Ukraine: the Home of Great Devs

2021 Tech Market Report

BEETROOT

www.beetroot.se

Contents

About this report

Acknowledgments

This paper has been created by Beetroot, one of the top 50 tech companies in Ukraine. We'd like to thank our partners and peer organizations for their assistance.

The research and analysis are based on Beetroot's corporate data and the insights collected by numerous organizations, including the [Ministry of Digital Transformation](), [IT Ukraine Association](), [DOU.UA](), [UkraineInvest](), [Beetroot Academy](), [Kharkiv IT Cluster](), and [BRDO](), to name a few.

Introduction

In recent years, Ukraine has been steadily advancing as a global tech market player. And with remote workforce and digital operations becoming businesses' top priorities in the post-pandemic paradigm, Ukraine's role in the world economy's ongoing restructuring effort will further increase.

Ukraine enters 2021 with a 20% IT Services market growth rate and over 200,000 tech specialists to meet the increasing global demand for software engineers.

Learn more about the Ukrainian IT market's state in 2020 and discover the significant benefits of outsourcing your software development projects to Ukraine in this report.

01

Market Overview

Numerous companies and investors worldwide have already discovered the power of reasons behind Ukraine's tech appeal. The following report section sums them up in a laconic manner.

TECH UKRAINE: QUICK FACTS

Population: 43.7M

Labor force: 18.1M

205,000 Tech Specialists (1.13% of Labor Force)

23,000 Annual Tech Graduates

Nominal GDP / GDP per capita: USD 153.78B / USD 3,224

Capital City, population: Kyiv, 2.99M

IT services export volume in 2020: USD 5.03B

[1] [3]

Cultural and geographical proximity

Ukraine is only one to two hours ahead of most European countries, making for notably simple communication between distributed teams.

Simultaneously, more significant time differences grant Ukraine's partners from distant countries the benefit of continuous development.

Direct flights from Ukraine to major European cities take no longer than 2-3 hours, and the major Ukrainian airports provide stable connections with them.

Citizens of 81 countries, including the EU and the US, don't need a visa to visit Ukraine. Another 45 countries can use an online pass to visit Ukraine for a short stay. [12] [13]

Time zones

Kyiv

New York
Toronto

London   Stockholm   Tel-Aviv
Lisbon   Zürich   Helsinki

0
-1
-2
-7
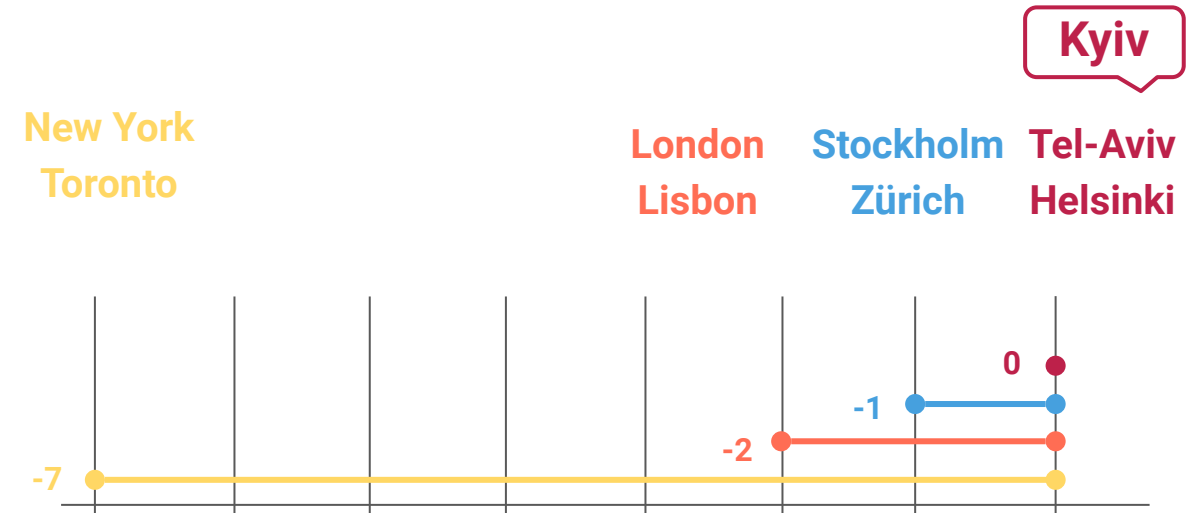
Language

About 85% of tech professionals have at least an intermediate English proficiency level. [19]

In the Education First 2020 ranking of English proficiency among non-native countries, Ukraine ranked 44th out of 100 moving up five positions since last year. [14]

Ukraine's affinity to Europe goes far beyond the geo factor. In no small measure, mentality, culture, and business values make Ukraine a European country. One of the facts speaking in favor of pro-European sentiment is that 60% of Ukrainians consider joining the European Union as Ukraine's main integration area. [11]

Tech business climate

Political and economic background

Ukraine is a priority partner for the European Union. After the Revolution of Dignity in 2014, the EU Association Agreement was signed (in effect since December 2017). [79]

Since 2014, Ukraine's economy has been steadily growing. It shows a systematic annual rise of GDP and an impressive drop in inflation under 5% in 2020. The most significant growth of GDP last year was in construction (+23%), services (+15%), and IT (+7.5%). [3]

Anti-corruption infrastructure

Even though Ukraine still has much work ahead in improving transparency and legal certainty, the Ukrainian treasury saves around $6 billion, or 6% of GDP, annually due to the anti-corruption measures since 2015.

The current network of regulatory institutions working in this field includes the Anti-Corruption Court, National Anti-Corruption Bureau, and the National Agency on Corruption Prevention, to name a few.

Legislation on data protection

The main legislative act on personal data protection in Ukraine is the Law On Personal Data Protection. [10]

In 2017, Ukraine started bringing its data protection system in line with European standards, preparing the recommendations and methodologies in 2018. Now the state is on its way to compliance with GDPR.

" Digitalization and the IT-industry's development are among our Ministry's priority tasks. We're moving confidently towards reaching the goal of increasing the IT sector's share in Ukraine's GDP to 10% in three years. We've launched the 360 Tech Ecosystem Overview platform, which opens new opportunities for the market, allowing all its participants to interact and develop more effectively. It's also an essential part of the promotion of our IT ecosystem among international investors. The Ministry's other priority project, Diia City, is expected to boost the tech industry's growth by at least twice over the next four years.

[82]

Olexandr Bornyakov

Deputy Minister of Digital Transformation for IT Development

Profile of the IT industry

Ukrainian IT is skyrocketing despite the turbulence caused by the pandemic outbreak. Through the last few years, Ukraine's tech community has gained worldwide recognition and foreign investors' trust. The IT Services sector has become a significant contributor to the country's economy as the 3rd largest service exporter.

[76]

"

Every year IT export grows by 20-25 percent. To maintain the current growth rate against tough global competition for talents, the first thing we require is that the state adopts a balanced approach to existing tax models review and develops IT education.

[76]

Constantine Vasuk

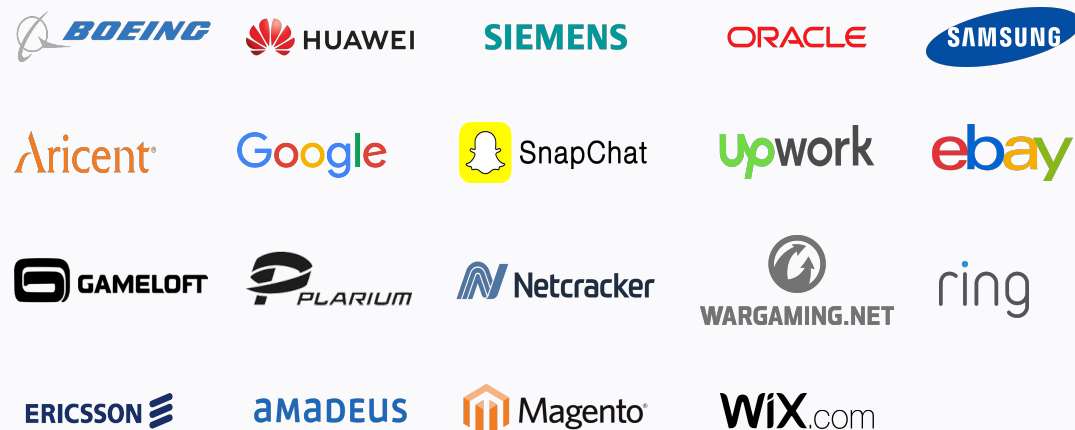Executive Director,
IT Ukraine Association

Tech infrastructure

According to various sources, there are between 3,000 and 5,000 IT companies in Ukraine. The government's Tech Ecosystem Overview lists 1142 product companies and 858 service vendors in Ukraine. [19] [20] [80]
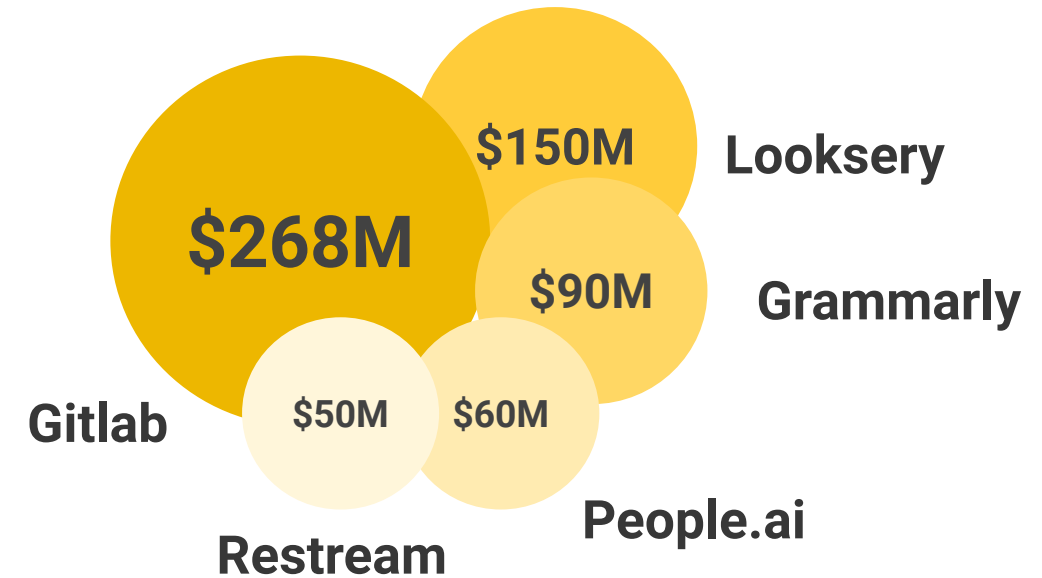
More than 100 Fortune 500 companies have chosen Ukrainian IT services. Ukraine is home to more than 100 R&D centers owned by or working with global companies, including Google, Samsung, Siemens, and Huawei. Many of them have significantly expanded the number of employees or/and opened new offices. [23][93][94]

In 2020, Ukraine made it to the world's top 30 startup ecosystems, jumping up by two spots in the StartupBlink's rating. [21]

Global companies with R&D in Ukraine

BOEING HUAWEI SIEMENS ORACLE SAMSUNG

Aricent Google SnapChat Upwork ebay

GAMELOFT PLARIUM Netcracker WARGAMING.NET ring

ERICSSON AMADEUS Magento WiX.com

Prominent startups with Ukrainian roots

$268M Gitlab
$150M Looksery
$90M Grammarly
$50M Restream
$60M People.ai

2019 marked the largest funding rounds in the history of the Ukrainian IT sector. Gitlab, owned by an entrepreneur from Kharkiv, raised $268 million, topping the most massive investments for 2019. [24] Grammarly has closed a $90 million round of funding the same year. [25] People.ai, the predictive sales startup, raised $60 million. The Restream startup, founded in Vinnytsia and incorporated in Austin, USA, has raised $50 million during the Series A round in 2020. Among other Ukrainian startups that have been drawing the global tech scene's eyes in recent years are Reface (raised $5.5M in 2020) and Looksery (acquired by Snap Inc. for $150M in 2015.) [26] [86]

To ensure the industry's development, the IT community holds more than 1000 events for specialists, startups, and investors annually.

Global expertise recognition

In the 2019 Skillvalue report, Ukrainian developers ranked 5th best in the world and 4th best in Europe [28].

2019 Skillvalue report
Best in the World

2019 Skillvalue report
Best in Europe

[32] [34]

In HackerRank 2016, Ukrainian developers took 11th place in the Top 50 Worldwide [29].

HackerRank 2016
Top 50 worldwide

At the 2017 Global Sourcing Association awards ceremony, Ukraine was named the Offshoring Destination of the Year. [23]

Offshoring Destination of the Year 2017

[32] [34]

The 2020 Global Outsourcing 100, published by The International Association of Outsourcing Professionals, includes 13 Ukrainian companies and eight companies with Ukraine offices. [31]

68 Ukrainian tech companies made it to the 2020 Clutch Top 1000 list, representing only the top 1% of all B2B enterprises in the Clutch catalog. [81]

Export volume

According to the Better Regulation Delivery Office (BRDO) report, the export of IT services in 2020 increased by 20.4% against the previous year, totaling $5.03 billion. The tech sector's growth contrasts with the overall decrease of Ukraine's goods and services export of 4.6% in 2020.
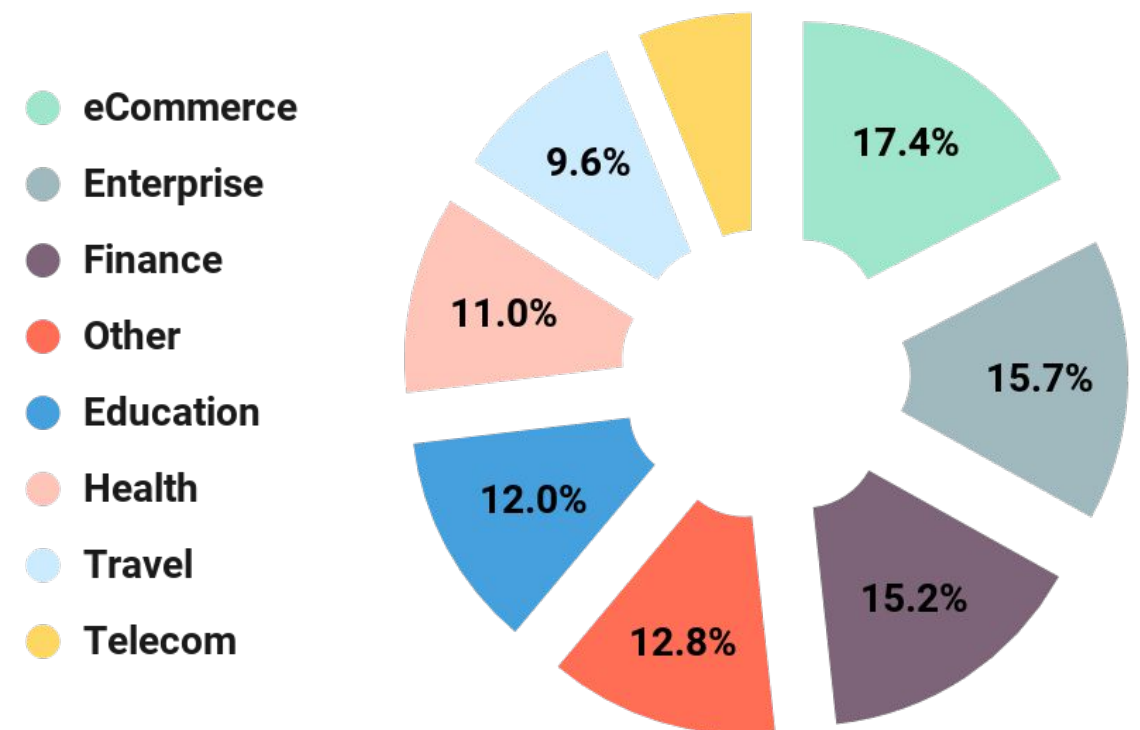
IT is the most exported service in Ukraine, with a share of 8.3% in the country's $60.4 billion export of goods and services. [43]

