Data Quality and Homelessness
Simple Tools for Collecting Data on Sensitive Items

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The Impact of Stigma

Presentation Roadmap

1. Data Quality

2. Sector-Specific Sources of Error

3. Techniques in Bias Reduction

4. Experimental Approaches

5. Reporting and Funder-Agency Relations

1. Why care about quality?

- Bad data misallocates resources and costs credibility

- Homeless serving agencies have sector-specific risks

"How agencies define and measure problems not only alters the understanding of their prevalence and changes over time but alters where agencies focus limited resources." (Sullivan 2022, 753).

1. Garbage In, Garbage Out

*"On two occasions I have been asked [by members of Parliament], '**Pray, Mr. Babbage, if you put into the machine wrong figures, will the right answers come out?'** I am not able to rightly apprehend the kind of confusion of ideas that could provoke such a question."*
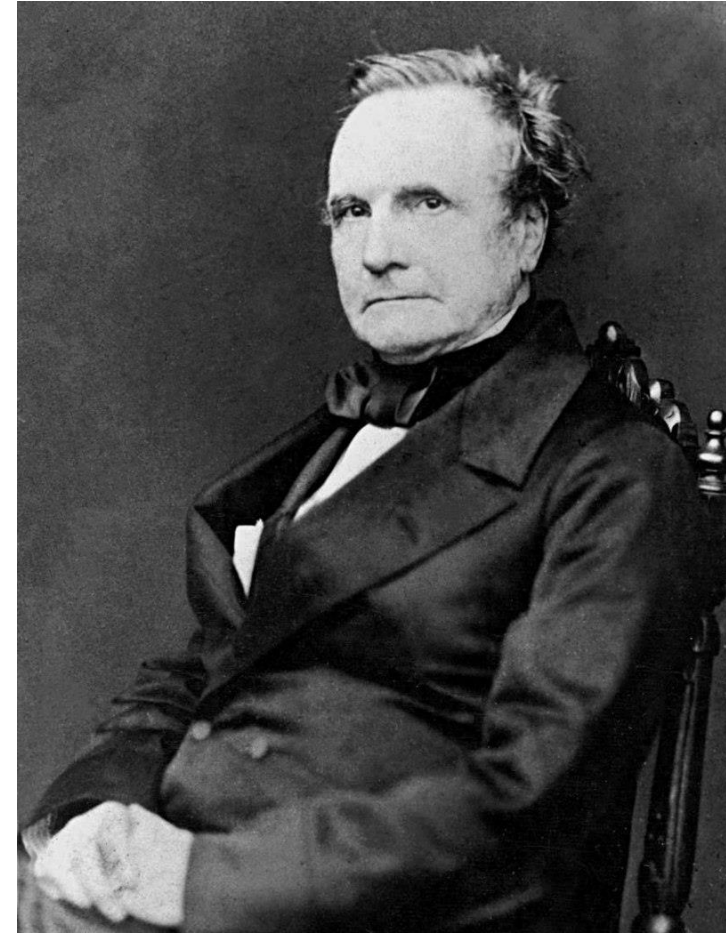
Charles Babbage, *Passages from the Life of a Philosopher* (1864), 67. Project Gutenberg. This Photo by Unknown Author is in the public domain.

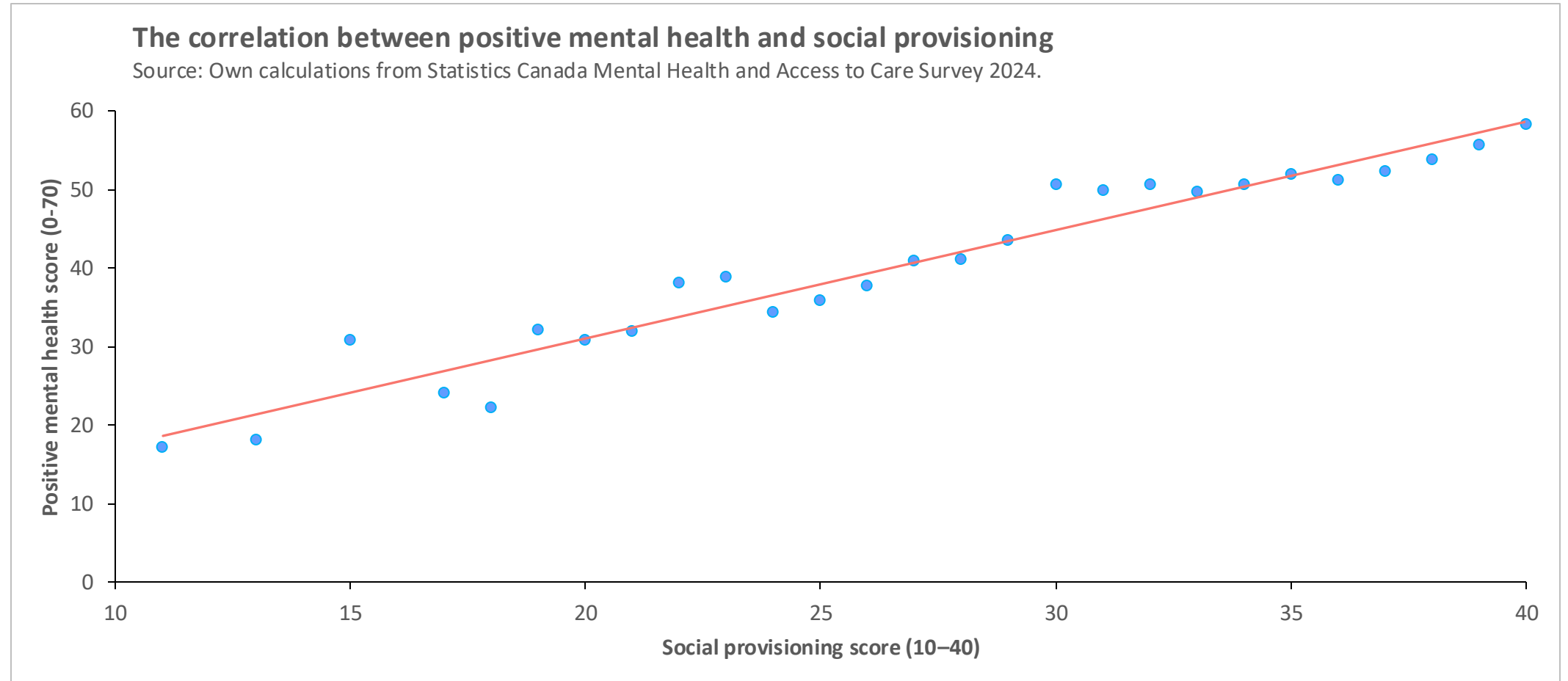# 1. What is Data Quality? How is it determined?

