Integrating Scientific Knowledge with Indigenous and Experiential Knowledge in Collaborative Environmental Governance

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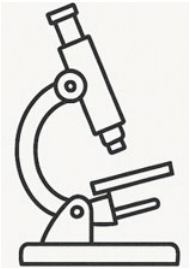
Based on: Koontz, Tomas M., Craig W. Thomas, and Katherine Cheng. 2025. "Integrating Science with Indigenous and Experiential Knowledge in Collaborative Governance." *Environmental Policy and Governance* 35:808-821. https://doi.org/10.1002/eet.70009

Funding from National Science Foundation grant #212247

Introduction

- Environmental restoration and recovery work is often science-driven

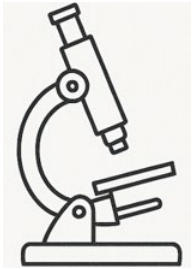




Introduction

- Environmental restoration and recovery work is often science-driven





- It also frequently involves collaboration across a wide range of partners



Introduction

Collaborative partnership = A **place-based** organization whose members represent **diverse interests** across jurisdictions and engage in systematic **deliberation** to develop projects, management plans, and/or recommendations
(Ansell & Gash 2008; Emerson et al. 2012; Margerum 2011)

Alliance for a HEALTHY South Sound

SKOKOMISH WATERSHED ACTION TEAM



WRIA 13 Salmon Habitat Recovery Lead Entity

Introduction

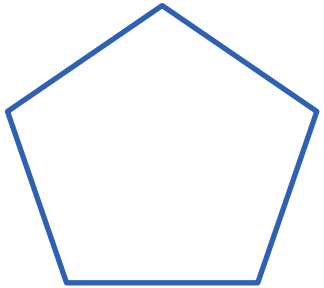
- Through deliberation, diverse members of collaborative partnerships bring important expertise
  - Scientific knowledge
  - Local experiential knowledge
  - Indigenous knowledge

Introduction

- Through deliberation, diverse members of collaborative partnerships bring important expertise
  - Scientific knowledge
  - Local experiential knowledge
  - Indigenous knowledge
- How can scientific knowledge be integrated with experiential & Indigenous knowledge for ecosystem restoration?

Knowledge types

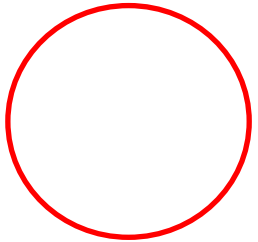
<u>Scientific knowledge (natural science + social science):</u>



- Describes or explains something about the world and how it works
- Components: variables, data, theory building & testing, replicability, peer review

Knowledge types

Indigenous knowledge:



- Knowledge built through generations of close contact with nature and preserved through cultural expression (Berkes and Berkes 2009, Yua et al. 2022)
- Context-bound and NOT generalizable via theory (McGregor 2008)
- Holistic understanding of human-nature interconnectedness

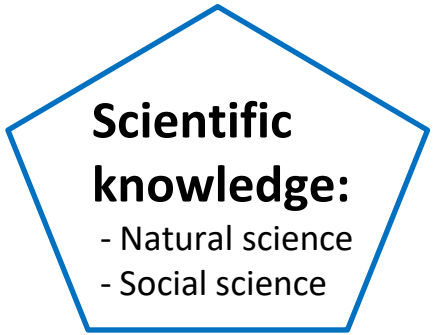
Knowledge types

Experiential knowledge:



- Knowledge held by community members in a particular place about local conditions and interactions, focused on practical information
  (Taylor and Loe 2012; Innes and Booher 2010)
- Gained through lived experience

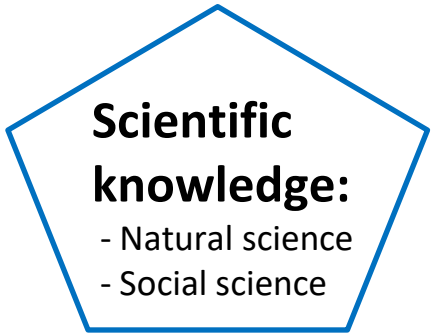
Pathways for knowledge use in collaboration





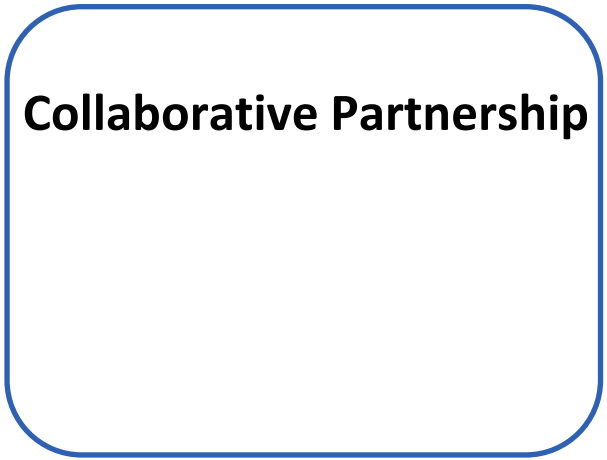


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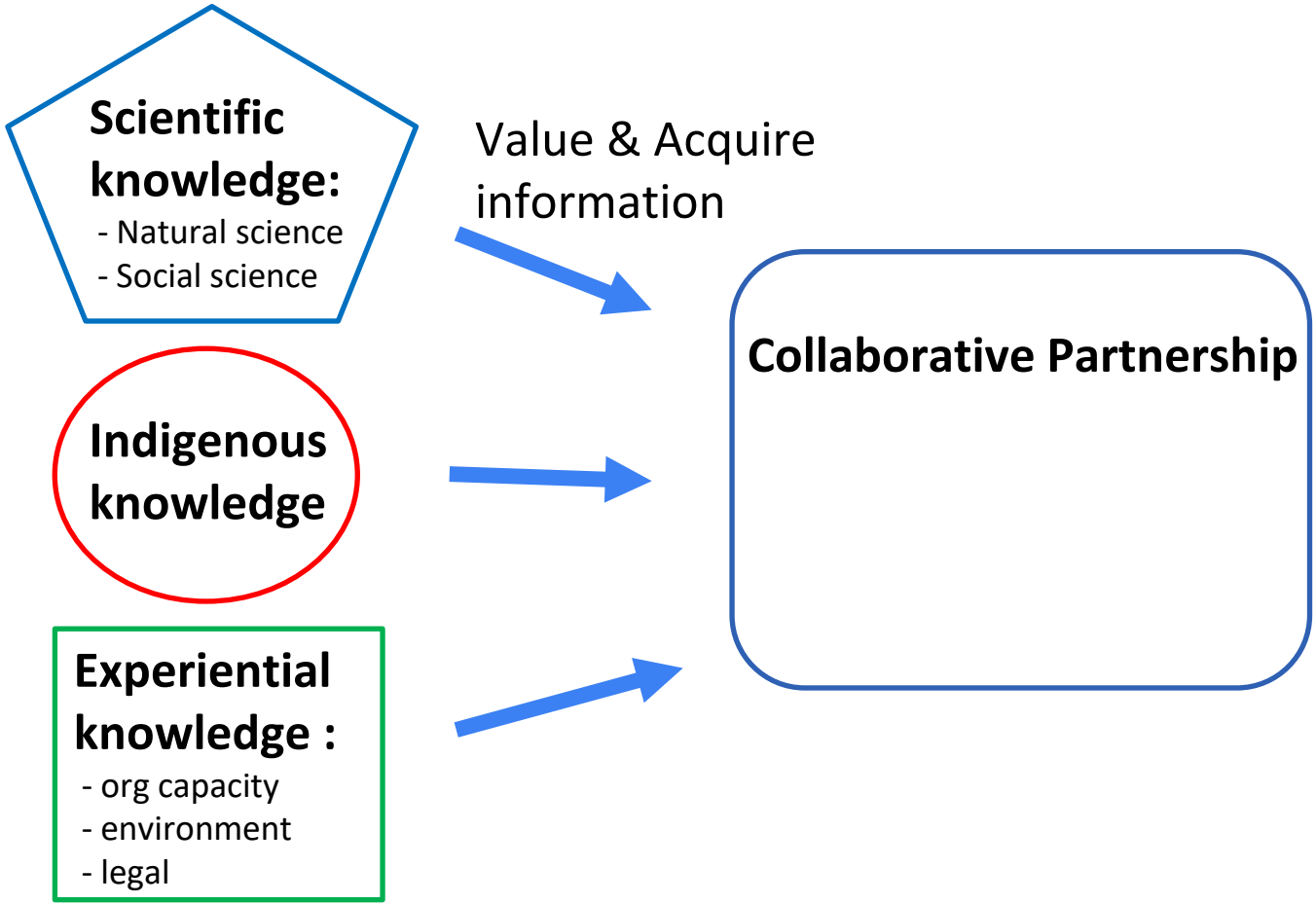




