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MOBILITY INTELLIGENCE







MOVING MILLIONS

What Major Events Reveal About Transportation Resilience

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What Major Events Reveal About Transportation Resilience

For U.S. host cities and their planning partners, the 2026 World Cup[1] was a stress test of regional mobility systems. Tournament-related travel brought unfamiliar visitors into already complex networks, increasing pressure on transit, roads, curb space, pedestrian routes, rideshare zones, and security operations.

In short, planning for the 2026 World Cup matches was nothing less than an exercise in managing chaos, as clear transportation routes and guidelines needed to be established, implemented, and disseminated widely - not just to the fans and match attendees, but also to the local residents whose daily lives were impacted by the matches.

While outcomes varied across host cities, the lessons learned from this exercise are clear: Cross-sector collaboration and long-term planning were key to the success of these events. And new data-centric planning approaches were vital in helping cities prepare for and respond to major events this summer and going forward. Successful mega-event mobility, therefore, depends on a blend of early planning, strong coordination, people-first operations, clear communication, real-time response, and proactive data.

By adopting and embracing this approach to proactive mobility intelligence, we believe that transportation officials and agencies can turn those lessons about coordination and planning into sharper priorities for safety, resilience, operations, and long-term investment.

Anonymized and aggregated telematics data for our analysis was provided by ***Mapbox***, which used AI-enhanced movement data to capture real-time vehicle behaviors both prior to, during, and after 2026 World Cup matches in seven cities across North America.

[1] *This report is an independent Michelin Mobility Intelligence analysis. Michelin Mobility Intelligence is not affiliated with FIFA or the tournament organizers*

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BACKGROUND

WHAT HOST CITIES ANTICIPATED



Host cities anticipated travel patterns that differed from routine commuting or typical stadium events. Fans would arrive at the venues from airports, hotels, fan zones, transit hubs, and regional corridors over extended windows, then leave in concentrated post-match surges.

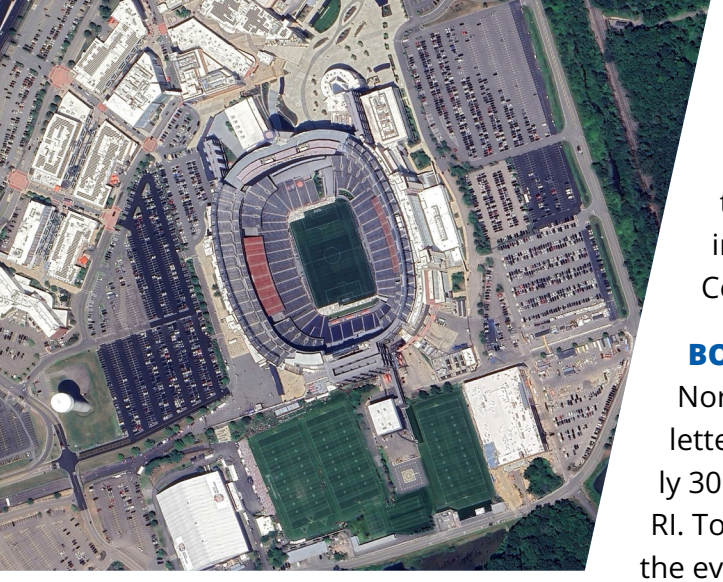
In addition to this cohort, city and event officials also had to plan for ticketed spectators and the wider movement of workers, fan-festival visitors, rideshare users, delivery vehicles, and spontaneous gatherings.

Finally, city and event officials had to consider the impact that hosting mega-events would have on their local residents and communities. From planning for traffic and public transportation delays to messaging about road closures and detours, officials worked to minimize the impact that event traffic had on non-event-related commuting patterns and on daily movement near the stadiums and other visitor-friendly areas of their communities.

Because each host region has its own unique geography and transit access, it's not surprising that a single playbook wouldn't apply everywhere. But according to Brad Miller, National Practice Lead – Traffic Engineering & Intelligent Transportation Systems, Michael Baker International, "It will never be 'one-size-fits-all,' but all these lessons learned can and should be leveraged for future events locally and beyond."

Though local context matters, each region faced similar problems, and uncertainty was a recurring planning challenge: Visitors might be unfamiliar with local roads, transit systems, pedestrian rules, curbside operations, or high-risk crossings. And regardless of how they arrived, spectators at every venue became pedestrians for the final half mile.

ATLANTA, for example, hosted eight games at Atlanta Stadium (aka, Mercedes-Benz Stadium) downtown. As a result, the city's already congested roadways were busier than usual, with officials warning commuters to expect heavy congestion for roughly two hours before and after each



Aerial view of Gillette Stadium in Foxborough, MA

match. Much of this increased traffic occurred along the I-75/I-85 corridor and along major streets leading toward the stadium, including Northside Drive, Centennial Olympic Park Drive, and Marietta Street.

BOSTON, meanwhile, was the "name" city for the Northeast, though matches were actually played at Gillette Stadium in Foxborough, Mass. That is approximately 30 miles from the city - and 25 miles from Providence, RI. To help facilitate commuting between the city and the event venue, the Massachusetts Bay Transportation Authority (MBTA) provided express round-trip train service between Boston's South Station and Foxboro Station for each match, while attendees who drove their own vehicles to the stadium were warned to plan for lengthy travel times due to redirected traffic patterns and general congestion.

KANSAS CITY, for its part, experienced unique transportation challenges as games were held at GEHA Field at Arrowhead Stadium, which required planning and coordination efforts between two separate state departments of transportation and emergency management agencies. Further, both Kansas and Missouri also supplied additional state and local law enforcement, and administrative support. Balancing the specific challenges of this host city demonstrated cooperation at the state and local levels.

Though officials set up temporary bus and shuttle operations between the stadium and local area hotels, delays happened due to a variety of factors, including operational constraints at the stadium itself that created congestion impacting all modes of transportation arriving at the venue[2].

LOS ANGELES, which regularly hosts mega-events and will host the 2028 Summer Olympics, also experienced game-day traffic surges around SoFi Stadium that reportedly lasted up to four hours before and after games played at the venue. According to local news sources, officials suggested that even expected delays were exacerbated by street closures on main arteries surrounding the stadium, including Century Boulevard, Manchester Boulevard, and along the Crenshaw Corridor[3].

