

Thesis Project Portfolio

**Optimization of Patient Flow and Process for a Primary Care Clinic
During the COVID-19 Pandemic**

(Technical Report)

Telemedicine: A Future Scenario Analysis

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

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Bachelor of Science, School of Engineering

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Sociotechnical Synthesis

Suite 2100 within the University of Virginia Health System contains a primary care clinic that is facing patient throughput inefficiencies resulting from poor communication, lack of understanding of the systems to maximize efficiency, and challenges brought on by the COVID-19 pandemic. The goal of this project is to improve the patient experience in the University Physicians Charlottesville (UPC) Clinic and reduce the stress on doctors, nurses and staff. Given that there are multiple small problems contributing to a broader patient throughput problem, the team plans to deliver several recommendations based on qualitative observations and quantitative data analysis. If the goal of increased patient throughput is achieved, it will allow reduced stress on clinic staff and the ability to accommodate more patients both of which are key inputs to the satisfaction of all of the human actors in the system.

While my technical research focuses specifically on patient throughput, my current research is exploring the future of telemedicine after its rapid proliferation caused by the COVID-19 pandemic. The future of telemedicine can be analyzed with Voros's Generic Foresight Process Framework. This framework is useful in using the current state of what's happening in a system to inform future projections. This research is conducted through scenario construction. Scenarios are different narratives about how the future could develop in terms of the key factors in a system. The scenario construction will produce several diverse futures which can be analyzed to raise awareness of the risks, decisions, constraints and opportunities which could be encountered within the future of telemedicine. The clinic research will provide near term fixes for their throughput problem whereas the scenarios will provide insights to decision makers, such as the ones in suite 2100, with the opportunities for the future of telemedicine.