

DATA VISUALIZATION PROJECT

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Introduction

1.1 Background and Motivation

The major Motive choosing behind the project is Early childhood work force has been declining these days due to various lack of reasons which is discussed and represented in the next part of the project. As Early Childhood learning is the crucial and critical foundation for learning quality of education in the Learning system, which is now suffering from the lack of employees and children who are not being taken enough care. The research interest which I was going through out this project has made me curious to perform more validate reasons for the downfall of Early childhood workforces in recent years.

The research project I was going to perform, and present would be the main reasons for the decrease of the employees and various factors which have been affecting the reduce in the employees and job count in the Early Childhood sector. This visualisation and tasks which are going to be designed in the project would be helpful for the users like government organisations, private work force schools for knowing the key reasons behind the downfall of the field and more vacancies increasing in the workforce crisis.

1.2 Project Objectives

The primary objective of the project development mainly concentrates on the reasons like:

- a. The shortage of the qualified staff, especially the childhood teachers and the ways for improving the staff retention in the workforces.
- b. And the details of various children's who were enrolled in different sectors in various regions of Australia across different programs.
- c. Also comparing various reason like cost of fees and various service providers across which might be a major reason for decrease in the children's not joining in the early childhood schools.

These key objectives would help the users to get an overview of the various trends and services that were provided by different early childhood services.

1.3 Weekly Outcomes

Week 2 – finding out about the task, project goals and results

Week3 - learning plan standards and configuration measure

Week 4 – figuring out how to design visualizations

Week 5-rehearsing tableau on the best way to make compelling visualizations

Week 6-learning visual designs with tableau, getting datasets.

Week 7-learning Tableau for additional upgrades and cleaning information by both manual and programmed strategies.

Week 8 – Focusing on data looking for information and creating more compelling and improved visualizations.

Week 9-Checking the advancement whether the visualizations are in track to the end result or not.

Week 10-Preparing for a Final project report

Week 11-Validation of the final project report

2.1 Data Source

The data used for visualizing the project is gathered from various government resource and government websites. The collected datasets from various resources will be used for presenting the required visualisation and research purpose answers. The data is collected from

1. Early Childhood Statistics.

<https://qed.qld.gov.au/publications/reports/statistics/early-years/early-childhood>

2. Preschool Education, Australia 2018.

<https://www.abs.gov.au/statistics/people/education/preschool-education-australia/latest-release#methodology>

3. Preschool

<https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/4240.02018?OpenDocument>

Above were few of the links which will be used the visualization of the objectives which are mostly taken from the government sites. The data set contains Numerical Values which contains Integers, numeric values and character data in the datasets that were being used for the project.

2.2 Data Processing

The Data set which is taken from the resources doesn't have any null variables or unnecessary data which will interrupt the data for utilising.

- But for getting exact outcomes for the project the Data pre-processing will be performed in case rather to delete the null values present in the datasets. For Data Pre-processing Python will be used as a Tool for cleaning and processing the data.
- Removing of various unwanted symbol's, spaces in the data set and clean it by not disturbing any data present in the data sets

Progress Report:

Although the data sets were cleaned, for making sure that no null values were present in the data sets the DATA INTREPETER was used for cleaning and sorting the data in the tableau. Through using various data sets in the project can't ensure every data set used for creating the visualizations will be clean and accurate for the visualizations. For such scenarios pandas in python will be used

and data cleaning will be performed before the data is being used for visualization process, where Null values will be either removed or being replaced with 0/1 or Nan values.

3.1 Features Must have

- ❖ The visualization which are being made must explain various challenge's, impacts that were faced in early childhood education field.
- ❖ Then should compare among the kindergarten and childhood data among years for better insights.
- ❖ And the reduce in the number of expertise staff and various factors affecting that.
- ❖ And also make visualization by following deign guidelines and keeping the integrity of data while using the data sets.

3.2 Optional Features

- ❖ Making visualizations for various programmes, number of children enrolled into different programs and how successful were they running across.

