3M Science. Applied to Life.™

Annual Report 2019

Transforming for the future

Fellow shareholders,

Everything 3M does is guided by our vision:

3M Technology Advancing Every Company
3M Products Enhancing Every Home
3M Innovation Improving Every Life

This vision resonates deeply with our 96,000 employees around the world, and helps drive our purpose as an enterprise. Every day we use science to solve problems and improve lives, and we are committed to delivering value for all of the stakeholders who have placed their trust in us: our customers, shareholders, employees, communities and business partners.

Mike Roman
3M Chairman of the Board and Chief Executive Officer

2019 Performance

Throughout 2019 3M faced declines in key end markets — specifically China, automotive and electronics — which represent approximately 30% of our total sales. In the face of these challenges, I am encouraged how our team stepped up our execution, made improvements to our operations and drove strong cash flow as we moved through the year.

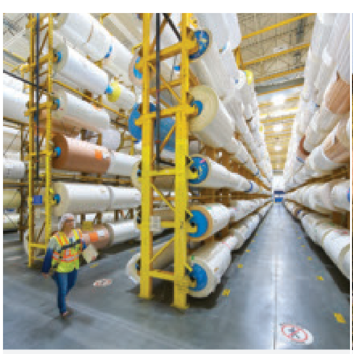
For the full year we posted organic growth of -1.5%, along with earnings of $7.81 per share, or $9.10 on an adjusted basis. We expanded free cash flow by 10% year-over-year to $5.4 billion — an all-time high for our enterprise — while delivering a strong conversion rate of 118%. We posted a good return on invested capital of 18% — including the impact of acquisitions — along with operating margins of 19%. On an adjusted basis, our team delivered operating margins of nearly 22%, even while reducing inventory levels by $370 million — which reflects the strength of the 3M model. Finally, in 2019 we returned $4.7 billion to our shareholders through dividends and share repurchases, and last year marked 3M's 61st consecutive year of dividend increases.

Transforming for the future

Beyond financial results, I view 2019 as a fundamentally significant year for 3M as we implemented major change to position us for the future.

In last year's Annual Report, I wrote about the strength and vitality of the 3M Value Model. Our company has deep competitive advantages that we leverage across our businesses — unique technology platforms, advanced manufacturing, leading brands, and global capabilities — all of which make 3M greater than the sum of our parts.

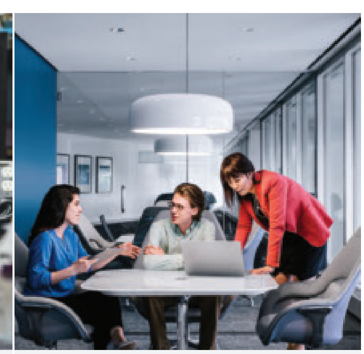
> **It is our responsibility to constantly build on that foundation, which we are doing through our four priorities for long-term growth and value creation: Transformation, Portfolio, Innovation, and People & Culture.**



Transformation
Activating our transformation advantages

Portfolio
Fully leveraging our 3M Value Model

Innovation
Realizing the full potential of our innovation model



People & Culture
Developing our people and advancing our culture

Transformation

3M has been on a journey to transform how we work, serve customers and compete. We have deployed a new companywide information technology ecosystem, including a new enterprise resource planning (ERP) system. Enabled by this ecosystem, we've rolled out new standardized business processes, service models and digitalization capabilities across 3M. In Europe and Canada — where we are furthest along in our transformation — we are seeing enhanced customer service, improved margins, better use of data analytics and lower inventories.

In 2019 we began to take the next step in our transformation journey, including a new global operating model and streamlined organizational structure. In April we moved from five to four business groups to better align around our customers and go-to-market models. We have since reorganized the entire company around our new business groups to take full advantage of our transformation capabilities. On January 1st, 2020 we implemented a new, streamlined global operating model designed to improve growth and operational efficiency. In the new model, our business groups have full responsibility for all facets of strategy, portfolio and resource prioritization across our entire global operations. Under the prior model, area and country teams — which comprised 3M's International organization — set priorities in their regions. All of our International people now report into the business groups and functions they are part of.

This new model will drive more accountability to our business groups to strengthen performance and serve both global and local customers, while enabling stronger customer insights and more powerful innovation. It will empower our people with more freedom to make decisions, and make us more efficient by reducing layers, streamlining structure and simplifying reporting lines. It will also allow us to leverage similarities across markets, while maintaining the robust local capabilities that differentiate 3M.

In addition to our new model, in 2019 we made changes to the way we support our business groups. To optimize the customer experience in each of our go-to-market models, we consolidated manufacturing, supply chain and customer operations into a seamless, end-to-end Enterprise Operations organization. We also brought together key capabilities as part of a new global Corporate Affairs organization in order to advance our brand and reputation. And we are realigning all existing corporate functions to drive more effective operations across geographies.

Ultimately, this is a defining moment for our enterprise. We are modernizing how we run our business and building an organization for the future, and I am more confident than ever in our journey to transform into a more agile efficient, and competitive enterprise.

Portfolio

The ongoing review and reshaping of 3M's portfolio is key to maximizing value across our company. Since 2012 we have moved from 40 businesses to 23, while completing more than ten divestitures and 14 acquisitions. In 2019 we continued to actively manage our portfolio, with particular progress in strengthening our health care business.

We acquired Acelity — which accelerates 3M as a leader in advanced wound care — along with M*Modal's technology business, an ideal fit within our health information systems business. The integration of Acelity is going well and the business is off to a good start, and M*Modal is outperforming our expectations for both growth and income. We have also announced the planned divestiture of our drug delivery business, which will enable us to focus more resources on our core health care portfolio.

Beyond our efforts in health care, last year we sold our gas and flame detection business, and in early 2020 we finalized the sale of our ballistic protection business. Managing our portfolio is an ongoing process, and we will continue to act on opportunities to maximize value across 3M.

Innovation

Innovation differentiates 3M in the marketplace, and supports organic growth and our long track record of delivering premium margins and return on invested capital. In 2019 we invested $3.6 billion in the combination of research and development and cap-ex, which enable us to both invent and manufacture new and unique solutions for customers. Last year we also expanded 3M's periodic table to 51 technology platforms, and we continue to see strong returns from our priority growth platforms which serve emerging and fast-growing markets. In 2019 these platforms grew 10%, as we create differentiated solutions for customers in areas such as automotive electrification, connected safety and structural adhesives.

> **3M is also stepping up our leadership in sustainability, particularly in our three focus areas:**
> **Science for Circular**
> **Science for Climate**
> **Science for Community**

In 2019 we moved our St. Paul headquarters to 100% renewable electricity, while committing to move our entire global operations to renewable electricity by 2050. Starting last year, we are also formally embedding sustainability into every new 3M product, meaning it must help solve an environmental or social challenge. To that end, we continue to produce a broad range of solutions that help our customers reduce their greenhouse gas emissions — from smog-reducing roofing granules, to films that make homes, electronics and automobiles more energy-efficient. And from a governance perspective, in 2019 our Board of Directors established a new Science, Technology and Sustainability committee to ensure we are building on our strong innovation capabilities, while advancing our already-high product stewardship standards.

Our commitment to sustainability includes stewardship of water, and active management of PFAS (per- and polyfluoroalkyl substances) related issues. In this, as with everything, we are guided by the principles of sound science, corporate responsibility and transparency, and are committed to being part of the solution. I encourage you to visit our PFAS Stewardship website to learn more about the actions we are taking.

People & Culture

In 2019 we took significant action to develop our people and continue to advance our culture. 3M's transformation initiatives are at the center of these efforts. Our transformation journey is as much a cultural change as it is a technology change. We are simplifying workflows, equipping employees with new tools, and empowering them with more autonomy to increase speed and service to our customers. I am pleased with how our team is embracing these changes.

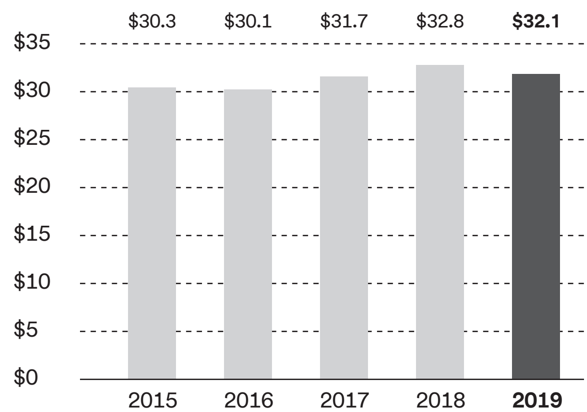
At the same time, we are deepening our commitment to 3M's core values, including diversity and inclusion. 60% of our top 100 leaders are diverse, one-third of our corporate officers and Board members are women, and we are doing more to integrate inclusion into our daily life. Underpinning everything we do is our Code of Conduct, and in 2019 3M again was named one of the World's Most Ethical Companies™ by the Ethisphere Institute.

Overall, I am pleased with the progress we made against each of our strategic priorities in 2019. As a result, we are well-positioned to improve our performance and return to growth in 2020. Moving forward, I know there is a lot more we can and must do to reach our full potential as an enterprise. Our entire team is focused on delivering extraordinary value for all of our stakeholders — including premium returns for you, our shareholders.

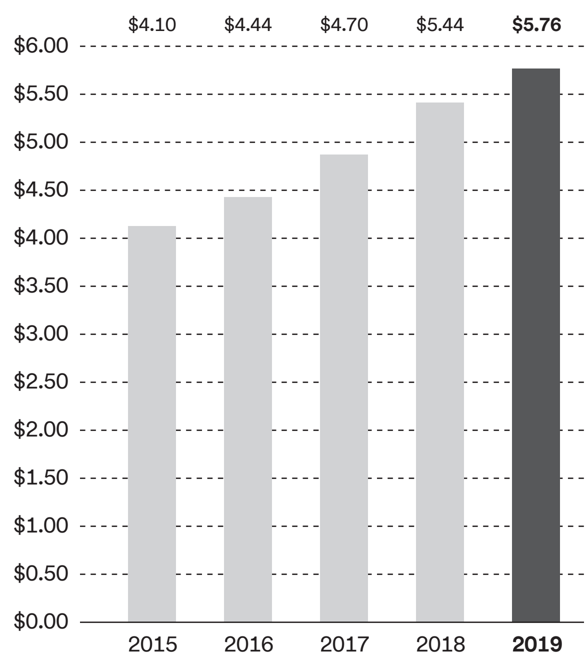
Thank you for your confidence in 3M.

Mike Roman
3M Chairman of the Board and Chief Executive Officer
February 6, 2020

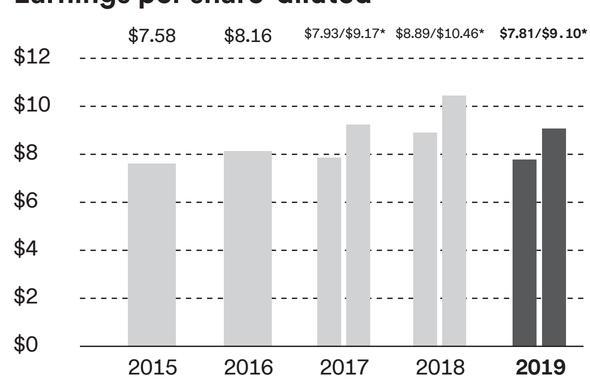
Sales (billions)



Cash dividends paid per share



Earnings per share-diluted



*Earnings per share-diluted, excluding the net impact of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the U.S. Tax Cuts and Jobs Act (TCJA) (a non-GAAP measure) in 2017, 2018, and 2019, as applicable. See the Overview section of Item 7 of 3M's 2019 Annual Report on Form 10-K for further details.

2019 Financial Results

GAAP earnings per share
$7.81
-12.1% year-on-year

Adjusted earnings per share*
$9.10
-13.0% year-on-year

Organic local currency sales growth worldwide
-1.5%
year-on-year

Return on invested capital*
17.5%

Free cash flow conversion*
118%

Net sales
$32.1B
-1.9% year-on-year

GAAP operating income margins
19.2%
-280 basis points year-on-year

Adjusted operating income margins*
21.6%
-310 basis points year-on-year

Impact of currency on worldwide sales
-1.7%
year-on-year

Impact of acquisitions, net of divestitures, on worldwide sales
+1.3%
year-on-year

Investment in research and development $1.9B

Investment in capital expenditures $1.7B

Organic local currency sales growth by business group and geographic area (year-on-year)

Safety & Industrial
-3.3%

Transportation & Electronics
-3.5%

Health Care
+1.6%

Consumer
+1.3%

United States
-1.1%

Asia Pacific
-2.9%

Europe, Middle East and Africa
-0.9%

Latin America and Canada
+1.1%

Dividends $3.3B

Share Repurchases $1.4B

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*2019 operating cash flow of $7.1 billion. Full financial data and non-GAAP reconciliations of free cash flow conversion and return on invested capital (refer to the Financial Condition and Liquidity section); and operating income margins and earnings per share adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the U.S. Tax Cuts and Jobs Act (TCJA) (refer to the Overview section) are included in Item 7 of 3M's 2019 Annual Report on Form 10-K.

3M Sustainability

For 3M, our purpose is articulated in our vision statement, ending with "improving every life." It's also reflected in our commitment to sustainability. As a science company, we know we have a unique opportunity and responsibility to act on behalf of and for each of our stakeholders — including our customers, investors, employees, business partners, and communities. At 3M we are a purpose-driven enterprise. We know we can grow our business while collaborating to solve some of humanity's greatest challenges.

2019 was a year of sustainability action and commitments from 3M. We began directing our efforts to align with our framework for the greater good — Science for Circular, Science for Climate and Science for Community. We also implemented a new requirement, announced in December 2018, that every product entering 3M's new product commercialization process must have a Sustainability Value Commitment (SVC), demonstrating how it drives impact for the greater good.

While 3M has a strong foundation, we know that we have the ability — and the responsibility — to do even more. Building on our global capabilities and diverse technologies, we are focusing on three priority areas:

A framework for the greater good

Science for Circular

Design solutions that do more with less material, advancing a global circular economy.

Science for Climate

Innovate to decarbonize industry, accelerate global climate solutions and improve our environmental footprint.

Science for Community

Create a more positive world through science and inspire people to join us.

These priority areas guide business decisions and strategy, as well as how we focus our efforts for local and global community impact.

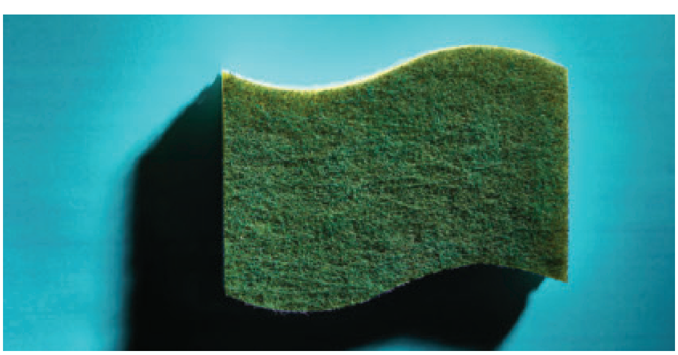
Science for Circular

Design solutions that do more with less material, advancing a global circular economy.

Our current global economy's linear business model of "take, make, and waste" is depleting natural resources faster than they can be replenished and straining ecosystems. Imagine repurposing a piece of plastic at the end of its use, giving it another life as something else. Its use is, in fact, circular, and the end of use doesn't mean the end of life.

A circular economy does more with less, keeps products and materials in use, designs out waste and pollution, and regenerates natural systems. At the core is an opportunity to develop technologies and business models that are restorative and regenerative by design. At 3M, we see the circular economy as an opportunity to inspire leadership, innovation and disruptive change, all driving impact for a sustainable future.

To advance Science for Circular, as of 2019, more than 30% of our manufacturing sites are zero waste to landfill, 3M gained membership in the Ellen MacArthur Foundation CE100, and established Circular Economy Working Groups within the company to increase use of renewable and recycled materials. We built upon 3M's history of creating sustainable solutions and collaborating with our customers to help them reach their own sustainability goals.



The green scrubbing layer of select **3M™ Scotch-Brite®** products is now made with 100% recycled content (including an average of 35% post-consumer recycled content).

3M™ Thinsulate™ 100% Recycled Featherless Insulation, made from 100% recycled plastic bottles — and is an example of 3M's commitment to using science to advance the circular economy, part of which involves designing solutions that keep products in use instead of creating waste.

100% of new products entering our commercialization process in 2019 have a commitment to drive progress for the greater good.

Sometimes a new design or a whole new way of packaging products is the best way to reduce impact. **3M™ Tegaderm™ Dressings** are packed using an innovative nested design that reduces material by 30% compared to rectangular packaging. The carton is also made of 100% recycled materials.

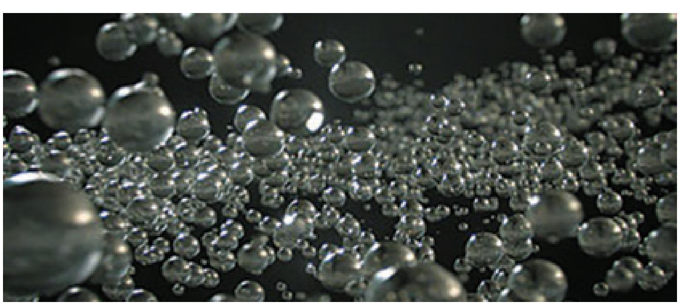
Science for Climate

Innovate to decarbonize industry, accelerate global climate solutions and improve our environmental footprint.

The impacts of climate change are widespread. Its risks are not limited by continent, industry, or even species.

At 3M, we support the global consensus set forth in the 2015 Paris Agreement, and we are incorporating the 2018 findings of the Special Report on Global Warming of 1.5°C by the Intergovernmental Panel on Climate Change into our goals, operations, and actions. The global climate crisis impacts business, our communities, and our families. We believe that by working together, we can drive the systemic change needed. We recognize the work to be done and are inspired by the opportunity to chart our collective path forward.

To advance Science for Climate, we committed to moving our entire global operations to 100% renewable electricity by 2050 through membership in the RE100 and doubled our interim target to 50% by 2025 (having already achieved our goal of 25%). Shortly after, we flipped the switch to 100% renewable sources of electricity at our global headquarters.



Imagine the lightest of particles helping to reduce the weight of the airplanes we travel in and the cars we drive, giving us better overall fuel economy or battery range. **3M™ Glass Bubbles** — hollow glass microspheres — help shed pounds per vehicle. That means filling up at the pump less often or holding a charge longer. Across an entire fleet, manufacturers can more easily meet weight reduction targets and emissions standards.

Using tapes, films, and adhesives, 3M is building the next generation of renewable energy systems. **3M™ Solar Light Redirecting Film** is a reflective film that is applied to recapture a significant portion of light that would otherwise be reflected away from the solar panel, increasing efficiency. **3M™ Wind Protection Tapes** stand up to sand, rain, hail and wind-borne debris; preventing costly damage and erosion of turbine blades and improving performance and energy production.

> **3M's global headquarters is now powered by renewable electricity. This is the first step in our commitment to move our entire global operations to 100% renewable sources of power, and innovating for a carbon-free future.**

Named one of TIME's Best Inventions of 2018, **3M™ Smog-reducing Granules** harness the power of the sun to turn roofing shingles into a pollution-fighting surface. When the sun hits the granules, their photocatalytic coating transforms the smog pollution (nitrogen oxides) into water-soluble ions that safely wash away with rain. Each ton of these granules used in shingles has the capacity to mitigate the smog created annually by one car driven 3,000 miles.

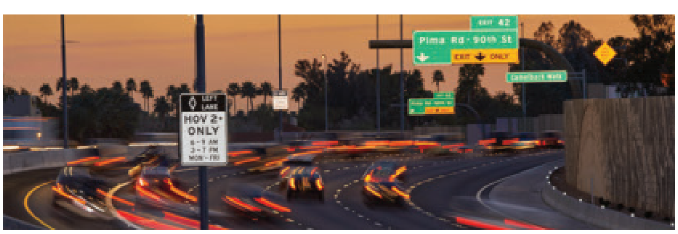
Science for Community

Create a more positive world through science and inspire people to join us.

At 3M, we recognize the importance of science and use it every day to improve the lives of people in our communities and around the world. We know that in order to solve global challenges we need new technologies, creative scientists, and evidence-based policies and decisions to drive impactful change. We also recognize the importance of well-trained science, technology, engineering, and math (STEM) graduates and the critical need for a diverse workforce with advanced manufacturing and vocational skills. We believe in the power of science, sharing our expertise, and investing in the bright minds of tomorrow. Together we will lead and design a sustainable future for all.

To advance Science for Community, we unveiled an additional 2025 Sustainability Goal. Through the expansion of 3M Impact, our skills-based employee volunteer program, we committed to 300,000 work hours of service across the globe. We formed a new partnership with the international non-governmental organization Clean Air Asia, which will leverage 3M's expertise to improve air quality and the lives of people in New Delhi and Metro Manila.

In summary, 2019 was a significant year as we accelerated our actions and leadership in sustainability. Going forward, we will continue to use innovation and collaboration to improve people's lives, help create a more sustainable world, and deliver on our purpose-driven commitments to all of 3M's stakeholders.



From improving brightness of pavement markings for better visibility to envisioning a future of autonomous driving and connected roads, 3M is dedicated to improving traffic safety and mobility. Our mission is to make sure families, commuters, pedestrians and road workers all get home safely. 3M is a founding donor of the **United Nations Road Safety Trust Fund** which aims to accelerate improving global road safety by bridging the gaps in the mobilization of resources for effective action at all levels.

With a looming skills gap in manufacturing and other trade jobs, investing in the workforce of tomorrow is imperative. **SkillsUSA** and **WorldSkills** support building a skilled workforce with a focus on trade, technical, and skilled service occupations. 3M's support enables productive employment and sustainable economic growth through the investment and encouragement of skill building.

> **Expanded 3M Impact, a skills-based service program, to provide 300,000 work hours of skills-based volunteerism by 3M employees to improve lives and help solve society's toughest challenges.**

In 2019, the company announced it is expanding **3M Impact,** a skills-based service program that allows employees to lend their business skills, experience, and energy to make a difference in global communities, while also developing leadership, problem-solving, and interpersonal communication skills. Through our commitment to provide 300,000 work hours of skills-based volunteerism by 3M employees to improve lives and help solve society's toughest challenges by 2025.

Financial Summary

(Dollars in millions, except per share amounts)

	2019	2018	2017	2016	2015
Operating Results					
Net sales	$32,136	$32,765	$31,657	$30,109	$30,274
Operating income	6,174	7,207	7,692	7,027	6,980
Net income attributable to 3M	4,570	5,349	4,858	5,050	4,833
Per share – basic	7.92	9.09	8.13	8.35	7.72
Per share – diluted	7.81	8.89	7.93	8.16	7.58
Financial Ratios					
Percent of sales					
Cost of sales	53.4%	50.9%	50.8%	50.2%	50.7%
Selling, general and administrative expense, net of gain on sale of businesses	21.5	21.5	19.0	20.6	20.4
Research, development and related expenses	5.9	5.6	5.9	5.9	5.8
Operating income	19.2	22.0	24.3	23.3	23.1
Net income attributable to 3M	14.2	16.3	15.3	16.8	16.0
Additional Information					
Cash dividends paid	3,316	3,193	$2,803	$2,678	$2,561
Per share	5.76	5.44	4.70	4.44	4.10
Stock price at year-end	176.42	190.54	235.37	178.57	150.64
Total assets	44,659	36,500	37,987	32,906	32,883
Long-term debt (excluding current portion)	17,518	13,411	12,096	10,678	8,753
Capital expenditures	1,699	1,577	1,373	1,420	1,461
Depreciation and amortization	1,593	1,488	1,544	1,474	1,435
Research, development and related expenses	1,911	1,821	1,870	1,764	1,757
Number of employees at year-end	96,163	93,516	91,536	91,584	89,446
Average shares outstanding – basic (in millions)	577.0	588.5	597.5	604.7	625.6
Average shares outstanding – diluted (in millions)	585.1	602.0	612.7	618.7	637.2

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2019

Commission file number 1-3285

3M COMPANY

State of Incorporation: **Delaware** I.R.S. Employer Identification No. **41-0417775**
Principal executive offices: **3M Center, St. Paul, Minnesota 55144**
Telephone number: **(651) 733-1110**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, Par Value $.01 Per Share	MMM	New York Stock Exchange, Inc.
	MMM	Chicago Stock Exchange, Inc.
1.500% Notes due 2026	MMM26	New York Stock Exchange, Inc.
Floating Rate Notes due 2020		New York Stock Exchange, Inc.
0.375% Notes due 2022	MMM22A	New York Stock Exchange, Inc.
0.950% Notes due 2023	MMM23	New York Stock Exchange, Inc.
1.750% Notes due 2030	MMM30	New York Stock Exchange, Inc.
1.500% Notes due 2031	MMM31	New York Stock Exchange, Inc.

Note: The common stock of the registrant is also traded on the SWX Swiss Exchange.
Securities registered pursuant to section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of voting stock held by nonaffiliates of the registrant, computed by reference to the closing price and shares outstanding, was approximately $91.3 billion as of January 31, 2020 (approximately $99.7 billion as of June 30, 2019, the last business day of the registrant's most recently completed second quarter).

Shares of common stock outstanding at January 31, 2020: 575.6 million

DOCUMENTS INCORPORATED BY REFERENCE

Parts of the Company's definitive proxy statement (to be filed pursuant to Regulation 14A within 120 days after Registrant's fiscal year-end of December 31, 2019) for its annual meeting to be held on May 12, 2020, are incorporated by reference in this Form 10-K in response to Part III, Items 10, 11, 12, 13 and 14.

3M COMPANY
FORM 10-K
For the Year Ended December 31, 2019

Pursuant to Part IV, Item 16, a summary of Form 10-K content follows, including hyperlinked cross-references (in the EDGAR filing). This allows users to easily locate the corresponding items in Form 10-K, where the disclosure is fully presented. The summary does not include certain Part III information that will be incorporated by reference from the proxy statement, which will be filed after this Form 10-K filing.

3M COMPANY
ANNUAL REPORT ON FORM 10-K
For the Year Ended December 31, 2019
PART I

Item 1. Business.

3M Company was incorporated in 1929 under the laws of the State of Delaware to continue operations begun in 1902. The Company's ticker symbol is MMM. As used herein, the term "3M" or "Company" includes 3M Company and its subsidiaries unless the context indicates otherwise. In this document, for any references to Note 1 through Note 20, refer to the Notes to Consolidated Financial Statements in Item 8.

Available Information

The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers, including the Company, that file electronically with the SEC. The public can obtain any documents that the Company files with the SEC at http://www.sec.gov. The Company files annual reports, quarterly reports, proxy statements and other documents with the Securities and Exchange Commission (SEC) under the Securities Exchange Act of 1934 (Exchange Act).

3M also makes available free of charge through its website (http://investors.3M.com) the Company's Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and, if applicable, amendments to those reports filed or furnished pursuant to the Exchange Act as soon as reasonably practicable after the Company electronically files such material with, or furnishes it to, the SEC.

General

3M is a diversified technology company with a global presence in the following businesses: Safety and Industrial; Transportation and Electronics; Health Care; and Consumer. 3M is among the leading manufacturers of products for many of the markets it serves. Most 3M products involve expertise in product development, manufacturing and marketing, and are subject to competition from products manufactured and sold by other technologically oriented companies.

At December 31, 2019, the Company employed 96,163 people (full-time equivalents), with 39,662 employed in the United States and 56,501 employed internationally.

Business Segments

As described in Notes 4 and 19, effective in the second quarter of 2019, the Company realigned its former five business segments into four to enable the Company to better serve global customers and markets. In addition, certain product lines were moved to better align with their respective end customers. Earlier in the first quarter of 2019, the Company changed its business segment reporting in its continuing effort to improve the alignment of businesses around markets and customers. These changes included the realignment of certain customer account activity in various countries (affecting dual credit reporting), creation of the Closure and Masking Systems and Medical Solutions divisions, and certain other actions that impacted segment reporting. Business segment information presented herein reflects the impact of these changes for all periods presented.

3M manages its operations in four business segments. The reportable segments are Safety and Industrial, Transportation and Electronics, Health Care, and Consumer. 3M's four business segments bring together common or related 3M technologies, enhancing the development of innovative products and services and providing for efficient sharing of business resources. Financial information and other disclosures relating to 3M's business segments and operations in major geographic areas are provided in the Notes to Consolidated Financial Statements.

Safety and Industrial Business: This segment includes businesses that serve the global industrial, electrical and safety markets. This business segment consists of personal safety, industrial adhesives and tapes, abrasives, closure and masking systems, electrical markets, automotive aftermarket, and roofing granules. This segment also includes the Communication Markets Division (which was substantially sold in 2018) and the refrigeration filtration product lines (within Other Safety and Industrial).

This segment's industrial offerings include tapes, a wide variety of coated, non-woven and bonded abrasives, adhesives, sealants, specialty materials, closure systems for personal hygiene products, and acoustic systems products. 3M is also a leading global supplier of precision grinding technology serving customers in the area of hard-to-grind precision applications in industrial, automotive, aircraft and cutting tools. Major products include vinyl, polyester, foil and specialty industrial tapes and adhesives; Scotch® Masking Tape, Scotch® Filament Tape and Scotch® Packaging Tape; packaging equipment; 3M™ VHB™ Bonding Tapes; conductive, low surface energy, sealants, hot melt, spray and structural adhesives; reclosable fasteners; label materials for durable goods; coated, nonwoven and microstructured surface finishing and grinding abrasives for the industrial market. In the first quarter of 2018, 3M divested a polymer additives compounding business and in May 2018 divested an abrasives glass products business.

This segment's electrical offerings include infrastructure protection and renewable energy solutions. This segment serves the world's electrical markets, including electrical utilities, electrical construction, maintenance and repair, original equipment manufacturers (OEM), outside plant and enterprise, as well as aerospace, military, automotive and medical markets, with products that enable the efficient transmission of electrical power. Products in this segment include pressure sensitive tapes and resins, electrical insulation, as well as the 3M™ Aluminum Conductor Composite Reinforced (ACCR) electrical power cable that increases transmission capacity for existing power lines. This segment also includes renewable energy component solutions for the solar and wind power industries, as well as infrastructure products solutions that provide municipalities both protection and detection solutions for electrical, oil, natural gas, water, rebar and other infrastructure assets. In June 2018, 3M completed the sale of substantially all of its Communication Markets Division, with the remaining telecommunications systems services portion based in Germany sold in December 2018.

This segment's safety market offerings include personal protection products, such as certain disposable and reusable respirators, fall protection equipment, personal protective equipment, head and face protection, body protection, hearing protection and protective eyewear, plus reflective materials that are widely used on apparel, footwear and accessories, enhancing visibility in low-light situations. Other segment products include natural and color-coated mineral granules for asphalt shingles. In October 2017, 3M completed the acquisition of the underlying legal entities and associated assets of Scott Safety, a premier manufacturer of innovative products, including self-contained breathing apparatus systems, gas and flame detection instruments, and other safety devices that complement 3M's personal safety portfolio. In January 2017, 3M sold the assets of its safety prescription eyewear business. In February 2018, 3M sold certain personal safety product offerings primarily focused on noise, environmental, and heat stress monitoring. In August 2019, 3M completed the sale of its gas and flame detection business.

Transportation and Electronics Business: This segment includes businesses that serve global transportation and electronic original equipment manufacturer (OEM) customers. This business segment consists of electronics (display materials and systems, electronic materials solutions), automotive and aerospace, commercial solutions, advanced materials, and transportation safety.

This segment's transportation-related businesses include components and products that are used in the manufacture, repair and maintenance of automotive, marine, aircraft and specialty vehicles; fluoroelastomers for seals, tubes and gaskets in engines; Thinsulate™ Acoustic Insulation and components for cabin noise reduction and catalytic converters; functional and decorative graphics; abrasion-resistant films; adhesives; sealants; masking tapes; fasteners and tapes for attaching nameplates, trim, moldings, interior panels and carpeting; coated, nonwoven and microstructured finishing and grinding abrasives; structural adhesives; and other specialty materials. In transportation safety, 3M provides reflective sheeting used on highway signs, construction work-zone devices, trucks and other vehicles, and also provides pavement marking systems. In May 2017, 3M completed the divestiture of its identity management business. In June 2017, 3M also completed the sale of its tolling and automated license/number plate recognition business and in October 2017, sold its electronic monitoring business.

This segment's electronics solutions include the display materials and systems business, which provides films that serve numerous market segments of the electronic display industry. 3M provides distinct products for five market segments, including products for: 1) computer monitors 2) televisions 3) handheld devices such as cellular phones and tablets 4) notebook PCs and 5) automotive displays. This segment also provides computer screen filters that address display light control, privacy, and glare reduction needs. Major electronics products also include packaging and interconnection devices; high performance fluids and abrasives used in the manufacture of computer chips, and for cooling electronics and lubricating computer hard disk drives; and high-temperature and display tapes. Flexible circuits use electronic packaging and interconnection technology, providing more connections in less space, and are used in ink-jet printer cartridges, cell phones and electronic devices. This segment also includes touch systems products, including touch screens, touch monitors, and touch sensor components.

Other businesses within this segment include major commercial products such as films, inks, and related products used to produce graphics for vehicles, signs and interior surfaces; spill-control sorbents; nonwoven abrasive materials for floor maintenance and commercial cleaning; and floor matting. 3M also develops and produces advanced technical ceramics for demanding applications in the automotive, oil and gas, solar, industrial, electronics and defense industries.

Health Care Business: Products and services provided to these and other markets include medical and surgical supplies, skin health and infection prevention products, oral care solutions (dental and orthodontic products), separation and purification sciences, health information systems, inhalation and transdermal drug delivery systems, and food safety products.

In medical solutions, 3M is a supplier of medical tapes, dressings, wound closure products, and orthopedic casting materials, in addition to acute wound care, skin integrity and disinfecting port protection products. 3M also markets a variety of surgical drapes, masks and preps, electrodes, stethoscopes, as well as sterilization assurance equipment and patient warming solutions designed to prevent hypothermia in surgical settings. In our drug delivery systems business, our products include metered-dose inhalers and transdermal skin patches and related components. This segment also includes a comprehensive line of filtration products for the separation, clarification and purification of fluids and gases. Oral care solutions include restoratives, adhesives, finishing and polishing products, crowns, impression materials, preventive sealants, professional tooth whiteners, prophylaxis and orthodontic appliances, as well as digital workflow solutions to transform traditional impression and analog processes. In health information systems, 3M develops and markets computer software for hospital coding, recording, and data classification and provides related consulting services. 3M provides food safety products that make it faster and easier for food processors to test the microbiological quality of food. In September 2017, 3M purchased all of the ownership interests of Elution Technologies, LLC, a Vermont-based manufacturer of test kits that help enable food and beverage companies ensure their products are free from certain potentially harmful allergens such as peanuts, soy or milk. In February 2019, 3M completed the acquisition of the technology business of M*Model. M*Model's technology business provides cloud-based, conversational artificial intelligence powered systems that expand 3M's Health Information Systems business. In October, 2019, 3M completed the acquisition of Acelity Inc. and its KCI subsidiaries. Acelity is a leading global medical technology company focused on advanced wound care and specialty surgical applications marketed under the KCI brand that expand 3M's presence in advanced and surgical wound care within 3M's medical solutions division.

Consumer Business: This business serves global consumers and consists of home improvement, stationery and office supplies, home care, and consumer health care. This segment also includes, within the Construction and Home Improvement Division, certain retail auto care product lines. Products in this segment include office supply products, stationery products, home improvement products (do-it-yourself), home care products, protective material products, certain consumer retail personal safety products, and consumer health care products.

Major consumer products include Scotch® brand products, such as Scotch® Magic™ Tape, Scotch® Glue Stick and Scotch® Cushioned Mailer; Post-it® Products, such as Post-it® Flags, Post-it® Extreme Notes, Post-it® Note Pads, Post-it® Labeling & Cover-up Tape, and Post-it® Pop-up Notes and Dispensers; home improvement products, including ScotchBlue™ painter tapes, surface-preparation and wood-finishing materials, Command™ Adhesive Products and Filtrete™ Filters for furnaces and air conditioners and Filtrete™ Room Air Purifiers; home care products, including Scotch-Brite® Scour Pads, Scotch-Brite® Scrub Sponges, Scotch-Brite® Microfiber Cloth products, O-Cel-O™ Sponges; protective material products, such as Scotchgard™ Fabric Protectors; certain maintenance-free respirators; certain consumer retail personal safety products, including safety glasses, hearing protectors, and 3M Thinsulate™ Insulation, which is used in jackets, pants, gloves, hats and boots to keep people warm; Nexcare™ Adhesive Bandages; and ACE® branded (and related brands) elastic bandage, supports and thermometer product lines. Retail auto care product offerings include paint finishing and detailing products, including a complete system of cleaners, dressings, polishes, waxes and other products.

Distribution

3M products are sold through numerous distribution channels, including directly to users and through numerous e-commerce and traditional wholesalers, retailers, jobbers, distributors and dealers in a wide variety of trades in many countries around the world. Management believes the confidence of wholesalers, retailers, jobbers, distributors and dealers in 3M and its products — a confidence developed through long association with skilled marketing and sales representatives — has contributed significantly to 3M's position in the marketplace and to its growth.

Research and Patents

Research and product development constitutes an important part of 3M's activities and has been a major driver of 3M's sales and profit growth. Research, development and related expenses totaled $1.911 billion in 2019, $1.821 billion in 2018 and $1.870 billion in 2017. Research and development, covering basic scientific research and the application of scientific advances in the development of new and improved products and their uses, totaled $1.253 billion in 2019, $1.253 billion in 2018 and $1.352 billion in 2017. Related expenses primarily include technical support; internally developed patent costs, which include costs and fees incurred to prepare, file, secure and maintain patents; amortization of externally acquired patents and externally acquired in-process research and development; and gains/losses associated with certain corporate approved investments in R&D-related ventures, such as equity method effects and impairments.

The Company's products are sold around the world under various trademarks. The Company also owns, or holds licenses to use, numerous U.S. and foreign patents. The Company's research and development activities generate a steady stream of inventions that are covered by new patents. Patents applicable to specific products extend for varying periods according to the date of patent application filing or patent grant and the legal term of patents in the various countries where patent protection is obtained. The actual protection afforded by a patent, which can vary from country to country, depends upon the type of patent, the scope of its coverage and the availability of legal remedies in the country.

The Company believes that its patents provide an important competitive advantage in many of its businesses. In general, no single patent or group of related patents is in itself essential to the Company as a whole or to any of the Company's business segments.

Raw Materials

In 2019, the Company experienced raw material price inflation across many material markets in all geographies. In response, the Company continued to deploy productivity projects to minimize the impact of raw material inflation and market supply challenges, including input management, reformulations, and multi-sourcing activities. These succeeded in partially offsetting the overall raw material headwinds experienced throughout the year. To date, the Company is receiving sufficient quantities of all raw materials to meet its reasonably foreseeable production requirements. It is difficult to predict future shortages of raw materials or the impact any such shortages would have. 3M has avoided disruption to its manufacturing operations through careful management of existing raw material inventories, strategic relationships with key suppliers, and development as well as qualification of additional supply sources. 3M manages spend category price risks through negotiated supply contracts, price protection agreements and commodity price swaps. In addition, 3M evaluates suppliers' conformance with environmental and social compliance requirements.

Environmental Law Compliance

3M's manufacturing operations are affected by national, state and local environmental laws around the world. 3M has made, and plans to continue making, necessary expenditures for compliance with applicable laws. 3M is also involved in remediation actions relating to environmental matters from past operations at certain sites (refer to "Environmental Matters and Litigation" in Note 16, Commitments and Contingencies).

Environmental expenditures relating to existing conditions caused by past operations that do not contribute to current or future revenues are expensed. Reserves for liabilities for anticipated remediation costs are recorded on an undiscounted basis when they are probable and reasonably estimable, generally no later than the completion of feasibility studies, the Company's commitment to a plan of action, or approval by regulatory agencies. Environmental expenditures for capital projects that contribute to current or future operations generally are capitalized and depreciated over their estimated useful lives.

In 2019, 3M expended approximately $59 million for capital projects related to protecting the environment. This amount excludes expenditures for remediation actions relating to existing matters caused by past operations that do not contribute to current or future revenues, which are expensed. Capital expenditures for environmental purposes have included pollution control devices — such as wastewater treatment plant improvements, scrubbers, containment structures, solvent recovery units and thermal oxidizers — at new and existing facilities constructed or upgraded in the normal course of business. The Company places consistent emphasis on environmental responsibility. While capital expenditures (other than for remediation projects) for known projects are presently expected to be approximately $150 million to $220 million over the next two years for new or expanded programs to build facilities or modify manufacturing processes to minimize waste and reduce emissions, 3M cannot predict with certainty whether future costs of such cleanup activities, capital expenditures or operating costs for environmental compliance will have a material effect on its capital expenditures, earnings or competitive position.

Information about our Executive Officers

Following is a list of the executive officers of 3M, and their age, present position, the year elected to their present position and other positions they have held during the past five years. No family relationships exist among any of the executive officers named, nor is there any undisclosed arrangement or understanding pursuant to which any person was selected as an officer. This information is presented in the table below as of the date of the 10-K filing (February 6, 2020).

Name	Age	Present Position	Year Elected to Present Position	Other Positions Held During 2015-2019
Michael F. Roman	60	Chairman of the Board, President and Chief Executive Officer	2019	Chief Executive Officer, 2018-2019 Chief Operating Officer and Executive Vice President, 2017-2018 Executive Vice President, Industrial Business Group, 2014-2017
John P. Banovetz	52	Senior Vice President, Research and Development and Chief Technology Officer	2017	Managing Director, DACH Region, 2016-2017 Vice President, Corporate Research Laboratory, Research and Development, 2015-2016 Global Business Director, Industrial Adhesives and Tapes Division, 2012-2015
Julie L. Bushman	58	Executive Vice President, International Operations	2017	Senior Vice President, Business Transformation and Information Technology, 2013-2017
Ivan K. Fong	58	Senior Vice President, Legal Affairs and General Counsel	2012	
Nicholas C. Gangestad	55	Senior Vice President and Chief Financial Officer	2014	
Eric D. Hammes	45	Senior Vice President, Enterprise Operations	2019	Senior Vice President, Manufacturing & Supply Chain, 2019 Senior Vice President, Business Transformation & Information Technology, 2017-2019 Vice President, Corporate Controller and Chief Accounting Officer, 2014-2017
Paul A. Keel	50	Executive Vice President, Consumer Business Group	2019	Senior Vice President, Business Development and Marketing-Sales, 2017-2019 Senior Vice President, Supply Chain, 2014-2017
Ashish K. Khandpur	52	Executive Vice President, Transportation & Electronics Business Group	2019	Executive Vice President, Electronics & Energy Business Group, 2017-2019 Senior Vice President, Research and Development, and Chief Technology Officer, 2014-2017
Kristen M. Ludgate	57	Senior Vice President, Human Resources	2018	Senior Vice President, Corporate Communications and Enterprise Services, 2018 Vice President, Global Human Resources Business Operations, Human Resources, 2017-2018 Vice President, Associate General Counsel and Chief Compliance Officer, Compliance and Business Conduct, 2015-2017 Associate General Counsel, Labor and Employment, Office of General Counsel, 2013-2015
Mojdeh Poul	57	Executive Vice President, Health Care Business Group	2019	Executive Vice President, Safety and Graphics Business Group, 2018-2019 President and General Manager, 3M Canada, 2016-2018 Vice President and General Manager, Infection Prevention Division, 2014-2016

Name	Age	Present Position	Year Elected to Present Position	Other Positions Held During 2015-2019
Denise R. Rutherford	57	Senior Vice President, Corporate Affairs	2019	Vice President, Research & Development and Commercialization, Industrial Business Group, 2017-2019 Managing Director, 3M Japan, 2016-2017 Vice President, Greater China Area and Managing Director, 3M China, 2015-2016 Vice President, Latin America, 2013-2015
Stephen M. Shafer	44	Senior Vice President, 3M Strategy & Business Development	2019	Senior Vice President, Business Development and Marketing-Sales, 2019 Vice President, Greater China Area and Managing Director, 3M China, 2016-2019 Vice President, Business Transformation, 2014-2016
Ty R. Silberhorn	52	Senior Vice President, Business Transformation and Information Technology	2019	Vice President and General Manager, Industrial Adhesives and Tapes Division, 2015-2019
Michael G. Vale	53	Executive Vice President, Safety and Industrial Business Group	2019	Executive Vice President, Health Care Business Group, 2016-2019 Executive Vice President, Consumer Business Group, 2012-2016

Cautionary Note Concerning Factors That May Affect Future Results

This Annual Report on Form 10-K, including “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7, contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. The Company may also make forward-looking statements in other reports filed with the Securities and Exchange Commission, in materials delivered to shareholders and in press releases. In addition, the Company’s representatives may from time to time make oral forward-looking statements.

Forward-looking statements relate to future events and typically address the Company’s expected future business and financial performance. Words such as “plan,” “expect,” “aim,” “believe,” “project,” “target,” “anticipate,” “intend,” “estimate,” “will,” “should,” “could,” “forecast” and other words and terms of similar meaning, typically identify such forward-looking statements. In particular, these include, among others, statements relating to:

- the Company’s strategy for growth, future revenues, earnings, cash flow, uses of cash and other measures of financial performance, and market position,
- worldwide economic, political, regulatory, capital markets and other external conditions, such as interest rates, foreign currency exchange rates, financial conditions of our suppliers and customers, trade restrictions such as tariffs in addition to retaliatory counter measures, and natural and other disasters or climate change affecting the operations of the Company or our suppliers and customers,
- new business opportunities, product development, and future performance or results of current or anticipated products,
- the scope, nature or impact of acquisition, strategic alliance and divestiture activities,
- liabilities related to certain fluorochemicals and the outcome of contingencies, such as legal and regulatory proceedings,
- future levels of indebtedness, common stock repurchases and capital spending,
- future availability of and access to credit markets,
- pension and postretirement obligation assumptions and future contributions,
- asset impairments,
- tax liabilities,
- information technology security, and
- the effects of changes in tax (including the Tax Cuts and Jobs Act), environmental and other laws and regulations in the United States and other countries in which we operate.

The Company assumes no obligation to update or revise any forward-looking statements.

Forward-looking statements are based on certain assumptions and expectations of future events and trends that are subject to risks and uncertainties. Actual future results and trends may differ materially from historical results or those reflected in any such forward-looking statements depending on a variety of factors. Important information as to these factors can be found in this document, including, among others, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” under the headings of “Overview,” “Financial Condition and Liquidity,” and annually in “Critical Accounting Estimates.” Discussion of these factors is incorporated by reference from Part I, Item 1A, “Risk Factors,” of this document, and should be considered an integral part of Part II, Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” For additional information concerning factors that may cause actual results to vary materially from those stated in the forward-looking statements, see our reports on Form 10-K, 10-Q and 8-K filed with the SEC from time to time.

Item 1A. Risk Factors

Provided below is a cautionary discussion of what we believe to be the most important risk factors applicable to the Company. Discussion of these factors is incorporated by reference into and considered an integral part of Part I, Item 2, “Management’s Discussion and Analysis of Financial Conditions and Results of Operations.”

* *Results are impacted by the effects of, and changes in, worldwide economic, political, regulatory, capital markets and other external conditions.* The Company operates in more than 70 countries and derives approximately 60 percent of its revenues from outside the United States. The Company’s business is subject to global competition and geopolitical risks and has been and will in the future be adversely affected by factors in the United States and other countries that are beyond its control, such as slower economic growth, disruptions in financial markets, economic downturns in the form of either contained or widespread recessionary conditions, inflation, elevated unemployment levels, sluggish or uneven recovery, government actions impacting international trade agreements, imposing trade restrictions such as tariffs, and retaliatory counter measures, government deficit reduction and other austerity measures in specific countries or regions, or in the various industries in which the Company operates; social, political or labor conditions in specific countries or regions; natural and other disasters, including public health crises, such as pandemics and epidemics, affecting the operations of the Company or its customers and suppliers; or adverse changes in the availability and cost of capital, interest rates, tax rates, tax laws, or exchange control, ability to expatriate earnings and other regulations in the jurisdictions in which the Company operates. Natural occurrences and human activities are increasingly releasing greenhouse gases into the atmosphere, contributing to changes in the earth’s climate. Climate change, as well as related environmental and social regulations, may negatively impact the Company or its customers and suppliers, in terms of availability and cost of natural resources, sources and supply of energy, product demand and manufacturing, and the health and well-being of individuals and communities in which we operate.

* *The Company faces liabilities related to certain fluorochemicals, which could adversely impact our results.*
As previously reported, the Company has been voluntarily cooperating with various local, state, federal (primarily the U.S. Environmental Protection Agency (EPA)), and international agencies in their review of the environmental and health effects of a broad group of perfluoroalkyl and polyfluoroalkyl substances produced by the Company, collectively known as “PFAS.” The PFAS group contains several categories and classes of durable chemicals and materials with properties that include oil, water, temperature, chemical and fire resistance, as well as electrical insulating properties. The strength of the carbon-fluorine bond also means that these compounds do not easily degrade. These characteristics have made PFAS critical to the manufacture of electronic devices such as cell phones, tablets and semi-conductors. They are also used to help prevent infections in products like surgical gowns and drapes. Commercial aircraft and low-emissions vehicles also rely on PFAS technology. PFAS compounds are manufactured by various companies, including 3M, and are used in everyday products. As science and technology evolve and advance, and in response to evolving knowledge and the understanding that PFAS compounds had the potential to build up over time, 3M announced in 2000 that we would voluntarily phase out production of perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) globally as a precautionary measure. We phased out of materials used to produce certain repellants and surfactant products, with most of these activities in the U.S. completed by the end of 2002. Phased out products included Aqueous Film Forming Foam (AFFF) and coatings for food packaging, for example. 3M currently is defending lawsuits concerning various PFAS-related products and chemistries, and is subject to unasserted and asserted claims and governmental regulatory proceedings and inquiries related to the production and use of PFAS in a variety of jurisdictions, as discussed in Note 16, “Commitments and Contingencies,” within the Notes to Consolidated Financial Statements. An adverse outcome in any one or more of these matters could be material to our financial results. For example, we recorded a pre-tax charge of $897 million, inclusive of legal fees and other related obligations, in the first quarter of 2018 with respect to the settlement of a matter brought by the State of Minnesota involving the presence of PFAS in the groundwater, surface

water, fish or other aquatic life, and sediments in the state. Governmental inquiries or lawsuits involving PFAS could lead to our incurring liability for damages or other costs, civil or criminal proceedings, the imposition of fines and penalties, or other remedies, as well as restrictions on or added costs for our business operations going forward, including in the form of restrictions on discharges at our manufacturing facilities or otherwise.

** The Company's future results may be affected by various asserted and unasserted legal and regulatory proceedings and legal compliance risks, including those involving product liability, antitrust, intellectual property, environmental, the U.S. Foreign Corrupt Practices Act and other anti-bribery laws, U.S. trade sanctions compliance, regulations of the U.S. Food and Drug Administration (FDA) and similar foreign agencies, U.S. federal healthcare program-related laws and regulations including the False Claims Act, anti-kickback laws, the Sunshine Act, or other matters.* The outcome of these legal proceedings may differ from the Company's expectations because the outcomes of litigation, including regulatory matters, are often difficult to reliably predict. Although the Company maintains general liability insurance, the amount of liability that may result from certain of these risks may not always be covered by, or could exceed, the applicable insurance coverage. Various factors or developments can lead the Company to change current estimates of liabilities and related insurance receivables where applicable, or make such estimates for matters previously not susceptible of reasonable estimates, such as a significant judicial ruling or judgment, a significant settlement, significant regulatory developments or changes in applicable law. A future adverse ruling, settlement or unfavorable development could result in future charges that could have a material adverse effect on the Company's results of operations or cash flows in any particular period. In addition, negative publicity related to product liability, environmental, health and safety matters involving the Company may negatively impact the Company's reputation. For a more detailed discussion of the legal proceedings involving the Company and the associated accounting estimates, see the discussion in Note 16, "Commitments and Contingencies," within the Notes to Consolidated Financial Statements.

** The Company's results are affected by competitive conditions and customer preferences.* Demand for the Company's products, which impacts revenue and profit margins, is affected by (i) the development and timing of the introduction of competitive products; (ii) the Company's response to downward pricing to stay competitive; (iii) changes in customer order patterns, such as changes in the levels of inventory maintained by customers and the timing of customer purchases which may be affected by announced price changes, changes in the Company's incentive programs, or the customer's ability to achieve incentive goals; (iv) changes in customers' preferences for our products, including the success of products offered by our competitors, and changes in customer designs for their products that can affect the demand for some of the Company's products; and (v) changes in the business environment related to disruptive technologies, such as artificial intelligence, block-chain, expanded analytics and other enhanced learnings from increasing volume of available data.

** Foreign currency exchange rates and fluctuations in those rates may affect the Company's ability to realize projected growth rates in its sales and earnings.* Because the Company's financial statements are denominated in U.S. dollars and approximately 60 percent of the Company's revenues are derived from outside the United States, the Company's results of operations and its ability to realize projected growth rates in sales and earnings could be adversely affected if the U.S. dollar strengthens significantly against foreign currencies.

** The Company's growth objectives are largely dependent on the timing and market acceptance of its new product offerings, including its ability to continually renew its pipeline of new products and to bring those products to market.* This ability is subject to difficulties or delays in product development, such as the inability to identify viable new products, obtain adequate intellectual property protection, or gain market acceptance of new products. There are no guarantees that new products will prove to be commercially successful.

** The Company's future results are subject to fluctuations in the costs and availability of purchased components, compounds, raw materials and energy, including oil and natural gas and their derivatives, due to shortages, increased demand, supply interruptions, currency exchange risks, natural disasters and other factors.* The Company depends on various components, compounds, raw materials, and energy (including oil and natural gas and their derivatives) supplied by others for the manufacturing of its products. Supplier relationships have been and could be interrupted in the future due to natural and other disasters and other events, or be terminated. Any sustained interruption in the Company's receipt of adequate supplies could have a material adverse effect on the Company. In addition, while the Company has a process to minimize volatility in component and material pricing, no assurance can be given that the Company will be able to successfully manage price fluctuations or that future price fluctuations or shortages will not have a material adverse effect on the Company.

** The Company employs information technology systems to support its business, including ongoing phased implementation of an ERP system as part of business transformation on a worldwide basis over the next several years. Security breaches and other disruptions to the Company's information technology infrastructure could interfere with the Company's operations, compromise information belonging to the Company or its customers, suppliers, and employees, exposing the Company to liability which could adversely impact the Company's business and reputation.* In the ordinary course of business, the Company relies on centralized and local information technology networks and systems, some of which are managed by third parties, to process, transmit and store electronic information, and to manage or support a variety of businesses. Additionally, the Company collects and stores certain data, including proprietary business information, and has access to confidential or personal information in certain of our businesses that is subject to privacy and security laws, regulations and customer-imposed controls. Despite our cybersecurity measures (including employee and third-party training, monitoring of networks and systems, patching, maintenance, and backup of systems and data), the Company's information technology networks and infrastructure are still potentially be vulnerable to damage, disruptions or shutdowns due to attacks by hackers, breaches, employee error or malfeasance, power outages, computer viruses, ransomware, telecommunication or utility failures, systems failures, service or cloud provider breaches, natural disasters or other catastrophic events. It is possible for such vulnerabilities to remain undetected for an extended period, up to and including several years. While we have experienced, and expect to continue to experience, these types of vulnerabilities to the Company's information technology networks and infrastructure, none of them to date has had a material impact to the Company. There may be other challenges and risks as the Company upgrades and standardizes its ERP system on a worldwide basis. Any such events could result in legal claims or proceedings, liability or penalties under privacy laws, disruptions or shutdowns, and damage to the Company's reputation, which could adversely affect the Company's business. Although the Company maintains insurance coverage for various cybersecurity and business continuity risks, there can be no guarantee that all costs or losses incurred will be fully insured.

