PROJECT REPORT

MALAYSIA: AN EXPLORATION OF GOVERNMENT PUPILS AND TEACHERS POPULATION DEMOGRAPHIC DATA BETWEEN 2017-2018

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1.0 MOTIVATION

We are living in information age, every statement or conclusion we make should be evaluate based on real data evidence, so that you can fully persuade people to believe in you. There are exits many argument and different information regarding the deficiency of teachers in Malaysia. Sometimes, government fails to represent the user-friendly data visualization to public. It's gives bored person a chance to spread the rumors and make the problem worse.

Figure 1.0

So, it is important to create a user-friendly and interactive data visualization to spread the truth and stop the rumors. Therefore, Tableau dashboard is used and will post to the public in Tableau Public platform. Check out this link, "dashboard"

Apart from that, this project report is to explore the population of pupils and teachers by state and each district education office and composition of pupils and teachers by several target variable.

2.0 DATASET

Before introducing the dataset, the type of data source or data set for this project is xlsx form or excel form. This dataset is consisting of two sheets, one is the data for pupils and another one is data for teachers. Although they are two different sheets, but similar in term of the geographic data type, string data type, categorical data type and date data type except quantitative data type. That means pupils data sheet consist of number of pupils (quantitative data type), while teachers data sheet consist of number of teachers (quantitative data type). To simplify my explanation on dataset, the *table 2.0* as shown below:

Data Variable	**Data Type**	**Components**
Year	Date data type	2017 and 2018 only
School type	Since string data type have properties that can be convert to categorical data type, then it can be either string or categorical.	Academic, Vocational College and others only
School stage		Primary school and Secondary school only
Sex		Male and female only
District education office		All 147 District education office only
State	Geographic data type	All 13 state of Malaysia and 3 federal territories only
Number of pupils	Quantitative data type	Number (discrete)
Number of teachers		

Table 2.0

Since the dataset consists of two sheets, then new dataset will be formed by union the two sheets in tableau.

As summary, the new datasets which use in creating data visualization and dashboard in this project is the result of union of two sheets and consist all of variable as shown as *Table 2.0* above.

3.0 ANALYZATION OF EACH DASHBOARD

3.1 Dashboard 1 Home

Topic:

HOME MALAYSIA: AN EXPLORATION OF GOVERNMENT PUPILS AND TEACHERS POPULATION DEMOGRAPHIC DATA BETWEEN 2017-2018 DASHBOARD.

There are no any data visualization in dashboard 1, but title, introduction of each dashboard and the menu.

3.2 Dashboard 2 Main Chart

Topic:

MAIN CHART: SUM AND AVERAGE OF PUPILS AND TEACHERS BY STATE

Overall, the dashboard 2 display the sum and average of pupils and teachers by state. It consists of 2 visualization which are viz 1 (dual-axis map) and viz 2 (heat map). It also consists of the legend for viz 1 and viz 2, 2 Go to sheet action button that allow user to go to home page and go to next page and last a simple text introduction of geography information of Malaysia. In addition, there are included Go To url action to allow user explore the state of Malaysia and filtering action function that allow users to filter the map by and compare the information that behind the Viz1 and Viz2.

3.2.1 Viz 1

Topic:

MALAYSIA: SUM OF PUPILS AND TEACHER BY <State> STATE FROM 2017 TO 2018

Based on viz 1, can see that Selangor have the highest sum of teachers and pupils. While, Labuan have the least sum of teacher and pupils. Overall, the total sum of pupils and teachers in Peninsular Malaysia are more than Borneo's East Malaysia.

3.2.2 Viz 2

Topic:

MALAYSIA: AVERAGE OF PUPILS AND TEACHER BY STATE FOR 2017 AND 2018

Before analyzation for the Viz2, assume that the three federal territories which are Putrajaya, Kuala Lumpur, Labuan as a state for smoothing the analyzation and data visualization.

Based on Viz 2, Kuala Lumpur have the highest average of pupils and teachers in 2017 and 2018 even though Kuala Lumpur is not the highest sum of pupils and teachers in Viz1. That means Kuala Lumpur is densely populated since the average of students are highest means more family settle down in Kuala Lumpur. However, Sarawak have the lowest average of pupils and teachers in 2017 and 2018 even though Sarawak is the largest state in Malaysia.

