

Errors

or not recommended

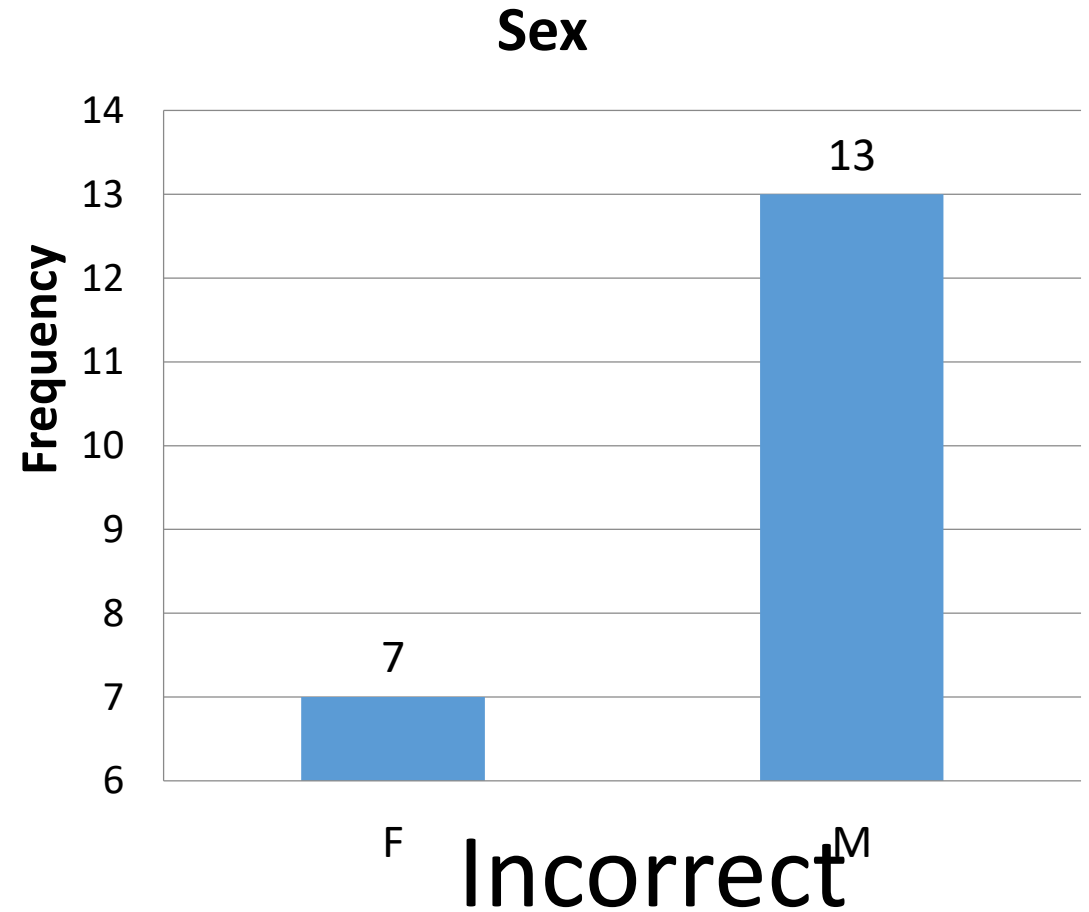
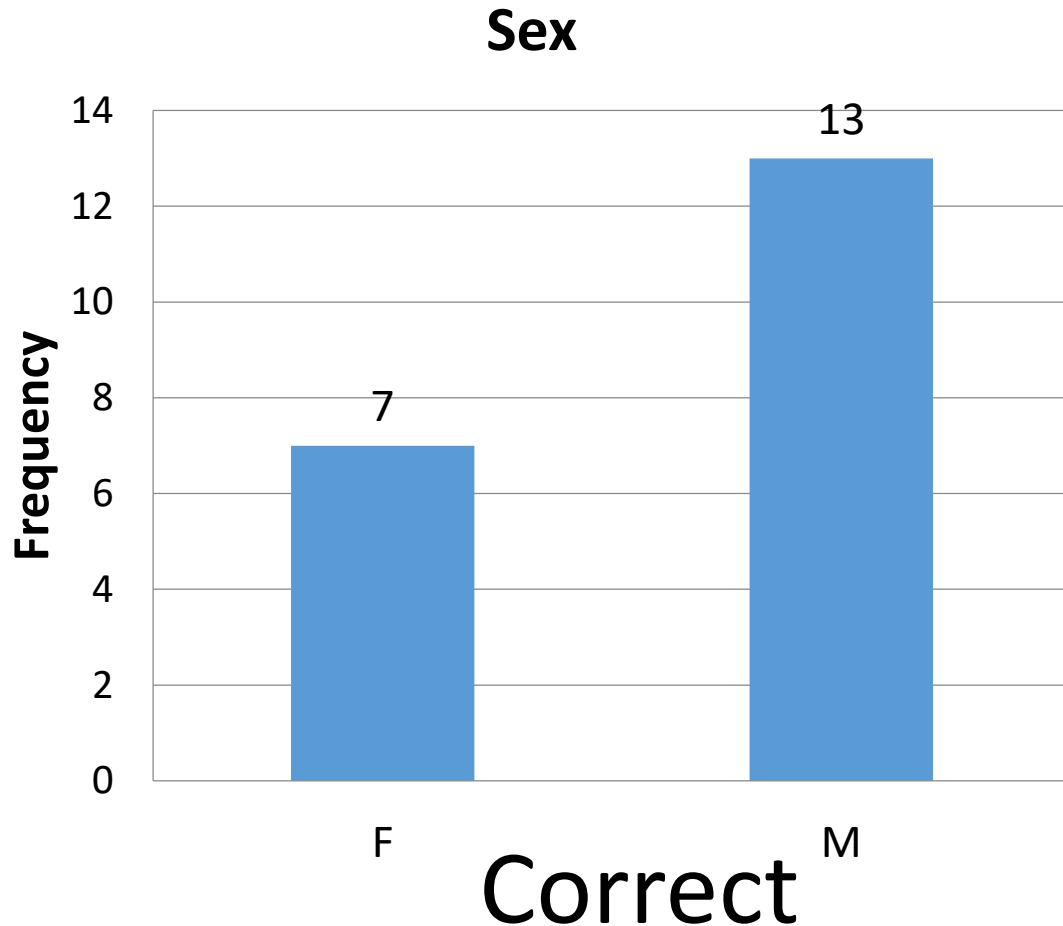
Lying with statistics

- **tactical data manipulation**
- statistics can be intentionally manipulated to manufacture a specific narrative or deceive the readers
- to utilize structural "errors" to trick the casual reader into seeing a pattern that does not actually exist

The Truncated Y-Axis (Exaggerating Tiny Differences)

