Third Fuse International Conference

Newcastle-Gateshead 27-28 April 2016

Tilburg University

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Wetenschappelijk centrum voor zorg en welzijn

Third Fuse International Conference

Evidence to impact in public health.

- What counts as evidence
- How can we ‘create impact’

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What about the 2nd Fuse Conference:

- Held in April 2013, in The Netherlands.
- Organised by Tranzo, Scientific Center for Care and Welfare, Tilburg University
- Theme: How to get practice into science?

Topics addressed in 2013

- Strategies to influence the policy process.
- Structures + strategies for knowledge exchange.
- Relationships between policy, research and practice.
- Conceptual approaches.
- Knowledge brokering and collaboration.
- And many more…

Many of the topics of 2013 and new topics will be discussed in this third conference.

Debates between researchers, partners from practice and from policy

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3rd FUSE international conference on knowledge exchange in public health – Newcastle, 27-28 April 2016

Reconceptualising healthcare research and development: the innovation problem

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The innovation problem

- Healthcare system financial rules and regulations prevent “disruptive innovation” – affordability and accessibility comes from cost-lowering, simple innovations (Clayton Christensen et al 2009)
- “The NHS is full of talented people with brilliant ideas. But the benefit of this collective creative energy has not been fully realised because these ideas and inventions have not always been systematically and rapidly spread throughout the service as a whole. The UK is particularly slow, relative to other developed economies, in adopting innovative medical technologies.” (Department of Health, 2011)

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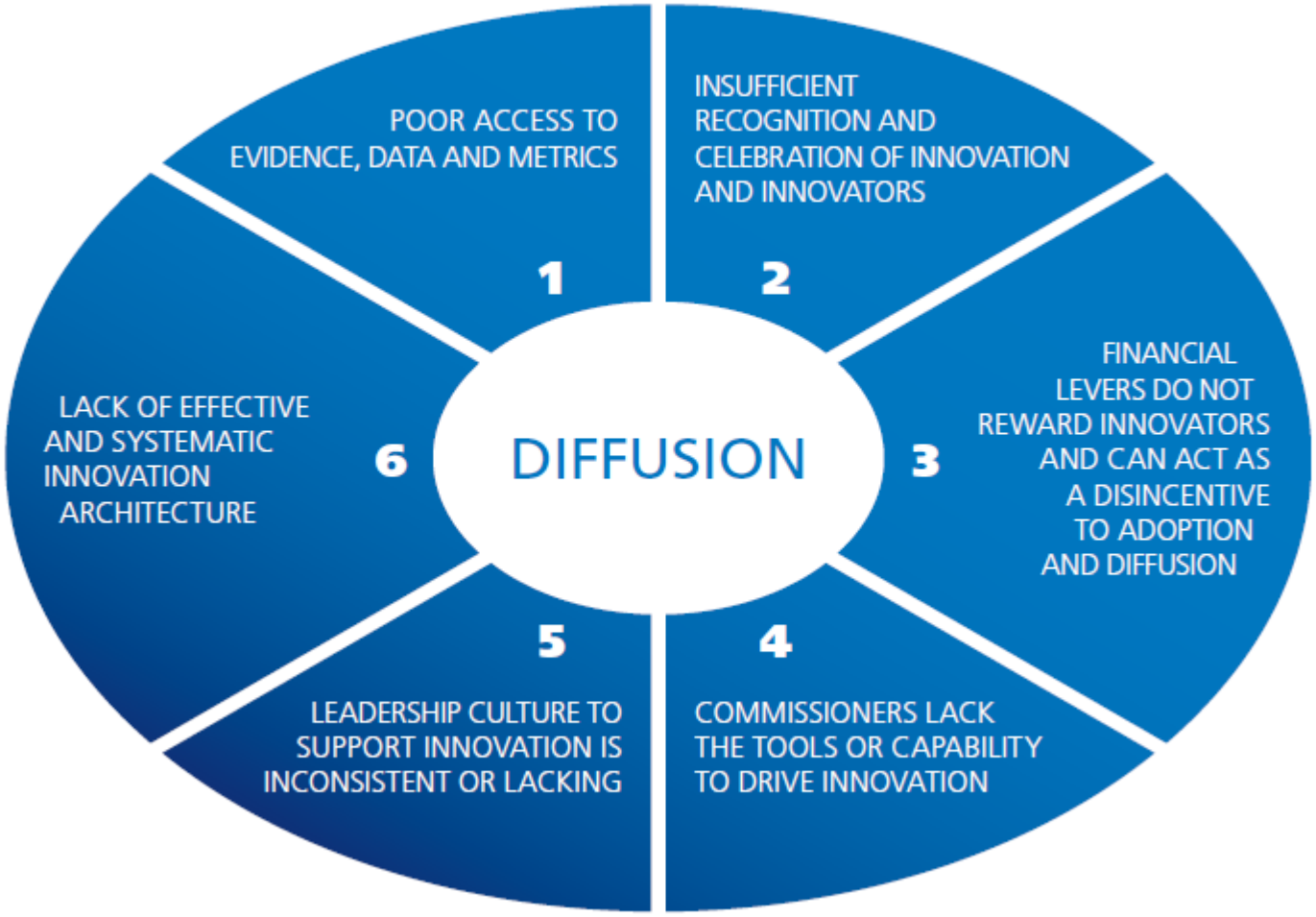
Innovation health and wealth (DH, 2011)



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The innovation problem

- We spend a lot on health research
- But the rate of innovation in healthcare systems is slow and barriers to innovation seem endemic and problematic
- “Evidence based medicine” movement of 1990s saw this as a problem of clinical practice and behaviour
- “Knowledge mobilisation movement” of 2000s sees this as a problem of implementation
- Research community uses this as an argument for investing more in research and making it easier to do research in healthcare systems

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Overview

- Health research, development and innovation – how it works and what the innovation problem really is
- Comparisons with other sectors and possible lessons from the organisation of research and innovation processes elsewhere
- Some ideas for reform in the healthcare sector
- Conclusions

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The global health R&D picture

- Annual spend $240 billion, 90% of it in high income countries, usually about 0.8% of GDP
- Most in a few countries - USA ($119 billion), Japan ($18 billion), Germany ($13 billion), and UK ($12 billion).
- About 60% from business (pharma), 30% from government, 10% from charities/philanthropy
- “persistent nature of the gap between health R&D needs and the R&D that is presently funded and undertaken”

(Rottingen et al 2013)

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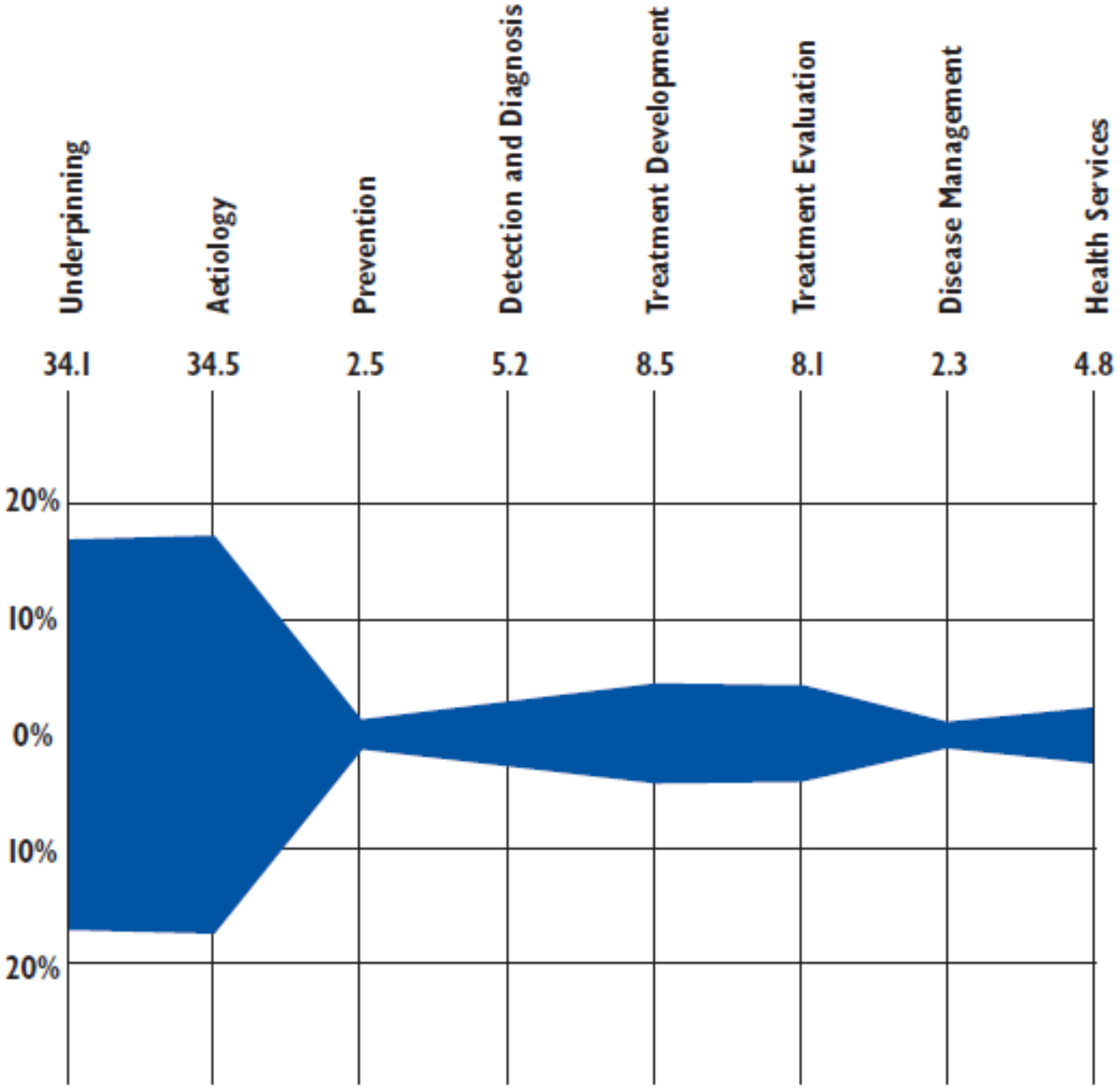
UK health research

- £8 billion pa – one third of all UK R&D spending
  - £4.5 billion from business – pharma and med tech
  - £2.3 billion from government – Medical Research Council, National Institute of Health Research, university funding
  - £1.2 billion from charities
- 60% on basic science, 19% on treatment evaluations, 7.5% on health services/systems research
- Research producers – pharma companies, universities, larger healthcare providers

(Walshe and Davies 2013)



(Cooksey 2006)

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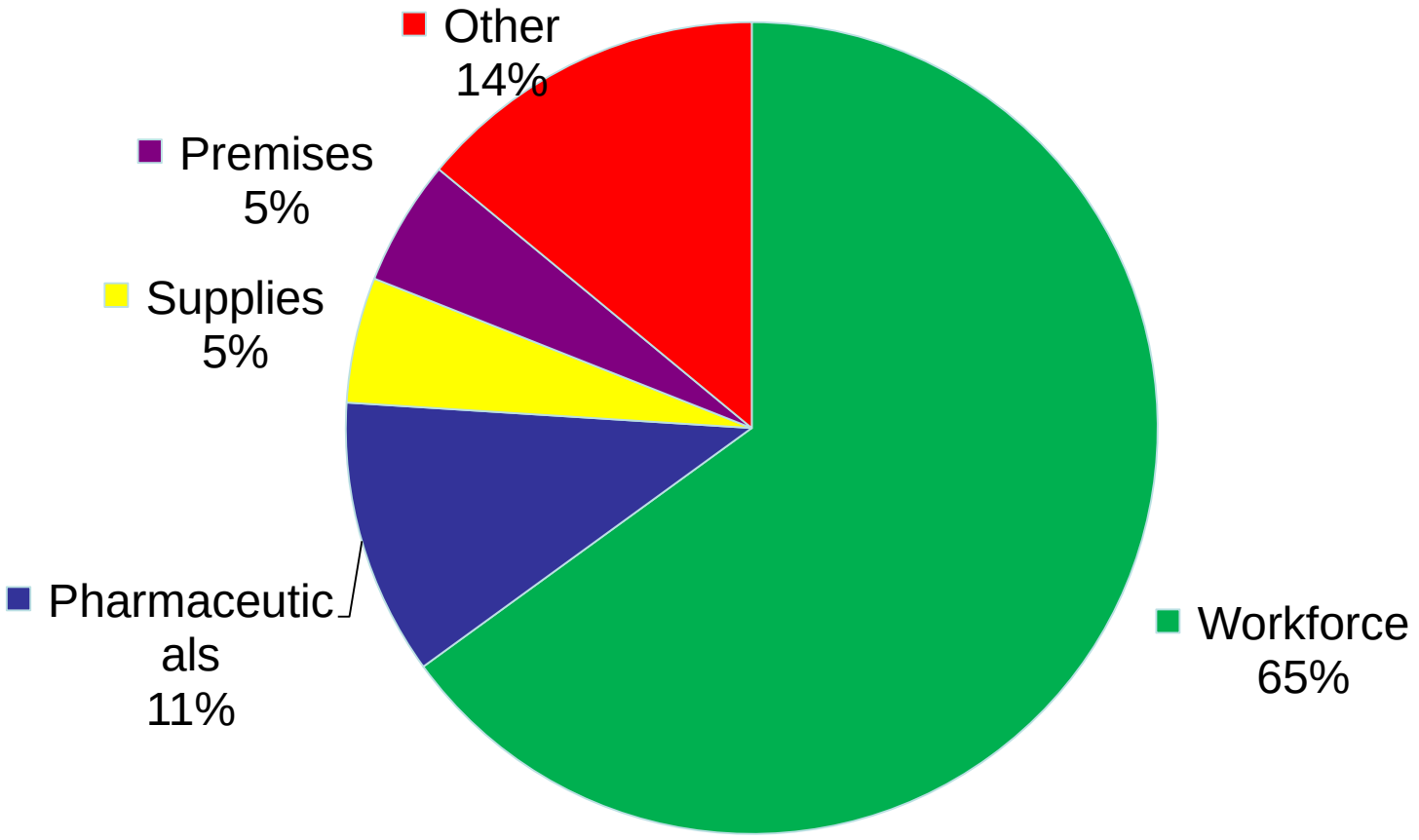
NHS spending by area, 2012/13



