Background

The purpose of this analytical report is to provide a comprehensive overview of UK cases and vaccination by province/state. The identified pattern and trends can indicate which province/ state is at the highest priority. Twitter data is also being analysed to further define our communication approach for target persona.

With the findings and insights, recommendations will be provided to inform the marketing approach for UK government to increase the number of fully vaccinated people.

Analytical Approach

There are 3 datasets that are analysed for the report:

1. COVID-19 cases daily entries from Jan 2020 to Oct 2021 ('recovered' data is missing after 5 Aug 2021)
2. Vaccinations daily entries from Jan 2020 to Oct 2021
3. Extract of Twitter data from 15 May 2022 to 23 May 2022 relating to the #coronavirus hashtag

The data for the 'Other' province/state in the cases and the vaccination dataset significantly skewed the data. (See below Fig 2 - with 'Others' & Fig 3 - without 'Others' as reference) Given that there is no clear indication of what the 'Others' represented and no insight is provided from this data, we have dropped the 'Others' data to better review the entire dataset.

Fig 2. COVID-19 Data Over Time

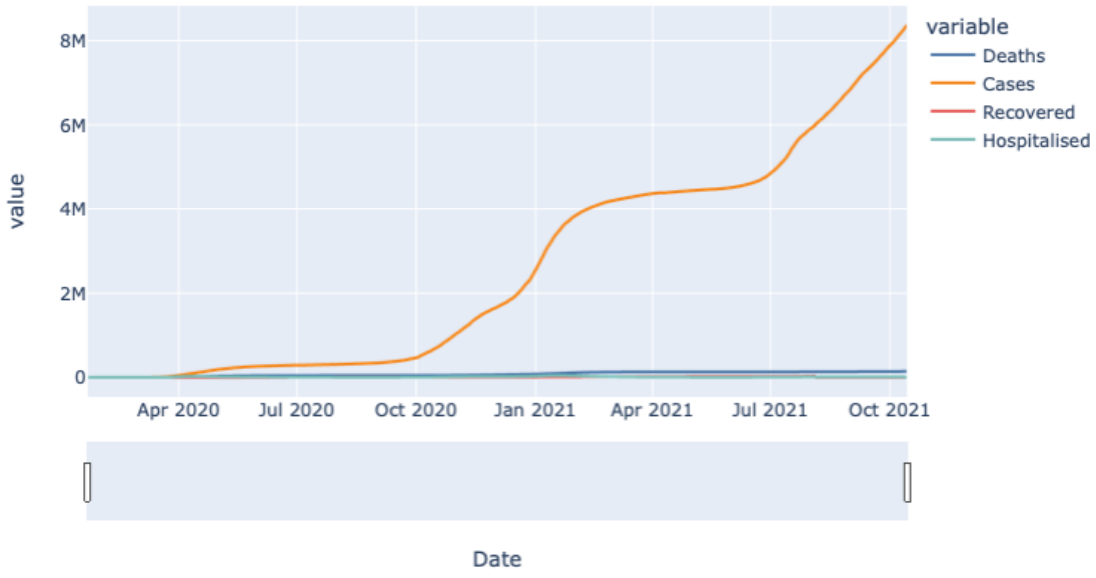
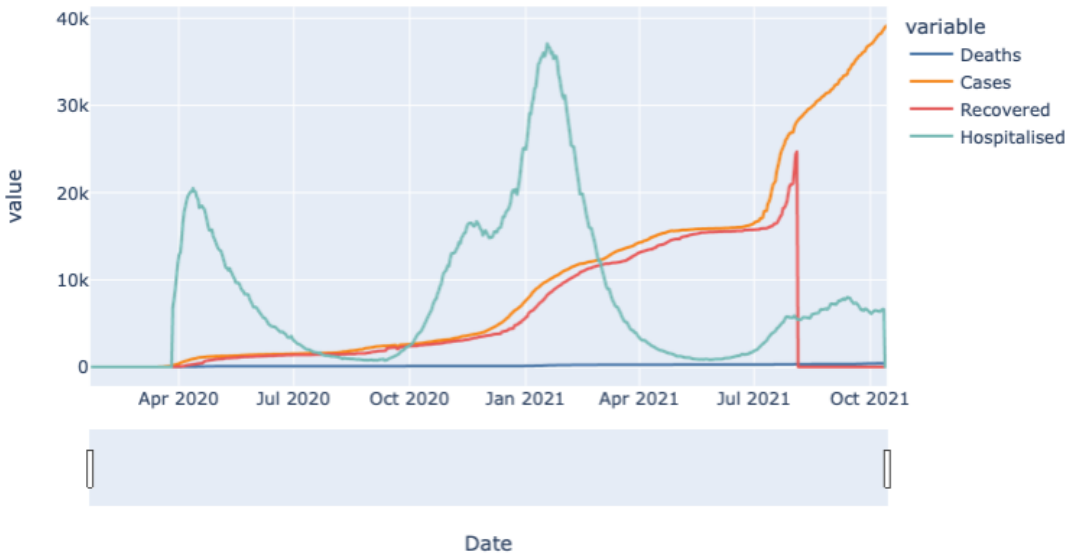


