Written evidence submitted by Chris Percy, independent quantitative researcher and consultant

Response summary

> *"The Skills and Post-16 Education Bill, currently [in] Parliament requires only one careers meeting per pupil over three key year groups. Instead, we should see at least three careers meetings per pupil, per year, involving colleges, technical education providers and apprenticeship providers."* -Robert Halfon MP, Committee Chair, introducing this review[1]

This response provides research evidence in support of the Chair's call, quoted above, for at least three careers meetings per pupil per year. If spread over diverse activities, including employer talks, professional guidance, and education/training providers, this proposed seven-fold increase in minimum target volume will not only lead to significant benefits for young people and the economy, but it will actually do so at 'a higher impact per £ spent' than the alternative, i.e. a better return on investment. The four key points evidenced in this note are:

- A new synthesis of the quantitative evidence identifies a new, policy-relevant theme: increasing returns to scale for careers provision. Four studies are described in detail, with supporting evidence cited from six further studies and two international meta-analyses, incl.:
  - 8% wage gain for 10 career talks in the UK, with benefits stronger beyond 4 talks a year.
  - A randomised control trial for Year 11s with gains for career thinking and revision plans.
  - Group career guidance sessions in Wales, with benefits accelerating past 4 or so sessions.
- Three mechanisms explain why increasing returns to scale might be expected in theory:
  (1) The need to contrast multiple roles to make sense of the vast range of options available.
  (2) The need to hear about careers from different people at different times before it clicks.
  (3) The need for multiple experiences to overcome prior, limited, or stereotyped views.
- Principles for delivering increased volume in practice and harvesting its benefits include:
  - universal provision from an early age for horizon broadening activities;
  - integrating piecemeal information from careers activities into a broad map of the universe of jobs and options available, supported with the availability of one-to-one career guidance;
  - using technology to connect more easily with outside speakers to support frequent, small-scale activities in the rhythm of the school and integrating activities with curriculum learning.
- Financial modelling in five different studies shows that state investments in careers activities are highly likely to provide a net positive fiscal return on investment. The studies span US, UK and Canadian contexts and a range of careers-related activities in secondary education.

[1] https://committees.parliament.uk/committee/203/education-committee/news/160555/

1. Quantitative evidence on the value of a high volume of careers activities

This section draws new insights from two longitudinal studies, one in the UK and one in Wales, a randomised control trial in England, two global meta-analyses, and large-scale survey data. The evidence spans career talks in both secondary and primary education settings, group activities with career practitioners, and one-to-one career guidance sessions. Similar principles would extend to engaging education providers, training providers, and apprenticeship providers in careers activities as well, as their outreach work often provide valuable insights on careers and career pathways similarly based on authentic, first-hand experience.

Relative to current and historic levels of practice, providing more careers meetings, talks, and conversations will not only lead to continued incremental gain, but is also likely to result in accelerating benefits – at least up to levels of provision that are likely to be enacted in the near future in accordance with the Committee Chair's proposal. With benefits either increasing or at least linear to scale, the cost efficiencies gained at larger delivery volumes mean the Chair's proposal would be more cost effective than the described alternative.

Wage benefits from careers talks with outside speakers in a UK setting

Academic analysis of the large-scale, longitudinal British Cohort Study showed that students who had more career talks with outside speakers aged 14-15 (and to a lesser extent aged 15-16) earned more at age 26.[2]

The analysis focuses on those were in full-time employment at age 26 and adjusts statistically to account for differences in a range of factors that reflect demographics, academic ability, home learning environment, socio-economic status, and local unemployment rate. The point estimates indicate an 8% wage increase associated with 10 extra such talks.

These wage benefits become far more noticeable beyond four to six talks per year. Below that level, some individuals may benefit, but there is not enough widespread benefit for it to show through in averaged data, as shown in the figure 4 & 5 excerpts from the article overleaf.

The benefits continue as far as the data allow us to comment – up to approximately weekly talks in term time. These talks are often small-scale activities, perhaps 15 to 30 minutes, done in a classroom or assembly situation.

