Transportation and Mobility

Roadway Network

The configuration of the corridor's roadway network includes several interfaces with freeways, but relatively few major cross streets outside of the core urban footprint of Kansas City, Missouri and Kansas City, Kansas.

The Study Area's network covers a mix of streets owned and maintained by local and state agencies, with numerous interfaces with other key thoroughfares and freeways. The east-west orientation of the area captures major routes from the west end of Wyandotte County into the Kansas Cities' two downtowns, and further east to Independence.

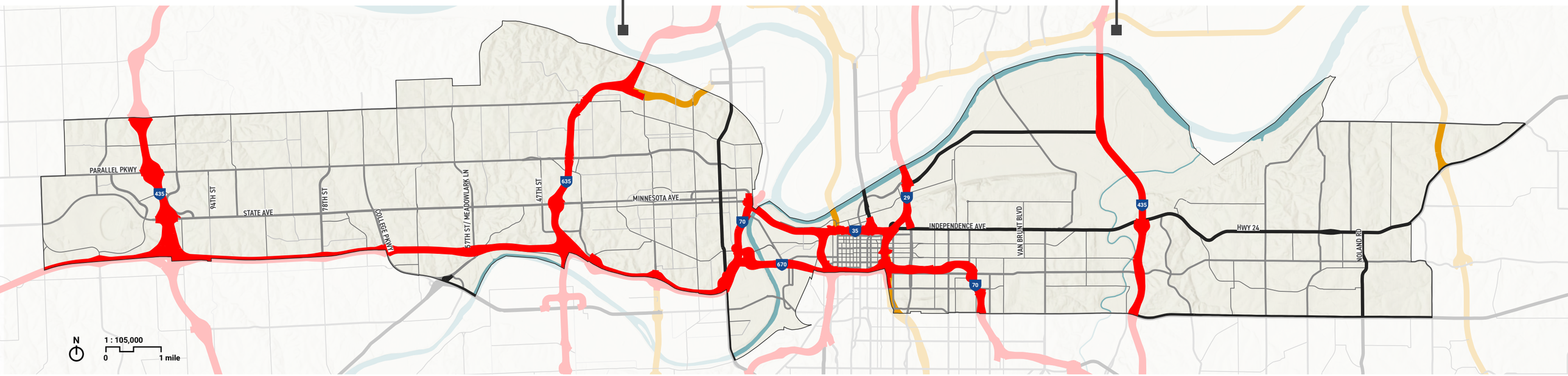
The roadway classification system guides policy and funding decisions for street management and enhancement. Notably, more study area streets in Missouri are classified as arterials than in Kansas, despite many serving primarily for property access.

SURFACE NETWORK CHARACTERISTICS in KANSAS		
Roadway classification	Major Corridors	Primary intended function
Minor Arterial	State Avenue, Parallel Parkway, Leavenworth Road, College Parkway, Meadowlark Lane	Regional mobility, with some property access
Collector	Quindaro Boulevard, Central Avenue, most connecting streets between the major east-west corridors	Connecting local streets to mobility corridors balanced with property access

SURFACE NETWORK CHARACTERISTICS in MISSOURI		
Roadway classification	Major Corridors	Primary intended function
Principal Arterial	Independence Avenue-US 24, Truman Road (east of I-435), 23rd Street, Front Street	Regional mobility, with limited property access
Minor Arterial	Truman Road (west of I-435), Winner Road, Sterling Avenue	Regional mobility, with some property access
Collector	Blue Ridge Avenue, Noland Road	Connecting local streets to mobility corridors balanced with property access

PLAN 24
ROADWAY NETWORK
(from MARC Roadway Functional Classification)

Interstate
Freeway/Expressway
Principal Arterial
Minor Arterial
Major Collector
Minor Collector



Overall Network Strength

The robustness of the BSRC street network varies throughout the Study Area, with a high density of intersections and network streets closer into the metropolitan core and varying outside of this area.

Street network is a useful proxy measure for many indicators that lead to successful multimodal corridors. In particular, the western suburban neighborhoods of Kansas City, Kansas, and most of the Study Area within Independence and Sugar Creek, Missouri, feature a less connected network with many streets only accessing their surrounding areas by connections to one main thoroughfare street. This pattern is especially pronounced in the more suburban areas of the western Study Area in Kansas.

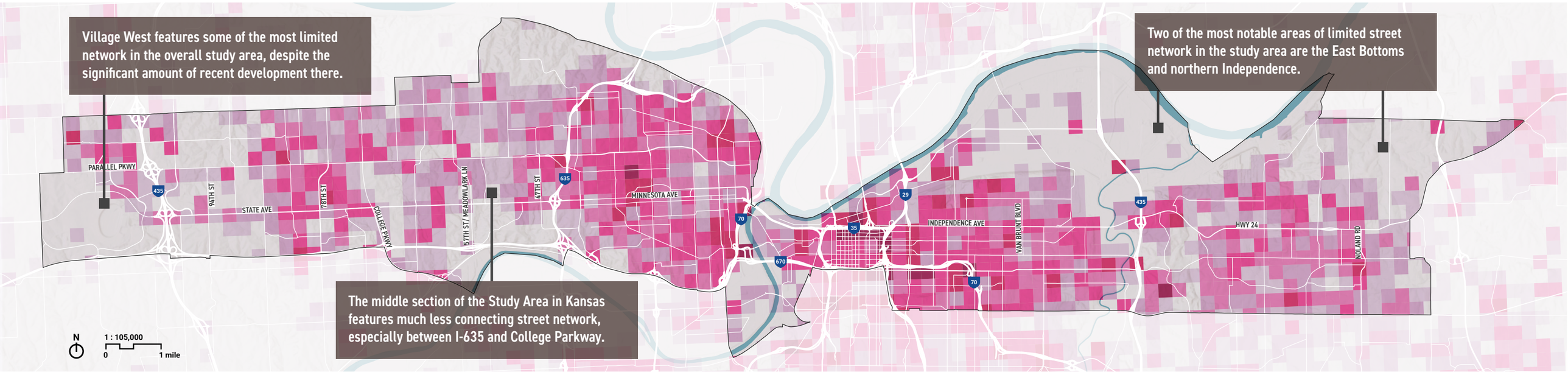
There are multiple reasons for the lack of connection: newer development patterns after World War II favored cul-de-sac and dead-end streets to offer a more exclusive and low-traffic environment for neighborhoods; the hilly topography of the Study Area above floodplains makes street connections and land development more challenging, and large industrial and commercial properties in parts of the Study Area did not create multiple connections onto the street network.

PLAN 25
NETWORK DENSITY DIAGRAM
(from MARC Roadway Functional Classification)

1 map square = 1/4 mile

Average Density of Intersections per Square Mile

Up to 25 | 25 - 50 | 50 - 100 | 100 - 150 | 150 - 200 | 200 - 300 | 300 - 400 | More than 400



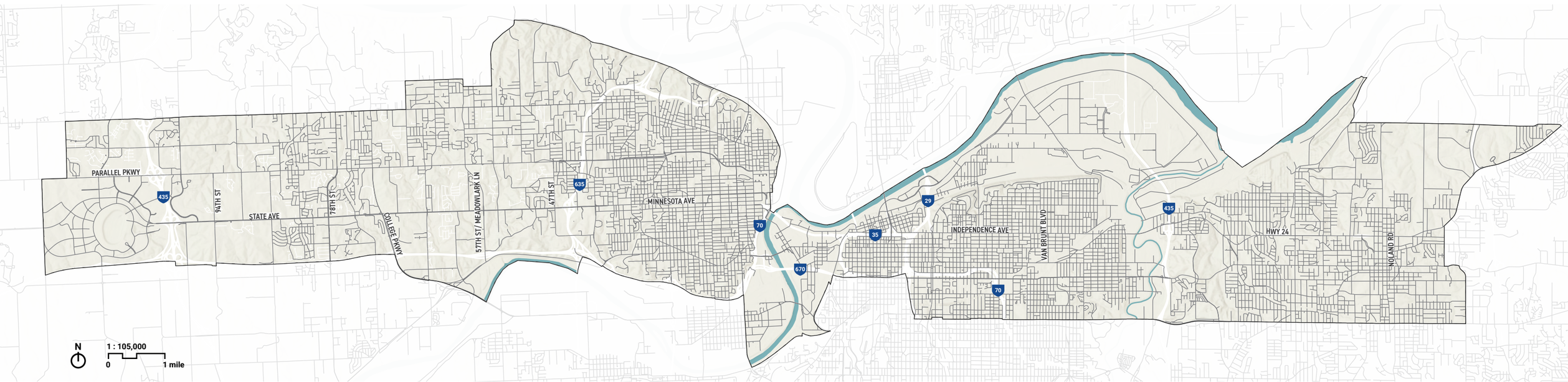
Connectivity Along the Corridor

The strength of the overall corridor street network speaks to its preparedness for major mobility investments and supporting development.

When considering which streets in the overall Study Area provide true connections to other parts of the region, the Study Area varies considerably. It features a connected grid of streets located mostly within the I-635 to I-435 subset of the Study Area: the historic boundaries of Kansas City, Kansas prior to consolidation with Wyandotte County, and the core urban neighborhoods of Kansas City, Missouri. Outside of these areas, there are far fewer connecting streets between more than one major thoroughfare.

Overall, this suggests that the parts of the Study Area outside of I-635 and I-435 rely more heavily on a single arterial connection for all forms of travel—both regional trips outside of their immediate district, and shorter local trips within that district. This in turn has implications for traffic operations and safety, when these thoroughfares have to function as traffic arteries as well as local streets.

PLAN 26
EFFECTIVE NETWORK DIAGRAM
(from MARC Roadway Functional Classification)



Bridges and the Roadway Network

The east and west reaches of the Study Area do not feature extensive bridges, but crossings of the Kansas River and the extent through downtown Kansas City, Missouri is connected to numerous bridge crossings.

The Kansas City region has extensive roadway, rail, and bridge infrastructure, and the Study Area includes some of the most notable concentrations of bridges. As it is crossed by multiple freeway and rail corridors, bridges and viaducts are a key part of the overall transportation landscape. Their condition varies throughout the Study Area, with most roadway bridges in the Kansas side of the Study Area in good condition and a greater share of bridges in the Missouri side in fair to poor condition.

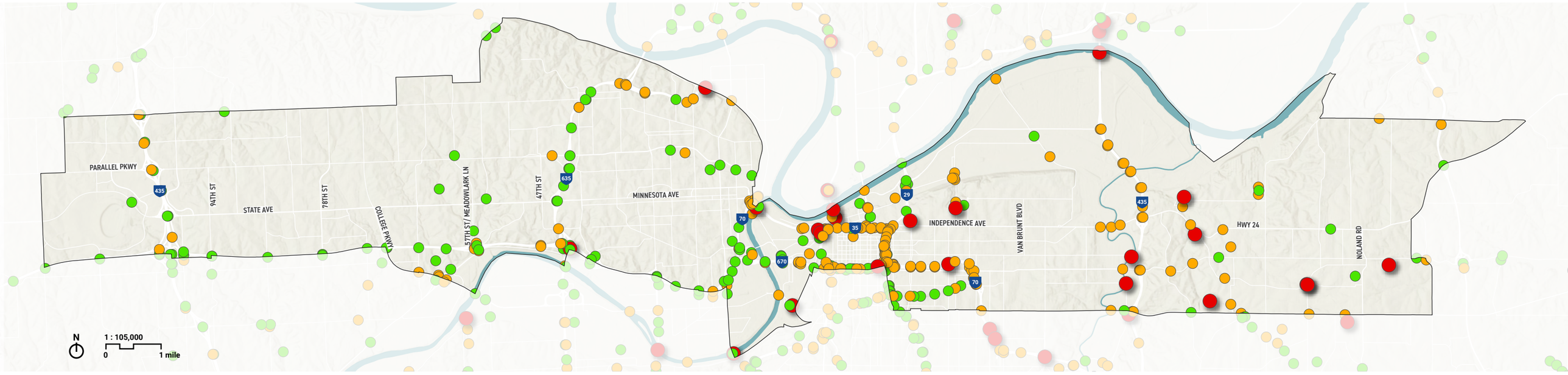
Notably, in Kansas very few bridges cross water features, and most are roadway viaducts where the freeway system has grade separation from the surface street network.

Some of the most significant bridge crossings in the Study Area cross the Kansas River, where several major connections have been closed to vehicle traffic due to bridges in need of repair and at risk of failure. These are discussed in more detail in a later page.

At the time of this report, Wyandotte County is planning to begin a bridge study to address this issue. As noted in the following page, both cities face a major challenge of recent failure of three of the major river crossings that connect Kansas City, Kansas to Kansas City, Missouri. Before these failures, the two cities had already seen steady reduction of connectivity between the two downtowns—beginning after World War II with the dismantling of the legacy urban streetcar system and eventually closure of rail and road bridges.

PLAN 27
BRIDGE CONDITION
(MARC)

- Bridge in **Good** Condition
- Bridge in **Fair** Condition
- Bridge in **Poor** Condition



Bridges and Rail Crossings

Railroads are prominent in the Kansas City region and create numerous locations that make east-west travel difficult. Even though they extend through more of the Missouri side of the Study Area, a limited number of rail crossings in Kansas complicates access across the Kansas River.

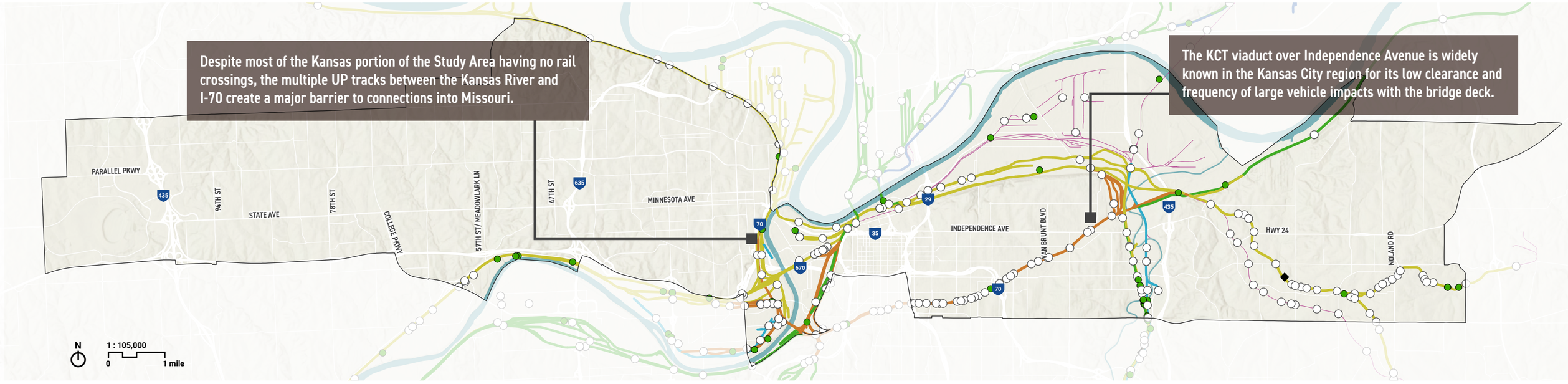
There are no railroad interfaces in most of the Study Area west of the Kansas River, but numerous locations east of the river and into Missouri where streets and the Kansas City region's extensive freight rail network cross. Owing in part to the long history of this rail network in the Kansas City area and the level of activity on both roads and rail, there are very few at-grade crossings of railroad tracks, and most of these at-grade crossings are for private service roads used by the railroads themselves. Nonetheless, the Missouri side of the Study Area does have notable infrastructure challenges, such as low-clearance rail viaducts, long roadway bridges over multiple tracks and yards, and existing road bridges in need of repair.

