CIRCE

Research Fellow

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How can policy support the inclusive growth of innovative sectors?

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Contents

Executive Summary

Taking a design and data-led approach to determine the ways policy might support diverse communities to participate and excel within the knowledge economy, this research uncovers a number of key insights including:

- The inability of catch-all policies, even those designed to engage marginalised groups, to reach those most vulnerable to exclusion;
- Socio-economic background playing a significant role in who participates in the knowledge economy (both within the Arts and Sciences - and more so than in other disciplines/sectors);
- In Barcelona, fewer women enter STEM education than men, but when they do are more likely to complete studies than male counterparts. While in the Arts both genders dropout at the same rate.
- In London, Women and Black, Asian and Ethnic Minority groups can be successfully brought into the knowledge economy through training and job opportunities, while people with disabilities, single parents, and care leavers (most vulnerable) appear to require more tailored approaches.

Recommendations are based on open questions that remain and that would benefit from the experimental approach to policy design detailed in this report. They include:

1. A call to design and test interventions that best serve those identified as the most vulnerable; helping to address and understand why STEAM holds more barriers to entry than other disciplines;
2. A call to tap into the wealth of data unutilised in policy decision-making processes. Existing data infrastructures can help to map what has worked and failed in the past and highlight how programme design and delivery might benefit from tweaks that optimise outcomes. Looking at the intersection of Arts and Science outcomes also offer the possibility of novel solutions.
3. Finally, the call for policy to enable cultures of learning and collaboration across disciplines, ministries and sectors to ensure innovative economies can serve and benefit all.

Introduction

For a number of years, developed economies have been driven by high-tech, creative and knowledge-driven sectors. However, the people and places reaping benefits from this new economic era have not been equally distributed. A landmark paper in 2018 highlighted that millions of dollars are lost because low income children, women and minorities do not invent at the same rate as white men from high-income families (A Bell et. al, 2018). Learning about what drives more inclusive forms of innovation, which creative and cultural economies play a leading role in driving, offers a huge potential to improve the way we live and work.

Traditionally, innovation theory has focused on market approaches, whether they be linked to the entrepreneurship paradigm or the technology-economic paradigm (J Sundbo, 1995). In practice this translated into public policy, designed by either Economic, Business or Innovation Ministries (or a mix of all three), that looked to enable companies or individuals identified as part of the innovation economy. The aim of innovation policies, aided by the state as a key investor (M Mazzucato, 2011), was to sustain high growth as well as technological and scientific development.

Today, innovation policies in the developed world are also expected to enable innovation-led growth that improves welfare and society (Breznitz, 2022, M Mazzucato, 2018). The *knowledge* economy - acknowledged as constantly evolving - is seen to involve multiple actors at both micro and macro levels. There are many fields it includes, for example science, technology, business and enterprise, as well as creative industries, including arts, design, other social enterprises, or those that mix of both disciplines.

How can policy support the growth of innovative sectors that drive the knowledge economy, while ensuring that traditionally marginalised groups are given equal opportunities to excel within its fields?

This research set out to explore multiple career pathways to innovative careers in both the Arts and Sciences, by combining data-driven methods that could uncover insights from educational and occupational data with design-led mapping techniques that would help build a clear picture of where and why would-be creative inventors are lost in the municipalities of Barcelona and four boroughs in the City of London.

By comparing the Arts and Science pathways in these two locations, there has been a unique opportunity to understand general educational and occupational gaps while also identifying trends that are specific to each of these innovation hubs driving societal impact. This research aimed to answer key questions related to the driving forces and mechanisms behind pathways to innovation careers, by considering where evidence generated by randomised controlled trials and other experimental research may be transported to other contexts (Segura Lladó and Zolho, 2022) and where additional experimental evidence is needed. For example, this research looked into whether parental educational background impacted in the Sciences and Arts pathways equally? If women and girls dropped out of Arts and Science pathways at the same rate, and the same points? How access to job opportunities and funding was awarded to diverse applicants in both Arts and Sciences?

By mapping gaps in the pipeline to innovative careers, this research makes the case for the economic importance of creative and cultural sectors in driving more inclusive knowledge economies, and highlights key areas where educational and occupational gaps might need to be closed, and where mutual learning can take place across sectors driving the knowledge economy.

The problem

While discussion around Science, Technology, Engineering, Arts and Mathematics (STEAM) education (with the inclusion of ‘A’ for arts in the last decade) has made its way into the lexicon of innovation policymaking, there has been criticism for the lack of meaningful engagement between disciplines that

remain at odds (ELIA et al, 2023). In the aftermath of COVID-19, the impact on diverse talent was well documented by Creative Industries Policy and Evidence Centre (Burger and Easton, 2020), as well as the Innovation Growth Lab (Goettsch and Glennie, 2020) (two Nesta Enterprises) but seldom have policy discussions centred on the agreed interdisciplinary nature of the arts and sciences, leading to a lack of cohesive policy design approaches that touch on both these core branches of innovative sectors. What we tend to see across Europe and the developed world are traditional Science, Technology, Engineering and Mathematics fields considered and kept separate from Arts focused policy programmes, whether that be in education or business policy.

Here lies the potential: if lessons could be combined from these traditionally kept separate fields, what insights might we gather about the innovation ecosystem? Particularly, in regards to the kind of experimental evidence needed to inform policy approaches (Segura Lladó and Zolho, 2022) that drive more inclusive innovation practices. For example:

- If we looked into whether parental educational background impacted in the Sciences and Arts pathways equally, what might we find?
- Would women and girls drop out of Arts and Science pathways at the same rate, and the same points?
- How would access to job opportunities and awarded funding change depending on diverse applicants in both Arts and Sciences?
- What might we learn from policy programmes looking to bridge gaps between arts and sciences for the benefit of traditionally marginalised groups?

If we are to understand nuances in how inclusive innovation is fostered, it is imperative that the knowledge economy is studied holistically and that sufficient probes on the interconnectedness of both formal and informal pathways to innovative careers explored. This report shares lessons from the start of this enquiry that extends beyond the six-month CIRCE fellowship programme through research into the Lost Innovative Potential at the *Innovation Growth Lab*.

