DATAVIZ IN R | CASE STUDY

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Group 48

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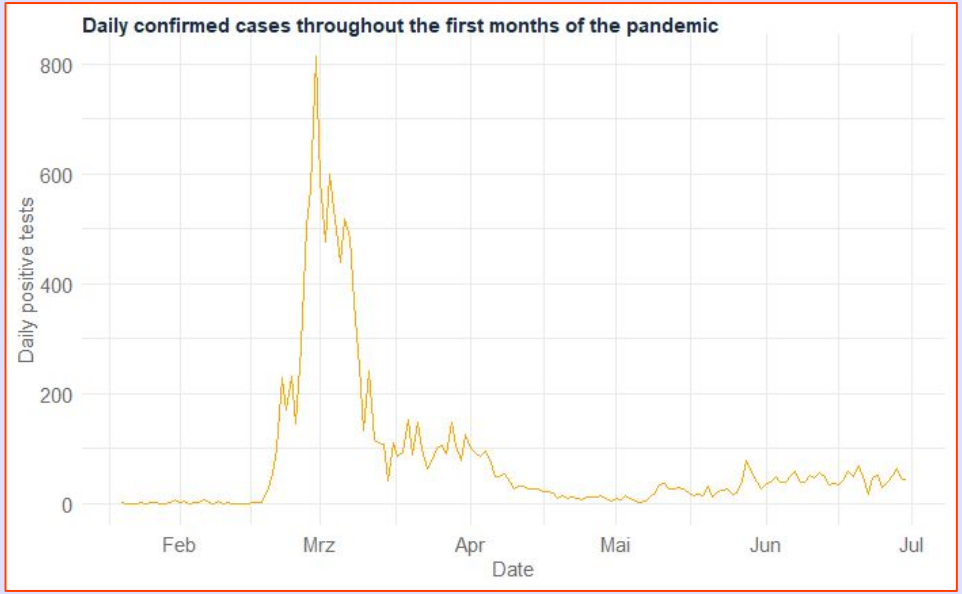
- Part I: Impact of Covid-19 on South Korea’s population
- Part II: Development of policies throughout the first phase of the pandemic
- Recap

“Learning by doing” - How the South Korean government learned to battle Covid-19, demonstrated by its policies

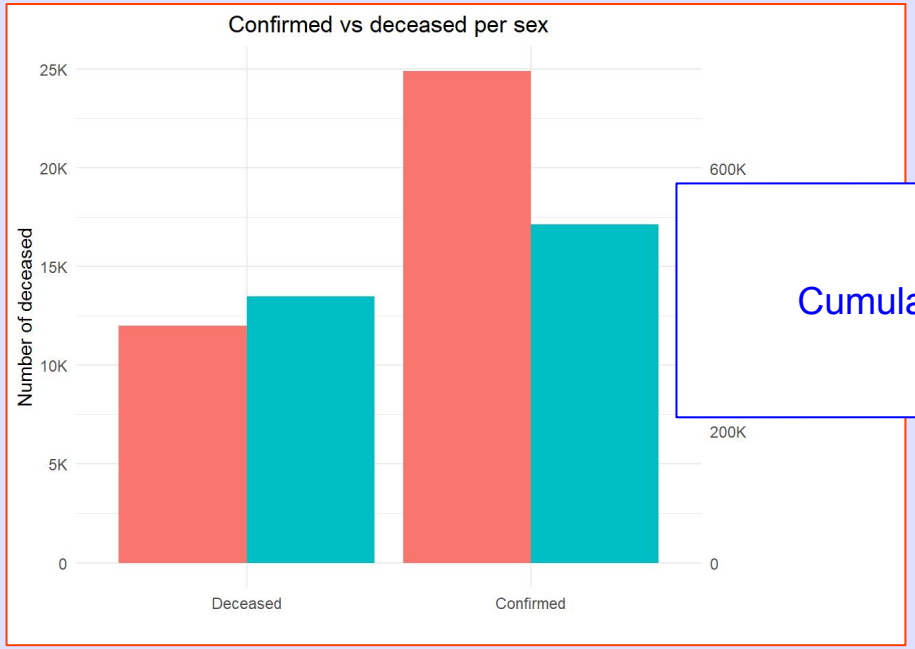
- What is the administrative process in battling an unknown virus such as Covid-19?
- What individual steps are taken as the situation develops?
- How can a government specialize measurements in the fight against a virus?



