

UNIVERSITY OF DERBY

QUANTIFYING THE
ECONOMIC IMPACT OF
CAREER GUIDANCE IN
SECONDARY EDUCATION

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Abstract [482 words]

Career guidance in secondary education has the potential to play a role in several related areas of government policy, including: youth unemployment prevention or re-engagement; education course choices, transitions, and motivation; skill shortages, regional economic development, and labour mobility; lifelong learning, mental health, and wellbeing.

Experts have long identified a need for a more robust, quantitative understanding of medium-term and long-term benefits, to engage policymakers and gain adequate funding for career guidance. Some government officials, particularly those responding to pressure from finance ministries, further request that the economic impact be monetised and contrasted against costs, to support analysis such as return on investment (ROI). This can be challenging because school-based career guidance often, and especially in England, refers to a diverse range of interventions that are small scale compared to the curriculum as a whole, theorised to have correspondingly modest average effects that can be hard to isolate statistically. Nonetheless, small effects from low-cost interventions can still translate into attractive policies from an ROI perspective.

This critical appraisal reviews the contributions and limitations of a selection of the author's work from 2008 to 2022 in improving our understanding of the economic impact of career guidance in secondary education, drawing primarily on new empirical work in Great Britain and the international literature. The corpus is grouped into three themes:

- (i) **Measuring impact:** strengthening the quantitative evidence base for the medium-term impact of career guidance on education progression or labour market outcomes, drawing on historical longitudinal surveys, school-level data, administrative data, and contemporary surveys of young adults.
- (ii) **Monetising impact:** applying a pragmatic ROI estimation framework to personal guidance conversations for students in English secondary education. The methodology, well-suited to interventions with few large-scale evaluations, was then re-applied and extended in a study for Careers Wales which addressed school-age and adult career guidance, the latter selected for a Cedefop collection which sets out a formalisation of this “linked ROI” methodology.
- (iii) **Interpreting impact:** exploring particular limitations and nuances of this evidence and the ROI method as applied to date, such that results might be appropriately used by policymakers, sector leaders, and the research community.

A broad range of career guidance activities are in scope, reflecting The Gatsby Benchmarks framework, which became government policy in England at end 2017. Example quantitative insights from the corpus include 0.8% higher average earnings for those in full-time employment associated with each extra career talk received aged 14-15 and an estimated 4.4x fiscal ROI for the provision of two personal guidance interviews. A future research agenda is outlined to enhance the breadth and usefulness of available evidence and ROI analyses.

A synthesis view of these contributions identifies a future opportunity to adopt a stronger systems perspective. Such an approach would address key limitations in the corpus: the limited statistical accounting for causality and displacement and the limited consideration of systemic factors, specific mechanisms, and innovative, future-focused approaches to guidance.

Contents

Introduction.....	3
Context	5
Definitions.....	5
Pressure from policymakers for quantitative impact assessment.....	6
Structure of the critical appraisal	7
Section 1. Context.....	9
Theories of economic benefit for career guidance	9
Evidence for economic outcomes from guidance – the early 2000s.....	11
Progress made since the early 2000s.....	11
The challenges of estimating economic impacts.....	13
Summary	14
Section 2. Methods	15
Ontological, epistemological, and theoretical orientation	15
Methods used in the corpus papers	16
Section 3. Contribution synthesis	22
Theme 1: Measuring impact.....	22
Theme 2: Monetising impact.....	24
Theme 3: Interpreting impact.....	26
Section 4. Critical synthesis.....	28
(i) Statistical limitations in inferring causality	28
(ii) Empirical estimates for economic displacement	30
(iii) Emphasis on incrementalism.....	32
(iv) Focus on average, net, and black-box effects.....	32
Section 5. Research programme	34
Conclusion	39
References.....	40
Annex: Published works.....	49

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Preface:

The critical appraisal and the underlying corpus are the author's own, except where co-author roles are specified. The research and underlying corpus documents have been through different levels of ethical approval as set out in the Application for Registration.

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I would like to thank a number of people who were instrumental in the writing of this critical appraisal and the research projects it is based on. Firstly, thank you to all the co-authors, research participants, colleagues, reviewers, and editors who were part of the corpus papers. Secondly, to my supervisory team, Professor Tristram Hooley and Dr Bill Esmond, for their support, challenge, and guidance throughout this process. Finally, to my family for their help and understanding throughout. Thank you all.

Introduction

Context

Career guidance has had renewed importance in English secondary education since 2015, following several years in which there was little national policy attention to school-age guidance (Watts, 2013; Langley et al., 2014). Key recent milestones include the launching of The Careers & Enterprise Company in 2015 (DfE & Morgan, 2014), the introduction of new statutory guidance in 2018 (DfE, 2018; updated July 2021), and stronger references in the education regulator's inspection framework for schools, with key revisions in 2018, 2019, and 2021 (Ofsted, 2021).

With such interest in career guidance, it is important for policymakers to understand the impact of providing different career guidance services. Academics and the policy sector were, however, critical of the impact evidence available internationally at the turn of the millennium (e.g., Hiebert et al., 2014; OECD, 2004; Hughes et al., 2002). Recent decades have seen significant progress, but literature reviews continue to emphasise coverage as patchy and imperfect, particularly for economic outcomes in a UK education context (e.g., Hughes et al., 2016; Mann et al., 2018).

Much of my research activity from 2008 to 2022 seeks to contribute to understanding the economic impact of career guidance services. The purpose of this critical appraisal is to review the contributions and limitations of a selection of this work with regard to measuring, monetising, and interpreting the economic benefits of career guidance in English secondary education. We start by specifying what is meant by career guidance in this context and the types of activities in scope.

Definitions

Different organisations and policymakers place different emphases and boundaries around the definition of career guidance and what good quality guidance looks like (Hooley & Rice, 2018). This critical appraisal adopts a broad definition of guidance in line with six international agencies, itself building on a policy-focused definition adopted by the OECD (2004) and noting equivalent or overlapping definitions with such terms as career counselling, career development, and vocational counselling (Cedefop et al., 2019):

Career guidance describes the services which help people of any age to manage their careers and to make the educational, training and occupational choices that are right for them. It helps people to reflect on their ambitions, interests, qualifications, skills and talents - and to relate this knowledge about who they are to who they might become within the labour market. Career guidance involves a range of connected activities, including provision of careers information, personalised guidance/counselling, skills assessment, engaging with the world of work and the teaching of decision-making and career management skills. (Cedefop et al., 2019: 2).

The eight Gatsby Benchmarks of good career guidance further provide a pragmatic guideline to the specific types of activities in scope for this appraisal and describe the expectations from policy makers in England for the shape and volume of activities to be delivered by schools and colleges (The Gatsby Foundation, 2014; DfE, 2017). The eight benchmarks are summarised as: a stable careers programme; learning from careers and labour market information; addressing each student's needs; linking curriculum learning to careers; encounters with employers; workplaces experiences; encounters with further and higher education; and personal guidance.

Pressure from policymakers for quantitative impact assessment

Policy advocates and providers in the fields of education and skills are under increasing pressure in the UK and across many OECD countries to defend their programmes in terms of quantitative, ideally monetisable impact evidence (Hughes et al., 2002; Hiebert, 2014; HMT, 2022).

The policy push for an improved quantitative base has become apparent in my own career portfolio over time. My work in the career guidance sector began with a civil servant role with the then Department for Children, Schools and Families from 2008 to 2011 focusing on employer engagement in delivering secondary education reforms in England. In this role, I began to collaborate on research with Dr Anthony Mann, leading to the first papers in this corpus (Percy & Mann, 2014; Mann & Percy, 2014). From 2016 I began collaborating on paid consulting, research, and policy projects for careers service providers and policy organisations, including delivery contractors and charities such as Adviza and Enabling Enterprise, think tanks and funders like The Gatsby Foundation and The Edge Foundation, and government delivery bodies in all four UK nations.

Senior managers in government delivery bodies have often spoken in these projects about the need to demonstrate impact to engage funders and policymakers. The topic of impact assessment is present across all four UK nations, but perhaps more so in England which has had a more marketised and devolved approach to career guidance in recent decades.

Marketised systems may more commonly result in economic approaches to measurement and evaluation, noting that marketisation brings with it a complex mix of possible advantages and disadvantages (see, e.g., Watts, 1995). Most senior managers describe the focus on impact as extending beyond the long-established monitoring of spend, activity, and customer feedback into likely long-term economic benefits and attempts to estimate reasonable counterfactuals for key aspects of their programme. When I was called in September 2022 as an expert witness to provide oral evidence on English careers education to the House of Commons Education Select Committee Inquiry, the questioning included quantitative evidence of impact on economic outcomes, relative spend between governments, and value for money.

Several of my recent collaborations illustrate this priority for UK government-funded bodies. Impact research and return on investment work is referenced in the project specification for the Department for the Economy's Career Service in Northern Ireland (DMH Associates Ltd, 2021; Hughes & Percy, 2022) and in the new five-year vision from Careers Wales (2021). Our landscape research for Skills Development Scotland surveyed key providers about the strength of their evidence base and ability to demonstrate ROI (Hooley, Percy, & Alexander, 2021). The Careers & Enterprise Company in England has also invested in impact analysis and ROI research (Percy, 2020; Percy & Tanner, 2021).

Looking beyond the UK, the 2020/21 Cedefop commission on monitoring and evaluation is part of an attempt to develop European standards for guidance, including considerations of cost-effectiveness, economic outcomes, and counterfactual analysis (Cedefop, 2020). Talking to increased US government interest in career development, Solberg (2017b) relates school-age initiatives to economic competitiveness via improved completion rates of post-secondary and industry qualifications, attractive interim metrics that are easy to track and have achieved a broad political consensus on their value to the economy.

Structure of the critical appraisal

This appraisal is structured into six sections following the introduction. The first section summarises the context for the corpus, outlining the theoretical mechanisms for impact, the

previous evidence base for career guidance in English secondary education, and the particular challenges associated with long-term and monetisable impact evidence. The second section explains the methods and key methodological limitations in the corpus and their underpinning ontology, epistemology, and theoretical orientation.