- An **accurate** representation

- A **consistent** representation

- Data **quality** is not the same as data **integrity**

- Data quality is determined during **collection**.

1. Validity: Accurately Reflecting the Real World

🎯 Measures the right concept (face/content)

🔄 Reusable across settings (external)

🔗 Links to related issues (construct)

1. Valid Data Behaves Like We Expect

The correlation between positive mental health and social provisioning
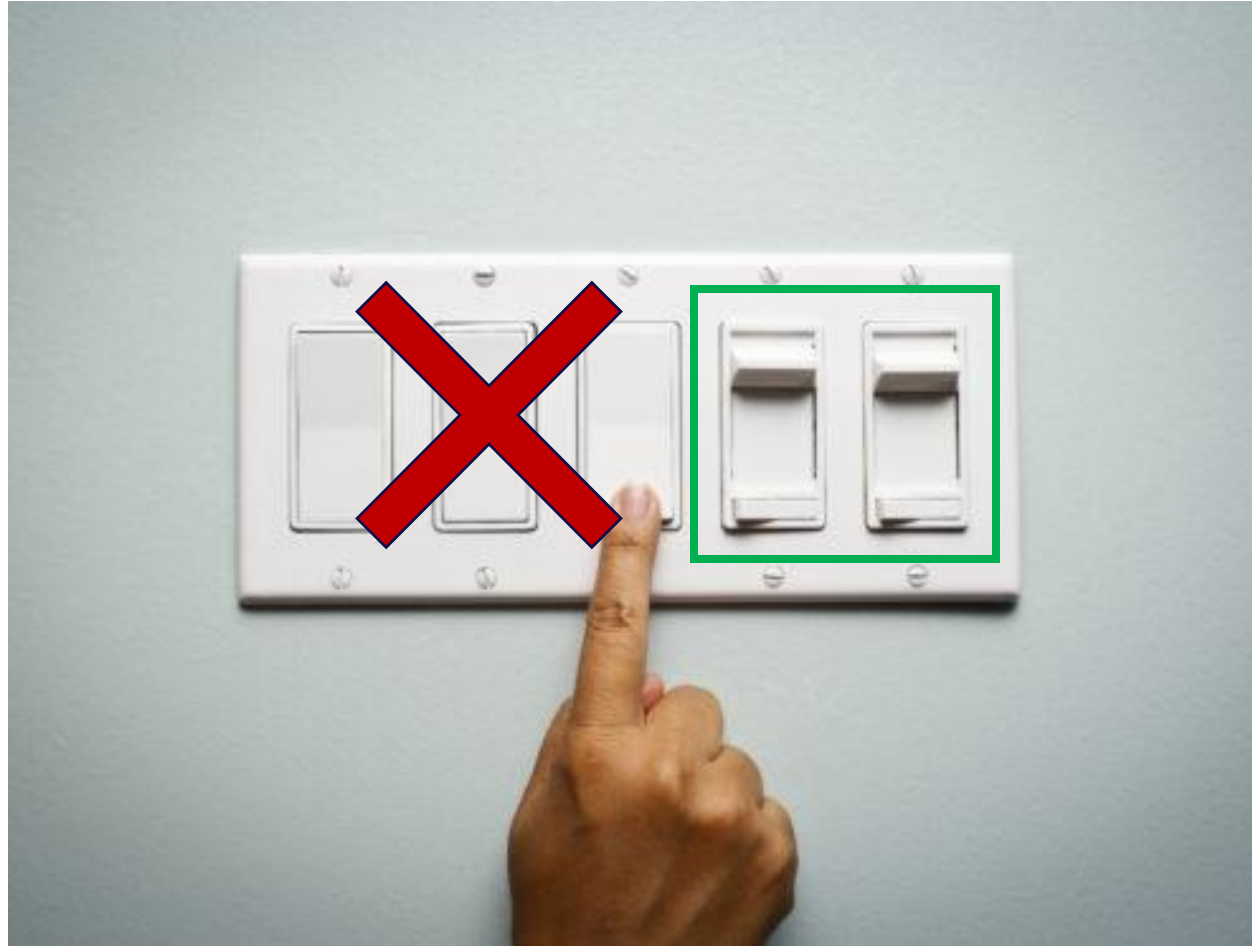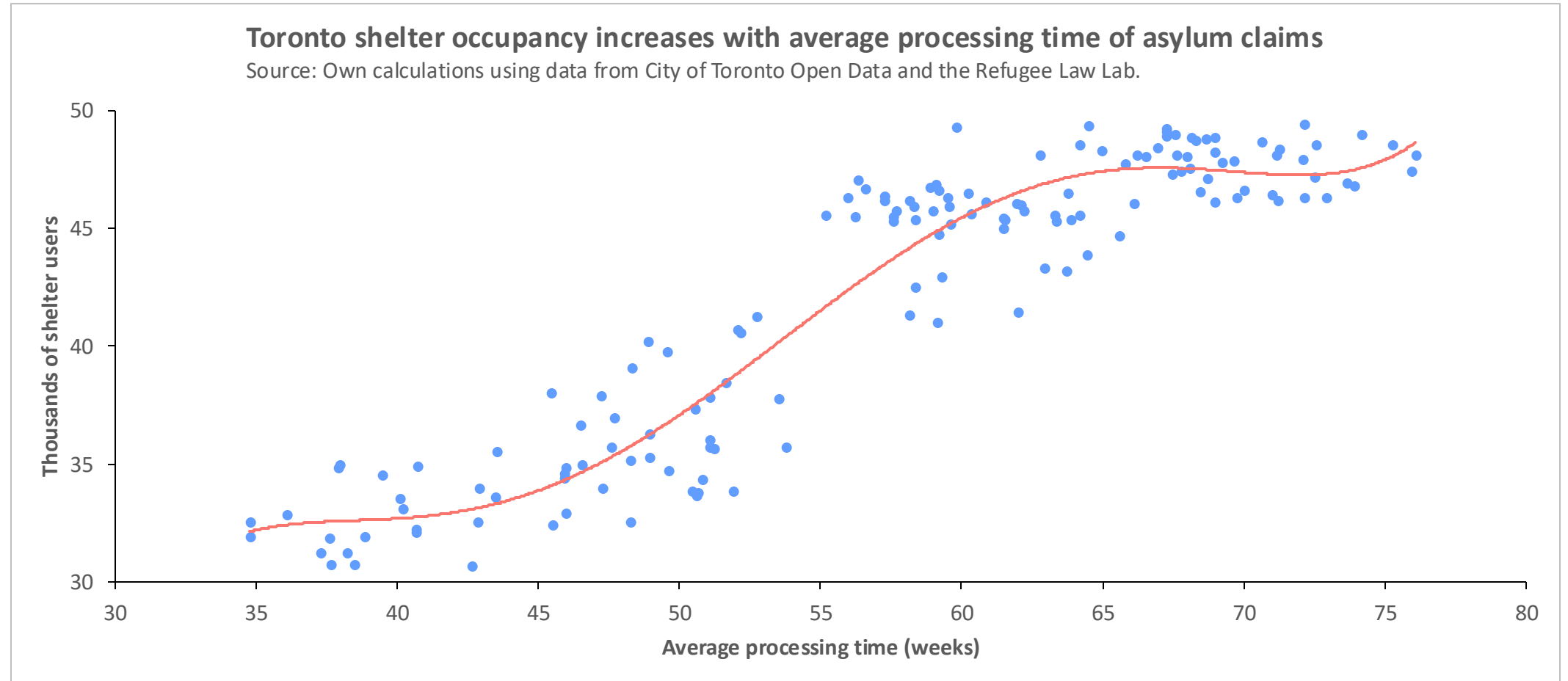Source: Own calculations from Statistics Canada Mental Health and Access to Care Survey 2024.