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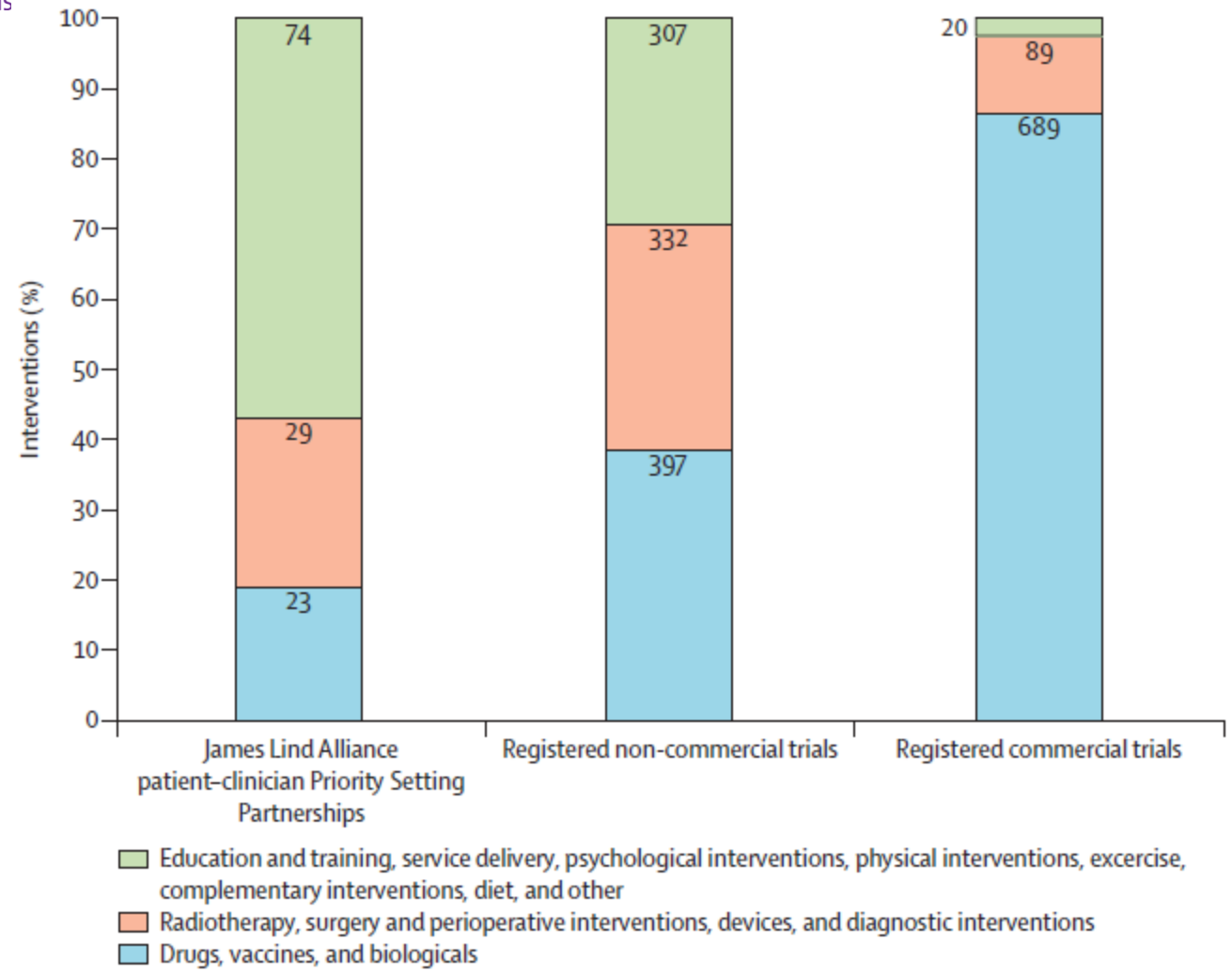
Avoidable waste in health research

- “Of more than 25 000 reports published in six leading basic-science journals between 1979 and 1983, 101 included confident claims that the new discoveries had clear clinical potential, yet only five had resulted in interventions with licensed clinical use by 2003, and only one led to the development of an intervention used widely”
- Apart from the effect of commercial, political, and academic interests in decisions about what is researched, one obvious reason is that users of research evidence are only rarely involved in the setting of research agendas”

(Chalmers et al 2014)



(Chalmers et al 2014)

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UK health research: the issues

- Large investment in health R&D – questions about value for money and impact
- Research policy and strategy – set by and around research interests, disconnected from health systems goals and strategies
- Divergence between health R&D enterprise and the healthcare system/organisations
- Wider context – diminished collectivity, reduced organisational capacity for and interest in R&D

(Walshe and Davies 2013)

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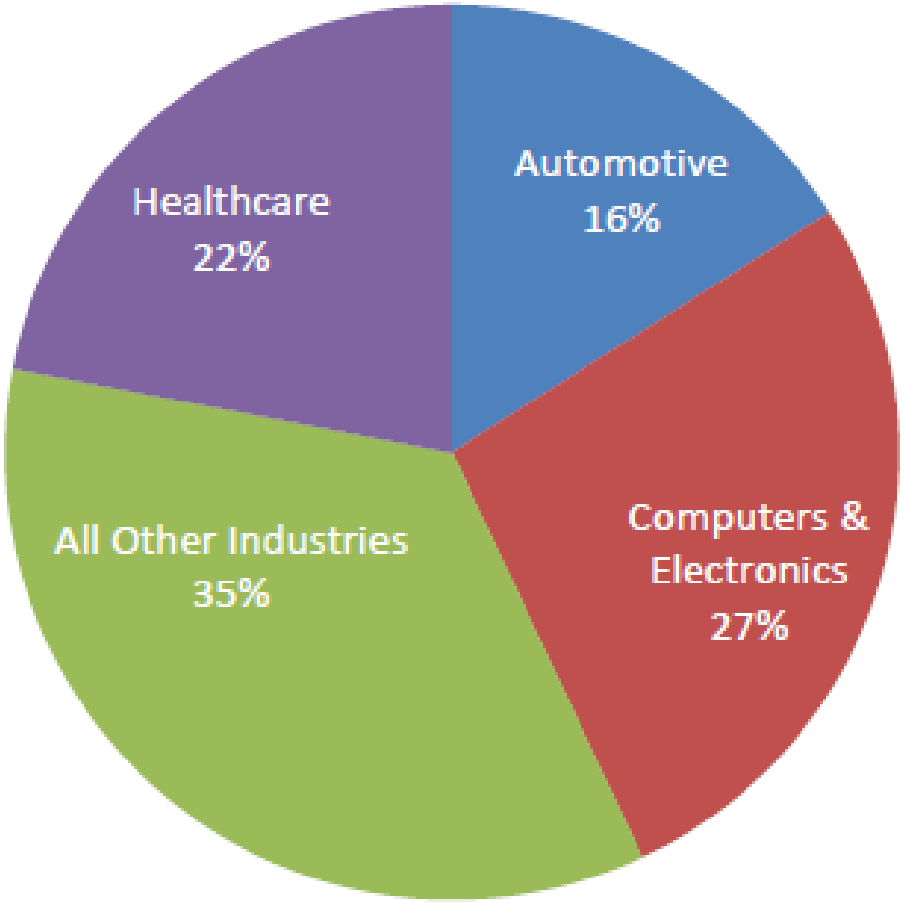
Global R&D spending by sector, 2013



(CAR 2014)

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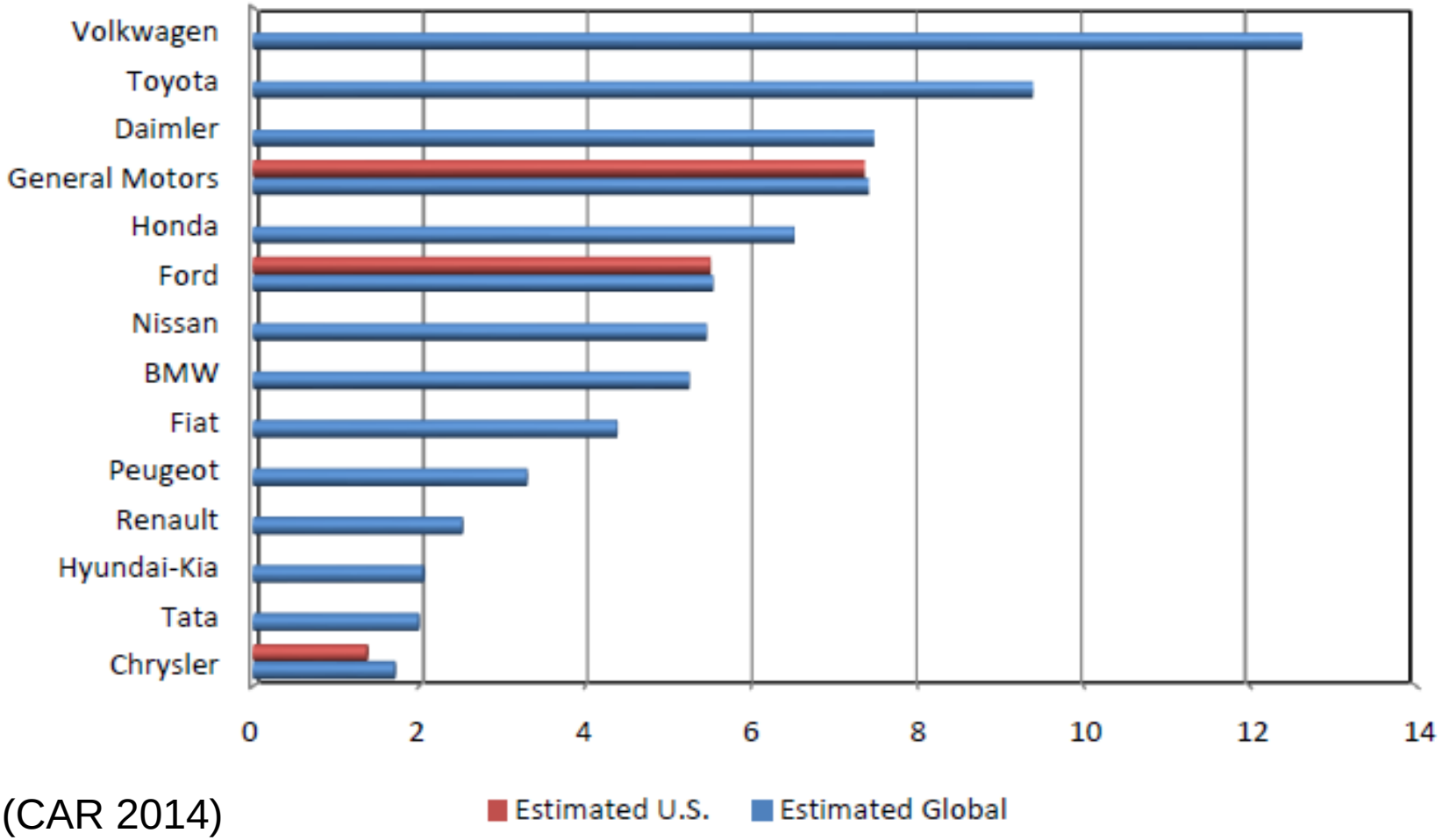
Automotive R&D spending by company

(annual, 2013, $ billions)



(CAR 2014)

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Automotive industry R&D

- About 90% research funded by industry, 10% by government
- Small number of large, global companies all invest heavily in R&D – circa 4% of turnover
- Industry collaboration on basic research prior to exploitation – company partnerships/collaborations
- Most research done in-house; research partnerships with universities, and universities train/educate science and engineering workforce
- Innovation and research vital to competitive advantage

(CAR 2014)