The amount of taxes and fees paid to the state budget by the IT industry in 2019 increased by 28% compared to the previous year, reaching UAH 16.7 billion. [1]
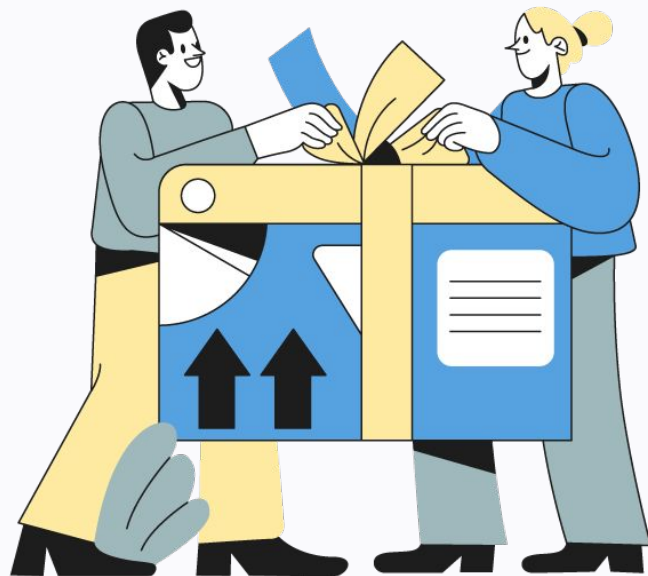
Main industries

Industry focus among Ukrainian software development companies

- eCommerce
- Enterprise
- Finance
- Other
- Education
- Health
- Travel
- Telecom

eCommerce 17.4%
Enterprise 15.7%
Finance 15.2%
Other 12.8%
Education 12.0%
Health 11.0%
Travel 9.6%

According to Clutch.co, the prime spheres Ukrainian IT vendors work in are eCommerce, Enterprise, and Finance. [35]
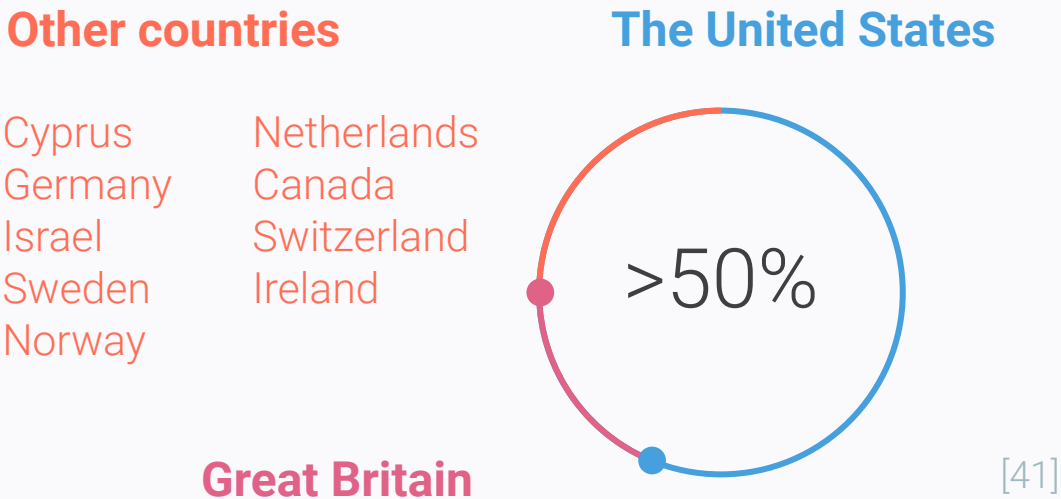
DOU.UA reports that E-commerce, Fintech, and Mobile are the top three industries in the Ukrainian development circles. [19]

Main target markets

The main clients of Ukrainian vendors remain the United States and Western Europe, including Great Britain and European Union countries. While different sources provide diverse statistics, it is clear that the USA remains Ukraine's largest R&D partner (45% of research companies).

The EU is the second-largest market, with the UK, Germany, Netherlands, and Sweden as primary consumers [32] [33]. According to the Almega report, the digital skill shortage in Sweden is about to reach 70,000 by 2022. Therefore, the demand for Ukraine's IT from Nordic countries is growing too, with Sweden and Denmark taking the lead. [34]

Main markets by IT Ukraine and BRDO:

Other countries

The United States

Cyprus   Netherlands
Germany   Canada
Israel   Switzerland
Sweden   Ireland
Norway

>50%

Great Britain

[41]

"
Cooperation with business and international partners is very important for us, in particular, we are talking about Sweden. We have already built an organizational structure within the framework of the Ministry to launch and implement our projects. And a specific Deputy Minister has already been assigned to fulfill each particular task and coordinates the relevant areas.

[83]

Mykhailo Fedorov

Deputy Prime Minister - Minister of Digital Transformation

Ukrainian tech community

Despite an inevitable slowdown caused by the global pandemic-crisis, Ukrainian IT is undoubtedly flourishing. Companies are growing in number and size, impacting the country's financial, cultural, and infrastructural outlook. By gathering into clusters and associations, tech businesses proactively cooperate with local communities and initiate big infrastructure projects.

Ukrainian IT industry's social impact during the COVID-19 outbreak

Over 92% of Ukraine's tech businesses have switched to remote work just a few weeks after the government enforced a strict quarantine — for most of them, it was a matter of habit, according to Olga Kunychak, manager of the IT committee at the European Business Association.

"

The maturity of business is largely manifested in the extent to which it is socially responsible and whether it is ready to support society in a critical situation.

A powerful movement of IT companies to raise funds and provide assistance to doctors in the regions was organized on the basis of regional IT clusters in just a few weeks. All so that they can resist the epidemic and save lives. Many thanks go to our colleagues from Lviv IT-cluster, Kharkiv IT-cluster, Dnipro IT Community, Cherkasy, Ivano-Frankivsk, Odesa, and all IT specialists who joined these initiatives. By June 2020, the IT industry has raised almost 45 million UAH.
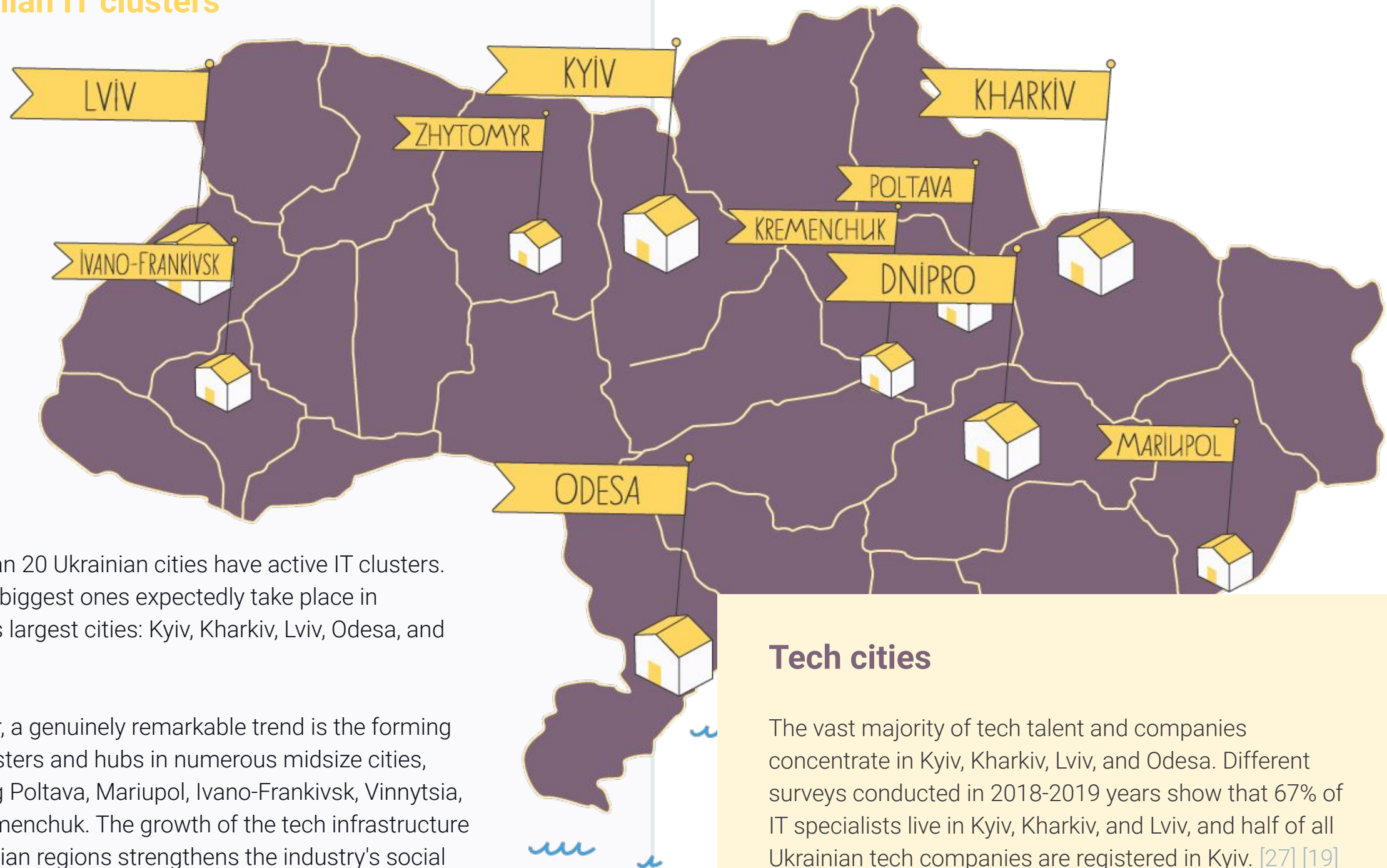
[84]

Tetyana Nazarchuk

Deputy Director,
Business Development IT
Ukraine Association

Ukrainian IT clusters

More than 20 Ukrainian cities have active IT clusters. [27] The biggest ones expectedly take place in Ukraine's largest cities: Kyiv, Kharkiv, Lviv, Odesa, and Dnipro.

However, a genuinely remarkable trend is the forming of IT clusters and hubs in numerous midsize cities, including Poltava, Mariupol, Ivano-Frankivsk, Vinnytsia, and Kremenchuk. The growth of the tech infrastructure in Ukrainian regions strengthens the industry's social impact, both on the local and national levels.

Tech cities

The vast majority of tech talent and companies concentrate in Kyiv, Kharkiv, Lviv, and Odesa. Different surveys conducted in 2018-2019 years show that 67% of IT specialists live in Kyiv, Kharkiv, and Lviv, and half of all Ukrainian tech companies are registered in Kyiv. [27] [19]

KYIV

Ukraine's capital is housing both the largest talent pool and highest salaries

$2,400

Median salary of a mid-level software engineer

90K

Tech specialists

44%

Of Ukraine's tech talent pool

50+

International R&D centers

86th

Place in the Worldwide Cost of Living 2020
(New York is the 4th)

38+

Universities and colleges with tech programs

KHARKIV

Ukraine's second-largest city known for its long tradition in aircraft engineering, electronics, and scientific research

$1,900

Median salary of a mid-level software engineer

31K+

Tech specialists

15%

Of Ukraine's tech talent pool

450+

Tech companies

65%

Of IT Services export is the USA

2,600+

IT graduates in 2019

LVIV

A large international tech hub with a vibrant IT community

$2,100

Median salary of a mid-level software engineer

26K+

Tech specialists

12.9%

Of Ukraine's tech talent pool

73K+

Jobs created by Lviv IT industry in 2020

13K+

Of students are studying at universities with tech program

492

Tech companies

ODESA

Ukraine's third most populous city, major tourism center, seaport and transport hub

$2,100

Median salary of a mid-level software engineer

10.5K+

Tech specialists

5.2%

Of Ukraine's tech talent pool

150

Tech companies

64

Registered product companies

59

Registered service companies

Even more tech cities

Most Ukrainian tech crowd crams into the largest business centers, like Kyiv, Kharkiv, or Lviv. Still, the IT market goes far beyond them. The role of small to midsize cities in Ukraine's tech arena is growing year by year. Together they represent almost half of all IT specialists in Ukraine.

Among the most actively developing midsize tech cities are Ivano-Frankivsk, Poltava, Vinnytsia, Zhytomyr, and Kremenchuk.

POLTAVA

30+

Tech companies

1K+

Estimated tech specialists

Beetroot Academy - the largest private tech school that educated over 30% of active IT talent pool in the city

[19][57]

VINNYTSIA

50+

Tech companies

5K+

Tech specialists

ZHYTOMYR

30+

Tech companies

1.5K+

Tech specialists

[19] [59]

IVANO-FRANKIVSK

30+

Tech companies

2K+

Tech specialists

[19] [42]

KREMENCHUK

11

Tech companies

700+

Tech specialists

02
Software Developer Salaries in Ukraine

After investigating the overall tech business climate in Ukraine, let's look at the actual costs of hiring a local full-time developer.

