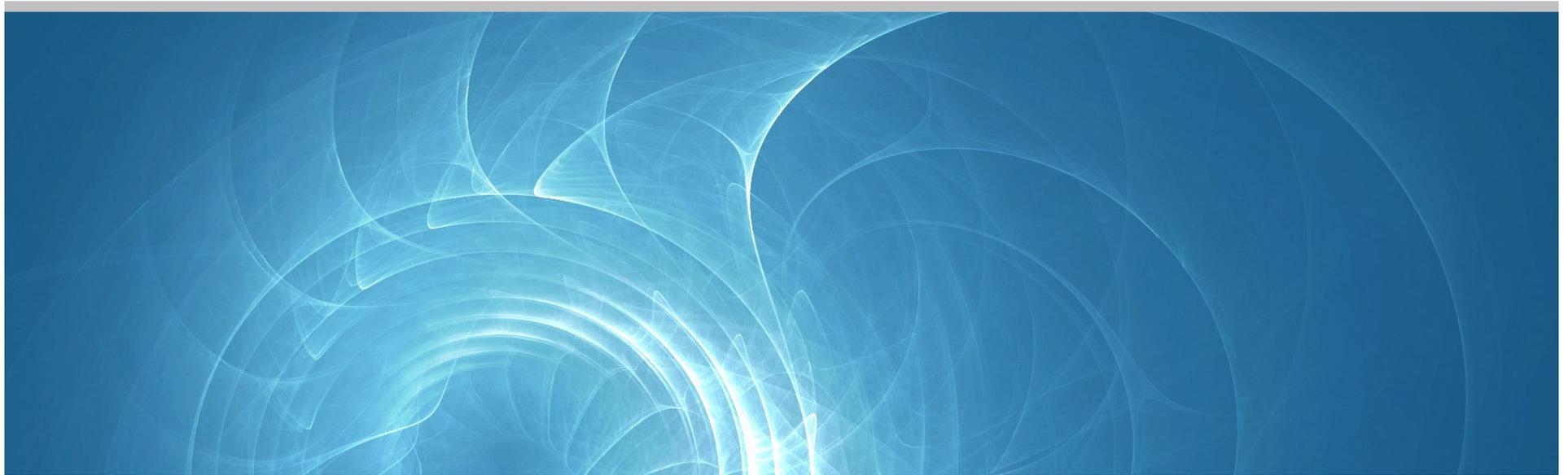


The Outputs and Impacts of Social Sciences and Humanities Research

Evidence from bibliometrics research
and two large-scale web surveys

by **Éric Archambault**



Science-Matrix



Objectives

- Identify outputs of SSH research and mechanisms used to disseminate them
- Identify the uses of SSHRC-funded research, as well as the extent to which impacts are observed
 - ▶ Highlight the most frequent types of impacts and where they occur
- Identify factors that may lead to increased use and impact of SSH research, in the academic sector and the non-academic sector
 - ▶ These may help predict impacts or design programs to increase the certain types of impact
- Use survey data to test and validate assumptions



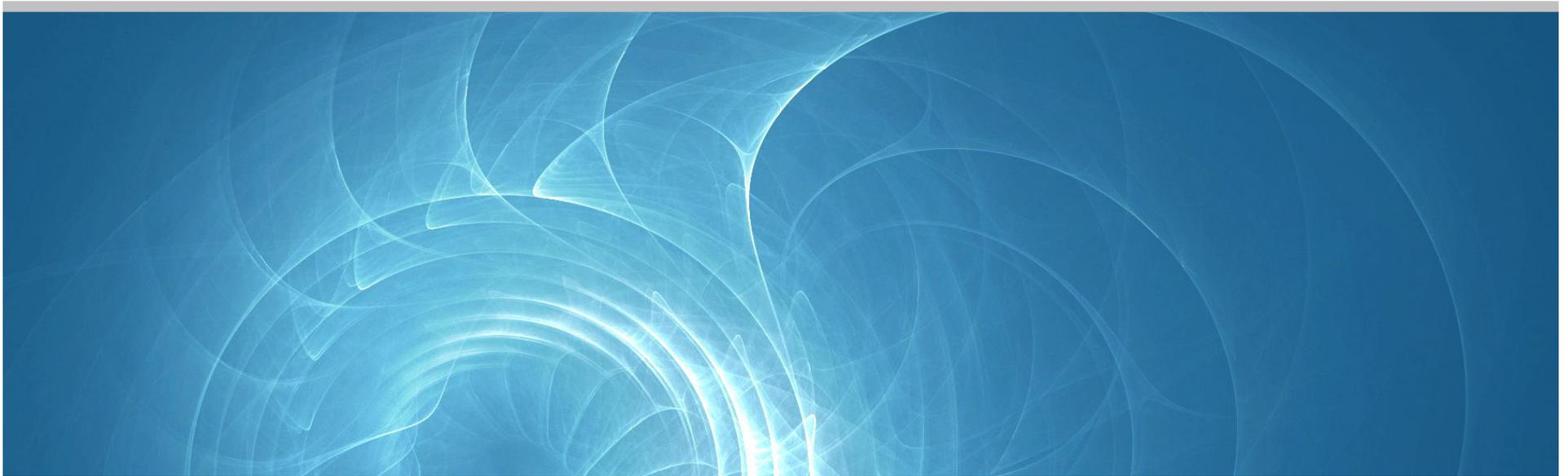
Sources of evidence

- Research conducted using bibliometric data
 - ▶ Studies examine data from 1900 to 2008
- Two large-scale web surveys:
 - ▶ Survey of SSH research impact as part of the presidential initiative ($n > 1,500$)
 - ▶ Questions inserted in the Blue Ribbon Panel survey ($n > 6,200$)

PART I

Specificities of Knowledge Dissemination in the SSH

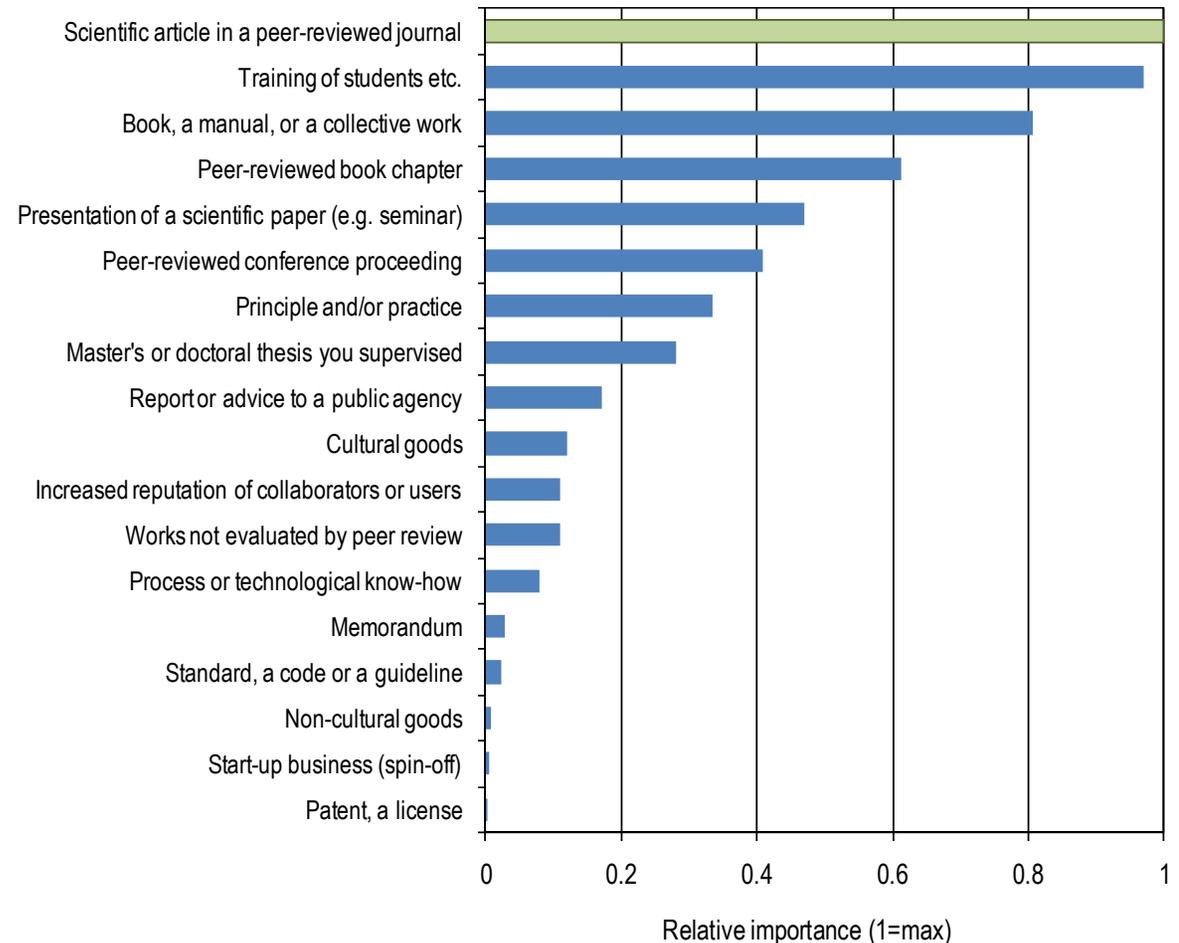
Insights from bibliometrics





Peer-reviewed papers is the most important result of SSH research and is worth an in-depth look

