



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

March 2025

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

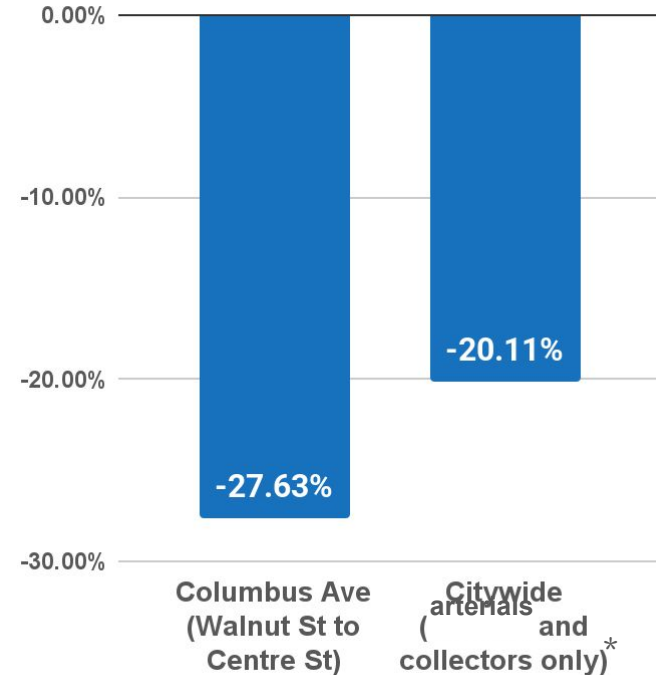
# GRAPHS + TAKEAWAYS

- 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

Percent Change in  
Annual Roadway Injuries

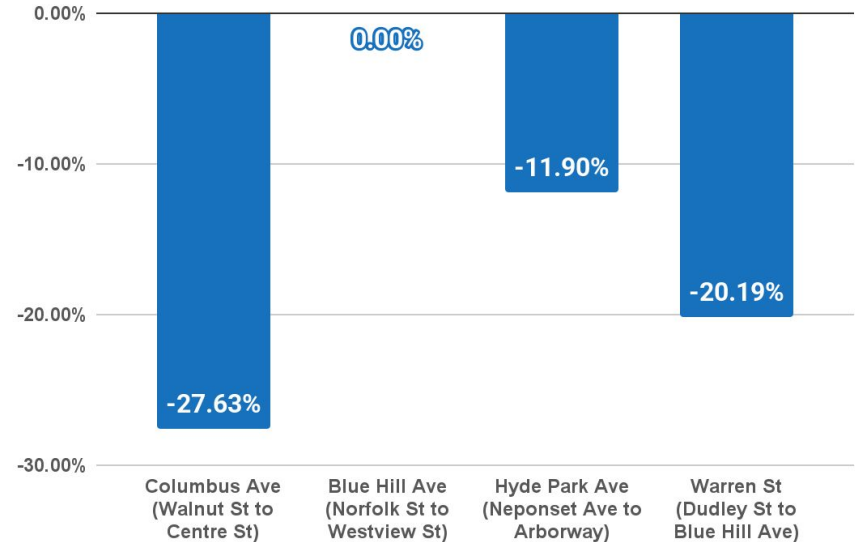


**B** \*Citywide data was limited to arterials and collector roads to exclude highways, residential roads, and other streets that buses rarely use

