






# The German App Economy: 2023

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JUNE 2023

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## INTRODUCTION

**It's no surprise that the German automobile industry has joined the App Economy. As of May 2023, Bertrandt, a leading supplier to the auto industry, was looking for an iOS and Android App Developer in Munich to help conceive and develop next-generation mobile apps and connected car apps. Meanwhile, MBition, a Berlin-based subsidiary of the Mercedes-Benz Group, was looking for a Test Engineer for Mobile Apps Testing to help deliver the next-generation of in-car infotainment software.**

But the Germany App Economy is not just about automobiles. Blinkist, an app that finds impactful books and distills them down to their key ideas, was looking for a Senior iOS Engineer and an Android developer in Berlin.<sup>2</sup> From manufacturing to books to health and everything between, the German App Economy includes 633,000 jobs. That's according to the Progressive Policy Institute's latest estimate, and it's up 38% from our pre-pandemic 2019 estimate.

None of these jobs existed 15 years ago, when Apple first opened the App Store on July 10, 2008, in the middle of the global financial crisis.<sup>3</sup> Android Market (which later became Google Play) was announced by Google shortly after.<sup>4</sup> These app stores created a new route through which software developers could write programs for smartphones. These mobile applications — called “apps” — could then be distributed to the rapidly growing number of smartphone users around the world.

The jobs generated by the app stores became an important part of the recovery from the financial crisis of 2008-2009, the subsequent economic expansion, and the response to the pandemic. More than that, app development and the app stores became a key route by which young people can develop tech skills and became an integral part of the digital economy.

This report describes some important aspects of the German App Economy. We also give some examples of App Economy jobs and skills development.

## METHODOLOGY AND FRAMEWORK

For the past ten years, PPI has done a series of reports on the App Economy around the world.<sup>5</sup> The most recent one we did for European countries was the *Europe App Economy Update 2021*.<sup>6</sup>

For this report, a worker is in the German App Economy if he or she is in:

- An IT-related job that uses App Economy skills — the ability to develop, maintain, or support mobile applications. We will call this a “core” app economy job. Core app economy jobs include app developers; software engineers whose work requires knowledge of mobile applications; security engineers who help keep mobile apps safe from being hacked; and help desk workers who support the use of mobile apps.
- A non-IT job (such as sales, marketing, finance, human resources, or administrative staff) that supports core app economy jobs in the same enterprise. We will call this an “indirect” app economy job.
- A job in the local economy that is supported either by the goods and services purchased

by the enterprise, or by the income flowing to core and indirect app economy workers. These “spillover” jobs include local professional services such as bank tellers, law offices, and building managers; telecom, electric, and cable installers and maintainers; education, recreation, lodging, and restaurant jobs; and all the other necessary services.

We use public job postings from the Indeed real-time database of German job postings to estimate the number of core App Economy jobs, combining that with government estimates of the number of information and communications technology (ICT) professionals.<sup>7</sup> A description of the basic methodology is found in “The App Economy in Europe: Leading Countries and Cities, 2017.”<sup>8</sup> Then we use a conservative multiplier of indirect and spillover jobs to estimate overall App Economy jobs.<sup>9</sup>

## RESULTS

Table 1 shows the results of the latest analysis. As already noted, the German App Economy includes an estimated 633,000 jobs, including a conservative estimate of spillover jobs. This figure is up some 38% since before the pandemic. (It must be noted that most statistical agencies adopted new forms of occupation classifications across this period that may have affected our estimates).

Table 2 shows our estimates of App Economy jobs by operating system. According to our estimates, the iOS ecosystem includes 503,000 jobs in Germany as of May 2023. The Android ecosystem includes 495,000 jobs in Germany as of May 2023. (The two categories sum to more than the total number of App Economy jobs because many app developer jobs are in both ecosystems).