** Acquisitions, strategic alliances, divestitures, and other unusual events resulting from portfolio management actions and other evolving business strategies, and possible organizational restructuring could affect future results.* The Company monitors its business portfolio and organizational structure and has made and may continue to make acquisitions, strategic alliances, divestitures and changes to its organizational structure. With respect to acquisitions, including, for example, the recently completed acquisition of Acelity, Inc. and its KCI subsidiaries (a leading global medical technology company), future results will be affected by the Company's ability to integrate acquired businesses quickly and obtain the anticipated synergies. The Company realigned from five to four business segments, effective in April of 2019, to better serve its global customers and markets. Successful execution of the realignment and the associated adjustments of our portfolio and business operating model, as well as other organizational changes, will be important to the Company's future results.

** The Company's future results may be affected by its operational execution, including scenarios where the Company generates fewer productivity improvements than estimated.* The Company's financial results depend on the successful execution of its business operating plans. The Company utilizes various tools, such as Lean Six Sigma, and engages in ongoing global business transformation. Business transformation is defined as changes in processes and internal/external service delivery across 3M to move to more efficient business models to improve operational efficiency and productivity, while allowing 3M to serve customers with greater speed and efficiency. This is enabled by the ongoing multi-year phased implementation of an enterprise resource planning (ERP) system. There can be no assurance that all of the projected productivity improvements will be realized. Operational challenges, including those related to productivity improvements, could have a material adverse effect on the Company's business, financial conditions and results of operations.

** The Company's defined benefit pension and postretirement plans are subject to financial market risks that could adversely impact our results.* The performance of financial markets and discount rates impact the Company's funding obligations under its defined benefit plans. Significant changes in market interest rates, decreases in the fair value of plan assets and investment losses on plan assets, and legislative or regulatory changes relating to defined benefit plan funding may increase the Company's funding obligations and adversely impact its results of operations and cash flows.

** Change in the Company's credit ratings could increase cost of funding.* The Company's credit ratings are important to 3M's cost of capital. The major rating agencies routinely evaluate the Company's credit profile and assign debt ratings to 3M. This evaluation is based on a number of factors, which include financial strength, business and financial risk, as well as transparency with rating agencies and timeliness of financial reporting. 3M currently has an A1 credit rating with a stable outlook from Moody's Investors Service and has an AA- credit rating with Standard & Poor's; Standard & Poor's placed 3M on "CreditWatch Negative" in January 2020. The Company's credit ratings have served to lower 3M's borrowing costs and facilitate access to a variety of lenders. The addition of further leverage to the Company's capital structure could impact 3M's credit ratings in the future. Failure to maintain strong investment grade ratings would adversely affect the Company's cost of funding and could adversely affect liquidity and access to capital markets.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

In the U.S., 3M's general offices, corporate research laboratories, and certain division laboratories are located in St. Paul, Minnesota. The Company operates 71 manufacturing facilities in 29 states. Internationally, the Company operates 100 manufacturing and converting facilities in 35 countries.

3M owns the majority of its physical properties. 3M's physical facilities are highly suitable for the purposes for which they were designed. Because 3M is a global enterprise characterized by substantial intersegment cooperation, properties are often used by multiple business segments.

Item 3. Legal Proceedings.

Discussion of legal matters is incorporated by reference from Part II, Item 8, Note 16, "Commitments and Contingencies," of this document, and should be considered an integral part of Part I, Item 3, "Legal Proceedings."

Item 4. Mine Safety Disclosures.

Pursuant to Section 1503 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Act"), the Company is required to disclose, in connection with the mines it operates, information concerning mine safety violations or other regulatory matters in its periodic reports filed with the SEC. For the year 2019, the information concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Act is included in Exhibit 95 to this annual report.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Equity compensation plans' information is incorporated by reference from Part III, Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters," of this document, and should be considered an integral part of Item 5. At January 31, 2020, there were 73,905 shareholders of record. 3M's stock ticker symbol is MMM and is listed on the New York Stock Exchange, Inc. (NYSE), the Chicago Stock Exchange, Inc., and the SWX Swiss Exchange. Cash dividends declared and paid totaled $1.44 and $1.36 per share for each quarter in 2019 and 2018, respectively.

Issuer Purchases of Equity Securities

Repurchases of 3M common stock are made to support the Company's stock-based employee compensation plans and for other corporate purposes. In November 2018, 3M's Board of Directors replaced the Company's February 2016 repurchase program with a new repurchase program. This new program authorizes the repurchase of up to $10 billion of 3M's outstanding common stock, with no pre-established end date.

Issuer Purchases of Equity Securities
(registered pursuant to Section 12 of the Exchange Act)

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (2)	Maximum Approximate Dollar Value of Shares that May Yet Be Purchased under the Plans or Programs (Millions)
January 1-31, 2019	1,723,445	$ 192.18	1,723,187	$ 9,065
February 1-28, 2019	1,052,365	$ 204.91	1,048,301	$ 8,850
March 1-31, 2019	355,200	$ 204.83	355,200	$ 8,777
Total January 1-March 31, 2019	3,131,010	$ 197.89	3,126,688	$ 8,777
April 1-30, 2019	—	$ —	—	$ 8,777
May 1-31, 2019	1,172,572	$ 170.30	1,172,572	$ 8,578
June 1-30, 2019	1,197,673	$ 169.25	1,197,673	$ 8,375
Total April 1-June 30, 2019	2,370,245	$ 169.77	2,370,245	$ 8,375
July 1-31, 2019	240,464	$ 173.41	240,358	$ 8,333
August 1-31, 2019	333,679	$ 161.29	332,239	$ 8,280
September 1-30, 2019	276,127	$ 166.25	276,127	$ 8,234
Total July 1-September 30, 2019	850,270	$ 166.33	848,724	$ 8,234
October 1-31, 2019	279,237	$ 161.31	279,237	$ 8,189
November 1-30, 2019	322,500	$ 170.75	322,500	$ 8,134
December 1-31, 2019	358,079	$ 171.49	358,079	$ 8,072
Total October 1-December 31, 2019	959,816	$ 168.28	959,816	$ 8,072
Total January 1-December 31, 2019	7,311,341	$ 181.22	7,305,473	$ 8,072

(1) The total number of shares purchased includes: (i) shares purchased under the Board's authorizations described above, and (ii) shares purchased in connection with the exercise of stock options.
(2) The total number of shares purchased as part of publicly announced plans or programs includes shares purchased under the Board's authorizations described above.

Item 6. Selected Financial Data.

(Dollars in millions, except per share amounts)	2019*	2018**	2017	2016	2015
Years ended December 31:					
Net sales	**$ 32,136**	$ 32,765	$ 31,657	$ 30,109	$ 30,274
Net income attributable to 3M	**4,570**	5,349	4,858	5,050	4,833
Per share of 3M common stock:					
Net income attributable to 3M — basic	**7.92**	9.09	8.13	8.35	7.72
Net income attributable to 3M — diluted	**7.81**	8.89	7.93	8.16	7.58
Cash dividends declared per 3M common share	**5.76**	5.44	4.70	4.44	3.075
Cash dividends paid per 3M common share	**5.76**	5.44	4.70	4.44	4.10
At December 31:					
Total assets	**$ 44,659**	$ 36,500	$ 37,987	$ 32,906	$ 32,883
Long-term debt (excluding portion due within one year) and long-term lease obligations	**17,629**	13,486	12,156	10,723	8,799

* The Company adopted ASU No. 2016-02 and related standards (collectively, Accounting Standards Codification (ASC) 842, *Leases)*, as described in Note 1, on January 1, 2019 using the modified retrospective method of adoption. The adoption resulted in the recording of right of use assets and associated lease liabilities of $0.8 billion each as of January 1, 2019, $0.5 billion of which relates to long-term operating lease obligations.
** The Company adopted ASU No. 2014-09 and related standards (collectively, ASC 606, *Revenue from Contracts with Customers*), as described in Note 2, on January 1, 2018 using the modified retrospective method of adoption, the impact of which was not material to the Company's consolidated results of operations and financial condition. Prior periods have not been restated.

Cash dividends declared and paid totaled $1.44 and $1.36 per share for each quarter in 2019 and 2018, respectively. 3M typically declares and pays dividends in the same quarter.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) is designed to provide a reader of 3M's financial statements with a narrative from the perspective of management. 3M's MD&A is presented in eight sections:

- Overview
- Results of Operations
- Performance by Business Segment
- Performance by Geographic Area
- Critical Accounting Estimates
- New Accounting Pronouncements
- Financial Condition and Liquidity
- Financial Instruments

Forward-looking statements in Item 7 may involve risks and uncertainties that could cause results to differ materially from those projected (refer to the section entitled "Cautionary Note Concerning Factors That May Affect Future Results" in Item 1 and the risk factors provided in Item 1A for discussion of these risks and uncertainties).

OVERVIEW

3M is a diversified global manufacturer, technology innovator and marketer of a wide variety of products and services. As more fully described in both the Performance by Business Segment section in MD&A and in Note 19, effective in the second quarter of 2019, the Company realigned its former five business segments into four and moved certain product lines to better align with their respective end customers. Earlier in the first quarter of 2019, the Company changed its business segment reporting in its continuing effort to improve the alignment of businesses around markets and customers. Business segment information presented herein reflects the impact of these changes for all periods presented. 3M manages its operations in four operating business segments: Safety and Industrial; Transportation and Electronics; Health Care; and Consumer. From a geographic perspective, any references to EMEA refer to Europe, Middle East and Africa on a combined basis.

Earnings per share (EPS) attributable to 3M common shareholders – diluted:

The following table provides the increase (decrease) in diluted earnings per share for 2019 compared to the same period last year, in addition to 2018 compared to 2017. As applicable, certain items in the table reflect specific income tax rates associated therewith.

	Year ended December 31,	
(Earnings per diluted share)	**2019**	**2018**
Same period last year	**$ 8.89**	$ 7.93
Significant litigation-related charges	**1.28**	—
TCJA enactment	**0.29**	1.24
Same period last year, excluding significant litigation-related charges and TCJA enactment	**$ 10.46**	$ 9.17
Increase/(decrease) in earnings per share - diluted, due to:		
2017 divestiture of identity management business	—	(0.54)
2018 divestiture of Communication Markets Division, net of related restructuring actions	**(0.50)**	0.50
Organic growth/productivity and other	**(0.60)**	0.74
2019 restructuring actions	**(0.41)**	—
Acquisitions/divestitures	**(0.07)**	(0.15)
Foreign exchange impacts	—	(0.05)
Income tax rate	—	0.61
Shares of common stock outstanding	**0.22**	0.18
Current period, excluding significant litigation-related charges, TCJA measurement period adjustment, and Venezuelan deconsolidation	**$ 9.10**	**$** 10.46
Significant litigation-related charges	**(1.01)**	(1.28)
TCJA measurement period adjustment	—	(0.29)
Loss on deconsolidation of Venezuelan subsidiary	**(0.28)**	—
Current period	**$ 7.81**	$ 8.89

Year 2019 EPS:

For year ended December 31, 2019, net income attributable to 3M was $4.570 billion, or $7.81 per diluted share basis, compared to $5.349 billion, or $8.89 per diluted share, for year ended December 31, 2018, a decrease of 12.1 percent on a per diluted share basis.

The Company refers to various "adjusted" amounts or measures on an "adjusted basis". These exclude the 2019 charge related to the deconsolidation of the Company's Venezuelan subsidiary, the 2018 and 2019 significant litigation-related charges, and the 2017 enactment and 2018 measurement period adjustments to the provisional amounts recorded related to the 2017 enactment of the Tax Cuts and Jobs Act (TCJA). These non-GAAP measures are further described and reconciled to the most directly comparable GAAP financial measures in the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section below.

On an adjusted basis, net income attributable to 3M was $5.322 billion, or $9.10 per diluted share for 2019 compared to $6.295 billion, or $10.46 per diluted share for 2018, a decrease of 13.0 percent on a per diluted share basis.

For 2019, while 3M experienced sales growth in its Consumer and Health Care segments, this was more than offset by declines in 3M's Safety and Industrial and Transportation and Electronics segments. These two businesses were impacted by softness in certain end markets (China, automotive and electronics) and channel inventory adjustments, particularly within Asia Pacific and the United States. Earnings were also impacted by second quarter restructuring actions taken to address lower sales volumes, as well as inventory reductions to drive improved cash flow. Further restructuring actions were taken in fourth quarter to realign 3M's organizational structure and operating model to improve growth and operational efficiency. Partially offsetting these impacts were benefits in the second half of 2019 from the second quarter restructuring actions.

Additional discussion related to the components of the year-on-year change in earnings per diluted share follows:

2018 divestiture of Communication Markets Division, net of related restructuring actions:

- In 2018, 3M completed the sale of substantially all of its Communication Markets Division and reflected a pre-tax gain of $509 million as a result of this divestiture and was reported within the Company's Safety and Industrial business. During 2018, management approved and committed to undertake certain restructuring actions as further described in Note 5, related to addressing corporate functional costs following the Communication Markets Division divestiture resulting in a 2018 pre-tax charge of $127 million, net of adjustments for reductions in cost estimates of $10 million. The aggregate net impact of the gain on sale and related restructuring actions increased earnings per diluted share by 50 cents per diluted share for the full year 2018.

Organic growth/productivity and other:

- Negative organic local-currency sales growth as a result of softness in certain end markets and channel inventory adjustments, along with actions taken by 3M in response to lower sales volumes and high inventory levels, which resulted in lower manufacturing and inventory absorption, reduced earnings per diluted share. Partially offsetting these impacts were benefits from restructuring actions taken in the second quarter of 2019.
- Defined benefit pension and postretirement service cost expense decreased expense year-on-year, which benefited earnings per diluted share.
- Lower income related to non-service cost components of pension and postretirement expense, increased expense year-on-year.
- Interest expense (net of interest income) increased $88 million for 2019, as a result of higher U.S. average debt balances, partially offset by the increase in interest income driven by higher balances in cash, cash equivalents and marketable securities during the year resulting from the proceeds from debt issuances in advance of the October 2019 Acelity acquisition.

2019 restructuring actions:

- During the second quarter of 2019, in light of slower than expected 2019 sales, and additionally in the fourth quarter to realign 3M's organizational structure and operating model to improve growth and operational efficiency, management approved and committed to undertake certain restructuring actions. The Company recorded a fourth quarter 2019 pre-tax charge of $134 million and second quarter 2019 pre-tax charge of $148 million, which when combined, resulted in a full year 2019 impact of 41 cents per diluted share. See Note 5 for additional details.

Acquisitions/divestitures:

- Acquisition impacts, which are measured for the first twelve months post-transaction, relate to the acquisitions of M*Modal (first quarter 2019), and Acelity (fourth quarter 2019). These items collectively decreased earnings per diluted share by 19 cents year-on-year for 2019. The net impacts related to these acquisitions included income from operations, more than offset by transaction and integration costs. Interest expense related to financing costs of these acquisitions is also included. Expenses related to the October 2019 acquisition of Acelity also include financing costs and the tax effect of repatriating funds in advance of the close of the acquisition.
- Divestiture impacts include the incremental year-on-year pre-tax gain on divestitures and the lost operating income from divested businesses (other than lost income related to the divestiture of the Communication Markets Division). These items collectively increased earnings per diluted share by 16 cents year-on-year for 2019. The net impacts included 14 cents for 2019 related to the gain from the third quarter 2019 divestiture of the Company's gas and flame detection business and 7 cents from the second quarter 2019 "held for sale" tax benefit related to the legal entities associated with the divestiture. Other incremental year-on-year gains/losses on divestitures and the lost operating income from divested businesses decreased earnings per share by 5 cents for 2019.
- In addition to divestiture impacts above, remaining stranded costs and lost operating income related to the 2018 divestiture of the Communication Markets Division decreased earnings per diluted share by 4 cents year-on-year for 2019.

Foreign exchange impacts:

- Foreign currency impacts (net of hedging) were essentially flat year-on-year, excluding the impact of foreign currency changes on tax rates.

Income tax rate:

- Certain items above reflect specific income tax rates associated therewith. Overall, the effective tax rate for 2019 was 19.8 percent, a decrease of 3.6 percentage points versus 2018. On an adjusted basis (as discussed below), the effective tax rate decreased 0.5 percentage points year-on-year for 2019.
- Factors that decreased the effective tax rate on a GAAP basis for 2019 included prior year measurement period adjustments related to 2017 Tax Cuts and Jobs Act (TCJA), prior year resolution of the NRD lawsuit (as described in Note 16) and geographical income mix. These decreases were partially offset by the deconsolidation of the Venezuelan subsidiary, adjustments to uncertain tax positions, and significant litigation-related charges. Refer to Note 10 for additional details.

Shares of common stock outstanding:

- Lower shares outstanding increased earnings per share year-on-year by 22 cents per diluted share for 2019. Weighted-average diluted shares outstanding in 2019 declined 2.8 percent year-on-year which benefited earnings per share. The decrease in the outstanding weighted-average diluted shares relates to the Company's purchase of $1.4 billion of its own stock in 2019.

Year 2018 EPS:

2017 divestiture of identity management business:

- In May 2017, 3M completed the divestiture of its identity management business and reflected a pre-tax gain of $457 million, which was reported within the Company's Transportation and Electronics business.

Organic growth/productivity and other:

- 2018 year-on-year benefits include higher organic local-currency sales, selling price increases, and business transformation, which had a positive impact on 3M's productivity efforts. Higher raw material costs partially offset these year-on-year benefits.
- Lower year-on-year restructuring (other than activity related to the Communication Markets Division divestiture), portfolio and footprint actions increased pre-tax earnings by approximately $307 million in 2018. 2017 charges included $99 million in restructuring actions and $207 million in asset charges, accelerated depreciation and other costs.
- Interest expense (net of interest income) increased $8 million year-on-year. While 2017 interest expense included a $96 million early debt extinguishment charge, 2018 net interest expense increased as a result of higher U.S. average debt balances and higher borrowing costs.

- On a combined basis, higher defined benefit pension and postretirement service cost expense and defined contribution expense, in addition to lower income related to non-service cost components of pension and postretirement expense, increased expense year-on-year.

Acquisitions/other divestiture gains:

- In aggregate, acquisitions, year-on-year divestitures gains (other than the sale of the Communication Markets Division and identity management business), and lost operating income from divested businesses (other than lost income related to the divestiture of the Communication Markets Division) decreased earnings per diluted share by 10 cents in 2018.
- Remaining stranded costs and lost operating income related to the divestiture of the Communication Markets Division decreased earnings per diluted share by 5 cents year-on-year in 2018.

Foreign exchange impacts:

- Foreign currency impacts (net of hedging) decreased pre-tax earnings year-on-year by approximately $42 million, or the equivalent of 5 cents per diluted share, excluding the impact of foreign currency changes on tax rates.

Income tax rate:

- Certain items above reflect specific income tax rates associated therewith. The effective tax rate for full year 2018 was 23.4 percent, a decrease of 12.1 percentage points versus 2017. On an adjusted basis (as described below), the effective income tax rate was 20.1 percent for 2018 versus 25.4 percent for 2017.
- Factors that decreased the effective tax rate on a GAAP basis for 2018 primarily related to the favorable aspects of the TCJA such as the decrease in the U.S. income tax rate and foreign-derived intangible income (FDII), reduced transitional impact of TCJA related to transition tax and remeasurement of deferred tax assets/liabilities and increased benefits from the R&D tax credit. These decreases were partially offset by the elimination of the domestic manufacturing deduction, the global intangible low-taxed income (GILTI) provision, and lower excess tax benefits related to employee share-based payments. Refer to Note 10 for additional details.

Shares of common stock outstanding:

- Lower shares outstanding increased earnings per share by 18 cents per diluted share for full year 2018. Weighted-average diluted shares outstanding in 2018 declined 1.8 percent year-on-year, which benefited earnings per share. The decrease in the outstanding weighted-average diluted shares relates to the Company's purchase of $4.9 billion of its own stock in the 2018.

2018 divestiture of Communication Markets Division, net of related restructuring actions and exit activities:

- As discussed above, in 2018, 3M completed the sale of substantially all of its Communication Markets Division and reflected a pre-tax gain of $509 million as a result of this divestiture. The divestiture was reported within the Company's Safety and Industrial business. Also as discussed above, during 2018, management approved and committed to undertake certain restructuring actions related to addressing corporate functional costs following the Communication Markets Division divestiture that resulted in a pre-tax charge of $127 million, net of adjustments for reductions in cost estimates. The aggregate net impact of the gain on sale and related restructuring actions increased earnings per diluted share by 50 cents per diluted share for 2018.

Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures):

In 2019, the Company recorded significant litigation-related charges of $762 million ($590 million after tax) related to PFAS (certain perfluorinated compounds) matters and coal mine dust respirator mask lawsuits of which $214 million ($166 million after tax) occurred in the fourth quarter. The aggregate 2019 pre-tax charge was reflected in cost of sales ($328 million) and selling, general and administrative expense ($434 million). In 2018, 3M recorded significant litigation-related charges of $897 million ($770 million after tax) for PFAS matters related to the previously disclosed agreement reached with the State of Minnesota that resolved the Natural Resource Damages (NRD) lawsuit. Essentially all of the aggregate 2018 pre-tax charge was reflected in selling, general and administrative expense. These charges are further discussed in Note 16.

In the second quarter of 2019, 3M recorded a pre-tax charge of $162 million related to the deconsolidation of the Company's Venezuelan subsidiary as further discussed in Note 1.

With respect to the enactment of the 2017 Tax Cuts and Jobs Act (TCJA), 3M recorded a $762 million tax expense in 2017 and additional net tax expense of $176 million in 2018 as a measurement period adjustment to the TCJA's enactment. See Note 10 for details.

In addition to reporting financial results in accordance with U.S. GAAP, the Company also provides non-GAAP measures that adjust for the impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary and measurement period adjustments to the enactment of the TCJA. These items represent significant amounts that impacted the Company's financial results. Operating income, income before taxes, net income, earnings per share, and effective tax rate are all measures for which 3M provides the reported GAAP measure and an adjusted measure. The adjusted measures are not in accordance with, nor are they a substitute for, GAAP measures. The Company considers these non-GAAP measures in evaluating and managing the Company's operations. The Company believes that discussion of results adjusted for these items is meaningful to investors as it provides a useful analysis of ongoing underlying operating trends. The determination of these items may not be comparable to similarly titled measures used by other companies.

(Dollars in millions, except per share amounts)	Operating Income	Operating Income Margin	Income Before Taxes	Provision for Income Taxes	Effective Tax Rate	Net Income Attributable to 3M	Earnings Per Diluted Share	Earnings per diluted share percent change
Full Year 2017 GAAP	$ 7,692	24.3 %	$ 7,548	$ 2,679	35.5 %	$ 4,858	$ 7.93	
Adjustment for TCJA enactment				(762)		762	1.24	
Full Year 2017 adjusted amounts (non-GAAP measures)	$ 7,692	24.3 %	$ 7,548	$ 1,917	25.4 %	$ 5,620	$ 9.17	
Full Year 2018 GAAP	$ 7,207	22.0 %	$ 7,000	$ 1,637	23.4 %	$ 5,349	$ 8.89	12.1 %
Adjustment for significant litigation-related charges	897		897	127		770	1.28	
Adjustment for measurement period accounting for TCJA				(176)		176	0.29	
Full Year 2018 adjusted amounts (non-GAAP measures)	$ 8,104	24.7 %	$ 7,897	$ 1,588	20.1 %	$ 6,295	$ 10.46	14.1 %
Full Year 2019 GAAP	$ 6,174	19.2 %	$ 5,712	$ 1,130	19.8 %	$ 4,570	$ 7.81	(12.1)%
Adjustment for significant litigation-related charges	762		762	172		590	1.01	
Adjustment for loss on deconsolidation of Venezuelan subsidiary			162	—		162	0.28	
Full Year 2019 adjusted amounts (non-GAAP measures)	$ 6,936	21.6 %	$ 6,636	$ 1,302	19.6 %	$ 5,322	$ 9.10	(13.0)%

Year 2019 sales and operating income by business segment:

The following tables contain sales and operating income results by business segment for the years ended December 31, 2019 and 2018. Refer to the section entitled "Performance by Business Segment" later in MD&A for additional discussion concerning both 2019 versus 2018 results and 2018 versus 2017 results, including Corporate and Unallocated. Refer to Note 19 for additional information on business segments, including Elimination of Dual Credit.

	2019			2018			2019 vs 2018 % change	
(Dollars in millions)	**Net Sales**	**% of Total**	**Oper. Income**	**Net Sales**	**% of Total**	**Oper. Income**	**Net Sales**	**Oper. Income**
Business Segments								
Safety and Industrial	**$ 11,607**	**36.1 %**	**$ 2,648**	$ 12,494	38.1 %	$ 3,423	(7.1)%	(22.6)%
Transportation and Electronics	**9,602**	**29.9**	**2,221**	10,106	30.8	2,649	(5.0)	(16.1)
Health Care	**7,431**	**23.1**	**1,863**	6,826	20.8	1,921	8.9	(3.0)
Consumer	**5,089**	**15.8**	**1,105**	5,086	15.5	1,071	0.1	3.3
Corporate and Unallocated	**110**	**0.3**	**(1,243)**	50	0.2	(1,409)	—	—
Elimination of Dual Credit	**(1,703)**	**(5.2)**	**(420)**	(1,797)	(5.4)	(448)	—	—
Total Company	**$ 32,136**	**100.0 %**	**$ 6,174**	$ 32,765	100.0 %	$ 7,207	(1.9)%	(14.3)%

	Year ended December 31, 2019				
Worldwide Sales Change By Business Segment	**Organic local-currency sales**	**Acquisitions**	**Divestitures**	**Translation**	**Total sales change**
Safety and Industrial	(3.3)%	— %	(1.7)%	(2.1) %	(7.1)%
Transportation and Electronics	(3.5)	—	—	(1.5)	(5.0)
Health Care	1.6	9.4	(0.1)	(2.0)	8.9
Consumer	1.3	—	—	(1.2)	0.1
Total Company	(1.5)%	2.0 %	(0.7)%	(1.7)%	(1.9)%

Year 2019 sales results by geographic area/business segment:

Percent change information compares the year ended December 31, 2019 with the same period last year, unless otherwise indicated. Additional discussion of business segment results is provided in the Performance by Business Segment section.

	Year ended December 31, 2019					
	United States	Asia Pacific	Europe, Middle East & Africa	Latin America/ Canada	Other Unallocated	Worldwide
Net sales (millions)	$ 13,159	$ 9,796	$ 6,226	$ 2,965	$ (10)	$ 32,136
% of worldwide sales	40.9 %	30.5 %	19.4 %	9.2 %	—	100.0 %
Components of net sales change:						
Volume — organic	(1.9)%	(2.8)%	(2.2)%	0.3 %	—	(2.1)%
Price	0.8	(0.1)	1.3	0.8	—	0.6
Organic local-currency sales	(1.1)	(2.9)	(0.9)	1.1	—	(1.5)
Acquisitions	4.1	0.3	1.0	0.8	—	2.0
Divestitures	(0.5)	(0.2)	(1.9)	(0.6)	—	(0.7)
Translation	—	(1.7)	(4.6)	(3.3)	—	(1.7)
Total sales change	2.5 %	(4.5)%	(6.4)%	(2.0)%	—	(1.9)%
Total sales change:						
Safety and Industrial	(5.7)%	(7.2)%	(11.0)%	(3.9)%	—	(7.1)%
Transportation and Electronics	(4.3)%	(5.2)%	(6.6)%	(1.5)%	—	(5.0)%
Health Care	18.4 %	2.1 %	0.6 %	1.0 %	—	8.9 %
Consumer	2.4 %	(3.6)%	(5.1)%	(1.2)%	—	0.1 %
Organic local-currency sales change:						
Safety and Industrial	(4.4)%	(4.3)%	(2.4)%	0.6 %	—	(3.3)%
Transportation and Electronics	(4.2)%	(4.0)%	(2.2)%	1.1 %	—	(3.5)%
Health Care	1.1 %	2.8 %	1.4 %	0.9 %	—	1.6 %
Consumer	2.4 %	(1.8)%	(0.1)%	2.2 %	—	1.3 %

Additional information beyond what is included in the preceding table is as follows:

- In the Asia Pacific geographic area, China/Hong Kong total sales decreased 7 percent and organic local-currency sales decreased 4 percent. In Japan, total sales decreased 2 percent and organic local currency sales decreased 3 percent.
- In the Latin America/Canada geographic area, total sales in Mexico were flat while organic local-currency sales increased 1 percent. In Canada, total sales and organic local-currency sales increased 3 percent. In Brazil, total sales decreased 4 percent while organic local-currency sales increased 3 percent.

Foreign currency translation decreased year-on-year sales by 1.7 percent, while selling prices increased by 0.6 percent year-on-year for 2019, with price growth in EMEA, Latin America/Canada, and the U.S., while Asia Pacific was flat.

Year 2018 sales results by geographic area/business segment:

Percent change information compares the full year 2018 with the full year 2017, unless otherwise indicated. Additional discussion of business segment results is provided in the Performance by Business Segment section.

	Year ended December 31, 2018					
	United States	Asia Pacific	Europe, Middle East & Africa	Latin America/ Canada	Other Unallocated	Worldwide
Net sales (millions)	$ 12,840	$ 10,254	$ 6,654	$ 3,024	$ (7)	$ 32,765
% of worldwide sales	39.2 %	31.3 %	20.3 %	9.2 %	—	100.0 %
Components of net sales change:						
Volume — organic	2.1 %	3.5 %	— %	2.1 %	—	2.1 %
Price	1.1	0.3	1.7	2.0	—	1.1
Organic local-currency sales	3.2	3.8	1.7	4.1	—	3.2
Acquisitions	1.9	0.5	2.2	0.7	—	1.4
Divestitures	(1.3)	(0.6)	(2.5)	(1.4)	—	(1.3)
Translation	—	0.8	1.7	(3.7)	—	0.2
Total sales change	3.8 %	4.5 %	3.1 %	(0.3)%	—	3.5 %
Total sales change:						
Safety and Industrial	6.9 %	4.0 %	4.6 %	(1.4)%	—	4.6 %
Transportation and Electronics	1.4 %	3.5 %	1.8 %	(0.8)%	—	2.5 %
Health Care	0.1 %	8.4 %	3.9 %	1.5 %	—	2.9 %
Consumer	3.4 %	(0.7)%	(1.8)%	(0.7)%	—	1.6 %
Organic local-currency sales change:						
Safety and Industrial	3.6 %	2.9 %	1.8 %	2.4 %	—	2.8 %
Transportation and Electronics	4.9 %	3.2 %	2.7 %	5.4 %	—	3.7 %
Health Care	— %	7.5 %	2.5 %	5.2 %	—	2.6 %
Consumer	3.4 %	(1.6)%	(3.6)%	4.5 %	—	1.5 %

Additional information beyond what is included in the preceding table is as follows:

- In the Asia Pacific geographic area, China/Hong Kong total sales increased 10 percent and organic local-currency sales increased 8 percent. In Japan, total sales and organic local currency sales decreased 2 percent.
- In the Latin America/Canada geographic area, total sales increased 1 percent in Mexico, as organic local-currency sales increases of 4 percent were partially offset by lost sales from divested businesses and foreign currency translation impacts. In Canada, total sales and organic local currency increased 5 percent. In Brazil, total sales decreased 8 percent, as organic local-currency sales growth of 5 percent was more than offset by foreign currency translation impacts.

Foreign currency translation increased year-on-year sales by 0.2 percent, with the translation-related sales increase in EMEA and Asia Pacific partially offset by the decreases in Latin America/Canada. Selling prices increased by 1.1 percent year-on-year for 2018, with strong price growth in Latin America/Canada, EMEA and the U.S. In Asia Pacific, price grew slightly, as strong volume growth in electronics had a negative impact on price.

Managing currency risks:

The stronger U.S. dollar had a negative impact on sales in full year 2019 compared to the same period last year. Net of the Company's hedging strategy, foreign currency was neutral to earnings for full year 2019 compared to the same period last year. 3M utilizes a number of tools to hedge currency risk related to earnings. 3M uses natural hedges such as pricing, productivity, hard currency and hard currency-indexed billings, and localizing source of supply. 3M also uses financial hedges to mitigate currency risk. In the case of more liquid currencies, 3M hedges a portion of its aggregate exposure, using a 12, 24 or 36 month horizon, depending on the currency in question. For less liquid currencies, financial hedging is frequently more expensive with more limitations on tenor. Thus, this risk is largely managed via local operational actions using natural hedging tools as discussed above. In either case, 3M's hedging approach is designed to mitigate a portion of foreign currency risk and reduce volatility, ultimately allowing time for 3M's businesses to respond to changes in the marketplace.

Financial condition:

3M generated $7.070 billion of operating cash flow in 2019, an increase of $631 million when compared to 2018. This increase was primarily due to significant litigation-related charges and the timing of associated payments that impacted 2019 and 2018. This followed an operating cash flow increase of $199 million when comparing 2018 to 2017. Refer to the section entitled "Financial Condition and Liquidity" later in MD&A for a discussion of items impacting cash flows.

In November 2018, 3M's Board of Directors replaced the Company's February 2016 repurchase program with a new repurchase program. This new program authorizes the repurchase of up to $10 billion of 3M's outstanding common stock, with no pre-established end date. In 2019, the Company purchased $1.4 billion of its own stock, compared to purchases of $4.9 billion in 2018 and $2.1 billion in 2017. The Company expects to purchase approximately $1.0 billion of its own stock in 2020. In February 2020, 3M's Board of Directors declared a first-quarter 2020 dividend of $1.47 per share, an increase of 2 percent. This marked the 62nd consecutive year of dividend increases for 3M.

Raw materials:

In 2019, the Company experienced raw material price inflation across many material markets in all geographies. In response, the Company continued to deploy productivity projects to minimize the impact of raw material inflation and market supply challenges, including input management, reformulations, and multi-sourcing activities. These succeeded in partially offsetting the overall raw material headwinds experienced throughout the year. To date, the Company is receiving sufficient quantities of all raw materials to meet its reasonably foreseeable production requirements. It is difficult to predict future shortages of raw materials or the impact any such shortages would have. 3M has avoided disruption to its manufacturing operations through careful management of existing raw material inventories, strategic relationships with key suppliers, and development as well as qualification of additional supply sources. 3M manages spend category price risks through negotiated supply contracts, price protection agreements and commodity price swaps. In addition, 3M evaluates suppliers' conformance with environmental and social compliance requirements.

Pension and postretirement defined benefit/contribution plans:

On a worldwide basis, 3M's pension and postretirement plans were 87 percent funded at year-end 2019. The primary U.S. qualified pension plan, which is approximately 67 percent of the worldwide pension obligation, was 93 percent funded and the international pension plans were 87 percent funded. The U.S. non-qualified pension plan is not funded due to tax considerations and other factors. Asset returns in 2019 for the primary U.S. qualified pension plan were 16.3%, as 3M strategically invests in both growth assets and fixed income matching assets to manage its funded status. For the primary U.S. qualified pension plan, the expected long-term rate of return on an annualized basis for 2020 is 6.75%. The primary U.S. qualified pension plan year-end 2019 discount rate was 3.25%, down 1.11 percentage points from the year-end 2018 discount rate of 4.36%. The decrease in U.S. discount rates resulted in an increased valuation of the projected benefit obligation (PBO). The primary U.S. qualified pension plan's funded status decreased 3 percentage points in 2019 due to the higher PBO resulting from the significant discount rate decrease and partially offset by higher return on assets. Additional detail and discussion of international plan asset returns and discount rates is provided in Note 13 (Pension and Postretirement Benefit Plans).

3M expects to contribute approximately $100 million to $200 million of cash to its global defined benefit pension and postretirement plans in 2020. The Company does not have a required minimum cash pension contribution obligation for its U.S. plans in 2020. 3M expects global defined benefit pension and postretirement expense in 2020 (before settlements, curtailments, special termination benefits and other) to increase by approximately $34 million pre-tax when compared to 2019. Refer to "Critical Accounting Estimates" within MD&A and Note 13 (Pension and Postretirement Benefit Plans) for additional information concerning 3M's pension and post-retirement plans.

2020 closed and recently announced divestitures:

As discussed in Note 3, in December 2019, 3M agreed to sell substantially all of its drug delivery business for approximately $650 million in consideration, subject to closing and other adjustments. 3M expects a pre-tax gain of approximately $400 million as a result of the divestiture that will be reported within the Company's Health Care business. The sale is expected to close in the first half of 2020.

Also as discussed in Note 3, in January 2020, 3M completed the sale of its advanced ballistic-protection business for $91 million, subject to closing and other adjustments, plus contingent consideration of up to $25 million depending on the outcome of pending tenders. The Company previously reflected an immaterial impact in 2019 as a result of measuring the disposal group at the lower of its carrying amount or fair value less cost to sell.

RESULTS OF OPERATIONS

Net Sales:

Refer to the preceding "Overview" section and the "Performance by Business Segment" section later in MD&A for additional discussion of sales change.

Operating Expenses:

(Percent of net sales)	**2019**	**2018**	**2017**	**2019 versus 2018**	**2018 versus 2017**
Cost of sales	**53.4 %**	50.9 %	50.8 %	2.5 %	0.1 %
Selling, general and administrative expenses	**21.9**	23.2	20.9	(1.3)	2.3
Research, development and related expenses	**5.9**	5.6	5.9	0.3	(0.3)
Gain on sale of businesses	**(0.4)**	(1.7)	(1.9)	1.3	0.2
Operating income margin	**19.2 %**	22.0 %	24.3 %	(2.8)%	(2.3)%

Operating income margins decreased year over year for both 2019 and 2018. The decrease from 2018 to 2019 was primarily driven by softness in certain end markets and channel inventory adjustments, along with actions taken by 3M in response to lower sales volumes and high inventory levels, which resulted in lower manufacturing and inventory absorption. Additionally, higher year-on-year restructuring actions taken decreased operating income margins, partially offset by lower year-on-year significant litigation-related charges. The decrease from 2017 to 2018 was driven primarily by the charge related to the significant litigation-related charges (as discussed in the *Selling, General and Administrative Expenses* section below). A number of factors impact the various income statement line items, such as raw material cost management, portfolio and footprint actions, divestitures, foreign currency, cost management, and pension and postretirement service cost effects. Expanded discussion of each of the income statement line items follows in the various sections below. Pension and postretirement service cost expense is recorded in cost of sales; selling, general and administrative expenses (SG&A); and research, development and related expenses (R&D). In total, 3M's defined benefit pension and postretirement service cost expense decreased $58 million in 2019, compared to an increase of $21 million in 2018. Refer to Note 13 (Pension and Postretirement Plans) for the service cost components of net periodic benefit costs.

The Company is investing in an initiative called business transformation, with these investments impacting cost of sales, SG&A, and R&D. Business transformation encompasses the ongoing multi-year phased implementation of an enterprise resource planning (ERP) system on a worldwide basis, as well as changes in processes and internal/external service delivery across 3M.

Cost of Sales:

Cost of sales includes manufacturing, engineering and freight costs.

Cost of sales, measured as a percent of sales, increased during full year 2019 when compared to full year 2018. Increases primarily related to lower sales volume year-on-year, which resulted in cost absorption penalties from lower sales volumes as all businesses worked to reduce inventories and improve cash flow and significant litigation-related charges taken in 2019 (as discussed earlier in the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan* *subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)*. These factors were partially offset by selling price increases, which increased net sales year-on-year by 0.6 percent for full year 2019.

Cost of sales as a percent of sales, increased during 2018 primarily due to foreign currency effects (net of hedge losses). Additionally, cost of sales for full year 2018 were increased by the 2018 Communication Markets Division related restructuring charges as discussed in Note 5. This increase was partially offset by 2017 portfolio and supply chain footprint optimization charges that did not repeat in 2018 and selling price increases. Selling prices increased net sales year-on-year by 1.1 percent for full year 2018. These were partially offset by raw material cost increases and higher defined benefit pension and postretirement service cost expense and defined contribution expense.

Selling, General and Administrative Expenses:

SG&A in dollars decreased 7.5 percent for full year 2019 when compared to full year 2018. The decrease primarily related to indirect cost reductions and lower year-on-year impact related to significant litigation-related charges (as discussed earlier in the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section).

SG&A in dollars increased 14.7 percent for full year 2018 when compared to full year 2017. The increase is primarily associated with the Communication Markets Division-related restructuring charges (as discussed in Note 5) and the charge related to the Minnesota NRD resolution (as discussed earlier in the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section and further in Note 16). This increase was partially offset by 2017 portfolio and supply chain footprint optimization charges that did not repeat in 2018.

Research, Development and Related Expenses:

R&D in dollars increased $90 million for the full year 2019 when compared to full year 2018. R&D, measured as a percent of sales was 5.9% in 2019, compared to 5.6% in 2018 and 5.9% in 2017. The increase from 2018 was driven by 3M continued investment in its key initiatives, including R&D aimed at disruptive innovation programs with the potential to create entirely new markets and disrupt existing markets. In addition, R&D increased due to additional spending related to the Company's acquisitions in 2019.

R&D in dollars decreased $49 million for full year 2018 when compared to full year 2017. The decrease primarily relates to R&D no longer incurred related to the Communication Markets Division, which was divested in 2018.

Gain on Sale of Businesses:

During the first quarter of 2019, the Company sold certain oral care technology comprising a business and reflected an earnout on a previous divestiture resulting in an aggregate immaterial gain. During 2019, the Company sold its gas and flame detection business for a pre-tax gain of $112 million. 3M also divested certain businesses in 2018 and 2017, resulting in gains of $547 million and $586 million, respectively. Refer to Note 3 for additional details on these divestitures.

Operating Income Margin:

3M uses operating income as one of its primary business segment performance measurement tools. Refer to the table below for a reconciliation of operating income margins for 2019 and 2018.

	Year ended December 31,	
(Percent of net sales)	**2019**	**2018**
Same period last year	**22.0 %**	24.3 %
Significant litigation-related charges	**2.7**	—
Same period last year, excluding significant litigation-related charges	**24.7 %**	24.3 %
Increase/(decrease) in operating income margin, due to:		
2017 divestiture of identity management business	**—**	(1.3)
2018 divestiture of Communication Markets Division, net of related restructuring actions	**(1.2)**	1.2
Organic volume/productivity and other	**(1.6)**	0.7
2019 restructuring actions	**(0.8)**	—
Acquisitions/divestitures	**(0.3)**	(0.1)
Selling price and raw material impact	**0.4**	0.1
Foreign exchange impacts	**0.4**	(0.2)
Current period, excluding significant litigation-related charges	**21.6 %**	24.7 %
Significant litigation-related charges	**(2.4)**	(2.7)
Current period	**19.2 %**	22.0 %

Year 2019 operating income:

Operating income margins decreased 2.8 percentage points in 2019 when compared to 2018. Excluding the significant litigation-related charges, operating margins decreased 3.1 percentage points to 21.6 percent in 2019 when compared to 2018. Refer to the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section above for additional details on the significant litigation-related charges.

Additional discussion related to the components of the year-on-year change in operating income margins follows:

2018 divestiture of Communication Markets Division, net of related restructuring actions:

- In 2018, 3M completed the sale of substantially all of its Communication Markets Division and reflected a pre-tax gain of $509 million as a result of this divestiture. During 2018, management approved and committed to undertake certain restructuring actions as described in Note 5 related to addressing corporate functional costs following the Communication Markets Division divestiture resulting in a 2018 pre-tax charge of $127, net of adjustments for reductions in cost estimates of $10 million.

Organic volume/productivity and other:

- Negative organic local sales volume growth as a result of softness in certain end markets and channel inventory adjustments, along with actions taken by 3M in response to lower sales volumes and high inventory levels, which resulted in lower manufacturing and inventory absorption, reduced operating margins. Partially offsetting these impacts were benefits from restructuring actions taken in the second quarter of 2019.
- Operating income margins increased year-on-year due to lower defined benefit pension and postretirement service cost expense.

2019 restructuring actions:

- During the second quarter of 2019, in light of slower than expected 2019 sales, and additionally in the fourth quarter to realign 3M's organizational structure and operating model to improve growth and operational efficiency, management approved and committed to undertake certain restructuring actions. Of the total $282 million charge reflected in 2019, $148 million was recorded in the second quarter, of which $35 million was associated with a voluntary retirement incentive program that impacted second quarter other expense (income), and an additional $134 million recorded in the fourth quarter.

Acquisitions/divestitures:

- Acquisition-related impacts relate to the on-going integration of M*Modal and Acelity, which decreased operating income margins year-on-year.
- Divestiture impacts (which is comprised of higher year-on-year divestiture gains other than the Communication Markets Division in addition to lost operating income from divested businesses) increased operating income margins year-on-year and primary related to the gain from the divestiture of the Company's gas and flame detection business.
- Remaining stranded costs to be addressed from the 2018 divestiture of the Communication Markets Division also reduced operating margins year-on-year.

Selling price and raw material impact:

- Higher selling prices, partially offset by raw material cost increases, benefited operating income margins year-on-year for 2019.

Foreign exchange impacts:

- Foreign currency effects (net of hedge gains) increased operating income margins year-on-year.

Significant litigation-related charges:

- Operating income margins for 2018 and 2019 included the $897 million and $762 million impact, respectively, of significant litigation-related charges (as discussed earlier in the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section.

Year 2018 operating income:

Operating income margins decreased 2.3 percentage points for the full year 2018 when compared to full year 2017.

2017 divestiture of identity management business:

- Operating income margins decreased year-on-year due to the gain on the May 2017 divestiture of the Company's former identity management business.

Organic volume/productivity and other:

- Operating income margins increased year-on-year due to benefits from organic local-currency growth and productivity, in addition to lower year-on-year portfolio and supply chain footprint optimization charges.
- Operating income margins decreased year-on-year due to higher defined benefit pension and postretirement service cost expense and defined contribution expense.

Acquisitions/other divestiture gains:

- Acquisition impacts (primarily related to Scott Safety), in addition to lower year-on-year divestiture gains (excluding the identity management business and Communication Markets Division), decreased operating margins year-on-year.
- Remaining stranded costs to be addressed from the divestiture of the Communication Markets Division reduced operating margins year-on-year.
- Operating income margins increased year-on-year due to the lost lower-margin operating income from divested businesses.

Selling price and raw material impact:

- Higher selling prices, partially offset by raw material cost increases, benefited operating income margins year-on-year.

Foreign exchange impacts:

- Foreign currency effects (net of hedge gains) decreased operating income margins year-on-year for the full year 2018.

2018 divestiture of Communication Markets Division, net of related restructuring actions:

- As discussed above, in 2018, 3M completed the sale of substantially all of its Communication Markets Division and reflected a pre-tax gain of $509 million as a result of this divestiture. Also as discussed above, during 2018, management approved and committed to undertake certain restructuring actions related to addressing corporate functional costs following the Communication Markets Division divestiture that resulted in a pre-tax charge of $127 million, net of adjustments for reductions in cost estimates.

Significant litigation-related charges:

- Operating income margins for 2018 decreased 2.7 percentage points year-on-year as a result of significant litigation-related charges. See the *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section for further details.

Other Expense (Income), Net:

See Note 6 for a detailed breakout of this line item.

Interest expense (net of interest income) increased during 2019 and 2018. The increase in 2019 was driven by higher U.S. average debt balances, partially offset by the year-on-year increase in interest income driven by higher balances in cash, cash equivalents and marketable securities during the year resulting from the proceeds from debt issuances in advance of the October 2019 Acelity acquisition. While 2017 interest expense included a $96 million early debt extinguishment charge, 2018 net interest expense increased as a result of higher U.S. average debt balances and higher borrowing costs.

The increase in other expense (income) during 2019 was primarily due to the impact of deconsolidation of the Company's Venezuelan subsidiary. Refer to Note 1 for additional details.

In addition, other expense (income) was impacted by lower year-on-year pension and postretirement net periodic benefit non-service benefits of $5 million and $55 million for 2019 and 2018, respectively. The lower year-on-year benefit in 2019 was primarily due to the second quarter 2019 charge associated with the voluntary retirement incentive program in addition to pension settlement charges in the fourth quarter 2019 related to employee retirements. The decrease in 2018 was primarily due to an increase in net actuarial amortization expense. Refer to Note 13 for additional details.

Provision for Income Taxes:

(Percent of pre-tax income)	2019	2018	2017
Effective tax rate	**19.8 %**	23.4 %	35.5 %

The effective tax rate for 2019 was 19.8 percent, a decrease of 3.6 percentage points when compared to 2018. The effective tax rate for 2018 was 23.4 percent, compared to 35.5 percent in 2017, a decrease of 12.1 percentage points. The changes in the tax rates between years were impacted by many factors, including measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA), prior year resolution of the NRD lawsuit, and geographical income mix offset by the impact from the deconsolidation of the Company's Venezuelan subsidiary as further described in the Overview, *Certain amounts adjusted for impacts of significant litigation-related charges, deconsolidation of the Company's Venezuelan subsidiary, and enactment/measurement period adjustments related to the Tax Cuts and Jobs Act (TCJA) - (non-GAAP measures)* section and in Note 10. Additional factors that impacted the tax rates between years were adjustments to uncertain tax positions, and significant litigation-related charges.

3M currently estimates its effective tax rate for 2020 will be approximately 20 to 21 percent. The tax rate can vary from quarter to quarter due to discrete items, such as the settlement of income tax audits, changes in tax laws, and employee share-based payment accounting; as well as recurring factors, such as the geographic mix of income before taxes.

Refer to Note 10 for further discussion of income taxes.

Net Income Attributable to Noncontrolling Interest:

(Millions)	2019	2018	2017
Net income attributable to noncontrolling interest	**$ 12**	$ 14	$ 11

Net income attributable to noncontrolling interest represents the elimination of the income or loss attributable to non-3M ownership interests in 3M consolidated entities. The amount primarily relates to 3M India Limited, of which 3M's effective ownership is 75 percent.

Currency Effects:

3M estimates that year-on-year currency effects, including hedging impacts, increased pre-tax income by $1 million in 2019 and decreased pre-tax income by $42 million in 2018. These estimates include the effect of translating profits from local currencies into U.S. dollars; the impact of currency fluctuations on the transfer of goods between 3M operations in the United States and abroad; and transaction gains and losses, including derivative instruments designed to reduce foreign currency exchange rate risks. 3M estimates that year-on-year derivative and other transaction gains and losses increased pre-tax income by approximately $201 million in 2019 and decreased pre-tax income by approximately $92 million in 2018. Refer to Note 14 in the Consolidated Financial Statements for additional information concerning 3M's hedging activities.

PERFORMANCE BY BUSINESS SEGMENT

For a detailed discussion of the markets served and types of products offered by 3M's business segments, see Item 1, Business Segments. Disclosures relating to 3M's business segments are provided in Note 19. Effective in the second quarter of 2019, to enable the Company to better serve global customers and markets, the Company made the following changes to its business segments:

Realignment of the Company's business segments from five to four

The Company realigned its former five business segments into four: Safety and Industrial; Transportation and Electronics; Health Care; and Consumer. Existing divisions were largely realigned to this new structure. In addition, certain retail auto care product lines formerly in the Automotive Aftermarket Division (now within the Safety and Industrial business segment) were moved to the Construction and Home Improvement Division (within the Consumer business segment). Also, product lines relating to the refrigeration filtration business, formerly included in the Separation and Purification Sciences Division (now within the Health Care business segment) were moved to Other Safety and Industrial (within the Safety and Industrial business segment). 3M business segment reporting measures include dual credit to business segments for certain sales and operating income. Dual credit, which is based on which business segment provides customer account activity with respect to a particular product sold in a specific country, was reduced as a result of the closer alignment between customer account activity and their respective markets. The four business segments are as follows:

Safety and Industrial: This segment includes businesses that serve the global industrial, electrical and safety markets. This business segment consists of personal safety, industrial adhesives and tapes, abrasives, closure and masking systems, electrical markets, automotive aftermarket, and roofing granules. This segment also includes the Communication Markets Division (which was substantially sold in 2018) and the refrigeration filtration product lines (within Other Safety and Industrial).

Transportation and Electronics: This segment includes businesses that serve global transportation and electronic original equipment manufacturer (OEM) customers. This business segment consists of electronics (display materials and systems, electronic materials solutions), automotive and aerospace, commercial solutions, advanced materials, and transportation safety.

Health Care: This business segment serves the global healthcare industry and includes medical solutions, oral care, separation and purification sciences, health information systems, drug delivery systems, and food safety.

Consumer: This business serves global consumers and consists of home improvement, stationery and office supplies, home care, and consumer health care. This segment also includes, within the Construction and Home Improvement Division, certain retail auto care product lines.

In addition, as part of 3M's continuing effort to improve the alignment of its businesses around markets and customers, the Company made the following changes, effective in the first quarter of 2019, and other revisions impacting business segment reporting:

Continued alignment of customer account activity

- As part of 3M's regular customer-focus initiatives, the Company realigned certain customer account activity ("sales district") to correlate with the primary divisional product offerings in various countries and reduce complexity for customers when interacting with multiple 3M businesses. This largely impacted the amount of dual credit certain business segments receive as a result of sales district attribution. 3M business segment reporting measures include dual credit to business segments for certain sales and operating income. This dual credit is based on which business segment provides customer account activity with respect to a particular product sold in a specific country.

Creation of Closure and Masking Systems Division and Medical Solutions Division

- 3M created the Closure and Masking Systems Division, which combines the masking tape, packaging tape and personal care portfolios formerly within Industrial Adhesives and Tapes Division in the former Industrial business segment into a separate division also within the former Industrial business segment. 3M created the Medical Solutions Division in the Health Care business segment, which combines the former Critical and Chronic Care Division and Infection Prevention Division (which were also both within the Health Care business segment).

Additional actions impacting business segment reporting

- The business associated with certain safety products sold through retail channels in the Asia Pacific region was realigned from the Personal Safety Division within the former Safety and Graphics business segment to the Construction and Home Improvement Division within the Consumer business segment. In addition, certain previously non-allocated costs related to manufacturing and technology of centrally managed material resource centers of expertise within Corporate and Unallocated are now reflected as being allocated to the business segments.

Business segment information presented herein reflects the impact of these changes for all periods presented. 3M manages its operations in four business segments. The reportable segments are Safety and Industrial; Transportation and Electronics; Health Care; and Consumer.

Corporate and Unallocated:

In addition to these four business segments, 3M assigns certain costs to "Corporate and Unallocated," which is presented separately in the preceding business segments table and in Note 19. Corporate and Unallocated includes a variety of miscellaneous items, such as corporate investment gains and losses, certain derivative gains and losses, certain insurance-related gains and losses, certain litigation and environmental expenses, corporate restructuring charges and certain under- or over-absorbed costs (e.g. pension) that the Company determines not to allocate directly to its business segments. Corporate and Unallocated also includes sales, costs, and income from contract manufacturing, transition services and other arrangements with the acquirer of the Communication Markets Division following its divestiture in 2018. Because this category includes a variety of miscellaneous items, it is subject to fluctuation on a quarterly and annual basis.

Corporate and Unallocated operating expenses decreased by $166 million in 2019 when compared to 2018. In 2018 and 2019, significant litigation-related charges of $897 million and $762 million, respectively, were reflected in Corporate and Unallocated. In 2018 and 2019, operating expenses included $127 million (net of adjustments for reductions in cost estimates) and $140 million, respectively, of the restructuring actions further discussed in Note 5. In the third quarter, operating expenses were partially offset by a gain related to sales of certain properties. In addition, 3M's defined benefit pension and postretirement service-cost expense allocation to Corporate and Unallocated decreased year-on-year.

