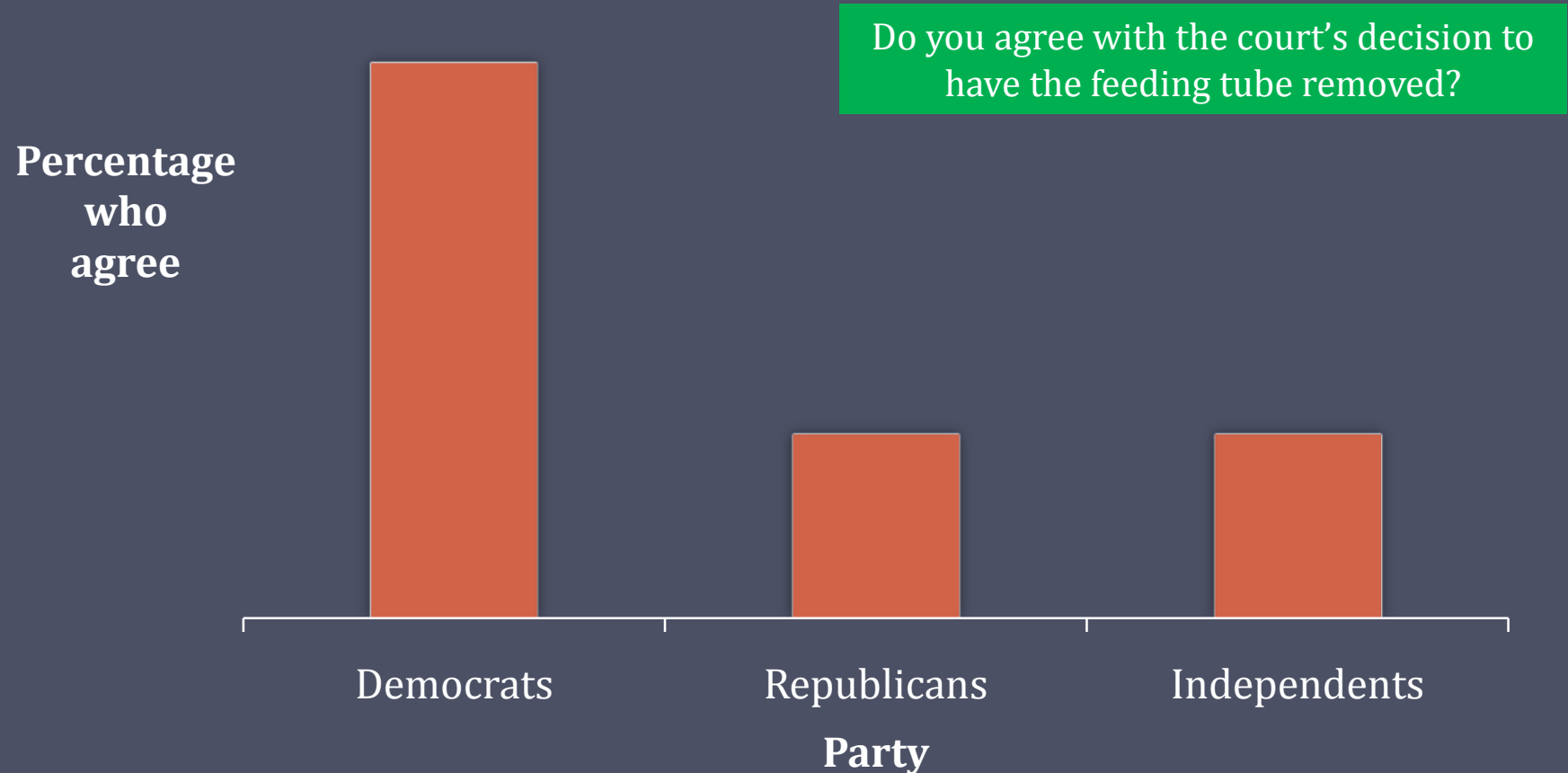


Deception with Graphs

Tanmay Kumar Maity
Department of Statistics
Haldia Govt. College

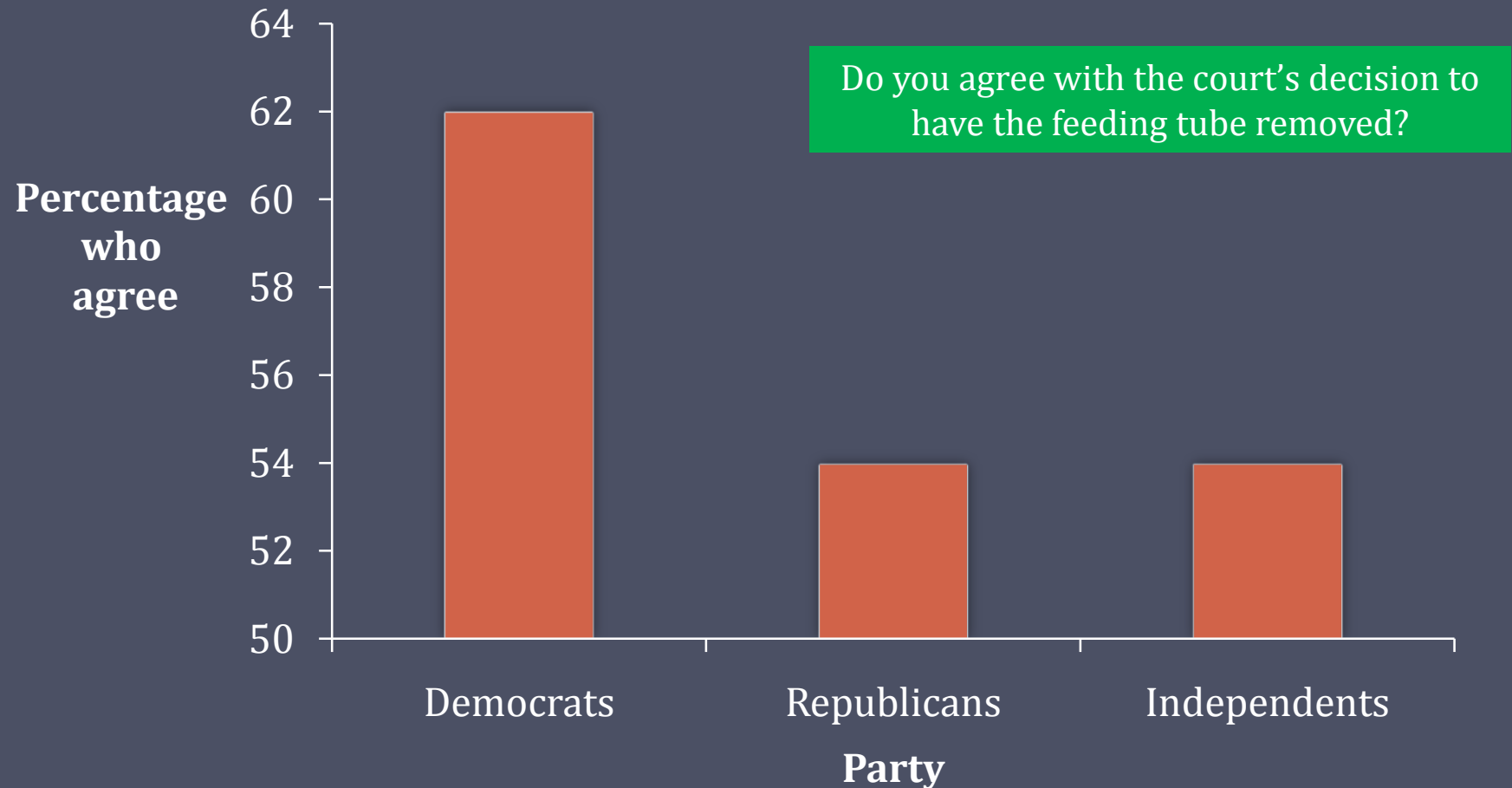
Scaling and Axis Manipulation

CNN/ USA Today Gallup Poll 2005: Terri Schiavo case Results by Party

