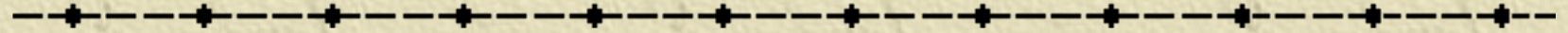


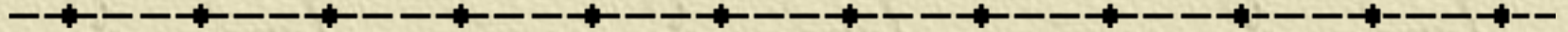
Measurement

Simple:


Sometimes the properties
of a variable constrain
measurement to simple
categories




The Census Bureau has many variables like this.



Make a list of variables that have such constraints



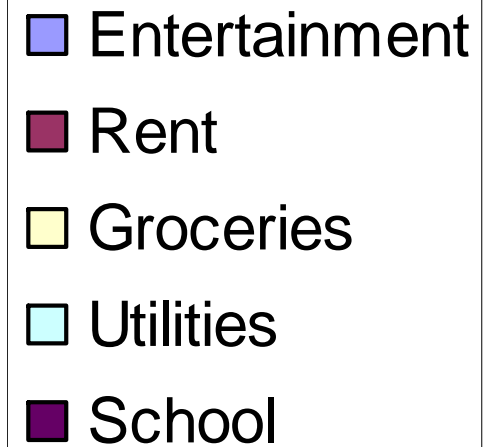
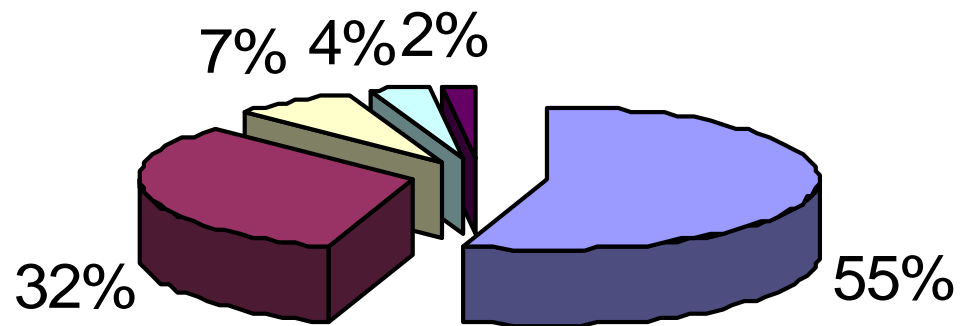
The categories are usually given simple descriptive names; hence the term “nominal data.” In each case, there is no degree of the characteristic; it either is or isn’t something.



