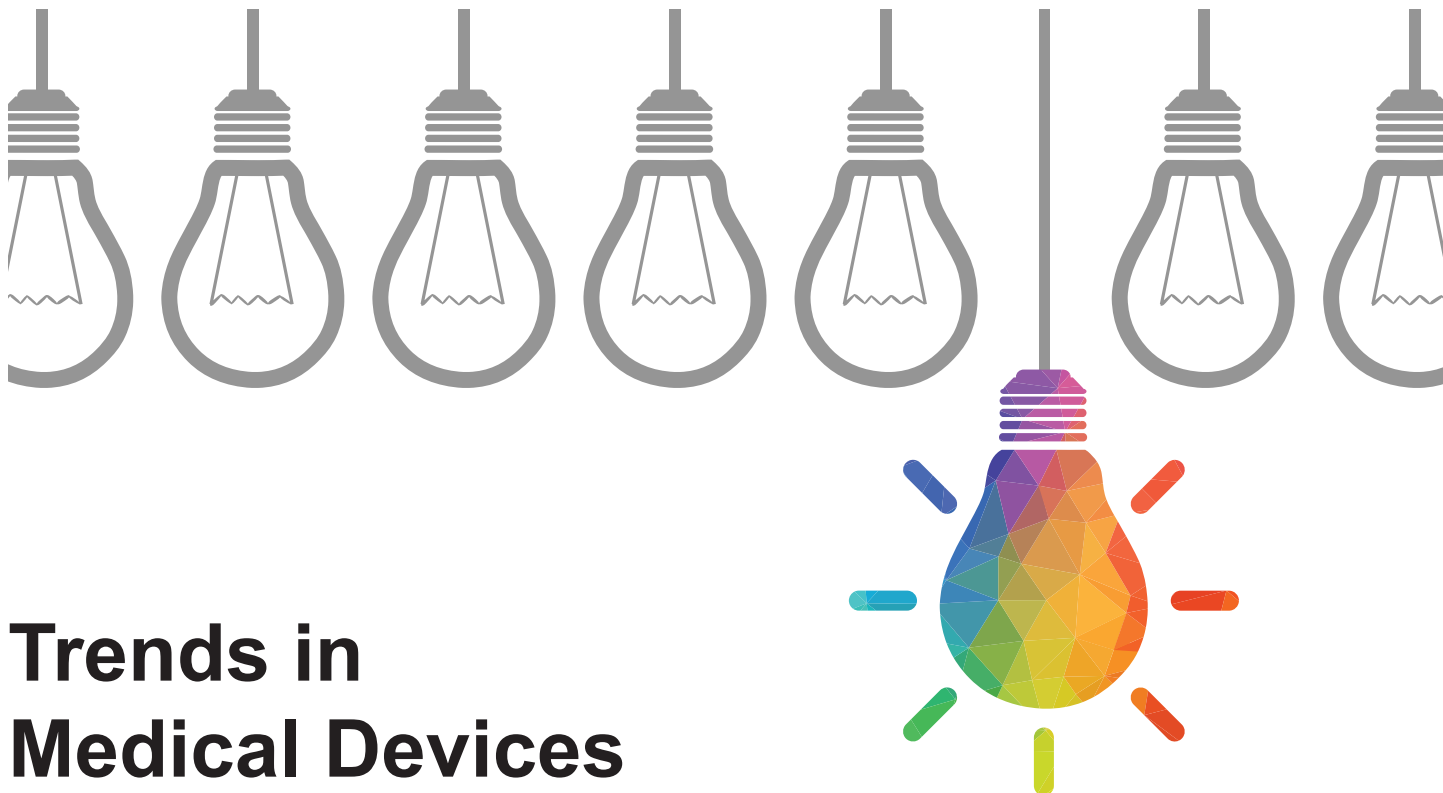




While there is a significant number of startups in the Medical Devices industry, patent applications are still being filed largely by the established players in this market.

Innovation and patent filings are on the rise in the Medical Devices industry. The increase in patenting activity is seen across multiple technologies in this industry.