One of the better known examples of these challenges is a Canadian Pacific Kansas City viaduct over Independence Avenue that only allows 12 feet of vertical clearance under the rail bridge. This bridge is known for vehicle collisions with parts of the structure, especially trucks and other taller vehicles that are too high to pass under the railroad bridge without impacting the structure.

To the north of the I-70 corridor, the East Bottoms industrial district also features extensive railroad short-line connections and spurs connecting to industrial buildings and land uses.

PLAN 28
RAILROAD NETWORK AND CROSSINGS
(MARC)

- Burlington Northern Santa Fe
- Canadian Pacific Kansas City
- Kansas City Terminal
- Other Operators
- Missouri & Northern Arkansas
- Norfolk Southern
- Union Pacific
- At-grade with public road
- At-grade with private road
- Grade-separated

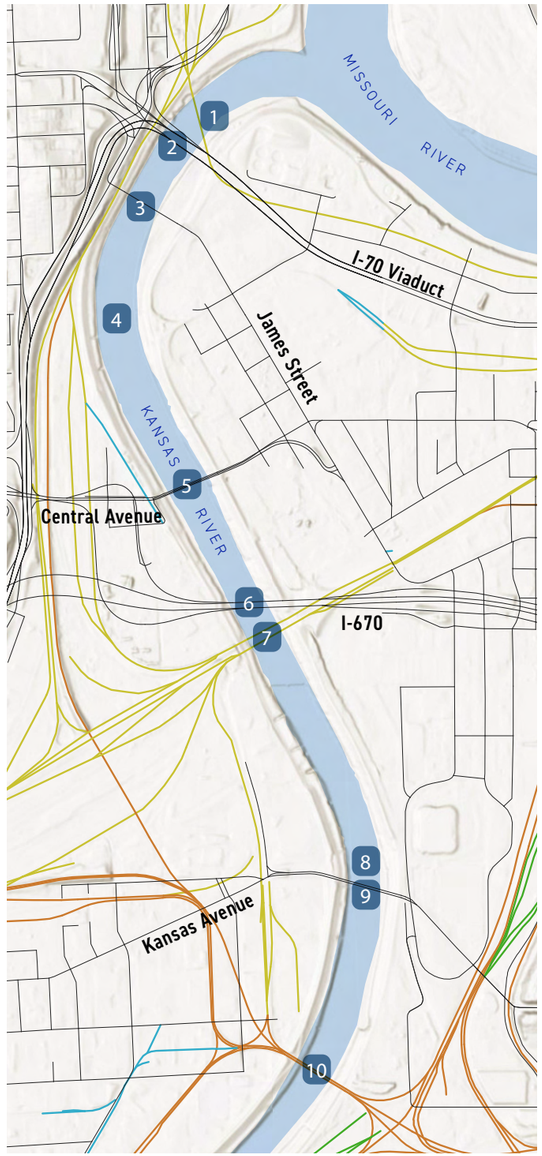


Kansas River Crossings

The Kansas River is the most significant natural barrier to east-west connectivity in the Study Area. Crossings of the river feature a mix of rail and road bridges, roadway designs, and agency ownership—and not all are in a condition readily supportive of adding transit or other mobility options.

This existing conditions summary effort included a more in-depth assessement of the Kansas River's crossings, both highway and rail bridges. The overall condition of these bridges and their readiness to accommodate transit or other forms of travel vary considerably. Most importantly, as of late 2024, three of the roadway bridges have been closed to traffic due to maintenance needs, limiting vehicular travel to James Street, westbound I-70, and I-670.

This means that only one surface-street crossing (James Street) is currently available from downtown Kansas City, Kansas to the West Bottoms of Kansas City, Missouri. Although this connects into downtown Kansas City, Kansas via Armstrong Avenue, it travels through complex intersections under the I-70 interchange with downtown streets, and similarly relies on routes with multiple turns to connect across the bluffs and into downtown Kansas City, Missouri. The only other crossing currently available in both directions is I-670, though access to the surface street network from the freeway requires use of lenghty ramps (the connection to Central Avenue on the Kansas side) or additional turns at intersections (connecting to Genesee and Wyoming Streets on the Missouri side).



Roadways

- Burlington Northern Santa Fe
- Canadian Pacific Kansas City
- Kansas City Terminal
- Other Operators
- Missouri & Northern Arkansas
- Norfolk Southern
- Union Pacific

	KDOT ID (Road Bridges)	Name and Description	Year Built	Current Condition and Key Issues
1		Union Pacific Railroad North		Active rail crossing owned and maintained by UPRR.
2	105-340	I-70 Westbound	2018	Very good condition.
	105-031 SSGC	I-70 Eastbound (Weatherswood Bridge)	1907/ 1972	Fair to poor condition. Highway bridge closed to traffic in 2024
3		James Street	1987	Fair condition. Superstructure in good state of repair; road carries two lanes.
4		Abandoned Rail Bridge		Owned by UPRR, though not currently used or connected to other rail tracks.
5		Central Avenue	1918	Poor condition, and bridge has been closed to vehicle traffic since 2021.
6	105-244	I-670 Westbound	1984	Good condition; some minor challenges with substructure and supports but bridge has been regularly maintained.
	105-243	I-670 Eastbound		
7		Union Pacific Railroad South		Active rail crossing owned and maintained by UPRR.
8		Kansas City-Rock Island Bridge		Bridge is closed to rail use and is currently being enhanced with buildings and public space amenities.
9		Kansas Avenue/Avenida Cesar Chavez		Poor condition, and bridge has been closed to vehicle traffic since 2022.
10		Kansas City Terminal Railroad		Active rail crossing owned and maintained by UPRR.

Traffic and Circulation

Overall, the Study Area includes relatively high-volume streets when considering surrounding neighborhood areas, but in large parts of the corridor—especially western Wyandotte County, the limits of street network mean a smaller number of intersections manage more traffic.

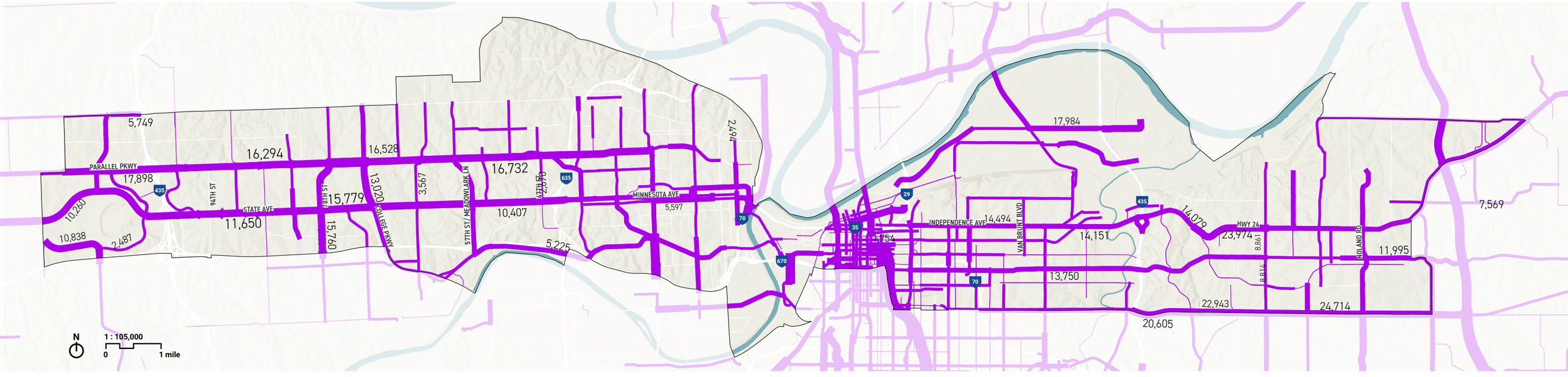
Most thoroughfare streets in the Study Area carry between 10,000 and 20,000 vehicles per day, significantly lower amounts than the Interstate highways and other freeways in the Kansas City metropolitan area and also lower than thoroughfare streets in the southern suburbs of the metropolitan area.

As discussed later in this report, traffic volumes are generally well within vehicle carrying capacity of streets, suggesting relatively minor risk of congestion for most of the Study Area. Nonetheless, the Study Area extends over 20 miles east to west, and the presence of traffic signals and other forms of traffic control means that an overall trip through the Study Area is long—around one hour in non-congested, relatively free-flowing traffic conditions.

Taken together, these conditions suggest that there may be room within current corridors to repurpose for other travel modes without needing to acquire costly right-of-way to make space for transit and multimodal improvements. This also suggests that making operational changes to these corridors, such as rethinking signal timing and management of traffic operations to be more friendly to transit, walking, and bicycling, may not have significant impacts on overall mobility in the region.

PLAN 29
AVERAGE DAILY TRAFFIC ON STUDY AREA ROADWAYS
(MoDOT and KDOT)

Up to 2,000
2,000 - 5,000
5,000 - 10,000
10,000 - 20,000
20,000 - 30,000
30,000 - 50,000
Greater than 50,000



Opportunity Areas for Roadway Change

Overall, the Study Area features corridors in which current traffic volumes are less than the typical vehicle-carrying capacity of their road designs.

The traffic volumes discussed in the previous map point to opportunities to rethink these streets for multimodal enhancement or other forms of investment, such as stormwater management or economic development, without the need to acquire additional right-of-way. As the Bi-State Sustainable Reinvestment Corridor study's later evaluation of mobility alternatives explores different pathways for enhancing mobility choice, understanding the corridors and streets of the Study Area where roadway vehicle-carrying capacity exceeds traffic volumes is important. Adding new right-of-way is a costly part of any transportation project, especially in urban areas where land prices are high. Any opportunities to use existing right-of-way differently, such as repurposing travel lanes for transit, active transportation, or other enhancements that make communities more sustainable, can increase the benefits of a mobility option while keeping costs managed.

PLAN 30
ROADWAY REPURPOSING OPPORTUNITIES
(MARC)

Number of Travel Lanes

2
3
4
5 - 6

Opportunity Areas for Roadway Change, continued

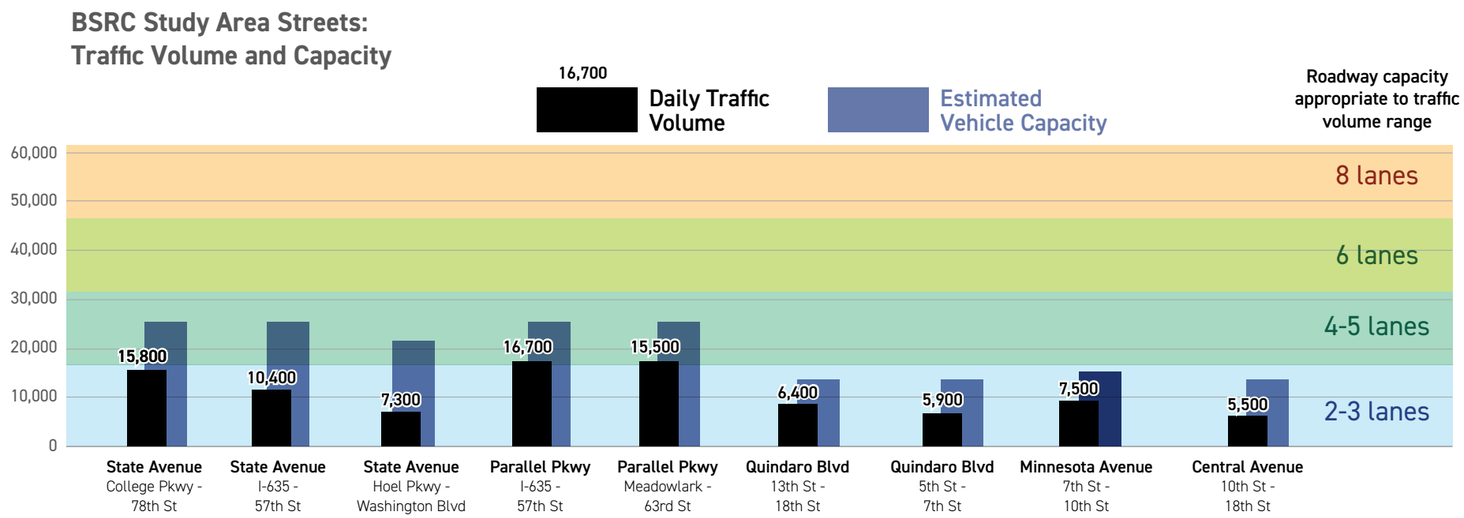
There is generally enough excess vehicle capacity to absorb small amounts of delay or adjustment to allow other users to better use the corridor.

The diagrams to the right illustrate a series of corridor segments throughout the Study Area and compare the daily traffic volumes counted on these streets with an estimated maximum vehicle carrying capacity of the street (capacity that meets a still-functional level of service before roadway congestion occurs). This is based on industry research and practice guides such as the Florida Department of Transportation's Quality and Level of Service Manual, and it considers the urban-area condition of these streets with their typical section design. Streets with medians and dedicated turn lanes such as State Avenue in western Kansas City, Kansas have a higher capacity than undivided four-lane streets such as Independence Avenue in historic Northeast Kansas City, Missouri.

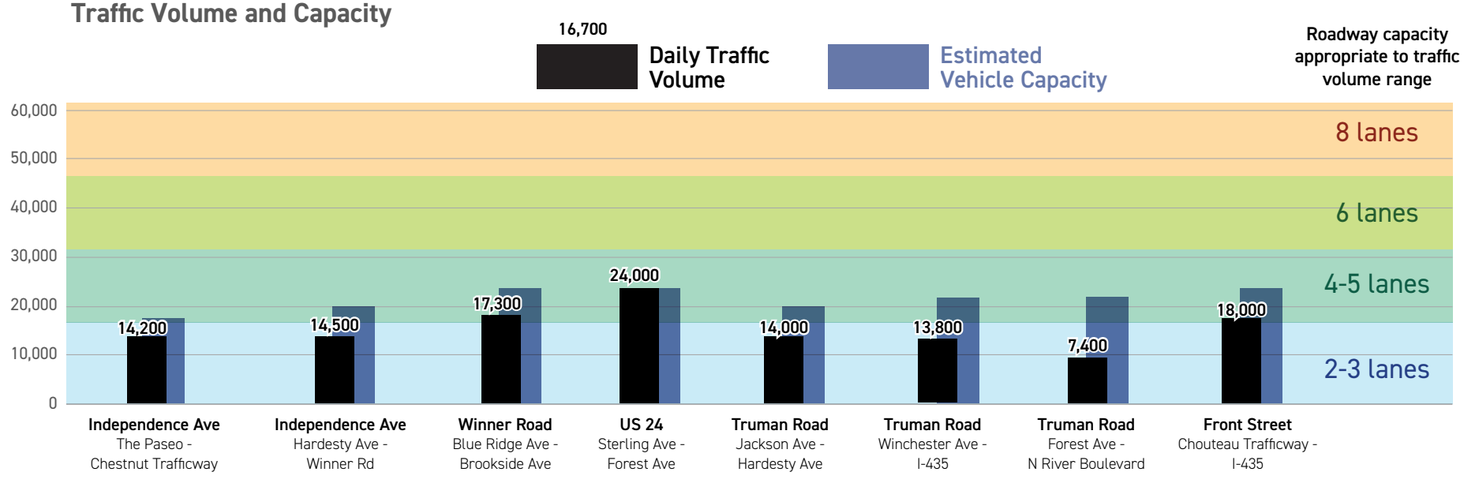
In some locations, especially State Avenue in Kansas and portions of Truman Road in Missouri, traffic volumes are well enough below capacity that substantial changes to the street design might be feasible, such as dedication of a lane for transit or conversion of an undivided four-lane roadway section into a three-lane section, allowing space for other travel modes. However, in most locations, capacity is greater than volume but not by levels that suggest that major roadway change could be readily accommodated. In these locations, this relationship might mean pursuing either less transformational changes to roadways, such as prioritized signal timing for transit or installation of signalized mid-block crossings for pedestrians, or looking to opportunities to add to the corridor's right-of-way if additional space for transit or active transportation users will be part of a multimodal corridor.