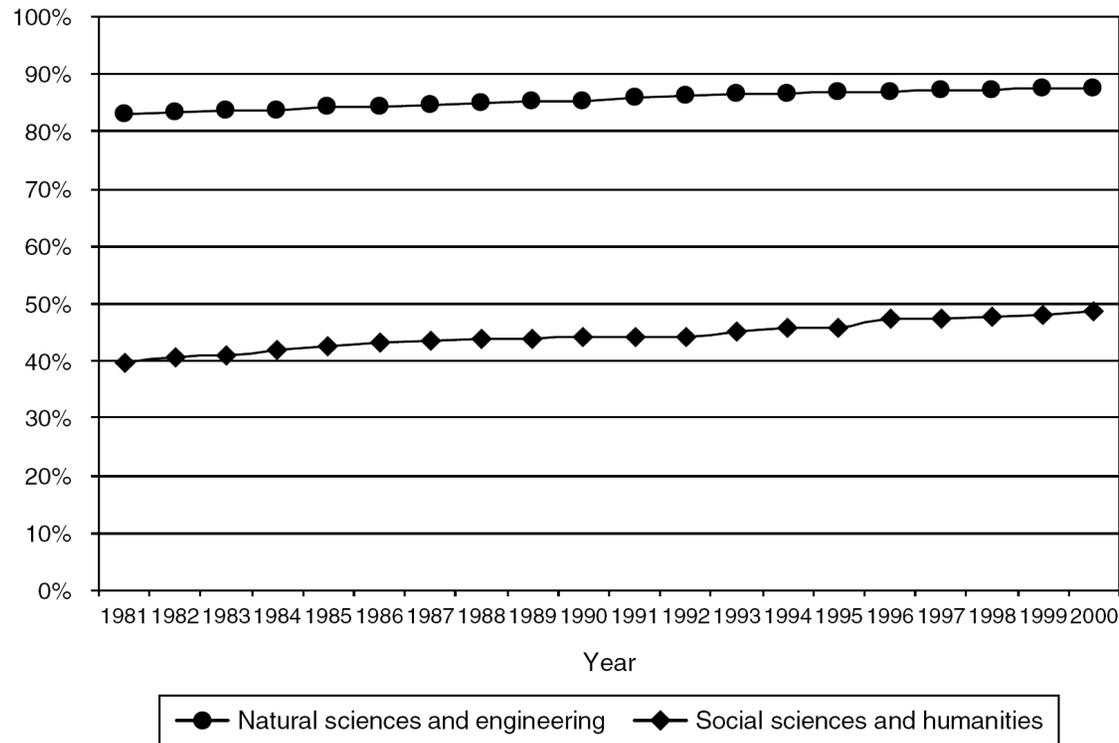
Q: In your view, what were the primary research results of your SSHRC-funded projects? (ranked in order of relative importance)





The relative importance of journals is greater in the natural sciences and engineering than in the SSH

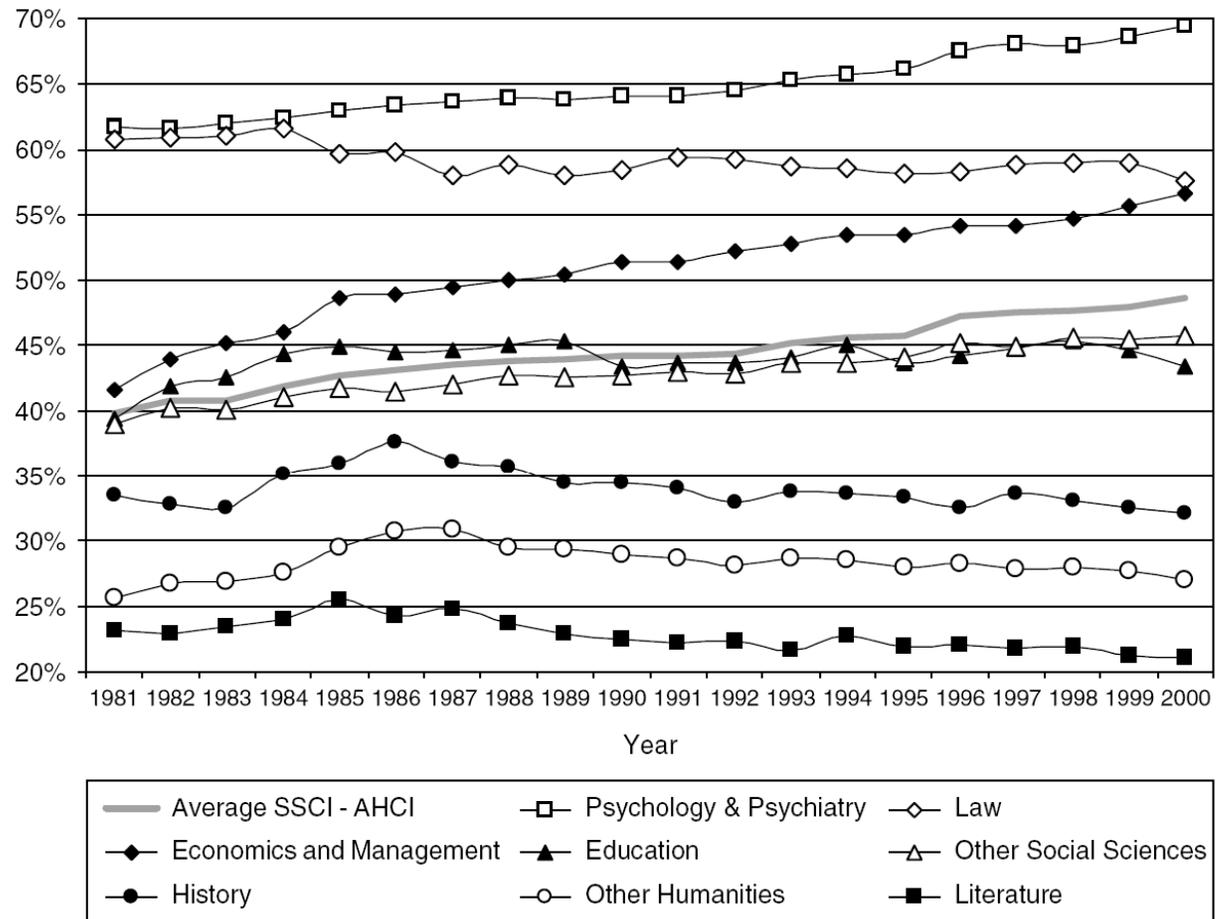
- Almost 90% of references made in the natural sciences and engineering point to serials
- In the SSH, less than 50% of the references are made to journals – growth here is more substantial (about 10 percentage points over two decades)



Source: Larivière, Archambault, Gingras and Vignola-Gagné (2006)