Fig 3. COVID-19 Data (without Others) Over Time

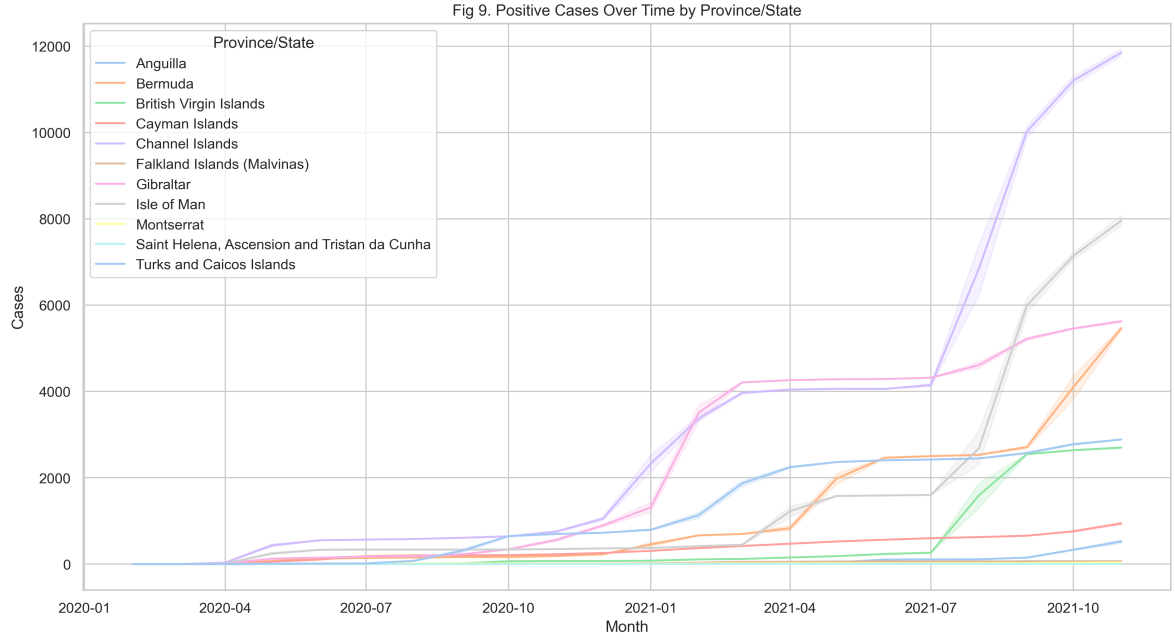


"Hospitalised" data from the COVID-19 case dataset will be overlooked for analysis as additional details are required to confirm the credibility of the data. It is absurd that the number of hospital admissions exceeds the number of cases. (See Fig 3)

