Project #3: Crime Trends

This assignment is due to Canvas before the 11:59 PM ET on Monday, February 18th. The paper should be typed, 12 pt. font, double spaced, and the whole assignment in **one single PDF file**, including copies of all supporting material identified below. I will not accept assignments that are not combined as a single file, and please do not exceed the space limit of two written pages of analysis–the grading will stop there.

This is to be independent work. If assignments closely resemble the work of another student (past, present, or future) then you run the risk of being submitted to the College of the Liberal Arts for academic misconduct (even after you finish the course). TurnItIn will be used AFTER you submit your assignment to check for authenticity. **Review the project overview page for Academic Integrity issues (https://psu.instructure.com/courses/1973867/pages/avoiding-plagiarism)** .

Analyzing crime can be difficult because of the number of factors that go into the decision for people to commit violent or property crimes. Crime in the United States was on a steady increase for decades and then in the 1990s, crime across the country started to recede. This dashboard is going to look at crime trends over time and you'll recreate a **visualization by Hans Rosling (https://econ.video/2018/02/16/bbc-200-countries-200-years-4-minutes/)** that looks at health and income in the world, but you'll look at crime rates in the United States. Here's a look at what you can **expect to complete (https://public.tableau.com/views/CrimetrendsintheUS1960-2014/CrimeTrendsintheUS?:embed=y&:display_count=yes)** .

Data Sources

FBI's Uniform Crime Reporting (https://drive.google.com/file/d/1bgYmQN2mZ2WedJ_bDWEWwflWFgUrL0H7/view?usp=sharing)

Here's What to Do

Review the **Pew Report on Five Trends in US Crime (http://www.pewresearch.org/fact-tank/2018/01/30/5-facts-about-crime-in-the-u-s/)** . You'll look at some of these trends in your work on this project, but be prepared to summarize the results in your analysis.

Data Sheet

Download the above data file from Google Drive. These numbers come from the FBI's **Uniform Crime Reporting portal (https://www.ucrdatatool.gov/Search/Crime/Crime.cfm)** . I have organized it to make it a bit easier for you to use in Tableau. The data covers 1960 to 2014, which will cover a nice picture of the history of crime in the United States. I have removed DC from the data, for two reasons: DC isn't a state and their crime rate mirrors large cities so it's an outlier in the data.

Tableau Work

Create a new workbook and connect the Crime Trends data set from the link above. Create a new worksheet and title it "Crime over time." In the Dimensions window, change the data type for the Year variable to "Date." Let's create two folders in the Measures window to make it a little easier to organize. Create a "Property Crimes" folder and a "Violent Crimes" folder and place all measures associated with each of those crimes in their respective folders. To create a folder, select the measures you want to group together and then right click and select Folder.

Crime Over Time

Let's recreate Hans Rosling's graph, but let's put the violent crime rate on the horizontal axis (columns) and the property crime rate on the vertical axis (rows). Drag the State dimension to the viz window and you'll create a scatterplot showing each state's sum of property and violent crime rates from 1960 to 2014. To get a year-by-year look at crime rates, drag Year to the Pages pane in the top left. Because we have some information about the location of the state, let's color code our observations by region. Drag the Region dimension to the color box in the Marks window. Now the circles are color coded based on where the state is located in the United States. This region dimension is based on the **US Census's designation (https://www.census.gov/geo/reference/webatlas/regions.html)** .

To see the moving graph, use the pages player on the right side to animate the graph. We'll edit this feature below, but you can at least see how crime has changed over time for your states. We can also base the size of the scatterplot dots based on the size of the state so that we can more easily see what large states (like California, Texas, and Illinois) are doing. Drag the "Population" measure to the size box on the Marks pane.

Be sure to update the features of your data visualization to ensure they look good, including:

- Update your title to reflect what's being shown.
- Change your horizontal axis to show full values, not "K"
- Update the axis labels to better reflect how the crime rate is measured
- Change the shape of your scatter plot to filled-in circles and increase their size a bit. Change the color opacity to 70% so we can "see through" the observations.
- Update the Tooltip to remove variable names and replace with more appropriate names or remove variables if you feel they aren't relevant
- Update the title of the "Pages" player and have the graph loop the playback.
- Update the title of the Population legend.

Murder by Region

Create a new worksheet titled "Murder Rates by Region." Earlier this semester we looked at capital punishment and discussed the Supreme Court's moratorium on using the death penalty. In this data viz we will track the murder rate by region and highlight the area associated with the moratorium. One of the interesting statistical stories of capital punishment is that southern states tend to have both the highest

usage of executions, but also the highest murder rates in the country, suggesting that the deterrent effect may not be working.

Select Year and Region from the Dimensions window and Murder rate from the Measures window. Select line chart from the "Show Me" tab and Tableau will create 4 lines tracking each region's cumulative murder rate. In the rows window, change the measure from sum to average so that we can track the average murder rate in each state in the region.

Let's now highlight the time range that the moratorium was in place. Right click in the Measures pane and create a new parameter. Title this parameter "Start Date," change the parameter to a date, and enter the date for the start of the moratorium. Create a second parameter titled "End Date" with the ending of the moratorium. Right click on the horizontal axis and add a reference line. From the dialogue box, select reference band, which will highlight an area of the chart. Start the band from the Start Date and band to the End Date. Change the color to something other than grey.

