PREPARED FOR PUBLIC REVIEW BY COOK COUNTY RESIDENTS AND STAKEHOLDERS

The Proposed Chicago Bears Stadium at Arlington Park

An Independent Traffic and Siting Analysis with Methodology

The Chicago Bears have proposed building a 60,000-seat fixed-roof NFL stadium on the 326-acre former Arlington Park parcel in Arlington Heights. Their own traffic study has not been made public. This document is a parallel, public-data-only analysis covering what the project would mean for traffic, what residents and local officials should ask for, and how the analysis was done. The findings are in the body; the methodology is in the appendix. The document is intended to give residents, neighboring municipalities, the State of Illinois, and any interested party a baseline against which the Bears' eventual study can be compared.

PREPARED BY	Bommarito Consulting LLC
SITE	Former Arlington Park, Arlington Heights, IL · Cook County
SUBJECT	Proposed Chicago Bears stadium and mixed-use development
BUILD YEAR EVALUATED	2028 (the Bears' publicly stated stadium opening; the same methodology re-runs against any other build year)
COMPANION DOCUMENTS	Methodology and findings consolidated in this single document

A formal Reliance and Disclaimer follows on page 2. Both the executive summary (resident-facing and general) and the full body of findings precede the methodology and data-source appendices.

Reliance and Disclaimer

This document is a desk study based on publicly available data. It applies standard public-domain transportation-analysis methodologies — the Institute of Transportation Engineers' *Trip Generation Manual*, the Transportation Research Board *Highway Capacity Manual*, the Federal Highway Administration's travel-model validation guidance, and the American Association of State Highway and Transportation Officials' *Highway Safety Manual* — to publicly accessible datasets. The application of these methods to these data is fully reproducible from the same public sources.

Nothing in this document constitutes engineering design, professional engineering certification, legal advice, or a stamped Traffic Impact Analysis. The document is intended for public review and informational use only.

Readers contemplating any specific action — a permit application, a public comment, a vote on the Illinois Megaprojects Bill, a legislative position, a procurement decision — should consult their own professional advisors. This document is not a substitute for that consultation.

Bommarito Consulting LLC has no contractual, financial, or advisory relationship with the Chicago Bears organization, Kimley-Horn, any current or prior landowner of the Arlington Park parcel, the Village of Arlington Heights, the State of Illinois, or any party formally opposing or supporting the stadium project. **This report was prepared at the firm's own expense, without commission, contract, retainer, or grant from any client, sponsor, or interested party.**

The findings reported here are derived from the public data identified in Appendix C. Where the public data is insufficient to complete a step of the analysis — as in the case of the project-model GEH validation discussed in the body — that limitation is identified explicitly and is not papered over.

The methodology applied in this document is well-established in the transportation literature; the choices made within that methodology — which peer-NFL document anchors the trip-generation calibration, which mode-share scenarios bracket the policy range, which scoping conventions define the corridor and intersection sets — are documented in detail in Appendix A and Appendix B. A reader who wishes to challenge or extend the analysis can re-run it against the same public sources using the data-source citations in Appendix C.

For Residents and Local Officials

A short summary for Arlington Heights, Palatine, Rolling Meadows, and Schaumburg

On a typical Sunday game day, the proposed Bears stadium would put approximately **16,000 additional vehicles arriving in the neighborhoods around Arlington Park** between roughly 11:00 AM and 1:00 PM, with another 16,000 leaving between roughly 4:30 PM and 6:30 PM — for a round-trip total of about 32,000 vehicle trips per game day on a suburban road network that was not built for stadium-event loads.

The most important finding for residents is not the total vehicle count. It is that **112 individual road links — all on local residential streets, not on arterials — are projected to run over capacity on game days in every mode-share scenario tested**, including the most-favorable case in which Metra runs full surge service and one in three attendees takes the train. The named local streets that carry this load are **Meacham Road, Euclid Avenue, Northwest Highway, Wilke Road, and Campbell Street**. Arterial improvements alone — signal timing on Algonquin or channelization on Route 53 — will not fix this.

FOR YOUR STREET

Look at the maps in this report

Five named streets

If you live on or near Meacham, Euclid, Northwest Highway, Wilke, or Campbell, those streets are projected to carry the residential spillover under every scenario tested. The full per-link breakdown is in Appendix F.

FOR METRA RIDERSHIP CLAIMS

What to ask for

Binding service commitment

If the Bears, Kimley-Horn, or the State claim a meaningful Metra mode share, ask for the specific train count, the binding agreement, the platform-capacity work, and who pays the operating cost. None of these are in the current public record.

FOR ALGONQUIN AND ROUTE 53

Three independent measures

Both worst on every axis

Algonquin Road carries the most homes within 500 feet (9,031 addresses). Illinois 53 carries the most crashes (4,964 in 2022–2024) and the most flood-hazard exposure. Both are also the most heavily loaded by Bears event traffic in the model.

FOR LOWER-EQUITY NEIGHBORHOODS

Disproportionate impact

30.6% vs 20.4%

30.6% of intersections on the named impact corridors fall in the lowest Cook County Digital Equity Score quartile, versus 20.4% across the wider study area. Algonquin sits at 76% Q1; Illinois 53 at 57% Q1.

What residents and local officials can ask for. The five recommendations in Chapter 9 are written so that any village trustee, township board member, or state legislator can adopt them directly. They include: public release of the Bears' Kimley-Horn traffic study *before* a final state vote on the Megaprojects Bill; a publicly-binding Metra surge commitment if any transit-mode claim is to be relied on; explicit local-street mitigation on the five named streets above; a Title VI / Environmental Justice review given the equity concentration; and a corridor-by-corridor comparison protocol for the Bears' eventual study against the per-corridor table in Appendix G.

The next two pages give the general executive summary intended for legislators, journalists, and independent reviewers. After that, the full report begins with three short framing chapters, then the five findings in detail, then the recommendations, then the methodology and data-source appendices.

Executive Summary

The proposed Bears stadium at Arlington Park, if built as currently described, would generate roughly **32,000 round-trip vehicle trips on a typical Sunday game day** (high-low range across four mode-share scenarios: 13,000 to 44,500) on the suburban road network around Arlington Heights. The full analysis identifies five findings that residents, neighboring municipalities, and the State of Illinois should weigh.

FINDING 1

Where the 32,000 vehicles go

16,000 arriving, 16,000 leaving

84 individual roads at the edge of the three-mile ring funnel inbound traffic to the stadium; the top five carry 29% of all Bears vehicle trips by themselves. Distribution is heavily northbound on Route 53 and eastbound on Algonquin, reflecting where roughly 85% of regional traffic enters the study area from.

FINDING 2

Algonquin and Illinois 53

Worst on every axis

Algonquin has the most homes within 500 feet (9,031 addresses). Illinois 53 has the most crashes (4,964 in 2022–2024) and most flood overlap. Both are also the top corridors in the event-day model: Route 53 northbound runs over capacity; Algonquin runs at borderline failing service.

FINDING 3

112 robust local-street bottlenecks

No mode share fixes them

Meacham, Euclid, Northwest Highway, Wilke, and Campbell are projected to run over capacity *in every scenario tested*, including a case in which Metra runs full surge service and 30% of attendees take the train. Arterial fixes alone will not resolve this.

FINDING 4

Metra UP-NW surge service

Not committed publicly

The Sunday UP-NW timetable runs about 10 trains per direction. No public commitment from Metra, the RTA, or the State exists for stadium-event surge service. The Bears' shown plans add 43 commuter parking spaces, not service.

FINDING 5

Equity concentration

30.6% in Q1 vs. 20.4%

30.6% of intersections on the named impact corridors fall in the lowest Cook County Digital Equity Score quartile, vs. 20.4% baseline. Algonquin (76% Q1) and Illinois 53 (57% Q1) carry the worst combination of physical impact and equity concentration.

WHAT TO ASK FOR

Five recommendations

Itemized in Chapter 9

Public release of the Bears' Kimley-Horn study before final state action; binding Metra surge commitment; explicit local-street mitigation on the five named streets; Title VI / EJ review; corridor-by-corridor comparison against Appendix G.

What this report is not. It is not a Kimley-Horn-style stamped Traffic Impact Analysis. It does not design road improvements, recommend signal timings, or quantify construction costs. It does not analyze the Hammond, Indiana alternative site. It does not take a position on the Megaprojects Bill itself. It is offered as a parallel public-data baseline against which any other analysis can be compared.

How to read this document. The body of the report (Chapters 1–12) is intended to be readable end-to-end by a non-engineer. Standard transportation-engineering terms are translated into plain English on first use and listed in the glossary at the back. The methodology — the actual formulas, the data-source-by-data-source citations, the per-link tables, the equilibrium-convergence math — is in the appendix. A reader who wants only the bottom line can stop at Chapter 9 (Recommendations); a reader who wants to challenge the methodology should start with Appendix A.

Contents

1 Why an independent analysis

The Chicago Bears organization has proposed building a 60,000-seat fixed-roof NFL stadium and adjacent mixed-use development on the 326-acre former Arlington International Racecourse parcel in Arlington Heights, Cook County. The Bears commissioned a traffic study from Kimley-Horn, the same firm that prepared the publicly available Allegiant Stadium (Las Vegas Raiders) traffic plan in 2021.

The Kimley-Horn study has not been made public. Neighboring municipalities — Palatine, Rolling Meadows, Schaumburg — have publicly demanded it, and several have retained their own independent reviewers. The State of Illinois is in the middle of legislative action on a "Megaprojects Bill" that establishes a negotiated payment-in-lieu-of-taxes structure for the parcel; the House passed it in April 2026 and the Senate must act before May 31, 2026 for the 60% threshold to apply.

This is a familiar pattern in major-project siting decisions: the project sponsor's traffic study arrives late in the process, often shortly before a binding state or local decision, and contains non-trivial methodological choices that affect every downstream number. By the time the sponsor's study is released, neither the time nor the open data needed to build an independent baseline are readily available.

This report addresses that gap. It assembles a parallel traffic and siting analysis using only publicly available data, so that when the Bears' study is eventually released, every empirical claim in it has a public-data counterpart to compare against, corridor by corridor.

The point is not to "debunk" anyone — the Bears' study has not been released yet. The point is to make a public-data analysis transparent enough that any reviewer can audit each modeling step against the public sources cited; any independent reviewer can adopt all or parts of the methodology (it uses no proprietary software); and any reader can identify the points where the analysis is weak and propose a stronger version. A public-data methodology that other people can use to second-guess the project sponsor is, in the long run, a more durable accountability mechanism than any single set of findings.

2 What "traffic impact" means here

"Traffic impact" is not a single quantity. A complete analysis answers several distinct questions:

1. **How many additional vehicle trips** will the project generate, and at what times?
2. **Where do those trips go** on the network of streets, arterials, and freeways?
3. **What is the resulting service level** (delay, queue, level of service) on each road segment and intersection?
4. **What is the safety effect** (crash count, crash type composition) on the same roads?
5. **Who is affected** — which neighborhoods, which income / equity groups, which sensitive land uses?

A complete Traffic Impact Analysis prepared by a licensed engineer addresses all five and produces specific recommended improvements (signal retimings, geometric upgrades, etc.). A public-data desk study like this one cannot make stamped engineering recommendations, but it can answer the underlying empirical questions 1, 2, 4, and 5 in a defensible, reproducible way. Question 3 (intersection-level Level of Service) requires per-intersection turning-movement counts and signal-timing plans that are not in the public layer; the analysis substitutes link-level volume-to-capacity ratios as the strongest defensible alternative on public-only data.

> **WHY PUBLIC DATA ONLY**
>
> This analysis uses only data that any reader can access — no FOIA requests, no commercial subscriptions, no proprietary travel-data products, no non-disclosure agreements. The discipline has a real cost (intersection signal timings, peer-NFL event counts, and commercial origin-destination data are unavailable), but it has a more valuable benefit: every input is reproducible from its public source. Any reviewer can re-pull the same data with the provenance information in Appendix C, re-run the analysis, and verify or refute the findings. This is the foundational property that lets the document stand as an independent accountability baseline.

3 The site, the three rings, and the six corridors

The site is the former Arlington International Racecourse parcel (326 acres) in Arlington Heights, Cook County, bordered by Algonquin Road to the north, Wilke Road to the east, Northwest Highway (US-14) to the south, and the Union Pacific Northwest Metra line to the west. Horse racing operations closed in September 2021. The Bears' publicly disclosed program includes a fixed-roof dome of 60,000–65,000 seats and adjacent mixed-use development (residential, retail, hotel) on the remaining acreage.

Three nested study rings

The analysis examines three nested rings around the site:

- A **half-mile inner ring** — the scope for curbside, parking, and pedestrian-conflict questions.
- A **three-mile arterial ring** — the primary scope of this analysis. Captures the named arterial corridors (Algonquin, Illinois 53, Palatine, Kirchoff, Euclid, Northwest Highway) and the residential streets that branch off them.
- A **ten-mile regional ring** — captures the freeway and tollway access points (I-90, Route 53, I-290) that funnel attendees from the broader metropolitan area.

The three-mile ring is the analytical workhorse. It is large enough to contain every named arterial that connects the stadium to the broader network, and it is the standard primary-access boundary that the Institute of Transportation Engineers recommends for large generators (Recommended Practice, "Transportation Impact Analyses for Site Development," 2010). Why these three radii and not others is documented in Appendix A.

Six named corridors

The six named corridors — Algonquin Road, Illinois 53, Palatine Road, Kirchoff Road, Euclid Avenue, Northwest Highway — are not chosen by the analyst. They are chosen by the geometry of the existing road network: they are all of the arterials that cross the three-mile ring and connect the parcel to the broader suburban network. The choice is algorithmic, not editorial.

Figure 1: The three nested study rings around the Arlington Park site. The half-mile inner ring (orange) is for curbside questions; the three-mile arterial ring (dashed green) is the primary focus; the ten-mile regional ring (light grey) sets the scope for regional background traffic.

For intersection-level work, the analysis selects 3,011 individual intersections within the three-mile ring using the criteria the Institute of Transportation Engineers recommends and the Illinois Department of Transportation uses for its Bureau of Design and Environment Manual, Chapter 36: the junction of two named arterials, of an arterial and a collector, or of an arterial and a high-volume residential connector. Running the same selection on the same Cook County streets layer produces the same 3,011 intersections.

Why 2028 as the build year

The Bears have publicly stated a 2028 stadium opening. The analysis adopts 2028 as the build year. Background traffic — the daily volume that would exist on the network in 2028 even without the stadium — is interpolated from the Chicago Metropolitan Agency for Planning's regional travel-demand model, which publishes scenario snapshots for 2019, 2025, 2030, 2035, 2040, and 2050. The 2028 build year sits between the 2025 and 2030 snapshots, and the analysis interpolates linearly between them for the no-stadium baseline.

4 Where the 32,000 vehicles come from and where they go

FINDING

For a typical Sunday-afternoon game with 60,000 attendees, an average of three people per car, and a moderate Metra mode share (15%), the model places approximately **16,000 vehicles arriving in the neighborhoods around Arlington Park** between roughly 11:00 AM and 1:00 PM, and another 16,000 leaving between 4:30 PM and 6:30 PM. The full plausible range, across four mode-share scenarios, is 13,000 (a high-transit case where Metra runs full surge service) to 44,500 (a high-drive case with no surge committed). 84 individual roads at the edge of the three-mile ring funnel inbound traffic to the stadium; **the top five of those 84 roads carry 29% of all Bears vehicle trips by themselves**.

This is the magnitude finding. Every other finding in this report is a consequence of it.