**TABLE 1: GERMANY: ESTIMATE OF APP ECONOMY JOBS, MAY 2023 (THOUSANDS)**

	2023	2019*	PERCENTAGE CHANGE, 2019-2023**
<b>TOTAL APP ECONOMY</b>	<b>633</b>	<b>458</b>	<b>38%</b>

*\*Revised from published data*

*\*\*Potentially reflects changes in official occupational categories*

*Data: Federal Office of Statistics, Indeed, PPI*

**TABLE 2: GERMANY: ESTIMATE OF APP ECONOMY JOBS BY OPERATING SYSTEM, MAY 2023 (THOUSANDS)**

	2023	2019*
<b>TOTAL APP ECONOMY</b>	<b>633</b>	<b>458</b>
<b>IOS ECOSYSTEM</b>	<b>503</b>	<b>359</b>
<b>ANDROID ECOSYSTEM</b>	<b>495</b>	<b>367</b>

*\*Revised from published data*

*2023 figures potentially reflect changes in official occupational categories*

*Data: Federal Office of Statistics, Indeed, PPI*

### CONTRIBUTIONS OF THE APP ECONOMY TO GROWTH OF JOBS AND SKILLS IN GERMANY

Figure 1 compares the number of jobs in the Germany App Economy with the net increase in all jobs since 2008, when the app stores came into existence. This is a legitimate comparison because the number of App Economy jobs in 2008 was zero.

We can see from Figure 1 that the total number of jobs in the German economy increased by roughly 4.7 million since 2008. From that perspective, the 633,000 German app economy

jobs account for roughly 13% of the total net gain in jobs over the past 15 years, including the pandemic.

Qualitatively, this suggests that the growth of the App Economy has played a significant role in Germany's economic growth over the past 15 years. That makes sense, given how much time people spend on their smartphones using mobile applications. According to the latest report from data.ai, German residents spend 3.6 hours per day on mobile applications.<sup>10</sup> That's up from roughly 2.6 in 2019, a roughly 38% increase.

With so much consumer time and money being devoted to apps, it's not a surprise that the App Economy is so critical to growth.

But there's another aspect of the App Economy that is often overlooked: The role of mobile app development and the app stores in providing a route into the digital workforce for people who come from varied backgrounds. While much app development is associated with large organizations, it's still easy for individuals and small groups to create new apps that can be accessed nationally or globally through the Apple App Store or Google Play.

In some cases, the new app can be very successful. Or it might languish without downloads, or have moderate success. But no matter what, the mere fact of creating a new app that is widely available through the app stores becomes a mark of skill and experience that opens other doors.

