Federal Transit Administration

Bus of the Future

Federal Transit Administration

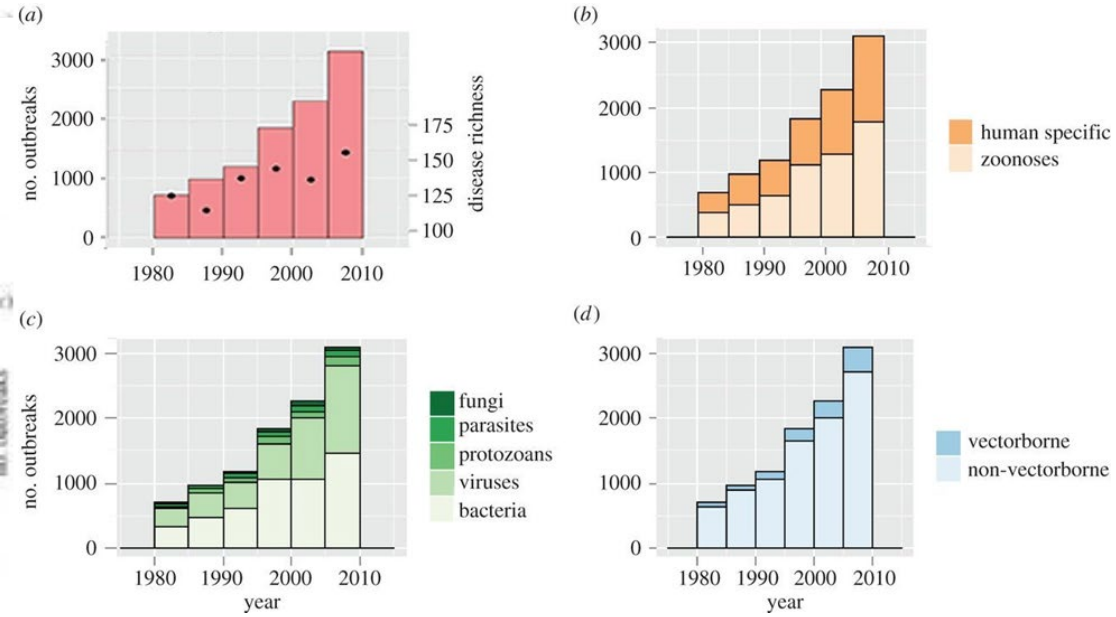
INTERNATIONAL TRANSPORTATION LEARNING CENTER