[2] Grace Smith, "Some fans describe bus nightmare during World Cup match in Kansas City," KCTV5, June 17, 2026 (https://www.kctv5.com/2026/06/17/some-fans-describe-bus-nightmare-during-world-cup-match-kansas-city/)

[3] Génesis Miranda Miramontes, "Inglewood and Metro respond to complaints over World Cup traffic," NBC Los Angeles, June 19, 2026" (https://www.nbclosangeles.com/news/local/inglewood-residents-complain-about-world-cup-traffic-problems/3906755/)

MAJOR EVENTS: 'THE ULTIMATE GROUP PROJECT'

Major-event mobility is a shared responsibility. Host cities prepared by treating transportation as a live, networked operation rather than a standalone traffic plan. Planning began years in advance and brought together transportation departments (DOTs), transit agencies, public safety, emergency management, stadium operators, event organizers, consultants, law enforcement, EMS, rideshare providers, business groups, and community partners.

> ***"Major events are the ultimate group project; no single agency can police the roads, drive the trains, regulate taxis – it's just impossible,"***
>
> - Declan Weir, Senior Transportation Planner, Stantec.



ATLDOT's Integrated Command Center

ATLANTA, for example, demonstrated the value of building on existing, previously tested systems. The city used stadium-area playbooks, transit partnerships, Georgia Department of Transportation signal coordination, command-center operations, and last-mile wayfinding to support a people-first strategy focused on transit, walking, scooters, bikes, pedestrian protection, ambassadors, alerts, and real-time adjustments.

Once events began, agencies shifted from planning to operations. Command centers, shared camera feeds, traffic-management systems, messaging channels, field teams, signal tools, automated alerts, and incident protocols helped agencies respond to sustained pedestrian surges, rideshare conflicts, and incidents that could create cascading delays.

Looking ahead to future events, we believe any potential host city can benefit from mobility intelligence that makes potential mobility and operational risks more visible before failures occur. A range of technologies and data sources, including mobile device telematics, connected-vehicle and



A MARTA subway train in Altlanta, GA

probe data, harsh braking data, video analytics, LiDAR, camera counts, pedestrian modeling, and drone footage, can support targeted preplanning and help agencies identify areas of elevated risk, curb conflicts, crowding, and operational weak points in near real time.

MANAGING EVENT DEMAND AND BALANCING TRANSPORTATION USER NEEDS

The greatest concerns were places where event demand could overwhelm and exacerbate existing vulnerabilities: pedestrian surge areas, short weaving zones, suburban stadium access chokepoints, crowded transit stations, remote parking and shuttle interfaces, and curbsides shared by rideshare, taxis, shuttles, buses, pedestrians, micromobility, and private vehicles.

Public education is key and can be accomplished by giving residents and visitors advance notice about congestion, pedestrian volumes, travel delays, road closures, and alternate routes. Officials can employ a broad mix of paid, earned, and free media, including public service announcements, social media, radio, local news, message boards, hotel materials, stadium communications, transit signage, and event websites.

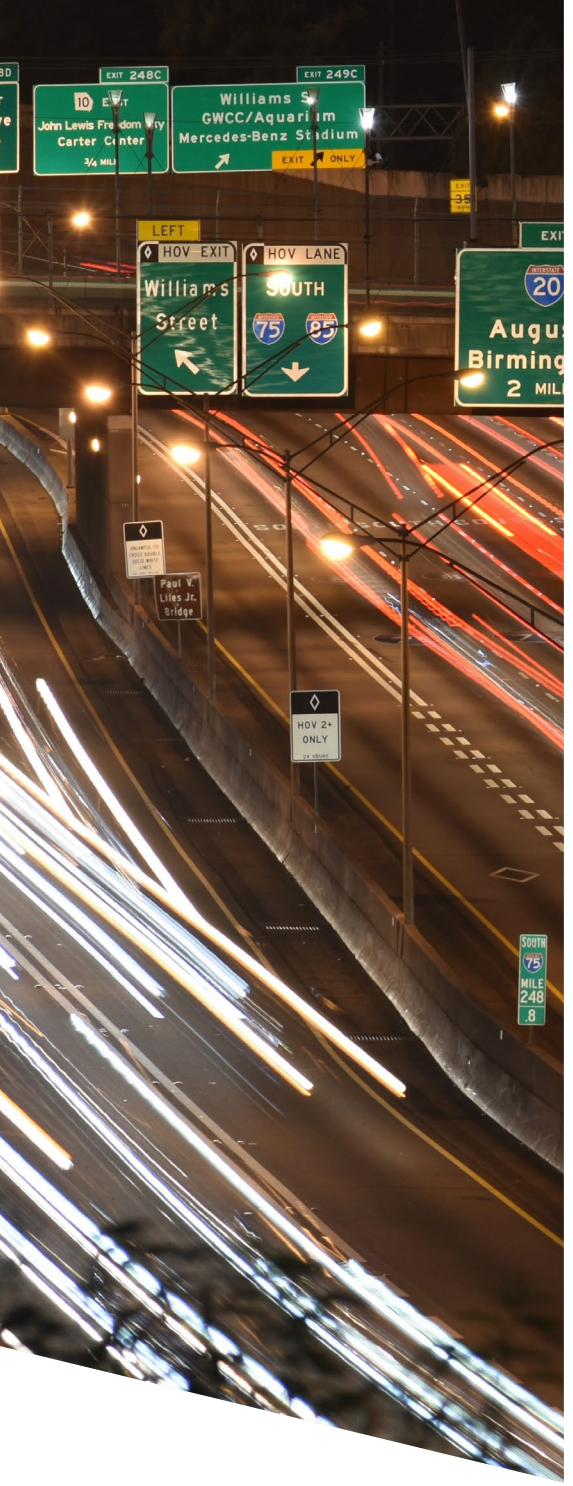
Within the final mile of travel, pedestrian safety stood out as the clearest event-specific risk for every host city during this summer's events. Large crowds moved between stadiums, transit, hotels, bars, fan festivals, parking areas, and rideshare zones, often through unfamiliar or temporarily altered streets.

