

Project Report

Successful project execution depends on a delicate integration of strategy and collaboration. This is the thesis behind our project, which was designed to be a solution that seamlessly aligns with the end users' needs. To fulfill aspirations, we navigated the complexities of requirements gathering, design, and execution. This report details the process and execution of our project.

The foundation of this project was the development of an HTML website addressing the effects of COVID-19 on university attendance in the UK. Despite a seemingly easy execution process, it was important to understand web development transcends mere code writing. Hence, we adopted a collaborative approach to develop a customized product with a balance of speed and performance. As a result, we divided the work in a manner where I was tasked with gathering information while my partner was to work on the code. This division and allocation of responsibilities ensured a smooth operation of an effective process where everyone did what they were best suited for (Kuthyola, 2017, p136). By understanding the necessity for effective communication, we aimed to boost customer engagement and effective collaboration for satisfaction.

The first step in this project was to figure out what we wanted our topic to be. This was informed by gaining an understanding and elimination extra information. We knew what we wanted to do, we

just needed to find the right direction to go in. Our project was primarily focused on addressing the intricacies of COVID-19, and we worked to ensure that the final website had relevant visuals addressing the issues. As the phrase goes, a picture is worth a thousand words, and hence incorporating relevant pictures to drive the message effectively.

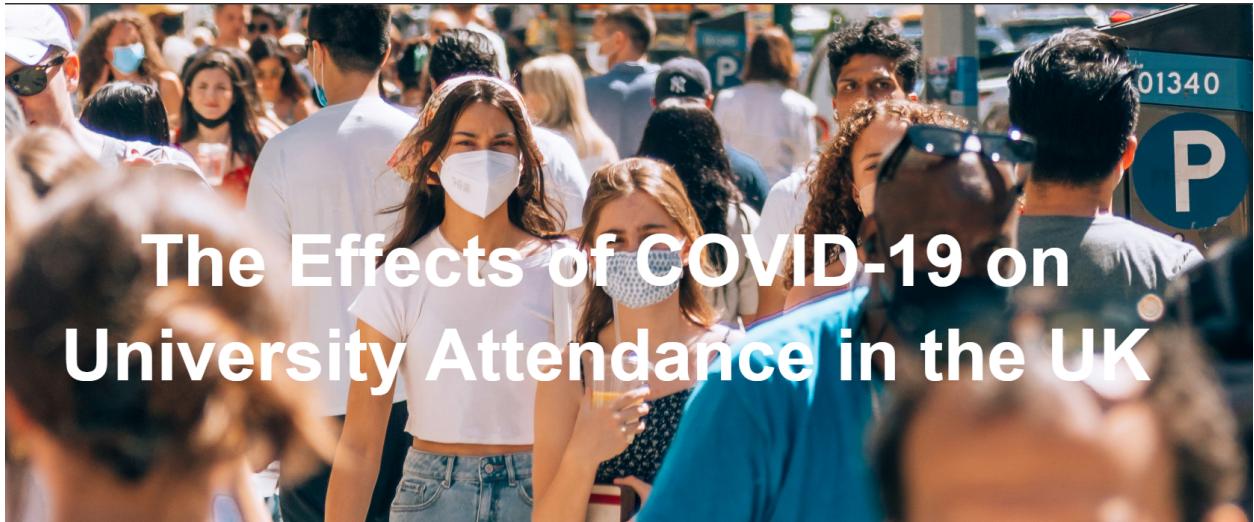


Figure 1: The websites landing page

The dataset selection for this project needed to be aligned with the overall project goal, which was to show the comparison of how COVID-19 affected attendance in the UK and Pakistan. In essence, the project required a comprehensive dataset that would provide valuable insights and support the narrative. This process led us to choose a dataset that offered a comprehensive overview of the subject matter. The dataset allowed us to explore several aspects in depth while comprehensively addressing all the questions one might ask themselves about the topic. The process of collecting information from the dataset was also something we had to think about. The most important part was to ensure the information was verified and true. To do so, we corroborated our dataset with multiple others and found a strong correlation between them. Once we verified the dataset, we moved forward with the rest of the project.