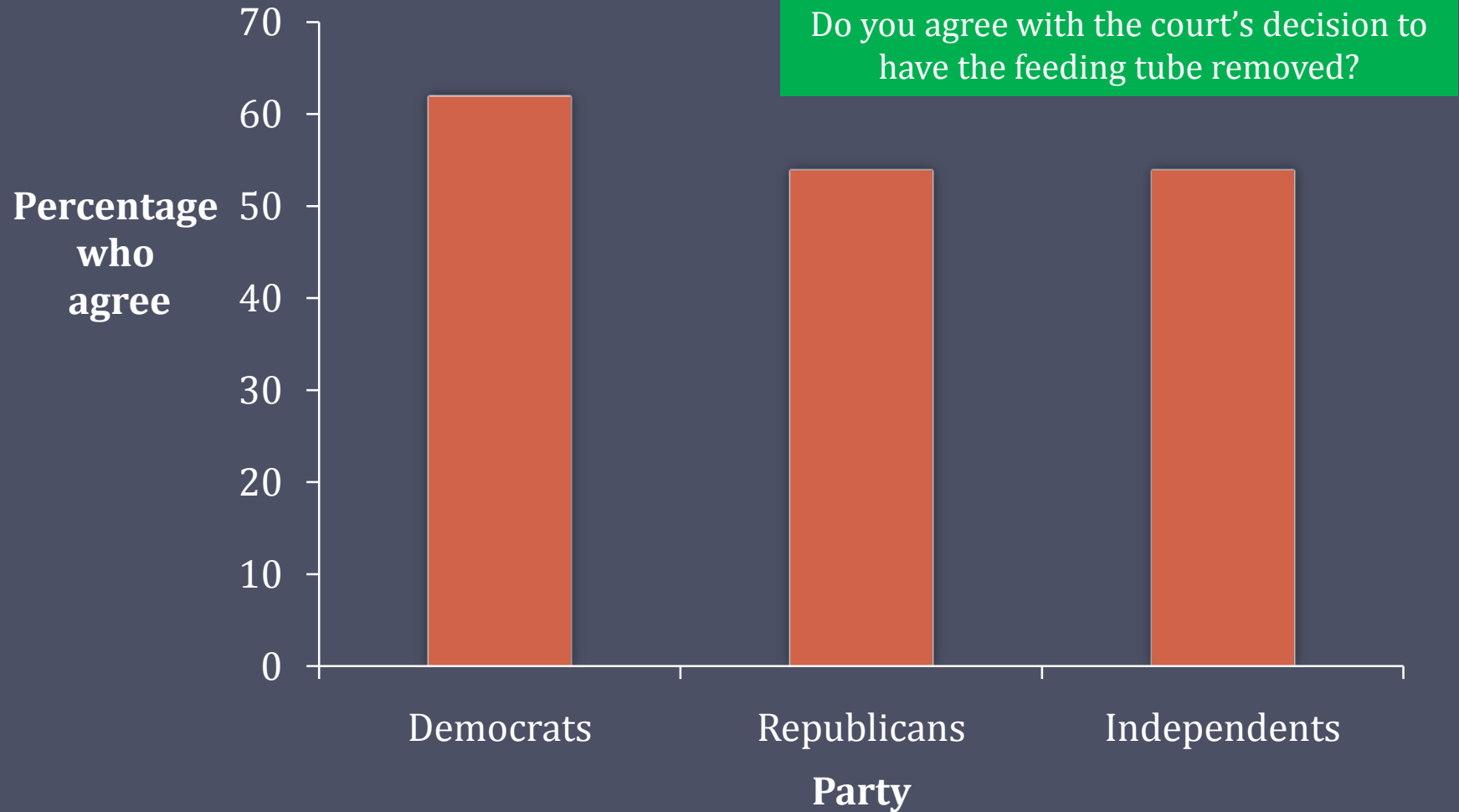


Scaling and Axis Manipulation

**CNN/ USA Today Gallup Poll 2005: Terri Schiavo case
Results by Party**

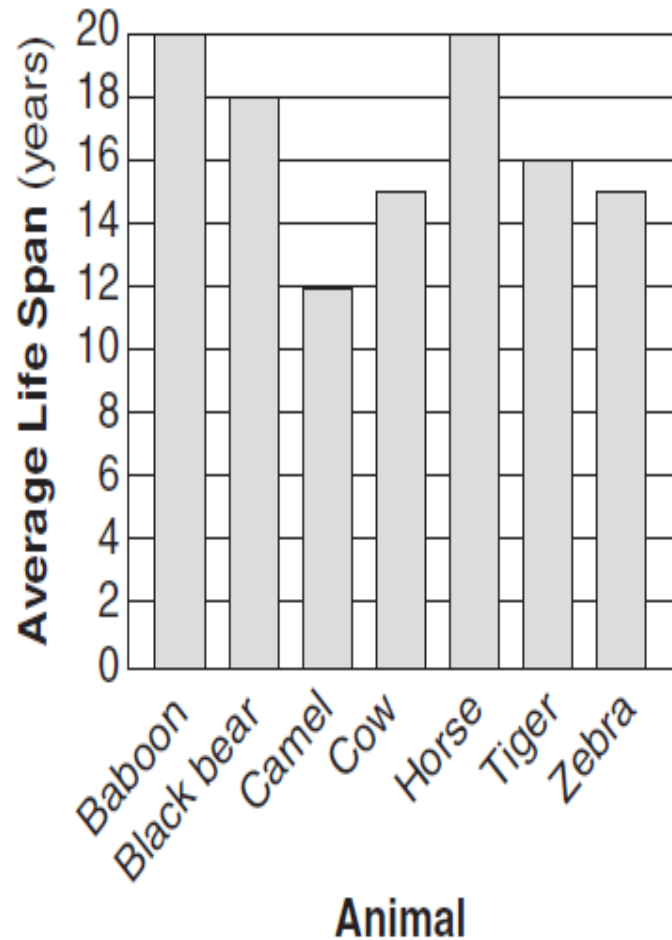


CNN/ USA Today Gallup Poll 2005: Terri Schiavo case Results by Party