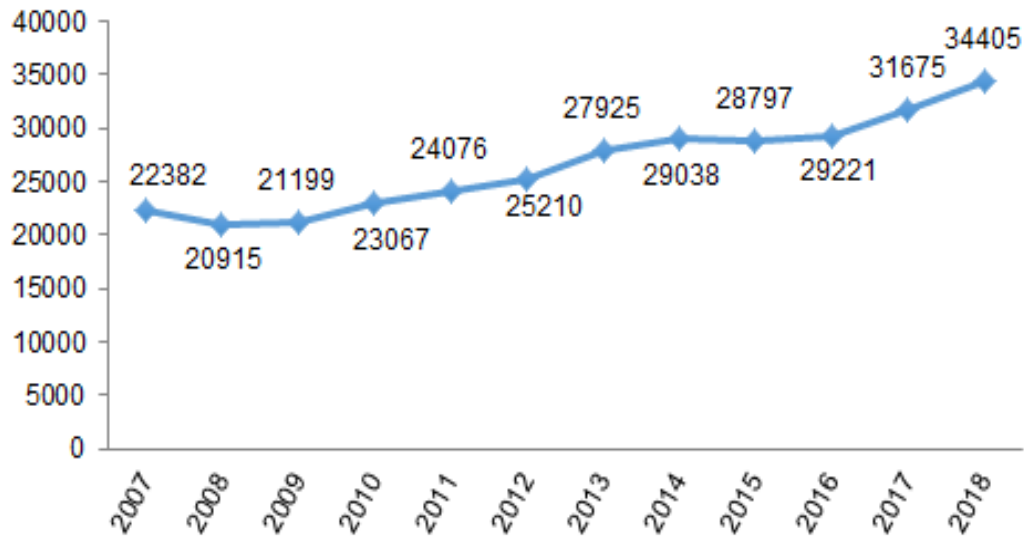
To delve deeper into the trends of patenting medical device innovation, we have defined the following technology clusters within the general Medical Devices industry:

Taxonomies and expanded definitions of these clusters are included in appendix A.

Level I Clusters	Level II Clusters
Assistive Care Devices	Durable Medical Equipment
	Feeding Equipment
Infant Care	
	Measuring Devices (Meters) Mobility Aids
	Orthopaedic Devices
Prosthetic Devices	
	Respiratory Equipment
Sensory Aids	
	Telehealth Equipment
	Treatment Equipment
	Voiding Equipment
Consumables And Disposables	-
Diagnosis & Imaging Devices	Endoscopic Devices
	Monitoring & Tracking Devices
Drug Deliver/ Devices	Implantable Drug Delivery Deice
	Infusion Pumps
Inhalers	
	Syringes
Transdermal Patches	
Surgical Devices	Electrosurgical Devices
Handheld Surgical Devices	
	Next-Generation Surgical Devices
Sutures & Staples	
Wearable Medical Devices	-



Patent filings are on a significant uptrend



After a slight dip during the Great Recession in 2008, patent filings in the Medical Devices industry have recovered and have been on a continuing uptrend since.

Several trends are converging to make the Medical Devices industry a hotbed of innovation and patenting activity. First, the increasingly aging populations of first-world countries and the higher physical activity level of older people in these countries create a growing market for innovative medical devices.⁸¹ Second, the rise of A.I. and robotics in medical settings, including surgery and diagnostics, have opened up new opportunities for innovation and patenting.⁸² Third, the personalization and decentralization of medical care - including the growing acceptance of health-related mobile apps - may lower the barrier to entry into the medical device market for new entrants.⁸³ All three of these trends are forecast to continue growing in upcoming years, fueling the increasing pace of innovation and patenting in the Medical Devices industry.

