



DARTMOUTH

Testing UV-C Lighting Technology to Improve Rural Transit Systems

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Problem Statement

- Need to sanitize public transit vehicles to combat the spread of viruses
- UV-C lighting and HEPA filtration show promise as measures to kill viruses
- Pros: cost efficient and effective in laboratory settings
- Cons: largely unknown effect in real world setting

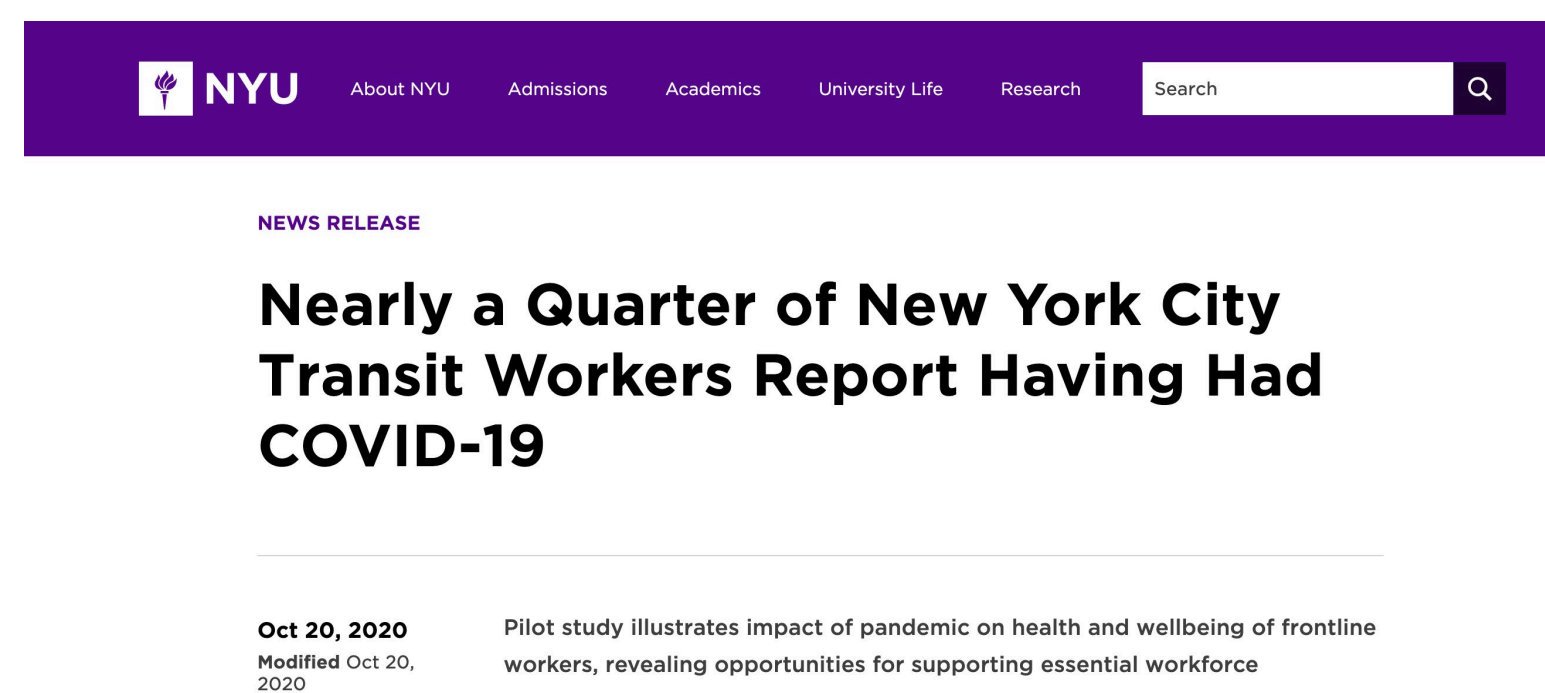


Figure 1. NYU Article on COVID-19 in public transit

Methodology

- HEPA & UV-C Implemented across 3 transit providers and 36 buses
- Repeated measures design: UV only, UV and HEPA, no treatment
- Measure outcomes in sick days using self-reported surveys
- In-lab aerosolization of coronaviruses in “glove box”

