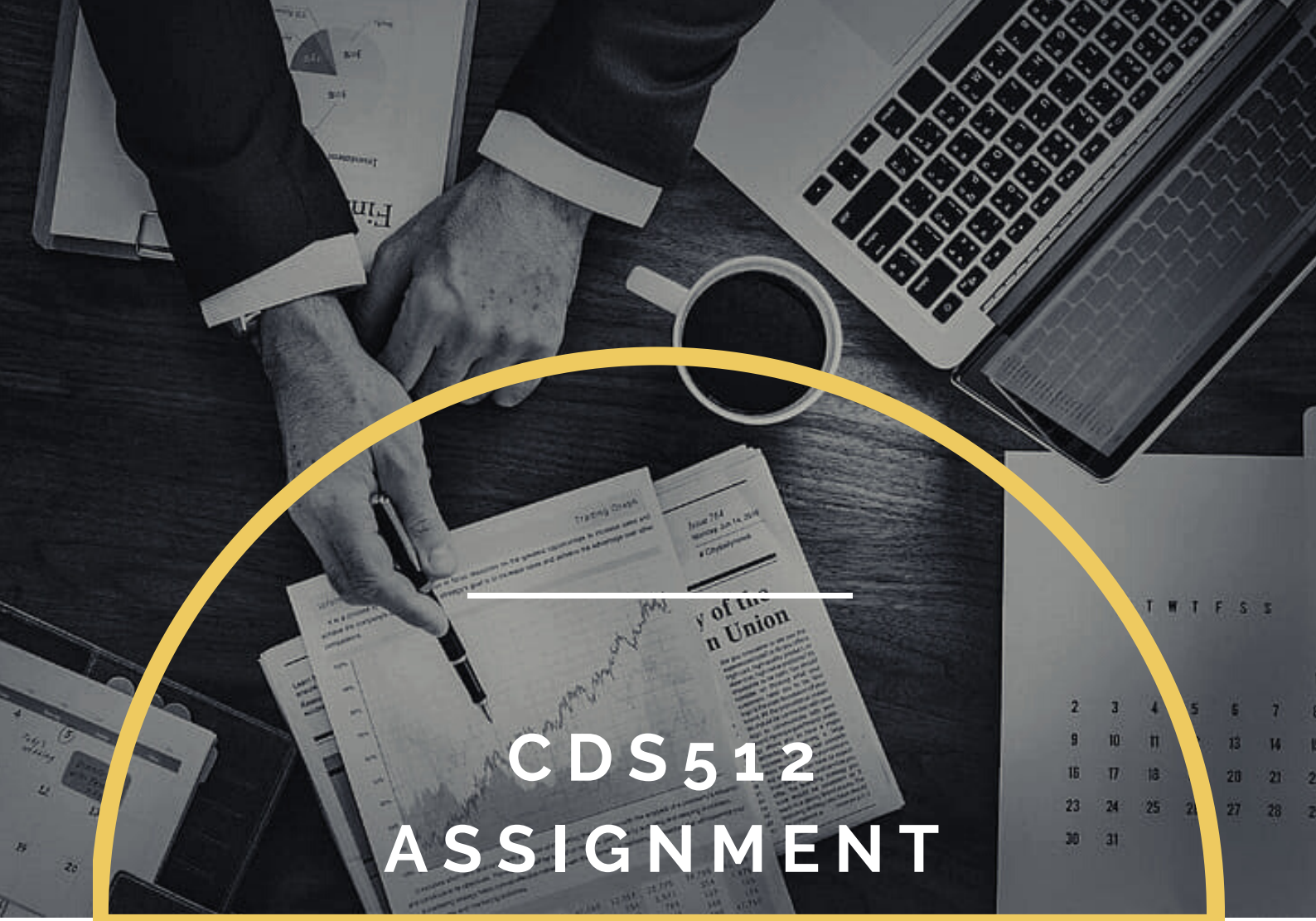

CDS512 ASSIGNMENT

REPORT
GROUP 29

2020/2021

PREPARED BY

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