STYL&TECH DESIGN & BUILD

Brian Sherlock
ATU International Health and Safety

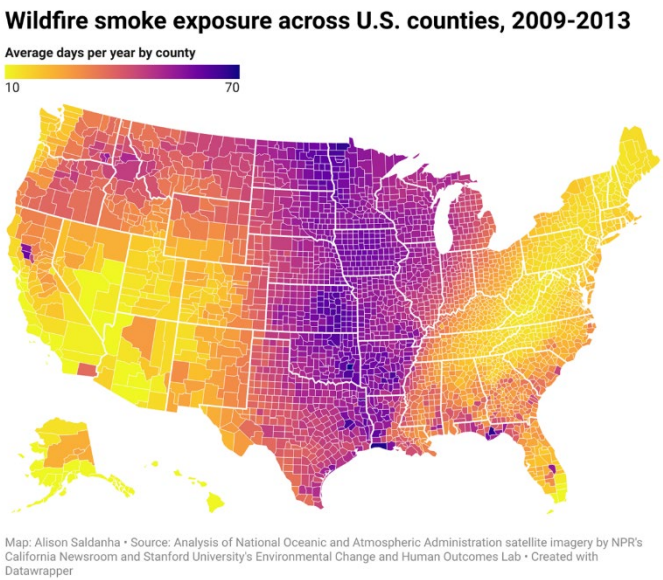
Onboard Air Quality Issues

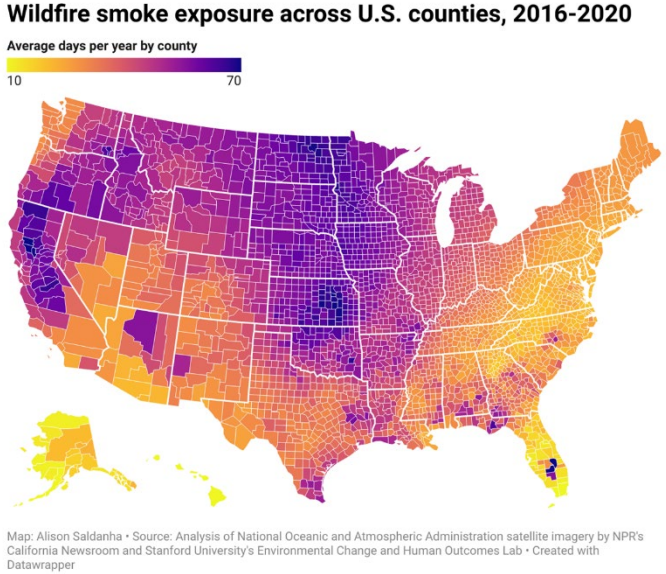
Zoonoses



SmithKF, Goldberg M, Rosenthal S, Carlson L, Chen, C, Ramachandran S. Global rise in human infectious diesease outbreaks. J. R. Soc. Interface
11: 20140950
http://dx.doi.org/10.1098/rsif.2014.0950

