CONNECT 2040

Metropolitan Transportation Plan

Adopted December 2, 2020
Amended November 17, 2021
Amended April 20, 2022
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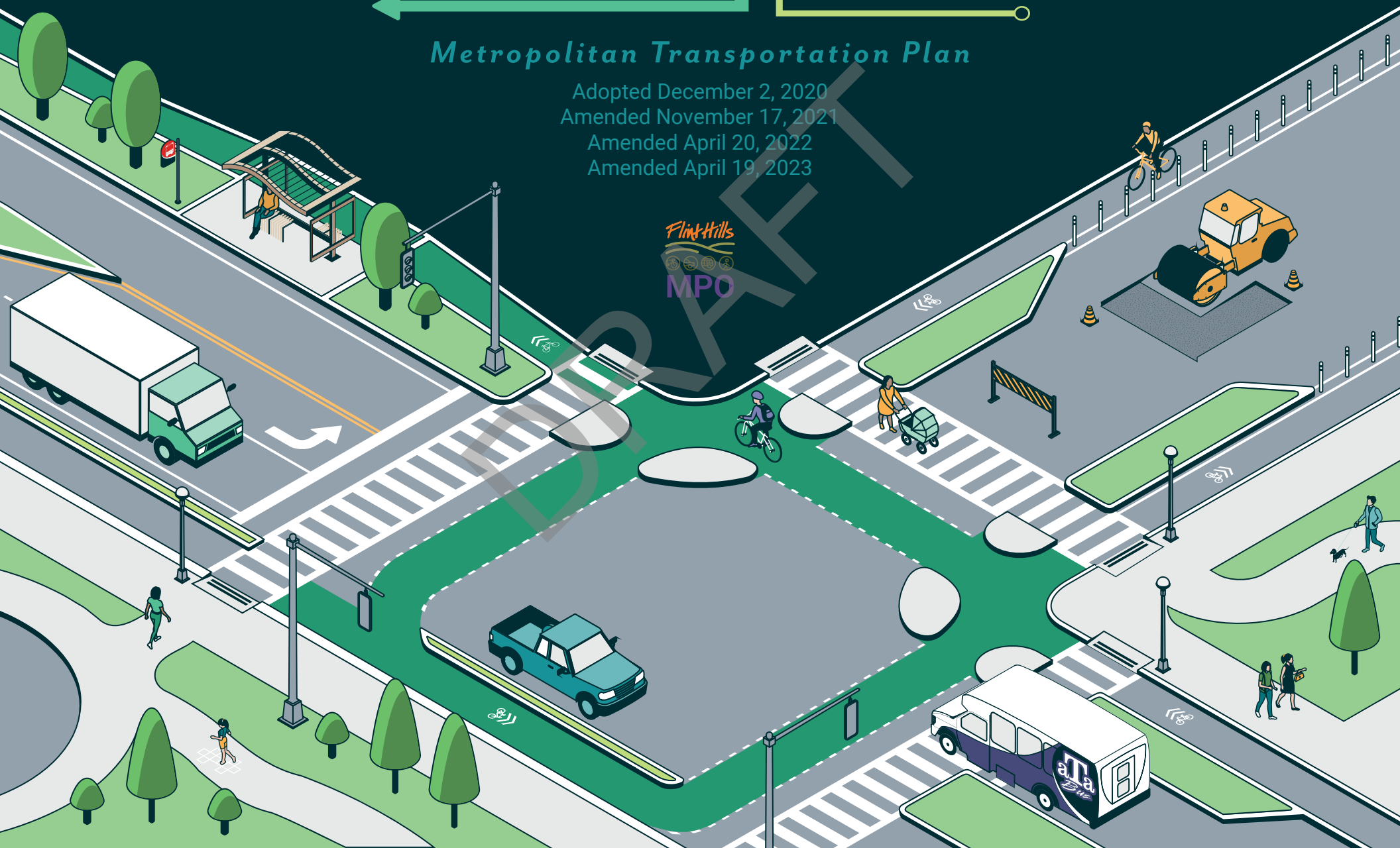
Flint Hills MPO



"Transportation should support the way Kansans want to live - and it is part of the fabric of our lives. It's a supporting fiber that needs to be woven into full cloth - including education, health care and the myriad of other public services. Transportation isn't just about roads and bridges - it's about getting people where they want and need to go -safely and as conveniently and with as much choice as possible. It's also about getting goods and services where we need to go - safely and cost effectively. We compete better when we drive down transportation costs."

-Julie Lorenz
Kansas Secretary of Transportation

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TITLE VI NOTE

The Flint Hills Metropolitan Planning Organization (MPO) hereby gives public notice that it is the policy of the agency to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, sex, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the MPO receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with the MPO. Any such complaint must be in writing and filed with the MPO's Title VI Coordinator within one hundred and eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discriminatory Complaint Form, please see our website at www.FlintHillsMPO.org.

DISCLAIMER

The preparation of this report has been financed in part through funds from the Federal Highway Administration and Federal Transit Administration, U. S. Department of Transportation, under the Metropolitan Planning Program, Section 104(f) of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

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Connect 2040 was a collaborative process that included robust community, stakeholder, and staff participation. Those included below and several other community members had an important role that shaped the content of this document.

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TABLE OF CONTENTS

1 OVERVIEW

2 OUR REGION TODAY

3 OUR REGION IN 2040

4 COMMUNITY OUTREACH

5 METRICS FOR PROGRESS

6 WHAT WE CAN AFFORD

1

Chapter One

OVERVIEW

Connect 2040 is the guiding document for the future of our region's multi-modal transportation system. It's the blueprint for how we can achieve our goals of safety, preservation, mobility, and prosperity.

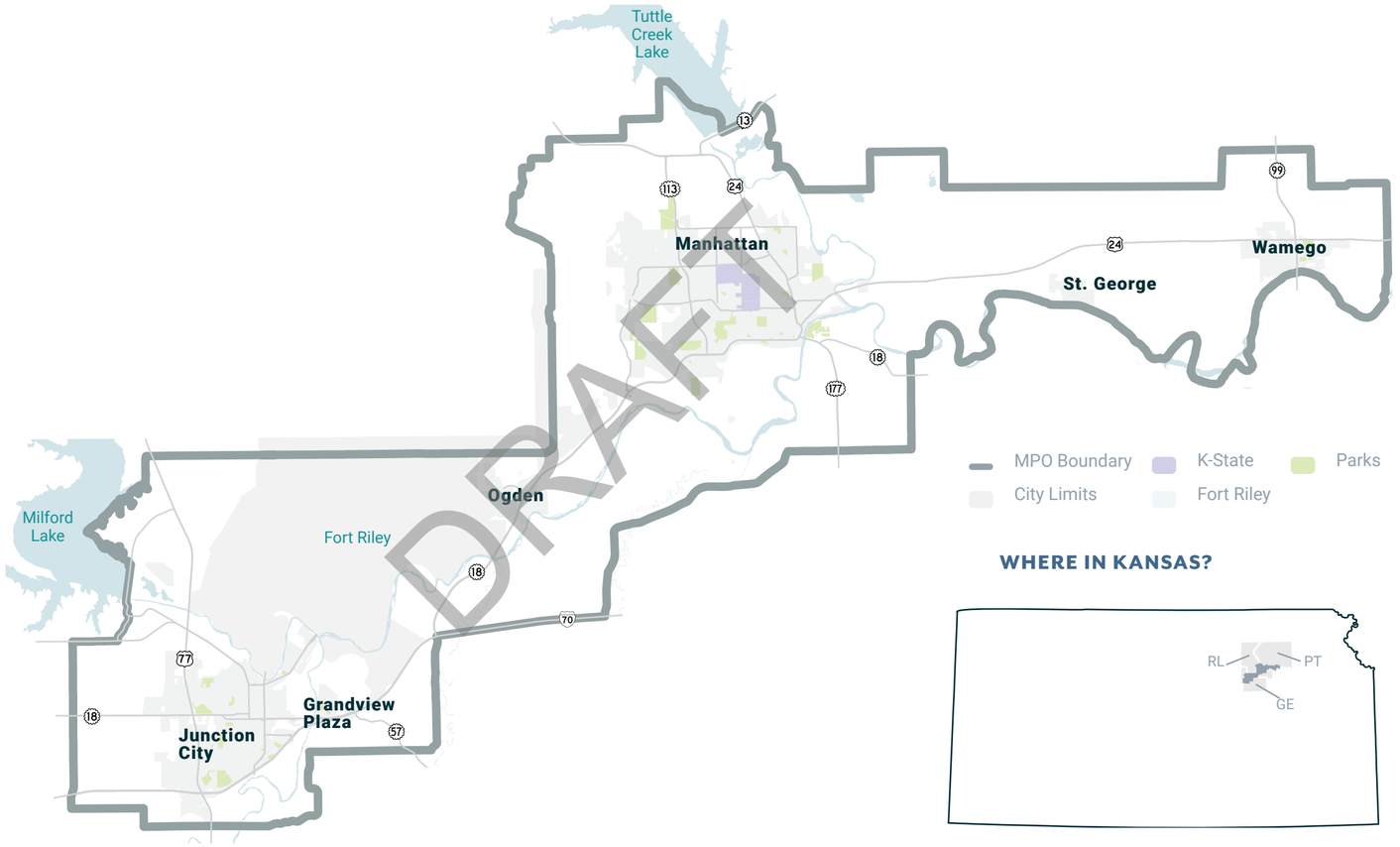
Transportation plays an important role in our region and directly impacts community livability. This chapter introduces the role the Flint Hills MPO and the long-range plan play in guiding our transportation system for decades to come.

THE FLINT HILLS MPO

Metropolitan Planning Organizations (MPOs) serve as regional transportation planning organizations in urbanized areas with a population of 50,000 or more people. They are tasked with providing a continuous, cooperative, and comprehensive planning process that includes all modes of surface transportation (vehicles, walking, biking, public transit, and freight).

The Flint Hills MPO serves portions of Riley, Geary, and Pottawatomie Counties, including the Cities of Manhattan, Junction City, Wamego, Ogden, St. George, and Grandview Plaza; as well as the southern portion of Fort Riley Military Installation. The MPO is responsible for providing a forum for regional coordination among these local entities, as well as our state and federal partners, key stakeholders, and residents. Together, we develop policies and programs that guide the development of our transportation system.

The Flint Hills MPO is governed by a Policy Board consisting of elected officials from each of the three counties, the three major cities (Manhattan, Junction City, and Wamego), and a representative from the Kansas Department of Transportation (KDOT). The Policy Board receives recommendations on actions by a staff-level committee, the Technical Advisory Committee (TAC). The Federal Transit Administration and Federal Highway Administration serve as non-voting members on both the Policy Board and (TAC).



FLINT HILLS MPO

110,441
residents

247
square miles

952
centerline miles of roadway

755
million vehicle miles traveled
(2017)

OUR MISSION

Provide a **regional** forum to coordinate, encourage, and promote a **safe, efficient, affordable,** and **integrated** transportation system for all users; in support of **livable communities** and **economic competitiveness**.

CONNECT 2040 PURPOSE & PROCESS

PURPOSE

The development of a long-range transportation plan is one of the core responsibilities of an MPO. Every five years, MPOs must facilitate the process of evaluating existing conditions, making financial projections, and working through project prioritization to identify the region's vision and priorities for the next twenty years. From a regulatory perspective, the long-range transportation plan is one of the key products an MPO must produce per federal regulations. From a practitioner standpoint, long-range planning serves as the foundation for responsible decision-making when it comes to implementing the region's future transportation system.

Connect 2040 builds from our first long-range plan, the Flint Hills Transportation Plan, to set the vision for our transportation future through the year 2040. It focuses on how our past decisions have shaped our current system and sets a direction for what transportation should be over the coming decades. *Connect 2040* is intended to be concise and educational, walking the reader through the story of our region's historical transportation decisions and where those might lead us come the year 2040. This plan takes a deep-dive into the historical growth patterns of our communities, how we have invested in our transportation system, and analyzes the overall health of our communities from a transportation perspective.

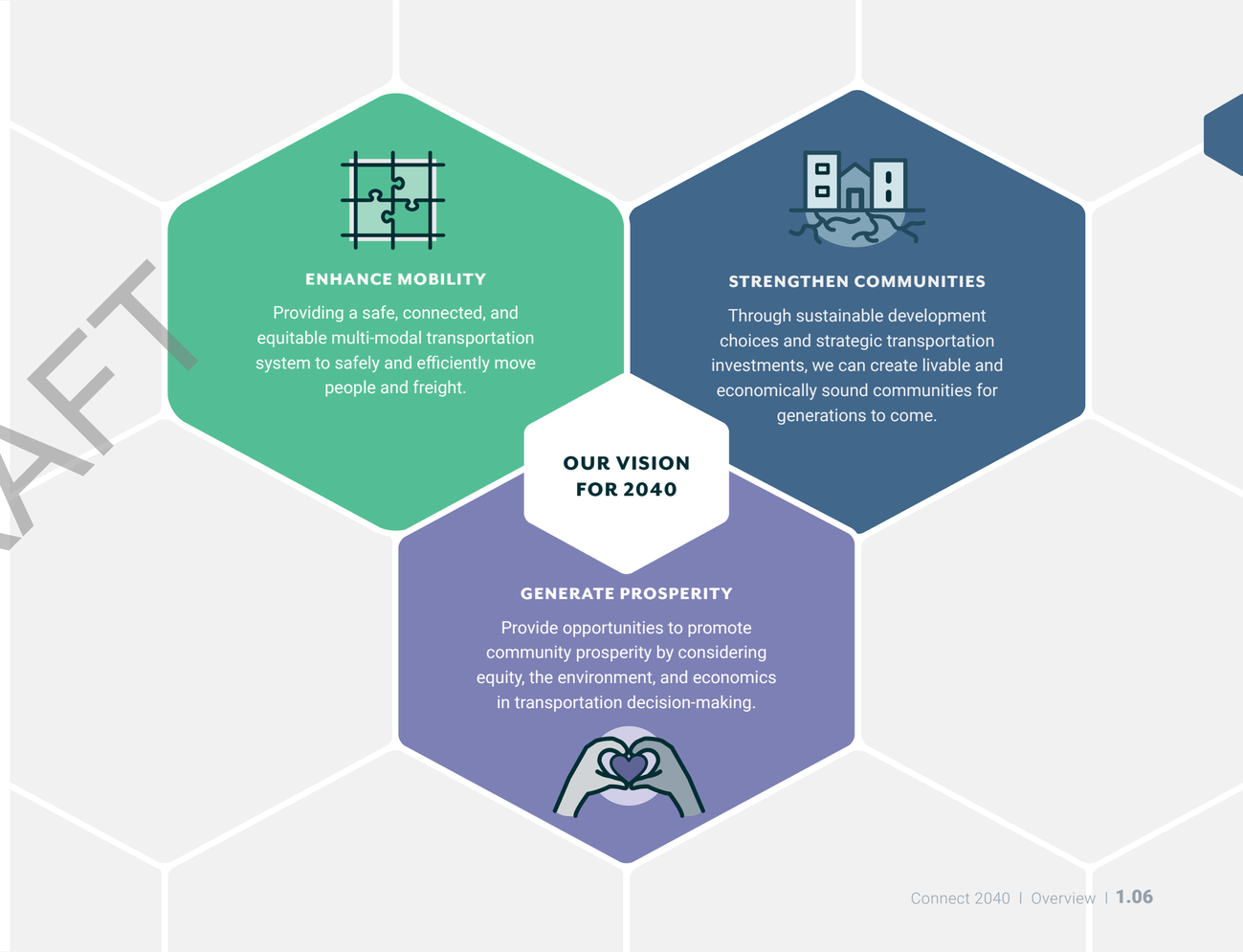
PROCESS

Connect 2040 was developed using a data-forward and collaborative process. It builds on previous efforts and plans, our current transportation assets, and public input to create a realistic plan to achieve our transportation goals. A variety of tools, data sets, and feedback was gathered to help identify the region's needs and opportunities.

1 WHERE WE ARE TODAY
Understanding the existing system through data analysis and citizen feedback.

2 WHERE WE WANT TO GO
Establishing goals, identifying needs, and engaging the public to achieve our vision.

3 HOW WE ARE GOING TO GET THERE
Identifying financially realistic investments and priorities for our future.

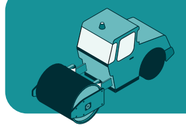


OUR REGIONAL GOALS

The goals developed for *Connect 2040* provide guidance on how to attain our vision for a transportation system that enhances mobility, strengthens communities, and generates prosperity. To measure our progress, a variety of performance metrics and corresponding targets were established.

CONNECT 2040 GOALS

SAFETY
Provide a safe and secure multi-modal transportation system.



PRESERVATION
Invest in the preservation and maintenance of our existing transportation infrastructure and assets.

MOBILITY
Maintain system performance and enhance modal choice for the efficient movement of people, goods, and freight.

PROSPERITY
Create an equitable, affordable, sustainable, and integrated transportation system for all users.

We are waiting for further guidance on performance measures from the US Department of Transportation for Prosperity.

FEDERAL PERFORMANCE METRICS

SAFETY
- Number of fatalities
- Rate of fatalities per 100 million Vehicle Miles Traveled (VMT)
- Number of serious injuries
- Rate of serious injuries per 100 million VMT
- Number of non-motorized fatalities and serious injuries

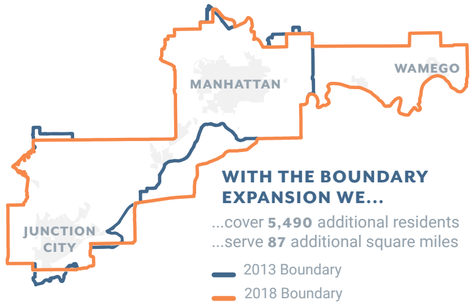
PRESERVATION
- % of bridges in "good" and "poor" condition
- % of interstate and highway pavement in "good" and "poor" condition
- % of public transit vehicles that have met or exceeded their Useful Life Benchmark

MOBILITY
- % of the person-miles traveled on the Interstate and highways that are reliable
- Truck Travel Time Reliability (TTTR) Index on Interstate System

CHANGES SINCE OUR LAST PLAN

MPO BOUNDARY EXPANSION

When the MPO was formed, the boundary included only a small portion of Pottawatomie County, its eastern edge bounded by Lake Elbo Road. In January 2018, the MPO Policy Board approved expanding the boundary further east towards Wamego, along the US-24 Corridor. Both the Pottawatomie County Commission and Wamego City Commission voted in favor of the expanded boundary to facilitate more comprehensive transportation planning along the highly traveled corridor of US-24.

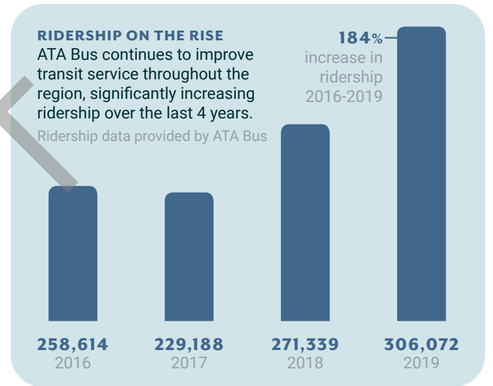


KDOT'S NEW TRANSPORTATION PROGRAM: EISENHOWER LEGACY

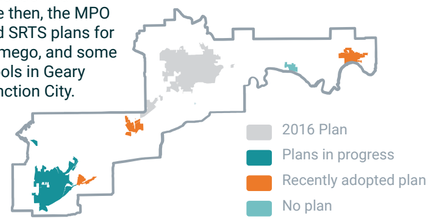
During the development of the MPO's first plan, the Kansas Department of Transportation (KDOT) was in the middle of implementing T-WORKS, a 10-year, $8 billion transportation program. *Connect 2040* was adopted during KDOT's newest long-range program known as the Eisenhower Legacy Transportation Program (or IKE). This program focuses on preserving our existing roadways and making cost-effective improvements to support economic development.

T-WORKS
TRANSPORTATION WORKS FOR KANSAS
Jobs ■ Safety ■ Economic Development

KANSAS DOT
IKE
THE EISENHOWER LEGACY TRANSPORTATION PROGRAM



SAFE ROUTES TO SCHOOL
Manhattan adopted a Safe Routes to School Plan in 2016. Since then, the MPO has created SRTS plans for Ogden, Wamego, and some of the schools in Geary County/Junction City.



PUBLIC TRANSIT INVESTMENTS

Over the last four years, significant progress has been made to incorporate public transit as part of the transportation system. The Flint Hills Area Transportation Agency, commonly referred to as ATA Bus, is the regional transit provider, serving all three counties, K-State, and Fort Riley. In May 2016, ATA Bus began operating three fixed-routes in Junction City.

In August 2018, ATA Bus released a new fixed-route system in Manhattan, replacing the original routes implemented in 2012. Ridership increased by more than 135% within the first month of service. Included with the new system was the K-18 Connector, a fixed-route providing service to the City of Ogden and Manhattan Business Park for the first time. In July 2019, additional modifications were made to the Manhattan fixed-routes to improve efficiencies and access.

BICYCLE AND PEDESTRIAN PLANNING INITIATIVES

Since the development of the last long-range transportation plan, the MPO has worked with local jurisdictions and school districts to develop bicycle and pedestrian infrastructure recommendations which include; the City of Manhattan's *Bicycle and Pedestrian Systems Plan*, Junction City's *Active Transportation Plan*, the Flint Hills *Regional Connections Plan*, and Safe Routes to School Plans for Junction City (USD 475), Ogden Elementary (USD 383), and Wamego (USD 320).

2

Chapter Two

OUR REGION TODAY

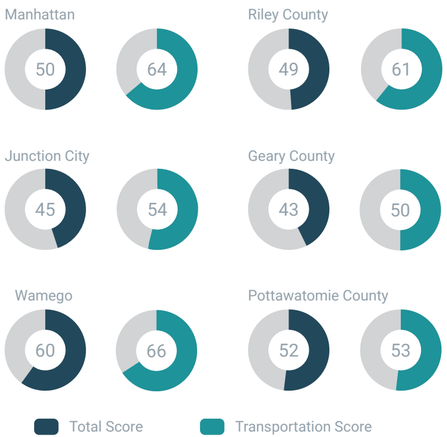
Our transportation network can provide an instant gauge for how our communities value livability. Transportation is the backbone to our economy and key to a prosperous future. Understanding our current assets and shortcomings allows us to understand where we are today and how we might alter our decisions for where we go in the future. If we can learn from our past, we can change the course of our future.

This chapter will review our region's existing conditions, examine historical trends, and provide a snapshot of the transportation system today. As we look at where we have been and the challenges it has created, we must also begin to look at how we can modify our growth patterns so we can continue to be a thriving, economically-sound place to live, work, learn, and play.

TRANSPORTATION & LIVABILITY

WHAT IS A LIVABLE COMMUNITY?
A community that tailors to the needs of all residents, regardless of age, status, income, race, ethnicity, or ability.

AARP LIVABILITY SCORES



Livability can be measured using a variety of metrics, but transportation is included as a criterion in nearly all evaluations. Transportation affects our daily lives in ways many of us don't consider. It contributes to our cost of living, our overall health, our decisions on where to work or live, and impacts community equity.

CHANGING DEMANDS

Despite the post-World War II development patterns that created vehicle-dependency for many communities, a shift in transportation preferences is emerging amongst the youngest and oldest generations. Millennials are less interested in driving than the generations that came before them,[1] electing to live in more dense communities for ease of access to destinations and the sense of place. This interest makes transportation choice and place-making even more important for attracting and retaining the future workforce. Baby boomers are interested in similar types of environments; choosing to live in walkable areas for increased mobility and livability that allow aging-in-place.[2]

[1] Millennials in Motion, U.S. PIRG Education Fund & Frontier Group, 2014
[2] AARP Livability Index
[3] National Center for Safe Routes to School, 2011
[4] Photo: Richmond Times-Dispatch Collection, The Valentine
[5] Photo: Source: Valerie, Shocking Tulsa

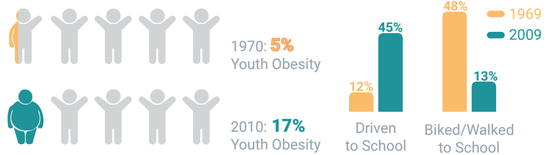
Note: Baby Boomers were born between 1946 to 1964 while Millennials were born between 1981 to 1996

HEALTH IMPACTS

Over the last half-century, the number of people commuting to work or school by walking or biking has decreased significantly. During this time, there have been startling increases in childhood obesity rates, chronic diseases, and a decrease in life expectancy. While these aren't directly attributable to changes in transportation behavior or community growth patterns, both transportation and land use can serve as ways to reverse these trends.

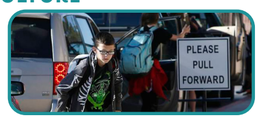
OBESITY ON THE RISE[3]

Experts argue that childhood obesity may be partly caused by the rising number of children who do not walk or bike to school.



SCHOOL CULTURE

THEN[4]



NOW[5]

LAND USE IMPACTS

Development patterns directly impact transportation efficiency and how people commute. For example, with a traditional grid-like roadway network, a quarter mile walk to school takes 5 minutes; whereas it might take a person three times as long to travel by foot in a more suburban-style development. When street and sidewalk connectivity are lacking, walking and biking become more challenging and time consuming, leaving traveling by vehicle the most practical option.

COMMUTE TO SCHOOL

5 minute walk - ¼ Mile
15 minute walk - ¾ Mile

REGIONAL POPULATION TRENDS

POPULATION CHANGES OVER TIME

While over the last several decades our region has experienced a steady increase in total population, the data are not reflective of the trends for each of our communities. For example, Junction City's population peaked in 2012 and has steadily declined since; yet Wamego's population has remained relatively constant. As the largest city in the region, Manhattan's overall population trend line slants upward, but has leveled off in recent years. The Green Valley Area, an unincorporated area of Pottawatomie County (Figure 2.1), has been the fastest growing residential area in our region, with a 324% growth rate since 2000. The MPO also serves three smaller towns, Grandview Plaza, Ogden, and St. George, with a combined 2019 population of 4,500 people (4% of our region's total population).

Figure 2.1: Local Jurisdictions

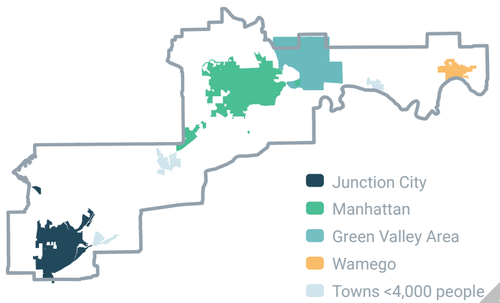
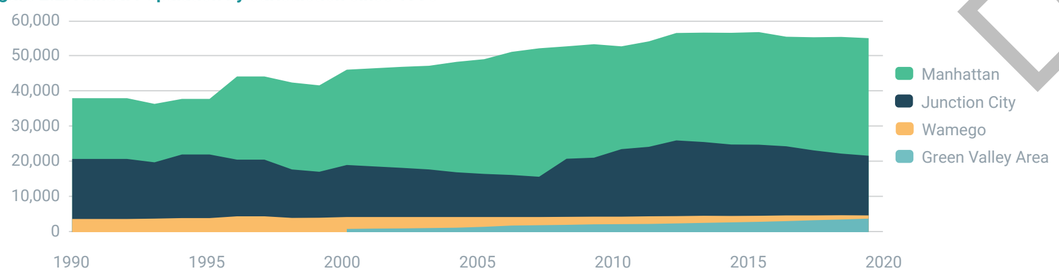


Figure 2.2: Annual Population by Jurisdiction since 1990



OUR TWO MAJOR INSTITUTIONS

Our region has two major institutions: Fort Riley Military Installation and Kansas State University (K-State). These institutions significantly influence our region's population, economy, and transportation system. Many of the fluctuations in our communities' populations (Figure 2.2) can be attributed to student enrollment or military personnel stationed at Fort Riley.

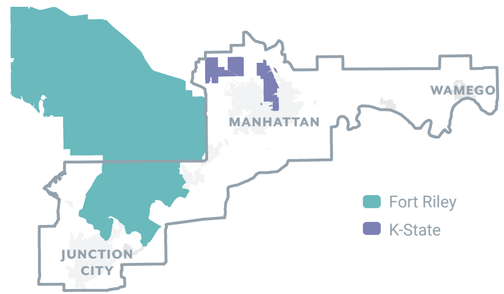
K-STATE

K-State students comprise nearly half of the population in Manhattan. When classes are in session, students directly increase traffic volumes, transit ridership, and vehicular crashes. The University is the largest employer in Manhattan and is located in the center of the city. The roadways surrounding the University are some of the most capacity-strained roadways in the region. Efforts have been made to improve additional access to campus by implementing public transit and improving bicycle and pedestrian connections.

FORT RILEY

Fort Riley Military Installation is home to the Big Red 1 and has close to 15,000 active military personnel. It is the largest employer in the region, employing nearly 5,900 civilians and contractors. As a $1.7 billion dollar economic generator for the State of Kansas, it is important to support the transportation around the installation. Bounded by highways on all borders, the installation is accessible primarily by vehicle. Although the ATA Bus provides demand response transit service to Fort Riley, this service is limited.

Figure 2.3: Fort Riley and K-State Land Consumption



13.7%
Fort Riley
land composition in the MPO boundary

3.7%
K-State
land composition in the MPO boundary

Note: year-to-year population estimates for Junction City, Manhattan, and Wamego were provided by the Kansas Division of the Budget's Certified Population Data. Green Valley Area population estimates were provided by Pottawatomie County's Planning and Zoning office.

LAND USE & TRANSPORTATION DEMAND

Land use and development patterns directly influence the transportation needs and demands within a community. More compact development easily supports a multi-modal network to move people more efficiently over shorter distances. The farther out from the center of a community that development takes place, the larger the role vehicles take on in transporting people. Figure 2.5 depicts the relationship between land use density and transportation.

As demonstrated in Figure 2.4, creating multi-modal transportation opportunities can increase the amount of people we can move on a downtown roadway. Not not only does this allow for a more efficient transportation system, but it also appeals to a wider audience to attract and retain residents from all social classes, ages, and abilities.

