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Understanding International Student Flows and Opportunities for Growth

BUSA3021 Client Report for Macquarie International

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Link to Presentation:
https://youtu.be/3nD4tFKWBC8

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Executive Summary

The objective of this report is to give an understanding of student flows past, current, and future to highlight areas that Australia can focus on to diversify away from its excessive dependence on China and India. This will be done using a maintain, regain, and develop framework for recommendations and identify sources of medium to long term growth areas.

To do this, the report analyses the international student flows to give an understanding of the current and past trends. The three major host countries by market share, are the United States of America (USA), Australia, and the United Kingdom (UK). USA is decreasing slightly from 19.5% (2015) to 16.8% (2019) in 2019, Australia has increased from 7% in 2016 to nearly 9% in 2019, and the UK is level around 8.5%. The top suppliers are China and India with nearly 30% of all student flows between them. There are some countries which are showing strong year on year growth of outgoing students such as Nepal, Somalia, Yemen, and more, which are potential sources for Australian growth.

Looking into the future this report utilises a linear regression with dummy variables for quarters and COVID to provide a forecast of what student flows could be after recovering from the impact of the pandemic. It does so by using a COVID recovery rate which can adjust forecasts higher or lower based on recent information.

Recommendations are made using the framework of maintain, regain, and develop to highlight the areas that Australia should focus on and in which manner to increase market share. The maintain countries are the Philippines, South Korea, and Taiwan. The regain countries are Hong Kong, Malaysia, and Vietnam. The develop countries are Sri Lanka, Indonesia, and Nigeria. In addition, a further analysis of the medium to long term area of Africa.

Introduction

This report deals with international student flows highlighting those flows around the five largest English-speaking countries, Australia, the United Kingdom, the United States of America, Canada, and New Zealand. The primary focus is looking at how Australia can diversify its share of international students whilst reducing its dependence on China, and India.

To do this our report will analyse the flow of international students to understand past and present trends. This data will be used to generate a prediction of what the next three years could look like with the impact of COVID, then use a framework of maintain, regain, and develop to highlight countries of interest.

The report will achieve this by using both numbers and percentage of market share to discover insights. In addition, it will bring focus on areas to develop in the medium to long term to sustain growth for the Australian market.

Section 1 – Understanding Past and Present Trends

Our objective is to understand the past and present trends. To achieve this outcome, we collated the Suppliers (Countries providing International Students) and Providers (Countries receiving international students).

Provider Market Share

The following outlines the Global Market Share of Providers in 2019. The primary providers are the United States (16.78%), Australia (8.74%) and the United Kingdom (8.40%).
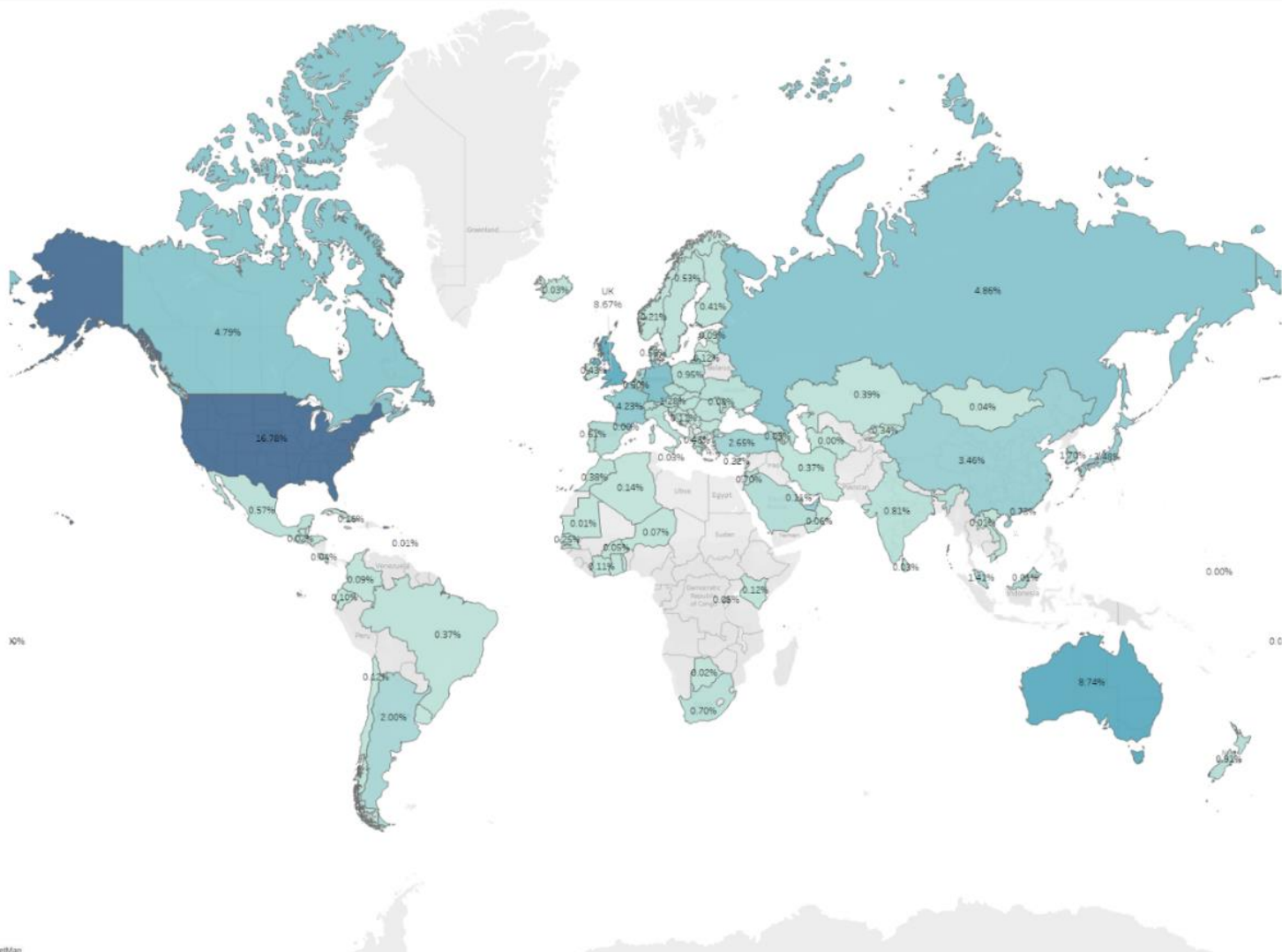

Figure 1: Map of Providers. Colour show sum of student flow. Marks are % of Total flows

To view 2015-2018, please refer to Appendix A

International Market by Provider Countries

The following outlines the Top 10 Providers, that are responsible for 63.12% (3,675,322) of the market in 2019, which has decreased from 64.22% (2,826,006) in 2015. This can be attributed to the emerging markets.

Top 10 Provider Countries

Indicator	Country	TIME						
		2015	2016	2017	2018	2019	72,178	987,314
Provider	United States of America	907,251 20.62%	971,417 19.53%	984,898 19.42%	987,314 18.93%	976,853 16.78%		
	Australia	294,438 6.69%	335,512 6.74%	381,202 7.52%	444,514 8.52%	509,160 8.74%		
	United Kingdom	430,833 9.79%	432,001 8.68%	435,734 8.59%	452,079 8.67%	489,019 8.40%		
	Germany	228,756 5.20%	244,575 4.92%	258,873 5.10%	311,738 5.98%	333,233 5.72%		
	Russian Federation	226,431 5.15%	243,752 4.90%	250,658 4.94%	262,416 5.03%	282,922 4.86%		
	Canada	171,603 3.90%	189,478 3.81%	209,979 4.14%	224,548 4.31%	279,168 4.79%		
	France	239,409 5.44%	245,349 4.93%	258,380 5.09%	229,623 4.40%	246,378 4.23%		
	Japan	131,980 3.00%	143,457 2.88%	164,338 3.24%	182,748 3.50%	202,907 3.48%		
	China	123,127 2.80%	137,527 2.76%	157,108 3.10%	178,271 3.42%	201,177 3.46%		
	Turkey	72,178 1.64%	87,903 1.77%	108,076 2.13%	125,138 2.40%	154,505 2.65%		

Figure 2: % of Total Inbound Students by Country and Year. Colour identifies impact on global market

The major English-speaking host countries are the USA, Australia, United Kingdom, and Canada, which combined account for 38.71% of the market in 2019.

International Market by Top 5 English Speaking Countries

Countries such as Australia and Canada have seen substantial growth of International Students year-on-year, responding to demand from the international community. Countries such as the United States and United Kingdom have experienced growth, with the Canada encountering a spike in 2019.
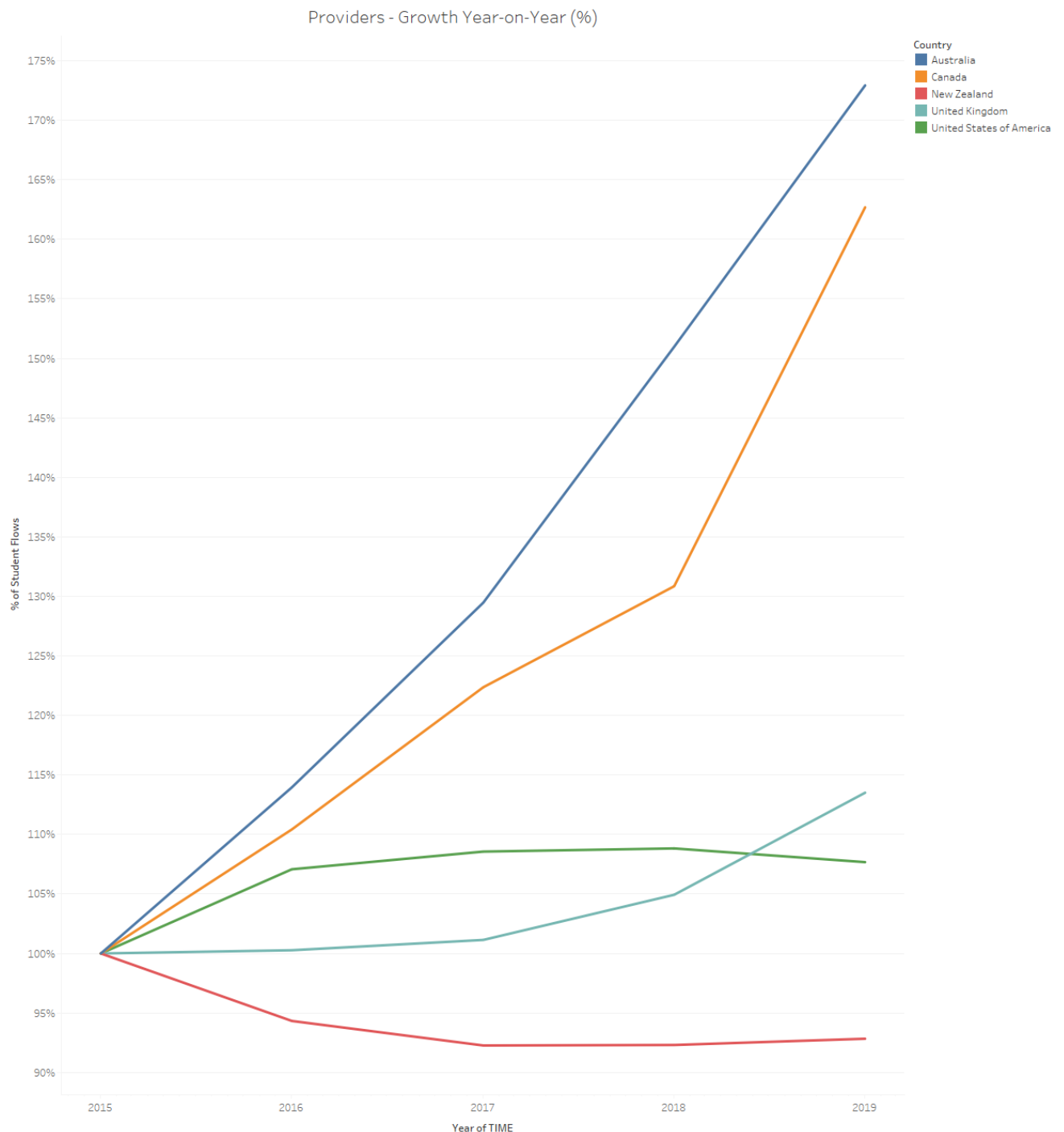
Figure 3: % of Total inbound students by key providers and year. Graph represents year on year growth