The third section synthesises the key contributions of the nine corpus papers and how they have been used in their sectoral and policy context. The contributions are structured onto three themes: (i) measuring impact in terms of expanding the quantitative evidence base for school-age career guidance, (ii) monetising impact with a pragmatic estimation framework for fiscal returns on investment (ROI), and (iii) interpreting impact with a suitable understanding of the limitations of this evidence and consequent implications for research and application. The fourth section provides a critical synthesis of the corpus as a whole, reflecting on how well the corpus contributes to the conceptual, methodological, and policy challenges of better understanding the impact of career guidance for improving youth economic outcomes.

The fifth section provides an outline research agenda targeted to the key limitations of the corpus that constrain its input to ambitious policy-making. The Annex provides details of all the corpus papers, including abstracts, funding sources, co-author roles, and peer-review processes.

Section 1. Context

Theories of economic benefit for career guidance

The economic benefits of successful career guidance are often theorised at a more abstract level than theories of career, which describe and explain how careers evolve and how best to approach supporting a person's career (Watts et al., 1996; Leung, 2008; Patton & McMahon, 2021), or the logic models and mechanisms of change developed by providers of specific interventions (e.g. Dallaglio RugbyWorks, 2020; Kashefpakdel et al., 2019b).

Two recent examples illustrate the focus on an overarching treatment of career guidance in general, rather than focusing on the detail of change mechanisms for a specific intervention. Hooley and Dodd (2015) develop a model that traces individual outcomes (such as human and social capital development) from any guidance-related activity through to primary and secondary economic outcomes (such as reduced unemployment and increased tax revenue), as well as macro-economic benefits (such as productivity and living standards). An example from the corpus is Percy (2020:40, Figure 1), which provides a graphical theory of change that takes guidance activities for young people aged 12-18 through to lifelong consequences for labour market participation, productivity, and wellbeing via short-term changes (such as gaining a future jobs plan) and mid-term impacts (such as improved education participation outcomes).

These recent overarching theories of economic impact build on earlier work that details logic models underpinning the progressions described above but without being specific to individual interventions. Killeen (1996) identifies how guidance might lead to improved motivational commitment, job search, and decision making by changing knowledge, skills, attitudes, and decision states, ultimately driving more appropriate uptake of education, training, and employment. Drawing on an economics tradition, Mayston (2002) develops a model of the job matching benefits from guidance, emphasising the importance of the general quality of the career guidance interview in supporting human capital accumulation, quality of life improvements, and broader social benefits that flow from improved individual choices.

More recently, researchers have drawn additionally on a sociological tradition to understand how employer engagement provision within career guidance might help young people improve their economic outcomes (Stanley & Mann, 2014). Recognising that multiple contested definitions of social and cultural capital exist (e.g. Bennett & Silva, 2011;

Fulkerson & Thompson, 2008), two particular instantiations of social capital can be highlighted here as prominent in a career guidance context, using respectively weak and strong social ties.

For weak social ties, even brief, non-repeating episodes of employer interaction have the potential to provide non-redundant trusted information and authentic insights into imagined futures, allowing young people to draw connections between current engagement in education, imminent decision-making, and potential future selves (Jones et al., 2016). While brief, a workplace visit may still provide the opportunity for cultural capital, feeling more comfortable with the norms in a particular work environment. Any one episode might happen to provide the right insights at the right time to a particular young person, but on average many such episodes might be needed to provide benefit reliably across a group of young people, meaning larger sample sizes and higher volumes of activity can be needed to identify impact statistically. This idea of benefit from fleeting experiences, benefitting individuals to no-one's direct detriment, is informed in particular by the practical value of weak ties in an adult labour market setting discussed by Granovetter (1995) and inspired by Putnam's (1993) view of social networks, trust, and norms as a geographically-centred and typically mutually-beneficial resource for society.

By contrast, strong social ties with individual employers, developed perhaps through work experience, mentoring, or project work, provide another mechanism for impact. The strong ties embodied in such social capital might potentially be partially translated into cultural capital, gaining a deeper understanding of how to act and impress in different work contexts, or directly into economic capital by providing an advantage over other job applicants without the same network. Specificity to an individual employer may nonetheless sometimes result in narrower horizons or feeling locked in to a particular role, which has been associated with negative wellbeing outcomes for workers (Stengård et al., 2016). This perspective draws more directly on Bourdieu's notion of social capital as an individual resource embedded in a competitive, class-structured social fabric and acknowledges the partial fungibility and inter-reliability of economic, cultural, and social capital (Bourdieu, 1997).

Theories of economic impact often contain an implicit stance on various theories of career evolution and how labour markets work. For instance, the theories outlined above typically have an emphasis on individuals developing some combination of self-awareness, skills, knowledge, and career planning that enables them to better find and fit particular careers,

perhaps alongside tactical support to gain an initial foothold in that career, such as via application support or networking. In practice, this in turn often requires a labour market with sufficient jobs that sufficiently approximates a liberal, marketised, meritocratic ideal in which multiple prospective employers and employees interact to find mutually productive matches. This stance can be contested, including the discussion in Percy and Kashefpakdel (2018) in the corpus and in the socio-political ideologies that can be applied to guidance discussed by Watts (1996).

Evidence for economic outcomes from guidance – the early 2000s

In the early 2000s, despite the possible theoretical mechanisms for the impact of guidance discussed above, several sector experts raised concern about the lack of empirical evidence for longer-term or economic outcomes from career guidance, whether delivered to students in education or to adults in the labour market.

The OECD (2004) called for more information on outcomes and cost-effectiveness of guidance, noting that the sector's research had focused on theories and techniques to date, with little relevance for policy and only weak evidence on outcomes and costs. Hiebert et al. (2014) discuss a 2003 symposium in Canada in which policymakers told the community that it had failed to make the case for the impact of career development services.

The English Department for Education and Skills (DfES) commissioned research in 2001 on the economic benefits of guidance, which serves as both an indication of policymaker interest in the evidence base and a cautionary note about its status at the time. Hughes et al. (2002) delivered the commission, identifying some 40 papers. These papers have good coverage of attitudinal and behavioural change, but those addressing longer-term outcomes were primarily described as opinion studies or outcome studies with no or very weak counterfactuals.

Progress made since the early 2000s

Extensive, albeit uncoordinated evidence building exercises have taken place over the last two decades, prompting a number of review and synthesis exercises (e.g. AIR UK [2008], Christensen and Larsen [2011], Hooley [2014], Bell et al., [2016], and Whiston et al. [2017]).

Two recent systematic literature reviews for the Education Endowment Foundation (EEF) are particularly relevant for this appraisal. These reviews both set out a transparent, structured search strategy by which international (albeit English language) evidence was identified and

have a thematic scope that aligns closely with this appraisal, being focused on young people in education. The first addresses a similarly broad definition of career guidance as this appraisal (Hughes et al., 2016), while the second addresses a subset of activities, being those related to employer engagement in education (Mann et al., 2018). The funder and researchers are also based in a UK context and deployed a search strategy calendar period that allowed for the inclusion of some of the corpus papers from theme one. By examining the papers identified in these reviews, I will show that the papers in this corpus account for an important proportion of those directly in scope for this appraisal: economic impact of career guidance in secondary education.

Hughes et al. (2016) identified 73 empirical papers since 1996 on the social, education, or economic outcomes of careers education in an OECD country context. Six of these papers addressed the economic outcomes of guidance in a UK setting (ibid, p29), the focus of this appraisal. Excluding the three papers from this corpus, only one relates guidance activities directly to labour market outcomes. The other two papers analyse benefits career guidance is hoped to have (qualification completion; career certainty), rather than analysing career guidance activities directly. The only directly relevant paper, in the context of this appraisal, is Brown et al. (2011). The authors examine a British birth cohort born in 1958 concluding that school resources devoted to careers advice appeared to have little consistent influence on 16-year-olds' general career expectations or whether their first job is in that general occupation.

Turning to the second EEF review, focused on employer engagement in education using a similar method to the first, Mann et al. (2018) identify 42 empirical studies, with 38 addressing secondary education (ten in a UK setting). For the UK secondary education studies, two are from this corpus and only one other relates to labour market or NEET outcomes from guidance related activities: Mann et al. (2017), a replication of the retrospective survey methodology used in Mann & Percy (2014) and Percy & Mann (2014). Two other studies do address NEET outcomes in the form of post-16 destinations, but via an intervention to offer vocational subjects rather than career guidance activities (Golden et al., 2005; Golden et al., 2006). The remaining studies address short-term outcomes around behaviour, attitudes, and academic attainment, rather than mid-term economic outcomes that are the focus of this appraisal.

Progress has continued since these literature reviews were published, with key recent papers drawing on longitudinal data from eight countries (Covacevich et al., 2021), evaluations of a new school-wide intervention in England (Hanson et al., 2021), randomised trials of intensive counselling services in the US (Castleman & Goodman, 2018; Castleman et al., 2020), and a randomised trial of career planning workshops in Canada (Renée, 2021).

The challenges of estimating economic impacts

Hughes et al. (2002) partly account for the weakness of the empirical evidence base on economic impacts by discussing the evaluation challenges. Career guidance is frequently not a discrete input, but is often embedded across contexts, such as learning provision or within multi-strand initiatives. Disentangling a “unique” contribution of career guidance may also be conceptually flawed, in that its primary value may draw from its connection to other activities. For instance, Solberg (2019) emphasises the importance of a multi-year, whole school approach in his discussion of the individualised learning plans that are popular in the US for helping secondary school students align course plans with career motivations, among other purposes (Solberg et al., 2012).

Many factors influence career decision-making and outcomes, with guidance often theorised to have a facilitating role rather than a dominating one (Percy, 2020). Effect sizes from small-scale, facilitative interventions will typically be small and harder to identify. Guidance provision itself varies very widely and there is little standardisation in defining activity provision, let alone output or outcome measures. Several corpus papers respond to the challenge of small-scale effects by pursuing large sample size datasets, such as the government-supported longitudinal studies used in Kashefpakdel and Percy (2017) and meta-analyses drawn on in Percy (2020).

Some activities in guidance are inherently personalised, such as the action plans that follow from one-to-one guidance interviews and coaching. Such activities have two particular features that make identifying causality challenging: the importance of voluntary and proactive participation to their success (leading to complex selection and mediation effects) and diversity in context and support provided (leading to heterogeneity and heteroskedasticity in estimating average treatment effects). The definition of ‘good outcomes’ also requires significant simplification at an individual level. For instance, guidance to support a shift to part-time or lower paid work in search of greater fulfilment or work-life balance could easily be identified as a negative labour market outcome in aggregate analyses. Such simplifications

proved largely unavoidable in the empirical papers in the corpus, although subjective outcomes have been drawn on where possible to balance out the risk of aggregate simplifications, such as career confidence in Percy and Mann (2014) or early career planning in Percy (2020).