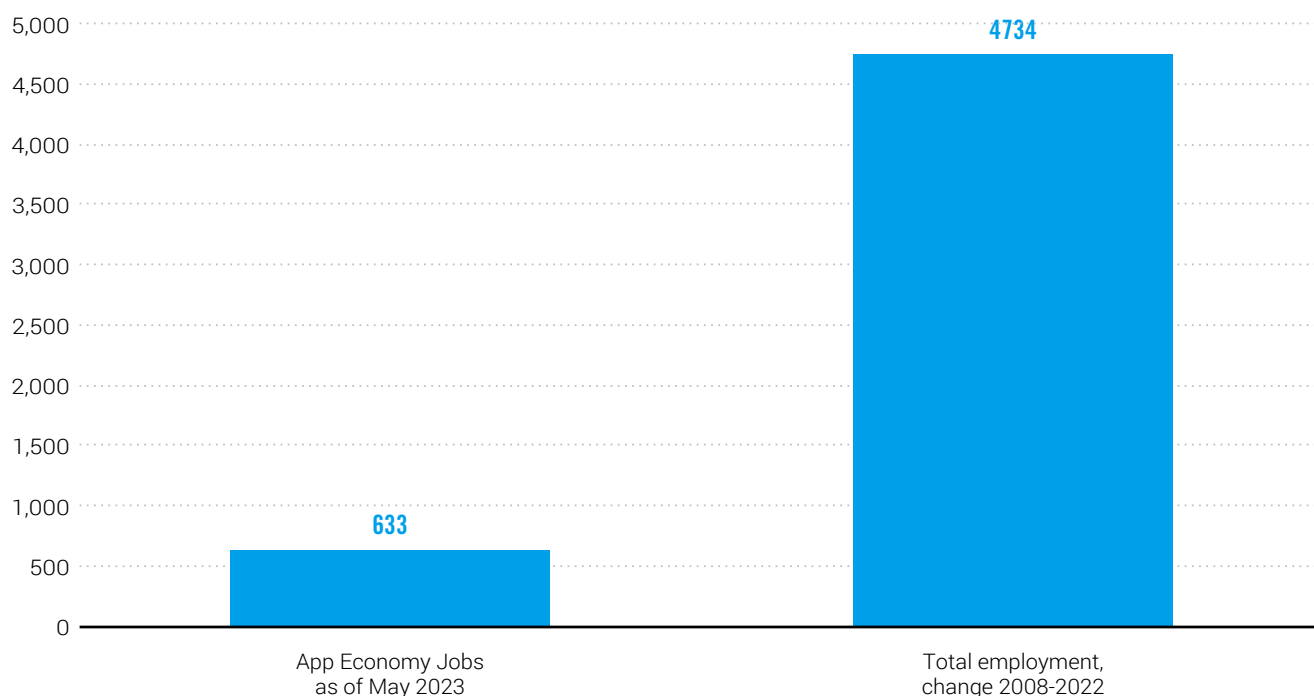
At the same time, the app stores have been investing in improving the skills of local app developers and the quality of apps. Anna Neovesky is co-founder of Coding Friends and one of the creators of the popular Wokabulary app, which is a tool for practicing and collecting vocabulary in all languages. Neovesky notes that she experienced the contact with Apple's Developer program support as helpful and responsive, and she received useful information on technical issues.

Putting together a comprehensive list of app development resources is beyond the scope of this paper. But one example is that developers with iOS apps have opportunities to request one-on-one online consultations with Apple technical experts.<sup>11</sup> Apple also runs Developer Academies in Italy and several other countries. Google Play Academy provides free online courses for app developers.<sup>12</sup> And while not strictly apps-focused, Google offers Startup Accelerators in various locations.

A related issue is the ability of the app stores to open doors for groups that are otherwise underrepresented in the digital economy. For example, official data shows that women make up only 18% of employees in ICT professional occupations in Germany (Table 3). That's slightly worse than the U.K., France, and the United States. We do not have direct evidence of the demographics of app developers, but the app stores accept all apps that meet requirements, without bias. Apple Entrepreneur Camp, an immersive technology lab for underrepresented founders and developers, offers dedicated cohorts for founders and developers who are female and have app-driven businesses.<sup>13</sup>

"I think app development is a great path for women," says Neovesky. She notes that it's ideal for self-taught developers and career changers, because of the learning material companies like Apple and Google provide. An alternative entry point into tech, says Neovesky, "is especially important for countries such as Germany and other Western European countries where still far fewer women study computer science."

**FIGURE 1: GERMANY APP ECONOMY GROWTH COMPARED TO OVERALL JOB GAINS (2008-2022) (THOUSANDS)**



**TABLE 3: GENDER IN ICT PROFESSIONAL OCCUPATIONS**

	IT AND COMMUNICATIONS TECHNOLOGY PROFESSIONALS	
	(SHARE OF WOMEN IN OCCUPATION)	YEAR
UNITED STATES	25%	2022
FRANCE	21%	2021
UNITED KINGDOM	20%	2022
GERMANY	18%	2022

Source: Bureau of Labor Statistics (U.S.); International Labour Organization; Office for National Statistics (U.K.); Federal Office of Statistics (Germany); PPI calculations

## EXAMPLES OF THE GERMAN APP ECONOMY

This section illustrates the variety of App Economy workers in the German economy as of May 2023, in addition to the connected car and consumer examples mentioned at the beginning of the report. Please note that we report the main location of these jobs, but most of them also offer the possibility of remote, hybrid, or flexible work.

