



DREAM JOBS?

Teenagers' Career Aspirations and the Future of Work



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About this publication

This publication was produced by Anthony Mann, Vanessa Denis and Andreas Schleicher (all OECD) with Hamoon Ekhtiari, Terralynn Forsyth, Elvin Liu (all FutureFit AI) and Nick Chambers (Education and Employers). The publication design was overseen by Sophie Limoges (OECD).

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Foreword

Across the world, the young people who leave education today are, on average, more highly qualified than any preceding generation in history. They often enter the working world with considerably more years of schooling than their parents or grandparents. This is an enormous achievement of which the global education community can be truly proud.

And yet, in spite of completing an unprecedented number of years of formal education, young people continue to struggle in the job market, and governments continue to worry about the mismatch between what societies and economies demand and education systems supply. The co-existence of unemployed university graduates and employers who say they cannot find people with the skills they need, shows that more education does not automatically mean better jobs and better lives. For many young people, academic success alone has proved an insufficient means of ensuring a smooth transition into good employment.

I firmly believe that education is the fundamental driving force for social progress. With the world of work changing so quickly, there is strong reason to believe that schools need to look afresh at how they can better prepare young people for their lives. The industrial age taught us how to educate second-class robots, people who learn in standardised settings and become good at repeating what we tell them. In this age of accelerations, we need to think harder about what makes us first-class humans, how we complement, not substitute, the artificial intelligence we have created in our computers, and how we build a culture that facilitates learning, unlearning and re-learning throughout life.

The new generation of citizens requires not just strong academic skills, but also curiosity, imagination, empathy, entrepreneurship and resilience. They need confidence and determination to create their own employment and to manage their careers in new ways. Effective education systems will go beyond traditional teaching techniques. Not only will they provide learners with knowledge relevant to future employment, they will also develop the ability of learners to be personally effective in applying that knowledge in changing situations.

Staying longer in education than ever before, today's young people must make more decisions about what, where and how hard they will study. These are investment decisions that are becoming increasingly difficult because technology is changing the working world itself so quickly. Good schools will respond by helping young people to become critical thinkers about the labour market and how it relates to their learning. Never before has effective career guidance been so important and never before has there been a greater onus on employers to step up and work with schools to help young people understand jobs and careers and help teachers bring learning to life.

The spectre of the unemployed graduate speaks to a divide between the worlds of education and employment. This publication draws on the best data in the world to understand the extent of the challenge and what is to be gained by closing the gap. Seeking insights from over half a million 15-year-olds in the 79 countries that took part in the latest PISA assessment, unprecedented analysis is presented on contemporary teenage career expectations, how they are formed, and how they are related to gender, geography and the future of work. Assuredly, schooling is not simply about preparing for work, but we owe it to our young people to ensure that they go through education blind neither to the opportunities offered by the working world nor to its potential pitfalls. As this multi-year project develops, data from so many countries will present schools and governments with important scope for peer learning. We owe it to our young people to ensure that these are opportunities that are fully grasped.



Charles Yidan
Co-Founder of Tencent



Career confusion in the 21st century: Challenges and opportunities

Every day, teenagers make important decisions that are relevant to their future. The time and energy they dedicate to learning and the fields of study where they place their greatest efforts profoundly shape the opportunities they will have throughout their lives. A key source of motivation for students to study hard is to realise their dreams for work and life. Those dreams and aspirations, in turn, do not just depend on students' talents, but they can be hugely influenced by the personal background of students and their families as well as by the depth and breadth of their knowledge about the world of work. In a nutshell, students cannot be what they cannot see.

With young people staying in education longer than ever and the labour market automating with unprecedented speed, students need help to make sense of the world of work. In 2018, the OECD Programme for International Student Assessment (PISA), the world's largest dataset on young people's educational experiences, collected first-of-its-kind data on this, making it possible to explore how much the career dreams of young people have changed over the past 20 years, how closely they are related to actual labour demand, and how closely aspirations are shaped by social background and gender.

Studies in Australia, the United Kingdom and the United States, which follow groups of young people from childhood to adulthood, show that teenagers who combine part-time employment with full-time education do better than would be expected in their school-to-work transitions. They highlight a range of positive benefits, including lower likelihoods of being unemployed or NEET (Not in Education, Employment or Training), higher wages, greater chances of pursuing apprenticeships and greater contentment in their career progression (Box 0.1). Engagement with the working world can lead to positive educational, economic and social outcomes for young people, but benefits cannot be taken for granted. By comparing experiences between and within countries, it becomes possible to understand how governments and schools can better support young people as they prepare themselves for working life.

To an important extent, schools can replicate positive benefits linked to first-hand exposure to the working world through programmes of career development activities, particularly where they include workplace experience. Effective career guidance encourages students to reflect on who they are and who they want

Box 0.1 – The positive effects of teenage part-time employment

Longitudinal studies in Australia, the United Kingdom and the United States commonly show that teenagers who combine full-time study with part-time work can expect to do better in the adult job market than would be expected, given their backgrounds and academic qualifications. Studies that follow the same cohort of young people from childhood to adulthood have routinely found evidence of higher earnings and fewer periods of unemployment than would be anticipated. In an interesting study, Jeylan Mortimer and colleagues explore data from the US Youth Development Study, which follows young people born in the mid-1970s up to the age of 30. They find a positive relationship between working part time at age 14 and 15 and a subjective sense of job achievement in adulthood. Teenage students who worked were far more likely to agree at age 30 that they were working in a job that they wanted. The exact relationship between working when a teenager and later economic success is not well understood, and the phenomenon is not straightforward: students working excessive hours perform worse in final examinations than would otherwise be expected.

to become, and to think critically about the relationships between their educational choices and future economic life. Experience of the world of work gives young people the opportunity to apply their skills and knowledge in unfamiliar situations. It challenges them to understand what it means to be personally effective (and attractive to employers) in distinct workplaces while providing a unique opportunity to develop social networks of value. Through exposure to the people who do different jobs, young people have the chance to challenge gender- and class-based stereotyping and broaden their aspirations, easing ultimate entry into the labour market (Box 0.2).

Longitudinal studies have explored the relationship between teenagers occupational aspirations and what actually happens to them in the adult labour market, and found youthful career ambitions to have a predictive quality. Young people who aim high while in school are more likely to end up in managerial or professional jobs requiring university education than would be anticipated given their background and academic performance.

However, it cannot be taken for granted that young people will have access to career development activities – or if they do, whether they will be of sufficient quality to make a positive difference over the long term. In recent years, analyses exploring career preparation have focused on the challenge of misalignment: where the educational plans of young people are out of kilter with their occupational expectations. When young people underestimate the education required to fulfil their dreams, they can expect to find their early working lives tougher than would be expected given their background and academic success. Of particular concern is that most young people whose aspirations are misaligned with their education are drawn from disadvantaged

backgrounds. Career guidance has long had a purpose in enabling efficient operation of the labour market. It is now clear that it serves an equally important service in addressing inequalities.

Results from PISA show that the career aspirations of young people are no simple reflection of teenage academic ability. Rather, they reflect complex lives. Analyses show that even after controlling for proficiency levels, the children of more advantaged families are more likely to want to go on to university than working class kids. Similarly, career thinking is often driven by gender and immigrant background as well as socio-economic status. Disadvantaged young people are at clear risk of career confusion. It is neither equitable, nor efficient, for students to move through education with blinkered views of both the breadth of the labour market and their own potential.

OECD PISA 2018

PISA examines what students know in reading, mathematics and science, and what they can do with what they know. It provides the most comprehensive and rigorous international assessment of student learning to date. Results from PISA indicate the quality and equity of learning outcomes attained around the world, and allow educators and policy makers to learn from the policies and practices applied in other countries.

PISA takes place every three years. In the 2018 PISA round, over half a million 15-year-old students in 79 countries and economic areas undertook assessments that included questions about the occupation in which they expect to be working at the age of 30 and their plans for further education after leaving secondary schooling. In addition, students

from 32 countries responded to a supplementary Educational Career Questionnaire, providing details of their participation in career development activities and other preparation for the world of work. By comparing results over the PISA cycles, going back to the year 2000, it is possible to trace changes in attitudes and experiences of young people over a generation.

This publication focuses on questions related to:

1. **Career concentration:** the extent to which young people's occupational expectations are concentrated in the ten most commonly cited jobs, how they have changed over time and how they vary between different types of learner.
2. **Labour market relevance:** how young people's occupational expectations are related to national projections of labour market demand.
3. **Job realism:** the risk that the jobs young people expect to be pursuing at age 30 will become automated.
4. **Career potential:** whether occupational expectations reflect the academic potential of students.
5. **Career confusion:** the extent to which students are misaligned in their educational and occupational expectations.
6. **Providing guidance:** whether participation in career development activities can be seen to make a difference to career thinking.
7. **Career participation:** how participation in career development activities has changed over time and varies between different types of learner.

Young people's voices

The data from PISA are complemented by qualitative insights. In December 2019, as part of events to mark the launch of PISA 2018, young people from around the world wrote letters to Princess Laurentien of the Netherlands. Organised by the London-based charity, Education and Employers, students shared their perspectives on how they view their future economic lives and what they anticipate doing to achieve their goals. Students from many countries shared their dreams, and teenagers from China, France and the United Kingdom came to Paris to speak about their hopes and fears for the future. Extracts from the thousands of letters written by young people preface the sections of this report.

What this analysis tells us

The OECD PISA surveys do not just assess the knowledge and skills of 15-year-olds around the world, they also ask young people about their aspirations for their future careers, and from where they learn about the world of work. While that world has undergone major changes since the first PISA survey was carried out in 2000, the results show that the career expectations of young people have changed little over that period. If anything, they have become more concentrated in fewer occupations. In the 2018 PISA survey, 47% of 15-year-old boys and 53% of 15-year-old girls from 41 countries and economies (those that also took part in PISA 2000) said they expect to work in one of just 10 jobs by the age of 30 – an increase of 8 percentage points for boys and 4 percentage points for girls since the start of the century.

Importantly, the growing concentration in career expectations is driven by changes in the expectations of young people from more disadvantaged backgrounds and by those who were weaker performers on the PISA tests in reading, mathematics and science.

Box 0.2 – The long-term impacts of career talks

Elnaz Kashefpakdel and Chris Percy have analysed longitudinal data from the UK British Cohort Study. The database follows children born in 1970 into adulthood. Data was collected on whether, as 16-year-olds, they had taken part in a career talk with someone from outside of school. The study finds that, after taking into account family and social background, and education qualifications, taking part in career talks is associated with significantly better earnings at age 26. The wage premium was found to be at its greatest where students took part in more than five career talks at age 14-15, rather than at 15-16, and when they agreed at the time that they had been very helpful.

Breaking down career expectations by gender shows just how narrow the interests of young people have become. In Brazil and Indonesia, between two-thirds and three-quarters of boys and girls express interest in just 10 careers. Over half of Indonesian girls anticipate being either a business manager, a doctor or a teacher when they are 30. In Germany and Switzerland, however, much lower levels of concentration are seen, arguably reflecting the strength of career guidance and exposure to a variety of occupations in these countries, enabling young people to make informed decisions about pursuing high-quality programmes of vocational education and training from a young age. It is also striking that even when boys and girls show similar learning outcomes in PISA, their career expectations can differ markedly. Among high performers in mathematics or science, boys were much more likely than girls to express an interest in becoming science or engineering professionals. The reverse was true for health-related careers.

The data also shed light on the extent to which the career aspirations of young people reflect actual and anticipated labour market demand. At a glance, it is clear that it is overwhelmingly jobs with origins in the 20th century or earlier that are most attractive to young people. In many ways, it seems that labour market signals are failing to reach young people: accessible, well-paying jobs with a future do not seem to capture the imagination of teenagers. Many young people, particularly boys and teenagers from the most disadvantaged backgrounds, anticipate pursuing jobs that are at high risk of being automated. There is considerable variation across countries in the extent to which the jobs cited by young people are at risk of automation. The risk tends to be lower in English-speaking and Nordic countries. Elsewhere, as in Japan and the Slovak Republic, up to half of the jobs that young people anticipate doing are at risk of automation.

Many workers suffer due to a lack of the qualifications, either in field of study or academic level, typically required by the job they do. The data suggest that such mismatch starts early. Across OECD countries, approximately one in three disadvantaged teenagers who perform well on the PISA tests does not expect to pursue tertiary education or work in a profession to which university education is a common gateway. High achievers do not always aim high. This is a matter of particular concern because high-performing young people from the most disadvantaged backgrounds are, on average, nearly four times less likely to hold high aspirations than similarly performing peers from the most privileged social backgrounds.

Young people's potential to do well may be compromised by confusion about how education and qualifications are related to jobs and careers. Across OECD countries, one young person in five is negatively misaligned. That is to say, the level of education and qualification to which they aspire is lower than that typically required of their occupational goal. Misaligned youth can expect bumpier transitions into the working world. Again, PISA 2018 shows that it is young people from the most disadvantaged backgrounds who are more likely to show signs of such confusion.

It is through systems of career guidance and engagement with the working world that such challenges can be addressed. PISA 2018 also looked at participation in career development activities, like job fairs, job shadowing and meeting with a career advisor, and young people's thinking about their future careers and how they are related to educational aspirations. Across OECD countries, clear relationships were observed between benefiting from career guidance and more positive attitudes about the usefulness of schooling. Associations were also observed, in a more complex way, between career guidance and changes in patterns of concentration and alignment of career expectations. The good news is that more young people are engaged in career development activities today than in 2006; still, less than 40% of students, on average, participate in important and relatively simple activities, like visiting a job fair. What's more, young people from more disadvantaged backgrounds are still consistently less likely to participate in such activities than their more privileged peers.

The data presented in this report build on an OECD/ Education and Employers study launched at the World Economic Forum in Davos in 2019. *Envisioning the Future* looked, in part, at how some 20,000 children in primary schools around the world saw themselves later on, in the world of work. The study found that children's career interests were highly concentrated among only a few occupations, and were shaped by gender and social background. It appears that over their schooling, young people struggle to develop more informed, more nuanced understandings of the labour market and how they might ultimately engage in it.

Next steps

This publication raises concerns over the extent to which children are being prepared for the jobs of the future. Governments, schools and international organisations are waking up to the challenge. The work of the World Economic Forum in communicating the scale and consequences of the Fourth Industrial Revolution is widely recognised. It adds considerable value to the work of the OECD and other research institutions in making sense of the character and consequences of technological change. At the end of 2019, in light of such changes, the OECD joined the European Centre for the Development of Vocational Training (CEDEFOP), the European Commission, the European Training Foundation, the International Labor Organisation and UNESCO in issuing a joint statement on the pressing need for high-quality career guidance for both young people and adults.

The OECD works with partners from across the globe to enable relevant and reliable peer learning to inform policy and practice. This publication sets out initial findings from the 2018 PISA datasets. Further publications will follow, drilling down into national experiences and isolating specific types of learners, engaged in specific types of activities, to better understand the nature of the challenges being faced and how they can best be addressed. As more young people stay on in education beyond compulsory schooling and as automation quickens the pace of labour market change, the need for sustained action becomes ever more urgent.



Andreas Schleicher

OECD Director for Education and Skills

Special Advisor on Education Policy to the Secretary General



I hope to be an aerospace engineer by the time I am 30, due to the field of work improving the amount of women hired for this job. I also have enjoyed school trips surrounding this area of work, and there are a wide range of jobs under this title to specialise in.

Tamara, a 15-year-old girl
from the United Kingdom



Career concentration: Have teenagers' career expectations changed since the start of the century?

The career aspirations of young people matter. A series of longitudinal studies have shown that teenage career aspirations are a good predictor of the jobs that students go on to occupy as adults. Notable studies by Ingrid Schoon and Zena Mello have shown that, even after controlling for social background and exam success, young people with high career aspirations are more likely to enter a professional career in adulthood. The OECD PISA database provides a unique mechanism for understanding the career aspirations of 15-year-olds and how these have changed over time.

Since 2000, through PISA, large representative samples of young people in multiple countries have been asked about the job they expect to be doing at age 30. The question is deliberately phrased. It seeks to understand young people's considered expectation, not simply their dreams for the future, at a time when important decisions are being made about curriculum specialisation, education progression and even whether to stay in school or not. Because the same question has been consistently asked, the PISA database

allows for tracking how young people's occupational expectations have changed since the turn of the century. Data is available from 41 countries that took part in PISA studies in both 2000 and 2018 (Box 1.1).