Figure 2.4: Space needed to move people by different modes

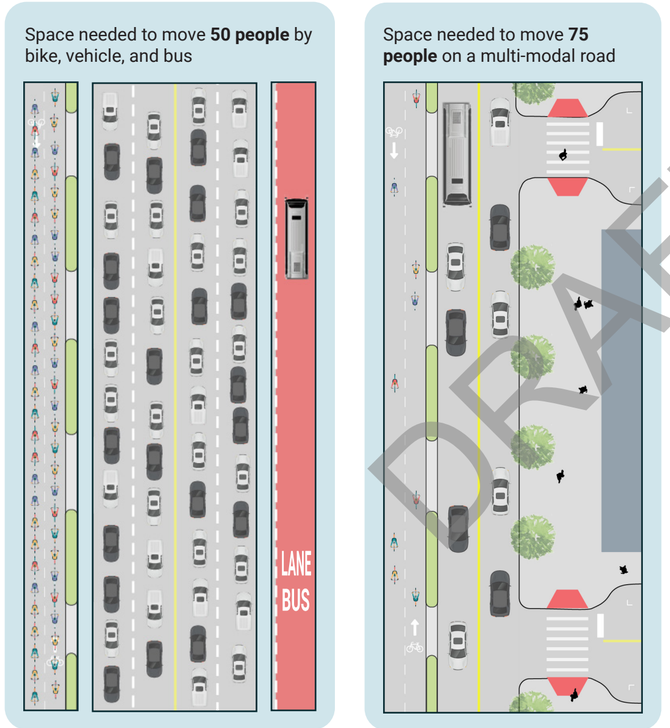
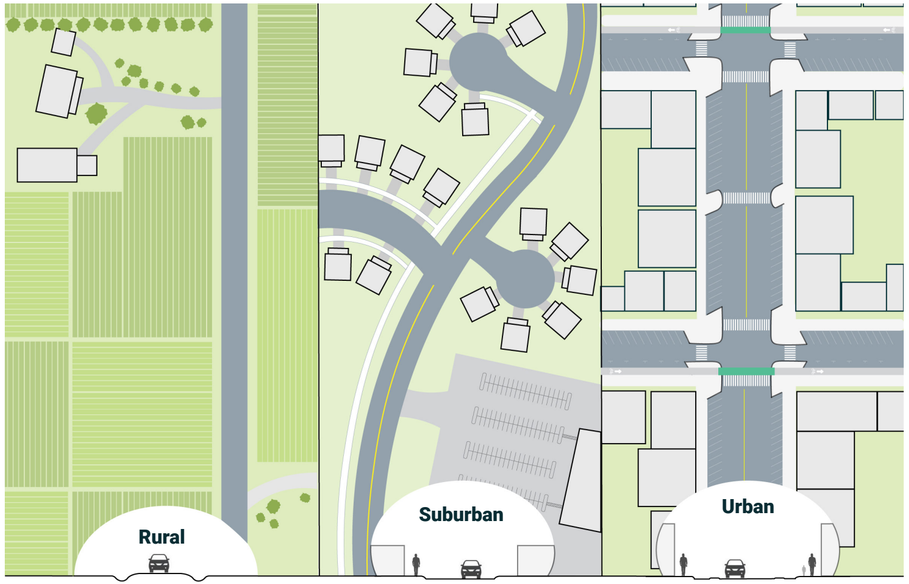
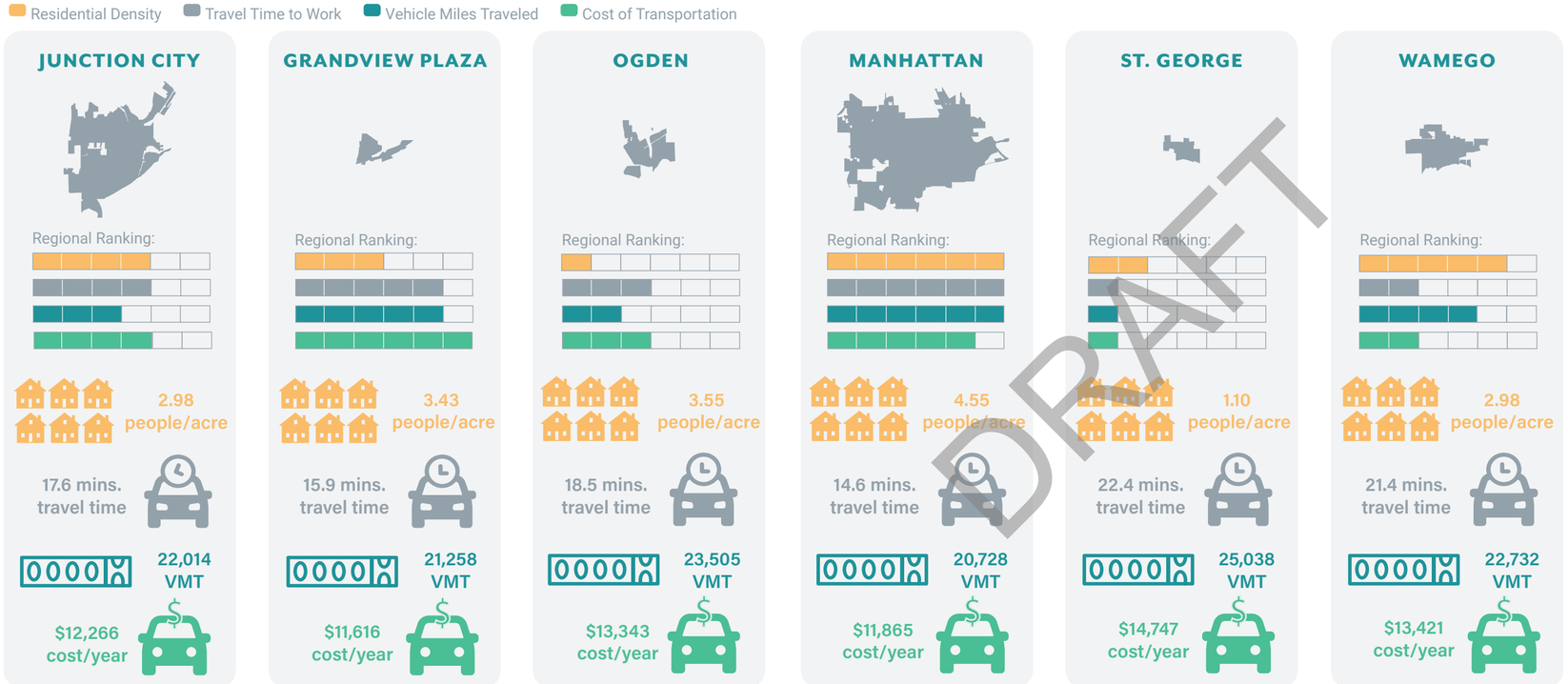


Figure 2.5: Roadway design for varying development patterns



	Rural	Suburban	Urban
Roadway built for:	Vehicles	Vehicles, pedestrians	Vehicles, pedestrians, bikes, buses
Development density:	Low density, spread out development	Medium density, clustered development	High density, close development
Travel time:	Longer (over 20 minutes)	Medium (15-20 minutes)	Shorter (less than 10 minutes)
Posted speed limit:	High (50mph)	Medium to low (30-40 mph)	Low (20-30mph)

Figure 2.6: Correlation between Residential Density and Household Impacts



DENSITY AND TRANSPORTATION

There is a correlation between land use density, travel time, the number of miles a household drives each year, and the annual cost of transportation for households. To summarize, the further a household lives from the center of our region, the longer travel time they have to get to work, the more miles they drive, and the more they pay each year on out-of-pocket transportation costs. Figure 2.6 summarizes these relationships and provides a regional ranking to depict how each community scores in each of these categories.

In the Flint Hills region, the average household spends more on transportation than on housing. This significant personal investment creates an expectation regarding acceptable travel times, pavement condition, or availability of parking. As the rest of *Connect 2040* will show, often times many of the perceived inadequacies with our roadway network, are just that, perceived. While in reality, our transportation system performs well in all of the categories above.

However, not every household in our region has access to a vehicle. Over 2,300 households in our communities rely on walking, biking, public transit, or some other form of transportation to go about their day-to-day lives. To adequately serve all residents and transportation needs in our community, we must also improve our multi-modal transportation system.

2,300 households
don't have access to a vehicle

Sources: Population figures are 2019 Kansas Certified Populations. Acres based on 2020 boundaries. Travel times from Data USA. VMT and vehicle ownership cost per year from Housing + Transportation Index.

ROADWAYS PER PERSON

To highlight the relationship between development and the road network needed to support it, analysis was completed comparing our communities' roadway miles, land consumption, and population trends over the last three decades.

Our region is very diverse in the amount of development it has experienced in the last thirty years. For Manhattan and Wamego, while there has been an increase in the acres of land consumed, it has stayed on pace with the change in population. This has led to a reduction in the number of roadway feet per resident. In Junction City, the change in population has slowed, yet development continued on the western edge of town, significantly increasing the number of feet of roadway per person. The Green Valley Area has experienced tremendous growth in both land developed and population, bringing the overall feet of roads per capita down. However, the focus of this analysis was on paved roads due to the higher construction and maintenance costs. Given these parameters, the Green Valley area has experienced a large increase in the feet of paved roads per person.

Ideally, if our land consumption stays on pace with population growth, the number of roadway feet per resident shouldn't change significantly over time. When population growth fails to keep up with increased infrastructure, a larger financial burden is placed on existing residents. For each additional mile of roadway added, a community must find additional dollars to help maintain and preserve that roadway.

CHAPTER 5: WHAT WE CAN AFFORD

We will no longer be able to afford to maintain or preserve our existing transportation system using current funding sources in the coming years. These constraints will force us to evaluate where new development occurs, how we accommodate growth, and which modes of transportation we invest in.

Manhattan

↑ 54.0%
increase in
land developed (1990 - 2020)

1990: 37,737 people
2020: 54,599 people

↑ 44.7%
increase in population

1990: 45.4 ft.
2020: 45.2 ft.

↓ 0.5%
decrease in the
road length per capita

Junction City

↑ 65.8%
increase in
land developed (1990 - 2020)

1990: 20,642 people
2020: 21,482 people

↑ 4.1%
increase in population

1990: 52.4 ft.
2020: 71.2 ft.

↑ 35.9%
increase in the
road length per capita

Wamego

↑ 36.6%
increase in
land developed (1990 - 2020)

1990: 3,706 people
2020: 4,732 people

↑ 27.7%
increase in population

1990: 68.0 ft.
2020: 65.5 ft.

↓ 3.7%
decrease in the
road length per capita

Green Valley Area

↑ 71.9%
increase in
land developed (1990 - 2020)

1990: 1,620 people
2020: 3,774 people

↑ 482.7%
increase in population

1990: 54.3 ft.
2020: 80.9 ft.

↑ 49.1%
increase in the
road length per capita

Note: Blue Township data is used for the Green Valley Area (GVA) due to data available. Most of the growth in this area has been in the GVA.

ENVIRONMENTAL AND GEOGRAPHICAL FEATURES

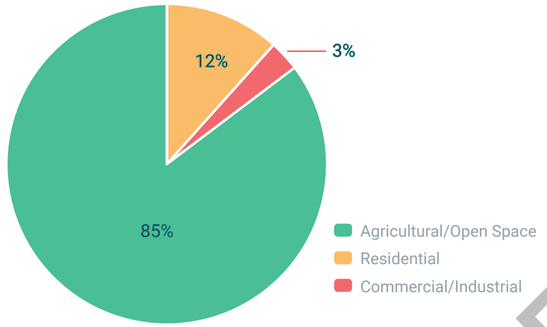
As mentioned previously, our transportation system is directly impacted by where and how we choose to develop. However, our development opportunities can also be influenced by factors outside of our control like geographical restrictions or environmentally sensitive areas. Our communities surrounding Fort Riley have an even greater responsibility to limit development occurring in certain areas that would prevent the installation from conducting its training missions.

The Environmental Protection Agency sets National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. There are no air quality monitors in our region. The closest monitor is located in Topeka and is currently in attainment for all pollutants.

We have an obligation to maintain a balance between a vibrant economy, equitable society, and a healthy environment. All three of these factors play an equal and important role in community livability and quality of life. As such, Figure 2.8 identifies geographical barriers and environmentally sensitive areas. These factors should be considered and reviewed during project development.

Our region's land use is mostly comprised of agricultural and open space, largely encompassing our environmentally sensitive areas.

Figure 2.7: Allocation of Land



FAST ACT

The current federal surface transportation legislation (the FAST Act) includes ten planning factors that must be incorporated into transportation planning, including to:

#6 Protect and enhance the environment, promote energy conservation, improve quality of life..."

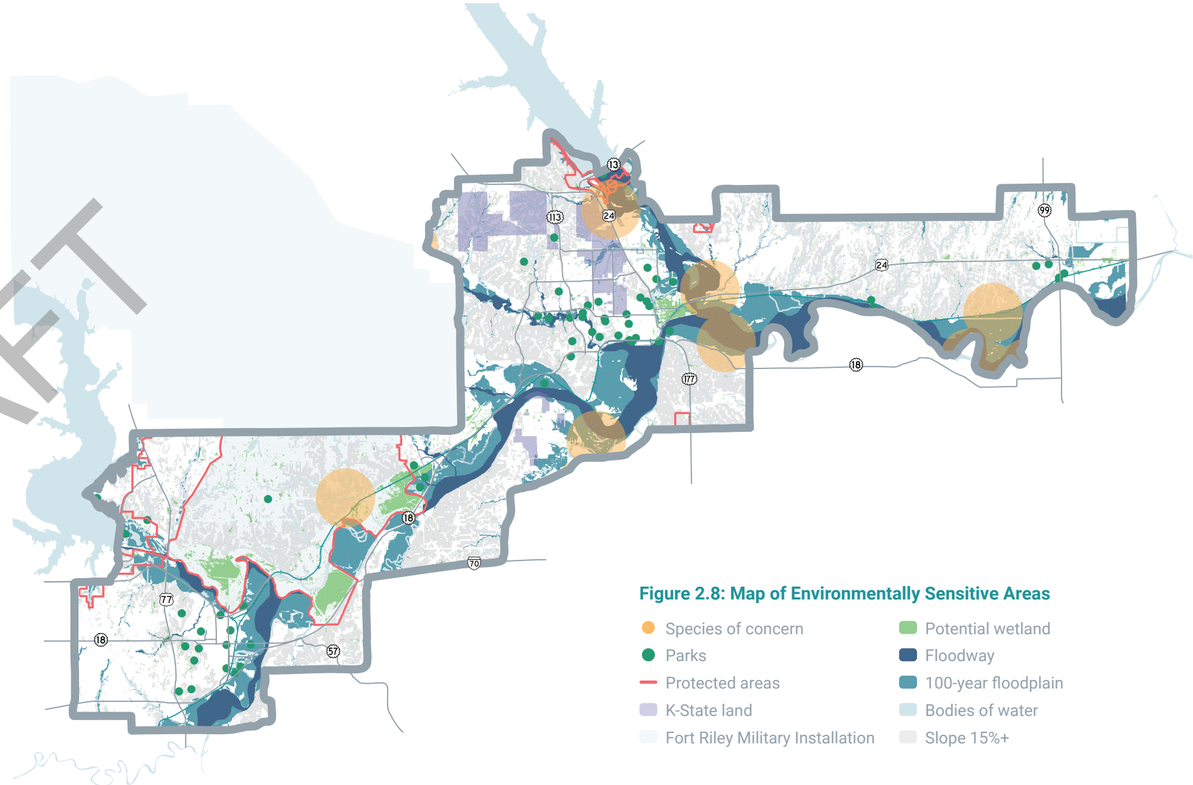


Figure 2.8: Map of Environmentally Sensitive Areas

ROADWAY NETWORK

Our region has a total of 1,960 lane miles of roadway responsible for the safe and efficient movement of people and goods. Our roads are categorized into several classes based on the role they play in our transportation system. Our interstates (I-70) and freeways (think K-18 between Manhattan and I-70) are intended to carry people at high speeds for long distances. On the opposite end of the spectrum we have our local roads that provide us direct access to our homes. Our local roads are some of our safest roads and make up a vast majority of the total miles of roadways.

Arterials carry large volumes of traffic across our communities. **Collectors** are those roads that connect our arterials to our local neighborhood streets. The **local** roads carry us directly to many of our houses. **University** roads are along the perimeter of or directly on the K-State campus and are responsible for serving a variety of transportation modes. **Downtown/ Aggieville District** streets often accommodate on street parking and have higher volumes of pedestrians.

Roadway Type	Lane Miles	% of total
Interstate	72	3.7%
Freeways/Highways	237	12.1%
Arterials	81	4.1%
Collectors	463	23.6%
Locals	1088	55.5%
University	11	0.6%
Downtown/Districts	8	0.4%
Total	**1960**	**100%**

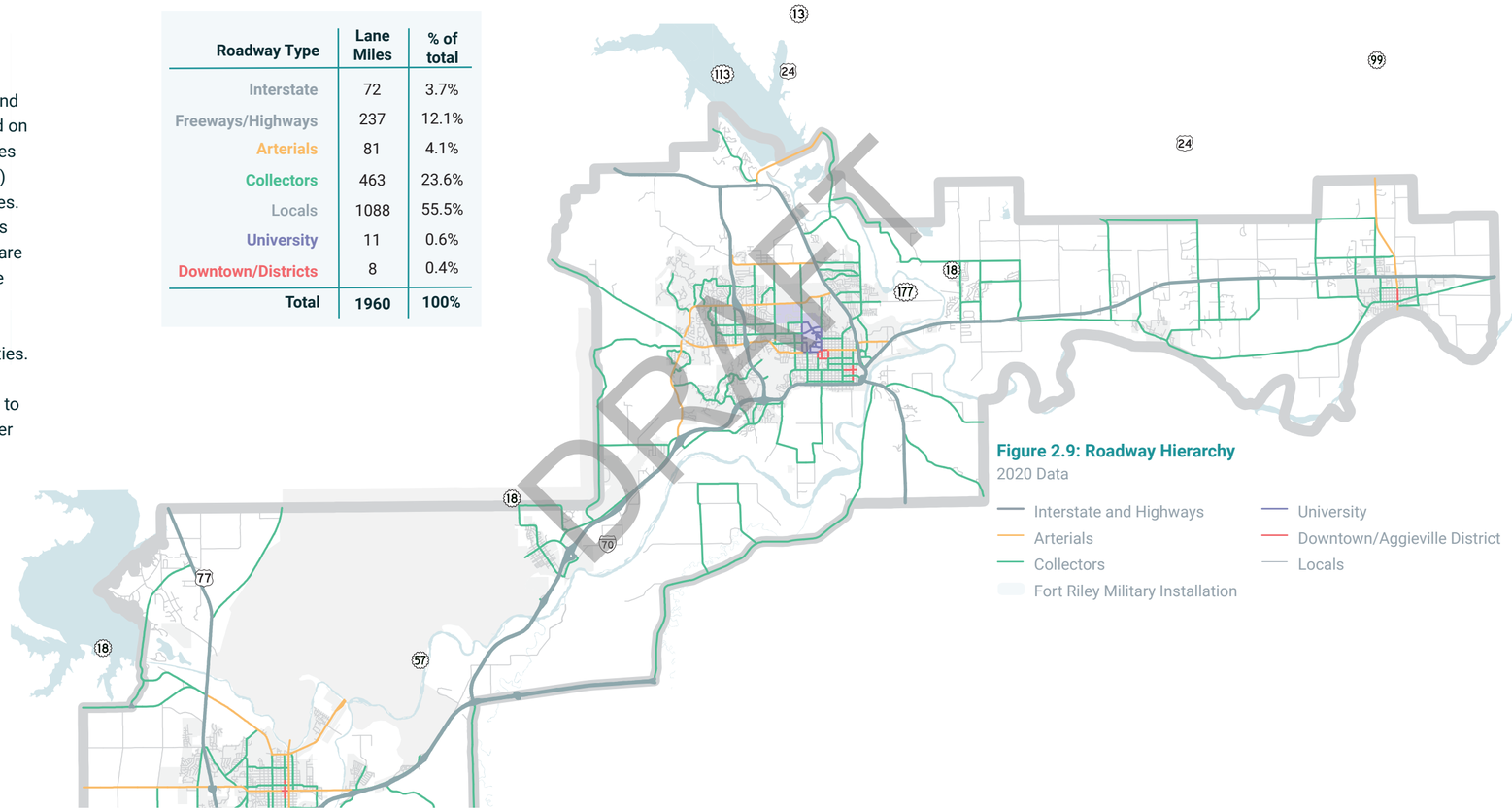


Figure 2.9: Roadway Hierarchy
2020 Data

QUICK FACTS

952
centerline miles of roadway

1,906
lane miles of roadway

755
million vehicle miles traveled *(2017)*

57
miles of bikeways

346
miles of sidewalks

192
public transit bus stops

ROADWAY RELIABILITY

Our region's roadways are incredibly efficient and do not experience congestion like most metropolitan areas. **Our region's average travel time to work is 18 minutes** which is below both the state and national average, reference Figure 2.10. While longer commute times can be a reflection of roadway congestion, they are also dependent upon where people choose to live and work. In our region, it is common for someone to live in one community and work in another which increases the average commute time.

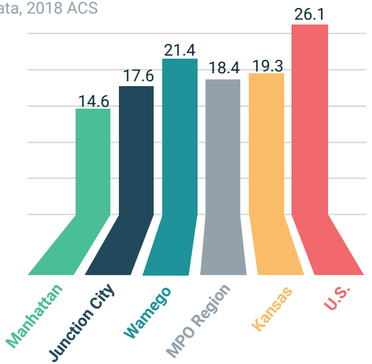
COMMUTING PATTERNS

Figure 2.11 shows the commuting patterns for our region, allowing visualization of how many people commute in or out of each of our communities. The green arrow ( ) indicates the number people not living in the community that travel in for work. The light blue arrow ( ) represents the number of people living in that community that travel to a different community for work. The circle represents those that both live and work in the same community.

Note that St. George, which has the longest commute time, has the largest percentage of people traveling to a different community to work, while Manhattan has the lowest commuting time and the largest percentage of people both living and working in the same community.

Figure 2.10: Comparison of Travel Times in Minutes

USA Data, 2018 ACS



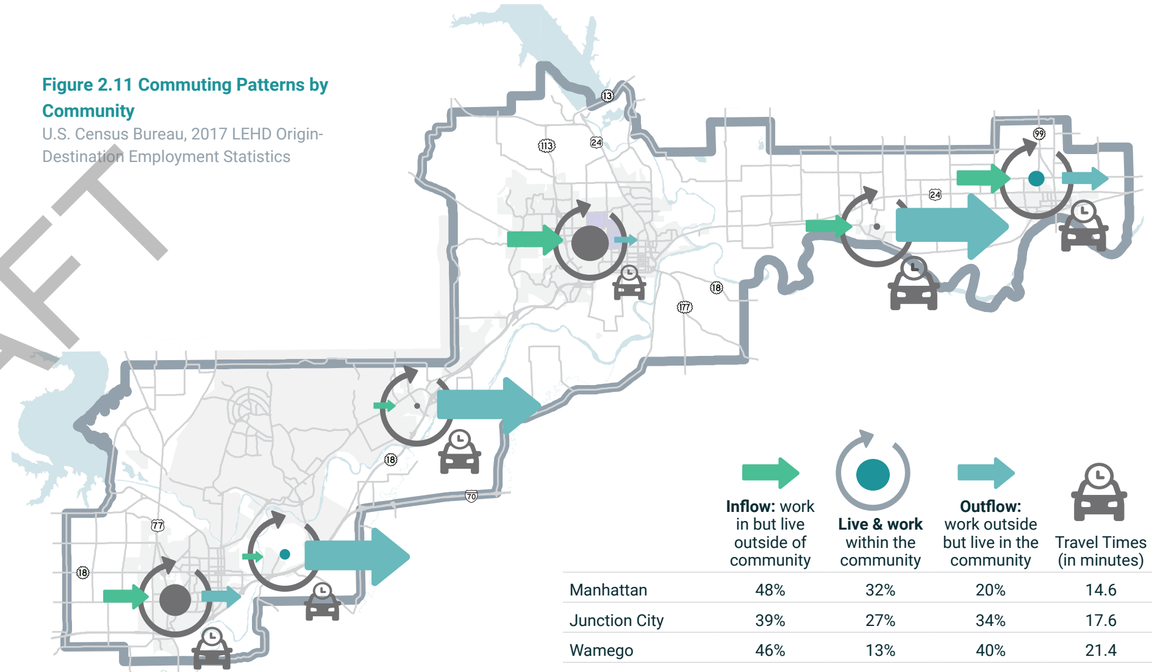
INTELLIGENT TRANSPORTATION SYSTEMS

One of the ways to improve roadway reliability and commute times is to improve efficiency along our signalized corridors. Intelligent transportation systems (ITS) allows technology to improve both the safety and efficiency along corridors. ITS has a variety of applications such as coordinating signals, detecting vehicles at signalized intersections, or providing real-time travel information, to name a few.

The Flint Hills Regional ITS Architecture outlines all ITS-related infrastructure for the region, including an inventory of existing ITS assets and planned projects.

Figure 2.11 Commuting Patterns by Community

U.S. Census Bureau, 2017 LEHD Origin-Destination Employment Statistics



	Inflow: work in but live outside of community	**Live & work** within the community	**Outflow:** work outside but live in the community	Travel Times (in minutes)
Manhattan	48%	32%	20%	14.6
Junction City	39%	27%	34%	17.6
Wamego	46%	13%	40%	21.4
Ogden	11%	0.5%	89%	18.5
Grandview Plaza	8%	2%	90%	15.9
St. George	4%	0.5%	96%	22.4

ROADWAY CAPACITY

To evaluate the efficiency of our roadways, we develop a travel demand model that measures the level of congestion on our roads. Congestion is measured using level of service (LOS) on a scale of A to F, with an LOS of E or F representing heavy congestion. For our most heavily used roadways, an LOS of D is considered acceptable.

In our region, only 0.4% of roadways are operating at a LOS E or F for more than two hours a day; most of which are directly adjacent to K-State's campus (Figure 2.12). There are a few additional roadways that operate at an LOS E or F between one and two hours a day. This is not surprising as a significant number our daily trips are made during our morning and evening commutes.

It is important to note that a roadway operating at a LOS of E or F doesn't necessarily need to be expanded with additional lanes. For example, near K-State campus, the capacity issues are due to the sheer number of people traveling to campus. In this environment, we must be cognizant that there are not only vehicles on these roadways, but a significant number of people walking and biking. Expanding one of these roads may improve the efficiency for vehicles, but would reduce the level of service and safety for non-motorized users.

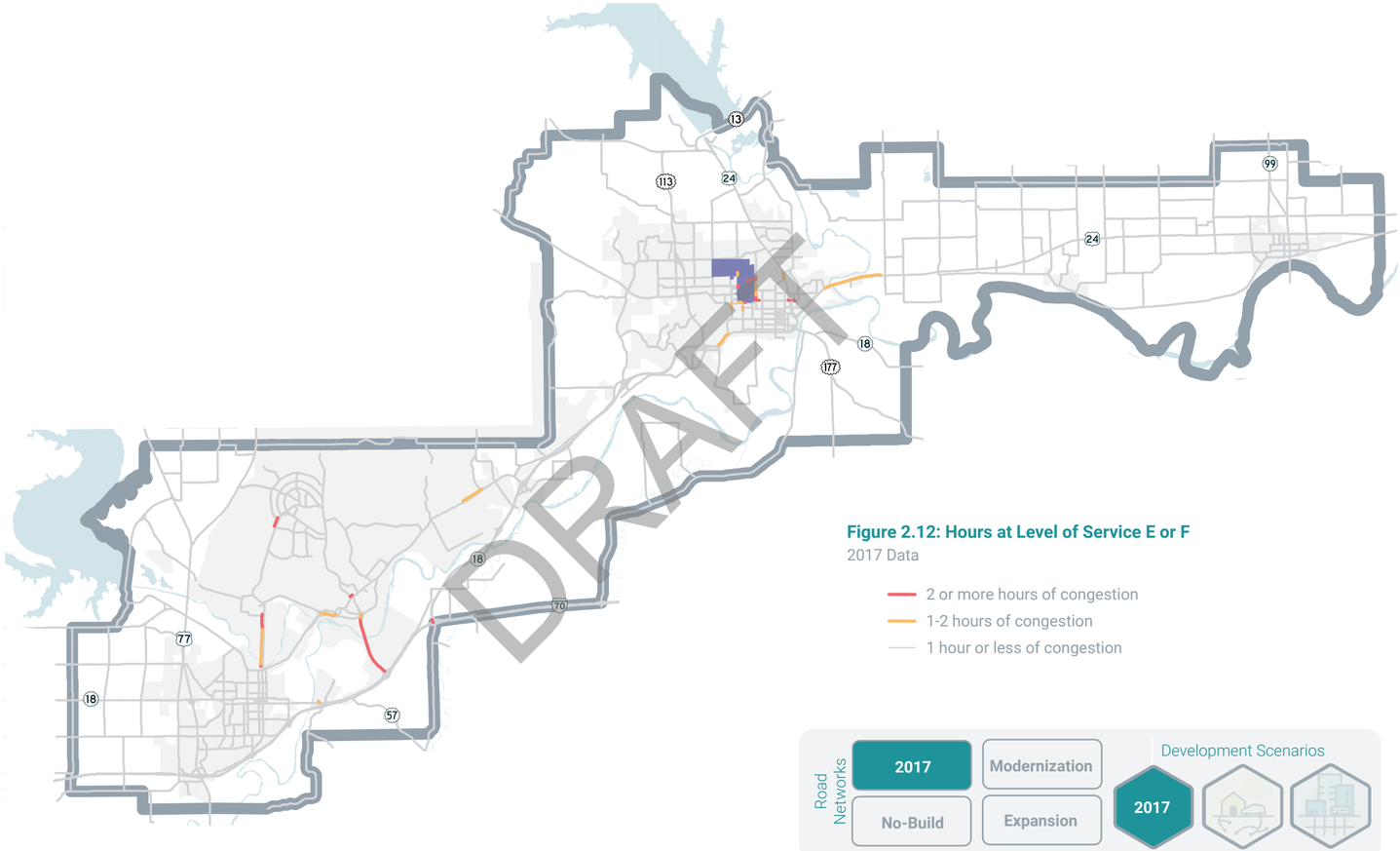
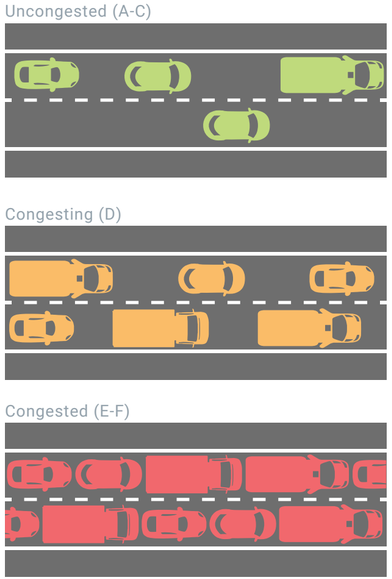


Figure 2.12: Hours at Level of Service E or F
2017 Data



PRESERVATION AND MAINTENANCE

Our region spends an average of $10.4 million dollars maintaining and preserving our roadways each year. This includes everything from snow removal and filling pot holes, to larger preservation projects such as replacing concrete panels or overlaying asphalt roadways.

Pavement Condition

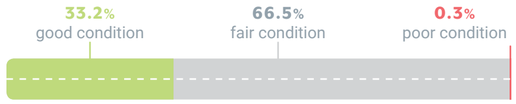
Pavement condition data is maintained for all state-owned roads and for the roadways within the City of Manhattan. For the state-owned roadways, pavement is categorized into three conditions; good, fair, and poor. The state-owned system is divided into two types of roadways, the Interstate system and our state highways.

The City of Manhattan uses a different method of maintaining pavement condition known as a pavement condition index (PCI), which rates condition on a scale of 0 to 100. The average PCI for Manhattan's roadways is 74. The City strives to keep the average PCI above 70.

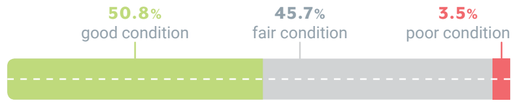
Bridge Condition

There are 148 bridges within the MPO region that are inspected every two years and rated as in good, fair, or poor condition. Over 86% of our bridges are in good condition. The only two bridges in poor condition are located on the local system (city or county owned).

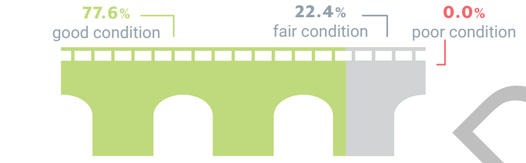
Interstate Pavement Condition



State Highway Pavement Condition



State Highway Bridge Condition



Local Roadway Bridge Condition

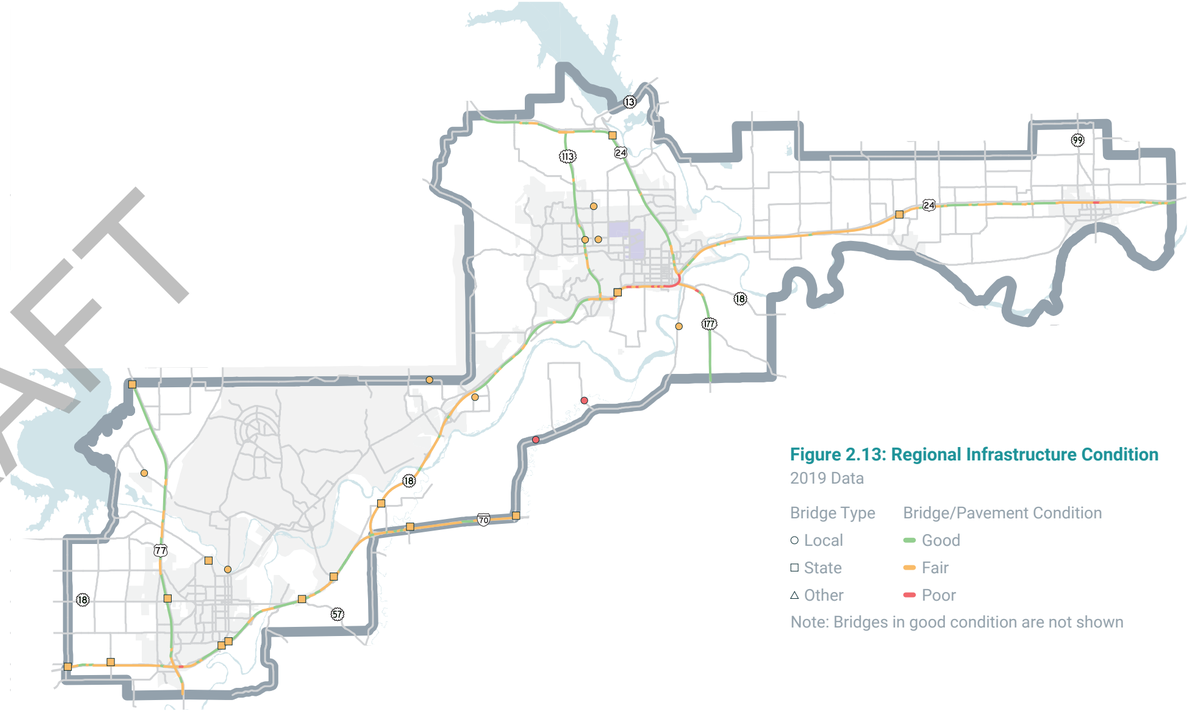


Figure 2.13: Regional Infrastructure Condition
2019 Data

Bridge Type	Bridge/Pavement Condition
○ Local	Good
□ State	Fair
△ Other	Poor

Note: Bridges in good condition are not shown

ROADWAY SAFETY

Over the last five years, the percentage of total serious injury and fatal crashes involving people walking and biking has steadily increased. This is in contrast to vehicular crashes, which have seen a reduction over the same period of time. While we have information for all vehicle-related crashes with over $1,000 in property damage, this isn't necessarily an effective measure for improved safety. For example, with the installation of the roundabout at 4th Street and Bluemont Avenue in Manhattan, the total number of crashes slightly increased. However, injury crashes were eliminated. Even though the number of crashes at this intersection increased, the overall safety of this intersection was dramatically improved.