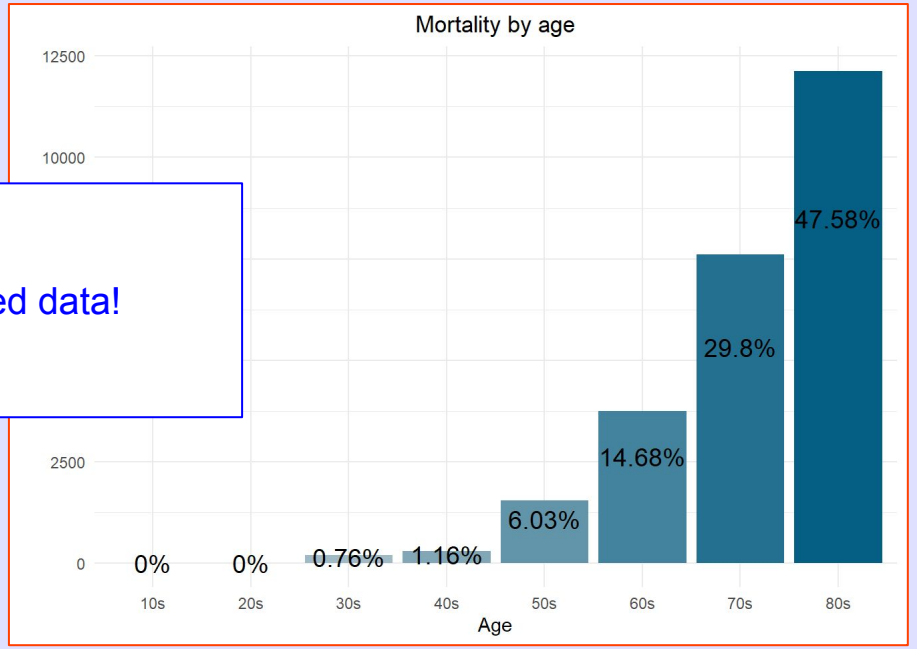
Part I: Impact on South Korea’s population

OUR APPROACH

What were the observable effects of Covid-19 on different population groups?



Cumulated data!