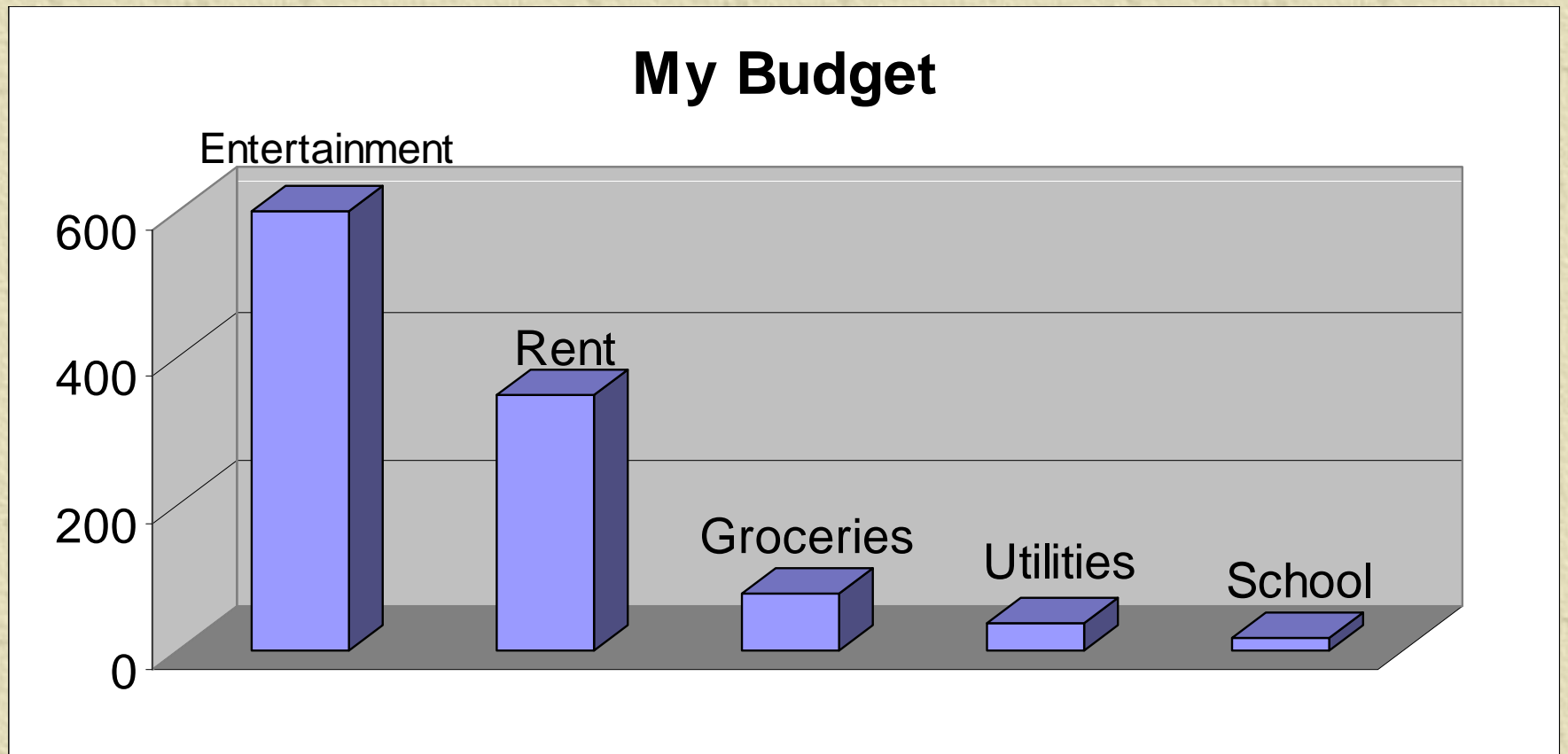
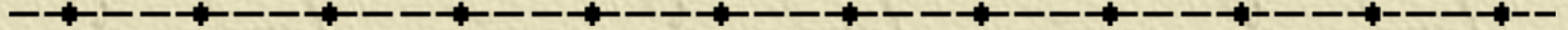
Nominal Data: no scales are used: tends to be pie charts or simple bar charts

Pie Chart

My Budget



Or Bar Chart



Next level of sophistication:

-
- ✦ If the properties include some incremental qualities, then we try to measure the increments with accuracy and precision. Measurements then call for some kind of technique.



Make a list of variables that have

incremental qualities. Here's one:

Nominal category: College Student

Incremental quality: a junior

This implies that there must be other increments.

Freshman

Sophomore

Junior

Senior

Post Bac

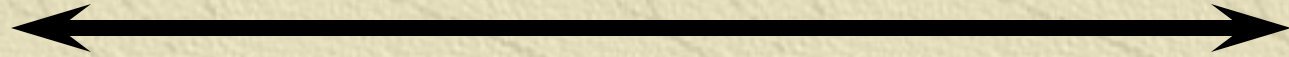
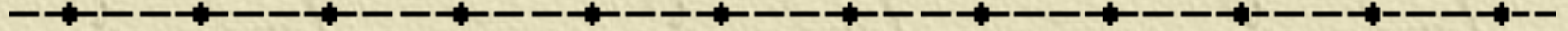
Grad Student

MA and PhD

Examples:

-
- ✦ Grade Point Average
 - ✦ Bowling Average
 - ✦ Age
 - ✦ Temperature
 - ✦ Extra Spending Cash (discretionary funds to be technical)
 - ✦ Timelines Showing dates of major political revolutions

