INDUSTRIES & MARKETS

Waste Management & Recycling in the U.S. – Industry Insights & Data Analysis

Gain valuable insights into
your industry

Dear Reader,

Find out more about the "Waste Management & Recycling" industry in our report focusing on key industry figures such as the financial numbers, companies, employment and salaries.

With this report, we provide a comprehensive overview of the current state of the industry as well as a prognosis for the upcoming years.

Gain insight into the major trends in the "Waste Management & Recycling" industry in order to assess the risks and opportunities relevant for domestic and international business.

We wish you a valuable and informative reading experience.

Leonie Huutáimr Smathy & Marie

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The U.S. Industry Report

Executive Summary

- Industry revenue to increase by 1.6% p.a. from 2022 to 2026

- With a revenue of US$109.4 billion, "Waste Management & Recycling" ranked 26th among all industries in 2021

- Waste Management registered the largest revenue in 2021

- The number of establishments increased by 0.3% in 2019

- The number of employees increased by 2.3% p.a. from 2011 to 2021

- The annual mean wage increased by 2.1% from 2015 to 2021

- General and Operations Managers earn the highest wages in the industry

- Insurance, financial, and real estate services made up about 3.0% of the total trademark applications from the U.S. in 2020

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Agenda

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CHAPTER 01

Introduction

Industry Definition

Waste Management & Recycling – NAICS 562

- Industries in the Waste Management and Remediation Services subsector group establishments engaged in the collection, treatment, and disposal of waste materials.
- This includes establishments engaged in local hauling of waste materials; operating materials recovery facilities (i.e., those that sort recyclable materials from the trash stream); providing remediation services (i.e., those that provide for the cleanup of contaminated buildings, mine sites, soil, or ground water); and providing septic pumping and other miscellaneous waste management services.

Subcategories included in this industry

- 5621 Waste Collection
- 5622 Waste Treatment and Disposal
- 5629 Remediation and Other Waste Management Services

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Waste Management & Recycling

Key Figures

Industry revenue

US$109.4bn   Total value in 2021[1]

1.9%   Growth 2020-2021[1]

1.6%   CAGR[1] [2] 2022–2026

Companies

17,195   Number of firms in 2019[3]

1,674   Number of establishment births in 2019[3]

1,609   Number of establishment deaths in 2019[3]

Employees

456.7k   Number of employees in 2021[1] [4]

US$52,680   Annual mean wage in 2021[5]

41,6   Average weekly hours worked in 2021[1] [6]

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COVID-19 developments in the United States

COVID-19 Updates

Management of the crises

The COVID-19 pandemic has affected the global economy and several aspects of life in most countries in the world. The degree of impact varies across countries in terms of the number of cases and the effects on the society and economy. This is related to each country's crisis management, i.e., the various policies which have been implemented in the relevant country. Some countries reacted very fast, imposing strict lockdowns, whereas other countries introduced more moderate policies to stop the spread of the virus.
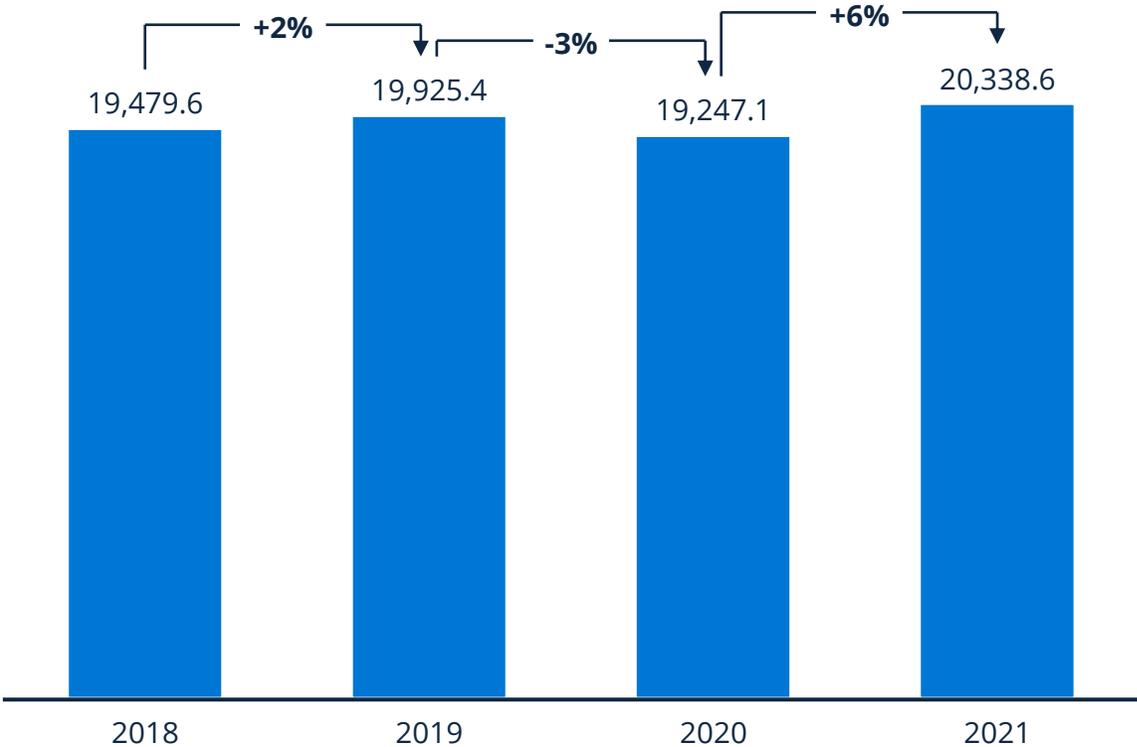
95,776.40k

Number of confirmed cases[1]

1,054.27k

Number of deaths related to COVID-19

224,060k

People fully vaccinated[1]
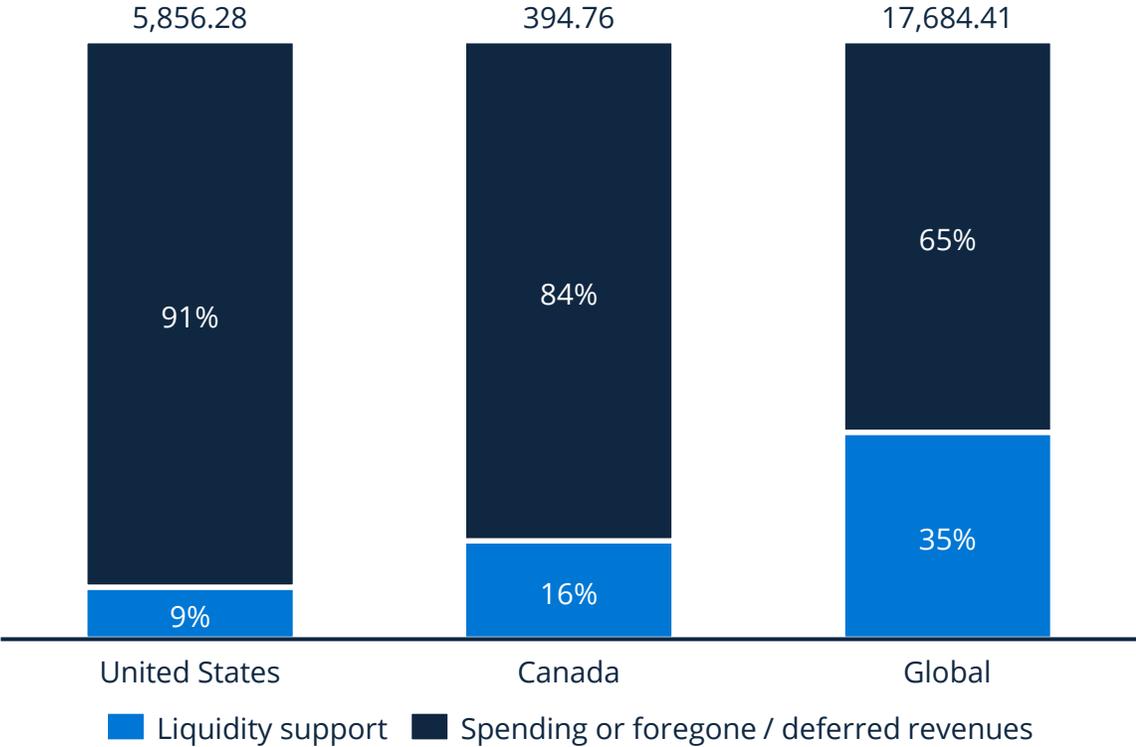
67.7%

Share of population fully vaccinated[1]

GDP (constant 2015 US$)

+2%   -3%   +6%

	2018	2019	2020	2021
GDP	19,479.6	19,925.4	19,247.1	20,338.6

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In the United States, fiscal measures in response to the COVID-19 pandemic have reached US$5,856.28 billion since January 2020

COVID-19 Fiscal Policy

Fiscal measures in billion US$

5,856.28   394.76   17,684.41

	United States	Canada	Global
Spending or foregone / deferred revenues	91%	84%	65%
Liquidity support	9%	16%	35%

■ Liquidity support   ■ Spending or foregone / deferred revenues

Fiscal measures as percentage of 2020 GDP

■ <2.5%   ■ 2.5%-5%   ■ 5.1%-7.5%   ■ 7.6%-10%   ■ 10.1%-20%   ■ >20%

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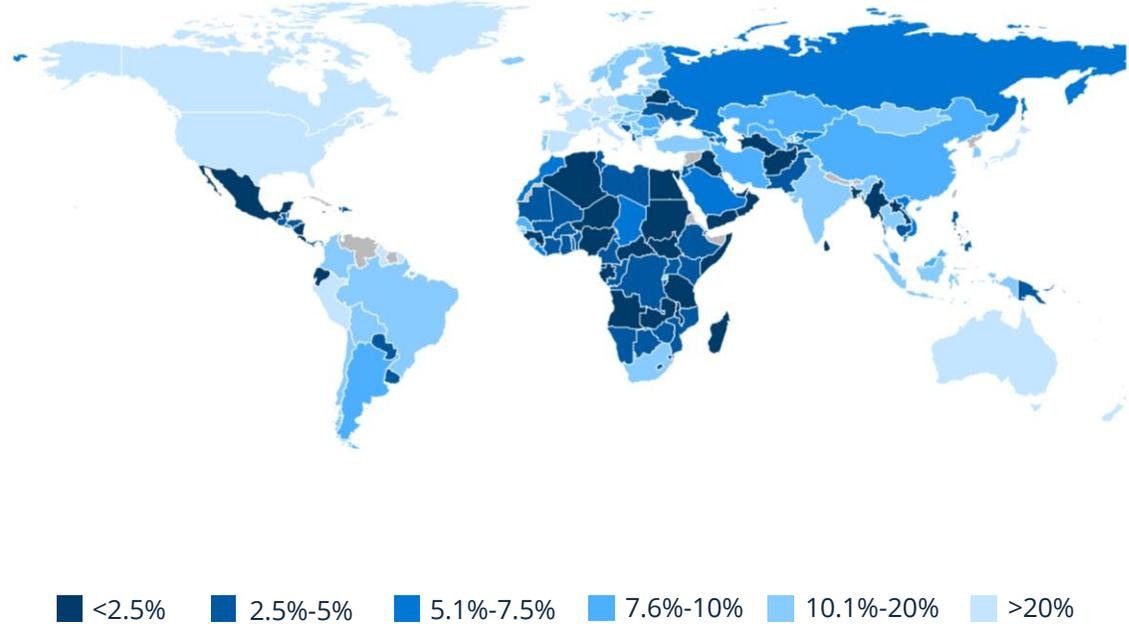
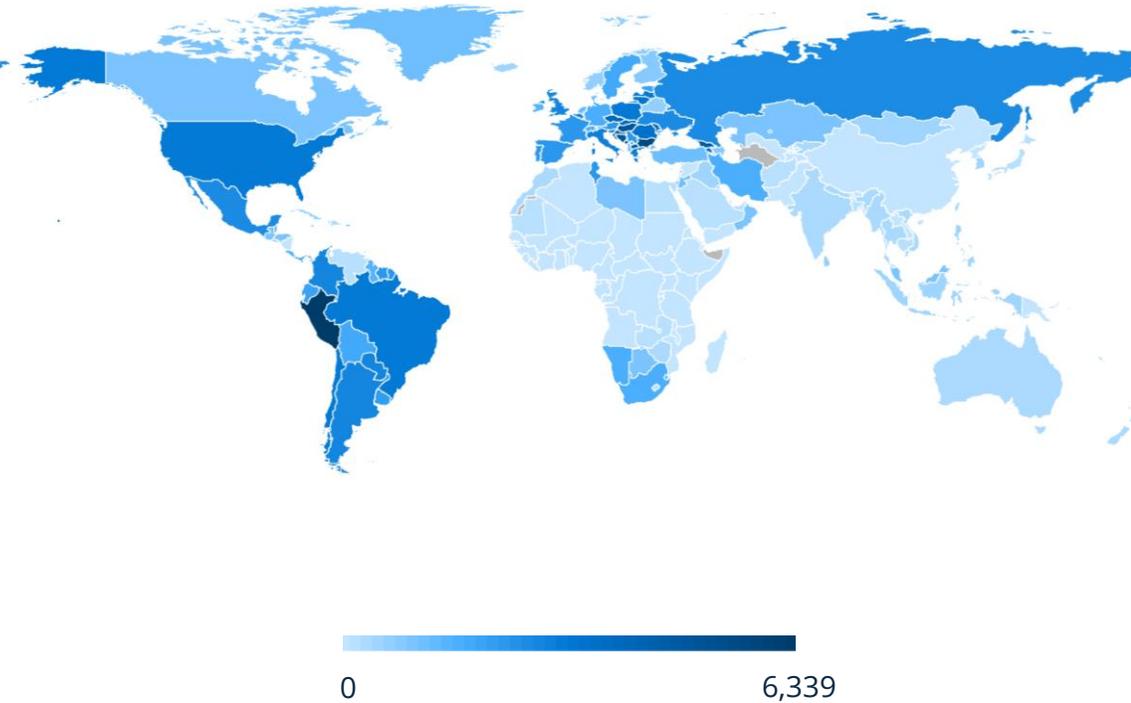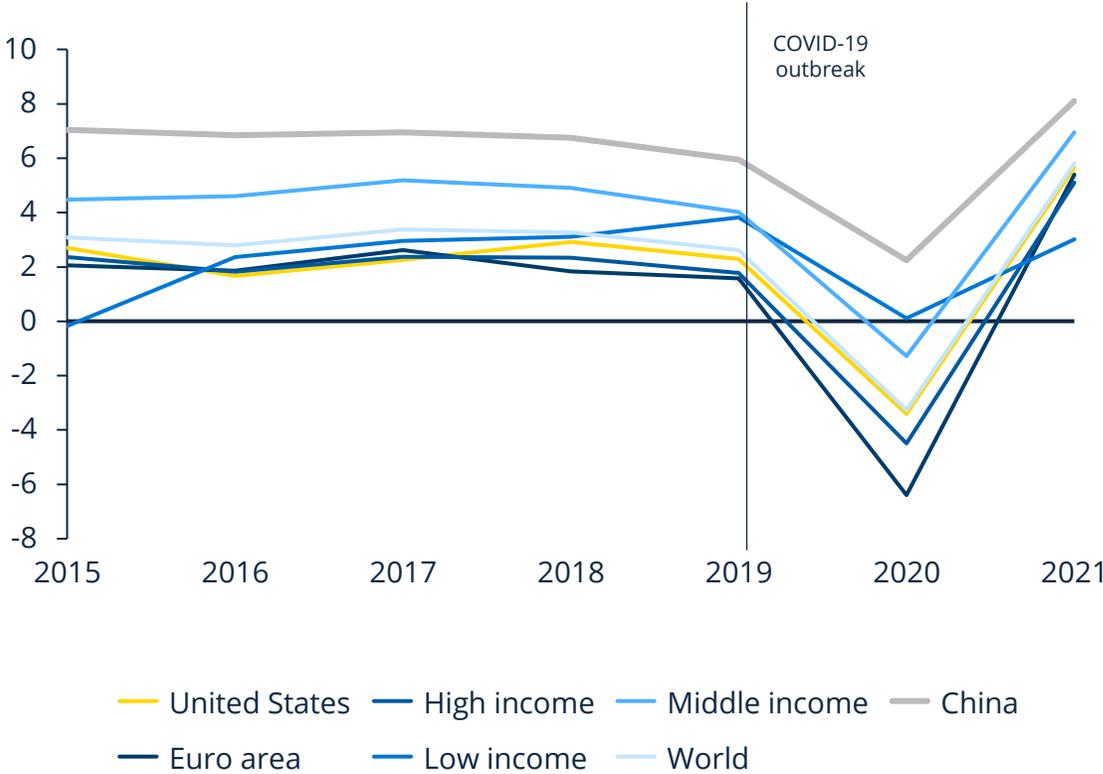# Global COVID-19 pandemic

COVID-19 Overview

Total number of deaths per 1 million population[1]

0 — 6,339

GDP growth rate in %

COVID-19 outbreak

Legend:
- United States
- High income
- Middle income
- China
- Euro area
- Low income
- World

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The Russia-Ukraine war has caused huge humanitarian and economic consequences

Russia-Ukraine War: Overview

The Russian invasion of Ukraine started on February 24, 2022. Attacks by Russian forced were reported in major cities across Ukraine, including Berdyansk, Chernihiv, Kharkiv, and the capital Kyiv. Western officials claimed that by scope, the war could be the largest in Europe since 1945. Find the latest developments at: Russia-Ukraine war 2022. Serious spill-overs of the war have been already observed in neighbour countries, EU, and the global economy, in almost all major fronts.