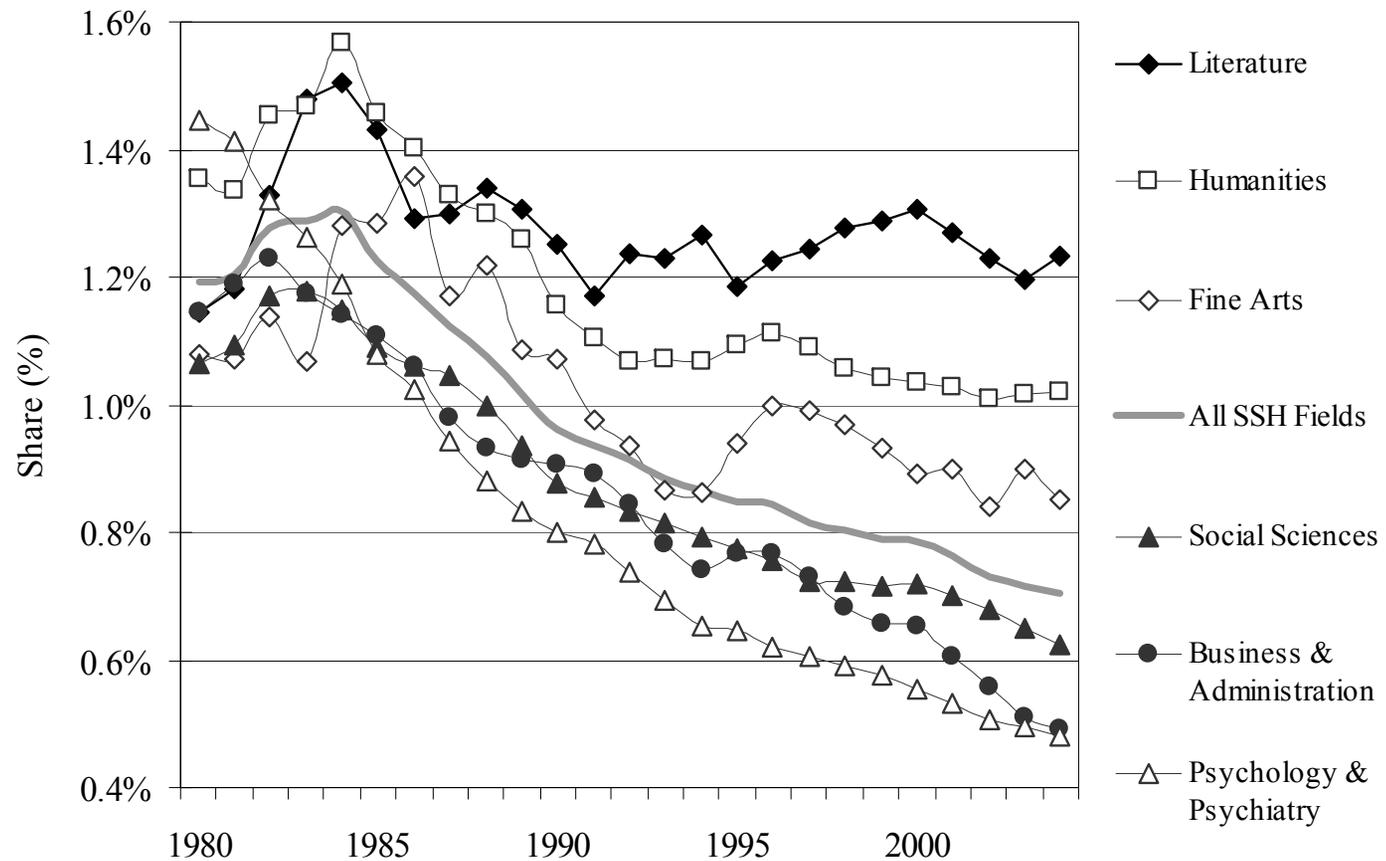
The relative importance of journals varies substantially among SSH disciplines



Less than 25% of references are made to journals in literature, but up to about 70% in psychology

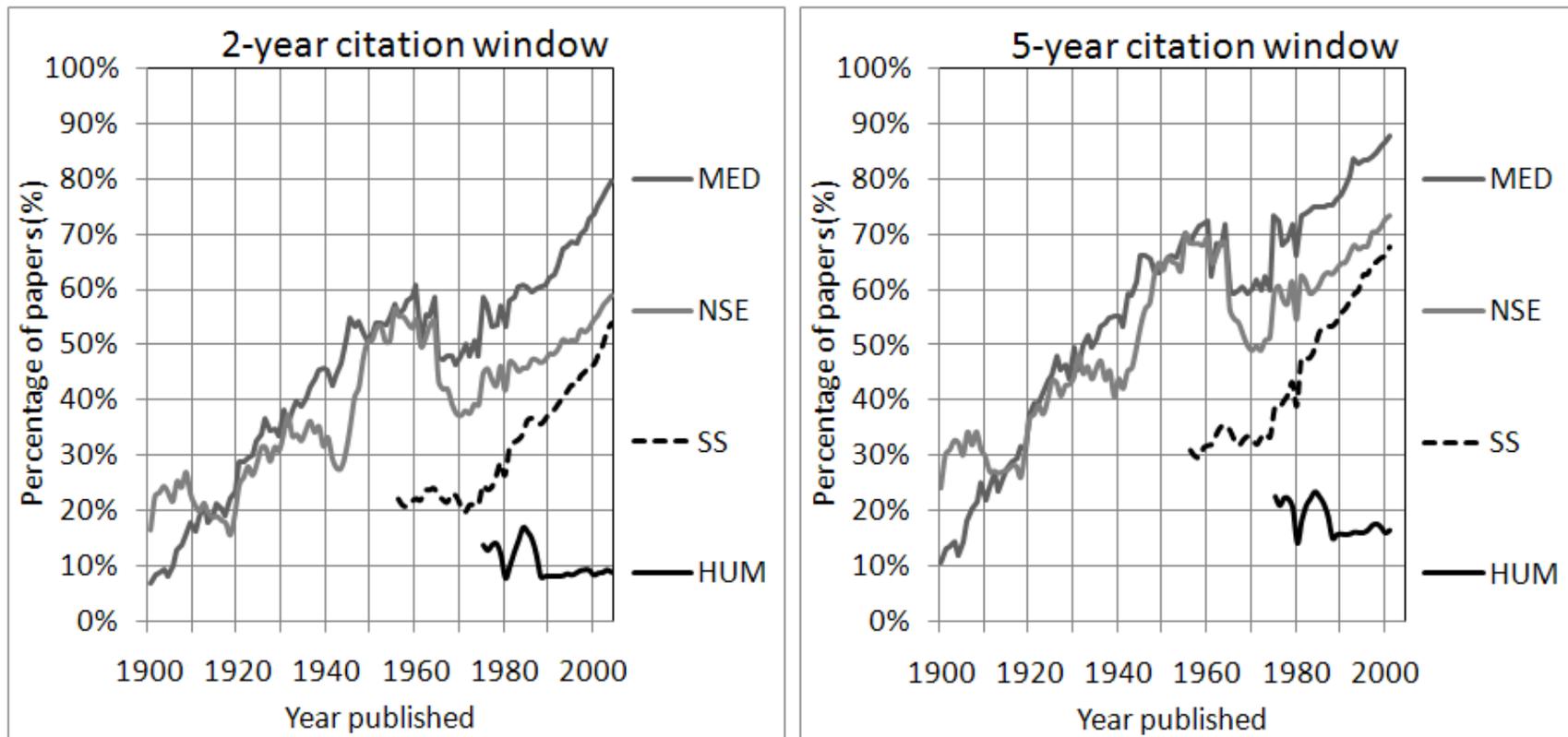


References made to theses are declining in the SSH (as is seen in the NSE)





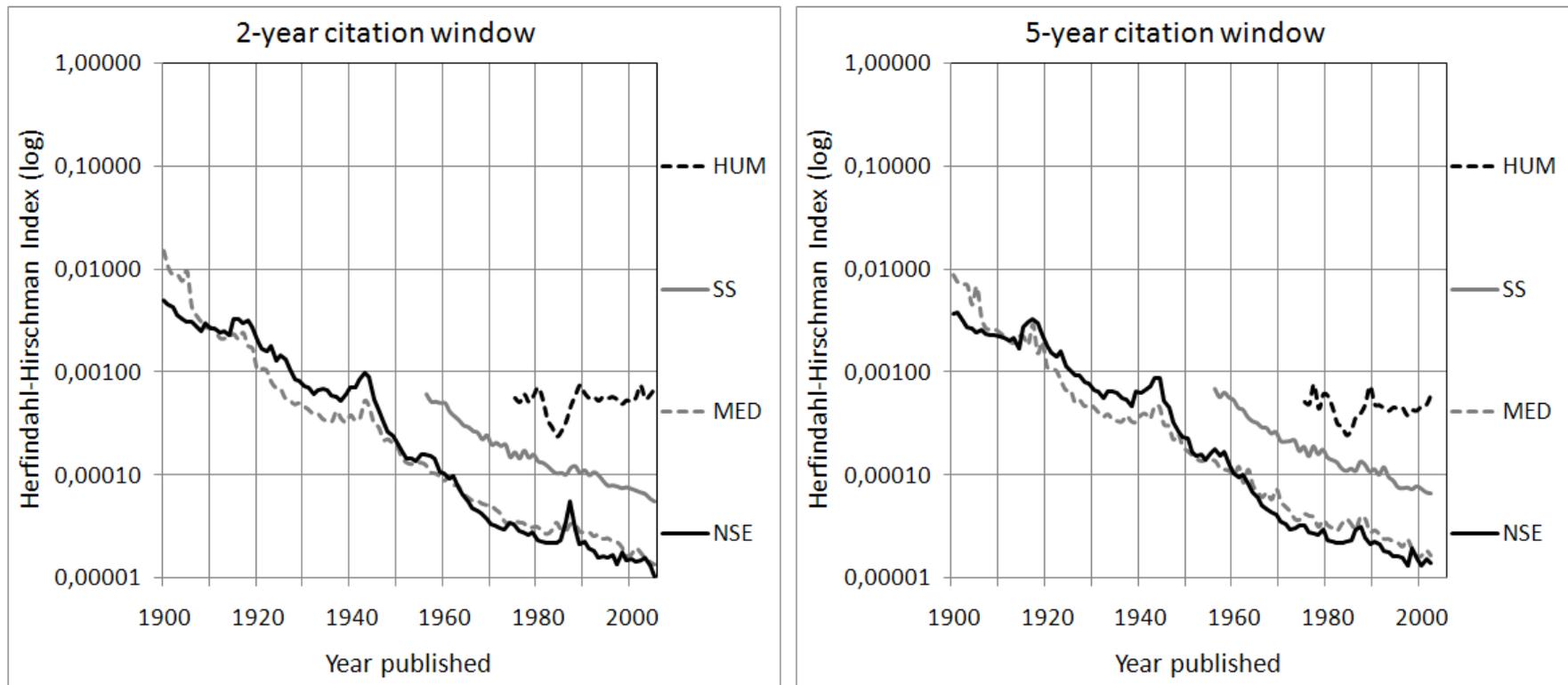
Since 1970, social sciences papers have been increasingly cited – but not humanities papers



Percentage of papers that were cited at least once within a two-year (left) and five-year (right) citation window, by field, 1900–2005 and 1900–2002



Concentration of citations is diminishing in the social sciences, but is stable in the humanities



Herfindahl-Hirschman index of citations received, two- and five-year citation window, by field, 1900–2005 and 1900–2002



What do bibliometric studies tell us?

