Data Storytelling Final Project

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Introduction

This document provides a detailed description of my final project for Data Storytelling (INF 385T) course at the University of Austin at Texas in Spring 2020.

Description of partnering organization and their needs

I worked with the Texas Workforce Commission (TWC) for my final project. The Texas Workforce Commission is a governmental agency in the U.S. state of Texas that provides unemployment benefits and services related to employment to eligible individuals and businesses. TWC is a part of Texas Workforce Solutions, a local and statewide network comprised of the agency, 28 workforce development boards, and their contracted service providers and community partners. The workforce development boards are responsible for strategic planning of workforce services for employers and job seekers. TWC provides grants, through various allocation formulas, to these boards.

Description of audience

The audience for the final dashboard would be the managers at TWC and it would be used internally to get an overview about the performance of a particular workforce board and to possibly gain new insights into the data and understand how efficiently the grants are being utilized.

Design requirements based on user needs analysis

The client wanted a dashboard that could effectively display details about grant expenditure across various programs and understand the performance of a workforce board.

To give the audience an overview, I decided to display the big numbers like 'Total grant award', 'Target Expenditure', 'Actual Expenditure' and 'Total Served' at the top of the dashboard.

I have added an interactive feature to view the numbers associated with each grant by clicking on a specific grant in the bar chart as there were quite a few numbers associated with each grant and I thought it would be helpful to display these in a crosstab.

As different grants were associated with different years, I had to design the individual charts in a way that was efficient and made sense to the audience.

Story/exploration experience for the audience

I wanted to give the audience an overview of the performance of the workforce board, so I have the big numbers at the top. Next, I wanted the audience to be able to see how the total grant amount for the board has been distributed among the various programs and highlight the grant with the highest amount. The audience will also be able to see other details specific to a grant to the right of this chart at the top.

Next, I decided to show how the various programs are performing in terms on the total numbers of unduplicated individuals served. I have the charts related to the total served in the second part of the dashboard.

Finally, I have the chart for displaying the target vs actual expenditure among various grants.

Visual encoding choices

I tried to separate the charts by adding space to let the user know what charts group together. I have added color in the chart title wherever applicable so that it is easier to read the chart. I liked how the portrait layout for the dashboard looked allowed me to group related charts together, so I decided to go with this layout. I restricted usage of color to shades of blue and teal to keep it neat and simple and not allow too much color on the dashboard.

I used a bar chart with color gradient to show the difference in grant amount for the 'Total Grant Award' chart at the top. I tried to match the row background color in the crosstab to the dashboard title's background color to relate the elements of the dashboard to the title.
I made use of dual axis bar charts to show the actual and target expenditures as I felt this was an effective way to show the differences in actual vs target amounts.
I used a dual axis bar chart and Gantt chart to show the 'Percentage time into the grant vs Total Served' as I felt the color gradient for the percentages in the chart did not effectively communicate the differences in the percentages. I checked with the client to see what they thought about my choice of charts, and they agreed.

Data provenance

I was provided with the data by the data team at Texas Workforce Commission. They provided multiple excel sheets as the data source.

Data dictionary

Field name	Data type	Definition
Program	String	Grant name
Year	String	Program Year of Fiscal Year of the grant (PY18, PY19, FY19, FY20)
Alpha	String	Grant abbreviation
Straight Line Target	Percentage	Target percentage to be expended
Grant Period Start	Date	Start date for the grant period
Grant Period End	Date	End date for the grant period
Total Grant Award	Number	Total Amount in $ for allocated for the grant
Total Served	Number	Total number of unduplicated individuals served by the grant
Percent Expended	Percentage	Grant percentage expended
Federal Average	Number	Federal Average per-person expenditure

Data transformation and cleaning

The excel provided by the client was not in the form of just rows and columns and it was not formatted in a way that Tableau can read the data. So, I had to create a new excel spreadsheet and copy the data given by the client into it and format it properly. Also, I learnt that the Tableau cannot read percentages denoted in the form of '%' in the excel correctly, so I had to make sure to change the excel columns data type from percentages into decimals wherever necessary. The grant period column was a single string field in the excel provided by the client. I had to convert them to a date format and split into two field with the Grant period start date and end date.

Calculations

Amount Expended – The data source contains the %. I have created a calculated field to display the amount expended for each program for a given year.

Target Amount - The data source contains the %. I have created a calculated field to display the target amount for each program for a given year.

No. of months in grant period - table calculation in Tableau to count the number of months between the grant period start date and end date.

No. of months elapsed - calculation in Tableau to count the number of months between the Grant period start date and May.

Percentage time into the grant - table calculation to compute the percentage time into the grant.

Spending Average - table calculation to compute the average per-person expenditure of a grant to compare against the federal average.