How to make vulnerable jobs ready for the future
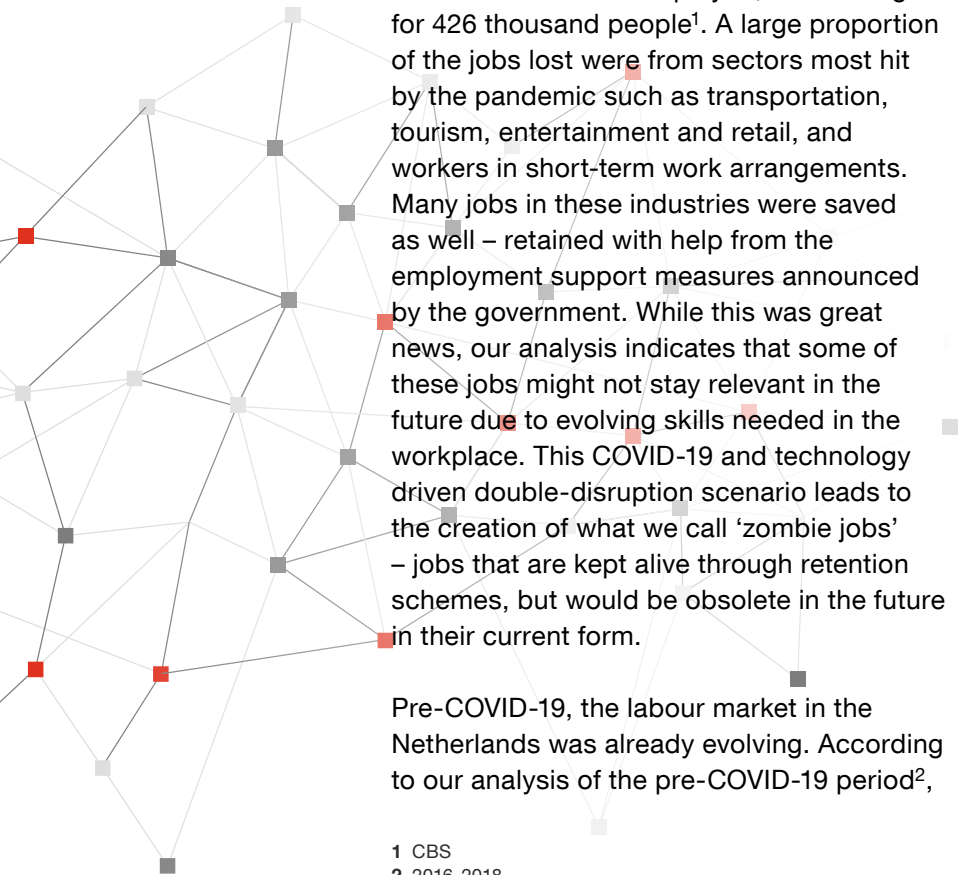
Realigning people between industries or regions

Contents

Introduction

The COVID-19 pandemic has caused high levels of unemployment across the world. At the height of this impact, in August 2020, 4.6 percent of the labour force of the Netherlands was unemployed, accounting for 426 thousand people[1]. A large proportion of the jobs lost were from sectors most hit by the pandemic such as transportation, tourism, entertainment and retail, and workers in short-term work arrangements. Many jobs in these industries were saved as well – retained with help from the employment support measures announced by the government. While this was great news, our analysis indicates that some of these jobs might not stay relevant in the future due to evolving skills needed in the workplace. This COVID-19 and technology driven double-disruption scenario leads to the creation of what we call 'zombie jobs' – jobs that are kept alive through retention schemes, but would be obsolete in the future in their current form.

Pre-COVID-19, the labour market in the Netherlands was already evolving. According to our analysis of the pre-COVID-19 period[2], digitalisation and changes in skills demand was putting pressure on nearly 250,000 jobs in the Netherlands – these were jobs that were faced with declining prospects for the future[3]. The COVID-19 pandemic increased this pressure substantially. Our analysis indicates that during the crisis, this number climbed to at least 330,000 jobs. To put this in perspective, this is over three percent of the labour force of the Netherlands. If these many jobs were actually lost and added to the current 368,000 unemployed people[4], it could push the unemployment rate of the Netherlands from 3.9% to 7.5%.

The good news is that many of these jobs are expected to recover as the pandemic ends – employers are likely to start hiring more, improving the prospects of jobs across industries. However, as the pandemic ends, the labour market will also start feeling the pressures of digitalisation more urgently. The jobs that were being protected through the COVID-19 period, will lose the extra support, and many of them will be under high risk of becoming obsolete – or turning into 'zombie jobs'.