Overview of the tech talent pool in Ukraine

Over 205,000* tech specialists engage in Ukraine's software development scene, making it the second-largest developer population in Eastern Europe. [20] [44] [48]

Software developer population in Eastern Europe


11,600 ▭▬▬▬▬ 255,000

[20] [23] [44]

*According to unofficial data based on the 2020 surveys and calculation method by DOU.UA [20]
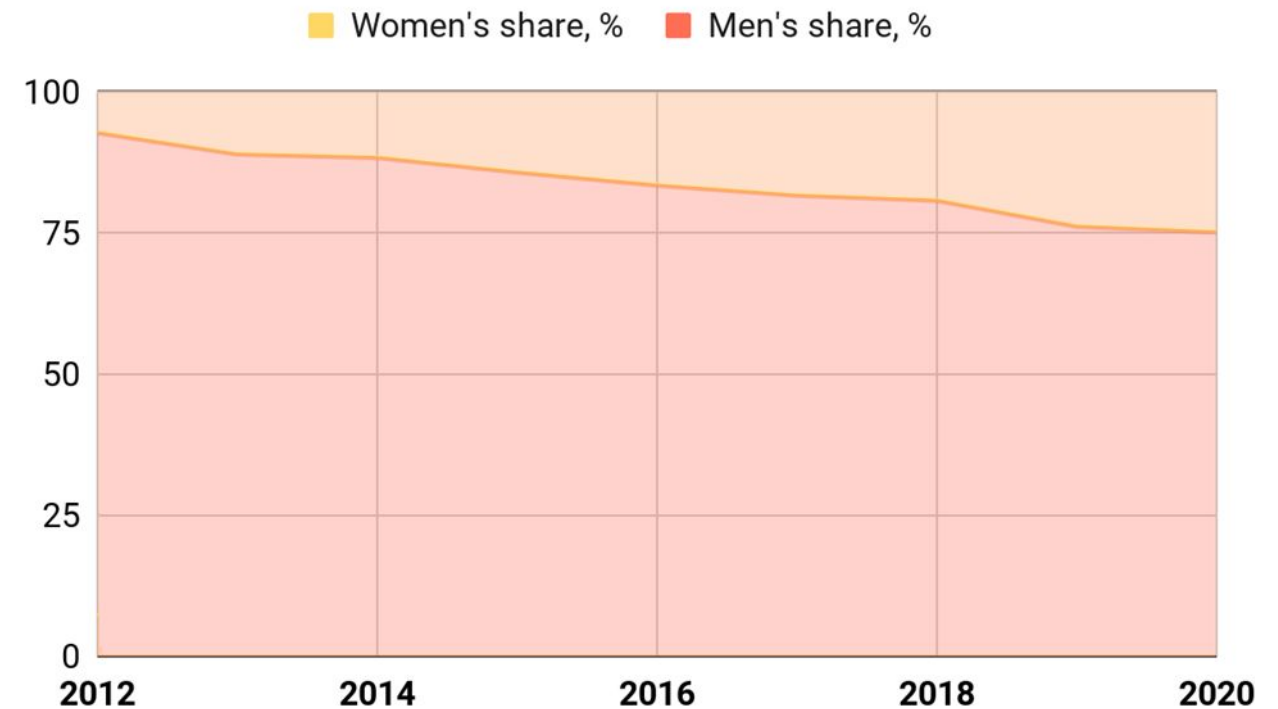
Some of the basic facts of the Ukrainian IT employee demographics are listed below:

- More than ½ of professionals have working experience of 2-5 years
- 56% of developers work in the outsourcing
- About a quarter of the Ukrainian IT force are women
- 28 is the median age of a Software Engineer in Ukraine
- Over 70% of Ukrainian tech specialists live in the top three cities: Kyiv, Kharkiv, and Lviv.

Ukrainian developers by experience

10 years+
14.2%

0-2 years
29.4%

6-9 years
19.5%

3-5 years
36.9%

[19]
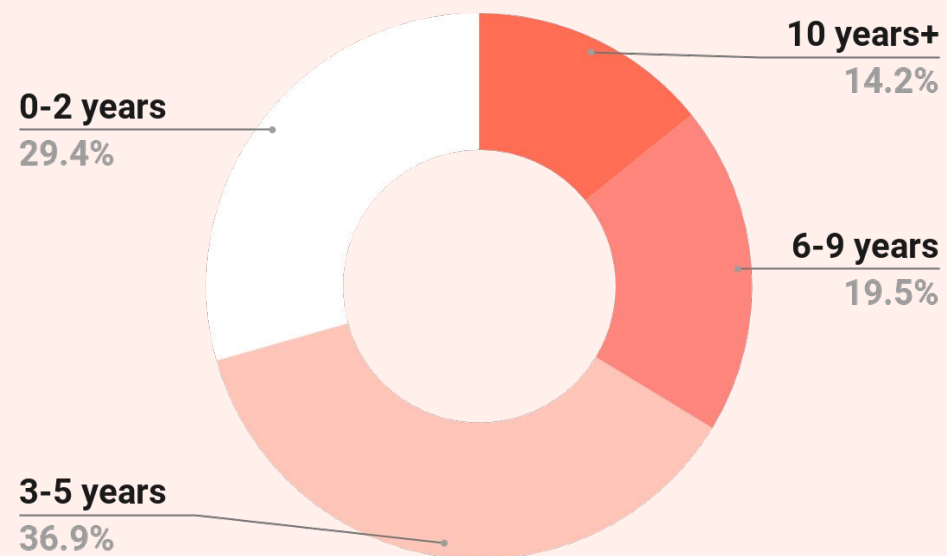
Gender balance in Ukrainian IT

■ Women's share, %   ■ Men's share, %

100

75

50

25

0
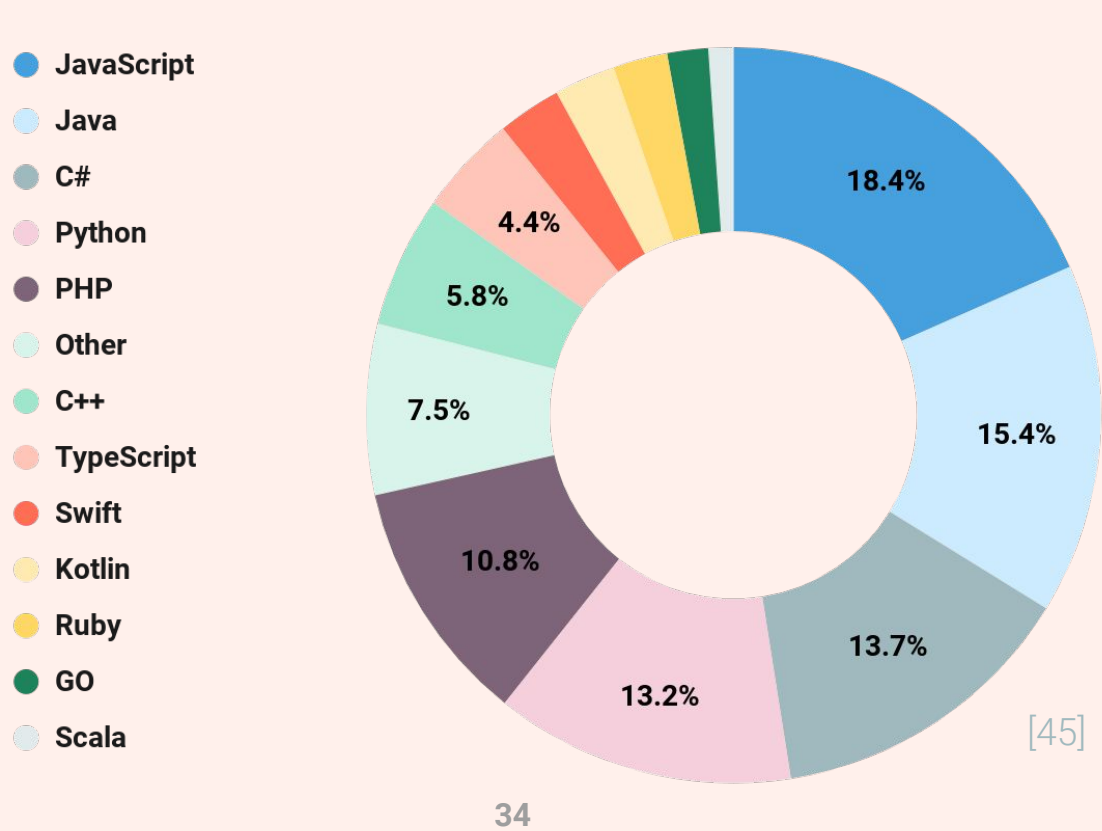
2012   2014   2016   2018   2020

Popular programming languages and frameworks

JavaScript is the number-one programming language in the Ukrainian development community. Over 18% of software engineers use it as primary in 2020, and more than 41% named it their additional programming language.

2020 was the first year when JavaScript has outrun Java. The latter has been experiencing negative dynamics in the last three years, which corresponds to the worldwide trend.
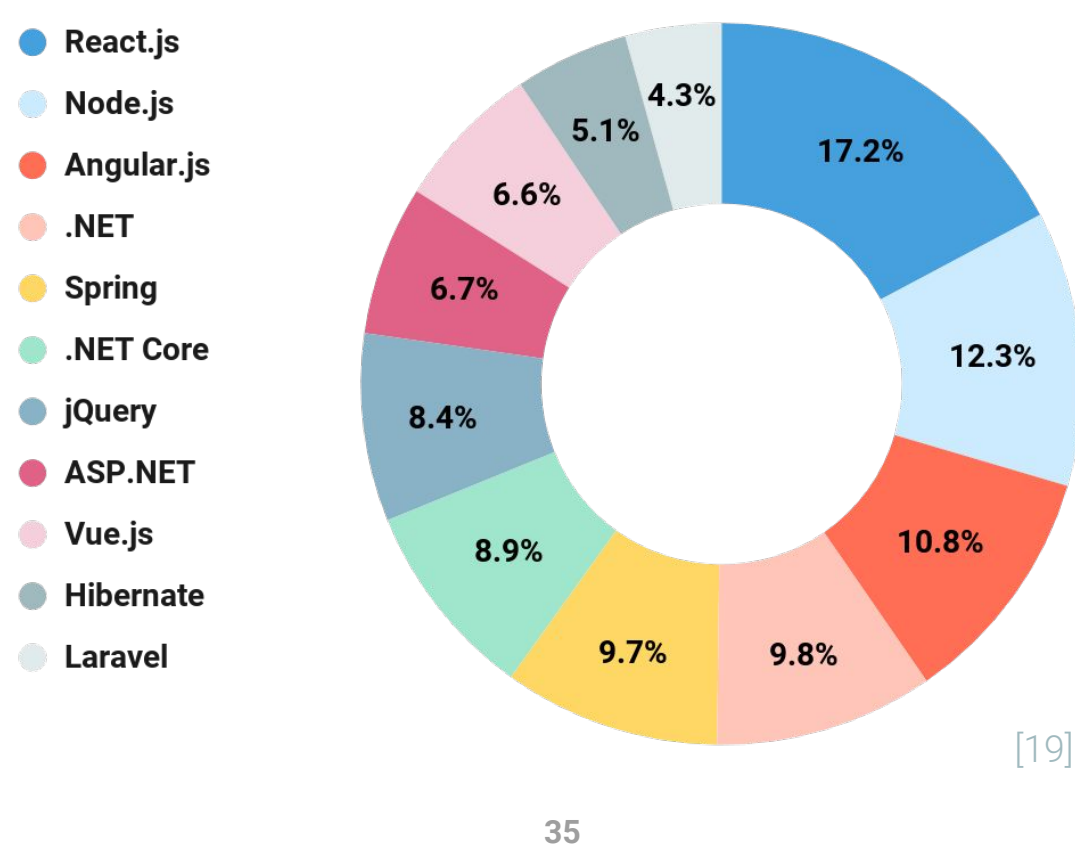
Programming languages used by Ukrainian developers

- JavaScript — 18.4%
- Java — 15.4%
- C# — 13.7%
- Python — 13.2%
- PHP — 10.8%
- Other — 7.5%
- C++ — 5.8%
- TypeScript — 4.4%
- Swift
- Kotlin
- Ruby
- GO
- Scala

[45]

Except for JavaScript, the languages that have shown a significant growth rate in recent years include Python (34% growth since 2017), TypeScript (55% growth since 2018), and Kotlin (67% growth since 2018).

When it comes to frameworks and libraries in use, React.js, Node.js, and Angular.js are the top three in the popularity chart. .Net and Spring are the closest pursuers.

Most popular frameworks, libraries & platforms in Ukraine

- React.js — 17.2%
- Node.js — 12.3%
- Angular.js — 10.8%
- .NET — 9.8%
- Spring — 9.7%
- .NET Core — 8.9%
- jQuery — 8.4%
- ASP.NET — 6.7%
- Vue.js — 6.6%
- Hibernate — 5.1%
- Laravel — 4.3%

[19]

Salaries overview*

In 2020, the average software developer salary in Ukraine fluctuated between $780/mo at an entry-level and $4,000/mo at a senior level. A mid-career developer typically earns from $1,500 to $2,600 per month, which amounts to 18K-33K USD annually.

The average monthly salary of a senior software engineer in Ukraine is $4,000, with this number rising to $4,550 and $5,600+ for the Tech/Team Lead and System Architect roles, respectively. [44][46][47]

In terms of hourly developer rates, Ukrainian outsourcing companies typically charge around $25-$40. For comparison, the average outsourcing rates in neighboring Poland and the Czech Republic are $40-$56 per hour and $34-$53 per hour correspondingly. [53]

According to DOU.UA, median salaries haven't changed significantly since last year, which speaks in favor of predictable cost planning when outsourcing to Ukraine.

Looking at the developer salary dynamics in retrospect, one can observe the most significant change in Tech Lead and Senior SE salaries — from 2015, they grew by 34% and 25% correspondingly. In 2020 mid-career developers earn 26% more than in 2015, while the average entry-level salary has increased by 15% in five years.

## Median salary by seniority level
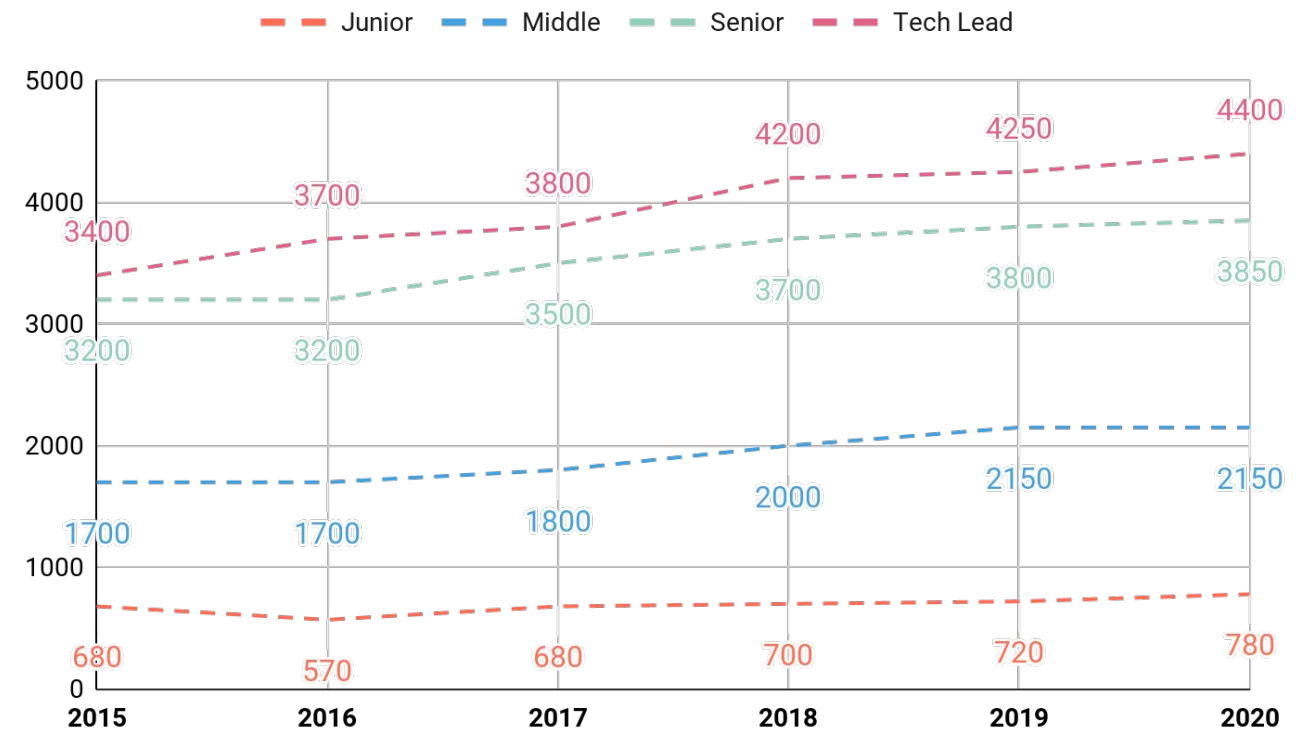
[49]

*Salaries presented in this research are gross amounts. Keep in mind that the information provided is advisory based on the actual from-the-field information by the Beetroot HR Department and public data from the trusted web sources, including Stack Overflow, SalaryExpert, and one of Ukraine's largest online IT communities, DOU.UA.

