CENTER RUNNING BUS LANES & STREET SAFETY: COLUMBUS AVENUE CASE STUDY

March 2025

Photo credit: MBTA

CITY of BOSTON

RESEARCH QUESTION

Inspired by our colleagues study of roadway safety on corridors with bike lanes, we wanted to investigate the impact of our first center-running bus lane project on overall street safety

- Has the redesign of the Columbus Avenue corridor, including center-running bus lanes, resulted in fewer crashes when compared to control corridors?
- Have there been any other safety impacts?

PROJECT CONTEXT

- New England's first center-running bus lanes
  - Serves the 22, 29, and 44 buses
- Project origins
  - JP/Rox Transportation Action Plan, GoBoston 2030
  - Unique mode split with high transit reliance but poor bus speeds and reliability
  - High-crash corridor - pedestrian safety improvements were another clear priority
- Project features:
  - Center-running bus lanes between Jackson Square station and Walnut Avenue
  - 4 pairs of center island platforms with rider amenities
  - Pedestrian safety features

METHODOLOGY

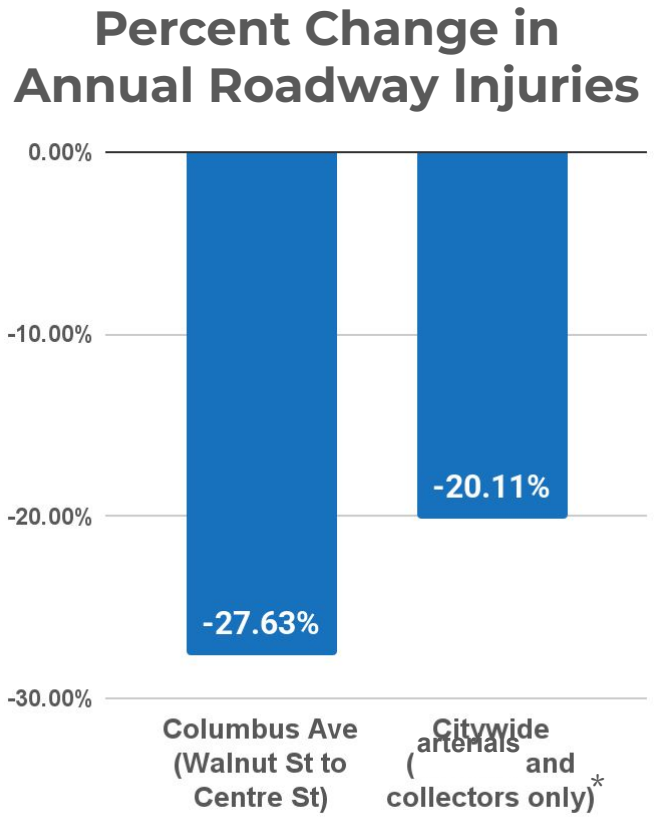
- Data pulled from City's Vision Zero dashboard
  - Roadway injuries reported by Boston EMS, a proxy for severe crashes throughout the city
- Looked at two years before and after implementation
  - Street was under construction from Sept 2020 to Oct 2021, when the bus lanes opened for operation
- Control corridor selection
  - Blue Hill Ave, Hyde Park Ave, Warren Street - all in various stages of planning and design
- Citywide comparisons
  - Specific focus on collectors and arterials where we are more likely to see bus service and future bus priority projects

GRAPHS + TAKEAWAYS

- Columbus Ave experienced a greater decrease in crashes than control corridors, citywide, and citywide collectors and arterials
- Also saw other benefits: rider and operator satisfaction, rider time savings
  - See Columbus Ave evaluation for more information

