

# Pharmaceutical Industry of Ukraine

2023



# Introduction

In 2023, despite the immense challenges posed by the full-scale war, Ukraine's pharmaceutical industry showcased its resilience and capacity for significant transformation and growth. The war highlighted the vital importance of digital innovation in the pharmaceutical sector, crucial for maintaining the stability of the healthcare system.

This infographic report analyses the pharmaceutical market, the development processes of new medicines, and the impact of global events on the industry. We explored how innovation and investment are driving the industry's growth, examined key market players, and assessed the opportunities and challenges pharmaceutical companies are facing.

We focused particularly on the ongoing changes within the sector that are shaping its evolution and its critical role in safeguarding public health and contributing to the nation's stability.

This study offers a comprehensive overview of the current state and future prospects of Ukrainian pharmaceutical industry.

## Data Collection Methods

Under martial law, individual entrepreneurs and legal entities are not obligated to submit statistical or financial reports, which affects the availability of current statistical data. Consequently, some of the macroeconomic data in this report are based on the most recent available information.

To illustrate the macroeconomic indicators for the pharmaceutical industry, we used Nomenclature of Economic Activities (NACE) codes 21.10 and 21.20.

To highlight investment by Ukrainian pharmaceutical manufacturers, we reached out to the top 10 companies based on 2023 pharmacy sales of medicinal products by volume. This report includes data from all the companies that responded to our inquiries.

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# Glossary of Key Terms

**Pharmacy Market** — the sale of medicinal products through pharmacies directly to consumers. The retail market is characterised by a large number of buyers, but with relatively low purchasing power.

**Bioequivalence** — the similarity between medicinal products in terms of the rate and extent of absorption, which ensures comparable efficacy and safety.

**Hospital Market** — the supply of medicinal products directly to hospitals, clinics, and other healthcare institutions, typically involving bulk purchases to ensure these facilities are well-equipped with essential medical supplies.

**Clinical Trials** — research studies involving human participants aimed at evaluating the safety, efficacy, and clinical-pharmacological properties of medicinal products.

**Non-patented (Generic) Medicinal Products** — medicines containing the same active ingredient as the original patented product, but manufactured after the patent's expiration.

**Sales Volume** — the total value of finished products dispatched from the enterprise.

**Patented (Original) Medicinal Products** — newly developed medicines that have been introduced to the market and are protected by patent rights.

**GMP (Good Manufacturing Practice) Certification** — a certificate verifying that the manufacturing conditions for medicinal products meet the standards of good manufacturing practice.

**ATC Classification (Anatomical Therapeutic Chemical Classification System)** — a system that categorises medicinal products based on their anatomical, therapeutic, and chemical characteristics.

**E-commerce** — all commercial and financial transactions in the medicinal products market conducted online.

# Development of the Pharmaceutical Industry



# Growth of Ukraine's Pharmaceutical Sector

## Inception

<p><b>1907</b></p> <p>The first pharmaceutical factory, the Chemical-Pharmaceutical and Galenic Preparations Plant Galenika (now known as Zdorovya).</p>	<p><b>1910s</b></p> <p>Laboratory production of herbal medicines at pharmacies, alongside the importation of synthetic medicinal products.</p>	<p><b>1925</b></p> <p>The first production of synthetic medicines took place at the Kyiv Chemical-Pharmaceutical Plant named after M. V. Lomonosov (currently Farmak).</p>	<p><b>1932</b></p> <p>The launch of production at the Kyiv branch of the Ukrainian Institute of Experimental Endocrinology (now Darnytsia).</p>	<p><b>1937</b></p> <p>The initial manufacturing of medications at the precursor to the Kyiv Vitamin Factory.</p>
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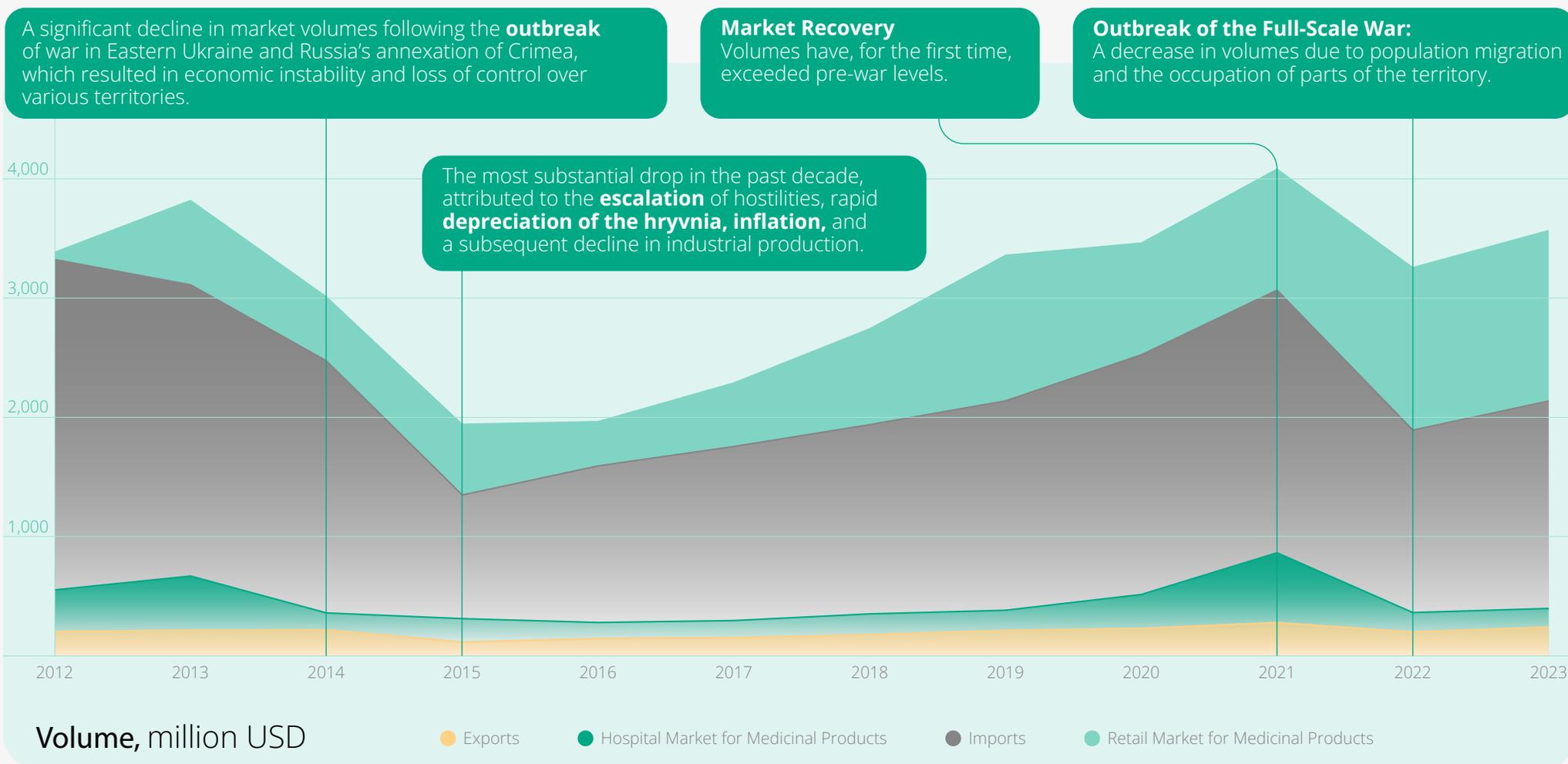
## Revival and Development

<p><b>1990s</b></p> <p>A crisis followed by a gradual recovery of production from 1995 onwards.</p>	<p><b>1970s</b></p> <p>Active construction of new facilities.</p>	<p><b>1968</b></p> <p>The establishment of a medicinal products department at the Cherkasy City Dairy Plant (now Yuria-Pharm).</p>	<p><b>1954</b></p> <p>The founding of the Darnytsia Chemical-Pharmaceutical Plant, including the construction of new production facilities.</p>	<p><b>1947</b></p> <p>The launch of the Kirov Collective, the precursor to the Borshchahivsky Chemical-Pharmaceutical Plant.</p>
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<p><b>Mid-2000s</b></p> <p>Darnytsia, the Borshchahivsky Chemical-Pharmaceutical Plant, and Farmak emerged as leaders in GMP certification.</p>	<p><b>2007</b></p> <p>The introduction of the first fully automated logistics complex in Ukraine (Darnytsia).</p>	<p><b>2009</b></p> <p>Implementation of mandatory adherence to Good Manufacturing Practice standards in accordance with EU regulations.</p>	<p><b>2013</b></p> <p>The export of medicinal products from Ukraine reached a quarter of a billion dollars.</p>	<p><b>2023</b></p> <p>Three of the top five companies in the Ukrainian market are domestic pharmaceutical manufacturers.</p>
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# Pharmaceutical Industry During the War

## Impact of the Full-Scale War on Ukraine's Pharmaceutical Market



# Pharmaceutical Industry in 2023



## Changes in the Ukrainian Pharmaceutical Industry in 2023 Compared to 2022

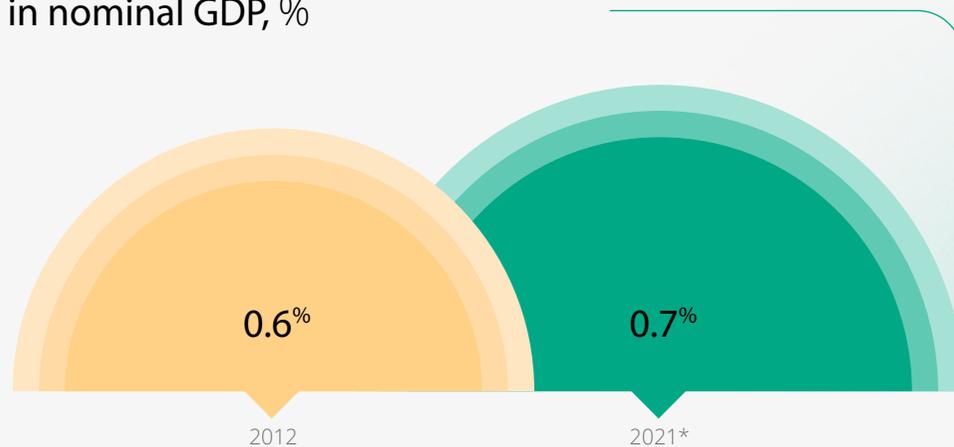


# Pharmaceutical Industry in the Economy

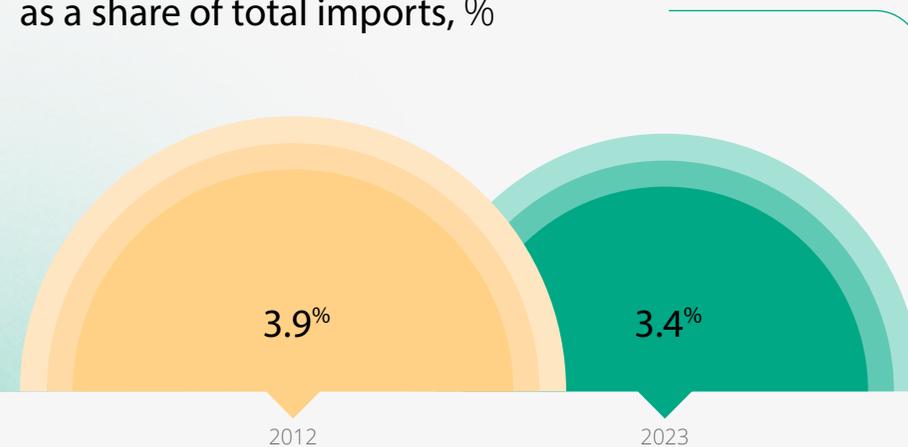


# Pharma Industry's Economic Impact

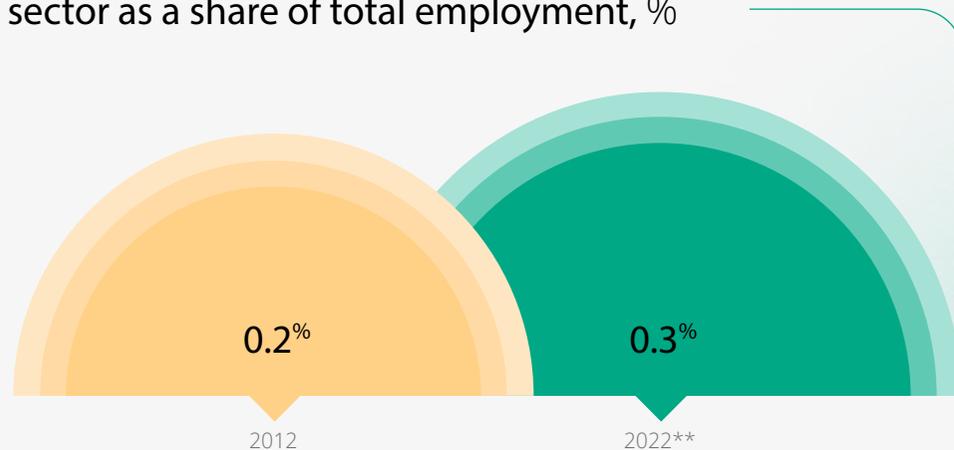
GDP of pharmaceutical products in nominal GDP, %



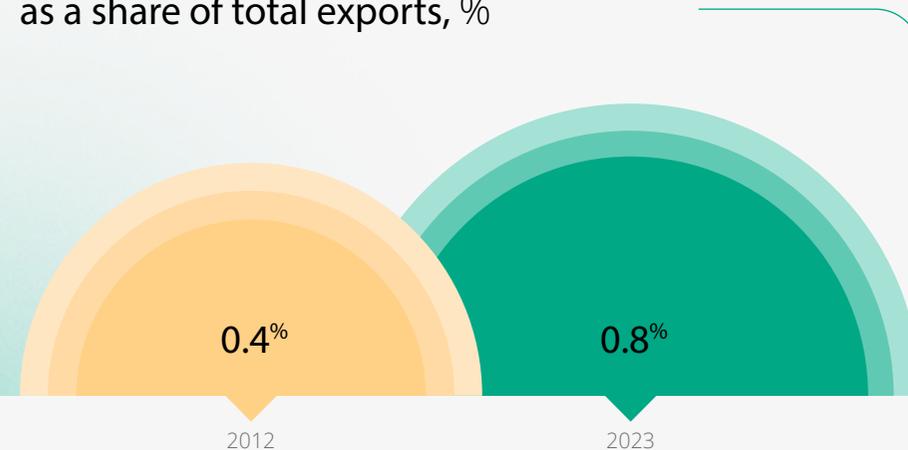
Import of pharmaceutical products as a share of total imports, %



Number of employees in the pharmaceutical sector as a share of total employment, %



Export of pharmaceutical products as a share of total exports, %



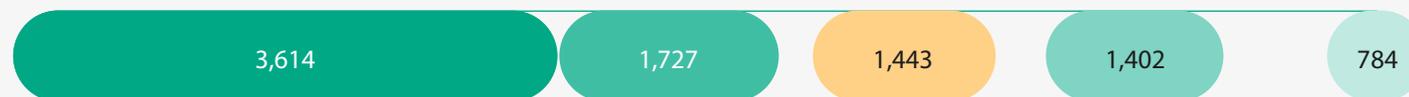
Sources: State Statistics Service, State Customs Service

\*more recent data is unavailable due to martial law

\*\*as of January 2022

# Pharma's Position Among Other Industries

GDP of key industries, 2021\*, million USD



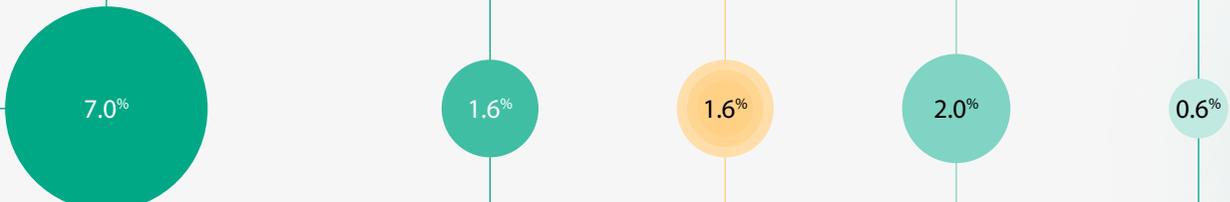
Share of industrial GDP, 2021, %



Share of capital investments in industry, 2022, %



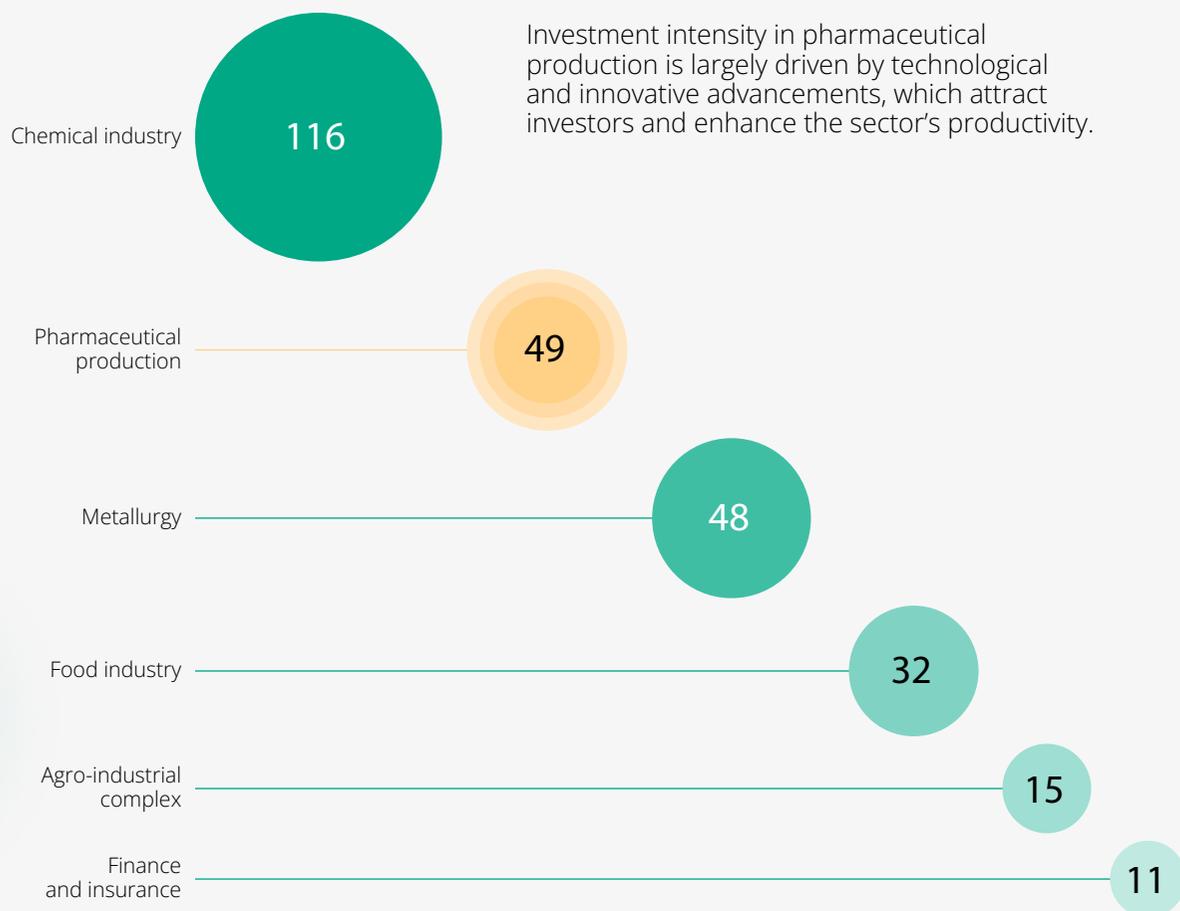
Share of industrial output, 2023, %



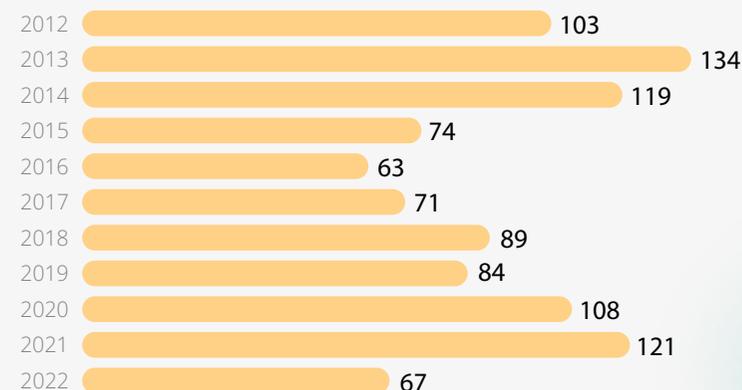
While pharmaceutical production is not the dominant force in the economy, it ranks highly among important industrial sectors and continues to grow actively. Despite lower sales volumes, the pharmaceutical sector generates higher profits, highlighting its efficiency.