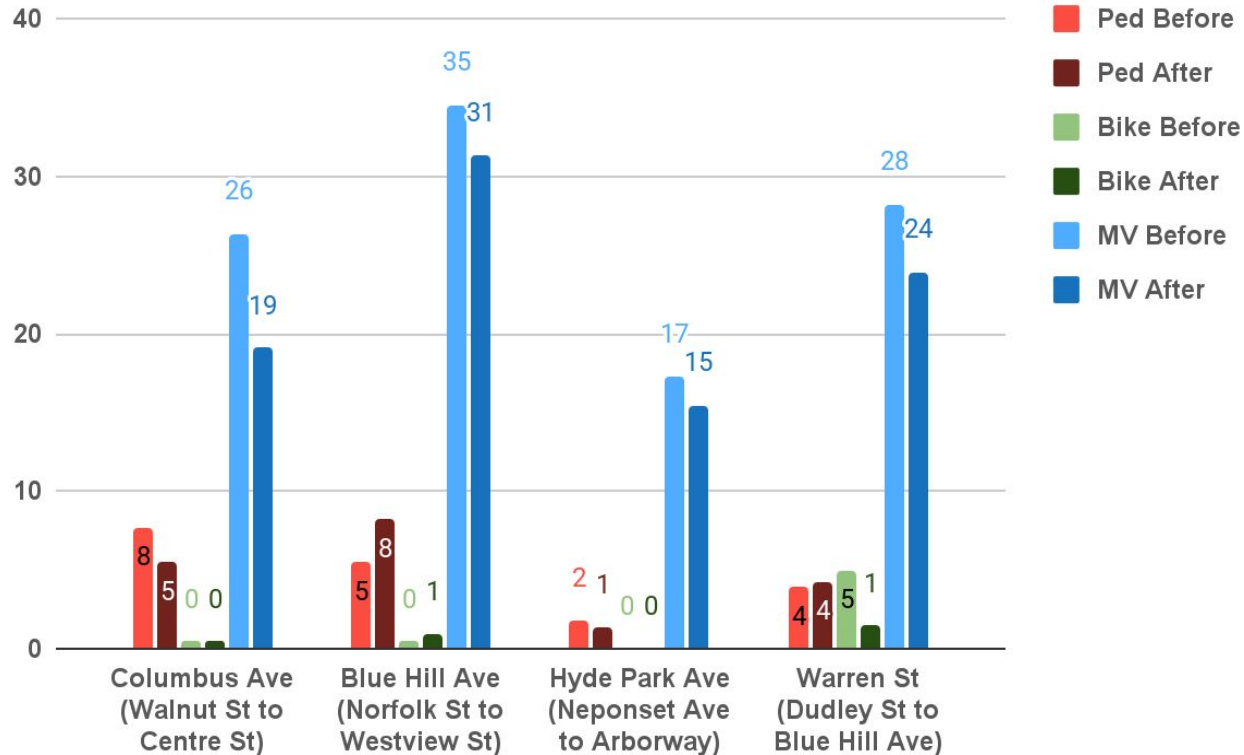
# CRASHES CRASHES RESULTING IN INJURIES - COMPARABLE CORRIDORS

- ▶ 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

Percent Change in Annual Roadway Injuries Per Mile



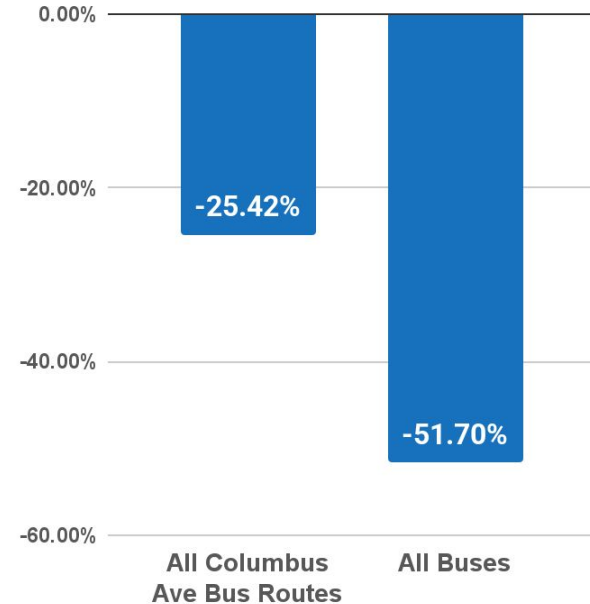
## Annual Roadway Injuries Per Mile By Mode Before Vs. After



# 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

## Percent Change in Weekday Ridership Between 2018-2019 and 2022-2023



# 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  $\frac{3}{4}$  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](#)