Identify the Pattern and Trend of COVID-19 Cases and Vaccinations

The number of COVID-19 cases varies widely across provinces due to the difference in population. Yet, we can diagnose that they had a similar trend of having two important peaks in February to March 2021 and September to October 2021. (See Fig 9)

Fig 9. Positive Cases Over Time by Province/State



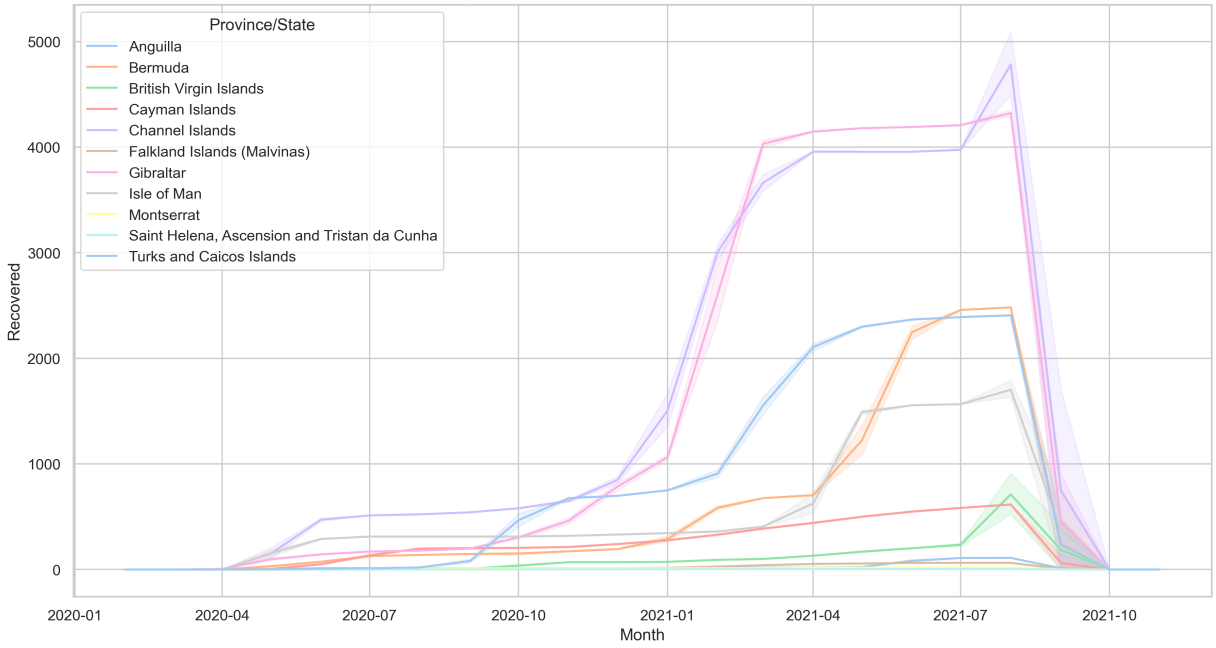
Month	Year	First Dose	Second Dose	Total
January	2020	0	0	0
February	2020	0	0	0
March	2020	0	0	0
April	2020	0	0	0
May	2020	0	0	0
June	2020	0	0	0
July	2020	0	0	0
August	2020	0	0	0
September	2020	0	0	0
October	2020	0	0	0
November	2020	0	0	0
December	2020	0	0	0
January	2021	6,624,253	97,153	6,721,406
February	2021	10,375,238	303,921	10,679,159
March	2021	10,274,043	3,494,275	13,768,318
April	2021	3,037,950	9,869,443	12,907,393
May	2021	4,833,629	10,184,639	15,018,268
June	2021	5,087,705	6,911,230	11,998,935
July	2021	1,847,854	4,983,906	6,831,760
August	2021	1,201,586	4,335,477	5,537,063
September	2021	732,927	1,882,294	2,615,221
October	2021	368,028	319,338	687,366

Table 1. Vaccination Over Time

Vaccination takes place on Jan 2021 (See Table 1). Following the peak of positive cases in February 2021, we observed the next increase in vaccination for the second dose in March 2021. The number of total vaccination then decreased from July 2021 with majority of the population already vaccinated.