The 32,000 number, broken down

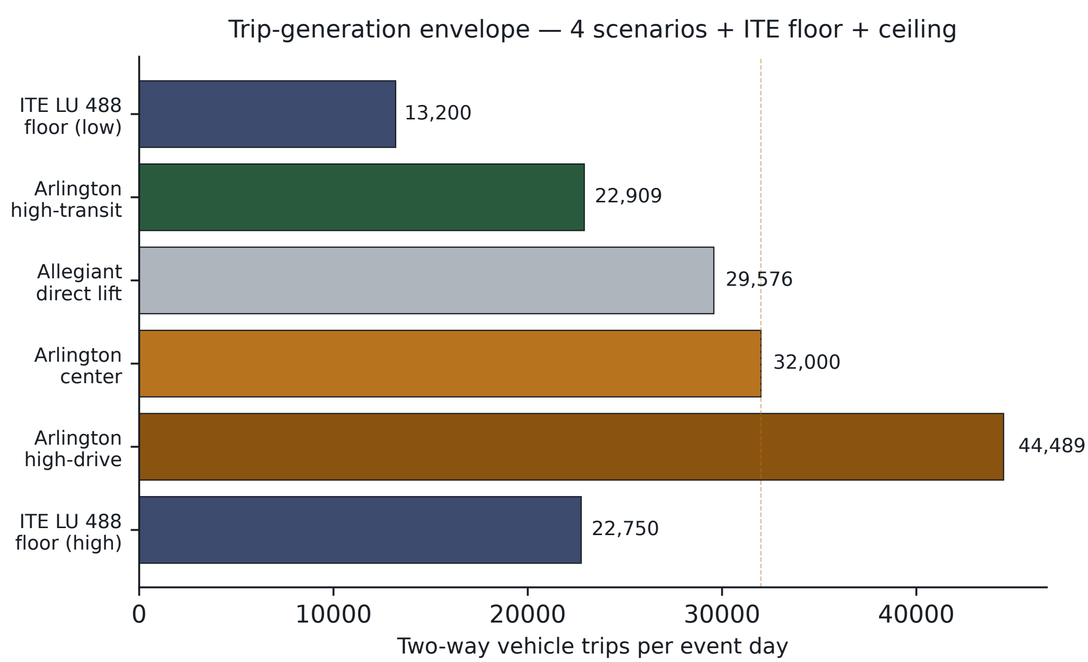


Figure 2: Total event-day vehicle trips across the four mode-share scenarios, with the Institute of Transportation Engineers LU 488 stadium-event reference floor and ceiling shown for comparison. The center estimate (32,000 round-trip vehicle trips per game day) is the dashed line.

The center estimate (32,000 two-way vehicle trips) is the recommended single number for stakeholders who need a point estimate. The four-scenario envelope (13,000 to 44,500) is the recommended representation for any sensitivity-conscious audience. Each scenario is constructed to surface a specific policy question, not as a generic high-low bracket; the scenarios are explained in Chapter 6 and detailed in Appendix B.

Why the envelope is so wide. The $13{,}000$–$44{,}500$ range is wide for two distinct reasons. First, policy uncertainty:

the high-transit case requires a Metra surge-service commitment that does not currently exist; the high-drive case assumes no such commitment. Second, *calibration uncertainty*: the only public peer-NFL document with the quantitative content needed to anchor trip-generation rates is the 2021 Allegiant Stadium plan — $n = 1$, and a Las Vegas Resort Corridor venue that is structurally different from suburban Cook County. A wider peer-NFL corpus (which would require non-Illinois state-agency records requests) would narrow the envelope; the current envelope width reflects what the public data can defensibly support. This limitation is identified explicitly in Chapter 11 and Appendix A.1.

Which roads they enter on

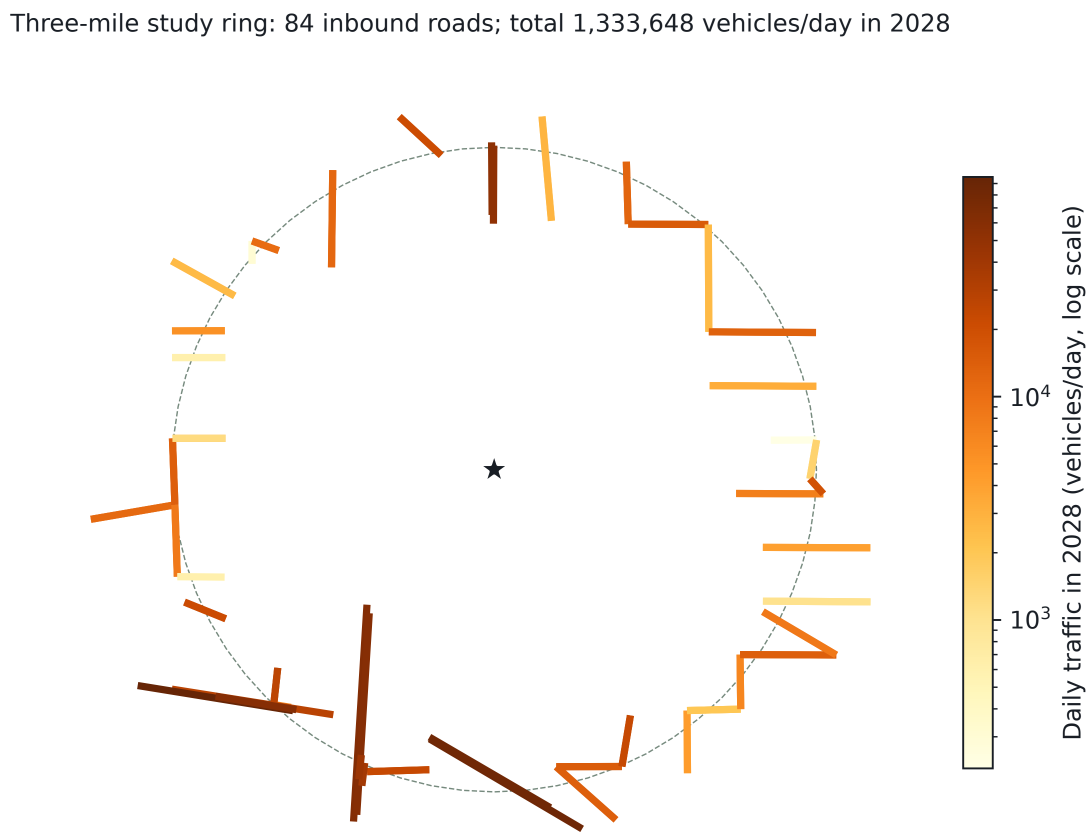


Figure 3: The 84 roads where regional traffic crosses into the three-mile study ring, colored by their forecast 2028 daily volume. Total daily inbound volume across all 84 roads: 1.33 million vehicles per day. Bears traffic distributes across these 84 roads proportional to existing volume.

The geometry is asymmetric. Roughly 85% of regional traffic enters the three-mile ring from the south or east, reflecting the density of suburban-to-Chicago commute flow on I-90, Route 53, and Algonquin Road. As a result, Bears event vehicles also enter predominantly from the south and east, and they travel northbound on Route 53 and eastbound on Algonquin to reach the stadium. Southbound and westbound directions carry essentially zero Bears flow in the center scenario.

Distribution to the stadium

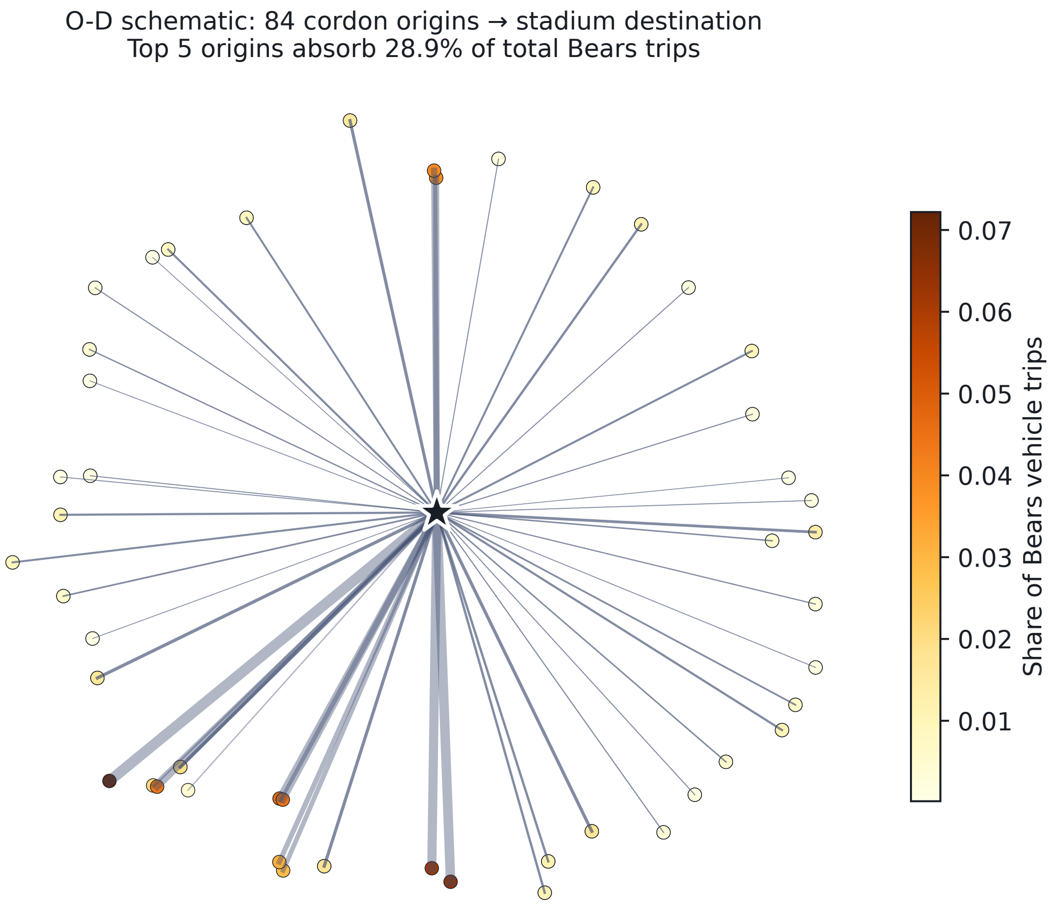


Figure 4: Schematic origin-destination flow. Each line represents a path from one of the 84 inbound roads to the stadium centroid; line width is proportional to that road's share of total Bears vehicle trips. The strong southern and eastern weighting reflects where the existing regional traffic enters the study area.

When they arrive and when they leave

For a Sunday 1:00 PM kickoff, peak arrival is between roughly 11:30 AM and 12:30 PM (about 35% of attendees arrive in that hour). Peak departure is in the 30–60 minutes after game-end — roughly 4:30 PM to 5:00 PM. **Monday Night Football and Thursday Night Football kickoffs at 8:15 PM are fundamentally different**: arrival falls between 6:15 PM and 8:00 PM, directly on top of the weekday PM commute peak on Route 53, I-90, and Algonquin. Weeknight games are the highest-impact scheduling for spillover.

5 Algonquin Road and Illinois 53 lead on every axis

FINDING

The same two corridors are worst on every independent measurement axis examined. **Algonquin Road** has the highest residential exposure (9,031 homes within 500 feet, by far the highest of any corridor). **Illinois 53** has the highest crash baseline (4,964 crashes 2022–2024) and the largest flood-zone overlap (46 acres). When the Sunday game-day traffic model runs, the same two corridors absorb the most vehicles: Algonquin carries 25,263 Bears vehicles across 21 of its links (peaking at 89% of capacity); Illinois 53 northbound local lanes carry 21,460 vehicles and run over capacity at the worst link. Three completely independent measurement axes — where people live, where crashes happen, and where Bears traffic goes — agree on the same two corridors.

This is the triple-convergence finding. The corridor-by-corridor breakdown across the four axes:

Table 1: Per-corridor cross-walk — 6 named arterial corridors across 4 exposure axes (residential, safety, flood, equity) + 2 event-day flow axes (Bears vehicle sum, max V/C). Algonquin + Illinois 53 lead on three axes; Palatine is 2nd on two axes; the triple-convergence finding rests on this table.

Corridor	Addr 500ft	Crashes	SFHA (ac)	Q1 #	Bears veh	Max V/C
Algonquin Road	9,031	1,813	26.0	25	25,263	0.89
Illinois 53	2,428	4,964	46.1	16	35,204	1.02
Palatine Road	7,767	4,337	5.3	11	—	—
Northwest Hwy	3,961	1,916	1.3	10	—	—
Kirchoff Road	4,030	510	3.2	3	—	—
Euclid Avenue	4,024	1,397	20.5	9	—	—

Where people live: Algonquin

Algonquin Road has **9,031 address points within 500 feet** — about twice the per-link density of the next-highest corridor. The asymmetry is structural: Algonquin parallels dense suburban-residential blocks on both sides, while Illinois 53 runs in protected expressway right-of-way.

Where crashes happen: Illinois 53

Illinois 53 carries **4,964 reported crashes from 2022 through 2024**, by far the highest of any named corridor. The single peak-crash link in the entire study area is an I-290 segment in Schaumburg with 966 crashes in three years — and notably, that peak link is structurally part of the I-290 / Illinois 53 interchange, not within the named-corridor framing. A named-corridor view alone would miss it; the full link-level analysis in Appendix F surfaces it.

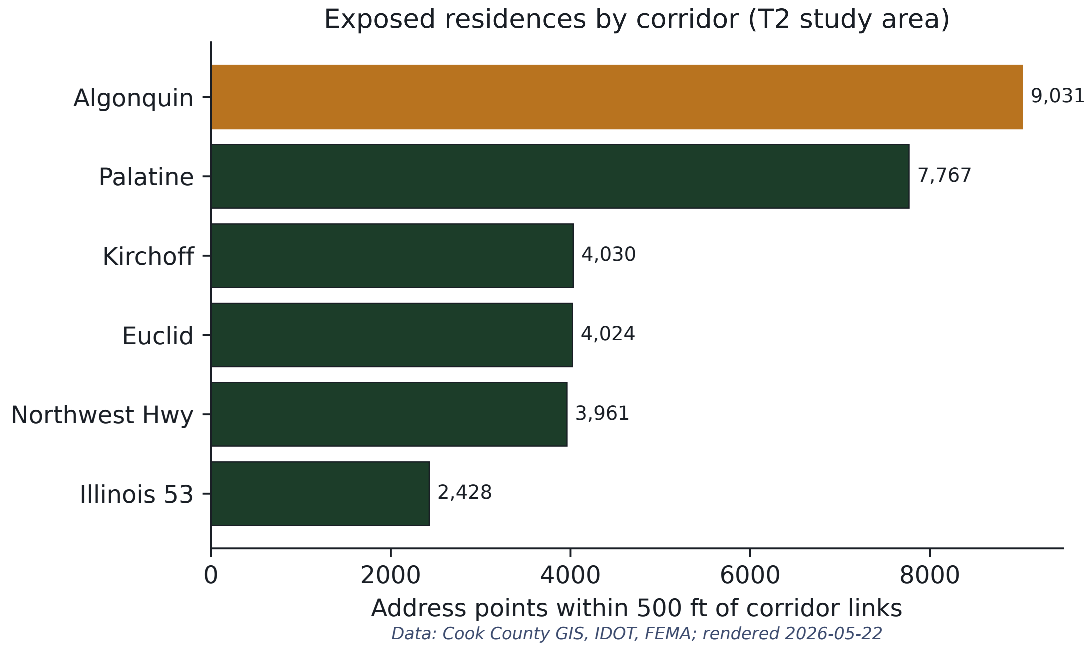


Figure 5: Residential address points within 500 feet of each named corridor. Algonquin's per-link density is roughly double the next corridor; Illinois 53 has the lowest residential exposure because its expressway right-of-way is set back from residential blocks.

