IOWA DOT
GETTING YOU THERE

IOWA PUBLIC TRANSIT

2050 LONG RANGE PLAN

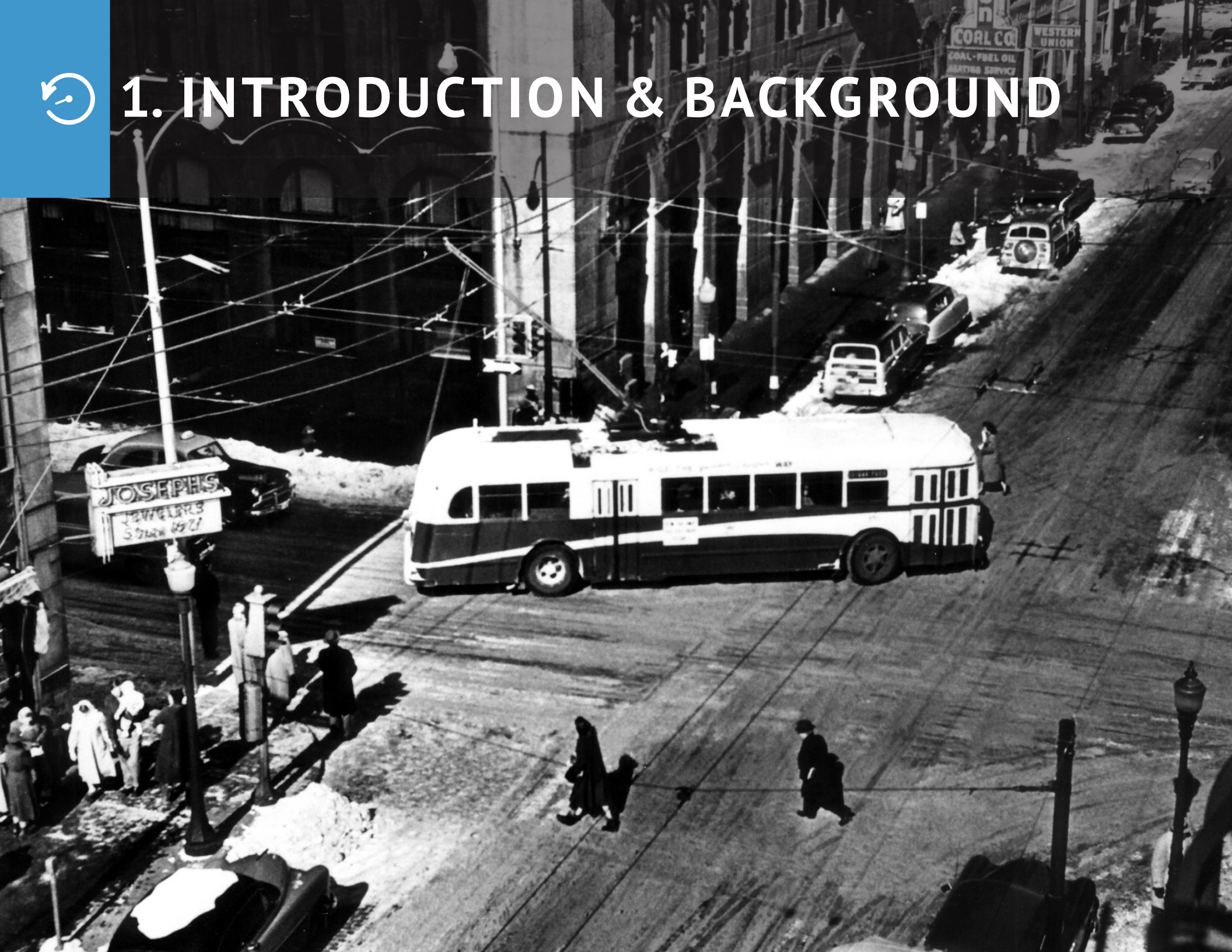
Image on the cover page.

"THE JULE," DUBUQUE

July 14, 2020

IOWA DOT
GETTING YOU THERE

1. INTRODUCTION & BACKGROUND



1.1. What's the Plan?

Iowans use our robust public transit system to get them where they need to go. Whether shuttling commuters to and from work to reduce congestion, getting people to their medical appointments on time, or transporting folks to shopping or entertainment venues, public transit strives to easily connect everyone in the most practical, efficient, and safe means possible. To make our system even stronger, the Iowa Department of Transportation (DOT), working with our transit agency partners and interested stakeholders, is developing this Public Transit Long Range Plan (Plan) to efficiently utilize limited resources to support an effective statewide public transit system.

Why are we updating the Plan?

Planning is collaborative process, and plans are in a continuous cycle of being developed, implemented, assessed, and revised. While the process itself is cyclical, one of its major milestones and culminating products is the publication of a long-range plan. This Plan is a product that documents the understanding of trends leading up to the current situation, identifies needs and gaps that exist now or may in the future, and presents courses of action to address those needs through efficient allocation of resources.

Long-range transportation plans, such as the Iowa Public Transit Long Range Plan and its umbrella multi-modal plan, Iowa in Motion 2045[1], are generally updated every five years in order to stay current with the contemporary operating environment, emerging trends, legislation, funding, and technological developments. As situations develop and factors change, the Plan also needs to adapt. Results from previous planning efforts and newly collected data help us evaluate, anticipate, and respond to changing needs. In this Plan, we are projecting these changing needs out to the planning horizon years of 2030 and 2050. This enables us to set long-term goals far into the future, while also working to implement short-term objectives.

1. Iowa in Motion 2045: https://iowadot.gov/iowainmotion

The analysis and forecasts in the early portion of the Plan represent a systematic process of looking at variables that influence public transit demand in Iowa. During this process, we can identify gaps or redundancies in service and work to adjust to changing needs. These strategies are more broadly characterized as "rightsizing" to better align the statewide public transit system. Some of these key concepts were utilized as part of the vision statement to describe the intended outcome of this Plan's implementation: "A public transit system that supports the physical, social, and economic wellbeing of Iowans, provides enhanced mobility and travel choices, and accommodates the unique needs of dependent and choice riders through rightsized solutions."

Where does this process start?

The last comprehensive statewide public transit plan was the Iowa in Motion Transit Plan, adopted in 1999. Since that plan, the Iowa DOT has conducted more specific planning efforts including the Iowa Statewide Passenger Transportation Funding Study[2] in 2009, the Iowa Park and Ride System Plan[3] in 2014, and the Iowa DOT Transit Asset Management Group Plan[4] in 2018.

While these plans and studies each have their specific focus, this Plan looks at the public transit system more comprehensively. This will enable Iowa's public transit partners to take a refreshed look at public transit from today's perspective. This Plan will seek to coordinate planning, programming, and technical assistance statewide to support public transit operations at the local level. The goal with the newly updated Plan is to provide specific strategies and improvements that can be implemented and revisited over time.

1 Iowa in Motion 2045: https://iowadot.gov/iowainmotion

2 Iowa Statewide Passenger Transportation Funding Study: https://iowadot.gov/transit/regulations/Exec_Summary_Final_12-15-09.pdf

3 Iowa Park and Ride System Plan: https://iowadot.gov/iowainmotion/files/StatewideParkandRideSystemPlanFINAL.pdf

4 Iowa DOT Transit Asset Management Group Plan: https://iowadot.gov/transit/publications/TransitAssetManagementGroupPlan.pdf

What is in the Plan?

Plan content includes the following.

Trends: An analysis of demographic, economic, and ridership data and what these trends mean for Iowa's public transit system.

Needs: Deficiencies, gaps, and shortfalls identified through condition assessments and stakeholder input related to transit service, facilities, vehicles, personnel, and technology.

Vision: Broad, overarching areas within which strategies have been defined to implement the Plan, including partnering, service, facility/fleet/personnel, and funding.

Strategies: Actions and initiatives that will be utilized by the department and our partners to implement the vision.

Costs and revenue: An analysis of anticipated capital and operating costs as well as anticipated revenue through the planning horizon.

Implementation: A discussion related to addressing any funding shortfalls, programming future investments, and continuous performance monitoring.

What is Public Transit?

What we do/ Our mission

The mission of the Iowa DOT's Public Transit Bureau is to advocate and deliver services that support and promote a safe and comprehensive public transit system in Iowa to enhance access to opportunities and quality of life.

The Iowa DOT administers federal and state public transit grants and provides technical assistance to Iowa's 19 urban public transit systems and 16 regional public transit systems. Nearly 25 million rides were provided by Iowa's public transit systems in fiscal year (FY) 2018. Every county in Iowa is served by a regional system to ensure Iowans have transportation to work, medical facilities, meal sites, and leisure activities.

Urban systems provide scheduled route services in larger Iowa communities. Most regional systems offer demand-responsive service and provide contract service. Public transit systems work with human service agencies to provide coordinated transportation in their area. All public transit systems receive state and federal funding and are open to the general public.

Iowa's public transit systems rely on state and federal transit assistance to help make rides available and affordable for Iowans. State transit assistance (STA) is funded by fees for new registration collected on sales of motor vehicles and accessory equipment. Federal assistance programs also provide funding for operational expenses, facilities, and buses.

Local support such as tax revenue, fares, and donations provide a larger share of agencies' operating budgets. Cities can assess a property tax levy to directly provide public transit services or to purchase services from the regional system. Federal funding is also available for intercity bus operations to help Iowans connect to the national transportation network.

Public Transit Challenges Iowa Faces

Before we can begin planning for the future needs of the public transit system, we much first understand the challenges that public transit currently faces.

Declining ridership

Trends both within Iowa as well as across the U.S. show public transit ridership decreasing for multiple years in a row. There is a combination of factors that may be contributing toward these decreases.

Rural areas. These areas are declining in population compared to urban areas, which impacts public transit service in areas that have few, if any, alternative means of transportation. Many rural areas also exhibit an aging population with greater medical needs. Non-emergency medical transportation is still a need for rural residents despite the sometimes great distances from area hospitals or medical providers.

Low population density. Areas that have high rates of personally owned vehicles and low population density have historically seen low transit ridership due to the difficulty of maintaining regular routes over dispersed locations. Irregular transit service and limited transportation options make it more difficult for employees to get to work and complicate employer efforts to reach potential pools of workers that live further away.

Availability of other forms of transportation. Other transportation and micro-mobility options are operating alongside existing public transit services. In some cases, this results in riders who may otherwise utilize public transit choosing to travel via another mode. Additionally, Transportation Network Companies (TNCs), such as Uber and Lyft, utilize a business model of on-demand service that operates within regions that have typically utilized fixed routes, resulting in further ridership impacts while continuing to add to high traffic volumes within dense urban areas.

Overextended transit system

Trying to do more with less has diminishing returns over time. As transit agencies continue to stretch their assets, the effectiveness of those resources decreases and leads to increasing break downs and extensive maintenance.

Vehicles beyond useful life. As the bus fleet gets older, it becomes more expensive to maintain. Replacing aging rolling stock will keep vehicles performing while minimizing costly repairs and servicing. Without sufficient revenue, an effective asset management plan can only carry an organization so far before the assets themselves become unsustainable to maintain.

Shortage of qualified drivers. Another aspect of the system that is overextended is its staff and bus drivers. Not having enough drivers prevents a transit agency from expanding its routes and hours of service. One of the contributing reasons for this includes competition with other sectors of employment, like the trucking industry, that is able and willing to pay higher wages than public transit agencies. The difficulty and expense of obtaining a Commercial Driver's License (CDL) only adds to the challenge. In response, some organizations utilize their administrative staff and maintenance personnel to serve as drivers when there are shortages. This results in either more deferred maintenance of vehicles or reducing service in other areas to make up for critical staff vacancies.

Rapidly changing technology. Emerging technologies, ranging from ongoing research into autonomous vehicles to ride hailing apps on a personal device and more, are having an impact on how the public interfaces with transportation. The agility of an organization to adapt to emerging technological change can be made especially challenging when trying to anticipate human behavior and tendencies which could fluctuate rapidly and with little warning.

Stigma of public transit

In some cases, it is not the lack of availability or infrequency of service that influences the decline of ridership; rather it is commonly held perceptions that prevent potential riders from choosing to even try public transit in the first place.

Transportation option of last resort. One of the advantages of public transit is that, generally, it is a transportation mode that is more cost-effective compared to owning and operating a personal vehicle. Not only that, but public transit does not require a driver's license or permit in order to travel. As a result, some low-income riders who utilize public transit do so because owning and operating a car is too cost prohibitive. Some riders may lose or never acquire a license to drive due to medical reasons or legal action. This shapes the perception that public transit is a mode of transportation that is the last option to be utilized, used primarily by people who are not able to travel by some other mode.

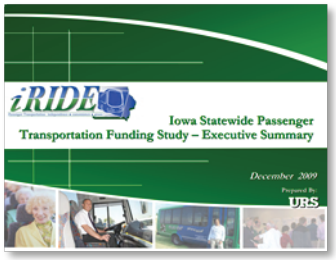
Undesirable experiences. When one imagines public transit, some of the more negative imagery that may come to mind is an environment that is crowded, chaotic, and uncomfortably hot. Given the close proximity of other public transit riders, there may also be a sense of insecurity or loss of freedom, as opposed to driving a personal vehicle in which a person exerts his/her independence with a greater sense of security.

1.2. Previous Iowa Passenger and Transit Planning Efforts

Throughout the last 20 years, the Iowa DOT has built upon the last comprehensive system plan by focusing on specific facets of public transit. The Iowa Public Transit Long Range Plan represents the most recent iteration of this continuous process.

Iowa in Motion Transit System Plan (1999)

The 1999 Iowa in Motion Transit System Plan was completed two years after the 1997 Iowa in Motion long-range plan was approved by the Iowa Transportation Commission. The 1999 Transit System Plan outlined a comprehensive strategy for implementation of the Commission's transportation policy to "Encourage and assist in the development, preservation, maintenance, improvement, and efficient use of all transportation systems – transit systems and services." The Public Transit Bureau of the Iowa DOT is responsible for administering that policy through coordination with other department bureaus, programming of federal and state funds, and providing technical support.



Iowa Statewide Passenger Transportation Funding Study (2009)

In 2009, legislation directed the Iowa DOT, in cooperation with the Office of Energy Independence and the Department of Natural Resources, to review the current revenues available for support of public transit and the sufficiency of those revenues to meet future needs. The review included the identification of public transit improvements needed to meet state energy independence goals and an assessment of how the state's support of public transit is positioned to meet the mobility needs of Iowa's growing senior population. The Iowa Statewide Passenger Transportation Funding Study was produced in response to this need and submitted to the governor and the general assembly for consideration.

Iowa Park and Ride System Plan (2014)

The Iowa Park and Ride System Plan was designed by the Iowa DOT to plan, evaluate, and develop a formal statewide system of park and ride facilities. These facilities were established to serve the purpose of providing a place to park a vehicle when carpooling, vanpooling, or taking public transit. The need for a more formalized park and ride system was initially identified through input from residents who contacted the Iowa DOT seeking information related to the location of existing park and ride facilities. The need for a formal park and ride system plan was the outcome of periodic planning-level reviews of the existing system by the Iowa DOT's Systems Planning and Public Transit Bureaus.

Iowa in Motion 2045 State Transportation Plan (2017)

The Iowa in Motion 2045 Plan, adopted by the Iowa Transportation Commission in 2017, is the most recent long-range plan developed by the Iowa DOT. This plan is updated every five years in order to stay current with trends, forecasts, and factors that influence decision-making, such as system needs, technological changes, and state priorities. The Plan provides direction for each transportation mode, including public transit, and supports a continued emphasis on stewardship.

Iowa Transit Asset Management Group Plan (2018)

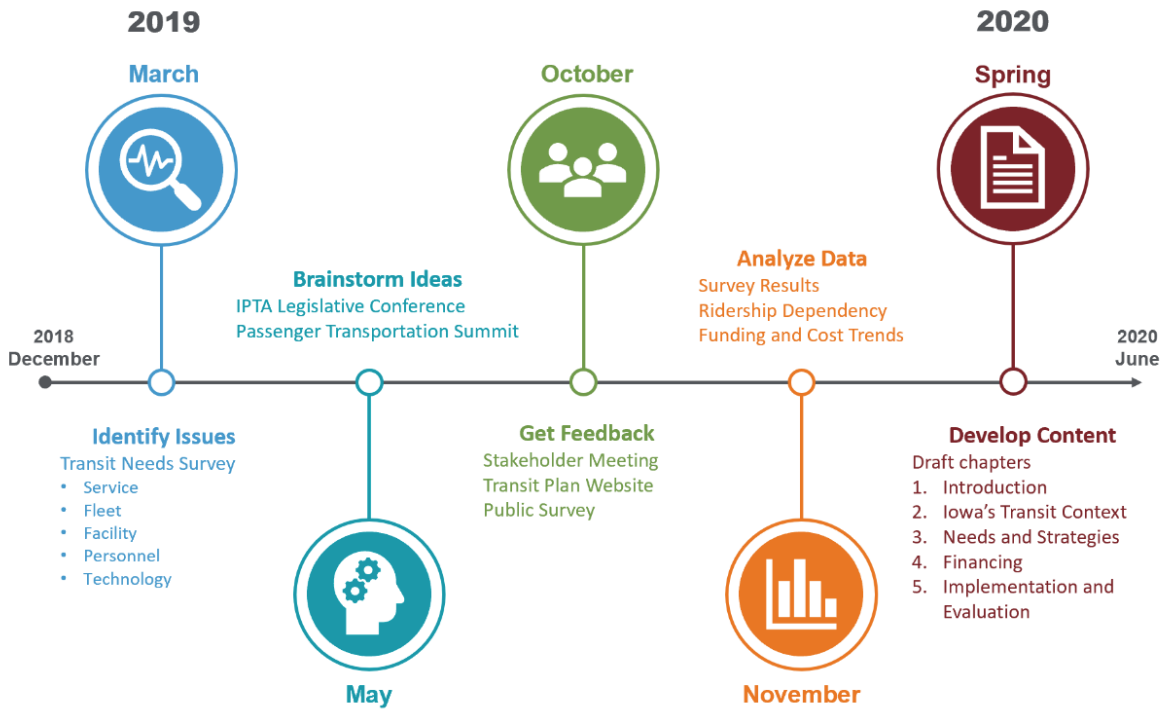
The Iowa DOT Public Transit Bureau, through the Transit Asset Management Group Plan, provides funding priorities and technical assistance, as well as many other services and program oversight functions, to aid in assessment of the current condition of capital assets for group participants. This is done by determining the condition and performance of assets, identifying unacceptable risks, and providing guidance and technical assistance to stakeholders, allowing them to balance and prioritize reasonably anticipated funds toward improving asset condition and achieving a sufficient level of performance.

1.3. How this Plan was developed

This Plan was developed over an 18-month time period, as shown in the graphic on page 11, and involved many steps to gather input and data, refine feedback and analyses, and develop Plan content. Development of a long-range plan does not occur in a vacuum. Nor does it occur without gathering sufficient information regarding the needs of the public transit system and validating that proposed solutions align with available resources and meet the expectations of public transit stakeholders. In order to facilitate a comprehensive planning process, multiple stakeholder groups, participants, and sources of feedback were utilized to help generate the Plan.

Interagency and external stakeholder consultation

While Iowa DOT staff can shed light on related issues as they pertain to department operations, the only way to truly include a diverse set of viewpoints is to invite participation from representatives across the state, including transit agencies, non-profit organizations, and other state government offices.



Transit agencies

The Iowa DOT distributes state and federal public transit assistance to public transit systems that have been duly designated as a single administrative agency (public transit system). There are 35 such public transit systems in Iowa which are classified by size with populations 50,000 and greater designated as large urban systems, those in urban areas of less than 50,000 population designated as small urban systems, and rural areas outside the urban systems designated as regional systems.

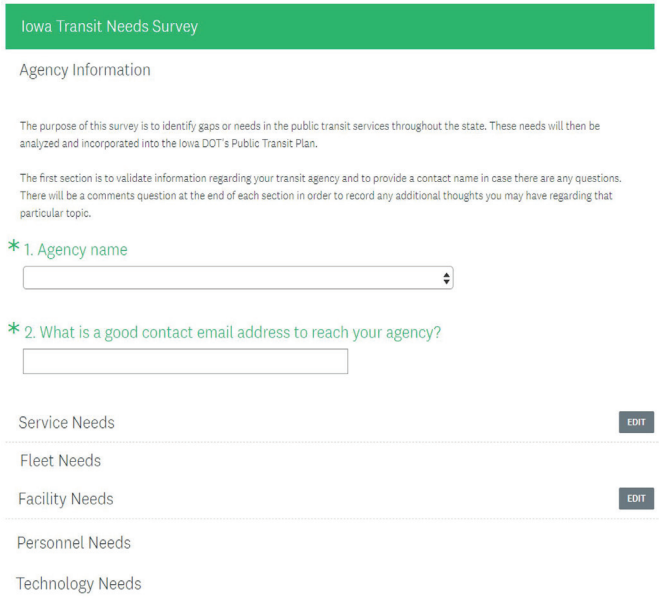
Given that they directly interface with public transit riders and manage their own operations, transit agencies were among the first organizations to contribute input for the Plan. The earliest effort was through the Iowa Transit Needs Survey which sought to identify major issues, needs, and gaps in Iowa's public transit system.

Distributed through Survey Monkey's web interface, the survey was opened February 1, 2019, and closed March 29, 2019, in order to allow the agencies ample time to respond. Many of the questions in the survey required forecasting a variety of needs to the short-term timeframe of 2030 and long-term timeframe of 2050. All 35 public transit agencies provided responses.

The survey itself was divided into six sections, with the first section focused on questions that affected the agency in general terms (i.e., marketing and outreach, strategic planning, etc.). Sections two through six each highlighted the "needs categories" of transit service, vehicles, facilities, personnel, and technology.

The survey helped identify gaps in the transit system, which enabled the planning process to move forward with generating strategies that could address those needs through the Plan's implementation.

In addition to the Transit Needs Survey, the transit agencies were also involved through select representation from the large urban, small urban, and regional public transit systems in the External Stakeholder Group. This group provided feedback and direction on the overall Plan development. The transit agencies as a whole were also informed of Plan progress through regular meetings with the Public Transit Advisory Council (PTAC), which is made up of public transit agency representatives and meets quarterly, presentations at Iowa Public Transit Association (IPTA) conferences, and through the ridership dependency analysis (described later in this Plan).


Iowa Transit Needs Survey

Agency Information

The purpose of this survey is to identify gaps or needs in the public transit services throughout the state. These needs will then be analyzed and incorporated into the Iowa DOT's Public Transit Plan.

The first section is to validate information regarding your transit agency and to provide a contact name in case there are any questions. There will be a comments question at the end of each section in order to record any additional thoughts you may have regarding that particular topic.

* 1. Agency name

* 2. What is a good contact email address to reach your agency?

Service Needs EDIT

Fleet Needs

Facility Needs EDIT

Personnel Needs

Technology Needs

External Stakeholder Group

Given the broad range of public transit ridership purposes, demographics, and challenges, the planning process needed to incorporate as many perspectives as possible in order to ensure the Plan adequately addresses all needs. As such, it was decided that an External Stakeholder Group would be formed with representation from a diverse range of backgrounds, fields, and viewpoints. Membership included:

- Cedar Rapids Transit
- Marshalltown Municipal Transit
- Southwest Iowa Transit Agency (SWITA)
- AARP
- American Cancer Society (ACS)
- U.S. Department of Veterans Affairs (VA)
- Iowa Department of Public Health (IDPH)
- Iowa State University (ISU) – Extension and Outreach
- Iowa's University Center for Excellence in Developmental Disabilities (UCEDD)

The External Stakeholder Group was utilized to review products, themes, and strategies prior to them being broadly disseminated. Transit agency representation was also important to this group's productivity, with SWITA representing regional public transit systems, Marshalltown Municipal Transit representing small urban systems, and Cedar Rapids Transit representing large urban systems. Having broad representation also led to committee members communicating information regarding this Plan to their respective stakeholders, allowing for greater visibility of the planning effort and inviting additional feedback. This helped to reach specific demographics, such as older riders and riders experiencing disabilities represented by UCEDD from the University of Iowa and the AARP, ethnic and minority groups represented by ISU's Extension and Outreach, military veteran medical transportation needs represented by the VA, cancer patient volunteer transportation represented by ACS, and non-emergency medical transportation needs represented by IDPH.

Metropolitan Planning Organizations (MPOs) and Regional Planning Affiliations (RPAs)

Iowa has nine Metropolitan Planning Organizations (MPOs) and 18 Regional Planning Affiliations (RPAs). MPOs conduct transportation planning activities in urbanized areas with more than 50,000 population. These include the metropolitan areas of Ames, Cedar Rapids, Council Bluffs, Davenport, Des Moines, Dubuque, Iowa City, Sioux City, and Waterloo. RPAs conduct transportation planning for the non-metropolitan areas of the state and cover all 99 counties.

The planning activities conducted by these agencies are funded through Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) sources, as well as local financial support. MPOs and RPAs complete several transportation planning activities on regular cycles, including updating their Passenger Transportation Plans (PTPs) at least every five years. The PTP process promotes coordinated passenger transportation planning programs and provides needs-based justification for passenger transportation projects. The goals are:

- Improve transportation services to Iowans.
- Increase passenger transportation coordination.
- Create awareness of unmet needs.
- Develop new working partnerships.
- Assist decision-makers, advocates, and consumers in understanding the range of transportation options available.
- Develop justification for future passenger transportation investments.
- Save dollars and eliminate overlapping of services.

The PTP process is an Iowa creation, providing needs-based justification for passenger transportation projects as well as incorporating federal requirements for coordinated planning. To support this need for coordination, MPOs and RPAs utilize Transportation Advisory Groups (TAGs) that are locally established and include representation from public transit systems, human service agencies, private transportation providers, non-profit organizations, and other entities. TAGs meet at least two times annually to discuss transportation related matters within the context of their areas. Additionally, the TAG is involved in the drafting of the PTP to ensure that a broad array of viewpoints is considered.

An important piece of the development of strategies, described in further detail later in this Plan, was a review of the MPO and RPA PTPs in order to determine gaps and overlaps in needs. This was particularly true when identifying the need for interagency and interregional transportation options.

Iowa Public Transit Association (IPTA)

In its words, “The mission of the Iowa Public Transit Association is to unify, advocate, and advance the interests of Iowa transit systems to influence and gain support from government agencies, legislators, and other entities.” IPTA serves as the trade organization of Iowa’s 35 public transit agencies, advocating for public transit interests and hosting multiple conferences each year to highlight public transit trends and offer discussion of public transit challenges. As it was developed, this Plan was presented to the IPTA membership at their regularly scheduled meetings.

Iowa Transportation Coordination Council (ITCC)

The Iowa Transportation Coordination Council (ITCC) was created in 1992 with original members including the Iowa DOT, the Iowa Department of Human Services, and the Iowa Department of Elder Affairs. In 2001, the ITCC membership was expanded. A United We Ride Action Plan for Iowa was created by ITCC in 2005.

Chaired by the Iowa DOT's Public Transit Bureau, the ITCC meets every other month to discuss such issues as mobility management, accessibility of transportation, STA Special Project Proposal applications pertaining to coordination, and the encouragement of state and local agencies' involvement in the passenger transportation planning process. Having grown considerably from the three original member state departments, the ITCC now includes membership from state departments, statewide organizations, and federal groups. This Plan was presented to the ITCC representatives at their regularly scheduled meetings throughout its development.

Public Transit Advisory Council (PTAC)

The Public Transit Advisory Council (PTAC) members represent Iowa public transit agencies to provide guidance and recommendations to the Iowa DOT Public Transit Bureau regarding public transit funding and policy issues. Council membership includes public transit professionals from regional, small urban, and large urban (both under and over 200,000 population) public transit systems. PTAC members are appointed by the Iowa DOT's Public Transit Bureau Director and serve a term of three years and a total of no more than four terms. This Plan was presented to the PTAC representatives at their regularly scheduled meetings throughout its development.

Internal stakeholders

Representatives from several bureaus within the Iowa DOT were invited to participate in the development of the Plan. The participants were invited due to their relationship to public transit and passenger transportation, such as the Aviation and Rail Transportation Bureaus. Other bureaus were involved due to their experience with special projects and corridor-level studies that consider aspects of public transit.

Staff representation included members from:

- Public Transit
- Systems Planning
- Aviation
- Rail Transportation
- Location & Environment
- Driver & Identification Services
- District Planners

The involvement of internal staff is important as it helps the planning effort integrate with other parallel efforts across all modes of transportation. This level of cooperation and multi-tiered planning allows the department to take a more holistic approach to understanding transportation problems while optimizing our limited resources in order to address numerous related needs. This supports the Iowa DOT's overall mission of supporting safe, efficient, and accessible mobility options for everyone who travels in Iowa.

Public input

Published in 2017, the State Public Participation Process for Transportation Planning[5], provides guidance for providing Iowans the opportunity to help identify transportation issues, needs, and priorities; plan how to meet those needs and priorities; and select transportation projects that turn the plans into reality. Examples of how the Public Participation Process was utilized in this Plan include the following.

Passenger Transportation Summit

The 2019 Iowa Passenger Transportation Summit was held at the Des Moines Area Community College (DMACC) Ankeny campus on May 23, 2019, and featured speakers from the Des Moines Area Regional Transit Authority (DART), American Cancer Society (ACS), Jefferson Lines, and North Dakota State University. Attendance was not restricted, allowing the members of the general public to attend and participate alongside federal, state, and local government officials, public transit agency staff, and human service organizations.

The 2019 summit was also one of the first opportunities to share the results of the Transit Needs Survey conducted by the Iowa DOT with feedback from all 35 public transit agencies. The survey results covered need areas that included transit service, vehicles, facilities, personnel, and technology. After sharing the results of these needs, a public participation "brainstorming" exercise was conducted by asking attendees to write ideas, solutions, strategies, or action items on sticky notes. Several large sheets of paper with each of the need areas were hung on the wall, allowing attendees to place their sticky notes under any of the topics.

5 State Public Participation Process for Transportation Planning: https://iowadot.gov/program_management/StatePublicParticipationProcess.pdf

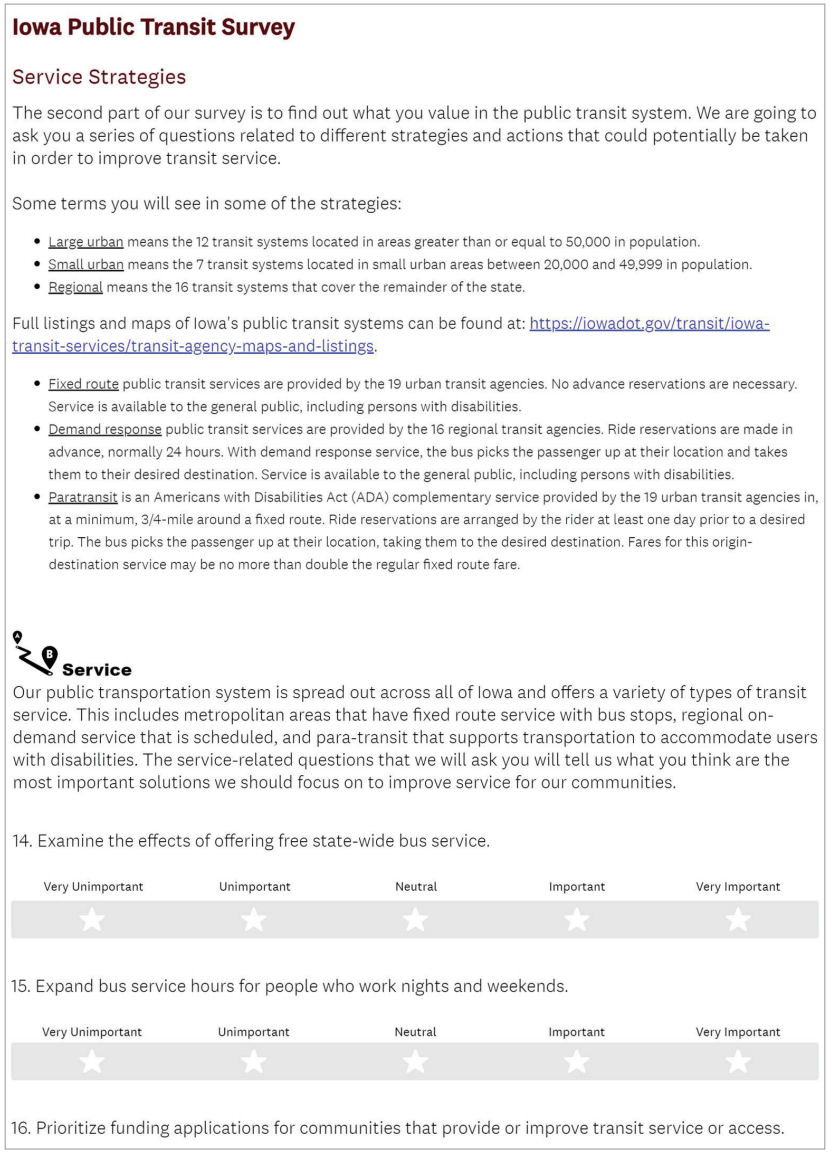
During the summit, the results of the exercise were aggregated in a spreadsheet then presented to the audience at the end of the conference. The results included nearly 60 individual pieces of feedback and highlighted trends in the types of strategies being proposed by the participants. After the conclusion of the summit, feedback was discussed and refined, helping to inform the initial creation of the strategies that can be found in this Plan. More information on the strategies can be found in "Chapter 3 – Needs and Strategies".

Public surveys

An online public survey was released for public input on October 18, 2019 and concluded November 1, 2019. While the survey was considered officially closed after that date, the survey itself was kept "live" for three additional weeks in order to allow opened surveys to be submitted. Mailed survey responses were also included in the results.

The intent of the survey was to provide the public an opportunity to weigh-in on the refined strategies that utilized input from the Passenger Transportation Summit and external stakeholders. Responses were determined by a "Five-star" rating scale, with one star indicating the strategy was "Very Unimportant" and five stars indicating the strategy was "Very Important".

In addition to providing input on the strategies, survey respondents also provided useful demographic information, which helped



Iowa Public Transit Survey

Service Strategies

The second part of our survey is to find out what you value in the public transit system. We are going to ask you a series of questions related to different strategies and actions that could potentially be taken in order to improve transit service.

Some terms you will see in some of the strategies:

- Large urban means the 12 transit systems located in areas greater than or equal to 50,000 in population.
- Small urban means the 7 transit systems located in small urban areas between 20,000 and 49,999 in population.
- Regional means the 16 transit systems that cover the remainder of the state.

Full listings and maps of Iowa's public transit systems can be found at: https://iowadot.gov/transit/iowa-transit-services/transit-agency-maps-and-listings.

- Fixed route public transit services are provided by the 19 urban transit agencies. No advance reservations are necessary. Service is available to the general public, including persons with disabilities.
- Demand response public transit services are provided by the 16 regional transit agencies. Ride reservations are made in advance, normally 24 hours. With demand response service, the bus picks the passenger up at their location and takes them to their desired destination. Service is available to the general public, including persons with disabilities.
- Paratransit is an Americans with Disabilities Act (ADA) complementary service provided by the 19 urban transit agencies in, at a minimum, 3/4-mile around a fixed route. Ride reservations are arranged by the rider at least one day prior to a desired trip. The bus picks the passenger up at their location, taking them to the desired destination. Fares for this origin-destination service may be no more than double the regular fixed route fare.

Service

Our public transportation system is spread out across all of Iowa and offers a variety of types of transit service. This includes metropolitan areas that have fixed route service with bus stops, regional on-demand service that is scheduled, and para-transit that supports transportation to accommodate users with disabilities. The service-related questions that we will ask you will tell us what you think are the most important solutions we should focus on to improve service for our communities.

14. Examine the effects of offering free state-wide bus service.

Very Unimportant	Unimportant	Neutral	Important	Very Important
★	★	★	★	★

15. Expand bus service hours for people who work nights and weekends.

Very Unimportant	Unimportant	Neutral	Important	Very Important
★	★	★	★	★

16. Prioritize funding applications for communities that provide or improve transit service or access.

determine which strategies resonated with various socio-demographic groups. Along with that, respondents were asked questions to gauge their usage of different transportation modes, such as how often public transit is utilized, or how far one is willing to commute to work. The result was a total of 583 responses from across Iowa that reflected a nearly equal distribution of public transit riders and non-riders, thus providing useful feedback that was not skewed toward any particular type of traveler.

Website and media

Iowa DOT's Strategic Communications Bureau assisted with the dissemination of information regarding the planning effort through creation of a dedicated website for the Plan, press releases, posts on the Iowa DOT's Transportation Matters blog, and posts via the department's social media accounts on Facebook and Twitter.

Public comment period

A 45-day public comment period was held for the Plan from May 18 to July 1, 2020. During this time, the draft Plan was posted online along with contact information and a comment form.

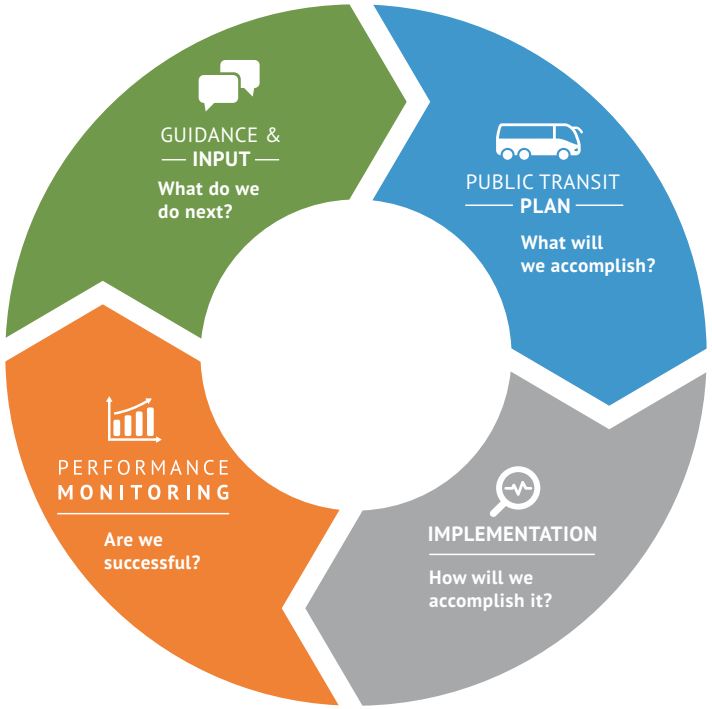
The Plan web page received 846 total web page views during this 45-day period, which consisted of 490 unique individual users. Approximate user locations were generalized through Google Analytics showing a distribution of users across metro and rural regions of the state. Additionally, a handful of individual comments were submitted through the online comment form. Included with these comments were two response letters from entities representing multiple organizations, reflecting a variety of different viewpoints. All responses and comments were compiled and considered while revising the final draft of the Plan.

Transit Plan Website: https://iowadot.gov/iowainmotion/Modal-Plans/Public-Transit-Plan

1.4. How this Plan is used

What will the outcome be?