Methodology

The nature of the research question and problem addressed by this design research lends itself to a mixed-method approach. The term ‘mixed method’ will mean different things to different people but in this report, the term is used to mean a combined approach of research and policy design methods that help to (1) build a clear but nuanced *sense* of existing pathways to innovative careers, and (2) borrows that same nuanced approach to seek policy solutions that are informed by evidence. Mixed method also means bringing together two (or more) disciplines and using them alongside one another. For this research project specifically, both design and data research methods have been used.

Design research

Design research borrows from traditional design principles of divergence and convergence, as well as practical innovation methods such as prototyping and testing to seek answers and/or solutions to identified problems. This research builds on a policy design approach developed in the summer of 2022 for the Innovation Growth Lab (IGL) and Nesta UK that aims to facilitate the discovery of experimental opportunities to recover the lost innovative potential of place; to identify hypothesis to be tested using randomised controlled trial and other quasi-experimental methodologies.

In order to help policymakers explore uncertainty, specifically related to the design of policies that might close “leaking” gaps in the pipeline to innovative careers, a sensemaking approach is adopted to prototype policy solutions incrementally (Zolho, 2023). Such an approach is needed where there are no clear, one-size-fits all solutions. Sensemaking in design relates to the adoption of different lenses to sharpen our perspective(s) by taking into account multiple dimensions that make up the whole (Fuller and Weizman, 2021). The design approach developed for

IGL begins with the premise that information (albeit imperfect) exists for policymakers looking to design innovative policy solutions. So what should the policymaker do in response to the many known and unknown unknowns? The sensemaking approach would allow for robustness to be built in incrementally to de-risk uncertainty before testing methods take place to generating evidence of varying degrees of 'proof'.

Nesta's Standards of Evidence illustrate what to expect at different levels of an intervention and how evidence might be generated (Puttick and Ludlow, 2013). At level one, during the design stage when exploring many policy ideas, we might accept a lower standard of evidence to proceed ahead. This might also be determined by resources and capabilities available for pilot stage policy. As we begin to scale up, where larger investments will be made, a higher degree of evidence is needed. This is where randomised controlled trials come into the design process to generate evidence of causal links - that the intervention we believe leads to specific outcomes does indeed deliver on what is promised. IGL's virtuous cycle of experimentation sets out steps one might take to embed RCT methods in innovation policy (Zolho, 2023).

In a nutshell, the policy design approach works from the starting point of high uncertainty related to the policy challenge: in this case how to support the growth of innovative sectors without leaving marginalised groups behind. Through existing data, a sensemaking approach is taken to narrow down the challenge: who are the marginalised groups we are looking to include in the innovative economy, and what roles or parts of the ecosystem are we looking to include them in. Finally, once specific policy solution ideas are generated how might we increase our certainty that our chosen interventions will work: what needs to be prototyped, tested and or experimented with?

Limitations of this method evidently include risks of an inability to move beyond sensemaking practices towards more concrete validation of hypothesis. Therefore, the goal particularly from a policy perspective with large implications for society is to combine design approaches with more quantitative and experimental research where possible.

While the goal of design approaches is to create and test - moving forward (IDEO, 2022) by doing to avoid stagnation and *analysis paralysis* - research and analysis that is able to interrogate existing data at a deeper level, offers the possibility to uncover stronger cues on the hunches policymakers should pursue.

Data mapping

Data is everywhere and has increasingly become a buzzword across sectors - but what do we mean? Data can be anything from text, content, images, audio. It might be locally collected and stored e.g. the notes you take at a meeting and upload to your shared team infrastructure, or digitally sourced e.g. data scraped from the web. When we speak about data mapping in this research project, this includes zooming in on the sources of knowledge that exist in policymaker siloes and zooming out to consider what other layers of knowledge might support the policy design process.

Depending on the quality of data, whether it sits in a database or remains locked behind a paywall, it is only through unlocked, accessible data, that we can begin to see patterns that might otherwise be missed. Large datasets paint a picture of general trends which complement the qualitative insights from design research focused on *sensemaking*.

In this research project, data has been collected related to two pathways to innovative careers. The data provides a snapshot of accuracy for a part of the pipeline and shows us what is possible when such access to data exists. In addition, it clarifies what we miss when data is closed, not adequately stored and shared or simply not collected. It becomes highly apparent that in the policymaking process we have yet to make full use of the capabilities that exist at our disposal through machine learning and artificial intelligence.

By combining data mapping with design, we also see where data alone is insufficient. While trends and insights can be pulled with high degrees of accuracy, rarely will data explain why we see what we do. Data can also not answer what might change policy

outcomes. At this point we return to the design approach to sense what the policy(maker) might want to test, incrementally designing the policy outcomes we wish to see.

Imagine you are about to enter a maze blindfolded. You know exactly what the destination you would like to reach is but you are unsure of how to get there. Sensemaking helps you choose whether you go right, left or straight ahead first. Testing helps you know if you are indeed making progress towards the exit you wish to take. Data will tell you whether you have hit a brick wall, where others are along their path to an exit and where you might want to focus next. Together the mixed method approach to policy design, and to this research project, helps to clear the obscure lens of the complex questions. While this research will not provide clear answers, it should provide policymakers at both national and local levels with ideas of how robustness and evidence-based decision making might support their programmes to meet desired outcomes, waste less resource and positively shift wicked problems being faced.

In summary

This research takes a design research approach and combines it with data mapping techniques to uncover experimental opportunities with regards to a specific policy problem:

How to support inclusive growth of innovative sectors that extends across the Arts and Sciences/Technology sectors.

By deep diving on two municipalities, this research shows how the mixed-method approach enables the nuances of the specific contexts of Barcelona and London to be uncovered, while revealing similar trends in challenges faced by these two cities, deemed to be innovation hubs in Europe. While the context and existing resources (access to data, educational curriculum, funding opportunities) differ, shared learning between policy contexts is useful, particularly as a prerequisite to uncovering experiential opportunities (open questions) to explore further.

Barcelona: STE(A)M pathways to innovative careers

Prototyping policy design tools

In the summer of 2022, Nesta commissioned IGL's Policy Learning Designer to spend three months solely focused on a sabbatical project that aimed to uncover experimental opportunities to close gaps in the 'leaking' pipeline to inventorship. Women, minoritised groups and children from low-income families had been shown to have their 'innovation capital' [who you know, what you know, how you think, and what you do] squandered (M Gabriel et al, 2018), limiting the inventive potential of these groups. Invention here is taken as the first step of innovation processes (Breznitz, 2021).