Humanitarian Consequences

As of September 20, 2022, the war has caused 14,532 civilian casualties (5,916 killed and 8,616 injured) and forced over 7.4 million refugees to leave home.
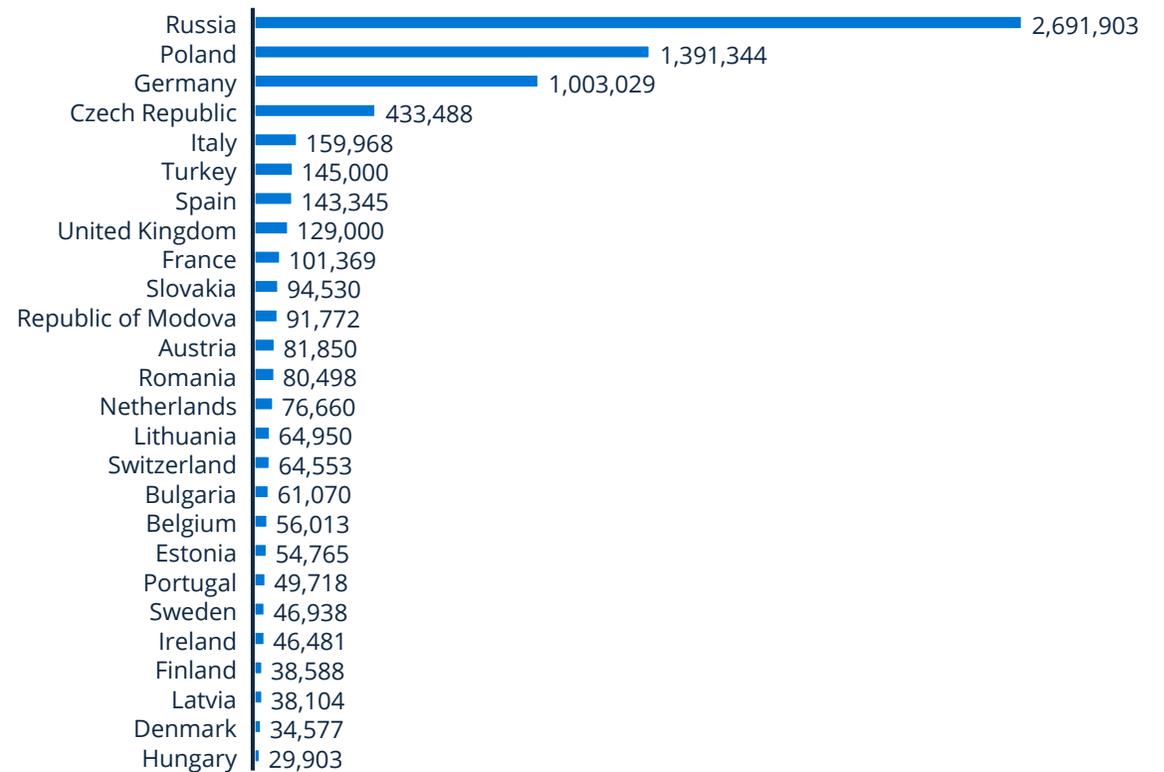
Economic Consequences

The war may lead to a loss of 1.2% of global GDP growth in 2022 and 0.9% in 2023. Global inflation is projected to be 2-3% higher than the pre-war projections.

Global reactions

As of July 20, 2022, numerous sanctions are imposed on Russian individuals (7,271) and institutions (1,350). Military, financial, and humanitarian aid commitments to Ukraine reached €84.2 billion until August 3, 2022.
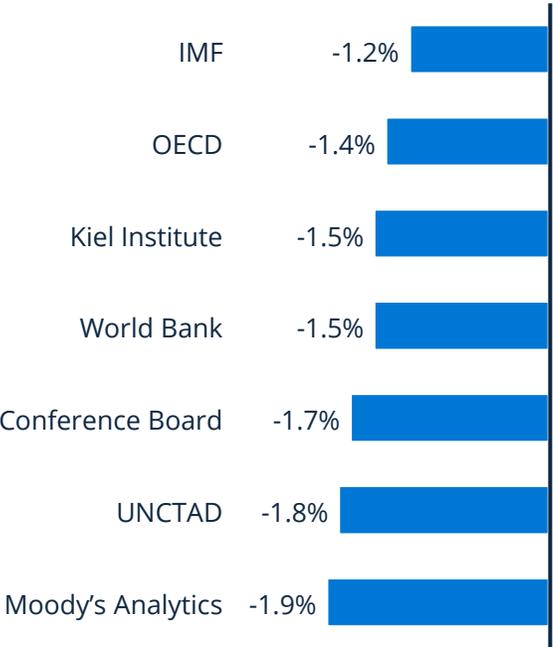
Individual refugees from Ukraine recorded across Europe[1]

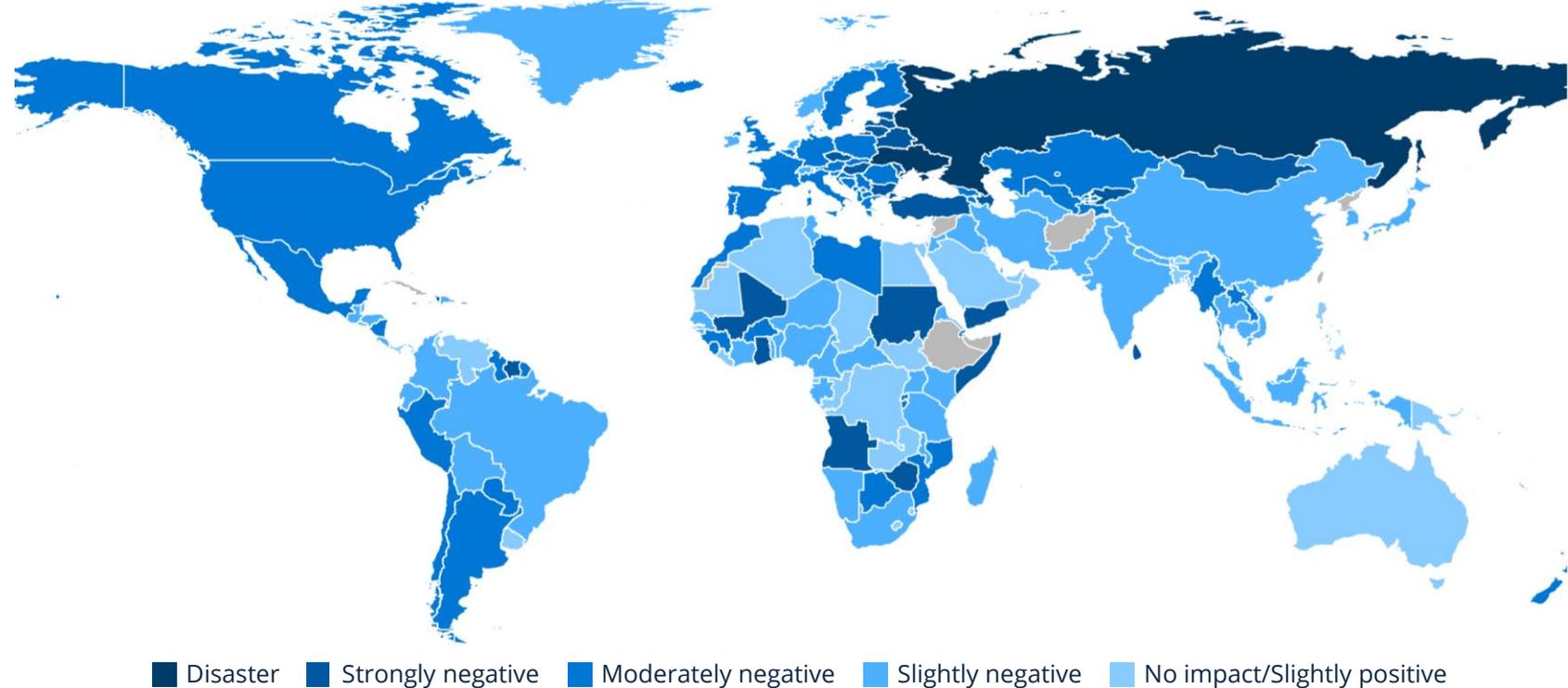| Country	Refugees
Russia	2,691,903
Poland	1,391,344
Germany	1,003,029
Czech Republic	433,488
Italy	159,968
Turkey	145,000
Spain	143,345
United Kingdom	129,000
France	101,369
Slovakia	94,530
Republic of Modova	91,772
Austria	81,850
Romania	80,498
Netherlands	76,660
Lithuania	64,950
Switzerland	64,553
Bulgaria	61,070
Belgium	56,013
Estonia	54,765
Portugal	49,718
Sweden	46,938
Ireland	46,481
Finland	38,588
Latvia	38,104
Denmark	34,577
Hungary	29,903

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Implications for the global economy due to the Russia-Ukraine war

Russia-Ukraine War: Global Impacts

2022 global GDP projection revision by selected institutions after war outbreak[1]

Institution	Revision
IMF	-1.2%
OECD	-1.4%
Kiel Institute	-1.5%
World Bank	-1.5%
Conference Board	-1.7%
UNCTAD	-1.8%
Moody's Analytics	-1.9%

Projected economic situation changes since war[2]

- ■ Disaster
- ■ Strongly negative
- ■ Moderately negative
- ■ Slightly negative
- ■ No impact/Slightly positive
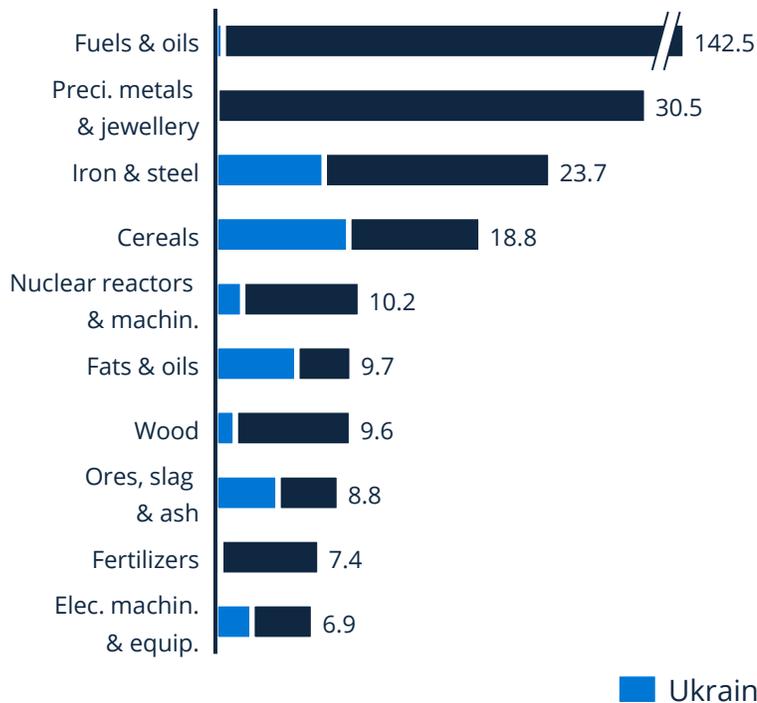
Notes: For the latest updates, see Statista Russia-Ukraine war 2022 - statistics & facts and Russia-Ukraine conflict 2021-2022 - statistics & facts (1) Difference between September 2022 (or latest) forecast and pre-war baseline forecast (4.4% WEO IMF Jan 2022) (2) Country groupings are based on the differences between pre-war and current forecasts of 2022 GDP/inflation. GDP/inflation data is published by IMF WEO October 2021 and April 2022

Sources: IMF 2022; Conference Board 2022; The Economist 2022; NIESR 2022; Fitch Ratings 2022; Oxford Economics 2022; UNCTAD 2022; Kiel Institute 2022; OECD 2022; World Bank 2022; Statista 2022
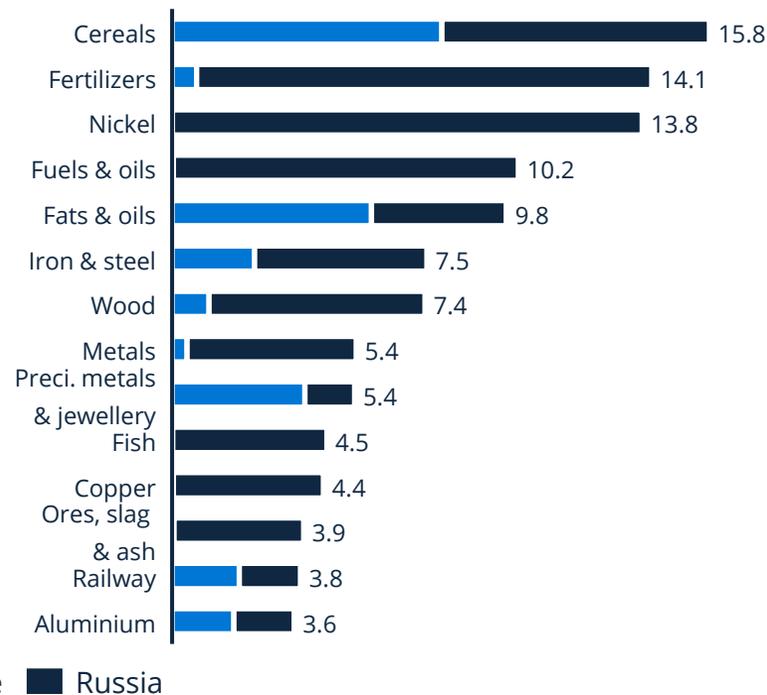
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The war has caused strong fluctuations in the global commodities market
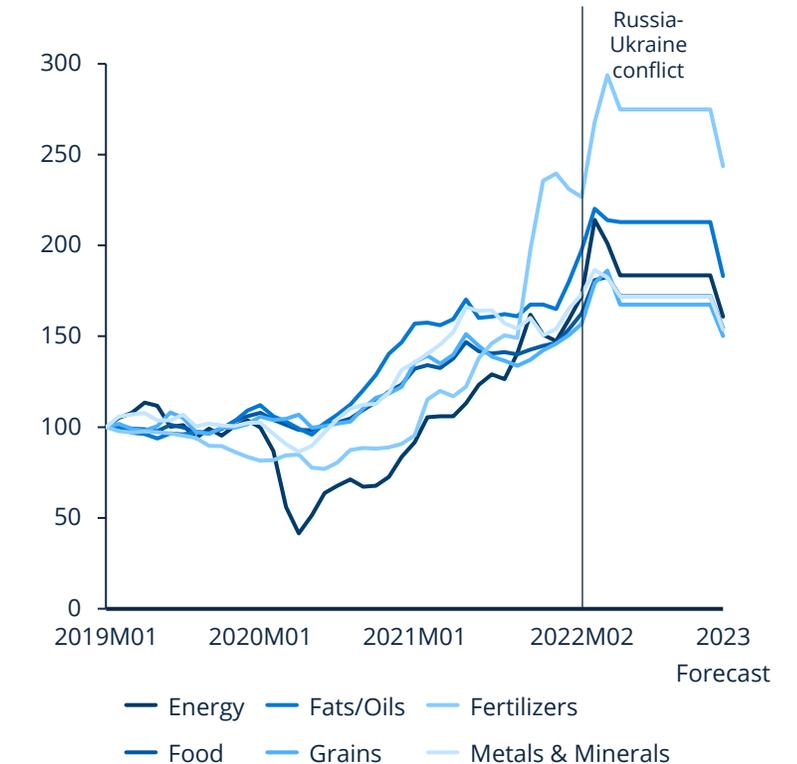
Russia-Ukraine War: Trade Impacts

Top products[1] exported by Russia and Ukraine in billion US$

Product	Value
Fuels & oils	142.5
Preci. metals & jewellery	30.5
Iron & steel	23.7
Cereals	18.8
Nuclear reactors & machin.	10.2
Fats & oils	9.7
Wood	9.6
Ores, slag & ash	8.8
Fertilizers	7.4
Elec. machin. & equip.	6.9

Top products[1] exported by Russia and Ukraine as percentage of the global export value

Product	Value
Cereals	15.8
Fertilizers	14.1
Nickel	13.8
Fuels & oils	10.2
Fats & oils	9.8
Iron & steel	7.5
Wood	7.4
Metals	5.4
Preci. metals & jewellery	5.4
Fish	4.5
Copper	4.4
Ores, slag & ash	3.9
Railway	3.8
Aluminium	3.6

■ Ukraine ■ Russia

Commodities price index (2019=100)

Russia-Ukraine conflict

Forecast

— Energy — Fats/Oils — Fertilizers
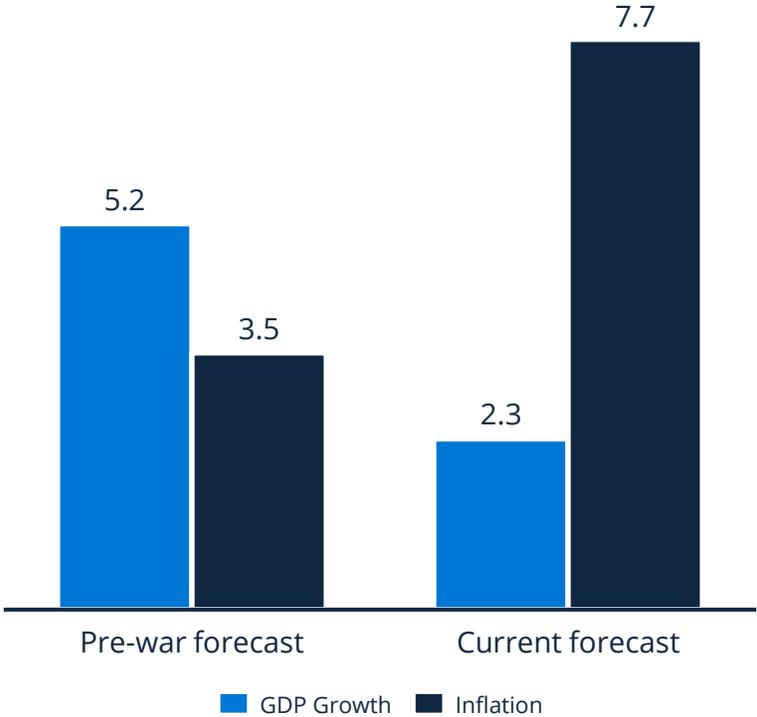— Food — Grains — Metals & Minerals

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The war may lead to lower growth and higher inflation for the United States and it has voted in favor of the UN resolution condemning the war

Russia-Ukraine War: Country-specific Impacts

Trade with Russia as % of total trade[1]

- 0.91 — United States, Exp. to Russia/Total Exp.
- 0.53 — United States, Imp. from Russia /Total Imp.
- 0.46 — North America[3], Exp. to Russia/Total Exp.
- 0.38 — North America[3], Imp. from Russia /Total Imp.