This Plan will assist the department and local public transit agencies in making informed decisions for the state. The strategies within the Plan serve as the starting points for what will become the implementation phase of the planning process. As with other Iowa DOT long-range plans, the public transit plan will be revisited after a five-year implementation period as the results of the performance monitoring can be analyzed and new guidance, input, and feedback can be gathered. This leads to a renewed effort to update the Plan as the process continues its cycle.



Transit planning and programming cycle

Public Transit Plan: The Plan serves as a kind of blueprint of strategies to successfully address identified needs and rightsize the public transit system for the future. The analysis that contributes to the development of the Plan helps determine what actions need to be taken and a rough sense of when and in what order those actions need to occur. This ensures that the right resources are allocated to the right action at the right time.

Implementation: While the Plan outlines the priority of events and milestones that need to be reached, implementation determines "how" exactly those strategies and actions will be executed. In some ways, this is similar to an architect who develops the initial plan and passes it on to the builder, who then figures out exactly how to construct it.

Performance monitoring: Progress of Plan implementation is tracked and compared to the general state of the public transit system. This allows us to determine if changes in public transit performance and any of the factors noted in the initial needs assessment have been impacted by the strategies. The evaluation of the system's performance is continuous, with minor adjustments occurring as the implementation of the Plan continues. The correlation of public transit impacts with actions enables the department to measure the effectiveness of the Plan's strategies and action items. This quality control effort helps the department ensure that it is making the best investments at the most ideal times.

Guidance and input: Feedback is an important aspect of the planning process as it enables the department to execute the Plan as effectively as possible. Feedback and input lets the Iowa DOT know what elements of the Plan are working and what elements may need to be adjusted. Using this feedback, public transit professionals can be agile and responsive to a rapidly changing environment, especially as situations change and technological advancements challenge conventional ideas regarding how public transit can be utilized.

Transit funding and programming process

Public transit planning is a process to determine the current and future needs for public transportation and to choose the best match between those needs and the available resources. The needs can be multifaceted, involving unserved or underserved populations, diverse geographic areas, or lack of appropriate equipment. The resources can include finances, equipment, workforce, and infrastructure.

The planning for public transit must be integrated and coordinated with many other types of planning to be effective. By law, public transit planning is part of an intermodal transportation planning process covering primarily highways and transit, but also including other transportation modes. The best planning processes also integrate public transit planning with human services planning, as well as planning for other community services. This can be accomplished by involving existing committees, such as the ITCC, in the vetting of proposed special projects and awarding these projects with funding from STA special projects funds. ITCC is also uniquely positioned as an organization established through State of Iowa statutes that mandate the coordination of transportation services.

The Plan can also be used as a resource by transit agencies, many of whom do not conduct formal strategic planning efforts. The Plan can either serve as a template for developing plans specific to a transit agency's needs, or it could simply provide an initial set of goals, tools, and resources in order to make better informed investments within their organization. For example, the transit dependency analysis, described later in this Plan, was conducted statewide in order to focus attention on specific areas where there are populations that may be more dependent on public transit for their transportation needs. This assessment generates "hotspots" of potential public transit needs at the U.S. Census block group level. A tool such as this can be used as a catalyst for transit agencies to expand services to these areas or to utilize a variety of outreach or marketing efforts targeting particular transit-dependent populations.

Lastly, the Iowa Public Transit Long Range Plan is a mode-specific plan that nests within the State Transportation Plan, which is an authoritative document that is approved by the Iowa Transportation Commission and guides transportation infrastructure investments that are programmed in the Five-Year Iowa Transportation Improvement Program.

2. IOWA'S TRANSIT CONTEXT

To understand the context of public transit in Iowa is to understand some of the underlying factors that are impacted by transit such as the population, or to understand how other transportation systems intersect with it such as intermodal nodes where buses and bicycles or other modes meet.

This chapter will highlight past and current trends in Iowa to understand the people that utilize transportation as well as the characteristics of the transportation systems themselves.

2.1. Understanding Iowa

The Iowa Public Transit Long Range Plan seeks to understand how the State will look in the future, both in the near term and the long term.

How will Iowa be different in 2050?

What key changes will occur that will affect the residents of Iowa?

What key changes will specifically impact passenger transportation and public transit?

It is impossible to predict the future; however, this Plan will try to understand past, current, and projected trends that help gain better insight into what the future may hold. This section will examine specific factors that influence public transit, including demographic, economic, and passenger transportation trends that have affected Iowa in the past; how they are affecting Iowa today; and how they are projected to affect Iowa in the future. An understanding of the characteristics that make Iowa unique will help project future needs and plan to meet these challenges.

Demographic trends

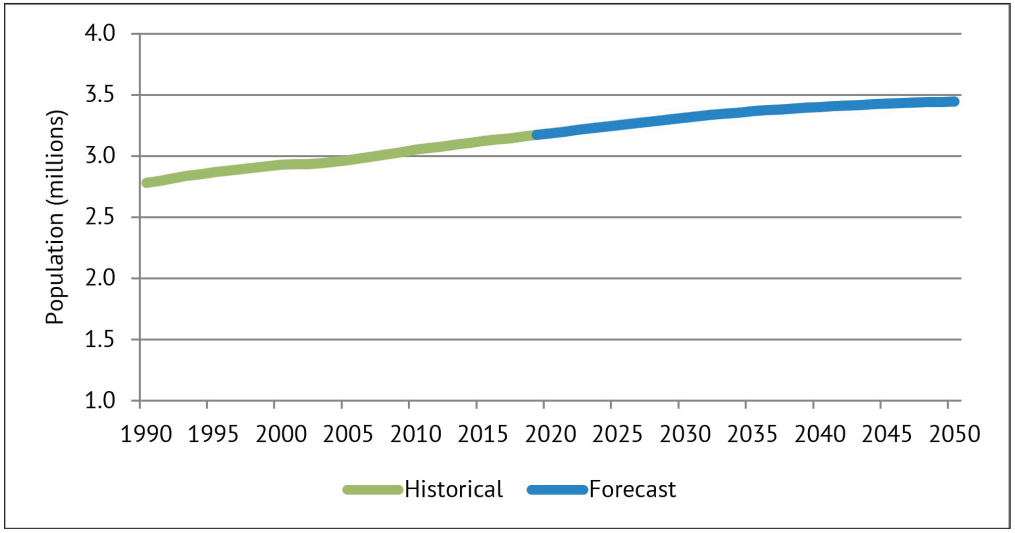
Iowa's population is growing at a slow pace

Iowa's population has remained relatively stable since 1990, growing about 13.6 percent over the past 30 years, compared to the rest of the U.S. which has grown 31.8 percent during the same period. Based on U.S. Census 2017 estimates, Iowa ranked 31st among all states when comparing total population, moving down one spot from 30th since 2015. It is projected that Iowa's population will continue to increase at the same rate over the next three decades, growing from 3.15 million in 2017 to approximately 3.44 million in 2050 (see Figure 2.1).

Iowa's population growth from 2000 to 2010 was slower than the national growth rate but was relatively consistent with the Midwest region, defined by the U.S. Census Bureau as the states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

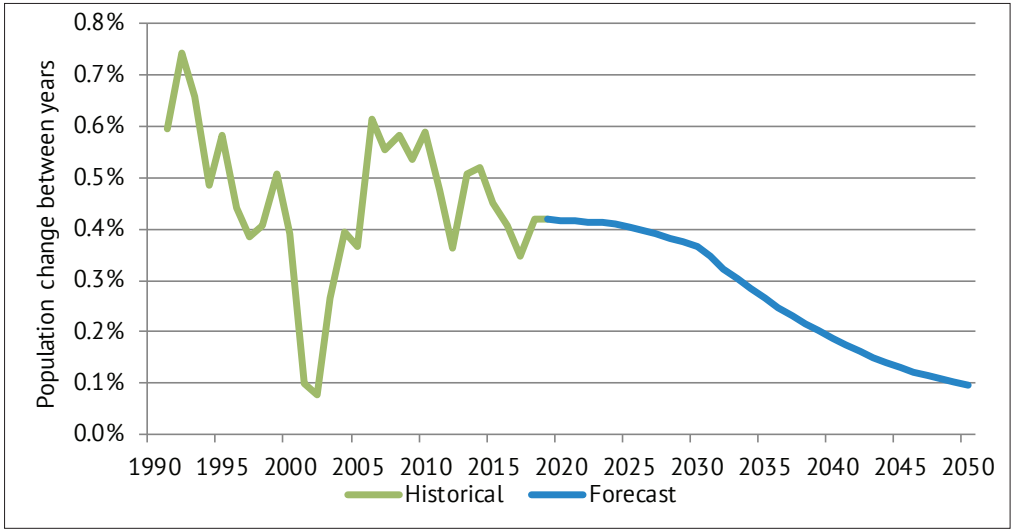
However, Iowa's population is not just slowly growing; the rate of growth is also slowing. Iowa's population growth rate, based on historic census data, is projected to continue to decrease over the next several decades (see Figure 2.2). By 2050, Iowa's growth rate is projected to be less than 0.1 percent. Based on the state's 2050 projected population of 3.44 million, growth of 0.1 percent would result in less than 3,500 additional people per year.

Figure 2.1: Iowa population, 1990-2050



Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Figure 2.2: Iowa population growth rate, 1990-2050

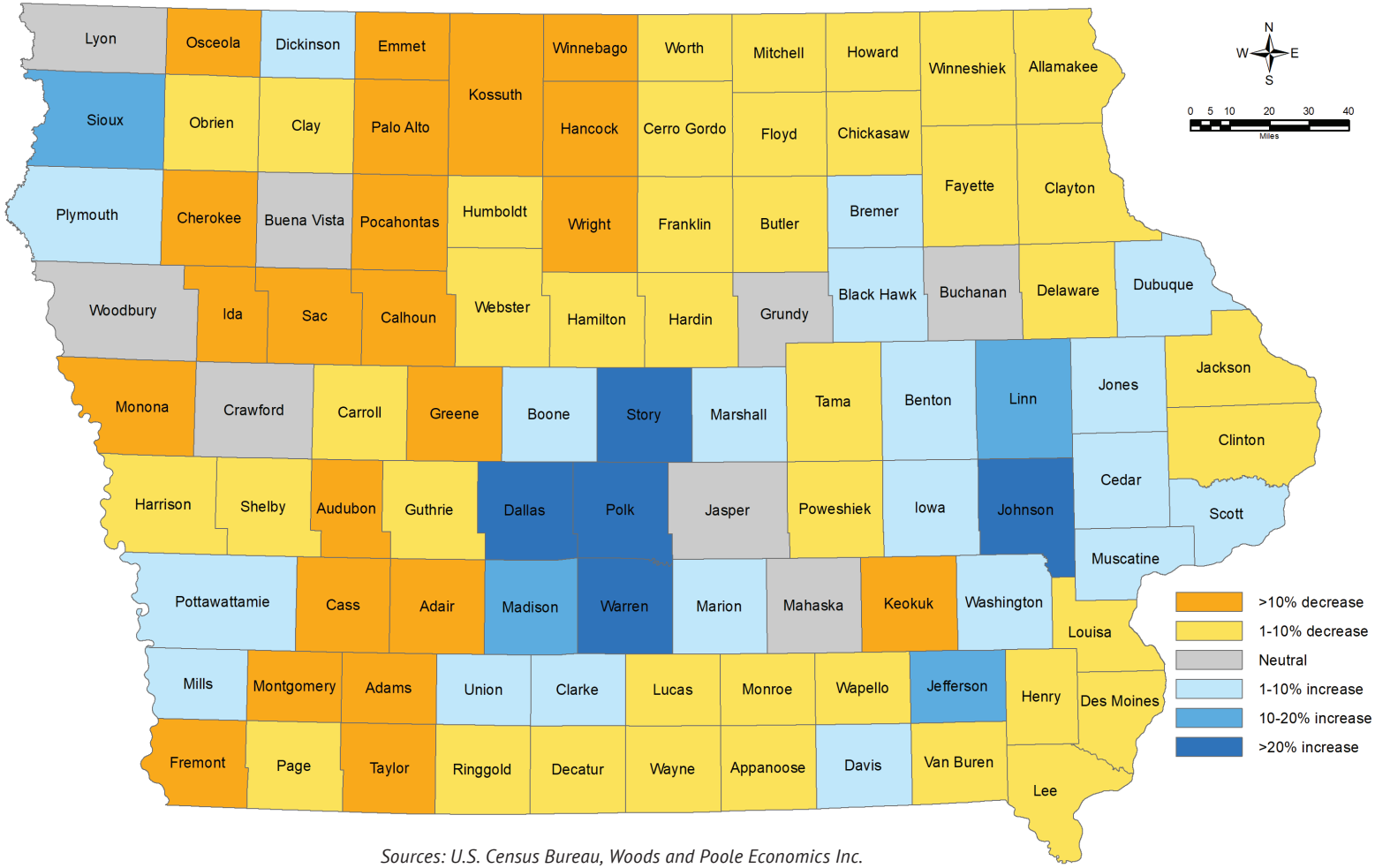


Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Iowa's population growth is not uniform throughout the state

Areas of population growth and decline vary around the state. Between 2000 and 2018, 29 of Iowa's 99 counties grew by one percent or more, eight counties remained unchanged, and 62 counties declined by one percent or more. While there was growth in various locations across Iowa, most of the population increases took place within or near metropolitan areas. Figure 2.3 illustrates the population change across Iowa's 99 counties.

Figure 2.3: County population change, 2000-2018

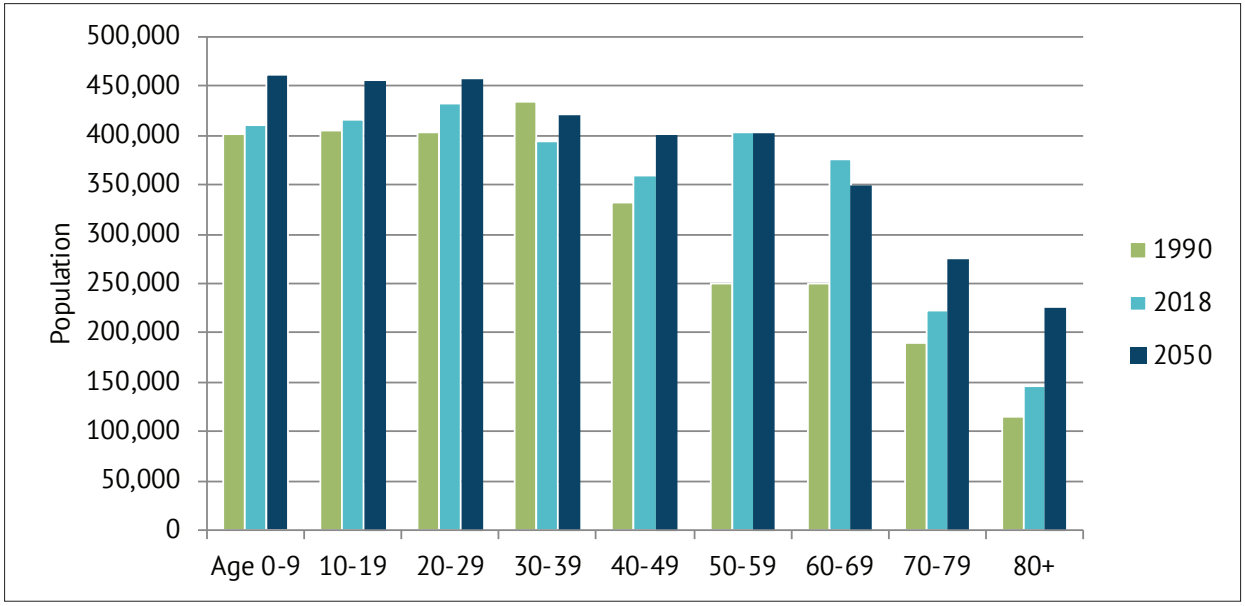


Sources: U.S. Census Bureau, Woods and Poole Economics Inc.

Iowa's population is urbanizing

As mentioned previously, Iowa's population is continuing to migrate toward the state's nine metropolitan areas, which each have a total population of at least 50,000 people. Historically, the majority of Iowa's population has resided in nonmetropolitan areas, yet most of the population growth in recent decades has been in counties that contain or are adjacent to metropolitan areas. Although Iowa's population as a whole is growing at a slow pace, the shift in population from rural to urban communities is having noticeable impacts on the public transportation system. Increased population in metropolitan areas can create urban congestion and capacity issues, with suburban growth challenging fixed route transit services. Rural jurisdictions with decreasing population will be facing increased challenges with longer school bus routes to pick up students, longer commutes to work for employees, and a smaller tax base to fund transportation options.

Figure 2.4: Historical and forecasted population by age for Iowa



Source: Woods and Poole Economics Inc.

Iowa's population is undergoing generational shifts

Iowa's median age has increased from 30 years old in 1980 to 38.2 years old in 2018, and 17.1 percent of Iowa's population is older than 65 – now the fifth-highest percent in the United States. This number is expected to continue to grow as more of the "Baby Boomer" generation reaches this milestone in the coming years. At the same time, almost 40 percent of the population forecasted to live in Iowa in 2050 will be less than 30 years old – in other words, this segment of the population has not yet been born. Figure 2.4 shows Iowa's estimated population by age for 1990, 2018, and 2050.

According to the U.S. Census Bureau[6], Millenials (those born between 1982 and 2000) outnumber Baby Boomers and are far more diverse than any previous generation.

Generations following the Millenials, such as Generation Z, are expected to continue to be increasingly diverse as well. In news publications and media outlets, Millenials are anecdotally said to be much more likely to not have drivers' licenses, to embrace public transit, and to leverage technology for a multitude of activities.

While this may be true to a certain degree, studies have been conducted to quantify these kinds of statements in order to better anticipate future driving and transportation preferences. A study was conducted by the Massachusetts Institute of Technology on "Generational Trends in Vehicle Ownership and Use"[7] and explored the question of how much different Millenials actually are from other generations in regards to driving. The study found that lower rates of vehicle ownership and driving by Millenials are tied more to issues that are outside their control, such as economic conditions, rather than strictly being a choice. Economic disruptions can lead to delayed career advancements which impacts personal finances and the ability to make larger purchases such as vehicles. Additionally, marriage and/or having children may also be delayed until later in life resulting in more transportation flexibility for Millenials who are single and/or childless.

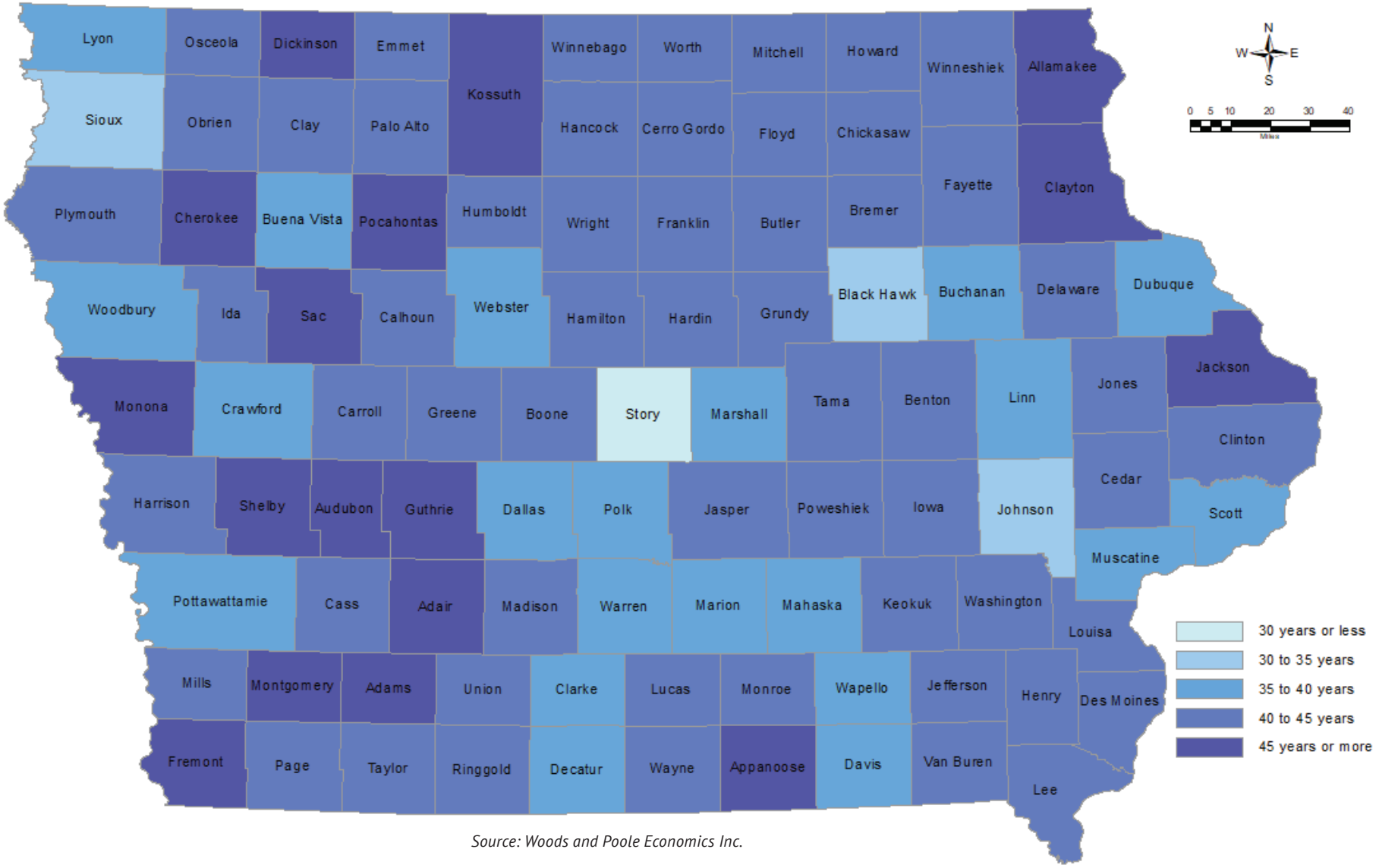
Iowa's older generations have specific transportation needs that differ from younger generations. Figure 2.5 shows average age by county, which is increasing overall and tends to be higher in rural areas of the state than in urban areas. As Iowans continue to travel and live independently longer, improving and expanding public transportation options is necessary to help meet the needs of older residents.

6 U.S. Census Bureau Press Release:
https://www.census.gov/newsroom/press-releases/2015/cb15-113.html
7 MIT Study on "Generational Trends in Vehicle Ownership and Use: Are Millennials Any Different?": http://ceepr.mit.edu/files/papers/2019-006.pdf

Some examples of ways to enhance public transportation for all ages, particularly older residents, include:

- Larger, easy to read print on signs, bus route maps, and transit information
- Vehicles equipped with wheelchair lifts
- Means of contacting ride dispatching services other than through apps or online
- Americans with Disabilities Act (ADA) accessible bus stops and well-maintained connecting sidewalks
- Improved transit options and coordination between transit providers and human service agencies

Figure 2.5: County average age, 2018

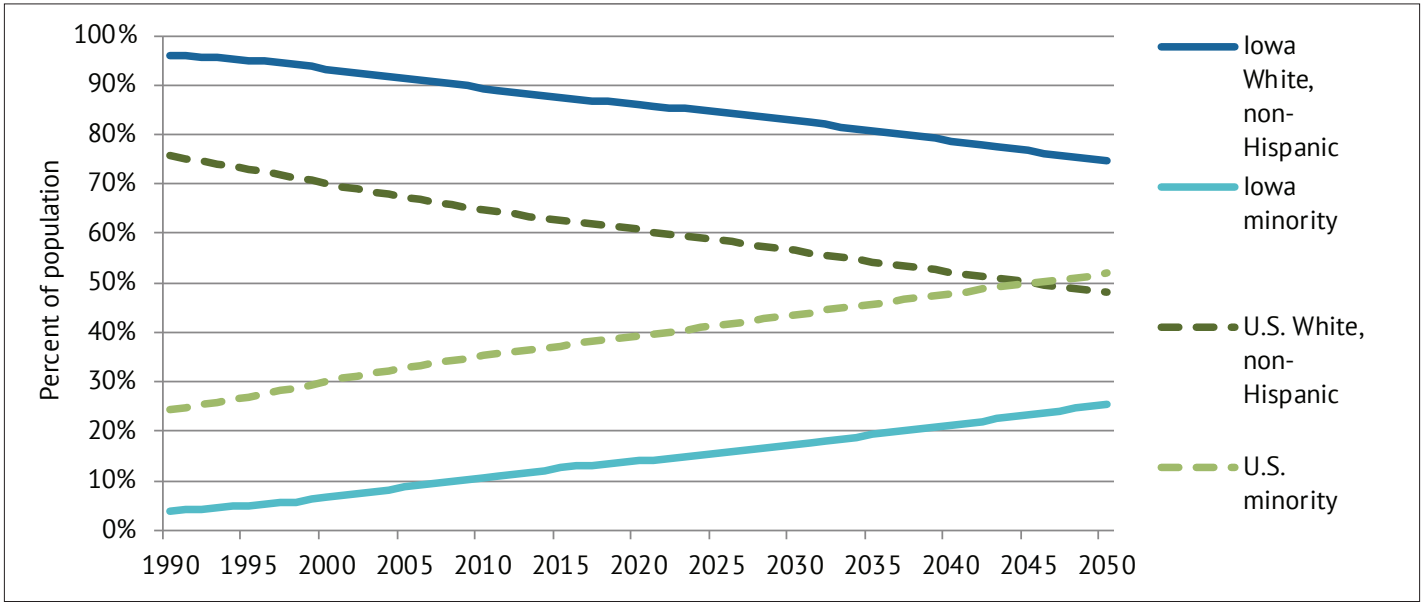


Source: Woods and Poole Economics Inc.

Iowa's minority population continues to grow

Iowa continues to become more diverse, with increasing racial and ethnic minority populations. Minorities[8] accounted for 13.4 percent of Iowa's 2018 population, compared to less than 4 percent in 1990. By 2050, racial and ethnic minorities in Iowa are projected to account for almost 25 percent of the state's total population. However, this is far less diversity than in the nation as a whole. Figure 2.6 shows the actual and forecasted minority population in the United States and Iowa from 1990 to 2050. As shown, the minority population of the United States is projected to equal the White, non-Hispanic population by 2045.

Figure 2.6: United States and Iowa White, non-Hispanic and minority population, 1990-2050

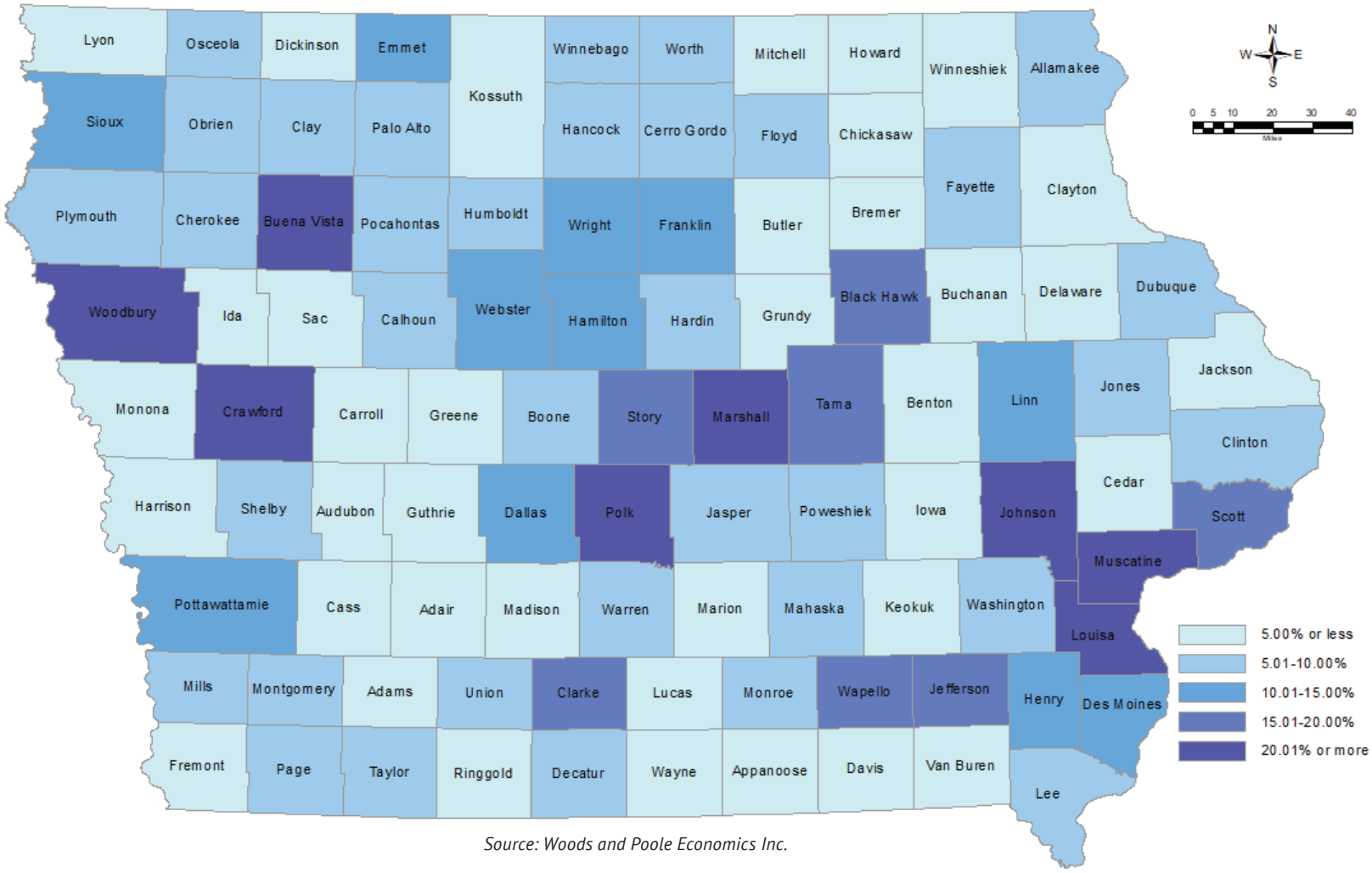


Source: Woods and Poole Economics Inc.

8 For the context of this Plan, "minority" is referencing the portion of the population that is non-White and/or Hispanic. In other words, this includes all population groups except White, non-Hispanic.

While most of the minority population in Iowa resides in the state's most populated counties, some of the areas with the highest percentage of minority populations are in counties outside metropolitan areas (see Figure 2.7). It is important to understand the transportation needs of Iowa's minority populations. Minority groups in Iowa are more likely to have a lower median household income and take a mode other than a personal automobile to work than nonminority populations. As Iowa's minority population increases, so will the need to accommodate persons with limited English proficiency (LEP) on the state's transportation system.

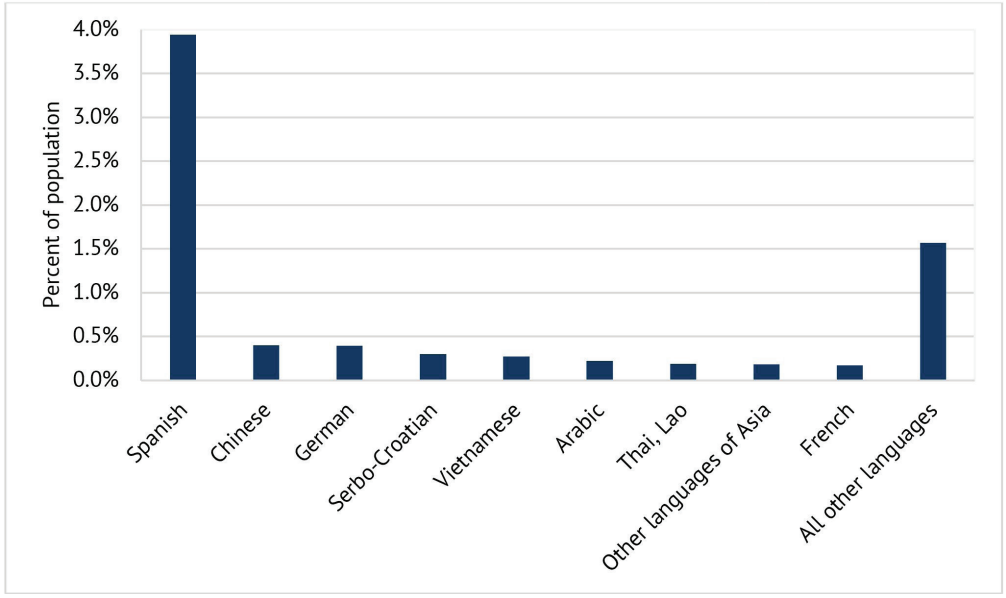
Figure 2.7: Percent minority population by county, 2018



Source: Woods and Poole Economics Inc.

Currently, approximately 3.2 percent of the state's population speaks English less than 'very well'. As shown in Figure 2.8, the language most often spoken in Iowa other than English is Spanish, and this will likely continue as the Hispanic population is projected to grow faster than any other population group over the next 30 years. It is important to accommodate Iowa's LEP population in the state's multimodal transportation system in ways such as translating bus route maps and transit schedules, providing training to transit drivers on interacting with non-English speakers, and by offering interpretation services at public meetings.

Figure 2.8: Percent of languages spoken, other than English, in Iowa



Source: U.S. Census Bureau
Chinese includes Mandarin and Cantonese; Thai, Lao includes other Tai-Kadai languages; French includes Cajun; All other languages includes over 30 additional languages spoken in Iowa

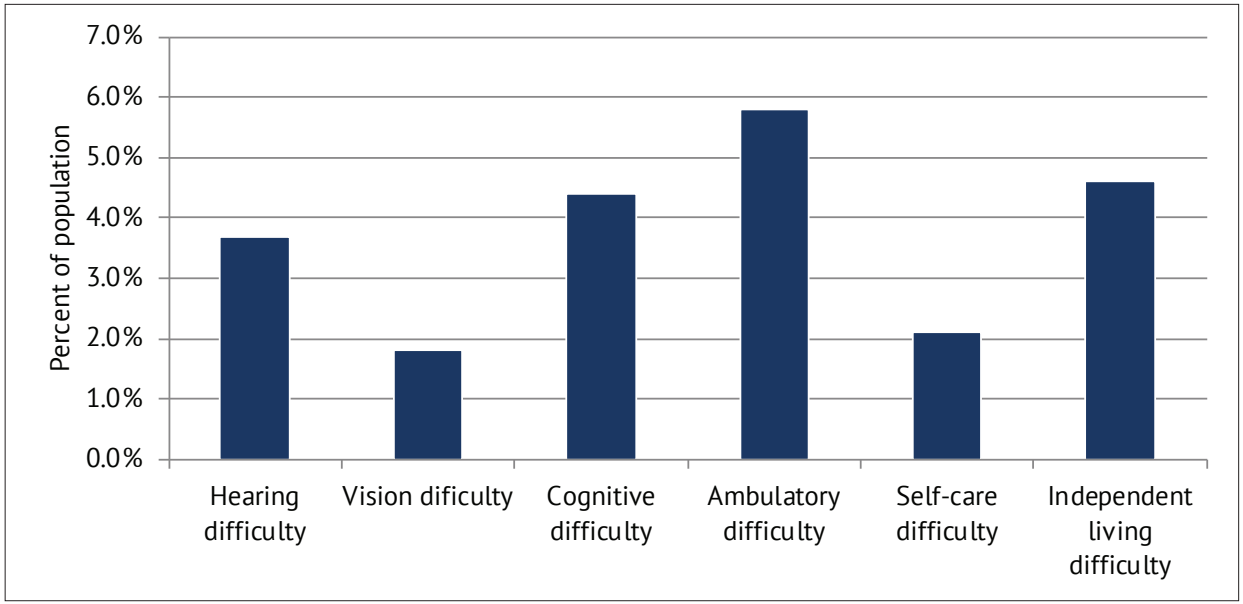
Iowa's transit system needs to be accessible

According to 2017 estimates by the U.S. Census Bureau's American Community Survey, roughly 11.6 percent of Iowa's population experiences some type of disability. As shown in Figure 2.9, the types of disability most experienced by Iowans are ambulatory difficulties at 5.8 percent, which impacts their mobility such as their ability to walk and climb stairs. This type of impairment could potentially affect a person as they try to access a bus stop or board a bus. It is for these reasons that Americans with Disabilities Act (ADA) accessible facilities are an important design element in planning and construction. Additionally, persons experiencing hearing difficulties (3.7 percent), vision difficulties (1.8 percent), or cognitive difficulties (4.4 percent) could potentially have challenges accessing transit information such as maps, brochures, and route schedules.

Implications for public transit – demographic trends

- Increased population in and around metropolitan areas and suburbs may create capacity issues and present challenges to optimizing fixed route transit services.
- Local jurisdictions with decreasing population will experience additional strain on already tight transportation budgets.
- Improvements can be made to transit facilities, bus stops, buses, transit service, and communication efforts to help meet the mobility needs of all transit riders, including riders with disabilities, older riders, and non-English speaking riders.
- It is important that all Iowans, including minority, low-income, and disabled populations, have access to employment and services in both urban and rural areas.

Figure 2.9: Disabilities by type in Iowa



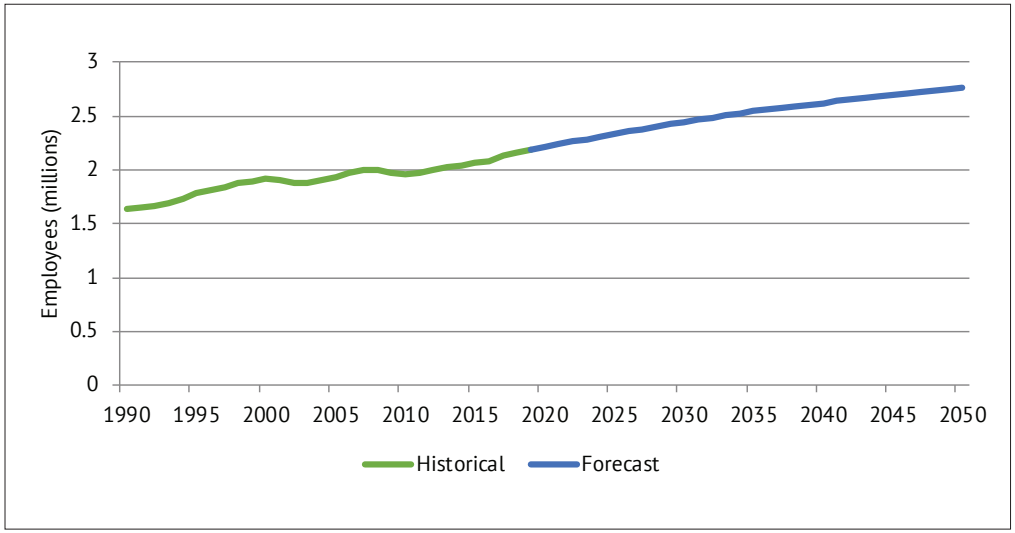
Source: U.S. Census Bureau

Economic trends

Total employment in Iowa is expected to increase slowly

In the past 30 years, total employment in Iowa has increased slowly, growing an average of one percent per year from 1990 to 2018. Iowa's employment is expected to continue to experience slow but steady growth, increasing by another 26 percent between 2018 and 2050. Figure 2.10 charts the actual and projected total employment in Iowa from 1990-2050.