Applying design research methods to the policy challenge of identifying which traditionally marginalised groups were most at risk, and at what stages experimental approaches might be usefully applied to close gaps, after three months a prototype that combined data methods with design was built to aid policy processes. The target was the policymaker tasked with designing policies to address the Lost Innovative Potential. Phases to build the ALPHA version of the 'Experiential Pipeline' prototype included:

1. **Getting to know people and place**

Phase one aimed to very quickly understand what the challenge of the Lost Innovative Potential looked and felt like in Barcelona. The starting point was to empty all assumptions and begin from scratch exploring the built environment (space and place) and systems attached to it (contextual, transactional and policy specific). Layering information taken from audio recordings, oral stories and stakeholder mappings produced by key actors active in the system (existing innovators, policymakers, local residents), the end result was a systems map that illustrated relationships between actors in the innovation and education systems, and the dark matter - intangible forces of influence - (D Hill,

2012) that surrounded them.

2. Deep diving into existing data

While phase one was a rapid way to get a general sense of the drivers of the Lost Innovative Potential, in designing a tool for policymaking where public funds are being used, more rigour was required. Phase two, deep dived into open data to map the stages of the innovation pipeline from early years to early career start. Driven with knowledge from phase one on who were likely to be the most at risk groups - in Barcelona, these were identified as women and girls, children with foreign national parents and children with socioeconomic disadvantage. Pulling statistics from national, regional and city level databases, the aim of deep diving into existing data was to *sense* how many would-be inventors were "leaking" from the pipeline.

3. Prototyping the pipeline

The data and stories were combined to build the first 'Experiential Pipeline' : an illustrative model of where at-risk groups enter and leave the pipeline starting during early years when all children enter formal schooling at age six, and ending at the early career start where by age 24 all should have started a career (some sitting within the innovation economy while others do not). Only using open data alone brought some rigour but proved to be an imperfect method. There were many 'black holes' - gaps that could not allow for direct matching of datasets. Instead snapshots were pieced together to facilitate understanding of the pipeline journey of at risks groups - albeit in an imperfect way that did not resolve uncertainties regarding where exact crisis points were.

4. Arriving at the ideas journey

The final, fourth phase identified ways to identify where experimentation might support closing of "leaks". Having worked through the previous phases, preferably in a collaborative way with both programme managers and strategic decision makers, "hunches" of where the biggest leaks take place were designed to be agreed upon. Later, reviewing existing literature of experiments that have taken place would highlight new ideas to test further. [See Figure 1.1]