The overall observation here is that there is room to repurpose spaces on many of the Study Area's streets in a way that will not create congested conditions on the thoroughfare. This implies that many of the east-west corridors could be good candidates for better multimodal accommodation today without needing to take on changes that would increase cost and effort.

Selected street segments in **Kansas**



Selected street segments in **Missouri**



Traffic Operations and Risks for Travel Time

As shown in MARC's regional travel demand forecasting and congestion management, many of the Study Area's corridors carry limited traffic volumes.

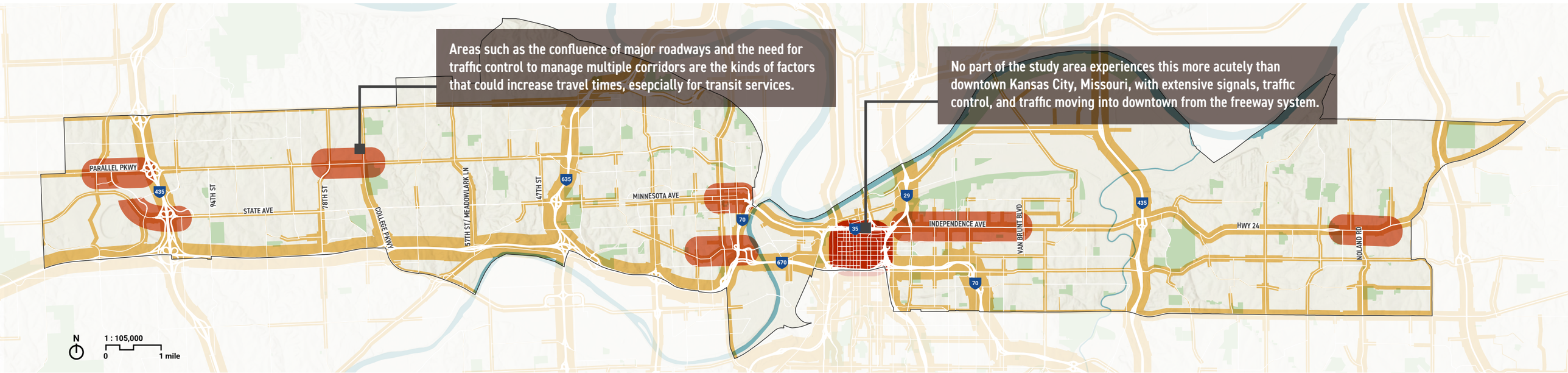
Many of the Study Area's streets operate within their capacity today and this is not expected to change in the future. MARC's regional travel demand forecasts for the Kansas City region note significant changes traffic volume and congestion on major freeways and arterials throughout the region, but relatively few of these are in the BSRC area. However, those corridors that are expected to increase in traffic volume and congestion represent opportunities for more advanced forms of corridor management and traffic operations.

The map below illustrates the traffic volumes expected under MARC's forecast for 2050, and notes concentrated districts in the Study Area where greater levels of congestion are a risk into the future. This is a helpful perspective for considering other mobility options and investment strategies in the BSRC corridor and how they can help offset the expected growth in vehicle travel in these areas; however, they also offer early guidance on the expected challenges that corridors and areas may face for transit operations and other time-sensitive travel needs.

PLAN 31
POTENTIAL CORRIDOR CONGESTION AREAS
(MARC)

Up to 2,000
2,000 - 5,000
5,000 - 10,000
10,000 - 20,000
20,000 - 30,000
30,000 - 50,000
Greater than 50,000

Travel Time Risk Areas: Where traffic volumes and operations are more prone to experience congestion and/or longer signal cycles and waits, especially for transit operations



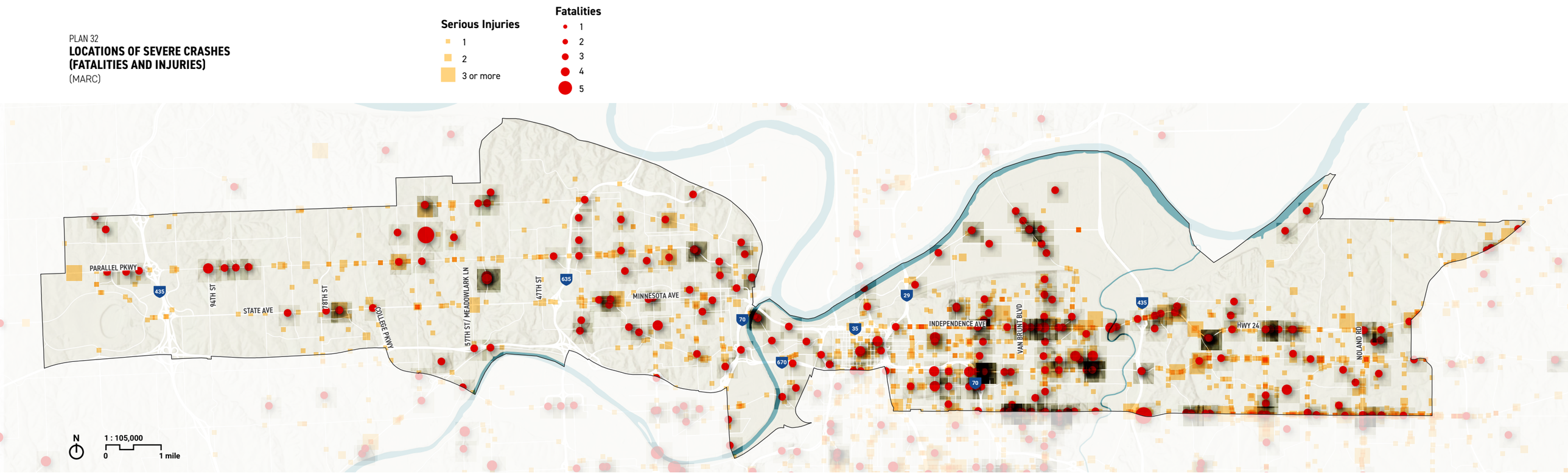
Transportation Safety

The area features a series of transportation safety patterns and trends that speak to needs for enhancement but also opportunities for balancing the corridor's multimodal users.

Most critically, the areas with the highest propensity for transit also feature the greatest risks for vulnerable roadway users. The Study Area's greatest areas of safety concern coincide with the two Kansas City downtowns and Kansas City, Missouri's east side before crossing the Blue River. Significantly, these are not the areas of the greatest traffic volume along the corridor—suggesting that traffic volume alone does not lead to greater risk of safety challenges, but that other conditions—such as roadway design, frequency of bicycle and pedestrian travel, and environmental conditions (such as limited visibility from terrain, lighting, or parallel transportation infrastructure) are also factors.

However, roadway safety remains an important issue for jurisdictions in the Study Area. Kansas City, Missouri completed its KC Vision Zero plan in 2022 with an intent to eliminate roadway fatalities, and has completed nearly 20 safety-focused street projects since then (including a project in the study area along East 12th Street). At the time of this report, the Unified Government of Wyandotte County had begun leading its own Vision Zero effort based on a Safe Streets and Roads for All Grant from the US Department of Transportation.

PLAN 32
LOCATIONS OF SEVERE CRASHES (FATALITIES AND INJURIES)
(MARC)



Major Safety Trends and Patterns

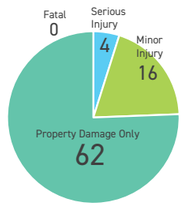
Along major Study Area streets, different safety trends and patterns suggest different roadway design treatments and land use and development policy approaches may be needed throughout the length of a single corridor.

The diagrams on this page provide additional detail on crash statistics at select locations throughout the Study Area. Notable trends include a generally greater rate of crashes, including a series of crashes involving fatalities, on the Parallel Parkway corridor in Kansas, a generally high frequency of crashes in the central Study Area in Kansas City, Missouri, and numerous fatalities in the industrial area of the East Bottoms.

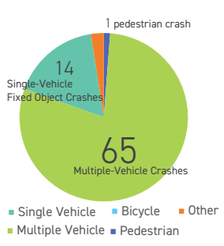
SELECTED CRASH CHARACTERISTICS in KANSAS

State Avenue: Village West to 86th Street

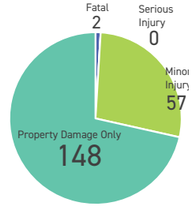
CRASHES BY SEVERITY

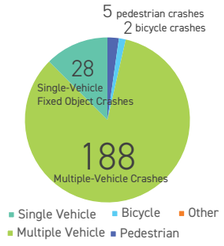


CRASHES BY COLLISION OBJECT

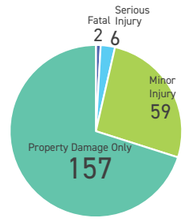


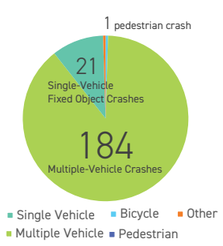
State Avenue: 78th Street to College Parkway





State Avenue: I-635 to Hoel Parkway

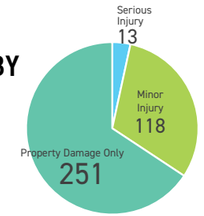




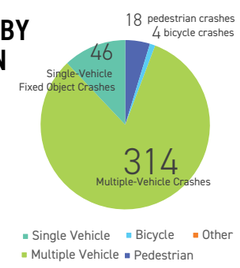
SELECTED CRASH CHARACTERISTICS in MISSOURI

Independence Avenue: The Paseo to Benton Boulevard

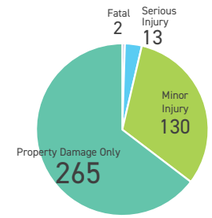
CRASHES BY SEVERITY

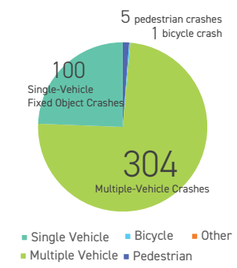


CRASHES BY COLLISION OBJECT

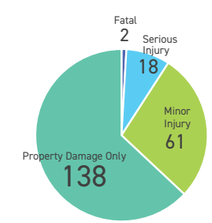


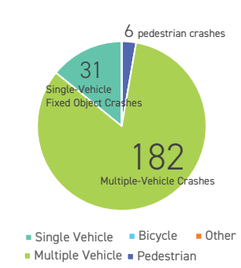
Independence Avenue: Hardesty Avenue to Bennington Avenue





US 24: I-435 to Brookside Boulevard





Safety Trends and Community Land Use

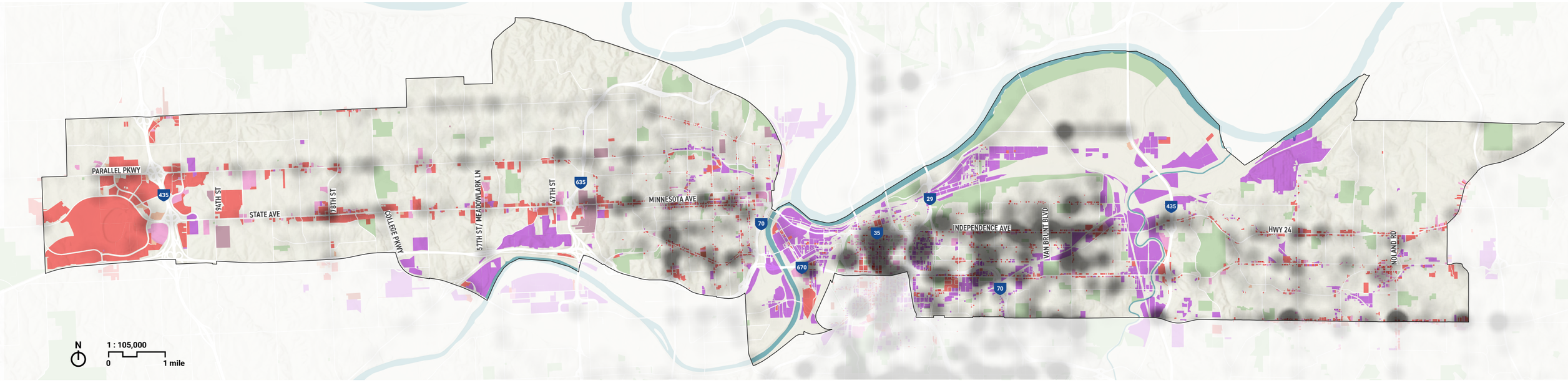
Where crash rates and patterns occur is not just a function of traffic volume, but also has a relationship with land use patterns.

Transportation safety is largely influenced by roadway and intersection design, but the way that streets and roads interact within their land use context is also a major factor in how and where safety challenges occur. In particular, the balance between local property access and regional mobility is an ongoing challenge for many arterial and collector thoroughfare corridors also serving commercial and industrial land use districts. As noted previously, many of the Study Area's primary east-west thoroughfares are classified as arterial roadways, designed and managed with a primary intent of providing regional mobility across the Kansas City metropolitan area. However, several of these corridors also serve as primary commercial streets, with higher rates of traffic generation than non-commercial land uses and driveways allowing access to private property. This high degree of local access on larger roads designed for mobility can be tied to safety trends that underscore a need for investment in transportation safety enhancements, coordinated land use planning and site design standards, and thoughtful guidance of development to overcome many of the physical challenges of a roadway's environment.

PLAN 33
LOCATIONS OF SEVERE CRASHES (FATALITIES AND INJURIES)
(MARC)

Commercial Land Use Districts
Industrial Land Use Districts

Low — High
Frequency of Crashes



Transit Systems And Services

The Study Area features transit service currently operated by multiple agencies but unified under the RideKC brand, with numerous locations featuring overlapping and intersecting routes.