> ***"There must be a real emphasis on pedestrian safety during these mega events because there are going to be thousands and thousands of people walking to the event. And I think that's where the highway safety offices can really play an important part and help educate through social media and PSAs."***
>
> - Chuck DeWeese, President & CEO, Connecting Clients Consulting LLC, and former Assistant Commissioner, New York State Department of Motor Vehicles

As such, effective plans extended beyond the venue to connector roads, neighborhoods, designated crossings, low-speed areas, hostile-vehicle mitigation, and clear wayfinding.

Behavioral uncertainty added another level of risk. According to some of our subject-matter experts, including Dr. Marsha Anderson-Bomar, President of the American Society of Civil Engineers and Transportation Strategic Advisor for GHD, a global consultancy, unfamiliar drivers were more likely to make sudden decisions, while other visitors may have relied on navigation tools in unexpected ways, causing travelers to shift routes in response to congestion, closures, or delays. These pattern changes could expose weak points that were not obvious from crash history or volume data alone.

Parking, rideshare, and communication presented a related concern. Clear advance messaging, multilingual guidance, transit instructions, parking expectations, rideshare rules, alerts, signs, media outreach, and in-vehicle messaging could help reduce confusion, unsafe drop-offs, unnecessary circulation, and stress-driven decisions.



Downtown Atlanta, GA

In Atlanta, the city updated wayfinding signs, added vinyl signage on signal boxes and other surfaces, and partnered with the Savannah College of Art & Design through the host committee on a simple last-mile wayfinding program, according to Lenor Bromberg, Deputy Commissioner for the Atlanta Department of Transportation's Office of Engineering.

"Atlanta updated outdated signs, added last-mile wayfinding, distributed information through FIFA's app, Citymapper, ATL Direct, Atlanta DOT's Navigate site, social media, printed visitor materials, and text alerts," she said.

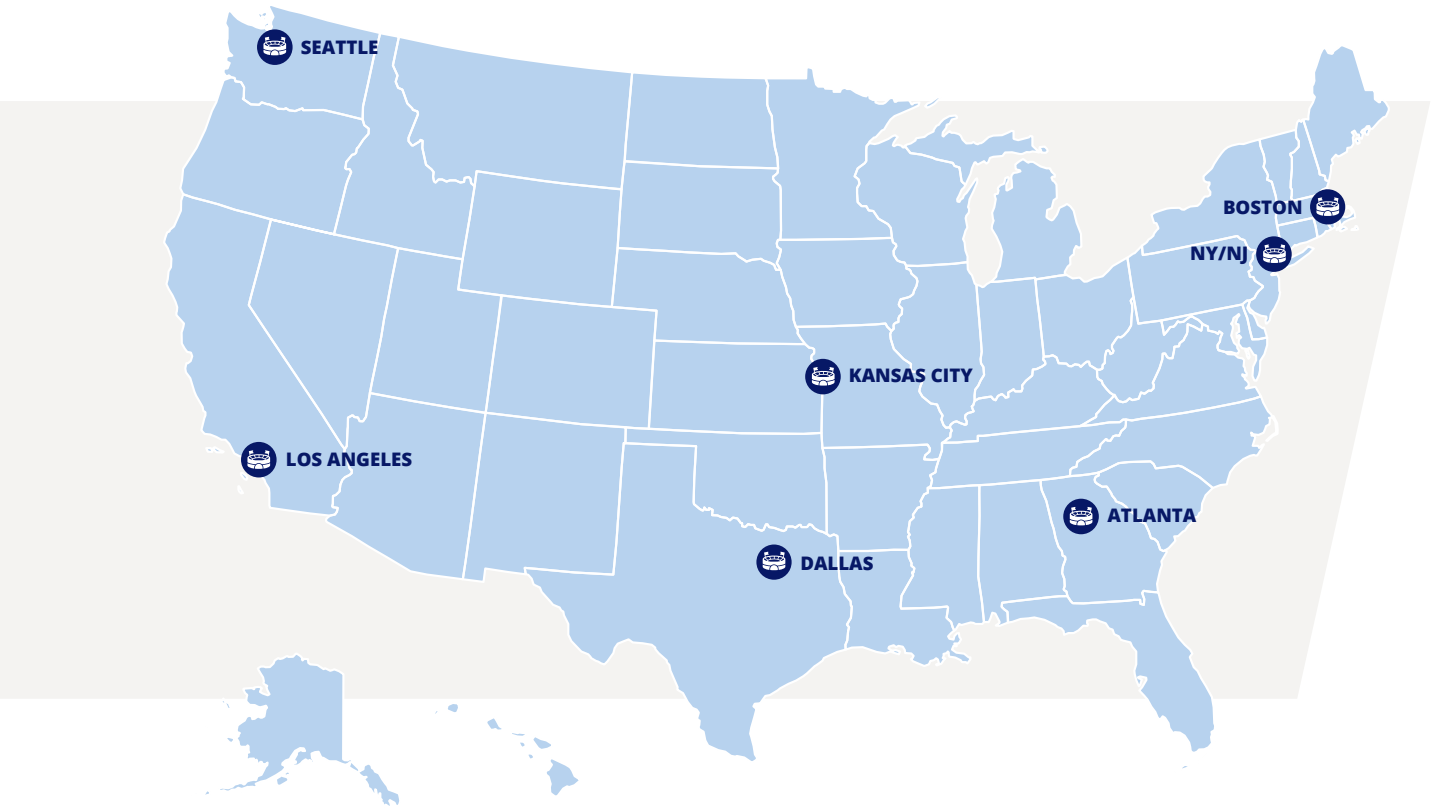
Examining the factors described above, and seeking out the causes of and possible solutions to these problems, Michelin Mobility Intelligence looked at seven host cities to identify mobility challenges and potential planning considerations to help communities better manage future mega-events. Our goal is to help planners run successful future events, by more effectively deploying resources, adjusting signals and closures, refining wayfinding, managing curbs, evaluating mode shifts, identifying risk hot spots, implementing education and communications to the broader public, and conducting faster after-action reviews.

The World Cup was a singular series of temporary events, but its mobility lessons can help communities everywhere to strengthen their daily operations, prepare for future events, and invest in longer-term safety planning.

