



COVID-19 Case Priority Data Analyse in Canada

Using Priority Queues



Data Source

All the data used in the project was obtained from the government of Canada

<https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-case.html#a4>



Bringing Data in

The data was given as a CSV file and was brought into java using a `BufferedReader`. The way the government has the data made it easy as each province had its own unique 2 digit code that could easily indicate where the data was from.

```
//get the csv file
//relaive path should be given
String csvFile = "./covid19.csv";
BufferedReader br = null;
String line = "";
String cvsSplitBy = ","; //use comma as our delimiter
EntryADT ent;

try {

    br = new BufferedReader(new FileReader(csvFile));
    while ((line = br.readLine()) != null) { // loop until EOF
```



Storing data

Each province got its own ArrayList with each element having the date of the data point the total number of cases and deaths to date. Since we wanted daily case and death we had to subtract the previous entry from the current.

```
//now we must calculate the number of cases/deaths per day as each entry in the csv is total to date
//this is done by looping through the list from the end and subtracting the previous element from the
//current element in order to get how many cases/deaths happened on that day
for(int i = ON.size()-1; i > 0; i--)
{
    EntryADT up = new EntryADT(ON.get(i).getDate(), ON.get(i).getCase()-ON.get(i-1).getCase(), ON.get(i).getDeath()-ON.get(i-1).getDeath());
    ON.set(i, up);
}
```



Priority Queues

The ArrayList were then used to populate 2 Priority queues for each province, one for death and one for cases.

```
//priority queues for the Deaths
PriorityQueueADTArray DON = new PriorityQueueADTArray(ON.size());
for(int i = ON.size()-1;i > 0;i--) {
    DON.enqueue( ON.get(i).getDeath(),ON.get(i).getDate());
}
```



Ranking

Due to the nature of priority queue all that had to be done was peek the top element of each queue to get the highest value for each province and put each peek into another queue

```
//for the deaths  
PriorityQueueADTArray provDeath = new PriorityQueueADTArray(14);  
  
provDeath.enqueue(DON.peek().getKey(), "Ontario,"+DON.peek().getValue());
```



