

Coronavirus (COVID-19) vaccination in the UK

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Introduction

What do I know about Bristol?

- This city is a part of the UK, England, and South West.
- There are two universities.

Data

I use the dataset from the website about Coronavirus (COVID-19) in the UK.

So, I am interested in data about the UK, England, South West, and Bristol.

Bristol

age	date	First	Second	Third
12_15	2022-02-09	28	45	0

South West

date	First	Second	Third
2022-01-26	986	2520	4034

What do I know about the data?

- There may be incorrect data
- There are missing values
- The counts of doses per day spread out.
- There are sets of small and large counts.

Questions 1

I was vaccinated by

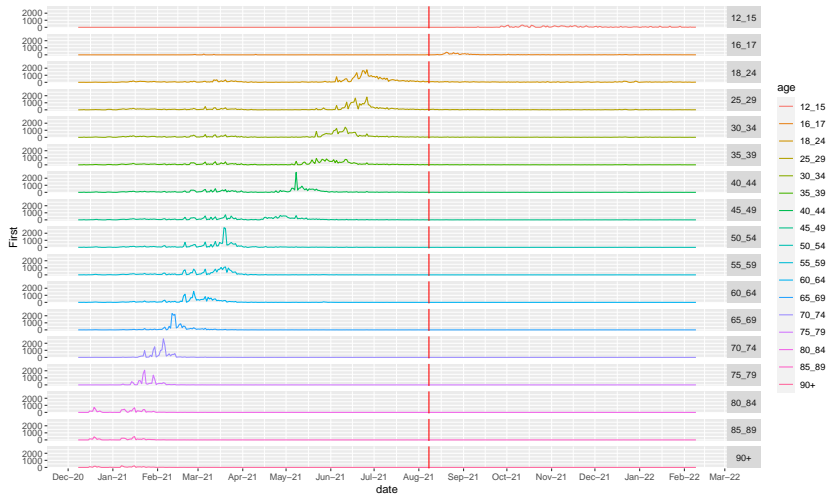
- the first dose on 2021 – 08 – 08,
- the second dose on 2021 – 10 – 03,
- the booster dose on 2022 – 01 – 08.

How many people got their jabs with me?

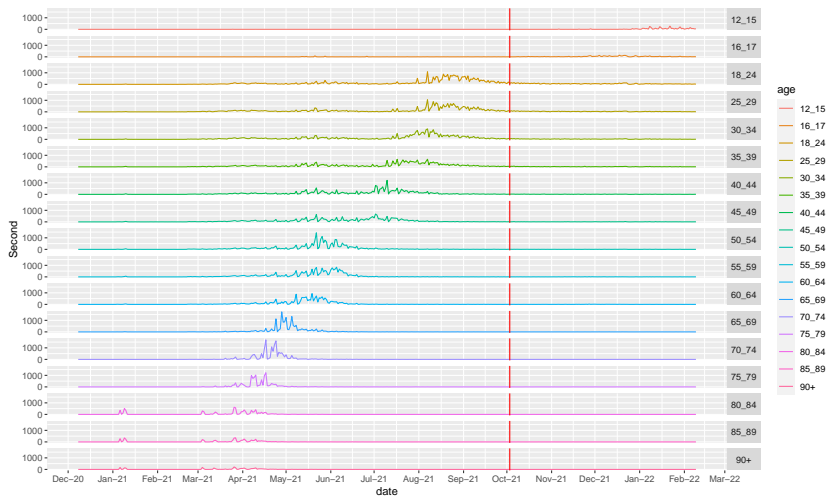
Bristol

date	age	Dose	Count
2021-08-08	25_29	First	16
2021-10-03	25_29	Second	37
2022-01-08	25_29	Third	806

