Sweden's COVID-19 approach, a success or a failure?

Author: Karl Fredrik Hu Josefsson
Address: University Of San Francisco,
San Francisco, CA, USA
Work: karl.f.josefsson@gmail.com
Business: info@sfbaydevelopment.com

***Abstract* — The COVID-19 pandemic forced governments to balance health against the economy. In Scandinavia, Sweden's voluntary "no-lockdown" approach differed sharply from the strict lockdowns in Norway and Denmark. We compared data on cases, GDP, unemployment, hospital use, and deaths to see how these strategies played out. Sweden saw a steeper rise in infections, deaths, and economic hits early on, while Denmark eventually faced its own surges by 2022. Our study shows that early, strict measures helped both health and the economy more than Sweden's lighter-touch approach. These findings highlight that taking strong action early can ease pressure on hospitals and support quicker economic recovery. Policymakers should consider both timing and levels of public compliance when designing responses to future health crises.**

Keywords— COVID-19, Sweden, Denmark, Norway, Scandinavia, Lockdown, GDP, Unemployment, Mortality

I. Introduction

When COVID-19 first hit, countries everywhere faced a tough choice: close businesses and schools to stop the virus, or keep things open and risk more spread. Sweden took the unusual path of asking people to use common sense, staying apart, working from home if they could, and avoiding big crowds, rather than ordering full lockdowns like Norway and Denmark did. That difference gives us a real-world experiment: we can look back and see how each approach played out for people's health and for the economy. This project aims to figure this out, which approach was the optimal one by looking at data represented in D3.

II. Project Objectives

 Geographic Case Distribution
We built a choropleth map of COVID-19 cases per 10 million inhabitants in Sweden, Norway, and Denmark to spot regional infection hotspots and directly compare the spread under different policy regimes.

 Economic Impact Analysis
We plotted quarterly GDP growth from early 2020 through 2022 to evaluate how strict lockdowns versus voluntary guidelines affected each country's economic downturn and recovery.

 Unemployment Trends
We charted monthly unemployment rates side by side to measure the immediate labor-market shocks and compare the human costs of each intervention strategy.

 Healthcare System Strain
Small-multiple line charts of daily hospital occupancy per 10 million residents to reveal when and for how long each country's health system was under peak pressure.

 Mortality Dynamics
Animated time-series of COVID-19 deaths per 10 million inhabitants so viewers could watch mortality waves unfold and compare the timing and severity of each country's peaks.

III. Related Work

- [8] Hiltzik , writing for the Los Angeles Times, argued that Sweden's voluntary "no-lockdown" policy led to worse outcomes than in its Nordic neighbors. He points out that Sweden saw higher case counts and death rates, and raises concerns about how elderly and other vulnerable groups were protected under this approach.

- [7] Ludvigsson, detailing Sweden's first eight months of pandemic policy. They report that by September 1, 2020, 0.8 % of Swedes had tested positive and 0.06 % had died, higher rates than Denmark and Norway despite lighter restrictions, and outline how key agencies relied on voluntary measures while keeping schools and businesses largely open.

- [6] Rebucci at Econofact examined the global evidence on lockdowns and found that early, strict closures did help reduce transmission and deaths, though at significant economic and social cost. His analysis underscores the trade-offs our visualizations aim to unpack, showing how timing and context shaped the effectiveness of lockdowns worldwide.

IV. Approach

The project initially began with a very broad "Global Impact Explorer" idea, combining case rates, deaths, GDP change, and unemployment, mobility and vaccinations into a single severity index for every country in the world. Hoping to let users quickly see which nations suffered most and least during the pandemic. However, that approach faded as soon as the first graphs were made where they were absolutely packed despite categorizing them into regions.

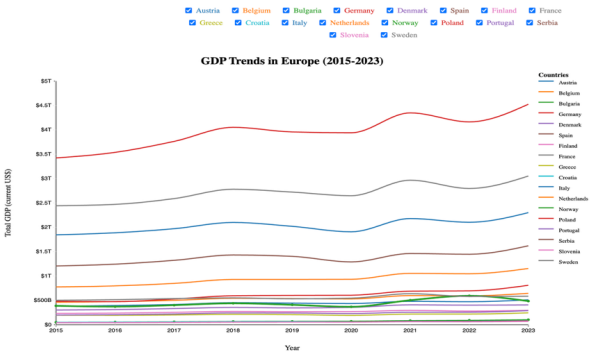

Figure 1:GDP GDP Trends in European Countries – Line Chart [5], [9].