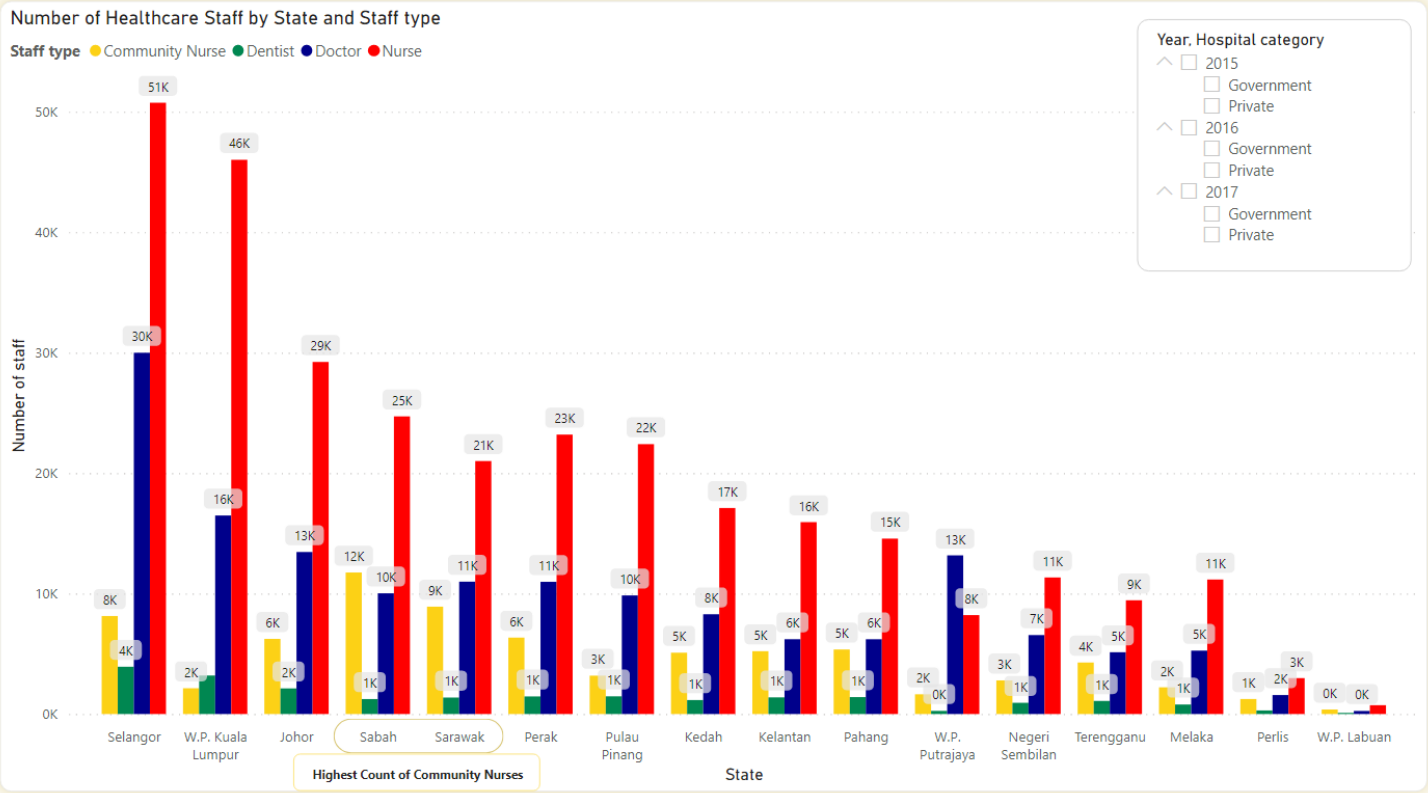
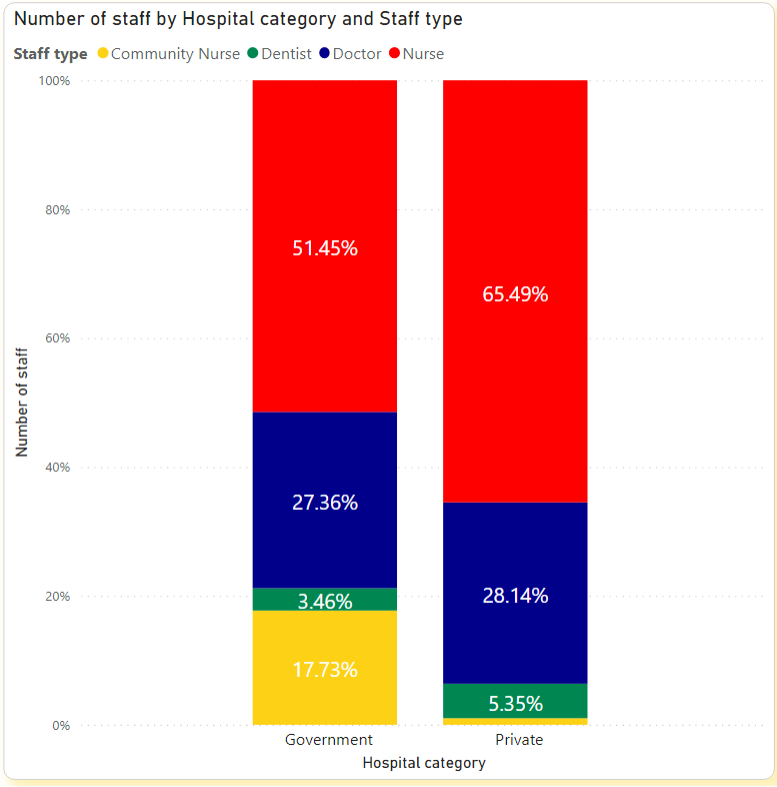
DISTRIBUTION ACROSS STATES