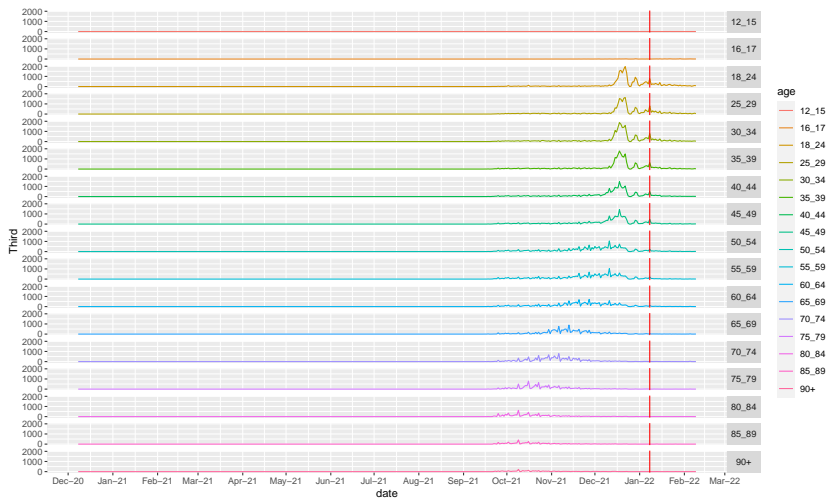
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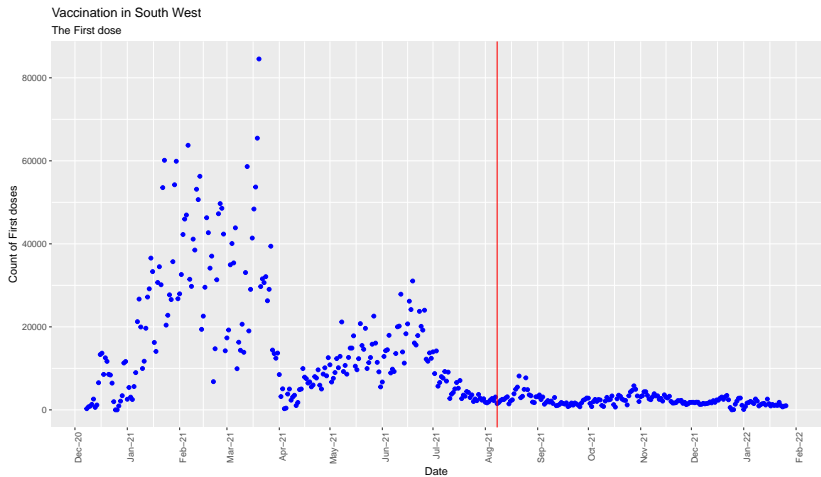
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South West

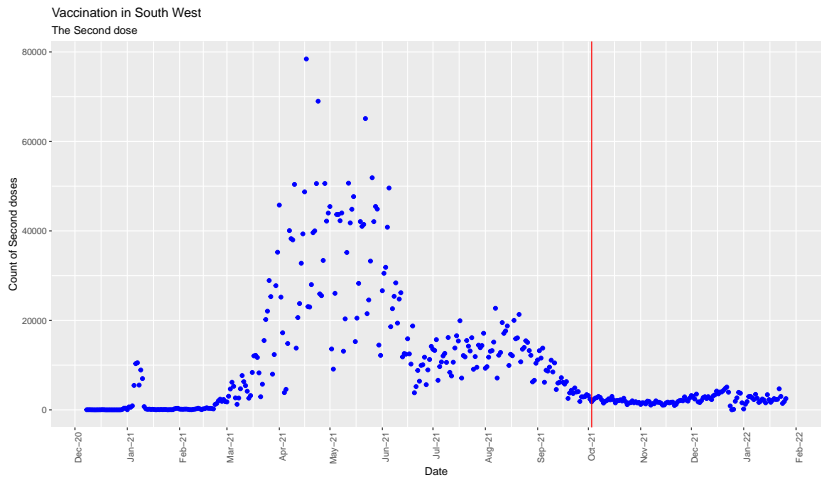
date	Dose	Count
2021-08-08	First	1496
2021-10-03	Second	1828
2022-01-08	Third	21664