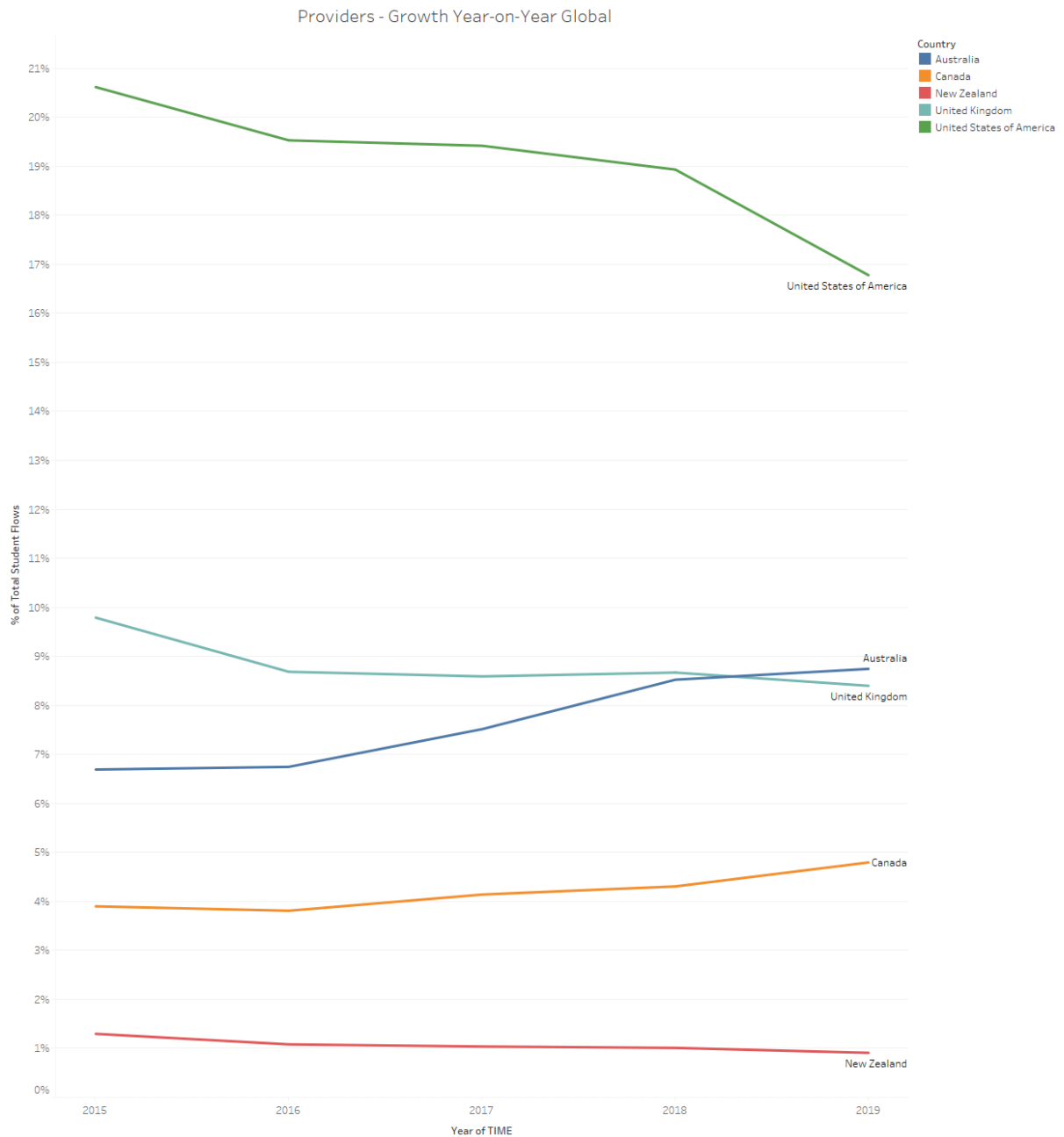Providers - Growth Year-on-Year Global

Figure 4: % of Total inbound students by country and year

Australia and Canada have grown their markets share considerably. Australia has increased their share 30% from 6.69% (2015) to 8.74% (2019) and Canada increased their share 22% from 3.90% (2015) to 4.79% (2019).

Provider Market Movers

The following providers (countries) have increased their international presence and are potential competitors to Australia:

% Providers Increase Year on Year

| Indicator | Country | Year of TIME | | | | % of Total Student Flows |
		2016	2017	2018	2019	0.140% — 8.815%
Provider	Mexico	12,654 26.6%	25,125 98.6%	7,223 -71.3%	33,271 360.6%	
	Kazakhstan	12,533 25.6%	13,850 10.5%	14,332 3.5%	22,728 58.6%	
	Turkey	87,903 21.8%	108,076 22.9%	125,138 15.8%	154,505 23.5%	
	Cyprus	7,722 18.5%	10,451 35.3%	11,273 7.9%	13,085 16.1%	
	Australia	335,512 13.9%	381,202 13.6%	444,514 16.6%	509,160 14.5%	
	China	137,527 11.7%	157,108 14.2%	178,271 13.5%	201,177 12.8%	
	Hungary	26,155 20.5%	28,628 9.5%	32,332 12.9%	35,479 9.7%	
	Algeria	7,180 -9.9%	8,546 19.0%	8,503 -0.5%	8,300 -2.4%	
	Argentina	75,688 811.9%	88,873 17.4%	109,226 22.9%	116,330 6.5%	
	Austria	70,483 4.1%	73,964 4.9%	75,259 1.8%	74,631 -0.8%	
Total		4,894,463 13.2%	4,979,481 1.7%	5,142,788 3.3%	5,776,038 12.3%	

Figure 5: % increase year on year and number increase, minimum of 5000 students receiving

Countries such as Mexico and Kazakhstan have had significant year on year increases, which is reflected in their market share increasing 0.26% to 0.58% and 0.26% to 0.39% respectively.

International Market by Suppliers

The following outlines the Global Market Share of Suppliers in 2019. The primary suppliers are China (20.06%), India (8.73%) and the Vietnam (2.38%).

To view 2015-2018, please refer to Appendix B.

Figure 6: Map of Suppliers. Colour show sum of student flow. Marks are % of Total flows

Supplier Market Share

Top 10 Suppliers

Indicator	Country	TIME					% Global Contribution
		2015	2016	2017	2018	2019	0.285% 4.441%
Supplier	China	818,604 19.14%	866,843 18.99%	928,395 19.50%	997,702 19.92%	1,061,511 20.06%	
	India	256,996 6.01%	305,369 6.69%	341,465 7.17%	377,849 7.54%	461,792 8.73%	
	Viet Nam	68,010 1.59%	82,644 1.81%	94,608 1.99%	108,301 2.16%	126,059 2.38%	
	Germany	117,088 2.74%	118,081 2.59%	122,958 2.58%	122,524 2.45%	122,445 2.31%	
	France	86,691 2.03%	90,836 1.99%	94,756 1.99%	99,567 1.99%	103,161 1.95%	
	United States of America	80,539 1.88%	83,949 1.84%	86,571 1.82%	86,029 1.72%	102,246 1.93%	
	Republic of Korea	107,861 2.52%	105,477 2.31%	105,453 2.22%	101,694 2.03%	101,493 1.92%	
	Kazakhstan	78,253 1.83%	90,213 1.98%	84,859 1.78%	88,118 1.76%	89,292 1.69%	
	Nigeria	92,531 2.16%	96,692 2.12%	85,917 1.80%	76,285 1.52%	71,133 1.34%	
Grand Total		4,276,819 100.00%	4,564,027 100.00%	4,760,100 100.00%	5,008,358 100.00%	5,290,528 100.00%	

Figure 7: Student flow by year. colour shows % contribution of global. Filtered by top 10

The Top 10 Suppliers combined account for 42.32% of total students in the market. The major contributors to the International Student market are China and India which combined, account for 28.79%, the other 8 countries combined contribute 13.53%. This highlights the significant dependence on China and India and the need for Australia to look for alternate avenues

Supplier Market Movers

The following countries are market movers, increasing their International Student Exports from 2015 to 2019:

Suppliers Increase by Year %

Indicator	Country	2016	2017	2018	2019
Supplier	Nepal	49,468 22.0%	64,355 58.7%	82,047 102.3%	93,921 131.6%
	Syrian Arab Republic	46,734 21.2%	53,462 38.6%	64,518 67.3%	74,839 94.0%
	Uzbekistan	32,908 17.0%	35,029 24.6%	42,335 50.6%	52,952 88.3%
	Viet Nam	82,644 21.5%	94,608 39.1%	108,301 59.2%	126,059 85.4%
	Somalia	6,053 15.0%	6,177 17.4%	7,202 36.9%	9,459 79.8%
	India	305,369 18.8%	341,465 32.9%	377,849 47.0%	461,792 79.7%
	Tajikistan	20,777 32.5%	19,779 26.1%	25,226 60.8%	27,624 76.1%
	Yemen	25,695 13.8%	24,877 10.2%	26,475 17.3%	39,631 75.6%
	Portugal	12,886 5.5%	14,114 15.5%	15,082 23.4%	20,633 68.9%
	Myanmar	8,437 10.0%	9,166 19.6%	10,698 39.5%	12,818 67.2%
	Total	6.9%	11.6%	17.9%	24.9%

% of Global Contribution: 0.134% — 8.969%

Figure 8: Number and % of student year on year with minimum of 5000 students

The following Graph represents the level of growth the Top 10 countries have endured.
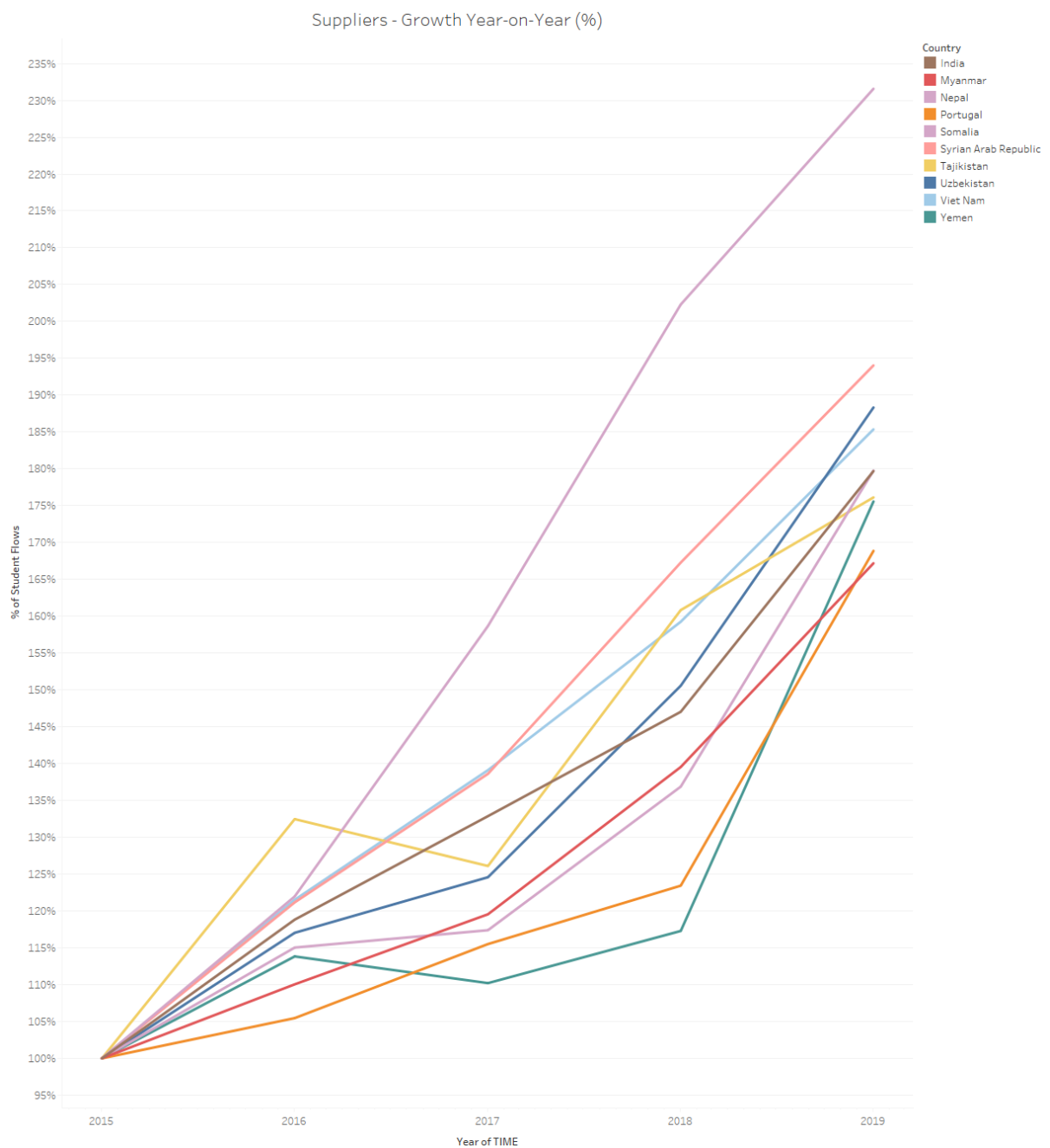
Figure 9: % of total outbound students by key suppliers and year. Represents year on year growth

The countries outlined above are potential markets for Australia. These countries have undergone substantial growth over 5 years which Australia could benefit from.

Section 2 – Prediction of Next Three Years

Using the data gathered we aimed to create a predictive forecasting model using visa application data. This will be used to predict the next three years of international student flows, particularly to Australia, and be able to demonstrate the impact the Coronavirus pandemic has had.

Methods

We tried several different methods with many underperforming, being unable to accommodate the impacts of COVID resulting in inaccurate and poor performing models. These include Moving Average, Holt's Exponential Smoothing, Linear Regression, and Tableau Linear Forecasting (see appendix C). The final method chosen was linear regression using dummy variables.

Linear Regression with Dummy Variables

The linear regression with dummy variables includes dummies for both the quarters and COVID (Q1 2020 onward). This allowed for a better visualisation as the model captures the impact of the decrease in student flows from COVID. In addition, this allows for the forecasts to be flexible and incorporate a recovery rate which adjusts forecasts higher or lower depending on the expected recovery.
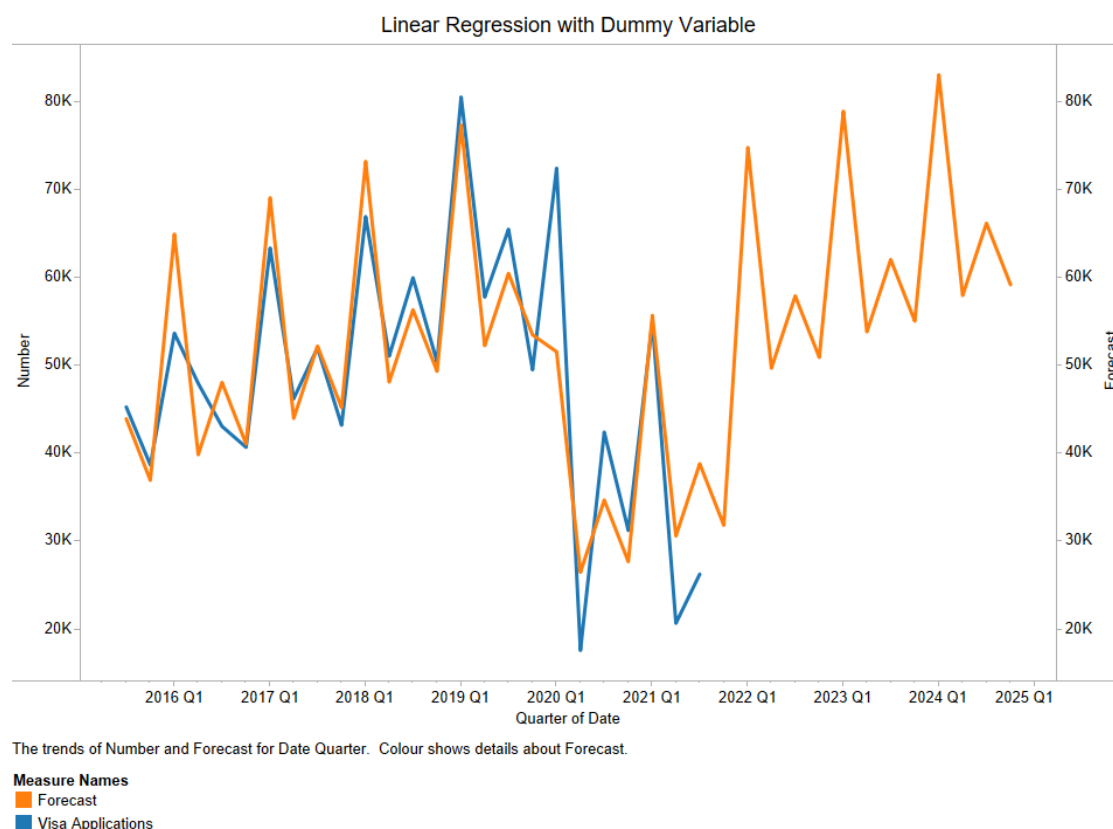

The trends of Number and Forecast for Date Quarter. Colour shows details about Forecast.

Measure Names
- Forecast
- Visa Applications

Figure 10: Linear regression with dummy variables for quarters and COVID with recovery rate at 50%

Results

The most accurate model was linear regression with dummy variables which for Australia gave an adjusted R squared of 0.71.

- Moving average by design is very reactive and has an inability to accurately forecast and is more suitable for level data.

- Exponential Smoothing is delayed and also has a limited ability to forecast as it just continues the previous trend for forecasts, so it is unfeasible to use.

- Linear regression can capture the impact of COVID when separate regressions are run but forecasts using this do not allow for a recovery period. For the post COVID trend there is not enough data to have an accurate trend which results in a flat line for this period.

- Dummy variables give a more accurate model and captures the impact of COVID while also allowing for flexible forecasting using the recovery rate.

Therefore, we chose to use a linear regression with dummy variables as our preferred predictive model.

Impact of the model

The predictive model incorporated the impact of COVID successfully and is trending upward in line with the pre-COVID trend. It will be easy to update forecasts using the recovery rate or to recalculate as it is a common method.

Section 3 – Recommendations

Recommendations will be made using a framework of Maintain, Regain, and Develop based on their percentage market share and growth. Each of the keywords is in reference to the approach that should be taken in dealing with each country.