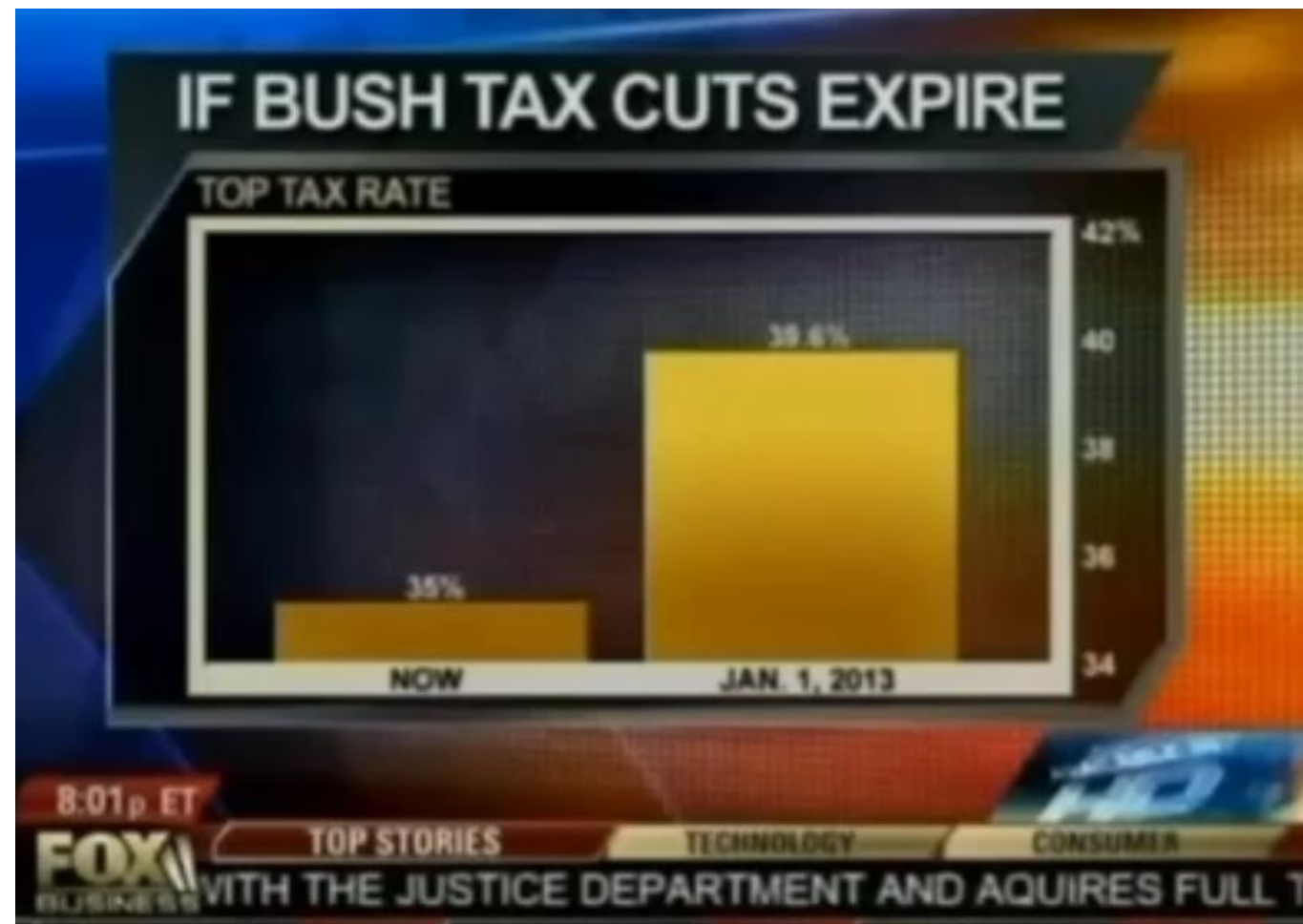
Not recommended

- !!! to start the axis at another value than 0 (increasing the differences between the frequencies)



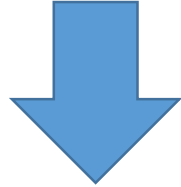
Real-World Example

- In 2012, Fox News aired a chart forecasting what would happen if the Bush tax cuts expired
- a massive bar for a tax rate of **39.6%** next to a shorter bar for **35%**
- The 39.6% bar looked roughly *five times taller* than the 35% bar
- In reality, the tax hike was **only a 4.6% increase**



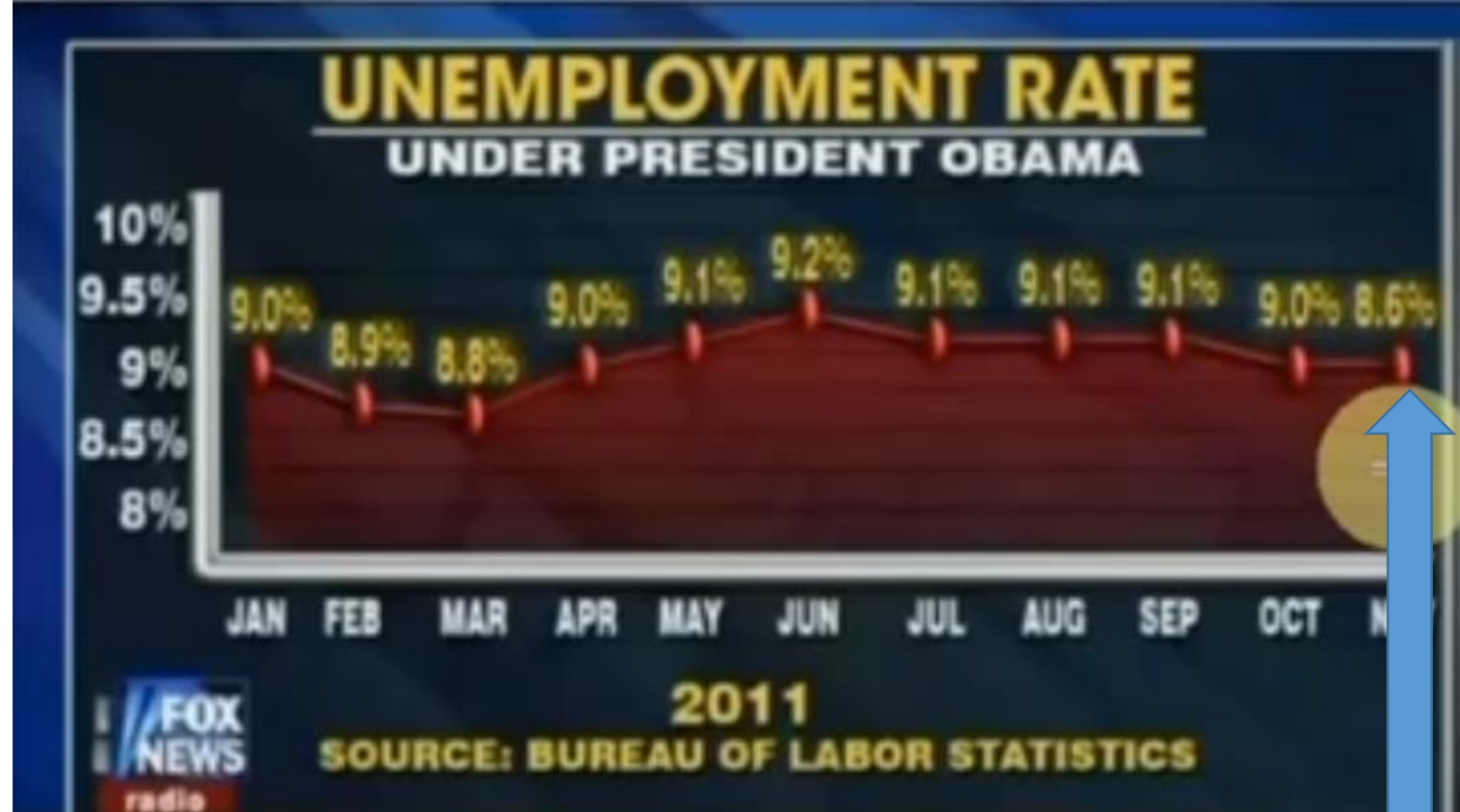
!!! deliberately truncated the OY-axis to start at 34% instead of 0% to induce panic about an "exponential" tax surge

