

Measurement Scales

Importance of Scales in Surveys

- ▶ **Definition of Scales**

- ▶ Tools for measuring attitudes, opinions, or behaviors in surveys.

- ▶ **Purpose of Using Scales**

- ▶ Standardize responses for easier analysis.
 - ▶ Quantify subjective data.

Overview of Different Scales

- ▶ **Likert Scale**

- ▶ Measures the extent of agreement or disagreement.

- ▶ **Semantic Differential Scale**

- ▶ Measures the connotative meaning of concepts.

- ▶ **Other Common Scales**

- ▶ **Guttman Scale**

- ▶ **Thurstone Scale**

- ▶ **Rating Scales (e.g., Numeric Rating, Graphic Rating)**

- ▶ **Stapel Scale**

Likert Scale

▶ Definition

- ▶ A scale that asks respondents to indicate their level of agreement with a statement.

Strongly Agree

Agree

Undecided

Disagree

Strongly Disagree

▶ Structure

- ▶ Typically 5 or 7 points, ranging from "Strongly Disagree" to "Strongly Agree".

▶ Advantages

- ▶ Easy to construct and interpret.

▶ Disadvantages

- ▶ Can lead to central tendency bias.

Likert Response Biases

▶ **Acquiescence bias**

- ▶ The tendency to agree with statements regardless of their content.

▶ **Social desirability bias**

- ▶ The desire to report views that will be regarded favourably by others.

▶ **Central tendency bias**

- ▶ Avoiding the extreme options and clustering near the middle.

▶ **Remedies**

- ▶ Mix positively and negatively worded statements.
- ▶ Keep wording neutral; assure anonymity.

“I enjoy laboratory work.”

“Laboratory work is a waste of time.”

Alternating the direction of statements forces respondents to read each one.

Semantic Differential Scale

► Definition

- A scale that measures the meaning of things, objects, or concepts across a range of bipolar adjectives.

► Structure

- Usually a 7-point scale between two opposite adjectives (e.g., Happy-Sad).

► Advantages

- Captures nuanced opinions and attitudes.

► Disadvantages

- Requires careful selection of adjective pairs.

	3	2	1	0	-1	-2	-3	
Heavy								Light
Hot								Cold
Strong								Weak
Active								Passive

Guttman Scale

► Definition

- A cumulative scale where items are arranged in increasing order of intensity.

► Structure

- Respondents agree or disagree with statements in a hierarchical fashion.

► Advantages

- Useful for measuring a unidimensional concept.

► Disadvantages

- Complex to construct and analyze.

Guttman Scaling

	People					
	A	B	C	D	E	F
I can use the toilet without assistance	yes	yes	yes	yes	yes	no
I can rise from an armchair	yes	yes	yes	yes	no	no
I can walk one block	yes	yes	yes	no	no	no
I can do the grocery shopping	yes	yes	no	no	no	no
I can run a mile	yes	no	no	no	no	no
score	5	4	3	2	1	0

This generates an ordinal scale in which all items fall on one dimension.

Thurstone Scale

▶ Definition

- ▶ An equal-appearing-interval scale: a panel of judges assigns each statement a value from 1 to 11.

▶ Structure

- ▶ Respondents tick the statements they agree with; their score is the mean value of the ticked statements.

▶ Advantages

- ▶ Yields approximately interval-level scores.

▶ Disadvantages

- ▶ Laborious to build, and scale values depend on the judges.

Rating Scales

- ▶ **Numeric rating**

- ▶ Rate on a number line, e.g. “Rate our service from 1 to 10.”

- ▶ **Graphic rating**

- ▶ Mark a point on a continuous line between two anchors; the distance is measured.

- ▶ **Advantages**

- ▶ Quick, intuitive, familiar to respondents.

- ▶ **Disadvantages**

- ▶ Different respondents interpret the numbers differently; anchors matter.

Stapel Scale

► Definition

- A scale that asks respondents to rate a concept or object using a single adjective and a numerical scale that typically ranges from -5 to +5 without a neutral point.

► Structure

- Usually a 10-point scale ranging from -5 to +5, with no midpoint or neutral option. Respondents indicate how strongly they feel positively or negatively about a single attribute.

► Advantages

- Useful when respondents have difficulty distinguishing between opposite adjectives.
- Simplifies data analysis by eliminating the need for a neutral option.

► Disadvantages

- May be confusing for respondents who prefer a neutral option.
- Can lead to bias if respondents tend to avoid extreme options.

+5	+5	+5
+4	+4	+4
+3	+3	+3
+2	+2	+2
+1	+1	+1
Tasty Food	Fast Service	Good Ambience
-1	-1	-1
-2	-2	-2
-3	-3	-3
-4	-4	-4
-5	-5	-5

Design survey questions on the following topics

- ▶ Reader Satisfaction
- ▶ Website Support
- ▶ Lab Service Delivered Follow-up
- ▶ Conference Planning
- ▶ Conference Satisfaction (Post Event)
- ▶ Membership Satisfaction
- ▶ Newsletter Satisfaction
- ▶ Product Reviews
- ▶ Understanding the Varied Interests of your Audience
- ▶ Understanding your Research

Assignment: Survey Reports

- ▶ **Read these survey reports**
- ▶ ASER 2024: <https://asercentre.org/aser-2024/>
- ▶ NSS CAMS 2022–23: <https://mospi.gov.in/report-nss-79th-round-comprehensive-annual-modular-survey-2022-23>
- ▶ **For each report, identify**
 - ▶ The measurement scales used in the questionnaire.
 - ▶ How the questions avoid (or fail to avoid) response biases.
 - ▶ One question you would redesign, and why.