PART 2

THE STUDY

Michelin Mobility Intelligence research examined how major-event demand affected traffic speeds, harsh-braking activity, recovery conditions, and operational priorities around **SEVEN WORLD CUP HOST MARKETS.**



Our analyses yielded clear conclusions: Risky driving events, such as harsh braking, were highly concentrated near stadiums, particularly within 1 mile, but the severity, timing, recovery path, and geographic spread of traffic impacts varied considerably by city.

Though some findings were unique to each locale, other findings spanned multiple cities and are instructive as broader takeaways for future event planning.

WORLD CUP MOBILITY & SAFETY STUDY METHODOLOGY

Our research was designed around a practical, data-driven framework for understanding how major World Cup activities may affect mobility, congestion, driving behavior, and corridor-level traffic conditions across host markets.

The approach is organized around **four core questions:**

- Where mobility impacts are likely to occur
- When impacts are expected to emerge and recover
- Where congestion and harsh braking-related risks overlap
- How host markets can be compared using a consistent set of mobility and behavior indicators

A full description of Michelin Mobility Intelligence's study methodology is provided in Appendix 1.



MULTICITY FINDINGS

IMPACTS WERE CONCENTRATED CLOSEST TO THE VENUE

Across all seven markets we examined, the strongest combined traffic and harsh-braking effects occurred in the Venue Core, which is defined as the area within 1 mile of the stadium. While not necessarily surprising, the lessons are instructive for future events, as this area represents the highest concentration of pedestrian and vehicular traffic.

The Venue Core Zone Priority Score combines multiple factors observed during the study, including traffic patterns, driving behavior, event-day changes and recovery, and the importance of each zone. Scored on a 0–100 scale, higher scores highlight areas that may warrant greater operational attention relative to other areas evaluated. The scores are not percentages or direct measures of crash risk or congestion.



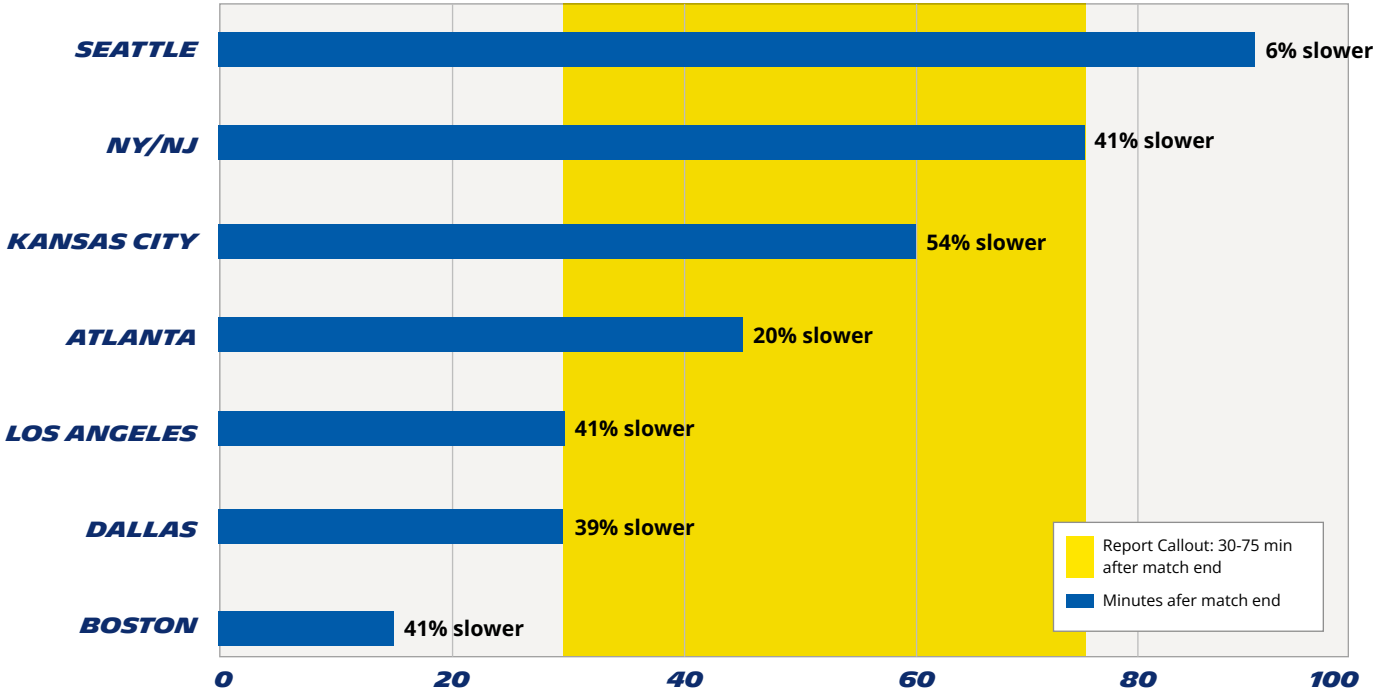
The farther one traveled from high-priority Venue Core Zones in our seven-city sample, the lower the impacts on traffic speeds and harsh-braking activity. As such, impacts in all 1-3-mile Primary Influence Zones were designated as "Medium," and all 3-9-mile Regional Mobility Zones were classified as "Low."

DEPARTURE WAS OFTEN THE MOST CRITICAL OPERATING PERIOD

Five cities in our sample (Boston, Dallas, Los Angeles, Atlanta, and Kansas City) recorded their largest significant traffic-speed reductions during the Departure Surge (the period immediately following an event when large numbers of attendees leave the venue at approximately the same time). Several of these cities also saw sharp increases in harsh braking after a match.

