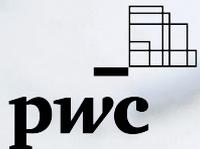


Economic Footprint of the Pharmaceutical industry in Europe

November 2024



Foreword

PwC are delighted to have had the opportunity to work with the European Federation of Pharmaceutical Industries and Associations (EFPIA) to produce this economic impact report, which calculates the size of EFPIA members' economic footprint in the European economy.

At PwC our purpose is to build trust in society and solve important problems. Economic impact reports help us deliver on that purpose as they provide a more holistic view of the value created by firms beyond what financial reporting alone provides. Economic impact modelling considers the total value created by a firm's activity, including the wider value generated by its entire supply chain, and spending by its employees throughout the economy. EFPIA's members play a critical role in the European economy. Therefore, obtaining a comprehensive understanding of the mechanisms underpinning their reach is essential for informing leaders and decision-makers.

This report also explores the wider context for EFPIA members' economic contribution to Europe. The report outlines their role in contributing to research and development that enables the highly productive nature of Europe's pharmaceutical sector.

It has been a pleasure working alongside EFPIA and the EFPIA members associations' staff. I hope you enjoy reading about their contribution to the European economy in this report.



Simon Oates

Partner, Europe Economics Advisory Lead

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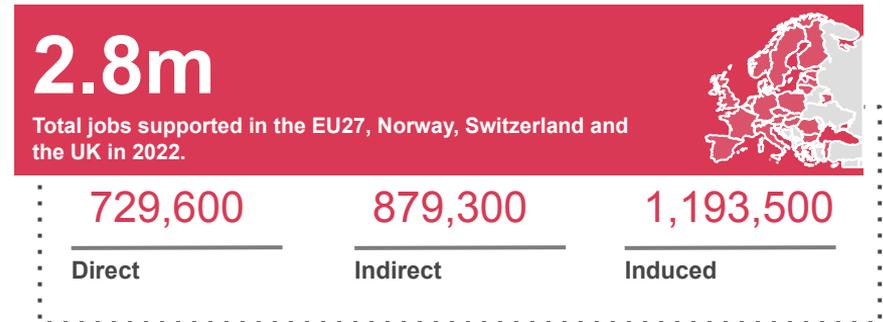
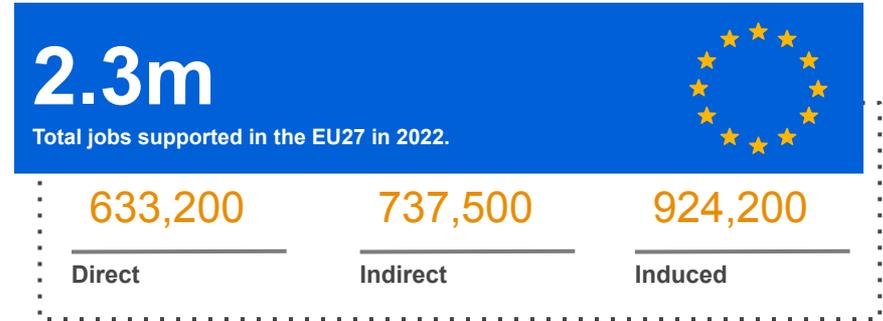
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1

Executive summary

The pharmaceutical sector contributed €311 billion GVA and 2.3 million jobs to the EU27 economy in 2022



For the purpose of this report, 'Europe' and 'European' refers to the EU27, the United Kingdom, Switzerland, and Norway. Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).
PwC

The pharmaceutical industry in Europe is highly productive, driven by consistently high levels of research and innovation



Pharmaceutical R&D has grown on average 4.4% per year since 2010. This has resulted in a strong and growing industry in the manufacture of innovative pharmaceuticals, contributing a total of €311bn of GVA to the EU27 economy in 2022.



The innovative nature of the industry means the manufacture of pharmaceuticals in the EU27 is highly productive. With a GVA per worker of €197,000 the industry is approximately three times as productive as the EU27 economy as a whole, and is more productive than other similar industries.

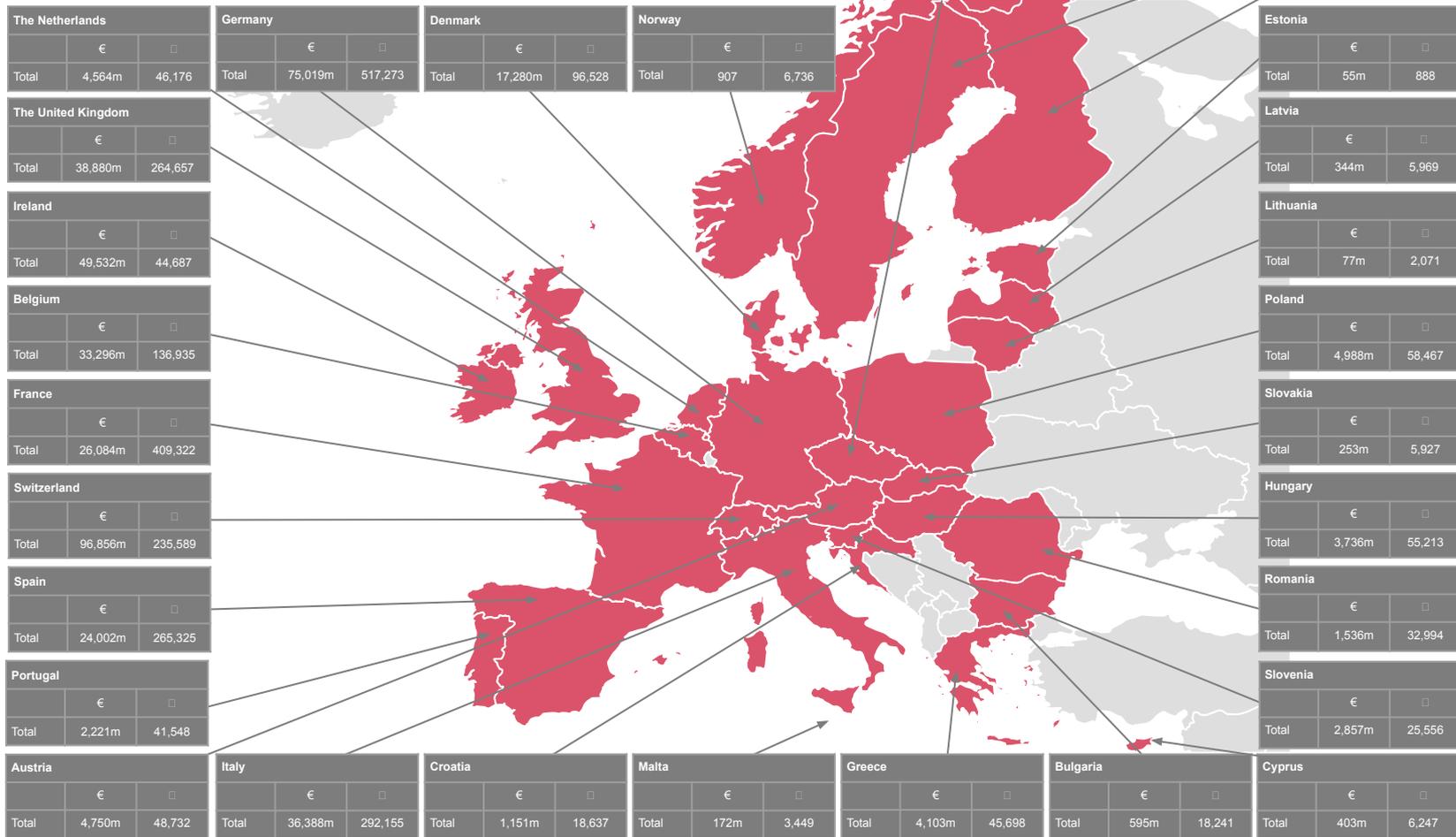


The industry's contribution to EU27 GVA is made up of €163bn direct GVA, €68bn of indirect GVA through the EU27 supply chain, and €80bn of induced GVA through employee spending.



The sector also supported 2.3 million jobs in the EU27 economy, consisting of 633,200 direct employees, 737,500 indirect jobs through the supply chain, and 924,200 jobs induced through direct and indirect employee spending in the economy.

Economic contribution by country



2

Introduction and Context

This economic impact study builds on previous analysis conducted in 2019

The European Federation of Pharmaceutical Industries and Associations (EFPIA) has commissioned PwC to conduct an Economic Impact Assessment for the pharmaceutical industry in Europe, which builds upon previous analysis from 2019¹. The analysis conducted in this report includes the European Union (EU), plus the United Kingdom, Norway, and Switzerland (henceforth referred to as “Europe”).

The aim of this report is to understand the direct and indirect economic impacts of the pharmaceutical industry in Europe in 2022 across three key indicators: Gross Value Added (GVA), employment, and GVA per employee. This allows us to compare performance in 2016 and 2022 and reflect any impacts from the Covid-19 pandemic.

The analysis presented in this report uses an Input-Output model, built using Input-Output tables from the World Input Output Database and data sourced from Eurostat and national statistics authorities (see [appendix](#) for more detail). EFPIA have inputted into the development of the report with information on R&D activities and NME discoveries in the pharmaceutical sector in Europe; PwC analysis of this information and all other data has been independent and EFPIA have not sought to influence this in any way.

The results presented in this report relate to activity as defined under the NACE² code C21 (Manufacture of basic pharmaceutical products and pharmaceutical preparations), consistent with the 2019 analysis. This captures most of the core activity of EFPIA members, and allows for like-for-like comparability. It should be noted that some EFPIA members conduct activity beyond the scope of C21 and therefore will have a larger overall economic footprint.

1 - The previous Economic Impact Assessment is available for download [here](#).

2 - NACE codes are a Europe-wide standard classification for businesses, which allow us to conduct analysis across countries consistently.



Three key themes affect the economic potential of the pharmaceutical industry in Europe



Research and development

- R&D is crucial for the continued advancement of medicines and vaccines.
- Academic research supports the pipeline for the production of new medicines.
- Technological advancement is changing the processes used to manufacture pharmaceutical products, and AI is likely to play a role in the future of the industry.



Rising global competition

- R&D generates innovation which can improve competition globally.
- The distribution of R&D is shifting on a global scale, with increasing competition from China and the US.
- The number of New Molecular Entities (NMEs) originating in Asia is increasing which reflects the changing trend in R&D.



Productivity

- Productivity growth has been slow in Europe since the Financial Crisis.
- The pharmaceutical industry is highly productive in terms of GVA per employee, three times more productive than the European average.
- The sector therefore has the potential to play an important role in driving growth.

R&D is crucial to the continued advancement of pharmaceuticals



€46.2bn

invested in pharmaceutical R&D in Europe¹

Research and development (R&D) in pharmaceuticals means people can benefit from new and often life saving medicines and vaccines.

Global R&D spending in the pharmaceutical sector was **€143.6 billion** in 2022, and Europe accounted for nearly 32.2% of this spending¹. R&D expenditure not only leads to the development and production of new medicines and vaccines, but also the continued growth of the pharmaceutical industry and the surrounding innovative ecosystem.

R&D in the industry is dependent on collaboration with higher education institutions that perform research into new active ingredients for drugs. Innovative collaborations between pharmaceutical companies and higher education institutions lead to discoveries of new molecules that later reach the commercial market². Europe is second only to the US in terms of pharmaceutical R&D spend, and the scale of this research activity is such that **16 of the world's top 50** life science universities are based in Europe³.

1 - Source - EFPIA, PwC analysis - see [appendix](#) for more detail.

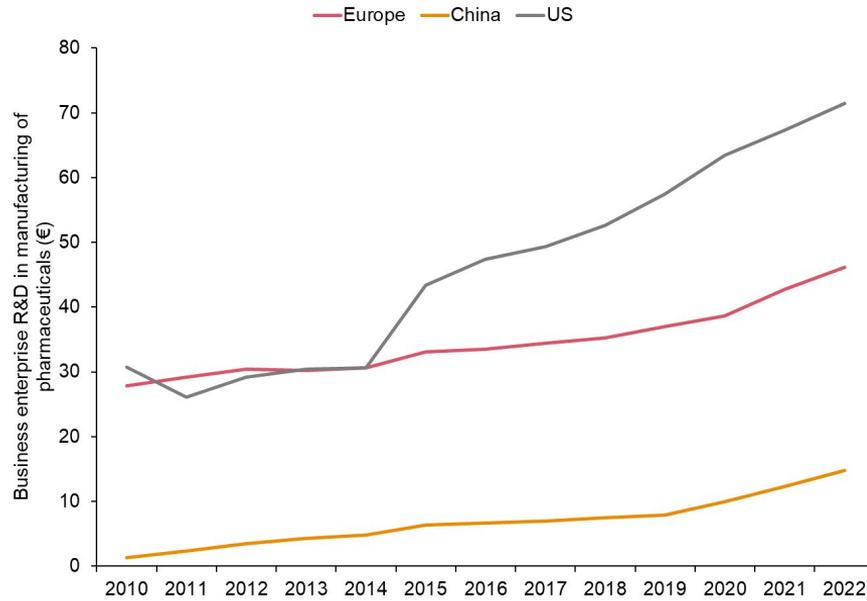
2 - Driving Drug Discovery: The Fundamental Role of Academic Labs (2010). B. Michael Silber - [link](#).

3 - Factors affecting the location of biopharmaceutical investments and implications for European policy priorities report (2022).

R&D spending in Europe has not kept pace with the US, and there is increasing competition from China



Pharmaceutical R&D investment in billion € (annual exchange rate), by territory, from 2010 to 2022



R&D investment in the pharmaceutical sector has been increasing over time in Europe, the US, and China.

Europe and the US had similar levels of R&D expenditure until 2014. Thereafter the US has consistently invested the highest level of R&D in pharmaceuticals, and the gap is widening.

In Europe, R&D expenditure in pharmaceuticals has grown an average of 4.4% each year between 2010 and 2022, from €27.8 billion to €46.2 billion.

In the US, R&D expenditure in pharmaceuticals has grown an average of 5.5% each year over the same period, from €30.7 billion to €71.5 billion.

Whilst in absolute terms R&D investment in China has been growing at a similar rate to Europe since 2010, the China trend starts at a low base such that relative growth is much higher than both Europe and the US in percentage terms. In China, pharmaceutical R&D expenditure has increased by an average of 20.7% each year between 2010 and 2022, from €1.7 billion to €14.8 billion.

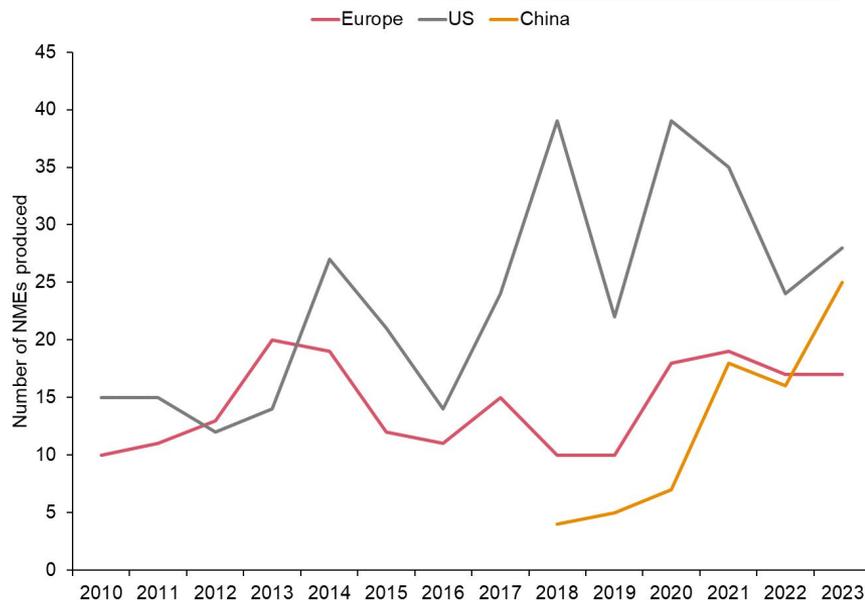
Source - EFPIA, PwC analysis - see [appendix](#) for more detail.

Note that Estonia, Latvia, Lithuania, Malta, and Slovakia are excluded from "Europe" total here due to the lack of availability of data, and data for Bulgaria is included from 2017 onwards.

R&D spend is reflected in NME discoveries worldwide



Number of NMEs originating in Europe, the US and China, from 2010 to 2023



There are a growing number of New Molecular Entities (NMEs) originating in China and the number of NMEs being produced in Europe has fallen since 2021.

NMEs are new drugs with an active ingredient that is marketed on the world market for the first time; their discovery is a key product of R&D activity.

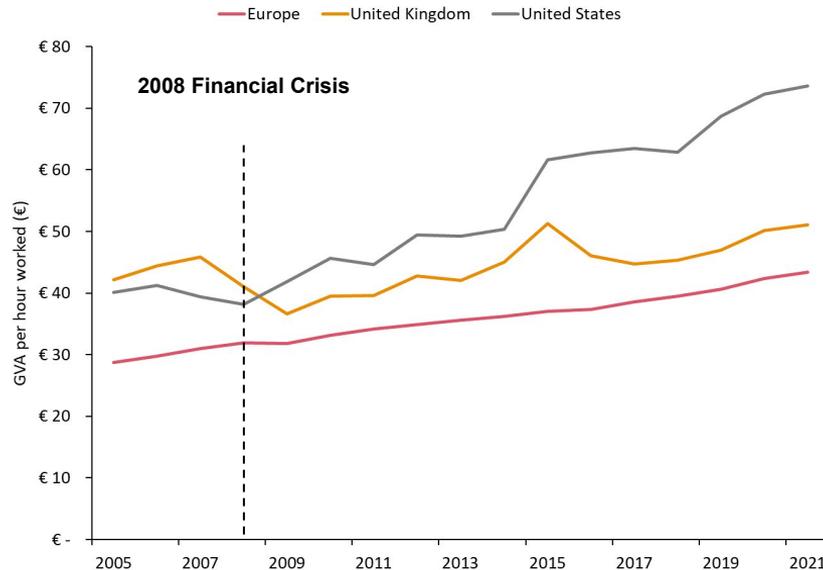
NME growth has been increasing in China since 2018 (the first available year of data). Despite investment being approximately 32% of European investment in 2022, China achieved a similar number of NMEs in 2022 and more than Europe in 2023. NME discoveries were similar between US and Europe until 2013, with significant divergence since (reflecting higher US R&D spend).

Between 2018 and 2023, 91 NMEs originated in Europe. This compares to 187 NMEs from the US and 75 NMEs from China.

Europe has been experiencing low productivity growth relative to the US since the financial crisis



GVA per hour worked in Europe (EU27), UK and the US, from 2005 to 2021



Prior to the 2008 financial crisis, GVA per hour worked was similar in the US and UK, and approximately 25% lower in the EU27.

Between 2008 and 2021, US productivity per hour has close to doubled. Over the same period productivity in the UK and EU27 has grown at a much slower rate, with US GVA per hour around double that of the EU27 and around a third higher than the UK in 2021. As a result, there is significant focus on improving productivity amongst policymakers.

The pharmaceutical industry is highly productive. In every country analysed in this report, productivity per worker is higher in the pharmaceutical industry than in the economy as a whole. Investment in the sector therefore has potential to contribute to regaining momentum in productivity growth.

Source - GVA data from World data, Employment data from OECD, Hours worked per employee data from OECD, PwC analysis. Note that the annual exchange rate is used to convert all figures from USD to euros. 'Europe' includes EU27 countries.

Our results suggest the pharmaceutical industry in the EU27 has a key role to play in productivity growth



The average GVA per worker in the pharmaceutical sector in the EU27 is **3 times higher** than in the EU27 economy as a whole.

	Pharmaceuticals €197,200		Whole economy in the EU27 €62,500
	Auto manufacturing €65,400		Computer programming €75,100
	Aerospace manufacturing €61,200		Telecommunications €159,400
	Financial services €174,800		Information service activities €66,800

The pharmaceutical industry is highly productive compared to similar key industries. For example, it is **23.7%** more productive than telecommunications and **12.8%** more productive than financial services.

Source: Eurostat, PwC analysis.

Note: The latest data available for other industries was 2021 to produce the average EU27 productivity level for each sector, and these are compared to the 2022 results for the pharmaceutical industry. GVA per employee is rounded to the nearest hundred for other EU27 industries.

Our results suggest the pharmaceutical industry in Europe has a key role to play in productivity growth



The average GVA per worker in the pharmaceutical sector in the Europe is **3 times higher** than in the European economy as a whole.

	Pharmaceuticals €225,300		Whole economy in Europe €69,600
	Auto manufacturing €65,400		Computer programming €75,100
	Aerospace manufacturing €61,200		Telecommunications €164,100
	Financial services €175,800		Information service activities €67,800

The pharmaceutical industry is highly productive compared to similar key industries. For example, it is **37.3%** more productive than telecommunications and **28.2%** more productive than financial services.

Source: Eurostat, PwC analysis. The UK is not included in these figures as data were not reported to Eurostat.

Note: The latest data available for other industries was 2021 to produce the average European productivity level for each sector, and these are compared to the 2022 results for the pharmaceutical industry. GVA per employee is rounded to the nearest hundred for other European industries.

3

Methodology

We define the pharmaceutical industry using NACE code C21 and measure its impact in terms of GVA and employment

For consistency with the 2019 report, and for compatibility between economies, **this report defines the pharmaceutical industry in terms of NACE 21.100 (the manufacture of basic pharmaceutical products) and NACE 21.200 (pharmaceutical preparations)**. This definition captures the core activity of EFPIA members, however it should be noted that some EFPIA members conduct activity beyond the scope of C21 and therefore will have a larger overall economic impact. For full details of the methodology, please refer to the [appendix](#).

We assess the economic impact of the pharmaceutical industry using three key metrics:

Gross Value Added (GVA)	<p>A measure for assessing the economic contribution of a company, industry, or sector. GVA is equivalent to GDP, after excluding taxes on products (including imports), and adding subsidies on products (including any on imports).</p> <p>This measure is used in order to avoid potential double-counting, as it only includes the 'value added' at each stage of production. It is used to communicate the total value created at industry level, including wages, profits, and other contributions that bring value within the production process.</p>
Employment	<p>The number of people who work for a sector, who have a contract of employment and receive compensation in the form of salaries. This is the number of jobs supported by the industry, both directly through employing workers in the sector, and more broadly in the economy as described below. For the purposes of this report we use the International Labour Organisation (ILO) definition of employment¹.</p>
GVA per employee	<p>GVA per employee is comparable over time and across industries, as a proxy measure for the skill level of employees. In other terms it is the value created per worker.</p>

1 - The International Labour Organisation (ILO) defines an employed person as anyone aged 16, or over, who has completed at least one hour of work in the reference week, or is temporarily away from his or her job, such as being on holiday.

GVA and employment data is sourced from Eurostat, or equivalent domestic statistics agencies

Data Sourcing

Enterprise accounts are the preferred data source as this method is based on data on the market activities of firms in an industry. GVA is calculated from the value added at factor costs, i.e. the gross income from operating activities after adjusting for operating subsidies and indirect taxes.

Using the same input data methodology for each nation ensures comparability across nations. Enterprise data is therefore used for all nations except the UK; the rationale for this is explained in more depth in [here](#).

Adjustments to raw input data

Where enterprise data is not available for 2022 we use the most recent available data and apply national growth rates from national accounts data.

In some cases this method was not reliable, and we therefore apply the C21 share of production from national accounts data to total GVA. Full details are available [here](#) for data sources, and [here](#) for alternative methods.

All data for GVA was quantified in “value added at factor cost - million euro” and all 2020 figures are adjusted for inflation up to 2022 using the Eurostat HICP index (the UK is adjusted using the CPI index, which is directly comparable).



Using this data, we built an input-output model to estimate the direct, indirect, and induced impact of the industry

Type I Multiplier

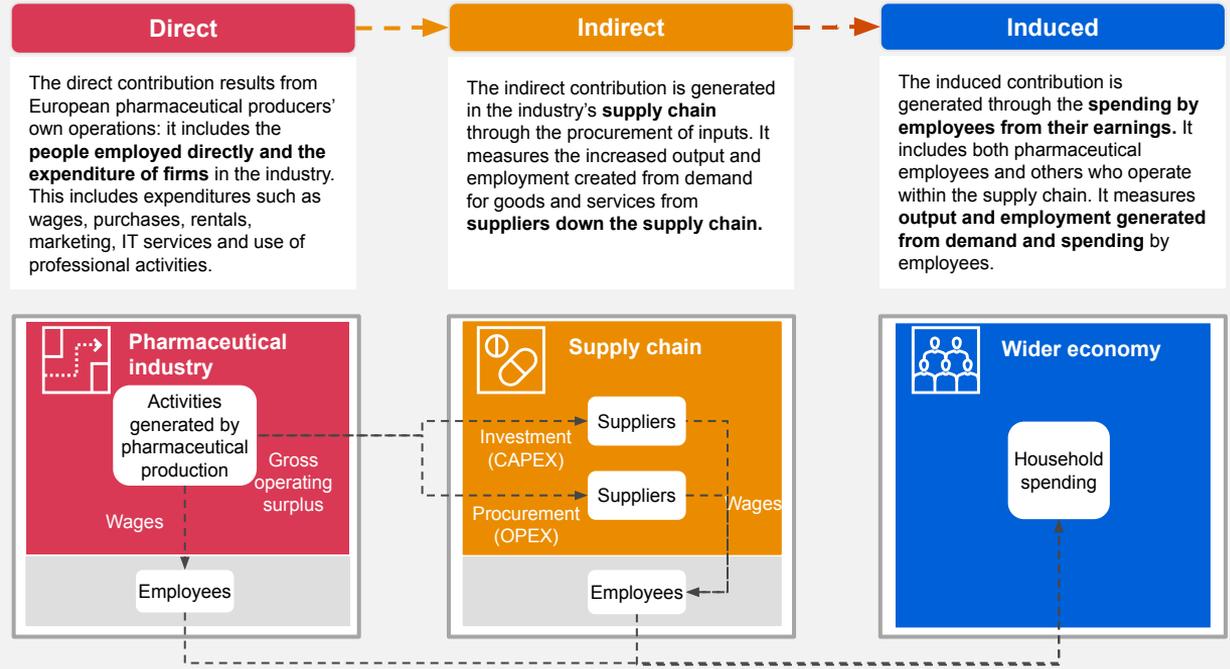


Type I multipliers estimate the impact on the **supply chain** as a result of the change in direct contribution. In other words Type I multipliers sum together **direct and indirect effects**.

Type II Multiplier



Type II multipliers capture the **direct, indirect and also induced** effects resulting from a change in direct contribution.



4

Economic impact
assessment results

4.1

Results

EU27

The pharmaceutical industry in the EU27 contributed €311bn to GVA in 2022, and supported 2.3 million jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	107,600	48,100	57,800
2022	162,700	68,000	80,200

The total GVA impact of the pharmaceutical industry in the EU27 has **increased by 7.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

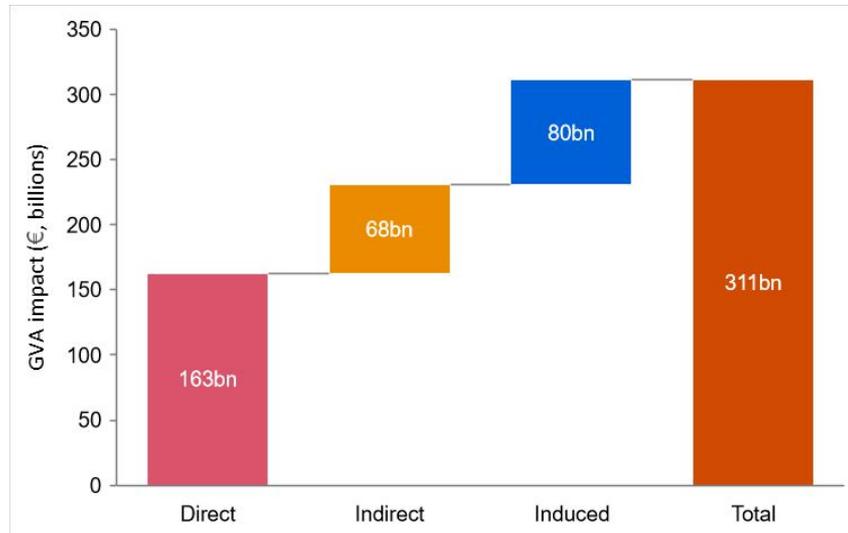
	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	558,300	659,600	824,600
2022	633,200	737,500	924,200

The total employment contribution of the pharmaceutical industry in the EU27 has **increased by 2.1% per year** between 2016 and 2022.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability. Percentage increases from 2016 to 2022 are calculated using a total that excludes Norway for comparison purposes.