2007 ad - 80% of dentists recommend Colgate tooth paste



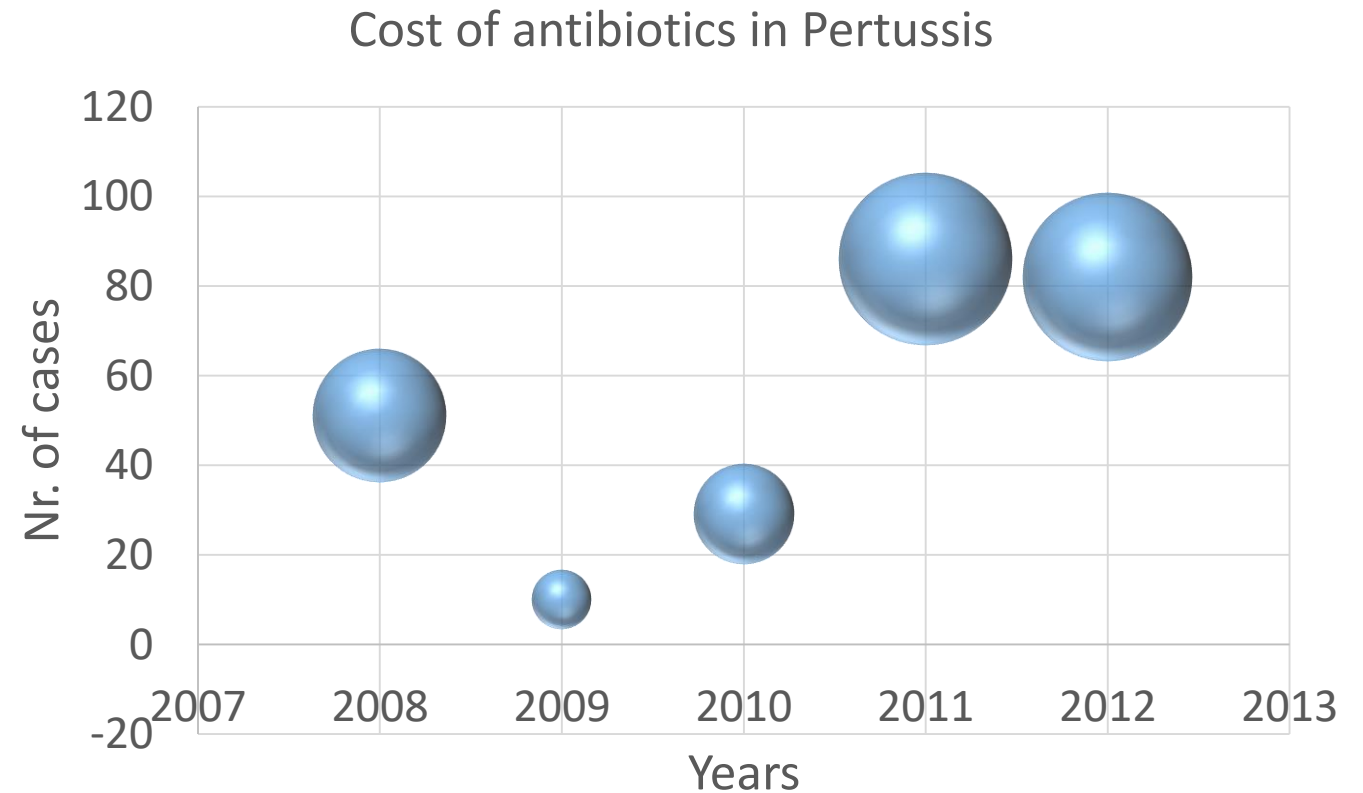
- many shoppers assumed Colgate was the best choice for their dental health
- But
- the survey asked dentist to list **several** brands of toothpaste they would recommend. The data only showed that Colgate was one of a number of different brands that dentists liked.

- 8.6% it is not plotted correctly.
- It should indicate a major drop in unemployment rate



Not recommended

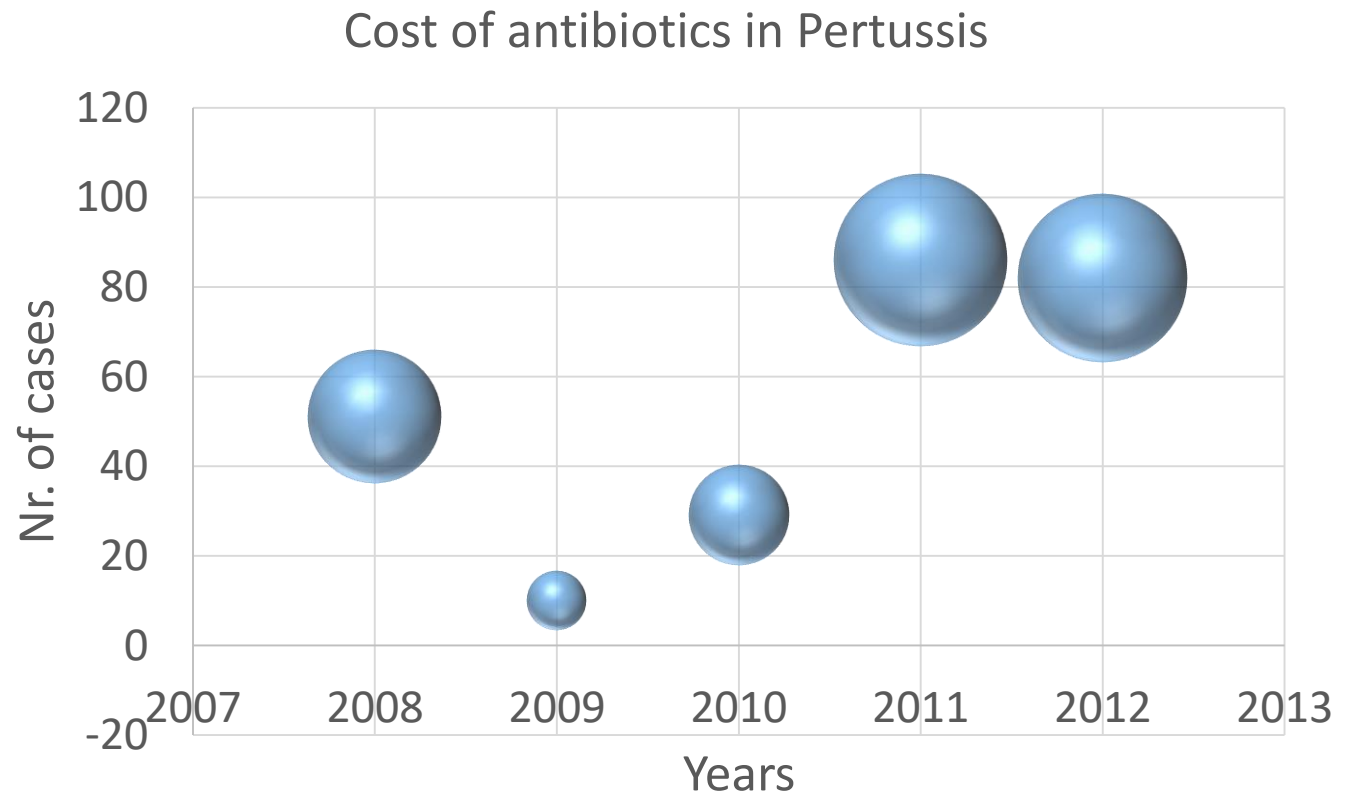
- Charts for 3 qualitative variables
 - !!! too complicated to understand