The general benefits of career activities in this research has been expanded and validated in cross-country comparative studies of longitudinal datasets led by the OECD.[3]

[2] Kashefpakdel, E., & Percy, C. (2016). Career education that works: an economic analysis using the British Cohort Study. Journal of Education and Work. DOI: 10.1080/13639080.2016.1177636

[3] For instance, this analysis on career talks is proven robust to different specifications (e.g. multiple imputation for missing data, Heckman selection for work participation, split gender analysis), and to be consistent with longitudinal studies in other countries: Mann, A., Denis, V., & Percy, C. (2020). Career ready? How schools can better prepare young people for working life in the era of COVID-19 (OECD Education Working Paper #241); Covacevich, C., et al. (2021). Indicators of teenage career readiness: An analysis of longitudinal data from eight countries (OECD Education Working Paper #258)

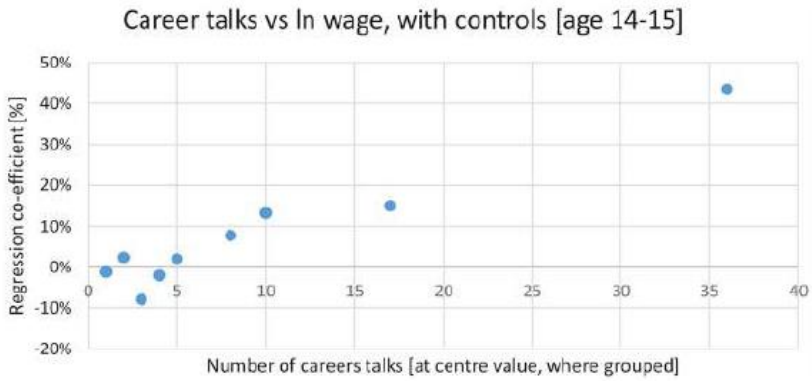


Figure 4. Fourth Year results [0 career talks as baseline comparator].

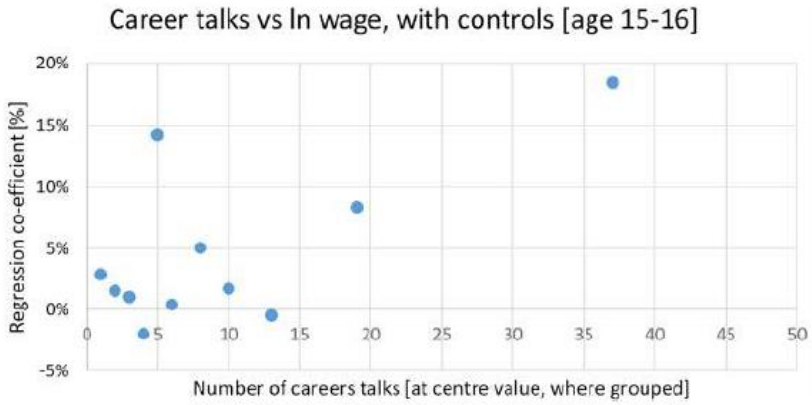


Figure 5. Fifth Year results [0 career talks as baseline comparator].

Improved career readiness from group guidance activities aged 14-16 in a Welsh setting

A similar pattern is identified in the provision of in-person group guidance activities. Internal analysis conducted for Careers Wales showed improvements from Year 10 to Year 11 on a standardised survey that captures young people's career management competencies and education/career pathway planning readiness.[4] Average progress was strongly identified beyond about four or so group sessions per year – and continued to grow through to ten or more sessions. About 17% of all progress young people reported over the year could be related to the number of in-person group activities they did, along with the other Careers Wales support that is typically provided alongside such activities (p-value 0.007, sample size 1,128, controls for region and demographics). For context, the average gain over the whole year was 2.4 points, approximately the equivalent of someone changing their answer from "I know who I can go to if I need help, but I probably won't" to "I know who I can go to for help and I probably will" (a two point shift).