The pharmaceutical industry supports a total of 2.0% of the EU27's GVA

Pharmaceutical GVA in € millions for the EU27, in 2022.

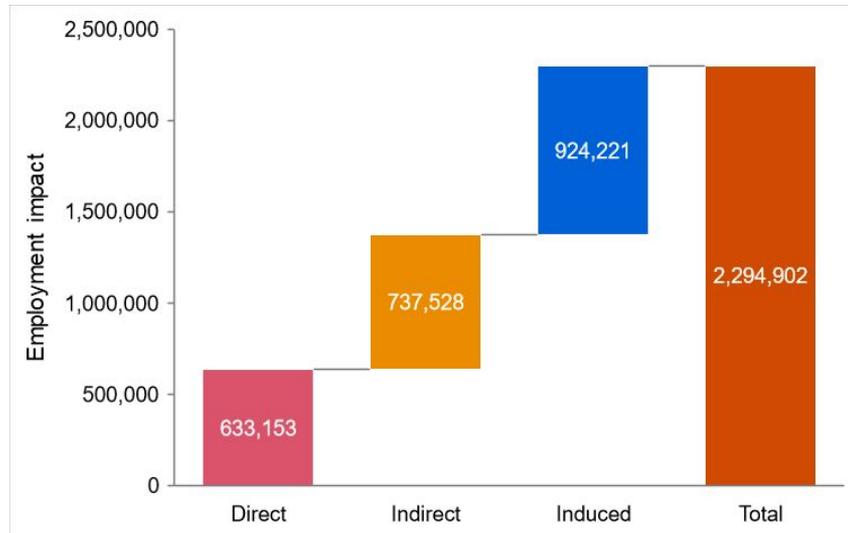


In 2022, the EU27 pharmaceutical industry contributed approximately **€311 billion** to EU27 GVA.

- This is made up of:
 - A direct impact from business operations of €163 billion. This accounts for 6.8% of direct GVA in the manufacturing industry.
 - An indirect impact of €68 billion arising from pharmaceutical manufacturing supply chains.
 - €80 billion induced impact arising from workers' spending.
- For every €1 contributed directly to the EU27 economy by the pharmaceutical industry, €1.91 is supported across the economy.
- Total GVA in this sector accounts for 2.0% of the total GVA in the EU27 economy.
- Growth in this sector has been persistent despite the economic challenges that the EU27 nations have been facing in recent years.

The pharmaceutical industry supports 2.3 million jobs across the EU27

Pharmaceutical employment for the EU27, in 2022



In 2022, the EU27 pharmaceutical industry supported **2.3 million jobs** in the EU27 economy.

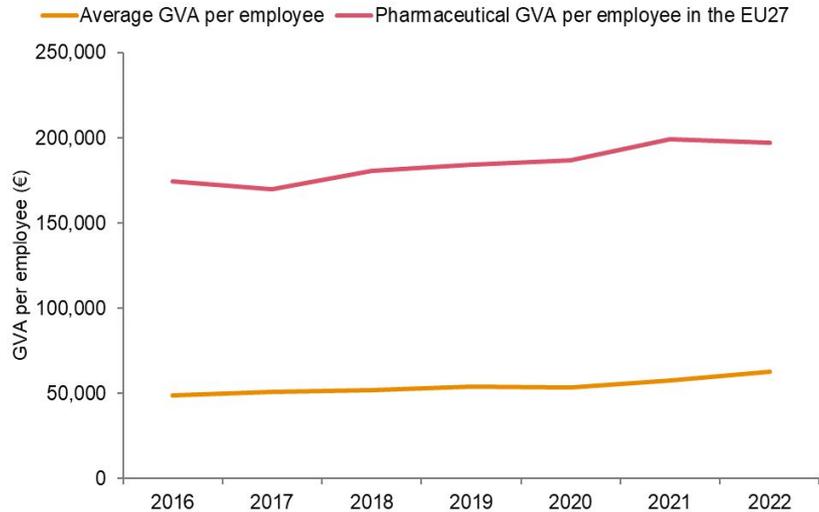
- This is made up of:
 - 633,200 people employed directly by the industry.
 - 737,500 people employed in the industry's supply chain.
 - 924,200 jobs that are supported by pharmaceutical and supply chain workers spending money in the economy.
- The total employment generated by the pharmaceutical sector accounts for 1.0% of the total employment in the EU27¹, and 7.6% of the total manufacturing employment in the EU27.

Source: PwC analysis

1 - National Accounts Employment Data by Industry (Eurostat) - [Link](#), number of People in Employment (ONS) - [Link](#).

Direct GVA per employee in the pharmaceutical industry has seen steady growth over time

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA in the EU27, 2016-2022



Productivity in the EU27 pharmaceutical sector has increased from **€169,600** to **€197,200** from 2016 to 2022, a total increase of 16.3% in real terms.

- EU27 productivity across all sectors over time has been relatively flat between 2016 and 2022.
- The productivity in the manufacture of pharmaceuticals sector is growing relatively faster compared to other sectors.
- Employees in the pharmaceutical industry contribute over three times as much direct GVA per employee than the EU27 average in 2022: €197,200 relative to the EU27 average of €62,500.

The EU27 pharmaceutical industry directly contributes an average **€197,200** of direct GVA for every direct employee in 2022. This represents a **2.7% increase per year in real terms** from the 2016 figure.

Source: PwC analysis.

Note that data over time was not available for Ireland so this figure includes an interpolation to produce data in the range between 2016 and 2022.

4.2

Results

Europe

The pharmaceutical industry in Europe contributed €448bn to GVA in 2022, and supported 2.8 million jobs

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	154,600	72,600	88,800
2022	225,200	102,000	120,400

The total GVA impact of the pharmaceutical industry in Europe has **increased by 6.9% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

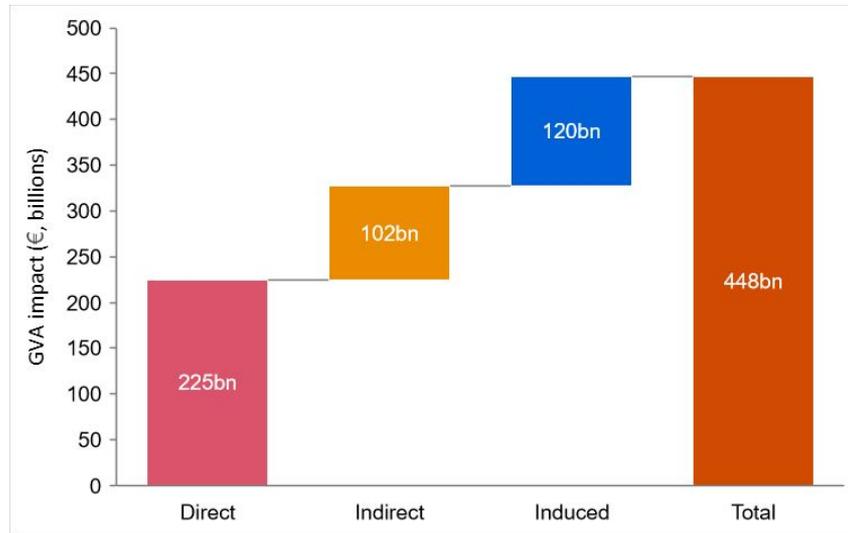
	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	643,400	785,400	1,068,600
2022	729,600	879,300	1,193,500

The total employment contribution of the pharmaceutical industry in Europe has **increased by 2.2% per year** between 2016 and 2022.

Note: 2016 figures are from the previous (2019) iteration of the report, but have been inflation-adjusted to 2022 prices for comparability. Percentage increases from 2016 to 2022 are calculated using a total that excludes Norway for comparison purposes.

The pharmaceutical industry supports a total of 2.6% of Europe's GVA

Pharmaceutical GVA in € millions for Europe, in 2022.



In 2022, the European pharmaceutical industry contributed approximately **€448 billion** to European GVA.

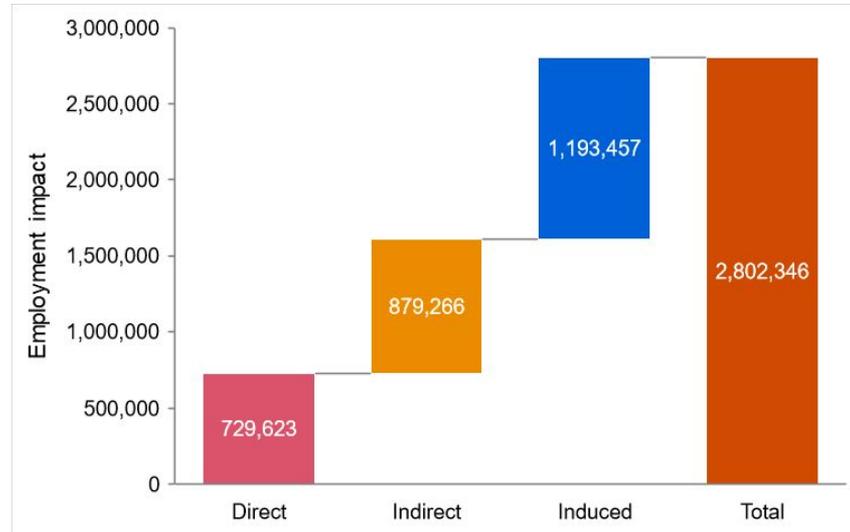
- This is made up of:
 - A direct impact from business operations of €225 billion. This accounts for 8.1% of direct GVA in the manufacturing industry.
 - An indirect impact of €102 billion arising from pharmaceutical manufacturing supply chains.
 - €120 billion induced impact arising from workers' spending.
- For every €1 contributed directly to the European economy by the pharmaceutical industry, €1.98 is supported across the economy.
- Total GVA in the sector accounts for 2.6% of the total GVA in Europe.
- Growth in the sector has been persistent despite the economic challenges that the European nations have been facing in recent years.

Source: PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry supports 2.8 million jobs across Europe

Pharmaceutical employment for Europe, in 2022



In 2022, the European pharmaceutical industry supported **2.8 million jobs** in the European economy.

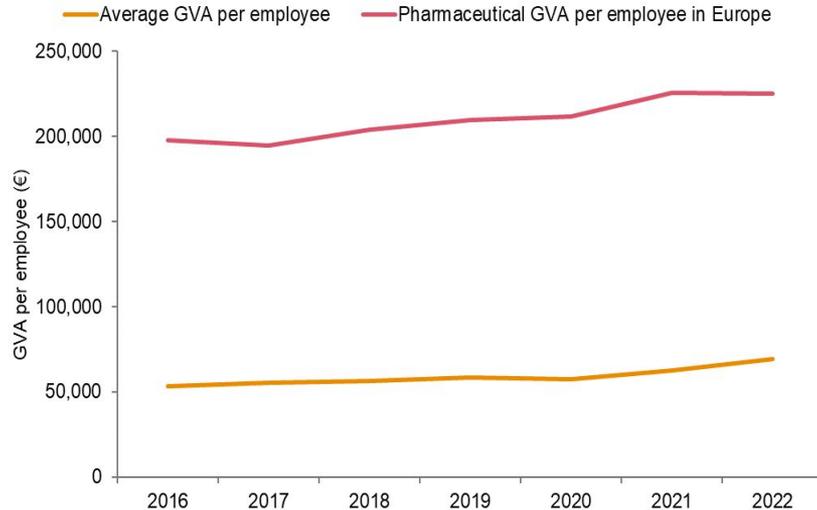
- This is made up of:
 - 729,600 people employed directly by the industry.
 - 879,300 people employed in the industry's supply chain.
 - 1,193,500 jobs that are supported by pharmaceutical and supply chain workers spending money in the economy.
- The jobs supported by the pharmaceutical sector account for 1.3% of employment in Europe¹, and 7.7% of the total manufacturing employment in Europe.

Source: PwC analysis.

1 - National Accounts Employment Data by Industry (Eurostat) - [Link](#), number of People in Employment (ONS) - [Link](#).

Direct GVA per employee in the pharmaceutical industry has seen steady growth over time

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA in Europe, 2016-2022



Productivity in the European pharmaceutical sector has increased from **€195,100** to **€225,300** between 2016 and 2022, a total increase of 15.4% in real terms.

- European productivity across all sectors over time has been relatively flat between 2016 and 2022.
- The productivity in the manufacture of pharmaceuticals sector is growing relatively faster compared to other sectors.
- Employees in the pharmaceutical industry contribute over three times as much direct GVA per employee than the European average in 2022: €225,300 relative to the European average of €69,200.

The European pharmaceutical industry directly contributes an average **€225,300** of direct GVA for every direct employee in 2022. This represents a **2.6% increase per year in real terms** from the 2016 figure.

Source: PwC analysis.

Note that data over time was not available for Ireland so this figure includes an interpolation to produce data in the range between 2016 and 2022.

PwC

4.3

Results

Country
by country

Click the country name to navigate to the individual results

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The pharmaceutical industry in Austria contributed €4.75bn to GVA in 2022, and supported 48,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	2,200	800	1,200
2022	2,500	900	1,300

The total GVA impact of the pharmaceutical industry in Austria has **increased by 2.4% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	14,700	8,700	13,800
2022	19,200	11,400	18,100

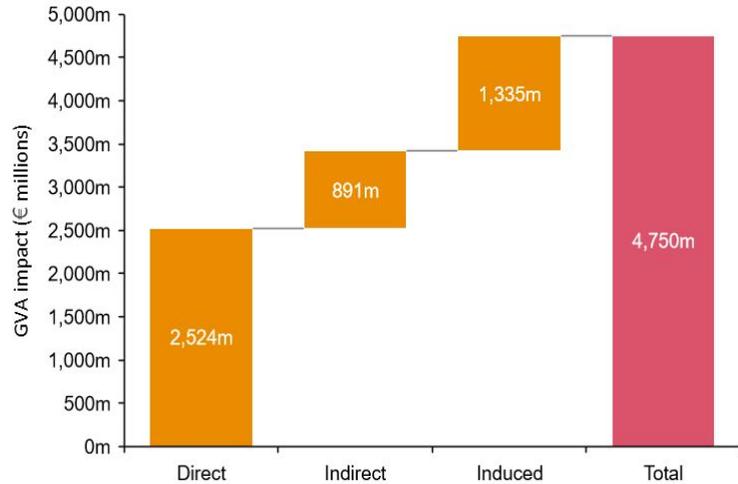
The total employment impact of the pharmaceutical industry in Austria has **increased by 5.2% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

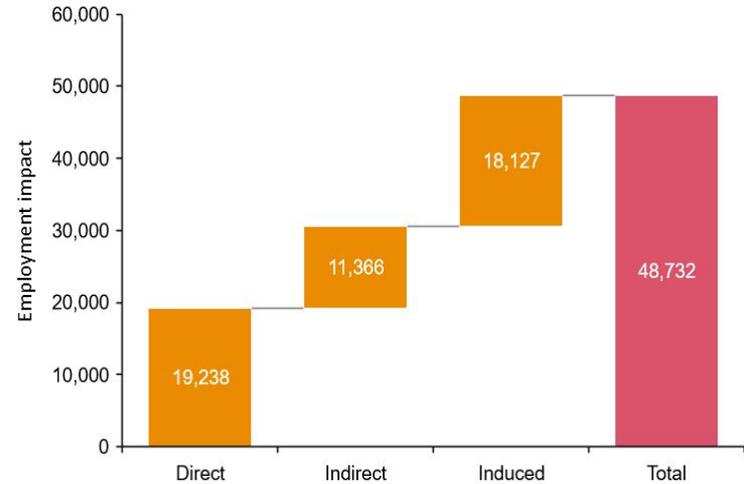
The pharmaceutical industry in Austria contributed €4.75bn to GVA in 2022, and supported 48,000 jobs across the economy

GVA contribution of the pharmaceutical industry in Austria, 2022



For every €1 contributed directly to Austria by the pharmaceutical sector, €1.88 is supported across the economy.

Employment contribution of the pharmaceutical industry in Austria, 2022



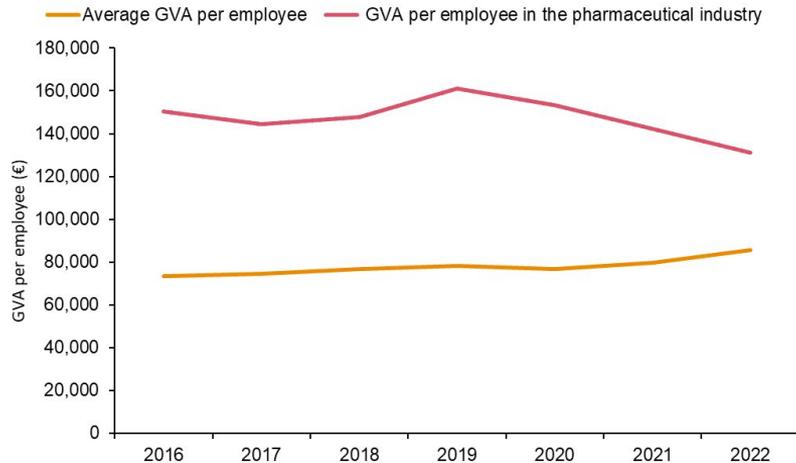
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 7.3% of total manufacturing employment in Austria.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Austria generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Austria, 2016-2022



The productivity of the pharmaceutical industry in Austria is on average 89.7% higher than the average productivity of all industries between 2016 and 2022.

- Pharmaceutical employment has been growing at a faster rate than GVA and thus GVA per employee has been decreasing since 2016.
- GVA per employee is fairly stable from 2016 to 2019, at which point it begins to decrease. This is driven by a higher growth rate per year of direct employment between 2019 and 2022 (4.2%), versus the direct GVA real growth rate per year (-2.7%).
- The peak GVA per employee in 2019 could be partly attributed to the large investment by €283 million investment in R&D by Austrian pharmaceutical companies in 2019¹.

The pharmaceutical industry directly contributes an average **€131,200** of direct GVA for every employee in 2022. This represents a **2.1% decrease per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis. 2020 enterprise data updated with national accounts growth rate to 2022.

1 - Facts & Figures 2023 Medicinal Products and Health Care in Austria, PHARMIG - [link](#).

The pharmaceutical industry in Belgium contributed €33.3bn to GVA in 2022, and supported 137,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	10,500	4,800	3,900
2022	18,200	8,300	6,700

The total GVA impact of the pharmaceutical industry in Belgium has **increased by 12.3% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	35,700	45,500	31,200
2022	43,500	55,400	38,000

The total employment impact of the pharmaceutical industry in Belgium has **increased by 3.6% per year** between 2016 and 2022.

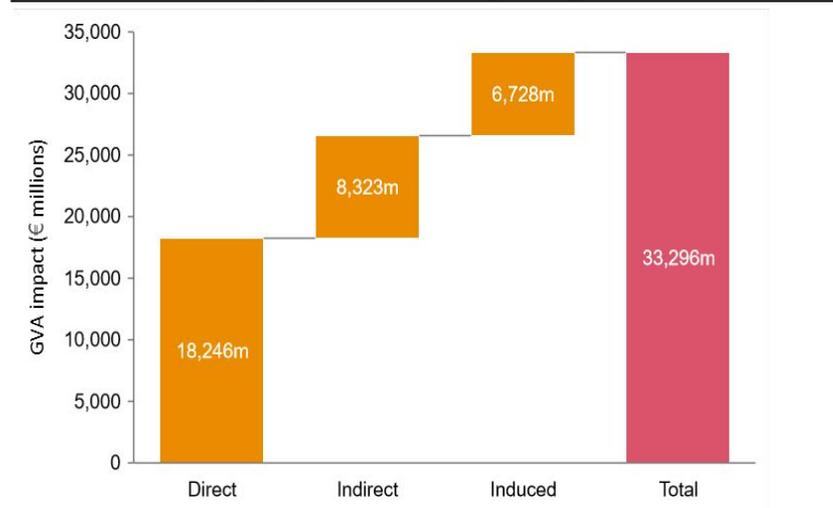
Source: GVA (Eurostat), employment (ONSS), PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The scope of the official NACE C21 'Manufacture of basic pharmaceutical products and pharmaceutical preparations' as a main classification of economic activities is too limited to capture the complete impact of the pharmaceutical industry in Belgium and would negatively bias results. A substantial part of Belgian's pharmaceutical R&D comes from companies which do not have NACE C21 as main classification, but NACE M72 'Scientific research and development' instead. Belgium has a significant number of active companies involved in international trade of pharmaceuticals that do not have NACE C21 as their main classification, but NACE G46 'Wholesale trade'.

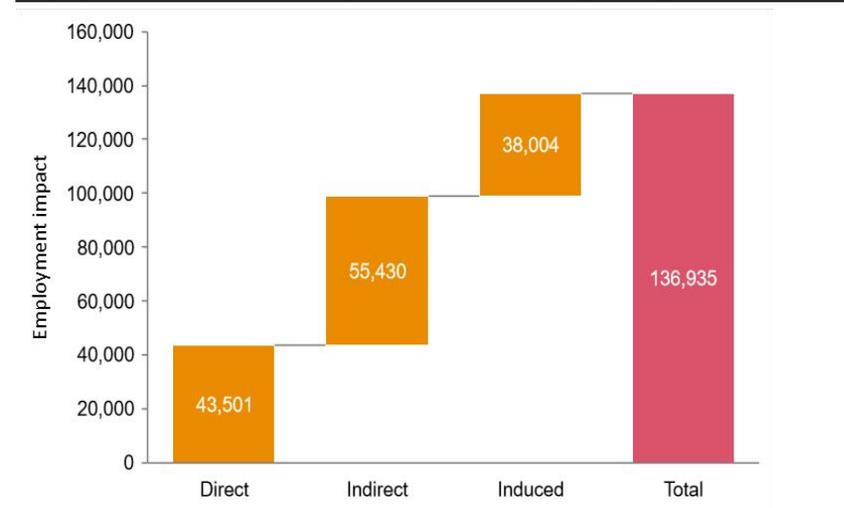
The pharmaceutical industry in Belgium contributed €33.3bn to GVA in 2022, and supported 137,000 jobs across the economy

GVA contribution of the pharmaceutical industry in Belgium, 2022



For every €1 contributed directly to Belgium by the pharmaceutical sector, €1.82 is supported across the economy.

Employment contribution of the pharmaceutical industry in Belgium, 2022



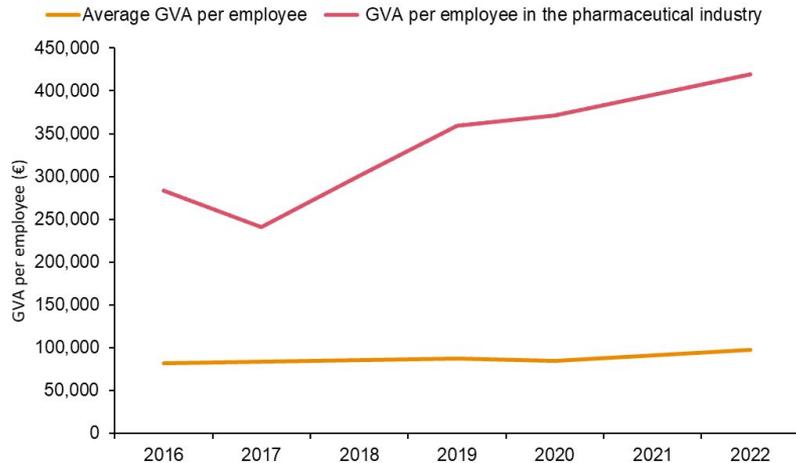
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 26.7% of total manufacturing employment in Belgium.

Source: GVA (Eurostat), employment (ONSS), PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Belgium generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Belgium, 2016-2022



The productivity of the pharmaceutical industry in Belgium is on average 290.7% higher than the average productivity of all industries between 2016 and 2022.

- GVA has been growing at a faster rate than employment and thus GVA per employee has been increasing since 2017.
- Direct GVA in pharmaceuticals increased 19.3% per year in real terms between 2017 and 2022, whilst direct employment increased 2.6% per year in the same period.
- Large growth in GVA since 2017 can be linked to growth in R&D expenditure. R&D investment in the pharmaceutical sector has increased from €3.8 billion to €5.7 billion, 2017 to 2022¹.

The pharmaceutical industry directly contributes an average **€419,400** of direct GVA for every employee in 2022. This represents a **7.1% increase per year in real terms** from the 2016 value.

Source: GVA (Eurostat), employment (ONSS), PwC analysis.

1 - Source: EFPIA data.

The pharmaceutical industry in Bulgaria contributed €595m to GVA in 2022, and supported 18,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	200	100	100
2022	300	100	200

The total GVA impact of the pharmaceutical industry in Bulgaria has **increased by 7.3% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	8,500	5,100	7,600
2022	7,300	4,400	6,600

The total employment impact of the pharmaceutical industry in Bulgaria has **decreased by 2.3% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

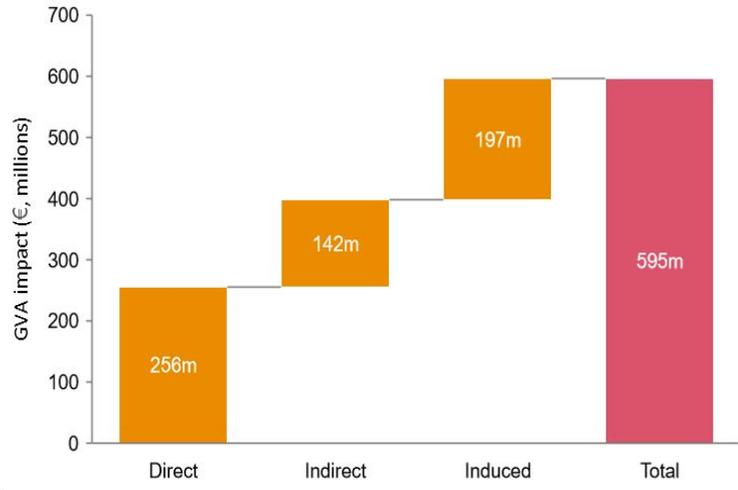
Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

For employment, 2020 enterprise data updated with national accounts growth rate to 2022. For GVA, method 1 used - 2019 enterprise data updated using growth rate from a range with the upper bound of 25% (Slovenia) and the lower bound of 3% (Cyprus).

Note that values presented for direct GVA for Bulgaria are median figures of the range 232 to 281. The indirect GVA range is 128 to 155. The induced range is 179 to 216. This leads to a total impact range of 538 to 652. All figures are in €m.

The pharmaceutical industry in Bulgaria contributed €595m to GVA in 2022, and supported 18,200 jobs across the economy

GVA contribution of the pharmaceutical industry in Bulgaria, 2022



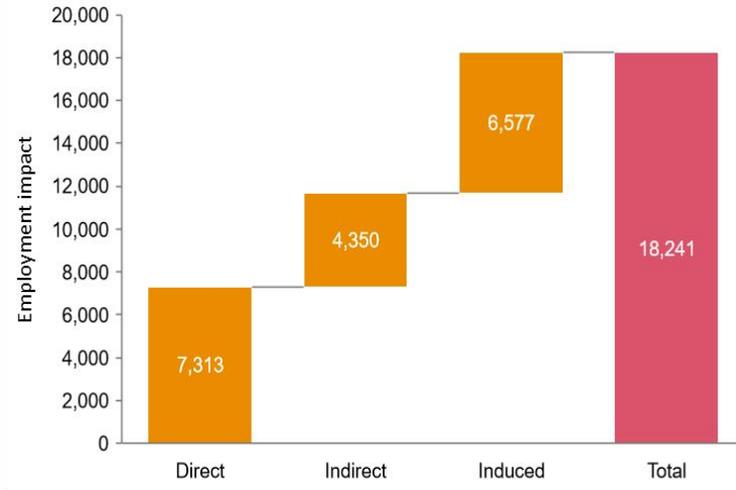
For every €1 contributed directly to Bulgaria by the pharmaceutical sector, €2.32 is supported across the economy.