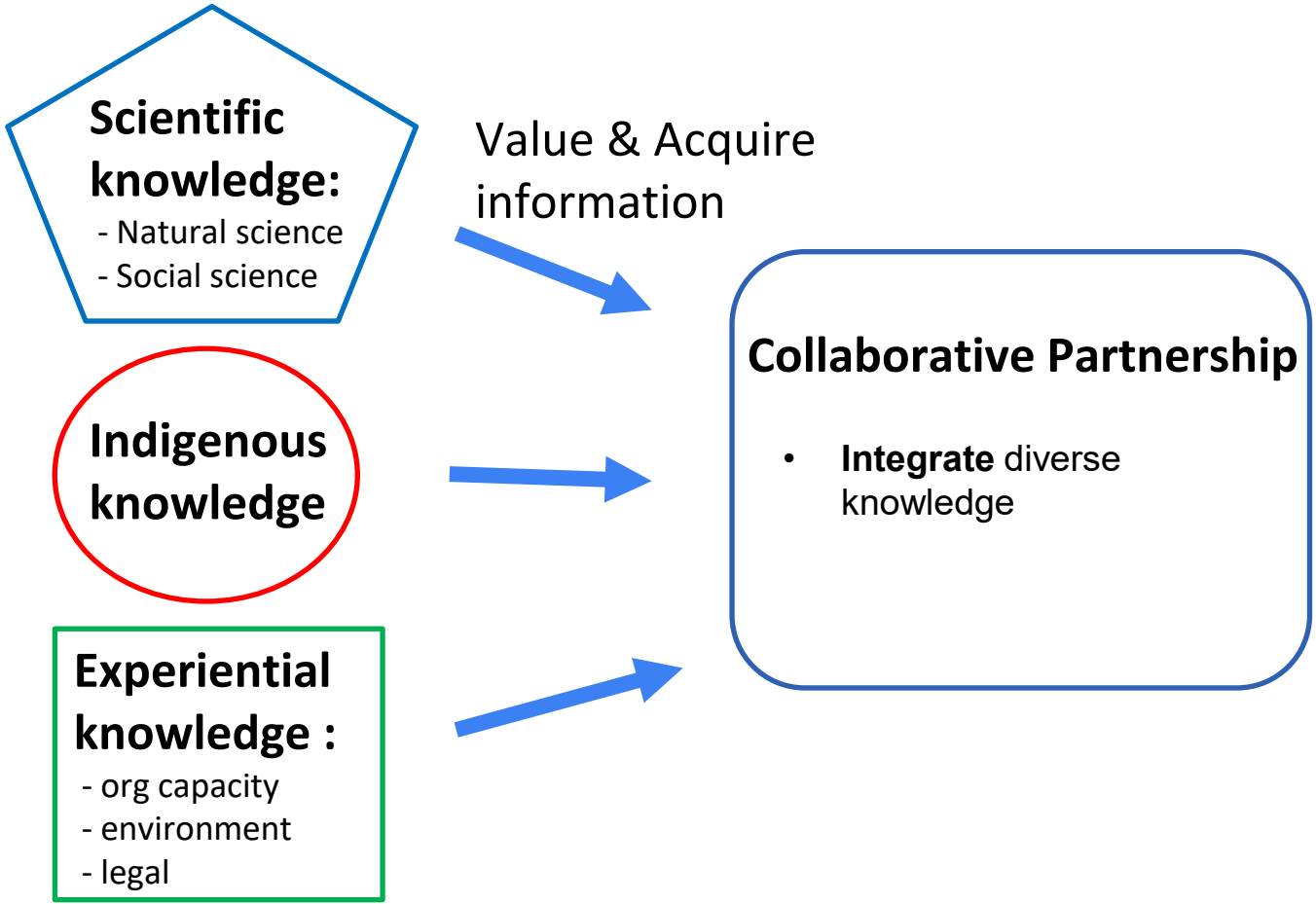




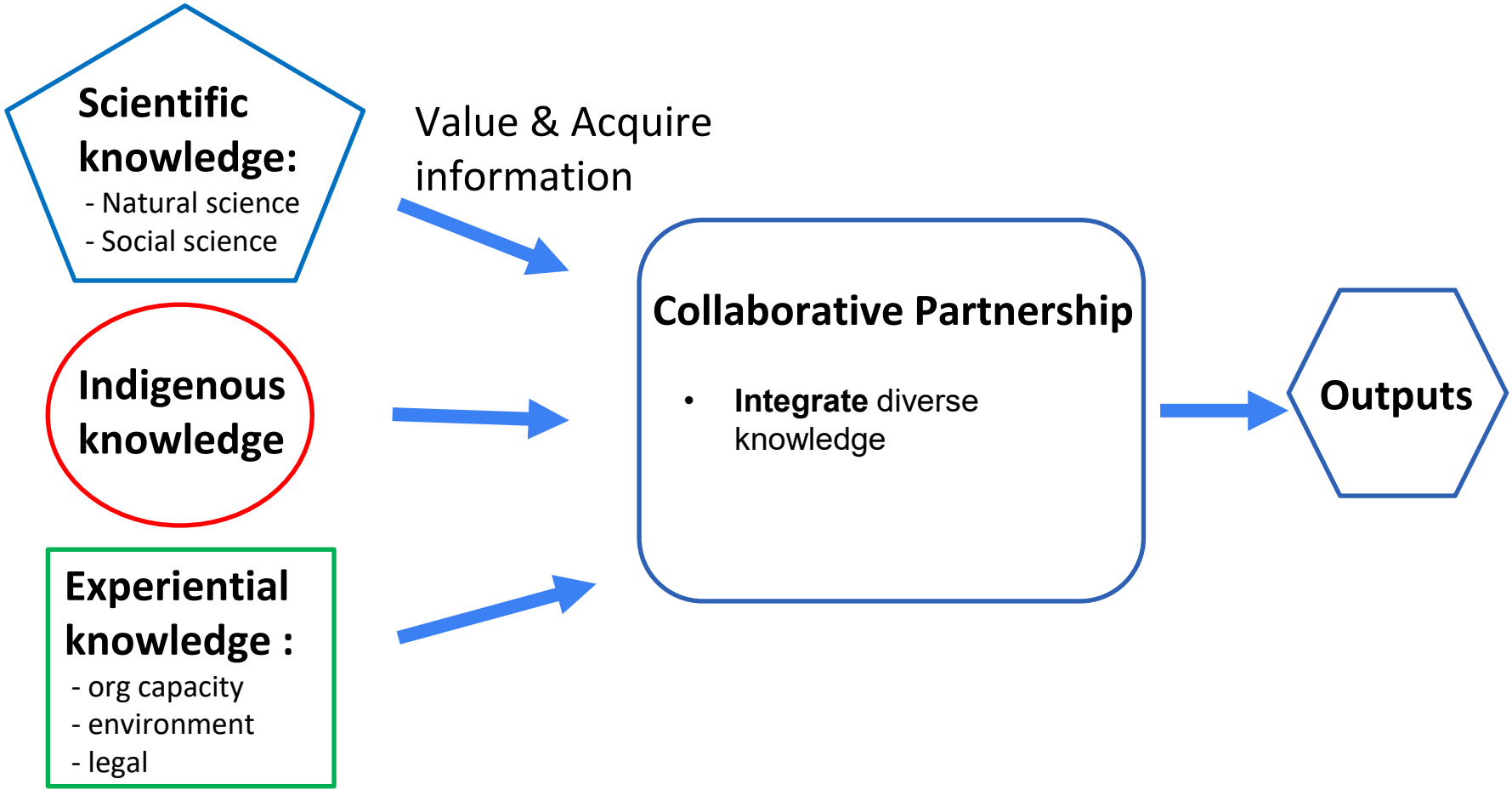
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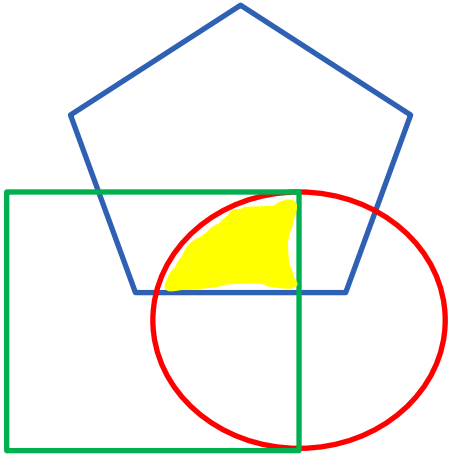
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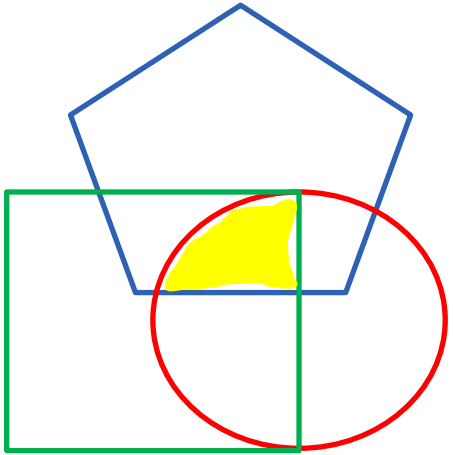
Integrating science with other knowledge

Knowledge coproduction (Yua et al. 2022, Thornton & Scheer 2012)

- Respect and value all knowledge types
- Knowledge holders from all types work together in all stages of research, starting with problem identification in deliberative forums



Integrating science with other knowledge



Factors that promote knowledge coproduction:

a. Equal footing: do not favor one knowledge type over another

b. Diverse knowledge holders at the table

c. Trust and deliberation

Research questions

1. How much do partnership members value different types of information?

2. What obstacles do they face in acquiring information?

3. How much do partnerships exhibit factors that promote knowledge integration, including:
   a) Equal footing among knowledge types
   b) Diverse knowledge holders at the table
   c) Trust and deliberation

Methods

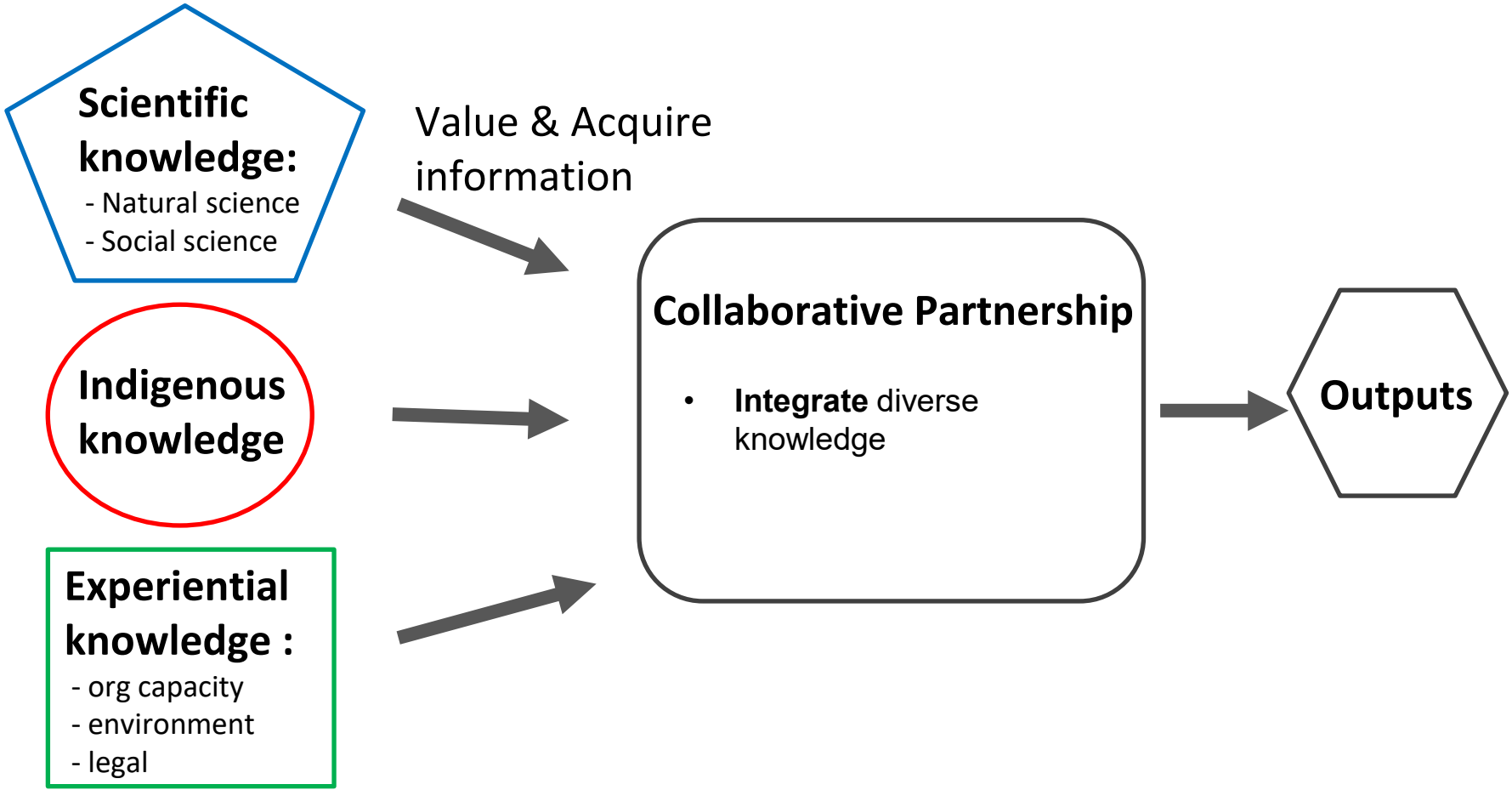
Identified collaborative partnerships engaged in planning processes for ecosystem recovery in the Puget Sound Basin

