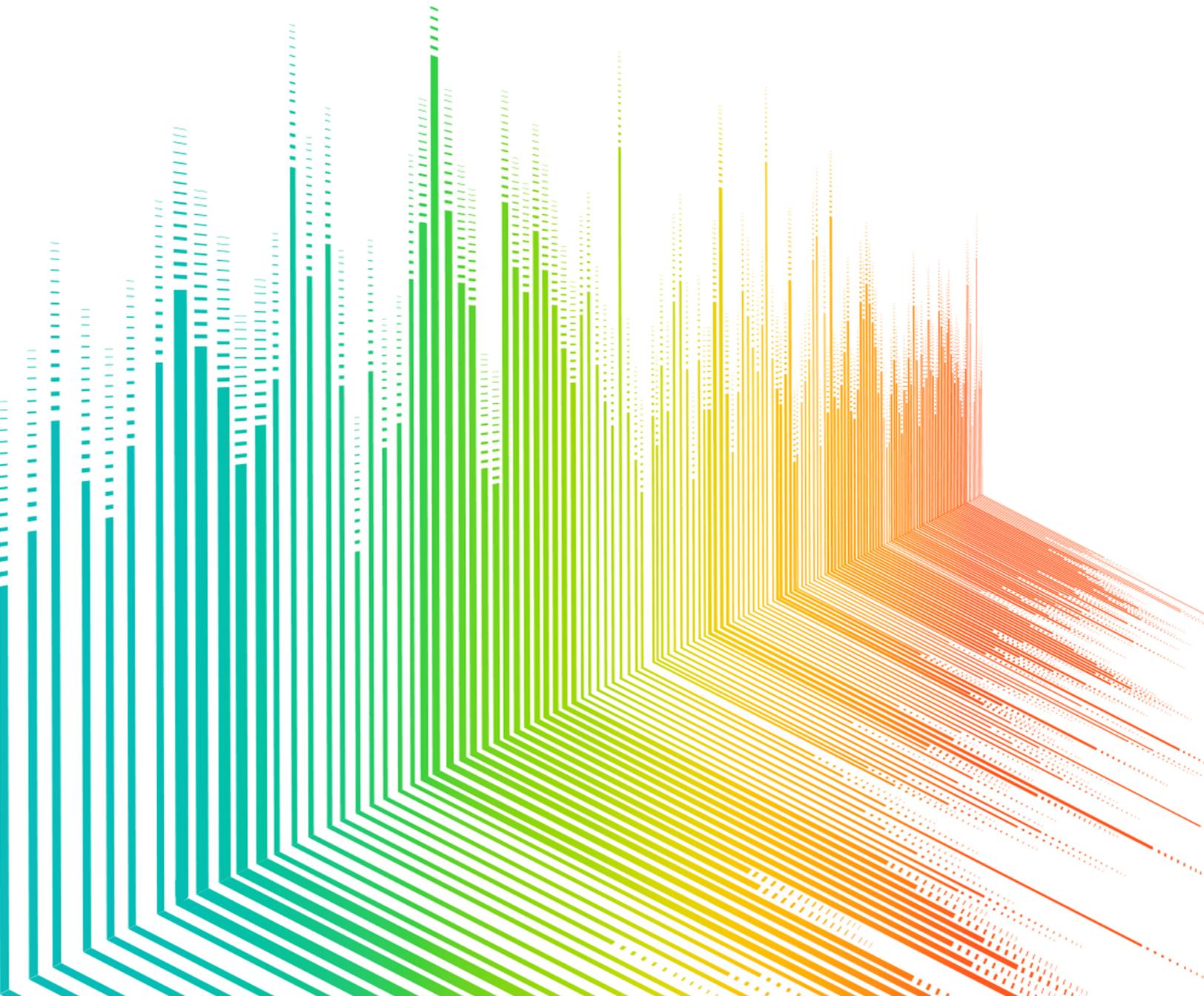




2021 Annual Survey

HIGHLIGHTS

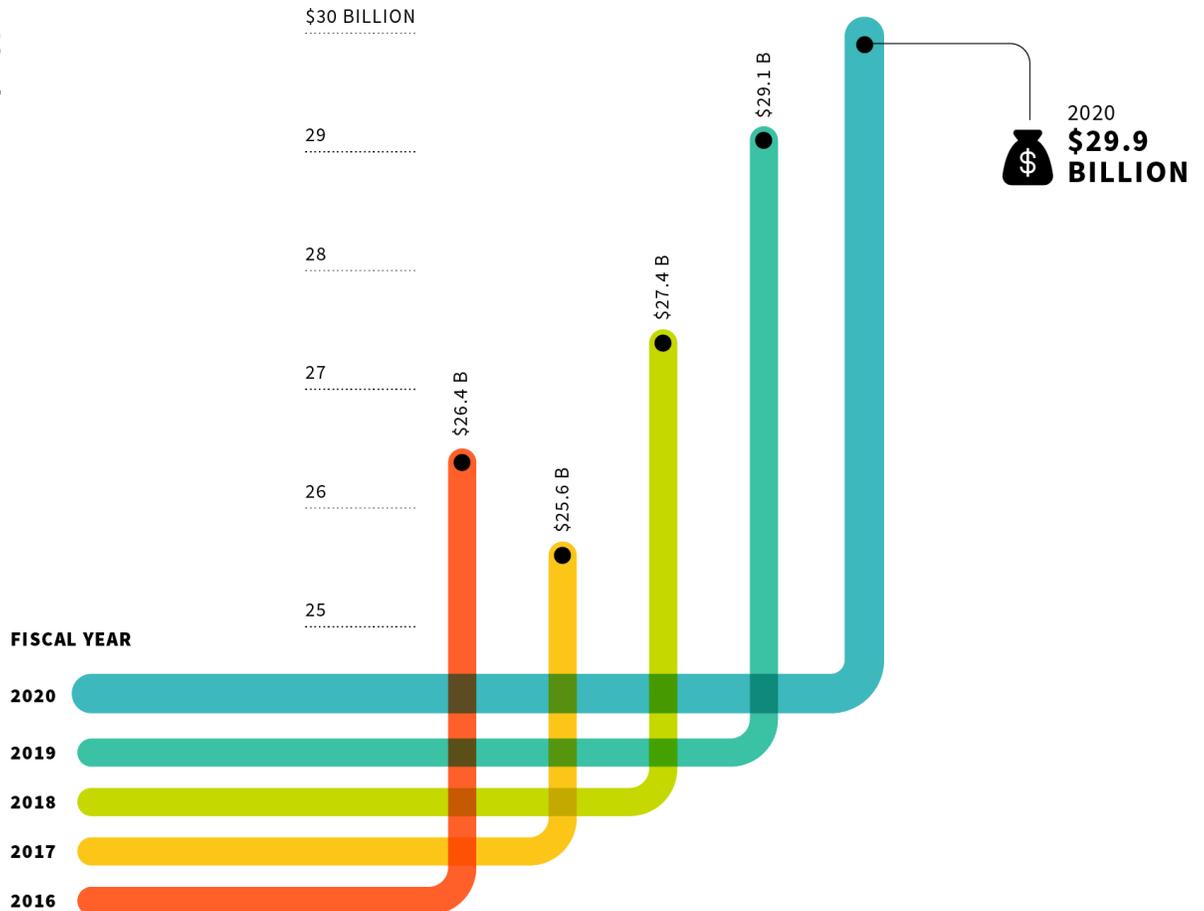




Since 1985, and as each generation of wireless became an integral part of our lives and the country's economy, CTIA has surveyed U.S. wireless providers to tell the ongoing story of this dynamic industry. The 2021 CTIA Annual Survey reveals a remarkable run of private investment that ensured wireless networks were more than up to the challenges posed by COVID-19. We look back on a year that saw 5G networks lit up across the country, bringing these next-gen networks into the hands and homes of millions—and keeping us connected when we needed it most.