- Bibliometric data show that knowledge dissemination and uptake through serials is increasing in the social sciences, but less so in the humanities
- A large proportion of the published output of research SSH remains in forms other than peer-reviewed journals (e.g., books)
- Consequently
 - ▶ Bibliometrics could be increasingly useful as a tool to measure SS knowledge output and scientific impact but we still need to be careful, and humanities are a no-go for bibliometrics



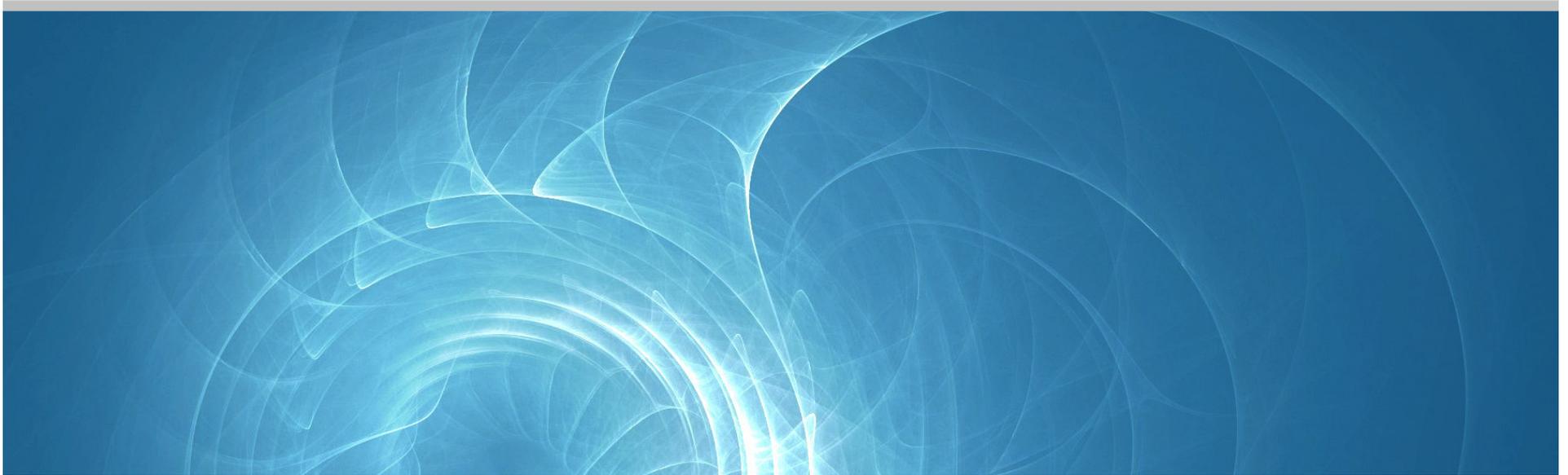
Caveat: Coverage of SSH in bibliometric databases is imperfect – proceed with caution!

- Considering:
 - ▶ The relative importance of books and non-serials in SSH knowledge diffusion, which are poorly covered in existing databases
 - ▶ The relative importance of local (especially non-English language) serials in SSH knowledge diffusion
 - ▶ That SSH journals are being rapidly added to the databases, which could confound trends calculated over time
- Caution is necessary when using bibliometrics to measure SSH research performance
 - ▶ Comparisons between countries/regions are not recommended
 - ▶ Longitudinal studies (over time) with control groups are suggested
- Using local databases to supplement world-level databases could become a viable option

PART II

Outputs, Dissemination, Use and Impacts in the SSH

Insights from two web surveys





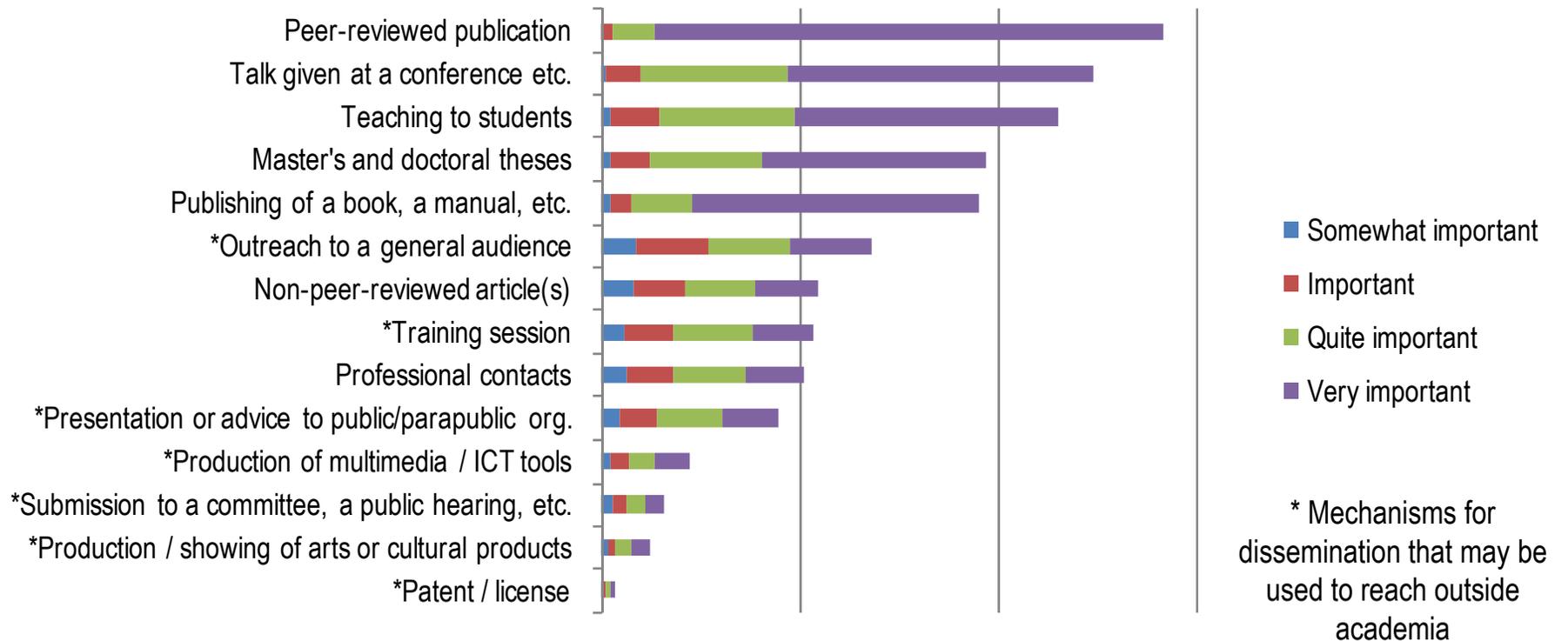
Two web surveys of SSH researchers

- First survey: Presidential Fund initiative (n > 1,500)
 - ▶ Questions were designed to collect data on outputs, dissemination, users and perceived impacts of SSH research
- Second survey: Blue Ribbon Panel (BRP; n > 6,200)
 - ▶ Questions on research use and impacts were inserted in the BRP survey and cross-tabulated with other variables
 - Individual factors: seniority, funding
 - Organizational factors: institution size
 - Research-specific factors: discipline, interdisciplinary research
- Cross-referencing of variables to identify significant associations and predictors of impact



Papers, conferences and teaching are perceived as key types of mechanisms for dissemination of results.

Q: What was the relative importance of the following mechanisms for the dissemination of the results obtained in the course of your SSHRC-funded research projects?





The main areas addressed by SSH research vary predictably according to the researchers' disciplines.