1. Validity isn't a binary

1. Validity isn't a binary, but a spectrum

1. Perfect validity is a goal, but not an enemy to good

Toronto shelter occupancy increases with average processing time of asylum claims
Source: Own calculations using data from City of Toronto Open Data and the Refugee Law Lab.

Taylor & Francis
Taylor & Francis Group

Check for updates
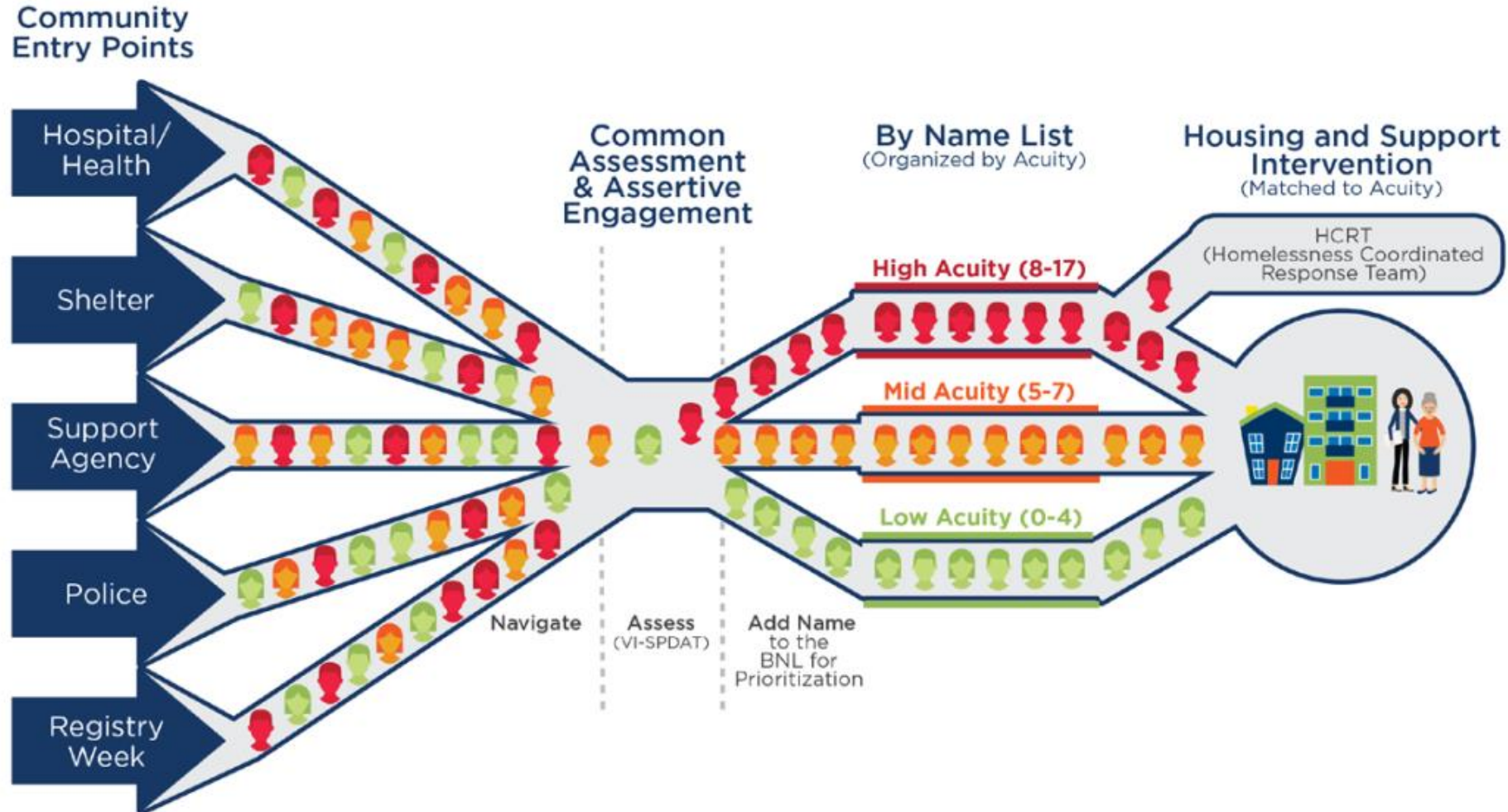
Reliability and validity of the Vulnerability Index-Service Prioritization Decision Assistance Tool (VI-SPDAT) in real-world implementation