United States   North America[3]

■ Exp. to Russia/Total Exp.   ■ Imp. from Russia /Total Imp.
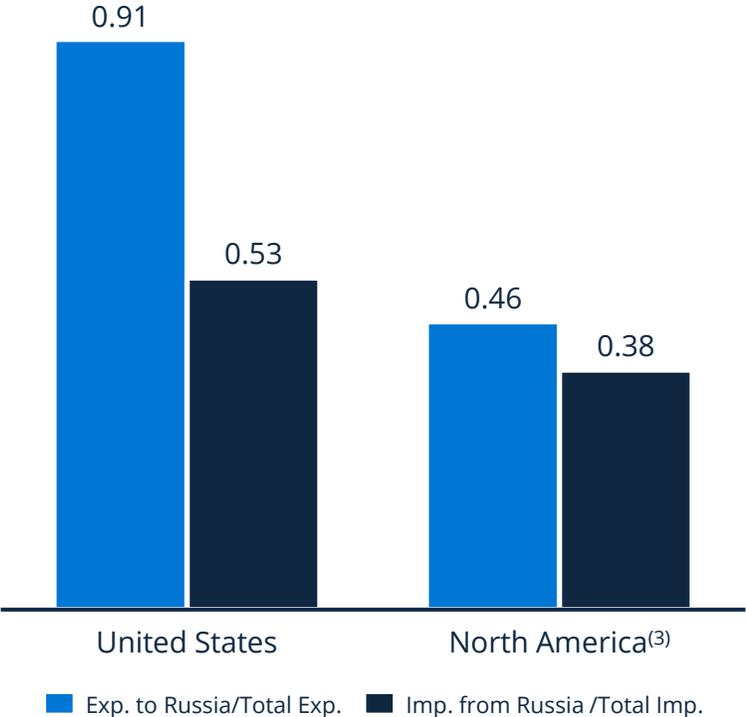
GDP growth and Inflation projection for 2022 of this country[2]

- 5.2 — Pre-war forecast, GDP Growth
- 3.5 — Pre-war forecast, Inflation
- 2.3 — Current forecast, GDP Growth
- 7.7 — Current forecast, Inflation

Pre-war forecast   Current forecast

■ GDP Growth   ■ Inflation

Voting on the UN resolution condemning Russia's invasion

■ Not vote   ■ In favor of   ■ Abstain

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In the United States, the current situation led to high concerns about rising prices/inflation/cost of living

Perceived Challenges

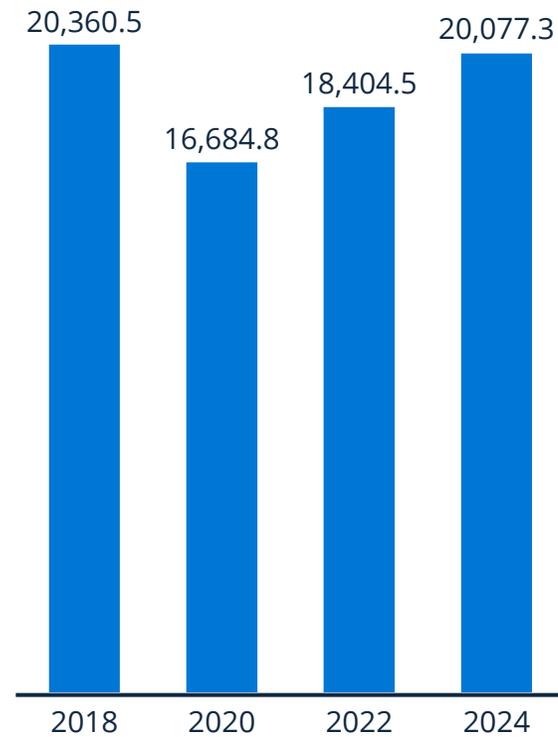**Perceived challenges of the current economic and social situation[1]**
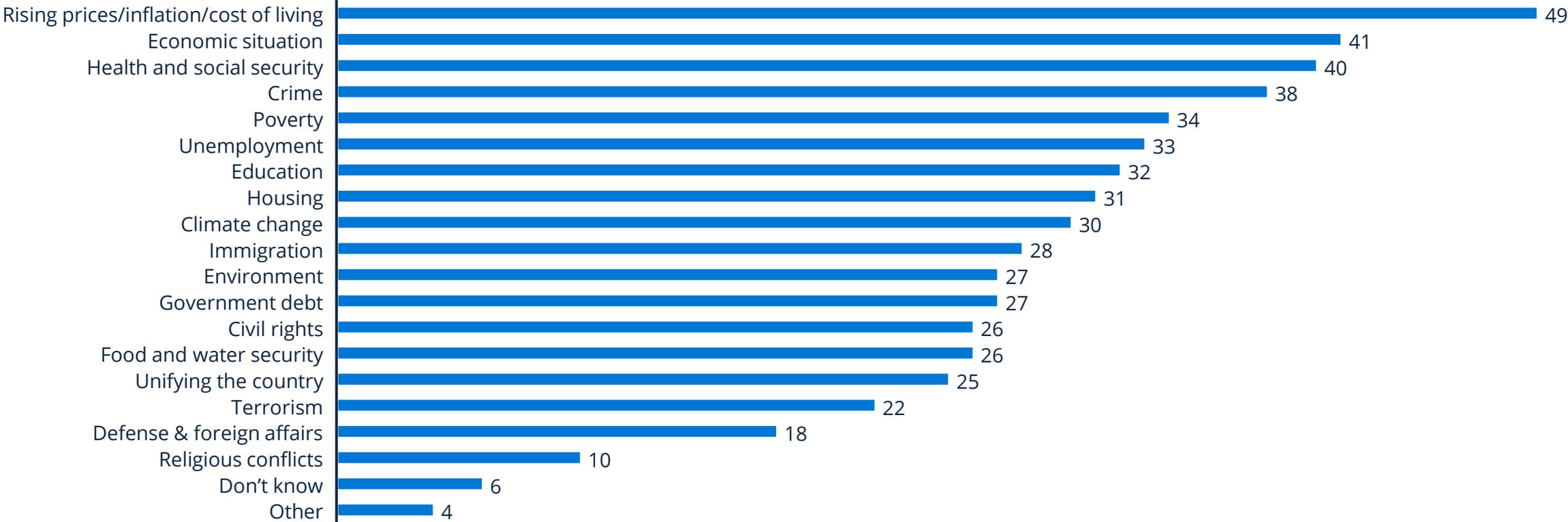
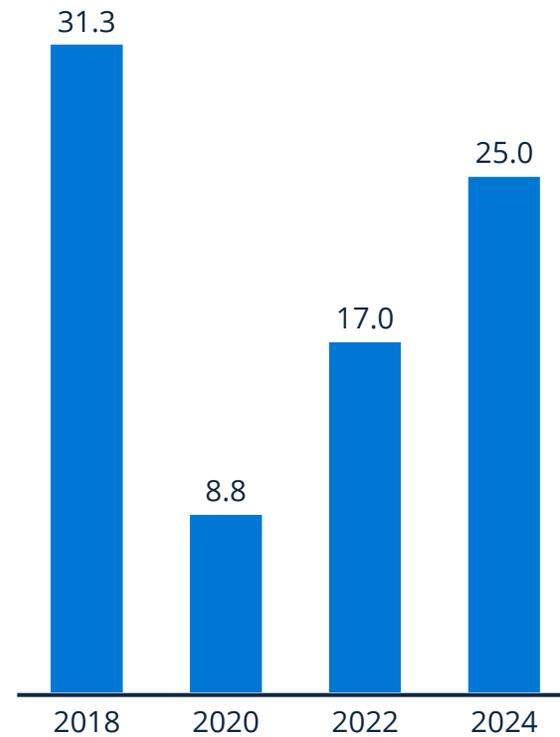| Challenge	Value
Rising prices/inflation/cost of living	49
Economic situation	41
Health and social security	40
Crime	38
Poverty	34
Unemployment	33
Education	32
Housing	31
Climate change	30
Immigration	28
Environment	27
Government debt	27
Civil rights	26
Food and water security	26
Unifying the country	25
Terrorism	22
Defense & foreign affairs	18
Religious conflicts	10
Don't know	6
Other	4

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The United States is expected to have 25 railway passenger-km per capita in 2024
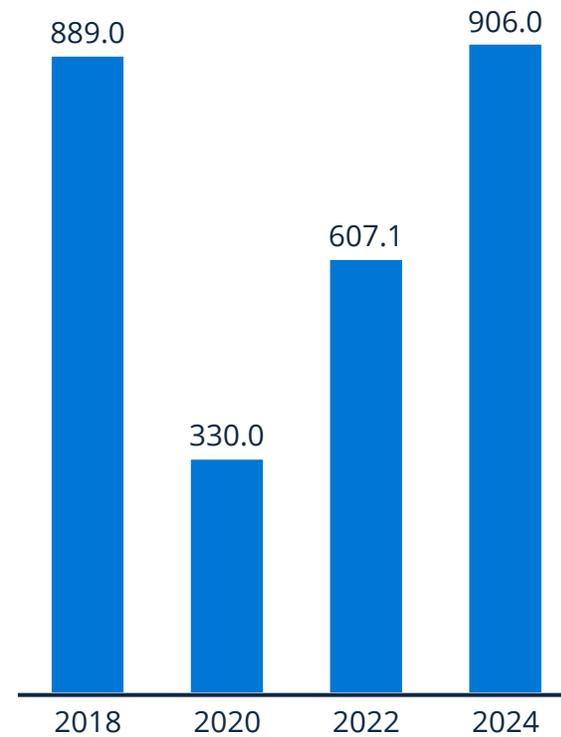
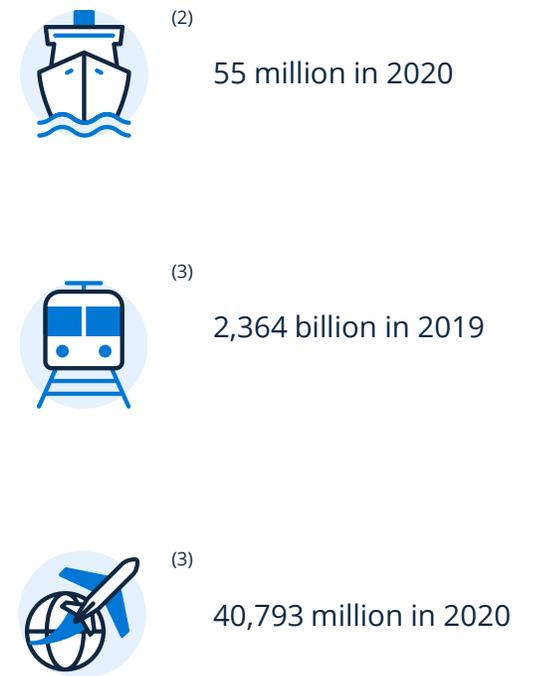Passengers & Transportation

Road passenger-km per capita[1]

- 2018: 20,360.5
- 2020: 16,684.8
- 2022: 18,404.5
- 2024: 20,077.3

Railway passenger-km per capita[1]

- 2018: 31.3
- 2020: 8.8
- 2022: 17.0
- 2024: 25.0

Air passengers in million

- 2018: 889.0
- 2020: 330.0
- 2022: 607.1
- 2024: 906.0

Freight transportation

[2] 55 million in 2020

[3] 2,364 billion in 2019

[3] 40,793 million in 2020

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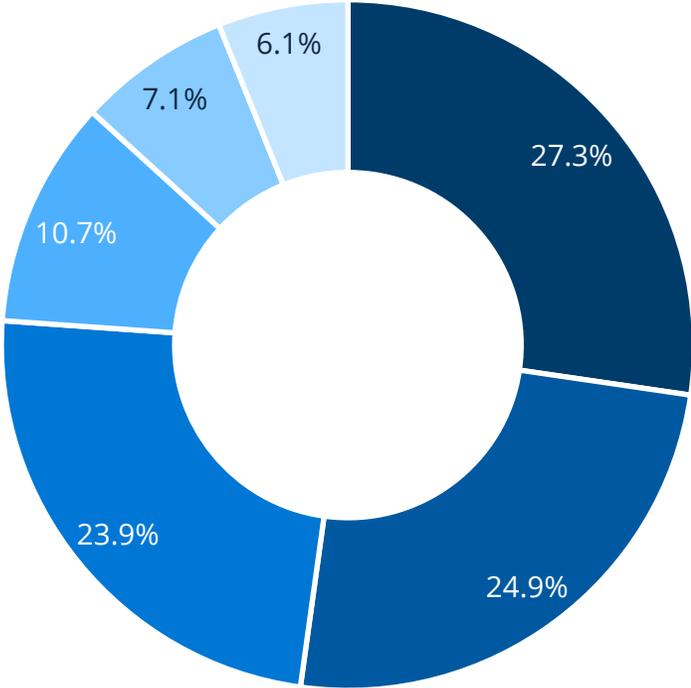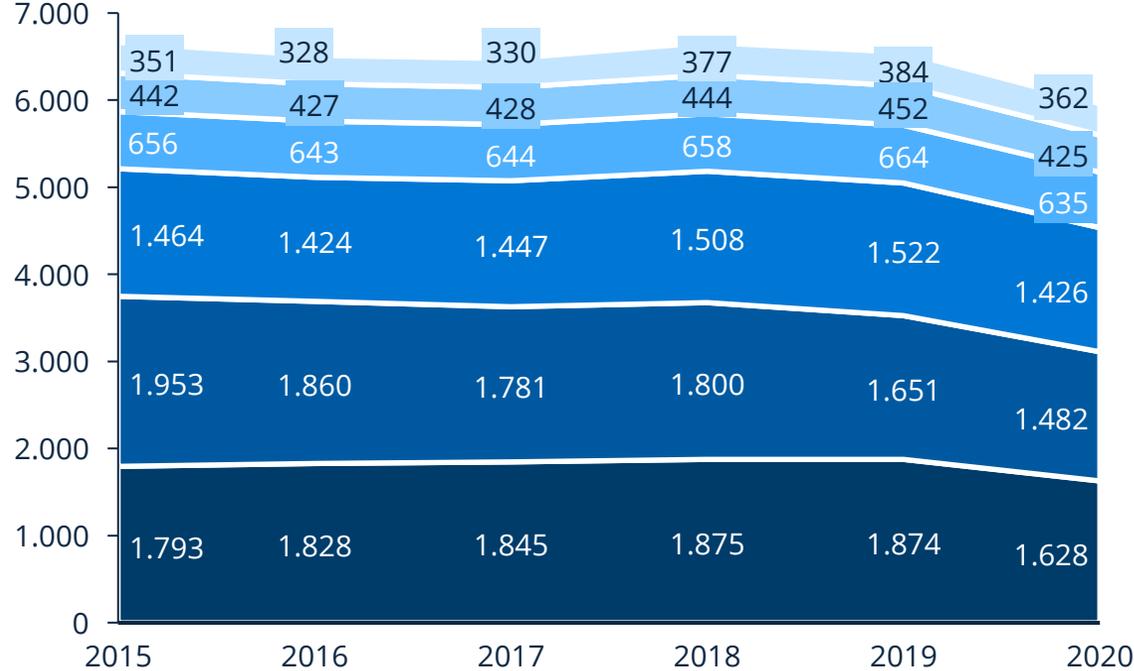
In 2020, the transportation sector accounted for 27.3% of total emissions in the U.S.

Greenhouse Gas Emissions by Sector

Emission shares in 2020

- 27.3% Transportation
- 24.9%
- 23.9%
- 10.7%
- 7.1%
- 6.1%

Emissions in million metric tons

	2015	2016	2017	2018	2019	2020
Residential	351	328	330	377	384	362
Commercial	442	427	428	444	452	425
Agriculture	656	643	644	658	664	635
Industry	1.464	1.424	1.447	1.508	1.522	1.426
Electricity generation	1.953	1.860	1.781	1.800	1.651	1.482
Transportation	1.793	1.828	1.845	1.875	1.874	1.628

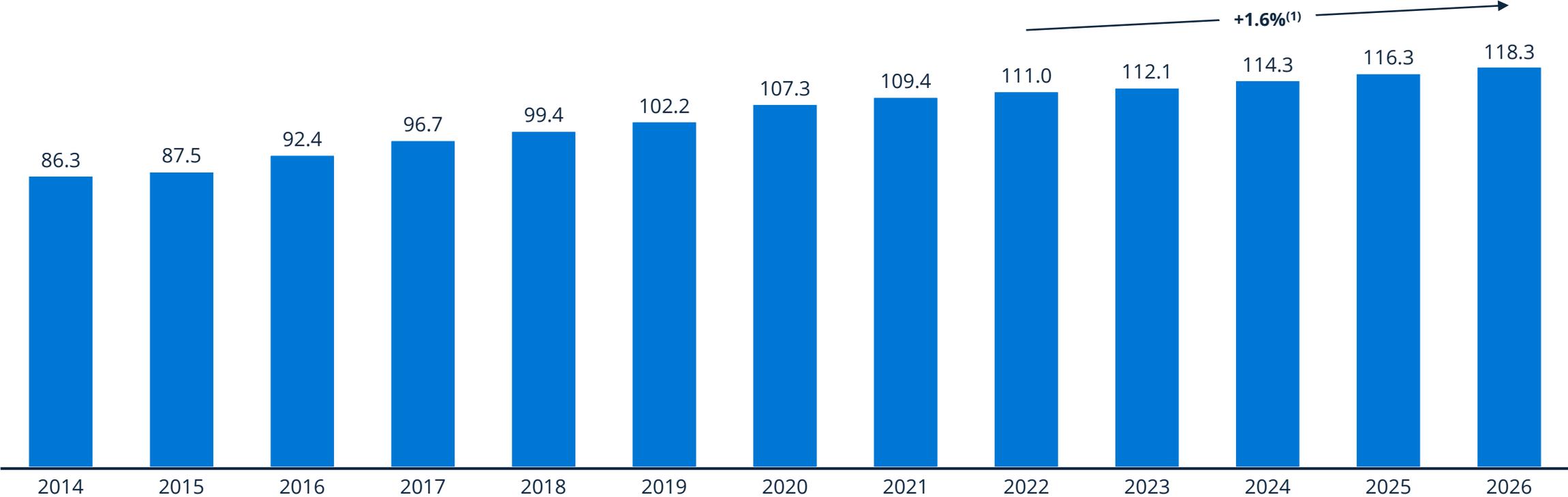Legend: Transportation · Electricity generation · Industry · Agriculture · Commercial · Residential

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Financial Numbers

Industry revenue to increase by 1.6% p.a. from 2022 to 2026

Revenue: Industry Revenue

Revenue in billion US$

+1.6%[1]

86.3 87.5 92.4 96.7 99.4 102.2 107.3 109.4 111.0 112.1 114.3 116.3 118.3

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

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With a revenue of US$109.4 billion, "Waste Management & Recycling" ranked 26th in 2021

Revenue: Industry Comparison

#	NAICS	Industry	Revenue in bnUS$[1]	Growth 2020-2021	
1	42	Wholesale Trade	6,051.47	3.80%	↑
2	52	Banking, Finance & Insurance	4,847.87	2.30%	↑
3	62	Health Care & Social Assistance	2,709.94	3.70%	↑
4	441	Retail: Car Dealers	1,151.38	4.10%	↑
5	336	Manufacturing: Automotive & Transportation Equipment	884.95	3.00%	↑
6	22	Utilities	780.24	1.50%	→
7	325	Manufacturing: Chemicals, Pharmaceuticals & Medicine	769.05	0.80%	→
8	311	Manufacturing: Food	746.54	1.80%	→
9	445	Retail: Food & Beverages	684.31	5.70%	↑
10	517	Telecommunications	583.44	0.50%	→
11	531	Real Estate	483.20	4.60%	↑
12	444	Retail: Building, Home & Garden	349.89	5.80%	↑
13	333	Manufacturing: Machinery	321.50	3.20%	↑
14	511	Publishing	311.25	1.90%	→
15	446	Retail: Drugstores	304.48	4.60%	↑
16	334	Manufacturing: Computers & Electronics	283.62	3.60%	↑
17	484	Transportation: Trucks	264.74	3.40%	↑
18	326	Manufacturing: Plastics & Rubber	218.09	0.80%	→
19	448	Retail: Fashion	194.46	3.70%	↑
20	518	Data Hosting & Computing	176.73	4.30%	↑
21	481	Transportation: Air	171.50	9.90%	↑
22	312	Manufacturing: Beverage & Tobacco Products	161.46	-0.30%	→
23	532	Rental & Leasing	158.42	4.00%	↑