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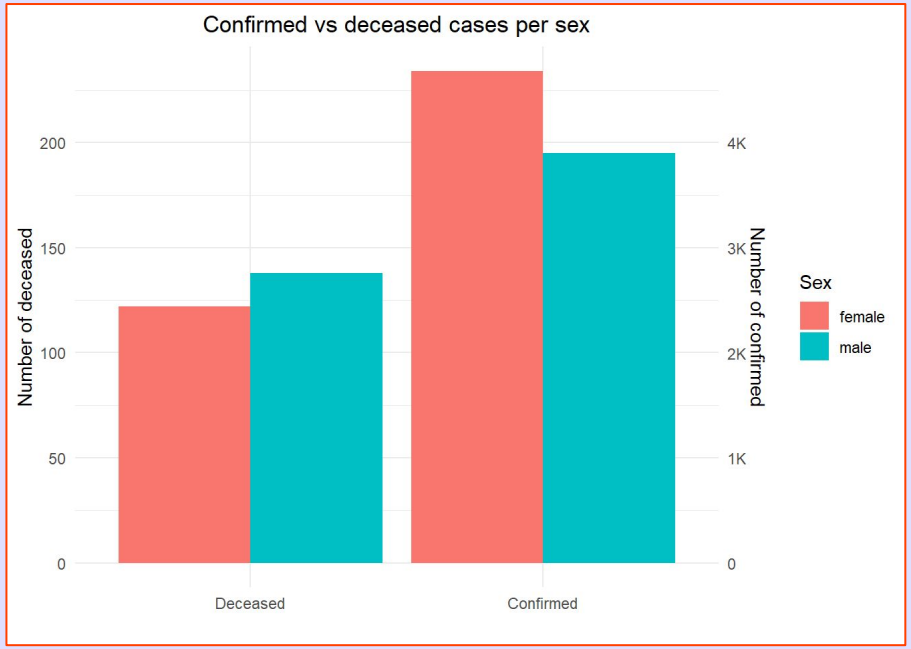
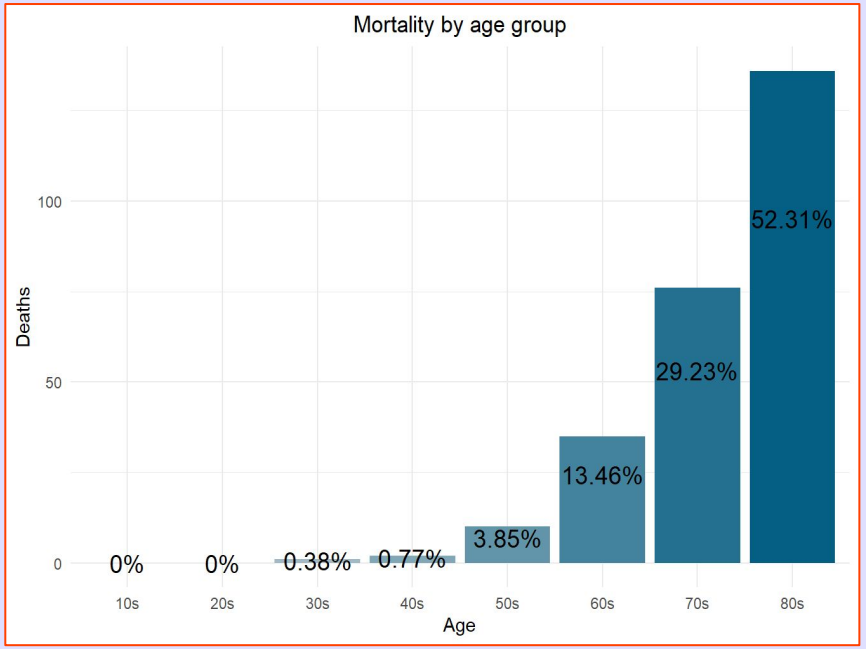
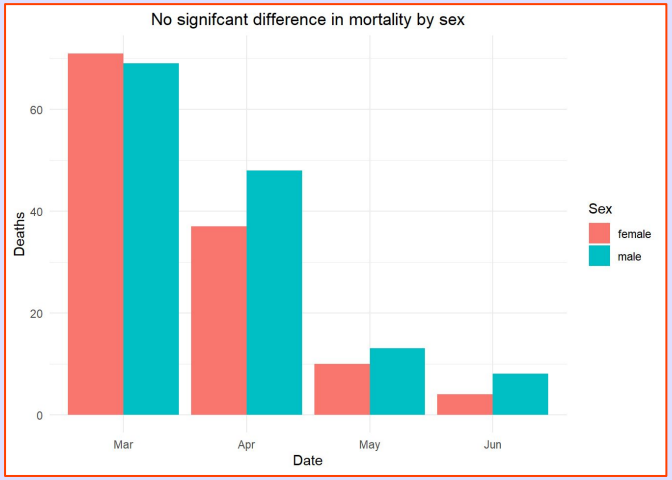
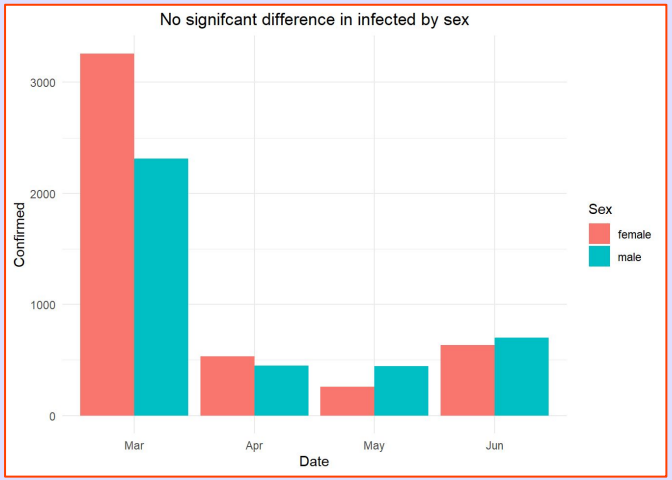






