

Artificial intelligence, platform work and gender equality

The growth of artificial intelligence (AI) technology and platform work is rapidly changing the world of work. These two phenomena have the potential to create new opportunities for gender equality, but at the same time can reinforce gender stereotypes, sexism and discrimination in the labour market.

What is artificial intelligence?

AI refers to software that displays intelligent behaviour. It uses algorithms and deep neural networks to make autonomous decisions, based on probabilities of certain outcomes and goals that developers have taught it to reach.

What is platform work?

While the precise definition of platform work is still evolving, Eurofound defines it as 'a form of employment that uses an online platform to enable organisations or individuals to access other organisations or individuals to solve problems or to provide services in exchange for payment' ⁽¹⁾. It distinguishes between digital labour platforms (e.g. TaskRabbit, Freelancer, Deliveroo, Uber or Wolt), which encompass platform work, and digital capital platforms (e.g. Airbnb or Etsy), where income is not generated through labour and which therefore do not constitute platform work.

Artificial intelligence in platform work

In platform work, algorithms have three main purposes:

- 1. Matching customers with workers.** Users can enter the tasks they need done into a platform and individual workers choose their jobs.
- 2. Performance monitoring and management.** Various technological tools, facilitated by AI, can be used to remotely manage workers. This function often relies on automated decision-making systems, real-time data collection to inform performance rating systems, and the use of 'nudges' to control, monitor and motivate workers' behaviour. For example, platform workers who tend to



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work during unsocial hours, such as evenings or weekends, often get more and better tasks or 'gigs'. This puts platform workers – both women and men – with care responsibilities at a disadvantage.

- 3. Evaluation of worker performance.** Clients can often rate a worker's performance. If they are not satisfied with the results and rate their satisfaction with a particular worker as low, the worker can be algorithmically excluded from future jobs. Sometimes these evaluations can be biased or discriminatory, which is especially problematic when platform workers cannot challenge their ratings.

⁽¹⁾ European Foundation for the Improvement of Living and Working Conditions (2018), 'Platform economy repository – Typology', <https://www.eurofound.europa.eu/data/platform-economy/typology>.

How does artificial intelligence reinforce sexism and gender stereotypes?

Gender bias can be embedded in AI by design, reflecting societal norms or the personal biases of those who design the systems. One example of how algorithms perpetuate gender stereotypes is AI-powered translation tools that produce gender-biased translations. When translating occupations, such as 'flight attendant' or 'engineer', from a language that does not assign a gender to nouns to one that does, translation tools might only provide one, stereotypical result (e.g. only a feminine version of the word 'nurse'), even though the word could have both a feminine and a masculine form.

The gendered design of virtual assistants. Digital voice assistants are intentionally designed to exhibit feminine features, including their names and voices, while they perform secretarial tasks traditionally assigned to women. This reaffirms gender stereotypes about women being subservient, helpful and pleasant. In some cases, these assistants may even appear flattered by sexual harassment and verbal abuse, which could trivialise such behaviour towards women.

Another, more startling example of gender bias powered by AI is a new form of gender-based violence – deepfake pornographic videos. These are produced using AI technology to superimpose images of people's faces or bodies, creating fake videos that appear authentic. These almost exclusively target women and inflict harm on their personal and professional lives. The emergence of deepfake apps for smartphones means that anyone can make videos using explicit content without the consent of those involved.

On the positive side, AI can be used to recognise and remove harmful content, ranging from hate speech to revenge porn and deepfake videos. However, there is a stark difference in the pace of development between deepfakes and face manipulation detection. This reflects a general bias in the industry, where concerns for gender equality remain less of a priority. It can also be linked to the under-representation of women and other marginalised groups in the development of AI.

Demand for artificial intelligence talent grows, yet women are missing out

AI development and maintenance is one of the fastest-growing and highest-paid industries. Jobs in this field usually offer good working conditions and benefits. Yet with the majority of AI professionals being men, women are missing out. Data on the AI industry workforce is scarce, but available evidence from LinkedIn suggests that in the EU just 16 % of all AI-skilled individuals are women and 84 % are men ⁽²⁾.