#	NAICS	Industry	Revenue in bnUS$[1]	Growth 2020-2021	
24	713	Amusement, Gambling & Leisure	139.76	2.9%	↑
25	335	Manufacturing: Electrical Equipment & Supplies	112.26	1.5%	→
26	562	Waste Management & Recycling	109.41	1.9%	→
27	442	Retail: Furniture	106.99	5.4%	↑
28	515	Broadcasting (except Internet)	106.76	3.1%	↑
29	512	Motion Picture and Sound Recording Industries	96.16	5.2%	↑
30	443	Retail: Consumer Electronics	87.06	3.9%	↑
31	61	Education	78.67	2.0%	↑
32	323	Manufacturing: Printing	76.82	-0.4%	→
33	451	Retail: Sports, Hobbies, Books & Music	67.23	3.1%	↑
34	483	Transportation: Water	36.96	1.9%	→
35	493	Warehousing & Storage	34.44	4.8%	↑
36	314	Textile Product Mills	20.39	0.1%	→
37	313	Textile Mills	18.74	0.7%	→
38	315	Manufacturing: Apparel	8.17	2.1%	↑
39	316	Manufacturing: Leather and Allied Products	4.08	1.7%	→

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FDI in this industry amounted to US$6,394 million in 2020

Investments: Development

FDI[1] position in million US$[2]
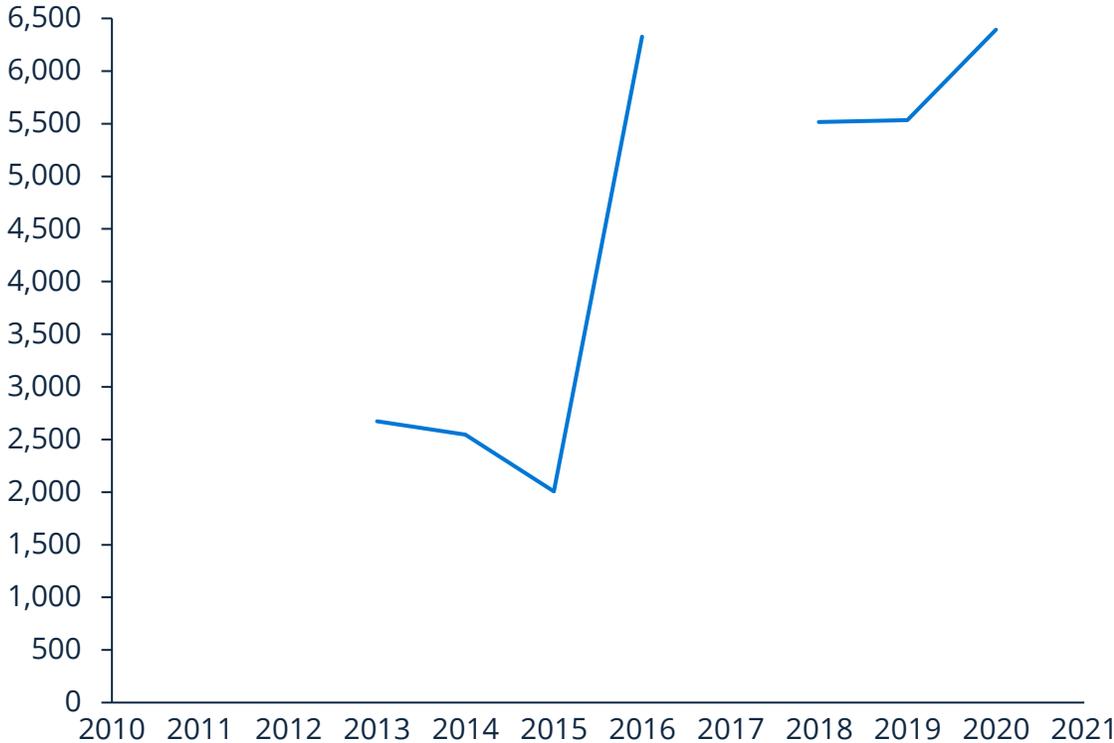
FDI is an international investment, in this case when a foreign firm or individual invests in a business operating in this industry in the United States. The worldwide value of FDI flows is immense, which is a result of the increasing connectedness of world financial markets. FDI, like any increase in capital, leads to a higher number of jobs. The economy of the target country grows, and the investing country generally gets a good rate of return. For all industries combined, the countries with the highest FDI position were Japan, the United Kingdom, and Canada.
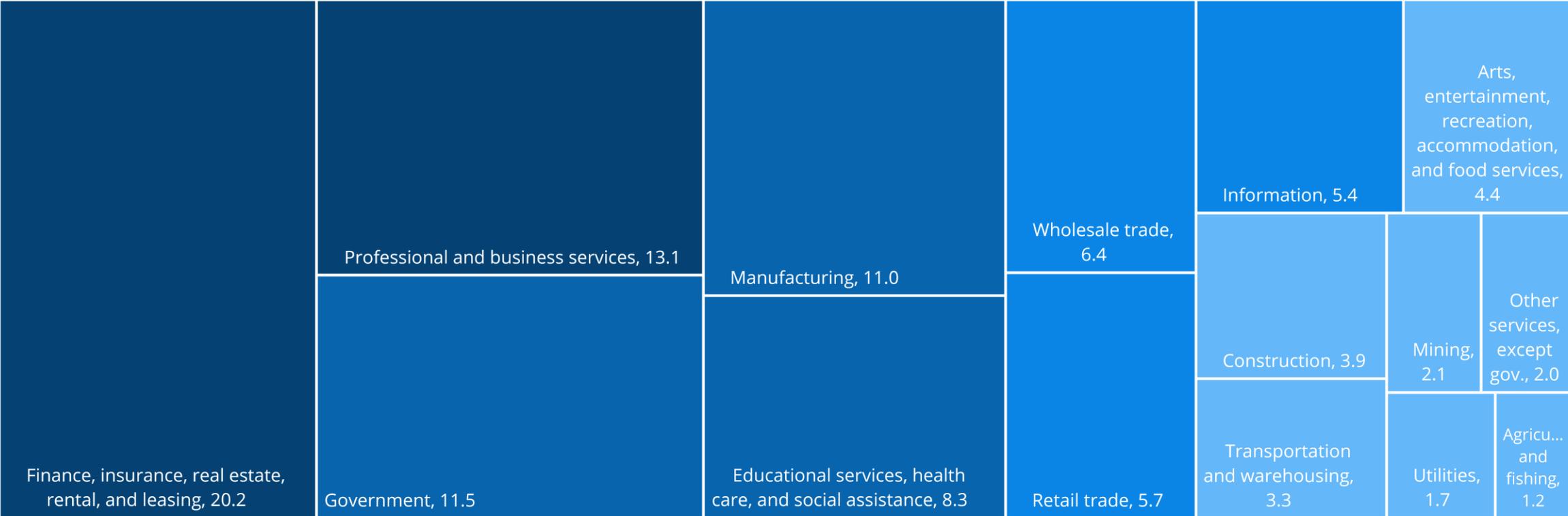
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"Professional and business services" to contribute 13.1% to the GDP in 2022

GDP and Value Added (1/3)

Value added[1] by industry as % of GDP in 2022

Finance, insurance, real estate, rental, and leasing, 20.2

Professional and business services, 13.1

Government, 11.5

Manufacturing, 11.0

Educational services, health care, and social assistance, 8.3

Wholesale trade, 6.4

Retail trade, 5.7

Information, 5.4

Arts, entertainment, recreation, accommodation, and food services, 4.4

Construction, 3.9

Transportation and warehousing, 3.3

Mining, 2.1

Utilities, 1.7

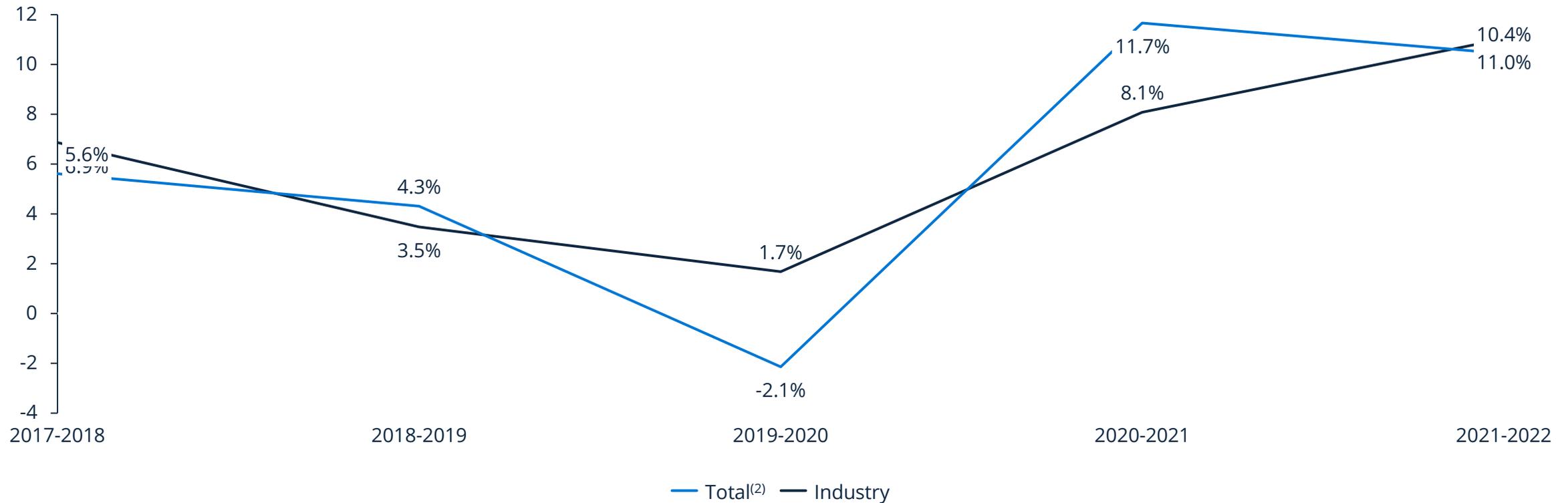Other services, except gov., 2.0

Agricu... and fishing, 1.2

Notes: (1) Each industry's labor and capital added to its gross output and to the overall GDP of the United States; equals industry's gross output minus its intermediate inputs

Sources: Bureau of Economic Analysis 2022; Statista 2022

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Value added by the 'Waste Management & Recycling' industry to grow by 11.0% from 2021-2022 which is higher than all industries combined

GDP and Value Added (2/3)

Gross value added[1] growth rate

12
10
8
6
4
2
0
-2
-4

2017-2018   2018-2019   2019-2020   2020-2021   2021-2022

5.6%
5.9%
4.3%
3.5%
-2.1%
1.7%
11.7%
8.1%
10.4%
11.0%

— Total[2]   — Industry

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In 2021, California had the highest added value in this industry

GDP and Value Added (3/3)

Top 10 states regarding value added(1) in billion US$ in 2021

California	8.5 (6.5%)
Texas	6.1 (4.7%)
New England	4.4 (3.4%)
Washington	3.5 (2.7%)
Florida	3.5 (2.6%)
New York	3.3 (2.5%)
Pennsylvania	2.6 (2.0%)
Ohio	2.5 (1.9%)
Illinois	2.4 (1.8%)
Massachusetts	2.4 (1.8%)
Other 41 states	91.9 (70.1%)
Total	131.1 (100.0%)

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Companies

Waste Management registered the largest revenue in 2021

Selected Top Companies

Rank	Company[1]	Total revenue in million US$ in 2021	No. of employees	Registered address
1	Waste Management	17,931	48,500	Wilmington, Delaware
2	Republic Services	11,295	35,000	Wilmington, Delaware
3	American Water Works Company	3,930	6,400	Wilmington, Delaware
4	Clean Harbors	3,806	18,300	Boston, Massachusetts
5	Stericycle	2,649	14,550	Wilmington, Delaware
6	Essential Utilities	1,878	3,211	Bryn Mawr, Pennsylvania
7	Us Ecology, Inc.	988	3,600	Wilmington, Delaware
8	California Water Service Group	791	1,182	Wilmington, Delaware
9	Casella Waste Systems	889	2,900	Wilmington, Delaware
10	Sjw Group	581	751	Wilmington, Delaware

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The number of establishments increased by 0.3% in 2019
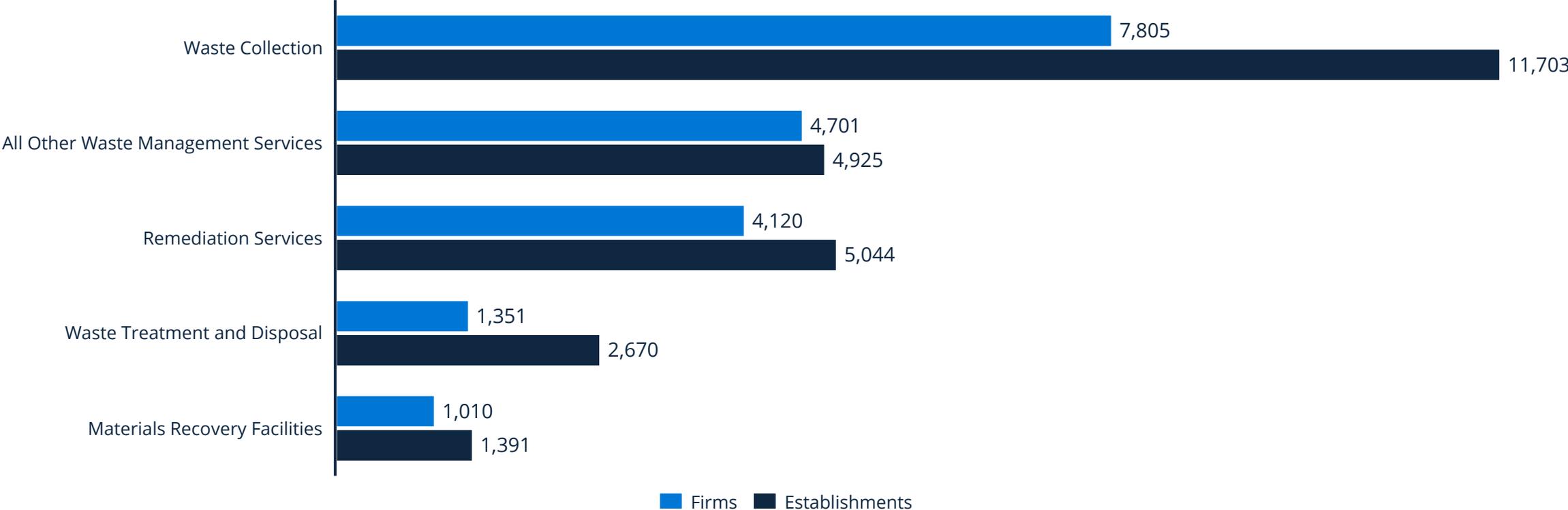
Business Demographics: Firms and Establishments Over Years

Total number of firms[1] and establishments[2] with paid employees

Legend: Firms (blue), Establishments (dark navy), Establishments per Firm (gray)

Establishments per Firm: 2014: 1.37 | 2015: 1.38 | 2016: 1.41 | 2017: 1.41 | 2018: 1.40 | 2019: 1.40

Firms: 2014: 16,384 | 2015: 16,394 | 2016: 16,661 | 2017: 16,778 | 2018: 17,119 | 2019: 17,195

Establishments: 2014: 22,429 | 2015: 22,598 | 2016: 23,440 | 2017: 23,663 | 2018: 24,029 | 2019: 24,091

+0.3%

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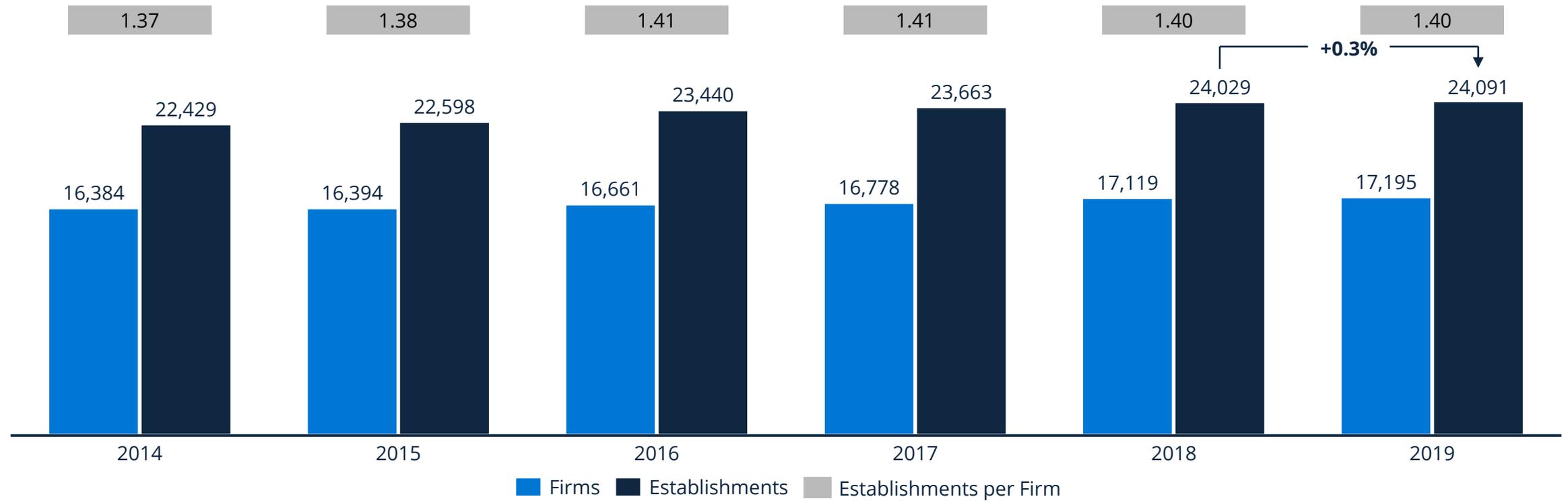
In 2019, 11,703 establishments were active in "Waste Collection"