Where flood risk is: Illinois 53 and Algonquin

Where Bears vehicles go

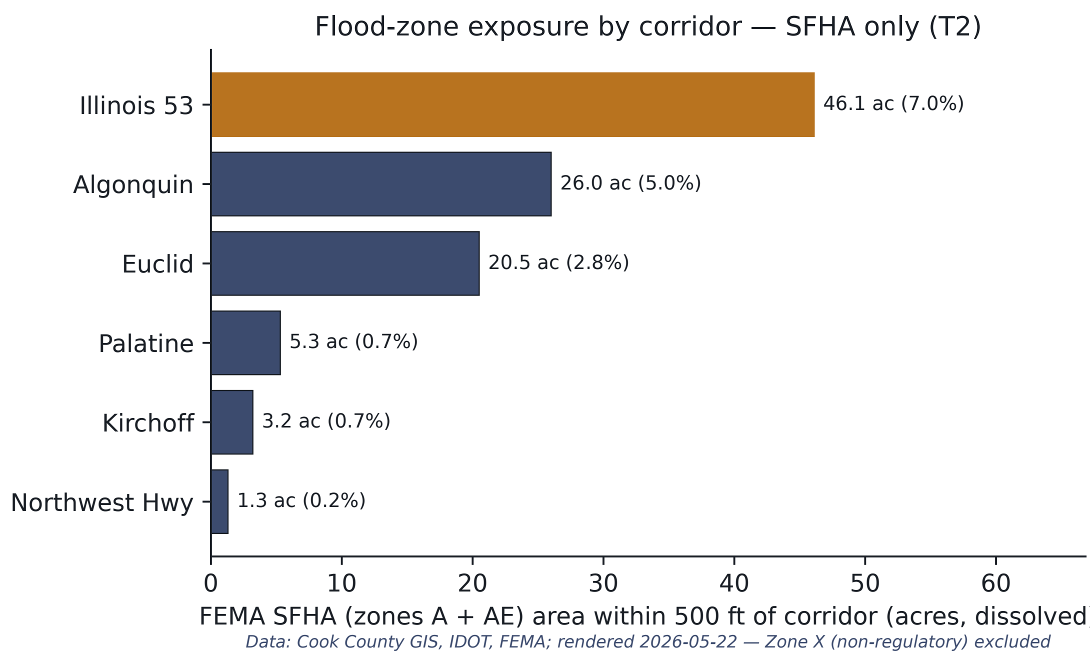


Figure 6: Federally-mapped Special Flood Hazard Area (FEMA Zones A and AE) overlap with each corridor's 500-foot buffer. Illinois 53 and Algonquin carry the construction-staging flood risk; Northwest Highway and Kirchoff are essentially flood-free.

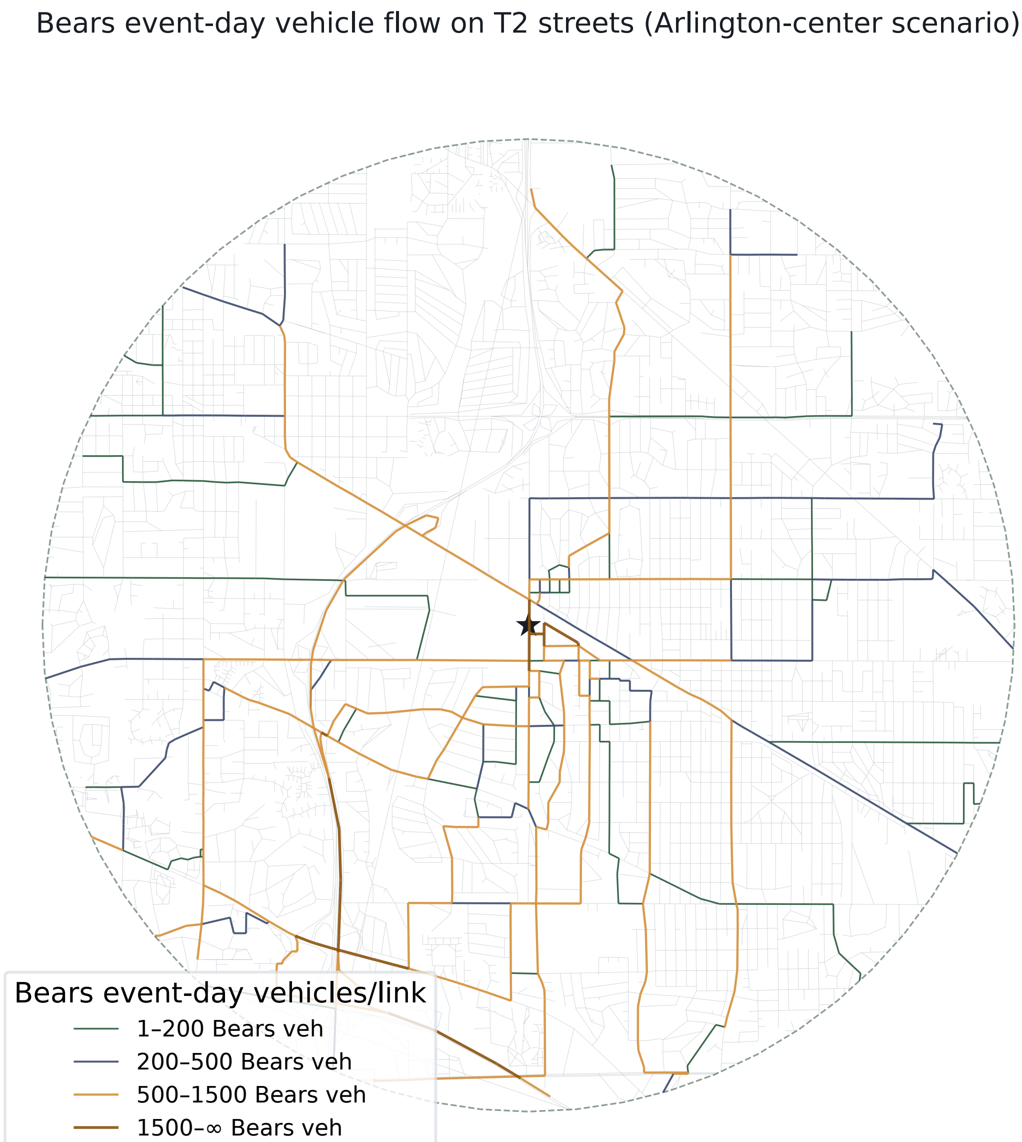


Figure 7: Bears event-day vehicle flow on the three-mile-ring street network (center scenario, 16,000 one-way vehicles). The strong northbound-only loading on Illinois 53 reflects the asymmetric inbound geography from the south and east.

6 112 local-street bottlenecks no policy fix resolves

FINDING

112 individual road links are projected to run over capacity in every mode-share scenario tested, including the most-favorable case in which Metra runs full surge service. All 112 are on local streets, not arterials: **Meacham Road, Euclid Avenue, Northwest Highway, Wilke Road, and Campbell Street** account for 78 of them. The arterial bottleneck count varies sharply with policy (0 arterials over capacity under the high-transit case, 21 under the high-drive case); the local-street bottleneck count does not. Arterial improvements — signal timing on Algonquin, channelization on Route 53 — will not fix this. Residential streets carry the spillover regardless of which transit or parking mitigations are committed to.

The four scenarios

The analysis runs four mode-share scenarios. Each is constructed to surface a specific policy question:

Scenario	One-way veh	Two-way veh	Arterial bottlenecks
High drive (no Metra surge)	22,244	44,489	21
Center (modal Sunday game)	16,000	32,000	11
Allegiant direct lift	14,788	29,576	0
High transit (surge committed)	11,455	22,909	0

Robust versus fragile bottlenecks

A bottleneck that appears only in the high-drive scenario but is fine in the high-transit scenario is *fragile* — the right mitigation (Metra surge, parking pricing) can fix it. A bottleneck that appears in every scenario, including the high-transit case, is *robust* — no policy package within the analysis's plausible range fixes it.

The five named local streets that carry the robust bottleneck load:

Table 2: Top streets by robust-bottleneck count — links over capacity in all 4 mode-share scenarios.

Local street	Links	V/C drive	V/C center	V/C transit
Meacham Road	15	1.24	1.14	1.08
Euclid Avenue	12	1.45	1.30	1.22
West Euclid Avenue	10	2.36	1.88	1.60
East Northwest Highway	9	2.11	1.89	1.66
Ramp	8	1.78	1.59	1.48
North Wilke Road	8	3.30	2.53	1.97

West Northwest Highway	8	1.61	1.49	1.25
Campbell Street	7	1.42	1.20	1.04
South Meacham Road	5	1.21	1.12	1.07
Plum Grove Road	3	1.64	1.52	1.44
Progress Parkway	3	2.29	1.65	1.18
West Oakton Street	3	1.20	1.15	1.14
North Chicago Avenue	3	3.24	2.39	1.77
Meadow Drive	2	1.37	1.29	1.01
North Arlington Heights Road	2	1.07	1.05	1.02

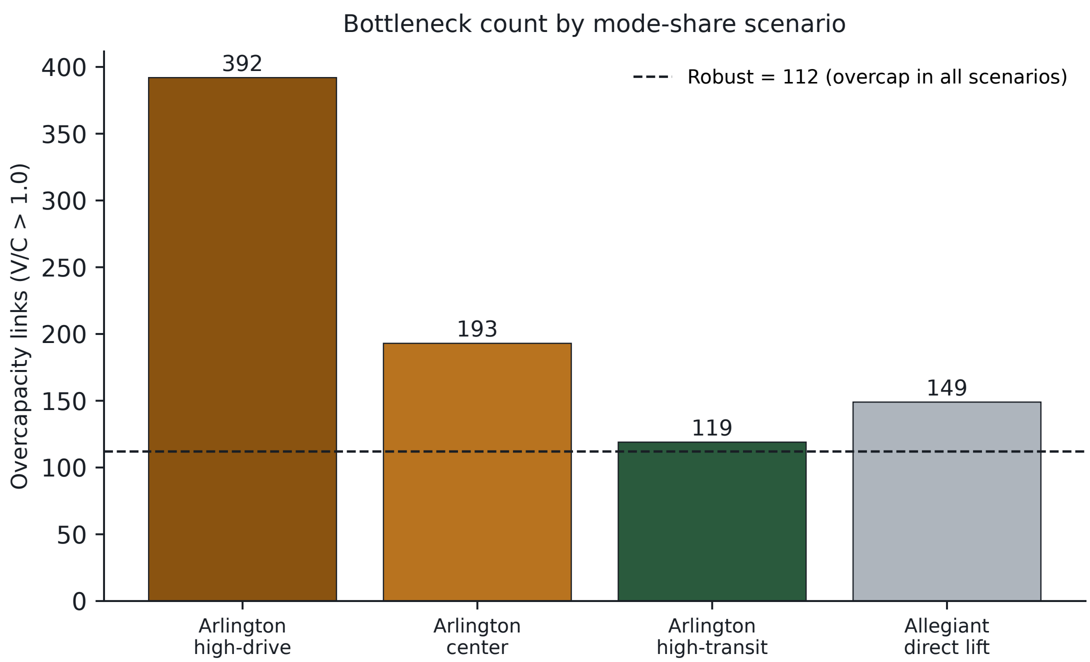


Figure 8: The number of road links that run over capacity changes dramatically with the assumed mode share. But the 112 links that run over capacity in *every* scenario (dashed line) do not. Those are the structural bottlenecks.

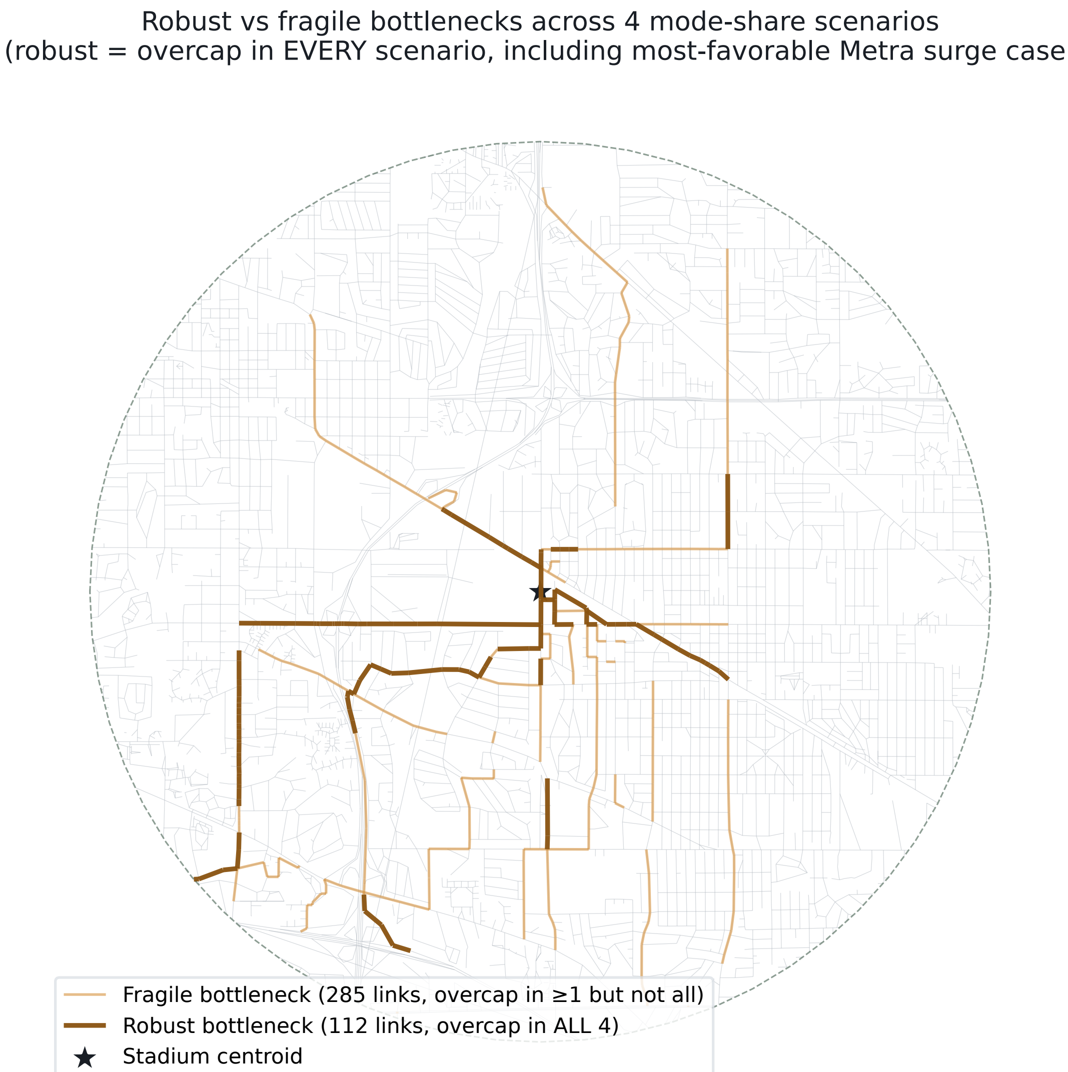


Figure 9: Robust vs. fragile bottlenecks. Dark orange links are projected over capacity in every scenario tested. Light orange links run over capacity in some scenarios but not others. Fragile bottlenecks can be mitigated by policy; robust bottlenecks cannot.

7 The Metra UP-NW surge-service gap

FINDING

The Metra UP-NW line on Sundays runs about 10 trains per direction at roughly 60-minute headways. Absorbing a 5,000-rider surge in the two-hour pre-kickoff window requires additional rolling stock, additional crew, additional dispatching capacity, and additional platform space at Arlington Park station. **No public commitment from Metra, the Regional Transportation Authority, or the State of Illinois exists for stadium-event surge service.** The Bears' publicly disclosed plans show "Metra preservation" — an increase in commuter parking spaces from 1,032 to 1,075 — but not service. Based on the RTA's published operating-cost rates, the direct operating cost of surge service for a single home game is approximately $4,700, or roughly $47,000 across a 10-game home season, exclusive of capital improvements.