In recent years, our region has been proactive at making improvements to some of the highest injury-crash locations. Figure 2.14 identifies the locations with either recently completed projects or programmed projects to improve safety for vehicle users.

Bicycle and Pedestrian Crashes

While we have data for nearly all vehicle crashes, we have very limited data on bicycle and pedestrian crashes (often referred to as non-vehicular crashes). One of the reasons is that there are many near-misses. A study completed in Knoxville, Tennessee found that for every one bicycle crash reported, there were at least 30 near-misses. It also found that for every one bicycle crash reported, there was at least one additional bicycle crash not reported. This lack of data prevents us from being proactive at improving "near-miss" locations before a serious injury or fatality occurs.

Despite comprising only 9% of commuting mode share, people walking and biking are involved in 15% of all serious injury and fatality crashes. This percentage has steadily increased over the last five years, in direct contrast to similar vehicular crashes.

Transit Safety and Security

Public transit is one of the safest forms of transportation in our region. Over the last three years, there have been no transit-related fatalities or serious injuries. For on-board security, cameras will be installed on public transit vehicles. Currently three of ATA Bus' vehicles have cameras installed on them, yet none are in working order. In the next several years, the goal is to have an operational camera on all ATA Bus vehicles.

Knoxville, TN study sourced from www.americawalks.org/knoxville-blog

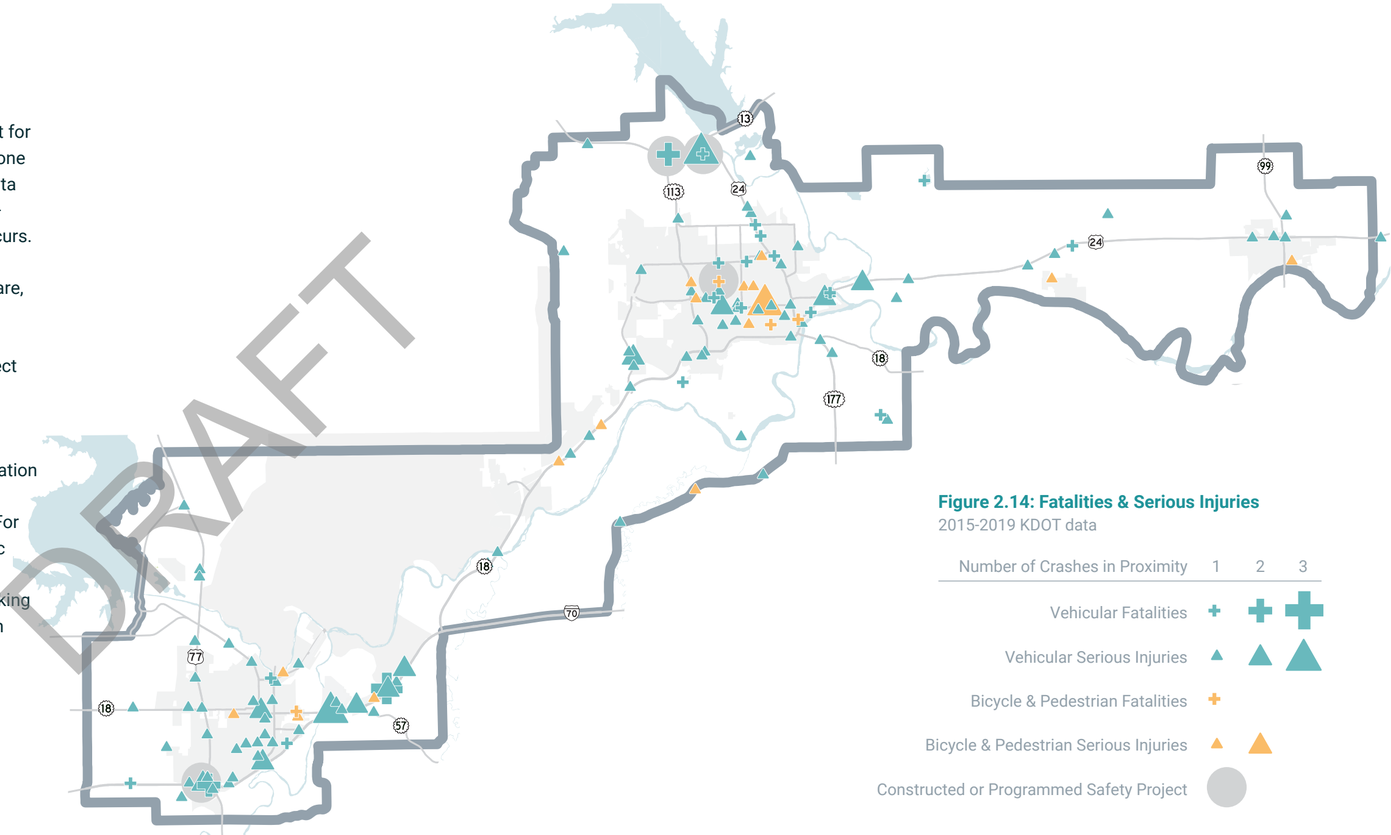


Figure 2.14: Fatalities & Serious Injuries
2015-2019 KDOT data

BICYCLE & PEDESTRIAN NETWORK

Our region has over 62 miles of bicycle infrastructure and 348 miles of sidewalks. When comparing this to our centerline miles of roadways, this is equivalent to 8% of roads having bicycle infrastructure and 78% with sidewalks.

Our bicycle network is comprised of several different types of bike facilities. Figure 2.15 further explains the different types of bicycle infrastructure, while the map provides an overview of where each of these facility types is located. The table below outlines the number of miles of existing bicycle infrastructure by type in our region.

Infrastructure Type	Number of Miles
Multi-use Paths	17.0
Bike Boulevards	12.4
Bike Lanes	7.3
Trails	25.5

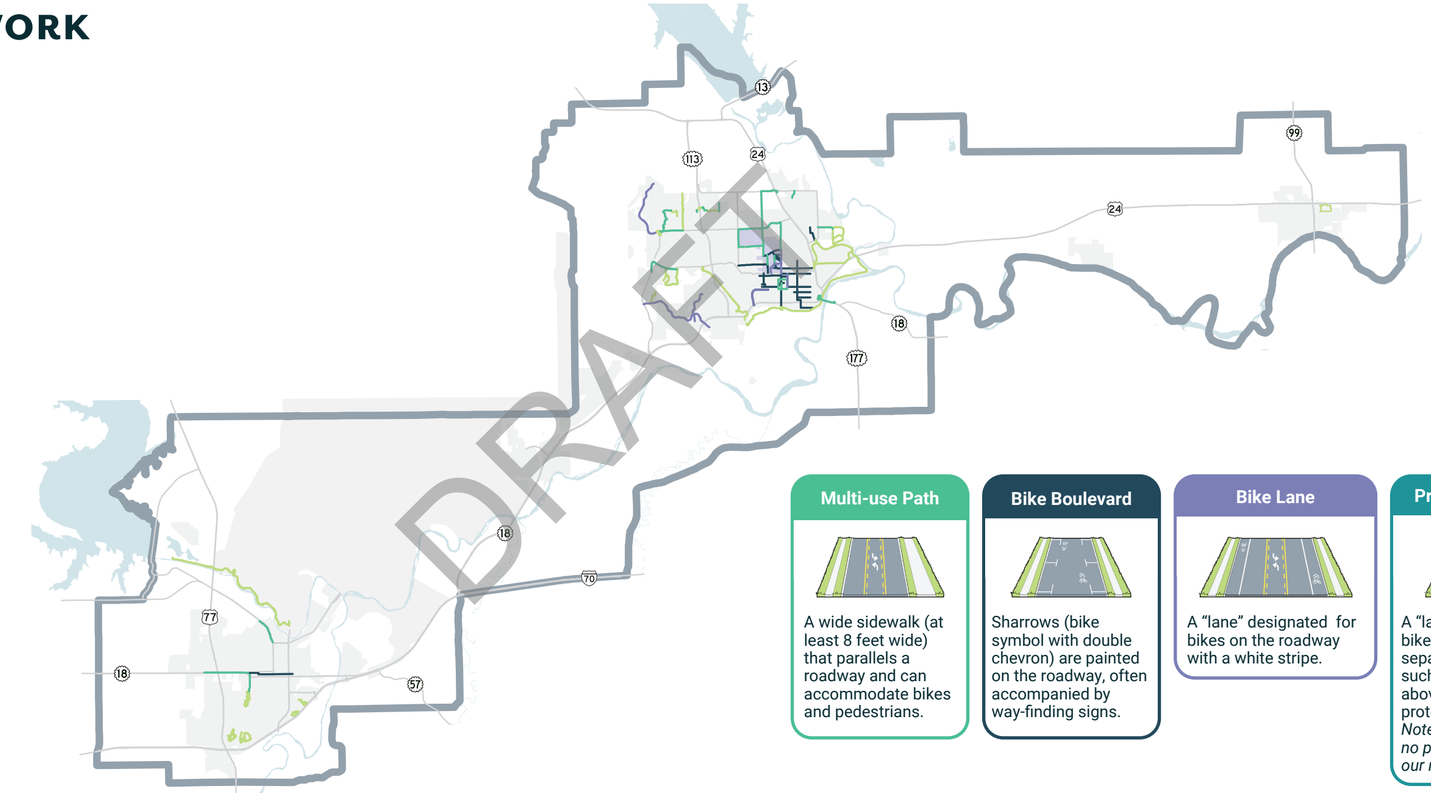


Figure 2.15: Existing Bicycle Infrastructure

- Multi-use Path
- Bike Boulevard
- Bike Lane
- Trail

Multi-use Path

A wide sidewalk (at least 8 feet wide) that parallels a roadway and can accommodate bikes and pedestrians.

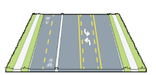
Bike Boulevard

Sharrows (bike symbol with double chevron) are painted on the roadway, often accompanied by way-finding signs.

Bike Lane

A "lane" designated for bikes on the roadway with a white stripe.

Protected Bike Lane



A "lane" designated for bikes using physical separation/protection, such as a curb. Shown above is a two-way protected bike lane. *Note: There are currently no protected bike lanes in our region.*

Trail

Similar to a multi-use path, but more recreation-focused. Trails often follow natural features such as rivers and can be paved or have natural surfaces.

JUNCTION CITY

In 2020, Junction City was awarded funding to construct the city's first bicycle boulevard. While there is a substantial gap in sidewalks and bicycle infrastructure, progress is being made to address this.

MANHATTAN

Over the last several years, Manhattan has invested in installing bicycle boulevards and bike lanes; and the existing sidewalk network is substantial. The major issues are providing infrastructure that is accessible by all ages and abilities (i.e. protected bike lanes) and improving the safety of crossings at key intersections.

WAMEGO

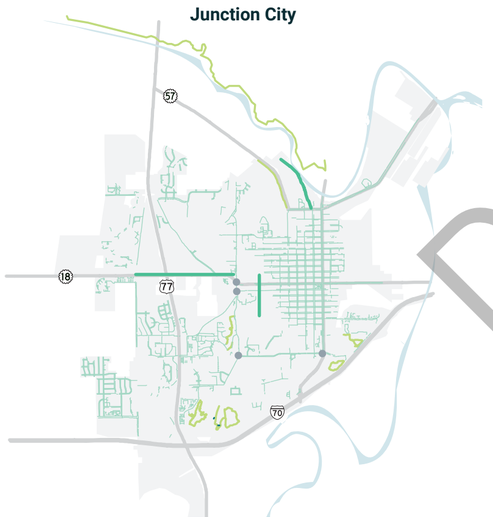
Overall, the community is very walkable with good connectivity. There are several areas where crossings could be improved or bicycle infrastructure could be added.

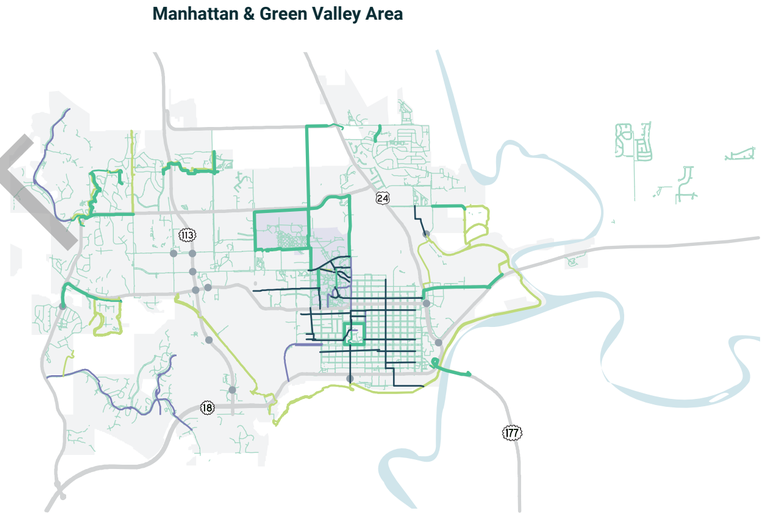
GREEN VALLEY AREA

Despite large gaps in the network and no bicyle infrastructure, opportunities exist to improve walking and biking for this area. In recent years, the County has required sidewalks be included in all new developments, but there is still missing infrastructure in the older neighborhoods and along major roadways.

Reference the following plans for additional information on existing conditions: Manhattan's Bicycle and Pedestrian Systems Plan; Junction City's Active Transportation Plan; and Wamego Sidewalk Master Plan and USD 320 Safe Routes to School.

Jurisdiction	Miles of Bike Infrastructure	Feet of Bike Infrastructure per Resident	% of Roads with Bike Infrastructure
Junction City	13.4	3.3	10%
Manhattan	47.5	4.6	21%
Wamego	1.2	1.3	2%





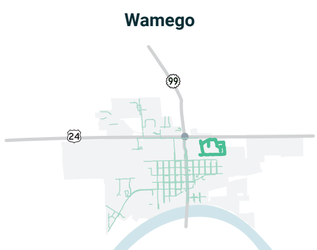


Figure 2.16: Bicycle and Pedestrian Infrastructure
2020 Data

- Multi-use Path
- Bike Boulevard
- Bike Lane
- Trail
- Sidewalks
- Key Intersections

BICYCLE FRIENDLY MANHATTAN

Manhattan is recognized by the League of American Bicyclists as a Bronze Bicycle Friendly Community and K-State is recognized as a Bronze Bicycle Friendly University.

PUBLIC TRANSPORTATION NETWORK

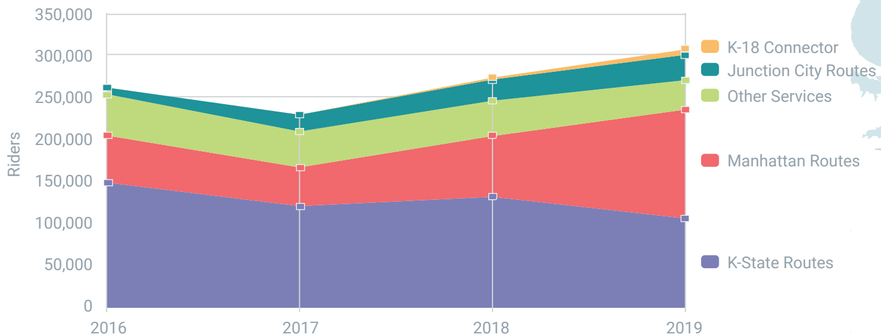
The ATA Bus provides regional public transit throughout the three-county area. There are a total of 11 fixed-routes serving Manhattan, K-State, Junction City, and Ogden. Ridership has increased over the last three years, as depicted in Figure 2.17. This is largely attributable to the growth in ridership with the fixed-routes in Manhattan and Junction City.

In 2020, 72% of our region's housing was located within a 1/4 mile of a transit stop. Based on the average number of people per household, over 74% of our region's residents live within 1/4 mile of a public transit stop.

Residences within 1/4 mile of a Transit Stop

Jurisdiction	% of Residences
Manhattan	78%
Junction City	58%
Ogden	26%
Grandview Plaza	46%
Regional Average	**72%**

Figure 2.17: ATA Bus Ridership by Service 2016-2019



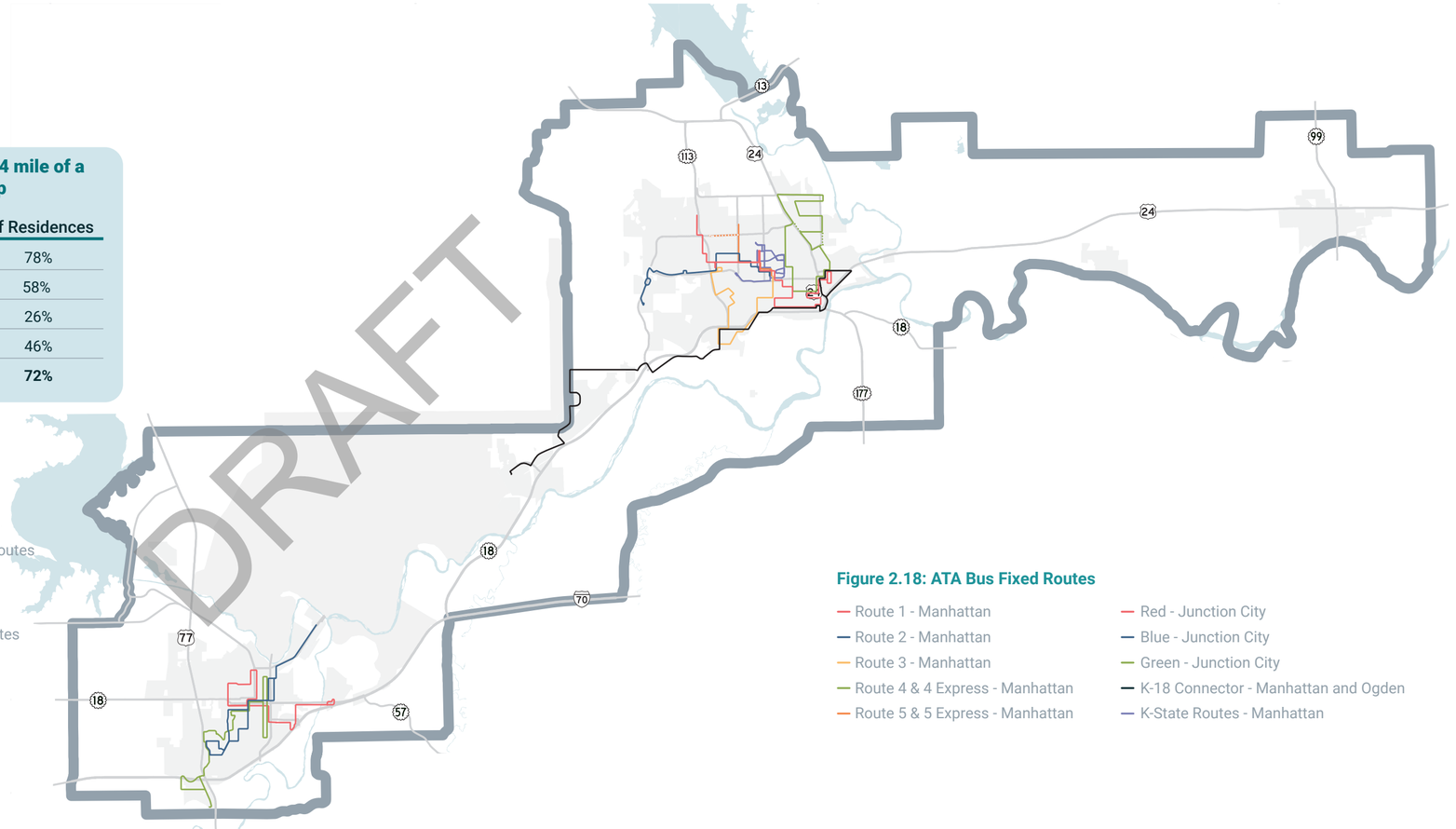


Figure 2.18: ATA Bus Fixed Routes

- Route 1 - Manhattan
- Route 2 - Manhattan
- Route 3 - Manhattan
- Route 4 & 4 Express - Manhattan
- Route 5 & 5 Express - Manhattan
- Red - Junction City
- Blue - Junction City
- Green - Junction City
- K-18 Connector - Manhattan and Ogden
- K-State Routes - Manhattan

MANHATTAN FIXED-ROUTES

Manhattan is served by five citywide fixed-routes. In August of 2018, a major overhaul was completed for the citywide system, doubling the number of residential addresses within walking distance of a public transit stop and improving overall access to public transit. These improvements led to a 196% increase in ridership on the fixed-routes. Citywide fixed-routes run year-round, Monday through Saturday, 7am to 7pm.

K-STATE ROUTES

For several years, K-State routes were the largest generators of ridership in the region. There are three routes providing service to K-State: the Jardine Shuttle, Park and Ride, and Union Express. While these routes are specifically tailored to the needs of K-State, the routes are open to the public. K-State routes predominately run while school is in session. Days and times of operation vary by route.

Anyone with a K-State ID can ride any of the fixed-routes services in Manhattan for free.

K-18 CONNECTOR

The K-18 Connector provides service from Manhattan to the Manhattan Business Park and the City of Ogden. This route continues to grow in ridership, averaging more than 6,000 riders a year. The K-18 Connector operates Monday through Friday, focusing on early morning trips and afternoon/early evening trips.

Figure 2.19: Percentage of community locations within a 1/4 mile of a transit stop

Source: Data from 2012 Routes and 2019 Routes

Community Locations	Original Routes	Current System
Residences	45%	78%
Apartments, Dorms, & Mobile Homes	56%	83%
Businesses	58%	62%
Grocery Stores*	62%	100%
Medical Centers	67%	83%
Social Services	56%	100%

*K-18 Connector is included in the Current System percentage

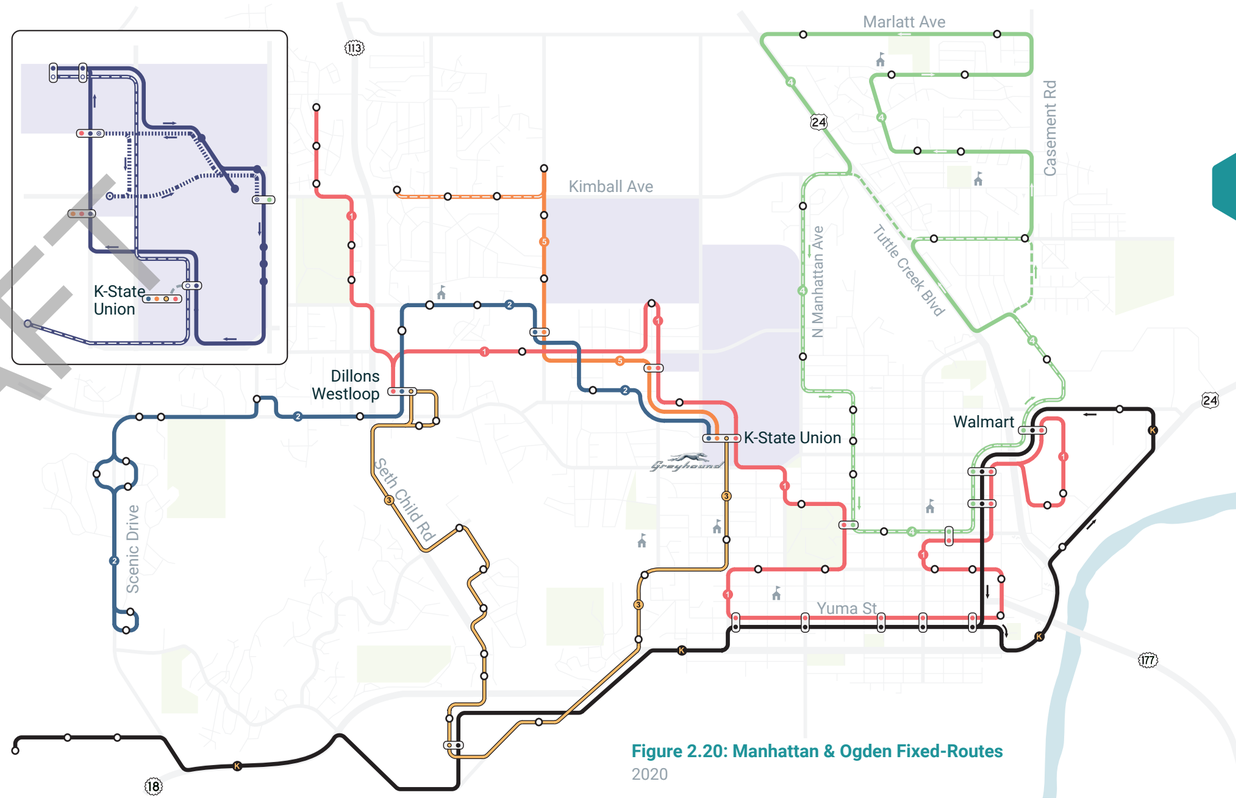


Figure 2.20: Manhattan & Ogden Fixed-Routes

2020

JUNCTION CITY ATA BUS ROUTES

Junction City has three fixed-routes that have serviced the community since May 2016 and continue to see increased ridership. One of the routes also provides service to Grandview Plaza.

In August 2018, ATA Bus formed an informal partnership with USD 475 Geary County and Junction City to pilot a program that would allow all USD 475 Middle and High School students to ride the ATA Bus for free. Ridership at the High School stop increased by more than 250% when comparing October 2018 to October 2019. In the spring of 2019, this partnership was formalized. The routes run year round, Monday through Friday, 7am to 7pm.

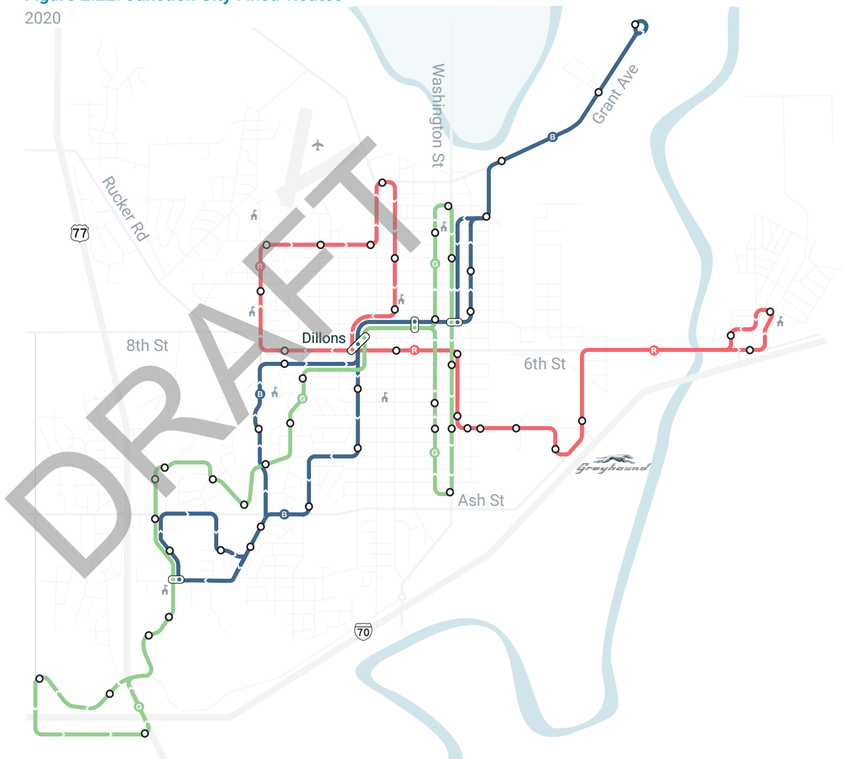
INTERCITY SHUTTLE

The Intercity Shuttle is a regional demand-response service providing transportation between Junction City/Geary County, Fort Riley, and Ogden. To use the service, one must schedule a ride a day in advance, stating the address of where they would like to be picked up and where they would like to be dropped off. Riders wishing to go to Manhattan transfer to the K-18 Connector at the Ogden Community Center.

Figure 2.21: Percentage of community locations within a 1/4 mile of a transit stop
Source: Data from 2012 Routes and 2019 Routes

Community Locations	Current Routes
Residences	53%
Apartments	78%
Businesses	86%
Grocery Stores	83%
Medical Centers	93%
Social Services	87%

Figure 2.22: Junction City Fixed-Routes
2020



DEMAND-RESPONSE TRANSIT SERVICES

Demand-response is a door-to-door transportation service offered to people over 60 years of age, disabled individuals, or those who live more than 3/4 of a mile away from a fixed-route public transit stop. Both the Intercity Shuttle and Wamego Shuttle are also considered demand-response services.

THE WAMEGO SHUTTLE

This service runs between Manhattan and Wamego, primarily serving Highland Community College students, although it is open to the general public. This shuttle is a hybrid between demand-response and fixed-route services. One must schedule a ride in advance, but the locations where the shuttles stops are fixed, rather than door-to-door.

OTHER TRANSIT PROVIDERS

There are a handful of public transit providers in our region that focus on providing transportation to seniors and disabled individuals. Our region has a Mobility Manager that is responsible for coordinating services between transit providers to improve efficiencies and better serve clients.

INTERCITY BUS

Greyhound Lines is an intercity bus provider serving Manhattan and Junction City. Intercity bus service provides longer, cross-country transportation.

EQUITY IN TRANSPORTATION

ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) is defined as the fair treatment for people of all races, cultures, and incomes. EJ is a federal requirement defined in an Executive Order signed in 1994 to ensure projects using federal funds are selected and distributed fairly to all people regardless of race or income.

While race and income are factors contributing to our EJ identified areas, the MPO also included zero car households to identify populations that may be dependent on walking, biking, or public transit as a mode of transportation.

EJ Methodology

The EJ areas are identified using Census-designated block groups. A block group is determined to be low-income if the median household income is at or below the thresholds used to determine free or reduced school meals as defined by the Department of Agriculture.

For the areas identified as minority block groups and zero car households, these block groups were 20% or greater than the regional average. The table below shows the regional averages and the 20% above average threshold.