Not recommended

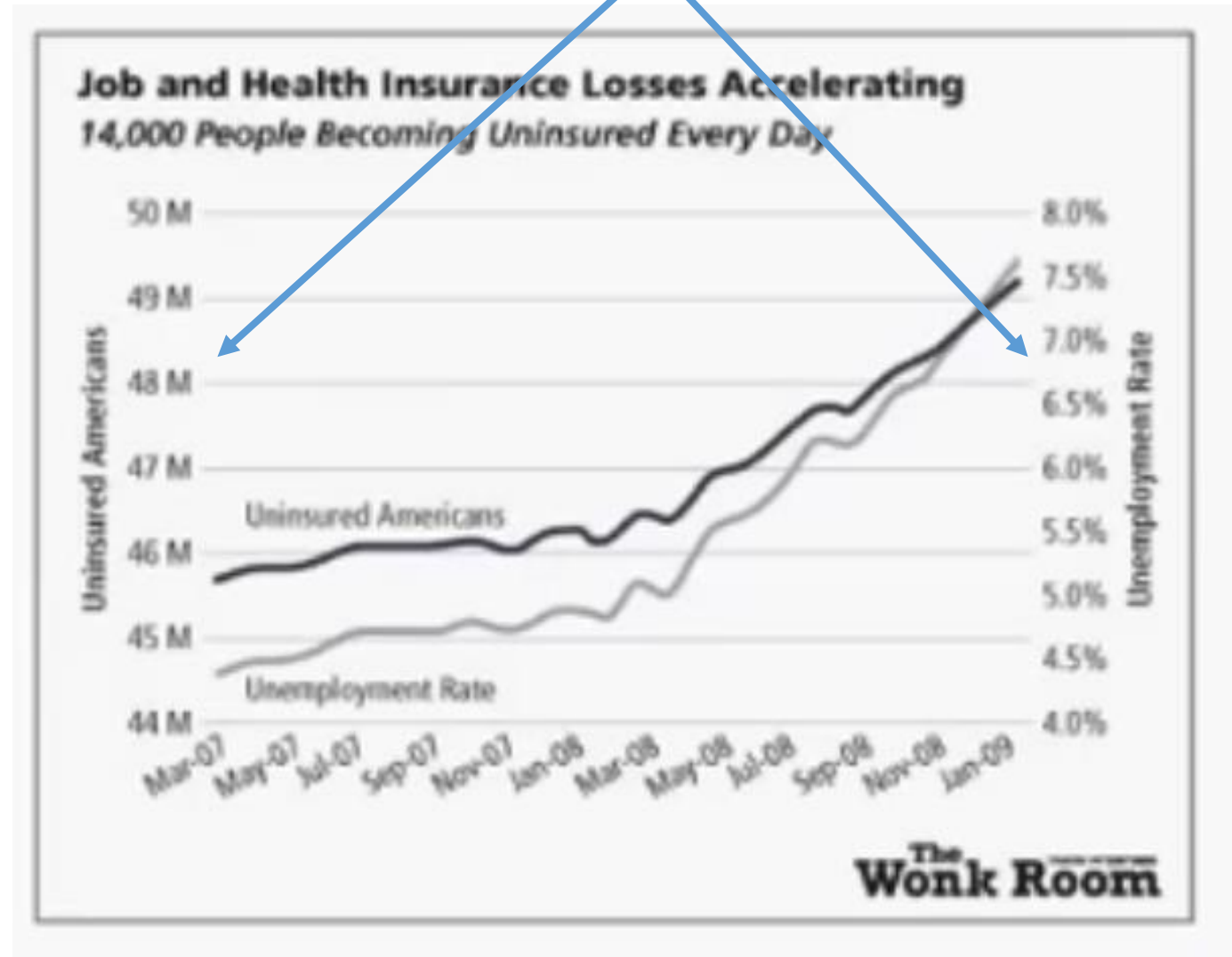
- Should be simple

Year	Pertussis no. of cases	Antibiotics cost
2012	82	2952
2011	86	3096
2010	29	1044
2009	10	360
2008	51	1836



Two OY axis...

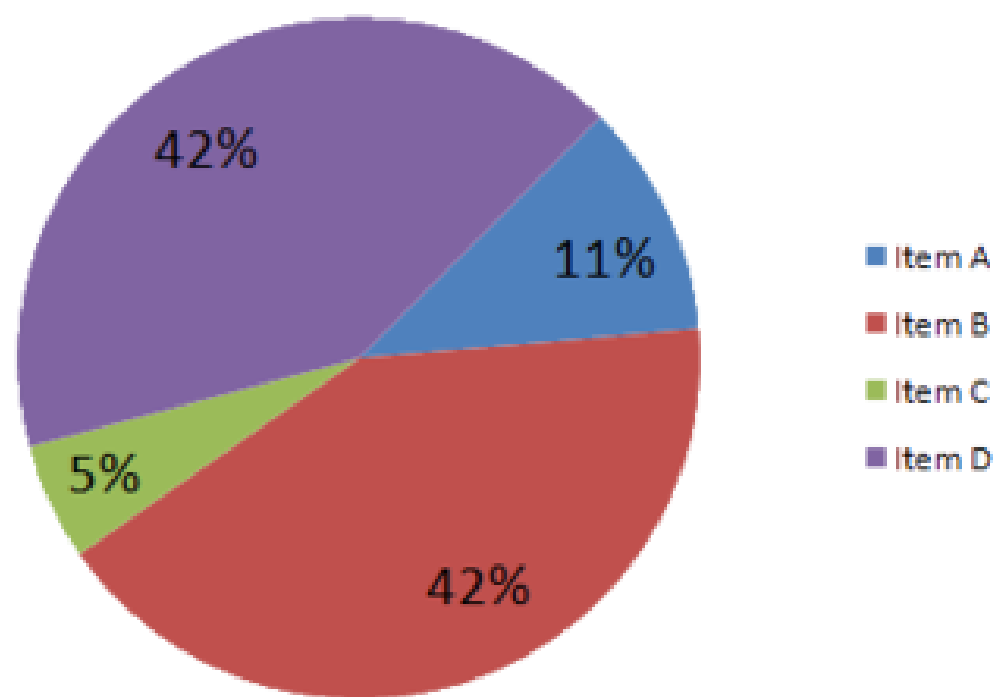
- which one is for which curve
– very confusing