WHAT TO ASK OF ANY PARTY CLAIMING A METRA MODE SHARE

Five specific questions. Any party — the Bears organization, Kimley-Horn, the State of Illinois, the Village of Arlington Heights — claiming a meaningful event-day Metra mode share in their analysis should be asked, on the record:

1. What specific surge train count and departure sequence is proposed?
2. What binding agreement secures that service for the full operating life of the stadium, not just for an opening season?
3. What platform-capacity work at Arlington Park station accommodates a 5,000-rider surge within the two-hour pre-kickoff window?
4. Who pays the recurring annual operating cost?
5. What happens to the mode-share assumption if the surge service is later reduced or eliminated?

The current public record contains no answers to any of these five questions.

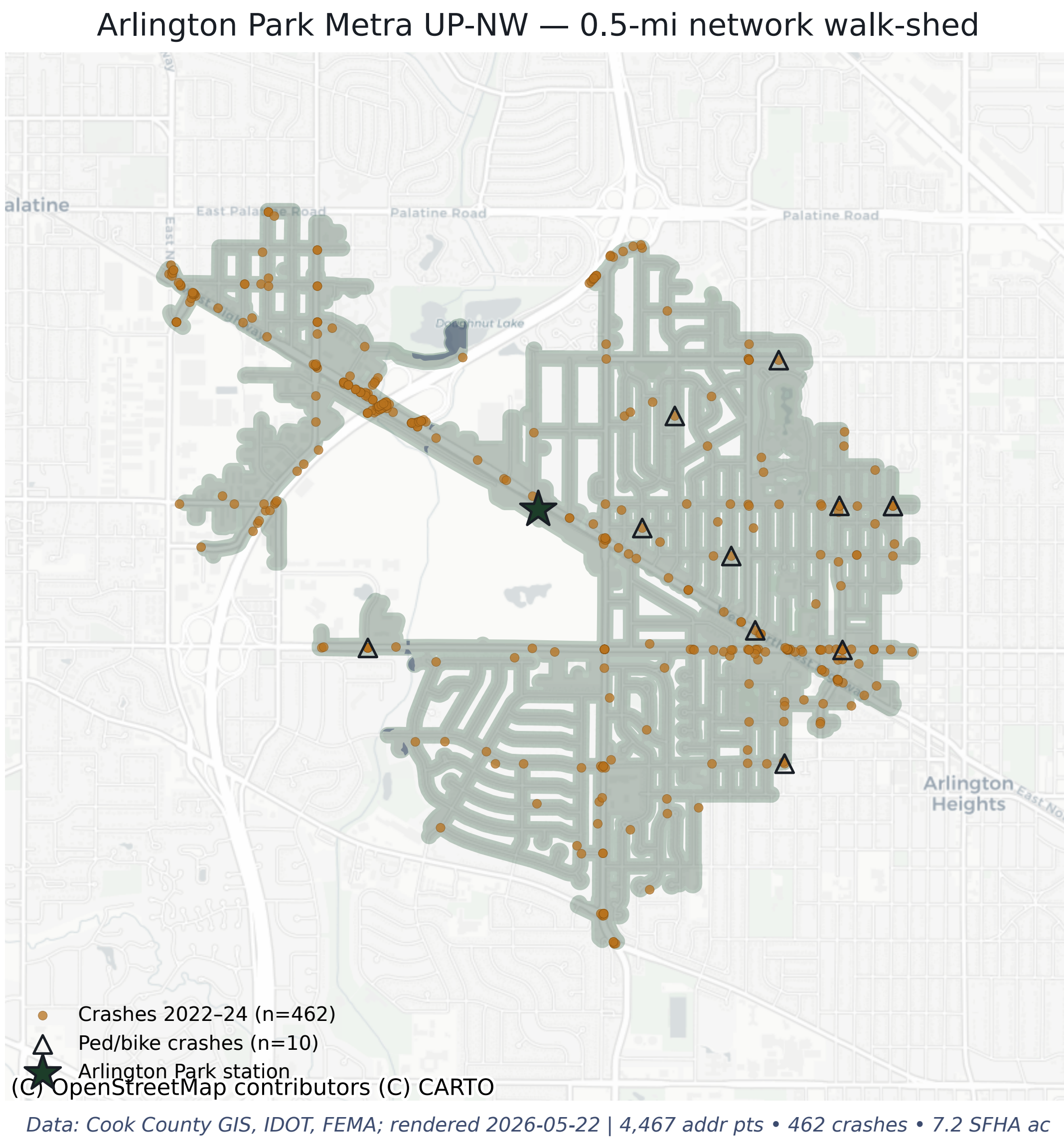


Figure 10: The half-mile walking shed from the Arlington Park Metra UP-NW station, computed against the OpenStreetMap pedestrian network. The shed covers about 1,531 acres (∼10% of the three-mile study area), contains 4,467 address points, and absorbs 462 crashes from 2022–2024 (∼9% of the study-area total — approximately proportional to its share of land area, not crash-light).

8 Equity concentration follows the corridor impact

FINDING

The two corridors that carry the worst physical impact also pass through the lowest-equity neighborhoods in the study area. This is not a separate finding from the impact analysis; it is a direct geographic consequence of it. Cook County's Digital Equity Score (DES) ranks census tracts into four quartiles; Q1 is the lowest-equity quartile. 30.6% of intersections on the named impact corridors fall in Q1, versus 20.4% across the broader three-mile study area. The asymmetry is starkest on the same two corridors that lead Findings 2 and 3 in this report: **76% of Algonquin Road intersections (25 of 33) and 57% of Illinois 53 intersections (16 of 28) are in Q1**. Where the impact is worst, the affected residents are also least-resourced.

This is a corollary, not a parallel theme

The numbers in the callout above are computed by overlaying the public Cook County DES tract polygons against the 3,011 selected intersections from Chapter 3. No new modeling is introduced; this finding is a straight cross-tabulation of the corridor-impact set (already established in Findings 2 and 3) against an independent, publicly published equity ranking. The right way to read this chapter is: *given* that Algonquin and Illinois 53 are the impact-leading corridors — a result derived from address-point density, crash counts, flood overlap, and event flow — the equity-overlay step asks what kinds of neighborhoods they pass through. The data answer that question directly and publicly.

Corridor	Q1 (low)	Q2	Q3	Q4 (high)
Algonquin Road	**25**	0	6	2
Illinois 53	16	11	1	0
Palatine Road	11	19	22	17
Northwest Highway	10	10	32	0
Euclid Avenue	9	1	10	21
Kirchoff Road	3	0	14	2

The federal EPA EJScreen and CEQ CEJST screening layers (downloaded in their full preserved public versions, before recent federal availability changes) corroborate the Cook County DES signal. A formal three-source equity overlay — Cook DES + EPA EJScreen + CEQ CEJST — is identified in Chapter 12 as a next-iteration item.

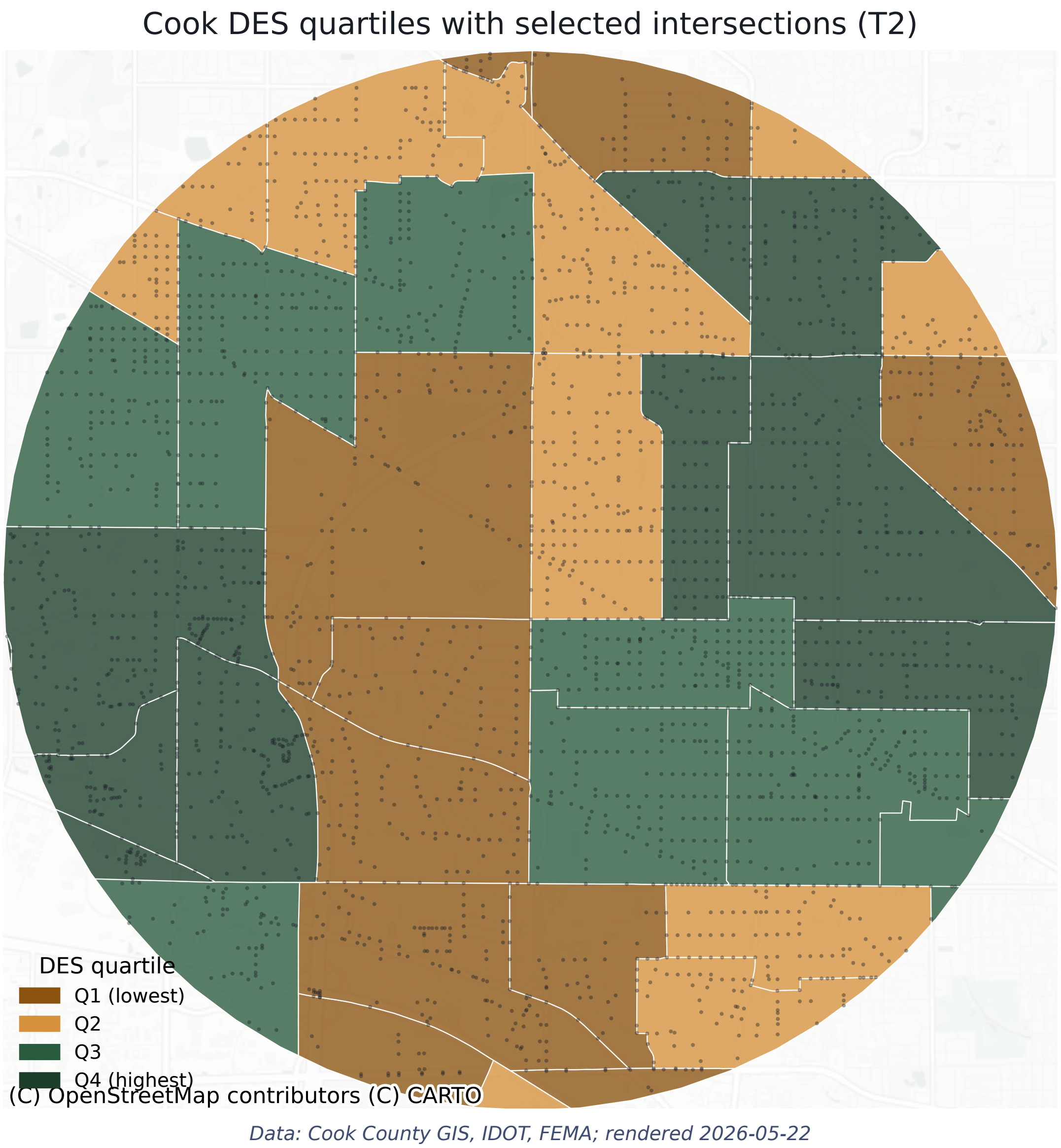


Figure 11: Cook County Digital Equity Score quartiles across the three-mile study area, with selected intersections overlaid. Q1 tracts (lowest-equity) cluster along the Algonquin corridor to the north and the Illinois 53 corridor to the east.

9 Five recommendations

These recommendations are framed as analytical positions on what the public record would benefit from, not as advocacy for or against the stadium project. Each is independently testable.

RECOMMENDATION 1

Public release of the Bears' Kimley-Horn Traffic Impact Analysis. The Chicago Bears organization should publicly release the Kimley-Horn-prepared Traffic Impact Analysis for the Arlington Park site in advance of any final State of Illinois action on the Megaprojects Bill. The analysis presented here is offered as a parallel public-data baseline against which any number in the Bears' TIA can be compared corridor by corridor.

RECOMMENDATION 2

Binding Metra UP-NW surge-service commitment. If any party — the Bears, Kimley-Horn, the State of Illinois, the Village of Arlington Heights — intends to rely on a meaningful Metra mode share to manage event-day traffic, a publicly-binding service-level commitment from Metra and the Regional Transportation Authority is necessary, not the parking-space additions currently disclosed. The five specific items to bind are listed in Chapter 7.

RECOMMENDATION 3

Local-street impact mitigation on the five named streets. The 112 robust local-street bottlenecks identified in Chapter 6 will not be resolved by arterial improvements alone. Any traffic-management plan should explicitly address operational strategies on **Meacham Road, Euclid Avenue, Northwest Highway, Wilke Road, and Campbell Street**: event-day signal timing, residential parking restrictions or permit zones, and turn-movement controls. These strategies should be public, binding, and durable across the operating life of the stadium.

RECOMMENDATION 4

Title VI / Environmental Justice review. The disproportionate concentration of physical impact on Cook County Digital Equity Score Q1 tracts — 30.6% on the named corridors versus 20.4% in the broader study area, with Algonquin Road at 76% Q1 and Illinois 53 at 57% Q1 — warrants an explicit equity-and-distribution review under Title VI of the Civil Rights Act and the federal Environmental Justice framework. The same signal is detectable in the federal-mirror EJScreen and CEJST layers.

RECOMMENDATION 5

Side-by-side comparison against the per-corridor table. When the Bears' Kimley-Horn analysis is publicly released, the natural baseline-comparison artifact is the per-corridor table in Appendix G of this report. Each row is a falsifiable empirical comparison: residential exposure, three-year crash count, flood overlap, equity quartile concentration, modeled Bears vehicle load, peak volume-to-capacity ratio. If the Kimley-Horn analysis materially diverges from this baseline, the divergence raises specific methodological questions that can be asked publicly, corridor by corridor.

10 Three audit questions for the Bears' eventual study

When the Kimley-Horn study is publicly released, the comparison will be most productive if it is structured around specific empirical claims, corridor by corridor and metric by metric. Three concrete audit questions:

AUDIT QUESTION 1

What total event-day vehicle count does the Kimley-Horn study produce? If it lands above 32,000 (the center estimate in this analysis), the implicit assumption is a higher mode share for driving or a lower vehicle occupancy than the analysis used — which should be defended explicitly. If it lands below, the implicit assumption is a higher transit or walk share, which should also be defended explicitly. The four scenarios in Appendix B set the plausible policy range; a KH number outside that range is asserting a future the public-data analysis cannot support.

AUDIT QUESTION 2

Which corridors does the Kimley-Horn study identify as most loaded? The independent analysis identifies Algonquin and Illinois 53 as the two highest-impact corridors on three independent axes (residential exposure, crash baseline, and event-day flow). If the KH study reaches a materially different identification — nominating Palatine or Northwest Highway as the top corridor, for example — the divergence is informative and deserves a corridor-by-corridor explanation against the per-axis data in Appendix G.

AUDIT QUESTION 3

What mitigations does the Kimley-Horn study recommend, and do they address the local-street bottlenecks? The independent analysis finds that 112 robust local-street bottlenecks survive every mode-share scenario, including the most favorable transit case. If the KH study recommends only arterial mitigations — signal timing on Algonquin, channelization on Route 53 — those mitigations will not fix the residential-street spillover identified in Chapter 6. The test is whether the KH mitigation package includes specific operational strategies on Meacham, Euclid, Northwest Highway, Wilke, and Campbell.

These three questions form a natural audit checklist for any reader — independent reviewer, journalist, legislator, or resident — who wants to know whether the Kimley-Horn study is doing the work that needs to be done.

11 What this analysis cannot do

A desk study has limitations that any honest reader should be aware of. They are not failures of the methodology; they are limitations of *public-data-only* desk studies as a class of work.

