ACADEMIC INCENTIVES AND RESEARCH IMPACT: DEVELOPING REWARD AND RECOGNITION SYSTEMS TO BETTER PEOPLE'S LIVES

Horizon Scan

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ABOUT THIS HORIZON SCAN

This paper aims to encourage creative thinking around academic incentives and research impact by challenging existing orthodoxies, generating new insights, and stimulating a productive debate within the discipline. To do this, cases are presented to explore efforts challenging the status quo of academic research incentives and realigning them to focus more on societal impact. The cases are organized around a system-, institutional-, and individual-level framework, and the following examples highlight the range of efforts explored more fully in the paper to align academic incentives with societal impact.

ABOUT THE PARADIGM PROJECT

The Paradigm Project is a concerted, collaborative effort to increase the relevance, timeliness, quality, and impact of health services research (HSR). Convened by AcademyHealth and funded by the Robert Wood Johnson Foundation, the project is ideating and testing new ways to ensure HSR realizes its full potential to improve health and the delivery of health care. The Paradigm Project is designed to push HSR out of its comfort zone—to ask what works now, what doesn't, and what might work in the future.

Learn more at www.academyhealth.org/ParadigmProject.

1. EXECUTIVE SUMMARY

As any economist will tell you, people respond to the incentives in front of them. For academic researchers competing for jobs, promotions, and tenure, the incentives today are clear: The road to tenure is paved with measures of peer-reviewed publications, first authorships, citations, journal impact, grant funding, and national or international reputation. For the most part, measures of research impact on societal problems are missing in action from performance evaluation criteria within academic disciplines. Therefore, it's hardly surprising that academics, including those conducting health services research, tailor their research practices and problem choices to fit university evaluation criteria for tenure rather than solving societal problems.

Unintended Consequences of Academic Incentives on Research

The current academic incentive and reward system—especially in the United States—traces to a 1915 American Association of University Professors report that introduced the idea of tenure in response to challenges to academic freedom.[1] Today, tenure[2] in U.S. universities is highly prized because it effectively means that an academic researcher has a "job for life" with arguably minimal ongoing accountability. The economic security and symbolism of tenure, combined with steep competition for both academic appointments and research funding and increased use of metrics for evaluation purposes, have led critics to argue that academic incentives have become increasingly perverse and may even promote scientific misconduct.[3] The core of the argument is that over the past 50 years research competition for funding and tenure-track positions has spurred "hyper-competition," negatively impacted research culture, and resulted in unintended consequences as illustrated in Table 1.

Table 1. Intended and Unintended Effects of Academic Incentives on Research[4]

Incentive	Intended effect	Actual effect
Researchers rewarded for increased publication.	Improve research productivity, provide a means of evaluating performance.	Avalanche of substandard, incremental papers; poor methods and increase in false discovery rates leading to a natural selection of bad science; reduced quality of peer review.
Researchers rewarded for increased citations.	Reward quality work that influences others.	Extended reference lists to inflate citations; reviewers request citation of their work through peer review.
Researchers rewarded for increased grant funding.	Ensure that research programs are funded, promote growth, generate overhead.	Increased time writing proposals and less time gathering and thinking about data. Overselling positive results and downplaying negative results.
Increase PhD student productivity	Higher school ranking and more prestige of program.	Lower standards and oversupply of PhDs. Postdocs often required for entry-level academic positions, and PhDs hired for work MS students used to do.

Recalibrating Academic Incentives to Include Research Impact

Assessing the societal impact of research is challenging because impact is difficult to quantify and meaningfully differentiate from a magnitude standpoint, takes time—sometimes decades—to occur, and often reflects the synthesis of innumerable researchers.[5] Nonetheless, recalibrating academic incentives and rewards to include measures of societal impact is central to reimagining health services research and a focus of AcademyHealth's Paradigm Project—a concerted, collaborative effort to increase the relevance, timeliness, quality, and impact of the field.[6] This paper aims to encourage creative thinking by challenging existing orthodoxies, generating new insights, and stimulating a productive debate within the discipline. To do this, cases are presented to explore efforts challenging the status quo of academic research incentives and realigning them to focus more on societal impact. The cases are organized around a system-, institutional-, and individual-level framework, and the following examples highlight the range of efforts explored more fully in the paper to align academic incentives with societal impact.

"Well, it does not matter how many reports are out there if nobody ever reads them or does anything with them.... What we really want to get at is not how many reports have been done, but how many people's lives are being bettered by what has been accomplished. In other words, is it being used, is it being followed, is it actually being given to patients?"[1]

— John E. Porter, former chairman of the U.S. House of Representatives subcommittee responsible for funding the Agency for Healthcare Research and Quality (AHRQ) in 1998

System-Level Examples. The United Kingdom Research Excellence Framework (REF) periodically reviews the quality of research conducted at universities. REF results reflect not only on the reputation of an institution but also direct allocation of government block grant funding to universities. Since 2014, the REF has assessed the societal impact of research, along with the quality of research and the institution's research environment. Similarly, university rankings are another way to provide system-level incentives to recognize research impact. For example, the London-based THE (Times Higher Education) has developed an impact ranking. Other system-level efforts include specific funding for research translation and impact, such as the National Institutes of Health (NIH) Clinical and Translational Science Awards (CTSA), which are "designed to develop innovative solutions that will improve the efficiency, quality and impact of the process for turning observations in the laboratory, clinic and community into interventions that improve the health of individuals and the public."

Institutional-Level Examples. Independently, or in response to system-level reforms, several universities and research disciplines have examined academic incentive structures for research. An example of a discipline-led initiative is the American Political Science Association's creation of a task force on public engagement, with the task force chair noting that the absence of incentives for researchers to engage broader audiences "forces many scholars to choose between actions that produce pay rises and promotions and actions that broaden the audience for their expertise."[7] Other institutional-level efforts to foster greater social impact include a "start-up" university—Olin College of Engineering in Massachusetts—and research institute—Francis Crick Institute in London. Olin is a private undergraduate college, endowed by the F.W. Olin Foundation, with a vision to change engineering education by focusing on the "needs of real

people" to "solve the world's complex future challenges."[8] Olin has no departments or tenured faculty but instead has six-year renewable contracts, with performance measured through three overlapping criteria: developing Olin students; building and sustaining the college; and impact outside Olin. Like Olin, Crick has "neither departments nor hierarchies"[9] and has adopted a model where young group leaders have a maximum 12-year term and then are expected to establish themselves in a university or other research institute. For the initial six years, they are fully funded and not expected nor incentivized to seek external research funding. Group leaders are reviewed halfway through their 12-year term and assessed on the progress of their scientific hypotheses—and explicitly not the amount of funding they have bought in nor their publication record.

Individual-Level Examples. Translating research knowledge into societal impact requires a new set of skills, experiences, and practices that are largely absent from doctoral programs and professional development for academic researchers.[10] However, there are efforts to help researchers develop "impact literacy," skills including the Health and Aging Policy Fellows, the University of Massachusetts Public Engagement Project (PEP), and the Impact by Design course, developed by the Policy Institute at King's College London. All three efforts focus on helping researchers gain practical skills that can help them identify and communicate the impact of their work. For example, PEP has a number of web-based resources and runs skill-building workshops focused on building relationships with non-academic users of research, writing for non-academic audiences, and advocating for the inclusion of public engagement in recruitment, promotion, and tenure decisions.[11] Another approach at the individual researcher or department level includes supporting the emergence of a new cadre of quasi-academic roles—or "third-space professionals" who fall outside the traditional academic and non-academic roles within universities. Such third-space professionals can play critical roles in helping researchers maximize their impact, for example, by curating public engagement and citizen science networks. At the end of the day the academic community is responsible for recruitment, promotion and tenure and therefore needs to 'own' this issue by, firstly, submitting recommendation letters from non-academic colleagues who can provide a testimonial of the impact of their research and then for selection panels to give such evidence appropriate weight in their decision making.

Testing Cases for Suitability, Feasibility, and Acceptability

Across efforts to recalibrate academic reward and recognition systems away from the assessment of traditional evaluation criteria toward social impact, some have succeeded, others are less proven but likely to be effective, and the rest can be best described as work in progress with effectiveness still to be determined. Along with delving into the details of the nine cases, the paper assesses the cases for their suitability, feasibility and acceptability within the specific context of health services research in the United States, and, based on that, draws out "provocations" for AcademyHealth and its constituents to consider as they imagine a new paradigm for health services research in the 21st century. The five provocations are as follows:

1. AcademyHealth should advocate for radical systems-level reform in U.S. research funding to recognize and reward societal impact. Along with lobbying of major funders of health services research, could include consideration of state-level work to incentivize universities in supporting research impact.