Remarkable Investment in the Platform for Our 5G Economy

**TOTAL
CUMULATIVE
CAPITAL
INVESTMENT**



4.5
MILLION

jobs created by 5G Economy

\$1.5
TRILLION

GDP growth from 5G Economy

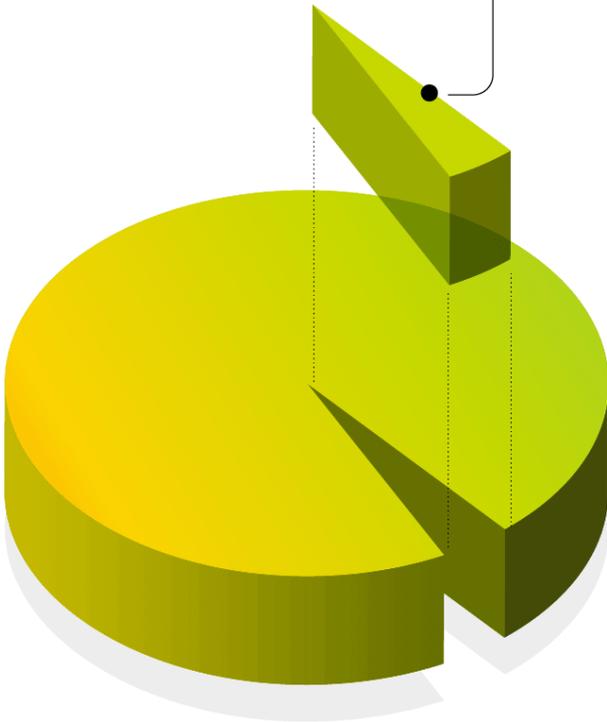
Wireless providers continued to demonstrate their commitment to our customers and the future of wireless, investing **\$30 billion in 2020**—a five-year high and the third straight year of increasing capital expenditures to power America’s world-leading wireless networks.

Since 2016, wireless providers have invested nearly **\$140 billion**, and over the life of the wireless industry, capital investment now totals over **\$601 billion**.

