



Experimentation: The use of Randomised Controlled Trials (RCTs)

Mutual Learning Exercise on Evaluation of Business R&D Grant
Schemes

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The Innovation Growth Lab

We aim to make innovation, entrepreneurship and growth policy more experimental and evidence-based

What IGL is

A global collaboration of governments, foundations and researchers that develops and tests different approaches to increase innovation, support high-growth entrepreneurship and accelerate business growth

What IGL does

- Run trials with partners
- Fund trials through the IGL Grants Programme
- Build and connect communities
- Promote wider adoption of trials
- Create useful resources
- Disseminate lessons

IGL Partners



Innovate UK



Tekes



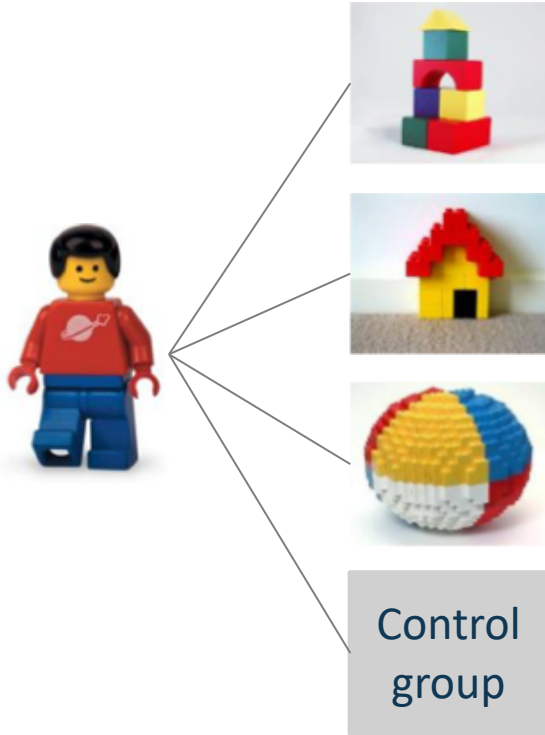
Typically start big...



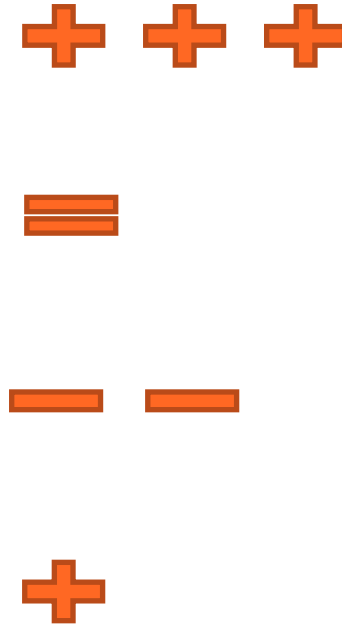
...without
prior small-
scale
testing...

...proceed
with one
design...

