DEPARTMENT OF CIVIL ENGINEERING

Post-Collapse Traffic Impacts of the Francis Scott Key Bridge

C13: Mobility2

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Background

- On March 26, 2024, the Francis Scott Key Bridge collapsed after a cargo ship struck one of its support piers
- This critical I-895 crossing carried over 30,000 vehicles per day, including regional freights and commuters
- The collapse forced significant detours onto I-695 Inner Loop, I-95, and I-895, all of which were already near capacity
- Resulting congestion impacted commute times, economic activity, and equity across affected corridors
- This project uses RITIS traffic data and survey responses to analyze post-collapse impacts and evaluate equitable, real-world strategies

Traffic Impact Analysis

Impact of Flexible Work Hours

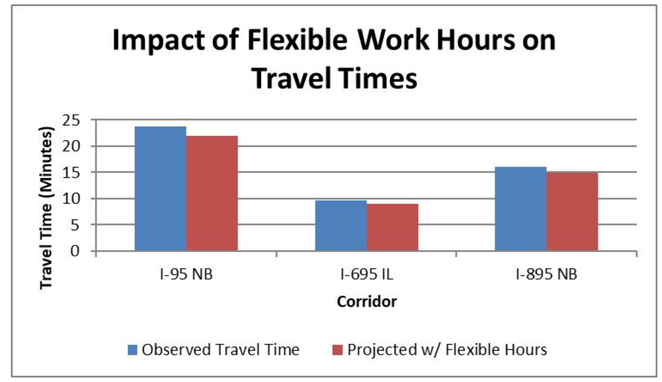
- Travel times were noticeably lower for workers starting at non-peak hours (earlier or later shifts)
- Trips starting between 6-7 am experienced significantly less delay
- Spreading peak demand through flexible schedules helped reduce overall congestion across key corridors
- Data suggests that promoting flexible work hours could be sustainable congestion mitigation strategy

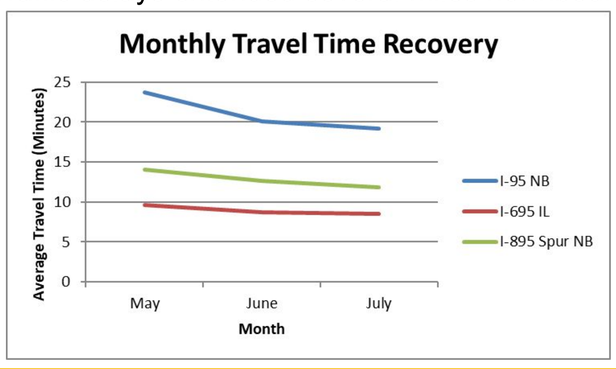
Monthly Trends (May–July 2024)

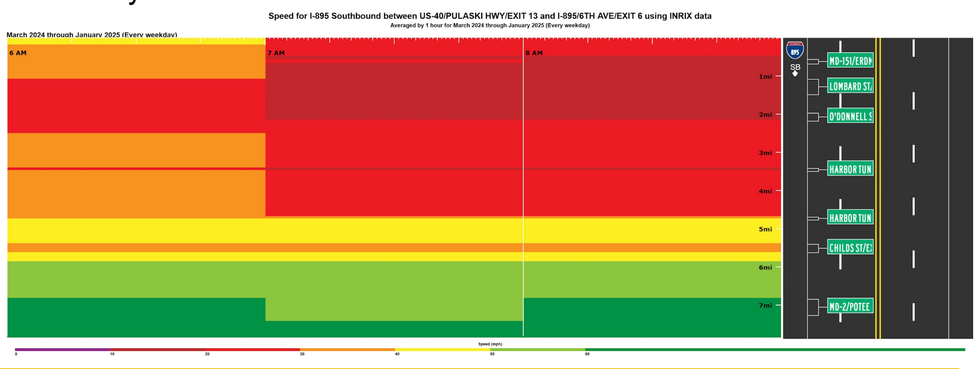
- I-95 Northbound showed the largest increase (about a 2 min decrease)
- I-695 Inner Loop improved slightly but remained elevated
- I-895 Spur Northbound showed moderate improvement

Congestion Scan (Based on I-895 Northbound Scan)

- Severe congestion formed north of the Harbor Tunnel during morning peaks
- Speeds dropped below 20 mph between 6:30-8 am over 4-5 mile stretch
- Midday and late morning conditions improved, with speeds rising above 40 mph
- Traffic delays extended several miles northbound into the city







Community Feedback and Equity Impacts

Commuter Behavior Changes

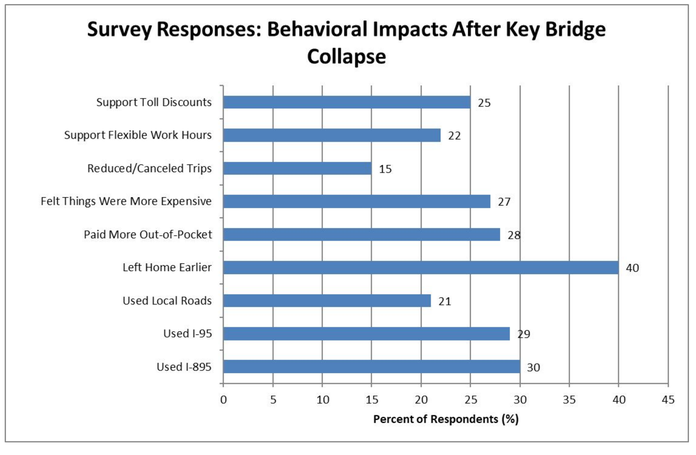
- 42% of respondents changed their daily travel routes
- 40% reported leaving earlier to reach destinations on time

Equity-Related Impacts

- Low-income communities were disproportionately impacted
- Many respondents reported longer bus and train commutes due to rerouting
- Increased travel costs affected essential workers the most

Policy Support (Based on Survey Data)

- 25% supported toll discounts for affected drivers
- 22% favored flexible work hours to ease peak congestion



Yang, Di, et al. "Bridge the Distance: Surveying a Path Forward Post the Francis Scott Key Bridge Collapse." (2025).

Recommendations

Short-Term Strategies:

- Encourage flexible work hours to spread peak demand
- Use real-time signage and dynamic message boards for rerouting
- Signal timing optimization on local detour corridors
- Deploy temporary traffic control teams during peak hours at key ramps and merges

Mid-Term Recommendations:

- Offer toll discounts for rerouted commuters
- Promote transit use through targeted outreach
- Improve real-time traffic information distribution
- Launch public feedback surveys to refine strategies and ensure reponses reflect equity goals

Acknowledgements

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