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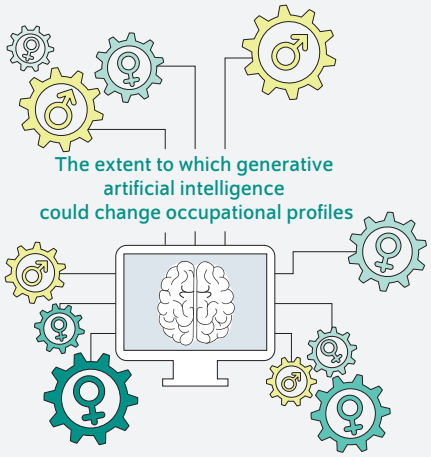
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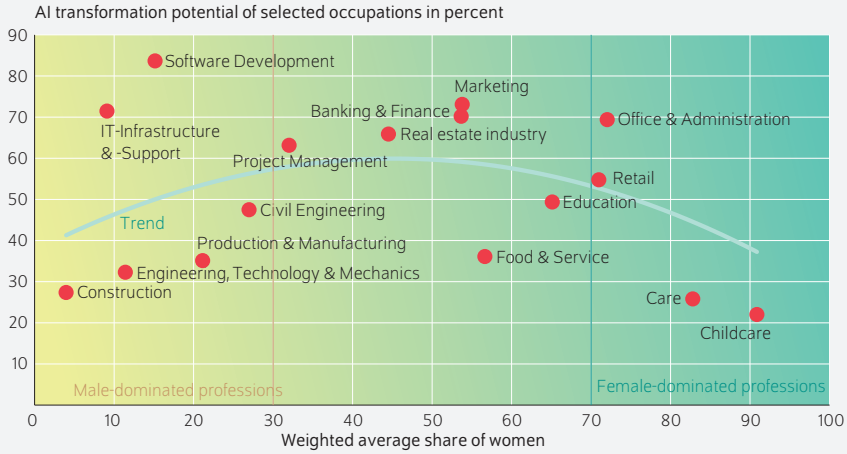
AI transformation potential impacts both men and women in the labor market

By Virginia Sondergeld, Katharina Wrohlich, and Julia Redelings

- Generative AI is radically transforming the labor market; this study examines the extent to which female- and male-dominated occupations are affected
- An analysis based on job postings on the job platform Indeed shows no clear correlation between AI transformation potential and employment shares by gender
- Occupations with high transformation potential tend to have a relatively balanced share of male and female employees
- The female-dominated care sector and the male-dominated construction sector have very low transformation potential
- There is a need for both women and men to receive relevant training that will help to narrow the gender gap in AI skills as far as possible

The male-dominated construction sector and the female-dominated childcare sector are least affected by AI transformation





Sources: Indeed GenAI Skill Transformation Index; microcensus 2022; own calculations.

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FROM THE AUTHORS

"Our analysis shows that women can be just as affected as men by AI-driven transformations in their occupational fields. It is therefore important that all employees receive ongoing training in the use of AI."

— Katharina Wrohlich —

MEDIA

Audio Interview with Virginia Sondergeld (in German)
www.diw.de/mediathek

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ABSTRACT

Technological progress in the field of generative artificial intelligence (GenAI) is set to radically transform the labor market. The transformation potential of AI varies greatly across occupations. Given that the German labor market is strongly segregated by gender, it is important to examine whether GenAI-driven transformation will affect women and men differently. When data on AI transformation potential for specific occupations are compared with their share of female employees, no clear relationship emerges between an occupation's share of women and its AI transformation potential. AI will have very little impact on both some heavily female-dominated and some heavily male-dominated occupations, such as, for example, childcare and construction. By contrast, most of the occupations with high transformation potential have a relatively balanced share of male and female employees. However, since virtually all occupations are expected to be transformed by AI to some extent, there is a need for all employees – women and men alike – to receive targeted and continuous training. In the course of this, the AI skills gender gap identified in some studies should be narrowed as much as possible.

The applications and capabilities of generative artificial intelligence (GenAI)[1] have expanded significantly in recent years and are continuing to evolve. Models such as GPT or Gemini are able to write complex texts, while tools like Midjourney or Sora can automatically generate images and videos. To name just a few of its capabilities, the agentic coding tool Claude Code can independently create and edit software projects, as well as identify and correct code errors.

