



HOW THE WIRELESS INDUSTRY POWERS THE U.S. ECONOMY

We live in a time when the world is more connected than ever before. With more than 262 million smartphone users in the U.S.¹ and a 238 percent increase in data traffic in the last two years,² it is clear that the “always-on” promise is here. While traffic growth is heavily driven by video and social networking applications, it is being further propelled by the formation of entirely new sectors reliant on wireless connectivity.

In powering this connectedness, the wireless industry plays a critical role in society. But just how much does it contribute to the U.S. economy? Accenture Strategy answers this question through a comprehensive study.³

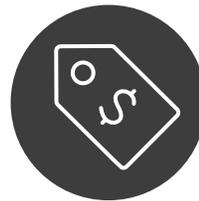
Wireless industry contribution to the U.S. economy



CONTRIBUTING
\$475B
IN GDP



SUPPORTING
4.7M
JOBS



GENERATING
\$1T
IN ECONOMIC
OUTPUT

Accenture estimates that the wireless industry contributes \$475B⁴ to the economy annually, accounting for 2.6 percent of total U.S. GDP in 2016.⁵ Based on GDP, the U.S. wireless industry is larger than 87 percent of countries in the world— making it the 24th largest economy globally—ahead of countries such as Norway, Hong Kong and Ireland.⁶

Each \$1 of the wireless industry's direct GDP contribution results in \$3.20⁷ of total GDP impact across the American economy.

The wireless industry also supports 4.7M⁸ U.S. jobs, as each direct wireless job results in a total employment multiplier effect of 7.7x.⁹ This is far ahead of other sectors, such as full-service restaurants at 1.5x, and hardware manufacturing at 3.9x.¹⁰ Clearly, the ripple effect throughout the economy is significant.

With over \$1 trillion in economic output generated by the wireless industry in 2016, the monetary impact of this sector is greater now than ever before.

LARGER THAN
87%
OF WORLD
ECONOMIES



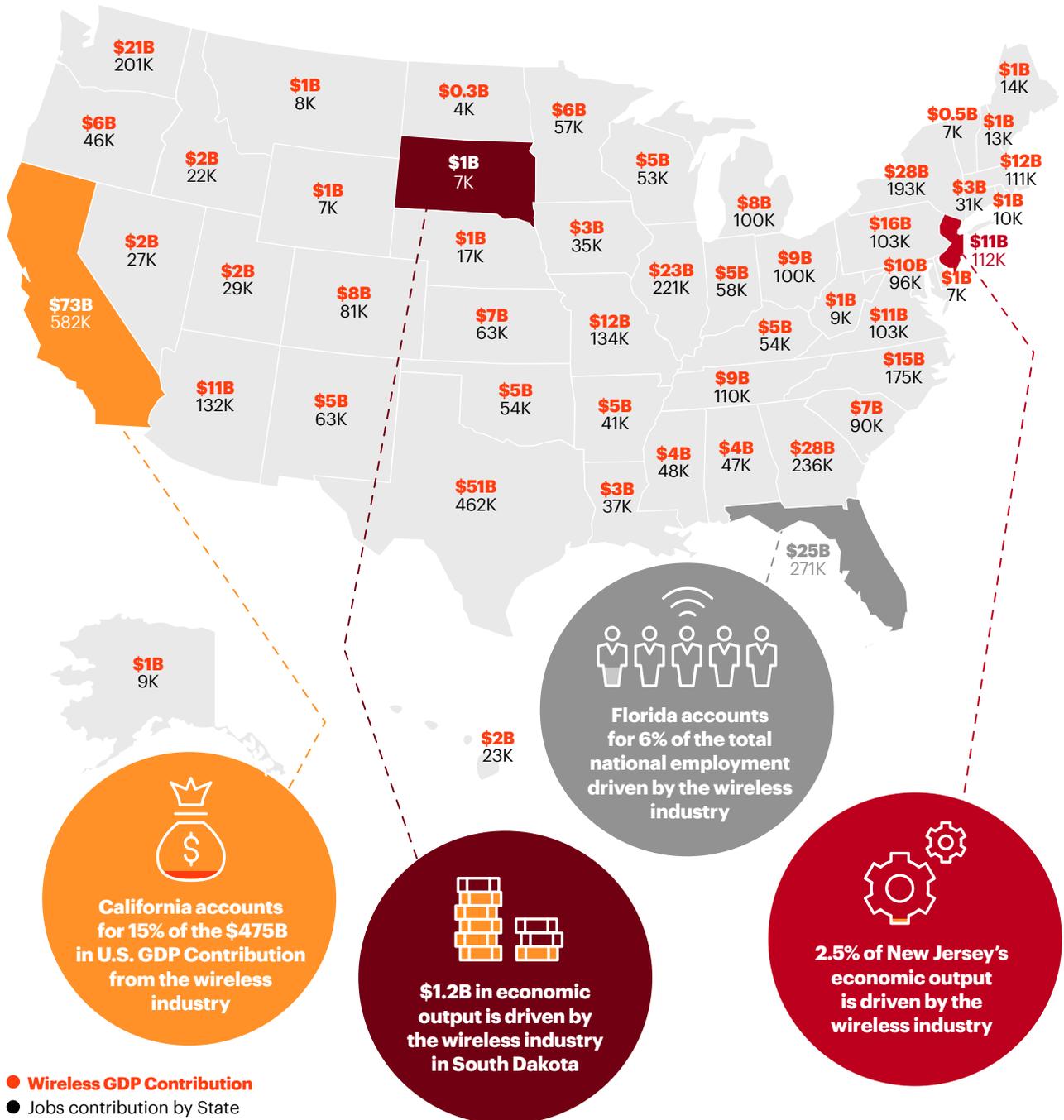
The U.S. wireless industry is larger than 87% of countries in the world based on GDP, ahead of economies such as Norway, Hong Kong and Ireland.