Wildfire Smoke

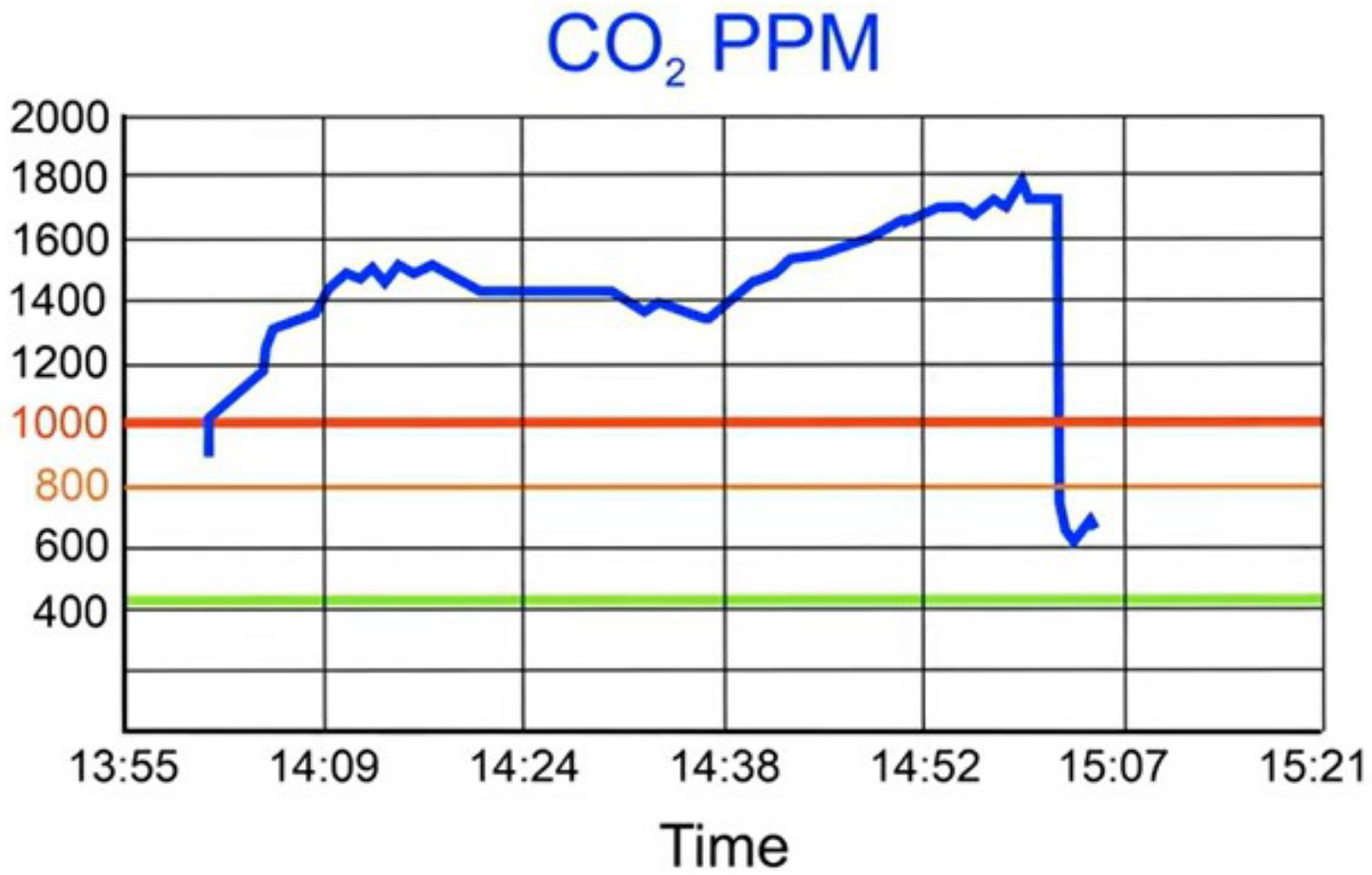




NPR's California Newsroom and Stanford University's Environmental Chande and Human Outcomes Lab

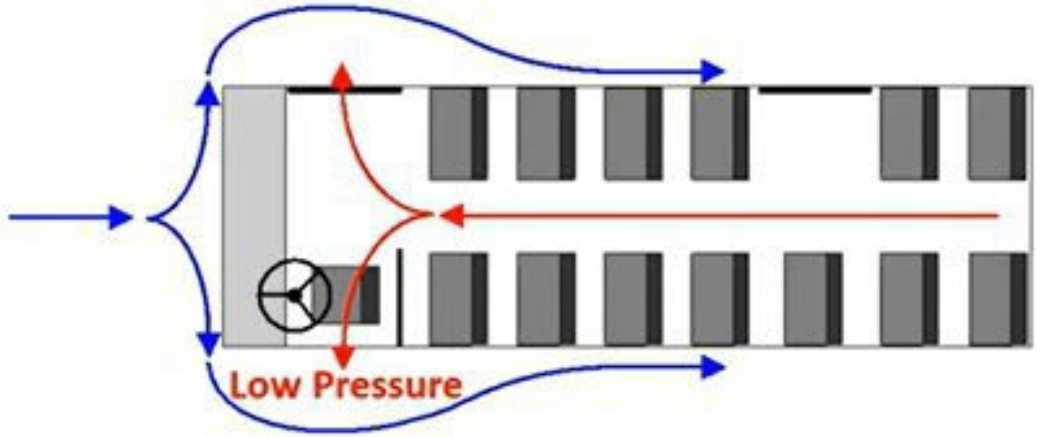
One of the better buses at 25% of a seated load

Note: the second largest bus manufacturer in North America had no fresh air in the HVAC until the second year of the pandemic and would perform far worse.