For adult welfare-to-work guidance, however, many of these challenges have been overcome. Restricted definitions of success (more rapid return to work) and the political salience of unemployment have, in some cases, unlocked large-scale administrative datasets for analysis and operational support for randomised control trials (RCTs), e.g. Michaelides et al. (2012). School-age guidance has had less attention, facing the additional challenges of meaningful economic outcomes typically being several years away, a policy focus on academic attainment that can be measured in the short-term, and only a small proportion of the intervening time having an explicit guidance component.

Summary

Empirical research in the school-age career guidance field has made significant progress since the critical assessments in the early 2000s, but there remains little that focuses on labour market or NEET outcomes and particularly little in a UK context. The value of the theme one papers in this corpus can be seen in enriching the subset of the evidence base concerned specifically for medium-term economic outcomes from career guidance interventions in Great Britain. The two most recent, UK-oriented systematic literature reviews identified rely heavily on the corpus in this critical appraisal for this particular area of evidence. Of the four such papers identified for a career guidance scope in Hughes et al. (2016), three are from this corpus. Of the three such papers identified for an employer engagement scope in Mann et al. (2018), two are from this corpus.

Section 2. Methods

Section two first describes and motivates the overall philosophical orientation underpinning the research undertaken in the corpus: its ontological, epistemological, and theoretical orientation, following the structure set out by Moon and Blackman (2014). It then summarises the specific methods used across the corpus papers and their primary methodological limitations.

Ontological, epistemological, and theoretical orientation

The corpus primarily adopts a structural realist perspective, assuming that there is a single external reality that can be usefully described and approximated by theory but whose underlying nature remains uncertain, ever-changing, and imprecisely known (Moon & Blackman, 2014). In line with such uncertainty, the theoretical orientation is one of pragmatism within a bounded context. It is bounded in that it focuses on a specific context, being modern day, approximately liberal capitalist labour markets from the late 20th century to the near-term future reflecting policy making horizons in education. It is pragmatic in examining applications based on what appears to work in practice (Morgan, 2008) and in seeking to relate to decision-making processes as practiced today. It accepts that political decisions often need to be made based on the imperfect evidence at hand, rather than postponing a decision until an unknown future date when the evidence base is strong enough to remove much of the ambiguity in decision-making.

The primary goal and axiology of the research is to understand the links between practice and outcomes to increase confidence about which policies will improve the future economic outcomes of young people. Recognising that all research methods are imperfect both in principle and in their individual instantiations, a plural approach is preferred. In the corpus, this plurality translates into conducting multiple empirical assessments as in theme one, drawing on third party literature and meta-analyses in theme two rather than relying on single studies, and creating space for critical analysis of the available economic data in theme three.

The bounded context is particularly necessary as many of the systems within which career guidance plays out are socially constructed and patterned by power relations, such that they could operate in radically different ways in different contexts, with profound implications for what career guidance activities look like and their impact. For instance, at the level of detail analysed in this corpus, career guidance and its economic impact would be very different in a

fully planned economy or an early forager society compared to the mixed, regulated markets common today, which often include informal and personal networks for providing careers support as well as the bureaucratised formal sector (Watts, 1981). However, the inter-subjective evolution of key structures like lifetime transitions and resource allocation across a large economy is assumed to be mostly modest over short time periods, albeit with the potential for occasional rapid adjustments.

The geographical and temporal bounds for this corpus allow for the adoption of a constructionist epistemology, anchored in the structuralist assumption of a single external reality. As a result, corpus papers are able to observe how the labour market of the 1990s reacts to career guidance interventions of the 1980s and gain some approximate insight into what might happen from a similar intervention in the 2020s. As time passes, even well-bounded empirical estimates gradually -sometimes suddenly- lose their reliability for estimating future effects. For instance, norms evolve, small shocks compound, policies change, and major crises occur which can all reshape the relationship between education and work. The general nature and direction of relationships identified from historical interventions may continue to be informative even as the empirical estimates become less reliable, provided the theories of change they rely on are still an approximate conceptual fit for the society being discussed.

The data used are inevitably incomplete, with survey questions and administrative data collection privileging certain topics over others and an ever-present risk of wilful or accidental errors in reporting. The moral assumption driving the corpus is that it is better to draw on such imperfect noisy data to develop caveated empirical insights than for policymakers to operate entirely from theory or instinct. The overarching caveat, explored in theme three of the corpus, is that imperfect insights can only be used well with an understanding of their limitations, including the accuracy and scope of data collected, and what topics are out of reach of the available research.

Methods used in the corpus papers

Measuring impact

Theme one, measuring impact, relies primarily on multivariable regression analyses conducted on observational survey data, both ad hoc cross-sectional and planned longitudinal datasets. Survey data were used as the best accessible source for quantifying the relationships connected to careers activities, given the absence of experimental data in an English setting

and given that administrative data available do not capture sufficient details on careers activity participation and young people's background.

Percy and Mann (2014) and Mann and Percy (2014) rely on a self-completed online survey administered to YouGov panel members, commissioned by Education and Employers, a charity that delivers employer engagement activities in schools. Panel members elect to complete the survey and their results are not cross-checked with other sources. 985 eligible adults aged 19-24 completed the survey in February 2011, with eligibility requiring residency in England, Scotland, or Wales. Survey questions were used both to collect data on current circumstances, notably employment and salary outcomes, and their recollection of school-mediated employer activities participated in during secondary school.

Regression analyses identify correlations between activities and the outcomes for relevant subgroups in the sample, with control variables also sourced from the questionnaire, such as demographics (age, gender, and ethnicity), highest qualification, region, and school type. Control variables seek to reflect as far as possible the topics identified by previous researchers employing regression-powered correlation analyses to explore school-to-work transitions, being those variables potentially confounding the relationship between the activity of interest and an outcome or variables that help reduce variance in the outcome to enable more accurate identification of correlations (see, for example, Schoon & Polek, 2011; Yates et al., 2011). Specifically, we sought to control for topics like socio-economic status, academic ability, home/school learning environment, local geographical markers, and demographics, within the constraints of the data available.

Logistic regression is used for EET outcomes and interval regression is used for the salary outcomes of those in full-time work, noting that those in part-time work are often less likely to be in a position to translate their human and social capital as fully as possible into their employment (for instance, they might be students working part-time, optimising for flexibility rather than wages). Results are interpreted with reference to a randomised control trial from the US, longitudinal UK studies of teenage career planning, and social capital theories. A range of standard regression diagnostics were employed (see, e.g. Fox, 2019), either on the core model or a linear regression variant, including outlier removal, tests for residual heteroskedasticity and normality, and RESET tests.

Key methodological caveats in these two papers are the small sample sizes, the risk of unmeasured confounding via a proactive mindset driving both participation in activities and

better labour market outcomes (i.e. selection bias; albeit limited where students have little agency over activity participation), and reliance on retrospective recollection of school-age activities, which might mean that only more impactful or more unusual experiences are reflected in their responses (i.e. hindsight bias). The paper highlights the complexity of wage outcome drivers and lack of explicit casual inference, noting that the statistical results should be considered an approximate average that describes an underlying empirical pattern rather than a mechanistic relationship.

Kashefpakdel and Percy (2017) use mostly self-report longitudinal survey data from the British Cohort Study, which follows a group of individuals born in 1970. The surveys capture near contemporaneous reports on career talk participation aged 14-16 and labour market outcomes at age 26, correcting in part for the proactive mindset limitation of the previous YouGov survey studies (such talks typically occurring at a class or year level with little individual agency) and hindsight bias from recalling school-age activities a few years later. Richer control variables and larger sample sizes are also available in the British Cohort Study than the YouGov survey, enabling a stronger implementation of the same core modelling and diagnostics principles as in Mann and Percy (2014).

Percy and Tanner (2021) use a generalised linear model with a logit link function to relate English school-level administrative data on post-16 destinations to self-completed assessments by schools about the quality of their careers provision, as measured by the Gatsby Benchmarks in an online survey tool. With school-level data and most students remaining EET post-16, measurements are necessarily blunt relative to how career guidance might support students at an individual level. A further key methodological limitation is the reliance on self-assessments by schools about their performance in an area mandated (but not enforced) by policymakers. In a later mixed methods paper for the *British Journal of Guidance and Counselling*, Percy and Tanner (2022) discuss the reliability of self-assessment data from schools in an analysis of the link between participating in a new “careers hub” policy in England and improved careers provision. We argue that this dataset is likely to be completed mostly honestly because the self-assessment results are used for internal reflection rather than external assessment, questions favour objective descriptions of provision, and scores have to stand up to discussion with peer schools and support partners.

Two additional methodological caveats apply across all theme one papers. The papers identify correlations in datasets, without the advantage of randomised comparison groups or

formal instruments to identify causality (see, e.g., Cunningham, 2021). The assessment that the observed effect sizes relate, substantially if not fully, to a causal component hangs on accepting that there is a plausible narrative theory of change, that appropriate control variables capture suspected confounders, and that the measurement error in survey instruments is modest in scale.

Secondly, the papers all report average effects, when there is likely some heterogeneity in how individuals respond to any individual guidance activity alongside variation in individual activities in scope and how they are implemented. Approximately average effects are typically the key results from a policymaker or ROI perspective but can often be net effects that aggregate positive and negative effects for some individuals and variation in key subgroups. Moreover, the average correlations surfaced by multivariable regression coefficients cannot typically be precisely interpreted as intuitive averages across subgroups (such as simple or population weighted average effects on those receiving different levels of treatment), being a live area of study (e.g. Słoczyński [2022] showing how OLS estimates can be undesirably based on inverse weighting of subgroup effects under binary treatment variables). As the target population make-up varies over time, average effects might also be expected to vary – although not necessarily more than due to other drivers of change, such as shifts in the institutional structure of the education and labour market. Attempts to disaggregate effects, to understand which groups or which characteristics lead more reliably to different results is a valuable exercise and could be usefully tackled through a realist evaluation lens (Pawson & Tilley, 2004; discussed in sections four and five).

Monetising impact

Two papers in theme two, monetising impact, use financial modelling to chain together various input assumptions to estimate a likely fiscal return on investment for different career guidance activities.