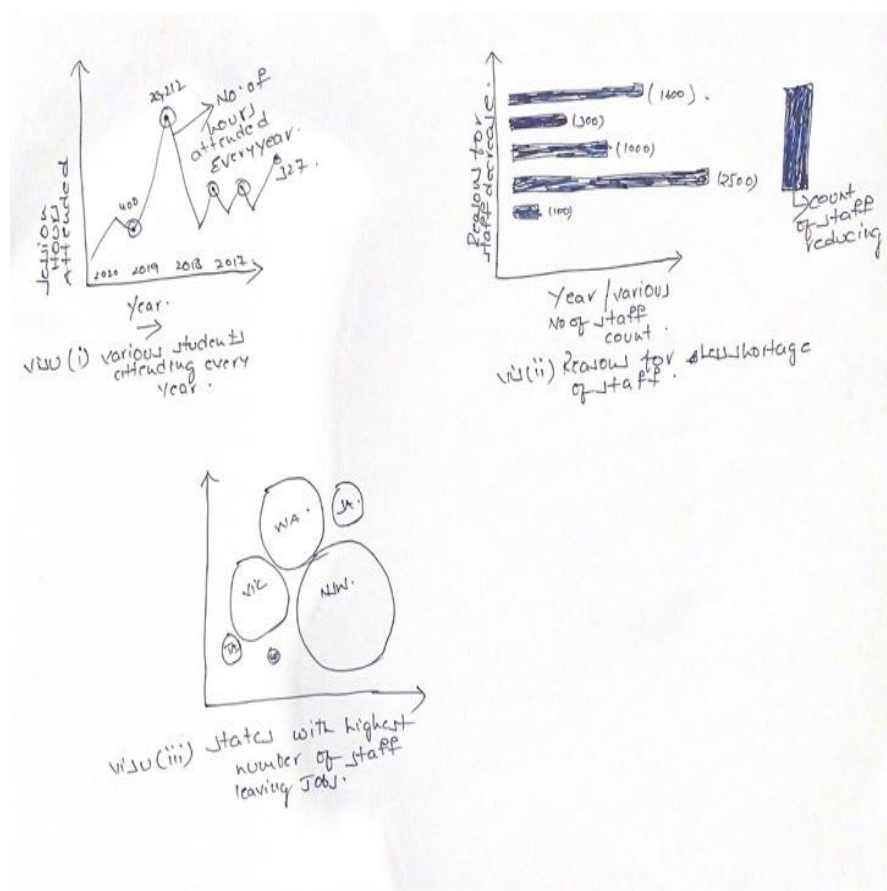
Self-Progress:

Finding of data and relevant information required for developing the visualizations and putting all the relevant data so that there might be no delays in visualizing the project exactly as required. As far found the data sets, key articles and working on the additional information which would be helpful for the developing of the project.

4. Visualization Design

For getting better visualizations choosing the target audience and making sure that data visualized is being understood by users. And also making ensure that data was clean before visualizing which the data is visualized perfectly.

And choosing the best chart for various kinds of data will also create more impact of how better the data is being understood by the various user groups. The visualizations which were encoded were doing with bar charts, the reason for encoding them visually was the changes and growth, decrease over the relationships can be clearly visually represented and can be understood by the user easily, by encoding through the bar chart. And line chart was also visualized which is better for showing the various ups and downfalls in various values or relationships.