Even if women start a career in AI, they do not always stay. The gender gap in the AI workforce widens with career length. Women with more than 10 years of work experience in AI represent 12 % of all professionals in the industry, compared to 20 % of women with 0–2 years ⁽³⁾.



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⁽²⁾ LinkedIn (2019), AI Talent in the European Labour Market, <https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/reference-cards/research/2019/LinkedIn-AI-Talent-in-the-European-Labour-Market.pdf>.

⁽³⁾ Idem.

Addressing gender equality concerns in artificial intelligence

Diversity in the AI industry is key to developing and maintaining AI tools that are gender sensitive and equitable. There are two main ways to improve the gender balance in the AI industry:

1. close the gender divide in AI-related fields of education;
2. focus on entry and retention of women in the industry.

Exposure to technology starts at a young age. In secondary schools across the EU, four out of five girls never or almost never engage in coding activities ⁽⁴⁾ and this carries over to tertiary education. Although more than half of university students in the EU are women, fewer women choose to enrol in science, technology, engineering and mathematics (STEM) studies, which are highly relevant for AI-related jobs. In 2018, women constituted about 28 % of graduates in engineering,

manufacturing and construction, and only around 20 % of ICT graduates ⁽⁵⁾.

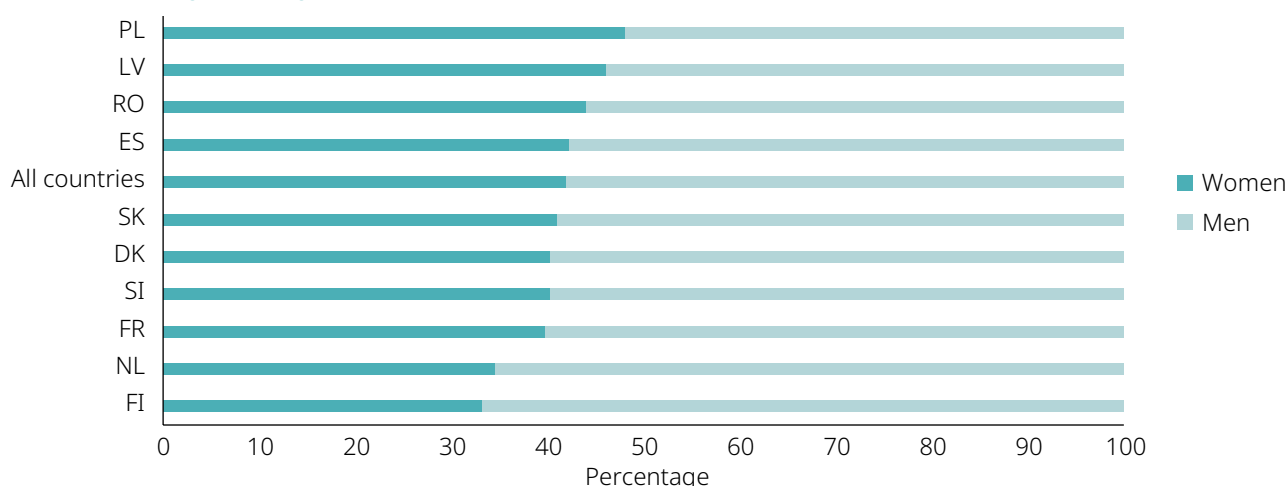
Even if young women aspire to pursue a career in science, they often do not opt for such a career, or quit their jobs much earlier than men. The organisation of work and work culture, including requirements for continuous skill updates (sometimes outside of working hours) or unpredictable working hours, likely play a crucial role in perpetuating the gender imbalance in the field. Strongly male-dominated work environments, stereotyping, sexual harassment, gender discrimination and the gender pay gap present additional challenges for women working in AI ⁽⁶⁾. Another barrier faced by women in AI is the persistent glass ceiling. Women are less likely to be in senior roles and are therefore less likely to gain expertise in certain high-profile emerging skills and, in turn, are less likely to be promoted ⁽⁷⁾.

Who are the platform workers in the European Union?

