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Data Presentation and Visualization

DSC640-T301

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**Term Project**

**Final**

**Overview:**

Without doubt, the childcare cost is a substantial part of the living cost in US families with young children, and it is expensive. If the female adult’s work off home earning cannot compensate the cost associated with childcare, they may be forced to stay at home to care for the kids themselves. With the national wide labor shortage, this is a factor can not be ignored.

Fortunately, the women’s Bureau in the department of labor conducted multiple year research to compile a database of county level childcare prices. The data were collected, as described further below, from state studies of childcare prices conducted between 2008 and 2018. This research provides a powerful tool for parents, researchers, policymakers, and other stakeholders to make decisions based on local data.

With this dataset, I conducted a brief study on Texas and Austin area childcare prices and compared them to the income growth. I concluded that Austin area childcare cost has outgrowth the income too much and become very unaffordable. Actions need to be taken to control the childcare cost growth, especially the center based.

To help materialize this initiative, I will market my findings using visualization methods, such as a dashboard and a presentation to interested groups. I also prepared a poster to use in the coming election season, which had a childcare fund proposal in ballot for Austin area.

**Summary of Analysis:**

**Findings:**

1. In general, the home and center care costs increase at a comparable pace. (Figure 1)
2. In general, the center care costs are more expensive than family care costs.
3. In general, when income grows, the childcare costs also grow. (Figure 1)
4. In terms of percentage of income, Central Texas (Austin) area childcare cost are more expensive than any other major Texas cities. (Figure 2)
5. In Austin, the childcare costs grow much faster than income growth, which caused the affordability issue.(Figure 3)
6. In Austin, there are abnormal drop of center-based childcare costs in 2007. (Figure 4)
7. By searching the news in 2017, there is a policy change related to childcare center, which contributed to the reduction of the childcare price.
8. Reduced childcare cost will stimulate the female work labor rate (Figure 5)

A graph of the average cost of a year

Description automatically generated with medium confidence

Figure 1. Nationwide household income and childcare cost trend

A screenshot of a graph

Description automatically generated

Figure 2. Austin childcare takes a bigger portion of income than other Texas cities

A graph showing the growth of childcare

Description automatically generated

Figure 3. Austin childcare cost overgrowth the income since 2018.

**A graph showing a line going up

Description automatically generated with medium confidence**

Figure 4. A sudden drop in the childcare cost in 2017

A screenshot of a computer

Description automatically generated

Figure 5. increase of female work rate in 2017

**Conclusions:**

Government supported action will help to reverse the increase in childcare costs. Such initiatives need to be supported.

**Assumptions:**

1. I assumein the region/area of higher income, the labor cost will also be higher, therefore, the childcare cost will also be higher. vice versa for lower income regions.
2. Without special cause, the income will grow year after year, the same as the childcare cost.
3. if the childcare cost is affordable, females will be more willing to go out for work, otherwise, they will be forced to stay at home to avoid expensive center-based childcare.
4. If there is a sudden change against the trend, there must be some special cause triggered the abnormal behavior
5. If the event happened at the same time and associated with same topic, they are correlated.

**Items need to be clarified**

1. If there are any other factors in 2017 which contributed to the sudden drop of Austin area center based childcare cost.
2. If there is another case of childcare cost reverse trend, which can be used to investigate the cause.

**Direction of Story/Message to get across**

The focus of the study is on childcare costs. Without an in-depth study of childcare cost increases and the contributing factors, it is hard to draw a story at national level, as well as compare things at state level. So, I would like to focus on a region I am familiar with and use data analysis to find some interesting facts to build up a story.

To build a story, I started with the national level average, confirming a common assumption that income and cost are both at growth. Then I used a commonly concerned topic: childcare cost affordability to make my story interesting and related to my audience. Next, I set up the stage of making changes, aka, election time.

Now the study starts to make sense to my audience; the interesting findings of reverse trend in 2007 at Austin area will draw audience attention, I can come to the point of call of action.

**Customer/Audience**: My audience is leaders from some nonprofit groups who are looking for evidence to support this bond. They can provide additional voice through their events. My audience also includes the general voters, who can vote yes to this bond.

**Medium**:

1. **PowerPoint slides**: My target audience are leaders from non-profit groups, who are not commercial or market people but are looking for ideas to support this bond. I will not show too much detail data tables or sort. Instead, I will primarily use charts with a line of summary to lay out my story. I am thinking of using a trend chart to compare income growth vs childcare cost growth, childcare cost growth between different states or counties etc. The type of chart could be bar chart, line chart, distribution chart etc.

2. **Power BI Dashboard**: I will create a Power BI dashboard of KPI cards to show some information. I plan to ask a web designer to put it on the election website, which will be used to promote this bond proposal. People can have a summary right from the dashboard.

3. **Poster**: To get voters’ support, I will design a poster with a clear call for action. The poster will be put outside of the vote station. This will bring voters’ attention to the bond

proposal: therefore, voters will potentially support the bond.

**Design decision**:

For PowerPoint, I want to make charts as simple as possible. I also place a sentence at the most visual place of the page to summarize the chart. I used font change and color change to draw audience attention.

For dashboard, to prepare for broader interests in the childcare topics, I also list the female labor participate rate to prove my assumption that female will work if the center care is affordable. For the poster, instead of using many words, I introduced a picture of mother and baby and a chart, hopefully it will draw voters’ attention and get their buy in on the actions.

**Ethical Consideration**:

* I checked the data, which is clean, so I did not need to remove/adjust anything. I used Excel to do some grouping since power BI is not strong in data transformation.
* The data did not cover the years when Austin grows most, so I googled out the post 2018 data to show the insane increase of the childcare cost.
* My analysis will be used for election champion, so I do see a huge legal or ethical risk/consequence. Fortunately, this is school practice work so I can place it in a simplified situation and do not worry about the risk. However, it is still a good idea to call out the source of the data to avoid any liability issue.
* I trusted the data since the data resource is from a government website.
* Before the analysis is posted to social media, I will add discriminator to protect myself.

**Lesson Learnt**:

* Even this is practice and will not be used for real. I treated this as a real- life task and enjoyed linking the data analysis result to a real-life scenario and a real-life call of action.
* On the other hand, if it is for real, I will be facing a lot of questions and challenges from opponents. My analysis will need to be much more in depth and broader to build a robust case. I also need to seek review and approval from the subject experts before publishing.

**Reference:**

**Childcare cost dataset**:

*US Department of Labor (Date unknown). National Database of Childcare Prices* <https://www.dol.gov/agencies/wb/topics/featured-childcare>

***Dataset technical guide***

*US Department of Labor (Oct-2020). The technical guide for the Childcare cost dataset*

<https://www.dol.gov/sites/dolgov/files/WB/media/NationalDatabaseofChildcarePricesTechnicalGuideFinal.pdf>

**Child Care – An Essential Work Support for Women**

Austin community Foundation (Jan-2020). Analysis of Access to Child Care in Central Texas

<https://www.austincf.org/wp-content/uploads/2020/01/ChildCare-AnEssentialWorkSupportforWomen.pdf>