TOTAL EMPLOYMENT MULTIPLIER EFFECT



When looking at the impact of the wireless industry in each state, it's clear that the industry contributes significantly to state economies.

CREATING JOBS AND CONTRIBUTING TO THE ECONOMY IN EVERY STATE



These state insights are provided as examples only

DELVING INTO THE KEY DRIVERS OF WIRELESS ECONOMIC CONTRIBUTION

At both the national and state level, Accenture calculated the **direct, indirect, and induced¹¹ benefits** of the wireless industry in terms of contribution to U.S. GDP (value add), employment, labor income and output.¹²

BREAKING DOWN THE \$475B IN WIRELESS INDUSTRY GDP CONTRIBUTION



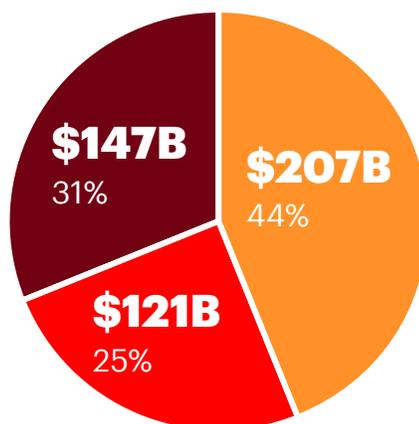
DIRECT ACTIVITY

Direct activity within the wireless industry, such as sales of products and services, through carriers and telecom resellers



INDUCED ACTIVITY

Increased household spending on goods such as restaurants due to income earned from wireless industry or industry suppliers



INDIRECT ACTIVITY

Economic contribution from adjacent industries to supply the wireless industry, such as production of semiconductor content for smartphones

