Measurement and Scaling: Fundamentals and Comparative Scaling

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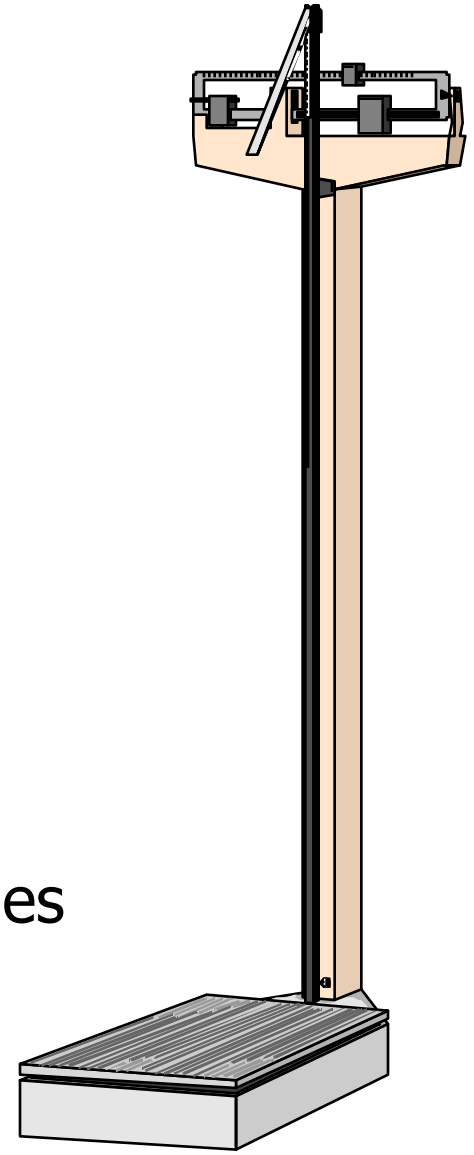

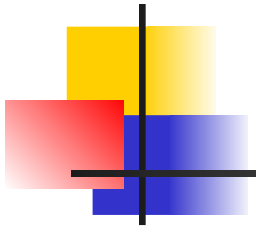

Outline

5) Comparative Scaling Techniques

i. Paired Comparison

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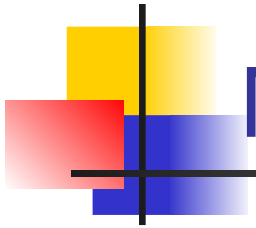


Measurement and Scaling

Measurement means assigning numbers or other symbols to characteristics of objects according to certain prespecified rules.

- One-to-one correspondence between the numbers and the characteristics being measured.
- The rules - standardized and applied uniformly.
- Rules must not change over objects or time.

Measurement and Scaling

Scaling involves creating a continuum upon which measured objects are located.

Consider an attitude scale from 1 to 100. Each respondent is assigned a number from 1 to 100, with 1 = Extremely Good, and 100 = Extremely bad.

Primary Scales of Measurement

Figure 8.1

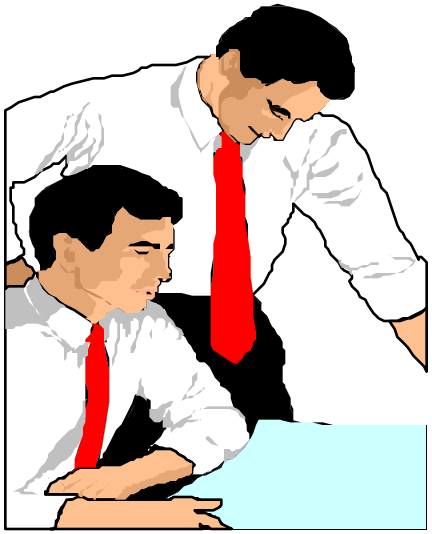
Scale					
Nominal	Numbers Assigned to Runners				
Ordinal	Rank Order of Winners				Finish
		Third place	Second place	First place	
Interval	Performance Rating on a 0 to 10 Scale	8.2	9.1	9.6	
Ratio	Time to Finish, in	15.2	14.1	13.4	