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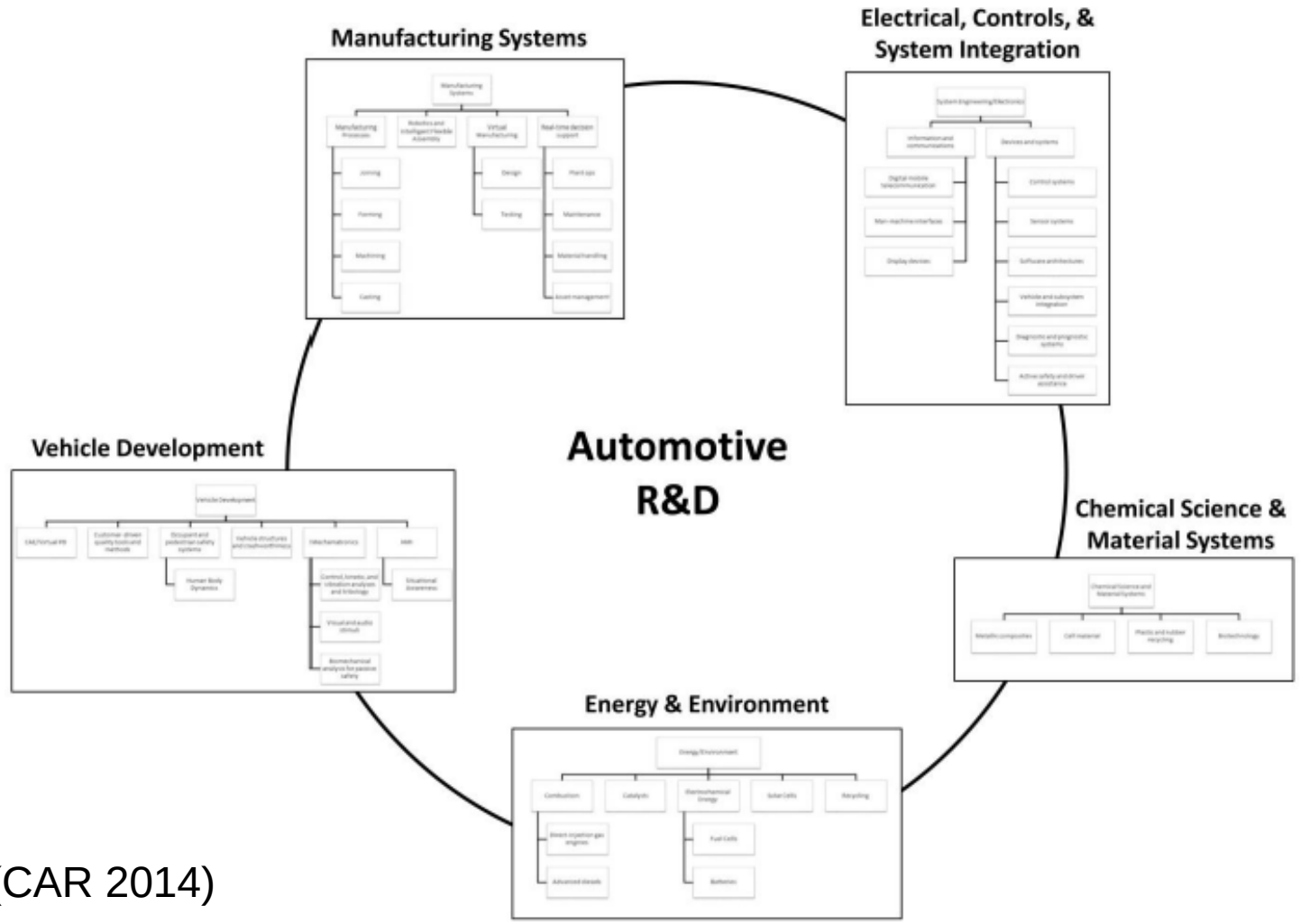
Typical automotive company R&D structure



(CAR 2014)

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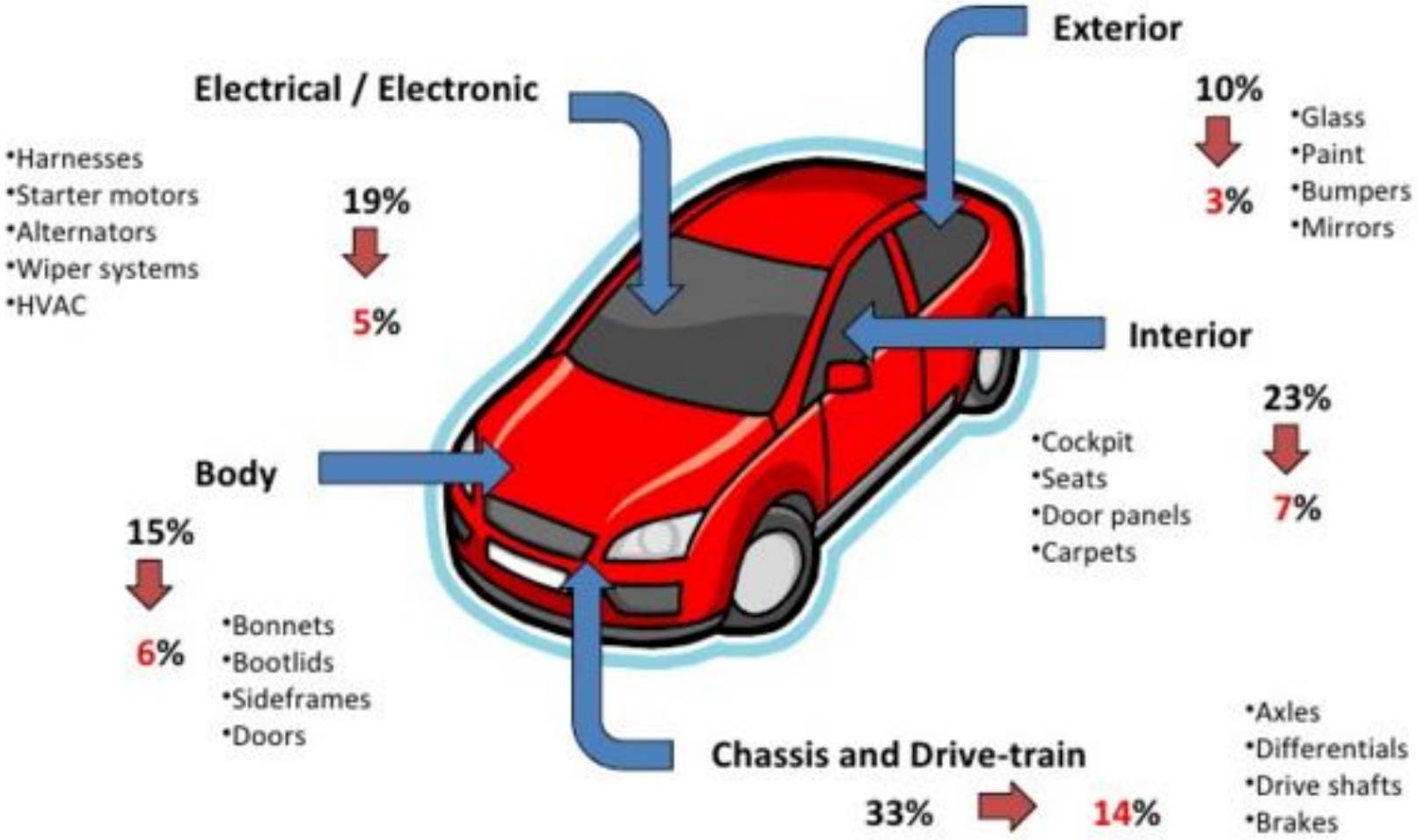
Breakdown of car manufacturing costs (NAACAM, 2009)



Companies with highest R&D spending

Rank 2014	Rank 2013	Company	R&D Spending 2014 US$ Billions	R&D Spending Change from 2013	R&D Spending As a % of Sales
1	1	Volkswagen	$13.5	18.9%	5.2%
2	2	Samsung	$13.4	28.0%	6.4%
3	4	Intel	$10.6	4.6%	20.1%
4	5	Microsoft	$10.4	6.1%	13.4%
5	3	Roche	$10.0	–1.8%	19.8%
6	7	Novartis	$9.9	5.6%	17.0%
7	6	Toyota	$9.1	–7.0%	3.5%
8	10	Johnson & Johnson	$8.2	6.8%	11.5%
9	12	Google	$8.0	17.1%	13.3%
10	8	Merck & Co.	$7.5	–8.1%	17.0%

(Strategy&pwc 2014)

Companies highest rated for innovation

RANK		Company	R&D Spending		
2014	2013		2014 US$ bil.	Rank	as % of sales (intensity)
1	1	Apple	$4.5	32	2.6%
2	2	Google	$8.0	9	13.3%
3	4	Amazon	$6.6	14	8.8%
4	3	Samsung	$13.4	2	6.4%
5	9	Tesla Motors	$0.2	440	11.5%
6	5	3M	$1.7	79	5.6%
7	6	GE	$4.8	30	3.3%
8	7	Microsoft	$10.4	4	13.4%
9	8	IBM	$6.2	18	6.2%
10	-	P&G	$2.0	70	2.4%

(Strategy&pwc 2014)

Approaches to research and innovation

- **Need seekers** – insight from users leads research needs, open cultures for innovation, priority to user focus (Apple, Tesla)
- **Market readers** – market opportunities lead research, culture of incremental innovation and market follower (Samsung, Caterpillar)
- **Technology drivers** – internal tech capabilities lead research, culture of superior tech knowledge (Siemens, Google, Bosch)

(Strategy&pwc 2014)

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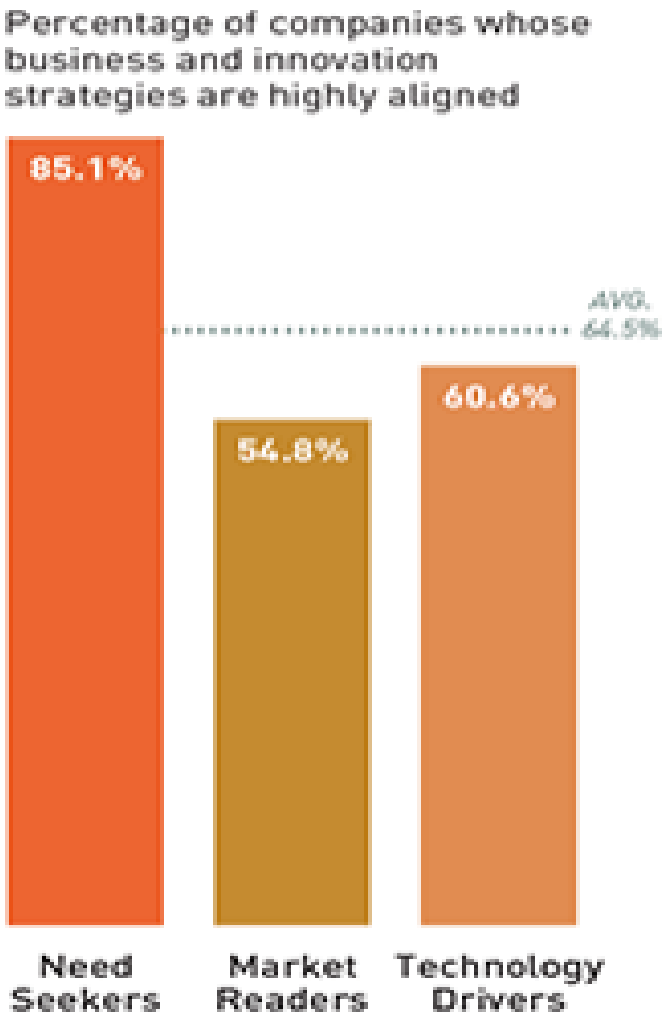
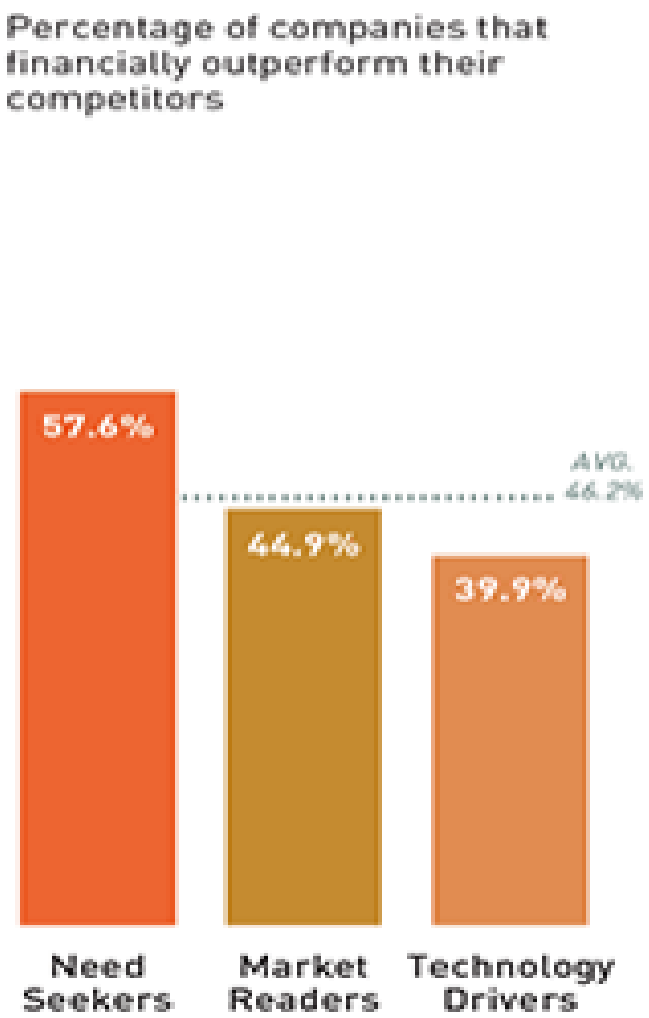
Approaches to research and innovation





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R&D intensity (as % of turnover)

High (>5%)	Pharmaceuticals & biotechnology; Health care equipment & services; Technology hardware & equipment; Software & computer services.
Medium (2-5%)	Electronics & electrical equipment; Automobiles & parts; Aerospace & defence; Industrial engineering & machinery; Chemicals; Personal goods; Household goods; General industrials; Support services.
Low (1-2%)	Food producers; Beverages; Travel & leisure; Media; Oil equipment; Electricity; Fixed line telecommunications
Very low (<1%)	Oil & gas producers; Industrial metals; Construction & materials; Food & drug retailers; Transportation; Mining; Tobacco; Multi-utilities; Banking