# Investment in Pharmaceutical Manufacturing

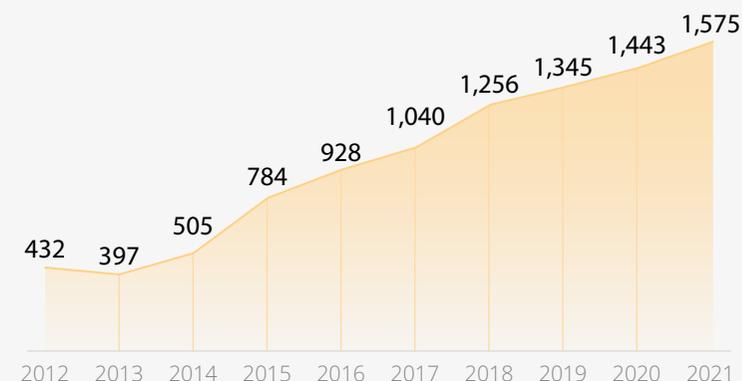
Average investment intensity by industry, 2021, kopecks of capital investment per hryvnia of gross profit



Capital investments in the pharmaceutical sector, million USD

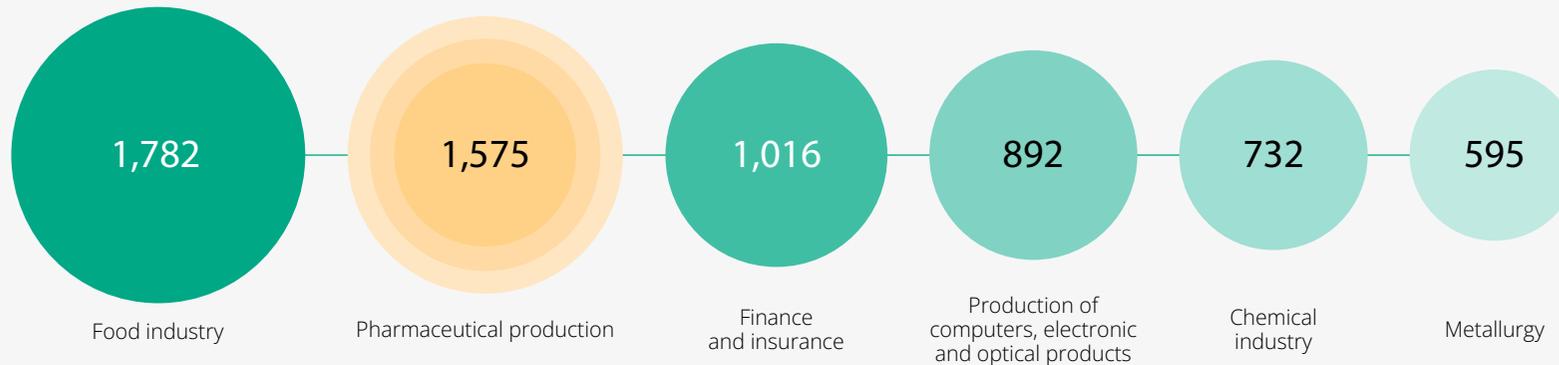


Pharmaceutical production productivity, GDP per employee, thousand UAH



# Productivity and Employment

Productivity of economic sectors, GDP per employee, 2021, thousand UAH

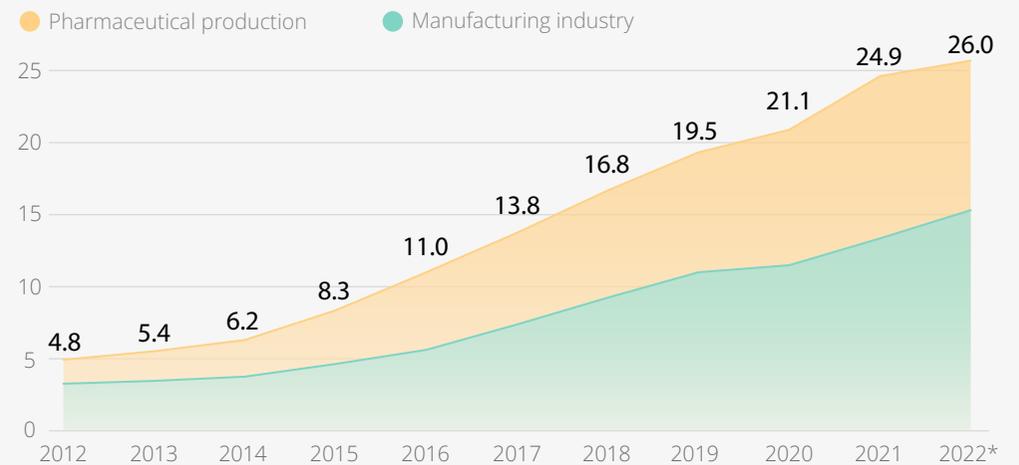


Pharmaceutical production ranks among the top sectors in terms of productivity within the economy. High wages in the sector are driven by the production of high-value goods, alongside the expertise of highly qualified workers and researchers.

Average number of employees in the pharmaceutical sector, thousand



Average monthly salary of full-time employees, thousand UAH

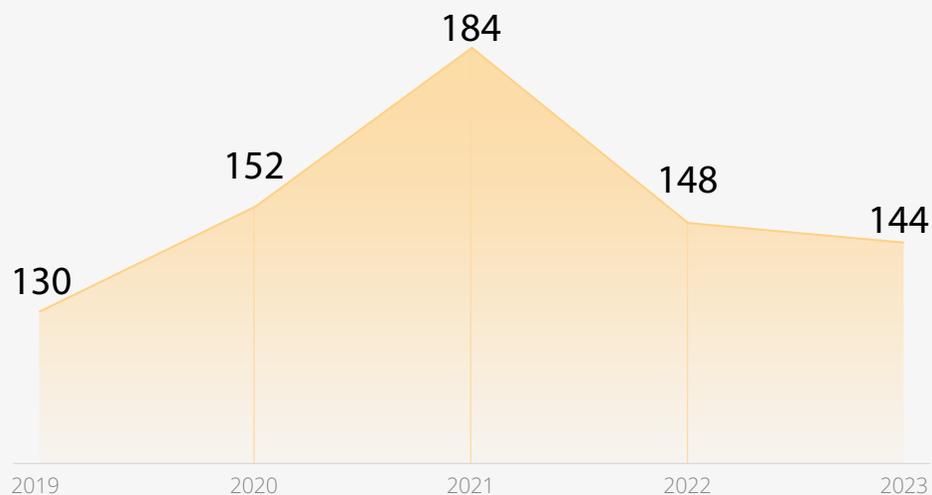


Source: State Statistics Service

\*as of January 2022

# Pharma's Contribution to National Budget

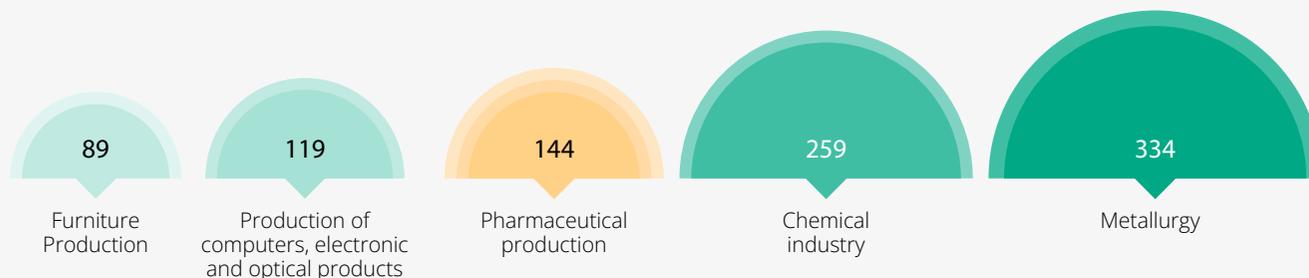
Amount of taxes paid by pharmaceutical manufacturers\* to the State Budget of Ukraine, million USD



Amount of taxes paid by the pharmaceutical trade sector to the State Budget of Ukraine, million USD



Amount of taxes paid by industrial sectors, 2023, million USD



The total taxes paid by pharmaceutical manufacturers in dollar terms have declined since the onset of the full-scale invasion. However, when measured in the national currency, the taxes paid in 2023 have already surpassed the figures for 2021.

While the pharmaceutical industry may not be the largest, it plays a vital role among the most critical industries for the economy.

Source: State Tax Service of Ukraine

\*Nomenclature of Economic Activities (NACE) codes 21.10 and 21.20

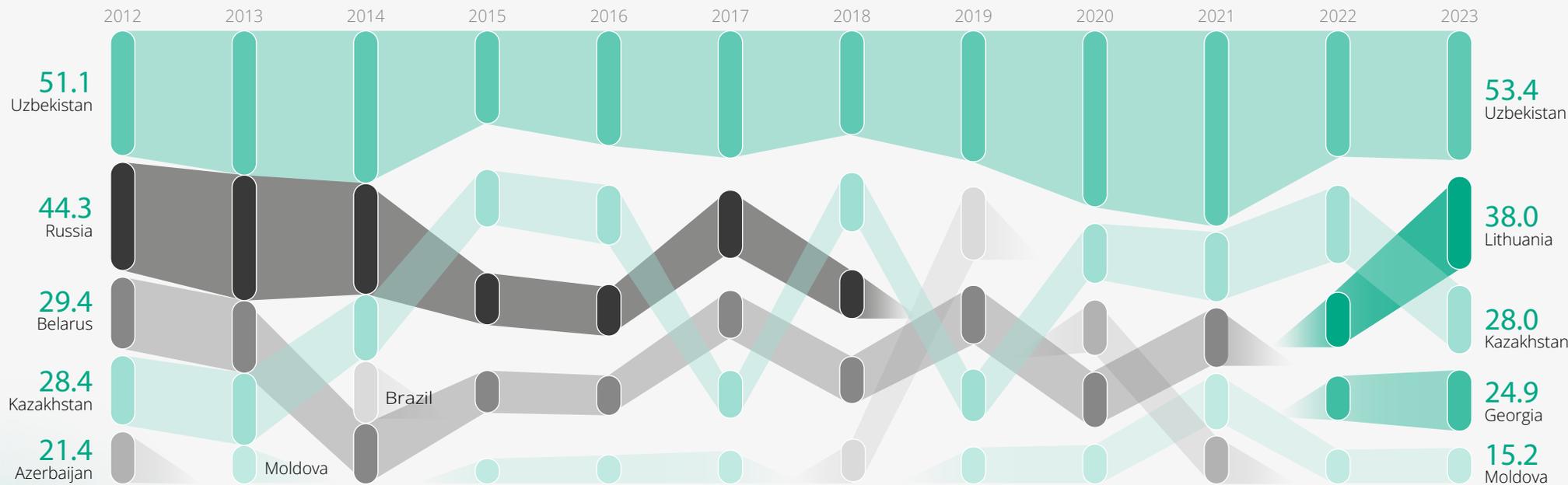
# Export of Medicines from Ukraine

Volume of pharmaceutical product exports, million USD



Top 5 export destinations for pharmaceutical products, million USD

There are few European countries among the export destinations, as a GMP certificate from the respective country is required for exports there. In Ukraine, only a limited number of companies possess these certificates.



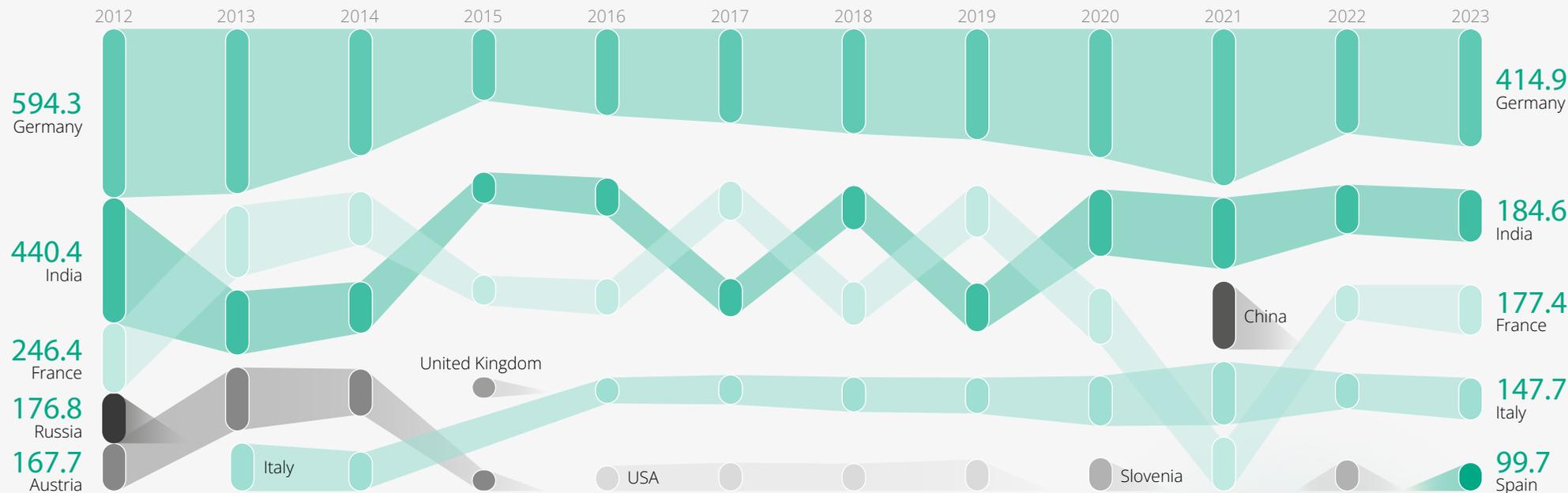
# Import of Medicines into Ukraine

Volume of pharmaceutical product imports, million USD



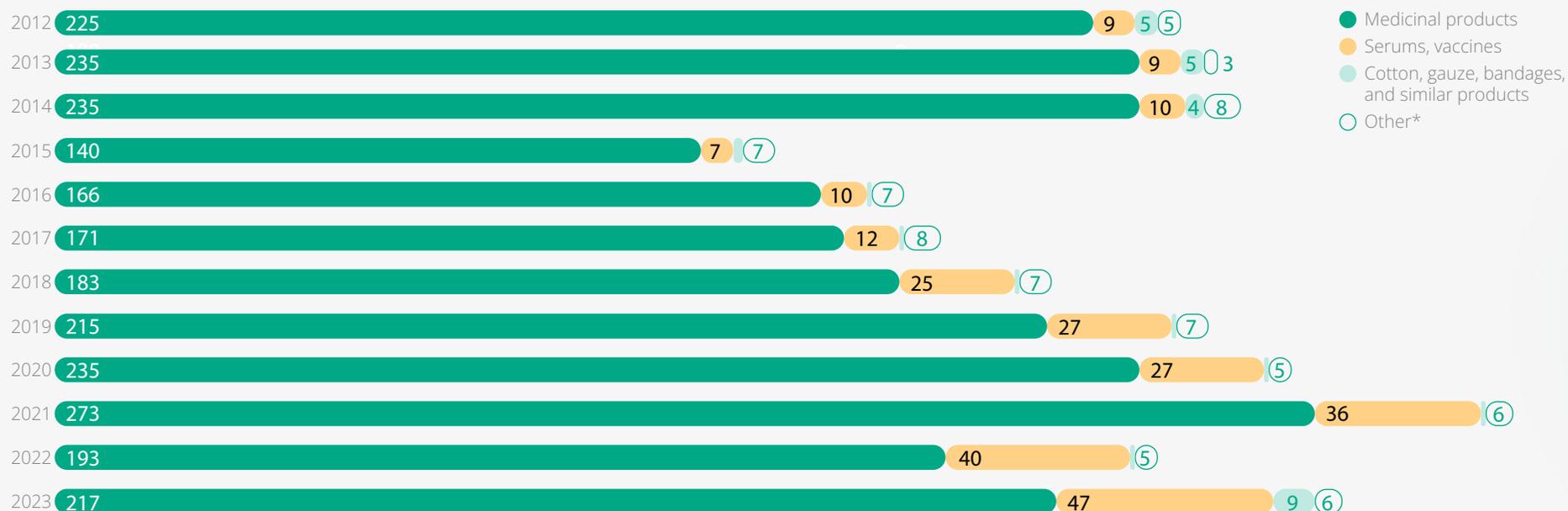
Top 5 import sources for pharmaceutical products, million USD

Germany, India, and France have consistently been the leading sources of imports into Ukraine. On average, these countries account for 75% of the imports among the top 5 sources from 2012 to 2023.