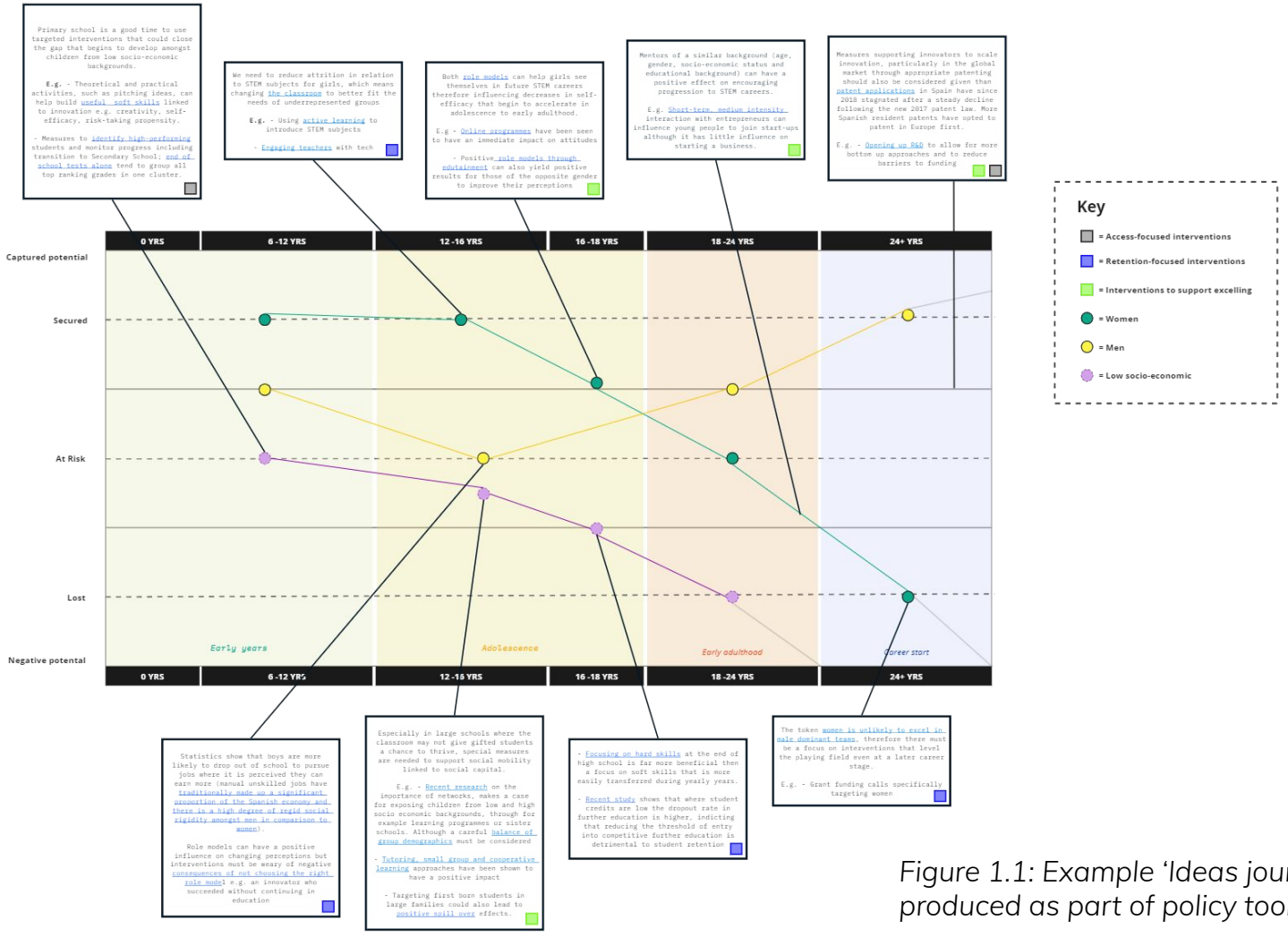

Figure 1.1: Example 'Ideas journey' produced as part of policy tool prototyping

Opening the data hood: From ALPHA to BETA version

The first pipeline prototype proved what was possible if data was brought together in a visual way (Li et al, 2023) - that evidence-based decision could be built from. However, getting a more concrete tool was necessary to prove viability. Through a special request to UNEIX (a shared database between universities in Catalunya), the Innovation Growth Lab was able to get unprecedented access to data showing the pipeline pathway towards innovative careers through the university system. With this data, there was an opportunity to iterate the ALPHA model based on open data alone to show how datasets policymakers have (or should have) access to could be used for evidence-based decision making.

With open data from unlinked sets, it had not been possible to accurately match junctions in the pipeline; for example, from secondary school to further education it was impossible to know which schools led to which outcomes for 17-18 year olds. Zooming in on UNEIX data that followed a cohort born in 1996, the pipeline could now track the probability of different indicators (gender, national/regional or foreign background, and socioeconomic status) for those entering degrees that would likely lead to jobs (OECD, 2019) in the innovative economy - by seeing these pathways through.

While the BETA version does not account for students who may dropout to purse alternative pathways into the innovative sector (outside and beyond invention of products or services), it does shine a light on how well the university pathways are serving at-risk groups in the municipality of Barcelona and wider Catalunya.

Findings: Known knowns versus known unknowns

1. An expected finding from the BETA version (illustrated in version ALPHA) is that **at-risk groups leak out of the system at different junctions, for different reasons.** Therefore, we cannot assume policy interventions targeting all marginalised groups to be effective.

In Barcelona, while fewer women enter a Science, Technology, Engineering or Mathematics degree than

men, once in the field of study they are less likely to dropout. 16% of men drop out of STEM subjects versus only 10% of women. In the Arts [Figure 1.2] we see far fewer students enter, and women and men dropping out at the similar rates (16% for women, 17% for men). This mirrors outcomes seen by gender in Non-STEAM subjects. In comparison, students of a foreign background (considering foreign as both national and regional i.e. outside of Catalunya) disproportionately dropout of all disciplines. This indicates that students born into Barcelona/Catalan families tend to have better outcomes then those who have migrated from outside the region.

What we cannot know for certain (therefore warranting further research and experimentation) is:

- How many students who dropout of an Arts or STEM subject, end up switching i.e. remaining in STEAM but completing studies that likely indicate they hold some ambidextrous characteristics that are becoming more sought after in the knowledge economy (Sorrel et. al, 2014).
- What is hindering entry and completion of Arts subjects, in comparison to STEM and Non-STEAM. What barriers are particular in this discipline that differentiate it from others?
- What would support students from outside of Catalunya to better perform within the university system?

2. **Arts students take far longer to complete university than counterparts in STEM or any other discipline.** This is a particularly useful finding given other research that has linked slow study completion to poorer job outcomes and higher risk of precarious work (Fenández-Mellizo, 2022).

What we cannot know from the BETA version alone is:

- What are Arts students doing in between completing their studies i.e. are they entering other forms of training or employment related to their chosen fields or not - and what are the implications of this?
- Does the completion of formal education in the Arts strongly determine long-term job outcomes positively or negatively?

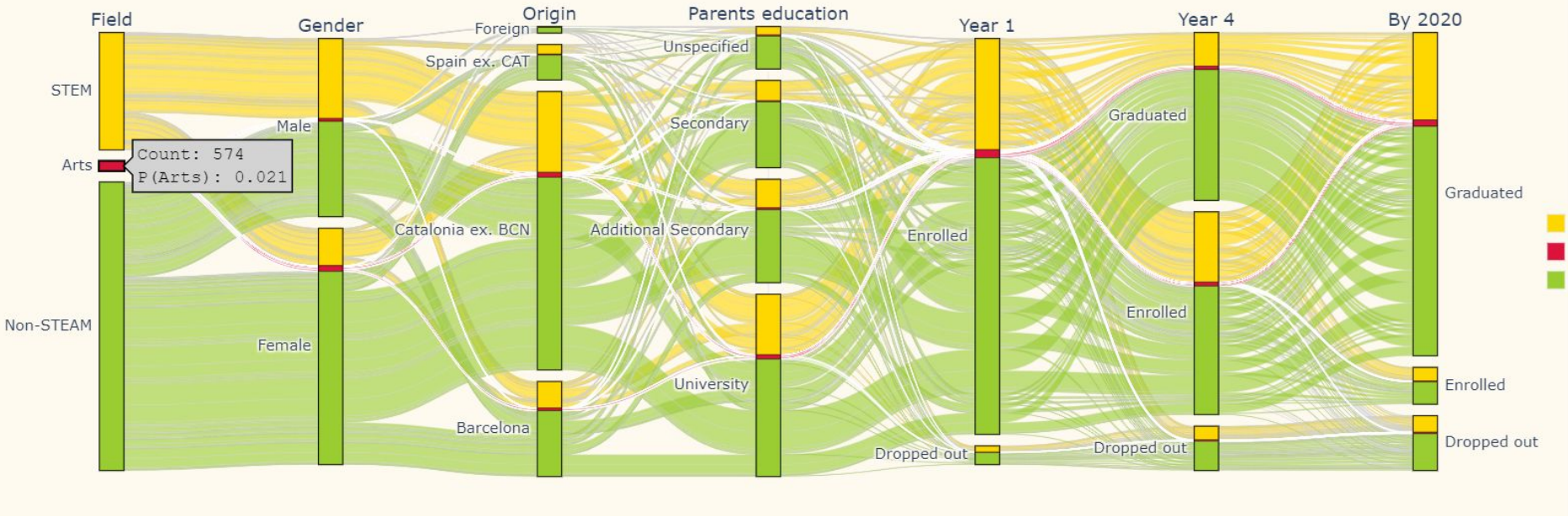

Figure 1.2: Taken from BETA tool - Student fields divided by the disciplines STEM [yellow] and Arts [red] (traditional pathways to innovative careers) and Non-STEAM [green]. Art's pathways is highlighted demonstrating the probability of students born in the year 1996 entering an Arts subject.