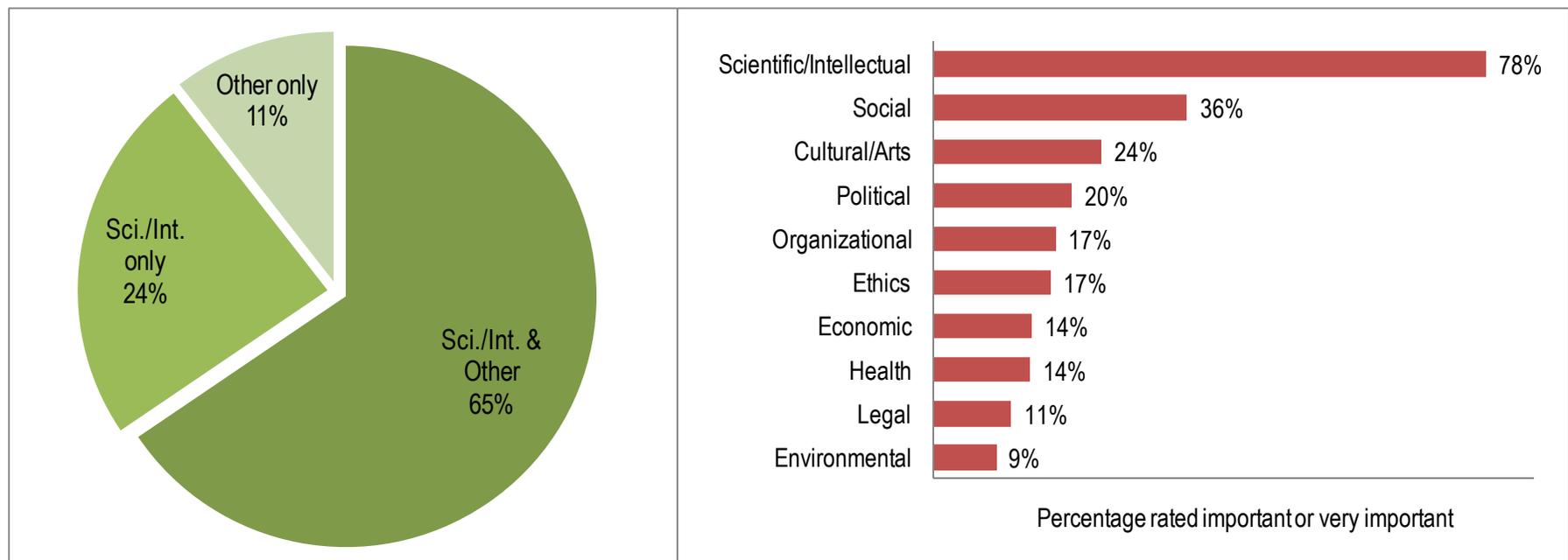
- At the proposal stage, the core contributions of the SSHRC-funded research are aimed at:
 - ▶ Scientific and intellectual advancement
 - ▶ Increasing knowledge in social, cultural and artistic areas
- Additional contributions are expected outside the academic sphere.

	Scientific/Intellectual	Social	Cultural/Arts	Political	Econo./Techno.	Organizational	Health	Environmental	Legal	Ethical	n
Modern Languages	19%	2%	78%	1%	1%	0%	0%	1%	0%	0%	194
History	29%	33%	12%	16%	3%	0%	1%	3%	1%	1%	150
Psychology	45%	36%	0%	0%	0%	1%	16%	0%	1%	1%	147
Education	38%	47%	3%	2%	0%	5%	3%	1%	0%	1%	133
Management	13%	5%	3%	0%	36%	41%	0%	3%	0%	0%	110
Political Science	8%	4%	1%	78%	2%	0%	1%	2%	3%	1%	100
Sociology	12%	56%	4%	6%	1%	3%	11%	4%	2%	1%	100
Economics	33%	12%	0%	1%	46%	1%	1%	6%	0%	0%	94
Fine Arts	7%	0%	89%	0%	0%	0%	1%	3%	0%	0%	74
Philosophy	50%	5%	7%	8%	0%	0%	3%	0%	5%	22%	60
Linguistics	80%	8%	6%	2%	0%	0%	4%	0%	0%	0%	51
Anthropology	40%	31%	13%	4%	2%	0%	4%	6%	0%	0%	48
Geography	13%	36%	0%	4%	7%	0%	9%	29%	2%	0%	45
Archaeology	87%	0%	10%	0%	3%	0%	0%	0%	0%	0%	30
Religious Studies	52%	15%	22%	0%	0%	4%	0%	0%	0%	7%	27
Mediaeval Studies	38%	4%	54%	0%	0%	0%	0%	0%	4%	0%	24
Social Work	4%	70%	0%	0%	0%	4%	17%	0%	4%	0%	23
Urban and Regional Studies	9%	36%	0%	9%	0%	0%	5%	41%	0%	0%	22
Law	15%	5%	0%	10%	0%	0%	0%	0%	70%	0%	20
Communications	16%	37%	26%	5%	0%	0%	5%	0%	0%	11%	19
Classics	17%	22%	56%	0%	0%	0%	0%	0%	0%	6%	18
Criminology	19%	56%	0%	6%	0%	0%	6%	0%	13%	0%	16
Library and Information Science	29%	29%	36%	0%	0%	7%	0%	0%	0%	0%	14
Industrial Relations	0%	31%	0%	8%	8%	38%	8%	0%	8%	0%	13
Demography	57%	43%	0%	0%	0%	0%	0%	0%	0%	0%	7
Archival Science	33%	0%	33%	0%	33%	0%	0%	0%	0%	0%	3
Folklore	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	2
Total	28%	22%	20%	8%	6%	4%	4%	3%	2%	1%	1544
Disciplines where this is the mode	8	7	7	1	2	2	0	1	1	0	



88% of SSH researchers claimed their research had important or very important impacts in at least one area

Q: Please rate the significance of impacts/effects arising from the utilization of the results and findings of your SSHRC-funded research projects.



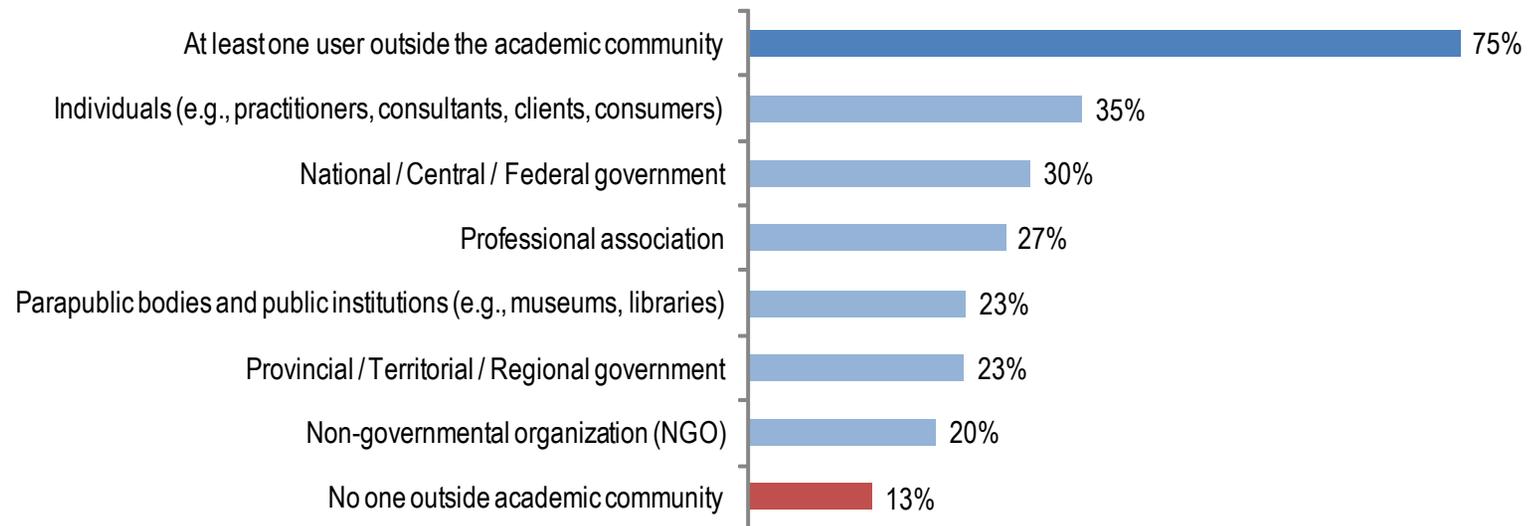
Breakdown of impacts rated important or very important, based on perceptions of respondents



Users of research results

- 95% of researchers indicate that their research results are being used in the academic sector, nationally and/or internationally

Q: Outside the academic community, who were or are the main users of the results obtained in the course of your SSHRC-funded research projects at the national and/or international levels?