Recovered cases also increased rapidly from February 2021 onwards. (See Fig 7). Most of the province are having the recovered rate of over 90% except Channel Islands, Isle of Man and British Virgin Islands. (See Table 2). It is vital to further explore the 3 provinces to understand the root cause with consideration of demographic or other factors.

Fig 7. Recovered Cases Over Time by Province/State

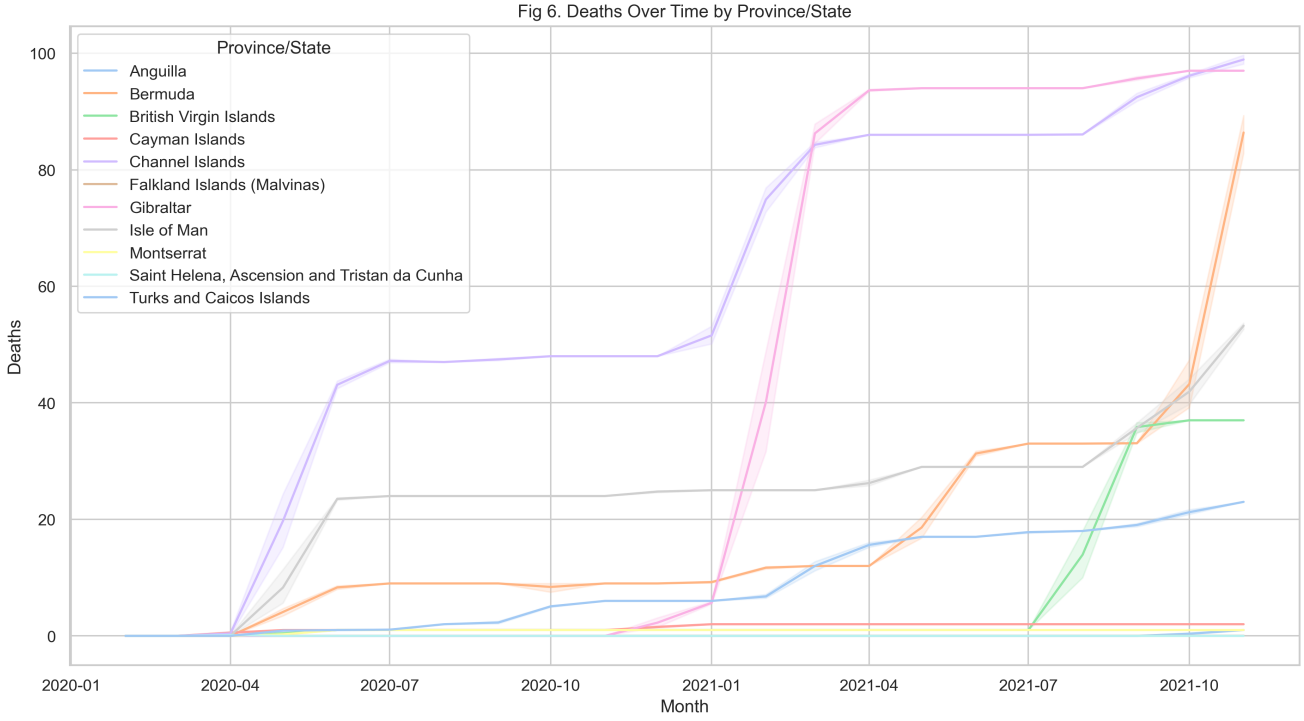


Province/State	Date	Cases	Recovered	Recovered Rate
Cayman Islands	2021-08-04	644	635	98.60%
Anguilla	2021-08-04	113	111	98.23%
Turks and Caicos Islands	2021-08-04	2,486	2,433	97.87%
Bermuda	2021-08-04	2,589	2,503	96.68%
Falkland Islands (Malvinas)	2021-08-04	66	63	95.45%
Gibraltar	2021-08-04	5,056	4,670	92.37%
Montserrat	2021-08-04	21	19	90.48%
Channel Islands	2021-08-04	9,507	8,322	87.54%
Isle of Man	2021-08-04	5,145	4,019	78.11%
British Virgin Islands	2021-08-04	2,500	1,914	76.56%
Saint Helena, Ascension and Tristan da Cunha	2021-08-04	4	4	100.00%

Table 2. Recovered Rate by Province

On the other side, the number of deaths continue to increase with 4 significant spikes shared by different province. (See Fig 6) Further research is required to better identify the causation and similarities across provinces that shared matching trend.