(European Commission 2012)

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Comparing high and low intensity R&D industries

High intensity

- Rapid/radical innovation
- Manufacturing/products
- Protected intellectual property – patents etc
- Ease of market entry and competition
- High growth, expanding
- Rising spending

Low intensity

- Limited innovation
- Services/intangibles
- Little protectable content to innovations
- Barriers to entry, little competition
- Low growth, mature
- Cost constrained

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Lessons for the healthcare sector

- Hybrid industry – pharma/medtech/manufacturing vs service/care delivery – which has consequences for the organisation of R&D
- "Scientific colonisation" of health R&D – control by life sciences, biomedicine and pharma interests external to the health system
- Setting of research priorities disconnected from wider health system strategies and priorities and skewed towards technologies and products
- Production of research outsourced – to universities and others – healthcare organisations as "sites for research"

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Lessons for the healthcare sector

- Inherent paradox of technological innovation and capacity to pay for it – health and wealth agenda vs cost controls
- Healthcare organisations and systems with little internal capacity for R&D and weak or conflicting incentives for innovation
- Boards and leadership with little grasp of the R&D agenda for their organisations, and without skills and knowledge to lead R&D
- Absence of effective research partnerships – between healthcare organisation/systems and with universities

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Reforming healthcare research and development

- Have a needs-led research strategy which is tightly coupled to the system's or organisation's priorities and goals
- Insource research production to the healthcare system, using universities and others as partners where it makes sense to the system/organisation
- Take control of the innovation pathway – from research through piloting and testing to adoption at scale
- Use R&D to drive performance improvement
- Have research-savvy leadership at board level – real engagement and understanding

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Conclusions

- The health research system looks very different from those in other industries/sectors
- Our problems with innovation are probably a product of the disconnected and disengaged research system producing innovations that the healthcare system has neither capacity nor will to implement
- The central paradox of health innovation as economic wealth creation vs health innovation as cost pressure in all healthcare systems can only be resolved through a more integrated approach to R&D

I'm speaking from the perspective of the research funding agency for British Columbia, Canada. Our role is to support BC's health research system…as a funder, but also as what we call a "neutral convenor," bringing diverse stakeholders together to collaborate on strengthening BC's health research system.

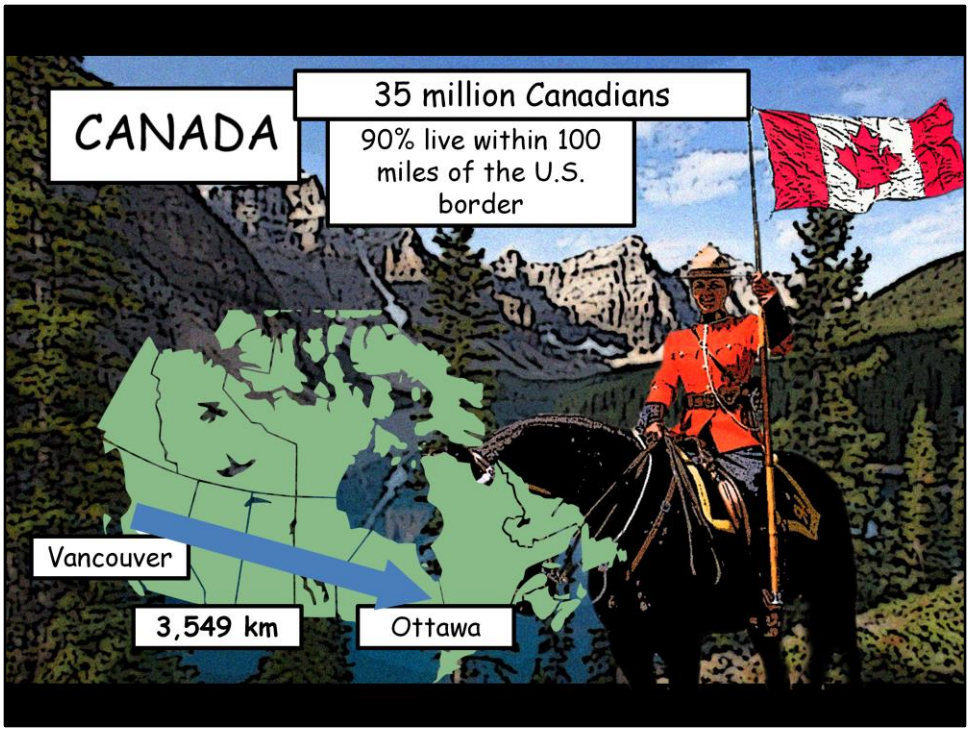
The theme of this conference resonated with us in BC; as my colleagues and I prepared for this presentation, we were struck by – and amused by – the recurring phrase in the conference materials “the rise of the impact agenda” - it sounds like the title of a horror film!

The presentation has three key messages. First, it's not only UK -- Canada and BC are experiencing the rise of the impact agenda…we have seen and are living this movie.

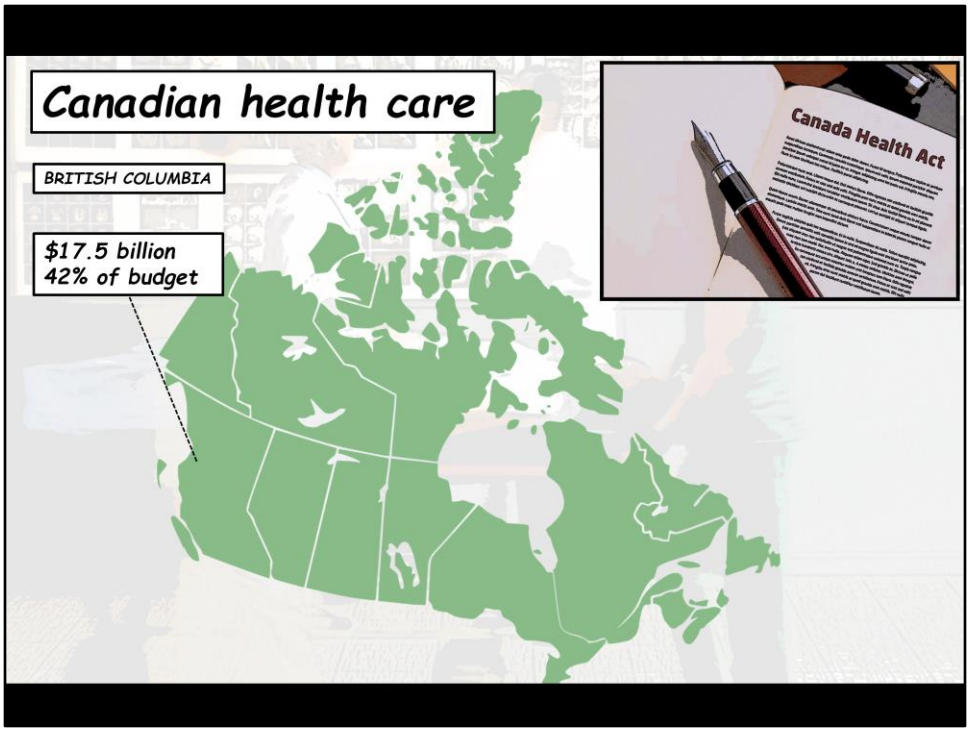
Second, at the Michael Smith Foundation for Health Research, we are doing what we can to "influence the plot" of this potentially scary movie, taking a systems view of research and its impact. We are treating the rise of the 'impact agenda' itself as a complex problem within a complex system, and bringing people together to help solve it.

Third it's definitely a work in progress. We have learned one big lesson and invite people to join us.

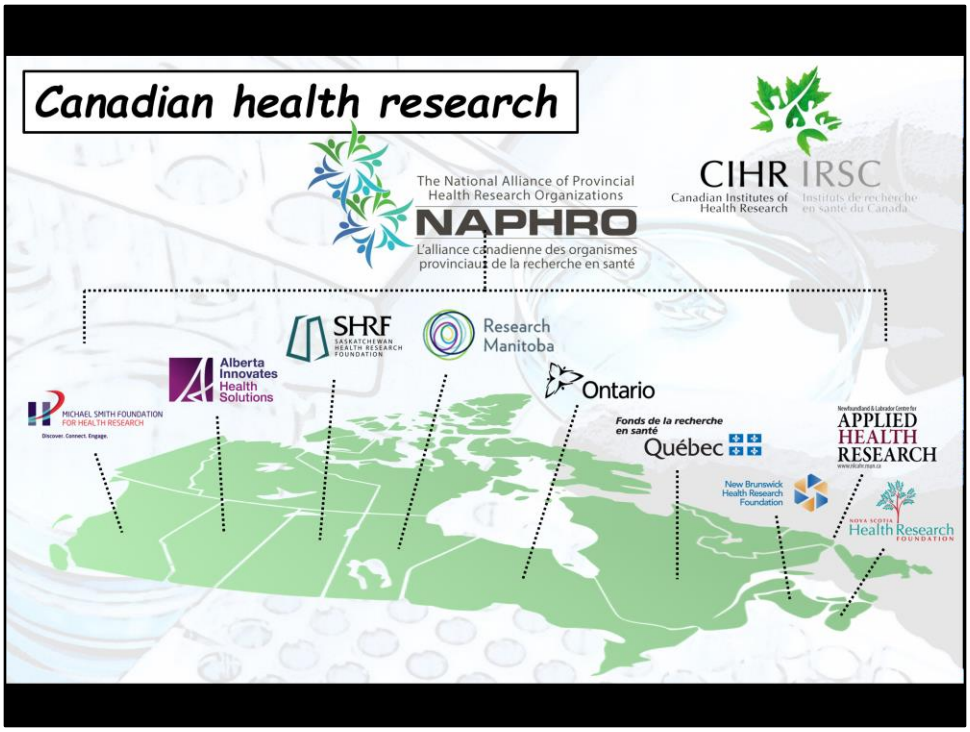
Setting the scene - because context small, large, has everything to do with health research impact. What follows is Canada and BC today on a number of relevant levels: geography and population; health care and health research; politics; and culture.



Canada is a big country with a population of 35M, 90 percent of whom live within 100 miles of the US border. For a sense of distance, 3,500K between Vancouver and Ottawa.



Health care in Canada is guided by five principles under the federal government's Canada Health Act, but it's publicly funded and administered on a provincial or territorial basis. Provinces spend on average about 40 percent of their budgets on health care.

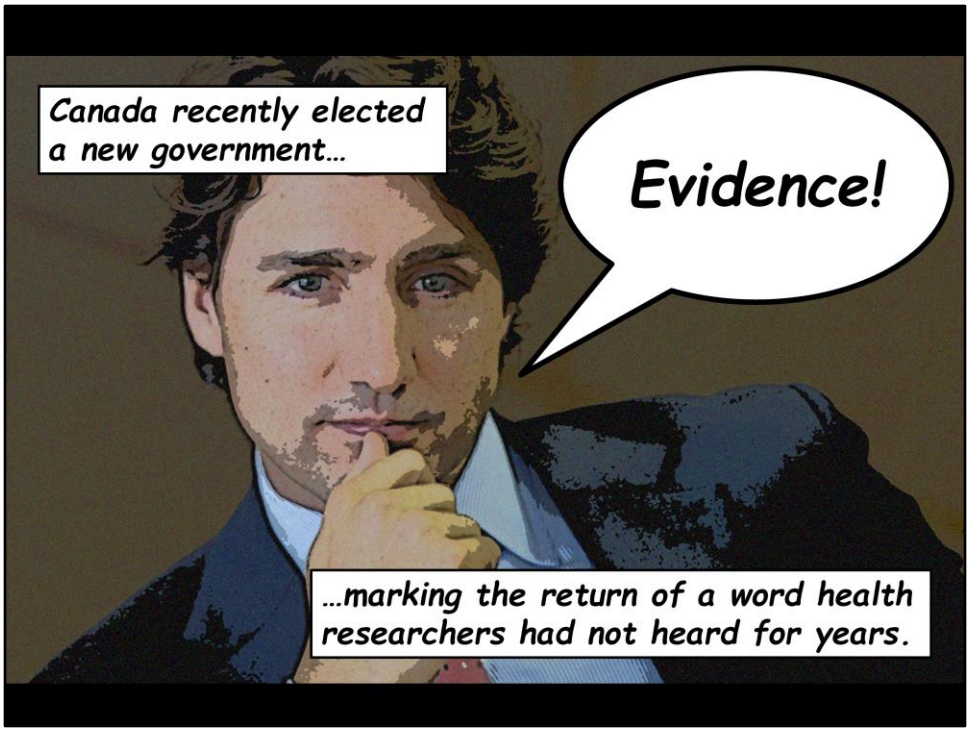


We have a national health research funding agency, Canadian Institutes of Health Research (CIHR), with annual funding of about CDN $1B. That budget has been flat for a while although they received an additional $30M in the last budget.

CIHR is being criticized by some of the research community for a series of reforms that some claim are badly designed, dismissive of basic/biomedical science, unfair in particular to new scientists.

There are funding agencies in most provinces, funded primarily by their provincial governments. MSFHR's budget last year was about CDN $17M. Collectively the provincial agencies are the National Alliance of Health Research Funders. One of the activities is a national research impact analysis group.

Why is the geography, health care and research background relevant to the rise of the impact agenda in Canada and BC? Because of the **c**omplexity (different priorities, the different incentives at play, the various levels of authority and autonomy, and ultimately, the different impacts that all these stakeholders are interested in and accountable for) but also the potential for coherence here with connections and shared interests.