3.3 Dashboard 3 Comparison Chart I

Topic :

COMPARISON CHART I: SUM OF PUPILS AND TEACHERS BY DISTRICT EDUCATION OFFICE

Dashboard 3 is the comparison chart dashboard, consists of Viz 3 and Viz 4. Both Viz 3 and Viz 4 are bar chart with maximum 15 ranking parameter. Besides, there are exits two interaction visualization tools that allow users to manipulate data. The first one is page shelf slider (years) that enable manipulate data by years and the second one is ranking parameter slider that allow users to manipulate the ranking parameter for Viz3 and Viz4. It also consists a short brief text explanation for the district education office in Malaysia. In addition, 2 filter action have been added to form the interaction relationship between Viz 3 and Viz 4 for users to compare Viz 3 and Viz 4. Last and not least, 2 Go to sheet action button that allow user to go to home page and go to next page and 1 Go to url action feature that allow user to navigate the Url for the extra information have been added in Dashboard 3.

3.3.1 Viz 3

Topic: TOP <Parameters.Top District Office> SUM OF PUPILS BY DISTRICT EDUCATION OFFICE FOR <Page Name>

Based on the Viz 3, Melaka Tengah district education office achieves the highest number of sum of pupils among top 15 district education office in Malaysia for 2017 and 2018. While the last place for top 15 district education office in 2017 and 2018 is the Kota Kinabalu district education office. Besides, only 4 district education office higher than average of total of pupils in 2017 and 2018 out of 15 district education office which are Melaka Tengah district education office, Petaling Perdana district education office, Hulu langat district education office and Klang district education office.

3.3.2 Viz 4

Topic:

TOP <Parameters.Top District Office> SUM OF TEACHERS BY DISTRICT EDUCTION OFFICE FOR <Page Name>

Based on the Viz 4, Temerloh district education office achieves the highest number of sum of teachers among top 15 district education office in Malaysia for 2017 and 2018. While the last place for the top 15 district education office in 2017 and 2018 is the Kota Serta district education office. Besides, only 4 district education office higher than average of total of teachers in 2017 and 2018 out of 15 district education office which are Temerloh district education office, Petaling Perdana district education office, Hulu langat district education office and Klang district education office.

3.3.3 Comparison between Viz 3 and Viz 4

Based on the Viz3 and Viz 4, although Melaka Tengah district education office achieve the highest number of sum of pupils out of 15 district education office, but ranks fourth to last when came to top 15 sum of teachers by district education office

list as shown in Viz 4. It means there is excessive number of pupils if compare with number of teachers in Melaka Tengah for 2017 and 2018. Other than that, excessive of number of teachers happens in Temerloh for 2017 and 2018. This is because Temerloh district education office achieves the highest number of sum of teachers among 15 district education office although it's not even in list of top 15 sum of pupils by district education office as shown in Viz 3.

3.4 Dashboard 4 Comparison Chart II

Topic:

COMPARISON CHART II: COMPARISON BETWEEN AVERAGE OF TOTAL PUPILS AND AVERAGE OF TOTAL TEACHER BY SCHOOL TYPE AND SCHOOL STAGE

Dashboard 4 is the comparison chart dashboard too, consists of Viz 5 (bar in bar chart) and Viz 6 (bullet graph). Multiple values filter list for date (years) is added to filter the data visualization by years. Two Go to sheet action button that allow user to go to home page and go to next page are added. Furthermore, a brief explanation regarding the Student-Teacher ratio is added to make dashboard 4 more informative.

3.4.1 Viz 5

Topic:

AVERAGE OF TOTAL OF PUPILS AND TEACHERS BY SCHOOL STAGE FOR <YEAR(Year)>.

In Viz 5, average of total of pupils (9264 pupils) and average of total of teacher (794 teachers) in primary school is higher than average of total of pupils (3628 pupils) and average of total of teacher (313 teachers) in secondary school. However, when it comes to teacher-pupil ratio, teacher-pupil ratio in secondary school is slightly better. This is because 1 teacher can take care of 11.59 pupils in secondary school if compare to 1 teacher can take care of 11.67 pupils in primary school.

3.4.2 Viz 6

Topic:

AVERAGE NUMEBR OF PUPILS AND TEACHERS BY SCHOOL TYPE FOR <YEAR(Year)>.

In Viz 6, average of total of pupils (9264 pupils) and average of total of teacher (793.6 teachers) for others school type is higher than average of total of pupils (7050 pupils) and average of total of teacher (597.7 teachers) for academic school type. Vocational college school type is the lowest average of total of teacher and

pupils if compare to the others and academic. However, the largest is not always the best when it is related to teacher-pupil ratio. In terms of teacher-pupil ratio, vocational college is the best when compare to others and academic. This is because teacher-pupil ratio for vocational college (1:7.55) is the smallest if compare to the others (1:11.67) and academic (1:11.80). In other view, teacher-pupil ratio for academic is the worst.