All of these call for scales

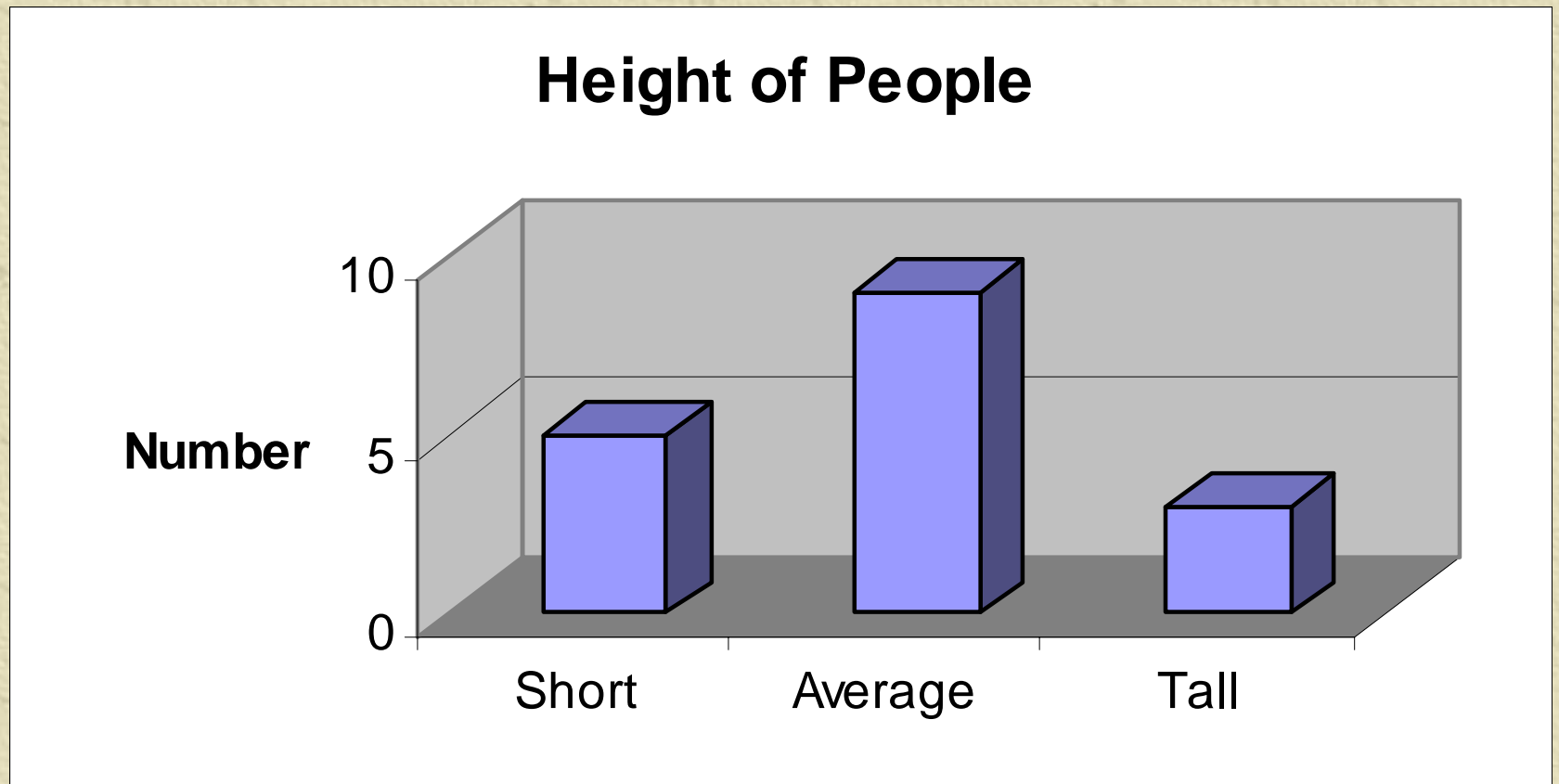
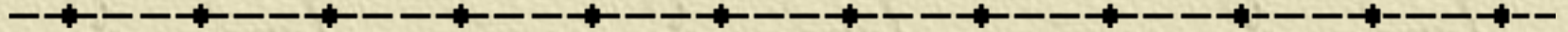