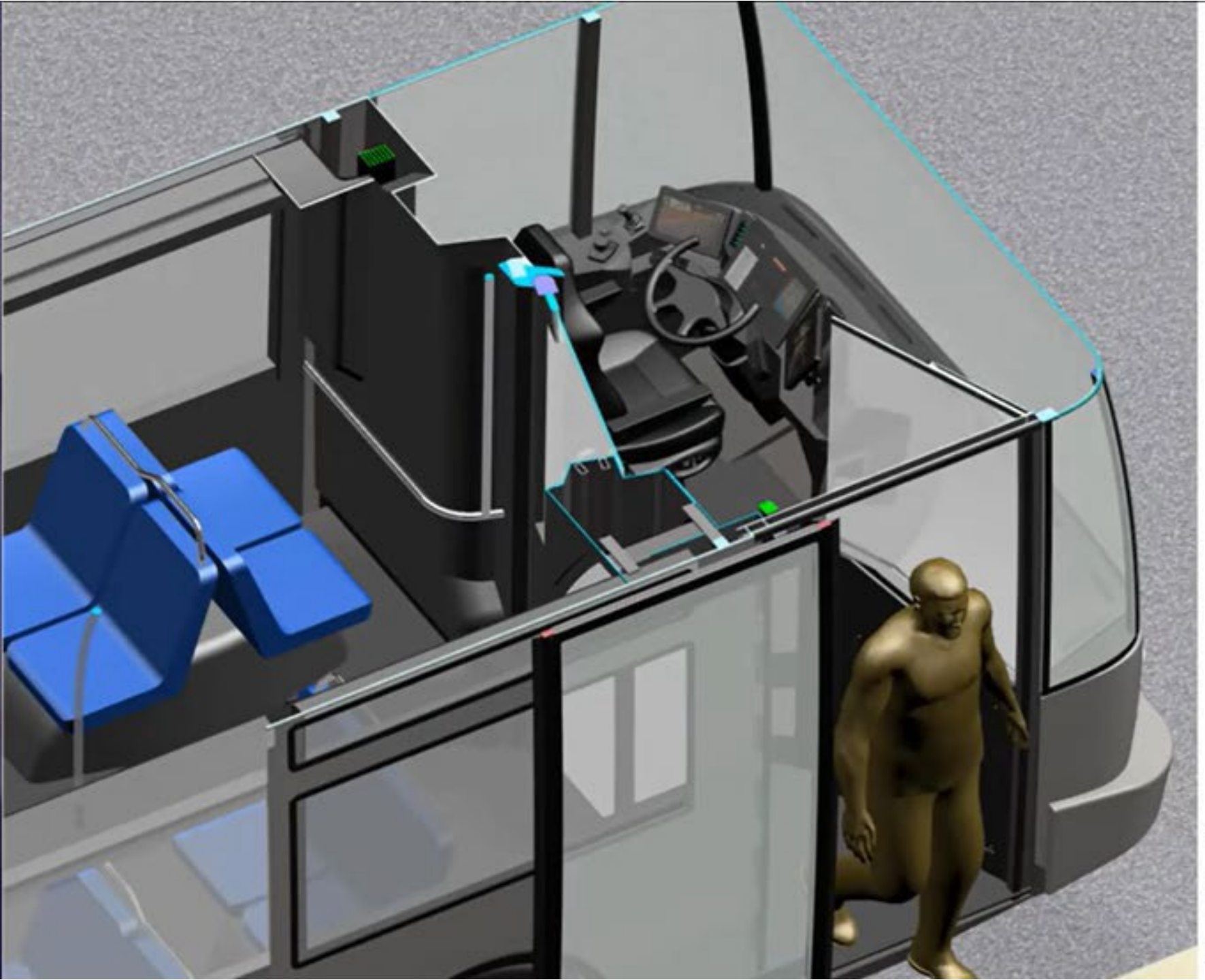


The trip began with only one passenger, the person doing the testing. Levels rise going through town and level out on a freeway. The rise in the right side of the graph is likely due to a traffic jam lowering speed, yielding diminished leakage-driven ventilation.

COVID Multiplied the Need for Operator Protections



- The blue arrows above show the external airflow caused by square front corners. This is called “leading-edge suction”.
- The red arrows show the resulting interior flows from back to front, carrying inevitable viral shedding.
- The red area at left is open and the operator has no meaningful protection from COVID.
- The design team has engineered two barrier modes protecting operators from this hazard.