Corporate and Unallocated operating expenses increased by $1 billion in 2018 when compared to 2017. Beginning in the second quarter of 2018, the operating income from contractual manufacturing and other arrangements described in the paragraph above were included in Corporate and Unallocated. In addition, in 2018, operating expenses included the restructuring charge of $127 million, net of adjustments for reductions in cost estimates, as discussed in Note 5 related to addressing corporate functional costs following the Communication Markets Division divestiture. In the first quarter of 2018, the Minnesota NRD resolution ($897 million), inclusive of legal fees and other related obligations, was reflected in Corporate and Unallocated. In addition, 3M's defined benefit pension and postretirement service-cost expense allocation to Corporate and Unallocated increased year-on-year.

Operating Business Segments:

Information related to 3M's business segments is presented in the tables that follow. Organic local-currency sales include both organic volume impacts plus selling price impacts. Acquisition and divestiture impacts, if any, are measured separately for the first twelve months post-transaction. Foreign currency translation impacts and total sales change are also provided for each business segment. Any references to EMEA relate to Europe, Middle East and Africa on a combined basis.

The following discusses total year results for 2019 compared to 2018 and 2018 compared to 2017, for each business segment. Refer to the preceding year 2019 and 2018 sales results by geographic area/business segment sections for additional sales change information.

Safety and Industrial Business (36.1% of consolidated sales):

	2019	2018	2017
Sales (millions)	**$ 11,607**	$ 12,494	$ 11,946
Sales change analysis:			
Organic local-currency	**(3.3)%**	2.8 %	
Acquisitions	**—**	3.7	
Divestitures	**(1.7)**	(2.1)	
Translation	**(2.1)**	0.2	
Total sales change	**(7.1)%**	4.6 %	
Operating income (millions)	**$ 2,648**	$ 3,423	$ 2,603
Percent change	**(22.6)%**	31.5 %	
Percent of sales	**22.8 %**	27.4 %	21.8 %

Year 2019 results:

Sales in Safety and Industrial totaled $11.6 billion, a decrease of 7.1 percent compared to the same period last year. Organic local-currency sales decreased 3.3 percent, divestitures decreased sales by 1.7 percent, and foreign currency translation decreased sales by 2.1 percent.

On an organic local-currency sales basis:

- Sales increased in roofing granules and personal safety, while electrical markets, industrial adhesives and tapes, abrasives, automotive aftermarket, and closure and masking systems declined year-on-year.

Divestitures:

- In February 2018, 3M closed on the sale of certain personal safety product offerings primarily focused on noise, environmental, and heat stress monitoring.
- In May 2018, 3M divested an abrasives glass products business.
- In 2018, 3M completed the sale of substantially all of its Communication Markets Division.
- In August 2019, 3M completed the sale of its gas and flame detection business.

Operating income:

- Operating income margins decreased 4.6 percentage points, primarily related to the gain on the 2018 divestiture of the Communication Markets Division, partially offset by the gain on the third quarter 2019 divestiture of the gas and flame detection business, resulting in a net year-on-year operating income margin reduction of 3.2 percentage points. Operating income margins were also impacted by sales declines, particularly in Asia Pacific and the U.S, in addition to inventory reductions and restructuring impacts.

Year 2018 results:

Sales in Safety and Industrial totaled $12.5 billion, up 4.6 percent in U.S. dollars, compared to full year 2017. Organic local-currency sales increased 2.8 percent, acquisitions increased sales by 3.7 percent, divestitures decreased sales by 2.1 percent, and foreign currency translation increased sales by 0.2 percent.

On an organic local-currency sales basis:

- Sales growth increased in personal safety, electrical markets, industrial adhesives and tapes, and abrasives, while automotive aftermarket and closure and masking declined.
- Sales also declined in roofing granules, as production slowed within the shingle manufacturing industry when compared to prior year.

Acquisitions and divestitures:

- Acquisition sales growth in 2018 reflects the acquisition of Scott Safety in October 2017. Scott Safety is a premier manufacturer of innovative products, including self-contained breathing apparatus systems.
- In 2018, certain personal safety product offerings primarily focused on noise, environmental, and heat stress monitoring (February 2018), and its abrasives glass products business (May 2018).
- Also in 2018, 3M completed the sale of substantially all of its Communication Markets Division and recorded a pre-tax gain of approximately $509 million. Refer to Note 3 for additional details.
- 2017 divestitures that impacted 2018 results include the sale of its safety prescription eyewear business (first quarter 2017) and assets of its electrical marking/labeling business (fourth quarter 2017).

Operating income:

- Operating income margins increased 5.6 percentage points, primarily driven by the Communication Markets Division divestiture gain.

Transportation and Electronics Business (29.9% of consolidated sales):

	2019	2018	2017
Sales (millions)	**$ 9,602**	$ 10,106	$ 9,861
Sales change analysis:			
Organic local-currency	**(3.5)%**	3.7 %	
Divestitures	**—**	(1.7)	
Translation	**(1.5)**	0.5	
Total sales change	**(5.0)%**	2.5 %	
Operating income (millions)	**$ 2,221**	$ 2,649	$ 2,986
Percent change	**(16.1)%**	(11.3)%	
Percent of sales	**23.1 %**	26.2 %	30.3 %

Year 2019 results:

Sales in Transportation and Electronics totaled $9.6 billion, down 5.0 percent in U.S. dollars. Organic local-currency sales decreased 3.5 percent and foreign currency translation decreased sales by 1.5 percent.

Total sales decreased 6 percent within the electronics-related businesses in addition to a 5 percent decrease in Asia Pacific.

On an organic local-currency sales basis:

- Sales increased in advanced materials and transportation safety, while commercial solutions and automotive and aerospace solutions declined.
- Automotive and aerospace was impacted by the decline in global car and light truck builds along with channel inventory reductions within its Automotive OEM business, particularly in China.
- Sales decreased 6 percent in 3M's electronics-related businesses, with decreases in both display materials and systems and electronics materials solutions. Electronics-related growth was impacted by soft consumer electronics and factory automation end markets in addition to channel inventory adjustments.
- Sales decreased 4 percent in Asia Pacific, where 3M's electronics business is concentrated.

Operating income:

- Operating income margins decreased 3.1 percentage points, primarily impacted by continued sales declines, particularly in Asia Pacific and the U.S, in addition to inventory reductions. Operating income margins were also impacted by the restructuring charges initiated in 2019.

In January 2020, 3M completed the sale of its advanced ballistic-protection business to Avon Rubber p.l.c for $91 million, subject to closing and other adjustments, plus contingent considerations of up to $25 million depending on the outcome of certain tenders. Refer to Note 3 for additional details.

Year 2018 results:

Sales in Transportation and Electronics totaled $10.1 billion, up 2.5 percent in U.S. dollars. Organic local-currency sales increased 3.7 percent, divestitures reduced sales by 1.7 percent, and foreign currency translation increased sales by 0.5 percent.

Total sales within the electronics-related business increased 3 percent and increased 4 percent in Asia Pacific.

On an organic local-currency sales basis:

- Sales increased in advanced materials, commercial solutions, automotive and aerospace and transportation safety.
- Sales also increased 3 percent in 3M's electronics-related businesses, driven by increases in electronics materials solutions. Sales were flat in display materials and systems due to softness in consumer electronics.
- Sales increased 3 percent in Asia Pacific, where 3M's electronics business is concentrated.

Divestitures:

- 2017 divestitures that impacted 2018 results included the sale of 3M's identity management business and tolling and automated license/number plate business (both in second quarter 2017) and electronic monitoring business (fourth quarter 2017).

Operating income:

- Operating income margins decreased 4.1 percentage points, which primarily related to the impact on operating margins from the 2017 gain on sale of the identify management and electronic monitoring businesses.

Health Care Business (23.1% of consolidated sales):

	2019	2018	2017
Sales (millions)	**$ 7,431**	$ 6,826	$ 6,635
Sales change analysis:			
Organic local-currency	**1.6 %**	2.6 %	
Acquisitions	**9.4**	—	
Divestitures	**(0.1)**	(0.1)	
Translation	**(2.0)**	0.4	
Total sales change	**8.9 %**	2.9 %	
Operating income (millions)	**$ 1,863**	$ 1,921	$ 1,877
Percent change	**(3.0)%**	2.3 %	
Percent of sales	**25.1 %**	28.1 %	28.3 %

Year 2019 results:

Sales in Health Care totaled $7.4 billion, up 8.9 percent in U.S. dollars. Organic local-currency sales increased 1.6 percent, acquisitions increased sales by 9.4 percent, divestitures decreased sales by 0.1 percent, and foreign currency translation decreased sales by 2.0 percent.

On an organic local-currency sales basis:

- Sales increased in health information systems, food safety, and medical solutions, while separation and purification sciences decreased, and oral care was flat.
- Drug delivery declined year-on-year, as continued softness in the business negatively impacted overall Health Care organic growth.

Acquisitions:

- In February 2019, 3M acquired M*Modal, a leading healthcare technology provider of cloud-based, conversational artificial intelligence-powered systems that help physicians efficiently capture and improve the patient narrative.
- In October 2019, 3M completed the acquisition of Acelity Inc. and its KCI subsidiaries, a leading global medical technology company focused on advanced wound care and specialty surgical applications.

Divestitures:

- In the first quarter of 2018, 3M completed the sale of its polymer additives compounding business.
- In the first quarter of 2019, the Company sold certain oral care technology comprising a business.

Operating income:

- Operating income margins decreased 3.0 percentage points year-on-year, driven by a 3.6 percentage point impact related to the M*Modal and Acelity acquisitions. Operating income margin was also impacted by the restructuring charges initiated in 2019.

In December 2019, 3M agreed to sell substantially all of its drug delivery business to an affiliate of Altaris Capital Partners, LLC. Subject to closing and other adjustments, 3M will receive approximately $650 million in consideration. The sale is expected to close in the first half of 2020. See Note 3 for additional details.

Year 2018 results:

Sales in Health Care totaled $6.8 billion, up 2.9 percent in U.S. dollars. Organic local-currency sales increased 2.6 percent, divestitures decreased sales by 0.1 percent, and foreign currency translation increased sales by 0.4 percent.

On an organic local-currency sales basis:

- Sales growth was led by food safety, health information systems, separation and purification sciences, and medical solutions.
- Oral care sales also increased, with continued positive growth internationally, particularly in developing economies.
- Sales declined in drug delivery systems.

Divestitures:

- In the first quarter of 2018, 3M completed the sale of its polymer additives compounding business.

Operating income:

- Operating income margins decreased 0.2 percentage points year-on-year.

Consumer Business (15.8% of consolidated sales):

	2019	2018	2017
Sales (millions)	**$ 5,089**	$ 5,086	$ 5,006
Sales change analysis:			
Organic local-currency	**1.3 %**	1.5 %	
Acquisitions	**—**	0.2	
Translation	**(1.2)**	(0.1)	
Total sales change	**0.1 %**	1.6 %	
Operating income (millions)	**$ 1,105**	$ 1,071	$ 1,051
Percent change	**3.3 %**	1.9 %	
Percent of sales	**21.7 %**	21.0 %	21.0 %

Year 2019 results:

Sales in Consumer totaled $5.1 billion, an increase of 0.1 percent in U.S. dollars. Organic local-currency sales increased 1.3 percent and foreign currency translation decreased sales by 1.2 percent.

On an organic local-currency sales basis:

- Sales grew in home improvement, while stationery and office decreased. Consumer health care and home care were flat.
- Geographically, the U.S. showed particular strength in the Company's Filtrete™ and Command™ brands, while Asia Pacific was impacted by lower consumer demand for respiratory solutions.

Operating income:

- Operating income margins increased 0.7 percentage points year-on-year. Increases in operating income margins were primarily due to benefits from portfolio and footprint actions taken, partially offset by the restructuring charges initiated in 2019.

Year 2018 results:

Sales in Consumer totaled $5.1 billion, an increase of 1.6 percent in U.S. dollars. Organic local-currency sales increased 1.5 percent, acquisitions increased sales by 0.2 percent and foreign currency translation decreased sales by 0.1 percent.

On an organic local-currency sales basis:

- Sales grew in home improvement, building on a track record of strong performance over the past several years.
- Stationery and office supplies and home care were flat, while consumer health care declined.

Acquisitions:

- Acquisition sales growth in 2018 reflects certain safety products sold through retail channels in the Asia Pacific region from the acquisition of Scott Safety in October 2017.

Operating income:

- Operating income margins were flat year-on-year.

PERFORMANCE BY GEOGRAPHIC AREA

While 3M manages its businesses globally and believes its business segment results are the most relevant measure of performance, the Company also utilizes geographic area data as a secondary performance measure. Export sales are generally reported within the geographic area where the final sales to 3M customers are made. A portion of the products or components sold by 3M's operations to its customers are exported by these customers to different geographic areas. As customers move their operations from one geographic area to another, 3M's results will follow. Thus, net sales in a particular geographic area are not indicative of end-user consumption in that geographic area. Financial information related to 3M operations in various geographic areas is provided in Note 19.

Refer to the "Overview" section for a summary of net sales by geographic area and business segment.

Geographic Area Supplemental Information

	Employees as of December 31,			Capital Spending			Property, Plant and Equipment - net as of December 31,	
(Millions, except Employees)	**2019**	**2018**	**2017**	**2019**	**2018**	**2017**	**2019**	**2018**
United States	**39,662**	37,412	36,958	**$ 1,164**	$ 994	$ 852	**$ 5,442**	$ 4,915
Asia Pacific	**18,724**	18,971	18,283	**241**	238	209	**1,637**	1,624
Europe, Middle East and Africa	**21,412**	20,884	20,869	**240**	295	256	**1,823**	1,751
Latin America and Canada	**16,365**	16,249	15,426	**54**	50	56	**431**	448
Total Company	**96,163**	93,516	91,536	**$ 1,699**	$ 1,577	$ 1,373	**$ 9,333**	$ 8,738

Employment:

Employment increased 2,647 positions in 2019 and increased by 1,980 positions in 2018. The above table includes the impact of acquisitions (which involved approximately 5,500 positions in 2019), net of divestitures and other actions.

Capital Spending/Net Property, Plant and Equipment:

Investments in property, plant and equipment enable growth across many diverse markets, helping to meet product demand and increasing manufacturing efficiency. In 2019, 69% of 3M's capital spending was within the United States, followed by Asia Pacific, Europe, Middle East and Africa; and Latin America/Canada. 3M is increasing its investment in manufacturing and sourcing capability in order to more closely align its product capability with its sales in major geographic areas in order to best serve its customers throughout the world with proprietary, automated, efficient, safe and sustainable processes. Capital spending is discussed in more detail later in MD&A in the section entitled "Cash Flows from Investing Activities."

CRITICAL ACCOUNTING ESTIMATES

Information regarding significant accounting policies is included in Note 1 of the consolidated financial statements. As stated in Note 1, the preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. Management bases its estimates on historical experience and on various assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The Company believes its most critical accounting estimates relate to legal proceedings, pension and postretirement obligations, goodwill and certain long-lived assets, and uncertainty in income tax positions. Senior management has discussed the development, selection and disclosure of its critical accounting estimates with the Audit Committee of 3M's Board of Directors.

Legal Proceedings:

Assessments of lawsuits and claims can involve a series of complex judgments about future events and can rely heavily on estimates and assumptions. The Company accrues an estimated liability for legal proceeding claims that are both probable and estimable in accordance with Accounting Standard Codification (ASC) 450, *Contingencies*. Please refer to the section entitled "Process for Disclosure and Recording of Liabilities Related to Legal Proceedings" (contained in "Legal Proceedings" in Note 16) for additional information about such estimates.

Pension and Postretirement Obligations:

The Company makes certain estimates and judgements in relation to its defined benefit pension and postretirement obligations.

The benefit obligation represents the present value of the benefits that employees are entitled to in the future for services already rendered as of the measurement date. The Company measures the present value of these future benefits by projecting benefit payment cash flows for each future period and discounting these cash flows back to the December 31 measurement date, using the yields of a portfolio of high quality, fixed-income debt instruments that would produce cash flows sufficient in timing and amount to settle projected future benefits. Service cost and interest cost are measured separately using the spot yield curve approach applied to each corresponding obligation. Service costs are determined based on duration-specific spot rates applied to the service cost cash flows. The interest cost calculation is determined by applying duration-specific spot rates to the year-by-year projected benefit payments. The spot yield curve approach does not affect the measurement of the total benefit obligations as the change in service and interest costs offset in the actuarial gains and losses recorded in other comprehensive income.

Using this methodology, the Company determined discount rates for its plans as follow:

	U.S. Qualified Pension	International Pension (weighted average)	U.S. Postretirement Medical
December 31, 2019 Liability:			
Benefit obligation	3.25 %	1.81 %	3.13 %
2020 Net Periodic Benefit Cost Components:			
Service cost	3.44 %	1.61 %	3.35 %
Interest cost	2.88 %	1.61 %	2.73 %

Another significant element in determining the Company's pension expense is the expected return on plan assets. The expected return on plan assets for the primary U.S. qualified pension plan is based on strategic asset allocation of the plan, long-term capital market return expectations, and expected performance from active investment management. For the primary U.S. qualified pension plan, the expected long-term rate of return on an annualized basis for 2020 is 6.75%, a decrease from 7.00% in 2019. Return on assets assumptions for international pension and other post-retirement benefit plans are calculated on a plan-by-plan basis using plan asset allocations and expected long-term rate of return assumptions. The weighted average expected return for the international pension plan is 4.70% for 2020, compared to 4.90% for 2019. Refer to Note 13 for information on how the 2019 rates were determined.

3M follows ASC 820, *Fair Value Measurements and Disclosures* in determining the fair value of plan assets within the Company's pension and postretirement benefit plans. While the Company believes the valuation methods used to determine the fair value of plan assets are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date. See Note 13 for additional discussion of actuarial assumptions used in determining defined benefit pension and postretirement health care liabilities and expenses.

For the year ended December 31, 2019, the Company recognized consolidated defined benefit pre-tax pension and postretirement service cost expense of $425 million and a benefit of $68 million related to all non-service pension and postretirement net benefit costs (after settlements, curtailments, special termination benefits and other) for a total consolidated defined benefit pre-tax pension and postretirement expense of $357 million, down from $410 million in 2018.

In 2020, defined benefit pension and postretirement service cost expense is anticipated to total approximately $458 million while non-service pension and postretirement net benefit costs (before settlements, curtailments, special termination benefits and other) is anticipated to be a benefit of approximately $67 million, for a total consolidated defined benefit pre-tax pension and postretirement expense of $391 million, an increase of approximately $34 million compared to 2019.

The table below summarizes the impact on 2020 pension expense for the U.S. and international pension plans of a 0.25 percentage point increase/decrease in the expected long-term rate of return on plan assets and discount rate assumptions used to measure plan liabilities and 2019 net periodic benefit cost. The table assumes all other factors are held constant, including the slope of the discount rate yield curves.

	Increase (Decrease) in Net Periodic Benefit Cost			
	Discount Rate		Expected Return on Assets	
(Millions)	-0.25%	+0.25%	-0.25%	+0.25%
U.S. pension plans	$ 36	$ (35)	$ 38	$ (38)
International pension plans	24	(24)	17	(17)

Goodwill and Certain Long-Lived Assets:

The Company makes certain estimates and judgments in relation to goodwill and certain long-lived assets. Those include considerations made in the valuation of certain acquired identifiable definite-lived and indefinite-lived assets as a result of business combinations as well as considerations in the recoverability and impairment assessments of long-lived assets and goodwill.

Acquisition of certain identifiable definite-lived and indefinite-lived assets

In conjunction with an acquisition of a business, the Company records identifiable definite-lived and indefinite-lived intangible assets acquired at their respective fair values as of the date of acquisition. The corresponding fair value estimates for these assets acquired include projected future cash flows, associated discount rates used to calculate present value, asset life cycles, royalty rates, and customer retention rates. The fair value calculated for indefinite-lived intangible assets such as certain tradenames, in addition to intangible assets that are definite-lived such as patents, customer relationships, tradenames and other technology-based assets may change during the finalization of the purchase price allocation, due to the significant estimates used in determining their fair value. As a result, the Company may make adjustments to the provisional amounts recorded for certain items as part of the purchase price allocation subsequent to the acquisition, not to exceed one year after the acquisition date, until the purchase accounting allocation is finalized.

Assessments of long-lived assets and goodwill

As of December 31, 2019, net property, plant and equipment totaled $9.3 billion and net identifiable intangible assets totaled $6.4 billion, of which $0.6 billion related to indefinite-lived tradenames. In addition, 3M goodwill totaled approximately $13.4 billion as of December 31, 2019. Long-lived assets with a definite life are tested for impairment whenever events or circumstances indicate that the carrying amount of an asset (asset group) may not be recoverable. An impairment loss is recognized when the carrying amount exceeds the estimated undiscounted cash flows from the asset's or asset group's ongoing use and eventual disposition. If an impairment is identified, the amount of the impairment loss recorded is calculated by the excess of the asset's carrying value over its fair value. Fair value is generally determined using a discounted cash flow analysis. Intangible assets with an indefinite life, namely certain tradenames, are not amortized. Indefinite-lived intangible assets are tested for impairment annually and are tested for impairment between annual tests if an event occurs or circumstances change that would indicate that the carrying amount may be impaired. An impairment loss would be recognized when the fair value is less than the carrying value of the indefinite-lived intangible asset. Goodwill is tested for impairment annually in the fourth quarter of each year, as further discussed below, and is tested between annual tests if an event occurs or circumstances change that would indicate the carrying amount may be impaired. If future non-cash asset impairment charges are taken, 3M would expect that only a portion of the long-lived assets or goodwill would be impaired. Management makes estimates and assumptions in preparing the consolidated financial statements for which actual results will emerge over long periods of time. This includes the recoverability of long-lived assets employed in the business, including assets of acquired businesses. These estimates and assumptions are closely monitored by management and periodically adjusted as circumstances warrant. For instance, expected asset lives may be shortened or an impairment recorded based on a change in the expected use of the asset or performance of the related asset group. Factors which could result in future impairment charges include, among others, changes in worldwide economic conditions, changes in competitive conditions and customer preferences, and fluctuations in foreign currency exchange rates. These risk factors are discussed in Item 1A, "Risk Factors," of this document. In addition, changes in the weighted average cost of capital could also impact impairment testing results.

As of December 31, 2019, the $0.6 billion of indefinite-lived tradenames primarily relates to Capital Safety (acquired in 2015), whose tradenames ($520 million at acquisition date) have been in existence for over 55 years (refer to Note 4 for more detail). The primary valuation technique used in estimating the fair value of indefinite lived intangible assets (tradenames) is a discounted cash flow approach. Specifically, a relief of royalty rate is applied to estimated sales, with the resulting amounts then discounted using an appropriate market/technology discount rate. The relief of royalty rate is the estimated royalty rate a market participant would pay to acquire the right to market/produce the product. Based on impairment testing in the third quarter of 2019, no impairment was indicated. The discounted cash flows related to the Capital Safety tradenames exceeded its book value by more than 20 percent in aggregate.

3M goodwill totaled approximately $13.4 billion as of December 31, 2019. 3M's annual goodwill impairment testing is performed in the fourth quarter of each year. Impairment testing for goodwill is done at a reporting unit level, with all goodwill assigned to a reporting unit. Reporting units are one level below the business segment level, but are required to be combined when reporting units within the same segment have similar economic characteristics. At 3M, reporting units correspond to a division. 3M did not combine any of its reporting units for impairment testing. An impairment loss would be recognized when the carrying amount of the reporting unit's net assets exceeds the estimated fair value of the reporting unit, and the loss would equal that difference. The estimated fair value of a reporting unit is determined using earnings for the reporting unit multiplied by a price/earnings ratio for comparable industry groups, or by using a discounted cash flow analysis. 3M typically uses the price/earnings ratio approach for stable and growing businesses that have a long history and track record of generating positive operating income and cash flows. 3M uses the discounted cash flow approach for start-up, loss position and declining businesses, in addition to using for businesses where the price/earnings ratio valuation method indicates additional review is warranted. 3M also uses discounted cash flow as an additional tool for businesses that may be growing at a slower rate than planned due to economic or other conditions. Where applicable, 3M used a weighted-average discounted cash flow analysis for certain divisions, using projected cash flows that were weighted based on different sales growth and terminal value assumptions, among other factors. The weighting was based on management's estimates of the likelihood of each scenario occurring.

As described in Note 19, effective in the second quarter of 2019, the Company realigned its former five business segments into four to enable the Company to better serve global customers and markets. In addition, effective in the first quarter of 2019, 3M made business segment reporting changes to align its businesses around markets and customers. For any product moves that resulted in reporting unit changes, the Company applied the relative fair value method to determine the impact on goodwill of the associated reporting units. During both the first and second quarters of 2019, the Company completed its assessment of any potential goodwill impairment for reporting units impacted by this new structure and determined that no impairment existed. The discussion that follows relates to the separate fourth quarter 2019 annual impairment test and is in the context of the reporting unit structure that existed at that time.

Based on the annual test in the fourth quarter of 2019, no goodwill impairment was indicated for any of the reporting units. As of October 1, 2019, 3M had 23 primary reporting units, with ten reporting units accounting for approximately 91 percent of the goodwill. These ten reporting units were comprised of the following divisions: Advanced Materials, Display Materials and Systems, Electronics Materials Solutions, Health Information Systems, Industrial Adhesives and Tapes, Medical Solutions, Oral Care Solutions, Personal Safety, Separation and Purification Sciences, and Transportation Safety.

3M is a highly integrated enterprise, where businesses share technology and leverage common fundamental strengths and capabilities, thus many of 3M's businesses could not easily be sold on a stand-alone basis. 3M's focus on research and development has resulted in a portion of 3M's value being comprised of internally developed businesses that have no goodwill associated with them.

3M will continue to monitor its reporting units and asset groups in 2020 for any triggering events or other indicators of impairment.

Uncertainty in Income Tax Positions:

The extent of 3M's operations involves dealing with uncertainties and judgments in the application of complex tax regulations in a multitude of jurisdictions. The final taxes paid are dependent upon many factors, including negotiations with taxing authorities in various jurisdictions and resolution of disputes arising from federal, state, and international tax audits. The Company recognizes potential liabilities and records tax liabilities for anticipated tax audit issues in the United States and other tax jurisdictions based on its estimate of whether, and the extent to which, additional taxes will be due. The Company follows guidance provided by ASC 740, *Income Taxes*, a subset of which relates to uncertainty in income taxes, to record these liabilities (refer to Note 10 for additional information). The Company adjusts these reserves in light of changing facts and circumstances; however, due to the complexity of some of these uncertainties, the ultimate resolution may result in a payment that is materially different from the Company's current estimate of the tax liabilities. If the Company's estimate of tax liabilities proves to be less than the ultimate assessment, an additional charge to expense would result. If payment of these amounts ultimately proves to be less than the recorded amounts, the reversal of the liabilities would result in tax benefits being recognized in the period when the Company determines the liabilities are no longer necessary.

NEW ACCOUNTING PRONOUNCEMENTS

Information regarding new accounting pronouncements is included in Note 1 to the Consolidated Financial Statements.

FINANCIAL CONDITION AND LIQUIDITY

The strength and stability of 3M's business model and strong free cash flow capability, together with proven capital markets access, positions the Company to be able to add further leverage to its capital structure. Investing in 3M's businesses to drive organic growth remains the first priority for capital deployment, including research and development, capital expenditures, and commercialization capability. Investment in organic growth will be supplemented by complementary acquisitions. 3M will also continue to return cash to shareholders through dividends and share repurchases. Sources for cash availability in the United States, such as ongoing cash flow from operations and access to capital markets, have historically been sufficient to fund dividend payments to shareholders, as well as funding U.S. acquisitions and other items as needed. The TCJA creates additional repatriation opportunities for 3M to access international cash positions on a continual and on-going basis and will help support U.S. capital deployments needs. For those international earnings still considered to be reinvested indefinitely, the Company currently has no plans or intentions to repatriate these funds for U.S. operations. See Note 10 for further information on earnings considered to be reinvested indefinitely.

3M's primary short-term liquidity needs are met through cash on hand and U.S. commercial paper issuances. 3M believes it will have continuous access to the commercial paper market. 3M's commercial paper program permits the Company to have a maximum of $5 billion outstanding with a maximum maturity of 397 days from date of issuance. At December 31, 2019, there was approximately $150 million in commercial paper issued and outstanding.

Total Debt:

The strength of 3M's capital structure and significant ongoing cash flows provide 3M proven access to capital markets. Additionally, the Company's maturity profile is staggered to help ensure refinancing needs in any given year are reasonable in proportion to the total portfolio. 3M currently has an A1 credit rating with a stable outlook from Moody's Investors Service and has an AA- credit rating with Standard & Poor's; Standard & Poor's placed 3M on "CreditWatch Negative" in January 2020.

The Company's total debt was $5.7 billion higher at December 31, 2019 when compared to December 31, 2018. Increases in debt related to the first quarter and third quarter 2019 issuances of $2.25 billion of medium-term notes and $3.25 billion of other registered notes, respectively, in addition to the 69 billion Japanese Yen (approximately $632 million at December 31, 2019 exchange rates) outstanding from the 80 billion Japanese Yen credit facility established in September 2019 and the 150 million Euro (approximately $168 million at December 31, 2019 exchange rates) outstanding credit facility established in November 2019. Total debt also increased as a result of debt assumed from the October 2019 Acelity Inc. acquisition that was not settled at close as discussed below. These increases were partially offset by the June 2019 repayment of $625 million aggregate principal amount of fixed-rate medium-term notes that matured in addition to lower commercial paper outstanding. For discussion of repayments of and proceeds from debt refer to the following "Cash Flows from Financing Activities" section.

In conjunction with the October 2019 acquisition of Acelity Inc. of the debt assumed, 3M did not immediately settle at close $0.5 billion of notes and, instead, satisfied and discharged those notes via an in-substance defeasance. Refer to Note 12 for additional information.

In July 2017, the United Kingdom's Financial Conduct Authority announced that it would no longer require banks to submit rates for the London InterBank Offered Rate ("LIBOR") after 2021. The Company is in the process of reviewing its debt securities, bank facilities, derivative instruments and commercial contracts that utilize LIBOR as the reference rate. 3M will continue its impact assessment and monitor regulatory developments during the transition period.

Effective February 24, 2017, the Company updated its "well-known seasoned issuer" (WKSI) shelf registration statement, which registers an indeterminate amount of debt or equity securities for future issuance and sale. This replaced 3M's previous shelf registration dated May 16, 2014. In May 2016, in connection with the WKSI shelf, 3M entered into an amended and restated distribution agreement relating to the future issuance and sale (from time to time) of the Company's medium-term notes program (Series F), up to the aggregate principal amount of $18 billion, which was an increase from the previous aggregate principal amount up to $9 billion of the same Series.

As of December 31, 2019, the total amount of debt issued as part of the medium-term notes program (Series F), inclusive of debt issued in February 2019 and prior years is approximately $17.6 billion (utilizing the foreign exchange rates applicable at the time of issuance for the Euro denominated debt). Additionally, the August 2019 debt was issued under the WKSI shelf registration, but not as part of the medium-term notes program (Series F). Information with respect to long-term debt issuances and maturities for the periods presented is included in Note 12.

In November 2019, 3M amended and restated its existing $3.75 billion five-year revolving credit facility expiring in March 2021 to a $3.0 billion five-year revolving credit facility expiring in November 2024. The revolving credit agreement includes a provision under which 3M may request an increase of up to $1.0 billion (at lender's discretion), bringing the total facility up to $4.0 billion. In addition, 3M entered into a $1.25 billion 364-day credit facility expiring in November 2020. The 364-day credit agreement includes a provision under which 3M may convert any advances outstanding on the maturity date into term loans with a maturity date one year later. These credit facilities were undrawn at December 31, 2019. Under both the $3.0 billion and $1.25 billion credit agreements, the Company is required to maintain its EBITDA to Interest Ratio as of the end of each fiscal quarter at not less than 3.0 to 1. This is calculated (as defined in the agreement) as the ratio of consolidated total EBITDA for the four consecutive quarters then ended to total interest expense on all funded debt for the same period. At December 31, 2019, this ratio was approximately 17 to 1. Debt covenants do not restrict the payment of dividends.

Apart from the committed credit facilities described above, in September 2019, 3M entered into a credit facility expiring in July 2020 in the amount of 80 billion Japanese Yen. At December 31, 2019, 69 billion Japanese Yen, or approximately $632 million at December 31, 2019 exchange rates, was drawn and outstanding. In November 2019, 3M entered into a credit facility expiring in November 2020 in the amount of 150 million Euros. At December 31, 2019, 150 million Euros, or $168 million at December 31, 2019 exchange rates, was drawn and outstanding. The Company also had an additional $268 million in stand-alone letters of credit and bank guarantees were also issued and outstanding at December 31, 2019. These instruments are utilized in connection with normal business activities.

Cash, Cash Equivalents and Marketable Securities:

At December 31, 2019, 3M had $2.5 billion of cash, cash equivalents and marketable securities, of which approximately $2.4 billion was held by the Company's foreign subsidiaries and approximately $100 million was held by the United States. These balances are invested in bank instruments and other high-quality fixed income securities. At December 31, 2018, 3M had $3.3 billion of cash, cash equivalents and marketable securities, of which approximately $3.1 billion was held by the Company's foreign subsidiaries and approximately $160 million was held by the United States. Specifics concerning marketable securities investments are provided in Note 11.

Net Debt (non-GAAP measure):

Net debt is not defined under U.S. GAAP and may not be computed the same as similarly titled measures used by other companies. The Company defines net debt as total debt less the total of cash, cash equivalents and current and long-term marketable securities.

3M believes net debt is meaningful to investors as 3M considers net debt and its components to be important indicators of liquidity and financial position. The following table provides net debt as of December 31, 2019 and 2018.

(Millions)	December 31, 2019	December 31, 2018	2019 versus 2018
Total debt	**$ 20,313**	$ 14,622	$ 5,691
Less: Cash, cash equivalents and marketable securities	**2,494**	3,270	(776)
Net debt (non-GAAP measure)	**$ 17,819**	$ 11,352	$ 6,467

Refer to the preceding "Total Debt" and "Cash, Cash Equivalents and Marketable Securities" sections for additional details.

Balance Sheet:

3M's continuous focus on its balance sheet and liquidity provide the Company with significant flexibility to fund its numerous opportunities going forward. The Company will continue to invest in its operations to drive growth, including continual review of acquisition opportunities.

The Company uses working capital measures that place emphasis and focus on certain working capital assets, such as accounts receivable and inventory activity.

Working Capital (non-GAAP measure):

(Millions)	December 31, 2019	December 31, 2018	2019 versus 2018
Current assets	**$ 12,971**	$ 13,709	$ (738)
Less: Current liabilities	**9,222**	7,244	1,978
Working capital (non-GAAP measure)	**$ 3,749**	$ 6,465	$ (2,716)

Various assets and liabilities, including cash and short-term debt, can fluctuate significantly from month to month depending on short-term liquidity needs. Working capital is not defined under U.S. generally accepted accounting principles and may not be computed the same as similarly titled measures used by other companies. The Company defines working capital as current assets minus current liabilities. 3M believes working capital is meaningful to investors as a measure of operational efficiency and short-term financial health.

Working capital decreased $2,716 million compared with December 31, 2018. Current asset balance changes decreased working capital by $738 million, driven by reductions in cash and cash equivalents. Working capital decreases also relate to decreases in accounts receivable and in inventories (discussed further below). Current liability balance changes decreased working capital by $1,978 million, primarily due to increases the current portion of long-term debt due to upcoming maturities in 2020, accruals related to respirator mask/asbestos and other environmental liabilities, net of related subsequent payments (refer to Note 16 for additional details on these accruals), in addition to the current portion of operating lease liabilities due to the adoption of Accounting Standards Update (ASU) No. 2016-02, *Leases* (refer to Note 17 for additional details on leases).

Accounts receivable decreased $229 million from December 31, 2018, primarily due to lower year-on-year sales in addition to continued focus on improving cash flows, partially offset by the receivables acquired from the M*Modal and Acelity Inc. acquisitions. Inventory decreased $232 million from December 31, 2018 as a result of the Company's commitment to improve its response to slowing growth conditions in several key end markets and channel inventory adjustments by customers partially offset by inventory from the Acelity Inc. acquisition.

Return on Invested Capital (non-GAAP measure):

Return on Invested Capital (ROIC) is not defined under U.S. generally accepted accounting principles. Therefore, ROIC should not be considered a substitute for other measures prepared in accordance with U.S. GAAP and may not be comparable to similarly titled measures used by other companies. The Company defines ROIC as adjusted net income (net income including non-controlling interest plus after-tax interest expense) divided by average invested capital (equity plus debt). The Company believes ROIC is meaningful to investors as it focuses on shareholder value creation. The calculation is provided in the below table.

In 2019, ROIC of 17.5 percent was lower than 2018. The decrease in 2019 when compared to 2018 was driven by lower net income from the 2019 impact of significant litigation-related charges in addition to the charge from the deconsolidation of the Company's Venezuela subsidiary. ROIC was also negatively impacted by the increase in cash and cash equivalents in anticipation of the funding of the acquisition of Acelity.

In 2018, ROIC of 22.2 percent was higher than 2017. The increase in 2018 when compared to 2017 was negatively impacted by the measurement period adjustments taken in 2018 to the expense recorded in December 2017 from the enactment of the TCJA, the impact from the resolution of the Minnesota natural resource damages (NRD) resolution, and the impact from the gain on sale of the Communication Markets Division, net of restructuring actions related to addressing corporate functional costs following the divestiture, which combined reduced ROIC by 2 percentage points in 2018.

Years ended December 31 **(Millions)**	**2019**	**2018**	**2017**
Return on Invested Capital (non-GAAP measure)			
Net income including non-controlling interest	**$ 4,582**	$ 5,363	$ 4,869
Interest expense (after-tax) (1)	**359**	268	208
Adjusted net income (Return)	**$ 4,941**	$ 5,631	$ 5,077
Average shareholders' equity (including non-controlling interest) (2)	**$ 10,198**	$ 10,407	$ 11,627
Average short-term and long-term debt (3)	**17,982**	14,912	12,156
Average invested capital	**$ 28,180**	$ 25,318	$ 23,783
Return on invested capital (non-GAAP measure)	**17.5 %**	22.2 %	21.3 %
(1) Effective income tax rate used for interest expense	**19.8 %**	23.4 %	35.5 %
(2) Calculation of average equity (includes non-controlling interest)			
Ending total equity as of:			
March 31	**$ 9,757**	$ 11,039	$ 11,040
June 30	**10,142**	10,428	11,644
September 30	**10,764**	10,311	12,202
December 31	**10,126**	9,848	11,622
Average total equity	**$ 10,198**	$ 10,407	$ 11,627
(3) Calculation of average debt			
Ending short-term and long-term debt as of:			
March 31	**$ 16,370**	$ 15,660	$ 11,711
June 30	**15,806**	14,519	11,301
September 30	**19,439**	14,846	11,663
December 31	**20,313**	14,622	13,949
Average short-term and long-term debt	**$ 17,982**	$ 14,912	$ 12,156

Cash Flows:

Cash flows from operating, investing and financing activities are provided in the tables that follow. Individual amounts in the Consolidated Statement of Cash Flows exclude the effects of acquisitions, divestitures and exchange rate impacts on cash and cash equivalents, which are presented separately in the cash flows. Thus, the amounts presented in the following operating, investing and financing activities tables reflect changes in balances from period to period adjusted for these effects.

Cash Flows from Operating Activities:

Years Ended December 31 (Millions)	**2019**	**2018**	**2017**
Net income including noncontrolling interest	**$ 4,582**	$ 5,363	$ 4,869
Depreciation and amortization	**1,593**	1,488	1,544
Company pension and postretirement contributions	**(210)**	(370)	(967)
Company pension and postretirement expense	**357**	410	334
Stock-based compensation expense	**278**	302	324
Gain on sale of businesses	**(111)**	(545)	(586)
Income taxes (deferred and accrued income taxes)	**(68)**	77	1,074
Loss on deconsolidation of Venezuelan subsidiary	**162**	—	—
Accounts receivable	**345**	(305)	(245)
Inventories	**370**	(509)	(387)
Accounts payable	**(117)**	408	24
Other — net	**(111)**	120	256
Net cash provided by operating activities	**$ 7,070**	$ 6,439	$ 6,240

Cash flows from operating activities can fluctuate significantly from period to period, as pension funding decisions, tax timing differences and other items can significantly impact cash flows.

In 2019, cash flows provided by operating activities increased $631 million compared to the same period last year, with this increase primarily due to lower year-on-year significant litigation-related charges and the timing of associated payments. Additional factors that increased operating cash flows were decreases in inventory and accounts receivable. The combination of accounts receivable, inventories and accounts payable increased working capital by $598 million in 2019, compared to the working capital decreases of $406 million in 2018. Additional discussion on working capital changes is provided earlier in the "Financial Condition and Liquidity" section.

In 2018, cash flows provided by operating activities increased $199 million compared to the same period last year, with the increase primarily made up of higher net income and lower year-on-year pension and postretirement contributions. The increase was partially offset primarily due to the significant litigation-related charges from the previously disclosed resolution of the Minnesota natural resource damages (NRD) in the first quarter of 2018 and year-on-year increases in income tax payments. Additional factors that decreased operating cash flows were increases in inventory and accounts receivable. The combination of accounts receivable, inventories and accounts payable increased working capital by $406 million in 2018, compared to the working capital increases of $608 million in 2017. Additional discussion on working capital changes is provided earlier in the "Financial Condition and Liquidity" section.

Cash Flows from Investing Activities:

Years ended December 31 (Millions)	2019	2018	2017
Purchases of property, plant and equipment (PP&E)	**$ (1,699)**	$ (1,577)	$ (1,373)
Proceeds from sale of PP&E and other assets	**123**	262	49
Acquisitions, net of cash acquired	**(4,984)**	13	(2,023)
Purchases and proceeds from maturities and sale of marketable securities and investments, net	**(192)**	669	(798)
Proceeds from sale of businesses, net of cash sold	**236**	846	1,065
Other — net	**72**	9	(6)
Net cash provided by (used in) investing activities	**$ (6,444)**	$ 222	$ (3,086)

Investments in property, plant and equipment enable growth across many diverse markets, helping to meet product demand and increasing manufacturing efficiency. The Company expects 2020 capital spending to be approximately $1.6 billion to $1.8 billion as 3M continues to invest in its businesses.

3M invests in renewal and maintenance programs, which pertain to cost reduction, cycle time, maintaining and renewing current capacity, eliminating pollution, and compliance. Costs related to maintenance, ordinary repairs, and certain other items are expensed. 3M also invests in growth, which adds to capacity, driven by new products, both through expansion of current facilities and new facilities. Finally, 3M also invests in other initiatives, such as information technology (IT), laboratory facilities, and a continued focus on investments in sustainability.

Refer to Note 3 for information on acquisitions and divestitures. The Company is actively considering additional acquisitions, investments and strategic alliances, and from time to time may also divest certain businesses. Acquisitions, net of cash acquired, in 2019 primarily includes the purchase of M*Modal and Acelity Inc. Proceeds from sale of businesses in 2019 primarily relate to the sale of 3M's gas and flame detection business and the sale of certain oral care technology comprising a business.

Purchases of marketable securities and investments and proceeds from maturities and sale of marketable securities and investments are primarily attributable to asset-backed securities, certificates of deposit/time deposits, commercial paper, and other securities, which are classified as available-for-sale. Purchases of marketable securities and investments include the purchase of a $0.5 billion of held-to-maturity treasury security (further discussed in Note 11) that was transferred to a trust as part of the in-substance defeasance of a portion of the debt assumed as a result of the Company's acquisition of Acelity Inc. Refer to Note 11 for more details about 3M's diversified marketable securities portfolio. Purchases of investments include additional survivor benefit insurance, plus investments in equity securities.

Cash Flows from Financing Activities:

Years ended December 31 (Millions)	2019	2018	2017
Change in short-term debt — net	**$ (316)**	$ (284)	$ 578
Repayment of debt (maturities greater than 90 days)	**(2,716)**	(1,034)	(962)
Proceeds from debt (maturities greater than 90 days)	**6,281**	2,251	1,987
Total cash change in debt	**$ 3,249**	$ 933	$ 1,603
Purchases of treasury stock	**(1,407)**	(4,870)	(2,068)
Proceeds from issuances of treasury stock pursuant to stock option and benefit plans	**547**	485	734
Dividends paid to stockholders	**(3,316)**	(3,193)	(2,803)
Other — net	**(197)**	(56)	(121)
Net cash used in financing activities	**$ (1,124)**	$ (6,701)	$ (2,655)

2019 Debt Activity:

Total debt was approximately $20.3 billion at December 31, 2019 and $14.6 billion at December 31, 2018. Increases in debt related to the first quarter and third quarter 2019 issuances of $2.25 billion of medium-term notes and $3.25 billion of other registered notes, respectively, 69 billion Japanese Yen (approximately $632 million at December 31, 2019 exchange rates) outstanding from the 80 billion Japanese Yen credit facility established in September 2019, 150 million Euro (approximately $168 million at December 31, 2019 exchange rates) outstanding credit facility established in November 2019, and $0.5 billion of debt assumed and not yet repaid as a result of the Company's acquisition of Acelity Inc. Repayment of debt primarily consists of the June 2019 repayment of $625 million aggregate principal amount of fixed-rate medium-term notes that had matured, in addition to debt assumed and subsequently repaid as a result of the Company's acquisitions of M*Modal and Acelity Inc. as discussed in Note 3. Outstanding commercial paper was $150 million at December 31, 2019, as compared to $435 million at December 31, 2018. Net commercial paper issuances, repayments and borrowings by international subsidiaries are largely reflected in "Change in short-term debt – net" in the preceding table. 3M's primary short-term liquidity needs are met through cash on hand and U.S. commercial paper issuances. Refer to Note 12 for more detail regarding debt issuances.

2018 Debt Activity:

The Company's total debt was $0.7 billion higher at December 31, 2018 when compared to December 31, 2017. Increases in debt related to the third quarter 2018 issuance of $2.25 billion of medium-term notes, which was partially offset by the $450 million third quarter repayment and 500 million Euro fourth quarter repayment of maturing medium-term notes, the net impact of repayments and borrowings of international subsidiaries along with foreign currency effects, and lower year on year commercial paper balance. Outstanding commercial paper decreased $310 million from December 31, 2017 to December 31, 2018. Net commercial paper issuances and repayments and borrowings by international subsidiaries are largely reflected in "Change in short-term debt – net" in the preceding table. 3M's primary short-term liquidity needs are met through cash on hand and U.S. commercial paper issuances. Refer to Note 12 for more detail regarding debt issuances.

Repurchases of Common Stock:

Repurchases of common stock are made to support the Company's stock-based employee compensation plans and for other corporate purposes. In November 2018, 3M's Board of Directors replaced the Company's February 2016 repurchase program with a new repurchase program. This new program authorizes the repurchase of up to $10 billion of 3M's outstanding common stock, with no pre-established end date. In 2019, the Company purchased $1.4 billion of its own stock, compared to purchases of $4.9 billion and $2.1 billion in 2018 and 2017, respectively. The Company expects full-year 2020 gross share repurchases to be approximately $1.0 billion. For more information, refer to the table titled "Issuer Purchases of Equity Securities" in Part II, Item 5. The Company does not utilize derivative instruments linked to the Company's stock.

Dividends Paid to Shareholders:

Cash dividends paid to shareholders totaled $3.316 billion ($5.76 per share) in 2019, $3.193 billion ($5.44 per share) in 2018, and $2.803 billion $4.70 per share) in 2017. 3M has paid dividends since 1916. In February 2020, 3M's Board of Directors declared a first-quarter 2020 dividend of $1.47 per share, an increase of 2 percent. This is equivalent to an annual dividend of $5.88 per share and marked the 62nd consecutive year of dividend increases.

Other cash flows from financing activities may include various other items, such as cash paid associated with certain derivative instruments, distributions to or sales of noncontrolling interests, changes in cash overdraft balances, and principal payments for finance leases.

Free Cash Flow (non-GAAP measure):

Free cash flow and free cash flow conversion are not defined under U.S. generally accepted accounting principles (GAAP). Therefore, they should not be considered a substitute for income or cash flow data prepared in accordance with U.S. GAAP and may not be comparable to similarly titled measures used by other companies. The Company defines free cash flow as net cash provided by operating activities less purchases of property, plant and equipment. It should not be inferred that the entire free cash flow amount is available for discretionary expenditures. The Company defines free cash flow conversion as free cash flow divided by net income attributable to 3M. The Company believes free cash flow and free cash flow conversion are meaningful to investors as they are useful measures of performance and the Company uses these measures as an indication of the strength of the company and its ability to generate cash. The first quarter of each year is typically 3M's seasonal low for free cash flow and free cash flow conversion. Below find a recap of free cash flow and free cash flow conversion for 2019, 2018 and 2017.

In 2019, free cash flow conversion was impacted by the $762 million pre-tax charge related to the significant litigation-related charges, the $162 million pre-tax impact from the deconsolidation of the Company's Venezuelan subsidiary, and the $112 million pre-tax divestiture gain from the gas and flame detection business.

In 2018, free cash flow conversion was impacted by the $176 million measurement period adjustment to the tax expense recorded in December 2017 from the enactment of the TCJA, the $897 million pre-tax charge related to the significant litigation-related charges from the previously disclosed resolution of the Minnesota natural resource damages (NRD), and the $381 million pre-tax gain on sale of the Communication Markets Division, net of restructuring actions related to addressing corporate functional costs following the divestiture.

Refer to the preceding "Cash Flows from Operating Activities" section for discussion of additional items that impacted operating cash flow. Refer to the preceding "Cash Flows from Investing Activities" section for discussion on capital spending for property, plant and equipment.

Years ended December 31 (Millions)	2019	2018	2017
Major GAAP Cash Flow Categories			
Net cash provided by (used in) operating activities	**$ 7,070**	$ 6,439	$ 6,240
Net cash provided by (used in) investing activities	**(6,444)**	222	(3,086)
Net cash provided by (used in) financing activities	**(1,124)**	(6,701)	(2,655)
Free Cash Flow (non-GAAP measure)			
Net cash provided by (used in) operating activities	**$ 7,070**	$ 6,439	$ 6,240
Purchases of property, plant and equipment (PP&E)	**(1,699)**	(1,577)	(1,373)
Free cash flow	**$ 5,371**	$ 4,862	$ 4,867
Net income attributable to 3M	**$ 4,570**	$ 5,349	$ 4,858
Free cash flow conversion	**118 %**	91 %	100 %

Off-Balance Sheet Arrangements and Contractual Obligations:

As of December 31, 2019, the Company has not utilized special purpose entities to facilitate off-balance sheet financing arrangements. Refer to the section entitled "Warranties/Guarantees" in Note 16 for discussion of accrued product warranty liabilities and guarantees.

In addition to guarantees, 3M, in the normal course of business, periodically enters into agreements that require the Company to indemnify either major customers or suppliers for specific risks, such as claims for injury or property damage arising out of the use of 3M products or the negligence of 3M personnel, or claims alleging that 3M products infringe third-party patents or other intellectual property. While 3M's maximum exposure under these indemnification provisions cannot be estimated, these indemnifications are not expected to have a material impact on the Company's consolidated results of operations or financial condition.

Contractual Obligations

A summary of the Company's significant contractual obligations as of December 31, 2019, follows:

		Payments due by year					
(Millions)	Total	2020	2021	2022	2023	2024	After 2024
Total debt (Note 12)	$ 20,313	$ 2,795	$ 1,682	$ 1,603	$ 1,811	$ 1,101	$ 11,321
Interest on long-term debt	6,185	508	471	424	398	362	4,022
Operating leases (Note 17)	931	267	191	138	97	65	173
Finance leases (Note 17)	138	21	17	16	15	14	55
Tax Cuts and Jobs Act (TCJA) transition tax (Note 10)	686	33	69	69	129	172	214
Unconditional purchase obligations and other	1,689	990	280	159	187	45	28
Total contractual cash obligations	$ 29,942	$ 4,614	$ 2,710	$ 2,409	$ 2,637	$ 1,759	$ 15,813

Long-term debt payments due in 2020 include floating rate notes totaling $149 million as a result of put provisions associated with these debt instruments.

During the fourth quarter of 2017, 3M recorded a net tax expense related to the enactment of the Tax Cuts and Jobs Act (TCJA). The expense is primarily related to the TCJA's transition tax. The transition tax is payable over 8 years at the election of the taxpayer. See Note 10 for additional details.

Unconditional purchase obligations are defined as agreements to purchase goods or services that are enforceable and legally binding on the Company. Included in the unconditional purchase obligations category above are certain obligations related to take or pay contracts, capital commitments, service agreements and utilities. These estimates include both unconditional purchase obligations with terms in excess of one year and normal ongoing purchase obligations with terms of less than one year. Many of these commitments relate to take or pay contracts, in which 3M guarantees payment to ensure availability of products or services that are sold to customers. The Company expects to receive consideration (products or services) for these unconditional purchase obligations. Contractual capital commitments are included in the preceding table, but these commitments represent a small part of the Company's expected capital spending. The purchase obligation amounts do not represent the entire anticipated purchases in the future but represent only those items for which the Company is contractually obligated. The majority of 3M's products and services are purchased as needed, with no unconditional commitment. For this reason, these amounts will not provide a reliable indicator of the Company's expected future cash outflows on a stand-alone basis.

Other obligations, included in the preceding table within the caption entitled "Unconditional purchase obligations and other" include the current portion of the liability for uncertain tax positions under ASC 740, which is expected to be paid out in cash in the next 12 months, when applicable. The Company is not able to reasonably estimate the timing of the long-term payments, or the amount by which the liability will increase or decrease over time; therefore, the long-term portion of the total net tax liability of $961 million is excluded from the preceding table. In addition, the transition tax prescribed under the Tax Cuts and Jobs Act (TCJA) is separately included in the table above. Refer to Note 10 for further details. Additionally, included within the caption entitled "Unconditional purchase obligations and other" are operating lease commitments that have not yet commenced, which as of December 31, 2019, totaled approximately $23 million. These commitments pertain to 3M's right of use buildings.

As discussed in Note 13, the Company does not have a required minimum cash pension contribution obligation for its U.S. plans in 2019 and Company contributions to its U.S. and international pension plans are expected to be largely discretionary in future years; therefore, amounts related to these plans are not included in the preceding table.

FINANCIAL INSTRUMENTS

The Company enters into foreign exchange forward contracts, options and swaps to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies and certain intercompany financing transactions. The Company manages interest rate risks using a mix of fixed and floating rate debt. To help manage borrowing costs, the Company may enter into interest rate swaps. Under these arrangements, the Company agrees to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to an agreed-upon notional principal amount. The Company manages commodity price risks through negotiated supply contracts, price protection agreements and commodity price swaps.

Refer to Item 7A, "Quantitative and Qualitative Disclosures About Market Risk", for further discussion of foreign exchange rates risk, interest rates risk, commodity prices risk and value at risk analysis.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

In the context of Item 7A, 3M is exposed to market risk due to the risk of loss arising from adverse changes in foreign currency exchange rates, interest rates and commodity prices. Changes in those factors could impact the Company's results of operations and financial condition. Senior management provides oversight for risk management and derivative activities, determines certain of the Company's financial risk policies and objectives, and provides guidelines for derivative instrument utilization. Senior management also establishes certain associated procedures relative to control and valuation, risk analysis, counterparty credit approval, and ongoing monitoring and reporting.