Figure 1.1 shows how career expectations have become more concentrated over time. Career concentration is an indicator of teenagers' occupational thinking. It sets out the percentage of 15-year-olds who name one of the ten most common career expectations in their country. Table 1.1 lists the top ten expectations for boys and girls in 2000 and 2018 across the 41 countries taking part in both studies. The list includes some modest grouping of similar occupations. For example, the interests of young people in both "specialist medicine" and "general medicine" are grouped in one category – "doctor". This is to allow for a meaningful comparison with the 2000 sample, which was undertaken using the 1988 International Standard Classification of Occupations, a structure for the organisation of jobs that was significantly updated and internationally adopted in 2008.

As seen in Figure 1.2 and in Table 1.1, the aspirations of boys and girls are very different. Only by looking at them separately is it possible to gauge the true extent of how concentrated their career interests have become. Across 41 countries, 53% of girls and 47% of boys who expressed an opinion anticipate entering one of just ten jobs by the age of 30.

Since 2000, the increasing concentration of career expectations has been driven by the changing thinking of boys (Table 1.1), young people from more disadvantaged backgrounds (Table 1.2) and lower performers on the PISA tests (Table 1.3). The following explores evidence of how these changing aspirations are related to fluctuations in labour market demand. The tables show how little career expectations have changed since 2000, an era before social media, 3D printing and the rapid acceleration of the use of artificial intelligence in the workplace. Overwhelmingly, it is 20th-, and even 19th-century, occupations that capture the imaginations of today's young people.

Table 1.4 sets out the level of concentration for boys and girls across 31 countries. It shows that considerable variation is hidden beneath the overall averages. In 20 countries, levels of concentration have increased since 2000 – by more than five

percentage points in Canada, Norway, Sweden and Thailand. Other education systems, led by Hong Kong (China) (12 percentage points) and Korea (10 percentage points) have seen decreases in the level of concentration. A striking finding in such comparative data is the consistently lower levels of concentration found in countries with strong and established systems of vocational education and training for teenagers. In countries such as Germany and Switzerland, fewer than four in ten young people express an interest in just ten jobs. At the other end of the spectrum, it is in lower income, developing countries, such as Brazil, Indonesia and Thailand, where levels of concentration are greatest. Here, up to three in four young people expect to work in one of just ten jobs. Table 1.5 provides a direct comparison of the occupational expectations of boys and girls in Germany and Indonesia. In Indonesia, 52% of girls and 42% of boys anticipate following one of just three careers. By contrast, German youth express interests that are much broader, better reflecting actual patterns of labour market demand.

The comparison of national data highlights the strong influence of gender on career aspirations, but warn too against fatalism. Figures 1.4 and 1.5 show strongly gendered patterns of interest in careers related to science and engineering, and the healthcare professions among

Box 1.1 – Countries participating in PISA in 2000 and 2018

- Albania
- Argentina
- Australia
- Austria
- Belgium
- Bulgaria
- Brazil
- Canada
- Chile
- Czech Republic
- Germany
- Denmark
- Spain
- Finland
- France
- United Kingdom of Great Britain and Northern Ireland
- Greece
- Hong Kong (China)
- Hungary
- Indonesia
- Ireland
- Iceland
- Israel
- Italy
- Republic of Korea
- Luxembourg
- Latvia
- Mexico
- Republic of North Macedonia
- Netherlands
- Norway
- New Zealand
- Peru
- Poland
- Portugal
- Romania
- Russian Federation
- Sweden
- Switzerland
- Thailand
- United States of America

Note. Japan also took part in PISA in both 2000 and 2018, but due to discrepancies in classification of occupational categories, it is excluded from the analysis presented in this publication.

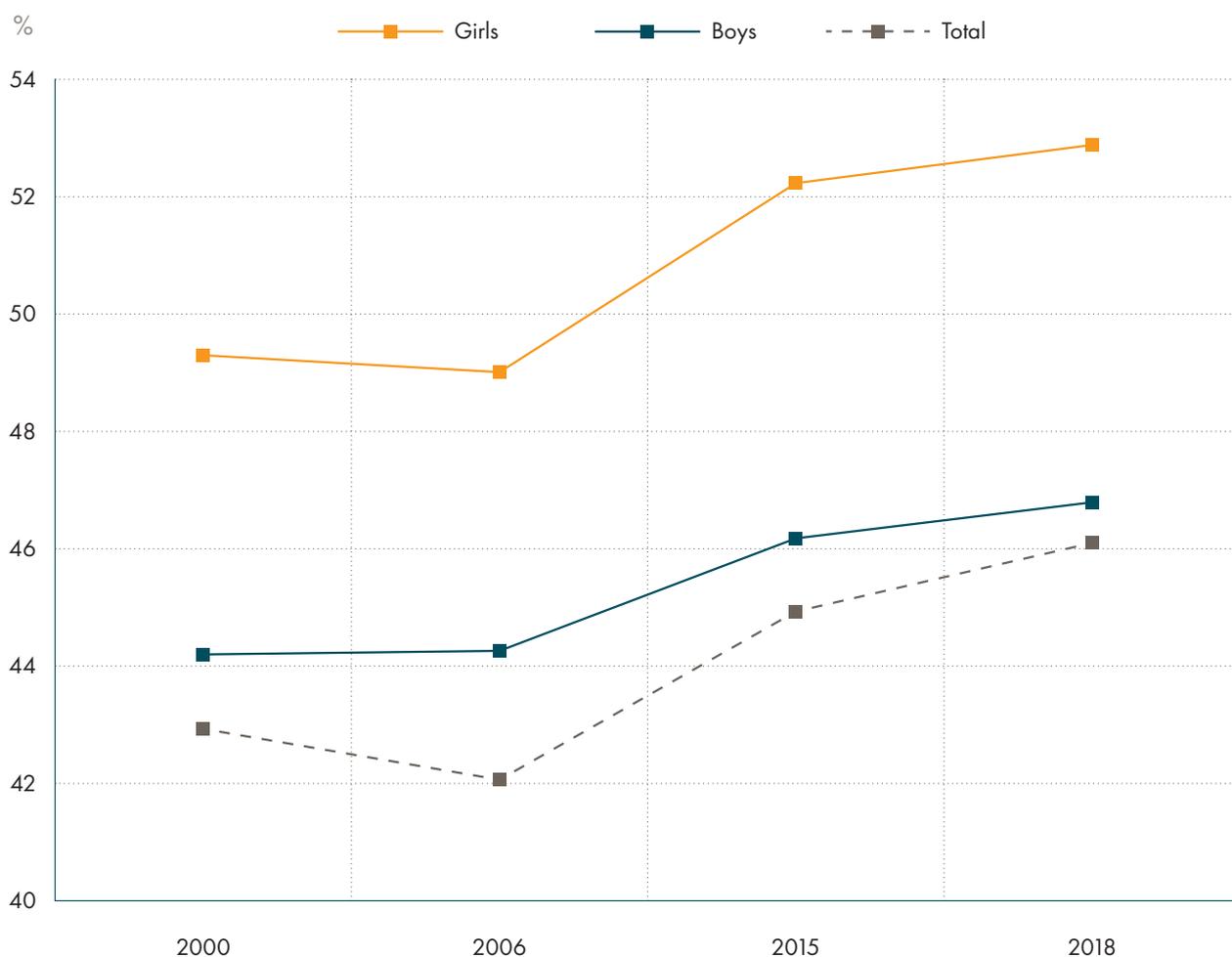
students with high scores on the PISA assessments. Overwhelmingly, it is more often boys who expect to work in science and engineering than girls, even when boys and girls perform similarly on the PISA science test, but this is not always the case. In many countries, moreover, the level of girls' interest in these professions is higher than that of boys in other countries.

The analysis provides new insight into just how concentrated the career expectations of 15-year-olds have become. This is a matter of concern. For countries, it offers a simple indication of the weakness of labour market signalling at an important time in the education

and training journeys of young people. It suggests, moreover, that increasingly the expectations of young people may be out of date and unrealistic. Over the period of the greatest accumulation of human capital during a lifetime, the data indicate that many young people are intent on pursuing jobs that they have little chance of securing.

Figure 1.1 – Concentration of occupational expectations, 2000 to 2018

Percentage of students expecting to work in one of the ten most commonly cited jobs at age 30



Note. International occupational classification codes were changed in 2011. Japan is excluded due to anomalies in reporting occupational data.

Source: PISA databases. Countries reporting career expectations in PISA 2000, 2003, 2006, 2015 and 2018.

Table 1.1 – Concentration of occupational expectations, by gender, 2000 and 2018

Percentage of students expecting to work in one of the ten most commonly cited jobs at age 30

Source: PISA 2000 and 2018 databases. Countries reporting career expectations in PISA 2000 and 2018.

Top 10 occupations cited by girls

2000		2018	
Occupation	%	Occupation	%
1 Teachers	11.1	Doctors	15.6
2 Doctors	11.0	Teachers	9.4
3 Lawyers	6.2	Business managers	5.0
4 Psychologists	3.9	Lawyers	4.6
5 Nursing and midwives	3.2	Nursing and midwives	4.5
6 Business managers	3.0	Psychologists	3.7
7 Veterinarians	2.9	Designers	3.0
8 Writers/journalists	2.6	Veterinarians	2.8
9 Secretaries	2.6	Police officers	2.3
10 Hairdressers	2.5	Architects	2.1
Total	49.0		52.9

Top 10 occupations cited by boys

2000		2018	
Occupation	%	Occupation	%
1 Business managers	6.8	Engineers	7.7
2 ICT professionals	6.1	Business managers	6.7
3 Engineers	4.9	Doctors	6.0
4 Doctors	4.5	ICT professionals	5.5
5 Sportspeople	4.0	Sportspeople	4.9
6 Teachers	3.9	Teachers	4.6
7 Lawyers	2.7	Police officers	4.0
8 Motor vehicle mechanics	1.9	Motor vehicle mechanics	2.8
9 Architects	1.9	Lawyers	2.4
10 Police officers	1.9	Architects	2.2
Total	38.4		46.8

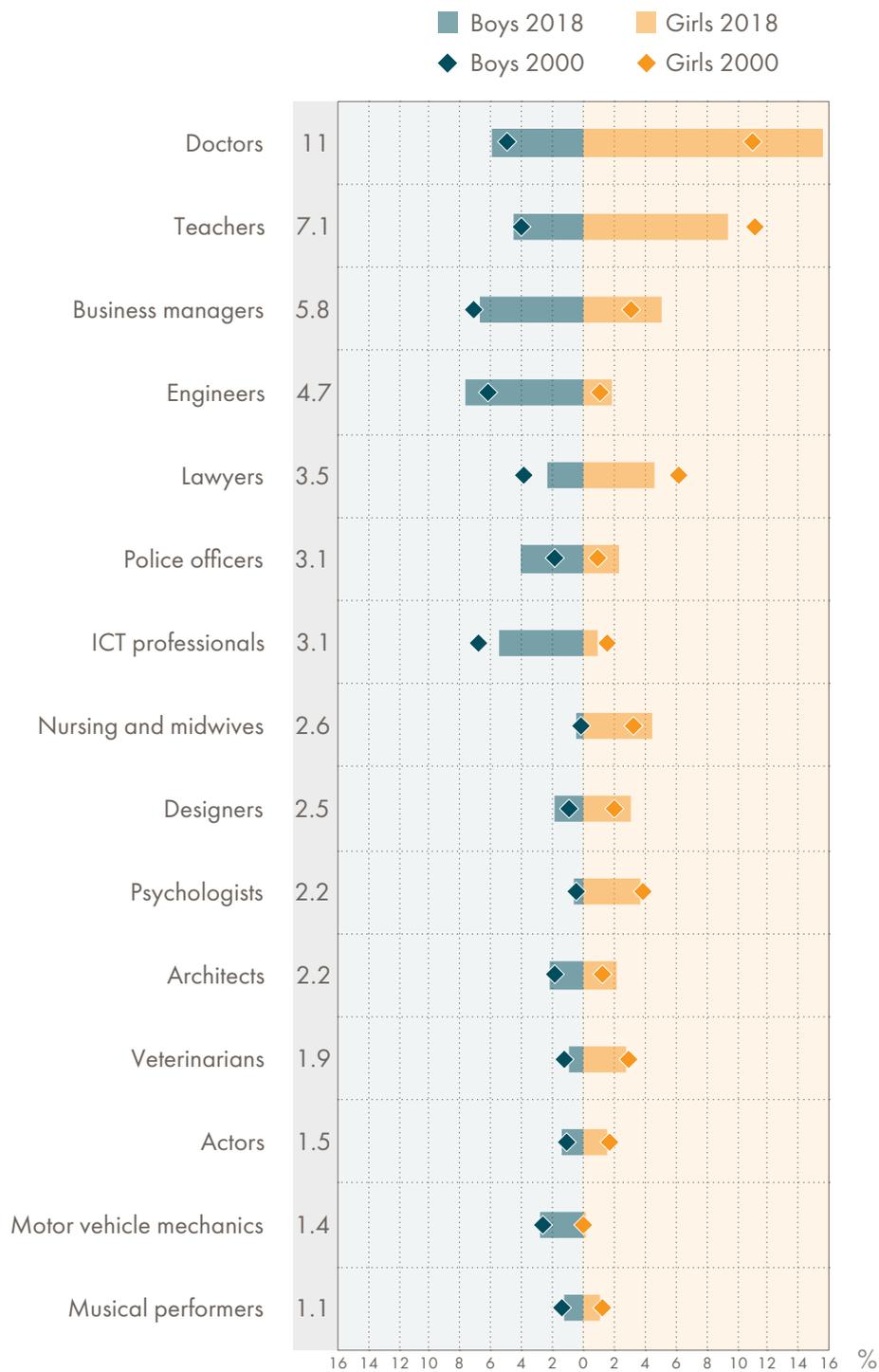


Figure 1.2 – The 15 most commonly cited occupations, by gender, 2000 and 2018

Source: PISA 2000 and 2018 databases. Countries reporting career expectations in PISA 2000 and 2018.

Table 1.2 – Concentration of occupational expectations, by socio-economic status, 2000 and 2018

Percentage of students expecting to work in one of the ten most commonly cited jobs at age 30

Source: PISA 2000 and 2018 databases. Countries reporting career expectations in PISA 2000 and 2018.

Top 10 occupations cited by disadvantaged students

2000		2018	
Occupation	%	Occupation	%
1 Teachers	8.7	Doctors	9.4
2 Doctors	6.6	Teachers	8.2
3 Lawyers	4.9	Business managers	5.2
4 Business managers	4.6	Police officers	3.9
5 Sportspeople	2.7	Lawyers	3.5
6 ICT professionals	2.6	Engineers	3.3
7 Nursing and midwives	2.4	Nursing and midwives	3.3
8 Engineers	2.3	Sportspeople	3.0
9 Hairdressers	2.3	Motor vehicle mechanics	2.5
10 Motor vehicle mechanics	2.1	Designers	2.3
Total	39.3		44.7

Top 10 occupations cited by advantaged students

2000		2018	
Occupation	%	Occupation	%
1 Doctors	10.5	Doctors	14.5
2 Teachers	6.5	Teachers	6.1
3 Lawyers	6.3	Engineers	5.9
4 ICT professionals	5.5	Business managers	5.7
5 Business managers	5.4	Lawyers	4.1
6 Engineers	5.2	ICT professionals	3.8
7 Writers/journalists	2.8	Architects	2.9
8 Psychologists	2.7	Designers	2.9
9 Architects	2.4	Psychologists	2.3
10 Veterinarians	2.2	Sportspeople	2.1
Total	49.5		50.3

Top 10 occupations cited by low performers

2000		2018	
Occupation	%	Occupation	%
1 Teachers	8.4	Business managers	9.6
2 Doctors	8.2	Doctors	8.9
3 Business managers	7.5	Teachers	8.6
4 Lawyers	5.1	Police officers	4.6
5 Sportspeople	3.3	Sportspeople	3.8
6 Engineers	2.9	Engineers	3.3
7 Motor vehicle mechanics	2.5	Gallery, museum and library technicians	3.1
8 Secretaries	2.5	Lawyers	2.9
9 Veterinarians	2.3	Nursing and midwives	2.9
10 ICT professionals	2.0	Motor vehicle mechanics	2.5
Total	44.7		50.2

Table 1.3 – Concentration of occupational expectations, by performance in reading, 2000 and 2018

Percentage of students expecting to work in one of the ten most commonly cited jobs at age 30

Source: PISA 2000 and 2018 databases. Countries reporting career expectations in PISA 2000 and 2018.