The impact of AI on the labor market is currently the subject of intense debate in academia and politics. Questions of particular interest include how tasks and tasks in specific occupations will change, what new skills employees in these occupations will need to acquire, and the extent to which certain occupations will either disappear altogether or be radically transformed. There are also numerous research studies focusing on the extent to which AI-driven transformation in the labor market influences labor demand and wage trends.[2]

Given the pronounced gender inequalities in Germany's labor market, the question arises as to whether AI-driven transformation affects – or will affect – women and men differently there. Recent analyses show, for example, that women use AI less frequently in a professional context than men.[3] If women do not benefit from the associated productivity gains, and higher productivity leads to higher wages, the AI transformation could exacerbate gender inequalities.

1 Generative AI refers to a form of artificial intelligence that independently creates new content – such as text, images, or videos – by learning patterns from training data and applying them creatively. See the Haufe Akademie website (available online, accessed March 13, 2026. Unless stated otherwise, this applies to all online sources cited in this report).

2 See, for example, Erik Engberg et al. (2026): Who is afraid of AI? Who should be? Kiel Policy Brief No. 198 (available online); Gerd Zika et al. (2025): Künstliche Intelligenz: Potenzielle Effekte für den deutschen Arbeitsmarkt. IAB-Forschungsbericht no. 23 (available online); Jonas Hannane, Ozge Demirci, and Xinrong Zhu (2024): Generative Künstliche Intelligenz reduziert Nachfrage nach Freelance-Arbeit auf Online-Plattformen. DIW Wochenbericht no. 35, 540–545 (in German; available online).

3 See, for example, IAB-Forum May 20, 2025: Abgehängt? Frauen nutzen KI beruflich viel seltener als Männer. Grafik aktuell May 20 (in German; available online).

DOI: https://doi.org/10.18723/diw_dwr:2026-14-1

In addition to gender inequalities in remuneration (the gender pay gap)[4], hours of paid employment[5], and representation in senior management positions[6], the German labor market is also characterized by a high degree of segregation between female- and male-dominated occupations. This Weekly Report aims to provide a descriptive analysis of how AI transformation potential varies between female- and male-dominated occupations.

Tech sector and office jobs show high AI transformation potential

Every occupation involves a variety of tasks that require different skills. The transformation potential of GenAI for a particular occupation depends on the proportion of associated skills or tasks that can be performed by AI. To measure this transformation potential, this report uses the findings from Indeed's "AI at Work 2025" report[7]. This is based on an analysis of approximately 2,900 occupational skills and tasks drawn from millions of job postings on the job platform Indeed. The job postings were published in the U.S. between May 2024 and April 2025. The extracted skills range from IT skills in programming and data analysis to language skills, mechanical skills, and patient care.

GenAI was used to investigate each of these skills and tasks to determine how well it could perform them. The AI language models GPT 4.1 from OpenAI and Anthropic's Claude Sonnet 4 were asked to assess their potential to perform a given skill on two dimensions: problem-solving ability and the need for physical execution. Based on this assessment, the skills were assigned to four categories:

- **"Full transformation":** GenAI has the potential to apply a skill independently to perform tasks that are typically well structured and to automate them end-to-end under the right conditions.
- **"Hybrid transformation"**: GenAI can take on the majority of the task, while humans continue to supervise, evaluate results, and intervene as required.
- **"Assisted transformation":** AI provides limited or general support (for example, by creating templates, conducting basic research, or suggesting methods). However, humans still need to practically apply the skill.
- **"Minimal transformation":** Due to high physical requirements and/or limited reasoning capability of GenAI, humans will continue to perform the activity largely independently.

Once categorized, the specific skills and tasks were weighted by their frequency of mention in job postings to determine the transformation potential for each occupation. Occupations with high transformation potential are those whose core activities can be significantly altered by GenAI. At the upper end of the distribution are occupations in the technology sector and other office jobs (Figure 1). In software development, for example, the majority of skills and tasks (83.7 percent) fall into the hybrid or full transformation categories. Similarly, in accounting and marketing, most skills belong to the hybrid or full transformation categories (a solid 75 and 73 percent respectively). At the lower end of the distribution, AI can assist with peripheral activities such as documentation and other administrative tasks, but it does not replace the core skills of the occupation. In childcare, for example, less than one percent of skills can be fully transformed by AI. An additional 12 percent of skills in this occupation can be assisted, and about 21 percent can undergo hybrid transformation. The majority of the skills required in this occupation (66 percent) can only be minimally transformed by AI.