Survey: over 200 partnership members across the Puget Sound Basin

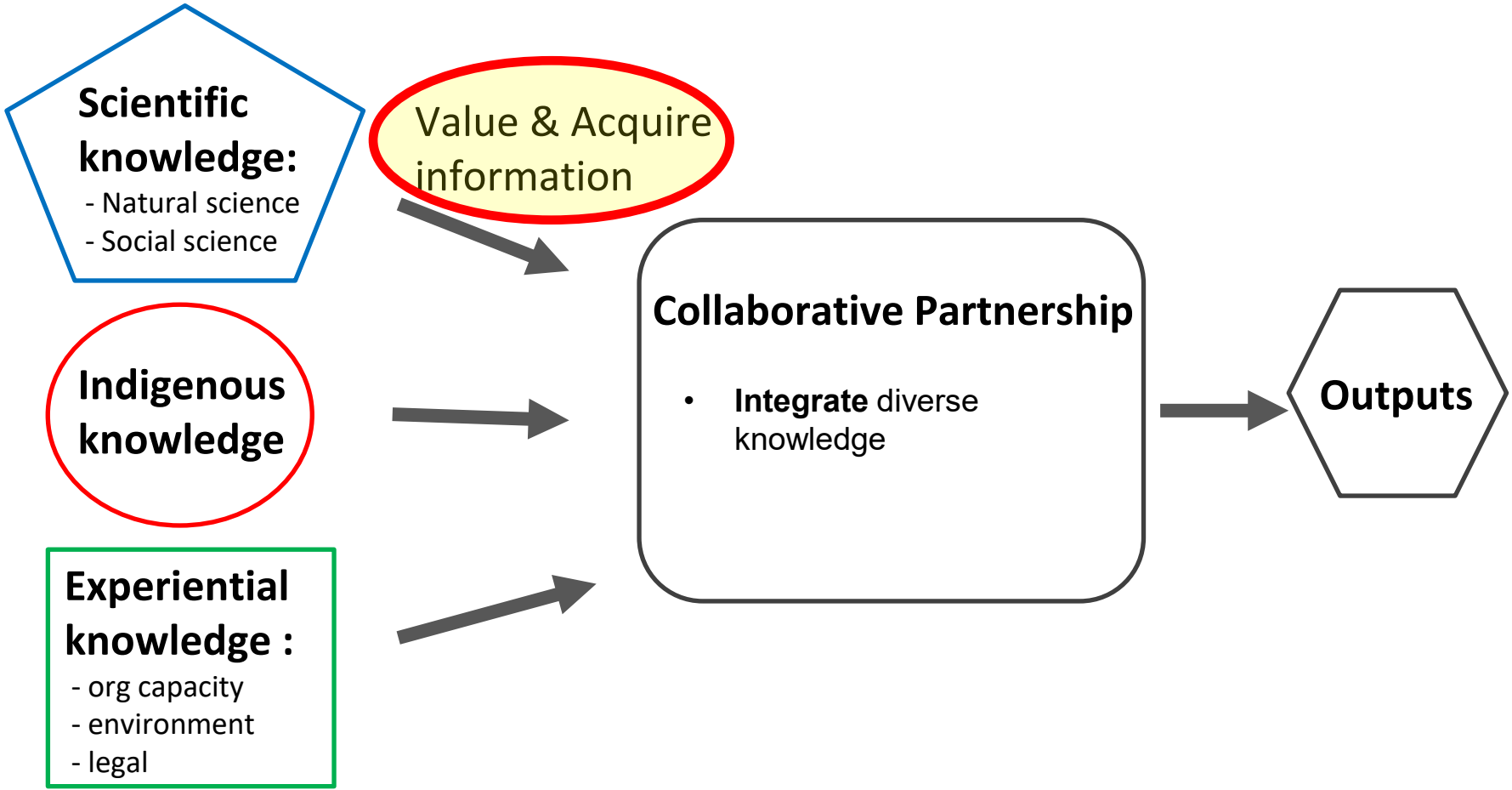
Interviews: illustrative quotes from partnership members in the South Sound

RESULTS: Valuing and Acquiring Information (Research Questions 1, 2)

Pathways for knowledge use in collaboration

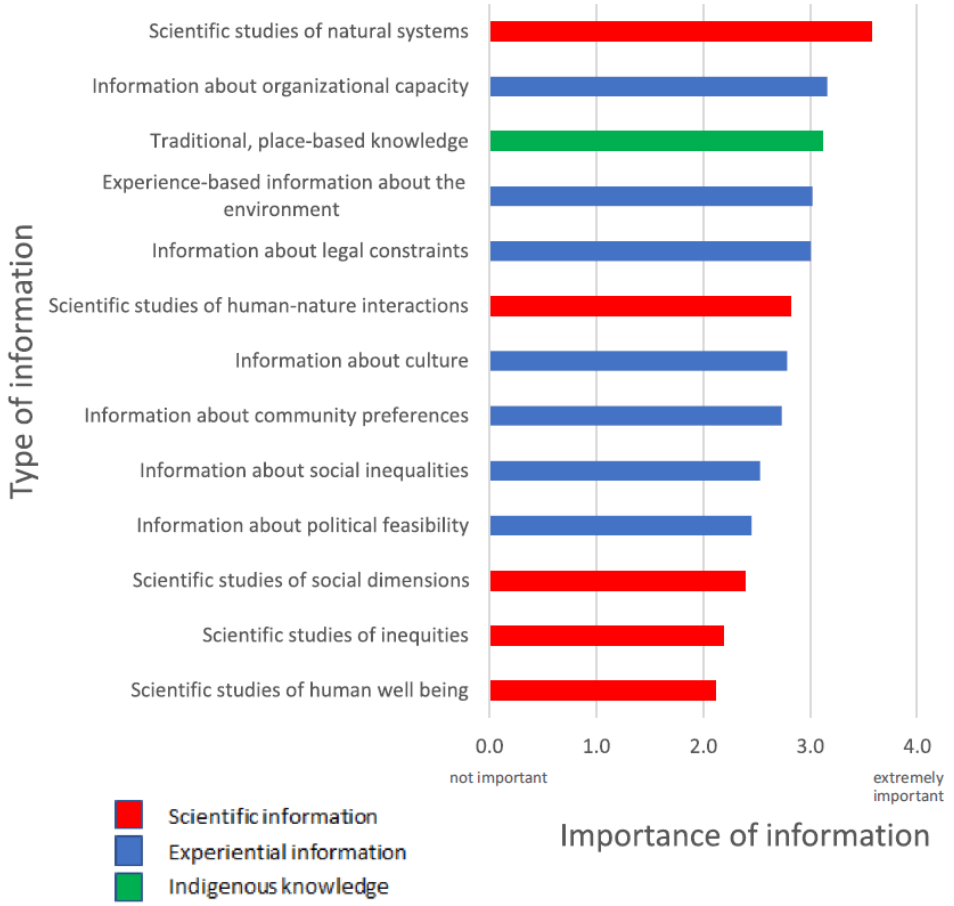


Pathways for knowledge use in collaboration



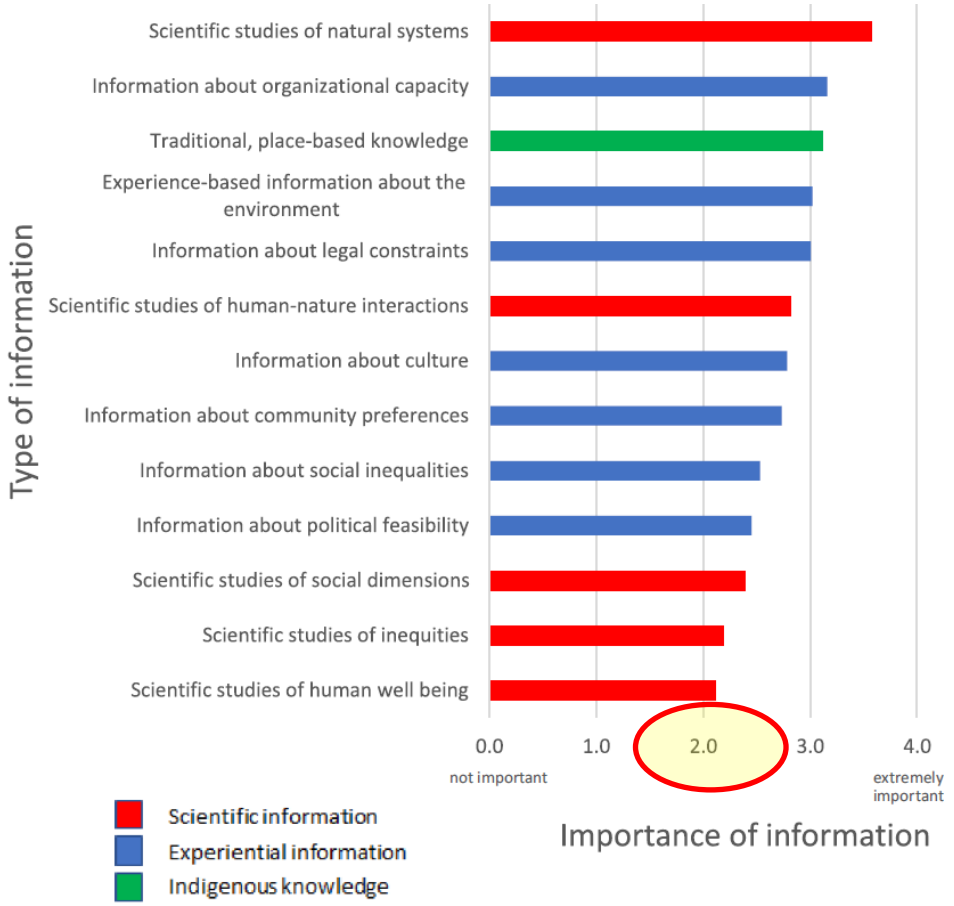
RESULTS: (1) Value of different information types