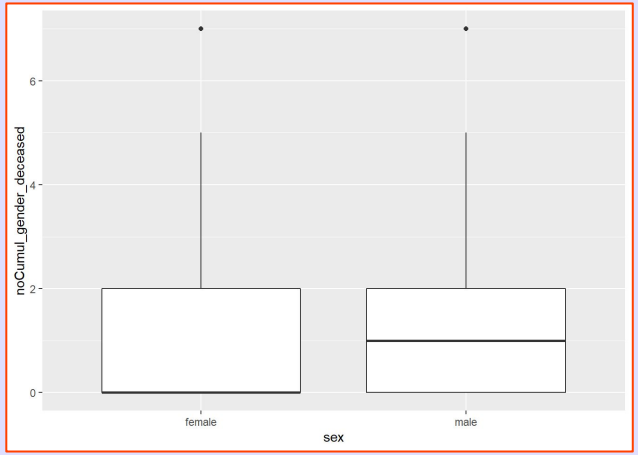


For the first months of the Covid-19 pandemic in South Korea, mortality and infection count did not differ significantly between genders.

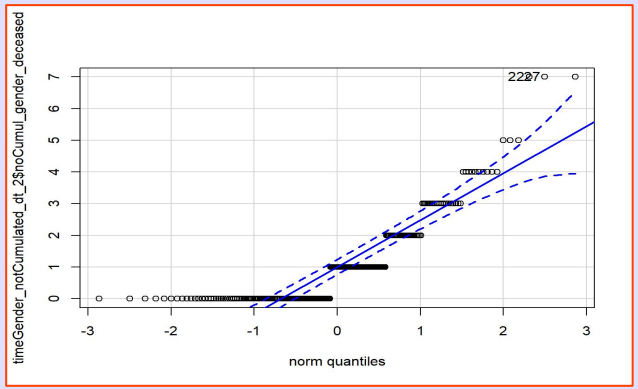
After decumulating and tidying the gender-related data, male and female seem to be more similarly impacted when dissecting the data by month.

Wilcoxon Rank Sum Test

Hypothesis (H0): *Infected individuals who are male are not dying more often in comparison to female*.



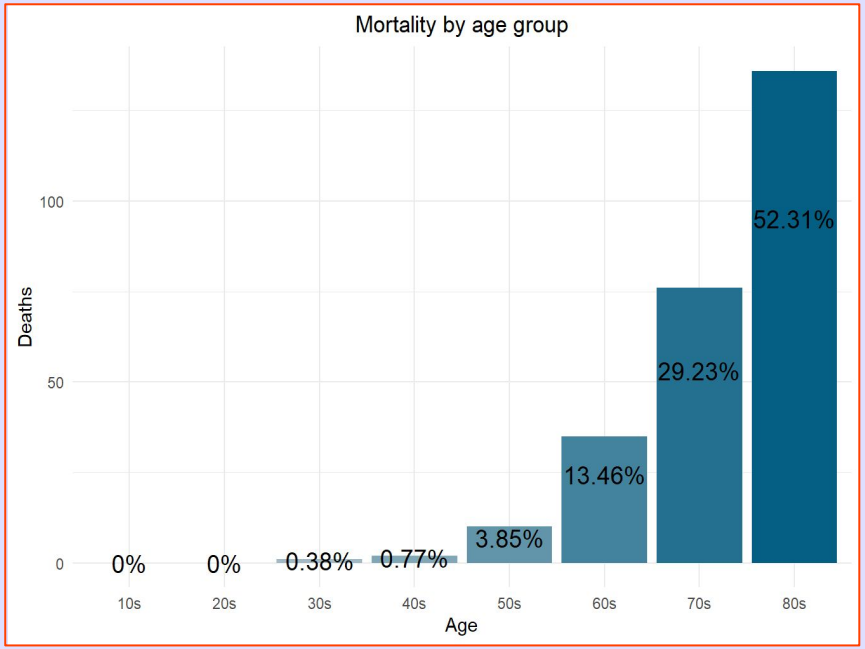
Boxplot: design of binary variables



QQ-Plot: Data is not normally distributed

```
## data:  noCumul_gender_deceased by sex
## W = 6566, p-value = 0.209
```

