

MATH 3190 Homework 3

Data Visualizations and Ethics

Due 3/9/2022

1. (get your previous points!) Keep working on your Shiny interfaces and packages! Complete any of the previous tasks you have not finished, and work to make your packages and interfaces better!
 - Done!
2. (20 points) Using the principles and guidelines from the data visualization lecture slides (we did not finish!), evaluate the plots in your Shiny interfaces (k means and basketball) and improve them! Also, add 3 more high-quality and highly-informative plots or tables to your interface. Use ggplot for all plots in the interface!
 - Done!
3. (20 points) Finish going through the examples from the ggplot lecture. Confirm in your RMarkdown that you completed this task (on your honor!).
 - Done! Code added to homework 3 folder
4. (20 points) Go find 5 solid examples where statistics have been misused, misrepresented (graphs), or misinterpreted. Add the link or graph to the RMarkdown document, and describe what they did wrong. What should they have done differently? Which of the 12 data science principles did they violate?

- This graph looks like the welfare program is completely out of control but if you look at the y-axis, it starts from 94 million. This plot violates principle number 7 and 8 of the 12 data science principles.

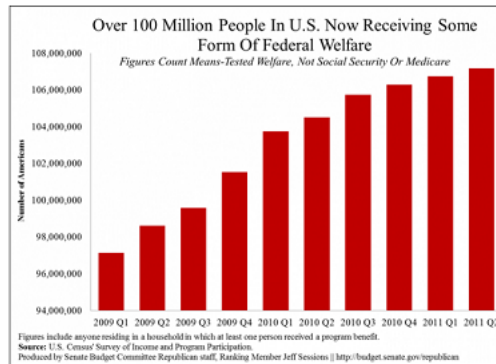
THE BLOG

Over 100 Million Now Receiving Federal Welfare

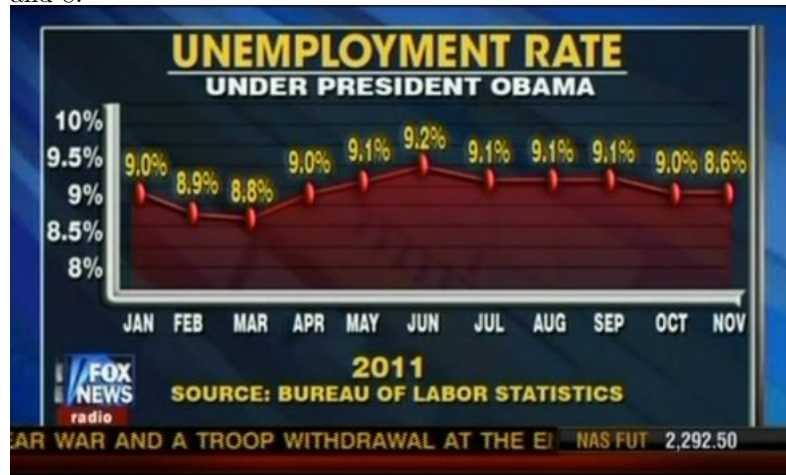
2:43 PM, AUG 5, 2012 • BY DANIEL HALPER

SHARE PAGE PRINT LARGER TEXT SMALLER TEXT FEEDBACK

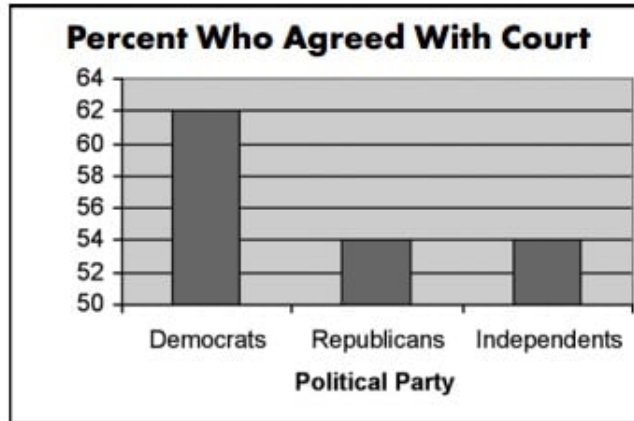
A new chart set to be released later today by the Republican side of the Senate Budget Committee details a startling statistic: "Over 100 Million People in U.S. Now Receiving Some Form Of Federal Welfare."



- Here is a graph from Fox News, this is unemployment rate under the Obama administration. It looks like there is a small drop in unemployment and then it keeps going up and up. But if you notice the last point it is not plotted correctly. It is plotted in the 9.0 spot but it should be lower than that. Again, this violates principles 7 and 8.



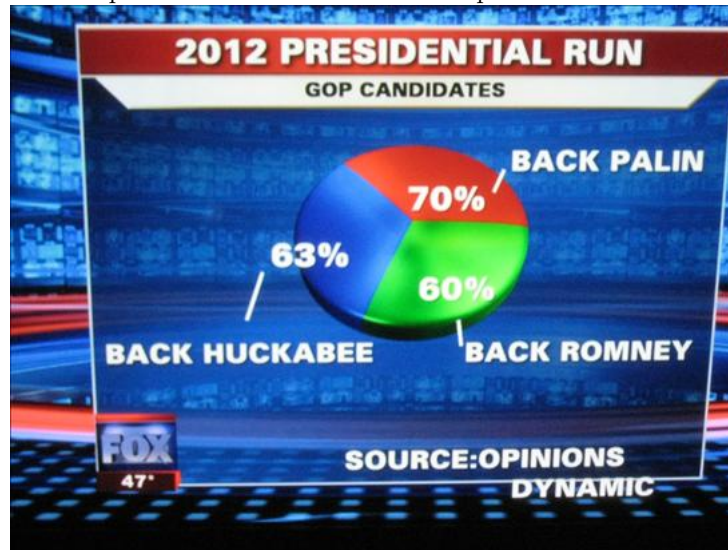
- This graph is from CNN, and refers to people who agree with removing the feeding tube from patients. If you look at the graph, it looks like a lot more Democrats support this motion but if you look at the y-axis, it only starts at 50 so the scale is way off. The difference between Democrats and Republican is actually only 62 v 54. Principles 7 and 8 are violated.



- This graph is again from Fox News. This basically says that the people on welfare compared to people with full time jobs. There is a problem with the underlying data, if one person is receiving benefits in the household, then all people living in that household are counted in the welfare category. Whereas for the full-time jobs, these are only individuals and not the whole household if one person has a full-time job. Principles 7 and 8 are violated.



Well Fox News again!! From the graph, 70% people back Palin in the 2012 presidential election. But 63% back Huckabee and 60% back Romney. The pie chart does not add up to a 100% so it is not a good visual representation of the data. Principles 7 and 8 are violated.



- All this came from <https://www.statisticshowto.com/probability-and-statistics/descriptive-statistics/misleading-graphs/>