Maintain

The countries we have identified for Australia to maintain are:

- Philippines
    - Australia has continued to capture % of Filipino student outputs as outlined in Figure 11.
    - In Figure 12 the Philippines has increased their global market share.
- South Korea
    - Australia has seen a decline in South Korean student imports as shown in Figure 11.
    - In Figure 12 South Korea has maintained its market share, suggesting Australia is losing its students to the 4 other English-speaking countries.
- Taiwan
    - Figure 11 shows that Australia has seen increase in Taiwanese students, however this has declined.
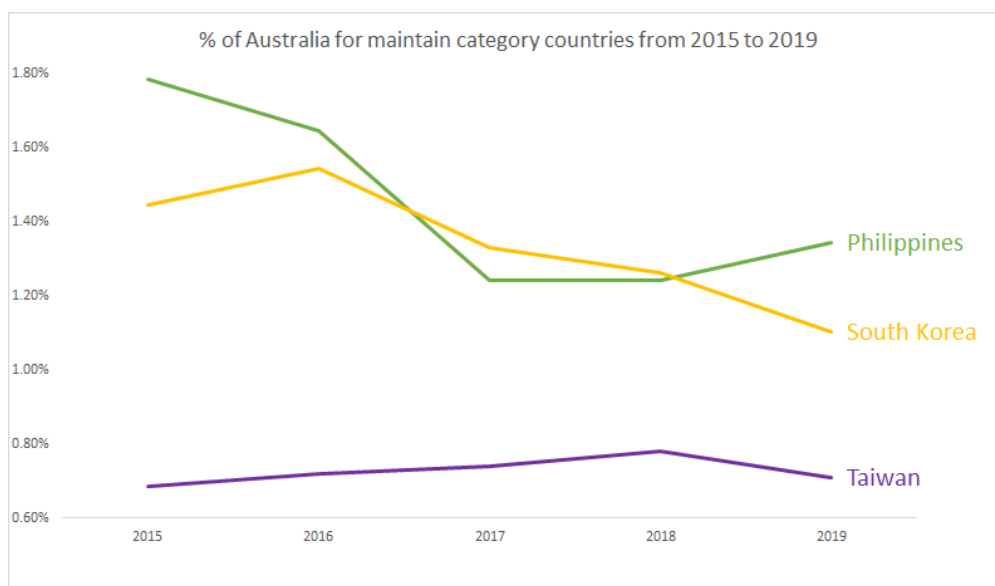   - In Figure 12 Taiwan has shown rapid growth in global market share but has started to stabilise.

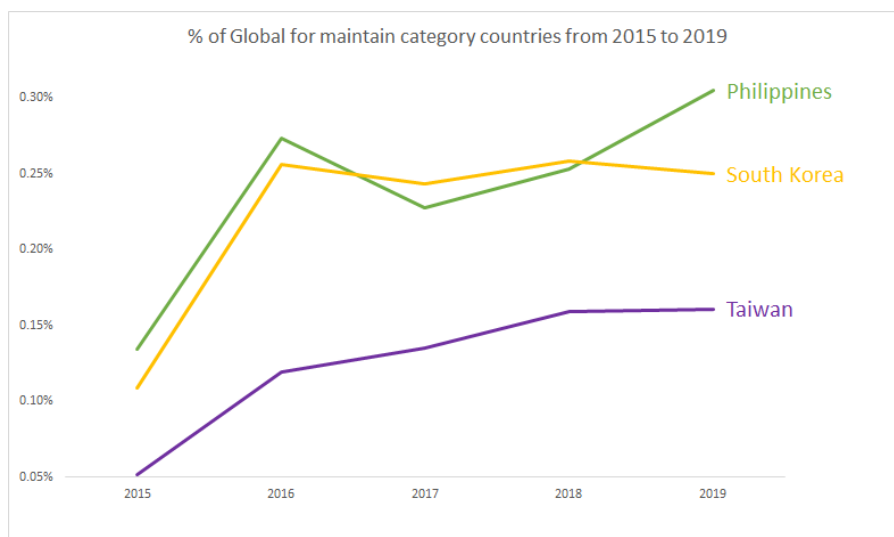*Figure 11: Trend of the % of Australian market share of maintain countries over time*

Figure 12: Trend of the % of global market share of maintain countries over time

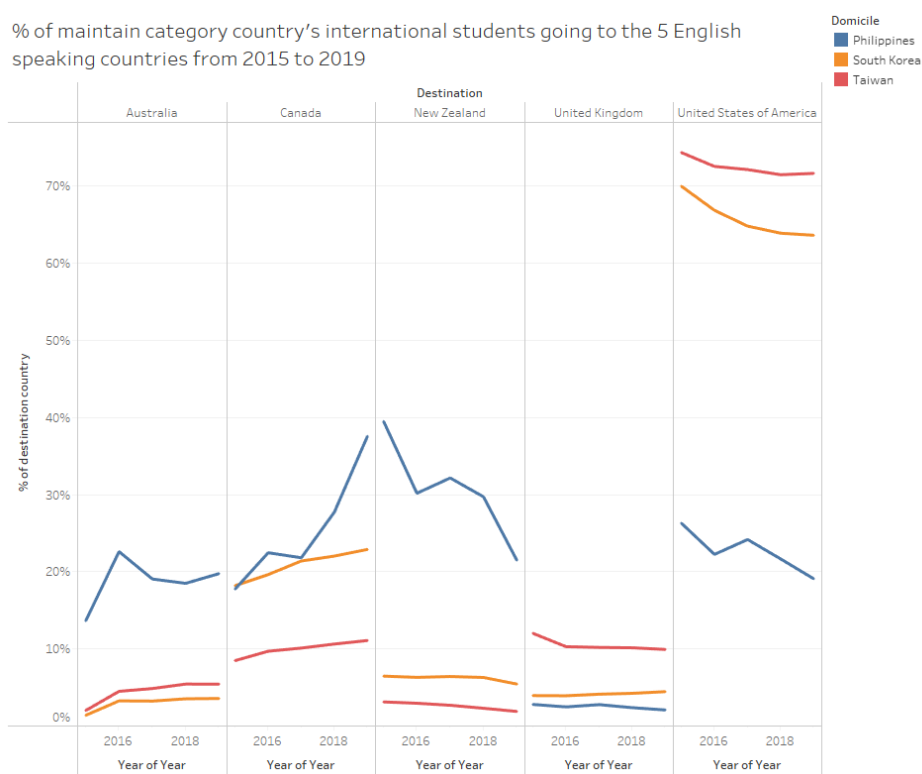## Comparison Between Other English-Speaking Countries

Figure 13: Line graphs show the % going to each English-speaking country

Recommendations:

Provide reassurance to students that Australia is a safe and welcoming destination for international students.

For South Korea and Taiwan, MQ International can look to allocate more resources to capitalise on the fact that those countries are still outputting a stable number of students.

Regain

The countries we have identified for Australia to regain are:

- Hong Kong
    - Figure 14 shows that Australia has continued to see a decline in Hong Kong students.
    - Shown in Figure 15, global market share has declined slightly, but has recovered to its 2016 student output levels.
- Malaysia
    - In Figure 14, Australia has seen a decline in % of Malaysian students
    - Malaysia global market share has continued to decline shown in Figure 15
- Vietnam
    - Australia has failed to capture a % of Vietnam's international student output shows in Figure 14.
    - Figure 15 shows Vietnam's global market share increase significantly over 2015 – 2019.
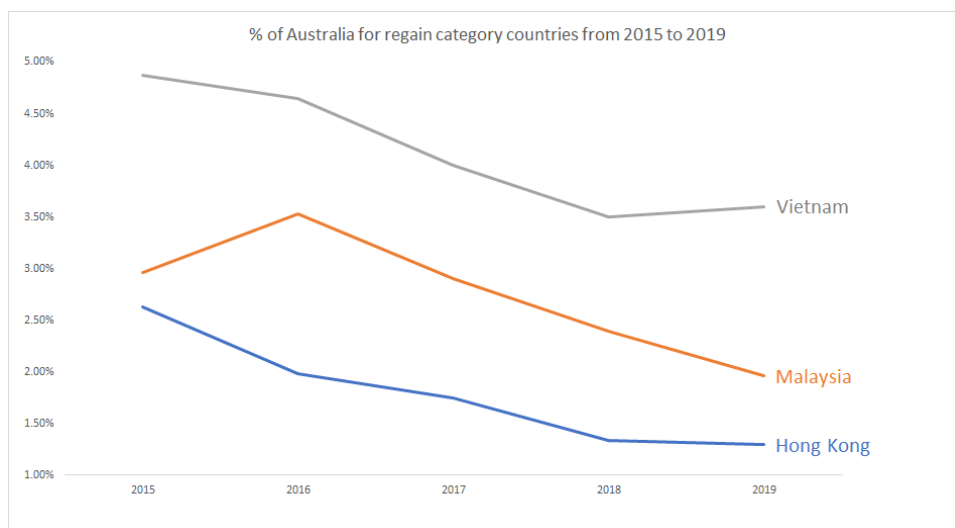

Figure 14: Trend of the % of Australian market share of regain countries over time
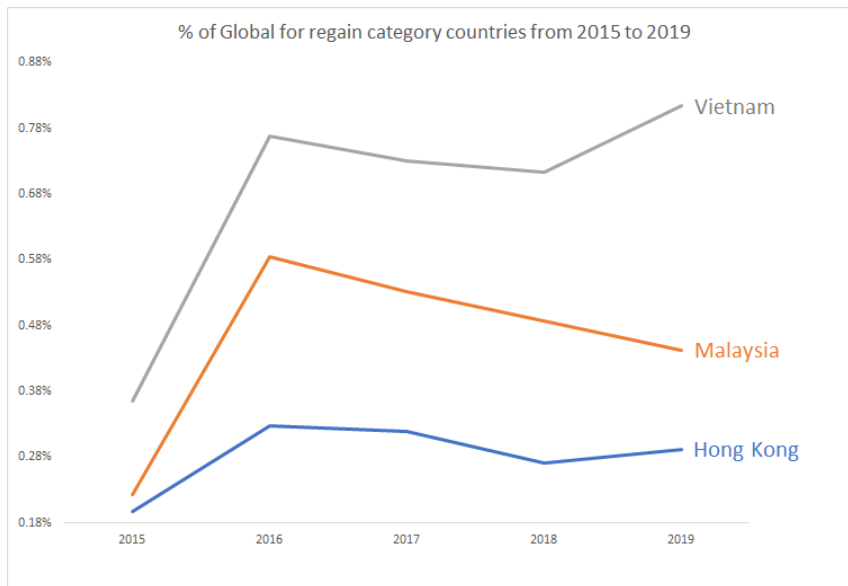
Figure 15: Trend of the % of global market share of regain countries over time