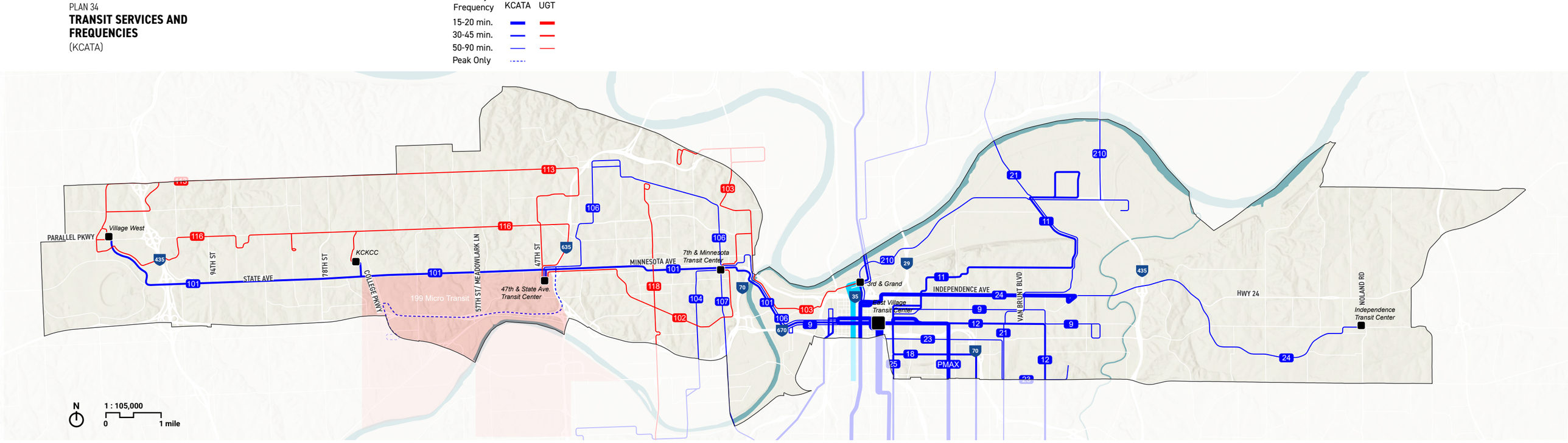
The bulk of the Study Area's transit service is in the core urban footprint inside I-635 and I-435, with most higher-frequency service connecting from downtown Kansas City, Missouri to the city's neighborhoods to the south. The full east-west length of the Study Area is served by two KCATA routes: Route 101 in Kansas and Route 24 in Missouri, with two additional Unified Government-operated routes providing service west to I-435 and the Village West district in Wyandotte County. Other services within the Study Area include the following.

- **Fixed Route Bus:** In addition to the two primary routes, 43 other fixed routes intersect through the study area primarily at three transit centers. These routes include three bus rapid transit (BRT) routes, known as Metro Area Express (MAX).
- **Streetcar:** The Kansas City streetcar is a two-mile north-south route that crosses with the Study Area at 11th Street.
- **RideKC Freedom (ADA Complimentary Paratransit):** As required by federal regulations, ADA paratransit is operated along the length of the corridor (within ¾-mile of fixed routes). This service provides demand-response curb-to-curb transportation to residents with a documented disability and by reservation.
- **On-Demand Micro Transit:** An app-based, on-demand service provided by, and within, Kansas City, MO and several other municipalities not including Unified Government or Independence. The intent of this service is to fill in gaps in areas that are difficult to serve with fixed-route transit.

The overall network serving the Study Area includes the following key components:

- **Primary routes on the BSRC corridor's primary streets:** 24/Independence and 101/State Avenue. 24 Independence is shown twice, due to the structure of the route where only certain trips extend the full length of the route to Independence Transit Center.
- **Connecting routes in Unified Government:** Nine fixed routes and one micro transit service include stops at either the Midtown KCK (47th & State) or Downtown KCK (7th & Minnesota) transit centers, several routes travel on segments of State Avenue for a portion of the route as well.
- **Connecting routes in Kansas City, Missouri:** This consists of the majority of transit operating in the Study Area, both in terms of number of routes as well as in total revenue hours of service operated. This is the only portion of the corridor with high-frequency transit service operating at 15- or 20-minute headways.

PLAN 34
TRANSIT SERVICES AND FREQUENCIES
(KCATA)



Transit Ridership

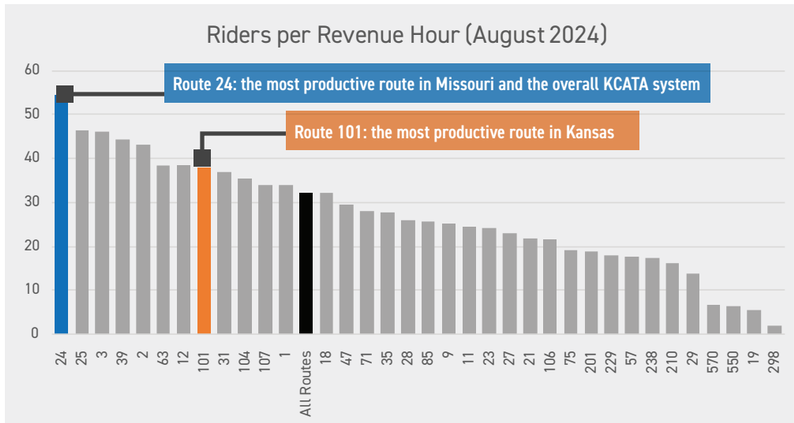
Ridership patterns align with service frequency, although some parts of the corridor seem to have gaps between transit rider potential and actual use.

Overall, the Study Area features a core urban area with high transit ridership, although the eastern and western edges feature relatively low ridership in many locations. Some of these areas feature greater population density than corridors with greater levels of transit service, suggesting that the service frequency itself may be a factor in lower ridership.

As with most transit providers, ridership across the RideKC system experienced a major decline in 2020-2021 due to the COVID-19 pandemic. However, the system, and KCATA services in particular, have experienced a significant and steady recovery over the past three years. This includes both the 24 Independence and 101 State Avenue routes.

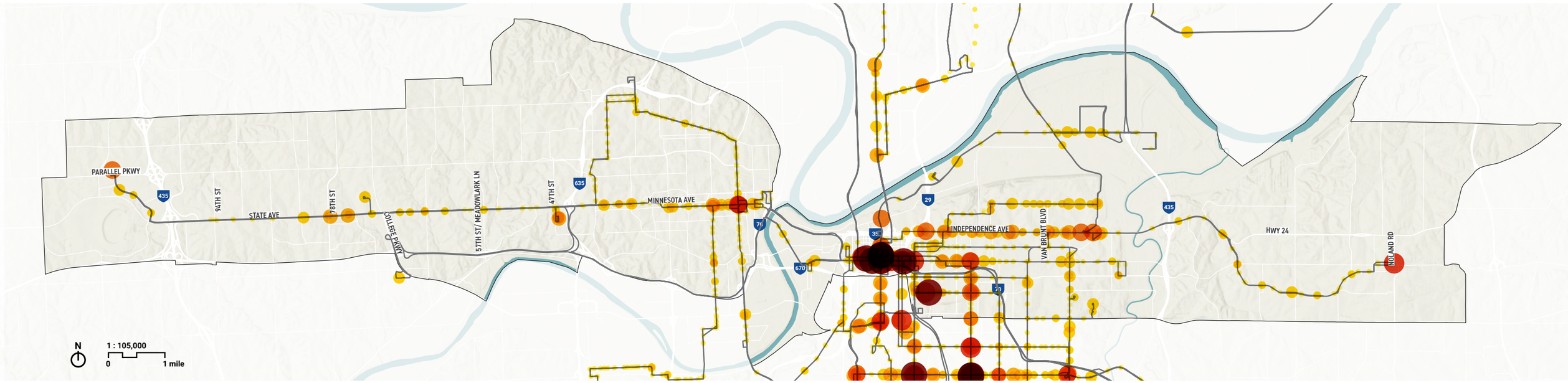
However, the full potential of this recovery has been diminished due to staffing challenges, and in particular the retainment and recruitment of bus drivers. This has been a challenge across the transit industry in the United States since the pandemic, with agencies both large and small. Lack of staffing has limited agencies' ability to fully restore service to pre-COVID levels.

Additionally, the nature of ridership has changed. Routes primarily focused on long-distance commuting to office jobs exhibited the greatest percentage of ridership lost, to the point where several of these services no longer achieved ridership levels to justify continued operation, and others have had service significantly reduced.



Transit service in the Study Area features some of the combined transit network's most productive service, with Route 24 on Independence Avenue featuring the most riders per revenue hour of any route. However, this ridership is concentrated mostly inside the I-435 loop.

PLAN 35
TRANSIT RIDERSHIP BY STOP
(KCATA)

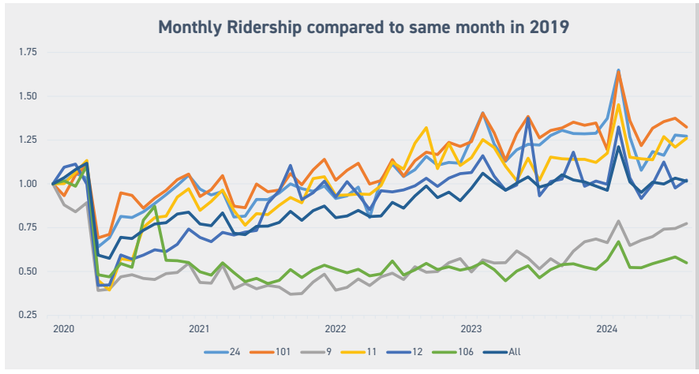


Transit Ridership Trends

Despite post-pandemic challenges, many transit routes in the Study Area have seen ridership return, sometimes exceeding pre-pandemic levels.

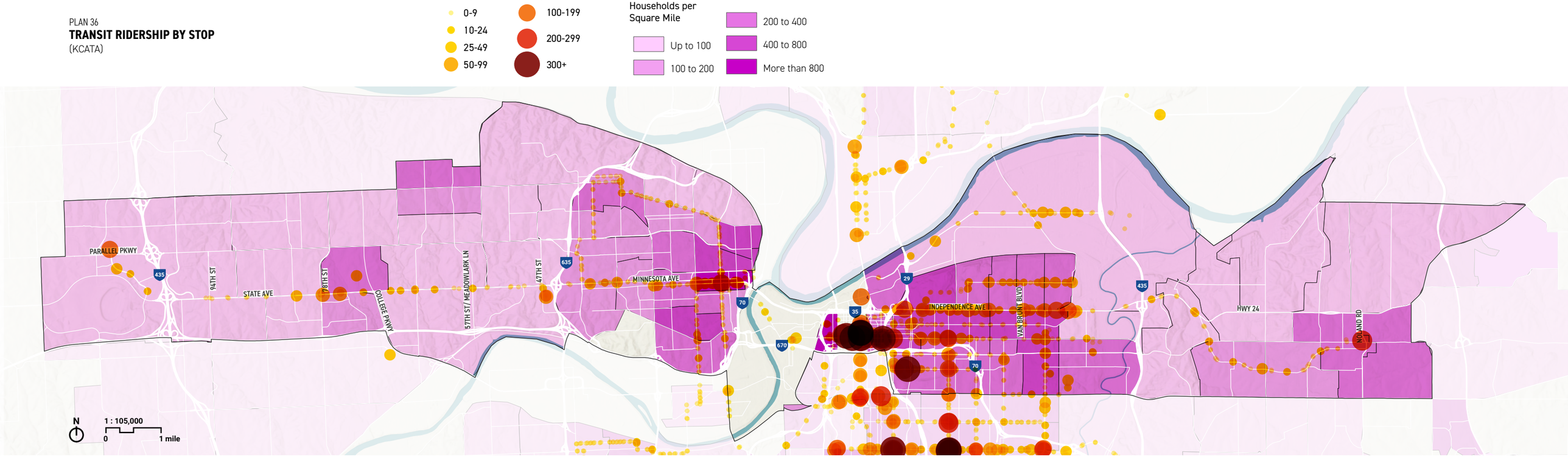
Ridership in the corridor has broadly recovered from the pandemic, with Routes 101 and 24, serving the State Avenue and Independence Avenue corridors, currently seeing higher overall ridership levels today than before 2020. However, the larger study area has potential to serve transit riders more closely, especially in areas with higher concentrations of households without access to vehicles and in areas prone to redevelopment where some type of multimodal enhancements would connect existing high-ridership areas.

Riders per revenue hour is a standard transit industry metric used to evaluate how effectively a bus route provides trips per unit (or hour) of service. This can be a way to determine if a route may have additional ridership potential or if a route may have excess service that may be better utilized elsewhere in the system. Based on data from KCATA's data dashboard from January through August 2024, the systemwide average rider per revenue hour is 29.8. (Note: in the data dashboard, KCATA defines revenue hours as not including layover time.) Both the 24 Independence and 101 State Avenue are higher than the system average, at 51.3 and 34.5, respectively.



Overall, most of the Study Area's fixed-route transit service has recovered to pre-COVID pandemic levels, and key routes (such as the 24 and 101) are at higher levels than before the pandemic. This suggests that **the area is a strong candidate for transit,** at least in the most productive areas.

PLAN 36
TRANSIT RIDERSHIP BY STOP
(KCATA)



Transit Governance and Funding

Although the Kansas City region aspires to a more advanced transit system and a greater role for transit in regional mobility, its existing funding model for transit complicates long-range planning and delivery of services across both Kansas and Missouri.

As discussed previously, the Kansas City region's transit services are provided by multiple different agencies, and some of these agencies operate service directly while others engage contracted third-party entities. The largest agency and operator, KCATA, draws its local (non-Federal or State) funding entirely from contracts with over ten municipalities throughout the region. Of these municipalities, Kansas City, Missouri is the only one with a dedicated funding source, drawn from two separate sales taxes (together accounting for seven-eighths of a cent, or a rate of 0.875 percent). Other jurisdictions that contract with KCATA fund their transit service through their general funds, and therefore are subject to reallocation to other needs on an annual basis. Since 2023, several cities have ended their fixed route contracts with KCATA, due to increased costs and/or low ridership. Although this meant elimination of fixed-route transit service in these communities, some of these municipalities still contract with KCATA for IRIS on-demand microtransit services.

In a recent report, MARC studied ten peer transit agencies with a similar scale of systems and operations to Kansas City, as well as four 'aspirational' agencies reflecting more advanced and capital-intensive transit systems in comparably-sized metropolitan areas. This report found that the majority of these peer agencies use a sales tax more broadly throughout their regions to fund transit operations, and across much greater geographic extents within their regions than just a single central city—taxes are usually applied across an entire county or even multiple counties in a region.

The region has addressed this issue more closely in recent efforts, with the most recent of these being "One RideKC" planning process in 2021. While this process did not result in adoption and implementation of specific actions toward regional transit funding, ideas and possibilities were discussed and documented. In addition, MARC's SmartMoves 3.0, the region's transit vision provided a general overview of funding options and ultimately concluded that a county-by-county funding approach, rather than an integrated regional solution, will have the highest-likelihood of success.

However, KCATA is unique among its peers in that it does not charge passenger fares for fixed-route service, eliminating a revenue source that all other peer agencies continue to collect. The share of operating expenses covered through fare revenue (referred to in the transit industry as the farebox recovery ratio) has typically been under half for most American transit agencies in recent decades, though after the impacts to transit ridership from the COVID-19 pandemic, this decreased even further. As the table to the right shows, KCATA is among the smaller of its overall agency peers in terms of services it operates, although it offers a greater mix of service types even than some of peers with larger operating budgets. This suggests that without significant additions to dedicated funding sources, it would face challenges in providing the metropolitan coverage of the larger area that it covers today while taking on additional operating services of a high-capacity corridor within the Bi-State Study Area.