Business Demographics: Firms and Establishments by Subcategory

**Total number of firms and establishments[1] by subcategory 2019**

Subcategory	Firms	Establishments
Waste Collection	7,805	11,703
All Other Waste Management Services	4,701	4,925
Remediation Services	4,120	5,044
Waste Treatment and Disposal	1,351	2,670
Materials Recovery Facilities	1,010	1,391

■ Firms ■ Establishments

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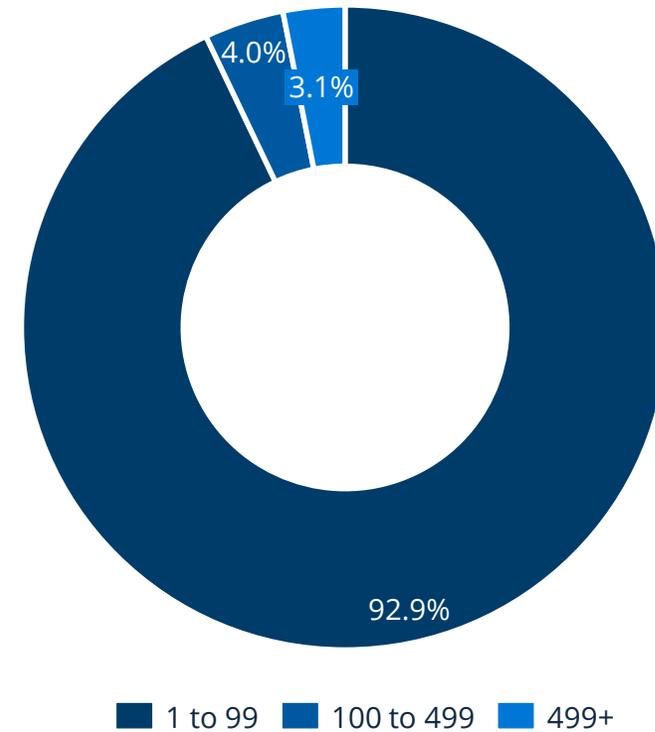# The number of establishment births decreased by 5.3% in 2019

Business Demographics: Establishment Births

Number of establishment births[1]

2015: 1,647
2016: 2,194
2017: 1,674
2018: 1,768
2019: 1,674

-5.3%
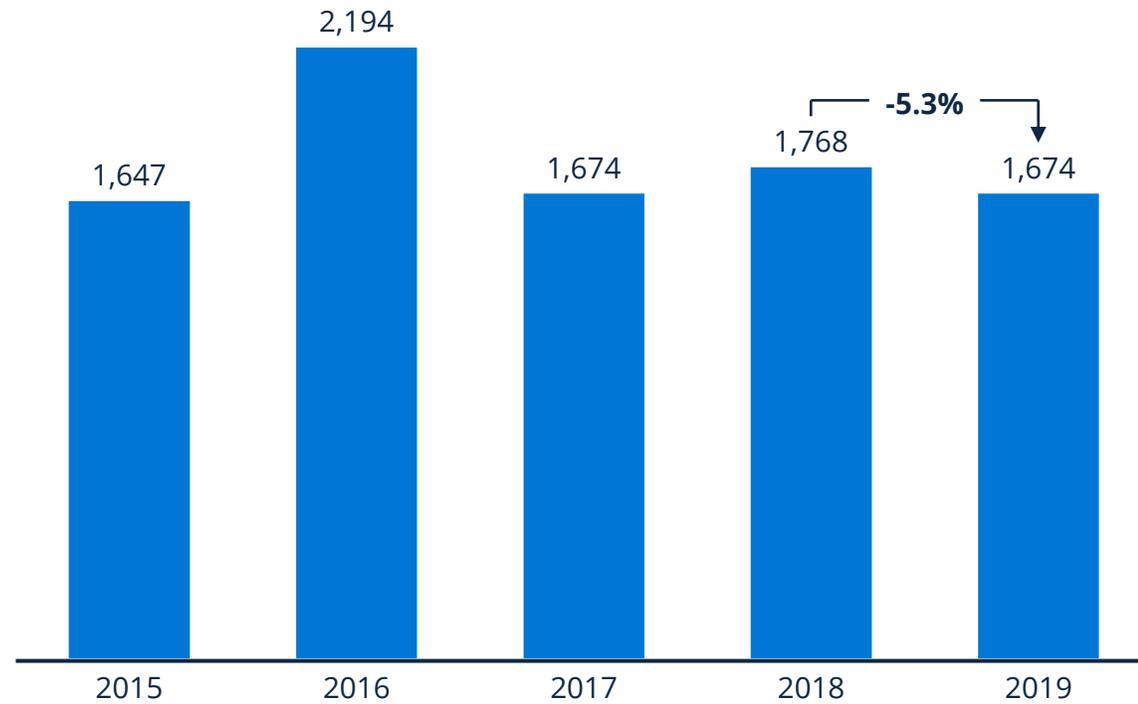
Establishment births by enterprise size[2] **in 2019**
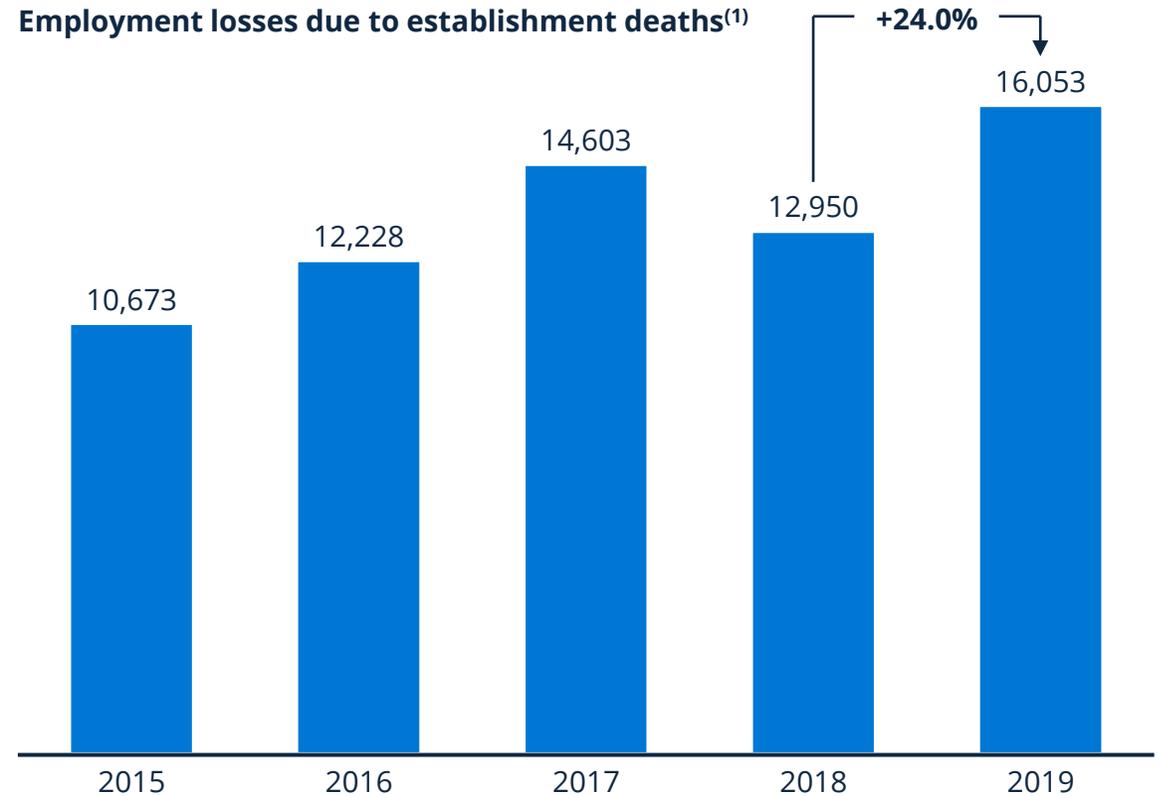

4.0%
3.1%
92.9%

■ 1 to 99 ■ 100 to 499 ■ 499+

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The number of establishment deaths increased by 4.3% in 2019

Business Demographics: Establishment Deaths

Number of establishment deaths[1]

+4.3%

2015	2016	2017	2018	2019
1,494	1,513	1,547	1,543	1,609
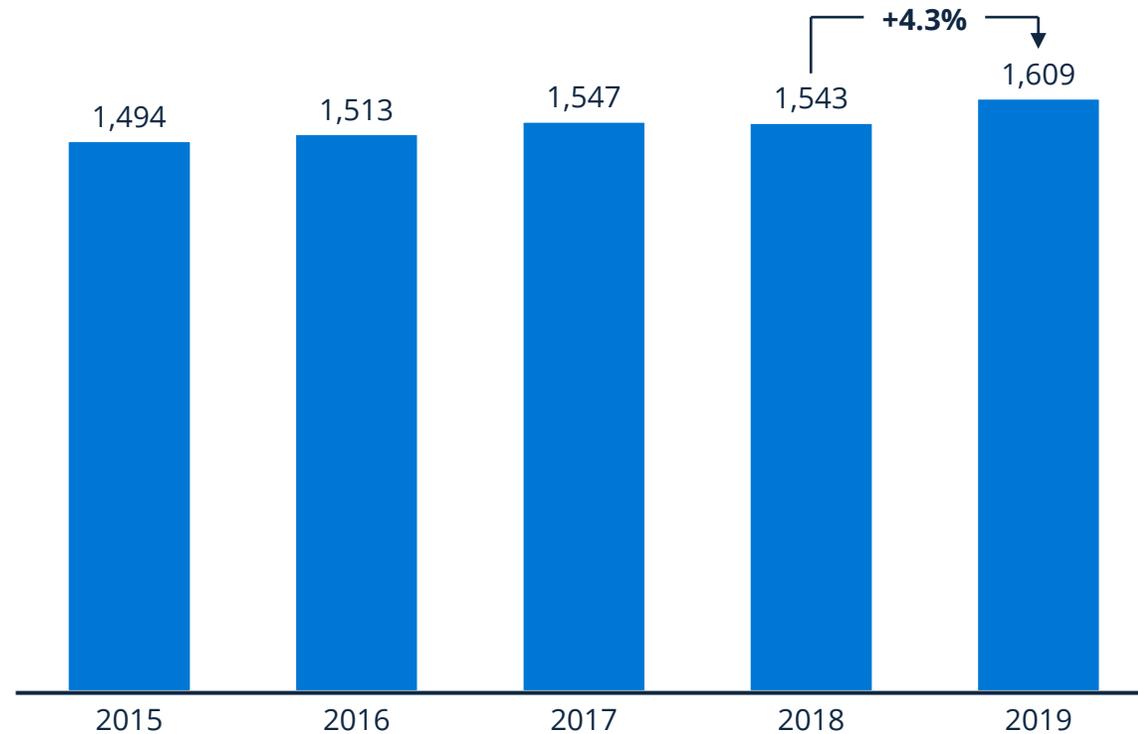
Employment losses due to establishment deaths[1]

+24.0%

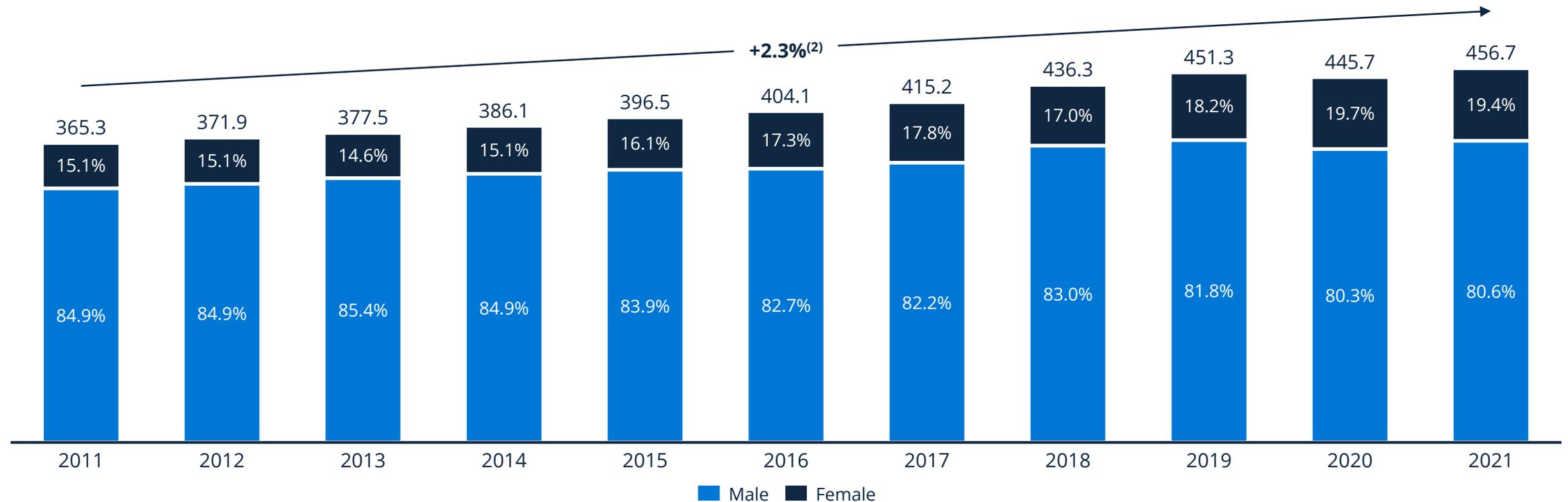| 2015	2016	2017	2018	2019
10,673	12,228	14,603	12,950	16,053

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Employees and Salaries

The number of employees increased by 2.3% p.a. from 2011 to 2021
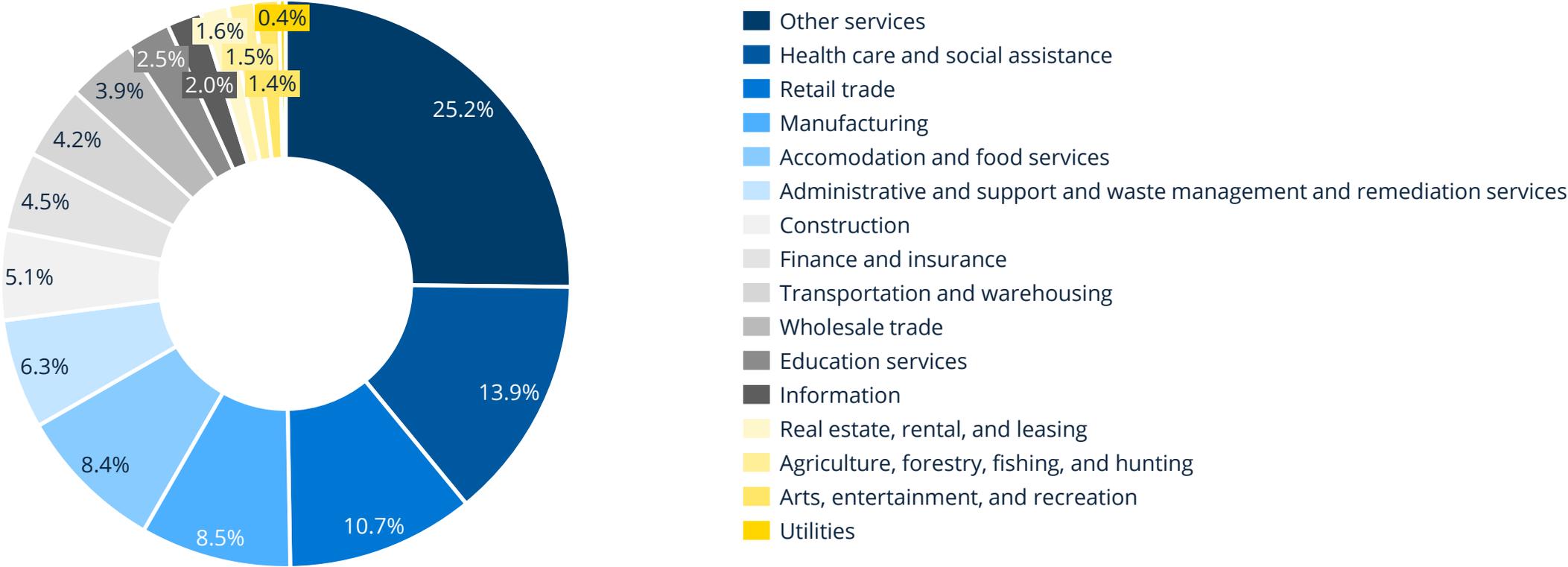
Employment: Total Employees

Total number of employees[1] in thousands

+2.3%[2]

Year	Total	Female	Male
2011	365.3	15.1%	84.9%
2012	371.9	15.1%	84.9%
2013	377.5	14.6%	85.4%
2014	386.1	15.1%	84.9%
2015	396.5	16.1%	83.9%
2016	404.1	17.3%	82.7%
2017	415.2	17.8%	82.2%
2018	436.3	17.0%	83.0%
2019	451.3	18.2%	81.8%
2020	445.7	19.7%	80.3%
2021	456.7	19.4%	80.6%

■ Male ■ Female

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The share of employment for "Administrative and support and waste management and remediation services" amounted to 6.3% in 2021

Employment: Sector Distribution
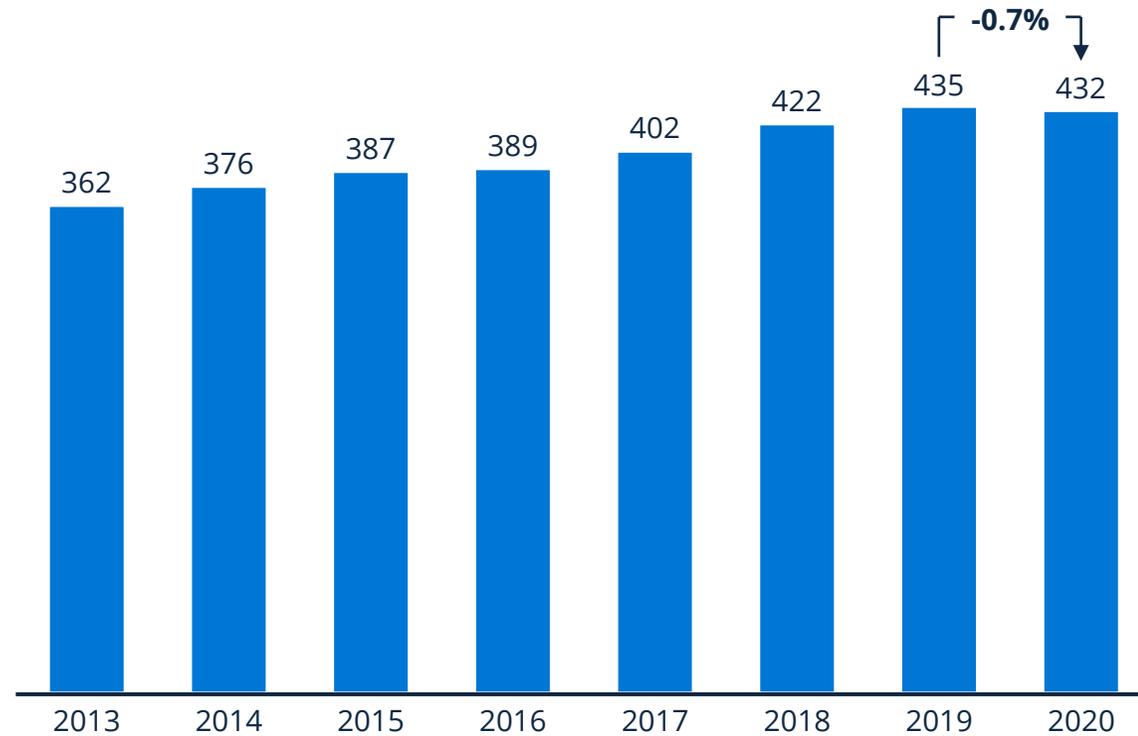
Share of employees[1] in 2021