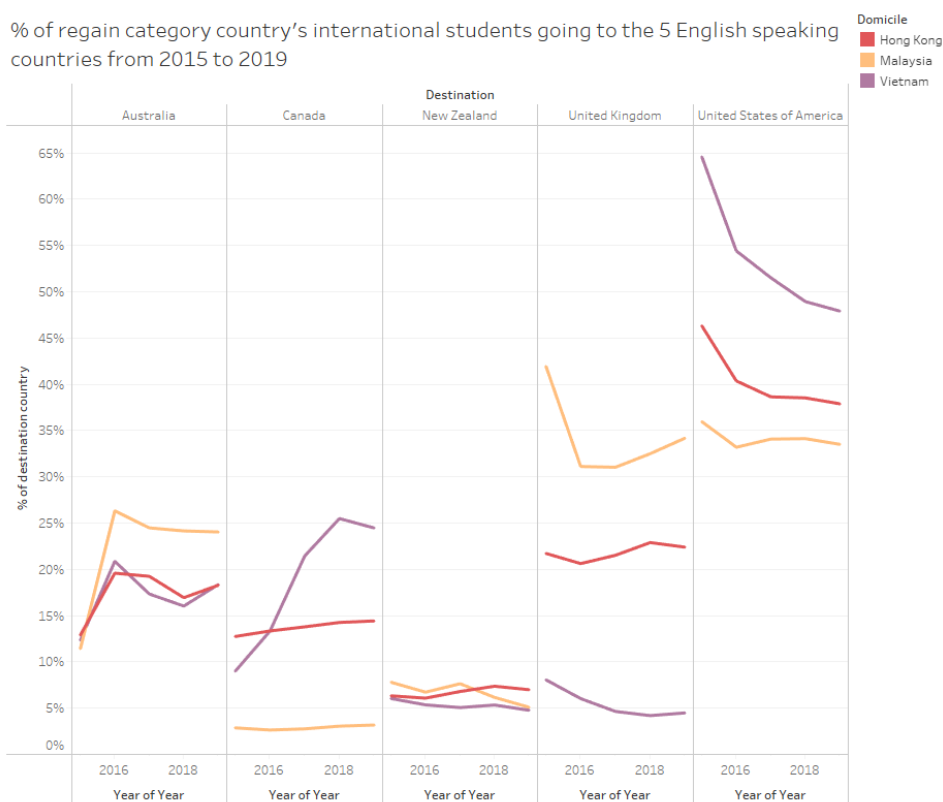## Comparison Between Other English-Speaking Countries

Figure 16: Line graphs show the % going to each English-speaking country

Recommendations

Increase marketing and recruitment efforts by:

- Running MQ university learning experience programs in high schools.
- Bring past student and current student speakers to talk about their experience.
- Offer academic English programs.

Develop

Short Term

The countries we have identified for Australia to develop are:

- Sri Lanka
  - In Figure 17 it can be seen that Sri Lanka makes up more of the international students in Australia every year.
  - Figure 18 shows Sri Lanka has taken up further market share, taking away more market share from English speaking countries.
- Indonesia
  - In Figure 17 Australia has seen a steady decline from Indonesia since 2016.
  - Figure 18 shows a steady level of students from Indonesia as a % of global.
- Nigeria
  - In Figure 17 the share of Nigerian increases slightly until 2017 then declines.
  - In Figure 18 it is seen that the Australian market share of Nigerian students as a % of global is flat which will currently result in less students in the future.
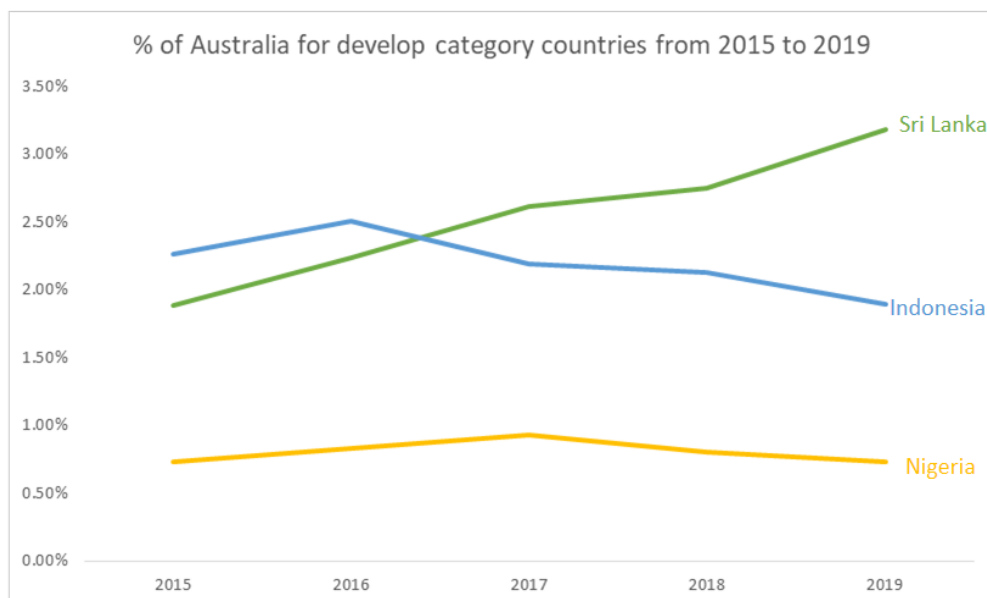

Figure 17: Trend of the % of Australian market share of develop countries over time
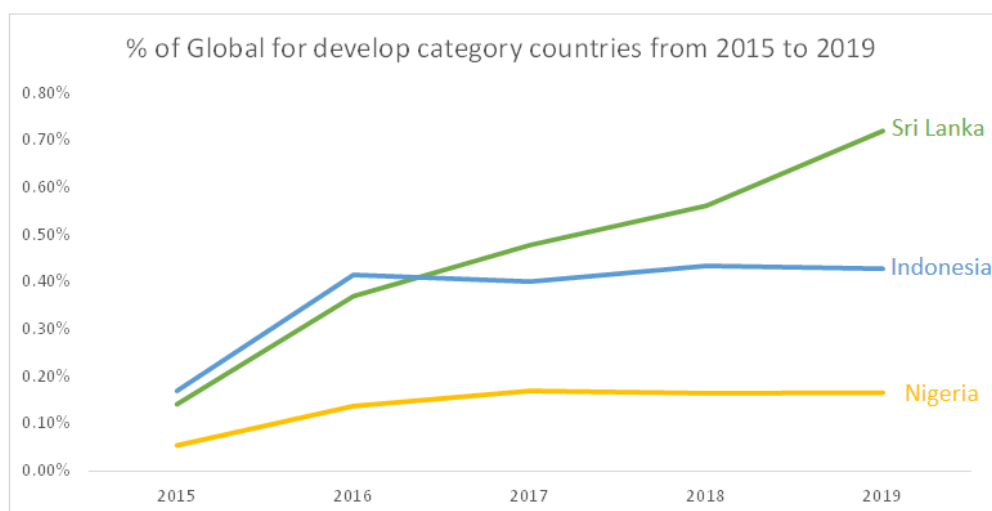
Figure 18: Trend of the % of global market share of regain countries over time

Recommendations

It is critical to develop in Nigeria as it is the tenth largest source of international students and there may be an opportunity to develop other African nations.

Additionally, it is critical to develop in the South-East Asian market as there is a fast-growing market of international students. Two of these potential countries are Sri Lanka and Indonesia.

Medium to Long Term

African region and Eastern Europe region from 2015 to 2019

Domicile	2015	2016	2017	2018	2019
Afghanistan	743	726	686	600	628
Belarus	506	502	508	540	544
Bulgaria	1,072	999	872	826	764
Central African Republic	39	40	55	43	47
Czech Republic	942	975	991	1,070	972
Hungary	908	904	871	959	875
Kazakhstan	3,782	3,600	3,482	3,467	3,664
Kyrgyzstan	287	311	339	424	478
Moldova	356	315	303	278	273
Pakistan	17,564	21,089	21,476	22,063	22,857
Poland	1,688	1,730	1,707	1,751	1,731
Romania	1,248	1,315	1,232	1,189	1,176
Russia	10,457	10,354	10,389	9,788	9,467
Slovakia	396	438	382	385	343
Somalia	69	154	178	175	152
South Africa	3,994	4,815	5,336	6,779	7,701
Tajikistan	266	248	259	260	282
Turkmenistan	256	274	286	338	326
Ukraine	3,943	4,525	4,469	4,300	4,054
Uzbekistan	778	757	800	931	1,047
Yemen	890	964	892	778	703

Figure 19: Table showing number of incoming students to Australia which are significantly lower than international student flows for each country.

% year on year change from 2015 to 2019

Domicile	Year 2016	2017	2018	2019
Afghanistan	-2.29%	-5.51%	-12.54%	4.67%
Belarus	-0.79%	1.20%	6.30%	0.74%
Bulgaria	-6.81%	-12.71%	-5.28%	-7.51%
Central African Republic	2.56%	37.50%	-21.82%	9.30%
Czech Republic	3.50%	1.64%	7.97%	-9.16%
Hungary	-0.44%	-3.65%	10.10%	-8.76%
Kazakhstan	-4.81%	-3.28%	-0.43%	5.68%
Kyrgyzstan	8.36%	9.00%	25.07%	12.74%
Moldova	-11.52%	-3.81%	-8.25%	-1.80%
Pakistan	20.07%	1.84%	2.73%	3.60%
Poland	2.49%	-1.33%	2.58%	-1.14%
Romania	5.37%	-6.31%	-3.49%	-1.09%
Russia	-0.98%	0.34%	-5.78%	-3.28%
Slovakia	10.61%	-12.79%	0.79%	-10.91%
Somalia	123.19%	15.58%	-1.69%	-13.14%
South Africa	20.56%	10.82%	27.04%	13.60%
Tajikistan	-6.77%	4.44%	0.39%	8.46%
Turkmenistan	7.03%	4.38%	18.18%	-3.55%
Ukraine	14.76%	-1.24%	-3.78%	-5.72%
Uzbekistan	-2.70%	5.68%	16.38%	12.46%
Yemen	8.31%	-7.47%	-12.78%	-9.64%

Figure 20: Table showing % change of incoming students into Australia

As these figures are lower than each country's international student flows (Figure 8) it presents an important medium-long term source of potential growth that Australia can capitalise on. If Australia can improve its reputation and improve its recognition amongst these countries, then Australia will be able to dominate these flows.