The table on the right notes different funding sources by peer agencies, as well as an overall amount spent on each (in the equivalent of 2023 fiscal years) for transit operations. As these are ordered by total operating expenses, it is clear that Kansas City and KCATA are within the smaller half of peers, yet they already operate a diversity of service types in line with larger peers (even though funding for the KC Streetcar is generated independently through a development district). Although fares make up relatively small portions of operating expenses for most agencies, the level collected could be the difference between an additional bus route or more and not being able to operate these services. This underscores the need for additional dedicated funding sources for the Kansas City region if its transit continues to explore new high-capacity services.

OPERATING FUNDS EXPENDED BY PRIMARY AGENCY AND TOTAL AMOUNT OF FUNDING (IN MILLIONS OF DOLLARS)

Agency	Fare	Local	State	Federal	Other	Total
Denver	75.29	0.6	8.03	299.02	591.09	974.02
Pittsburgh	55.63	38.13	268.56	93.59	3.8	459.71
Minneapolis-St. Paul	45.9	25.78	241.79	97.01	3.03	413.5
Austin	15.66	0.8	0	201.23	101.56	319.24
St. Louis	20.11	170.88	0.75	91.87	6.39	289.99
Charlotte	12.71	136.89	9.6	26.5	3.24	188.94
Milwaukee	23.15	11.26	57	62.61	3.16	157.2
Columbus	11.64	0.7	1.01	2.68	138.55	154.58
Cincinnati	15.43	35.74	3.05	70.89	2.86	127.97
Indianapolis	5.84	32.7	11.24	54.46	6.45	110.69
Kansas City	0.56	37.05	0.38	61.11	1.69	100.79
Louisville	6.85	52.05	4.61	25.29	1.01	89.82
Nashville	6.96	42.89	5.27	25.32	0	80.43
Memphis	1.8	12.87	8.42	36.69	0.6	60.39
Oklahoma City	1.95	6.95	0.71	22.26	5.51	37.39

Agency operates fixed route local bus

Agency operates bus rapid transit or rapid bus

Agency operates streetcar

Agency operates commuter rail

Agency operates light rail

Transit Plans and Aspirations

The Kansas City region has long envisioned an expanded network of high-capacity transit services, including through the Study Area.

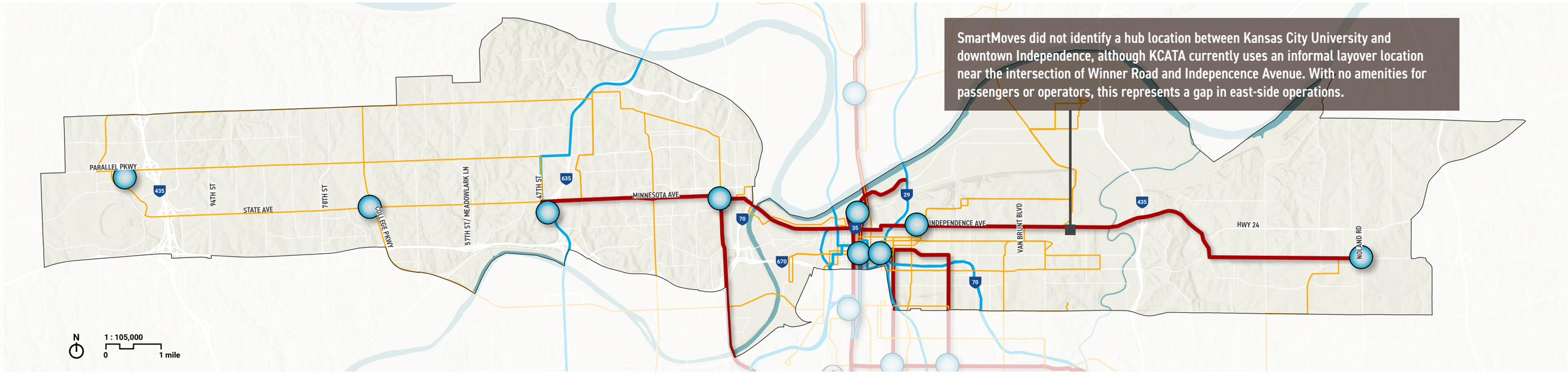
The most recent regional plan for transit in the Kansas City region is Smart Moves 3.0, a 20-year plan for transit and mobility. It builds on foundation of prior planning efforts and is founded on a primary network of fast and frequent (service frequencies of every 15 minutes or better), high-ridership core transit service corridors linked by a series of community mobility hubs. These hubs are envisioned to offer transfers between transit services or last-mile connections with other mobility options including shared mobility.

The plan is based in a foundational principle that efficient transit is based on population and employment density, and its primary network reflects the understanding in regional plans and policies of where density patterns would continue in the region. The recommended primary network builds on existing high-capacity services like KCATA's MAX rapid bus service and extends this within the Study Area, primarily along the State Avenue and Independence Avenue corridors.

This reliance on mobility hubs is a key element of the SmartMoves plan and subsequent efforts taken by KCATA and regional mobility partners. These hubs are central places or districts that act as converging points for public transit and an integrated suite of mobility services, scaled for their respective environments and functions. Most importantly, they are a key strategy to shifting transit from a network of long routes providing coverage over a large area to shorter routes able to maintain schedules and provide timely services. This is an important factor as transit agencies continually face increases in operating costs and challenges of adequately funding service.

It is also important that mobility hubs be designed and located to facilitate connections to transit—and even to make transit and the hub's other connecting services primary choices of travel mode of people in their vicinity. This highlights the importance of land development patterns and form, with higher-density, walkable, connected development a key factor in the success of transit and the mobility hub concepts. Within the Study Area, the locations of hubs as proposed in Smart Moves 3.0 reflect a limited potential for current development patterns and opportunities to interface with transit and other mobility services: the Study Area only includes nine hub locations, and only four of these are outside of the traditional downtowns of the Kansas Cities. This suggests that the remainder of the BSRC area may not be poised to benefit from transit investment, although there is transit propensity and need throughout the study area.

PLAN 37
SMART MOVES 3.0 PRIMARY NETWORK AND CORRIDORS
(KCATA)



Paratransit and Supporting Systems

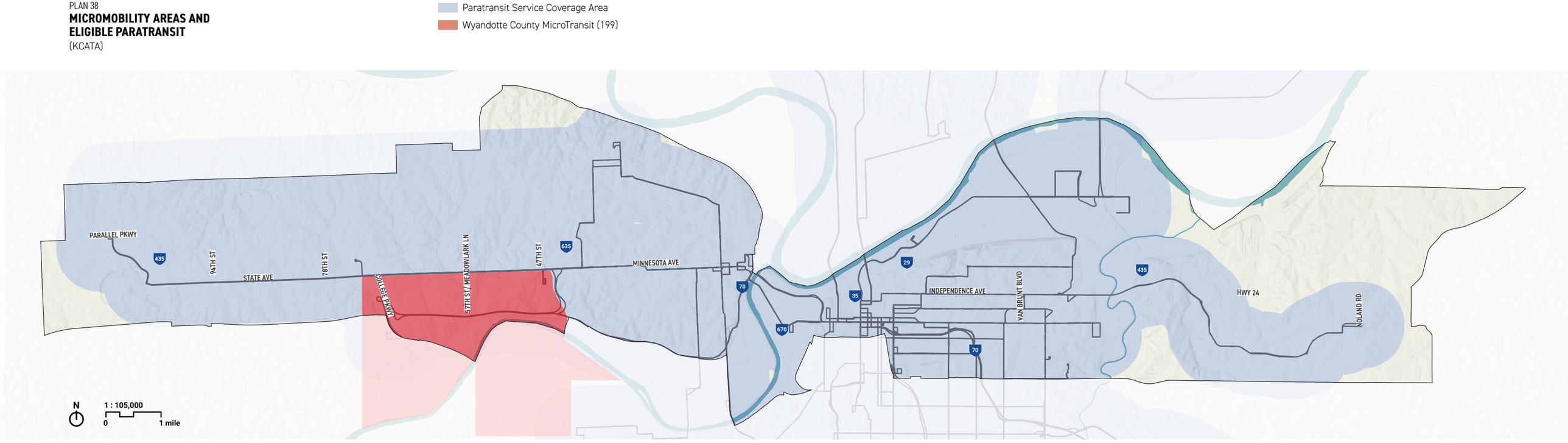
In addition to ADA-required paratransit services, the larger Study Area is increasingly employing on-demand micro-transit services to complement fixed-route services.

Although paratransit service has eligibility requirements, it nonetheless provides an important mobility link for transit users with limitations to connect to existing fixed-route transit stops and stations, usually in some form of limited personal mobility. These services are arranged on demand, and per requirements of the Americans with Disabilities Act, transit agencies providing fixed-route service must provide paratransit within three-quarters of a mile from any fixed routes.

However, the on-demand IRIS services operated under the RideKC brand do not have eligibility requirements and are open to all users. These serve larger areas of the Study Area and provide connections to fixed routes or to other destinations within their zone. At the time of this report, only one service area exists in Kansas City, Kansas, though Independence will soon begin operating a similar service to replace the fixed-route services the City previously operated.

This leaves a notable gap in paratransit service in the east end of the study area, and although the new IRIS service can fill this gap, its resources will be shared with the general transit-riding population accessing the service.

PLAN 38
MICROMOBILITY AREAS AND ELIGIBLE PARATRANSIT
(KCATA)



Bicycle Infrastructure and Plans

The Kansas City region's bicycle route network and planned expansions include multiple key connections in the Study Area. Nonetheless, many gaps remain to be filled in this network, and doing so will be critical for last-mile connections to major mobility corridors.

In the current state of the bicycle and trail network, however, connections are limited outside of the central neighborhoods of Kansas City, Missouri. West of downtown Kansas City, Kansas, the Study Area contains no consistent east-west corridors for bicycle travel or multi-use trails, and only one connection north to south throUgh Independence connecting its downtown to other corridors in the Study Area.

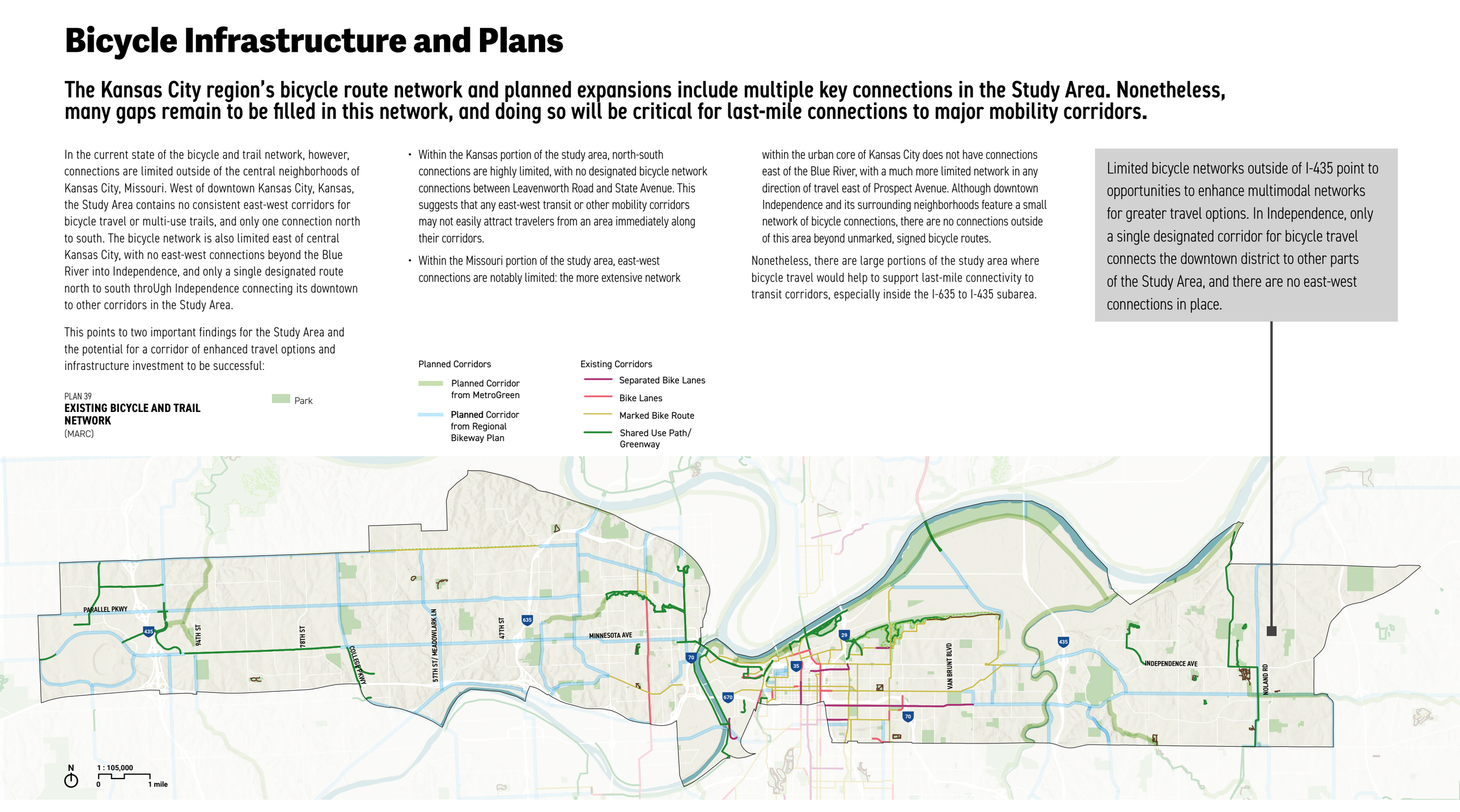
This points to two important findings for the Study Area and the potential for a corridor of enhanced travel options and infrastructure investment to be successful:

- Within the Kansas portion of the study area, north-south connections are highly limited, with no designated bicycle network connections between Leavenworth Road and State Avenue. This suggests that any east-west transit or other mobility corridors may not easily attract travelers from an area immediately along their corridors.
- Within the Missouri portion of the study area, east-west connections are notably limited: the more extensive network within the urban core of Kansas City does not have connections east of the Blue River, with a much more limited network in any direction of travel east of Prospect Avenue. Although downtown Independence and its surrounding neighborhoods feature a small network of bicycle connections, there are no connections outside of this area beyond unmarked, signed bicycle routes.

Nonetheless, there are large portions of the study area where bicycle travel would help to support last-mile connectivity to transit corridors, especially inside the I-635 to I-435 subarea.

Limited bicycle networks outside of I-435 point to opportunities to enhance multimodal networks for greater travel options. In Independence, only a single designated corridor for bicycle travel connects the downtown district to other parts of the Study Area, and there are no east-west connections in place.