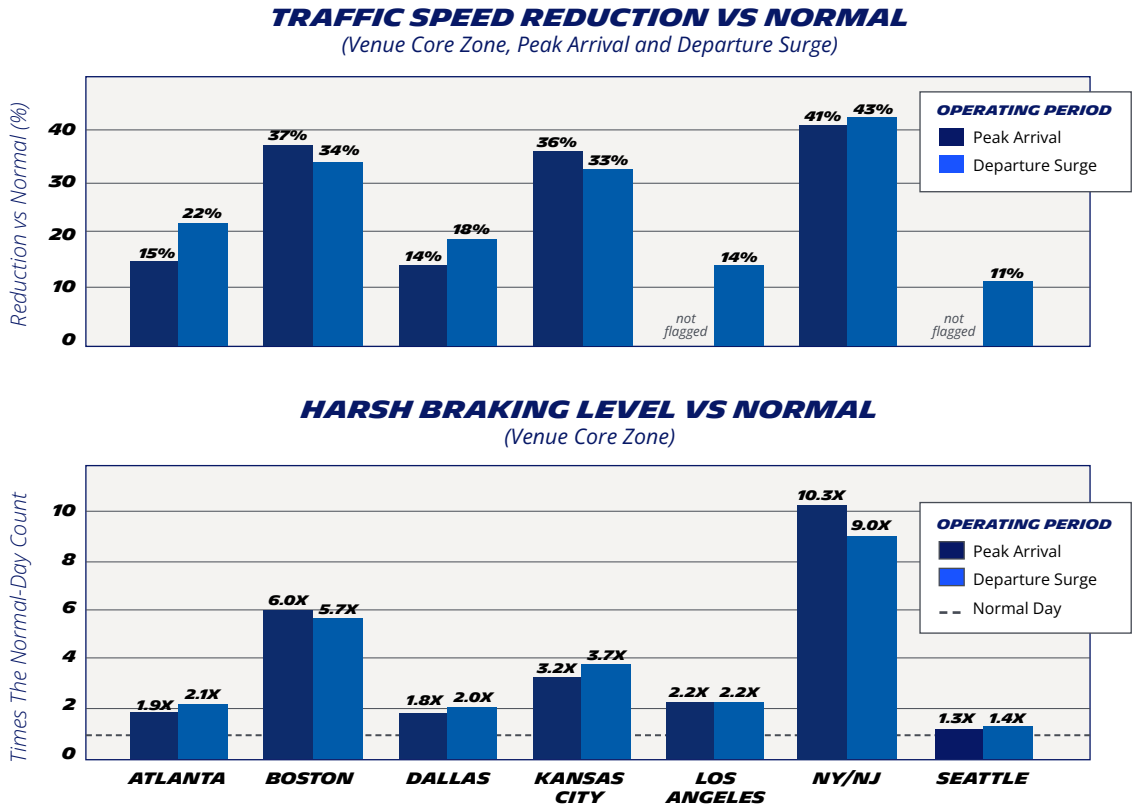
The departure of tens of thousands of eventgoers can be challenging under normal circumstances, but the combined effects of a mass exodus that includes drivers unfamiliar with the area, temporary road closures, and other traffic challenges can intensify post-event congestion.

The largest measured traffic impacts often emerged 30-75 minutes after match end rather than immediately after the final whistle.



This may reflect the timeframe for individuals to exit stadiums en masse and return to their vehicles for stadium departure. Unlike a baseball game, where fans might stagger their exits based on how their team is performing, fans at this summer's events tended to stick around until the final whistle and beyond.

In Atlanta, for example, the city had to adapt when pedestrian volumes remained high for hours rather than clearing in the typical 30-45 minutes after a stadium event. Agencies adjusted street closures, signal timing, communications, and field operations in real time to help pedestrian flow remain smooth and safe long after the events ended.



NOTES:

Peak Arrival: *A fixed operating period, 3 hours before kickoff until kickoff.*
Peak traffic: *"Impact means" refers to the single 15-minute bucket with the largest percentage speed reduction vs baseline, calculated separately for each city and zone.*
Not flagged: *No matching study 1 key finding. A 6.0x braking level means 6 times the normal-day count.*

"We know that people tend to come early, but generally everybody leaves at the same time," said Dr. Anderson-Bomar.

TRAFFIC DISRUPTION AND RISKY DRIVING BEHAVIORS FREQUENTLY CONVERGED

In multiple cities, speed reductions and harsh-braking increases appeared at multiple venues during the same time periods and were especially notable during the Peak Arrival and Departure Surges. This suggests agencies should evaluate both mobility performance and driver behavior rather than relying on congestion measures alone.

It is clear that the period immediately following a major event can create some of the greatest mobility and behavioral pressures. For planning purposes, agencies shouldn't treat the end of an event as the start of the actual departure window.

Instead, officials should start planning to handle potential departure issues as soon as an event begins. By proactively changing traffic patterns and clearly marking and simplifying the routes leading to major thoroughfares while an event is ongoing, officials can greatly reduce backups and unnecessary delays for both event patrons and for those residents who live in neighborhoods surrounding the event venue.

"Planning is definitely something we've spent a lot of time on," said Bromberg, who added that getting an early jump on handling traffic and pedestrian flow around the venue allowed officials to pivot quickly when things didn't go as expected. "We had flexibility that when things went differently than we maybe thought they would," she added.

Similarly, traffic control, incident response, parking operations, enforcement, and real-time monitoring need to remain at full readiness as large numbers of people leave the venue.

"The key to success is planning," echoed Miller, who lauded NJDOT's foresight in launching an ITS Operational Needs Assessment in 2022, well before the New York-New Jersey event.



NJDOT's early planning laid the foundation for a fast-track delivery schedule. "We had four months to complete our final design, and the contractor had only a year to get everything installed and operational. The need was to get the system operational to serve as the eyes for the traffic operations team." Doing so, he said, helped to lessen the impacts that congestion around the venue caused for both attendees and area residents.

Michelin's data shows that even the most comprehensive planning cannot anticipate every condition that may emerge once an event is underway. As congestion grew around event venues, harsh braking incidents increased in the same areas. Examining these variables provides a clear picture of where and when an event is putting the most stress on the transportation system. Our analysis provides officials a potential roadmap of where they should focus to improve future event preparations.

For this summer's events in cities like Atlanta, for example, infrastructure improvements ranged from relatively small changes (e.g., road resurfacing and striping) to longer-term improvement (e.g., improved lighting, new sidewalk installations, and pedestrian and traffic signal upgrades) that were designed to last long after the World Cup matches ended.

Another lesson learned in Atlanta and in other cities in our study is that successful major-event transportation planning relies on modeling how people move between transit stations, parking, event sites, fan zones, sidewalks, and streets.