Figure 2.10: Iowa employment, 1990-2050

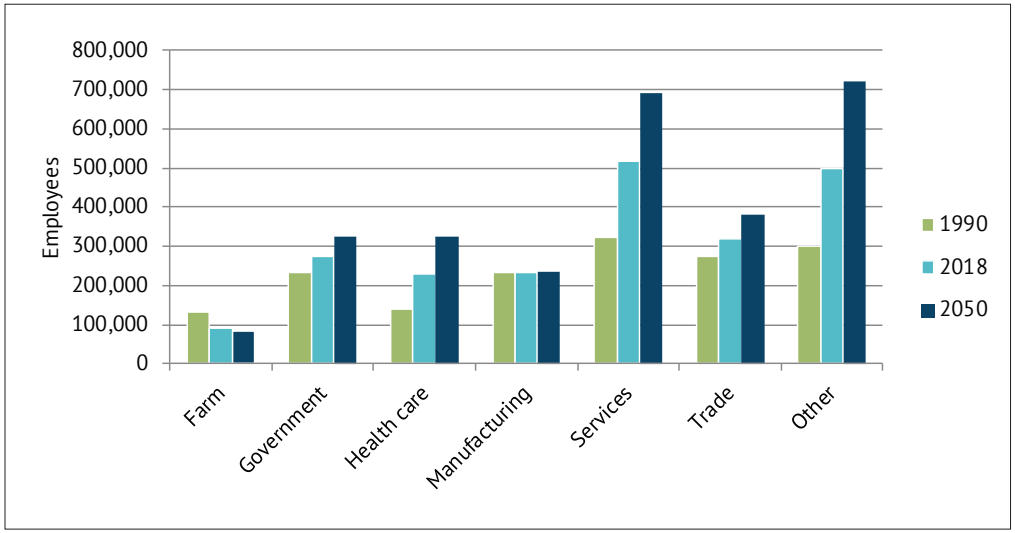


Source: Woods and Poole Economics Inc.

Iowa's employment sectors continue to change

Traditionally, farming and manufacturing have been two of the primary employment sectors in Iowa. Technological advancements and economic diversification continue to be catalysts for change in recent years. Since 1990, the farm sector has decreased by more than 40,000 jobs, which represents a decline of 30 percent in total farm employment in Iowa. This trend is projected to continue, though flatten out, with this sector losing an additional 8,200 jobs through 2050. The number of jobs in the service sector (professional, educational, administrative, arts, etc.) is expected to grow the most over the next 30 years. Currently, there are 516,000 service jobs, which are forecast to grow to almost 692,000 jobs in 2050. The largest growth in the "other" category shown on Figure 2.11 is in the finance and insurance category, which is expected to continue to accelerate in its hiring and add more than 69,000 jobs between 2018 and 2050.

Figure 2.11: Iowa employment by sector, 1990-2050

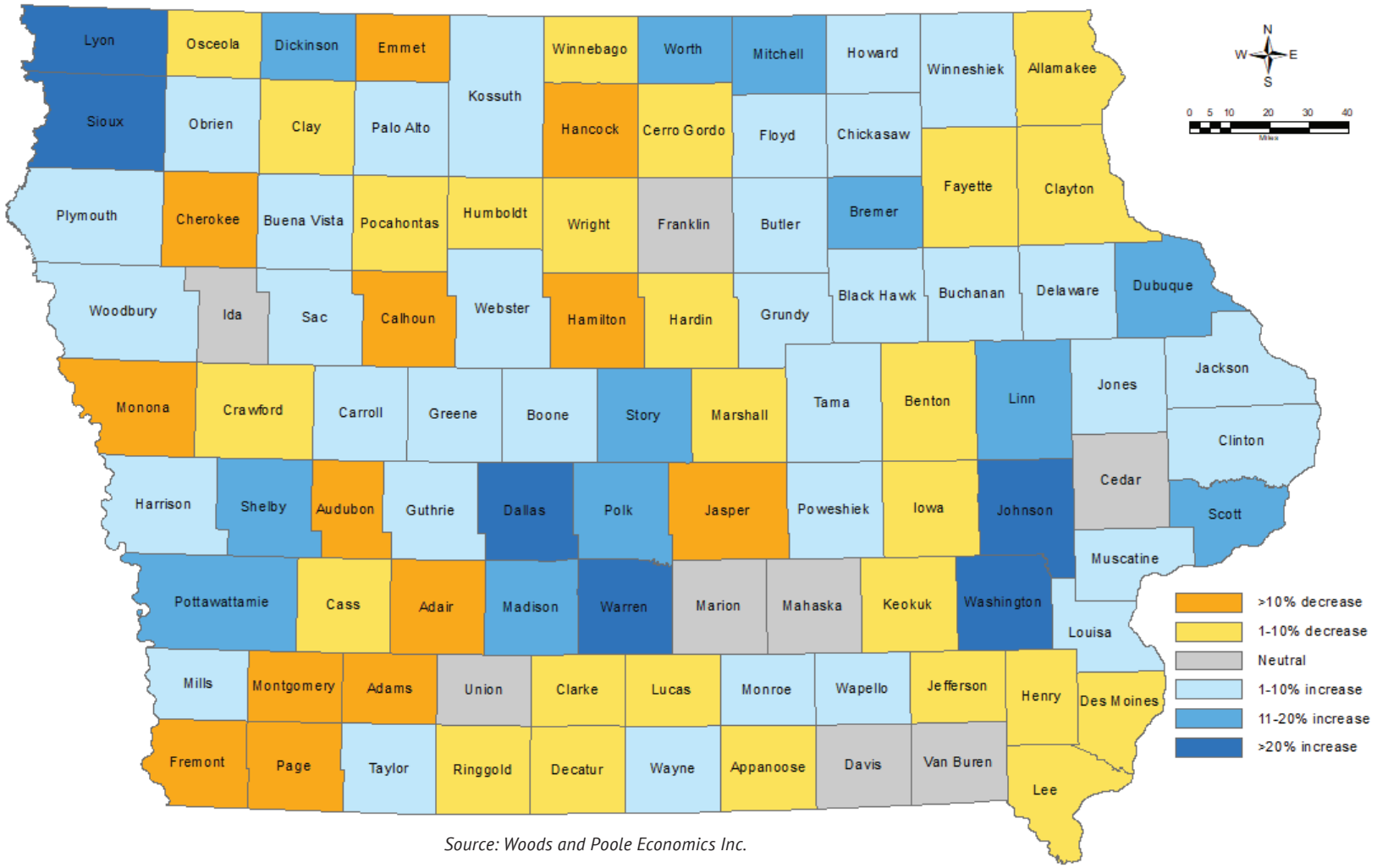


Source: Woods and Poole Economics Inc.

Iowa's employment growth is not uniform throughout the state

Areas of employment growth and decline vary around the state. Between 2000 and 2018, 52 of Iowa's 99 counties saw an increase in the number of jobs available by one percent or more, eight counties remained unchanged, and 39 counties declined by one percent or more. While there was growth in various locations across Iowa, the largest increases in employment were in the counties surrounding the Des Moines area, the Iowa City area, and north of Sioux City. Figure 2.12 illustrates the 2000 to 2018 employment change across Iowa's 99 counties.

Figure 2.12: County employment change, 2000-2018

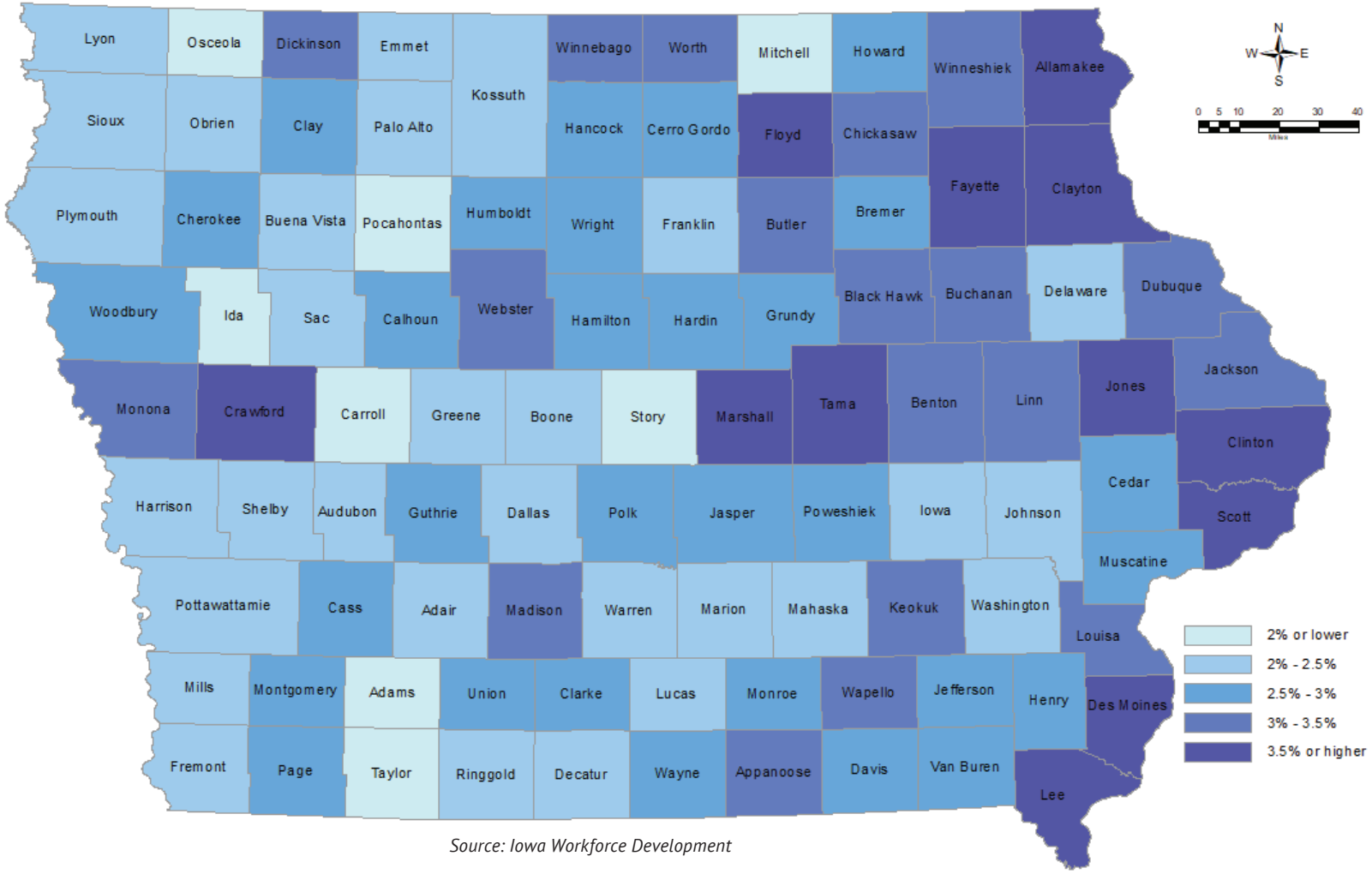


Source: Woods and Poole Economics Inc.

Iowa's unemployment rate is among the lowest in the nation

The unemployment rate is defined by the U.S. Census Bureau as a number representing unemployed people as a percentage of the civilian labor force. The civilian labor force includes all people who are employed or unemployed, as well as members of the armed forces. Iowa's unemployment rate as of December 2019 was 2.8 percent, which ranked as the 10th lowest in the nation, much lower than the U.S. average of 3.8 percent. Figure 2.13 shows the unemployment rate by county in Iowa as of December 2019.

Figure 2.13: Iowa unemployment rate by county, December 2019



Source: Iowa Workforce Development

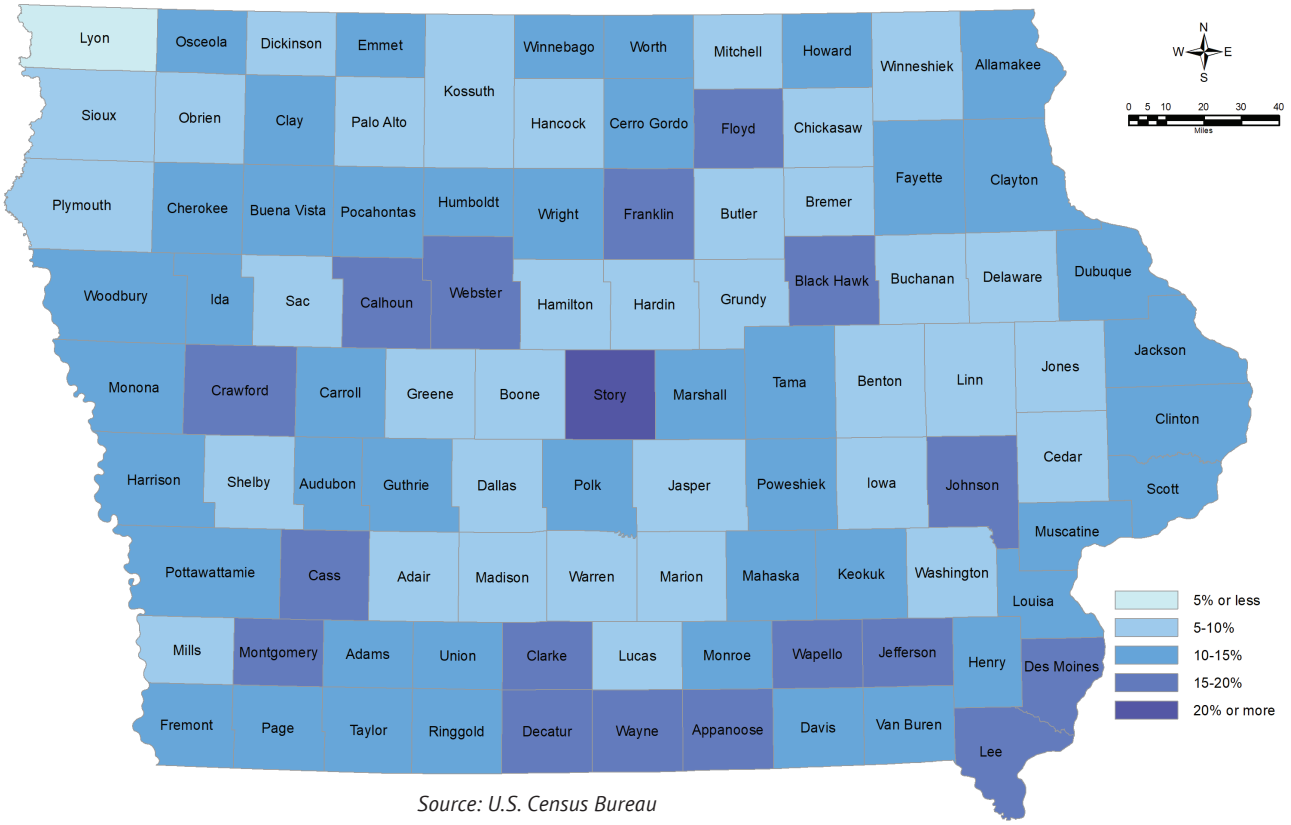
Iowans living in poverty need access to transit

The U.S. Census Bureau measures poverty by comparing household income to money income thresholds, varying with family size and composition. If a household's total income is below the family threshold, then that household is considered to be in poverty. For these purposes, only pre-tax income is considered and noncash benefits such as public housing, Medicaid, and food stamps are not included. Additionally, student financial aid does not count as income. While the income thresholds used to determine poverty do not change based on geographic location, inflation and the consumer price index are factored in. According to U.S. Census 2017 estimates, nearly 12 percent of Iowans are considered to be in poverty; in other words, one out of every 8.35 Iowans is in poverty. In 65 out of 99 counties, more than 10 percent of the population is in poverty, as shown in Figure 2.14.

Implications for public transit – economic trends

- Employment opportunities are plentiful across urban and rural regions but are strongest in the metropolitan areas.
- With low unemployment throughout the state and uneven population growth between urban and rural areas, there will be an increased need for employers to access pools of employees that live further away.

Figure 2.14: County population below poverty level



Source: U.S. Census Bureau

Passenger trends

Iowans are traveling more, but passenger travel is not uniform across all modes of transportation

Since 1990, travel across all passenger modes (aviation, highway, passenger rail, and public transit) has increased in Iowa (see Figure 2.15). However, growth in passenger travel over the past 30 years has not been uniform across modes. In terms of relative change in Iowa, passenger vehicle miles traveled (VMT) and aviation enplanements grew the most between 1990 and 2000, passenger rail and public transit had the most significant increases in passenger travel between 2000 and 2010, and aviation enplanements increased the most between 2010 and 2018. Overall, aviation enplanements experienced the largest relative increase between 1990 and 2018, growing by over 50 percent. If trends from the past 30 years continue, all passenger travel modes will increase, but at varying rates. It should be noted that passenger travel trends are influenced in part by the cost of fuel, and fluctuations in this cost can create some uncertainty in forecasting future travel trends. Figure 2.16 shows the passenger transportation trends for each mode from 1990 to 2018.

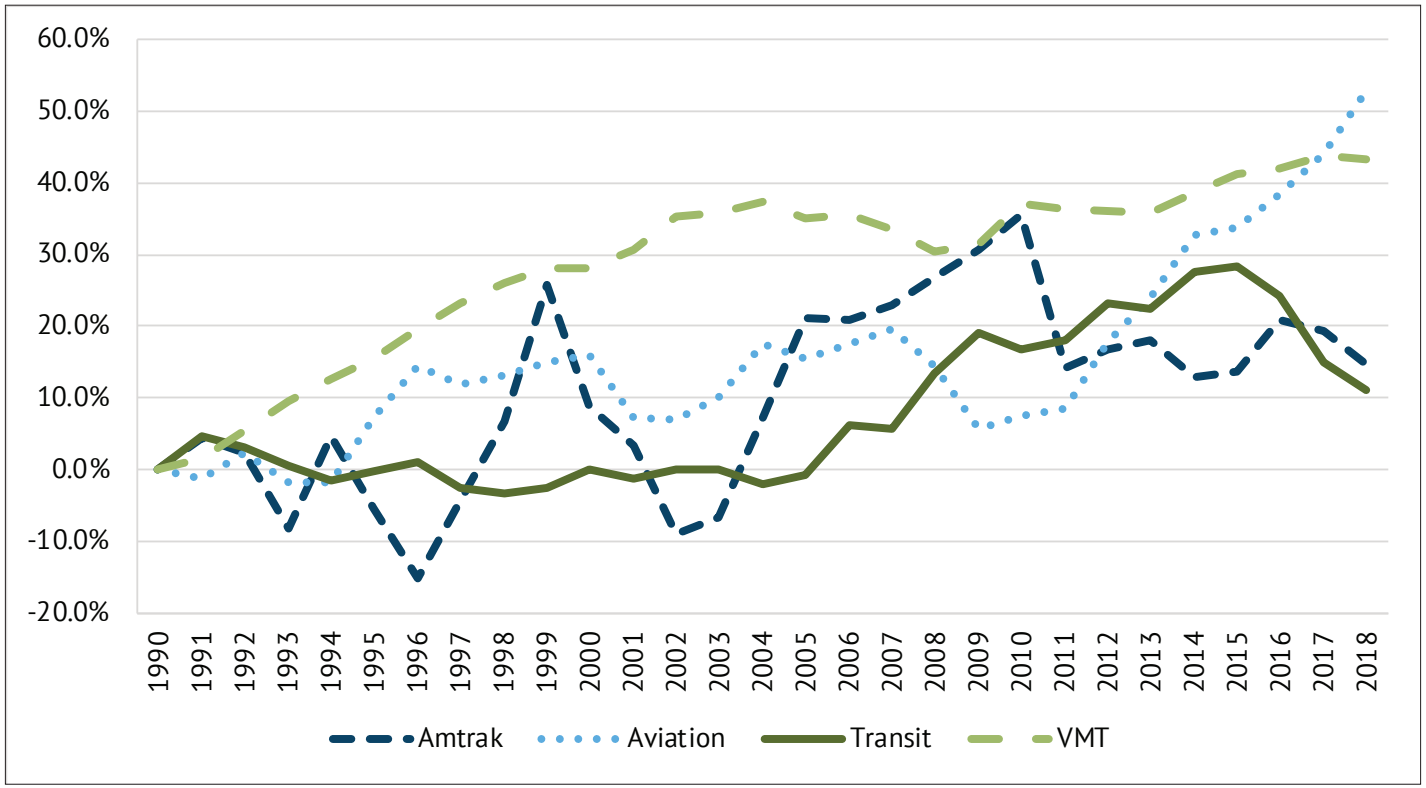
Figure 2.15: Iowa passenger transportation trends, 1990-2018

	1990	2000	2010	2018
Amtrak rides	50,719	55,146	68,744	58,119
Aviation enplanements	1,363,840	1,581,217	1,468,158	2,082,586
Passenger VMT*	20,418,000,000	26,128,000,000	28,004,000,000	29,255,000,000
Public transit	22,417,065	22,449,367	26,208,453	24,887,393

**Passenger VMT includes passenger cars, light trucks, vans, sport utility vehicles (SUVs), motorcycles, and buses over all road systems*

Source: Iowa DOT

Figure 2.16: Iowa passenger travel trends by mode, 1990-2018



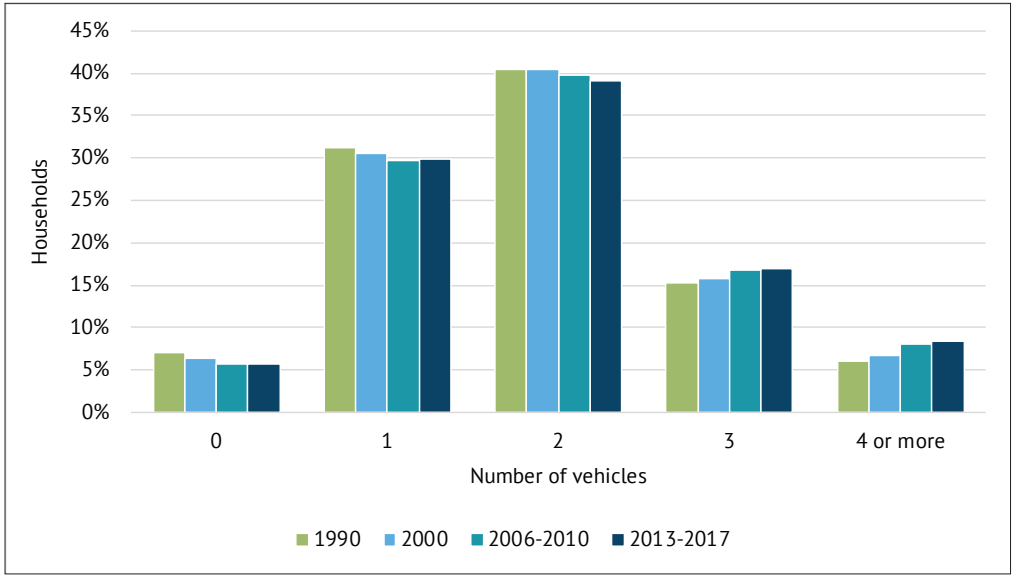
Source: Iowa DOT

Aviation enplanements dipped between 2000 and 2010, before increasing rapidly from 2010 to 2018. Amtrak has only seen a 14.6 percent increase in ridership in Iowa from 1990 levels, much lower than U.S. ridership increases. A Chicago to Iowa City passenger rail route study estimated that 300,000 travelers would use the route on an annual basis. If this idea comes to fruition, passenger rail ridership could increase significantly in Iowa. Public transit ridership has increased 11.0 percent since 1990, but has been decreasing in recent years. Passenger VMT's growth rate has slowed over time. From 1990 to 2000, passenger VMT grew by 28.0 percent, but from 2010 to 2018, it only grew by 4.5 percent.

The number of vehicles per household has increased

Between 2010 and 2017, there was little change in the number of vehicles per household, with most households having one or two vehicles. These two categories account for close to 70 percent of households. A longer term trend, from 1990 to 2017, shows that the percent of households with zero, one, or two vehicles have all decreased, and the percent of households with either three or four or more vehicles have both increased, suggesting the overall shift is toward an increased number of vehicles per household. Figure 2.17 illustrates the number of vehicles per household from 1990 to 2017.

Figure 2.17: Number of vehicles available per household in Iowa, 1990-2017



Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

Most Iowans drive to work alone

The overwhelming majority of Iowans continue to drive to work alone. From 1990 to 2000, the trend of driving alone was increasing, but since then it has remained somewhat stable at around 80 percent. Carpooling has decreased over time, dropping to 8.4 percent. Public transportation and bicycling remained stable with no notable changes between 2010 and 2017. Walking and working from home saw very little change, decreasing by .04 and 0.2 percent respectively, while other modes such as motorcycles and taxis (which includes paid Transportation Network Companies such as Uber and Lyft) slightly increased by 0.2 percent between 2010 and 2017. Figure 2.18 shows the mode of transportation Iowans used to get to work from 1990 to 2017.

Figure 2.18: Iowans' mode of transportation to work, 1990-2017

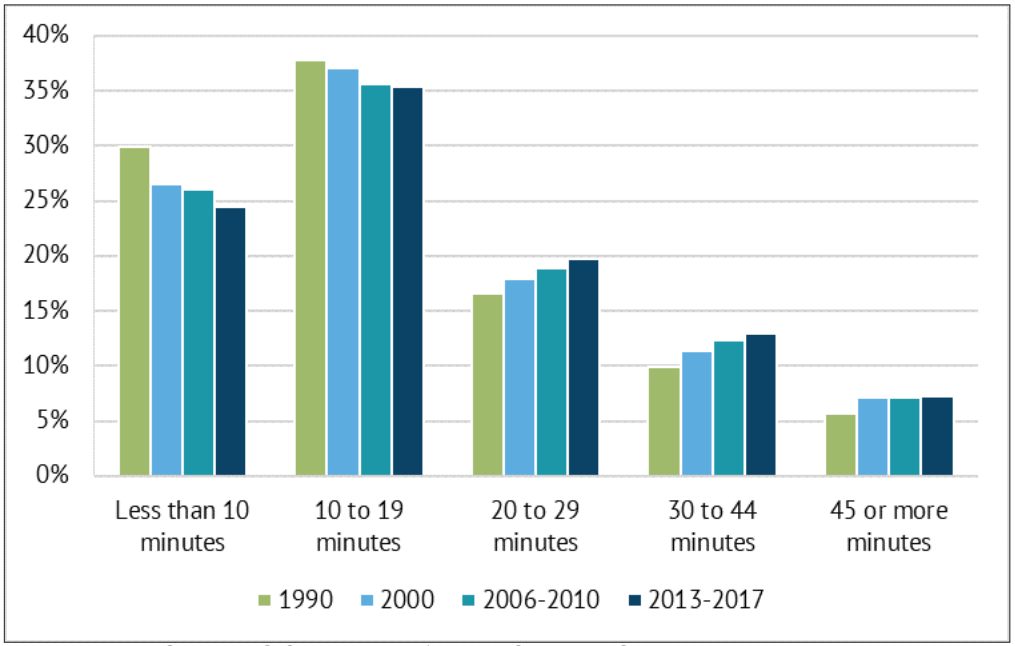
	1990	2000	2006-2010	2013-2017
Drove alone	73.4%	78.6%	78.7%	81.0%
Carpool	11.9%	10.8%	10.3%	8.4%
Public transportation	1.2%	1.0%	1.1%	1.1%
Bicycle	0.3%	0.4%	0.5%	0.5%
Walk	5.8%	4.0%	3.8%	3.4%
Other (includes motorcycle and taxi)	0.7%	0.6%	0.8%	1.0%
Worked at home	6.7%	4.7%	4.8%	4.6%

Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

Average travel time to work has increased, but Iowans continue to have one of the lowest average commute times nationally

Average travel time to work for Iowans has slowly increased over the past 30 years, and this trend will likely continue. Fewer people have commutes of less than 10 minutes, decreasing to 24.5 percent. Moderate distance commutes between 10 and 19 minutes remained consistent, holding steady at around 35.4 percent. Commutes of 20 minutes or longer increased over this period, suggesting that more people are living further away from where they work. Figure 2.19 shows the change in travel time to work for Iowans from 1990 to 2017. Despite the slight increase in travel time, Iowans continue to enjoy relatively short commute times compared to the rest of the United States. The average travel time to work for Iowans was 19 minutes, much lower than the average of 26.9 minutes nationally.

Figure 2.19: Travel time to work in Iowa

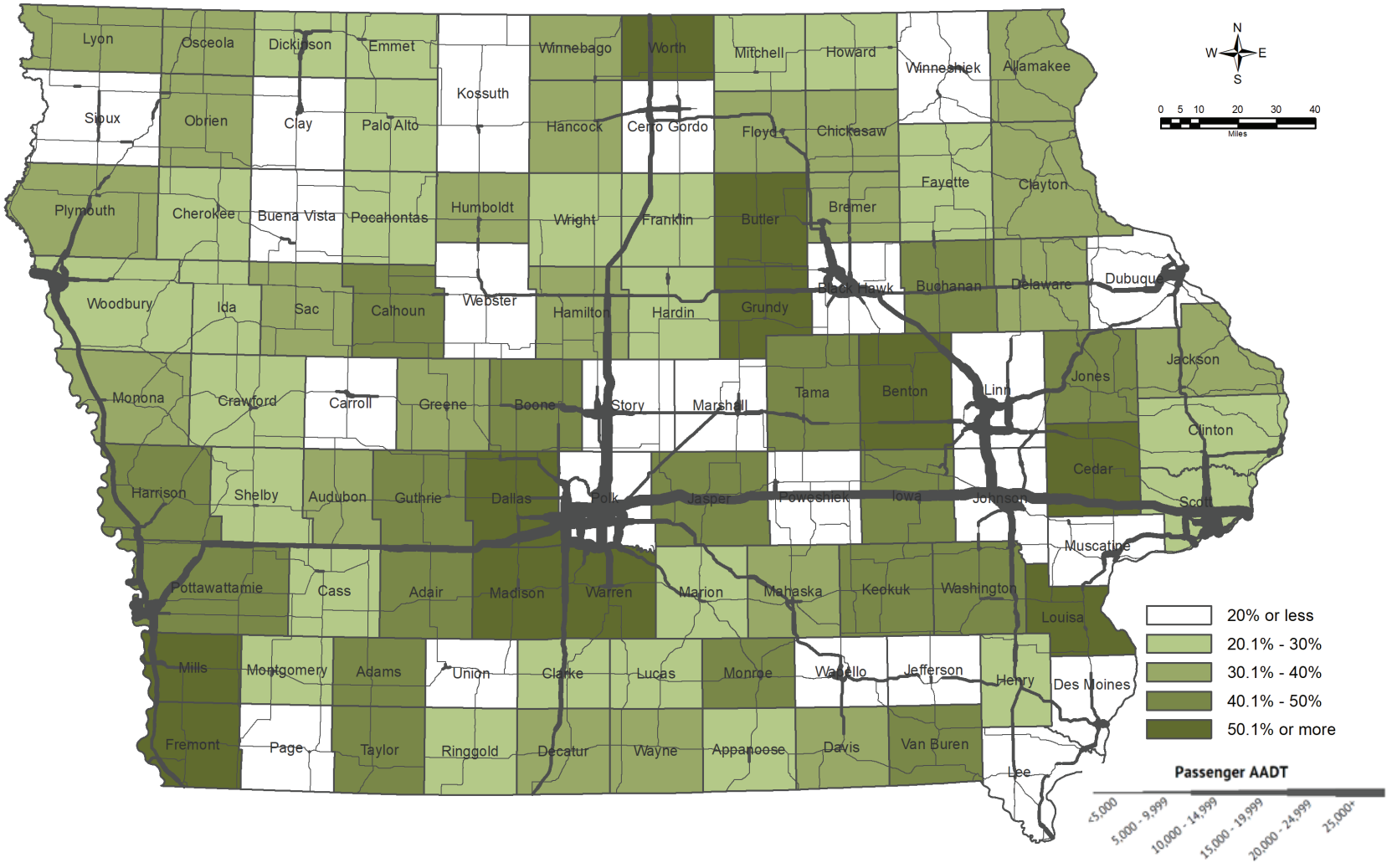


Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates

More Iowans are commuting to locations outside their county of residence, which may help explain the increased travel times noted previously. In 1990, approximately 17 percent of workers commuted to a job outside their county of residence; by 2017, this increased to 19.6 percent. More than 50 percent of the residents in nine different Iowa counties traveled to jobs outside their home county in 2017, compared to only two counties in 1990. Figure 2.20 highlights the passenger vehicle annual average daily traffic (AADT) on primary highways, along with the percentage of the workforce leaving their county of residence for work. This helps illustrate routes that may experience heavy commuter traffic, and that may be candidates for increased passenger transportation options.

With jobs continuing to migrate toward Iowa's metropolitan areas, commuting has taken on more of a role to support the labor force necessary for these areas. The influence of a metropolitan area is not just on the urbanized area it encompasses, but on surrounding counties as well. An example of this is Polk County and the surrounding region. The U.S. Census Bureau's 2017 American Community Survey estimated Polk County had approximately 245,995 workers age 16 and older, only 10.3 percent of which commute to a different county for work. Two neighboring counties, Dallas and Warren, both have more than 60 percent of their workers traveling to Polk County for work.

Figure 2.20: Commuting trends of passenger AADT on primary highways, and percent of workforce leaving county of residence to work, 2017



Sources: U.S. Census Bureau, American Community Survey Five-Year Estimates; Iowa DOT

Implications for public transit – passenger trends

- Travel across all passenger modes has increased nearly 22 percent since 1990, while Iowa's population has only grown by 14 percent. Investments in all passenger modes are necessary to ensure mobility options for Iowans.

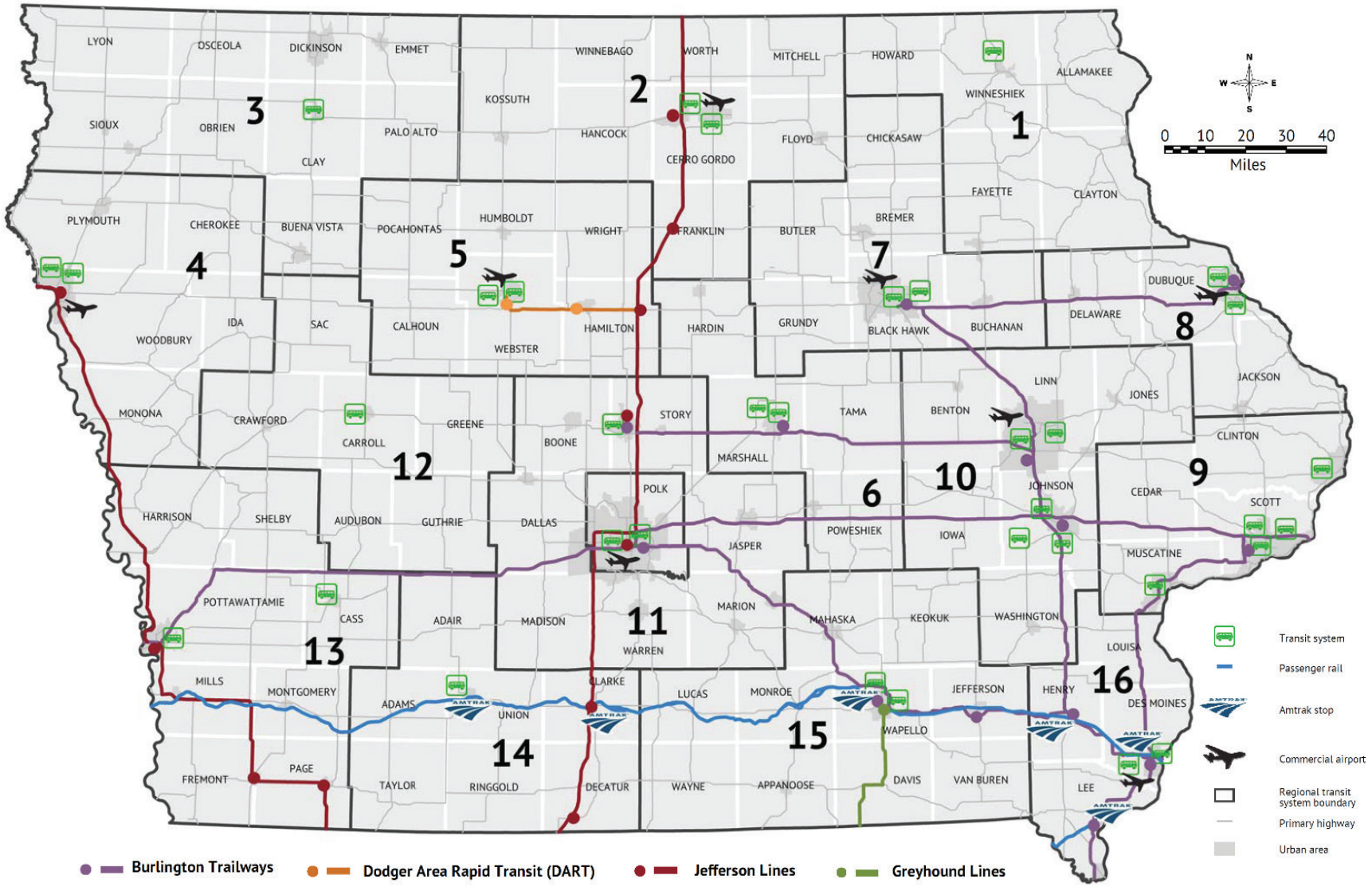
- Driving to work alone continues to be by far the most common mode choice for commuters, and its percentage share has continued to increase. Meanwhile, other modes of transportation usage have stayed the same or slightly decreased, including biking, walking, and carpooling. Working from home continues to be a choice utilized by a number of Iowans; however, its trend has been slightly decreasing since 1990.

- Iowans are increasingly choosing to live over 20 minutes away from their place of work, creating more opportunities for regional transit services while creating challenges for extending local fixed route transit service into suburban areas.

2.2. System and Travel Characteristics

Passenger transportation comes in many forms and many times it takes the shape of multiple modes of transportation combined together in order for a passenger to get from their origin to their destination. Figure 2.21 highlights some of these modes, including public transit, passenger rail, commercial air service, and intercity bus routes. The following sections describes some of the primary passenger transportation options that currently exist within Iowa. Understanding the unique characteristics of these transportation systems helps us better plan for incorporating their use within the context of creating and maintaining a robust, efficient, and effective multimodal passenger transportation system in Iowa.