Top 10 occupations cited by high performers

2000		2018	
Occupation	%	Occupation	%
1 Doctors	9.2	Doctors	14.1
2 Teachers	8.5	Engineers	6.6
3 ICT professionals	6.4	Teachers	5.6
4 Lawyers	4.7	ICT professionals	5.6
5 Engineers	4.6	Lawyers	4.3
6 Writers/journalists	3.5	Designers	3.3
7 Psychologists	3.5	Psychologists	3.1
8 Business managers	2.8	Architects	2.7
9 Designers	2.6	Writers/journalists	2.6
10 Veterinarians	2.5	Veterinarians	2.4
Total	48.3		50.2

Table 1.4 – Concentration of occupational expectations, by gender, 2000 and 2018

Percentage of students expecting to work in one of the ten most commonly cited jobs at age 30

Source: PISA databases.

Countries reporting career expectations in PISA 2000, 2003, 2006, 2015 and 2018.

	Girls		Boys		All	
	2000	2018	2000	2018	2000	2018
Australia	49	52	44	42	39	41
Austria	47	54	42	38	36	40
Belgium	53	53	47	45	40	43
Brazil	70	68	60	66	60	63
Canada	52	58	46	51	44	50
Czech Republic	51	50	49	40	41	36
Denmark	60	58	57	45	48	43
Finland	51	53	45	45	40	42
France	53	43	44	40	40	36
Germany	43	51	38	40	36	38
Greece	61	58	51	50	49	51
Hong Kong (China)	64	50	61	51	59	47
Hungary	53	39	43	46	39	38
Iceland	63	54	56	52	52	47
Indonesia	77	73	76	68	72	68
Ireland	55	60	53	49	45	49
Italy	50	51	40	43	37	41
Korea	71	58	63	54	62	52
Latvia	52	51	53	49	42	44
Mexico	67	59	59	57	61	54
New Zealand	51	53	44	47	40	41
Norway	50	59	54	47	40	47
Poland	52	49	52	49	42	42
Portugal	68	54	59	58	55	50
Russia	59	53	54	58	50	51
Spain	60	56	49	49	47	49
Sweden	47	53	49	45	40	45
Switzerland	50	49	41	38	36	38
Thailand	47	61	56	64	46	57
United States	61	59	48	47	49	50

Table 1.5 – The 10 most commonly cited occupations in Germany and Indonesia, by gender, 2018

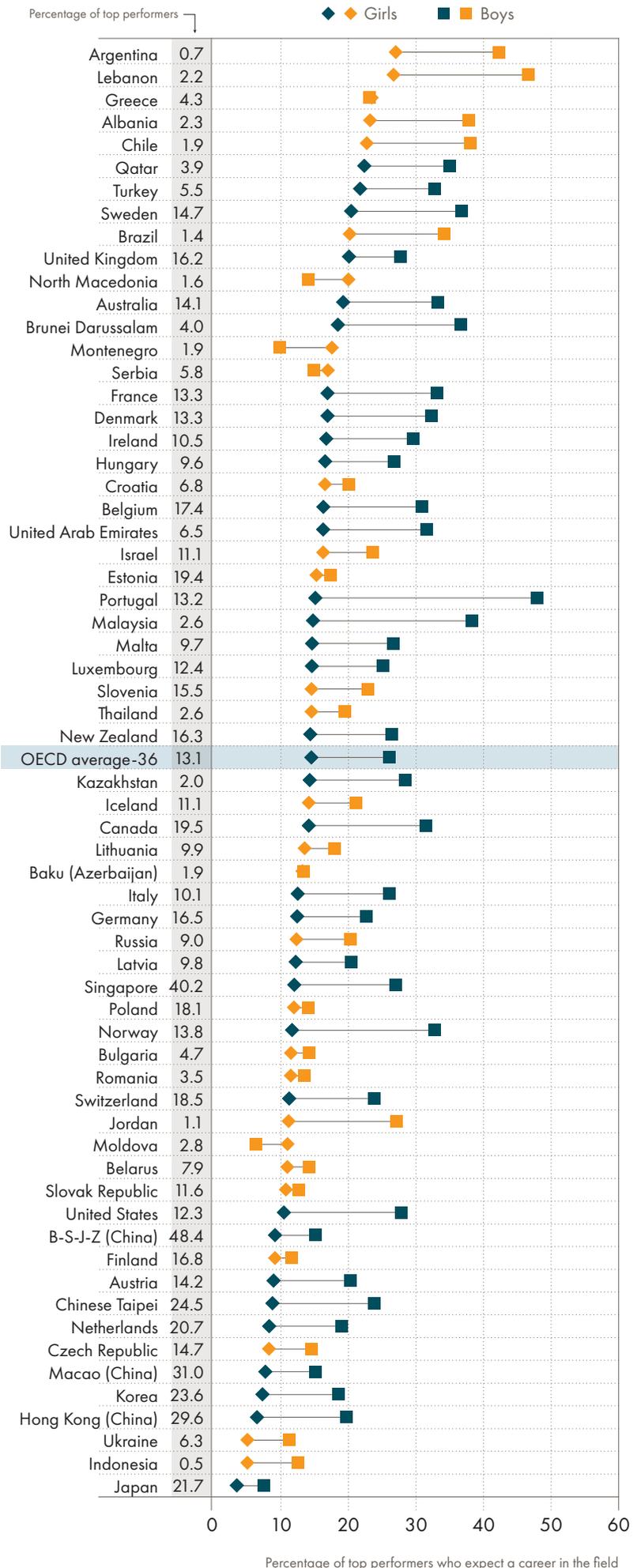
Germany – Girls		Indonesia – Girls		Germany – Boys		Indonesia – Boys		
1	Teachers	10.4	Business managers	20.6	ICT professionals	6.7	Business managers	25.6
2	Doctors	10.0	Doctors	15.7	Agricultural and industrial machinery mechanics and repairers	5.2	Teachers	9.2
3	Child care workers	6.4	Teachers	15.4	Motor vehicle mechanics and repairers	5.1	Armed forces occupations	7.1
4	Psychologists	4.5	Gallery, museum and library technicians	5.1	Police officers	4.5	Gallery, museum and library technicians	6.3
5	Nursing associate professionals	4.5	Police inspectors and detectives	4.6	Teachers	3.8	Doctors	6.3
6	Architects	3.6	Nursing and midwives	3.2	Science and engineering professionals	3.6	Police officers	4.4
7	Police officers	3.5	Designers	2.3	Doctors	3.1	Motor vehicle mechanics and repairers	3.4
8	General office clerks	3.2	Government social benefits officials	2.0	Engineers	3.1	Police inspectors and detectives	2.2
9	Designers	2.8	Pharmacists	1.9	Architects	2.8	Religious professionals	2.0
10	Lawyers	2.7	Armed forces occupations	1.8	Sportspeople	2.6	Sales workers	1.9

Source: PISA 2000 and 2018 databases.

Figure 1.3 – Gender gap in career expectations among top performers in mathematics and/or science – science and engineering professions, 2018

Notes: Statistically significant differences between girls and boys are shown in blue. For students' career expectations, results are only available for the French Community of Belgium. In this figure, "top performers" refers to students who attain at least Level 2 in all three core subjects and Level 5 or 6 in mathematics and/or science. Countries and economies are ranked in descending order of the percentage of top-performing girls who expect a career in the field. OECD average-36 refers to the arithmetic mean across OECD countries (and Colombia), excluding Spain.

Source: Schleicher, A. (2019), *PISA 2018 Insights and Interpretations*, OECD, Paris, <https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf>.



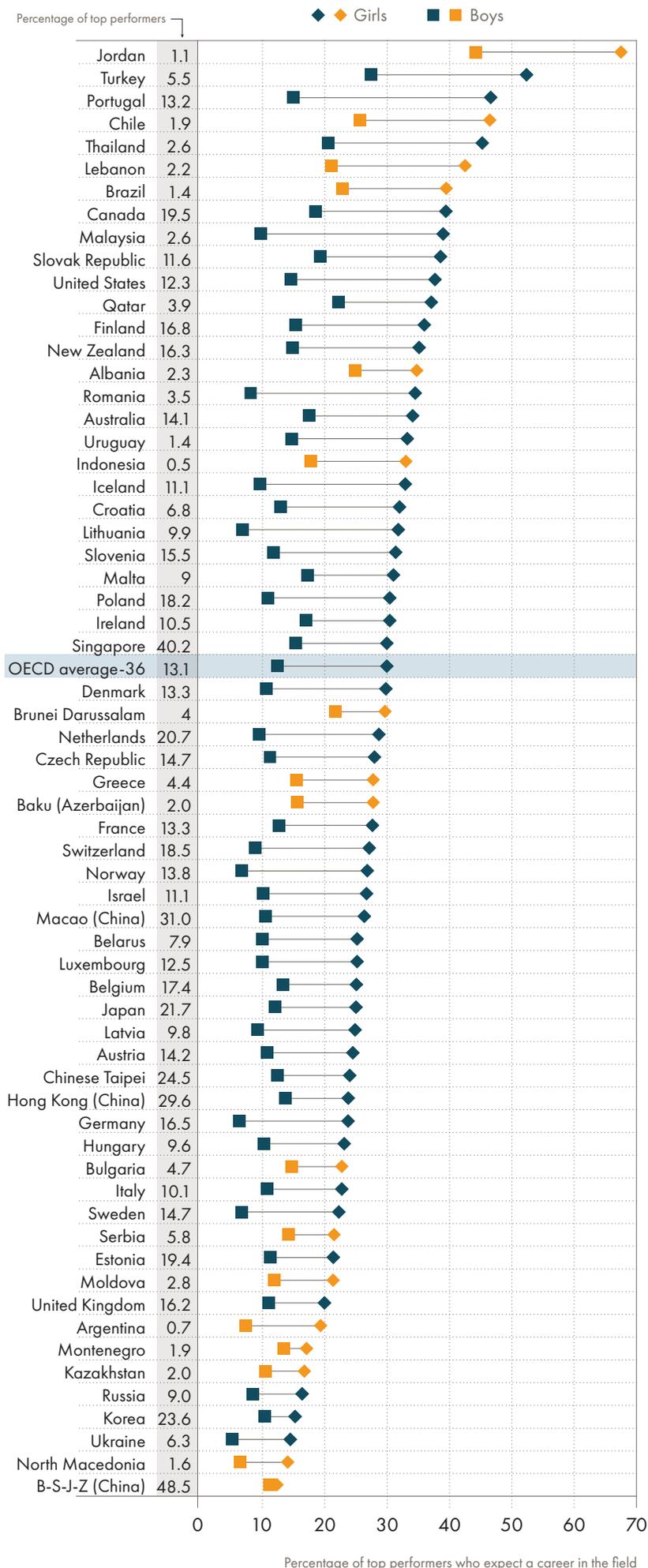


Figure 1.4 – Gender gap in career expectations among top performers in mathematics and/or science – health related careers, 2018

Notes: Statistically significant differences between girls and boys are show in blue.

For students' career expectations, results are only available for the French Community of Belgium.

In this figure, "top performers" refers to students who attain at least Level 2 in all three core subjects and Level 5 or 6 in mathematics and/or science.

Countries and economies are ranked in descending order of the percentage of top-performing girls who expect a career in the field.

OECD average-36 refers to the arithmetic mean across OECD countries (and Colombia), excluding Spain.

Source: Schleicher, A. (2019), *PISA 2018 Insights and Interpretations*, OECD, Paris, <https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf>.



*What job do I expect to do when I am 30?
I like football.*

Oliver, a 14-year-old boy
from the United Kingdom



2

Labour market relevance: How interested are young people in good jobs with a future?

The high, and increasing, concentration of students' career expectations raises questions about the extent to which young people are aware of the availability of current and future jobs. This is a matter of concern because analyses by the OECD, the World Economic Forum and other research organisations have highlighted the volatility of the current and projected jobs market. This section compares student preferences between those jobs with positive prospects for the future and those with more negative prospects. Are students interested in jobs that are largely in decline or are they aware of those with a promising future? Section 3 of this report takes a more detailed look at how jobs are at risk of automation over the next 10 to 15 years. For young people making essential decisions about what, where and how hard they study, it is important to be aware of how the labour market is likely to change by the time they reach the age of 30.

One test of whether young people are aware of changing demand in the labour market is to assess their levels of interest in what can be called jobs with a future

and jobs of the past. Canadian analysts at FutureFit AI have taken a first look at these questions, comparing a number of datasets from different countries to look for evidence of labour market signalling.

Tables 2.1 and 2.2 show data drawn from publicly available sources about popular jobs that currently pay close to or above median earnings and are accessible (i.e. typically requiring qualifications below a university undergraduate degree). Such accessible, good jobs were then split into two groups. Jobs with a future are estimated by government assessments to have much higher than average projected growth into the future and are assessed as having a lower-than-average risk of automation based on OECD data. In the case of jobs of the past, significant decline has been projected and the risk of automation related to the job is above average – usually significant or high (above 50%). Finally, PISA 2018 data were reviewed to calculate the extent of interest in the occupation among 15-year-olds in the relevant country. Analysis was undertaken in two countries where such data are easily accessible: Canada and the United States.

This section presents a first take in comparing PISA data on occupational expectations to labour market outlooks. The analysis finds mixed results in both Canada and the United States. The most prominent finding is that a large number of students set high ambitions for themselves from a young age; these students aim to enter somewhat inaccessible occupations. The top five occupations in both Canada and the United States include occupations such as doctors and lawyers, while many highly accessible professions in similar fields are farther down the list. On a positive note, the analysis finds that students are largely interested in the personal, human-centred jobs of the future, such as occupational therapists and veterinarians. However, occupations in the trades, manufacturing and production occupations are likely to diminish in demand and become highly technical, yet students show a high level of interest in them. Tables 2.1 and 2.2 show limited evidence of labour market signalling. Further analysis will enable a deeper understanding of the projected gaps between supply and demand in future labour markets.

About the tables:

Job title: The occupational title based on the country-specific classification system

Job group: The occupational group based on the country-specific classification system

Median annual salary: Median annual earnings of the job title stated in the country's currency calculated in the base year of projection; all "jobs with a future" featured here focus on jobs with financial security with a median annual salary above the total median in the relevant country

Current demand (% of total): Job demand as total and as a percentage of the total national workforce in the base year of projection

Projected growth: Projected growth rate of job over the projection time period

Accessibility: Level of ease to enter or ability to transition into a job based on education requirements; all "jobs with a future" featured here focus on highly accessible jobs with an education requirement of associate degree or less

Risk of automation: The probability of job automatability; all "jobs with a future" featured here focus on jobs outside of significant and high risk of automation (below 50%), while most "jobs of the past" feature a significant or high risk (above 50%)

Projected growth ranking: The ranking of the job based on the growth projection over the projection period (i.e. #1 indicates the job group with the highest projected growth rate)

Student ranking: The ranking based on student preferences in the relevant country as reported in PISA 2018, based on the 4-digit level ISCO code

US Sources

US Bureau of Labor Statistics, Employment Projections, 2018-2028.

<https://www.bls.gov/emp/tables/emp-by-detailed-occupation.htm>

US Bureau of Labor Statistics, National Occupational Employment and Wage estimates (May 2018):

https://www.bls.gov/oes/current/oes_nat.htm

Canada Sources

Government of Canada, Canadian Occupational Projection System, 2017-2026.

<https://open.canada.ca/data/en/dataset/e80851b8-de68-43bd-a85c-c72e1b3a3890>

Statistics Canada, Employment Income Statistics (2016).

<https://tinyurl.com/uwol5wu>

Table 2.1 – US labour market outlook vs. Student preferences:
Jobs with a future vs. Jobs of the past

United States: Labour market outlook 2018-2028							Rankings		
Job title	Job group	Median annual salary (2018)	Current demand (% of total)	Projected growth (%)	Accessibility	Risk of automation	Projected growth rank*	Student preference rank**	
Jobs with a future	Physical therapist assistants	Healthcare support occupations	\$58.040	43,800 (0.03%)	33.1%	High – associate degree	Lower than average (42%)	#12	#29
	Occupational therapy assistants	Healthcare support occupations	\$60.220	98,400 (0.06%)	27.1%	High – associate degree	Lower than average (42%)	#5	#71
	Computer user support specialist	Computer and mathematical occupations	\$50.980	671,800 (0.4%)	10.6%	High – associate degree	Lower than average (38%)	#129	#229
Jobs of the past	Structural metal fabricators and fitters	Production occupations	\$39.290	80,400 (0.05%)	-14.7%	High – post-secondary certificate	Higher than average (48%)	#558	#325
	Bookkeeping, accounting, and auditing clerks	Office and administrative support occupations	\$40.240	1,707,700 (1.1%)	-3.9%	High – post-secondary certificate	Significant (51%)	#479	#374
	Travel agents	Sales and related occupations	\$38.700	78,000 (0.05%)	-5.7%	High – associate degree	Lower than average (41%)	#491	#65

*Rank based on ISOC occupation count of 810

**Rank based on ISCO occupation count of 543.

Table 2.2 – Canada labour market outlook vs. Student preferences:
Jobs with a future vs. Jobs of the past

Canada: Labour market outlook 2018-2028							Rankings		
Job title	Job group	Median annual salary (2016)	Current demand (% of total)	Projected growth (%)	Accessibility	Risk of automation	Projected growth rank*	Student preference rank**	
Jobs with a future	Nurse aides and patient service associate	Health occupations	\$40.715	297,300 (1.6%)	24.5%	High – associate degree	Lower than average (31%)	#6	#33
	Veterinary technician	Health occupations	\$41.804	17,200 (0.1%)	21.5%	High – associate degree	Lower than average (31%)	#17	#32
	User support technician & information systems testing technician	Natural and applied sciences and related occupations	\$55.290	106,300 (0.6%)	13.7%	High – associate degree	Lower than average (40%)	#56	#158
Jobs of the past	Banking, insurance and other financial clerks & collectors	Business, finance, and administration occupations	\$40.657	80,400 (0.05%)	-3.1%	High – high school diploma	Significant (54%)	#263	#278
	Railway carmen/ women & aircraft mechanics and aircraft inspectors	Trades, transport and equipment operators and related occupations	\$67.596	14,800 (0.08%)	-4.1%	High – associate degree	Significant (51%)	#242	#15
	Customer services representatives - financial institutions	Sales and service occupations	\$29.786	80,100 (0.4%)	-5.9%	High – post-secondary certificate	Significant (50%)	#244	#365

*Rank is based on NOC occupation count of 263 occupations.