The Company is exposed to credit loss in the event of nonperformance by counterparties in interest rate swaps, currency swaps, commodity price swaps, and forward and option contracts. However, the Company's risk is limited to the fair value of the instruments. The Company actively monitors its exposure to credit risk through the use of credit approvals and credit limits, and by selecting major international banks and financial institutions as counterparties. The Company does not anticipate nonperformance by any of these counterparties.

Foreign Exchange Rates Risk:

Foreign currency exchange rates and fluctuations in those rates may affect the Company's net investment in foreign subsidiaries and may cause fluctuations in cash flows related to foreign denominated transactions. 3M is also exposed to the translation of foreign currency earnings to the U.S. dollar. The Company enters into foreign exchange forward and option contracts to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies. These transactions are designated as cash flow hedges. 3M may dedesignate these cash flow hedge relationships in advance of the occurrence of the forecasted transaction. The maximum length of time over which 3M hedges its exposure to the variability in future cash flows of the forecasted transactions is 36 months. In addition, 3M enters into foreign currency forward contracts that are not designated in hedging relationships to offset, in part, the impacts of certain intercompany activities (primarily associated with intercompany licensing arrangements and intercompany financing transactions). As circumstances warrant, the Company also uses foreign currency forward contracts and foreign currency denominated debt as hedging instruments to hedge portions of the Company's net investments in foreign operations. The dollar equivalent gross notional amount of the Company's foreign exchange forward and option contracts designated as either cash flow hedges or net investment hedges was $3.0 billion at December 31, 2019. The dollar equivalent gross notional amount of the Company's foreign exchange forward and option contracts not designated as hedging instruments was $2.7 billion at December 31, 2019. In addition, as of December 31, 2019, the Company had 4.1 billion Euros in principal amount of foreign currency denominated debt designated as non-derivative hedging instruments in certain net investment hedges as discussed in Note 14 in the "Net Investment Hedges" section.

Interest Rates Risk:

The Company may be impacted by interest rate volatility with respect to existing debt and future debt issuances. 3M manages interest rate risk and expense using a mix of fixed and floating rate debt. In addition, the Company may enter into interest rate swaps that are designated and qualify as fair value hedges. Under these arrangements, the Company agrees to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to an agreed-upon notional principal amount. The dollar equivalent (based on inception date foreign currency exchange rates) gross notional amount of the Company's interest rate swaps at December 31, 2019 was $1.1 billion. Additional details about 3M's long-term debt can be found in Note 12, including references to information regarding derivatives and/or hedging instruments, further discussed in Note 14, associated with the Company's long-term debt.

Commodity Prices Risk:

The Company manages commodity price risks through negotiated supply contracts, price protection agreements and commodity price swaps. The related mark-to-market gain or loss on qualifying hedges was included in other comprehensive income to the extent effective, and reclassified into cost of sales in the period during which the hedged transaction affected earnings. The Company may enter into other commodity price swaps to offset, in part, fluctuation and costs associated with the use of certain commodities and precious metals. These instruments are not designated in hedged relationships and the extent to which they were outstanding at December 31, 2019 was not material.

Value At Risk:

The value at risk analysis is performed annually to assess the Company's sensitivity to changes in currency rates, interest rates, and commodity prices. A Monte Carlo simulation technique was used to test the impact on after-tax earnings related to financial instruments (primarily debt), derivatives and underlying exposures outstanding at December 31, 2019. The model (third-party bank dataset) used a 95 percent confidence level over a 12-month time horizon. The exposure to changes in currency rates model used 9 currencies, interest rates related to three currencies, and commodity prices related to five commodities. This model does not purport to represent what actually will be experienced by the Company. This model does not include certain hedge transactions, because the Company believes their inclusion would not materially impact the results. The following table summarizes the possible adverse and positive impacts to after-tax earnings related to these exposures.

	Adverse impact on after-tax earnings		Positive impact on after-tax earnings	
(Millions)	**2019**	**2018**	**2019**	**2018**
Foreign exchange rates	**$ (133)**	$ (290)	**$ 137**	$ 305
Interest rates	**(11)**	(20)	**10**	17
Commodity prices	**(2)**	(6)	**1**	8

An analysis of the global exposures related to purchased components and materials is performed at each year-end. A one percent price change would result in a pre-tax cost or savings of approximately $70 million per year. The global energy exposure is such that a ten percent price change would result in a pre-tax cost or savings of approximately $40 million per year. Global energy exposure includes energy costs used in 3M production and other facilities, primarily electricity and natural gas.

Item 8. Financial Statements and Supplementary Data.

Index to Financial Statements

A complete summary of Form 10-K content, including the index to financial statements, is found at the beginning of this document.

Management's Responsibility for Financial Reporting

Management is responsible for the integrity and objectivity of the financial information included in this report. The financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. Where necessary, the financial statements reflect estimates based on management's judgment.

Management has established and maintains a system of internal control over financial reporting for the Company and its subsidiaries. This system and its established accounting procedures and related controls are designed to provide reasonable assurance that assets are safeguarded, that the books and records properly reflect all transactions, that policies and procedures are implemented by qualified personnel, and that published financial statements are properly prepared and fairly presented. The Company's system of internal control over financial reporting is supported by widely communicated written policies, including business conduct policies, which are designed to require all employees to maintain high ethical standards in the conduct of Company affairs. Internal auditors continually review the accounting and control system.

3M Company

Management's Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining an adequate system of internal control over financial reporting. Management conducted an assessment of the Company's internal control over financial reporting based on the framework established by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control — Integrated Framework (2013)*. Management's assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 excluded M*Modal and Acelity, which were acquired by the Company in February 2019 and October 2019, respectively. The total assets and total net sales of M*Modal and Acelity collectively represent 2 percent and 2 percent, respectively, of the related consolidated financial statement amounts as of December 31, 2019. Companies are allowed to exclude acquisitions from their assessment of internal control over financial reporting during the year of acquisition while integrating the acquired company under guidelines established by the Securities and Exchange Commission. Based on the assessment, management concluded that, as of December 31, 2019, the Company's internal control over financial reporting is effective.

The Company's internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein, which expresses an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019.

3M Company

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of 3M Company

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of 3M Company and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management’s Report on Internal Control Over Financial Reporting. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management’s Report on Internal Control Over Financial Reporting, management has excluded M*Modal and Acelity Inc. from its assessment of internal control over financial reporting as of December 31, 2019 because they were acquired by the Company in purchase business combinations during 2019. We have also excluded M*Modal and Acelity Inc. from our audit of internal control over financial reporting. M*Modal and Acelity Inc. are wholly-owned subsidiaries whose total assets and total net sales excluded from management’s assessment and our audit of internal control over financial reporting collectively represent 2 percent and 2 percent, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing a separate opinion on the critical audit matters or on the accounts or disclosures to which they relate.

Legal Proceedings Contingencies

As described in Note 16 to the consolidated financial statements, management records liabilities for legal proceedings in those instances where it can reasonably estimate the amount of the loss and when the liability is probable. Where the reasonable estimate of the probable loss is a range, management records the most likely estimate of the loss, or the low end of the range if there is no one best estimate. Management either discloses the amount of a possible loss or range of loss in excess of established accruals if estimable, or states that such an estimate cannot be made. Management discloses significant legal proceedings even where liability is not probable or the amount of the liability is not estimable, or both, if management believes there is at least a reasonable possibility that a loss may be incurred.

The principal considerations for our determination that performing procedures relating to legal proceedings contingencies is a critical audit matter are there was significant judgment by management when assessing the likelihood of a loss being incurred and when estimating the loss or range of loss for each claim, which in turn led to significant auditor judgment, subjectivity, and effort in performing procedures and evaluating management's assessment of the liabilities and disclosures associated with legal proceedings.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's evaluation of the liability related to legal proceedings, including controls over determining the likelihood of a loss and whether the amount of loss can be reasonably estimated, as well as financial statement disclosures. These procedures also included, among others, obtaining and evaluating the letters of audit inquiry with internal and external legal counsel, evaluating the reasonableness of management's assessment regarding whether an unfavorable outcome is reasonably possible or probable and reasonably estimable, and evaluating the sufficiency of the Company's disclosures related to legal proceedings.

Valuation of Acelity Inc. Intangible Assets

As described in Note 3 to the consolidated financial statements, the Company completed the acquisition of Acelity Inc. resulting in net assets acquired of approximately $4.3 billion, including $3.6 billion of intangible assets. Management disclosed that the fair value of intangible assets acquired involved the use of significant estimates and assumptions with respect to projected future cash flows, associated discount rates used to calculate present value, asset life cycles, royalty rates, and customer retention rates. As disclosed by management, the allocation of purchase consideration related to Acelity Inc. is considered preliminary with provisional amounts.

The principal considerations for our determination that performing procedures relating to the valuation of Acelity Inc. intangible assets is a critical audit matter are there was significant auditor judgment and subjectivity in applying procedures relating to the fair value measurement of intangible assets acquired due to the significant amount of judgment by management when developing the estimate; significant audit effort was required in evaluating the significant assumptions relating to the estimate, such as the projected future cash flows, associated discount rates used to calculate present value, asset life cycles, royalty rates, and customer retention rates; and the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the acquisition accounting, including controls over management's valuation of the intangible assets and controls over development of the assumptions related to the valuation of the intangible assets, including projected future cash flows, associated discount rates used to calculate present value, asset life cycles, royalty rates, and customer retention rates. These procedures also included, among others, reading the purchase agreement and testing management's process for estimating the fair value of intangible assets. Testing management's process included evaluating the appropriateness of the valuation methods and the reasonableness of significant assumptions, including the projected future cash flows, associated discount rates used to calculate present value, asset life cycles, royalty rates, and customer retention rates. Evaluating the reasonableness of the projected cash flows, asset life cycles, royalty rates, and customer retention rates involved considering economic and industry factors and the past performance of the acquired businesses. The discount rates were evaluated by considering the cost of capital of comparable businesses and other industry factors. Professionals with specialized skill and knowledge were used to assist in the evaluation of management's valuation methods and certain significant assumptions.

/s/ PricewaterhouseCoopers LLP
Minneapolis, Minnesota
February 6, 2020

We have served as the Company's auditor since 1975.

3M Company and Subsidiaries
Consolidated Statement of Income
Years ended December 31

(Millions, except per share amounts)	2019	2018	2017
Net sales	**$ 32,136**	$ 32,765	$ 31,657
Operating expenses			
Cost of sales	**17,136**	16,682	16,055
Selling, general and administrative expenses	**7,029**	7,602	6,626
Research, development and related expenses	**1,911**	1,821	1,870
Gain on sale of businesses	**(114)**	(547)	(586)
Total operating expenses	**25,962**	25,558	23,965
Operating income	**6,174**	7,207	7,692
Other expense (income), net	**462**	207	144
Income before income taxes	**5,712**	7,000	7,548
Provision for income taxes	**1,130**	1,637	2,679
Net income including noncontrolling interest	**$ 4,582**	$ 5,363	$ 4,869
Less: Net income attributable to noncontrolling interest	**12**	14	11
Net income attributable to 3M	**$ 4,570**	$ 5,349	$ 4,858
Weighted average 3M common shares outstanding — basic	**577.0**	588.5	597.5
Earnings per share attributable to 3M common shareholders — basic	**$ 7.92**	$ 9.09	$ 8.13
Weighted average 3M common shares outstanding — diluted	**585.1**	602.0	612.7
Earnings per share attributable to 3M common shareholders — diluted	**$ 7.81**	$ 8.89	$ 7.93

The accompanying Notes to Consolidated Financial Statements are an integral part of this statement.

3M Company and Subsidiaries
Consolidated Statement of Comprehensive Income
Years ended December 31

(Millions)	2019	2018	2017
Net income including noncontrolling interest	**$ 4,582**	$ 5,363	$ 4,869
Other comprehensive income (loss), net of tax:			
Cumulative translation adjustment	**211**	(467)	373
Defined benefit pension and postretirement plans adjustment	**(560)**	444	52
Cash flow hedging instruments	**(72)**	176	(203)
Total other comprehensive income (loss), net of tax	**(421)**	153	222
Comprehensive income (loss) including noncontrolling interest	**4,161**	5,516	5,091
Comprehensive (income) loss attributable to noncontrolling interest	**(11)**	(8)	(14)
Comprehensive income (loss) attributable to 3M	**$ 4,150**	$ 5,508	$ 5,077

The accompanying Notes to Consolidated Financial Statements are an integral part of this statement.

3M Company and Subsidiaries
Consolidated Balance Sheet
At December 31

(Dollars in millions, except per share amount)	2019	2018
Assets		
Current assets		
Cash and cash equivalents	$ 2,353	$ 2,853
Marketable securities — current	98	380
Accounts receivable — net of allowances of $161 and $95	4,791	5,020
Inventories		
Finished goods	2,003	2,120
Work in process	1,194	1,292
Raw materials and supplies	937	954
Total inventories	4,134	4,366
Prepaids	704	741
Other current assets	891	349
Total current assets	12,971	13,709
Property, plant and equipment	26,124	24,873
Less: Accumulated depreciation	(16,791)	(16,135)
Property, plant and equipment — net	9,333	8,738
Operating lease right of use assets	858	—
Goodwill	13,444	10,051
Intangible assets — net	6,379	2,657
Other assets	1,674	1,345
Total assets	$ 44,659	$ 36,500
Liabilities		
Current liabilities		
Short-term borrowings and current portion of long-term debt	$ 2,795	$ 1,211
Accounts payable	2,228	2,266
Accrued payroll	702	749
Accrued income taxes	194	243
Operating lease liabilities — current	247	—
Other current liabilities	3,056	2,775
Total current liabilities	9,222	7,244
Long-term debt	17,518	13,411
Pension and postretirement benefits	3,911	2,987
Operating lease liabilities	607	—
Other liabilities	3,275	3,010
Total liabilities	$ 34,533	$ 26,652
Commitments and contingencies (Note 16)		
Equity		
3M Company shareholders' equity:		
Common stock par value, $.01 par value; 944,033,056 shares issued	$ 9	$ 9
Shares outstanding - 2019: 575,184,835		
Shares outstanding - 2018: 576,575,168		
Additional paid-in capital	5,907	5,643
Retained earnings	42,135	40,636
Treasury stock	(29,849)	(29,626)
Accumulated other comprehensive income (loss)	(8,139)	(6,866)
Total 3M Company shareholders' equity	10,063	9,796
Noncontrolling interest	63	52
Total equity	$ 10,126	$ 9,848
Total liabilities and equity	$ 44,659	$ 36,500

The accompanying Notes to Consolidated Financial Statements are an integral part of this statement.

3M Company and Subsidiaries
Consolidated Statement of Changes in Equity
Years Ended December 31

		3M Company Shareholders				
(Dollars in millions, except per share amounts)	Total	Common Stock and Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Non-controlling Interest
Balance at December 31, 2016	**$ 10,343**	**$ 5,070**	**$ 37,907**	**$ (25,434)**	**$ (7,245)**	**$ 45**
Net income	4,869		4,858			11
Other comprehensive income (loss), net of tax:						
Cumulative translation adjustment	373				370	3
Defined benefit pension and post-retirement plans adjustment	52				52	—
Cash flow hedging instruments - unrealized gain (loss)	(203)				(203)	—
Total other comprehensive income (loss), net of tax	222					
Dividends declared ($4.70 per share, Note 8)	(2,803)		(2,803)			
Stock-based compensation	291	291				
Reacquired stock	(2,044)			(2,044)		
Issuances pursuant to stock option and benefit plans	744		(847)	1,591		
Balance at December 31, 2017	**$ 11,622**	**$ 5,361**	**$ 39,115**	**$ (25,887)**	**$ (7,026)**	**$ 59**
Net income	5,363		5,349			14
Other comprehensive income (loss), net of tax:						
Cumulative translation adjustment	(467)				(461)	(6)
Defined benefit pension and post-retirement plans adjustment	444				444	—
Cash flow hedging instruments - unrealized gain (loss)	176				176	—
Total other comprehensive income (loss), net of tax	153					
Dividends declared ($5.44 per share, Note 8)	(3,193)		(3,193)			
Transfer of ownership involving non-wholly owned subsidiaries	—		14		1	(15)
Stock-based compensation	291	291				
Reacquired stock	(4,888)			(4,888)		
Issuances pursuant to stock option and benefit plans	500		(649)	1,149		
Balance at December 31, 2018	**$ 9,848**	**$ 5,652**	**$ 40,636**	**$ (29,626)**	**$ (6,866)**	**$ 52**
Impact of adoption of ASU No. 2018-02 (See Note 1)	**—**		**853**		**(853)**	
Impact of adoption of ASU No. 2016-02 (See Note 1)	**14**		**14**			
Net income	**4,582**		**4,570**			**12**
Other comprehensive income (loss), net of tax:						
Cumulative translation adjustment	**211**				**212**	**(1)**
Defined benefit pension and post-retirement plans adjustment	**(560)**				**(560)**	**—**
Cash flow hedging instruments - unrealized gain (loss)	**(72)**				**(72)**	**—**
Total other comprehensive income (loss), net of tax	**(421)**					
Dividends declared ($5.76 per share, Note 8)	**(3,316)**		**(3,316)**			
Stock-based compensation	**264**	**264**				
Reacquired stock	**(1,381)**			**(1,381)**		
Issuances pursuant to stock option and benefit plans	**536**		**(622)**	**1,158**		
Balance at December 31, 2019	**$ 10,126**	**$ 5,916**	**$ 42,135**	**$ (29,849)**	**$ (8,139)**	**$ 63**

Supplemental share information	2019	2018	2017
Treasury stock			
Beginning balance	**367,457,888**	349,148,819	347,306,778
Reacquired stock	**7,575,647**	23,526,293	10,209,963
Issuances pursuant to stock options and benefit plans	**(6,185,314)**	(5,217,224)	(8,367,922)
Ending balance	**368,848,221**	367,457,888	349,148,819

The accompanying Notes to Consolidated Financial Statements are an integral part of this statement.

3M Company and Subsidiaries
Consolidated Statement of Cash Flows
Years ended December 31

(Millions)	2019	2018	2017
Cash Flows from Operating Activities			
Net income including noncontrolling interest	**$ 4,582**	$ 5,363	$ 4,869
Adjustments to reconcile net income including noncontrolling interest to net cash provided by operating activities			
Depreciation and amortization	**1,593**	1,488	1,544
Company pension and postretirement contributions	**(210)**	(370)	(967)
Company pension and postretirement expense	**357**	410	334
Stock-based compensation expense	**278**	302	324
Gain on sale of businesses	**(111)**	(545)	(586)
Deferred income taxes	**(273)**	(57)	107
Loss on deconsolidation of Venezuelan subsidiary	**162**	—	—
Changes in assets and liabilities			
Accounts receivable	**345**	(305)	(245)
Inventories	**370**	(509)	(387)
Accounts payable	**(117)**	408	24
Accrued income taxes (current and long-term)	**205**	134	967
Other — net	**(111)**	120	256
Net cash provided by (used in) operating activities	**7,070**	6,439	6,240
Cash Flows from Investing Activities			
Purchases of property, plant and equipment (PP&E)	**(1,699)**	(1,577)	(1,373)
Proceeds from sale of PP&E and other assets	**123**	262	49
Acquisitions, net of cash acquired	**(4,984)**	13	(2,023)
Purchases of marketable securities and investments	**(1,635)**	(1,828)	(2,152)
Proceeds from maturities and sale of marketable securities and investments	**1,443**	2,497	1,354
Proceeds from sale of businesses, net of cash sold	**236**	846	1,065
Other — net	**72**	9	(6)
Net cash provided by (used in) investing activities	**(6,444)**	222	(3,086)
Cash Flows from Financing Activities			
Change in short-term debt — net	**(316)**	(284)	578
Repayment of debt (maturities greater than 90 days)	**(2,716)**	(1,034)	(962)
Proceeds from debt (maturities greater than 90 days)	**6,281**	2,251	1,987
Purchases of treasury stock	**(1,407)**	(4,870)	(2,068)
Proceeds from issuance of treasury stock pursuant to stock option and benefit plans	**547**	485	734
Dividends paid to shareholders	**(3,316)**	(3,193)	(2,803)
Other — net	**(197)**	(56)	(121)
Net cash provided by (used in) financing activities	**(1,124)**	(6,701)	(2,655)
Effect of exchange rate changes on cash and cash equivalents	**(2)**	(160)	156
Net increase (decrease) in cash and cash equivalents	**(500)**	(200)	655
Cash and cash equivalents at beginning of year	**2,853**	3,053	2,398
Cash and cash equivalents at end of period	**$ 2,353**	$ 2,853	$ 3,053

The accompanying Notes to Consolidated Financial Statements are an integral part of this statement.

Notes to Consolidated Financial Statements

NOTE 1. Significant Accounting Policies

Consolidation: 3M is a diversified global manufacturer, technology innovator and marketer of a wide variety of products. All applicable subsidiaries are consolidated. All intercompany transactions are eliminated. As used herein, the term “3M” or “Company” refers to 3M Company and subsidiaries unless the context indicates otherwise.

Basis of presentation: Certain amounts in the prior years’ consolidated financial statements have been reclassified to conform to the current year presentation.

Foreign currency translation: Local currencies generally are considered the functional currencies outside the United States with the exception of 3M’s subsidiaries in Argentina, the economy of which was considered highly inflationary beginning in 2018, and accordingly the financial statements of these subsidiaries are remeasured as if their functional currency is that of their parent. Assets and liabilities for operations in local-currency environments are translated at month-end exchange rates of the period reported. Income and expense items are translated at average monthly currency exchange rates in effect during the period. Cumulative translation adjustments are recorded as a component of accumulated other comprehensive income (loss) in shareholders’ equity.

3M had a consolidating subsidiary in Venezuela, the financial statements of which were remeasured as if its functional currency were that of its parent because Venezuela’s economic environment is considered highly inflationary. The operating income of this subsidiary was immaterial as a percent of 3M’s consolidated operating income for the periods presented. In light of circumstances, including the country’s unstable environment and heightened unrest leading to sustained lack of demand, and expectation that these circumstances will continue for the foreseeable future, during May 2019, 3M concluded it no longer met the criteria of control in order to continue consolidating its Venezuelan operations. As a result, as of May 31, 2019, the Company began reflecting its interest in the Venezuelan subsidiary as an equity investment that does not have a readily determinable fair value. This resulted in a pre-tax charge of $162 million within other expense (income) in the second quarter of 2019. The charge primarily relates to $144 million of foreign currency translation losses associated with foreign currency movements before Venezuela was accounted for as a highly inflationary economy and pension elements previously included in accumulated other comprehensive loss along with write-down of intercompany receivable and investment balances associated with this subsidiary. Beginning May 31, 2019, 3M’s consolidated balance sheets and statements of operations no longer include the Venezuelan entity’s operations other than an immaterial equity investment and associated loss or income thereon largely only to the extent, if any, that 3M provides support or materials and receives funding or dividends.

Use of estimates: The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from these estimates.

Cash and cash equivalents: Cash and cash equivalents consist of cash and temporary investments with maturities of three months or less when acquired.

Marketable securities: Marketable securities include available-for-sale debt securities and are recorded at fair value. Cost of securities sold use the first in, first out (FIFO) method. The classification of marketable securities as current or non-current is based on the availability for use in current operations. 3M reviews impairments associated with its marketable securities in accordance with the measurement guidance provided by ASC 320*, Investments-Debt and Equity Securities*, when determining the classification of the impairment as “temporary” or “other-than-temporary”. A temporary impairment charge results in an unrealized loss being recorded in accumulated other comprehensive income as a component of shareholders’ equity. Such an unrealized loss does not reduce net income for the applicable accounting period because the loss is not viewed as other-than-temporary. The factors evaluated to differentiate between temporary and other-than-temporary include the projected future cash flows, credit ratings actions, and assessment of the credit quality of the underlying collateral, as well as other factors. Amounts are reclassified out of accumulated other comprehensive income and into earnings upon sale or “other-than-temporary” impairment.

Investments: All equity securities that do not result in consolidation and are not accounted for under the equity method are measured at fair value with changes therein reflected in net income. 3M utilizes the measurement alternative for equity investments that do not have readily determinable fair values and measures these investments at cost less impairment plus or minus observable price changes in orderly transactions. The balance of these securities is disclosed in Note 7.

Other assets: Other assets include deferred income taxes, product and other insurance receivables, the cash surrender value of life insurance policies, medical equipment in rental arrangements utilized primarily by hospitals and other medical clinics, prepaid pension and postretirement and other long-term assets. Investments in life insurance are reported at the amount that could be realized under contract at the balance sheet date, with any changes in cash surrender value or contract value during the period accounted for as an adjustment of premiums paid. Cash outflows and inflows associated with life insurance activity are included in “Purchases of marketable securities and investments” and “Proceeds from maturities and sale of marketable securities and investments,” respectively.

Inventories: Inventories are stated at the lower of cost or net realizable value (NRV), which is defined as estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation market. Cost is determined on a first-in, first-out basis.

Property, plant and equipment: Property, plant and equipment, including capitalized interest and internal direct engineering costs, are recorded at cost. Depreciation of property, plant and equipment generally is computed using the straight-line method based on the estimated useful lives of the assets. The estimated useful lives of buildings and improvements primarily range from ten to forty years, with the majority in the range of twenty to forty years. The estimated useful lives of machinery and equipment primarily range from three to fifteen years, with the majority in the range of five to ten years. Fully depreciated assets other than capitalized internally developed software are retained in property, plant and equipment and accumulated depreciation accounts until disposal. Upon disposal, assets and related accumulated depreciation are removed from the accounts and the net amount, less proceeds from disposal, is charged or credited to operations. Property, plant and equipment amounts are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset (asset group) may not be recoverable. An impairment loss would be recognized when the carrying amount of an asset exceeds the estimated undiscounted future cash flows expected to result from the use of the asset and its eventual disposition. The amount of the impairment loss recorded is calculated by the excess of the asset’s carrying value over its fair value. Fair value is generally determined using a discounted cash flow analysis.

Conditional asset retirement obligations: A liability is initially recorded at fair value for an asset retirement obligation associated with the retirement of tangible long-lived assets in the period in which it is incurred if a reasonable estimate of fair value can be made. Conditional asset retirement obligations exist for certain long-term assets of the Company. The obligation is initially measured at fair value using expected present value techniques. Over time the liabilities are accreted for the change in their present value and the initial capitalized costs are depreciated over the remaining useful lives of the related assets. The asset retirement obligation liability was $137 million and $122 million at December 31, 2019 and 2018, respectively.

Goodwill: Goodwill is the excess of cost of an acquired entity over the amounts assigned to assets acquired and liabilities assumed in a business combination. Goodwill is not amortized. Goodwill is tested for impairment annually in the fourth quarter of each year, and is tested for impairment between annual tests if an event occurs or circumstances change that would indicate the carrying amount may be impaired. Impairment testing for goodwill is done at a reporting unit level, with all goodwill assigned to a reporting unit. Reporting units are one level below the business segment level, but are required to be combined when reporting units within the same segment have similar economic characteristics. 3M did not combine any of its reporting units for impairment testing. The impairment loss is measured as the amount by which the carrying value of the reporting unit’s net assets exceeds its estimated fair value, not to exceed the carrying value of the reporting unit’s goodwill. The estimated fair value of a reporting unit is determined using earnings for the reporting unit multiplied by a price/earnings ratio for comparable industry groups or by using a discounted cash flow analysis. Companies have the option to first assess qualitative factors to determine whether the fair value of a reporting unit is not “more likely than not” less than its carrying amount, which is commonly referred to as “Step 0”. 3M has chosen not to apply Step 0 for its annual goodwill assessments.

Intangible assets: Intangible asset types include customer related, patents, other technology-based, tradenames and other intangible assets acquired from an independent party. Intangible assets with a definite life are amortized over a period ranging from four to twenty years on a systematic and rational basis (generally straight line) that is representative of the asset’s use. The estimated useful lives vary by category, with customer-related largely between twelve to nineteen years, patents largely between six to seventeen years, other technology-based largely between six to fifteen years, definite lived tradenames largely between six and twenty years, and other intangibles largely between five to thirteen years. Intangible assets are removed from their respective gross asset and accumulated amortization accounts when they are no longer in use. Refer to Note 4 for additional details on the gross amount and accumulated amortization of the Company's intangible assets. Costs related to internally developed intangible assets, such as patents, are expensed as incurred, within "Research, development and related expenses."

Intangible assets with a definite life are tested for impairment whenever events or circumstances indicate that the carrying amount of an asset (asset group) may not be recoverable. An impairment loss is recognized when the carrying amount exceeds the estimated undiscounted cash flows from the asset's or asset group's ongoing use and eventual disposition. If an impairment is identified, the amount of the impairment loss recorded is calculated by the excess of the asset's carrying value over its fair value. Fair value is generally determined using a discounted cash flow analysis.

Intangible assets with an indefinite life, namely certain tradenames, are not amortized. Indefinite-lived intangible assets are tested for impairment annually, and are tested for impairment between annual tests if an event occurs or circumstances change that would indicate that the carrying amount may be impaired. An impairment loss would be recognized when the fair value is less than the carrying value of the indefinite-lived intangible asset.

Restructuring actions: Restructuring actions generally include significant actions involving employee-related severance charges, contract termination costs, and impairment or accelerated depreciation/amortization of assets associated with such actions. Employee-related severance charges are largely based upon distributed employment policies and substantive severance plans. These charges are reflected in the quarter when the actions are probable and the amounts are estimable, which typically is when management approves the associated actions. Severance amounts for which affected employees in certain circumstances are required to render service in order to receive benefits at their termination dates were measured at the date such benefits were communicated to the applicable employees and recognized as expense over the employees' remaining service periods. Contract termination and other charges primarily reflect costs to terminate a contract before the end of its term (measured at fair value at the time the Company provided notice to the counterparty) or costs that will continue to be incurred under the contract for its remaining term without economic benefit to the Company. Asset impairment charges related to intangible assets and property, plant and equipment reflect the excess of the assets' carrying values over their fair values.

Revenue (sales) recognition: The Company sells a wide range of products to a diversified base of customers around the world and has no material concentration of credit risk or significant payment terms extended to customers. The vast majority of 3M's customer arrangements contain a single performance obligation to transfer manufactured goods as the promise to transfer the individual goods is not separately identifiable from other promises in the contracts and, therefore, not distinct. However, to a limited extent 3M also enters into customer arrangements that involve intellectual property out-licensing, multiple performance obligations (such as equipment, installation and service), software with coterminous post-contract support, services and non-standard terms and conditions.

The Company recognizes revenue in light of the guidance of Accounting Standards Codification (ASC) 606, *Revenue from Contracts with* Customers. Revenue is recognized when control of goods has transferred to customers. For the majority of the Company's customer arrangements, control transfers to customers at a point-in-time when goods/services have been delivered as that is generally when legal title, physical possession and risks and rewards of goods/services transfers to the customer. In limited arrangements, control transfers over time as the customer simultaneously receives and consumes the benefits as 3M completes the performance obligation(s).

Revenue is recognized at the transaction price which the Company expects to be entitled. When determining the transaction price, 3M estimates variable consideration applying the portfolio approach practical expedient under ASC 606. The main sources of variable consideration for 3M are customer rebates, trade promotion funds, and cash discounts. These sales incentives are recorded as a reduction to revenue at the time of the initial sale using the most-likely amount estimation method. The most-likely amount method is based on the single most likely outcome from a range of possible consideration outcomes. The range of possible consideration outcomes are primarily derived from the following inputs: sales terms, historical experience, trend analysis, and projected market conditions in the various markets served. Because 3M serves numerous markets, the sales incentive programs offered vary across businesses, but the most common incentive relates to amounts paid or credited to customers for achieving defined volume levels or growth objectives. There are no material instances where variable consideration is constrained and not recorded at the initial time of sale. Free goods are accounted for as an expense and recorded in cost of sales. Product returns are recorded as a reduction to revenue based on anticipated sales returns that occur in the normal course of business. 3M primarily has assurance-type warranties that do not result in separate performance obligations. Sales, use, value-added, and other excise taxes are not recognized in revenue. The Company has elected to present revenue net of sales taxes and other similar taxes.

For substantially all arrangements recognized over time, the Company applies the "right to invoice" practical expedient. As a result, 3M recognizes revenue at the invoice amount when the entity has a right to invoice a customer at an amount that corresponds directly with the value to the customer of the Company's performance completed to date.

For contracts with multiple performance obligations, the Company allocates the contract's transaction price to each performance obligation using 3M's best estimate of the standalone selling price of each distinct good or service in the contract.

The Company did not recognize any material revenue in the current reporting period for performance obligations that were fully satisfied in previous periods.

The Company does not have material unfulfilled performance obligation balances for contracts with an original length greater than one year in any years presented. Additionally, the Company does not have material costs related to obtaining a contract with amortization periods greater than one year for any year presented.

3M applies ASC 606 utilizing the following allowable exemptions or practical expedients:

- Exemption to not disclose the unfulfilled performance obligation balance for contracts with an original length of one year or less.
- Practical expedient relative to costs of obtaining a contract by expensing sales commissions when incurred because the amortization period would have been one year or less.
- Portfolio approach practical expedient relative to estimation of variable consideration.
- "Right to invoice" practical expedient based on 3M's right to invoice the customer at an amount that reasonably represents the value to the customer of 3M's performance completed to date.
- Election to present revenue net of sales taxes and other similar taxes.
- Sales-based royalty exemption permitting future intellectual property out-licensing royalty payments to be excluded from the otherwise required remaining performance obligations disclosure

The Company recognizes revenue from the rental of durable medical devices in light of the guidance of ASC 842, *Leases*. The Company recognizes rental revenue based on the length of time a device is used by the patient/organization, (i) at the contracted rental rate for contracted customers and (ii) generally, retail price for non-contracted customers. The leases are short-term in nature, generally providing for daily or monthly pricing, and are all classified as operating leases.

Accounts receivable and allowances: Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company maintains allowances for bad debts, cash discounts, product returns and various other items. The allowance for doubtful accounts and product returns is based on the best estimate of the amount of probable credit losses in existing accounts receivable and anticipated sales returns. The Company determines the allowances based on historical write-off experience by industry and regional economic data and historical sales returns. The Company reviews the allowance for doubtful accounts monthly. The Company does not have any significant off-balance-sheet credit exposure related to its customers.

Advertising and merchandising: These costs are charged to operations in the period incurred, and totaled $348 million in 2019, $396 million in 2018 and $411 million in 2017.

Research, development and related expenses: These costs are charged to operations in the period incurred and are shown on a separate line of the Consolidated Statement of Income. Research, development and related expenses totaled $1.911 billion in 2019, $1.821 billion in 2018 and $1.870 billion in 2017. Research and development expenses, covering basic scientific research and the application of scientific advances in the development of new and improved products and their uses, totaled $1.253 billion in 2019, $1.253 billion in 2018 and $1.352 billion in 2017. Related expenses primarily include technical support; internally developed patent costs, which include costs and fees incurred to prepare, file, secure and maintain patents; amortization of externally acquired patents and externally acquired in-process research and development; and gains/losses associated with certain corporate approved investments in R&D-related ventures, such as equity method effects and impairments.

Internal-use software: The Company capitalizes direct costs of services used in the development of, and external software acquired for use as, internal-use software. Amounts capitalized are amortized over a period of three to seven years, generally on a straight-line basis, unless another systematic and rational basis is more representative of the software's use. Amounts are reported as a component of either machinery and equipment or finance leases within property, plant and equipment. Fully depreciated internal-use software assets are removed from property, plant and equipment and accumulated depreciation accounts.

Environmental: Environmental expenditures relating to existing conditions caused by past operations that do not contribute to current or future revenues are expensed. Reserves for liabilities related to anticipated remediation costs are recorded on an undiscounted basis when they are probable and reasonably estimable, generally no later than the completion of feasibility studies, the Company's commitment to a plan of action, or approval by regulatory agencies. Environmental expenditures for capital projects that contribute to current or future operations generally are capitalized and depreciated over their estimated useful lives.

Income taxes: The provision for income taxes is determined using the asset and liability approach. Under this approach, deferred income taxes represent the expected future tax consequences of temporary differences between the carrying amounts and tax basis of assets and liabilities. The Company records a valuation allowance to reduce its deferred tax assets when uncertainty regarding their realizability exists. As of December 31, 2019 and 2018, the Company had valuation allowances of $158 million and $67 million on its deferred tax assets, respectively. The Company recognizes and measures its uncertain tax positions based on the rules under ASC 740, *Income Taxes*. As described in the "New Accounting Pronouncements" section, 3M adopted ASU No. 2018-02, *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. The Company's accounting policy for income taxes has been updated to indicate the uses of the portfolio approach for releasing income tax effects from accumulated other comprehensive loss.

Earnings per share: The difference in the weighted average 3M shares outstanding for calculating basic and diluted earnings per share attributable to 3M common shareholders is the result of the dilution associated with the Company's stock-based compensation plans. Certain options outstanding under these stock-based compensation plans during the years 2019, 2018 and 2017 were not included in the computation of diluted earnings per share attributable to 3M common shareholders because they would have had an anti-dilutive effect (8.9 million average options for 2019, 2.9 million average options for 2018, and 0.8 million average options for 2017). The computations for basic and diluted earnings per share for the years ended December 31 follow:

Earnings Per Share Computations

(Amounts in millions, except per share amounts)	2019	2018	2017
Numerator:			
Net income attributable to 3M	**$ 4,570**	$ 5,349	$ 4,858
Denominator:			
Denominator for weighted average 3M common shares outstanding – basic	**577.0**	588.5	597.5
Dilution associated with the Company's stock-based compensation plans	**8.1**	13.5	15.2
Denominator for weighted average 3M common shares outstanding – diluted	**585.1**	602.0	612.7
Earnings per share attributable to 3M common shareholders – basic	**$ 7.92**	$ 9.09	$ 8.13
Earnings per share attributable to 3M common shareholders – diluted	**$ 7.81**	$ 8.89	$ 7.93

Stock-based compensation: The Company recognizes compensation expense for its stock-based compensation programs, which include stock options, restricted stock, restricted stock units (RSUs), performance shares, and the General Employees' Stock Purchase Plan (GESPP). Under applicable accounting standards, the fair value of share-based compensation is determined at the grant date and the recognition of the related expense is recorded over the period in which the share-based compensation vests. However, with respect to income taxes, the related deduction from taxes payable is based on the award's intrinsic value at the time of exercise (for an option) or on the fair value upon vesting of the award (for RSUs), which can be either greater (creating an excess tax benefit) or less (creating a tax deficiency) than the deferred tax benefit recognized as compensation cost is recognized in the financial statements. These excess tax benefits/deficiencies are recognized as income tax benefit/expense in the statement of income and, within the statement of cash flows, are classified in operating activities in the same manner as other cash flows related to income taxes. The extent of excess tax benefits/deficiencies is subject to variation in 3M stock price and timing/extent of RSU vestings and employee stock option exercises.

Comprehensive income: Total comprehensive income and the components of accumulated other comprehensive income (loss) are presented in the Consolidated Statement of Comprehensive Income and the Consolidated Statement of Changes in Equity. Accumulated other comprehensive income (loss) is composed of foreign currency translation effects (including hedges of net investments in international companies), defined benefit pension and postretirement plan adjustments, unrealized gains and losses on available-for-sale debt securities, and unrealized gains and losses on cash flow hedging instruments. The Company uses the portfolio approach for releasing income tax effects from accumulated other comprehensive income.

Derivatives and hedging activities: All derivative instruments within the scope of ASC 815, *Derivatives and Hedging*, are recorded on the balance sheet at fair value. The Company uses interest rate swaps, currency and commodity price swaps, and foreign currency forward and option contracts to manage risks generally associated with foreign exchange rate, interest rate and commodity market volatility. All hedging instruments that qualify for hedge accounting are designated and effective as hedges, in accordance with U.S. generally accepted accounting principles. If the underlying hedged transaction ceases to exist, all changes in fair value of the related derivatives that have not been settled are recognized in current earnings. Instruments that do not qualify for hedge accounting are marked to market with changes recognized in current earnings. Cash flows from derivative instruments are classified in the statement of cash flows in the same category as the cash flows from the items subject to designated hedge or undesignated (economic) hedge relationships. The Company does not hold or issue derivative financial instruments for trading purposes and is not a party to leveraged derivatives.

Credit risk: The Company is exposed to credit loss in the event of nonperformance by counterparties in interest rate swaps, currency swaps, commodity price swaps, and forward and option contracts. However, the Company's risk is limited to the fair value of the instruments. The Company actively monitors its exposure to credit risk through the use of credit approvals and credit limits, and by selecting major international banks and financial institutions as counterparties. 3M enters into master netting arrangements with counterparties when possible to mitigate credit risk in derivative transactions. A master netting arrangement may allow each counterparty to net settle amounts owed between a 3M entity and the counterparty as a result of multiple, separate derivative transactions. The Company does not anticipate nonperformance by any of these counterparties. 3M has elected to present the fair value of derivative assets and liabilities within the Company's consolidated balance sheet on a gross basis even when derivative transactions are subject to master netting arrangements and may otherwise qualify for net presentation.

Fair value measurements: 3M follows ASC 820, *Fair Value Measurements and Disclosures*, with respect to assets and liabilities that are measured at fair value on a recurring basis and nonrecurring basis. Under the standard, fair value is defined as the exit price, or the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date. The standard also establishes a hierarchy for inputs used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs market participants would use in valuing the asset or liability developed based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the factors market participants would use in valuing the asset or liability developed based upon the best information available in the circumstances. The hierarchy is broken down into three levels. Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities. Level 2 inputs include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs (other than quoted prices) that are observable for the asset or liability, either directly or indirectly. Level 3 inputs are unobservable inputs for the asset or liability. Categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

Acquisitions: The Company accounts for business acquisitions in accordance with ASC 805, *Business Combinations*. This standard requires the acquiring entity in a business combination to recognize all (and only) the assets acquired and liabilities assumed in the transaction and establishes the acquisition-date fair value as the measurement objective for all assets acquired and liabilities assumed in a business combination. Certain provisions of this standard prescribe, among other things, the determination of acquisition-date fair value of consideration paid in a business combination (including contingent consideration) and the exclusion of transaction and acquisition-related restructuring costs from acquisition accounting. In addition to business combinations, 3M periodically acquires certain tangible and/or intangible assets and purchases interests in certain enterprises that do not otherwise qualify for accounting as business combinations. These transactions are largely reflected as additional asset purchase and investment activity.

Leases: 3M determines if an arrangement is a lease upon inception. A contract is or contains a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The right to control the use of an asset includes the right to obtain substantially all of the economic benefits of the underlying asset and the right to direct how and for what purpose the asset is used. 3M determines certain service agreements that contain the right to use an underlying asset are not leases because 3M does not control how and for what purpose the identified asset is used. Examples of such agreements include master supply agreements, product processing agreements, warehouse and distribution services agreements, power purchase agreements, and transportation purchase agreements.

After adoption of ASU 2016-02 and related standards, operating lease right-of-use assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. The discount rate used to calculate present value is 3M's incremental borrowing rate or, if available, the rate implicit in the lease. 3M determines the incremental borrowing rate for leases using a portfolio approach based primarily on the lease term and the economic environment of the applicable country or region.

As a lessee, the Company leases distribution centers, office space, land, and equipment. Certain 3M lease agreements include rental payments adjusted annually based on changes in an inflation index. 3M's leases do not contain material residual value guarantees or material restrictive covenants. Lease expense is recognized on a straight-line basis over the lease term.

Certain leases include one or more options to renew, with terms that can extend the lease term up to five years. 3M includes options to renew the lease as part of the right of use lease asset and liability when it is reasonably certain the Company will exercise the option. In addition, certain leases contain fair value purchase and termination options with an associated penalty. In general, 3M is not reasonably certain to exercise such options.

For the measurement and classification of its lease agreements, 3M groups lease and non-lease components into a single lease component for all underlying asset classes. Variable lease payments primarily include payments for non-lease components, such as maintenance costs, payments for leased assets used beyond their noncancelable lease term as adjusted for contractual options to terminate or renew, and payments for non-components such as sales tax. Certain 3M leases contain immaterial variable lease payments based on number of units produced.

New Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board (FASB) issued ASU No. 2016-02, *Leases*, and in July 2018, issued ASU No. 2018-10 and 2018-11 and in December 2018, issued ASU No. 2018-20 and in March 2019, issued ASU No. 2019-01, which amended the standard, replacing existing lease accounting guidance. The new standard introduced a lessee model that requires entities to recognize assets and liabilities for most leases, but recognize expenses on their income statements in a manner similar to current accounting. The ASU did not make fundamental changes to previous lessor accounting. However, it modified what qualifies as a sales-type and direct financing lease and related accounting and aligned a number of the underlying principles with those of the ASC 606 revenue standard, such as evaluating how collectability should be considered and determining when profit can be recognized. The guidance eliminated existing real estate-specific provisions and requires expanded qualitative and quantitative disclosures. For 3M, the ASU was effective January 1, 2019. As amended, the ASU provided for retrospective transition applied to earliest period presented or an adoption method by which entities would not need to recast the comparative periods presented. 3M did not recast prior periods as it adopted this ASU. As a result of adopting this ASU, 3M recorded approximately $0.8 billion of lease assets and lease liabilities related to its operating leases and a $14 million adjustment to retained earnings related to transition upon this ASU's adoption.

In June 2016, the FASB issued ASU No. 2016-13, *Measurement of Credit Losses on Financial Instruments*, which revises guidance for the accounting for credit losses on financial instruments within its scope, and in November 2018, issued ASU No. 2018-19 and in April 2019, issued ASU No. 2019-04 and in May 2019, issued ASU No. 2019-05, and in November 2019, issued ASU No. 2019-11, which amended the standard. The new standard introduces an approach, based on expected losses, to estimate credit losses on certain types of financial instruments and modifies the impairment model for available-for-sale debt securities. The new approach to estimating credit losses (referred to as the current expected credit losses model) applies to most financial assets measured at amortized cost and certain other instruments, including trade and other receivables, loans, held-to-maturity debt securities, net investments in leases and off-balance-sheet credit exposures. With respect to available-for-sale (AFS) debt securities, the ASU amends the current other-than-temporary impairment model. For such securities with unrealized losses, entities will still consider if a portion of any impairment is related only to credit losses and therefore recognized as a reduction in income. However, rather than also reflecting that credit loss amount as a permanent reduction in cost (amortized cost) basis of that AFS debt security, the ASU requires that credit losses be reflected as an allowance. As a result, under certain circumstances, a recovery in value could result in previous allowances, or portions thereof, reversing back into income. For 3M, this ASU is effective January 1, 2020, with early adoption permitted. Entities are required to apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. Based on the conducted analyses and due to the nature and extent of 3M's financial instruments in scope of this ASU (primarily accounts receivable) and the historical, current and expected credit quality of its customers, the Company does not expect this ASU to have a material impact on its consolidated results of operations and financial condition.

In August 2017, the FASB issued ASU No. 2017-12, *Targeted Improvements to Accounting for Hedging Activities* and in October 2018, issued ASU No. 2018-16, which amended the standard. The ASU amends existing guidance to simplify the application of hedge accounting in certain situations and allow companies to better align their hedge accounting with their risk management activities. Existing standards contain certain requirements for an instrument to qualify for hedge accounting relative to initial and ongoing assessments of hedge effectiveness. While an initial quantitative test to establish the hedge relationship is highly effective would still be required, the new ASU permits subsequent qualitative assessments for certain hedges instead of a quantitative test and expands the timeline for performing the initial quantitative assessment. The ASU also simplifies related accounting by eliminating the requirement to separately measure and report hedge ineffectiveness. Instead, for qualifying cash flow and net investment hedges, the entire change in fair value (including the amount attributable to ineffectiveness) will be recorded within other comprehensive income and reclassified to earnings in the same income statement line that is used to present the earnings effect of the hedged item when the hedged item affects earnings. For fair value hedges, generally, the entire change in fair value of the hedging instrument would also be presented in the same income statement line as the hedged item. The new standard also simplifies the accounting for fair value hedges of interest rate risks and expands an entity's ability to hedge nonfinancial and financial risk components. In addition, the guidance also eases certain documentation requirements, modifies the accounting for components excluded from the assessment of hedge effectiveness, and requires additional tabular disclosures of derivative and hedge-related information. For 3M, this ASU was effective January 1, 2019, with a modified retrospective transition resulting in a cumulative-effect adjustment recorded to the opening balance of retained earnings as of the adoption date. The adoption of this ASU did not have a material impact on 3M's consolidated results of operations and financial condition.

In February 2018, the FASB issued ASU No. 2018-02, *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which permits entities to reclassify, to retained earnings, the one-time income tax effects stranded in accumulated other comprehensive income (AOCI) arising from the change in the U.S. federal corporate tax rate as a result of the Tax Cuts and Jobs Act of 2017. An entity that elects to make this reclassification must consider all items in AOCI that have tax effects stranded as a result of the tax rate change, and must disclose the reclassification of these tax effects as well as the entity's policy for releasing income tax effects from AOCI. The ASU may be applied either retrospectively or as of the beginning of the period of adoption. For 3M, this ASU was effective January 1, 2019 and resulted in a reclassification between retained earnings and AOCI. As a result of adopting this ASU, the Company increased retained earnings by approximately $0.9 billion, with an offsetting increase to accumulated other comprehensive loss for the same amount.

In August 2018, the FASB issued ASU No. 2018-15, *Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, which aligns the accounting for implementation costs incurred in a cloud computing arrangement that is a service arrangement (i.e. hosting arrangement) with the guidance on capitalizing costs in ASC 350-40, *Internal-Use Software*. The ASU permits either a prospective or retrospective transition approach. For 3M, the ASU is effective as of January 1, 2020 and the Company plans on prospective adoption. While the Company utilized limited cloud-computing services where significant implementation costs were incurred for the periods presented, 3M will apply this ASU to its expected expanded use of applicable services.

In December 2019, the FASB issued ASU No. 2019-12, *Simplifying the Accounting for Income Taxes (Topic 740).* This ASU simplifies the accounting for income taxes by, among other things, eliminating certain existing exceptions related to the general approach in ASC 740 relating to franchise taxes, reducing complexity in the interim-period accounting for year-to-date loss limitations and changes in tax laws, and clarifying the accounting for transactions outside of business combination that result in a step-up in the tax basis of goodwill. The transition requirements are primarily prospective and the effective date for 3M is January 1, 2021, with early adoption permitted. As 3M does not have material activity associated with items such as franchise taxes or the types of transactions described above, does not typically have entities subject to relevant loss limitations and is not currently addressing enacted tax law changes for which this ASU applies, 3M does not expect this ASU to have a material impact on its consolidated results of operations and financial condition.

In January 2020, the FASB issued ASU No. 2020-01, *Clarifying the Interactions between Topic 321, Investments—Equity Securities*, *Topic 323, Investments—Equity Method and Joint Ventures, and Topic 815, Derivatives and Hedging*. This ASU clarifies that when accounting for certain equity securities, a Company should consider observable transactions before applying or upon discontinuing the equity method of accounting for the purposes of applying the measurement alternative. Further, this ASU notes when determining the accounting for certain derivatives, a Company should not consider if the underlying securities would be accounted for under the equity method or fair value option. The transition requirements are prospective and the effective date for 3M is January 1, 2021, with early adoption permitted. As 3M does not currently have a material amount of equity securities and equity method investments or relevant derivatives, 3M does not expect this ASU to have a material impact on its consolidated results of operations and financial condition, but will apply such guidance, where applicable, to future circumstances.

NOTE 2. Revenue

The Company adopted ASU No. 2014-09 and related standards (collectively, ASC 606, *Revenue from Contracts with Customers*), on January 1, 2018 using the modified retrospective method of adoption. Prior periods have not been restated. Due to the cumulative net impact of adopting ASC 606, the January 1, 2018 balance of retained earnings was increased by less than $2 million, primarily relating to the accelerated recognition for software installation service and training revenue. This cumulative impact reflects retrospective application of ASC 606 only to contracts that were not completed as of January 1, 2018. Further, the Company applied the practical expedient permitting the effect of all contract modifications that occurred before January 1, 2018 to be aggregated in the transition accounting. The impact of applying ASC 606 as compared with previous guidance applied to revenues and costs was not material for the year ended December 31, 2018.

Contract Balances:
Deferred revenue primarily relates to revenue that is recognized over time for one-year software license contracts. Refer to Note 7 for deferred revenue balances at December 31, 2018 and 2019. Approximately $600 million of the December 31, 2018 balance was recognized as revenue during the year ended December 31, 2019, while approximately $500 million of the December 31, 2017 balance was recognized as revenue during the year ended December 31, 2018.

Disaggregated revenue information:

The Company views the following disaggregated disclosures as useful to understanding the composition of revenue recognized during the respective reporting periods:

	Year ended December 31,		
Net Sales (Millions)	**2019**	**2018**	**2017**
Abrasives	**$ 1,414**	$ 1,533	$ 1,498
Automotive Aftermarket	**1,243**	1,374	1,388
Closure and Masking Systems	**1,111**	1,224	1,259
Communication Markets	**—**	175	387
Electrical Markets	**1,200**	1,243	1,196
Industrial Adhesives and Tapes	**2,737**	2,880	2,773
Personal Safety	**3,508**	3,606	2,960
Roofing Granules	**366**	353	372
Other Safety and Industrial	**28**	106	113
Total Safety and Industrial Business Segment	**$ 11,607**	$ 12,494	$ 11,946
Advanced Materials	**$ 1,246**	$ 1,236	$ 1,123
Automotive and Aerospace	**1,943**	2,109	2,047
Commercial Solutions	**1,760**	1,829	1,743
Electronics	**3,710**	3,965	3,842
Transportation Safety	**949**	957	1,103
Other Transportation and Electronics	**(6)**	10	3
Total Transportation and Electronics Business Segment	**$ 9,602**	$ 10,106	$ 9,861
Drug Delivery	**$ 406**	$ 444	$ 486
Food Safety	**341**	328	303
Health Information Systems	**1,177**	837	791
Medical Solutions	**3,406**	3,036	2,934
Oral Care	**1,321**	1,353	1,322
Separation and Purification Sciences	**790**	822	797
Other Health Care	**(10)**	6	2
Total Health Care Business Group	**$ 7,431**	$ 6,826	$ 6,635
Consumer Health Care	**$ 383**	$ 391	$ 425
Home Care	**991**	1,012	1,028
Home Improvement	**2,305**	2,233	2,118
Stationery and Office	**1,373**	1,396	1,386
Other Consumer	**37**	54	49
Total Consumer Business Group	**$ 5,089**	$ 5,086	$ 5,006
Corporate and Unallocated	**$ 110**	$ 50	$ 2
Elimination of Dual Credit	**(1,703)**	(1,797)	(1,793)
Total Company	**$ 32,136**	$ 32,765	$ 31,657

Net Sales (Millions)	Year ended December 31, 2019 United States	 Asia Pacific	 Europe, Middle East and Africa	 Latin America and Canada	 Other Unallocated	 Worldwide
Safety and Industrial	**$ 4,643**	**$ 2,877**	**$ 2,672**	**$ 1,419**	**$ (4)**	**$ 11,607**
Transportation and Electronics	**2,304**	**5,228**	**1,472**	**601**	**(3)**	**9,602**
Health Care	**3,597**	**1,490**	**1,743**	**603**	**(2)**	**7,431**
Consumer	**3,119**	**984**	**545**	**442**	**(1)**	**5,089**
Corporate and Unallocated	**100**	**—**	**1**	**9**	**—**	**110**
Elimination of Dual Credit	**(604)**	**(783)**	**(207)**	**(109)**	**—**	**(1,703)**
Total Company	**$ 13,159**	**$ 9,796**	**$ 6,226**	**$ 2,965**	**$ (10)**	**$ 32,136**

Net Sales (Millions)	Year ended December 31, 2018 United States	 Asia Pacific	 Europe, Middle East and Africa	 Latin America and Canada	 Other Unallocated	 Worldwide
Safety and Industrial	$ 4,921	$ 3,099	$ 3,001	$ 1,476	$ (3)	$ 12,494
Transportation and Electronics	2,406	5,514	1,578	610	(2)	10,106
Health Care	3,039	1,458	1,733	596	—	6,826
Consumer	3,045	1,021	574	447	(1)	5,086
Corporate and Unallocated	48	—	—	3	(1)	50
Elimination of Dual Credit	(619)	(838)	(232)	(108)	—	(1,797)
Total Company	$ 12,840	$ 10,254	$ 6,654	$ 3,024	$ (7)	$ 32,765

Net Sales (Millions)	Year ended December 31, 2017 United States	 Asia Pacific	 Europe, Middle East and Africa	 Latin America and Canada	 Other Unallocated	 Worldwide
Safety and Industrial	$ 4,605	$ 2,981	$ 2,869	$ 1,497	$ (6)	$ 11,946
Transportation and Electronics	2,372	5,328	1,550	615	(4)	9,861
Health Care	3,037	1,346	1,667	587	(2)	6,635
Consumer	2,943	1,029	585	450	(1)	5,006
Corporate and Unallocated	6	(1)	1	(4)	—	2
Elimination of Dual Credit	(591)	(874)	(216)	(112)	—	(1,793)
Total Company	$ 12,372	$ 9,809	$ 6,456	$ 3,033	$ (13)	$ 31,657

NOTE 3. Acquisitions and Divestitures

Acquisitions:

3M makes acquisitions of certain businesses from time to time that are aligned with its strategic intent with respect to, among other factors, growth markets and adjacent product lines or technologies. Goodwill resulting from business combinations is largely attributable to the existing workforce of the acquired businesses and synergies expected to arise after 3M's acquisition of these businesses.