Our analysis indicates that nearly **1.6 million jobs** in the Netherlands are alive and well in the near term, but might be obsolete in the medium to long term. This analysis is based on normal economic circumstances, implying that these jobs are expected to be the result of sector structure changes (gradual move towards more services and less manufacturing) and intra-sector skills change (gradual change in the activities conducted in each industry).

Key findings:
- 1.6 million jobs in the Netherlands are expected to be at risk of becoming obsolete in the medium to long term
- Most zombie jobs will be from 13 professions that are highly susceptible to automation, such as retail sales associates, loaders, unloaders and shelf fillers, waiters and bar staff, receptionists and telephone operators, call center agents etc.
- Different regions will be impacted differently, with the most affected being - Groot Amsterdam, Rijnmond and Midden-Utrecht
- In order to avoid many of these jobs from becoming obsolete, reskilling will be key. People working in zombie jobs will have to be reskilled and employed in other roles that have better prospects, or realigned across regions to balance demand and supply
- Reskilling does not imply a complete re-learning in a new job. 82% of the skills used in zombie jobs, can potentially be used for other jobs in the Netherlands. This is a significant overlap in skills, indicating that while some jobs will be rendered obsolete in the future, many of the skills available are still very valuable in the labour market

1 CBS
2 2016-2018
3 Prospects refers to the demand for a job vis-à-vis its supply (defined as the number of open vacancies as a percentage of number of job seekers)
4 December 2020, CBS

Since this analysis does not adequately consider the disruption caused by COVID-19, the number of those obsolete jobs in the Netherlands could actually be higher than 1.6 million jobs till 2024. The COVID-19 pandemic is expected to have had an accelerator effect on digitalisation, and by extension, on the number of jobs that could get obsolete.

Under normal economic circumstances, 1.6 million jobs, or roughly 400,000 jobs per year would be stressed between 2021 and 2024. Assuming employment support measures last through the year, 400,000 jobs will be artificially kept alive in 2021, that would have otherwise turned obsolete. These jobs are clearly 'zombie jobs' – highly likely to be dead on withdrawal of government support. After 2021, the remaining 1.2 million stressed jobs might not see any support at all and would face increasing pressure to be phased out immediately afterwards.

The accelerator effect of COVID-19
After 2021, the accelerator effect of COVID-19 will also become clear.

Through the pandemic, firms have been investing in new technologies to deal with disruption – essentially making investments of necessity – to deal with the effects of the lockdowns. All these investments, from remote working systems to online shopping to efficient manufacturing, will have an accelerator effect on digitalisation. Because of this accelerated digitalisation during COVID-19, the skills needed in the workplace would also evolve much more rapidly than earlier. Consequently, the remaining 1.2 million jobs that we predicted would be obsolete jobs by 2024, could get there even sooner, and perhaps even more jobs could be added to the list.

There would also be a second order effect pushing the number of obsolete jobs over 1.6 million. The pandemic is expected to be harder on less efficient companies that are low on digitalisation and have jobs that are more susceptible to automation and becoming obsolete. As more of such firms contract or go bankrupt, obsolete jobs could be created in greater numbers than initially projected.

Methodology

The prospect of jobs

Our findings are based on a detailed analysis of job prospects in the Netherlands. 'Prospect' in a job is defined as the number of vacancies for an occupation divided by the number of job-seekers for the role[5]. Theoretically, when this figure is 1 or near 1, signifying that there is one vacancy available for each job seeker, the labour market is fairly stable. When this prospect score falls below 0.25, it points towards a situation where the relevant job skills are in abundant supply, much higher than the demand for them in the labour market. This weak demand situation, when coupled with technology-driven change in skills, has the potential to render certain jobs obsolete. On the flip side, when this prospect score is over 4, it points towards jobs that have a high demand – many vacancies to fill, with not as many job seekers with relevant skills.

While such demand-supply mismatches in the short term aren't particularly concerning, mismatches over a period time signal a trend. For example, jobs that were gradually becoming stressed pre-COVID-19, (even if they stayed stable through COVID-19) and are expected to become severely stressed again – point towards a likely shift in demand for related skills. To get insights into how this trend is developing for each job, we analyse the data for a period of time to ascertain the trajectory that each job's demand and supply has taken between 2016 and 2020. This gives us an understanding of the demand supply dynamics, per job and skills category. We also look at the prospects of each job in the future, to understand which ones are likely to face extreme oversupply till 2024 – and this determines which ones are likely to be zombie jobs.

We also analysed which jobs have very lucrative prospect scores, with limited supply and an increasing demand trend. We call these 'angel jobs', as there is potential for the labour force to be reskilled towards fulfilling angel jobs. These 'angel jobs' not only help realign the labour force towards future demand, it can also keep unemployment low.