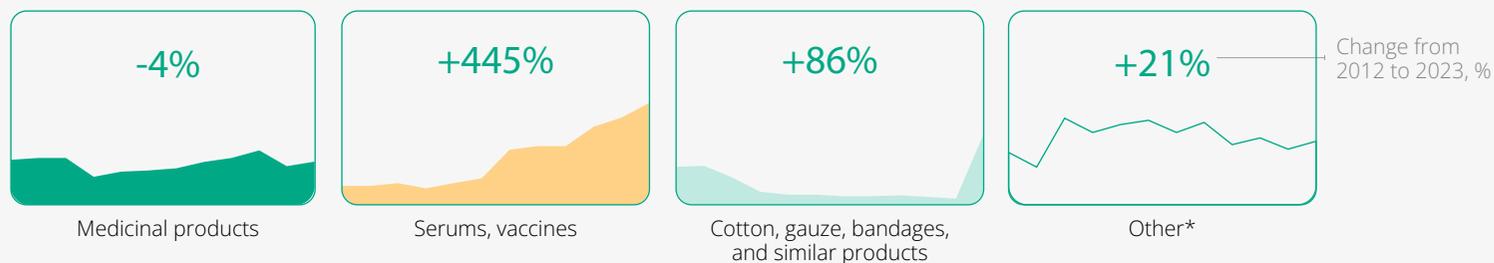


# Trade in Specific Export Categories

## Structure of pharmaceutical product exports, million USD



## Export of pharmaceutical products by category, 2012-2023, million USD



The category "Serums, vaccines" has seen the most significant growth in Ukrainian exports from 2012 to 2023, with its total share in exports increasing from 3.5% to 16.8%.

In 2023, there was a substantial increase in the export of the category "Cotton, gauze, bandages, and similar products."

# Ukrainian Pharmaceutical Market

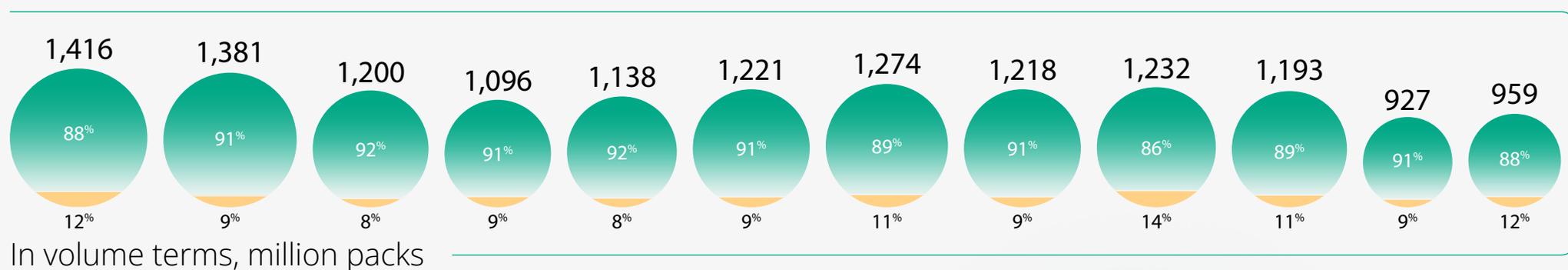


# Ukrainian Medicinal Products Market

## Structure of the pharmaceutical market in Ukraine

● Hospital ● Pharmacy

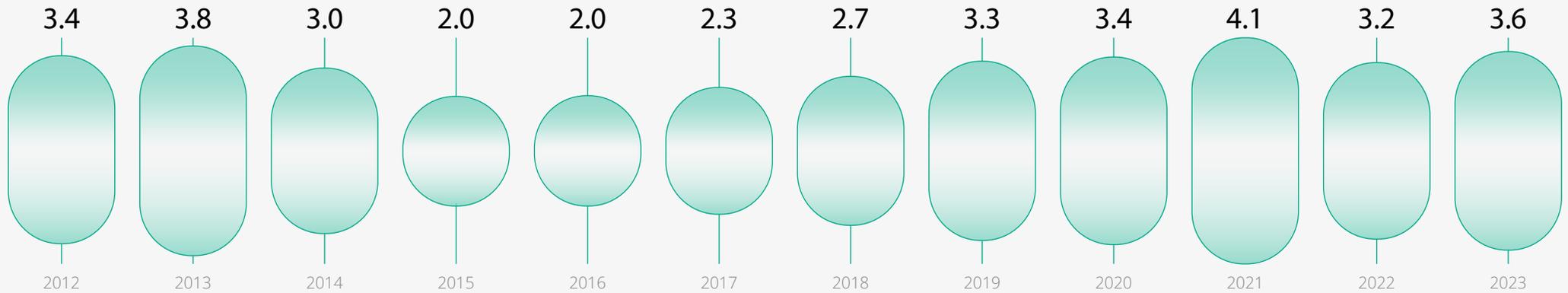
In monetary terms, billion USD



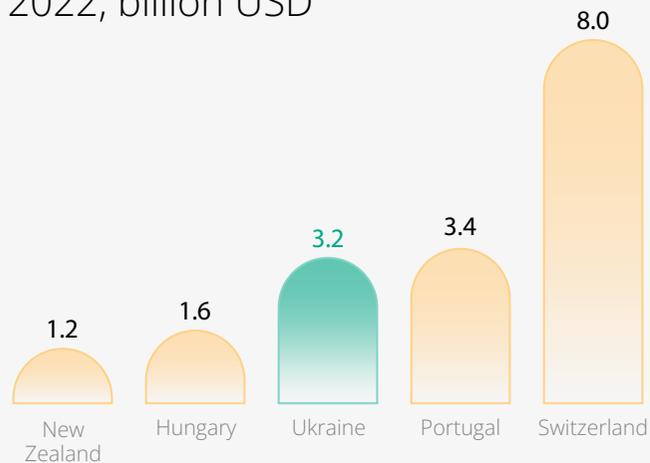
From 2012 to 2023, the structure of the pharmaceutical market in Ukraine remained relatively stable, with the overwhelming majority of the market in both monetary and physical terms being comprised of the pharmacy (retail) segment. The hospital segment accounts for only about 11%, as it relies on government funding, which is quite limited.

# Dynamics of Pharmacy Sales

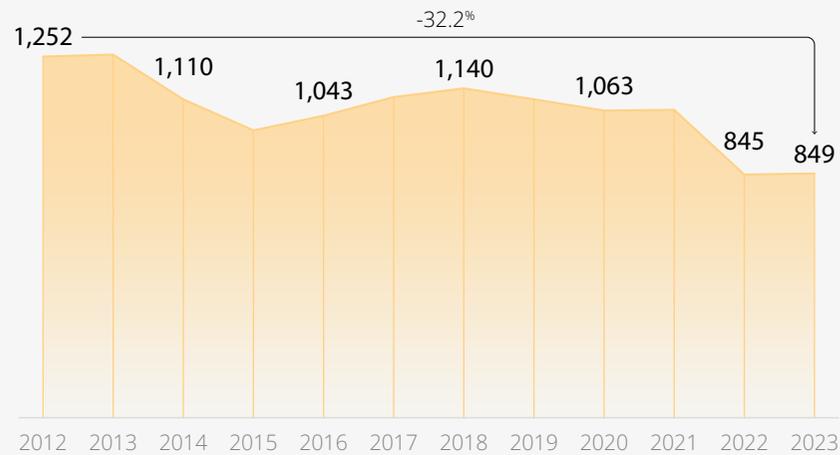
Volume of pharmaceutical sales in pharmacies in Ukraine, billion USD



Volume of pharmaceutical sales in pharmacies by country, 2022, billion USD



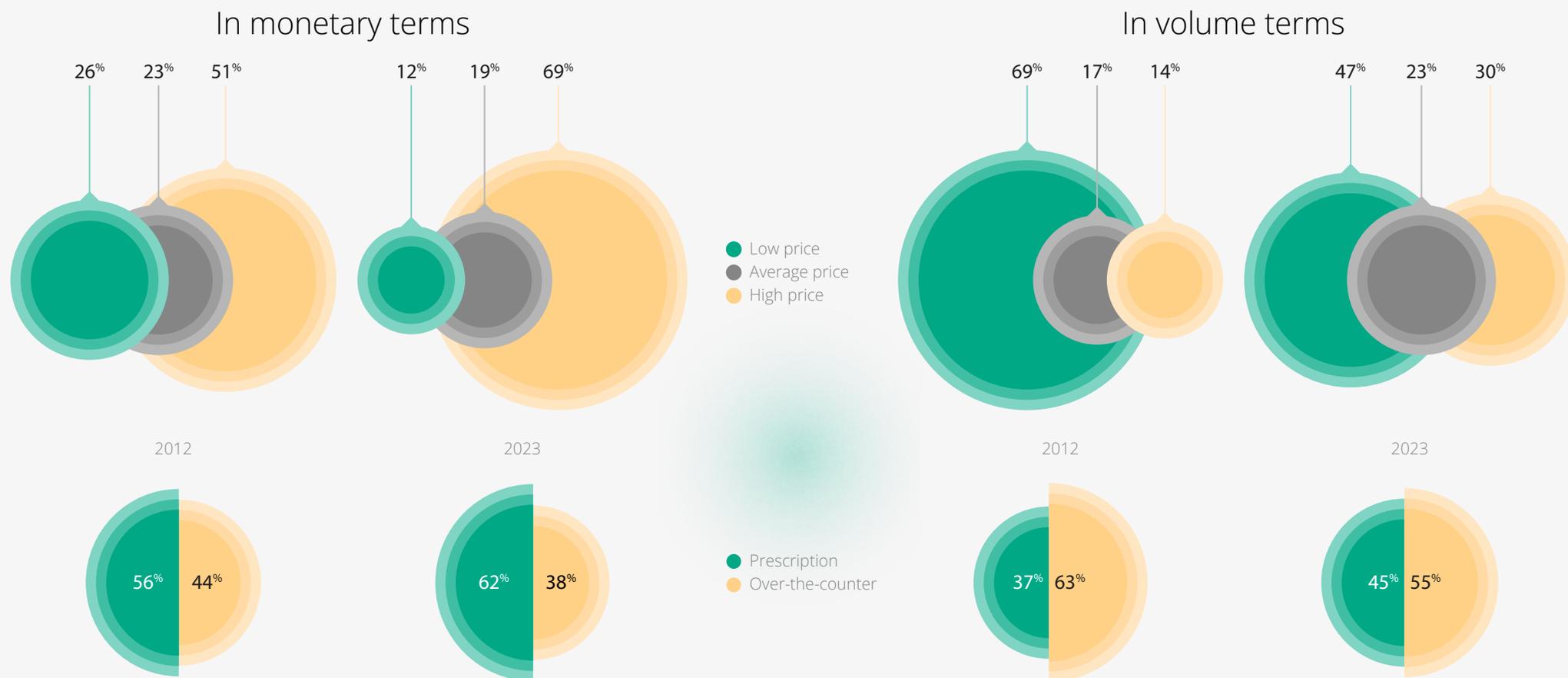
Volume of pharmaceutical sales in pharmacies in Ukraine, million packs



Sales in volume terms experienced minimal changes over the past year. In contrast, in monetary terms, sales volumes increased by 9.4%, indicating a rise in the cost of medicinal products.

# Segmentation of Pharmacy Sales

## Structure of pharmaceutical sales by price segment\* and prescription status, %



From 2012 to 2023, the structure of medicinal products in monetary terms was expected to change significantly due to inflation; however, the changes have been minimal. In contrast, the share of low-cost medicines in packaging has sharply decreased, which is linked to the increase in the number of prescription medications, which are typically more expensive.

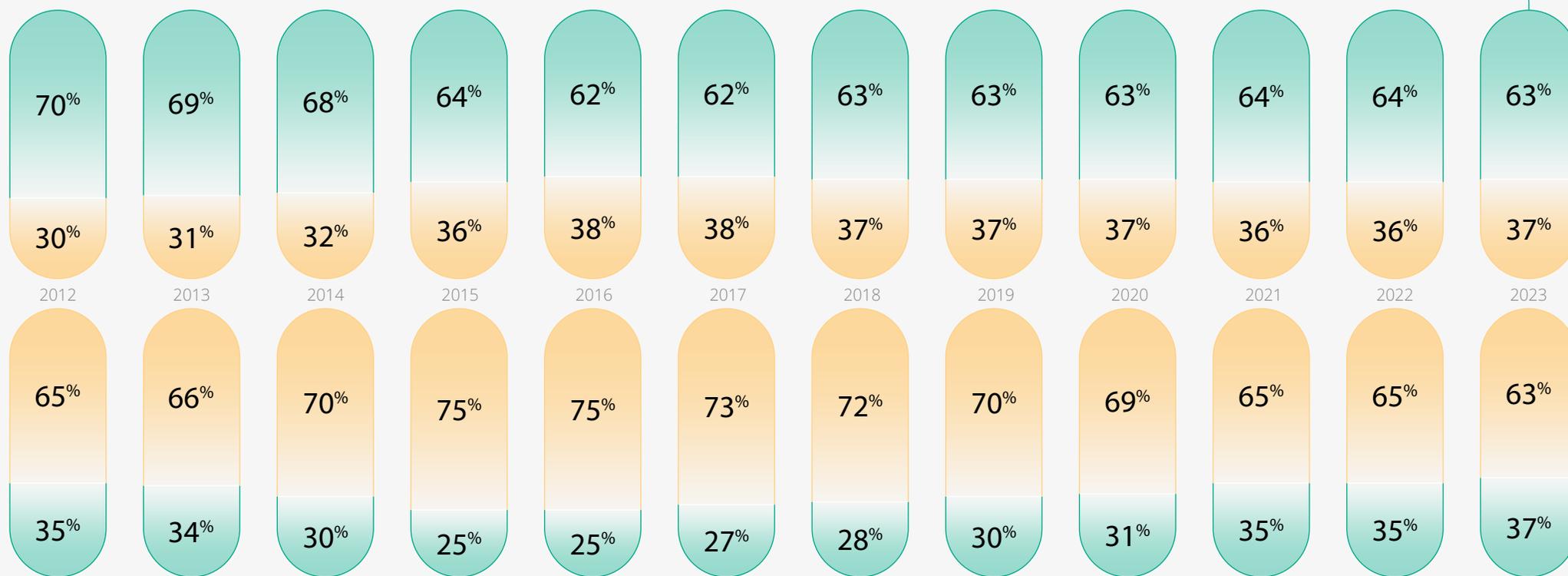


# Pharmacy Sales by Manufacturer

Structure of pharmacy sales by place of production, %

Ukrainian Foreign

In monetary terms

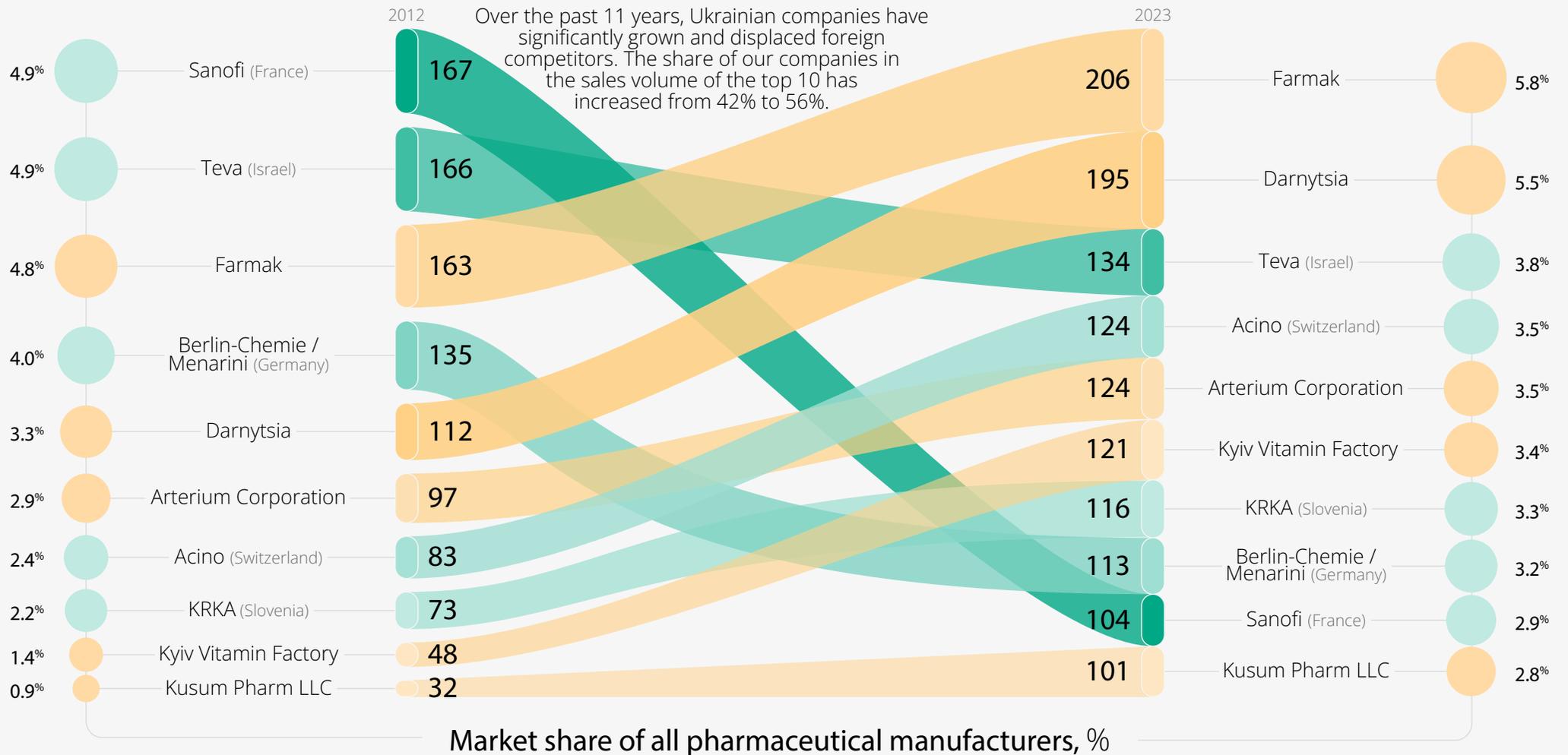


In volume terms

Ukrainian companies are ramping up their production volumes, surpassing foreign counterparts in terms of quantity. However, the average price of Ukrainian medicines is lower, which results in a smaller share of domestic products in terms of monetary value.

