Assignment #3: Visualization with Tableau (Team work)

Personal Ethics & Academic Integrity Statement

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By typing in my name and student ID on this form and submitting it electronically, I am attesting to the fact that I have reviewed not only my own work, but the work of my team member, in its entirety.

I attest to the fact that my own work in this project adheres to the fraud policies as outlined in the Academic Regulations in the University's Undergraduate Studies Calendar. I further attest that I have knowledge of and have respected the "Beware of Plagiarism" brochure found on the Telfer School of Management's doc-depot site. To the best of my knowledge, I also believe that each of my group colleagues has also met the aforementioned requirements and regulations. I understand that if my group assignment is submitted without a completed copy of this Personal Work Statement from each group member, it will be interpreted by the school that the missing student(s) name is confirmation of non-participation of the aforementioned student(s) in the required work.

We, by typing in our names and student IDs on this form and submitting it electronically,

- warrant that the work submitted herein is our own group members' work and not the work of others
- acknowledge that we have read and understood the University Regulations on Academic Misconduct
- acknowledge that it is a breach of University Regulations to give or receive unauthorized and/or unacknowledged assistance on a graded piece of work

Select any one of the datasets listed in **Table-1.** Then,

1. Using the dataset you selected, create worksheets, and a storyboard with one or more dashboards in Tableau. Save your visualization as a tableau workbook (.twbx) file and submit through BrightSpace. Please submit your dataset with your workbook and ensure that your workbook is not referencing any external data source on your laptop.

2. Answer the questions below (3 pages maximum for each question: single-spaced, 12 point Times New Roman font and 1-inch margins on 8.5 x 11 page size). Submit a document including your answers to these questions through BrightSpace.

Questions

Q1. Rationale: Why did you design the dashboard(s) the way you did? Consider your use of line versus bar graphs, scatter plots, infographics, and the sequence of the graphics displayed etc. We are looking for a clear rationale that considers the data, the type of content and the user population (i.e. mainly, managers using the dashboard to make decisions).

Answer:

The Story

The data provided of the Crimes of Chicago from 2012 to 2017 can build many different stories and scenarios, but we attempted to keep it simple to make the data clear and understandable. Fortunately, the dataset was perfectly organized from the data source and the adjustment was not necessary. To illustrate our story in more presentable manner various factors were considered such as colors, size, flow and layout. As these factors can influence on easily inferring and practicing of the data visualization. The selection of colors and relatable information has been made to make it in a visually aesthetic manner so that it can appeal to the managers. The main reason for representing this story was to provide the concerned authorities with the insights in order to make them capable of making smarter decisions.

The story advertises the crimes engaged in the City of Chicago from 2012 to 2017. Initiating from the crime analysis which depicts total crime cases by year , month and total crimes and arrests by top 15 locations. So, by determining the location of the crime, we can further sort the crimes based on the ward which eventually will help to get insights of crime trends in given time duration.

The Dashboard

The end goal of our dashboard is to manifest a perfect blend of aesthetic factors like colors and dimensions to create visual masterpieces, therefore exhibiting remarkable data insights which in turn helps to make knowledgeable decisions. To make it more understandable and easier to go, we have kept it simple yet distinguishable such as with the use of color variants we have made sure that the representation is more attractive yet natural.

We have implemented the same strategy in each sheet that have been covered in a logical order to give meaning to our visualization. To give it more professional and informative, the background we chose is black and text color as green. It's more important to make our audience perceive the data insights efficiently with no background interruptions. Lastly, the provision of filters has been made in order to render the managers with the more exploration of our analysis. Eventually, sticking to our main strategy that is not to make our audiences disconcerted with the irrelevant information.

The Story : Chicago Crime Report 2012 – 2017

Dashboard 1 : Case Analysis

The main puporse behind the development of this dashboard is to give users insights of total crime cases happening in Chicago in particular year , month and what are the major locations of the crime.

Sheet 1 : Total Crimes & Total Arrests by Top 15 Location

In this scatter plot graph , we have developed bar graph showing the total number of crimes and on what are major crime scene locations

Sheet 2 : Total cases by month

In this line graph, we are showing the total number of cases occurred in particular month of te year.

Sheet 3 : Total crime cases by year

In this scatter plot graph , we are showing the pattern of crimes that occur through out the year as well as month wise.