Department of Agriculture Income Eligibility Guidelines
https://www.fns.usda.gov/cnp/fr-032019

THE 3 GUIDING ENVIRONMENTAL JUSTICE PRINCIPLES:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effect on EJ populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

	Regional average	20% above average
Minority	29.7%	35.6%
Zero-Car Households (HH)	6.8% (or 32 HH)	8.2% (or 39 HH)

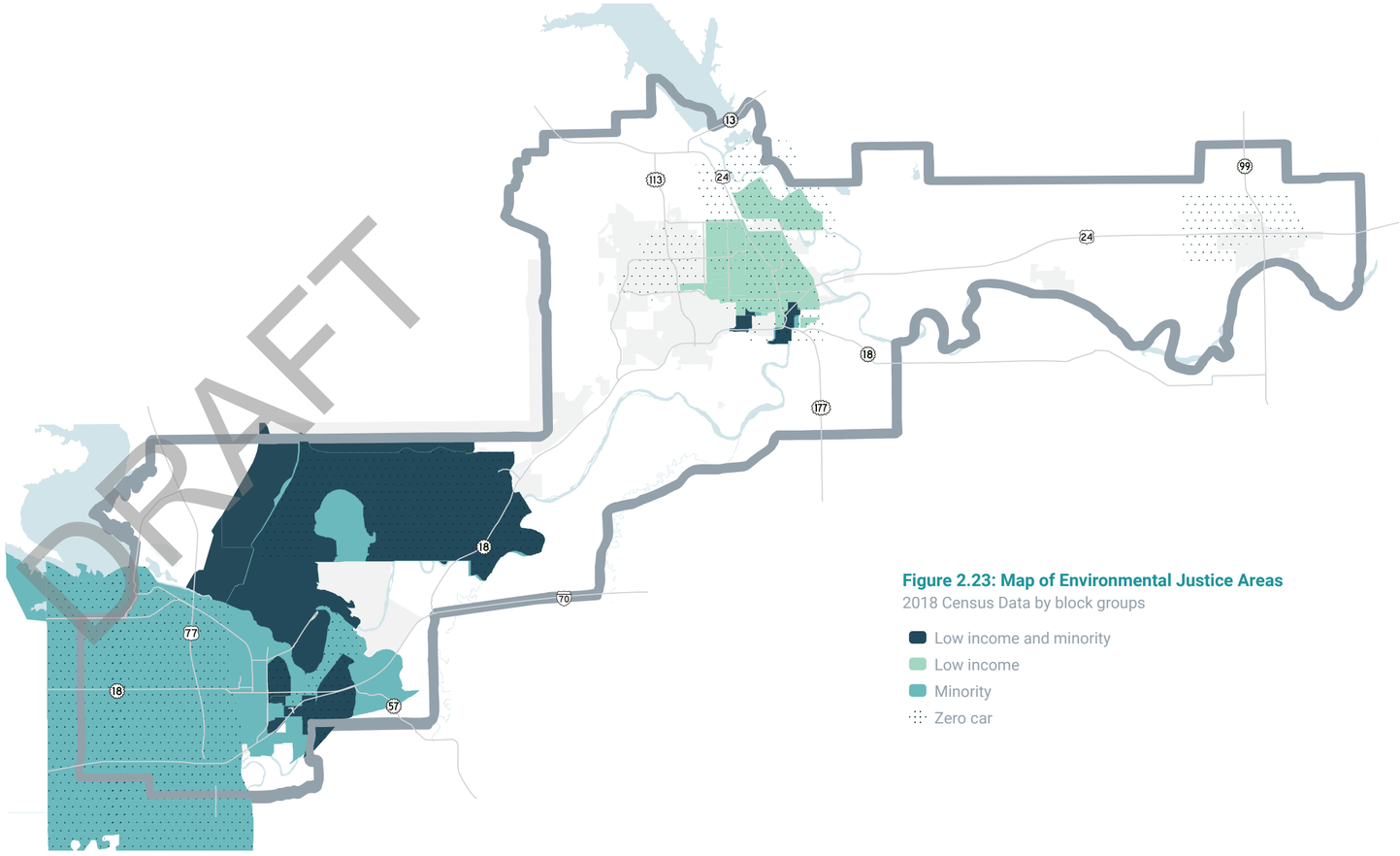


Figure 2.23: Map of Environmental Justice Areas
2018 Census Data by block groups

EQUITY IN SAFETY

One of the ways to evaluate our transportation system between EJ and non-EJ areas is to compare different aspects of our system, like pavement condition, capacity constraints, or safety. Pavement condition cannot be evaluated due to a lack of data and our region doesn't have capacity issues.

Presented in Figure 2.24 are the serious injuries and fatalities in EJ and non-EJ areas. There are an equal number of fatal crashes in the EJ and non-EJ areas, while there are slightly more serious injury crashes in the EJ areas.

Crash Type	EJ Areas	Non-EJ Areas	Total
Serious Injuries (SI)	66 (56%)	51 (44%)	117
Fatalities	12 (50%)	12 (50%)	24

When comparing the percentage of these crashes to the percentage of lane miles in both EJ and non-EJ areas, 41% of our lane miles are in the EJ areas, with 55% of serious injuries and fatalities. So while we have fewer roadway miles in our EJ areas, there are more serious injuries on them than on roadways in non-EJ areas.

	EJ Areas	Non-EJ Areas	Total
Total SI & Fatalities	78 (55%)	63 (45%)	141
Lane Miles	390 (41%)	564 (59%)	954

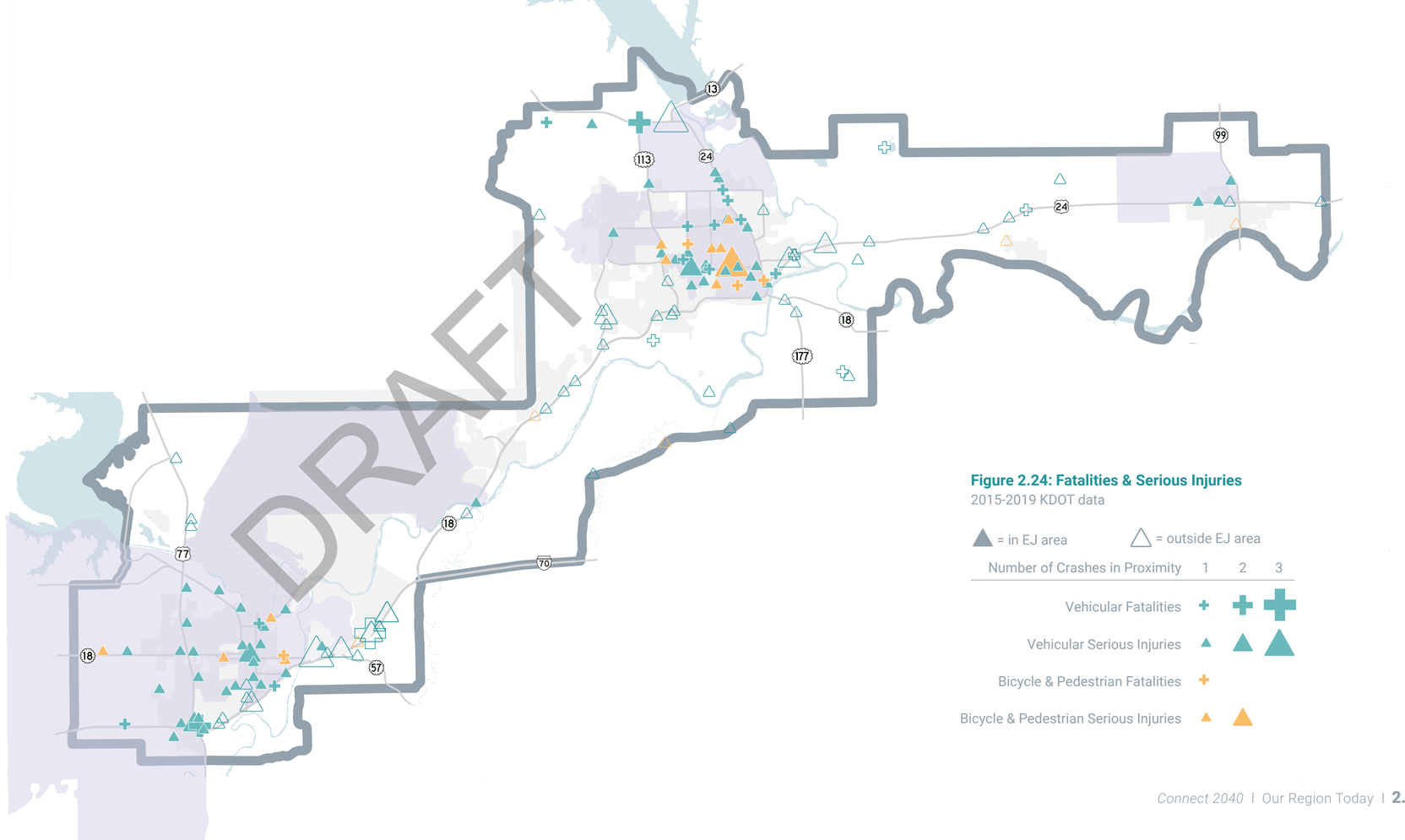


Figure 2.24: Fatalities & Serious Injuries
2015-2019 KDOT data

EQUITY IN PUBLIC TRANSIT

Presented in Figure 2.25 are transit stops located in EJ areas versus those outside of the EJ block groups. Equity in transit can be evaluated by comparing the percentage of households within a 1/4 mile of a transit stop for both EJ and non-EJ areas.

Region-wide	EJ Areas
72% households within 1/4 mile of a transit stop	**68%** households within 1/4 mile of a transit stop

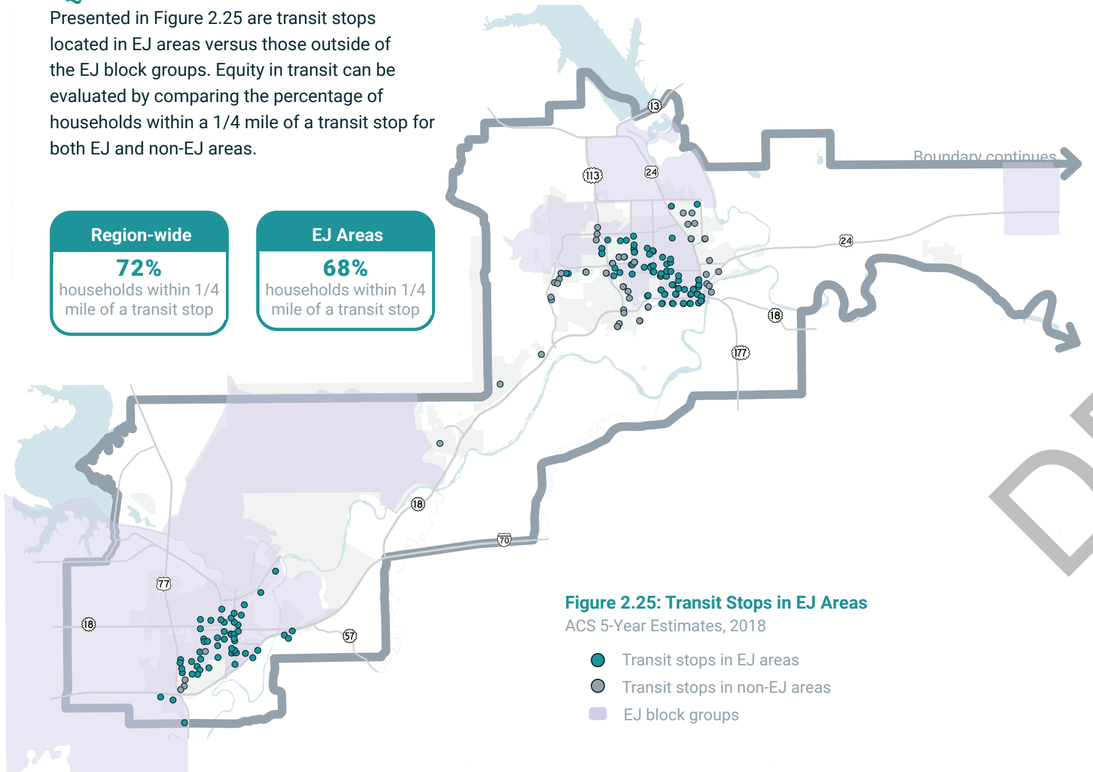


Figure 2.25: Transit Stops in EJ Areas
ACS 5-Year Estimates, 2018

- Transit stops in EJ areas
- Transit stops in non-EJ areas
- EJ block groups

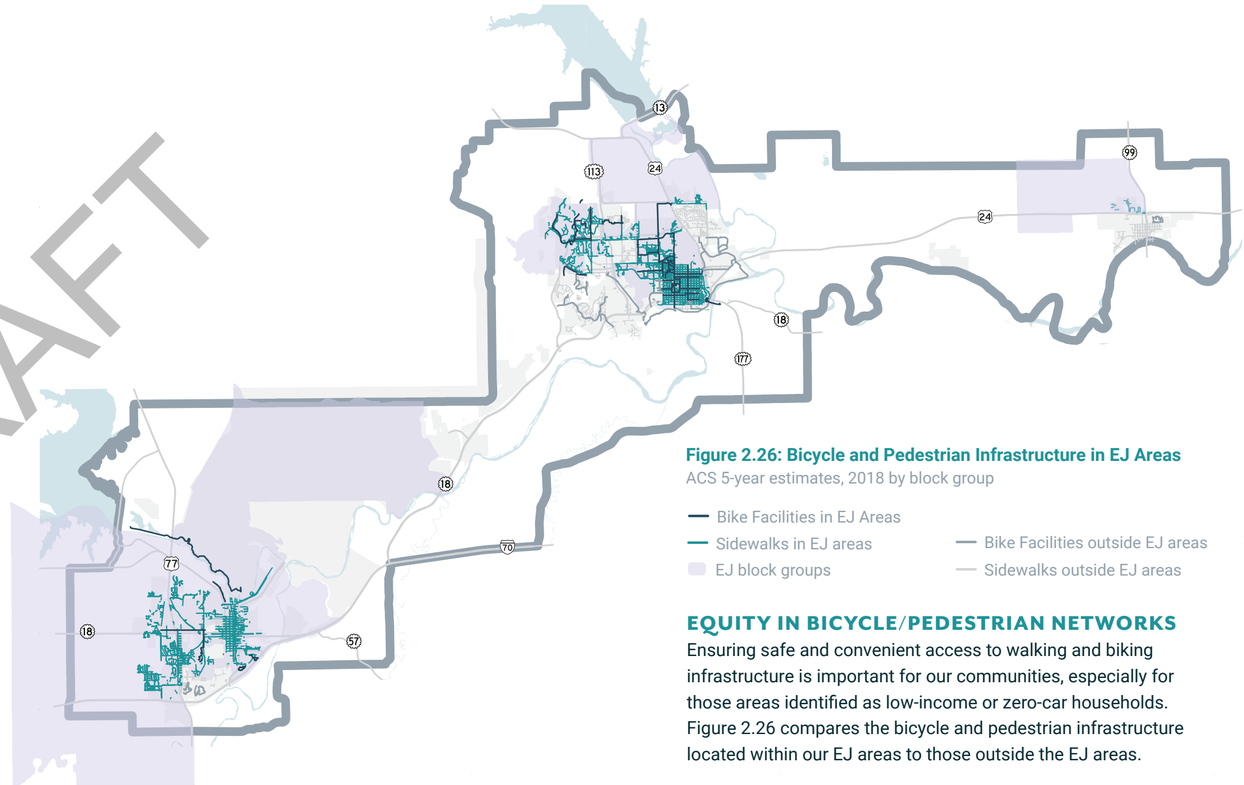


Figure 2.26: Bicycle and Pedestrian Infrastructure in EJ Areas
ACS 5-year estimates, 2018 by block group

- Bike Facilities in EJ Areas
- Sidewalks in EJ areas
- EJ block groups
- Bike Facilities outside EJ areas
- Sidewalks outside EJ areas

EQUITY IN BICYCLE/PEDESTRIAN NETWORKS

Ensuring safe and convenient access to walking and biking infrastructure is important for our communities, especially for those areas identified as low-income or zero-car households. Figure 2.26 compares the bicycle and pedestrian infrastructure located within our EJ areas to those outside the EJ areas.

FREIGHT AND RAIL

Communities in our region are located near I-70, which is a prominent route for moving freight across the country. Junction City is located adjacent to I-70, while Manhattan and Wamego are approximately 10 miles north.

On I-70, between Junction City and the K-177 exit, approximately 20% of all traffic is freight-related. Out of the highest percentage of freight-related traffic in our region, 30%, is on I-70 between K-18 and K-177.

Several years ago, the Kansas Department of Transportation (KDOT) designated both K-18 (between Manhattan and I-70) and K-99 (between Wamego and I-70) as Critical Freight Corridors and identified them within their statewide freight plan.

Our region has one active rail line, operated by Union Pacific, passing through the area. Fort Riley uses this rail line frequently to move and deploy military equipment. Overall, our region has limited freight and rail operations, although there is potential in Junction City for an inter-modal facility given the proximity to both the Interstate and railroad.

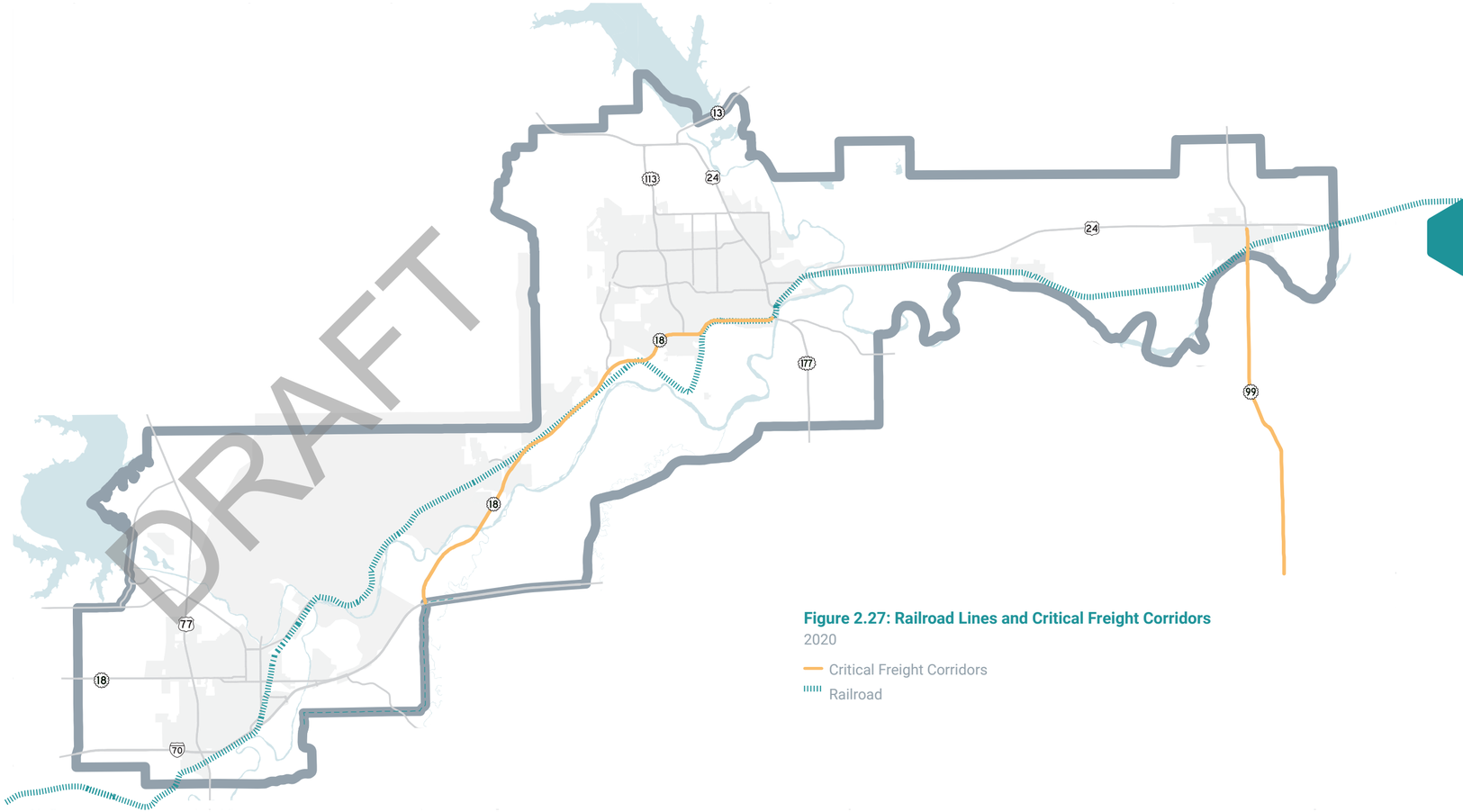


Figure 2.27: Railroad Lines and Critical Freight Corridors
2020

Critical Freight Corridors
Railroad

3

Chapter Three

OUR REGION IN 2040

Our vision for the year 2040 is to Enhance Mobility, Strengthen Communities, and Generate Prosperity. These are the critical components to ensuring our region is resilient and economically sound over the next two decades. While we can't be certain what our future looks like, we know that we must begin to make some changes to our status quo if we want to have self-sustaining communities.

Using outputs from our travel demand model, along with future demographic projections and community input we've received throughout this process, we were able to identify potential transportation needs. The next few pages build upon the previous chapter and where we are today to focus more on where we are headed come the year 2040.

OUR POPULATION IN 2040

Over the next twenty years, we will add around 15,000 residents to our region, totaling approximately 136,000 people. Figure 3.1 provides a general idea of where this growth will be concentrated.[1] Where this growth occurs plays directly into the transportation system that will be needed to support additional residents in the year 2040.

In Junction City, growth is concentrated west of US-77, while a majority of the growth occurring in the Manhattan area is to the east along US-24 in the Green Valley Area, with infill development in town. Wamego has identified a small amount of potential residential development west of the existing city limits.

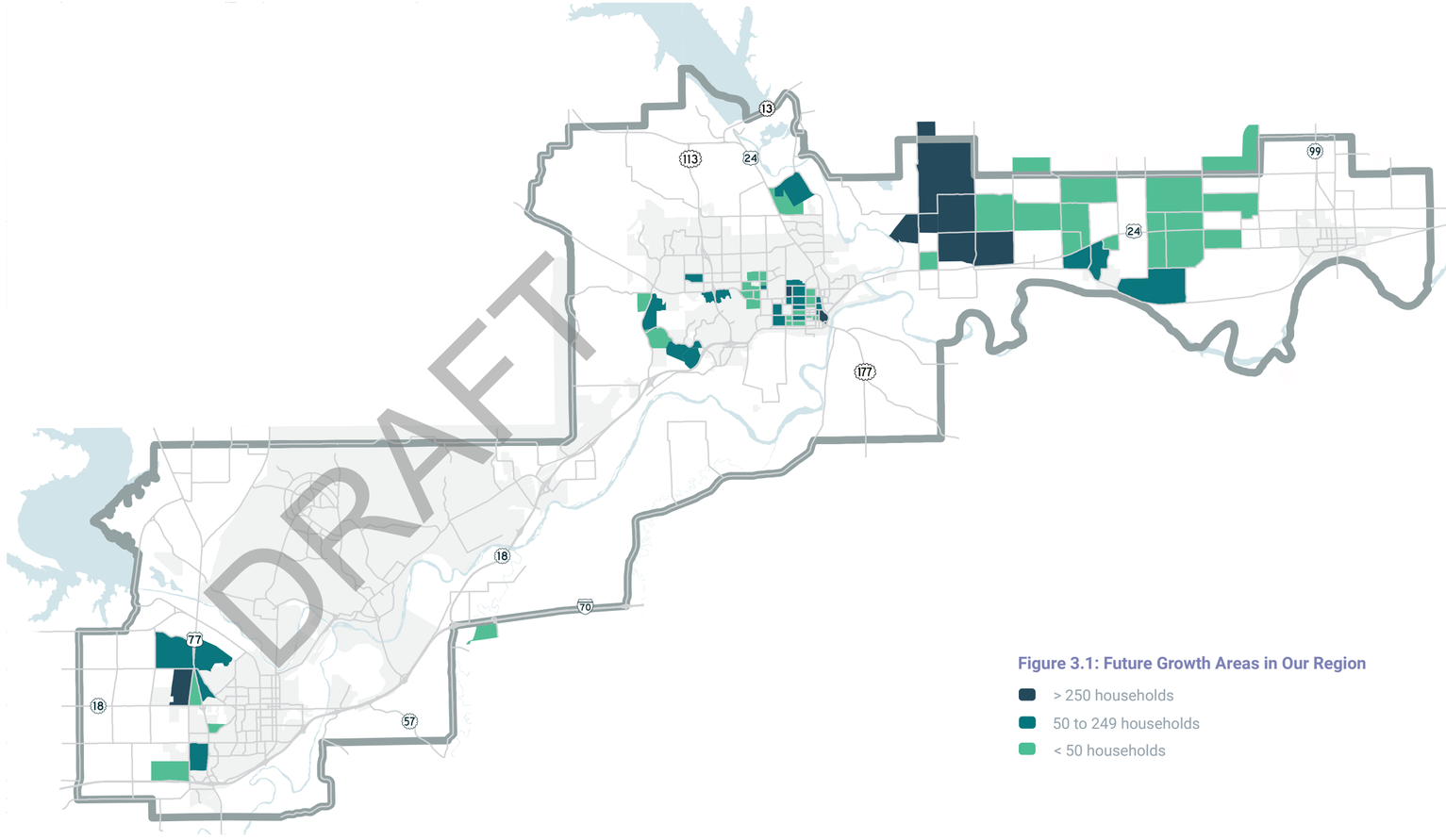


Figure 3.1: Future Growth Areas in Our Region

- > 250 households
- 50 to 249 households
- < 50 households

Sources: Population based on 2017 travel demand model. 2017 base model households: 47,714; 2040 Scenario A: 52,764 households; and 2040 Scenario B 54,077 households. Average people per household in our region, 2.58 people.

As a note, the growth reflected in Figure 3.1 is based on Scenario B growth for the Junction City Area and Scenario A growth for the Green Valley Area.

OUR FUTURE ROADWAY NETWORK

TRAVEL DEMAND MODEL PROCESS

The travel demand model is one of the tools used to forecast future capacity constraints on roadways and evaluate the effectiveness of projects in reducing congestion.

To begin evaluating roadway conditions in the year 2040, we start with our existing roadway network, the 2040 No-Build Road Network. This road network assumes that we add no additional roadways between now and 2040 other than those already committed for funding, which are identified in the Transportation Improvement Program (TIP).

Once the base roadway network is completed, the model is then populated with the anticipated population and employment growth over the next 20 years. As discussed in Chapter 2, there is a direct correlation between land use and transportation demands. To demonstrate this within the model, two different future development scenarios were created; Scenario A and Scenario B.

Having two differing development scenarios with the same roadway network allows us to examine how our land use decisions can impact the demand placed on our transportation system.

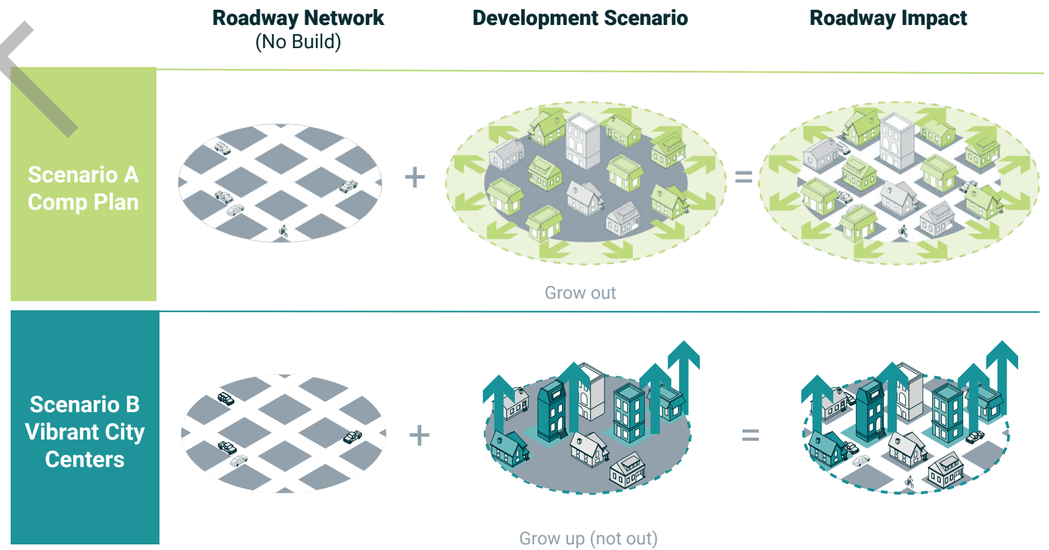
SCENARIO A

Scenario A, Comp Plan, is based on the land use, development patterns, and population growth identified in each of our communities Comprehensive Plans.

SCENARIO B

Scenario B, Vibrant City Centers, examines how we can accommodate future growth by utilizing existing infrastructure, focusing growth in the hearts of our communities.

Figure 3.2: Development of Scenarios A and B



2040 NO-BUILD NETWORK

Figure 3.5 shows our existing roadway network as of 2017, along with any projects completed since 2017 or committed for funding and programmed in the Transportation Improvement Program (TIP).

A list of these projects is located in Figure 3.3, along with one project that has since been removed from the TIP (C4040 # R1), yet was included as part of the travel demand model initially.

Figure 3.3: List of Existing or Removed Projects

C2040 #	Project Name	Scope
T1	Marlatt Expansion: Denison to US-24	Add center turn lane
T2	Denison Expansion: Marlatt to Kimball	Add center turn lane
T3	Kimball Expansion: Hudson to Vanesta	Add center turn lane
T4	US-24 & Flush Road Intersection	Add turn lanes
T5	US-24 Frontage Rd at Excel	Add frontage road SE of intersection
T6	Kimball Turn lanes at US-24	Add turning lanes at intersection
R1	Kimball Expansion: Berkshire to Anderson	Add center turn lane

Figure 3.4 includes a list of projects contained within the TIP at the time of developing the model. Several of these projects are contained within the fiscally constrained portion of *Connect 2040*, while others have been re-prioritized and included in the illustrative project list. The illustrative list contains projects identified as potential needs yet do not currently have a funding source. This is not a comprehensive list of projects included in the fiscally constrained or illustrative list.

Figure 3.4: List of Fiscally Constrained or Illustrative Projects

C2040 #	Project Name	Scope
E8	Casement Expansion: Brookmont to Griffith	Add center turn lane
E9	Casement Expansion: Griffith to Allen	Add center turn lane
E37	Kimball Expansion: College to Denison	Add center turn lane
E38	Kirkwood Drive Extension: Walters to Marlatt	New roadway
E49	N. Manhattan Ave Expansion: Baker's Way to Claflin	Add center turn lane
E63	US-24 & Green Valley Road Intersection	Add turning lanes, add frontage road
E67	Kimball Expansion: N. Manhattan to NBAF	Add center turn lanes and realign roadway
E69	Kimball and Denison Intersection	Add turning lanes at Intersection

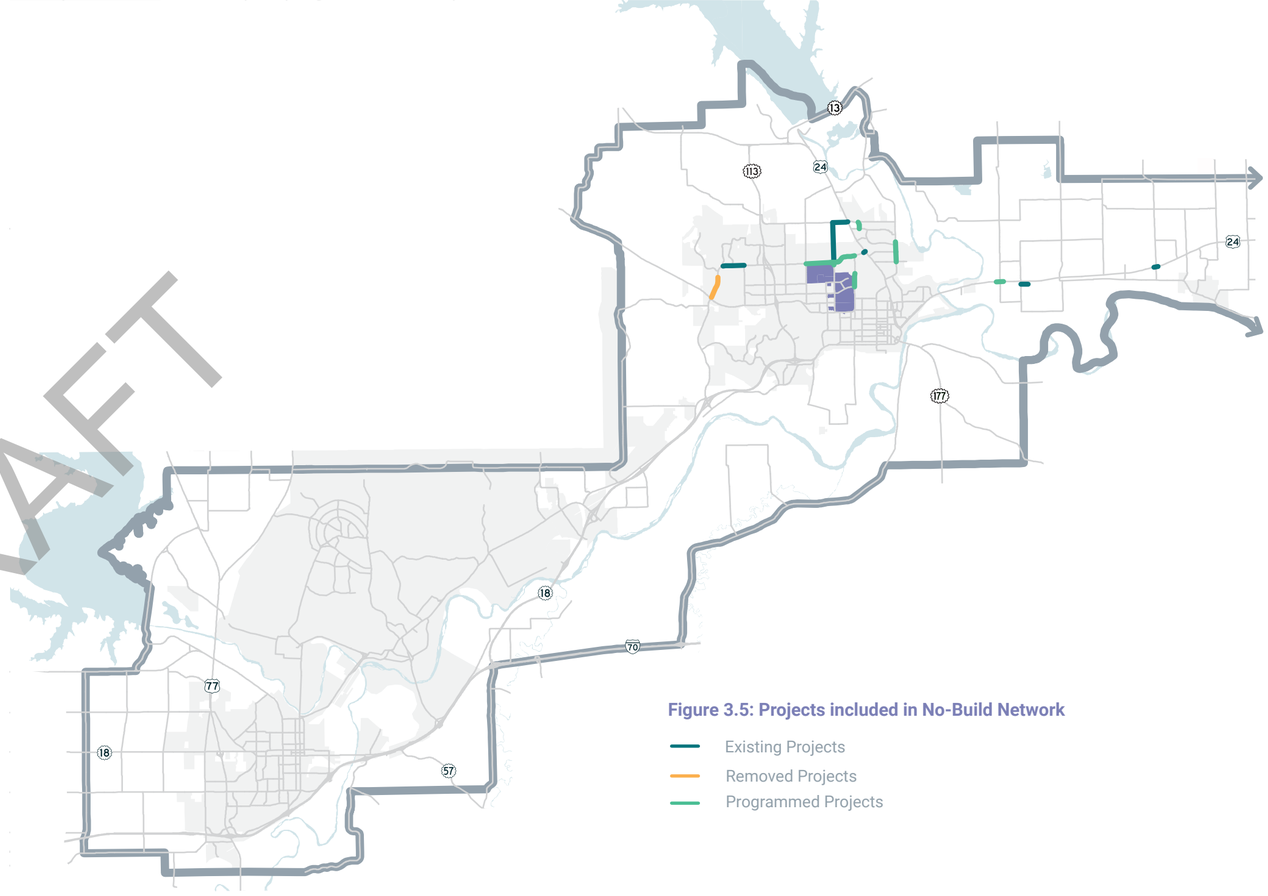


Figure 3.5: Projects included in No-Build Network

- Existing Projects
- Removed Projects
- Programmed Projects

2040 NO-BUILD MODEL OUTPUT

Figure 3.6 shows the capacity needs in our region in 2040 if we make no additional investments to our roadways. For Junction City and Wamego, there are no capacity issues under either Scenario A or B. The model outputs from Scenario B are shown in Figure 3.5, which contains more dense development and assumes additional residents are added to our region.