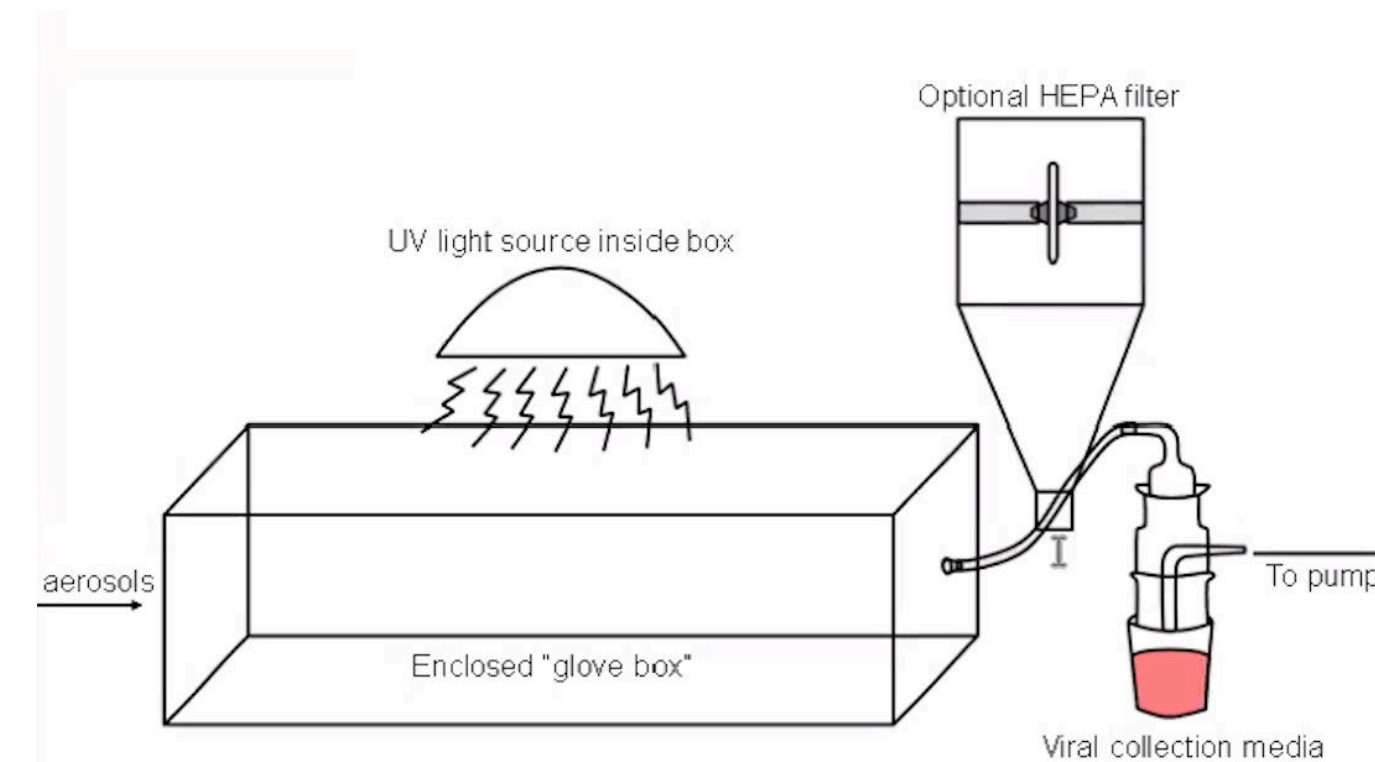


Figure 2. Enclosed Pro Air HEPA 3 filtration unit and “Glove Box” experimental paradigm

Potential Impacts

- Improve vehicle, facility, equipment and infrastructure cleaning and disinfection
- Strengthen public confidence in transit
- Improve public health & safety outcomes