PLAN 39
EXISTING BICYCLE AND TRAIL NETWORK
(MARC)



Micromobility

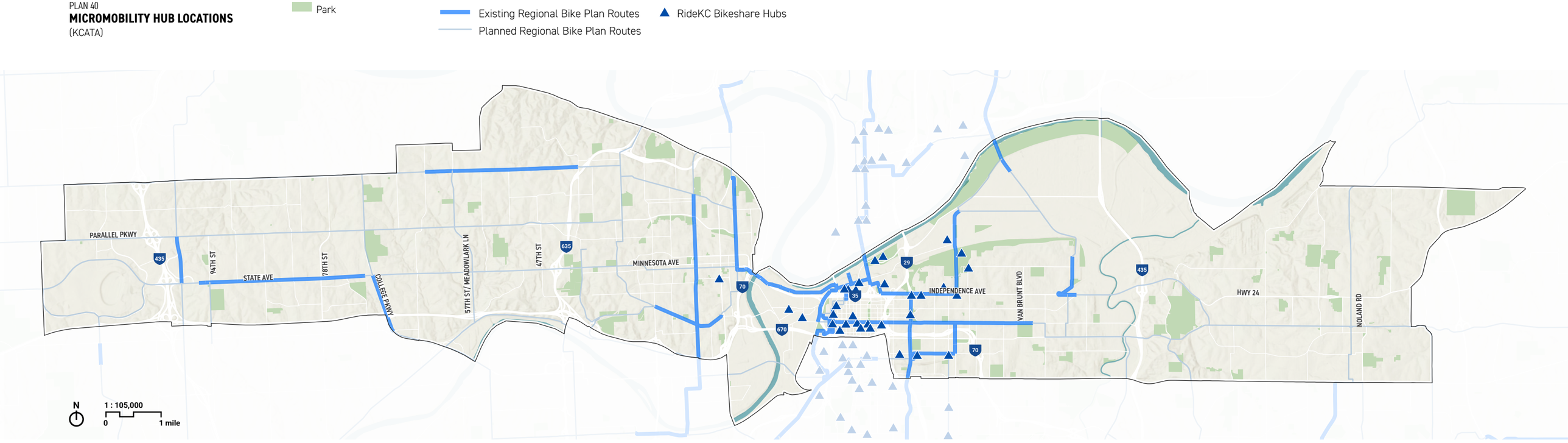
Shared personal transportation, such as bicycles and scooters, has increased the overall mobility options in the region, but not evenly throughout the Study Area.

Existing micromobility shared services consist of bikeshare and scooters, and include electric scooter, classic and pedal assist bikes. The integration with the overall RideKC brand facilitates a link to other transit service options in the larger Kansas City region, as discussed in previous sections on transit service.

Although this partnership offers significant potential for last-mile connectivity options from transit, its primary footprint is only in the urban core of Kansas City, Kansas, extending south from downtown but not east and west. In addition, there is limited end-of-trip and facility infrastructure throughout the system, including a requirement to lock-to at end of trip which limits options where bike parking infrastructure is limited or not present. Nonetheless, the service is demonstrating success. Use of microbility options increased 8% in 2023, continuing an overall year by year growth trend. Mix of commute use and recreational use, with many commute trips coming into Kansas City, MO across municipal boundaries. Ridership was still increasing in Kansas City, KS, where the boundary expanded further west and north in 2023. (source: RideKC Bike Annual Report 2023).

Trip data collected by RideKC shows the greatest micromobility use on the Missouri side of the state line, but with westward expansion of the service boundary into Wyandotte County, this may expand into the future. As noted previously, limited bicycle infrastructure remains a challenge and may limit the potential of RideKC's service to meet mobility needs (source: State of Walking and Biking in Kansas City data dashboard by BikeWalkKC).

PLAN 40
MICROMOBILITY HUB LOCATIONS
(KCATA)



Walking/Biking Conditions and Potential

Regardless of the form and alignment of major mobility enhancements in the region, pedestrian connection to these enhancements is vital to their success.

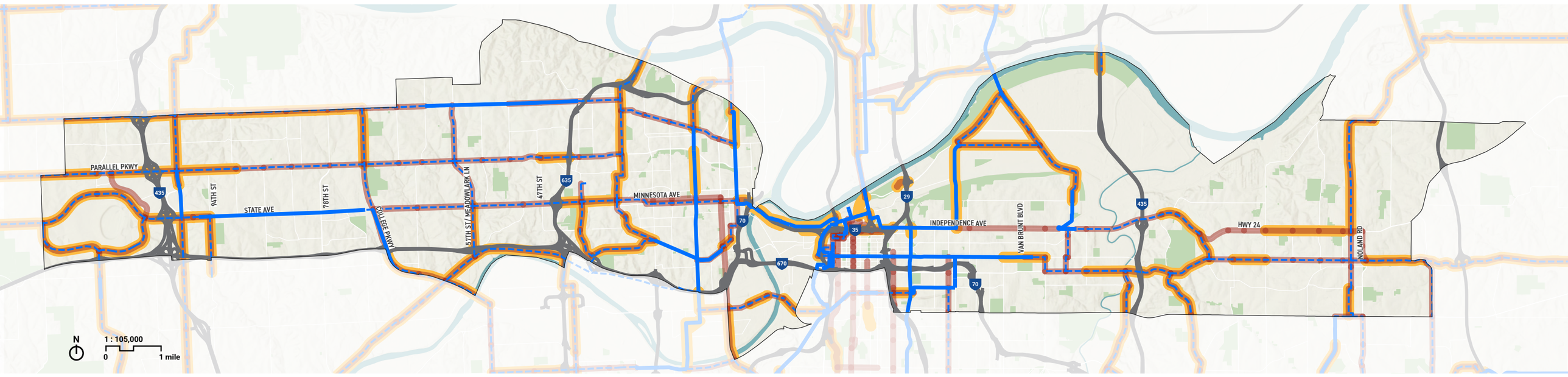
The potential for walking and bicycling is an important factor in how well the overall area can adapt to transit service or other forms of mobility, but the current condition of streets and roads for these forms of travel can limit this potential. A key challenge in much of the BSRC corridor is the gap between transit service and walking and biking potential on the same corridors where transit service is provided, much less on connecting streets and thoroughfares.

The map below provides an overview of major corridors and their overall suitability for walking and cycling. Even though bicycle facilities exist on some of these corridors, they are limited by their potential for walking, either through missing or limited sidewalks (sidewalks not separated from curbs along streets).

The map below illustrates walking and cycling conditions on major corridors, indicating where key links in the regional bicycle network have been completed and comparing these to actual walking and biking conditions. Even beyond a lack of bicycle facilities or a high level of bicycle stress and exposure to safety risk, many of these corridors lack sidewalks, and some corridors with sidewalks offer little or no protection of pedestrians from safety risk.

PLAN 41
WALKING AND BIKING SUITABILITY
(MARC, KCATA)

Park
Existing Regional Bike Route
Planned Regional Bike Route
Streets with limited biking conditions
Streets with limited walking conditions (missing or insufficient sidewalks)



Natural Environment

Hydrologic Features

The larger Study Area features terrain both above major floodplains, elevated on bluffs above the Missouri River, and within them. However, even higher elevations contain areas subject to flooding.

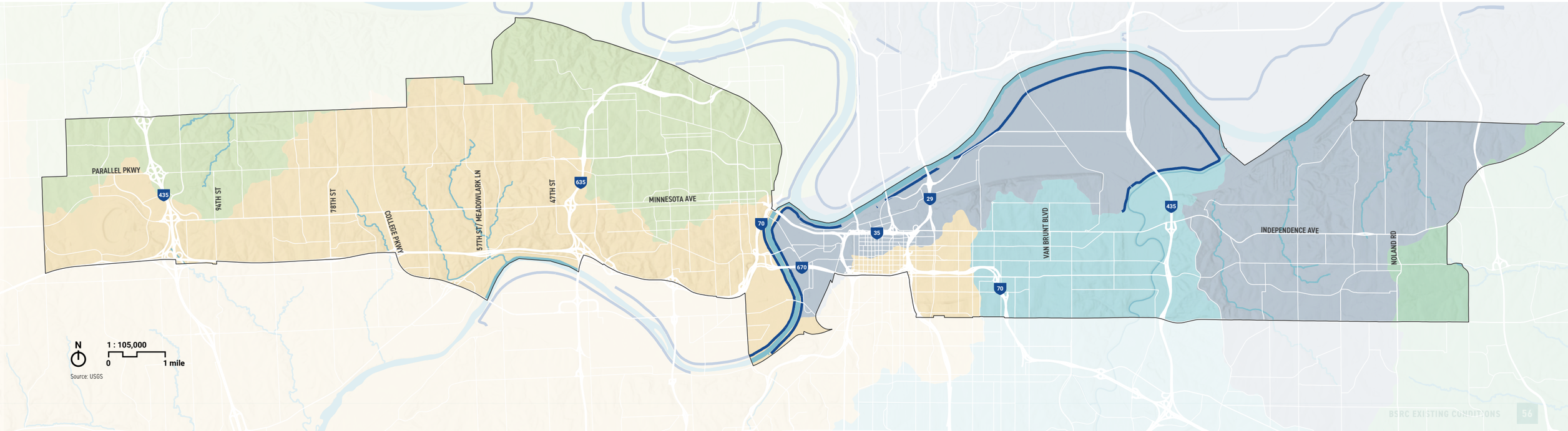
In the United States, approximately 17 million people live and work behind levee systems. Levee systems play a fundamental role in flood risk management, protecting over $2 trillion in property value and safeguarding essential infrastructure including schools, hospitals, and transportation networks. Ensuring safety and economic stability of our communities across the country, levees are crucial for future infrastructure projects. Levees should be identified for flood risk reduction, protection of property and lives, support for critical infrastructure, adaptation to climate change, and economic benefits.

- Flood Risk Reduction: Levees help protect communities from flooding by containing or diverting water flow, reducing the risk of flood damage to homes, businesses, and critical infrastructure.
- Protection of Property and Lives: They safeguard millions of people and trillions of dollars in property value, ensuring the safety and economic stability of areas prone to flooding.
- Support for Critical Infrastructure: Levees protect essential services and infrastructure, such as schools, hospitals, and transportation networks, which are vital for community resilience and recovery during flood events.
- Adaptation to Climate Change: As extreme weather events become more frequent due to climate change, levees play a key role in mitigating the impacts of increased flooding.
- Economic Benefits: By preventing flood damage, levees reduce the economic costs associated with disaster recovery and insurance claims, contributing to overall economic stability.

Considering these factors, incorporating levees into infrastructure planning is essential for building resilient and sustainable communities.

PLAN 42
HYDROLOGIC FEATURES

Study Area
Turkey Creek-Kansas River
Brush Creek-Missouri River
Shoal Creek-Missouri River
Blue River
Little Blue River



Flood Zones

Excluding areas around the Missouri River, Blue River, and other smaller streams and tributaries, the Study Area lies well outside of major flood zones.

A flood zone is a geographic area defined by its risk of flooding, as identified by the Federal Emergency Management Agency (FEMA). These zones are shown on Flood Insurance Rate Maps (FIRMs) and are used to determine flood insurance requirements and building regulations. The main types of flood zones are High-Risk (known as Special Flood Hazard Areas), Moderate to Low-Risk, and Undetermined Risk Areas.

High-Risk Areas represent a minimum 1 percent annual chance of flooding (100-year flood), in which properties are required to have flood insurance if a mortgage exists from a federally regulated lender. Moderate to Low-Risk Areas represent a lower risk of flooding in which insurance is not required but recommended. Undetermined Risk Areas indicate possible but undefined risk flood hazards. Flood zone designations may change over time with land development, weather patterns, fluctuating populations, and technology advancements.

It is vital to consider existing and future flooding when executing infrastructure projects to ensure the communities remain safe and prosperous. Factors to consider include:

- Increased Risk of Flood Damage: Infrastructure in flood-prone areas is at higher risk of damage from flooding events, leading to costly repairs and replacements.
- Higher Insurance Costs: Properties in flood zones can face higher insurance premiums due to the increased risk of flood damage.
- Regulatory Challenges: Projects may require additional permits and adherence to stricter building codes and regulations designed to mitigate flood risks.
- Economic Impact: Flood events can disrupt local economies, causing business interruptions and loss of income. Investing in flood-resilient infrastructure can help mitigate these economic impacts.
- Environmental Concerns: Developing can alter natural water flow and ecosystems, potentially leading to more severe flooding and environmental degradation.
- Public Safety: Ensuring community safety in flood-prone areas is a major concern, as flooding can pose significant risks to life and property.

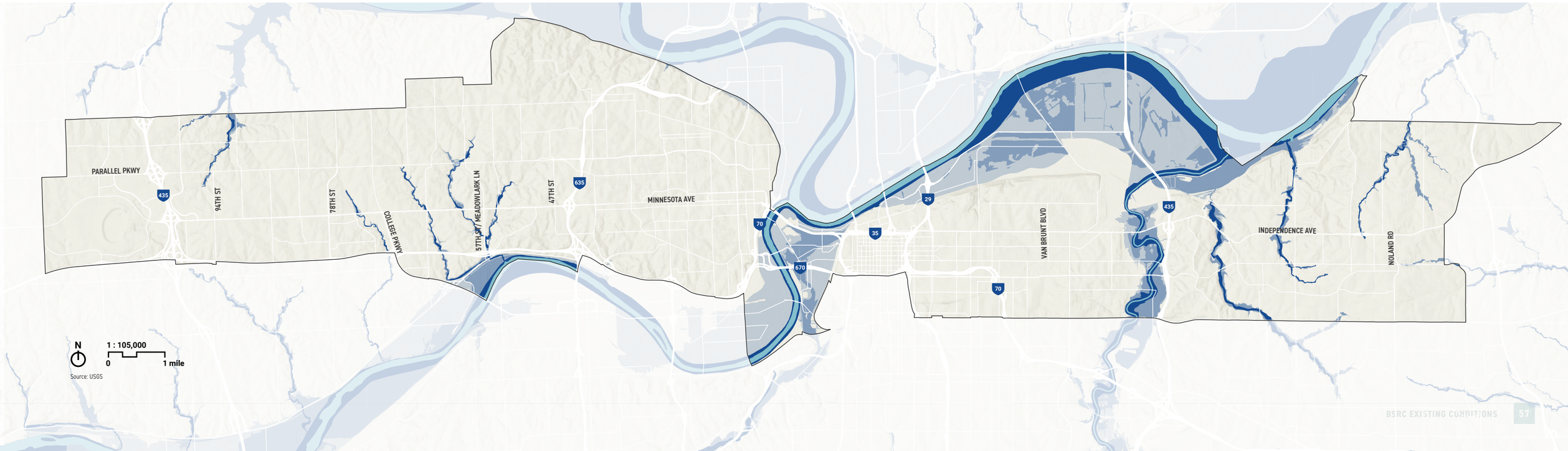
PLAN 43

FLOOD ZONES

Floodway

100 year flood (1 percent annual chance of flooding)

500 year flood (0.2 percent - 1 percent annual chance of flooding)



Wetlands

Wetlands and bodies of water do not present major future development concerns.