- **No interview, consultation, or other direct engagement.** This analysis did not include any interview, consultation, or direct engagement with the Chicago Bears organization, Kimley-Horn, the Village of Arlington Heights, IDOT, CMAP, Metra, Pace, USACE, USFWS, or any reviewing agency. All inputs are public datasets and public documents.
- **Not a Professional Engineer report.** This is not a stamped Traffic Impact Analysis, an engineering design, or professional engineering certification. The methodologies are well-established (ITE *Trip Generation Manual*, Highway Capacity Manual, FHWA travel-model guidance, AASHTO *Highway Safety Manual*), but their application here is desk analysis, not engineering design.
- **Peer-NFL calibration uses a single quantitative document.** Of the three public NFL-stadium documents available through ordinary channels (Allegiant, SoFi, Highmark), only the Allegiant Stadium plan publishes the quantitative figures needed for calibration. Arrival and departure timing curves are absent from all three publicly available documents; the analysis uses the ITE-published structural shape with explicit uncertainty bands.
- **IDOT count coverage gap.** The publicly downloadable IDOT Annual Average Daily Traffic layer returned only 165 segments across the broader Cook County area for this analysis's bounding box, and none of those 165 segments fall within the three-mile study ring. Without observed counts in the study area, a fully formal calibration of the project model against IDOT counts cannot complete. The diagnostic comparison and what its result means are in Appendix B.
- **No intersection-level signal analysis.** Per-approach turning-movement counts and per-intersection signal-timing plans are not in the public data layer. Intersection-level Levels of Service at the 3,011 selected intersections cannot be computed; the analysis substitutes link-level volume-to-capacity ratios as the strongest defensible alternative on public-only data.
- **Hammond, Indiana alternative is out of scope.** This analysis evaluates the Arlington Heights site only. The competing Hammond site (under Indiana SB-27) is identified in the background discussion but is not modeled.

12 What a fully-funded follow-up would add

A reader who finds the analysis useful but wants stronger evidence should know what a properly-funded follow-up could add. In descending order of impact:

1. **Re-retrieve IDOT AADT with proper paging.** The current IDOT MapServer retrieval has a coverage gap that blocks the project-model validation step (Appendix B). A careful re-retrieval with adjusted paging parameters, or a non-FOIA contact with IDOT's data office, would fill this gap. The most-bang-for-buck improvement.
2. **Intersection-level HCM Levels of Service.** Per-approach turning-movement counts (via field counts, commer-

cial sources such as Streetlight, or municipal records for signal timing plans) would enable HCM Chapter 19 / 20 LOS analysis at the 3,011 selected intersections, replacing the link-V/C-as-proxy approach used in this analysis.

3. **Expand the peer-NFL document corpus.** State-agency open-records requests in non-Illinois jurisdictions (Minnesota's Mortenson plans for U.S. Bank Stadium; New Jersey records for MetLife; jurisdictions covering NFL stadiums in Massachusetts, Connecticut, and elsewhere) could add additional peer documents to the calibration corpus, specifically addressing the arrival / departure curve gap.
4. **Highway Safety Manual Part C estimation.** A quantitative estimate of crash-rate change on the named corridors under stadium-event loading, using AASHTO HSM Part C safety-performance-function coefficients calibrated against the IDOT crash history.
5. **Hammond, IN comparative pipeline run.** The same modeling stack applied to the Indiana alternative site. Requires re-sourcing INDOT and Northwestern Indiana Regional Planning Commission layers but no methodological change.
6. **Gravity-decay distribution sensitivity.** An alternative origin-distribution model (gravity with stadium-event-specific decay parameter) as a sensitivity test on the cordon-VADT-prior distribution used here.

Appendix A — How the analysis was done, step by step

The stadium-event traffic model proceeds in five steps. Each step takes the previous step's output as input and produces the next step's input. The steps are intentionally separated so each can be audited, sensitivity-tested, or replaced independently. This is the canonical four-step transportation-modeling sequence (generation, distribution, mode choice, assignment) with a temporal step added for stadium events.

A.1 Trip generation: how many cars come to a game

Trip generation answers: for a given event size and ticket-sales scenario, how many vehicles arrive at and leave from the site over the day?

The Institute of Transportation Engineers publishes the standard *Trip Generation Manual* (11th Edition, 2021). Each land use has a code; Land Use 488 ("Soccer Complex") is the closest ITE code to an NFL stadium. The LU 488 sample is collegiate-dominated and uses per-1,000-sq-ft rates, both of which translate poorly to NFL venues on a per-seat basis.

The analysis uses peer-NFL calibration as the primary anchor and ITE LU 488 as a sanity-check floor. The only publicly available peer-NFL document with quantitative content — the 2021 Allegiant Stadium plan published by the Regional Transportation Commission of Southern Nevada — supplies the central anchor for total vehicle count per attendee. Allegiant's mode shares (37.5% walk-only, 17.5% TNC) are Las Vegas Resort Corridor-specific and are not directly transferred; the mode-share work in Appendix A.2 adjusts to Arlington-Heights-specific assumptions.

Average vehicle occupancy is taken from the TRB *Highway Capacity Manual* and ITE *Parking Generation* (6th Edition): NFL stadium-event AVO is commonly cited at 2.7–3.3 persons per vehicle. Central estimate 3.0; high (transit-favorable) 3.3; low (drive-favorable) 2.7.

A.2 Mode share: who drives, who takes Metra

Mode share is the fraction of attendees arriving by each mode. The analysis uses four explicit scenarios rather than a single point estimate, because the most plausible floor on the Metra share depends on whether Metra publicly commits to event-day surge service — a commitment that has not yet been made.

Scenario	Defining assumption
Arlington high-drive	No Metra surge committed; bad weather; sold-out 65,000-seat event; low AVO (2.7). The conservative residential-spillover scenario.
Arlington center	Modal Bears Sunday game; 60,000 attendees at 96% utilization; AVO 3.0; 15% Metra mode share (cap absent surge commitment). The recommended single number.
Allegiant direct lift	Allegiant mode share (37.5% walk, 17.5% TNC) applied to Arlington Heights unchanged. NOT a recommendation. Included as a sanity check.
Arlington high-transit	Metra surge service committed and used; 30% Metra mode share; high AVO (3.3). The most-favorable transit case.

Each scenario produces a different total vehicle count, yielding the 13,000–44,500 envelope in Chapter 4.

A.3 Distribution: which directions they come from

Distribution allocates trips across origin directions. The analysis uses a *cordon-VADT prior*: vehicles entering the three-mile ring are distributed in proportion to existing average daily traffic on each inbound road, as forecast by the CMAP regional travel-demand model for the 2028 build year.

CMAP publishes its c25q2 conformity-package model in six scenario snapshots (2019, 2025, 2030, 2035, 2040, 2050). The analysis interpolates linearly between the 2025 and 2030 snapshots for the 2028 build-year baseline. The 84 individual cordon-crossing roads, their per-road 2025 / 2030 / 2028 daily volumes, and the Bears-vehicle allocation are tabulated in full in Appendix E.

A gravity model with stadium-event-specific decay was considered and rejected for v1.0 because: it would require a separate origin-distribution forecast; for a high-attraction destination like an NFL stadium, the effective decay parameter is flat enough that gravity gives substantially similar results to the VADT-prior; and it adds parameters that must be fit, which introduces a defensibility cost without an obvious empirical benefit in this context.

Defensibility of the cordon-VADT prior. This is the empirically weakest defended choice in the analysis. The cordon-VADT prior implicitly assumes that Bears event-day attendees arrive from the same compass directions, in the same proportions, as the existing CMAP-modeled regional commute traffic. For a discretionary, single-day attraction — not a commute trip — this is a stronger assumption than the data directly support. A formal gravity-decay sensitivity test against the cordon-VADT-prior distribution is identified as a v1.1 item in Chapter 12; until that test runs, readers should treat the per-cordon-link shares in Appendix E as a structurally plausible distribution rather than a calibrated one.

A.4 Timing: when in the day they arrive and leave

Temporal distribution determines which roads see peak loading at which clock hours. The analysis uses the structural arrival and departure shape published in the ITE LU 488 reference, applied to four kickoff scenarios:

- **Arrival prior** (relative to kickoff): 20% in [-2h, -1.5h]; 35% in [-1.5h, -1h]; 30% in [-1h, -0.5h]; 15% in [-0.5h, 0h].
- **Departure prior** (relative to game end at kickoff + 3.5h): 15% in [0, +0.25h]; 25% in [+0.25h, +0.5h]; 35% in [+0.5h, +1h]; 25% in [+1h, +2h].

Peer-NFL empirical arrival curves from venues with similar geography (suburban, weekend, single-event-day) would be a better fit. None are publicly available in the corpus assembled for this analysis. Allegiant references a Stadium Event Management Plan but does not reproduce its contents. This is identified in Chapter 12 as a v1.1 item.

A.5 Network assignment: which roads end up loaded

Network assignment computes the per-road vehicle count given the total trips, mode shares, origin distribution, and timing.

The method is **Bi-Conjugate Frank-Wolfe (BFW) user-equilibrium assignment** using the Bureau of Public Roads (BPR, 1964) volume-delay function. This is the standard method used by every major travel-demand model in the United States.

The volume-delay function relates a road's modeled travel time to its volume-to-capacity ratio:

$$t(v) = t_0 \cdot \left[1 + \alpha \cdot \left(\frac{v}{c}\right)^{\beta}\right]$$

where t_0 is the free-flow travel time, v is the modeled flow on the road, c is its capacity, and $\alpha = 0.15$, $\beta = 4.0$ are the FHWA-recommended default coefficients. The fourth-power dependence on v/c is what produces the sharp inflection at $v/c \approx 0.85$: once a road is near capacity, small increases in flow produce large increases in travel time.

The user-equilibrium solution is the steady-state distribution of vehicles to routes under which no individual driver can shorten their trip by switching routes (Wardrop's first principle). Frank-Wolfe-class algorithms iteratively re-route vehicles and re-compute travel times; the *relative gap* is a measure of how much travel-time inefficiency remains in the current distribution. Federal guidance (FHWA Travel Model Improvement Program) recommends convergence to a relative gap below 10^{-4}. This analysis converged in 474 iterations to a relative gap of 9.34×10^{-5}.

Per-functional-class recalibration of the BPR coefficients is documented in NCHRP Report 716; this analysis uses the published defaults because the publicly available road-classification layer (Cook County Streets) does not support reliable per-class recalibration in the study area.

Per-link capacity provenance. Link capacity (c in the BPR formula) is assigned by functional class from the Cook County Streets layer's published road-class field, using the following default capacities (vehicles per hour per direction): arterial (1,900); minor arterial (1,400); collector (900); local / other (700); freeway main (4,000 per direction); ramp (1,500). These are the Transportation Research Board *Highway Capacity Manual* (7th Edition) reference defaults for the corresponding facility classes, taken from HCM Chapters 12 and 18 without per-link adjustment. The local / other category dominates the residential-street network and is what drives the dramatic V/C ratios observed in Appendix F (V/C above 5.0 on several local streets); a future iteration with field-collected or municipally-published per-link capacity data would refine these numbers, but the published-default-capacity choice is documented here for transparency and reproducibility. No per-link capacity modifier was applied outside the published HCM functional-class defaults.

A.6 Convergence and verification (within-model)

The empirical convergence (Figure 13) is a within-model verification: it shows the assignment algorithm itself reached a stable equilibrium. It is *not* a calibration against observed counts; that step — the GEH validation — is discussed in Appendix B and is the verification step the public data does not let this analysis complete.

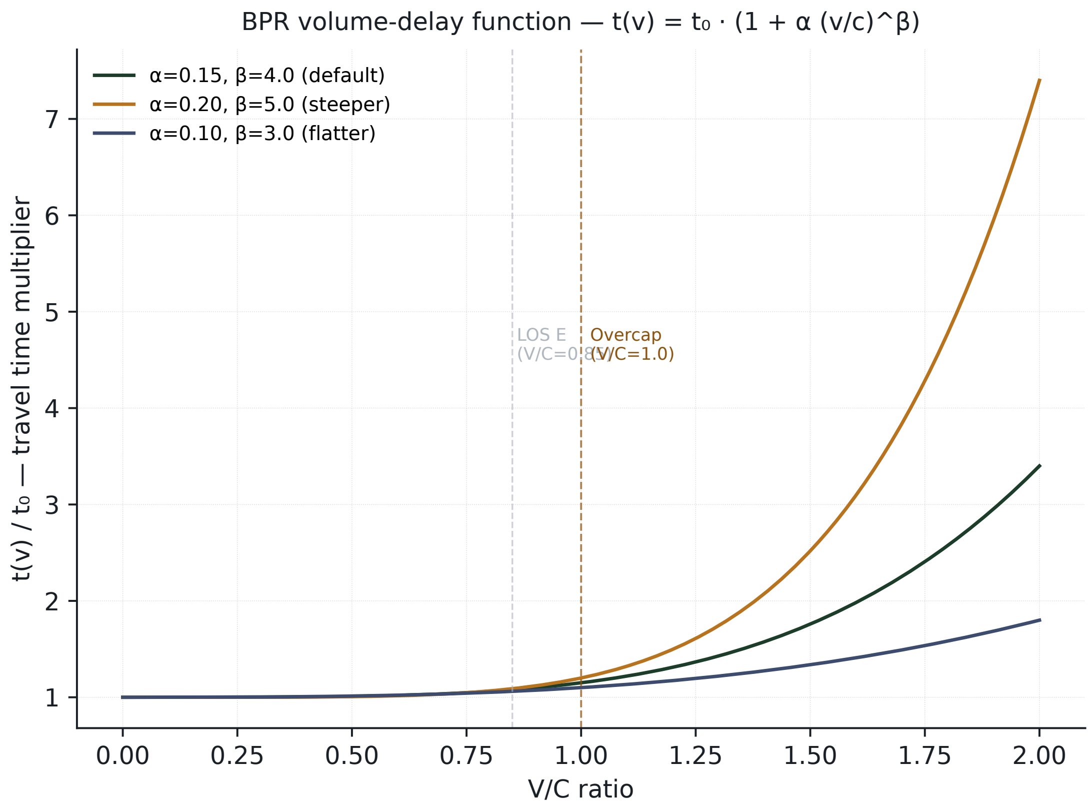


Figure 12: The BPR volume-delay function. As V/C approaches 1.0, travel time inflates non-linearly. V/C $=$ 0.85 corresponds to Highway Capacity Manual Level of Service E (operationally near failure); V/C $>$ 1.0 (Level of Service F) means more vehicles want to use the road than its design accommodates.

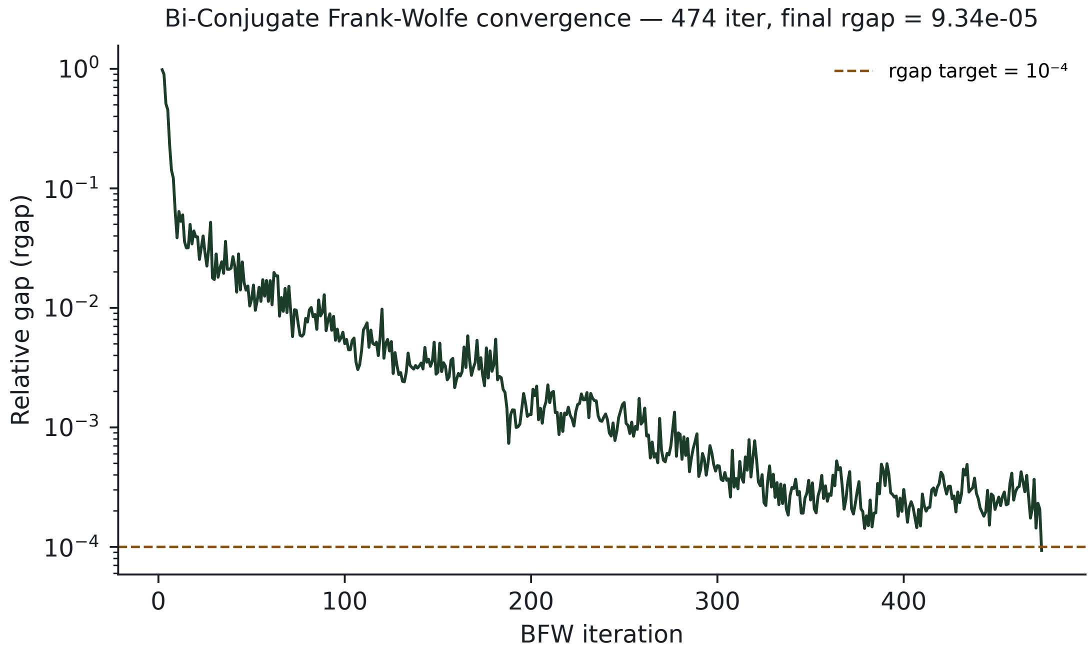


Figure 13: Equilibrium model convergence trace. The horizontal axis is BFW iteration; the vertical axis is the relative gap on a log scale. The dashed line is the federal-guidance target of 10^{-4}.