The chart below shows how healthcare personnel are distributed across states in Malaysia. The figures are in the sum of the number of staff from 2015 to 2017. We can see from it that Selangor and Kuala Lumpur have the highest number of staff while Perlis and Labuan have the least.
In addition, we can also observe that Sabah and Sarawak occupy the **Top 2** position of states having **the highest number of Community Nurses** (question number 6). Possible factors causing this are the number of Government hospitals and the overall income levels of the population.



GOVERNMENT VS PRIVATE HOSPITAL

- The data contains 20% missing values on community nurses, which we decide to replace by its median value of 14. This is because of the distribution of data is sparse, making it not suitable to replaced by mean. In addition, imputing these missing values by zero doesn't seem like the right approach in our opinion because we don't want to mistakenly treat some nurses as non-existent after their hard work
- The stacked bar chart on the right shows the composition of healthcare staff by type of hospitals. We can see that nurses have the highest proportion on both types. In addition, community nurses are mostly working in Government hospitals



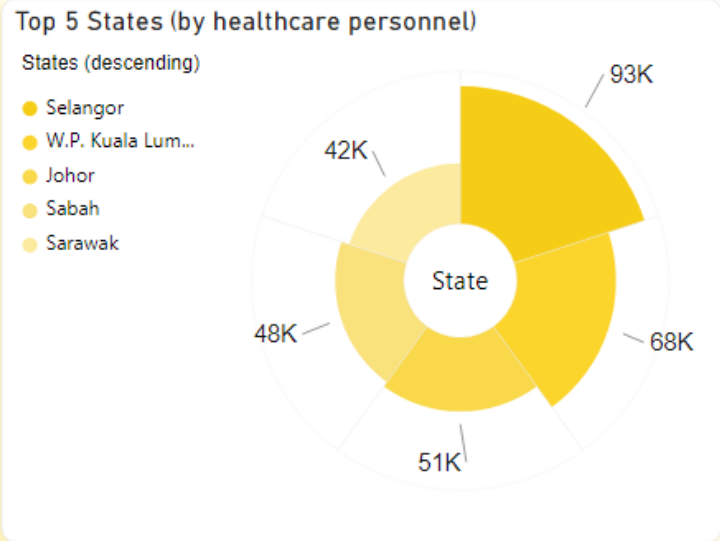
States (2015-2017)

