

**Thesis Project Portfolio**

**The Effect of Covid-19 on Construction Labor Productivity at the New Student Health & Wellness Center**

(Technical Report)

**Post-Pandemic Impacts on the Average Employee: Understanding How COVID-19 Reshaped the American Workforce**

(STS Research Paper)

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## **Sociotechnical Synthesis**

The onset of COVID-19 had profound effects on many facets of life. One area that experienced immense changes following the pandemic was the workforce. Labor fluctuated in an unprecedented manner, as some fields were pushed entirely out of work while other industries were exhausted far more than usual. Additionally, the day-to-day of employees within many industries was noticeably altered, as many fields transitioned to remote work or required employees to adhere to CDC guidelines that contradicted the normality of their working environment. Even at the dawn of COVID-19, most workers quickly realized that the traditional style of work they had become accustomed to would shift indefinitely. Years have passed since COVID-19 began, yet many of the adjustments that occurred in the working world due to the pandemic are still apparent.

Many workers have accepted that these changes will likely remain for the foreseeable future as the labor industry has transitioned into a new normal. However, the gradual progression into the redefined work environment has not been faultless or even smooth, as numerous demographics within the labor spectrum were confronted with disparity and struggle. As a result, many characteristics of the workforce have shifted dramatically during this metamorphosis. The STS portion of this research investigates how the labor force has changed in the years following the pandemic and how employers have reacted to these differences.

Specifically, the STS paper acknowledges the discrepancy that occurred within the workforce with respect to gender and race following the COVID-19 pandemic. Additionally, the research highlights the emergence of telecommunication and the increased role of workplace engagement in the post-pandemic labor environment. The paper incorporates the framework of Latour's actor-network theory to further explain the functions and intersectionality of gender, race, communication, and engagement within the workplace.

Despite the STS portion of the research having a more generalized nature and focusing on broader themes following the pandemic, it is crucial to also examine specific cases within the labor industry where COVID-19 had a considerable impact. In particular, it is essential to investigate how everyday labor was impacted during the pandemic, which is the aim of the technical portion of this research. The technical area of this research is centered around Barton Malow, the general contractor on the new Student Health and Wellness Center (SHWC) at the University of Virginia, wanting to understand the impact that COVID-19 had on labor productivity at the newly opened project. The SHWC project is rather unique and serves as an excellent case study into the impact of COVID-19 on day-to-day labor, as construction began prior to the pandemic and carried on through its peak months. Furthermore, the realm of construction is particularly useful to analyze due to its rigid nature and the fact that it continued to operate throughout the pandemic.

The construction industry is heavily reliant on predictability, safety, and risk aversion, all of which were greatly diminished during the outbreak of COVID-19. Moreover, the presence of in-person communication is deeply integral to the construction process, which was severely impaired, if not non-existent, during the peak months of the pandemic. Labor productivity can be challenging to track and quantify on large-scale construction projects, as many labor-centric activities occur simultaneously on-site. The hardships regarding labor measurement were especially profound during the pandemic, a time when the construction industry felt a noticeable hindrance in being able to communicate effectively between trades and the general contractor.

Two methods of analysis were used to study the obstruction that COVID-19 had on communication: a review and breakdown of relevant construction documents relating to the SHWC project (i.e., RFI's, Manpower Summaries, Monthly Reports), as well as extensive interviews with the relevant stakeholders and contributors to the SHWC project. After gathering interview material and evaluating the SHWC construction data, my capstone group created an extensive report that detailed the analysis that was conducted to determine how COVID-19 impacted the construction of the UVA Student Health & Wellness Center. Using the report findings as a baseline framework, my capstone group spent the entirety of second semester working on the development of a preliminary app design that serves to effectively

communicate construction-related project data between subcontractors and the general contractor in a comprehensible and digestible format. Ultimately, the objective of the app is to serve as a supplemental tool for increasing and strengthening communication and coordination within the construction industry, as COVID-19 proved the importance of construction-related discussion within the field.