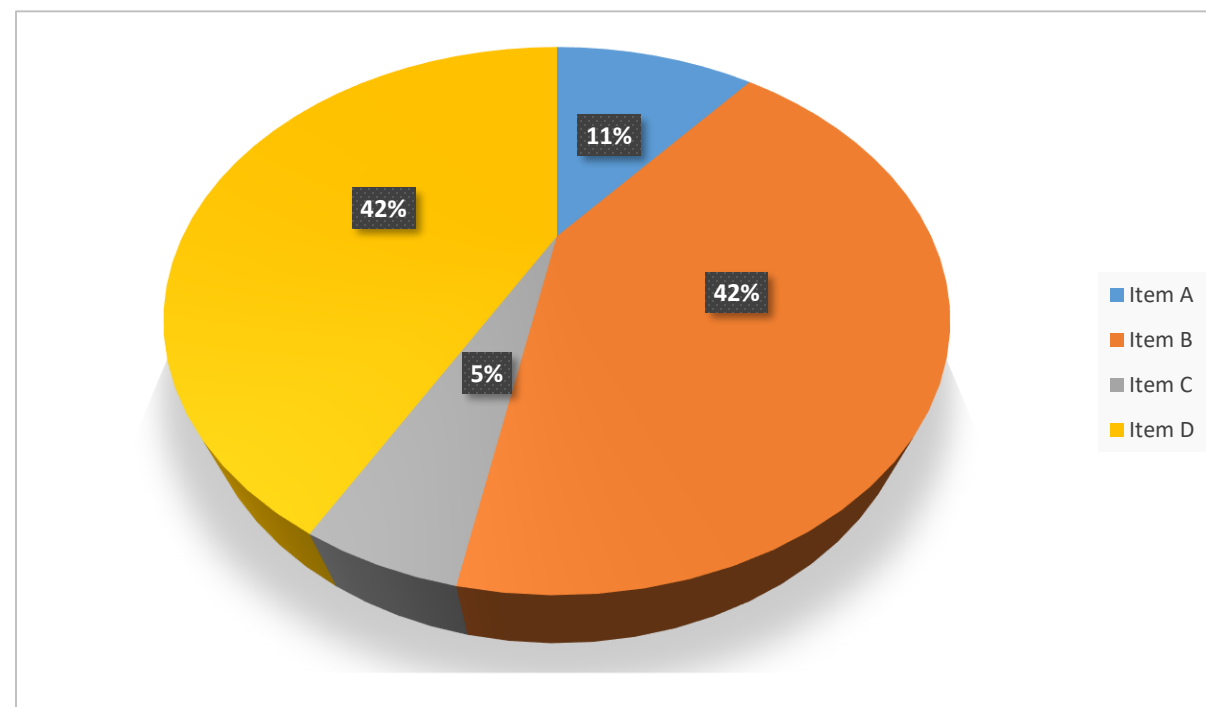
Not recommended

3D charts

!!! 5% near the same dimension as 11%



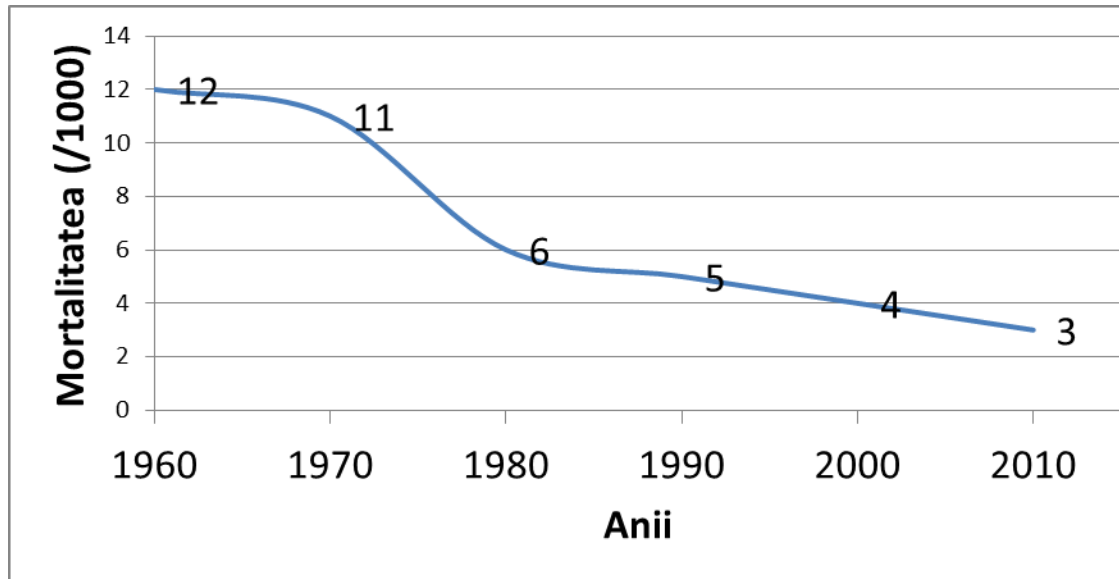
Correct



Incorrect

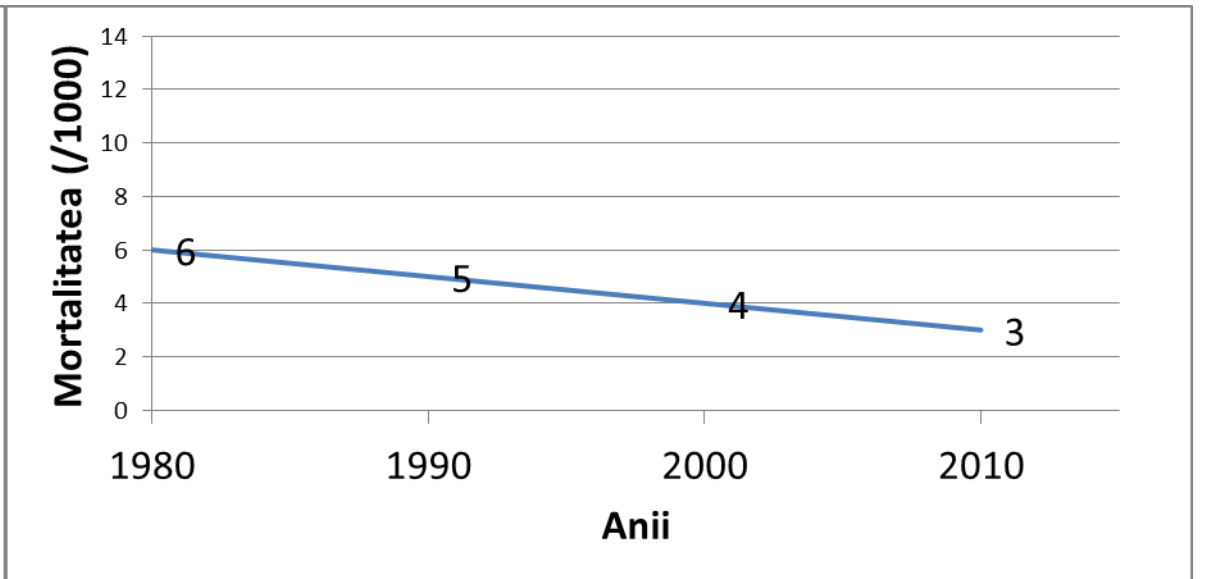