2. AcademyHealth should open a dialogue with national and global entities publishing university rankings to both ensure the widespread adoption of societal impact into their evaluation criteria and greater participation from U.S. universities.

3. AcademyHealth should develop a proposition for establishing a School of Health Services Research that reimagines academics structures, incentives and training along the lines of the Olin School for Engineering.

4. AcademyHealth should look to work with other learned societies to identify opportunities to expand the conversation beyond health services research and begin a social movement that strategically focuses on changing both research funder and university assessment criteria, and, in doing so, bring those entities into the movement.

5. AcademyHealth members and the wider health services research community should understand, debate, and develop the values and behaviors perpetuating the current system when reviewing grant applications, papers and recruitment, promotion and tenure candidates and start to give sufficient weight to societal impact and other non-traditional criteria of academic research excellence.

Doing Nothing Is Not an Option

As the paper outlines, the current incentive system for academic researchers promotes a focus on research with limited societal impact, can contribute to a negative research culture, and at the extreme can incentivize scientific misconduct. In closing it is important to stress that doing nothing is not an option. Beginning the difficult work of realigning academic incentives and reward structures to encourage research with societal impact will improve not only people's lives but also strengthen the field of health services research.

2. INTRODUCTION

Incentive and reward structures for academic researchers directly influence what type of research is being conducted. This is the case for all research including health service research in the USA and globally. For example, in a 2015 survey of U.K. academics, 41 percent strongly agreed with the statement that they shape their research outputs and publication choices to match the criteria they perceive for success in tenure and promotion processes (which was up from 25 percent in a similar survey in 2012), whilst over half (57 percent) strongly agreed that they clearly understand the criteria that are used to evaluate them in tenure and promotion decision-making.[12]

These U.K. academics are simply tailoring their research practices and problem choices according to their anticipation of evaluation criteria applied by grant funding committees and by their university, within their academic discipline, that are necessary for recruitment, promotion, and tenure decisions.[13] But this is not a U.K. specific issue. A recent review of promotion and tenure guidelines of 92 randomly selected biomedical and health faculties worldwide found that 'traditional' evaluation criteria of peer reviewed publications, authorship order, journal impact, grant funding and national or international reputation are used in 95 percent of guidelines.[14] Or put another way, it would seem that the majority of evaluation criteria used by universities do not reward research that is focused on having a societal impact. Twenty three of the 92 randomly selected faculties were from the U.S. and the majority of these hosted health services research departments or Ph.D. programs, albeit some of those in schools of public health.[15] It should, however, be acknowledged that in some universities individual departments and schools may have the autonomy to develop their own recruitment, promotion and tenure criteria, and these would be outside the scope of this survey. That said, it is not unreasonable to assume these 'traditional' evaluation criteria are being applied to health service research where more 'non-traditional' criteria, that focus on societal impact, may provide more appropriate incentive and reward structures. However, the assessment of the societal impact of research is as challenging as it is hard to quantify, takes time – sometimes decades – to occur, is often the synthesis of innumerable researchers and is difficult to meaningfully differentiate magnitudes of impact.[16]

This is a critical issue for reimagining health services research and thus is central to AcademyHealth's Paradigm Project that is a concerted, collaborative effort to increase the relevance, timeliness, quality, and impact of the field.[17] This paper is a contribution to that effort and aims to encourage some creative thinking by challenging existing orthodoxies, generating new insights, and stimulating a productive debate within the discipline. To do this, several innovative cases where academic research incentives are being challenged and realigned to focus more on societal impact are presented. Some of these

come from the field of health services research, but others are deliberately chosen from outside the field. Similarly, some are drawn from U.S. research institutions but others from a more international scan. As illustrated in the summary Table 2, the cases are organized around a systems (macro), institutional (meso) and individual (micro) framework. The final section assesses the cases against their suitability, feasibility, and acceptability to the specific context of health services research in the U.S. and based on that, draws out a series of 'provocations' for AcademyHealth and its constituents to consider as they reimagine health services research for the 21st century.

But before presenting these ideas, it is important to acknowledge that the issue of academic incentives and research impact is not new. Indeed, an earlier AcademyHealth paper from 2010 explored the hypothesis that "university-based researchers are not rewarded for applied research and that the system may in fact discourage them from engaging with research users. In particular, university promotion and tenure systems around the country may not value applied research and knowledge translation activities as highly as the easily quantifiable and verifiable numbers of government research grants and peer reviewed publications that tend to dominate review processes."[18] The fact that the issue is again being debated some ten years later suggested that reform of academic incentives has been allocated to the 'too difficult box,'[19] although this characterization may be a bit too harsh as some progress has been made since 2010 as the cases highlight. However, there is clearly some stickiness to that reform and to give that stickiness some context, the next section provides a thumbnail sketch of how the current system has evolved over a 100-year history before the cases are presented in the remainder of the paper.

Table 2: Summary of case studies reviewed

	Case Number	Case Study Descriptor
Systems level (macro)	Case 1	The U.K.'s Research Excellence Framework (REF): Rewarding universities that can demonstrate research impact.
	Case 2	THE's Social Impact rankings: University league tables that focus on social impact.
	Case 3	The National Institute of Health's (NIH) Clinical and Translational Science Awards (CTSA) programme: Research funding programmes that focus on research translation and impact.
Institutional and disciplinary level (meso)	Case 4	Olin College of Engineering: 'Starting-up' new universities or research institutes.
	Case 5	American Political Sciences Association's (APSA) Task Force on Public Engagement: Discipline-led debate, dialogue, and collective advocacy.
	Case 6	The Dutch *Room for everyone's talent*: Partnerships between universities and funders.
Individual responses and responsibilities to academic incentives system (meso)	Case 7	The UMass Public Engagement Project: Training to support the development of 'impact literacy'.
	Case 8	'Impact resumés': Technological platforms to support development of impact resumés and practitioner letters of recommendation in promotion and tenure dossiers.
	Case 9	The third space professional: A new set of skills and competencies amongst the university workforce.

3. HOW DID WE GET HERE?

The current academic incentive and reward system – especially in the U.S. – can be traced back to a report by the American Association of University Professors (AAUP) published in 1915 that introduced the idea of tenure in response to a series of scandals where academic freedom was challenged.[20] One notorious case occurred in 1900, when Edward Ross was not reappointed at Stanford University because Jane Stanford, the widow of Leland Stanford, the university's founder, did not like his views. At the time, this provoked outrage with several academics resigning their positions from Stanford in protest.[21] Prompted by this and other scandals, some 15 years later the American Association of University Professors (AAUP) was founded to ensure the academic freedom of its members, an enduring mission that still holds today.[22] The AAUP convened a *Committee on Academic Freedom and Academic Tenure*[23] that reported in 1915, making some "practical proposals" including that:

"In every institution there should be an unequivocal understanding as to the term of each appointment; and the tenure of professorships and associate professorships, and of all positions above the grade of instructor after ten years of service, should be permanent (subject to the provisions hereinafter given for removal upon charges)."

The aim of such a proposal was to "to render the profession more attractive to men [sic] of high ability and strong personality by insuring the dignity, the independence, and the reasonable security of tenure, of the professorial office."

Today, in U.S. universities 'tenure'[24] and being on a 'tenure track' is highly prized as it effectively means that an academic researcher cannot be dismissed and thus has a 'job for life' that is often seen to be unaccountable.

This may be a harsh characterization especially when put against the original formulation that tenure was to protect the researcher from dismissal for treading on the toes of the great and the good (as was the case with Edward Ross).[25] Nevertheless, the economic security and symbolism of having tenure in the U.S., combined with significant competition for both academic appointments and research funding, the increased use of metrics for evaluation purposes and a changing social contract for universities, has resulted in a number of commentators arguing that current incentives for academics are no longer fit for purpose and in some cases have become increasingly perverse.

One such critic is Steven D. Levitt, the economist and co-author of the best-selling book *Freakonomics*. In a 2007 blog post titled *Let's Just Get Rid of Tenure (Including Mine)* here argues that tenure:

"distorts people's effort so that they face strong incentives early in their career (and presumably work very hard early on as a consequence) and very weak incentives forever after (and presumably work much less hard on average as a consequence) … [This only makes sense] if one needs to learn a lot of information to become competent, but once one has the knowledge it does not fade, and effort is not very important. That model may be a good description of learning to ride a bike, but it is a terrible model of academics."[26]

Whether or not you agree with Levitt's call for getting rid of tenure it is hard not sympathize with his comment that the current incentive system is broken. This is a point that is developed by Edwards and Roy (2017)[27] where they go even further in arguing that the current system is, at the extreme, promoting scientific misconduct. Although Edwards and Roy are engineers, writing in *Environmental Engineering Science*, their paper is not focused on engineering but a broader critique of academia which is relevant to health service research not least given the interdisciplinary nature of both disciplines. The core of their argument is that over the past 50 years research competition for funding and tenure-track positions has increased, resulting in "hyper-competition" which has impacted negatively on research culture and driven a set of unintended behaviours as elaborated on in Table 3.

