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Design Challenge: COVID-19 Jupyter Notebook Dashboard

As I write this, hundreds of millions of people across the globe are under quarantines, lockdowns, and stay-at-home orders. Not one country has been spared by the COVID-19 pandemic, except ***allegedly*** North Korea (definitely a lie).

As governments, businesses, education institutions, and individuals chart their next steps, they need to ensure that all decision making is rooted in objective, measurable, and accurate scientific data. Unfortunately, certain influencers in media and political circles have either intentionally or unintentionally misrepresented COVID-19 data. This has led to confusion, anxiety, and conflicting beliefs. To help people cut through the misinformation, I decided to create a COVID-19 dashboard with plots that show the current state of the virus and the spread of the virus overtime.

My dashboard utilizes COVID-19 data from John Hopkins University's Center for Systems Science and Engineering (CSSE). John Hopkins CSSE refreshes the data at least once a day and publishes it on their GitHub page. My dashboard was constructed using the open-source python-based Jupyter library. My code and plots are housed in what is called a Jupyter notebook. Everytime I run the Jupyter notebook, it retrieves the latest COVID-19 data.

The goal of this dashboard is to inform citizens, scientists, public officials, and business owners about the current status of the pandemic with clear and concise plots that can be easily tweaked to support further exploration of the data if desired.

I got the idea to build this dashboard while I was on Kaggle.com reading about how data scientists and machine learning experts are helping out in the fight against COVID-19. I decided to base my Jupyter notebook on the one by Kaggle user Tarun Kumar [1]. The Jupyter notebook is designed such that each time it runs it pulls the latest COVID-19 data from the CSSE GitHub page.

In order to prevent the code -- which there is a lot of -- from taking away from the plots I exported the Jupyter notebook to a PDF and explicitly removed the code blocks (from the PDF version only). As a PDF, the dashboard can now be quickly disseminated anywhere online or printed for that matter!

The dashboard has three types of visuals: bar charts, line plots, and choropleth maps. The bar charts, color-coded tables, and choropleth maps show the latest COVID-19 statistics. Furthermore, the bar charts show the latest COVID-19 data broken down by continent and country. Making the choropleth maps required a lot of manual data preprocessing, but I believe they are extremely useful as they illustrate how each country is faring with the virus in an easy-to-understand and concise way.

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The line plots show how the pandemic has evolved over time. Each line plot has a line for confirmed cases, deaths, and recovered cases.

All figures were enlarged to make interpreting the data easier for the audience. Furthermore, the font size of the labels and title was blown up.

During the creation of this project, I examined several COVID-19 data graphics for inspiration. I found Google's COVID-19 data map to be inspiring [2]; it includes interactive displays to sort through COVID-19 metrics for various countries. However, it does not offer many of the plots I have included in my Jupyter notebook.

1. https://www.kaggle.com/tarunkr/covid-19-case-study-analysis-viz-comparisons
2. https://www.google.com/search?biw=1440&bih=793&sxsrf=ALeKk03TdC8zWqOfK-ylwpuHL8DTMNqFBg%3A1588135109418&ei=xQSpXtmLGcSEsAWklYO4Cg&q=number+of+coronavirus+cases&oq=number+of+co&gs_lcp=CgZwc3ktYWIQAxgBMgUIABCRAjICCAAyAggAMgIIADICCAAyAggAMgUIABCDATICCAAyAggAMgIIADoECCMQJzoECAAQQzoGCAAQChBDUOJKWOx3YImFAWgFcAB4AIABdYgB5g6SAQQxMC45mAEAoAEBqgEHZ3dzLXdpeg&sclient=psy-ab