Across the 10 surveyed countries, there were somewhat fewer women platform workers than men (42 % were women while 58 % were men) ⁽⁸⁾. In recent years, the number of

women in platform work has been growing and has accelerated with the COVID-19 pandemic and the expansion of digital forms of work.

Platform workers, by country and sex



Source: EIGE (forthcoming), 2020 Online Panel Survey of Platform Workers.

⁽⁴⁾ European Commission (2019), '2nd Survey of Schools: ICT in education', <https://digital-strategy.ec.europa.eu/en/library/2nd-survey-schools-ict-education-0>.

⁽⁵⁾ Eurostat, 'Graduates by education level, programme orientation, sex and field of education', data set [educ_uoe_grad02], https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=educ_uoe_grad02&lang=en, 2018 data.

⁽⁶⁾ European Institute for Gender Equality (EIGE) (2020), Gender Equality Index 2020 – Digitalisation and the future of work, Publications Office of the European Union, Luxembourg, <https://eige.europa.eu/publications/gender-equality-index-2020-digitalisation-and-future-work>.

⁽⁷⁾ See, for example, World Economic Forum (2018), The Global Gender Gap Report 2018, http://www3.weforum.org/docs/WEF_GGGR_2018.pdf.

⁽⁸⁾ These findings are based on EIGE's survey of 4 932 platform workers, aged between 16 and 54, in 10 Member States (Denmark, Spain, France, Latvia, the Netherlands, Poland, Romania, Slovenia, Slovakia and Finland), carried out in November and December 2020.

The majority of platform workers are young (with an average age of 30 for women and 32 for men) and very well educated, and many have care responsibilities. The education level of platform workers raises concerns about deskilling, as platform work often entails low-skilled tasks. Although platform work can be a way for some young workers to enter the labour market and gain experience, others may be at risk of becoming trapped in precarious jobs.

In addition to working via platforms, 76 % of women and 80 % of men who are platform workers also work full-time or part-time or are self-employed in other jobs. Fewer women than men are employed full-time outside of platform work (44 % compared to 49 %). Overall, the gender differences in activity status are very small. Although most platform workers are young, only 6 % of the women and 4 % of the men surveyed were students.

A significant proportion of platform workers have family responsibilities: a majority of regular platform workers live with

a partner and children (48 % of women and 40 % of men) or with a partner but no children (23 % of women and 25 % of men), and 10 % of both women and men are lone parents. On average, about 11 % of both women and men platform workers were born outside the EU.



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Addressing gender equality concerns in platform work

Gender segregation in platform work is lower than in the traditional labour market

Much of platform work is split along well-known gendered lines. EIGE's survey shows that significantly more women than men provide childcare and elderly care services, whereas men dominate platform jobs in construction, software development or transportation. However, certain occupational choices by women and men seem less differentiated than in the traditional labour market. For example, work in traditionally female-dominated sectors such as housekeeping and other home services shows gender balance when taken via online platforms, with close to 46 % of workers being men.