3.5 Dashboard 5 Composition Chart I

Topic:

COMPOSITION CHART I: TOTAL OF PUPILS BY SCHOOL TYPE, SEX AND SCHOOL STAGE

Dashboard 5 is composition chart, consists of Viz 7 (doughnut chart) and Viz 9 (pie chart). Just like others dashboard, Two Go to sheet action button that allow user to go to home page and go to next page are added. Multiple values filter list for date (years) and sex (male female) is added to filter the data visualization by years and sex. Last, highlight action feature have been added in school type legend that enable interaction between Viz 7 and Viz 9.

3.5.1 Viz 7

Topic:

MALAYISA: COMPOSITION TOTAL OF PUPILS BY SCHOOL SCHOOL TYPE AND SCHOOL STAGE FOR <YEAR(Year)>.

In Viz 7, primary school is fully made up of others school type, which is 5,373,408 pupils in 2017-2018. Secondary school have 4,208,941 pupils, comprises of two components, academic school type 97.15% and vocational college school type 2.85% in 2017-2108.

3.5.2 Viz 9

Topic:

MALAYSIA: PERCENT OF TOTAL SUM OF NUMBER OF PUPILS BY SEX AND SCHOOL TYPE FOR <YEAR(Year)>.

In viz 9, total pupils for others school type is 5,373,408 pupils in 2017-2018, nearly 51% is male and the rest is female. Besides, female is the most when come to academic school type, 51.33% from the total of 4,089,008 pupils and 48.67% for the male from the total of 4,089,008 pupils in 2017-2018. The smallest school type in terms of sum of pupils is Vocational college, but the proportion for male is the highest among 3 school type, 64.15% out of 119,933 pupils and the female is 35.85 % out of 119,933 pupils.

3.6 Dashboard 6 Composition Chart II

Topic:

COMPOSITION CHART II: TOTAL OF TEACHERS BY SCHOOL TYPE, SEX AND SCHOOL STAGE

Dashboard6 is composition chart, consists of Viz 8 (doughnut chart) and Viz 10 (pie chart). Just like others dashboard, Two Go to sheet action button that allow user to go to home page and go to next page are added. Multiple values filter list for date (years) and sex (male female) is added to filter the data visualization by years and sex. Last, highlight action feature have been added in school type legend that enable interaction between Viz 8 and Viz 10.

3.6.1 Viz 8

Topic:

MALAYISA: COMPOSITION TOTAL OF TEACHERS BY SCHOOL TYPE AND SCHOOL STAGE FOR <YEAR(Year)>.

In Viz 8, primary school is fully made up of others school type, which is 460,313 teachers in 2017-2018. Secondary school have 4,208,941 pupils, breakdowns to two components, which are academic school type 95.61% and vocational college school type 4.39% for 2017-2018.

3.6.2Viz 10

Topic:

MALAYSIA: PERCENT OF TOTAL SUM OF NUMBER OF TEACHERS BY SEX AND SCHOOL TYPE FOR <YEAR(Year)>.

In viz 10, total teachers for others school type are 460,313 pupils in 2017-2018, nearly 30% is male and the rest is female. Besides, female is the most for all three school type. For academic school type, 70.93% are female from the total of 349,078 teachers and 29.07% is the male from the total of 349,078 teachers in 2017-2018. The smallest school type in terms sum of teachers is Vocational college. However proportion for male in vocational college (44.80%) slightly higher than proportion for male in others school type and academic school type.

4.0 CONCLUDING REMARKS

Dashboard with title “MALAYSIA: AN EXPLORATION OF GOVERNMENT PUPILS AND TEACHERS POPULATION DEMOGRAPHIC DATA BETWEEN 2017-2018**”** is created to brings the actual and right information to the public through user-friendly interactive visualization dashboard.

Government should increase the supply of teacher for the future and make sure that distribute equally and there is no oversupply of teachers for each district education office. Other than that, dashboard 6 indicated the problem of fewer men in teaching profession in primary school and secondary school for 2017-2018. Therefore, government and society should seek for initiative to encourage more men dedicate for teaching profession. Last but not least, teacher-student ratio also should become the important indicators to manage distribution of teacher for each school in Malaysia.