"Please indicate how important the following types of information are to this partnership in doing its work."
From 0 (not) to 4 (extremely)



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"Please indicate how important the following types of information are to this partnership in doing its work."
From 0 (not) to 4 (extremely)



All are above midpoint of scale (2.0). Top 3 are science (natural), experiential (organizational capacity), and Indigenous knowledge

RESULTS: (2) Obstacles to acquiring information

"Please indicate how frequently you confront each of the following obstacles to finding information in your role in this partnership"

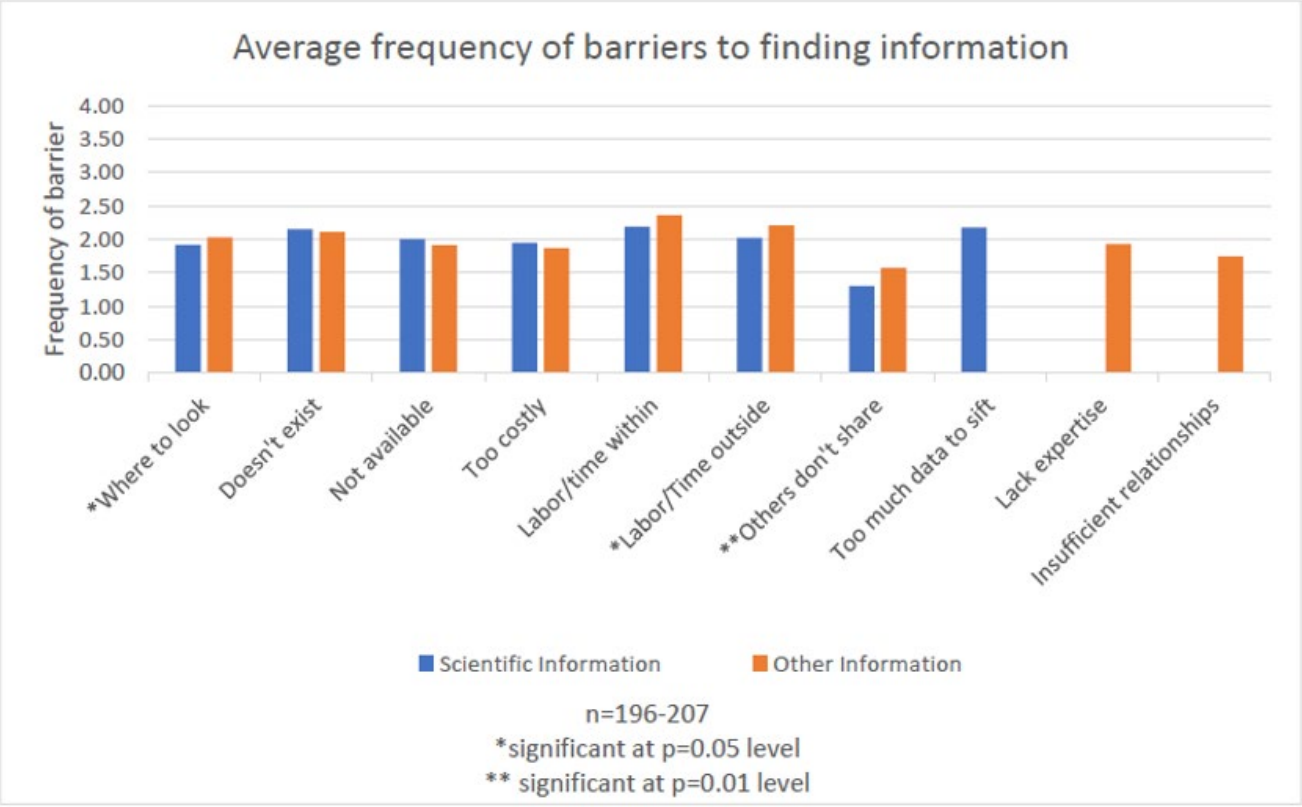
Extremely often = 4

Very often = 3

Sometimes = 2

Rarely = 1