Easy entry to platform work, but lower flexibility

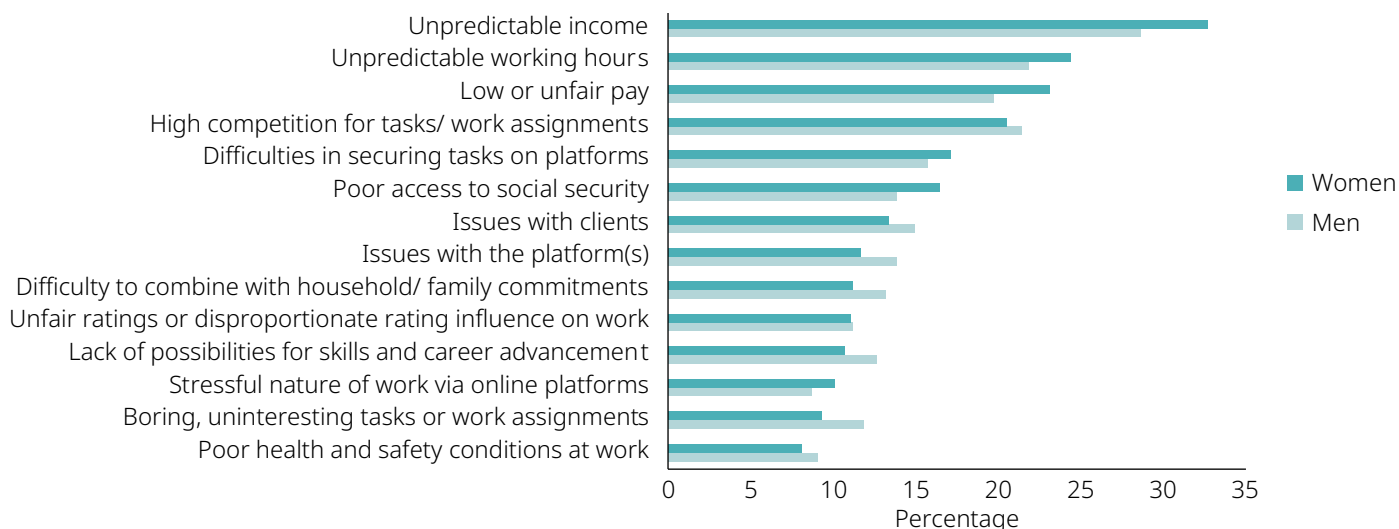
The most common reason for taking work on digital labour platforms is because it is a good way to earn additional income (according to 45 % of women and 40 % of men). The flexibility of working hours and location, especially in relation to family commitments, is more important for women than for men (36 % cited it as important compared to 28 %).

In addition, highly educated women and men appreciate working on digital platforms for the flexibility it allows in choosing when and where to work. By contrast, fewer platform workers with lower education have the autonomy to plan their working schedules.

One of the main reasons for working through digital platforms is the perception that they allow work to be more easily combined with family commitments. However, aside from easy entry, there is limited evidence of flexibility in platform work. As many as 36 % of women and 40 % of men who regularly work via platforms often or always work at night and/or the weekend. In addition, many are unable to choose when to work and their hours are scattered throughout the day. The penalties imposed by platforms for interrupted work are also detrimental to combining work with care responsibilities at home.

The most frequently mentioned drawbacks of working through digital labour platforms were unpredictable incomes (according to 33 % of women and 29 % of men), unpredictable working hours (24 % of women and 22 % of men) and low or unfair pay (23 % of women and 20 % of men).

Drawbacks of platform work



Source: EIGE (forthcoming), 2020 Online Panel Survey of Platform Workers.

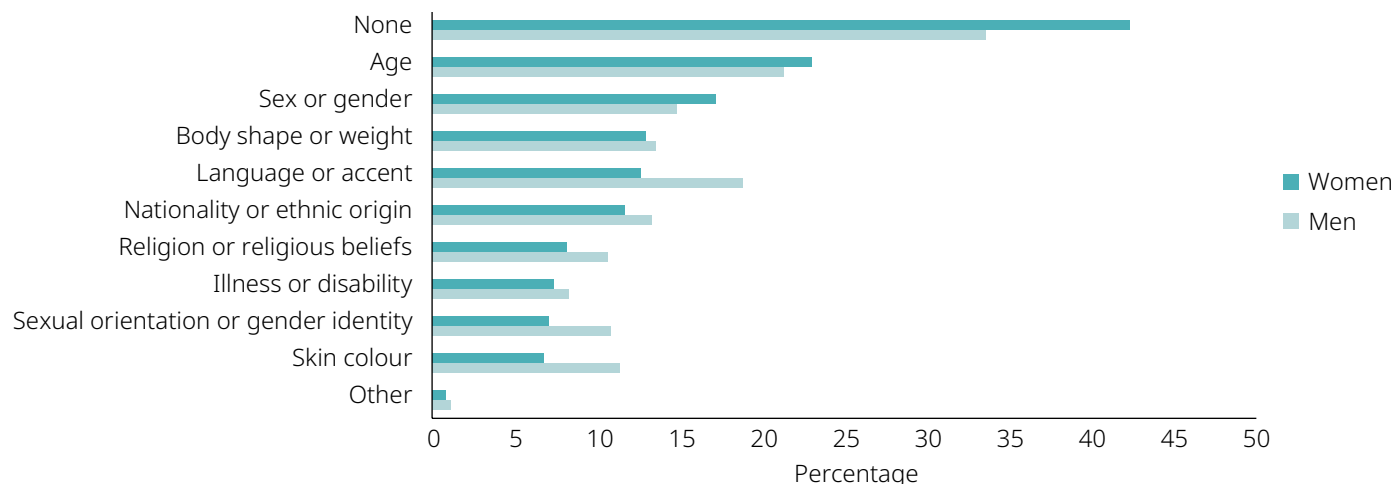
Women and men spend similar amounts of time in regular jobs or on digital platforms, but women carry the bulk of childcare and housework