1. Experiment



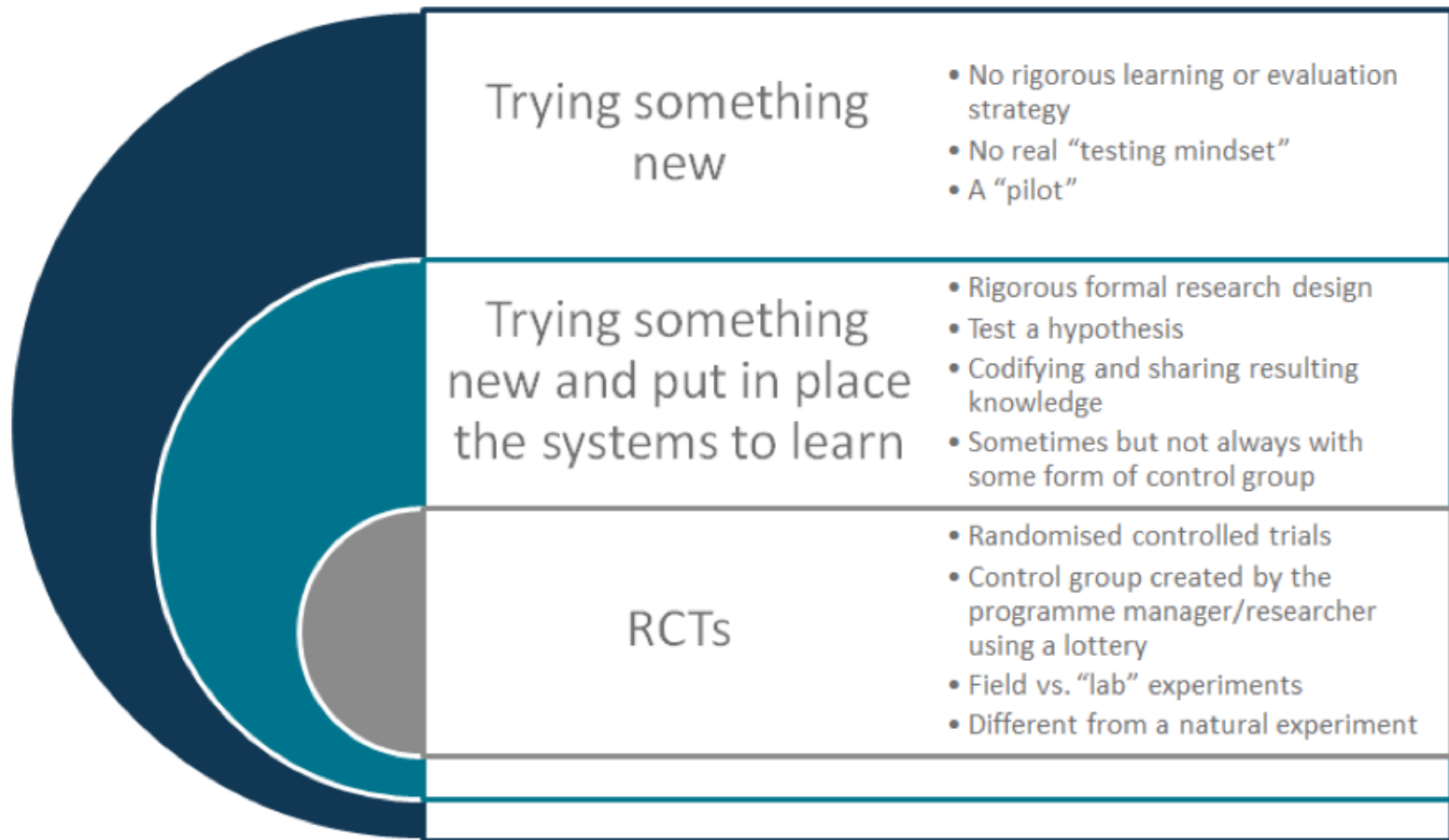
2. Evaluate



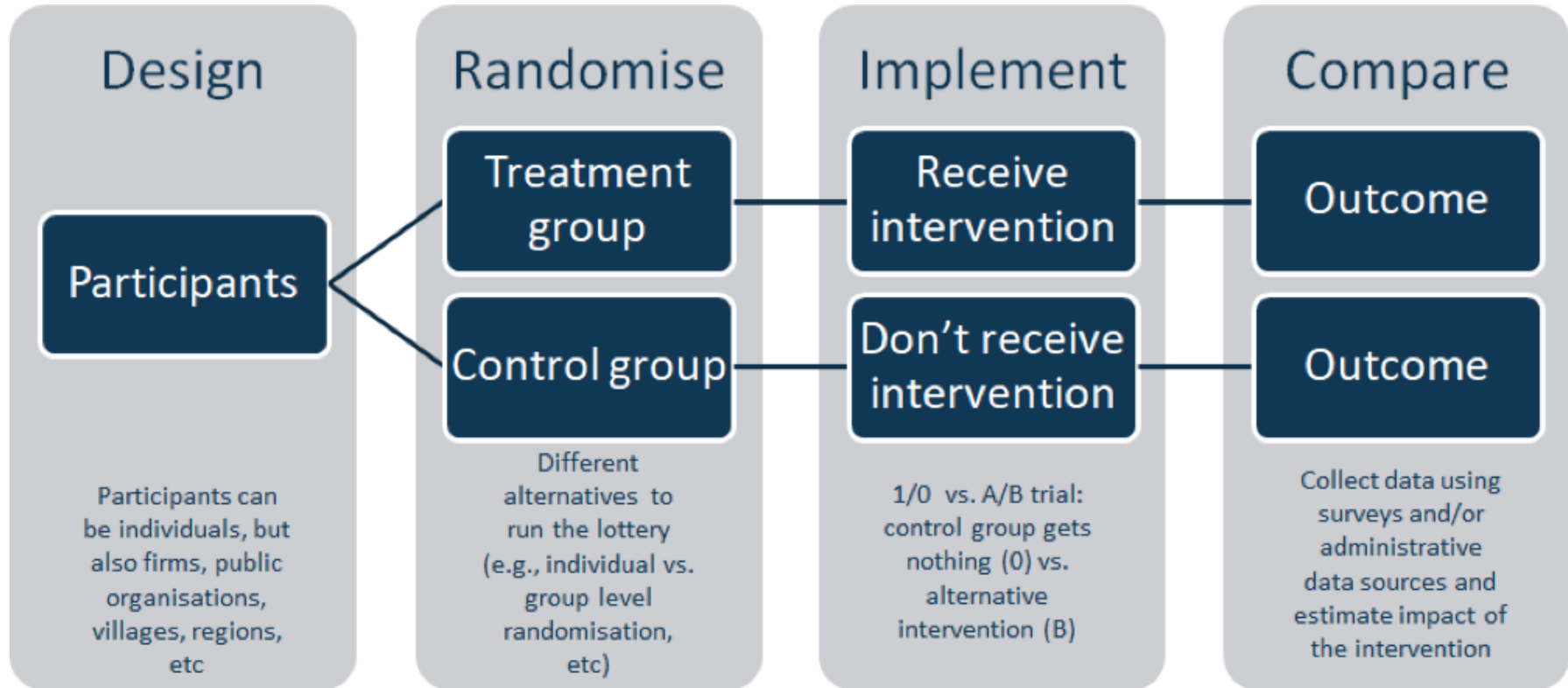
3. Scale-up



Different understandings on the meaning of experiment



What is a randomised controlled trial?



Benefits: Robust and Clear Counterfactual

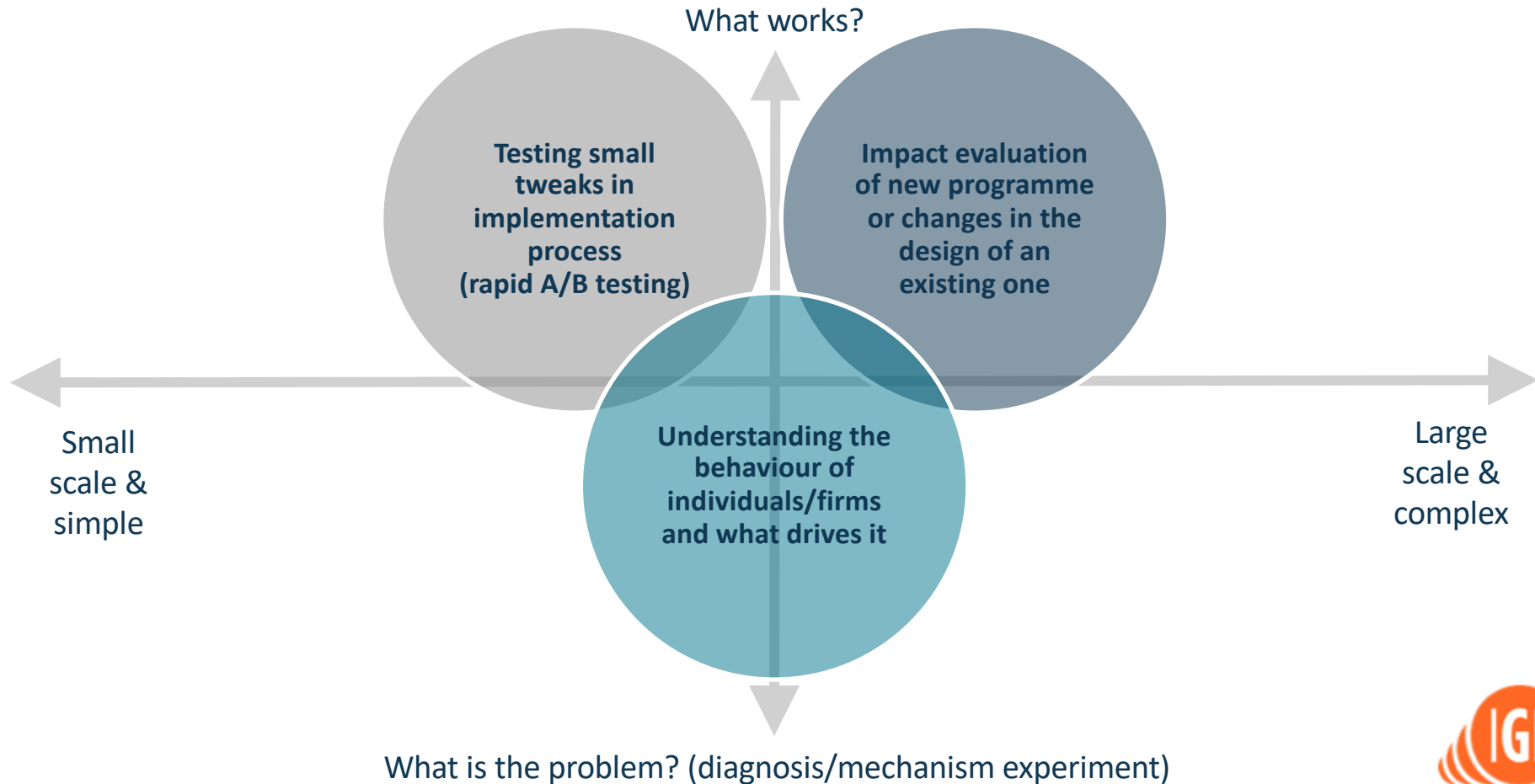
- RCTs can provide a concise and clear-cut conclusion of intervention effectiveness
 - If the randomised groups are large enough, you can be confident that differences in outcomes are due to the intervention and not other factors
 - You decided when and how to randomise into groups and so have a clear understanding of the nature of the counterfactual(s)