Incomplete data - Mortality

- If we start in 1960



Corect

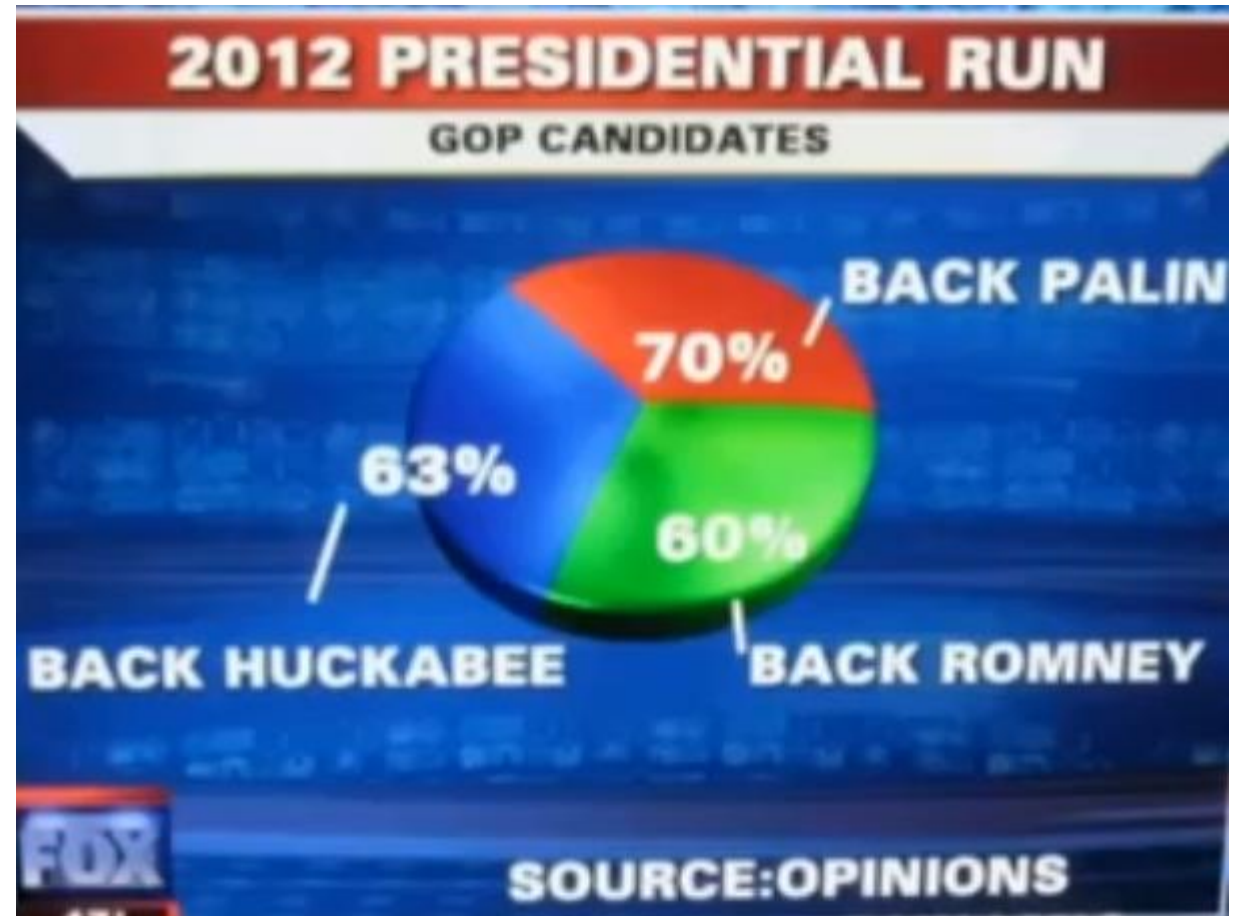
- If we start in 1980



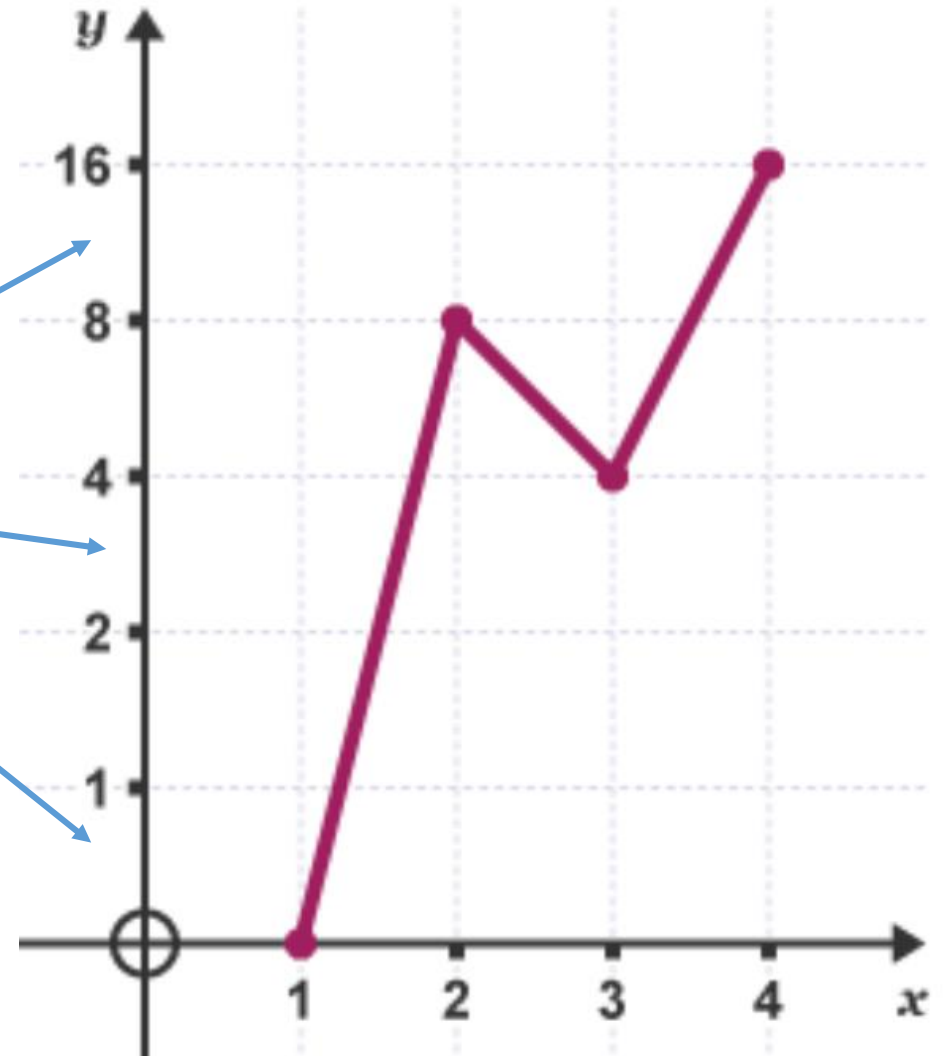
Incorect

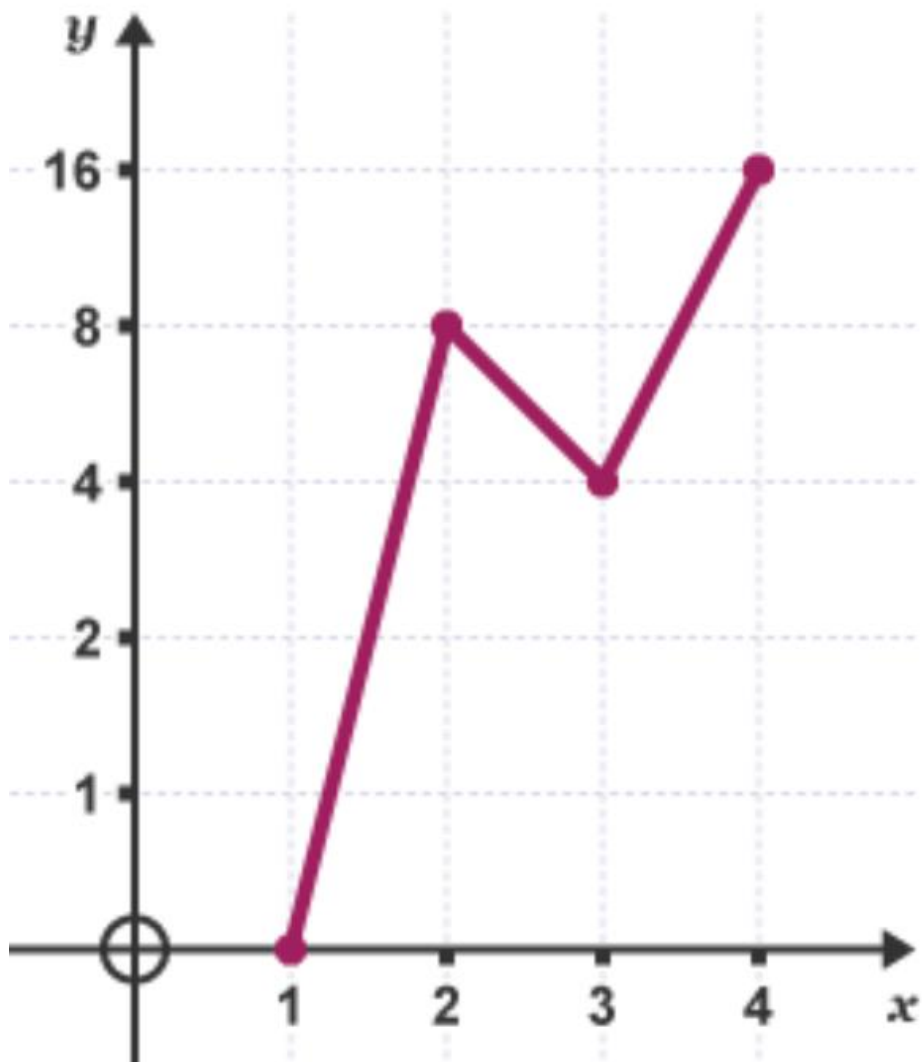
100%?