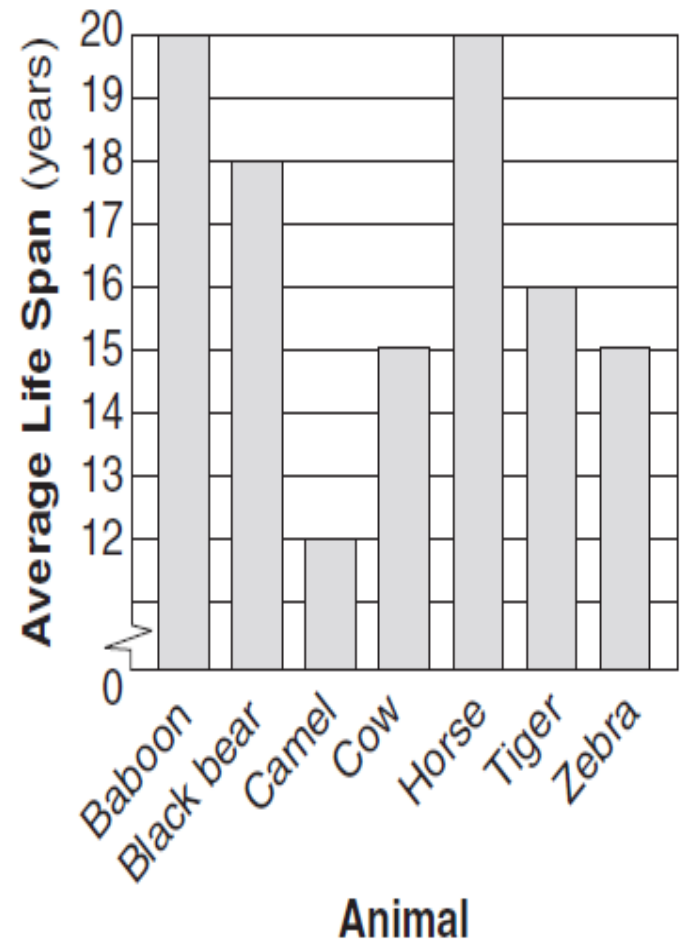


Scaling and Axis Manipulation

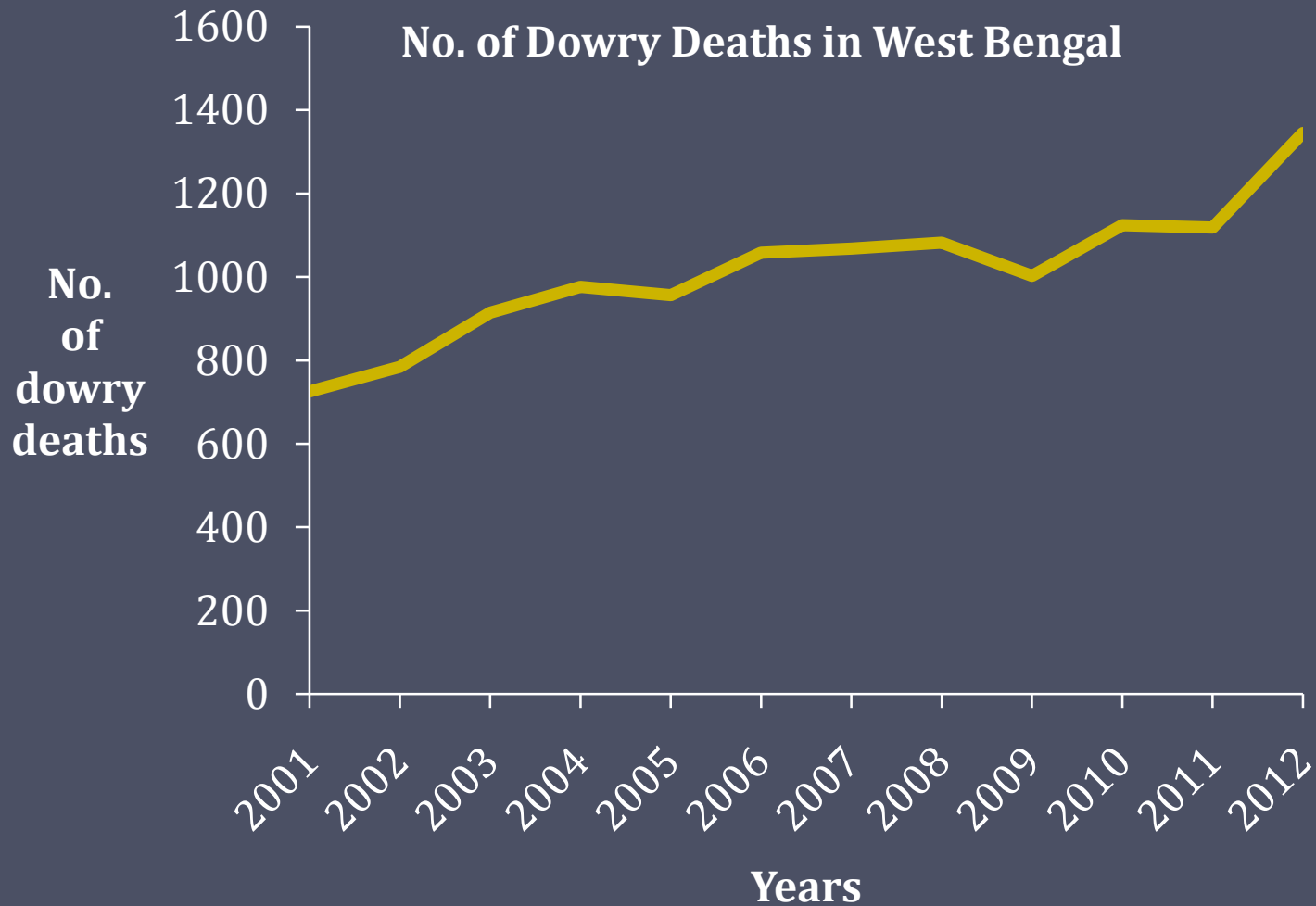
**Average Life Span of
Selected Animals**



**Average Life Span of
Selected Animals**

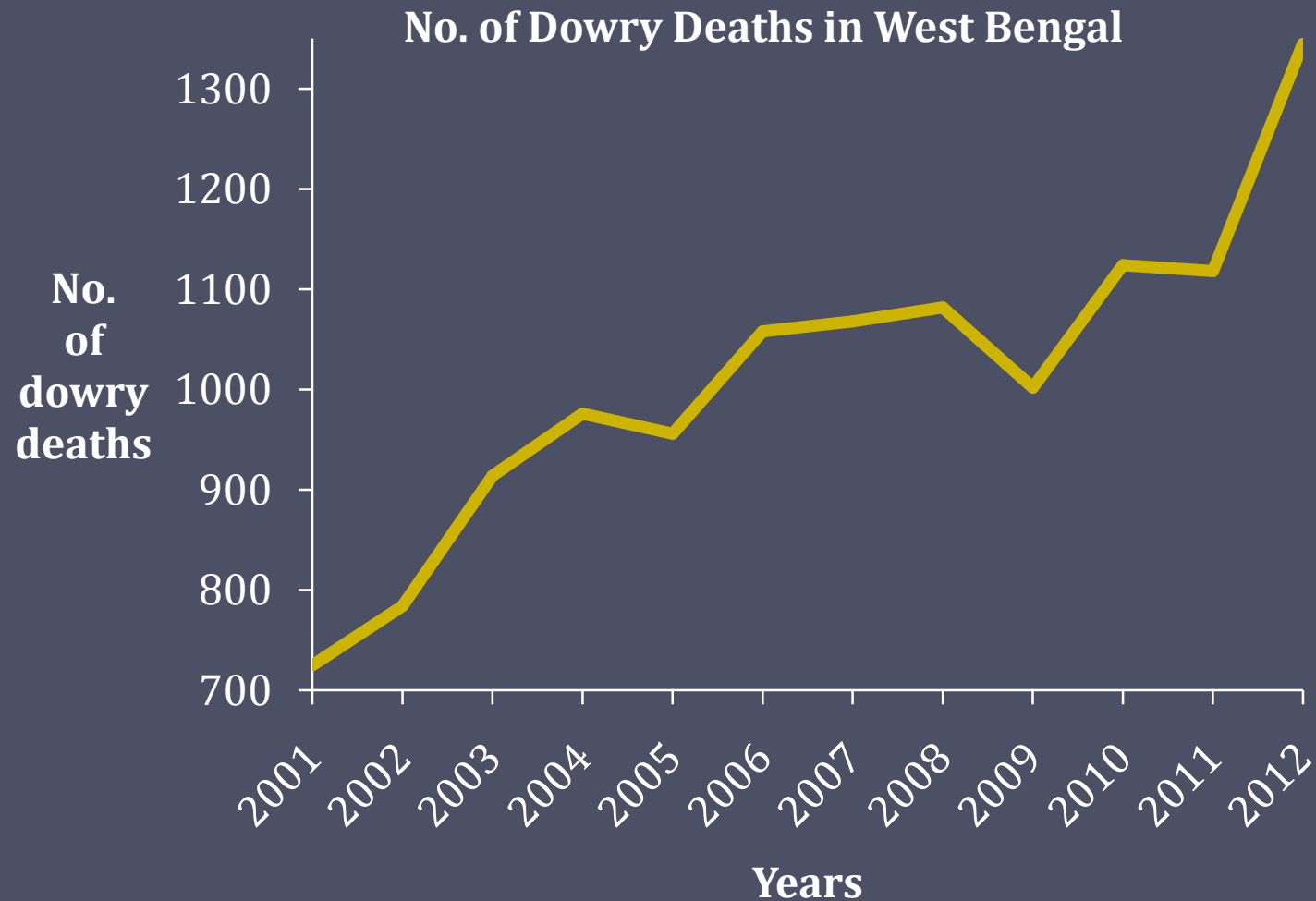


Misleading Trend



Misleading Trend...