Molly Brown[a], Camilla Cummings[b], Jennifer Lyons[c], Andrés Carrión[d] and Dennis P. Watson[e]

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ABSTRACT

This study examined the reliability and validity of the Vulnerability Index-Service Prioritization Decision Assistance Tool (VI-SPDAT), a widely-used assessment of the health and social vulnerabilities and housing needs of individuals experiencing homelessness. Homeless Management Information System data were obtained for 1495 individuals who were administered the VI-SPDAT between 2014 and 2016. Subsamples were selected for reliability and validity assessments. Results suggest there are challenges to the reliability and validity of the VI-SPDAT in practical use. VI-SPDAT total scores did not significantly predict risk of return to homeless services, while type of housing was a significant predictor. Vulnerability assessment instruments have important implications for communities working to end homelessness by facilitating prioritization of scarce housing resources. Findings suggest that further testing and development of the VI-SPDAT is necessary.

1. The Stakes: Data Quality Has Consequences

A total of 158 individuals had more than one administration of the VI-SPDAT. Test-retest reliability coefficients fell below the $r \geq .7$ cutoff for acceptable test-retest reliability across the three timeframes (Table 3). Retest trends showed that total VI-SPDAT scores were higher on second administration for 110 (69.6%) participants and were lower on second administration for 30 (19.0%) participants. Kappa coefficients for the four items across timeframes were in the slight to fair range for inter-rater reliability (i.e. $\leq .4$; Landis & Koch, 1977).

1. Reliability: The Same Data—Any*time*, Any*one*

🎲 Low random error

🕐 Consistent over time

🤝 Consistent across recorders

2. Sector-Specific Sources of Reliability Error

Reliability Problem	Examples
Consistent definitions	Provisional housing; refugees
Concept stretching	ETHOS "housing excluded"
Inter-rater	Volunteer or staff skills
Test -retest	PiT dates and conditions

Table: Threats to Reliability

2. Random Error: The Cheeky Imp of Data Quality

- Illness

- Windows updates

- Reduced attention on day 2 of a conference

- Noise is about numbers

- **Systematic error** or **bias**

2. Systemic Bias is Downstream of Other Issues

- It **is not** personal or institutional bias

- It **is not** random

- It **is** a consistent inaccuracy

- Sometimes it's the analysis of collected data

- It's usually a **collection issue**

2. Examples of Bias

↑ Underreporting

↓ Overreporting

2. Examples of Bias

Source: CBC News

2. Social desirability bias and disclosure

- Preference or behaviour falsification

- Over-report the 'good', under-report the 'bad'

Source: Atlantic Council

2. Voter Turnout

Source: Edmonton Journal

2. Social desirability bias and disclosure

Source: Financial Times

2. Social Desirability and Homelessness

- Mental health

- Personal income

- Compliance with treatment

- Criminal behaviour

- Substance use

- Living situation

2. The Consequences of SDB

- Individual

- Program effectiveness

- Policy development

3. General Techniques for SDB

- Ensure anonymity where possible

- Self-administration

- But these are **not perfect**

- Sometimes **linkage is desirable**.

3. Specialized Techniques

- Ballot Box Method

- Asking about friends

- List experiment

- Games

3. Ballot Box Method

- Separate intake from questions

- Questions should be anonymous

- Unique IDs, Shared Key

- Allows for linkage

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3. BBM Use, Benefits, and Trade-offs

- Has been used widely

- Relatively simple

- High degree of validity

- Requires some limited analytical support

- Ethical implications

- U.S. 2024 Election

- Polymarket

- How much would you have bet?

- The $100,000,000 gamble

Polymarket Odds of Winning the 2024 U.S. Presidential Election
Source: own calculations using data from Polymarket 2025.