Never = 0



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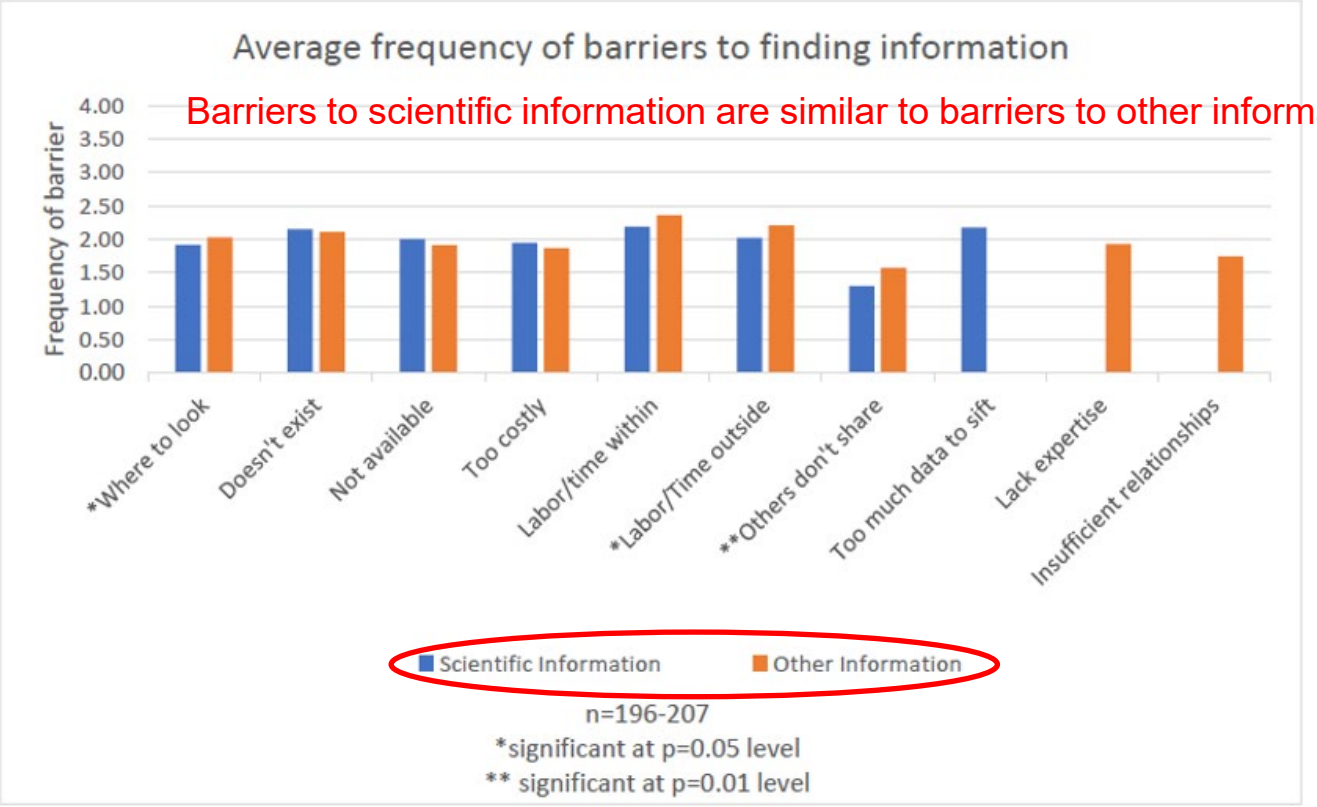
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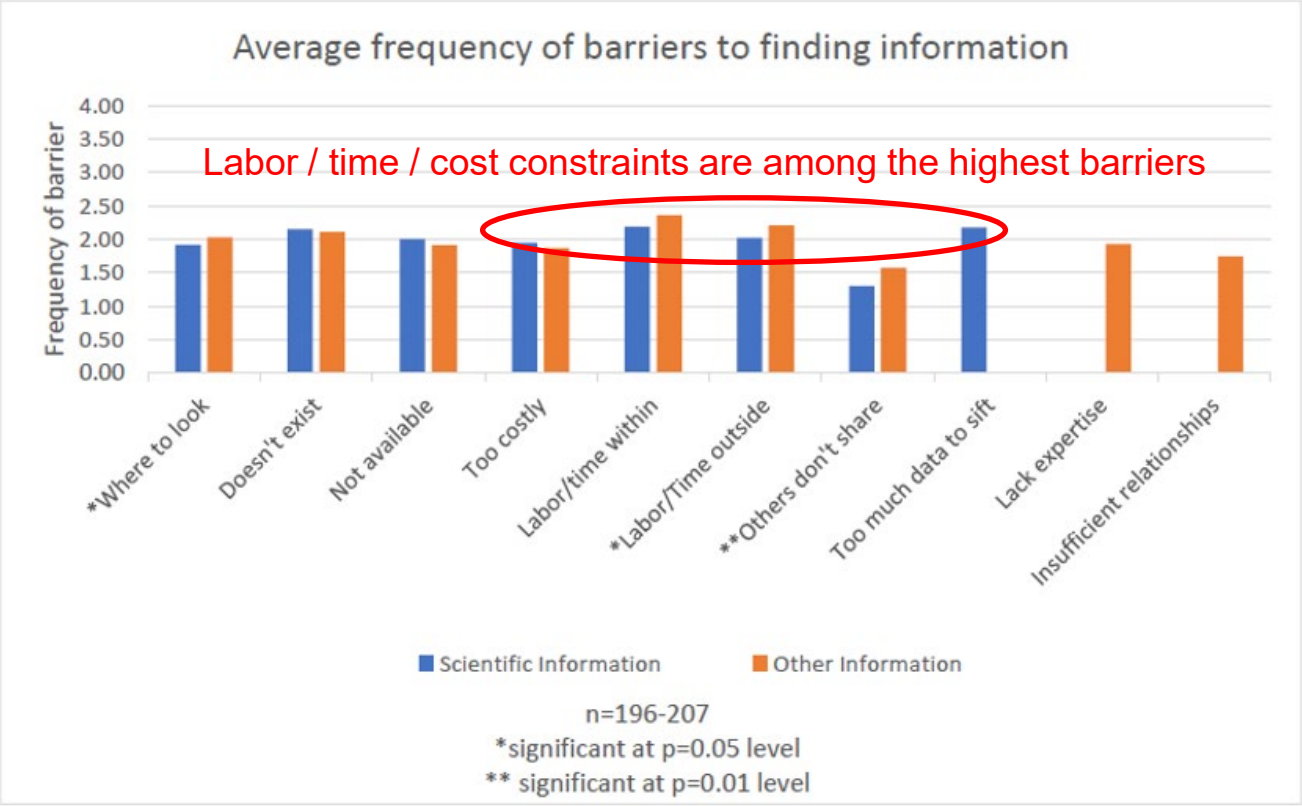
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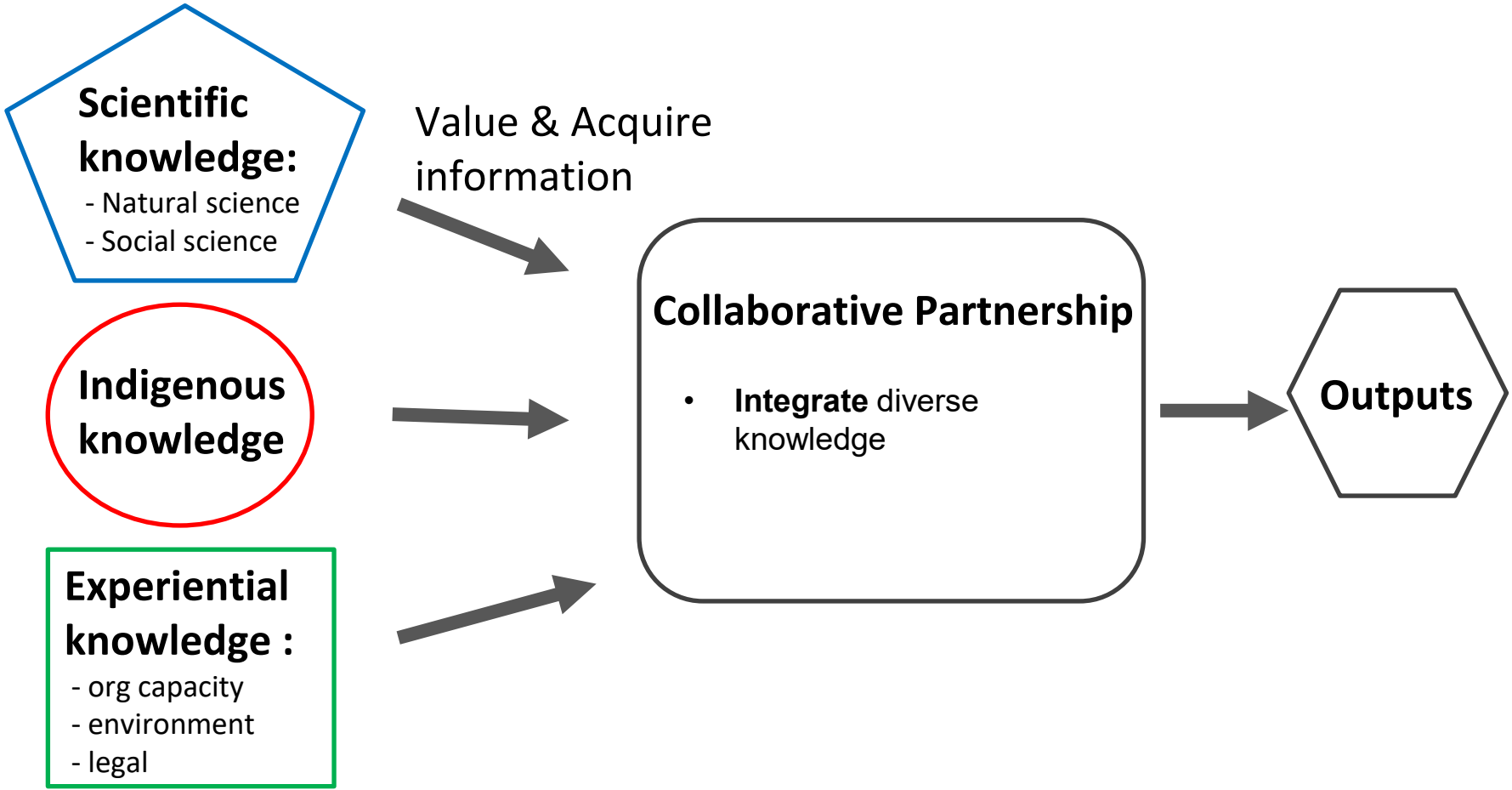
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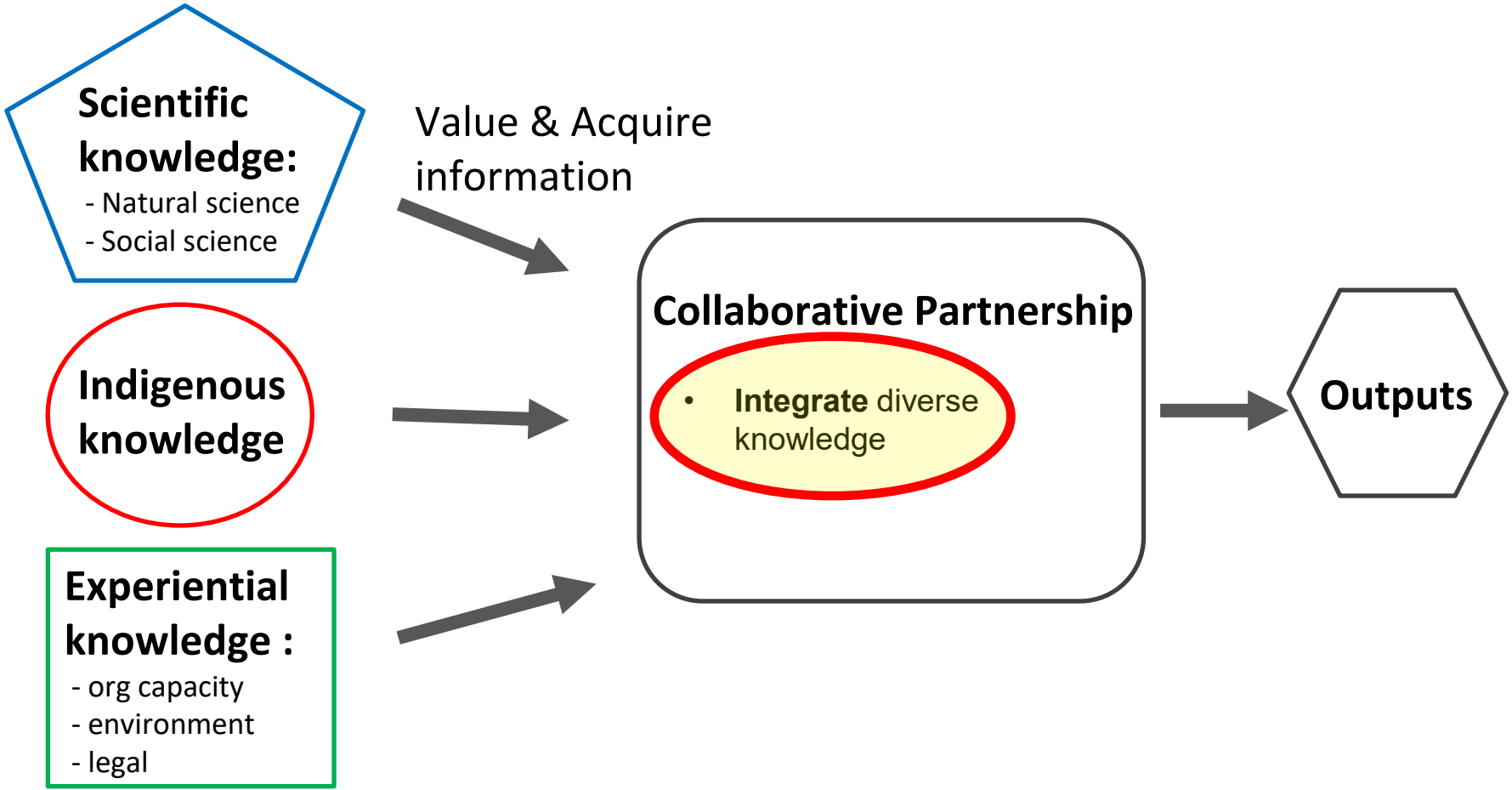


RESULTS: Presence of factors that promote knowledge integration (Research Question 3)

Pathways for knowledge use in collaboration



Pathways for knowledge use in collaboration



RESULTS: (3a) Equal footing, science vs other information

"How do you think this partnership should consider other types of information, alongside or separate from scientific information?"