Appendix B — Calibration, uncertainty, and the verification gap

B.1 Why an envelope, not a single number

The analysis does not give a single number for event-day vehicle generation. It gives a range, with the center scenario producing 32,000 round-trip vehicle trips and the full envelope spanning 13,000 to 44,500.

A single point estimate has one property and one liability. The property: it gives a single number to put in the headline. The liability: it implies more confidence than the underlying inputs (mode share, average vehicle occupancy, attendance utilization) support. Reporting an envelope rather than a point estimate exposes the policy choices hiding inside the headline number.

If the Bears' Kimley-Horn study lands above the center estimate (32,000), the implicit assumption is a higher drive share or lower AVO. If it lands below, the implicit assumption is a higher transit or walk share. Each implicit assumption can be checked separately — which is the comparison protocol that Recommendation 5 (Chapter 9) is built on.

B.2 The four scenarios in detail

The four mode-share scenarios bracket the policy-relevant range. Each one is constructed to answer a specific policy question:

- **High drive (44,500 round-trip).** No Metra surge committed; sold-out 65,000-seat event; vehicle occupancy on the low end of TRB's NFL range (2.7); weather unfavorable to walking or transit. The conservative residential-spillover scenario. Neighboring municipalities planning around residential impact should plan around this case.
- **Center (32,000 round-trip).** Modal Sunday Bears game: 60,000 attendees at 96% utilization (league average), AVO 3.0, 15% Metra mode share (the ceiling for Metra absent a service commitment, given the existing UP-NW Sunday timetable capacity). The recommended single number estimate for stakeholders who need a point.
- **Allegiant direct lift (29,576 round-trip).** The Allegiant Stadium published mode share applied to Arlington Heights unchanged. Not a recommendation: Allegiant's 37.5% walk-only is a Las Vegas Resort Corridor feature that does not transfer to suburban Cook County. Included as a benchmark — if the Kimley-Horn analysis produces a number near this, Allegiant transfer is the implicit assumption that should be defended explicitly.
- **High transit (22,909 round-trip).** Metra surge service committed and used: 30% Metra mode share; high AVO (3.3). The most-favorable case. This is the scenario in which the proponents of the transit-mitigation framing should be asked to defend binding service commitments (Chapter 7).

B.3 Robust bottleneck identification

For each scenario, the assignment identifies the set of road segments with V/C > 1.0. A road in only one scenario's set is *fragile* (policy-sensitive). A road in all four sets is *robust* (structural). The robust set is reported in Chapter 6 as the 112-link finding.

The construction is symmetric across scenarios — no scenario is weighted more heavily than another. The 112-link count is the plain intersection of the four per-scenario over-capacity sets.

A note on probability weighting. Treating all four scenarios as equally probable is a deliberate analytical choice, not an implicit probability statement. The high-transit scenario assumes a Metra surge-service commitment that does not currently exist; the high-drive scenario assumes no surge commitment. A Bayesian reader who wants to down-weight the high-transit case (on the grounds that the prerequisite commitment has not been made) can do so directly: the per-scenario over-capacity sets are independent inputs, and the intersection under any down-weighting of the high-transit case is at least as large as the 112-link figure reported here. The reported number is therefore a *lower bound* on the robust-bottleneck count under any non-uniform probability weighting that down-weights the most-favorable scenario. A reader who treats the high-transit case as essentially impossible (zero weight) gets a larger robust bottleneck count, not a smaller one.

B.4 The GEH validation that cannot complete on public data

A complete travel-demand model is validated against observed traffic counts. The FHWA standard is the GEH statistic:

$$\text{GEH} = \sqrt{\frac{2(m-c)^2}{m+c}}$$

where m is the modeled volume on a road segment and c is the observed (counted) volume. The standard threshold is that 85% or more of comparison links should have GEH < 5.

This analysis can run two GEH calculations and not the third:

- **Diagnostic GEH (CMAP regional model vs. IDOT counts).** Ran. Compared CMAP scenario 100 (2019) modeled volumes against IDOT 2019 observed counts at the 149 links where both sources have data. Median GEH was well above 5. This is *expected* —- regional travel-demand models intentionally smooth individual-link counts in favor of regional consistency. The diagnostic result is reported in the analysis but is not the project-model validation.
- **Project-model GEH (this analysis's UE-assigned link flows vs. IDOT counts).** Did not run. Requires IDOT observed counts within the three-mile study ring. The publicly available IDOT AADT layer does not contain such counts: the query returned 165 segments in the broader bounding box, none inside the three-mile ring. The most important next-iteration item is to re-retrieve IDOT AADT with proper paging or by direct contact with IDOT's data office, and complete this step.

What this means for the findings. The findings in this report rely on the network model's internal logic, the CMAP-published boundary conditions, and the model's convergence to the federal relative-gap threshold. They do not yet rely on an external empirical calibration of link volumes within the study area. That calibration is identified as the single most important next-iteration item. The findings should be read with this gap in mind.

Appendix C — Data sources, provenance, and reproducibility

C.1 Sources used

Every dataset used in this analysis has a known publisher, a stable URL, and a known publication vintage. Per-file provenance information (URL, retrieval timestamp, SHA-256 hash, feature count) is preserved alongside the analysis's working data.

Source	Publisher	What is used
Cook County Streets	Cook County DOT & Highways	Road network geometry, lane counts, road classes
Cook County parcels	Cook County Assessor	Land-use polygons, ownership, taxable value
Cook County buildings	Cook County Assessor	Building footprints, address points
IDOT AADT	IL Dept. of Transportation	Observed daily traffic counts (2018–2021)
IDOT crash records	IL Dept. of Transportation	Per-crash location, type, severity (2022–2024)
IDOT truck volume	IL Dept. of Transportation	Heavy-vehicle counts
CMAP c25q2 conformity	CMAP (regional MPO)	Regional travel-demand model, 6 forecast scenarios
Metra / Pace / CTA GTFS	Transit operators	Transit schedules, stop locations, route geometry
OpenStreetMap walk + bike	OSM	Pedestrian network for walk-shed analysis
FEMA NFHL	FEMA	Flood-hazard polygons (Zones A, AE)
EPA EJScreen	EPA (federal-mirror copy)	Environmental-justice screening indicators
CEQ CEJST	CEQ (federal-mirror copy)	Climate & economic-justice screening
Cook DES	Cook County Open Data	Digital Equity Score per census tract
ACS 5-year	U.S. Census Bureau	Tract-level demographics
LEHD LODES	U.S. Census Bureau	Home-work commute flows (cross-check only)
Allegiant Stadium plan	RTC of Southern Nevada	Peer-NFL trip-generation calibration anchor
SoFi NRITS 2021	Krage & Munoz	Qualitative peer-NFL operational reference
ESD Bills 2021	Buffalo Bills / ESD	Qualitative peer-NFL cost-study reference

C.2 Provenance record per file

Each retrieved file has an accompanying provenance record with at minimum: source URL, publisher, publisher's stated vintage, retrieval timestamp, SHA-256 hash of the retrieved file, file size, feature count, native coordinate reference system, and where applicable the bounding box of the retrieved subset.

The point of each field: **source URL + publisher** lets a reviewer go to the same source; **vintage** tells them which version was used (e.g., 2024 Q2 vs. 2025 Q2); **retrieval timestamp** catches publisher revisions after this analysis was done; **SHA-256** detects silent updates that change content without changing the URL or vintage; **feature count** is a first-line sanity check that the retrieval pulled what was intended.

This is the provenance discipline that the FRE 702 / *Daubert* expert-evidence framework requires for scientific testimony: reproducible, time-stamped, hash-verifiable inputs.

C.3 What was retrieved but not used

Documented for transparency:

- **LEHD LODES** home-work commute flows are not used for event-day distribution (LODES is commute-only; Bears attendance is discretionary). Retained as a cross-check for the MNF and TNF scenarios, where event arrival overlaps the weekday PM commute peak.

- **FEMA Zone X** (non-regulatory, 500-year floodplain) is excluded from corridor flood-overlap calculations. The analysis follows the convention of focusing on regulatory flood zones (A and AE).
- **ACS 1-year tabulations** are not used; the 5-year series has better small-geography precision.
- **OSM bike network** retrieved but not used in this release; bike-shed analysis is a v1.1 candidate.

C.4 Reproducibility

From a clean retrieval of the same public data, the analytical chain reproduces with a sequence of well-defined steps: buffer the four-tier influence zone, clip the retrieved layers, select the algorithmic intersection set, compute per-link receptor inventory, build the network graph, extract CMAP cordon flows, generate trips, compute mode shares per scenario, distribute, time, assign via BFW, and render figures and tables. Each step takes the previous step's output as input; each step can be independently replaced or audited.

Appendix D — What is missing from the public record

A reader should know the four categories of data that would meaningfully improve the analysis but are not publicly available in the corpus assembled here:

1. **Per-intersection signal timing plans** held by the individual municipalities (Arlington Heights, Palatine, Rolling Meadows, Schaumburg). Without these, intersection-level Highway Capacity Manual Levels of Service cannot be computed.
2. **Peer-NFL event traffic counts.** The Kimley-Horn study, when released, will presumably draw on the firm's accumulated peer-NFL data. Only one peer-NFL document (Allegiant 2021, also Kimley-Horn-authored) contains the quantitative figures needed for calibration in the public corpus.
3. **Arrival and departure timing curves for specific NFL events.** Stadium-event management plans are typically held by the stadium-event company and not published. The Allegiant document cites such a plan but does not reproduce it.
4. **IDOT AADT coverage in the three-mile study ring.** The publicly downloadable layer returns 165 segments across the broader Cook County area for this analysis's bounding box; none of those 165 segments fall within the three-mile study ring. This blocks the project-model GEH validation step.

The first three categories are structural — they would require non-FOIA records requests in other jurisdictions, or commercial data subscriptions, to fill. The fourth category appears to be a retrieval-side gap (the IDOT MapServer paging) that may be resolvable without leaving the public-data discipline.

Appendix E — The 84 inbound cordon roads

Table 3: Per-cordon-link table — 84 cordon-crossing CMAP links, 2025/2030/2028 daily VADT (bidirectional), share of total inbound flow, and Bears event-day vehicles (Arlington-center scenario, 16,000 one-way). Sorted by 2028 VADT.

ID	VADT 2025	VADT 2030	VADT 2028	Share %	Bears veh
9358-9884	94,398	97,536	96,281	7.22	1,155
10037-10547	83,846	86,449	85,408	6.40	1,025
10552-10038	80,628	82,223	81,585	6.12	979
20109-20129	61,950	61,829	61,878	4.64	742
20127-20110	59,960	59,544	59,711	4.48	716
9885-24184	56,587	60,087	58,687	4.40	704
20068-10315	52,452	52,825	52,676	3.95	632
10340-20069	51,928	51,584	51,722	3.88	621
9975-9947	42,834	41,570	42,076	3.15	505
9956-10005	38,864	38,147	38,434	2.88	461
24064-24183	27,373	27,344	27,356	2.05	328
17323-9723	26,109	27,651	27,034	2.03	324
9723-17323	25,137	26,566	25,994	1.95	312
18231-9613	24,995	25,963	25,576	1.92	307
10586-10601	23,918	24,325	24,162	1.81	290
10027-16956	23,952	23,917	23,931	1.79	287
10084-10185	23,212	23,830	23,583	1.77	283
16956-10027	23,122	22,900	22,989	1.72	276
10601-10586	22,278	22,921	22,664	1.70	272
9613-18231	20,989	21,586	21,347	1.60	256
10185-10084	20,467	20,823	20,681	1.55	248
11087-11107	19,179	19,401	19,312	1.45	232
11107-11087	18,305	18,335	18,323	1.37	220
10467-10579	15,836	16,474	16,219	1.22	195
10598-10759	15,659	15,581	15,612	1.17	187
10467-10586	15,816	15,312	15,513	1.16	186
10759-10598	15,235	15,317	15,284	1.15	183
10586-10467	15,216	14,639	14,870	1.11	178
9675-9738	13,571	14,830	14,327	1.07	172
10579-10467	13,601	14,207	13,964	1.05	168
9512-9511	13,436	14,311	13,961	1.05	167
11125-10831	13,944	13,719	13,809	1.04	166
10831-11125	13,567	13,568	13,568	1.02	163
11090-10758	11,709	13,975	13,069	0.98	157
9511-9512	12,305	13,007	12,726	0.95	153

Table 3 continued from previous page

ID	VADT 2025	VADT 2030	VADT 2028	Share %	Bears veh
10599-10598	12,118	12,539	12,370	0.93	148
9344-9511	11,769	12,120	11,979	0.90	144
10598-10599	11,446	11,921	11,731	0.88	141
10758-11090	10,081	12,710	11,658	0.87	140
23987-17430	11,800	11,529	11,637	0.87	140
9511-9344	11,171	11,384	11,299	0.85	136
17430-23987	11,426	10,808	11,055	0.83	133
9738-9675	10,071	11,002	10,630	0.80	128
10934-11125	9,772	10,170	10,011	0.75	120
9511-9519	8,647	9,430	9,117	0.68	109
11125-10934	8,260	8,584	8,454	0.63	101
9519-9511	7,826	8,342	8,136	0.61	98
10831-10836	7,201	7,611	7,447	0.56	89
11107-10826	7,277	7,452	7,382	0.55	89
10836-10831	6,265	6,635	6,487	0.49	78
10826-11107	6,153	6,249	6,211	0.47	75
18268-9723	5,970	6,310	6,174	0.46	74
9505-9623	5,257	5,432	5,362	0.40	64
9623-9505	5,236	5,401	5,335	0.40	64
10936-11229	4,428	4,719	4,602	0.35	55
10720-10719	4,204	4,365	4,301	0.32	52
11229-10936	3,878	4,122	4,024	0.30	48
18171-9506	3,568	4,021	3,840	0.29	46
11089-10763	3,312	3,243	3,270	0.25	39
10763-11089	3,229	3,084	3,142	0.24	38
10719-10720	2,901	3,000	2,960	0.22	36
10720-10836	2,884	2,870	2,876	0.22	35
10448-10447	2,678	2,919	2,822	0.21	34
9512-9620	2,572	2,622	2,602	0.20	31
9506-18171	2,324	2,708	2,554	0.19	31
10759-10758	2,791	2,354	2,529	0.19	30
10758-10759	2,052	2,090	2,075	0.16	25
10836-10720	2,009	1,981	1,992	0.15	24
10447-10448	1,512	1,586	1,557	0.12	19
11088-11087	1,387	1,551	1,485	0.11	18
781-9512	1,219	1,305	1,270	0.10	15
11087-11088	1,189	1,313	1,263	0.09	15
9512-781	1,165	1,323	1,260	0.09	15
9620-9512	1,128	1,276	1,216	0.09	15
10935-11228	1,260	1,021	1,117	0.08	13

Table 3 continued from previous page

ID	VADT 2025	VADT 2030	VADT 2028	Share %	Bears veh
11228-10935	1,089	1,006	1,040	0.08	12
9614-9519	533	667	614	0.05	7
9622-9504	538	661	612	0.05	7
9504-9622	426	571	513	0.04	6
18178-9675	260	367	324	0.02	4
9675-18178	274	315	298	0.02	4
9519-9614	201	279	248	0.02	3
10973-11088	206	232	222	0.02	3
11088-10973	194	231	217	0.02	3
Total	**1,315,535**	**1,345,724**	**1,333,649**	**100.00**	**16,000**

Appendix F — The 100 most-loaded individual road segments

Table 4: Top 100 most-loaded road links under the center scenario. Sorted by peak volume-to-capacity ratio. 193 of these (V/C > 1.0) are projected over capacity on a Sunday game day.