U.S. Wireless Industry Continues to Lead the World in Capex

U.S. CAPITAL INVESTMENT RELATIVE TO THE WORLD'S


4%
THE U.S. POPULATION AS A SHARE OF WORLD'S TOTAL




18%
U.S. INVESTMENT IN MOBILE, AS A SHARE OF WORLD'S TOTAL INVESTMENTS



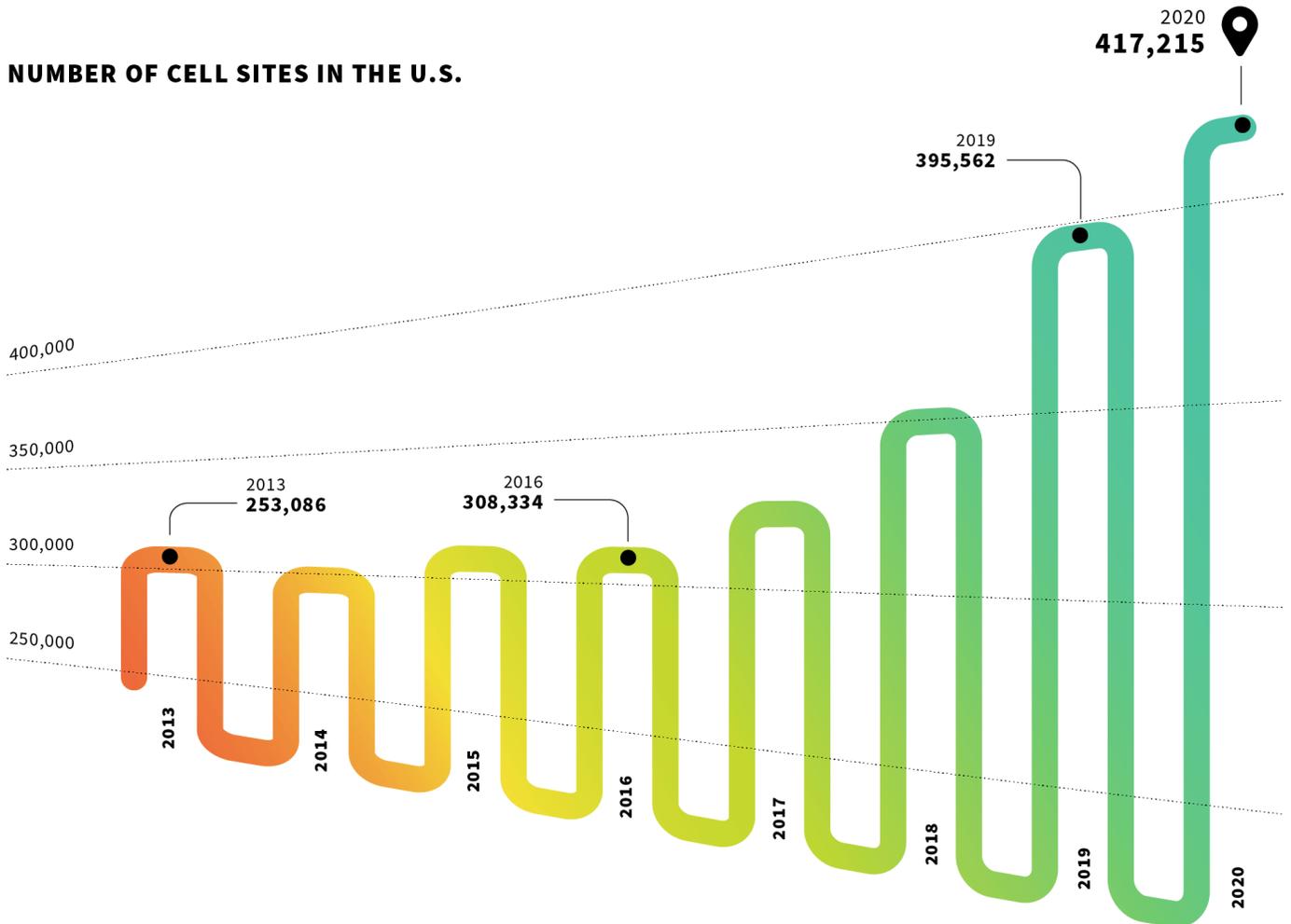
\$601
BILLION

total U.S. wireless investment

The U.S. wireless industry's investment in 2020 represents, once again, 18% of the world's total mobile capex—even though the U.S. has just 4.3% of the world's population and 5.9% of the world's mobile connections. That means that for two years in a row, the U.S. accounted for nearly one-fifth of global wireless capex.

Building More Cell Sites to Support 5G Economy

NUMBER OF CELL SITES IN THE U.S.