Source: Eurostat, PwC analysis.

For employment, 2020 enterprise data updated with national accounts growth rate to 2022. For GVA, method 1 used - 2019 enterprise data updated using growth rate from a range with the upper bound of 25% (Slovenia) and the lower bound of 3% (Cyprus).

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

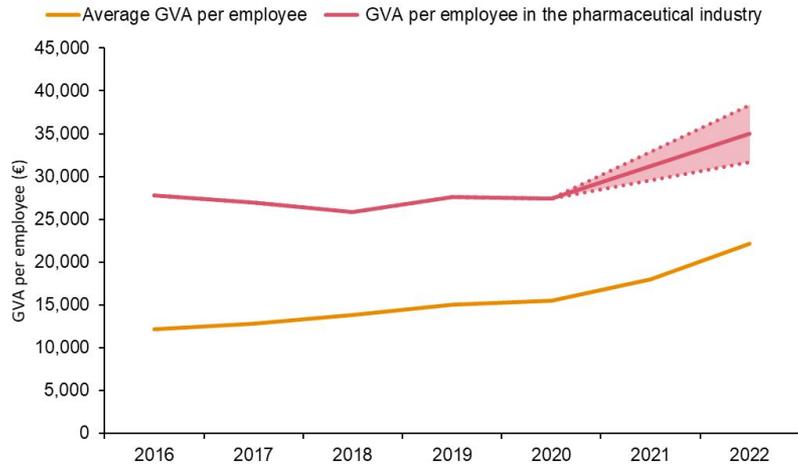
Employment contribution of the pharmaceutical industry in Bulgaria, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 3.1% of total manufacturing employment in Bulgaria.

The pharmaceutical industry in Bulgaria generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Bulgaria, 2016-2022



The productivity of the pharmaceutical industry in Bulgaria is on average 86.1% higher than the average productivity of all industries between 2016 and 2022.

- GVA increased between 2016 and 2022 but employment has declined slightly since 2020, thus GVA per employee has been increasing.
- Direct GVA in pharmaceuticals increased 4.6% per year in real terms between 2019 and 2022, whilst direct employment fell by 3.5% per year in the same period.
- This generates the large increase in GVA per employee observed since 2019 and suggests that workers are becoming more productive over time in the pharmaceutical sector.

The pharmaceutical industry directly contributes an average **€35,000** of direct GVA for every employee in 2022. This represents a **11.2% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

For employment, 2020 enterprise data updated with national accounts growth rate to 2022. For GVA, method 1 used - 2019 enterprise data updated using growth rate from a range with the upper bound of 25% (Slovenia) and the lower bound of 3% (Cyprus).

The pharmaceutical industry in Croatia contributed nearly €1.2bn to GVA in 2022, and supported 18,600 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	400	200	200
2022	600	300	300

The total GVA impact of the pharmaceutical industry in Croatia has **increased by 9.1% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	4,900	4,300	6,800
2022	5,700	5,000	7,900

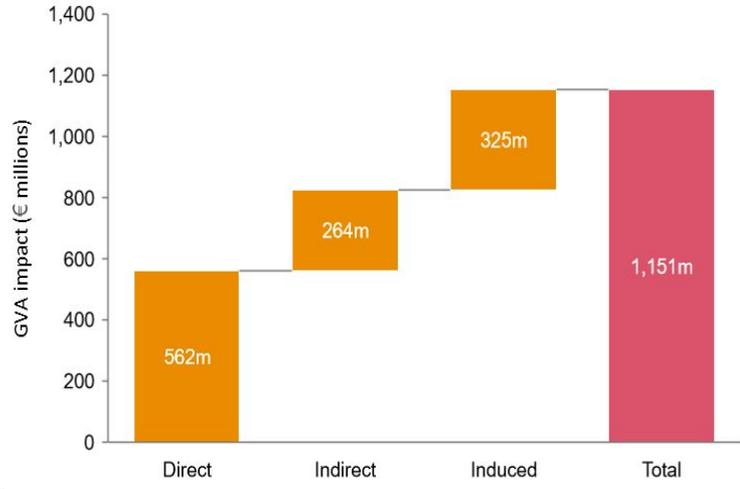
The total employment impact of the pharmaceutical industry in Croatia has **increased by 2.7% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Croatia contributed nearly €1.2bn to GVA in 2022, and supported 18,600 jobs across the economy

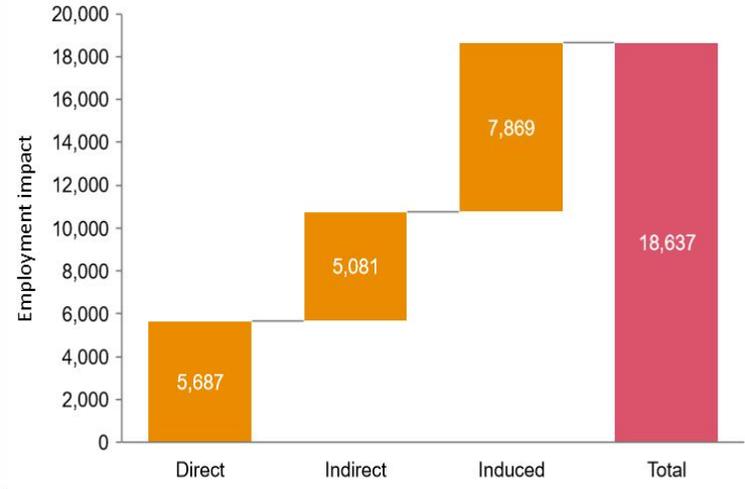
GVA contribution of the pharmaceutical industry in Croatia, 2022



For every €1 contributed directly to Croatia by the pharmaceutical sector, €2.05 is supported across the economy.

Source: Eurostat, PwC analysis.

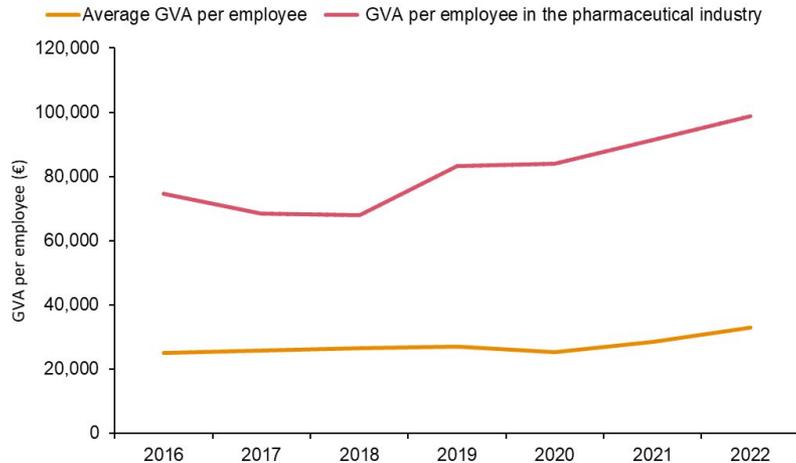
Employment contribution of the pharmaceutical industry in Croatia, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 6.2% of total manufacturing employment in Croatia.

The pharmaceutical industry in Croatia generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Croatia, 2016-2022



The productivity of the pharmaceutical industry in Croatia is on average 199.9% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment have steadily increased between 2016 and 2022. GVA is increasing at a higher rate than employment.
- Direct GVA in pharmaceuticals increased 6.7% per year in real terms between 2019 and 2022, whilst direct employment increased by 0.4% per year in the same period.
- This generates the large increase in GVA per employee observed from 2019 onwards and the pharmaceutical industry in Croatia is growing, in terms of GVA.

The pharmaceutical industry directly contributes an average **€98,800** of direct GVA for every employee in 2022. This represents a **5.5% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Cyprus contributed €400m to GVA in 2022, and supported 6,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	100	40	100
2022	200	60	200

The total GVA impact of the pharmaceutical industry in Cyprus has **increased by 8.9% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,600	700	2,100
2022	2,200	1000	3,000

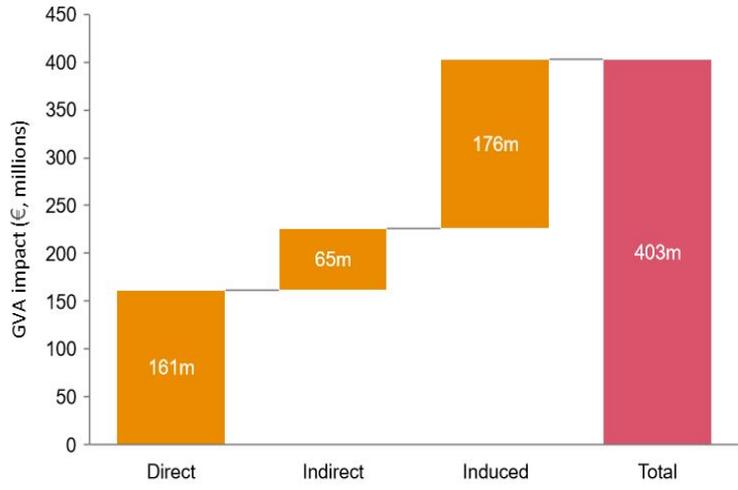
The total employment impact of the pharmaceutical industry in Cyprus has **increased by 7.0% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

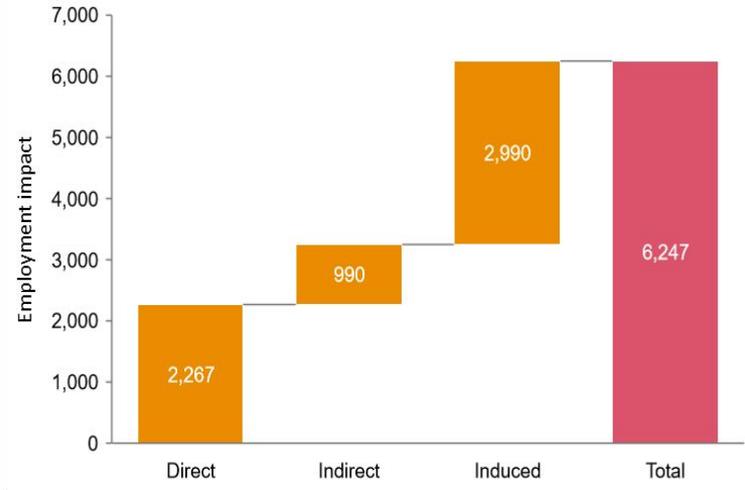
The pharmaceutical industry in Cyprus contributed €400m to GVA in 2022, and supported 6,200 jobs across the economy

GVA contribution of the pharmaceutical industry in Cyprus, 2022



For every €1 contributed directly to Cyprus by the pharmaceutical sector, €2.50 is supported across the economy.

Employment contribution of the pharmaceutical industry in Cyprus, 2022



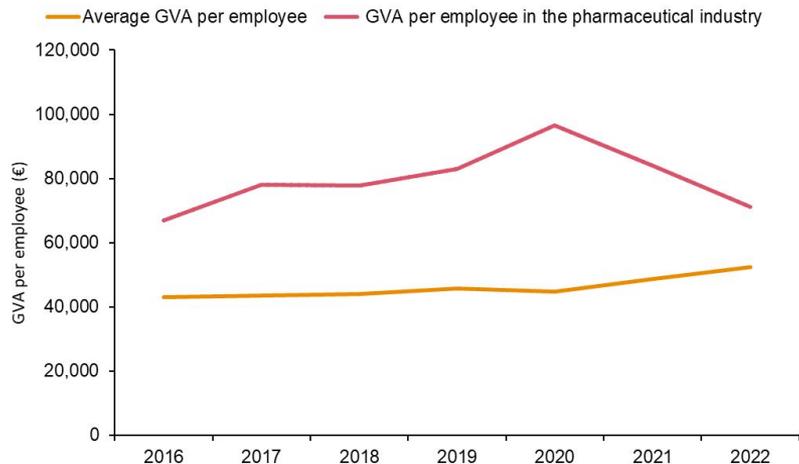
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 16.7% of total manufacturing employment in Cyprus.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Cyprus generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Cyprus, 2016-2022



The productivity of the pharmaceutical industry in Cyprus is on average 73.6% higher than the average productivity of all industries between 2016 and 2022.

- Both GVA and employment have been increasing since 2016.
- GVA per worker is fairly steady over time, with the exception of 2020 in which there was a spike in GVA. This is likely related to short-term impacts of the Covid-19 pandemic on the industry.
- Direct GVA in pharmaceuticals increased 8.9% per year in real terms between 2016 and 2022, whilst direct employment increased by 7.0% per year in the same period.

The pharmaceutical industry directly contributes an average **€71,200** of direct GVA for every employee in 2022. This represents a **1.4% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Czechia contributed nearly €1.9bn to GVA in 2022, and supported 31,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	600	300	300
2022	900	500	400

The total GVA impact of the pharmaceutical industry in Czechia has **increased by 9.9% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	9,600	9,800	7,200
2022	11,300	11,500	8,400

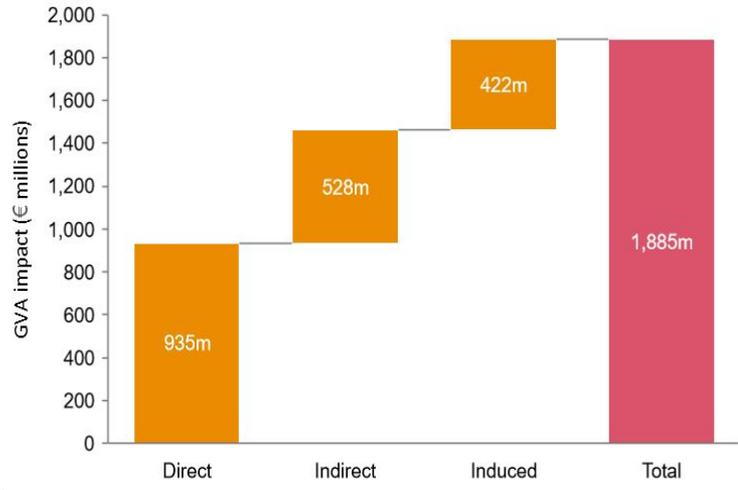
The total employment impact of the pharmaceutical industry in Czechia has **increased by 2.8% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

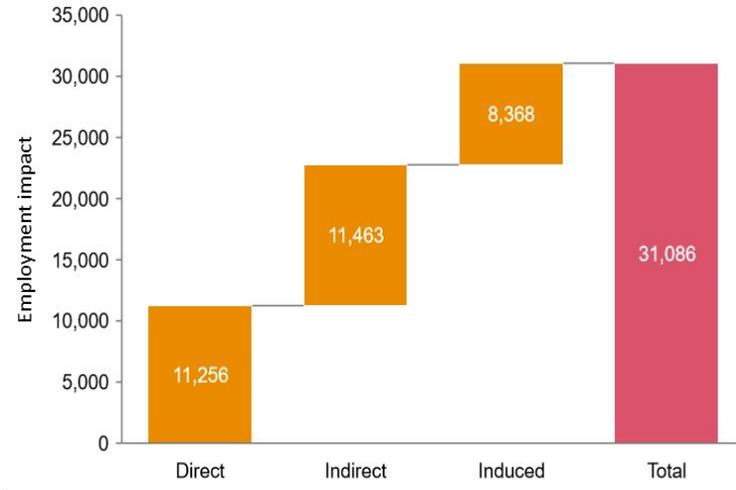
The pharmaceutical industry in Czechia contributed nearly €1.9bn to GVA in 2022, and supported 31,000 jobs across the economy

GVA contribution of the pharmaceutical industry in Czechia, 2022



For every €1 contributed directly to Czechia by the pharmaceutical sector, €2.02 is supported across the economy.

Employment contribution of the pharmaceutical industry in Czechia, 2022



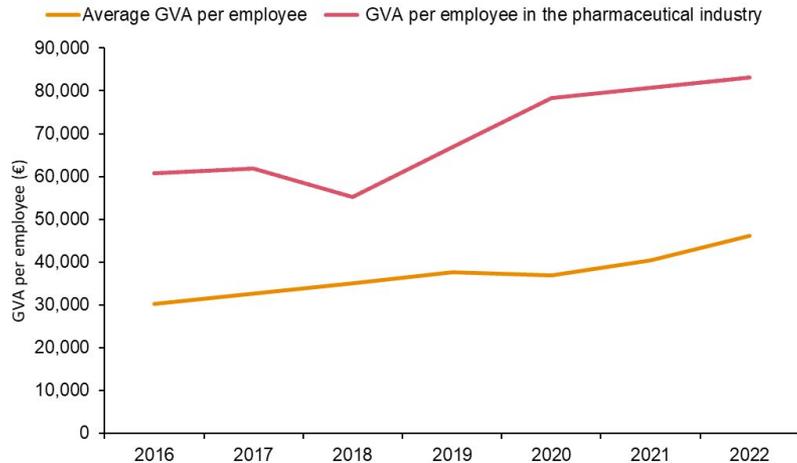
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 2.2% of total manufacturing employment in Czechia.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Czechia generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Czechia, 2016-2022



The productivity of the pharmaceutical industry in Czechia is on average 90.0% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment have steadily increased between 2016 and 2022. GVA has increased at a higher rate than employment since 2018.
- Direct GVA in pharmaceuticals increased 15.4% per year in real terms between 2018 and 2022, whilst direct employment increased by 1.8% per year in the same period.
- GVA per employee has therefore been increasing significantly since 2018 and the industry is becoming more productive.

The pharmaceutical industry directly contributes an average **€83,100** of direct GVA for every employee in 2022. This represents a **6.0% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Denmark contributed €17.8bn to GVA in 2022, and supported 96,500 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	7,800	2,000	2,300
2022	11,000	2,900	3,300

The total GVA impact of the pharmaceutical industry in Denmark has **increased by 7.1% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	27,000	27,700	27,600
2022	31,600	32,500	32,400

The total employment impact of the pharmaceutical industry in Denmark has **increased by 2.9% per year** between 2016 and 2022.

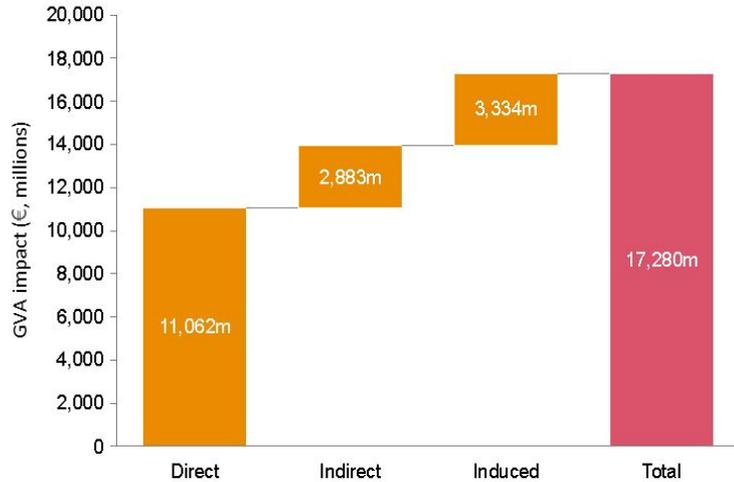
Source: GVA (Eurostat), employment (Denmark Statistics), PwC analysis. Eurostat employment data for Denmark was not reliable due to a definitional changes. Figures were tested for comparability.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

For employment, 2022 data sourced from Denmark Statistics. For GVA, method 1 used - 2020 enterprise data updated using growth rate from a range with the upper bound of 15% (Germany) and the lower bound of 7% (the Netherlands). Note that values presented for direct GVA for Denmark are median figures of the range 10,711 to 11,414. The indirect GVA range is 2,791 to 2,975. The induced range is 3,288 to 3,440. This leads to a total impact range of 16,731 to 17,829. All figures are in €m.

The pharmaceutical industry in Denmark contributed €17.8bn to GVA in 2022, and supported 96,500 jobs across the economy

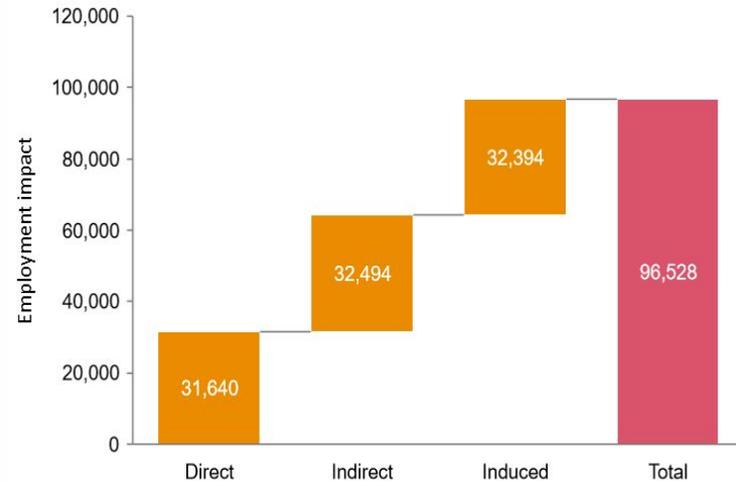
GVA contribution of the pharmaceutical industry in Denmark, 2022



For every €1 contributed directly to Denmark by the pharmaceutical sector, €1.56 is supported across the economy.

Source: GVA (Eurostat), employment (Denmark Statistics), PwC analysis.

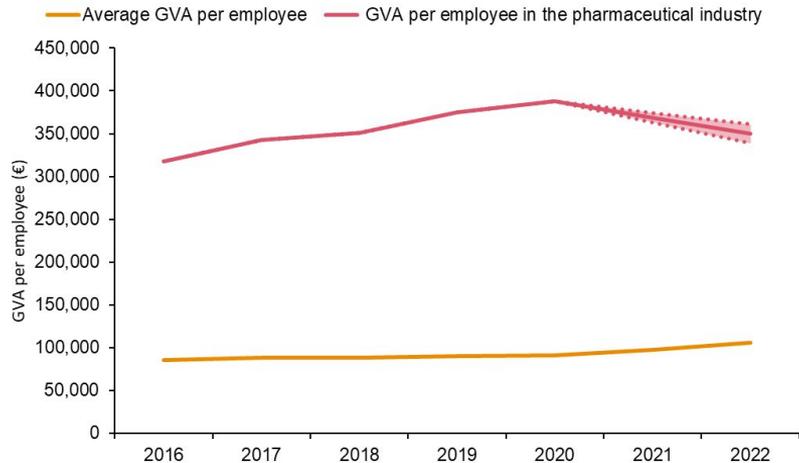
Employment contribution of the pharmaceutical industry in Denmark, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 31.5% of total manufacturing employment in Denmark.

The pharmaceutical industry in Denmark generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Denmark, 2016-2022



The productivity of the pharmaceutical industry in Denmark is on average 287.7% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment have steadily increased between 2016 and 2022. GVA increased at a higher rate than employment until 2020.
- Direct GVA in pharmaceuticals increased 7.1% per year in real terms between 2016 and 2022, whilst direct employment increased by 2.1% per year in the same period.
- GVA per employee has stagnated between 2020 to 2022 due to relatively higher growth in employment in this period.
- Foreign direct investment (FDI) grew from €1.3 billion to €7.4 billion, from 2016 to 2022¹.

The pharmaceutical industry directly contributes an average **€349,600** of direct GVA for every employee in 2022. This represents a **3.6% increase per year in real terms** from the 2016 value.

Source: GVA (Eurostat), employment (Denmark Statistics), PwC analysis.

1 - Economic Footprint of the Life Science Industry in Denmark, The Ministry of Industry, Business and Financial Affairs (2023) - [link](#) (figure converted using 2022 exchange rate)

The pharmaceutical industry in Estonia contributed €55m to GVA in 2022, and supported 900 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	12	7	9
2022	23	15	17

The total GVA impact of the pharmaceutical industry in Estonia has **increased by 16.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	300	300	400
2022	300	300	300

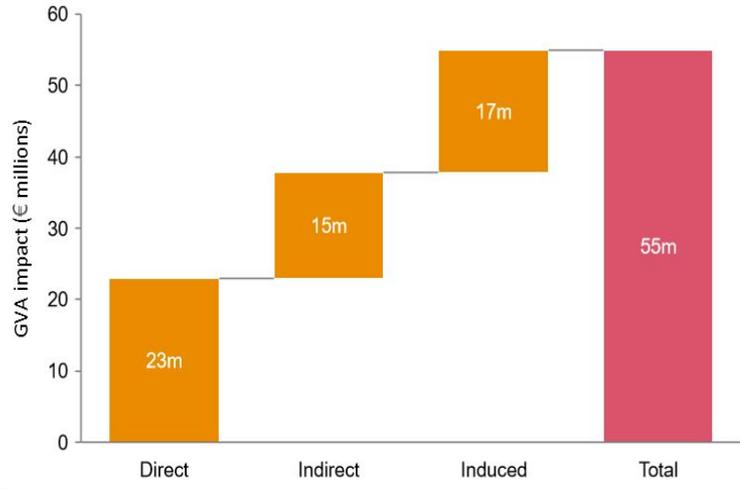
The total employment impact of the pharmaceutical industry in Estonia has **decreased by 1.9% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Estonia contributed €55m to GVA in 2022, and supported 900 jobs across the economy

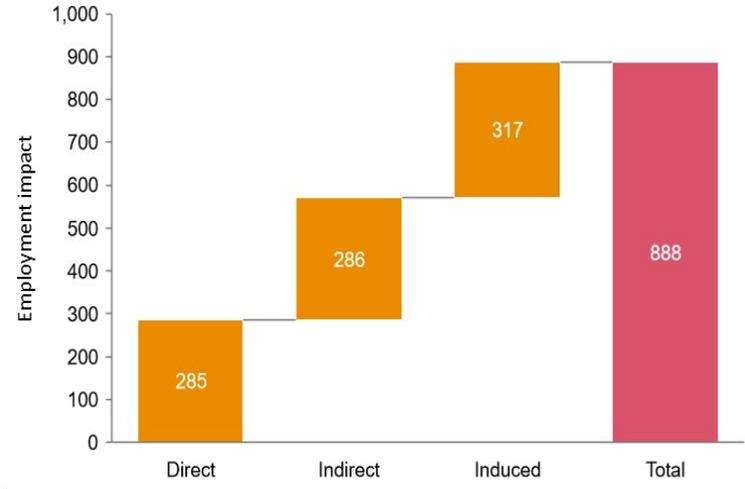
GVA contribution of the pharmaceutical industry in Estonia, 2022



For every €1 contributed directly to Estonia by the pharmaceutical sector, €2.39 is supported across the economy.

Source: Eurostat, PwC analysis.

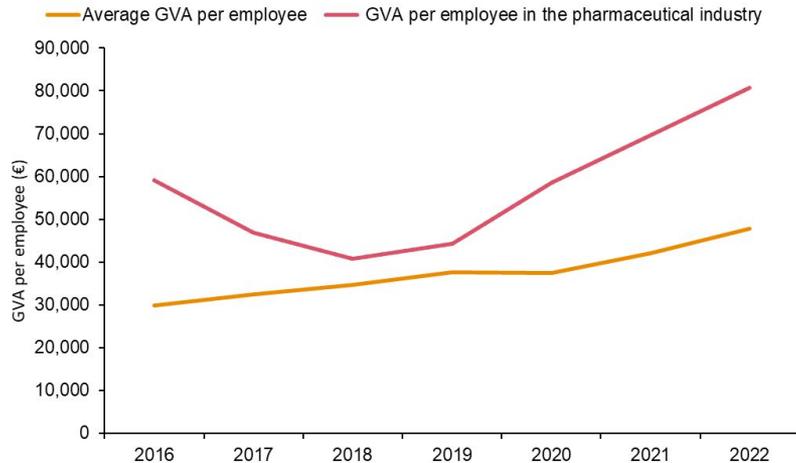
Employment contribution of the pharmaceutical industry in Estonia, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 0.7% of total manufacturing employment in Estonia.

The pharmaceutical industry in Estonia generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Estonia, 2016-2022



The productivity of the pharmaceutical industry in Estonia is on average 54.0% higher than the average productivity of all industries between 2016 and 2022.