Link	Street	Class	Cap.	Bears veh	V/C
3271	West Hawthorne Street	Local/other	700	3,729	5.33
3267	North Wilke Road	Local/other	700	3,494	4.99
3272	North Wilke Road	Local/other	700	3,319	4.74
3269	North Chicago Avenue	Local/other	700	2,194	3.13
3265	North Wilke Road	Local/other	700	2,015	2.88
3257	West Euclid Avenue	Local/other	700	1,578	2.25
2443	Kirchoff Road	Local/other	700	1,560	2.23
3273	North Chicago Avenue	Local/other	700	1,534	2.19
3278	North Harvard Avenue	Local/other	700	1,534	2.19
3281	West Vine Street	Local/other	700	1,534	2.19
3010	North Wilke Road	Local/other	700	1,436	2.05
3686	West Northwest Highway	Local/other	700	1,415	2.02
3691	East Northwest Highway	Local/other	700	1,415	2.02
3718	East Northwest Highway	Local/other	700	1,415	2.02
3719	East Northwest Highway	Local/other	700	1,415	2.02
3721	East Northwest Highway	Local/other	700	1,415	2.02

Table 4 continued

Link	Street	Class	Cap.	Bears veh	V/C
3723	East Northwest Highway	Local/other	700	1,415	2.02
3738	East Northwest Highway	Local/other	700	1,415	2.02
3819	East Northwest Highway	Local/other	700	1,415	2.02
192	Ramp	Local/other	700	1,397	2.00
193	Ramp	Local/other	700	1,397	2.00
324	Ramp	Local/other	700	1,397	2.00
798	Ramp	Local/other	700	1,397	2.00
2723	West Euclid Avenue	Local/other	700	1,386	1.98
3259	West Euclid Avenue	Local/other	700	1,375	1.96
904	North Meacham Road	Local/other	700	1,359	1.94
941	North Meacham Road	Local/other	700	1,359	1.94
3253	West Euclid Avenue	Local/other	700	1,331	1.90
3254	West Euclid Avenue	Local/other	700	1,313	1.88
3260	West Euclid Avenue	Local/other	700	1,313	1.88
3264	North Harvard Avenue	Local/other	700	1,313	1.88
2715	West Euclid Avenue	Local/other	700	1,309	1.87
2716	Euclid Avenue	Local/other	700	1,309	1.87
2718	Euclid Avenue	Local/other	700	1,309	1.87
2722	West Euclid Avenue	Local/other	700	1,309	1.87
2725	West Euclid Avenue	Local/other	700	1,309	1.87
3268	North Chicago Avenue	Local/other	700	1,281	1.83
2455	Plum Grove Road	Local/other	700	1,276	1.82
759	Progress Parkway	Local/other	700	1,155	1.65
760	Progress Parkway	Local/other	700	1,155	1.65
902	Progress Parkway	Local/other	700	1,155	1.65
3261	West Hawthorne Street	Local/other	700	1,135	1.62
3228	North Yale Avenue	Local/other	700	1,110	1.59
2944	North Wilke Road	Local/other	700	1,083	1.55
3009	Saint James Street	Local/other	700	1,074	1.53
720	South New Wilke Road	Local/other	700	1,033	1.48
753	South New Wilke Road	Local/other	700	1,033	1.48
3687	North Wilke Road	Local/other	700	1,008	1.44
719	West Central Road	Local/other	700	1,003	1.43
744	West Central Road	Local/other	700	1,003	1.43
746	West Central Road	Local/other	700	1,003	1.43
3053	East Northwest Highway	Local/other	700	992	1.42
3095	East Northwest Highway	Local/other	700	992	1.42
3113	West Northwest Highway	Local/other	700	992	1.42
3114	West Northwest Highway	Local/other	700	992	1.42
3118	West Northwest Highway	Local/other	700	992	1.42

Table 4 continued

Link	Street	Class	Cap.	Bears veh	V/C
3160	West Northwest Highway	Local/other	700	992	1.42
3166	West Northwest Highway	Local/other	700	992	1.42
3188	West Northwest Highway	Local/other	700	992	1.42
3193	West Northwest Highway	Local/other	700	992	1.42
3256	West Euclid Avenue	Local/other	700	959	1.37
2490	Plum Grove Road	Local/other	700	955	1.36
2496	Plum Grove Road	Local/other	700	955	1.36
2957	North Yale Avenue	Local/other	700	943	1.35
2982	North Yale Avenue	Local/other	700	943	1.35
658	Barker Avenue	Local/other	700	940	1.34
671	Barker Avenue	Local/other	700	940	1.34
684	Barker Avenue	Local/other	700	940	1.34
732	Barker Avenue	Local/other	700	940	1.34
733	Barker Avenue	Local/other	700	940	1.34
742	Central Road	Local/other	700	940	1.34
1518	Central Road	Local/other	700	940	1.34
3270	West Hawthorne Street	Local/other	700	913	1.30
3692	North Wilke Road	Local/other	700	910	1.30
3740	North Wilke Road	Local/other	700	910	1.30
2972	Meadow Drive	Local/other	700	906	1.29
3003	Meadow Drive	Local/other	700	906	1.29
3685	West Northwest Highway	Local/other	700	896	1.28
2549	Campbell Street	Local/other	700	848	1.21
2550	Campbell Street	Local/other	700	848	1.21
2554	Campbell Street	Local/other	700	848	1.21
2971	Campbell Street	Local/other	700	848	1.21
2973	Campbell Street	Local/other	700	848	1.21
2975	Campbell Street	Local/other	700	848	1.21
3000	North Dwyer Avenue	Local/other	700	839	1.20
1359	Ramp	Local/other	700	832	1.19
2270	Ramp	Local/other	700	832	1.19
2326	Ramp	Local/other	700	832	1.19
2442	Ramp	Local/other	700	832	1.19
1915	South Wilke Road	Local/other	700	831	1.19
2960	North Dwyer Avenue	Local/other	700	829	1.18
2980	North Dwyer Avenue	Local/other	700	829	1.18
2988	North Dwyer Avenue	Local/other	700	829	1.18
2592	Euclid Avenue	Local/other	700	827	1.18
2593	Euclid Avenue	Local/other	700	827	1.18
2699	Euclid Avenue	Local/other	700	827	1.18

Table 4 continued

Link	Street	Class	Cap.	Bears veh	V/C
2711	Euclid Avenue	Local/other	700	827	1.18
2719	Euclid Avenue	Local/other	700	827	1.18
2721	Euclid Avenue	Local/other	700	827	1.18
2745	Euclid Avenue	Local/other	700	827	1.18

Appendix G — Side-by-side comparison of the six named corridors

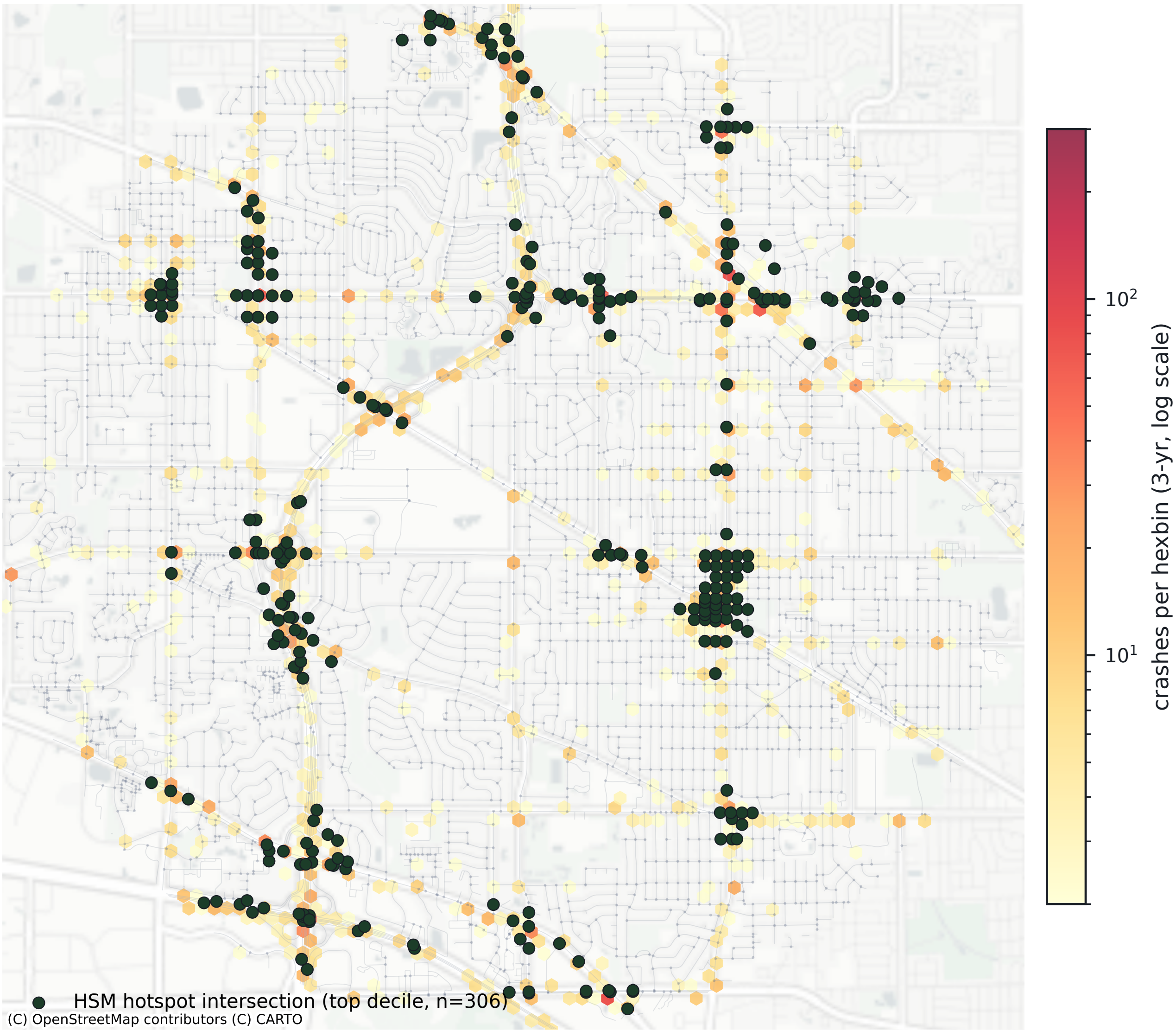
Table 1 from Chapter 5 and Table 2 from Chapter 6 together form the per-corridor comparison artifact that Recommendation 5 points to. When the Bears' Kimley-Horn study is released, these two tables form the natural side-by-side comparison: each row is a falsifiable empirical claim that any other analysis must either reproduce or explicitly disagree with.

Appendix H — Full-page maps

The remaining maps are reproduced at full-page resolution for readers who want geographic detail beyond the body figures.

Figure 14: The 3,011 algorithmically-selected intersections in the three-mile study area, selected per ITE Recommended Practice 2010 and IDOT BDE Manual Chapter 36.

Crash density 2022–2024 (T2) with HSM hotspot intersections



Data: Cook County GIS, IDOT; rendered 2026-05-22

Figure 15: Density of IDOT-recorded crashes (2022–2024) across the three-mile study network. The peak-crash link in the study area is on I-290 in Schaumburg with 966 crashes in three years.

Event-day V/C heatmap — Arlington center scenario (16,000 one-way vehicles)
193 links overcapacity; 334 at LOS E or worse

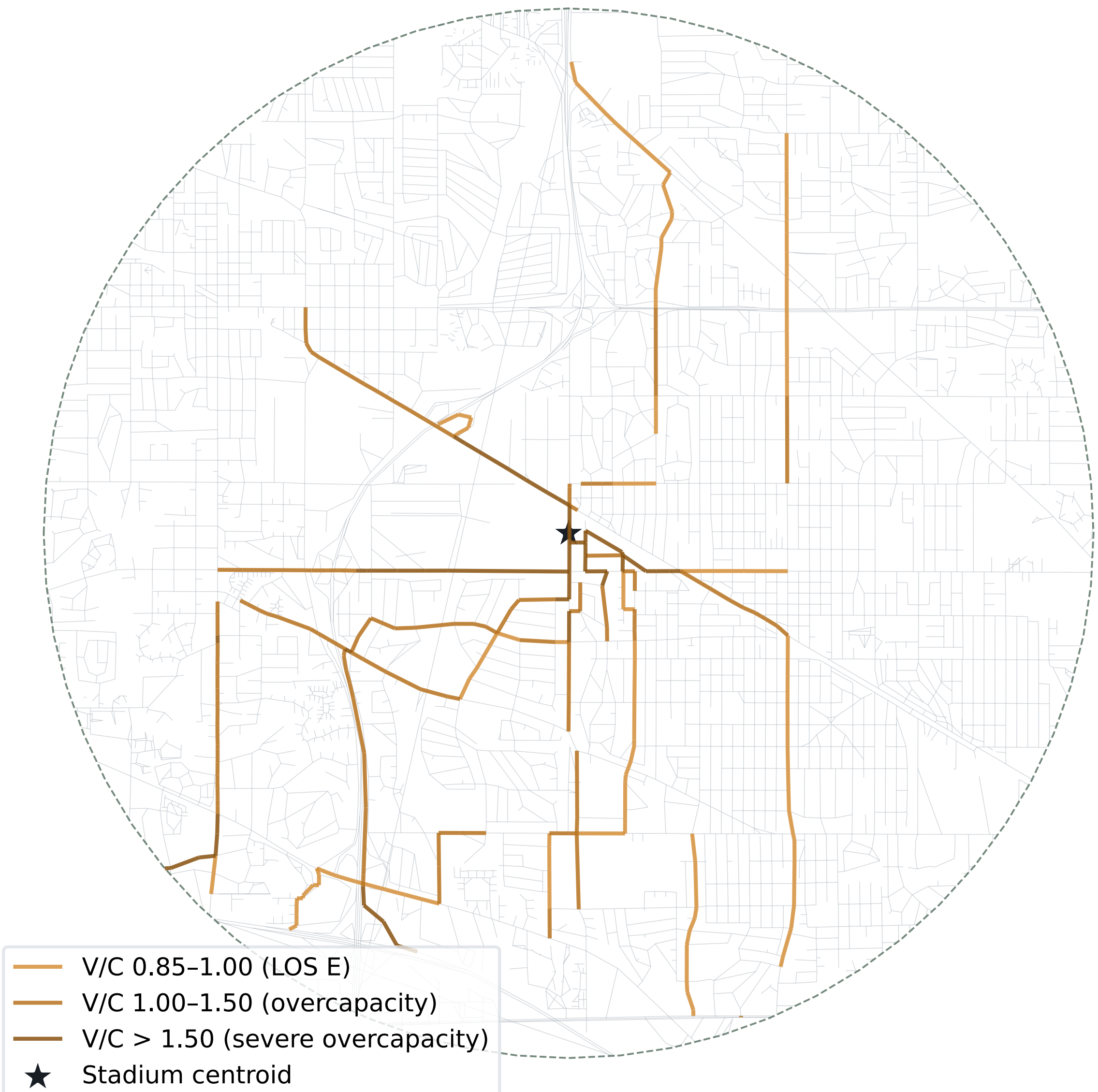


Figure 16: Final modeled volume-to-capacity ratios across the three-mile road network under the center scenario. 193 individual road links run over capacity (V/C > 1.0, dark orange); 334 are at near-failing service or worse.