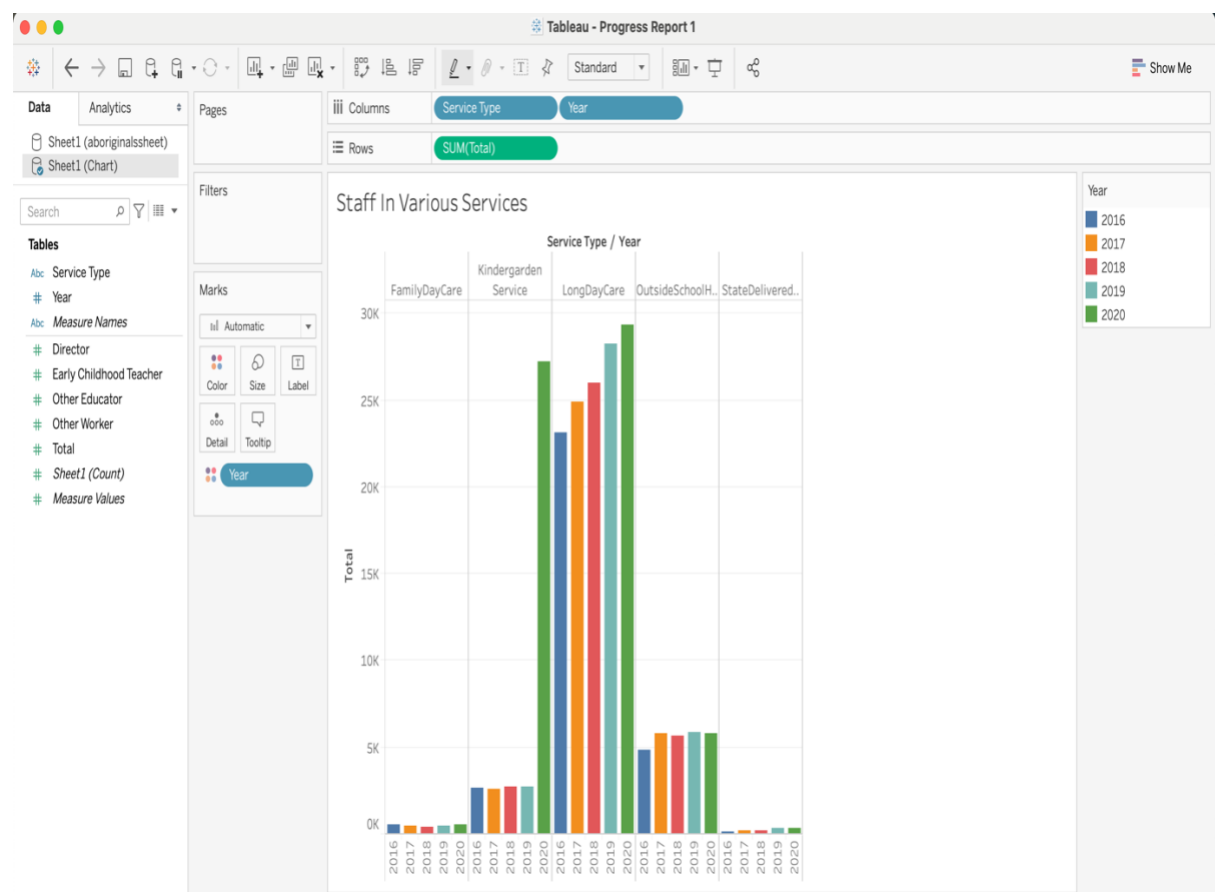


The above sketches were the designs which were used as a sample visualization which will be used for creating the final the dashboard designs required for the project.