The general method is computationally standard (e.g. Levin et al. [2017] for the theoretical scaffold, or Hollenbeck & Huang [2016] for an implementation), adopting a transparent approach to estimation with each individual assumption stated and discussed. Uncertainty in assumptions is measured either via a sensitivity table (Percy & Hughes, 2022) or a Monte Carlo simulation of possible results given simultaneous and random variation of the input assumptions (Percy, 2020). Estimates of activity costs are combined with data on the likely

impact of those activities, which are in turn translated into monetary implications for government tax receipts and public spend via third party estimates.

The key methodological limitations of these models are largely common across any long-term ROI models (e.g. Vörös, 2018; HMT, 2022). A key issue to highlight for these studies is the limitations of the empirical literature, lacking a large number of studies that closely match the context being studied with high quality counterfactuals. Even the most proximate studies must use historic data, which is only an imperfect guide to future outcomes. The studies also cover only a subset of the theorised fiscal benefits of career guidance, but seek to cover the full direct fiscal cost of provision. In neither study is there enough empirical evidence to directly measure area-level displacement. For instance, if career guidance helps someone get a job at someone else's expense, the impact may look beneficial relative to a comparison group not receiving guidance but may look less positive if we accounted for the second best option taken by the unidentified individual who missed out. The papers discuss theoretical reasons why the loss through displacement should be modest, but no empirical evidence is available to incorporate this explicitly into the modelling.

These limitations are managed in three main ways. Firstly, the papers surface and discuss the caveats and the resulting uncertainty for the analysis, to enable readers to make their own assessment in interpreting the results. Secondly, where a range of options are available, the modelled estimates seek to be conservative and documented as such. This provides some offset for possible optimism bias or uncertainty elsewhere in the model. Thirdly, working groups and expert review are drawn on to ensure the assumptions pass a sense-check. Percy (2020) draws on peer review from two specialist economic consultancies and a working group of government officials, guidance sector bodies, schools associations, and academics. Percy and Hughes (2022) benefitted from extensive discussions with the leadership team and oversight board of the government delivery body in Wales, as well as academic and technical peer review coordinated by the Cedefop team and its external reviewers.

Interpreting impact

The three papers in the third theme present a critical overview of key topics that inform how empirical research should be interpreted and the caveats that need to be considered in so doing. Methodologically, these papers typically present an overview of selected key texts to illustrate theoretical principles.

A taxonomy of economic benefits is illustrated in Percy and Dodd (2020), highlighting example empirical evidence alongside the main gaps in the literature. The study also explores the limitations of an economic lens on career guidance, drawing on the New Public Management literature (e.g. Andrews & Van de Walle, 2013).

Percy, Tomlinson, and Huddleston (2020) analyse policy documents to identify emerging practice across some OECD country governments to report graduate destinations from secondary education. A critical theory perspective is then adopted to explore the risks and potential mitigations in how such data might be used at the individual student, career practitioner, or policymaker level.

Finally, Percy and Kashefpakdel (2018) explore the potential social biases of employer engagement in a neoliberal context and how to mitigate them. The method combines new quantitative research on the British Cohort Study (building on Kashefpakdel and Percy, 2017) with a review of third-party studies, spanning ethnographic research, case studies, and small-scale surveys.

Section 3. Contribution synthesis

This section summarises the key contributions of the papers to their respective themes and how they have been used in their sectoral and policy context.

Theme 1: Measuring impact

The four papers in theme one chart a journey from a student's teenage years through to their early labour market outcomes. Correlations are identified between certain career guidance activities and avoiding unemployment outcomes aged 16-17, being more likely to be employed aged 19-24 and having a higher salary if working full-time, and higher earnings aged 26.

The analysed activities are typically modest in scale compared to education as a whole with correspondingly modest relationships identified. Relationships identified vary in scale given, for instance, differences in measurement scale for the underlying intervention and the quality of controls available. Larger associations, relative to the size of the intervention measured, are typically identified from the YouGov sample method (second and third bullets below), perhaps due to the greater risk of upside bias in this method as discussed in section 2 (proactive mindset and retrospective recollection biases). The key empirical results from multivariable regression analyses can be summarised as:

- 10% decline in non-EET rates for the post-16 leavers from the 2017/18 academic year associated with schools that fully implement the eight Gatsby benchmarks of good career guidance compared to those with zero benchmark achievement - equivalent to 0.7%pts of the cohort or odds ratio 1.3x. (n=2,382 schools in England; p-value < 0.05; replicated also for 2016/17 leavers; controls include level of economic disadvantage and school structure/geography/academic performance; Percy & Tanner, 2021).
- 2.0-2.7x higher odds of being in education or employment aged 19-24 for individuals reporting two or more school-mediated employer engagement activities¹ compared to those who reported no such contacts, with the range spanning twelve models with different control variables (n=850 young adults; p-values < 0.1 in all models, < 0.05

¹ Prompt examples given in the survey question were: “work experience, mentoring, enterprise competitions, careers advice, CV or interview workshops, workplace visits, taking part in classroom discussions”.

in all but one model; controls include school type attended, region, age, and highest qualification; Percy & Mann, 2014).

- 4.5% higher average income for those in full-time employment aged 19-24 in 2011 associated with each extra experience of school-mediated employer engagement recalled at the time of the survey (n=169 young British adults; p-value < 0.05; controls include school type attended, student demographics, region, age, and highest qualification; Mann & Percy, 2014).
- 8% higher average earnings for those in full-time employment aged 26 in 1996 associated with ten career talks with outside speakers received aged 14-15 in the mid-1980s using British Cohort Study data (n=784 students; p-value < 0.01; controls address demographics, academic ability, home learning environment, background socio-economic status, and local economic activity rates; Kashefpakdel & Percy, 2017).

The latter three papers were available in time for the two major systematic literature reviews discussed in section 1. The importance of these papers to the literature base on medium-term economic impact in a UK setting can be seen in their prominence in those literature reviews.

Prominent policy citations for corpus papers in this theme include England's 2017 Careers Strategy (DfE, 2017, p4, p11) and the UK's Industrial Strategy Green Paper (HMG, 2017, p45), motivating the importance of investing in career guidance especially for disadvantaged young people. They have also featured in overview OECD papers (e.g. Musset & Kureková, 2018) and policy recommendation papers for individual countries, e.g. analysis for Switzerland (Vujanovic & Lewis, 2017), for Australia by the Mitchell Institute (Torii, 2018), and for South Africa by the OECD (Lewis & Gasealahwe, 2017).

The studies also provide contextual insights into how and when career guidance activities were more effective. For instance, Kashefpakdel and Percy (2017) identify volume of provision as key for careers talks – one or two talks per year might help some young people, but it is only beyond four or five talks a year that the associated wage benefits become clear as an average effect. We also find that the exam years may not be the best time for exploratory career guidance, although targeted career talks at this time may still benefit career planning and revision activity, as seen in our later randomised control trial study

(Kashefpakdel et al., 2019a). Percy and Tanner (2021) show that better career guidance is particularly influential for increasing apprenticeship uptake post-16, perhaps because it is an often stigmatised and less well-known route in England. Percy and Mann (2014) identify larger associated benefits for economically disadvantaged young people. These contextual insights are unlikely to apply to every setting, but they provide initial evidence-informed heuristics to support further research, theory development, and practice design.

Methodologically, Kashefpakdel and Percy (2017) was a key inspiration for a major study by the OECD addressing longitudinal datasets in eight countries for which Dr Jill Hanson and I were the lead analysts for UK datasets (Covacevich et al., 2021) The YouGov survey in Mann and Percy (2014) was also replicated in a later study funded by the Education and Employers Charity, with similarly positive associations identified between recalled employer encounters and early labour market outcomes (Mann et al., 2017), and the methodology was adopted in later work by the Skills Builder Partnership (2022) and Speakers for Schools (Clarence-Smith, 2022).

The most recent publication, Percy and Tanner (2021), also shows early signs of being used as part of the policy and sectoral discourse. For instance, on 24 June 2021, the Chief Executive of The Careers & Enterprise Company cited the findings in his oral evidence to the House of Lords Youth Unemployment Committee, with follow-up written evidence submitted using the research following a request from the committee (The Careers & Enterprise Company, 2021). The report has also been indexed in the VOCEDplus research database and featured on The Gatsby Foundation website.

Theme 2: Monetising impact

The modest relationships identified in theme one raise an important practical question about policy significance, even if policymakers are willing to interpret the relationships as likely to contain a significant causal component. The potentially low costs of the interventions sustain the possibility that they can remain worthwhile investments, even if they are insufficient on their own to fully address the policy challenges they target. Theme two addresses this question directly, using financial modelling to analyse different career guidance interventions with multiple results from third party research.

The key empirical result from theme two is the estimation of a fiscal return on investment of 4.4x for the provision of two personal guidance interviews during secondary education, corresponding to the minimum expectations of Gatsby Benchmark 8 (Percy, 2020). This is

based on a typical direct cost of £40 per interview, assuming interviews are fairly tightly scheduled and excluding organisational overheads. Three types of benefit are included in the returns side of the calculation, being a subset of all the benefits theorised to exist: reduction in youth NEET outcomes, increased wages in early employment, and reduced higher education drop-out. There is significant uncertainty in the estimate, reflected in Monte Carlo analysis that estimates an 80% probability range of 3x-5x ROI.

The result is sense-checked against breakeven assumptions using valuations from government commissioned studies. The £80 per person cost throughout secondary education would be recouped fiscally in net present terms if - for instance - one in 500 secondary school students were prevented from becoming NEET prior to the age of 18 or one in 1800 were prevented from dropping out of Higher Education. In practice, both of these outcomes can be targeted via school-age guidance along with other possible outcomes, so the combined breakeven assumptions can be even less stringent.

A key methodological consideration in this ROI was the reliance on multiple third-party estimates. The study chains together the short-term impact of career guidance on career planning and readiness from meta-analyses of comparison and control group trials with the medium-term impact of improved career planning and readiness on outcomes like youth NEET and education progression from observational evidence in longitudinal studies. The net present fiscal value of these medium-term impacts, typically analysed over several decades, is then driven by a further set of third-party estimates. Typically there are only few third party estimates available for the ROI to draw on, at least up until the long-term fiscal valuation. In the latter case, the ROI argues for a high end and a low-end interpretation out of the available literature and then applies a simple average.