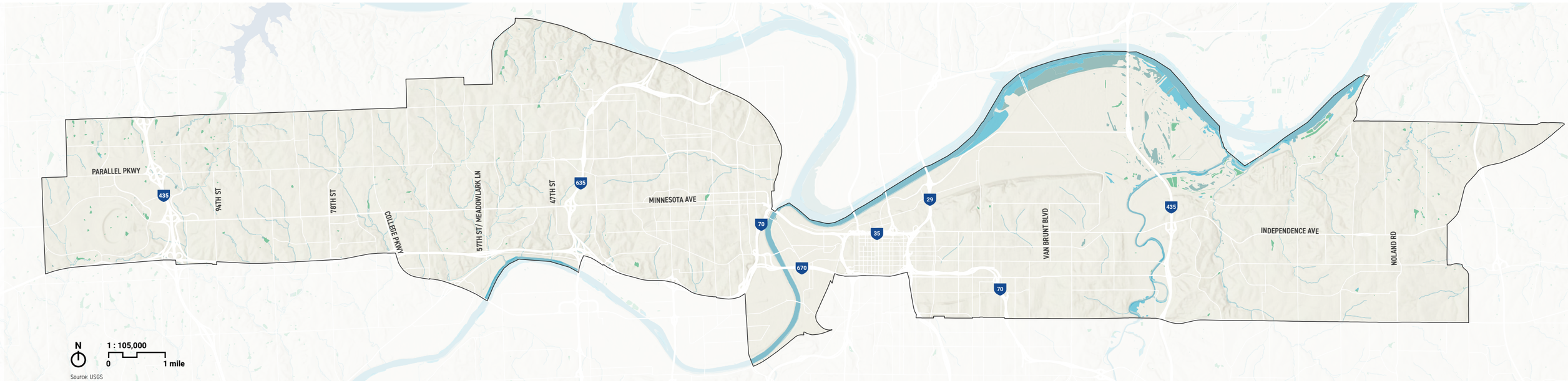
Wetlands are distinct ecosystems where water covers the soil or is present at or near the surface for varying seasonal periods. Key characteristics of wetlands include their hydrology, hydrophyte vegetation, and saturated soil. The hydrology (how much water is present permanently or seasonally) influences the soil and vegetation types that plants and animals rely on. Wetlands can be present in the form of marshes, swamps, bogs, and fens, and are present in both inland and coastal areas.

When planning an infrastructure project, it is key to consider wetland presence to evaluate environmental impacts and regulatory compliance. An Environmental Impact Assessment (EIA) should be conducted to fully understand the potential impacts of the project and identify mitigation measures. The EIA will help outline the regulatory compliance necessary to adhere to local, state, and federal regulations including permitting activities. The project should strive to avoid or minimize disturbances to the wetland footprint and implement mitigation measures to compensate with unavoidable impacts.

If a wetland must be disturbed, the project should consider any hydrological impacts to the area including changes in water flow and water quality. The biodiversity and habitats within the wetland footprint should be protected through incorporation of buffer zones and natural vegetation. The overall wetland health should be continuously monitored after construction to ensure the wetland does not suffer any adverse or unexpected issues. Key stakeholder engagement throughout the project lifecycle will be vital in communicating input and addressing concerns related to wetland impacts and disturbances.

PLAN 44
WETLANDS

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine



Source: USGS

Soils

The Study Area is mainly covered by three soil types, all of which are soils suitable for development.

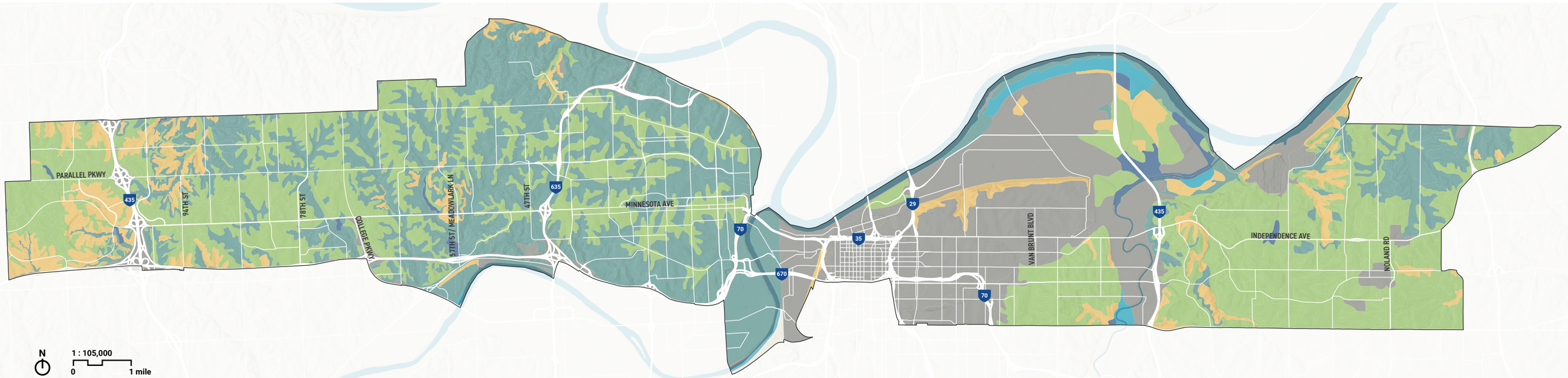
Soils are natural bodies composed of minerals, organic matter, water, and area, which support plant life and are formed through physical, chemical, and biological processes. They cycle and provide essential nutrients for plant growth, regulate the flow and filtration of water, and offer physical support and stability for plant life and human-made structures. The main groups of soil type are Group A, Group B, Group C, and Group D. Each soil group has a different infiltration rate and consistency of material, which then impacts drainage, runoff, and habitat.

It is necessary to evaluate soil type when planning an infrastructure project. Each soil type carries varying load-bearing capabilities and permeability for drainage. Select soils may be more prone to erosion and would require additional measures to prevent soil loss and infrastructure protection. Soil properties impact the surrounding environment and ecosystem and as such, proper soil management can mitigate negative impacts like habitat disruption and runoff. The type of soil influences the choice of construction techniques and materials, which may impact overall material and handling costs and schedule (particularly if additional soil testing, stability, or construction is required).

PLAN 45

SOIL TYPE

- A
- B
- C
- C/D
- D
- No data available



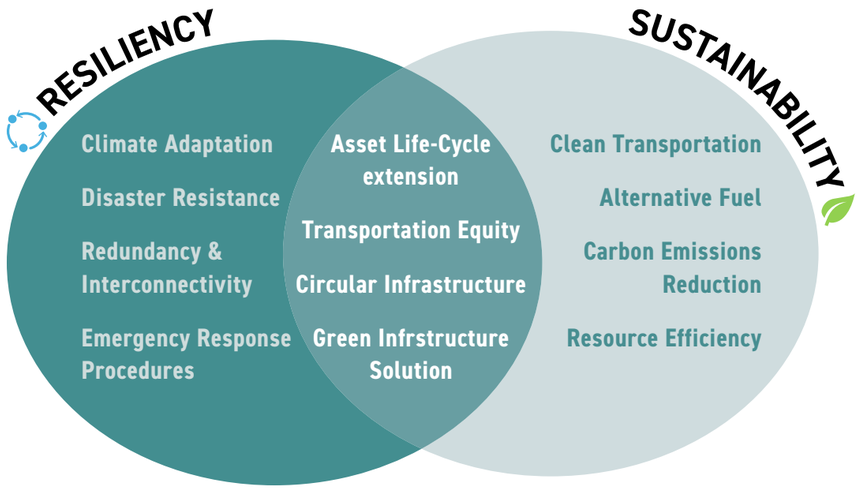
Source: USGS

Resiliency and Sustainability

Resiliency and sustainability are critical principles for transportation that address the long-term viability and robustness of a transportation network. These principles are essential for creating transportation infrastructure that is not only efficient and reliable but also environmentally responsible and adaptable to climate change. The importance of integrating resiliency and sustainability into transportation planning ensures the continuity of essential services, supports economic stability, and contributes to the overall health and well-being of communities.

This section explores the definitions, significance, and practical applications of resiliency and sustainability, reviews existing plans and policies, and identifies potential strategies to moving people and developing in sustainable and resilient ways.

While resilience and sustainability are related, they have different definitions and accomplish different goals. Sustainability in transportation planning is addressed through emissions regulations, carbon reduction actions, utilizing innovative materials, as well as through routine operation and maintenance programs. In 1987, the United Nations defined **sustainability** as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."[1] Resiliency is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions.[2] **Resiliency** in transportation planning is focused on creating, or improving redundancy and reliability, and facilitating rapid response and recovery to emergency events. A key component of sustainability is minimizing the severity of climate change through mitigating actions, compared to resiliency that focuses on lessening the impacts of natural hazards and climate change. Transportation actions to improve resiliency and sustainability are often intertwined and can both improve responses to natural hazards while reducing carbon emissions. Examples of resilient and sustainable actions and the relationship between the two principles are shown below.



The role of transportation in sustainable development was first recognized at the 1992 United Nation's Earth Summit and are currently crucial components in several Sustainable Development Goals (SDGs).3 Nationally, there is a growing recognition of the opportunity to advance sustainability goals, climate mitigation, and resilience efforts through the transportation sector. The USDOT's recent efforts include supporting smart community design, improving efficiency through transit, rail, and high-efficiency vehicles, and transitioning to clean options with zero-emission vehicles and fuels. The Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act have made historic investments in resilient infrastructure for transit, rail, active transportation, and electric vehicles (EV)4 in response to the challenges faced by transportation systems. Climate change and extreme weather events increasingly threaten the safety, reliability, and sustainability of transportation infrastructure.

Wyandotte County, Kansas and Jackson County, Missouri have faced 25 presidential disaster declarations between January 1969 and September 2024, or approximately one presidential disaster declaration every two years.5 Disasters routinely impact transportation infrastructure in the region, and climate change is expected to increase the frequency and severity of these events. The Great Flood of 1993, a regional event that impacted large portions of the Missouri and Mississippi Rivers, produced billions of dollars of damage across several states and roughly 50 deaths were attributed to the flooding. In the Kansas City region, 6 federal and 810 non-federal levees were overtopped (13% and 100% of federal and non-federal levees, respectfully).6 In July 1993, flood waters displaced several Kansas City residents from their homes, flooded portions of the Charles B. Wheeler Downtown Airport, and a river dredge broke free of its moorings and damaged two railroad bridges and three highway bridges.7 Several other flooding events have impacted the greater Kansas City area since 1993, including flooding in 2011, 2015, 2017, and 2018. Flooding from these events impacted several local roads and highways, including I-435 at 23rd Street (2015), State Line Road (2017), US-169 (2017, 2018), and US-69 (2018).8

Many new funding programs support transportation resiliency and sustainability as shown in the table on the next page. Several funding programs through the BIL provide states with formula funds to use at their discretion. For multiple programs, states can use formula funds to support local projects and initiatives.

Funding Program	Icon	Funding Type	Description
Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT)		Discretionary and Programmatic	Funding under the BIL to support resilience improvements of the surface transportation system to extreme weather events, and climate impacts. The program includes state formula funds9 and discretionary grants10
Carbon Reduction Program (CRP)		Programmatic	Funding under the BIL for projects designed to reduce transportation emissions from on-road highway sources. The funds are administered as state formula funds.11
Building Resilient Infrastructure and Communities (BRIC)		Discretionary	Pre-disaster mitigation initiative by FEMA that funds communities to carry out large scale infrastructure mitigation and adaptation activities through grants.12
Hazard Mitigation Grant Program (HMGP)		Programmatic	Funding to support hazard mitigation planning at state, local, tribal, and territorial government level.13
National Electric Vehicle Infrastructure (NEVI) program		Discretionary and Programmatic	Funding under the BIL to support a nationwide network of electric vehicle (EV) charging stations to promote EV adoption and transportation decarbonization. The funds are administered as state formula funds.14
Charging and Fueling Infrastructure Grant Program		Discretionary	Funding under the BIL to strategically deploy publicly accessible electric vehicle charging infrastructure and other alternative fueling infrastructure. The funds are administered through discretionary grants.15
U.S. National Blueprint for Transportation Decarbonization		Discretionary and Programmatic	The Blueprint represents a coordinated effort across multiple federal agencies (DOE, DOT, HUD, and EPA) to achieve a 100% clean electrical grid by 2035 and net-zero carbon emissions from the transportation sector by 2050. Funding is provided through grants, and discretionary programs 16

Existing Plans, Policies, and Programs

There are several plans related to resilience and sustainability within the region. Many of the state and regional plans ensure eligibility for grants that can support sustainable and resilient transportation projects. Additionally, some of the plans identify transportation resilience and sustainability related actions for the region. The plans reviewed are summarized in the table to the right and include funding implications.

Eleven statewide plans were identified that relate to transportation sustainability and resiliency. Many of the plans are associated with new funding streams through the BIL. Some of the programs require plans to program funds (e.g., CRP and NEVI). Other BIL programs incentivize plan development with an improved cost-match (e.g., PROTECT). Kansas and Missouri Department of Transportations (KDOT and MoDOT, respectfully) have adopted a plan from each of these programs, maximizing each state's federal funding.

Also at the state level, Missouri maintains an approved enhanced state hazard mitigation plan (SHMP), enabling the state to leverage and distribute a variety of FEMA programs and qualifies to receive the maximum amount of HMGP funds if a disaster declaration were to occur. Kansas also maintains a SHMP; however, the current plan does not meet the requirements of being an enhanced SHMP. Having an approved SHMP is critical in the event of a disaster, even if the plan does not qualify as an enhanced SHMP.

In addition, there are several local and regional plans related to resiliency and sustainability. The Mid-America Regional Council (MARC), often in partnership with *Climate Action KC, has the Climate Action Playbook, KC Regional Climate Action Plan, and ConnectedKC 2050. The Climate Action Playbook* and the *KC Regional Climate Action Plan (KC CAP)* are both aimed at reducing pollution through a systems-based approach at a local level. The *Climate Action Playbook* is focused on short-term opportunities and addresses varying local priorities, attitudes and opportunities. The *KC CAP* is a comprehensive document that includes a *Climate Risk and Vulnerability Assessment* and identifies overarching goals and specific actions to address climate change. ConnectedKC 2050 is the long-range transportation plan for the greater Kansas City area. The plan provides a policy framework for the region's transportation system and identifies goals and projects that help accomplish these goals.

The City of Kansas City, MO (KCMO) has the *Kansas City Walkability Plan*, which outlines strategies to addressing barriers to walking, measuring walkability, establishing priorities, and recommending changes to city regulations, standards, and policies. KCMO also has *KC Vision Zero Action Plan*, which is aimed at supporting the development of better roads, bridges, bike lanes, and sidewalks to make commutes safer and more convenient for all travelers.

The planning area also participates in the *MARC Regional Multi-Hazard Mitigation Plan and the Kansas Region L Hazard Mitigation Plan*, updated in 2020 and 2023, respectfully. Hazard mitigation planning is an important process to identify risks within a community and makes the community eligible for increased FEMA funds in the event of a disaster. The reviewed plans that address transportation are shown on the next page.