As you can note on the chart above, the data is very cluttered which happens when you take the wrong approach to visualize the selected data. There was also a lot of data inconsistencies depending on so many different countries data. This shifted the projects focus to Sweden, Norway, and Denmark. With only three countries, it was much easier to find reliable numbers from Our World in Data and each country's own health agencies. And since Sweden's "no-lockdown" choice stood in sharp contrast to tight rules next door, the project had an actual direction.

In the early stages, all the graphs were firstly made in data wrapper or tableau to get a sense of them before creating them in D3. After making them all separately on VizHub, later on integrating them on the project website. The webpage has a background of Swedish country, as well as a little note for each visualization describing it and providing any necessary direction or note. In regards to the color choices, I stuck with the three same colors for the whole project for the purpose of the reader, aligning the color with the country's flag. Denmark red, Norway blue while Sweden got green because of its other colors not fitting the occasion.

V. Results

A. *Project Objective:* ***Geographic Case Distribution***

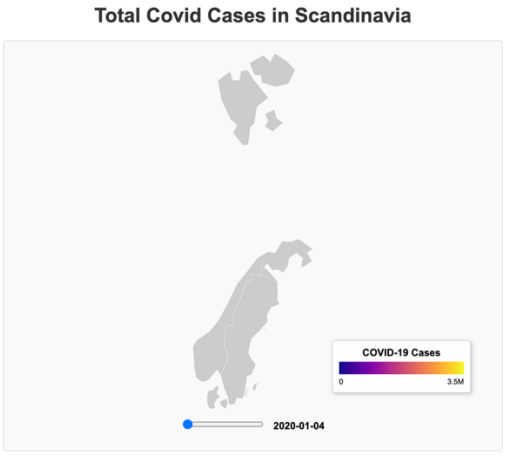

Figure 2: Total Covid Cases in Scandinavia – Heatmap [4], [5], [9].

The animated map above shows total COVID-19 cases per 10 million people in Sweden, Norway, and Denmark from January 2020 onward. As you drag the slider forward, southern Sweden around Stockholm turns yellow well before similar regions in Norway or Denmark, highlighting Sweden's faster and heavier early outbreak under voluntary guidelines. Denmark's regions stay purple longer, showing how its strict lockdowns delayed major spread. This view directly meets our first objective by placing case counts in both space and time, so you can compare how each country's policy shaped infection patterns.

B. *Project Objective:* ***Economic Impact & Unemployment Trends***

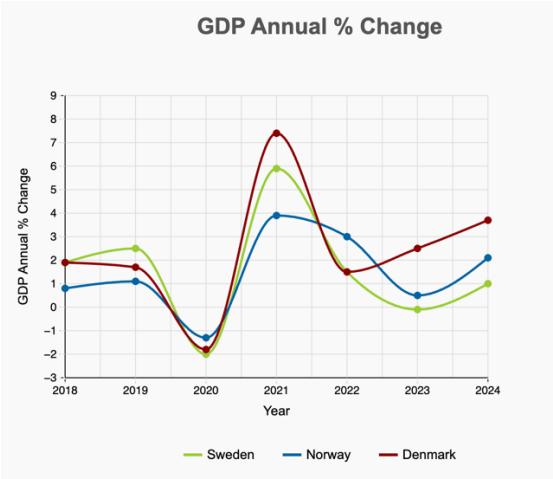

Figure 3:GDP Annual Change in Scandinavia – Line Chart [5], [9].