The second paper in this theme, Percy and Hughes (2022), addressed the methodological issues surfaced by chaining together third party estimates, formalising this feature of the analysis under the term “linked ROI”. The paper explores the limitations in Percy (2020) and applies it to another area of career guidance, estimating a two-year 1.6x fiscal ROI for adult career guidance for the unemployed in Wales, drawing on third party RCT evidence from the US. The paper emphasises two key methodological insights. First is the need to be explicit about the subset of possible impact strands that an ROI is modelling (i.e. so we understand what is not being modelled in a structured way), given that robust third-party estimates are unlikely to be available for every possible impact of interest from an intervention. Second is

the value of applying a structured search to motivate the identification and selection of third-party estimates and of discussing the robustness of any results to the availability of alternative estimates.

Percy (2020) was well received by the working group, including English government officials and sector stakeholders, and by the guidance sector more generally. For instance, the Career Development Institute invited me to write an article for it in their flagship practitioner journal, *CareerMatters* (Percy, 2021), and to present the findings in a regional practitioner forum on 10 February 2021. The significance of the second recent paper is hard to assess, but its value can be seen in the invitation to publish the work in a major Cedefop publication and to present it on 21 March 2022 to about 70 people at Cedefop's invite-only event for senior researchers, policy makers, and sector stakeholders across Europe. The underlying ROI work was also well received by the Careers Wales board and reported to Welsh Government, resulting in the work featuring in the organisation's new five-year vision and a mandate for increased ROI research over that period (CareersWales, 2021).

Theme 3: Interpreting impact

A key risk with impact analysis and ROI papers is misinterpretation. There is rarely scope in the underlying papers to cover more than the methodological limitations, with knowledge assumed concerning analytical practice and philosophical limitations. The three papers in this theme seek to clarify certain issues that are not yet well understood in the area of economic impacts of career guidance and to highlight broader political risks in how certain common types of empirical data might be used in the guidance sector.

In a reference publication for the Oxford Handbooks series, Percy and Dodd (2020) provide a taxonomy of the economic benefits of career guidance alongside an overview of selected texts against each element of the taxonomy, highlighting the gaps on the knowledge base. Key theoretical considerations are highlighted, including the potentially distorting role of the New Public Management paradigm in how guidance is currently practiced, the difficulty of extrapolating from the historical context of career guidance to potential future impact, and the partial availability and quantification of outcomes within a dynamic social system defined by inequality and contestation.

Percy et al. (2020) analyse policy documents to identify an emerging practice across some OECD country governments to report on graduate destinations outcomes at the individual education provider level in secondary education, similar to a widely discussed trend in

tertiary education that had already gained momentum. Issues identified include the privileging of labour market and progression outcomes over other measures of success, pathologising unemployment, a bias that favours continued education and certain types of work, and the potential misapplication of average outcomes to marginal applicants. For instance, if a school typically achieves high progression rates for its historic cohort of students, further assumptions are necessary for applying this in a guidance context for a specific student. Such assumptions must address, among other topics, whether the target student wants the same type of progression and whether the target student is similar to the historic cohort in the ways that are relevant for that progression success.

Finally, Percy and Kashefpakdel (2018) explore the potential social biases of employer engagement in a neoliberal context and how to mitigate them. The paper uses social capital theory to synthesise the findings, differentiating individuals' direct real social capital (e.g. their personal network of contacts) from individuals' school-mediated social capital (e.g. insights and opportunities gained from the typically weak and temporary ties resulting from school-mediated activities with employers). The conclusion of this study is that employer engagement risks being a force for replicating pre-existing social structures, unless the activities and identification of employers are proactively mediated, such as by a school or a third-party provider.

These articles have been cited only lightly, such as in sector journal discussions (e.g. Reid, 2020), but highlight contextual issues that are important for presenting and interpreting empirical work in a policy context. Where I have been involved in such discussions, they are more commonly informal or private. One exception is Hooley et al. (2021), where the ecosystem analysis for the government's policy review references Percy and Kashefpakdel (2018) in arguing for the importance of proactive policy to ensure interventions compensate for social inequalities and support social justice.

Section 4. Critical synthesis

This section considers the key limitations in how the corpus contributes to its brief: to measure, monetise, and interpret impact data on secondary education career guidance, ultimately valuing improvement in youth economic outcomes. Section 4 builds on section 3, which summarised the key contributions of the papers to their respective themes.

A critical synthesis view identifies four major limitations of the corpus, which collectively recognise the importance of adopting a stronger systems perspective: (i) limited capacity to infer causality from the statistical methods deployed; (ii) concern about economic displacement in financial modelling; (iii) an emphasis on incremental interventions rather than systemic reform; and (iv) a focus on average net impact with a black box approach to the specific mechanisms that lead to impact.

Other limitations include specific methodological issues identified in the individual papers and issues common to much empirical work: the imperfect reliance on historic data to inform policies in a fast-changing future, the unquenchable desire for larger sample sizes and more data to sustain subgroup and mediation analysis, and the corpus' limited coverage of activities given the broad definition of career guidance. Nonetheless, the need for a stronger systems perspective is a key strategic limitation in the corpus and sets up section 5 on how most productively to extend the research programme.

(i) Statistical limitations in inferring causality

None of the papers in theme one draw on statistical techniques that are considered sufficient on their own to permit causal inference from a policy perspective by present day standards (e.g. Cunningham [2021] for a recent overview). The financial modelling papers in theme two are also limited: one draws on a large-scale randomised control trial (but from a different country context) while the other draws on international comparison group meta-analyses (but the constituent studies were often unrandomised).

This limitation does not mean the empirical results cited in section 3 do not provide information on a causal relationship, but it does mean that additional assumptions are required to build such confidence. Different researchers and policy makers look to different sources for such assumptions, but typical options include a credible mechanism for action (such as the theories of economic impact described in section 1), testimony from participants or case studies (e.g. McIlveen et al., 2012), or stronger statistical evidence on other

interventions that buttress a similar theory of change, such as a randomised control trial on Year 11 career talks (Kashefpakdel et al., 2019a) or a regression discontinuity design analysis on school counsellors in the US (Hurwitz & Howell, 2014). Nonetheless, within the constraints of the data available, the theme one papers seek to support causal inference and make the underlying assumptions for doing so as transparent as possible.

The studies in theme one typically consider interventions that were decided at the class or school level (e.g. discussion in Kashefpakdel & Percy, 2017). This reduces the ability of students to ‘self-select’ into activities based on what they think will benefit them, although such endogeneity may still exist at the class or school level. In general, endogeneity at best means the effects may still be causal but can only be claimed for the subgroup who self-select – as such effects may not scale up to other students, classes, or schools who do not self-select into the activity. At worst it means the effects might simply reflect the proactive mindset of those who self-select into guidance activities or other correlated positive activities of school staff who select activities for their classes. In other words, it is possible that students attending activities were always (on average) expected to do better than those who did not attend them, whether due to their own mindset or their teachers’ efforts; it is not the careers activity that made the difference. Nonetheless, a proactive mindset on its own may mean relatively little – jobs do not arise out of belief alone. It may be the interaction between being proactive and the activities engaged in that collectively supports outcomes; such a view would return some (but not all) of the credit to the activities.

The studies also use a series of control variables that account for possible confounding factors like academic attainment and socio-economic background. In order to assert a strong rejection of causal inference, it is necessary to hypothesise (and ideally evidence) a particular bias that would produce the spurious relationship (e.g. some confounding variable that is not controlled for, some material selection bias etc., see Rohrer [2018]). Nonetheless, introducing more variables typically increases measurement error and covariance that interferes with the relationship of interest. Such noise is often argued to bias estimated coefficients towards zero, i.e. the estimated relationship should be an under-estimate of the true causal relationship, but this is far from a reliable heuristic (e.g. Hutcheon et al., 2010; Schennach, 2016).

The net result of this discussion suggests the theme one empirical results should be interpreted cautiously for systems-level interventions, such that any action taken on their account should be robust to the true relationship being lower than estimated. This is the

approach I adopted in the unpublished ROI estimates I have developed for organisations' government stakeholders using the theme one results – applying lower point estimates for financial modelling and pointing out that the resulting ROI multiplier remains highly positive, sufficient to motivate a net positive breakeven even if there remains some optimism across the assumptions as a whole.

(ii) Empirical estimates for economic displacement

The discussion in section 3 emphasised the pragmatic, policy-focused nature of financial modelling, which typically entails a significant number of limitations and assumptions, as with all decision-making for an uncertain future. Rather than enumerate the common limitations of this type of ROI analysis (see, e.g., Cordes, 2017), this synthesis surfaces an issue that is particularly salient to school-age career guidance and has not yet been evaluated in strong empirical work.

It is possible that the positive economic relationships associated with career guidance in theme one both reflect a causal mechanism and that this causal mechanism is misleading, even counter-productive from a policy perspective. Specifically, it is possible that young people perform better in the labour market as a result of more support at school, whether from employer talks, work experience, personal guidance, or other activities, but they do so at the expense of other young people who did not have such activities. In other words, individual young people gain a positional benefit. From a whole system perspective, if everyone were to participate in all activities equally, their individual outcomes and the size of the economy would be similar to no-one doing any career guidance activities at school at all.

An archetypal example of positional advantage in career guidance is interview practice or application phrasing which focuses on helping a participant present a more polished front. If all participants do the same and are equally polished, the individual advantage may disappear. If so, there was likely little aggregate direct economic gain to be had in the first place, despite evidence of wage premia at the participant level. There may perhaps be slight benefits in more efficient navigation of bureaucratic processes or other out-of-scope benefits via increased interviewee confidence and personal wellbeing, which in turn might lead indirectly to economic gain, but it would be hard to deploy confidently for policy purposes the wage premia as identified here in such cases. However, not all career guidance activities are of such an instrumental, tactical nature and benefits are typically not limited to positional advantage alone (see mechanisms discussed in section 1).

The trusted non-redundant information of career talks or similar activities is a more complex case. In some examples, this could be a purely positional benefit: if one young person hears about a job opportunity ahead of others (or instead of others) and thus pursues it, prepares for it, and gets it. The benefits of such privileged information scale poorly – it is a bad target for policy investment. However, most career talks happen well before the point of actual job application, and have a mechanism for impact that involves sharing non-rival information as widely as possible so that young people understand a complex system as well as they can, making better choices about education/career pathways and preparation that are better suited for their current and future needs. This latter mechanism scales well: if one young person chooses a post-16 qualification or investigates a career pathway that better suits their interests and leads to more productive employment as a result, it does not limit a second young person from doing the same – provided our interests and aptitudes are sufficiently diverse across the population to map to different jobs.