The health care sector is an especially vibrant sector of the German App Economy. As of early 2023, TWT Digital Health was searching for an Android or IOS mobile developer for its Heidelberg office. Vivira Health Lab in Berlin was looking for an Android developer to help with the Vivira App, which provides personalized therapeutic training for patients with musculoskeletal pain. Technicians' Health Insurance (Techniker Krankenkasse) in Hamburg, was looking for an iOS/Android App Developer. And Preventicus, which uses an app on a smartphone or smartwatch to pick up cardiac arrhythmias, was searching for an iOS/Android mobile developer in Jena.

Blockchain HELIX, a company that provides digital identity solutions for individuals and businesses, was hiring an app developer in Frankfurt. Solaris, a Berlin-based fintech company, was looking for someone to take responsibility for the company's iOS and Android credit card apps.

On the consumer side, Berlin-based Lumas was looking for an "App Growth Manager" to take charge of the company's new Artstream App, "which will revolutionize nothing less than the digital art market." The applicant needed to have many years of experience in app project management (iOS, Android, Tizen). GetYourGuide, a Berlin-based online travel agency and online marketplace for tour guides and excursions, was looking for an engineering manager with "strong hands-on experience as an App engineer (iOS or Android)."

## CONCLUSION

Fifteen years after the Apple App Store and Google Play first opened, they are still filling an essential role, driving job growth in Germany, building skills, and opening tech doors to underrepresented groups. Hopefully the next 15 years will bring the same success.

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## ABOUT THE AUTHOR

**Michael Mandel** is Chief Economist of the Progressive Policy Institute, and **Jordan Shapiro** is Director of the Innovation Frontier Project.

# Notes and References

- 1 With research assistance from Damian Ghiotti.
- 2 The jobs were located in Berlin or could be done remotely from Germany/Spain/U.K.
- 3 "The App Store Turns 10," Apple Newsroom, July 5, 2018, <https://www.apple.com/newsroom/2018/07/app-store-turns-10>.
- 4 "Google Play," Wikipedia, last modified May 16, 2023, [https://en.wikipedia.org/wiki/Google\\_Play#](https://en.wikipedia.org/wiki/Google_Play#).
- 5 Countries include the United States, the countries of the European Union, the United Kingdom, Canada, Mexico, Argentina, Brazil, Chile, Japan, Korea, Australia, Vietnam, Thailand, Indonesia, and India. We have analyzed China's App Economy but not published it because of data issues.
- 6 Michael Mandel, "Europe App Economy Update, 2021," Progressive Policy Institute, May 25, 2022, <https://www.progressivepolicy.org/blogs/europe-app-economy-update-2021/>.
- 7 Indeed, which bills itself as "the #1 job site in the world," offers a searchable continually updated database of job postings in Germany on [de.indeed.com](https://de.indeed.com) as well as similar databases for more than 60 other countries. For Germany, the government estimates of information and communications technology professionals are drawn from the Federal Office of Statistics.
- 8 Michael Mandel and Elliott Long, "The App Economy in Europe: Leading Countries and Cities, 2017," Progressive Policy Institute, October 2017, [https://www.progressivepolicy.org/wp-content/uploads/2017/10/PPI\\_EuropeAppEconomy\\_2017\\_.pdf](https://www.progressivepolicy.org/wp-content/uploads/2017/10/PPI_EuropeAppEconomy_2017_.pdf). Some pandemic-related updates to the European methodology can be found here: <https://www.progressivepolicy.org/blogs/europe-app-economy-update-2021/>
- 9 Based on government data, we make the reasonable assumption that each core App Economy job corresponds to one indirect App Economy job in the same organization. Next, we make the very conservative assumption that each core or indirect App Economy job generates 0.5 spillover jobs in the relevant geographic area.
- 10 "State of Mobile 2022," data.ai, accessed May 2023, <https://www.data.ai/en/go/state-of-mobile-2022/>
- 11 "How to Participate in Office Hours," Apple Developer: Ask Apple, accessed May 2023, <https://developer.apple.com/events/ask-apple/office-hours/>.
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