Table 3. The intended and unintended of academic incentives on research[32]

Incentive	Intended effect	Actual effect
Researchers rewarded for increased number of publications.	Improve research productivity, provide a means of evaluating performance.	Avalanche of substandard, incremental papers; poor methods and increase in false discovery rates leading to a natural selection of bad science; reduced quality of peer review.
Researchers rewarded for increased number of citations.	Reward quality work that influences others.	Extended reference lists to inflate citations; reviewers request citation of their work through peer review.
Researchers rewarded for increased grant funding.	Ensure that research programs are funded, promote growth, generate overhead.	Increased time writing proposals and less time gathering and thinking about data. Overselling positive results and downplay of negative results.
Increase Ph.D. student productivity	Higher school ranking and more prestige of program.	Lower standards and create oversupply of Ph.D. Postdocs often required for entry-level academic positions, and Ph.Ds hired for work M.S. students used to do.

As Edwards and Roy (2017) point out, one of the causes and effects of these unintended behaviours is the increased use of performance metrics for the assessment of research. Cause as, for example, researchers may extend reference lists to inflate citation counts.[28] Effect as, for example, citations, journal impact factors and the h-index may be used as a crude way of assessing the track record of candidates or research applicants, especially when there are too many applications to warrant appropriate review.[29] The use and mis-use of metrics in research assessment was a topic covered in a U.K. government spon-sored report, *The Metric Tide*,[30] in 2015. *The Metric Tide*, based on an extensive literature search and background data in an impressive accompanying report,[31] made a number of findings including that, "there is considerable scepticism among researchers, universities, representative bodies and learned societies about the broader use of metrics in research assessment and management, … [along with] .. legitimate concern that some indicators can be misused or 'gamed': journal impact factors, university rankings and citation counts being three prominent examples."

This paper is not in itself about metrics, but it is important to acknowledge the complex relationship between the availability of data, the analytical tools and computing power to analyse that data, the development performance metrics, their widespread use and thus their role in shaping incentives for academics, and the overall impact they have on the leadership and management of higher education institutes. This 'managerial' approach is one that has characterised university leadership for a generation[33] with *The Economist* succinctly putting it in a recent article critiquing 'scientific management' commenting that "tenure and promotion are awarded on the basis of the production of articles (which can be measured) rather than teaching (which can't), so students suffer."[34] The marketization of higher education can be traced back to the 1980s with the emergence of new public management (NMP) which was an attempt to make public services more business-like, bringing in corporate practices focused on efficiency, incentives and the markets. In many ways, the application of NPM to the higher education sector has been a necessary modernising step to ensure that universities are run in an economically sustainable and well-governed way. The trouble comes when these ideas and values collide with and undermine the public purpose of today's modern university. As Michael Crow, President of Arizona State University, puts it:

"With missions spanning teaching, research, and public service, research universities are uniquely positioned to assume an obligation to construe their purposes in a context of societal engagement. We mistakenly assume that the intellectual objectives of our institutions,

especially in terms of scientific research are technological innovation, are automatically and inevitably aligned with our most important goals as a society. But if these institutions are to create knowledge that is as socially useful as it is scientifically meritorious, a deliberate effort will be required by some to integrate their quest to advance discovery, creativity, and innovation with an explicit mandate to assume responsibility for the societies they serve."[35]

In short, this new mandate requires the recalibration of the social contract of universities to include research impact,[36] which in turn requires re-imagining academic incentives to ensure they "align with the most important goals as a society." Critique of the current incentive system is not new but for too long it has been confined to the 'too difficult box.'[37] The ideas presented in the next three sections of this paper aim to make them less difficult to do, suggesting some ideas for improving existing academic inventive systems.

4. SYSTEM LEVEL INTERVENTIONS TO CHANGE ACADEMIC INCENTIVE STRUCTURES

There has been a long running concern by politicians, policy makers and the public that university research is too esoteric and remote and is not contributing to societal benefits. This was famously made clear by John E. Porter, former chairman of the House of Representatives subcommittee responsible for funding the U.S. Agency for Healthcare Research and Quality (AHRQ) in 1999. When taking evidence from its then director John M. Eisenberg, Porter asked:

"Well, it does not matter how many reports are out there if nobody ever reads them or does anything with them…. What we really want to get at is not how many reports have been done, but how many people's lives are being bettered by what has been accomplished. In other words, is it being used, is it being followed, is it actually being given to patients?"[38]

As Eisenberg notes in a 2001 article in *Health Services Research* this became known as the 'Porter Question'[39] and, notwithstanding his untimely death a year later, shaped the AHRQ agenda for several years as described by his successor, Carolyn M. Clancy, in 2004.[40]

A small number of countries have implemented systems that aim to address the 'Porter Question' by providing **recognition and reward for universities that can demonstrate the impact of the research** that is undertaken in their institution which makes up the first case study (Case 1, in Table 2). Key amongst these is the U.K. Research Excellence Framework (REF). The REF reviews the research quality of U.K. universities every 5-6 years. It matters not only as a signal of the reputation of an institution, but also because it determines the allocation of government block grant funding to universities. The REF has been running in various iterations since 1986, but critically in the 2014 exercise (and the current 2021 iteration) the assessment of societal impact was included.
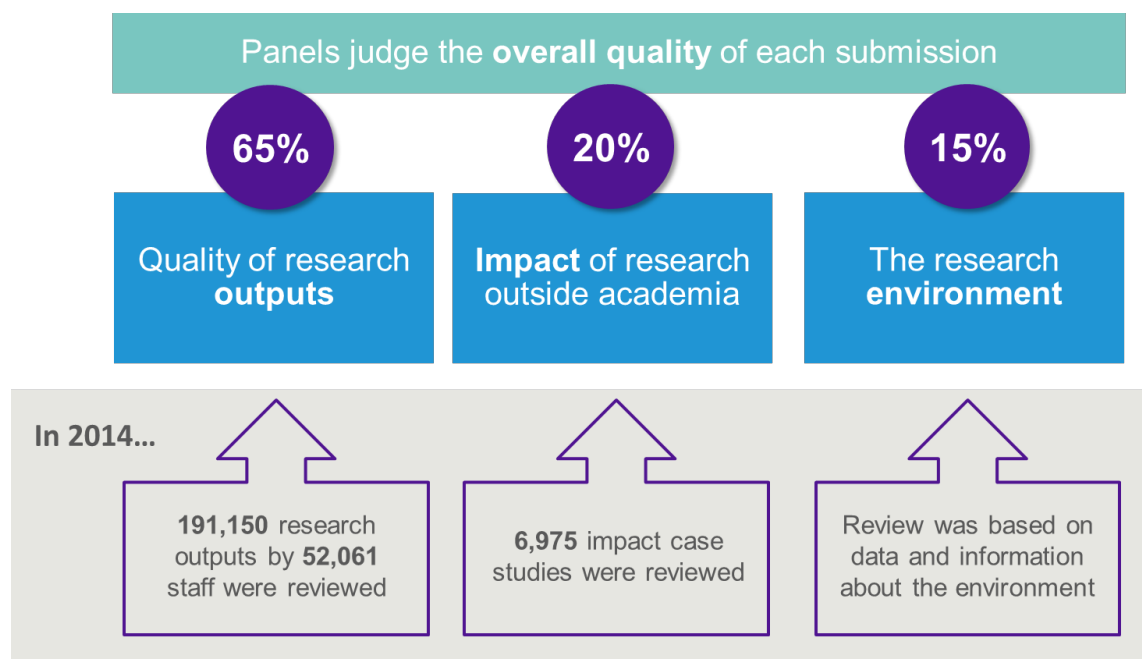
As illustrated in the bottom panel in Figure 1, in 2014, U.K. universities submitted 191,150 research outputs, 6,975 impact case studies and statements on the research environment for each unit of assessment (equivalent to a department). These submissions were assessed by peer review panels for each of 36 units of assessment and graded against a four-point scale - 1*, 2*, 3* and 4* with 4* being the best - using the weights illustrated in the top panel in Figure 1.[41] The grades then determined the amount of block grant that is allocated to

a university on an annual basis, with 4 times of much funding for each 4* submission than a 3* one, and no funding for 1* or 2* submissions.[42] In practice this means that £1 billion ($1.3 billion) a year is allocated to universities based on the outcomes of REF, accounting for just over 10 percent of their research income, concentrated in the research intensive universities that also secure the majority of project grant funding.[43] With the impact element making up 20 percent (and 25 percent from 2021) of the block grant, universities faced a significant systems level financial incentive to support research that addresses societal goals and, by implication, the Porter Question. This incentive has begun to change the outlook of researchers with, for example, a recent survey of U.K. academics reporting that 77 percent of respondents currently expect their research to have societal impact, compared to 86 percent who expect their research to have societal impact in the future.[44]