We elected a new government in November. There was a collective sigh of relief among the health research community in British Columbia when Mr. Trudeau and the Liberal party came to power.

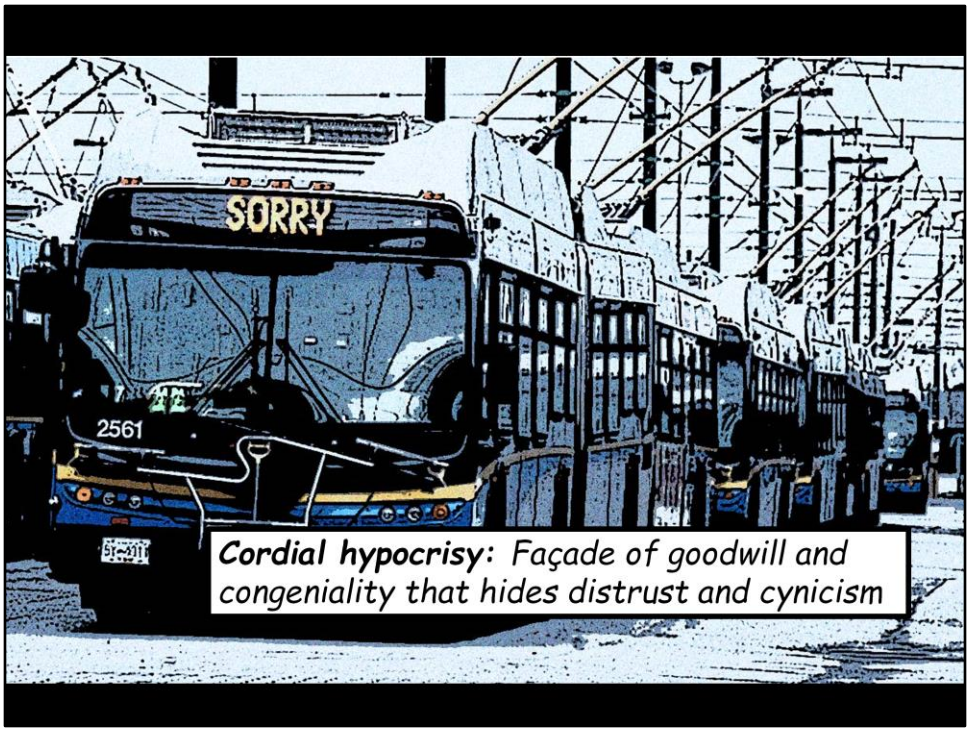
There are two ministers with the word “science” in their title, and half the cabinet is women. When asked why, Mr. Trudeau said “because it’s 2015.”

In the federal budget that was released in March, there was the additional $30M for CIHR, other commitments to basic research and a promise to review all federal support for research funding in the next year

One day after taking office, the Trudeau government reinstated the mandatory long form census, which had been stopped by the Conservatives in 2010, considered "intrusive," and replaced by a voluntary "national household survey" for which there was a poor response rate and problems with the data. The return is applauded by many, because the data from the long form census – income, cultural heritage, education and so on – are very valuable for public health.

Why is this political situation relevant to the research impact agenda? Because it signals a shift…real excitement …a heightened profile for research and for evidence, but will mean lots of jockeying for power and attention. Whose evidence is most important, what problems are the biggest? What will get funded?

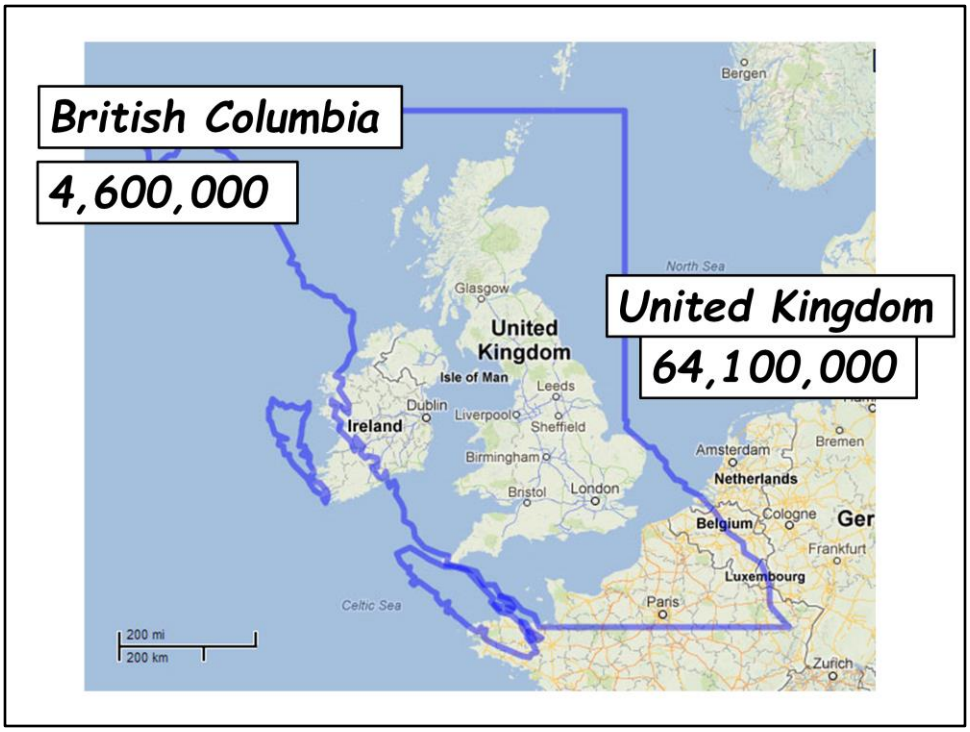
And lastly on Canada, our culture…because who we are accounts for deeply held beliefs and values, and dictates our behavior….and it's affecting our ability to achieve research impact in BC. What do they say about Canadians? How do you get all the Canadians out of a swimming pool? You simply announce: "all Canadians out of the swimming pool." And we will do it. Canadians are nice, polite, respectful people. But there are downsides…sometimes we need to cut through the "nice and polite" and have difficult conversations.



Here is the BC version of the Canadian culture – even our buses say sorry!

Why is this relevant to the impact agenda? Canadians and British Columbians are nice, but there is an element of cordial hypocrisy here – as opposed to the authentic trust that must be cultivated if people are going to collaborate to solve wicked problems.

Cordial hypocrisy is a façade of goodwill and congeniality that hides distrust and cynicism, is destructive to teamwork, and makes honest communication impossible, whereas authentic trust must be continuously cultivated and recognizes the possibility of betrayal and disappointment.



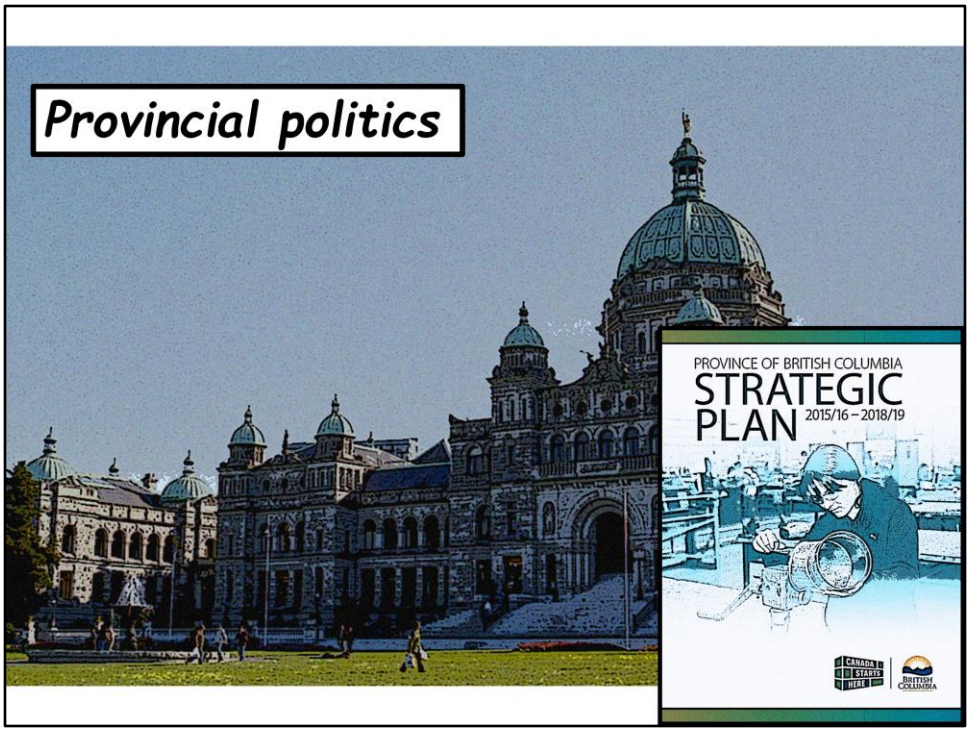
And now to BC – also big. A few major cities but lots of rural and remote space, especially compared with the UK.

Health care is provided through five regional health authorities and one provincial health authority. We also have a First Nations Health Authority – all with varying levels of research activity, some with research institutes. There are very different health issues and needs and research focus across the province.

Health care system is overseen by the BC Ministry of Health, under "Setting Priorities for the BC Health System." All health authorities have services plans that align with this ministry plan. We have four research intensive universities and a recent and growing trend for public and patient involvement in health care and health research.

We also have MSFHR, funded by the provincial government but arm's length; our funding is small compared to what the universities and their researchers bring in from sources outside the province.

Why is this relevant to the research impact agenda? To understand the complexity, the competing priorities and incentives, but to see the potential for coherence



To BC politics, we have a liberal government, with a focus on BC Jobs Plan. Their strategic plan emphasizes small business, innovation, life sciences, economic benefit.

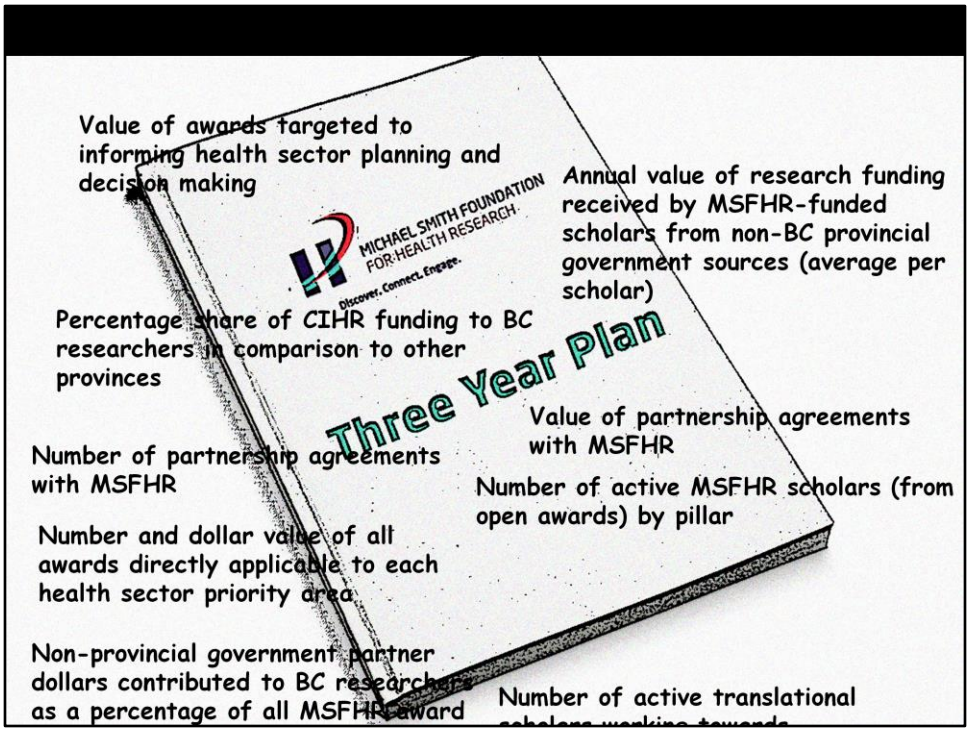
Why is this relevant to the research impact agenda? Good to have a focus on innovation and life sciences but expected impacts might be products, jobs, leveraging of dollars, ROI, cost reduction in the health care system.


BC is experiencing the RISE OF THE IMPACT AGENDA
We've seen this movie!

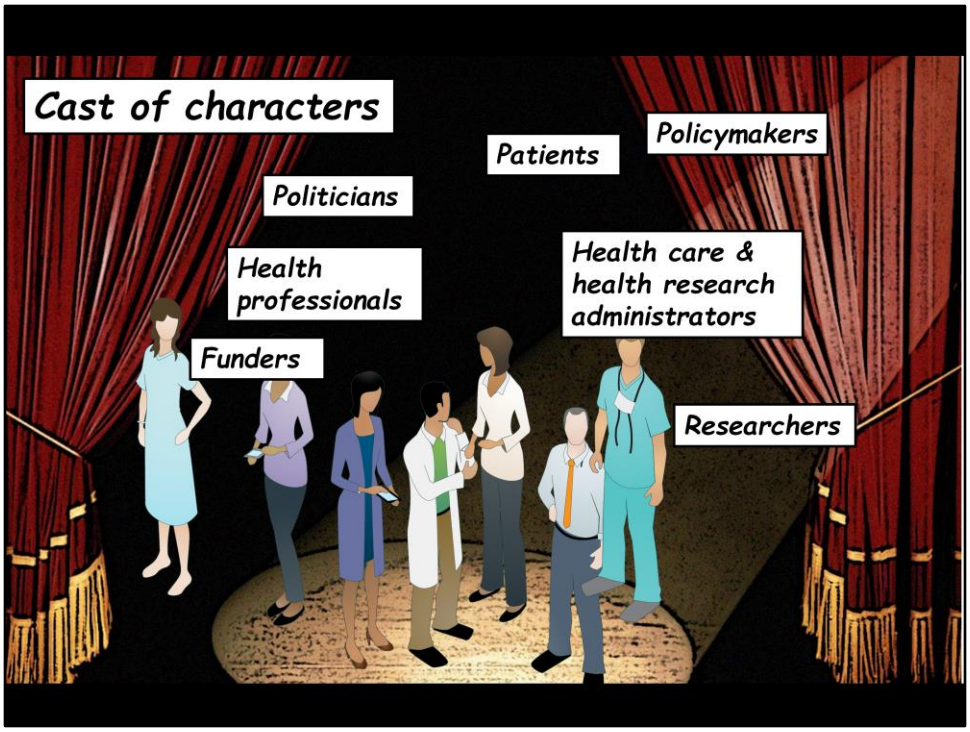

What does the rise of the impact agenda look like in BC?