Issue: p-values are not small enough to prove our initial claims

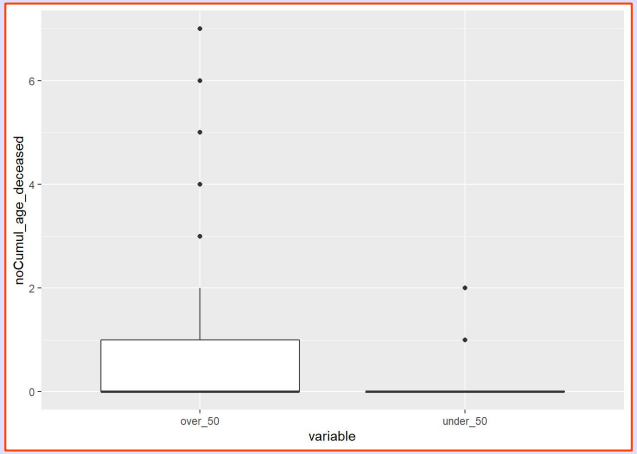


People above 60 have a significantly higher risk of mortality compared to people below 60.

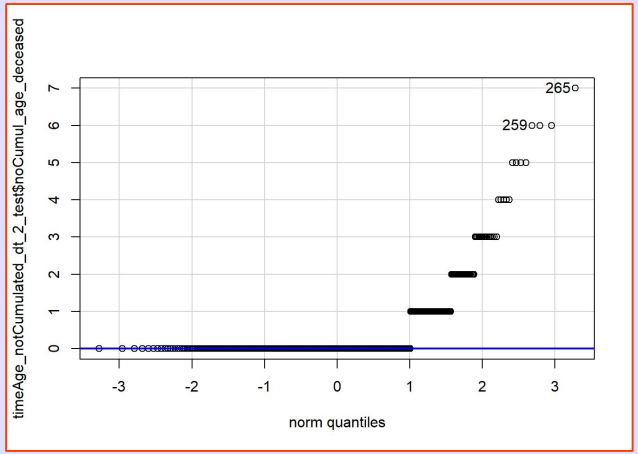
The age group seems to be a strongly influential factor regarding the risk of death with Covid-19.

Wilcoxon Rank Sum Test

Hypothesis (H0): *People older than 60 years have a higher risk of death by Covid-19*.



Boxplot: design of binary variables



QQ-Plot: Data is not normally distributed

```
        Wilcoxon rank sum test with continuity correction

data:  noCumul_age_deceased by variable
W = 147515, p-value < 2.2e-16
alternative hypothesis: true location shift is greater than 0
```

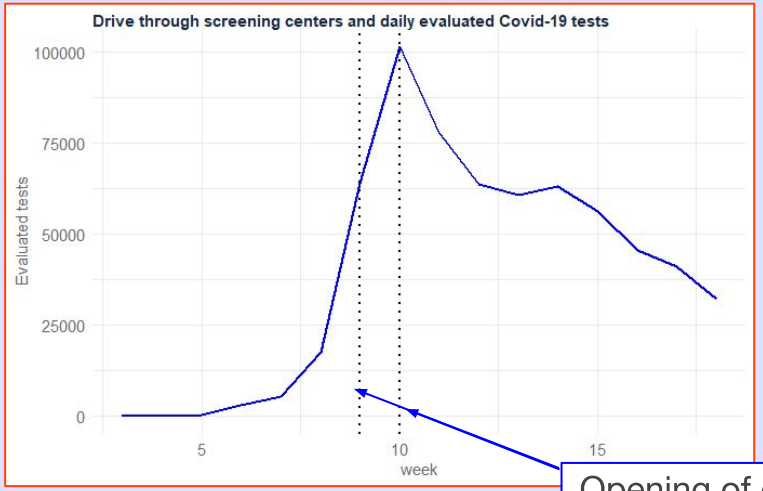
significantly small p-value allows to accept the claim of rising mortality by age