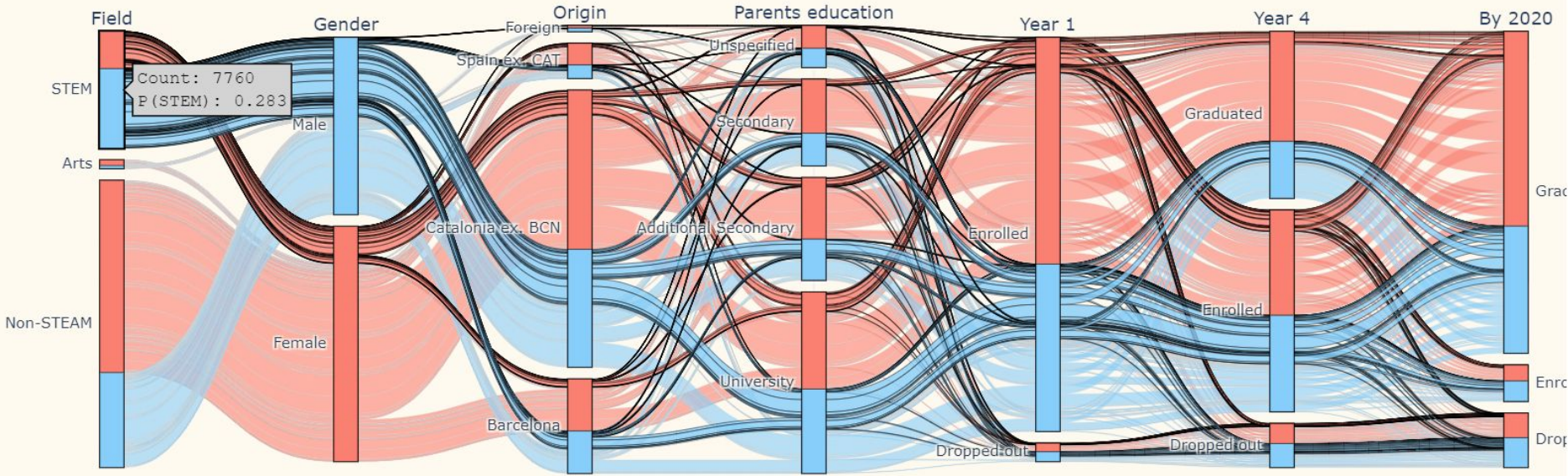

Figure 1.3: Taken from BETA tool - Students born in the year 1996 are divided by gender identification available; women [red] and men [blue] are highlighted in the STEM pathway. While men make up a higher number of STEM students, they are also more likely to not complete their degrees in comparison to women who enter.

3. **Socio-economic background** (the closest indicator used here was parental levels of education) **is the greatest determinant for entering or completing all disciplines at university**. However, it plays an even more prominent role in STEM.

STEM students with parents who went to university are 79% likely to complete studies, while only 69% of STEM student with parents who only completed secondary schooling go on to complete university. We see this same trend in the Arts but with a smaller gap; students with parents who went to university complete degrees at a 76% while those who only have secondary education 70%. The gap between the lowest parental levels of education and the highest parental levels of education is lower. Students entering a No-STEAM discipline appear to be more heterogeneous, although the levels of education still play some role in university outcomes.

What we cannot know from the data alone is:

- Why it is that socio-economic background affects STEAM subjects at a far higher rate that No-STEAM disciplines, and why socio-economic background seems to split STEM at a significantly higher rate than the Arts?
- What about the Arts and Sciences (key drivers of the knowledge economy) makes them particularly susceptible to a lack of socio-economic inclusion?

From explorative questions to experimental opportunities

All the areas where uncertainty or open questions remain (known unknowns), are areas for further research or probing. In most cases, more use of experimental research would support a growing evidence base policymakers can trust. For example, where there is a policy need to determine whether an intervention is in fact closing a “leak” or whether it could be more effective at achieving its desired outcome, causal links identified through randomised controlled trials (Breckon, 2020; Edovald and Firpo, 2016) are a useful way to ensure public resources are going towards where is is possible to adopt this approach (UK HM Treasury and Evaluation Task Force, 2011).

London: LIFT boroughs building pathways into the knowledge economy

Probing policy design processes

In the summer of 2023, supported by the Creative Impact Research Centre EU (CIRCE) fellowship, the tools developed to identify gaps in the pipeline to innovative careers in 2022 were stretched to test whether promising policy solutions could also be enabled through a similar approach. Data and evidence tools tested through design research methodologies, set the stage for an existing policy programme to reflect both forwards and backwards on its design. The central question: could tools such as the ALPHA and BETA experimental pipeline or others enable better decision making?

LIFT London

LIFT London is a coalition of four London boroughs: Islington, Hackney, Tower Hamlets and Camden delivering a £7.3million program. These boroughs sit within one of Europe's more prosperous innovation hubs and yet local residents are not usually participating in the knowledge economy. This means that while London's access to market and resources in one of the most globally competitive in Europe, the outcomes for local people are not equivalent. LIFT London takes a holistic approach to offer jobs, training, and support to local residents who want to start a business in tech, digital, creative and science sector. The aim is to diversify participation in the knowledge economy so that the benefits of being part of the innovation hub are reaped by all.