- GVA steadily increased between 2019 and 2022 such that GVA per employee in pharmaceuticals is now greater than the national average and workers in the pharmaceutical industry are becoming increasingly productive.
- Direct GVA in pharmaceuticals increased 16.9% per year in real terms between 2019 and 2022, whilst direct employment decreased by 5.7% per year in the same period.
- Estonia has a smaller pharmaceutical industry than some other European countries. This means that small changes in GVA and employment have a large variance and thus larger impact on GVA per employee.

The pharmaceutical industry directly contributes an average **€80,700** of direct GVA for every employee in 2022. This represents a **18.4% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Finland contributed €2.3bn to GVA in 2022, and supported 12,600 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,400	300	400
2022	1,600	300	400

The total GVA impact of the pharmaceutical industry in Finland has **increased by 1.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	4,500	3,000	3,600
2022	5,100	3,500	4,000

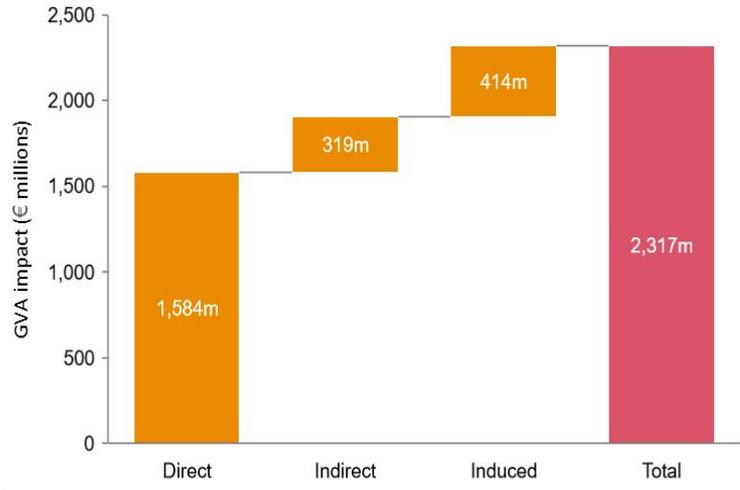
The total employment impact of the pharmaceutical industry in Finland has **increased by 2.2% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Finland contributed €2.3bn to GVA in 2022, and supported 12,600 jobs across the economy

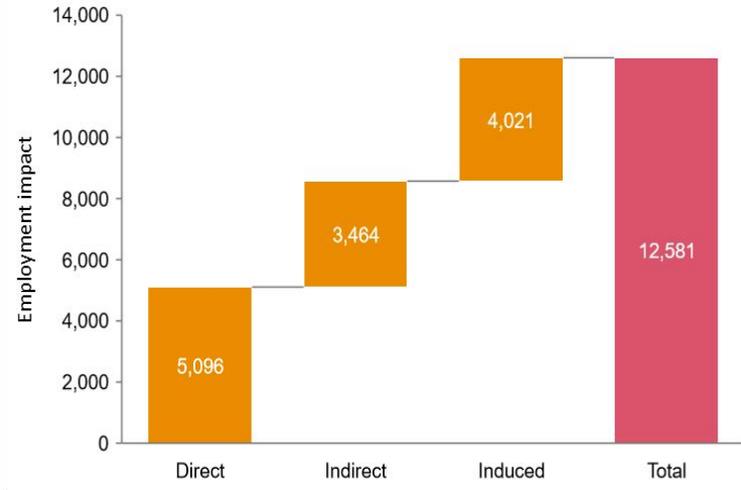
GVA contribution of the pharmaceutical industry in Finland, 2022



For every €1 contributed directly to Finland by the pharmaceutical sector, €1.46 is supported across the economy.

Source: Eurostat, PwC analysis.

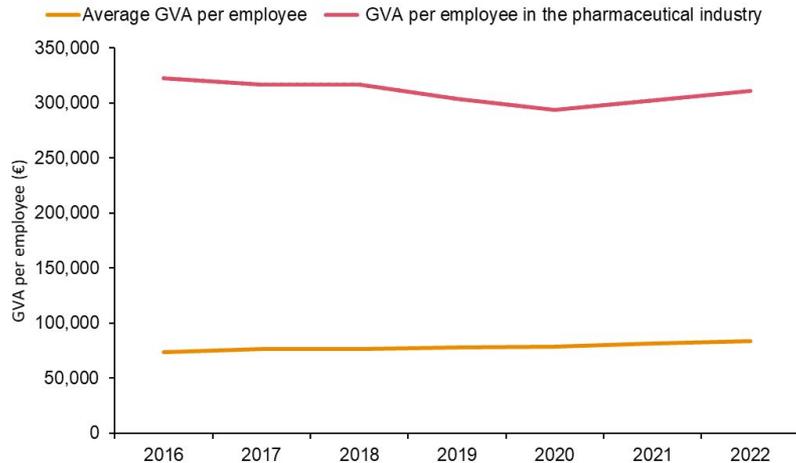
Employment contribution of the pharmaceutical industry in Finland, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 3.6% of total manufacturing employment in Finland.

The pharmaceutical industry in Finland generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Finland, 2016-2022



The productivity of the pharmaceutical industry in Finland is on average 296.3% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment increased between 2016 and 2022 and the pharmaceutical sector in Finland is growing.
- Direct GVA in pharmaceuticals increased 1.6% per year in real terms between 2016 and 2022, whilst direct employment increased by 2.2% per year in the same period.
- GVA per employee has remained stable and the pharmaceutical industry is more productive than the national average. The slight dip in 2020 can be explained as GVA grew slightly less, relative to employment, in that year.

The pharmaceutical industry directly contributes an average **€310,800** of direct GVA for every employee in 2022. This represents a **0.6% decrease per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in France contributed €26.1bn to GVA in 2022, and supported 409,300 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	12,800	6,300	7,500
2022	12,600	6,100	7,400

The total GVA impact of the pharmaceutical industry in France has **decreased by 0.3% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	98,800	151,000	178,000
2022	94,500	144,500	170,300

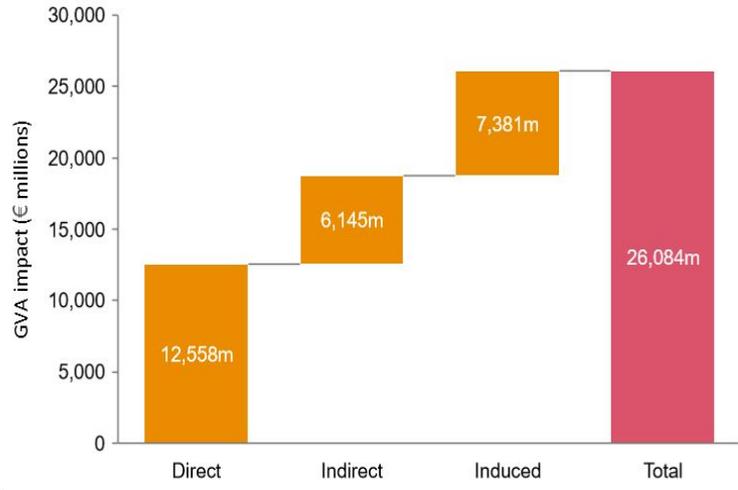
The total employment impact of the pharmaceutical industry in France has **decreased by 0.7% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

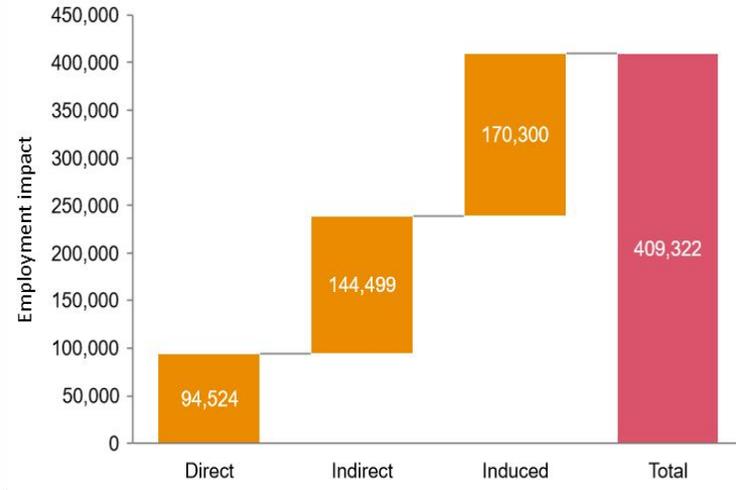
The pharmaceutical industry in France contributed €26.1bn to GVA in 2022, and supported 409,300 jobs across the economy

GVA contribution of the pharmaceutical industry in France, 2022



For every €1 contributed directly to France by the pharmaceutical sector, €2.08 is supported across the economy.

Employment contribution of the pharmaceutical industry in France, 2022



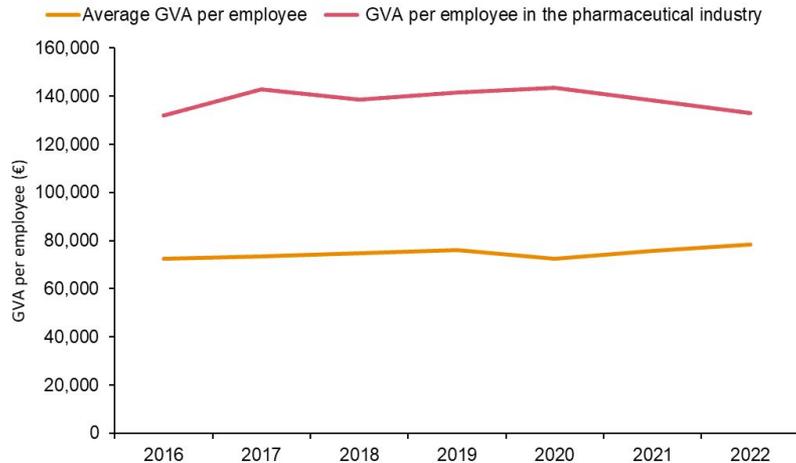
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 15.2% of total manufacturing employment in France.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in France generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in France, 2016-2022



The productivity of the pharmaceutical industry in France is on average 85.7% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment have not changed between 2016 and 2022.
- Both direct GVA and direct employment in pharmaceuticals decreased less than 1.0% per year in real terms between 2016 and 2022.
- There has been no notable growth or decline in the industry but the pharmaceutical sector is far more productive than the national average.
- The pharmaceutical sector in France is large and makes up 3.1% of the global market¹.

The pharmaceutical industry directly contributes an average **€132,900** of direct GVA for every employee in 2022. This represents a less than **0.4% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

1 - French pharmaceutical data, leem (2020) - [link](#).

The pharmaceutical industry in Germany contributed €75bn to GVA in 2022, and supported 517,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	21,000	10,800	11,700
2022	36,300	18,600	20,100

The total GVA impact of the pharmaceutical industry in Germany has **increased by 12.1% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	130,700	162,900	194,500
2022	138,500	172,600	206,100

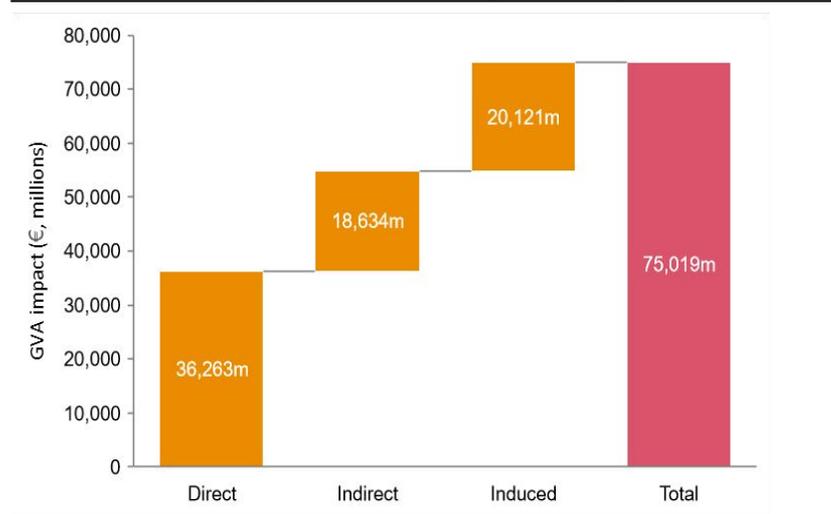
The total employment impact of the pharmaceutical industry in Germany has **increased by 1.0% per year** between 2016 and 2022.

Source: GVA (Eurostat), employment (Production data provided by EFPIA inflated with a multiplier to become equivalent to enterprise data), PwC analysis. Employment adjustments were estimated using Eurostat enterprise data. Eurostat data was not reliable due to a definitional change in 2016. Figures were tested for comparability.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Germany contributed €75bn to GVA in 2022, and supported 517,200 jobs across the economy

GVA contribution of the pharmaceutical industry in Germany, 2022



For every €1 contributed directly to Germany by the pharmaceutical sector, €2.07 is supported across the economy.

Employment contribution of the pharmaceutical industry in Germany, 2022



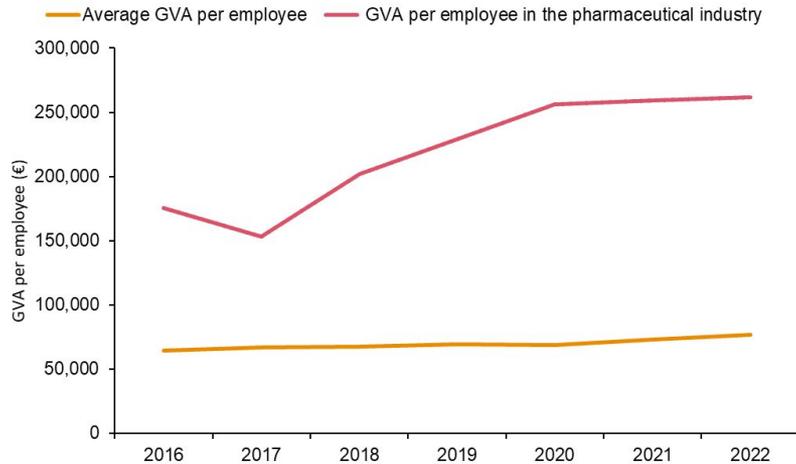
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 6.9% of total manufacturing employment in Germany.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Germany generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Germany, 2016-2022



The productivity of the pharmaceutical industry in Germany is on average 217.8% higher than the average productivity of all industries between 2016 and 2022.

- Direct GVA increased by 12.7% per year in real terms from 2016 to 2020, at which point it levels off, and thus GVA per employee has increased significantly during this period.
- Direct employment in pharmaceuticals increased 6.1% per year between 2020 and 2022, whilst direct GVA increased 7.3% per year in real terms in the same period. This explains why GVA per employee has been flatter since 2020.
- The increase in GVA per employee following 2017 can be partly attributed to the €7.4bn invested in R&D by pharmaceutical companies in 2018¹.

The pharmaceutical industry directly contributes an average **€261,800** of direct GVA for every employee in 2022. This represents a **10.5% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

1 - The Pharmaceutical Industry in Germany - Germany Trade and Invest (2022) - [Link](#).

The pharmaceutical industry in Greece contributed €4.1bn to GVA in 2022, and supported 45,700 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	600	800	1,600
2022	800	1,000	2,200

The total GVA impact of the pharmaceutical industry in Greece has **increased by 6.1% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	9,000	7,400	13,800
2022	13,600	11,200	20,900

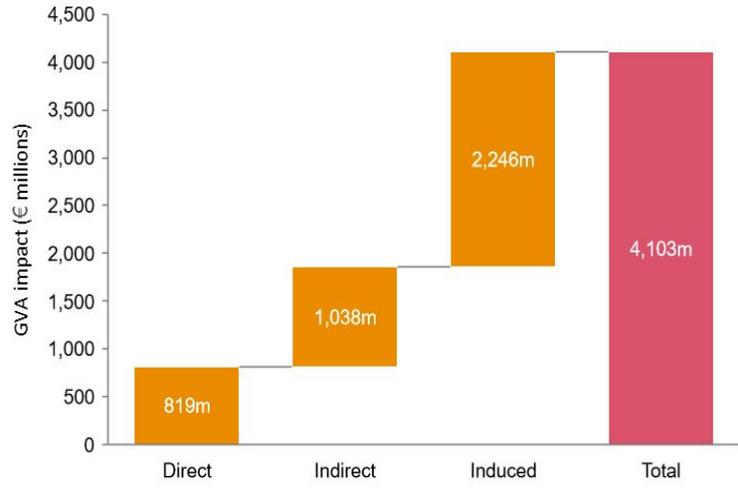
The total employment impact of the pharmaceutical industry in Greece has **increased by 8.6% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Greece contributed €4.1bn to GVA in 2022, and supported 45,700 jobs across the economy

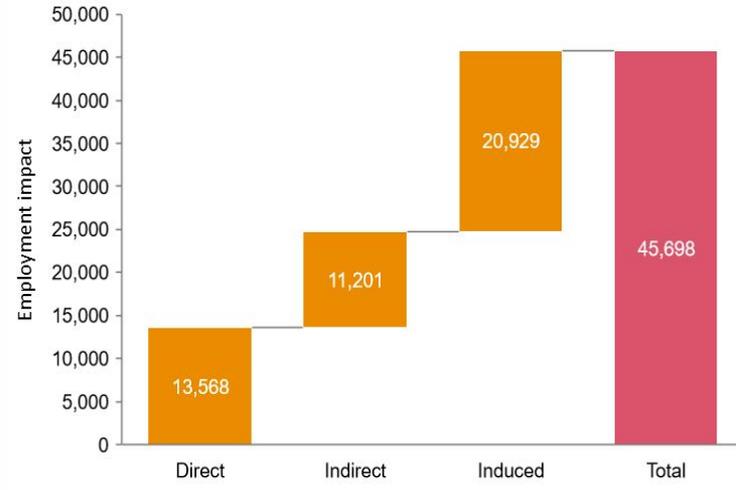
GVA contribution of the pharmaceutical industry in Greece, 2022



For every €1 contributed directly to Greece by the pharmaceutical sector, €5.01 is supported across the economy.

Source: Eurostat, PwC analysis.

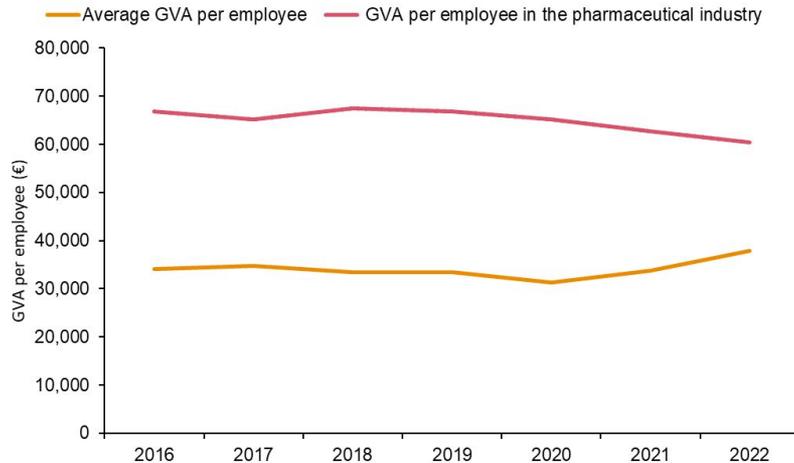
Employment contribution of the pharmaceutical industry in Greece, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 12.0% of total manufacturing employment in Greece.

The pharmaceutical industry in Greece generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Greece, 2016-2022



The productivity of the pharmaceutical industry in Greece is on average 91.8% higher than the average productivity of all industries between 2016 and 2022.

- Employment and GVA has been growing at a relatively consistent rate between 2016 and 2022.
- Direct employment in pharmaceuticals increased 8.6% per year between 2016 and 2022, whilst direct GVA increased 6.1% per year in real terms in the same period.
- The pharmaceutical industry is consistently more productive than the national economy in Greece.
- The size of the sector is growing as both GVA and employment have been increasing over time.

The pharmaceutical industry directly contributes an average **€60,400** of direct GVA for every employee in 2022. This represents a **1.6% decrease per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Hungary contributed €3.7bn to GVA in 2022, and supported 55,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,700	500	600
2022	2,300	600	800

The total GVA impact of the pharmaceutical industry in Hungary has **increased by 5.8% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	18,100	12,800	19,000
2022	20,000	14,200	21,000

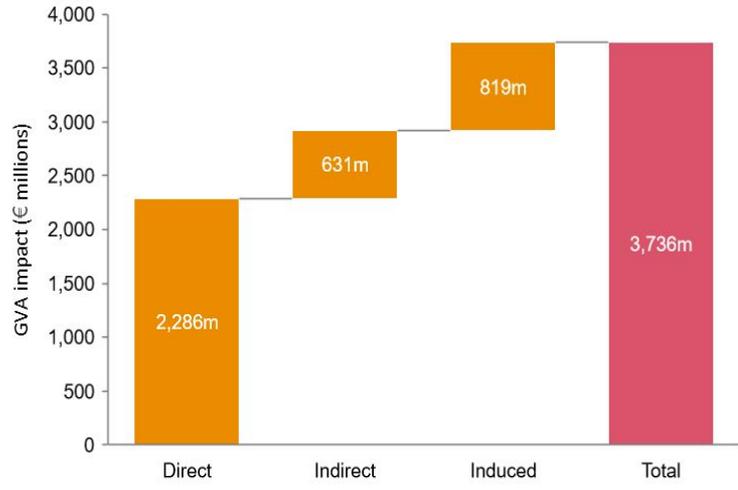
The total employment impact of the pharmaceutical industry in Hungary has **increased by 1.8% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Hungary contributed €3.7bn to GVA in 2022, and supported 55,200 jobs across the economy

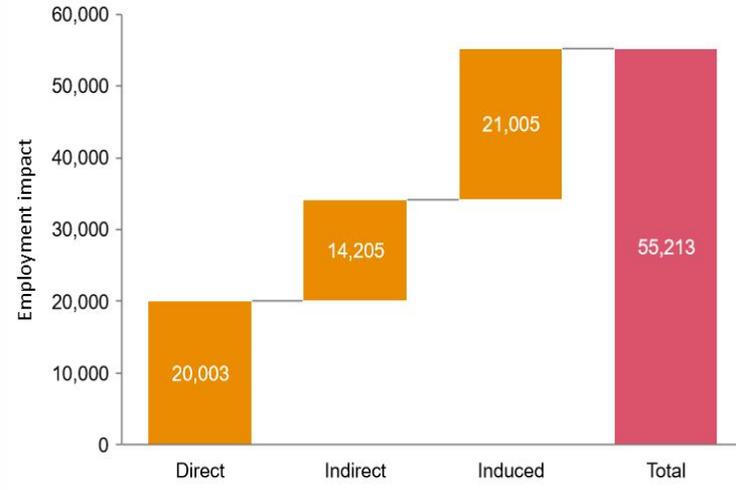
GVA contribution of the pharmaceutical industry in Hungary, 2022



For every €1 contributed directly to Hungary by the pharmaceutical sector, €1.63 is supported across the economy.

Source: Eurostat, PwC analysis.

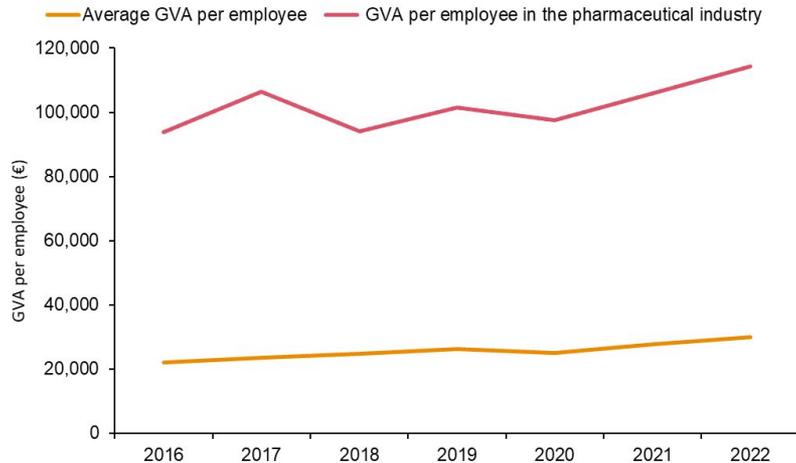
Employment contribution of the pharmaceutical industry in Hungary, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 6.2% of total manufacturing employment in Hungary.

The pharmaceutical industry in Hungary generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Hungary, 2016-2022



The productivity of the pharmaceutical industry in Hungary is on average 301.9% higher than the average productivity of all industries between 2016 and 2022.

- The increase in GVA per employee from 2020 onwards can be attributed to a higher relative growth rate for GVA compared to employment.
- Employment in pharmaceuticals increased 2.2% per year in between 2020 and 2022, whilst GVA increased 11.2% per year in real terms in the same period.
- The pharmaceutical industry in Hungary is becoming more productive as GVA is increasing at a higher rate than employment.

The pharmaceutical industry directly contributes an average **€114,300** of direct GVA for every employee in 2022. This represents a **3.7% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Ireland contributed €49.5bn to GVA in 2022, and supported 44,700 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	22,100	1,700	2,000
2022	42,500	3,300	3,800

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	19,000	3,300	6,500
2022	29,500	5,200	10,100

The total GVA impact of the pharmaceutical industry in Ireland has **increased by 15.4% per year in real terms** between 2016 and 2022.

The total employment impact of the pharmaceutical industry in Ireland has **increased by 9.1% per year** between 2016 and 2022.

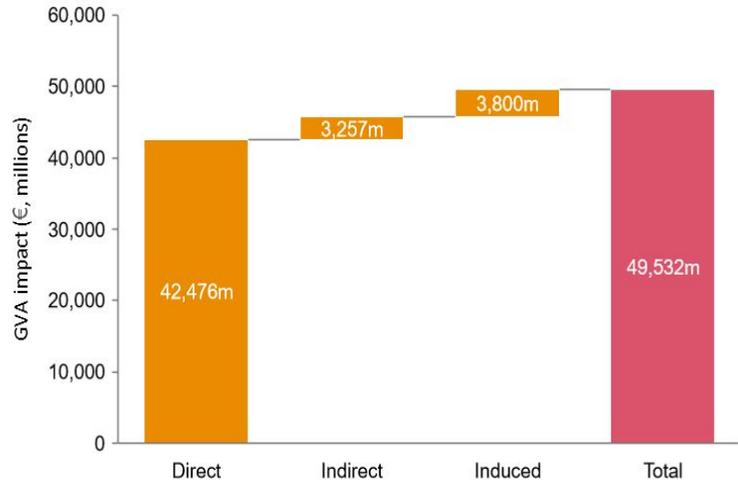
The pharmaceutical industry directly contributes an average **€1.4m** of direct GVA for every employee in 2022. This represents a **4.0% increase per year in real terms** from the 2016 value.

Source: IDA, PwC analysis. For GVA, Method 2 used - 2022 national data, with percentage of the size of the pharmaceutical industry applied. Source: Eurostat, PwC analysis. GVA 2022 with multiplier applied to estimate the size of "enterprise data" as data not available past 2014. Note that values presented for direct GVA for Ireland are median figures of the range 36,194 to 48,758. The indirect GVA range is 2,775 to 3,738. The induced range is 3,238 to 4,362. This leads to a total impact range of 42,207 to 56,858. All figures are in €m. Employment is sourced from the IDA due to data availability on Eurostat. Values presented for direct employment for Ireland are median figures of the range 28,812 to 30,088. The indirect employment range is 5,055 to 5,279. The induced range is 9,853 to 10,289. This leads to a total impact range of 43,719 to 46,655.

Figures for employment and GVA (2016) are not taken from the 2019 report and data is compared over time from the same data source used for 2022. Please also note that the NACE code definition is C21 only and does not include the wider biopharmaceutical industry. If the manufacturing of biopharma sector was considered, the direct impact of employment would be **37,949** in 2022. Furthermore, if the entire biopharmaceutical sector was considered (including services) the direct impact of employment would be **49,570** in 2022. There is no recently published data available for GVA and thus the size of the pharmaceutical industry as a percentage of the whole economy is taken over time to produce 2022 data. Robustness checks were conducted and the growth rate between 2016 and 2022 is approximately 12% for GVA and 8% for employment, this suggests comparable growth overtime for both values.