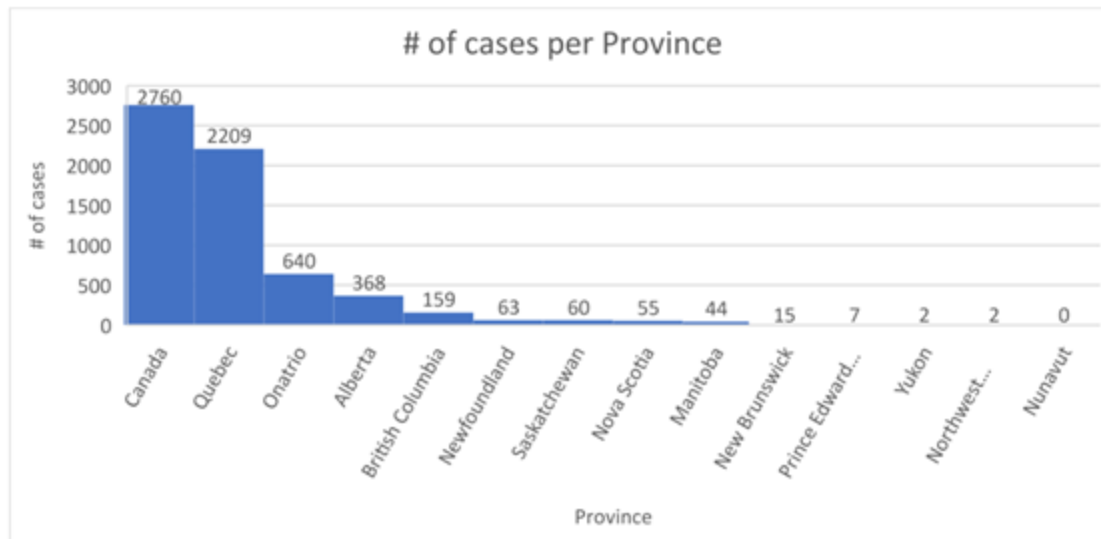
Output

Once the rankings were determined we output to a CSV

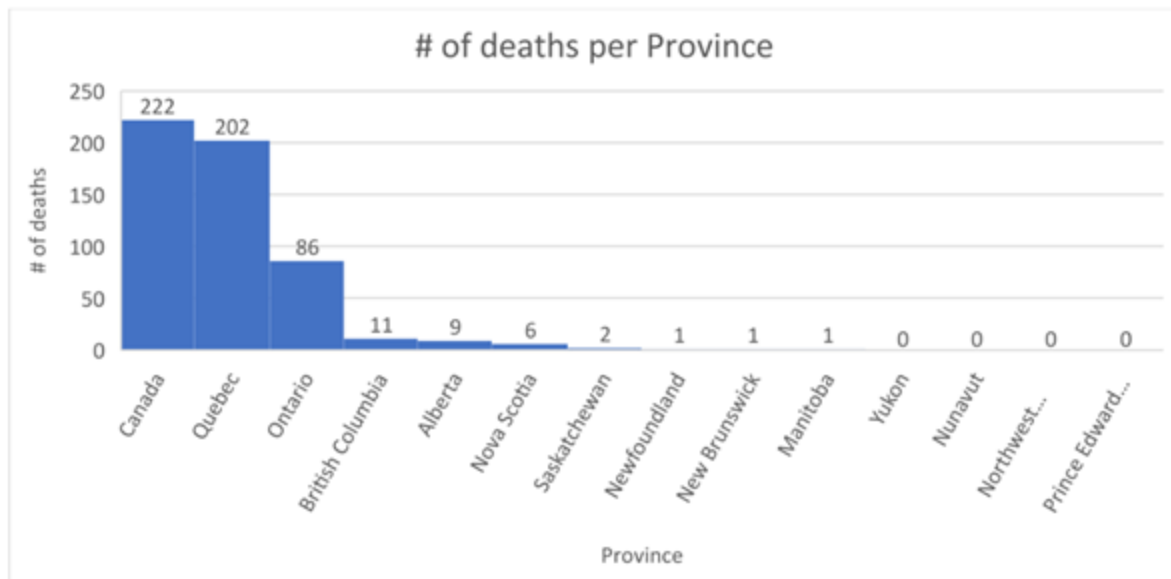
```
//now we can output this information into a csv file to create graphical displays of the data
try{
    File outFile = new File("Deaths.csv");//create csv file
    PrintWriter output = new PrintWriter(outFile);
    output.printf("Province,Date,Deaths\n");//create collumn titles
    while(!provDeath.isEmpty())//dequeue elements until queue is empty
    {
        EntryADTQueue temp = provDeath.dequeue();
        output.printf(temp.getValue()+" ,%d\n",temp.getKey());//write to file
    }

    output.close();//close the file
}
```