Junction City

Under both Scenario A and Scenario B, Junction City's population and job growth can be accommodated with the existing roadways. The future growth scenarios include a full build out of the land bank lots and existing infill of vacant or under-utilized commercial or industrial lots. The model also assumes the new high school built on the west side of town is occupied.

Wamego

Like Junction City, Wamego has no capacity issues under either future land use scenario. All anticipated growth can be reasonably accommodated with the existing roadway network. There may be additional local roads that will need to be built to service new subdivisions, but local roads were not included in the model.

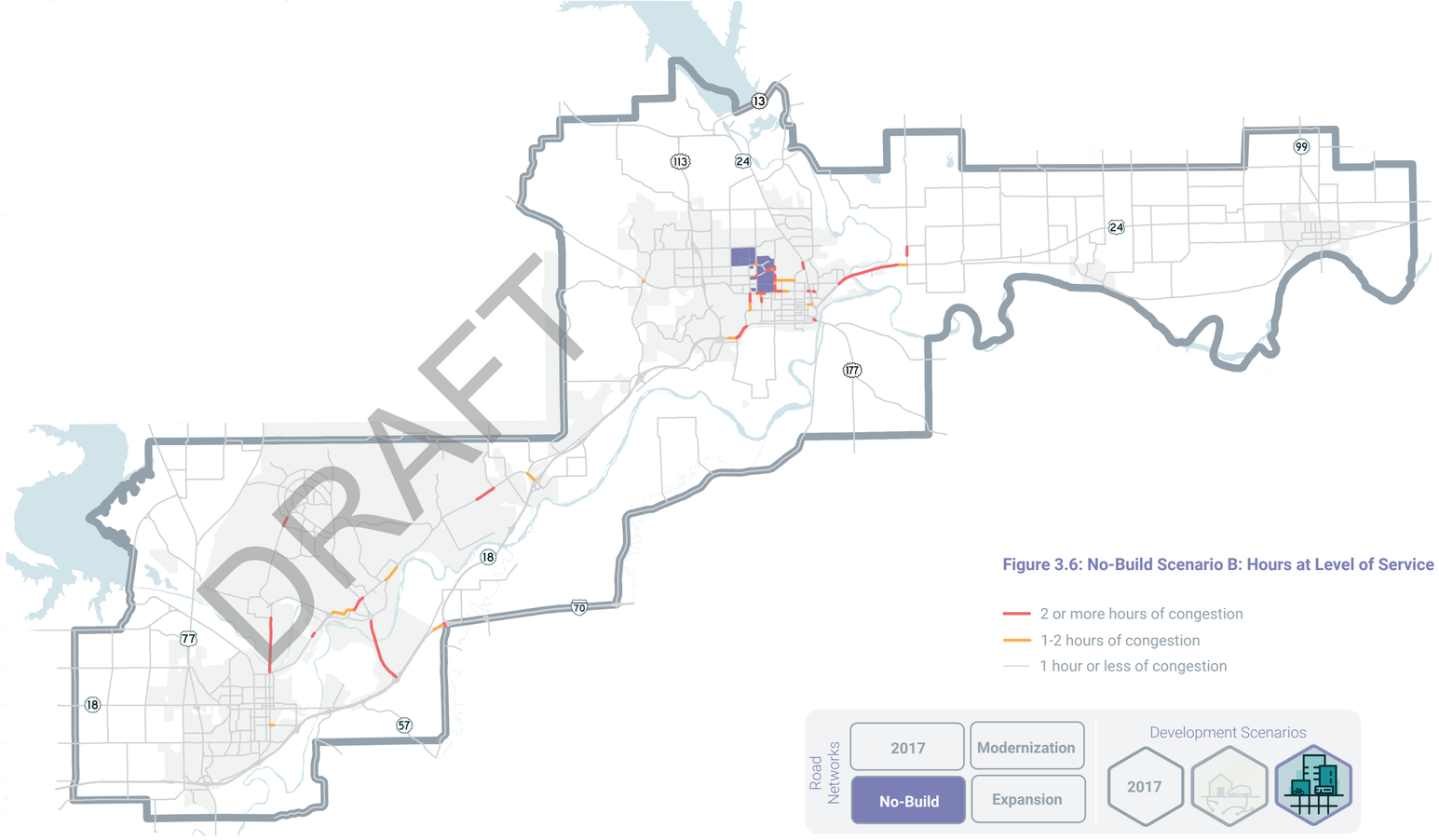


Figure 3.6: No-Build Scenario B: Hours at Level of Service E or F

MANHATTAN NO-BUILD NETWORK OUTPUTS

The capacity issues anticipated to occur in the region over the next two decades will be on roadways within Manhattan or the Green Valley Area. Figures 3.8 and 3.9 provides a comparison of the differences between the two future land use scenarios. As a reminder, Scenario A assumes most of the new growth will occur in the Green Valley Area, while Scenario B allocates some of that growth to Manhattan.

K-State Adjacent

The roadways on and surrounding K-State are likely to continue to experience capacity issues given the number of people accessing campus. The level of congestion is not surprising as many of these roadways have been designed to serve multiple modes of transportation. One of the ways to reduce the capacity demands placed on these roadways is to encourage more students and faculty to walk, bike, or take public transit to campus. K-State's Campus Master Plan calls for many of the current parking lots to be sites of future buildings. If this occurs, the lack of parking availability will provide a natural shift in how people get to campus.

US-24 Corridor

The US-24 Corridor is one of the most heavily traveled corridors in the region. With most of the region's growth occurring in the Green Valley Area, US-24 will continue to be an important corridor, experiencing varying levels of capacity. Figures 3.6 and 3.7 compare the two no-build development scenarios and the capacity demands they place on our roadways.

Scenario A: Comp Plan

With most of the development occurring in the Green Valley Area under this scenario, US-24 carries over 43,000 vehicles a day and experiences significant congestion for nine hours of the day. Since US-24 experiences more congestion and delay under this scenario, motorists will likely elect to use Junietta and Blue River Roads as alternative routes. Blue River Road shows an increased demand of over 4,000 vehicles a day. However, in its current gravel state, Blue River Road can only accommodate less than 1,000 vehicles per day.

Scenario B: Vibrant City Centers

This scenario adds more growth than Scenario A, but accommodates more development within Manhattan in a more dense fashion. Doing so reduces the demand along US-24 to under 34,000 vehicles a day.

Figure 3.7: Summary of US-24 Corridor Data

	US-24 at Heritage Square Data		Blue River Road Data	
	Scenario A	Scenario B	Scenario A	Scenario B
Vehicles/day	43,258	33,667	4,214	1,270
Capacity	34,000	34,000	1,000	1,000
Hours at E/F	9	4	2	0

Figure 3.8: No-Build Scenario A

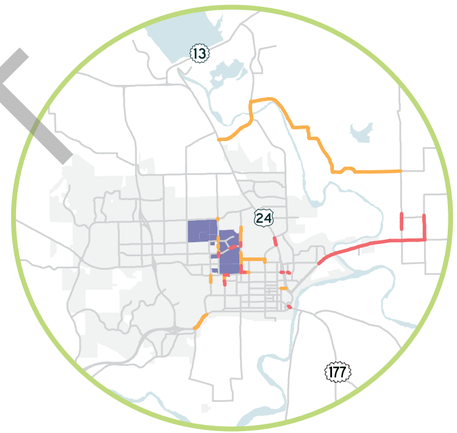
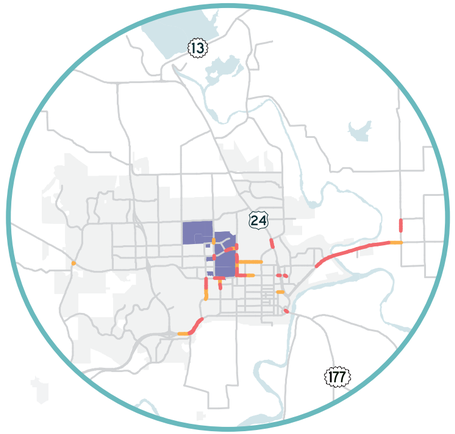


Figure 3.9: No-Build Scenario B



Hours Spent at LOS E or F

- 2 or more hours of congestion
- 1-2 hours of congestion
- 1 hour or less of congestion

MODELING FUTURE PROJECTS

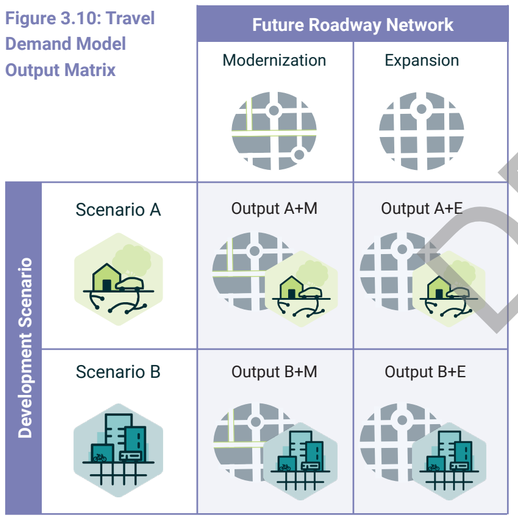
Based on the outputs gathered from the 2040 No-Build Roadway Network under Scenarios A and B, we gain a better understanding of the capacity issues likely to occur in future years depending on our development patterns. The next step in the modeling process is to use those same development scenarios (A and B) to model future capacity projects. The travel demand model allows us to test different projects, or different scopes for a project, to see how they impact the future roadway network or how they address existing capacity needs.

The future projects modeled are divided into two groups, modernization and expansion. Modernization projects are those intended to upgrade existing roadways to either improve safety, add turning lanes, reduce driving lanes, or make a roadway more multi-modal. Expansion projects are those that add an additional lane to a roadway or create a new roadway.

Figure 3.10 shows the relationship between the development scenarios and the future roadway networks. It attempts to show how Scenario A combined with the Modernization roadway network creates a unique demand on the future roadway network given the types of projects modeled and the development pattern. The outputs of this model run are named "Output A+M" (for Scenario A and the Modernization roadway network).

It is important to note that we are not selecting which development scenario we think is most likely to occur. The purpose of having two development scenarios is to see how our transportation needs may change depending on how much growth occurs and where. If a project performs well under both development scenarios, it is likely to be a good investment for the future. If a project only performs well or is needed under one of the development scenarios, that project should be given additional consideration.

Figure 3.10: Travel Demand Model Output Matrix



TRAVEL DEMAND MODEL OUTPUTS

There are approximately 20 projects that appear under all four future model scenarios. Several of the projects listed in Figure 3.11 pave an existing gravel road that the No-Build Network showed as having capacity issues. Paving an existing gravel road greatly increases the number of vehicles the roadway can accommodate.

As a note, not all of the projects listed in Figure 3.11 are included as priority projects in Chapter 6.

The four travel demand model outputs used for project selection in Connect 2040 are presented in Appendix B. Figure 3.12 on the following page is provided as an example of one of the model outputs.

Figure 3.11: Projects Included in all Future Roadway Demands

C2040 #	Project Name
E26	Harvest Rd paved 3-lane: Lake Elbo to Excel
E30	Junietta Rd paved 3-lane: Moody to Green Valley
E35	Blue Jay Way Expansion: K-18 to Rucker
E46	Moody Rd paved 3-lane: Harvest to Junietta
E48	Mt. Zion Rd paved 3-lane: Lake Elbo to Moody
M20	US-24 & K-13 Roundabout
M21	US-24 & K-113 Roundabout
M30	Flint Rock Rd Paving: Gillaspie to Elm Slough
M32	Franklin Rd Paving: Hwy to Rockenham
M35	Hopkins Creek Rd Paving: US-24 to Harvest
M48	Rockenham Rd Paving: US-24 to Franklin
M49	Rockenham Rd Paving: Franklin to St. George
M54	Say Rd Paving: Kaw Valley to Columbian
M57	Vineyard Rd Paving: Chapman to Burr Oak
M59	Chapman Rd Paving: Vineyard to St. George
M61	Elm Slough Rd Paving: K-99 to Salzer
M62	Elm Slough Rd Paving: Salzer to Flint Rock
M64	US24 4-lane Urbanization (Mall - McCall)
M65	US24 4-lane Urbanization (GV - Excell)

HOW TO READ THE MODEL OUTPUTS

Figure 3.12 is an example of the travel demand model outputs included in Appendix B.

Box A: Each model output includes a set of either modernization or expansion projects. Each set of projects are modeled under both future landuse scnarios to better understand how land use impacts the roadway network. These projects are outlined in purple in the map.

Box B: Capacity issues on US-24 show more hours of congestion than anywhere else in the region. The table in Section B shows vehicles per day for the current model output, along with the capacity created from any projects listed in Section A. This table allows for a quick comparison between the four model outputs for the US-24 Corrdior. The tables from all four model outputs are summarized in Figure 3.13.

Box C: This legend identifies the road network and land use scenario for each map. The legend in the Figure 3.12 example highlights the "Modernization" network and development "Scenario B".

Map: The map for each model output depicts the level of service to be expected should the projects in Section A be constructed. This information is used by the local jurisdictions to determine if the project should move forward or the the scope of the project be adjusted. The model also highlights which projects may create additional capacity issues should they be constructed.

Figure 3.12: Example of Travel Demand Model Output

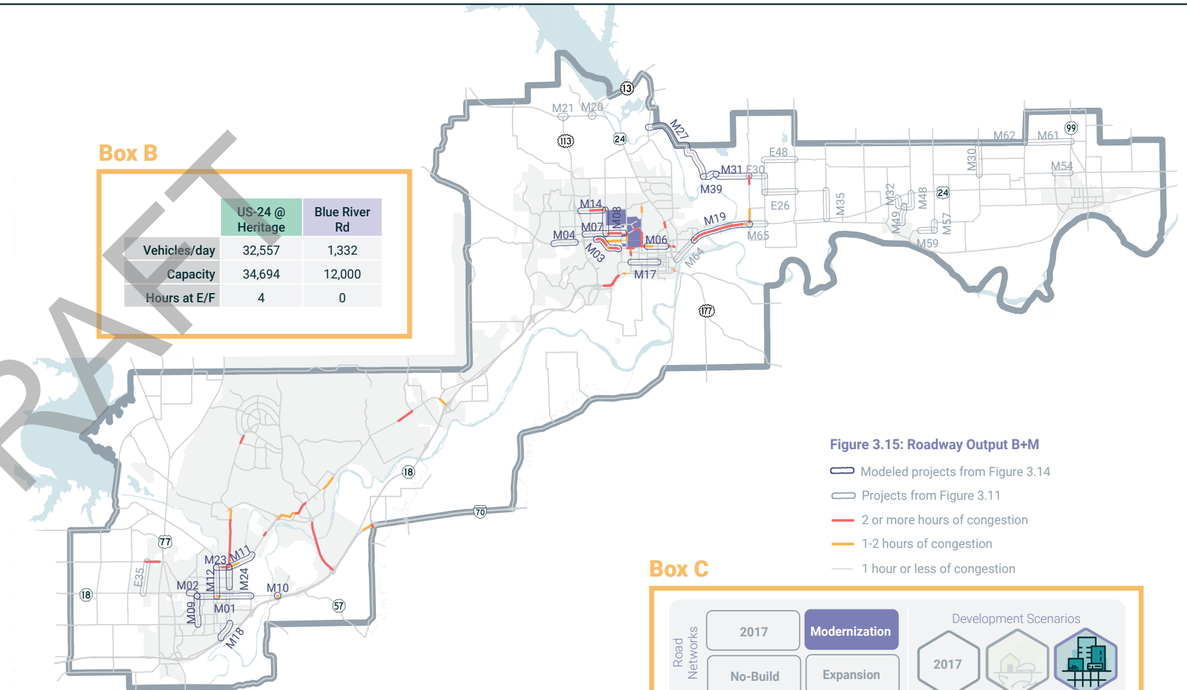
Box A

Figure 3.14: Scenario B + Modernization Projects
(in millions)

C2040 #	Project	Cost
M01	6th St Lane Reduction: Reynolds to Eisenhower	$0.2
M02	8th St Lane Reduction: Eisenhower to Rucker	$0.1
M03	Anderson Lane Reduction: Wickham to Connecticut	$1.0
M04	Anderson Lane Reduction: Wreath to Anneberg Park	$1.0
M27	Blue River Rd Paving: Junietta to Dyer	$4.5
M06	Bluemont Ave Right in, Right out: 4th to 10th	$0.6
M07	Claflin Lane Reduction/2-way protected bike lane: Beechwood to Denison	$2.5
M08	College Ave Lane Reduction w/ bike lanes: Kimball to Claflin	$0.1
M09	Eisenhower Lane Reduction: 6th to Ash	$0.1
M10	Flint Hills Blvd & I-70 Roundabout	$2.5
M11	Grant Ave Lane Reduction: Prospect to Washington	$0.1
M12	Jackson Lane Reduction: 18th to 6th	$0.2
E31	Junietta Rd paved 3-lane: Green Valley to State Lake Rd	$5.8
M39	Junietta Rd Paving: State Lake Rd to Blue River Rd	$0.7
M14	Kimball Lane Reduction: College to K-113	$0.1
M17	Poyntz Ave Lane Reduction: Juliette to 17th	$1.2
M18	S. Washington Lane Reduction: Ash to I-70	$0.1
M19	US-24 4-lane Urbanization	TBD
M23	18th St Lane Reduction: N. Washington to Jackson	$0.1
M24	Washington St Lane Reduction: Grant to 10th	$0.1
	TOTAL	$20.9

Box B

	US-24 @ Heritage	Blue River Rd
Vehicles/day	32,557	1,332
Capacity	34,694	12,000
Hours at E/F	4	0



Box C

US-24 MODEL SUMMARY

With the Green Valley/US-24 Corridor being one of the most capacity restricted areas in our region come 2040, a summary of the findings for this corridor have been included. Figure 3.13 provides a summary of the model results under each development scenario. Figures 3.14 through 3.15 are dedicated to the modeling of the proposed Blue River Bridge.

The outputs from the travel demand model stress the importance US-24, regardless of the improvements made to other roadways in the area. The region should continue to make improvements to US-24 and implement the US-24 Corridor Study.

Figure 3.13: Summary of US-24 Corridor Model Results

		US-24 @ Heritage Square		Blue River Road	
		Development Scenario A	Development Scenario B	Development Scenario A	Development Scenario B
No-Build Network	Vehicles/Day	43,258	33,667	4,214	1,270
	Capacity	34,000	34,000	1,000	1,000
	Hours at LOS E/F	9	4	2	0
Modernization Network	Vehicles/Day	40,562	32,557	4,123	1,332
	Capacity	34,694	34,694	12,000	12,000
	Hours at LOS E/F	7	4	1	0
Expansion Network	Vehicles/Day	46,895	35,304	1,033	525
	Capacity	51,524	51,524	1,000	1,000
	Hours at LOS E/F	5	1	4	0

Figure 3.14: No-Build Scenario A

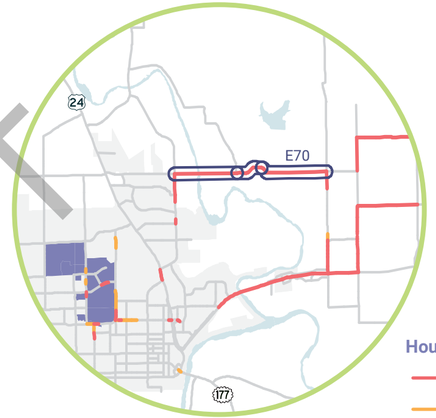


Figure 3.15: No-Build Scenario B

Hours Spent at LOS E or F

- 2 or more hours of congestion
- 1-2 hours of congestion
- 1 hour or less of congestion

Figure 3.16: Summary of Blue River Bridge Model Results

		US-24 @ Heritage Square		Blue River Road		Blue River Bridge	
		Development Scenario A	Development Scenario B	Development Scenario A	Development Scenario B	Development Scenario A	Development Scenario B
No-Build Network	Vehicles/Day	39,513	31,439	156	35	9,577	4,321
	Capacity	34,000	34,000	1,000	1,000	14,700	14,700
	Hours at LOS E/F	7	4	0	0	4	0

OUR FUTURE BICYCLE SYSTEM

There have been several plans developed over the last several years to improve walking and biking within our communities and region. While sidewalks are prevalent within our communities, bicycle infrastructure is limited. Figure 3.27 shows the existing bicycle infrastructure in combination with the planned facilities. This map provides an overview of how each of our communities' planned bicycle infrastructure connects into the larger regional system.

RESOURCES

The *Regional Connections Plan* is a regional document outlining the opportunities to connect our communities to each other and to our state parks via trails. The infrastructure planned within our communities is identified in either the *Junction City Active Transportation Plan*, *Manhattan's Bicycle and Pedestrian Systems Plan*, or the Safe Routes to Schools plans for schools in Junction City, Ogden, Manhattan, or Wamego.

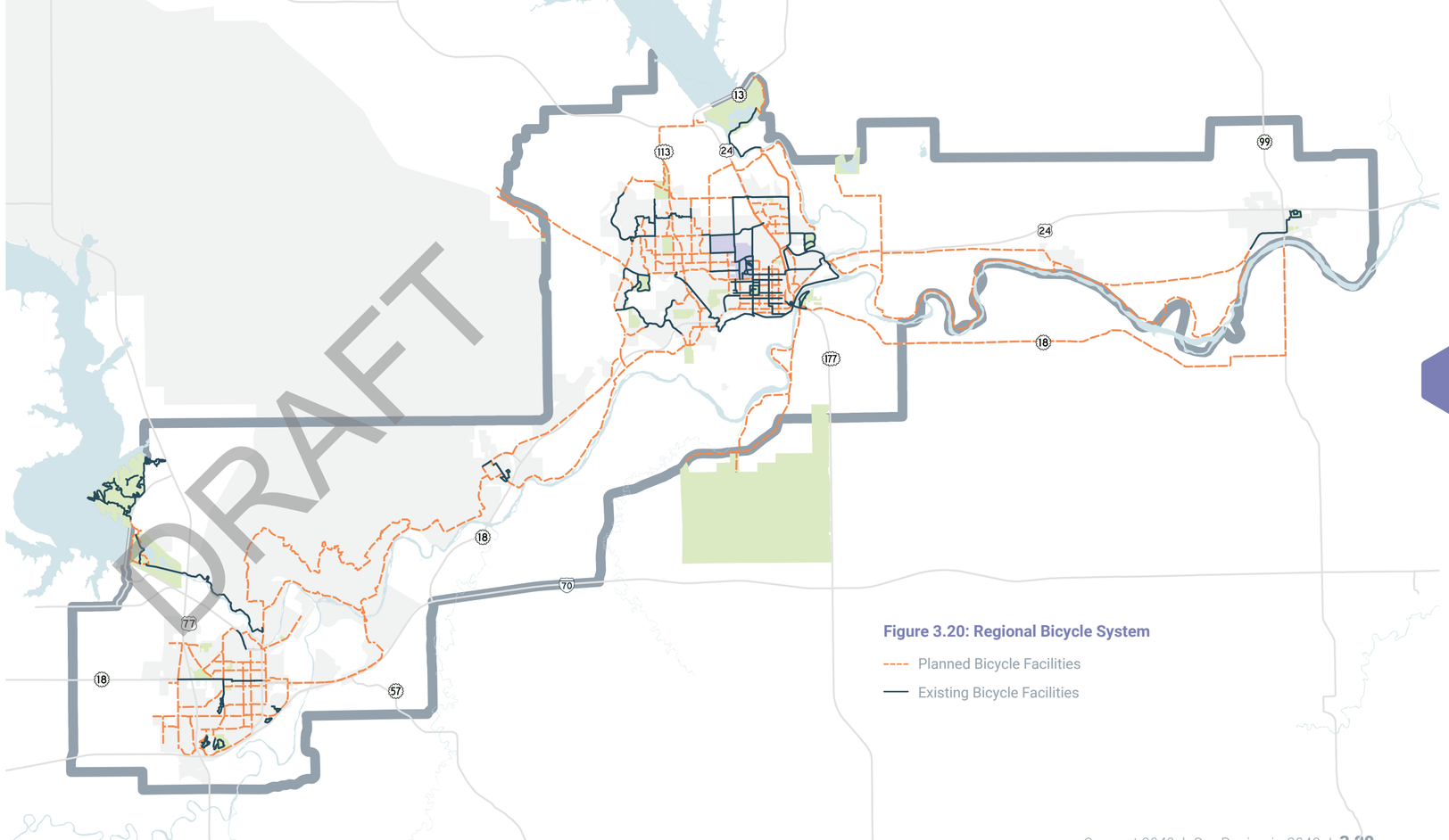


Figure 3.20: Regional Bicycle System

Planned Bicycle Facilities

Existing Bicycle Facilities

OUR FUTURE PUBLIC TRANSIT SYSTEM

The routes presented in Figure 3.22 have been identified as needs to improve the public transit system. Both the Fort Riley routes and K-18 Connector expansion have been discussed for years. A lack of local funding has prevented these routes from moving forward.

Fixed-route service between Manhattan and the Green Valley Area has also been identified. As this area continues to grow, incorporating public transit into future development will become a necessity.

For Manhattan, the most immediate priority is increasing the frequency of stops on the existing system. Currently, four of the five routes have one-hour frequencies. Increasing this to 30-minute headways would improve the system.

FUNDING
Federal funding is often available for improving public transit. However, it takes local investments to leverage this funding.

Figure 3.21: Proposed Transit Routes and Costs

	Green Valley Area	Full K-18 Connector	Fort Riley System	Grand Mere Extension	Miller Parkway/ Amherst Extension	Junction City High/Middle School
Hours	6a - 7p	Current Schedule	6a - 7p	6a - 7p	6a - 7p	7a - 7p
Cost	$193k	$459k	$472k	$76k	$202k	$80k

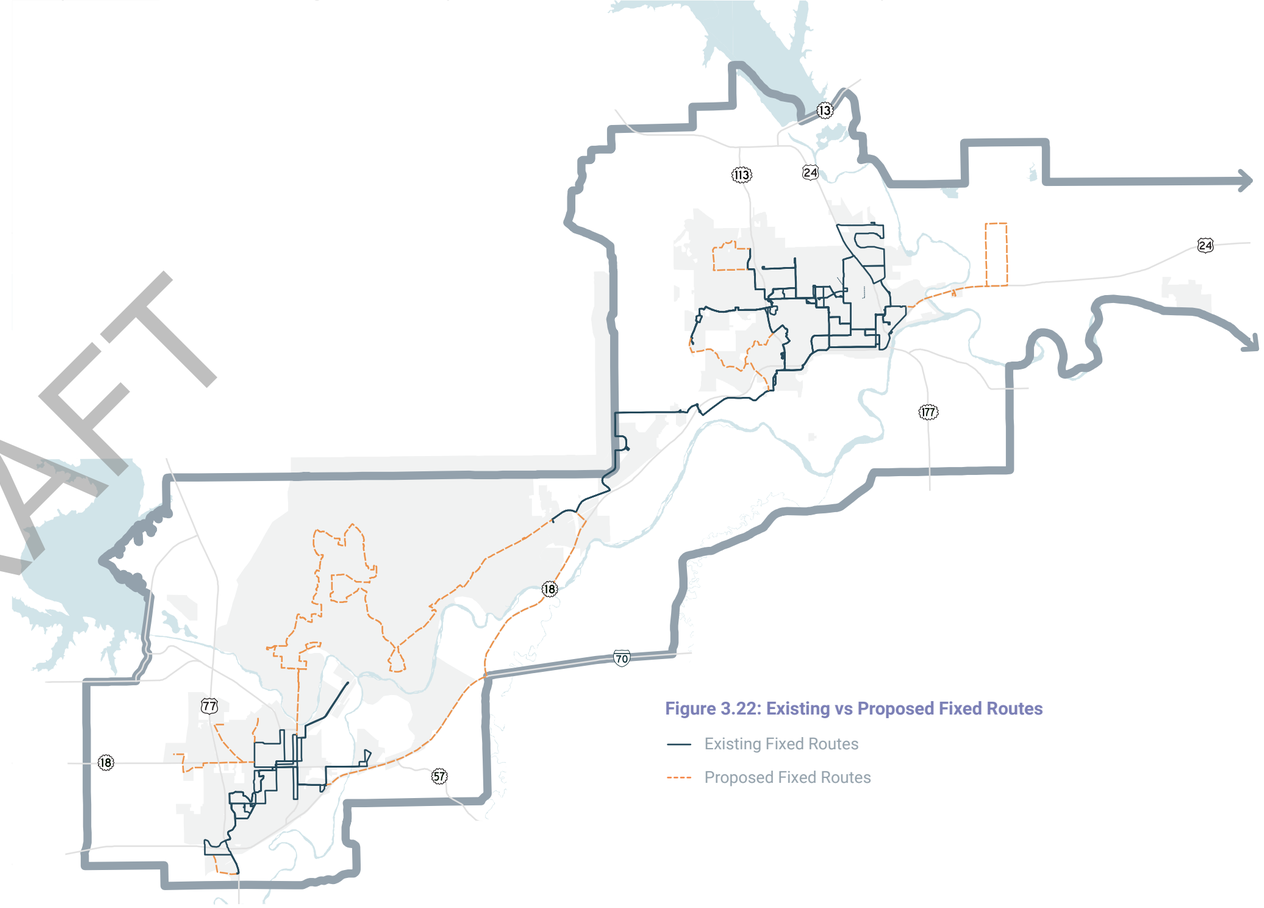


Figure 3.22: Existing vs Proposed Fixed Routes

Existing Fixed Routes

Proposed Fixed Routes

Chapter Four

COMMUNITY OUTREACH

No plan is complete without public outreach opportunities to engage residents in planning for the future of their community. For the past two years, the Flint Hills MPO team worked closely with residents to ensure *Connect 2040* is the shared vision for transportation needs and opportunities over the next twenty years. During the development of the plan, a variety of outreach methods took place such as traditional public meetings and community surveys to demonstration projects.

More than 1,500 people were involved in the development of *Connect 2040*, helping to mold the future of our region's transportation system. The following pages outline the methods used to engage the public and the comments received.

Figure 4.1: *Connect 2040* Community Outreach

DEMONSTRATION PROJECTS & PLEDGE CARDS

» *Manhattan*
April, June - October, 2019

» *Junction City*
June - October, 2019

SURVEYS

» *Junction City On-Board Bus Survey*
February - March, 2019

» *Junction City Active Transportation Survey*
May - July, 2019

» *Regional Transportation Needs Assessment*
February - April, 2020

PUBLIC COMMENT PERIOD

» Regional Public Comment Period
October - November, 2020

OPEN HOUSE & POP-UP EVENTS

» Manhattan BugAPalooza
April 2019

» Manhattan Parks & Recreation Trail Talks
April - May 2019

» Manhattan Juneteenth
June 2019

» Manhattan Purple Power Play
August 2019

» Manhattan 3rd Thursday
August 2019

» Junction City Back to School (Health Department)
July 2019

» Junction City Back to School (Konza)
July 2019

» Manhattan Bicycle & Pedestrian Systems Plan Open House
October 2019

» Connect 2040 Open Houses (Junction City, Wamego, & Manhattan)
March 2020

Please note: The Flint Hills MPO's Policy Board and Technical Advisory Committee assisted with the development of *Connect 2040* prior to the public comment period. *Connect 2040* was adopted by both groups on December 2, 2020.

METHODS OF OUTREACH

Public outreach activities can greatly range in scale and format. To develop *Connect 2040*, the Flint Hills MPO team made an effort to reach people by going out into the community and asking for feedback.

Flint Hills MPO staff offered traditional public involvement methods such as surveys and open houses, but that feedback was scarce in comparison to feedback received at community events or near demonstration projects. At these events, staff recognized that there was overlap in the ideas people had that could be useful when creating other short-term plans such as the *Junction City Active Transportation Plan* or *Regional Connections Plan*.

Figure 4.1 provides an overview of the community outreach initiatives undertaken over the last several years. The feedback received during each of these events was used to help guide the development of *Connect 2040*.

A formal public comment period for the Plan was held from October 21 to November 20, 2020. No comments were received. Appendix C contains more information on where the draft document was made available to the public.

OUTREACH BY THE NUMBERS

1,100+
booth visits at pop-up events (2019 to 2020)

50+
hours at pop-up events (2019 to 2020)

144
pledge cards received

178
completed MPO and ATA Bus surveys (2019 to 2020)

POP-UP EVENTS & OPEN HOUSES

Events that encouraged education and outreach at already established community events or popular locations.