It looks like this. This is Nikita Khrushchev – the iconic angry politician – playing the part of any number of politicians wondering what citizens have gotten for their investments into health research. Not everyone suffers from cordial hypocrisy!

And it is a good question, given the slippery definition of "impact." Is it lower health care budgets? Products on the market? Cures for disease?

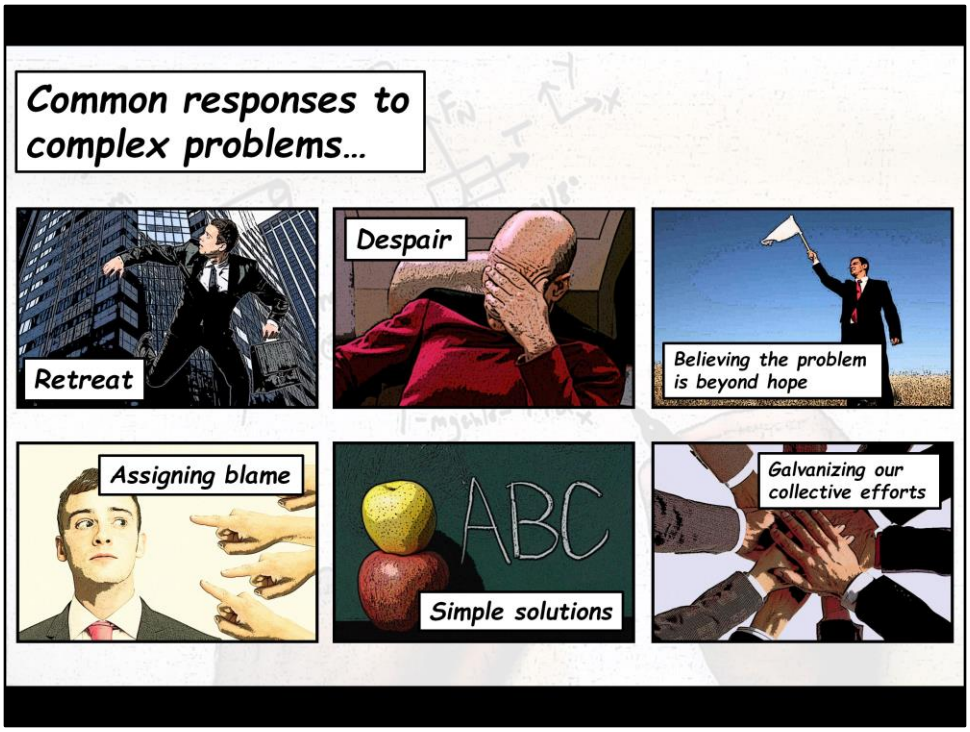


As a result of government's increased interest in impact, the impact agenda also looks like this …MSFHR's three year plan to government with a number of indicators of impact.



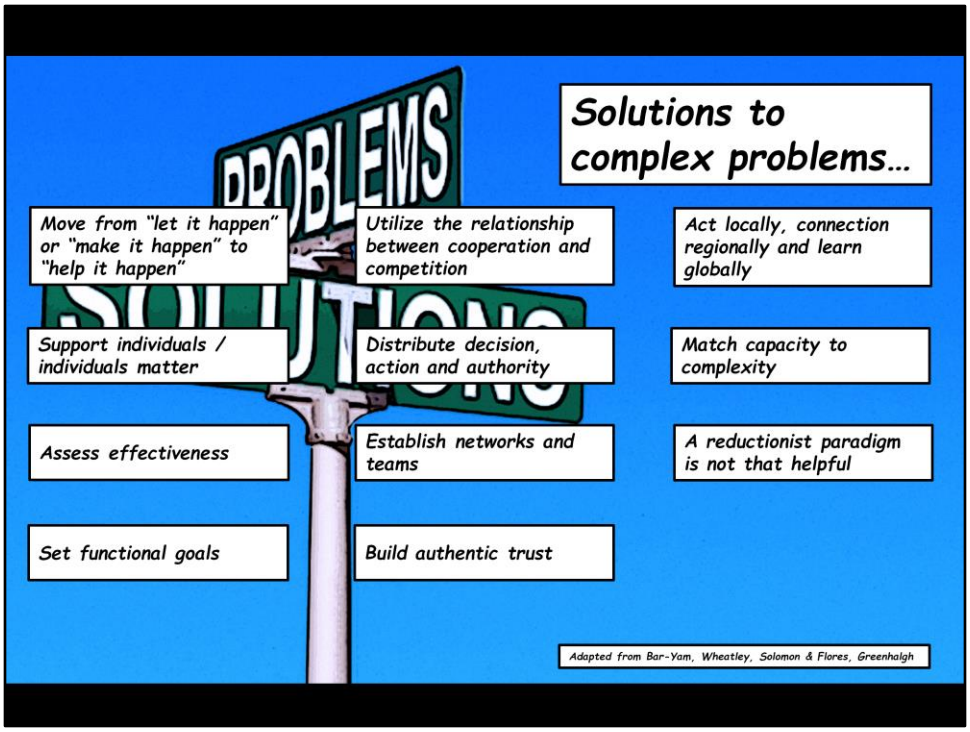
So in BC, like elsewhere, we have a huge cast of characters (researchers, politicians, policymakers, health professionals, funders, health care and health research administrators, patients, and the public) – as individuals but also the organizations they work for. And although somewhere here there are shared goals about research impact at a high level, right now the system is set up for competition: everyone is accountable for different and sometimes conflicting impacts, and in an environment of restricted resources, is feeling great pressure to deliver on those.

Add an environment of cordial hypocrisy, and what you have in the impact agenda is a complex problem.

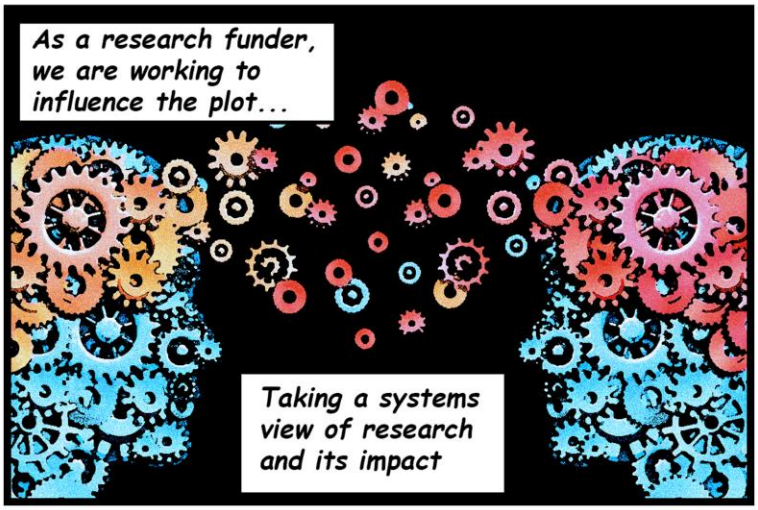


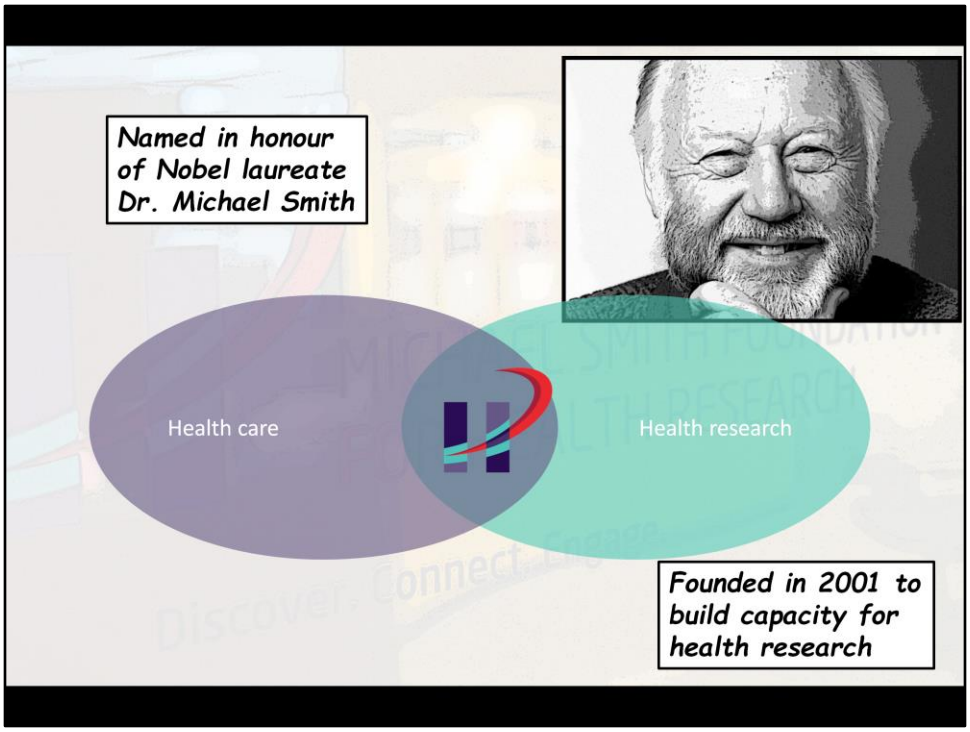
And common responses to complex problems…

What's missing? Certainly technical knowledge and infrastructure are needed for understanding research impact and there is lots of great work underway on how to measure different research impacts, what indicators to use, an understanding of what short term outcomes lead to longer term impact. But….



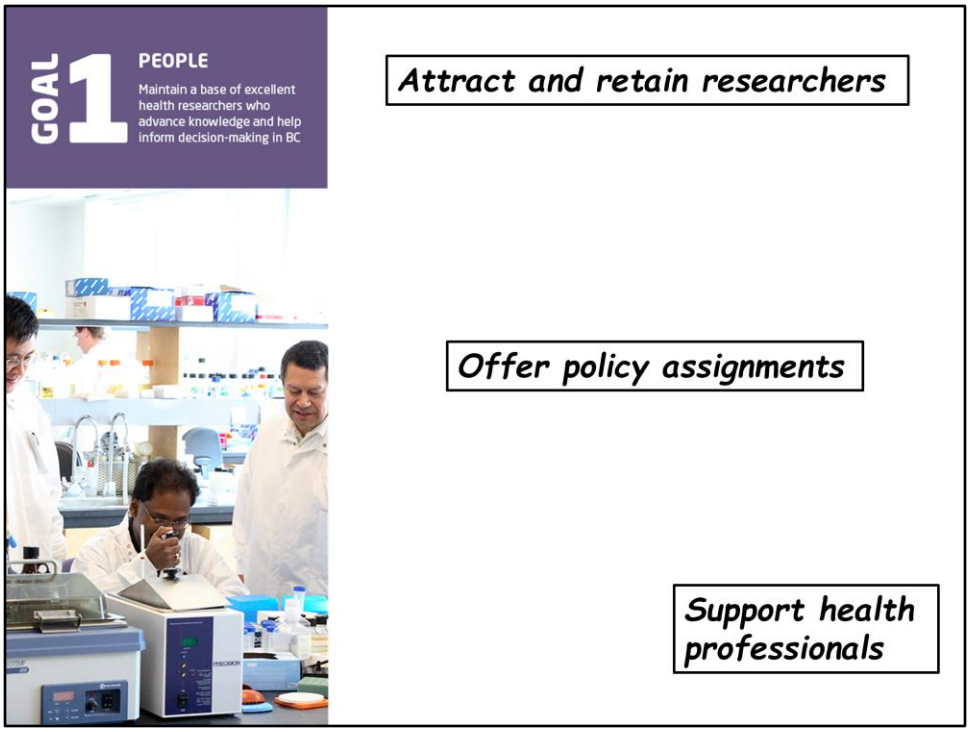
…as a broad health research community, we need to employ more of these solutions for complex problems. The research impact agenda is being treated as a complicated problem – difficult, but able to be worked out with technical solutions. But besides technical knowledge and infrastructure there are more conversations needed about what research impact means, what is possible and desirable to achieve, and who is responsible for what.