Africa from 2015 to 2019

Domicile	Year 2015	2016	2017	2018	2019
Algeria	1,460	1,263	1,535	2,031	3,300
Angola	1,718	1,710	1,484	1,239	1,099
Cameroon	2,735	2,821	2,736	2,789	2,932
Ethiopia	1,770	2,167	2,469	2,506	2,787
Ghana	5,068	5,392	5,557	6,230	7,646
Ivory Coast	1,964	2,120	2,146	2,426	2,588
Kenya	5,153	6,309	6,636	7,333	7,691
Libya	4,599	3,139	2,423	1,950	1,681
Morocco	3,430	3,635	3,799	4,200	5,216
Nigeria	28,391	27,098	27,350	28,891	31,305
Rwanda	1,233	1,522	1,762	1,946	2,255
South Africa	3,994	4,815	5,336	6,779	7,701
Zimbabwe	2,263	2,791	2,730	2,747	2,787

Figure 21: Table showing number of outgoing African students

% of year on year change in Africa from 2015 to 2019

Domicile	Year 2016	2017	2018	2019
Algeria	-13.49%	21.54%	32.31%	62.48%
Angola	-0.47%	-13.22%	-16.51%	-11.30%
Cameroon	3.14%	-3.01%	1.94%	5.13%
Ethiopia	22.43%	13.94%	1.50%	11.21%
Ghana	6.39%	3.06%	12.11%	22.73%
Ivory Coast	7.94%	1.23%	13.05%	6.68%
Kenya	22.43%	5.18%	10.50%	4.88%
Libya	-31.75%	-22.81%	-19.52%	-13.79%
Morocco	5.98%	4.51%	10.56%	24.19%
Nigeria	-4.55%	0.93%	5.63%	8.36%
Rwanda	23.44%	15.77%	10.44%	15.88%
South Africa	20.56%	10.82%	27.04%	13.60%
Zimbabwe	23.33%	-2.19%	0.62%	1.46%

Figure 22: Table showing % change of incoming African students into Australia

Figure 21 shows us African nations that have at least 1000 outbound students. In Figure 22 many of these African nations are seeing double digit increases in growth in 2019.

Recommendations

Pursuing nations for example Nigeria, South Africa, and Ghana will see a more immediate increase in medium source of potential growth whilst the other countries are more long-term goal. Instilling recognition and trust to Australia in an early stage will allow Australia to have a large piece of the market in the future and diversify away from China and India.
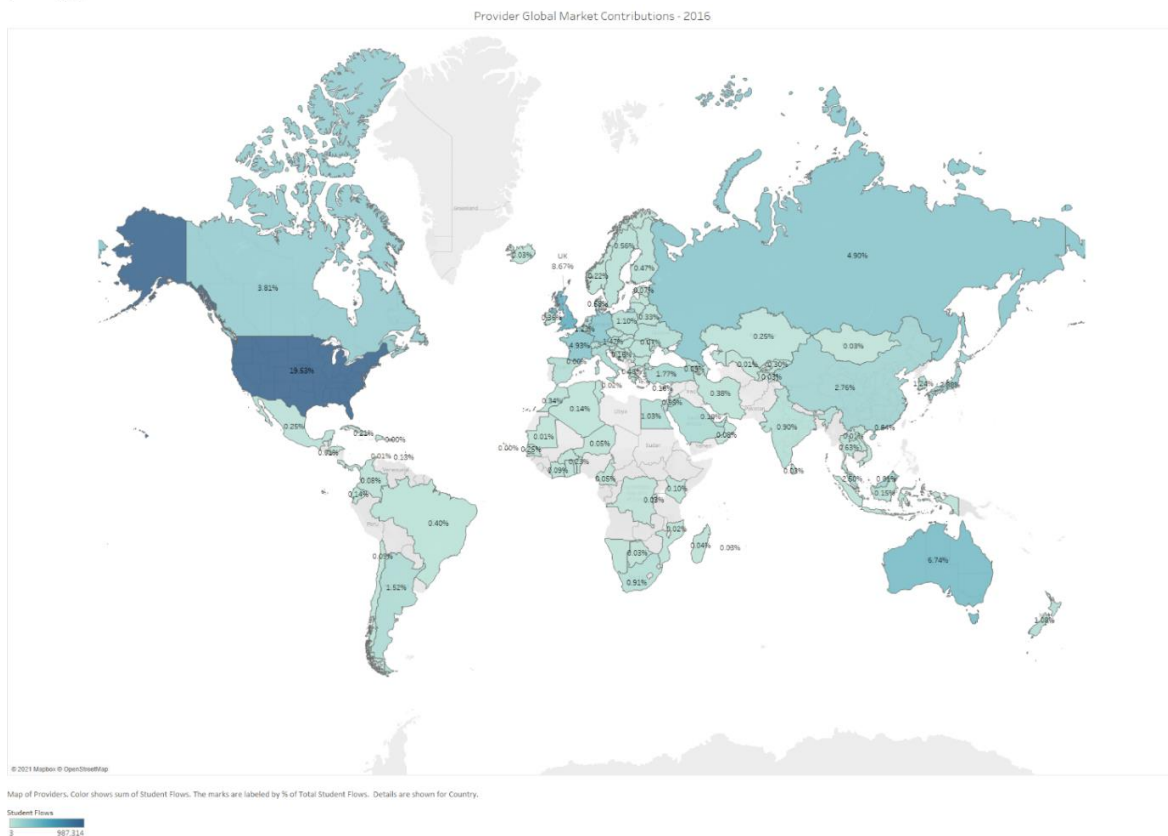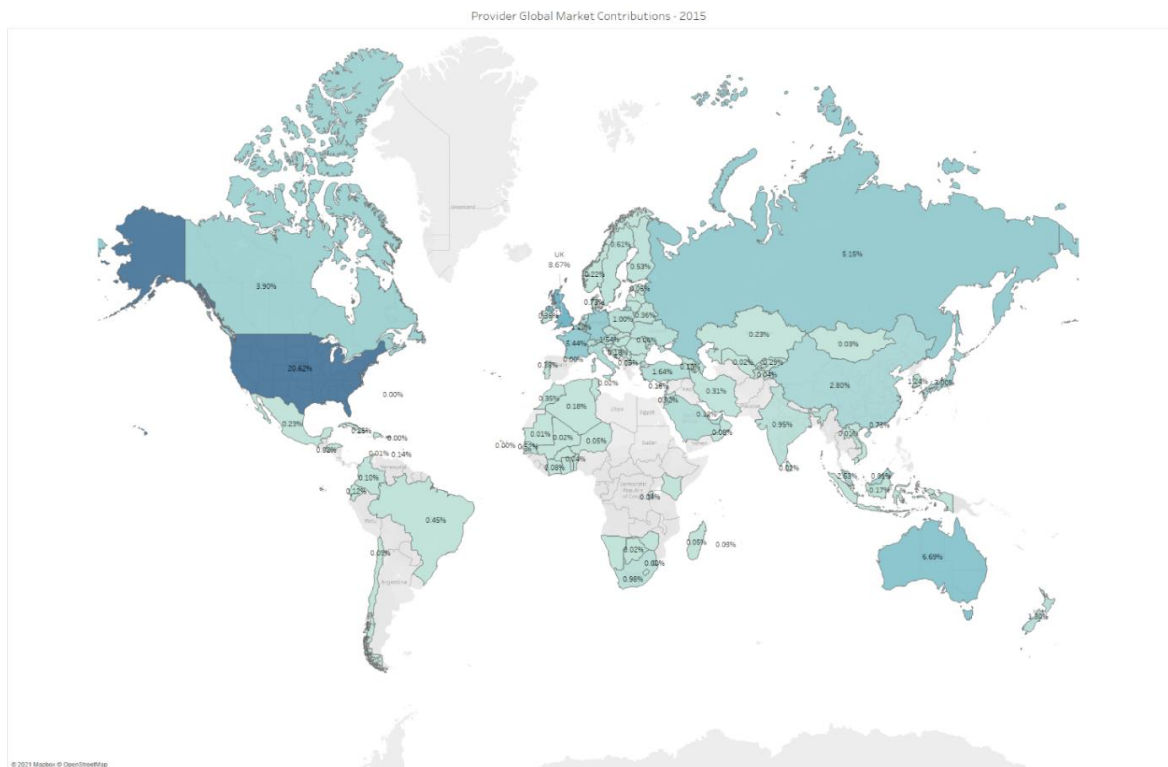
Conclusion