Figure 4.2: Example pop-up events


Tactical Urbanism at N Manhattan & Fremont
Manhattan - April 2019


WIC Family Fun Day - Junction City - June 2019


Juneteenth - Manhattan - June 2019

POP-UP EVENTS

Prior to the launch of *Connect 2040*, the Flint Hills MPO team attended various community events throughout the region. Examples of the events attended can be found in Figure 4.2. At these events, MPO staff members would learn about the transportation needs of residents and understand their vision for the future. MPO staff members were also available at these events to answer questions about transportation in the region and provide information, especially on bicycle routes and the Flint Hills ATA Bus. The vast majority of public input and completed surveys can be attributed to these types of events.

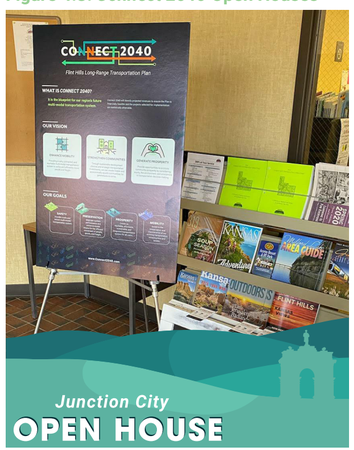
Pop-up events are especially popular over the spring, summer, and fall months. In 2019, the MPO interacted with over 1,000 residents at these events. Though MPO staff planned to continue this method of engagement for 2020, the COVID-19 Pandemic greatly constrained this method of public outreach.

OPEN HOUSES

During the first week of March 2020 and early stages of *Connect 2040*, the Flint Hills MPO team hosted an Open House in Junction City, Wamego, and Manhattan. Each of the three Open Houses were advertised on social media and the newspaper in advance. Popular locations such as the libraries were strategically chosen in hopes that a few curious residents would stop by. At each Open House there was general information available about the goals and vision for *Connect 2040*. Attendees were also encouraged to complete a survey and a comment card with additional thoughts or suggestions.

Though the Open Houses were advertised in advance and setup at popular locations, there were only a few participants at each location. However, most participants were able to complete a survey and those that provided additional comments are detailed in Appendix C.

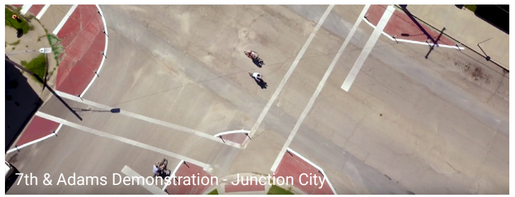
Figure 4.3: *Connect 2040* Open Houses



DEMONSTRATION PROJECTS & PLEDGE CARDS

Demonstration projects are low-cost, temporary street improvements. These projects, alongside the pledge cards, helped raise awareness about walking and biking.

Figure 4.4: Example pop-up events



DEMONSTRATION PROJECTS

A demonstration project is a low-cost, temporary improvement intended to show how roads can be redesigned to better serve all users. For the development of both the *Junction City Active Transportation Plan* and *Manhattan Bicycle and Pedestrian Systems Plan*, demonstration projects were used to engage and educate people about roadway strategies that improve the safety for all roadway users.

These engagement opportunities are created using reusable and inexpensive materials. They are also interactive, making them an effective way for people to experience and visualize street improvements before being installed permanently. The graphic on the left illustrates examples of the demonstration projects installed during the development of this plan. In total, about a dozen demonstration projects were installed.

PLEDGE CARDS

One of the most unique public outreach techniques used was the distribution of pledge cards. These pledge cards mimic a postcard, with the front addressed to the either the City of Junction City or Manhattan Commissions. The back provided space for people to write why walking and biking matter to them. These cards were intended to provide City Commissioners comments on why improving safety and connectivity for walking and biking are important to their constituents. In total, around 140 pledge cards were received; over 40 in Junction City and over 100 in Manhattan.

Figure 4.5: Blank Manhattan Pledge Card

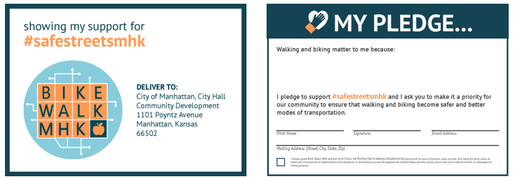


Figure 4.6: Pledge Card Notable Responses: Walking and biking matter to me because...

SURVEY RESPONSES

From February to April 2020, surveys were collected from residents across our region on their transportation experiences and needs.

TRANSPORTATION NEEDS ASSESSMENT

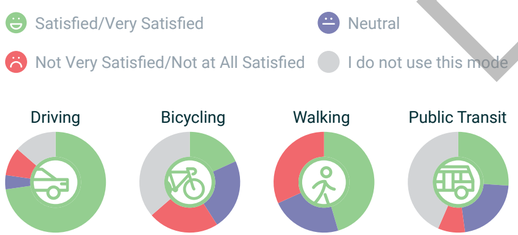
The Transportation Needs Assessment Survey was created specifically for *Connect 2040*. Survey participants were able to anonymously voice their opinion about their experiences and desires for the future of transportation in the Flint Hills region. The survey was administered February through April of 2020. The survey was available online and in print, receiving 23 responses.

In general, a majority of respondents that drive are satisfied with driving in the region. Many respondents often walk, bike, or take transit, but generally wish that it was safer and more convenient to use these modes to get to the places they want to go. Several respondents stated that they wish there were more multi-modal connections between communities and to different parts of our communities.

A common complaint was that major thoroughfares are barriers for bicyclists and pedestrians. Many respondents observed that the west side of Manhattan and most of Junction City lack bicycle and pedestrian access. Cyclists were the most dissatisfied among the respondents.

What modes do you use to get to work/school and how often?

How satisfied are you when using the following modes of travel?



Improving user experience by mode

When asked "what could be done to improve your transportation experience," survey respondents provided answers based on their experiences with each mode.

Driver respondents (12 people) reported wanting better access to Manhattan, better street maintenance, greater enforcement of traffic laws, and that they wanted major roads and thoroughfares to be both safe and efficient.

Bicyclist respondents (15 people) reported wanting protected, clean, and connected bike routes. Some respondents called for connections between Manhattan and Wamego, and bike lanes on major thoroughfares in Manhattan. Several respondents asked for improvements that would make biking a more viable mode choice rather than for recreation only. One respondent said that they don't see biking as a mode of transportation, and another asked for education on rules of the road for bicyclists.

The most common response among walking respondents (19 people) was that there needed to be more sidewalks and/or in better condition. Some respondents stated that they wish that they had places, like shopping and eating, to walk to. There were specific complaints about the "island effect" created by Tuttle Creek Boulevard and Fort Riley Boulevard, and that it is easier and more convenient to drive even to nearby places. Some walkers suggested improving intersections and narrowing streets so that pedestrians don't have to cross as many lanes.

There were a variety of responses from public transit users (13 people). Several respondents stated that Saturday routes in Junction City and evening service would help them attend more events by bus. Other requests included more frequent routes, better and more visible bus stops, inter-city connections, useful routes, and better drivers. One respondent stated that they appreciate the bus route to Wamego.

Important factors to consider when selecting projects

Survey respondents were asked to "rank the following criteria in order from the most important (1) to the least important (7) factor to consider when selecting transportation projects." These were the most important factors for survey respondents ranked from the highest to lowest score:

1. Safety (5.82)
2. Impact on Community Livability (5.64)
3. Affordability/Cost (4.91)
4. Mode Choice (improving walking, biking, transit) (4.77)
5. Social Justice/Equity (3.86)
6. Community Support (2.50)
7. Reducing Congestion (1.67)

> "It would be fantastic to have multimodal options to travel between areas."

> "Families and seniors want to walk/bike places too and don't want to [live in] Grand Mere, Northview, etc."

> "In general improve intersections for people."

5

Chapter Five

METRICS FOR PROGRESS

To achieve our vision for creating a transportation system that enhances mobility, strengthens communities, and generates prosperity, we must be able to monitor and assess how we are meeting our goals. Performance measures, and their respective targets, allow us to understand how our system is performing now compared to where we want to go.

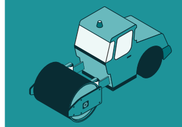
The following chapter provides a summary of our performance measures and targets. This information is updated routinely to track our progress and identify where and how we should focus our investments.

METRICS FOR PROGRESS

To better gauge where we are today and what we need to do to achieve our transportation vision and goals, performance measures and targets have been established. Our MPO is required to track some of these performance measures, while others are voluntary.

CONNECT 2040 GOALS

SAFETY
Provide a safe and secure multi-modal transportation system.



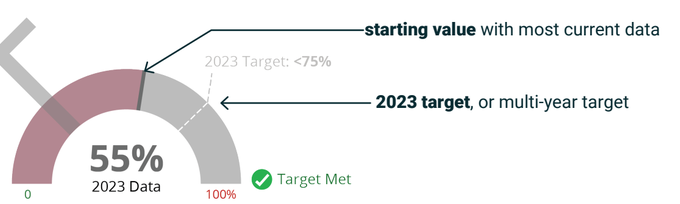
PRESERVATION
Invest in the preservation and maintenance of our existing transportation infrastructure and assets.

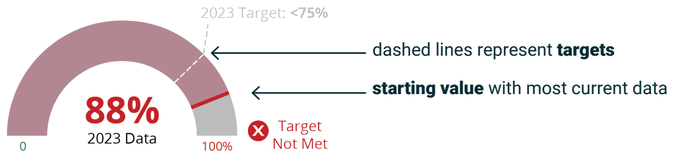
MOBILITY
Maintain system performance and enhance modal choice for the efficient movement of people, goods, and freight.

PROSPERITY
Create an equitable, affordable, sustainable, and integrated transportation system for all users.

UNDERSTANDING THE METRICS AND GAUGES IN THIS CHAPTER

The following chapter has been organized by the four goals of *Connect 2040*. Throughout these sections, gauge charts have been used to clarify the comparison of where we stand today compared to our future targets.





Federally Required Metric
MPOs are federally required to use a performance-based approach for guiding transportation investment and policy decisions. Transportation legislation identifies several performance metrics MPOs must monitor, establish targets for, and report on.

Flint Hills MPO Metric
MPOs can choose to establish additional goals and targets specific to their region.

FAST ACT PLANNING FACTORS

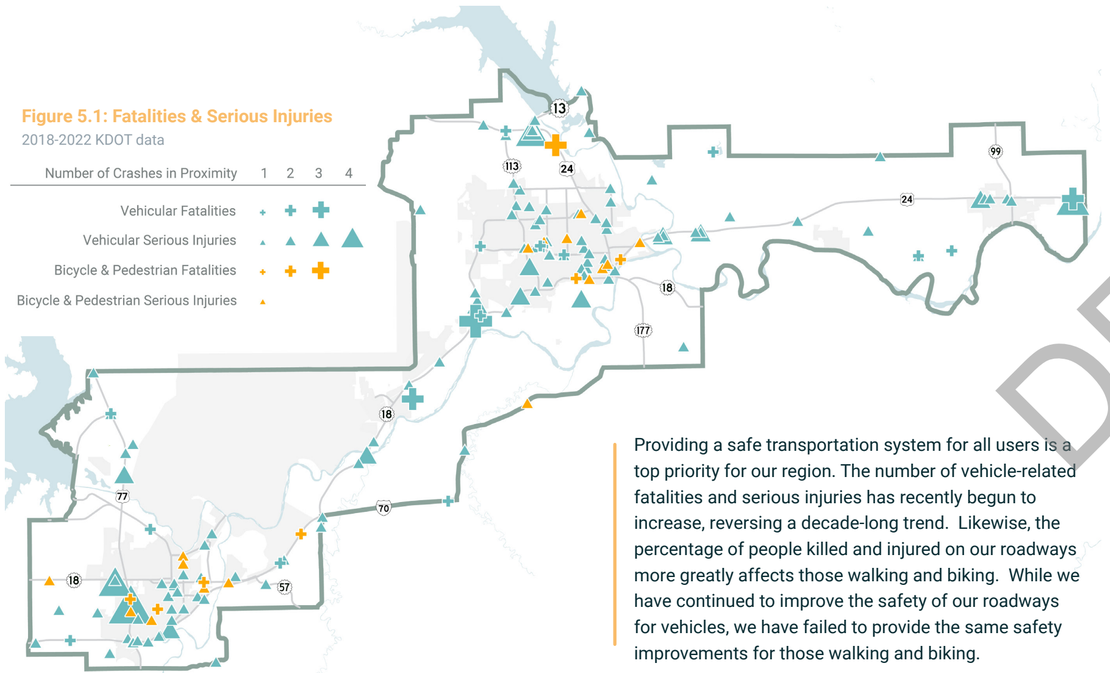
- The current federal surface transportation legislation, the FAST Act, included ten planning factors that must be incorporated into transportation planning. *Connect 2040* provides for consideration of projects and strategies that are consistent with these factors. Within each *Connect 2040* goal section, you will find the corresponding planning factors listed.
- With the prevelance of data available, the MPO has chosen to set its own targets instead of adopting statewide metrics set by KDOT.

SAFETY

Provide a safe and secure multi-modal transportation system.

Figure 5.1: Fatalities & Serious Injuries

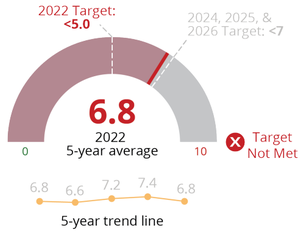
2018-2022 KDOT data



Providing a safe transportation system for all users is a top priority for our region. The number of vehicle-related fatalities and serious injuries has recently begun to increase, reversing a decade-long trend. Likewise, the percentage of people killed and injured on our roadways more greatly affects those walking and biking. While we have continued to improve the safety of our roadways for vehicles, we have failed to provide the same safety improvements for those walking and biking.

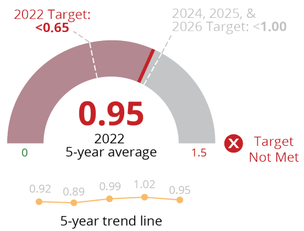
PM 1: # of vehicular fatalities

Because the number of vehicular fatalities may vary greatly from year to year, the MPO looks at 5-year averages to gain a better idea of overall trends. Over the last five years of available data (2018-2022) we have had a total of 34 fatalities on our roadways. In 2022, we had 5 fatalities in the MPO area, the lowest number since 2018. The five-year average of yearly fatalities also decreased in 2022 after several years of increasing.



PM 2: Rate of vehicular fatalities per 100 million vehicle miles traveled (VMT)

Using a "rate" allows us to compare the safety of our roadways to larger regions that have hundreds of more crashes each year. Think of this as a per capita comparison, but rather than using population, we use the number of miles driven on our roadways. The five-year average rate of fatalities per 100 million VMT is currently trending downward, but still well above the 2022 target value of 0.65.

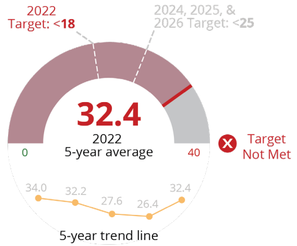


WHAT IS VMT?

Vehicle Miles Traveled (VMT) is the number of miles driven on our roadways in one year. In 2022, people drove approximately **7.28 million miles** in our region, down slightly from 7.38 million miles in 2021.

PM 3: # of serious injuries

The MPO area saw 49 serious injuries in 2022, a sharp increase from the previous year's total of 30. In addition, the five-year average of serious injuries increased to 32.4, the highest value since 2019. This five-year average well exceeded both the 2022 target (<18 serious injuries) and the 2024-26 target of <25 serious injuries.

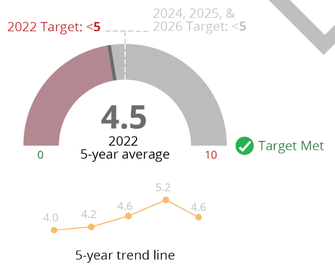


PM 4: Rate of serious injuries per 100 million VMT

Despite a decrease in the number of miles driven in 2022, the rate of serious injuries increased to 6.7 serious injuries per 100 million VMT. This substantial increase raised the 2022 5-year average to 4.5 serious injuries per 100 million VMT. Though fewer miles are being driven, more serious injuries are occurring.

PM 5: Non-motorized fatalities & serious injuries

Bicycle and pedestrian fatalities and serious injuries are classified as "non-motorized". Our average non-motorized fatalities and serious injuries decreased in 2022 after several years of increase. Our target is to have a five-year average of less than five fatalities and serious injuries in the coming years.



WHAT ARE CONSIDERED SERIOUS INJURIES?

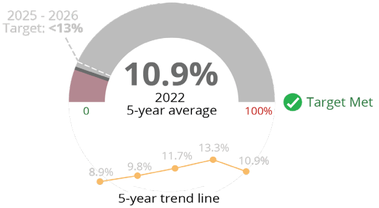
USDOT uses the definition provided by the MMUCC 4th edition. An injury is considered serious if it meets one or more of the following criteria:

- Severe laceration
- Broken or distorted extremity
- Crush injuries
- Skull, chest, or abdominal injury other than bruises
- Significant burns (2nd or 3rd degree on >10% of body)
- Unconscious when taken from the scene
- Paralysis

MPO

PM 6: % of serious injury and fatality crashes involving bicycles & pedestrians

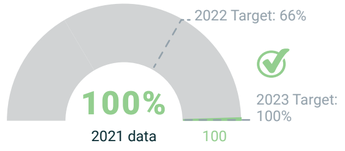
Despite comprising only 9% of commuting mode share, the five-year average percentage of serious and fatality crashes involving cyclists and pedestrians was 10.9%. This is a decrease from the previous year's five-year average percentage of 13.3%, and meets the target of 13%.



MPO

PM 7: % of public transit buses with cameras

The Flint Hills Area Transportation Agency (ATA Bus) has 35 vehicles. Each had a camera installed in 2021, well ahead of the 2023 target.



MPO

PM 8: # of public transit related fatalities & serious injuries

The ATA Bus had no transit-related fatalities or serious injuries between 2016 and 2018. Public transit remains one of the safest modes of travel in our region.

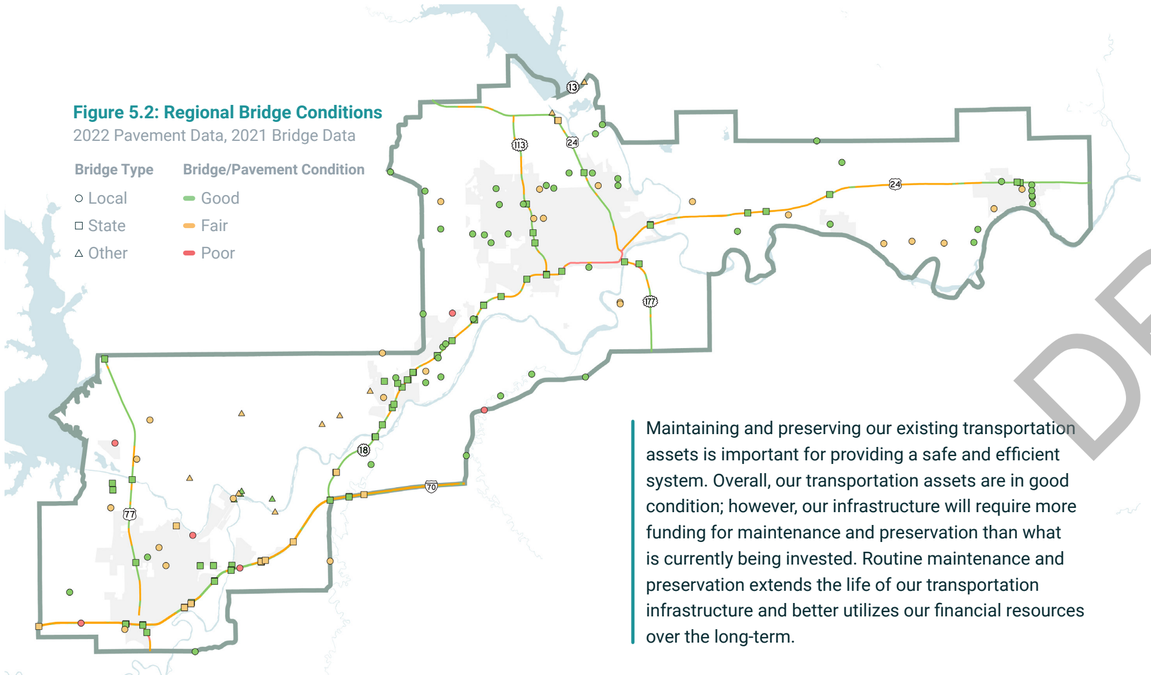
WHAT ARE THE FAST ACT PLANNING FACTORS FOR SAFETY?

- Increase safety of the transportation system for motorized and non-motorized users.
- Increase security of the transportation system for motorized and non-motorized users.

PRESERVATION

Invest in the preservation and maintenance of our existing infrastructure and assets.

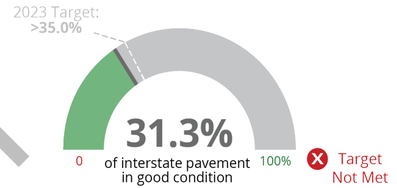
Figure 5.2: Regional Bridge Conditions
2022 Pavement Data, 2021 Bridge Data



Maintaining and preserving our existing transportation assets is important for providing a safe and efficient system. Overall, our transportation assets are in good condition; however, our infrastructure will require more funding for maintenance and preservation than what is currently being invested. Routine maintenance and preservation extends the life of our transportation infrastructure and better utilizes our financial resources over the long-term.

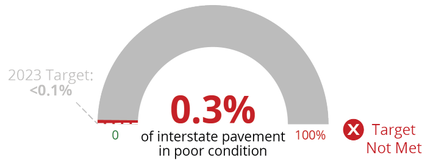
PM 1: % of Interstate pavement in good condition

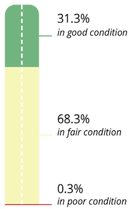
The 16 centerline miles of I-70 are the only segments of interstate in the MPO region. Current construction work is expected to improve the condition of these lanes over the next three years.



PM 2: % of Interstate pavement in poor condition

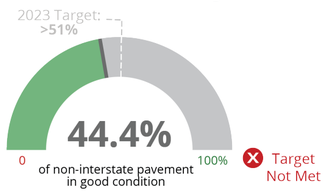
The pavement condition on I-70 continues to deteriorate. The longer preservation and maintenance needs are prolonged, the more expensive repairs become.





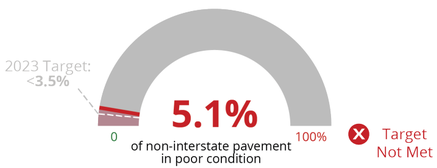
PM 3: % of non-Interstate pavement in good condition

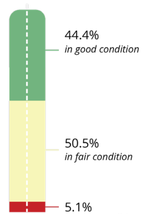
The non-interstate pavement includes all roadways on the National Highway System (NHS), such as state highways. There are 60 centerline miles of non-Interstate NHS roads in our region.



PM 4: % of non-Interstate pavement in poor condition

Since 2018, 3.6% more pavement on non-interstate NHS roadways is now in poor condition. The 2023 percentage, 5.1%, is also well above the target value of less than 3.5%.



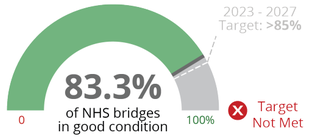


CENTERLINE VS LANE MILES

Roadway lengths can be measured by **centerline miles** or **lane miles.** Centerline miles do not take into consideration the number of lanes a roadway has, while lane miles do. Example: If a four lane road is 100 feet long, it would be 100 centerline miles or 400 lane miles.

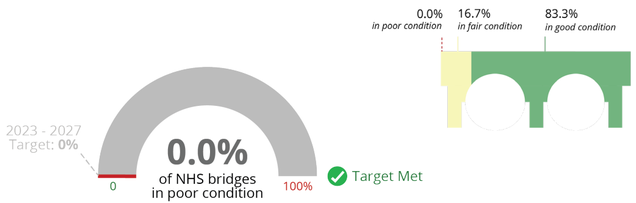
PM 5: % of NHS bridges in good condition

Bridge condition is measured by the deck area classified in good, fair, or poor condition. Of the bridges on the National Highway System (NHS), 83.3% are in good condition.



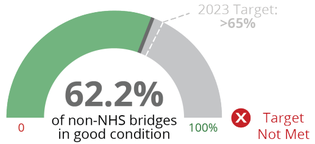
PM 6: % of NHS bridges in poor condition

There are no bridges by deck area classified as in poor condition on the NHS system.



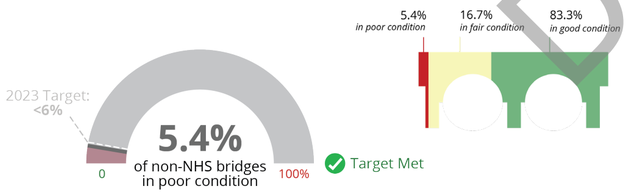
PM 7: % of non-NHS bridges in good condition

Non-NHS bridges are those on the local roadway system. Of the 96 bridges on the local system, 62.2% are in good condition.



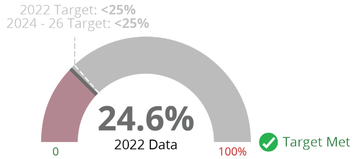
PM 8: % of non-NHS bridges in poor condition

While most of our non-NHS bridges are in good condition, 5.4% are in poor condition.



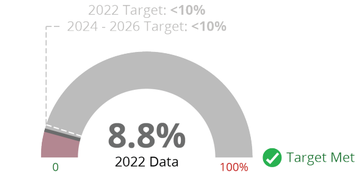
PM 9: % of revenue vehicles exceeding their useful life benchmark (ULB)

Useful life benchmark is the expected life cycle of a transit asset. Our region has several smaller transit providers that provide transportation services to their clients, while the ATA Bus provides the general public with transit services. Our goal is to have less than 25% of all of our transit vehicles meeting or exceeding their useful life. A majority of the vehicles exceeding their ULB are vehicles owned by smaller transit providers.



PM 10: % of transit fleet with more than 200,000 odometer miles

In total, our region has 57 transit vehicles in service by the smaller transit providers and ATA Bus. Of these, five (5) exceed 200,000 odometer miles. The goal is to have less than 10% of the fleet below this threshold as maintenance on high-mileage vehicles is substantially more frequent and expensive.



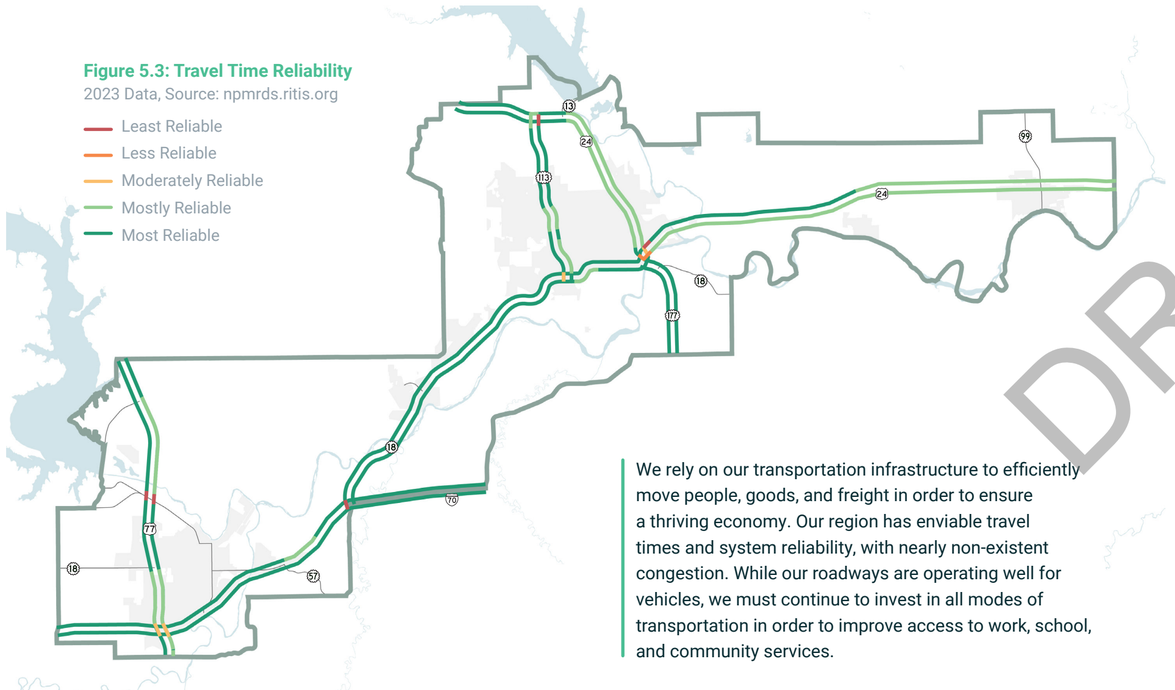
MISSING THE (MOVING) TARGET:

- The MPO region failed to meet targets set in 2020 on 11 of 14 Federally required metrics. There reasons are numerous but include: project delays, changes in data classification, COVID19 related changes in driving behavior (state & nationwide trends), as well as lack of historical data, and overly agressive targets. With new targets adopted in 2023, the MPO has set more reasonable goals based on the data available. Despite the missed targets, the MPO and its regional communities will continue to leverage data help identify and prioritize projects by safety and need.

MOBILITY

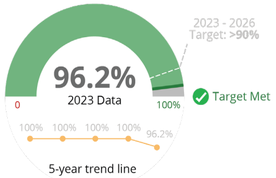
Maintain system performance and enhance modal choice for the efficient movement of people, goods, and freight.

Figure 5.3: Travel Time Reliability
2023 Data, Source: npmrds.ritis.org

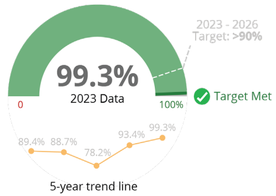


We rely on our transportation infrastructure to efficiently move people, goods, and freight in order to ensure a thriving economy. Our region has enviable travel times and system reliability, with nearly non-existent congestion. While our roadways are operating well for vehicles, we must continue to invest in all modes of transportation in order to improve access to work, school, and community services.

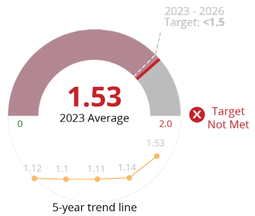
PM 1: % of person-miles traveled on the Interstate with a reliable travel time
96.2% of the person-miles traveled on I-70 through our region are reliable. This means our Interstate system has a low amount of congestion, allowing people and goods to move efficiently through our region. Construction on I-70 is likely responsible for the decrease in reliability from previous years.



PM 2: % of person-miles traveled on the NHS with a reliable travel time
Of the non-interstate roadways on the National Highway System (NHS), 99.3% are performing at a high-level of reliability. Reliability has improved over the past two years, largely due to the completion of construction projects on K-18 and US-24.



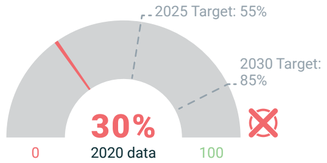
PM 3: Truck Travel Time Reliability (TTTR) index on our interstate system
A complex formula is used to develop the TTTR Index and to calculate the TTTR of our interstate system. Ideally, any segment along a roadway should have a TTTR Index of 1.50 or less. TTTR in the MPO region increased to 1.53, slightly above the target value, due to construction on I-70 in 2023.



TRAVEL TIME RELIABILITY
Defined as the consistency or dependability in travel times across different days and different times of day.
Truck Travel Time Reliability (TTTR) is the measure of reliable travel times for trucks on the Interstate system. This is calculated by comparing days with extremely high delays to days with average travel times.

PM 4: % of Intelligent Transportation Systems enabled traffic signals along key corridors

Intelligent transportation systems (ITS) allow for communication and coordination among signals to improve traffic flow. Our region has 17.5 miles of signalized corridors, with 30% percent enabled with signal coordination to improve the efficiency of the corridor.



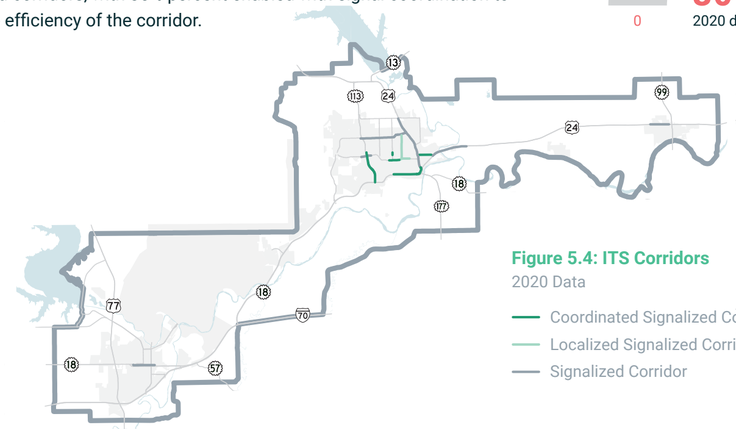
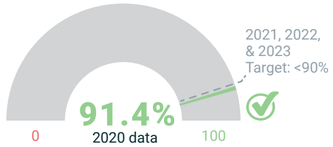


Figure 5.4: ITS Corridors
2020 Data

- Coordinated Signalized Corridor
- Localized Signalized Corridor
- Signalized Corridor

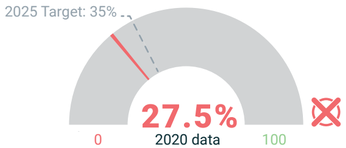
PM 5: % of transit routes on-time performance

Providing an on-time public transit service is important for dependability and reliability. The ATA Bus' current on time performance among all fixed routes has increased from 88.8% in 2019 to 91.4% in 2020.