Pie chart segments:
- 25.2%
- 13.9%
- 10.7%
- 8.5%
- 8.4%
- 6.3%
- 5.1%
- 4.5%
- 4.2%
- 3.9%
- 2.5%
- 2.0%
- 1.6%
- 1.5%
- 1.4%
- 0.4%

Legend:
- Other services
- Health care and social assistance
- Retail trade
- Manufacturing
- Accomodation and food services
- Administrative and support and waste management and remediation services
- Construction
- Finance and insurance
- Transportation and warehousing
- Wholesale trade
- Education services
- Information
- Real estate, rental, and leasing
- Agriculture, forestry, fishing, and hunting
- Arts, entertainment, and recreation
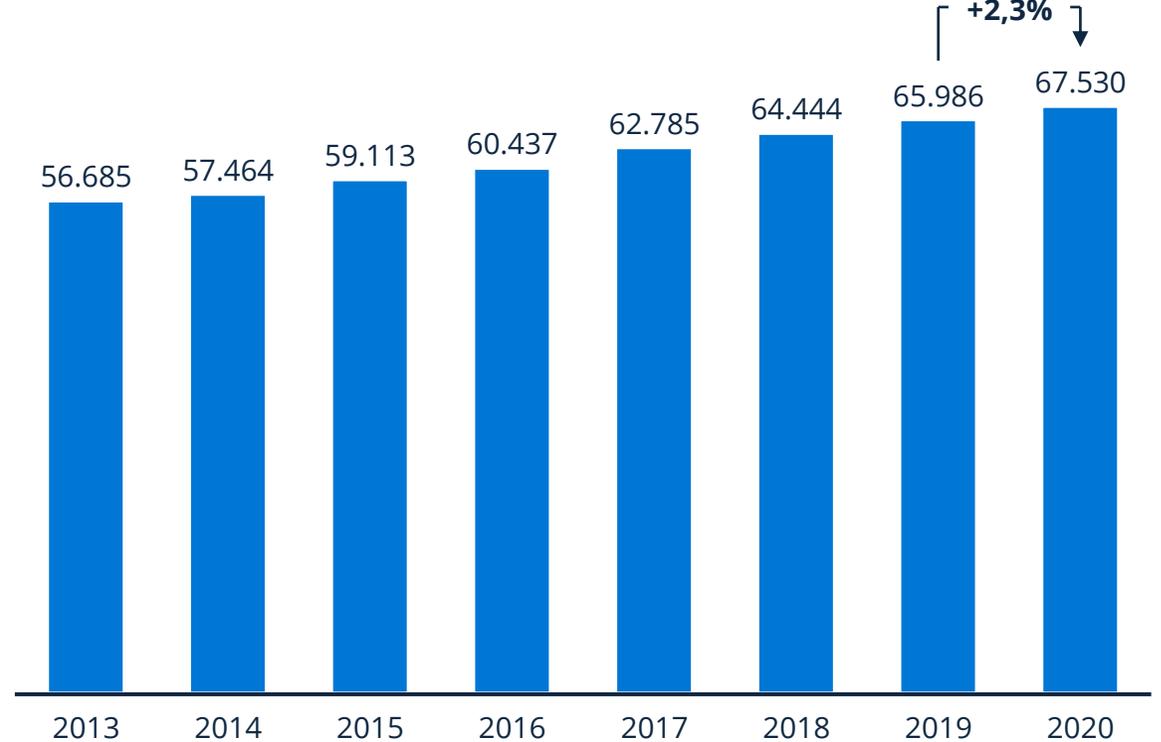- Utilities

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The number of full-time employees decreased by 0.7% p.a. from 2013 to 2020

Employment: Full-Time Equivalents

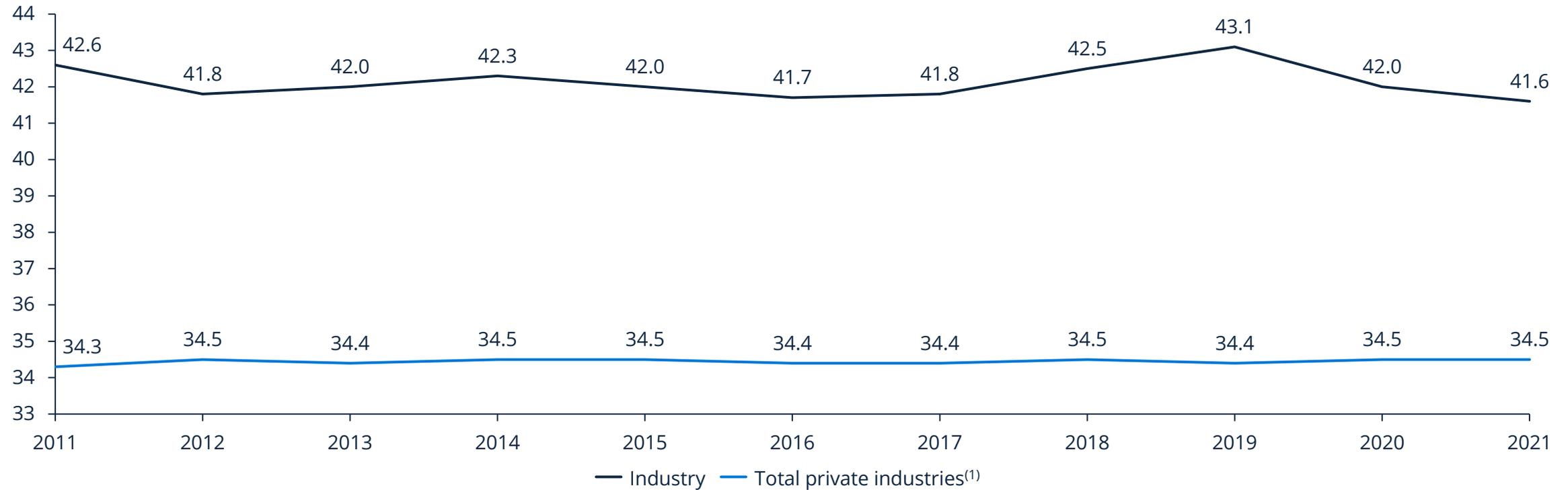**Full-time equivalent employees[1] in thousands**

-0.7%

2013	2014	2015	2016	2017	2018	2019	2020
362	376	387	389	402	422	435	432

Wage and salary accruals[2] per full-time equivalent employee in US$

+2,3%

2013	2014	2015	2016	2017	2018	2019	2020
56.685	57.464	59.113	60.437	62.785	64.444	65.986	67.530

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Working hours in the industry were above the private industry level in 2021

Weekly Hours Worked

Average weekly working hours of all payroll employees

Industry values: 42.6 (2011), 41.8 (2012), 42.0 (2013), 42.3 (2014), 42.0 (2015), 41.7 (2016), 41.8 (2017), 42.5 (2018), 43.1 (2019), 42.0 (2020), 41.6 (2021)

Total private industries values: 34.3 (2011), 34.5 (2012), 34.4 (2013), 34.5 (2014), 34.5 (2015), 34.4 (2016), 34.4 (2017), 34.5 (2018), 34.4 (2019), 34.5 (2020), 34.5 (2021)

— Industry   — Total private industries[1]

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The unemployment rates in the industry were higher than the sector rates in 2021

Unemployment

Unemployment Rates[1]

	2020	2021
Waste management & recycling		
Total	11%	9.3%
♂	10.1%	8.6%
♀	12.3%	10.4%
Professional & business services		
Total	6.7%	5.2%
♂	6.1%	4.7%
♀	7.5%	5.9%

Number of unemployed[1] **people in thousands**

-15.5%

639 → 540

-21.3%

1,176 → 926

2020 | 2021 | 2020 | 2021

■ Industry   ■ Sector

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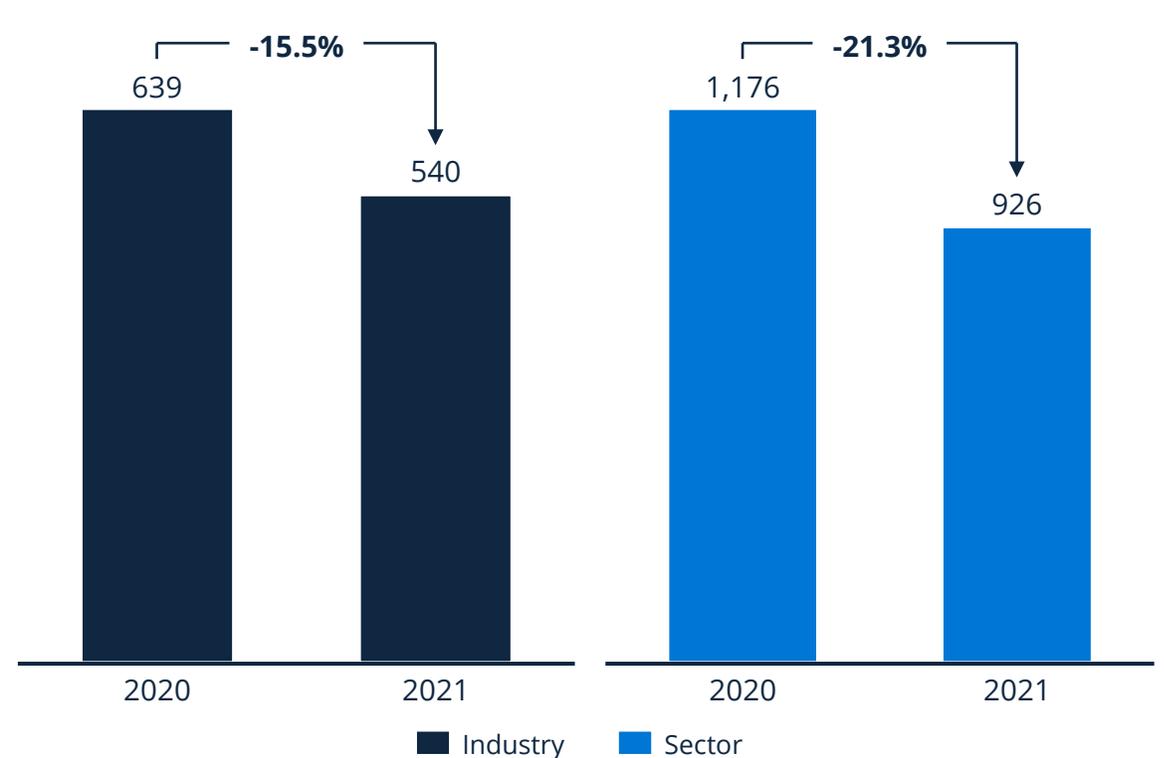
The annual mean wage increased by 2.4% from 2016 to 2021

Wages (1/3)

Annual mean wage[1] in thousand US$

+2.4%[2]

2016	2017	2018	2019	2020	2021
46.8	47.8	49.4	50.2	51.9	52.7

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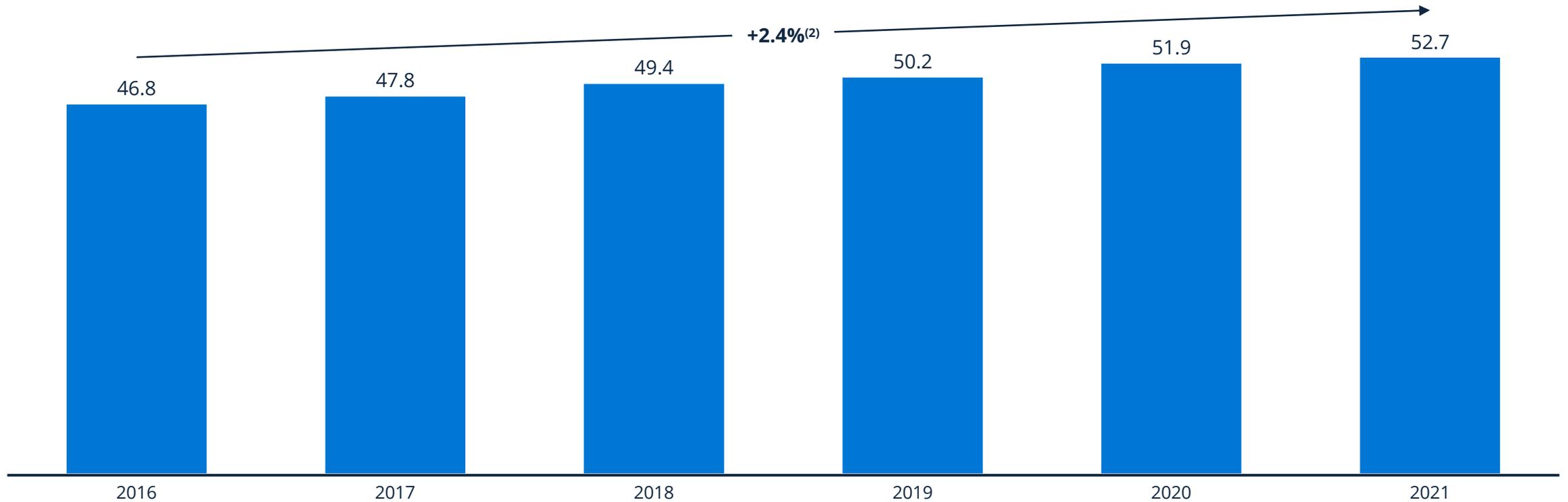
General and Operations Managers earn the highest wages in the industry

Wages (2/3)

Occupations with the highest industry employment[1] in 2021

Occupation	Employment	Annual mean wage[2] in thousand US$	Deviation from industry mean wage
Refuse and Recyclable Material Collectors	17.6%	43.3	-17.9%
Heavy and Tractor-Trailer Truck Drivers	15.0%	48.9	-7.3%
Hazardous Materials Removal Workers	7.8%	48.9	-7.3%
Laborers and Freight, Stock, and Material Movers, Hand	6.1%	36.2	-31.3%
General and Operations Managers	3.6%	108.0	105.0%
Office Clerks, General	3.5%	39.1	-25.9%
Septic Tank Servicers and Sewer Pipe Cleaners	3.4%	42.9	-18.5%
Bus and Truck Mechanics and Diesel Engine Specialists	2.7%	53.4	1.3%

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General and operations managers earned more than professionals in other occupations

Wages (3/3)

Median weekly earnings[1] in US$ in 2021

	General and operations managers	Business operations specialists, all other	Water and wastewater treatment plant and system operators

Total: 1,449 / 1,241 / 960
Male: 1,548 / 1,326 / 965
Female: 1,285 / 1,162 / n.a.

-17.0%   -12.4%

■ Total ■ Male ■ Female
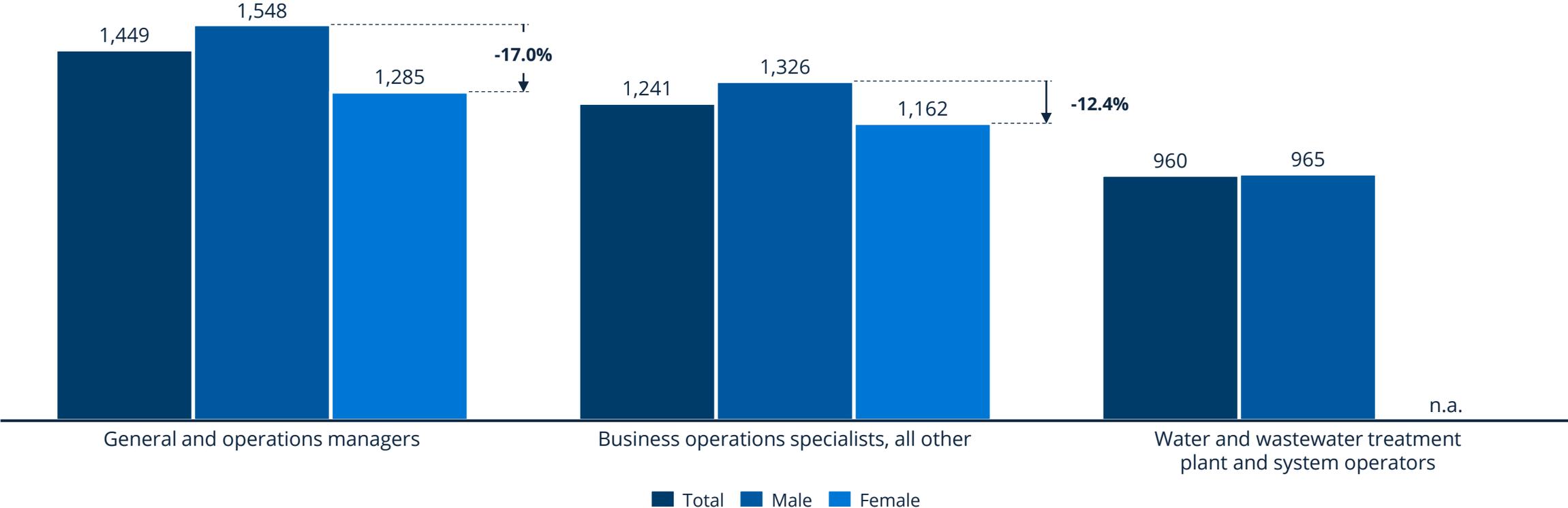
Notes: (1) Of full-time wage and salary workers

Sources: U.S. Bureau of Labor Statistics 2022; Statista 2022

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19,089 bachelor degrees were awarded in "Engineering technologies and engineering-related fields" in 2019