- Numbers did not add up

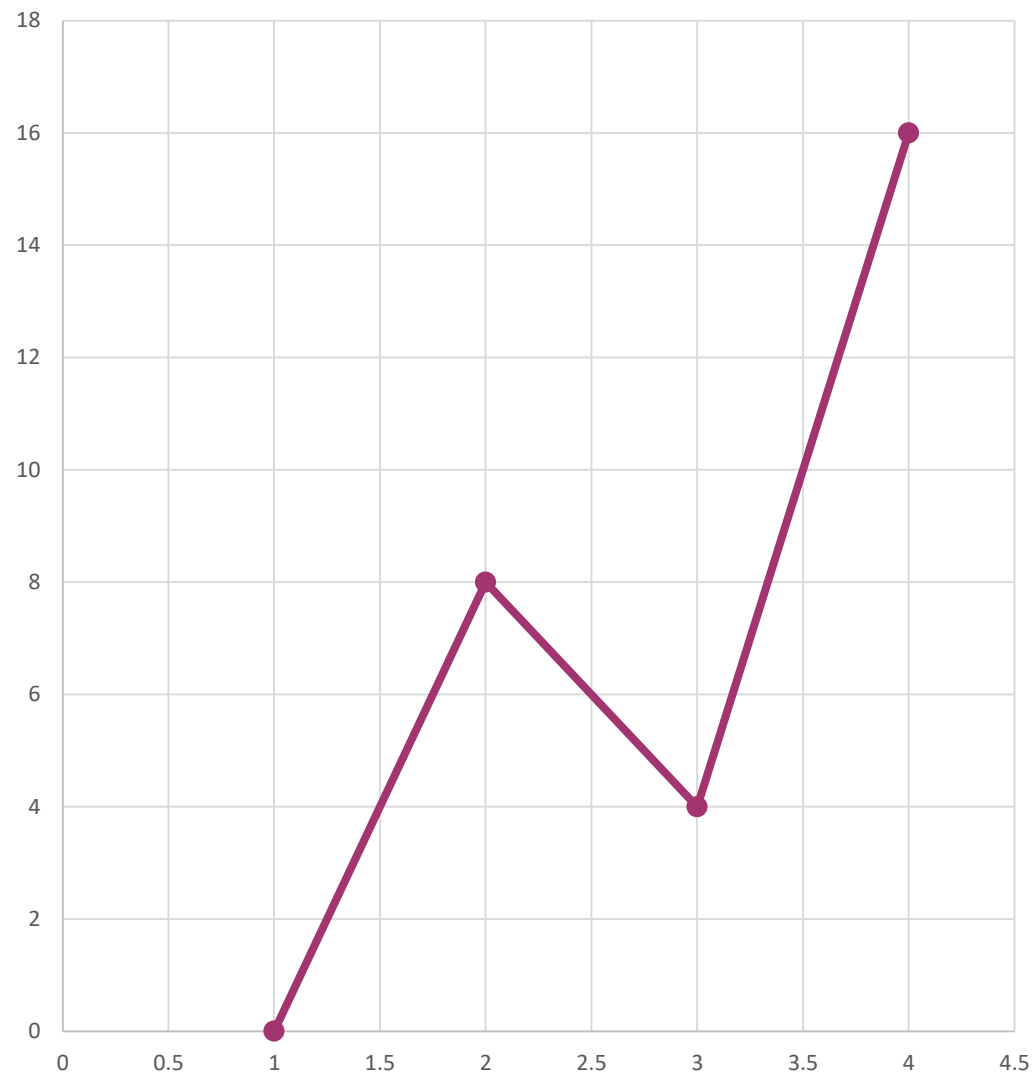


- Y axis - the intervals are doubling



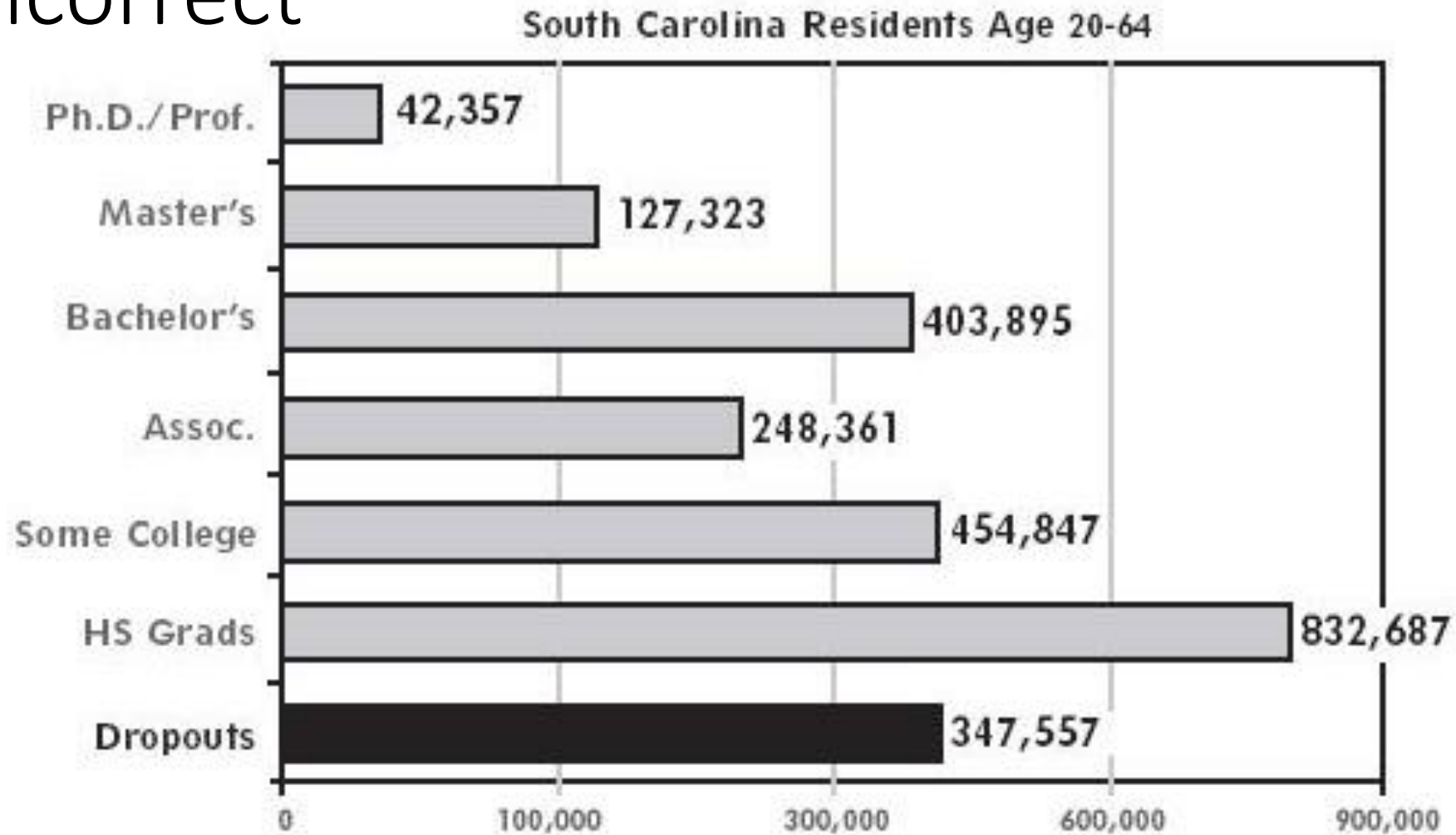


Incorrect



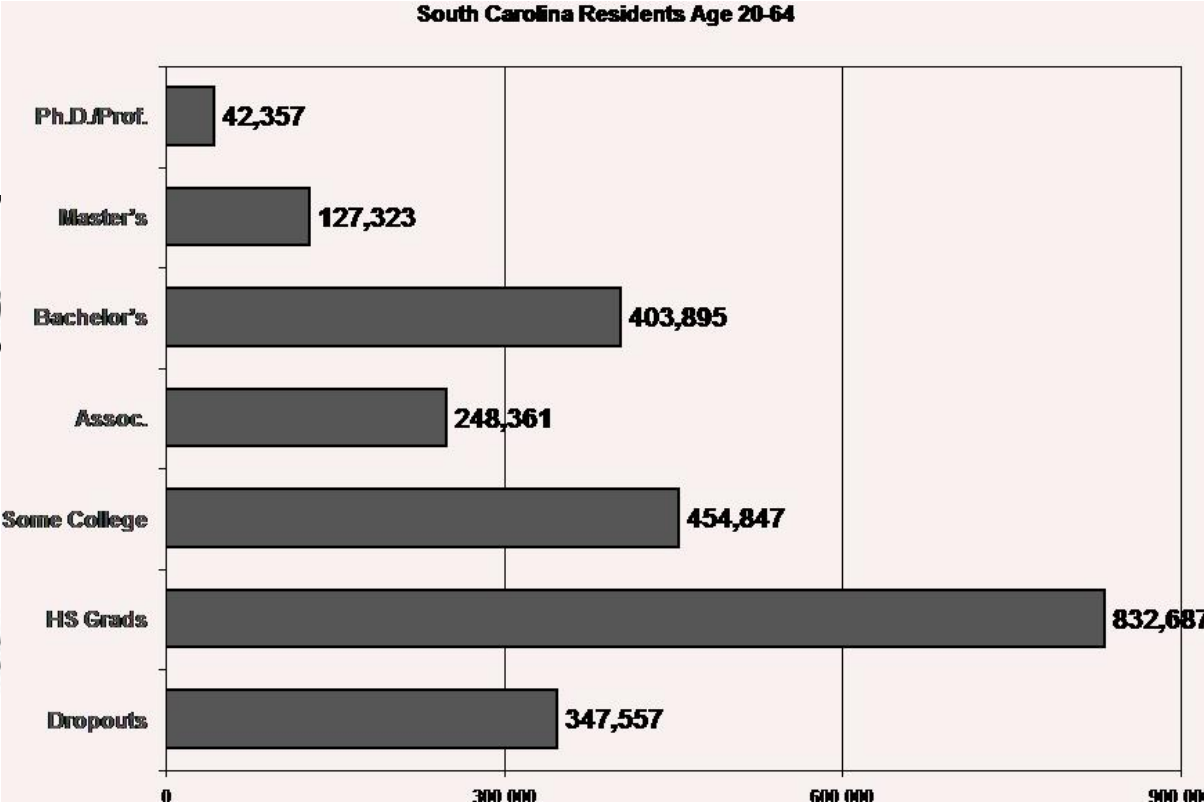