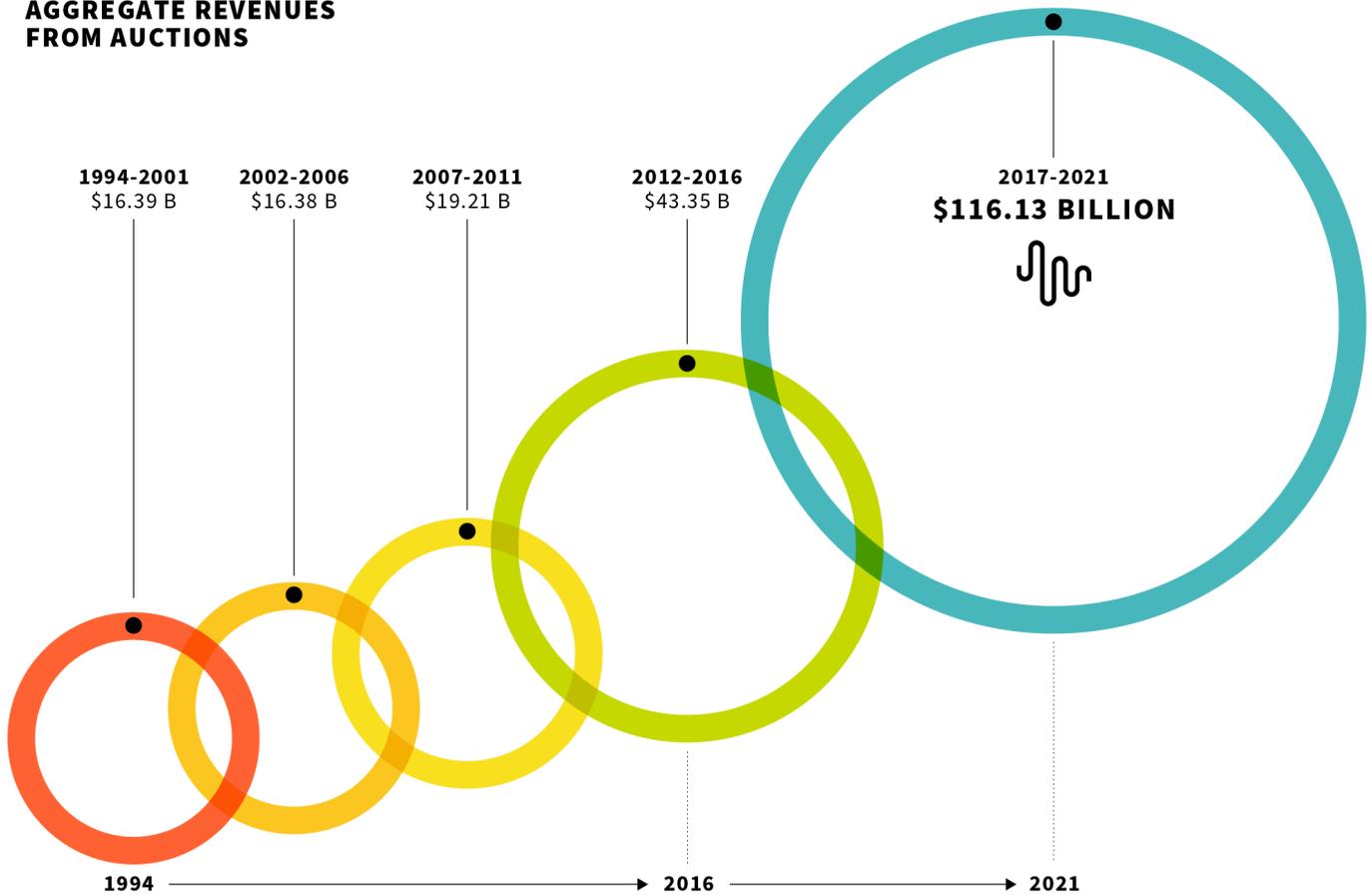
67,871
2-YEAR GROWTH

in cell sites is more than 2011-2018
growth combined

America's cell sites provide the physical platform that enables technological innovation in the U.S. 5G Economy, driving broader coverage and capacity to meet increasing consumer demand. By the end of 2020, over **417,000 cell sites** were built and operational, an increase of 35% since 2016—and in just the two years since the implementation of historic federal siting reforms, more cell sites have been built than the previous seven years combined.

Licensed Spectrum Investment Continues to Grow

AGGREGATE REVENUES FROM AUCTIONS



\$200+
BILLION

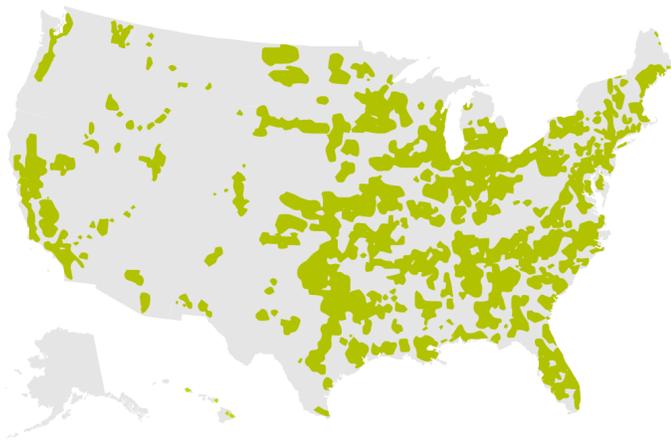
invested through licensed
spectrum auctions