An example of a closely-related signalling benefit could be argued for in work experience, where part of the benefit may be using work experience in interviews to signal to employers in the same sector that you are indeed committed to that sector, having invested effort in it over a long period and basing your claimed motivations for it on first-hand experience. There may be young people who would be equally productive in that job who lack that signal, which limits the economy-wide benefit of work experience to reducing employer search costs and labour market frictions. However, it is also plausible that the work experience gives a genuine insight into the sector such that the young people who then choose to pursue it are better suited to it and more productive than they would be elsewhere – or that they gain genuine insights into working life which helps them prepare for it and enter more smoothly.

A modest statement would assert that some of the benefit of career guidance reflects a positional or signalling benefit, that displaces benefit elsewhere, but not all of it. Estimating the scale of this displacement and how it varies across different policies is an important question for the economic motivation for investing in career guidance, noting that other motivations may nonetheless remain valid.

The corpus papers discuss the possibility of such a displacement or positional effect, presenting a narrative case that it is unlikely to be a large effect in the case of school-age guidance due to the type of activities involved and the potential for productivity gains from better career preparation and alignment (e.g. the signalling subsection of Percy, 2020).

However, no strong empirical evidence has been identified for young people, whereas the few studies on adult guidance urge caution, e.g. a study in France where a significant displacement effect is described (Crépon et al., 2013) and later studies in Sweden and the Netherlands (Cheung et al., 2019; Gautier et al., 2018).

(iii) Emphasis on incrementalism

The third limitation of the corpus recognises that pragmatic incrementalism grounded in historical interventions may not be the most valuable research focus for improving young people's economic outcomes, especially if technological capabilities accelerate through the 21st century, if the more urgent risks of global resource pressures materialise, and if the post-pandemic economy differs structurally from what came before.

The empirical studies in theme one focus on historical interventions which were typically widespread practice across the geography studied. By definition, the studies can only discuss the possible benefits of career talks as commonly delivered in the 1980s, school-age activities as were commonplace in the 2000s, or the Gatsby Benchmarks as commonly delivered in the 2010s. They cannot comment directly on the possibility of significantly greater benefits from more radical interventions, although evidence in Kashefpakdel and Percy (2017) hints at the possible benefit of a dramatic increase in career talks, up to once a week or once a fortnight during term time (Percy, 2022). The ROI studies in theme two similarly focus on policy as currently practiced or set as a target by government, rather than more ambitious ideas.

The theoretical challenges discussed in theme three also typically point to modest ambitions: reduced reliance on parental networks in school career guidance and more critical awareness of institution-level performance metrics in supporting individual-level decision-making. Percy and Dodd (2020) do discuss the conceptual and systemic limitations of a financial metrics-driven and marketised approach to guidance, but do not set out a research agenda to move meaningfully beyond it.

(iv) Focus on average, net, and black-box effects

Section 1 noted that the economic benefits of successful career guidance are often theorised at a more abstract level than theories of career, which describe and explain how careers evolve. The economic benefit theories also specify a range of different mechanisms, such as skills alignment, work readiness, confidence building, or tactical application support, which are more closely related to some theories of career than others. Although practitioners can

often provide a narrative account of why individual career guidance activities should be associated more with certain mechanisms than others, a weakness of the corpus lies in its inability to unpack quantitatively which mechanisms are most significant in driving particular effects.

Addressing this weakness is likely to require further primary research, since the necessary detailed questions were typically not in the historic survey data analysed or could not be asked due to budget constraints in those surveys we commissioned directly. Sample sizes place additional constraints on how easily we can unpack the net effect into the subgroups or proportions of young people who might have different types of effect (including perhaps negative effects) in different contexts. However, understanding the contexts and mechanisms for outcomes, whether through qualitative or quantitative work, is important for building confidence that observed correlations have material causal components and will continue to hold in the future and for designing a programme of support that works across the diversity of young people's circumstances.

Section 5. Research programme

This section outlines a research programme to begin correcting the key limitations of the corpus as presented in section 4.

Considerable similar efforts are underway in the policy and research sectors in adjacent areas in the UK, such as the education initiatives in the What Works Network (www.gov.uk/guidance/what-works-network), innovations in ROI such as HMRC guidance for monetising wellbeing gains (HMT, 2021), and a creative approach to future policy thinking via the Government Office for Science Futures work (www.gov.uk/government/groups/futures-and-foresight).

There is potential for career guidance to ride the wave of these evidence-focused initiatives, securing funding and institutional commitment to ensure its interventions to promote fulfilling, inspiring and productive career pathways are equally explored alongside those already the focus of attention, such as academic attainment initiatives (the EEF organisation) and widening HE participation (the TASO organisation).

Improved causal inference for school-based career guidance

The two key challenges in causal inference are identifying a comparison group, with experimental design and/or statistical adjustments, and collecting sufficient contextual, baseline, and outcomes data to fuel the analysis.

Where policy can be implemented with causal inference analysis in mind, there are several promising options for school-based career guidance short of RCTs. For instance, policy-makers might adapt the approach of some US states in requiring schools to have a certain number of guidance counsellors per hundred students, permitting regression discontinuity analysis against standard school-level outcomes such as attendance, attainment, or destinations (see, e.g. Hurwitz & Howell, 2014). Another option is the identification of pilot areas in a careful way that permits robust difference-in-difference methods.

Ideally, however, policy makers, educationalists, and funders would commit to RCT evaluations at the school-level, permitting the analysis of intensive, holistic school-level programmes using both administrative and longitudinal survey data to track young people through their secondary education choices into their mid-20s to pick up objective and subjective early labour market outcomes. Indicative evidence from the US suggests that

school-level programmes might be more effective when bedded down and supporting students over multiple years of their education, perhaps at least five years (Sink et al., 2008). Such research would likely require a programme that can be applied broadly consistently across at least 50 schools, depending on the anticipated effect sizes and other inputs into a pre-trial power analysis, ideally alongside some fidelity measure of programme implementation in each school.

An empirical understanding of displacement

Addressing displacement requires an ambitious extension of a multi-school research programme and is particularly challenging in the post-18 English school setting with high levels of geographic mobility among university entrants. Focusing initially on the more analytically tractable group of students who enter the labour market post-18, the first requirement is to identify the young people who are likely to compete with each other on full time labour market entry. We then test both whether outcomes improve over time for those receiving extra guidance but also whether they drop over time for those not receiving it. If there is a negative change in the non-intervention group, it suggests that some displacement is taking place, provided no other material change has taken place for the non-recipients that we cannot control for.

To deliver this first requirement, we can estimate the centres of gravity and approximate boundaries of local labour markets, based on where young people have recently sought jobs. In a region near enough to the core of such a porously bounded market, such that we can be confident the young people compete materially with each other, yet spanning a large enough area to contain multiple secondary education providers, providers are randomly allocated to a careers programme that is sufficiently more intense than neighbouring providers' planned programmes that we believe an identifiable effect should occur. Multiple labour market cores may need to be analysed to generate sufficient sample sizes. For smaller class-level programmes, randomisation could occur at the class-level rather than school-level, which allows for more sample units per geographical area.

Outcome data would ideally use linked administrative data, with benefits, employment, and tax data from HMRC and DWP linked to student-level education data. These measures can be enhanced with ethnographic work and surveys of both participating and non-participating young people to understand their experiences of labour market entry and early

progression/churn and how, if at all, they believe this relates to their prior career guidance activities.

Sourcing more innovative ideas

This corpus focuses on career guidance to support youth economic outcomes, but acknowledges that policy in practice is often about contrasting alternative options for delivering a particular goal (e.g. the short-listing exercises outlined in the Green Book [HMT, 2022]). It is often not enough for school-based career guidance to demonstrate it can contribute towards a given goal, it must also demonstrate that additional investments in career guidance likely contribute more than the marginal gains of new investment elsewhere, such as tutoring programmes that raise attainment and indirectly lead to better economic outcomes, although concerns about signalling are present here as well (e.g. Bhattacharya & Percy, 2021).

Researching historic practice is only one source of ideas for improving youth economic outcomes, both via alternative approaches to career guidance or via adjacent or related policy changes. Other methods to explore include ethnographic research (e.g. seminal research with working class British boys by Willis [1997]; and work in the US by Castro [2012]), “foresight studies” using stakeholder engagement to explore possible future scenarios (e.g. Palermo, 2015), researcher-practitioner collaborations (e.g. Solberg, 2017a), and deliberative policy development via citizens’ assemblies (e.g. Flinders et al., 2016). Such deep qualitative work can help understand and draw on the social contexts, operating environment, decision processes, and policy proposals from key groups involved, ranging from young people, their parents, teachers, and careers professionals, through to admissions teams and recruiting and hiring managers.

The scope for new ideas should be as broad as possible. We might look to practice in employers and the welfare system as well as in education providers. We might explore systemic issues around discrimination, citizen mobility, geographic skills traps, changing technology, and a realigned global economy – both to inspire new ideas but also to understand the limits of what any policy proposals might achieve if they do not seek to tackle particular systemic issues. One example of a more ambitious, systemic approach incorporating career guidance can be found in the US. The ASIP intervention tries to develop low income students’ success identities by simultaneously supporting the person and operating on the context (e.g. school policies, teacher behaviours, parent interactions),

reflecting a broader shift from a “school-to-work” transition paradigm to a “school-to-work-to-life” transition (Solberg et al., 2002).

Evaluating and comparing ideas via ROI analyses

Once a range of policy proposals are available, whether based on historic practice or new ideas, ROI analysis can be one input among several to support decision-making. One value of ROI analysis is making transparent the assumptions and uncertainties around the costs and anticipated benefits of an initiative. Policies based on well-evaluated historic practice will generally have more reliable data and more precise estimates to drive an ROI, but new ideas may nonetheless outperform them even with wide confidence intervals.

ROI models need to be carefully designed if they are to enable comparisons across policies, rather than a “go/no-go” assessment of a single policy (e.g. Hollenbeck & Huang, 2016). Typically, a lowest common denominator approach is required, using only categories of cost and benefit that can be estimated across all interventions using approximately similar monetisation techniques. However, this limitation can be turned into a virtue when it comes to prioritising future research efforts.