With the median monthly salary of $4000, senior back-end developers are the highest paid in 2020. The lowest-paid position is Junior Front-End Coder; this specialty's median salary rate is $730/mo.
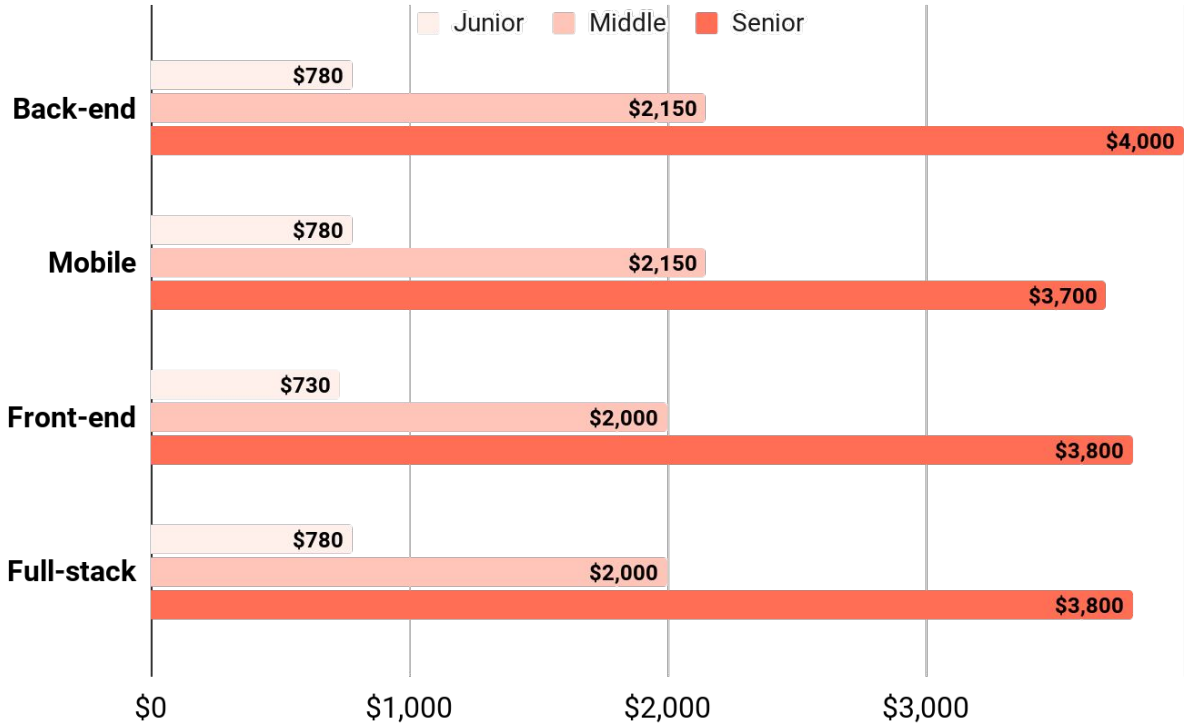
The most in-demand IT professionals in Ukraine are front-end experts followed by QA, PHP, and .Net developers — their share in the overall number of DOU vacancies is 35%. [44][19]

Median monthly salary vs. programming language
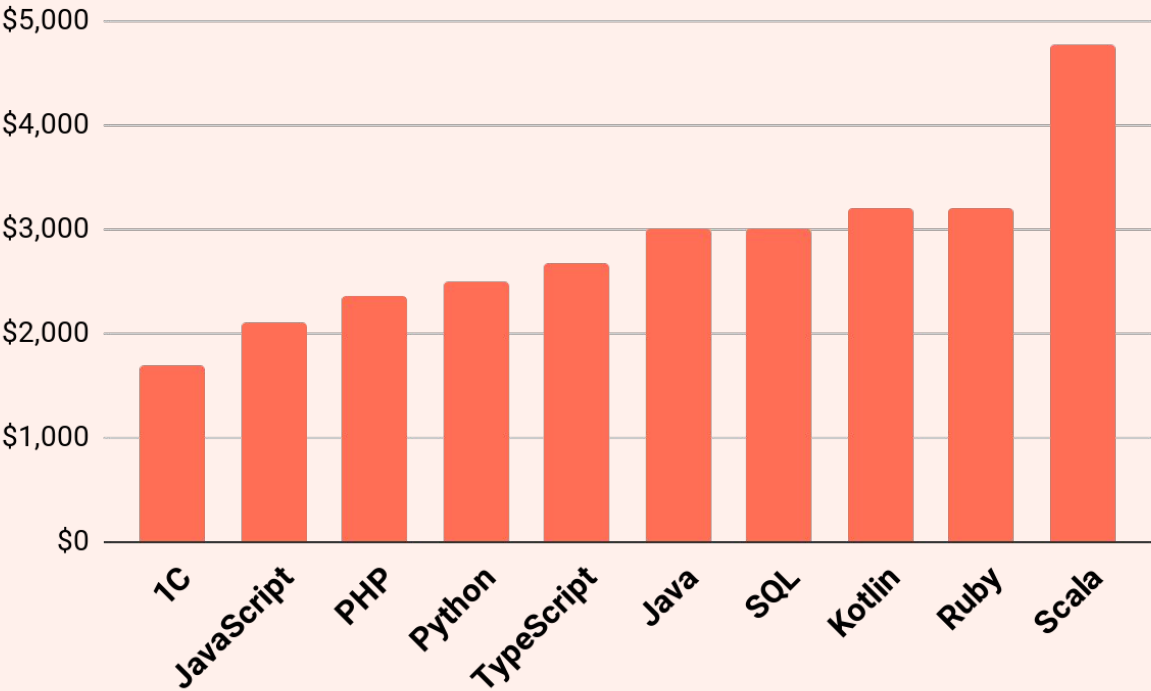

[85]

Developer salaries by specialty

[44] [19]

Regarding the salary-programming language correlation, Scala developers earn the most ($4,770/mo median salary). Simultaneously, the lowest-paid competency is 1C, with the median salary just under $1,700 per month.

C developers are the highest-paid among the Junior specialists, with the median salary in this category reaching $1,200/mo. [85]

The dynamics of monthly compensation depending on the experience level is displayed in the chart below. According to the DOU survey, developers with less than a year of experience earn around $600 per month. In contrast, the median monthly salary of tech specialists with 10+ years of experience exceeds the $4,200 mark.
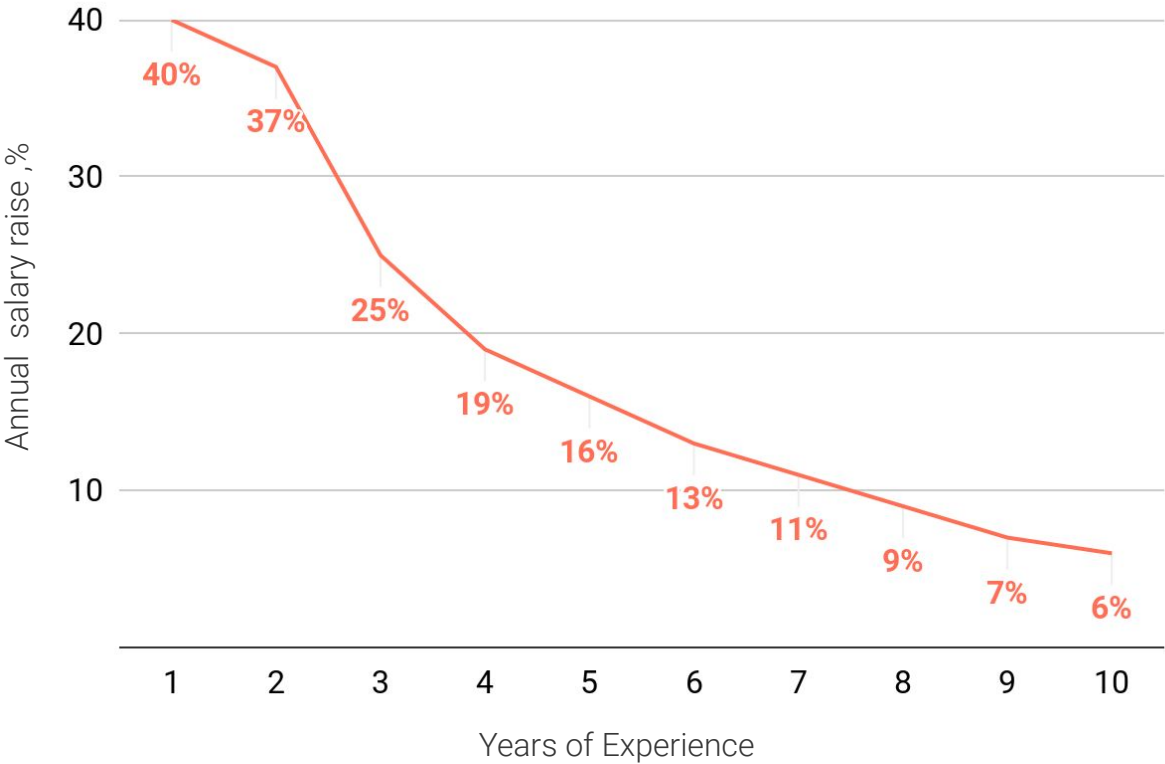
Median salary vs. years of experience
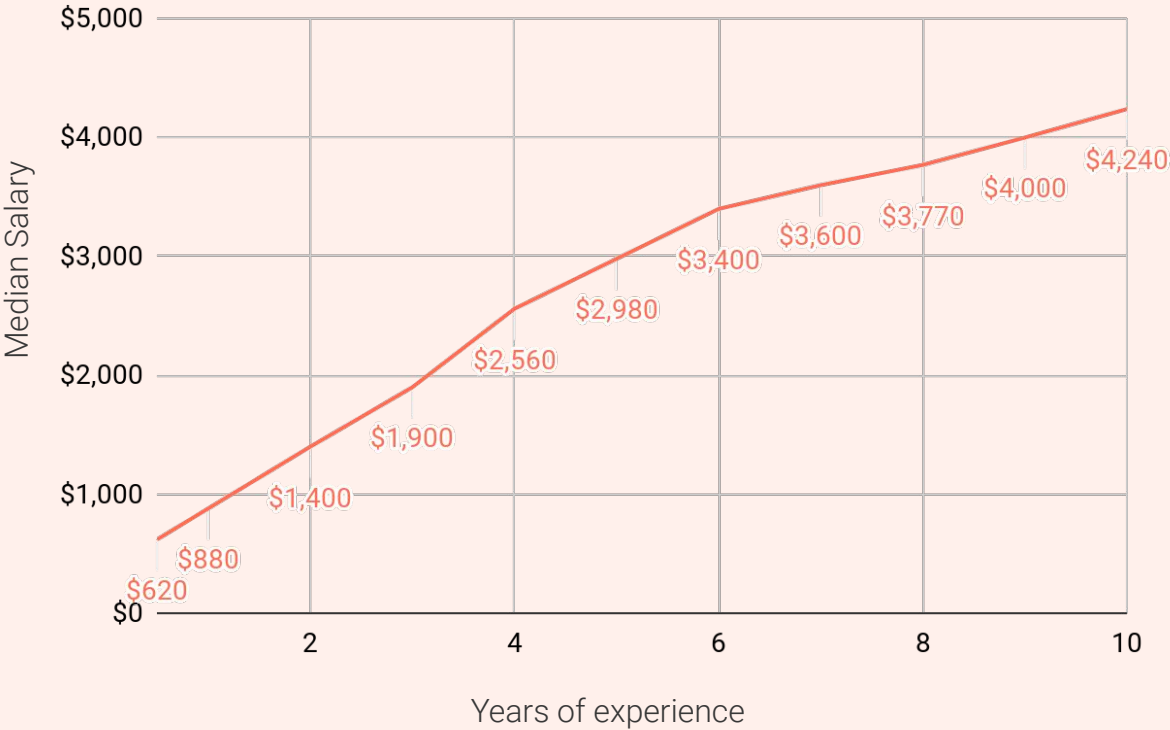
The yearly salary raise for software engineers tends to change inversely to the seniority level, balancing the market and enabling long-term engagements.
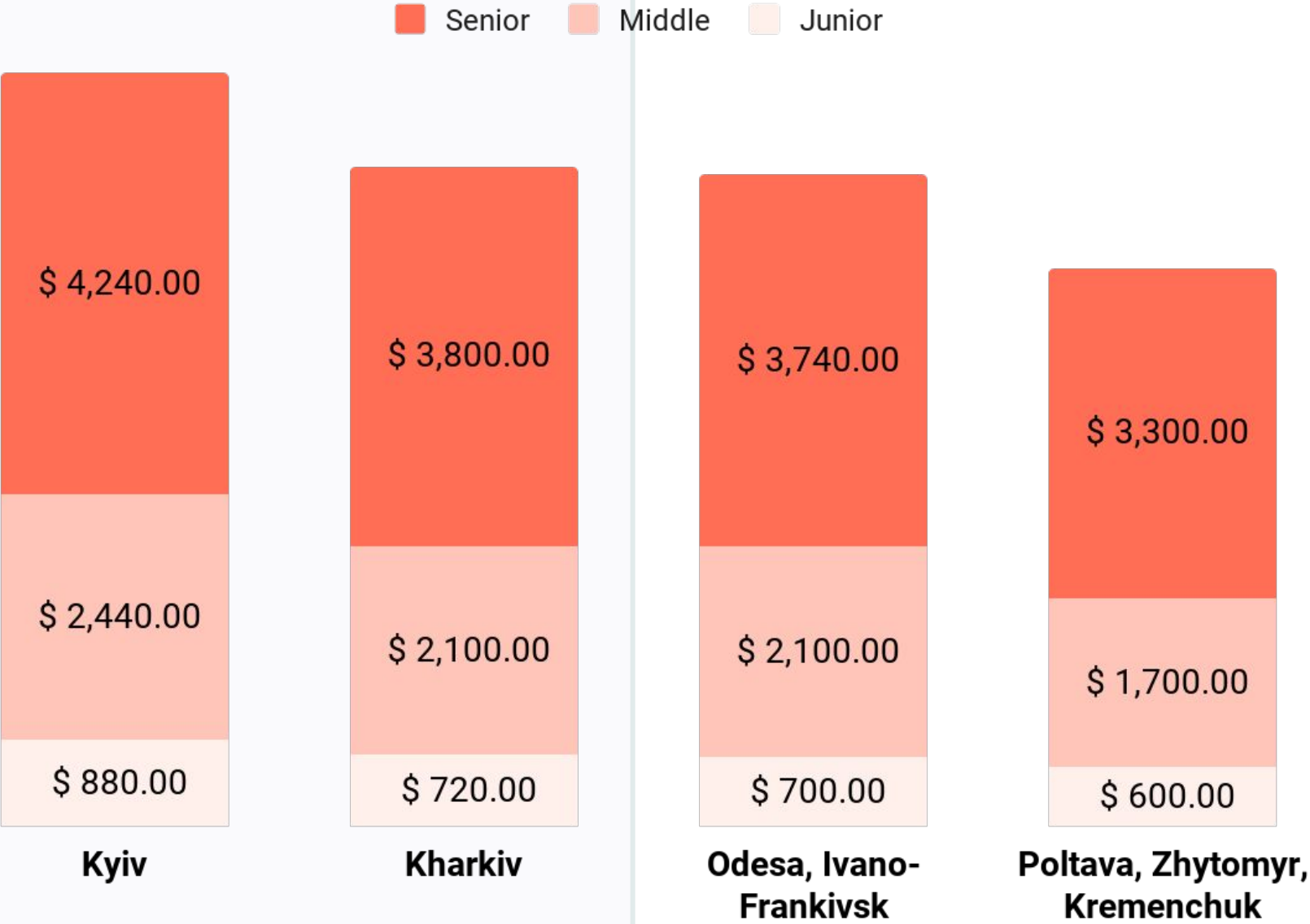
Annual salary raise percentage vs. experience