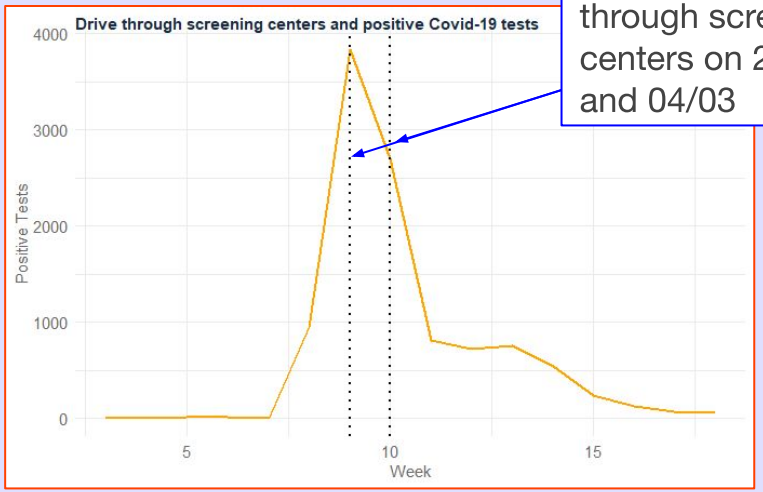
Part II: Policy Development

The three steps of policy development

1. Understanding the problem
2. Taking broad measures
3. Quickly adapting actions to local demands

Limitations: Due to simultaneous policy implementation, statistical proof of the effect of a certain policy was not always possible with the available data.