What are zombie and angel jobs

Job classification	Prospect scores in the medium to long-term (Number of vacancies/ number of job seekers)	Trend over time
Zombie job	Low	Zombie jobs have low prospects in the medium to long-term. In principle, they can be: *Expected zombie jobs:* ones that had declining prospects for the last 4-5 years (below 0.25 prospect scores), and are expected to stay low through 2024. *Unexpected zombie jobs:* ones that did not have rapidly declining prospects till COVID-19, but are now expected to be zombie jobs by 2024.
Stable job	Medium	Prospect scores of stable jobs stay comparatively steady over time. They could have fluctuated in the short term (for example, during COVID-19), but largely stay in the range of 0.25 - 4. Going forward as well, they are not expected to breach this range.
Angel job	High	Angel jobs are the ones that have high demand in the future and limited number of job seekers to fulfil the vacancies.

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[5] UWV refers to this as the 'Spanningsindicator', calculated by dividing the number of open vacancies by the number of people with unemployment benefits or with an expired unemployment benefit period of less than six months.

In this report

Based on our analysis of labour market prospects and the evolution of skills, this report gives a broad overview of zombie jobs in the Netherlands. We will look into how many jobs are at risk, which jobs these are, and in which regions are they placed. This analysis will give job seekers, but also companies and policy makers a good understanding of which jobs are on a path to becoming obsolete, and thus, in most need of realigning to the needs of the future.

Realignment can work in multiple ways – either through realigning people from one industry to another, where they only need to gain few additional skills to be ready for an angel job, or by realigning people from one region where they might face redundancies to another with better prospects.

We will also discuss the ways to achieve such realignment – reskilling is of course important to make people in zombie jobs ready for other roles, but also other factors that will come into play. We will discuss factors that can make realignment complicated – like regional mobility (the angel jobs might be located in regions different from where the labour supply is), scale of reskilling needed (which jobs are closest to each other to allow for reskilling), or even social factors (such as differences in occupational prestige between the two).

Zombie and angel jobs in the Netherlands

When COVID-19 pandemic hit, the Dutch labour market showed signs of healthy demand: the prospect score - or the number of vacancies for an occupation divided by the number of job-seekers for the role - was steadily increasing (*figure 1*). This indicated an overall healthy, and improving demand for the skills available in the country. While upskilling for a rapidly digitalising world was still needed, the stable labour market allowed for a gradual change.

The COVID-19 pandemic changed the situation to some degree. The prospects for the average job seeker steeply declined through 2020, largely because companies had to halt hiring, causing the number of vacancies to decline across the board. The number of job seekers stayed high, causing a sharp demand-supply mismatch for some jobs.

After the pandemic subsides, and hiring is back to its normal levels, the labour market is expected to bounce back, but not for all jobs. Once the employment support measures are withdrawn, jobs that are beginning to get obsolete because of digitalisation might not bounce back to the pre-COVID-19 levels.

Many companies are expected to remain under financial stress after the pandemic, and likely to hire only for roles that are critical, and much less for ones that can potentially be automated, outsourced or otherwise made redundant. In other words, the jobs that are artificially being kept alive because of government aid, might not recover.

## Changes in job prospects in the Netherlands

Our analysis indicates that in the medium to long term, the number of stressed, or zombie jobs in the Netherlands will increase, reaching nearly 1.6 million jobs, up from only 0.3 million jobs during the COVID-19 period. On the other hand, the number of angel jobs, or jobs with higher demand than supply, will decline - down to 0.7 million in the medium to long term. This is also an indication of the supply picking up over time for some of these angel jobs, such as for technical roles.

Figure 1 Prospect score in the Dutch labor market
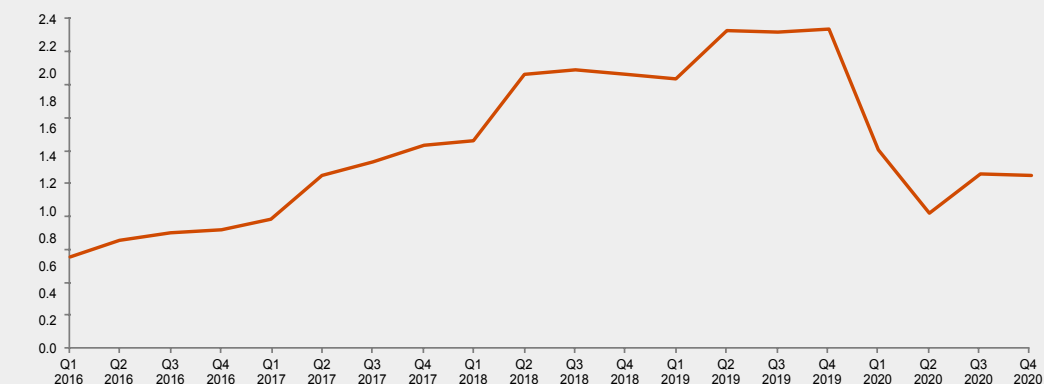
Source: UWV