Dashboard 2 : Crime Demographics

This particular tab provides the demographics visualisations such as crime measures on various community areas in Chicago , Top 10 types of crimes in given duration , time based crime records and many more wit filters provided for sheets on right.

Sheet 1 : Chicago Community Areas

The sheet interprets the crime based on the location. The graph showcased the ward based on the number of crime records and the location coordinates. This has been visualized on map with different colors based on intensities.

Sheet 2 : Crime Records - Continuous Time

In this descrete line graph , we are projecting the conitinous timely occurance of various crimes in Chicago

Sheet 3 : Crime & Arrest Rate Per 1,000 People

In this scatter plot graph , we are displaying crime and arrest rate per 1000 people which shows how secure location is for a person to live.

Sheet 4 : Top 10 Types of Crimes

This bubble graph shows the top 10 crimes popular among the location like Theft is the major crime in the location.

Sheet 5 : Crimes Records - Time Interval

This vertical bar graph shows the timely projection of crimes in Chicago.

Dashboard 3 : Crime Analysis

In this dashboard , our focus is to project some unseen details of the crime such as their types , number of crimes by their time and many more details .

Sheet 1 : Type of Crimes

To show the variance in the different crimes based on number of records against that particular type, we have colored it by increasing the intensity of Green from Dark to Light in order to maintain the easier visualization. Dark being the maximum occurred crime as per the given data.

Sheet 2 : Type of crimes by day

This discrete line graph projects the crime occurance day wise like we get insights that highest crimes occur at weekends as during weekends graph is showing sudden peak .

Sheet 3 : Heat Map for number of crimes by Type

The sheet in the Tableau Desktop is Crime types/ year. The reason we chose heat map for this entity is to evaluate the crimes based on discrete categories. Upon Analysis, it was found that theft is the most prevalent type of crime that happen in Chicago as seen , it is having the darkest color in heatmap. Similarly, other types are represented through the heat map to recognize the usual pattern in the mentioned timeframe.

Dashboard 4 : Police Progress

The idea behind the development of this sheet is to give insights to Police department regarding the crimes happening in their location and what are majors of their types.

Sheet 1 : Top 10 FBI codes

In this bubble graph , we projected the top 10 used FBI codes for the crime in their location . Based on the crime code , they can find the crime that happening most often.

Sheet 2 : Top10 Primary Type And Their Top 2 Location Description

In this scatter plot graph , we have shown top 10 crime types on two top locations of occurances Residence and Street respectively.

Sheet 3 : Arrest per primary type

This bar graph shows the number of arrests that happened for a particular crime type

Sheet 4 : Top 15 HotPoint Community Areas

This heatmap shows the top most 15 vulnerable community areas of the crime with brown being the highest vulnerable area and light blue being the lowest.

Q2. Interpretation: Putting yourself in the manager's role, what insights do you draw from the dashboard? Did any of your design choices help in generating these insights?

Answer:

As a manager's prospect, the line chart of arrest per primary type in "Police Progress" helped to easily display the crime trend over the year with the attractive numbers. The variant colored line helped to explicitly showcased the arrest rate over the years. The main highlight point was the categories defined that comes as an add on to the clear vision about the crime details of which arrest has been made and which still left not arrested. Helping to figure the ways in which crime rate can be reduces.

This graphical representation of map in "Crime Dempgraphics" will help officials to check ward wise crime insights. The measure of each ward can be discovered by visualizing the graphical map. As a manager, One can have an insightful view of each ward and determine the number of crimes happened per year, knowing about the performance of each ward and particularly looking at the efficiency of the officials posted in the particular ward. This way rearrangement of the police officials could be done to strengthen the less capable wards. The training programs can be run for the less powerful forces. Consequently, enhancing the capabilities of the entire police department.

Also in “Crime Demographics “ , bubble graph of “Top 10 types of Crimes” gives department of the different types of Primary type of crimes with maximum occurance in the location.

The Heat map in “Crime Analysis” gives a good idea to department which crime types are happening at a large scale in the location , so that they can focus on controlling them such as theft appeared to be the major primary type of crime . Also our “Top 10 FBI Codes” graph also give department insights of which crime codes are majorly happening in various wards.

In “Case Analysis “ , the graph of “Total crime cases by year” gives department insights of pattern of occurance of crime through out the year . Also we have provided month wise analysis of the same in another graph as well.