2019 acquisitions:

In February 2019, 3M completed the acquisition of all of the ownership interests of the technology business of M*Modal for $0.7 billion of cash, net of cash acquired, and assumption of $0.3 billion of M*Modal's debt. Based in Pittsburgh, Pennsylvania, M*Modal is a leading healthcare technology provider of cloud-based, conversational artificial intelligence-powered systems that help physicians efficiently capture and improve the patient narrative. The allocation of purchase consideration related to M*Modal was completed in the fourth quarter of 2019. Net sales and operating loss (inclusive of transaction and integration costs) of this business included in

3M's consolidated results of operations in 2019 were approximately $300 million and $25 million, respectively. M*Modal is reported within the Company's Health Care business.

In October 2019, 3M completed the acquisition of all of the ownership interests of Acelity Inc. and its KCI subsidiaries for consideration of $4.5 billion net of cash acquired as shown in the table below, and assumption of $2.3 billion of debt (see also Note 12). Acelity is a leading global medical technology company focused on advanced wound care and specialty surgical applications marketed under the KCI brand. The allocation of purchase consideration related to Acelity Inc. and its KCI subsidiaries is considered preliminary with provisional amounts primarily related to intangible assets, working capital, certain tax-related and contingent liability amounts. 3M expects to finalize the allocation of purchase price within the one-year measurement-period following the acquisition. Net sales and operating loss (inclusive of transaction and integration costs) of this business included in 3M's consolidated results of operations in 2019 were approximately $350 million and $45 million, respectively. Acelity is reported within the Company's Health Care business.

Proforma information related to these acquisitions has not been included as the impact on the Company's consolidated results of operations was not considered material. The following table shows the impact on the consolidated balance sheet of the purchase price allocations related to the 2019 acquisitions and assigned finite-lived asset weighted average lives.

(Millions) Asset (Liability)	2019 Acquisition Activity M*Modal	Acelity	Total	Finite-Lived Intangible-Asset Weighted-Average Lives (Years)
Accounts receivable	$ 75	$ 295	$ 370	
Inventory	—	186	186	
Other current assets	2	65	67	
Property, plant, and equipment	8	147	155	
Purchased finite-lived intangible assets:				
Customer related intangible assets	275	1,760	2,035	18
Other technology-based intangible assets	160	1,390	1,550	10
Definite-lived tradenames	11	485	496	16
Purchased goodwill	517	2,952	3,469	
Other assets	58	73	131	
Accounts payable and other liabilities	(127)	(438)	(565)	
Interest bearing debt	(251)	(2,322)	(2,573)	
Deferred tax asset/(liability) and accrued income taxes	(24)	(288)	(312)	
Net assets acquired	$ 704	$ 4,305	$ 5,009	
Supplemental information:				
Cash paid	$ 708	$ 4,486	$ 5,194	
Less: Cash acquired	4	206	210	
Cash paid, net of cash acquired	$ 704	$ 4,280	$ 4,984	
Consideration payable	—	25	25	
	$ 704	$ 4,305	$ 5,009	

Purchased identifiable finite-lived intangible assets related to acquisitions which closed in 2019 totaled $4.081 billion. The associated finite-lived intangible assets acquired will be amortized on a systematic and rational basis (generally straight line) over a weighted-average life of 14 years (lives ranging from 6 to 19 years).

2018 acquisition:

There were no acquisitions that closed during 2018.

2017 acquisitions:

In September 2017, 3M purchased all of the ownership interests of Elution Technologies, LLC, a Vermont-based manufacturer of test kits that help enable food and beverage companies ensure their products are free from certain potentially harmful allergens such as peanuts, soy or milk. Elution is reported within the Company's Health Care business.

In October 2017, 3M completed the acquisition of the underlying legal entities and associated assets of Scott Safety, which is headquartered in Monroe, North Carolina, from Johnson Controls for $2.0 billion of cash, net of cash acquired. Scott Safety is a premier manufacturer of innovative products, including self-contained breathing apparatus systems, gas and flame detection instruments, and other safety devices that complement 3M's personal safety portfolio.

Divestitures:

3M may divest certain businesses from time to time based upon review of the Company's portfolio considering, among other items, factors relative to the extent of strategic and technological alignment and optimization of capital deployment, in addition to considering if selling the businesses results in the greatest value creation for the Company and for shareholders.

2019 divestitures, announced divestitures and recently closed divestitures:

During the first quarter of 2019, the Company sold certain oral care technology comprising a business and reflected an earnout on a previous divestiture resulting in an aggregate immaterial gain.

In August 2019, 3M closed on the sale of its gas and flame detection business, a leader in fixed and portable gas and flame detection, to Teledyne Technologies Incorporated. 3M's gas and flame business was part of the overall October 2017 acquisition of underlying legal entities and associated assets of Scott Safety. This business has annual sales of approximately $120 million. The transaction resulted in a pre-tax gain of $112 million that was reported within the Company's Safety and Industrial business.

In December 2019, 3M agreed to sell substantially all of its drug delivery business to an affiliate of Altaris Capital Partners, LLC. Subject to closing and other adjustments, 3M will receive approximately $650 million in consideration including cash, an interest-bearing security, and a 17 percent noncontrolling interest in the new company. The business that is being divested has annual sales of approximately $380 million. 3M will retain its transdermal drug delivery components business. The sale is expected to close in the first half of 2020, subject to customary closing conditions and regulatory approvals. 3M expects a pre-tax gain of approximately $400 million as a result of the divestiture that will be reported within the Company's Health Care business. Following completion of the transaction, 3M's will reflect its ownership interest in the divested business using the equity method of accounting.

In January 2020, 3M completed the sale of its advanced ballistic-protection business to Avon Rubber p.l.c for $91 million, before closing and other adjustments. Further contingent consideration of up to $25 million may be received depending on the outcome of pending tenders. The business, with annual sales of approximately $85 million, consists of ballistic helmets, body armor, flat armor and related helmet-attachment products serving government and law enforcement. The Company reflected an immaterial impact in the third quarter of 2019 within the Transportation and Electronics business as a result of measuring this disposal group at the lower of its carrying amount or fair value less cost to sell.

2018 divestitures:

In February 2018, 3M closed on the sale of certain personal safety product offerings primarily focused on noise, environmental, and heat stress monitoring to TSI, Inc. This business has annual sales of approximately $15 million. The transaction resulted in a pre-tax gain of less than $20 million that was reported within the Company's Safety and Industrial business. In addition, during the first quarter of 2018, 3M divested a polymer additives compounding business, formerly part of the Company's Health Care business, and reflected a gain on final closing adjustments from a prior divestiture which, in aggregate, were not material. In May 2018, 3M divested an abrasives glass products business, formerly part of the Company's Safety and Industrial business, with annual sales of approximately $10 million. The transaction resulted in a pre-tax gain of less than $15 million. The Company also reflected an immaterial gain in the fourth quarter from an earnout on a previous divestiture.

In June 2018, 3M completed the sale of substantially all of its Communication Markets Division to Corning Incorporated. This business, with annual sales of approximately $400 million, consists of optical fiber and copper passive connectivity solutions for the telecommunications industry including 3M's xDSL, FTTx, and structured cabling solutions and, in certain countries, telecommunications system integration services. 3M received cash proceeds of $772 million and reflected a pre-tax gain of $494 million as a result of this divestiture. In December 2018, the Company completed the sale of the remaining telecommunications system integration services portion of the business based in Germany, resulting in a pre-tax gain of $15 million. These divestiture impacts were reported within the Company's Safety and Industrial business.

2017 divestitures:

In January 2017, 3M sold the assets of its safety prescription eyewear business, with annual sales of approximately $45 million, to HOYA Vision Care. The Company recorded a pre-tax gain of $29 million in the first quarter of 2017 as a result of this sale, which was reported within the Company's Safety and Industrial business.

In May 2017, 3M completed the divestiture of its identity management business to Gemalto N.V. This business, with 2016 sales of approximately $205 million, is a leading provider in identity management solutions, including biometric hardware and software that enable identity verification and authentication, as well as secure materials and document readers. In June 2017, 3M also completed the sale of its tolling and automated license/number plate recognition business, with annual sales of approximately $40 million, to Neology, Inc. 3M's tolling and automated license/number plate recognition business includes RFID readers and tags, automatic vehicle classification systems, lane controller and host software, and back office software and services. It also provides mobile and fixed cameras, software, and services in automated license/number plate recognition. 3M received proceeds of $833 million, or $809 million net of cash sold, and reflected a pre-tax gain of $458 million as a result of these two divestitures, which was reported within the Company's Transportation and Electronics business.

In October 2017, 3M sold its electronic monitoring business to an affiliate of Apax Partners. This business, with annual sales of approximately $95 million, is a provider of electronic monitoring technologies, serving hundreds of correctional and law enforcement agencies around the world. 3M received proceeds of $201 million, net of cash sold, and reflected a pre-tax gain of $98 million in the fourth quarter of 2017 as a result of this divestiture, which was reported within the Company's Transportation and Electronics business.

In the fourth quarter of 2017, 3M sold the assets of an electrical marking/labeling business within its Safety and Industrial business. The former activity, proceeds and gain were not considered material.

Operating income and held for sale amounts
The aggregate operating income of these businesses was approximately $40 million, $85 million, and $115 million in 2019, 2018, and 2017, respectively. The approximate amounts of major assets and liabilities associated with disposal groups classified as held-for-sale as of December 31, 2018 were not material and as of December 31, 2019 included the following:

(Millions)	**December 31, 2019**
Inventory	**$ 70**
Property, plant and equipment	**150**
Intangible assets	**35**

In addition, approximately $30 million of goodwill was estimated to be attributable to disposal groups classified as held-for-sale as of December 31, 2019, based upon relative fair value. The amounts above have not been segregated and are classified within the existing corresponding line items on the Company's consolidated balance sheet.

NOTE 4. Goodwill and Intangible Assets

Goodwill

Goodwill from acquisitions total $3.5 billion in 2019, none of which is deductible for tax purposes. There were no acquisitions that closed during 2018. The acquisition activity in the following table also includes the net impact of adjustments to the preliminary allocation of purchase price within the one year measurement-period following prior acquisitions, which increased goodwill by $7 million during 2018. The amounts in the "Translation and other" column in the following table primarily relate to changes in foreign currency exchange rates. The goodwill balance by business segment follows:

(Millions)	Safety and Industrial	Transportation and Electronics	Health Care	Consumer	Total Company
Balance as of December 31, 2017	$ 5,077	$ 1,886	$ 3,317	$ 233	$ 10,513
Acquisition activity	7	—	—	—	7
Divestiture activity	(268)	—	(4)	—	(272)
Translation and other	(100)	(29)	(65)	(3)	(197)
Balance as of December 31, 2018	4,716	1,857	3,248	230	10,051
Acquisition activity	**—**	**—**	**3,469**	**—**	**3,469**
Divestiture activity	**(49)**	**—**	**—**	**—**	**(49)**
Translation and other	**(46)**	**(27)**	**22**	**24**	**(27)**
Balance as of December 31, 2019	$ **4,621**	$ **1,830**	$ **6,739**	$ **254**	$ **13,444**

Accounting standards require that goodwill be tested for impairment annually and between annual tests in certain circumstances such as a change in reporting units or the testing of recoverability of a significant asset group within a reporting unit. At 3M, reporting units correspond to a division.

As described in Note 19, effective in the second quarter of 2019, the Company realigned its former five business segments into four to enable the Company to better serve global customers and markets. In addition, effective in the first quarter of 2019, the Company changed its business segment reporting in its continuing effort to improve the alignment of its businesses around markets and customers. For any product changes that resulted in reporting unit changes, the Company applied the relative fair value method to determine the impact on goodwill of the associated reporting units. Goodwill balances reported above reflect these business segment reporting changes in the earliest period presented. During the first and second quarters of 2019, the Company completed its assessment of any potential goodwill impairment for reporting units impacted by this new structure and determined that no impairment existed. The Company also completed its annual goodwill impairment test in the fourth quarter of 2019 for all reporting units and determined that no impairment existed. In addition, the Company had no impairments of goodwill in 2018 or 2017.

Acquired Intangible Assets

The carrying amount and accumulated amortization of acquired finite-lived intangible assets, in addition to the balance of non-amortizable intangible assets, as of December 31, follow:

(Millions)	December 31, 2019	December 31, 2018
Customer related intangible assets	**$ 4,316**	$ 2,291
Patents	**538**	542
Other technology-based intangible assets	**2,124**	576
Definite-lived tradenames	**1,158**	664
Other amortizable intangible assets	**125**	125
Total gross carrying amount	**$ 8,261**	$ 4,198
Accumulated amortization — customer related	**(1,180)**	(998)
Accumulated amortization — patents	**(499)**	(487)
Accumulated amortization — other technology-based	**(435)**	(333)
Accumulated amortization — definite-lived tradenames	**(316)**	(276)
Accumulated amortization — other	**(90)**	(88)
Total accumulated amortization	**$ (2,520)**	$ (2,182)
Total finite-lived intangible assets — net	**$ 5,741**	$ 2,016
Non-amortizable intangible assets (primarily tradenames)	**638**	641
Total intangible assets — net	**$ 6,379**	$ 2,657

Certain tradenames acquired by 3M are not amortized because they have been in existence for over 55 years, have a history of leading-market share positions, have been and are intended to be continuously renewed, and the associated products of which are expected to generate cash flows for 3M for an indefinite period of time.

Amortization expense for the years ended December 31 follows:

(Millions)	2019	2018	2017
Amortization expense	**$ 341**	$ 249	$ 238

Expected amortization expense for acquired amortizable intangible assets recorded as of December 31, 2019 follows:

(Millions)	2020	2021	2022	2023	2024	After 2024
Amortization expense	$ 535	$ 523	$ 511	$ 482	$ 455	$ 3,200

The preceding expected amortization expense is an estimate. Actual amounts of amortization expense may differ from estimated amounts due to additional intangible asset acquisitions, changes in foreign currency exchange rates, impairment of intangible assets, accelerated amortization of intangible assets and other events. The table above excludes the impact of the carrying value of finite-lived intangible assets associated with disposal groups classified as held-for-sale at December 31, 2019. See Note 3 for additional details. 3M expenses the costs incurred to renew or extend the term of intangible assets.

NOTE 5. Restructuring Actions

2019 Restructuring Actions:

During the second quarter of 2019, in light of slower than expected 2019 sales, management approved and committed to undertake certain restructuring actions. These actions impacted approximately 2,000 positions worldwide, including attrition. The Company recorded second quarter 2019 pre-tax charges of $148 million. Additionally, during the fourth quarter of 2019, to realign 3M's organizational structure and operating model to improve growth and operational efficiency, management approved and committed to undertake certain restructuring actions. These actions impacted approximately 1,500 positions worldwide. The Company recorded fourth quarter 2019 pre-tax charges of $134 million. These restructuring charges were recorded in the income statement as follows:

(Millions)	Second and Fourth Quarter 2019
Cost of sales	$ 72
Selling, general and administrative expenses	137
Research, development and related expenses	37
Total operating income impact	246
Other expense (income), net	36
Total income before income taxes impact	$ 282

The second quarter 2019 actions included a voluntary early retirement incentive initial charge (further discussed in Note 13), the charge for which is included in other expense (income), net above.

The operating income impact of these restructuring charges are summarized by business segment as follows:

	Second and Fourth Quarter 2019		
(Millions)	Employee-Related	Asset-Related	Total
Safety and Industrial	$ 50	$ —	$ 50
Transportation and Electronics	31	—	31
Health Care	17	—	17
Consumer	8	—	8
Corporate and Unallocated	100	40	140
Total Operating Expense	$ 206	$ 40	$ 246

Restructuring actions, including cash and non-cash impacts, follow:

(Millions)	Employee-Related	Asset-Related	Total
Expense incurred in the second quarter and fourth quarter of 2019	$ 242	$ 40	$ 282
Non-cash changes	(36)	(40)	(76)
Cash payments	(52)	—	(52)
Adjustments	(14)	—	(14)
Accrued restructuring action balances as of December 31, 2019	$ 140	$ —	$ 140

Remaining activities related to this restructuring are expected to be completed largely through 2020.

2018 Restructuring Actions:

During the second quarter and fourth quarter of 2018, management approved and committed to undertake certain restructuring actions related to addressing corporate functional costs following the Communication Markets Division divestiture. These actions affected approximately 1,200 positions worldwide and resulted in a second quarter 2018 pre-tax charge of $105 million and a fourth quarter pre-tax charge of $22 million, net of adjustments for reductions in cost estimates of $10 million, essentially all within Corporate and Unallocated. The restructuring charges were recorded in the income statement as follows:

(Millions)	Second and Fourth Quarter 2018
Cost of sales	$ 27
Selling, general and administrative expenses	105
Research, development and related expenses	5
Total	$ 137

Restructuring actions, including cash and non-cash impacts, follow:

(Millions)	Employee-Related	Asset-Related	Total
Expense incurred in the second quarter and fourth quarter of 2018	$ 125	$ 12	$ 137
Non-cash changes	—	(12)	(12)
Cash payments	(24)	—	(24)
Adjustments	(17)	—	(17)
Accrued restructuring action balances as of December 31, 2018	$ 84	$ —	$ 84
Cash payments	(76)	—	(76)
Adjustments	(5)	—	(5)
Accrued restructuring action balances as of December 31, 2019	$ 3	$ —	$ 3

Remaining activities related to this restructuring were substantially completed in 2019.

2017 Restructuring Actions:

During the second quarter of 2017, management approved and committed to undertake certain restructuring actions primarily focused on portfolio and footprint optimization. These actions affected approximately 1,300 positions worldwide and resulted in a second quarter 2017 pre-tax charge of $99 million. The restructuring charges were recorded in the income statement as follows:

(Millions)	Second Quarter 2017
Cost of sales	$ 86
Selling, general and administrative expenses	5
Research, development and related expenses	8
Total	$ 99

The impact of these restructuring charges are summarized by business segment as follows:

(Millions)	Second Quarter 2017 Employee-Related
Safety and Industrial	45
Transportation and Electronics	10
Health Care	2
Consumer	36
Corporate and Unallocated	6
Total	$ 99

Restructuring actions, including cash and non-cash impacts, follow:

(Millions)	Employee-Related
Expense incurred in the second quarter of 2017	$ 99
Cash payments	(8)
Adjustments	(3)
Accrued restructuring action balances as of December 31, 2017	$ 88
Cash payments	(20)
Adjustments	(28)
Accrued restructuring action balances as of December 31, 2018	$ 40
Cash payments	(21)
Adjustments	1
Accrued restructuring action balances as of December 31, 2019	$ 20

Remaining activities related to this restructuring were substantially completed in 2019, with payments occurring over time in accordance with applicable severance arrangements into 2020. A portion of the adjustments detailed above include certain severance accruals taken in 2017, the obligation for which was relieved and reflected as part of the gain on divestiture when that business was sold in 2018.

NOTE 6. Supplemental Income Statement Information

Other expense (income), net consists of the following:

(Millions)	2019	2018	2017
Interest expense	**$ 448**	$ 350	$ 322
Interest income	**(80)**	(70)	(50)
Pension and postretirement net periodic benefit cost (benefit)	**(68)**	(73)	(128)
Loss on deconsolidation of Venezuelan subsidiary	**162**	—	—
Total	**$ 462**	$ 207	$ 144

Pension and postretirement net periodic benefit costs described in the table above include all components of defined benefit plan net periodic benefit costs except service cost, which is reported in various operating expense lines. Pension and postretirement net periodic benefit costs for 2019 included a second quarter charge related to the voluntary early retirement incentive program announced in May 2019 in addition to U.S. non-qualified pension plan settlement charges of $32 million recognized in the fourth quarter of 2019. Refer to Note 13 for additional details on the voluntary early retirement incentive program in addition to the components of pension and postretirement net periodic benefit costs.

In the second quarter of 2019, the Company incurred a charge of $162 million related to the deconsolidation of its Venezuelan subsidiary. Refer to Note 1 for additional details.

The Company recorded an early debt extinguishment charge of approximately $96 million which was included within interest expense in the fourth quarter of 2017.

NOTE 7. Supplemental Balance Sheet Information

Additional supplemental balance sheet information is provided in the table that follows.

(Millions)	2019	2018
Other current assets		
Derivative assets-current	$ 75	$ 88
Held-to-maturity debt security held in trust	470	—
Insurance related (receivables, prepaid expenses and other)	172	103
Other	174	158
Total other current assets	$ 891	$ 349
Property, plant and equipment - at cost		
Land	$ 351	$ 340
Buildings and leasehold improvements	7,877	7,564
Machinery and equipment	16,586	15,776
Construction in progress	1,310	1,193
Gross property, plant and equipment	26,124	24,873
Accumulated depreciation	(16,791)	(16,135)
Property, plant and equipment - net	$ 9,333	$ 8,738
Other assets		
Deferred income taxes	$ 521	$ 365
Prepaid pension and post retirement	230	208
Insurance related receivables and other	67	68
Cash surrender value of life insurance policies	254	251
Equity method investments	70	70
Equity and other investments	126	118
Other	406	265
Total other assets	$ 1,674	$ 1,345
Other current liabilities		
Accrued rebates	$ 594	$ 558
Deferred revenue	430	617
Derivative liabilities	17	32
Employee benefits and withholdings	229	228
Contingent liability claims and other	566	244
Property, sales-related and other taxes	247	273
Pension and postretirement benefits	67	76
Other	906	747
Total other current liabilities	$ 3,056	$ 2,775
Other liabilities		
Accrued income taxes – long-term portion	$ 1,507	$ 1,274
Employee benefits	312	299
Contingent liability claims and other	787	789
Finance lease obligations	111	75
Deferred income taxes	301	279
Other	257	294
Total other liabilities	$ 3,275	$ 3,010

NOTE 8. Supplemental Equity and Comprehensive Income Information

Common stock ($.01 par value per share) of 3.0 billion shares is authorized, with 944,033,056 shares issued as of December 31, 2019, 2018 and 2017. Preferred stock, without par value, of 10 million shares is authorized but unissued.

Cash dividends declared and paid totaled $1.44, $1.36, and $1.175 per share for each quarter in 2019, 2018 and 2017, respectively, which resulted in total year declared and paid dividends of $5.76, $5.44, and $4.70 per share, respectively.

Transfer of Ownership Interest Involving Non-Wholly Owned Subsidiaries

During 2018, a wholly owned subsidiary in India was sold to 3M India Limited, which is 75 percent owned by the Company. Because the Company retained its controlling interest in the subsidiary involved, the sale resulted in a deemed dividend to 3M, resulting in an increase in 3M Company shareholders' equity and a decrease in noncontrolling interest. Refer to the Consolidated Statement of Changes in Equity for further details.

Changes in Accumulated Other Comprehensive Income (Loss) Attributable to 3M by Component

(Millions)	Cumulative Translation Adjustment	Defined Benefit Pension and Postretirement Plans Adjustment	Cash Flow Hedging Instruments, Unrealized Gain (Loss)	Total Accumulated Other Comprehensive Income (Loss)
Balance at December 31, 2016, net of tax:	$ (2,008)	$ (5,328)	$ 91	$ (7,245)
Other comprehensive income (loss), before tax:				
Amounts before reclassifications	91	(604)	(311)	(824)
Amounts reclassified out	—	487	(7)	480
Total other comprehensive income (loss), before tax	91	(117)	(318)	(344)
Tax effect	279	169	115	563
Total other comprehensive income (loss), net of tax	370	52	(203)	219
Balance at December 31, 2017, net of tax:	$ (1,638)	$ (5,276)	$ (112)	$ (7,026)
Other comprehensive income (loss), before tax:				
Amounts before reclassifications	(414)	55	133	(226)
Amounts reclassified out	—	606	96	702
Total other comprehensive income (loss), before tax	(414)	661	229	476
Tax effect	(47)	(217)	(53)	(317)
Total other comprehensive income (loss), net of tax	(461)	444	176	159
Transfer of ownership involving non-wholly owned subsidiaries	1	—	—	1
Balance at December 31, 2018, net of tax:	$ (2,098)	$ (4,832)	$ 64	$ (6,866)
Impact of adoption of ASU No. 2018-02 (See Note 1)	(13)	(817)	(23)	(853)
Other comprehensive income (loss), before tax:				
Amounts before reclassifications	102	(1,227)	(26)	(1,151)
Amounts reclassified out	142	459	(70)	531
Total other comprehensive income (loss), before tax	244	(768)	(96)	(620)
Tax effect	(32)	208	24	200
Total other comprehensive income (loss), net of tax	212	(560)	(72)	(420)
Balance at December 31, 2019, net of tax:	$ (1,899)	$ (6,209)	$ (31)	$ (8,139)

Income taxes are not provided for foreign translation relating to permanent investments in international subsidiaries, but tax effects within cumulative translation does include impacts from items such as net investment hedge transactions. Reclassification adjustments are made to avoid double counting in comprehensive income items that are subsequently recorded as part of net income.

Reclassifications out of Accumulated Other Comprehensive Income Attributable to 3M

Details about Accumulated Other Comprehensive Income Components (Millions)	Amounts Reclassified from Accumulated Other Comprehensive Income Year ended December 31, 2019	2018	2017	Location on Income Statement
Cumulative translation adjustment				
Deconsolidation of Venezuelan subsidiary	**$ (142)**	$ —	$ —	Other (expense) income, net
Total before tax	**(142)**	—	—	
Tax effect	**—**	—	—	Provision for income taxes
Net of tax	**$ (142)**	$ —	$ —	
Defined benefit pension and postretirement plans adjustments				
Gains (losses) associated with defined benefit pension and postretirement plans amortization				
Prior service benefit	**69**	76	89	See Note 13
Net actuarial loss	**(478)**	(678)	(570)	See Note 13
Curtailments/Settlements	**(48)**	(4)	(6)	See Note 13
Deconsolidation of Venezuelan subsidiary	**(2)**	—	—	Other (expense) income, net
Total before tax	**(459)**	(606)	(487)	
Tax effect	**110**	145	117	Provision for income taxes
Net of tax	**$ (349)**	$ (461)	$ (370)	
Cash flow hedging instruments gains (losses)				
Foreign currency forward/option contracts	**$ 74**	$ (95)	$ 8	Cost of sales
Interest rate swap contracts	**(4)**	(1)	(1)	Interest expense
Total before tax	**70**	(96)	7	
Tax effect	**(17)**	19	(3)	Provision for income taxes
Net of tax	**$ 53**	$ (77)	$ 4	
Total reclassifications for the period, net of tax	**$ (438)**	$ (538)	$ (366)	

NOTE 9. Supplemental Cash Flow Information

(Millions)	2019	2018	2017
Cash income tax payments, net of refunds	**$ 1,198**	$ 1,560	$ 1,604
Cash interest payments	**370**	314	199

Cash interest payments include interest paid on debt and finance lease balances. Cash interest payments exclude the cash paid for early debt extinguishment costs. Additional details are described in Note 12.

Individual amounts in the Consolidated Statement of Cash Flows exclude the impacts of acquisitions, divestitures and exchange rate impacts, which are presented separately.

Transactions related to investing and financing activities with significant non-cash components are as follows:

- 3M sold and leased-back, under finance leases, certain recently constructed machinery and equipment in return for municipal securities with certain cities in the United States. In aggregate, the values totaled approximately $9 million in 2019, $13 million in 2018, and $13 million in 2017, as of the transaction date.

NOTE 10. Income Taxes

Income Before Income Taxes

(Millions)	2019	2018	2017
United States	$ 3,008	$ 3,487	$ 4,149
International	2,704	3,513	3,399
Total	$ 5,712	$ 7,000	$ 7,548

Provision for Income Taxes

(Millions)	2019	2018	2017
Currently payable			
Federal	$ 534	$ 698	$ 1,022
State	59	109	59
International	673	763	722
Tax Cuts and Jobs Act (TCJA) non-current transition tax provision	—	176	623
Deferred			
Federal	(32)	(38)	162
State	(26)	(17)	15
International	(78)	(54)	76
Total	$ 1,130	$ 1,637	$ 2,679

Components of Deferred Tax Assets and Liabilities

(Millions)	2019	2018
Deferred tax assets:		
Accruals not currently deductible		
Employee benefit costs	$ 169	$ 187
Product and other claims	280	228
Miscellaneous accruals	119	113
Pension costs	824	643
Stock-based compensation	218	203
Net operating/capital loss/tax credit carryforwards	150	71
Foreign tax credits	66	—
Inventory	70	54
Other	113	24
Gross deferred tax assets	2,009	1,523
Valuation allowance	(158)	(67)
Total deferred tax assets	$ 1,851	$ 1,456
Deferred tax liabilities:		
Product and other insurance receivables	$ —	$ (7)
Accelerated depreciation	(580)	(521)
Intangible amortization	(1,021)	(799)
Currency translation	(30)	(35)
Other	—	(8)
Total deferred tax liabilities	$ (1,631)	$ (1,370)
Net deferred tax assets	$ 220	$ 86

The net deferred tax assets are included as components of Other Assets and Other Liabilities within the Consolidated Balance Sheet. See Note 7 “Supplemental Balance Sheet Information” for further details.

As of December 31, 2019, the Company had tax effected operating losses, capital losses, and tax credit carryovers for federal (approximately $82 million), state (approximately $79 million), and international (approximately $55 million), with all amounts before limitation impacts and valuation allowances. Federal tax attribute carryovers will expire after one to 10 years, the state after one to 11 years, and the international after one year to an indefinite carryover period. As of December 31, 2019, the Company has provided $158 million of valuation allowance against certain of these deferred tax assets based on management's determination that it is more-likely-than-not that the tax benefits related to these assets will not be realized.

Reconciliation of Effective Income Tax Rate

	2019	2018	2017
Statutory U.S. tax rate	**21.0 %**	21.0 %	35.0 %
State income taxes - net of federal benefit	**0.5**	1.0	0.8
International income taxes - net	**0.2**	0.2	(6.3)
Global Intangible Low Taxed Income (GILTI)	**1.8**	1.1	—
Foreign Derived Intangible Income (FDII)	**(2.9)**	(1.3)	—
U.S. TCJA enactment - net impacts	**—**	2.5	10.1
U.S. research and development credit	**(1.7)**	(1.5)	(0.7)
Reserves for tax contingencies	**2.3**	1.2	2.2
Domestic Manufacturer's deduction	**—**	—	(1.8)
Employee share-based payments	**(1.3)**	(1.4)	(3.2)
All other - net	**(0.1)**	0.6	(0.6)
Effective worldwide tax rate	**19.8 %**	23.4 %	35.5 %

The effective tax rate for 2019 was 19.8 percent, compared to 23.4 percent in 2018, a decrease of 3.6 percentage points, impacted by several factors. Primary factors that decreased the effective tax rate for 2019 included prior year measurement period adjustments related to 2017 Tax Cuts and Jobs Act (TCJA), prior year resolution of the NRD lawsuit (as described in Note 16), and geographical income mix. These decreases were partially offset by the deconsolidation of the Venezuelan subsidiary, adjustments to uncertain tax positions, and significant litigation-related charges.

The effective tax rate for 2018 was 23.4 percent, compared to 35.5 percent in 2017, a decrease of 12.1 percentage points, impacted by several factors. Primary factors that decreased the Company's effective tax rate included favorable aspects of the Tax Cuts and Jobs Act (TCJA) including the decrease in the U.S. income tax rate and foreign-derived intangible income (FDII), reduced transitional impact of TCJA related to transition tax and remeasurement of deferred tax assets/liabilities, increased benefits from the R&D tax credit, and favorable adjustment to prior year uncertain tax provisions. These decreases were partially offset by the elimination of the domestic manufacturing deduction, the global intangible low-taxed income (GILTI) provision, and lower excess tax benefits related to employee share-based payments.

The TCJA was enacted in December 2017, after which the SEC staff issued Staff Accounting Bulletin (SAB) 118, which provided a measurement period of up to one year from the TCJA's enactment date for companies to complete their accounting under ASC 740. In connection with the enactment of the TCJA, the Company recorded a net tax expense of $762 million in the fourth quarter of 2017 and additional net charges of $176 million as measurement period adjustments in 2018, which are comprised of both a transition tax in addition to a remeasurement of deferred tax assets/liabilities and other impacts.

The TCJA's transition tax is payable over eight years beginning in 2018. As of December 31, 2019 and December 31, 2018, 3M reflected $653 million and $649 million, respectively, in accrued income taxes – long-term portion and $33 million payable within one year associated with the transition tax.

The Company adopted ASU No. 2018-02, Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income, as described in Note 1, on January 1, 2019. The purpose of this ASU was to allow a reclassification to retained earnings of one-time income tax effects stranded in accumulated other comprehensive income (AOCI) arising from the change in the U.S. federal corporate tax rate as a result of TCJA. The effect of this adoption resulted in a reclassification between retained earnings and AOCI, which increased retained earnings by approximately $0.9 billion, with an offsetting increase to accumulated other comprehensive loss for the same amount.

The IRS has completed its field examination of the Company's U.S. federal income tax returns for 2005 through 2015, but the years have not closed as the Company is in the process of resolving issues identified during those examinations. The Company is under examination or in appeals for 2015 through 2018. In addition to the U.S. federal examination, there is also audit activity in several U.S. state and foreign jurisdictions. As of December 31, 2019, no taxing authority proposed significant adjustments to the Company's tax positions for which the Company is not adequately reserved.

It is reasonably possible that the amount of unrecognized tax benefits could significantly change within the next 12 months. The Company has ongoing federal, state and international income tax audits in various jurisdictions and evaluates uncertain tax positions that may be challenged by local tax authorities and not fully sustained. These uncertain tax positions are reviewed on an ongoing basis and adjusted in light of facts and circumstances including progression of tax audits, developments in case law and closing of statutes of limitation. At this time, the Company expects approximately $50 million of unrecognized tax benefits to be recognized within the next 12 months.

The Company recognizes the amount of tax benefit that has a greater than 50 percent likelihood of being ultimately realized upon settlement. A reconciliation of the beginning and ending amount of gross unrecognized tax benefits (UTB) is as follows:

Federal, State and Foreign Tax

(Millions)	2019	2018	2017
Gross UTB Balance at January 1	**$ 647**	$ 530	$ 319
Additions based on tax positions related to the current year	**76**	129	119
Additions for tax positions of prior years	**132**	146	149
Additions related to recent acquisitions	**396**	—	—
Reductions for tax positions of prior years	**(56)**	(123)	(38)
Settlements	**(4)**	(17)	(3)
Reductions due to lapse of applicable statute of limitations	**(24)**	(18)	(16)
Gross UTB Balance at December 31	**$ 1,167**	$ 647	$ 530
Net UTB impacting the effective tax rate at December 31	**$ 1,178**	$ 655	$ 526

The total amount of UTB, if recognized, would affect the effective tax rate by $1,178 million as of December 31, 2019, $655 million as of December 31, 2018, and $526 million as of December 31, 2017. The ending net UTB results from adjusting the gross balance for deferred items, interest and penalties, and deductible taxes. The net UTB is included as components of Other Assets, Accrued Income Taxes, and Other Liabilities within the Consolidated Balance Sheet.

The Company recognizes interest and penalties accrued related to unrecognized tax benefits in tax expense. The Company recognized in the consolidated statement of income on a gross basis approximately $33 million of expense, $12 million of expense, and $20 million of expense in 2019, 2018, and 2017, respectively. The amount of interest and penalties recognized may be an expense or benefit due to new or remeasured unrecognized tax benefit accruals. At December 31, 2019, and December 31, 2018, accrued interest and penalties in the consolidated balance sheet on a gross basis were $102 million and $69 million, respectively. Included in these interest and penalty amounts are interest and penalties related to tax positions for which the ultimate deductibility is highly certain but for which there is uncertainty about the timing of such deductibility.

As a result of certain employment commitments and capital investments made by 3M, income from certain manufacturing activities in the following countries is subject to reduced tax rates or, in some cases, is exempt from tax for years through the following: China (2019), Korea (2019), Switzerland (2023), Singapore (2025), and Brazil (2028). The income tax benefits attributable to the tax status of these subsidiaries are estimated to be $127 million (22 cents per diluted share) in 2019, $227 million (38 cents per diluted share) in 2018, and $228 million (37 cents per diluted share) in 2017.

The Company has not provided deferred taxes on approximately $14 billion of undistributed earnings from non-U.S. subsidiaries as of December 31, 2019 which are indefinitely reinvested in operations. Because of the multiple avenues in which to repatriate the earnings to minimize tax cost, and because a large portion of these earnings are not liquid, it is not practical to determine the income tax liability that would be payable if such earnings were not reinvested indefinitely.

NOTE 11. Marketable Securities and Held-to-Maturity Debt Securities

Marketable Securities

The Company invests in asset-backed securities, certificates of deposit/time deposits, commercial paper, and other securities. The following is a summary of amounts recorded on the Consolidated Balance Sheet for marketable securities (current and non-current).

(Millions)	December 31, 2019	December 31, 2018
Commercial paper	**$ 85**	$ 366
Certificates of deposit/time deposits	**10**	10
U.S. municipal securities	**3**	3
Asset-backed securities	**—**	1
Current marketable securities	**$ 98**	$ 380
U.S. municipal securities	**$ 43**	$ 37
Non-current marketable securities	**$ 43**	$ 37
Total marketable securities	**$ 141**	$ 417

At December 31, 2019 and 2018, gross unrealized, gross realized, and net realized gains and/or losses (pre-tax) were not material.

The balance at December 31, 2019, for marketable securities by contractual maturity are shown below. Actual maturities may differ from contractual maturities because the issuers of the securities may have the right to prepay obligations without prepayment penalties.

(Millions)	December 31, 2019
Due in one year or less	$ 98
Due after one year through five years	14
Due after five years through ten years	20
Due after ten years	9
Total marketable securities	$ 141

Held-to-Maturity Debt Securities

In connection with the in-substance debt defeasance of the Third Lien Notes described in Note 12, the Company purchased a $0.5 billion U.S. Treasury security in the fourth quarter of 2019 that matures in the second quarter of 2020 and transferred it to a trust with irrevocable instructions to use the proceeds from its maturity to satisfy the redemption of the Third Lien Notes in May 2020. This debt security is considered held-to-maturity due to the restrictions in satisfying and discharging the Third Lien Notes, is carried at amortized cost, and is reflected in other current assets on the Company's consolidated balance sheet. At December 31, 2019, the difference between the amortized cost of the U.S. Treasury security and its fair value was not material.

NOTE 12. Long-Term Debt and Short-Term Borrowings

The following debt tables reflect effective interest rates, which include the impact of interest rate swaps, as of December 31, 2019. If the debt was issued on a combined basis, the debt has been separated to show the impact of the fixed versus floating effective interest rates. Carrying value includes the impact of debt issuance costs and fair value hedging activity. For notes subject to in-substance defeasance, the final maturity reflected below is that associated with the redemption date included in the irrevocable instructions given to the trust. Long-term debt and short-term borrowings as of December 31 consisted of the following:

Long-Term Debt

(Millions) Description / 2019 Principal Amount	Currency/ Fixed vs. Floating	Effective Interest Rate	Final Maturity Date	Carrying Value 2019	Carrying Value 2018
Medium-term note (repaid in 2019)	USD Floating	— %	2019	$ —	$ 596
Medium-term note (repaid in 2019)	USD Fixed	— %	2019	—	25
Third lien senior secured notes subject to in-substance defeasance ($445 million)	USD Fixed	12.50 %	2020	463	—
Medium-term note (650 million Euros)	Euro Floating	— %	2020	726	743
Medium-term note ($300 million)	USD Floating	2.16 %	2020	299	294
Medium-term note ($200 million)	USD Floating	1.98 %	2020	200	197
Eurobond (300 million Euros)	Euro Floating	— %	2021	346	357
Eurobond (300 million Euros)	Euro Fixed	1.97 %	2021	334	341
Medium-term note ($600 million)	USD Fixed	1.63 %	2021	599	599
Medium-term note ($200 million)	USD Fixed	3.07 %	2021	199	199
Medium-term note ($200 million)	USD Floating	1.90 %	2021	204	201
Medium-term note (500 million Euros)	Euro Fixed	0.45 %	2022	557	570
Medium-term note ($600 million)	USD Fixed	2.17 %	2022	597	596
Medium-term note ($450 million)	USD Fixed	2.76 %	2022	449	—
Medium-term note (600 million Euros)	Euro Fixed	1.14 %	2023	665	680
Medium-term note ($650 million)	USD Fixed	2.26 %	2023	648	648
Registered note ($500 million)	USD Fixed	1.86 %	2023	497	—
Medium-term note ($300 million)	USD Floating	2.21 %	2024	299	299
Medium-term note ($300 million)	USD Fixed	3.30 %	2024	299	298
Medium-term note ($500 million)	USD Fixed	2.98 %	2024	503	—
Medium-term note ($550 million)	USD Fixed	3.04 %	2025	547	547
Registered note ($750 million)	USD Fixed	2.12 %	2025	743	—
Medium-term note (750 million Euros)	Euro Fixed	1.66 %	2026	826	844
Medium-term note ($650 million)	USD Fixed	2.37 %	2026	643	642
Medium-term note ($850 million)	USD Fixed	2.95 %	2027	842	841
30-year debenture ($220 million)	USD Fixed	6.44 %	2028	226	226
Medium-term note ($600 million)	USD Fixed	3.62 %	2028	597	597
Medium-term note ($800 million)	USD Fixed	3.38 %	2029	796	—
Registered note ($1 billion)	USD Fixed	2.50 %	2029	984	—
Medium-term note (500 million Euros)	Euro Fixed	1.90 %	2030	549	562
Medium-term note (500 million Euros)	Euro Fixed	1.54 %	2031	554	567
30-year bond ($555 million)	USD Fixed	5.73 %	2037	551	551
Floating rate note ($96 million)	USD Floating	1.58 %	2041	96	95
Medium-term note ($325 million)	USD Fixed	4.05 %	2044	314	314
Floating rate note ($55 million)	USD Floating	1.54 %	2044	53	53
Medium-term note ($500 million)	USD Fixed	3.37 %	2046	475	474
Medium-term note ($500 million)	USD Fixed	3.68 %	2047	492	491
Medium-term note ($650 million)	USD Fixed	4.07 %	2048	637	637
Medium-term note ($500 million)	USD Fixed	3.78 %	2048	506	—
Registered note ($1 billion)	USD Fixed	3.37 %	2049	968	—
Other borrowings	Various	1.63 %	2020-2040	76	72
Total long-term debt				**$ 19,359**	$ 14,156
Less: current portion of long-term debt				**1,841**	745
Long-term debt (excluding current portion)				**$ 17,518**	$ 13,411

Post-Swap Borrowing (Long-Term Debt, Including Current Portion)

(Millions)	2019 Carrying Value	2019 Effective Interest Rate	2018 Carrying Value	2018 Effective Interest Rate
Fixed-rate debt	**$ 17,061**	**3.01 %**	$ 11,249	2.67 %
Floating-rate debt	**2,298**	**1.06 %**	2,907	1.44 %
Total long-term debt, including current portion	**$ 19,359**		$ 14,156	

Short-Term Borrowings and Current Portion of Long-Term Debt

(Millions)	Effective Interest Rate	Carrying Value 2019	Carrying Value 2018
Current portion of long-term debt	3.85 %	**$ 1,841**	$ 745
U.S. dollar commercial paper	1.61 %	**150**	435
Japan subsidiary credit facility	0.13 %	**632**	—
Germany subsidiary credit facility	0.25 %	**168**	—
Other borrowings	4.85 %	**4**	31
Total short-term borrowings and current portion of long-term debt		**$ 2,795**	$ 1,211

Other short-term borrowings primarily consisted of bank borrowings by international subsidiaries.

Future Maturities of Long-term Debt

Maturities of long-term debt in the table below reflect the impact of put provisions associated with certain debt instruments and are net of the unaccreted debt issue costs such that total maturities equal the carrying value of long-term debt as of December 31, 2019. The maturities of long-term debt for the periods subsequent to December 31, 2019 are as follows (in millions):

2020	2021	2022	2023	2024	After 2024	Total
$ 1,841	$ 1,682	$ 1,603	$ 1,811	$ 1,101	$ 11,321	$ 19,359

As a result of put provisions associated with certain debt instruments, long-term debt payments due in 2020 include floating rate notes totaling $149 million (classified as current portion of long-term debt).

Credit Facilities

In November 2019, 3M amended and restated its existing $3.75 billion five-year revolving credit facility expiring in March 2021 to a $3.0 billion five-year revolving credit facility expiring in November 2024. The revolving credit agreement includes a provision under which 3M may request an increase of up to $1.0 billion (at lender’s discretion), bringing the total facility up to $4.0 billion. In addition, 3M entered into a $1.25 billion 364-day credit facility expiring in November 2020. The 364-day credit agreement includes a provision under which 3M may convert any advances outstanding on the maturity date into term loans having a maturity date one year later. These credit facilities were undrawn at December 31, 2019. Under both the $3.0 billion and $1.25 billion credit agreements, the Company is required to maintain its EBITDA to Interest Ratio as of the end of each fiscal quarter at not less than 3.0 to 1. This is calculated (as defined in the agreement) as the ratio of consolidated total EBITDA for the four consecutive quarters then ended to total interest expense on all funded debt for the same period. At December 31, 2019, this ratio was approximately 17 to 1. Debt covenants do not restrict the payment of dividends.

Other Credit Facilities

Apart from the committed credit facilities described above, in September 2019, 3M entered into a credit facility expiring in July 2020 in the amount of 80 billion Japanese Yen. At December 31, 2019, 69 billion Japanese Yen, or approximately $632 million at December 31, 2019 exchange rates, was drawn and outstanding. In November 2019, 3M entered into a credit facility expiring in November 2020 in the amount of 150 million Euros. At December 31, 2019, 150 million Euros, or $168 million at December 31, 2019 exchange rates, was drawn and outstanding.

The Company also had an additional $268 million in stand-alone letters of credit and bank guarantees issued and outstanding at December 31, 2019. These instruments are utilized in connection with normal business activities.

Long-Term Debt Issuances

The principal amounts, interest rates and maturity dates of individual long-term debt issuances can be found in the long-term debt table found at the beginning of this note.

In February 2019, 3M issued $2.25 billion aggregate principal amount of fixed rate medium-term notes. These were comprised of $450 million of 3-year notes due 2022 with a coupon rate of 2.75%, $500 million of remaining 5-year notes due 2024 with a coupon rate of 3.25%, $800 million of 10-year notes due 2029 with a coupon rate of 3.375%, and $500 million of remaining 29.5-year notes due 2048 with a coupon rate of 4.00%. Issuances of the 5-year and 29.5-year notes were pursuant to a reopening of existing securities issued in September 2018.

In August 2019, 3M issued $3.25 billion aggregate principal amount of fixed rate registered notes. These were comprised of $500 million of 3.5-year notes due 2023 with a coupon rate of 1.75%, $750 million of 5.5-year notes due 2025 with a coupon rate of 2.00%, $1.0 billion of 10-year notes due 2029 with a coupon rate of 2.375%, and $1.0 billion of 30-year notes due 2049 with a coupon rate of 3.25%.

In September 2018, 3M issued $2.25 billion aggregate principal amount of medium-term notes. These were comprised of $400 million of 3-year fixed rate notes due 2021 with a coupon rate of 3.00%, $300 million of 5.5-year fixed rate notes due 2024 with a coupon rate of 3.25%, $300 million of 5.5-year floating rate notes due 2024 with a rate based on a floating three-month LIBOR index, $600 million aggregate principal amount of 10-year fixed rate medium-term notes due 2028 with a coupon rate of 3.625%, and $650 million of 30-year fixed rate notes due 2048 with a coupon rate of 4.00%. Upon debt issuance, the Company entered into a fixed-to-floating interest rate swap on $200 million aggregate principal amount of the 3-year fixed rate notes issued with an interest rate based on a three-month LIBOR index.

In October 2017, 3M issued $2.0 billion aggregate principal amount of fixed rate medium-term notes. These were comprised of $650 million of 5.5-year notes due 2023 with a coupon rate of 2.25%, $850 million of 10-year notes due 2027 with a coupon rate of 2.875%, and $500 million of 30-year notes due 2047 with a coupon rate of 3.625%.

Long-Term Debt Maturities and Extinguishments

In June 2019, 3M repaid $625 million aggregate principal amount of fixed-rate medium-term notes that matured.

In 2019, 3M also assumed approximately $2.6 billion of debt in connection with the acquisitions of Acelity and M*Modal (See Note 3) of which $2.1 billion was immediately redeemed or paid at close.

In November and August 2018, respectively, 3M repaid 500 million Euros and $450 million aggregate principal amount of floating rate medium-term notes that matured.

In October 2017, 3M, via cash tender offers, repurchased $305 million aggregate principal amount of its outstanding notes. This included $110 million of its $330 million principal amount of 6.375% notes due 2028 and $195 million of its $750 million principal amount of 5.70% notes due 2037. The Company recorded an early debt extinguishment charge of approximately $96 million in the fourth quarter of 2017 within interest expense, the cash outflow for which is recorded within other financing activities on the statement of cash flows. This charge reflected the differential between the carrying value and the amount paid to acquire the tendered notes and related expenses.

In June 2017, 3M repaid $650 million aggregate principal amount of fixed rate medium-term notes that matured.

In-Substance Defeasance

In conjunction with the October 2019 acquisition of Acelity (See Note 3), 3M assumed outstanding debt of the business, of which $445 million in principal amount of third lien senior secured notes (Third Lien Notes) maturing in 2021 with a coupon rate of 12.5% was not immediately redeemed at closing. Instead, at closing, 3M satisfied and discharged the Third Lien Notes via an in-substance defeasance, whereby 3M transferred held-to-maturity debt securities to a trust with irrevocable instructions to redeem the Third Lien Notes on May 1, 2020. The trust assets are restricted from use in 3M's operations and may only be used for the redemption of the Third Lien Notes. These actions, however, do not represent a legal defeasance. Therefore, as of December 31, 2019, this debt is included in current portion of long-term debt and the related trust assets comprised of a held-to-maturity debt security are included in other current assets on the Company's consolidated balance sheet.

Floating Rate Notes

At various times, 3M has issued floating rate notes containing put provisions. 3M would be required to repurchase these securities at various prices ranging from 99 percent to 100 percent of par value according to the reduction schedules for each security. In December 2004, 3M issued a forty-year $60 million floating rate note, with a rate based on a floating LIBOR index. Under the terms of this floating rate note due in 2044, holders have an annual put feature at 100 percent of par value from 2014 and every anniversary thereafter until final maturity. Under the terms of the floating rate notes due in 2027, 2040 and 2041, holders have put options that commence ten years from the date of issuance and each third anniversary thereafter until final maturity at prices ranging from 99 percent to 100 percent of par value. For the periods presented, 3M was required to repurchase an immaterial amount of principal on the aforementioned floating rate notes.

NOTE 13. Pension and Postretirement Benefit Plans

3M has company-sponsored retirement plans covering substantially all U.S. employees and many employees outside the United States. In total, 3M has over 75 defined benefit plans in 28 countries. Pension benefits associated with these plans generally are based on each participant's years of service, compensation, and age at retirement or termination. The primary U.S. defined-benefit pension plan was closed to new participants effective January 1, 2009. The Company also provides certain postretirement health care and life insurance benefits for its U.S. employees who reach retirement age while employed by the Company and were employed by the Company prior to January 1, 2016. Most international employees and retirees are covered by government health care programs. The cost of company-provided postretirement health care plans for international employees is not material and is combined with U.S. amounts in the tables that follow.

The Company has made deposits for its defined benefit plans with independent trustees. Trust funds and deposits with insurance companies are maintained to provide pension benefits to plan participants and their beneficiaries. There are no plan assets in the non-qualified plan due to its nature. For its U.S. postretirement health care and life insurance benefit plans, the Company has set aside amounts at least equal to annual benefit payments with an independent trustee.

The Company also sponsors employee savings plans under Section 401(k) of the Internal Revenue Code. These plans are offered to substantially all regular U.S. employees. For eligible employees hired prior to January 1, 2009, employee 401(k) contributions of up to 5% of eligible compensation matched in cash at rates of 45% or 60%, depending on the plan in which the employee participates. Employees hired on or after January 1, 2009, receive a cash match of 100% for employee 401(k) contributions of up to 5% of eligible compensation and receive an employer retirement income account cash contribution of 3% of the participant's total eligible compensation. All contributions are invested in a number of investment funds pursuant to the employees' elections. Employer contributions to the U.S. defined contribution plans were $186 million, $173 million and $159 million for 2019, 2018 and 2017, respectively. 3M subsidiaries in various international countries also participate in defined contribution plans. Employer contributions to the international defined contribution plans were $96 million, $99 million and $88 million for 2019, 2018 and 2017, respectively.

In May 2019 (as part of the 2019 restructuring actions discussed in Note 5), the Company began offering a voluntary early retirement incentive program to certain eligible participants of its U.S. pension plans who meet age and years of pension service requirements. The eligible participants who accepted the offer and retired by July 1, 2019 received an enhanced pension benefit. Pension benefits were enhanced by adding one additional year of pension service and one additional year of age for certain benefit calculations.

Approximately 800 participants accepted the offer and retired before July 1, 2019. As a result, the Company incurred a $35 million charge related to these special termination benefits in the second quarter of 2019.

In the fourth quarter of 2019, the Company recognized a non-operating $32 million settlement expense in its U.S. non-qualified pension plan. The charge is related to lump sum payments made to employees at retirement. The settlement expense is an accelerated recognition of past actuarial losses.