Be sure to update the features of your data visualization to ensure they look good, including:

- Update your title to reflect what's being shown
- Update the axes labels to better reflect what's being show
- Add labels to each line and remove the Region legend from the side
- Add a annotation to the area of the moratorium and describe why that section is banded
- Check the tooltip to ensure the results are nicely presented

Crime Trend in Your State

The last portion of your workbook will look at crime trends in your state. Since violent crime definitions have changed since 1960, let's look at property crime in your state. Create a new sheet and title it "Crime in STATE" and enter your state's name in the title. We're going to create a **stacked vertical bars chart (https://kb.tableau.com/articles/howto/stacked-bar-chart-multiple-measures)** that shows the total amount or property crime and breaks the bars down by the type of property crime.

Drag Year from the dimensions pane to the column entry box. Drag "Measure Names" to the color box on the Marks card. In the Marks pane, right click on "Measure Names," select Filter and then select only the property crimes then click ok. From the Measures pane, drag "Measure Values" to the rows entry box. If necessary, change the mark type in the Marks card from automatic to bar.

Be sure to update the features of your data visualization to ensure they look good, including:

- Update your title to reflect what's being shown.
- Update the axes labels to better reflect what's being show
- Change axes minimum and maximum to show min and max of your data
- Update the Tooltip to be more informative

Dashboard

To complete your data visualization, create a New Dashboard and label it "County Level Crime." Change the dimension on the dashboard to be 800 wide and 1100 tall so that it mirrors the dimension of a sheet

of paper. The dashboard is your chance to arrange your visualizations that you've created before sharing them with the public. Think about the best way to arrange your visualizations and use the "objects" pane on the left side to arrange pieces to tell a story. Review **Tableau's Best Practices for Effective Dashboards (https://onlinehelp.tableau.com/current/pro/desktop/en-us/dashboards_best_practices.htm)** .

Be sure your dashboard has at least the following items:

- A clear, distinct title
- A brief description less than 150 words
- Each of the 3 visualizations you made
- Highlight tools and legends to make your work interactive
- A note of the source of your data file

Each of the visualizations on your dashboard should be fitted to the boxes (no scroll bars). This can be done by clicker on "More Options" within each visualization and selecting "Fit > Entire View." You will also save your dashboard as an image to include in your write-up. To save your dashboard as an image, select "Dashboard" from the menu bar and then select "Export Image" to save the dashboard as a .png file.

Extract your data by going to "data" in the menu bar, selecting the title of your sheet, and then "Extract Data." Save this file with your other project files. To publish your dashboard to your Tableau Public account, select "Server" from the menu and select "Publish Workbook." When your Tableau Public account opens, be sure have your dashboard public. In the bottom corner of your visualization is a sharing icon, which will provide a sharable link. If you use this link on your social media accounts, please tag me (@Wootenomics). You'll use this link to **submit your dashboard for grading (https://psu.instructure.com/courses/1973867/assignments/10601856)** . 50% of your project grade comes from peer reviews completed by your classmates. 25% of your project scores come from **peer reviewing your classmates (https://psu.instructure.com/courses/1973867/assignments/10602114)** .

Write Up

You have two pages to summarize any readings associated with this project, to summarize your data, and summarize the data visualizations that you created. Be sure to define any variables you are analyzing, discuss the purpose of converting to similar rates, and discuss these outcomes with what we have talked about in class. Be sure that you are citing material correctly and quoting outside sources appropriately with proper in-text citations for any material you discuss in your write-up, including the articles mentioned above and any databases we use.

Appendix Material

In the appendix (material after your analysis), include a reference page that lists your references in APA format. Any additional references you decide to include should also be cited parenthetically and included

in the reference page. Next, add your exported Tableau dashboard. The entirety of the file should be saved as one single PDF and uploaded to Canvas.

Here's the order:

- 2 page analysis
- Reference list
- Dashboard image export

Ready to Submit?

To submit your project, do the following:

1. Publish your data visualization to your Tableau Public profile.
2. **Submit the link to your completed dashboard (https://psu.instructure.com/courses/1973867/assignments/10601856)**
3. **Submit your final PDF (https://psu.instructure.com/courses/1973867/assignments/10601754)**

Peer Grading

Part of the learning process (and your grade) is to evaluate other student's on their organization, presentation, and accuracy of the same dashboard you just completed. Your role as the peer grader is anonymous to the other students you are grading. By providing honest feedback, you can help improve not only their projects, but your future ones as well. You will not be grading their paper, but only their dashboard. You will be grading on the quality of the work, not on the actual completion of the work. I need you to be critical.

One of the reasons for this is for you to learn some valuable skills in providing feedback, but also to think deeper about how you can improve your own presentation. After the projects are submitted, you will be assigned to peer review 5 dashboards through the Canvas system. You will be use a rubric to judge the quality of work submitted and a portion of your final grade will come from the grading of others. You can see your list of students you've been assigned by going to the **dashboard submission page (https://psu.instructure.com/courses/1973867/assignments/10601856)** in Canvas.

The grade you receive on your project will be comprised of your written analysis, the median score of your peers, and the completion of peer grading. Each peer review you complete will be worth 5% of your project (up to 25% of your grade). 50% of your overall score will come from the median score you receive from your peers and the remaining 25% of your score will come from your written work.

For each project, I will randomly select 20 students and evaluate your ability to provide accurate reviews and constructive feedback. Your role as a peer grader is anonymous, so I expect you to provide open and honest feedback to help them in the course. If you are found to be inflating grades or shirking on the peer grading portion, you will not receive credit for any peer reviews you complete on that project.