The FTA, ITLC

Bus of the Future

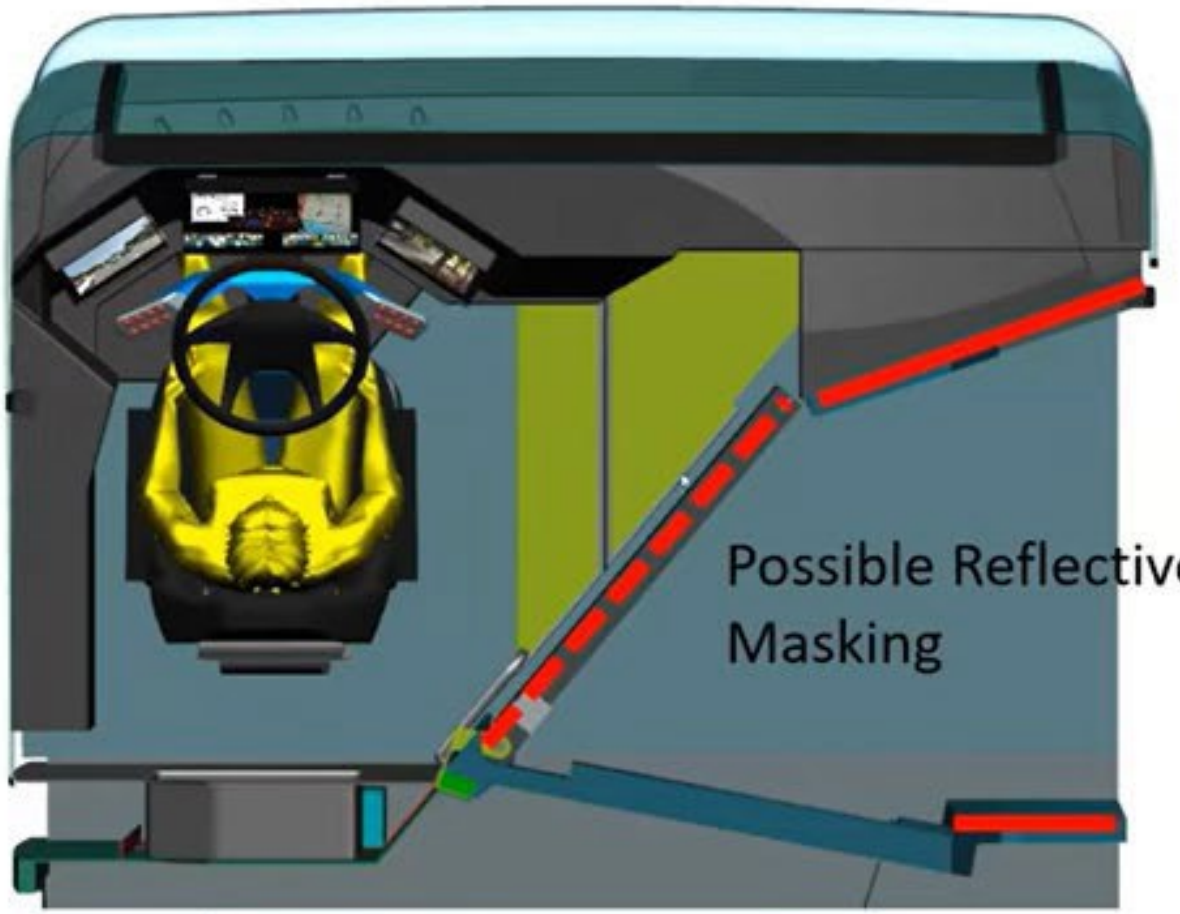
Concept and design by ATU and Styl&Tech

- Rounded front corners keep airflow attached – no leading-edge suction
- Positive-pressure isolation protects the operator along with high-quality filtration of a separate roof-mounted HVAC unit