Comparative ROI across career guidance and adjacent interventions competing for policy support can assess the widest areas of uncertainty in the analysis and the most important costs or benefits that had to be excluded in order to meet lowest common denominator requirements. Research can then be targeted to lifting those constraints for specific intervention categories that best improves the comparative analysis as a whole.

A lowest common denominator approach for comparative assessments should not stop an ROI research agenda from broadening its lens in analysing individual interventions. The ROI studies in theme two have focused on average economic outcomes, but future studies do not need to be limited to this. As a society, we can place value on other outcomes, such as equity of distribution, sustainability or resilience over time, and wellbeing. These outcomes can also be approximately translated into a common unit of account via shadow prices, e.g. confidence on university campuses as estimated by Ravulo et al. (2019) by student interviews and alternative product benchmarking or the state’s inferred willingness to pay for education attendance as used in ROIs for bullying prevention (Belfield et al., 2015). As a result, our ROI studies better capture what we care about, even as we acknowledge some considerations will always be best analysed qualitatively outside of a financial model.

Deeper understanding of contexts and mechanisms

Ongoing qualitative case study and ethnographic work with small samples would also improve analysis in all these areas, but is perhaps most necessary to guide policy work. Given the continual societal change in labour market and educational structures, an understanding of the mechanisms at work in career guidance is essential for assessing how to extrapolate from historic evidence to likely future policy outcomes. A significant body of theoretical and qualitative work exists in career guidance (e.g. Leung, 2008; Patton & McMahon, 2021), which can be built on to construct hypotheses on which career guidance mechanisms might have what type of effect for which young people under which circumstances.

By framing such exploratory hypothesis-generating work through the context-mechanism-outcome lens of realist evaluation (Pawson & Tilley, 2004), future quantitative data collection can be better guided to enable statistical testing of those hypotheses, helping to unpack the black box outcomes discussed in this corpus in a quantitative manner. Quantifying individual mechanisms for modest effect sizes in theorised subgroups may require very large datasets. One opportunity comes via Future Skills Questionnaires (Tanner & Finlay, 2021). By the mid-/late-2020s, these surveys will potentially have been completed longitudinally by a large proportion of secondary school students and be linkable in principle to administrative outcomes data.

Conclusion

This critical appraisal has reviewed the contributions and limitations of a selection of the author's work from 2008 to 2022 in improving our ability to measure, monetise, and interpret the economic impact of career guidance in secondary education, with new empirical work drawn from England and Great Britain.

The value of the theme one papers in this corpus can be seen in enriching the subset of the evidence base concerned specifically for economic outcomes from career guidance interventions in Great Britain. The two most recent, UK-oriented systematic literature reviews identified rely heavily on the corpus in this critical appraisal. Theme two papers assess the likelihood that the typically modest effect sizes estimated translate nonetheless into positive ROI for policymakers. Theme three papers raise contextual limits on this type of evidence and how they are interpreted, considering the socio-economic patterning of career guidance activities, the reliability of institution-level performance metrics, and the neoliberal assumptions behind using financialised metrics to evaluate career guidance.

A synthesis review of these contributions identifies important shortfalls relative to the long-term research ambitions of an agenda that hopes to maximise the possible contributions of school career guidance to youth economic outcomes. These shortfalls collectively represent an insufficiently strong systems perspective: the limited statistical accounting for causality and displacement and the limited consideration of systemic factors, specific mechanisms, and innovative, future-focused approaches to guidance. A qualitative and quantitative research programme is briefly outlined to begin addressing these limitations, taking inspiration from the UK's growing What Works Network that there may be an appetite for an ambitious, agenda-transforming research programme.

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Annex: Published works

The nine corpus works fall into three categories of contribution to understanding the economic benefits of career guidance in English secondary education: (i) Measuring impact via empirical research (4 publications); (ii) Monetising impact via return on investment modelling (2 publications); and (iii) Interpreting impact, adopting a critical lens in exploring the limitations and nuance of this evidence (3 publications). The table below summarises the funding and review processes for each paper, followed by the abstracts/paper summaries in the next section.

Paper	Funding / conflicts	Review process
Theme 1: Measuring impact		
Percy, C. & Mann, A. (2014). School-mediated employer engagement and labour market outcomes for young adults: Wage premia, NEET outcomes and career confidence. In A. Mann, J. Stanley, & L. Archer (Eds.), <i>Understanding Employer Engagement in Education – Theories and Evidence</i> (pp. 205-220). Abingdon: Routledge. https://doi:10.4324/9781315779966	No funding to C. Percy. A. Mann then working at the Education and Employers Charity (which seeks to enhance links between education and work) that arranged the YouGov survey. C. Percy was previously seconded to the same place from the English Government education department (DCSF).	Non-blind peer review of proposal/text for academic collection
Mann, A., & Percy, C. (2014). Employer engagement in British secondary education: Wage earning outcomes experienced by young adults. <i>Journal of Education and Work</i> , 27(5), 496-523. https://doi.org/10.1080/13639080.2013.769671		Academic journal blind peer review
Kashefpakdel, E. T., & Percy, C. (2017). Career education that works: An economic analysis using the British Cohort Study. <i>Journal of Education and Work</i> , 30(3), 217-234. https://doi:10.1080/13639080.2016.1177636	No funding. E. Kashefpakdel then working with the Education and Employers Charity.	Academic journal blind peer review
Percy, C., & Tanner, E. (2021). <i>The benefits of Gatsby Benchmark achievement for post-16 destinations</i> . London: The Careers & Enterprise Company. https://www.careersandenterprise.co.uk/our-evidence/evidence-and-reports/the-benefits-of-gatsby-benchmark-achievement-for-post-16-destinations/	C. Percy contracted to conduct research with the publisher, mandated by government to help schools achieve the Gatsby Benchmarks. E. Tanner Head of Research at the same organisation.	Internal review within The Careers & Enterprise Company

Theme 2: Monetising impact		
Percy, C. (2020). <i>Personal guidance in English secondary education: An initial return-on-investment estimate</i> . London: The Careers & Enterprise Company. https://www.careersandenterprise.co.uk/our-evidence/evidence-and-reports/personal-guidance-in-english-secondary-education-an-initial-return-on-investment-estimate/	C. Percy contracted to conduct research with the publisher, which is mandated by government to help schools achieve the Gatsby Benchmarks.	Reviewed via a non-blind process with a steering group of experts and policymakers and methodologically peer-reviewed via a non-blind process with two firms of professional economists.
Percy, C., & Hughes, D. (2022). Lifelong guidance and welfare to work in Wales: Linked return on investment methodology. In Cedefop (Ed.) <i>Towards European standards for monitoring and evaluation of lifelong guidance systems and services (Vol. I)</i> , pp.109-138. Publications Office of the European Union. Cedefop. http://data.europa.eu/doi/10.2801/422672	Underlying research (not the article itself) funded by Careers Wales.	Commissioned out of open competition with single-blind peer review on abstract submission, with feedback from three reviewers as part of the publication process.
Theme 3: Interpretating impact		
Percy, C., & Kashefpakdel, E. (2018). Social advantage, access to employers and the role of schools in modern British education. In T. Hooley, R. Sultana, & R. Thomsen (Eds.), <i>Career guidance for emancipation: Reclaiming justice for the multitude</i> (pp. 148–165). London: Routledge. https://doi.org/10.4324/9781315110486	No funding. E. Kashefpakdel then working with the Education and Employers Charity.	Single blind peer review of proposal/text for academic collection
Percy, C., & Dodd, V. (2020 online). The economic outcomes of career development programmes. In P. Robertson, T. Hooley, & P. McCash (Eds.), <i>The Oxford handbook of career development</i> (pp. 35-48). Oxford: OUP. https://doi.org/10.1093/oxfordhb/9780190069704.013.4	None	Single blind peer review of proposal/text for academic collection.
Percy, C., Tomlinson, M., & Huddleston, P. (2020). The end of the road? Critiquing the nascent trend of secondary education transition data. <i>Journal of Education and Work</i> , 33(4), 298-311. https://doi:10.1080/13639080.2020.1820966	None	Academic journal blind peer review

Abstracts / paper summaries

Measuring impact

Percy, C. & Mann, A. (2014). School-mediated employer engagement and labour market outcomes for young adults: Wage premia, NEET outcomes and career confidence.

In A. Mann, J. Stanley, & L. Archer (Eds.), *Understanding Employer Engagement in Education – Theories and Evidence* (pp. 205-220). Abingdon: Routledge.

<https://doi:10.4324/9781315779966>

Analysing a sample of 850 young people surveyed in 2011, this chapter shows that young British adults who recalled two or more school-age employer contacts through their schools or colleges as teenagers were significantly less likely to be NEET when compared to similar peers who enjoyed no such contacts. The data showed that the relationships were greatest for young people going into the labour market with lower levels of qualifications. The survey also shows that over half of young adults recalling four or more school-mediated workplace contacts felt what they were then doing (as young adults) to be very helpful to their future career plans, being only one-third among those pupils recalling no teenage contacts.

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. <https://doi.org/10.1080/13639080.2013.769671>

Since 2004, the devolved education systems of England, Scotland and Wales have introduced initiatives to increase contact between employers and young people, particularly aged 14–19, as a supplementary, co-curricular activity within mainstream education. The initiatives are motivated partly to increase wage-earning potential but studies to date have not explicitly tested this hypothesis. Robust evaluations from the USA suggest a potential wage uplift of 6.5–25% but these evaluations do not directly comment on the UK approach, as they focus on highly specialised forms of education with closely integrated employer involvement. A new 2011 survey associates wage returns and school-mediated employer contacts for 169 full-time 19–24-year-old workers on annual salaries within the UK environment – and suggests a link of 4.5% between each additional school-mediated employer contact, such that four employer contacts would produce results in line with the US studies. Contrasting the US and UK studies suggests that any causal link from school-mediated employer contact to wage outcomes is likely to be driven more by increased social capital as witnessed in improved access to non-redundant, trustworthy information and social network development than by the development of either technical or ‘employability’ skills.