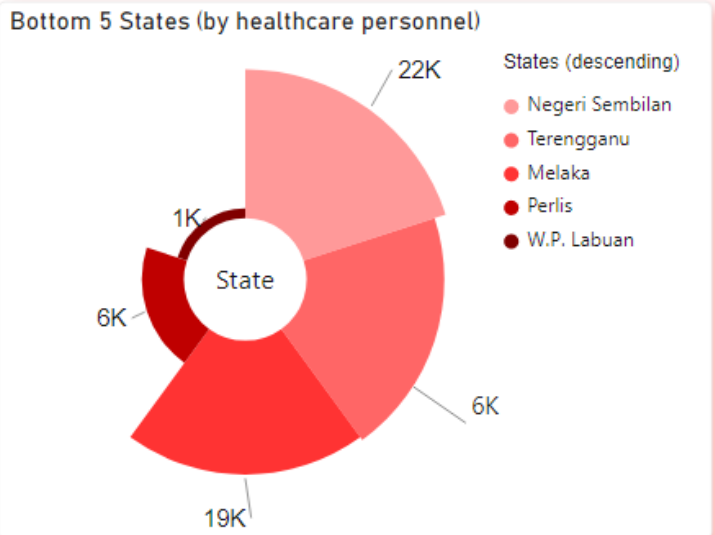
TOP 5 & BOTTOM 5

The below Aster plots shows states having the highest number of healthcare staff as well as those having the least. On the top 5 we have Selangor, W.P.Kuala Lumpur, Johor, Sabah and Sarawak in descending order. On the other hand, Negeri Sembilan, Terengganu, Melaka, Perlis, and W.P.Labuan was shown to have the fewest count of healthcare personnel among all states