# Leaders of pharmacy sales

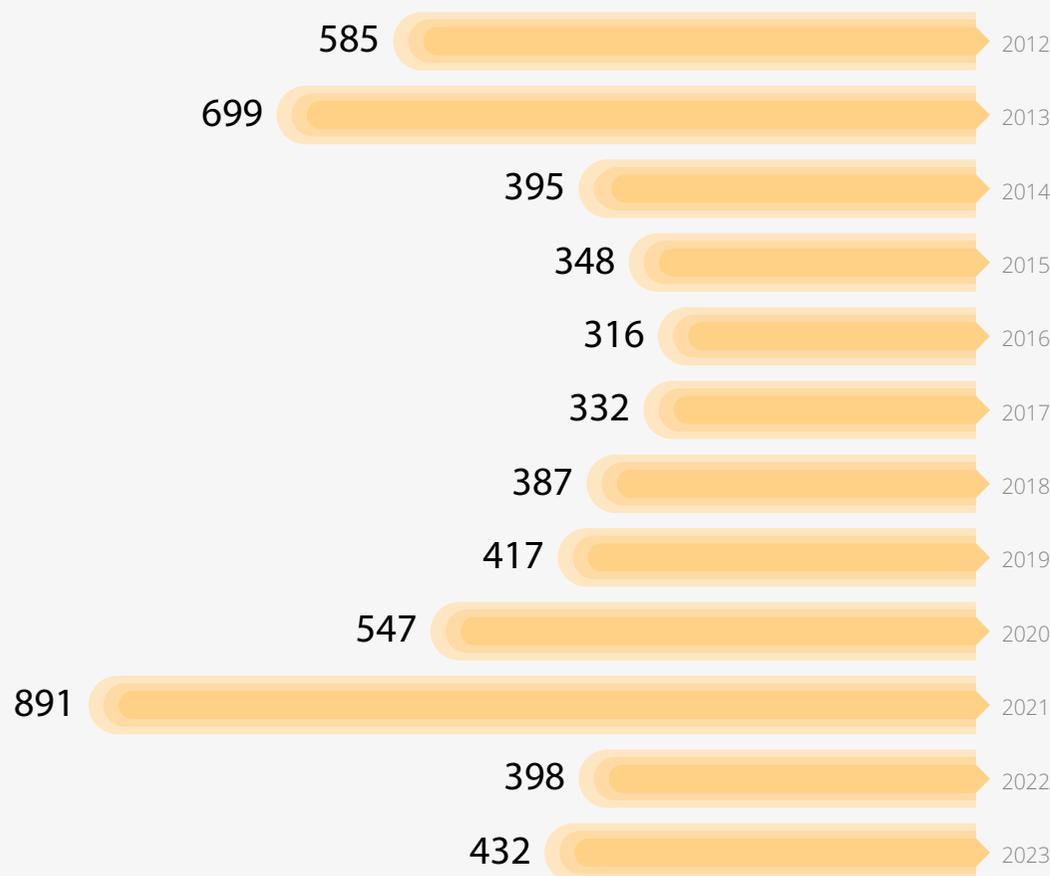
Top 10 Leaders in Pharmacy Sales, million USD



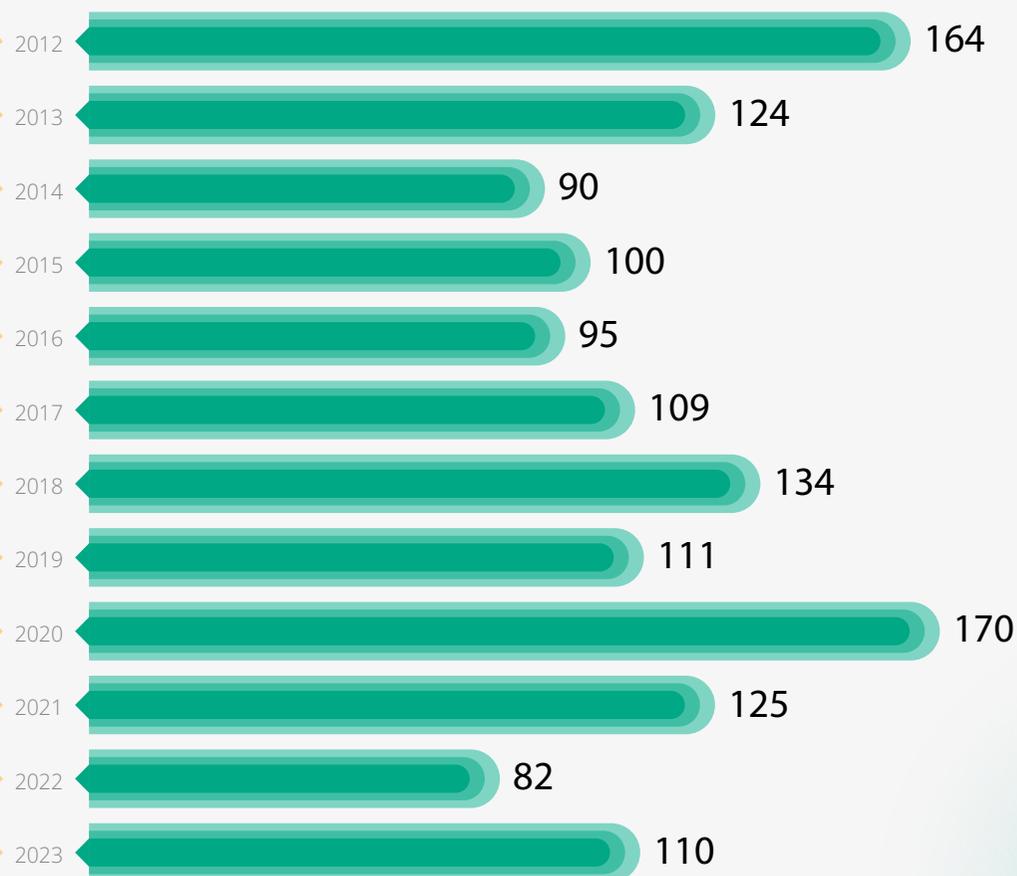
Source: Proxima Research

# Dynamics of the Hospital Market

Volume of the Hospital Pharmaceuticals Market, million USD



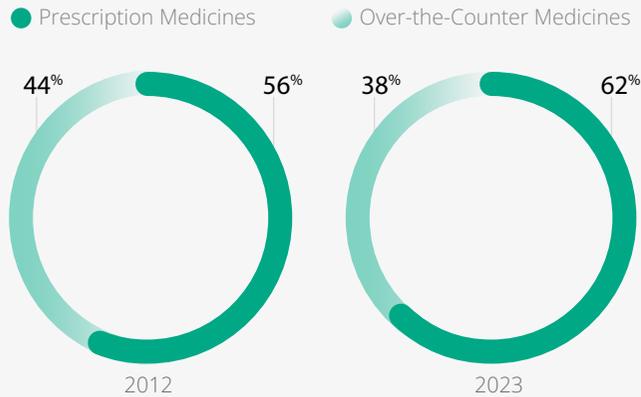
Volume of Hospital Purchases, million packages



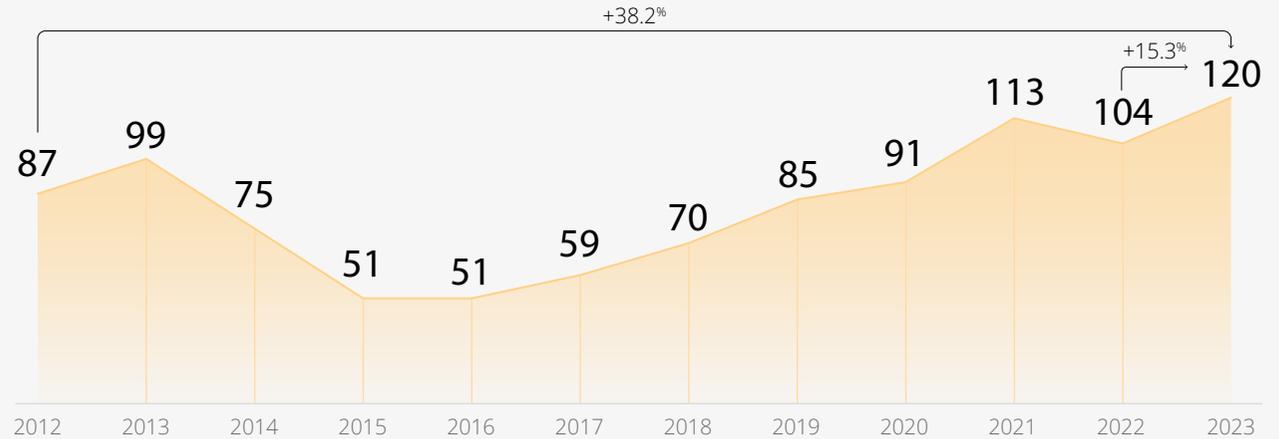
The share of the public sector in the total consumption of pharmaceuticals remains relatively low. Following record financial expenditures on drug procurement in 2021, driven by the purchase of high-cost medicines, public funding has decreased due to the onset of the full-scale war and the influx of humanitarian aid into the country.

# Consumption of Medicinal Products

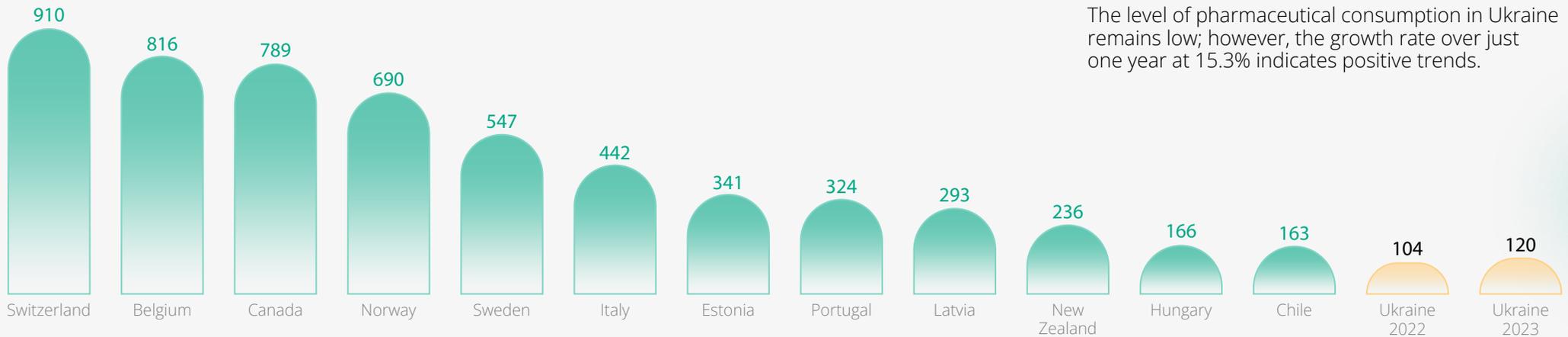
Structure of Pharmaceutical Consumption in Monetary Terms, %



Volume of Pharmaceutical Consumption in Ukraine, USD per capita



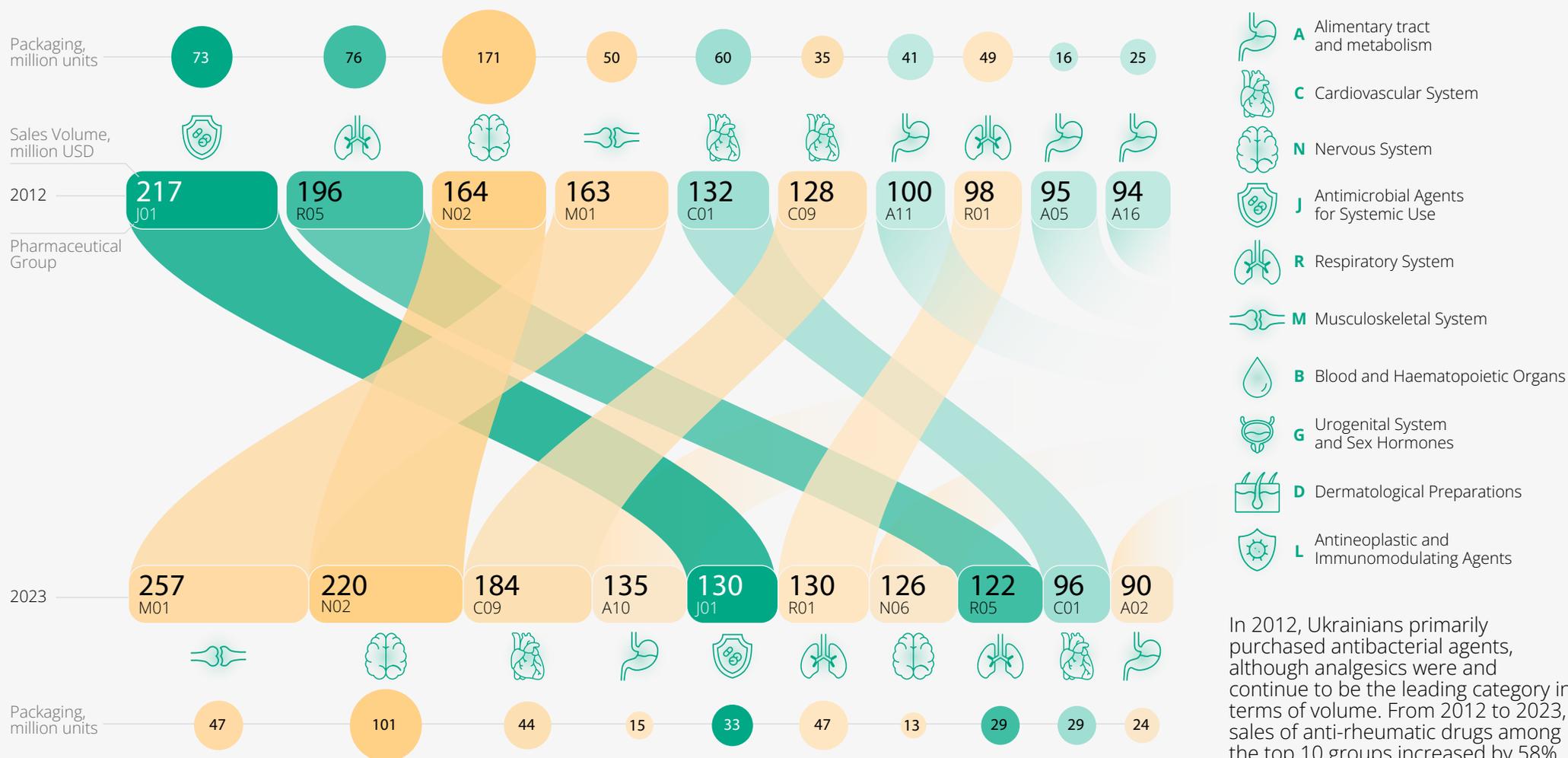
Global Pharmaceutical Consumption, 2022, USD per capita



The level of pharmaceutical consumption in Ukraine remains low; however, the growth rate over just one year at 15.3% indicates positive trends.

# Structure of Medicine Consumption

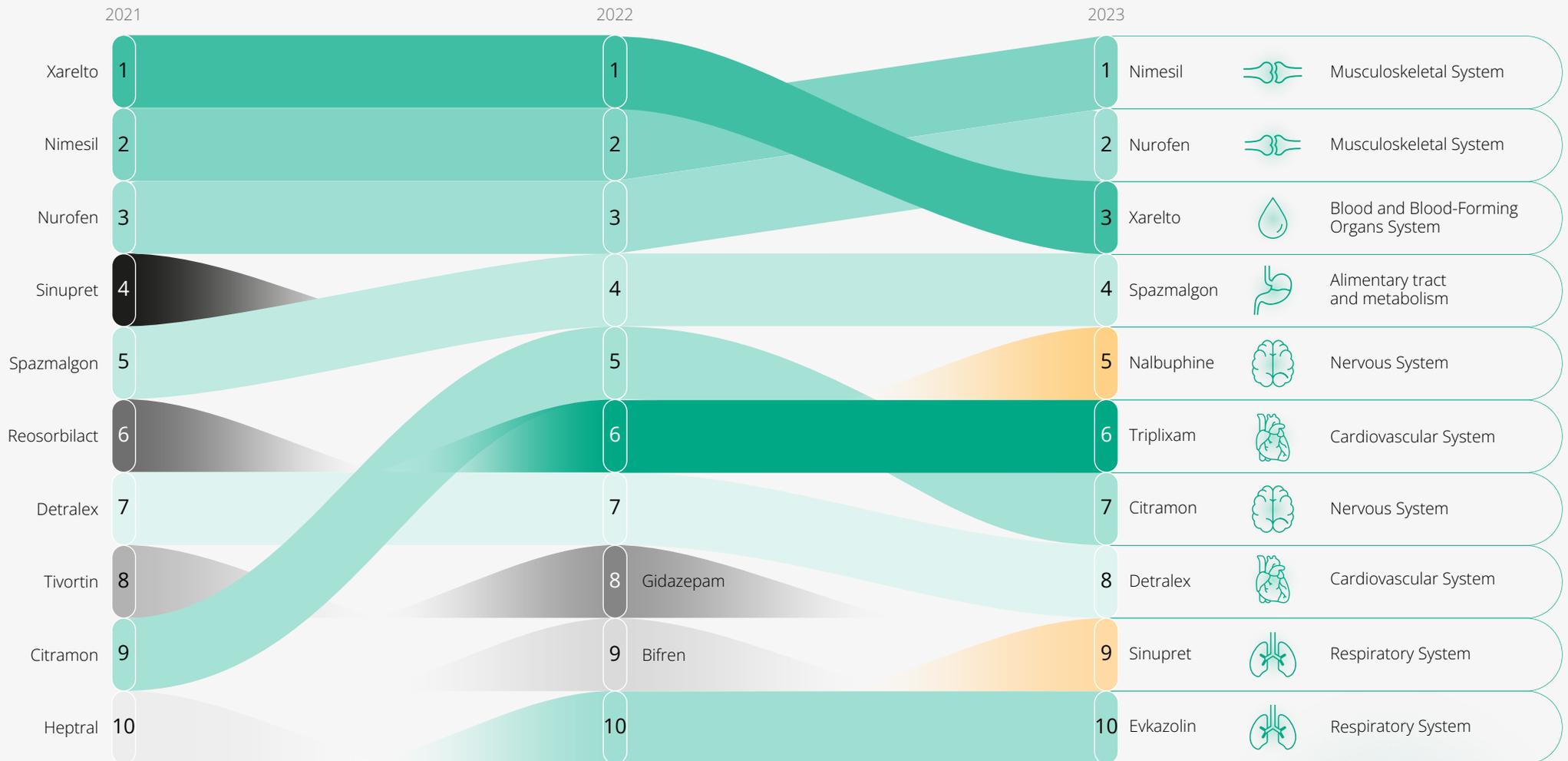
Top 10 Pharmaceutical Groups in the Retail Market According to ATC Classification based on monetary value



In 2012, Ukrainians primarily purchased antibacterial agents, although analgesics were and continue to be the leading category in terms of volume. From 2012 to 2023, sales of anti-rheumatic drugs among the top 10 groups increased by 58%.

# Most Popular Medicines in Ukraine

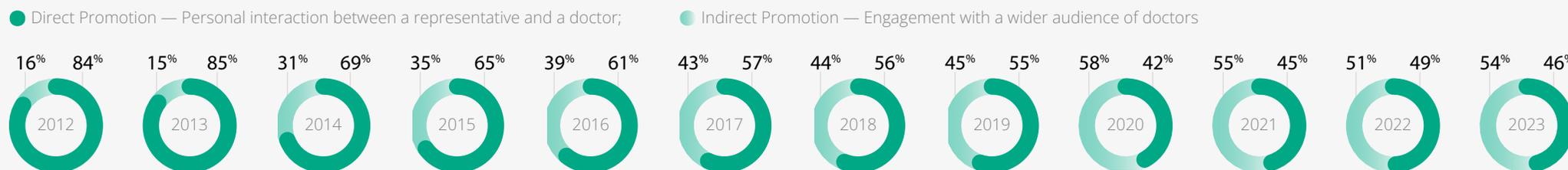
Top 10 medicines by pharmacy sales, monetary value



Source: Proxima Research

# Promotion of Medicinal Products

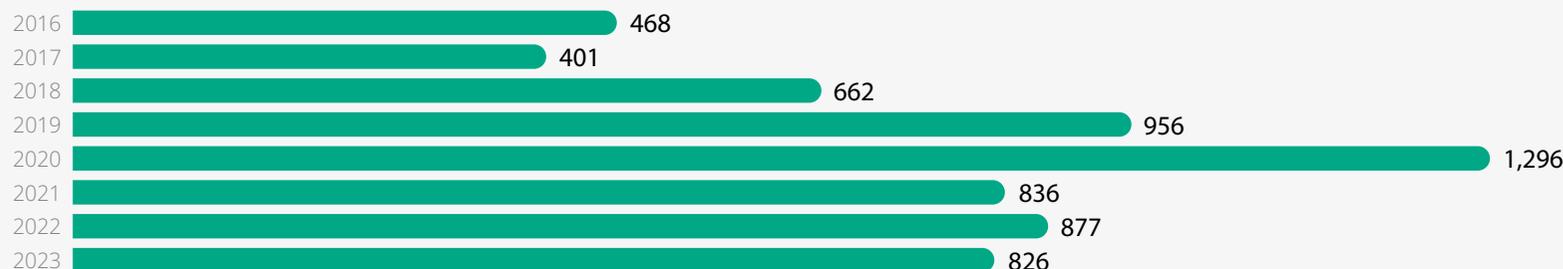
## Promotion of Pharmaceuticals to Doctors by type, %



## Pharmaceutical Companies' Investment in TV Advertising of Medicinal Products, million USD



## Number of Pharmaceutical Ads Viewed Online, million impressions



Over the years, pharmaceutical promotion and advertising of medicinal products have evolved to foster a closer relationship with the target audience. The effects of COVID-19 and the full-scale invasion have significantly shaped these changes, leading to both increases and reductions in budgets, as well as a notable shift towards digital channels.