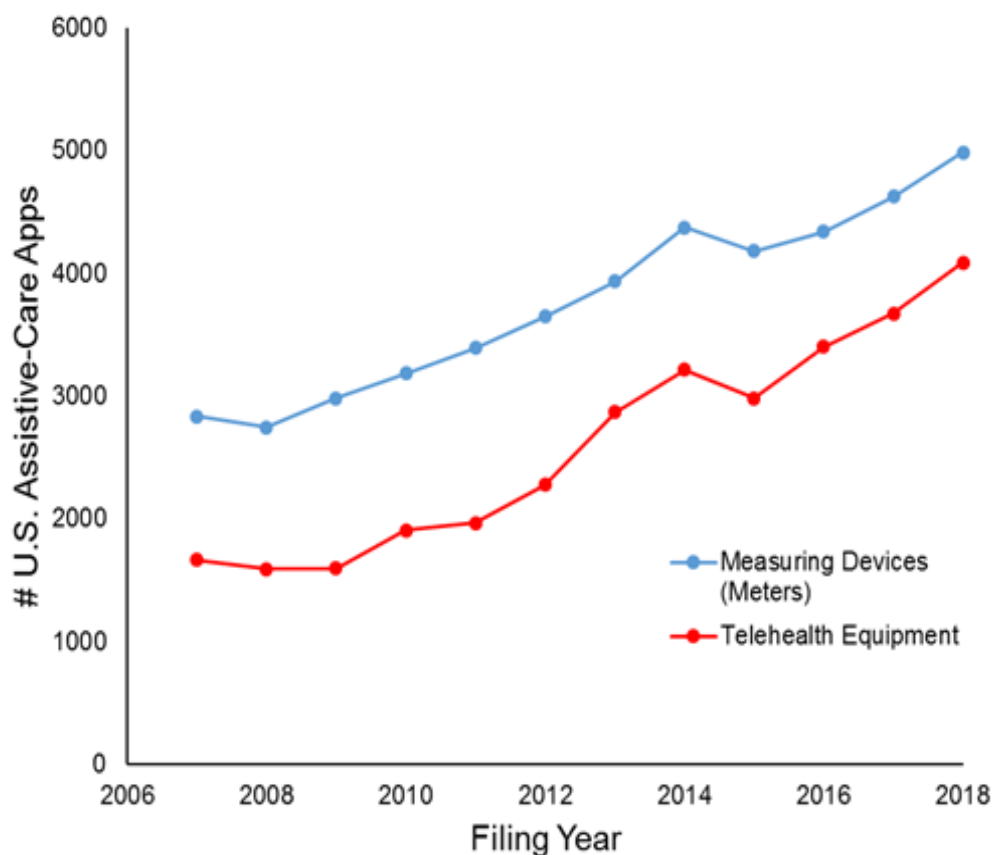


⁸¹ <https://mercercapital.com/assets/5-Trends-to-Watch-Med-Dev-Industry-2018.pdf>

⁸² <https://www.pwc.com/gx/en/industries/healthcare/publications/ai-robotics-new-health/transforming-healthcare.html>

⁸³ <https://health2con.com/news-item/8992/>

Innovation and patent filings are high in Measuring Devices and Telehealth Equipment



While patent filings are on the rise in the majority of the technology clusters in our study, filings in Assistive Care Devices are both significantly higher and rising more steeply than in any other cluster. Within Assistive Care Devices, two subclusters are particularly noteworthy in their uptrends: Patent filings in both Measuring Devices and Telehealth Equipment are rising sharply, suggesting that both of these subclusters are going through a significant innovation boom.

Measuring devices, including sensors for a variety of stimuli, are becoming more sensitive, accurate, and sophisticated. They are used to monitor conditions such as diabetes, cardiovascular disease, and respiratory disease, all of which are on the rise in countries with aging populations. Measuring devices are also being integrated into medical equipment to make that equipment both more effective and safer.

The increasing capabilities of measuring devices are also a significant factor in telehealth innovation, which depends on data from remote sensors to provide both medical care and patient monitoring. Research shows that the use of telehealth services is on the rise and that it is expected to continue to grow.⁸⁴ As acceptance of telehealth grows among healthcare providers and patients, it will open the door to more innovation in both the Telehealth and the Measuring Devices technologies.

⁸⁴ <https://mhealthintelligence.com/news/research-shows-telehealth-service-use-availability-on-the-rise>