Figure 2 Zombie and angel jobs in the Netherlands*
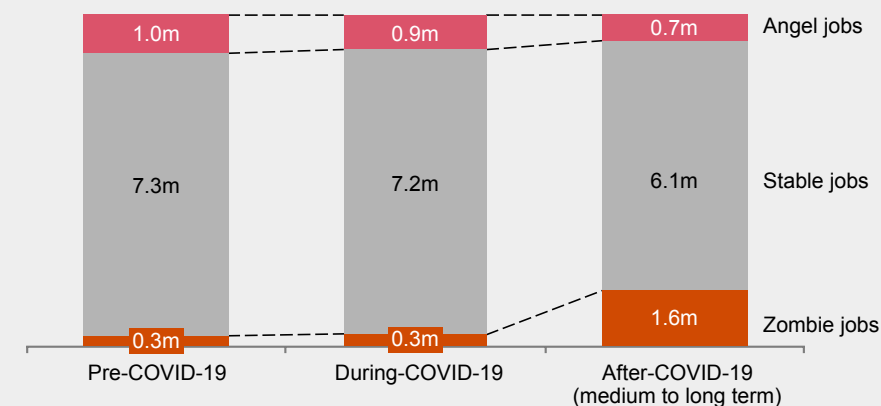
* analysis is based on 8.5 million people (out of 9.3 million people in the labour force of the Netherlands).

Zombie jobs

The long term zombie jobs affected is a very high number – nearly 1.6 million jobs. In other words, 1.6 million people are likely to be affected by this. As we analyse which jobs are likely to be 'zombie', the effects of digitalisation on job prospects becomes clear. The categories at the top of the list of zombie jobs include professions that are highly susceptible to the digitalisation trend – such as receptionists and telephone operators, accounting employees, call centre agents, cashiers and secretaries (*Figure 3*).

While this does not mean all jobs in these categories will disappear, the total number will certainly decline.

While most of these categories have been showing declining prospects over a period of time, the COVID-19 period has been somewhat unique. With the employment support measures currently in place, these zombie jobs do not appear to be as stressed during the COVID-19 period.
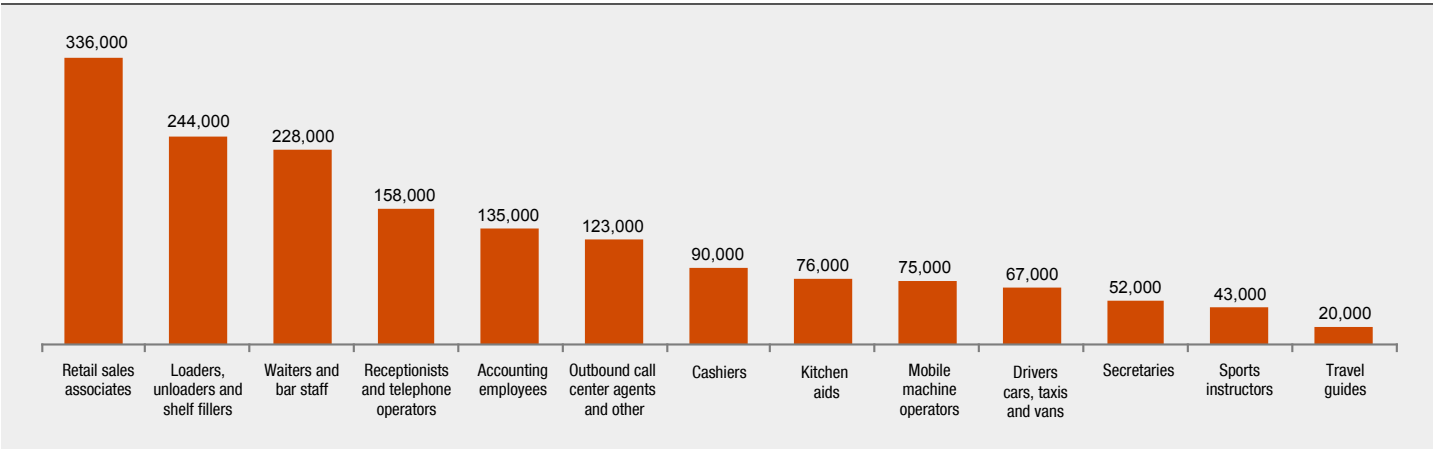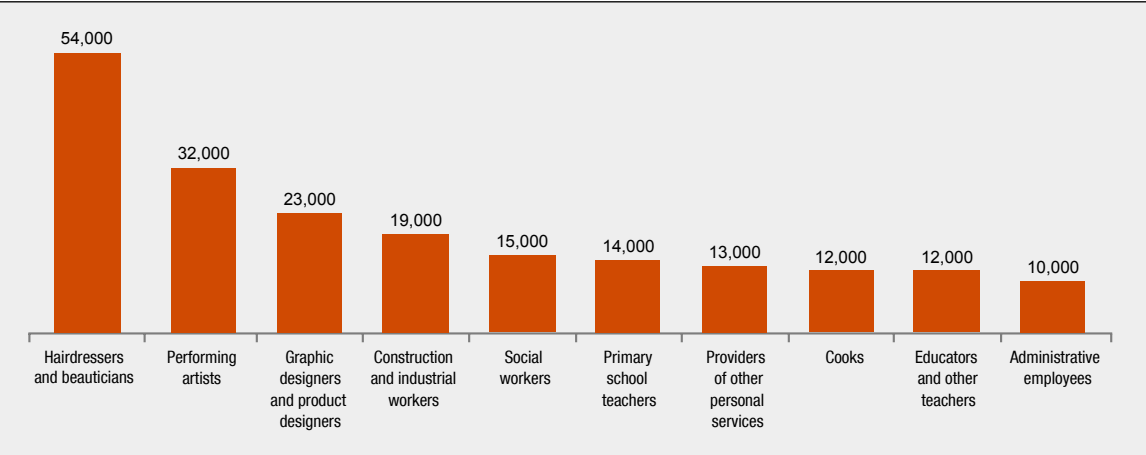
Figure 4 Most stressed jobs during the COVID-19 period