THREE KEY DRIVERS FOR DIRECT WIRELESS CONTRIBUTION

SUBSCRIBERS



1.2

Wireless mobile device subscriptions per American

DATA GROWTH



238%

Growth of U.S. data traffic over the past 2 years

CONNECTED DEVICES



180m+

Connected devices, such as fitness trackers are on the rise

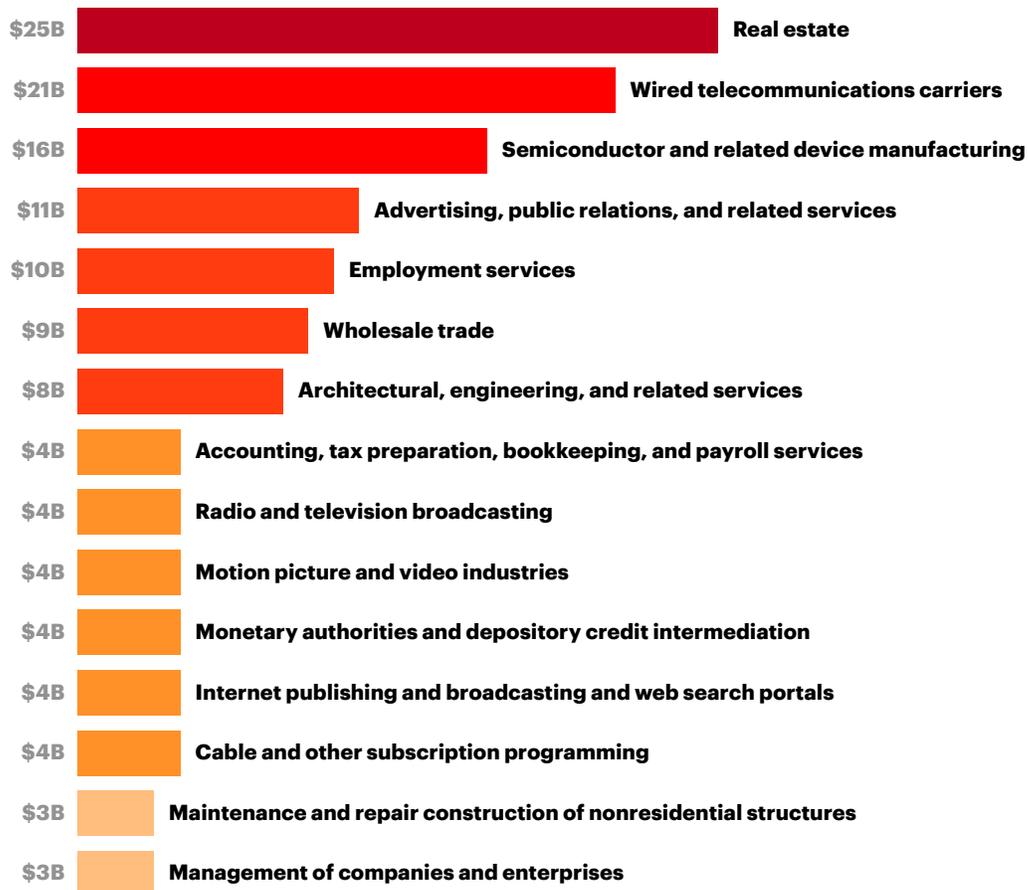
The wireless industry makes a direct contribution of \$147B to the U.S. economy. One of these key drivers is the sheer number of active wireless devices, which is currently above 396 million in the U.S.,¹³ equivalent to 1.2 mobile device subscriptions per person.¹⁴ These devices deliver the connectedness that many consumers and businesses rely on. Data traffic more than tripled in the U.S. in the last two years to reach over 13.7 trillion MB.¹⁵ This growth shows no signs of slowing down, with traffic per subscriber in North America set to grow from the current 7GB per month per active smartphone to 22GB in 2022.¹⁶ This increase will be fueled by functions such as video and social networking. **Remarkably, by 2021, video will account for 76 percent of all mobile data traffic.**¹⁷

But growth in mobile data traffic is only one part of the story. In addition to hundreds of millions of smartphones, there are over 180 million connected devices in the U.S.¹⁸ Device ownership is expanding to new types of connected devices, such as fitness trackers (with a U.S. device ownership rate of 25 percent), smart home devices (15 percent), and many others.¹⁹ Device proliferation will continue to be a key driver of increased network demand.

The largest proportion of the industry's overall \$475B national GDP contribution – 44 percent, or \$207B – is driven through **indirect contribution** by adjacent industries that supply the wireless industry. Notable examples are the semi-conductor and related device manufacturing sectors: 24 percent, or \$16B, of the total GDP contributed to the U.S. economy by these sectors is driven by demand from the wireless industry. This should not come as a surprise, given that mobile phones are now the single largest driver of semiconductor demand. Smartphones are projected to have five to six times more semiconductor content than traditional mobile phones from now through 2020.²⁰

FUELING ECONOMIC ACTIVITY IN OTHER KEY INDUSTRIES

Top 15 industries: Indirect contribution from the wireless industry



Smartphones are expected to represent nearly 94 percent of total mobile phone units in 2021.²¹ Many wireless carriers have adjusted their plans and subsidies to give consumers more device flexibility, spurring further smartphone proliferation.

Smartphones will act as a gateway to other smart devices, thus creating a connected ecosystem involving smart homes and smart cars. This will continue to expand the connected devices market and create additional semiconductor demand. This is one salient example of how the wireless industry is contributing to the overall U.S. economy by driving demand in adjacent industries and shaping a truly robust ecosystem.

TELECOM INDUSTRY ECOSYSTEM



Source: Digital Transformation Initiative, Telecommunications Industry, World Economic Forum in Collaboration with Accenture, January 2017

The **induced contribution** of \$121B, which includes household spending from income earned in the industry, further demonstrates the ripple effect on the economy.

The wireless industry makes a substantial contribution to the U.S. economy with mobile phone penetration surpassing population, data growth surging, and a proliferation of connected devices. Furthermore, economic activity in other industries is being fueled by wireless through a significant multiplier effect.

The continued growth of wireless, combined with the advent of 5G, among other factors, suggests that the wireless industry will continue to be a driving force of the U.S. economy and the backbone of many future innovations.

ABOUT THIS RESEARCH

Through a comprehensive study, commissioned by CTIA and conducted by Accenture Strategy, an economic model was created to estimate the contribution of the wireless industry to the U.S. economy at a national and state level.

Economic contribution modeling allows an estimation of how the current state of an industry supports the broader local economy. This type of model uses Input-Output (I/O) tables, constructed from standard economic accounts which measure intermediate purchases and demand between industries, as well as the actions of institutions (e.g., based on household and government spend data from the U.S. Bureau of Economic Analysis). This allows for the calculation of multiplier effects through other industries (indirect) as well as household spending patterns (induced). As this type of model is a snapshot of the current economy, it does not attempt to capture complex econometric relationships that would, for example, affect price at different levels of production or through substitutes for wireless services.