In May 2019, 3M modified the 3M Retiree Life Insurance Plan postretirement benefit to close it to new participants effective August 1, 2019 (which results in employees who retire on or after August 1, 2019 not being eligible to participate in the plan) and reducing the maximum life insurance and death benefit to $8,000 for deaths on or after August 1, 2019. Due to these changes, the plan was re-measured in the second quarter of 2019, resulting in a decrease to the accumulated projected benefit obligation liability of approximately $150 million and a related increase to shareholders' equity, specifically accumulated other comprehensive income in addition to an immaterial income statement benefit prospectively.

The following tables include a reconciliation of the beginning and ending balances of the benefit obligation and the fair value of plan assets as well as a summary of the related amounts recognized in the Company's consolidated balance sheet as of December 31 of the respective years. 3M also has certain non-qualified unfunded pension and postretirement benefit plans, inclusive of plans related to supplement/excess benefits for employees impacted by particular relocations and other matters, that individually and in the aggregate are not significant and which are not included in the tables that follow. The obligations for these plans are included within other liabilities in the Company's consolidated balance sheet and aggregated less than $40 million as of December 31, 2019 and 2018.

	Qualified and Non-qualified Pension Benefits				Postretirement Benefits	
	United States		International			
(Millions)	2019	2018	2019	2018	2019	2018
Change in benefit obligation						
Benefit obligation at beginning of year	**$ 15,948**	$ 17,360	**$ 6,965**	$ 7,502	**$ 2,175**	$ 2,410
Acquisitions/Transfers	**—**	—	**9**	(11)	**—**	—
Service cost	**251**	288	**131**	143	**43**	52
Interest cost	**620**	563	**156**	157	**82**	79
Participant contributions	**—**	—	**7**	9	**—**	—
Foreign exchange rate changes	**—**	—	**55**	(387)	**—**	(13)
Plan amendments	**—**	—	**3**	7	**(171)**	—
Actuarial (gain) loss	**2,209**	(1,226)	**906**	(144)	**225**	(244)
Benefit payments	**(1,128)**	(1,034)	**(302)**	(304)	**(112)**	(109)
Settlements, curtailments, special termination benefits and other	**35**	(3)	**1**	(7)	**—**	—
Benefit obligation at end of year	**$ 17,935**	$ 15,948	**$ 7,931**	$ 6,965	**$ 2,242**	$ 2,175
Change in plan assets						
Fair value of plan assets at beginning of year	**$ 14,803**	$ 15,686	**$ 6,170**	$ 6,737	**$ 1,260**	$ 1,397
Acquisitions/Transfers	**—**	(4)	**4**	—	**—**	—
Actual return on plan assets	**2,323**	(95)	**858**	(38)	**187**	(32)
Company contributions	**101**	254	**106**	112	**3**	4
Participant contributions	**—**	—	**7**	9	**—**	—
Foreign exchange rate changes	**—**	—	**80**	(346)	**—**	—
Benefit payments	**(1,128)**	(1,034)	**(302)**	(304)	**(112)**	(109)
Settlements, curtailments, special termination benefits and other	**—**	(4)	**—**	—	**—**	—
Fair value of plan assets at end of year	**$ 16,099**	$ 14,803	**$ 6,923**	$ 6,170	**$ 1,338**	$ 1,260
Funded status at end of year	**$ (1,836)**	$ (1,145)	**$ (1,008)**	$ (795)	**$ (904)**	$ (915)

(Millions)	Qualified and Non-qualified Pension Benefits — United States 2019	United States 2018	International 2019	International 2018	Postretirement Benefits 2019	Postretirement Benefits 2018
Amounts recognized in the Consolidated Balance Sheet as of Dec. 31,						
Non-current assets	**$ —**	$ —	**$ 230**	$ 208	**$ —**	$ —
Accrued benefit cost						
Current liabilities	**(48)**	(60)	**(15)**	(13)	**(4)**	(3)
Non-current liabilities	**(1,788)**	(1,085)	**(1,223)**	(990)	**(900)**	(912)
Ending balance	**$ (1,836)**	$ (1,145)	**$ (1,008)**	$ (795)	**$ (904)**	$ (915)

(Millions)	Qualified and Non-qualified Pension Benefits — United States 2019	United States 2018	International 2019	International 2018	Postretirement Benefits 2019	Postretirement Benefits 2018
Amounts recognized in accumulated other comprehensive income as of Dec. 31,						
Net transition obligation (asset)	**$ —**	$ —	**$ 10**	$ —	**$ —**	$ —
Net actuarial loss (gain)	**5,899**	5,374	**1,967**	1,713	**663**	584
Prior service cost (credit)	**(128)**	(152)	**(5)**	(20)	**(262)**	(123)
Ending balance	**$ 5,771**	$ 5,222	**$ 1,972**	$ 1,693	**$ 401**	$ 461

The balance of amounts recognized for international plans in accumulated other comprehensive income as of December 31 in the preceding table are presented based on the foreign currency exchange rate on that date.

The pension accumulated benefit obligation represents the actuarial present value of benefits based on employee service and compensation as of the measurement date and does not include an assumption about future compensation levels. The accumulated benefit obligation of the U.S. pension plans was $17.125 billion and $15.033 billion at December 31, 2019 and 2018, respectively. The accumulated benefit obligation of the international pension plans was $7.355 billion and $6.438 billion at December 31, 2019 and 2018, respectively.

The following amounts relate to pension plans with accumulated benefit obligations in excess of plan assets as of December 31:

(Millions)	Qualified and Non-qualified Pension Plans — United States 2019	United States 2018	International 2019	International 2018
Projected benefit obligation	**$ 17,935**	$ 593	**$ 2,986**	$ 2,613
Accumulated benefit obligation	**17,125**	521	**2,752**	2,415
Fair value of plan assets	**16,099**	9	**1,778**	1,633

Components of net periodic cost and other amounts recognized in other comprehensive income

The service cost component of defined benefit net periodic benefit cost is recorded in cost of sales, selling, general and administrative expenses, and research, development and related expenses. As discussed in Note 6, the other components of net periodic benefit cost are reflected in other expense (income), net. Components of net periodic benefit cost and other supplemental information for the years ended December 31 follow:

	Qualified and Non-qualified Pension Benefits						Postretirement Benefits		
	United States			International					
(Millions)	2019	2018	2017	2019	2018	2017	2019	2018	2017
Net periodic benefit cost (benefit)									
Operating expense									
Service cost	**$ 251**	$ 288	$ 268	**$ 131**	$ 143	$ 142	**$ 43**	$ 52	$ 52
Non-operating expense									
Interest cost	**620**	563	565	**156**	157	157	**82**	79	80
Expected return on plan assets	**(1,040)**	(1,087)	(1,035)	**(299)**	(307)	(292)	**(81)**	(84)	(86)
Amortization of prior service benefit	**(24)**	(23)	(23)	**(12)**	(13)	(13)	**(33)**	(40)	(53)
Amortization of net actuarial loss	**366**	503	388	**78**	114	126	**34**	61	56
Settlements, curtailments, special termination benefits and other	**70**	—	2	**10**	4	4	**5**	—	(4)
Total non-operating expense (benefit)	**(8)**	(44)	(103)	**(67)**	(45)	(18)	**7**	16	(7)
Total net periodic benefit cost (benefit)	**$ 243**	$ 244	$ 165	**$ 64**	$ 98	$ 124	**$ 50**	$ 68	$ 45
Other changes in plan assets and benefit obligations recognized in other comprehensive (income) loss									
Prior service cost (benefit)	**$ —**	$ —	$ —	**$ 3**	$ 7	$ 6	**$ (171)**	$ —	$ (1)
Amortization of prior service benefit	**24**	23	23	**12**	13	13	**33**	40	53
Net actuarial (gain) loss	**926**	(44)	607	**344**	194	(244)	**119**	(127)	69
Amortization of net actuarial loss	**(366)**	(503)	(388)	**(78)**	(114)	(126)	**(34)**	(61)	(56)
Foreign currency	**—**	—	—	**7**	(83)	167	**(1)**	(2)	—
Settlements and curtailments	**(35)**	—	(2)	**(8)**	(4)	(4)	**(5)**	—	—
Total recognized in other comprehensive (income) loss	**$ 549**	$ (524)	$ 240	**$ 280**	$ 13	$ (188)	**$ (59)**	$ (150)	$ 65
Total recognized in net periodic benefit cost (benefit) and other comprehensive (income) loss	**$ 792**	$ (280)	$ 405	**$ 344**	$ 111	$ (64)	**$ (9)**	$ (82)	$ 110

Weighted-average assumptions used to determine benefit obligations as of December 31

	Qualified and Non-qualified Pension Benefits						Postretirement Benefits		
	United States			International					
	2019	2018	2017	2019	2018	2017	2019	2018	2017
Discount rate	**3.25 %**	4.36 %	3.68 %	**1.81 %**	2.50 %	2.41 %	**3.27 %**	4.41 %	3.79 %
Compensation rate increase	**3.21 %**	4.10 %	4.10 %	**2.88 %**	2.89 %	2.89 %	**N/A**	N/A	N/A

Weighted-average assumptions used to determine net cost for years ended December 31

	Qualified and Non-qualified Pension Benefits						Postretirement Benefits		
	United States			International					
	2019	2018	2017	2019	2018	2017	2019	2018	2017
Discount rate - service cost	**4.44 %**	3.78 %	4.42 %	**2.39 %**	2.27 %	2.32 %	**4.53 %**	3.86 %	4.50 %
Discount rate - interest cost	**4.02 %**	3.35 %	3.61 %	**2.26 %**	2.14 %	2.25 %	**4.15 %**	3.52 %	3.80 %
Expected return on assets	**7.00 %**	7.25 %	7.25 %	**4.90 %**	5.02 %	5.16 %	**6.43 %**	6.53 %	6.48 %
Compensation rate increase	**4.10 %**	4.10 %	4.10 %	**2.89 %**	2.89 %	2.90 %	**N/A**	N/A	N/A

The Company provides eligible retirees in the U.S. postretirement health care benefit plans to a savings account benefits-based plan. The contributions provided by the Company to the health savings accounts increase 3 percent per year for employees who retired prior to January 1, 2016 and increase 1.5 percent for employees who retire on or after January 1, 2016. Therefore, the Company no longer has material exposure to health care cost inflation.

The Company determines the discount rate used to measure plan liabilities as of the December 31 measurement date for the pension and postretirement benefit plans, which is also the date used for the related annual measurement assumptions. The discount rate reflects the current rate at which the associated liabilities could be effectively settled at the end of the year. The Company sets its rate to reflect the yield of a portfolio of high quality, fixed-income debt instruments that would produce cash flows sufficient in timing and amount to settle projected future benefits. Using this methodology, the Company determined a discount rate of 3.25% for the U.S. pension plans and 3.27% for the postretirement benefit plans as of December 31, 2019, which is a decrease of 1.11 percentage points and 1.14 percentage points, respectively, from the rates used as of December 31, 2018. A decrease in the discount rate increases the Projected Benefit Obligation (PBO), the significant decrease in the discount rate as of December 31, 2019 resulted in an approximately $2.0 billion higher PBO for the U.S. pension plans. For the international pension and postretirement plans the discount rates also reflect the current rate at which the associated liabilities could be effectively settled at the end of the year. If the country has a deep market in corporate bonds the Company matches the expected cash flows from the plan either to a portfolio of bonds that generate sufficient cash flow or a notional yield curve generated from available bond information. In countries that do not have a deep market in corporate bonds, government bonds are considered with a risk premium to approximate corporate bond yields.

The Company measures service cost and interest cost separately using the spot yield curve approach applied to each corresponding obligation. Service costs are determined based on duration-specific spot rates applied to the service cost cash flows. The interest cost calculation is determined by applying duration-specific spot rates to the year-by-year projected benefit payments. The spot yield curve approach does not affect the measurement of the total benefit obligations as the change in service and interest costs offset in the actuarial gains and losses recorded in other comprehensive income.

For the primary U.S. qualified pension plan, the Company's assumption for the expected return on plan assets was 7.00% in 2019. Projected returns are based primarily on broad, publicly traded equity and fixed-income indices and forward-looking estimates of active portfolio and investment management. As of December 31, 2019, the Company's 2020 expected long-term rate of return on U.S. plan assets is 6.75%. The expected return assumption is based on the strategic asset allocation of the plan, long term capital market return expectations and expected performance from active investment management. The 2019 expected long-term rate of return is based on an asset allocation assumption of 23% global equities, 14% private equities, 47% fixed-income securities, and 16% absolute return investments independent of traditional performance benchmarks, along with positive returns from active investment management. The actual net rate of return on plan assets in 2019 was 16.3%. In 2018 the plan earned a rate of return of -0.5% and in 2017 earned a return of 12.4%. The average annual actual return on the plan assets over the past 10 and 25 years has been 8.9% and 9.4%, respectively. Return on assets assumptions for international pension and other post-retirement benefit plans are calculated on a plan-by-plan basis using plan asset allocations and expected long-term rate of return assumptions.

As of December 31, 2019, the Company converted to the "Pri-2012 Aggregate Mortality Table" and updated the mortality improvement scales to the Society of Actuaries Scale MP-2019. The December 31, 2019 update resulted in a small decrease to the U.S. pension PBO and U.S. accumulated postretirement benefit obligations.

During 2019, the Company contributed $207 million to its U.S. and international pension plans and $3 million to its postretirement plans. During 2018, the Company contributed $366 million to its U.S. and international pension plans and $4 million to its postretirement plans. In 2020, the Company expects to contribute an amount in the range of $100 million to $200 million of cash to its U.S. and international retirement plans. The Company does not have a required minimum cash pension contribution obligation for its U.S. plans in 2020. Future contributions will depend on market conditions, interest rates and other factors.

Future Pension and Postretirement Benefit Payments

The following table provides the estimated pension and postretirement benefit payments that are payable from the plans to participants.

(Millions)	Qualified and Non-qualified Pension Benefits		Postretirement Benefits
	United States	International	
2020 Benefit Payments	$ 1,103	$ 246	$ 121
2021 Benefit Payments	1,096	253	128
2022 Benefit Payments	1,104	272	136
2023 Benefit Payments	1,106	284	142
2024 Benefit Payments	1,111	302	148
Next five years	5,521	1,656	789

Plan Asset Management

3M's investment strategy for its pension and postretirement plans is to manage the funds on a going-concern basis. The primary goal of the trust funds is to meet the obligations as required. The secondary goal is to earn the highest rate of return possible, without jeopardizing its primary goal, and without subjecting the Company to an undue amount of contribution risk. Fund returns are used to help finance present and future obligations to the extent possible within actuarially determined funding limits and tax-determined asset limits, thus reducing the potential need for additional contributions from 3M. The investment strategy has used long duration cash bonds and derivative instruments to offset a significant portion of the interest rate sensitivity of U.S. pension liabilities.

Normally, 3M does not buy or sell any of its own securities as a direct investment for its pension and other postretirement benefit funds. However, due to external investment management of the funds, the plans may indirectly buy, sell or hold 3M securities. The aggregate amount of 3M securities are not considered to be material relative to the aggregate fund percentages.

The discussion that follows references the fair value measurements of certain assets in terms of levels 1, 2 and 3. See Note 15 for descriptions of these levels. While the company believes the valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different estimate of fair value at the reporting date.

U.S. Pension Plans and Postretirement Benefit Plan Assets

In order to achieve the investment objectives in the U.S. pension plans and U.S. postretirement benefit plans, the investment policies include a target strategic asset allocation. The investment policies allow some tolerance around the target in recognition that market fluctuations and illiquidity of some investments may cause the allocation to a specific asset class to vary from the target allocation, potentially for long periods of time. Acceptable ranges have been designed to allow for deviation from strategic targets and to allow for the opportunity for tactical over- and under-weights. The portfolios will normally be rebalanced when the quarter-end asset allocation deviates from acceptable ranges. The allocation is reviewed regularly by the named fiduciary of the plans. Approximately 50% of the postretirement benefit plan assets are in a 401(h) account. The 401(h) account assets are in the same trust as the primary U.S. pension plan and invested with the same investment objectives as the primary U.S. pension plan.

The fair values of the assets held by the U.S. pension plans by asset class are as follows:

	Fair Value Measurements Using Inputs Considered as						Fair Value at	
(Millions)	Level 1		Level 2		Level 3		Dec. 31,	
Asset Class	2019	2018	2019	2018	2019	2018	2019	2018
Equities								
U.S. equities	**$ 1,575**	$ 1,369	**$ —**	$ —	**$ —**	$ —	**$ 1,575**	$ 1,369
Non-U.S. equities	**1,585**	1,234	**—**	—	**—**	—	**1,585**	1,234
Index and long/short equity funds*							**417**	372
Total Equities	**$ 3,160**	$ 2,603	**$ —**	$ —	**$ —**	$ —	**$ 3,577**	$ 2,975
Fixed Income								
U.S. government securities	**$ 2,346**	$ 1,889	**$ 916**	$ 732	**$ —**	$ —	**$ 3,262**	$ 2,621
Non-U.S. government securities	**—**	—	**61**	44	**—**	—	**61**	44
Preferred and convertible securities	**—**	—	**52**	44	**—**	—	**52**	44
U.S. corporate bonds	**10**	9	**3,566**	2,941	**—**	—	**3,576**	2,950
Non-U.S. corporate bonds	**—**	—	**759**	475	**—**	—	**759**	475
Derivative instruments	**(5)**	2	**109**	111	**—**	—	**104**	113
Other*							**—**	9
Total Fixed Income	**$ 2,351**	$ 1,900	**$ 5,463**	$ 4,347	**$ —**	$ —	**$ 7,814**	$ 6,256
Private Equity								
Growth equity	**$ 80**	$ 45	**$ —**	$ —	**$ —**	$ —	**$ 80**	$ 45
Partnership investments*							**1,865**	2,064
Total Private Equity	**$ 80**	$ 45	**$ —**	$ —	**$ —**	$ —	**$ 1,945**	$ 2,109
Absolute Return								
Fixed income and other	**$ 1**	$ 28	**$ 117**	$ 114	**$ —**	$ —	**$ 118**	$ 142
Hedge fund/fund of funds*							**2,010**	1,866
Partnership investments*							**589**	429
Total Absolute Return	**$ 1**	$ 28	**$ 117**	$ 114	**$ —**	$ —	**$ 2,717**	$ 2,437
Cash and Cash Equivalents								
Cash and cash equivalents	**$ 20**	$ 412	**$ 5**	$ 4	**$ —**	$ —	**$ 25**	$ 416
Repurchase agreements and derivative margin activity	**—**	—	**(1)**	(1)	**—**	—	**(1)**	(1)
Cash and cash equivalents, valued at net asset value*							**480**	870
Total Cash and Cash Equivalents	**$ 20**	$ 412	**$ 4**	$ 3	**$ —**	$ —	**$ 504**	$ 1,285
Total	**$ 5,612**	$ 4,988	**$ 5,584**	$ 4,464	**$ —**	$ —	**$ 16,557**	$ 15,062
Other items to reconcile to fair value of plan assets							**$ (458)**	$ (259)
Fair value of plan assets							**$ 16,099**	$ 14,803

* In accordance with ASC 820-10, certain investments that are measured at fair value using the net asset value (NAV) per share (or its equivalent) as a practical expedient have not been classified in the fair value hierarchy. The NAV is based on the fair value of the underlying assets owned by the fund, minus its liabilities then divided by the number of units outstanding and is determined by the investment manager or custodian of the fund. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the fair value of plan assets.

The fair values of the assets held by the postretirement benefit plans by asset class are as follows:

(Millions)	Fair Value Measurements Using Inputs Considered as						Fair Value at Dec. 31,	
	Level 1		Level 2		Level 3			
Asset Class	2019	2018	2019	2018	2019	2018	2019	2018
Equities								
U.S. equities	$ 337	$ 356	$ —	$ —	$ —	$ —	$ 337	$ 356
Non-U.S. equities	77	58	—	—	—	—	77	58
Index and long/short equity funds*							33	34
Total Equities	$ 414	$ 414	$ —	$ —	$ —	$ —	$ 447	$ 448
Fixed Income								
U.S. government securities	$ 136	$ 112	$ 242	$ 213	$ —	$ —	$ 378	$ 325
Non-U.S. government securities	—	—	6	4	—	—	6	4
U.S. corporate bonds	—	—	203	162	—	—	203	162
Non-U.S. corporate bonds	—	—	46	32	—	—	46	32
Derivative instruments	—	—	5	5	—	—	5	5
Total Fixed Income	$ 136	$ 112	$ 502	$ 416	$ —	$ —	$ 638	$ 528
Private Equity								
Growth equity	$ 4	$ 2	$ —	$ —	$ —	$ —	$ 4	$ 2
Partnership investments*							92	101
Total Private Equity	$ 4	$ 2	$ —	$ —	$ —	$ —	$ 96	$ 103
Absolute Return								
Fixed income and other	$ —	$ 1	$ 5	$ 5	$ —	$ —	$ 5	$ 6
Hedge fund/fund of funds*							92	80
Partnership investments*							27	18
Total Absolute Return	$ —	$ 1	$ 5	$ 5	$ —	$ —	$ 124	$ 104
Cash and Cash Equivalents								
Cash and cash equivalents	$ 33	$ 47	$ 1	$ 5	$ —	$ —	$ 34	$ 52
Repurchase agreements and derivative margin activity	—	—	—	—	—	—	—	—
Cash and cash equivalents, valued at net asset value*							22	37
Total Cash and Cash Equivalents	$ 33	$ 47	$ 1	$ 5	$ —	$ —	$ 56	$ 89
Total	$ 587	$ 576	$ 508	$ 426	$ —	$ —	$ 1,361	$ 1,272
Other items to reconcile to fair value of plan assets							$ (23)	$ (12)
Fair value of plan assets							$ 1,338	$ 1,260

*In accordance with ASC 820-10, certain investments that are measured at fair value using the NAV per share (or its equivalent) as a practical expedient have not been classified in the fair value hierarchy. The NAV is based on the fair value of the underlying assets owned by the fund, minus its liabilities then divided by the number of units outstanding and is determined by the investment manager or custodian of the fund. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the fair value of plan assets.

Publicly traded equities are valued at the closing price reported in the active market in which the individual securities are traded.

Fixed income includes derivative instruments such as credit default swaps, interest rate swaps and futures contracts. Corporate debt includes bonds and notes, asset backed securities, collateralized mortgage obligations and private placements. Swaps and derivative instruments are valued by the custodian using closing market swap curves and market derived inputs. U.S. government and government agency bonds and notes are valued at the closing price reported in the active market in which the individual security is traded. Corporate bonds and notes, asset backed securities and collateralized mortgage obligations are valued at either the yields currently available on comparable securities of issuers with similar credit ratings or valued under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments, but includes adjustments for certain risks that may not be observable such as credit and liquidity risks. Private placements are valued by the custodian using recognized pricing services and sources.

The private equity portfolio is a diversified mix of derivative instruments, growth equity and partnership interests. Derivative investments are written options that are valued by independent parties using market inputs and valuation models. Growth equity investments are valued at the closing price reported in the active market in which the individual securities are traded.

Absolute return consists primarily of partnership interests in hedge funds, hedge fund of funds or other private fund vehicles. Corporate debt instruments are valued at either the yields currently available on comparable securities of issuers with similar credit ratings or valued under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments, but includes adjustments for certain risks that may not be observable such as credit and liquidity risk ratings.

Other items to reconcile to fair value of plan assets include, interest receivables, amounts due for securities sold, amounts payable for securities purchased and interest payable.

The balances of and changes in the fair values of the U.S. pension plans' and postretirement plans' level 3 assets for the periods ended December 31, 2019 and 2018 were not material.

International Pension Plans Assets

Outside the U.S., pension plan assets are typically managed by decentralized fiduciary committees. The disclosure below of asset categories is presented in aggregate for over 70 defined benefit plans in 25 countries; however, there is significant variation in asset allocation policy from country to country. Local regulations, local funding rules, and local financial and tax considerations are part of the funding and investment allocation process in each country. The Company provides standard funding and investment guidance to all international plans with more focused guidance to the larger plans.

Each plan has its own strategic asset allocation. The asset allocations are reviewed periodically and rebalanced when necessary.

The fair values of the assets held by the international pension plans by asset class are as follows:

	Fair Value Measurements Using Inputs Considered as						Fair Value at	
(Millions)	**Level 1**		**Level 2**		**Level 3**		**Dec. 31,**	
Asset Class	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Equities								
Growth equities	**$ 638**	$ 460	**$ 796**	$ 248	**$ —**	$ —	**$ 1,434**	$ 708
Value equities	**696**	446	**10**	42	**—**	—	**706**	488
Core equities	**61**	55	**88**	742	**5**	5	**154**	802
Equities, valued at net asset value*							**18**	16
Total Equities	**$ 1,395**	$ 961	**$ 894**	$ 1,032	**$ 5**	**$** 5	**$ 2,312**	$ 2,014
Fixed Income								
Domestic government	**$ 353**	$ 334	**$ 433**	$ 351	**$ 4**	$ 5	**$ 790**	$ 690
Foreign government	**22**	150	**603**	321	**—**	—	**625**	471
Corporate debt securities	**3**	56	**1,599**	993	**9**	9	**1,611**	1,058
Fixed income securities, valued at net asset value*							**449**	961
Total Fixed Income	**$ 378**	$ 540	**$ 2,635**	$ 1,665	**$ 13**	**$** 14	**$ 3,475**	$ 3,180
Private Equity								
Real estate	**$ 6**	$ 5	**$ 207**	$ 75	**$ 4**	$ 4	**$ 217**	$ 84
Real estate, valued at net asset value*							**36**	37
Partnership investments*							**85**	89
Total Private Equity	**$ 6**	$ 5	**$ 207**	$ 75	**$ 4**	**$** 4	**$ 338**	$ 210
Absolute Return								
Derivatives	**$ —**	$ 1	**$ 3**	$ 1	**$ —**	$ —	**$ 3**	$ 2
Insurance	**—**	—	**—**	—	**513**	496	**513**	496
Other	**—**	—	**—**	33	**5**	8	**5**	41
Other, valued at net asset value*							**1**	—
Hedge funds*							**195**	186
Total Absolute Return	**$ —**	$ 1	**$ 3**	$ 34	**$ 518**	**$** 504	**$ 717**	$ 725
Cash and Cash Equivalents								
Cash and cash equivalents	**$ 94**	$ 71	**$ 39**	$ 22	**$ —**	$ —	**$ 133**	$ 93
Cash and cash equivalents, valued at net asset value*							**1**	1
Total Cash and Cash Equivalents	**$ 94**	$ 71	**$ 39**	$ 22	**$ —**	$ —	**$ 134**	$ 94
Total	**$ 1,873**	$ 1,578	**$ 3,778**	$ 2,828	**$ 540**	**$** 527	**$ 6,976**	$ 6,223
Other items to reconcile to fair value of plan assets							**$ (53)**	$ (53)
Fair value of plan assets							**$ 6,923**	$ 6,170

*In accordance with ASC 820-10, certain investments that are measured at fair value using the NAV per share (or its equivalent) as a practical expedient have not been classified in the fair value hierarchy. The NAV is based on the fair value of the underlying assets owned by the fund, minus its liabilities then divided by the number of units outstanding and is determined by the investment manager or custodian of the fund. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the fair value of plan assets.

Equities consist primarily of mandates in public equity securities managed to various public equity indices. Publicly traded equities are valued at the closing price reported in the active market in which the individual securities are traded.

Fixed Income investments include domestic and foreign government, and corporate, (including mortgage backed and other debt) securities. Governments, corporate bonds and notes and mortgage backed securities are valued at the closing price reported if traded on an active market or at yields currently available on comparable securities of issuers with similar credit ratings or valued under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments, but includes adjustments for certain risks that may not be observable such as credit and liquidity risks.

Private equity funds consist of partnership interests in a variety of funds. Real estate consists of property funds and REITS (Real Estate Investment Trusts). REITS are valued at the closing price reported in the active market in which it is traded.

Absolute return consists of private partnership interests in hedge funds, insurance contracts, derivative instruments, hedge fund of funds, and other alternative investments. Insurance consists of insurance contracts, which are valued using cash surrender values which is the amount the plan would receive if the contract was cashed out at year end. Derivative instruments consist of interest rate swaps that are used to help manage risks.

Other items to reconcile to fair value of plan assets include the net of interest receivables, amounts due for securities sold, amounts payable for securities purchased and interest payable.

The balances of and changes in the fair values of the international pension plans' level 3 assets consist primarily of insurance contracts under the absolute return asset class. The aggregate of net purchases and net unrealized gains increased this balance by $17 million in 2019 and decreased this balance by $11 million in 2018.

NOTE 14. Derivatives

The Company uses interest rate swaps, currency swaps, commodity price swaps, and forward and option contracts to manage risks generally associated with foreign exchange rate, interest rate and commodity price fluctuations. The information that follows explains the various types of derivatives and financial instruments used by 3M, how and why 3M uses such instruments, how such instruments are accounted for, and how such instruments impact 3M's financial position and performance.

3M adopted ASU No. 2017-12, *Targeted Improvements to Accounting for Hedging Activities* as of January 1, 2019. The disclosures contained within this note have been updated to reflect the new guidance, except for prior period amounts presented, as the disclosure changes were adopted prospectively. For derivative instruments that are designated in a cash flow or fair value hedging relationship, the impact of this accounting standard was to remove the requirement to test for ineffectiveness. Prior to the adoption of this ASU, any gain or loss related to hedge ineffectiveness was recognized in current earnings. For any net investment hedges entered into on or after January 1, 2019, amounts excluded from the assessment of hedge effectiveness, including the time value of the forward contract at the inception of the hedge, are recognized in earnings using an amortization approach over the life of the hedging instrument on a straight-line basis. Any difference between the change in the fair value of the excluded component and the amount amortized into earnings during the period is recorded in cumulative translation within other comprehensive income.

Additional information with respect to derivatives is included elsewhere as follows:

- Impact on other comprehensive income of nonderivative hedging and derivative instruments is included in Note 8.
- Fair value of derivative instruments is included in Note 15.
- Derivatives and/or hedging instruments associated with the Company's long-term debt are also described in Note 12.

Types of Derivatives/Hedging Instruments and Inclusion in Income/Other Comprehensive Income:

Cash Flow Hedges:

For derivative instruments that are designated and qualify as cash flow hedges, the gain or loss on the derivative is reported as a component of other comprehensive income and reclassified into earnings in the same period during which the hedged transaction affects earnings. Gains and losses on the derivative representing hedge components excluded from the assessment of effectiveness are recognized in current earnings.

Cash Flow Hedging - Foreign Currency Forward and Option Contracts: The Company enters into foreign exchange forward and option contracts to hedge against the effect of exchange rate fluctuations on cash flows denominated in foreign currencies. These transactions are designated as cash flow hedges. The settlement or extension of these derivatives will result in reclassifications (from accumulated other comprehensive income) to earnings in the period during which the hedged transactions affect earnings. 3M may dedesignate these cash flow hedge relationships in advance of the occurrence of the forecasted transaction. The portion of gains or losses on the derivative instrument previously included in accumulated other comprehensive income for dedesignated hedges remains in accumulated other comprehensive income until the forecasted transaction occurs or becomes probable of not occurring. Changes in the value of derivative instruments after dedesignation are recorded in earnings and are included in the Derivatives Not Designated as Hedging Instruments section below. The maximum length of time over which 3M hedges its exposure to the variability in future cash flows of the forecasted transactions is 36 months.

Cash Flow Hedging — Interest Rate Contracts: The Company may use forward starting interest rate contracts to hedge exposure to variability in cash flows from interest payments on forecasted debt issuances.

In the fourth quarter of 2016, the Company entered into forward starting interest rate swaps with a notional amount of $200 million as a hedge against interest rate volatility associated with a forecasted issuance of fixed rate debt. In 2017, the Company entered into additional forward starting interest rate swaps with notional amounts of $600 million as hedges against interest rate volatility associated with a forecasted issuance of fixed rate debt. Prior to the issuance of medium-term notes in October 2017, 3M terminated these interest rate swaps. The termination resulted in an immaterial loss within accumulated other comprehensive income that will be amortized over the respective lives of the debt.

During 2018, the Company entered into forward starting interest rate swaps with a notional amount of $1.2 billion as hedges against interest rate volatility associated with forecasted issuances of fixed rate debt. Concurrent with the issuance of the medium-term notes in September 2018, 3M terminated $500 million of these interest rate swaps. The termination resulted in an immaterial gain within accumulated other comprehensive income that will be amortized over the respective lives of the debt.

As of December 31, 2018, the Company had $700 million of notional amount in outstanding forward starting interest rate swaps as hedges against interest rate volatility with forecasted issuances of fixed rate debt. During 2019, the Company entered into additional forward starting interest rate swaps with a notional amount of $743 million. Concurrent with the issuance of the medium-term notes in February 2019 and the additional issuance of registered notes in August 2019, 3M terminated all outstanding interest rate swaps related to forecasted issuances of debt. These terminations resulted in a net loss of $143 million within accumulated other comprehensive income that will be amortized over the respective lives of the debt.

The amortization of gains and losses on forward starting interest rate swaps is included in the tables below as part of the gain/(loss) reclassified from accumulated other comprehensive income into income.

As of December 31, 2019, the Company had a balance of $31 million associated with the after-tax net unrealized loss associated with cash flow hedging instruments recorded in accumulated other comprehensive income. This includes a remaining balance of $112 million (after-tax loss) related to the forward starting interest rate swaps, which will be amortized over the respective lives of the notes. Based on exchange rates as of December 31, 2019, 3M expects to reclassify approximately $42 million and $20 million of the after-tax net unrealized foreign exchange cash flow hedging gains to earnings in 2020 and 2021, respectively, in addition to reclassifying approximately $93 million of the after-tax net unrealized foreign exchange cash flow hedging losses to earnings after 2021 (with the impact offset by earnings/losses from underlying hedged items).

The location in the consolidated statements of income and comprehensive income and amounts of gains and losses related to derivative instruments designated as cash flow hedges are provided in the following table. Reclassifications of amounts from accumulated other comprehensive income into income include accumulated gains (losses) on dedesignated hedges at the time earnings are impacted by the forecasted transaction.

Year ended December 31, 2019 (Millions)	Pretax Gain (Loss) Recognized in Other Comprehensive Income on Derivative		Pretax Gain (Loss) Reclassified from Accumulated Other Comprehensive Income into Income		
	Amount		Location	Amount	
Foreign currency forward/option contracts	$	96	Cost of sales	$	74
Interest rate swap contracts		(122)	Interest expense		(4)
Total	$	(26)		$	70

Year ended December 31, 2018 (Millions)	Pretax Gain (Loss) Recognized in Other Comprehensive Income on Effective Portion of Derivative		Pretax Gain (Loss) Recognized in Income on Effective Portion of Derivative as a Result of Reclassification from Accumulated Other Comprehensive Income			Ineffective Portion of Gain (Loss) on Derivative and Amount Excluded from Effectiveness Testing Recognized in Income		
	Amount		Location	Amount		Location	Amount	
Foreign currency forward/option contracts	$	151	Cost of sales	$	(95)	Cost of sales	$	—
Interest rate swap contracts		(18)	Interest expense		(1)	Interest expense		—
Total	$	133		$	(96)		$	—

Year ended December 31, 2017 (Millions)	Amount		Location	Amount		Location	Amount	
Foreign currency forward/option contracts	$	(305)	Cost of sales	$	8	Cost of sales	$	—
Interest rate swap contracts		(6)	Interest expense		(1)	Interest expense		—
Total	$	(311)		$	7		$	—

Fair Value Hedges:

For derivative instruments that are designated and qualify as fair value hedges, the gain or loss on the derivatives as well as the offsetting loss or gain on the hedged item attributable to the hedged risk are recognized in current earnings.

Fair Value Hedging - Interest Rate Swaps: The Company manages interest expense using a mix of fixed and floating rate debt. To help manage borrowing costs, the Company may enter into interest rate swaps. Under these arrangements, the Company agrees to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to an agreed-upon notional principal amount. The mark-to-market of these fair value hedges is recorded as gains or losses in interest expense and is offset by the gain or loss of the underlying debt instrument, which also is recorded in interest expense.

In November 2013, 3M issued a Eurobond due in 2021 for a face amount of 600 million Euros. Upon debt issuance, 3M completed a fixed-to-floating interest rate swap on a notional amount of 300 million Euros as a fair value hedge of a portion of the fixed interest rate Eurobond obligation.

In June 2014, 3M issued $950 million aggregate principal amount of medium-term notes. Upon debt issuance, the Company entered into an interest rate swap to convert $600 million of a $625 million note that was due in 2019, included in this issuance, to an interest rate based on a floating three-month LIBOR index as a fair value hedge of a portion of the fixed interest rate medium-term note obligation. This interest rate swap matured in conjunction with the repayment of the $625 million aggregate principal amount of fixed-rate medium notes that matured in June 2019.

In August 2015, 3M issued $1.5 billion aggregate principal amount of medium-term notes. Upon debt issuance, the Company entered into two interest rate swaps as fair value hedges of a portion of the fixed interest rate medium-term note obligation. The first converted a $450 million three-year fixed rate note that matured in August 2018 at which time the associated interest rate swap also matured, and the second converted $300 million of a five-year fixed rate note that is due in 2020, included in this issuance, to an interest rate based on a floating three-month LIBOR index.

In the fourth quarter of 2017, the Company entered into an interest rate swap with a notional amount of $200 million that converted the company's fixed-rate medium-term note due 2020 into a floating-rate note as a hedge of its exposure to changes in the fair value that is attributable to interest rate risk.

In September 2018, the Company entered into an interest rate swap with a notional amount of $200 million that converted a portion of the Company's $400 million aggregate principal amount of fixed rate medium-term notes due 2021 into a floating rate note with an interest rate based on a three-month LIBOR index as a hedge of its exposure to changes in fair value that are attributable to interest rate risk.

Refer to the section below titled *Statement of Income Location and Impact of Cash Flow and Fair Value Derivative Instruments* for details on the location within the consolidated statements of income for amounts of gains and losses related to derivative instruments designated as fair value hedges and similar information relative to the hedged items for the year ended December 31, 2019.

The location in the consolidated statements of income and amounts of gains and losses related to derivative instruments designated as fair value hedges and similar information relative to the hedged items are as follows for periods prior to 2019:

	Gain (Loss) on Derivative Recognized in Income		Gain (Loss) on Hedged Item Recognized in Income	
Year ended December 31, 2018 (Millions)	**Location**	**Amount**	**Location**	**Amount**
Interest rate swap contracts	Interest expense	$ (5)	Interest expense	$ 5
Total		$ (5)		$ 5

Year ended December 31, 2017 (Millions)	**Location**	**Amount**	**Location**	**Amount**
Interest rate swap contracts	Interest expense	$ (9)	Interest expense	$ 9
Total		$ (9)		$ 9

The following amounts were recorded on the consolidated balance sheet related to cumulative basis adjustments for fair value hedges:

	Carrying Value of the Hedged Liabilities (in millions)		Cumulative Amount of Fair Value Hedging Adjustment Included in the Carrying Value of the Hedged Liabilities (in millions)	
Location on the Consolidated Balance Sheet	**December 31, 2019**	**December 31, 2018**	**December 31, 2019**	**December 31, 2018**
Short-term borrowings and current portion of long-term debt	$ 499	$ 596	$ —	$ (4)
Long-term debt	775	1,276	22	18
Total	$ 1,274	$ 1,872	$ 22	$ 14

<u>Net Investment Hedges:</u>

The Company may use non-derivative (foreign currency denominated debt) and derivative (foreign exchange forward contracts) instruments to hedge portions of the Company's investment in foreign subsidiaries and manage foreign exchange risk. For instruments that are designated and qualify as hedges of net investments in foreign operations and that meet the effectiveness requirements, the net gains or losses attributable to changes in spot exchange rates are recorded in cumulative translation within other comprehensive income. The remainder of the change in value of such instruments is recorded in earnings. Recognition in earnings of amounts previously recorded in cumulative translation is limited to circumstances such as complete or substantially complete liquidation of the net investment in the hedged foreign operation. To the extent foreign currency denominated debt is not designated in or is dedesignated from a net investment hedge relationship, changes in value of that portion of foreign currency denominated debt due to exchange rate changes are recorded in earnings through their maturity date.

3M's use of foreign exchange forward contracts designated in hedges of the Company's net investment in foreign subsidiaries can vary by time period depending on when foreign currency denominated debt balances designated in such relationships are dedesignated, matured, or are newly issued and designated. Additionally, variation can occur in connection with the extent of the Company's desired foreign exchange risk coverage.

During the first quarter of 2018, the Company dedesignated 300 million Euros of foreign currency denominated debt from a former net investment hedge relationship.

At December 31, 2019, the total notional amount of foreign exchange forward contracts designated in net investment hedges was approximately 200 million Euros, along with a principal amount of long-term debt instruments designated in net investment hedges totaling 4.1 billion Euros. The maturity dates of these derivative and nonderivative instruments designated in net investment hedges range from 2020 to 2031.

The location in the consolidated statements of income and comprehensive income and amounts of gains and losses related to derivative and nonderivative instruments designated as net investment hedges are as follows. There were no reclassifications of the effective portion of net investment hedges out of accumulated other comprehensive income into income for the periods presented in the table below.

	Pretax Gain (Loss) Recognized as Cumulative Translation within Other Comprehensive Income	Amount of Gain (Loss) Excluded from Effectiveness Testing Recognized in Income	
Year ended December 31, 2019 (Millions)	**Amount**	**Location**	**Amount**
Foreign currency denominated debt	$ 108	Cost of sales	$ —
Foreign currency forward contracts	32	Cost of sales	20
Total	$ 140		$ 20

	Pretax Gain (Loss) Recognized as Cumulative Translation within Other Comprehensive Income on Effective Portion of Instrument	Ineffective Portion of Gain (Loss) on Instrument and Amount Excluded from Effectiveness Testing Recognized in Income	
Year ended December 31, 2018 (Millions)	**Amount**	**Location**	**Amount**
Foreign currency denominated debt	$ 222	Cost of sales	$ (2)
Foreign currency forward contracts	18	Cost of sales	4
Total	$ 240		$ 2

Year ended December 31, 2017 (Millions)	**Amount**	**Location**	**Amount**
Foreign currency denominated debt	$ (667)	N/A	$ —
Foreign currency forward contracts	(58)	Cost of sales	7
Total	$ (725)		$ 7

Derivatives Not Designated as Hedging Instruments:

Derivatives not designated as hedging instruments include dedesignated foreign currency forward and option contracts that formerly were designated in cash flow hedging relationships (as referenced in the Cash Flow Hedges section above). In addition, 3M enters into foreign currency forward contracts to offset, in part, the impacts of certain intercompany activities (primarily associated with intercompany licensing arrangements) and enters into commodity price swaps to offset, in part, fluctuations in costs associated with the use of certain commodities and precious metals. These derivative instruments are not designated in hedging relationships; therefore, fair value gains and losses on these contracts are recorded in earnings. The Company does not hold or issue derivative financial instruments for trading purposes.

The location in the consolidated statements of income and amounts of gains and losses related to derivative instruments not designated as hedging instruments are as follows:

		Gain (Loss) on Derivative Recognized in Income		
		Year ended December 31,		
		2019	2018	2017
(Millions)	Location	Amount	Amount	Amount
Foreign currency forward/option contracts	Cost of sales	$ 2	$ 13	$ 11
Foreign currency forward contracts	Interest expense	(13)	(109)	(141)
Total		$ (11)	$ (96)	$ (130)

Statement of Income Location and Impact of Cash Flow and Fair Value Derivative Instruments

The location in the consolidated statement of income and pre-tax amounts recognized in income related to derivative instruments designated in a cash flow or fair value hedging relationship are as follows:

	Location and Amount of Gain (Loss) Recognized in Income	
	Year ended December 31, 2019	
(Millions)	Cost of Goods Sold	Other expense (income), net
Total amounts of income and expense line items presented in the consolidated statement of income in which the effects of cash flow or fair value hedges are recorded	$ 17,136	$ 462
The effects of fair value and cash flow hedging:		
Gain or (loss) on cash flow hedging relationships:		
Foreign currency forward/option contracts:		
Amount of gain or (loss) reclassified from accumulated other comprehensive income into income	$ 74	$ —
Interest rate swap contracts:		
Amount of gain or (loss) reclassified from accumulated other comprehensive income into income	—	(4)
Gain or (loss) on fair value hedging relationships:		
Interest rate swap contracts:		
Hedged items	$ —	$ (8)
Derivatives designated as hedging instruments	—	8

Location and Fair Value Amount of Derivative Instruments:

The following tables summarize the fair value of 3M's derivative instruments, excluding nonderivative instruments used as hedging instruments, and their location in the consolidated balance sheet. Notional amounts below are presented at period end foreign exchange rates, except for certain interest rate swaps, which are presented using the inception date's foreign exchange rate. Additional information with respect to the fair value of derivative instruments is included in Note 15.

December 31, 2019 (Millions)	Gross Notional Amount	Assets Location	Assets Fair Value Amount	Liabilities Location	Liabilities Fair Value Amount
Derivatives designated as hedging instruments					
Foreign currency forward/option contracts	$ 1,995	Other current assets	$ 64	Other current liabilities	$ 9
Foreign currency forward/option contracts	1,041	Other assets	50	Other liabilities	3
Interest rate swap contracts	500	Other current assets	—	Other current liabilities	—
Interest rate swap contracts	603	Other assets	17	Other liabilities	—
Total derivatives designated as hedging instruments			$ 131		$ 12
Derivatives not designated as hedging instruments					
Foreign currency forward/option contracts	$ 2,684	Other current assets	$ 11	Other current liabilities	$ 8
Total derivatives not designated as hedging instruments			$ 11		$ 8
Total derivative instruments			$ 142		$ 20

December 31, 2018 (Millions)	Gross Notional Amount	Assets Location	Assets Fair Value Amount	Liabilities Location	Liabilities Fair Value Amount
Derivatives designated as hedging instruments					
Foreign currency forward/option contracts	$ 2,277	Other current assets	$ 74	Other current liabilities	$ 12
Foreign currency forward/option contracts	1,099	Other assets	39	Other liabilities	4
Interest rate swap contracts	1,000	Other current assets	—	Other current liabilities	14
Interest rate swap contracts	1,403	Other assets	19	Other liabilities	17
Total derivatives designated as hedging instruments			$ 132		$ 47
Derivatives not designated as hedging instruments					
Foreign currency forward/option contracts	$ 2,484	Other current assets	$ 14	Other current liabilities	$ 6
Total derivatives not designated as hedging instruments			$ 14		$ 6
Total derivative instruments			$ 146		$ 53

Credit Risk and Offsetting of Assets and Liabilities of Derivative Instruments:

The Company is exposed to credit loss in the event of nonperformance by counterparties in interest rate swaps, currency swaps, commodity price swaps, and forward and option contracts. However, the Company's risk is limited to the fair value of the instruments. The Company actively monitors its exposure to credit risk through the use of credit approvals and credit limits, and by selecting major international banks and financial institutions as counterparties. 3M enters into master netting arrangements with counterparties when possible to mitigate credit risk in derivative transactions. A master netting arrangement may allow each counterparty to net settle amounts owed between a 3M entity and the counterparty as a result of multiple, separate derivative transactions. As of December 31, 2019, 3M has International Swaps and Derivatives Association (ISDA) agreements with 17 applicable banks and financial institutions which contain netting provisions. In addition to a master agreement with 3M supported by a primary counterparty's parent guarantee, 3M also has associated credit support agreements in place with 16 of its primary derivative counterparties which, among other things, provide the circumstances under which either party is required to post eligible collateral (when the market value of transactions covered by these agreements exceeds specified thresholds or if a counterparty's credit rating has been downgraded to a predetermined rating). The Company does not anticipate nonperformance by any of these counterparties.

3M has elected to present the fair value of derivative assets and liabilities within the Company's consolidated balance sheet on a gross basis even when derivative transactions are subject to master netting arrangements and may otherwise qualify for net presentation. However, the following tables provide information as if the Company had elected to offset the asset and liability balances of derivative instruments, netted in accordance with various criteria in the event of default or termination as stipulated by the terms of netting arrangements with each of the counterparties. For each counterparty, if netted, the Company would offset the asset and liability balances of all derivatives at the end of the reporting period based on the 3M entity that is a party to the transactions. Derivatives not subject to master netting agreements are not eligible for net presentation. As of the applicable dates presented below, no cash collateral had been received or pledged related to these derivative instruments.

Offsetting of Financial Assets under Master Netting Agreements with Derivative Counterparties

		Gross Amounts not Offset in the Consolidated Balance Sheet that are Subject to Master Netting Agreements		
December 31, 2019 (Millions)	**Gross Amount of Derivative Assets Presented in the Consolidated Balance Sheet**	**Gross Amount of Eligible Offsetting Recognized Derivative Liabilities**	**Cash Collateral Received**	**Net Amount of Derivative Assets**
Derivatives subject to master netting agreements	$ 142	$ 14	$ —	$ 128
Derivatives not subject to master netting agreements	—			—
Total	$ 142			$ 128
December 31, 2018 (Millions)				
Derivatives subject to master netting agreements	$ 146	$ 38	$ —	$ 108
Derivatives not subject to master netting agreements	—			—
Total	$ 146			$ 108

Offsetting of Financial Liabilities under Master Netting Agreements with Derivative Counterparties

		Gross Amounts not Offset in the Consolidated Balance Sheet that are Subject to Master Netting Agreements		
December 31, 2019 (Millions)	**Gross Amount of Derivative Liabilities Presented in the Consolidated Balance Sheet**	**Gross Amount of Eligible Offsetting Recognized Derivative Assets**	**Cash Collateral Pledged**	**Net Amount of Derivative Liabilities**
Derivatives subject to master netting agreements	$ 20	$ 14	$ —	$ 6
Derivatives not subject to master netting agreements	—			—
Total	$ 20			$ 6
December 31, 2018 (Millions)				
Derivatives subject to master netting agreements	$ 53	$ 38	$ —	$ 15
Derivatives not subject to master netting agreements	—			—
Total	$ 53			$ 15

Foreign Currency Effects

3M estimates that year-on-year foreign currency transaction effects, including hedging impacts, increased pre-tax income by approximately $201 million in 2019 and decreased pre-tax income by approximately $92 million in 2018. These estimates include transaction gains and losses, including derivative instruments designed to reduce foreign currency exchange rate risks.

NOTE 15. Fair Value Measurements

3M follows ASC 820, *Fair Value Measurements and Disclosures*, with respect to assets and liabilities that are measured at fair value on a recurring basis and nonrecurring basis. Refer to Note 1 for additional details.

Assets and Liabilities that are Measured at Fair Value on a Recurring Basis:

For 3M, assets and liabilities that are measured at fair value on a recurring basis primarily relate to available-for-sale marketable securities and certain derivative instruments. Derivatives include cash flow hedges, interest rate swaps and net investment hedges. The information in the following paragraphs and tables primarily addresses matters relative to these financial assets and liabilities. Separately, there were no material fair value measurements with respect to nonfinancial assets or liabilities that are recognized or disclosed at fair value in the Company's financial statements on a recurring basis for 2019 and 2018.

3M uses various valuation techniques, which are primarily based upon the market and income approaches, with respect to financial assets and liabilities. Following is a description of the valuation methodologies used for the respective financial assets and liabilities measured at fair value.

Available-for-sale marketable securities — except certain U.S. municipal securities:

Marketable securities, except certain U.S. municipal securities, are valued utilizing multiple sources. A weighted average price is used for these securities. Market prices are obtained for these securities from a variety of industry standard data providers, security master files from large financial institutions, and other third-party sources. These multiple prices are used as inputs into a distribution-curve-based algorithm to determine the daily fair value to be used. 3M classifies U.S. treasury securities as level 1, while all other marketable securities (excluding certain U.S. municipal securities) are classified as level 2. Marketable securities are discussed further in Note 11.

Available-for-sale marketable securities —certain U.S. municipal securities only:

3M holds municipal securities with certain cities in the United States as of December 31, 2019. Due to the nature of these securities, the valuation method utilized includes referencing the carrying value of the corresponding finance lease obligation as adjusted for additional issuances when 3M sells its assets to the municipality and decreases in the form of bond amortization payments, and as such will be classified as level 3 securities separately. Refer to Note 9 for additional discussion of the non-cash nature of these securities.

Investments:

Investments include equity securities that are traded in an active market. Closing stock prices are readily available from active markets and are representative of fair value. 3M classifies these securities as Level 1. Investments are included within other assets on the Company's consolidated balance sheet.

Derivative instruments:

The Company's derivative assets and liabilities within the scope of ASC 815, *Derivatives and Hedging*, are required to be recorded at fair value. The Company's derivatives that are recorded at fair value include foreign currency forward and option contracts, commodity price swaps, interest rate swaps, and net investment hedges where the hedging instrument is recorded at fair value. Net investment hedges that use foreign currency denominated debt to hedge 3M's net investment are not impacted by the fair value measurement standard under ASC 820, as the debt used as the hedging instrument is marked to a value with respect to changes in spot foreign currency exchange rates and not with respect to other factors that may impact fair value.

3M has determined that foreign currency forwards, commodity price swaps, currency swaps, foreign currency options, interest rate swaps and cross-currency swaps will be considered level 2 measurements. 3M uses inputs other than quoted prices that are observable for the asset. These inputs include foreign currency exchange rates, volatilities, and interest rates. Derivative positions are primarily valued using standard calculations/models that use as their basis readily observable market parameters. Industry standard data providers are 3M's primary source for forward and spot rate information for both interest rates and currency rates, with resulting valuations periodically validated through third-party or counterparty quotes and a net present value stream of cash flows model.

The following tables provide information by level for assets and liabilities that are measured at fair value on a recurring basis.

Description (Millions)	Fair Value at December 31, 2019	Fair Value Measurements Using Inputs Considered as Level 1	Level 2	Level 3
Assets:				
Available-for-sale:				
Marketable securities:				
Commercial paper	$ 85	$ —	$ 85	$ —
Certificates of deposit/time deposits	10	—	10	—
U.S. municipal securities	46	—	—	46
Investments	25	25	—	—
Derivative instruments — assets:				
Foreign currency forward/option contracts	125	—	125	—
Interest rate swap contracts	17	—	17	—
Liabilities:				
Derivative instruments — liabilities:				
Foreign currency forward/option contracts	20	—	20	—

Description (Millions)	Fair Value at December 31, 2018	Fair Value Measurements Using Inputs Considered as Level 1	Level 2	Level 3
Assets:				
Available-for-sale:				
Marketable securities:				
Commercial paper	$ 366	$ —	$ 366	$ —
Certificates of deposit/time deposits	10	—	10	—
Asset-backed securities	1	—	1	—
U.S. municipal securities	40	—	—	40
Derivative instruments — assets:				
Foreign currency forward/option contracts	127	—	127	—
Interest rate swap contracts	19	—	19	—
Liabilities:				
Derivative instruments — liabilities:				
Foreign currency forward/option contracts	22	—	22	—
Interest rate swap contracts	31	—	31	—

The following table provides a reconciliation of the beginning and ending balances of items measured at fair value on a recurring basis in the table above that used significant unobservable inputs (level 3).

Marketable securities — certain U.S. municipal securities only (Millions)	2019	2018	2017
Beginning balance	**$ 40**	$ 30	$ 20
Total gains or losses:			
Included in earnings	**—**	—	—
Included in other comprehensive income	**—**	—	—
Purchases and issuances	**9**	13	13
Sales and settlements	**(3)**	(3)	(3)
Transfers in and/or out of level 3	**—**	—	—
Ending balance	**46**	40	30
Change in unrealized gains or losses for the period included in earnings for securities held at the end of the reporting period	**—**	—	—

In addition, the plan assets of 3M's pension and postretirement benefit plans are measured at fair value on a recurring basis (at least annually). Refer to Note 13.