For other approaches this is harder...

Benefits: Robust and Clear Counterfactual

- Finding a ‘counterfactual’ of similar firms is often not a problem
 - Innovation programme users often atypical SMEs, observable factors (eg age, size, sector and past growth) explain a lot about who doesn’t use support
- But how confident can we be that matching on observable characteristics removes selection bias?
 - Lots of effort goes into collecting detailed information and expert assessments to select the best applicants
 - Observable characteristics have very little explanatory power in models of business growth (Coad 2009)
- And when have the groups diverged?
 - Do comparison also capture the outcomes from factors that started the business on the journey (eg undertaking innovation) or helped them be successful (eg a management team that is aware and successfully apply for support).

There are multiple ways to use trials



Examples: Innovation Vouchers

- UK Innovation Vouchers Programme
- Provides financial subsidies (up to £5,000) for SMEs to engage the services of external partners to support innovation activities
- Trial for three rounds conducted in 2015. When lottery used to draw from a pool eligible applicants
- In total 2,149 companies applied (1589 Treatment and 560 Control)
- Objective: Increase innovation collaboration; Innovation activities; innovation output and business growth



Findings: Analysis is on-going.

Trials of similar programmes have found mixed results. With high short term additionality but weaker long term impacts

Promoting high impact entrepreneurship

What is the impact of grants on firm performance? When selecting applications, is it better to use reviewers with domain-expertise (but perhaps biased) or not?

- Background: A matched-grant scheme for innovative SMEs in Mexico, provides matched grants of up to \$170,000 USD
- Participants: Innovative SMEs startups and scale-ups with export potential
- Intervention: 1) Firms' applications are randomised into two types of selection: either by domain-experts (who are potentially more biased) or impartial but non-domain expert reviewers 2) A random selection of eligible firms (selected on one or both panels) will then be selected for funding, those who do not will provide the control group.

Leonardo Iacovone, et al (forthcoming)

<http://www.innovationgrowthlab.org/blog/promoting-high-impact-entrepreneurship-mexico-impact-evaluation>