**Rank is based on ISCO occupation count of 543.



*I want to work in a restaurant as a chef.
It motivates me to know the cuisine of my
country and other countries and follow the
example of people who are dedicated to this
and do it with passion.*

Valentina, a 14-year-old girl from Mexico



3

Job realism: Are today's teenagers dreaming of jobs that will still be there in 15 years' time?

In addition to conducting the triennial PISA tests among 15-year-olds, the OECD works with countries to survey adults aged 16 to 65 about their experiences of work. The Programme for the International Assessment of Adult Competencies (PIAAC) collects information from tens of thousands of adults, in dozens of countries, through its Survey of Adult Skills. Analysts can use the data to categorise the jobs survey participants do into component tasks and then assess how likely it is that the task itself will be automated. On this basis, analysis shows that on average across OECD countries, 14% of jobs are highly automatable and another 32% could face substantial changes in how they are carried out due to such innovations as artificial intelligence. Nearly half of the jobs in OECD countries are at significant risk of being automated over the next 10 to 15 years.

FutureFit AI has used data from the OECD Survey of Adult Skills to review the extent to which the jobs that young people expect to be doing when they are 30 years old are at risk of automation. The most popular careers, according to young people, such

as health professionals and social, cultural and legal professionals, tend to be at low risk of automation. However, FutureFit AI analysis shows that outside of the top five or ten jobs, many young people select jobs at much higher risk of automation. In all, 39% of the jobs cited by PISA participants, on average across OECD countries, run the risk of being automated within the next 10 to 15 years.

The risk of automation varies between countries, reflecting both differences in young people's occupational expectations and the character of national labour markets. Whereas in Australia, Ireland and the United Kingdom, around 35% of the jobs cited by students are at risk of automation, on average, in Germany, Greece, Japan, Lithuania and the Slovak Republic, more than 45% of those jobs are at risk. The likelihood that the jobs students expect to pursue will be automated correlates closely with the likelihood that certain jobs in the current labour market will be automated. For example, jobs in English-speaking and Nordic countries are less likely to be automated,

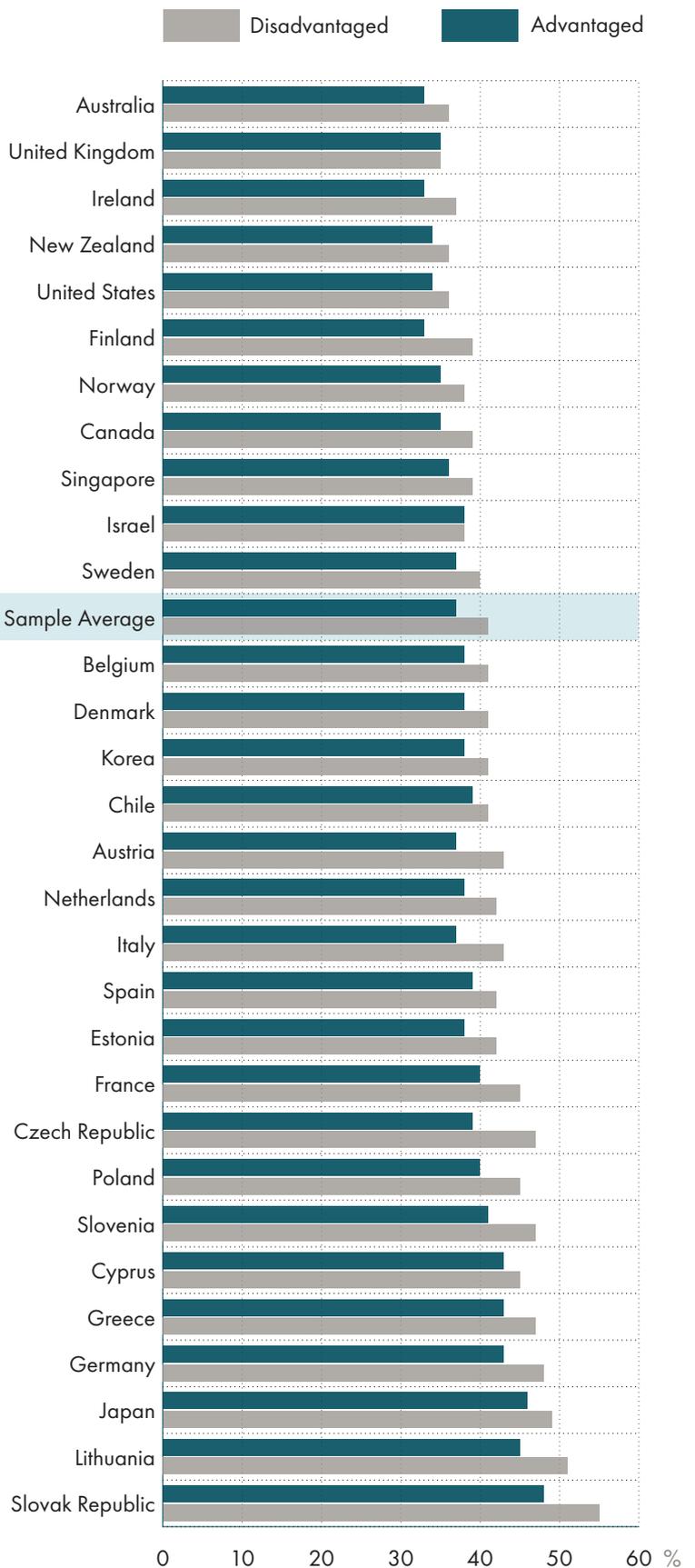
on average, than those in Eastern and Southern European countries, Germany and Japan.

Breaking down the sample, significant variations by social background and gender are apparent. Figure 3.1 presents the average risk of automation of the jobs cited by the most advantaged 25% and least advantaged 25% of students in national PISA samples. On average across selected OECD countries, 41% of the jobs of interest to the most disadvantaged students are at risk of automation compared to 37% of the jobs that the most advantaged students cited. In the Czech Republic, the gap between these two groups of students is a significant eight percentage points.

Figure 3.2 considers how the risk of automation is associated with gender disparities in job choice. On average across selected OECD countries, 38% of the jobs cited by girls are at risk of being automated as are 41% of the jobs cited by boys. In Lithuania and the Slovak Republic, around 50% of the jobs cited by boys are at risk of automation. Valentina, whose quote opens this section, would be well advised to research her occupational goal with some care, considering what the future holds for the hospitality and food services industry, and what opportunities she may take advantage of to build on her skills: on average across OECD countries, 39% of the jobs related to cookery risk being automated by the time she is 30.

Figure 3.1 – Risk of automation of expected job, by socio-economic status, 2018

Source: PISA 2018 and Survey of Adult Skills (PIAAC) 2012, 2015 databases.



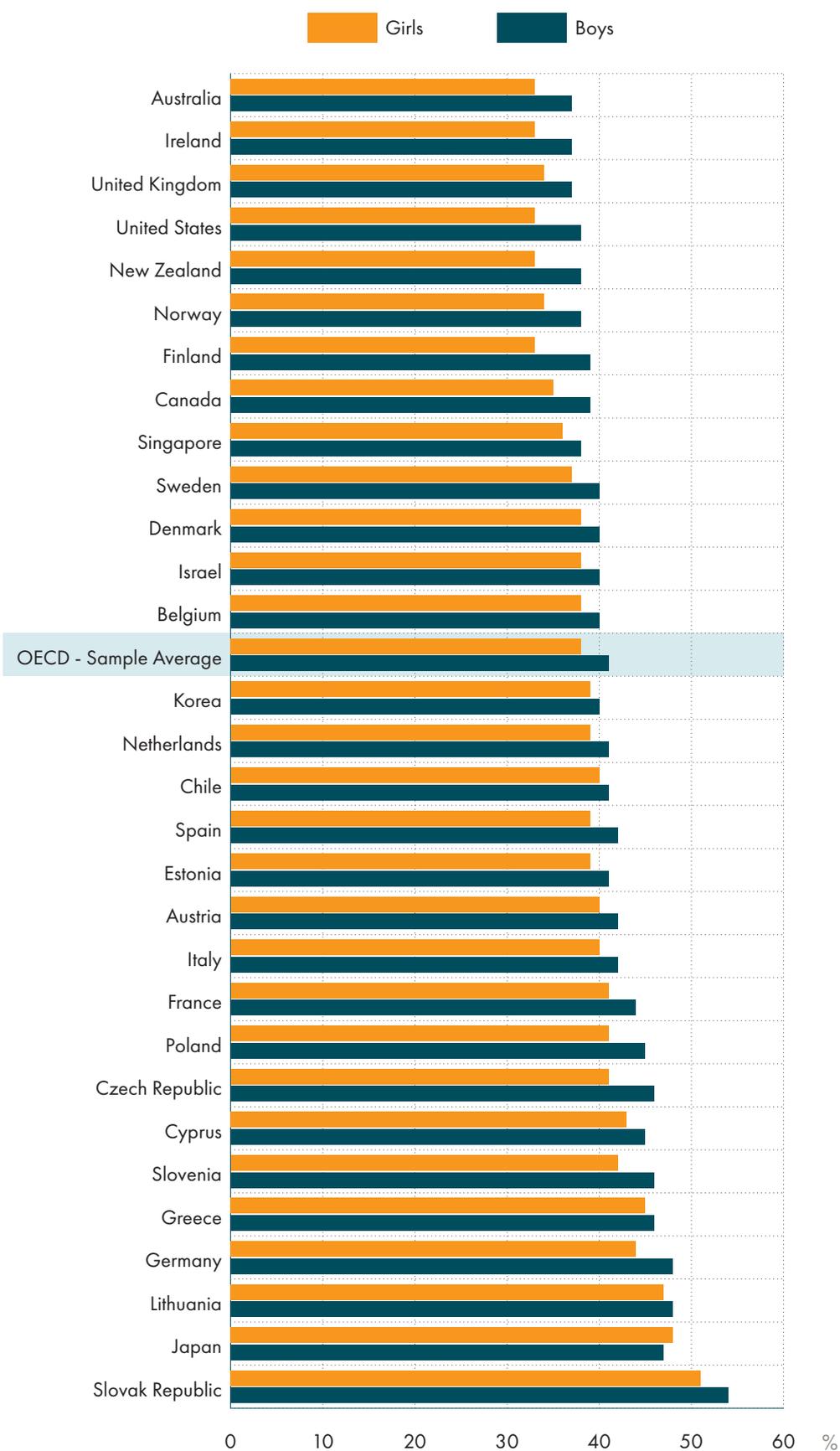


Figure 3.2 – Risk of automation of expected job, by gender, 2018

Source: PISA 2018 and Survey of Adult Skills (PIAAC) 2012, 2015 databases.



I really think that the purpose of education is lost. We are running after grades, scores and ranks and just cramming, and giving exams with so much pressure. We are not getting experiential learning that will help us build life skills. I believe that students are not only the future, but they are also the present and it is only if they are happy and hopeful in the present that their future will be happy and bright.

Supriya, a 16-year-old girl from India who hopes to become a psychologist



4

Career potential: Do teenagers' career expectations reflect their abilities?

The results from PISA show how young people from the least advantaged backgrounds who performed well on the science test commonly expressed much lower career expectations than comparably performing peers from the most advantaged backgrounds. Considering just those student who performed at the highest levels on the science test, high-achieving advantaged students were more than twice as likely as disadvantaged students, on average, to express an intention to pursue tertiary education (Table 4.1). While in a few countries, such as Austria and Germany, the results may reflect the effectiveness of vocational education and training systems in offering access to employment through work-based learning rather than university education, elsewhere the phenomenon speaks to barriers preventing disadvantaged youth from meeting their educational potential.

Table 4.2 highlights comparable patterns with regard to occupational expectations. Again, across the countries that took part in PISA 2018, high-performing students from the most advantaged backgrounds

were more than twice as likely as their disadvantaged peers of equal academic ability to anticipate working in a professional or managerial occupation by age 30. As illustrated in Table 4.3, this pattern of lower aspirations is more commonly a challenge for boys than for girls. As French scholars Guyon and Huillery, have recently illustrated, lower aspirations can reflect a lack of understanding of actual levels of ability, serve to depress scores in national assessments and distort patterns of academic progression. The PISA data presented here demonstrate that it cannot be taken for granted that young people will pursue education in line with their abilities.

Figure 4.1 – High performers who do not expect to complete tertiary education, by socio-economic status, 2018

Notes: High performers are classified as students who attained at least minimum proficiency (Level 2) in the three core PISA subjects and are high performers (Level 4) in at least one subject. The percentage of high performers is shown next to the country/economy name.

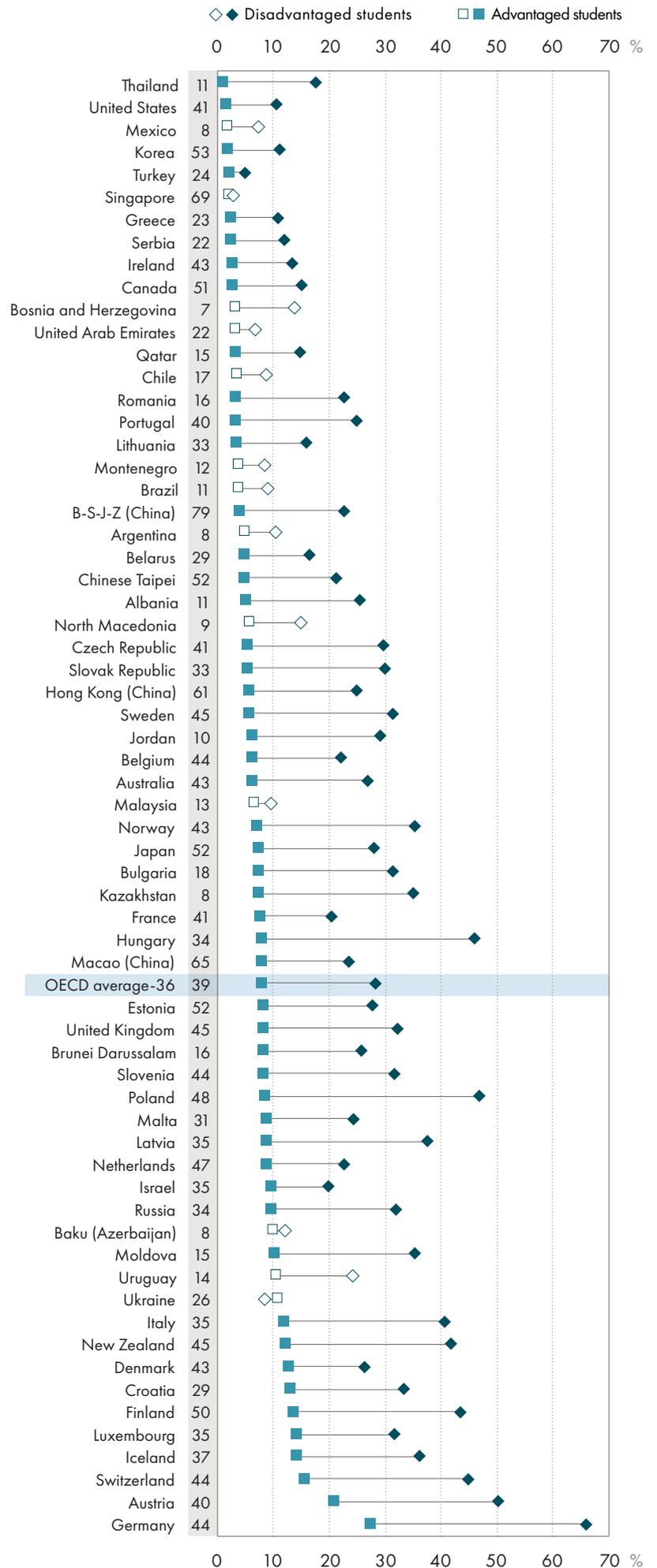
Statistically significant differences are marked in a darker tone.