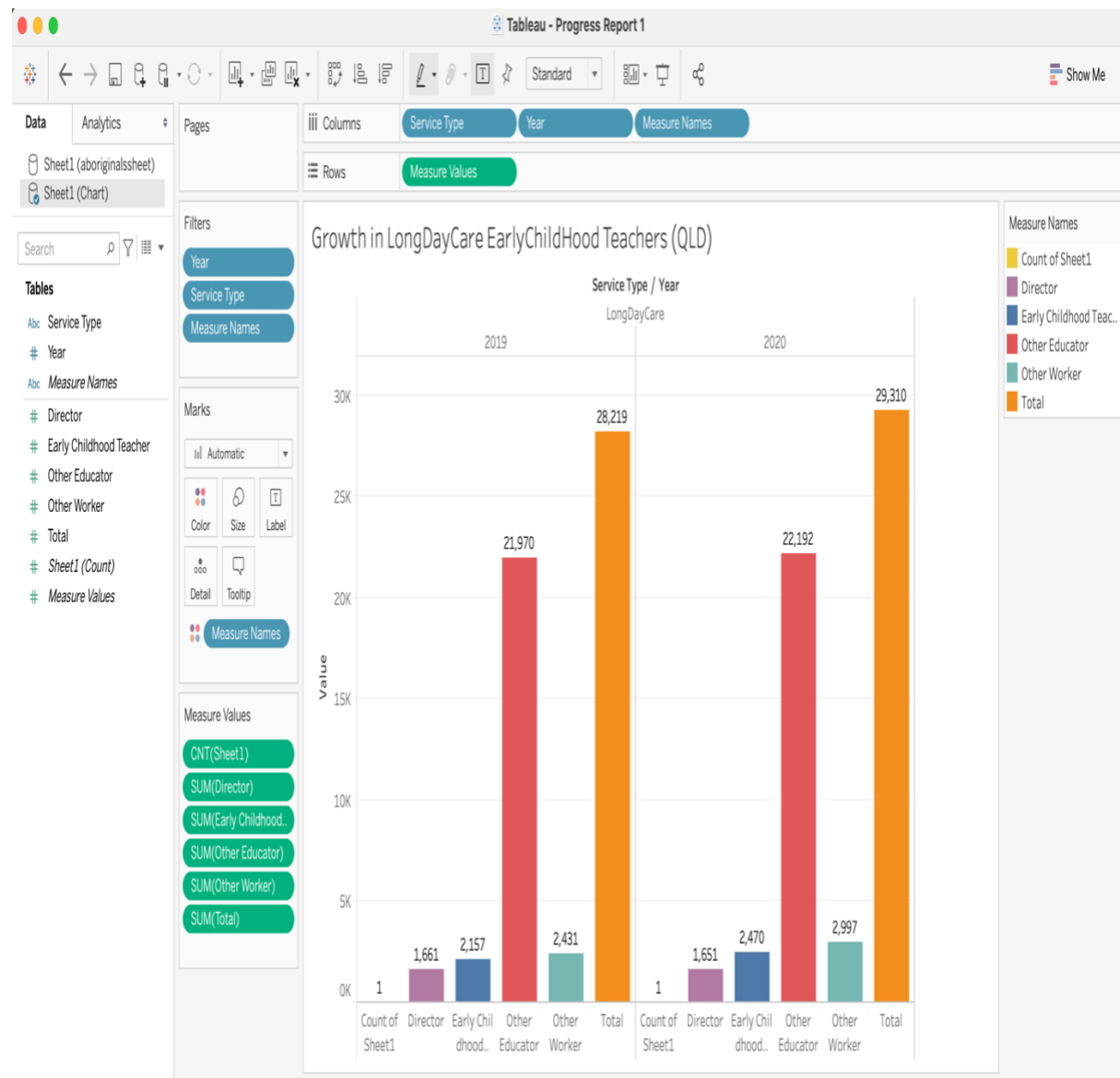
Project Proposal:

The data sets which are being used in the project were displayed using the Tableau Visualization tool, which provides better visualizations for explaining the various problems that were faced in the early childhood education sector. Tableau also provides better insights visually for understanding the problem to the various user groups, so that they work towards the problems and find better solution for the problem outcome. For getting better insights into the data:

The Queensland Staff data for various Services that were provided like Family day care, Kindergarten services were being visualised to show the growth and decrease of staff from the year 2016-2020, which is visualized through the tableau.