International meta-analysis evidence of one-to-one career guidance

Publicly funded one-to-one career guidance in secondary education is typically provided on the basis of a single session, perhaps with a single follow-up session. However, delivery in the private sector (e.g. career coaching) and the charity sector (e.g. those in greater need) more commonly uses multiple sessions in which the practitioner builds a relationship with participants. Meta-analysis evidence, mostly of one-to-one sessions with a trained professional, supports the conclusion that,

[4] Percy, C., & Small, D. (2021, March). Career Check follow up analysis: Internal report for Careers Wales.

while single sessions still show statistically significant gains in career readiness and confidence related indicators, benefits are strongest for four or five sessions.[5]

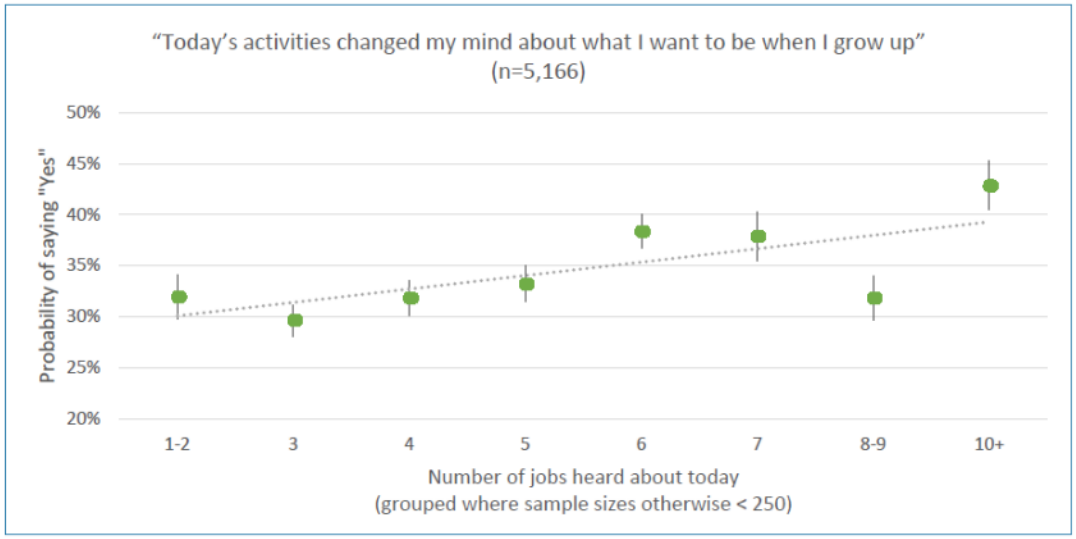
Improved confidence, motivation, and revision intentions from talks in an English setting

A randomised control trial in England provides further evidence that prior engagement in career activities increases young people's likelihood of getting value from future activities.[6]

A group of Year 11 students were randomly identified at the form/class level to participate in three short career talks with outside speakers, leading to increased career confidence, self-efficacy, motivation at school, and planned revision hours, as well as changes in their career/education pathway planning. The evidence for increasing returns to scale is identified in a larger impact of the talks on weekly revision hours for students who reported having done other similar careers activities prior to the intervention (e.g. 2 extra weekly hours of revision for three such prior activities, significant at 5% level).

New ideas about future pathways and education relevance in primary schools in England

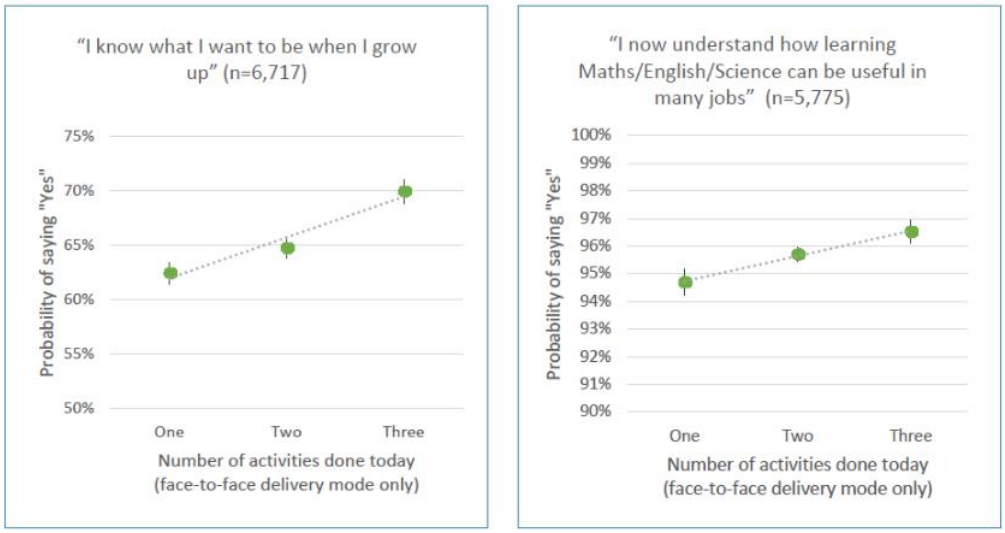
Increased benefits from higher volume of activity were also seen in a primary school setting, with a Department for Education funded pilot of world of work inspiration events using outside speakers (delivered by the Education and Employers Charity, funded via The Careers & Enterprise Company).[7] Although the government no longer directly funds such horizon broadening activities in a primary school setting, the evidence from the pilot strongly supports the potential impact of such activities.