Only countries and economies with sufficient proportions of high performers amongst advantaged/disadvantaged students are shown in this figure.

OECD average-36 refers to the arithmetic mean across OECD countries (and Colombia, excluding Spain).

Countries and economies are ranked in ascending order of the percentage of advantaged students.

Source: OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/b5fd1b8f-en>, Figure II.6.5.



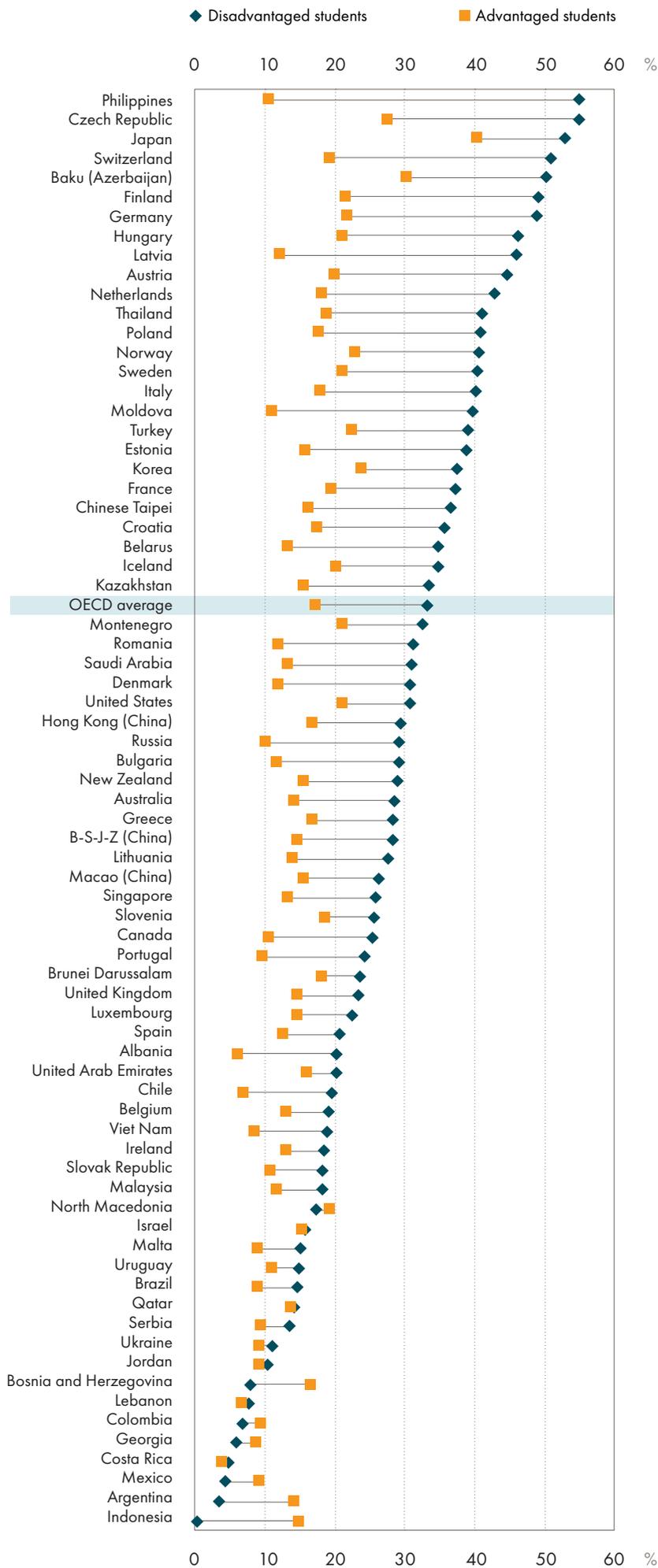


Figure 4.2 – High performers who do not expect to be professionals or managers, by socio-economic status, 2018

Note: High performers are classified as students who attained at least minimum proficiency (Level 2) in the three core PISA subjects and are high performers (Level 4) in at least one subject.

Countries and economies are ranked in descending order of the percentage of disadvantaged students.

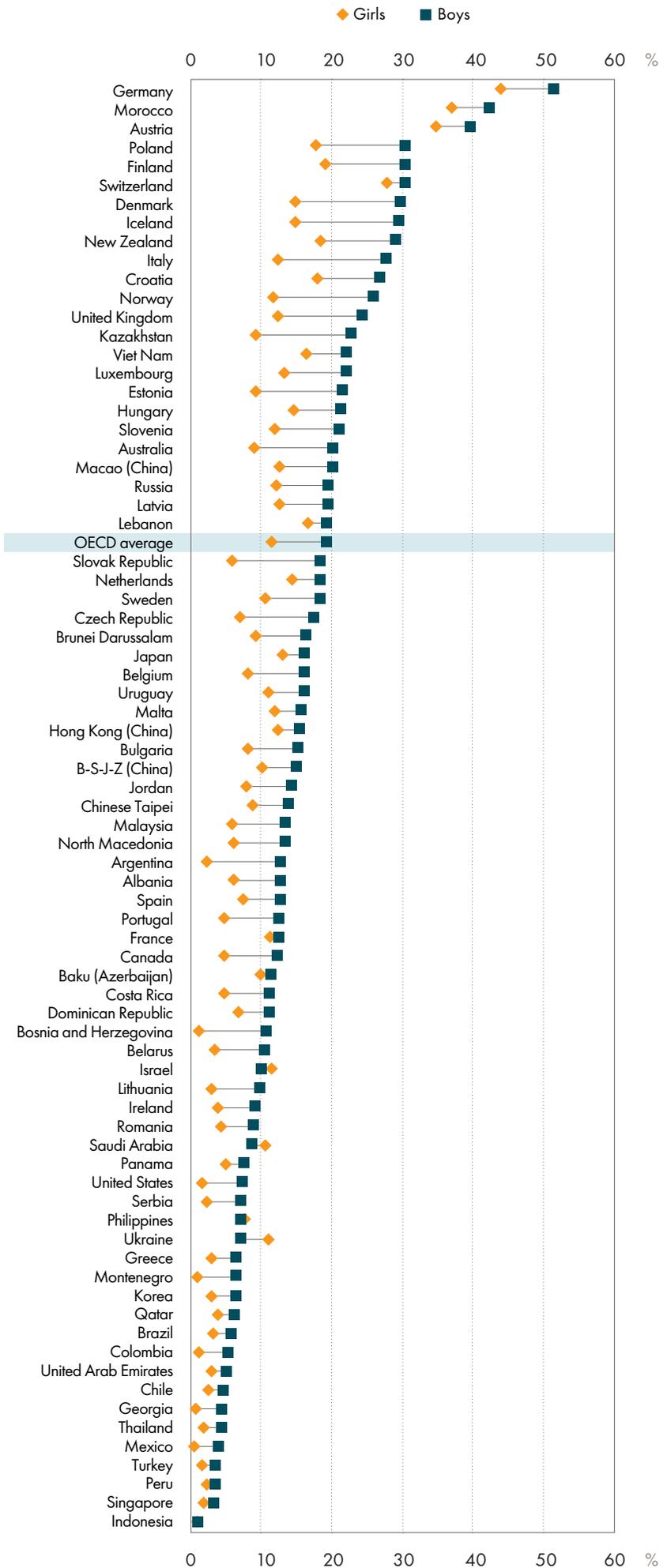
Source: PISA 2018 database.

Figure 4.3 – High performers who do not expect to complete tertiary education, by gender, 2018

Note: High performers are classified as students who attained at least minimum proficiency (Level 2) in the three core PISA subjects and are high performers (Level 4) in at least one subject.

Countries and economies are ranked in descending order of the percentage of boys

Source: PISA 2018 database.



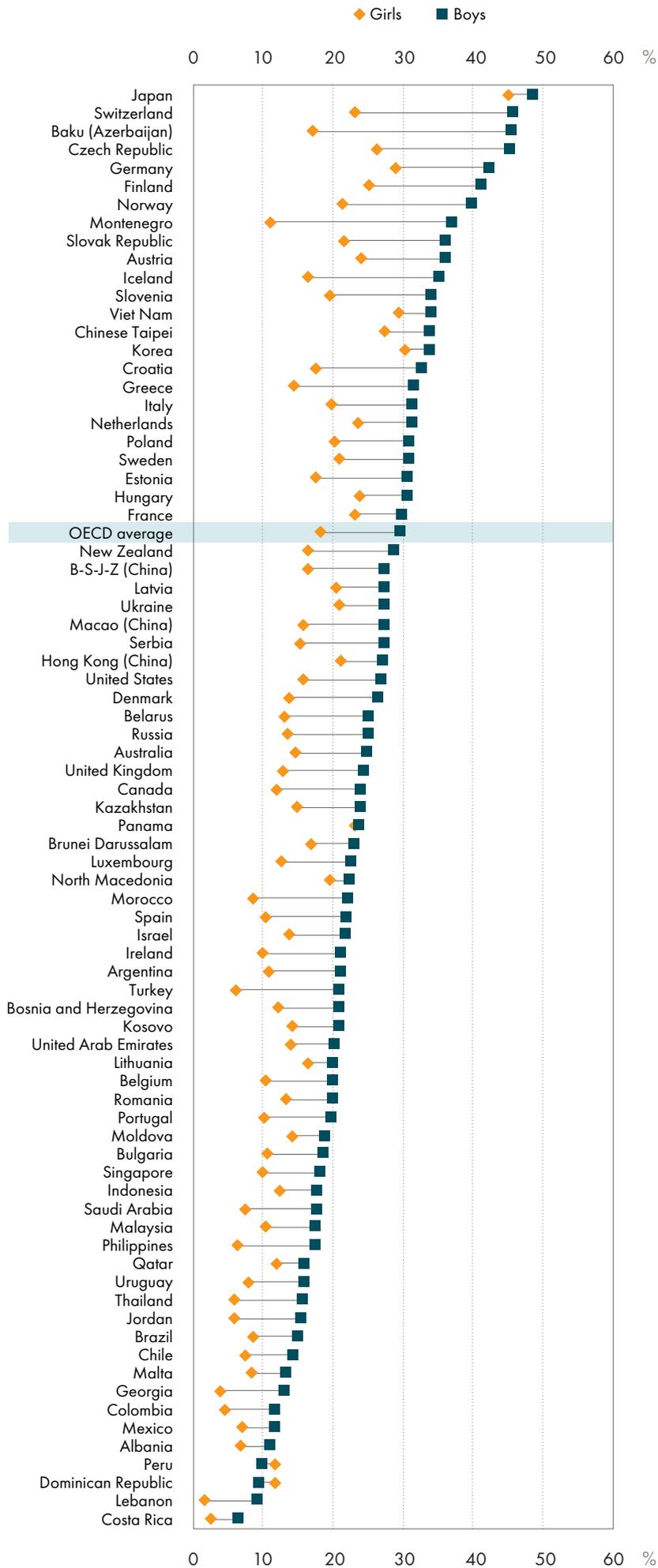


Figure 4.4 – High performers who do not expect to be professionals or managers, by gender, 2018

Note: High performers are classified as students who attained at least minimum proficiency (Level 2) in the three core PISA subjects and are high performers (Level 4) in at least one subject.

Countries and economies are ranked in descending order of the percentage of boys

Source: PISA 2018 database.



What job do I expect to have when I am 30? I expect to be a lawyer because I like money and helping people. My plan after I leave school is to get a job with training – an apprenticeship.

Chloe, a 16-year-old girl
from the United Kingdom



5

Career confusion: Do teenagers know what they need to do to fulfil their career expectations?

The research literature is clear that one of the best indicators of young people's capacity to understand and progress in the labour market is the extent to which their educational and occupational aspirations are aligned: whether the educational expectation of a young person while in school is appropriate to their occupational expectation. In many countries, a teenager who aspires to be a lawyer, for example, should anticipate attending university and pursuing post-graduate study. Misalignment, particularly when a young person plans to pursue less education than would normally be expected to secure his or her career goal, is an indication of career confusion. Longitudinal studies show that young people whose expectations are misaligned can expect to do worse in the adult job market than their peers with similar qualifications and backgrounds who understand what they need to do to realise their ambitions.

Table 5.1 shows that, on average, one in five young people across the countries that took part in PISA 2018 had misaligned education and career expectations:

they underestimate the levels of education typically required to secure professional or managerial positions. Sometimes this pattern of misalignment reflects the strength of systems of vocational education and training (VET) which, in some countries, including Germany and Switzerland, provide alternative pathways into higher-status, higher-paying jobs. In such countries, the relationship between education and training pathways and occupational outcomes is clear to see. However, such effective VET systems are available in relatively few countries.

In keeping with the conclusions of academic literature, it is young people from disadvantaged backgrounds who are most likely to demonstrate misaligned expectations. As Table 5.2 shows, across the countries that participated in PISA 2018, more than one in three of the most disadvantaged 25% of students had misaligned aspirations compared to one in ten of the most advantaged 25% of students. In many countries, more than 40% of disadvantaged students presented this indication of career confusion.

The PISA 2018 dataset provides some insights into the character of student thinking about continuing on to tertiary education. Students in many countries were asked whether they have access to information about financing for university and, if so, whether the information is provided at school or outside of school. This is particularly important as studies show that access to such information can have a considerable effect on the likelihood of young people from disadvantaged backgrounds progressing to university. Table 5.3 shows that whereas it is advantaged students who are consistently more likely than their disadvantaged peers to access information outside of school, no such pattern is observed in relation to activities undertaken within school. This finding suggests that schools can play a major role in levelling the playing field across social backgrounds and addressing systemic inequalities in access to reliable information.

Figure 5.1 – Students who expect a professional or managerial career, but do not plan to complete tertiary education, 2018

Notes: The percentage of students who expect to work in a high-skilled occupation is shown next to the country/economy name.

Tertiary education corresponds to ISCED levels 5A, 5B or 6 according to the International Standard Classification of Education (ISCED-1997).

Countries and economies are ranked in descending order of the percentage of students who do not aspire to complete a tertiary degree amongst those who expect to work in a high-skilled occupation

Source: OECD, PISA 2018 Database, Table II.B1.6.3.