93 K
Selangor

1 K
W.P.Labuan

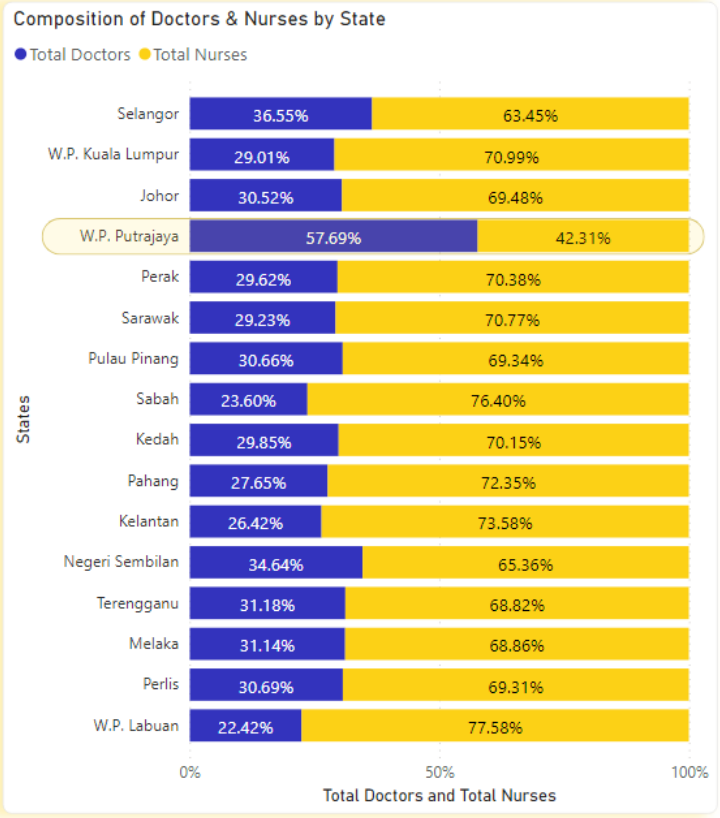


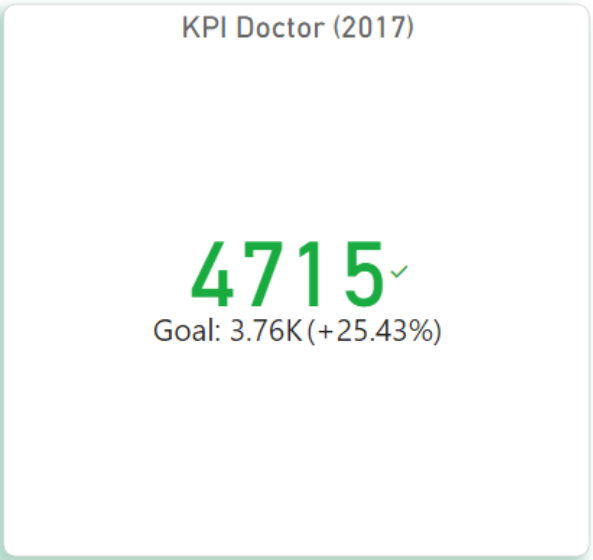


NURSES & DOCTORS BY STATES

The plot on the right shows the distribution of all type of doctors and nurses across states. As we can see, most of the states have more nurses than doctors.

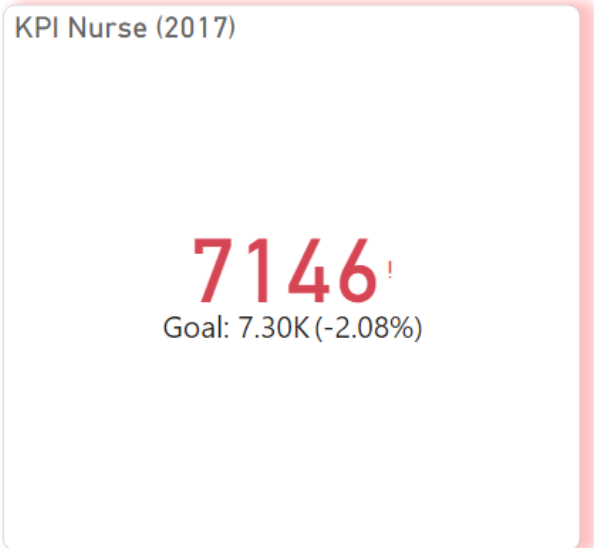
However, an exception to this is the W.P.Putrajaya state. We can see that doctors contribute to 57.8% of the healthcare staff. The reason of this is might because W.P Putrajaya state is the federal adminstrative center of Malaysia.





DOCTORS ARE GROWING OKAY

The two figures above shows the KPI of Dentist and Doctors in Sarawak in 2017. The target of growth is set to 5% addition of new staff to the number of staff in 2016.
As we can see, the growth target for Dentist and Doctors is already achieved with number of doctors exceeding the target by around 25% while Dentist exceeding its target by around 8%.