Research use and time employed as a professor

Employment as professor	Research is used in academic sector				Research is used in non-academic sectors			
	Nationally	Internationally	Total	(n)	Nationally	Internationally	Total	(n)
Less than 5 years	72%	75%	94%	1276	62%	41%	74%	1194
6 to 10 years	73%	80%	96%	1607	66%	41%	77%	1506
11 to 20 years	78%	83%	98%	1500	67%	41%	78%	1403
More than 20 years	77%	84%	98%	1676	69%	43%	79%	1565
<i>p</i> <	0.001	0.001	0.001		0.001	n.s	0.003	
<i>Odds</i>	1.104	1.209	1.415		1.094		1.093	
Average (total n)	75%	81%	96%	6059	66%	41%	77%	5668

- In academia, research results are increasingly used at the national and international levels as professors gain in seniority.
- In non-academic sectors, this relationship holds only for use within Canada.



Research use and funding

Funding by SSHRC	Research is used in academic sector				Research is used in non-academic sectors			
	Nationally	Internationally	Total	(n)	Nationally	Internationally	Total	(n)
Never applied to SSHRC	66%	68%	89%	395	60%	37%	73%	370
Never been funded by SSHRC	69%	73%	93%	1209	62%	42%	73%	1141
Funded by SSHRC as a C.-A.	78%	70%	96%	762	76%	37%	82%	719
Funded by SSHRC as a PI	77%	86%	98%	3751	66%	43%	78%	3496
<i>p</i> <	0.001	0.001	0.001		0.008	n.s	0.002	
<i>Odds</i>	1.218	1.476	2.042		1.078		1.113	
Average (total n)	75%	80%	96%	6117	66%	41%	77%	5726

PI= Principal Investigator; C.-A. = Co-Applicant

- SSHRC-funded PIs see significantly greater use for their research output in the international academic community.
- The research results of co-applicants are used more than those of PIs or researchers who have not been funded by SSHRC at the national level (both the academic and non-academic sectors).
- Researchers who have never applied to SSHRC have the lowest rate of use for their research.



Research use and number of grants obtained

Number of grants received	Research is used in academic sector				Research is used in non-academic sectors			
	Nationally	Internationally	Total	(<i>n</i>)	Nationally	Internationally	Total	(<i>n</i>)
0	66%	69%	88%	395	51%	34%	63%	368
At least 1 to 4	74%	79%	96%	4023	62%	38%	74%	3719
At least 4 to 10	80%	86%	99%	1227	77%	46%	86%	1178
11 or More	77%	85%	98%	467	83%	61%	92%	458
<i>p</i> <	0.001	0.001	0.001		0.001	0.001	0.001	
<i>Odds</i>	1.25	1.438	2.58		1.777	1.442	1.958	
Average (total <i>n</i>)	75%	80%	96%	6112	66%	41%	77%	5723

- As the number of grants received increased, research results are increasingly used, both nationally and internationally.
- However, there may be a threshold of decreasing returns in the academic sector: researchers who received 11+ grants tend to see less use of their research in academia than researchers with 4 to 10 grants.
- Importantly, this threshold does not occur in the non-academic sector.



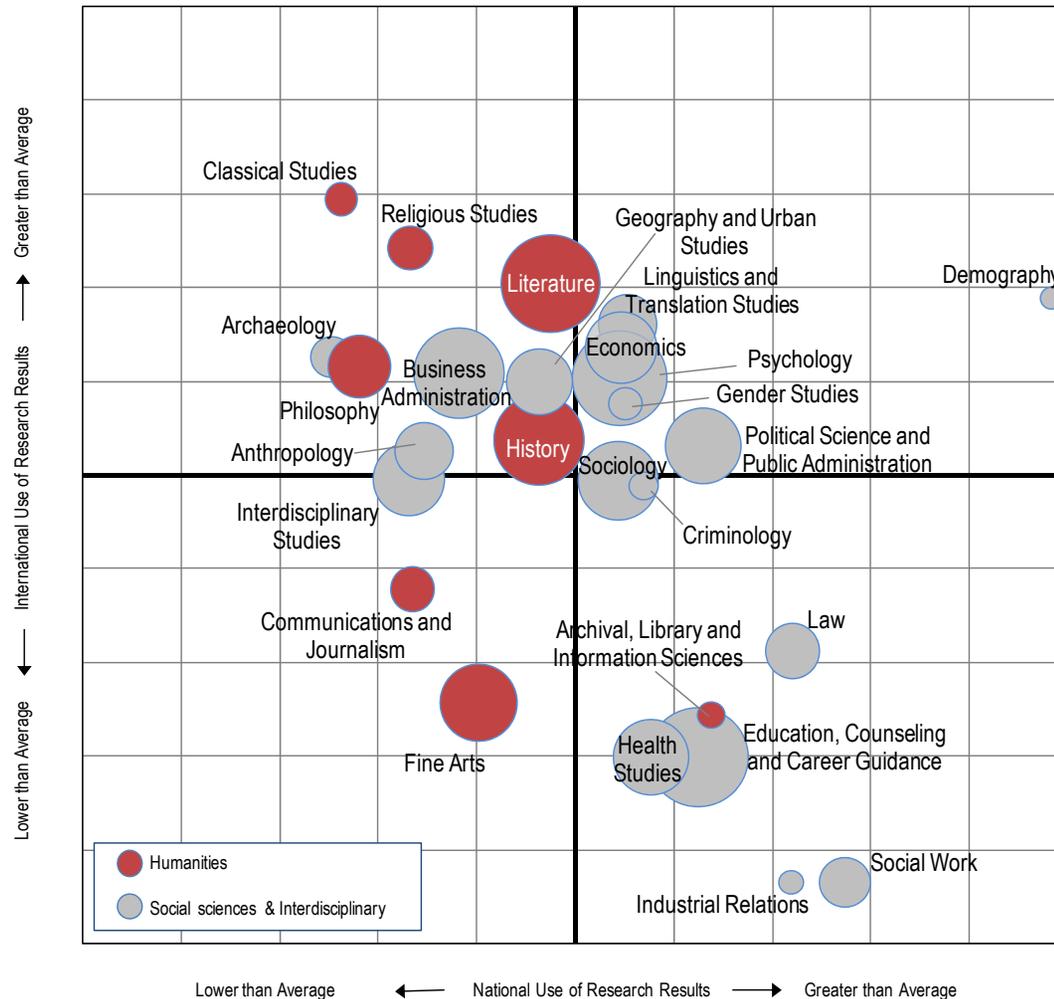
Research use and institution size

Size of institution	Research is used in academic sector				Research is used in non-academic sectors			
	Nationally	Internationally	Total	(<i>n</i>)	Nationally	Internationally	Total	(<i>n</i>)
Less than 5,000 students	72%	72%	93%	568	69%	36%	76%	538
5,000 to 15,000 students	74%	75%	94%	1125	67%	37%	77%	1063
More than 15,000 students	76%	83%	97%	4381	66%	43%	77%	4087
<i>p</i> <	0.03	0.001	0.001		n.s.	0.001	n.s.	
<i>Odds</i>	1.107	1.436	1.681			1.205		
Average (total <i>n</i>)	75%	81%	96%	6074	66%	41%	77%	5688

- The bigger the institution, the more the research results are used in academia, especially for use at the international level.
- However, in non-academic sectors, researchers smaller institution are more likely to see their results used nationally, suggesting they may be more closely linked with the local community.
- Research use was also greater for institutions that offer doctoral degrees (across both sectors, nationally and internationally; data not shown).