"Recent sidewalk and street-network improvements in downtown have already made a noticeable difference by giving people more transportation options in Atlanta," Dr. Anderson-Bomar said, adding that the same kind of practical insight can help other cities to guide future decisions about where additional improvements are needed across their networks.

Miller said similar work was done in New Jersey, where NJDOT deployed about $50 million in ITS infrastructure – described as its largest ITS deployment and featured in the April issue of ITE Journal – to support the World Cup while also strengthening future event and day-to-day traffic management in the Meadowlands vicinity.

That planning doesn't end when the event starts, however, as planners must also be able to shift from long-range planning to real-time operations once events begin, using traffic centers, signal timing tools, incident monitoring, emergency coordination, and contingency plans.

In addition to improving traffic flow and reducing commuter stress, Weir noted that good planning also takes pedestrian safety into account, especially in terms of vehicle intrusion risk, pedestrian management, and controlled movement around venues. He summarized the concept clearly, noting that "**good mobility planning supports security, and good security planning supports mobility.** Pedestrian-only areas, hostile vehicle mitigation, low-speed environments, and managed crossing points reduce conflict between people and vehicles."

Clearly, quiet operations can signal effective planning. **"Success should be invisible. If no one knows we exist, we've obviously done a good job,"** he concluded.

RECOVERY VARIED MATERIALLY BY CITY

While getting to the game may be half the fun for many fans, getting out after the event is over is rarely, if ever, the other half.

RECOVERY CONDITIONS VARIED MATERIALLY BY CITY

Venue Core Zone | Recovery Means Sustained degradation below 10%.

CITY	PEAK IMPACT	PEAK TIMING	RECOVERY OUTCOME	TIME FROM PEAK TO RECOVERY
ATLANTA	20% slower	T+3h00	T+5h15	2h 15m
BOSTON	41% slower	T+2h30	T+5h45	3h 15m
DALLAS	39% slower	T+2h45	T+5h45	3h
KANSAS CITY	54% slower	T+3h15	T+5h15	2h
LOS ANGELES	41% slower	T+2h45	T+5h15	2h 30m
NY/NJ	**41% slower**	**T+3h30**	**Not reached within a 6h window**	**Still slower at window end**
SEATTLE	6% slower	T+3h45	Not Applicable: Peak stayed <10%	Not Applicable

Some cities we studied returned to their normal traffic patterns within a normal recovery period of two to three hours after peak disruption. New York-New Jersey was the exception, however, requiring longer recovery periods that extended beyond the end of the six-hour observation period.

While every host city performed differently, one key takeaway that officials should consider for future planning is that recovery should be measured directly rather than in any fixed post-event window.

Similarly, while broad geographic patterns were consistent across markets, each individual event's impact magnitude and spatial reach differed across the board. While this means that different agencies can use similar planning structures to broadly devise their event-planning tactics, individualized plans to tailor staffing, monitoring, traffic control, and intervention intensity are required to maximize the flow of both automobile and pedestrian traffic while limiting disruptions. This is particularly important for pedestrian planning. Major events generate substantial foot traffic as fans move between stadiums, transit stations, rideshare pickup areas, parking facilities, restaurants and entertainment districts. The analysis indicates that elevated traffic disruption often persists for hours after matches end, meaning many pedestrians remain active in and around venue districts while roadway conditions return to normal.



"No matter what mode you come by, you're a pedestrian for the last half a mile to the stadium,"

- Graeme Masterton, Transit Planning Leader &
Lead of Venue and Event Mobility Planning, Stantec

He added that planning for pedestrian safety is as important – if not more so – than for other traffic. Another key is transit investment, which, in turn, supports the fan experience.

"Helping fans arrive by transit combined with good pedestrian access actually helps the stadium give another option for folks over parking to get to and from their venues easily, quickly, and functionally," he added.

Taken together, these findings suggest that venue districts should be treated as safety zones as well as traffic management zones. Recovery planning involves both restoring vehicle flow and ensuring pedestrian infrastructure, transit connections and safety resources remain in place long enough to support the large number of people moving through the area after an event concludes.

PART 3

KEY TAKEAWAYS

EFFECTIVE PLANNING STARTS WITH UNDERSTANDING LOCAL CONDITIONS

Our research demonstrates that major-event mobility impacts are predictable in structure, but can be local in their severity, which means that there is no one-size-fits-all playbook for mobility around major events.

Instead, mobility and traffic safety planners must examine the data from their own area to better understand the real-world ramifications that hosting a mega-event can have on their community, and to help plan for future events.

Leveraging data and community feedback helps planners focus resources, decide which corridors need infrastructure improvements or operational attention, and determine when education or enforcement strategies will be most effective. Community comments are also important but should be contextualized with existing risk indicators, driving behavior, and crash data.



Lumen Field, Seattle, WA

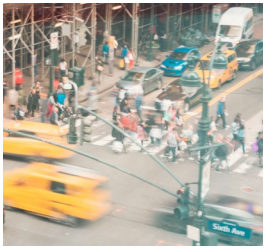
No single data set should (or can) drive planning decisions on its own. Instead, a more complete understanding emerges by combining public input with safety, operational, behavioral and crash-related data to guide targeted network improvements.

Our findings from the seven cities we studied supported three main conclusions that officials everywhere can leverage for future mobility planning, improving infrastructure, and advancing stronger education and enforcement.

LEVERAGING DATA FOR FUTURE MOBILITY PLANNING

One main value of this research is that it turns event mobility management from a broad, reactive exercise into a more targeted, evidence-based process. Instead of assuming a whole region will be

equally affected, agencies can use traffic speed, harsh-braking, timing, recovery, and corridor-level data to identify where, when, and how intensely to intervene. In the real world this translates to a five-point plan.



USE A TIERED OPERATING FOOTPRINT

The data we collected this summer consistently shows the highest priority area to address lie within one mile of the venue while medium priority issues exist in the 1-3-mile zone, and lower priority issues lie farther out. While not completely unexpected, the lesson is clear for planners: Focus resources where they are needed the most.

Our analysis revealed that in cities such as New York, Los Angeles, and Kansas City, some of the highest-priority streets were not directly adjacent to event venues. As a result, early planning efforts should extend beyond the venue area to include feeder corridors, ramps, intersections, curbside zones, and parking access routes where infrastructure needs may also emerge.