[5] Brown, S. D., & Ryan Krane, N. E. (2000). Four (or five) sessions and a cloud of dust: Old assumptions and new observations about career counseling. In S. D. Brown, & R. W. Lent (Eds.), Handbook of counseling psychology (pp. 740–766) (3rd ed.). New York: Wiley; & Whiston, S. C., Li, Y., Mitts, N. G., & Wright, L. (2017). Effectiveness of career choice interventions: A meta-analytic replication and extension. Journal of Vocational Behavior, 100, 175–184.

[6] Kashefpakdel, E., Percy, C., & Rehill, J. (2019). Motivated to achieve: How encounters with the world of work can change attitudes and improve academic achievement. London: Education and Employers.

[7] Percy, C., Taneja, A., & Hampshire, K. (2021). Scaling Up: Developing and extending career-related learning in primary schools. & Percy, C., & Amegah, A. (2021). Starting Early: Building the foundations for success. Education and Employers.



* Coefficients plotted using logistic regression with core controls. Linear trendline fitted to average points. Vertical bars represent one standard error above and below the mean, representing a c. 68% confidence interval for the mean value.

The relationships shown above sustain approximately linear returns to scale despite the high levels of activity involved: hearing about ten jobs in a single day or doing three discrete employer/career-related activities in a single day. In the next section, exploring theoretical mechanisms for increasing returns to scale, it is possible that some of these mechanisms apply less strongly in primary school than secondary, notably the need for multiple talks to overcome prior, stereotyped views based on limited experience, since stereotypes may be less strongly embedded at a younger age.

Other evidence, including high quality causal inference studies, for impactful careers activities

The studies summarised above reflect a broader literature, with evidence of positive impacts of career guidance and at least linear returns to scale as the volume of provision increases. For instance:

- Other experimental and quasi-experimental evidence have found benefits for career guidance in other settings, including a study of career counsellors in US high schools and a randomised field experiment on early entrepreneurship education in the Netherlands.[8]
- The benefits of more meaningful school-mediated interactions with employers have also been shown in two YouGov surveys of young British adults, where recalling three or four or more such interactions typically has significant stronger associations with positive labour market outcomes and a step change in reported usefulness compared to just two or fewer.[9]
- OECD analysis of longitudinal studies from Germany, the UK, and the US similarly finds associations with positive labour market outcomes for increased frequency of part-time work and part-time volunteering while in secondary education.[10]

[8] E.g. a regression discontinuity design on counsellors in US high schools and an RCT on entrepreneurship education in the Netherlands: Hurwitz, M., & Howell, J. (2014), Estimating Causal Impacts of School Counselors With Regression Discontinuity Designs. Journal of Counseling & Development, 92: 316-327; Huber, L., Sloof, R., Praag, M. (2012). The effect of early entrepreneurship education: Evidence from a randomized field experiment. Institute for the Study of Labor.