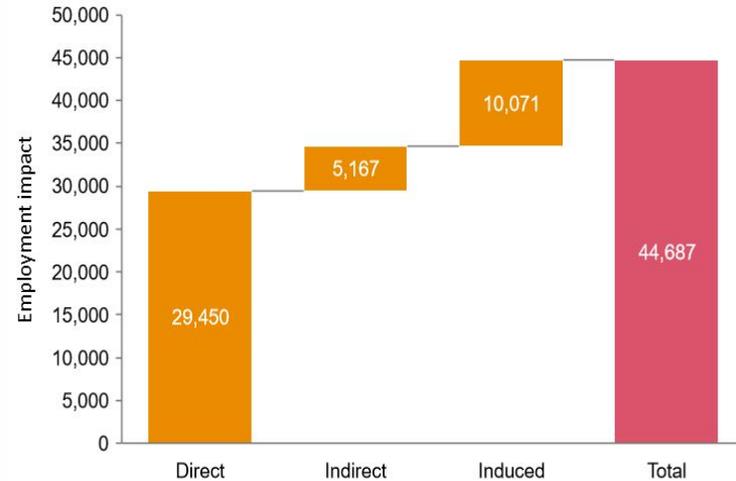
The pharmaceutical industry in Ireland contributed €49.5bn to GVA in 2022, and supported 44,700 jobs across the economy

GVA contribution of the pharmaceutical industry in Ireland, 2022



For every €1 contributed directly to Ireland by the pharmaceutical sector, €1.17 is supported across the economy.

Employment contribution of the pharmaceutical industry in Ireland, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 15.6% of total manufacturing employment in Ireland.

Source: Employment (IDA), GVA (Eurostat), PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

For GVA, Method 2 used - 2022 national data, with percentage of the size of the pharmaceutical industry applied. Source: Eurostat, PwC analysis. GVA 2022 with multiplier applied to estimate the size of "enterprise data" as data not available past 2014. Note that values presented for direct GVA for Ireland are median figures of the range 36,194 to 48,758. The indirect GVA range is 2,775 to 3,738. The induced range is 3,238 to 4,362. This leads to a total impact range of 42,207 to 56,858. All figures are in €m. Employment is sourced from the IDA due to data availability on Eurostat. Values presented for

PwC direct employment for Ireland are median figures of the range 28,812 to 30,088. The indirect employment range is 5,055 to 5,279. The induced range is 9,853 to 10,289. This leads to a total impact range of 43,719 to 46,655. A slide to present the change overtime for GVA per employee is not included for Ireland as time series data are not available.

The pharmaceutical industry in Italy contributed €36.4bn to GVA in 2022, and supported 292,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	9,500	8,000	13,000
2022	11,300	9,500	15,600

The total GVA impact of the pharmaceutical industry in Italy has **increased by 3.2% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	58,300	69,300	127,600
2022	66,800	79,300	146,100

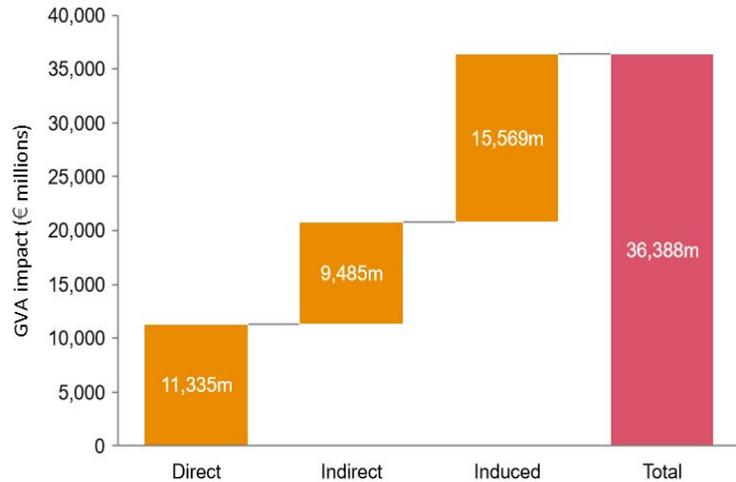
The total employment impact of the pharmaceutical industry in Italy has **increased by 2.4% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Italy contributed €36.4bn to GVA in 2022, and supported 292,200 jobs across the economy

GVA contribution of the pharmaceutical industry in Italy, 2022

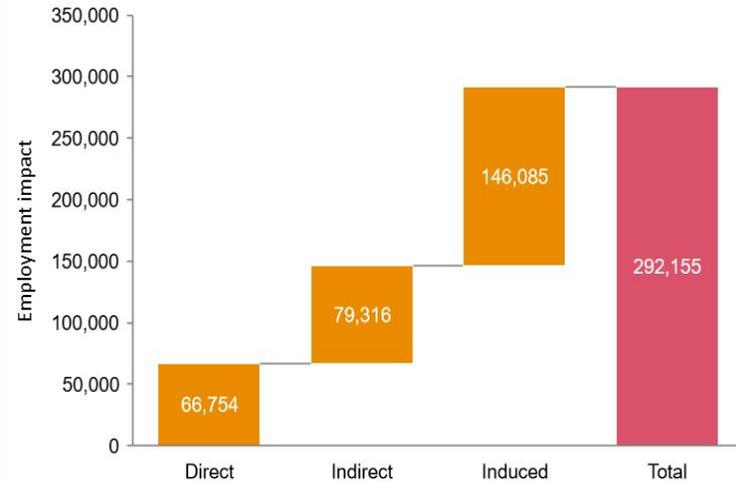


For every €1 contributed directly to Italy by the pharmaceutical sector, €3.21 is supported across the economy.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

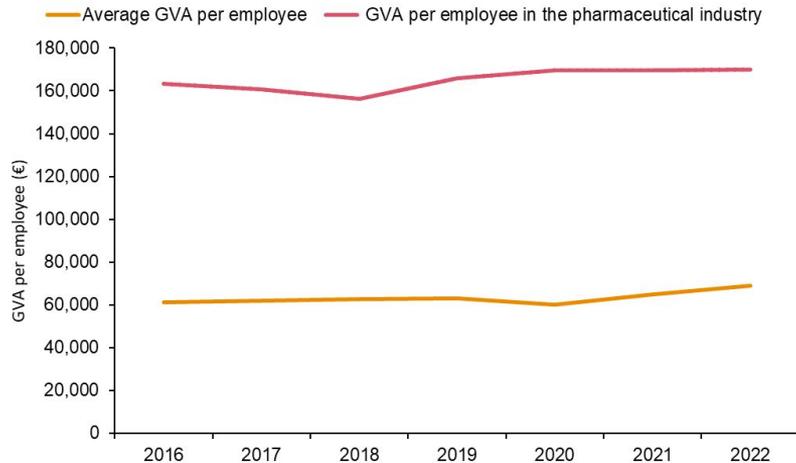
Employment contribution of the pharmaceutical industry in Italy, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 7.4% of total manufacturing employment in Italy.

The pharmaceutical industry in Italy generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Italy, 2016-2022



The productivity of the pharmaceutical industry in Italy is on average 162.0% higher than the average productivity of all industries between 2016 and 2022.

- There is consistent growth for both GVA and employment between 2016 and 2022. GVA has grown at a marginally higher rate than employment since 2018.
- In 2021, investments in pharmaceutical R&D were €1.7 billion in Italy¹ such that there is large investment in the sector.

The pharmaceutical industry directly contributes an average **€169,800** of direct GVA for every employee in 2022. This represents a **0.7% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

1 - Pharmaceutical Industry in Italy: Facts and Figures - Farindustria (2022) - [Link](#).

The pharmaceutical industry in Latvia contributed nearly €350m to GVA in 2022, and supported 6,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	100	40	60
2022	200	70	100

The total GVA impact of the pharmaceutical industry in Latvia has **increased by 10.7% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	2,100	1,300	2,000
2022	2,300	1,400	2,300

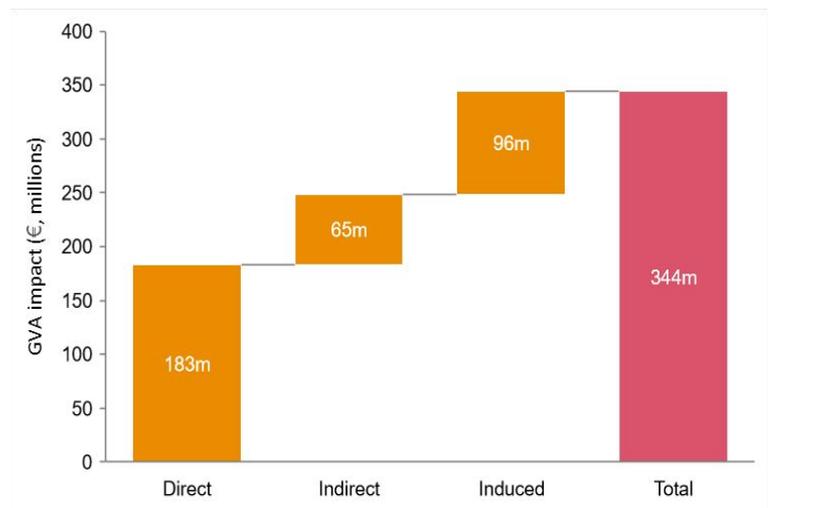
The total employment impact of the pharmaceutical industry in Latvia has **increased by 1.8% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

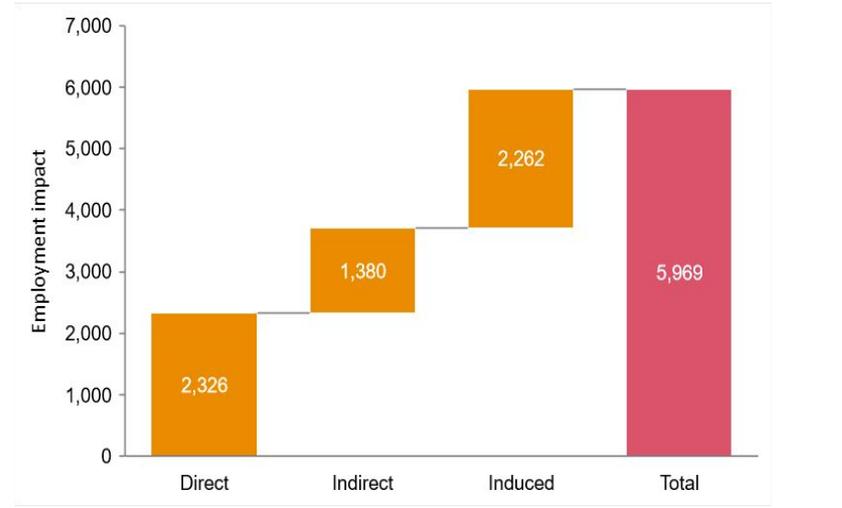
The pharmaceutical industry in Latvia contributed nearly €350m to GVA in 2022, and supported 6,000 jobs across the economy

GVA contribution of the pharmaceutical industry in Latvia, 2022



For every €1 contributed directly to Latvia by the pharmaceutical sector, €1.88 is supported across the economy.

Employment contribution of the pharmaceutical industry in Latvia, 2022



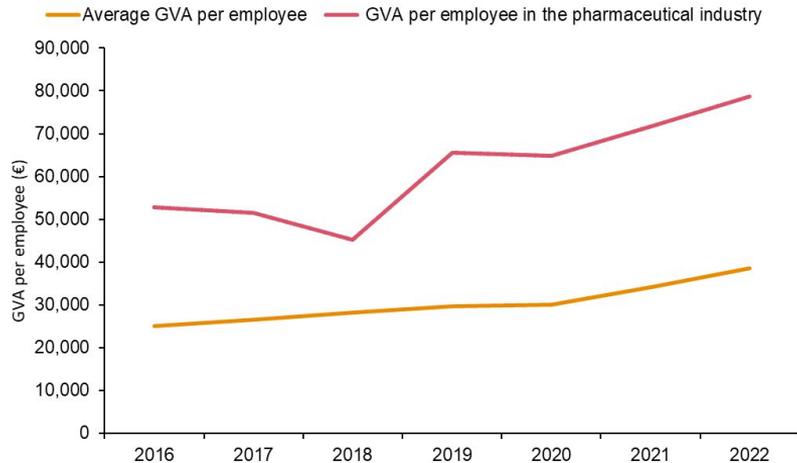
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 4.8% of total manufacturing employment in Latvia.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Latvia generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Latvia, 2016-2022



The productivity of the pharmaceutical industry in Latvia is on average 105.5% higher than the average productivity of all industries between 2016 and 2022.

- Employment and GVA have been growing since 2016 and thus GVA per employee has increased over time.
- Employment in pharmaceuticals increased 1.7% per year between 2016 and 2022, whilst GVA increased 10.7% per year in real terms in the same period.
- The relative changes in GVA and employment lead to larger variance in GVA per employee as the pharmaceutical industry in Latvia is relatively small compared to some European nations.

The pharmaceutical industry directly contributes an average **€78,600** of direct GVA for every employee in 2022. This represents a **8.0% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Lithuania contributed nearly €100m to GVA in 2022, and supported 2,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	200	30	50
2022	50	10	10

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,200	900	1,900
2022	600	500	1,000

The total GVA impact of the pharmaceutical industry in Lithuania has **decreased by 11.5% per year in real terms** between 2016 and 2022.

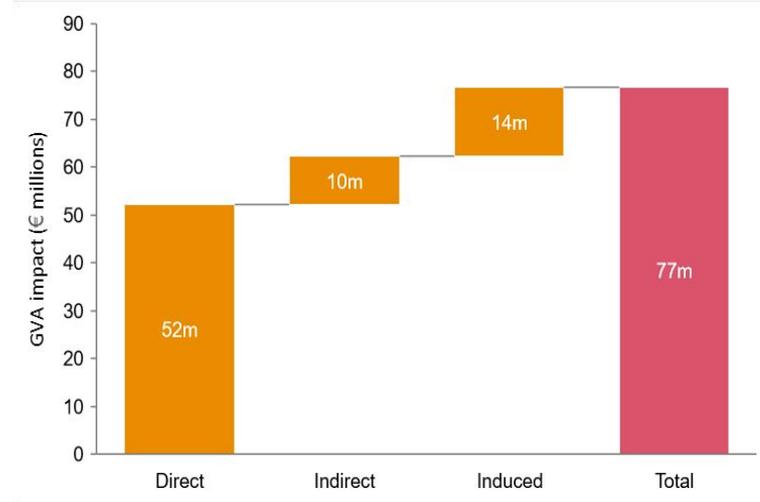
The total employment impact of the pharmaceutical industry in Lithuania has **decreased by 8.0% per year** between 2016 and 2022.

Source: Lithuania National Statistics, PwC analysis. Data on Eurostat was not available for Lithuania beyond 2015, therefore an alternative data source was used in order to produce the most up to date analysis of the size of the manufacture of pharmaceuticals industry. Figures were tested for comparability.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

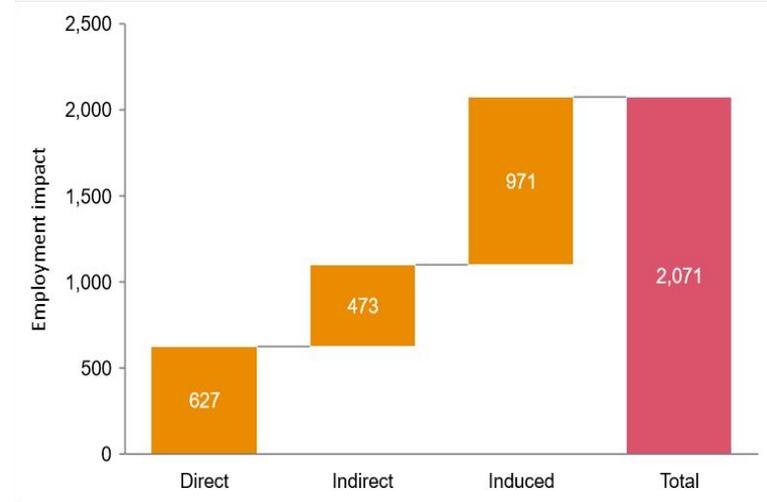
The pharmaceutical industry in Lithuania contributed nearly €100m to GVA in 2022, and supported 2,000 jobs across the economy

GVA contribution of the pharmaceutical industry in Lithuania, 2022



For every €1 contributed directly to Lithuania by the pharmaceutical sector, €1.47 is supported across the economy.

Employment contribution of the pharmaceutical industry in Lithuania, 2022

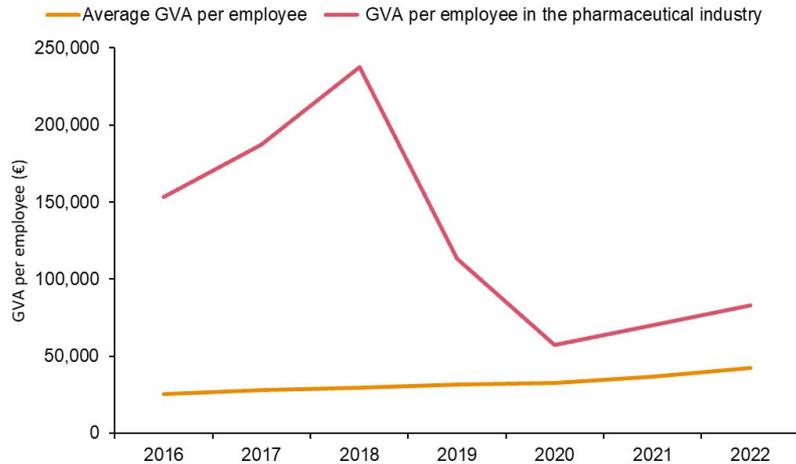


The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 0.9% of total manufacturing employment in Lithuania.

Source: Lithuania Official Statistics, PwC analysis. For employment, 2022 employment and GVA data sourced from Lithuania Official Statistics. Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Lithuania generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Lithuania, 2016-2022



The productivity of the pharmaceutical industry between 2016 and 2018 in Lithuania was on average 569.0% higher than the average productivity of all industries. There is a steep decline between 2018 and 2020; between 2020 and 2022 it was 94.0% higher than the average productivity of all industries.

- Lithuania has a smaller pharmaceutical industry than some other European countries. This means that changes in GVA and employment have a large variance and thus larger impact on GVA per employee.
- GVA has varied over time whilst employment has remained fairly stable. As a result we do see a sharp decrease in productivity between 2018 and 2020. Analysing over a longer time horizon shows that 2017 and 2018 were outliers and GVA has returned closer to its pre-2017 trend.

The pharmaceutical industry directly contributes an average **€83,100** of direct GVA for every employee in 2022. This represents a **6.7% decrease per year in real terms** from the 2016 value.

Source: Lithuania Official Statistics, PwC analysis.

The pharmaceutical industry in Malta contributed nearly €200m to GVA in 2022, and supported 3,400 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	19	15	10
2022	75	58	39

The total GVA impact of the pharmaceutical industry in Malta has **increased by 48.0% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,200	1,200	800
2022	1,300	1,300	900

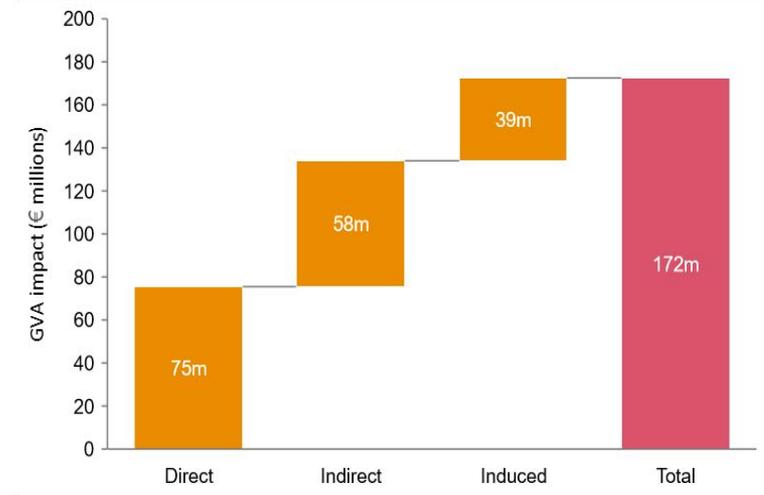
The total employment impact of the pharmaceutical industry in Malta has **increased by 1.3% per year** between 2016 and 2022.

Source: Eurostat, Lithuania Official Statistics, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Malta contributed nearly €200m to GVA in 2022, and supported 3,400 jobs across the economy

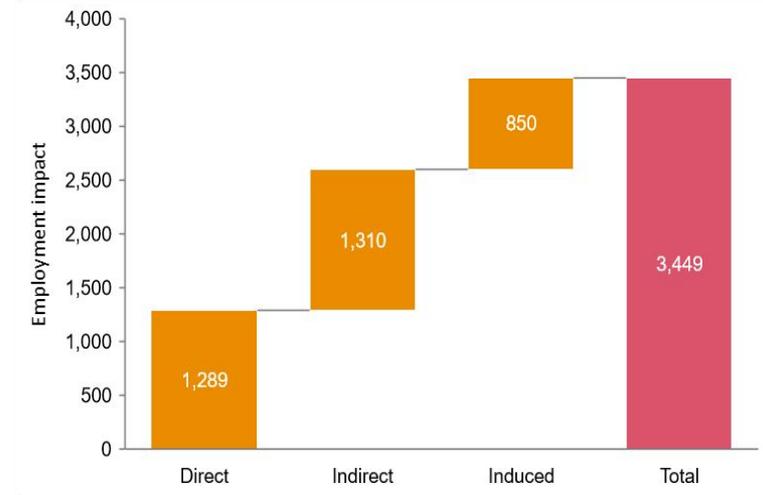
GVA contribution of the pharmaceutical industry in Malta, 2022



For every €1 contributed directly to Malta by the pharmaceutical sector, €2.28 is supported across the economy.

Source: Eurostat, PwC analysis.

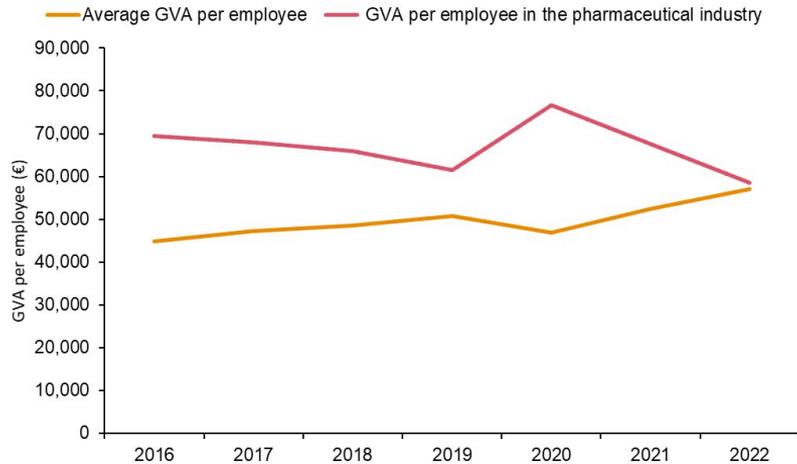
Employment contribution of the pharmaceutical industry in Malta, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 14.2% of total manufacturing employment in Malta.

The pharmaceutical industry in Malta generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Malta, 2016-2022



The productivity of the pharmaceutical industry in Malta is on average 34.7% higher than the average productivity of all industries between 2016 and 2022.

- Both GVA and employment are increasing over time.
- From 2019 to 2020, GVA per employee growth was greater than the trend, as GVA in pharmaceuticals increased 29.5% in real terms whilst employment increased 3.6%.
- From 2020 to 2022, GVA per employee growth was below the trend as GVA decreased by 4.6% per year in real terms whereas employment increased by 9.6%.
- Malta has a smaller pharmaceutical industry than some other European countries. This means that small changes in GVA and employment have a large variance and thus larger impact on GVA per employee.

The pharmaceutical industry directly contributes an average **€58,500** of direct GVA for every employee in 2022. This represents a **43.5% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in the Netherlands contributed €4.6bn to GVA in 2022, and supported 46,200 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	2,600	800	600
2022	3,000	900	700

The total GVA impact of the pharmaceutical industry in the Netherlands has **increased by 2.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	12,700	10,400	10,200
2022	17,600	14,400	14,200

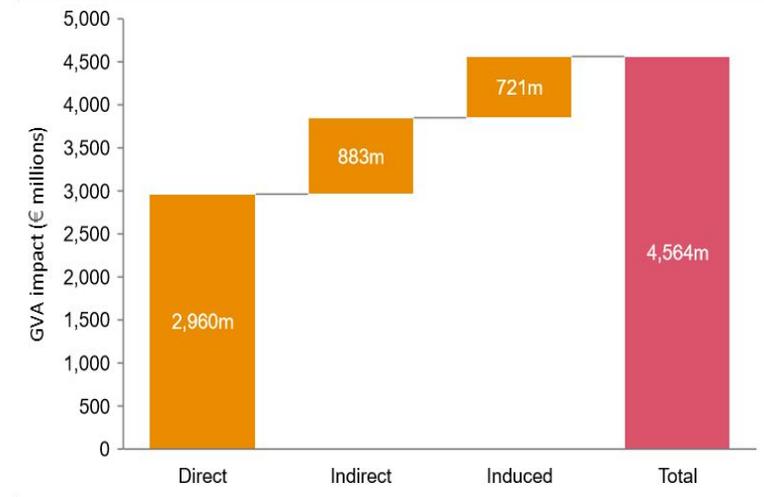
The total employment impact of the pharmaceutical industry in The Netherlands has **increased by 6.4% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

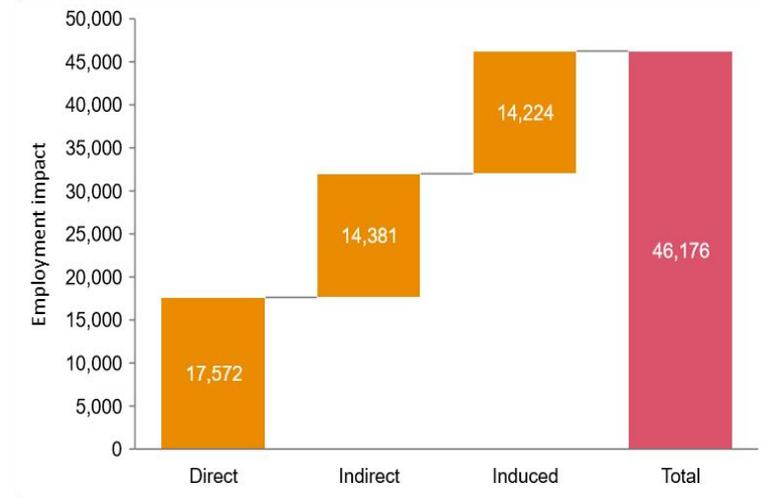
The pharmaceutical industry in the Netherlands contributed €4.6bn to GVA in 2022, and supported 46,200 jobs across the economy

GVA contribution of the pharmaceutical industry in The Netherlands, 2022



For every €1 contributed directly to the Netherlands by the pharmaceutical sector, €1.54 is supported across the economy.