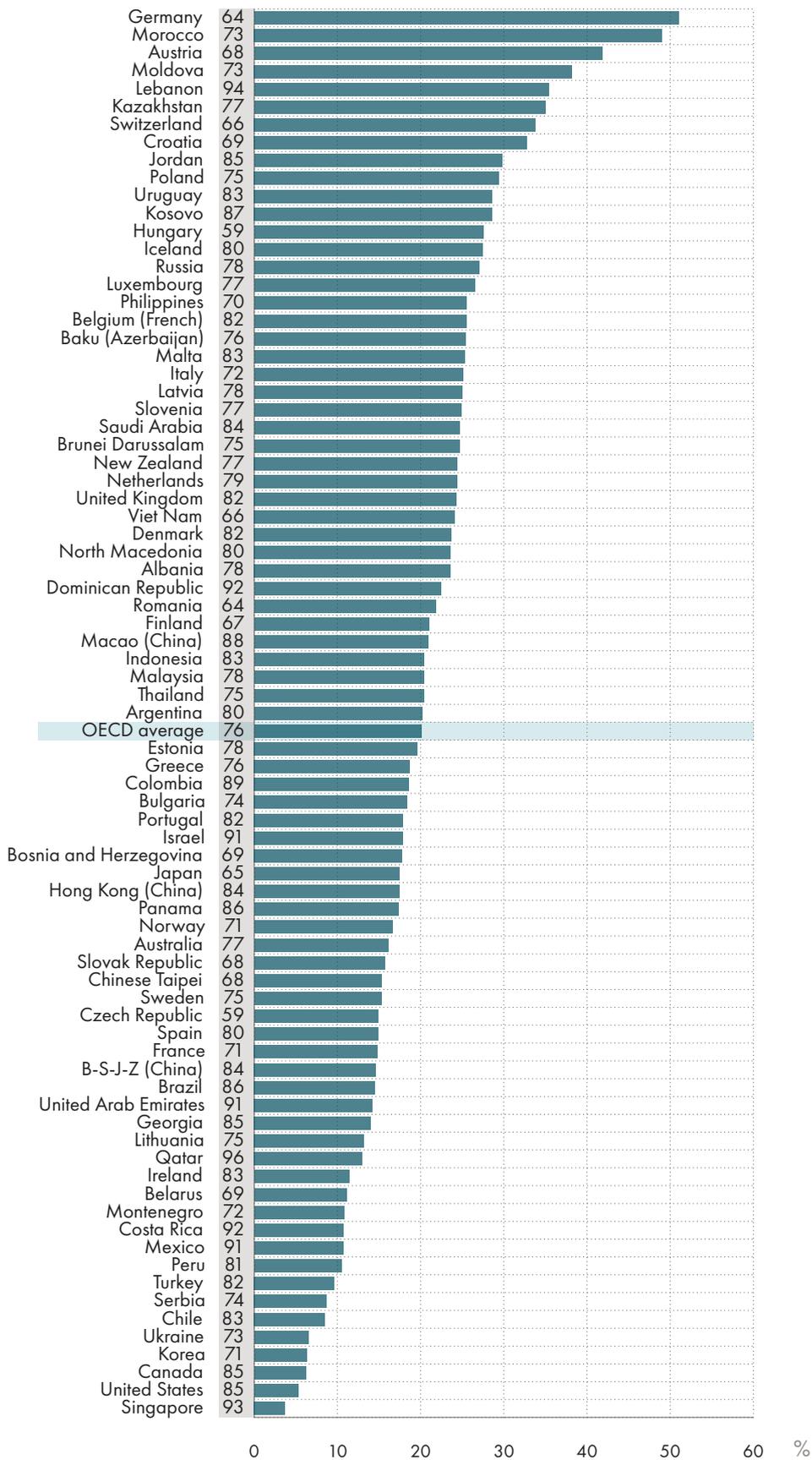


Figure 5.2 – Students who expect a professional or managerial career, but do not plan to complete tertiary education, by socio-economic status, 2018

Notes: The percentage of students who expect to work in a high-skilled occupation is shown next to the country/economy name. Statistically significant differences are marked in a darker tone. Tertiary education corresponds to ISCED levels 5A, 5B or 6 according to the International Standard Classification of Education (ISCED-1997). Countries and economies are ranked in descending order of the percentage of disadvantaged students.

Source: OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/b5fd1b8f-en>, Figure II.6.2.

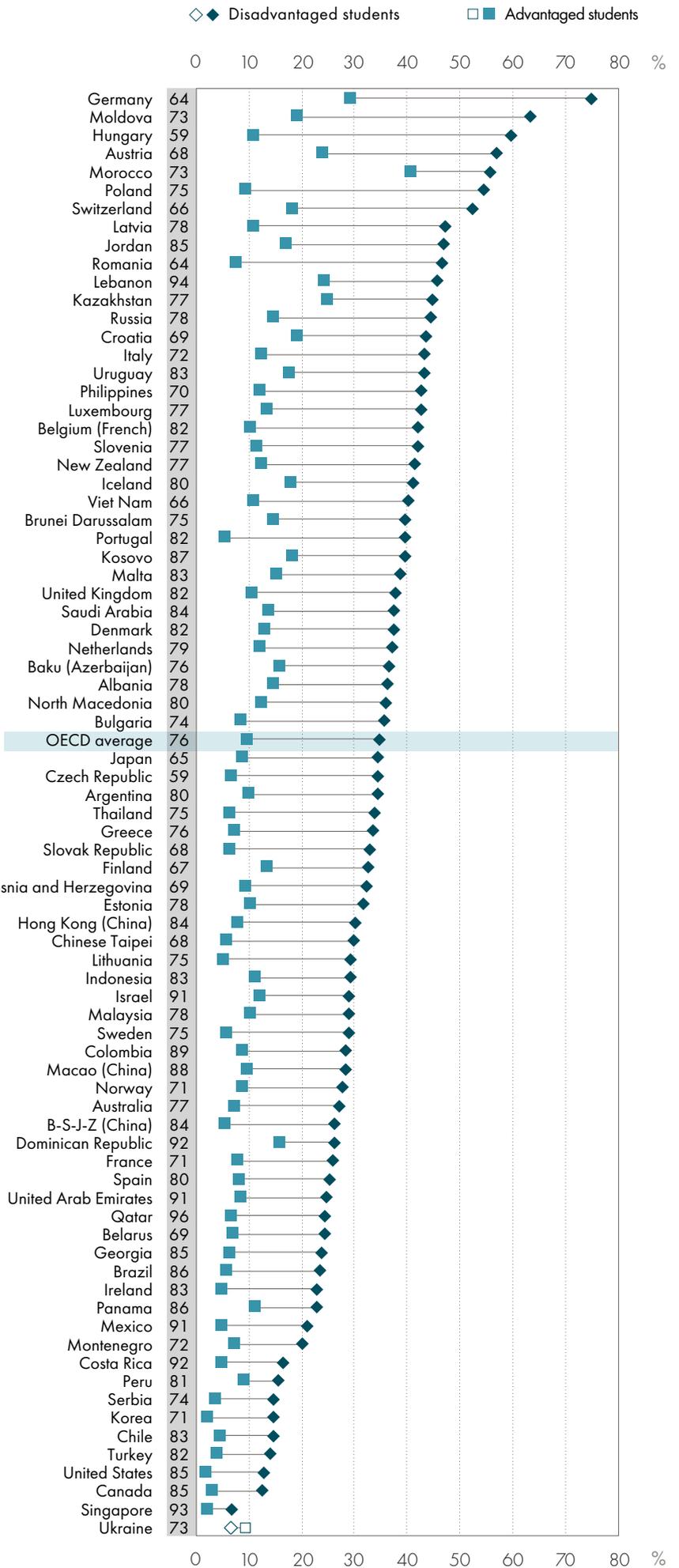
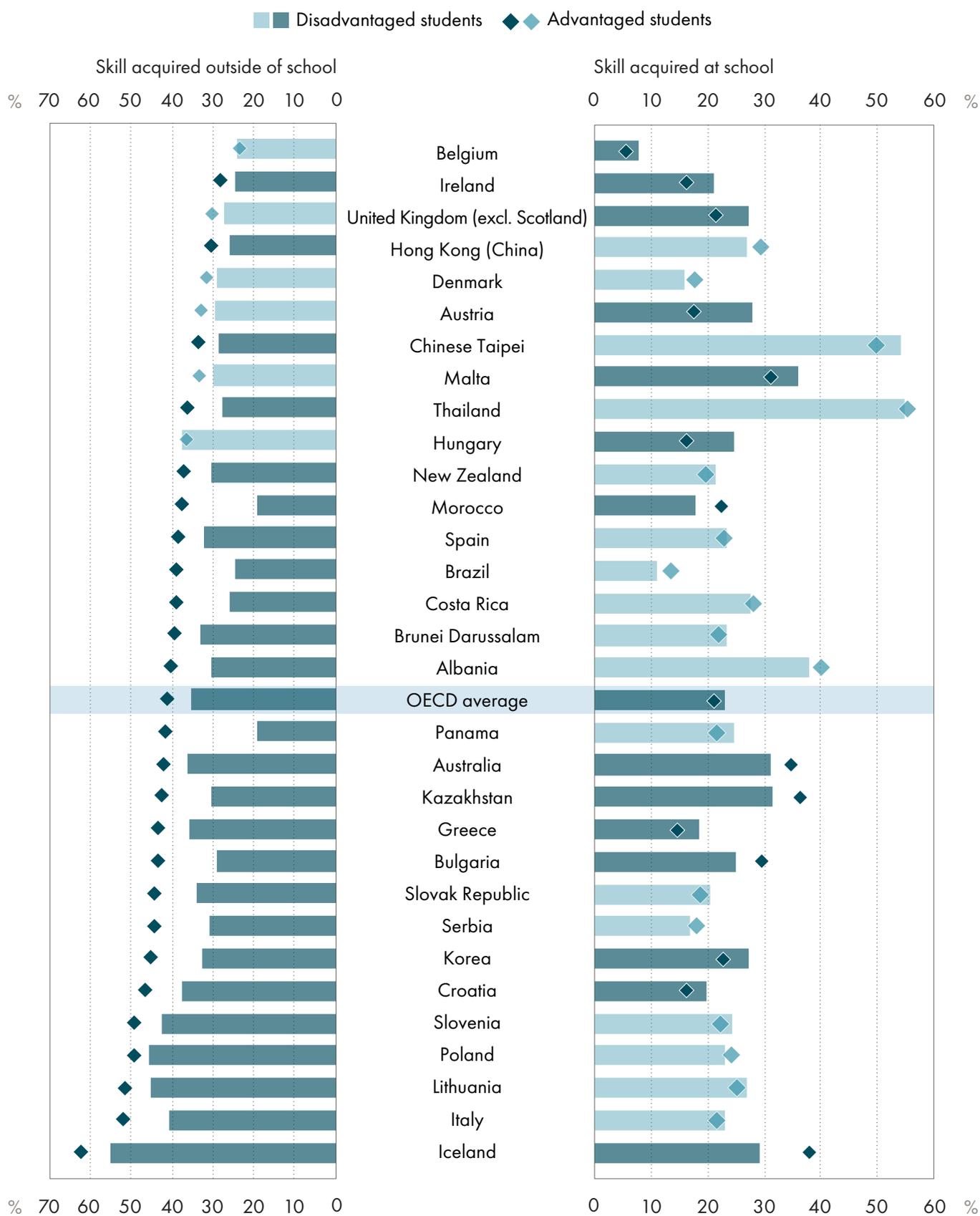


Figure 5.3 – Students who know how to find information about student financing, by socio-economic status and source of information, 2018

Selected PISA-participating countries/economies



Notes: Statistically significant differences are marked in a darker tone.

Only countries and economies with available data are shown in this figure.

Countries and economies are ranked in ascending order of the percentage of advantaged students who acquired skills outside of school.

Source: OECD (2019), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, PISA, OECD Publishing, Paris, <https://doi.org/10.1787/b5fd1b8f-en>, Figure II.6.8.

Four principles that guide the best employer engagement in education

By Nick Chambers

It was a generation ago when, as a newly qualified teacher of science and technology in a northern English secondary school, I saw for myself the positive difference employer engagement could have on my students. Using some connections I had with local employers, I persuaded a range of people to come into my classroom to talk about how the knowledge and skills my students were developing would be of value to them in the workplace. It was a light-bulb moment for many of those young people – showing them the relevance of what they were doing in the classroom, broadening their horizons, raising their aspirations, and highlighting the range of jobs and career routes open to them. Looking back, I firmly believe that for many it gave them motivation to pass an exam they would have otherwise failed. As a young teacher, it opened my eyes to the powerful impact such simple interventions could have and how lucky I was to have within my network people who could provide the informed insight that my students needed.

In the years since then, interest in connecting schools more closely with the working world has grown steadily not just in the United Kingdom, but around the world and in relation to all forms of schooling, not just technical or vocational education. Employer engagement in education includes such activities as careers-insights talks, subject talks, career/job fairs, enterprise competitions, mentoring, workplace visits, job shadowing and short work placements that enable young people to interact with private, public and third-sector employers and their employees. While easily recognisable, employer engagement has different meanings at the different stages of school life.

At the primary level, it is often about challenging gender stereotyping about jobs and careers, and helping to excite children about the subjects they are learning. At secondary school, employer engagement focuses more on broadening and sharpening career aspirations and developing knowledge, skills and experience to ease the transition into work. Employer engagement is a resource that enriches career guidance and bolsters student academic motivation. When children and young people engage with the working world they gain something that is not readily

accessed by any other means. For example, students are often more willing to believe what they hear from a professional who is actually working in a particular sector or doing a specific job, than from parents, teachers or career counsellors. It gives young people new, first-hand information that they feel they can trust. Its authenticity helps them make decisions and confidently develop the skills and behaviours that employers want in their future workforce.

Employer engagement has an essential and unique role to play in modern education, and the evidence is clear that young people have much to gain from it; but what is the best way to provide it? After all, it depends largely on the voluntary, unpaid contributions of multiple workplaces and employee volunteers interacting with enormous numbers of schools and teachers, commonly undertaking initiatives outside of the fixed curriculum. What should national strategies seek to achieve and try to avoid? Four principles can be applied to test whether employer engagement is working for everyone. The employer engagement that we strive for should be effective, efficient, equitable and evidenced.

Effective employer engagement ensures that the right young people engage with the right employer or employee volunteer through the right activity at the right time in their school life. Put another way, effective employer engagement ensures that the people closest to the learners get to decide how they become involved. No one is better placed than the teacher to know how different students might benefit from an encounter with an employer. Effective interactions, moreover, must be unquestioningly authentic. It must never be forgotten that the added value that the volunteer employee offers is persuasive insights and experiences that are new and different to traditional schooling. For some students, low career aspirations are the challenge, for others it is that aspirations are, as this publication shows, unrealistic or misaligned with educational plans. All learners can benefit from broadening their understanding of what the labour market has to offer. It is one of the most interesting insights from research that where young people themselves state that their engagement with employers was “very useful”, they turn

out to be right: they go on to do better as young adults in the labour market. Many students will gain from first-hand experience with mentors or through placements in the workplace. Working with adults who are not parents or teachers gives students the opportunity to develop, in authentic environments, the communication and team-working skills that underscore what it means to be personally effective in distinctive workplaces. The truer the representation of actual working life and the closer more intensive activities speak to the ambitions of young people, the more effective they are likely to be.

Teachers are perfectly placed to judge whether children and young people are learning something new and different from their interactions with the world of work. They should be the customers who drive any delivery system. This means that classroom and subject teachers, as well as career guidance professionals, should determine with whom their learners should interact. Of course teachers, like young people, “don’t know what they don’t know”, and effective systems will put mechanisms in place to amplify occupational areas that are failing to signal well to young people. There is an advantage, consequently, in delivering employer engagement through systems based around national campaigns that can target different types of employment, like small businesses and cutting-edge start-ups that might not be well known as well as areas where there are significant shortages of skills.

The importance of volume and variety in young people’s encounters with the working world drives the need for **efficiency** in delivery, a second principle essential to the best employer engagement. While some employer engagement activities, such as mentoring, might require modest training or safeguarding checks, and others, like work placements, may demand an assessment of health and safety risks, the costs of employer engagement is overwhelmingly related to finding the right people and workplaces that are open to working with schools. It is essential to know what employers are willing to do, and when and where they are willing to do it. Efficient systems will work through existing networks of businesses, trade unions and professional associations,

based on the field of work and location, to raise awareness of the opportunities to engage. As such, national online portals serve a valuable purpose in enabling low-cost campaigns that can drive interest to a single website. If campaigns are overseen by governance structures that include representatives of both teaching and employer/employee communities, there can be greater confidence that initiatives are needed and well targeted, and will take full advantage of existing networks to secure participation from both sides. Efficient systems, moreover, will connect employee volunteers with teachers in schools and colleges either through corporate gatekeepers or directly as suits individual needs.

As well as being effective and efficient, employer engagement in education must be **equitable** if it is to fully realise its potential for social transformation. Indeed, poorly managed employer engagement has a high risk of increasing inequalities – as schools in more affluent areas draw on richer parental and local economic resources to support learners. Equitable employer engagement recognises that young people vary in the extent to which they have easy access to, and a comfortable understanding of, the working world. As the OECD has shown, the career expectations of teenagers are heavily shaped by their gender, social class, immigrant background and geographic location. The children of parents who are managers, for example, are likely to have a much better understanding of hiring processes than peers from different backgrounds. It is well known too that gender stereotyping often distorts how children and young people think about future employment, serving to channel young women towards lower-paying employment. Employer engagement is a means of challenging such drivers of inequality as it presents an opportunity to strategically enhance the social capital of young people who lack relevant family contacts. National policy can ensure that specific schools in specific areas have easy access to employers well placed to inspire and inform young people's career thinking. More than that, equitable systems can ensure fair access to the most desirable workplace visits

and experiences, even for learners in remote areas. National campaigns can and should explicitly address the needs of young people who are at the greatest disadvantage.

Finally, it should go without saying that high-quality employer engagement is **evidenced**. Longitudinal datasets now offer important insights into the impact of different employer engagement approaches. Further opportunity exists to introduce greater experimentation into the delivery of employer engagement. School systems and employers can develop a deeper understanding of what works best for whom under which circumstances. It is time to go beyond seeing employer engagement as a “nice-to-have” bonus and approach it with the same critical enquiry as other aspects of education.

Every young person, wherever they live, whatever their parents' or carers' circumstances, wherever the school they go to, should have the opportunity to hear about jobs and the world of work first-hand, from the people doing those jobs – and this should start in primary education.