Donald Trump — Kamala Harris
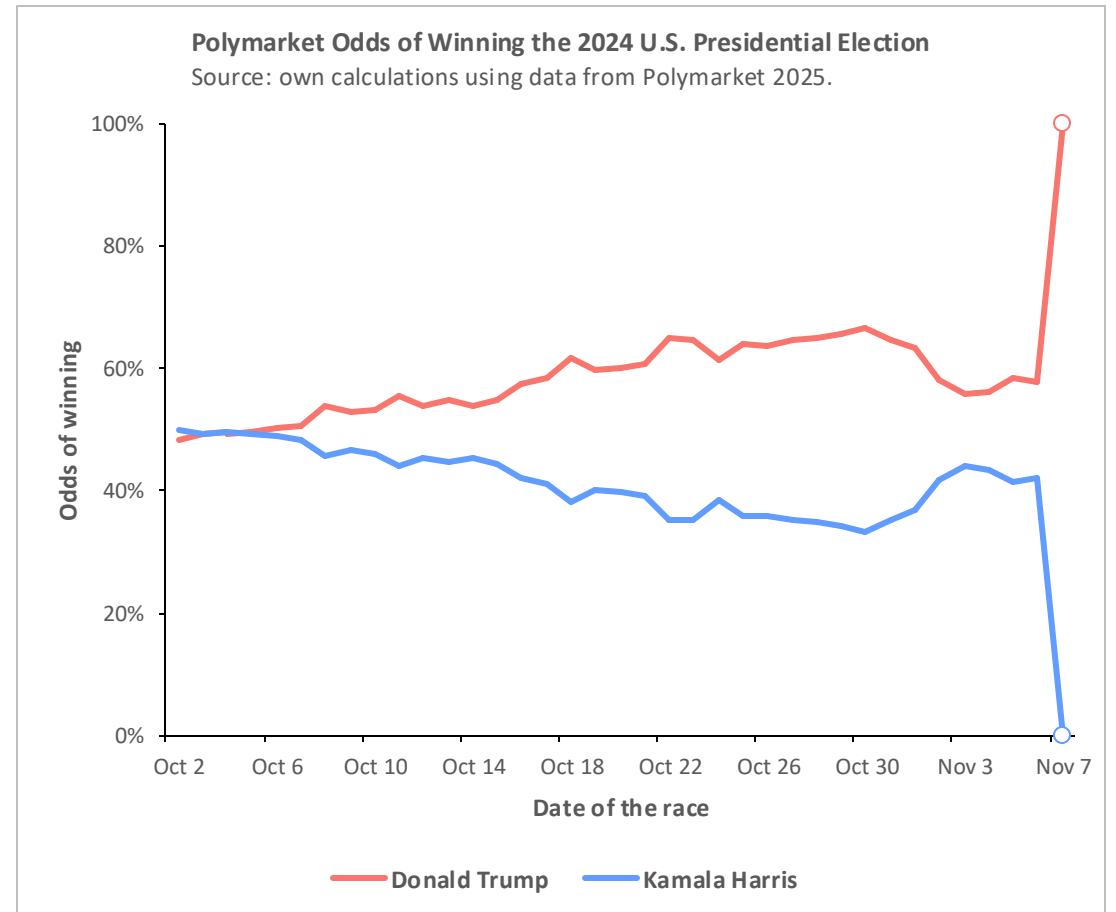
3. Getting By With a Poll of Your Friends

Nocera 2024

3. Getting…

"How many people do you know?"

"Do any of these people use [drug]?"

"Do they usually use alone, or with others? How many"

3. Other Alternatives

- No tool is perfect

- Ballot Box Issues

- The Friend Poll

- **Randomization**
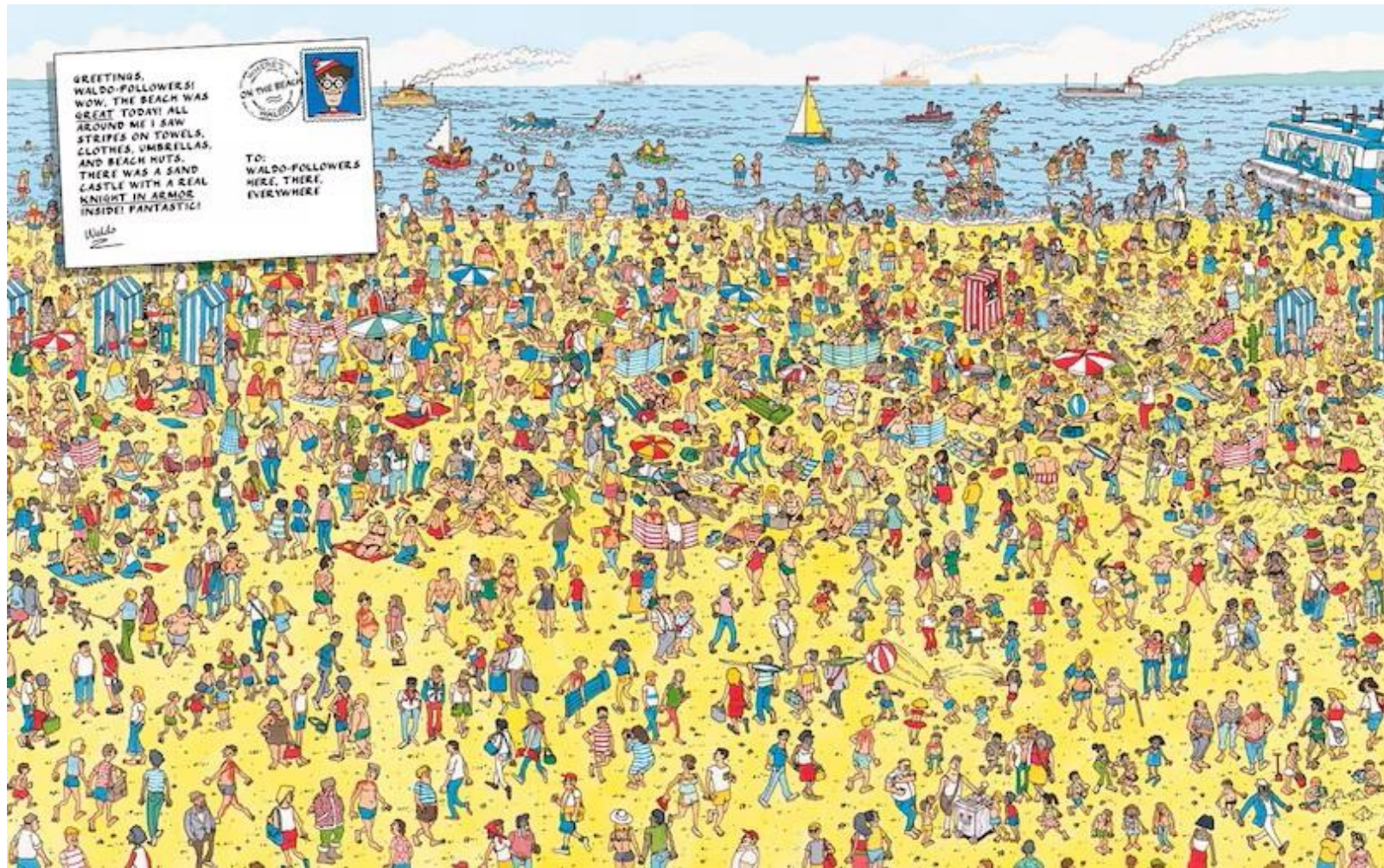
Source: "Where's Waldo?"