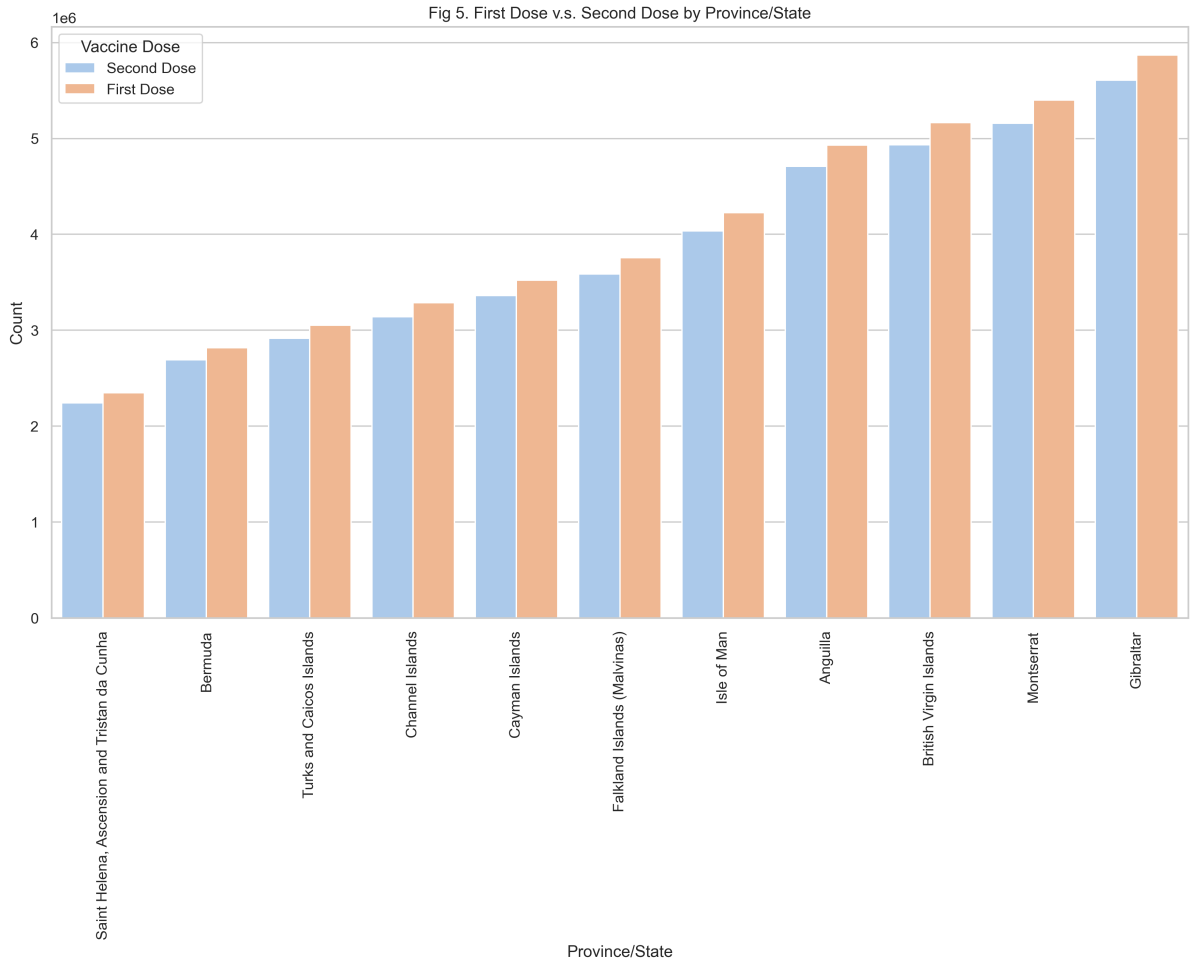
Fig 6. Deaths Over Time by Province/State