[9] Mann, A., & Percy, C. (2014). Employer engagement in British secondary education: Wage earning outcomes experienced by young adults. Journal of Education and Work, 27(5), 496-523; The views of young Britons (aged 19—24) on their teenage experiences of school-mediated employer engagement. In Mann, A., Stanley, J. and Archer, L. (Eds.) Understanding Employer Engagement in Education: Theories and Evidence. London: Routledge, pp. 143-162.

[10] Table 4.5 in Covacevich, C., et al. (2021). Indicators of teenage career readiness: An analysis of longitudinal data from eight countries (OECD Education Working Paper #258).

2. The theoretical mechanisms behind increased returns to scale in careers activities

Why might there be increasing returns to scale with career activities, particularly those involving a group setting or interactions with outside speakers?

More specifically: why might it take more than a few sessions before material benefits can be observed on average across a class and why would those benefits continue up to quite large levels, such as hearing about ten different jobs in one day or having activities every week or every fortnight during term time? We've seen hints of this pattern in the empirical data above but we would be more confident acting on the pattern if we have reason to expect it. This section suggests three theoretical reasons that might contribute to an explanation of the observed patterns.

Reason 1: The need to contrast multiple roles to make sense of the vast range of jobs available

There is a huge, ever-shifting variety of jobs, roles, and careers available in a modern economy, with many different and non-linear routes to accessing them. It is never possible to analyse all choices to make a fully considered choice, instead our best approach is to piece together different insights to form reliable heuristics and narrow down the options or test specific choices.

No one person, whether careers practitioner, parent, external speaker or teacher, knows enough of the full picture to convey all of it, but by bringing in lots of different people and different activities, we help young people identify enough similarities and differences across roles, that they can get a feel for what might resonate with them, helping them to ask targeted questions and explore specific avenues that might work, with an awareness that there are plenty of other options to explore if those do not fit.

Reason 2: The need to hear about careers from different people at different times for it to click

We all respond differently to other people. At some times, we may want to hear about jobs from people that look and sound like us, with similar backgrounds, at other times, we may want to hear about opportunities and life paths from far afield. Hearing about roles from different people in a variety of different ways increases the chance that some of it sticks. This takes volume of activity and it will be hard to support a whole year group of diverse students with just a couple of activities every year or two.

Different people are also responsive to insights about careers at different times. We all develop at different rates. We think about our careers at different stages of education and in non-linear, unpredictable ways. How we feel on the day of an activity can also influence how open we are to new information. Therefore, it is helpful to make careers information and opportunities for interaction available to young people at lots of different times, so that when they are open to it, it's there, both highly visible and accessible.

The availability of independent career guidance professionals also offers a vital ' safety net' for those most in need, although this works best when those interacting day-to-day with young people – their teachers, tutors, and parents – are aware of the guidance offer and what it can help with, so they can make introductions or referrals as appropriate.

Reason 3: The need for multiple experiences to overcome prior, limited, or stereotyped views

From a very young age, we gain a narrow, periscope view on different jobs and careers from children's books, TV, social media and friends and family. Common questions like "what do you want to do when you're older" can also inadvertently lead to children reaching for plausible answers and reasons, locking in pat answers at an early age based on limited information. Since we are not starting

with blank canvasses, it may take multiple experiences, underpinned by authentic interactions with multiple adults engaging with first hand knowledge, and sufficient reflection time to build perceptions into a more rounded picture that can update or expand prior views.

Survey evidence from the UK, the OECD and internationally reveals surprising persistence in the jobs and sectoral aspirations from primary school through to late secondary.[11] For example, the 1.0% interested in manufacturing at age 17/18 has barely shifted from age 7/8. The same evidence shows that the collective aspirations of young people represent a very narrow spectrum of jobs, particularly among more economically disadvantaged young people who are often limited in the range of jobs they see around them.

Teenage aspirations are wildly disconnected from the forecast jobs available in the economy and rarely have back-up plans[12], leading to future disappointment for many young people and exacerbating skills shortages in the economy. Tackling such misinformed early impressions may require lots of exposure to diverse and representative worlds of work.