- Identifies the prevalence of an issue

- Not individual application or belief

- Sensitive items hide among other items

4: Hiding in Plain Sight

- List of items

- Non-sensitive

- Not universal

- Asked **how many**

- **But not which**

4: The Direct Question

Do you believe encampments should be cleared if sufficient shelter space is available?

○ Yes

○ Maybe

○ No

○ Don't know / unsure

4: Our Crowd: The Control List

Below is a list of statements regarding the homeless-serving sector:

- Funding should focus on long-term housing over shelters

- Private sector housing plays a key role in addressing homelessness

- Building shelter capacity should be prioritized over long-term housing

- Current services in our community are effectively reducing homelessness.

How many *of these statements do you agree with? You do not need to specify which ones—**just the number**.*

Control list

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4. Comparing Lists: Similar Items, Similar Average

Control list

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Control list

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- Funding should focus on long-term housing over shelters

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- Building shelter capacity should be prioritized over long-term housing

- **Encampments should be cleared if shelter spaces are available.**

- Current services in our community are effectively reducing homelessness.

How many *of these statements do you agree with? You do not need to specify which ones—**just the number**.*

4. Introducing the Extra Item

Control list

Below is a list of statements regarding the homeless-serving sector:

- Funding should focus on long-term housing over shelters

- Private sector housing plays a key role in addressing homelessness

- Building shelter capacity should be prioritized over long-term housing

- Current services in our community are effectively reducing homelessness.

How many *of these statements do you agree with? You do not need to specify which ones—**just the number**.*

Sensitive list

Below is a list of statements regarding the homeless-serving sector:

- Funding should focus on long-term housing over shelters

- Private sector housing plays a key role in addressing homelessness

- Building shelter capacity should be prioritized over long-term housing

- **Encampments should be cleared if shelter spaces are available.**

- Current services in our community are effectively reducing homelessness.

How many *of these statements do you agree with? You do not need to specify which ones—**just the number**.*

4. Leveraging excludability

- Given both groups are similar...

- And they share non-sensitive items

- What explains a difference in # items chosen?

4. Identifying the Difference

Group	# Statements	Average
Control List (N=56)	125	2.23
Sensitive List (N=54)	151	2.80
Average Difference	—	**0.57**

Table: List Difference in Means

4. Identifying the Difference

Group	# Statements	Average
Control List (N=56)	125	2.23
Sensitive List (N=54)	151	2.80
Average Difference	—	**0.57**

Table: List Difference in Means

4. Identifying Prevalence

Group	# Statements	Average
Control List (N=56)	125	2.23
Sensitive List (N=54)	151	2.80
% Sensitive Item	—	**0.57**

Table: List Difference in Means

4. Recovering the Extra Item

Respondents (N=10)	Number of Sensitive Items Chosen
Client 1	1
Client 2	0
Client 3	0
Client 4	1
Client 5	0
Client 6	1
Client 7	0
Client 8	0
Client 9	0
Client 10	1
Total # Sensitive Items Chosen	4
Average # Sensitive Items Chosen	**0.4**