Degrees

Number of degrees[1] [2]

| 2017 | 2018 | 2019 |
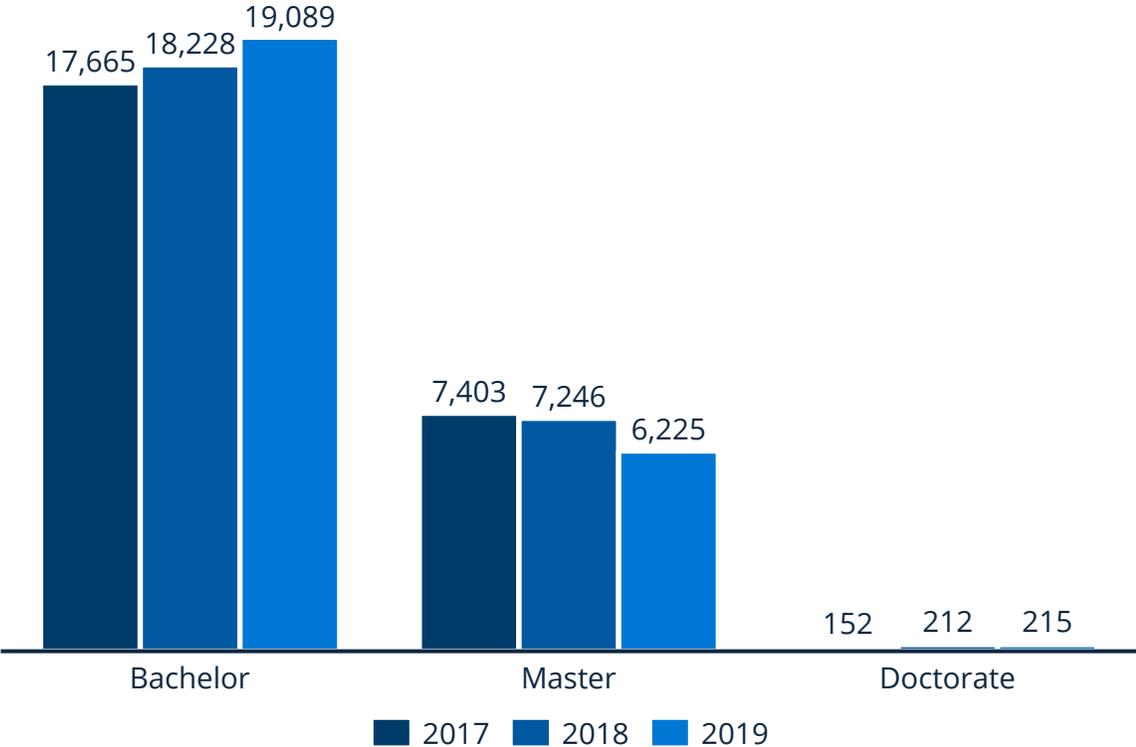
Distribution of degrees[1] **in 2019**

	Total	♂	♀
Bachelor	19,089	86.8%	13.2%
Master	6,225	69.7%	30.3%
Doctorate[3]	215	72.1%	27.9%

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Job automation is shaping the future of work across all industries

Potential Rates of Job Automation

Impact of automation and overview of waves

Job automation is advancing at a rapid pace. While boosting productivity and enhancing the quality and quantity of products and services, automation is also disrupting the job market. PwC's study on the impact of automation categorizes the automation process into three overlapping waves, ranging from the early 2020s to the 2030s:

Waves	Algorithm	Augmentation	Autonomy
Years	Early 2020s	Late 2020s	2030s
Description	Automation of simple computational tasks and data analysis	Dynamic interaction with technology, including robotic tasks	Automation of physical labor, problem-solving, and responsive actions
Industries impacted	Financial and insurance; information and communication; professional, scientific, and technical services	Financial and insurance; public administration; manufacturing; transportation and storage	Construction, water, sewage, and waste management; transportation and storage

Potential rates of job automation across waves

Legend: Algorithm wave, Augmentation wave, Autonomy wave

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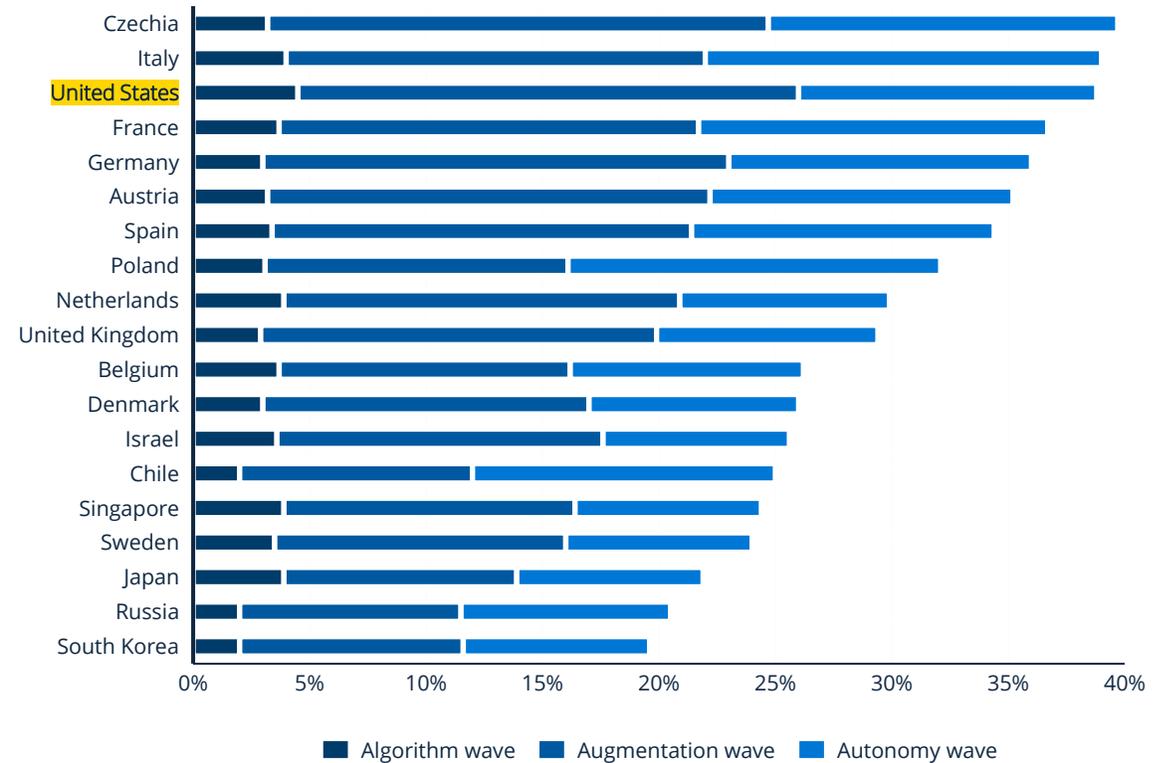
Research and Development

In the waste management and remediation services sector, the R&D intensity was 0.19% in 2021

Intensity

Comparison of R&D intensity in %(1)

Industry / Business Activities[2]	NAICS	2019	2020	2021
All industries	21–23, 31–33, 42–81	4.10	4.40	4.45
Utilities	22	0.10	0.11	0.11
Construction	23	1.03	1.10	1.12
Manuf.: Food	311	0.90	0.97	0.98
Manuf.: Computer & electronic	334	10.20	12.80	12.95
Manuf.: Electrical equip. & appliances	335	3.40	3.70	3.74
Motion picture and sound recording	512	0.18	0.18	0.18
Broadcasting	515	0.85	0.91	0.92
Telecommunications	517	0.80	0.86	0.87
Data processing, hosting, and related	518	6.60	7.08	7.17
Finance and insurance	52	0.80	0.86	0.87
Real estate	531	2.35	2.52	2.55
Rental and leasing services	532	11.4	12.3	12.4
Waste management and related	562	0.18	0.19	0.19
Healthcare services	621-23	1.50	1.61	1.63
Arts, entertainment, and recreation	710	1.30	1.40	1.41
Accommodation and food services	720	0.14	0.15	0.15

Spending on business R&D in the U.S. in million US$

-7.2%

2018	2019	2020	2021
21	17	17	17

■ Companies

43

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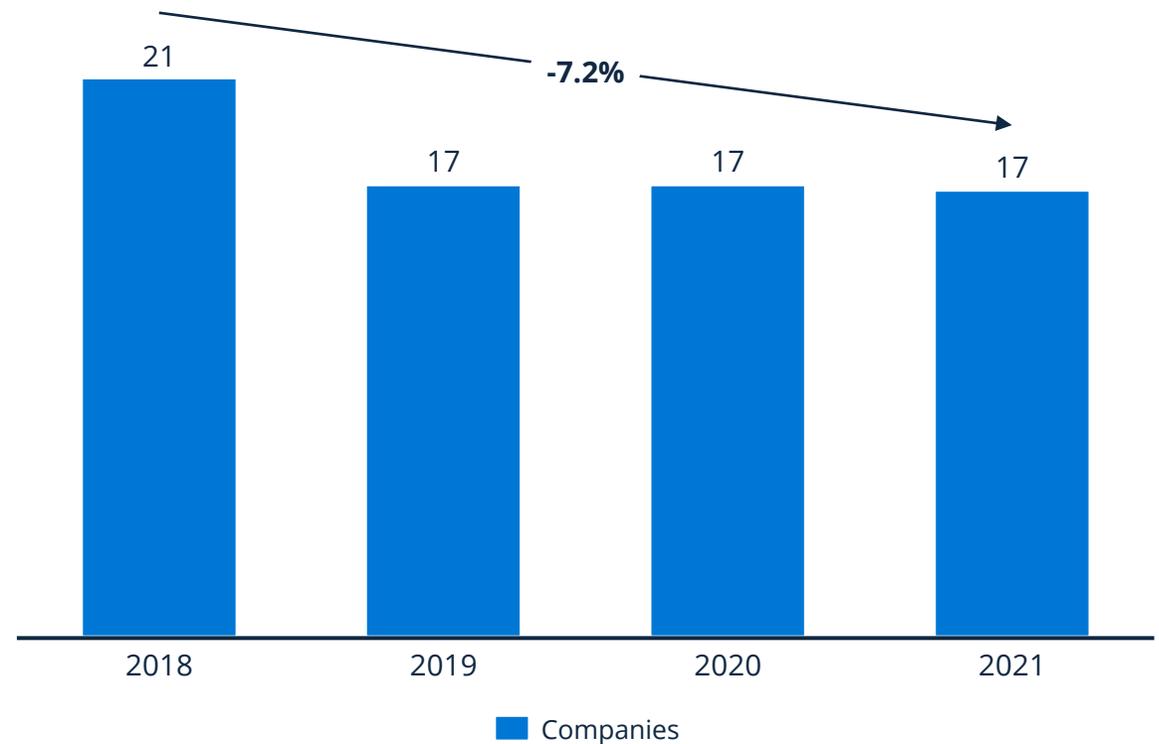
The insurance, financial, and real estate services made up about 3.0% of the total trademark applications from the U.S. in 2020

Trademark Applications

Number of relevant trademark applications[1] in thousands

Legend: Mainland China — France — Germany — Japan — UK — United States

X-axis: 2017, 2018, 2019, 2020
Y-axis: 0 to 100
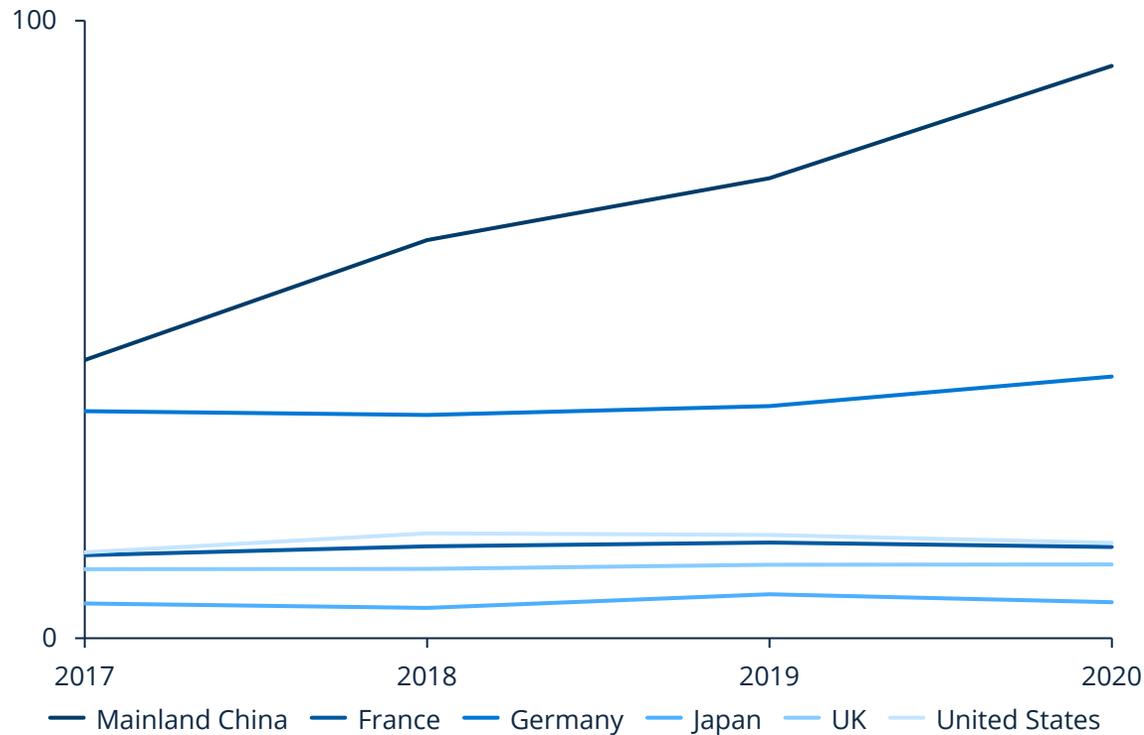
Share of relevant trademark applications[1] in 2020 in per cent

Country	Share
Germany	1.5
France	1.3
Japan	0.9
UK	0.9
Mainland China	0.8
United States	0.8
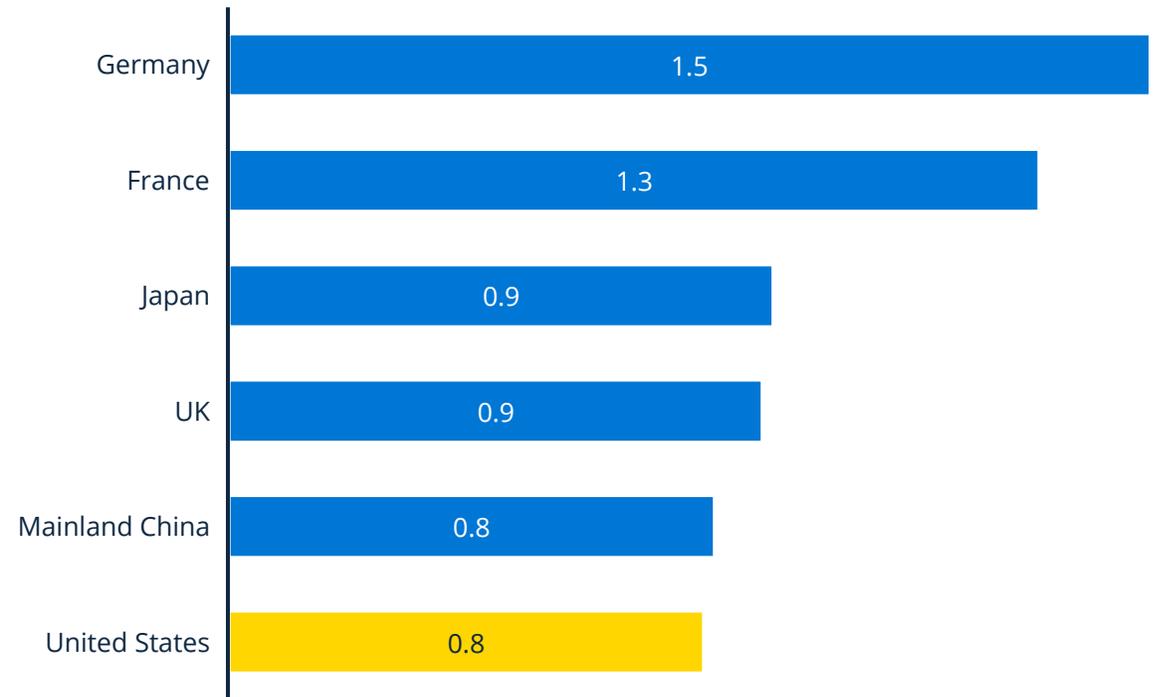
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Appendix

Authors

Leonie Senn-Kalb
Team Lead Reports

l.senn@statista.com

Tam Huu Nguyen
Analyst

h-t.nguyen@statista.com

Aswathy Venugopal
Junior Analyst

a.venugopal@statista.com

Marie Hölscher
Junior Analyst

m.hoelscher@statista.com

As Team Lead for the Industry, Country, Global Business City, and In-Depth Reports since 2022. Additionally, she continues to carry out the tasks of her previous role at Statista as Senior Project Manager, leading department-wide projects. Before that, she worked as a consultant at EY for Transaction Advisory Services with a focus on large carve-out and integration projects.

Tam Huu Nguyen studied Economics, Law, and Politics in Hanoi, Hamburg, Hagen, and Lüneburg. Before joining Statista, he conducted research in international macroeconomics, finance, and politics in various research institutes in Vietnam and Germany.

Aswathy received her bachelor's degree in Information Technology from Mahatma Gandhi University in India. She completed her master's degree in Computer Science at the University of Passau in Germany.

Before joining Statista, she gathered experience as a Business Analyst from Amazon, Munich.

As a former working student, Marie joined the Statista Reports team as a Junior Analyst in April 2022.

After studying economics and sociology at University of Hamburg, she is currently proceeding with her master's degree in Public and Nonprofit Studies, focusing on digitalization and cross-sector topics.

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Data, classifications, and methods used in this report

Data Description and Methods (1/2)

Data sources

The Statista Industry Reports package and present quantitative data from many private and public sources of information. These sources include the U.S. Census Bureau, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, National Center for Education Statistics, National Science Foundation, U.S. Patent and Trademark Office), and Statista itself. The data sources are indicated in footnotes throughout the report.

NAICS-Classification

The North American Industry Classification System (NAICS) was introduced by the statistical bureaus of Mexico, Canada, and the United States in 1997 to replace the Standard Industrial Classification (SIC) system. It is designed to align with the United Nations Statistical Office's International Standard Industrial Classification (ISIC) system. The initial two digits indicate the largest sector. The third digit indicates the subsector, while the fourth digit indicates the industry group. The classification system is modified every five years with the last three changes occurring in the years 2007, 2012, and 2017. Detailed information about the different classifications can be found on the homepage of the U.S. Census Bureau.

Forecasts and estimates

Certain diagrams within this Industry Report include estimates or forecast values. The sources are indicated in footnotes throughout the report.

Data indicator

The footnote indicates if the slide data is either aggregated or from the industry that the report industry is included within.

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About the forecasting methods

Depending on the availability of data and the quality of the data time range, the following methods were used to prepare forecasts: trend analysis (moving average analysis, second-order statistical smoothing, and multiplier analysis), linear regressions, as well as subjective estimates. These estimates reflect years of industry expertise and vast know-how.