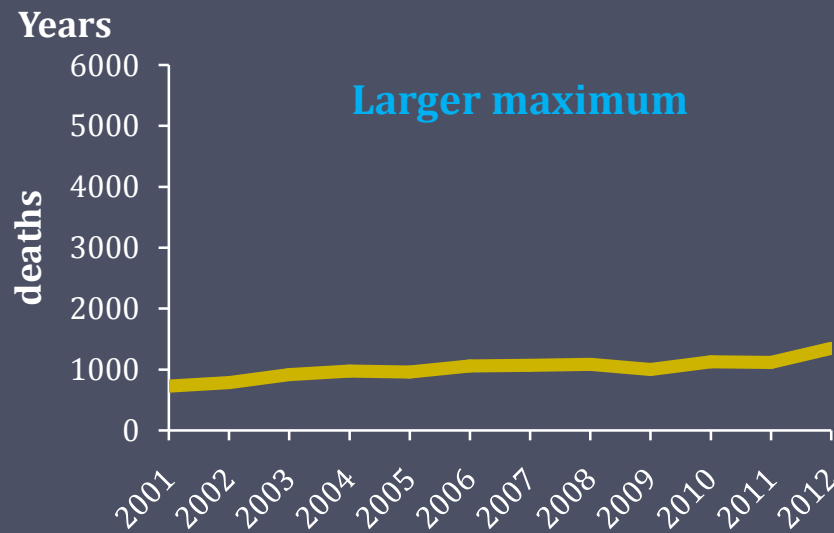
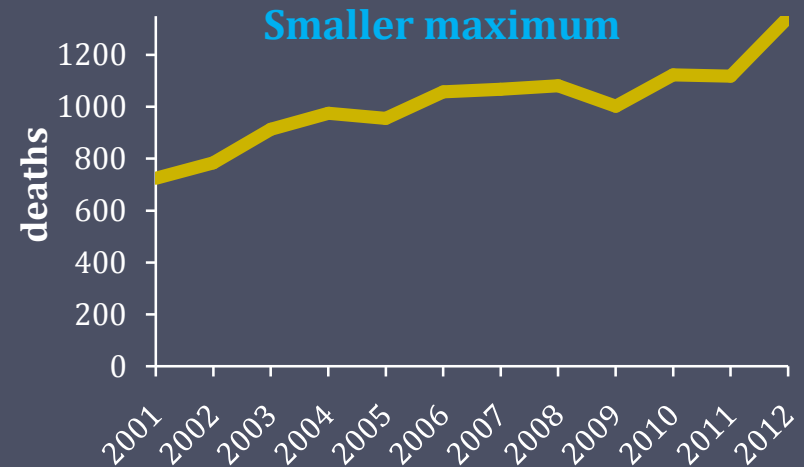
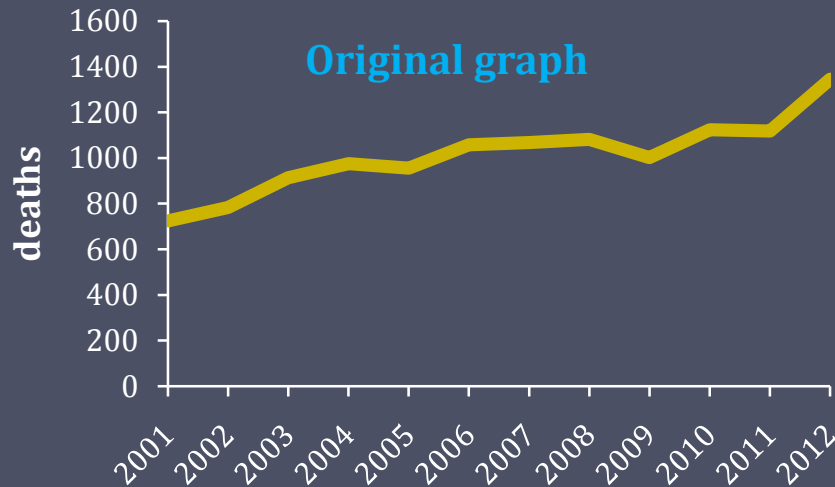
Changing scale of vertical axis



Misleading Trend...

Changing maximum of vertical axis

No. of Dowry Deaths in West Bengal



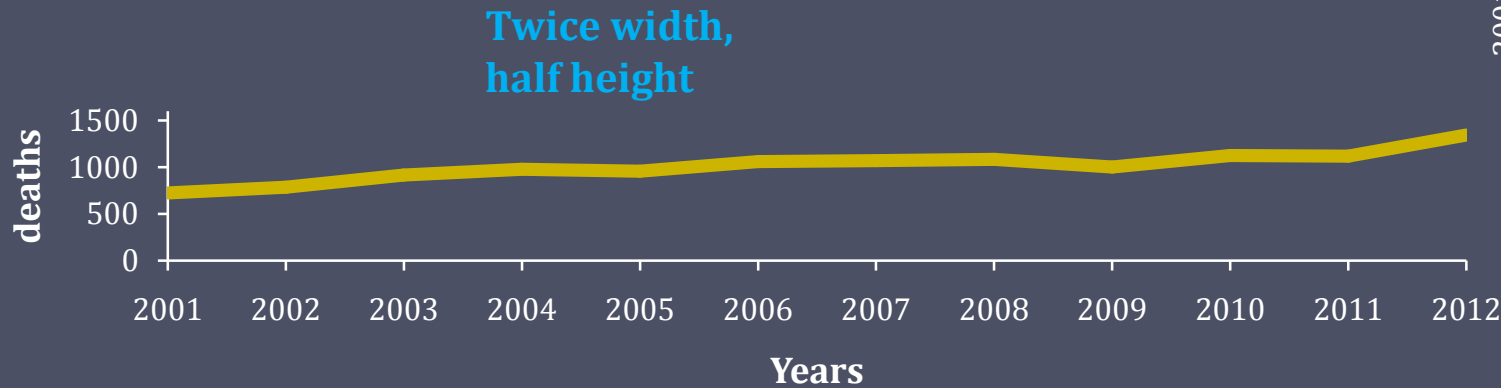
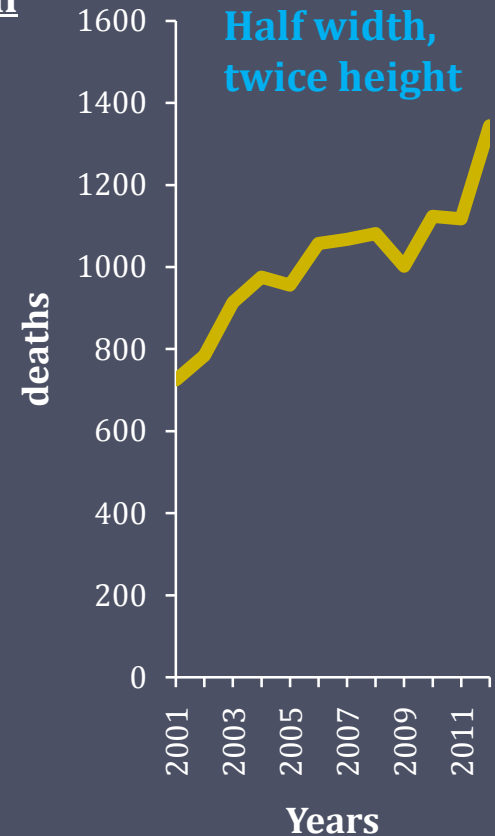
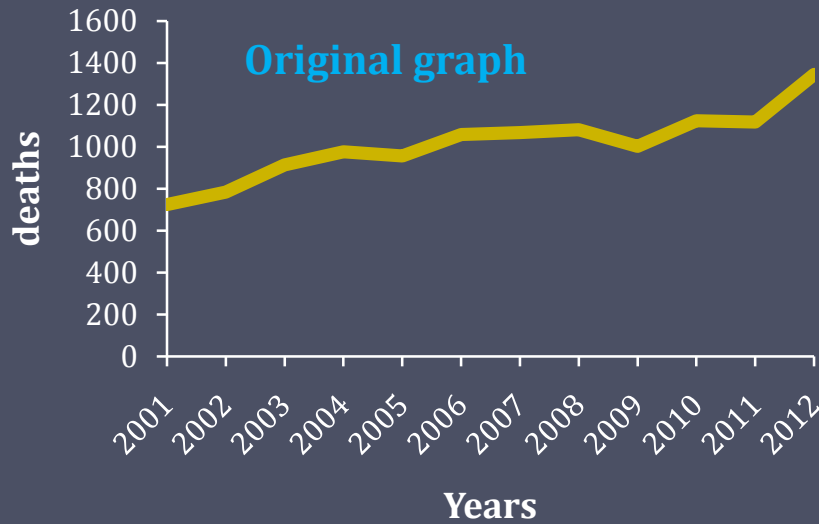
Deception with graphs

Years

Misleading Trend...