Table: Sensitive Item Prevalence

- **57% agreed** using the list approach

- **22% agreed** using the direct question

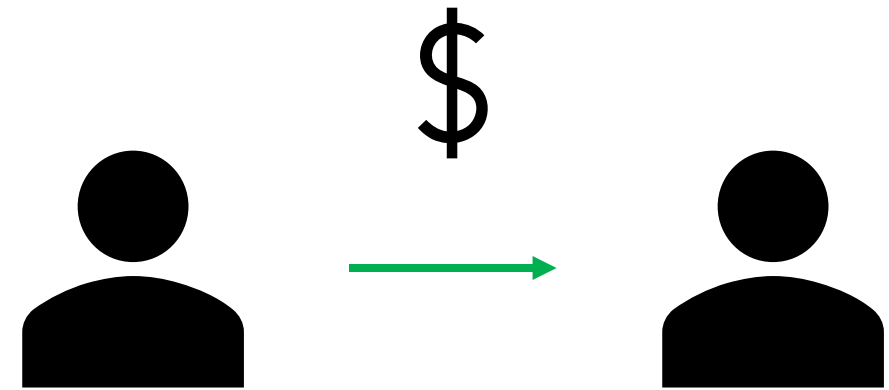- Hiding the item **reduces SDB**

Direct versus list agreement
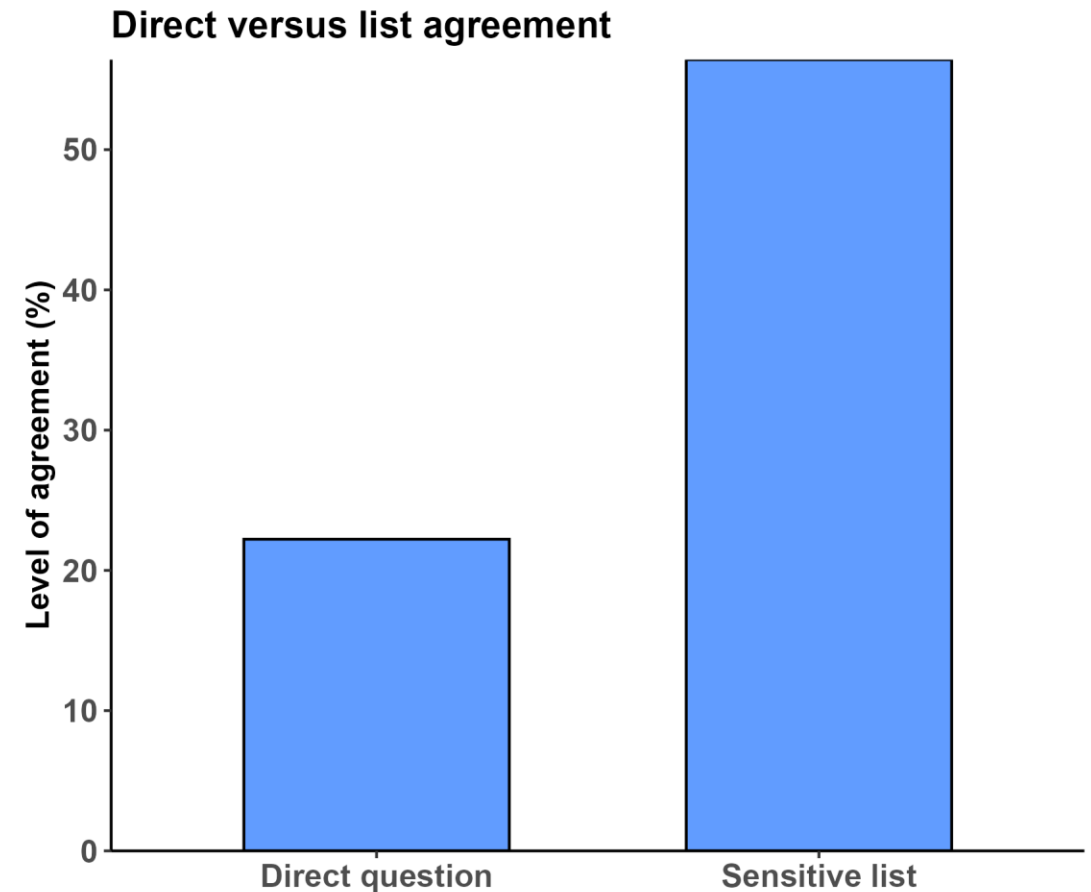
4. List Benefits

- Wide application

- High degree of validity

- Not time intensive

- Easy top-level analysis

4. Dictator Game: Applied Agency

- Giving people resources

- Seeing how they allocate them

- **Revealing preferences**

$

- Keep or donate

- 56% donated

- Variation by cause

Donation rate by charity type
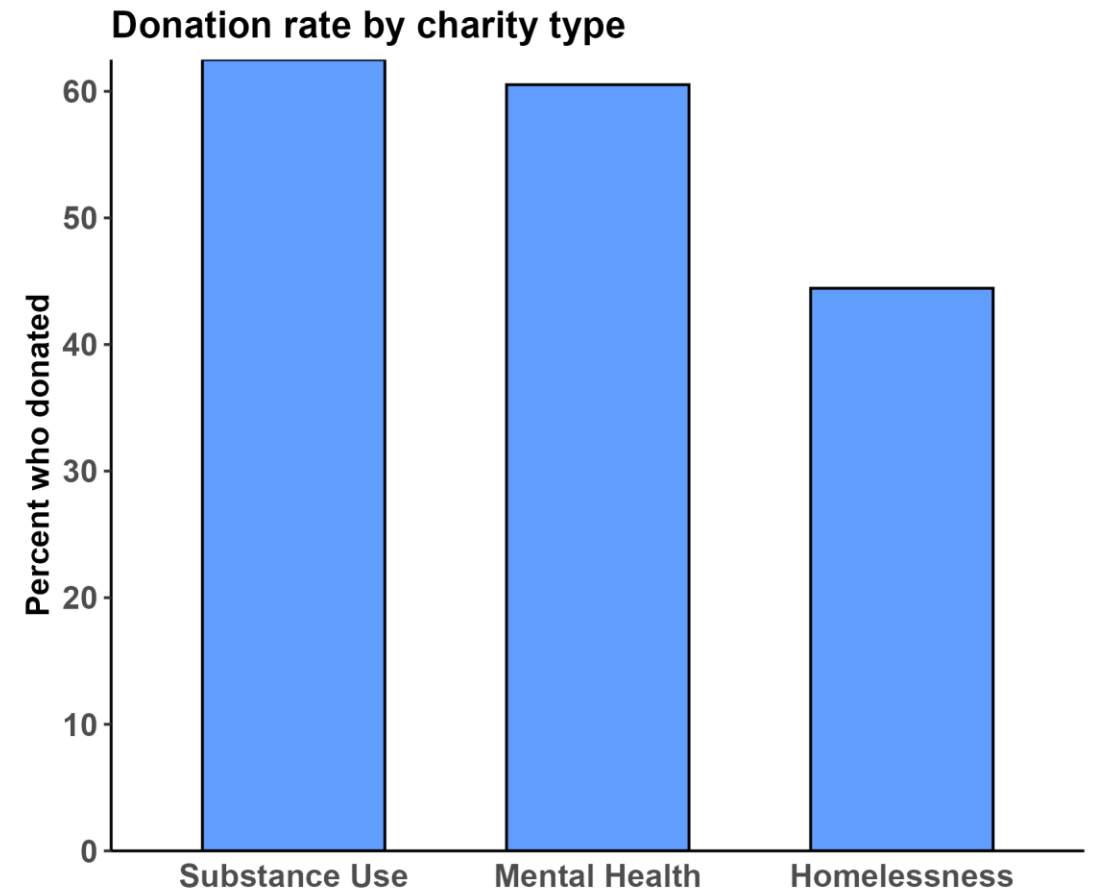
4. Applied Games