Figure 3 Zombie jobs in the medium to long term

Most stressed jobs[6] during COVID-19
A completely different set of jobs were the most stressed – largely the ones that could not work remotely or in the absence of personal contact – like hairdressers and beauticians, and performing artists (*Figure 4*). This was a short term shock to the labour market, with many of these jobs expected to make a full recovery in the long term.

This also provides a good basis to understand which jobs must be saved in the immediate term, when they are most impacted by the pandemic. There is merit in saving jobs that appear stressed in the short term (during COVID-19), but are expected to have higher prospects in the future. For instance, hairdressers and beauticians are among the most stressed jobs during the COVID-19 crisis. However, pre-COVID-19 and in the longer term, they are expected to have better demand - which indicates that they are not zombie jobs, but just under temporary stress. Such factors must be taken into account.

6 Prospect score below 0.25 in Q2 and Q3 2020

Angel jobs

In the medium to long term, the number of stressed jobs in the Netherlands will increase. On the other hand, the number of angel jobs, or jobs with higher demand than supply, will decline – down to 0.7 million in the medium to long term. This number indicates the number of people already employed in the angel job categories (not vacancies) – which means that 0.7 million people will be in jobs which are expected to have much more demand than that by 2024.

Angel jobs during COVID-19
The angel jobs during the COVID-19 period (Q2 - Q3 2020) reflected the immediate labour market realities, with specialised nurses and doctors being in high demand alongside other technical professions that had consistently high prospects in previous periods as well.