The major contributors to student flows are China and India demonstrating the need to diversify Australia's market to be less dependent on these nations. Using the data, we identified the current trends amongst international student flows for both host countries and contributors. The prediction model of linear regression using dummy variables allows for an adjustable model which predicts growth and a return back to pre-COVID levels.
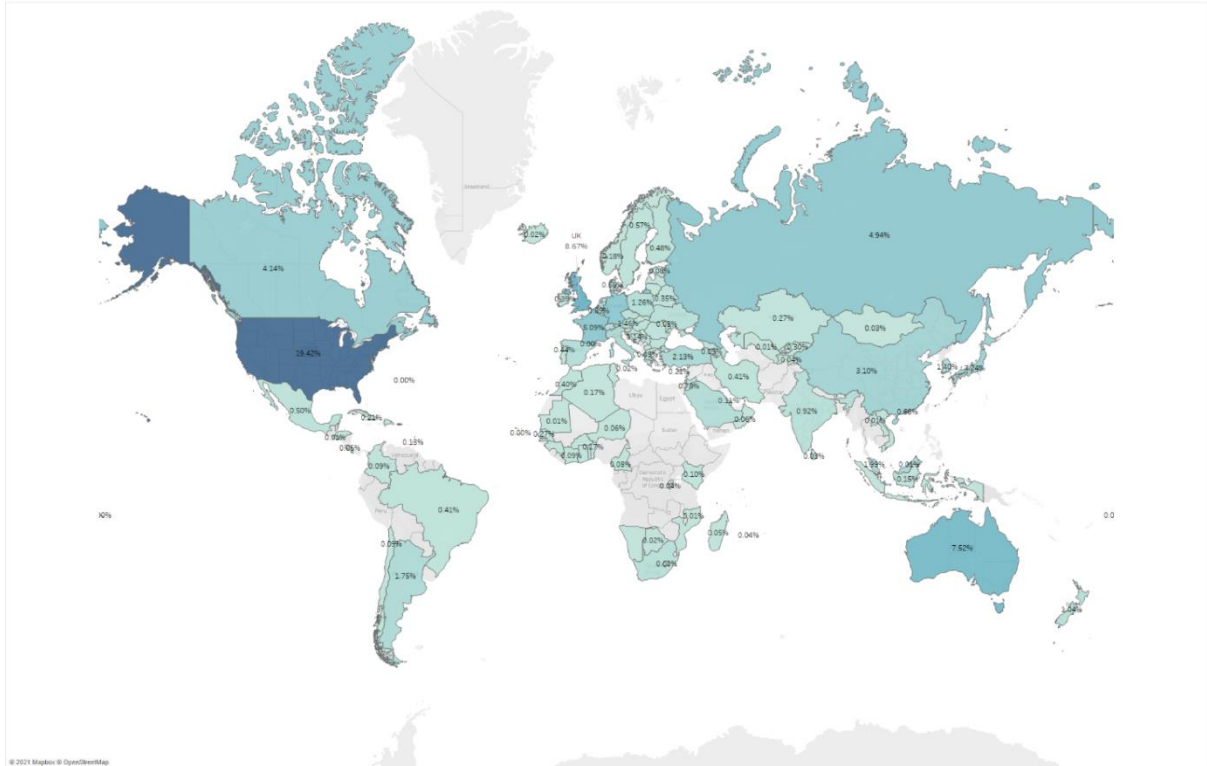
Using the data of market share we are able to identify Philippines, South Korea, and Taiwan as countries to maintain, Hong Kong, Malaysia, and Vietnam as countries to regain and lastly Sri Lanka, Indonesia, and Nigeria to develop. For a source of medium to long term areas of potential growth regions in Africa such as South Africa, Nigeria and Ghana are areas that are showing strong growth in student outflows but are not being captured by English-speaking countries.
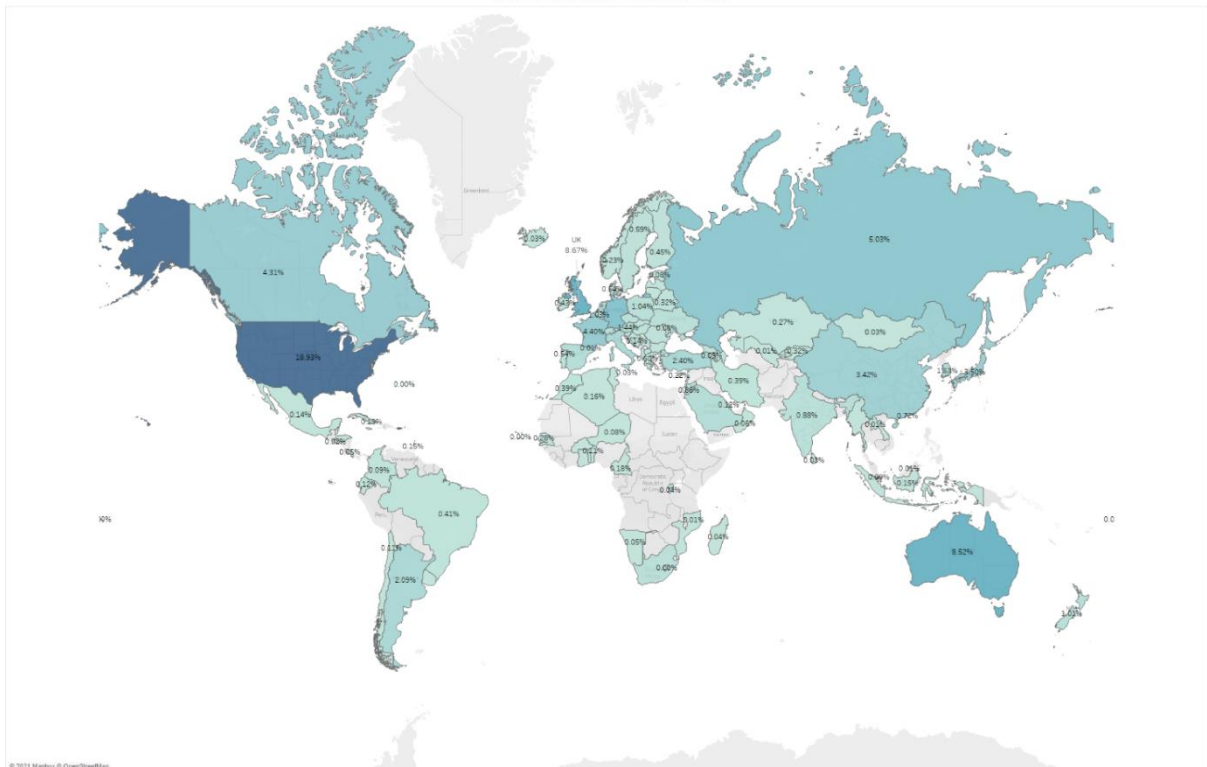
Appendices

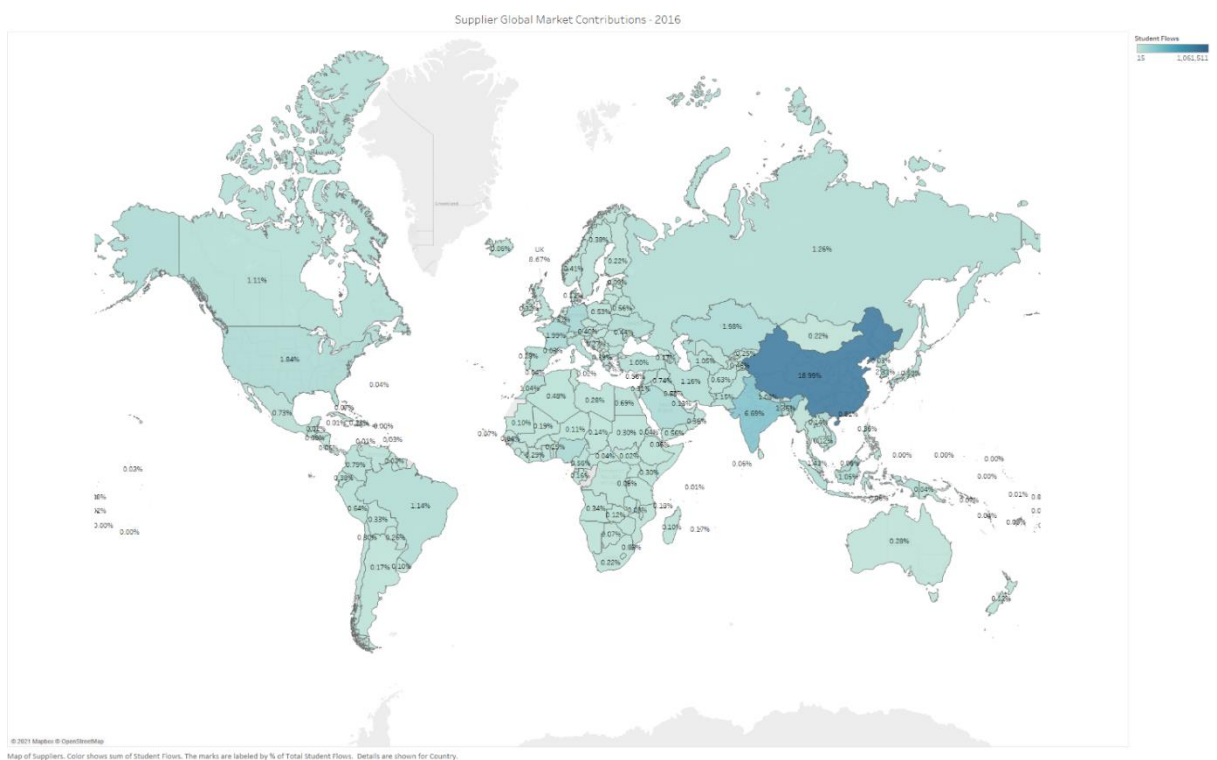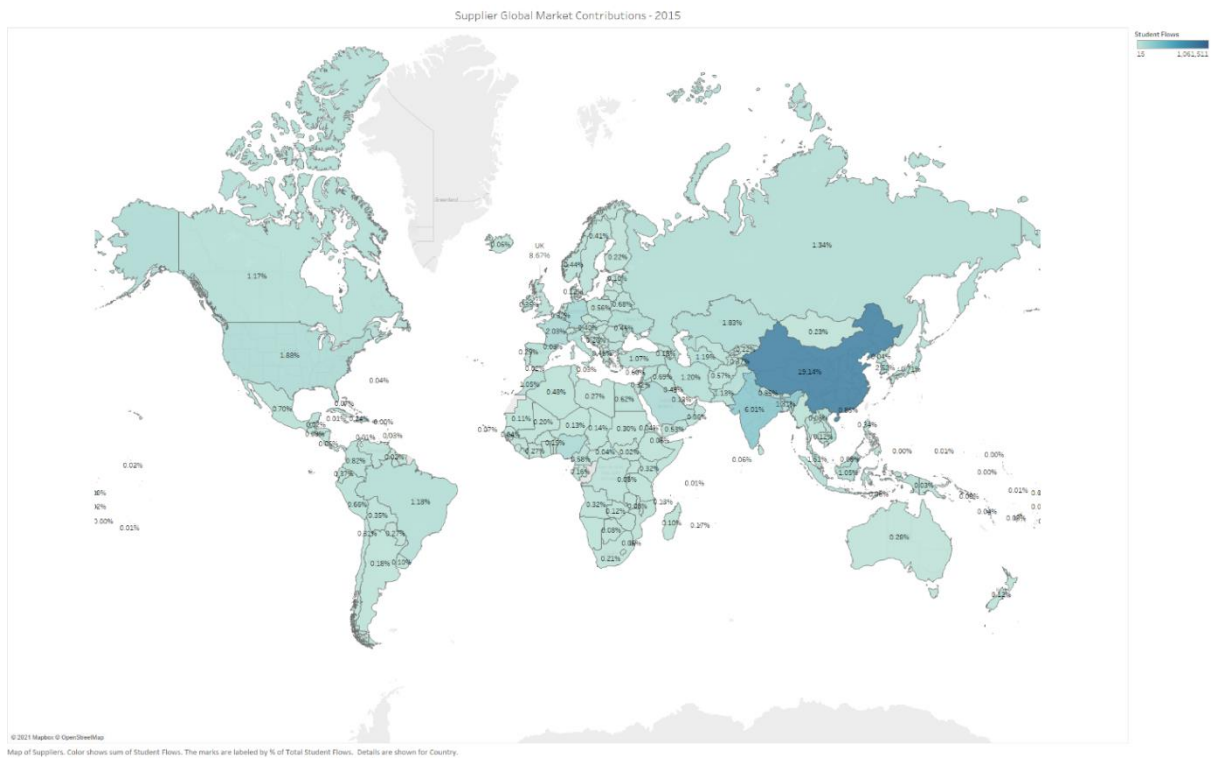## Appendix A – Provider – Global Market Contributions

Provider Global Market Contributions - 2015

Map of Providers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Student Flows
3   987,314

Provider Global Market Contributions - 2016

Map of Providers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Student Flows
3   987,314

Provider Global Market Contributions - 2017

Map of Providers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Student Flows
3   987,314

Provider Global Market Contributions - 2018

Map of Providers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Student Flows
3   987,314

Appendix B – Supplier – Global Market Contributions

Supplier Global Market Contributions - 2015

Map of Suppliers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Supplier Global Market Contributions - 2016

Map of Suppliers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Supplier Global Market Contributions - 2017

Map of Suppliers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Supplier Global Market Contributions - 2018

Map of Suppliers. Color shows sum of Student Flows. The marks are labeled by % of Total Student Flows. Details are shown for Country.