3. How to deliver increased provision in practice

Meaningful increases in careers provision will require meaningful commitment: appropriate levels of resource, support, and oversight, along with adjustments to day-to-day practice in schools and colleges. Without attempting a comprehensive discussion, this section describes a few principles to support the implementation of increased provision:

Using universal provision for the majority of horizon-broadening activities

"We don't know what we don't know – and may not realise we're interested in something until we hear it." For that reason, it is important to have careers activities focused on broadening horizons provided as standard at a group/class level, built into fabric of the school or college. In this respect, the implications are consistent with the Gatsby benchmarks for good career guidance that are currently encouraged for secondary schools and colleges, emphasising that the benchmarks recommend certain minimum levels of activity, rather than setting a full target to aim for.

These activities can be complemented with optional or targeted provision and on-request career guidance support with a trained practitioner. The key is to have sufficient and ongoing universal engagement so that the three theoretical mechanisms for benefit described in section 2 have a chance to gain traction.

Integrating episodic insights into a schematic of future opportunities

External speakers, both employer volunteers and education/training providers will inevitably cover the careers and pathways that exist in an episodic, ad hoc manner, based on their partial experience of our diverse economy. This piecemeal information can be better exploited if anchored in a map or schematic of the career diversity that exists. A classroom setting might be used to explain what

[11] Chambers, N., Percy, C., & Rogers, M. (2020). Disconnected: Career aspirations and jobs in the UK. London: Education and Employer; Mann, A., Massey, D., Glover, P., Kashefpakdel, E., & Dawkins, J. (2013). Nothing in common: The career aspirations of young Britons mapped against projected labour market demand 2010-2020. London: Education and Employers; OECD. (2020). Dream Jobs: Teenagers' Career Aspirations and the Future of Work. Paris: OECD; Chambers, N., Rehill, J., Kashefpakdel, E., & Percy, C. (2018). Drawing the future. London: Education and Employers.

[12] Percy, C., & Schoon, I. (2021, October). What happens to those with a common job aspirations by age 14? Gender stereotypes and outcomes in England. Presented at the OECD Disrupted Futures Conference.

sectors and occupations currently exist, how they have evolved historically, and how they might continue to evolve.

The schematic would effectively be summarising thousands of distinct roles, so can never describe each one. However, having a schematic means teachers can explicitly help young people to situate where the talks and activities fit in relative to the overall picture, giving a sense of what ground has been covered and what has not. This will also help schools to cover a true diversity of roles, not just the more glamorous careers that exist. Understanding what lower skill, lower progression jobs look like may be just as valuable to young people as inspiring them about high profile careers.

Career guidance practitioners are also an important part of this picture. They can help young people make sense of the incoming information, corral their areas of uncertainty into targeted questions and self-motivated research activity, and translate aspirations into practical action plans.

Using technology to organise frequent, small-scale activities in the rhythm of the school

Some types of activity, such as careers talks, can in principle be done at a high frequency. Why not a short talk every fortnight? The young people who describe that level of provision seem to be the ones getting most benefit. Use assembly time where possible or regular form time slots. For high profile and engaging speakers, where young people are likely to attend if encouraged, use optional breaktime slots and /or after school or summer school activities.

Wherever possible, talks and activities should be embedded in the curriculum and local community activities. So many of the topics, case studies, and learnings contained in different subjects can be linked to different jobs, careers, or job-related tasks. There are great opportunities for enhancing learning and motivation, while supporting careers awareness and reflection at the same time.

A blend of live virtual interactive talks (e.g. via a video conferencing platform) and in-person talks can be used to increase volume and help young people hear from a more geographically diverse range of individuals and industries that may not be present in their local area. Early evidence suggests that video conferencing career-related talks can have similar benefits to in-person talks for students.[13]

Platform technologies exist to make it easy for schools to connect with potential speakers, such as Inspiring the Future, Speakers for Schools, and Founders for Schools. At the same time, relationship brokerage and activity organising takes time, networks, and expertise, whether developed in-house in schools or commissioned via third parties. This activity needs to be resourced on a sustainable basis.

What is the right proportion to aim for?

If this sounds like a significant shift compared to current practice, perhaps that is exactly what we should be trying – or at least trialling for one full cycle of secondary education so that we can test the impact directly.