The U.K. is not the only country to have implemented a nationwide research impact assessment.[46] Australia has, for example, established the Engagement and Impact assessment as a 'companion piece' to its more established and outputs focused Excellence in Research Australia (ERA) assessment.[47] The big difference between the Australian and U.K. systems is the that the Australian system is not used to allocate funding, and thus is solely focused on reputation (or 'bragging rights' between institutions). The current system is being reviewed and one of the key considerations will be whether there needs to be financial incentives. It may well be the case that status – and status hierarchies - turn out to be enough. For example, outside the remit of research assessment but within the purview of health service research the University of Wisconsin County Health Rankings[48] is an example of this type of systems level intervention that is intended to change behaviours without the (re)allocation of funding. Or, as the authors put it, "the rankings draw upon the human instinct to compete by facilitating comparisons between neighbouring or peer counties within states."[49]

Like the University of Wisconsin County Health Rankings, **university league tables**[50] provide another way to provide system level incentives to recognize research impact and they make up the second case study (Case 2, in Table 2). Historically the providers of global league tables have been

Figure 1: The U.K.'s Research Excellence Framework for 2014[45]

Panels judge the **overall quality** of each submission

65%	20%	15%
Quality of research **outputs**	**Impact** of research outside academia	The research **environment**

In 2014...

191,150 research outputs by 52,061 staff were reviewed

6,975 impact case studies were reviewed

Review was based on data and information about the environment

part of the problem since their rankings were dominated by traditional quantitative assessments of research such as research income and citation analysis.[51]

However, recently THE[52] has developed an 'Impact Ranking' which is constructed around the United Nation's Sustainable Development Goals (SDGs).[53] For each of the 17 goals THE assesses universities on their educational outcomes, research performance and institutional behaviour. So, for example and as illustrated in Box 1, for SDG 3 which is on 'good health and wellbeing' metrics include the number of research publications, citations on clinical guidelines, proportion of health graduates, evidence of a smoke free policy and mental health support for students and staff. Every participating universities is assessed against SDG 17 (partnerships) plus three other SDGs. Universities can submit to more SDGs but it is their top three highest scores plus SDG 17 that makes up the ranking. The approach was piloted in 2019 and rolled out in full in 2020 when 768 universities from 85 countries participated including 31 from the U.S. The top-ranking US universities were Arizona State (ranked 5th globally), North Carolina at Chapel Hill (22) and Penn State (35), although SDG 3 (on good health and wellbeing) did not contribute to their overall placement.

The relatively low participation rate of U.S. universities in THE impact ranking (i.e. 31 / 768 = 4%) may present an opportunity for AcademyHealth and the health service research sector in advocating for greater engagement with this assessment. Alternatively, it may be that research impact is included in specific U.S. rankings such as U.S. News and World Report[54] or the WSJ/THE ranking.[55] However it is notable that both of these rankings focus on student attainments, with US News and World Report currently having no assessment of research let alone research impact, and the WJS/THE having an indicator on 'Research papers per faculty' but this only carries an 8 percent weight.

Box 1: Criteria and weights for assessing SDG 3, 'good health and wellbeing', in THE Impact Ranking of universities

Research on health and well-being (27%)

- Proportion of research papers that are viewed or downloaded (10%)
- Proportion of research papers that are cited in clinical guidance (10%)
- Number of publications (7%)

Proportion of health graduates (34.6%)

Collaborations and health services (38.4%)

- Smoke-free policy (8%)
- Collaborations with local or global health institutions to improve health and well-being outcomes (7%)
- Outreach programmes in tshe local community to improve health and well-being (7%)
- Access to sexual and reproductive healthcare services for students (7%)
- Free mental health support for students and staff (7%)
- Community access to university sports facilities (2.4%)

Other systems interventions include **specific research funding programmes that focus on research translation and impact** which are the focus of the third case study (Case 3, in Table 2). For example, the National Institutes of Health (NIH) Clinical and Translational Science Awards (CTSA) program, "is designed to develop innovative solutions that will improve the efficiency, quality and impact of the process for turning observations in the laboratory, clinic and community into interventions that improve the health of individuals and the public."[56] The CTSA was a capstone initiative of the then NIH's director Elias Zerhouni who introduced it as part of the NIH Roadmap, with the aim of eliminating "the growing barriers between clinical and basic research."[57] Although the CTSA programme supports around U.S.$500m worth of research investments a year since its inception in 2014,[58] the only (CTSA supported) evaluations of its impact have focused on traditional evaluation criteria such as bibliometric indicators of publication outputs and their citations.[59] Nevertheless, the CTSA program builds capacity and provides an infrastructure – hard and soft – that allows researchers to come together across many disciplines to address a given societal problem. For example, in 2017 several CTSAs prioritized addressing the opioid epidemic in the U.S., after a call from National Institute on Drug Abuse. In reviewing this multicentre collaboration Cottler at al (2019) noted that the CTSA "capacity to address the issues with community input is based on the CTSA community focus that utilizes the principles of community engagement, developed by CTSA scientists, to advance the science of community engagement."[60]

To have a systems level effect on academic incentives and community engagement, schemes like the CTSA need to be consistently evaluated against and rewarded for indicators of social impact. One such example, is the Australian National Health and Medical Research Council (NHMRC) which requires all applicants for its Investigator Grants to consider the impact of their research as part of their track record.[61] In other words, applicants are more likely to be funded if they can demonstrate a track record in securing a societal impact from their research. This, however, requires research funders to make some wholesale changes to both what they fund and how they fund it. Currently, biomedical and health research funders – such as the National Institutes of Health (NIH) – overwhelmingly fund basic discovery driven research (despite it is worth noting 'Health' being in its title) whilst those funders that are focused on health services research – such as the Agency for Healthcare Research and Quality (AHRQ) – have a small fraction of the NIH's budget.[62] In addition, the peer review decision making process of NIH and like funders are often focused on the methodological approach to the scientific hypothesis and thus, even in the somewhat fantastical world of 'balanced' funding, grant funding peer review approaches would need to be reformed[63] to ensure that societal impact was a significant part of the decision making process.

The system level changes that have been reviewed either focus on all research disciplines (as is the case with REF and the global league tables) or broad disciplinary areas as with the CSTA and NHMRC funding. In both cases health services research is a subset of a wider reform. The challenge for AcademyHealth and the wider health services research discipline is whether such systems level change are achievable given potential competing views from other disciplines with different disciplinary norms. For example, in the U.K. there was concern about the REF impact agenda from theoretical disciplines, such as mathematics and physics, as it was seen as a threat to blue-skies discovery-driven research. It may be possible to merge the three cases and devise a system level intervention that focused on applied disciplines, such as health services research or business studies and left out more theoretical subjects, through some form of national assessment (as in REF) or rankings (as in the league table). That said, whilst systems level changes may be harder to achieve, if they are achieved, they are likely to have a greater impact on academic incentives than interventions at the institution or individual level which are discussed in the remainder of this paper. This, it should be stressed, is not to let institutions and individuals 'off the hook:' the more system level change occurs as a result of 'bottom up' activism from the academic community, the more likely that change will be effective.

5. INSTITUTIONAL AND DISCIPLINARY CHANGES TO ACADEMIC INCENTIVES

Independently, or in response to system level reforms, several universities and research disciplines have looked to change academic incentive structures for research. Initially in this section, two cases are presented where institutional level changes have occurred: the first is the case of the 'start-up' university or research institute and the second are discipline led initiatives, often by an academic society. The start-up is often a 'top-down' intervention directed by philanthropic funding, whilst the academy-led intervention is typically a 'bottom-up' movement responding to dissatisfaction with the status quo. The final case of meso level institutional change is when these two ideas come together through cross institutional collaboration as has occurred recently in the Netherlands, through an initiative called '*Room for everyone's talent*.'

In reviewing the scant literature on academic incentives and impact, it seems that where institutional innovation has occurred it typically has been in **'starting-up' new universities or research institutes** with significant foundation and/or government funding (Case 4, Table 2). This is the case for Olin College in the U.S. and the Crick Institute in the U.K.