Appendix C – Other Forecasting Models Used

Moving Average
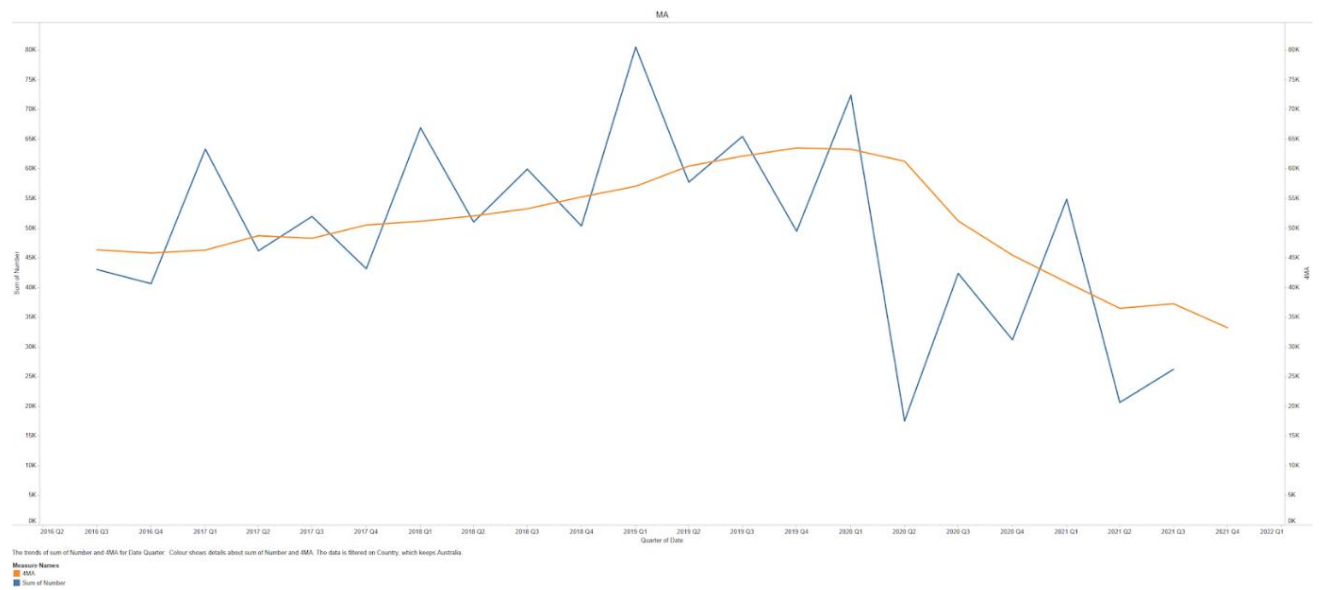
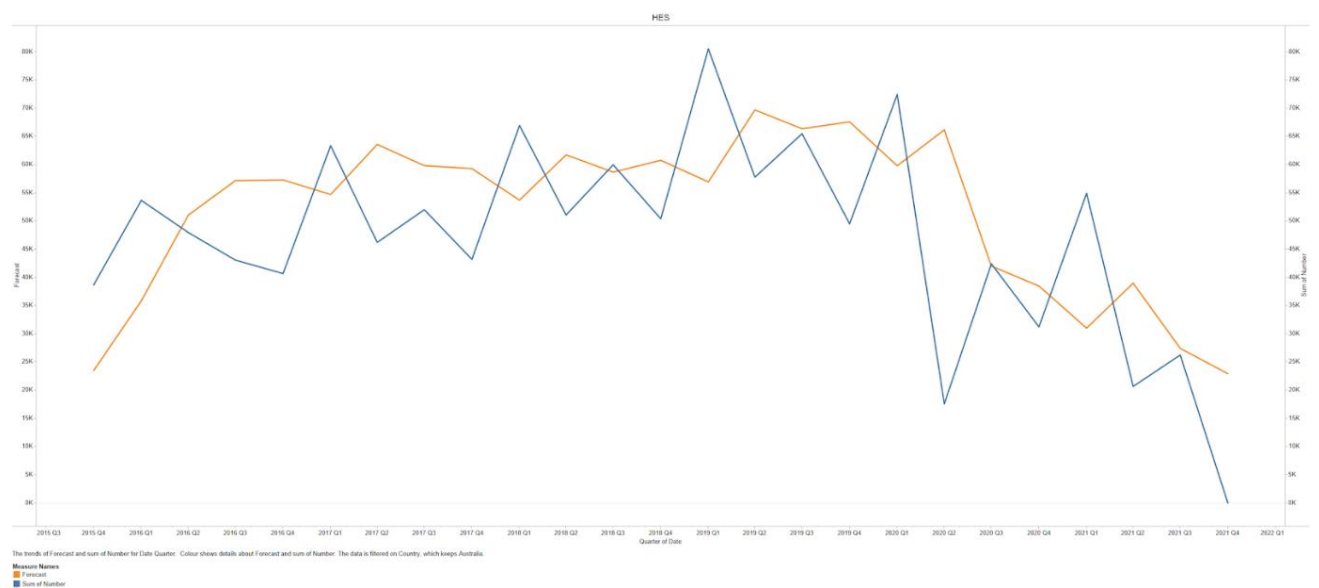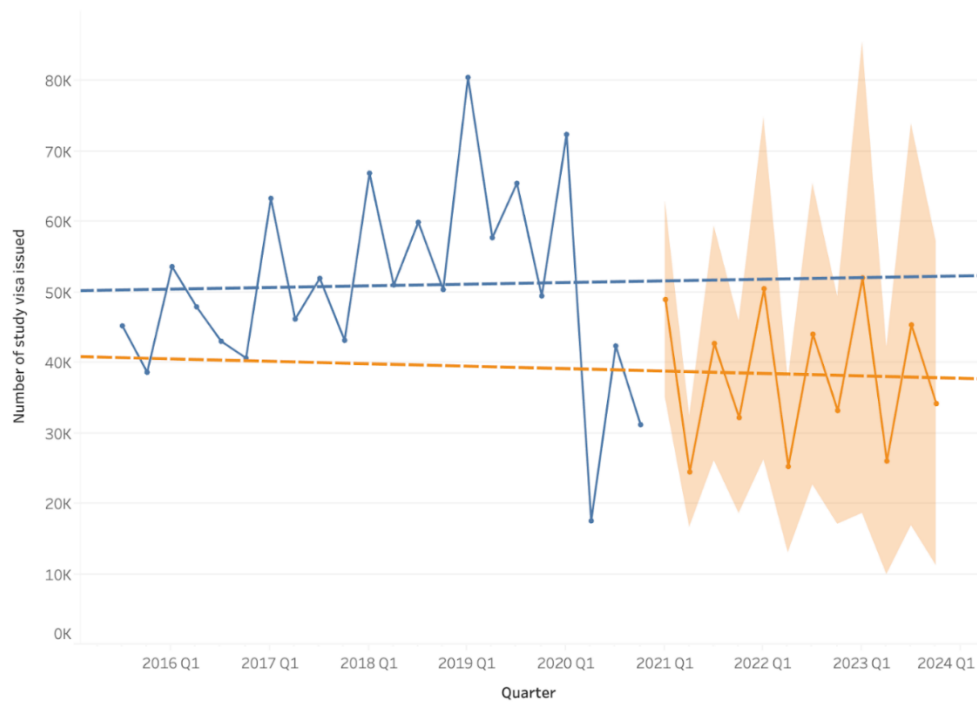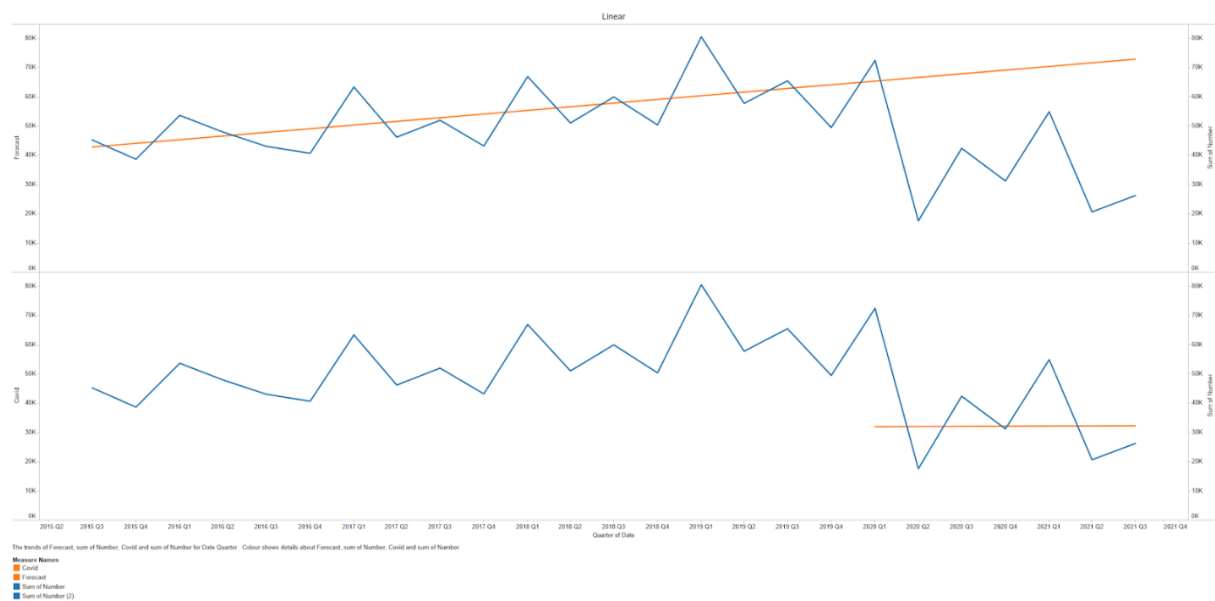**Holts Exponential Smoothing**

Tableau Forecasting

Predict number of international students in Australia

Linear Regression

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