America's wireless networks depend on licensed spectrum, which enables providers to deliver faster speeds and higher capacity to consumers. The wireless **industry invested ~\$85 billion** in the two auctions the FCC launched in 2020—airwaves that will be the foundation for the U.S. 5G Economy for years to come, creating millions of jobs and sparking hundreds of billions of dollars in economic growth.

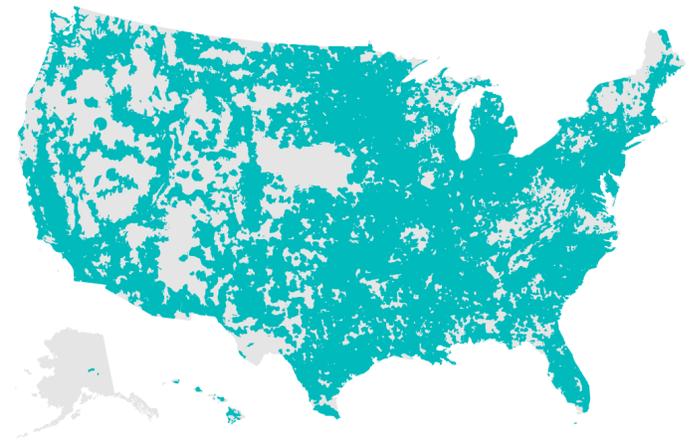
The \$82 billion C-band auction revenue represents the largest investment in a spectrum auction to date and brings the total to more than **\$200 billion** in payments to the government for the spectrum needed to power wireless networks and carry the increasing volumes of services used by consumers across the country.