Historically, schools have been tasked with delivering employer engagement for their students, at times helped by specialist brokers often operating on a local or sub-regional basis. These are models with many strengths, but they can run the risk of undermining the

principles of good practice articulated here. Technological advance allows countries to mitigate such dangers by reducing the transaction costs of having someone in a workplace with desirable knowledge to share coming to a school to interact with a young person. Ultimately, for employer engagement to happen, it needs to be made easy for everyone involved. The single biggest reason why any employer or employee volunteers to work with a school is because someone asked them to. As concerns rise over skills mismatch, automation and youth unemployment, the need for the question to be asked becomes ever more pressing.

Back in the 1990s, when I was a young teacher, good fortune gave me access to the people I needed to enrich students' schooling through career insight talks and work experience. It is an urgent necessity to go beyond such happenstance. Across the world, it is time for a strategic, critical, technologically driven approach. Our vision should be of a world where employer engagement is an everyday element of schooling, from the first years of primary school to the last days of upper secondary. It is a vision that is within the grasp of this generation to achieve.



Nick Chambers is Chief Executive of the charity Education and Employers. Launched in 2009, the charity aims to “provide children and young people with the inspiration, motivation, knowledge, skills and opportunities they need to help them achieve their potential.” It does this though connecting schools and colleges with volunteers from the world of work, quickly, easily, for free and at scale

by using an innovative match-making technology called Inspiring the Future. Since its launch in 2012, the Inspiring the Future programme, and its subsidiary initiatives, including Inspiring Women, Primary Futures and Inspiring Apprentices, has enabled two million interactions between young people and the world of work in the United Kingdom. The charity has also supported the roll-out of the programme in a number of other countries. In addition, Education and Employers undertakes research into the effectiveness of employer engagement in education and works with a range of partners internationally.

” *I want to be able to help young people
like I wanted to be helped myself.*

Isobel, a 16-year-old girl from the United Kingdom
who wants to be a guidance counsellor



6

Providing guidance: Does career counselling make a difference?

Reviews of research literature show that young people who participate in career development activities through their schooling can mostly, but not always, expect positive changes in their educational success and later working lives. Effective career development activities can help young people develop a better understanding of the relationship between education and employment, broaden their career aspirations and help them develop a more informed understanding of what they need to do in order to achieve their goals. As such, the quality of the guidance provided is as important as the availability of a coherent programme of related activities delivered over a school career.

The PISA 2018 dataset provides some insights into the effectiveness of career development activities. Across the 32 countries that distributed the PISA Educational Career Questionnaire, young people who participated in a number of career development activities were more likely than expected to agree with the statement “Trying hard at school will help me get a good job”. The relationship provides a tantalising insight into the potential for career guidance to underpin educational success. As Figure 6.1 shows, it is activities that demand little of students’ time –

attending a job fair, speaking with a school guidance counsellor – that are most strongly associated with more positive outcomes.

Figures 6.2 and 6.3 explore the relationship between participation in career development activities and misalignment in students’ education and the concentration of career expectations. The data show that participation in career development activities is associated with both more and less misalignment than would otherwise be expected. The data raise questions about the circumstances under which career development activities can be most effective in informing students’ plans for their future. Figure 6.4 shows a stronger, more positive relationship between participation in career development activities and consideration of a broader array of occupations. While the relationship is strongest with internships, a number of less time-consuming activities, including job shadowing and attending job fairs, are positively associated with a broader range of aspirations. Further analysis will drill into national experiences to better understand how schools can optimise positive impacts among young people.

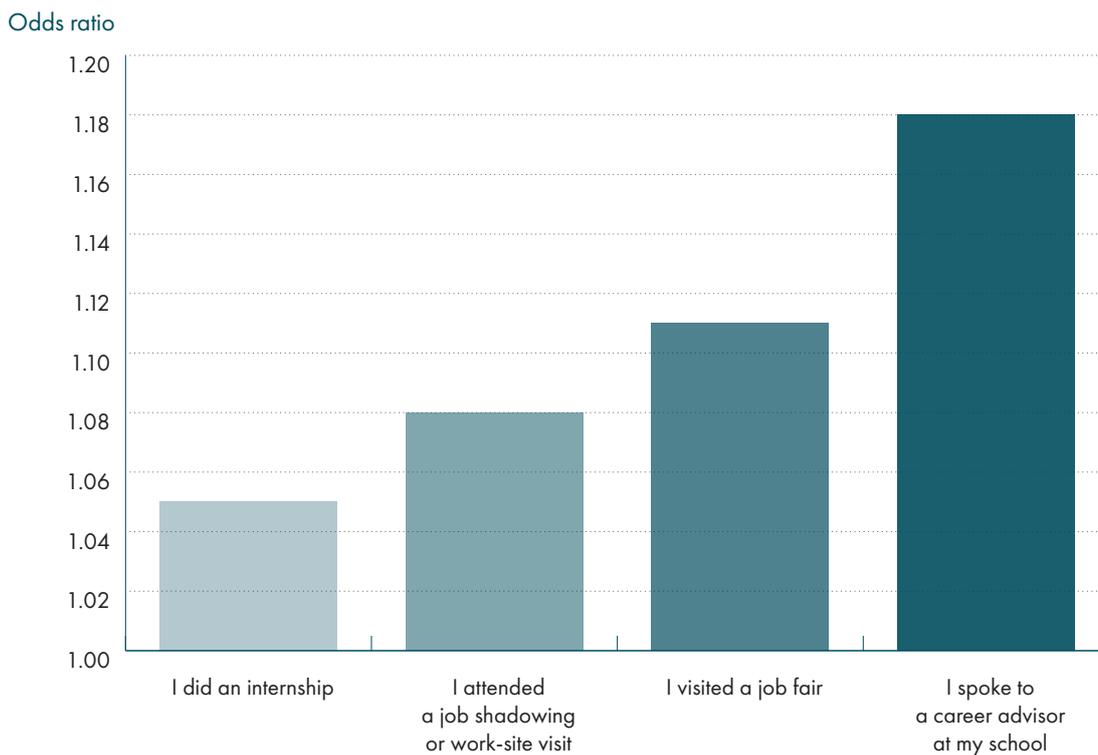


Figure 6.1 – Participating in career development activities and motivation to work hard at school

Odds ratio of the likelihood of students agreeing or strongly agreeing with the statement "Trying hard at school will help me get a good job", average, PISA 2018.

Note: Odds ratio are adjusted for gender, socio-economic status, school type (private/public, class size, urban/rural, staff/student ratio), immigrant background, motivational factors (whether students skipped classes or days) and cognitive potential (whether students repeated a year of study).

Source: PISA 2018 database.

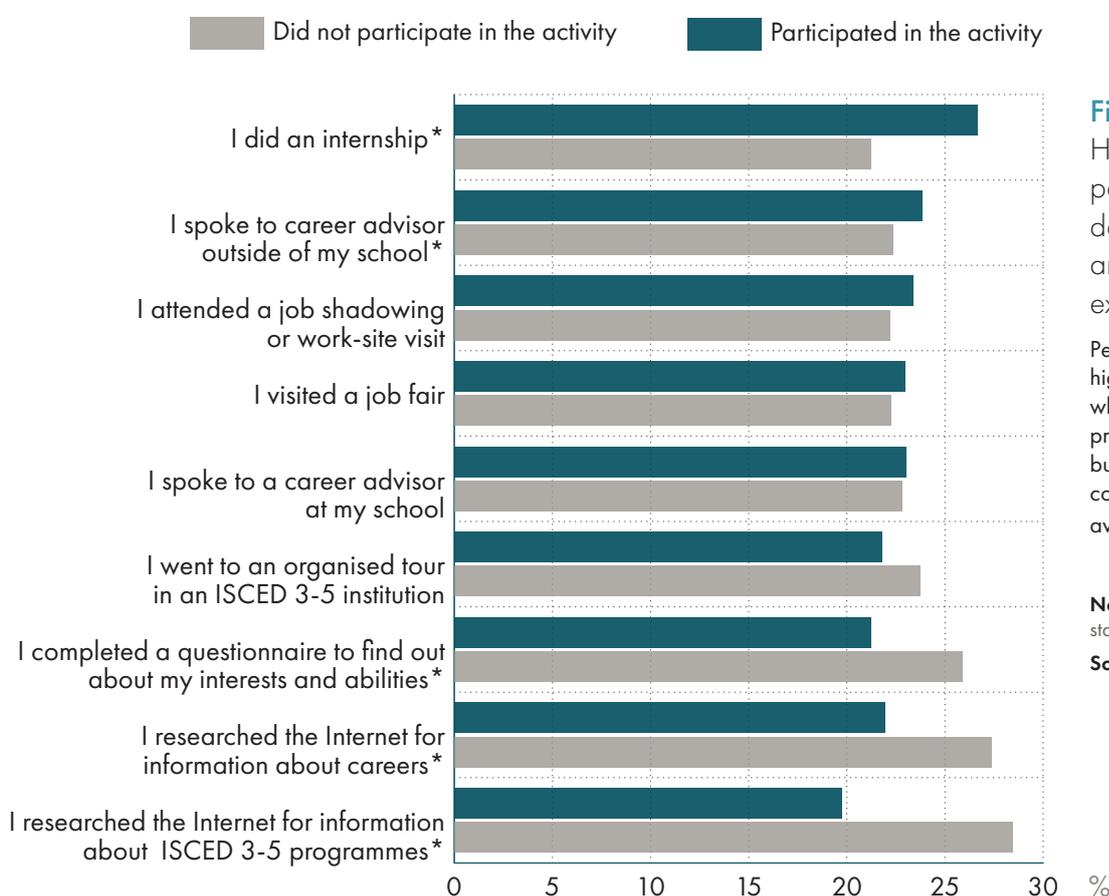


Figure 6.2 – High performers participating in career development activities and misalignment of expectations

Percentage of high-performing students who expect to work as professionals or managers, but who do not plan to complete tertiary education, average, PISA 2018

Note: A star (*) indicates statistical significance.

Source: PISA 2018 database.

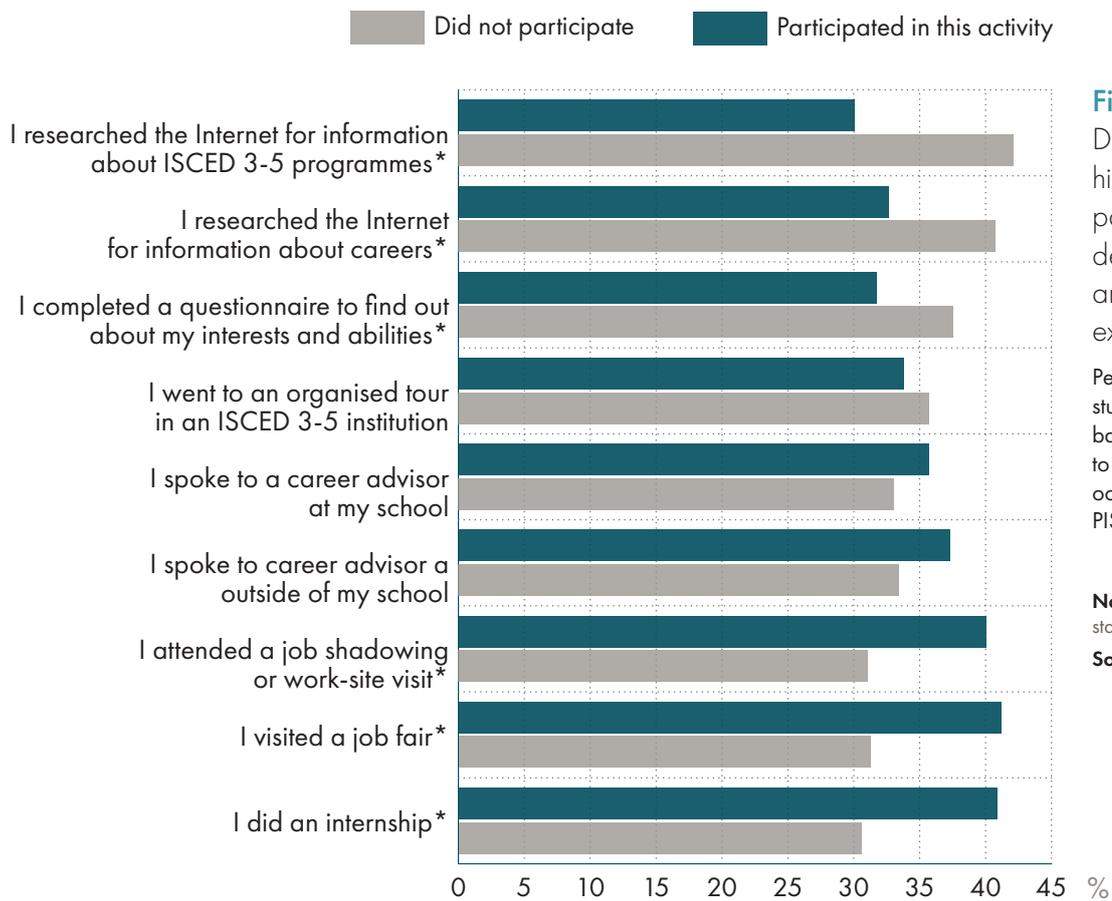


Figure 6.3 – Disadvantaged high-performers participating in career development activities and misalignment of expectations
Percentage of high-performing students from disadvantaged backgrounds who do not aspire to professional or managerial occupations, average, PISA 2018

Note: A star (*) indicates statistical significance.

Source: PISA 2018 database.

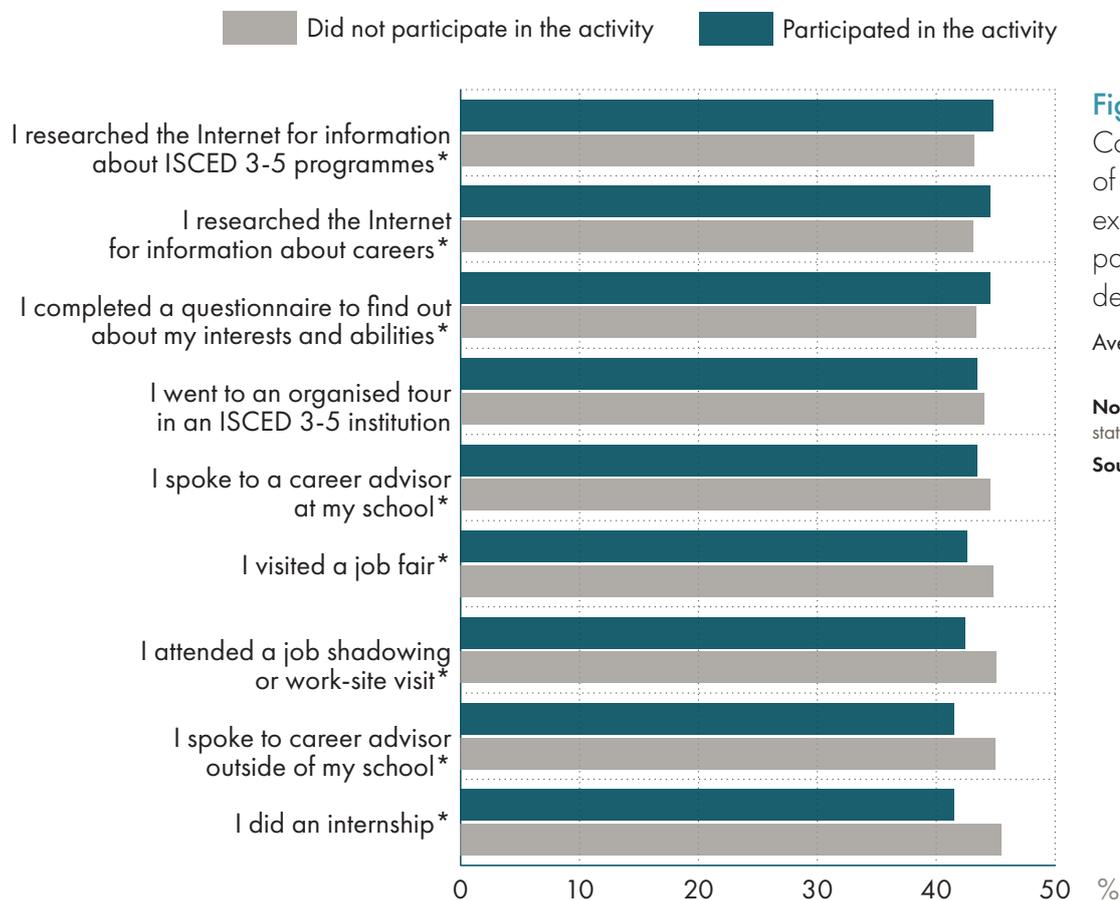


Figure 6.4 – Concentration of occupational expectations, by participation in career development activities
Average, PISA 2018

Note: A star (*) indicates statistical significance.

