

### Uses and Abuses of Statistics

#### Uses:

- Poll results, TV determines what we watch and buy.
- Manufacturers provide better products and lower costs
- Diseases are controlled through stats by trying to predict epidemics.
- Endangered species are protected by estimating population growth.
- Fatality rates analyze for legislation by looking at air pollution, auto inspections, air bag use, and drunk driving.

Jan 27-8:10 AM

If the methods that are being used to collect the data is not appropriate, it will allow for errors in the information.

#### Abuse of Statistics:

- **Self Selected Survey or voluntary response-** individuals choose to respond to a survey if they are more likely to have a strong opinion. (don't represent the entire population)

Ex) mass mailings, telephone polls, and tv polls

- **Too Small of Sample** - won't represent the entire population.

Ex) survey stats class for the senior song.

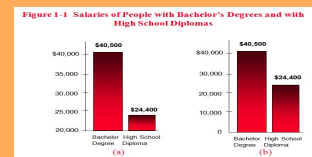
Jan 27-8:14 AM

- **Loaded or misleading questions** - worded to make people vote one way or another.

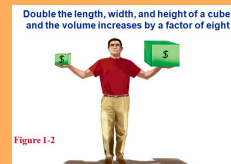
Ex) 97% yes: "Should the president have the line item veto to eliminate waste?" vs. 57% yes: "Should the president have the line item veto or not?"

Aug 17-3:05 PM

- **Misleading graphs** - can be used to exaggerate or diminish the truth.



**Pictographs**- can be used to double the picture, which actually increases by 4. 3-D increases by 8.



Jan 27-8:27 AM

- **Distorted Percents**- the percentage is incorrect or too large.

ex) ① if in a sample of 20, the % should end in 5 or 0.

② If 100% or larger, may not always be true.

③ If the sample size is 25, then % are divisible by 4. ④ If there is an increase of 5% and then a decrease of 5%, they are not equivalent.

Aug 17-3:06 PM

- **Partial Pictures** - don't give all the information.

ex) 90% of our cars are still on the road after 10 years. They didn't mention that 90% of the cars weren't older than 10 years.

- **Deliberate Distortions**- publish false data.

- **Too Precise of Number** - makes people assume it to be accurate because it is so precise. It is better to use an estimate.

ex) 103,215,027 household is U.S.

Jan 27-8:48 AM

Try to identify 4 types of abuse in the following:

A daily newspaper ran a survey by asking readers to call in their response to this question." Do you support the development of the atomic weapons that would kill millions of innocent people?" It was reported that 20 readers responded and 87% said no and 13% said yes.

- 1.
- 2.
- 3.
- 4.

Aug 19-10:22 AM