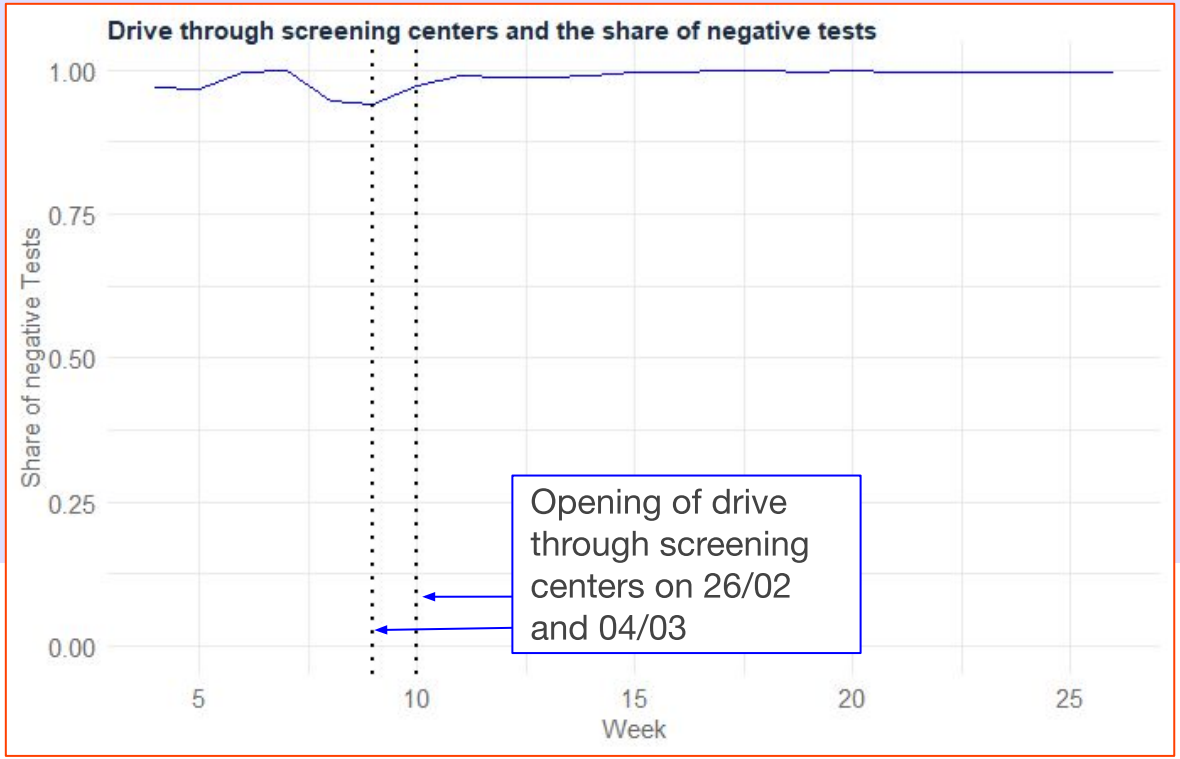




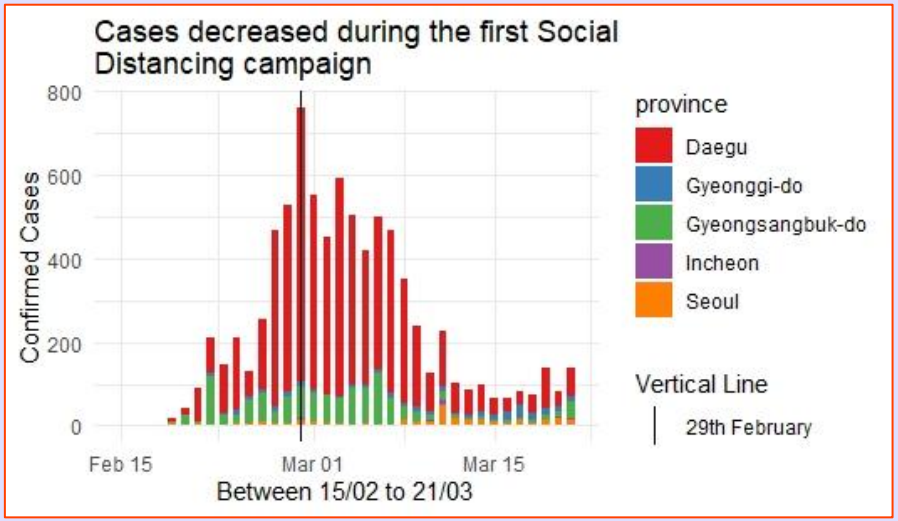
Opening of drive through screening centers on 26/02 and 04/03

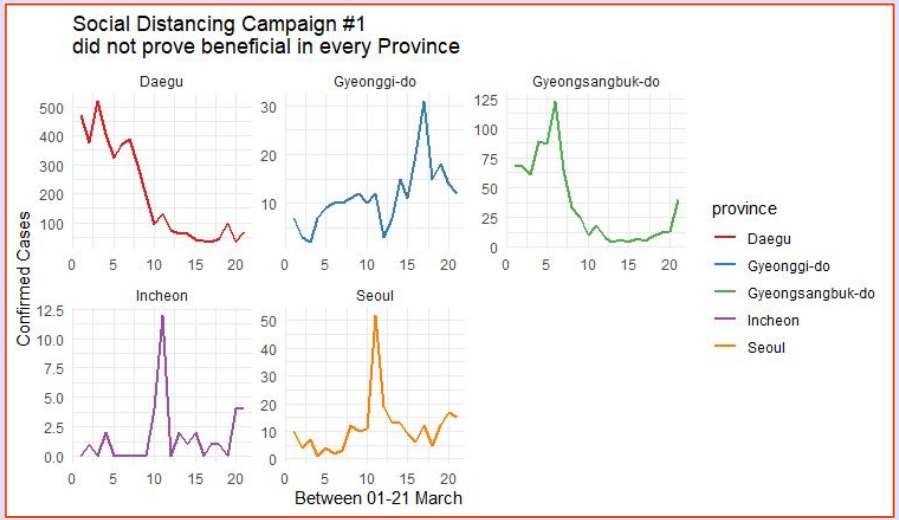
Drive-through testing centers helped the South Korean government to efficiently assess the realistic spread of Covid-19 throughout the population.