After the first year of working on one or several software development projects, a programmer will likely get a salary increase of 35-40%. Mature specialists with a professional background of 10 years or more usually receive a lower yearly increase of 5-6%. [44]

However, those are rough estimations. The exact amount of pay rise is defined individually by the various factors, such as actual performance results and workplace responsibility evolution.

Tech salaries in Ukrainian cities

Median software developer salary by city

■ Senior　　■ Middle　　□ Junior

$ 4,240.00 (Kyiv, Senior)

$ 3,800.00 (Kharkiv, Senior)

$ 3,740.00 (Odesa, Ivano-Frankivsk, Senior)

$ 3,300.00 (Poltava, Zhytomyr, Kremenchuk, Senior)

$ 2,440.00 (Kyiv, Middle)

$ 2,100.00 (Kharkiv, Middle)

$ 2,100.00 (Odesa, Ivano-Frankivsk, Middle)

$ 1,700.00 (Poltava, Zhytomyr, Kremenchuk, Middle)

$ 880.00 (Kyiv, Junior)

$ 720.00 (Kharkiv, Junior)

$ 700.00 (Odesa, Ivano-Frankivsk, Junior)

$ 600.00 (Poltava, Zhytomyr, Kremenchuk, Junior)

Kyiv　　**Kharkiv**　　**Odesa, Ivano-Frankivsk**　　**Poltava, Zhytomyr, Kremenchuk**

[44] [49]

Tech salaries in Kyiv

Over 44% of Ukrainian software developers live in Kyiv. As one of the largest tech hubs in Eastern Europe, the capital city offers the wealthiest talent pool and higher salary rates than in the rest of the country.

Software engineer salaries have been relatively stable since their latest leap in 2018. A mid-level developer earns 18% more compared to 2015. In five years, the average salary of an entry-level coder has grown by 25%. Senior software engineer monthly salary has increased by 20% for the same period.
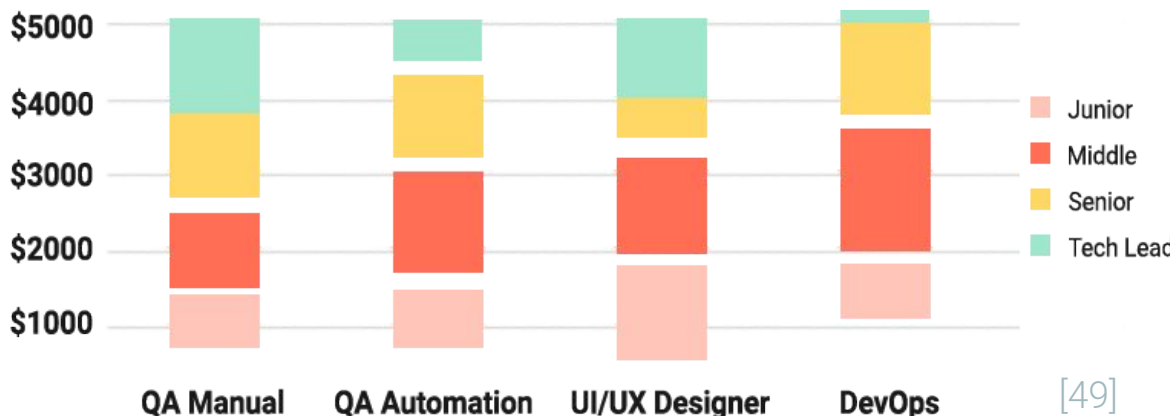
Developer salary dynamics in Kyiv
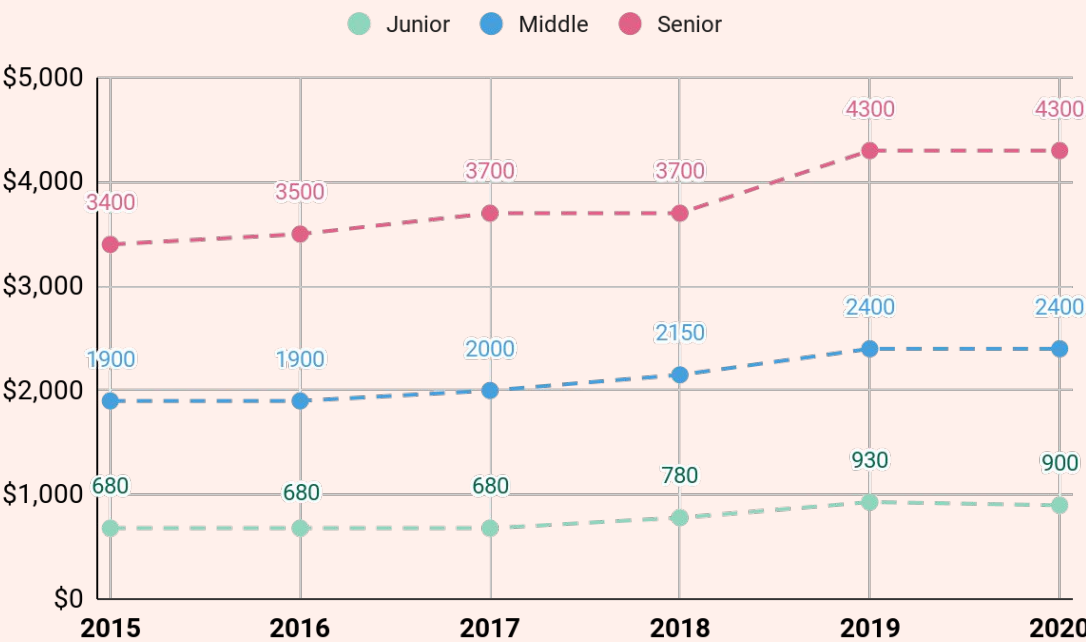
The average salaries of Kyiv software developers, filtered by the experience level and skills, are displayed on the right.
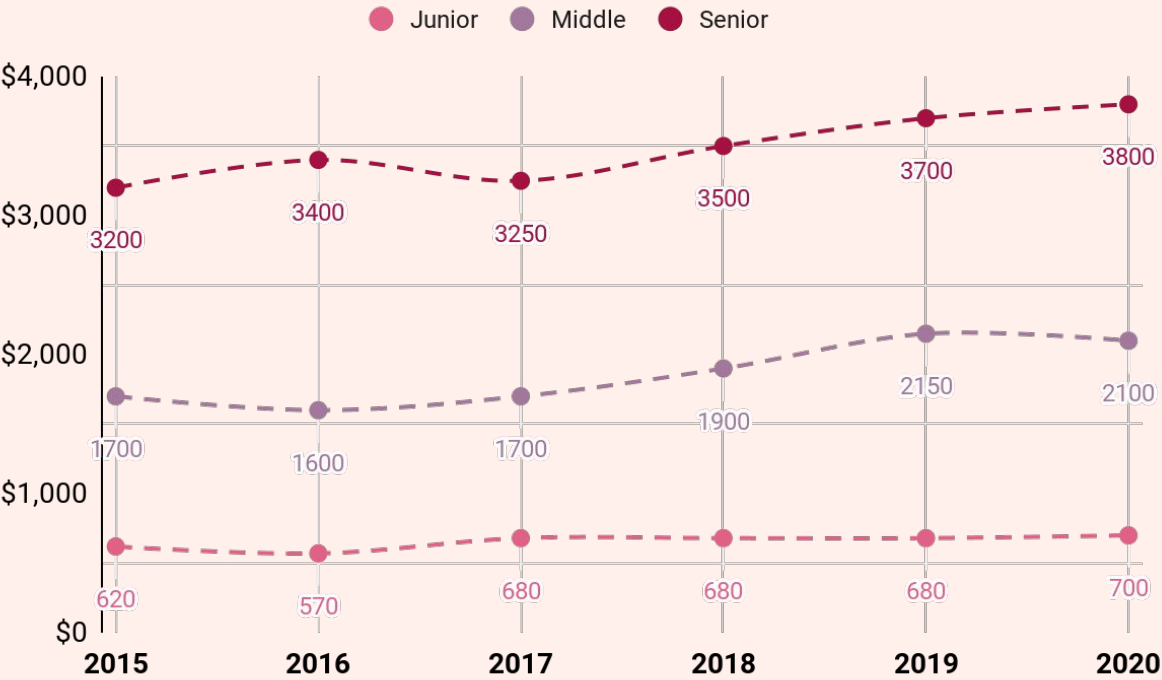
Developer salary ranges in Kyiv
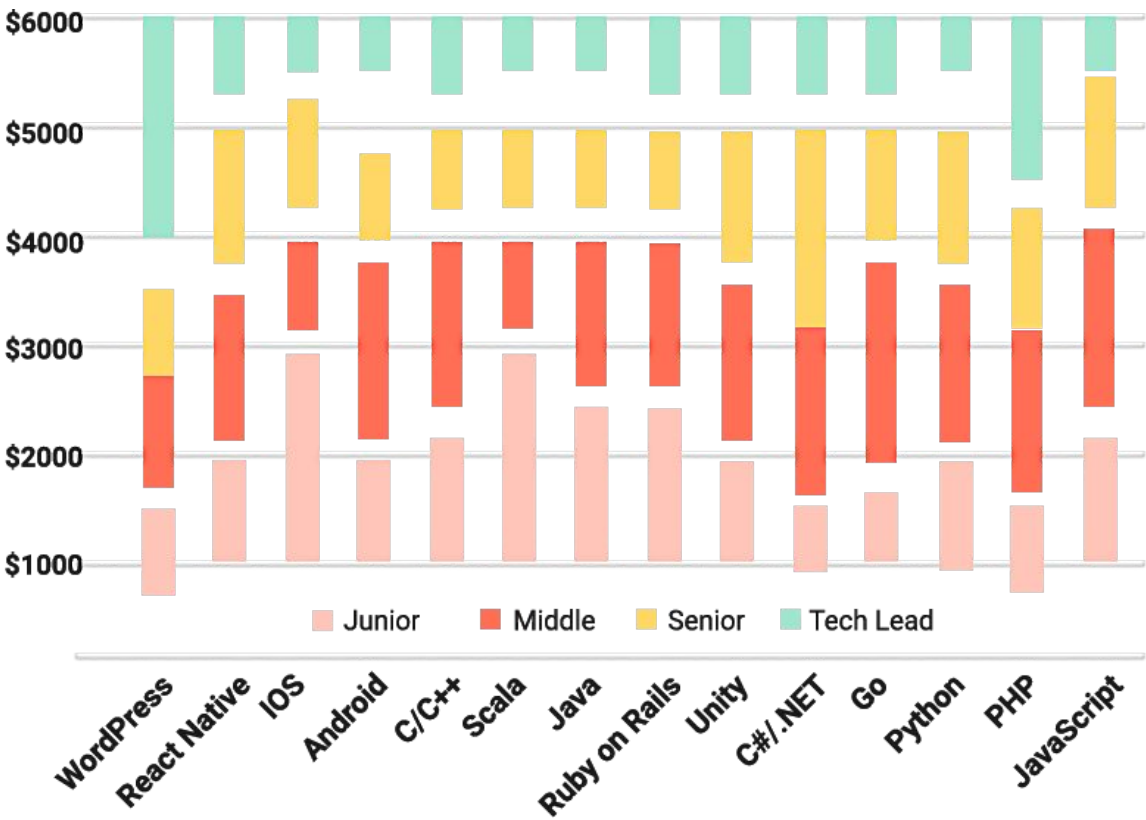
The average salaries of IT professionals working in other specialties are listed in the chart below.