Kashefpakdel, E. T., & Percy, C. (2017). Career education that works: An economic analysis using the British Cohort Study. *Journal of Education and Work*, 30(3), 217-234.
<https://doi:10.1080/13639080.2016.1177636>

There is significant policy interest in the issue of young people's fractured transitions into the labour market. Many scholars and policymakers believe that changes in the education system and labour market over recent decades have created a complex world for young people; and that this can partly be addressed by enhanced career education while individuals are at school. However, the literature lacks in-depth quantitative analysis making use of longitudinal data. This paper draws on the British Cohort Study 1970 to investigate the link between career talks by external speakers and employment outcomes, and finds some evidence that young people who participated in more career talks at age 14–16 enjoyed a wage premium 10 years later at age 26. The correlation is statistically significant on average across all students who receive talks at age 14–15; but remains the case for 15–16 year olds only if they also described the talks as very helpful.

Percy, C., & Tanner, E. (2021). *The benefits of Gatsby Benchmark achievement for post-16 destinations*. London: The Careers & Enterprise Company.

<https://www.careersandenterprise.co.uk/our-evidence/evidence-and-reports/the-benefits-of-gatsby-benchmark-achievement-for-post-16-destinations/>

One of the target outcomes of improved school-level career provision is a greater proportion of students in sustained positive destinations in education, employment, or training (EET). As part of The Careers & Enterprise Company's ongoing work to develop and evidence its impact model, we investigated this outcome on about 2,400 schools with Key Stage 4 provision, analysing the link between their reported Gatsby Benchmark performance in 2017/18 and their Year 11 students' sustained destinations the following year.

The statistical analysis indicates that 1,400 more students were in sustained EET during 2018/19 connected to the level of guidance provision that schools in the sample reported, compared to a scenario in which all schools had reported zero benchmark provision. Using Government-commissioned fiscal estimates, that level of career guidance is worth about £60m in annual fiscal savings from lifetime NEET costs alone, noting that good career guidance can secure many other benefits for society and for the economy.

Career guidance, as measured by the Gatsby Benchmarks, has continued to improve since 2017/18 when the careers strategy was introduced. In March 2020, prior to the impact of the pandemic, we have data on careers provision for over two thirds of the Year 11 cohort. If this provision reflects all schools in England, and if the relationship between benchmarks and post-16 destinations from the 2017/18 cohort continues to be representative, then some 3,700 additional students would have entered confirmed, sustained EET destinations post-16, compared to if schools were unable to achieve any of the Gatsby Benchmarks.

The analysis controls for key differences between schools such as level of disadvantage, academic grades, school type, and location, ensuring that these differences are not simply masking the true relationship between guidance provision and EET outcomes. The results were statistically significant at the 5% level, showing that each additional benchmark is typically associated with a 1.4% decline in non-EET rates, amounting to a 9.7% decline if a school achieves all eight benchmarks compared to achieving no benchmarks, either fully or partially. Among the most disadvantaged quarter of schools, the relationship is particularly strong: Each additional benchmark reflects 2.8% improvement, amounting to a 20.1% decline in the non-EET rate for full Gatsby Benchmark achievement.

The positive relationship between Gatsby Benchmarks and EET outcomes is particularly strong for more students choosing and sustaining apprenticeship routes, more students going into school sixth forms, and for fewer students being untraceable with unknown destinations (a risk factor for NEET outcomes).

Positive results were also identified on 2016/17 Year 11 leavers, providing an initial level of confidence that these findings replicate. Research in future years can continue to monitor and analyse this relationship, alongside ongoing efforts to improve the quality of career guidance across England's schools and colleges.

Monetising impact

Percy, C. (2020). *Personal guidance in English secondary education: An initial return-on-investment estimate*. London: The Careers & Enterprise Company.

<https://www.careersandenterprise.co.uk/our-evidence/evidence-and-reports/personal-guidance-in-english-secondary-education-an-initial-return-on-investment-estimate/>

In July 2020, the UK government announced a comprehensive spending review on departments' resource budgets. The review is to conclude in late 2020 and represents a period of scrutiny over public spending and proactive exploration of opportunities for policy spend to support the UK recovery from the COVID19 pandemic. At times of financial pressures, the risk of activities being dropped is higher for those where the value has not been quantified and might be assumed lower value than other activities that have been analysed. This report seeks to mitigate this risk by presenting a careful analysis of the return on investment (ROI) of personal guidance.

Personal guidance is defined by the Gatsby Foundation (2014) as the provision of career guidance interviews to young people in secondary education. Personal guidance, along with career guidance more generally, has the potential to support school-to-work transitions and economic growth. Career guidance has become a larger priority for the English government in recent years, following the publication of a new careers strategy in 2017 (DfE, 2017a).

The ROI analysis in this paper shows that, at a typical direct cost of £80 per young person for two interviews during secondary education, personal guidance is highly likely to be a net positive investment for the Exchequer. Using valuations by government-commissioned studies, breakeven is achieved if - for instance - one in 500 secondary school students were prevented from becoming NEET prior to the age of 18 or one in 1800 were prevented from dropping out of Higher Education.

The research literature suggests that these breakeven requirements are highly likely to be exceeded. Drawing mainly on meta-analyses of comparison group trials and three longitudinal datasets, a partial and conservative picture of the possible benefits identifies a midpoint ROI for the Exchequer of 4.4x with an 80% probability range of 3x-5x. For each £1 the government invests in personal guidance, it should be confident of recouping at least £3 and most likely much more.

This is the first in-depth ROI assessment for personal guidance and as such represents a provisional exercise that can be improved upon in future work. This report identifies four specific areas of uncertainty that might be addressed in future research, which might both improve the accuracy of impact measurement for personal guidance and also reveal potential ways to enhance its impact: (i) the potential need for additional support for young people at risk of NEET; (ii) the potential impact of increased quality of delivery; (iii) any difference in impact between personal guidance as commonly delivered in General Further Education Colleges compared to the Gatsby model; and (iv) the potential benefit of increased focus on over-served career pathways to support strategic sectors, national skills gaps and improved labour market matching.

Percy, C., & Hughes, D. (2022). Lifelong guidance and welfare to work in Wales: Linked return on investment methodology. In Cedefop (Ed.) *Towards European standards for monitoring and evaluation of lifelong guidance systems and services (Vol. I)*, pp.109-138. Publications Office of the European Union. Cedefop.

<http://data.europa.eu/doi/10.2801/422672>

This chapter makes the case for a particular approach to return on investment (ROI) analysis, termed “linked ROI”, as a pragmatic component for the monitoring and evaluation of lifelong guidance programmes.

“Linked ROI” is designed for circumstances when a long-term programmatic randomised control trial (RCT) is not feasible, due perhaps to cost, complexity, or ethical considerations. The objective is to link internal programme data to appropriately evaluated academic evidence on third party programmes that preserves a reasonable level of robustness to important requirements such as attribution and counterfactual considerations. Given the uncertainty introduced by linking, it is important to apply conservative choices in the modelling, such as addressing only a partial set of the anticipated benefits (but including the full cost), in order that stakeholders, such as funders and policymakers, maintain confidence in the estimates as a “likely minimum ROI”. As a floor estimate, such calculations can usefully inform go/no-go investment decisions.

The ROI analysis is situated within the context of a new and evolving five-year careers strategy (2021-2026) in Cymru/Wales. We set out the ROI methodology, applied to a new programme in Wales for supporting unemployed adults’ return to work. The ROI estimate draws on internal monitoring and budget data, internal interviews, and a randomised control trial (RCT) from the United States on a comparable programme. The findings show a c. £12m per year fiscal return on c. £7m of annual direct costs to

the government, or a 1.6x fiscal ROI. Our findings focus on the financial returns of professionally trained careers advisers working with unemployed adults to support their return to work, but we also acknowledge the wider benefits to individuals and society.

Interpreting impact

Percy, C., & Kashefpakdel, E. (2018). Social advantage, access to employers and the role of schools in modern British education. In T. Hooley, R. Sultana, & R. Thomsen (Eds.), *Career guidance for emancipation: Reclaiming justice for the multitude* (pp. 148–165). London: Routledge. <https://doi.org/10.4324/9781315110486>

This chapter explores the relationship between social advantage and a particular aspect of careers guidance as it manifests in modern British secondary schools, the use of school-mediated employer engagement to provide career-relevant experiences and insights to young people in fulltime education. Specifically, it explores the access that school-age young people have to people in work, both through their personal networks and within careers provision, what impact such contacts can have on their lives as they move into the adult working world and whether schools possess the ability to harness such engagement in order to challenge patterns of social reproduction. Within the UK context, we focus on two aspects of employer engagement that are easily implemented and common in many developed countries: careers talks with outside speakers and short work experience placements. We argue that schools have the potential to design interventions that compensate for social disadvantage, but that without a deliberate approach, employer contact is more likely to exacerbate inequality.

Percy, C., & Dodd, V. (2020 online). The economic outcomes of career development programmes. In P. Robertson, T. Hooley, & P. McCash (Eds.), *The Oxford handbook of career development* (pp. 35-48). Oxford: OUP. <https://doi.org/10.1093/oxfordhb/9780190069704.013.4>

This chapter sets out a conceptual model of the economic outcomes of career development work. It is centred on the financial metrics that are most important to stakeholders at three different tiers of the economy. These tiers include individuals, organizations/employers, and the state. Empirical examples from the literature are provided to show that financial impacts can be identified at each tier. The limitations of the model and the evidence base are discussed. In addition, a critical examination of a narrow focus on economic outcomes in public policy is presented in order to convey the limitations of an economic rationale for career development.

Percy, C., Tomlinson, M., & Huddleston, P. (2020). The end of the road? Critiquing the nascent trend of secondary education transition data. *Journal of Education and Work*, 33(4), 298-311. <https://doi:10.1080/13639080.2020.1820966>

This paper identifies a nascent trend in several countries regarding increased collection, public availability and use of destination data for graduates of secondary education, with policy ambitions to support pupil-level decision-making and drive provider-level accountability. This trend mirrors the previous development of such data for higher education graduates and underpins a policy direction of data visibility and data engineering to support labour market objectives, via an assumed approach to change that privileges financial factors in career decision-making. Reforms in England are identified as an example of extreme practice, illustrating the practical potential of such data as well as potential pitfalls. Building on the pre-existing critique, the authors highlight three biases particularly prevalent in the new data: bias for continued education, bias for more stable, traditional forms of employment that disadvantages particular sectors, and bias for a provider-centric view of outcomes. Mitigations via an enhanced role for adolescent career counselling and improved data are discussed.