Strongly agree = 4

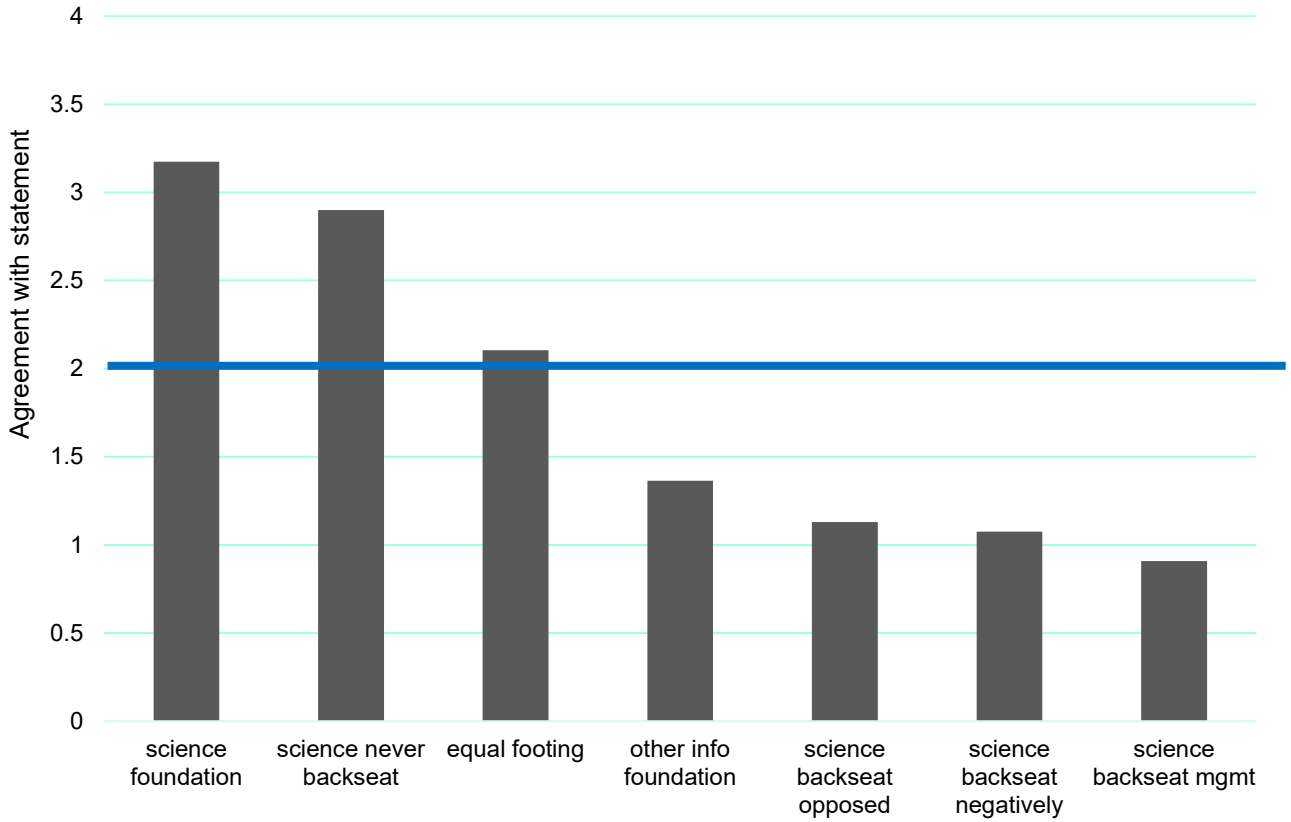
Agree = 3

Neither agree/disagree = 2

Disagree = 1

Strongly disagree = 0

N=198-200



RESULTS: (3a) Equal footing, science vs other information

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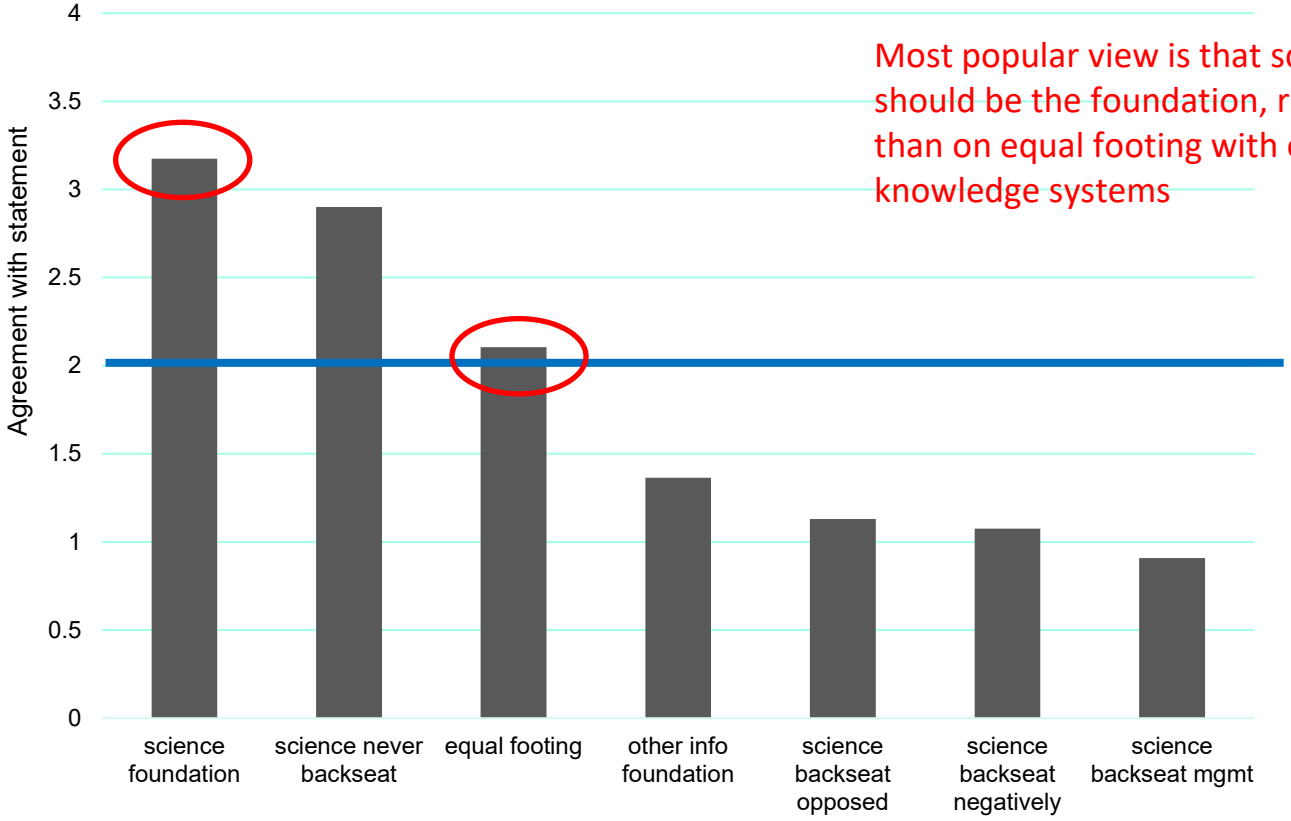
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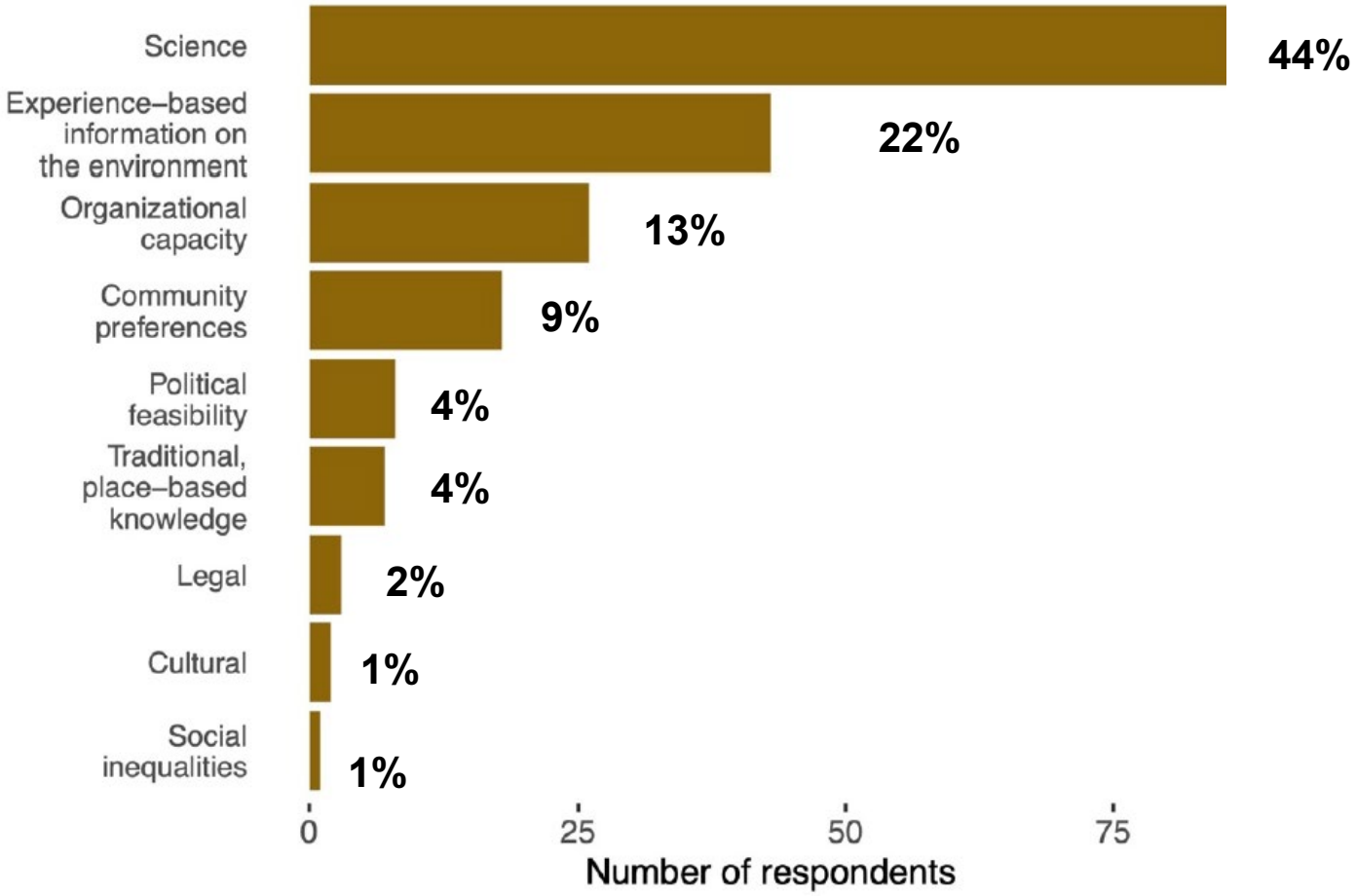
Strongly disagree = 0