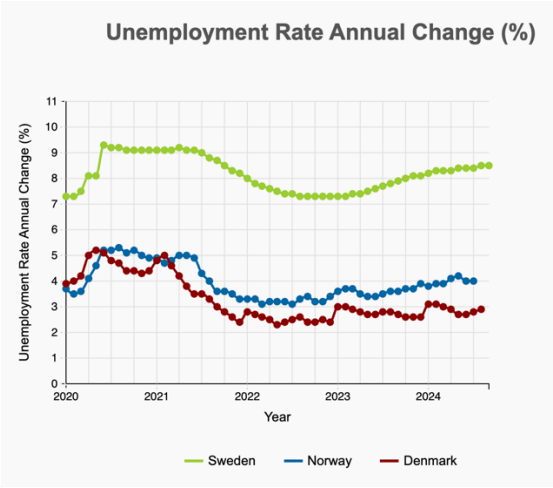

Figure 4: Scandinavian Unemployment Rate – Line chart [1], [2], [3], [5].

The two charts above show annual GDP change (Figure 3) and unemployment-rate change (Figure 4) for Sweden, Norway, and Denmark from just before the pandemic through 2024. At the beginning of the pandemic, when Norway and Denmark went into lockdown in 2020, Sweden had the most negative change when it comes to GDP. They also suffered the worst when it came to unemployment, having twice the upswing as Denmark and Norway.

C. Project Objective: ***Healthcare System Strain***

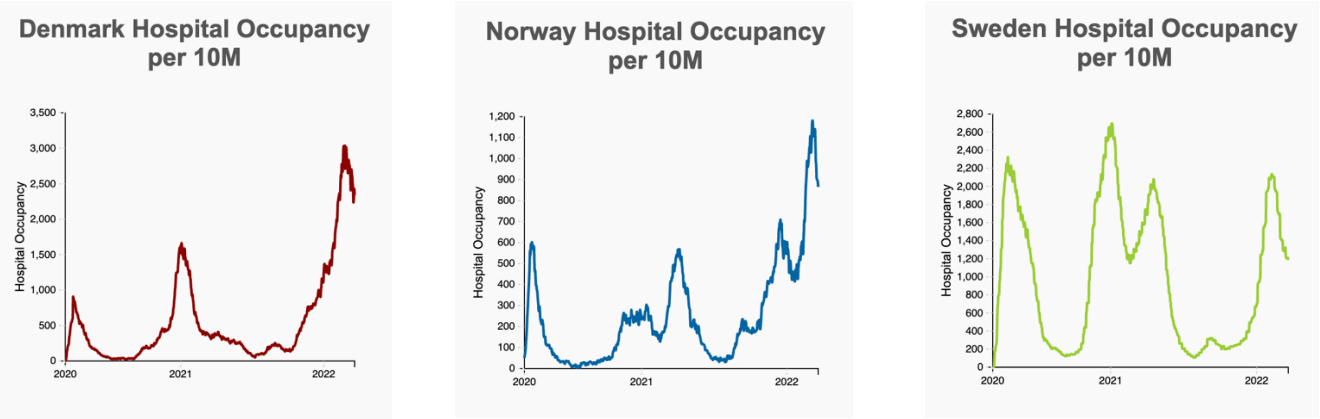

Figure 5: Scandinavian Hospital Occupancy – Small Multiples [5], [10].

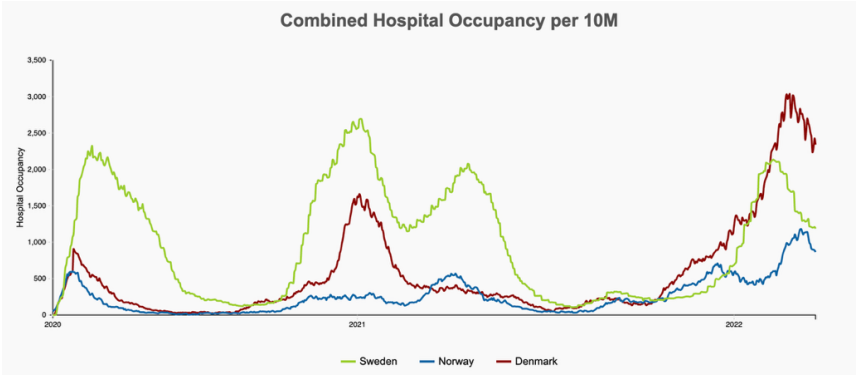

Figure 6: Scandinavian Hospital Occupancy – Line chart [5], [10].