Germany's labor market is strongly segregated by gender

In Germany, the labor market has traditionally been strongly segregated by gender. A large proportion of employed women work in female-dominated occupations – that is, occupations where women account for 70 percent or more of the workforce. Likewise, a large proportion of men work in male-dominated occupations, where men account for 70 percent or more of the workforce. Occupations where the proportion of women or men is between 30 and 70 percent are referred to as mixed-gender occupations. This occupational segregation is pronounced in both East and West Germany and has changed little in recent decades.[8]

In the analyses presented here, data from the microcensus 2022 were used as a basis for calculating gender shares in the respective occupations.[9] The results show that, of the 30 most common occupation s in Germany, nine are female-dominated and ten are male-dominated (Figure 2). This is

4 See, for example, Fiona Herrmann and Katharina Wrohlich (2025): Gender pay gap increases with age among all educational backgrounds. DIW Weekly Report no. 18+19, 109–116 (available online).

5 See, for example, Boryana Ilieva and Katharina Wrohlich (2022): Gender Gaps in Employment, Working Hours and Wages in Germany: Trends and Developments Over the Last 35 Years. CESifo Forum 23(2), 17–19 (available online).

6 See, for example, Arianna Antezza, Alina Meiner, and Katharina Wrohlich (2026): Women on the Executive and Supervisory Boards of Large Companies: The Upward Trend of Recent Years Has Largely Stalled. DIW Weekly Report no. 4, 23–37 (available online).

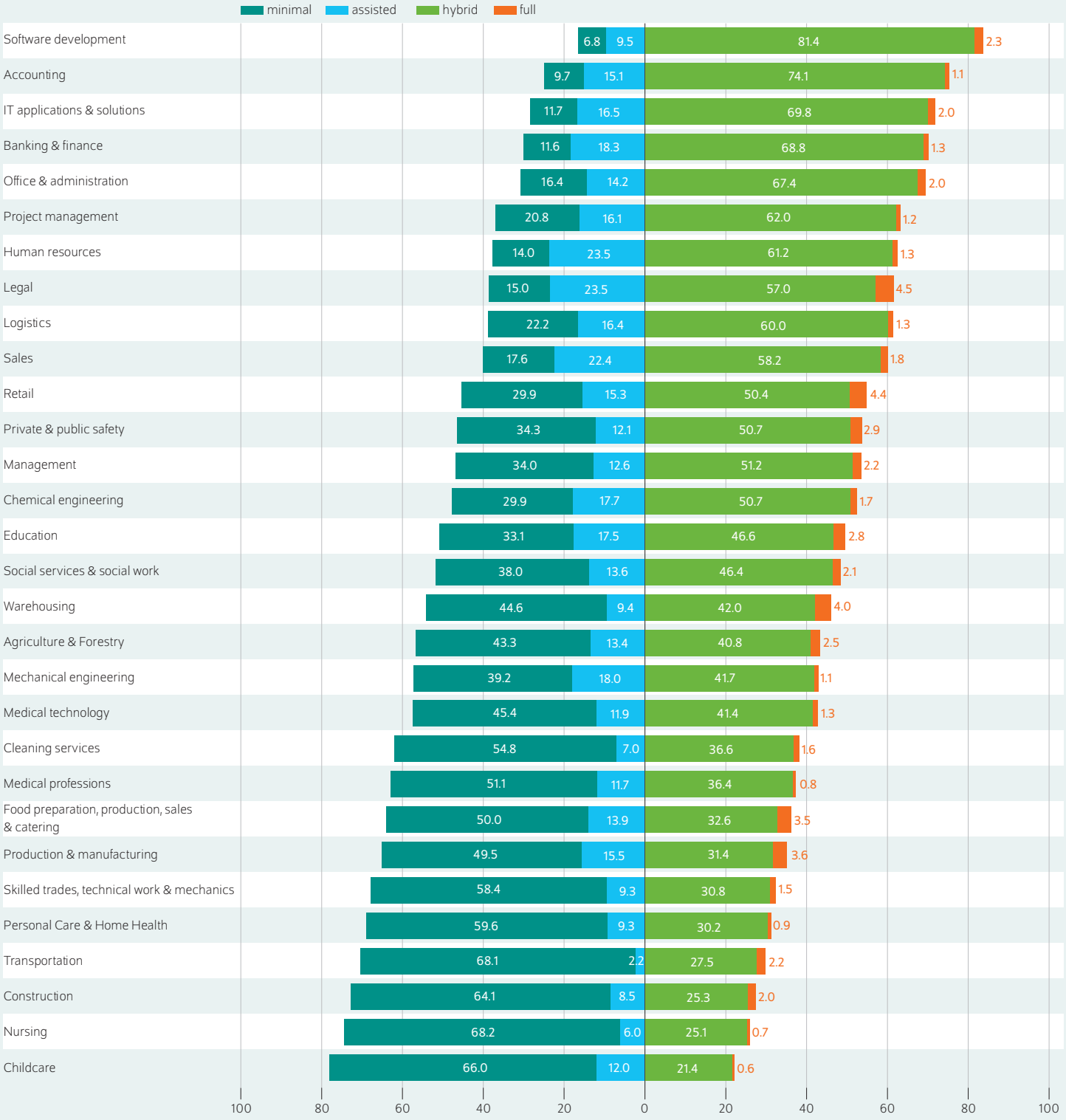
7 Annina Hering and Arcenis Rojas (2025): AI at Work Report 2025: How GenAI is Rewiring the DNA of Jobs (available online). Alternative data for measuring the transformation potential of AI can be found, for example, in Edward Felten, Manav Raj, and Robert Seamans (2021): Occupational, industry, and geographic exposure to artificial intelligence: A novel dataset and its potential uses, in: Strategic Management Journal 42, 2195–2217; Pawel Gmyrek et al. (2025): Generative AI and Jobs. A Refined Global Index of Occupational Exposure. ILO Working Paper 140 (available online); Erik Engberg et al. (2026): AI Unboxed and Jobs: A Novel Measure and Firm-Level Evidence from Three Countries. IZA Discussion Paper 16717 (available online).