LIFT designed its programme to work upstream with businesses located within their borough boundaries, as well as residents who met the criteria to identify as being marginalised from the knowledge economy. In addition, the coalition formed links between the participating boroughs who did not have existing infrastructures to work closely and collaboratively in this way. Divided into four workstreams (Community Engagement, Employability and Business Support, Affordable Workspace and Thought Leadership)

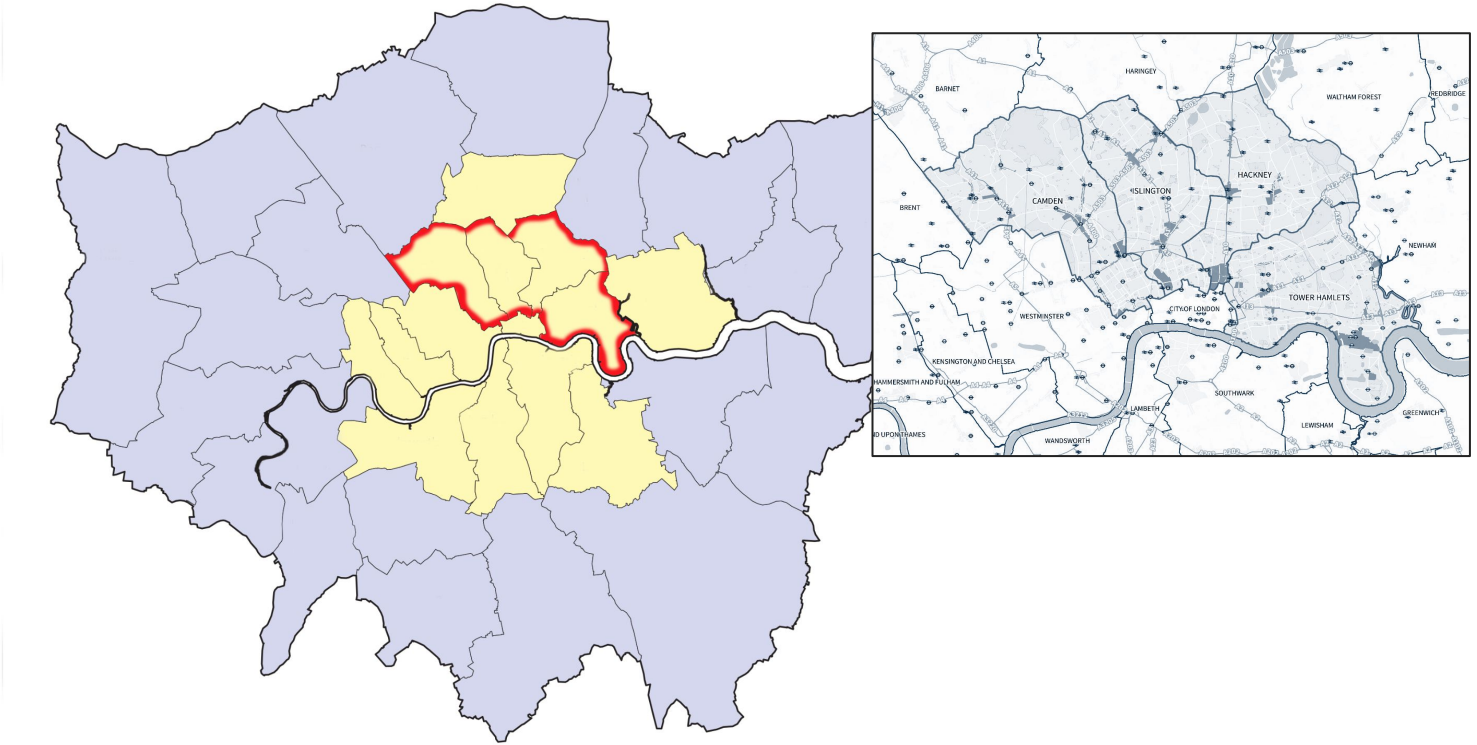

Figure 2.1: LIFT London coalition boundaries illustrating where data mapping within and beyond boundaries could take place for experimental research to investigate impact.

the LIFT programme has a number of desired outcomes. The engagements of this research sought to learn from LIFT London's programme and to test where data and evidence might have supported the programme further. Steps taken included:

1. **Getting to know the context**

LIFT defines the knowledge economy in the total sense, whereby tech and science sectors are considered to be within the reach of the programmes, alongside creative and digital sectors. Speaking with LIFT it was clear that the intention was broader than achieving outputs, so identifying what worked and what the team sensed hadn't worked as well (with one year to the programme closing) was instrumental. Rapid mapping with both managerial/leadership staff and engagement leads working directly with businesses and local residents, it was revealed that:

- **Some target groups had been much easier to reach and engage with than others**. Black, Asian and Minority Ethnic (BAME) groups and women had engaged with the programme in high numbers. However, other groups identified as being marginalised from the knowledge economy - people with disabilities, single parents, people who had been in the care system - were all harder to reach and cater to distinctive needs.

- **Not all businesses (depending on size, sector) were engaged and brought onboard with the programme in the same ways.** LIFT looked to engage with both small and large businesses across the knowledge economy to open the supply of roles for residents. Creative/digital agencies were easier to engage with (particularly during COVID) than tech and science companies. Big businesses tended to opt to engage on specific events or trainings while SME's needed financial support to hire apprentices.

- **Collaboration between boroughs was useful but outcomes were not homogenous** within the boroughs, and getting into the swing of this new way of working took time. Each borough has its own contextual differences and flexibility was built in to allow for outcomes to be met through

differing strategies. However, some boroughs struggled to get going and outcomes differed within the coalition as a result. **Where collaboration was established across boundaries (neither residents or businesses operate within this) the benefits were maximised for all.** Businesses were able to tap into a wider pool of prospective talent and residents gained access to more opportunities. Beyond the benefits of collaboration with regards to sharing lessons, widening pools of resources (on demand and supply side) served LIFT well.

2. Identifying specific outcomes measures LIFT was working towards

The first workshop with LIFT focused on a mapping of all activities to cluster efforts into categories of desired outcomes (accounting for areas where there may be overlaps). Six LIFT team members present in workshop one ranked what they felt were the most instrumental activities in the success of the programme to date; helping to identifying 'hunches' of where the levers of change (Meadow, 1999) might be. The team identified:

- **Engaging residents effectively to convert them towards knowledge economy jobs or support**: The paramount importance of community engagement officers who were able to build trusted relationship with communities and reach them through a variety of means from face-to-face to alongside existing services such as the Job Centre (career support for those receiving unemployment benefits).
- **Getting residents into the sector**: Building strategic relationships with training providers who were able to meet the diverse needs of residents of differing backgrounds was also raised as being an important lever here, as well as having 1:1 support available.
- **Consistently supporting business needs:** Funding apprenticeships in smaller businesses was seen as key to open roles and developing relationships that built a reputation of LIFT being a useful gateway and reliable partner.
- Finally **cross-borough collaboration** was instrumental to ensure momentum was not lost.