Olin College of Engineering is a private undergraduate teaching college, located in Massachusetts, U.S., and founded in 1997 with a large endowment from the FW Olin Foundation.[64] The vision of the Trustees was to radically change engineering education with a focus on the "needs of real people" to "solve the world's complex future challenges." As its website states, "Olin 'engineer-innovators' envision and deliver products, services and systems that transform the way people live on this planet."[65] Olin had no departments or tenured faculty but instead has six-year renewable contracts. At a recent National Academies of Science, Engineering, and Medicine workshop, Rob Martello, Associate Dean for Curriculum and Academic Programs at Olin, noted that reappointment and promotion guidelines use to be very traditional but it became increasingly clear they did not align with the mission of the college.[66] He was part of an effort to re-imagine Olin's approach to faculty reappointment and promotion processes, which had three overlapping criteria: developing Olin students; building and sustaining the college; and impact outside Olin. As he noted at the workshop, the three areas overlap meaning that in practice "you put your activities for that year on the diagram and you collect evidence, which leads to a conversation" about key accomplishments and ambitions in annual review processes and makes the case for reappointment and promotion.

Interestingly this is also the case for innovative research institutes such as the Francis Crick Institute in London.[67] The Crick, however, is a discovery research institute that is open to scientific translation. Like Olin it has "neither departments nor hierarchies"[68] and is physically designed so research groups intermingle with one another, co-locating different sub-disciplines, methodological approaches, and applied industry scientists to encourage collaboration and translation. The Crick has adopted an innovative model where young Group Leaders coming into the Crick have a maximum 12-year term at which point they are expected to establish themselves in a university or other research institute. Group Leaders receive core funding for the duration of their 12-year term. For the initial six year period these Group Leaders are fully funded and not expected nor incentivised to seek external research funding, giving them the "time and space to demonstrate their intellectual capability and develop their scientific oeuvre."[69] The Group Leaders are reviewed half way through

their 12-year term where they are assessed on progressing their scientific hypotheses, and explicitly not the amount of funding they have bought in nor their publication record, with the expectation that they will continue to work at the Crick for the full 12 years. Senior group leaders – who are on permanent contracts and account for about a third of the researcher workforce – provide mentorship and guidance as needed.

There are two lessons to take from these examples. The first is that both institutions have avoided legacy issues by being 'start-ups' – that is they have been able to start with a blank sheet of paper in developing incentive and reward structures for academics and researchers. The second is that they were founded with significant philanthropic or government investment. Olin had the backing of an independent foundation, whilst the Crick is funded through a mix of government, university, and charitable[70] (Wellcome Trust and Cancer Research U.K.) sources. Thus, an aspiration for AcademyHealth and others would be to establish a College of Health Services Research, in partnership with a foundation, and in doing so design an academic incentive system that is fit for purpose for health services research.

It is worth acknowledging, in the context of institutional reform, that this can occur at different 'levels' within universities. For example, individual Faculties, Schools or Departments may have the autonomy to develop their own evaluation criteria and in the case of health service research it may be the case that in such circumstances these do include an assessment of impact. This may be further complicated by the interdisciplinary nature of health services research. On one hand the field is dependent on mono-disciplinary experts (e.g. health economists, anthropologists) who are likely to be reviewed against the norms of their field, but on the other hand the health service researcher (and research department) will be judged appropriately on societal impact. This tension is perhaps one of the (many) reasons why university level strategies often mention impact, but fail to see that operationalized across a diverse academic community of disciplines.

The second case is perhaps more feasible and that is **discipline-led debate, dialogue, and collective advocacy** (Case 5, Table 2). For example, the American Political Sciences Association (APSA) established a Task Force on Public Engagement on the premise "that political science has great and growing potential to provide substantial value to many people and organizations." The Task Force reported through a special issue of its journal, *PS: Political Science and Politics*, with a set of recommendations and a series of essays from the task force members. In the introduction to the special issue the Task Force chair reviewed "the problem" noting that "universities offer fewer incentives for effectively engaging broader audiences. The absence of incentives forces many scholars to choose between actions that produce pay rises and promotions and actions that broaden the audience for their expertise."[71] This is a point well made by Pittman and colleagues in the earlier quoted AcademyHealth paper on the role of *Academic incentives in Applied Health Services Research and Knowledge Transfer*.[72] A similar set of concerns are raised in an essay by Kenneth Prewitt on *Retrofitting social science for the practical and moral*.[73] His thesis is that social science, as a discipline, can no longer assert its contribution but will need to "learn to be responsive" to what society "expects our contribution to be." As with the APSA and Pittman et al he laments "the university culture, defined by faculty-controlled tenure criteria" and urges "a more forceful (thus risky) purpose: notably re-establish a social science for the sake of society, reasserting its authoritative voice."

Whilst there is a broader consensus on the 'problem statement' i.e. university academic reward and recognition systems are not fit for purpose for applied research disciplines, none of the above offer any practical solutions for addressing the issue. A partial exception to this is a 2016 American Sociological Association (ASA) report on *Evaluation of social media and public communication in sociology* that offered several assessment criteria around the type of content, the rigor and quality of that content and its public impact.[74] In conclusion the ASA report notes that "departments traditionally consider tenure cases on the basis of three categories: research, teaching and service … Our suggestion is that departments consider a) adding a fourth category, public engagement, where scholars can emphasize their contributions to this realm; or b) recognizing and reward public engagement within these three categories."

But even in the case of the ASA the scope is rather narrow i.e. on public engagement via social media and communications which, whilst important, is one of a number of intermediate routes to, in Porters language, bettering people's lives. For example, it may be the case that an academic has developed a trusted relationship with a senior policy maker and through that relationship provides high quality advise that has helped shape and inform that individuals outlook, and the policy areas they are responsible for. As such that academic is having considerable social impact, but through a private (not public) engagement mechanism.

One recent example of where 'impact' is an explicit focus is an **institutional partnership between Dutch universities, university medical centres and funders**[75] (Case 6, Table 2). Very much in its infancy the partnership published a position paper in November 2018 titled *Room for everyone's talents. Towards a new balance in the recognition and reward of academics*.[76] The partnership was motivated by the simple recognition that what was deemed important in the Dutch research system was not being appropriately rewarded.[77,78] This resulted in the position paper that set out a new system of reward and recognition with five characteristics:

1. "Enables the diversification and vitalization of career paths, thereby promoting excellence in each of the key areas;

2. Acknowledges the independence and individual qualities and ambitions of academics as well as recognizing team performances;

3. Emphasizes quality of work over quantitative results (such as number of publications);

4. Encourages all aspects of open science; and

5. Encourages high-quality academic leadership."

The signatories to the position paper – which were effectively every institutional stakeholder in the Netherlands – then committed to applying these principles to their own research assessment systems. For the universities and university medical centers, this was focused on the assessment of researchers and research teams, including the recruitment and promotion for individual researchers. For the funders, the focus was appraisal of research grants and fellowships. From the outset there was an understanding that implementation would be different in different contexts, but to aide some common approaches, and to ensure the key principals were kept alive, the partnership in parallel published a 'Strategy Evaluation Protocol' March 2020.[79] The SEP (as it has become known) is centered around three main assessment criteria as summarized in Box 2. The SEP, which is compliant with DORA,[80] provides clear guidance on how to present research results in narratives supported by quantitative data. It prohibits the use of numbers of articles and Journal Impact Factors, and discourages the use of the h-index by the unit of evaluation and by the evaluation committees. Importantly, in addition to the three criteria mentioned in Box 2, several other aspects are evaluated that relate to *how* research is performed including: Open Science, Academic Leadership and Culture, Diversity and Talent Management, and Ph.D. supervision.

It should be stressed that the SEP is a framework for evaluating research units on a 6-yearly cycle, but it is hoped that the revised version and criteria will influence local assessment for individual academic assessments in Dutch universities. For example, the UMC Utrecht has a guide for reviewers that states in its introduction that "scientific research in the UMC Utrecht should be evaluated on societal impact and not just on scientific excellence. It means that an evaluation should not just focus on output or 'deliverables' or other scientific end-products. The evaluation should also appreciate how research aims to create societal impact."[81] The guide then goes on to set out an evaluation framework that includes goals and suggested indicators for the various categories identified in the SEP.

Box 2: Research assessment criteria from the Dutch Strategy Evaluation Protocol

Research quality: the quality of the unit's research over the past six-year period is assessed in its international, national or – where appropriate – regional context. The assessment committee does so by assessing a research unit in light of its own aims and strategy. Central in this assessment are the contributions to the body of scientific knowledge. The assessment committee reflects on the quality and scientific relevance of the research. Moreover, the academic reputation and leadership within the field is assessed. The committee's assessment is grounded in a narrative argument and supported by evidence of the scientific achievements of the unit in the context of the national or international research field, as appropriate to the specific claims made in the narrative. The protocol explicitly follows the guidelines of the San Francisco Declaration on Research Assessment (DORA) adopted by KNAW, VSNU and NWO.