Province/State	Date	Deaths	Cases	Death Rate
Montserrat	2021-10-14	1	41	2.44%
Bermuda	2021-10-14	95	5,548	1.71%
Gibraltar	2021-10-14	97	5,727	1.69%
British Virgin Islands	2021-10-14	37	2,725	1.36%
Channel Islands	2021-10-14	100	12,135	0.82%
Turks and Caicos Islands	2021-10-14	23	2,910	0.79%
Isle of Man	2021-10-14	54	8,343	0.65%
Cayman Islands	2021-10-14	2	1,011	0.20%
Anguilla	2021-10-14	1	644	0.16%
Falkland Islands (Malvinas)	2021-10-14	0	69	0.00%
Saint Helena, Ascension and Tristan da Cunha	2021-10-14	0	4	0.00%

Table 3. Death Rate by Province

Gibraltar has the highest number of fully vaccinated population across all province/ state. (See Fig 5) However, if we reviewed the vaccination % by province, we can see that the fully vaccination % are similar across all province/ state at approx. 95.5%. (See Table 4)



Province/State	First Dose	Second Dose	First Dose Only	Partially Vaccinated %	Fully Vaccinated %
Anguilla	4,931,470	4,709,072	222,398	4.50977%	95.49023%
Bermuda	2,817,981	2,690,908	127,073	4.50936%	95.49064%
British Virgin Islands	5,166,303	4,933,315	232,988	4.50976%	95.49024%
Cayman Islands	3,522,476	3,363,624	158,852	4.50967%	95.49033%
Channel Islands	3,287,646	3,139,385	148,261	4.50964%	95.49036%
Falkland Islands (Malvinas)	3,757,307	3,587,869	169,438	4.50956%	95.49044%
Gibraltar	5,870,786	5,606,041	264,745	4.50953%	95.49047%
Isle of Man	4,226,984	4,036,345	190,639	4.51005%	95.48995%
Montserrat	5,401,128	5,157,560	243,568	4.50958%	95.49042%
Saint Helena, Ascension and Tristan da Cunha	2,348,310	2,242,421	105,889	4.50916%	95.49084%
Turks and Caicos Islands	3,052,822	2,915,136	137,686	4.51012%	95.48988%

Table 4. Vaccination by Province

To further identify the vaccination pattern, people tend to received vaccination on Thursday to Saturday and less likely to receive vaccination on Sunday and Monday. (See Table 5) This may be attributed to the recommended recovery period following vaccination.

Day	First Dose	Second Dose	Total
Monday	4,609,476	4,326,646	8,936,122
Tuesday	5,904,496	5,825,303	11,729,799
Wednesday	6,768,628	6,868,036	13,636,664
Thursday	7,277,179	7,266,735	14,543,914
Friday	7,563,769	7,019,867	14,583,636
Saturday	8,005,418	7,356,542	15,361,960
Sunday	4,254,247	3,718,547	7,972,794

Table 5. Vaccination by Day

Explore Twitter to Understand the Target Audience

In general, vaccine doesn't appear to be a topic that is widely discussed on Twitter. The top hashtags and words in the Tweets data are neutral words that reflects how the general public are used to COVID-19 with less negative emotions. (See Fig 10 & Fig 11) People are having high interest towards 'Athen', 'China' and 'Greece' that worth to further explore.