Tech salaries in Kharkiv

Similar to the country-wide dynamics, the yearly change of developer salaries in Kharkiv has not been significant. The average monthly salary rate at the entry-level has grown by 8% since 2019, while middle software developers earn 2% less per month than last year. A senior SE's median salary in Kharkiv has increased by 3% — $3700 per month.
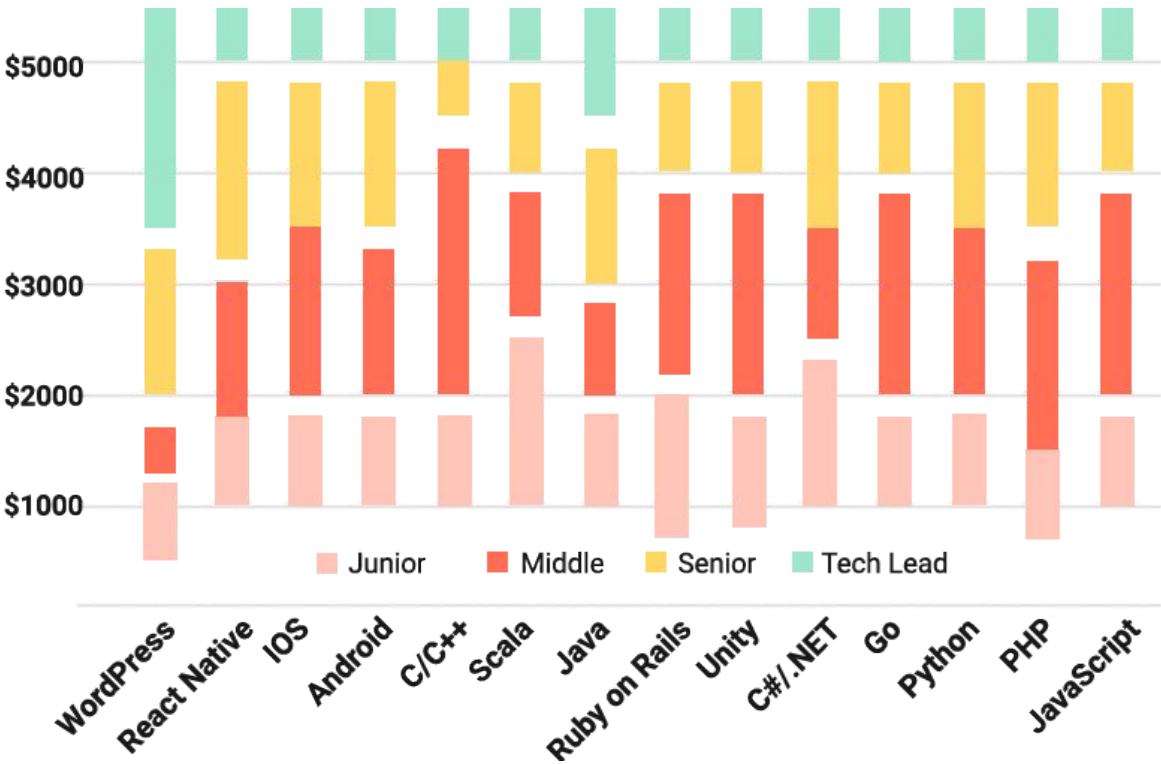
Developer salary dynamics in Kharkiv

Junior   Middle   Senior

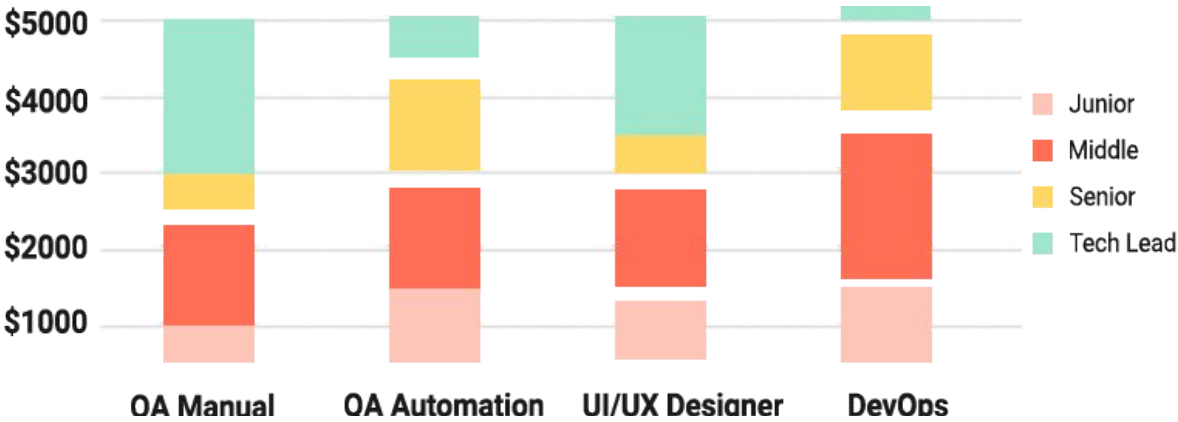|	2015	2016	2017	2018	2019	2020
Senior	3200	3400	3250	3500	3700	3800
Middle	1700	1600	1700	1900	2150	2100
Junior	620	570	680	680	680	700

[49]

See how tech salaries in Kharkiv range depending on the programming language and seniority in the charts on the right.

Developer salary ranges in Kharkiv

Junior   Middle   Senior   Tech Lead

WordPress, React Native, IOS, Android, C/C++, Scala, Java, Ruby on Rails, Unity, C#/.NET, Go, Python, PHP, JavaScript

QA, Designer, DevOps salaries in Kharkiv

Junior   Middle   Senior   Tech Lead

QA Manual   QA Automation   UI/UX Designer   DevOps
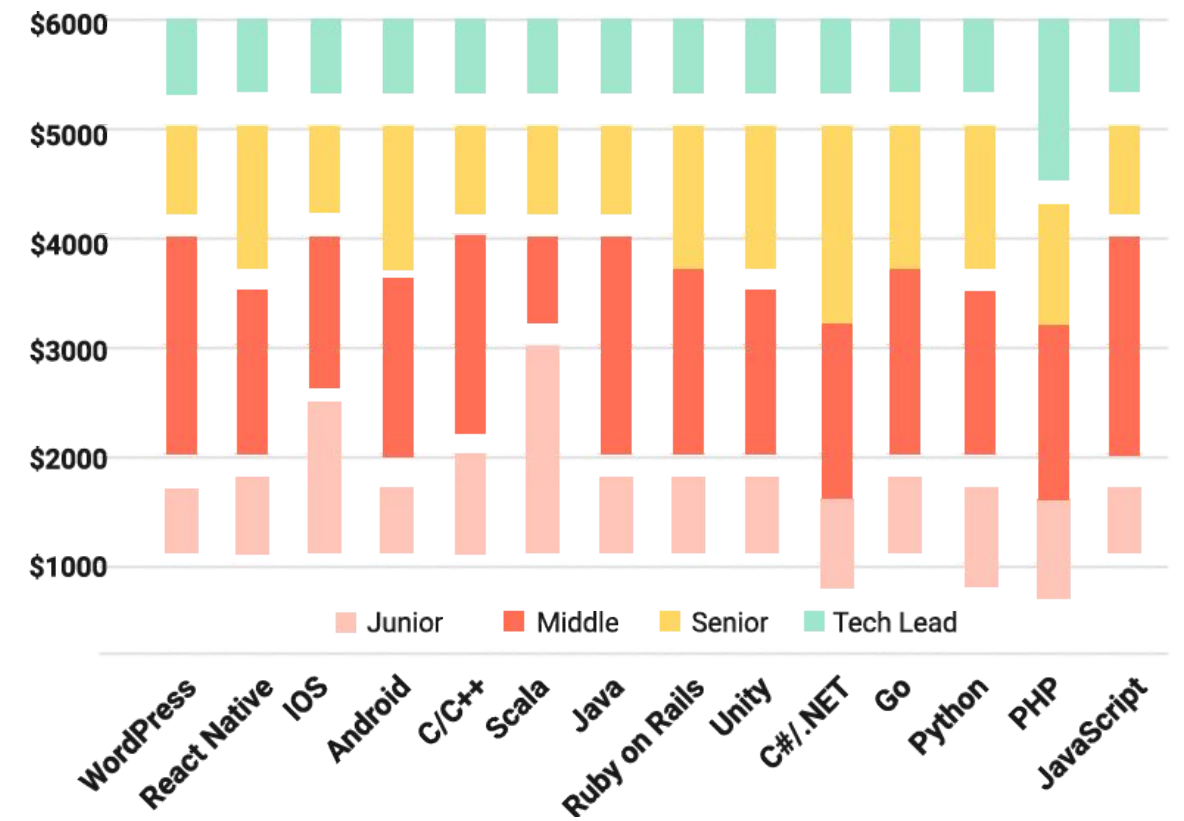
Tech salaries in Odesa and Ivano-Frankivsk*

The median salary of a junior software engineer in Odesa or Ivano-Frankivsk dropped by 7.9% since 2019 to $700/mo. In 2020, mid-career developers in either city earned an average of $2100 per month, which is 5% more than the 2019 rate. Senior professionals' median salary has grown by 10% since last year, up to $3740 per month.

Developer salary dynamics in Odesa and Ivano-Frankivsk
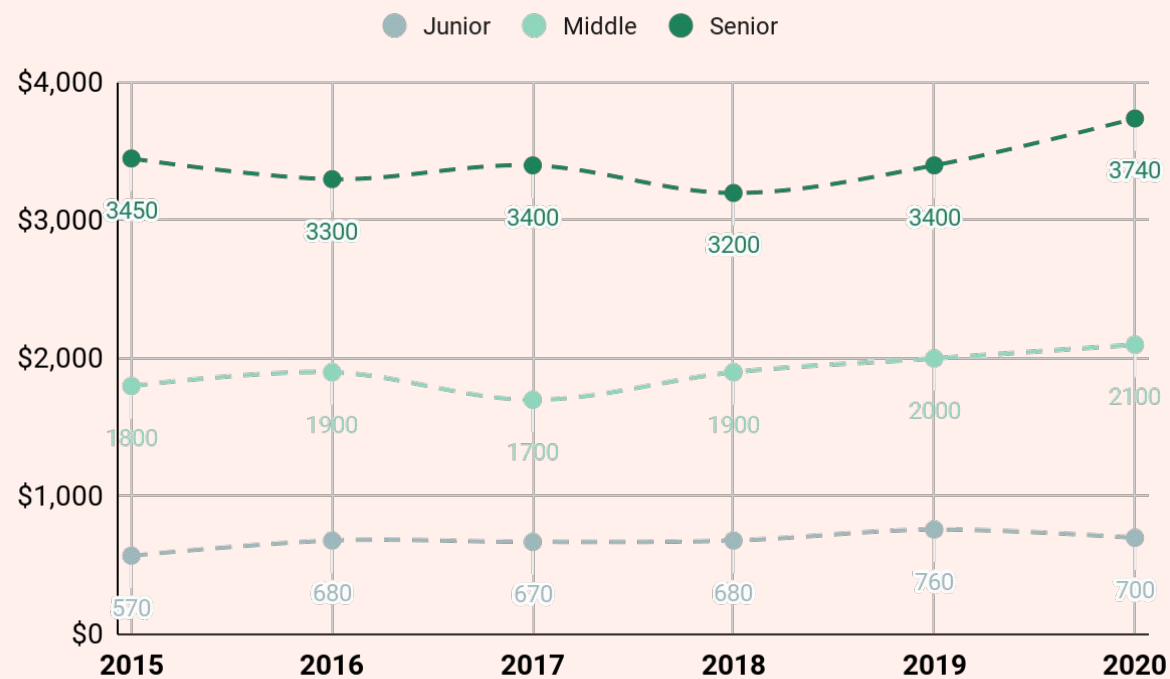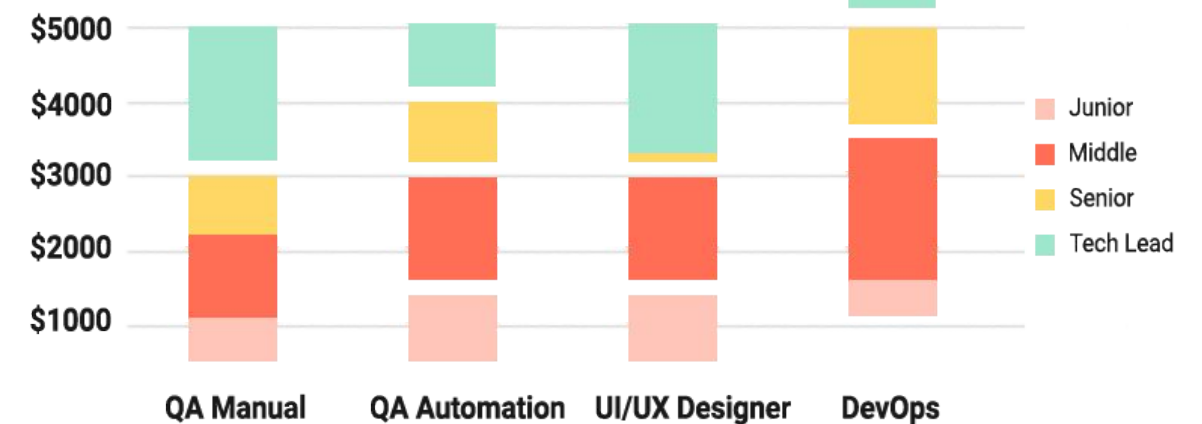

*The salary rates in the software development markets of Odesa and Ivano-Frankivsk are presented as aggregated data due to their relative similarity.