As a research funder, we are working to influence the plot...
Taking a systems view of research and its impact



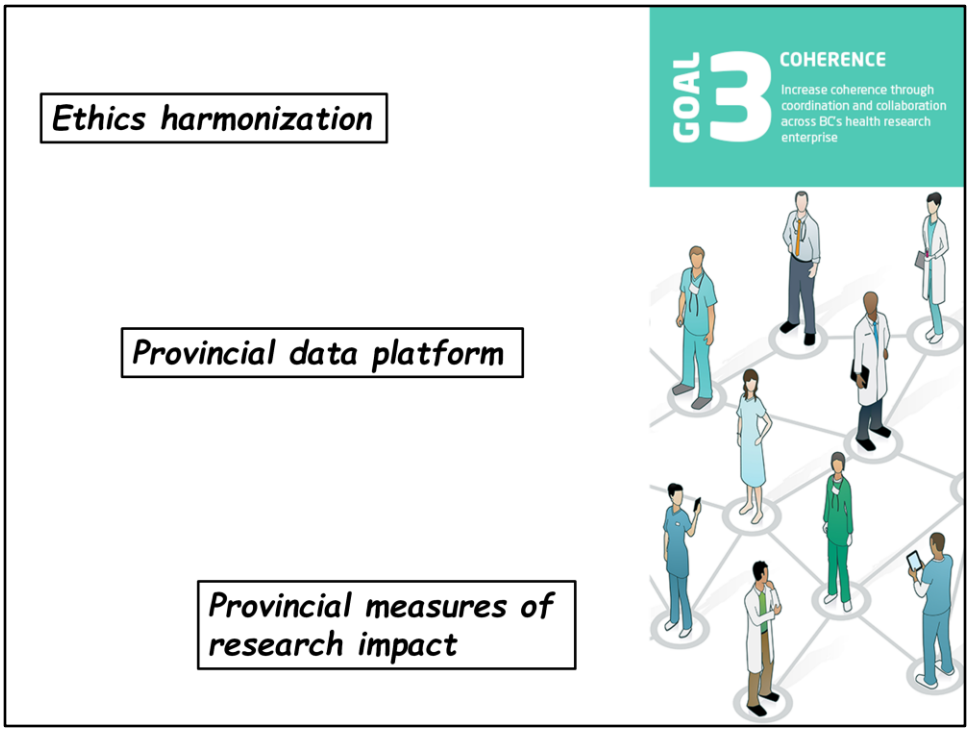
MSFHR was established in 2001 to build research capacity by funding salaries for scientists from those in training through to very senior scientists. Like most funding agencies we had a primarily hands-off approach for the first decade. Increasingly, we are hands on, because the "fund and forget" model, while appropriate for a time, is not what is needed now. We need to consider the environment in which we are launching programs, adapt programs to fit, and work to change and influence the environment. We are trying to see beyond our own aims as an organization (to get re-funded) to the broader system.

Our strategic plan suggests that what the system is people, it needs responsive research, and it needs coherence. A few examples of programs under each of these that we are trying to bring this systems view to, by applying the solutions to complex problems…



Goal one, people, we continue to support establishment and retention of outstanding early-career researchers and trainees – but looking to target some of this funding to gap areas; we're also offering training in other settings, for example policy assignments. And we are going to launch a program to support health professionals to advance careers in the conduct and application of research relevant to care. Related to this whole area of funding research, we're also re-evaluating peer review.

Goal two, responsiveness, we are providing financial and/or operational support for research responsive to health-care system priorities…implementation science teams, convening and collaborating awards. We are funding people to come together and talk about what the problem is in the first place, not assume they know the answer and all they need is money to solve it.



Goal three is key, because it is about the system in which our other programs take place. Under this goal are initiatives that have us as neutral convenor bringing people together to influence the system. This is very difficult in a low resource, high competition environment, and an environment of cordial hypocrisy, where people agree in the room but work against each other when they are out of it.

Some projects here: harmonize our ethics approval across the province, supporting a provincial data platform and, we hope to develop provincial measures of research impact so that our government gets a coherent story from all stakeholders at the highest level.

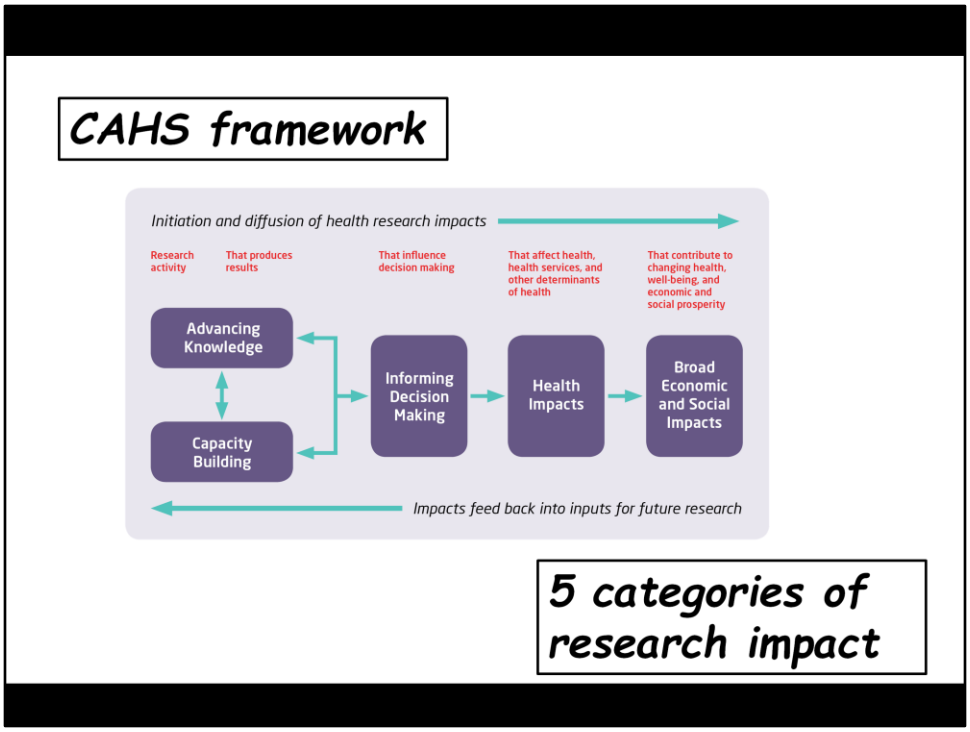
As we work on research impact, we are emphasizing the big differences among measuring, demonstrating and achieving impact.

There is some great work being done on **measuring** research impact and it's important and needs to keep going.

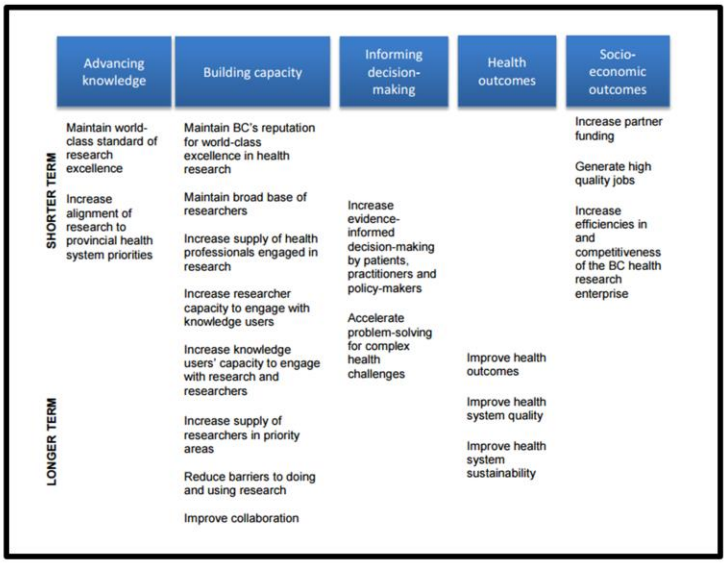
With 'the rise of the impact agenda,' there is maybe a little too much focus on **demonstrating** impact in ways that people think others want to hear it.

But we want to have more conversations – with researchers, decision makers, health care providers, patients and the public – about what it means to **achieve** research impact at a system level in BC.

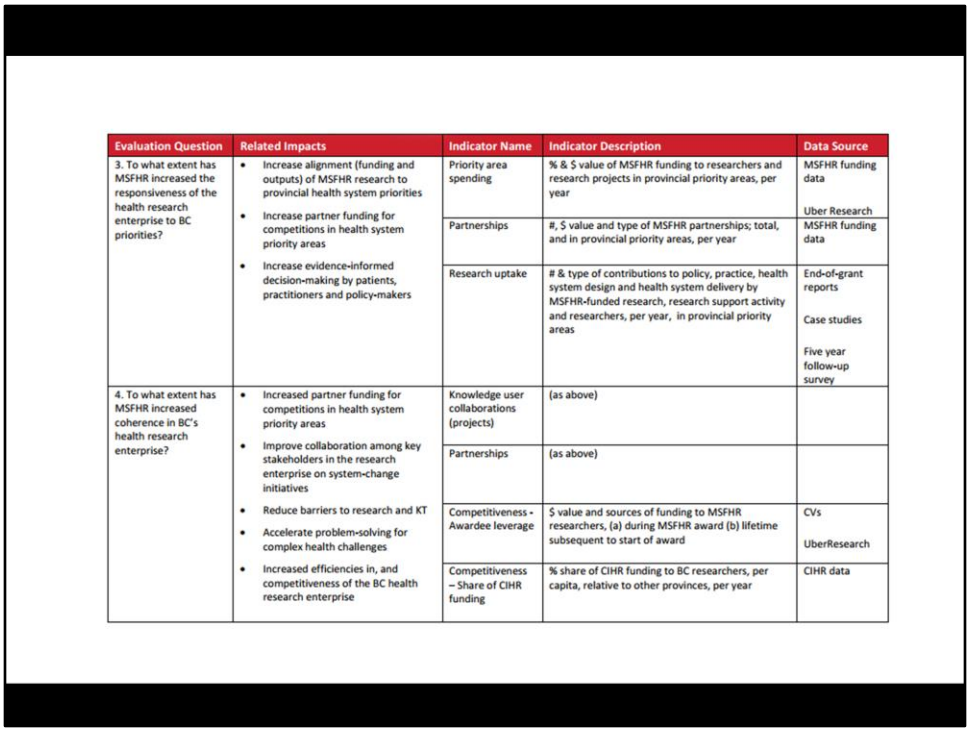
Here is how we will know to what extent we are succeeding with our strategic plan. Our strategy is a couple of years old, and we have spent a lot of time getting data systems and sources in place. We want to be able to measure the impact of individuals and teams funded through our programs, our programs themselves, our organizational efforts and – given our “coherence” goal – even at the systems level.



Like the other NAPHRO organizations across Canada, we have taken the Canadian Academy of Health Sciences framework…

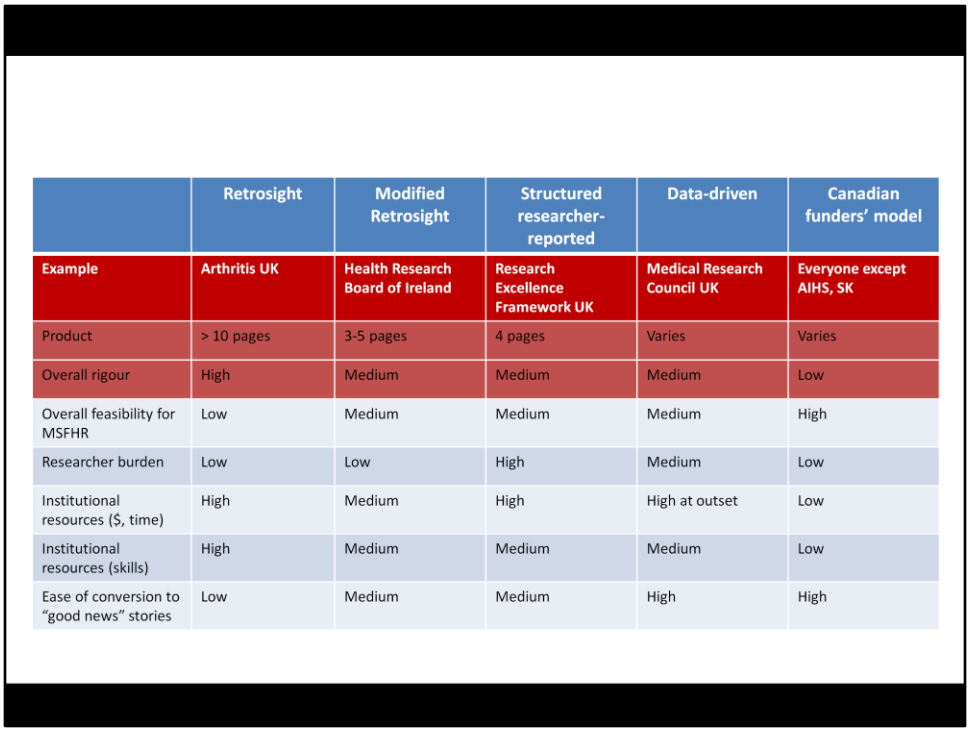


…and mapped our organizational impacts on it.