The decision about how to allocate scarce education time between the years of aged 10 and 18 is ultimately a political one, to be made jointly as a society based on what different stakeholders value. A rounded, modern education hopes to achieve many things, including a firm basis of knowledge and skills to support future learning; excellent functional skills in literacy, numeracy, digital, and critical

[13] Percy, C., Taneja, A., & Hampshire, K. (2021). Scaling Up: Developing and extending career-related learning in primary schools. London: Education and Employers; Mann, A. and Kashefpakdel, E.T. (2014).

reasoning; preparing people to be active citizens in a democracy and stewards of our society and planet; and providing the foundations for healthy, fulfilling lives inside and outside of work.

A key part of any stage of education is preparing people for what comes after it, in its broadest sense. Doing this well will, at some point, involve fostering a rich understanding of the economic structure of the society they will be entering into, a well-informed and confident view on the pathways they might pursue into lifelong satisfying careers, and the appropriate skills, networks, and experience for navigating career and education transitions.

Estimates suggest that even a full and fair implementation of the eight Gatsby Benchmarks for good career guidance would likely reflect around 5% of time during secondary education, with much of that taken up by a single work experience week or similar activity. Indeed, relatively few schools in England achieve that level of provision at the moment, with an average of 4.4 out of the 8 benchmarks fully achieved.[14] Given the extraordinary ambitions of good career guidance, helping young people manage the complexities of the modern economy, we might reasonably ask for more time in the school or college year and more resources inside and outside of schools to support it.

A national debate informed by broad public and employer polling might help identify an appropriate split of resources across different education objectives and curriculum priorities. However, pending such an exercise, the available evidence from young people and employers points to the likely need for more ambition for careers activities.

Young people in the UK reported the lowest value of school preparing them for "adult working life" and the lowest usefulness of school career guidance counselling out of 19 countries surveyed in 2019.[15] Repeated surveys reveal employer criticisms about careers provision in schools, with one example finding 84% of UK businesses saying careers advice was not good enough[16]. While careers provision may be on an upwards trajectory[17] and may have improved since these surveys, we do not appear to be in territory where incremental changes can fully meet stakeholder hopes.

4. Financial modelling on the likely positive fiscal return on investment (ROI)

The vision of education and careers preparation set out above is well motivated on social and moral grounds alone. There is also good reason to believe that state investment in better careers provision will result in positive pay back for the Exchequer, as young people are more likely to make pathway choices that reflect their strengths and potential, to complete the qualifications they commit to, to enter employment, and to have progressive, income-generating careers.[18]

The table overleaf summarises five ROI models from three countries. All identify positive returns overall or in key subgroups, even though they analyse only a partial set of the likely economic

[14] The Careers & Enterprise Company (2021). Trends in Careers Education 2021.

[15] Non-fee paying schools. WorldSkills & OECD. (2019). Youth Voice for the Future of Work: Do young people feel ready … for the future of work?

[16] CBI. (2017). Helping the UK thrive: CBI/Pearson education and skills survey 2017.

[17] The Careers & Enterprise Company (2021). Trends in Careers Education 2021.

[18] See, e.g., 2019 statement on the strategic importance of career guidance from six international agencies: Cedefop, ETF, European Commission, ILO, OECD, & UNESCO. (2019). Investing in Career Guidance. Revised in 2021 to reflect covid-19: www.cedefop.europa.eu/en/publications/2230.

benefits. ROI analysis in any domain is sensitive to assumptions and I urge readers to review the full texts. However, five broadly positive studies collectively suggest that the Treasury should feel optimistic about its education investments including more careers-related activity.