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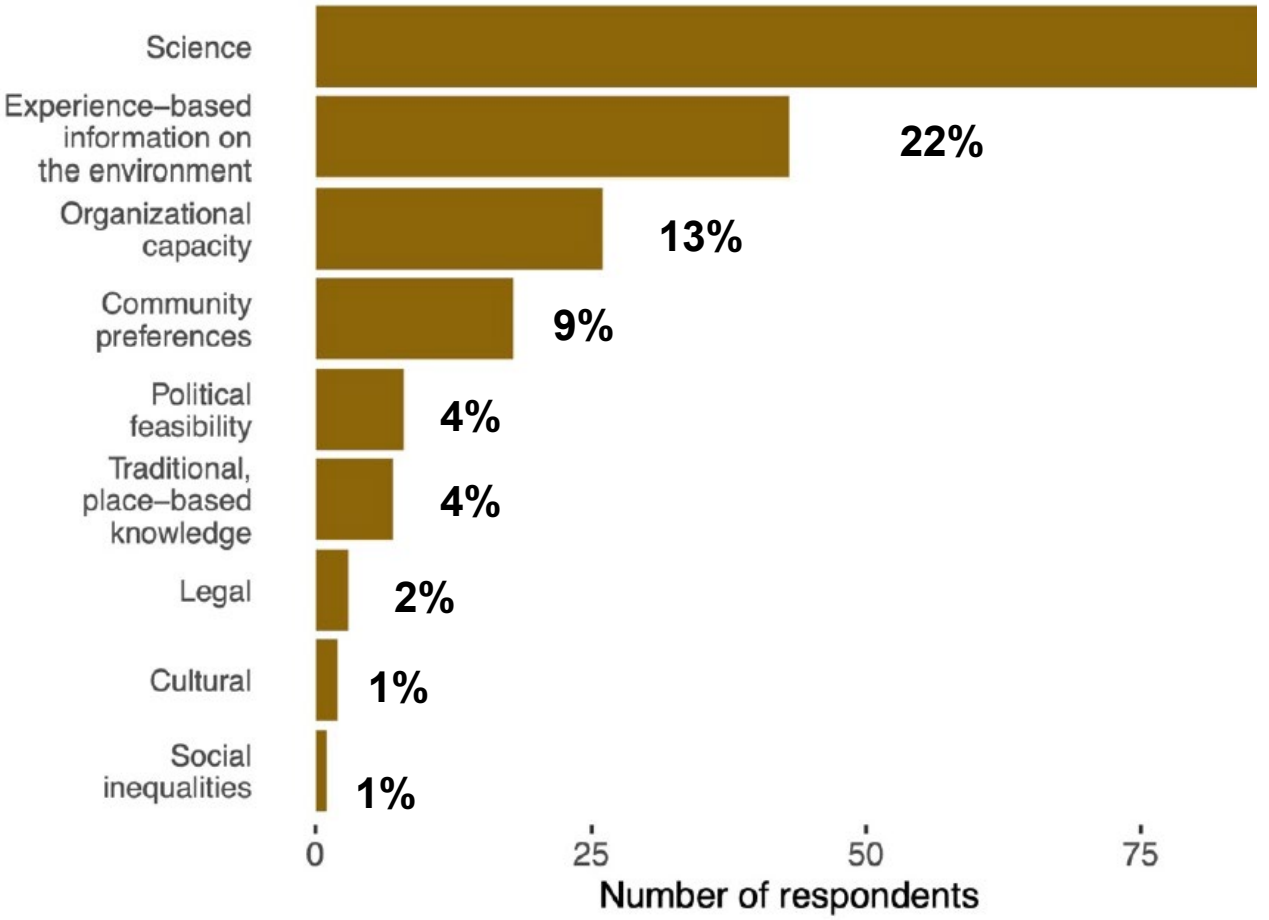


Most popular view is that science should be the foundation, rather than on equal footing with other knowledge systems

RESULTS: (3b) Diverse knowledge holders - Primary expertise

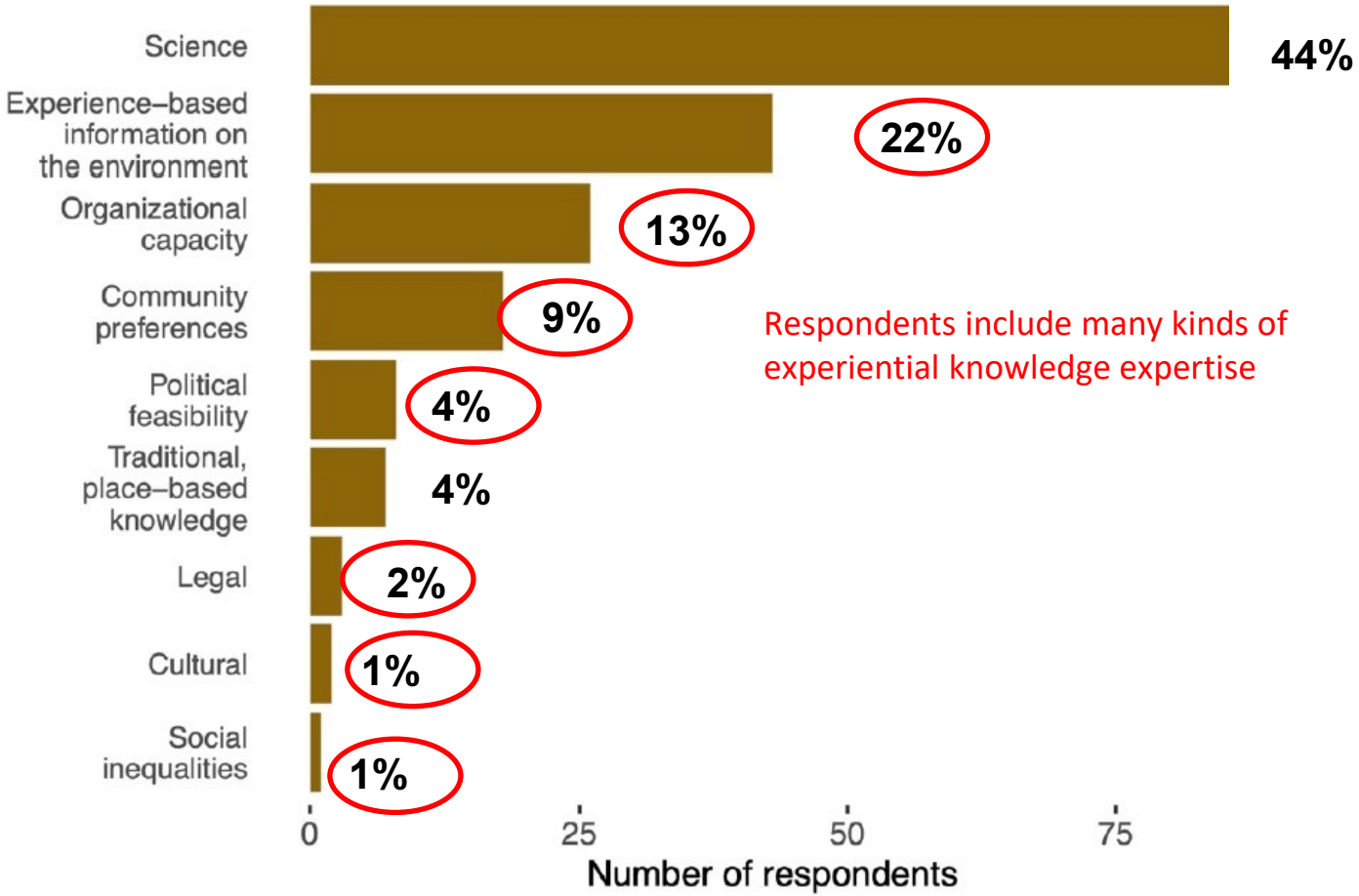


RESULTS: (3b) Diverse knowledge holders - Primary expertise



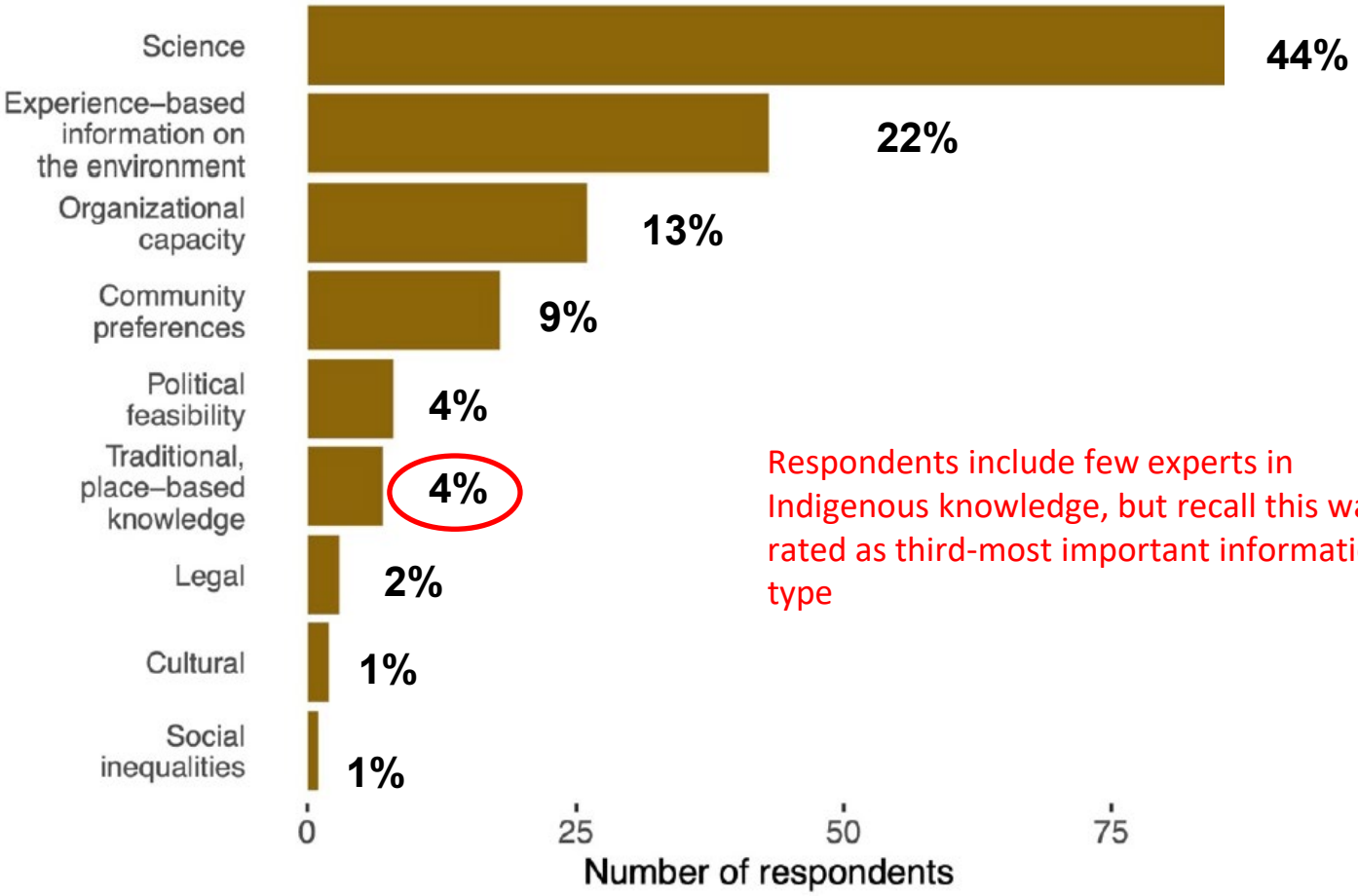
Scientific expertise is most common among respondents, but still less than 50% of all members