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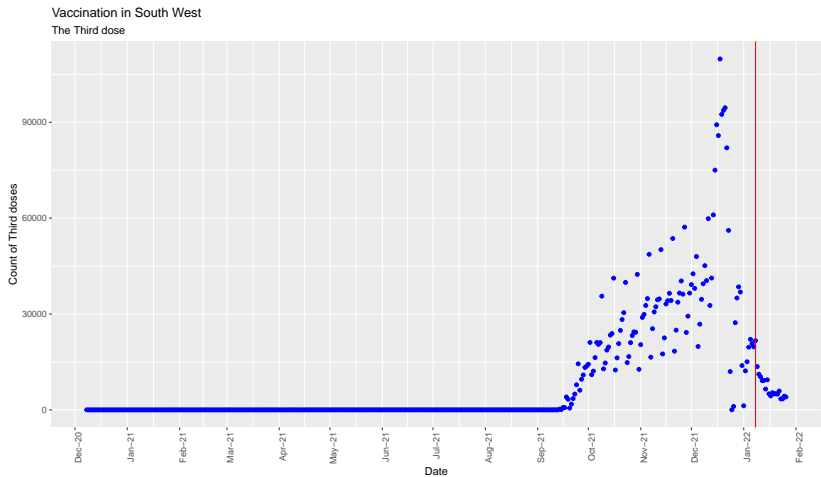
More information <https://coronavirus.data.gov.uk/details/about-data>

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Conclusion

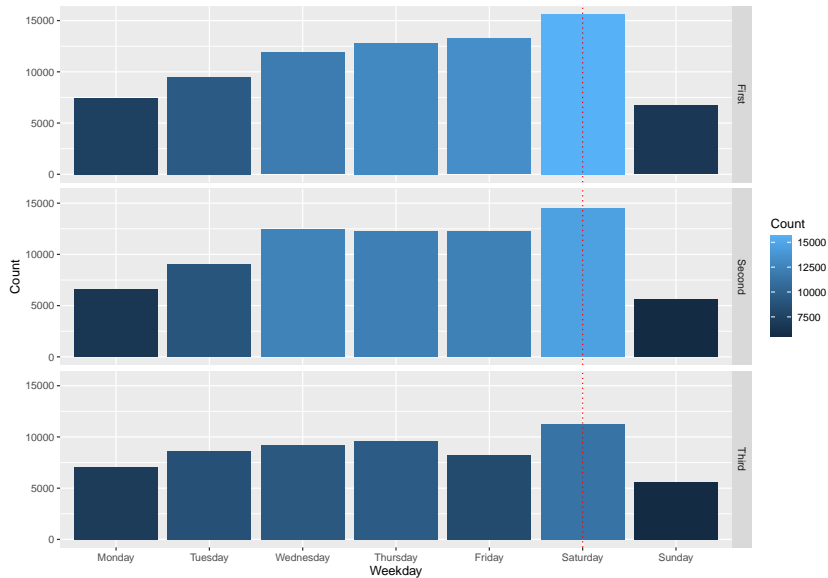
I got my jabs in the not active phases of the vaccination, but I got the third one with a lot of people.

Also, I can say that there are waves. So, the count of jabs depends on dates. Keep this fact in mind.

Question 2

When do people prefer to get a jab: weekdays or weekends/Saturdays or Sundays?

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Are there other dependencies?

First of all, I am going to use Regression Machine Learning models:

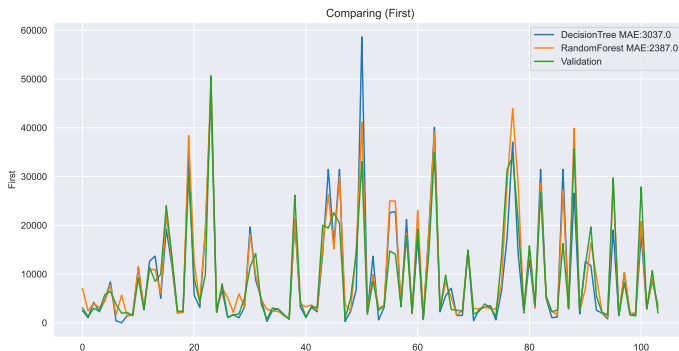
- Decision Tree
- Random Forest.