This was particularly true in New York-New Jersey, which had the most severe immediate venue impact. Los Angeles, on the other hand, showed the widest spatial spread into the 1-3-mile zone.



PLAN FOR DEPARTURE AS A PEAK OPERATING PERIOD

Departures were more difficult than arrivals. In many cities, the worst traffic occurred after the match ended, sometimes 30-75 minutes later.

The reasons for this are myriad, potentially ranging from attendees lingering at the venue after the event to congestion issues due to bottlenecks caused by limited departure options and routes to major thoroughfares surrounding the venue. As such, officials should consider designing future events to speed recovery from an event, rather than just ensuring that attendees can easily get to the venue.

In short, officials should ensure that infrastructure and post-event traffic operations support staged departures, post-event circulation, and sustained traffic monitoring.

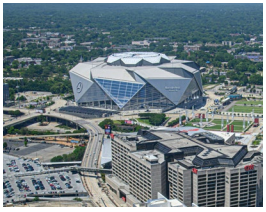


MEASURE POST-EVENT RECOVERY

Recovery, not surprisingly, varied by city due to a variety of factors in each host city. Recovery, therefore, must be taken on a case-by-case basis. For example, the most difficult recovery period was clocked in New York-New Jersey, where data showed the region hadn't fully recovered within the six-hour observation window.

While congestion alone doesn't always reveal operational stress, reviewing mobility and behavioral signals in real time following an event helps to paint a clearer picture of what's actually happening as attendees are leaving a venue.

Kansas City is a strong example of a host city where harsh-braking data exposed risk that speed data alone missed.



IMPROVE INFRASTRUCTURE

Our research suggests that infrastructure planning can benefit from examining where repeated operational stress appears – such as specific venue-adjacent bottlenecks, access routes, and corridors. In doing so, agencies can validate existing plans, identify potential gaps and inform infrastructure improvements for future events. Specifically, we emphasize that planners should prioritize the Venue Core – the 1-mile area around venues where the strongest combined impacts appeared across every city.

One method to achieve this is to use corridor-level findings to help identify areas for future infrastructure investment. This type of street-level analysis can help identify candidates for signal improvements, temporary traffic-control plans, curb-management changes, wayfinding, pedestrian separation, parking ingress/egress redesign, or transit-priority treatments.



ADVANCE STRONGER EDUCATION FOR EVENT ATTENDEES AND LOCAL RESIDENTS

While improving the physical infrastructure leading to and from event venues is critical, it is only part of the puzzle that officials need to solve when planning for future mega-events. Equally important, we believe, is properly educating both attendees and area residents of potential detours, delays, and transit changes that could impact their travel to and from the venue, or to and from their homes.

Specifically, we note that education efforts should be targeted to peak arrival and departure surge times, as these are periods when the greatest amount of traffic will be heading to and from a venue.

These periods repeatedly showed elevated harsh-braking activity across all the cities studied, with the strongest behavioral signals appearing within one mile of venues, even after normalizing for roadway miles and time.

As part of this effort, officials should work to tailor their messaging to focus on navigation issues, early arrival options, lane choices, parking access, and pedestrian awareness.

"In Atlanta, we wanted to make sure that things were well lit. We wanted to make sure that we had ADA ramps and accessible sidewalks," said Bromberg. "Pedestrian traffic … as safely as we could continue to move them, that was really key for us," she added.

Similarly, departure messaging should focus on patience, route choice, queueing, and avoiding sudden stops.

"Communications are very critical, and it's not communication once you get there, it's communication in advance about what to expect,"

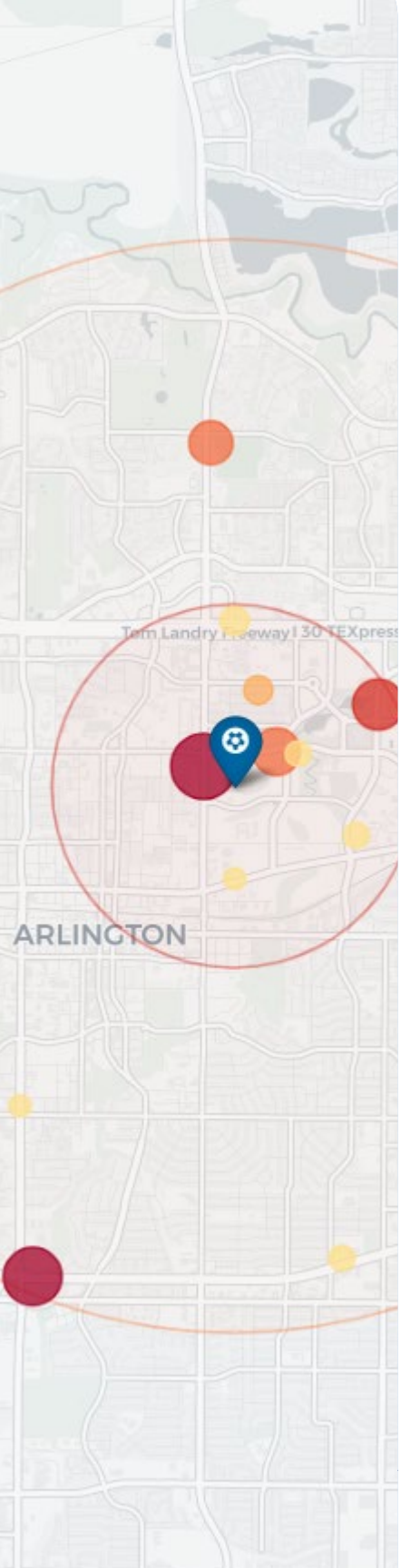
- Dr. Anderson-Bomar

DeWeese echoed this sentiment, adding "The more information you give people, the less stressed out they're going to be and the more in control of their behavior."

Further, our study identifies operational and behavioral stress signals that occur before and after an event and does not focus on crash prediction. Education/enforcement strategies should be framed around reducing conflict, smoothing flows, and improving driver expectations.

To this end, we suggest that officials use their data to identify areas where mobility and behavioral risks overlap, and implement appropriate enforcement operations to help cut down on unnecessary incidents. Locations with both major speed reductions and high harsh-braking increases should receive greater attention than locations with congestion alone.