Changing ratio of graph dimensions

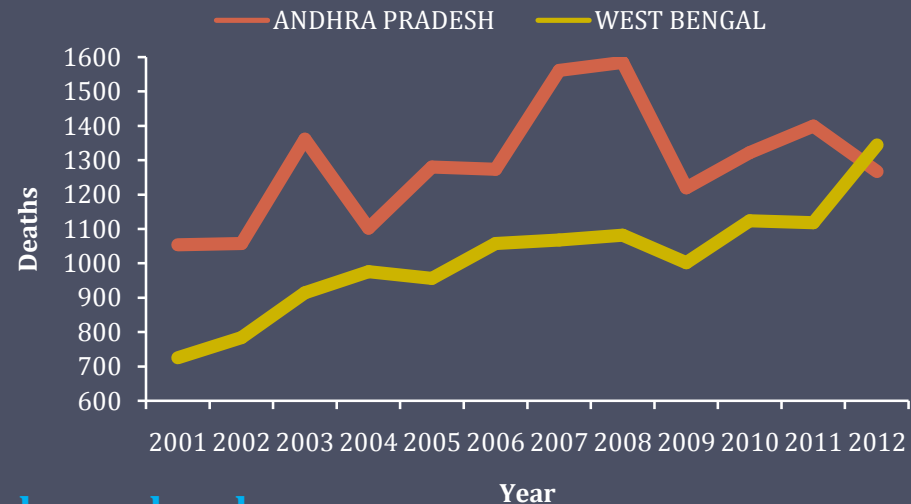
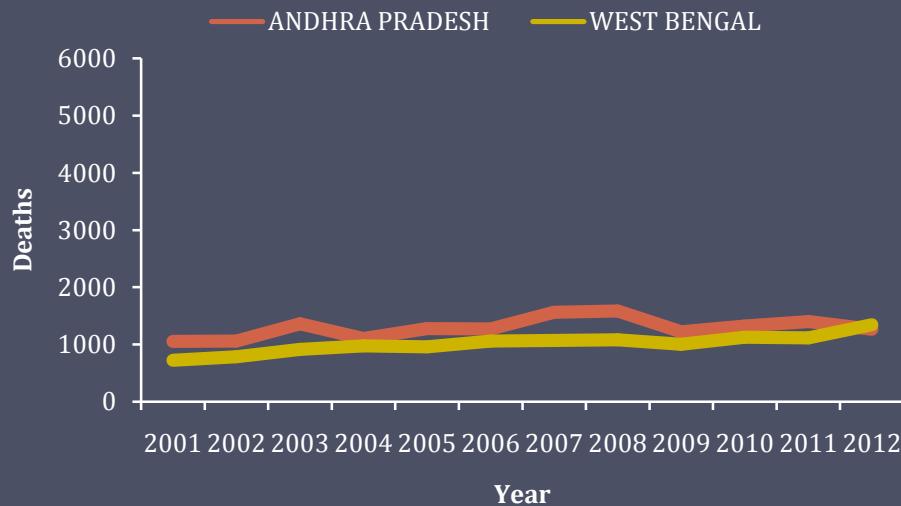
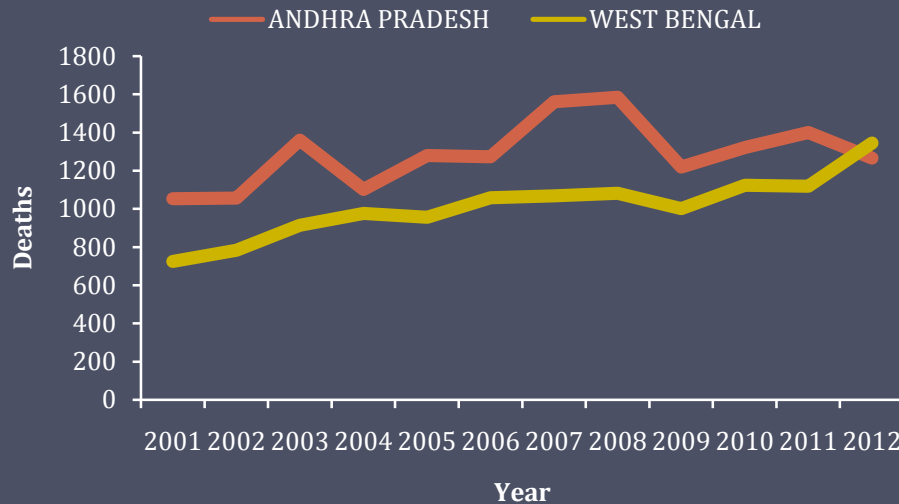
No. of Dowry Deaths in West Bengal



Deception with graphs

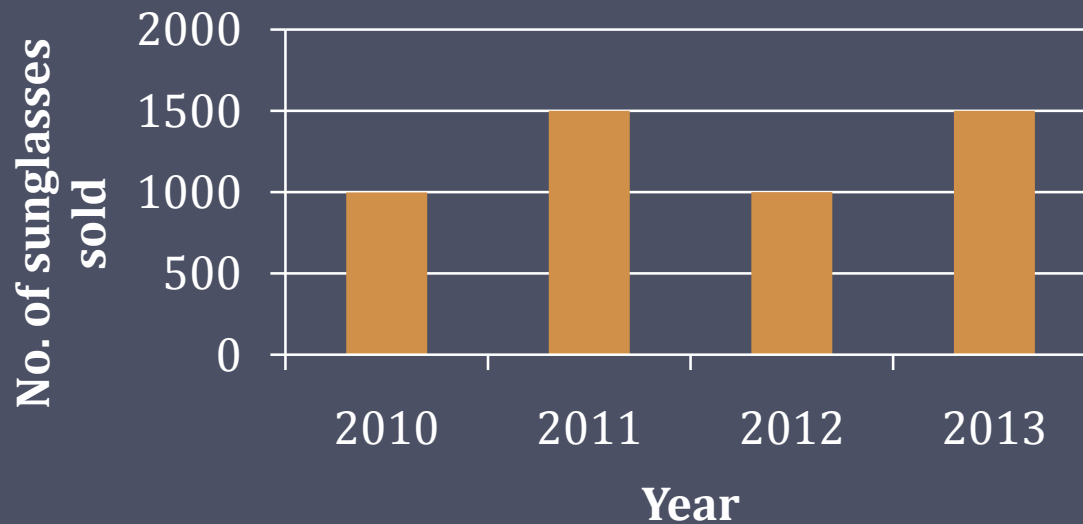
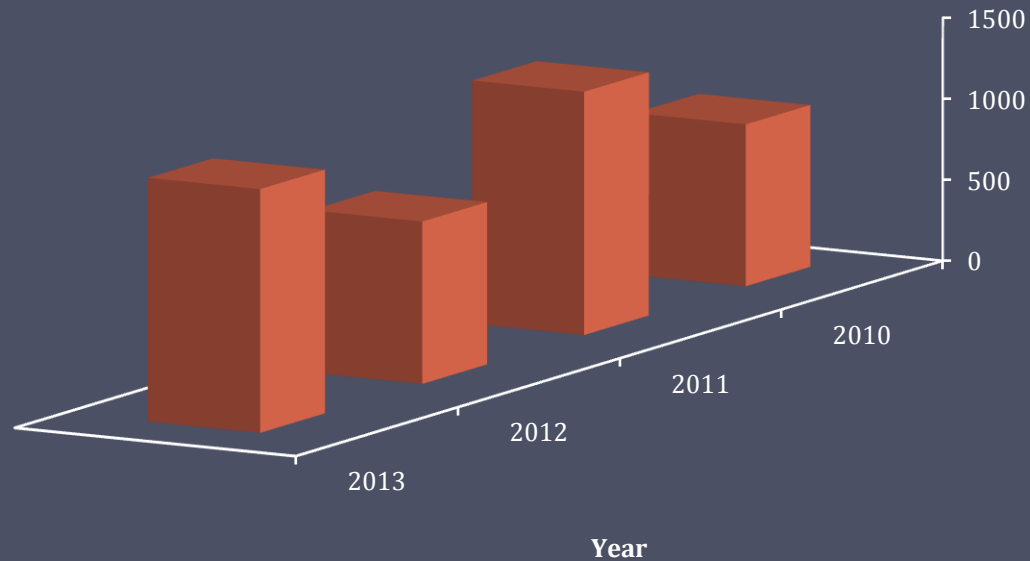
Misleading comparison between two trends