IGL Funded

Example: Feedback to startups in an incubator

Rodrigo Wagner, University of Chile, 2016

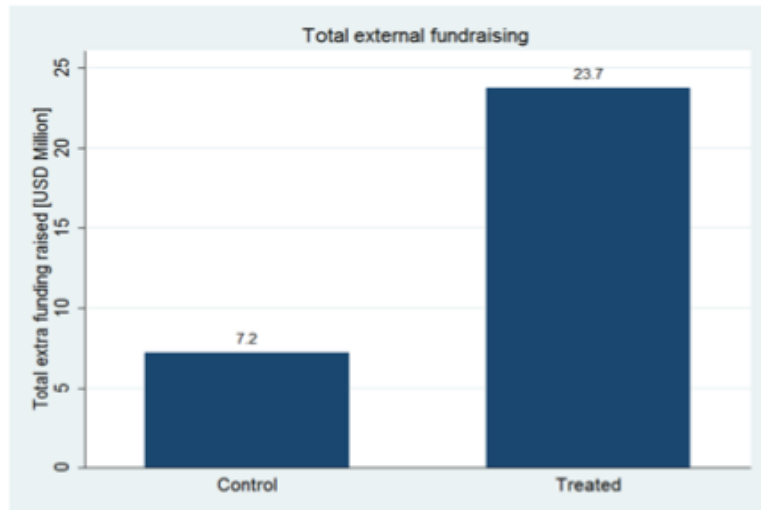
Participants: (International) applicants to the Startup Chile incubator

Intervention: Feedback from the selection process was randomly allocated to some of the applicants

Findings: Ventures that received feedback were 60% more likely to raise VC funds, 50% more likely to survive, and raised x2 more money

Research question: Can providing feedback to applicants improve their likelihood of success?

Findings: Applicants who received feedback performed much better across a series of relevant outcomes



Search costs and scientific collaborations

Can scientists be encouraged to collaborate more by reducing the 'search costs' of potential collaborators?

"A Field Experiment on Search Costs and the Formation of Scientific Collaborations" (Kevin Boudreau, Tom Brady, Ina Ganguli, Patrick Gaulé, Eva Guinan, Tony Hollenberg and Karim Lakhani), *Review of Economics and Statistics* (2017).

- **Participants:** Biomedical researchers at the Harvard Medical School
- **Intervention:** Researchers are randomly assigned a 90-minutes "structured information-sharing session" with a potential collaborator as part of a grant-funding opportunity"
- **Results:** 75% increase in probability of grant co-application of a given pair (from 0.16 to 0.28); the effects are highest among those in the same specialisation

What is the impact of teaching how the scientific method can be applied to startups?

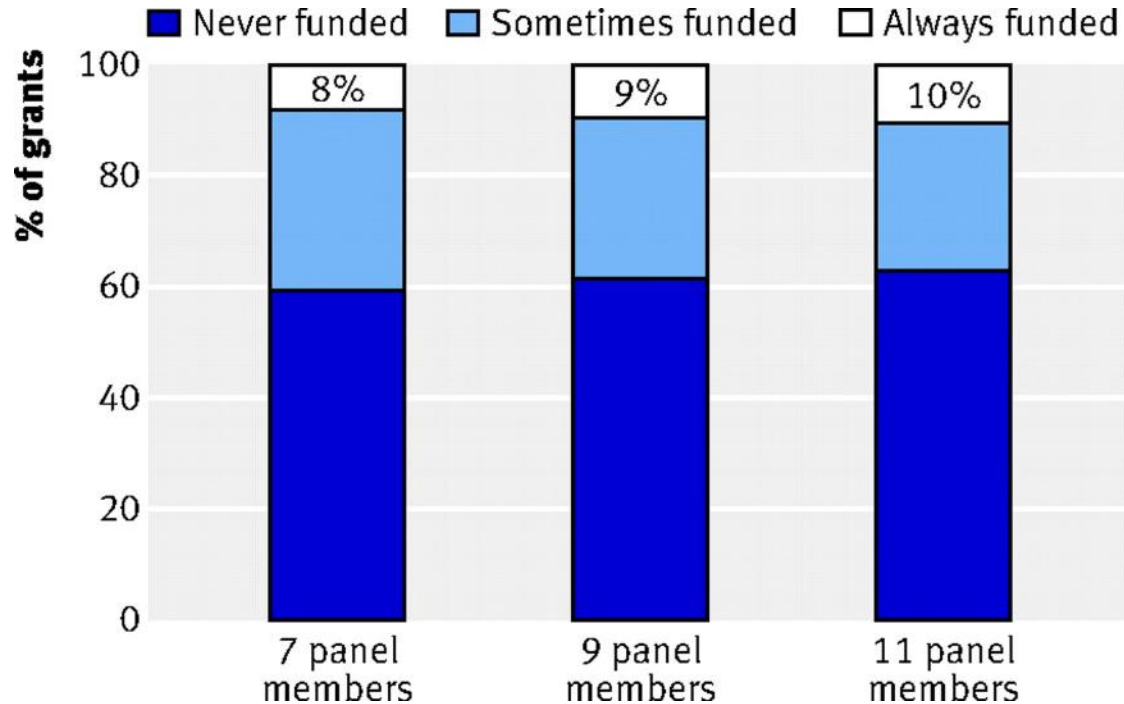
- Participants: startups in an incubator taking a 'Lean Startup' training course
- Intervention: as part of the course, half of the startups are randomly assigned to receiving a special emphasis on using the scientific method - testing and experimenting, and deciding based on the results
- A pilot concluded that the intervention lead to higher startup survival, quicker activation of consumers, and more beneficial 'pivots'