Figure 2.21: Iowa passenger transportation services



Source: Iowa DOT

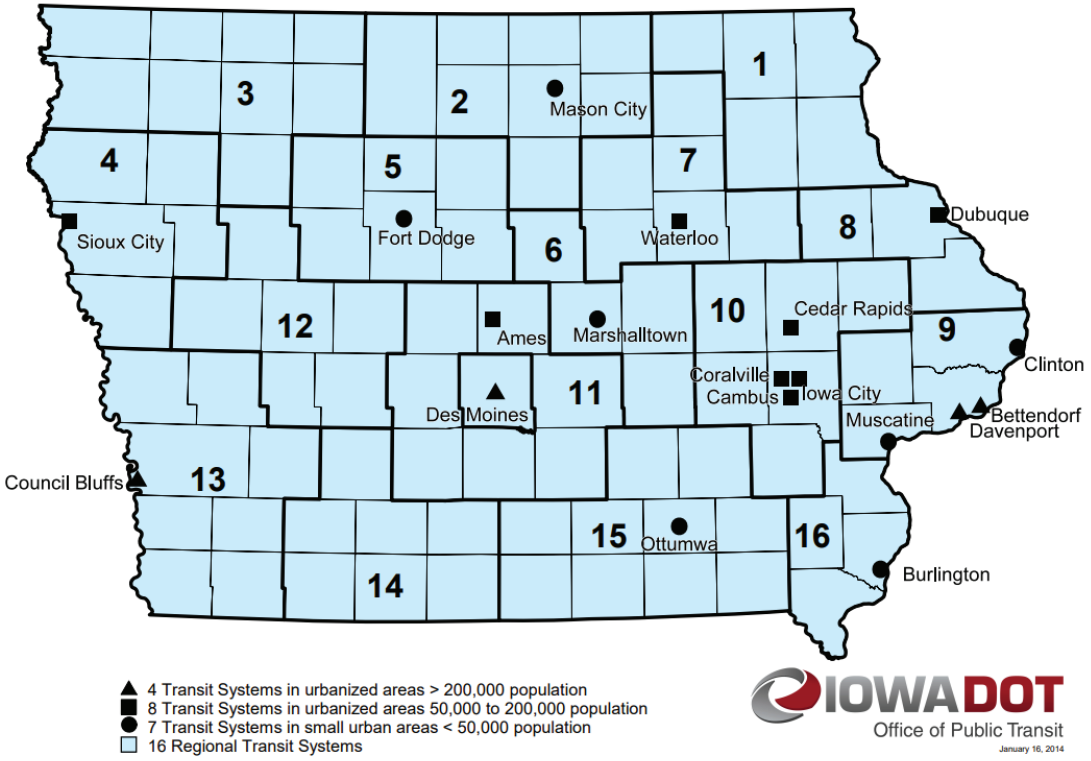
Public Transit

Iowa's public transit system provides many benefits to its residents, fulfilling a key alternative transportation role. In general, transit users in Iowa include commuters, elderly residents, low-income residents, college students, disabled residents, and youth. However, especially in metropolitan areas, people are increasingly making the choice to ride public transit for economic, practical, or environmental reasons.

Public transit services positively impact Iowa's economy. Transit ridership reduces fuel consumption and demand, as well as costs such as automobile insurance and maintenance for passenger, business, and commuter trips. Additionally, public transit services provide transit-dependent workers with reliable and essential access to employment opportunities. Availability of public transit service in all 99 Iowa counties also enables elderly residents who are no longer able to drive but in good health otherwise to remain in their own homes longer. This increases their quality of life and reduces assisted living or nursing home costs. From 1985 through 2018, transit ridership in Iowa has grown modestly from 23.8 million annual rides to 24.9 million annual rides. Ridership is expected to continue increasing in the future as Iowa's population base ages and as more people embrace environmentally friendly transportation options.

There are 35 public transit systems in Iowa, which are classified by size. Urban areas with populations 50,000 and greater are designated as large urban systems, urban areas with less than 50,000 population are designated as small urban systems, and rural areas outside the urban systems are designated as regional systems. Figure 2.22 shows the location of Iowa's public transit agencies.

Figure 2.22: Iowa's public transit agencies



Source: Iowa DOT

Regional

- Region 1: Northeast Iowa Community Action Corporation – Transit/NEICAC-T
- Region 2: Region 2 Transit
- Region 3: Regional Transit Authority/RIDES
- Region 4: Siouxland Regional Transit System
- Region 5: MIDAS Council of Governments
- Region 6: Region Six Resource Partners/PeopleRides
- Region 7: Iowa Northland Regional Transit Commission
- Region 8: Region 8 Regional Transit Authority
- Region 9: River Bend Transit
- Region 10: CorridorRides
- Region 11: Heart of Iowa Regional Transit Agency
- Region 12: Western Iowa Transit System
- Region 13: Southwest Iowa Transit Agency
- Region 14: Southern Iowa Trolley
- Region 15: 10-15 Regional Transit Agency
- Region 16: South East Iowa Bus (SEIBUS)

Small urban

- Burlington Urban Service
- City of Clinton, Municipal Transit Administration
- City of Fort Dodge (DART)
- Marshalltown Municipal Transit
- City of Mason City
- City of Muscatine
- Ottumwa Transit

Large urban

- Ames Transit Agency/CyRide
- City of Bettendorf
- University of Iowa, Cambus
- Cedar Rapids Transit
- Coralville Transit System
- City of Council Bluffs
- Davenport Public Transit (CitiBus)
- Des Moines Area Regional Transit Authority (DART)
- City of Dubuque, The Jule
- Iowa City Transit
- Sioux City Transit System
- Metropolitan Transit Authority of Black Hawk County/ Waterloo MET

In recent years, operation and maintenance costs for transit services in Iowa have been increasing much faster than revenues. Consequently, it has been difficult to pay for necessary improvements (e.g., facility upgrades, bus replacements, and fleet expansions). The percent of Iowa's public transit vehicles exceeding the age threshold for replacement has been steadily increasing over the past several years. This is primarily due to less federal funding for bus replacement in recent reauthorization bills, along with a large portion of the fleet replaced with American Recovery and Reinvestment Act funding in 2009 reaching the age threshold at the same time. While recent federal grants from the Bus and Bus Facilities Program in 2016-2019 have helped prevent that percentage from increasing further, the overall age of the fleet is still a serious issue for public transit service in Iowa. According to the Federal Transit Administration's National Transit Database for the most recent available reporting year of 2018, Iowa has a bus fleet with an average age of 7.42 years, which is the twelfth oldest among states and territories.

Other Passenger Travel Options

Intercity Bus

Intercity bus service is an extremely valuable transportation resource for Iowa's residents who do not drive or choose not to drive. This service allows them to reach destinations across the country. Routes and stops for Iowa's four intercity bus carriers are shown on Figure 2.21. Intercity bus services include stops at non-urbanized locations and make meaningful connections to nationwide networks. As of 2016, 15 percent of state's federal non-urbanized (5311) transit funding must be used for support of intercity bus services, unless the Governor certifies this need has been met.

Eligible participants for the Intercity Bus Program include private intercity bus companies, companies wishing to start intercity bus service, public transit agencies either operating or proposing to operate intercity bus services, or local communities wishing to support intercity bus connections to their community.

Iowa's Intercity Bus Program has four components in priority order:

1. Base level support of existing services
2. Start-up support for new services
3. Support for marketing of intercity bus services and interlined service
4. Support for intercity bus capital improvements (over the road coaches, vertical infrastructure, vehicle renovations/ improvements, ADA improvements to vehicles and facilities)

Passenger Rail

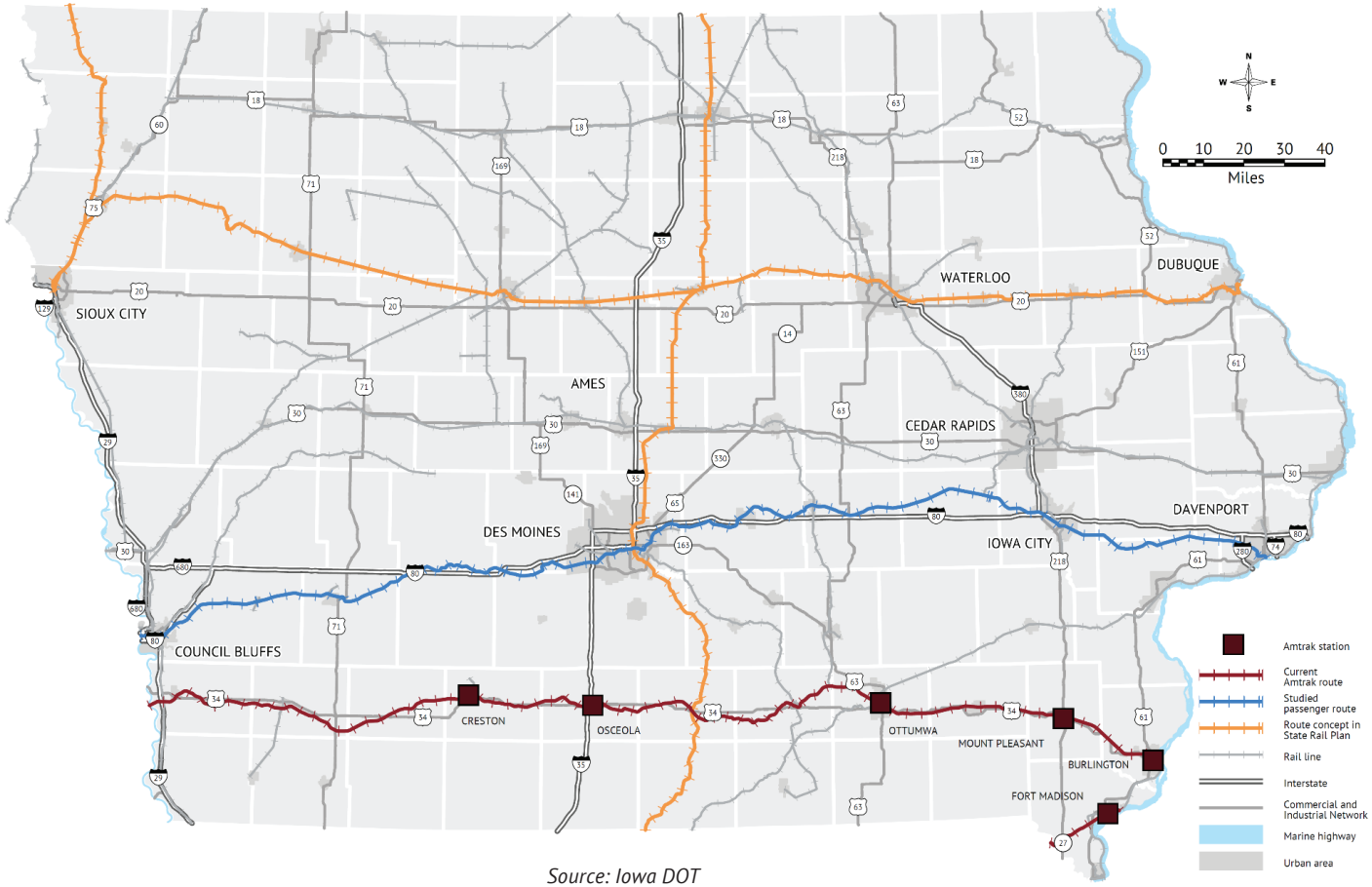
Like freight rail transportation, Iowa has two passenger rail routes through Amtrak that serve long-distance destinations between Chicago and two California destinations, the San Francisco Bay Area and Los Angeles, and stop at six various stations throughout the state. There currently is no intercity corridor service or commuter rail service provided in the state, either by Amtrak or by other operators. There are two tourist or heritage railroads offering excursion trips in the state. As metropolitan areas throughout Iowa continue to grow, the need to invest in a diverse network of passenger transportation options that will accommodate this growth will continue to be a factor.

Passenger rail service in Iowa is currently provided by two Amtrak routes, the California Zephyr from Chicago, Illinois to Oakland, California, and the Southwest Chief from Chicago to Los Angeles, California. The California Zephyr operates over the BNSF tracks in southern Iowa providing daily service in both directions. Stations in Iowa include Burlington, Mount Pleasant, Ottumwa, Osceola, and Creston. The Southwest Chief also operates daily in both directions over the BNSF tracks in extreme southeast Iowa with one stop in Fort Madison. Figure 2.23 shows current service and routes where service is being planned or considered for study.

Nationwide, passenger rail ridership on Amtrak has increased from 20.8 million in 1985 to 31.7 million in 2018. This increase has not been reflected in boardings or alightings at Iowa Amtrak stations, which are at relatively the same level that they were in 1985. Just over 58,000 passengers boarded and alighted at the six Iowa Amtrak stations in 2018. Of these, approximately 16,000 boardings and alightings were at the Osceola Station (located south of Des Moines) and approximately 12,500 boardings and alightings were at the Mount Pleasant Station (located south of Iowa City). Projections indicate boarding and alightings at existing Amtrak stations in Iowa will rise to approximately 62,000 in 2040, an increase of just above 8 percent over the 26-year period.

While these two lines are a tremendous asset for the state, there is concern that most of Iowa's largest communities do not have convenient passenger rail connections to major regional cities such as Chicago, Omaha, Minneapolis, or Kansas City. The Iowa DOT's 10-Year Strategic Passenger Rail Plan envisions a network that provides service connecting Iowans to major cities, regional destinations, and many other communities not currently served by commercial air service or passenger rail. At this point, there are no plans for changes in the frequency or routes of Amtrak services in Iowa. That noted, Iowa DOT is working on various fronts on potential new passenger rail corridor services and facilities supported at least in part by federal funding sources. These plans are discussed in Chapter 3 of the Iowa State Rail Plan[9] – Proposed Passenger Rail Improvements.

Figure 2.23: Passenger rail routes in Iowa



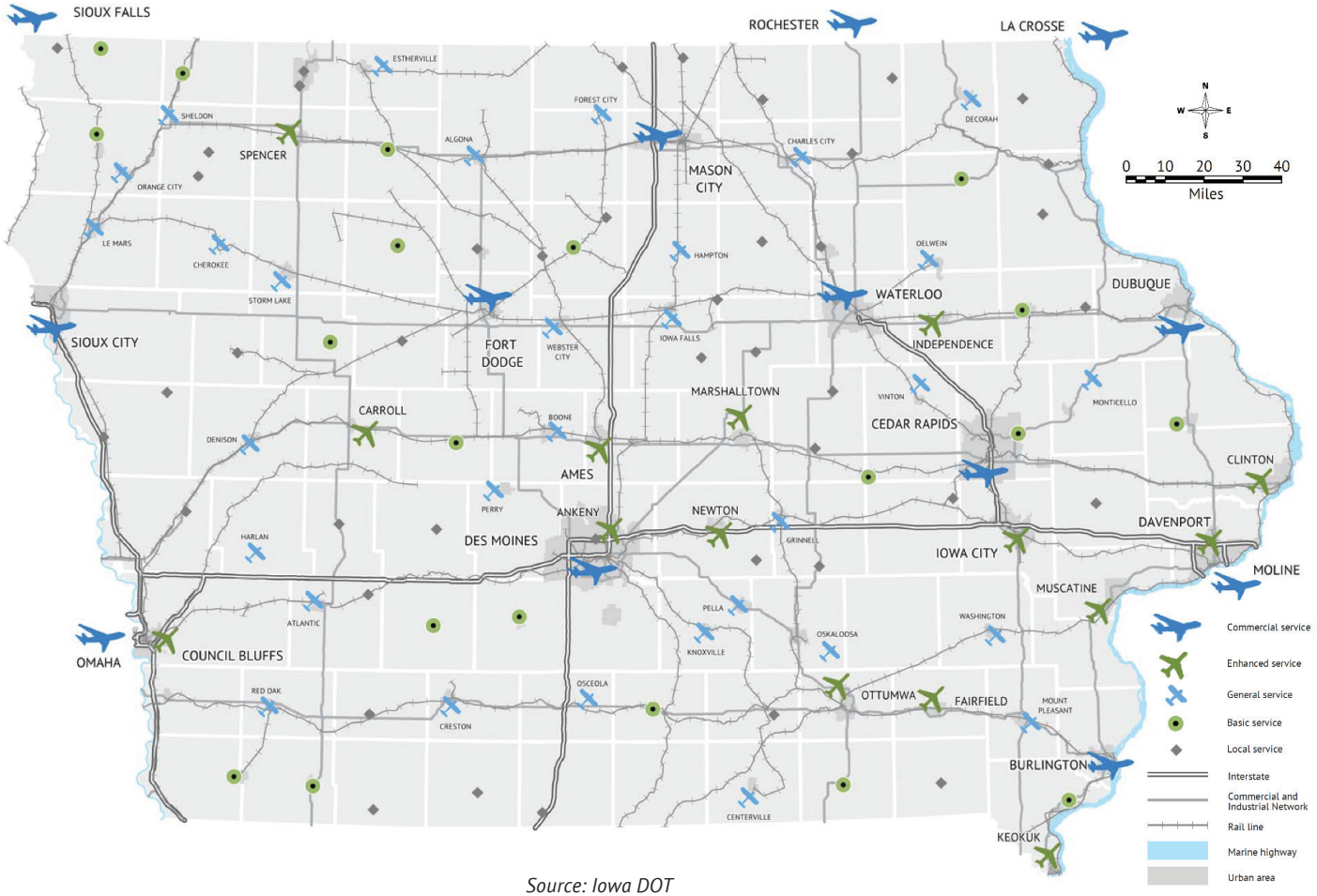
Source: Iowa DOT

9 Iowa State Rail Plan: https://iowadot.gov/iowainmotion/railplan/2017/IowaSRP2017_Complete.pdf

Aviation

Iowa's air transportation system plays a critical role in the economic development of the state and the quality of life for Iowans, providing an essential travel option for business and leisure. Airports are key transportation centers and economic catalysts, moving people and goods quickly and efficiently. The Federal Aviation Administration (FAA) lists more than 3,700 aircraft and 5,500 pilots in the state. With more than 1 million annual aircraft operations conducted at 107 publicly owned airports (see Figure 2.24), the aviation system provides a valuable transportation mode to meet the needs of businesses, residents, and visitors.

Figure 2.24: Iowa airports by role and bordering commercial airports

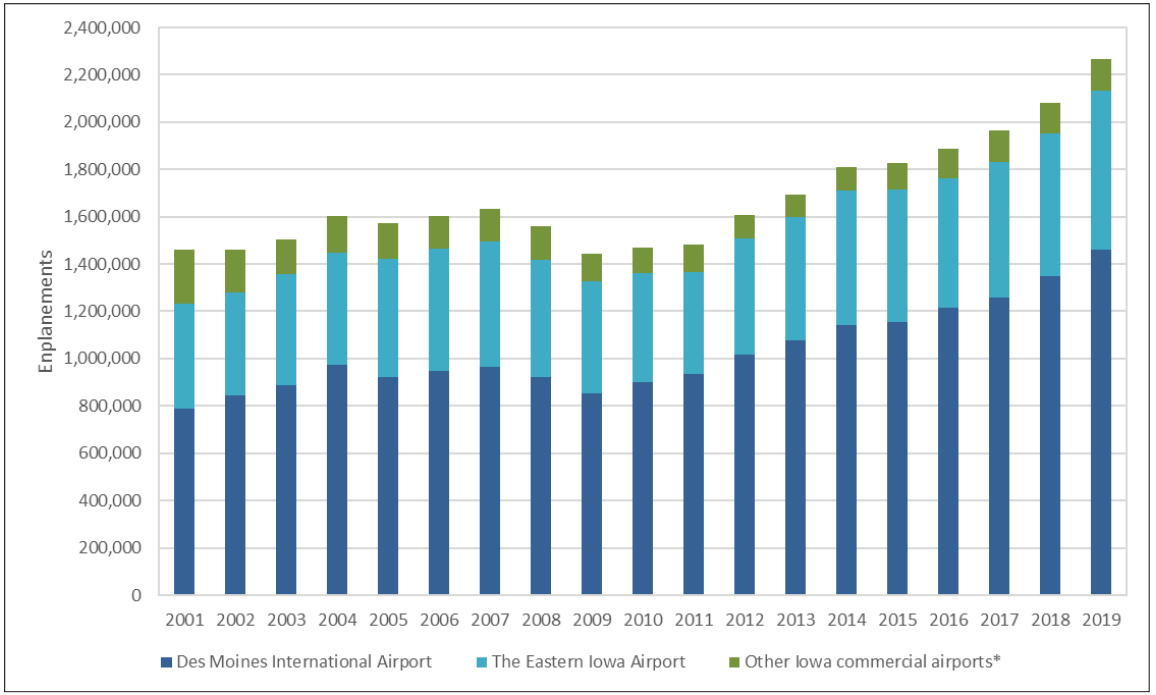


Source: Iowa DOT

Iowa's commercial service and general aviation airports provide access for many different types of aviation system users. More than 2.2 million people are boarded (enplanements) on commercial aircraft and nearly 98,000 tons of cargo are shipped from Iowa's eight commercial service airports each year. General aviation accounts for most aircraft operations in Iowa and includes uses for agriculture, business, charter, flight instruction, law enforcement, medical transport, and recreational activities.

After a slight decline during 2008-2011, enplanements at Iowa's commercial service airports have been growing (see Figure 2.25). Forecasts suggest passenger traffic will experience annual increases of 2 percent over the next 20 years. During the same period, general aviation activity is expected to see modest increases in both based aircraft and operations.

Figure 2.25: Enplanements at Iowa's commercial service airports, 2001-2019



**This includes Dubuque Regional, Fort Dodge Regional, Mason City Municipal, Sioux Gateway, Southeast Iowa Regional, and Waterloo Regional Airports*
Source: FAA

Transportation Network Companies (TNCs)

One area of yet unknown influence on public transit ridership is the use of paid rideshare applications such as Uber and Lyft, otherwise known as Transportation Network Companies (TNCs). These services involve people, who may have otherwise taken public transit or used another mode of transportation, paying to ride in private passenger vehicles. These services are considered "paid rideshares" or for-hire passenger transportation provided by rideshare companies. Iowa defines a rideshare company as a corporation, partnership, sole proprietorship, or other entity that operates in this state and uses a digital network (an online enabled app, internet site, or system offered by a rideshare company) to connect riders to drivers who use their personal vehicles to provide prearranged rides for a fare. More information on what these services consist of can be found on Iowa DOT's website[10].

The ride hailing service Lyft began offering service to all of Iowa starting in August 2017. Lyft originally began service in Ames, Cedar Rapids, Davenport, Des Moines, Dubuque, Iowa City, Sioux City and Waterloo earlier in 2017 before expanding service to the rest of the state. Lyft notes that availability of drivers will impact service in rural areas.

In January 2019, Uber announced that its paid rideshare service was available across the entire state of Iowa. While exact average wait times are not available, it is expected that with fewer or potentially no drivers available in some areas, service levels will differ considerably, particularly between urban and rural regions.

10 https://iowadot.gov/mvd/Paid-Rideshare#474891722-information-for-rideshare-companies

Automated Vehicles (AV)

Another area of unknown influence on public transit service and ridership is the advancement of automated vehicles (AV). Vehicles that are fully autonomous could potentially operate without the need for a driver, which could revolutionize passenger travel. Many organizations have attempted to project AV adoption rates into the future in order to anticipate how many autonomous vehicles could be on the road in the near and long-term future. Due to the multitude of unknowns and variable factors, forecasted AV adoption rates have decreased and most expect a negligible portion of the overall fleet of vehicles to have AV technology in the near future.

For the purposes of this Plan, the potential benefits of AV to mobility is of special importance as it may potentially have the most direct impact on passenger transportation services. From a technical standpoint, the FTA[11] has already begun studying the possibility of incorporating autonomous vehicles into transit fleets by evaluating the capability of existing technology and the ability to retrofit new automated technology into buses. While some existing technology will work well with future AV uses, it was found that the configuration of most braking systems will not be sufficient or at least very difficult for automated technology to leverage unless costly upgrades are made. It was noted however, that hybrid and electric buses have a different type of braking system that performs better as an AV.

From an operations standpoint, the American Public Transportation Association (APTA)[12] is investigating types of transit service that would most likely be the earliest adopters of autonomous technology. Among those services, low-speed shuttle AVs are assessed as having potential to replace existing large buses that service low demand routes with infrequent schedules. First mile/last mile services are also possible services that might see smaller AV transit vehicles providing rides. According to U.S. DOT research conducted in 2018, of the dozen AV shuttle pilot test projects, all of them utilized electric vehicles with capacities between 10 and 15 transit riders, although most of the testing has been limited to closed courses and routes due to safety concerns.

As far as the overall impact of AV on public transit ridership, a study[13] by researchers from North Carolina Department of Transportation and the University of Tennessee found that AVs will likely result in a net decrease in public transit ridership. While they acknowledged that much more research still needs to be done on this, they concluded that this ridership decrease will be due to factors such as extra comfort and privacy of AVs compared to public transit and the relative utility of AVs. It was also noted that micro-mobility services such as shared AVs and microtransit AVs could attract riders from transitional public transit services. Additionally, once full automation has been achieved, populations who otherwise could not drive, such as the disabled, elderly, and unlicensed individuals, could potentially transition from public transit to AV usage.

11 FTA Research – Transit Bus Automation Project: Transferability of Automation Technologies: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118161/transit-bus-automation-project-transferability-automation-technologies-final-report-fta-report-no.pdf

12 APTA Policy Brief – Public Transit Increases Exposure to Automated Vehicle Technology: https://www.apta.com/wp-content/uploads/Policy-Brief_AVFinal.pdf

13 Exploring the effect of autonomous vehicles on transit ridership: https://www.researchgate.net/publication/328979918_Exploring_the_effect_of_autonomous_vehicles_on_transit_ridership

Shared Systems (Bike, Scooter, etc.)

Most shared or electric bicycle (eBike) and scooter services, whether docked at a rack or undocked, are managed at the local jurisdictional level. As such, each location will individually determine if such mobility options are warranted, have sufficient demand from the public, and meet statutory requirements designated for the local area.

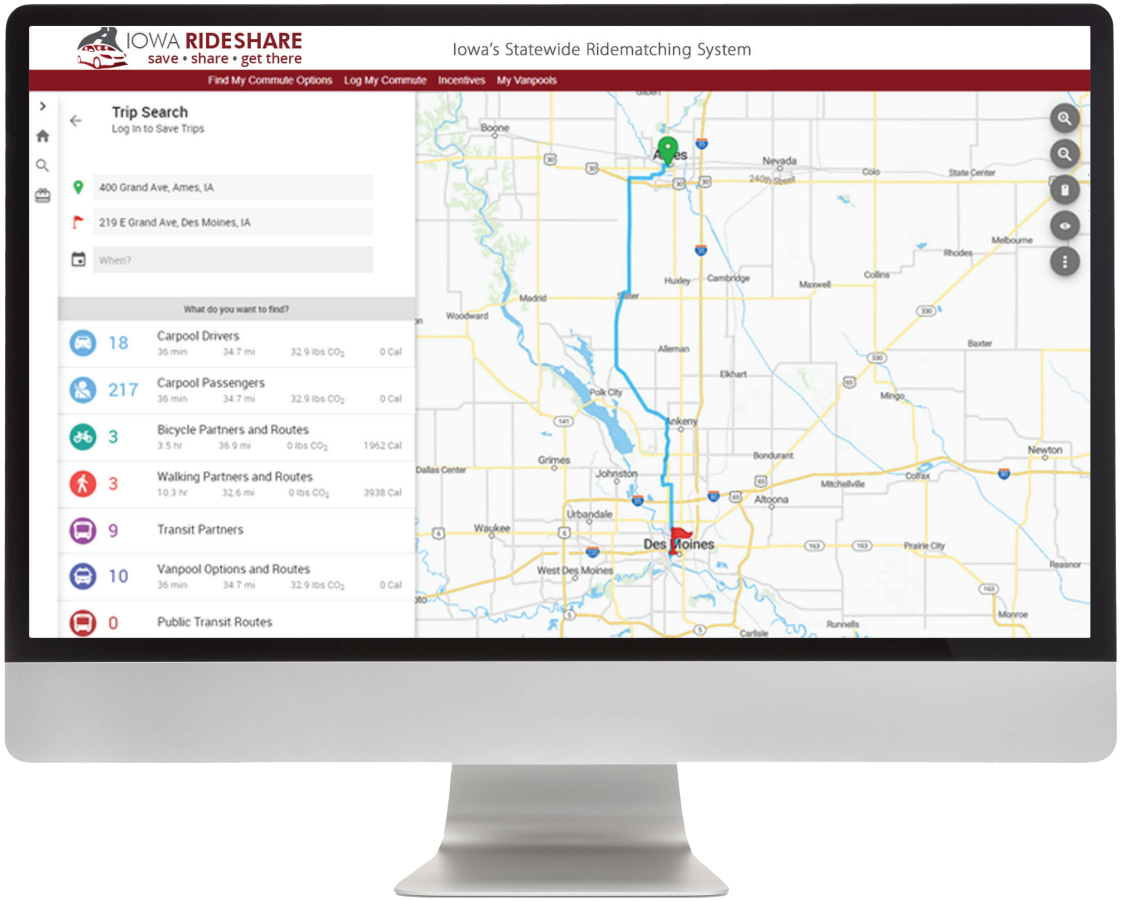
Currently there are three Iowa communities that either have electric scooters or are in the process of considering them. In September of 2019, after amending city code earlier in April, Cedar Rapids formed an agreement with VeoRide to operate and maintain both bike and scooter sharing in the city consisting of 30 scooters and 150 bikes. The electric scooters have a 28-mile range and can reach 12 miles per hour. Likewise, Iowa City also changed its city code to handle electric scooters and bikes the same as non-electric/motorized versions, contracting with Gotcha Mobility to implement dockless bike sharing facilities in the city.

In addition to Cedar Rapids and Iowa City, Des Moines is also exploring allowing electric scooters within its jurisdiction. Des Moines already has an extensive bike share fleet, so the scooters would be an augmentation of that service. If communities continue to incorporate these types of shared systems, they could have varying effects on public transit, from serving as an alternative mode for transit riders to helping to provide last-mile connections to transit riders.

Other shared transportation options

Other technological transportation innovations that could affect public transit include transportation subscription services, where an individual pays for access to multiple modes of transportation to serve their needs at any time (e.g., rental car, bike, vanpool, passenger rail pass, etc.), or paying a monthly fee for the access rather than owning a personal vehicle or waiting to ride the bus.

Free alternative transportation options include arranging for carpools or vanpools using the Iowa Rideshare[14] ridematching system that helps to quickly and securely find viable commute options, including carpool partners, vanpool routes, transit routes, cycling buddies, and more. Since its inception in late 2016, more than 5,000 unique users have registered with Iowa Rideshare, resulting in over 2,500 connections between multiple commuters and carpools. Additionally, DART offers its own vanpool program with connections available through the Iowa Rideshare site. To date, DART's fleet of nearly 250 vans has performed over 3,000 additional commuter trips. The Iowa Statewide Park and Ride System[15] further supports carpooling and ridesharing by providing free parking for commuters throughout the state, which can be utilized by commuters connecting through Iowa Rideshare or any other means, free of charge.



14 Iowa Rideshare website: https://www.iowarideshare.org/Public/Home.aspx
15 Iowa Park and Ride System website: https://iowadot.gov/parkride#sthash.uzku4t7A.XVRiv9Ei.dpbs

3. NEEDS AND STRATEGIES

The prior chapters have described characteristics of different passenger transportation systems, as well as the challenges that Iowa's public transportation system is experiencing. Information on gaps and needs within the public transit system itself will be covered in this chapter in order to produce a comprehensive operational picture of the current situation. Once the needs are identified, strategies addressing them can be applied in order to influence the transit system in such a way that it aligns with the goals of this Plan.

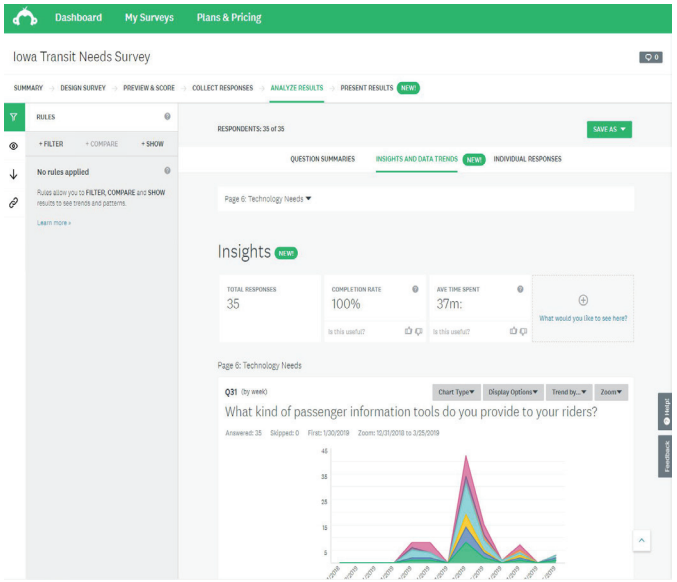
3.1. Needs Assessment and Gap Analysis

One of the steps of the planning process was to identify the existing and forecasted needs of the public transit system. Afterall, a solution cannot be applied until the problem is first fully understood. The needs assessments and analyses not only result in solutions and strategies, but also provide tangible metrics with which to begin estimating the costs associated with them. Further discussion on costs and the financial analysis will be covered in Chapter 4.

Transit Needs Survey

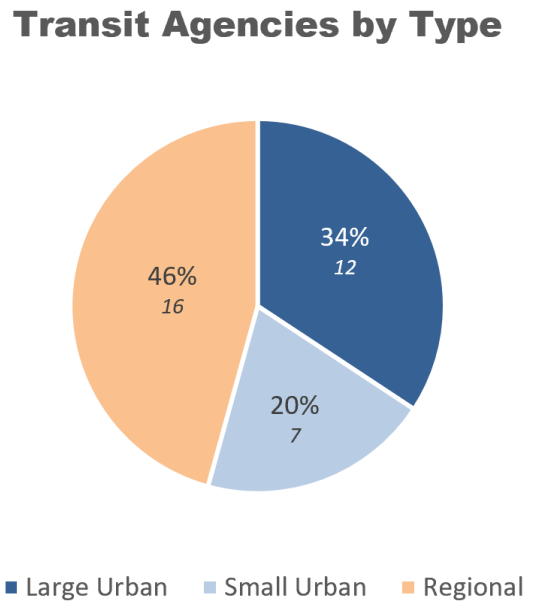
Understanding the needs of the public transit system requires detailed knowledge of how it operates. For this reason, the first effort to assess these needs relied upon input from all transit agencies in Iowa.

Immediately after the launch of the Iowa Public Transit Long Range Plan effort in December 2018, the Plan's working group began drafting a set of questions for the transit agencies to answer through a survey. The purpose of this survey was to identify gaps or needs in public transit services throughout the state. These needs were then analyzed and incorporated into the Plan.



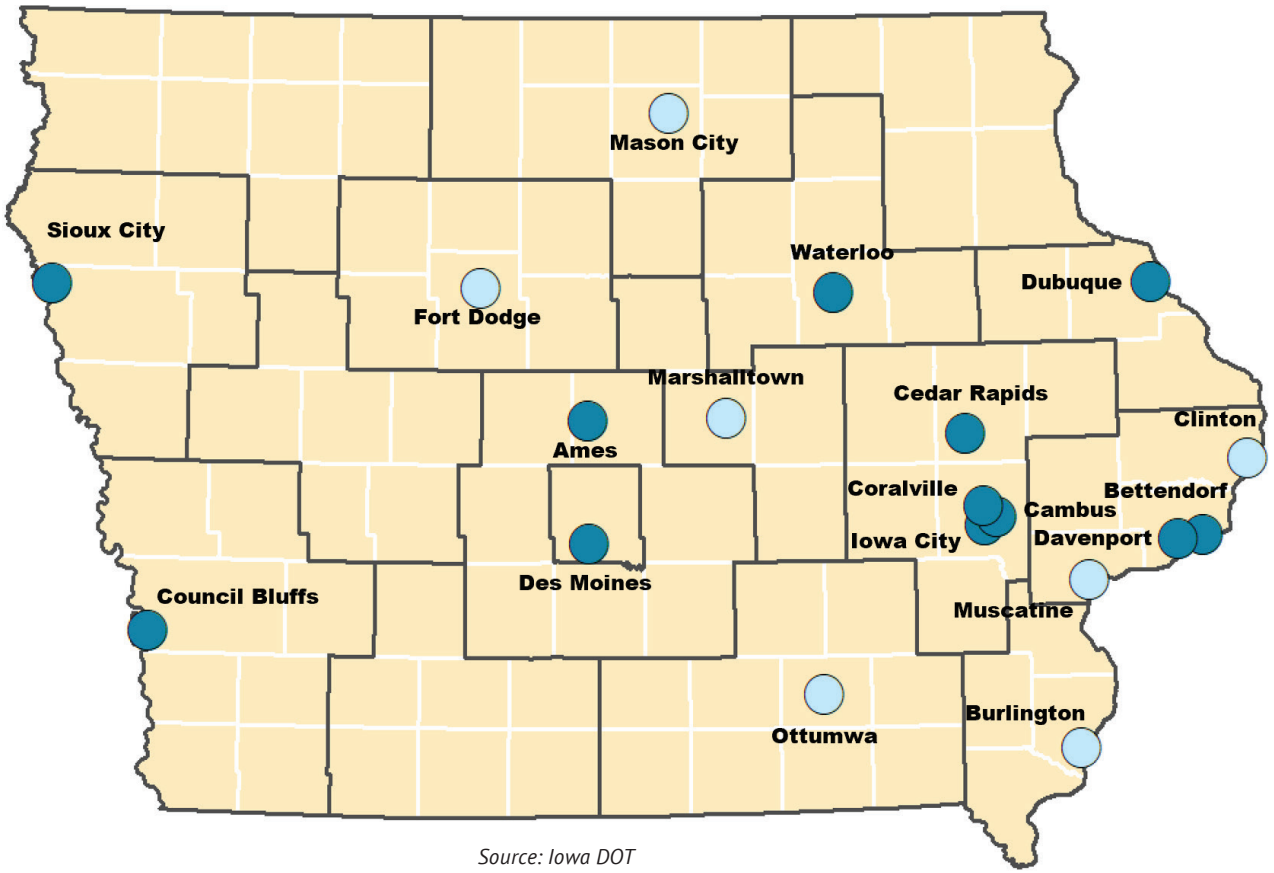
An online platform was utilized to conduct the needs assessment and the survey was open from February 1 through March 29, 2019. All 35 Iowa transit agencies responded to the survey.

When possible, results were aggregated by transit agency type: large urban, small urban, or regional (see Figure 3.1).