CRASHES RESULTING IN INJURIES - CITYWIDE

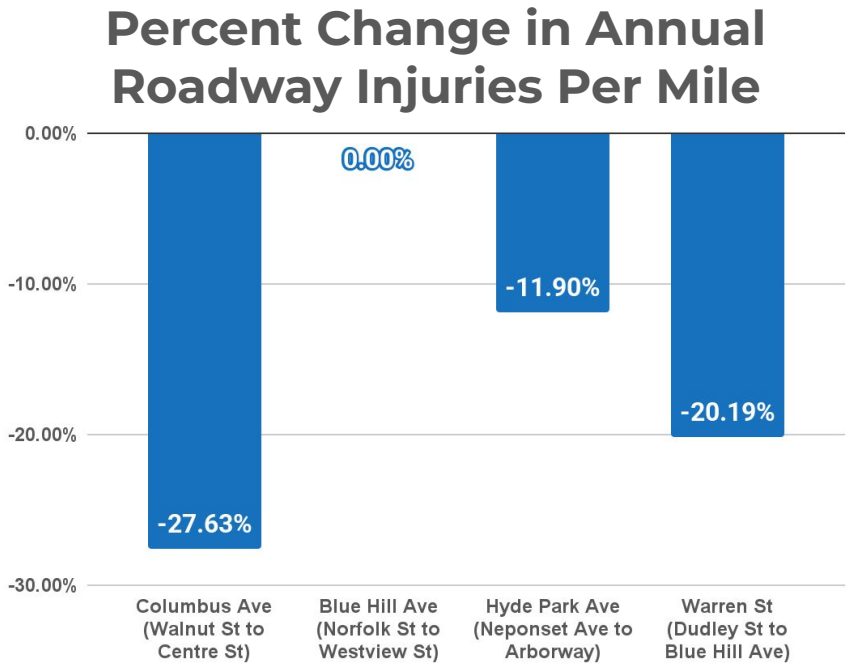
- The city has seen fewer severe crashes and injuries across the board in recent years
- After the installation of the bus lanes, Columbus Ave saw a **7%** greater decrease than similar roads across the city
  - Rapid safety improvements like this are crucial to achieve Vision Zero



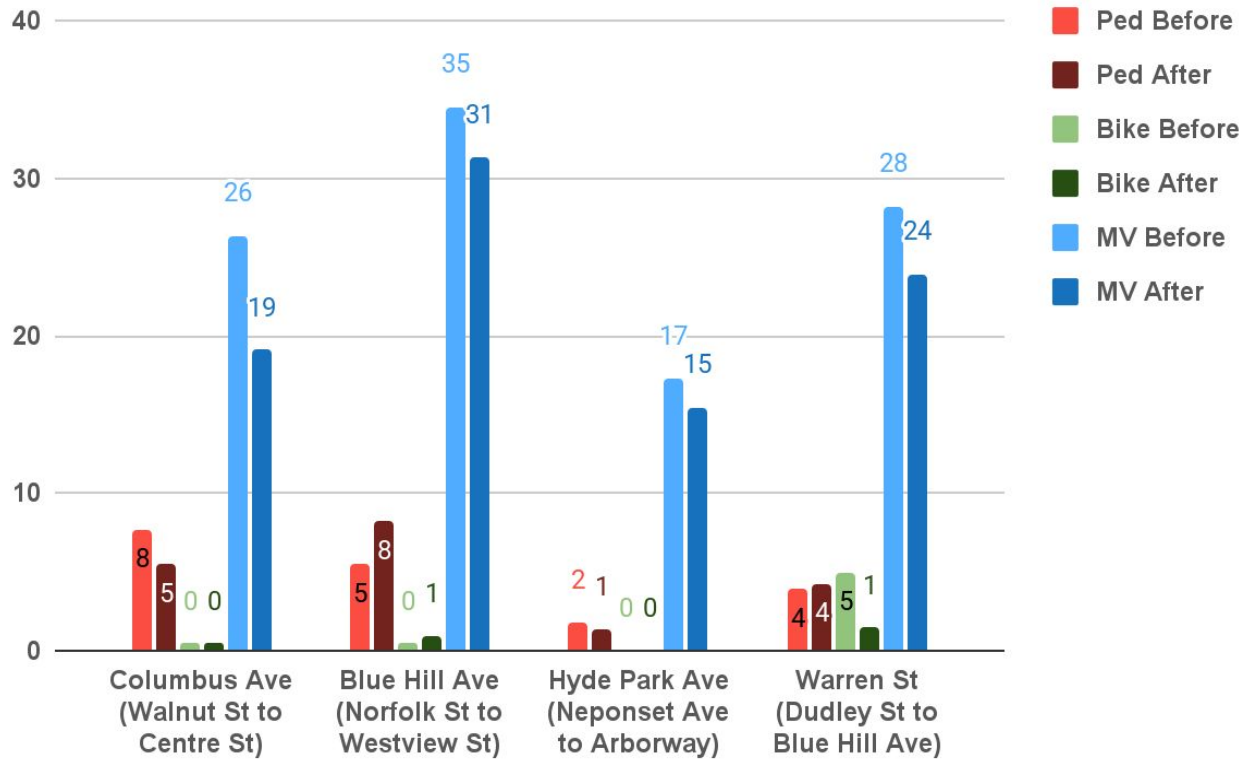
**Citywide data was limited to arteries and collector roads to exclude highways, residential roads, and other streets that buses rarely use*