8 See also Ann-Christin Bächmann, Corinna Kleinert, and Brigitte Schels (2024): Anhaltende berufliche Geschlechtersegregation: In Ost wie West arbeiten Frauen und Männer häufig in unterschiedlichen Berufen. IAB-Kurzbericht 3,1–8 (in German; available online).

9 The microcensus is an annual survey of private households in Germany conducted by the Federal Statistical Office in cooperation with the State Statistical Offices. Approximately one percent of the resident population (about 800,000 people) are surveyed. For further information on the microcensus, see the Destatis website (available online).

Figure 1

AI transformation potential in the 30 largest occupational groups in Germany
Percentage of skills sought in job postings, by AI transformation potential[1]



1 Based on the Indeed GenAI Skill Transformation Index (derived from evaluations by GPT-4.1 and Claude Sonnet 4).

Notes: U.S. job postings on Indeed from April 2024 to May 2025 were analyzed; occupational group definitions are based on the Indeed taxonomy.

Sources: AI at Work Report 2025; microcensus 2022.

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Occupations in the technology sector and traditional office jobs have the greatest potential for AI transformation.

consistent with earlier analyses based on social insurance data.[10] Examples of highly segregated occupations include, on the one hand, childcare, where women account for over 90 percent of all employees. At the other end of the spectrum are occupations in the construction sector, where men make up more than 95 percent of the workforce.

Mixed-gender occupations are among those most affected by AI

To examine whether male- and female-dominated occupations differ in their potential for transformation by GenAI, the data on transformation potential is combined with the data on the share of women among all employees (Figure 3). When the share of women in an occupation is compared with the transformation potential of AI (measured by the proportion of skills that can undergo hybrid or full transformation), it becomes clear that there is no positive or negative linear relationship between the share of women in an occupation and its potential for transformation by AI. Rather, an inverted U-shaped curve can be observed. This means that there are both male-dominated occupations (Figure 3, bottom left) and female-dominated occupations (bottom right) with low potential for transformation.