Large Urban: greater than 50,000 population
Small Urban: 20,000 - 49,999 population
Regional: Rural areas outside Urban

Figure 3.1: Transit agencies by type



Source: Iowa DOT

The survey questions were organized into several different sections based on the type of need. The sections included:

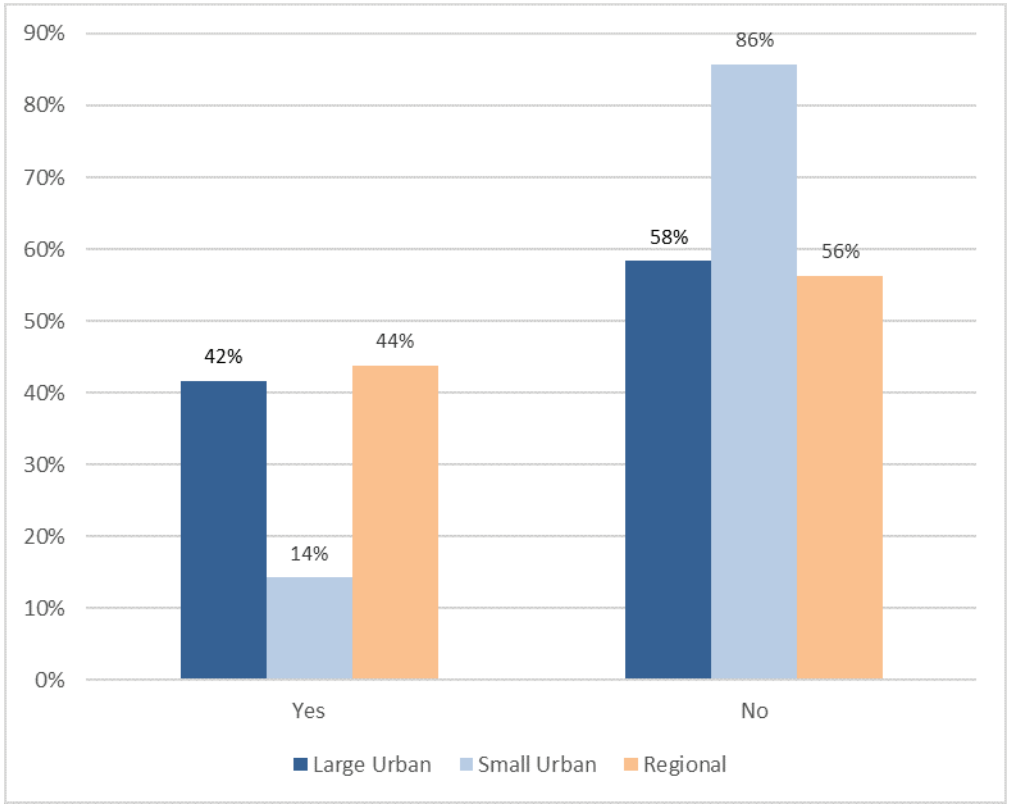
- **Section 1:** Agency Information
- **Section 2:** Service Needs
- **Section 3:** Fleet Needs
- **Section 4:** Facility Needs
- **Section 5:** Personnel Needs
- **Section 6:** Technology Needs

Section 1: Agency Information

The first section of the survey was intended to validate agency contact information, as well as to ask a series of general questions about the agency itself. These questions were useful information to gather as they provided additional context for understanding how the transit agencies operate and communicate.

One fact that quickly became clear was a general lack of long-range or strategic planning efforts. As seen in Figure 3.2, most agencies do not conduct planning to this extent. This was also evident through the difficulties that some agencies experienced when trying to forecast needs out to 2030 and 2050. Open-ended comments supplied in each survey section indicated this as well. The overall lack of long-range strategic planning serves as further evidence that this Public Transit Long Range Plan is needed.

Figure 3.2: Percentage of transit agencies that have conducted strategic planning



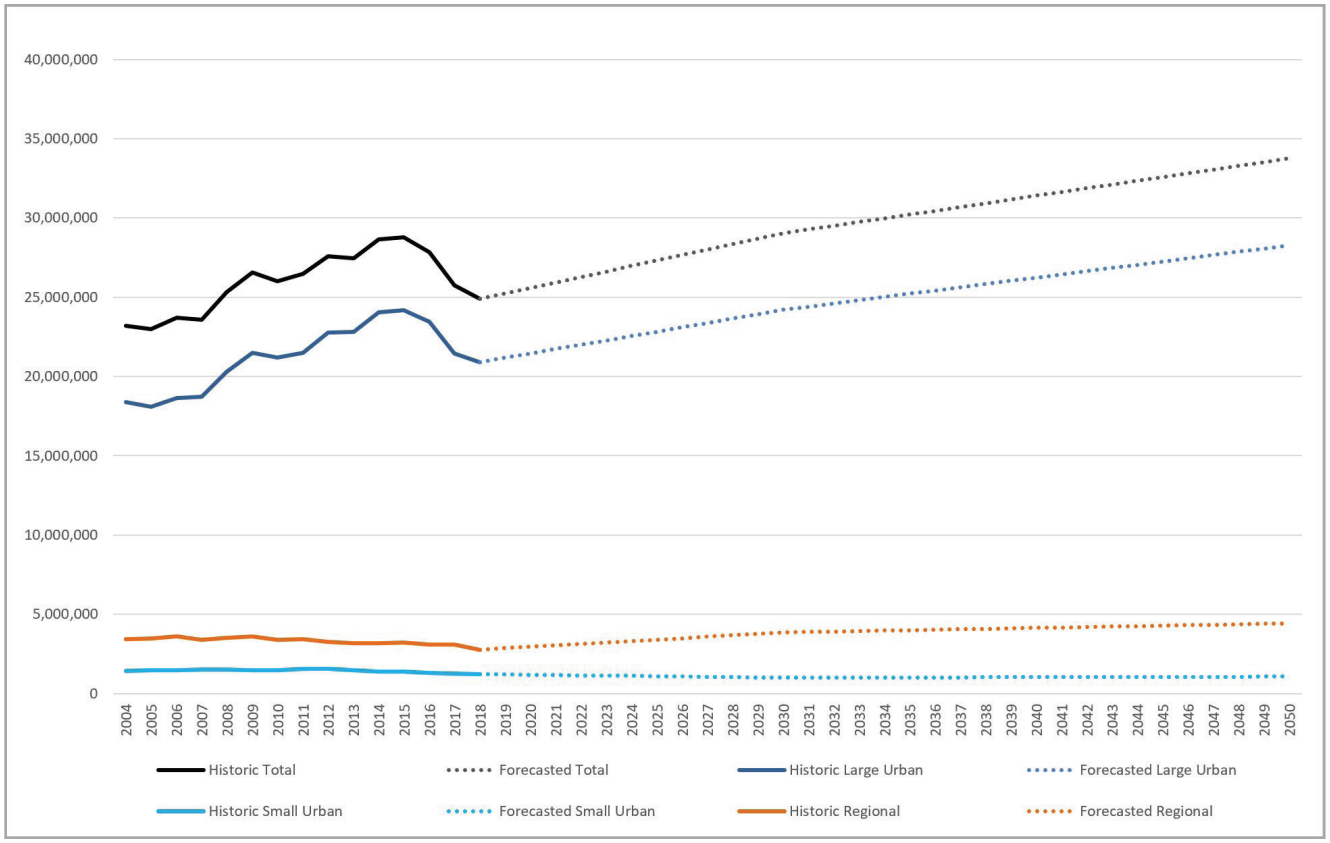
Source: Iowa DOT

Section 2: Service Needs

Service needs are defined as unmet demand for specific components of public transit service. Needs could be gaps in service area, frequency, or time periods that service operates; or a lack of options such as express routes (routes with few stops or transfers), paratransit (service for individuals with disabilities), or demand response (pre-scheduled trips with no set stops).

Figure 3.3 represents historically reported ridership numbers and projected future ridership levels based on survey responses. This clearly shows a decrease of ridership from its peak around 2015 through the present. There are multiple factors that may help explain this decline. During that time period, Transportation Network Companies (TNCs) such as Uber and Lyft began expanding in Iowa's urban areas, which attracted some ridership from public transit. Additionally, changes in how Medicare medical transportation is contracted through Iowa's Managed Care Organization (MCO) providers resulted in a significant number of riders being diverted from public transportation to private or alternative means of transportation. Despite the recent decreases in public transit ridership, transit agencies are projecting long-term growth in ridership. Agencies were asked to estimate their ridership in 2030 and in 2050; as shown on Figure 3.3, agencies are projecting slightly higher growth in ridership from now to 2030 compared to 2030 to 2050. This may represent some of the long-term uncertainty of the relationship of public transit to TNCs and other possible transportation developments, such as autonomous vehicles.

Figure 3.3: Iowa transit agency ridership, historical and forecasted

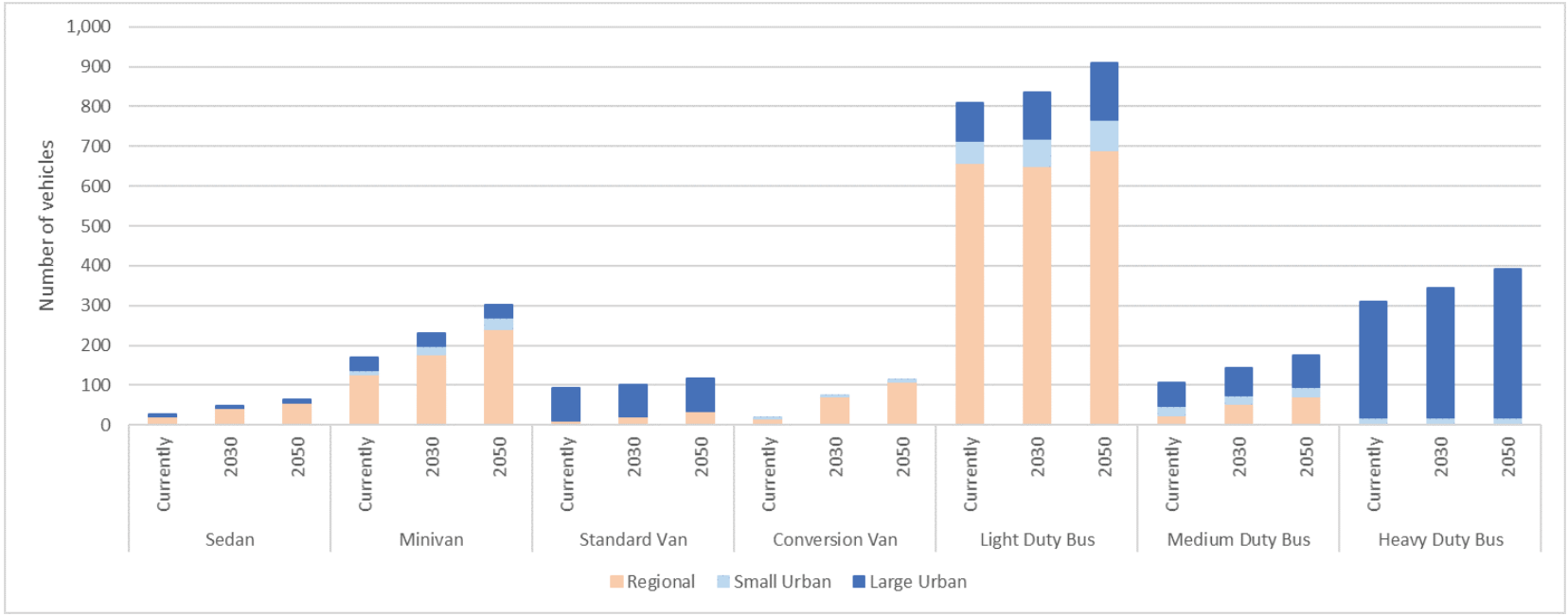


Source: Iowa DOT

Section 3: Fleet Needs

Fleet needs relate to revenue vehicles, which are a transit agency's bus and van fleet that is utilized to transport riders. This does not include vehicles used by office personnel or for non-public transportation purposes such as maintenance trucks. Vehicle fleet needs represent a constant challenge as this includes replacing existing vehicles that are beyond their useful lives, as well as projecting future needs for additional vehicles, called expansion vehicles since they increase the overall fleet size. In general, transit agencies are exploring the "rightsizing" of their fleet in order to have appropriately-sized vehicles for the likely number of riders. In some situations, there may only be one or two riders, so it would not make as much practical sense to utilize a heavy duty bus to transport them. Instead, a smaller van would be a more appropriate and comfortable fit. On the other hand, fixed-route services or contracted employee transportation services may require a bus that can hold 20 or more people at once. Figure 3.4 shows the varying vehicle needs between the different types of transit agencies, by showing the estimated additional vehicles needed by 2030 and by 2050 on top of their current vehicle fleets. Note that large urban systems typically focus on fixed-route service which transports larger numbers of people for shorter distances, while regional systems generally transport fewer numbers of people over longer distances. Additionally, many systems are exploring the use of vans to augment or replace larger buses.

Figure 3.4: Transit agency current vehicle fleets and additional vehicle needs by 2030 and 2050



Source: Iowa DOT

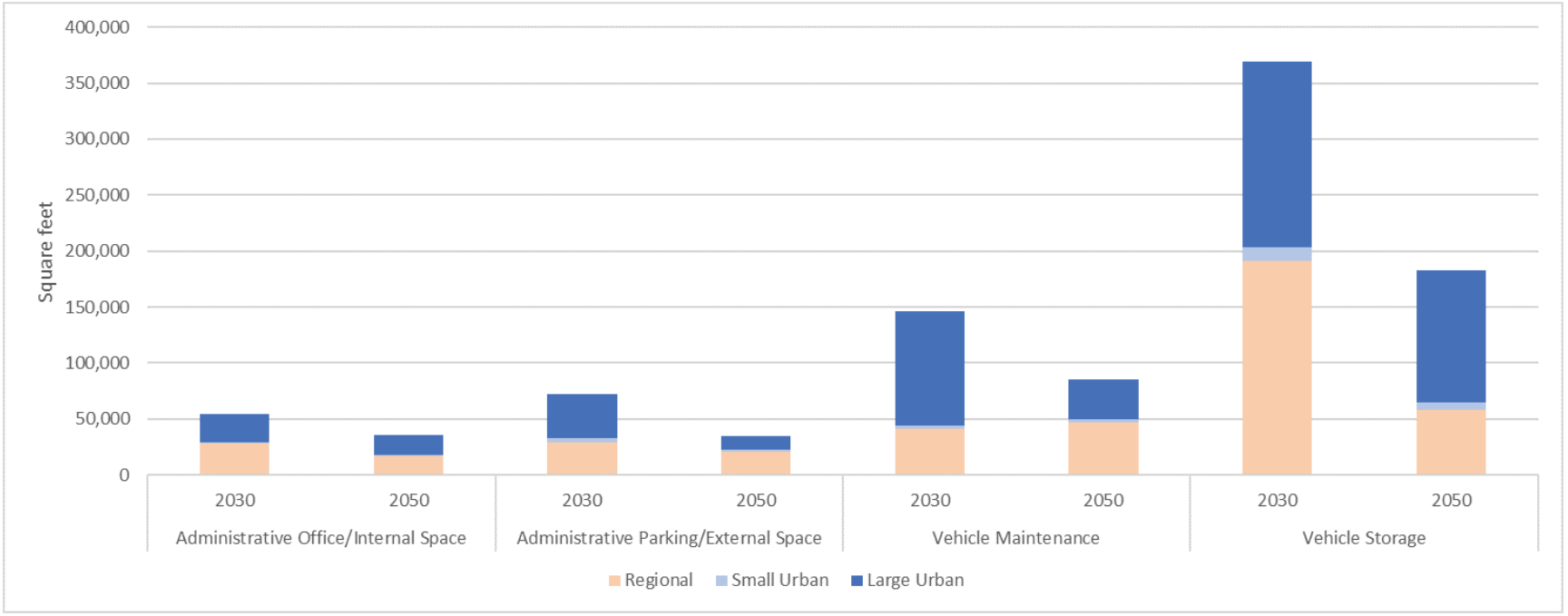
Section 4: Facility Needs

Facility needs include maintenance areas (including wash racks and wash bays), revenue vehicle storage areas, administrative/offices (including building needs such as offices/storage space and site needs such as parking spaces and walkways), and park and ride facilities.

Typically, the larger the vehicle size, the more expensive it is to fix and replace. In order to extend the lives of these expensive vehicles, it is best to protect them to reduce maintenance costs and wear-and-tear of the buses. Extending the longevity of the bus fleet was reflected as one of the more significant needs for additional revenue vehicle storage. Maintenance facilities for the fleet were also identified as a need; however, it was significantly lower compared to storage needs. Administrative offices and parking space were also notably lower in need compared to other types of facilities.

Figure 3.5 displays the survey results for facility needs. Besides the need for particular types of facilities, the time period in which they are needed displayed another trend. Nearly all facility needs were identified in the short-term planning horizon of 2030, with additional facility needs significantly lower in the long-term by 2050. This shows that additional facilities, particularly for vehicle storage, are a higher priority and a more immediate need.

Figure 3.5: Transit agency additional facility needs by 2030 and 2050 (square feet)



Source: Iowa DOT

Transit agencies had varying needs for bus shelters and park and ride lots. Regional systems had a slight need that increased very little between 2030 and 2050, as shown in Figure 3.6. Large urban systems showed the greatest change between 2030 and 2050, with much more need for both types of facilities. Small urban systems saw an increase for bus shelters in the short-term by 2030 with a similar need by 2050, but saw no need for additional park and ride facilities.

Figure 3.6: Bus shelter and park and ride additional facility needs by 2030 and 2050 (number of shelters/lots)

	Bus Shelters		Park & Ride	
	2030	2050	2030	2050
Regional	4	6	9	10
Small Urban	16	15	0	0
Large Urban	203	317	13	22

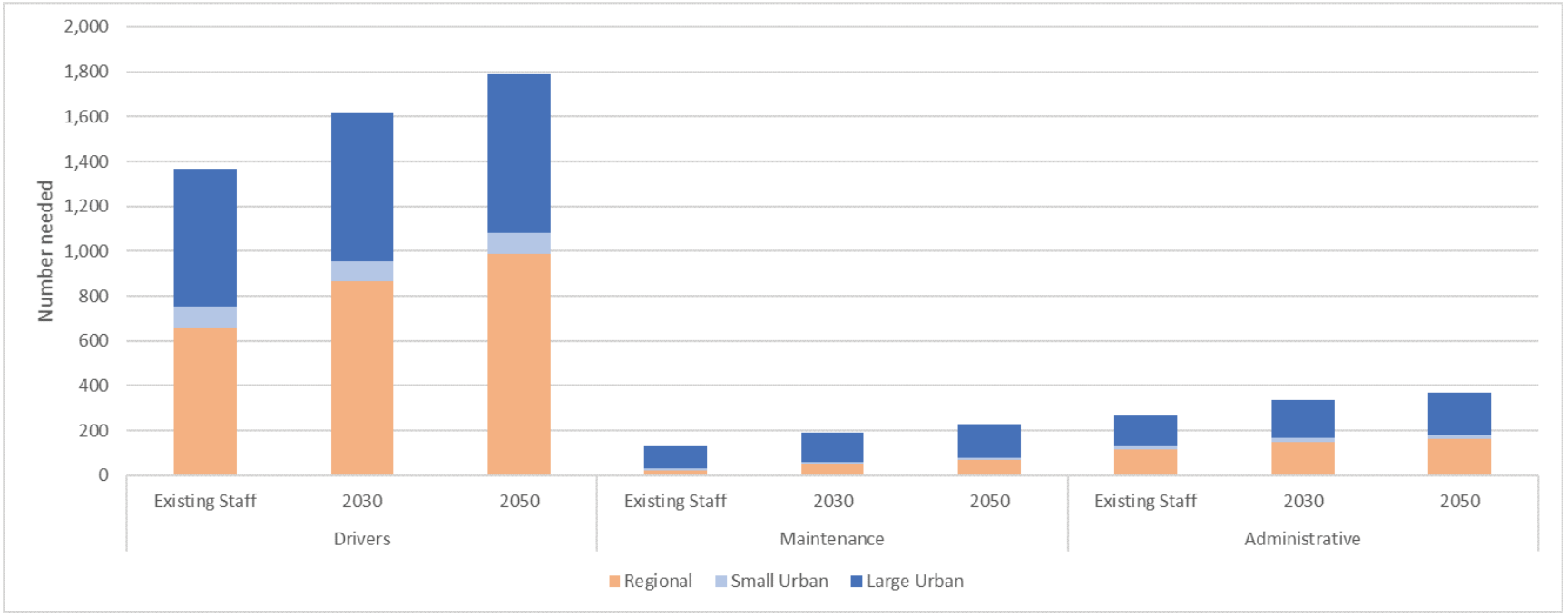
Source: Iowa DOT

Section 5: Personnel Needs

Personnel needs relate to the workforce of the transit agency. This includes drivers, maintenance, and administrative staff. All types of transit agencies expressed current personnel needs as well as ongoing needs for additional drivers, maintenance staff, and administrative or office staff (see Figure 3.7). However, the need for more bus drivers represents the single greatest personnel need across the state. In some situations, the need for drivers is so significant that dispatchers, maintenance personnel, and even agency directors attempt to fill the gap by driving a limited number of routes and picking up on-demand transit calls.

A lack of drivers will have the effect of limiting the level of transit service that is available in a given region. It does not matter how many buses or vans are available if there are not sufficient numbers of qualified and licensed drivers to operate them. Likewise, a lack of maintenance employees may impact the ability to service and sustain the fleet of vehicles available for transit service, while a lack of office staff will handicap the agency's ability to conduct public outreach, market its services, or perform strategic planning or analyses.

"Figure 3.7: Transit agency current personnel and additional personnel needs by 2030 and 2050



Source: Iowa DOT

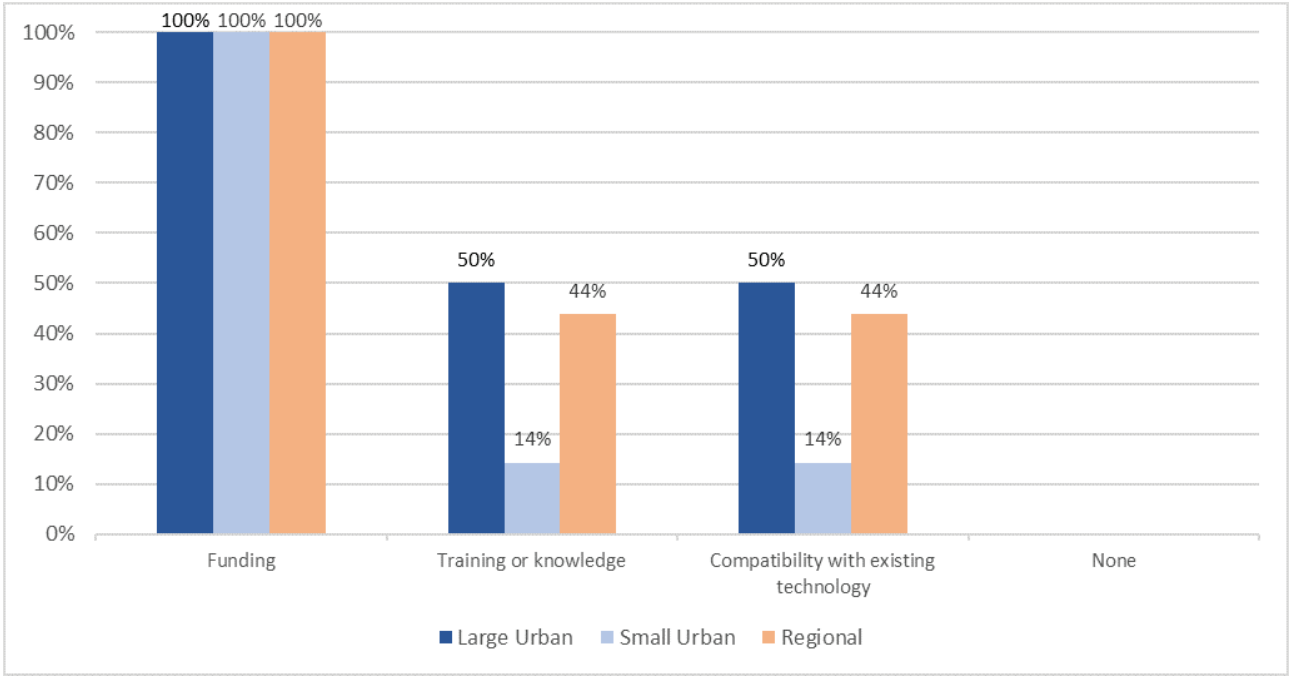
Section 6: Technology Needs

Technology needs relate to hardware or software capabilities within vehicles, as well as those utilized by administrative staff in the office.

Transit agencies utilize a wide range of tools and technologies in order to keep the transit system operating. From dispatching, to route optimization software, hybrid buses, and live geolocating services and apps, there are many different aspects of running transit operations that are impacted by the rapid pace of changing technology. Along with that, there are rapidly changing expectations of potential riders that make it difficult for transit agencies to simultaneously manage current operations while researching and implementing new technological approaches.

As shown in Figure 3.8, it is clear that the most significant barrier to implementing new technology is funding. Some of the comments from the agencies provided additional context to this. Several made mention of the difficulty in determining the overall cost of technology, such as predicting training costs, subscription services, and long-term licensing agreements. While most agencies expressed interest in adopting new technology, there was even more interest in understanding its return-on-investment. In other words, they would like to understand what the overall costs entail, including lost opportunity costs, in relation to cost savings or some other tangible benefit.

Figure 3.8: Barriers preventing transit agencies from acquiring or leveraging technology



Source: Iowa DOT

Transit Dependency Analysis

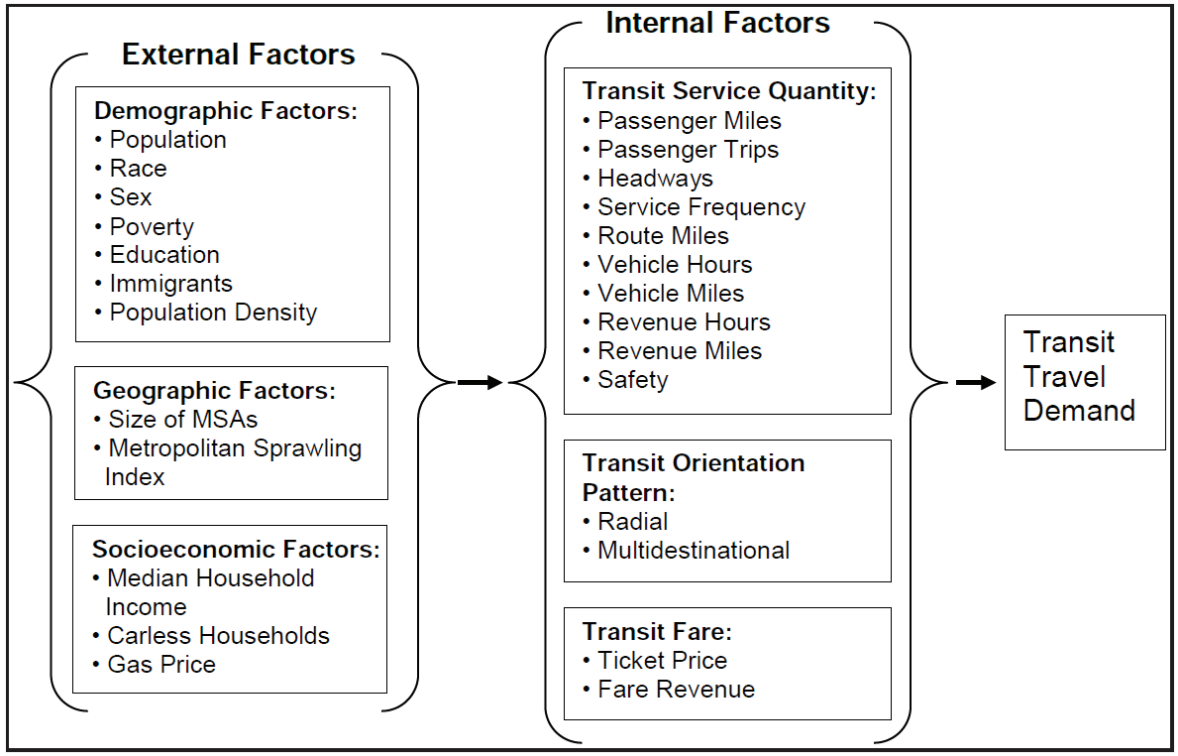
Background

Determining needs and assessing the public transit system for gaps and issues occurred early in the planning process. While the Transit Needs Assessment survey was being completed by the transit agencies in March 2019, additional analysis was being done to forecast or predict the locations of "hot spots" where transit need or dependency was highest in Iowa. After a literature review of multiple studies on the topic, a study by the Mineta Transportation Institute from San José State University (SJSU) was utilized as the basis for a transit dependency analysis in Iowa.

This study, titled "Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas[16]", shared several common themes that were reproduced for the purposes of this Plan, including:

- Predicting areas of transit need
- Not relying on ridership statistics or other reported transit data
- Utilizing general characteristics, universally applied throughout the entire study area

Figure 3.9: Internal and external factors



Source: Adapted from Taylor et al. (2009) and Thompson and Brown (2006).

Source: Mineta Transportation Institute

16 "Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas", Mineta Transportation Institute, San José State University, May 2015. https://transweb.sjsu.edu/research/investigating-determining-factors-transit-travel-demand-bus-mode-us-metropolitan

Selection of Factors

While the overall goals of the Mineta study were the same with regards to identifying transit dependent areas in Iowa, the factors utilized in the study needed to be evaluated and adapted in order to tailor them to better suit Iowa.

Internal versus External Factors

The original study divided the list of factors into internal and external factors. Internal factors were described as characteristics that are directly controlled by transit agencies. As Figure 3.9 shows, these factors primarily consist of things like bus fares, hours of service, frequency of routes, and the type of routes traveled (i.e., a circular ring-route, multi-stop route, or express route).

External factors, on the other hand, are characteristics that describe the relationship between demographic and economic factors and transit ridership. These attributes cover a spectrum of areas including household income, fuel prices, metropolitan sprawl, and other socioeconomic characteristics.

Methodology

For the purposes of this Plan, only external factors were leveraged for the transit dependency analysis. This was mainly due to the fact that internal factors can vary greatly across different regions and transit agencies, making it nearly impossible to evaluate and describe the entire state under one universal set of characteristics. Additionally, several factors from the original study were removed or adjusted due to their limited applicability to Iowa or redundancy with other factors.

After the factors were selected and adjusted, the next step was to gather the necessary data in order to conduct the analysis. After reviewing the available datasets, it was determined that most of the factors could be described in terms of U.S. Census Block Groups. This was the smallest, most granular geographic unit that most of the factors could be attributed to. The only exception was for gas prices due to the limited availability of this information. As such, gas prices were determined at the county-level instead of block group. Figure 3.10 shows the seven factors used in the transit dependency analysis and their definitions.

Figure 3.10: Transit dependency factors

Factor	Scale	Description
Gas Prices	County	Average gas prices from AAA web site with samples taken between June and November 2019. O'Brien County data from Gas Buddy website (not available from AAA).
Median Household Income	Block Group	Median household income for the block group.
Carless Households	Block Group	Percentage of households with zero vehicles available.
Language	Block Group	Percentage of households where English is spoken "not well" or "not at all."
Race	Block Group	Percentage of households not classified solely as "White."
College Enrolled	Block Group	Percentage of households with occupants enrolled in "college, undergraduate, graduate or professional school."
Population Density	Block Group	Density of population per square kilometer (land area only – water area not included).

Sources: U.S. Census Bureau; AAA; Gas Buddy

Once data for the factors was gathered, it was rendered in a Geographic Information System (GIS) map. This mapping software allowed for detailed analysis of the individual factors as layers of information that could then be summarized and compiled into a single overlay to represent transit dependency in different areas of the state. Statewide averages for each of the factors were used as a threshold by which each area could be determined to be more or less transit dependent for that factor. For each factor, a scale of one through ten was applied with a value of ten being all values that were equal to or less transit dependent than the statewide average. All remaining block groups were divided into nine categories with an equal number of remaining block groups in each of the nine categories. This enabled the comparison of factors based on a normalized scale rather than each individual factor's data range.

A layer, with a one through ten score for each block group, was generated corresponding to each of the seven individual external factors used in the analysis. All the individual layers were then compiled in order to generate an overall composite layer that identifies the most transit dependent areas based on these seven factors. Since it is likely that not all factors contribute equally when it comes to influencing transit dependency and ridership, they needed to be weighted to reflect the level of influence of each factor.

The transit agencies were asked to help provide this information by supplying a set of scoring values for each of the seven factors, based on their background, experience, and perspective. The higher the value assigned to the factor, the more weighting or influence was given to that particular factor. Lower values for a factor indicate less influence on transit dependency. Results were averaged first by transit agency type then across all agencies together, as shown on Figure 3.11.

These results were input into GIS. The scores for each factor were multiplied by that factor's weight, then all individual weighted layers were added together. Figure 3.12 depicts the result based on the average weights for each factor as determined by the transit agencies.

Application

The value of performing this analysis is in realizing the complex relationship between multiple factors and how they contribute to transit dependency. Regardless of whether a transit system is in an urban or rural area, a transit agency can review these results and see where there are populations that may be more likely to be dependent on that transit system for transportation. This allows for focused discussion on how to address those potential needs.

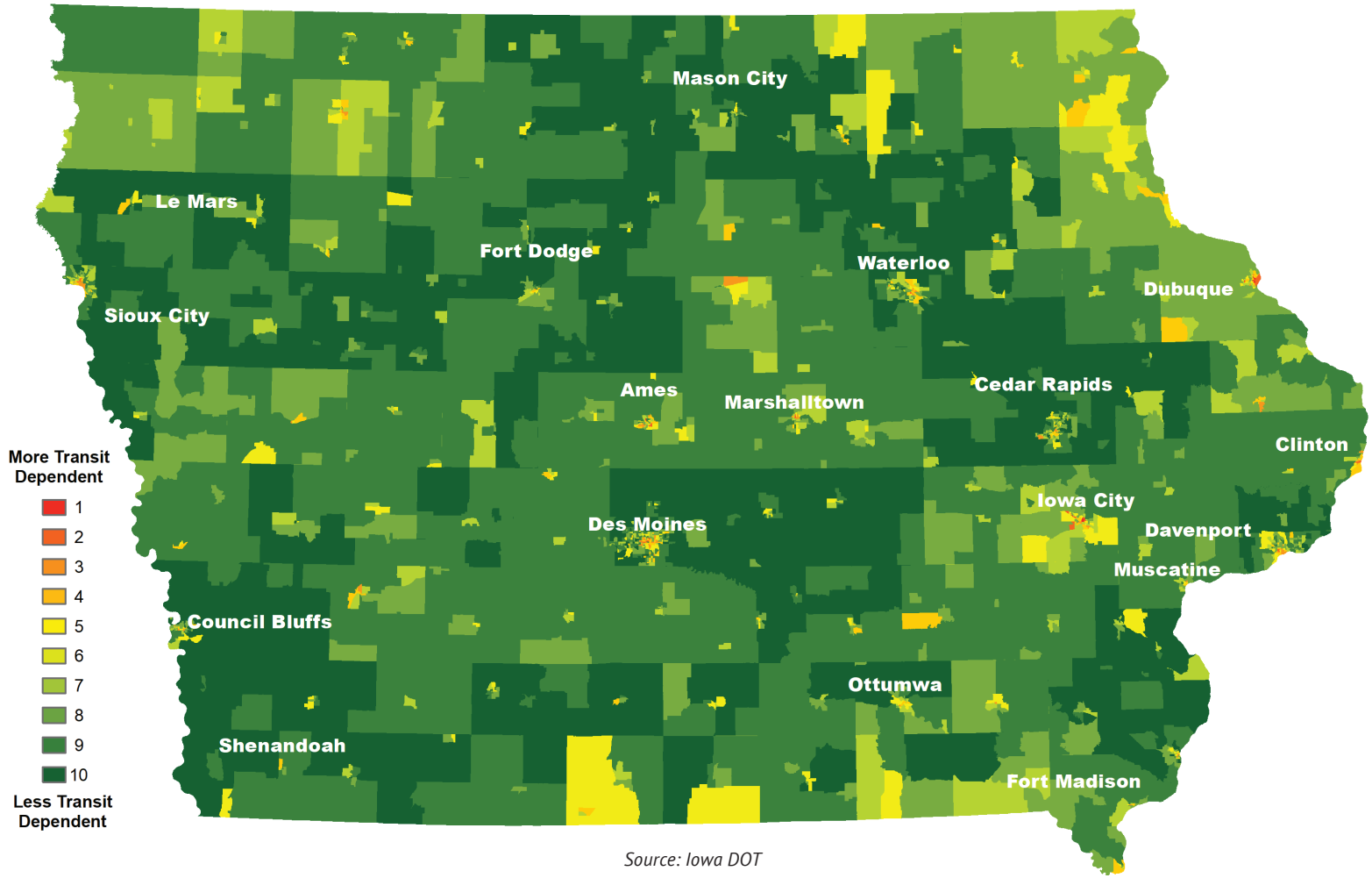
In the case of this analysis, one size does not fit all. Different strategies can be leveraged based on the combination of the individual factors in the region that are flagged as more transit dependent. Just because an area is "more transit dependent" does not necessarily mean that routes or schedules need to change, which could be quite costly for the transit agency.

Figure 3.11: Weighting feedback from transit agencies

	Final			
Factor	*Large Urban*	*Small Urban*	*Regional*	All
1. Gas Prices	15	10	20	20
2. Household Income	25	30	20	20
3. Carless Households	25	40	30	30
4. Language	5	5	5	5
5. Race	5	5	5	5
6. Enrolled in College	10	5	5	5
7. Population Density	15	5	15	15

Source: Iowa DOT

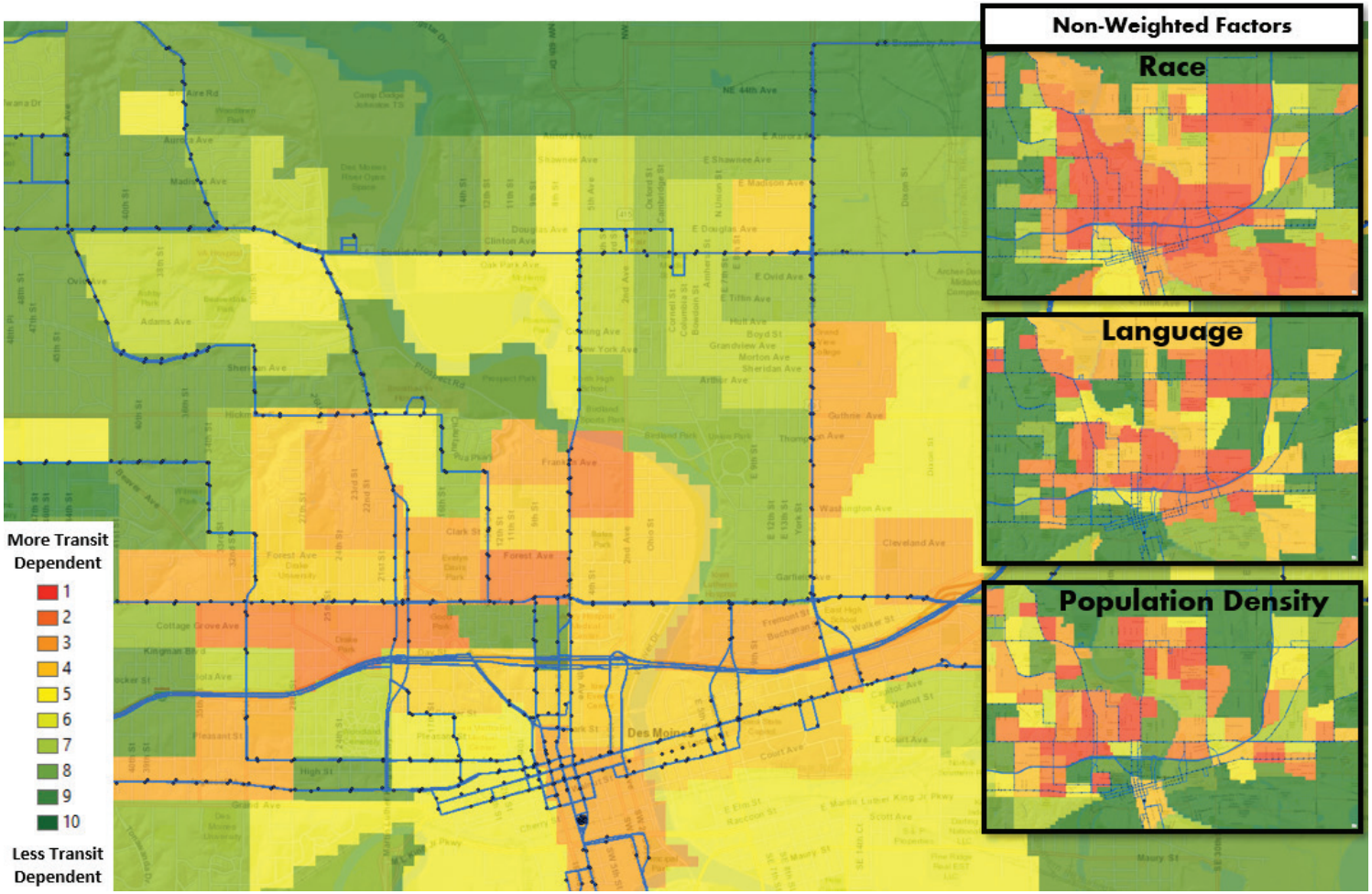
Figure 3.12: Composite transit dependency weighted by all transit agency results



Source: Iowa DOT

By examining the individual factors in transit dependent block groups, an agency can tailor the appropriate response and potentially achieve the end goal of serving additional riders in those areas. Figure 3.13 illustrates this for the Des Moines area, with bus routes and stops overlaid on top of block groups identified as being more transit dependent based on the composite result. The individual, non-weighted factors can also be used as a reference to better understand an area's characteristics in order to tailor appropriate strategies.