# Pharmaceutical Products



# Patented and Non-Patented (Generic) Medicines

## Patented (Original) Medicinal Products



Innovation in the pharmaceutical industry **involves developing new, original medicines** with unique properties. These medicinal products are typically more effective than existing treatments or are designed to treat rare diseases.



**Original, patented medicines require significant financial investment**, with a large portion allocated to preclinical and clinical trials. As a result, in some countries, pharmaceutical companies primarily focus on producing generics, which are equally effective and safe as original medicines.



In Ukraine, the retail sector makes up 89% of the market. Given the population's income levels and purchasing power, **many people cannot afford original medicines due to their high price**, as companies need to recoup production costs.

## Non-Patented (Generic) Medicinal Products



Generic medicinal products contain the same active ingredients, dosage, and method of administration as original medicines, and are equally **effective**. They become available once the patent on the original drug has expired. Generics are affordable, reliable, and safe, with rigorous safety oversight equivalent to that of original medicines.



Generics are a vital component of healthcare systems, **helping to reduce healthcare costs**, encourage competition, and drive down the price of medicines, thereby making healthcare more affordable and accessible to patients without compromising on quality or effectiveness.



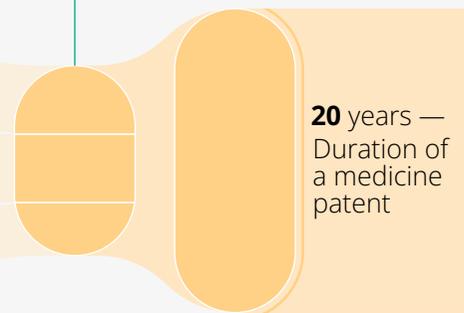
The primary advantage of generics is their **increased affordability for consumers**, allowing patients access to effective treatments at lower prices.

# Life Cycle of Medicinal Products

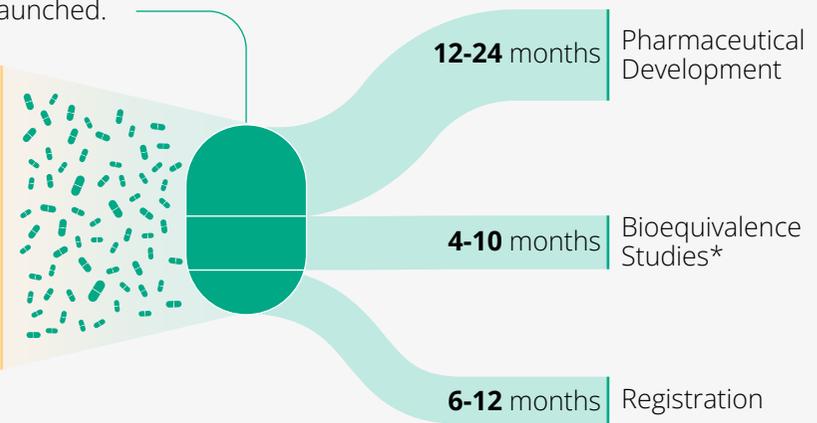
## Patented (Original) Medicines



In the time required to develop one original medicine, approximately four generics can be launched.

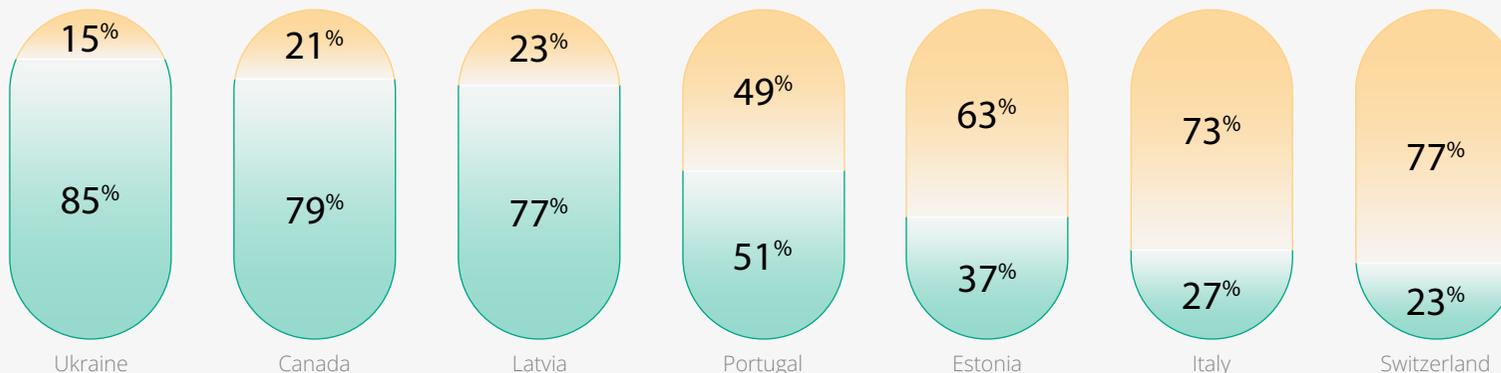


## Non-Patented (Generic) Medicines



## Market Structure of Medicines by Country in volume terms, 2022, %

● Patented ● Generics



Original medicines are typically more complex and time-intensive to develop, which significantly affects their cost. This is one reason why the market shares of original and generic medicines can vary considerably between different countries.

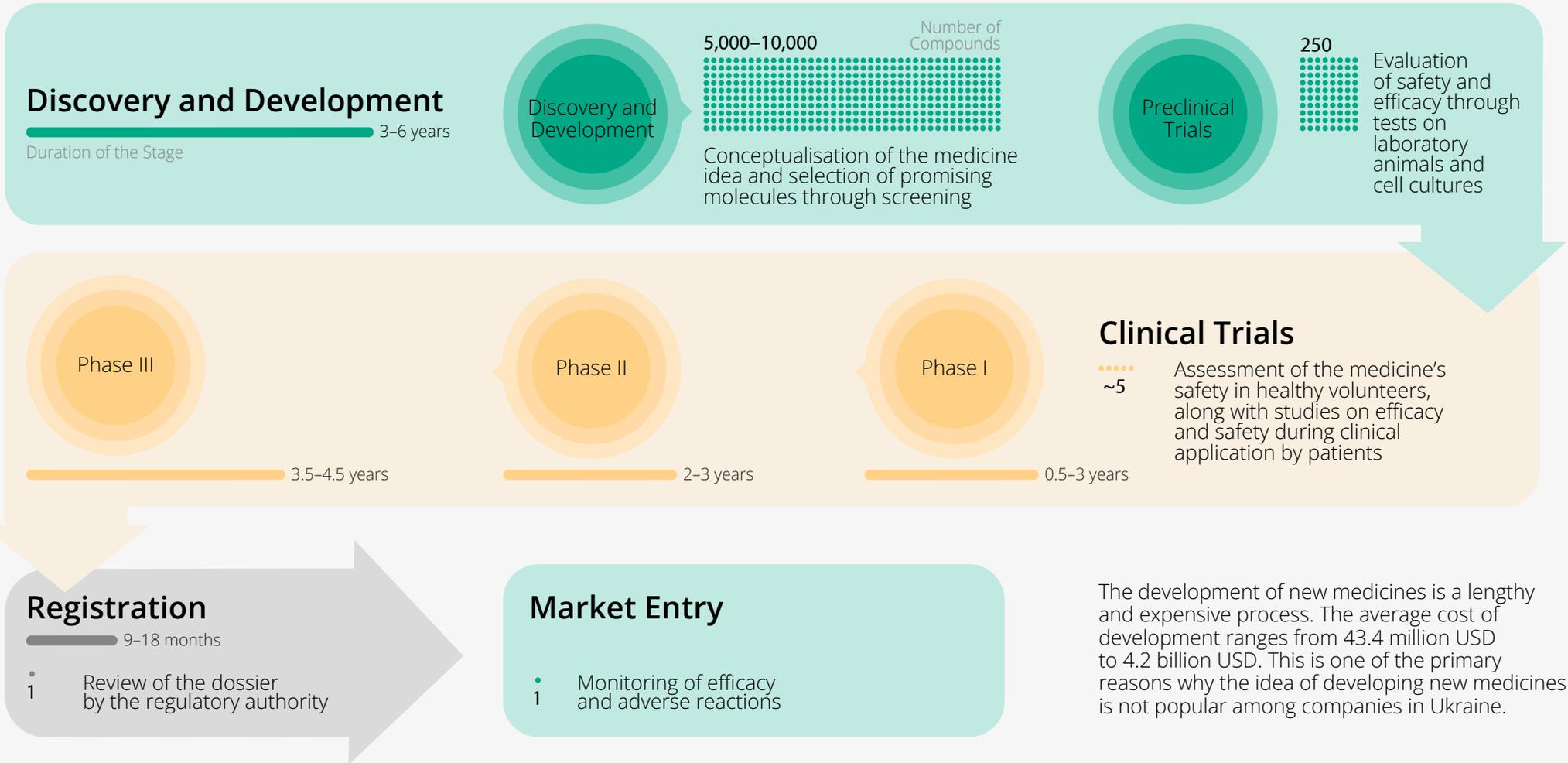
Sources: Ministry of Health Order No. 690, Darnytsia, OECD

\*Bioequivalence refers to the similarity of medicines in terms of their absorption rates and extents, which is crucial for ensuring comparable effectiveness and safety

# Development of Original Medicines

## Stages of Development and Market Entry for Original Medicines

Development price: ● Low ● Average ● High

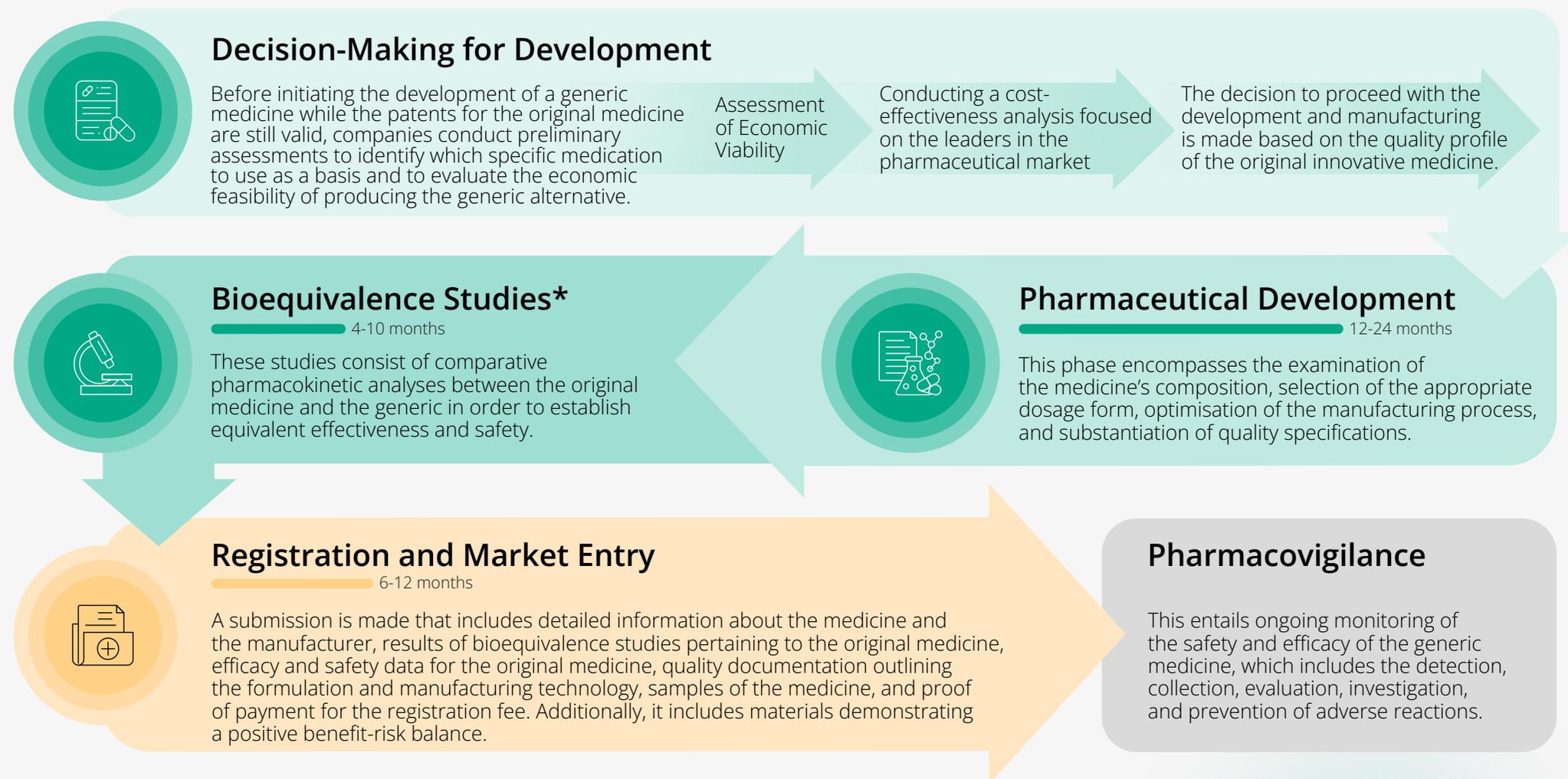


The development of new medicines is a lengthy and expensive process. The average cost of development ranges from 43.4 million USD to 4.2 billion USD. This is one of the primary reasons why the idea of developing new medicines is not popular among companies in Ukraine.

# Development and Registration of Generics

## Stages of Development and Market Entry for Generic Medicines

● Development ● Registration ● Monitoring

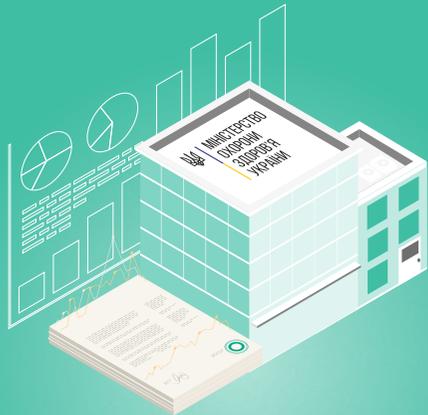


# Regulatory Environment



# Regulatory Authorities

## Key Regulatory Authorities in Ukraine and Their Roles in the Pharmaceutical Industry



### Ministry of Health of Ukraine (MoH)

This ministry is responsible for defining the strategic directions for the development of the pharmaceutical industry and establishing regulations and policies related to healthcare.



### State Service of Ukraine on Medicines and Drug Control (State Drug Service)

This authority oversees the registration, licensing, and quality control of medicines, medical devices, and narcotic substances.



### State Expert Centre of the Ministry of Health of Ukraine

A scientific and expert institution tasked with conducting scientific research, expert evaluations, and advisory activities aimed at safeguarding the pharmaceutical market against dangerous and substandard products.



### Ukrainian Scientific Pharmacopeial Centre for Quality of Medicines (State Enterprise "Pharmacopeial Centre")

A scientific institution focused on the standardisation and quality control of pharmaceuticals, which organises and implements professional testing programmes for laboratories responsible for quality control in the pharmaceutical sector.

# Pharma Industry's Role During War

## Regulatory Changes in the Pharmaceutical Sector During the Full-Scale Invasion



Manufacturers are permitted to dispense medicines **produced for export to other countries.**



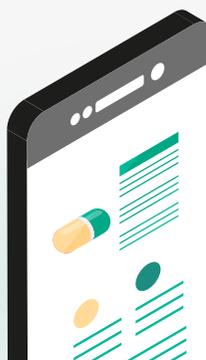
Medicinal products can be imported **without packaging in Ukrainian**, as long as they include instructions.



Products **with less than half of their shelf life remaining** may be imported, provided they are not expired.



During the production of medicines, **the use of substances from alternative manufacturers**, including those not registered in Ukraine, is permitted.



Importers can submit documents **electronically** for quality control processes.



Pharmacies **are allowed to employ students and graduates** from pharmaceutical universities who have yet to complete their internships.

# Prospects and Barriers

## Recent Developments in Ukraine's Regulatory Environment



**A revised version of the Law of Ukraine "On Medicinal Products"**<sup>\*\*</sup> has been adopted, formulated in accordance with European directives. This law integrates key positive elements of European regulation, steering Ukraine towards a mutually open market with the EU.



**The Ministry of Health of Ukraine is implementing significant changes to subordinate legislation** (including registration, licensing, and audit procedures) to ensure alignment with EU regulatory standards.

Over the past few years, substantial changes have occurred that enhance the position of pharmaceutical companies in the market and bring them closer to compliance with European legislation.

## Challenges Facing Ukraine's Regulatory Environment



**Outdated regulations** remain unaddressed. Numerous provisions within Ukrainian legislation contradict each other, and neglecting this issue adversely affects pharmaceutical manufacturers.



**The enforcement of new laws is often at odds with market realities.** For instance, a ban on advertising certain medicines at the end of 2023 left the market unable to promote products for six months, leading to a significant drop in sales and a corresponding decline in tax revenues.

While the full-scale invasion has not introduced additional critical challenges, pre-existing issues have become increasingly pronounced.