Societal relevance: the societal relevance of the unit's research in terms of impact, public engagement and uptake of the unit's research is assessed in economic, social, cultural, educational or any other terms that may be relevant. Societal impact may often take longer to become apparent. Societal impact that became evident in the past six years may therefore well be due to research done by the unit long before. The assessment committee reflects on societal relevance by assessing a research unit's accomplishments in light of its own aims and strategy. The assessment committee also reflects, where applicable, on the teaching-research nexus. The assessment is grounded in a narrative argument that describes the key research findings and their implications, while it also includes evidence for the societal relevance in terms of impact and engagement of the research unit.

Viability: the extent to which the research unit's goals for the coming six-year period remain scientifically and societally relevant is assessed. It is also assessed whether its aims and strategy as well as the foresight of its leadership and its overall management are optimal to attain these goals. Finally, it is assessed whether the plans and resources are adequate to implement this strategy. The assessment committee also reflects on the viability of the research unit in relation to the expected developments in the field and societal developments as well as on the wider institutional context of the research unit.

The three examples of institutional level reform illustrate the power of partnerships – whether with foundations in starting up new entities that have the luxury of a 'blank sheet of paper' to work from, or disciplinary affiliated groups showing leadership in at least raising the issues and generating ideas for reform or perhaps most interestingly the example from the Netherlands, where different institutions within the system have voluntarily come together to agree an agenda and begin to implement it. In all these cases it is entirely conceivable that AcademyHealth could lead such changes. As noted, clearly the start-up model is audacious and will be dependent on funding. The disciplinary level conversation is in part ongoing through the Paradigm Project, this paper (and the earlier Pittman et al paper) but perhaps could be amplified. The Dutch approach provides an interesting paradigm but clearly the Netherlands is a significantly smaller country when compared to the U.S. and scaling such an approach may be challenging.[82]

6. INDIVIDUAL RESPONSES AND RESPONSIBILITIES TO ACADEMIC INCENTIVES SYSTEM

Academic researchers are increasingly concerned about the influence incentive structures have on research as reflected in a broad literature on the "the creeping marketization and managerialism of higher education"[83] and the rise of "neoliberal science."[84] The Wellcome Trust, one of the world's largest funders of biomedical and health research, has recently initiated a campaign to "reimagine" research culture as, in the words of their website, "current practices prioritize outputs at almost any cost. This is damaging people's wellbeing and undermining the quality of research."[85] In the largest ever survey into of research culture, the Trusts observes that:

"Interviewees agreed that individual expectations, ambitions and behaviours influence the research culture. But when thinking about recent shifts in research culture, they judged that such personal characteristics had remained largely unchanged and so were not the cause. Instead, they believed that the wider environment and the incentives set by policy makers, institutions and funders were responsible." [86]

Although this work is focused on the U.K., it would be misguided to assume this issue does not affect research in the U.S. (and elsewhere) and in health services research (and other disciplines). Such concerns have been voiced by disciplinary groups as reviewed above, but it is also the case that individual responses give an insight into how broken the current academic reward and recognition system has become. The 'Quit Lit' is an interesting and fundamentally concerning genre of accounts of why academics have left higher education documented by *The Chronicle of Higher Education*.[87] As one individual put it:

"My decision to leave isn't really about my department or university in particular, but about a perverse incentive structure that maintains the status quo, rewards mediocrity, and discourages potentially high-impact, interdisciplinary work." [88]

This matters as there is evidence that individuals with certain socio demographic characteristics – race, gender – are more likely to quit academia than white men contributing to a homogenous cohort of tenured academics who are making the decisions on recruitment, promotion and tenure.[89] The critical issue of diversity in the academic and non-academic workforce is picked up in another paper commissioned by the Paradigm Project[90] and thus is not explored further here, except to acknowledge how salient this issue is and how it impacts on the reward and recognition of academic researchers.

However, it is too easy to blame the corrosive research culture on system and institutional incentives. At the end of the day, individual academics day-in and day-out are making recruitment, promotion, and tenure decisions and thus, as a collective, they also bear responsibility for the current system. As the Dutch *Room for everyone's talents* report puts it:

"Modernising the system of recognition and rewards requires a culture change as well as national and international coordination between all parties involved. Moreover, it requires the academics themselves, including academic leaders, to give shape to this modernisation and to embrace it. After all, it is these academics who assess the career paths of fellow academics. Together they form the system of appointment advisory committees, selection committees, assessment committees, etc."[91]

But what can academics do to take personal responsibility for ensuring that academic incentive systems appropriately recognize societal impact? In this final section, three cases are described. The first focuses on acquiring the right skills to maximize the impact of your and your teams' research. Secondly, is ensuring that you, as an individual academic, celebrate your own impact and the impact your peers have, ensuring that it is a consideration in academic reward and recognition. The third acknowledges the emergence of a new cadre of quasi-academic roles – or 'third space professionals' as they have been termed – and their fundamental and important role in helping individual researchers maximize their impact.

Translating research knowledge into societal impact requires a new set of skills, experiences and practices that hitherto have not been widely taught in doctoral programs and nor continuing professional development for academic researchers.[92] As Bayley et al put it, "brokering research knowledge into social practice is a highly effortful and complex activity; without sufficient focus on skills, both institutions and individuals may be under-equipped to generate impact effectively."[93] This means that **researchers need training to support the development of 'impact literacy'** that can help them be recruited, promoted, and achieve tenure as academic incentives become aligned with more societal goals (Case 7, Table 2). There are a number of examples of this in the literature, including the Health and Aging Policy Fellows,[94] the UMass Public Engagement Project,[95] and the Impact by Design course, developed by the Policy Insti-

tute at King's College London.[96,97] The Health and Aging Policy Fellows (HAPF) is designed to provide health and aging professionals with the skills and experience they need to health shape sound policy for the elderly population. About three quarters of the fellows are academics. The program is a mix of hands-on experience through placements and a classroom-based training on the process and procedures of policy making. It also offers fellows communication seminars and other focused interventions around specific skill sets.[98]

The UMass Public Engagement Project (PEP) is predicated on a "relational model of public engagement."[99] As its website states, "the Public Engagement Project supports and trains faculty members to use their research to contribute to social change, inform public policy, and enrich public debate. Scholars learn new skills from experts and from each other to improve their communication and engagement with the media, community groups, policymakers, and practitioners."[100] One of its steering group members is Lee Badgett who wrote the book, *The Public Professor. How to use your research to change the world*, which is a very practical guide on how to acquire the necessary skills to make an impact.[101] The PEP has a number of resources on its website and runs skill building workshops in a range of topics include building relationships with non-academic users of research,[102] writing for non-academic audiences[103] as well as advocating for the inclusion of public engagement in recruitment, promotion, and tenure decisions.[104]

The *Impact by Design* course is modelled around the 7Cs and was developed from an earlier iteration that focused on teaching how to assess research impact.[105] The aim of *Impact by Design* it to support researchers in developing the concept of "impact literacy", which was originally proposed by Bayley & Phipps (2019), and stresses the multiple skills required for researchers to make effective and timely research impact. The 7Cs framework is aimed at the individual researcher and seeks to

support impact literacy by offering an applied framework, structured around a series of questions, which are divided into seven categories or principles (as outlined in Figure 2). Each of these questions is intended to clarify key objectives of any research impact project as well as to crystallize the ways in which that project can be constructed.

The development of 'impact literacy' as a core research skill will only become widespread if it is recognised by recruitment, promotion, and tenure panels, which, as already noted, is staffed by academic researchers themselves. In practice this means including impact as an evaluation criterion (which, as we have seen, will largely arise through institutional interventions) and then for peer review panels to take such criteria seriously in their individual evaluations. To support this, it may be necessary to develop **'impact resumés' and practitioner letters of recommendation in promotion and tenure dossiers** (Case 8, Table 2). In the ecosystem of suppliers supporting recruitment, promotion and tenure processes, there is some movement in this direction. For example, Interfolio,[106] a faculty information system, recently acquired Researchfish,[107] a platform that tracks research impact, suggesting that in the long run impact will become integrated into academic dossiers.[108] In the meantime, and as emphasized by the work in the Netherlands, the academic community can 'own' this issue by, firstly, submitting recommendation letters from non-academic colleagues who can provide a testimonial of the impact of their research and then for selection panels to give such evidence appropriate weight in their decision making.

Figure 2: The 7Cs for planning impact into research projects[109]

Contexts	What are the wider environmental, political, social, technological, legal and/or economic contexts to which your research may be relevant?
Communities	Who are the communities and beneficiaries of your research?
Constituencies	Who has a (positive) interest in your project and can influence change?
Challenge	What is the situation, and challenge, you will solve through your research questions?
Channels	What approaches will you use to reach those constituencies?
Communication	What is the appropriate style, tone and structuring needed to get your main message across?
Capture	How will you demonstrate your impact?