While the amount of people tested went further up, the amount of positive tests started to decline.



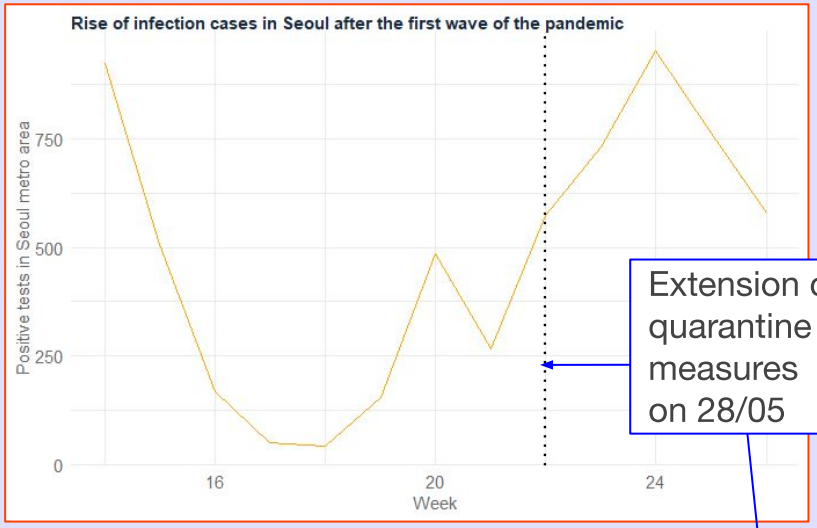
Drive through testing centers helped gain much needed visibility on running infection numbers throughout the population, enabling up to 15,000 tests per day* after Feb. 28th 2020.

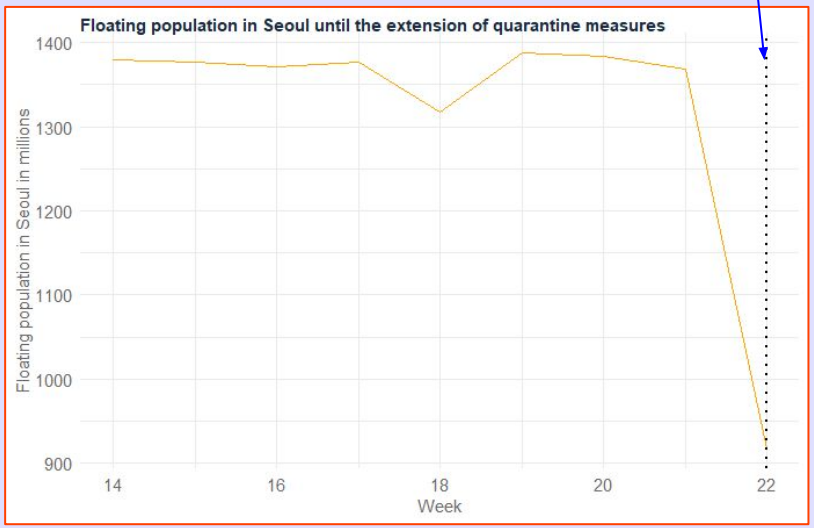




The first Social Distancing Campaign proved generally effective; however, the effects did not materialize in every province.

Confounding variable here was **Provinces** and hence the data shows very diverse effects of policies for different provinces.





Case Study of Seoul: While local measures are important, acting quickly is even more so.

- infection numbers went down two weeks after extension of measures
- the population already adapted, moving around less, before measures were even extended

Recap

Recap

Learning by doing: the South Korean government learned and consequently was able to take more precise measures over time.

1 | Understanding the problem	• Debunking claims from untidy data (gender-related biases) • Massive testing with drive-through screening centers
2 | Taking broad measures	• Mitigate the risk for the population by taking out infection sources, such as virus-carriers from other countries
3 | Specifying actions	• Adapt to local issues, e.g. react locally to a local outbreak in Seoul

Thanks for your attention!

Sources

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