PM 6: % of planned bicycle infrastructure projects implemented

There are 164.5 miles of planned bicycle projects in our region. To date only 45.3 miles, or 27.5%, of this infrastructure has been built. Strides towards the implementation of this bicycle infrastructure will provide our community with a network that will provide access to local and eventually regional connections.



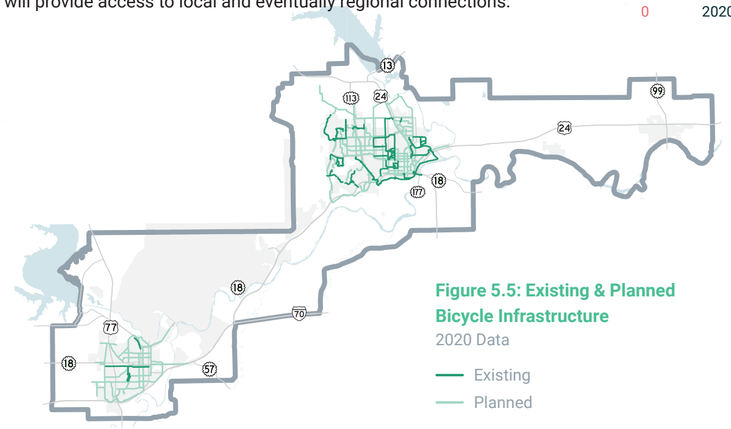


Figure 5.5: Existing & Planned Bicycle Infrastructure
2020 Data

- Existing
- Planned

WHAT ARE THE FAST ACT PLANNING FACTORS FOR MOBILITY?

- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
- Promote efficient system management and operations.

PROSPERITY

Create an equitable, affordable, sustainable, and integrated transportation system for all users.

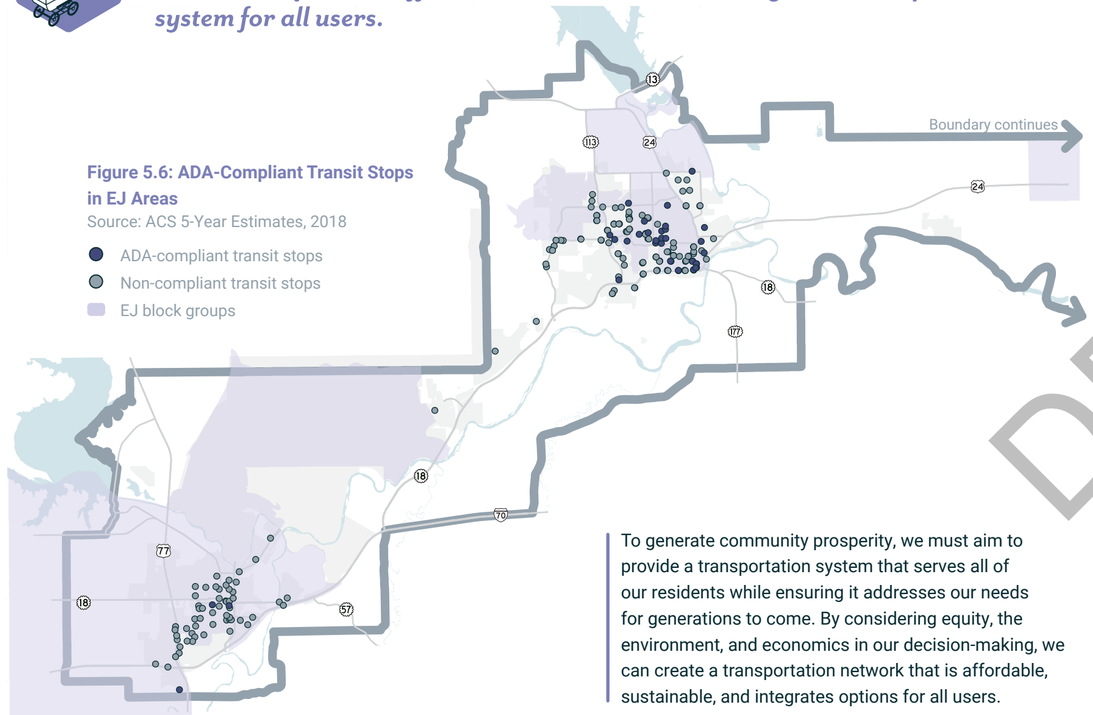
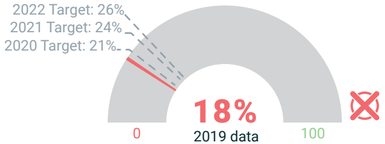


Figure 5.6: ADA-Compliant Transit Stops in EJ Areas
Source: ACS 5-Year Estimates, 2018

- ADA-compliant transit stops
- Non-compliant transit stops
- EJ block groups

To generate community prosperity, we must aim to provide a transportation system that serves all of our residents while ensuring it addresses our needs for generations to come. By considering equity, the environment, and economics in our decision-making, we can create a transportation network that is affordable, sustainable, and integrates options for all users.

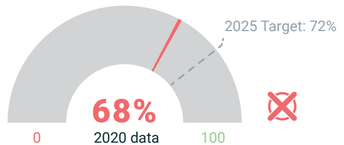
PM 1: % of transit stops compliant with Americans with Disabilities Act (ADA)
Our region has 192 fixed-route bus stops, of which, only 18% are ADA compliant. To improve public transit accessibility, the number of ADA compliant bus stops must increase.



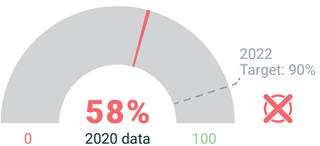
ENVIRONMENTAL JUSTICE (EJ)

EJ is the fair treatment and meaningful involvement of all people regardless of race, culture, or income with respect to transportation planning and project development. The MPO has elected to also identify areas that have a higher than average number of households without access to a vehicle, as this creates additional need for walking, biking, and access to public transit.

PM 2: % of households within 1/4 mile of a transit stop in Environmental Justice areas
In the Flint Hills region, 72% of households are within 1/4 mile of a public transit stop. However, only 68% of households in EJ areas are within a 1/4 mile of a stop.

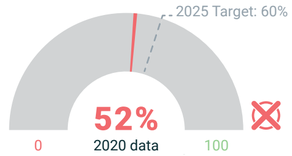


PM 3: % of bus fleet equipped with bike racks
The ATA Bus has a total of 36 buses, of which 21 are equipped with a bike rack. Ideally, all fixed-route buses should have bike racks. This number should also include bike racks on demand response buses that are occasionally used for fixed-routes.



PM 4: % of bicycle infrastructure located in EJ areas

A safe and direct bicycle network is a vital artery for any community; however, for areas in our communities where we have higher percentages of zero car households and lower-incomes, biking can fill a critical transportation need. Biking can also be a child's first form of transportation independence, being able to ride a bike to school or a friend's house.



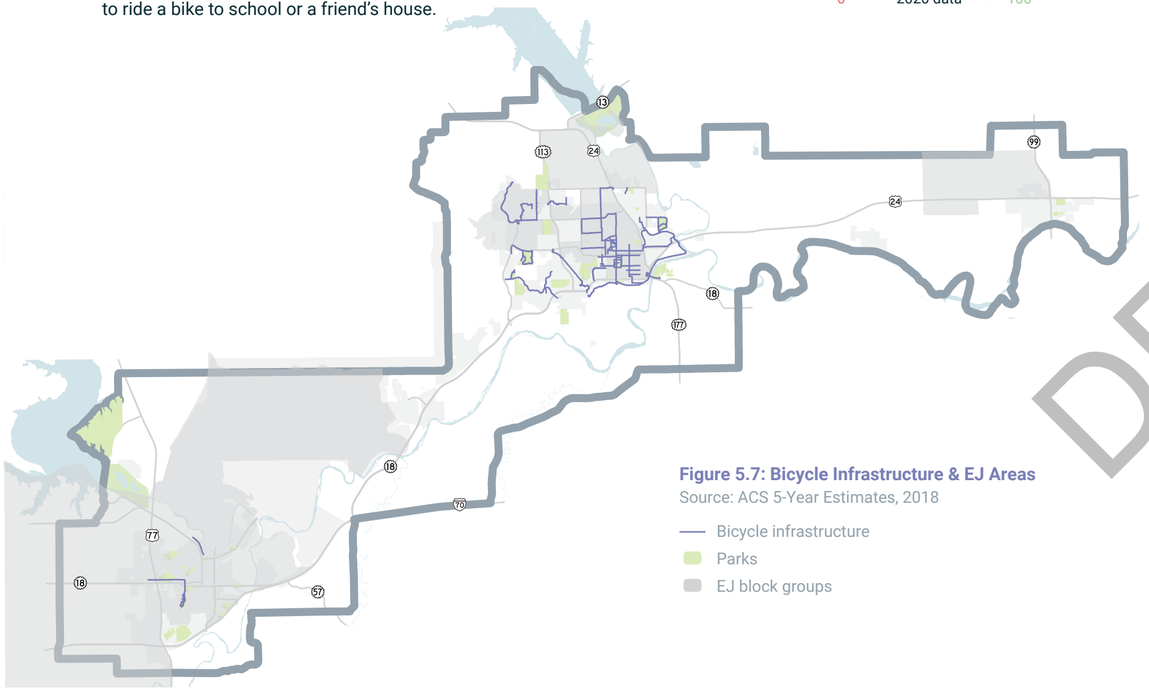
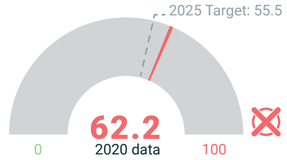


Figure 5.7: Bicycle Infrastructure & EJ Areas
Source: ACS 5-Year Estimates, 2018

- Bicycle infrastructure
- Parks
- EJ block groups

PM 5: Maintain or reduce the number of roadway feet per person

When roadways are built or expanded, a larger financial burden is placed on existing residents to support the infrastructure. To be fiscally responsible and reduce the cost of transportation, our region should focus on reducing or maintaining the number of roadway feet per person.



Road per Capita (ft): each resident responsible for	Manhattan	Junction City	Wamego	Green Valley Area	MPO Average
1990	45.4 ft	52.4 ft	68.0 ft	42.9 ft	52.2 ft
2020	45.2 ft	71.2 ft	65.5 ft	67.0 ft	62.2 ft
% Change	-0.4%	+35.9%	-3.7%	+56.2%	+19.2%

WHAT ARE THE FAST ACT PLANNING FACTORS FOR PROSPERITY?

- Protect and enhance the environment, promote energy conversation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
- Improve the resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.
- Enhance travel and tourism.

6

Chapter Six

WHAT WE CAN AFFORD

Connect 2040 envisions a transportation system that considers the future needs of our communities by delivering solutions in a responsible and affordable manner. Due to local funding levels, *Connect 2040* reflects a slim list of future projects.

Connect 2040 serves as both a strategic plan and vision statement for our future transportation system. The projects listed within this chapter are those we can reasonably afford to construct and operate by 2040. These projects range in size and scope, focusing on preserving what we have today to making strategic investments in new infrastructure.

FUTURE REVENUES AND EXPENDITURES

Connect 2040 includes a financial analysis that demonstrates how this Plan can be implemented with available resources over the next 20 years. The fiscally constrained portion of the Plan must take into consideration future expenditures needed for operations and maintenance (O&M) and preservation of the existing system. This ensures we have the resources available to preserve and maintain what we have today before adding additional infrastructure to our network.

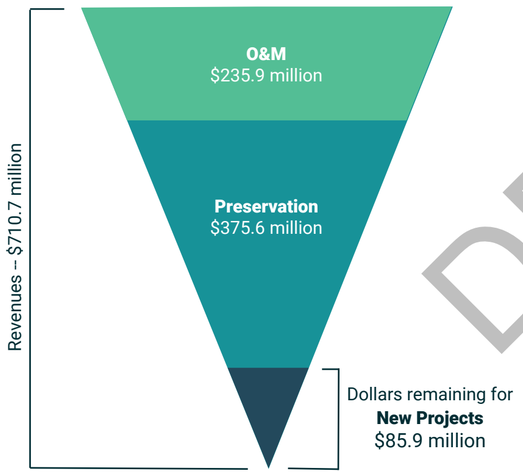
To make long-range financial projections, historical revenue and expenditure data was collected from the local jurisdictions, KDOT, and ATA Bus. A five-year historical average of expenditures and revenues was used to make the long-range projections of available revenues and future expenditures. Future expenditures were calculated using a 3% inflation factor, while future revenues were held constant.

FISCAL CONSTRAINT PROCESS

One of the federal requirements for long-range plans is that future revenues must be set aside to cover anticipated O&M and preservation expenditures before planning for new projects. Figure 5.1 provides a visual representation of how revenues are first allocated to O&M, then to preservation projects, with any remaining funding available to be used for new projects.

Figure 6.1 Fiscal Constraint Process

2020-2040, *Connect 2040* Fiscal Constraint Worksheet



O&M AND PRESERVATION

Maintenance and preservation are of the highest priority in supporting a safe and efficient transportation system. However, our preservation needs on our locally-owned roadways are outpacing our revenues. This will create a challenge in continuing to preserve and maintain our infrastructure with existing funding sources. Local budgets will be stretched thin over the coming decades, unable to address all of our transportation needs.

OPERATIONS AND MAINTENANCE (O&M)
O&M refers to the minor upkeep and maintenance like filling potholes, snow removal, re-striping, or maintaining traffic signals.

vs

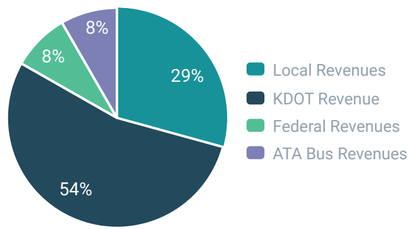
PRESERVATION
Preservation projects are complete rebuilds of existing infrastructure, like replacing a bridge or roadway. This also includes replacing transit buses.

FUNDING SOURCES

There are local, state, and federal funding sources used to maintain, preserve, and construct our transportation infrastructure. As seen in Figure 5.2, a majority of the revenues are state funds from KDOT, used to maintain state-owned infrastructure, like highways or the Interstate. As shown on the next few pages, local needs will go unmet due to a lack of sufficient revenues.

Figure 6.2 Sources of Revenues

2020-2040, Fiscal Constraint Worksheet



FUTURE FINANCIAL OUTLOOK

While our local jurisdictions will generate over $200 million dollars over the next 20 years, close to $300 million will be needed just for O&M and preservation. For most of our cities and counties, this means there are no remaining revenues to build new roads or expand existing ones. This is reflected in Figure 5.3 where the "$ for new projects" bar is in the negative in the 2025-2030 timeband.

KDOT, however, will have adequate funding to operate and maintain the existing state system over the next two decades with funding remaining for expansion or modernization projects. One caveat, most of this funding will likely be limited to projects on the state system.

Over the next twenty years, our local revenues will be exhausted, leaving us with a **$47.4 million deficit**. by 2040.

Figure 6.3 Local Revenues and Expenses by Timeband

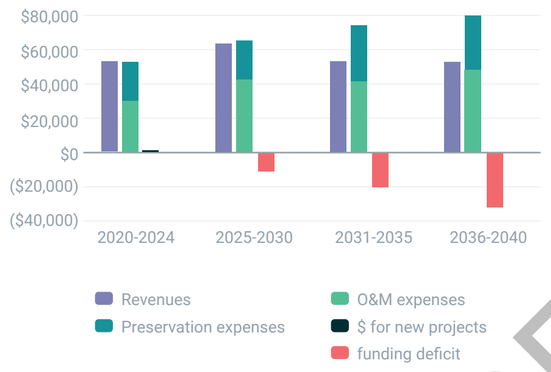
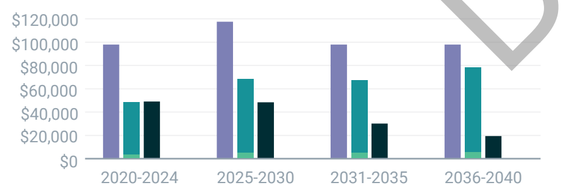


Figure 6.4 KDOT Revenues and Expenses by Timeband



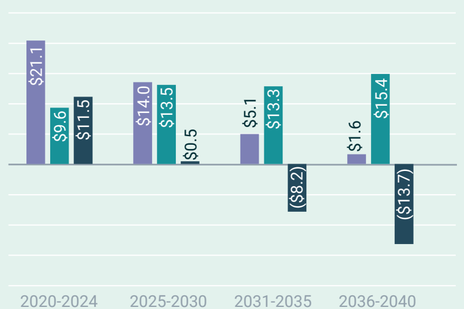
CITY OF MANHATTAN PRESERVATION SALES TAX

In 2016, the residents of the City of Manhattan passed a 0.2% sales tax dedicated to preserving our roadways. This ballot initiative brings in $2-$3 million dollars to the City every year and will sunset after 2026.

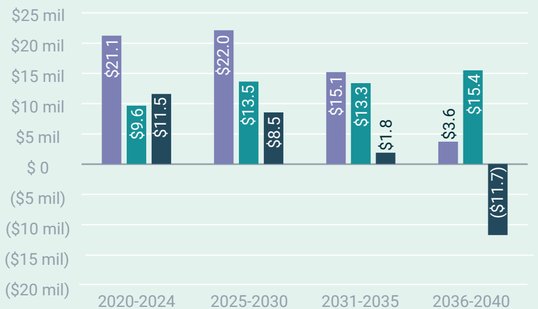
To fully understand the long-term financial benefit of this funding source, Manhattan's future financial information was examined under two different assumptions. First, the financial scenario used for the analysis of this chapter has the preservation sales tax ending in 2026. However, another scenario was run assuming the sales tax was extended for another ten years.

If the citizens of Manhattan were to renew the sales tax, preservation costs could be offset to allow for more revenues to go towards modernizing our roadways and improving safety.

With Preservation Tax Sunsetting after 2026 (in millions)



With Preservation Tax Sunsetting after 2036 (in millions)

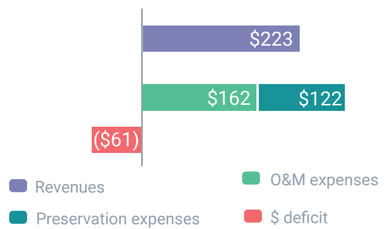


Revenues after O&M | Preservation Costs | $ for new projects

FINANCIAL INFORMATION BY JURISDICTION

Figure 6.6 presents the revenues and expenditure data by jurisdiction for each of the four timebands. With the exception of Geary County, none of our jurisdictions will have any remaining revenues for new projects after meeting their O&M and preservation obligations by the last timeband. The last bar in each grouping represents either money remaining for new projects or a funding deficit. If there is money remaining, this is the funding that can be used for any new expansion or modernization projects.

Figure 6.5 Local Revenues and Expenses 2020-2040 (in millions)



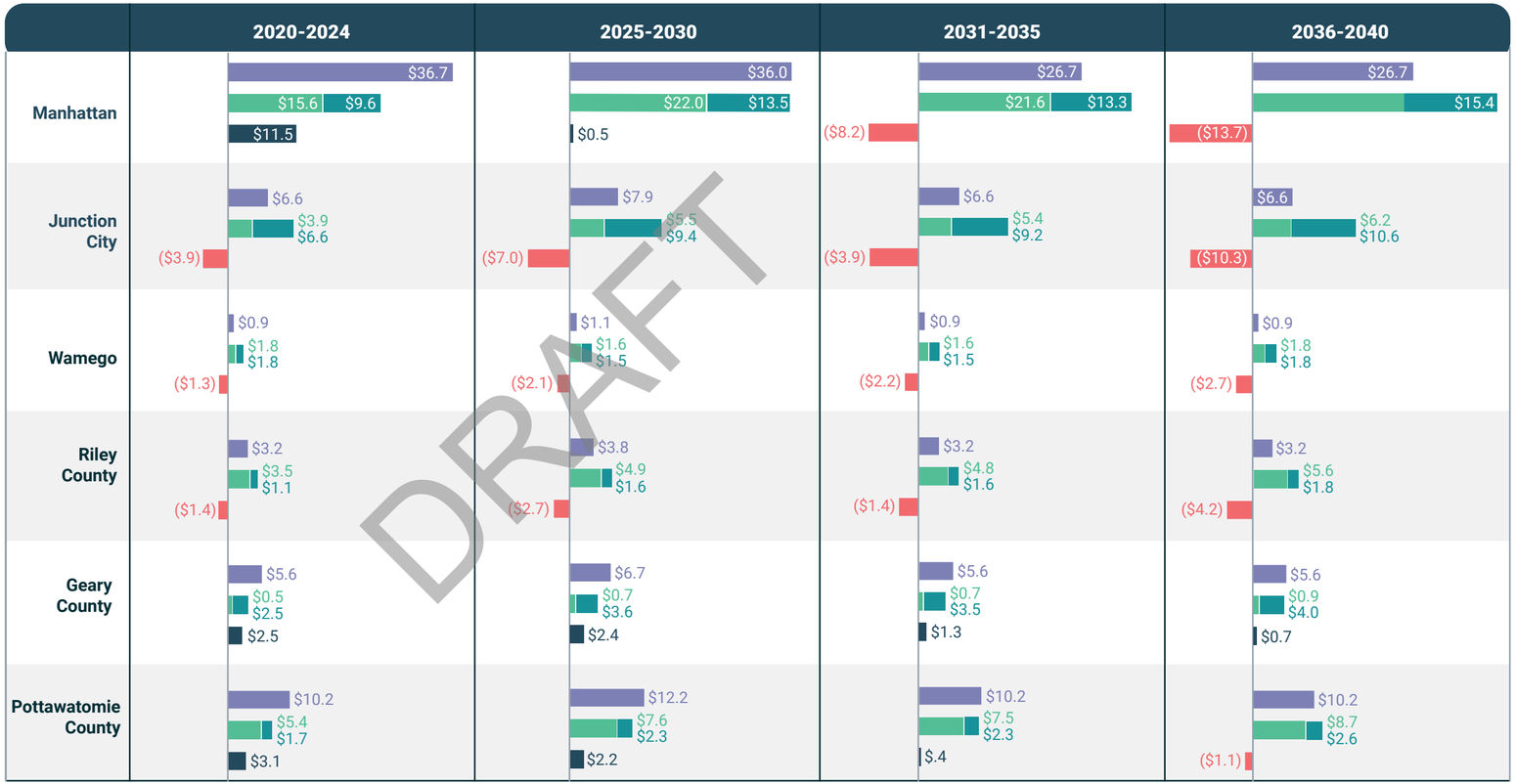


Figure 6.6 Financial Information by Jurisdiction (in millions)

- Revenues
- O&M expenses
- Preservation expenses
- $ for new projects
- $ deficit

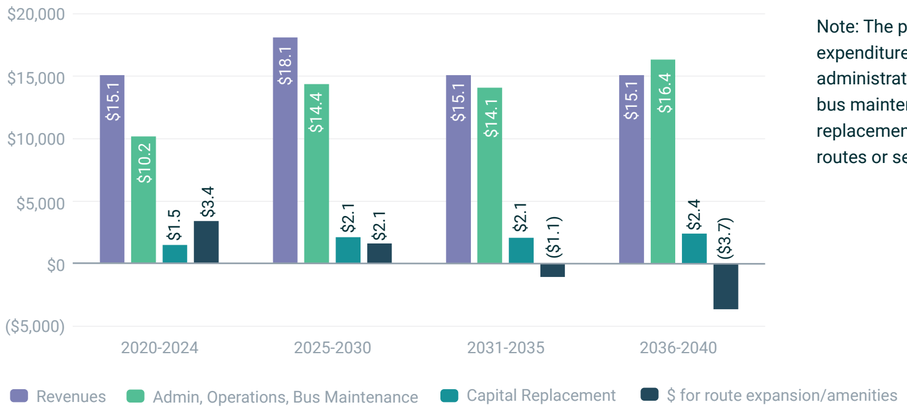
FUTURE FUNDING OF PUBLIC TRANSIT

Like our local jurisdictions, ATA Bus will struggle to operate and maintain the system they have in place today if revenues fail to keep up with the rising cost of expenditures. While federal funds will likely continue to be available, a local investment is required to leverage those funds.

Public Transit Priorities

- Expanding the K-18 Connector to Junction City
- Improving the Junction City Fixed-Routes
- Improving frequency of the Manhattan Fixed-Routes

Figure 6.7 Public Transit Revenues and Expenditures 2020-2040
(in thousands)



Note: The projected expenditures for administration, operations, bus maintenance, and capital replacement assume no new routes or services.

FUTURE FUNDING FOR BICYCLE & PEDESTRIAN PROJECTS

For a majority of our cities and counties, there is not a dedicated funding source for bicycle and pedestrian projects. Often times, bicycle and pedestrian infrastructure (like sidewalks or multi-use trails) are added as a component of larger roadways projects.

One of the more popular funding streams utilized by our local jurisdictions to construct these projects is KDOT's Transportation Alternatives (TA) Program. TA is a federal program, administered by KDOT, and awarded on a competitive basis. The Safe Routes to School Program (SRTS) is a sub-component of TA, focusing on improving walking and biking routes to schools. To be eligible for this funding source, the school must have a SRTS Phase I Plan, identifying infrastructure needs. The MPO has completed the SRTS plans for nearly all of the elementary schools within the region.

The City of Manhattan has a dedicated sales tax providing roughly $100,000 each year for completing SRTS projects. This sales tax will sunset in 2026.

The bicycle and pedestrian projects planned for the next two decades are identified in either a Safe Routes to School Plan, the *Junction City Active Transportation Plan*, Manhattan's *Bicycle and Pedestrian Systems Plan*, or Wamego's *Sidewalk Plan*.

Figure 6.8 TA Grants Received between 2016-2019

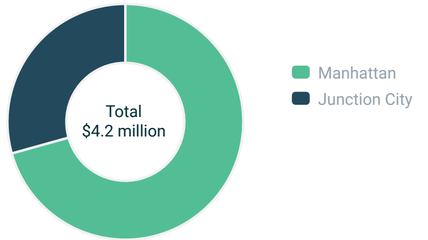
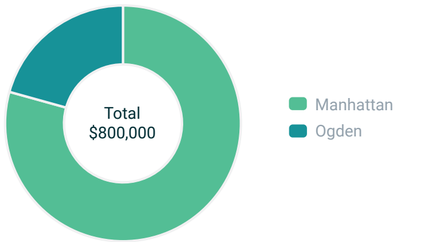


Figure 6.9 SRTS Grants Received between 2016-2019



PROJECTS WE CAN AFFORD

SELECTION OF FUTURE PROJECTS

As presented in Chapter 3, there are the 100-plus projects that have been identified as a need over the next 20 years. Based on the funding anticipated to be available ("$ for new projects"), only a fraction of these projects can be included in the fiscally-constrained project list.

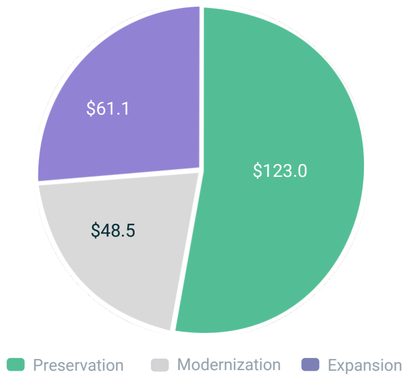
The selection of projects for the fiscally-constrained project list was a collaborative effort with the cities, counties, and KDOT. The projects identified in the first timeband, years 2020-2024, mainly consists of projects included in the 2020 Transportation Improvement Program (TIP). These projects have an identified funding source and are nearing construction (or currently being constructed).

Projects identified in the later timebands are those identified as priorities that also have a funding source reasonably expected to be available. KDOT is the only project sponsor with identified funding available for new projects in all future time bands.

There are many projects included in Chapter 3 that are priorities for the region without an identified funding source. It should be noted that the fiscally-constrained project list can be amended at any time to reflect additional revenues available or federal funding received. This Plan can also be amended to move a project to the fiscally-constrained list if it is selected for inclusion in KDOT's transportation program.

Identified in Figure 6.12 are the projects included in the fiscally-constrained project list.

Figure 6.10: Fiscally Constrained Projects by Type



FISCAL CONSTRAINT VERIFICATION

Figure 6.6 is used to verify fiscal constraint for each jurisdiction by comparing the revenues anticipated to be available to the projects on the fiscally constrained list. One factor not taken into consideration in Figure 6.6 are other methods and funding sources jurisdictions use to pay for a project. This often includes issuing bonds, receiving grant funding, or outside revenue sources not often utilized for transportation investments.

For example, the City of Manhattan has $11.5 million available for new projects in the first timeband (reference Figure 6.6). However, the City has $23 million worth of projects on the fiscally constrained list for this same time period. In addition to traditional funding sources, the City will utilize revenue from the City-University Fund, Kansas State University Athletics, and issue bonds in order to move forward with several identified projects.

This is a similar approach used by Wamego and Junction City in order to demonstrate fiscal constraint for projects identified.

FISCALLY CONSTRAINED VS. ILLUSTRATIVE

The following pages include the fiscally constrained project list and the illustrative list. The fiscally constrained list contains projects that have an identified funding source. The illustrative list contains projects identified by the jurisdictions are priorities, but currently lack a funding source.

Having an illustrative list allows for projects to easily be moved into the fiscally constrained portion of *Connect 2040* once a funding source is identified. Once a project is identified on the fiscally constrained list, the project can be amended into the Transportation Improvement Program. For projects seeking federal funding, this process is essential.

FISCALLY CONSTRAINED PROJECTS

Figure 6.12: Fiscally Constrained Projects by Timeband
(in millions)

C2040 #	2020-2024 Projects	Year	Cost
E38	Kirkwood Dr Extension: Walters to Marlatt	2020	$2.0
E49	N. Manhattan Expansion: Baker's Way to Claflin	2020	$2.9
E63	US-24 & Green Valley Rd Intersection	2020	$3.4
M13	K-18 & Karns Dr Roundabout	2020	$2.0
P01	K-18 Bridge Replacement over Wildcat Creek	2020	$9.6
E35	Blue Jay Way Expansion: K-18 to Rucker	2021	$2.0
E36	Kimball & College Intersection Improvements	2021	$8.0
E64	Industrial Commerce Route: Valley and Balderson	2021	$6.4
M25	600 Block Poyntz Multimodal Project	2021	$0.7
P02	Kimball Ave Reconstruction (K-113 to Candlewood)	2021	$2.3
P05	US-24 Bridge Replacement over Blackjack Creek	2021	$1.7
M22	US-77 Reconstruction: Old Milford to N Jct K-57	2022	$10.0
M40	N. Manhattan Ave Traffic Signals and two-way bike lane	2022	$2.5
P07	US-40B Bridge Replacement (UP Railroad & Monroe St)	2022	$18.7
E37	Kimball Ave Expansion: Denison to College	2023	$6.4
E67	Kimball Ave Expansion: N Manhattan to NBAF	2023	$5.0
P11	I-70 Replacement 296-300	2023	$32.0
P14	US-24 Resurfacing: PT County line, easet 3.9 miles	2023	$2.3
E69	Kimball and Denison Intersection	2024	$10.9
M15	I-70 & K-18 Interchange	2024	$19.9
M20	US-24 & K-13 Roundabout	2024	$6.7
M21	US-24 & K-113 Roundabout	2024	$6.7
P03	US-24 Resurfacing: K-13 to US-77	2024	$1.2
P06	US-40B Resurfacing: JC City limits to K-57	2024	$1.0
	2020-2024 Timeband Total		$164.3
C2040 #	**2025-2030 Projects**	**Year**	**Cost**
E61	Taylor Road Interchange @ I-70	2026	$14.1
P12	I-70 Bridge Replacement at J Hill Rd	2026	$2.9
	2025-2030 Timeband Total		$17.0
C2040 #	**2031-2035 Projects**	**Year**	**Cost**
P04	US-24 Mill & Overlay: K-13 to US-77	2035	$6.8
P08	US-40B Smoky Hill River Bridge Replacement	2035	$4.5
P10	I-70 Replacement 290-296	TBD	$40.0
	2031-2035 Timeband Total		$51.3
	Total for All Timebands		**$232.6**

Note: Please be advised that some of the projects listed as fiscally constrained are being funded by sources of revenue not reflected in Figure 6.6. These include projects being bonded or using local or state funding sources that are not typically used for transportation improvements.