Source: PISA 2018 database.



I would like to be successful and be able make enough money to live comfortably and be financially stable. Yet I also want to feel like my work is making a difference and improving the lives of others. I want to be challenged and never bored.

Sarah, a 16-year-old girl from Canada who aspires to be a scientist



Career participation: Who gets career guidance?

With young people staying in education longer than ever and facing increasingly difficult decisions about how to prepare for the labour market, it is more important than ever to get career guidance right. The PISA 2018 Educational Career Questionnaire asked young people in 32 countries about their participation in career development activities. The data show a great variety in levels of engagement. As Figure 7.1 illustrates, it is only the least-demanding activities (researching the Internet, completing a questionnaire) that the majority of 15-year-olds undertake. Less than half had spoken to a career advisor by this age and less than 40% had attended a job fair. Direct exposure to the world of work, which has been seen to be so valuable to young people in giving them trusted insights into the working world, is limited.

Across all career development activities, comparisons with PISA data from 2006 show steady improvements in participation levels. However, it is still advantaged students, often in less urgent need of career guidance, who are much more likely to receive it (Figure 7.2). Participation in career development activities is also strongly shaped by gender (Figure 7.3). Across PISA-participating countries, schools attracting more advantaged students are more likely to provide a dedicated career guidance counsellor (Figure 7.4). In some

countries, including Belarus, Brazil, Colombia, Greece, Latvia, Mexico, Peru, the Philippines, Romania and in parts of China, the gap exceeds 30 percentage points; in others, such as Austria and Germany, it is disadvantaged students who have greater access, reflecting the strength of vocational education in these countries.

National variation is considerable in the delivery of career development activities. While more than 80% of young Danes can expect to have met with a career guidance counsellor in school by the age of 15, the same applies to fewer than one in three Belgians or Brazilians. Only 8% of young people in Hong Kong can expect to have attended a job fair compared to 72% of Maltese youth. Given such variation, there are significant opportunities for peer learning between countries. One focus of future analysis will be on the extent to which countries are able to ensure that young people from rural and immigrant backgrounds have access to the information they need to make good decisions about their educational and occupational futures.

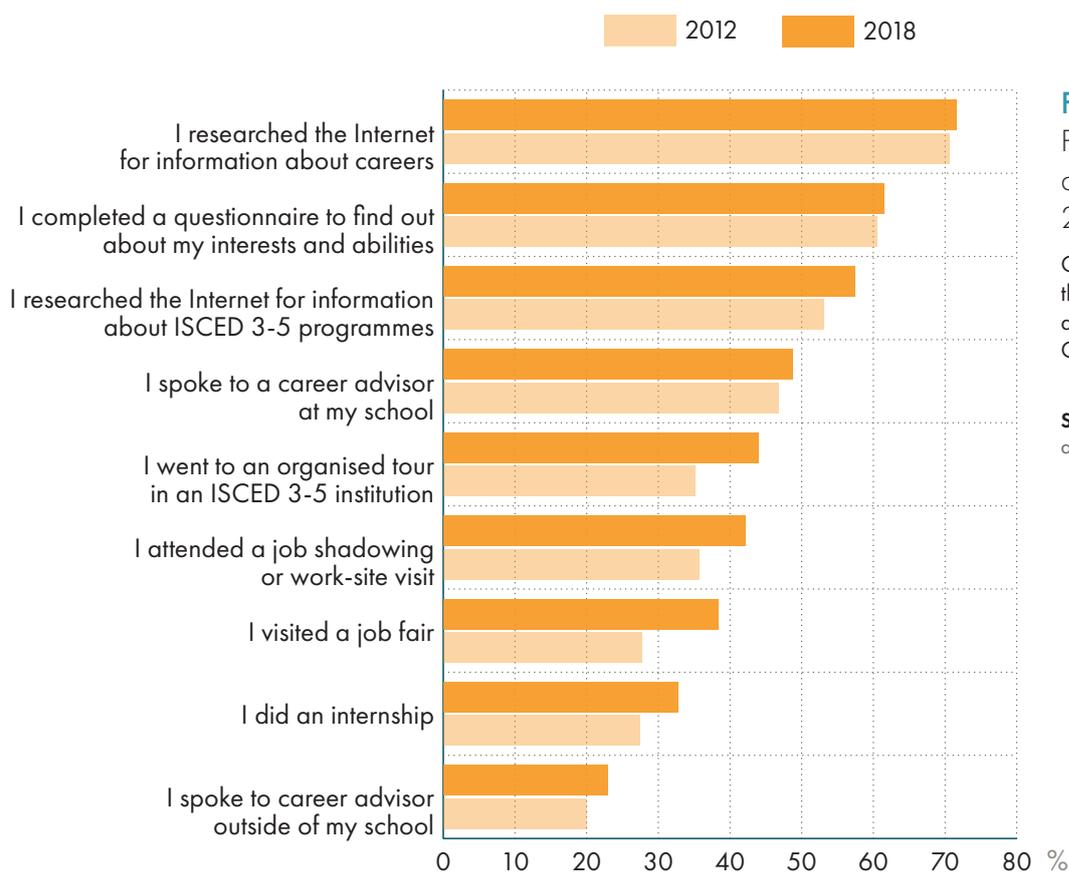


Figure 7.1 – Participation in career development activities, 2012 and 2018

OECD average of countries that completed the 2012 and 2018 PISA Educational Career Questionnaires

Source: PISA 2012 and 2018 databases.

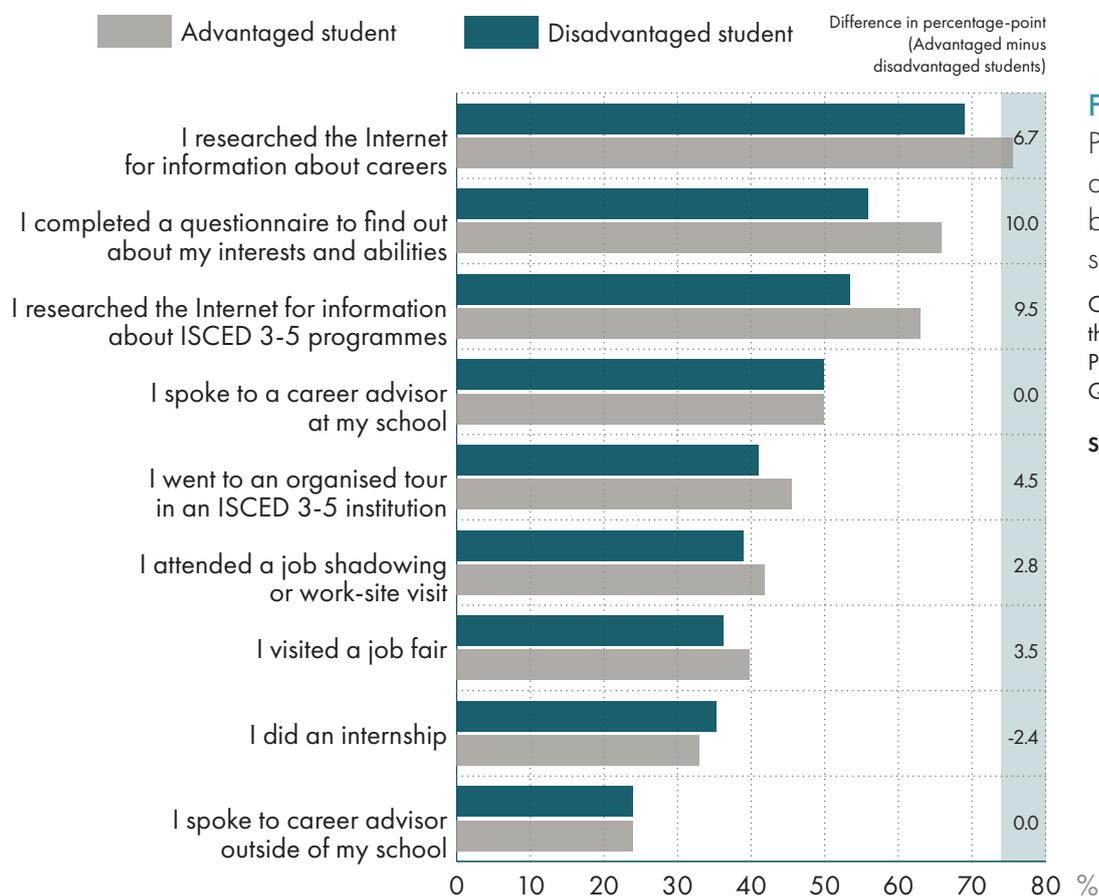


Figure 7.2 – Participation in career development activities, by socio-economic status, 2018

OECD average of countries that completed the 2018 PISA Educational Career Questionnaire

Source: PISA 2018 database.

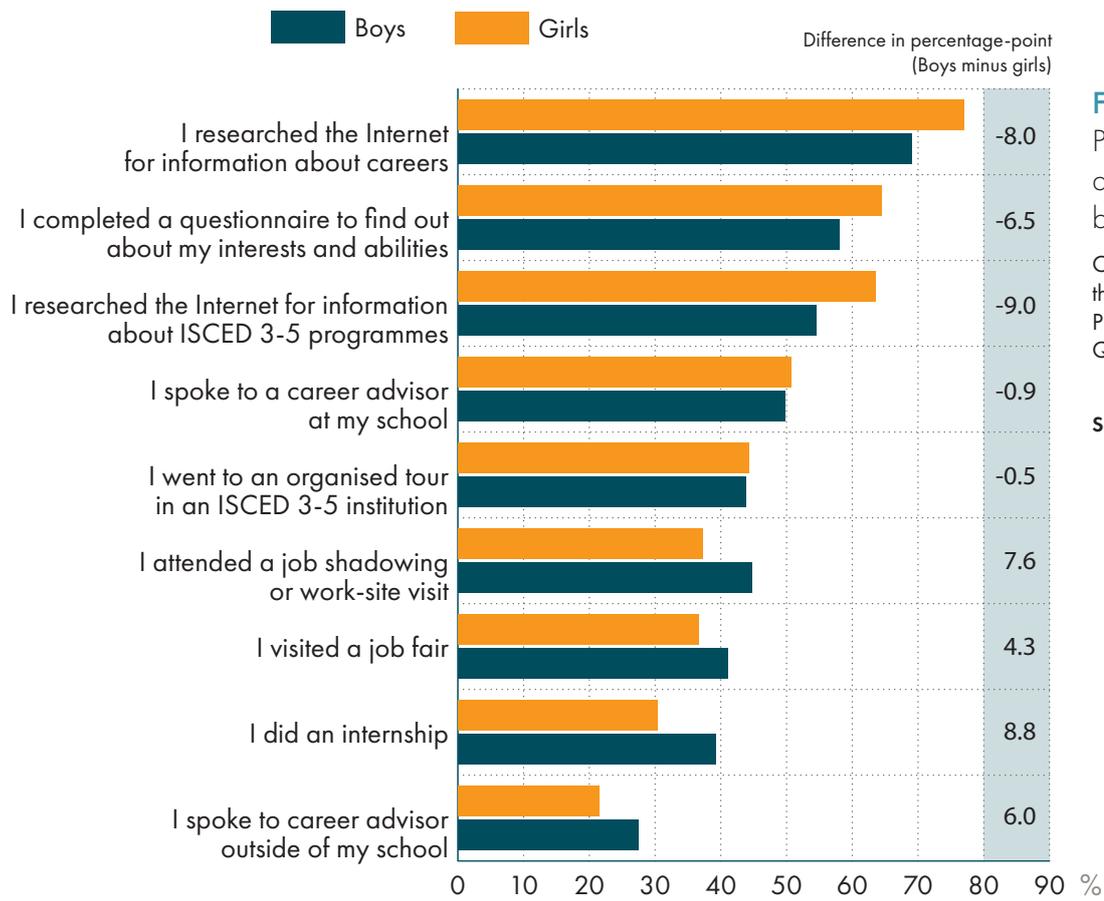


Figure 7.3 – Participation in career development activities, by gender, 2018

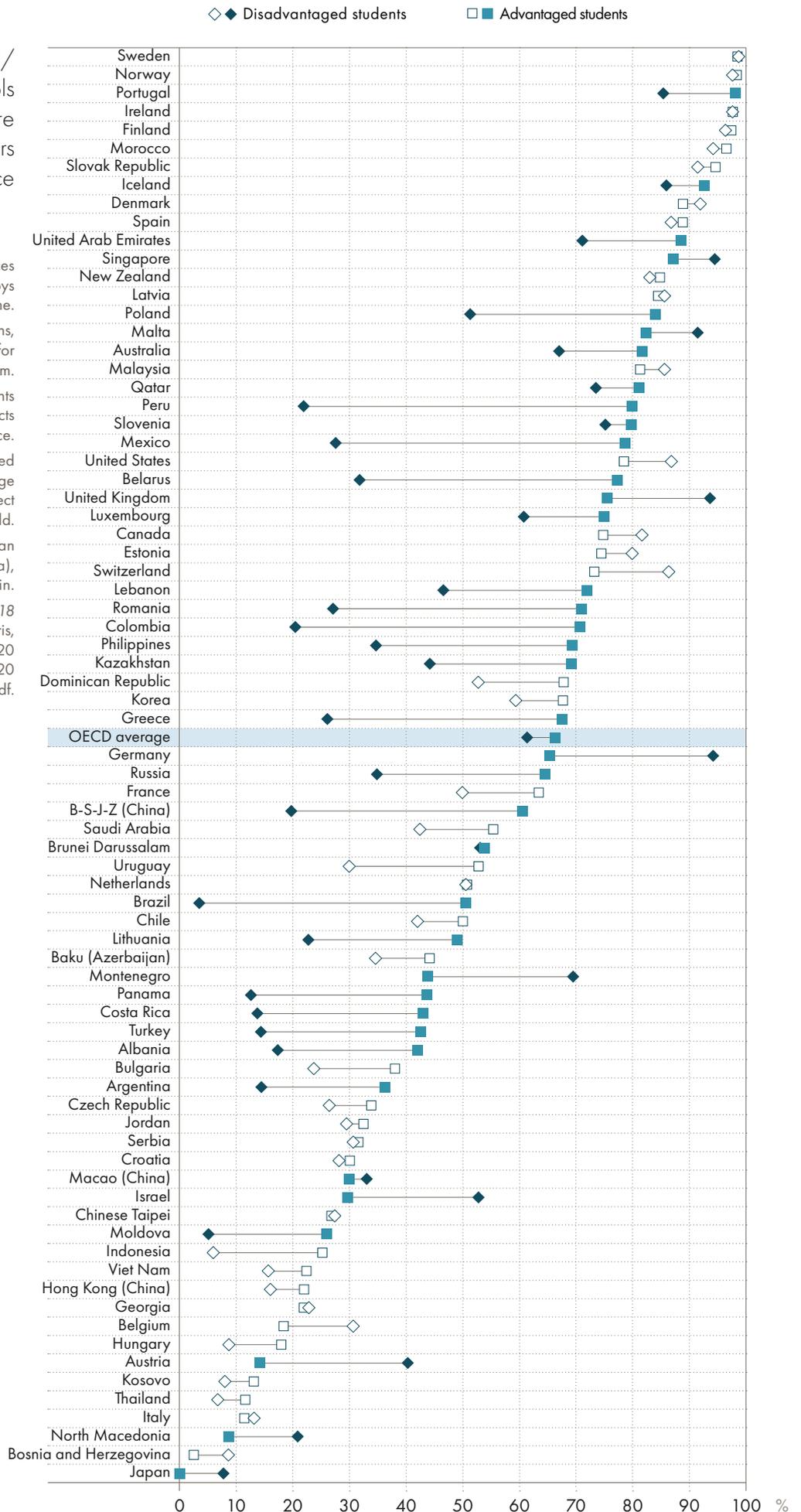
OECD average of countries that completed the 2018 PISA Educational Career Questionnaire

Source: PISA 2018 database.

Figure 7.4 – Advantaged/Disadvantaged schools where one or more dedicated counsellors provide career guidance

Notes: Statistically significant differences between girls and boys are shown in a darker tone. For students' career expectations, results are only available for the French Community of Belgium. In this figure, "top performers" refers to students who attain at least Level 2 in all three core subjects and Level 5 or 6 in mathematics and/or science. Countries and economies are ranked in descending order of the percentage of top-performing girls who expect a career in the field. OECD average-36 refers to the arithmetic mean across OECD countries (and Colombia), excluding Spain.

Source: Schleicher, A. (2019), *PISA 2018 Insights and Interpretations*, OECD, Paris, <https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf>.



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