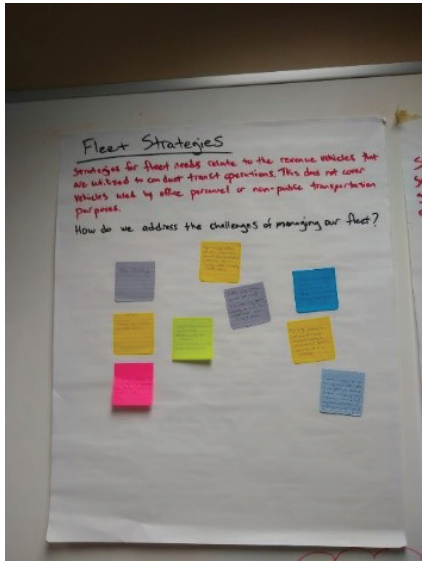
Figure 3.13: Des Moines area example comparing individual weighted factors and bus routes

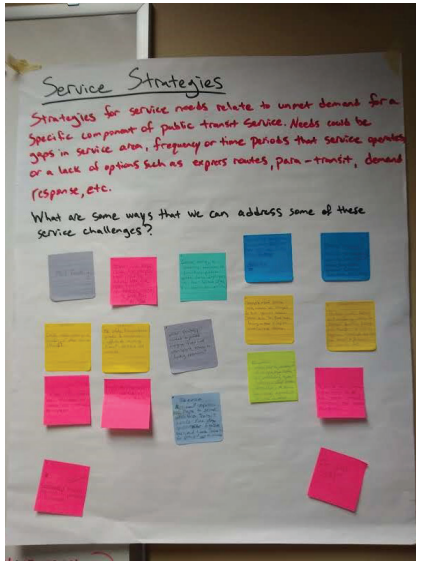


Source: Iowa DOT

3.2. Strategies

In order to carry out the vision of the public transit system and address the needs that were identified during the planning process, strategies have been identified for several areas that would help implement this Plan. The strategies that are listed in this section were derived from existing plans (such as the State Transportation Plan and MPO/RPA Passenger Transportation Plans) and input from stakeholders, the Iowa Transportation Commission, and the general public.





Strategy identification and development

As described in Section 3.1, public transit system needs were among the first items to be collected and analyzed. The results of this needs assessment were initially presented to transit agencies at the Iowa Public Transit Association (IPTA) Legislative Conference in April 2019. After sharing the aggregated results from the transit needs survey, a brainstorming exercise was introduced to the group in order to solicit feedback and begin accumulating ideas and possible strategies for addressing those needs. Each participant had the opportunity to identify ideas or strategies for the five categories of needs – service, fleet, facility, personnel, and technology.

The same approach was utilized in May 2019 for the Passenger Transportation Summit. This conference featured a much broader group of participants, including multiple levels of government, transit agencies, non-profits, human service organizations, and the public. Approximately 60 individual ideas were received.

Strategies were derived from these initial brainstorming exercises and working group input. The result was an initial list of 30 strategies to be considered for inclusion into the Plan and used as a basis to formulate the overall vision and goal areas of the plan. Key themes were extracted from the strategies to determine the frequency of their use, and organized into general categories or goal areas for the plan. These goal areas, and the strategies contained within them, nest under the overall vision for the future of public transit in Iowa.

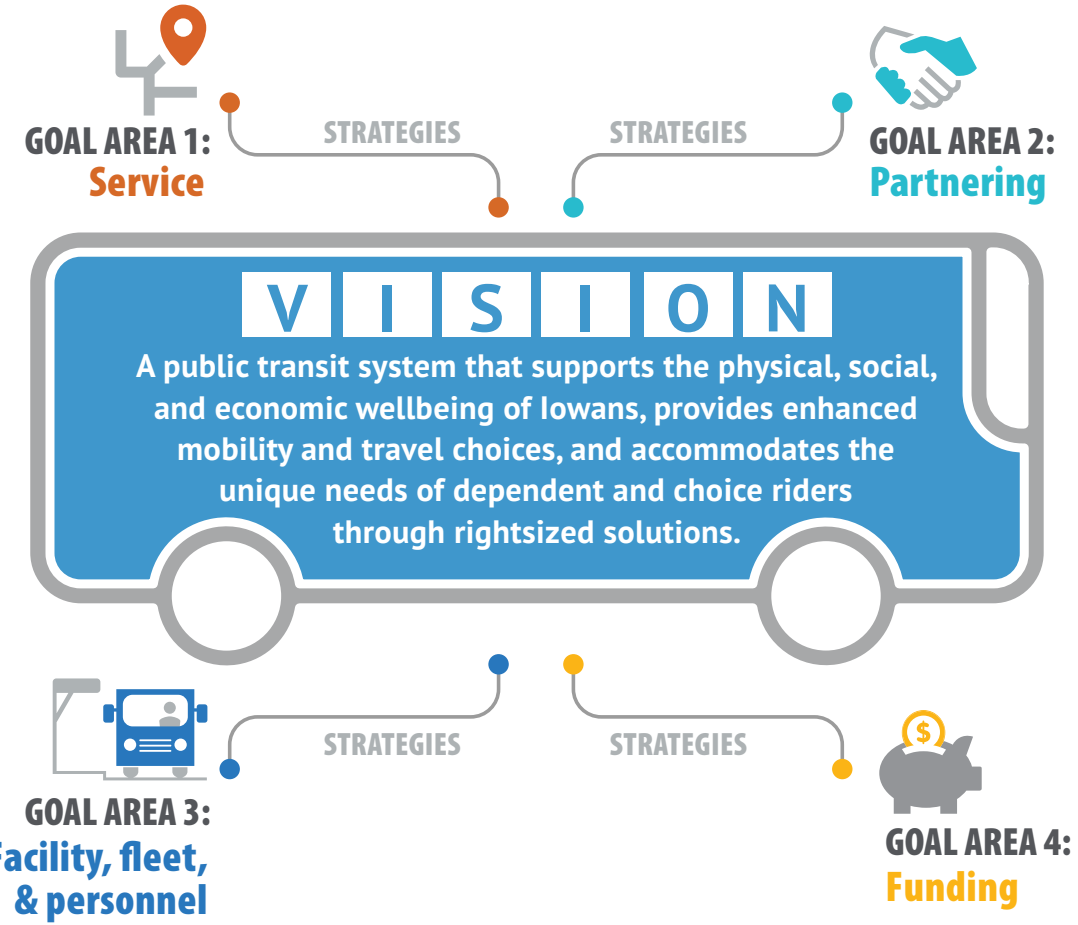
Iowa's Transit Vision

To help translate the overall vision into meaningful actions, an overall structure has been set up with a broad system **vision statement** that captures the overall vision for Iowa's future public transit system, **overarching goal areas**, and **strategies** that have been identified to help achieve the system vision. The vision statement for public transit in Iowa is:

"A public transit system that supports the physical, social, and economic wellbeing of Iowans, provides enhanced mobility and travel choices, and accommodates the unique needs of dependent and choice riders through rightsized solutions."

The intent of the vision statement is to steer the overall efforts of the Plan toward a meaningful end goal; in particular, to enhance mobility overall, improve the ability to get from point 'A' to point 'B', and tailor service options to an area's needs. As the statement indicates, this plan is for all types of transit riders, whether they are dependent upon public transit and have limited transportation options, or they choose to ride public transit to take advantage of one or more of its benefits.

One aspect of public transit that is oftentimes understated, misunderstood, or unrealized is the physical, social, and economic benefit that public transit offers to community wellbeing. Public transit allows riders who are completely unable to transport themselves to access vital public services, businesses, and activities that they otherwise could not access. Enabling all residents of Iowa to remain mobile regardless of age, income, or impairment allows them to stay healthier, more productive, and able to enjoy the amenities that Iowa has to offer. Public transit can also enhance productivity of employees and businesses by connecting workers and employers.



Collectively, the wide range of public transit benefits and beneficiaries will be realized through strategies that prioritize rightsizing solutions. What this means is that everything from the transit fleet to its services should be tailored and optimized to support the unique needs of each area in order to operate as safely and efficiently as possible. In other words, transit systems will be better positioned to use "the right tool for the right job." To help organize these strategies and rightsizing solutions, they are categorized under four general goal areas: Service; Partnering; Facility, Fleet, and Personnel; and Funding.

Iowa's Transit Strategies

As described above, strategies were categorized into goal areas that serve the purpose of helping focus the implementation of the Plan. The following sections describe each goal area and the strategies identified within it.

Goal Area 1: Service

The public transportation system is spread out across all of Iowa and offers a variety of types of transit service. This includes metropolitan areas that have fixed route service with bus stops, regional on-demand service that is scheduled ahead of time, and paratransit that accommodates users with disabilities. The service strategies involve actions that could enhance, expand, or otherwise augment transit service in Iowa.

Service strategies

- Examine the effects of offering fare-free statewide bus service.
- Examine bus service hours for people who work nights and weekends.
- Prioritize funding applications for communities that improve transit service or access.
- Examine the effects of creating more urban transit services in areas that are currently covered by regional transit services.
- Continue existing services and establish new inter-regional services along commuter routes (such as Interstate 380 between Cedar Rapids and Iowa City, Interstate 35 between Ames and Des Moines, and Interstate 74 between Davenport and Illinois).
- Start a subscription price service that works across all bus services in Iowa and includes bikes, scooter sharing, and parking facilities.
- Enable all buses and transit agencies in the state to accept digital fares or electronic payment formats, while still allowing for cash payments.
- Improve accessibility of all transit information, service notifications, and bus route information to ensure they are easy to understand for older adults, multilingual riders, and riders with audio, visual, or cognitive impairments.
- Establish standardized data collection and reporting requirements to better understand ridership.
- Study how to most effectively implement intercity transit bus systems in Iowa.
- Study and define a statewide minimum level of essential transit service necessary to meet critical needs, particularly in the event of severe and sustained disruptions to demand or service.

Goal Area 2: Partnering

By establishing partnerships with other public and private entities, a more diverse array of resources can be leveraged across a much wider area. Partnerships enable organizations to offer a much larger selection of services that would otherwise not be available. The partnership strategies involve multiple entities working together to enhance transit options.

Partnering strategies

- Improve bus transfers between regions and counties in order to support longer and more efficient trips across the state.
- Partner with companies (such as taxis, Uber, Lyft) in order to support city bus routes and provide more transportation options.
- Improve workforce development by partnering with businesses to help employees get to work.
- Partner with non-profit organizations (such as American Cancer Society, Veteran's Affairs, and hospitals) to help people get to their medical appointments on time.
- Partner with other government organizations to increase the number of transportation options for traveling long distances.
- Work with businesses to create transportation options for their employees by offering subsides, bus passes, or incentives such as tax breaks.
- Improve sidewalks and connecting infrastructure by working with state agencies, local government, and private organizations to improve access to bus stops and transit services.

Goal Area 3: Facility, Fleet, and Personnel

When it comes to capital improvements and addressing personnel needs, many times the strategies reflect the kinds of investments that are not easily seen by the public. These strategies can take the form of facility construction and maintenance activities, which do not directly impact transit service, but indirectly influence a transit agency's ability to effectively administer it. Some direct impacts of capital improvements can be seen in the age or condition of buses. As capital assets such as the bus fleet increase in age, their maintenance costs increase, which can negatively impact services. The facility, fleet, and personnel-related strategies would help make sound investments for the agencies that operate public transit.

Facility, fleet, and personnel strategies

- Develop a rightsizing strategy for transit agency bus fleets to decrease costs and better match vehicle sizes to the number of people taking the bus.
- Decrease fuel costs for transit agencies by adopting electric, hybrid, or flex-fuel efficient vehicles.
- Prioritize transit facilities that are evaluated as being in marginal or poor condition for reconstruction or repair.
- Save costs by encouraging transit agencies and local governments to share facilities and staff.
- Address the bus driver shortage by targeting non-traditional candidates to expand the pool of potential applicants.
- Increase training for bus drivers to better serve mobility, hearing or visually impaired riders, children, older adults, immigrant, and refugee populations.
- Identify minimum technology needs for all transit agencies and develop a technology implementation plan.
- Update the Park and Ride System Plan to determine ideal locations for carpooling and ridesharing to support commuting activities.
- Improve the coordination of transportation services between transit agencies and other transportation providers by promoting and hiring mobility manager positions to provide statewide coverage.

Goal Area 4: Funding

The costs associated with nearly all aspects of public transit, particularly capital assets and operations, typically increase over time due to factors such as inflation. Compounding this issue is the fact that traditional funding to offset these costs comes from revenue streams that have remained relatively stagnant over time. Agencies are faced with dilemmas such as cutting staff or services in order to replace or maintain aging buses, or reducing the number of active buses in operation, which reduces the number of routes or their frequency. The funding strategies are aimed at improving transit operators' choices for effectively serving the public.

Funding strategies

- Decrease maintenance costs by focusing resources on replacing transit vehicles that are beyond their useful life.
- Examine alternative ways of funding public transit that do not rely only on existing federal and state sources.
- Conduct a benefit-cost analysis or economic impact study of transit services and projects in order to measure the impact and overall benefit to social welfare.

Prioritization of Iowa's Transit Solutions

Feedback through the public survey in October 2019 allowed members of the public to provide input regarding the relative importance of strategies. Following that effort, the stakeholder groups guiding the development of this Plan also provided feedback, which largely mirrored the trends from the public. This also provided further validation that the strategies were sufficient to address the short-term and long-term objectives of this Plan. Strategy prioritization and resourcing is addressed in Chapter 5, which discusses the implementation of the strategies.

4. FINANCING

Background

Public transit is typically operated on a very thin margin, with nearly all revenue being utilized for capital and operating costs. When looking at historical data for costs and revenues, they are often equal. While this may mean that all available funding was spent on needed service, it does not mean that all needed service was able to be provided. For future planning, it is important to understand not just what has been spent on service in the past, but the amount that would be needed to provide the level of service that is necessary to fully meet the needs in the state.

Prior planning efforts, such as those discussed in Chapter 1, have gauged future needs in various ways. The 2009 Iowa Passenger Transportation Study based future costs on a historic trend of capital and operating costs, as well as annual incremental costs associated with addressing unmet "baseline," or transit dependent, and "choice" demand. Baseline demand was defined uniformly for the state and would include increased service frequency for small and large urban fixed route systems, expanding daily service hours for large urban systems, and expanding daily regional paratransit trips. Choice demand would enhance service to the point that public transit travel times would be more competitive with travel by personal vehicle. The 2017 update to the State Transportation Plan, Iowa in Motion 2045, based its transit cost estimates off a combination of historic trends and the baseline demand identified in the 2009 study.

For this plan, the Transit Needs Survey conducted in March 2019 provided input from the State's 35 public transit agencies on the additional personnel, vehicles, and facilities needed to provide their desired level of service for the short-range horizon of 2030 and the long-range horizon of 2050. It is important to forecast what the costs to meet these needs may be and what amount of revenue is likely to be available. This chapter addresses that by forecasting costs based on historic operating costs along with anticipated staff, facility, and vehicle needs, and forecasting revenues based on historical funding levels. The most critical piece of information presented in this chapter is the shortfall between anticipated future costs and revenues. The chapter also includes potential revenue options to help close the gap between the two.

Historic Costs and Revenues

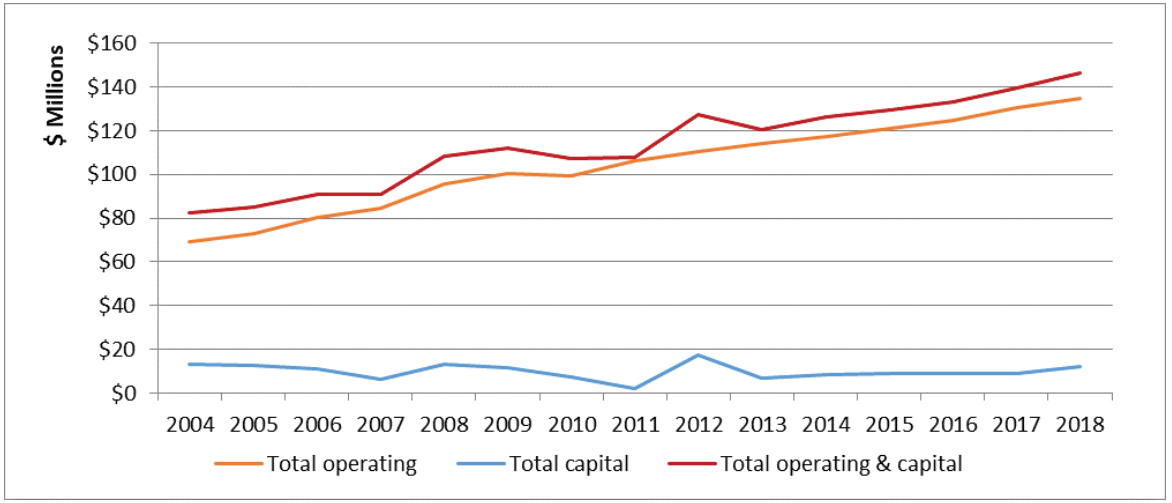
Costs and revenues for public transit from 2004 to 2018 were reviewed and average annual amounts were determined. Capital costs for public transit were calculated from reported totals of Section 5309 Capital Investment Program and Section 5339 Bus and Bus Facilities Formula Grant projects, Congestion Mitigation Air Quality (CMAQ) funding dedicated to transit vehicle replacements, and Public Transit Infrastructure Grant (PTIG) projects. For operations costs, reported annual operating costs from the transit agencies were used. Overall average annual costs between 2004 and 2018 are shown below in Figures 4.1 and 4.2. As shown, operating costs comprise a majority of the overall costs at 91.37 percent with capital expenditures representing roughly 8.63 percent.

Figure 4.1: Historic average annual transit operating and capital costs, 2004-2018 ($ millions)

	2004 - 2018 average costs
Capital	$9.824
Operating	$104.076
Total	**$113.900**

Source: Iowa DOT

Figure 4.2: Historic transit operating and capital costs (2004 – 2018)

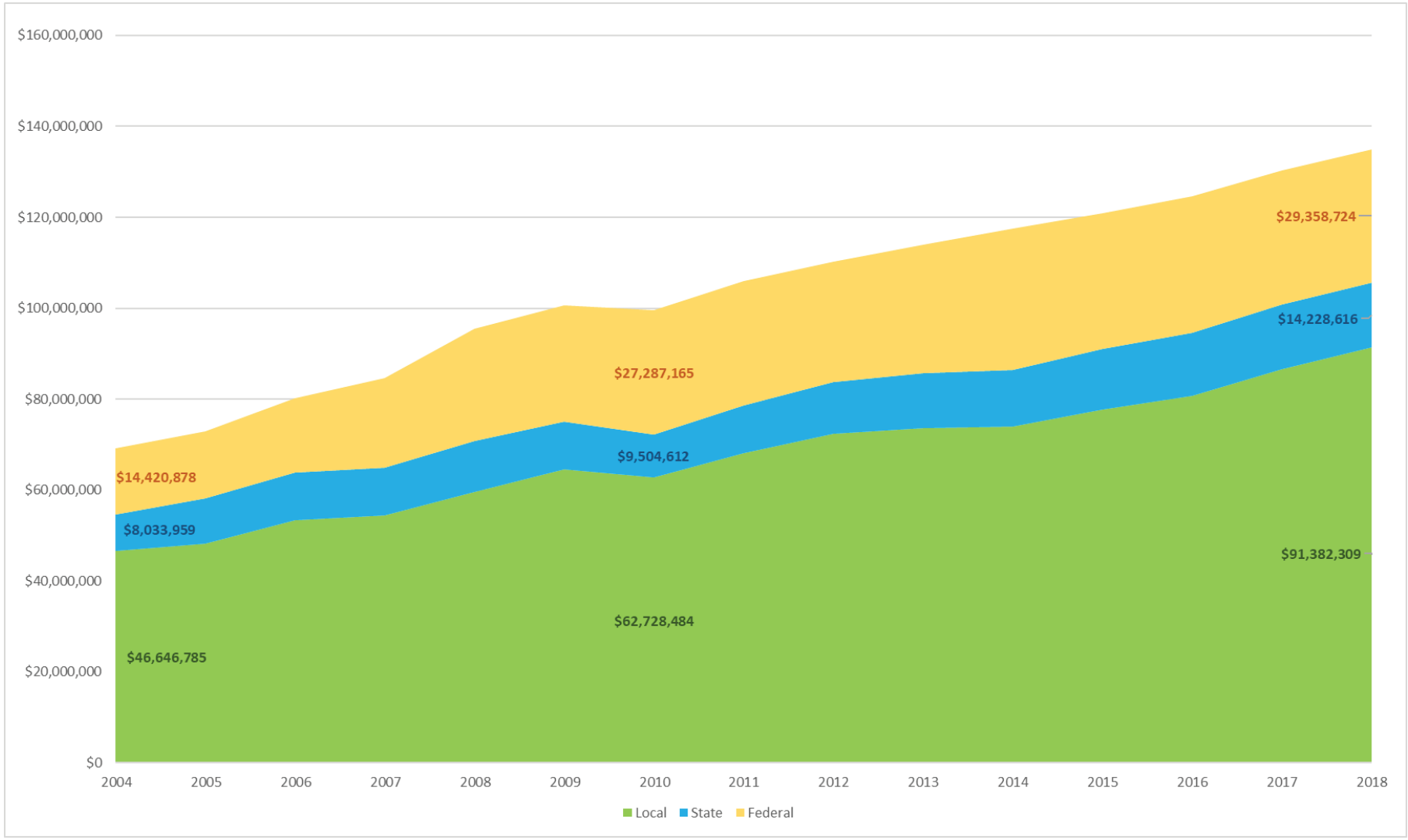


Source: Iowa DOT

Historic operating costs can also be broken out into federal, state, and local funding sources. Figure 4.3 shows this breakout for operating costs from 2004-2018. While the percentage of overall funding from each level varies from year to year, across time they are relatively consistent. The average annual percentage of operating costs funded by federal sources was 23.86 percent, state sources was 11.16 percent, and local sources was 64.98 percent.

As discussed in the introduction, transit revenues and costs are often the same, so the same historic information was used to understand trends of historic costs and revenues. These historic trends were used to help inform and validate projected costs from 2019 through the long-range planning horizon of 2050.

Figure 4.3: Historic transit operating funding (2004 – 2018)



Source: Iowa DOT

4.1. What are the anticipated costs?

The costs associated with nearly all goods and services typically increase over time, including those in transportation. The term for this increase in costs over time is inflation, which is often expressed as a rate or index. While the Construction Cost Index (CCI) is often referenced in the transportation industry for road construction, this modal Plan uses a few different indices to measure inflation for the construction of transit facilities, cost of transit vehicles, and compensation for transit employees.

The Producer Price Index (PPI) is utilized for calculating the inflation for transit facilities. Transit facilities could include everything from bus stops and park and ride commuter lots to vehicle storage buildings and maintenance bays. To approximate transit facility construction inflation rates, data from the United States Department of Labor – Bureau of Labor Statistics for new non-residential building construction in the Midwest from 2014-2018 was used for the basis of this calculation, which resulted in an inflation rate of 2.14 percent per year.

The PPI was also used as the index for calculating the inflation for transit vehicles such as the buses. To approximate these rates, data from Federal Research Economic Data – Economic Research Division for truck and bus bodies from 1982-2019 was used for the basis of this calculation, which resulted in an inflation rate of 2.41 percent per year.

Lastly, the Employment Cost Index (ECI) was utilized for calculating the inflation for paying transit personnel such as bus drivers and administrative staff. Data from the United States Department of Labor – Bureau of Labor Statistics for the change in total compensation and cost of labor between 2009 and 2019 was used for the basis of this calculation, which resulted in an inflation rate of 2.20 percent per year.

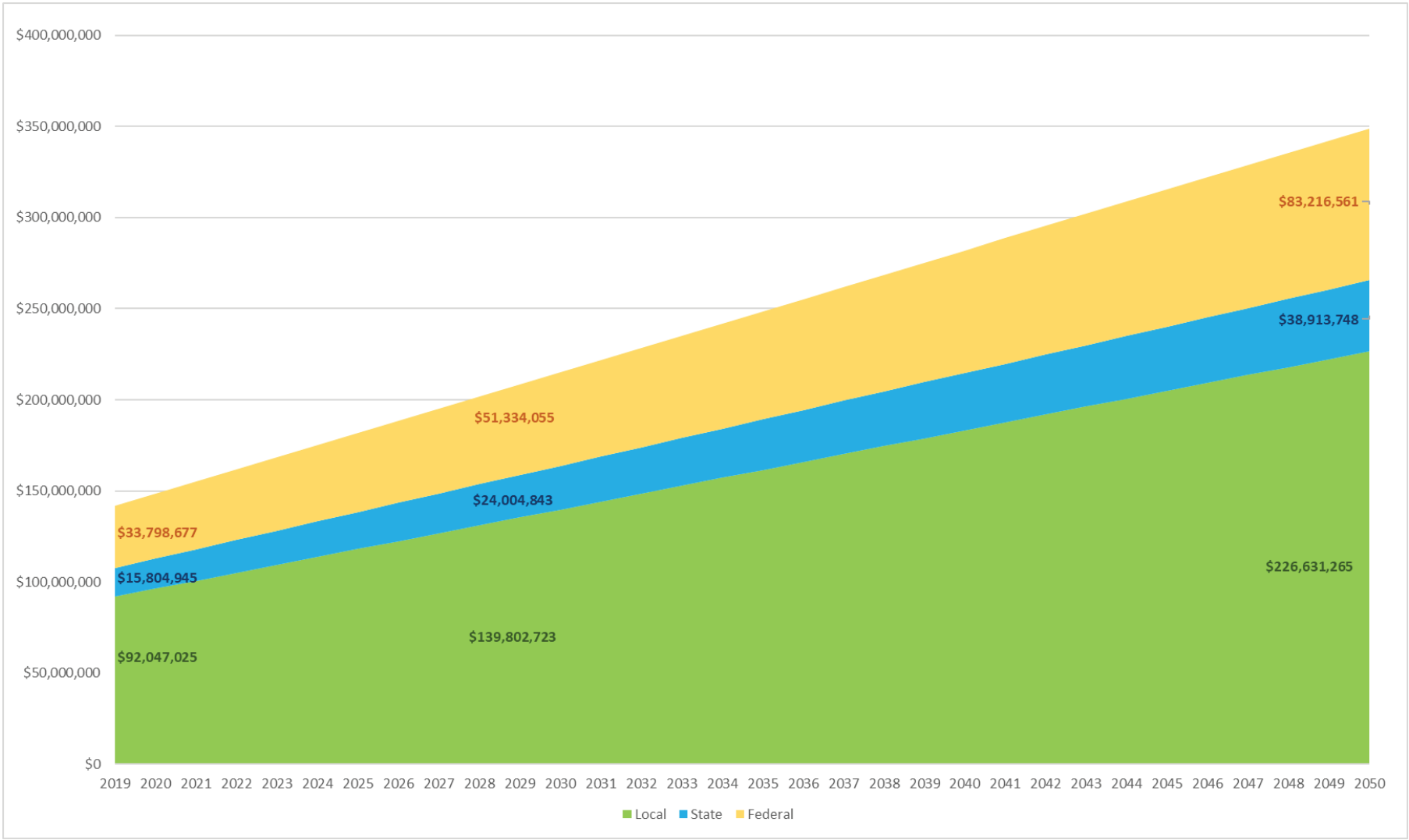
Projected Costs

Anticipating future expenses is a challenge in that it must include costs of products and services inflated into the future for reasons explained in the earlier sections of this chapter. Additionally, to fully account for anticipated needs, these cost forecasts must also consider projected service expansion, expanding the bus fleet, as well as adding additional personnel such as drivers to support those service expansions. The following sections break down the projected costs into operating expenses and capital expenses in order to describe the methodology used to calculate the cost projections.

Operating Expenses

Forecasting operating expenses represented a combination of a few different approaches, due to the fact that operations involve a wide variety of activities that occur within public transit. These activities include such things as personnel costs, including pay and benefits, fuel costs, and vehicle and building maintenance costs. Operating costs were largely projected based on historical expenditures on operations. Operations costs from 2004-2018 were reviewed, and the average annual percent change during this timeframe was 4.95 percent per year. This rate was applied to forecast operations costs for each year from 2019-2050. These annual costs were divided into federal, state, and local revenue sources based on the average historical percentage of each, as shown in Figure 4.4.

Figure 4.4: Forecasted transit operating costs (2019 – 2050)



Source: Iowa DOT

Personnel Needs

In addition to calculating operations costs based on historical trends, additional future personnel costs were calculated based on feedback provided by the transit agencies in the Transit Needs Survey conducted in March 2019. Responses in that survey included estimates for the number of additional administrative, maintenance, and driver personnel that are collectively needed to support transit operations now (i.e., current vacancies) and by the years 2030 and 2050.

Types of public transit employees:

- **Administrative:** employees responsible for conducting payroll, dispatching vehicles, marketing and outreach, planning, and analysis-related activities.
- **Maintenance:** employees performing basic repairs and maintenance actions on the vehicle or facilities, such as a mechanic.
- **Drivers:** employees responsible for operating revenue vehicles to pick up and drop off passengers.

The current annual salaries for these positions were estimated based on data from an Iowa Public Transit Association survey and Bureau of Labor Statistics State Occupational Employment and Wage estimates. In order to project these personnel costs, the analysis relied on the ECI trend discussed earlier to represent the inflated costs of hiring and employing projected personnel through 2050. The ECI trend includes both the costs of benefits and wages. ECI was estimated on a quarterly basis for a period between 2009 and 2019 for State and local government workers. The average ECI across this period was 2.2 percent, and this was used for the personnel cost inflation rate.

Figure 4.5 depicts the forecasted additional transit personnel costs through 2050. As shown, bus drivers represent the majority of all transit agency additional personnel needs. This trend was consistent between all sizes of transit agencies, regardless of whether they were in an urban or rural region.

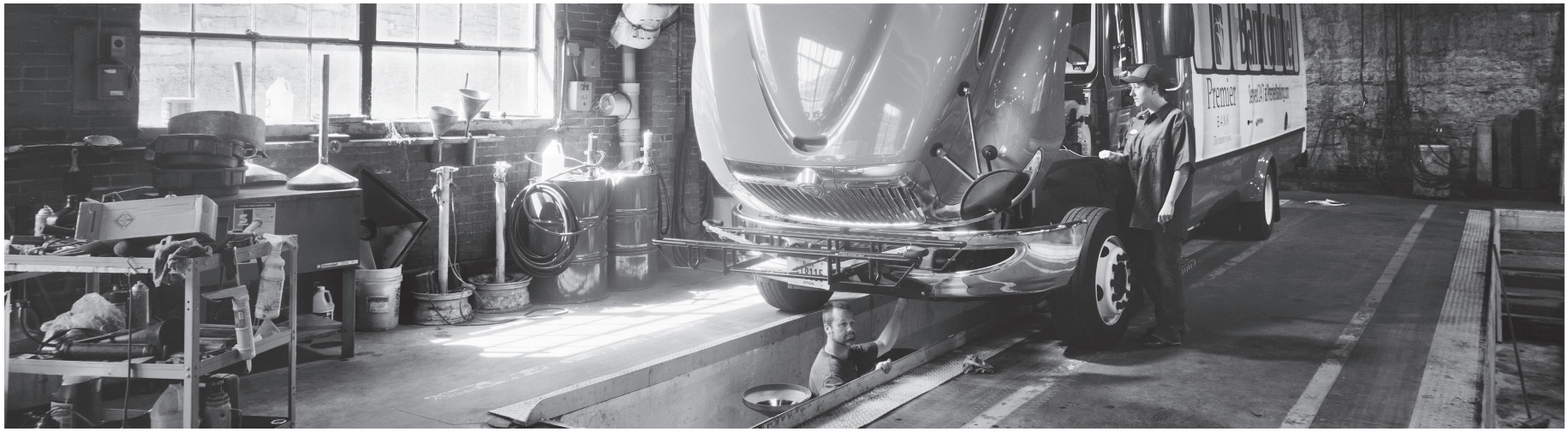
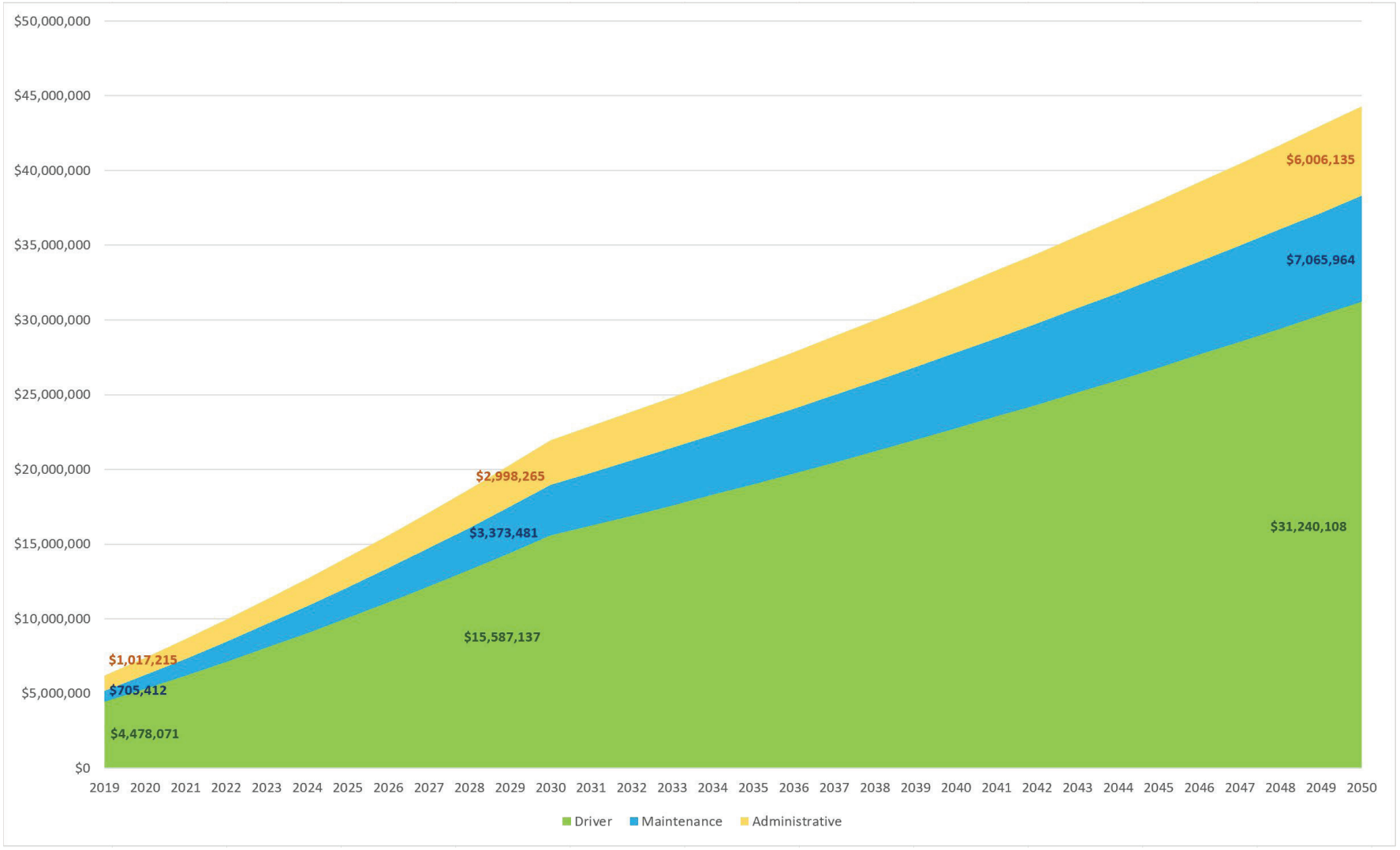


Figure 4.5: Forecasted additional transit personnel costs (2019 – 2050)



Source: Iowa DOT

Capital Expenses

Unlike operational costs, which reflect the day-to-day expenses of conducting transit activities, capital expenses represent investments in items such as infrastructure, vehicles, or equipment. This can include passenger vehicles like buses and vans, maintenance and storage buildings, maintenance equipment, bus stops and bus shelters, park and ride commuter lots, and administrative buildings. The capital expenses calculated for this Plan grouped these costs into two broader categories of facilities and vehicles, relying exclusively upon transit agency feedback to the Transit Needs Survey from March 2019.

Facility Needs

Transit facility needs were determined through results of the Transit Needs Survey from March 2019, which asked agencies to estimate the overall square footage needed by 2030 and 2050 by facility type. The number of needed bus shelters and park and ride locations were also requested.

Types of public transit facilities:

- **Vehicle storage:** areas and buildings that serve as storage and protection for transit vehicles such as buses.
- **Vehicle maintenance:** areas where basic repairs and maintenance activities take place. These can also include wash racks and wash bays.
- **Administrative office:** areas that support the internal staff operations of the transit agency, such as office activities.
- **Bus shelter:** enclosures to protect passengers as they wait at transit stops along established bus routes.
- **Park and ride:** parking lots where passengers can leave their vehicles while they take the bus. Park and ride lots can be constructed in a variety of configurations with surface types consisting of gravel (mainly in rural settings) or pavement.