Fig 10. Top 8 Twitter Hashtags

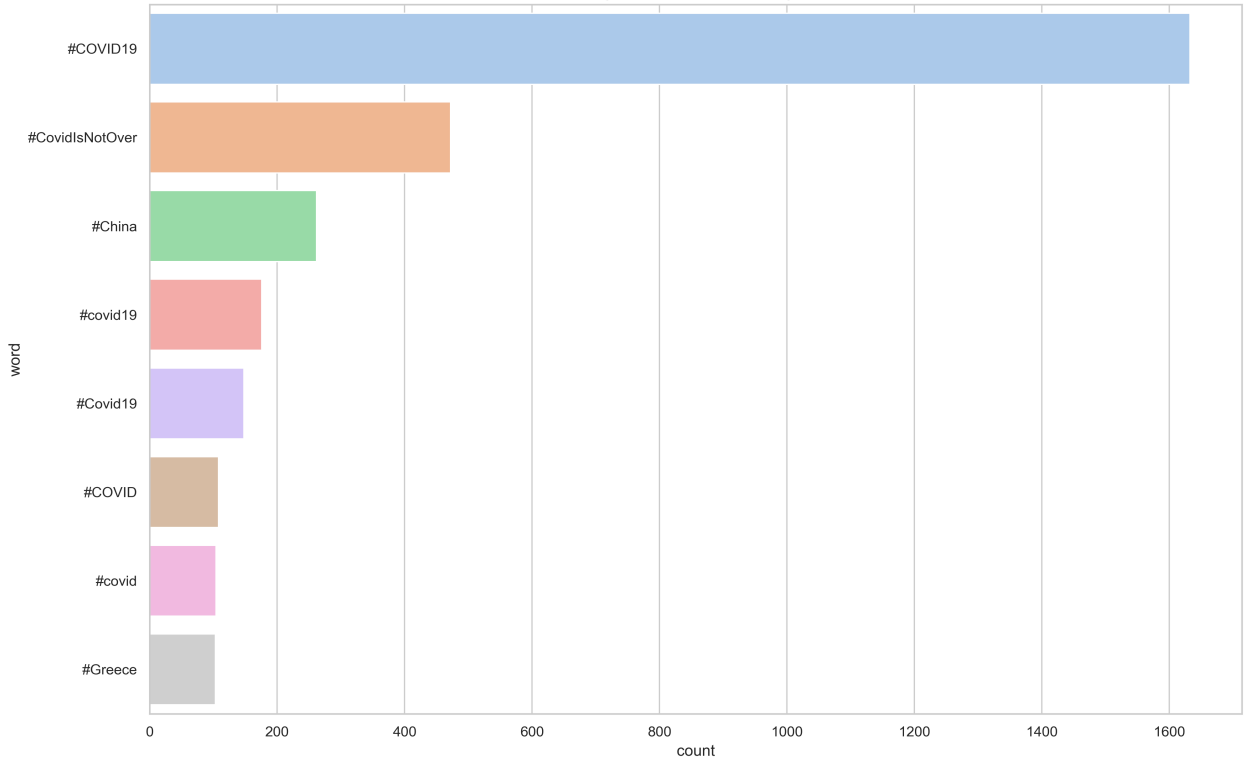
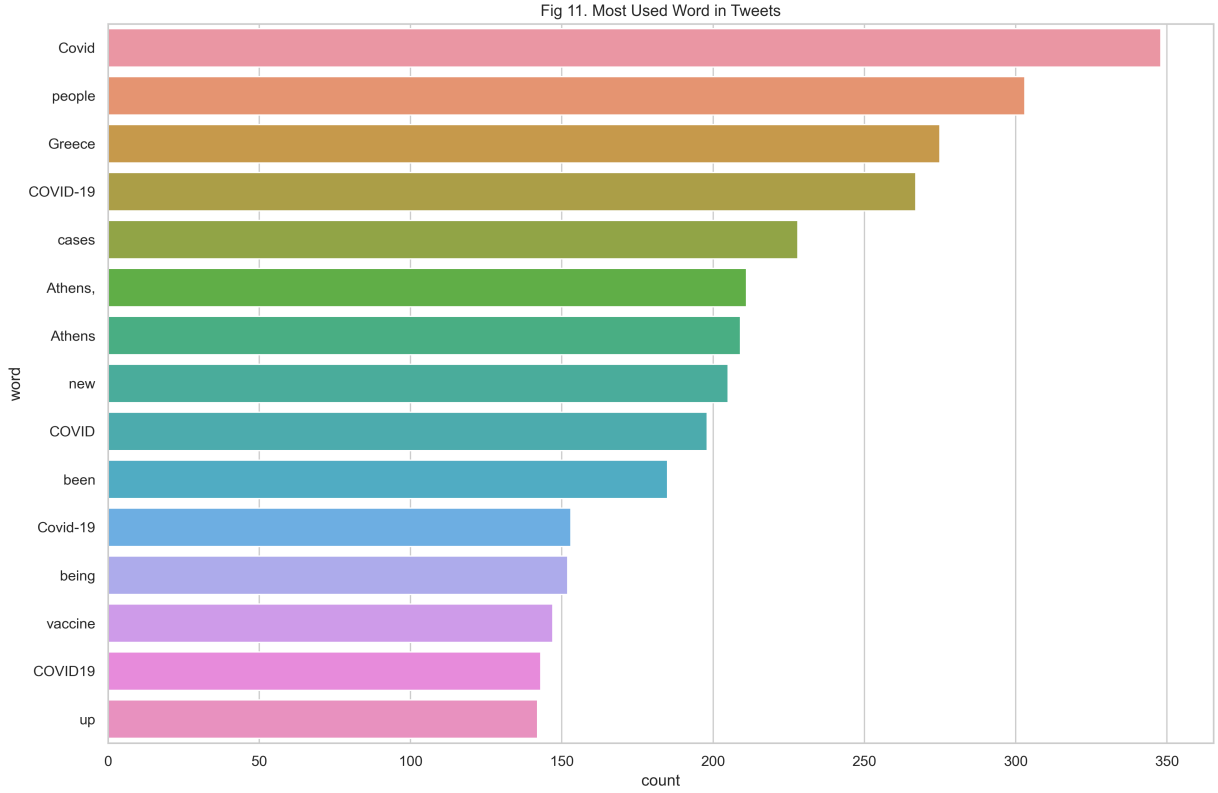