No. of Dowry Deaths in West Bengal and Andhra Pradesh



Three dimensional effect: Bar graph

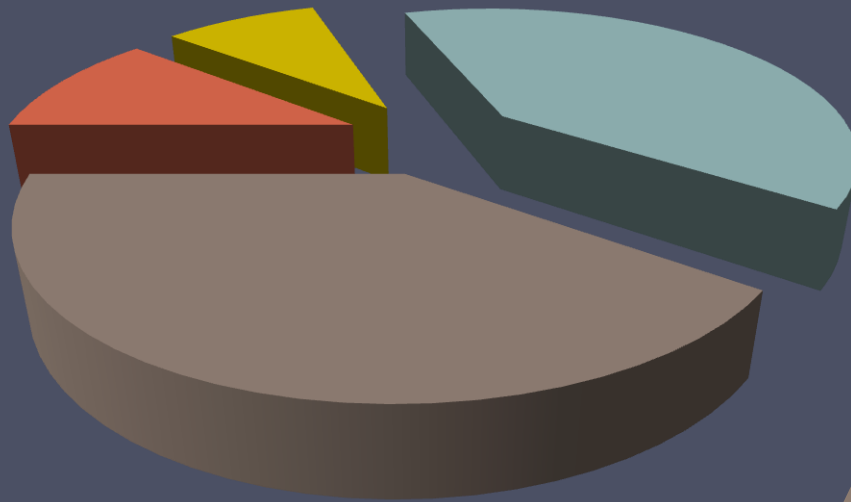
Sale of sunglasses in a shop



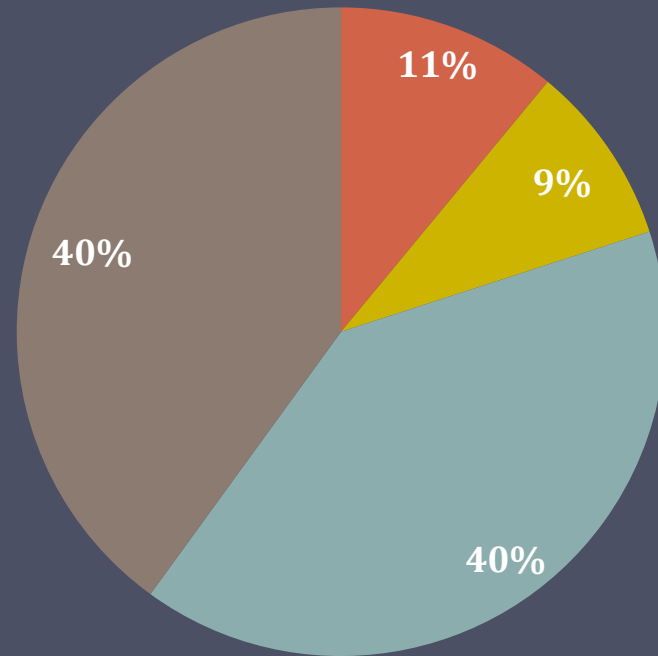
Deception with graphs

Three dimensional effect: Pie diagram

Blood group distribution of Arts students in a college



■ A ■ B ■ AB ■ O



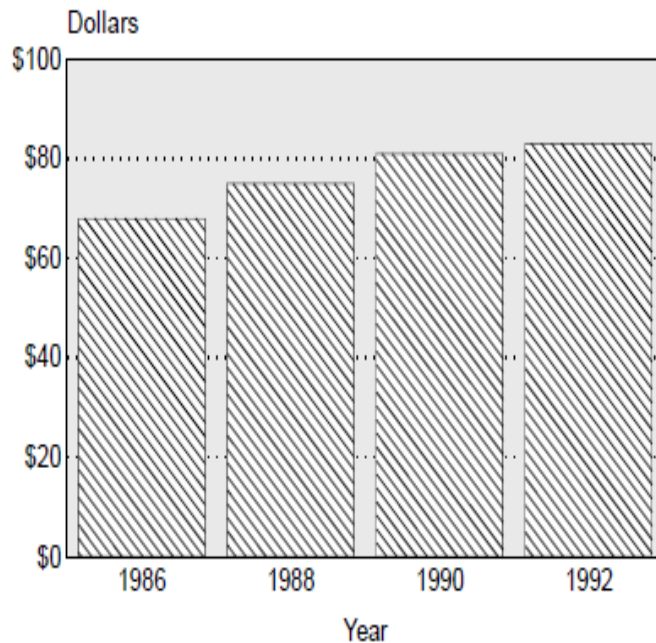
■ A ■ B ■ AB ■ O

Deception with graphs

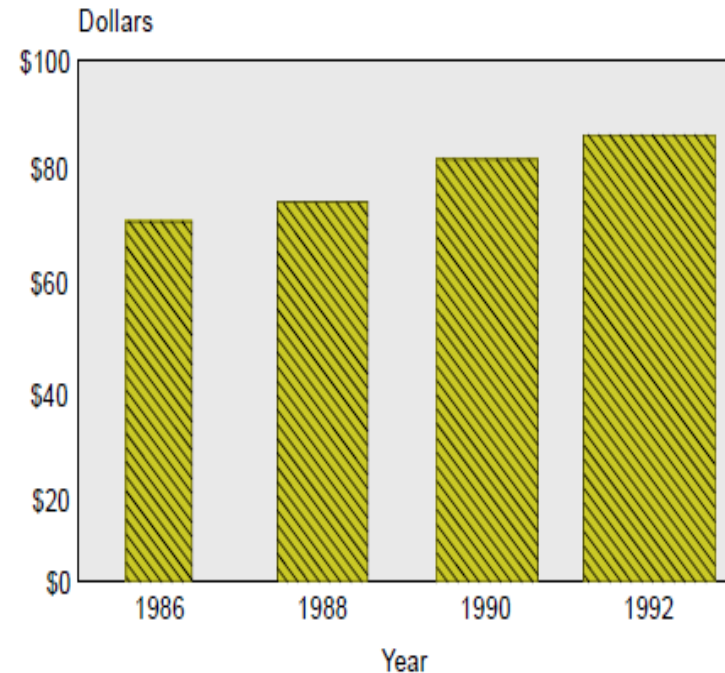
Manipulating Bar Graphs

Width of the bars is proportional to their height

Average Weekly Food Expenditures
(Texas Families)