Study[19]	Intervention context	Main benefits monetised	ROI
Frontier Economics (2021)	UK: School-based skills competition events, typically grounded in employer or sector challenges, and careers advice/advocacy work.	• Educational attainment linked to earnings and lower NEET rates • Higher skills for competition participants and peer effects	Positive fiscal ROI
Percy (2020)	England/general: Two c. 40-60 minute one-to-one career guidance/planning sessions with a professional (the first aged 14-16; the second aged 16-18)	• Lifetime value of reduced youth NEET and reduced HE drop-out • Higher wages to age 35 for those with poor prior career planning	Positive fiscal ROI
Castleman & Goodman (2018)	US (Massachusetts): Intensive college advising program for low income students in their senior high school year.	• Student lifetime earnings from completing four-year post-18 study (college) vs attending college without gaining a degree	Highly positive ROI using individual wage gain
Engelman et al. (2016)	US (Colorado): Grants to secondary schools to hire school counsellors, focused on college/career readiness, behaviour, and academic motivation.	• Taxes lost and other public spending, including welfare, incarceration, and healthcare due to education drop-out	Highly positive fiscal ROI
Ford et al. (2012)	Canada: Career planning and info on post-secondary options, with 40 hours of after-school activities for high school students and 12 hours for parents.	• Employment and wage gains from increasing high school graduation and post-secondary enrolment	Positive social ROI for some subgroups only Always net positive for the participants

** These five studies reflect all the ROI studies identified in a 20-year search of academic databases (Scopus) and a review of grey literature facilitated by discussions with 11 international experts. All identified studies are included, noting variation in quality and rigour. A further four ROI studies, also with primarily positive findings, were identified for secondary education activities designed to support widening participation in further or higher education, as a closely related field to career guidance.*

The two UK studies identify a return on investment of 2x to 5x, with no considerations of possible economic multiplier effects or the benefits of improved career satisfaction and wellbeing. With the presence of identified conservative assumptions, even a sceptical reading of the evidence and possible optimism bias, there is enough headroom that we can be confident of at least breaking even.

[19] **ROI study references**:

- Frontier Economics. (2021). The Economic Value of WorldSkills UK. London: WorldSkills UK.

- Percy, C. (2020). Personal Guidance in English Secondary Education: An initial Return-on-Investment estimate. London: The Careers & Enterprise Company.

- Castleman, B., & Goodman, J. (2018). Intensive College Counseling and the Enrollment and Persistence of Low-Income Students. Education Finance and Policy 2018; 13 (1): 19–41.

- Engelman, A., Morgan, G., Ruthven, M., & Pugh, E. (2016). 2016 Legislative Report Colorado School Counselor Corps Grant Program. Colorado, US: Colorado Department of Education.

- Ford, R., Frenette, M., Nicholson, C., Kwakye, I., Hui, T., Hutchinson, J., Dobrer, S., Fowler, H., & Hebert, S. (2012). Future to Discover: post-secondary impacts report. Social Research and Demonstration Corporation, Ottawa.

About the contributor

This submission has been prepared by Chris Percy in a personal capacity. I am a data scientist and strategy consultant working primarily on career trajectories, school-to-work transitions, explanatory AI, and economic development, with recent publications for the OECD and the ILO.

As an independent consultant specialising in economics and career development issues, I have worked with governments or their delivery bodies in seven nations and with diverse organisations including the World Bank, Rolls Royce, Jaguar Land Rover, the Open University, the Edge Foundation, the Gatsby Foundation, Speakers for Schools, small start-ups and charities, and the Ark network of secondary schools. I am a Visiting Research Fellow at the University of Derby and served previously as interim Director of Academic Strategy at Kings College London.

Recent public-facing work spans presenting on career trajectories in a primetime three-part documentary on Channel 4 ("When I Grow Up"), developing a chatbot to support career guidance, and exploring the future of maths education for the Royal Society.

My data science research has been featured in the Journal of AI Communications (2022), the AAAI AI for Social Good Fall Symposium (2020), the Neural Information Processing Systems conferences (2019, 2016), and the European Conference on Artificial Intelligence (2016).

Further evidence

If helpful, I am available to share further evidence on the above analysis and related topics, including:

- the wellbeing and career satisfaction benefits of career development activities;
- the value of starting world of work inspiration activities in primary school;
- the role of careers activities in reducing skill shortages and enhancing community cohesion;
- the higher impact that careers activities can have on economically disadvantaged students;
- modelling the costs and benefits involved in different careers provision models, including consideration of issues like displacement and deadweight; and
- the impact of a strategic, integrated policy approach that balances universal provision with additional, triaged, and targeted support.

If useful to the Committee, I am available to provide oral evidence as well.

March 2022