Research use within academia, by SSH discipline

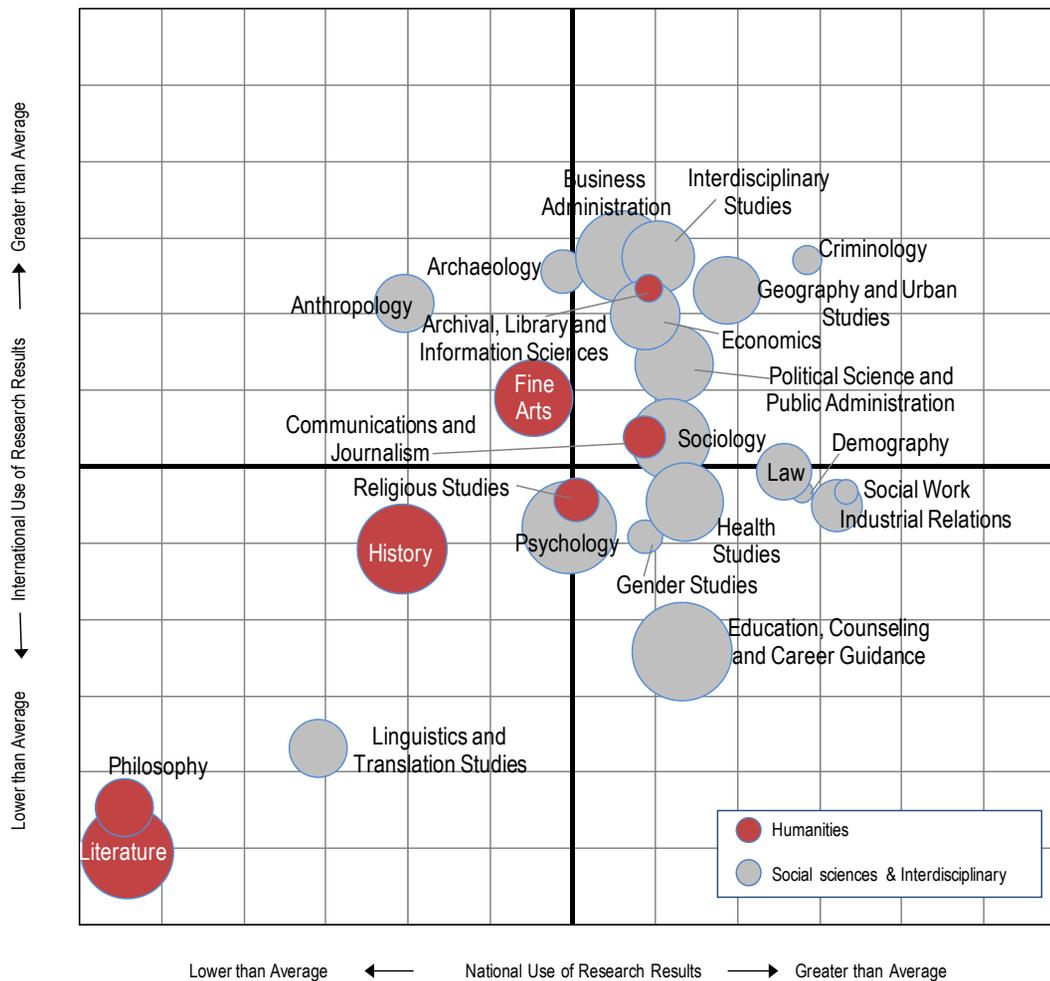


- Arts and humanities researchers do not consider that their research is used nationally as much as do social sciences researchers.
- Research results in classical studies, religious studies and literature appear to be used mostly outside Canada.
- Researchers in the fine arts and communications & journalism tend to see the least academic use for their research, whereas demography researchers see their research being used both in and outside Canada.

This figure compares the perception of research use as reported by SSH researchers, grouped by discipline and shown as relative to the average. It should not be interpreted to mean that individual researchers consider their research to be more or less useful than other disciplines.



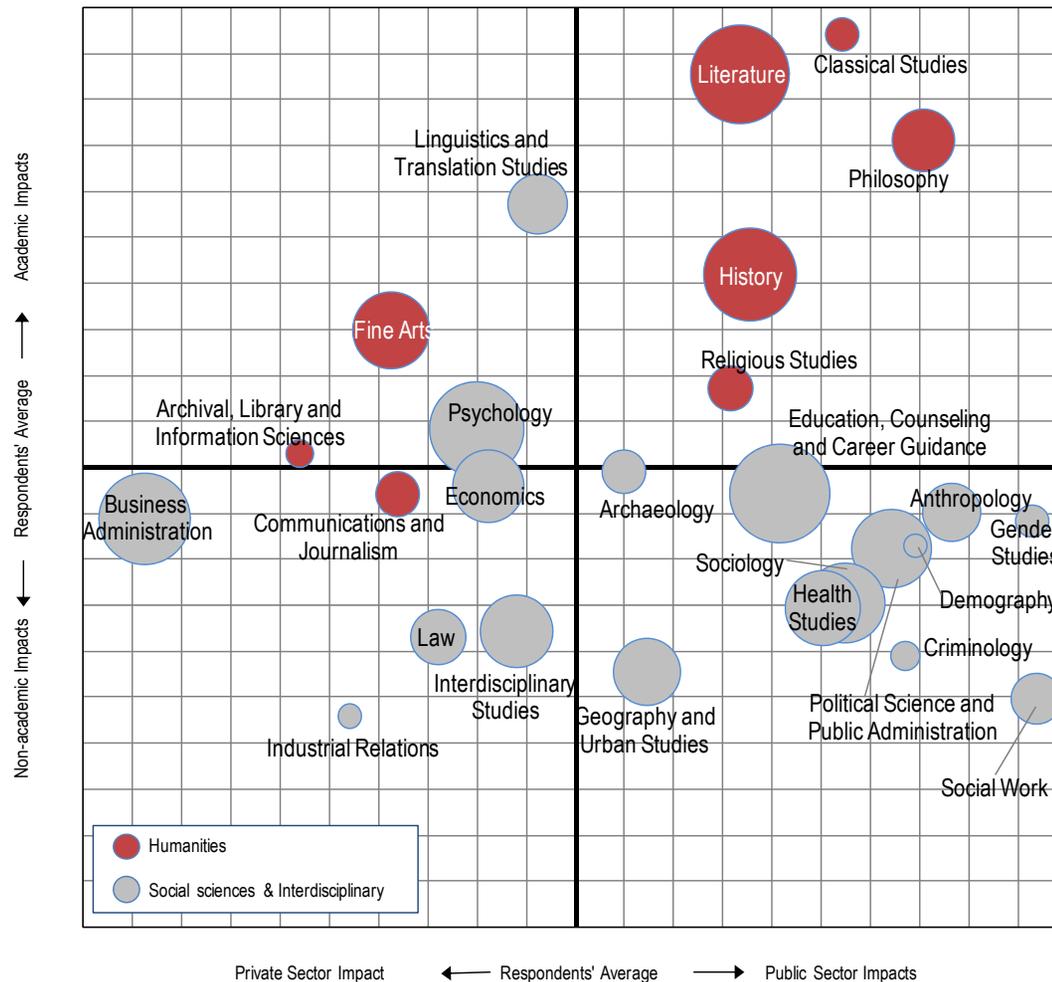
Research use outside of academia, by SSH discipline



- Researchers in philosophy and literature are least likely to think their research is used outside academia.
- The greatest proportion of researchers who claim their research is used outside academic are in social work and industrial relations.
- Several disciplines see a high level of non-academic use at the international level: business administration, interdisciplinary studies, criminology, archaeology, etc.
- Overall, these results are quite intuitive – it is not surprising that researchers in education, health studies and social work see their results as being use within rather than outside Canada.



In which sectors are impacts comparatively important, by SSH discipline?



- Researchers in business administration most often claim to an impact in the private sector, whereas researchers in social work and gender studies see their impact as occurring mainly in the public sector.
- The humanities generally perceive their research impact to occur primarily in the academic sector and in the public sphere.
- Social work and criminology have, relatively speaking, greater perceived impacts on the public, non-academic spheres than other disciplines.

This figure examines the perception of research impacts by respondents, grouped by disciplines. Their position is determined relative to the average for two variables: private vs. public sector use (x-axis) and academic vs. non-academic use (y-axis).



Research use and interdisciplinarity

Disciplinary Emphasis	Research is used in academic sector				Research is used in non-academic sectors			
	Nationally	Internationally	Total	(<i>n</i>)	Nationally	Internationally	Total	(<i>n</i>)
Exclusively disciplinary	78%	82%	97%	303	48%	25%	55%	262
Quite disciplinary	76%	81%	97%	1682	62%	35%	73%	1554
Quite interdisciplinary	76%	80%	97%	2217	68%	42%	79%	2078
Extremely Interdisciplinary	72%	81%	96%	1610	71%	50%	83%	1544
<i>p</i> <	0.007	n.s.	n.s.		0.001	0.001	0.001	
<i>Odds</i>	0.75				2.155	2.614	3.055	
Average (total <i>n</i>)	75%	81%	96%	5812	66%	41%	77%	5438

- The use of research results outside academia increases with interdisciplinarity (nationally and internationally).
- This strongly suggests that performing interdisciplinary research increases the diffusion of research results outside of academia and presents a strong case in favour of funding interdisciplinary teams to tackle social, governmental and industrial problems.