Primary Scales of Measurement

Scale	Basic Characteristics	Common Examples	Marketing Examples	Appropriate Statistics	
				Descriptive	Inferential
Nominal	Numbers identify & classify objects	Social Security nos., numbering of football players	Brand nos., store types	Percentages, mode	Chi-square, binomial test
Ordinal	Nos. indicate the relative positions of objects but not the magnitude of differences between them	Quality rankings, rankings of teams in tournament	Preference rankings, market position, social class	Percentile, median	Rank-order correlation, Friedman ANOVA
Interval	Differences between objects	Temperature (Fahrenheit)	Attitudes, consumer index	Range, mean, standard deviation	Product moment correlation
Ratio	Zero point is fixed, ratios of scale values can be compared	Length, weight	Age, sales, income, costs	Geometric mean, harmonic mean	Coefficient of variation

A Classification of Scaling Techniques

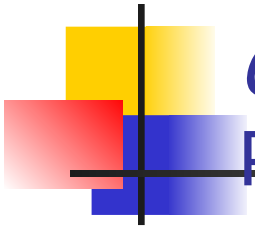
Figure 8.2



A Comparison of Scaling Techniques

- **Comparative scales** involve the direct comparison of stimulus objects. Comparative scale data must be interpreted in relative terms and have only ordinal or rank order properties.

- In **noncomparative scales**, each object is scaled independently of the others in the stimulus set. The resulting data are generally assumed to be interval or ratio scaled.



Comparative Scaling Techniques
Paired Comparison Scaling

- A respondent is presented with two objects and asked to select one according to some criterion.
- The data obtained are ordinal in nature.
- Paired comparison scaling is the most widely used comparative scaling technique.
- With n brands, [n(n - 1) /2] paired comparisons are required

Obtaining Shampoo Preferences Using Paired Comparisons

Figure 8.3

Instructions: We are going to present you with ten pairs of shampoo brands. For each pair, please indicate which one of the two brands of shampoo you would prefer for personal use.

Recording Form:

	Jhirmack	Finesse	Vidal Sassoon	Head & Shoulders	Pert
Jhirmack		0	0	1	0
Finesse	1[a]		0	1	0
Vidal Sassoon	1	1		1	1
Head & Shoulders	0	0	0		0
Pert	1	1	0	1	
Number of Times Preferred[b]	3	2	0	4	1

[a]A 1 in a particular box means that the brand in that column was preferred over the brand in the corresponding row. A 0 means that the row brand was preferred over the column brand. [b]The number of times a brand was preferred is obtained by summing the 1s in each column.

Paired Comparison Selling

The most common method of taste testing is paired comparison. The consumer is asked to sample two different products and select the one with the most appealing taste. The test is done in private and a minimum of 1,000 responses is considered an adequate sample. A blind taste test for a soft drink, where imagery, self-perception and brand reputation are very important factors in the consumer's purchasing decision, may not be a good indicator of performance in the marketplace. The introduction of New Coke illustrates this point. New Coke was heavily favored in blind paired comparison taste tests, but its introduction was less than successful, because image plays a major role in the purchase of Coke.

A paired comparison taste test

Comparative Scaling Techniques
Rank Order Scaling

- Respondents are presented with several objects simultaneously and asked to order or rank them according to some criterion.
- It is possible that the respondent may dislike the brand ranked 1 in an absolute sense.
- Furthermore, rank order scaling also results in ordinal data.
- Only (n - 1) scaling decisions need be made in rank order scaling.