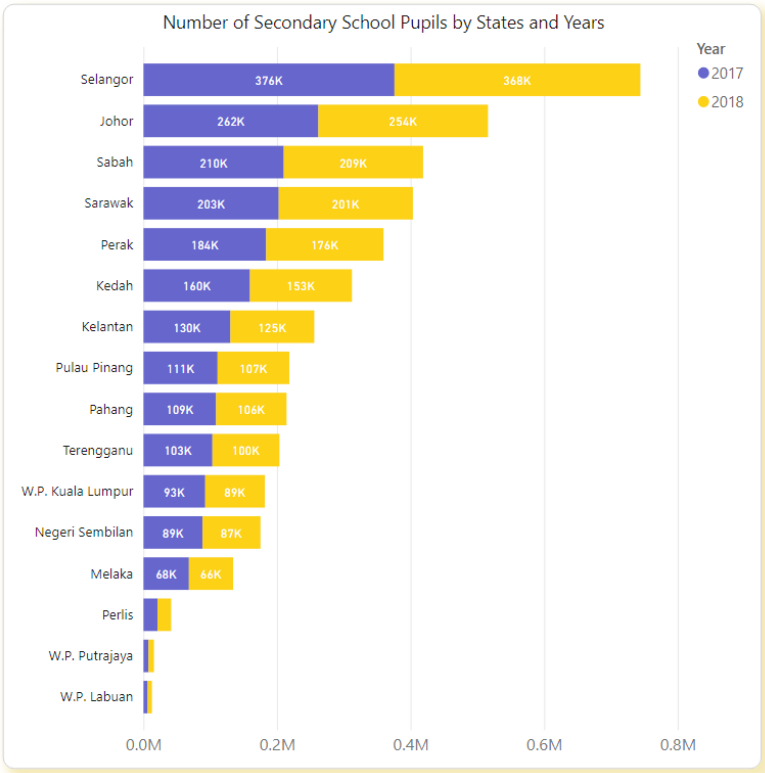
MORE NURSES NEEDED!

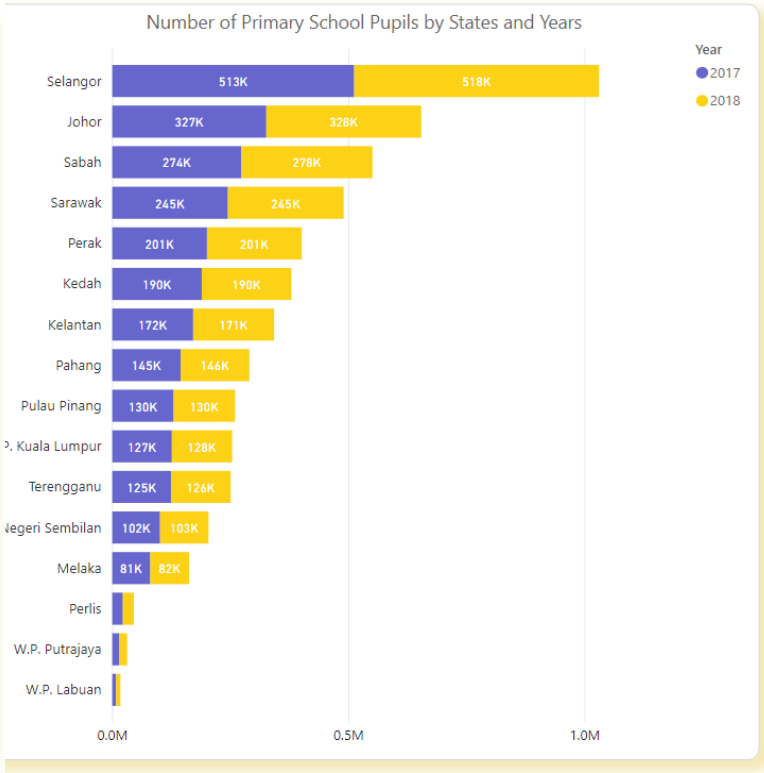
The two figures on the left shows the KPI of Nurse and Community Nurse in 2017. The growth target is similar to that of the doctors discussed above. However, unlike the doctors, nurses haven't yet met their growth target.

On the top figure, we can see that Nurse is almost meet the growth target having only lack behind by 2%.

Meanwhile, Community Nurse has still plenty of progress to achieve as it still behind the growth target by more than 10%

DISTRIBUTION BY EDUCATION LEVELS





The two bar charts above shows the number of primary and secondary school pupils by states and years. It suggests that the highest number of pupils belongs to Selangor with 513K of pupils in 2017 and 518K in 2018 for primary school compared to 376K in 2017 and 368K by following year for secondary school's students.