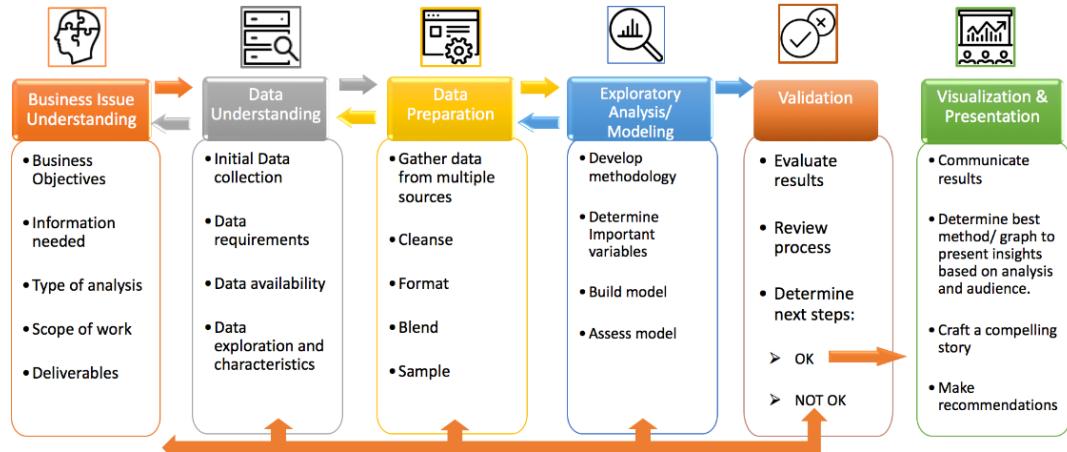


Figure 2: Dataset selection and visualization process

My role laid the foundation for the project. Therefore, considering that the primary data collection phase was entirely me. Living through the pandemic we knew first-hand how it affected attendance rate. Being from Pakistan I was able to speak to a few people in the educational department and get their opinions. This allowed us to gather incite and gather specific detailed information. We gathered most of our information through surveys done online. Surveys came in handy in collecting and analyzing group views from the target end users.

After the successful collection of the data, we systematically organized it to facilitate analysis, visualization, and interpretation. This involved a dedicated cleaning of the data to remove inconsistencies, and errors and standardize the formats where necessary. As with any dataset, this one had its own set of challenges.

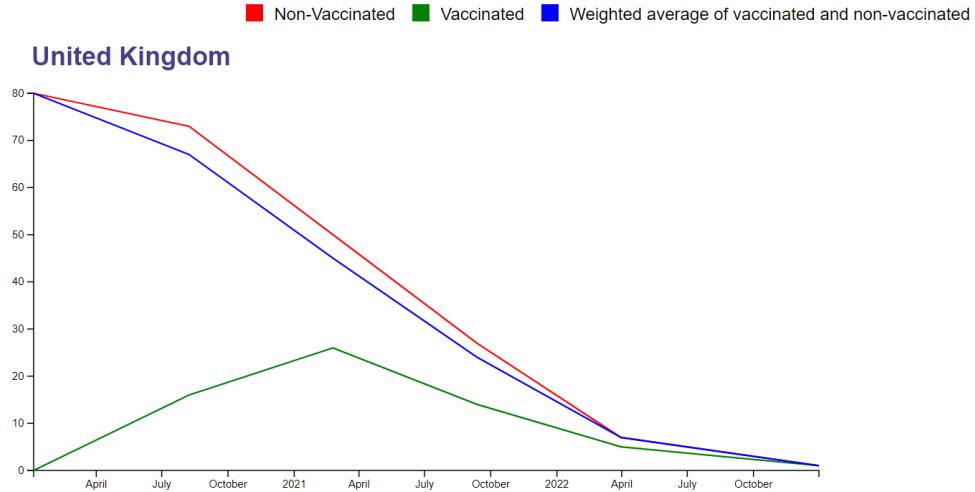


Figure 3: Visualized report of the data, showing the vaccination rates in UK

The main limitation we came across was missing or incomplete data which restricted comprehensive analysis. Without careful cleaning, the dataset could lead to ineffective conclusions. Fortunately, we were able to do a decent job of sorting out information for the dataset and verifying the conclusions it brought us to. What we learned from this was that datasets are not always perfect and project teams must be mindful of their limitations. It is important to cross-reference the overall trends from our dataset with others. There may not be an exact direct correlation as not all variables are aligned, but if the overall theme of the datasets points towards the same conclusion it can be labeled as “valid”. Many limitations came about when finding information to back up our points for Pakistan. We came across many stumps that left us to somewhat come up with our conclusions.

After building our foundation, execution was the next phase. It involves the construction of our website. this was UI/UX design and web development. We had delegated to each other to do what we felt we were better at. The coding was mainly done by my partner, she took charge and I helped when needed. We used YouTube videos and tutorials for the coding section which proved to be valuable throughout the project. The tutorials provided us with directions, and towards the end we

found ourselves looking back to YouTube less and less. It took us from below-average coders to ones who could effectively tackle the breakdown of a dataset.

UI (user interface) design incorporates interactive design and usability to build a connection between the users and a digital product. On the other hand, UX (user experience) creates meaningful systems experiences for users by understanding their needs and designing intuitive interfaces (Lamprecht, 2023, para 2). This project was instrumental in understanding the crucial role played by UI and UX. Since it was what anyone would react to, it needed to be the most aesthetically pleasing part of our project.