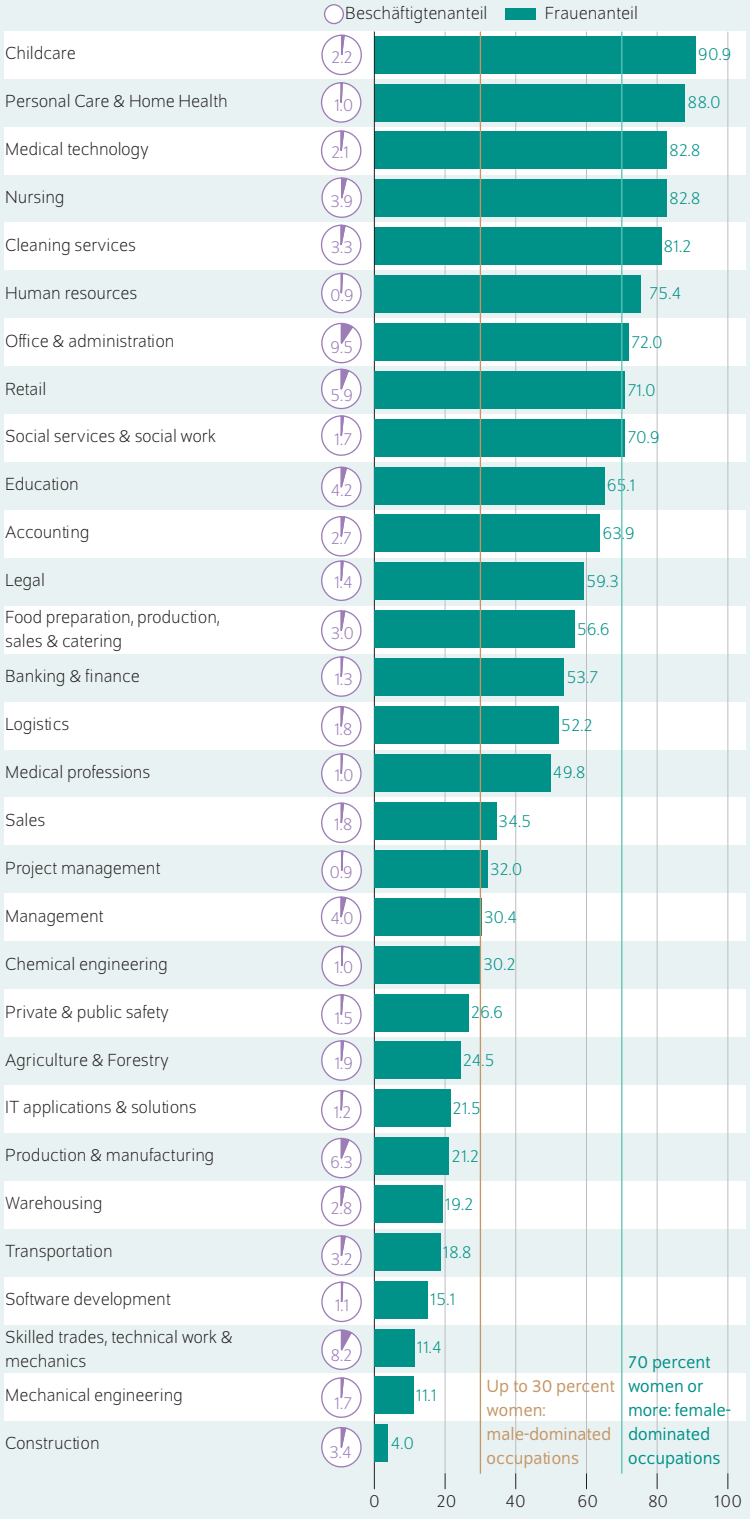
Examples of male-dominated occupations of this kind are found in construction, transportation, as well as in installation, and mechanics. Examples of female-dominated occupations with low transformation potential are found in childcare and healthcare.