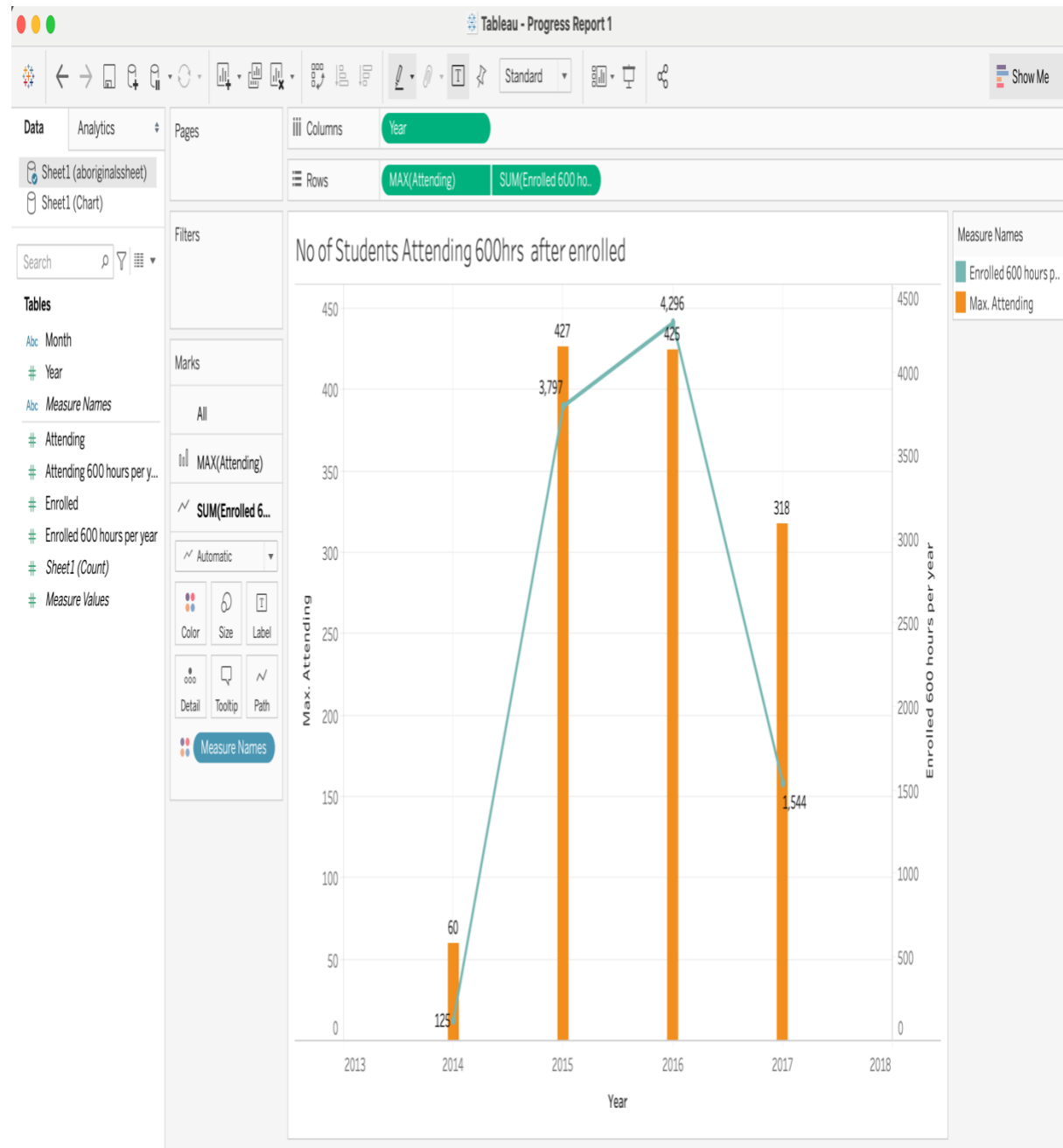


And also, the growth of staff the Long day care services in the Queensland region have seen a great growth in the year 2020 when compared to the year 2019 which is being visualized. The reasons for the major boost and various factors for the downfall of other services will be clearly discussed in the Final report, various factors like fees, opportunities for staff and various other reasons for the decrease will be visualized in further visualizations.



Whereas we have seen various number of students in the remote areas who were enrolled for the education services were not attending in numbers as they enrolled. The decrease in the attending the particular education after

enrolled is visually showed and in further visualizations the factors and various parts of Australia and various states will be visualized more effectively so that this would be helpful for finding out the problems and drawback reasons for children attending can be found.



Although the goal of the project was to provide better solution for the various problems in early childhood work force and finding out the various reasons for that, the end goal was never changed the requirement and

visualizing patterns among the various measures keeps changing for providing better solution. Though there were not many changes in the final end goal the data modelling process and requirements were not much changed, and objectives were changed when compared to the initial plan of the Proposed Project.

IDOM	Bar Chart
What: Data	One Quantitative Attribute, One Categorical Attribute.
How: Encode	Key attributes with horizontal position and expressing value attribute with aligned vertical position. Label marks
Why: Task	For comparing values. Looking up views.

Appendix:

Below was the sample Tableau Dashboard which is show the various parts of the visualization questions which will be further discussed in the final design of the project. These visualizations were the partial development designs for the project.