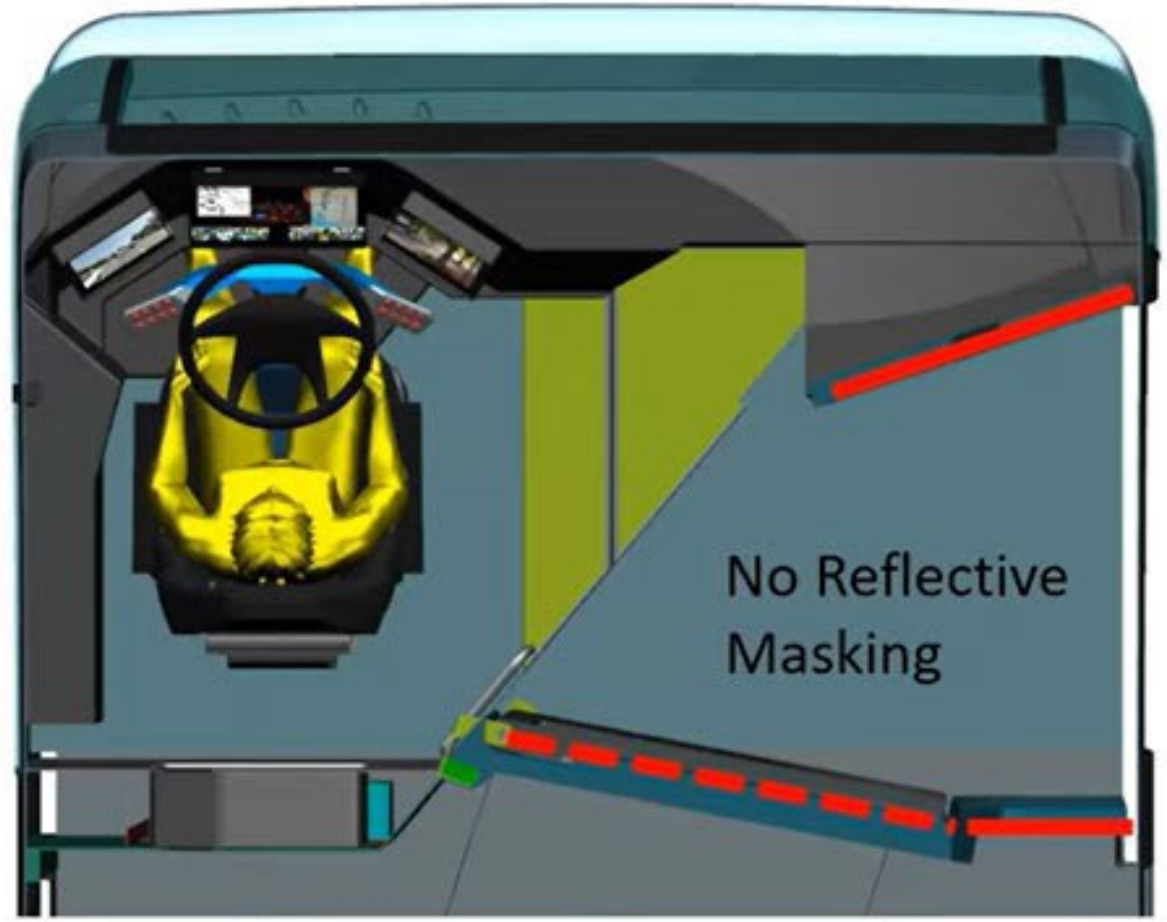
The ITLC is the International Transportation Learning Center and grant recipient. The ATU is the Amalgamated Transit Union, source of the design concepts

The Improved Barrier

Please note that the very wide central door allows faster passenger ingress and egress even without the front door.