By contrast, occupations with high transformation potential often consist of mixed-gender occupations – that is, occupations where women account for between 30 and 70 percent of all employees. Examples include occupations in accounting and marketing, as well as banking & finance. Software development represents an exception: it has the highest transformation potential of all the occupations examined here (Figure 1) and yet, at only 15 percent, a comparatively low share of women among all employees (Figure 2).

After calculating the shares of women and men across occupations with different levels of AI transformation potential, the results show that women tend to be more strongly represented in occupations with higher transformation potential. However, this difference is mainly driven by occupations with moderate transformation potential. For example, around 23 percent of women – but only 12 percent of men – work in occupations in which 60 to 70 percent of skills can undergo hybrid or full transformation (Figure 4).[11] At the same time, around 29 percent of men – but only 19 percent of women – work in occupations in which 30 to 40 percent of skills can undergo hybrid or full transformation.

Figure 2

Share of women by occupational group and employment share of each occupational group
In percent



Notes: Average share of women in ISCO-4 occupations, weighted by their share of the occupational group.

Source: Own calculations based on the microcensus 2022.

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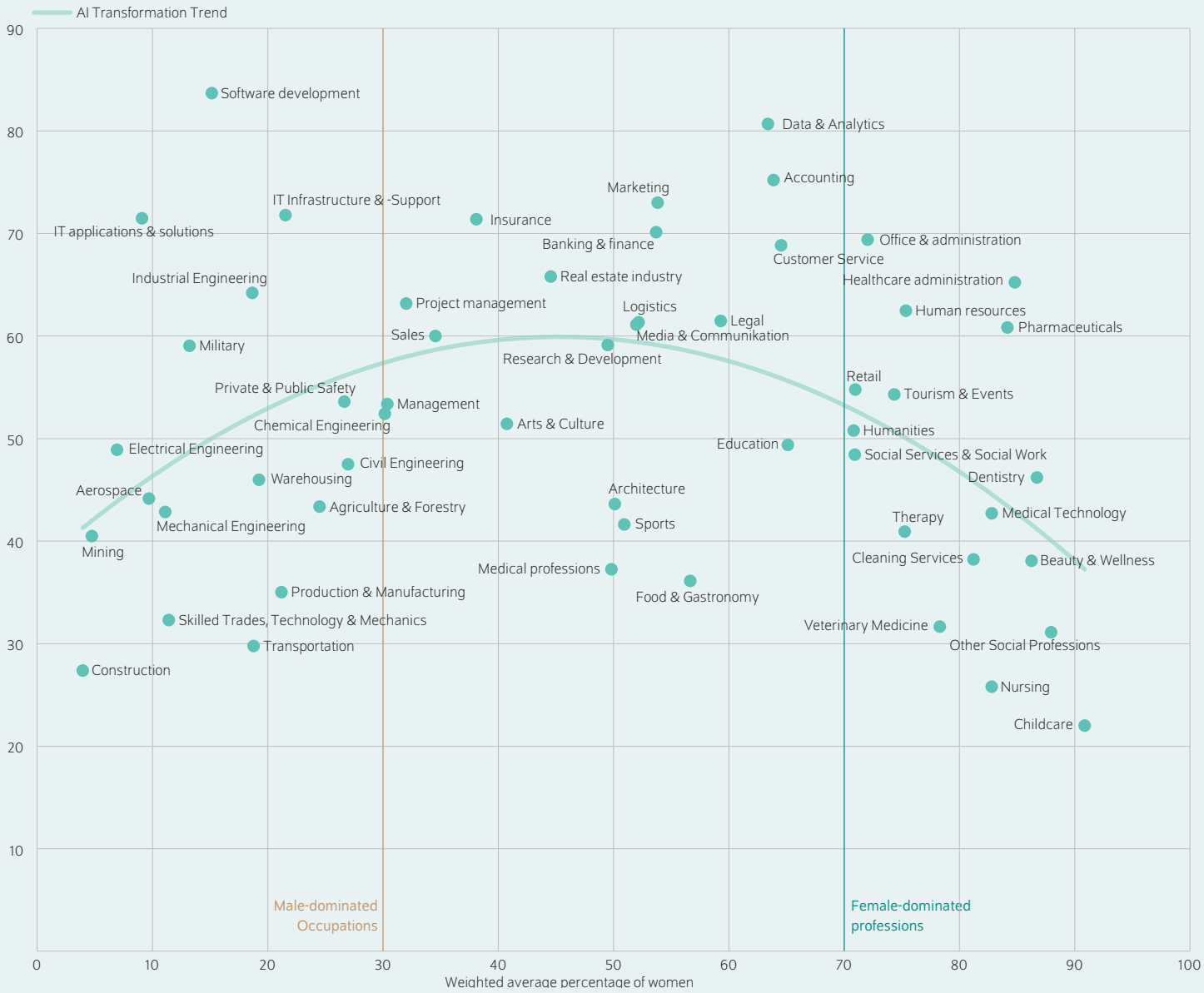
In Germany, occupations are strongly segregated by gender.