RESULTS: (3b) Diverse knowledge holders - Primary expertise



Respondents include many kinds of experiential knowledge expertise

RESULTS: (3b) Diverse knowledge holders - Primary expertise



Respondents include few experts in Indigenous knowledge, but recall this was rated as third-most important information type

RESULTS: (3c) Trust and deliberation

"Please indicate your level of agreement or disagreement with each statement below"

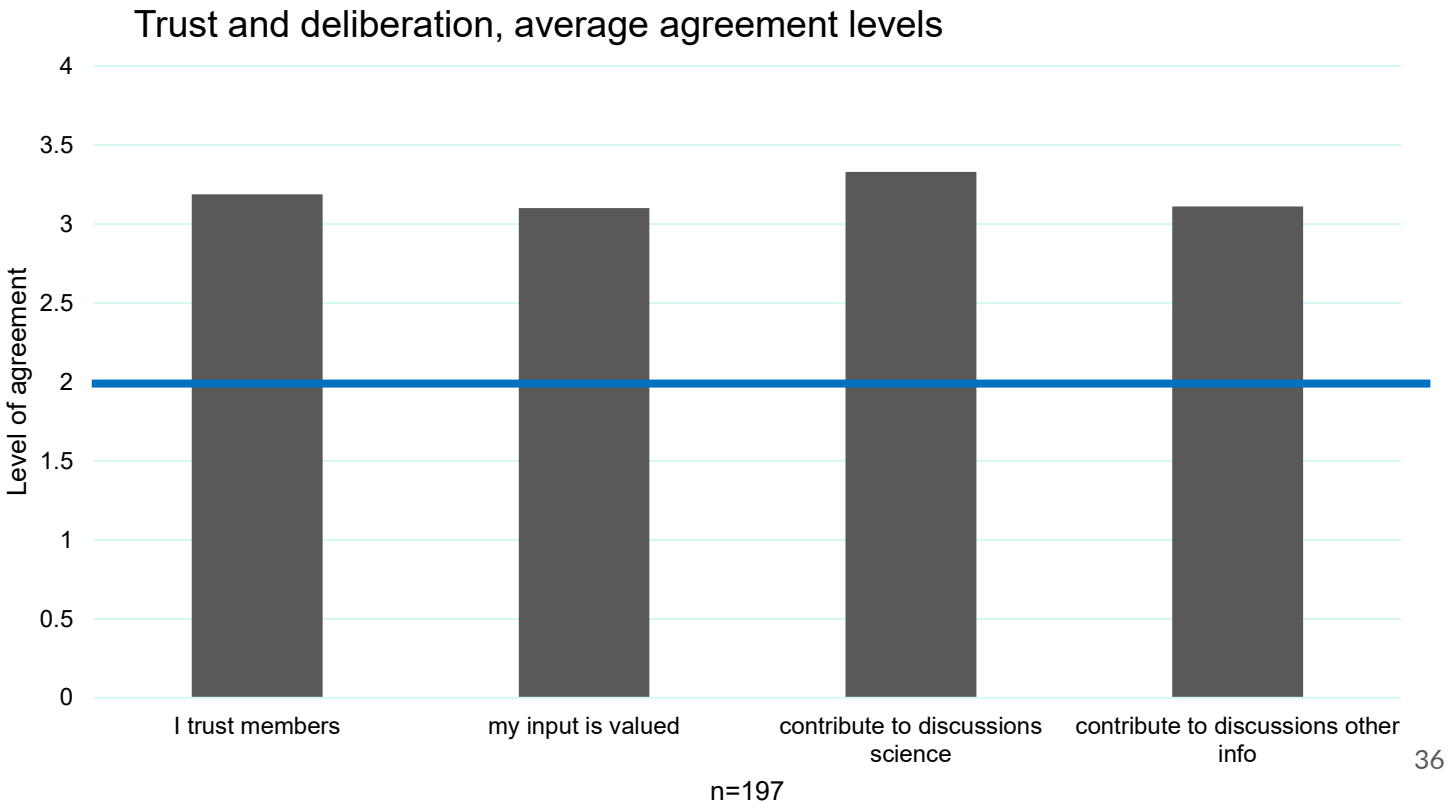
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RESULTS: (3c) Trust and deliberation

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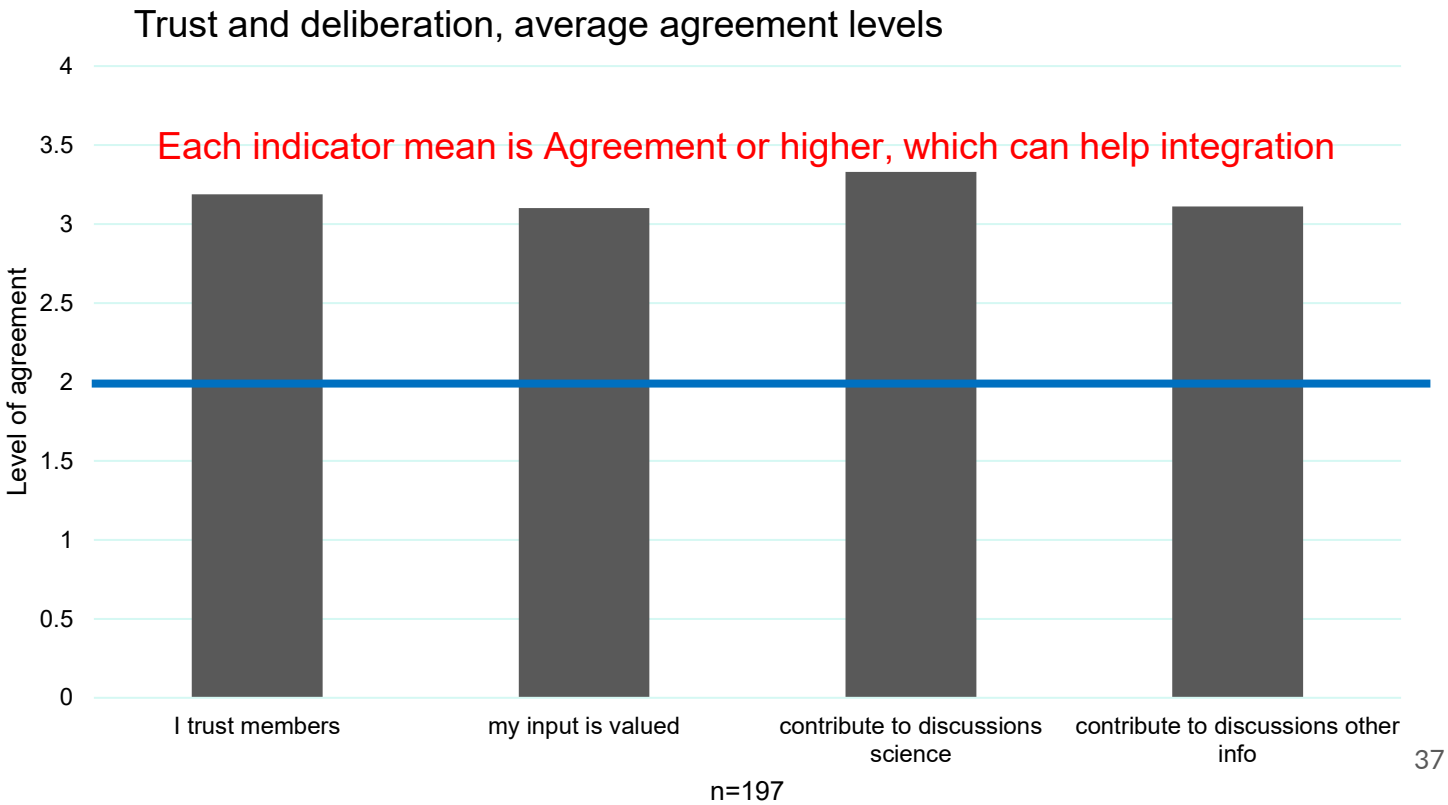
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Neither agree/disagree = 2

Disagree = 1

Strongly disagree = 0



DISCUSSION

Discussion: Compare to other studies

- Similar to other studies: collaborative partnership members in our region privilege scientific knowledge over other knowledge, and they highly value natural science information, less so social science
- Unlike other studies: Indigenous knowledge is valued highly here. Such expertise is low among participants, creating gap between supply and demand.
- Infrequent obstacles to finding information. Among the most frequent are time/labor constraints, which supports prior studies

Conclusion: Management implications

1. Indigenous knowledge is highly valued but largely not present among partnership members. How to address this gap?
2. Most frequent barriers to acquiring information is time/ labor/ cost constraints. How to build capacity to overcome this? (e.g., fund partnership coordinator, support conference participation)

Conclusion: Management implications

3. Presence of 2/3 main factors promoting integration:
    a) Diverse
    b) Trust and deliberation
    c) Not equal footing: Is it desirable & legal to put Indigenous and experiential knowledge on an equal footing as scientific knowledge?
4. Beyond natural science: how might social science knowledge be more valued to inform environmental restoration and recovery?

Questions?



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