The line charts (Figure 5) above show daily hospital occupancy per 10 million residents for each country, and the combined view at the underneath displays them all. The combined chart (Figure 6) also does a good job representing the different waves of COVID-19, as you can see, the trends are the same just in different magnitudes. This comparison directly meets our fourth objective by revealing when and how hard each health system was pushed under different COVID-19 policies highlighting the first part of the pandemic when Sweden was the only country not it lockdown.

D. Project Objective: ***Mortality Dynamics***

The two charts to the right shows COVID-19 deaths per 10 million people in Sweden, Norway, and Denmark over the course of the pandemic. The tree map (Figure 7) displays the difference in total deaths per 10M. The animated scatterplot (Figure 8) on the right shows how mortality progresses over time. With the tree map, you can instantly see a big difference. In regards to the animated chart, you can see Sweden gaining a head start in mortality as the other countries are in lockdown. As time goes on, the trends are pretty similar for all three, Sweden sustaining at the top until this past year.

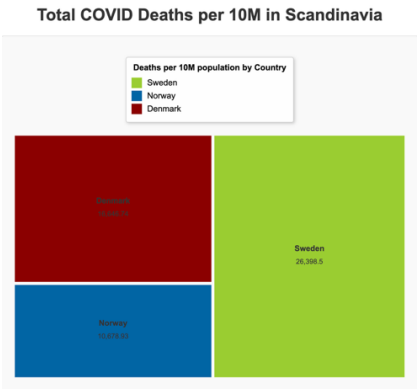

Figure 7: Total Covid Deaths per 10M – Treemap [5], [9].

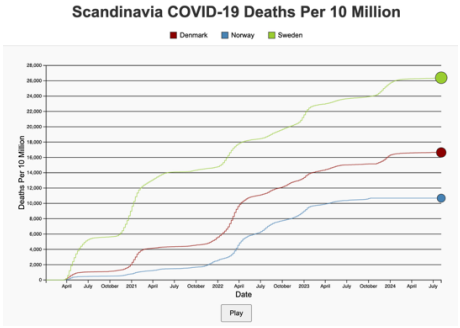

Figure 8: Total Covid Deaths per 10M Time Series – Animated Scatterplot [5], [9].

VI. Discussion

Overall, this approach was successful considering fulfilling all my project objectives. The approach containing having each project goal lined up with a visualization, simple and effective. Looking back, our decision to focus on just Sweden, Norway, and Denmark, and build every chart in D3 turned out to be a strong choice. By keeping the scope tight, I avoided messy global data and created a clear, unified story. Having all visualizations in D3 gave me freedom to implement any type of tooltips, interaction and animations which is the highlight of my project.

If I could start over and make it better, I would have added some additional project objectives and other forms of data such as vaccines as well as commute statistics. This to get an even better understanding on COVID-19 and its consequences.

Throughout this project, I have learned a lot. From cleaning data efficiently using online tools and tableau to writing decent front-end code with a structure. The biggest gain for me was the front-end skills, understanding the eco system of web dev, and how html, CSS and JavaScript works with each other on a lower level.

VII. Future Work

If this project would to be worked on further upon, I would have added the other data mentioned in the discussion. I would also have tried to focus more on the year of 2020 maybe making the scope of the project even smaller in terms of time scope. By zeroing in on just 2020, we could dive deeper into the immediate effects of each policy and avoid diluting our analysis with later waves and vaccines. Lastly, would be adding other northern and close countries such as Finland, Estonia or even Iceland.

VIII. Conclusion

Looking back, it's clear that getting ahead of the virus with strict lockdowns in Norway and Denmark paid off, in both lives saved, and economic pain were avoided. The map showed how quickly cases climbed in Sweden as its neighbors acted with restrictions. The line charts on GDP and unemployment shows with numbers that Sweden's economy took a bigger hit right away, and more people lost jobs compared to its neighbors. The hospital data drove the point home too, Sweden's hospitals reached much higher peaks of patients per ten million people, while Norway and Denmark managed to spread out their waves and keep beds available.

Even the death rates tell the same tale. Sweden recorded more deaths per ten million residents throughout the pandemic, whereas early shutdowns in Norway and Denmark kept those curves flatter and delayed their worst days. Later, vaccines and treatments changed the game for everyone, but by then the early choices had already set each country on its path, one steeper, one flatter.

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