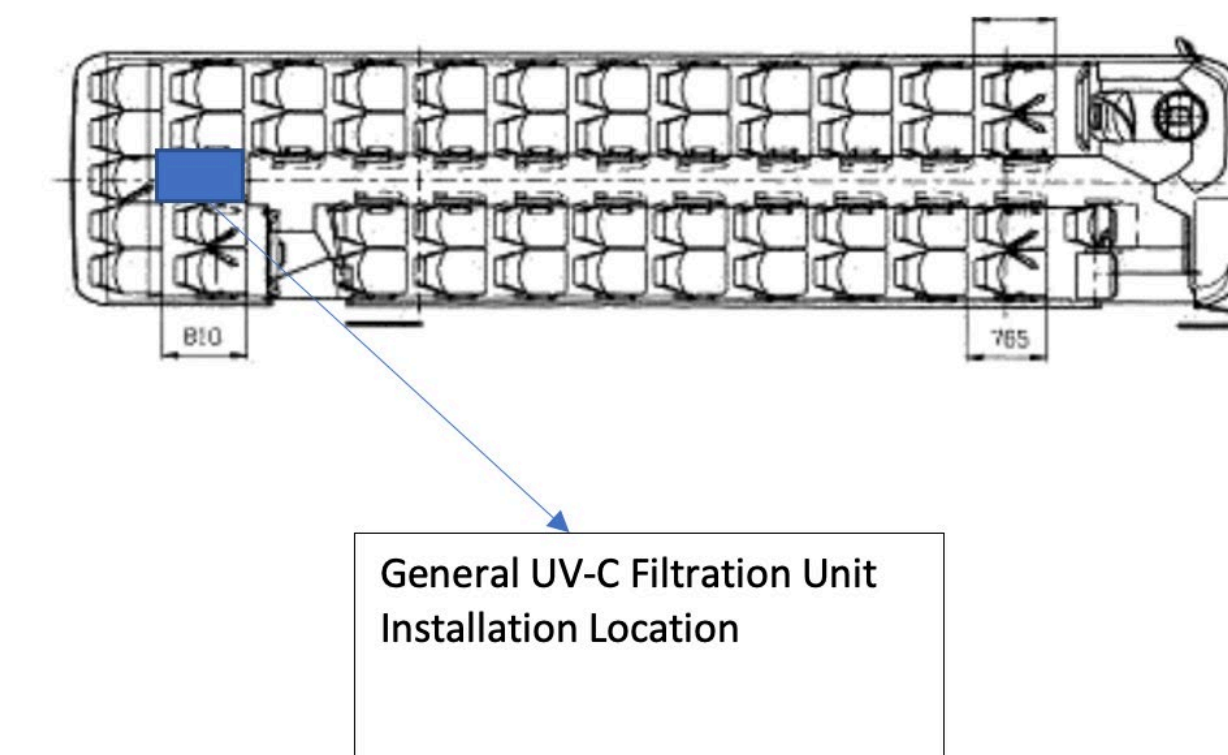
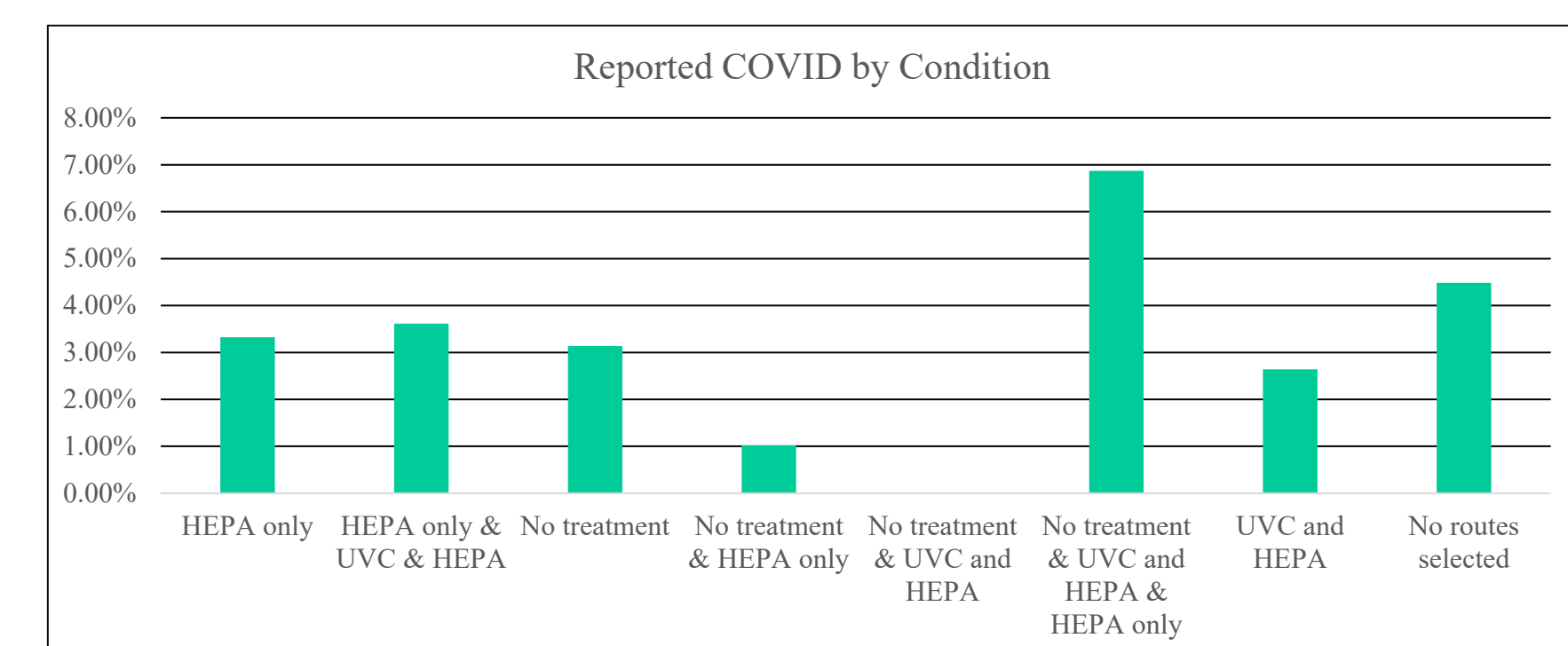
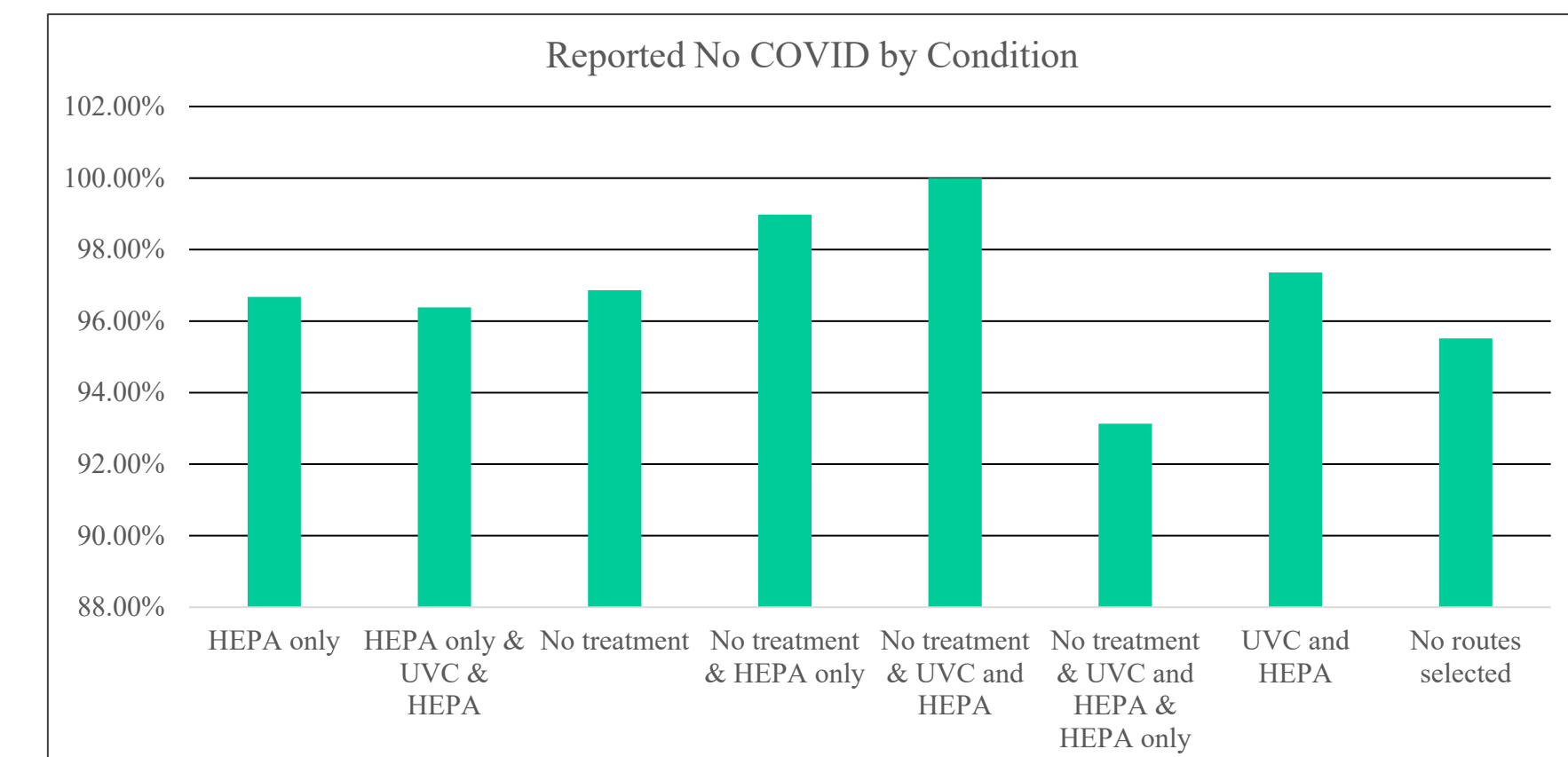


Figure 3. Diagram indicating modified filtration unit installation location

Conclusions

- Over 500 research participants
- Over 3,000 surveys collected
- Preliminary analysis indicates no significant main effect in any of the treatment groups
- Additional analysis is underway



Acknowledgments

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References

- Communications, N. Y. U. W. (2020, October 20). *Nearly a quarter of New York City Transit Workers Report having had COVID-19*. NYU. Retrieved August 22, 2022, from <https://www.nyu.edu/about/news-publications/news/2020/october/transit-workers-covid-pilot-study.html#:~:text=News%20Release-,Nearly%20a%20Quarter%20of%20New%20York%20City,Report%20Having%20Had%20COVID%2D19&text=A%20survey%20of%20New%20York,fear%20getting%20sick%20at%20work.>