2. Mapping existing data and gaps

Building on the hunches identified, workshop two moved towards identifying specific evidence that supported LIFT's confidence in the success of its programme, as well as areas requiring further probing to demonstrate effect and impact. The existing data architecture was mapped - taking data to mean any information available, including what might sit outside of formal reporting - facts, statistics, or details gathered through observation, surveys or feedback. What information satisfied the LIFT team that they were on track, and what information might be missing or supplement existing evidence? Considering the data on Reach, Engagement, Conversion, and Scaling, LIFT's team were able to point to a number of markers that supported their hunches. However questions remained:

- What if those engaged with were the most motivated, and may have engaged with the knowledge economy regardless of LIFT's support?
- Where businesses engaged already those open to diverse talent?
- What specific elements of the programme should be replicated elsewhere - LIFT aimed to produce an EDI toolkit as part of it's thought leadership.
- What outcomes were the result of LIFT activities alone?

2. Rapid-prototyping data dashboard and exploring use cases

Data can often be collected but fail to tell a useful story for policymakers beyond reporting on outputs. To explore how LIFT's existing wealth of data might be transformed to answer the open questions that remained and, more importantly, inform future decision making, a data dashboard prototype was built at the end of workshop two [See Figure 2.1].

By layering existing data with that which might be scraped off the web (e.g. from LinkedIn or job postings) LIFT might begin to tell important impact stories about the journey residents and businesses engaged underwent, how intersectionality affected reach and engagement activity success (highlighting areas to improve), and most importantly how LIFT's intervention shaped the knowledge economy of its boroughs.

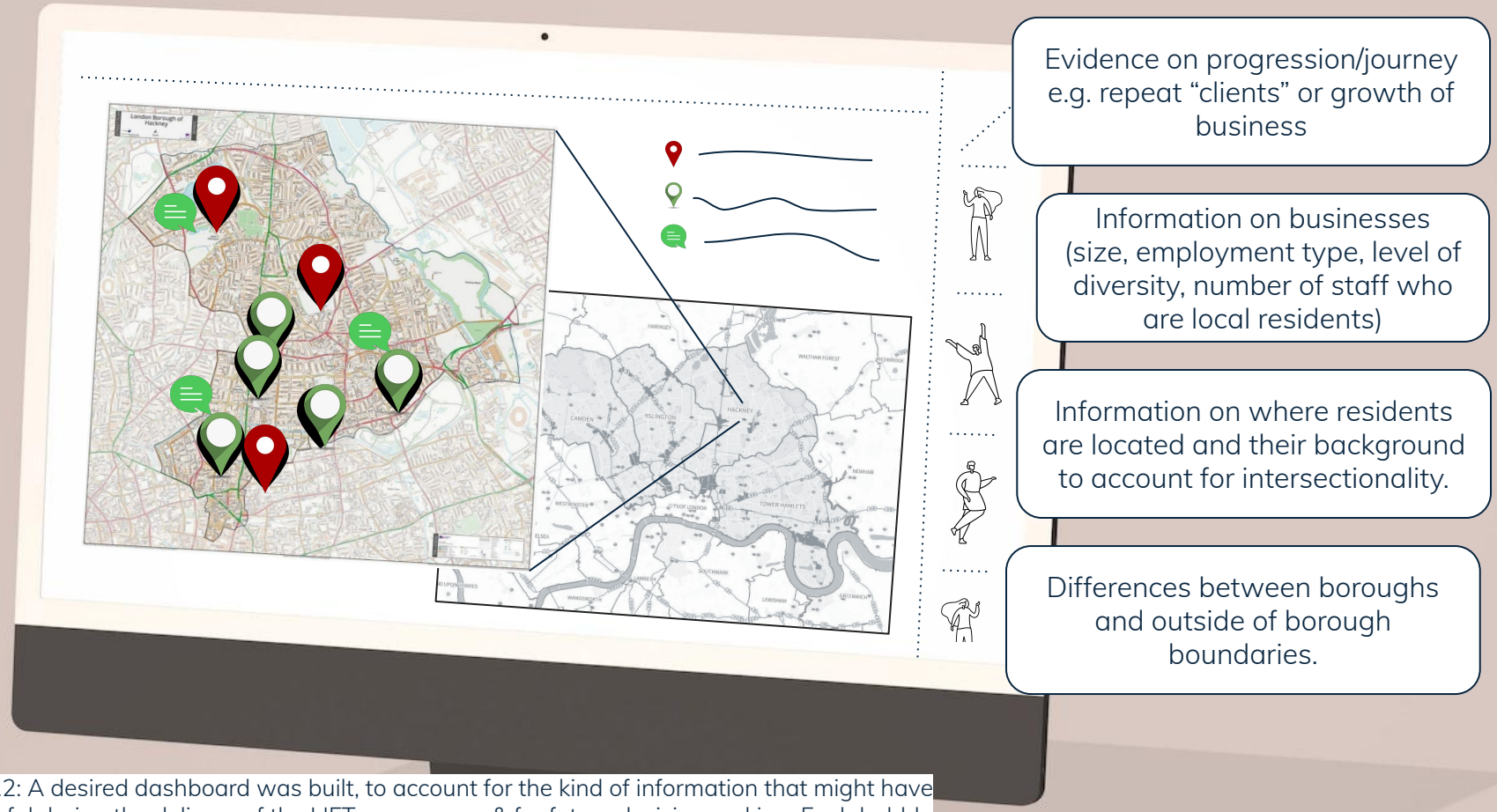

Figure 2.2: A desired dashboard was built, to account for the kind of information that might have been useful during the delivery of the LIFT programme & for future decision making. Each bubble reflects a post-it shared by a LIFT team member.

Source: Matteo Vella, Unsplash

(Sense)making

What do findings indicate about how to support inclusive growth of innovative sectors?

We cannot compare apples and oranges but the snapshots of both Barcelona and London give us some indication of ways to support inclusive growth:

1. **The kinds of support or interventions best suited to those who are traditionally marginalised from a particular pathway to innovative careers will need to be tailored to reach those most at risk**.