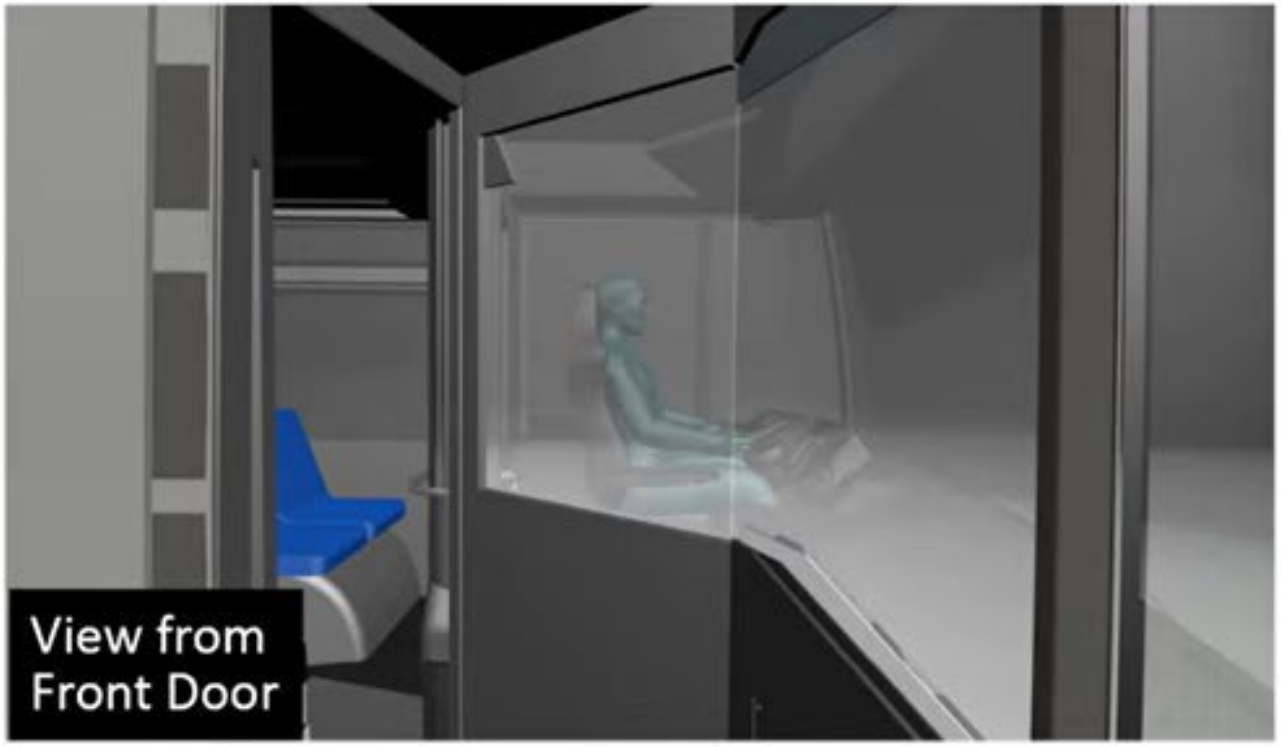


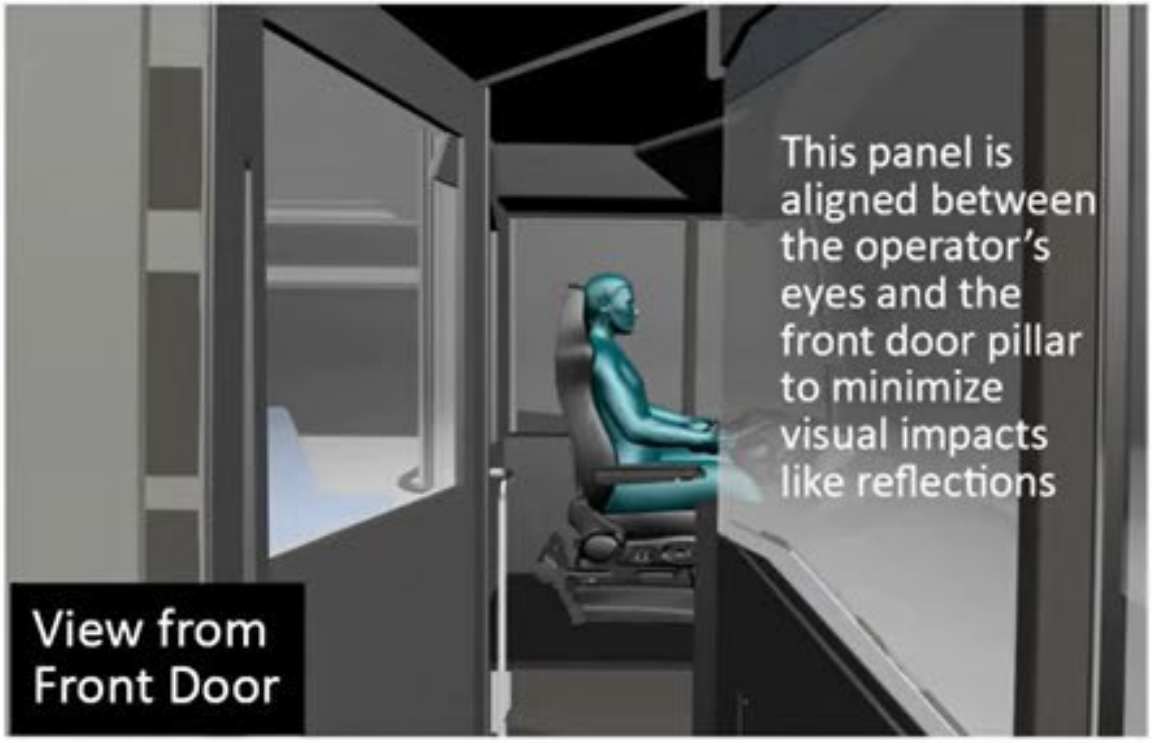
Front Entry Mode



Rear Entry Mode

Operator Protection, Flexibility, with a Modern Inviting Design





A Related Project Protecting Passengers: Cleanroom Vertical Flow

Concept by Robert Breidenthal, PhD,
University of Washington

Testing by Varghese Mathai
University of Massachusetts, Amhurst