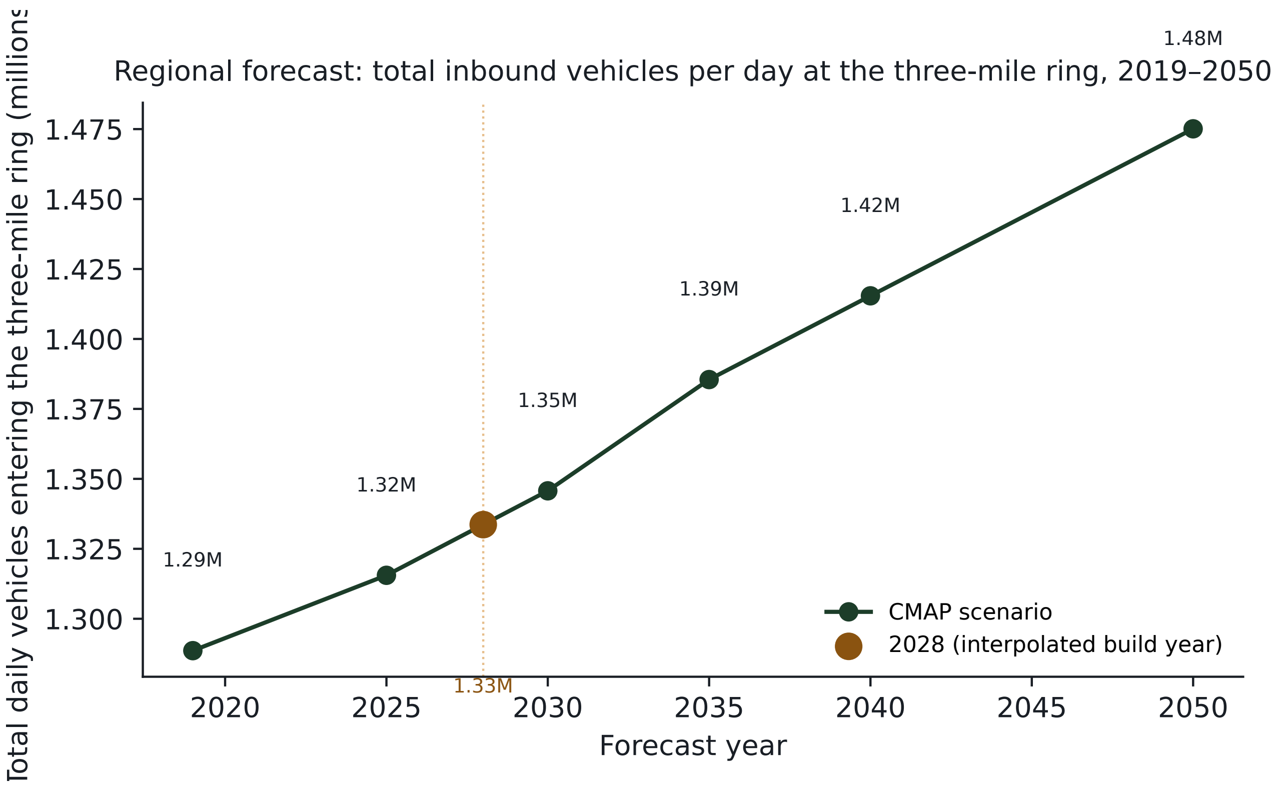


Figure 17: CMAP forecast trajectory of total inbound traffic at the three-mile ring across the six conformity scenarios (2019 base through 2050 horizon). The 2028 Bears opening sits between the 2025 and 2030 published scenarios; this analysis interpolates linearly between them.

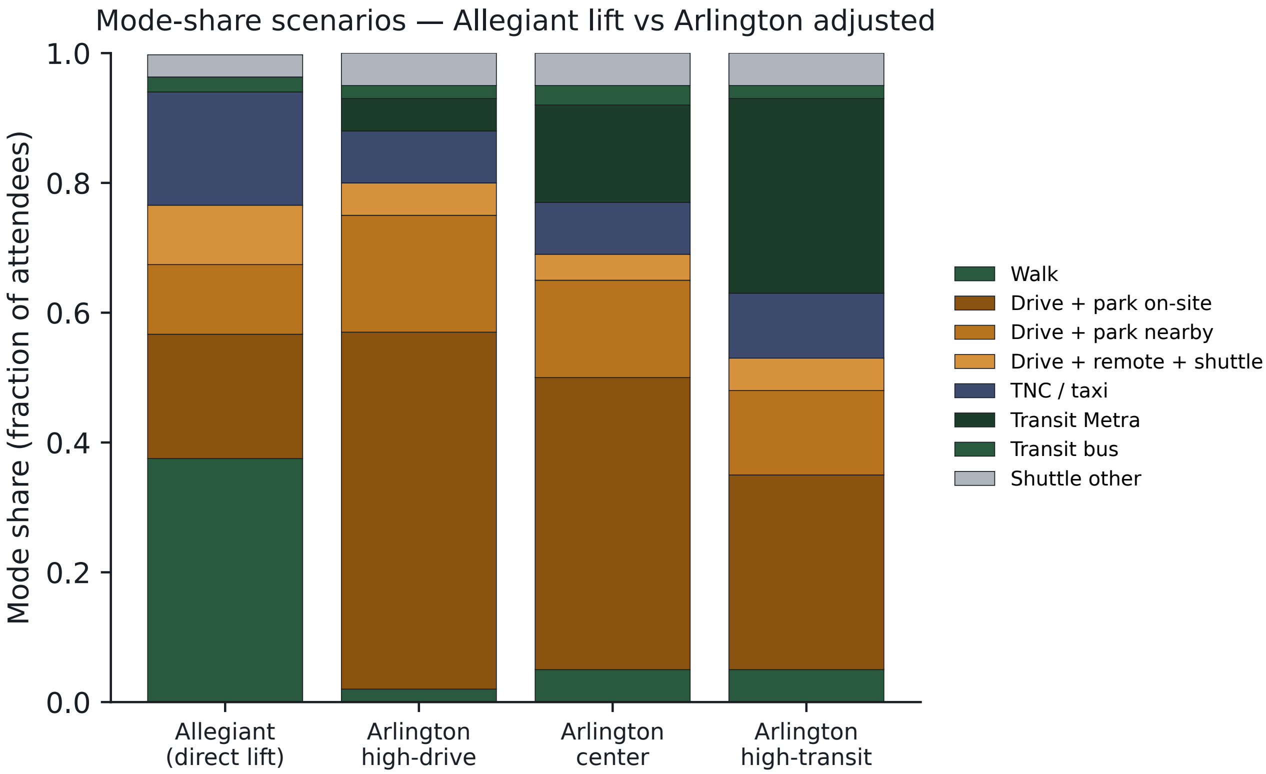


Figure 18: Mode-share assumptions across the four scenarios, compared against the Las Vegas Allegiant Stadium plan applied unchanged (left-most bar). Allegiant's 37.5% walk-only share is a Resort Corridor feature and not directly applicable to Arlington Heights; the Arlington scenarios dampen walk to 2–5% and reallocate to driving and Metra.

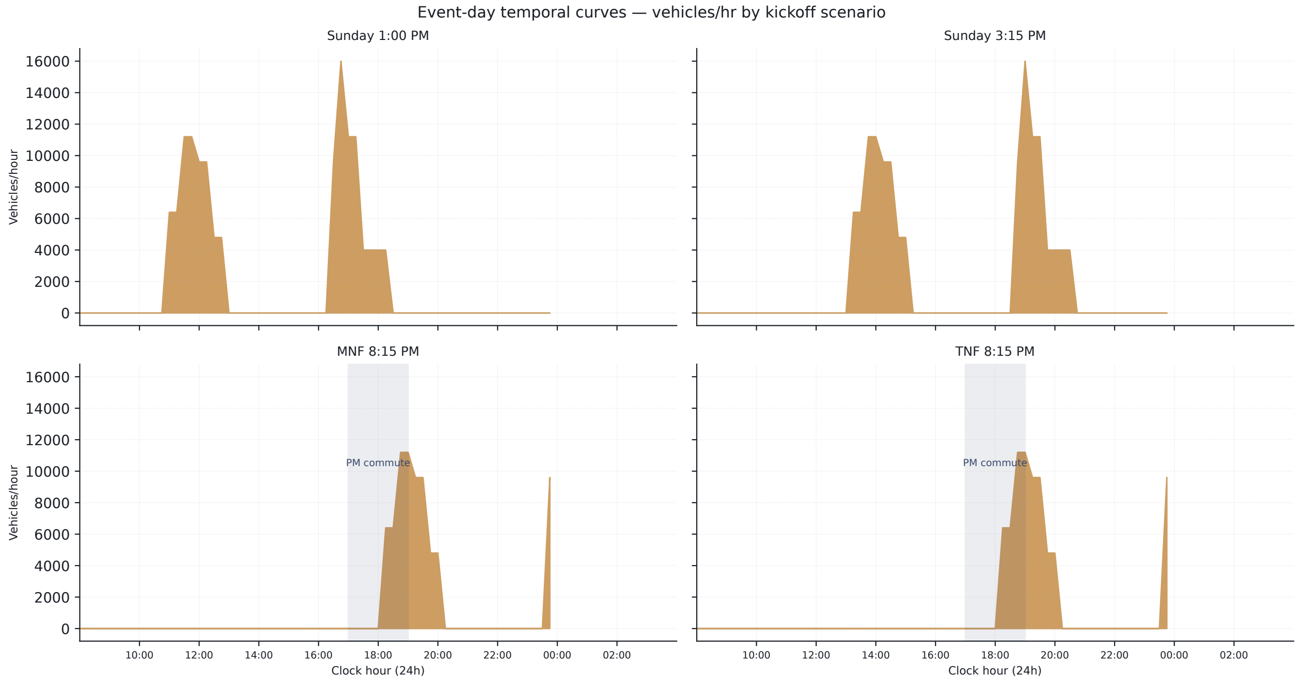


Figure 19: Modeled vehicle flow by clock hour for the four kickoff scenarios. Sunday games (top row) end before the typical weekday commute window. Monday Night Football and Thursday Night Football (bottom row) place stadium arrivals directly into the weekday PM commute peak on Route 53, I-90, and Algonquin.

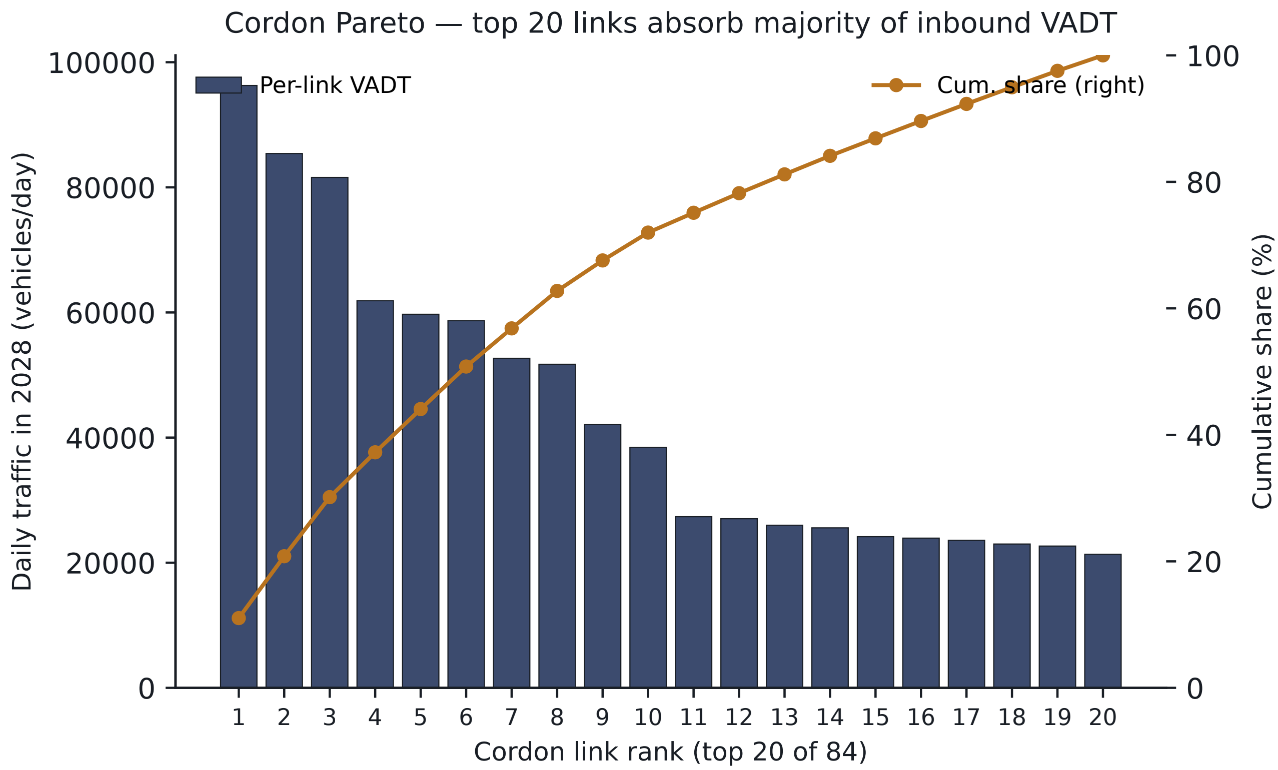


Figure 20: The top 20 of the 84 inbound roads, ranked by 2028 daily volume. The top five absorb roughly 29% of all Bears vehicles by themselves.

Glossary

Plain-English translations of the transportation-engineering terms used in this report. Body chapters use the plain version; appendix sections use the canonical term.

Annual Average Daily Traffic (AADT). Observed average daily vehicle count on a road segment, averaged across the year. Published by state DOTs from continuous-count stations and short-duration counts.

Average vehicle occupancy (AVO). Number of people per car. NFL stadium-event AVO commonly ranges 2.7–3.3 persons per vehicle. The body uses "average people per car."

BPR volume-delay function. The standard formula relating road travel time to volume-to-capacity ratio (Appendix A.5). Body says "travel time grows non-linearly as volume approaches capacity."

Cordon. The boundary of a study area where vehicles enter or leave; the analysis tracks 84 cordon-crossing roads at the three-mile ring boundary.

Daubert standard. The Federal Rules of Evidence framework (FRE 702) for admissibility of scientific evidence, requiring reliable methods reliably applied to sufficient facts.

Digital Equity Score (DES). Cook County's tract-level composite ranking of digital and economic equity. Q1 is the lowest-equity quartile.

Frank-Wolfe / Bi-Conjugate Frank-Wolfe (BFW). A class of algorithms for solving user-equilibrium traffic assignment problems. Body says "the model converged" (Appendix A.6).

GEH statistic. The FHWA goodness-of-fit measure used to validate modeled link volumes against observed counts (Appendix B.4). Body says "the standard goodness-of-fit check."

Level of Service (LOS). HCM's A–F grading of congestion. LOS A is free-flow; LOS F is breakdown. Body uses "comfortable / near-failing / over-capacity" instead.

Mode share. The fraction of trips by each travel mode (drive / Metra / TNC / walk / bus). Body says "what fraction of attendees drive, take Metra, or walk."

NFHL. FEMA National Flood Hazard Layer. Provides regulatory flood-zone polygons.

Special Flood Hazard Area (SFHA). FEMA Zones A and AE; the regulatory 100-year floodplain. Used in the corridor flood-overlap metric in Chapter 5.

Trip generation. The first step of the four-step model: how many trips a land use produces. Body says "how many cars come to the stadium."

User equilibrium. The steady-state distribution of vehicles to routes such that no driver can reduce their trip time by switching routes (Wardrop's first principle). Body says "where drivers end up after rerouting around congestion."

V/C ratio. Volume-to-capacity ratio. Body says "how full the road is, relative to what it was built to carry." Thresholds: 0.85 = LOS E (near failing); 1.0 = LOS F (over capacity).

VADT. Vehicles per day, average daily traffic. The CMAP travel-demand model field used as the cordon-flow input.

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