CONCLUSION



THE BOTTOM LINE

The analysis shows that major-event mobility impacts follow a recognizable pattern, but their intensity, timing, and geographic reach vary by host city, venue setting, and event phase.

Across the data, the clearest lesson is that successful planning depends on using evidence at a precise scale: concentrating resources within the highest-impact venue core, monitoring feeder corridors and recovery periods, and pairing mobility data with behavioral indicators such as harsh braking.

These findings point to a practical planning framework rather than a fixed playbook, one that can help agencies decide where infrastructure improvements are warranted, when operations should be intensified, and how education and enforcement can be targeted to the moments of greatest stress.

Looking ahead, this approach can help future host cities move from event-by-event reaction to proactive mobility management. By building city-specific profiles before an event, setting tiered response zones, planning for event departure as a peak operating period, and measuring recovery in real time, planners can better anticipate pressure points and adapt as conditions change.

For future events, the opportunity is to turn mobility intelligence into a repeatable cycle of planning, monitoring, adjustment, and post-event learning. This can improve traffic performance, safety, communication, and the overall experience for residents, visitors, and event attendees.

APPENDIX 1

STUDY METHODOLOGY

Our methodology was designed to be defensible, transparent, and actionable for public agencies and transportation partners. Rather than relying on complex predictive modeling, we used available traffic data, event schedules, venue locations, corridor definitions, and harsh-braking event data to produce outputs that can directly support monitoring, operations planning, and post-event evaluation.

Harsh-braking events are used in this study as indicators of driving behavior and potential operational stress. They do not establish that a collision occurred, determine the cause of any event, predict crashes, or independently measure overall roadway safety.

Raw data for our analysis was provided by Mapbox, which used AI-enhanced movement data to capture real-time vehicle behaviors both prior to, during, and after 2026 World Cup matches in seven cities across North America. This data enabled Michelin to identify dangerous locations and patterns, such as harsh braking zones, wrong-way driving, collision-prone road corridors and intersections, and areas where road conditions contribute to unsafe behavior.

Michelin Mobility Intelligence used the results of its analysis to develop insights designed to help transport authorities prioritize infrastructure improvements to improve both pedestrian and vehicular traffic flow around future mega-events.

ANALYTICAL FRAMEWORK

The study uses a corridor-based framework to identify where match-day congestion was most likely to occur.

It then tracked traffic from arrivals through recovery and combines congestion, harsh braking, and exposure-normalized risk to highlight priority corridors and support agency decisions.

Exposure-normalized risk compares harsh-braking activity across areas of different sizes and observation periods. That data is used to calculate the number of events per mile of roadway per hour to make comparisons more consistent.

“Risk” does not mean the probability of a crash. Harsh braking is used as a behavioral safety indicator that may identify locations and times where drivers are experiencing more abrupt or potentially challenging driving conditions.

Event windows were compared with matched non-event periods by day and time. A 12-hour profile captured arrivals, match conditions, departures, and recovery using speed, travel time, peak impact, and recovery metrics.

Driving behavior analysis mapped harsh braking hotspots by corridor, venue area, and time period, distinguishing persistent, emerging, event-sensitive, and venue-access patterns.

DECISION-SUPPORT VALUE

Our methodology converted traffic, event, and behavior data into actionable information on where to focus monitoring, mitigation, and resources.

Risk analyses identified where congestion and unstable driving behavior overlap, helping agencies identify areas for further evaluation and potential intervention. The corridor scorecard classified locations as High, Medium, or Low Priority based on congestion, travel time, harsh braking, recovery, and stadium access, linking results to potential actions such as monitoring, traffic management, traveler information, enforcement, and other operational or safety measures.

CROSS-MARKET APPLICABILITY

Consistent indicators allow host markets to compare mobility impacts, possible safety risks, and operational complexity across host markets without evaluating cities as better or worse.

Overall, the framework can support pre-event planning and post-event evaluation through clear, repeatable mobility and behavior-related metrics.

SUBJECT-MATTER EXPERT INTERVIEWS

As part of our research, we interviewed subject-matter experts to help align our research data with real-world applications and events. These experts represent a cross-section of public-sector transportation leadership, private-sector engineering and consulting, transit and mobility planning, highway safety, intelligent transportation systems, and major-event operations. Their roles span city transportation engineering, state DOT mobility management, transit planning, traffic engineering, ITS deployment, safety policy, event logistics, and consulting support for large-scale venues and international sporting events.



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APPENDIX 2

KEY FINDINGS BY CITY

CITY	KEY FINDINGS
NY/NJ	Highest overall impact profile. The Venue Core had the highest combined priority score (98.8), severe speed reductions during Peak Arrival and Departure Surge, very large harsh-braking increases, and recovery had not returned within the threshold by T+6.
BOSTON	High-impact market with strong near-venue and surrounding-area effects. Boston had the second-highest Venue Core score (94.3), a 41% maximum Venue Core slowdown, slow recovery from peak disruption, and relatively strong 1–3-mile impacts.
KANSAS CITY	Important behavioral-risk case. Although the initial traffic-speed analysis did not identify significant speed impacts, Kansas City had a very high Venue Core combined score (93.2), a 54% maximum Venue Core slowdown in the higher-resolution timeline, and substantial harsh-braking increases during Departure Surge.
LOS ANGELES	Most notable for geographic spread. Los Angeles was the only city where significant traffic degradation extended beyond one mile in the earlier analyses and had the highest Primary Influence Zone score (58.9), indicating that operational attention should extend into the surrounding network.
ATLANTA	Moderate but persistent near-venue impact. Atlanta showed clear overlap between reduced speeds and increased harsh braking during Departure Surge, a high Venue Core score (86.3), and evidence that harsh braking remained elevated during Recovery.
DALLAS	Strong near-venue focus with post-event traffic degradation. Dallas had a high Venue Core score (84.8), a 39% maximum Venue Core slowdown at T+2h45, recovery within the observation window, and a notable pre-match harsh-braking increase during Early Arrival.
SEATTLE	Lowest overall magnitude among the seven cities, but still followed the same geographic pattern. Seattle's Venue Core score was the lowest of the high-priority group (69.0), traffic-speed effects were limited, but harsh-braking activity still increased during several event periods.

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