Assets and Liabilities that are Measured at Fair Value on a Nonrecurring Basis:

Disclosures are required for certain assets and liabilities that are measured at fair value, but are recognized and disclosed at fair value on a nonrecurring basis in periods subsequent to initial recognition. For 3M, such measurements of fair value relate primarily to long-lived asset impairments and adjustment in carrying value of equity securities for which the measurement alternative of cost less impairment plus or minus observable price changes is used. During 2017, the Company recognized approximately $61 million in long-lived asset impairments within its Safety and Industrial and Transportation and Electronics business segments, with the complete carrying amount of such assets written off and included in operating income results. There were no material long-lived asset impairments for 2018 and 2019. There were no material adjustments to equity securities using the measurement alternative for 2019.

Fair Value of Financial Instruments:

The Company's financial instruments include cash and cash equivalents, marketable securities, held-to-maturity debt securities, accounts receivable, certain investments, accounts payable, borrowings, and derivative contracts. The fair values of cash equivalents, accounts receivable, held-to-maturity debt securities, accounts payable, and short-term borrowings and current portion of long-term debt approximated carrying values because of the short-term nature of these instruments. Available-for-sale marketable securities, in addition to certain derivative instruments, are recorded at fair values as indicated in the preceding disclosures. To estimate fair values (classified as level 2) for its long-term debt, the Company utilized third-party quotes, which are derived all or in part from model prices, external sources, market prices, or the third-party's internal records. Information with respect to the carrying amounts and estimated fair values of these financial instruments follow:

	December 31, 2019		December 31, 2018	
(Millions)	Carrying Value	Fair Value	Carrying Value	Fair Value
Long-term debt, excluding current portion	**$ 17,518**	**$ 18,475**	$ 13,411	$ 13,586

The fair values reflected above consider the terms of the related debt absent the impacts of derivative/hedging activity. The carrying amount of long-term debt referenced above is impacted by certain fixed-to-floating interest rate swaps that are designated as fair value hedges and by the designation of certain fixed rate Eurobond securities issued by the Company as hedging instruments of the Company's net investment in its European subsidiaries. A number of 3M's fixed-rate bonds were trading at a premium at December 31, 2019 and 2018 due to the lower interest rates and tighter credit spreads compared to issuance levels.

NOTE 16. Commitments and Contingencies

Unconditional Purchase Obligations:

Unconditional purchase obligations are defined as an agreement to purchase goods or services that is enforceable and legally binding (non-cancelable, or cancelable only in certain circumstances). The Company estimates its total unconditional purchase obligation commitment (for those contracts with terms in excess of one year) as of December 31, 2019, at $983 million. Payments by year are estimated as follows: 2020 ($306 million), 2021 ($278 million), 2022 ($156 million), 2023 ($184 million), 2024 ($42 million) and after 2024 ($17 million). Many of these commitments relate to take or pay contracts, in which 3M guarantees payment to ensure availability of products or services that are sold to customers. The Company expects to receive consideration (products or services) for these unconditional purchase obligations. The purchase obligation amounts do not represent the entire anticipated purchases in the future, but represent only those items for which the Company is contractually obligated. The majority of 3M's products and services are purchased as needed, with no unconditional commitment. For this reason, these amounts will not provide an indication of the Company's expected future cash outflows related to purchases.

Warranties/Guarantees:

3M's accrued product warranty liabilities, recorded on the Consolidated Balance Sheet as part of current and long-term liabilities, are estimated at approximately $51 million at December 31, 2019, and $48 million at December 31, 2018. Further information on product warranties are not disclosed, as the Company considers the balance immaterial to its consolidated results of operations and financial condition. The fair value of 3M guarantees of loans with third parties and other guarantee arrangements are not material.

Related Party Activity:

3M does not have any material related party activity.

Legal Proceedings:

The Company and some of its subsidiaries are involved in numerous claims and lawsuits, principally in the United States, and regulatory proceedings worldwide. These claims, lawsuits and proceedings include, but are not limited to, products liability (involving products that the Company now or formerly manufactured and sold), intellectual property, commercial, antitrust, federal False Claims Act, securities, and state and federal environmental laws. Unless otherwise stated, the Company is vigorously defending all such litigation and proceedings. From time to time, the Company also receives subpoenas or requests for information from various government agencies. The Company generally responds to such subpoenas and requests in a cooperative, thorough and timely manner. These responses sometimes require time and effort and can result in considerable costs being incurred by the Company. Such subpoenas and requests can also lead to the assertion of claims or the commencement of administrative, civil or criminal legal proceedings against the Company and others, as well as to settlements. The outcomes of legal proceedings and regulatory matters are often difficult to predict. Any determination that the Company's operations or activities are not, or were not, in compliance with applicable laws or regulations could result in the imposition of fines, civil or criminal penalties, and equitable remedies, including disgorgement, suspension or debarment or injunctive relief.

Process for Disclosure and Recording of Liabilities Related to Legal Proceedings

Many lawsuits and claims involve highly complex issues relating to causation, scientific evidence, and alleged actual damages, all of which are otherwise subject to substantial uncertainties. Assessments of lawsuits and claims can involve a series of complex judgments about future events and can rely heavily on estimates and assumptions. When making determinations about recording liabilities related to legal proceedings, the Company complies with the requirements of ASC 450, *Contingencies*, and related guidance, and records liabilities in those instances where it can reasonably estimate the amount of the loss and when liability is probable. Where the reasonable estimate of the probable loss is a range, the Company records as an accrual in its financial statements the most likely estimate of the loss, or the low end of the range if there is no one best estimate. The Company either discloses the amount of a possible loss or range of loss in excess of established accruals if estimable, or states that such an estimate cannot be made. The Company discloses significant legal proceedings even where liability is not probable or the amount of the liability is not estimable, or both, if the Company believes there is at least a reasonable possibility that a loss may be incurred.

Because litigation is subject to inherent uncertainties, and unfavorable rulings or developments could occur, there can be no certainty that the Company may not ultimately incur charges in excess of presently recorded liabilities. Many of the matters described are at preliminary stages or seek an indeterminate amount of damages. It is not uncommon for claims to be resolved over many years. A future adverse ruling, settlement, unfavorable development, or increase in accruals for one or more of these matters could result in future charges that could have a material adverse effect on the Company's results of operations or cash flows in the period in which they are recorded. Although the Company cannot estimate its exposure to all legal proceedings, the Company currently believes that the ultimate outcome of legal proceedings or future charges, if any, would not have a material adverse effect on the consolidated financial position of the Company. Based on experience and developments, the Company reexamines its estimates of probable liabilities and associated expenses and receivables each period, and whether it is able to estimate a liability previously determined to be not estimable and/or not probable. Where appropriate, the Company makes additions to or adjustments of its estimated liabilities. As a result, the current estimates of the potential impact on the Company's consolidated financial position, results of operations and cash flows for the legal proceedings and claims pending against the Company could change in the future.

Process for Disclosure and Recording of Insurance Receivables Related to Legal Proceedings

The Company estimates insurance receivables based on an analysis of the terms of its numerous policies, including their exclusions, pertinent case law interpreting comparable policies, its experience with similar claims, and assessment of the nature of the claim and remaining coverage, and records an amount it has concluded is likely to be recovered. For those insured legal proceedings where the Company has recorded an accrued liability in its financial statements, the Company also records receivables for the amount of insurance that it expects to recover under the Company's insurance program. For those insured matters where the Company has not recorded an accrued liability because the liability is not probable or the amount of the liability is not estimable, or both, but where the Company has incurred an expense in defending itself, the Company records receivables for the amount of insurance that it expects to recover for the expense incurred.

The following sections first describe the significant legal proceedings in which the Company is involved, and then describe the liabilities and associated insurance receivables the Company has accrued relating to its significant legal proceedings.

Respirator Mask/Asbestos Litigation

As of December 31, 2019, the Company is a named defendant, with multiple co-defendants, in numerous lawsuits in various courts that purport to represent approximately 1,727 individual claimants, compared to approximately 2,320 individual claimants with actions pending at December 31, 2018.

The vast majority of the lawsuits and claims resolved by and currently pending against the Company allege use of some of the Company's mask and respirator products and seek damages from the Company and other defendants for alleged personal injury from workplace exposures to asbestos, silica, coal mine dust or other occupational dusts found in products manufactured by other defendants or generally in the workplace. A minority of the lawsuits and claims resolved by and currently pending against the Company generally allege personal injury from occupational exposure to asbestos from products previously manufactured by the Company, which are often unspecified, as well as products manufactured by other defendants, or occasionally at Company premises.

The Company's current volume of new and pending matters is substantially lower than it experienced at the peak of filings in 2003. The Company expects that filing of claims by unimpaired claimants in the future will continue to be at much lower levels than in the past. Accordingly, the number of claims alleging more serious injuries, including mesothelioma, other malignancies, and black lung disease, will represent a greater percentage of total claims than in the past. Over the past twenty plus years, the Company has prevailed in fourteen of the fifteen cases tried to a jury (including the lawsuits in 2018 described below). In 2018, 3M received a jury verdict in its favor in two lawsuits – one in California state court in February and the other in Massachusetts state court in December – both involving allegations that 3M respirators were defective and failed to protect the plaintiffs against asbestos fibers. In April 2018, a jury in state court in Kentucky found 3M's 8710 respirators failed to protect two coal miners from coal mine dust and awarded compensatory damages of approximately \$2 million and punitive damages totaling \$63 million. In August 2018, the trial court entered judgment and the Company appealed. During March and April 2019, the Company agreed in principle to settle a substantial majority of the coal mine dust lawsuits in Kentucky and West Virginia for \$340 million, including the jury verdict in April 2018 in the Kentucky case mentioned above. That settlement has now been completed, and the appeal has been dismissed.

The Company has demonstrated in these past trial proceedings that its respiratory protection products are effective as claimed when used in the intended manner and in the intended circumstances. Consequently, the Company believes that claimants are unable to establish that their medical conditions, even if significant, are attributable to the Company's respiratory protection products. Nonetheless, the Company's litigation experience indicates that claims of persons alleging more serious injuries, including mesothelioma, other malignancies, and black lung disease, are costlier to resolve than the claims of unimpaired persons, and it therefore believes the average cost of resolving pending and future claims on a per-claim basis will continue to be higher than it experienced in prior periods when the vast majority of claims were asserted by medically unimpaired claimants.

As previously reported, the State of West Virginia, through its Attorney General, filed a complaint in 2003 against the Company and two other manufacturers of respiratory protection products in the Circuit Court of Lincoln County, West Virginia, and amended its complaint in 2005. The amended complaint seeks substantial, but unspecified, compensatory damages primarily for reimbursement of the costs allegedly incurred by the State for worker's compensation and healthcare benefits provided to all workers with occupational pneumoconiosis and unspecified punitive damages. The case was inactive from the fourth quarter of 2007 until late 2013, other than a case management conference in March 2011. In October 2019, the court granted the State's motion to sever its unfair trade practices claim. In January 2020, the manufacturers filed a petition with the West Virginia Supreme Court, challenging the trial court's rulings. No liability has been recorded for this matter because the Company believes that liability is not probable and estimable at this time. In addition, the Company is not able to estimate a possible loss or range of loss given the lack of any meaningful discovery responses by the State of West Virginia, the otherwise minimal activity in this case, and the assertions of claims against two other manufacturers where a defendant's share of liability may turn on the law of joint and several liability and by the amount of fault, if any, a jury may allocate to each defendant if the case were ultimately tried.

Respirator Mask/Asbestos Liabilities and Insurance Receivables

The Company regularly conducts a comprehensive legal review of its respirator mask/asbestos liabilities. The Company reviews recent and historical claims data, including without limitation, (i) the number of pending claims filed against the Company, (ii) the nature and mix of those claims (i.e., the proportion of claims asserting usage of the Company's mask or respirator products and alleging exposure to each of asbestos, silica, coal or other occupational dusts, and claims pleading use of asbestos-containing products allegedly manufactured by the Company), (iii) the costs to defend and resolve pending claims, and (iv) trends in filing rates and in costs to defend and resolve claims, (collectively, the "Claims Data"). As part of its comprehensive legal review, the Company regularly provides the Claims Data to a third party with expertise in determining the impact of Claims Data on future filing trends and costs. The third party assists the Company in estimating the costs to defend and resolve pending and future claims. The Company uses these estimates to develop its best estimate of probable liability.

Developments may occur that could affect the Company's estimate of its liabilities. These developments include, but are not limited to, significant changes in (i) the key assumptions underlying the Company's accrual, including, the number of future claims, the nature and mix of those claims, the average cost of defending and resolving claims, and in maintaining trial readiness (ii) trial and appellate outcomes, (iii) the law and procedure applicable to these claims, and (iv) the financial viability of other co-defendants and insurers.

As a result of the March and April 2019 settlements-in-principle of the coal mine dust lawsuits mentioned above, the Company's assessment of other current and expected coal mine dust lawsuits (including the costs to resolve all current and expected coal mine dust lawsuits in Kentucky and West Virginia), its review of its respirator mask/asbestos liabilities, and the cost of resolving claims of persons who claim more serious injuries, including mesothelioma, other malignancies, and black lung disease, the Company increased its accruals in 2019 for respirator mask/asbestos liabilities by $337 million, of which $313 million pre-tax was accrued in the first quarter of 2019. In 2019, the Company made payments for legal defense costs and settlements of $402 million related to the respirator mask/asbestos litigation. As of December 31, 2019, the Company had an accrual for respirator mask/asbestos liabilities (excluding Aearo accruals) of $608 million. This accrual represents the Company's best estimate of probable loss and reflects an estimation period for future claims that may be filed against the Company approaching the year 2050. The Company cannot estimate the amount or upper end of the range of amounts by which the liability may exceed the accrual the Company has established because of the (i) inherent difficulty in projecting the number of claims that have not yet been asserted or the time period in which future claims may be asserted, (ii) the complaints nearly always assert claims against multiple defendants where the damages alleged are typically not attributed to individual defendants so that a defendant's share of liability may turn on the law of joint and several liability, which can vary by state, (iii) the multiple factors described above that the Company considers in estimating its liabilities, and (iv) the several possible developments described above that may occur that could affect the Company's estimate of liabilities.

As of December 31, 2019, the Company's receivable for insurance recoveries related to the respirator mask/asbestos litigation was $4 million. The Company continues to seek coverage under the policies of certain insolvent and other insurers. Once those claims for coverage are resolved, the Company will have collected substantially all of its remaining insurance coverage for respirator mask/asbestos claims.

Respirator Mask/Asbestos Litigation — Aearo Technologies

On April 1, 2008, a subsidiary of the Company acquired the stock of Aearo Holding Corp., the parent of Aearo Technologies ("Aearo"). Aearo manufactured and sold various products, including personal protection equipment, such as eye, ear, head, face, fall and certain respiratory protection products.

As of December 31, 2019, Aearo and/or other companies that previously owned and operated Aearo's respirator business (American Optical Corporation, Warner-Lambert LLC, AO Corp. and Cabot Corporation ("Cabot")) are named defendants, with multiple co-defendants, including the Company, in numerous lawsuits in various courts in which plaintiffs allege use of mask and respirator products and seek damages from Aearo and other defendants for alleged personal injury from workplace exposures to asbestos, silica-related, coal mine dust, or other occupational dusts found in products manufactured by other defendants or generally in the workplace.

As of December 31, 2019, the Company, through its Aearo subsidiary, had accruals of $50 million for product liabilities and defense costs related to current and future Aearo-related asbestos and silica-related claims. This accrual represents the Company's best estimate of Aearo's probable loss and reflects an estimation period for future claims that may be filed against Aearo approaching the year 2050. The accrual was increased by $22 million from the year-end 2018, reflecting the Company's assessment of pending and expected lawsuits, its review of its respirator mask/asbestos liabilities, and the cost of resolving claims of persons who claim more serious injuries. Responsibility for legal costs, as well as for settlements and judgments, is currently shared in an informal arrangement among Aearo, Cabot, American Optical Corporation and a subsidiary of Warner Lambert and their respective insurers (the "Payor Group"). Liability is allocated among the parties based on the number of years each company sold respiratory products under the "AO Safety" brand and/or owned the AO Safety Division of American Optical Corporation and the alleged years of exposure of the individual plaintiff. Aearo's share of the contingent liability is further limited by an agreement entered into between Aearo and Cabot on July 11, 1995. This agreement provides that, so long as Aearo pays to Cabot a quarterly fee of $100,000, Cabot will retain responsibility and liability for, and indemnify Aearo against, any product liability claims involving exposure to asbestos, silica, or silica products for respirators sold prior to July 11, 1995. Because of the difficulty in determining how long a particular respirator remains in the stream of commerce after being sold, Aearo and Cabot have applied the agreement to claims arising out of the alleged use of respirators involving exposure to asbestos, silica or silica products prior to January 1, 1997. With these arrangements in place, Aearo's potential liability is limited to exposures alleged to have arisen from the use of respirators involving exposure to asbestos, silica, or silica products on or after January 1, 1997. To date, Aearo has elected to pay the quarterly fee. Aearo could potentially be exposed to additional claims for some part of the pre-July 11, 1995 period covered by its agreement with Cabot if Aearo elects to discontinue its participation in this arrangement, or if Cabot is no longer able to meet its obligations in these matters.

Developments may occur that could affect the estimate of Aearo's liabilities. These developments include, but are not limited to: (i) significant changes in the number of future claims, (ii) significant changes in the average cost of resolving claims, (iii) significant changes in the legal costs of defending these claims, (iv) significant changes in the mix and nature of claims received, (v) trial and appellate outcomes, (vi) significant changes in the law and procedure applicable to these claims, (vii) significant changes in the liability allocation among the co-defendants, (viii) the financial viability of members of the Payor Group including exhaustion of available insurance coverage limits, and/or (ix) a determination that the interpretation of the contractual obligations on which Aearo has estimated its share of liability is inaccurate. The Company cannot determine the impact of these potential developments on its current estimate of Aearo's share of liability for these existing and future claims. If any of the developments described above were to occur, the actual amount of these liabilities for existing and future claims could be significantly larger than the amount accrued.

Because of the inherent difficulty in projecting the number of claims that have not yet been asserted, the complexity of allocating responsibility for future claims among the Payor Group, and the several possible developments that may occur that could affect the estimate of Aearo's liabilities, the Company cannot estimate the amount or range of amounts by which Aearo's liability may exceed the accrual the Company has established.

Environmental Matters and Litigation

The Company's operations are subject to environmental laws and regulations including those pertaining to air emissions, wastewater discharges, toxic substances, and the handling and disposal of solid and hazardous wastes enforceable by national, state, and local authorities around the world, and private parties in the United States and abroad. These laws and regulations provide, under certain circumstances, a basis for the remediation of contamination, for capital investment in pollution control equipment, for restoration of or compensation for damages to natural resources, and for personal injury and property damage claims. The Company has incurred, and will continue to incur, costs and capital expenditures in complying with these laws and regulations, defending personal injury and property damage claims, and modifying its business operations in light of its environmental responsibilities. In its effort to satisfy its environmental responsibilities and comply with environmental laws and regulations, the Company has established, and periodically updates, policies relating to environmental standards of performance for its operations worldwide.

Under certain environmental laws, including the United States Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and similar state laws, the Company may be jointly and severally liable, typically with other companies, for the costs of remediation of environmental contamination at current or former facilities and at off-site locations. The Company has identified numerous locations, most of which are in the United States, at which it may have some liability. Please refer to the section entitled "*Environmental Liabilities and Insurance Receivables"* that follows for information on the amount of the accrual for such liabilities.

Environmental Matters

As previously reported, the Company has been voluntarily cooperating with ongoing reviews by local, state, federal (primarily the U.S. Environmental Protection Agency (EPA)), and international agencies of possible environmental and health effects of various perfluorinated compounds, including perfluorooctanoate ("PFOA"), perfluorooctane sulfonate ("PFOS"), perfluorohexane sulfonate ("PFHxS"), or other per- and polyfluoroalkyl substances (collectively "PFAS"). As a result of its phase-out decision in May 2000, the Company no longer manufactures certain PFAS compounds including PFOA, PFOS, PFHxS, and their pre-cursor compounds. The Company ceased manufacturing and using the vast majority of these compounds within approximately two years of the phase-out announcement and ceased all manufacturing and the last significant use of this chemistry by the end of 2008. The Company continues to manufacture a variety of shorter chain length PFAS compounds, including, but not limited to, pre-cursor compounds to perfluorobutane sulfonate ("PFBS"). These compounds are used as input materials to a variety of products, including engineered fluorinated fluids, fluoropolymers and fluorelastomers, as well as surfactants, additives, and coatings. Through its ongoing life cycle management and its raw material composition identification processes associated with the Company's policies covering the use of all persistent and bio-accumulative materials, the Company continues to review, control or eliminate the presence of certain PFAS in purchased materials or as byproducts in some of 3M's current fluorochemical manufacturing processes, products, and waste streams.

Regulatory activities concerning PFAS continue in the United States, Europe and elsewhere, and before certain international bodies. These activities include gathering of exposure and use information, risk assessment, and consideration of regulatory approaches. As the database of studies of both PFOA and PFOS has expanded, the EPA has developed human health effects documents summarizing the available data from these studies. In February 2014, the EPA initiated external peer review of its draft human health effects documents for PFOA and PFOS. The peer review panel met in August 2014. In May 2016, the EPA announced lifetime health advisory levels for PFOA and PFOS at 70 parts per trillion (ppt) (superseding the provisional levels established by the EPA in 2009 of 400 ppt for PFOA and 200 ppt for PFOS). Where PFOA and PFOS are found together, EPA recommends that the concentrations be added together, and the lifetime health advisory for PFOA and PFOS combined is also 70 ppt. Lifetime health advisories, which are non-enforceable and non-regulatory, provide information about concentrations of drinking water contaminants at which adverse health effects are not expected to occur over the specified exposure duration. To collect exposure information under the Safe Drinking Water Act, the EPA published on May 2, 2012 a list of unregulated substances, including six PFAS chemicals, required to be monitored during the period 2013-2015 by public water system suppliers to determine the extent of their occurrence. Through January 2017, the EPA reported results for 4,920 public water supplies nationwide. Based on the 2016 lifetime health advisory, 13 public water supplies exceed the level for PFOA and 46 exceed the level for PFOS (unchanged from the July 2016 EPA summary). A technical advisory issued by EPA in September 2016 on laboratory analysis of drinking water samples stated that 65 public water supplies had exceeded the combined level for PFOA and PFOS. These results are based on one or more samples collected during the period 2012-2015 and do not necessarily reflect current conditions of these public water supplies. EPA reporting does not identify the sources of the PFOA and PFOS in the public water supplies.

The Company is continuing to make progress in its work, under the supervision of state regulators, to remediate its historic disposal of PFAS-containing waste associated with manufacturing operations at its Decatur, Alabama; Cottage Grove, Minnesota; and Cordova, Illinois plants. As previously reported, the Company entered into a voluntary remedial action agreement with the Alabama Department of Environmental Management (ADEM) to remediate the presence of PFAS in the soil at the Company's manufacturing facility in Decatur, Alabama. For approximately 20 years (1978-1998), pursuant to a permit issued by ADEM, the Company incorporated its wastewater treatment plant sludge, which contained PFAS, in fields at its Decatur facility. After a review of the available options to address the presence of PFAS in the soil, ADEM agreed that the preferred remediation option is to use a multilayer cap over the former sludge incorporation areas on the manufacturing site with subsequent groundwater migration controls and treatment. Implementation of that plan continues.

The Company continues to work with the Minnesota Pollution Control Agency (MPCA) pursuant to the terms of the previously disclosed May 2007 Settlement Agreement and Consent Order to address the presence of certain PFAS in the soil and groundwater at former disposal sites in Washington County, Minnesota (Oakdale and Woodbury) and at the Company's manufacturing facility at Cottage Grove, Minnesota. Under this agreement, the Company's principal obligations include (i) evaluating releases of certain PFAS from these sites and proposing response actions; (ii) providing treatment or alternative drinking water upon identifying any level exceeding a Health Based Value ("HBV") or Health Risk Limit ("HRL") (i.e., the amount of a chemical in drinking water determined by the Minnesota Department of Health (MDH) to be safe for human consumption over a lifetime) for certain PFAS for which a HBV and/or HRL exists as a result of contamination from these sites; (iii) remediating identified sources of other PFAS at these sites that are not controlled by actions to remediate PFOA and PFOS; and (iv) sharing information with the MPCA about certain perfluorinated compounds. During 2008, the MPCA issued formal decisions adopting remedial options for the former disposal sites in Washington County, Minnesota (Oakdale and Woodbury). In August 2009, the MPCA issued a formal decision adopting remedial options for the Company's Cottage Grove manufacturing facility. During the spring and summer of 2010, 3M began implementing the agreed upon remedial options at the Cottage Grove and Woodbury sites. 3M commenced the remedial option at the Oakdale site in late 2010. At each location the remedial options were recommended by the Company and approved by the MPCA. Remediation work has been completed at the Oakdale and Woodbury sites, and they are in an operational maintenance mode. Remediation continued at the Cottage Grove site during 2019.

In August 2014, the Illinois EPA approved a request by the Company to establish a groundwater management zone at its manufacturing facility in Cordova, Illinois, which includes ongoing pumping of impacted site groundwater, groundwater monitoring and routine reporting of results.

In May 2017, the MDH issued new HBVs for PFOS and PFOA. The new HBVs are 35 ppt for PFOA and 27 ppt for PFOS. In connection with its announcement the MDH stated that "Drinking water with PFOA and PFOS, even at the levels above the updated values, does not represent an immediate health risk. These values are designed to reduce long-term health risks across the population and are based on multiple safety factors to protect the most vulnerable citizens, which makes them overprotective for most of the residents in our state." In December 2017, the MDH issued a new HBV for perfluorobutane sulfonate (PFBS) of 2 parts per billion (ppb). In February 2018, the MDH published reports finding no unusual rates of certain cancers or adverse birth outcomes (low birth rates or premature births) among residents of Washington and Dakota Counties in Minnesota. In April 2019, the MDH issued a new HBV for PFOS of 15 ppt and a new HBV for PFHxS of 47 ppt.

In May 2018, the EPA announced a four-step PFAS action plan, which includes evaluating the need to set Safe Drinking Water Act maximum contaminant levels (MCLs) for PFOA and PFOS and beginning the steps necessary to designate PFOA and PFOS as "hazardous substances" under CERCLA. In November 2018, the EPA asked for public comment on draft toxicity assessments for two PFAS compounds, including PFBS. In February 2019, the EPA issued a PFAS Action Plan that outlines short- and long-term actions the EPA is taking to address PFAS – actions that include developing a national drinking water determination for PFOA and PFOS, strengthening enforcement authorities and evaluating cleanup approaches, nationwide drinking water monitoring for PFAS, expanding scientific knowledge for understanding and managing risk from PFAS, and developing consistent risk communication tools for communicating with other agencies and the public. With respect to groundwater contaminated with PFOA and PFOS, the EPA issued interim recommendations in December 2019, providing guidance for screening levels and preliminary remediation goals for groundwater that is a current or potential drinking water source, to inform final clean-up levels of contaminated sites.

The U.S. Agency for Toxic Substances and Disease Registry (ATSDR) within the Department of Health and Human Services released a draft Toxicological Profile for PFAS for public review and comment in June 2018. In the draft report, ATSDR proposed draft minimal risk levels (MRLs) for PFOS, PFOA and several other PFAS. An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. MRLs are not intended to define cleanup or action levels for ATSDR or other agencies. In August 2018, 3M submitted comments on the ATSDR proposal, noting that there are major shortcomings with the current draft, especially with the MRLs, and that the ATSDR's profile must reflect the best science and full weight of evidence known about these chemicals.

Several state legislatures and state agencies have been evaluating or have taken actions related to cleanup standards, groundwater values or drinking water values for PFOS, PFOA, and other PFAS, and 3M has submitted various responsive comments. In September 2019, 3M and several other parties filed a lawsuit in New Hampshire state court to enjoin new PFAS regulations in New Hampshire. In November 2019, the court issued a preliminary injunction preventing the regulations from being enforced. New Hampshire has made a motion to appeal that decision with the State supreme court.

The Company cannot predict what additional regulatory actions arising from the foregoing or other proceedings and activities, if any, may be taken regarding such compounds or the consequences of any such actions.

Litigation Related to Historical PFAS Manufacturing Operations in Alabama

As previously reported, a former employee filed a putative class action lawsuit against 3M, BFI Waste Management Systems of Alabama, and others in the Circuit Court of Morgan County, Alabama (the "St. John" case), seeking property damage from exposure to certain perfluorochemicals at or near the Company's Decatur, Alabama, manufacturing facility. The St. John case was stayed through January 2020, pending ongoing mediation between the parties involved in this case and another case discussed below. The parties have submitted a joint motion to extend the stay through April 2020. Two additional putative class actions filed in the same court by certain residents in the vicinity of the Decatur plant seeking relief on similar grounds (the Chandler case and the Stover case, respectively) are stayed pending the resolution of class certification issues in the St. John case.

In October 2015, West Morgan-East Lawrence Water & Sewer Authority (Water Authority) filed an individual complaint against 3M Company, Dyneon, L.L.C, and Daikin America, Inc., in the U.S. District Court for the Northern District of Alabama. The complaint also includes representative plaintiffs who brought the complaint on behalf of themselves, and a class of all owners and possessors of property who use water provided by the Water Authority and five local water works to which the Water Authority supplies water (collectively, the "Water Utilities"). The complaint seeks compensatory and punitive damages and injunctive relief based on allegations that the defendants' chemicals, including PFOA and PFOS from their manufacturing processes in Decatur, have contaminated the water in the Tennessee River at the water intake, and that the chemicals cannot be removed by the water treatment processes utilized by the Water Authority. In April 2019, 3M and the Water Authority settled the lawsuit for $35 million, which will fund a new water filtration system, with 3M indemnifying the Water Authority from liability resulting from the resolution of the currently pending and future lawsuits against the Water Authority alleging liability or damages related to 3M PFAS. The putative class claims brought by the representative plaintiffs remain, and a motion for class certification is currently pending.

In June 2016, the Tennessee Riverkeeper, Inc. (Riverkeeper), a non-profit corporation, filed a lawsuit in the U.S. District Court for the Northern District of Alabama against 3M; BFI Waste Systems of Alabama; the City of Decatur, Alabama; and the Municipal Utilities Board of Decatur, Morgan County, Alabama. The complaint alleges that the defendants violated the Resource Conservation and Recovery Act in connection with the disposal of certain PFAS through their ownership and operation of their respective sites. The complaint further alleges such practices may present an imminent and substantial endangerment to health and/or the environment and that Riverkeeper has suffered and will continue to suffer irreparable harm caused by defendants' failure to abate the endangerment unless the court grants the requested relief, including declaratory and injunctive relief. This case has been stayed through April 2020, pending ongoing mediation between the parties in conjunction with the St. John case.

In August 2016, a group of over 200 plaintiffs filed a putative class action against West Morgan-East Lawrence Water and Sewer Authority (Water Authority), 3M, Dyneon, Daikin, BFI, and the City of Decatur in state court in Lawrence County, Alabama (the "Billings" case). Plaintiffs are residents of Lawrence, Morgan and other counties who are or have been customers of the Water Authority. They contend defendants have released PFAS that contaminate the Tennessee River and, in turn, their drinking water, causing damage to their health and properties. In January 2017, the court in the St. John case, discussed above, stayed this litigation pending resolution of the St. John case.

In January 2017, several hundred plaintiffs sued 3M, its subsidiary Dyneon, and Daikin America in Lawrence and Morgan Counties, Alabama (the "Owens" case). The plaintiffs are owners of property, residents, and holders of property interests who receive their water from the West Morgan-East Lawrence Water and Sewer Authority (Water Authority). They assert common law claims for negligence, nuisance, trespass, wantonness, and battery, and they seek injunctive relief and punitive damages. The plaintiffs contend that the defendants own and operate manufacturing and disposal facilities in Decatur that have released and continue to release PFOA, PFOS and related chemicals into the groundwater and surface water of their sites, resulting in discharges into the Tennessee River. The plaintiffs contend that, as a result of the alleged discharges, the water supplied by the Water Authority to the plaintiffs was, and is, contaminated with PFOA, PFOS, and related chemicals at a level dangerous to humans. The court denied a motion by co-defendant Daikin to stay this case pending resolution of the St. John case, and the case is progressing through discovery.

In November 2017, a putative class action (the "King" case) was filed against 3M, its subsidiary Dyneon, Daikin America, and the West Morgan-East Lawrence Water and Sewer Authority (Water Authority) in the U.S. District Court for the Northern District of Alabama. The plaintiffs are residents of Lawrence and Morgan County, Alabama who receive their water from the Water Authority and seek injunctive relief, attorneys' fees, compensatory and punitive damages for their alleged personal injuries. The plaintiffs contend that the defendants own and operate manufacturing and disposal facilities in Decatur that have released and continue to release PFOA, PFOS and related chemicals into the groundwater and surface water of their sites, resulting in discharges into the Tennessee River. The plaintiffs contend that, as a result of the alleged discharges, the water supplied by the Water Authority to the plaintiffs was, and is, contaminated with PFOA, PFOS, and related chemicals at a level dangerous to humans. In November 2019, the King plaintiffs amended their complaint to withdraw all class allegations, dismiss the Water Authority as a defendant, and add 24 new individual plaintiffs (for a total of 59 plaintiffs).

In March 2018, an individual plaintiff filed a lawsuit in the U.S. District Court for the Northern District of Alabama raising allegations and claims substantially similar to those asserted by the plaintiffs in the King case. This case was dismissed without prejudice when the plaintiffs joined a previously pending case.

In January 2018, certain property owners in Trinity, Alabama filed a lawsuit against 3M, Dyneon, and three unnamed defendants in the U.S. District Court for the Northern District of Alabama. The plaintiffs assert claims for negligence, strict liability, trespass, nuisance, wanton and reckless conduct, and citizen suit claims for violation of the Resource Conservation and Recovery Act. They allege these claims arise from the defendants' contamination of their property by disposal of PFAS in a landfill located on their property. The plaintiffs seek compensatory and punitive damages and a court order directing the defendants to remediate all PFAS contamination on their property. In September 2018, the case was dismissed by stipulation of the parties.

In July 2019, 3M announced that it had initiated an investigation into the possible presence of PFAS in three closed municipal landfills in Decatur that accepted waste from 3M's Decatur plant and other companies in the 1960s through the 1980s. 3M is working with local and state entities as it conducts its investigation and will report the results and recommended remedial action, if any, to those entities and the public.

Litigation Related to Historical PFAS Manufacturing Operations in Minnesota

In July 2016, the City of Lake Elmo filed a lawsuit in the U.S. District Court for the District of Minnesota against 3M alleging that the City suffered damages from drinking water supplies contaminated with PFAS, including costs to construct alternative sources of drinking water. In April 2019, 3M and the City of Lake Elmo agreed to settle the lawsuit for less than $5 million.

State Attorneys General Litigation related to PFAS

<u>Minnesota.</u> In December 2010, the State of Minnesota, by its Attorney General, filed a lawsuit in Hennepin County District Court against 3M seeking damages and injunctive relief with respect to the presence of PFAS in the groundwater, surface water, fish or other aquatic life, and sediments in the state of Minnesota (the "NRD Lawsuit"). In February 2018, 3M and the State of Minnesota reached a resolution of the NRD Lawsuit. Under the terms of the settlement, 3M agreed to provide an $850 million grant to the State for a special "3M Water Quality and Sustainability Fund." This Fund, which is administered by the State, will enable projects that support water sustainability in the Twin Cities East Metro region, such as continued delivery of water to residents and enhancing groundwater recharge to support sustainable growth. The projects will also result in habitat and recreation improvements, such as fishing piers, trails, and open space preservation. 3M recorded a pre-tax charge of $897 million, inclusive of legal fees and other related obligations, in the first quarter of 2018 associated with the resolution of this matter.

New York. The State of New York, by its Attorney General, has filed four lawsuits (in June 2018, February 2019, July 2019, and November 2019) against 3M and other defendants seeking to recover the costs incurred in responding to PFAS contamination allegedly caused by Aqueous Film Forming Foam (AFFF) manufactured by 3M and others. Each of the four suits was filed in Albany County Supreme Court before being removed to federal court, and each has been transferred to the multi-district litigation (MDL) proceeding for AFFF cases, which is discussed further below. The state is seeking compensatory and punitive damages, and injunctive and equitable relief in the form of a monetary fund for the State's reasonably expected future damages, and/or requiring defendants to perform investigative and remedial work.

Ohio. In December 2018, the State of Ohio, by its Attorney General, filed a lawsuit in the Common Pleas Court of Lucas County, Ohio against 3M, Tyco Fire Products LP, Chemguard, Inc., Buckeye Fire Equipment Co., National Foam, Inc., and Angus Fire Armour Corp., seeking injunctive relief and compensatory and punitive damages for remediation costs and alleged injury to Ohio natural resources from AFFF manufacturers. This case was removed to federal court and transferred to the MDL.

New Jersey. In March 2019, the New Jersey Attorney General filed two actions against 3M, DuPont, and Chemours on behalf of the New Jersey Department of Environmental Protection (NJDEP), the NJDEP's commissioner, and the New Jersey Spill Compensation Fund regarding alleged discharges at two DuPont facilities in Pennsville, New Jersey (Salem County) and Parlin, New Jersey (Middlesex County). 3M is included as a defendant in both cases because it allegedly supplied PFOA to DuPont for use at the facilities at issue. Both cases expressly seek to have the defendants pay all costs necessary to investigate, remediate, assess, and restore the affected natural resources of New Jersey. DuPont removed these cases to federal court. In August 2019, the court stayed all proceedings in these actions pending a ruling on NJDEP's motions to remand the cases to state court.

In May 2019, the New Jersey Attorney General and NJDEP filed a lawsuit against 3M, DuPont, and six other companies, alleging natural resource damages from AFFF products and seeking damages, including punitive damages, and associated fees. This case was removed to federal court and transferred to the AFFF MDL.

New Hampshire. In May 2019, the New Hampshire Attorney General filed two lawsuits alleging contamination of the state's drinking water supplies and other natural resources by PFAS chemicals. The first lawsuit was filed against 3M and seven co-defendants, alleging PFAS contamination resulting from the use of AFFF products at several sites around the state. This case was removed to federal court and transferred to the AFFF MDL. The second suit asserts PFAS contamination from non-AFFF sources and names 3M, DuPont, and Chemours as defendants. This suit remains in state court in early stages of litigation; 3M's motion to dismiss remains pending.

Vermont. In June 2019, the Vermont Attorney General filed two lawsuits alleging contamination of the state's drinking water supplies and other natural resources by PFAS chemicals. The first lawsuit was filed against 3M and ten co-defendants, alleging PFAS contamination resulting from the use of AFFF products at several sites around the state. This case was removed to federal court and transferred to the AFFF MDL. The second suit asserts PFAS contamination from non-AFFF sources and names 3M and several entities related to DuPont and Chemours as defendants. This suit remains in state court in early stages of litigation; 3M's motion to dismiss remains pending.

Michigan. In May 2019, the Michigan Attorney General issued a request for proposal seeking outside legal expertise in pursuing claims against manufacturers, distributors, and other parties related to PFAS. In January 2020, the Michigan Attorney General filed a lawsuit in state court against 3M, Dyneon, DuPont, Chemours and others seeking injunctive and equitable relief and damages for alleged injury to Michigan public natural resources and its residents relating to PFAS.

Guam. In September 2019, the Attorney General of Guam filed a lawsuit against 3M and other defendants relating to contamination of the territory's drinking water supplies and other natural resources by PFAS, allegedly resulting from the use of AFFF products at several sites around the island. This lawsuit has been removed to federal court and transferred to the AFFF MDL.

Commonwealth of Northern Mariana Islands. In December 2019, the Attorney General of the Commonwealth of Northern Mariana Islands, a U.S. territory, filed a lawsuit against 3M and other defendants relating to contamination of the territory's drinking water supplies and other natural resources by PFAS, allegedly resulting from the use of AFFF products.

In addition to the above state attorneys general actions, the Company is in discussions with several other state attorneys general and responding to information and other requests relating to PFAS matters.

Aqueous Film Forming Foam (AFFF) Environmental Litigation

3M manufactured and marketed AFFF for use in firefighting at airports and military bases from approximately 1963 to 2002. As of December 31, 2019, 150 putative class action and other lawsuits have been filed against 3M (along with other defendants) in various state and federal courts where current or former airports, military bases, or fire training facilities are or were located. As previously noted, some of these cases have been brought by state or territory attorneys general. In these cases, plaintiffs typically allege that certain PFAS used in AFFF contaminated the soil and groundwater where AFFF was used and seek damages for loss of use and enjoyment of properties, diminished property values, investigation costs, remediation costs, and in some cases, personal injury and funds for medical monitoring. The United States, the U.S. Department of Defense and several companies have been sued along with 3M, including but not limited to Ansul Co. (acquired by Tyco, Inc.), Angus Fire, Buckeye Fire Protection Co., Chemguard, Chemours, DuPont, National Foam, Inc., and United Technologies Corp.

In December 2018, the U.S. Judicial Panel on Multidistrict Litigation granted motions to transfer and consolidate all AFFF cases pending in federal courts to the U.S. District Court for the District of South Carolina to be managed in an MDL proceeding to centralize pre-trial proceedings. Additional AFFF cases continue to be transferred into the MDL as they are filed or removed to federal court. As of December 31, 2019, there were 147 cases in the MDL, 142 of which name 3M as a defendant. The parties in the MDL are currently in the process of conducting discovery.

In June 2019, several subsidiaries of Valero Energy Corporation, an independent petroleum refiner, filed eight AFFF cases against 3M and other defendants, including DuPont/Chemours, National Foam, Buckeye Fire Equipment, and Kidde-Fenwal, in various state courts. Plaintiffs seek damages that allegedly have been or will be incurred in investigating and remediating PFAS contamination at their properties and replacing or disposing of AFFF products containing long-chain PFAS. Two of these cases have been removed to federal court and transferred to the AFFF MDL. Five cases remain pending in state courts where they are in early stages of litigation, after Valero dismissed its Ohio state court action without prejudice in October 2019.

In September 2019, an individual plaintiff filed an AFFF lawsuit against 3M, together with the State of Alaska, Chemguard, Tyco Fire Equipment Co., DuPont, Chemours and other co-defendants, in state court in Alaska. Plaintiff in this case seeks property damages and medical monitoring on behalf of a putative class. Also in September 2019, 3M was named a defendant, together with Tyco Fire Products, Chemguard, Buckeye Fire Protection and other co-defendants, in an AFFF action filed by individual plaintiffs in state court of New York. Plaintiffs in the New York case seek damages for alleged property damage and personal injuries, as well as injunctive relief in the form of medical monitoring and property testing and remediation.

Other PFAS-related Product and Environmental Litigation

3M manufactured and sold products containing various PFOA and PFOS, including Scotchgard, for several decades. Starting in 2017, 3M has been served with individual and putative class action complaints in various state and federal courts alleging, among other things, that 3M's customers' improper disposal of PFOA and PFOS resulted in the contamination of groundwater or surface water. The plaintiffs in these cases generally allege that 3M failed to warn its customers about the hazards of improper disposal of the product. They also generally allege that contaminated groundwater has caused various injuries, including personal injury, loss of use and enjoyment of their properties, diminished property values, investigation costs, and remediation costs. Several companies have been sued along with 3M, including Saint-Gobain Performance Plastics Corp., Honeywell International Inc. f/k/a Allied-Signal Inc. and/or AlliedSignal Laminate Systems, Inc., Wolverine World Wide Inc., Georgia-Pacific LLC, E.I. DuPont De Nemours and Co., Chemours Co., and various carpet manufacturers.

In New York, 3M is defending 47 individual cases and one putative class action filed in the U.S. District Court for the Northern District of New York and four additional cases filed in New York state court against 3M, Saint-Gobain Performance Plastics Corp. (Saint-Gobain), Honeywell International Inc. and E.I. DuPont De Nemours and Co. (DuPont). The plaintiffs allege that 3M manufactured and sold PFOA that was used for manufacturing purposes at Saint-Gobain's and Honeywell's facilities located in the Village of Hoosick Falls and the Town of Hoosick. The plaintiffs claim that the drinking water around Hoosick Falls became contaminated with unsafe levels of PFOA due to the activities of the defendants and allege that they suffered bodily injury due to the ingestion and inhalation of PFOA. The plaintiffs seek unstated compensatory, consequential, and punitive damages, as well as attorneys' fees and costs. In addition, 3M is defending eight cases filed by Nassau County drinking water providers in the U.S. District Court for the Eastern District of New York. The plaintiffs in these cases allege that 3M, DuPont, and additional unnamed defendants are responsible for the contamination of plaintiffs' water supply sources with various PFAS compounds. These cases are in the preliminary stages of litigation.

In Michigan, one consolidated putative class action is pending in the U.S. District Court for the Western District of Michigan against 3M and Wolverine World Wide (Wolverine) and other defendants. The action arises from Wolverine's allegedly improper disposal of materials and wastes, including 3M Scotchgard, related to Wolverine's shoe manufacturing operations. Plaintiffs allege Wolverine used 3M Scotchgard in its manufacturing process and that chemicals from 3M's product contaminated the environment and drinking water sources after disposal. In addition to the consolidated federal court putative class action, as of December 31, 2019, 3M has been named as a defendant in approximately 257 private individual actions in Michigan state court based on similar allegations. These cases are coordinated for pre-trial purposes. Four of these cases were selected for bellwether trials in 2020, with the first trial scheduled in March 2020. In January 2020, the court issued the first round of dispositive motion rulings related to the first two bellwether cases, including dismissing the second bellwether case entirely and dismissing certain plaintiffs' medical monitoring, risk of future disease, and granting summary judgment to the defendants on one plaintiff's cholesterol injury claims.

Wolverine also filed a third-party complaint against 3M in a suit by the State of Michigan and intervenor townships that seeks to compel Wolverine to investigate and address contamination associated with its historic disposal activity. 3M filed an answer and counterclaims to Wolverine's third-party complaint in June 2019. In September and October 2019, the parties (including 3M as third-party defendant) engaged in mediation. In December 2019, the State of Michigan, the intervening townships, and Wolverine announced that they had tentatively resolved the State and townships' claims against Wolverine in exchange for a $70 million payment and certain future remediation measures by Wolverine. 3M and Wolverine continue to engage in productive settlement discussions.

3M is also a defendant, together with Georgia-Pacific as co-defendant, in a putative class action in federal court in Michigan brought by residents of Parchment, who allege that the municipal drinking water is contaminated from waste generated by a paper mill owned by Georgia-Pacific's corporate predecessor. Defendants have moved to dismiss certain claims in the complaint, and the parties have begun discovery on the remaining claims.

In Alabama and Georgia, 3M is defending four state court cases, including three brought by municipal water utilities, relating to 3M's sale of PFAS-containing products to carpet manufacturers in Georgia. The plaintiffs in these cases allege that the carpet manufacturers improperly discharged PFAS into the surface water and groundwater, contaminating drinking water supplies of cities located downstream along the Coosa River, including Rome, Georgia and Centre and Gadsden, Alabama. The three water utility cases remain in the early stages of litigation. One state court case was brought by individuals asserting PFAS contamination by the Georgia carpet manufacturers and seeking economic damages and injunctive relief on behalf of a putative class of Rome and Floyd County water subscribers. This case has been removed to federal court where it remains in early stages of litigation.

In Delaware, 3M is defending one putative class action brought by individuals alleging PFAS contamination of their water supply resulting from the operations of local metal plating facilities. Plaintiffs allege that 3M supplied PFAS to the metal plating facilities. DuPont, Chemours, and the metal platers have also been named as defendants. This case has been removed from state court to federal court, and plaintiffs have filed a motion to remand to state court. 3M has also filed a motion to dismiss.

In Maine, 3M was defending one individual action in state court relating to contamination of drinking water and dairy farm operations by PFAS from wastewater sludge. In October 2019, the plaintiffs filed a notice voluntarily dismissing their case without prejudice.

In New Jersey, 3M is defending an action brought in federal court by Middlesex Water Company, alleging PFAS contamination of its water wells. 3M's motion to transfer the case to the AFFF MDL was denied. 3M has moved to dismiss the complaint, and the case is currently in the early stages of discovery. In addition, 3M is defending a case brought in state court by multiple individuals with private drinking water wells near Dupont and Solvay facilities that were allegedly supplied with PFAS by 3M. Plaintiffs seek medical monitoring and damages. This case has been removed to federal court, where it remains in early stages. On a separate matter, 3M was dismissed without prejudice from a class action that was previously pending in federal court in New Jersey, relating to the DuPont Chambers Works plant.

In October 2018, 3M and other defendants, including DuPont and Chemours, were named in a putative class action in the U.S. District Court for the Southern District of Ohio brought by the named plaintiff, a firefighter allegedly exposed to PFAS chemicals through his use of firefighting foam, purporting to represent a putative class of all U.S. individuals with detectable levels of PFAS in their blood.

The plaintiff brings claims for negligence, battery, and conspiracy and seeks injunctive relief, including an order "establishing an independent panel of scientists" to evaluate PFAS. 3M and other entities jointly filed a motion to dismiss in February 2019. In September 2019, the court denied the defendants' motion to dismiss. In February 2020, the court denied 3M's motion to transfer the case to the AFFF MDL.

Other PFAS-related Matters

In July 2019, the Company received a written request from the Subcommittee on Environment of the Committee on Oversight and Reform, U.S. House of Representatives, seeking certain documents and information relating to the Company's manufacturing and distribution of PFAS products. In September 2019, a 3M representative testified before and responded to questions from the Subcommittee on Environment with respect to PFAS and the Company's environmental stewardship initiatives. The Company continues to cooperate with the Subcommittee.

The Company operates under a 2009 consent order issued under the federal Toxic Substances Control Act (TSCA) (the "2009 TSCA consent order") for the manufacture and use of two perfluorinated materials (FBSA and FBSEE) at its Decatur, Alabama site that does not permit release of these materials into "the waters of the United States." In March 2019, the Company halted the manufacture, processing, and use of these materials at the site upon learning that these materials may have been released from certain specified processes at the Decatur site into the Tennessee River. In April 2019, the Company voluntarily disclosed the releases to the U.S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM). During June and July 2019, the Company took steps to fully control the aforementioned processes by capturing all wastewater produced by the processes and by treating all air emissions. These processes have been back on-line and in operation since July 2019. The Company continues to cooperate with the EPA and ADEM in their investigations and will work with the regulatory authorities to demonstrate compliance with the release restrictions.

The Company is authorized to discharge wastewater from its Decatur plant pursuant to the terms of a Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit issued by ADEM. The NPDES permit requires the Company to report on a monthly and quarterly basis the quality and quantity of pollutants discharged to the Tennessee River. In June 2019, the Company voluntarily disclosed to the EPA and ADEM that it had included incorrect values in certain of its monthly and quarterly reports. The Company has submitted the corrected values to both the EPA and ADEM.

As part of ongoing work with the EPA and ADEM to address compliance matters at the Decatur facility, the Company discovered it had not fully characterized its PFAS discharge in its NPDES permit. In September 2019, the Company disclosed the matter to the EPA and ADEM and announced that it had elected to temporarily idle certain other manufacturing processes at 3M Decatur. The Company is reviewing its operations at the plant, has installed wastewater treatment controls, has restarted certain processes, and is working to re-start the remaining idled processes in compliance with regulatory requirements and Company policies and procedures.

In December 2019, the Company received a grand jury subpoena from the U.S. Attorney's Office for the Northern District of Alabama for documents related to, among other matters, the Company's compliance with the 2009 TSCA consent order and unpermitted discharges to the Tennessee River. The Company is cooperating with this inquiry and will produce documents in response to the subpoena.

In addition, as part of its ongoing evaluation of regulatory compliance at its Cordova, Illinois facility, the Company discovered it had not fully characterized its PFAS discharge in its NPDES permit for the Cordova facility. In November 2019, the Company disclosed this matter to the EPA, and in January 2020 disclosed this matter to the Illinois Environmental Protection Agency (IEPA). The Company continues to work with the EPA and IEPA to address the discharge from the Cordova facility.

The Company is also reviewing operations at its other plants with similar manufacturing processes, such as those in Cottage Grove, Minnesota, to ensure those operations are in compliance with applicable environmental regulatory requirements and Company policies and procedures.

The Company will continue to work with relevant state and federal agencies as it conducts these reviews.

The Company cannot predict at this time the outcomes of resolving these compliance matters or what potential actions may be taken by the regulatory agencies.

Securities Litigation

In July 2019, Heavy & General Laborers' Locals 472 & 172 Welfare Fund filed a putative securities class action against 3M Company, its former Chairman and CEO, current Chairman and CEO, and current CFO in the U.S. District Court for the District of New Jersey. In August 2019, an individual plaintiff filed a similar putative securities class action in the same district. Plaintiffs allege that defendants made false and misleading statements regarding 3M's exposure to liability associated with PFAS, and bring claims for damages under Section 10(b) of the Securities Exchange Act of 1934 and SEC Rule 10b-5 against all defendants, and under Section 20(a) of the Securities and Exchange Act of 1934 against the individual defendants. In October 2019, the court consolidated the securities class actions and appointed a group of lead plaintiffs. The suit is in the early stages of litigation.

In October 2019, a follow-on derivative lawsuit was filed in the U.S. District Court for the District of New Jersey against 3M and several of its current and former executives and directors. In November and December 2019, two additional derivative lawsuits were filed in a Minnesota state court. The derivative lawsuits rely on similar factual allegations as the putative securities class action discussed above. Plaintiffs have agreed to stay these cases pending a ruling on a motion to dismiss the securities class action.

Other Environmental Litigation

In July 2018, the Company, along with more than 120 other companies, was served with a complaint seeking cost recovery and contribution towards the cleaning up of approximately eight miles of the Lower Passaic River in New Jersey. The plaintiff, Occidental Chemical Corporation, alleges that it agreed to design and pay the estimated $165 million cost to remove and cap sediment containing eight chemicals of concern, including PCBs and dioxins. The complaint seeks to spread those costs among the defendants, including the Company. The Company's involvement in the case relates to its past use of two commercial drum conditioning facilities in New Jersey. Whether, and to what extent, the Company may be required to contribute to the costs at issue in the case remains to be determined.

For environmental matters and litigation described above, unless otherwise stated, no liability has been recorded as the Company believes liability in those matters is not probable and estimable and the Company is not able to estimate a possible loss or range of loss at this time. The Company's environmental liabilities and insurance receivables are described below.

Environmental Liabilities and Insurance Receivables

The Company periodically examines whether the contingent liabilities related to the environmental matters and litigation described above are probable and estimable based on experience and developments in those matters. During the first quarter of 2019, the EPA issued its PFAS Action Plan and the Company settled the litigation with the Water Authority (both matters are described in more detail above). The Company completed a comprehensive review with the assistance of environmental consultants and other experts regarding environmental matters and litigation related to historical PFAS manufacturing operations in Minnesota, Alabama, Gendorf Germany, and at four former landfills in Alabama. As a result of these developments and of that review, the Company increased its accrual for "other environmental liabilities" by $235 million pre-tax (including the settlement with the Water Authority) in the first quarter of 2019. During the fourth quarter of 2019, 3M updated its evaluation of certain customer-related litigation based on continued, productive settlement discussions with multiple parties. As previously disclosed, 3M has been engaged in mediation and resolution negotiations in multiple cases. In addition, during the fourth quarter, the Company updated its assessment of environmental matters and litigation related to its historical PFAS manufacturing operations and expanded its evaluation of other 3M sites that may have used certain PFAS-containing materials and locations at which they were disposed. As a result of these actions during the fourth quarter the Company recorded a pre-tax charge of $214 million. As of December 31, 2019, the Company had recorded liabilities of $445 million for "other environmental liabilities." The accruals represent the Company's best estimate of the probable loss. The Company is not able to estimate a possible loss or range of loss in excess of the established accruals at this time.