10 See, for example, Bächmann, Kleinert, and Schels (2024).

11 This is consistent with the findings of a recent International Labour Organization (ILO) report covering 68 countries worldwide (but not Germany); see International Labour Organization (2026): Gen AI, occupational segregation and gender equality in the world of work. ILO Research Brief (available online).

Figure 3

Occupational groups by share of women and AI transformation potential
As a percentage of activities that can undergo full or hybrid transformation by AI



Sources: Indeed GenAI Skill Transformation Index; microcensus 2022; own calculations.

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There are both male- and female-dominated occupations with very low AI transformation potential, such as construction or childcare.

At the extremes of the distribution – that is, in occupations with the highest and lowest AI transformation potential – the shares of women and men are similar. Around 13 percent of women and 13 percent of men work in occupations in which 20 to 30 percent of skills can undergo hybrid transformation or full transformation. Meanwhile, around seven percent of women and seven percent of men work in occupations in which 70 to 80 percent of skills can undergo such levels of transformation. A higher percentage of men than of women work in the most exposed occupations – particularly the software development occupation. However, this group accounts for only a small share of all employees in Germany, with two percent of men and 0.6 percent of women working in these occupations.

Conclusion: training should aim to close the gender gap in AI use

The debate on how GenAI will transform the labor market in the future is well underway. Different occupations are already affected to varying degrees by the transformation potential of AI and will continue to be in the future. Given the strong gender-based occupational segregation in the German labor market, the question arises whether – and to what extent – the transformation driven by GenAI will affect women and men differently in that context. This analysis shows no clear correlation. Some heavily female-dominated and some heavily male-dominated occupations have very low transformation potential, while most occupations with high transformation potential have a relatively balanced share of men and women.

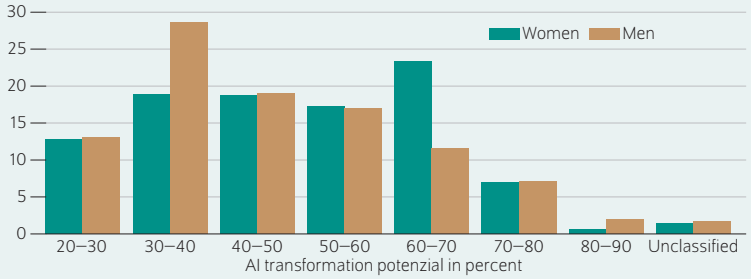
However, the dynamics of AI transformation are determined not only by transformation potential but also by institutional and cultural conditions as well as business decisions. These factors will also determine whether AI will completely replace certain jobs or change the tasks performed within an occupation. Therefore, it is not yet possible to predict with certainty which occupations will be most or least affected. Even though no gender gap is currently observable, research should continue to monitor these developments. To gain a comprehensive picture of how AI transformation will affect women and men differently on the labor market, analysis should focus in particular on wage trends and on how women and men are distributed across hierarchies within occupations, taking into account different levels of transformation potential.

However, it is also clear that the vast majority of occupations will change as a result of AI transformation – albeit to varying degrees. Consequently, there is a need for all employees to receive targeted and continuous training. Even if transformation potential is independent of gender, these training programs should take into account and address the observed gender gap in AI skills.

Figure 4

Distribution of employees across occupations by AI transformation potential

Employment share by gender in percent



Sources: Indeed GenAI Skill Transformation Index; microcensus 2022; own calculations.

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Just under a quarter of women – but only 12 percent of men – work in occupations where 60 to 70 percent of skills can undergo hybrid or full transformation.

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