# Certification of Pharmaceutical Manufacturers

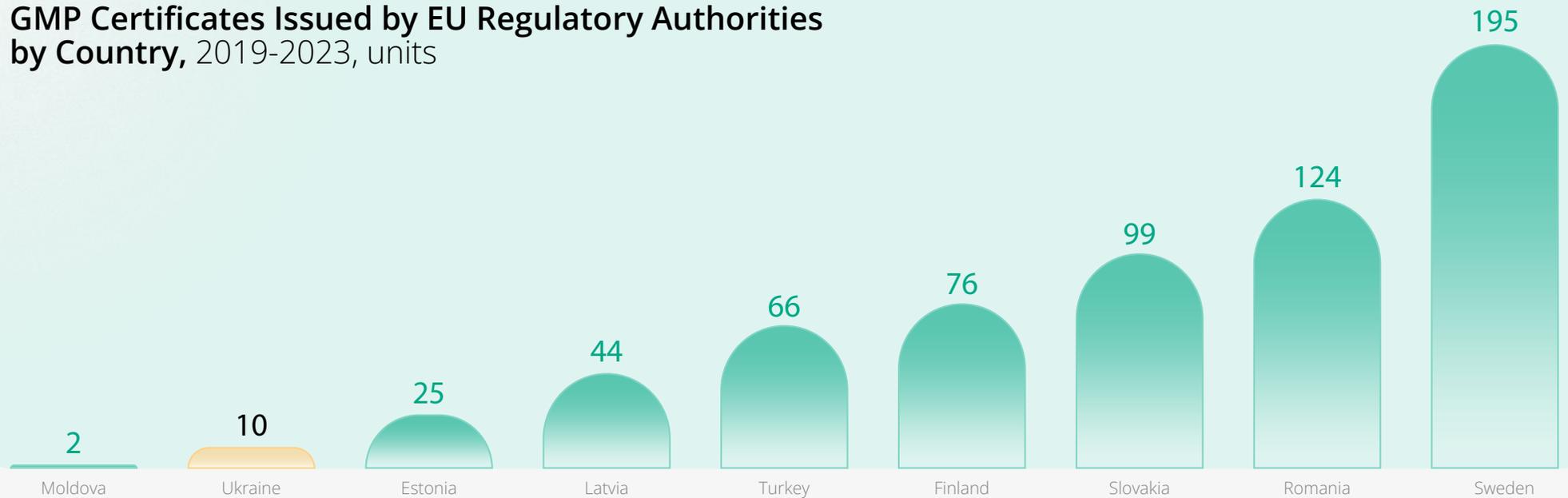
## Issuance of GMP Certificates to Ukrainian Companies by EU Regulatory Authorities



GMP (Good Manufacturing Practice) certification from EU regulatory authorities is a mandatory requirement for companies looking to enter the EU pharmaceutical market.

The validity of a GMP certificate is three years; however, in 2021 and 2022, it was automatically extended by one year due to restrictions imposed in response to COVID-19.

## GMP Certificates Issued by EU Regulatory Authorities by Country, 2019-2023, units



# EU GMP Certification Challenges for Ukraine



National pharmaceutical manufacturers must undergo repeated inspections by EU regulatory authorities in order to ensure compliance with Good Manufacturing Practice (GMP) requirements for the ability to export their products, which presents an additional burden.



GMP Certificates issued by Ukrainian regulatory bodies are not recognised at the EU level, meaning that medicines cannot be exported to Europe. However, major players in the Ukrainian market hold both Ukrainian and European certifications.

## Export Share of Pharmaceutical Products to EU Countries, %

Following the onset of the full-scale war, pharmaceutical companies have suspended trade relations with Russia and Belarus. Thanks to the existing GMP certifications of leading players in the Ukrainian market, companies have increased their exports to the EU by 14.2 percentage points compared to 2021. However, the potential absence of these certifications at that time could have significantly harmed Ukrainian pharmaceutical manufacturers.



Sources: State Service of Ukraine on Medicines and Drug Control, State Statistics Service of Ukraine, State Customs Service of Ukraine

# Intellectual Property and Patents

## The Mechanism for Patent Registration of Original Medicinal Products



## Negative legislative changes regarding patent registration during the war in Ukraine

### The Bolar Exemption has yet to be implemented in Ukraine.

This provision stipulates that, within a certain timeframe before the expiration of a patent for an original medicinal product, other companies may commence research and subsequently enter the market with a new medicinal product following the patent's expiry.

Although the Bolar Exemption has been mentioned in Ukrainian legislation, judicial practice indicates that it cannot be applied for conducting research or even for registering a generic medicinal product before the patent has expired.



### The Law of Ukraine "On the Protection of the Interests of Persons in the Field of Intellectual Property During the State of Martial Law Imposed Due to the Armed Aggression of the Russian Federation Against Ukraine" was enacted on 1 April 2022

This contentious law extends the validity of patents for original medicinal products until the end of martial law, which contravenes international law norms.

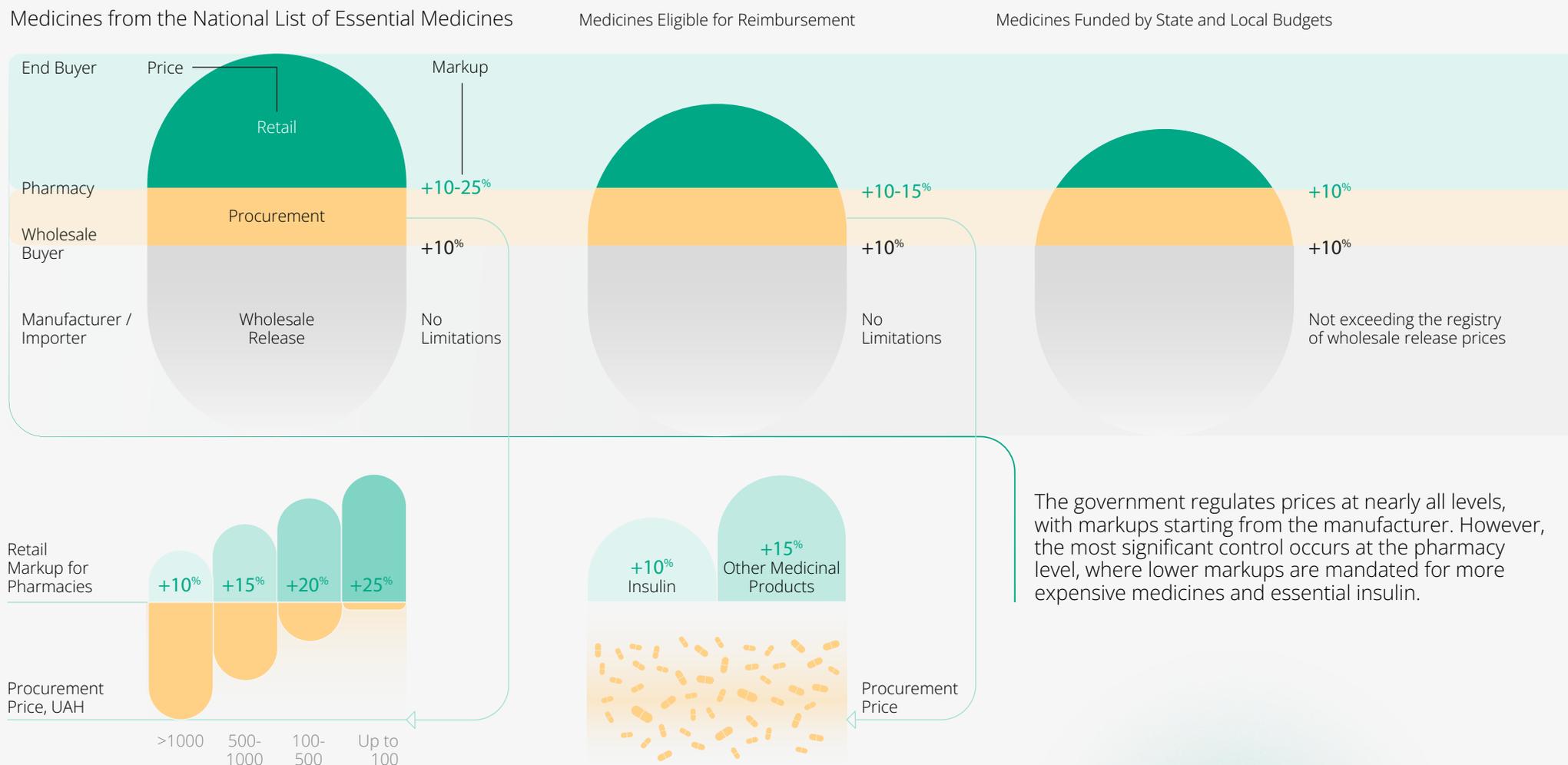


**+40-60%**  
Consumer Overpayment

Patents for several medicinal products, including caspofungin and etoricoxib, which were due to expire, have had their terms extended. Such prolonged patent protection hinders the production of generics and the introduction of imported generic medicinal products into the market, significantly increasing prices and establishing monopolies within the sector.

# Price Regulation of Medicinal Products

## Legislatively Established Maximum Markup on Medicinal Products, %

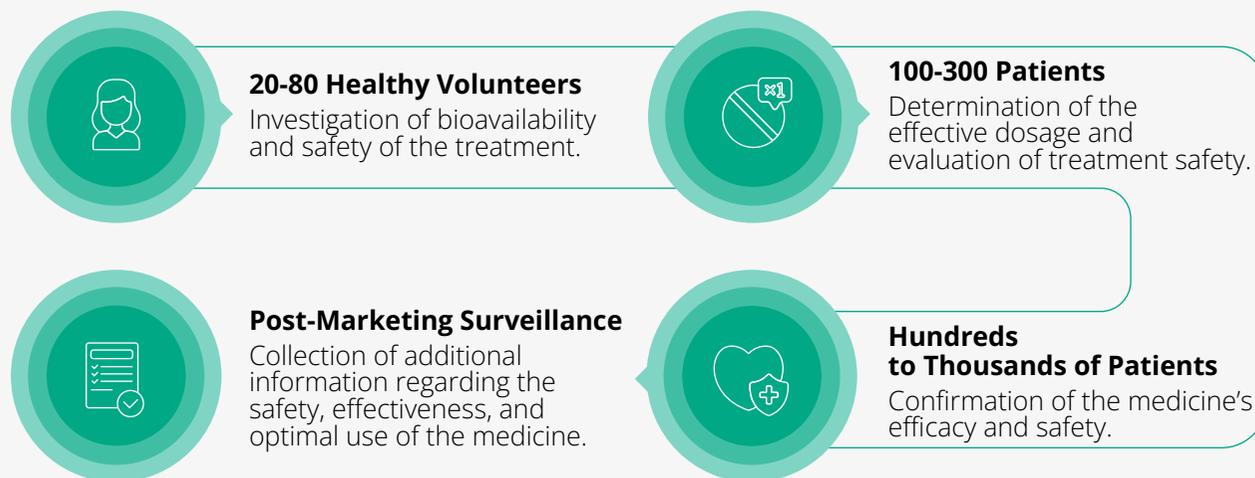


The government regulates prices at nearly all levels, with markups starting from the manufacturer. However, the most significant control occurs at the pharmacy level, where lower markups are mandated for more expensive medicines and essential insulin.

Source: Cabinet of Ministers Resolution No. 955 "On Measures for Stabilising Prices on Medicinal Products and Medical Devices"

# Clinical Trials

## Phases of Clinical Trials



## Factors Impeding the Development of Clinical Trials

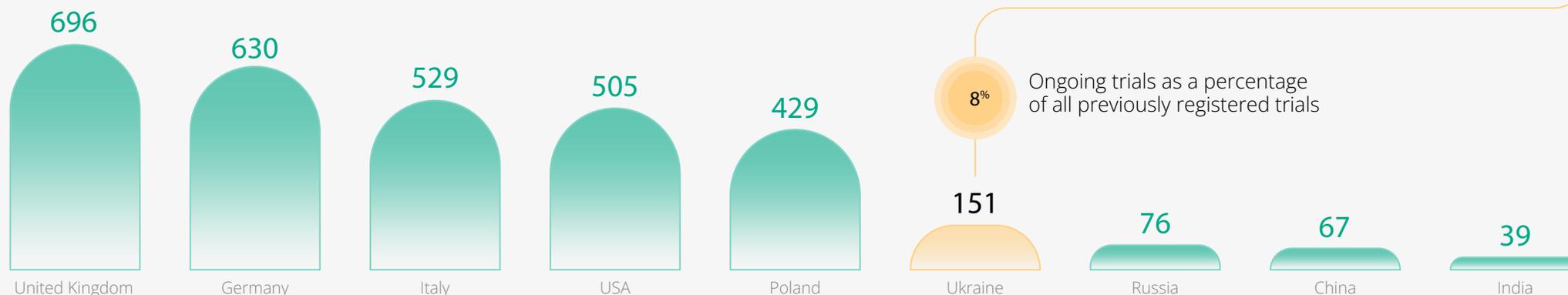
### Full-Scale War.

Reduction in new projects, disruption of logistical chains, migration of patient participants, and occupation of territories.

### Drug Customs Clearance Procedures

### Shortage of Specialists

## Number of Registered Clinical Trials, in 2022 per 1 million population



# Drug Approval Process in Ukraine

## Existing Deficiencies in the Approval Processes and Their Resolution

### Current Edition of the Law of Ukraine “On Medicinal Products”

#### State Service of Ukraine on Medicines and Drug Control

- Absence of 2D coding to combat counterfeit medicines (in effect in the EU since 2015).
- Submission of documents for the registration of medicines occurs offline, unlike the electronic eCTD format standard in the EU.

### New Edition\*

The new edition was intended to come into effect 30 months after the conclusion of martial law. However, due to its significant impact on the EU **integration of the pharmaceutical industry**, discussions are underway for a faster implementation process (despite the ongoing martial law).

#### New Regulatory Authority

The introduction of EU standards and the imposition of stricter requirements for bioequivalence and other studies. **Improved regulation through inspections and sanctions** will ensure compliance with all requirements from pharmaceutical manufacturers.

## Process of Establishing the New Regulatory Authority

The new authority will be established based on the old regulatory bodies, overseeing market access procedures and being monitored by manufacturers, associations, and partners from the EU.

**State Service of Ukraine on Medicines and Drug Control**

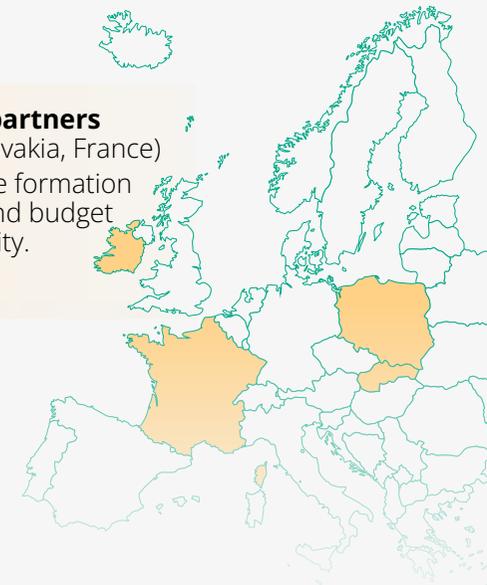
**State Expert Centre of the Ministry of Health of Ukraine**  
(almost in full composition)

**Ministry of Health of Ukraine**

Establishment **based on old divisions**, which will take at least 2.5 years.

**Assistance from partners**  
(Ireland, Poland, Slovakia, France)

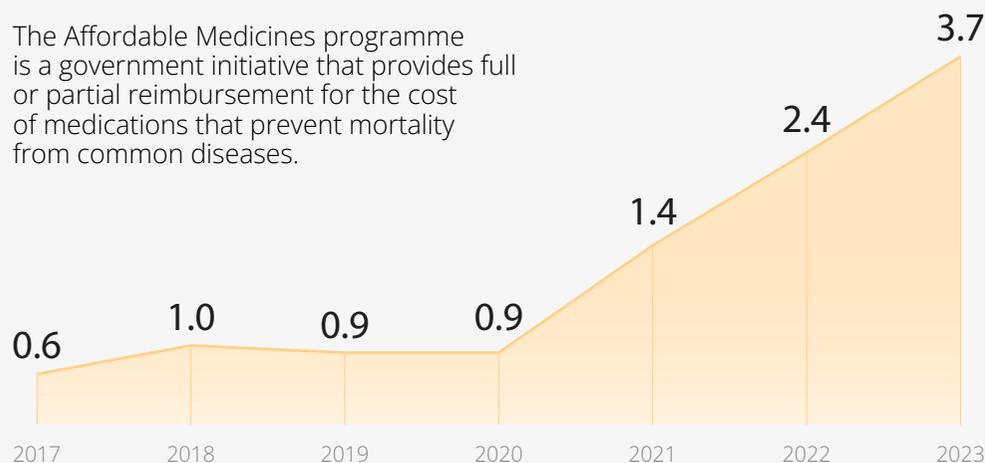
- Participation in the formation of the structure and budget
- of the new authority.
- Joint inspections.



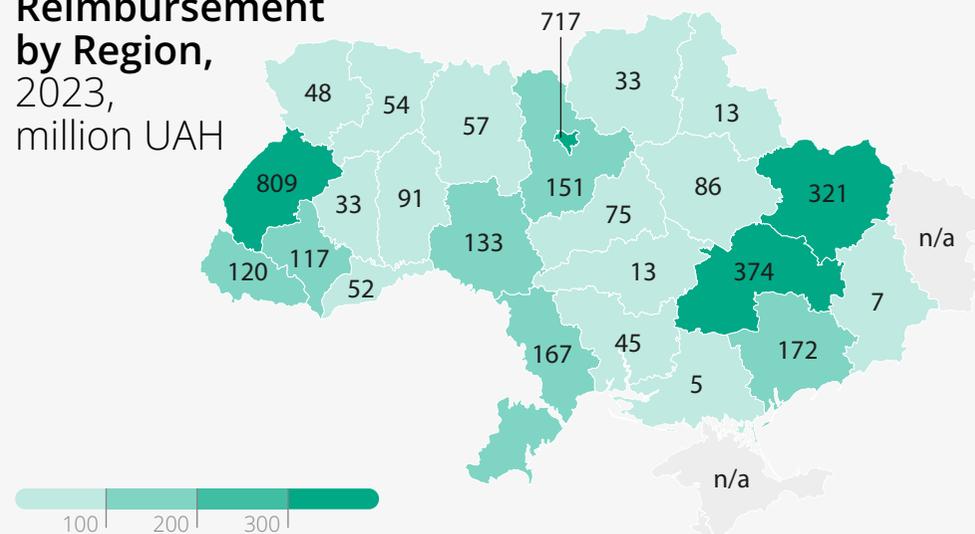
# Availability of Medicines

## Reimbursement Under the Affordable Medicines Programme, billion UAH

The Affordable Medicines programme is a government initiative that provides full or partial reimbursement for the cost of medications that prevent mortality from common diseases.