A. Gambardella (Bocconi), A. Camuffo (Bocconi), A. Cordova (Bocconi), D. Hsu (Wharton), & A. Contigiani (Wharton)

Building support for Experimentation

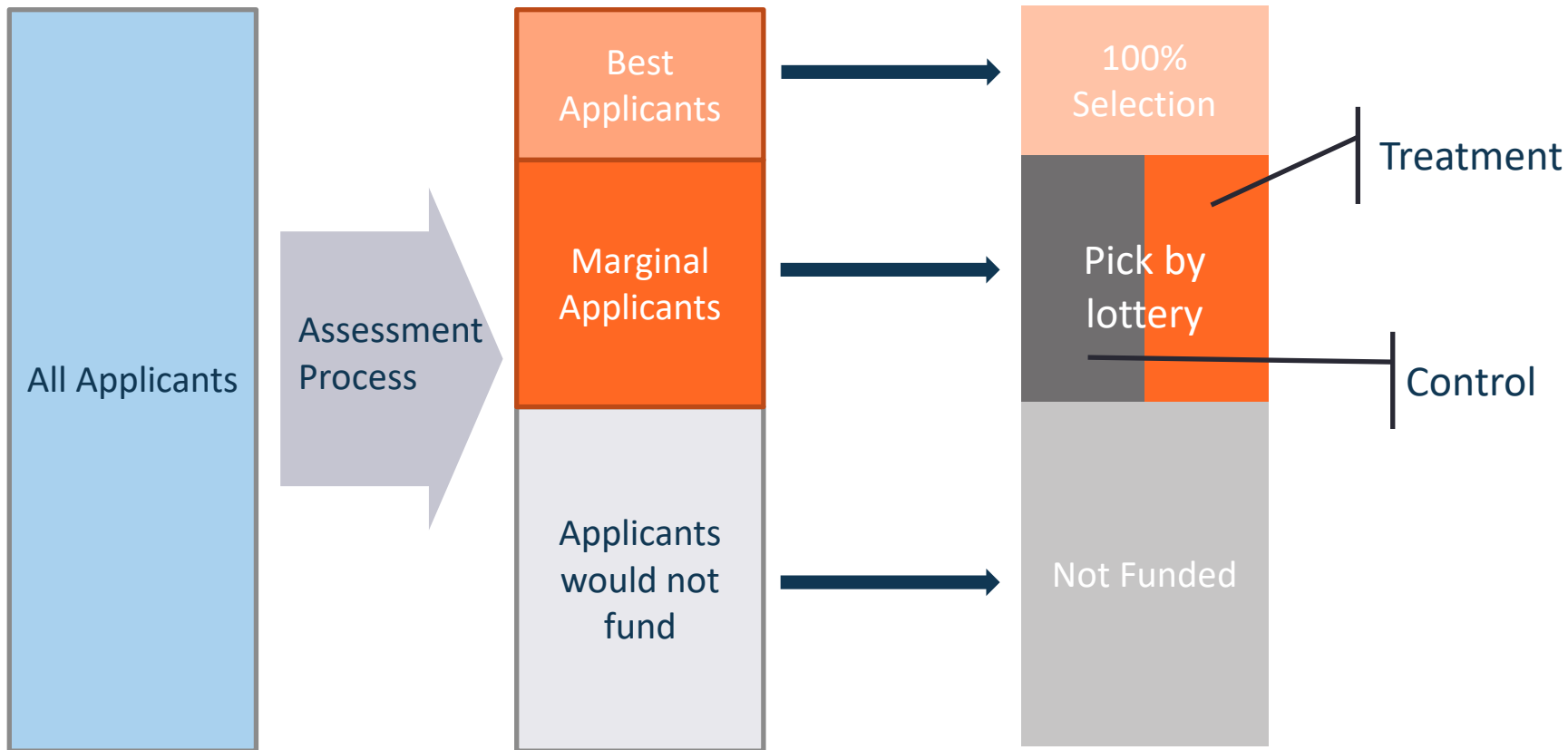
- A narrative for change, tailored for each audience
 - Growing adoption and already widely used in other fields
 - Accountability - Need to prove the project works
 - Need to address weakness of evidence base
 - Start small – eg basic messaging trials
 - Randomised trials part of mixed methods approach
- Openness
 - Not clear which approach will work best, testing to find out is a strength
- Fairness
 - Lottery preferable to first come first served
 - Limits to how well can select best applicants
 - Variation in treatment – everyone can get something