Evaluation Question	Related Impacts	Indicator Name	Indicator Description	Data Source
3. To what extent has MSFHR increased the responsiveness of the health research enterprise to BC priorities?	• Increase alignment (funding and outputs) of MSFHR research to provincial health system priorities • Increase partner funding for competitions in health system priority areas • Increase evidence-informed decision-making by patients, practitioners and policy-makers	Priority area spending	% & $ value of MSFHR funding to researchers and research projects in provincial priority areas, per year	MSFHR funding data Uber Research
		Partnerships	#, $ value and type of MSFHR partnerships; total, and in provincial priority areas, per year	MSFHR funding data
		Research uptake	# & type of contributions to policy, practice, health system design and health system delivery by MSFHR-funded research, research support activity and researchers, per year, in provincial priority areas	End-of-grant reports Case studies Five year follow-up survey
4. To what extent has MSFHR increased coherence in BC's health research enterprise?	• Increased partner funding for competitions in health system priority areas • Improve collaboration among key stakeholders in the research enterprise on system-change initiatives • Reduce barriers to research and KT • Accelerate problem-solving for complex health challenges • Increased efficiencies in, and competitiveness of the BC health research enterprise	Knowledge user collaborations (projects)	(as above)	
		Partnerships	(as above)	
		Competitiveness - Awardee leverage	$ value and sources of funding to MSFHR researchers, (a) during MSFHR award (b) lifetime subsequent to start of award	CVs UberResearch
		Competitiveness – Share of CIHR funding	% share of CIHR funding to BC researchers, per capita, relative to other provinces, per year	CIHR data

An example from our evaluation strategy: questions, the related impacts, indicator name, indicator description, and data source. As much as possible we will take an established impact measure or indicator so that we can share what we learn with other organizations.

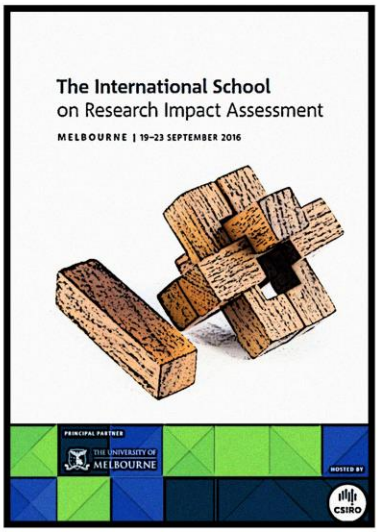


	Retrosight	Modified Retrosight	Structured researcher-reported	Data-driven	Canadian funders' model
Example	**Arthritis UK**	**Health Research Board of Ireland**	**Research Excellence Framework UK**	**Medical Research Council UK**	**Everyone except AIHS, SK**
Product	> 10 pages	3-5 pages	4 pages	Varies	Varies
Overall rigour	High	Medium	Medium	Medium	Low
Overall feasibility for MSFHR	Low	Medium	Medium	Medium	High
Researcher burden	Low	Low	High	Medium	Low
Institutional resources ($, time)	High	Medium	High	High at outset	Low
Institutional resources (skills)	High	Medium	Medium	Medium	Low
Ease of conversion to "good news" stories	Low	Medium	Medium	High	High

We're excited about case study methodology, which allows us to land somewhere between hard numbers and soft stories and look at long term impact. We did an international scan of models, interviews, and expert validation; we settled on five models to compare as far as end product, rigour, feasibility, researcher burden, resources (time and money, skill), ease of conversion to a good story!

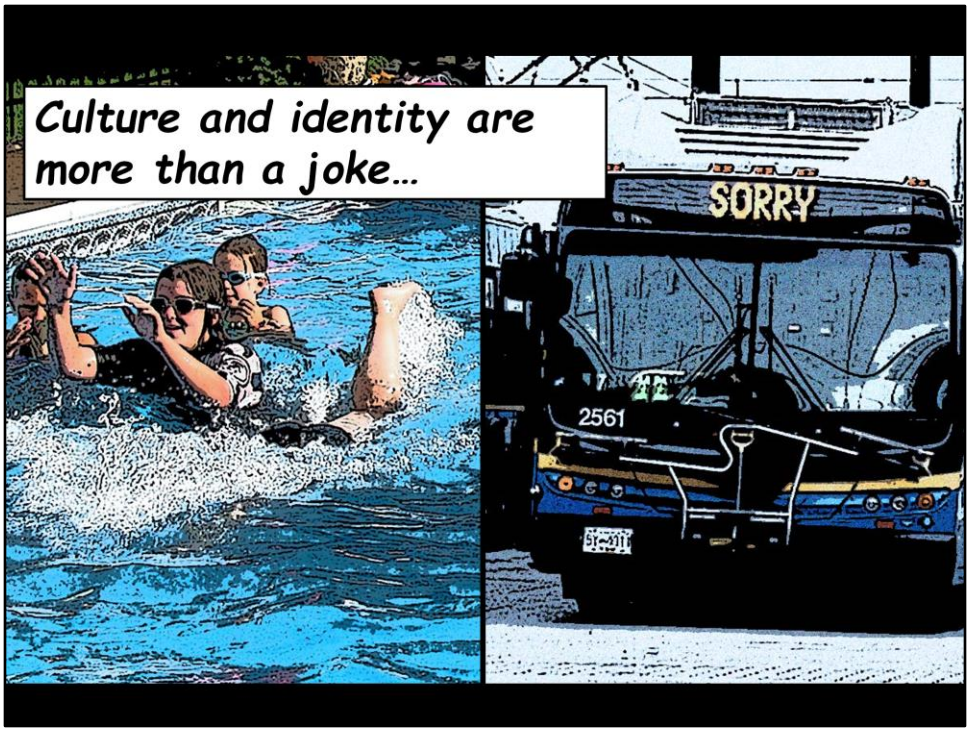
We landed on a model based on the Health Research Board of Ireland. Looking forward to testing and refining methodology as well as producing case studies.

We're part of NAPHRO's Impact Assessment Group…mandate is to strengthen Canada's capacity to evaluate health research impact. Joint projects, harmonization of measures, sharing data, disseminating practices and lessons.



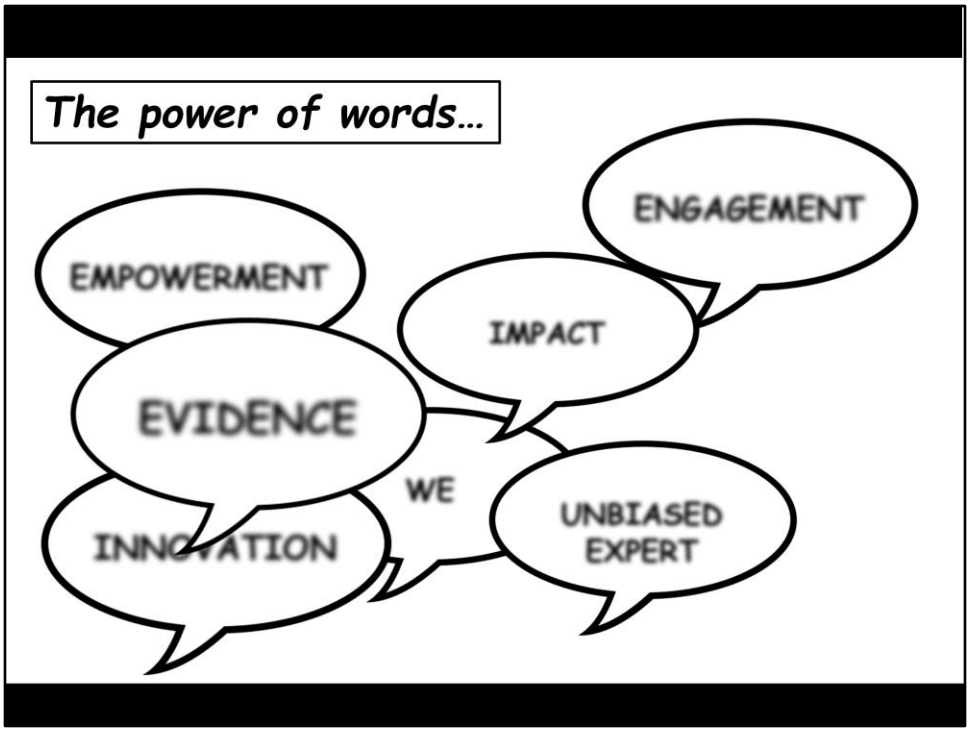
And we're excited about ISRIA.


It's a work in progress
CAUTION
AREA UNDER
CONSTRUCTION
One big (obvious) lesson
and an invitation

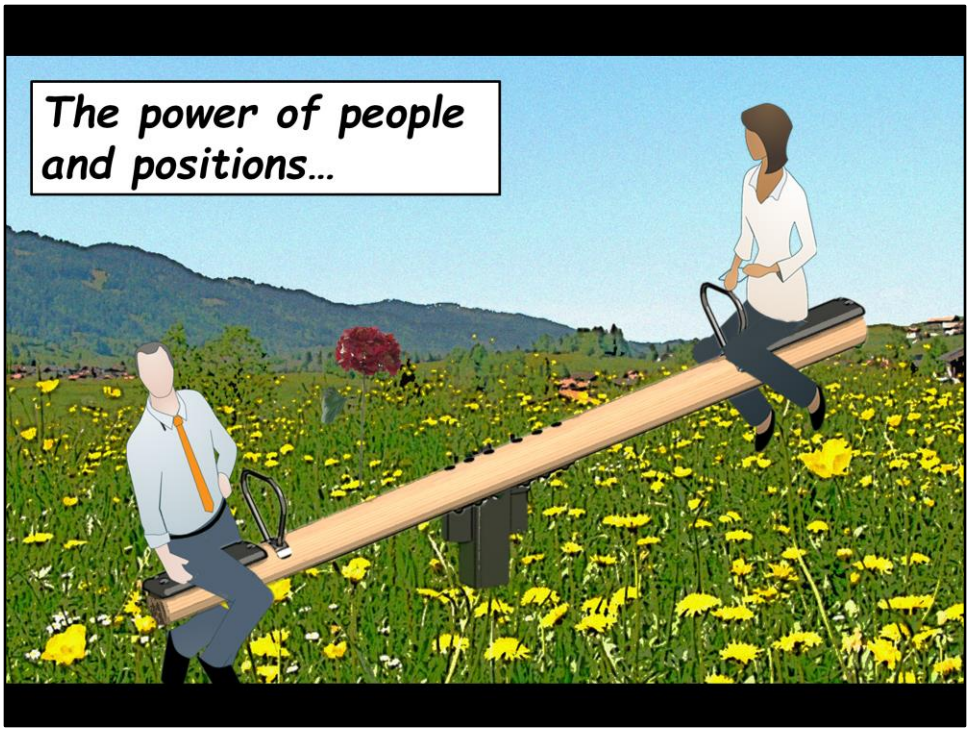


The lesson - what is going to get in our way? It may seem obvious, but culture and identity are more than a joke. In BC, our niceness and politeness don't enable us to raise challenges or to acknowledge and resolve conflict, and they prevent the difficult conversations needed to realize the impact of health research in times of constrained resources and the resulting tension and distrust and retreat to silos.

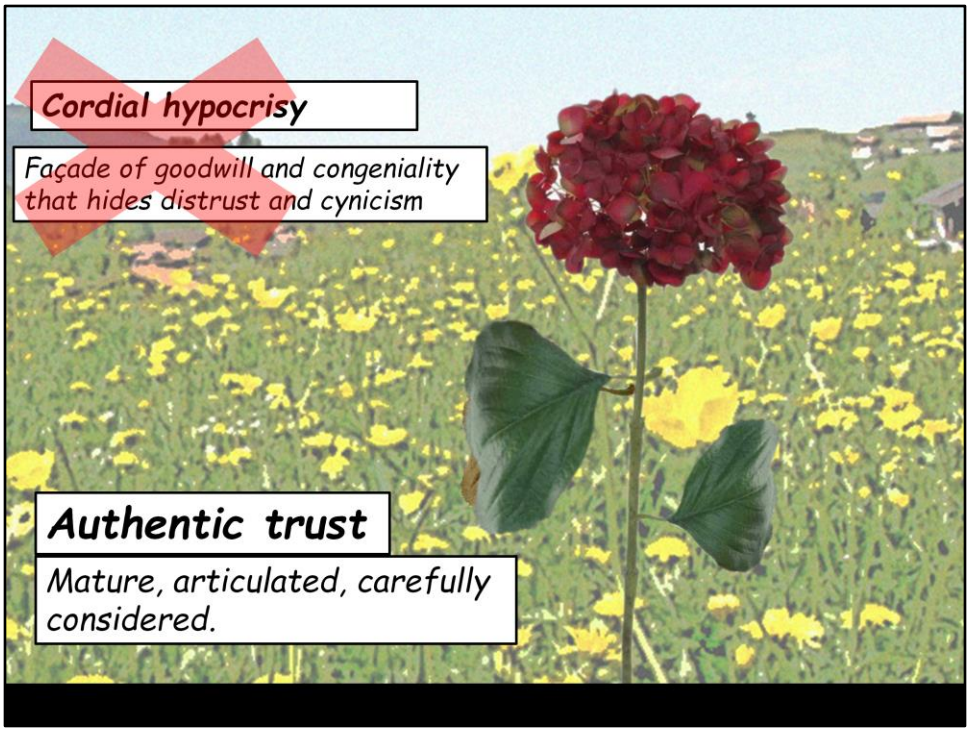
We are suggesting we become much less Canadian (or at least much less British Columbian) and do two things: challenge the assumptions behind words, and challenge the power imbalances that are in the way of progress.



These words are fuzzy for a reason! Many words are thrown around as if everyone knows what they mean. Among the words we need to be careful of are engagement, expert, impact, innovation, evidence, priority, and even the small word “we.”



We also need to challenge power and positions. Often we have all agreed to work together as partners, but power imbalances exist and need to be dealt with: it takes work to create equity among the people who need to be at the table.



Coming back to cordial hypocrisy…measuring, demonstrating and achieving research impact in BC requires us to get rid of it, and cultivate authentic trust.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Please join us!

MICHAEL SMITH FOUNDATION
FOR HEALTH RESEARCH

Discover. Connect. Engage.

Thank you.