Poor

Middle Income

Rich

Ordinal Scales

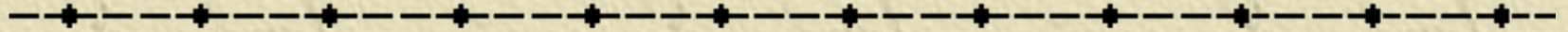


Some kind of order is used

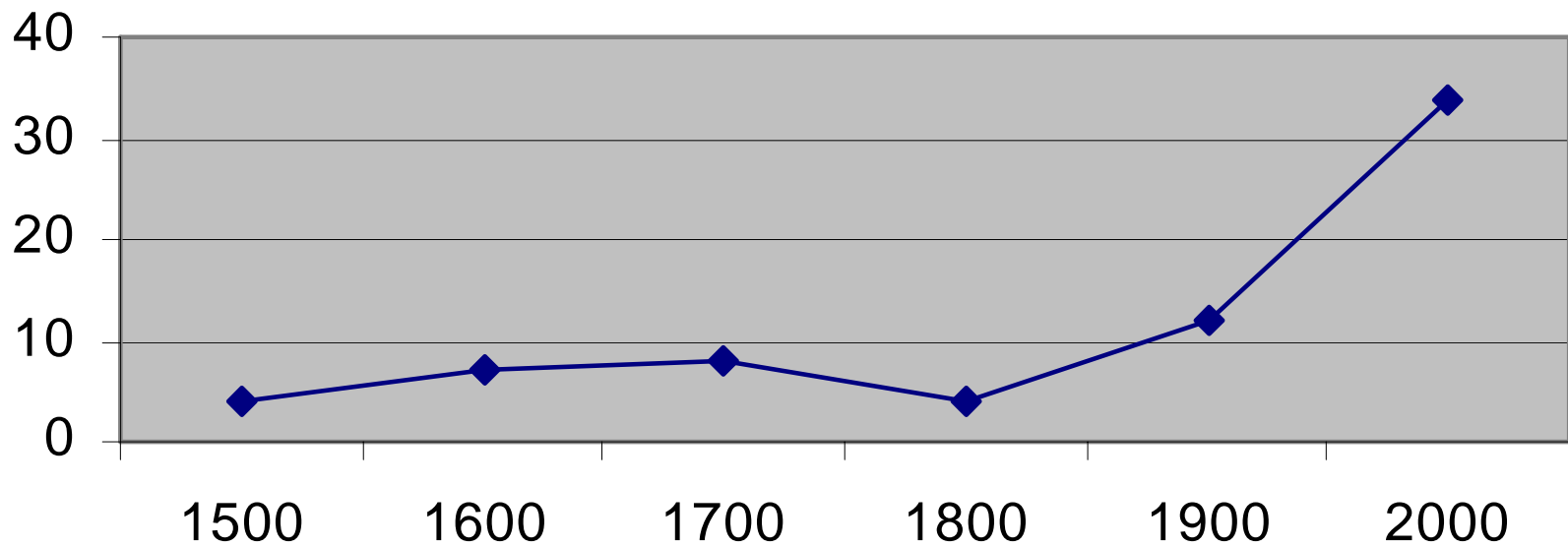
Examples of Ordinal Scales

- ✦ Social Class (lower to upper)
- ✦ Economic standing (poverty, low income, middle income, high income, wealthy)
- ✦ Education attainment
 - ◆ High school
 - ◆ College
 - ◆ Post Bac.