Figure 4: A snippet from the website showing masked individuals; a regulation that prevailed during the COVID-19 period

HTML, CSS, and JavaScript were the foundational tools for our web development. HTML acted as the website's skeleton. The index.html file houses the content or information available for modification.

```

<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>The Effects of COVID-19 on University Attendance in the UK</title>
    <link
      rel="stylesheet"
      href="https://unpkg.com/leaflet@1.9.3/dist/leaflet.css"
      integrity="sha256-kLaT2GOSpHechhszzB+fInD+zUyjE2LlfWPgU04xyI="
      crossorigin=""
    />
    <script
      src="https://unpkg.com/leaflet@1.9.3/dist/leaflet.js"
      integrity="sha256-WBkoXOwTeyKclOHuWtc+i2uENFpDZ9YPdf5Hf+D7ewM="
      crossorigin=""
      defer
    ></script>
    <script src="https://d3js.org/d3.v7.min.js"></script>
    <link rel="stylesheet" href="./index.css" />
  </head>
  <body>
    <header>
      <button onclick="onHeaderBtnClicked(this)">Introduction</button>
      <!-- <button onclick="onHeaderBtnClicked(this)">Map</button> -->
      <button onclick="onHeaderBtnClicked(this)">Timeline</button>
      <button onclick="onHeaderBtnClicked(this)">Visualisation</button>
      <button onclick="onHeaderBtnClicked(this)">Reference</button>
    </header>
    <main>
      <section id="introSection">
        <h1>The Effects of COVID-19 on</h1>
        <h2>University Attendance in the UK</h2>
      </section>
      <section>
        <h1>
          The COVID-19 pandemic has significantly affected various aspects of
          life across different sectors worldwide. Notably, education has borne
          unprecedented upheaval since its outbreak in 2019, particularly
          enrolment and learning patterns, despite the situation showing some
          form of normalcy. For instance, universities in England reported
          102,382 cases among learners and 28,639 among university staff between
          October 2020 and February 2022, suggesting a notable trend among the
          student population (Dack et al., 2023, p. 106). In the United Kingdom,
          the pandemic effects on university attendance have been profound, with
          -----
        </h1>
      </section>
    </main>
  </body>
</html>

```

Figure 5: A section of the index.html file

CSS, on the other hand, was used for the aesthetics of the website (Mueller, 2015, p118). It was responsible for adding layouts, fonts, and colours. The index.css file also accounts for the aesthetically pleasing nature of the website.

```

60
61 <section id="TimelineSection"> Sivanesan, 3 weeks ago
62 <h1>
63   The COVID-19 pandemic has catalysed a notable shift in edu-
64   paradigms globally. It significantly impacted university a-
65   and academic routines. In response to the unprecedented ch-
66   osed by the pandemic, educational institutions worldwide i-
67   compelled to adapt swiftly to remote learning to ensure co-
68   learning while prioritising the safety and well-being of st-
69   aff (McGivern and Shepherd, 2022, p. 218; Pašák and Palc-
70   i). As highlighted by Korotchenko and Dobbs (2023, p. 1), i-
71   precipitated a statistically significant negative relation-
72   the virus's spread and college enrolment. The results under-
73   profound influence of the pandemic on educational institut-
74   operations. However, other empirical evidence shows that a-
75   campus-based lectures to digital ones because of pandemic (-
76   showed a significantly higher attendance rate, revealing t-
```

```

82 background-repeat: no-repeat;
83 background-size: cover;
84 background-position-x: 50%;
85 background-position-y: 100%;
86 }
87 #timelineSection > h1 {
88   color: #Black;
89   padding: 10rem 12rem 0 12rem;
90   text-align: justify;
91 }
92 }
93 #prefaceSection {
94   width: 100%;
95   height: 75rem;
96   display: flex;
97   justify-content: flex-end;
98 }
```

OUTPUT DEBUG CONSOLE PORTS TERMINAL GITLENS

Figure 6: Website styling snippet (CSS)

To change the styling of the website, you refer to the element in the index.html file and look for its styling code in the index.css. For instance, from the above screenshot, the styled element is ‘id=time Selection’, modify its styling code to see the changes on the site. CSS files function as follows:

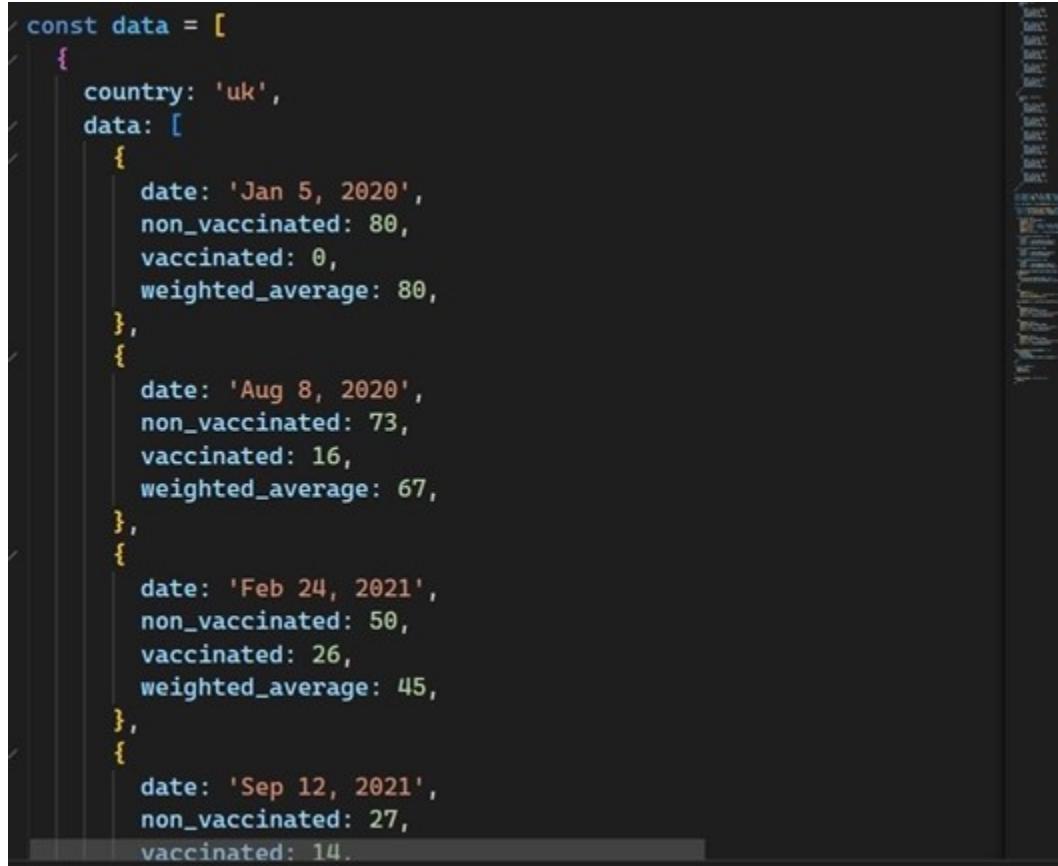
class – the styling script is preceded by a period (.) .

id – begin the script with a hash (#).

To add more details without repeating the names, use >.

In essence, the more detailed the CSS file is, the more effective the styling will be.

JavaScript was primarily used to define its functionality – it made things interactive. For instance, it was responsible for the background functioning when a button was clicked or the movement of elements on the screen. Additionally, it was used to fetch the map functionality and the charts showing data visualization. In essence, JavaScript can be considered the brain of the website; it ensures that all things run and worked smoothly.



```

const data = [
  {
    country: 'uk',
    data: [
      {
        date: 'Jan 5, 2020',
        non_vaccinated: 80,
        vaccinated: 0,
        weighted_average: 80,
      },
      {
        date: 'Aug 8, 2020',
        non_vaccinated: 73,
        vaccinated: 16,
        weighted_average: 67,
      },
      {
        date: 'Feb 24, 2021',
        non_vaccinated: 50,
        vaccinated: 26,
        weighted_average: 45,
      },
      {
        date: 'Sep 12, 2021',
        non_vaccinated: 27,
        vaccinated: 14,
      }
    ]
  }
]

```

Figure 7: JavaScript file to fetch map and charts data

By working together, HTML, CSS, and JavaScript formed a powerful trio that harmoniously delivered a fully functional website. We leveraged the unique strength of each component and created a compelling digital experience.

Testing and deployment are typically the last phases of any development. These are crucial stages that ensure that the final product is functional, reliable, and accessible to users. It scrutinizes all parts of the website to ensure it works. For our project, the testing phase incorporated several types of tests:

- i. Automated testing to autonomously check code errors hence saving a lot of time by detecting the bugs early enough.

- ii. Unit testing to check if individual parts of the code such as specific functions and components function correctly and independently.
- iii. Integration testing to check how different parts of the final product work together. This ensures that all pieces of the product fit seamlessly.
- iv. End-to-end testing – Ensures that all sections of the website work as expected, from start to end.

The project was a classic example of an odorous voyage that was full of both victories and challenges. Each step contributed enormously to the final product goal. Teamwork proved to be the most valuable tool in our arsenal, spanning from strategizing to execution. In the end, the project stands as a testament to our technical proficiency and the power of teamwork in achieving shared goals.

References

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