Overall, the COVID-19 period has brought a significant short-term shock to the labour market, but the trends that prevailed before 2020 are likely to return in full force after the pandemic effects are over.
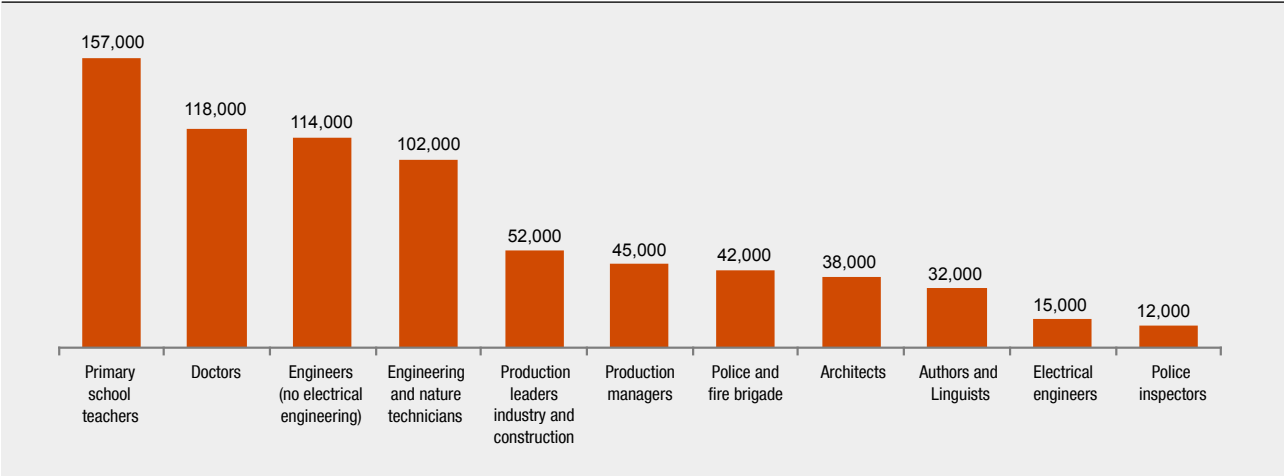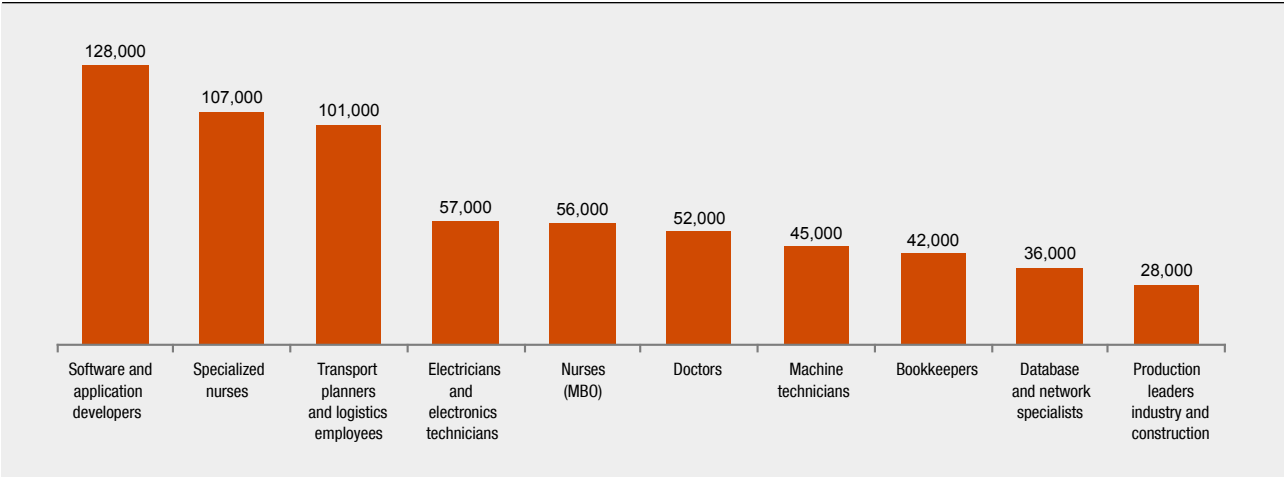
Figure 5 Angel jobs in the medium to long term

Category	Value
Primary school teachers	157,000
Doctors	118,000
Engineers (no electrical engineering)	114,000
Engineering and nature technicians	102,000
Production leaders industry and construction	52,000
Production managers	45,000
Police and fire brigade	42,000
Architects	38,000
Authors and Linguists	32,000
Electrical engineers	15,000
Police inspectors	12,000

Figure 6 Angel jobs during COVID-19

Category	Value
Software and application developers	128,000
Specialized nurses	107,000
Transport planners and logistics employees	101,000
Electricians and electronics technicians	57,000
Nurses (MBO)	56,000
Doctors	52,000
Machine technicians	45,000
Bookkeepers	42,000
Database and network specialists	36,000
Production leaders industry and construction	28,000