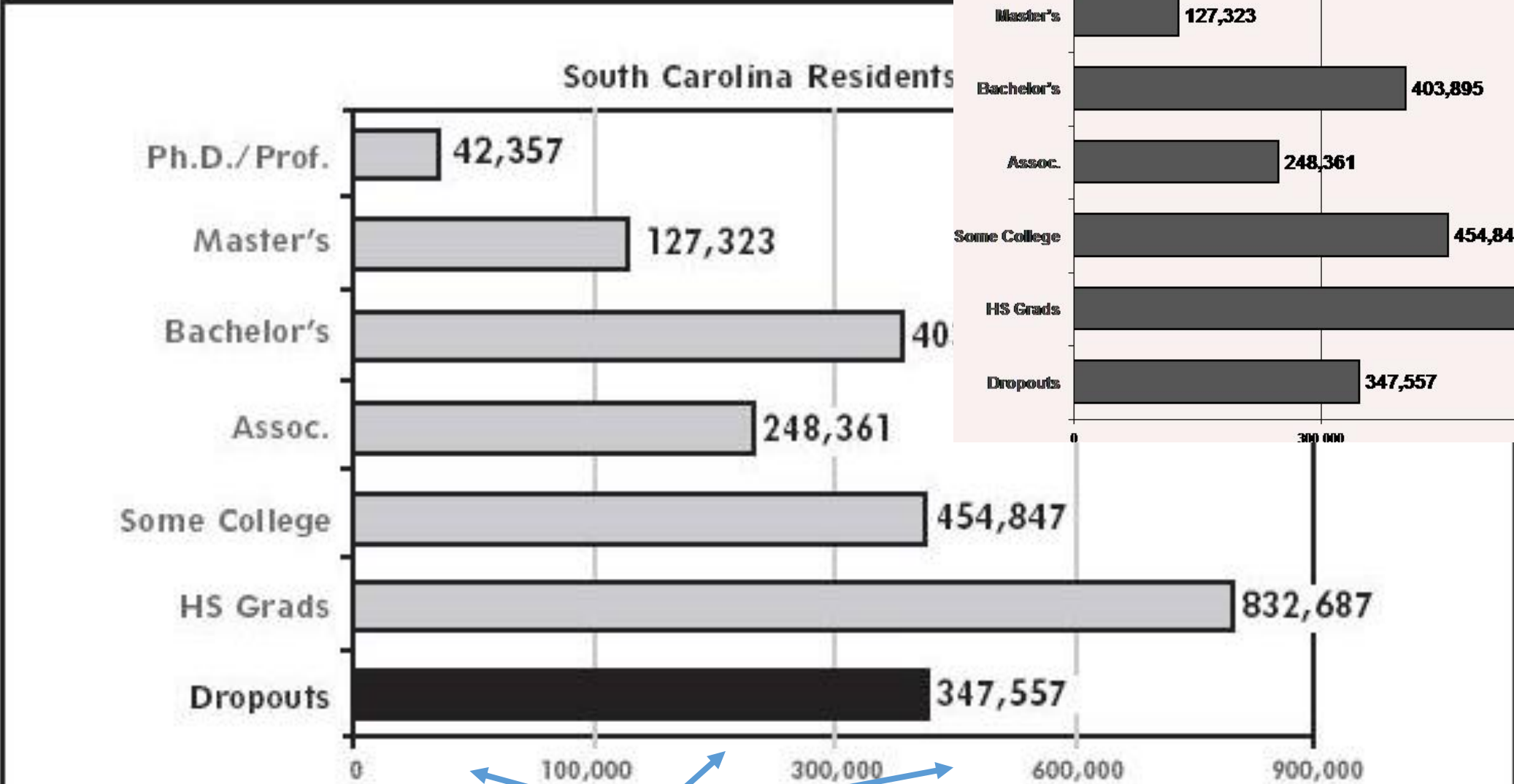
Corect

Incorrect



Source: PolEcon analysis of U.S. Census Bureau's Current Population Survey March 2004-06 Supplement data for South Carolina

Incorrect Ox axis



• X axis - the intervals are not equal