Employment contribution of the pharmaceutical industry in The Netherlands, 2022



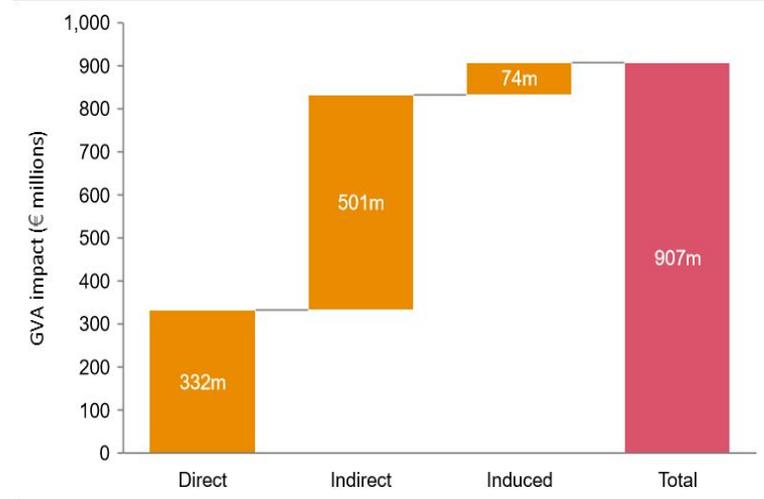
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 5.7% of total manufacturing employment in the Netherlands.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

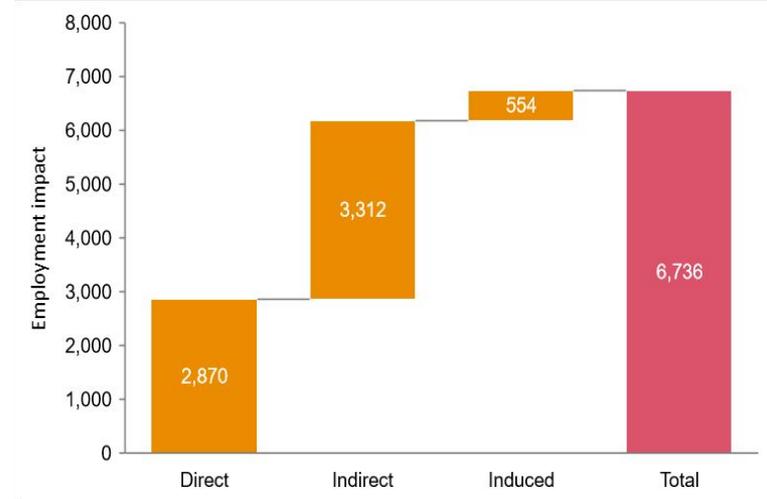
The pharmaceutical industry in Norway contributed €900m to GVA in 2022, and supported 6,700 jobs across the economy

GVA contribution of the pharmaceutical industry in Norway, 2022



For every €1 contributed directly to Norway by the pharmaceutical sector, €2.73 is supported across the economy.

Employment contribution of the pharmaceutical industry in Norway, 2022

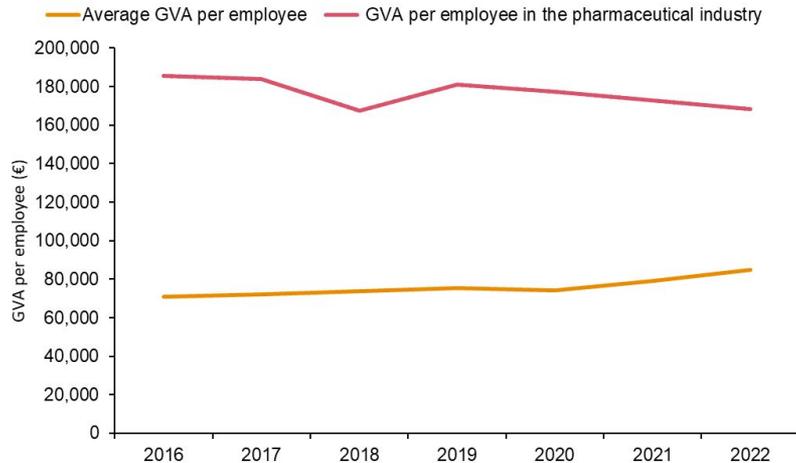


The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 3.0% of total manufacturing employment in Norway.

Source: Raw data provided by Norway, PwC analysis. Note: Norway was excluded from the previous report so here we present 2022 figures only.

The pharmaceutical industry in the Netherlands generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in the Netherlands, 2016-2022



The productivity of the pharmaceutical industry in the Netherlands is on average 134.2% higher than the average productivity of all industries between 2016 and 2022.

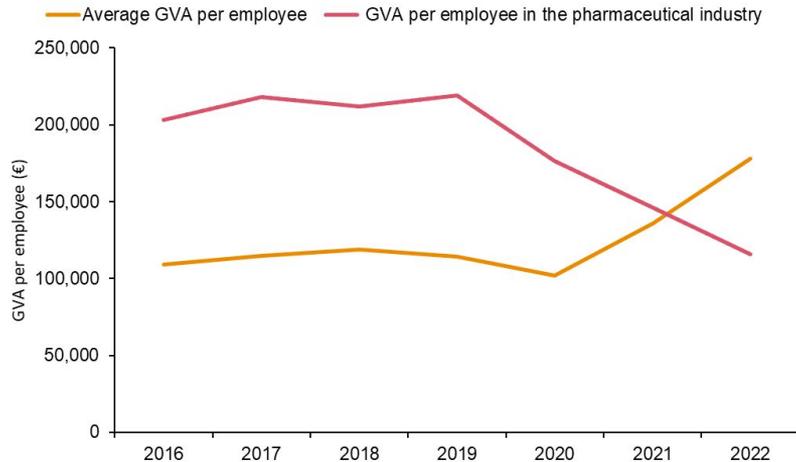
- Employment and GVA have been growing at similar rates since 2016.
- Employment in pharmaceuticals increased 6.4% per year between 2016 and 2022, whilst GVA increased 2.6% per year in real terms in the same period.
- GVA per employee has been gradually increasing over time and the slight reduction in 2018 can be attributed to a one year decrease in GVA.
- GVA per employee is large in the pharmaceutical sector compared to the national average.

The pharmaceutical industry directly contributes an average **€168,400** of direct GVA for every employee in 2022. This represents a **2.7% decrease per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Norway has had falling direct GVA per employee since 2019

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Norway, 2016-2022



The productivity of the pharmaceutical industry in Norway was 48.1% higher than the average of all industries between 2016 and 2021.

- Up to 2019, GVA per employee in the pharmaceutical industry steadily increased, but it has since been falling due to decreasing GVA.
- Employment in pharmaceuticals increased 3.1% per year between 2019 and 2022, whilst GVA decreased 5.4% per year in real terms in the same period, such that GVA per employee is now lower than that for the national average.
- It should be noted that productivity in the Norwegian economy as a whole is very high, 156% higher than Europe as a whole in 2022. Therefore whilst Norway is one of the few economies for which pharmaceutical productivity is lower than the economy as a whole, it remains in the top 50% of Europe.

The pharmaceutical industry directly contributed **€115,700** of GVA per employee in 2022.

Source: Raw data provided by Norway, PwC analysis.

Note: Norway was excluded from the previous report so here we present 2022 figures only.

The pharmaceutical industry in Poland contributed €5bn to GVA in 2022, and supported 58,500 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	1,400	1,200	1,300
2022	1,800	1,600	1,600

The total GVA impact of the pharmaceutical industry in Poland has **increased by 5.0% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	23,000	15,500	18,200
2022	23,800	16,000	18,700

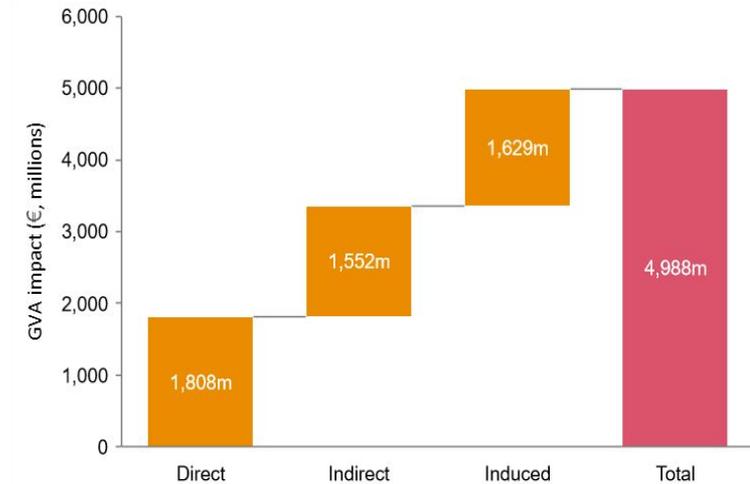
The total employment impact of the pharmaceutical industry in Poland has **increased by 0.5% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

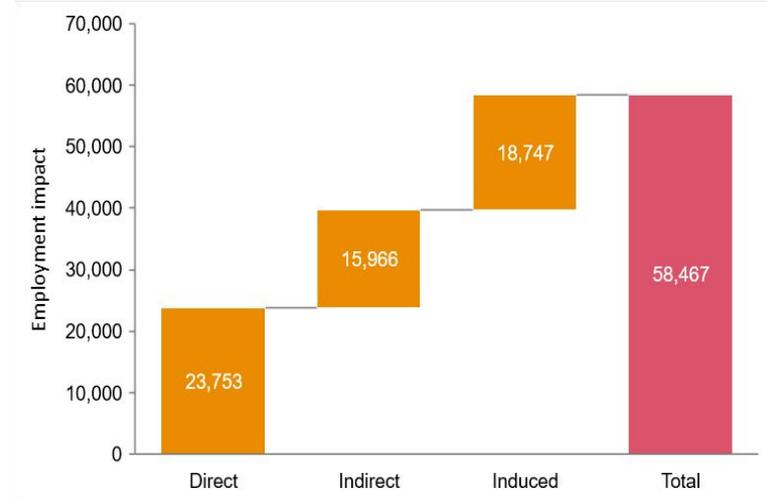
The pharmaceutical industry in Poland contributed €5bn to GVA in 2022, and supported 58,500 jobs across the economy

GVA contribution of the pharmaceutical industry in Poland, 2022



For every €1 contributed directly to Poland by the pharmaceutical sector, €2.76 is supported across the economy.

Employment contribution of the pharmaceutical industry in Poland, 2022



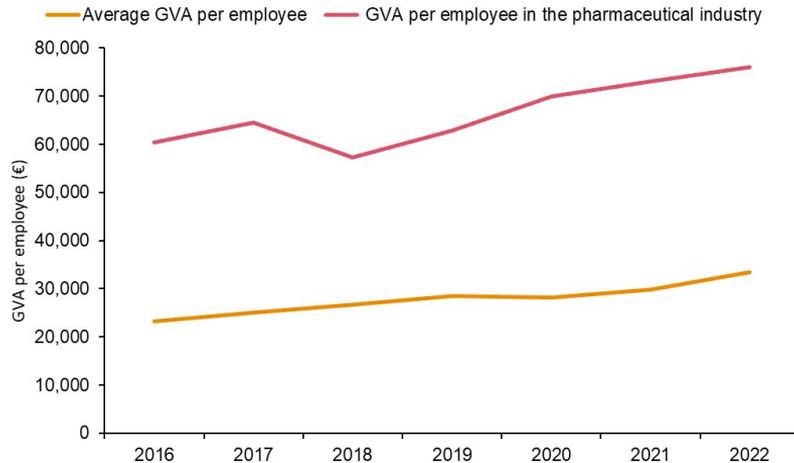
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 1.7% of total manufacturing employment in Poland.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Poland generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Poland, 2016-2022



The productivity of the pharmaceutical industry in Poland is on average 139.7% higher than the average productivity of all industries between 2016 and 2022.

- Pharmaceutical GVA per employee has been consistently growing since 2018.
- Employment in pharmaceuticals decreased 1.3% per year between 2018 and 2022, whilst GVA increased 6.4% per year in real terms in the same period, so employees are becoming more productive.
- GVA has grown and employment has remained fairly stable such that pharmaceutical employees are becoming more productive.

The pharmaceutical industry directly contributes an average **€76,100** of direct GVA for every employee in 2022. This represents a **4.3% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Portugal contributed €2.2bn to GVA in 2022, and supported 41,500 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	500	400	500
2022	800	600	900

The total GVA impact of the pharmaceutical industry in Portugal has **increased by 10.0% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	6,700	8,600	13,700
2022	9,600	12,400	19,600

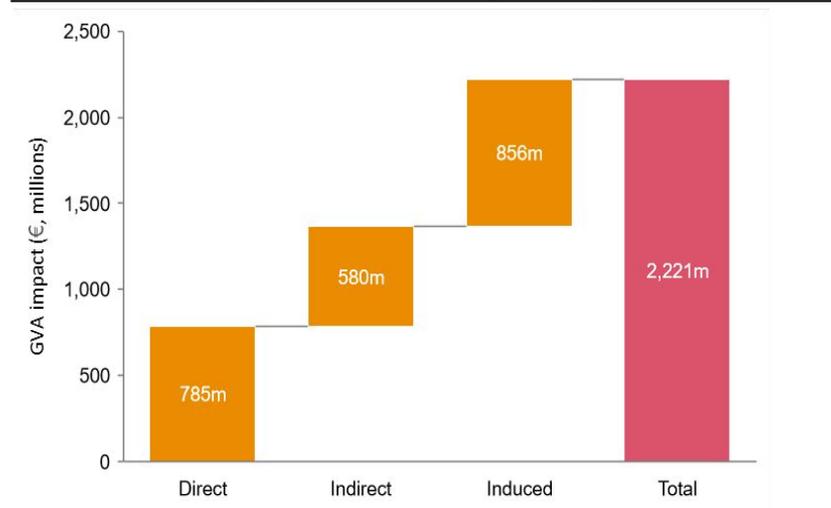
The total employment impact of the pharmaceutical industry in Portugal has **increased by 7.2% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Portugal contributed €2.2bn to GVA in 2022, and supported 41,500 jobs across the economy

GVA contribution of the pharmaceutical industry in Portugal, 2022

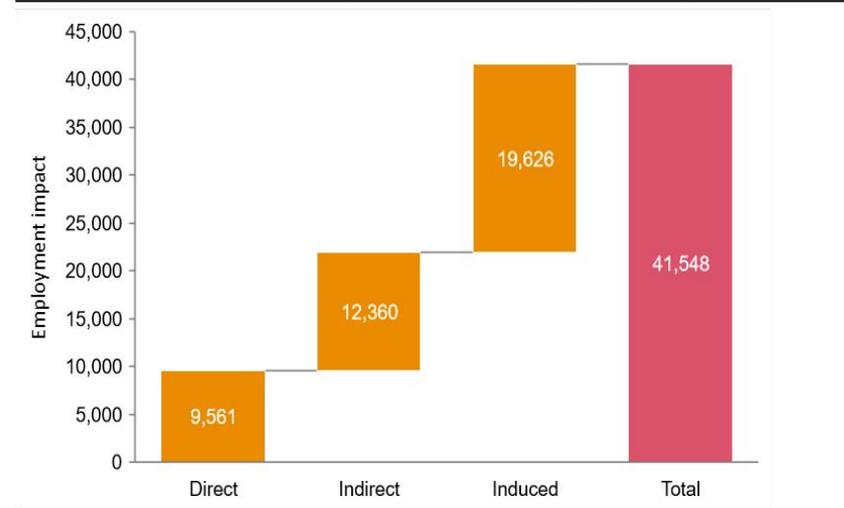


For every €1 contributed directly to Portugal by the pharmaceutical sector, €2.83 is supported across the economy.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

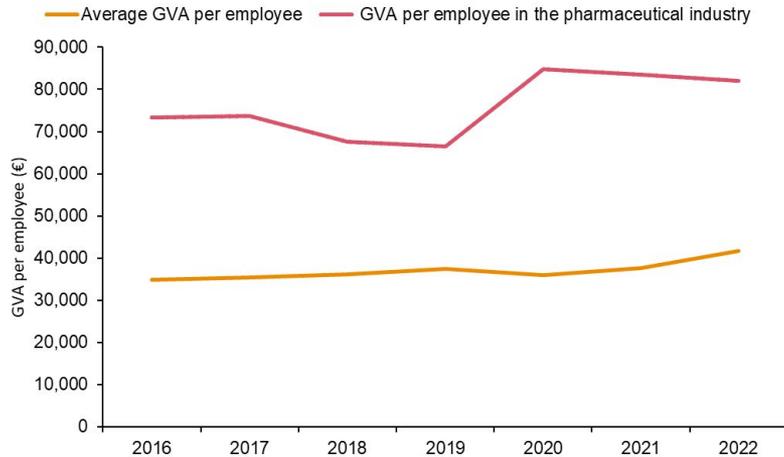
Employment contribution of the pharmaceutical industry in Portugal, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 7.7% of total manufacturing employment in Portugal.

The pharmaceutical industry in Portugal generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Portugal, 2016-2022



The productivity of the pharmaceutical industry in Portugal is on average 106.4% higher than the average productivity of all industries between 2016 and 2022.

- GVA and employment in the pharmaceutical sector have increased over time.
- Employment in pharmaceuticals increased 3.6% per year between 2019 and 2022, whilst GVA increased 12.2% per year in real terms in the same period.
- Relative greater growth in GVA compared to employment has led to GVA per employee increasing in 2020.
- In 2020, Portuguese pharmaceutical companies invested €90.4 million in R&D¹. The growth in 2020 can be partly attributed to this R&D investment.

The pharmaceutical industry directly contributes an average **€82,100** of direct GVA for every employee in 2022. This represents a **2.0% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

1 - ABIFARMA - Portuguese Pharmaceutical Industry Association (2022) - [Link](#).

The pharmaceutical industry in Romania contributed €1.5bn to GVA in 2022, and supported 33,000 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	400	300	500
2022	500	400	600

The total GVA impact of the pharmaceutical industry in Romania has **increased by 4.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	9,100	7,900	10,900
2022	10,800	9,300	12,800

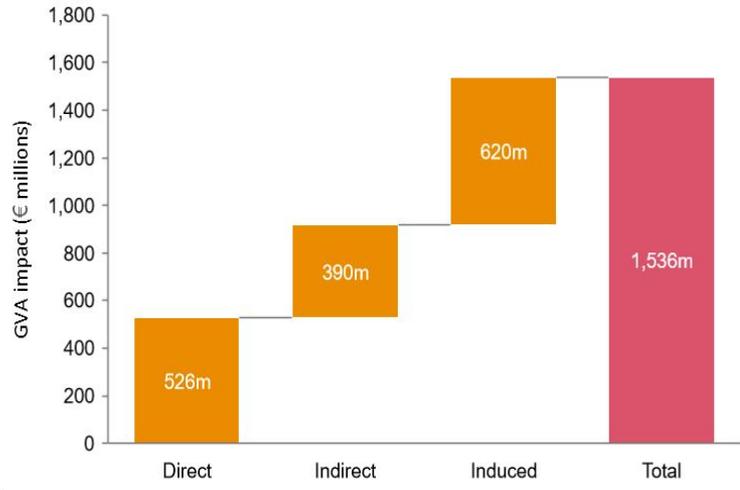
The total employment impact of the pharmaceutical industry in Romania has **increased by 3.0% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Romania contributed €1.5bn to GVA in 2022, and supported 33,000 jobs across the economy

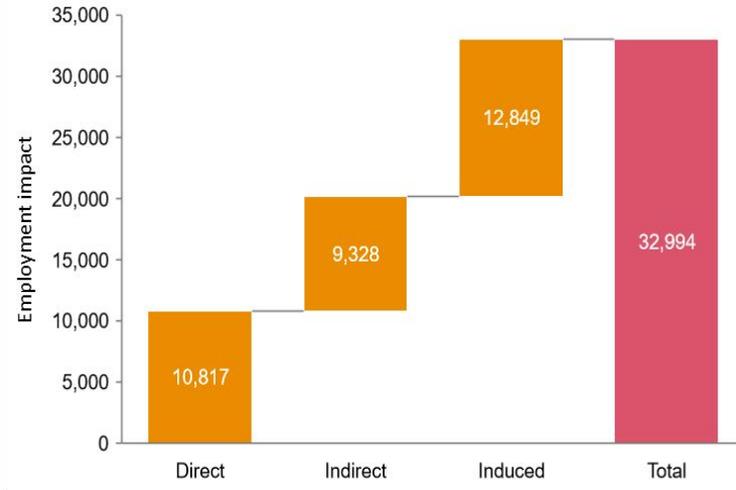
GVA contribution of the pharmaceutical industry in Romania, 2022



For every €1 contributed directly to Romania by the pharmaceutical sector, €2.92 is supported across the economy.

Source: Eurostat, PwC analysis.

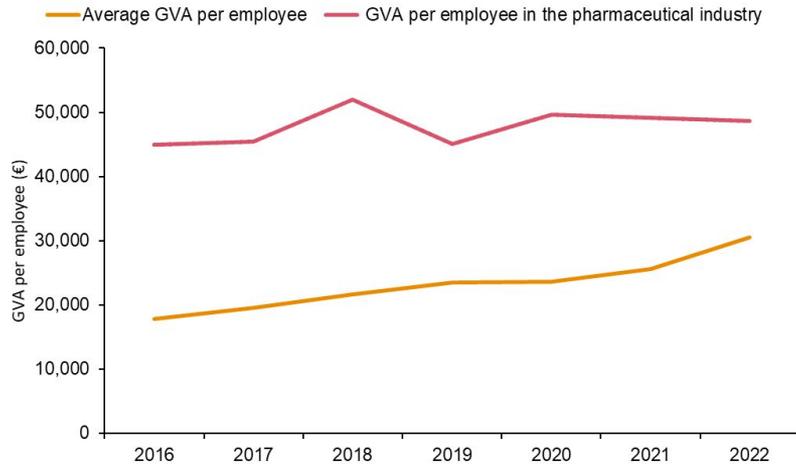
Employment contribution of the pharmaceutical industry in Romania, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 2.8% of total manufacturing employment in Romania.

The pharmaceutical industry in Romania generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Romania, 2016-2022



The productivity of the pharmaceutical industry in Romania is on average 107.9% higher than the average productivity of all industries between 2016 and 2022.

- GVA per employee has increased since 2016 and has been increasing at a higher rate from 2019 to 2022.
- Employment in pharmaceuticals decreased by 1.0% per year between 2019 and 2022, whilst GVA increased 1.6% per year in real terms in the same period.
- Although there has been almost no change in employment since 2019, GVA has been increasing and thus employees are becoming more productive.
- Romania is becoming more productive over time and this can be observed in the pharmaceutical sector and on a national level.

The pharmaceutical industry directly contributes an average **€48,700** of direct GVA for every employee in 2022. This represents a **1.3% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Slovakia contributed €250m to GVA in 2022, and supported 5,900 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	80	50	60
2022	100	70	80

The total GVA impact of the pharmaceutical industry in Slovakia has **increased by 5.5% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	2,200	1,400	1,500
2022	2,600	1,600	1,700

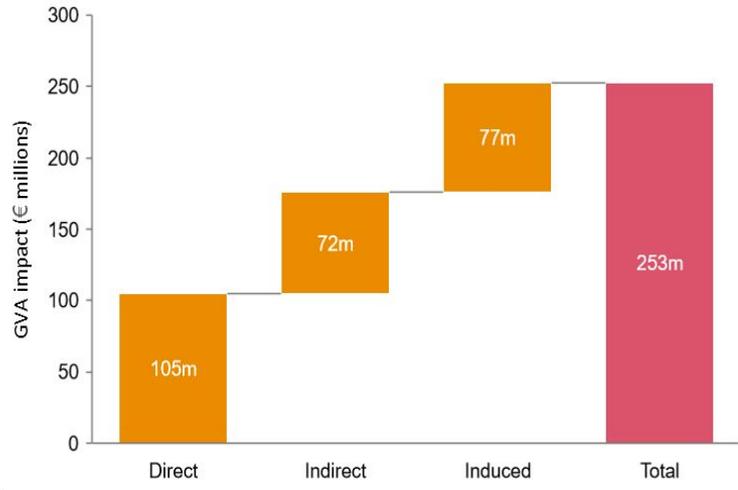
The total employment impact of the pharmaceutical industry in Slovakia has **increased by 2.7% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

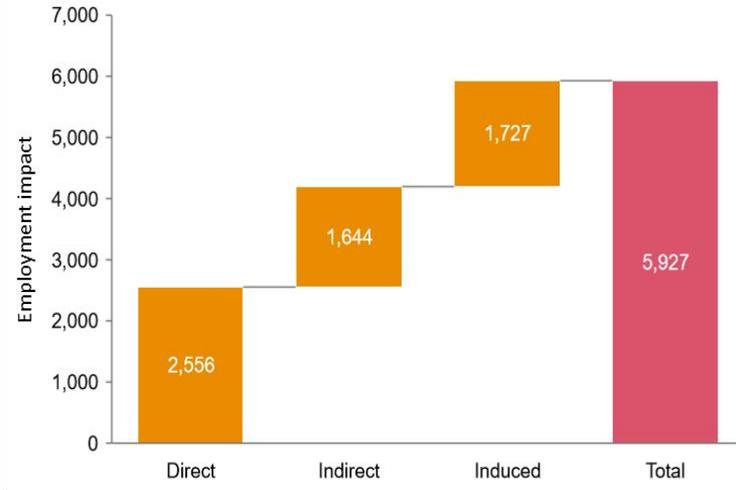
The pharmaceutical industry in Slovakia contributed €250m to GVA in 2022, and supported 5,900 jobs across the economy

GVA contribution of the pharmaceutical industry in Slovakia, 2022



For every €1 contributed directly to Slovakia by the pharmaceutical sector, €2.42 is supported across the economy.

Employment contribution of the pharmaceutical industry in Slovakia, 2022



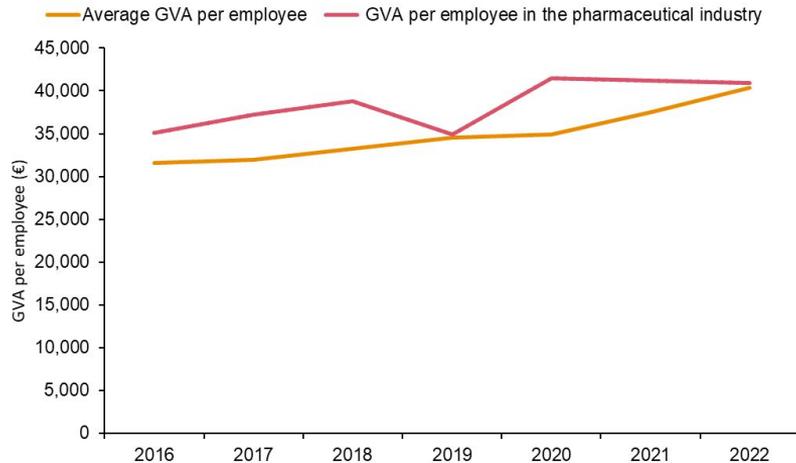
The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 6.4% of total manufacturing employment in Slovakia.

Source: Eurostat, PwC analysis.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Slovakia generates a similar GVA per employee as the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Slovakia, 2016-2022



The productivity of the pharmaceutical industry in Slovakia is on average 11.3% greater than the average productivity of all industries between 2016 and 2022.

- Employment in pharmaceuticals increased 5.6% per year between 2019 and 2022, whilst GVA increased 12.2% per year in real terms in the same period.
- The pharmaceutical industry in Slovakia has been growing, given the large increase in GVA over time, and is becoming more productive in line with the Slovakian economy.
- Slovakia has a smaller pharmaceutical industry than some other European countries. This means that small changes in GVA and employment have a large variance and thus larger impact on GVA per employee.

The pharmaceutical industry directly contributes an average **€40,900** of direct GVA for every employee in 2022. This represents a **2.4% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

The pharmaceutical industry in Slovenia contributed €2.9bn to GVA in 2022, and supported 25,600 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	900	600	500
2022	1,300	900	700

The total GVA impact of the pharmaceutical industry in Slovenia has **increased by 6.4% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	6,500	10,700	8,600
2022	6,400	10,600	8,500

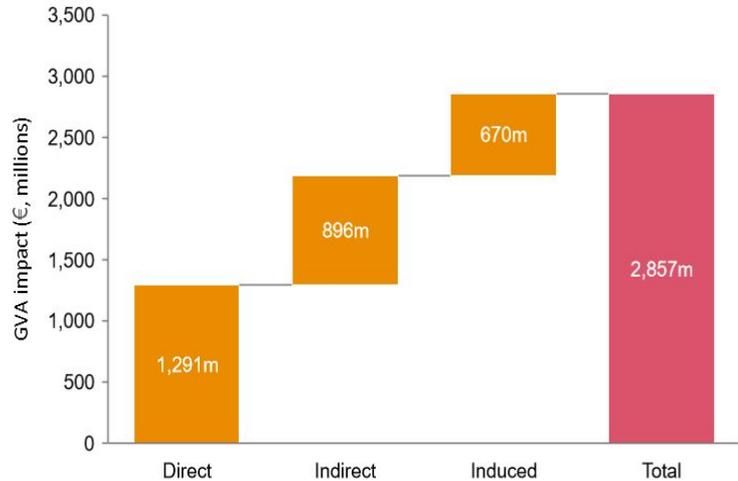
The total employment impact of the pharmaceutical industry in Slovenia has **decreased by 0.2% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis. Method 2 used - 2022 national data, with percentage of the size of the pharmaceutical industry applied (GVA and employment).