Regional dynamics

Nearly 1.6 million zombie jobs is a substantial number. However, the good news is that a job classified as a zombie job is not necessarily zombie everywhere at the same time. Since labour markets are highly localised, there is the possibility that an occupation experiencing high stress in one region might have higher demand in another region. Looking at labour markets at the regional level develops a greater appreciation of local skills, and shifts focus from the need to reskill large populations at the same time, to realigning demand and supply between labour market regions.
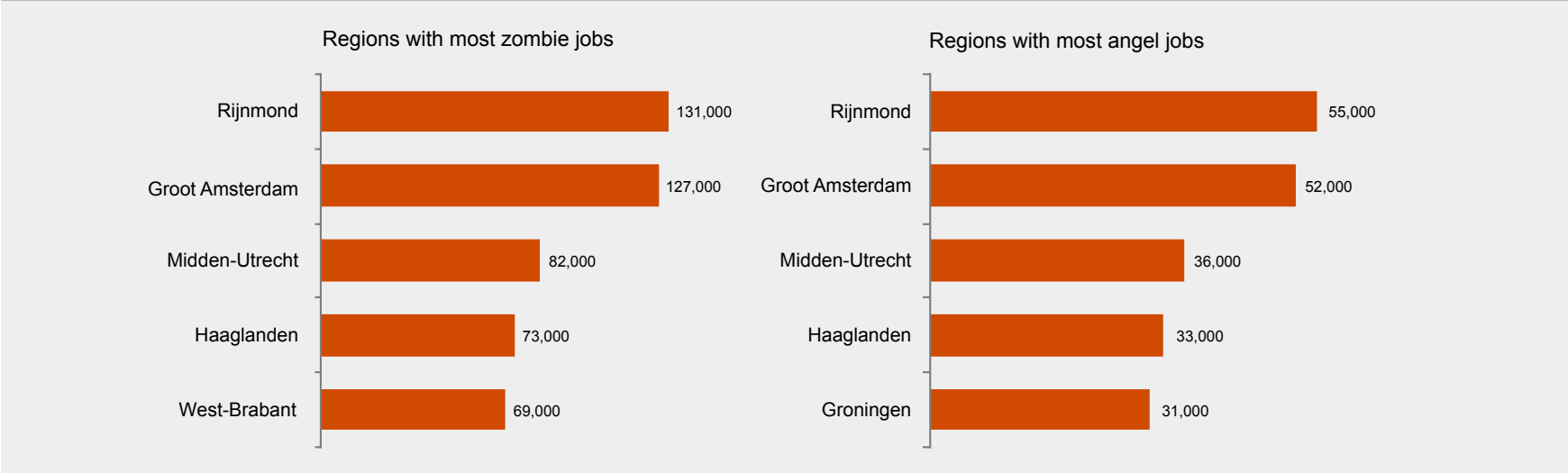
Hover over the different regions of the Netherlands on the map, to see how many zombie and angel jobs are expected in each region.

Zombie and angel jobs by labour market region

Move your mouse over the different regions to see the specific number of Zombie and Angel jobs.

Figure 7 Most zombie and angel jobs per region

Regions with most zombie jobs

Region	Jobs
Rijnmond	131,000
Groot Amsterdam	127,000
Midden-Utrecht	82,000
Haaglanden	73,000
West-Brabant	69,000

Regions with most angel jobs

Region	Jobs
Rijnmond	55,000
Groot Amsterdam	52,000
Midden-Utrecht	36,000
Haaglanden	33,000
Groningen	31,000

Out of all labour market regions in the Netherlands, Rijnmond, Groot Amsterdam and Midden-Utrecht have the highest number of jobs at risk of becoming zombie jobs in the medium to long-term (131,000, 127,000 and 82,000 people respectively). This is to be expected, as these are also the regions with the largest labour force. A slightly different picture emerges if we assess the number of zombie jobs as a percentage of the total labour force of the region. Midden-Brabant has the highest proportion of zombie jobs (21.1% of the labour force), followed by Midden-Limburg and Zeeland (20.7% and 20.5% of the labour force respectively).

Achterhoek, Helmond-De Peel and Drenthe are the regions with the most angel jobs to labour force percentage (9.9%, 9.5% and 9.4% of the labour force respectively). As regional dynamics come into play, these regions would need more reskilling and realigning efforts than others.

As we mentioned earlier, realignment can work in multiple ways – either through realigning people from one industry to another, where they only need to gain few additional skills to be ready for an angel job, or by realigning people from one region where they might face redundancies to another with better prospects. For instance, consider one of the zombie job categories for the Netherlands – receptionists and telephone operators. At the country level, we estimate that receptionists have low prospects for the future, but so far, the trend across regions differs widely (*Figure 8*).

The above example is just indicative of a wider need for realignment. It shows that while receptionists and telephone operators might have lower prospects in the future, all regions will not experience this in the same way. There will still be regional differences in the prospects of different jobs.

Any job seeker, zombie or not, must take a critical look at the skills required for their jobs, and where the best future-proof use of their skills might be. The solution will not always be in reskilling and changing professions, but sometimes, will just be a matter of looking at different regions or industries.

Similarly, companies will do well to understand which skills will be needed by them in the future, and the best way to acquire those skills, either through reskilling their existing workforce, or hiring from the right places. This is no easy feat, but awareness about the future of jobs, specifically taking into account regional dynamics is a first step.