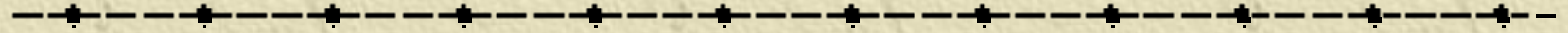
Interval: Usually time or distance



Number of Revolutions 1500-2000

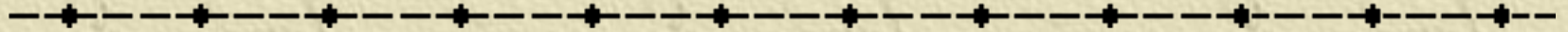


Interval Scale Examples

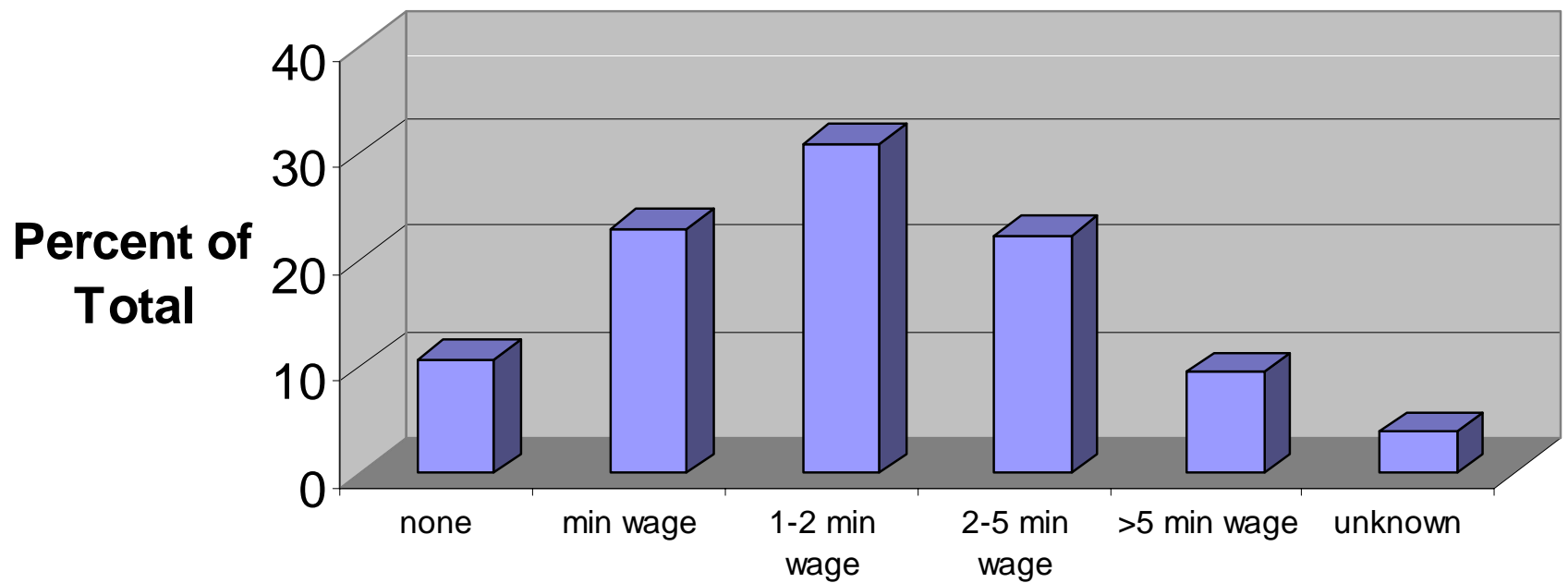


- ✦ Timelines used in history
- ✦ Degrees on a thermometer

Ratio Scales

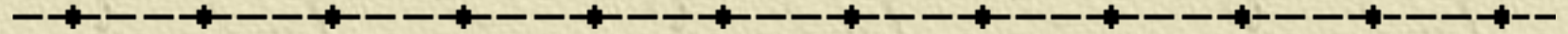


Earnings for Aguascalientes Mexico 1997



Ratio example

- ✦ Distance or quantity between things.
Astronomers use a ratio scale known as astronomical units. The Earth and Sun are 1 unit apart. Mars is 1.52 a.u. from the Sun.
- ✦ From that comparison, we know that Mars is about 50% more distant from the Sun than Earth.



Now make a set of scales that can be used to record data for a variable.