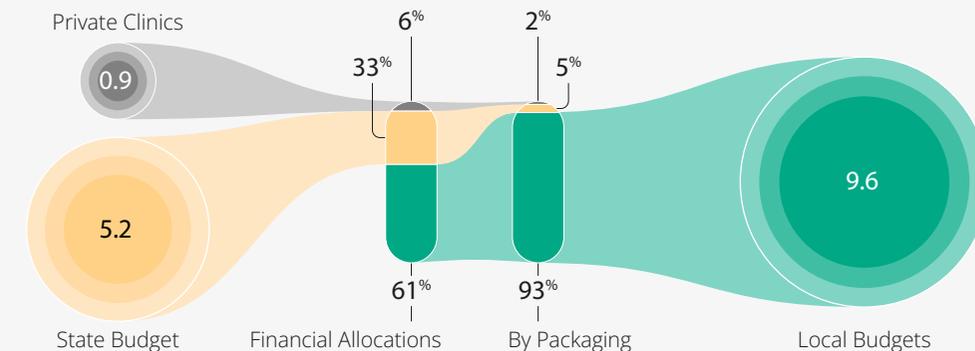
## Reimbursement by Region, 2023, million UAH



## Expenditures on Medicines\* in the State Budget, billion UAH



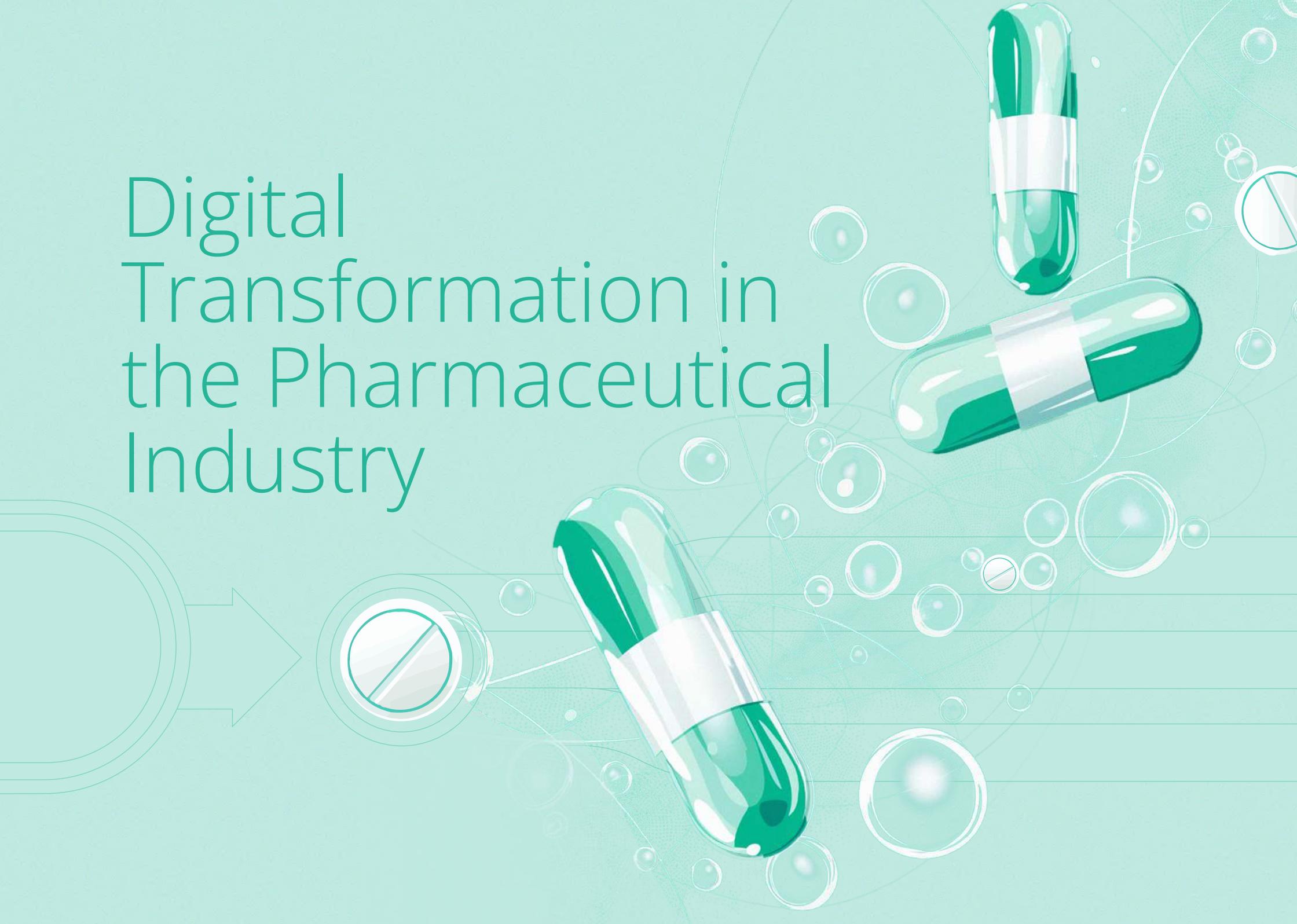
## Structure of Hospital Supplies, 2023, billion UAH



Sources: National Health Service of Ukraine, apteka.ua, Laws of Ukraine "On the State Budget of Ukraine" for 2021-2024, Proxima Research

\*Expenditures related to the provision of medical services under specific state programmes and comprehensive programme-based initiatives.  
\*\*Approved Plan

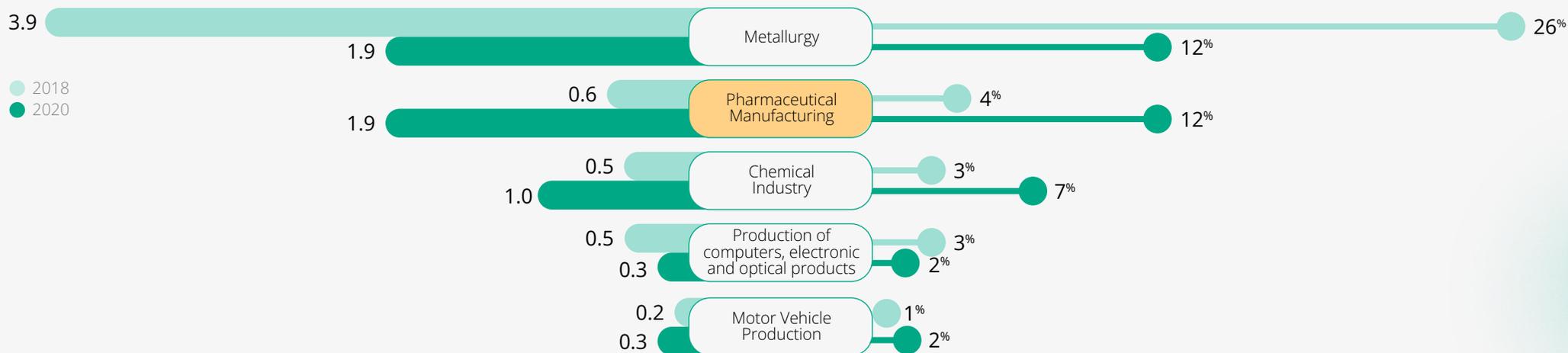
# Digital Transformation in the Pharmaceutical Industry



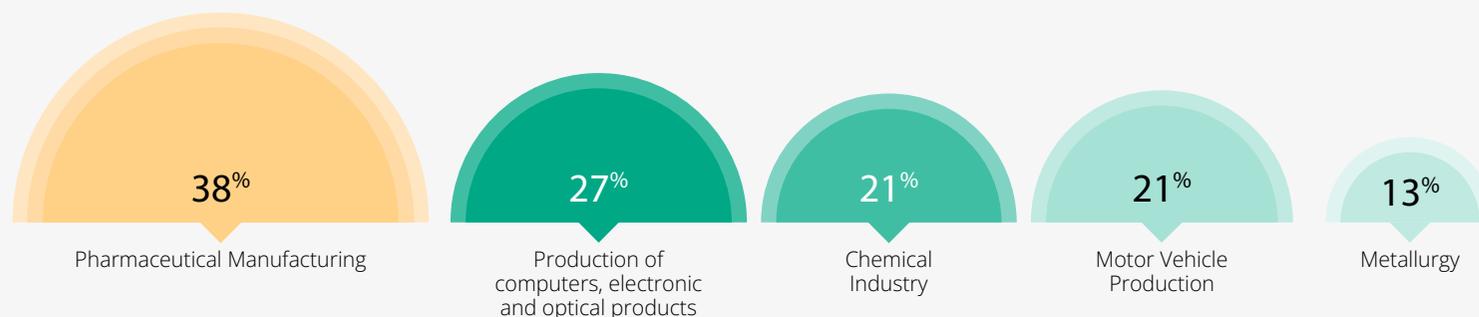
# Innovation in Pharmaceutical Manufacturing

**Expenditure on Innovations by Sector, billion USD**

**Innovation Expenditure as a Percentage of Total Spending, %**



**Proportion of Innovative Enterprises in the Manufacturing Sector, 2018-2020, % of total number of enterprises**

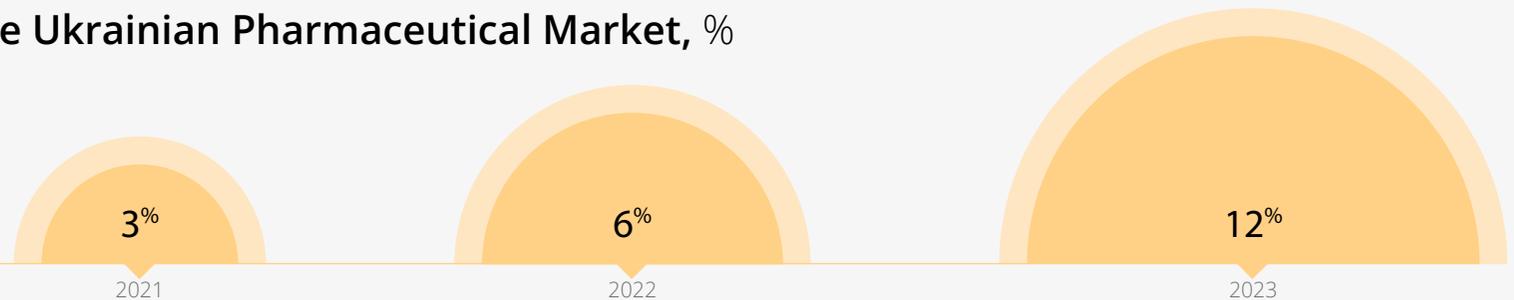


The pharmaceutical sector is at the forefront of innovation implementation. This success is due to its responsiveness to contemporary demands, strong connections to scientific research, and a positive trend in innovation spending.

# E-commerce

## Share of E-commerce\* in the Ukrainian Pharmaceutical Market, %

The active development of e-commerce in Ukraine began in 2020, driven by the COVID-19 pandemic and the growing need for remote services.



## Structure of the E-commerce Pharmaceutical Market in Ukraine



### Pharmacy Network Websites

The primary communication channel with consumers, where medicines can be ordered and picked up.

- Most Popular Representatives
- ANC Pharmacy
  - Podorozhnyk Pharmacy
  - 9-1-1 Pharmacy



### Marketplaces

Online platforms allowing users to find medicines in pharmacies, reserve them, and either pick them up or order delivery.

- Most Popular Representatives
- Tabletki.ua
  - Liki24.com



### Pharmaceutical Companies

Pharmaceutical companies sell their products exclusively through intermediaries. However, key players in the e-commerce market utilise personalised interactions with consumers.

## Barriers and Development Directions for E-commerce in the Pharmaceutical Industry

● Barriers ● Development Directions



# Digitalisation in Darnytsia

## Darnytsia's Process Optimisation Propels the Company to a Global Standard

Darnytsia has become the first Ukrainian pharmaceutical company to implement the latest suite of SAP systems. The implementation, which took just over a year, has elevated the company to the standards of leading global pharmaceutical firms.

**Database**  
Incorporating both internal and external components



This comprehensive software suite enables the company to improve and streamline business processes.

### Top 3 Key Areas Affected by Process Optimisation

#### Financial Segment

The optimisation of budgeting and forecasting processes has resulted in significantly faster re-planning and financial scenario modelling, providing greater flexibility.

#### Source-to-Pay (S2P)

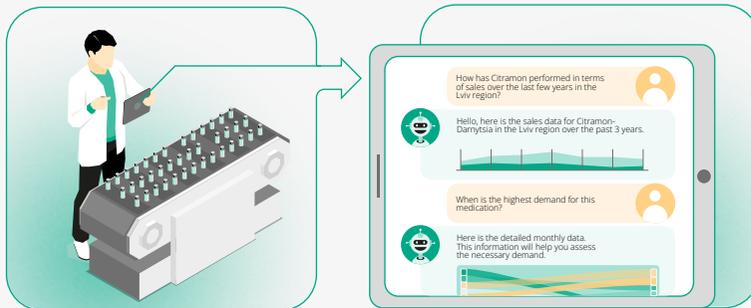
By automating and optimising the analysis and consolidation of demand, as well as supplier interactions, the company has accelerated procurement processes, resulting in enhanced financial efficiencies.

#### Demand Analysis

Digitalisation has enabled the company to segment demand more precisely and quickly by season and region, which directly improves production efficiency.

## Artificial Intelligence for Employees

A chatbot powered by AI has been developed, giving employees access to Darnytsia's database. It responds in a human-like manner to inquiries regarding market analysis and demand forecasting for medicines.



## Future Integration of Service Programmes

A pilot care programme has been created for employees and their relatives, which is expected to expand across Ukraine. Currently, it focuses on cardiovascular diseases. The programme informs users, reminds them about necessary medical check-ups, and analyses results to detect risks.



# Digital Solutions in Big Pharma

## Artificial Intelligence as a Tool for Medicines Development

AI analyses vast amounts of medical data, enabling researchers to develop more precisely targeted medicines. **It predicts medicine efficacy, reducing both the time and cost** required to advance to clinical trials.



## Big Data — Improved Efficiency and Safety

AI **enhances the efficiency and accuracy of clinical trials.** By analysing patient history data, companies can make better participant selections and forecast potential side effects.



## Telemedicine Expands Access to Healthcare

Digital tools are being developed to enable doctors **to remotely monitor patients' health and adjust treatments,** particularly for conditions like cancer and diabetes.



AI assists in early-stage **budget planning by estimating the necessary financial resources** for clinical trials. This prevents budget deficits and eliminates the need for additional funding requests later, which could slow down the trials.



Once products are on the market, Big Data allows companies to more effectively **monitor drug safety and performance.** Post-market analysis helps detect rare side effects and evaluate the long-term efficacy of treatments.



Major pharmaceutical companies are utilising telemedicine **to improve patient access to healthcare services.** Through online patient portals, patients or their doctors can receive free medications or explore other financial assistance options.

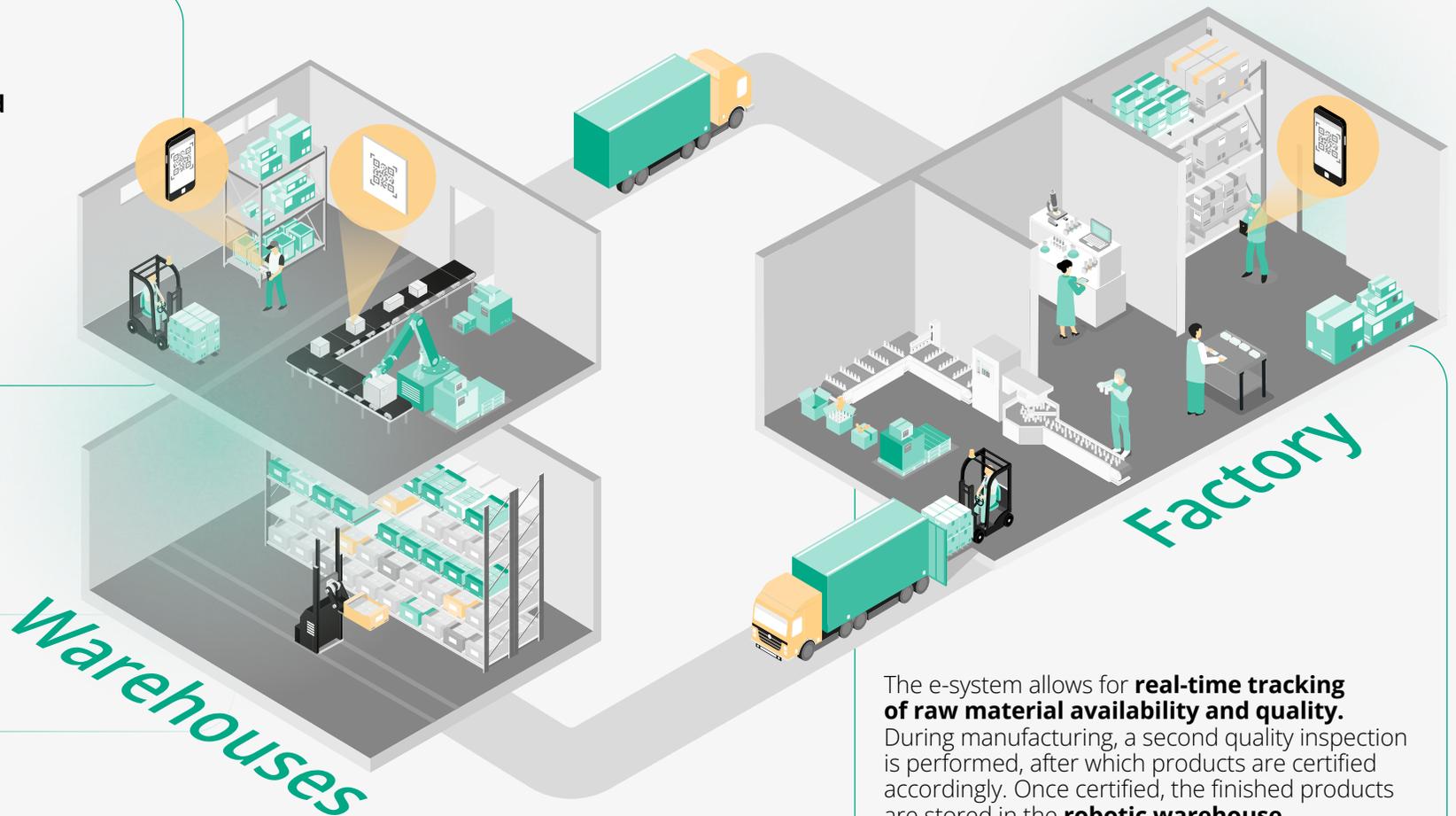
# Automation of Production

## Automation of Manufacturing Processes at Ukrainian Pharmaceutical Companies

A robotic warehouse stores raw materials, where **quality checks are conducted, and all information is stored digitally.** Each batch is tagged with a tracking label, enabling full traceability.