In Barcelona, women entering the Sciences are less likely to dropout than men, but in the Arts they dropout at similar rates. Foreign national students disproportionately dropout and socio-economic background is a strong determinant of STEAM completion (more so than other disciplines). In London, women and Black, Asian and Ethnic Minorities were easier to engage with than other at-risk groups for training and jobs in the knowledge economy. Defining *who* needs to be included is key - beyond two genders and with particular regard to socio-economic determinants and intersectionality.

2. **Using existing data to design targeted programmes and to learn from what has worked or not, is key to achieving desired outcomes.**

In Barcelona, open data supported a first version of a policy tool that lacked robustness but provided an approach to surface assumptions during design of interventions. Access to better data (closed) supported far more accurate conclusions, which we would assume would support policymaking processes even more.

In London, while existing data helped to report on outputs, as the LIFT London policy programme came to its final year it was harder to tell a compelling story.

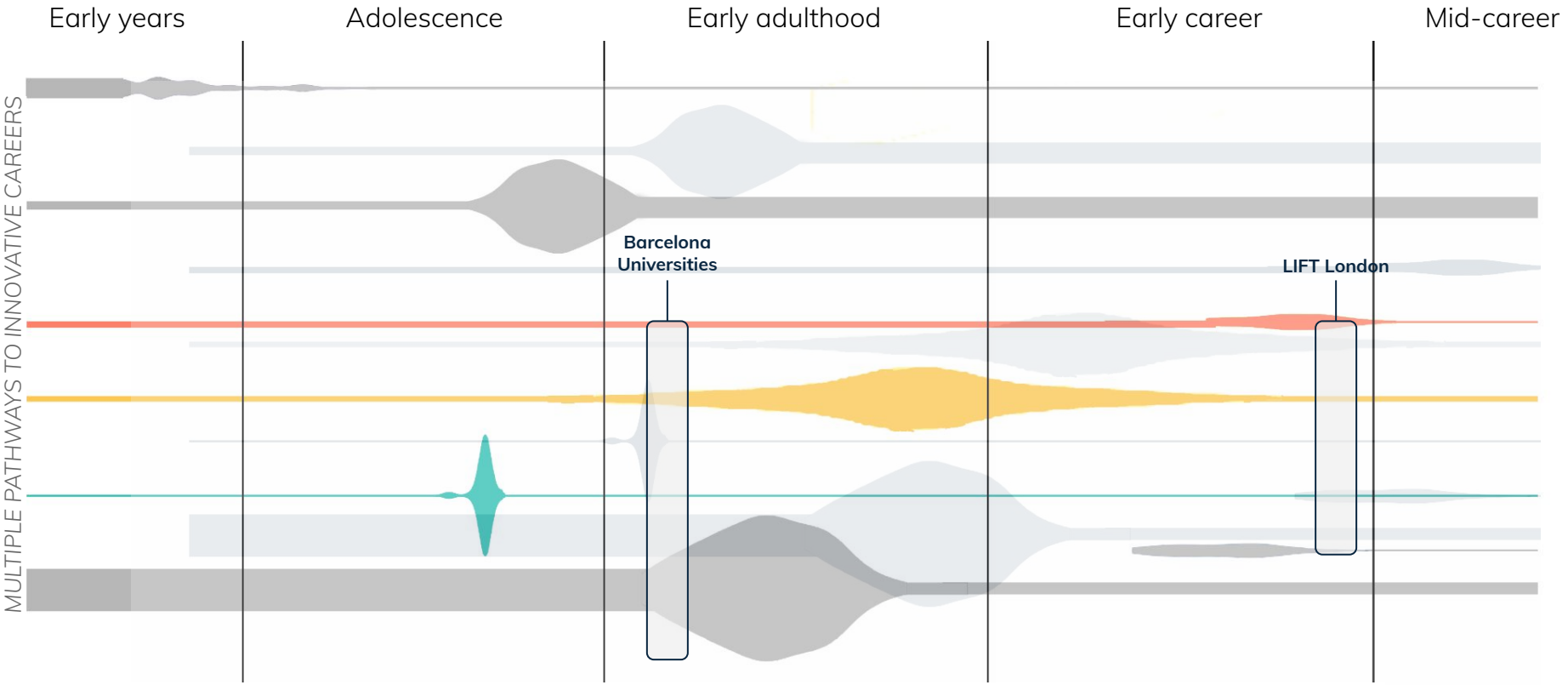

Figure 3.1: This research deep dives into two snapshots of the pipeline to innovative careers in two municipalities looking at leaks (ballooned blockages) and ways to recapture talent (open streams). While the contexts differ, there are lessons to be learned and an incentive to share insights on the Lost Innovative Potential across places.

The layering of information held in different pockets of the data 'architecture' needed to be brought together e.g. observations from community and business engagement officers, data available on the web, feedback, were all untapped pockets that would help generate evidence to inform future decisions.

3. **Designing policies for flexibility, learning and adaptation.**

In Barcelona, we zoomed in on the STE(A)M university pathways but could not account for those who switched from an Arts subject to a Science or vice versa. We could not account for those who dropped out but went on to enter the innovative sector through an alternative route. While non-traditional paths may not be the fastest route to excelling within the knowledge economy (taking patenting or scaling a high growth businesses as an indicator) it is still worth considering what might be gained by those able to explore multiple disciplines whilst in formal education and during early adulthood.

In London, through the LIFT programme, the ability to in three years support residents from non-traditional backgrounds to train and acquire jobs in the knowledge economy, is a great indication of what is possible. Flexibility in delivery did lead to different outcomes between boroughs but flexibility is what maintained buy-in while adaptation allowed for roadblocks to be tackled as needed, More robust evidence on what worked well in this programme will help to determine which elements of this particular model of delivery might be useful to apply elsewhere.

For creative impact in Europe and beyond

Experimental research looking at two or more intersectional indicators (e.g. origin and parental education levels) would support better policy making for innovation and beyond. Understanding why STE(A)M remains a blocked for the most vulnerable populations is key to unlocking more transformative and inclusive growth. The potential for creative sectors to help solve big societal challenges will only be made possible is more people are able to participate and excel. Data and evidence can help inform how paths are forged for all.

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