Well-known medical-device companies are the leaders in patent filings

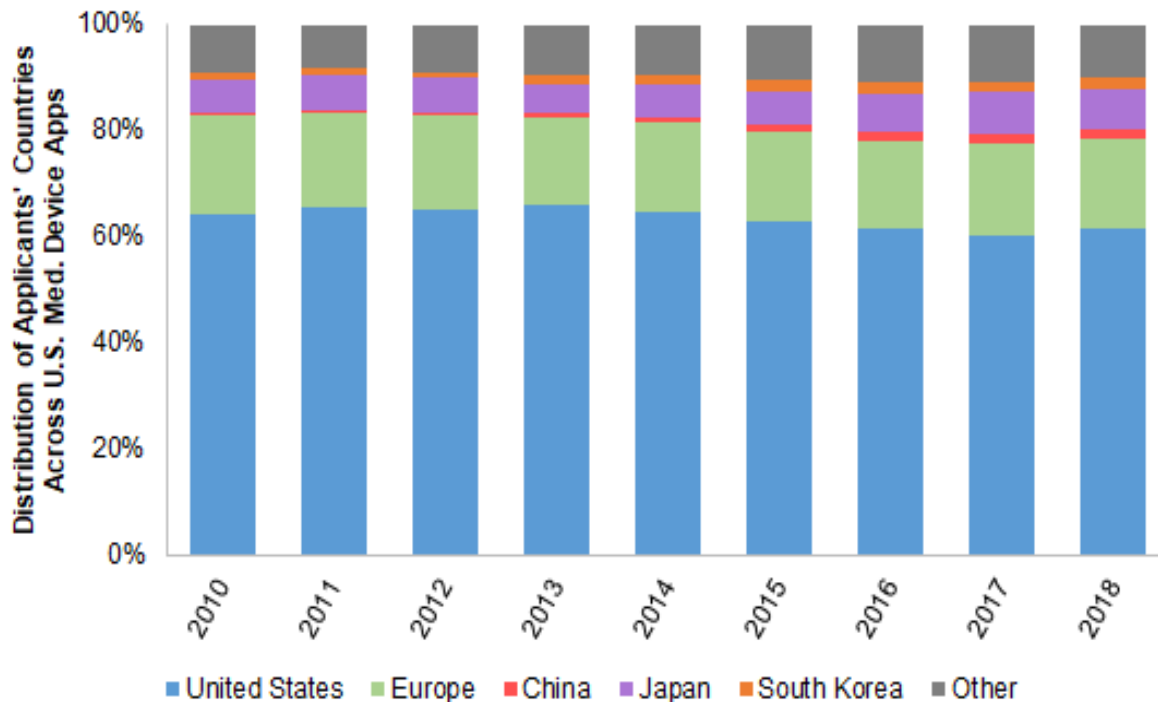
While there is a significant number of startups in the Medical Devices industry, patent applications are still being filed largely by the established players in this market. While these companies innovate in-house, they are also partnering with high-tech companies for consumer-facing offerings, and they are licensing more technologies from universities, which serve as incubators for innovation in the Medical Devices industry.⁸⁵ It is possible, therefore, that the large medical-device companies have rights to even more technology than our study shows.

USING 2016 DATA:	
	Most Families Flied by
	(Applicants In alphabetical order)
Medical Devices	Boston Scientific, Covidien, Ethicon, Medtronic, Olympus Corp.
Level I	
Assistive Care Devices	Boston Scientific, Cardiac Pacemakers, Medtronic, Samsung, Siemens
Consumables And Disposables	Boston Scientific, Covidien, Ethicon, Fenwal, Katalyst Surgical, Procter &Gamble
Diagnose &Imaging Devices	Boston Scientific, Cardiac Pacemakers, Covidien, General Electric, IBM, Olympus Corp.
Drug Delivery Devices	Becton Dickinson And Co., Boston Scientific, Fenwal, Medtronic, Terumo
Surgical Devices	Biosense Webster (Israel), Boston Scientific, Covidien, Ethicon, Olympus Corp.
Wearable Medical Devices	Apple, IBM, Intel, Samsung, Seiko Epson Corp., Tosense



⁸⁵ <https://www.medicaldesignandoutsourcing.com/here-are-5-medtech-industry-trends-you-need-to-know/>

U.S.-based patent filings are increasing



The percentage of U.S.-based patent filings has been stable over the past several years, hovering near 60%. This trend is in contrast with several other industries where our study shows a decreasing percentage of U.S.-based patent filings. Because the percentage of filings is steady but the overall number of filings continues to rise sharply, the overall number of patents filings from the United States is increasing at a high rate.

Our study also shows that while China and Korea are still contributing very small percentages to the overall number of patent filings in the USPTO, those percentages are growing. For China, it is likely that both its rising prosperity - which allows it to invest more in medical device research - and its recent state emphasis on more patent protection are responsible for the rising trend in patenting activity. For Korea, the increasing importance of mobile technology in medical devices has created an opportunity for its high tech companies to participate in the medical device markets.



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