Developer salary ranges in Odesa & Ivano-Frankivsk


## QA, Designer, DevOps Salaries in Odesa and Ivano-Frankivsk, 2020

Tech salaries in midsize cities: Poltava, Kremenchuk, Zhytomyr

As displayed on the aggregate chart below, a software engineer median salary has risen more significantly in smaller Ukrainian cities than in broader IT hubs. Hence, the junior developer median salary has increased from $250 / mo in 2015 to $625 / mo in 2020, which equals 60%. Middle-level software developers earn 43% more compared to the 2015 monthly rate. The Senior SE salary peaked in 2019, and it dropped by 2% — from $3K to $2950 per month — in 2020.
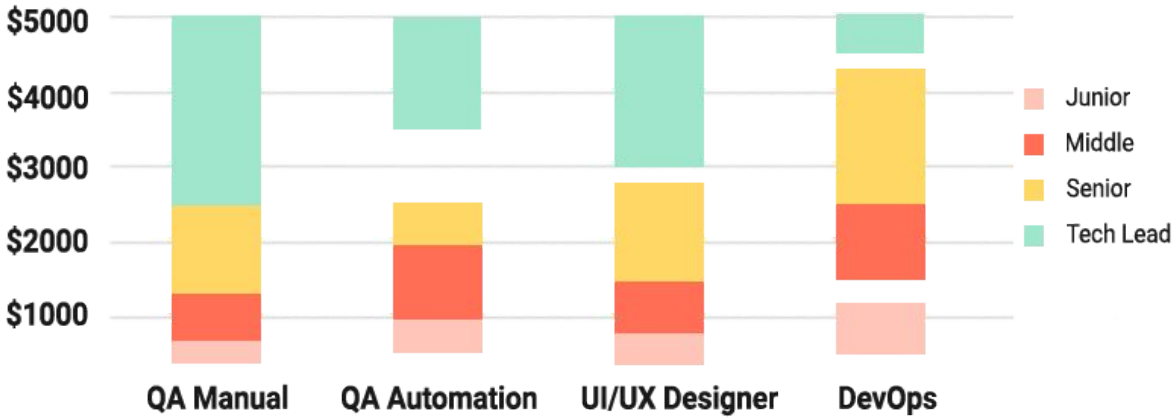
Developer salary dynamics in Poltava, Kremenchuk, Zhytomyr
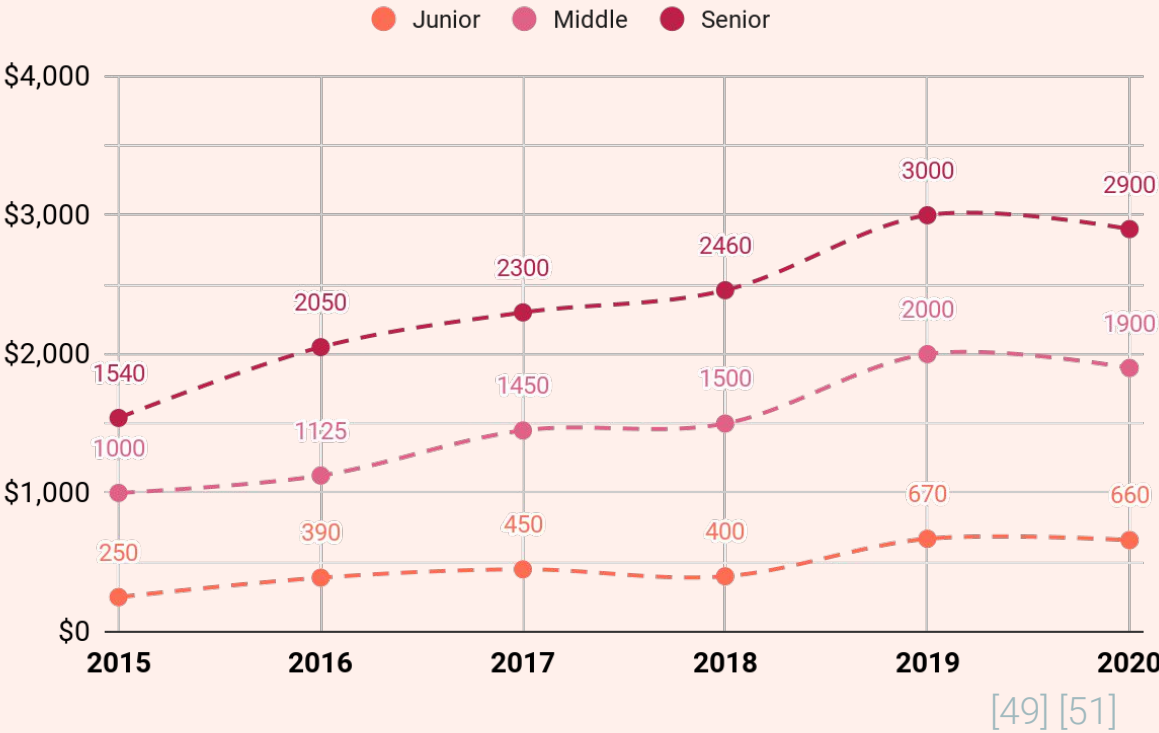
Developer salary ranges in Poltava, Kremenchuk, Zhytomyr
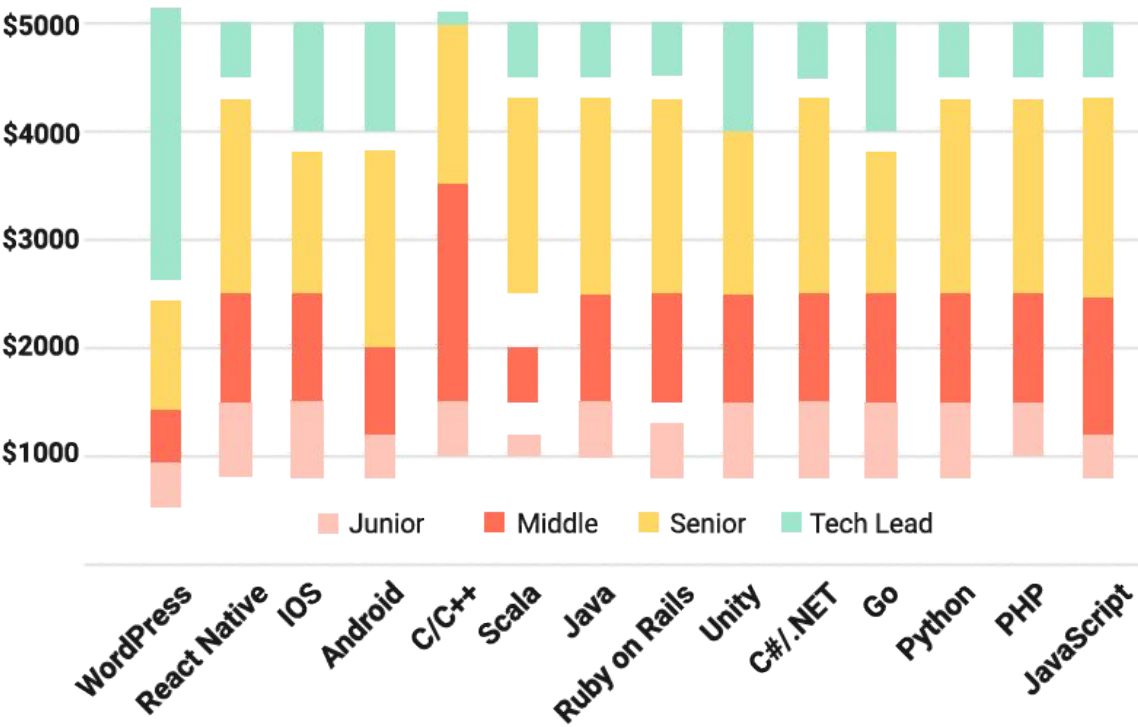
The salary ranges of QA Specialists, UI/UX Designers, and DevOps professionals in Poltava, Kremenchuk, and Zhytomyr are displayed below.

Job satisfaction

The majority of IT professionals (82%) in Ukraine are content with their salary. The level of compensation satisfaction is higher among senior specialists. Over 40% of system architects and tech leads mark their satisfaction level as fully content. Most dissatisfied with their salary are system administrators, support officers, Junior QA, Junior developers, designers, and marketing specialists, making about 18% of respondents in the DOU.UA survey.

Most IT specialists in Ukraine are happy with their work: over 18% find their current projects enjoyable, almost 40% see their work interesting. About one-third of professionals consider their routine rather interesting than not.

Among other non-financial factors influencing the level of job satisfaction in Ukraine's IT are the following:

What Ukrainian developers value in their everyday work
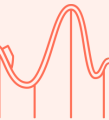
The flexibility of the working schedule

Sense of belonging to the team and common goals

Access to high-quality equipment/work stations

[51]

50

Factors that influence the level of enthusiasm about the project

Access to user feedback on the product

Social impact of the product

Learning new things through challenging projects

The opportunity to track their imprint/ Contribution to the project's final results

What Ukrainian developers value in employers

Commitment to employee recognition and creating a sense of belonging to the team

Honest and constructive regular feedback

Financial stability and transparency of the business

Adherence to open communication

Attention to employee's voice in the workplace

Active support of the employee's professional growth

51

Impact of COVID-19 on the job market

Needless to say that the impact of the COVID-19 pandemic on the global and local economic systems is colossal. The IT industries worldwide have been seeing slowdowns in the Q1 and Q2 of 2020, and Ukraine was no exception.

According to the DOU.UA research of the IT labor market, the total volume of job openings has drastically decreased January through April 2020.

[52]

Job market dynamics, Jan 2020 - Jan 2021
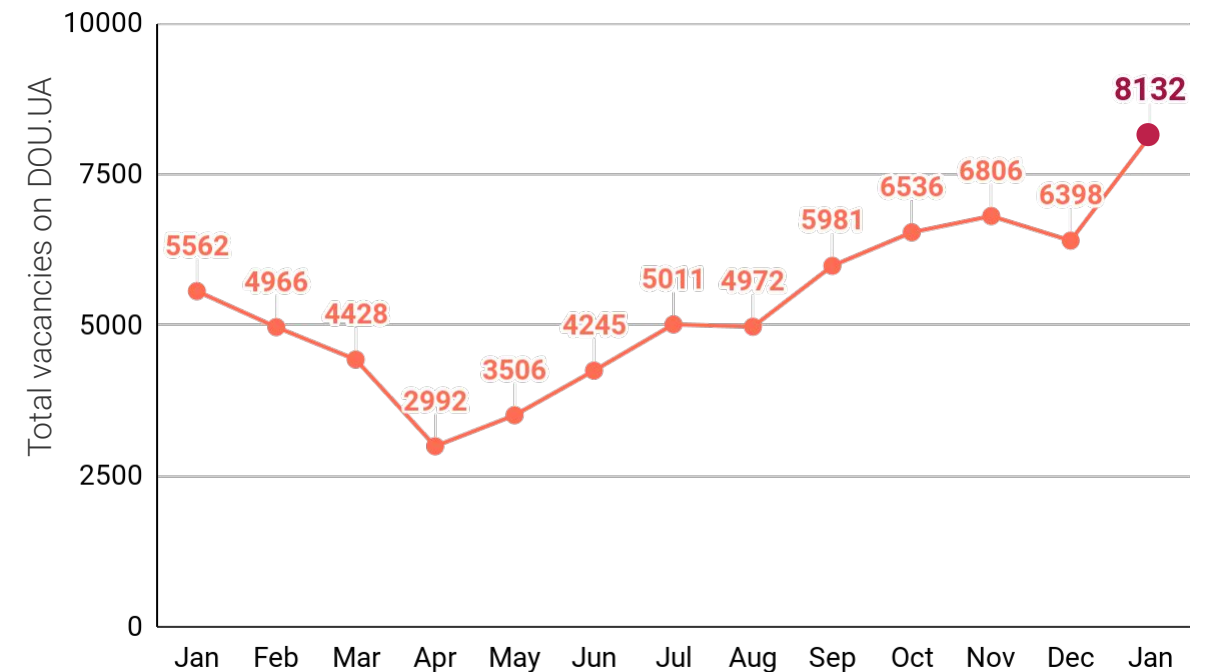
[52]

The rapid decline in job listings has caused a comparable increase in responses. Hence, in July, the response rate reached an impressive 40/vacancy rate.

However, the vacancy volume curve has been heading firmly upwards starting from April, reaching an all-time record in Jan '21. Such dynamics hints at the market's willingness to leverage the post-pandemic paradigm for exponential growth.

In January 2021, the categories demonstrating the most positive dynamics compared to the same period in 2020 were Golang (+90%), Unity (+67%), and React Native (+55%). Besides, companies have been actively hiring analysts, Node.js developers, and data security specialists. [52] [95]

03

Tech Education in Ukraine

The educational system plays an essential role in developing any industry, especially in the fast-pacing digital economy. Discover how the Ukrainian IT community helps today's students become tomorrow's thriving tech professionals.

STEM-Education

There's no doubt that Ukraine's vast tech talent pool is rooted in the state's extensive network of educational institutions with solid technological tradition. Therefore, Ukraine ranks #1 among European countries for the number of tech graduates. Ukrainian universities provide 16,000 qualified IT specialists and 130,000 general engineering professionals every year. [53]

Engineering specialists, thouthands
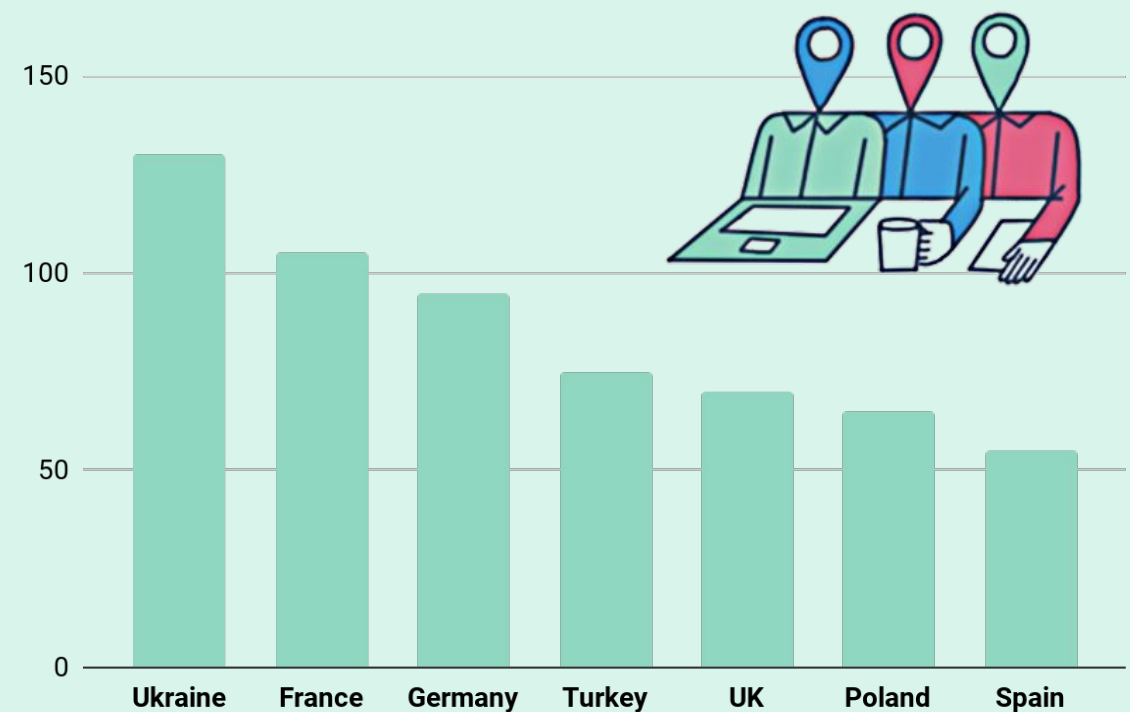
[53]

The quality of education is regularly acknowledged in various ratings, both on the national and global levels.

For instance, the annual ranking of the world's 1,000 top universities, QS World University Rankings 2021, features six Ukrainian universities. These are V. N. Karazin Kharkiv National University, Taras Shevchenko National University of Kyiv, National Technical University "Kharkiv Polytechnic Institute," the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute," Sumy State University, Lviv Polytechnic National University. [66]

Eastern Europe & Central Asia (EECA) University Ranking conducted by the same company includes twenty Ukrainian universities in 2020. On the top of the Ukrainian group is the Taras Shevchenko National University of Kyiv, with the 29th ranking position. Igor Sikorsky Kyiv Polytechnic Institute and V. N. Karazin Kharkiv National University closed the top-three with the 67th and 68th places accordingly. [67]

Ukrainian universities in the EECA Universities Ratings 2020

29	Taras Shevchenko National University of Kyiv	113	Lviv Polytechnic National University
67	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"	117	Sumy State University
68	V.N. Karazin Kharkiv National University	125	National University of Kyiv-Mohyla Academy

[67]

The growth of the IT industry, in its turn, fuels the interest in STEM education. Thus, according to DOU.UA, the number of universities that have received at least 200 applications for tech specialties in 2020 is 82. As shown in the rating below, eight out of the top ten STEM-oriented universities in Ukraine are located in three major cities: Kyiv, Lviv, and Kharkiv. [68]

DOU.UA rating of Ukrainian universities with STEM-programs: Top-10

1	Ukrainian Catholic University	**Lviv**
2	Taras Shevchenko National University of Kyiv	**Kyiv**
3	Lviv Polytechnic National University	**Lviv**
4	National University of Kyiv-Mohyla Academy	**Kyiv**
5	Ivan Franko National University of Lviv	**Lviv**
6	National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"	**Kyiv**
7	Sumy State University	**Sumy**
8	Kharkiv National University of Radio Electronics	**Kharkiv**
9	V.N. Karazin Kharkiv National University	**Kharkiv**
10	Yuriy Fedkovych Chernivtsi National University	**Chernivtsi**

[68]

Educational programs by IT clusters

Ukrainian IT clusters are successfully collaborating with the state institutions and local communities to improve professional staff training for the tech industry.