Which columns should I choose?

- "Weekday"
- "Year"
- "DayOfYear"

DecisionTree: 0.7248630326024768

RandomForest: 0.7837038702898657



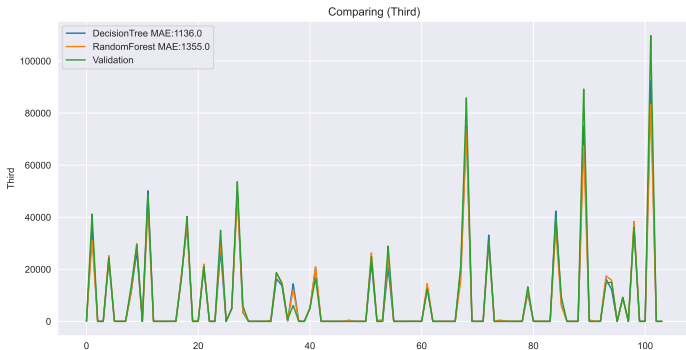
DecisionTree: 0.7692636418171874

RandomForest: 0.8318561653086721



DecisionTree: 0.8664423499345815

RandomForest: 0.840745098066024

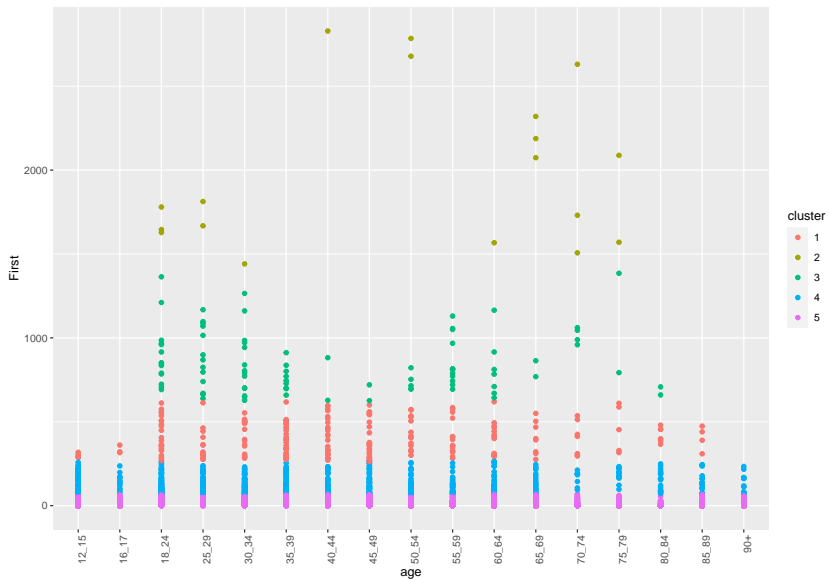


- The waves are recognisable.
- The extreme values are bigger than in real data.