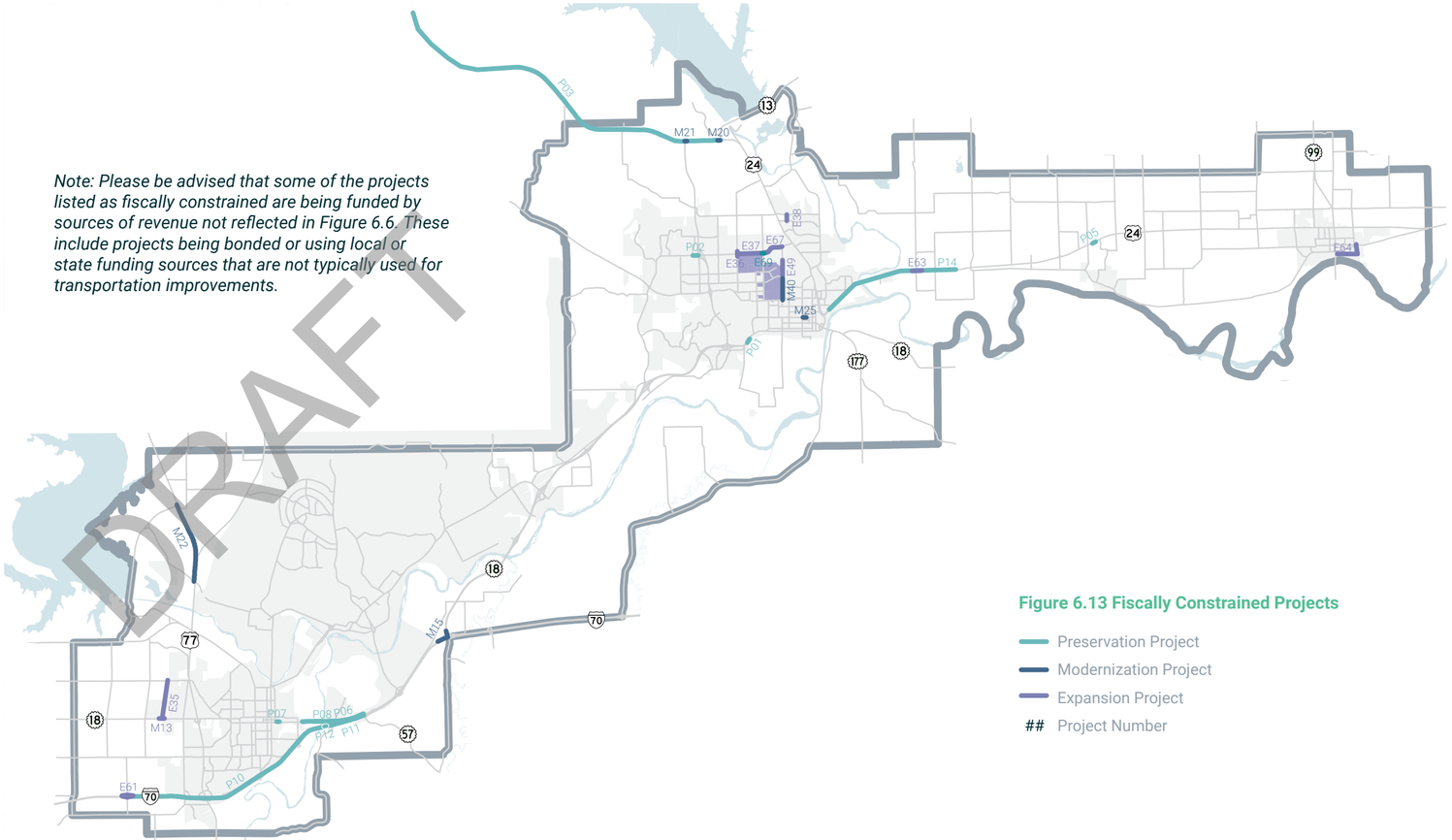


Figure 6.13 Fiscally Constrained Projects

- Preservation Project
- Modernization Project
- Expansion Project
- ## Project Number

FISCALLY CONSTRAINED PROJECTS & PERFORMANCE MEASURES

The following table outlines the fiscally constrained projects along with indicating any performance measure (PM) target the project helps to meet.

Figure 6.14: Fiscally Constrained Projects with Performance Measures

C2040 ID	Project	Safety						Preservation								Mobility					Prosperity	
		PM1	PM2	PM3	PM4	PM5	PM6	PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM1	PM2	PM3	PM4	PM6	PM4	PM5
E35	Blue Jay Way Expansion: K-18 to Rucker																			✓	✓	
E36	Kimball & College Intersection Improvements																		✓			
E37	Kimball Ave Expansion: Denison to College																			✓	✓	
E38	Kirkwood Dr Extension: Walters to Marlatt																					
E49	N. Manhattan Expansion: Baker's Way to Claflin																					
E61	Taylor Road Interchange @ I-70											✓	✓									
E63	US-24 Green Valley Intersection			✓	✓					✓												
E64	Industrial Commerce Route: Valley/Balderson																					
E67	Kimball Ave Expansion: N Manhattan to NBAF	✓	✓	✓	✓	✓	✓												✓	✓	✓	
M13	K-18 & Karns Dr Roundabout			✓	✓		✓			✓										✓	✓	
M15	I-70 & K-18 Interchange			✓	✓					✓						✓	✓	✓				
M20	US-24 & K-13 Roundabout			✓	✓					✓												
M21	US-24 & K-113 Roundabout	✓	✓							✓							✓					
M22	US-77 Reconstruction: Old Milford to N Jct K-57			✓	✓					✓							✓					

continued on following page

Safety

- PM 1: # of vehicular fatalities
- PM 2: Rate of vehicular fatalities per 100 million vehicle
- PM 3: # of serious injuries
- PM 4: Rate of serious injuries per 100 million vehicle
- PM 5: Non-Motorized Fatalities & Serious Injuries
- PM 6: % of serious injuries & fatality crashes involving bicycles & pedestrians

Preservation

- PM 1: % of Interstate pavement in good condition
- PM 2: % of Interstate pavement in poor condition
- PM 3: % of non-Interstate pavement in good condition
- PM 4: % of non-Interstate pavement in poor condition
- PM 5: % of NHS bridges in good condition
- PM 6: % of NHS bridges in poor condition
- PM 7: % of non-NHS bridges in good condition
- PM 8: % of non-NHS bridges in poor condition

Mobility

- PM 1: % of person-miles traveled on Interstate with reliable travel time
- PM 2: % of person-miles traveled on the NHS with a reliable travel time
- PM 3: Truck Travel Time Reliability (TTTR) Index on our Interstate system
- PM 4: % of Intelligent Transportation System traffic signals on key corridors
- PM 6: % of planned bicycle infrastructure projects implemented

Prosperity

- PM 4: % of bicycle infrastructure located in EJ areas
- PM 5: Maintain or reduce the number of roadway feet per person

Figure 6.14 Continued

C2040 ID	Project	Safety						Preservation								Mobility					Prosperity	
		PM1	PM2	PM3	PM4	PM5	PM6	PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM1	PM2	PM3	PM4	PM6	PM4	PM5
M25	600 Block Poyntz Multimodal Project																			✓	✓	✓
M40	N. Manhattan Ave Traffic Signals and two-way Bike Lane					✓	✓												✓	✓	✓	✓
P01	K-18 Bridge Replacement over Wildcat Creek									✓	✓	✓								✓		
P02	Kimball Ave Reconstruction (K-113 to Candlewood)																			✓		
P03	US-24 Resurfacing K-13 to US-77									✓												
P04	US-24 Mill & Overlay: K-13 to US-77									✓												
P05	US-24 Bridge Replacement over Blackjack Creek											✓										
P06	US-40B Resurfacing: JC City limits to K-57									✓												
P07	US-40B Bridge Replacement (UP Railroad & Monroe St)											✓										
P08	US-40B Smoky Hill River Bridge Replacement											✓	✓									
P10	I-70 Pavement Replacement Exit 290-296							✓	✓													
P11	I-70 Pavement Replacement Exit 296-300							✓	✓													
P12	I-70 Bridge Replacement at J-Hill									✓	✓	✓										
P14	US-24 Resurfacing PT County line east 3.9 miles									✓												
E69	Kimball and Denison Intersection	✓	✓																			

Note: Transit related performance measures were removed from this table.

Safety

- PM 1: # of vehicular fatalities
- PM 2: Rate of vehicular fatalities per 100 million vehicle
- PM 3: # of serious injuries
- PM 4: Rate of serious injuries per 100 million vehicle
- PM 5: Non-Motorized Fatalities & Serious Injuries
- PM 6: % of serious injuries & fatality crashes involving bicycles & pedestrians

Preservation

- PM 1: % of Interstate pavement in good condition
- PM 2: % of Interstate pavement in poor condition
- PM 3: % of non-Interstate pavement in good condition
- PM 4: % of non-Interstate pavement in poor condition
- PM 5: % of NHS bridges in good condition
- PM 6: % of NHS bridges in poor condition
- PM 7: % of non-NHS bridges in good condition
- PM 8: % of non-NHS bridges in poor condition

Mobility

- PM 1: % of person-miles traveled on Interstate with reliable travel time
- PM 2: % of person-miles traveled on the NHS with a reliable travel time
- PM 3: Truck Travel Time Reliability (TTTR) Index on our Interstate system
- PM 4: % of Intelligent Transportation System traffic signals on key corridors
- PM 6: % of planned bicycle infrastructure projects implemented

Prosperity

- PM 4: % of bicycle infrastructure located in EJ areas
- PM 5: Maintain or reduce the number of roadway feet per person

Figure 6.15: Fiscal Constraint Table

C2040 #	2020-2024 Timeband Projects	Year	Cost	MHK	MHK Pres.	Junction City	Wamego	Riley County	Geary County	Pott. County	KDOT (State)	HSIP	NHPP	ATA (5307 & 5339)	Other Funding Sources	Funding Source Notes
				Anticipated Revenues												
				$11.5	$9.6	-$3.9	-$1.3	-$1.4	$2.5	$3.1	$94.4	$1.4	$3.1	$1.5	N/A	
E38	Kirkwood Dr Extension: Walters to Marlatt	2020	$2.0	$2.0												
E49	N. Manhattan Expansion: Baker's Way to Claflin	2020	$2.9	$2.9												
E63	US-24 & Green Valley Rd Intersection	2020	$3.4							$0.9	$2.5					
M13	K-18 & Karns Dr Roundabout	2020	$2.0								$2.0					
P01	K-18 Bridge Replacement over Wildcat Creek	2020	$9.6	$0.1							$1.0		$8.5			Using Advance Const.
E35	Blue Jay Way Expansion: K-18 to Rucker	2021	$2.0			$2.0										
E36	Kimball & College Intersection Improvements	2021	$8.0	$4.0							$4.0					
E64	Industrial Commerce Route: Valley and Balderson	2021	$6.4							$0.8	$4.4				$1.3	Project is being bonded
M25	600 Block Poyntz Multimodal Project	2021	$0.7	$0.1										$0.6		
P02	Kimball Ave Reconstruction (K-113 to Candlewood)	2021	$2.3		$2.3											
P05	US-24 Bridge Replacement over Blackjack Creek	2021	$1.7								$0.1		$1.6			
M22	US-77 Reconstruction: Old Milford to N Jct K-57	2022	$10.0								$0.6				$10.4	KDOT using STP
M40	N. Manhattan Ave Traffic Signals and two-way bike lane	2022	$2.5	$2.5												
P07	US-40B Bridge Replacement (UP Railroad & Monroe St)	2022	$18.7								$12.0					
E37	Kimball Ave Expansion: Denison to College	2025	$6.4	$3.5							$2.9					
E67	Kimball Ave Expansion: N Manhattan to NBAF	2023	$5.0	$0.2							$4.2					
P11	I-70 Replacement 296-300	TBD	$32.0								$3.2		28.8			
P14	US-24 Resurfacing: PT County line east 3.9 miles	2023	$2.3								$0.1		$2.2			
E69	Kimball and Denison Intersection	2024	$10.9	$10.9												
M15	I-70 & K-18 Interchange	2024	$19.9								$2.4		$17.4			
M20	US-24 & K-13 Roundabout	2024	$6.7								$1.6	$5.1				
M21	US-24 & K-113 Roundabout	2024	$6.7								$1.6	$5.1				
P03	US-24 Resurfacing: K-13 to US-77	2024	$1.2								$0.2		$1.0			
P06	US-40B Resurfacing: JC City limits to K-57	2024	$1.0								$1.0					
				$26.2	$2.3	$2.0	$0.0	$0.0	$0.0	$1.7	$43.8	$10.2	$59.5	$0.6	$11.7	Total Project Costs
				-$14.7	$7.3	-$5.9	-$1.3	-$1.4	$2.5	$1.4	$50.6	-$8.8	-$56.4	$0.9	--	Remaining Revenue
C2040 #	2025-2030 Timeband Projects	Year	Cost	$0.4	$14.0	-$7.0	-$2.1	-$2.7	$2.4	$2.2	$112.6	$1.7	$3.8	$2.1	N/A	
E61	Taylor Road Interchange @ I-70	2026	$14.1								$14.1					
P12	I-70 Bridge Replacement at J Hill Rd	2026	$2.9								$2.9					
				$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$17.0	$0.0	$0.0	$0.0	$0.0	$0.0
				$0.4	$14.0	-$7.0	-$2.1	-$2.7	$2.4	$2.2	$95.6	$1.7	$3.8	$2.1	--	Remaining Revenue
C2040 #	2031-2035 Timeband Projects	Year	Cost	-$8.2	$5.1	-$8.0	-$2.2	-$3.2	$1.3	$0.4	$93.1	$1.4	$3.1	$2.1	N/A	
P04	US-24 Mill & Overlay: K-13 to US-77	2035	$6.8								$6.8					
P08	US-40B Smoky Hill River Bridge Replacement	2035	$4.5								$4.5					
P10	I-70 Replacement 290-296	TBD	$40.0								$40.0					
				$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$51.3	$0.0	$0.0	$0.0	$0.0	Total Project Costs

Notes:

Projects E35, E38, E49, E63, E67, P01, P02, & M13 has already been constructed.

The HSIP and NHPP funding revenues shown are based on a historical average. More HSIP and NHPP funding is being spent in our region than in previous years, which is why the remaining balance of available funding is negative.

The "Other Funding Sources" column is intended to show funding sources that are not included in the fiscall constrain process

ILLUSTRATIVE LIST

The illustrative list includes projects identified by the cities and counties as priorities that are not included in the fiscally constrained project list due to a lack of funding. These are projects that are likely to be needed or implemented over the next decade and align with the goals of the Plan. These projects are included in the illustrative list and can be moved to the fiscally constrained list should funding become available.

Figure 6.16: Illustrative Project Tables

C2040 #	Priority A Projects	Year	Cost
E19	Excel Rd 3-lane: Harvest to Cara's Way	2025	$2.3
E26	Harvest Rd paved 3-lane: Lake Elbo to Excel	2025	$5.3
E46	Moody Rd paved 3-lane: Harvest to Junietta	2025	$2.8
E71	Strauss Blvd Extension	2026	$8.1
E72	Taylor Road Expansion: Strauss to Old Highway 40	2025	$1.9
E73	Taylor Road Expansion: Strauss to Liberty Hall	2025	$2.0
E74	Spring Valley Rd 3-lane: Ash to Strauss	2028	$5.0
E75	Spring Valley Rd 3-lane: Lacy to Old Highway 40	2024	$1.9
M17	Poyntz Ave Lane Reduction: Juliette to 17th	2026	$1.2
M57	Vineyard Rd Paving: Chapman to Burr Oak	2025	$0.4
M59	Chapman Rd Paving: Vineyard to St. George	2025	$0.7
M66	McFarland & Eisenhower Roundabout	2025	$2.0
		TOTAL	$33.6
	Priority B		
C2040 #	Priority B Projects	Year	Cost
E01	11th St 3-lane: Poyntz to Bluemont	2030	$5.5
E02	17th St 3-lane: Laramie to Yuma	2030	$4.0
E04	Bluemont Ave 5-lane: 4th to 11th	2030	$3.8
E08	Casement Rd. 3-lane: Brookmont to Allen/Knox	2026	$4.2
E11	Claflin & Hylton Heights Intersection Turning Lanes	2035	$0.8
E12	East Street Extension: Chestnut to Grant	2031	$4.5
E23	Grand Mere Parkway Extension: MacLeod to Marlatt	2030	$3.6
M06	Bluemont Ave Right in, Right out: 4th to 10th	2030	$0.6
M19	US-24 4-lane Urbanization: Mall to McCall	2025	$3.0
M67	K-18 & Munson Rd Roundabout	2030	$2.0
P13	Riley Ave: Ogden city limits to Ft. Riley	2030	$5.2
		TOTAL	$37.3

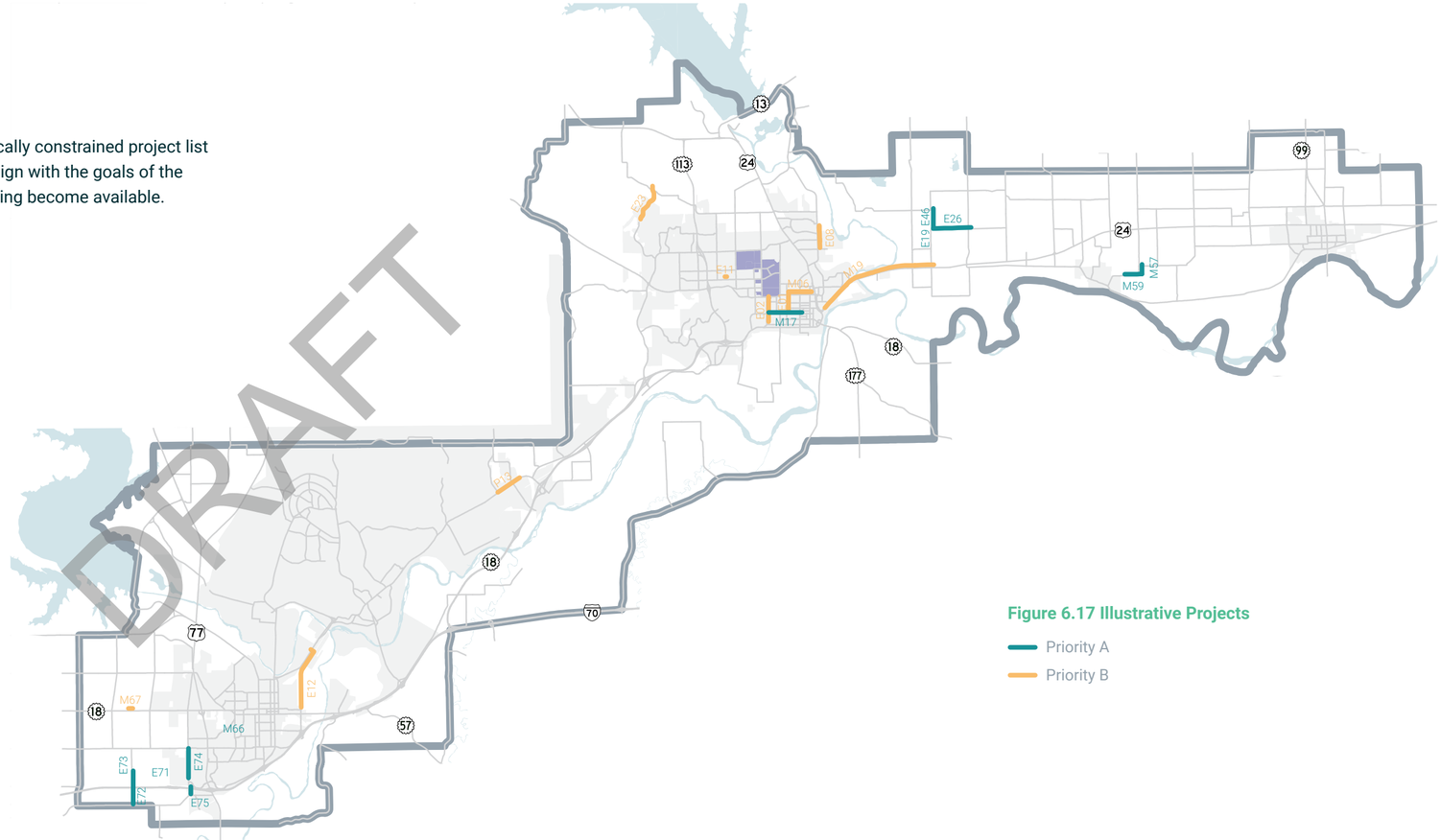


Figure 6.17 Illustrative Projects

Priority A

Priority B

ILLUSTRATIVE PROJECTS & PERFORMANCE MEASURES

The following table outlines the illustrative projects with indicating any performance measure (PM) target the project helps to meet.

Figure 6.18: Illustrative Projects with Performance Measures

C2040 ID	Project	Safety						Preservation								Mobility					Prosperity	
		PM1	PM2	PM3	PM4	PM5	PM6	PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM1	PM2	PM3	PM4	PM6	PM4	PM5
E19	Excel Rd 3-lane: Harvest to Cara's Way																					
E26	Harvest Rd paved 3-Lane: Lake Elbo to Excel																					
E46	Excel Rd 3-lane extension: Harvest to Junietta																					
E71	Strauss Blvd Extension																					
E72	Taylor Road Expansion: Strauss to Old Highway 40																					
E73	Taylor Road Expansion: Strauss to Liberty Hall				✓	✓																
E74	Spring Valley Road 3-Lane: Ash to Strauss																					
E75	Spring Valley Road 3-Lane: Lacy to Old Highway 40																					
M17	Poyntz Ave Lane Reduction: Juliette to 17th					✓	✓													✓	✓	✓
M57	Vineyard Rd Paving: Chapman to Burr Oak																					
M59	Chapman Rd Paving: Vineyard to St. George																					
M66	McFarland & Eisenhower Roundabout			✓	✓															✓	✓	

Safety
- PM 1: # of vehicular fatalities
- PM 2: Rate of vehicular fatalities per 100 million vehicle
- PM 3: # of serious injuries
- PM 4: Rate of serious injuries per 100 million vehicle
- PM 5: Non-Motorized Fatalities & Serious Injuries
- PM 6: % of serious injuries & fatality crashes involving bicycles & pedestrians

Preservation
- PM 1: % of Interstate pavement in good condition
- PM 2: % of Interstate pavement in poor condition
- PM 3: % of non-Interstate pavement in good condition
- PM 4: % of non-Interstate pavement in poor condition
- PM 5: % of NHS bridges in good condition
- PM 6: % of NHS bridges in poor condition
- PM 7: % of non-NHS bridges in good condition
- PM 8: % of non-NHS bridges in poor condition

Mobility
- PM 1: % of person-miles traveled on Interstate with reliable travel time
- PM 2: % of person-miles traveled on the NHS with a reliable travel time
- PM 3: Truck Travel Time Reliability (TTTR) Index on our Interstate system
- PM 4: % of Intelligent Transportation System traffic signals on key corridors
- PM 6: % of planned bicycle infrastructure projects implemented

Prosperity
- PM 4: % of bicycle infrastructure located in EJ areas
- PM 5: Maintain or reduce the number of roadway feet per person

continued on following page

Figure 6.18 Continued

C2040 ID	Project	Safety						Preservation								Mobility					Prosperity	
		PM1	PM2	PM3	PM4	PM5	PM6	PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8	PM1	PM2	PM3	PM4	PM6	PM4	PM5
E01	11th St 3-lane: Poyntz to Bluemont			✓	✓	✓	✓													✓	✓	
E02	17th St 3-lane: Laramie to Yuma																					
E04	Bluemont Ave 5-lane: 4th to 11th			✓	✓																	
E08	Casement Rd 3-lane: Brookmont to Allen/Knox			✓	✓															✓		
E11	Claflin & Hylton Heights Intersection Turning Lanes																					
E12	East Street Extension: Chestnut to Grant																			✓	✓	
E23	Grand Mere Parkway Extension: MacLeod to Marlatt																					
M06	Bluemont Ave Right in, right out: 4th to 10th			✓	✓																	✓
M19	US-24 4-lane Urbanization: Mall to McCall	✓	✓	✓	✓	✓	✓			✓							✓		✓	✓	✓	
M67	K-18 & Munson Rd Roundabout																					
P13	Riley Ave: Ogden City limits to Ft. Riley																					

Note: Transit related performance measures were removed from this table.

Safety

- PM 1: # of vehicular fatalities
- PM 2: Rate of vehicular fatalities per 100 million vehicle
- PM 3: # of serious injuries
- PM 4: Rate of serious injuries per 100 million vehicle
- PM 5: Non-Motorized Fatalities & Serious Injuries
- PM 6: % of serious injuries & fatality crashes involving bicycles & pedestrians

Preservation

- PM 1: % of Interstate pavement in good condition
- PM 2: % of Interstate pavement in poor condition
- PM 3: % of non-Interstate pavement in good condition
- PM 4: % of non-Interstate pavement in poor condition
- PM 5: % of NHS bridges in good condition
- PM 6: % of NHS bridges in poor condition
- PM 7: % of non-NHS bridges in good condition
- PM 8: % of non-NHS bridges in poor condition

Mobility

- PM 1: % of person-miles traveled on Interstate with reliable travel time
- PM 2: % of person-miles traveled on the NHS with a reliable travel time
- PM 3: Truck Travel Time Reliability (TTTR) Index on our Interstate system
- PM 4: % of Intelligent Transportation System traffic signals on key corridors
- PM 6: % of planned bicycle infrastructure projects implemented

Prosperity

- PM 4: % of bicycle infrastructure located in EJ areas
- PM 5: Maintain or reduce the number of roadway feet per person

TRANSIT PROJECTS & PERFORMANCE MEASURES

The following table outlines the transit investments identified as priorities along with indicating any performance measure (PM) target the project helps to meet.

Figure 6.19: Transit Projects with Performance Measures

C2040 ID	Project	Safety		Preservation		Mobility	Prosperity		
		PM7	PM8	PM9	PM10	PM5	PM1	PM2	PM3
T01	K-18 Connector Expansion to Junction City						✓		
T02	Improved Headways on Manhattan Fixed Routes					✓			
T03	Blue Township Route Expansion								
T04	Implement Saturday Service in Junction City								
T05	Geary County Maintenance Facility								
T06	Park and Ride Facility in Manhattan/K-State						✓		
T07	Replace Existing Fleet with Electric Buses			✓	✓				✓
T08	Zero Emissions Maintenance Charging Facility								
T09	Regional Route Along US-24 between Manhattan and Topeka								

Safety
- PM 7: % of public transit buses with cameras
- PM 8: # of public transit related fatalities & serious injuries

Preservation
- PM 9: % revenue vehicles exceeding their useful life benchmark
- PM 10: % of transit fleet with more than 200,000 odometer miles

Mobility
- PM 5: % of transit routes on-time performance

Prosperity
- PM 1: % of transit stops compliant with Americans with Disabilities Act
- PM 2: % of households within 1/4 mile of a transit stop in EJ Areas
- PM 3: % of bus fleet equipped with bike racks

Figure 6.20: Transit Priority Projects

C2040 #	Transit Priority Projects	Year	Cost
T01	K-18 Connector Expansion to Junction City	2024	$0.4
T02	Improved Headways on Manhattan Fixed Routes	2026	$0.5
T03	Blue Township Route Expansion	2027	$0.5
T04	Implement Saturday Service in Junction City	2024	$0.5
T05	Geary County Maintenance Facility	2026	$3.0
T06	Park and Ride facility in Manhattan/K-State	2027	$2.5
T07	Replace Existing Fleet with Electric Buses	2030	$15.0
T08	Zero Emissions Maintenance Charging Facility	2030	$5.0
T09	Regional Route Along US-24 between Manhattan and Topeka	2028	$1.5

The projects in the above table have been identified as transit priorities over the next ten years. Although funding has not yet

EJ ANALYSIS OF SELECTED PROJECTS

Of the projects included in the fiscally-constrained and illustrative project lists, a majority are within Environmental Justice (EJ) areas. Figure 6.22 identifies the projects included in the fiscally-constrained and illustrative project lists and their proximity to EJ-identified areas.

Based on the project type (see Figure 6.21) and the apportion of funding invested in EJ areas, there does not appear to be any disproportionate impacts when comparing the projects located within EJ versus non-EJ areas.

Figure 6.21: Project Type by EJ Area

	Non-EJ Areas	EJ Areas
Preservation	5 projects (50%)	7 projects (37%)
Modernization	2 projects (20%)	5 projects (26%)
Expansion	3 projects (30%)	7 projects (37%)

Non-EJ Areas
$56.9 million
in project costs

EJ Areas
$169.3 million
in project costs

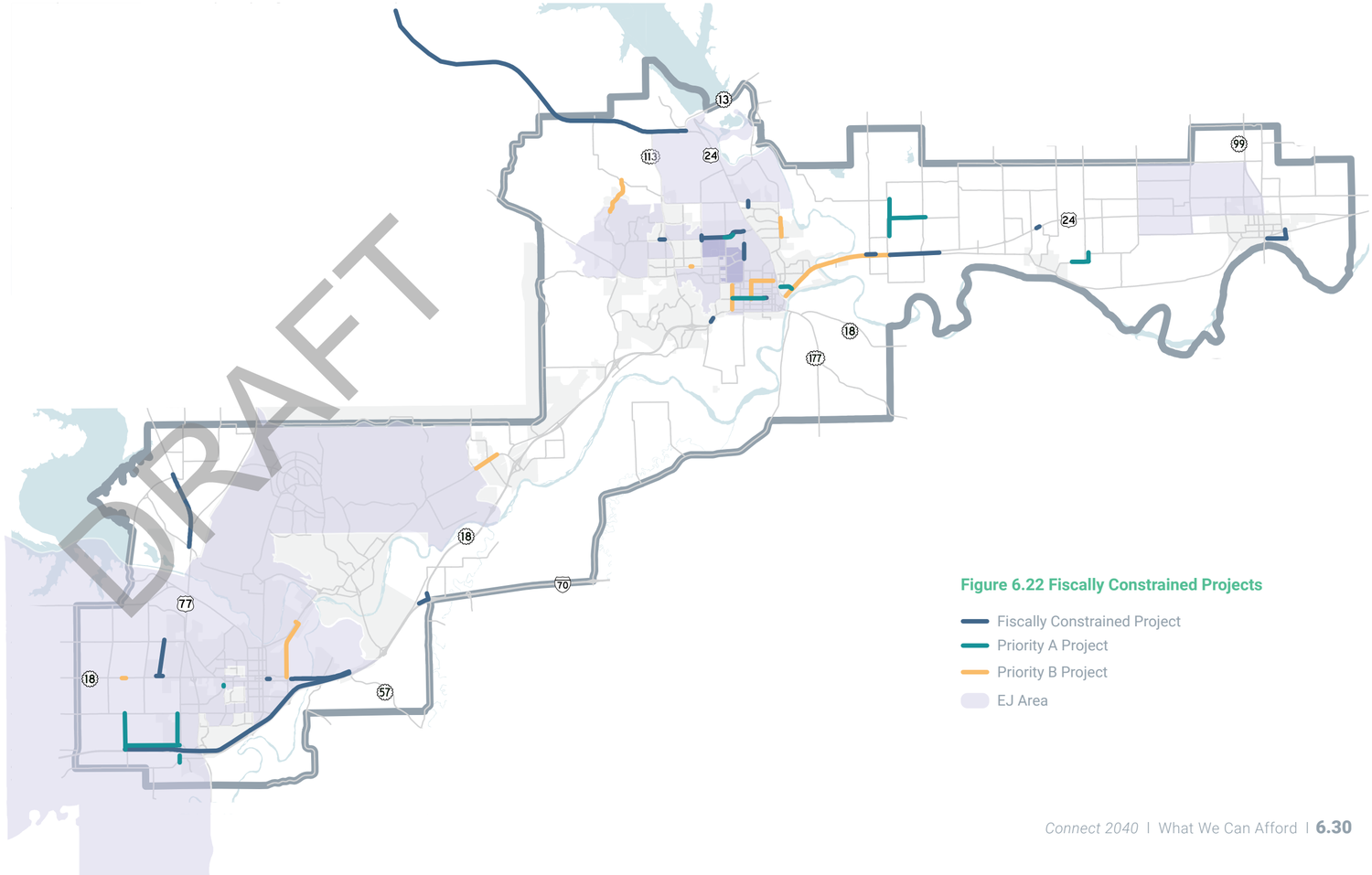


Figure 6.22 Fiscally Constrained Projects

- Fiscally Constrained Project
- Priority A Project
- Priority B Project
- EJ Area