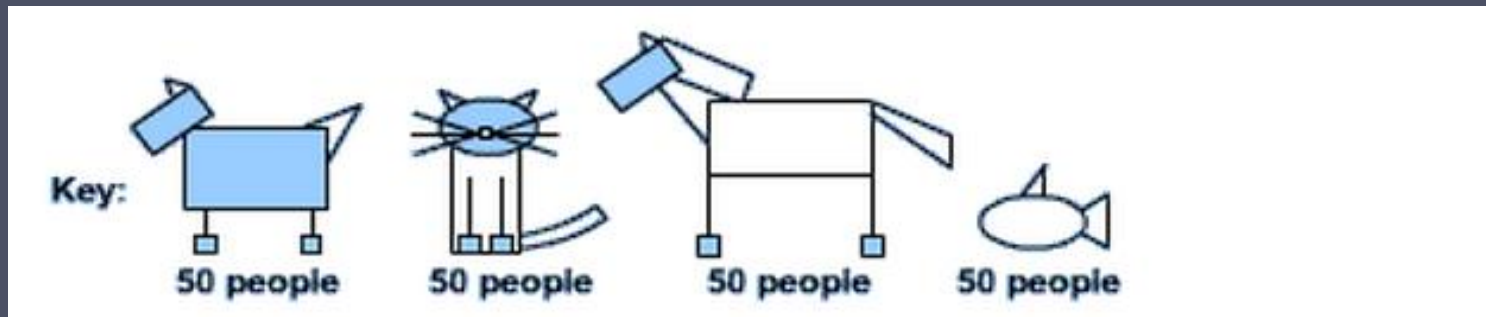
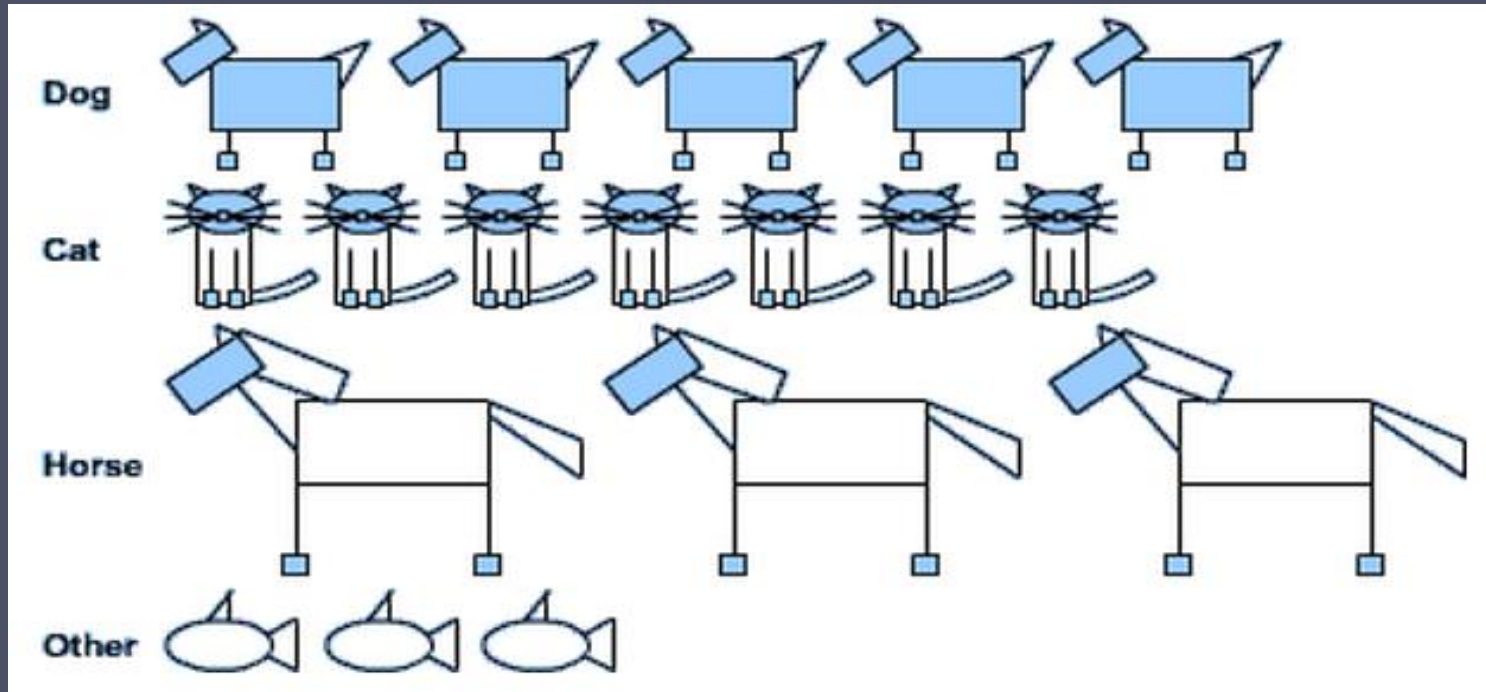


Average Weekly Food Expenditures
(Texas Families)