Sreenan N, Hinrichs-Krapels S, Pollitt A et al. Impact by design: Planning your research impact in 7Cs [version 1]. Emerald Open Res 2019, 1:18 (doi:10.35241/emeraldopenres.13323.1)

Emerald Open Research

At the same time as supporting researchers in developing a new set of impact skills, and then ensuring that such skills are recognised in recruitment, promotion and tenure dossiers, it is also likely that **the future university will require a new set of skills and competencies amongst its workforce** that can, for example, curate public engagement and citizen science networks (Case 9, Table 2.)[110] Part of the challenge is that these competencies are often found in roles that are neither academic nor professional. It is for this reason that Celia Whitchurch coined the phrase 'third space professions.' "The concept is used as a way of exploring groups of staff in higher education who do not fit conventional binary descriptors such as those enshrined in 'academic' or 'non-academic' employment categories."[111] Critically she notes that "the significance of in-between spaces, which are likely to be invisible in that they are not written into organisation charts or job descriptions, and may not have dedicated physical space, associated with them, is recognised in a wider literature including on community of practices, actor-network theory and social capital".[112] Examples of third place professionals include staff who are working in widening participation and access schemes, professors of practice, people running entrepreneurship institutes, academic think tanks and museums, and those responsible for the environmental sustainability of the university. All those roles have critical academic elements which bridge to more operational aspects of running an institution including its broader societal contribution. In concluding her book, *Reconstructing identities in higher education. The rise of the third space professionals*, Whitchurch observes "third space activity may contribute to … ways of moving beyond 'dialectical managerialism' to develop 'creative management thinking' and 'make external ambiguity manageable for governors, staff and students'. …. In all these ways, third space might be described as representing 'discursive space' that is neither 'managerially' nor 'ideologically constrained'."[113]

These individual level interventions illustrate that if societal impact is fully embraced as part of the mission of academic research—whether in health services research or in other disciplines - it is likely that new professional functions will begin to develop that no longer fit the century old binarism of today's reward structures. Through this evolution, and with time, the collapse of the current system of reward and recognition continues to accelerate and through that disruption some of the ideas described such as developing impact literacy and including impact in recruitment, promotion and tenure dossiers come to the fore. But that only happens if, as already stressed, individual researchers take responsibility for both talking about the impact of their teams and those same researchers sitting on review panels recognize such activity as being a dimension of research excellence. At the heart of this is a debate as to the purpose of universities, academic research and more specifically health service research. Fundamental to this is a question of values – whether (health services) research should have impact and be a social good, or whether the role of the academy is about knowledge creation and curation. At the end of the day this question boils down to the values of individual researchers who, through working together, contribute to the values of institutions and systems. Thus, understanding, debating, and developing the values of health service research in the U.S. is as key to any reform of incentive systems.

7. CLOSING REFLECTIONS

This paper has presented nine cases that have attempted to recalibrate academic reward and recognition systems away from the assessment of traditional evaluation criteria such as funding, papers, and citation counts, towards social impact. These cases have been drawn from several countries and from research disciplines outside health services research. Some of the cases have been successful in changing incentives, others less proven but likely to be effective, and the rest can be best described as work in progress with their effectiveness still to be determined. Nevertheless, in reimagining a new paradigm for health services research it is important not to let the dead hand of evaluation stifle innovation. Whilst not losing sight of the need to measure effectiveness, it is important to be willing to experiment and try out new things. With that in mind, Table 4, tests each of the nine cases against a 'suitability, feasibility and acceptability'[114] framework *for the context of health services research in the U.S.* In this framework suitability is addressing how fit for purpose the intervention is, feasibility how likely it could be implemented and acceptability whether important stakeholder groups, including researchers, research administrators and research users, are likely to 'buy-in' to the intervention.

It should be stressed that the assessment is based on the authors judgement and therefore can be contested but nonetheless begins to sketch out an agenda for AcademyHealth and the broader community of health service researchers in the U.S. to debate and pursue. To focus that debate, from the assessment of suitability, feasibility, and acceptability, a number of 'provocations' arising from this analysis are then listed in Box 3.

In closing, it is important to stress that doing nothing is not an option. As hopefully this paper sets out the current incentive system for academic researchers promotes a focus on research with limited societal impact, can contribute to a negative research culture and at the extreme can incentivise scientific misconduct. The upside being that the realignment of academic incentives and reward structures will have a positive impact on the field of health services research and other applied health disciplines and critically begin to align research behind its core mission to better people's lives.

Box 3: Five provocations to better people's lives

1. AcademyHealth should advocate for radical systems level reform in the way that research is funded in the U.S., to ensure that it both recognizes societal impact and rewards it when this occurs. This could include continued lobbying of the major funders of health research, but also consideration of work at state level in incentivising universities to support research impact.

2. AcademyHealth should open a dialogue with the producers of national and global league tables and with universities to both ensure the widespread adoption of societal impact into their evaluation criteria but also participation from U.S. universities.

3. AcademyHealth should develop a proposition for establishing a School of Health Services Research that reimagines academics structures, incentives and training along the lines of the Olin School for Engineering.

4. AcademyHealth should look to work with other learned societies to see whether there is an opportunity to take the conversation beyond health services research and begin a social movement that strategically focuses on changing both funders and university assessment criteria, and in doing so bring those agencies into the movement.

5. Members of AcademyHealth, and the wider health services research community, should understand, debate and develop the values and behaviours in perpetrating the current system when reviewing grant applications, papers and recruitment, promotion and tenure candidates and start to give sufficient weight to societal impact and other non-traditional criteria of academic research excellence.

Table 4: The suitability, feasibility and acceptability of reviewed interventions to incentivize academic impact

Intervention		Suitability …	Feasibility …	Acceptability …
		… for health services research in the US		
Systems level interventions	**Reward universities that can demonstrate research impact.**	Proven system that works in other countries but will impact all disciplines including health services research.	Only likely to work at a state level with state universities being rewarded for having societal impact.	May raise concern from disciplines that are focused on curiosity driven research (in biomedicine and beyond).
	University league tables that focus on social impact.	Proven system but currently low US participation in THE Impact Ranking.	Would require either increased participation of US HEIs or persuading US News and World Report and/or WSJ/THE rankings to adopt social impact.	Concern amongst many academics on the legitimacy of league tables, although more support amongst senior leadership.
	Research funding programmes that focus on research translation and impact.	Existing programmes are in place and can be used as a model for other 'platforms' such as the CTSA.	Easy to implement but to prevent drift to 'business as usual' the assessment of track record of societal impact may be necessary (as occurs with the Australian NHMRC)	Likely to be broadly accepted by the academic community as within the zone of normal practice.
Institutional and disciplinary level interventions	**'Starting-up' new universities or research institutes.**	Will only impact on those academic researchers who are employed by the new university.	High impact, low likelihood strategy ie will have to persuade a funder (most likely a foundation) to make a significant investment.	Likely to be supported by the academic community as no direct impact on those not employed by the university (but could provide a model for others to follow).
	Discipline-led debate, dialogue, and collective advocacy.	Likely to have limited real-world impact on recognition and reward criteria and academic incentives in universities.	Relatively easy for AcademyHealth to sponsor, but whether that leads to tangible change within universities and funders is the question.	Likely to be accepted by the health services research community, and other cognate academic disciplines.
	Partnerships between universities and funders.	The Dutch example provides a model for how to broker a sector wider conversation on reward and recognition systems.	The challenge will be the scale of the US (versus the Netherlands) and whether AcademyHealth can initiate and broker a debate beyond health services research.	Dutch experience suggests that alignment can be created between senior leaders across different actors, but still not clear if this will be accepted within faculty.

	Intervention	Suitability …	Feasibility …	Acceptability …
		… for health services research in the US		
Individual responses and responsibilities to academic incentives system	**Training to support the development of 'impact literacy'.**	The provision and expansion of impact training by a range of providers (which could include AcademyHealth) is likely to occur if societal impact is rewarded at systems and institutional level.	Easy to implement but issue will be quality and effectiveness of training, which could provide AcademyHealth an opportunity to accredit, perhaps along the lines used in business schools.	Likely to be accepted by those individuals who have a pre-existing interest in achieving impact. Challenge will be to reach those academic communities who show less interest.
	'Impact resumés' and practitioner letters of recommendation in promotion and tenure dossiers.	Testimonials and endorsements by stakeholders external to the academy will broaden evaluation criteria and give a more rounded assessment of an individual.	Relatively easy to implement but may require some amendments to existing institutional process and commercial platforms that support those process.	Will require selection panels to take seriously dossiers that include non-academic recommendation letters majoring on societal impact. This will require some visible appointments based on these new assessment criteria.
	The future university will require a new set of skills and competencies amongst its workforce.	In aligning the purpose of research disciplines, including health services research, on societal impact a cadre of third space professionals is a likely success factor.	Already occurring by stealth, so issue is for third way professionals to be recognised as a legitimate role within universities.	In the long run is likely to require further blurring between the concepts of tenure/tenure track and non-tenure track, and faculty and staff. Could lead to additional costs that put off some students/parents.