5G Rapidly Rolling Out, Fueled by Remarkable Investment

NATIONWIDE COVERAGE BY TYPE OF NETWORK, 2 YEARS AFTER LAUNCH



4G DEPLOYMENT



5G DEPLOYMENT

300
MILLION

Americans covered by 5G

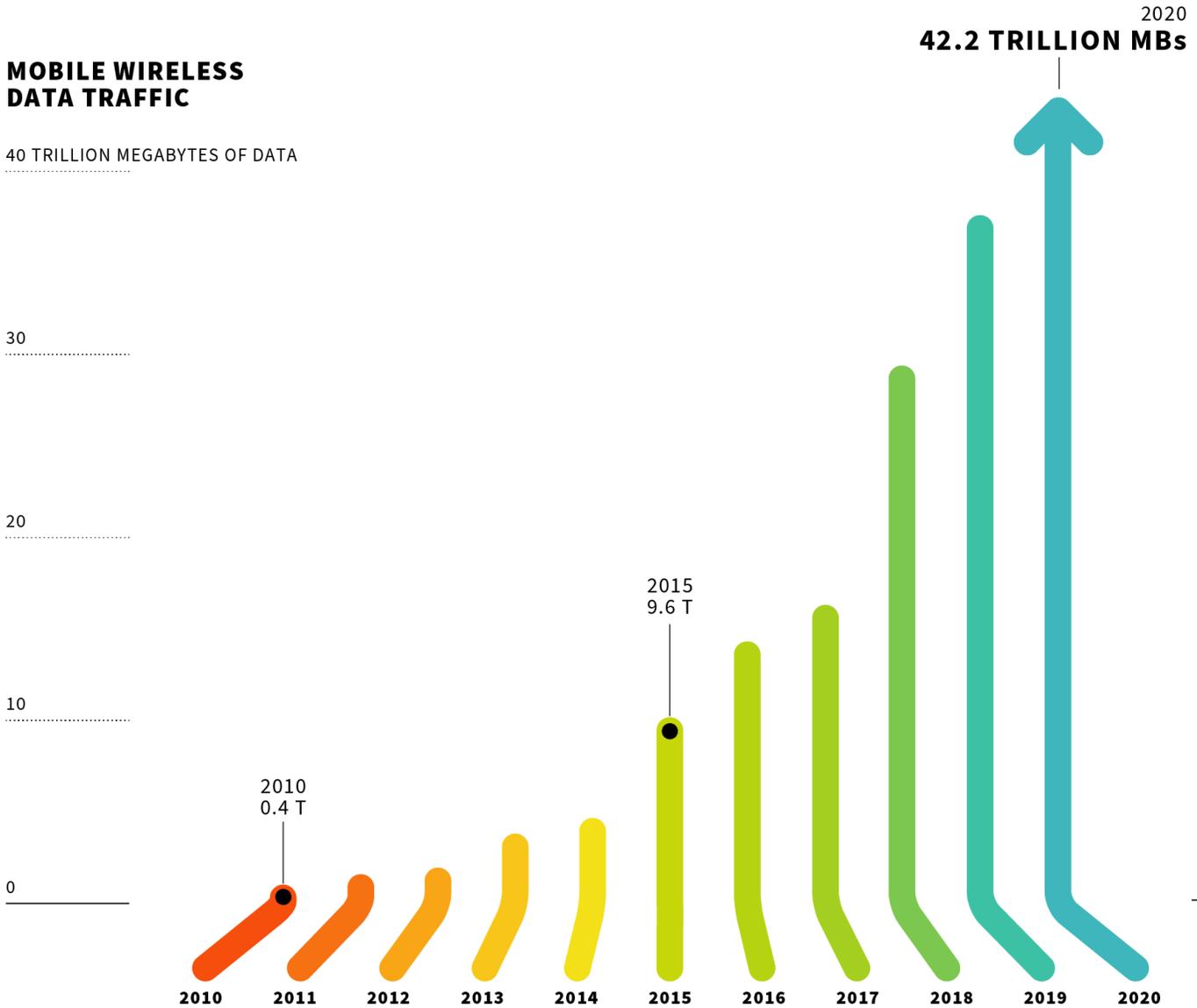
Since 5G was launched in 2019, three nationwide networks—and regional provider networks across the U.S.—already cover **300 million Americans**, up from 200 million last year and amounting to over 90% of the entire country. 5G networks are also being built out and expanding faster than 4G. The first 5G network achieved nationwide coverage 2x as fast as 4G, and all three major providers built nationwide networks 42% faster than 4G.

Large national operators and small local start-ups are also bringing 5G for home broadband (also known as 5G fixed wireless) services to millions of homes across the country, including in unserved and underserved communities.

Mobile Wireless Data Traffic Continues to Increase

MOBILE WIRELESS DATA TRAFFIC

40 TRILLION MEGABYTES OF DATA



108x
INCREASE

in mobile traffic since 2010

Mobile wireless data traffic had another record year, topping **42 trillion MBs**—a ~207% increase since 2016. Over the past decade, Americans have driven a 108x increase in mobile data traffic.