In primary school, Johor, Sabah, Pahang, W.P. Kuala Lumpur, Terengganu, Negeri Sembilan, Melaka, Perlis, W.P. Putrajaya and W.P. Labuan including Selangor record increment of students from 2017 to 2018 meanwhile Kelantan experience decrement for the following year. The rest states remain the same.

On secondary school, number of pupils experienced a decrease between 2017 and 2018 in all states except for W.P. Putrajaya.

TEACHERS TO PUPILS RATIO

The table below contains teachers to pupils ratio for all district education offices in Malaysia for primary school in both 2017 and 2018. Petaling Perdana holds the highest ratio of pupils per 1 teacher with 17.28 followed by W.P. Putrajaya with 16.36 pupils for 1 teacher at second place in 2017. Meanwhile, as for 2018, Petaling Perdana still holds the highest ratio of pupils for 1 teacher with 16.93 followed by Bintulu at second place with 16.21 pupils per 1 teacher.

Primary school teachers to pupils ratio in 2017

School stage / District Education Office	Primary school Number of pupils	Number of teachers	Ratio teachers to pupils
W.P. Putrajaya	15097	923	16.36
Petaling Utama	43624	2807	15.54
Petaling Perdana	103458	5988	17.28
Pasir Gudang	67356	4183	16.10
Miri	24964	1641	15.21
Kota Kinabalu	37667	2394	15.73
Klang	89628	5651	15.86
Hulu Langat	94931	5930	16.01
Gombak	68742	4526	15.19
Bintulu	17402	1103	15.78

Primary school teachers to pupils ratio in 2018

School stage / District Education Office	Primary school Number of pupils	Number of teachers	Ratio teachers to pupils
W.P. Putrajaya	16990	1129	15.05
Petaling Utama	43786	2828	15.48
Petaling Perdana	105173	6211	16.93
Pasir Gudang	67675	4406	15.36
Miri	24835	1626	15.27
Kota Kinabalu	38811	2419	16.04
Klang	90510	5646	16.03
Hulu Langat	96308	6036	15.96
Gombak	68924	4521	15.25
Bintulu	17361	1071	16.21

Teachers with. . . . .
"Zero" Students??