Hence, the Kharkiv IT Cluster has partnered with the Kharkiv National University to launch the new Master's program, "Strategic Communications and The New Media." [69]

Kharkiv IT Cluster has several initiatives targeted at a younger audience as well. The organization has been arranging educational tours for high school students (9-11 grades) to the local IT companies' offices.

For example, the winners of the Kids2IT challenge, conducted by Kharkiv IT Cluster and the member-company Beetroot in early 2020, visited the Beetroot Kharkiv office to hear about the opportunities
for students in Ukrainian IT companies, as well as learn more about Sweden and its cooperation with Ukraine. [70]

[70]

Organizing internships for the local university graduates has been listed by Ivano-Frankivsk IT Cluster among the top projects in 2020. [65]

Lviv IT Cluster has modernized nine Lviv universities' nine programs to include such innovative courses as the Internet of Things, Artificial Intelligence, and Data Science, to list a few. [71]

Self-education & private IT schools

Commitment to constant professional growth is typical for the Ukrainian tech community. On that account, more than 75% of tech specialists with a university degree continue self-education throughout their careers. Besides, over 6% of the IT talent pool has two academic degrees, according to the DOU.UA survey. [19]

Ukraine's growing IT market is stimulating demand for extracurricular training programs from non-tech talent, too. There are over 70 private tech schools in Ukraine. Some of the most popular educational centers include IT Step Academy, Beetroot Academy, Hillel, Dan.IT, Go IT Mate Academy, and IT Education Academy (ITEA). [72]

Beetroot Academy

2014
founded

3900+
graduates

400
scholarships granted by partners

200+
tech companies employed BA students

70%
of graduates work in IT

1.9%
of Ukrainian tech talent pool educated by BA

40%
of graduates are women

3%
of all women in Ukrainian IT educated by BA

Short-term extracurricular education plays an essential role in the Ukrainian IT industry's continuous alignment with the global market's fast-pacing changes. That is something Ukrainian faculty staff representatives mention as important.

"

While academic education gives students some necessary IT skills, it's nearly impossible for a graduate to get a job at a modern tech company relying solely on their university-obtained knowledge.

[61]

Maksym Veres

Ph.D. in Applied Mathematics, Associate Professor
 Faculty of Computer Science and Cybernetics, T. Shevchenko National University of Kyiv

"

In my off hours, I attend various educational programs to keep up with the changes in the disciplines I teach. These include the course on project approach to higher education, training on databases, front-end, back-end development, and a business administration course. [...] Without continuous learning and up-to-date knowledge, teachers can't properly do their job, especially in the IT-sphere.

[61]

Maiia Sperkach

Associate Professor,
Faculty of Informatics and Computer Science, Igor Sikorsky Kyiv Polytechnic Institute

Social impact is another remarkable feature of Ukraine's private IT education sector. For instance, Beetroot Academy has been offering scholarships to Ukrainian refugees fleeing from the Donbas and Crimea conflict zone since 2014. [63]

In 2020, as a member of the IT Association of Ukraine, the company has been supporting Belorusian colleagues, providing temporary workplaces in Ukraine and practical, juridical, and administrative backing. [64]

Impact of COVID-19 on tech education

The coronavirus pandemic has instantly accelerated the digitalization of educational systems worldwide. In response to this growth of the global e-learning market, many IT events and previously on-location IT schools have transitioned to the online format.

"

Online education has experienced a real boom this year. Schools, universities, business schools – all went online. The number of active users of online platforms such as Prometheus at the start of quarantine increased by 3-7 times. Quantitatively, online learning has made a high jumped, while qualitative change remains even more important.

[91]

Ivan Primachenko

CEO at Prometheus

"

Let's face it: the pandemic has changed education forever, everywhere. We believe that e-learning will eventually become an integral component of both secondary and higher education in Ukraine, with the IT industry leading the transformation process.

Dmytro Olaresko

CEO at Beetroot Academy

04

Outlook & Opportunities

Ukrainian IT is skyrocketing despite epidemical and political woes. Through the last few years, it gained worldwide recognition and the trust of foreign investors. The tech sector has become a significant contributor to the country's economy as the 3rd largest exporter of Ukrainian services.

Ukraine's IT Services Market Growth: Export Volume & Talent Pool

Specialists, thousands   bn,$
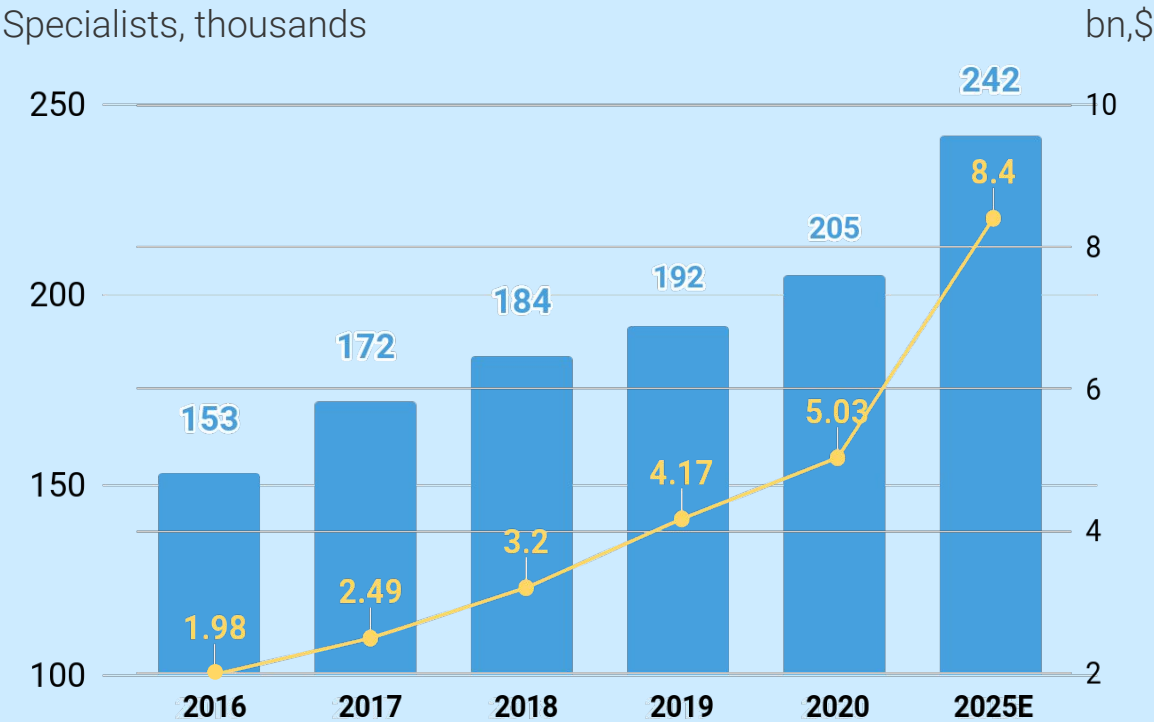
The export volume of the IT Services market has increased by 157% in five years, while the talent pool has expanded by 34% for the same period. According to the PwC forecast, the IT industry's market size will reach $8.4 bn worth of export and 242,000 tech specialists by 2025. [19] [20] [43] [76] [77]

Investments in Tech

In 2019, the total funding volume in Ukraine's tech has reached $544 million, for the first time surpassing the $0.5 bn mark [22]

Diia City, a free economic zone for creative economy representatives that the Ministry of Digital Transformation is working on, offers high prospects to investors. Eventually, it will enable domestic and foreign tech companies to open businesses and R&D centers in Ukraine under simplified procedures, to operate according to the English Law, and pay 10% of distributed profit tax. The project is expected to double the tech market's size to $11.8 billion and the number of jobs to 450,000. [54]

International recognition

Ukraine's boosting its reputation in various international rankings. The state has risen by seven spots in the 2020 World Bank's annual Doing Business Index, moving from the 71st to 64th place. [5]

Moody's Investors Service upgraded Ukraine's credit rating from Caa1 to B3 with a stable outlook [6] after Ukraine has acquired a new financing program with the International Monetary Fund.

S&P Global Ratings and Fitch Ratings confirmed a stable B-degree for Ukraine in 2020. [7]

Ukraine is among the top 50 countries in the Global Innovation Index 2020. [8] The second year in a row, it keeps the 1st rank in the Good Country Index in the science and technology category. [9]

Ukraine in the Doing Business rating
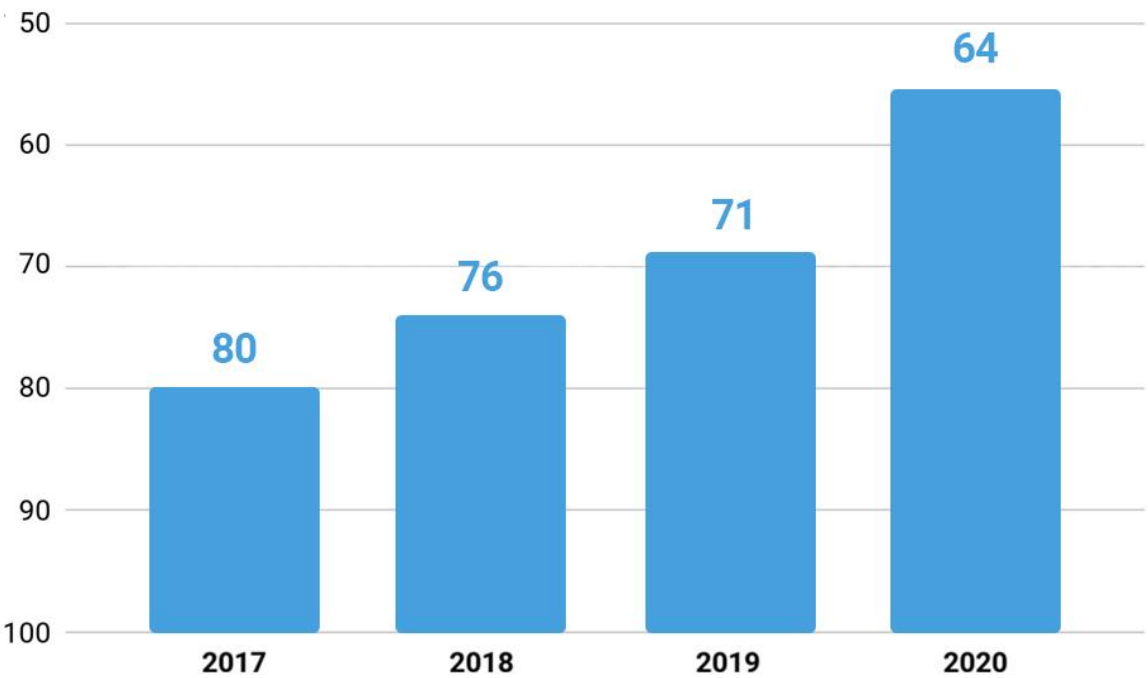
Sovereign Credit Ratings:

Moody's – B3 stable

S&P Global Ratings – B/B stable

Fitch Ratings – B/B stable

Other ratings:

24th position

31th place

45th position

85th place

1st position

in Science and Technology

Good Country Index

Global Service Location Index

Global Open Data Index

Global Innovation Index

Global Competitiveness Index

2021 Economic Outlook

The Ukrainian government's macroeconomic forecasts aim at a growth rate of 4.6% in 2021, with an inflation rate of 7.3%. [73] The experts at FocusEconomics are less optimistic, predicting Ukraine's GDP to grow by 4.2% in 2021 and 3.6% in 2022. [74]

Projections are more forward-looking for the tech industry. Experts expect Ukraine's tech companies to focus on fintech, medicine, virtual reality, and online education as the most profitable industries in the post-pandemic paradigm. AI is another sector that Ukraine is looking to prioritize in 2021. The country was ranked by the 2020 Oxford Government AI Readiness Index as the number one AI provider in Eastern Europe. [90][92]

According to European Commission, the high-tech skills gap in Europe will reach 500,000 in 2025, while the US could lose out on $162 billion worth of revenues annually unless it finds more high-tech workers, as suggested by Korn Ferry. [87][88]

As the global market seeks ways to combat the talent shortage, Ukraine's strengthening its positions as an emerging tech driver. The 2019 poll conducted by the American Chamber of Commerce in Ukraine conforms to the previous statement, indicating IT as the second most attractive Ukrainian industry for foreign investment. [89]

"

The COVID-crisis has accelerated the global tech market's megatrends, such as *digitalization* and *remote work* acceptance. The need for tech skills is snowballing, and despite the significant adverse effect from the global economic recession, the positive outcomes for our industry are even larger.

We already see a record amount of vacancies in Ukrainian IT, and the demand will continue to escalate in 2021 and onwards. The main bottleneck for growth will be the tech ecosystem's capability to raise new specialists. For instance, Beetroot Academy's development is among our top priorities, and I believe many companies will invest in accumulating their tech education forces. I would expect a market growth of 25-30% in 2021. The rivalry for talent will intensify, which will put pressure on many smaller market players. Hence, we'll see a stronger consolidation trend in the industry during the 2020s.

Andreas Flodström

Founder & CEO,
Beetroot AB

Beetroot

 BEETROOT

★ **Top 50 IT Companies in Ukraine**

★ **Clutch.co Top 1000 Service Providers**

★ **2020 Top Employer by Ukrainian Corporate Equality Index**

★ **WorldBlu certified Freedom-Centered Organization™**

Founded
2012

R&D Offices in Ukraine
Kyiv, Odesa, Kharkiv, Poltava, Ivano-Frankivsk, Zhytomyr, Kremenchuk

Employees
500+

Global Offices
Sweden

Beetroot Tech Hub
Mariupol

Tech Education Division

Beetroot Academy

Key Expertise
Dedicated Teams, Software Solutions (Web/Mobile Development, WordPress, DevOps, Data Management, Games & VR, Art & Design), Blended Teams, Managed Teams

Key Markets
Sweden, Israel, USA, Switzerland, Norway UK, Germany, Malta

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2021 Tech Market Report

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