8. ACKNOWLEDGEMENTS

Endnotes

1. Grant (2021).

2. Note that 'tenure' does has different meaning in different institutions and need not always mean a 'job for life' or a fully salary for life.

3. Edwards and Roy (2017).

4. This is an abridged version of Table 1 in Edwards and Roy (2017) which is based on an acknowledged personal communication.

5. Adam et al (2018).

6. https://www.academyhealth.org/ParadigmProject.

7. Lupia and Aldrich (2015), p2.

8. Mulgan et al (2016), p5.

9. Roblin (2016).

10. Sachalet et al (2020).

11. https://theconversation.com/should-writing-for-the-public-count-toward-tenure-63983.

12. Wollf et al (2016).

13. Moher et al (2018).

14. Rice et al (2020).

15. In Rice et al (2020) analysis the "most relevant faculty" was often a school of medicine.

16. Adam et al (2018).

17. https://www.academyhealth.org/ParadigmProject.

18. Pittman (2010).

19. The former U.K. politician, Charles Clarke, coined this phrase in his eponymous book where he notes that "at the end of the day it is simply not good enough to leave too many big and fundamental problems in the 'too difficult' box." (Clarke, 2014, pxxi).

20. Grant (2021).

21. Ludlum (1950).

22. https://www.aaup.org/about/mission-1.

23. https://www.aaup.org/NR/rdonlyres/A6520A9D-0A9A-47B3-B550-C006B5B224E7/0/1915Declaration.pdf.

24. Note that 'tenure' does has different meaning in different institutions and need not always mean a 'job for life' or a fully salary for life.

25. As a side note, it is important to acknowledge that this portrayal is very US-centric and has arisen in part due to weaker employment laws in the US than in other countries. For example, the academic tenure was abolished in the U.K. by legislation in the 1980 and in other countries the concept is unknown (see Palfreyman and Temple, 2017).

26. https://freakonomics.com/2007/03/03/lets-just-get-rid-of-tenure/.

27. Edwards and Roy (2017).

28. Szomszor (2020).

29. Seglen (1997).

30. Wilsdon et al (2015).

31. Wouters et al (2015).

32. This is an abridged version of Table 1 in Edwards and Roy (2017) which is based on an acknowledged personal communication.

33. Naidoo and Williams (2014).

34. https://www.economist.com/britain/2020/08/20/how-the-british-government-rules-by-algorithm?frsc=dg%7Ce.

35. Crow (2015), p25.

36. Grant (2021).

37. Clarke (2014).

38. Clancy & Simpson (2002) cite full quote as available from Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives. 1998. One Hundred Fifth Congress, Second Session, Part 3, Department of Health and Human Services, Public Health Service, Washington, DC, March 4

39. Eisenberg (2001).

40. Clancy (2004).

41. In the 2021 exercise the weight for impact has increased to 25% and research outputs decreased to 60%.

42. https://re.ukri.org/funding/quality-related-research-funding/.

43. See https://re.ukri.org/news-opinions-events/news/uplift-for-re-qr-funding-to-support-governments-commitment-to-rnd/ and https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/ukgrossdomesticexpenditureonresearchanddevelopment/2018 for source data.

44. Parks et al (2019).

45. Note that in 2021 the weights change so the quality of research outputs is 60% and the impact of research outside academia is 25%. The environmental component stays the same at 15%.

46. The University Grant Council in Hong Kong runs a Research Assessment Exercise, which in 2020 will include research impact (see: https://www.ugc.edu.hk/eng/ugc/activity/research/rae.html). The Hong Kong RAE is modelled of the U.K. REF so not described in detail here.

47. Williams and Grant (2018).

48. https://uwphi.pophealth.wisc.edu/chrr/.

49. Remington et al (2015).

50. University league tables are produced by a range of support to support students in making decisions about where to study. However, their results can vary widely year to year as they rely heavily on perceptions of prestige through reputational surveys and on research performance through citations. Nevertheless, they powerfully influence perceptions of universities' performance and how universities allocate resources. Higher rankings help universities to attract better students, academics and international partnerships. (Douglas et al. 2020).

51. Douglas et al (2020).

52. THE derives from Times Higher Education, or formerly the Times Higher Education Supplement (THES), a weekly news outlet based in London but reporting on higher education news worldwide. It is also one of the major suppliers of university rankings, including the World University Ranking (WUR).

53. https://www.timeshighereducation.com/rankings/impact/2020/overall#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/undefined.

54. https://www.usnews.com/best-colleges

55. https://www.timeshighereducation.com/rankings/united-states/2020#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/scores

56. https://ncats.nih.gov/ctsa

57. Zerhouni (2006).

58. https://ncats.nih.gov/files/CTSA_Funding_Information_FY19_508_v2.pdf.

59. Llewellyn et el (2020).

60. Cottler el al (2019).

61. https://www.nhmrc.gov.au/funding/find-funding/investigator-grants.

62. The NIH budget is around US$40 billion vs AHRQ which is around US$400 million.

63. Note there is a separate Paradigm Project paper on peer review (Guthrie, 2019).

64. Mulgan et al (2016), p5.

65. http://www.olin.edu/about/.

66. National Academies of Science, Engineering, and Medicine (2020).

67. https://www.crick.ac.uk.

68. Roblin (2016).

69. Roblin (2016).

70. In the U.K., charitable funding is equivalent to foundation funding in the US.

71. Lupia and Aldrich (2015), p2.

72. Pittman et al (2010).

73. Prewitt (2019).

74. ASA (2016).

75. The partnership was broader than this being made up of VNSU (the Association of Universities in the Netherlands), NFU (The Netherlands Federation of University Medical Centres), KNAW (the Royal Netherlands Academy of Arts and Sciences), NOW (the Dutch Research Council) and ZonMW (The Netherlands Organisation for Health Research and Development).

76. VSNU et al (2019)

77. See https://www.youtube.com/watch?v=VN5mO2N06x0 for excellent summary.

78. Benedictus and Miedema (2016).

79. VNSU et al (2020).

80. DORA is the San Francisco Declaration on Research Assessment, and "recognizes the need to improve the ways in which the outputs of scholarly research are evaluated". It was developed in 2012 during the Annual Meeting of the American Society for Cell Biology in San Francisco and has become a worldwide initiative covering all scholarly disciplines and all key stakeholders including funders, publishers, professional societies, institutions, and researchers. For more detail see: https://sfdora.org/).

81. https://www.umcutrecht.nl/en/science-in-transition.

82. Although it is worth noting that the Dutch approach is inspired by the European Union's 2016 adoption 'Open Science' which promotes a similar set of principles (https://ec.europa.eu/research/openscience/pdf/integrated_advice_opspp_recommendations.pdf#view=fit&pagemode=none).

83. Naidoo and Williams (2014).

84. Lave et al (2010).

85. https://wellcome.org/what-we-do/our-work/research-culture.

86. Wellcome Trust (2020).

87. https://community.chronicle.com/news/%20215-what-we-talk-about-when-we-talk-about-quitting?cid%20=%20vem.

88. https://community.chronicle.com/news/216-why-so-many-academics-quit-and-tell?cid=vem

89. https://diverseeducation.com/article/150672/.

90. Cobian and Gutierrez (forthcoming); Frogner (forthcoming).

91. It is worth noting, that in the Dutch context, modernisation takes on a broader meaning than often in the US, capturing a more progressive set of ideas over and beyond efficiency and effectiveness (as broadly captured by the notion of new public management).

92. Sachalet et al (2020).

93. Bayley et al (2017).

94. Pincus et al (2017).

95. https://www.umass.edu/pep/.

96. Sreenan et al (2019).

97. Note, the author was and is actively involved in designing and running this course.

98. https://www.columbiapsychiatry.org/education-and-training/clinical-fellowships/health-and-aging-policy-fellows-program.

99. Sachalet et al (2020).

100. https://www.umass.edu/pep/about.

101. Badgett (2015).

102. https://www.umass.edu/pep/how-get-your-research-out-there-feb-10-15.

103. https://www.umass.edu/pep/op-ed-panel.

104. https://theconversation.com/should-writing-for-the-public-count-toward-tenure-63983.

105. https://www.theinternationalschoolonria.com/.

106. https://www.interfolio.com/.

107. https://researchfish.com/.

108. Note that the author is a senior advisor to Researchfish.

109. Sreenan et al (2019).

110. Grant (2021).

111. Whitchurch (2015).

112. Whitchurch (2013), p21.

113. Whitchurch (2013), p144.

114. El Turabi et al (2011).

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