Many platform workers are working an excessive number of hours, particularly women, who also take on the bulk of household work and childcare. Women and men platform workers spend the same number of hours working in jobs outside of platform work and on digital platforms, but women on average spend about 2.5 hours per week more than men on household work, and 3.5 hours more on childcare. The differences are even greater in couples with children. Women’s overall working time and schedules on online platforms are more affected by family factors while men’s are more affected by personal and professional factors.

Foreign-born platform workers, particularly men, are disproportionately affected by unfair treatment and discrimination

More men (66 %) than women (58 %) indicated having experienced some form of unfair treatment while providing services through digital platforms. Women are slightly more often treated unfairly due to their age and sex, while men are more likely to report unfair treatment due to language or accent, skin colour, nationality, religious beliefs, sexual orientation or gender identity, and illness or disability. For example, as many as 85 % of foreign-born men experienced unfair treatment and discriminatory practices in platform work, compared to 77 % of foreign-born women.

Reasons platform workers felt unfairly treated while providing services



Source: EIGE (forthcoming), 2020 Online Panel Survey of Platform Workers.

The COVID-19 pandemic and related policy measures have strongly impacted the lives of platform workers

Roughly one third of women (32 %) and two fifths of men (39 %) platform workers lost their paid jobs due to COVID-19. As many as 38 % of low-educated women and 58 % of low-educated men lost their jobs and had to leave their accommodation (32 % and 45 %, respectively) due to COVID-19. Similarly, as many as 45 % of foreign-born women and 52 % of foreign-born men lost their paid jobs or had to leave

their accommodation due to COVID-19 (31 % and 44 %, respectively).

Platform work served as an important source of income during the pandemic. A similar proportion of women (36 %) and men (35 %) started or restarted platform work due to COVID-19. Among platform workers who lost their regular jobs, almost half of women (44 %) and men (45 %) started or restarted working via online platforms due to COVID-19. In addition, 26 % of women and 29 % of men increased their working hours on digital platforms.

The impact of COVID-19 on platform workers



Source: EIGE (forthcoming), 2021 Online Panel Survey of Platform Workers.

Legal uncertainty in the employment status of platform workers

Platform workers are frequently considered self-employed by default and are thus engaged in predominantly unregulated jobs. Companies (and clients) benefit from classifying platform workers as self-employed: they pay lower or no social security contributions for workers, have to follow fewer or no employment regulations, and make task-specific rather than salary payments. Self-employed platform workers then bear all the costs, including social protection coverage. More often than not, however, self-employed platform workers work under the same conditions as regular employees, but with limited protection.

Platform work can increase women's and men's participation in the labour market, providing them with some flexibility around care and other activities, and a way out of discrimination in the traditional workplace. However, with limited regulations and social protections, platform work may lead to greater vulnerability and risk of poverty over the life course.

Platform workers' poor access to social security

Platform workers, predominantly those classified as self-employed, have very limited or no access to maternity and parental leave, sick pay and unemployment benefits.



They may not meet the employment-related conditions, or the low pay and fragmented nature of platform work may not satisfy contribution-based or job tenure requirements. The situation is particularly dire for those who primarily depend on platforms to access work. According to EIGE's survey, for as many as 38 % of women and 46 % of men who are regular platform workers, platform work is their primary activity ⁽⁹⁾. The classification of platform workers as self-employed also hinders their capacity to seek collective representation, negotiate improved working conditions and social protection, or contest pay inequalities.