As of December 31, 2019, the Company had recorded liabilities of $19 million for estimated non-PFAS related "environmental remediation" costs to clean up, treat, or remove hazardous substances at current or former 3M manufacturing or third-party sites. The Company evaluates available facts with respect to each individual site each quarter and records liabilities for remediation costs on an undiscounted basis when they are probable and reasonably estimable, generally no later than the completion of feasibility studies or the Company's commitment to a plan of action. Liabilities for estimated costs of environmental remediation, depending on the site, are based primarily upon internal or third-party environmental studies, and estimates as to the number, participation level and financial viability of any other potentially responsible parties, the extent of the contamination and the nature of required remedial actions. The Company adjusts recorded liabilities as further information develops or circumstances change. The Company expects that it will pay the amounts recorded over the periods of remediation for the applicable sites, currently ranging up to 20 years.

It is difficult to estimate the cost of environmental compliance and remediation given the uncertainties regarding the interpretation and enforcement of applicable environmental laws and regulations, the extent of environmental contamination and the existence of alternative cleanup methods. Developments may occur that could affect the Company's current assessment, including, but not limited to: (i) changes in the information available regarding the environmental impact of the Company's operations and products; (ii) changes in environmental regulations, changes in permissible levels of specific compounds in drinking water sources, or changes in enforcement theories and policies, including efforts to recover natural resource damages; (iii) new and evolving analytical and remediation techniques; (iv) success in allocating liability to other potentially responsible parties; and (v) the financial viability of other potentially responsible parties and third-party indemnitors. For sites included in both "environmental remediation liabilities" and "other environmental liabilities," at which remediation activity is largely complete and remaining activity relates primarily to operation and maintenance of the remedy, including required post-remediation monitoring, the Company believes the exposure to loss in excess of the amount accrued would not be material to the Company's consolidated results of operations or financial condition. However, for locations at which remediation activity is largely ongoing, the Company cannot estimate a possible loss or range of loss in excess of the associated established accruals for the reasons described above.

The Company has both pre-1986 general and product liability occurrence coverage and post-1985 occurrence reported product liability and other environmental coverage for environmental matters and litigation. As of December 31, 2019, the Company's receivable for insurance recoveries related to the environmental matters and litigation was $33 million. The Company increased its receivable for insurance recoveries by $25 million in the first quarter of 2019. Various factors could affect the timing and amount of recovery of this and future expected increases in the receivable, including (i) delays in or avoidance of payment by insurers; (ii) the extent to which insurers may become insolvent in the future, (iii) the outcome of negotiations with insurers, and (iv) the scope of the insurers' purported defenses and exclusions to avoid coverage.

Product Liability Litigation

As of December 31, 2019, the Company was a named defendant in nine lawsuits in the United States involving 12 plaintiffs (compared to approximately 5,015 plaintiffs at December 31, 2018) and one Canadian punitive class action with a single named plaintiff, alleging that the Bair Hugger™ patient warming system caused a surgical site infection.

As previously disclosed, 3M had been a named defendant in lawsuits in federal courts involving over 5,000 plaintiffs. The plaintiffs claim they underwent various joint arthroplasty, cardiovascular, and other surgeries and later developed surgical site infections due to the use of the Bair Hugger™ patient warming system. The plaintiffs seek damages and other relief based on theories of strict liability, negligence, breach of express and implied warranties, failure to warn, design and manufacturing defect, fraudulent and/or negligent misrepresentation/concealment, unjust enrichment, and violations of various state consumer fraud, deceptive or unlawful trade practices and/or false advertising acts.

The U.S. Judicial Panel on Multidistrict Litigation (JPML) consolidated all cases pending in federal courts to the U.S. District Court for the District of Minnesota to be managed in a multi-district litigation (MDL) proceeding. In July 2019, the court excluded several of the plaintiffs' causation experts, and granted summary judgment for 3M in all cases pending at that time in the MDL. Plaintiffs have appealed that decision to the U.S. Court of Appeals for the Eighth Circuit. Plaintiffs have also appealed a 2018 jury verdict in favor of 3M in the first bellwether trial in the MDL and appealed the dismissal of another bellwether case.

Among the nine remaining lawsuits in the United States, eight are in the MDL court. Of the eight cases in the MDL, four cases were removed from a Missouri state court. Three of those four were dismissed with the July 2019 MDL summary judgment decision referenced above. Plaintiffs, however, have filed motions to remand all four Missouri cases to state court. All eight remaining lawsuits in the MDL court have been stayed pending the appeal of the summary judgment decision. The ninth case is one the Company has been defending in Hidalgo County, Texas, which combines Bair Hugger product liability claims with medical malpractice claims. In August 2019, the U.S. District Court managing the MDL enjoined the individual plaintiff from pursuing his claims in Texas state court because he had previously filed and dismissed a claim in the MDL. That plaintiff has appealed the order to the U.S. Court of Appeals for the Eighth Circuit. The Texas state court has stayed the entire case while the appeal is pending.

As previously disclosed, 3M had been named a defendant in 61 cases in Minnesota state court. In January 2018, the Minnesota state court excluded plaintiffs' experts and granted 3M's motion for summary judgment on general causation. Plaintiffs appealed that ruling and the state court's punitive damages ruling. The Minnesota Court of Appeals affirmed the Minnesota state court orders in their entirety and the Minnesota Supreme Court denied plaintiffs' petition for review. Final dismissal was entered in April 2019, effectively ending the Minnesota state court cases.

In June 2016, the Company was served with a putative class action filed in the Ontario Superior Court of Justice for all Canadian residents who underwent various joint arthroplasty, cardiovascular, and other surgeries and later developed surgical site infections due to the use of the Bair Hugger™ patient warming system. The representative plaintiff seeks relief (including punitive damages) under Canadian law based on theories similar to those asserted in the MDL.

No liability has been recorded for the Bair Hugger™ litigation because the Company believes that any such liability is not probable and estimable at this time.

In September 2011, 3M Oral Care launched Lava Ultimate CAD/CAM dental restorative material. The product was originally indicated for inlay, onlay, veneer, and crown applications. In June 2015, 3M Oral Care voluntarily removed crown applications from the product's instructions for use, following reports from dentists of patients' crowns debonding, requiring additional treatment. The product remains on the market for other applications. 3M communicated with the U.S. Food and Drug Administration, as well as regulators outside the United States. 3M also informed customers and distributors of its action, offered to accept return of unused materials and provide refunds. In May 2018, 3M reached a preliminary settlement for an amount that did not have a material impact to the Company of the lawsuit pending in the U.S. District Court for the District of Minnesota that sought certification of a class of dentists in the United States and its territories. In September 2019, the court issued an order granting final approval of the settlement.

Aearo Technologies sold Dual-Ended Combat Arms – Version 2 earplugs starting in about 2003. 3M acquired Aearo Technologies in 2008 and sold these earplugs from 2008 through 2015, when the product was discontinued. In December 2018, a military veteran filed an individual lawsuit against 3M in the San Bernardino Superior Court in California alleging that he sustained personal injuries while serving in the military caused by 3M's Dual-Ended Combat Arms earplugs – Version 2. The plaintiff asserts claims of product liability and fraudulent misrepresentation and concealment. The plaintiff seeks various damages, including medical and related expenses, loss of income, and punitive damages. As of December 31, 2019, the Company is a named defendant in approximately 2,531 lawsuits (including 14 putative class actions) in various state and federal courts that purport to represent approximately 11,318 individual claimants making similar allegations. In April 2019, the U.S. Judicial Panel on Multidistrict Litigation granted motions to transfer and consolidate all cases pending in federal courts to the U.S. District Court for the Northern District of Florida to be managed in a multi-district litigation (MDL) proceeding to centralize pre-trial proceedings. The court conducted a case management conference in June 2019 on a discovery plan and scheduling. Discovery is underway. No liability has been recorded for these matters because the Company believes that any such liability is not probable and estimable at this time.

For product liability litigation matters described in this section for which a liability has been recorded, the amount recorded is not material to the Company's consolidated results of operations or financial condition. In addition, the Company is not able to estimate a possible loss or range of loss in excess of the established accruals at this time.

Federal False Claims Act / Qui Tam Litigation

In October 2019, 3M acquired Acelity, Inc. and its KCI subsidiaries, including Kinetic Concepts, Inc. and KCI USA, Inc. As previously disclosed in the SEC filings by KCI entities, in 2009, Kinetic Concepts, Inc. received a subpoena from the U.S. Department of Health and Human Services Office of Inspector General. In 2011, following the completion of the government's review and its decision declining to intervene in two qui tam actions described further below, the qui tam relator-plaintiffs' pleadings were unsealed.

The government inquiry followed two qui tam actions filed in 2008 by two former employees against Kinetic Concepts, Inc. and KCI USA, Inc. (collectively, the "KCI defendants") under seal in the U.S. District Court for the Central District of California. The complaints contain allegations that the KCI Defendants violated the federal False Claims Act by submitting false or fraudulent claims to federal healthcare programs by billing for V.A.C.® Therapy in a manner that was not consistent with the Local Coverage Determinations issued by the Durable Medical Equipment Medicare Administrative Contractors and seek monetary damages. One complaint (the "Godecke case") also contains allegations that the KCI Defendants retaliated against the relator-plaintiff for alleged whistle-blowing behavior.

In October 2016, the KCI Defendants filed counterclaims in the Godecke case, asserting breach of contract and conversion. In August 2017, the fraud claim of the Godecke case was dismissed. In January 2018, the district court stayed the retaliation claim and the KCI Defendants' counterclaims pending the relator-plaintiff's appeal. In September 2019, the U.S. Court of Appeals for the Ninth Circuit reversed and remanded the case to the district court for further proceedings. During a January 2020 status conference, the district court ordered a stay of the proceedings until April 2020. In June 2019, following discovery, the district court in the second case (the "Hartpence case") entered summary judgment in the KCI Defendants' favor on all of the relator-plaintiff's claims. The plaintiff then filed an appeal in the U.S. Court of Appeals for the Ninth Circuit, which is pending. No liability has been recorded for these matters because the Company believes that any such liability is not probable and estimable at this time.

Compliance Matter

The Company, through its internal processes, discovered certain travel activities and related funding and record keeping issues raising concerns, arising from marketing efforts by certain business groups based in China. The Company initiated an internal investigation to determine whether the expenditures may have violated the U.S. Foreign Corrupt Practices Act (FCPA) or other potentially applicable anti-corruption laws. The Company has retained outside counsel and a forensic accounting firm to assist with the investigation. In July 2019, the Company voluntarily disclosed this investigation to both the Department of Justice and Securities and Exchange Commission and is cooperating with both agencies. The Company cannot predict at this time the outcome of its investigation or what potential actions may be taken by the Department of Justice or Securities and Exchange Commission.

NOTE 17. Leases

The Company adopted ASU No. 2016-02 and related standards (collectively ASC 842, *Leases*), which replaced previous lease accounting guidance, on January 1, 2019 using the modified retrospective method of adoption. 3M elected the transition method expedient which allows entities to initially apply the requirements by recognizing a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. As a result of electing this transition method, prior periods have not been restated. Due to the cumulative net impact of adopting ASC 842, the January 1, 2019 balance of retained earnings was increased by $14 million, primarily relating to previously deferred gains from sale-leaseback transactions. In addition, adoption of the new standard resulted in the recording of right of use assets and associated lease liabilities of $0.8 billion each as of January 1, 2019. The Company's accounting for finance leases (previously called capital leases) remains substantially unchanged. ASC 842 did not have a material impact on 3M's consolidated income statement. 3M elected the package of practical expedients permitted under the transition guidance within ASC 842, which includes not reassessing lease classification of existing leases. The Company did not elect the hindsight practical expedient.

The components of lease expense are as follows:

(Millions)	**Year ended December 31, 2019**
Operating lease cost	$ 308
Finance lease cost:	
Amortization of assets	20
Interest on lease liabilities	2
Variable lease cost	93
Total net lease cost	$ 423

Short-term lease cost and income related to sub-lease activity is immaterial for the Company.

Supplemental balance sheet information related to leases is as follows:

(Millions unless noted)	Location on Face of Balance Sheet	As of: December 31, 2019
Operating leases:		
Operating lease right of use assets	Operating lease right of use assets	$ 858
Current operating lease liabilities	Operating lease liabilities – current	$ 247
Noncurrent operating lease liabilities	Operating lease liabilities	607
Total operating lease liabilities		$ 854
Finance leases:		
Property and equipment, at cost	Property, plant and equipment	$ 239
Accumulated amortization	Property, plant and equipment (accumulated depreciation)	(102)
Property and equipment, net		$ 137
Current obligations of finance leases	Other current liabilities	$ 21
Finance leases, net of current obligations	Other liabilities	111
Total finance lease liabilities		$ 132
Weighted average remaining lease term (in years):		
Operating leases		5.7
Finance leases		9.0
Weighted average discount rate:		
Operating leases		3.2 %
Finance leases		3.8 %

Supplemental cash flow and other information related to leases is as follows:

(Millions)	Year ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	$ 309
Operating cash flows from finance leases	2
Financing cash flows from finance leases	18
Right of use assets obtained in exchange for lease liabilities:	
Operating leases	326
Finance leases	61

In the first quarter of 2019, 3M sold and leased-back certain recently constructed machinery and equipment in return for municipal securities, which in aggregate, were recorded as a finance lease asset and obligation of approximately $9 million. During 2019, the Company sold and leased-back an office location and a manufacturing site resulting in a combined gain of $82 million.

Maturities of lease liabilities were as follows:

(Millions)	December 31, 2019 Finance Leases	December 31, 2019 Operating Leases
2020	$ 21	$ 267
2021	17	191
2022	16	138
2023	15	97
2024	14	65
After 2024	55	173
Total	$ 138	$ 931
Less: Amounts representing interest	6	77
Present value of future minimum lease payments	132	854
Less: Current obligations	21	247
Long-term obligations	$ 111	$ 607

As of December 31, 2019, the Company has additional operating lease commitments that have not yet commenced of approximately $23 million. These commitments pertain to 3M's right of use buildings.

Disclosures related to periods prior to adoption of new lease standard:

Capital and Operating Leases:
Rental expense under operating leases was $393 million in 2018 and $343 million in 2017. Accumulated depreciation for capital leases totaled $54 million as of December 31, 2018. It is 3M's practice to secure renewal rights for leases, thereby giving 3M the right, but not the obligation, to maintain a presence in a leased facility. 3M has the following primary capital leases:

- In 2003, 3M recorded a capital lease asset and obligation of approximately 34 million British Pound (GBP), or approximately $43 million at December 31, 2018, exchange rates, for a building in the United Kingdom (with a lease term of 22 years).
- 3M sold and leased-back certain recently constructed machinery and equipment in return for municipal securities, which in aggregate, were recorded as a capital lease asset and obligation of approximately $13 million in 2018 and $13 million in 2017, with an average remaining lease term remaining of 15 years at December 31, 2018.

Minimum lease payments under capital and operating leases with non-cancelable terms in excess of one year as of December 31, 2018, were as follows:

(Millions)	Capital Leases	Operating Leases
2019	$ 18	$ 283
2020	16	208
2021	14	153
2022	12	122
2023	12	92
After 2023	32	253
Total	$ 104	$ 1,111
Less: Amounts representing interest	12	
Present value of future minimum lease payments	92	
Less: Current obligations under capital leases	17	
Long-term obligations under capital leases	$ 75	

NOTE 18. Stock-Based Compensation

The 3M 2016 Long-Term Incentive Plan provides for the issuance or delivery of up to 123,965,000 shares of 3M common stock pursuant to awards granted under the plan. Awards may be issued in the form of incentive stock options, nonqualified stock options, stock appreciation rights, restricted stock, restricted stock units, other stock awards, and performance units and performance shares. As of December 31, 2019, the remaining shares available for grant under the LTIP Program are 22 million and there were approximately 6,700 participants with outstanding options, restricted stock, or restricted stock units.

The Company's annual stock option and restricted stock unit grant is made in February to provide a strong and immediate link between the performance of individuals during the preceding year and the size of their annual stock compensation grants. The grant to eligible employees uses the closing stock price on the grant date. Accounting rules require recognition of expense under a non-substantive vesting period approach, requiring compensation expense recognition when an employee is eligible to retire. Employees are considered eligible to retire at age 55 and after having completed ten years of service. This retiree-eligible population represents 37 percent of the annual grant's stock-based compensation expense; therefore, higher stock-based compensation expense is recognized in the first quarter.

In addition to the annual grants, the Company makes other minor grants of stock options, restricted stock units and other stock-based grants. The Company issues cash settled restricted stock units and stock appreciation rights in certain countries. These grants do not result in the issuance of common stock and are considered immaterial by the Company.

Beginning in 2016, as a result of the Company's application of ASU No. 2016-09, *Improvements to Employee Share-Based Payment Accounting*, certain excess tax benefits at the time of exercise (for an option) or upon vesting (for restricted stock units) are recognized as income tax benefits in the statement of income. These amounts totaled $89 million, $100 million, and $228 million for 2019, 2018 and 2017, respectively, and are reflected in the "income tax benefits" line within the stock-based compensation table below.

Amounts recognized in the financial statements with respect to stock-based compensation programs, which include stock options, restricted stock, restricted stock units, performance shares and the General Employees' Stock Purchase Plan (GESPP), are provided in the following table. Capitalized stock-based compensation amounts were not material.

Stock-Based Compensation Expense

	Years ended December 31		
(Millions)	**2019**	**2018**	**2017**
Cost of sales	**$ 47**	$ 48	$ 49
Selling, general and administrative expenses	**185**	207	229
Research, development and related expenses	**46**	47	46
Stock-based compensation expenses	**$ 278**	$ 302	$ 324
Income tax benefits	**(141)**	(154)	(327)
Stock-based compensation expenses (benefits), net of tax	**$ 137**	$ 148	$ (3)

Stock Option Program

The following table summarizes stock option activity for the years ended December 31:

(Options in thousands)	2019 Number of Options	2019 Weighted Average Exercise Price	2018 Number of Options	2018 Weighted Average Exercise Price	2017 Number of Options	2017 Weighted Average Exercise Price
Under option —						
January 1	**34,569**	**$ 138.98**	34,965	$ 125.73	36,196	$ 112.07
Granted:						
Annual	**3,434**	**200.80**	3,211	233.19	5,410	175.93
Exercised	**(4,193)**	**89.89**	(3,482)	91.01	(6,474)	90.37
Forfeited	**(135)**	**201.27**	(125)	188.00	(167)	162.36
December 31	**33,675**	**$ 151.15**	34,569	$ 138.98	34,965	$ 125.73
Options exercisable						
December 31	**26,487**	**$ 136.75**	26,117	$ 121.98	24,281	$ 108.50

Stock options generally vest over a period from one to three years with the expiration date at 10 years from date of grant. As of December 31, 2019, there was $62 million of compensation expense that has yet to be recognized related to non-vested stock option based awards. This expense is expected to be recognized over the remaining weighted-average vesting period of 20 months. For options outstanding at December 31, 2019, the weighted-average remaining contractual life was 64 months and the aggregate intrinsic value was $1.1 billion. For options exercisable at December 31, 2019, the weighted-average remaining contractual life was 54 months and the aggregate intrinsic value was $1.1 billion.

The total intrinsic values of stock options exercised during 2019, 2018 and 2017 was $433 million, $469 million and $703 million, respectively. Cash received from options exercised during 2019, 2018 and 2017 was $375 million, $316 million and $585 million, respectively. The Company's actual tax benefits realized for the tax deductions related to the exercise of employee stock options for 2019, 2018 and 2017 was $91 million, $99 million and $238 million, respectively.

For the primary annual stock option grant, the weighted average fair value at the date of grant was calculated using the Black-Scholes option-pricing model and the assumptions that follow.

Stock Option Assumptions

	Annual 2019	Annual 2018	Annual 2017
Exercise price	**$ 201.12**	$ 233.63	$ 175.76
Risk-free interest rate	**2.6 %**	2.7 %	2.1 %
Dividend yield	**2.5 %**	2.4 %	2.5 %
Expected volatility	**20.4 %**	21.0 %	17.3 %
Expected life (months)	**79**	78	78
Black-Scholes fair value	**$ 34.19**	$ 41.59	$ 23.51

Expected volatility is a statistical measure of the amount by which a stock price is expected to fluctuate during a period. For the 2019 annual grant date, the Company estimated the expected volatility based upon the following three volatilities of 3M stock: the median of the term of the expected life rolling volatility; the median of the most recent term of the expected life volatility; and the implied volatility on the grant date. The expected term assumption is based on the weighted average of historical grants.

Restricted Stock and Restricted Stock Units

The following table summarizes restricted stock and restricted stock unit activity for the years ended December 31:

	2019		2018		2017	
(Shares in thousands)	Number of Shares	Weighted Average Grant Date Fair Value	Number of Shares	Weighted Average Grant Date Fair Value	Number of Shares	Weighted Average Grant Date Fair Value
Nonvested balance —						
As of January 1	**1,789**	**$ 180.02**	1,994	$ 162.60	2,185	$ 145.64
Granted						
Annual	**564**	**200.41**	467	233.61	604	176.10
Other	**15**	**180.08**	8	207.76	21	233.77
Vested	**(732)**	**149.33**	(640)	164.83	(769)	127.21
Forfeited	**(63)**	**192.52**	(40)	186.48	(47)	158.25
As of December 31	**1,573**	**$ 201.11**	1,789	$ 180.02	1,994	$ 162.60

As of December 31, 2019, there was $72 million of compensation expense that has yet to be recognized related to non-vested restricted stock and restricted stock units. This expense is expected to be recognized over the remaining weighted-average vesting period of 22 months. The total fair value of restricted stock and restricted stock units that vested during the years ended December 31, 2019, 2018 and 2017 was $144 million, $155 million and $136 million, respectively. The Company's actual tax benefits realized for the tax deductions related to the vesting of restricted stock and restricted stock units for 2019, 2018 and 2017 was $28 million, $29 million and $45 million, respectively.

Restricted stock units granted generally vest three years following the grant date assuming continued employment. Dividend equivalents equal to the dividends payable on the same number of shares of 3M common stock accrue on these restricted stock units during the vesting period, although no dividend equivalents are paid on any of these restricted stock units that are forfeited prior to the vesting date. Dividends are paid out in cash at the vest date on restricted stock units. Since the rights to dividends are forfeitable, there is no impact on basic earnings per share calculations. Weighted average restricted stock unit shares outstanding are included in the computation of diluted earnings per share.

Performance Shares

Instead of restricted stock units, the Company makes annual grants of performance shares to members of its executive management. The 2019 performance criteria for these performance shares (organic volume growth, return on invested capital, free cash flow conversion, and earnings per share growth) were selected because the Company believes that they are important drivers of long-term stockholder value. The number of shares of 3M common stock that could actually be delivered at the end of the three-year performance period may be anywhere from 0% to 200% of each performance share granted, depending on the performance of the Company during such performance period. When granted, these performance shares are awarded at 100% of the estimated number of shares at the end of the three-year performance period and are reflected under "Granted" in the table below. Non-substantive vesting requires that expense for the performance shares be recognized over one or three years depending on when each individual became a 3M executive. The performance share grants accrue dividends, therefore the grant date fair value is equal to the closing stock price on the date of grant. Since the rights to dividends are forfeitable, there is no impact on basic earnings per share calculations. Weighted average performance shares whose performance period is complete are included in computation of diluted earnings per share.

The following table summarizes performance share activity for the years ended December 31:

(Shares in thousands)	2019 Number of Shares	2019 Weighted Average Grant Date Fair Value	2018 Number of Shares	2018 Weighted Average Grant Date Fair Value	2017 Number of Shares	2017 Weighted Average Grant Date Fair Value
Undistributed balance —						
As of January 1	**562**	**$ 188.96**	686	$ 171.90	656	$ 142.98
Granted	**166**	**207.49**	166	229.13	201	191.28
Distributed	**(210)**	**162.16**	(206)	159.82	(314)	124.88
Performance change	**(48)**	**204.73**	(56)	198.39	155	173.91
Forfeited	**(26)**	**209.96**	(28)	204.09	(12)	171.36
As of December 31	**444**	**$ 205.58**	562	$ 188.96	686	$ 171.90

As of December 31, 2019, there was $16 million of compensation expense that has yet to be recognized related to performance shares. This expense is expected to be recognized over the remaining weighted-average earnings period of 20 months. The total fair value of performance shares that were distributed were $45 million, $48 million, and $55 million for 2019, 2018 and 2017, respectively. The Company's actual tax benefits realized for the tax deductions related to the distribution of performance shares were $9 million, $11 million, and $15 million per year for 2019, 2018, and 2017, respectively.

General Employees' Stock Purchase Plan (GESPP):

As of December 31, 2019, shareholders have approved 60 million shares for issuance under the Company's GESPP. Substantially all employees are eligible to participate in the plan. Participants are granted options at 85% of market value at the date of grant. There are no GESPP shares under option at the beginning or end of each year because options are granted on the first business day and exercised on the last business day of the same month.

The weighted-average fair value per option granted during 2019, 2018 and 2017 was $27.14, $31.91 and $30.07, respectively. The fair value of GESPP options was based on the 15% purchase price discount. The Company recognized compensation expense for GESSP options of $30 million in 2019, $30 million in 2018, and $26 million in 2017.

NOTE 19. Business Segments and Geographic Information

3M's businesses are organized, managed and internally grouped into segments based on differences in markets, products, technologies and services. 3M manages its operations in four business segments: Safety and Industrial; Transportation and Electronics; Health Care; and Consumer. 3M's four business segments bring together common or related 3M technologies, enhancing the development of innovative products and services and providing for efficient sharing of business resources. Transactions among reportable segments are recorded at cost. 3M is an integrated enterprise characterized by substantial intersegment cooperation, cost allocations and inventory transfers. Therefore, management does not represent that these segments, if operated independently, would report the operating income information shown. The difference between operating income and pre-tax income relates to other expense (income), which is not allocated to business segments. Further information about which is included in Note 6.

Effective in the second quarter of 2019, to enable the Company to better serve global customers and markets, the Company made the following changes to its business segments:

Realignment of the Company's business segments from five to four

The Company realigned its former five business segments into four: Safety and Industrial; Transportation and Electronics; Health Care; and Consumer. Existing divisions were largely realigned to this new structure. In addition, certain retail auto care product lines formerly in the Automotive Aftermarket Division (now within the Safety and Industrial business segment) were moved to the Construction and Home Improvement Division (within the Consumer business segment). Also, product lines relating to the refrigeration filtration business, formerly included in the Separation and Purification Sciences Division (now within the Health Care business segment) were moved to Other Safety and Industrial (within the Safety and Industrial business segment). 3M business segment reporting measures include dual credit to business segments for certain sales and operating income. Dual credit, which is based on which business segment provides customer account activity with respect to a particular product sold in a specific country, was reduced as a result of the closer alignment between customer account activity and their respective markets. The four business segments are as follows:

Safety and Industrial: This segment includes businesses that serve the global industrial, electrical and safety markets. This business segment consists of personal safety, industrial adhesives and tapes, abrasives, closure and masking systems, electrical markets, automotive aftermarket, and roofing granules. This segment also includes the Communication Markets Division (which was substantially sold in 2018) and the refrigeration filtration product lines (within Other Safety and Industrial).

Transportation and Electronics: This segment includes businesses that serve global transportation and electronic original equipment manufacturer (OEM) customers. This business segment consists of electronics (display materials and systems, electronic materials solutions), automotive and aerospace, commercial solutions, advanced materials, and transportation safety.

Health Care: This business segment serves the global healthcare industry and includes medical solutions, oral care, separation and purification sciences, health information systems, drug delivery systems, and food safety.

Consumer: This business serves global consumers and consists of home improvement, stationery and office supplies, home care, and consumer health care. This segment also includes, within the Construction and Home Improvement Division, certain retail auto care product lines.

In addition, as part of 3M's continuing effort to improve the alignment of its businesses around markets and customers, the Company made the following changes, effective in the first quarter of 2019, and other revisions impacting business segment reporting:

Continued alignment of customer account activity

- As part of 3M's regular customer-focus initiatives, the Company realigned certain customer account activity ("sales district") to correlate with the primary divisional product offerings in various countries and reduce complexity for customers when interacting with multiple 3M businesses. This largely impacted the amount of dual credit certain business segments receive as a result of sales district attribution. 3M business segment reporting measures include dual credit to business segments for certain sales and operating income. This dual credit is based on which business segment provides customer account activity with respect to a particular product sold in a specific country.

Creation of Closure and Masking Systems Division and Medical Solutions Division

- 3M created the Closure and Masking Systems Division, which combines the masking tape, packaging tape and personal care portfolios formerly within Industrial Adhesives and Tapes Division in the former Industrial business segment into a separate division also within the former Industrial business segment. 3M created the Medical Solutions Division in the Health Care business segment, which combines the former Critical and Chronic Care Division and Infection Prevention Division (which were also both within the Health Care business segment).

Additional actions impacting business segment reporting

- The business associated with certain safety products sold through retail channels in the Asia Pacific region was realigned from the Personal Safety Division within the former Safety and Graphics business segment to the Construction and Home Improvement Division within the Consumer business segment. In addition, certain previously non-allocated costs related to manufacturing and technology of centrally managed material resource centers of expertise within Corporate and Unallocated are now reflected as being allocated to the business segments.

The financial information presented herein reflects the impact of the preceding business segment reporting changes for all periods presented.

Business Segment Products

Business Segment	Major Products
Safety and Industrial	Tapes, coated, nonwoven and bonded abrasives, adhesives, sealants, specialty materials, closure systems for personal hygiene products, abrasion-resistant films, structural adhesives, infrastructure protection products, renewable energy component solutions, roofing granules for asphalt shingles, personal protection products, fall protection products, and self-contained breathing apparatus systems
Transportation and Electronics	Optical film solutions for electronic displays, packaging and interconnection devices, insulating and splicing solutions for the electronics and electrical industries, touch screens and touch monitors, acoustic systems products, automotive components, advanced ceramics, commercial graphics systems, commercial cleaning and protection products, and transportation safety products
Health Care	Medical and surgical supplies, skin health and infection prevention products, drug delivery systems, dental and orthodontic products, health information systems, filtration products, and food safety products
Consumer	Consumer and office tapes and adhesives, repositionable notes, indexing systems, home improvement products, furnace filters, painter tapes, mounting products, home care products, sponges, scouring pads, high-performance clothes, protective material products, paint finishing and detailing products, and adhesive bandages and braces

Business Segment Information

	Net Sales			Operating Income		
(Millions)	2019	2018	2017	2019	2018	2017
Safety and Industrial	$ **11,607**	$ 12,494	$ 11,946	$ **2,648**	$ 3,423	$ 2,603
Transportation and Electronics	**9,602**	10,106	9,861	**2,221**	2,649	2,986
Health Care	**7,431**	6,826	6,635	**1,863**	1,921	1,877
Consumer	**5,089**	5,086	5,006	**1,105**	1,071	1,051
Corporate and Unallocated	**110**	50	2	**(1,243)**	(1,409)	(367)
Elimination of Dual Credit	**(1,703)**	(1,797)	(1,793)	**(420)**	(448)	(458)
Total Company	$ **32,136**	$ 32,765	$ 31,657	$ **6,174**	$ 7,207	$ 7,692

	Assets			Depreciation & Amortization			Capital Expenditures		
(Millions)	2019	2018	2017	2019	2018	2017	2019	2018	2017
Safety and Industrial	$ **12,593**	$ 13,086	$ 13,560	$ **682**	$ 528	$ 424	$ **391**	$ 375	$ 255
Transportation and Electronics	**7,611**	7,773	7,786	**324**	337	437	**390**	339	382
Health Care	**15,210**	7,092	7,258	**277**	216	257	**264**	245	217
Consumer	**2,792**	2,963	2,909	**91**	97	117	**130**	115	110
Corporate and Unallocated	**6,453**	5,586	6,474	**219**	310	309	**524**	503	409
Total Company	$ **44,659**	$ 36,500	$ 37,987	$ **1,593**	$ 1,488	$ 1,544	$ **1,699**	$ 1,577	$ 1,373

Corporate and unallocated operating income includes a variety of miscellaneous items, such as corporate investment gains and losses, certain derivative gains and losses, certain insurance-related gains and losses, certain litigation and environmental expenses, corporate restructuring charges and certain under- or over-absorbed costs (e.g. pension, stock-based compensation) that the Company may choose not to allocate directly to its business segments. Corporate and Unallocated also includes sales, costs, and income from contract manufacturing, transition services and other arrangements with the acquirer of all of the Communication Markets Division following its divestiture in 2018. Because this category includes a variety of miscellaneous items, it is subject to fluctuation on a quarterly and annual basis.

3M business segment reporting measures include dual credit to business segments for certain sales and related operating income. Management evaluates each of its four business segments based on net sales and operating income performance, including dual credit reporting to further incentivize sales growth. As a result, 3M reflects additional ("dual") credit to another business segment when the customer account activity ("sales district") with respect to the particular product sold to the external customer is provided by a different business segment. This additional dual credit is largely reflected at the division level. For example, privacy screen protection products are primarily sold by the Display Materials and Systems Division within the Transportation and Electronics business segment; however, certain sales districts within the Consumer business segment provide the customer account activity for sales of the product to particular customers. In this example, the non-primary selling segment (Consumer) would also receive credit for the associated net sales initiated through its sales district and the related approximate operating income. The assigned operating income related to dual credit activity may differ from operating income that would result from actual costs associated with such sales. The offset to the dual credit business segment reporting is reflected as a reconciling item entitled "Elimination of Dual Credit," such that sales and operating income in total are unchanged.

Geographic Information

Geographic area information is used by the Company as a secondary performance measure to manage its businesses. Export sales and certain income and expense items are generally reported within the geographic area where the final sales to 3M customers are made.

	Net Sales			Property, Plant and Equipment - net	
(Millions)	**2019**	**2018**	**2017**	**2019**	**2018**
United States	**$ 13,159**	$ 12,840	$ 12,372	**$ 5,442**	$ 4,915
Asia Pacific	**9,796**	10,254	9,809	**1,637**	1,624
Europe, Middle East and Africa	**6,226**	6,654	6,456	**1,823**	1,751
Latin America and Canada	**2,965**	3,024	3,033	**431**	448
Other Unallocated	**(10)**	(7)	(13)	**—**	—
Total Company	**$ 32,136**	$ 32,765	$ 31,657	**$ 9,333**	$ 8,738

Asia Pacific included China/Hong Kong net sales to customers of $3.337 billion, $3.574 billion and $3.255 billion in 2019, 2018, and 2017, respectively. China/Hong Kong net property, plant and equipment (PP&E) was $553 million and $542 million at December 31, 2019 and 2018, respectively.

NOTE 20. Quarterly Data (Unaudited)

(Millions, except per-share amounts) 2019	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year 2019
Net sales	**$ 7,863**	**$ 8,171**	**$ 7,991**	**$ 8,111**	**$ 32,136**
Cost of sales	**4,310**	**4,313**	**4,188**	**4,325**	**17,136**
Net income including noncontrolling interest	**893**	**1,131**	**1,588**	**970**	**4,582**
Net income attributable to 3M	**891**	**1,127**	**1,583**	**969**	**4,570**
Earnings per share attributable to 3M common shareholders - basic	**1.54**	**1.95**	**2.75**	**1.68**	**7.92**
Earnings per share attributable to 3M common shareholders - diluted	**1.51**	**1.92**	**2.72**	**1.66**	**7.81**

(Millions, except per-share amounts) 2018	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year 2018
Net sales	$ 8,278	$ 8,390	$ 8,152	$ 7,945	$ 32,765
Cost of sales	4,236	4,227	4,159	4,060	16,682
Net income including noncontrolling interest	606	1,862	1,546	1,349	5,363
Net income attributable to 3M	602	1,857	1,543	1,347	5,349
Earnings per share attributable to 3M common shareholders - basic	1.01	3.14	2.64	2.32	9.09
Earnings per share attributable to 3M common shareholders - diluted	0.98	3.07	2.58	2.27	8.89

Gross profit is calculated as net sales minus cost of sales.

In 2019, the Company recorded significant litigation-related charges related to PFAS (certain perfluorinated compounds) matters and coal mine dust respirator mask lawsuits as further described in Note 16, which reduced net income by $590 million, or $1.01 per diluted share, of which $424 million, or $0.72 per diluted share occurred in the first quarter and $166 million, or $0.29 per diluted share occurred in the fourth quarter. In the second quarter of 2019, the Company recorded a non-operating charge related to the deconsolidation of its Venezuelan subsidiary, which reduced net income by $162 million, or $0.28 per diluted share.

In the first quarter of 2018, the Company recorded significant litigation-related charges related to the previously disclosed resolution of the State of Minnesota Natural Resource Damages (NRD) lawsuit, which reduced net income by $710 million, or $1.16 per diluted share. Refer to Note 16 for additional details. Additionally, the first quarter of 2018 was impacted by a measurement period adjustment related to the enactment of the Tax Cuts and Jobs Act (TCJA), which reduced net income by $217 million, or $0.36 per diluted share. Refer to Note 10 for additional details.

In the fourth quarter of 2018, the Company's ongoing IRS examination under the Compliance Assurance Process (CAP) and new guidance released under the Tax Cuts and Jobs Act resulted in a charge that reduced net income by $60 million, or $0.11 per diluted share. Additionally, in the fourth quarter of 2018, the Company finalized the tax impact related to TCJA with a reversal of previously recorded tax expense that increased net income by $41 million, or $0.07 per diluted share. On a combined basis, these items, including the impacts detailed above for the first quarter of 2018, reduced net income by $946 million, or $1.57 per diluted share in 2018.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

a. The Company carried out an evaluation, under the supervision and with the participation of its management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of the Company's "disclosure controls and procedures" (as defined in the Exchange Act Rule 13a-15(e)) as of the end of the period covered by this report. Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures are effective.

b. The Company's management is responsible for establishing and maintaining an adequate system of internal control over financial reporting, as defined in the Exchange Act Rule 13a-15(f). Management conducted an assessment of the Company's internal control over financial reporting based on the framework established by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control — Integrated Framework (2013).* Based on the assessment, management concluded that, as of December 31, 2019, the Company's internal control over financial reporting is effective. Management's assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 excluded M*Modal and Acelity, which were acquired by the Company in February 2019 and October 2019, respectively. The total assets and total net sales of M*Modal and Acelity collectively represent 2 percent and 2 percent, respectively, of the related consolidated financial statement amounts as of December 31, 2019. Companies are allowed to exclude acquisitions from their assessment of internal control over financial reporting during the year of acquisition while integrating the acquired company under guidelines established by the Securities and Exchange Commission. The Company's internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included herein, which expresses an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019.

c. There was no change in the Company's internal control over financial reporting that occurred during the Company's most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

The Company is implementing an enterprise resource planning ("ERP") system on a worldwide basis, which is expected to improve the efficiency of certain financial and related transaction processes. The gradual implementation is expected to occur in phases over the next several years. The implementation of a worldwide ERP system will likely affect the processes that constitute our internal control over financial reporting and will require testing for effectiveness.

The Company completed implementation with respect to various processes/sub-processes in certain subsidiaries/locations, including aspects relative to the United States, and will continue to roll out the ERP system over the next several years. As with any new information technology application we implement, this application, along with the internal controls over financial reporting included in this process, was appropriately considered within the testing for effectiveness with respect to the implementation in these instances. We concluded, as part of its evaluation described in the above paragraphs, that the implementation of the ERP system in these circumstances has not materially affected our internal control over financial reporting.

Item 9B. Other Information.

None.

PART III

Documents Incorporated by Reference

In response to Part III, Items 10, 11, 12, 13 and 14, parts of the Company's definitive proxy statement (to be filed pursuant to Regulation 14A within 120 days after Registrant's fiscal year-end of December 31, 2019) for its annual meeting to be held on May 12, 2020, are incorporated by reference in this Form 10-K.

Item 10. Directors, Executive Officers and Corporate Governance.

The information relating to directors and nominees of 3M is set forth under the caption "Proposal No. 1" in 3M's proxy statement for its annual meeting of stockholders to be held on May 12, 2020 ("3M Proxy Statement") and is incorporated by reference herein. Information about executive officers is included in Item 1 of this Annual Report on Form 10-K. The information required by Items 405, 407(c)(3), (d)(4) and (d)(5) of Regulation S-K is contained under the captions "Delinquent Section 16(a) Reports," "Corporate Governance At 3M — Board Membership Criteria — Identification, Evaluation, and Selection of Nominees,," "—Nominees Proposed By Shareholders," "—Shareholder Nominations", and "—Proxy Access Nominations" and "Corporate Governance At 3M -- Board Committees – Audit Committee" of the 3M Proxy Statement and such information is incorporated by reference herein.

Code of Ethics. All of our employees, including our Chief Executive Officer, Chief Financial Officer and Chief Accounting Officer and Controller, are required to abide by 3M's long-standing business conduct policies to ensure that our business is conducted in a consistently legal and ethical manner. 3M has posted the text of such code of ethics on its website (http://www.3M.com/businessconduct). At the same website, any future amendments to the code of ethics will also be posted. Any person may request a copy of the code of ethics, at no cost, by writing to us at the following address:

3M Company
3M Center, Building 220-11W-09
St. Paul, MN 55144-1000
Attention: Vice President, 3M Ethics & Compliance

Item 11. Executive Compensation.

The information required by Item 402 of Regulation S-K is contained under the captions "Executive Compensation" (excluding the information under the caption "— Compensation Committee Report") and "Director Compensation and Stock Ownership Guidelines" of the 3M Proxy Statement. Such information is incorporated by reference.

The information required by Items 407(e)(4) and (e)(5) of Regulation S-K is contained in the "Executive Compensation" section under the captions "Compensation Committee Report" and "Compensation Committee Interlocks and Insider Participation" of the 3M Proxy Statement. Such information (other than the Compensation Committee Report, which shall not be deemed to be "filed") is incorporated by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information relating to security ownership of certain beneficial owners and management is set forth under the designation "Security Ownership of Management" and "Security Ownership of Certain Beneficial Owners" in the 3M Proxy Statement and such information is incorporated by reference herein.

Equity compensation plans information as of December 31, 2019 follows:

Equity Compensation Plans Information (1)

Plan Category (options and shares in thousands)	A Number of securities to be issued upon exercise of outstanding options, warrants and rights	B Weighted-average exercise price of outstanding options, warrants and rights	C Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (A))
Equity compensation plans approved by security holders			
Stock options	33,675	$ 151.15	—
Restricted stock units	1,573		—
Performance shares	444		—
Non-employee director deferred stock units	232		—
Total	35,924		22,165
Employee stock purchase plan	—		24,190
Subtotal	35,924		46,355
Total	35,924		46,355

(1) In column B, the weighted-average exercise price is only applicable to stock options. In column C, the number of securities remaining available for future issuance for stock options, restricted stock units, and stock awards for non-employee directors is approved in total and not individually with respect to these items.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

With respect to certain relationships and related transactions as set forth in Item 404 of Regulation S-K, no matters require disclosure with respect to transactions with related persons. The information required by Item 404(b) and Item 407(a) of Regulation S-K is contained under the section "Corporate Governance at 3M" under the captions "Director Independence" and "Related Person Transaction Policy and Procedures" of the 3M Proxy Statement and such information is incorporated by reference herein.

Item 14. Principal Accounting Fees and Services.

The information relating to principal accounting fees and services is set forth in the section entitled "Audit Committee Matters" under the designation "Audit Committee Policy on Pre-Approval of Audit and Permissible Non-Audit Services of the Independent Accounting Firm" and "Fees of the Independent Accounting Firm" in the 3M Proxy Statement and such information is incorporated by reference herein.

PART IV

Item 15. <u>Exhibits, Financial Statement Schedules.</u>

(a) (1) Financial Statements. The consolidated financial statements filed as part of this report are listed in the index to financial statements at the beginning of this document.

(a) (2) Financial Statement Schedules. Financial statement schedules are omitted because of the absence of the conditions under which they are required or because the required information is included in the Consolidated Financial Statements or the notes thereto. The financial statements of unconsolidated subsidiaries are omitted because, considered in the aggregate, they would not constitute a significant subsidiary.

(a) (3) Exhibits. The exhibits are either filed with this report or incorporated by reference into this report. See (b) Exhibits, which follow.

(b) Exhibits.

(3) Articles of Incorporation and bylaws

- (3.1) Certificate of incorporation, as amended as of December 4, 2017, is incorporated by reference from our Form 8-K dated December 7, 2017.
- (3.2) Amended and Restated Bylaws, as adopted as of November 10, 2015, are incorporated by reference from our Form 8-K dated November 10, 2015.

(4) Instruments defining the rights of security holders, including indentures:

- (4.1) Indenture, dated as of November 17, 2000, between 3M and The Bank of New York Mellon Trust Company, N.A., as successor trustee, with respect to 3M's senior debt securities, is incorporated by reference from our Form 8-K dated December 7, 2000.
- (4.2) First Supplemental Indenture, dated as of July 29, 2011, to Indenture dated as of November 17, 2000, between 3M and The Bank of New York Mellon Trust Company, N.A., as successor trustee, with respect to 3M's senior debt securities, is incorporated by reference from our Form 10-Q for the quarter ended June 30, 2011.
- (4.3) Description of Securities is filed herewith.

(10) Material contracts and management compensation plans and arrangements:

- (10.1)* 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 8-K dated May 12, 2016.
- (10.2)* Form of Stock Option Award Agreement under the 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 8-K dated May 12, 2016.
- (10.3)* Form of Stock Appreciation Right Award Agreement under the 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 8-K dated May 12, 2016.
- (10.4)* Form of Restricted Stock Unit Award Agreement under the 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 8-K dated May 12, 2016.
- (10.5)* Form of Performance Share Award Agreement for performance share awards granted under the 3M Company 2016 Long-Term Incentive Plan prior to February 5, 2018, is incorporated by reference from our Form 8-K dated May 12, 2016.
- (10.6)* Form of Performance Share Award Agreement for performance share awards granted under the 3M Company 2016 Long-Term Incentive Plan on or after February 5, 2018 is incorporated by reference from our Form 10-K for the year ended December 31, 2017.
- (10.7)* Form of Stock Issuance Award Agreement for stock issuances on or after January 1, 2019 to Non-Employee Directors under the 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2018.
- (10.8)* Form of Deferred Stock Unit Award Agreement for deferred stock units granted on or after January 1, 2019 to Non-Employee Directors under the 3M Company 2016 Long-Term Incentive Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2018.

(10.9)* 3M 2008 Long-Term Incentive Plan (including amendments through February 2, 2016) is incorporated by reference from our Form 10-K for the year ended December 31, 2015.

(10.10)* Form of Agreement for Stock Option Grants to Executive Officers under 3M 2008 Long-Term Incentive Plan is incorporated by reference from our Form 8-K dated May 13, 2008.

(10.11)* Form of Stock Option Agreement for options granted to Executive Officers under the 3M 2008 Long-Term Incentive Plan, commencing February 9, 2010, is incorporated by reference from our Form 10-K for the year ended December 31, 2009.

(10.12)* Form of Stock Option Agreement for U.S. Employees under 3M 2008 Long-Term Incentive Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2008.

(10.13)* Form of Restricted Stock Unit Agreement for U.S. Employees under 3M 2008 Long-Term Incentive Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2008.

(10.14)* Amended and Restated 3M VIP Excess Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2016.

(10.15)* Amended and Restated 3M VIP (Voluntary Investment Plan) Plus Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2016.

(10.16)* 3M Deferred Compensation Excess Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2009.

(10.17)* 3M Performance Awards Deferred Compensation Plan is incorporated by reference from our Form 10-K for the year ended December 31, 2009.

(10.18)* 3M Annual Incentive Plan (including amendments through February 3, 2020) is incorporated herewith.

(10.19)* 3M Executive Annual Incentive Plan is incorporated by reference from our Form 8-K dated May 14, 2007.

(10.20)* 3M Executive Severance Plan is incorporated herewith.

(10.21)* 3M Compensation Plan for Non-Employee Directors, as amended, through November 8, 2004, is incorporated by reference from our Form 10-K for the year ended December 31, 2004.

(10.22)* Amendment of 3M Compensation Plan for Non-Employee Directors is incorporated by reference from our Form 8-K dated November 14, 2008.

(10.23)* Amendment of 3M Compensation Plan for Non-Employee Directors as of August 12, 2013, is incorporated by reference from our Form 10-Q for the quarter ended September 30, 2013.

(10.24)* Amendment and Restatement of 3M Compensation Plan for Non-Employee Directors as of January 1, 2019, is incorporated by reference from our Form 10-K for the year ended December 31, 2018.

(10.25)* 3M Executive Life Insurance Plan, as amended, is incorporated by reference from our Form 10-K for the year ended December 31, 2017.

(10.26)* Policy on Reimbursement of Incentive Payments is incorporated by reference from our Form 10-Q for the quarter ended June 30, 2018.

(10.27)* Amended and Restated 3M Nonqualified Pension Plan I is incorporated by reference from our Form 10-K for the year ended December 31, 2016.

(10.28)* Amended and Restated 3M Nonqualified Pension Plan II is incorporated by reference from our Form 10-K for the year ended December 31, 2016.

(10.29)* Amended and Restated 3M Nonqualified Pension Plan III is incorporated by reference from our Form 10-K for the year ended December 31, 2016.

(10.30) Amended and restated five-year credit agreement as of November 15, 2019, is incorporated by reference from our Form 8-K dated November 19, 2019.

(10.31) 364-day credit agreement as of November 15, 2019, is incorporated by reference from our Form 8-K dated November 19, 2019.

(10.32) Registration Rights Agreement as of August 4, 2009, between 3M Company and State Street Bank and Trust Company as Independent Fiduciary of the 3M Employee Retirement Income Plan, is incorporated by reference from our Form 8-K dated August 5, 2009.

Filed herewith, in addition to items, if any, specifically identified above:

(21)	Subsidiaries of the Registrant.
(23)	Consent of independent registered public accounting firm.
(24)	Power of attorney.
(31.1)	Certification of the Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350.
(31.2)	Certification of the Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350.
(32.1)	Certification of the Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350.
(32.2)	Certification of the Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350.
(95)	Mine Safety Disclosures.
(101.INS)	Inline XBRL Instance Document (the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document)
(101.SCH)	Inline XBRL Taxonomy Extension Schema Document
(101.CAL)	Inline XBRL Taxonomy Extension Calculation Linkbase Document
(101.DEF)	Inline XBRL Taxonomy Extension Definition Linkbase Document
(101.LAB)	Inline XBRL Taxonomy Extension Label Linkbase Document
(101.PRE)	Inline XBRL Taxonomy Extension Presentation Linkbase Document
(104)	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

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* Management contract or compensatory plan or arrangement required to be filed as an exhibit pursuant to Item 15 of Form 10-K.

Item 16. Form 10-K Summary.

A Form 10-K summary is provided at the beginning of this document, with hyperlinked cross-references. This allows users to easily locate the corresponding items in Form 10-K, where the disclosure is fully presented. The summary does not include certain Part III information that is incorporated by reference from a future proxy statement filing.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

3M COMPANY

By /s/ Nicholas C. Gangestad
Nicholas C. Gangestad,
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)
February 6, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities indicated on February 6, 2020.

Signature	Title
Michael F. Roman	Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer and Director)
Theresa E. Reinseth	Vice President, Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)
Thomas K. Brown	Director
Pamela J. Craig	Director
David B. Dillon	Director
Michael L. Eskew	Director
Herbert L. Henkel	Director
Amy E. Hood	Director
Muhtar Kent	Director
Edward M. Liddy	Director
Dambisa F. Moyo	Director
Gregory R. Page	Director
Patricia A. Woertz	Director

Nicholas C. Gangestad, by signing his name hereto, does hereby sign this document pursuant to powers of attorney duly executed by the other persons named, filed with the Securities and Exchange Commission on behalf of such other persons, all in the capacities and on the date stated, such persons constituting a majority of the directors of the Company.

By /s/ Nicholas C. Gangestad
Nicholas C. Gangestad, *Attorney-in-Fact*

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Shareholder Information

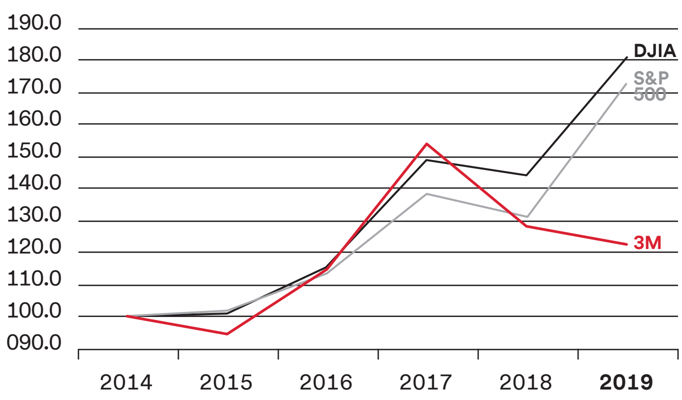
Account Information
Registered 3M shareholders can access account information and get answers to frequently asked questions in several ways:

Internet:	http://www.shareowneronline.com
Telephone:	(651) 450-4064 or 1-800-401-1952
E-mail:	Go to http://www.shareowneronline.com and select Contact Us.
Mail:	EQ Shareowner Services P.O. Box 64854 St. Paul, MN 55164-0854

Dividends
Quarterly dividends on 3M common stock typically are paid on or about the 12th of March, June, September and December. 3M has paid dividends since 1916. Shareholders can reinvest dividends and make additional cash contributions through the Automatic Dividend Reinvestment Plan or have dividend payments automatically deposited into checking or savings accounts through the Electronic Dividend Deposit Service.

Stock Listings
3M's common stock trades on the New York and Chicago stock exchanges, and is also traded on the SWX Swiss Exchange. Our symbol is MMM. 3M is one of 30 companies in the Dow Jones Industrial Average and is also a component of the Standard & Poor's 500 Index.

3M Stock Performance (With Dividend Reinvestment)



The graph above compares the five-year cumulative total shareholder return for 3M common stock with that of the Standard & Poor's 500 Stock Index (S&P 500) and the Dow Jones Industrial Average (DJIA). The comparison assumes that $100 was invested in 3M stock and the two indexes on Dec. 31, 2014, and that all quarterly dividends were reinvested.

Annual Shareholders' Meeting
3M's annual meeting of shareholders will be held on Tuesday, May 12, 2020, at 8:30 a.m. (Central Daylight Time) at the Archer Hotel, 3121 Palm Way, Austin, Texas 78758. Shareholders of record may vote proxies via the Internet at http://www.proxyvote.com, by calling 1-800-690-6903, or by mail. If a broker holds your shares, please contact the broker to determine your voting options.

Investor Inquiries
Securities analysts, portfolio managers and representatives of financial institutions should contact:
3M Investor Relations
3M Center, Building 224-1W-02
St. Paul, MN 55144-1000
Phone: (651) 737-8503

Corporate News and Reports
Corporate news releases, 3M's Annual Report, and Forms 10-K and 10-Q are available online at:
http://investors.3M.com

Product Information
Information about 3M products and services is available at:

Internet:	http://www.3M.com/product
Telephone:	1-800-3M HELPS (1-800-364-3577)

Forward-Looking Statements
This Annual Report contains forward-looking statements that involve risks and uncertainties that could cause results to differ materially from those projected. Please refer to the section titled "Cautionary Note Concerning Factors That May Affect Future Results" in Item 1 and "Risk Factors" in Item 1A of the Annual Report on Form 10-K for a discussion of these risks and uncertainties.

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http://www.3M.com

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