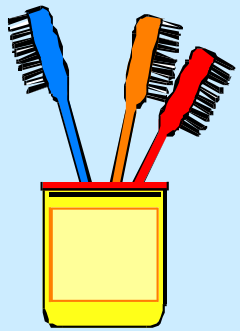
Preference for Toothpaste Brands Using Rank Order Scaling

Figure 8.4

Instructions: Rank the various brands of toothpaste in order of preference. Begin by picking out the one brand that you like most and assign it a number 1. Then find the second most preferred brand and assign it a number 2. Continue this procedure until you have ranked all the brands of toothpaste in order of preference. The least preferred brand should be assigned a rank of 10.

No two brands should receive the same rank number.

The criterion of preference is entirely up to you. There is no right or wrong answer. Just try to be consistent.

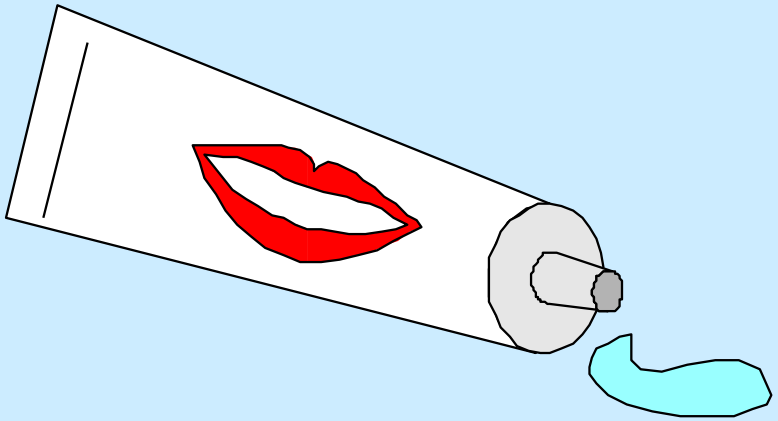


Preference for Toothpaste Brands Using Rank Order Scaling

Figure 8.4 cont.

Form

Brand	Rank Order
1. Crest	_____
2. Colgate	_____
3. Aim	_____
4. Gleem	_____
5. Macleans	_____
6. Ultra Brite	_____
7. Close Up	_____
8. Pepsodent	_____
9. Plus White	_____
10. Stripe	_____



Comparative Scaling Techniques
Constant Sum Scaling

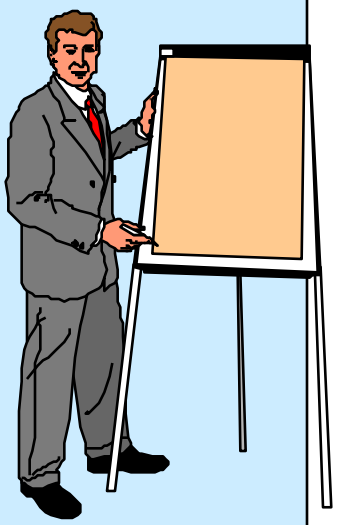
- Respondents allocate a constant sum of units, such as 100 points to attributes of a product to reflect their importance.
- If an attribute is unimportant, the respondent assigns it zero points.
- If an attribute is twice as important as some other attribute, it receives twice as many points.
- The sum of all the points is 100. Hence, the name of the scale.

Importance of Bathing Soap Attributes Using a Constant Sum Scale

Figure 8.5

Instructions

On the next slide, there are eight attributes of bathing soaps. Please allocate 100 points among the attributes so that your allocation reflects the relative importance you attach to each attribute. The more points an attribute receives, the more important the attribute is. If an attribute is not at all important, assign it zero points. If an attribute is twice as important as some other attribute, it should receive twice as many points.



Importance of Bathing Soap Attributes Using a Constant Sum Scale

Figure 8.5 cont.

Form

Attribute	Average Responses of Three Segments		
	Segment I	Segment II	Segment III
1. Mildness	8	2	4
2. Lather	2	4	17
3. Shrinkage	3	9	7
4. Price	53	17	9
5. Fragrance	9	0	19
6. Packaging	7	5	9
7. Moisturizing	5	3	20
8. Cleaning Power	13	60	15
Sum	100	100	100