Example: Assessment process are fallible



Source: Graves (2011) 'Funding grant proposals for scientific research: retrospective analysis of scores by members of grant review panel'

Example: Dealing with marginal cases



European Commission support for experimentation

Funding for experimental pilot projects in regional and national innovation agencies

- Strand 1: Up to **€60.000** for projects investigating the feasibility of new SME innovation support schemes or revision of existing support schemes, including through RCTs
- Strand 2: Expected (**€300.000 - €500.000**) for large-scale pilots testing new, scalable, SME innovation support schemes using RCTs

Deadline 27 March 2018

Visit H2020 participant Portal, topic ID INNOSUP-06-2108

Thank you

To find out more:

- Read this [short brief](#)
- Visit our [website](#)
- Send us an [email](#)

www.innovationgrowthlab.org



Experimental innovation and growth policy: Why do we need it?

Albert Bravo-Biosca, May 2016 (Version 1.0)¹

Despite the importance of innovation and high-growth entrepreneurship for economic growth, there are still many open questions on the best approaches to support them. There is a need to experiment with new approaches and, crucially, learn what works.

European governments alone spend around €150 billion every year trying to make their economies more innovative and entrepreneurial, as do many other governments around the world.² Yet the programmes that governments put in place to increase innovation, support high-growth entrepreneurship and accelerate business growth suffer from two weaknesses:

- 1. There is insufficient innovation in innovation and growth policy:**
Despite a fast changing world in which new technologies and business models continuously emerge, the tools that governments use to support them have evolved little. New programmes are regularly launched, but changes are often purely cosmetic (e.g., a new name, or a few tweaks at the margin). Also, supposedly new policy approaches are sometimes the reinstatement of old ideas that had fallen out of fashion (the 300-year old idea of challenge prizes being the latest example). And even when there is genuine innovation, be it incremental or radical, it is not of much use if we cannot tell whether it's better or worse than the programmes that preceded it (since in contrast to the private sector, there are no markets to guide us).
- 2. There is limited evidence on the effectiveness of innovation and growth policy:**
The uncomfortable truth is that surprisingly little policy in this domain is backed by hard evidence. A few years ago Nesta supported the Compendium of Evidence on the Effectiveness of Innovation Policy, led by researchers at Manchester University.³ With some exceptions, it showed that the evidence was scarce, often of poor quality, and typically inconclusive. More recently, a systematic review by the What Works Centre for Local Economic Growth examined almost 15,000 evaluations in this policy domain, and found that only 2.5 per cent of them provided a credible answer, and of those, only one in four found a positive effect on productivity or employment (or 0.6 per cent of the total).⁴ Without good evidence, it is impossible to allocate our limited resources to the programmes that have the greatest impact.

¹ In the spirit of continuous iteration and improvement, we see this brief as a living document that will evolve over time as new examples, arguments and debates emerge in the field.

² Fajos and Borensz (2016) 'As much as €150 billion is spent across Europe supporting businesses but does it work?' Available at www.innovationgrowthlab.org/files/2016/05/IGL-report-europe-supporting-businesses-does-it-work.

³ See www.innovation-policy.com/.

⁴ See www.whatworksgrowth.org/. Credible refers to evaluations that satisfy the level 3 of the Scientific Maturity Scale, which requires that the evaluation method used has a credible counterfactual (one that random allocation is not a requirement for level 3, it is sufficient to have a clear justification on why the control group would have performed in a similar way as those benefiting from the intervention if the intervention had not happened).