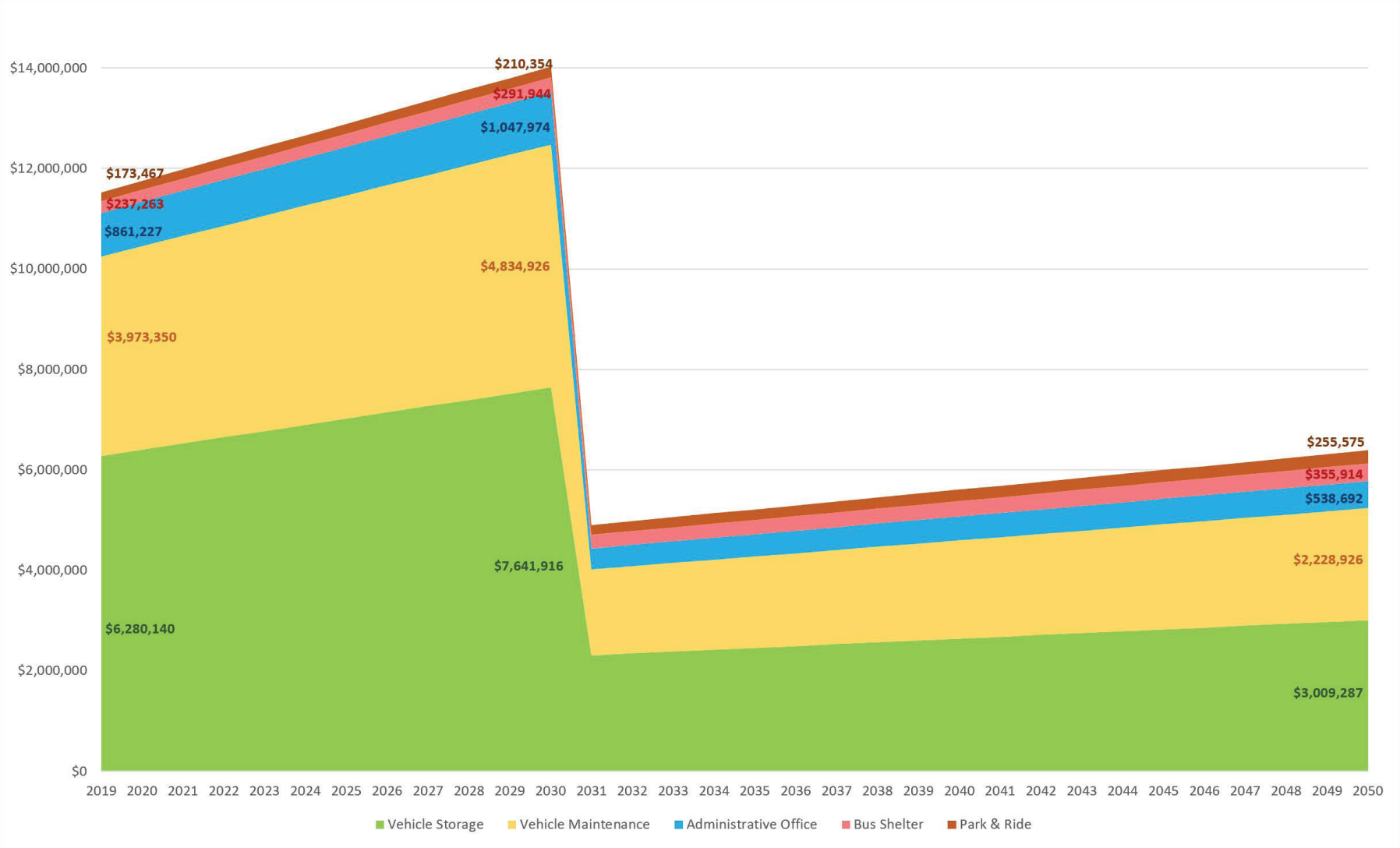
Average costs for bus shelters were determined through previous research conducted by a consultant partner, LT Leon Associates Inc., for a bus stop Americans with Disabilities Act (ADA) compliance assessment in 2018,[17] by averaging bus shelter costs from several agencies. Park and ride costs were derived from the 2014 Iowa Park and Ride System Plan and broken down further into gravel lots and paved lots. For the remaining facility types, a 2015 National Cooperative Highway Research Program (NCHRP) study[18] on transit facility construction cost estimates was utilized.

These facility costs were adjusted to account for future inflation by using an average of the PPI. A five-year average between 2014 and 2018 was calculated for a result of 2.14 percent. This rate was used to project the costs of the facility needs from the Transit Needs Survey to the short-term planning horizon of 2030 and the long-term planning horizon of 2050, as shown in Figures 4.6 and 4.7. These figures show the same information formatted in different ways.

17 LT Leon Associates Inc. Technical Memorandum "ADA Requirements for Transit Facilities", April 4, 2018.

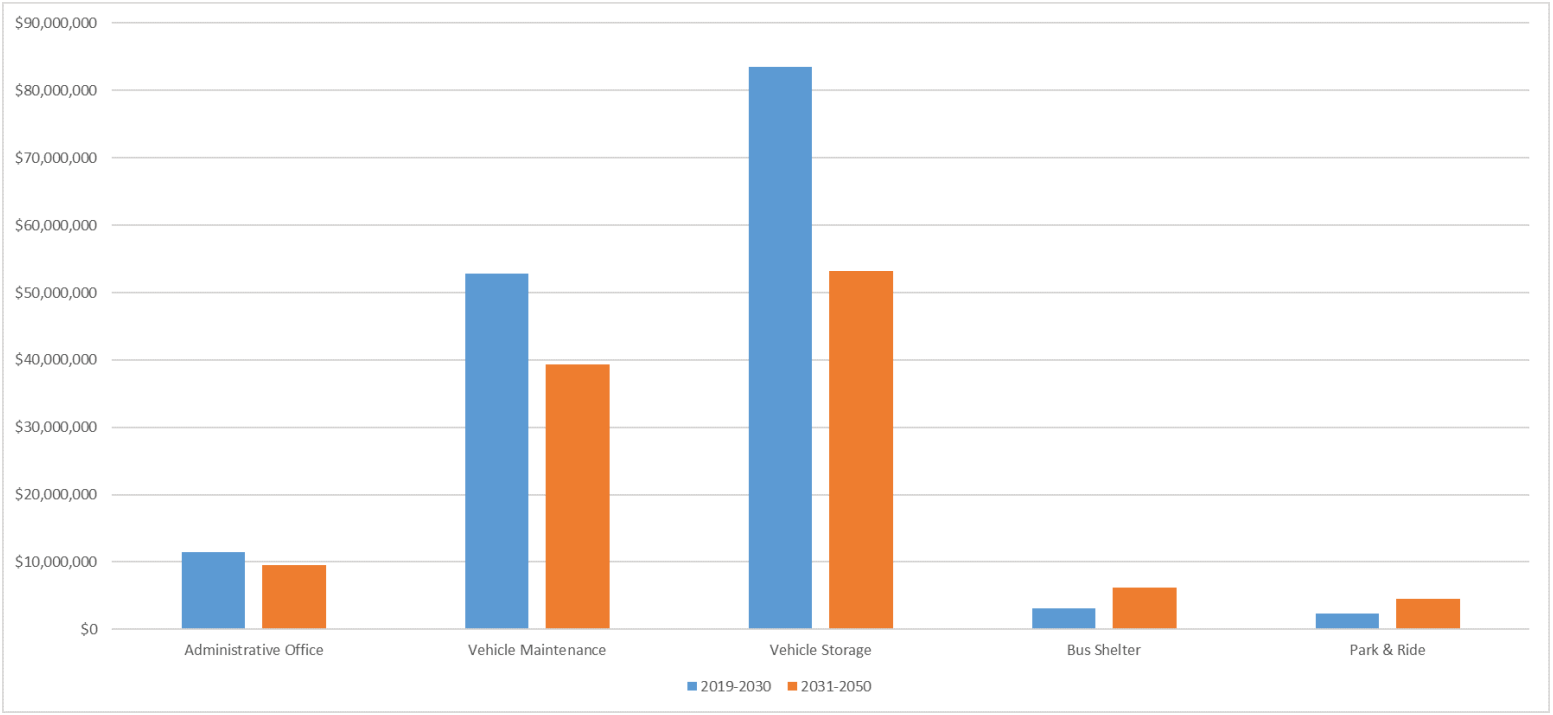
18 National Academies of Sciences, Engineering, and Medicine 2015, "Independent Cost Estimates for Design and Construction of Transit Facilities in Rural and Small Urban Areas," https://www.nap.edu/catalog/22086/independent-cost-estimates-for-design-and-construction-of-transit-facilities-in-rural-and-small-urban-areas.

Figure 4.6: Forecasted transit facility costs (2019 – 2050)



Source: Iowa DOT

Figure 4.7: Forecasted transit facility costs (2019 – 2050)



Source: Iowa DOT

As can be seen in Figures 4.6 and 4.7, less needs are identified in the long-term timeframe of 2031-2050 than in the short-term timeframe of 2019-2030. This is based on survey results, which identified needed facility square footage by those dates, and facility needs were not blended between the short and long-range planning horizons. This indicates that facility needs were prioritized for the short-term future, and once most of those needs were met, additional facility needs would decrease into the future. The inverse is true for bus shelters and park and ride facilities, which show a higher need in the long-term timeframe. This may be related to continued growth in urban areas and the need to accommodate transit riders and commuters in those areas.

Another conclusion based on these results is that vehicle storage facilities are a significant need across all transit agencies. These types of facilities help maintain and protect transit vehicles such as buses, which prolongs their lifespan. Protecting and prolonging the life of vehicles will help decrease the cost of performing maintenance and repairs. As will be discussed, vehicle replacement needs represent a significant capital expense. As vehicle maintenance needs occur with increasing regularity, it drastically increases the overall operation costs described earlier in this chapter.

Vehicle Needs

Like the transit facilities, vehicle needs were also obtained from the Transit Needs Survey in March 2019. The survey asked how many of each type of vehicle agencies currently need, and how many additional vehicles of each type they will need by the years 2030 and 2050.

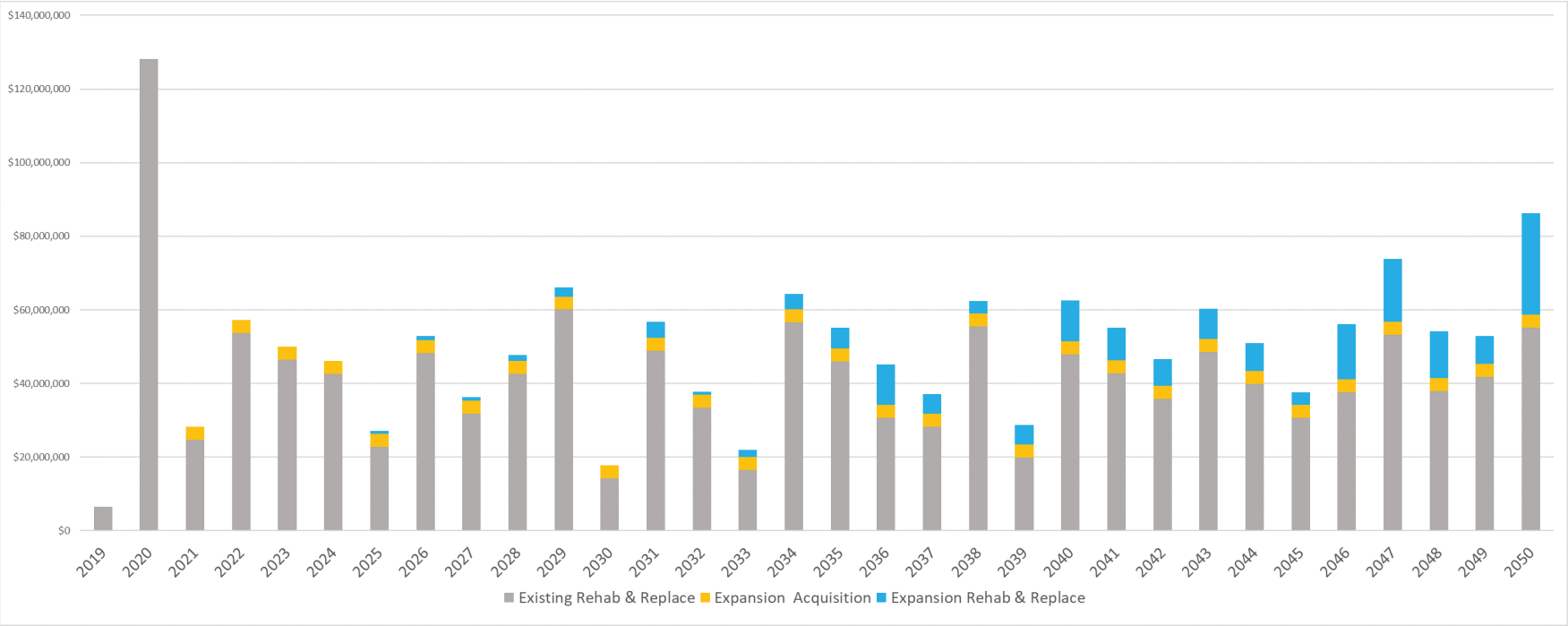
Types of public transit vehicles:

- **Sedan, Standard Van, Minivan, Conversion Van:** 7- to 15-passenger vehicles, which may or may not be wheelchair lift equipped, with useful life up to 100,000 miles and 4 years.
- **Light Duty Bus:** up to 25-passenger vehicles with useful life of 120,000 miles and 4 years.
- **Medium Duty Bus:** up to 30-passenger vehicles with useful life of 200,000 miles and 7 years.
- **Heavy Duty Bus:** up to 40-passenger vehicles with useful life of 300,000 to 350,000 miles and between 10 and 12 years.
- **Medium, Heavy Trolley:** up to 40-passenger vehicles like buses but exterior (and usually interior) designed to look like a streetcar from the early 1900s, and useful life of 13 years.

Once the quantity and types of vehicle needs were known and distributed evenly across the short-range planning horizon of now through 2030 and the long-range planning horizon of 2031 through 2050, this information was entered into an analysis tool designed to optimize future investment in transit vehicles. This software, called TERM-Lite, was developed by the Federal Transit Administration (FTA) Office of Budget and Policy and designed to account for typical rehabilitation, refurbishment, or replacement timelines for vehicles, while also factoring in vehicle condition and mileage of the existing vehicle fleet.

Figure 4.8 depicts the forecasted costs of replacing the existing transit vehicle fleet, in addition to vehicle expansion needs that the transit agencies indicated in the Transit Needs Survey. As shown, backlogged vehicles that are beyond their expected useful lives were front loaded into the forecast. This is based on an unconstrained funding scenario, although the reality is that a number of backlogged vehicles will not be replaced for a period of years after 2020. After 2030, expansion vehicle rehabilitation and replacements increasingly account for greater portions of overall vehicle costs.

Figure 4.8: Forecasted transit vehicle costs (2019 – 2050)



Source: Iowa DOT

Cost Estimate Conclusions

Overall future cost estimates are higher than historic average expenditure trends. This is primarily due to the incorporation of additional personnel, facility, and vehicle needs that were reported in the March 2019 Transit Needs Survey by the transit agencies. As discussed earlier, vehicle expenses in particular are much higher. This is partially due to the increasing numbers of transit vehicles that are continuing to be utilized beyond their useful life. These older vehicles result in much higher costs to maintain and repair over time, which increases operational costs. Older vehicles are also less fuel efficient compared to more modern vehicles and electric or hybrid buses. As such, vehicle replacement has become a higher priority within recent years, and this is expected to continue until the backlog for 2019-2020 has been completely addressed.

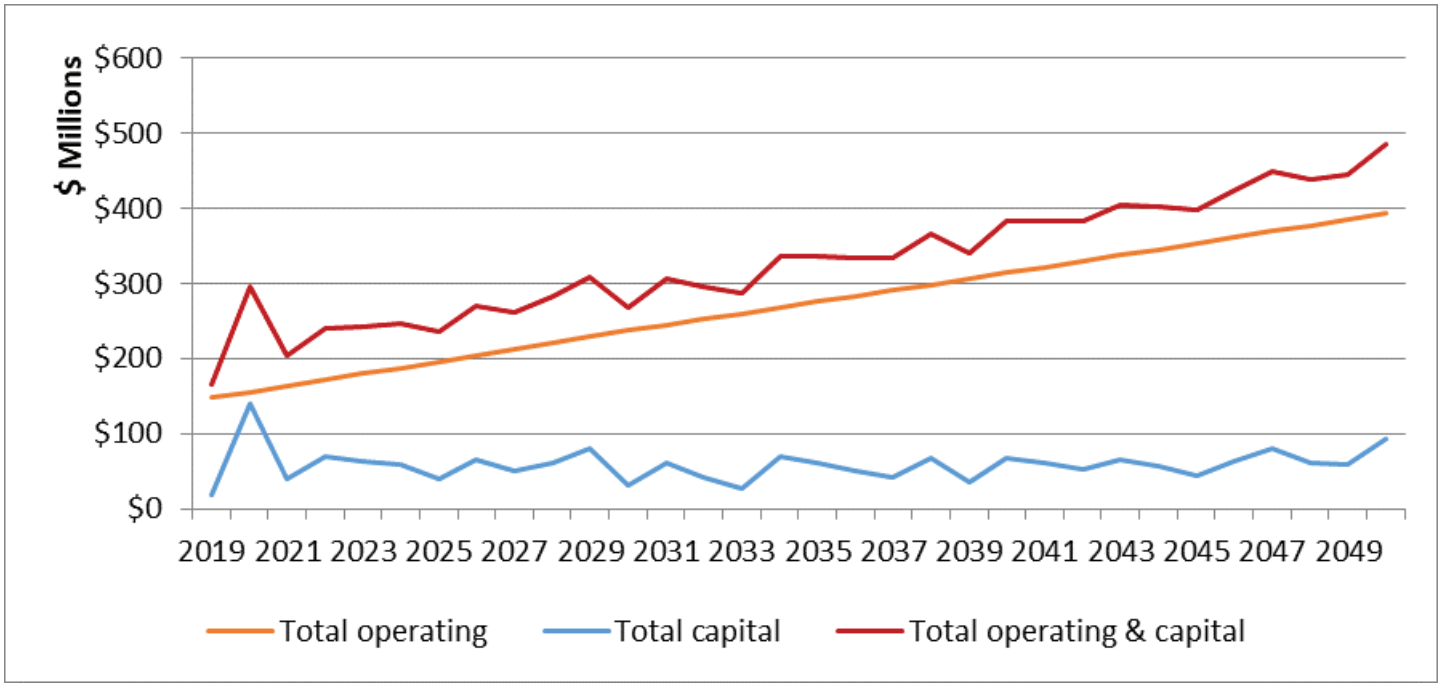
Figure 4.9 shows the average annual projected operating and capital costs for the short-term timeframe of 2019-2030 and the long-term timeframe of 2031-2050, as well as the average annual costs for the overall time period of 2019-2050. Figure 4.10 depicts the overall forecasted costs, which includes operating and capital expenses. This cost forecast will be compared to the forecasted revenue (discussed next in Section 4.2) in Section 4.3, which examines the overall shortfalls. Understanding the shortfalls will assist with identifying potential mechanisms to generate additional revenue.

Figure 4.9: Average annual projected transit operating and capital costs ($ millions)

	2019 - 2030 average annual costs	2031 - 2050 average annual costs	2019 - 2050 average annual costs
Capital	$59.770	$57.933	$58.622
Operating	$192.068	$318.358	$270.999
Total	**$251.837**	**$376.290**	**$329.620**

Source: Iowa DOT

Figure 4.10: Forecasted transit operating and capital costs (2019 – 2050)



Source: Iowa DOT

4.2. What is the expected revenue?

Projected Revenue

Operating Funding

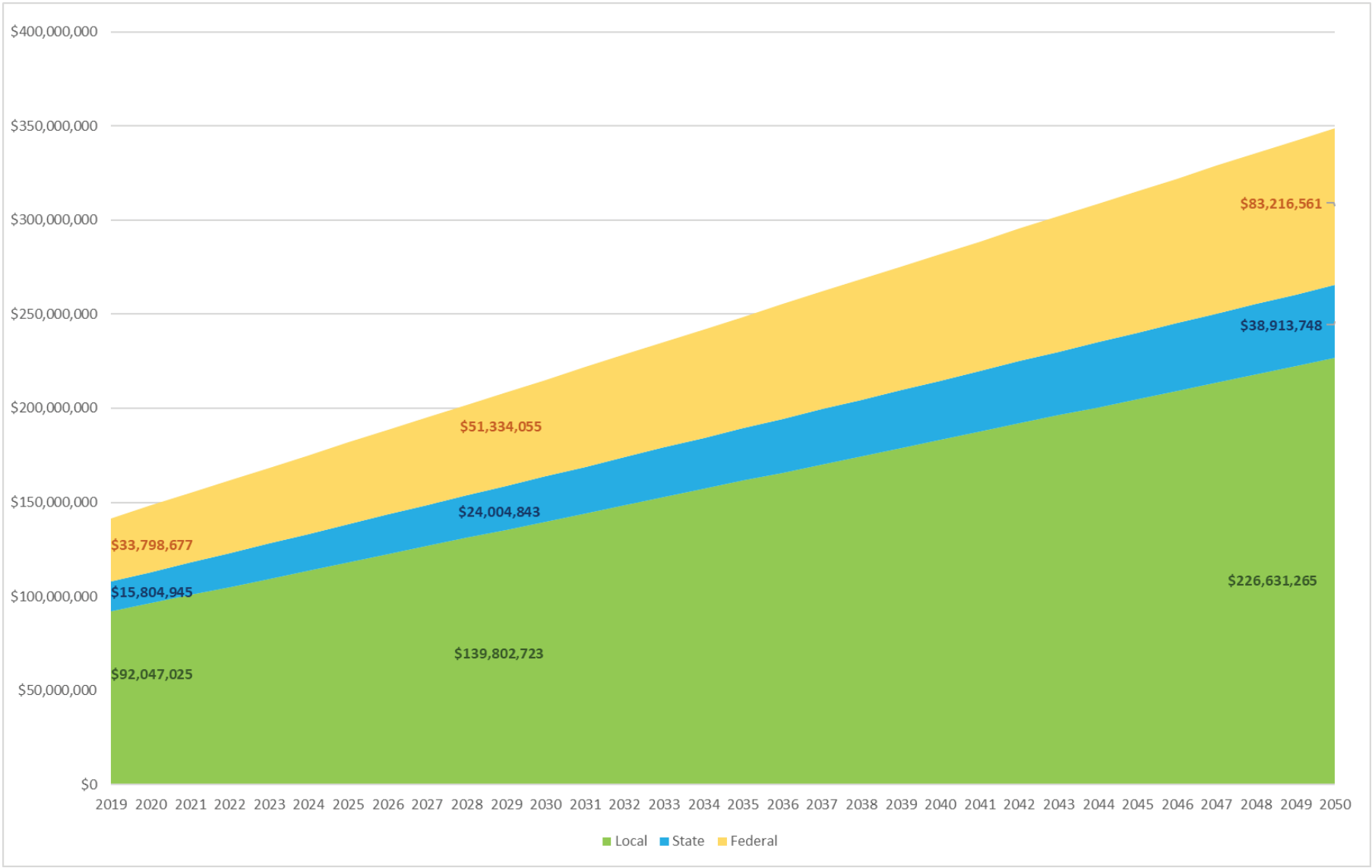
Operational funding was calculated by using historical trends in federal transit assistance, state transit assistance, and local funding sources between 2004 and 2018. This trend was projected out to 2050 in order to forecast expected funding amounts, as shown in Figure 4.11. On average, federal funds account for approximately 23.86 percent of the budget, while state funds account for 11.16 percent. The remaining portion is covered by local funding at 64.98 percent of total funding.

Federal Transit Assistance
The Federal Transit Administration of the U.S. Department of Transportation administers programs offering financial assistance for capital, operating, planning, and training assistance of local public transportation. For operations, the two most significant sources of funding are Urbanized Area Formula Funding (Section 5307) and the Rural Area Formula Funding (Section 5311).

State Transit Assistance (STA)
Iowa devotes an amount equal to four percent of the fees for new registration collected on sales of motor vehicle and accessory equipment to support public transit. Funding is distributed by an STA formula that is based on each transit system's performance during the previous year in terms of rides, miles, and local funding support. These formula funds are usable for support of any operating, capital, or planning expenses related to the provision of public passenger transportation.

Local Transit Funding
Local funding support for transit includes fares or contributions received from riders, revenues from contracts with social service agencies, student fees, and taxes levied by local cities and counties. Cities are allowed under the Iowa Code to levy a dedicated property tax for transit of 95 cents per $1,000 assessed valuation. Other local tax funding comes from general fund levies and "trust and agency" levies.

Figure 4.11: Forecasted transit operating funding (2019 – 2050)



Source: Iowa DOT

Capital Funding

Funding for capital projects and expenditures was calculated by examining historical trends in Bus and Bus Facilities Formula Grants, Discretionary Competitive funding, Public Transit Infrastructure Grants (PTIG), and Congestion Mitigation and Air Quality (CMAQ) funding. There are some additional funding programs that can fund public transit vehicles and infrastructure. These include competitive grants through Iowa's Clean Air Attainment Program (ICAAP), and Surface Transportation Block Grant (STBG) funds that are distributed to the State's metropolitan planning organizations (MPOs) and regional planning affiliations (RPAs). These sources have not been included in the revenue projections as the amount spent for transit projects varies considerably from year to year.

5339 Funding
Bus and Bus Facilities Formula Grants (Section 5339) are used to finance capital projects to replace, rehabilitate, and purchase buses and related equipment, or to construct bus-related facilities. This is a formula program with state apportionments based on population size; the funding is provided as a statewide appropriation for small urban and regional transit systems. Iowa receives individual allocations for each large urban transit system serving populations between 50,000 and 200,000, but the large urban funds are pooled since individual allocations would not allow for bus purchases on an annual basis. All funds are spent on vehicle replacements rather than on expansion vehicles or bus-related facilities and are distributed utilizing the vehicle rankings of the Public Transit Management System (PTMS), which prioritizes bus replacements based on age and mileage of vehicles. Transit systems serving populations of more than 200,000 receive direct allocations from the Federal Transit Administration and are not included in the statewide distribution through PTMS.

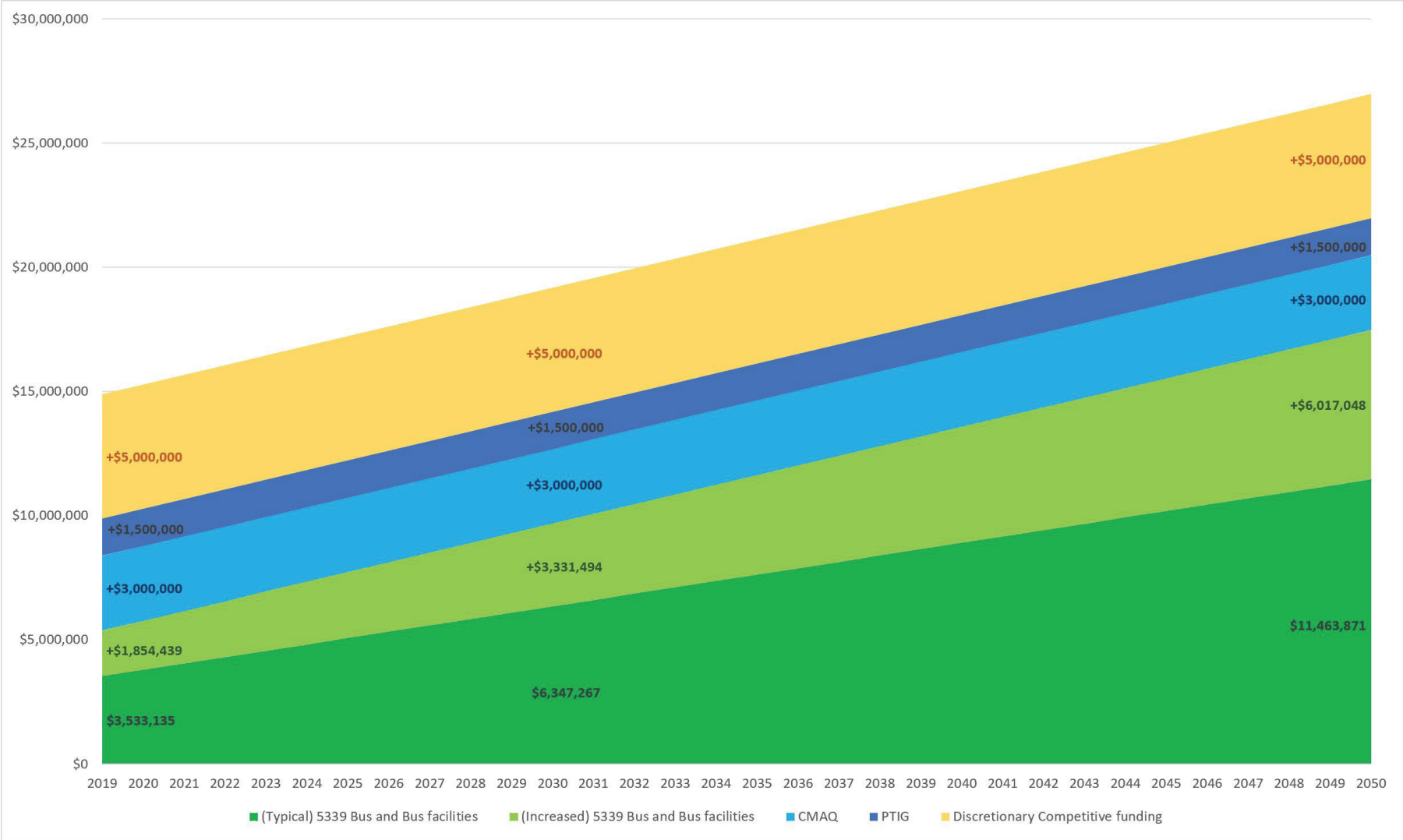
Discretionary Funding
Discretionary competitive funding is a federal funding source in which all states compete for funds nationally to be used for bus replacement. Should Iowa be awarded this funding, PTMS is utilized to prioritize applications.

Congestion Mitigation and Air Quality (CMAQ) Funding
CMAQ funds Iowa's Clean Air Attainment Program (ICAAP) and helps finance transportation projects and programs that result in attaining or maintaining federal clean air standards. A portion of Iowa's CMAQ funding is awarded through a competitive grant program; transit improvements such as construction of new facilities and bus expansion projects are eligible expenses. In recent years, Iowa has also allocated $3 million annually to statewide bus replacement. The $3 million annual allocation is the only portion of Iowa's CMAQ funding that is shown in the projections; competitive grant awards for transit are not included.

Public Transit Infrastructure Grant (PTIG)
This program is funded by an annual appropriation by the state legislature to fund some of the vertical infrastructure needs of Iowa's transit systems. Projects can involve new construction, reconstruction, or remodeling, but must include a vertical component to qualify. Projects are evaluated based on the anticipated benefits to transit, as well as the ability to complete the projects quickly.

Figure 4.12 shows the forecasted transit capital funding to the year 2050. As shown, PTIG, CMAQ, and Discretionary Competitive funding sources have been held constant at $1.5 million, $3 million, and $5 million, respectively, through the long-term planning horizon of 2050. Historical trends for Section 5339 funds have generally increased over time and were projected to continue to do so through 2050. Starting in 2018, these funds have received an additional annual boost through congressional appropriations. This is reflected in Figure 4.12 as increased 5339 funding and projected to 2050, but is shown separately from the typical 5339 funding forecast due to the limited trend information available.

Figure 4.12: Forecasted transit capital funding (2019 – 2050)



Source: Iowa DOT

Funding Scenarios

The operating and capital revenue projections discussed previously were combined and projected out to 2050. Average annual Iowa DOT revenues (Figure 4.13) over the life of the Plan were then calculated for two different scenarios, which differ based on availability of PTIG funding, discretionary funding, and the inclusion of additional Section 5339 funding. PTIG funding is dependent on an annual appropriation from the state legislature. As mentioned earlier, available capital funding from discretionary funds and Section 5339 funds have varied in the past. Discretionary funding is dependent upon Congressional appropriation and competitive with other states across the nation, making this an unpredictable source of funds. Additionally, Section 5339 funding has increased significantly in recent years; however, it is unknown if this increased amount will continue into the future.

Given the variability of these two sources of funds, only CMAQ and the pre-2018 Section 5339 funding levels were used to forecast a baseline or typical funding scenario. PTIG, discretionary funds, and the increased amount of Section 5339 since 2018 were added as part of an increased funding scenario in order to generate an alternative funding scenario for comparison. Having two scenarios of typical funding and optimistic funding levels helps illustrate the potential range of public transit revenue that Iowa can expect to receive in the future.

Figure 4.13: Average annual public transit revenue, 2019 - 2050 ($ millions)

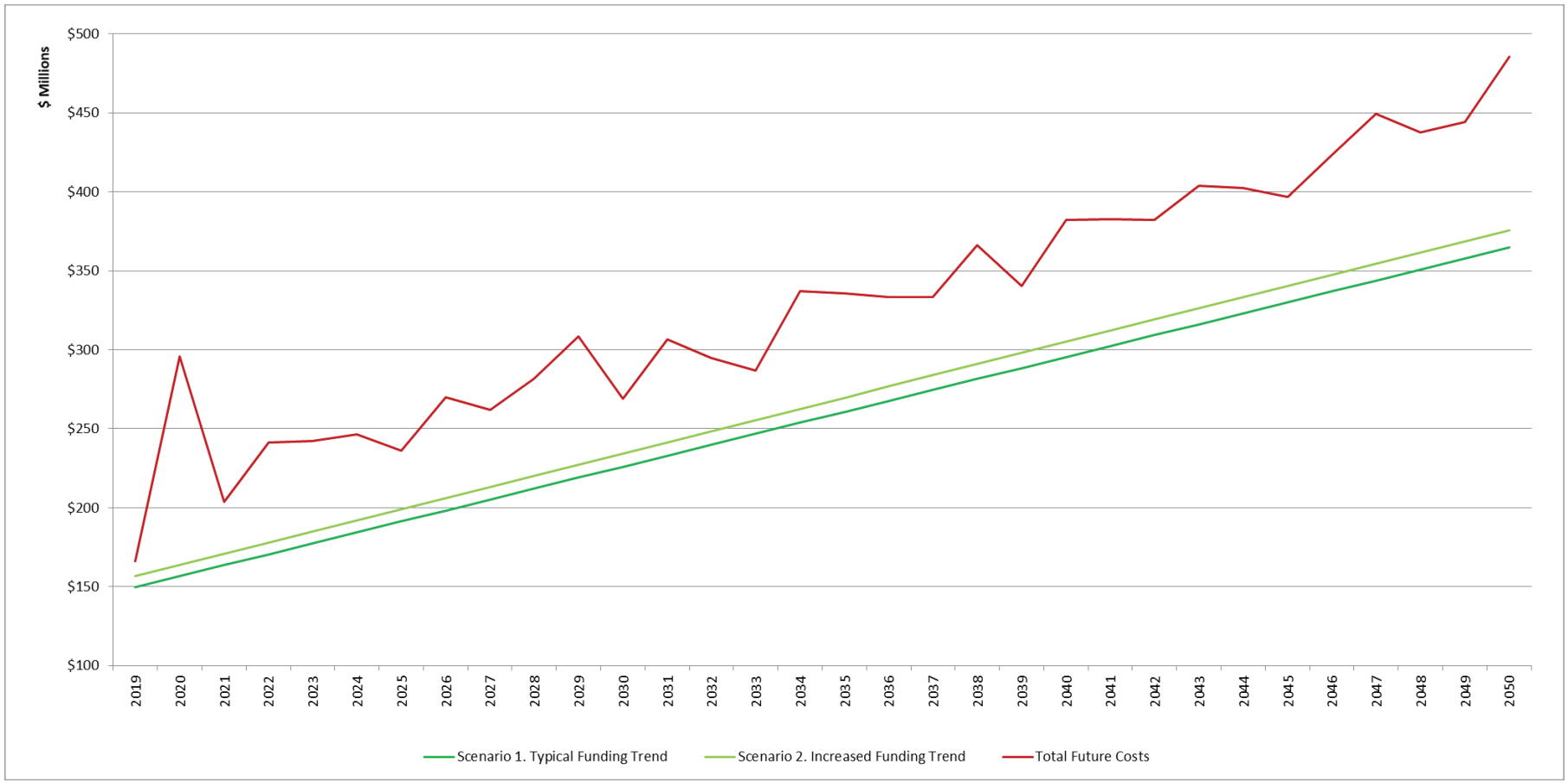
	Average Annual Iowa DOT revenue
Scenario 1. Typical funding	$255.70
Scenario 2. Increased funding	$266.14

Source: Iowa DOT

4.3. What are the shortfalls?

The anticipated future costs and expected revenues are compared in order to identify financial gaps. These gaps represent shortfalls in transit funding that will need to be addressed in order to support the operating and capital investments that have been identified as priorities. As shown in Figure 4.14, total future costs exceed available revenues in both funding scenarios.

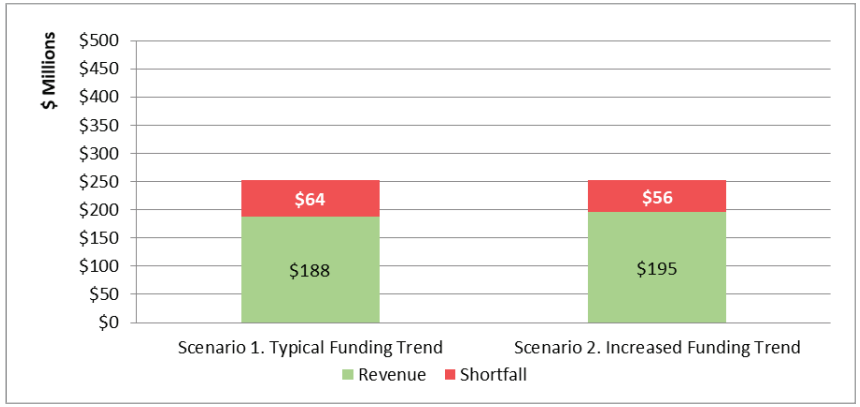
Figure 4.14: Forecasted costs and funding scenarios (2019 – 2050)



Source: Iowa DOT

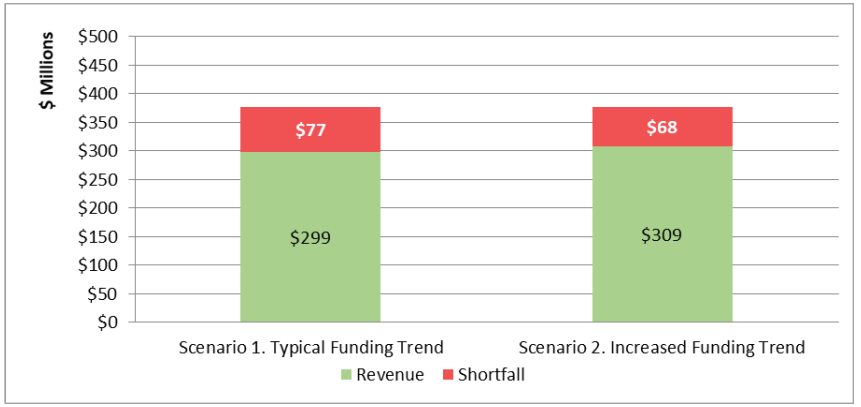
Figures 4.15 and 4.16 represent the average annual funding shortfalls expected to occur by the short-range and long-range planning horizons. Regardless of the funding scenario, these shortfalls are expected to increase as time goes on. Between 2019 and 2030, the optimistic increased funding estimate leaves an average shortfall of $56 million, while the conservative estimate of typical funding leaves a shortfall of $64 million. By 2050, these shortfalls will increase to $68 million and $77 million, respectively.