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability. Values presented for direct GVA for Slovenia are median figures of the range 1,140 to 1,442. The indirect GVA range is 792 to 1,001. The induced range is 592 to 748. This leads to a total impact range of 2,524 to 3,191. All figures are in €m. Values presented for direct employment for Slovenia are median figures of the range 5,436 to 7,443. The indirect employment range is 8,963 to 12,272. The induced range is 7,175 to 9,824. This leads to a total impact range of 21,573 to 29,539.

The pharmaceutical industry in Slovenia contributed €2.9bn to GVA in 2022, and supported 25,600 jobs across the economy

GVA contribution of the pharmaceutical industry in Slovenia, 2022

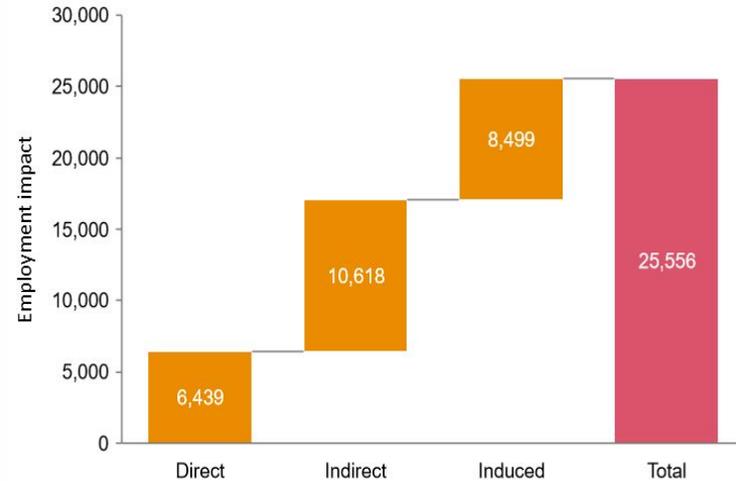


For every €1 contributed directly to Slovenia by the pharmaceutical sector, €2.21 is supported across the economy.

Source: Eurostat, PwC analysis. Method 2 used - 2022 national data, with percentage of the size of the pharmaceutical industry applied (GVA and employment).

Note that values presented for direct GVA for Slovenia are median figures of the range 1,140 to 1,442. The indirect GVA range is 792 to 1,001. The induced range is 592 to 748. This leads to a total impact range of 2,524 to 3,191. All figures are in €. Values presented for direct employment for Slovenia are median figures of the range 5,436 to 7,443. The indirect employment range is 8,963 to 12,272. The induced range is 7,175 to 9,824. This leads to a total impact range of 21,573 to 29,539.

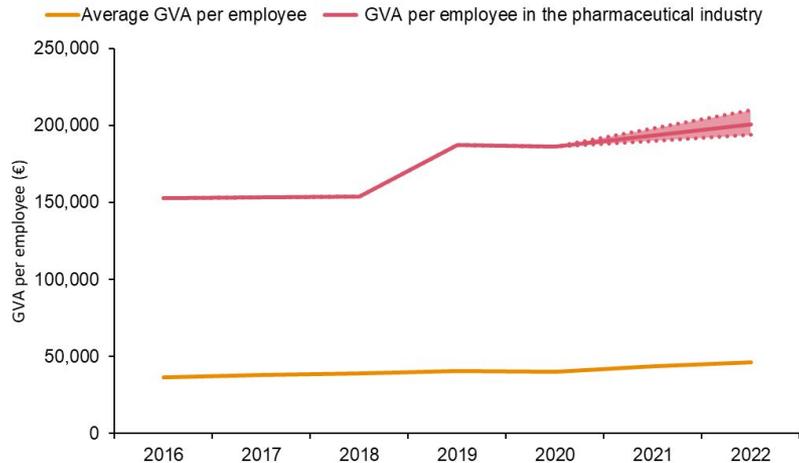
Employment contribution of the pharmaceutical industry in Slovenia, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 2.6% of total manufacturing employment in Slovenia.

The pharmaceutical industry in Slovenia generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Slovenia, 2016-2022



The productivity of the pharmaceutical industry in Slovenia is on average 335.9% higher than the average productivity of all industries between 2016 and 2022.

- GVA per employee has increased since 2016 and has been increasing at a higher rate from 2019 to 2022.
- Employment in pharmaceuticals increased 0.2% per year between 2016 and 2022, whilst GVA increased 6.4% per year in real terms in the same period.
- GVA per employee has been increasing over time, such that employees in the pharmaceutical sector are becoming more productive. The sector is also growing in size, given GVA and employment growth.

The pharmaceutical industry directly contributes an average **€200,500** of direct GVA for every employee in 2022. This represents a **6.7% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis. Method 2 used - 2022 national data, with percentage of the size of the pharmaceutical industry applied (GVA and employment).

Note that values presented for direct GVA for Slovenia are median figures of the range 1,140 to 1,442. The indirect GVA range is 792 to 1,001. The induced range is 592 to 748. This leads to a total impact range of 2,524 to 3,191. All figures are in €m. Values presented for direct employment for Slovenia are median figures of the range 5,436 to 7,443. The indirect employment range is 8,963 to 12,272. The induced range is 7,175 to 9,824. This leads to a total impact range of 21,573 to 29,539.

The pharmaceutical industry in Spain contributed €24bn to GVA in 2022, and supported 265,300 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	5,600	4,500	7,100
2022	7,800	6,300	10,000

The total GVA impact of the pharmaceutical industry in Spain has **increased by 6.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	41,000	63,500	102,500
2022	52,600	81,400	131,400

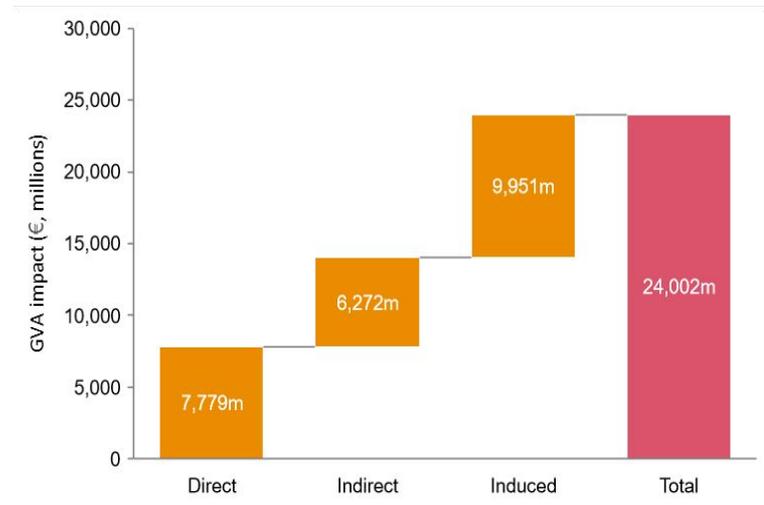
The total employment impact of the pharmaceutical industry in Spain has **increased by 4.7% per year** between 2016 and 2022.

Source: Eurostat, PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

The pharmaceutical industry in Spain contributed €24bn to GVA in 2022, and supported 265,300 jobs across the economy

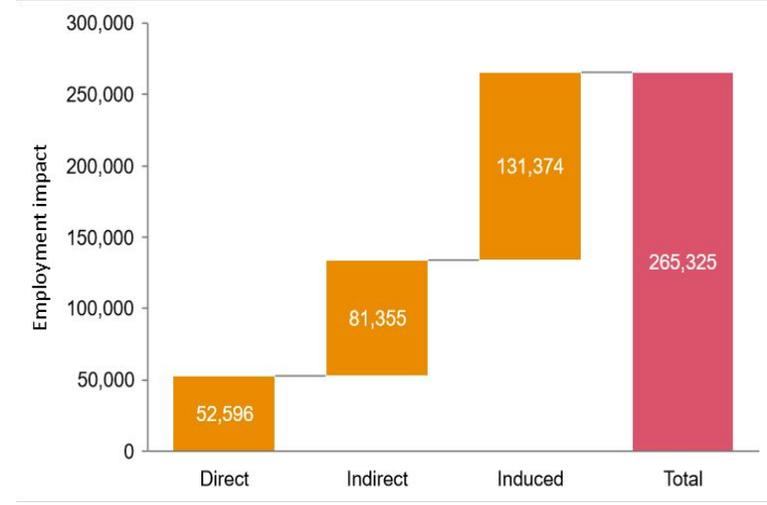
GVA contribution of the pharmaceutical industry in Spain, 2022



For every €1 contributed directly to Spain by the pharmaceutical sector, €3.09 is supported across the economy.

Source: Eurostat, PwC analysis.

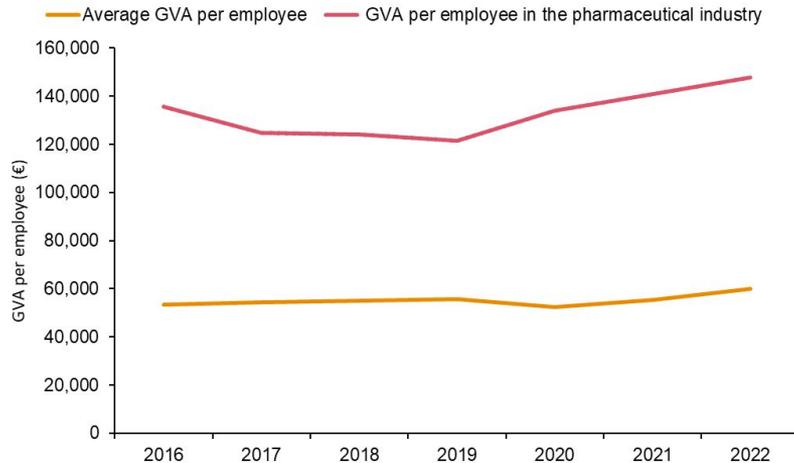
Employment contribution of the pharmaceutical industry in Spain, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 1.3% of total manufacturing employment in Spain.

The pharmaceutical industry in Spain generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Spain, 2016-2022



The productivity of the pharmaceutical industry in Spain is on average 141.7% higher than the average productivity of all industries between 2016 and 2022.

- GVA per employee has increased since 2016 and has been increasing at a higher rate from 2019 to 2022.
- Employment in pharmaceuticals increased 2.6% per year between 2019 and 2022, whilst GVA increased 10.5% per year in real terms in the same period.
- GVA is growing relatively faster than employment and thus GVA per employee has increased from 2019.
- Specifically the growth in GVA per employee can be partially attributed to the investment of €774 million in R&D, in 2019¹.

The pharmaceutical industry directly contributes an average **€147,900** of direct GVA for every employee in 2022. This represents a **1.5% increase per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis.

1 - Caixa Bank, The Spanish Pharmaceutical Industry (2022) - [link](#).

The pharmaceutical industry in Sweden contributed €13.3bn to GVA in 2022, and supported 73,700 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	4,900	3,800	2,100
2022	6,000	4,600	2,700

The total GVA impact of the pharmaceutical industry in Sweden has **increased by 3.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	11,800	26,400	14,600
2022	16,500	36,900	20,300

The total employment impact of the pharmaceutical industry in Sweden has **increased by 6.6% per year** between 2016 and 2022.

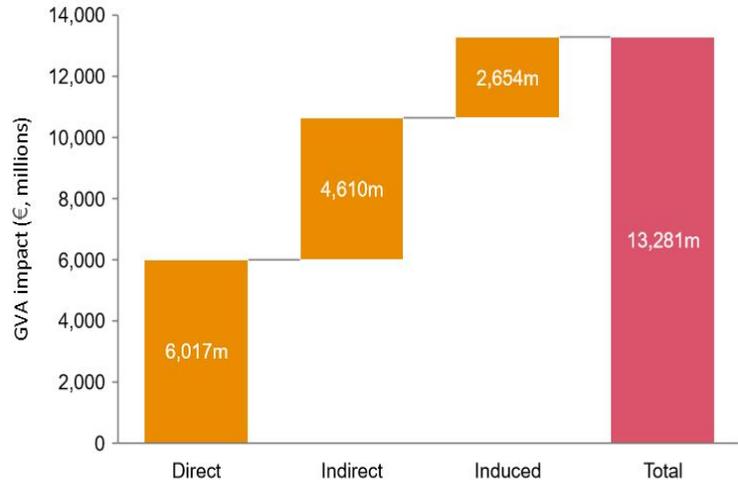
Source: National data, PwC analysis. Method 1 used, GVA and employment. GVA upper bound 15% (Germany) and lower bound 7% (the Netherlands). Employment upper bound 12% (Austria) and lower bound 1% (Slovakia). Range narrowed using data source provided by Sweden.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

Values presented for direct GVA for Sweden are median figures of the range 6,096 to 6,538. The indirect GVA range is 4,671 to 5,009. The induced range is 2,689 to 2,884. This leads to a total impact range of 13,456 to 14,431. All figures are in €m. Values presented for direct employment for Sweden are median figures of the range 15,900 to 17,099. The indirect employment range is 35,516 to 38,194. The induced range is 19,567 to 21,043. This leads to a total impact range of 70,983 to 76,336.

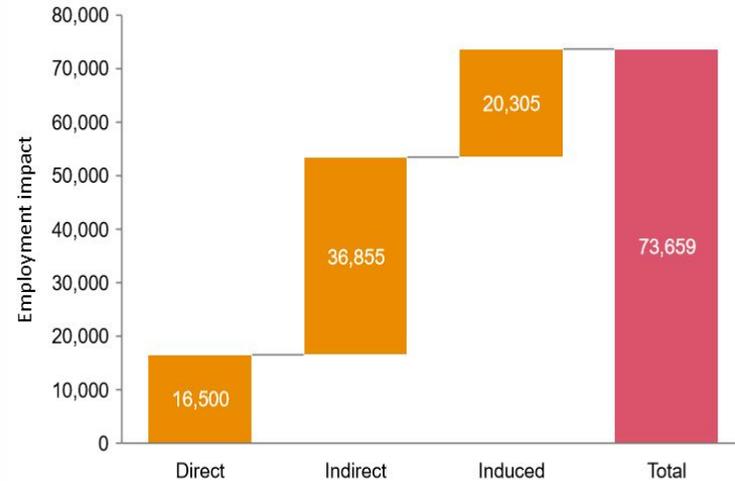
The pharmaceutical industry in Sweden contributed €13.3bn to GVA in 2022, and supported 73,700 jobs across the economy

GVA contribution of the pharmaceutical industry in Sweden, 2022



For every €1 contributed directly to Sweden by the pharmaceutical sector, €2.21 is supported across the economy.

Employment contribution of the pharmaceutical industry in Sweden, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 47.4% of total manufacturing employment in Sweden.

Source: National data, PwC analysis. Method 1 used, GVA and employment.

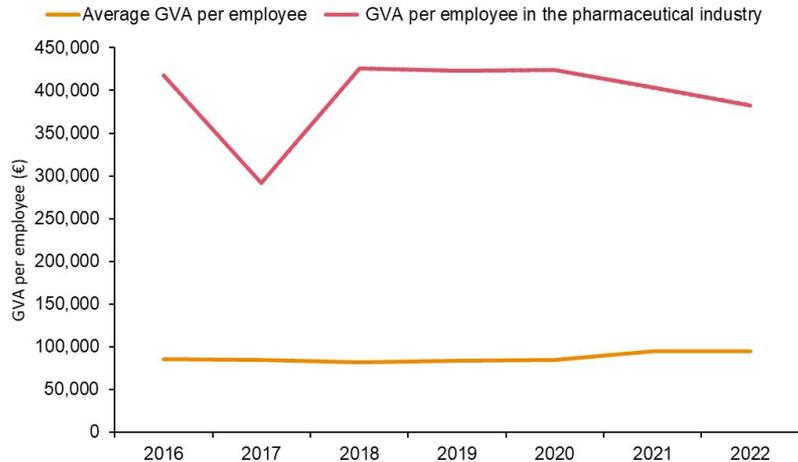
GVA upper bound 15% (Germany) and lower bound 7% (the Netherlands). Employment upper bound 12% (Austria) and lower bound 1% (Slovakia). Range narrowed using data source provided by Sweden.

Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

Note that values presented for direct GVA for Sweden are median figures of the range 6,096 to 6,538. The indirect GVA range is 4,671 to 5,009. The induced range is 2,689 to 2,884. This leads to a total impact range of 13,456 to 14,431. All figures are in €m. Values presented for direct employment for Sweden are median figures of the range 15,900 to 17,099. The indirect employment range is 35,516 to 38,194. The induced range is 19,567 to 21,043. This leads to a total impact range of 70,983 to 76,336.

The pharmaceutical industry in Sweden generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Sweden, 2016-2022



The productivity of the pharmaceutical industry in Sweden is on average 356.3% higher than the average productivity of all industries between 2016 and 2022.

- Employment in pharmaceuticals increased 6.6% per year between 2016 and 2022, whilst GVA increased 3.6% per year in real terms in the same period.
- As the growth rate of both GVA and employment is similar, GVA per employee appears to be stable over time.
- There is a one year decrease in GVA per employee attributed to a decline in GVA, the sector recovers to trend levels the following year.

The pharmaceutical industry directly contributes an average **€382,900** of direct GVA for every employee in 2022. This represents a **1.4% decrease per year in real terms** from the 2016 value.

Source: Eurostat, PwC analysis. Method 1 used, GVA and employment. GVA upper bound 15% (Germany) and lower bound 7% (the Netherlands). Employment upper bound 12% (Austria) and lower bound 1% (Slovakia). Range narrowed using data source provided by Sweden.

Note that values presented for direct GVA for Sweden are median figures of the range 6,096 to 6,538. The indirect GVA range is 4,671 to 5,009. The induced range is 2,689 to 2,884. This leads to a total impact range of 13,456 to 14,431. All figures are in €m. Values presented for direct employment for Sweden are median figures of the range 15,900 to 17,099. The indirect employment range is 35,516 to 38,194. The induced range is 19,567 to 21,043. This leads to a total impact range of 70,983 to 76,336.

The pharmaceutical industry in Switzerland contributed €96.9bn to GVA in 2022, and supported 235,600 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	28,900	17,500	17,400
2022	43,900	26,500	26,400

The total GVA impact of the pharmaceutical industry in Switzerland has **increased by 8.6% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	45,100	60,200	108,500
2022	50,600	66,000	119,000

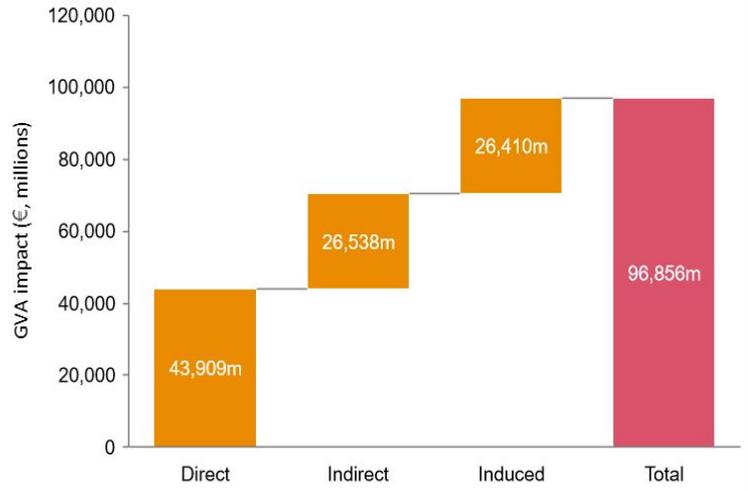
The total employment impact of the pharmaceutical industry in Switzerland has **increased by 1.6% per year** between 2016 and 2022.

Source: 2022 Switzerland data from 'The Importance of the Pharmaceutical Industry for Switzerland' (BAK Economics AG) as there was limited data available from Eurostat. Figures were tested for comparability and adjusted to euros using the average exchange rate between 2012 and 2022. PwC analysis.

Note: 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability.

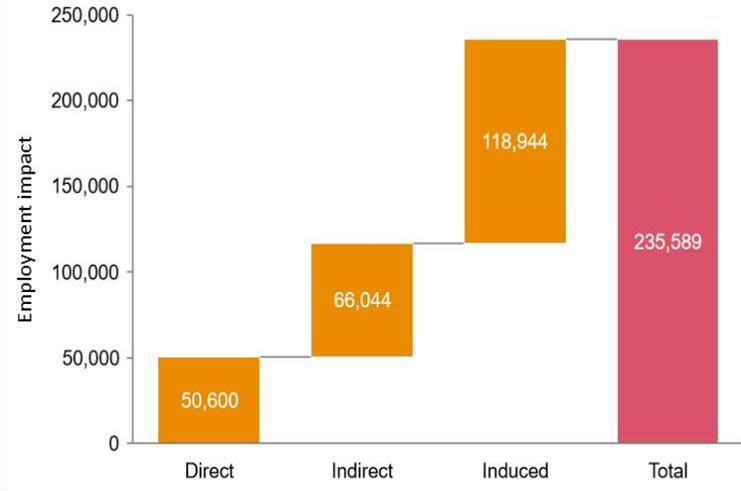
The pharmaceutical industry in Switzerland contributed €96.9bn to GVA in 2022, and supported 235,600 jobs across the economy

GVA contribution of the pharmaceutical industry in Switzerland, 2022



For every €1 contributed directly to the Switzerland by the pharmaceutical sector, €2.21 is supported across the economy.

Employment contribution of the pharmaceutical industry in Switzerland, 2022

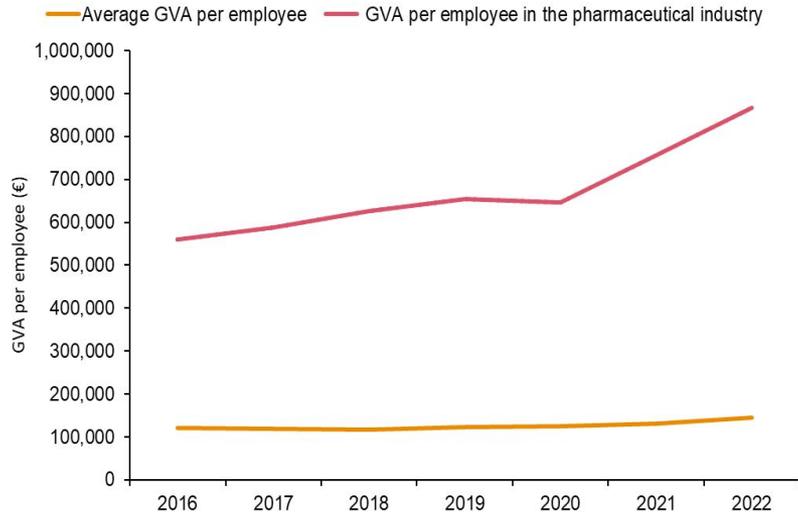


The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 11.4% of total manufacturing employment in Switzerland.

Source: Data provided by Switzerland as there was limited or no data available from Eurostat. Figures were tested for comparability, PwC analysis.
2022 Switzerland data from 'The Importance of the Pharmaceutical Industry for Switzerland' (BAK Economics AG).
Note that figures have been rounded so may not sum. Precise data to 4 decimal places are included in the [appendix](#).

The pharmaceutical industry in Switzerland generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in Switzerland, 2016-2022



The productivity of the pharmaceutical industry in Switzerland is on average 434.0% higher than the average productivity of all industries between 2016 and 2022.

- GVA per employee has increased since 2016 and grew at a faster rate between 2020 to 2022.
- Specifically, employment in pharmaceuticals increased 3.7% per year between 2020 and 2022, whilst GVA increased 22.1% per year in real terms in the same period.
- The recent shift in the rate of increase in GVA per employee is attributed to GVA growing at a faster rate than employment.
- Companies in the pharmaceutical sector invest CHF 7 billion in R&D each year.

The pharmaceutical industry directly contributes an average **€867,800** of direct GVA for every employee in 2022. This represents a **6.4% increase per year in real terms** from the 2016 value.

Source: Data provided by Switzerland as there was limited or no data available from Eurostat. Figures were tested for comparability, PwC analysis.

1 - 2022 Switzerland data from 'The Importance of the Pharmaceutical Industry for Switzerland' (BAK Economics AG) - [link](#).

The pharmaceutical industry in the United Kingdom contributed €38.9bn to GVA in 2022, and supported 264,700 jobs across the economy

GVA Impact (€m)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	18,100	6,900	13,600
2022	18,200	7,000	13,700

The total GVA impact of the pharmaceutical industry in the United Kingdom has **increased by 0.1% per year in real terms** between 2016 and 2022.

Employment Impact (total employment, ILO definition)

	Direct	Supply Chain (Indirect)	Consumer Spending (Induced)
2016	35,000	58,800	121,600
2022	43,000	72,300	149,400

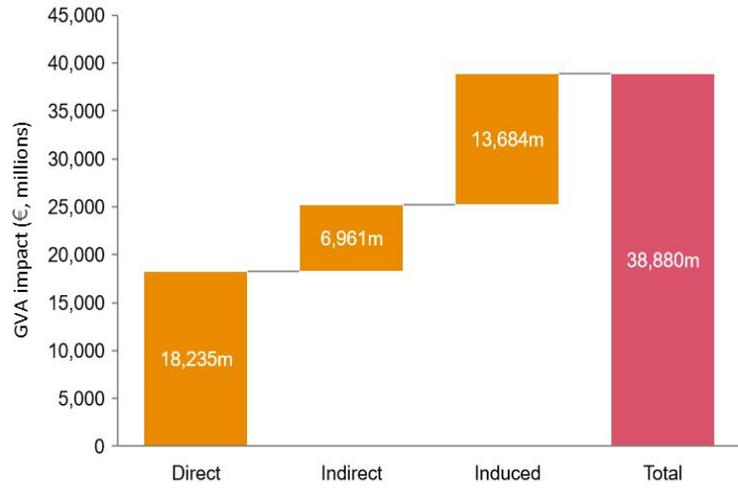
The total employment impact of the pharmaceutical industry in the United Kingdom has **increased by 3.8% per year** between 2016 and 2022.

Source: ONS GDP Low Level Aggregates, Business Register and Employment Survey, PwC analysis.

Note: 2016 figures are in current prices for comparability and all UK GVA data is converted to euros using the average of annual exchange rate for the years 2016 to 2022.

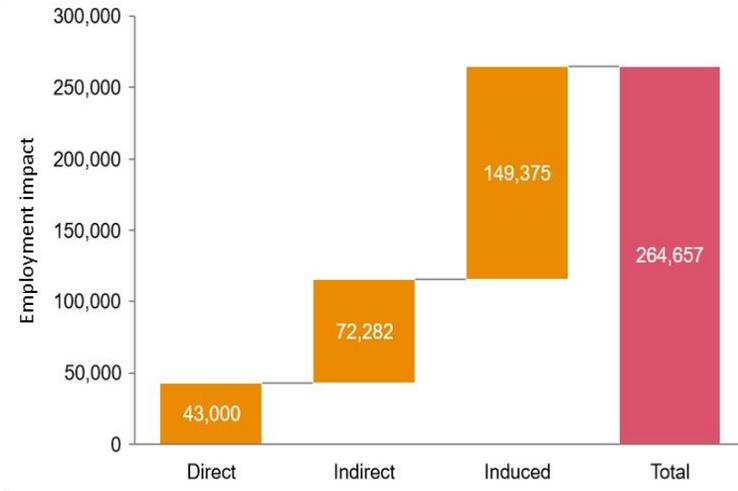
The pharmaceutical industry in the United Kingdom contributed €38.9bn to GVA in 2022, and supported 264,700 jobs across the economy

GVA contribution of the pharmaceutical industry in the United Kingdom, 2022



For every €1 contributed directly to the United Kingdom by the pharmaceutical sector, €2.13 is supported across the economy.