Industry-specific sales, revenue, and shipment calculations were made according to the relevant economic and business indicators, such as:

- The general macro-economic developments within the economy (gross domestic product)
- U.S. foreign trade developments (import and export numbers)
- The development of U.S. household disposable income numbers
- The development of U.S. domestic household consumption differentiated according to expenditures (such as, expenses related to foods, drinks, and transportation, as well as accommodation and restaurant expenses)

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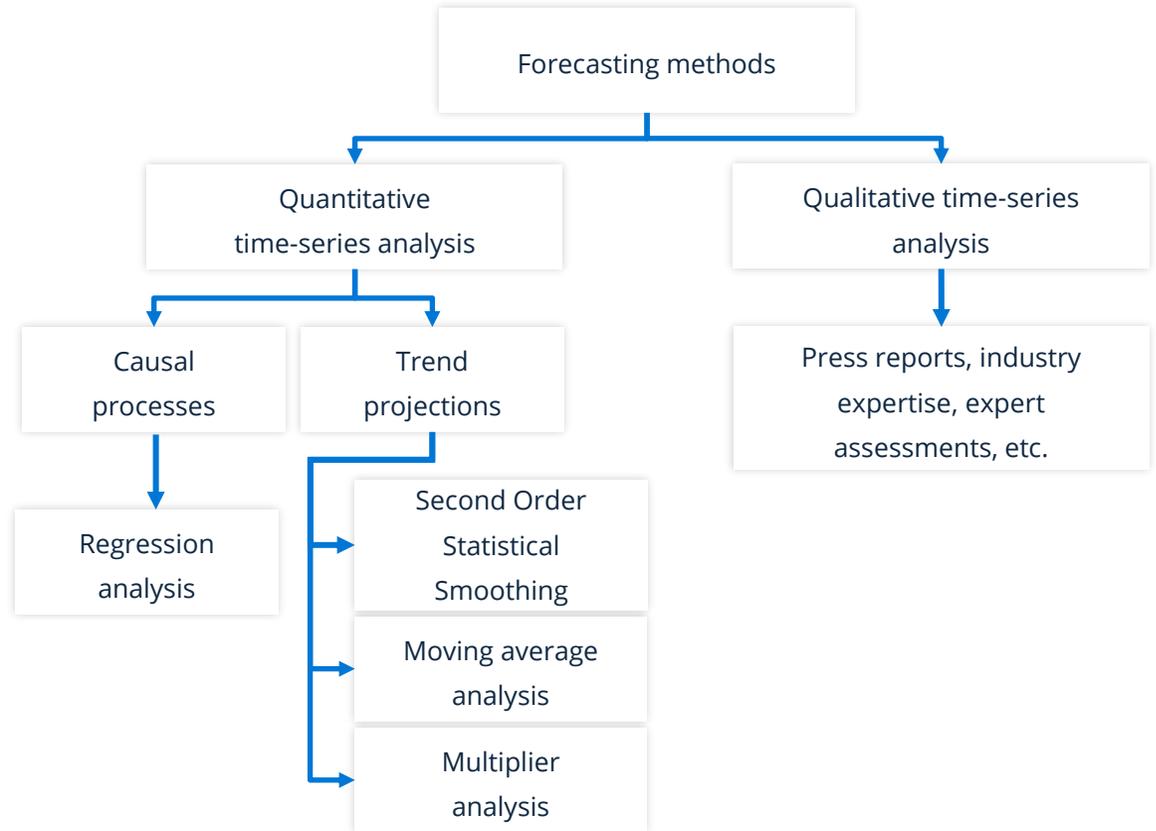
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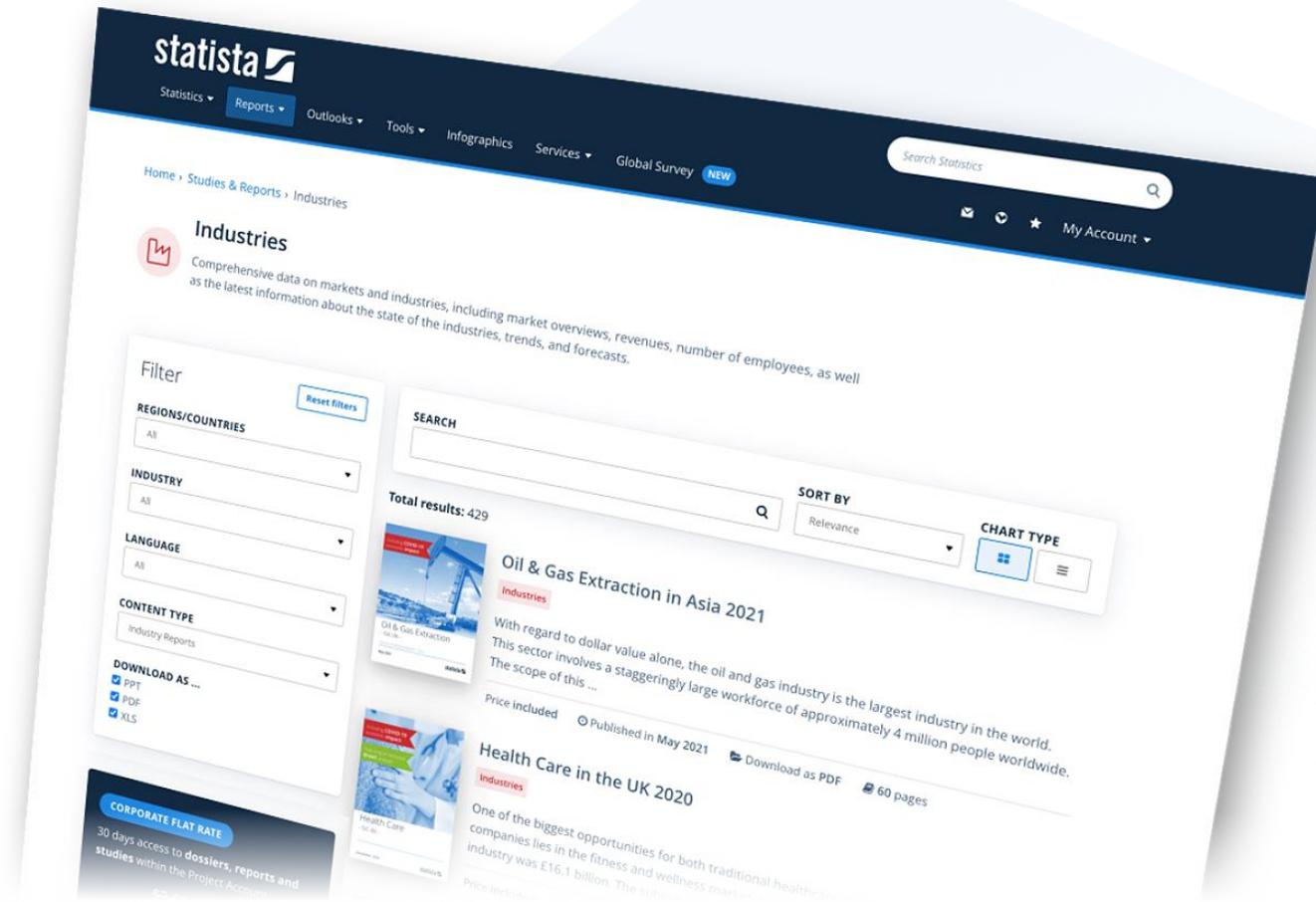
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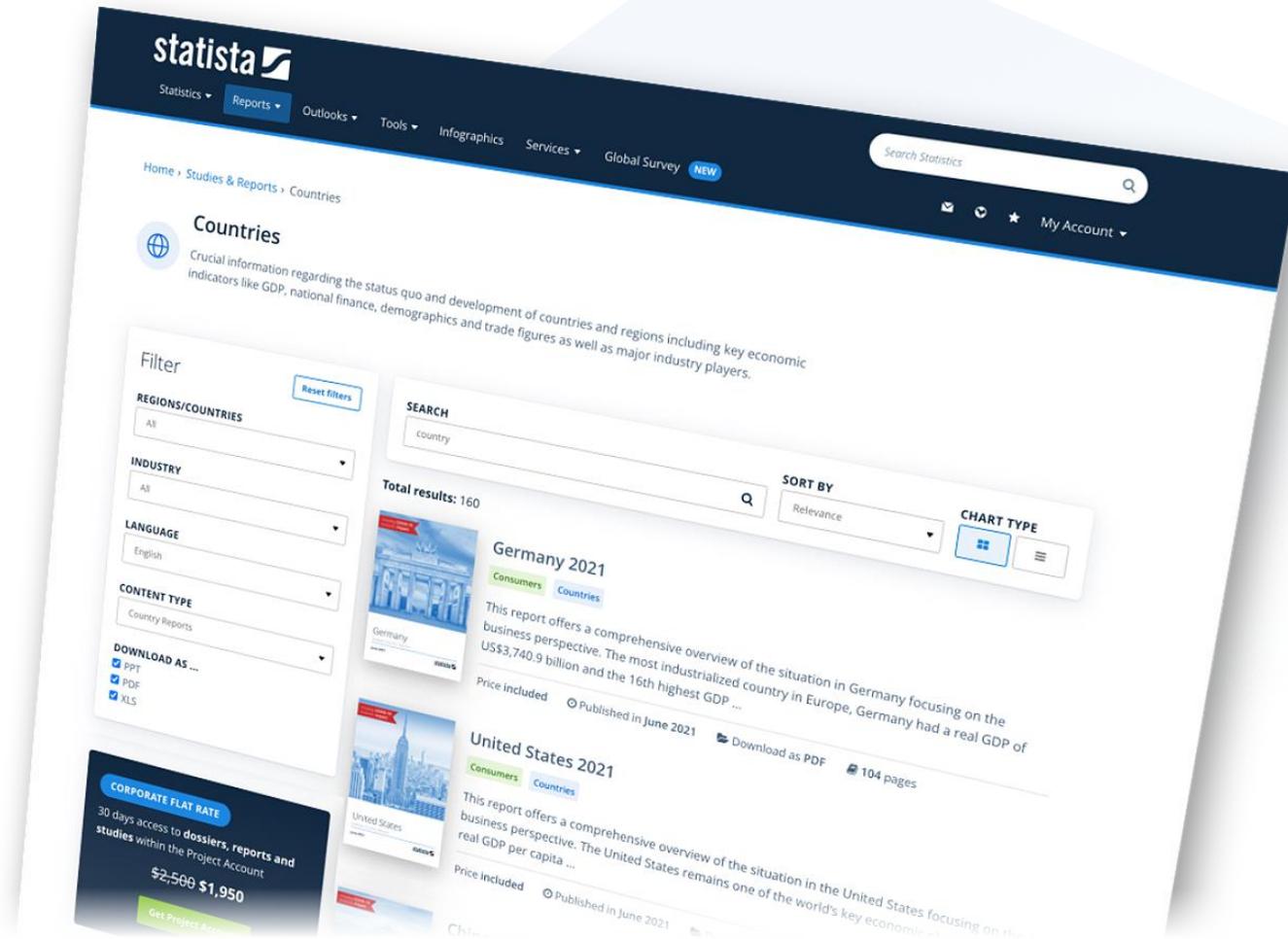
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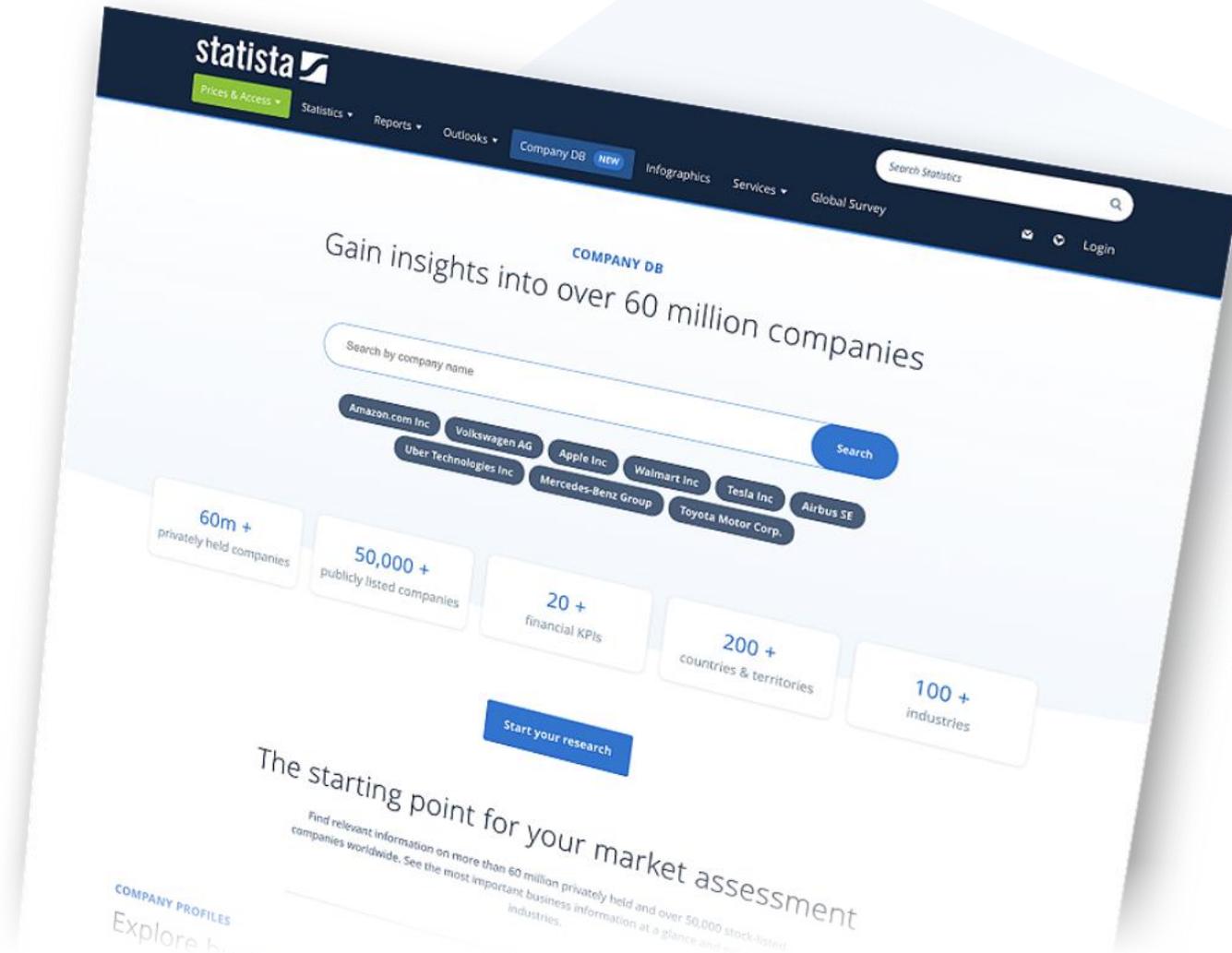
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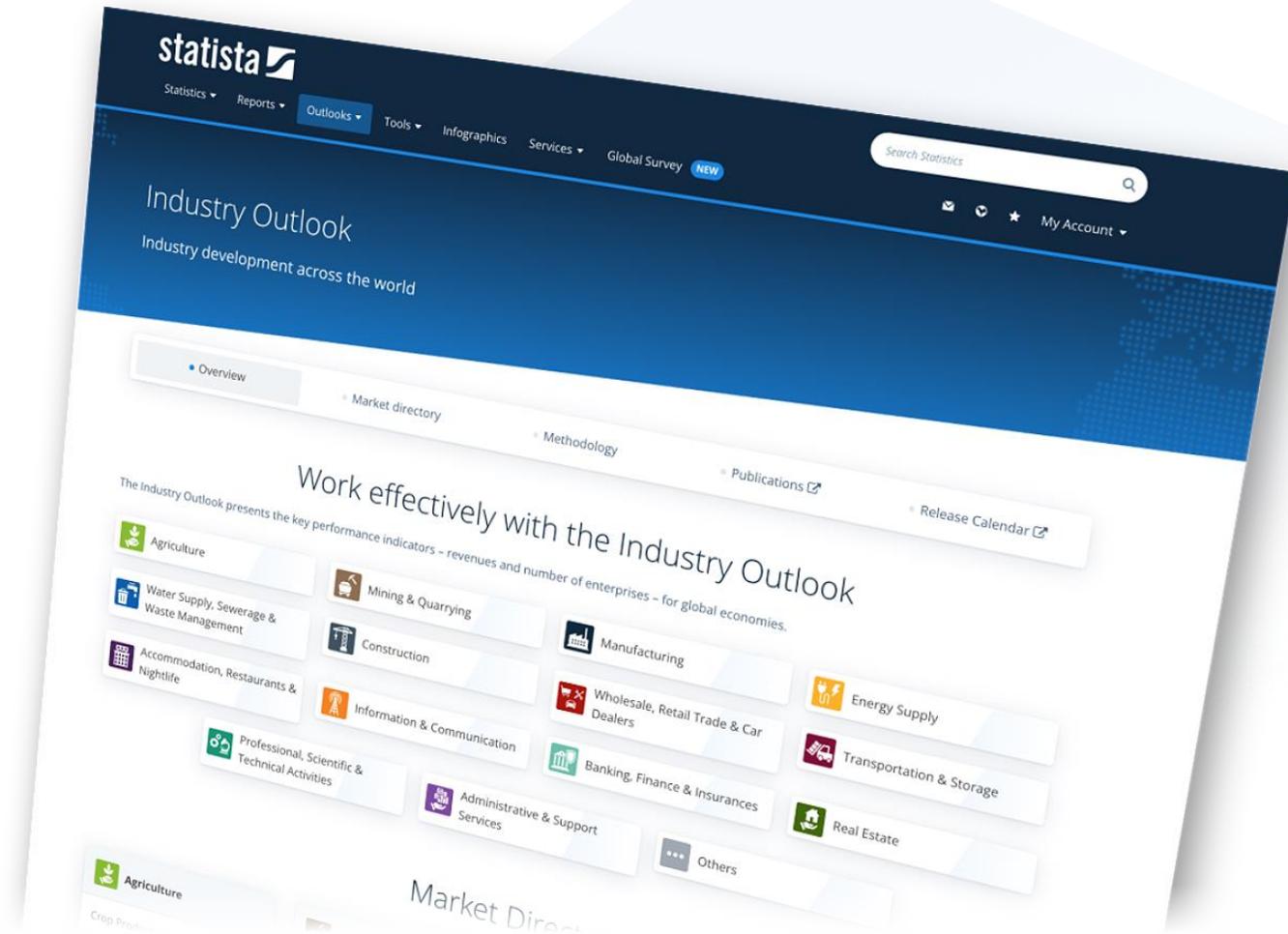
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