More and More Messages

119 BILLION



GROWTH IN NUMBER OF MESSAGES IN 2020 COMPARED TO 2019

2.2 TRILLION



TOTAL SMS AND MMS MESSAGES EXCHANGED IN 2020

28 PERCENT



INCREASE IN GIFs, MEMES, VIDEOS, AND OTHER MMS MESSAGES

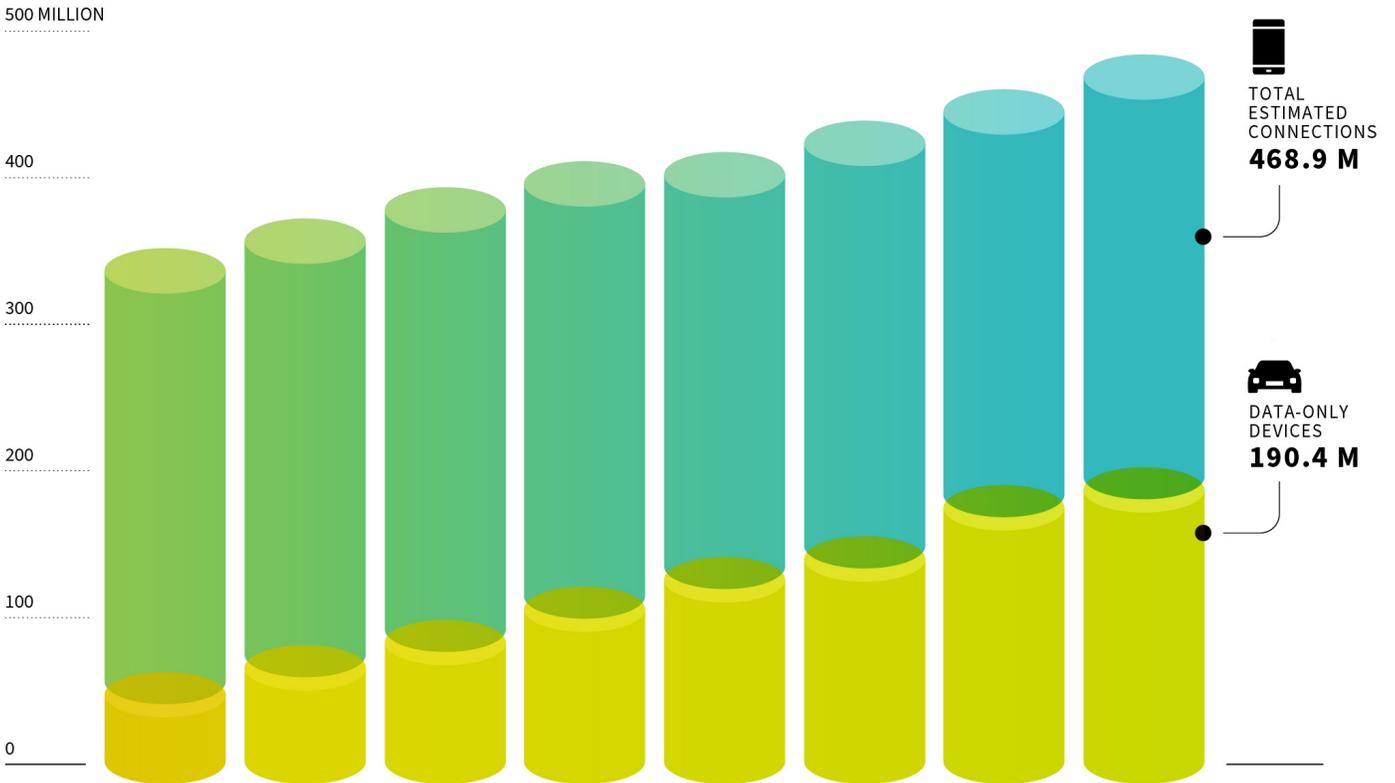
2.9
TRILLION

minutes of voice
traffic in 2020

American consumers have continued to use wireless networks to stay connected, especially while social distancing—we exchanged over 119 billion more messages last year, for a total of **2.2 trillion SMS and MMS messages**, driven by a **28% increase** in GIFs, memes, videos, and other MMS messages. Voice traffic saw 2.9 trillion minutes of use.

Continued Growth of Data-Only Devices

NUMBER OF WIRELESS CONNECTIONS



41%

Data-only devices' share of all estimated devices

5G is driving our nation's transition to the Internet of Things, where medical sensors, smartwatches, hotspots, and other IoT devices usher us into the "connected-everything" era. Data-only devices rose to **190.4 million** in 2020, now representing 41.3 percent of all estimated devices. Data-only devices have grown 272 percent since 2013. Overall wireless connections grew to 468.9 million.

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