Automation removes the risk of human error, ensuring that **only verified raw materials enter production.**

Storage of Finished Products



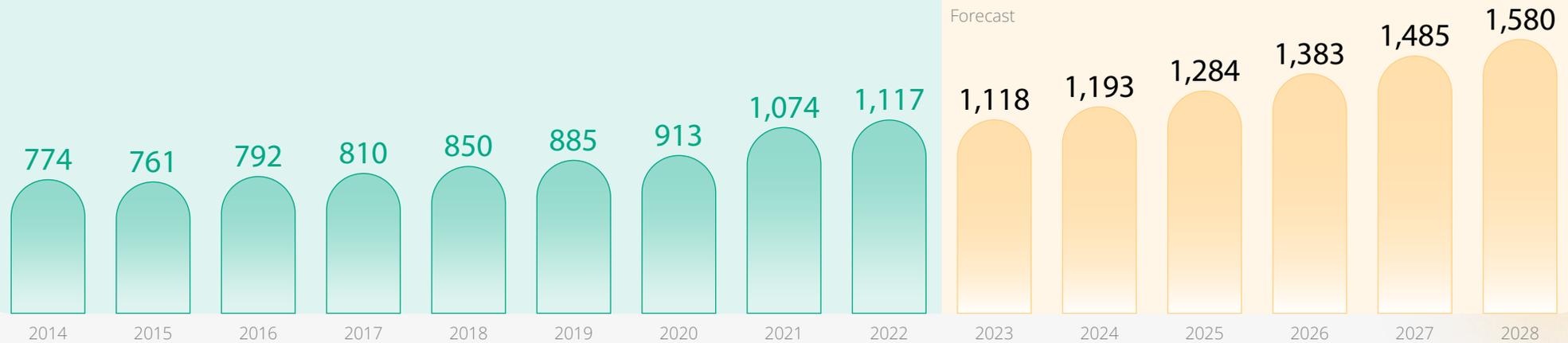
The e-system allows for **real-time tracking of raw material availability and quality.** During manufacturing, a second quality inspection is performed, after which products are certified accordingly. Once certified, the finished products are stored in the **robotic warehouse.**

# Pharma Industry: Challenges and Prospects

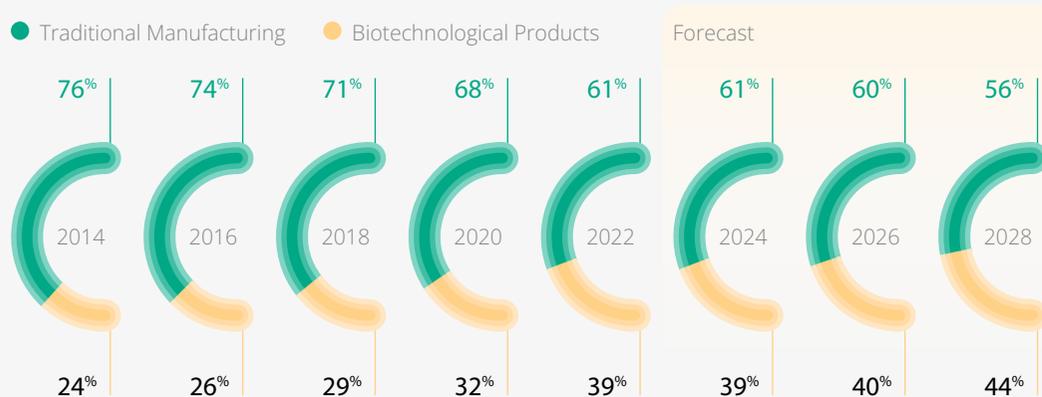


# Global Medicinal Product Sales

Global Sales of Prescription Medication, billion USD

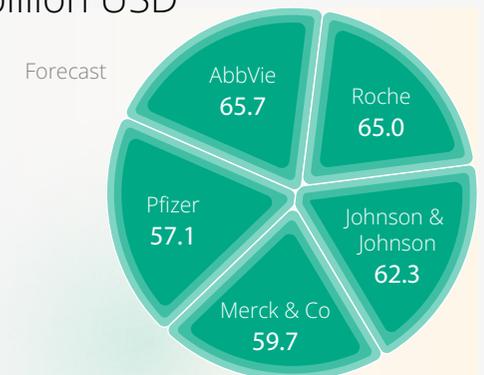


Global Sales of Prescription and Over-the-Counter Medications by production method



The biotechnology sector saw a significant transformation in 2021-2022, largely driven by the COVID-19 pandemic, as vaccines are included within this category. Looking ahead, growth will be fuelled by rising demand for treatments related to obesity, neurological disorders, and cancer.

Projected Sales of the Top 5 Pharmaceutical Companies, 2028, billion USD

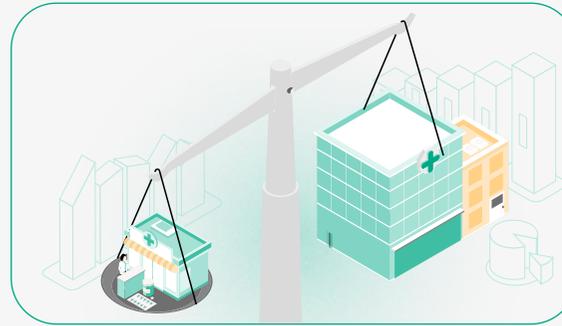


# Key Challenges for Pharmaceuticals in Ukraine



## Lack of Cooperation Between the State and Business

Ukrainian pharmaceutical manufacturers face limited planning horizons for both the production of medicines and business development. While they are keen to collaborate with the government, the state does not always reciprocate. As a result, there is a lack of government support, strategy, and subsidies for businesses.



## The monopolisation of the pharmacy market

is becoming an increasingly apparent issue. This stems from the lack of regulation of pharmacy operations, which could have a significant long-term impact on the pharmaceutical sector.

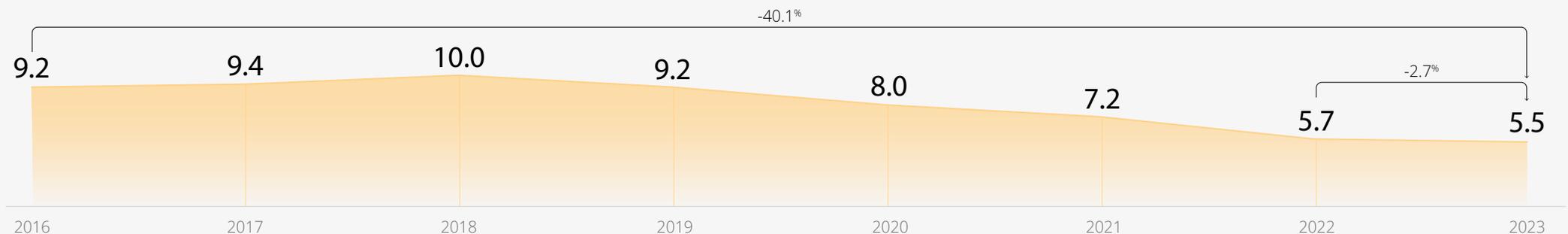


## Non-recognition of Ukrainian certificates by EU regulatory bodies.

Due to doubts over the integrity of Ukrainian regulatory authorities, European regulators require Ukrainian companies to undergo repeat inspections.

## Number of Applicants for the Speciality “Pharmacy, Industrial Pharmacy”, thousands

Over the past five years, there has been a downward trend in the number of applicants choosing to study pharmacology. In 2022, the number was significantly affected by the full-scale invasion and resulting migration. This decline is likely to negatively impact the recruitment of new professionals in the future.



# Recovery of the Industry in War Conditions

## Impact of the War on the Pharmaceutical Industry

The pharmaceutical industry, like any other industry in Ukraine, has been affected by the war. However, unlike many other sectors, it has predominantly experienced indirect losses. The decline in sales has not been attributed to the destruction of facilities but rather to population migration, decreased demand, and other related factors.



### Shelling and Active Combat

At the beginning of the full-scale invasion, hostilities were particularly intense. Companies were compelled to relocate their facilities and construct shelters for their employees. This significantly mitigated risk levels and allowed the industry to adapt to the new circumstances.



### Decline in Purchasing Power

The uncertain situation has influenced household expenditure patterns, which in turn has affected the demand for medications.



### Population Migration

Combat operations and occupation have resulted in both internal and external migration, impacting workers in the pharmaceutical industry and reducing the number of potential consumers of pharmaceutical products.



### Logistics and Distribution Challenges

Pharmaceutical companies have had to identify new logistical routes and sales points, as some pharmacies have ceased operations.

Despite these challenges, the pharmaceutical industry is recovering and gradually returning to pre-war levels

Pharmacy sales volume, billion USD



Number of pharmacies, thousand



Number of new job vacancies in the "Medicine, Pharmacy" sector, thousand



# Pharma as a National Security Element

## Key Sectors for Ukraine's National Security

Every nation faces its own unique challenges concerning national security. In the context of war, Ukraine must particularly prioritise the stability of its pharmaceutical industry.



### Security and Defence

This sector safeguards the sovereignty of the nation, protecting citizens and infrastructure from external threats.



### Energy

A robust energy infrastructure is crucial for the effective functioning of the economy, ensuring that citizens enjoy a safe and comfortable life.



### Pharmaceuticals

The pharmaceutical industry is vital for preserving lives and maintaining public health. Its significance has become even more apparent during the pandemic and the ongoing full-scale war.

## Key national interests in pharmaceuticals that the state should safeguard



### Health and Wellbeing of Citizens

The overall health of the population directly influences demographic trends and determines the level of investment in healthcare and social protection systems.



### Independence from Medication Imports

A reliance on imported medicines exposes the country to risks associated with price fluctuations and the imposition of trade barriers.



### Human Capital

Investments in education and support for skilled professionals are essential for sustainable industry growth, especially given that Ukraine ranks 4th among 177 countries in terms of "brain drain."

## How the Ukrainian Pharmaceutical Industry Has Responded to Crisis Challenges

### COVID-19

- Identifying new suppliers in response to the closure of Chinese manufacturing facilities and escalating raw material prices.
- Scaling up production to meet the surging demand for antibiotics, antivirals, cough medicines, and antipyretics.

### Full-Scale War

- Establishing efficient logistics amidst ongoing combat operations.
- Addressing the humanitarian crisis that has left millions of Ukrainians without access to essential medicines.
- Developing sales mechanisms for products in light of the reduced number of pharmacies and declining purchasing power among the population.

# Humanitarian Aid

At the start of the full-scale invasion, Ukraine faced a medicine shortage. In response, various countries and companies provided humanitarian medical aid. However, this influx also led to negative consequences for the Pharmaceutical Sector.

## Impact of Humanitarian Aid on the Market



**A decline in sales** and hospital procurements from domestic manufacturers.



**An increase in the stock levels of medicines,** surpassing pre-war figures.



**Fluctuations in demand for medicines** at different phases of the war, influenced by the volume of aid received and the prevailing security situation.

**388 million USD**

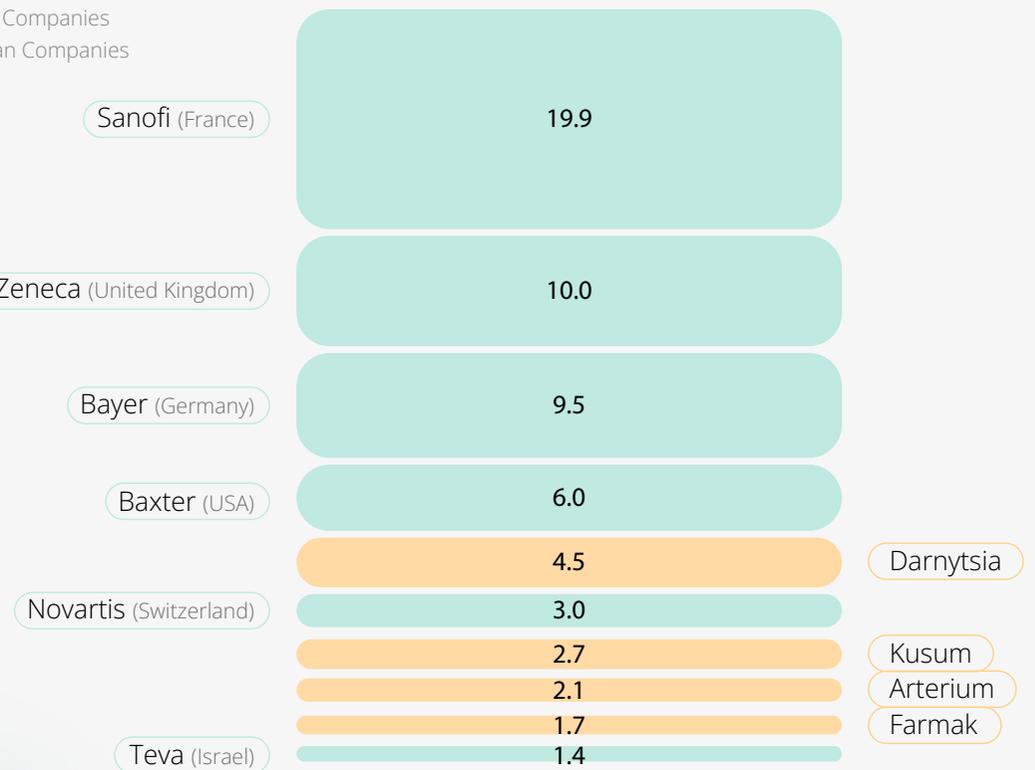
The total amount of medical humanitarian aid provided from March to August 2022

**Who Provided Aid to Ukraine**



## Top 10 Pharmaceutical Companies Providing Aid, from March to August 2022, million USD

● Foreign Companies  
● Ukrainian Companies



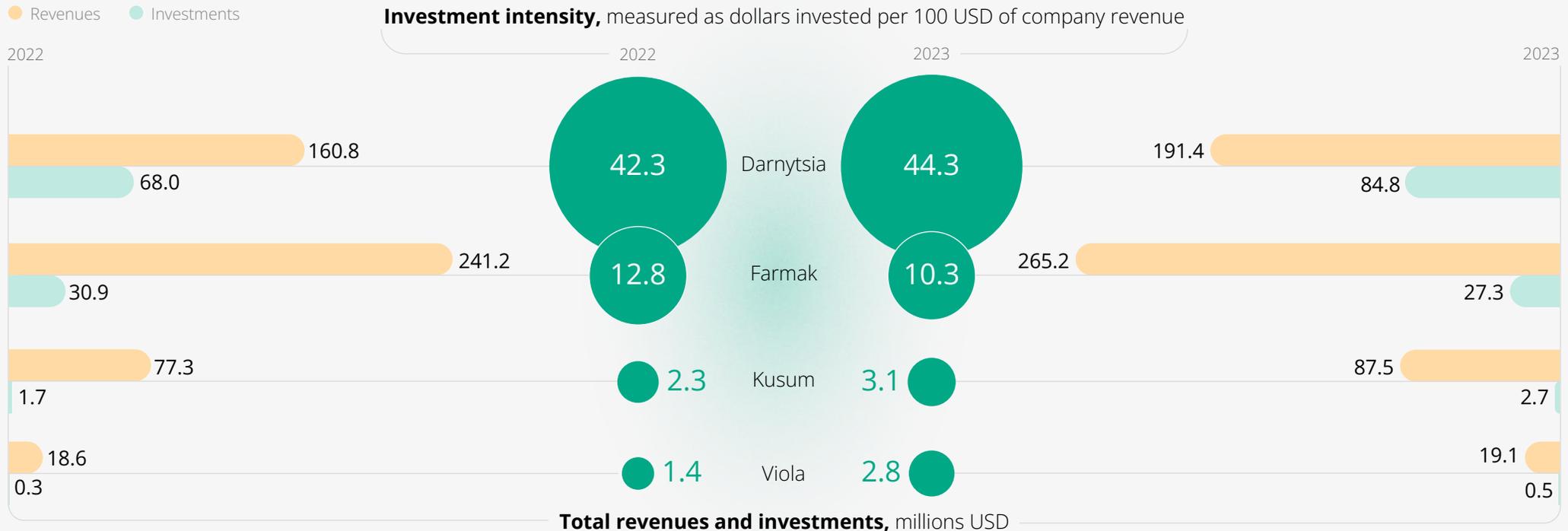
# Investment in Pharmaceutical Manufacturers

## Factors Influencing Pharmaceutical Manufacturers' Investment Decisions

Pharmaceutical companies primarily invest in their development, focusing on the research and production of new medications. Understanding the specific types of medications that the population will require allows for more effective resource planning to meet market demands.



## Financial Performance of Ukrainian Pharmaceutical Companies



Sources: Darnytsia, Farmak, Kusum, Viola

# Positive Transformations in the Pharma Sector



Despite various challenges, **the Ukrainian pharmaceutical industry has demonstrated remarkable effectiveness and resilience.** The development process has not stalled even amidst the full-scale invasion, with many companies continuing to expand and innovate.



**Harmonisation with European Legislation:** The recent adoption of the new Law "On Medicinal Products" presents an opportunity for a thorough evaluation of all Ukrainian companies to ensure compliance with European standards.

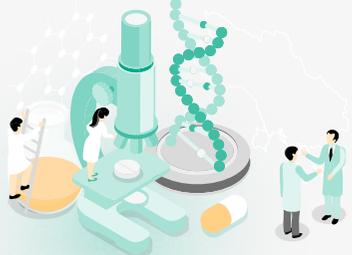


**Digital Transformation:** In response to the COVID-19 pandemic and the ongoing full-scale invasion, pharmaceutical companies are actively digitising their operations. This includes automating production processes and implementing advanced information systems.



**Export Growth to European Markets:** Since the onset of the full-scale war, Ukrainian pharmaceutical companies have been exploring new markets for their products. Over the past two years, the share of exports to Europe has risen significantly, increasing from 6.7% to 20.9% of the total volume.

# The Future of Ukrainian Pharmaceutical Industry



**Development Despite Adversity**  
In spite of the ongoing war and the absence of government subsidies, the pharmaceutical industry is making significant strides through its own initiatives and strategies.



**Investment in Education and Workforce Training**  
The pharmaceutical industry urgently needs skilled professionals, a demand that is expected to rise as the industry evolves. Importantly, investments in education can yield returns of up to 500%.

**Reducing Import Dependency**  
The Ministry of Health of Ukraine encourages Ukrainians to purchase domestically produced medicines to support local manufacturers.



# EU Integration: Pharmaceutical Compliance

## Challenges and Conditions for Integration

- 

**Harmonisation of Legislation with the EU**  
A series of subordinate regulations is currently being developed to align Ukrainian legislation with the EU's regulatory framework.
- 

**Preparedness of the Regulatory Authority**  
The new regulatory authority must ensure the elimination of corruption and achieve full compliance in terms of expertise and the number of qualified specialists.
- 

**Purchasing Power in Ukraine**  
The low purchasing power of Ukrainians hampers development and diminishes the EU's interest in the Ukrainian pharmaceutical market.
- 

**Negative Legislative Developments**  
The lack of implementation of the "Bolar Provision" and the introduction of legislation extending the patent duration of original medicines until the end of martial law pose significant barriers to integration with the EU. Therefore, it is crucial to ensure compliance with EU requirements.

## Future Prospects in the EU Market

- 

**Ukraine's Competitive Viability**  
Due to non-tariff barriers, such as additional Good Manufacturing Practice (GMP) certification, Ukraine is not yet able to compete on an equal footing with European manufacturers. However, the recognition of Ukrainian certification will resolve this issue.
- 

**Inequitable Conditions for Older Medicines**  
Older medicines in the EU market were registered 20-25 years ago, at a time when quality control and safety regulations were less stringent. The registration conditions for similar medicines from Ukraine will be contemporary, leading to higher production costs.

## Advantages of Ukraine Entering the EU Market

- 

**Extensive Consumer Market**  
In the wake of the full-scale invasion, companies have lost their markets in Russia and Belarus. Gaining access to the EU market will provide a larger consumer base with greater purchasing power.
- 

**Demand for Generics**  
The EU is keen on affordable, high-quality generics. Ukraine, in turn, possesses a surplus that can effectively meet European needs.
- 

**Healthy Competition**  
European companies express concerns about market dumping; however, compared to products from India and China available in the EU market, Ukrainian offerings will not be cheaper.

# Sources

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