What needs to change?

Both AI and platform work have tremendous potential to improve gender equality in the labour market, but also carry the risk of perpetuating unequal outcomes for women and men. Gender equality in AI development and platform work could benefit the EU by increasing the quality and competitiveness of European technology and the labour market.

In relation to AI, the EU needs to do the following:

- **Mainstream gender into the policy framework on AI-related transformation of the labour market.**

AI technologies are opening up many opportunities for society and the economy. However, AI also contributes to reproducing gender stereotypes, sexism and discrimination and enables new forms of gender-based violence. It is important to mainstream gender into the policy cycle and to use appropriate tools, such as gender monitoring and evaluation, to promote gender equality and tackle discrimination and gender stereotypes in AI. Equally crucial is the adjustment of the current equal treatment legislative framework to set up accountability mechanisms for AI technology and access to remedies in the event of harm.

- **Increase the number of women in, and the diversity of, the AI workforce.**

In order to avoid the reproduction of gender stereotypes and discrimination in AI technologies, we need more diversity at all levels of the workforce. The EU has already made several steps in this direction, particularly by incentivising women's participation in STEM education. Nevertheless, gender segregation in education and employment persists.

More intensive efforts are needed on the part of EU Member States to reverse this trend and increase diversity in AI-relevant education and training at all levels. The EU regulatory framework for AI should include more stringent measures engaging not only women and girls



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but also industry and academia to address recruitment and retention barriers to diversity in AI.

In relation to platform work, the EU needs to do the following:

- **Address the legal uncertainty in the employment status of platform workers to combat disguised employment.**

Platform workers are frequently considered self-employed by default and are thus engaged in predominantly unregulated jobs. More often than not, self-employed platform workers work under the same conditions as regular employees, but with limited protection or options to unionise.

The 2021 European Pillar of Social Rights action plan highlights that as the number of vulnerable and precariously self-employed individuals in the platform economy rises, it is increasingly vital to clarify platform workers' employment status. EIGE's study has provided arguments in support of classifying platform workers as employees as this would contribute to a more gender-responsive regulation of platform work.

- **Address gender inequalities in platform work.**

Platform work is not immune to gender inequalities. Rather, it mirrors overall labour market trends, such as horizontal and vertical gender segregation and gendered impacts on work-life balance, which are especially problematic for people with care responsibilities. However, emerging approaches to regulating platform work are largely gender-blind. In this context, the EU and national-level gender equality policies should address the negative trends in gender equality that are apparent in platform work.

⁽⁹⁾ Meaning that they work more than 20 hours per week via platforms or receive at least half of their income from platform work.

A directive on transparent and predictable working conditions could be a first step towards ensuring a balance between flexibility and security for workers in the digital economy. Its transposition at Member State level should not exclude platform workers, both women and men. Similarly, national transposition of the work-life balance directive should ensure that platform workers can benefit from its provisions in relation to flexible working arrangements and access to parental leave.

- **Ensure that women and men platform workers can access social protection.**

The 2020–2025 EU gender equality strategy highlights that social protection systems should not perpetuate structural gender inequalities. “In line with the Council recommendation on access to social protection for workers and the self-employed ⁽¹⁰⁾, Member States should adopt measures so that all platform workers, whether employed or self-employed, can be included in and benefit from corresponding social protection systems such as affordable healthcare and access to unemployment benefits.

This policy brief is based on the forthcoming report ‘Artificial intelligence, platform work and gender equality’ (to be published in 2022) by EIGE. It was prepared at the request of the Slovenian Presidency of the Council of the European Union. More information on the data referred to in the text, including exact references, can be found in the report.

⁽¹⁰⁾ Council recommendation of 8 November 2019 on access to social protection for workers and the self-employed (2019/C 387/01), OJ C 387, 15.11.2019, p. 1, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019H1115%2801%29>.

European Institute for Gender Equality

The European Institute for Gender Equality (EIGE) is the EU knowledge centre on gender equality. EIGE supports policymakers and all relevant institutions in their efforts to make equality between women and men a reality for all Europeans by providing them with specific expertise and comparable and reliable data on gender equality in Europe.

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