What leads to extra-academic impacts? (I)

- **Collaborating with partners in non-academic sectors** leads to an increased perception of extra-academic impacts
 - ▶ Having at least one partner doubles the odds of reporting extra-academic impacts and users are more likely to be known
 - ▶ More impacts seen for all types of partners (except private firms)
 - ▶ Partner-linked impacts most often related to environmental, social, health, organizational, and political sectors



What leads to extra-academic impacts? (II)

- **Number/length of SSHRC grants** is not a strong predictor.
 - ▶ Nonetheless, SSH researchers who receive grants from multiple sources or substantial grants (\$20,000/yr to \$45,000/yr) report more extra-academic impacts.
 - ▶ Multivariate analysis suggests that **additional financial resources** can contribute substantially to these impacts in certain disciplines that report a higher relative non-academic impact:
 - Education
 - Sociology
 - Industrial relations
 - Business administration



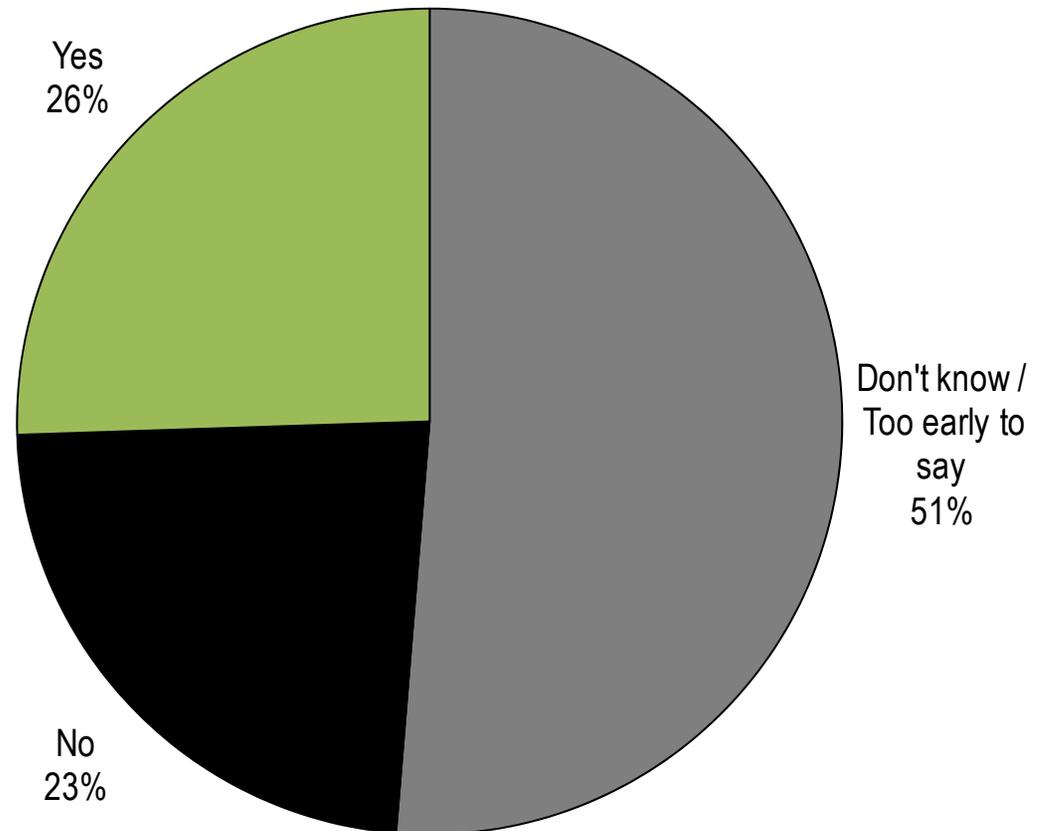
What leads to extra-academic impacts? (III)

- **The mechanism for dissemination** of research results emerges as one of the most important predictors of extra-academic impact.
 - ▶ Researchers who used at least one type of user-driven dissemination mechanism (e.g., research reports, memorandum, professional contacts, outreach activities, etc.) are nine times more likely to identify extra-academic impact associated to their research than those who don't.
 - ▶ Dissemination of research results through workshops or training sessions was also associated with extra-academic impacts.
 - ▶ Peer-reviewed publications were not associated with extra-academic impacts.



And yet only a quarter of funded SSHRC researchers see effects/impacts of their research *outside academia!*

Q: Outside the academic community, can observed changes, effects, or impacts be linked to results obtained in the course of your SSHRC-funded research projects at the national and/or international levels?



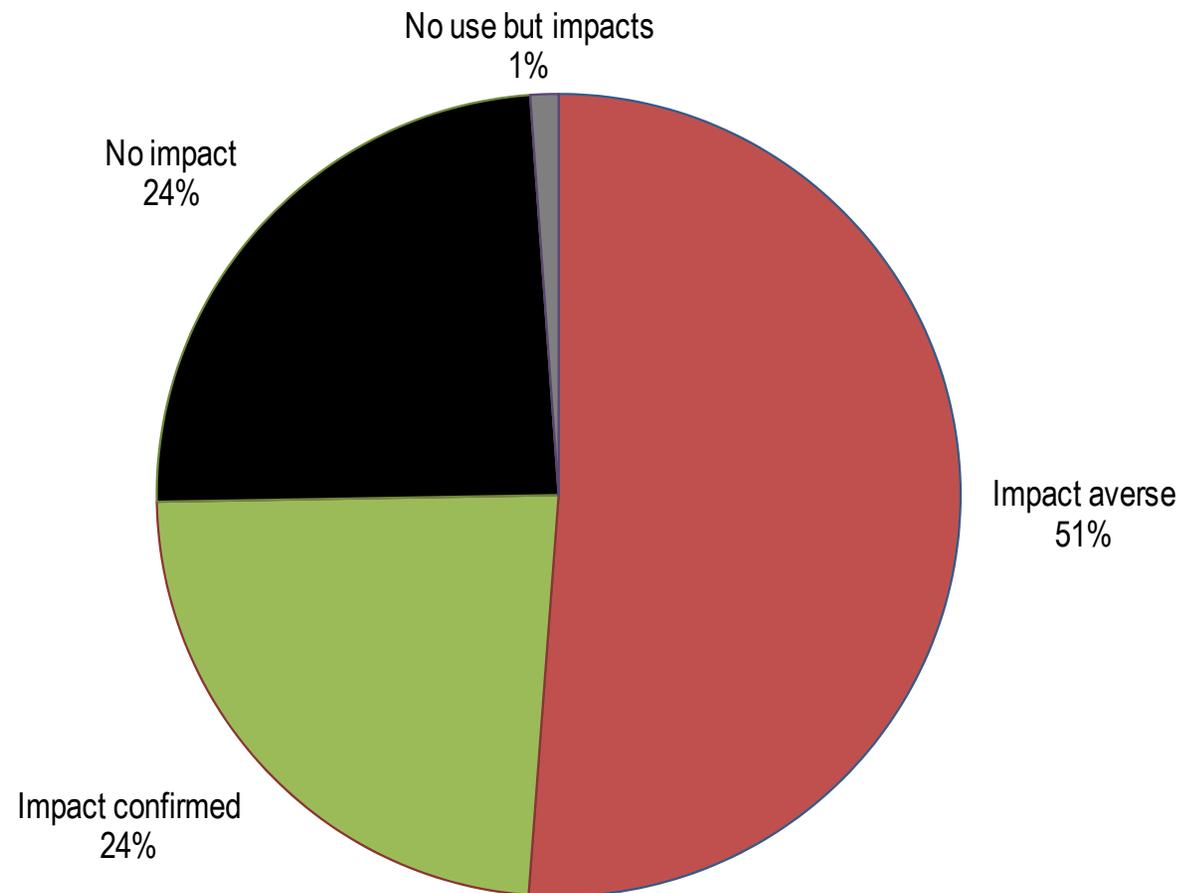


These findings are quite surprising!

- Indeed, they should be in agreement with previous questions on research users outside the academic community (in which 75% report at least one non-academic user)
- Responses on research users and research impact (including open-ended questions) were compared to determine why certain respondents appeared to be displaying “impact aversion”



Over half of respondents say their research results are used outside academia but report no impacts/effects.





Open-ended question on impacts suggest effects occur even when respondents are “impact averse”.

Health service agencies, professional associations and unions used the information in assessing work environments, and either making or advocating for change.

Utilisation de mes travaux sur l'Amérique latine par les agents du Ministère des affaires étrangères dans la préparation de la nouvelle stratégie du Canada face à la région.

The research is used to assist aboriginal rights movements.

Respondents who claim “No” impacts occurred also say:

A chapter of a book I published became the basis of major criminal law legislation in the UK.

The results inform therapeutic interventions in a variety of health and educational organizations.

Used as a basis for advocacy by early learning and child care NGOs.

I have brought music uncovered through that research to a wide public by editing and publishing it.

My research in development economics is sometimes used by researchers at the World Bank.



Impact aversion and the SSH

- There appears to be some resistance among certain members of the SSH community to identify or seek to obtain non-academic impacts for their research, even when they openly share it with non-academic users and identify extra-academic “uses” for their work
- The survey results suggest a culture in which academic and extra-academic uses and impacts appear to be viewed as “either/or” rather than complementary by some researchers



Conclusion

- Bibliometric data and the web survey data collected in two surveys contain a wealth of information, providing insight into the outputs and impacts of SSH research
 - ▶ The bibliometric data confirm that humanities researchers do not behave in the same way as those in the social sciences
- By conducting SSH research with support from public funds, academics produce knowledge that is seen to be used not only by their peers and by their students, but also by the general public, NGOs and community organisations, by governmental, as well as by private sector organizations
 - ▶ As mentioned by researchers at last year's SSHRC seminar on the impact of SSH research, the term impact may not be the best concept to approach this subject with SSH researchers: there are signs of aversion to this term. Fine-tuning is required.



Thank you for your attention!

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