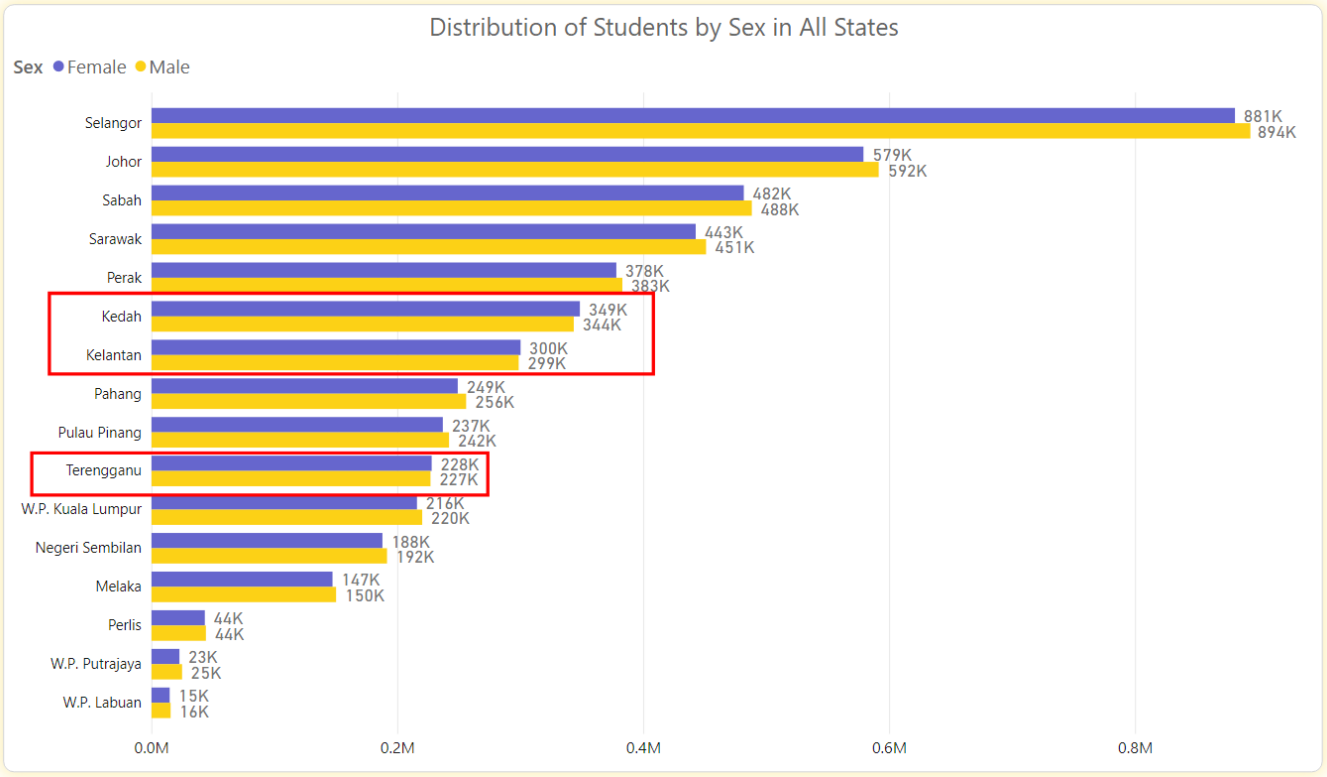
The table on the right consists of count of teachers who working at vocational colleges with zero students. It can be seen that Pasir Gudang and Pontian districts have 14 and 13 number of teachers each

Number of Teachers at Vocational College with Zero Students

School type	Vocational College	
District Education Office	Number of pupils	Number of teachers
Pasir Gudang	0	14
Pontian	0	13
Total	**0**	**27**

WHERE DO FEMALES DOMINATE?

The bar chart below shows the distribution of students by sex in all states in Malaysia. Based on the data shown, Kedah, Kelantan and Terengganu record more female students compared to the rest states. As it being said, Kedah holds the highest number of female pupils among those three states.



Teachers to Students Ratio Adjustment

The below table is contains the data of some adjustment made for number of teachers in Perak districts. The analysis involves calculation of ratio teachers to pupils in each district. For each district that do not meet 1:10 ratio, adjustment number of teachers have been made.

Adjustment number of teachers in Perak districts.

Year	2018					
School stage	Primary school					
District Education Office	Number of teachers	Number of pupils	Ratio teachers to pupils	Ratio different measure (teachers)	Adjustment Number of teachers to get 1:10 teachers to pupils ratio measure	Number of teachers need to add to original value
Bagan Datuk	853	5315	6.23	4.77	200.13	652.87
Batang Padang	1873	16691	8.91	2.09	1,434.01	438.99
Hilir Perak	1184	10958	9.26	1.74	960.77	223.23
Hulu Perak	1160	10348	8.92	2.08	889.62	270.38
Kerian	1786	15367	8.60	2.40	1,288.68	497.32
Kinta Selatan	1492	14643	9.81	1.19	1,311.75	180.25
Kinta Utara	4377	54294	12.40	-1.40	4,872.55	-495.55
Kuala Kangsar	1766	14747	8.35	2.65	1,205.67	560.33
Larut/Matang & Selama	2759	25822	9.36	1.64	2,275.30	483.70
Manjung	2196	23134	10.53	0.47	2,098.99	97.01
Perak Tengah	1116	9310	8.34	2.66	760.46	355.54
Total	**20562**	**200629**	**9.76**	**1.24**	**17,943.13**	**2,618.87**