- Fundraising drives

- Impact of volunteers

- Preference for housing stability

4. Some Caveats

- The example here is illustrative,

- **Not** prescriptive

- Sample size issues

- **Don't disappoint Charles**

4. Other Caveats

- Hawthorne Effect

- Staff training

- Client comprehension

- Remember, **validity is a range**

- The goal is to increase quality

- Eliminating all issues is impossible

- Sound tools are not always complex

- Apply widely within your sector

- Test against other measures

Conclusion: Funder-Agency Relations

- Good data analysis begins at the collection phase, before any statistical work begins

- Certain sectors, especially homelessness, are subject to statistical biases arising from stigmas, fear, shame, or anti-social behaviour

- Addressing statistical bias supports the effective targeting of limited funds, staff, and time; more importantly, it can improve client outcomes

- New tools, many of them simple, have been developed to uncover data around sensitive issues, many of which are at the core of serving clients experiencing homelessness

- When implemented at the funder-agency level, they support a healthier relationship, based on mutual understanding of precise data and mission.

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Supplemental: Common List Issues

Issue	Definition	Solution
The Hawthorne Effect	People act differently when they know they're in an experiment	Don't let them know! Requires justifying to ethics
Instruction Fails/Presence	Enumerators watch or inadequately explain the question	Better training around privacy and verbatim instructions
Comprehension Fails	Respondents report "which" instead of "how many", or count too quickly	Separate the explanation/question from the answer sheet
Ceiling/Floor Effects	Universal (dis)agreement on non-sensitive items impacts anonymity	Include items that elicit disagreement or are opposed to another item
Miscounting	Honest mistakes due to long or cognitively demanding lists	Keep it short and simple (3 –5 items, max)

Table: List Experiment Issues

Supplemental: Common List Issues

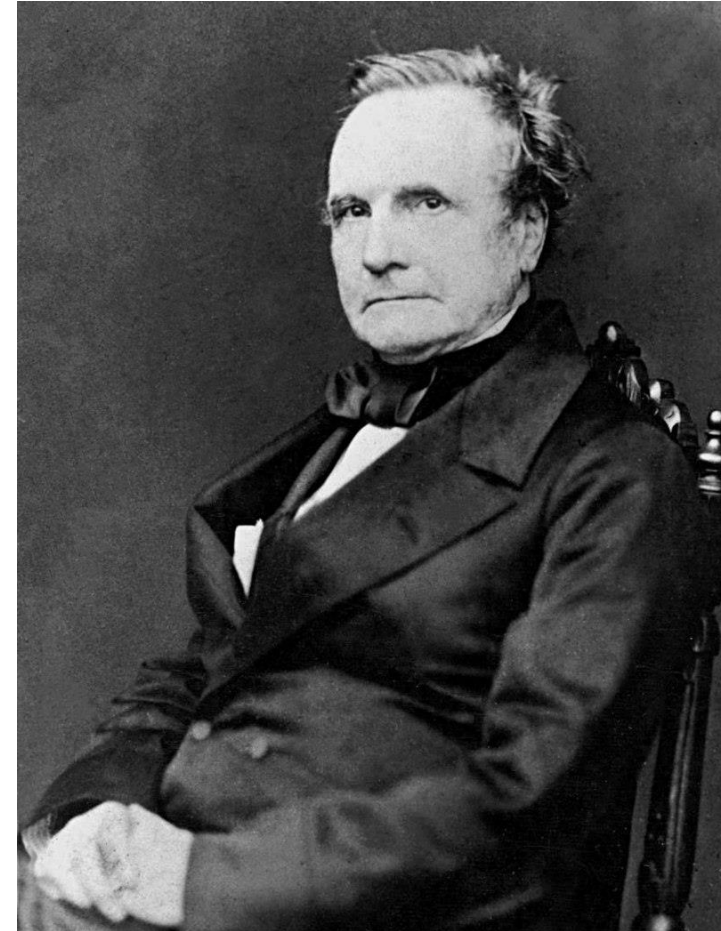| Issue	Definition	Solution
Lying	Cognizant misreporting their count	Validate against other tests; double-list designs
Related Controls/Sensitivity	Including a control item that's related to the sensitive item	Make sure control items are not directly related to sensitive items
List -length Imbalance	Suspicious of the +1 item	Add a placebo item or list
Item-order Effects	The first/last items dominate memory; the position of the sensitive item influences count	Shuffle the order of items electronically or randomly on paper
Heterogeneity	Different groups might agree to different counts of items	Stratification: randomize the list within subgroups (e.g., gender, Indigeneity)

Table: List Experiment Issues

Supplemental: Humour

"Machine Learning." In *xkcd* by Randall Munroe. Licensed under CC BY-NC 2.5.

Supplemental: Humour

- *"The errors which arise from the absence of facts are far more numerous and more durable than those which result from unsound reasoning respecting true data."*

  — Charles Babbage, *On the Economy of Machinery and Manufactures* (1832), 119. [Project Gutenberg](#).

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