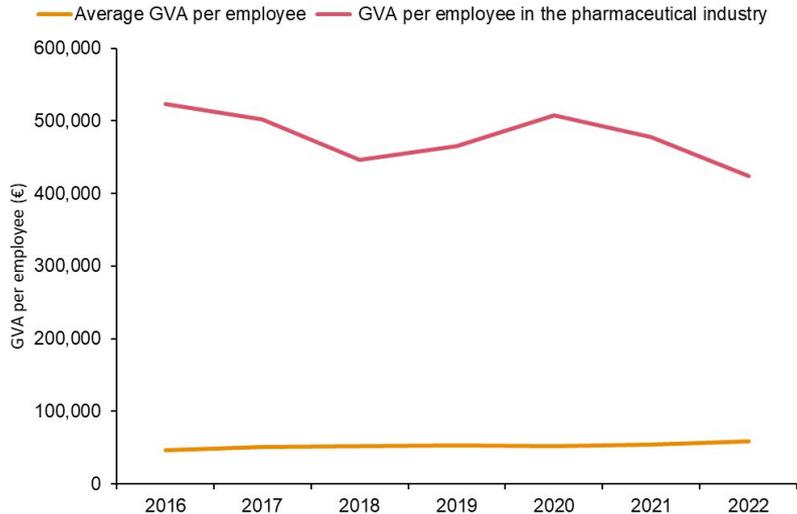
Employment contribution of the pharmaceutical industry in the United Kingdom, 2022



The employment contribution of the pharmaceutical industry (including indirect and induced effects) accounts for 9.0% of total manufacturing employment in the United Kingdom.

The pharmaceutical industry in the United Kingdom generates greater direct GVA per employee than the national average

Comparison of direct GVA per employee of the pharmaceutical industry to the national average GVA per employee in the United Kingdom, 2016-2022



The productivity of the pharmaceutical industry in the UK is 813.5% higher than the average of all industries between 2016 and 2022.

- Employment has been growing since 2016, whilst there has been a slight decrease in GVA. Consequently GVA per employee has declined slightly over time.
- Employment in pharmaceuticals increased 3.8% per year between 2016 and 2022, whilst GVA increased 0.1% per year in real terms in the same period.
- There is R&D investment in pharmaceutical research and £9 billion was invested in 2022¹. The pharmaceuticals product group made up the greatest portion of business R&D in 2022 (17.9% of the total).

The pharmaceutical industry directly contributes an average **€424,100** of direct GVA for every employee in 2022. This represents a **0.2% decrease per year in real terms** from the 2016 value.

Source: ONS GDP Low Level Aggregates, Business Register and Employment Survey, PwC analysis.

Note that all UK GVA data is converted using the average of annual exchange rate for the years 2016 to 2022.

1 - ONS: Business enterprise research and development, UK: 2022 - [link](#).

Notes on UK input data

The data included in this report for the UK is not directly comparable with other nations.

Due to the UK's exit from the European Union, the UK Office for National Statistics no longer routinely reports data to Eurostat. As such, Eurostat Enterprise data for the UK does not exist in the relevant years.

The most comparable data source from the UK is aGVA data from the Annual Business Survey. However whilst methodologically similar this is not like-for-like, and trends do not precisely match Eurostat enterprise data in years for which both exist. Additionally, ONS aGVA data excludes changes in asset values resulting from R&D, which is significant for the UK (representing approximately an 80% difference in sectoral GVA). For these reasons we use National Accounts Low Level Aggregates.

The manufacturing of pharmaceuticals is part of the wider biopharmaceutical sector.

The analysis contained in this report focuses on industry classification C21, “manufacturing of pharmaceuticals”. Activity relating to the manufacture of other chemical products (SIC 20590), inorganic base chemicals (SIC 20130), other organic base chemicals (SIC 20140), and “wholesale” activity (SIC 46460) are not contained in this analysis.

PwC conducted similar analysis for ABPI in 2022¹; the scope of that analysis included industry classifications beyond C21. Additionally, input data was from the Annual Business Survey as opposed to National Accounts Low Level Aggregate data as used in this report.

1 - PwC and ABPI (2022), Transforming lives, raising productivity - [link](#).

5

Appendix

We estimated the economic contribution of the pharmaceutical industry in Europe using input-output modelling

Our approach to estimating the economic contribution of the pharmaceutical industry involved three steps.

Overview of our economic modelling approach

Broadly, the approach involved review existing economic statistics for the pharmaceutical industry in Europe and agreeing the correct base data, calculating the indirect and induced multipliers for GVA and employment, and then using these multipliers to estimate the indirect and induced contributions of the industry.

1

Review and agreeing existing economic statistics for the pharmaceutical industry in Europe

2

Calculate indirect and induced multipliers for GVA and employment

3

Estimate indirect and induced contributions

Data approach by country (1)

Country	GVA			Employment		
	Standard approach	Method 1	Method 2	Standard approach	Method 1	Method 2
Austria	X			X		
Belgium	X			EFPIA production data (2022). In keeping with the 2016 report we use Belgian ONSS data provided by EFPIA. This is because of frequent swapping between primary production activities of pharmaceutical companies in Belgium. The Belgian ONSS has completed a comprehensive exercise to produce this data that is more accurate.		
Bulgaria		X		X		
Croatia	X			X		
Cyprus	X			X		
Czechia	X			X		
Denmark		X		Denmark Statistics data (2022). Eurostat employment data for Denmark was not reliable due to a definitional change. Figures were tested for comparability.		
Estonia	X			X		
Finland	X			X		
France	X			X		
Germany	X			Production data provided by EFPIA inflated with a multiplier to become equivalent to enterprise data (2022). Employment adjustments were estimated using Eurostat enterprise data. Eurostat data was not reliable due to a definitional change in 2017. Figures were tested for comparability.		
Greece	X			X		
Hungary	X			X		
Ireland			X	IDA NACE C20 and C21 data deflated with a multiplier to become equivalent to SIC21 (2022). Deflator estimated using Eurostat enterprise data. Employment data was not available on eurostat beyond 2014. Figures were tested for comparability.		

Data approach by country (2)

Country	GVA			Employment		
	Standard approach	Method 1	Method 2	Standard approach	Method 1	Method 2
Italy	X			X		
Latvia	X			X		
Lithuania	Lithuania National Statistics (2022). Data on Eurostat was not available for Lithuania beyond 2015, therefore an alternative data source was used in order to produce the most up to date analysis of the size of the manufacture of pharmaceuticals industry. Figures were tested for comparability.					
Malta	X			X		
Netherlands	X			X		
Norway	Data provided by the Association of the Pharmaceutical Industry in Norway (LMI) (2022). Eurostat data was not available. Figures were tested for comparability.					
Poland	X			X		
Portugal	X			X		
Romania	X			X		
Slovakia	X			X		
Slovenia			X			X
Spain	X			X		
Sweden		X The ranged was narrowed using data from Sweden.			X The ranged was narrowed using data from Sweden.	
Switzerland	Data provided by the Swiss Federal Statistics Office as there was limited or no data available from Eurostat. Figures were tested for comparability.					
United Kingdom	GVA data was sourced from the GDP Low Level Aggregates data (ONS). Figures were adjusted from pounds to euros using an average of the annual exchange rate from 2016 to 2020. Eurostat data appeared to be inconsistent and therefore less reliable so an alternative data set was used.			Employment data was sourced from the Business Register and Employment Survey (ONS). There was limited availability of Eurostat data and it was not as reliable as that from the ONS.		

Data sources by country (1)

Country	Employment
Austria	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Belgium	2020 enterprise data updated with national accounts growth rate to 2022 (GVA). Source: Eurostat. Employment 2022 data. Source: ONSS.
Bulgaria	2020 enterprise data updated with national accounts growth rate to 2022 (employment). GVA method 1, 2019 enterprise data updated using growth rate from a range with the upper bound of 25% (Slovenia) and the lower bound of 3% (Cyprus). Source: Eurostat.
Croatia	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Cyprus	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Czechia	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Denmark	2022 employment data. Source: Denmark Statistics. GVA method 1, 2020 enterprise data updated using growth rate from a range with the upper bound of 15% (Germany) and the lower bound of 7% (the Netherlands). Source: Eurostat.
Estonia	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Finland	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
France	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Germany	2020 enterprise data updated with national accounts growth rate to 2022 (GVA). Source: Eurostat. Employment 2022 with multiplier applied to estimate the size of "enterprise data" as the definition changes in 2017/18. Source: EFPIA production data.
Greece	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Hungary	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Ireland	Employment Method 2, 2022 national data, with percentage of the size of the pharmaceutical industry applied. Source: Eurostat. Employment 2022 with multiplier applied to estimate the size of "enterprise data" as data not available past 2014. Source: IDA.
Italy	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Latvia	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.

Data sources by country (2)

Country	Employment
Lithuania	2022 employment and GVA data. Source: Lithuania Official Statistics.
Malta	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Netherlands	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Norway	Data provided by Norway (2022). Data was not available or considered less reliable. Figures were tested for comparability.
Poland	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Portugal	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Romania	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Slovakia	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Slovenia	Method 2, 2022 national data, with percentage of the size of the pharmaceutical industry applied (GVA and employment). Source: Eurostat.
Spain	2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.
Sweden	Method 1, GVA and employment. GVA upper bound 15% (Germany) and lower bound 7% (the Netherlands). Employment upper bound 12% (Austria) and lower bound 1% (Slovakia). Range narrowed using data source provided by Sweden.
Switzerland	2022 Switzerland data from report provided (GVA and employment).
United Kingdom	Employment: Business Register Data 2022. GVA: GDP Low Level Aggregates data 2022. Source: ONS. Employment and GVA data were not available from Eurostat due to the UK's exit from the European Union.

Method 1

Some countries did not have recent data available in enterprise or national accounts. We used the highest and lowest growth rates from countries with similarly sized pharmaceutical sectors. We applied these growth rates to the latest year of available data and generated a range of estimates for the missing data.

Country	Comparison Countries	Range of total impact	Upper Bound	Lower Bound
Bulgaria (GVA)	Cyprus, Slovenia,	€538m - €652m	25% (Slovenia) - growth rate applied to 2019 Eurostat data	3% (Cyprus) - growth rate applied to 2019 Eurostat data
Denmark (GVA)	Germany, the Netherlands, Sweden	€16,731 - €17,829	15% (Germany) - growth rate applied to 2020 Eurostat data	7% (the Netherlands) - growth rate applied to 2020 Eurostat data
Sweden (GVA)	Austria, Germany, Norway, UK, Netherlands	€13,456 - €14,431	15% (Germany) - growth rate applied to 2018 Eurostat data	7% (Austria) - growth rate applied to 2018 Eurostat data
Sweden (Employment)	Austria, Germany, Norway, UK, Netherlands	19,567 - 21,043	12% (Austria) - growth rate applied to 2020 Eurostat data	6.4% (Norway) - growth rate applied to 2020 Eurostat data

Method 2

Some countries do not have the most recent enterprise or national accounts data, nor do they have comparable countries from which to derive upper and lower bounds.

We calculate the size of the pharmaceutical industry GVA in relation to the overall economy GVA over time. We develop high and low scenarios based on the highest and lowest share of the economy and applying the percentages to the available data. We use the average of the two scenarios for the analysis in this report.

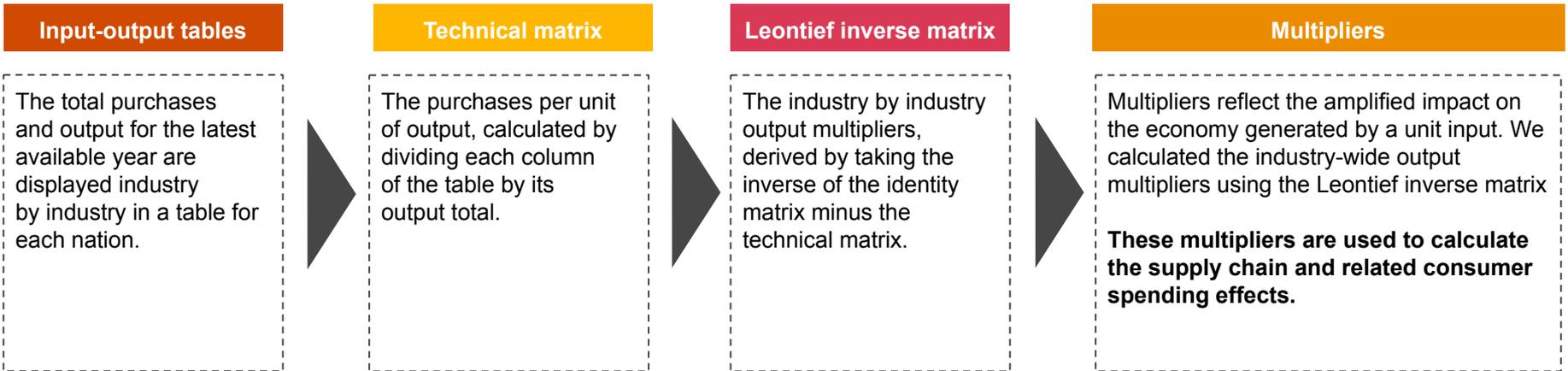
Country	Low (2022)		High (2022)		Average (2022)	
	Pharmaceutical industry as % of whole economy	Value	Pharmaceutical industry as % of whole economy	Value	Pharmaceutical industry as % of whole economy	Value
Ireland (GVA)	6.7%	€32,316m	9.0%	€43,534m	7.9%	€37,925m
Slovenia (GVA)	2.0%	€983m	2.5%	€1,243m	2.2%	€1,097m
Slovenia (Employment)	0.5%	5,000	0.7%	7,000	0.6%	6,000

The second step was to calculate indirect and induced multipliers for GVA and employment



An **input-output table** provides a complete picture of the interdependence of industries in the economy. It is constructed by combining and transforming both the **Use Table**, which provides data on inputs consumed by each industry with the **Supply Table**, which provides data on the outputs produced by each industry to form a symmetric table mapping supply and use across industries in the economy.

Deriving multipliers:



Type 1 and Type 2 multipliers capture different impacts of the pharmaceutical industry

A Type 1 multiplier captures the direct and indirect impacts of an industry, and is calculated as follows:

Direct impact + Indirect Impact

Direct impact

A Type 2 multiplier captures the direct, indirect, and induced impacts of an industry, and is calculated as follows:

Direct impact + Indirect Impact + Induced impact

Direct impact

These multipliers can be interpreted as follows:

	Type 1 multiplier	Type 2 multiplier
GVA	A Type 1 GVA multiplier of 1.5 is interpreted as 'for every €1 spent by the pharmaceutical industry, 50 cents of benefit is created in the supply chain.'	A Type 2 GVA multiplier of 2.5 is interpreted as 'for every €1 spent by the pharmaceutical industry, €1.50 of benefit is created through the supply chain and employees spending their wages.'
Employment	A Type 1 employment multiplier of 1.7 is interpreted as 'for every job created in the pharmaceutical industry, 0.7 jobs are created in the supply chain.'	A Type 2 employment multiplier of 3.0 is interpreted as 'for every job created in the pharmaceutical industry, 2 jobs are created in the supply chain and through employees spending their wages.'

Multipliers by country (1)

Country	GVA multipliers		Employment multipliers	
	Type I	Type II	Type I	Type II
Europe average	1.58	2.27	2.01	3.30
Austria	1.35	1.88	1.59	2.53
Belgium	1.46	1.82	2.27	3.15
Bulgaria	1.55	2.32	1.59	2.49
Croatia	1.47	2.05	1.89	3.28
Cyprus	1.40	2.50	1.44	2.76
Czechia	1.56	2.02	2.02	2.76
Denmark	1.26	1.56	2.03	3.05
Estonia	1.65	2.39	2.01	3.12
Finland	1.20	1.46	1.68	2.47
France	1.49	2.08	2.53	4.33
Germany	1.51	2.07	2.25	3.73
Greece	2.27	5.01	1.83	3.37
Hungary	1.28	1.63	1.71	2.76
Ireland	1.08	1.17	1.18	1.52
Italy	1.84	3.21	2.19	4.38
Latvia	1.36	1.88	1.59	2.57

Multipliers by country (2)

Country	GVA multipliers		Employment multipliers	
	Type I	Type II	Type I	Type II
Europe average	1.58	2.27	2.01	3.30
Lithuania	1.19	1.47	1.75	3.30
Malta	1.77	2.28	2.02	2.68
Netherlands	1.30	1.54	1.82	2.63
Norway	2.51	2.73	2.15	2.35
Poland	1.86	2.76	1.67	2.46
Portugal	1.74	2.83	2.29	4.35
Romania	1.74	2.92	1.86	3.05
Slovakia	1.69	2.42	1.64	2.32
Slovenia	1.69	2.21	2.65	3.97
Spain	1.81	3.09	2.55	5.04
Sweden	1.77	2.21	3.23	4.46
Switzerland	1.60	2.21	2.31	4.66
United Kingdom	1.38	2.13	2.68	6.15

Some multipliers were significantly higher / lower than the region's average, but there are real-world reasons for this (1)

Country	GVA multipliers		Employment multipliers		Why are multipliers different?
	Type I	Type II	Type I	Type II	
Europe average	1.58	2.27	2.01	3.30	
Greece	2.27	5.01	1.83	3.37	Greece has relatively high GVA multipliers, and the type 2 GVA multiplier is particularly high. This may be caused by lower wage and price levels in Greece than elsewhere in Europe, which means companies and employees buy predominantly from local companies. This is likely particularly true in high value industries, where prices are likely to be higher.
Netherlands	1.30	1.54	1.82	2.63	The Netherlands has relatively low GVA and employment multipliers. This is likely due to it being a relatively small country, which is strongly integrated with the rest of Europe. This means companies that operate in the country's pharmaceutical industry are likely to procure a large share of their supply chain from elsewhere in Europe. Consumers are also likely to spend a larger share of their income on imported goods and services than domestically produced goods and services.
Ireland	1.08	1.17	1.18	1.52	Ireland has relatively low GVA and employment multipliers. This is likely due to it being a relatively small country, which is strongly integrated with other economies in the British Isles and the rest of Europe. Consumers are likely to spend a larger share of their income on imported goods and services than domestically produced goods and services.

Some multipliers were significantly higher / lower than the region's average, but there are real-world reasons for this (2)

Country	GVA multipliers		Employment multipliers		Why are multipliers different?
	Type I	Type II	Type I	Type II	
Europe average	1.58	2.27	2.01	3.30	
Slovakia	1.69	2.42	1.64	2.32	Slovakia has relatively low GVA and employment multipliers. This is likely due to it being a relatively small country, which is strongly integrated with the rest of Europe. This means companies that operate in the country's pharmaceutical industry are likely to procure a large share of their supply chain from elsewhere in Europe. Consumers are also likely to spend a larger share of their income on imported goods and services than domestically produced goods and services.
Spain	1.81	3.09	2.55	5.04	Spain has relatively high employment multipliers, and the type 2 employment multiplier is particularly high. This may in part be due to the fact that wage and price levels are lower in Spain than elsewhere in Europe, which means companies and employees are likely to buy predominantly from local companies.

Some multipliers were significantly higher / lower than the region's average, but there are real-world reasons for this (3)

Country	GVA multipliers		Employment multipliers		Why are multipliers different?
	Type I	Type II	Type I	Type II	
Europe average	1.58	2.27	2.01	3.30	
Switzerland	1.60	2.21	2.31	4.66	Switzerland has relatively high type 2 multipliers, particularly for employment. This is consistent with the high rates of productivity in the country's industry. High productivity feeds through to higher wages and living standards, and these wages are spent on a variety of goods and services, which in turn support other industries and a large number of jobs.
United Kingdom	1.38	2.13	2.68	6.15	The United Kingdom has a relatively high type 2 employment multiplier. This is consistent with the high rates of productivity in the country's industry. High productivity feeds through to higher wages and living standards, and these wages are spent on a variety of goods and services, potentially significantly from lower productivity and lower skilled industries, which supports a large number of jobs.

Some multipliers were significantly higher / lower than the region's average, but there are real-world reasons for this (4)

Country	GVA multipliers		Employment multipliers		Why are multipliers different?
	Type I	Type II	Type I	Type II	
Europe average	1.58	2.27	2.01	3.30	
Norway	2.51	2.73	2.15	2.35	<p>The multipliers produced from the analysis relate to the NACE code C, not C21. In Norway input output tables the following sectors are combined and therefore cannot be distinguished from each other:</p> <ul style="list-style-type: none"> • Manufacturing of coke and refined petroleum products • Manufacturing of chemicals and chemical products • Manufacturing of basic pharmaceutical products and pharmaceutical preparations <p>The manufacturing of petroleum products is a high value adding industry as it takes raw materials and generates large GVA. This means that the multiplier for the combined industries above would be likely to overestimate the indirect and induced impacts of the pharmaceutical industry.</p> <p>This means that the most representative multiplier is that of manufacturing. We use the multiplier from the manufacturing sector as manufacturing in Norway is highly productive. The multiplier is in line with the expectations for a highly productive industry and all multipliers range between 2 and 3 for Norway.</p>

The third step was to estimate the indirect and induced contributions of the pharmaceutical industry by country

We combined the base data agreed in step 1 with the multipliers estimated as part of step 2.

We have shown that:

- The pharmaceutical industry is a major contributor to the European economy in terms of GVA and employment.
- We estimate that in total, it supported **€448 billion in GVA** and **2.8 million jobs** in 2022.
- The industry's GVA contribution is primarily through direct effects (50.1%), while the industry's employment contribution primarily through induced effects (42.9%). This is consistent with the industry being highly productive.
- The pharmaceutical industry is highly productive, creating **€225,300 of GVA per worker**, which compares favourably to other key industrial industries

The pharmaceutical industry in Europe has a significant impact on GVA (1)

Country	GVA impact (€m)			
	Direct	Indirect	Induced	Total
Austria	2,524.3002	890.8573	1,334.9609	4,750.1184
Belgium	18,246.3081	8,322.5937	6,727.5897	33,296.4915
Bulgaria	256.1893	141.5641	197.3569	595.1103
Croatia	561.9808	264.4315	324.7210	1,151.1333
Cyprus	161.4039	65.1880	176.4429	403.0348
Czechia	935.3812	527.7258	422.2250	1,885.3320
Denmark	11,062.4161	2,883.0921	3,334.4346	17,279.9428
Estonia	22.9769	14.8525	17.0116	54.8410
Finland	1,583.8996	318.9746	413.8229	2,316.6971
France	12,558.1044	6,145.0343	7,381.2645	26,084.4032
Germany	36,263.2889	18,634.1897	20,121.2370	75,018.7156
Greece	819.0604	1,037.6810	2,246.1200	4,102.8614
Hungary	2,285.5883	631.2911	819.1284	3,736.0078
Ireland	42,476.1315	3,256.5063	3,799.7057	49,532.3435
Italy	11,334.7570	9,484.5945	15,568.6766	36,388.0281
Latvia	182.9551	65.1526	95.9048	344.0125

The pharmaceutical industry in Europe has a significant impact on GVA (2)

Country	GVA impact (€m)			
	Direct	Indirect	Induced	Total
Lithuania	52.1120	10.0747	14.4859	76.6726
Malta	75.4100	58.3203	38.5520	172.2823
Netherlands	2,959.9210	883.2096	721.0708	4,564.2014
Norway	331.9862	500.8844	74.4722	907.3428
Poland	1,807.5508	1,551.7141	1,629.0616	4,988.3265
Portugal	785.0090	579.6650	856.0051	2,220.6791
Romania	526.2849	389.6469	619.9943	1,535.9261
Slovakia	104.5288	71.6409	76.5030	252.6727
Slovenia	1,291.2546	896.1721	669.8946	2,857.3213
Spain	7,778.7574	6,271.8792	9,950.9607	24,001.5973
Sweden	6,016.7379	4,609.8906	2,654.0768	13,280.7053
Switzerland	43,908.8706	26,537.5277	26,409.8508	96,856.2491
United Kingdom	18,235.1886	6,961.2102	13,684.0296	38,880.4284
EU27	162,672.3081	68,014.4253	80,224.0384	310,910.7718
Europe	225,148.3535	102,005.5647	120,379.5599	447,533.4781

The pharmaceutical industry in Europe has a significant impact on employment (1)

Country	Employment impact			
	Direct	Indirect	Induced	Total
Austria	19,237.8941	11,366.3320	18,127.4550	48,731.6811
Belgium	43,501.0000	55,429.7951	38,004.0276	136,934.8227
Bulgaria	7,313.2254	4,350.0861	6,577.4369	18,240.7484
Croatia	5,687.1476	5,080.8735	7,869.2806	18,637.3017
Cyprus	2,266.5659	990.4056	2,990.3672	6,247.3387
Czechia	11,255.8340	11,462.9350	8,367.6807	31,086.4497
Denmark	31,640.0000	32,493.8995	32,393.7009	96,527.6004
Estonia	284.7674	286.3571	316.5648	887.6893
Finland	5,095.9184	3,464.0042	4,021.1133	12,581.0359
France	94,523.5294	144,498.5313	170,299.6115	409,321.6722
Germany	138,536.2793	172,646.7039	206,090.1411	517,273.1243
Greece	13,568.0135	11,200.7786	20,929.0648	45,697.8569
Hungary	20,002.5257	14,205.3316	21,005.2761	55,213.1334
Ireland	29,449.9398	5,166.6186	10,070.7489	44,687.3073
Italy	66,754.1654	79,315.9310	146,084.9566	292,155.0530
Latvia	2,326.3094	1,380.1427	2,262.4226	5,968.8747

The pharmaceutical industry in Europe has a significant impact on employment (2)

Country	Employment impact			
	Direct	Indirect	Induced	Total
Lithuania	627.0000	472.6113	971.2379	2,070.8492
Malta	1,288.9913	1,310.2637	850.2141	3,449.4691
Netherlands	17,571.9286	14,380.7951	14,223.5995	46,176.3232
Norway	2,869.7500	3,311.9329	554.4201	6,736.1030
Poland	23,753.2358	15,966.1539	18,747.1770	58,466.5668
Portugal	9,561.4270	12,360.4582	19,625.9486	41,547.8338
Romania	10,816.5341	9,327.7482	12,849.2201	32,993.5024
Slovakia	2,556.4932	1,643.8559	1,726.9327	5,927.2818
Slovenia	6,439.0897	10,617.5147	8,499.2063	25,555.8107
Spain	52,596.0613	81,355.0695	131,374.3603	265,325.4911
Sweden	16,499.5524	36,855.0002	20,304.9024	73,659.4550
Switzerland	50,600.0000	66,044.3283	118,944.3215	235,588.6498
United Kingdom	43,000.0000	72,281.5890	149,375.1384	264,656.7274
EU27	633,153.4287	737,527.5690	924,221.1905	2,294,902.1882
Europe	729,623.1787	879,266.0467	1,193,456.5275	2,802,345.7529

EFPIA data for R&D investment in the manufacture of pharmaceuticals for Europe, the US, and China, 2010 to 2022 (1)

Country	Employment
Austria	Statistik Austria
Belgium	pharma.be (firms doing basic research on medicines for human use in Belgium)
Bulgaria	2018: KPMG; 2021: estimate based on data triangulation from several data sources
Croatia	Croatian Employers Association (HUP) & Association of Employers in Healthcare
Cyprus	EFPIA data
Czechia	Eurostat; CZSO (2018); AIFP study Innovation for Life (2019)
Denmark	Statistics Denmark
Estonia	No data available
Finland	Pharma Industry Finland +Orion
France	Ministry of Research
Germany	Stiftverband (Association for the Promotion of Sciences and Humanities)
Greece	National Ethics Committee (2011 clinical research), IOVE (as of 2013); Eurostat (2015); GSRI (General Secretariat for Research & Innovation - 2020)
Hungary	Hungarian Central Statistical Office (KSH)
Ireland	PCI until 2012, Industrial Development Association (IDA) as of 2013
Italy	Farmindustria elaboration on Istat
Latvia	No data available

EFPIA data for R&D investment in the manufacture of pharmaceuticals for Europe, the US, and China, 2010 to 2022 (2)

Country	Employment
Lithuania	No data available
Malta	No data available
Netherlands	CBS - Nefarma estimate as of 2007 (10% of private business R&D spending)
Norway	LMI yearly R&D inquiry
Poland	Central Statistical Office
Portugal	IPCTN
Romania	ARPIM estimate
Slovakia	No data available prior to 2020 so excluded
Slovenia	Forum estimate based on latest available Slovenian Statistics Office data (2016)
Spain	Data include intra-mural and extra-mural R&D; 2019-2021: Farmaindustria survey
Sweden	LIF members survey prior to 2013; Statistics Sweden (pharmaceutical products)
Switzerland	Interpharma
United Kingdom	ONS Business Enterprise Research & Development; 2021 (OHE estimate)
United States	Pharmaceutical Research and Manufacturers of America, PhRMA Annual Survey, 2023
China	China Statistical Yearbook 2002-2023

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