Figure 8 Receptionists and telephone operators' prospects in different regions (2019 average)

Zombie jobs in the medium to long term

Realigning jobs is a challenging task. There are two big elements that need to be kept top of mind. One – how much upskilling is required to move to a stable job, and two – the extent of regional and social mobility needed to do so. These two factors determine the feasibility of realigning jobs in the labour market.

Job proximity analysis
82% of the skills that were needed to do the zombie jobs in the Netherlands, can potentially be used for other jobs (stable or angel). This is a significant overlap in skills, indicating that while some jobs could be rendered obsolete, many of the skills available are still very valuable in the labour market. This will differ widely depending on the job, and some specialised job skills might not have an overlap with stable and angel jobs at all. At the same time, many will. For instance, call centre agents is classified as a potentially zombie job for the Netherlands, with significant skills overlap with administrative employees, which is expected to be a stable job in most regions.

A job proximity analysis will not only give insights on where the overlapping skills lie, but also details on which skills are 'essential' to a job and which are 'optional or desired'. This can help policymakers, companies and job seekers plan for change, and upskilling for many years ahead.

Challenges for skills mobility
Apart from overlapping skills, a key component to make skills mobility practical, is the ability of people to move from one job to the next. Various factors can restrict such movement, ranging from location mobility issues (the angel jobs being located in other regions) to social mobility issues (for instance, the angel job having lower occupational prestige, or the need to start afresh in a new industry), to quite simply pay gaps in the two roles.

These concerns need to be dealt with at the job level – to recognise which roles could turn obsolete in the future, where do the angel jobs lie and whether the path to it is feasible.

Job proximity assessment
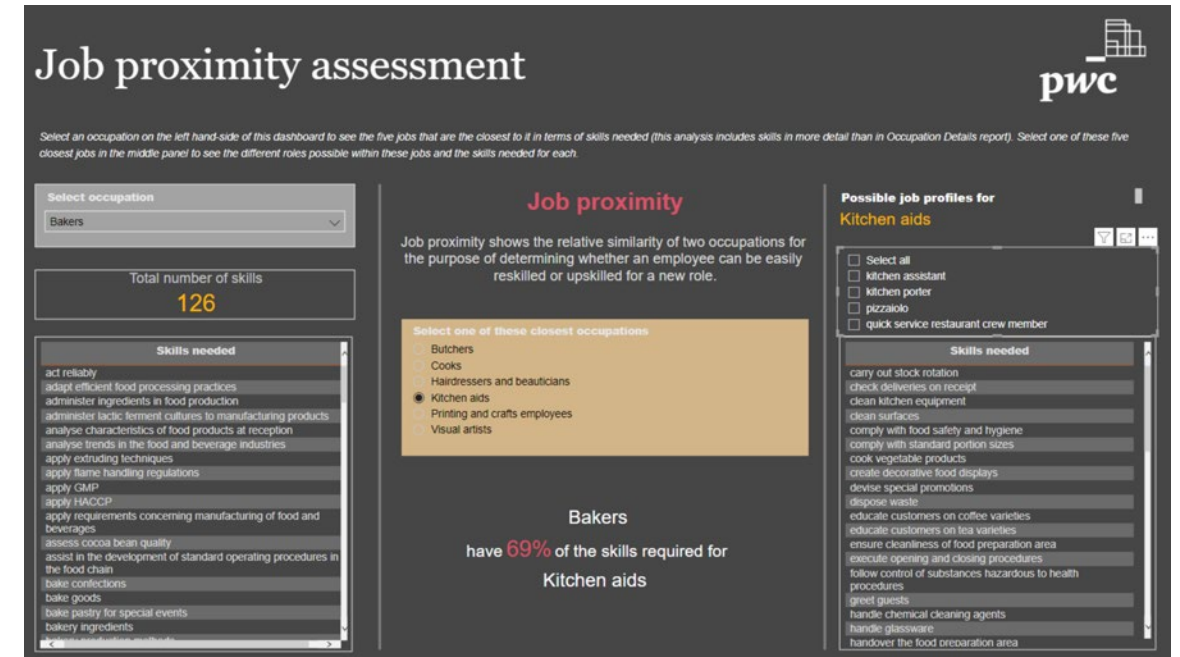
The future of jobs

Policy makers and companies constantly need to assess the evolution of skills in the country, to understand its demand and supply, now and in the future, and how to address any gaps. It is sufficiently clear that skills needed in the workplace are rapidly evolving and there is a need to reskill. Yet, taking a sweeping stance at reskilling large chunks of the population might not be the most effective strategy - either for the country or specific companies.

Taking a critical look at which jobs and skills need reskilling, versus which ones can be redeployed in the labour force, provides a very realistic outlook for the labour force of the Netherlands. For further details on other regions, or an in-depth skills and job level analysis, please contact us.

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