Manipulating Pictograph

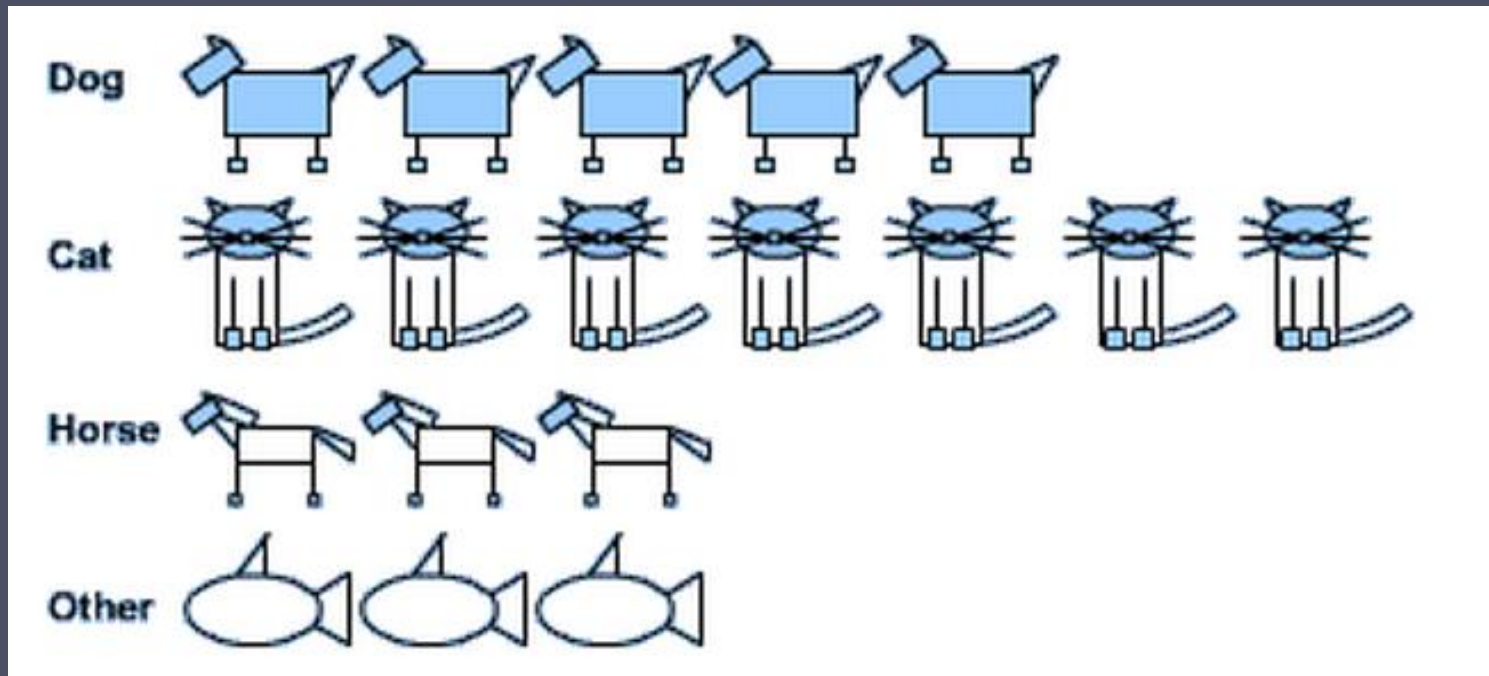
No. of people own different pets



Deception with graphs

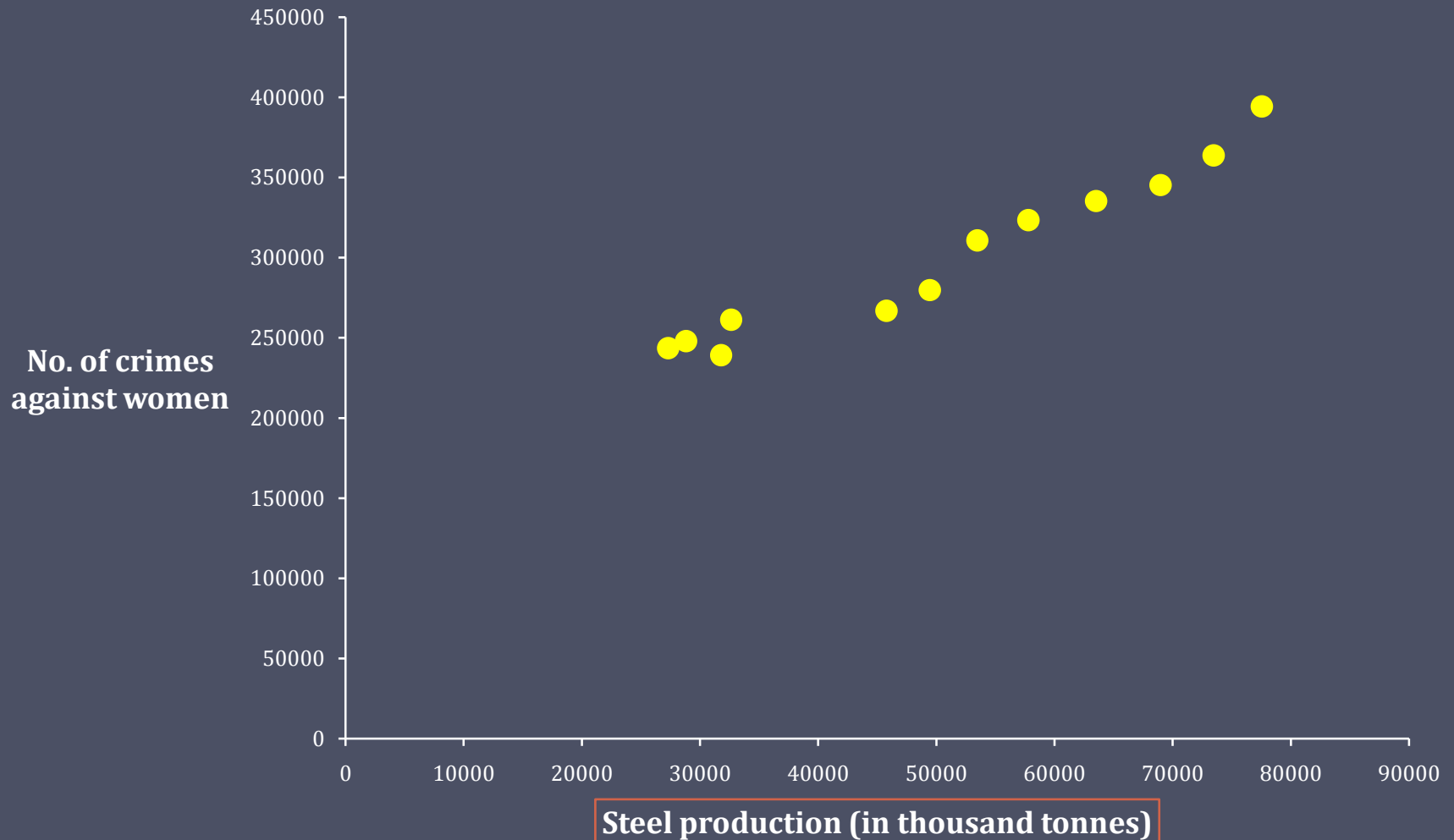
Manipulating Pictograph...

No. of people own different pets



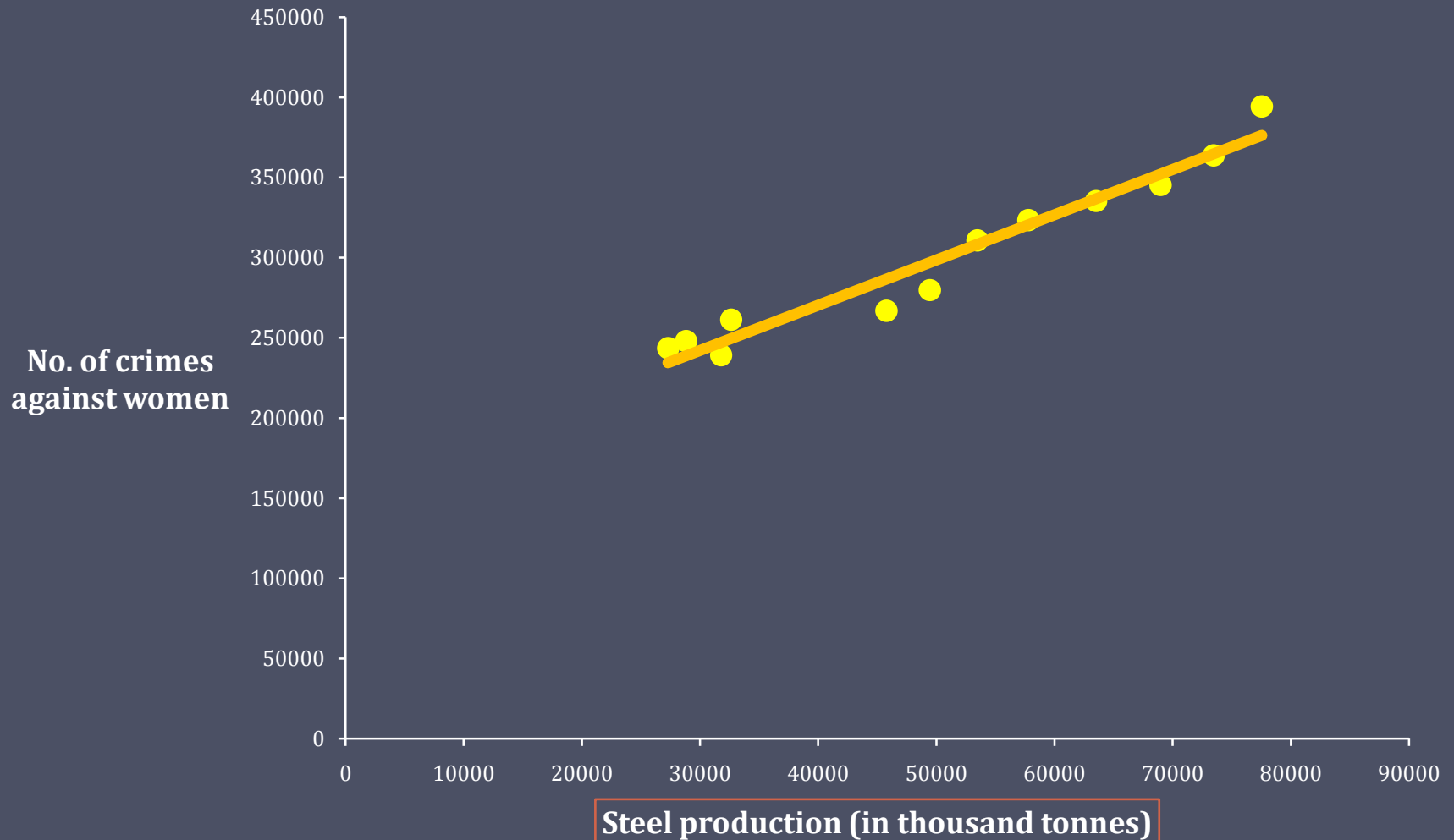
Misleading Scatter diagram

India: Steel Production vs. Crime against women



Misleading Scatter diagram

India: Steel Production vs. Crime against women



Misleading Scatter diagram...

India: Steel Production vs. Crime against women



Bottom line

Detection of misleading graph/ chart

- Too narrow scale or No scale at all
- A break in the axis
- Unequal intervals
- Origin not starting at zero
- Comparing two sets of data with different scales

Detection of misleading graph/ chart...

- Ratio between horizontal and vertical scale
- If the bars are not equal widths
- If it's a pictogram, then all of the pictured items may not be the same size.
- Beware of 3D graph
- Misleading scatter diagram

If you torture the data long enough,
it will confess.

Ronald Coase



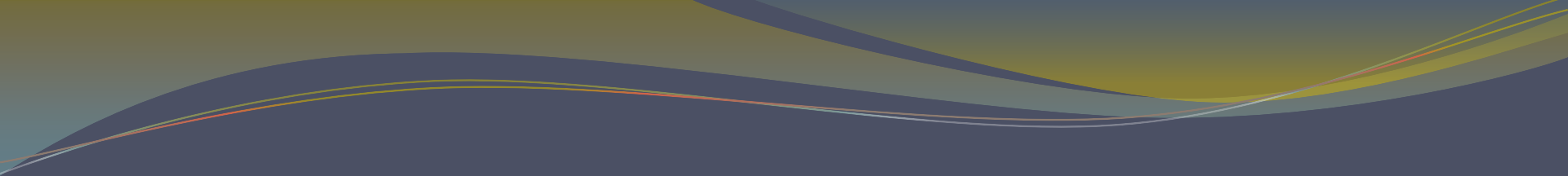
Treat Your Data with Reason - Not With Force



Deception with graphs

References

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THANK
YOU