Fig 11. Most Used Word in Tweets



Nevertheless, the data size is too small that more data should be scraped from Twitter for a better review

Insight to Unlock Opportunities

Although each province is sharing the similar fully vaccinated %, the death and recovered rate varies by province. This indicates a potential difference in demographic that causing the disparity. The province with higher death rate and lower recovered rate might tend to have higher population for elderly and children.

Hence, the marketing channel and communication approach might be varies for each province to maximise the effectiveness.

Recommendations

1. **Location Targeting:** Isle of Man, Channel Island and British Virgin Island should be prioritised with the lowest recovered rate across all provinces. Followed by Montserrat, Bermuda and Gibraltar with the highest death rate.

2. **Daypart Targeting:** Maximise the campaign exposure on Thursday to Sunday to optimise the campaign effectiveness based on audience behavioural.

3. **Communication Approach:** Make good use of the top used hashtag (e.g. #COVID19) for campaign running on social media platform to enhance the exposure. Emotionally connect with the audience leverage the hashtag #CovidIsNotOver to bring out the message of having full vaccination to get over Covid.

Continuous Improvement

1. **Data Accuracy:** There are missing data in the provided dataset that the total number is not the full representation of the period recorded. We should also review the reliability of the datasource as it doesn't seems to reflect the real world situation.

2. **Data Completeness:** More data should be collected to have a comprehensive and in-depth analysis on COVID-19 in UK. For example, population to better review the % of COVID case by province, the time difference between first dose and second dose to evaluate the effectiveness of vaccinations…

3. **Data Source:** Despite the Twitter data, we should also consider to collect more qualitative data from other channels including but not limited to Facebook, Instagram, offline survey, Google search trend… This allows us to have a better understanding of the target persona to avoid potential bias as not all of our target audience are active on Twitter.