CRASHES CRASHES RESULTING IN INJURIES - COMPARABLE CORRIDORS

- Warren St, Hyde Park Ave, and Blue Hill Ave all fared worse than the citywide average
  - Blue Hill Ave notably saw **no improvements**
- Columbus Ave is the only one of these corridors where safety improved more than the citywide average

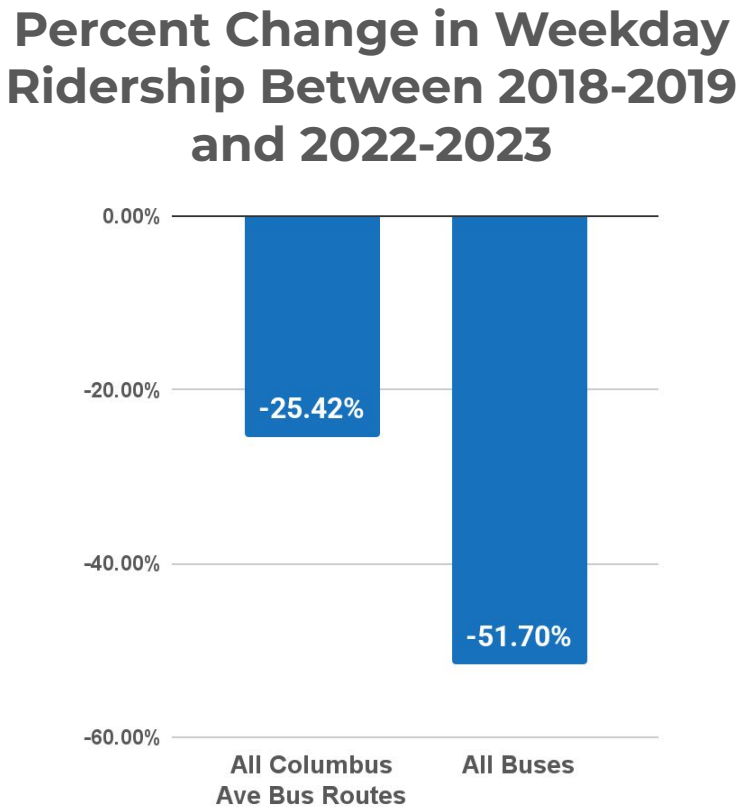


Annual Roadway Injuries Per Mile By Mode Before Vs. After



RIDERSHIP CHANGES

- Ridership on transit fell across the board after the pandemic
- The 3 buses on Columbus Ave retained **26% more** of their ridership than other buses across the city.
  - Today, the 22, 29, and 44 serve over **11,000 riders** every weekday.
  - **4,900** of those riders are on the bus while it travels in the bus lanes



VEHICLE SPEEDS

After the bus lanes were installed

- About **10% more vehicles** were obeying the speed limit
- Average vehicle speeds **declined by 1.5 mph**
- Vehicle delay was **only 20-40s** more than pre-install

This stands in stark contrast to the significant time savings for bus riders

- Bus riders save **3-4 minutes** along this ¾ mile stretch
- Across all bus riders, this adds up to **81 hours** saved every weekday

RESEARCH QUESTIONS REVIEWED

- Has the redesign of the Columbus Avenue corridor, including center-running bus lanes, resulted in fewer crashes when compared to control corridors?
  - Yes! Columbus Ave saw a greater percent decrease in crashes resulting in injuries than any of the control corridors as well as the average of major roads across the city.
- Have there been any other safety impacts?
  - Bus operators reported feeling safer and more comfortable when driving buses on this corridor
  - Vehicles have slowed down
  - Directed speed hump installation has discouraged and slowed down cut-through traffic on neighborhood streets

FUTURE STUDIES

- Other types of bus priority infrastructure
  - Side-running bus lanes with and without accompanying pedestrian safety upgrades (ex. Washington St in Roslindale, Huntington Ave)
  - Center-running bus lanes with bike lanes (ex. future Blue Hill Avenue project)
- Boston specials
  - Huntington Ave/South Huntington Ave - Green Line trolleys, two frequent bus routes, sharrows, high vehicle volumes, high pedestrian volumes
  - Skewed intersections with high bus volumes (ex. Arborway, Nubian Square, Roxbury Crossing, Grove Hall)

PEER STUDIES

- Summer St Pilot
- Los Angeles study