State Plans

- Missouri State Management Plan for the Administration of Federal Transit Programs - 2016, State Management Plan for Kansas Public Transportation Programs - 2017
- Kansas Connected and Automated Vehicles Implemention Plan - 2021
- Kansas Long Range Transportation Plan - 2021, Missouri's Transportation Emissions Reduction Strategy - 2023, Missouri Carbon Reduction Strategy - 2023
- Kansas State Transportation Improvement Program 2025 - 2028 - 2024, Missouri Statewide Transportation Improvement Program: 2025-2029 - 2024

Local Plans

- Greater KC Regional Bikeway Plan - 2015
- Kansas City Walkability Plan - 2003
- MARC Autonomous and Connected Vehicle Framework - 2008
- Smart Moves 3.0 - 2017
- KC Regional Climate Action Plan - 2021
- Kansas Active Transportation Plan - 2023

Identified Strengths

The Kansas City region has invested in several existing plans and studies aimed at promoting resilience and sustainability. This has established the groundwork for implementing meaningful work in the region, including through an existing foundation of stakeholder engagement and coordination which is paramount to actionable next steps. Existing initiatives include a Regional Bikeway Plan, Regional Pedestrian Policy Plan, Complete Streets Policy/Handbook, Smart Moves 3.0, Sustainable Code Framework. Additionally, agencies like the Unified Government of Wyandotte County Kansas City, Kansas, have invested in important community outreach and engagement around a more people friendly approach to transportation planning. There has been significant work to assess and quantify the current and expected impacts of climate change in the region. The Understanding Long-Term Climate Changes for KC, MO (2016) and the Climate Risk and Vulnerability Assessment (an appendix of the KC Regional Climate Action Plan) provide insight into these impacts. Furthermore, MARC has already completed an extensive GHG emissions inventory. These assessments aim to inform strategic priorities for resilience and sustainability. MARC has already begun to take significant steps to improve resilience and sustainability. MARC has adopted GHG reduction targets, climate change adaptation goals, sustainable/affordable energy goals, & a plan addressing climate change mitigation. Local governments are actively involved with national climate change organizations and have successfully secured discretionary grant funding.

Identified Opportunities

The following represents an initial list of identified opportunities for the project based on this initial assessment. One of the opportunities is right-sizing this project to the larger ongoing evolution of the transportation system with increased focus on emerging technologies, decarbonization, and equity and accessibility.

Evolving Transportation Landscape

- Any number of innovative solutions for first mile/last mile.- the interconnection between transportation and land use has perhaps never been stronger
- What are potential ways to enhance the public transportation system and integrate innovations that align with goals and objectives of projects to support both climate and operational resilience ? i.e. on-demand, microtransit, aerial ropeway system
- New synergies around transportation and energy – electrification and hydrogen – how does powering the future public transportation system impact climate goals
- How to think about life-cycle costs and impacts of new technologies – minerals and e-waste
- From an operational resilience perspective, how to pay for needed services – i.e. de-congestion pricing (probably dead on arrival in Kansas)

Land Use

- Protect & increase urban & suburban forests.
- Plant native plants; remove invasive species in parks & along greenways.
- Plant & protect street trees & shade trees.
- Conserve key natural assets & open space, including agricultural lands.
- Earn Recognition for Urban Forest Stewardship w/ a Tree City USA Growth Award.
- Floating zoning to allow for mixed use surrounding future station locations without having to go back & updated comp plan/zoning.
- Management of right-of-way to prioritize most efficient and least impactful transportation options
- Integration of Community Charging Hubs that support access to EV charging infrastructure and consider mixed uses (i.e. light-duty and medium-duty)
- Mobility Hubs

Transportation

- Prioritize infill development
- Earn walk-friendly community designation
- Update zoning codes to promote walkability
- Allow/encourage accessory dwelling units
- Complete streets & sidewalks

- Reduce minimum on-site parking
- Green vehicle purchasing
- Promote EVs & EV-ready code
- Curb side management includes no idling zones, designated areas for ride share, delivery, etc. Ensure it's accessible to everyone.
- Increase ridership on transit
- Transit-oriented development
- Commuter ridesharing incentives
- Earn bicycle-friendly community designation
- Safe routes to school
- Create cycling networks
- Include space for trees/natural buffer. Increase sizes of median, swells to provide space for planting /maturing trees.
- Provide shaded areas over sidewalks without causing maintenance issues later.
- Localized mobility hubs & first mile/last mile options (mobility choice [grocery store example]). This can be implemented through land use policy that new development incorporates / facilitates for first mile/last mile.

Transit-Oriented Development

With planning for a transit corridor that spans across the river, comes greater opportunities for more jurisdictions to pursue Transit Oriented Development (TOD) planning, zoning and implementation.

- Planning – As the Bistate Corridor Preferred Alternative is selected and the project evolves, there are multiple opportunities for pursuing federal funding to support additional TOD planning and station area planning that could support equitable, transit-oriented development along the corridor. Similarly, individual jurisdictions along the route can undertake planning to identify specific tools that align with their zoning code, size, and development interest.
- Zoning – Zoning revisions should be considered at the city scale for each jurisdiction along the Bistate Corridor. There are significant advantages to advancing planning and zoning for TOD in advance of making a Capital Improvement Grant funding application to the FTA, as land use and economic development potential factor into project ratings that determine eligibility and competitiveness for New Starts and Small Starts grant programs.
- Implementation – Beyond setting up the policies, plans and zoning measures to support TOD, public agencies and the transit agency can evaluate their own capacity to implement new developments on public property, subsidize private development and fund community-based organizations working to advance TOD goals. These steps can be explored in a planning process initially, and then require ongoing staff capacity to administer programs and advance strategies long term. KCATA has already appointed a Director of TOD/TOC to implement measures, which is an important asset to implementation.

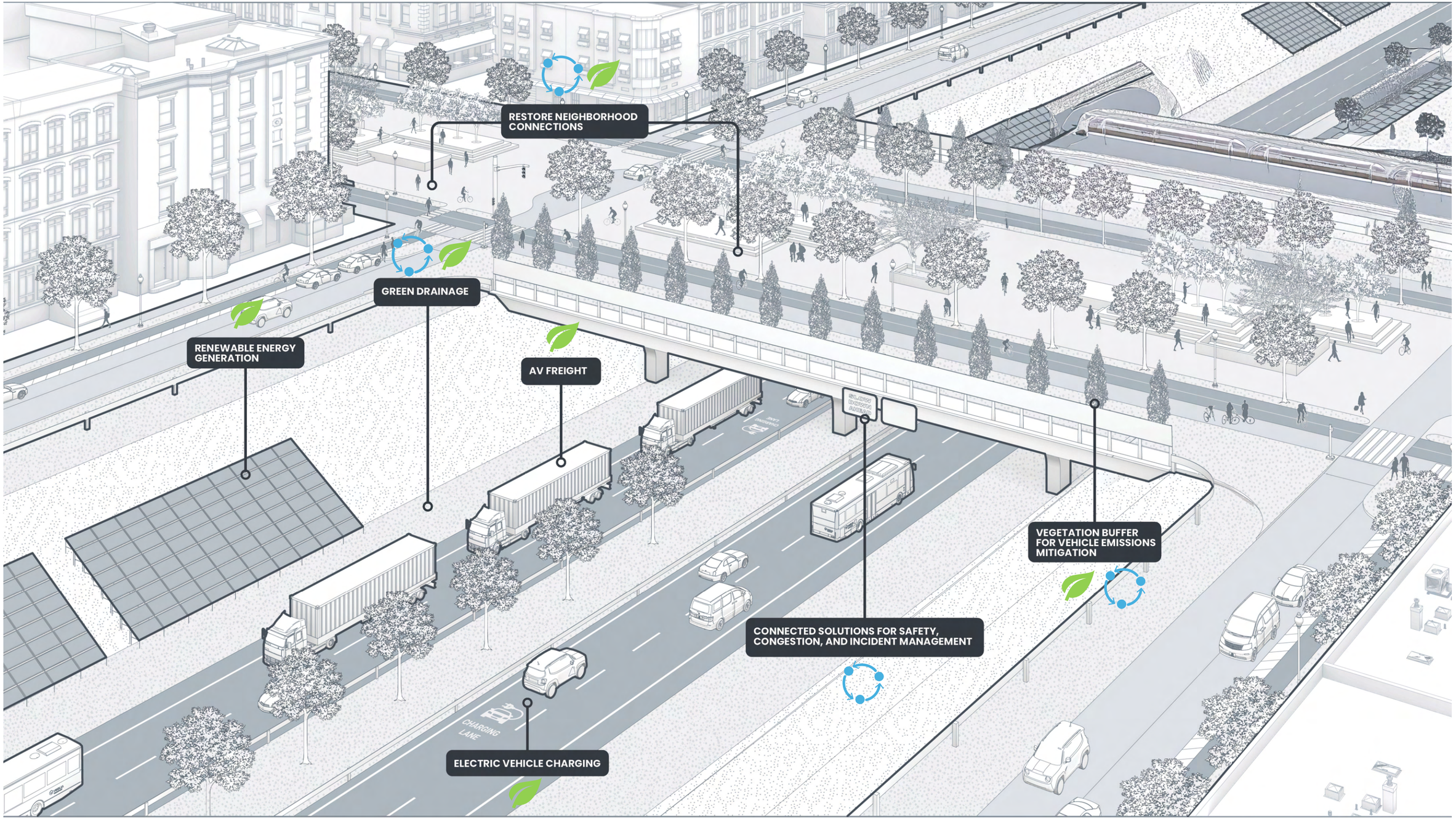
While the region has made significant progress to improve sustainability and resiliency, there is still work to be done. The climate and hazards historically faced by the community are changing. By 2050, Kansas City is expected to experience 19 more days above 95° F and a 14% increase in days with heavy precipitation.17 Current transportation design standards and practices may need to be updated to prepare for future climate conditions within the lifecycle of an asset. For example, existing design storms may not reflect future, or even current, precipitation trends. Additionally, densely urbanized areas where greenery is limited will experience increased impacts of extreme heat as a result of the urban heat island effect. This produces elevated maintenance costs to infrastructure and increased risk of heat-related injuries both on and off the roadway. by the Urban Heat Island effect as Knoxville continues to develop.

Strategies and Actions to Create a Resilient and Sustainable Transportation Network

The following strategies and actions are recommended to increase sustainability and resiliency of the transportation network surrounding the BSRC. MoDOT has made progress on many of these strategies and actions through the CRS, STIP, and NEVI plans. Similarly, KDOT has made progress through the Transportation Emissions Reduction Strategy, RIP, and NEVI Plans. Local governments have also made progress towards some of these strategies and actions through the Climate Action Playbook, KC Climate Action Plan, RideKC SmartMoves 3.0, and other initiatives. Projects can often incorporate both resilience and sustainability strategies to complement each other and additional transportation priorities. Examples of transportation infrastructure incorporating resilience and sustainability strategies are presented in the figures on the following two pages. A menu of strategies and actions for increasing transportation sustainability and resilience are presented in Appendix 2. A few priority strategies and actions are highlighted below for the region.

For sustainability, the Region should focus on reducing vehicle emissions. This directly relates to two of the sustainability strategies of Drive Less and Drive Wise. The region should prioritize transportation actions that reduce the number of vehicle miles traveled (VMT) and single occupant vehicles (SOVs). When the trips must be made, the focus should be on driving wise or reducing the impact of the trip.

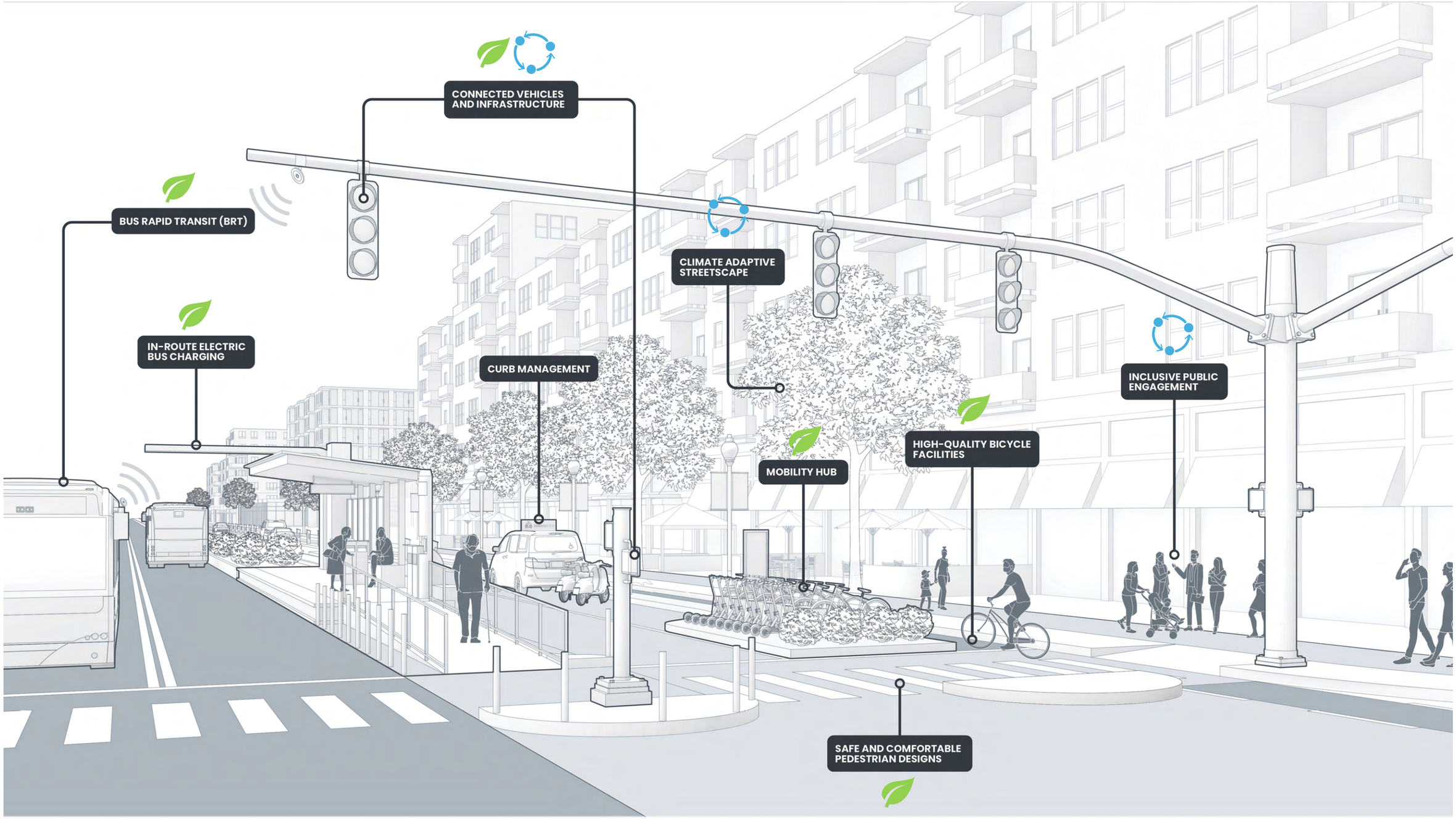
For resilience, the region should focus on minimizing risk and building capacity. While the goal is to eliminate risk, it is often expensive to relocate transportation infrastructure. The region has noted issues with flooding and stormwater management with increased development. The region should focus on developing policies and best practices to incorporate resilience into projects and development such as utilizing nature-based solutions (NBS) for stormwater management. The region should also focus on including resilience in large infrastructure projects moving forward to protect large regional investments.



Freight Corridor incorporating Sustainability and Resiliency Strategies

Sustainability Strategy

Resiliency Strategy



Urban Corridor incorporating sustainability and resiliency strategies

Sustainability Strategy

Resiliency Strategy