Regional distributions for direct value-add, employment and production patterns were driven by publicly available data from the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis, and further adjusted based on available industry data. Standard economic software²² was used for the calculation of multiplier effects, as well as source data on regional business patterns.²³

MODELING THE ECONOMIC CONTRIBUTION OF THE WIRELESS INDUSTRY IN THE U.S.

The model estimates different types of contribution across several economic effects, as summarized below:

CONTRIBUTION TYPES



DIRECT ACTIVITY

Economic contribution created directly within the wireless industry.



INDIRECT ACTIVITY

Economic contribution from adjacent industries as a result of supplying goods or services to the wireless industry.



INDUCED ACTIVITY

Economic contribution as a result of household spending based on income received from working in the wireless industry or in a supplier to the wireless industry.

ECONOMIC EFFECTS



OUTPUT

The value of industry production in producer prices, including net inventory change.



EMPLOYMENT

Annual average full-time/part-time/seasonal jobs, including wage workers, salary workers and proprietors.



VALUE ADD

Economic contribution as a result of household spending based on income received from working in the wireless industry or in a supplier to the wireless industry.

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NOTES

¹ <https://www.ctia.org/industry-data/ctia-annual-wireless-industry-survey>, <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017.pdf>

² <https://www.ctia.org/docs/default-source/default-document-library/ctia-wireless-snapshot.pdf>

³ Select congressional districts were also included in the full study, but are not discussed in this publication.

⁴ This excludes the contribution of construction in 2016, which was estimated at \$16B, as construction and other capex is discussed later in the report in relation to carriers' investment in deployment of 5G technology.

⁵ Calculated by dividing the \$475B in economic input by U.S. GDP in 2016 of \$18.6T.

⁶ Based on IMF data.

⁷ Calculated as total GDP contribution of \$475B divided by direct GDP contribution of \$147B.

⁸ Annual average full-time/part-time/seasonal jobs. This includes both wage and salary workers and proprietors, and includes direct, indirect, and induced jobs.

⁹ Calculated as total wireless Jobs at 4.7M, divided by direct wireless Jobs at 605,227.

¹⁰ IMPLAN 2016, U.S. data

¹¹ Direct effects constitute economic contribution created directly within the wireless industry; indirect effects constitute economic contribution from adjacent industries as a result of supplying goods or services to the wireless industry; and induced effects constitute economic contribution resulting from household spending based on income received from working in the wireless industry or for a supplier to the wireless industry. Sources: https://www.bea.gov/papers/pdf/wp_iomia_rimsii_020612.pdf, <https://implanhelp.zendesk.com/hc/en-us/articles/115009674688-IMPLAN-Data-Components>

¹² GDP or Total Value Add is analogous to final demand for the region, and comprises employee compensation, proprietor income, other property-type income, and tax on production and import; employment constitutes annual average full-time/part-time/seasonal jobs. This includes both wage and salary workers and proprietors. Labor Income comprises employee compensation and proprietor income; output is the value of Industry production in producer prices. For sectors for which there is inventory, this value includes net inventory change. Sources: https://www.bea.gov/papers/pdf/wp_iomia_rimsii_020612.pdf, <https://implanhelp.zendesk.com/hc/en-us/articles/115009674688-IMPLAN-Data-Components>

¹³ <https://www.ctia.org/industry-data/ctia-annual-wireless->

industry-survey

¹⁴ <https://www.ctia.org/industry-data/ctia-annual-wireless-industry-survey>

¹⁵ CTIA Wireless Industry Indices Report, A Comprehensive Report on the State of the Wireless Industry based on CTIA's Wireless Industry Survey Results, Year-End Results of 2016 reported in May 2017

¹⁶ <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017.pdf>

¹⁷ Cisco, VNI Mobile Forecast Highlights, 2016-2021, https://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/#-Country

¹⁸ <https://www.statista.com/statistics/741735/us-number-of-internet-connectable-devices/>

¹⁹ GSMA Consumer Intelligence Survey US, 2016.

²⁰ Source: Gartner, Forecast Overview: Mobile Phone Production and Semiconductors, Worldwide, 2017. Published 31 October 2017 ID: G00325550.

²¹ Source: Gartner, Forecast Overview: Mobile Phone Production and Semiconductors, Worldwide, 2017. Published 31 October 2017 ID: G00325550.

²² IMPLAN: <http://www.implan.com>

²³ Largely driven by the U.S. Bureau of Labor Statistics and the U.S. Bureau of Economic Analysis.

ABOUT ACCENTURE

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions – underpinned by the world’s largest delivery network – Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With approximately 442,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at www.accenture.com.

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