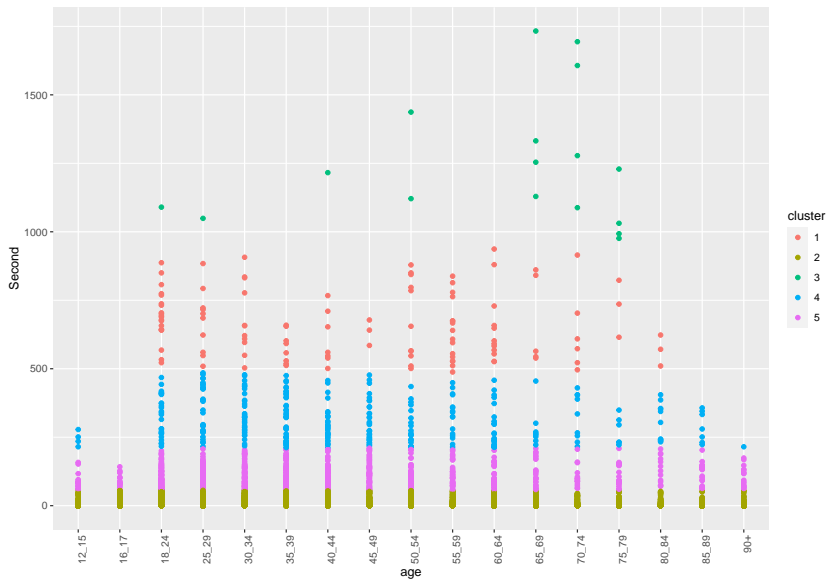
Question 3

Are there dependencies between academic year events and vaccination waves?

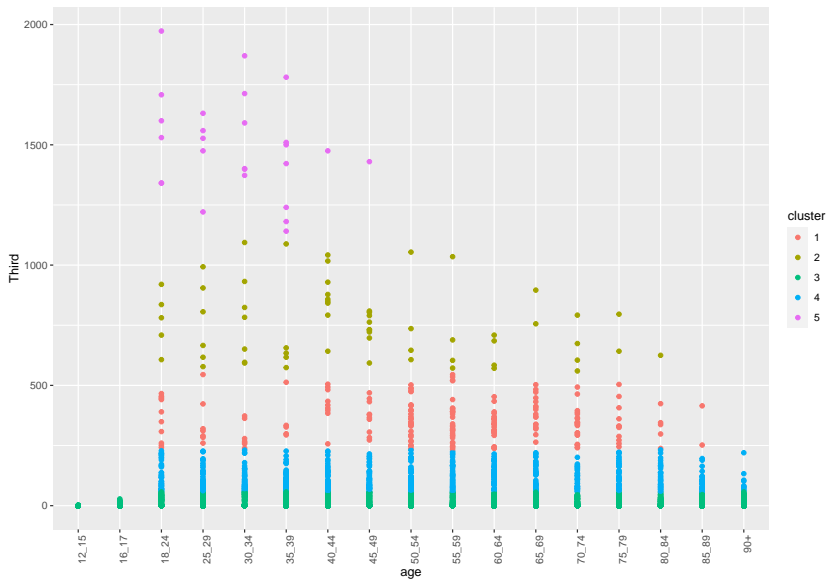
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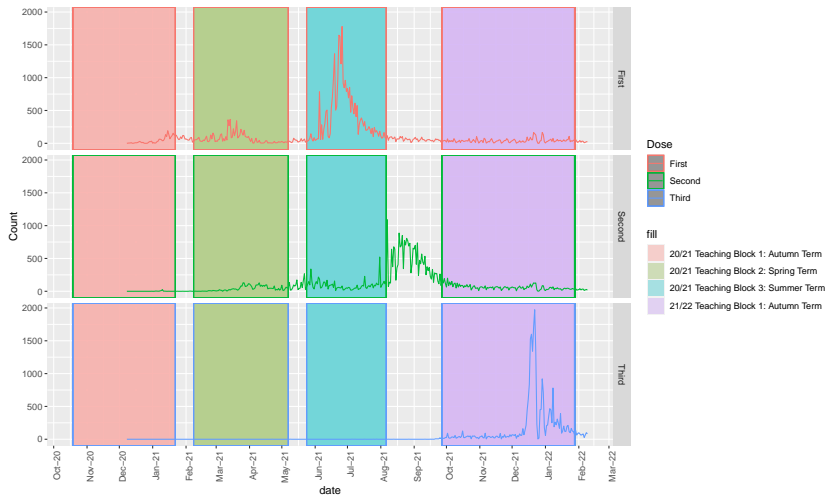
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What is next?

- the UK data
- England data
- deep learning and models considering time series.
- domain knowledge facts

Thanks for your attention

To be continued... :)