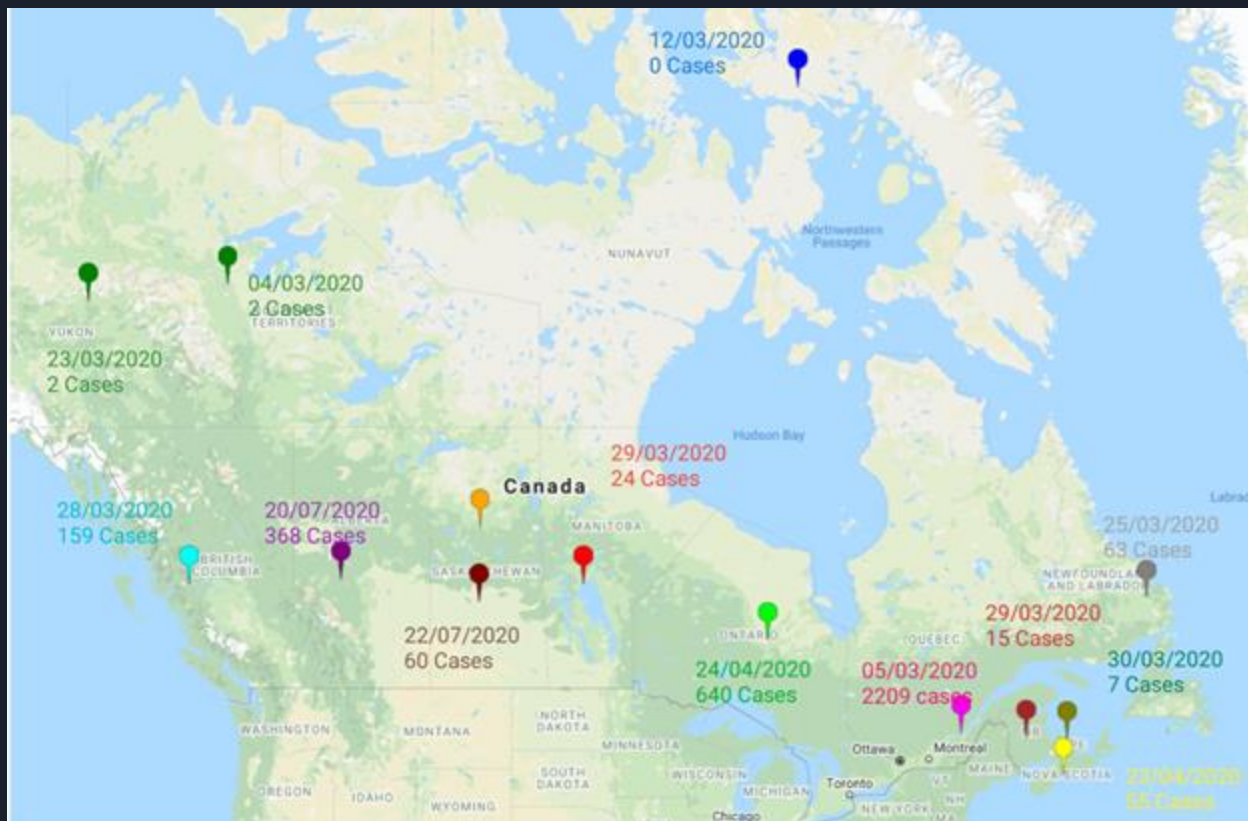
Results-Case



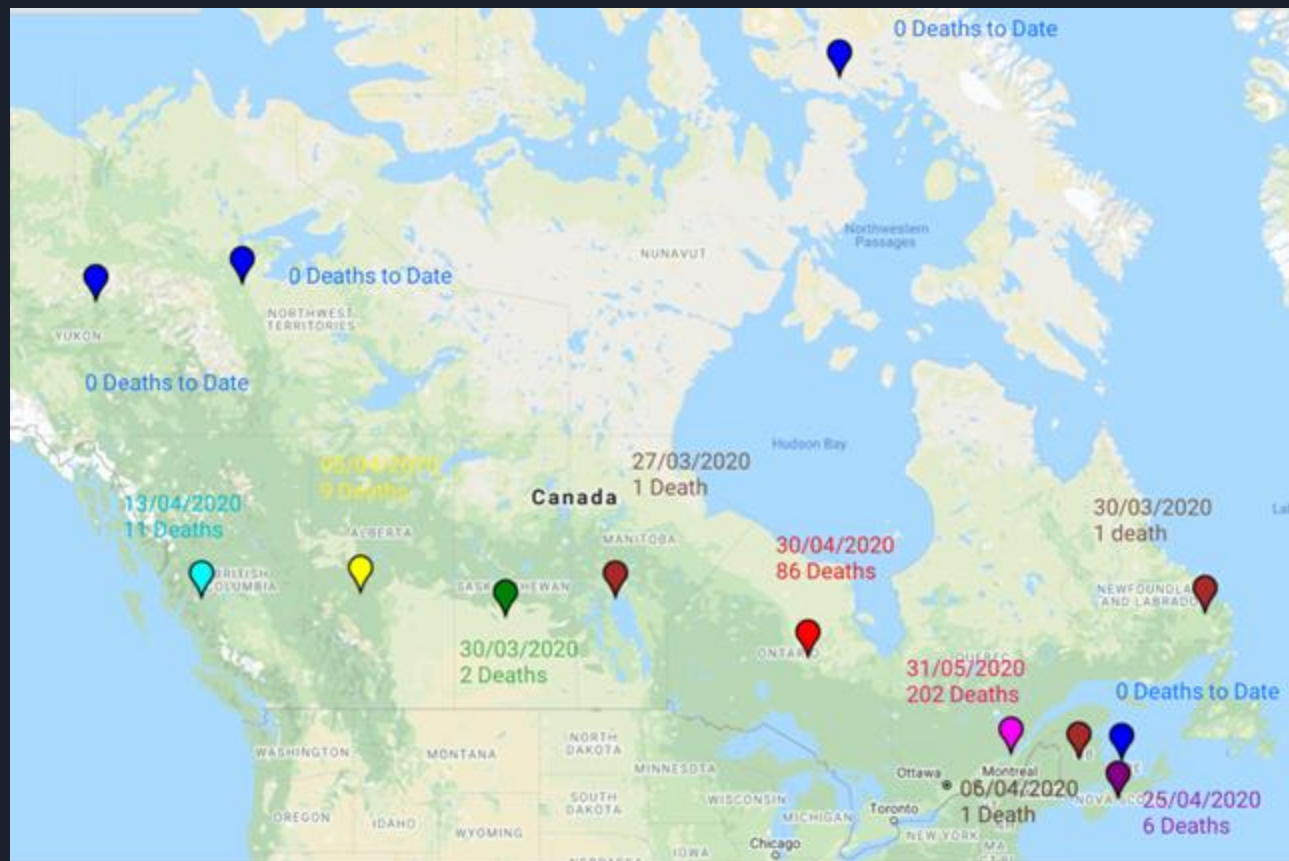
Results-Death



Results-Case



Results-Death





End