4.15: Forecasted average annual funding shortfall (2019 – 2030)



Source: Iowa DOT

Figure 4.16: Forecasted average annual funding shortfall (2031-2050)



Source: Iowa DOT

Implications of the shortfall

- Expanding storage facilities will decrease the overall operational costs of maintaining vehicles over time. However, the number of vehicles beyond useful life right now may result in vehicles being prioritized over facilities.
- Impacts to operational funding may affect facilities or vehicles in terms of deferred maintenance and the hiring or retention of personnel.
- Decreasing staff levels as a cost saving measure, particularly drivers, will result in a decrease to overall transit service, further limiting farebox revenue and additional sources of funding.
- If shortfalls in transit funding are not addressed, priority operating and capital investments cannot be supported.

4.4. Potential Revenue Sources

With the funding shortfall and its impacts noted in the previous section, it becomes imperative to examine other potential sources of revenue. Additionally, it is prudent to continuously evaluate alternative funding sources for public transit and passenger transportation services for their advantages, disadvantages, and overall viability. This is particularly important as circumstances change, or, as in the case of this Plan, agencies work to rightsize transit service and reduce the number of capital assets that are beyond their useful lives.

Input was gathered from a variety of stakeholders on potential mechanisms or enhancements that could be made to more efficiently support Iowa's public transit system and to rightsize transit service. This feedback resulted in the list shown in Figure 4.17, which indicates the type of mechanism proposed, as well as potential advantages and disadvantages of implementing it.

Figure 4.17: Potential revenue sources

Type of Financing	Description/Mechanism	Advantages	Disadvantages
Population Threshold for Regional Transit Districts (Iowa Code 28M.2)	Reduce population threshold for Regional Transit District (RTD) formation for counties from 175,000 to 90,000. The current RTD population threshold restricts regional districts to Polk County and contiguous counties in central Iowa and Linn County and contiguous counties in eastern Iowa. Reducing the population threshold would allow an additional seven counties to collaborate on transit funding through the formulation of a multi-city/ county RTD to do so.	• Increases the number of authorized RTDs.	• Requires modification to existing legislation.
Property Tax (Iowa Code 28M.5)	Increase the property tax cap from $0.95 to $1.45 per $1,000 of taxable valuation for Regional Transit Districts and municipal transit levies. Two cities are currently capped (Iowa City and Windsor Heights), and more will reach the cap in the future.	• Collection and administration process already in place. • Broad coverage.	• Can be an equity issue when costs are passed on to homeowners. • Generally unpopular with taxpayers.
Local Option Sales Tax (Iowa Code 422B)	Enable Regional Transit Districts (RTDs) to levy local option sales taxes to meet the public transportation needs of those who work and live in their district. This taxing authority can be used in conjunction with a number of infrastructure projects, but often is associated with transportation. Iowa RTDs, currently only available to counties with at least 175,000 residents, have the power to implement a property tax of up to 95 cents per $1,000 of assessed value; municipalities also have this authority, but it cannot be used in conjunction with an RTD levy.	• Collection and administration process already in place. • Revenue generated locally and available for local public transit priorities.	• Not proportional to transit system usage. • Fluctuates with economic cycles.

Type of Financing	Description/Mechanism	Advantages	Disadvantages
Rebuild Iowa Infrastructure Fund (RIIF) (Iowa Code 8.57(5))	Sustain the Rebuild Iowa Infrastructure Fund (RIIF) to help with a variety of transit projects including maintenance facility improvements, construction of bus storage buildings, and repair of bus shelters. In the past, RIIF expenditures have been reduced or eliminated for some programs; sustaining this amount of funding would help ensure continued transit infrastructure improvements.	• Collection and administration process already in place.	• Not guaranteed • Used for several different competing purposes • Dependent on collection of gaming revenues
State Transit Assistance (STA) (Iowa Code 321.145(2)(a) (1))	Increase State Transit Assistance (STA) standing appropriation from 4 percent to 5 percent (equivalent to the state sales tax) of the fees for new registration collected on sales of motor vehicle and accessory equipment to support public transportation. Most of this funding is distributed by the STA formula that is based on each transit system's performance during the previous year in terms of rides, miles, and local funding support. These formula funds are usable for support of any operating, capital, or planning expenses related to the provision of public passenger transportation.	• Collection and administration process already in place.	• Many competing needs.
Vehicle Rental/ Leased Car Sales Tax	Add vehicle rental/leased car sales tax to support public transit. Iowa currently devotes a portion of new vehicle registrations to fund public transit. Vehicle rental and lease taxation would place a premium on the usage of such personal transportation options compared to other more cost-effective modes of transit.	• Collection and administration process already in place. • Provides revenue source based on ability to pay. • Proportional to cost of vehicle.	• Requires enabling legislation • Not proportional to transit system usage. • May discourage rental/leasing of vehicles. • Fluctuates with economic cycles.
TNC Tax	Establish Transportation Network Company tax. Research shows that TNCs increase the number of vehicle trips by users and draw riders away from alternative transit and mobility options, thus decreasing the operating revenue of the bus systems. Taxation of TNC usage would balance the return-on-investment of the public transportation infrastructure versus the net negative impacts of congestion and increased road surface deterioration. Additionally, TNC usage and ridership data would be shared with the state for planning purposes in order to more effectively analyze trends in transportation infrastructure and forecast future needs. Adequate planning becomes a challenge when vital transportation data is obscured or denied outright.	• Discourages single-occupant vehicle usage. • Enables better data sharing of road usage by TNCs.	• Requires enabling legislation. • Fluctuates with economic cycles.

Sources: Iowa DOT, Iowa Public Transit Association

4.5. Economic Impact of Public Transit

In addition to public transit being a vitally important service for residents of the state, part of the justification for considering additional funding mechanisms such as those discussed in the prior section is the positive economic impact that public transit provides. Being cognizant of transit's impact on society, commerce, and the public good is important in a general sense; in the case of this Plan, it will also serve as direct input into one of its long-term strategies described in Chapter 3. This strategy is categorized under the 'Funding Goal Area' with the stated intent to "Conduct a benefit-cost analysis or economic impact study for all transit services and projects in order to measure the impact and overall benefit to social welfare."

Conducting a robust benefit-cost analysis is not the intent of this section, as it is already a stated strategy to be implemented after the publication of this plan. However, background research was done in order to better understand the value of doing this, as well as understanding the necessary inputs and methodology so that this could be tailored to Iowa's public transit system. The study discussed below is presented as an example of research that helps quantify the economic benefit of public transit; further research would be needed to fully address this topic for Iowa.

Background research

The study used to inform the proposed strategy on benefit-cost analysis and justify investment in the public transit system was conducted by the Upper Great Plains Transportation Institute of North Dakota State University and published by and for U.S. DOT's National Center for Transit Research (NCTR) in 2014, titled "Cost-Benefit Analysis of Rural and Small Urban Transit."[19] The intent of the study was to create a methodology for quantifying the benefits of public transit services in smaller communities. This type of quantification of services has generally gone unaddressed and unmeasured in past studies as most have focused on much larger urban transit systems. Given the smaller size of Iowa's transit systems in comparison to places like San Francisco, New York, and elsewhere, as well as the coverage of Iowa's regional transit systems across wide swaths of rural area, a study like North Dakota State's research is very applicable for informing this Plan and any subsequent benefit-cost analyses. For Iowa, the "small urban areas" referenced in the study would include service in metropolitan areas between 50,000 and 200,000 population, and the "rural areas" would include Iowa's small urban and regional transit systems.

According to Dr. Jeremy Mattson, a researcher from North Dakota State University, their study of small urban and rural transit systems revealed benefits that could be quantified and categorized into three types:

- **Transportation cost savings:** costs that would have been incurred if the transit rider used a different mode in absence of transit
- **Low-cost mobility benefits:** benefits of trips made that would otherwise have been foregone in the absence of transit
- **Economic impacts:** economic activity resulting from the existence of transit operations

19 "Cost-Benefit Analysis of Rural and Small Urban Transit", 2014, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University: https://www.nctr.usf.edu/wp-content/uploads/2014/07/77060-NCTR-NDSU031.pdf

In Figure 4.18, an overall summary of transit benefits and costs are monetized and presented on a per trip basis. The total benefit amount was divided by the total cost amount in order to determine the benefit-cost ratio, which can then be compared between small urban and rural transit services. Figure 4.18 highlights the national results from North Dakota State study and can serve as a rough approximation or starting point when attempting to perform a similar analysis in Iowa.

As shown, while transit service in rural areas showed a much higher benefit per trip compared to small urban service, it was the cost to operate transit service in rural areas that brought the benefit-cost ratio down and tilted it in favor of small urban areas. That being said, it should be noted that both types of transit service resulted in a ratio greater than 1.0, which indicates that there is a positive return on investment for transit service. In other words, for every dollar spent on public transit, it provided greater than one dollar in benefit in return.

Figure 4.18: National summary: transit benefits, costs, and their analysis results[20]

Transit Benefits	Small Urban Areas Benefit per Trip	Rural Areas Benefit per Trip
Vehicle cost savings	$0.32	$0.38
Chauffeuring cost savings	$0.56	$1.21
Taxi cost savings	$1.04	$1.34
Travel time cost savings	-$0.47	-$0.58
Accident cost savings	$0.07	$0.15
Emission cost savings	-$0.01	-$0.49
Cost of foregone medical trips	$4.16	$6.65
Cost of foregone work trips	$4.24	$5.00
Cost of other foregone trips	$0.52	$0.83
Total Transit Benefits	*$10.43*	*$14.49*
Transit Costs	**Cost per Trip**	**Cost per Trip**
Operational expenses	$4.49	$10.78
Capital expenses	$0.33	$1.03
Total Transit Costs	*$4.83*	*$11.81*
Benefit-Cost Ratio	***2.16***	***1.20***

Source: North Dakota State University – Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute

20 "Measuring the Benefits of Transit Services", May 23, 2019 Iowa Passenger Transportation Summit, Jeremy Mattson, PhD, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University.

While the results may address the 'Transportation cost savings' and 'Low-cost mobility benefits' categories for quantifying the overall benefit of public transit, the researchers also examined transit's economic impact. There are a number of perspectives and factors that could be utilized when trying to quantify economic impact; however, the study focused on comparisons of financial investment in public transit through funds spent outside the transit area and inside the transit area. Expenditures, such as on large capital assets like buses, in most cases involve the procurement of vehicles from outside the transit service area. As a result, these costs were considered to have a negative economic effect on the

local area as those investments represent local funding that is leaving the area. On the other hand, operating costs are generally spent on purposes such as maintenance and supplies that can be acquired locally, and so could be summarized as having a positive economic impact on the local area, in addition to indirect impacts such as job creation and sustainment for local employers.

Figure 4.19: Benefit-cost ratios for Iowa in small urban and rural areas*[21]

State	Small Urban Areas			Rural Areas
	Fixed-Route	Demand-Response	Total	Total
Iowa	3.69	0.82	3.22	1.87

**For Iowa, "small urban areas" would include service in metropolitan areas between 50,000 and 200,000 population, and "rural areas" would include Iowa's small urban and regional transit systems.*

Source: North Dakota State University – Small Urban and Rural Transit, Upper Great Plains Transportation Institute

21 "Cost-Benefit Analysis of Rural and Small Urban Transit", 2014, Small Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University: https://www.nctr.usf.edu/wp-content/uploads/2014/07/77060-NCTR-NDSU031.pdf

When the economic framework from the study was applied to the state of North Dakota, they found that the results also displayed a net benefit in terms of economic impact. The study found that in North Dakota, every $1 spent on public transit produced $1.35 as a net economic output, with $0.57 worth of benefit added to the economy as local gross domestic product – a $0.37 net increase to local wages when travel time costs are factored in. Additionally, for every $1 million in investment, 10.3 jobs were produced in the local area.

The researchers of the study took the economic model further and calculated the benefit-cost for all states in which data was available from the FTA's National Transit Database (NTD). In Figure 4.19, North Dakota State's findings generally showed a net benefit across Iowa's transit systems; only demand-response transit service in small urban systems showed a net loss at 0.82. When compared nationally with other transit systems (for which reported data was available), Iowa ranked 5th in the nation overall for the benefit-cost ratio of small urban systems, and 8th for rural transit systems. This ranking was determined out of 46 states for small urban area transit systems and 48 states for rural area transit systems. Missing states were due to insufficient data for those areas.

Implications of a benefit-cost analysis

- Models exist that can attempt to quantify net benefit and economic impact, which can serve as a starting point for conducting similar analyses for Iowa's public transit services.
- Results show that through a broad statewide examination of reported data, Iowa ranks highly compared to other states in terms of benefit-cost for providing small urban and rural transit service.
- Positive benefit-cost analysis and economic impact assessments can help justify the implementation of alternative revenue generating mechanisms to fund public transit.

5. IMPLEMENTATION & EVALUATION

In Chapter 1 of this Plan, a general concept of the planning process was depicted showing each of the steps from plan creation, to implementation, to performance measurement, then using feedback to inform future plan development. This final chapter will focus on some of the implementation actions that can be taken in order to successfully accomplish the strategies described in Chapter 3. This will be followed by a brief explanation of the role that performance measures play in monitoring whether a plan is being successfully implemented.

5.1. How will this Plan be implemented?

While this document outlines strategies to help achieve the vision for public transit in Iowa, the implementation of the Plan requires considering "how" the various strategies will be executed. In order to help guide the implementation of the Plan, three different tools will be utilized together to create a framework for successful implementation.

It is worth restating the vision statement that was described earlier in Chapter 3:

> "A public transit system that supports the physical, social, and economic wellbeing of Iowans, provides enhanced mobility and travel choices, and accommodates the unique needs of dependent and choice riders through rightsized solutions."

This broad statement serves as general guidance for the direction and intention of this Plan, with strategies and action items to help fulfill the vision.

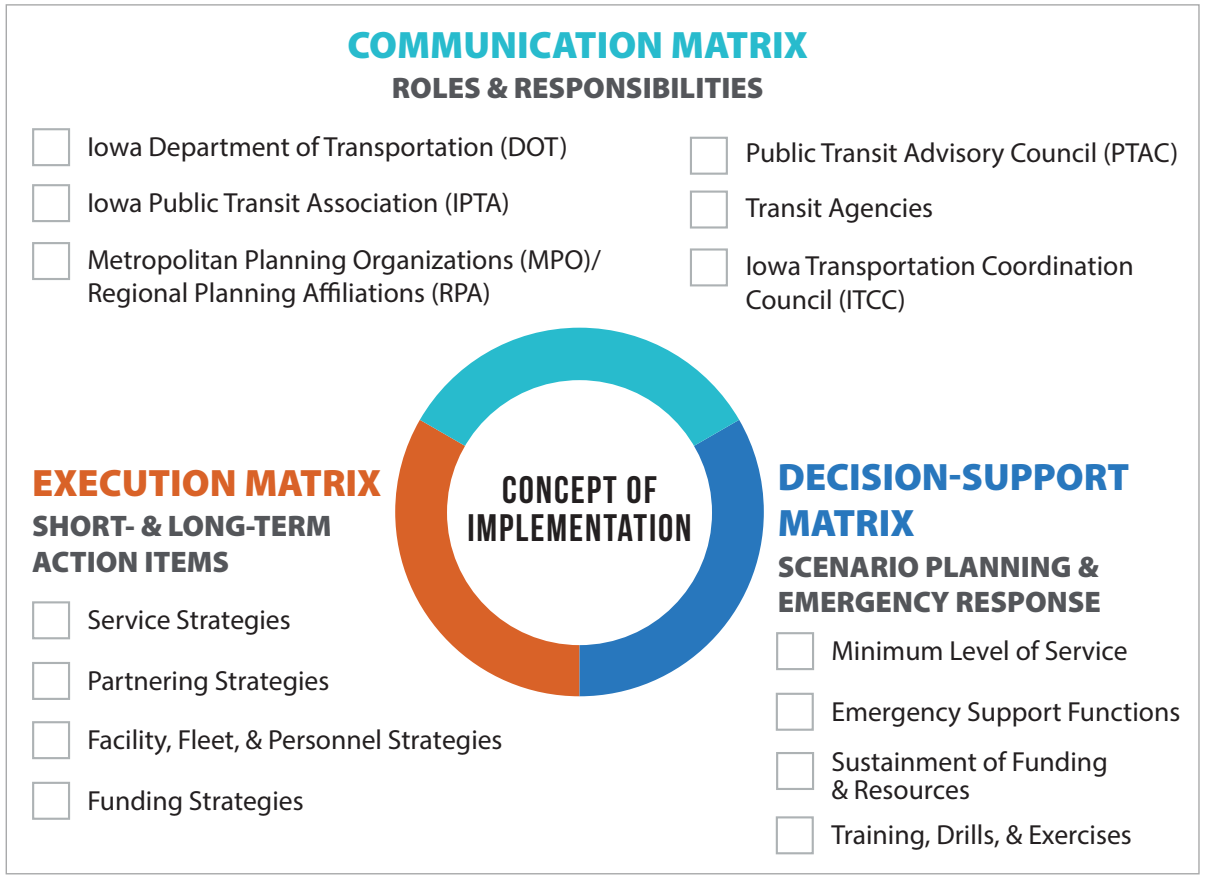
Concept of Implementation

This Plan will meet the stated intent of the vision statement by leveraging three distinct components in combination. A generalized diagram of this concept is depicted in Figure 5.1.

Concept Elements:

- **Communication Matrix:** the binding agent of this implementation, an array of internal and external stakeholder groups to assist with outreach, strategy implementation, and indirect support for contingency transit operations.
- **Execution Matrix:** listing of all strategies with key partners for implementing them, as well as approximate time periods that strategies are expected to be fully implemented by.
- **Decision-Support Matrix:** representation of "what ifs" for contingency operations, emergency support, and the maintenance of a minimum level of essential transit service for the public transit system.

Figure 5.1: Diagram depicting the concept of implementation



Source: Iowa DOT

Communication Matrix

The communication matrix represents a consolidated listing of key stakeholders who will help implement the strategies and action items of this Plan. Additionally, these organizations will have their own unique communication channels that can help with outreach and be utilized to gather valuable feedback regarding interests that are impacted by or overlap with public transit.

Figure 5.2 shows the different communication channels and stakeholders that will be utilized for strategy implementation. It lists typical groups, activities or events, the primary organizer of the event, and typical members or attendees. The frequency represents how often the group generally meets. The stated purpose attempts to capture the general reason why the communication channel exists, as well as to specify what aspects of the Plan's implementation will be discussed. In most cases, the execution matrix will be the primary agenda item from this Plan's point of view as it directly relates to the implementation of the identified strategies and action items. The decision-support matrix has a much narrower focus and has a correspondingly limited audience.

Figure 5.2: Communication matrix

Communication Type	**Participants** *Who are the primary organizer and members?*	**Frequency** *How often does it occur?*	**Purpose** *What is its purpose and how does it relate to implementation of the Plan?*
Public Transit Advisory Council (PTAC)	**Primary:** Public Transit Bureau **Members:** Transit Agency representatives	Quarterly	Members represent Iowa public transit agencies from large urban, small urban, and regional transit systems in order to provide guidance and recommendations to the Iowa DOT Public Transit Bureau regarding public transit funding and policy issues. **Relationship to the Plan:** Coordinate passenger strategy implementation (see *execution matrix*) across transit agencies and review expectations for maintaining minimum level of essential transit service (see *decision-support matrix*).
Iowa Transportation Coordination Council (ITCC)	**Primary:** Public Transit Bureau **Members:** IDPH Transit Agency MPO/RPA Veteran Affairs Refugee Services Epilepsy Foundation AARP American Cancer Society	Every other month	Discusses issues such as mobility management, accessibility of transportation, State Transit Assistance Special Project applications pertaining to coordination, and the encouragement of state and local agencies' involvement in the passenger transportation planning process. **Relationship to the Plan**: Coordinate passenger strategy implementation (see *execution matrix*) across external stakeholder groups.

Communication Type	**Participants** *Who are the primary organizer and members?*	**Frequency** *How often does it occur?*	**Purpose** *What is its purpose and how does it relate to implementation of the Plan?*
Iowa Public Transit Association (IPTA)	**Primary:** IPTA Executive Director **Members:** Transit Agencies Public Transit Bureau Passenger Planner Vendors and other interested parties	Three times per year	Trade organization of Iowa's 35 public transit agencies, advocating for public transit interests and hosting multiple conferences each year to highlight public transit trends, hold discussion on public transit challenges, and champion legislative priorities related to public transit topics. **Relationship to the Plan:** Coordinate passenger strategy implementation and legislative priorities (see *execution matrix*) across transit agencies.
Joint MPO/RPA Quarterly Meeting	**Primary:** MPO/RPA Coordinator **Members:** All MPOs/RPAs Planning, Programming, and Modal Division	Quarterly	Provide updates on multimodal transportation planning activities, including coordinated passenger transportation planning programs. **Relationship to the Plan:** Coordinate passenger strategy implementation (see *execution matrix*) across regions.
Transportation Advisory Group (TAG) meetings and Passenger Transportation Plan (PTP) development	**Primary:** MPOs/RPAs Transit Agencies Human Service Agencies **Members:** Passenger Planner Public Transit Bureau District Planners	TAG – Semi-annual (or more) PTP – Quinquennial	TAGs involve members from public transit agencies, human service agencies, MPOs/RPAs, and interested agencies and residents throughout Iowa. PTPs are updated by MPOs and RPAs at least every five years and are designed to promote joint, coordinated passenger transportation planning programs that further the development of the local and regional public transportation systems. TAGs serve as a forum to discuss these issues on a regular basis, and PTPs serve as documentation of the region's passenger transportation status, challenges, and needs. **Relationship to the Plan:** Opportunity for interregional coordination of transit services, implementation of intraregional passenger transportation services, implementation of other local-focused strategies and action items from the Plan (see *execution matrix*).
Planning, Programming, & Modal Division Geospatial Information Systems Meeting (PPM-GIS)	**Primary:** Cartography & Traffic Team **Members:** Public Transit Bureau Rail Transportation Bureau Aviation Bureau Systems Planning Bureau	Every other month	Coordination of GIS and data management activities in the PPM Division. **Relationship to the Plan:** Source of technology, data, and GIS support for the Division. Supporting effort for transit plan strategy implementation relating to data and technology needs (see *execution matrix*).

Communication Type	Participants *Who are the primary organizer and members?*	Frequency *How often does it occur?*	Purpose *What is its purpose and how does it relate to implementation of the Plan?*
Mobility Synchronization *(proposed)*	**Primary:** Passenger Planner **Members:** Public Transit Bureau Rail Transportation Bureau Aviation Bureau Systems Planning Bureau Bicycle & Pedestrian Coordinator Driver and Identification Services Bureau Research and Analytics Bureau	Quarterly	Iowa DOT coordination between modes of transportation that involve passenger mobility activities. **Relationship to the Plan:** Coordinate passenger strategy implementation (see *execution matrix*) across modal plans.
Iowa Mobility Managers Network (IMMN)	**Primary:** Statewide Mobility Manager **Members:** Mobility Managers	Quarterly	Manages and delivers coordinated transportation services to customers including low-income individuals, older adults, and persons with disabilities. Bridges the gap between transportation and human service agencies by locating the appropriate transit option within the community. Funded with federal funds through the Iowa DOT and local matching funds, coordinators must have a transit agency affiliation, but can be housed within a wide variety of locations, such as Area Agencies on Aging, Community Action Programs, and regional transit agencies. **Relationship to the Plan:** Coordinate passenger strategy implementation (see *execution matrix*) within and across multiple regions.
Iowa DOT Emergency Management *(proposed)*	**Primary:** Transportation Systems Management and Operations (TSMO) Team **Members:** Public Transit Bureau District Personnel	Annually	Tabletop exercises, response plans, and rehearsals used to clarify roles and to identify additional emergency management mitigation and preparedness needs. **Relationship to the Plan:** Rehearse response to maintain minimum level of essential transit service (see *decision-support matrix*) during natural disasters and other critical or disruptive events.

Communication Type	**Participants** *Who are the primary organizer and members?*	**Frequency** *How often does it occur?*	**Purpose** *What is its purpose and how does it relate to implementation of the Plan?*
Iowa Workforce Development (IWD)	**Members:** Future Ready Iowa Home Base Iowa American Job Center Workforce Services	As needed	State agency that provides employment services for individual job seekers through the IowaWORKS partnership. Connects workers to opportunities and employers to workforce solutions. Administering labor services, workers' compensation, labor market information, and unemployment insurance services. Maintains a statewide delivery system of 15 regional, 4 satellite, and 8 expansion offices to provide services to Iowans in communities demonstrating need. **Relationship to the Plan:** Coordinate passenger strategy implementation (see *execution matrix*) between employers and employees.
Intercity Transit Providers	**Members:** Greyhound Lines Jefferson Lines Dodger Area Rapid Transit (DART) Burlington Trailways	As needed	Intercity transit services are an extremely valuable transportation resource for Iowa's residents who do not drive or choose not to drive. This service allows them to reach destinations across the country. Intercity services include stops at non-urbanized locations and make meaningful connections to nationwide networks. **Relationship to the Plan:** Interregional coordination of transit services and passenger strategy implementation (see *execution matrix*) statewide for intercity, interregional, and interstate travel.
Local Jurisdictions	**Members:** Counties Cities	As needed	Governmental or administrative units smaller than states and regions; mainly consisting of but not limited to counties and cities. **Relationship to the Plan:** Localized coordination of transit services and passenger strategy implementation (see *execution matrix*).

Source: Iowa DOT

Execution Matrix

The execution matrix is a tool designed to track the execution of the Plan by showing key strategies and action items in a matrix format. In some ways, this product is similar to a very high-level version of a project management Gantt chart. The primary difference between this execution matrix and a Gantt chart is that individual subtasks have not yet been identified for each strategy. These smaller subtasks will represent the specific actions to be taken by appropriate entities to help implement the strategies.

During the development of the Plan, various strategies were identified by federal, state, and local stakeholders, as well as members of the public. These were then validated and refined by key stakeholders, and public feedback was provided on the strategies as part of the public

survey. These items collectively represent the actions that will be taken and implemented through this Plan in order to meet the intent of the vision statement for public transit in Iowa.

These action items can be further balanced by weighing the level of importance placed on them by stakeholders and the public against the finite resources available to accomplish them. For the purposes of this plan, examples of resources may include available funding, staff capacity and capability, or political capital needed to pass enabling legislation.

The execution matrix in Figure 5.3 lists the strategies described in Chapter 3. Estimated completion time periods are shown for each item indicating when it is expected to be implemented given resource constraints. Estimated timeframes include the short-term, which is the period between Plan publication and 2030, and the long-term, which is the period after 2030 until the long-term planning horizon of 2050. There are some items that overlap between short-term and long-term indicating that, while the strategy is being considered for implantation sooner rather than later, the timeline is flexible or ongoing.

Figure 5.3: Execution matrix

Goal Area	#	Strategy *What must be implemented?*	Key Partners *Who could help implement?*	Timeline (years) *How long before it will be fully implemented?*
				Short-Term (2030): 2 4 6 8 10 — Long-Term (2050): 12 14 16 18 20 22 24 26 28 30
Service	1-1	Examine the effects of offering fare-free statewide bus service.	Public Transit Bureau	
	1-2	Examine bus service hours for people who work nights and weekends.	Public Transit Bureau Transit Agencies	
	1-3	Prioritize funding applications for communities that improve transit service or access.	Public Transit Bureau ITCC	
	1-4	Examine the effects of creating more urban transit services in areas that are currently covered by regional transit services.	Public Transit Bureau Systems Planning Bureau MPOs/RPAs Transit Agencies	
	1-5	Continue existing services and establish new inter-regional services along commuter routes (such as Interstate 380 between Cedar Rapids and Iowa City, Interstate 35 between Ames and Des Moines, and Interstate 74 between Davenport and Illinois).	Transit Agencies MPOs/RPAs	

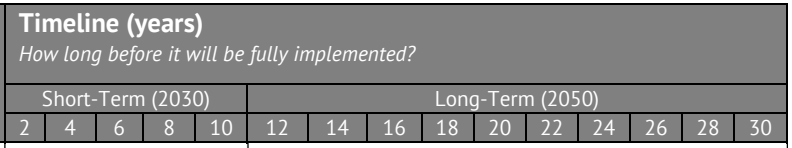
Goal Area	#	Strategy *What must be implemented?*	Key Partners *Who could help implement?*	Timeline (years) *How long before it will be fully implemented?*
Service	1-6	Start a subscription price service that works across all bus services in Iowa and includes bikes, scooter sharing, and parking facilities.	Transit Agencies IMMN Local Jurisdictions	
	1-7	Enable all buses and transit agencies in the state to accept digital fares or electronic payment formats, while still allowing for cash payments.	Public Transit Bureau Transit Agencies PTAC	
	1-8	Improve accessibility of all transit information, service notifications, and bus route information to ensure they are easy to understand for older adults, multilingual riders, and riders with audio, visual, or cognitive impairments.	TAGs ITCC IMMN	
	1-9	Establish standardized data collection and reporting requirements to better understand ridership.	PPM-GIS Public Transit Bureau	
	1-10	Study how to most effectively implement intercity transit bus systems in Iowa.	Public Transit Bureau Research and Analytics Bureau Intercity Bus Providers	
	1-11	Study and define a statewide minimum level of essential transit service necessary to meet critical needs, particularly in the event of severe and sustained disruptions to demand or service.	Public Transit Bureau Research and Analytics Bureau Transit Agencies PTAC Intercity Bus Providers Emergency Management	
Partnering	2-1	Improve bus transfers between regions and counties in order to support longer and more efficient trips across the state.	Transit Agencies MPOs/RPAs	
	2-2	Partner with transportation network companies (such as taxis, Uber, Lyft) in order to support city bus routes and provide more transportation options.	Transit Agencies ITCC IPTA	

Timeline (years) — How long before it will be fully implemented?

Short-Term (2030)					Long-Term (2050)									
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30

Goal Area	#	Strategy *What must be implemented?*	Key Partners *Who could help implement?*	Timeline (years) *How long before it will be fully implemented?*
				Short-Term (2030): 2 4 6 8 10 — Long-Term (2050): 12 14 16 18 20 22 24 26 28 30
Partnering	2-3	Improve workforce development by partnering with businesses to help employees get to work.	IWD Transit Agencies Public Transit Bureau	
	2-4	Partner with non-profit organizations (such as American Cancer Society, Veteran's Affairs, and hospitals) to help people get to their medical appointments on time.	ITCC IMMN	
	2-5	Partner with other government organizations to increase the number of transportation options for traveling long distances.	Rail Transportation Bureau Aviation Bureau Public Transit Bureau Intercity Bus Providers Transit Agencies MPOs/RPAs	
	2-6	Work with businesses to create transportation options for their employees by offering subsides, bus passes, or incentives such as tax breaks.	IWD Transit Agencies Public Transit Bureau	
	2-7	Improve sidewalks and connecting infrastructure by working with state agencies, local government, and private organizations to improve access to bus stops and transit services.	Local Jurisdictions MPOs/RPAs	
Facility, Fleet, & Personnel	3-1	Develop a rightsizing strategy for transit agency bus fleets to decrease costs and better match vehicle sizes to the number of people taking the bus.	Public Transit Bureau PTAC	
	3-2	Decrease fuel costs for transit agencies by adopting electric, hybrid, or flex-fuel efficient vehicles.	Public Transit Bureau Transit Agencies PTAC MPOs/RPAs	
	3-3	Prioritize transit facilities that are evaluated as being in marginal or poor condition for reconstruction or repair.	Public Transit Bureau Transit Agencies MPOs/RPAs	

Goal Area	#	Strategy *What must be implemented?*	Key Partners *Who could help implement?*	Timeline (years) *How long before it will be fully implemented?*
Facility, Fleet, & Personnel	3-4	Save costs by encouraging transit agencies and local governments to share facilities and staff.	Transit Agencies Local Jurisdictions	
	3-5	Address the bus driver shortage by targeting non-traditional candidates to expand the pool of potential applicants.	IWD Transit Agencies	
	3-6	Increase training for bus drivers to better serve mobility, hearing or visually impaired riders, children, older adults, immigrant, and refugee populations.	ITCC IMMN Transit Agencies	
	3-7	Identify minimum technology needs for all transit agencies and develop a technology implementation plan.	Public Transit Bureau Research and Analytics Bureau PTAC PPM-GIS	
	3-8	Update the Park and Ride System Plan to determine ideal locations for carpooling and ridesharing to support commuting activities.	Systems Planning Bureau Public Transit Bureau Local Jurisdictions MPOs/RPAs	
	3-9	Improve the coordination of transportation services between transit agencies and other transportation providers by promoting and hiring mobility manager positions to provide statewide coverage.	IMMN Transit Agencies ITCC MPOs/RPAs	
Funding	4-1	Decrease maintenance costs by focusing resources on replacing transit vehicles that are beyond their useful life.	Public Transit Bureau Transit Agencies IPTA	
	4-2	Examine alternative ways of funding public transit that do not rely only on existing federal and state sources.	Public Transit Bureau Transit Agencies IPTA PTAC	



Goal Area	#	Strategy *What must be implemented?*	Key Partners *Who could help implement?*	Timeline (years) *How long before it will be fully implemented?*
				Short-Term (2030) 2 4 6 8 10 / Long-Term (2050) 12 14 16 18 20 22 24 26 28 30
Funding	4-3	Conduct a benefit-cost analysis or economic impact study of transit services and projects in order to measure the impact and overall benefit to social welfare.	Public Transit Bureau Research and Analytics Bureau IPTA	

Source: Iowa DOT

Decision-Support Matrix

Long-range plans attempt to forecast needs into the future – the year 2050 in the case of this Plan. However, it is impossible to anticipate sporadic or random occurrences of disruptive events that may negatively impact public transit services. A clear example of this occurred in early 2020 during the development of this Plan, with an extreme disruption to transit service and everyday life due to the COVID-19 pandemic. Once such an event occurs, there is usually very little time to draft a plan on how to mitigate those disruptions. For this reason, it is beneficial to draft a set of anticipated decisions that will need to be made in order to react to such unforeseen disruptions. These decision-points can then be communicated to all involved parties and rehearsed, thus minimizing the reaction and response time when an actual disruption occurs.

The intent of this section is not to define a fully developed decision-support matrix in order to address these disruption mitigation measures. In fact, it is impossible to do so until stakeholders define what constitutes a "minimum level of essential transit service." Once this is defined, then a series of supporting decisions can be drafted that will help determine appropriate responses for ensuring a minimum level of essential transit service can be maintained.

Recognizing the need to address this for the future, a strategy to "Study and define a statewide minimum level of essential transit service necessary to meet critical needs, particularly in the event of severe and sustained disruptions to demand or service" was added to this Plan. This will be among one of the first action items that needs to be addressed before any support decision points can be formulated and a decision-support matrix drafted.

Once a minimum level of essential transit service has been defined, the remainder of the decision-support matrix can be created. Through past experiences and expected outcomes, an initial list of probable decisions can be generated with prepared action steps to respond to them. Each of these probable decisions will have specific criteria or conditions that will function as a trigger, resulting in the decision having to be made. The resulting decision-support matrix could then be validated through tabletop exercises, rehearsals, and drills organized by emergency management or other similar organizations. Lessons learned could be captured through an after-action report that could then be used to update or refine the decision-support matrix.

Once a decision-support matrix is finalized, it could be distributed to all appropriate stakeholders, including transit agencies, the State DOT, MPOs/RPAs, and county and city administrations. This would ensure that everyone is aware of and will expect certain actions to be taken given particular criteria.

5.2. How will Plan implementation be evaluated?

Performance measures support Plan implementation as a way to monitor progress toward achieving the Plan's vision. Existing system-level metrics are discussed, as these can help with understanding the overall health and status of the system. Additionally, ways the Plan itself will be monitored are discussed.

System Performance Measures

In order to assess the overall relative health of the public transit system in Iowa, the Public Transit Bureau tracks metrics related to performance, mileage, and condition. Iowa DOT has also recently implemented its Americans with Disabilities Act (ADA) Transition Plan[22] in order to bring public facilities within Iowa DOT right-of-way into compliance with federal ADA regulations. Performance measures for ADA compliance and the means of monitoring it are still being devised and thus are not shown with the other system performance measures at this time. It should be noted that, as of the publication of this Plan, the Iowa DOT is currently reexamining its performance management framework. As system performance objectives are finalized, key stakeholders will have an opportunity to examine the alignment of this Plan's performance measures to the Iowa DOT's new framework. Figure 5.4 shows the current transit system performance measures.

22 Iowa Department of Transportation ADA Transition Plan, December 2019: https://iowadot.gov/accessiblesidewalks/pdfs/CY20_IADOT_ADA_TP.pdf

Figure 5.4: Iowa DOT public transit system performance measures

Performance	Mileage	Condition
Annual statewide transit ridership	Total distance travelled by transit revenue vehicles while operating service routes and pick-ups	Percentage of transit fleet operating within Federal Transit Administration's normal useful life standards
2010: 26,209,999 **2016**: 27,838,603 **2019:** 23,828,108	**2010**: 25,045,158 miles **2016**: 21,360,197 miles **2019**: 22,581,257 miles	**2010:** 51% **2016:** 37% **2019**: 48%

Source: Iowa DOT

In addition to the performance measures identified by the Public Transit Bureau, there are federally-required measures for transit asset condition, which are discussed in the Transit Asset Management Group Plan[23]. These performance measures were identified as part of the group plan in 2018, and statewide targets for small urban and regional systems continue to be set annually. The performance targets set a goal for what percent of revenue and non-revenue vehicles will exceed their useful life benchmarks (ULB) by the end of 2020. ULBs represent the expected life cycle of a capital asset. In addition, a target is set for what percent of facilities will be rated as less than adequate on the Transit Economic Requirements Model (TERM) scale, which provides a numerical score ranging between 1 (Poor) and 5 (Excellent) for each facility. Figure 5.5 provides the current statewide group targets for small urban and regional transit systems. Each large urban system is responsible for creating its own asset management plan and updating its targets annually.

23 Iowa DOT Transit Asset Management Group Plan, September 2018: https://iowadot.gov/transit/publications/TransitAssetManagementGroupPlan.pdf

Figure 5.5: Performance measures established for transit asset management for States, public transit providers, and MPOs, and Iowa's 2020 targets for small urban and regional transit agencies

Performance Measure	Class	Current Status	2020 Target
Percentage of revenue vehicles met or exceeded Useful Life Benchmark	Automobiles	58% of fleet exceeds ULB of 8	70%
	Buses	20% of fleet exceeds ULB of 14	14%
	Cutaway buses	56% of fleet exceeds ULB of 8	51%
	Trolley	0% of fleet exceeds ULB of 13	0%
	Vans	60% of fleet exceeds ULB of 8	58%
	Minivans	36% of fleet exceeds ULB of 8	36%
Percentage of non-revenue vehicles met or exceeded Useful Life Benchmark	Automobile	20% of non-revenue service vehicles exceeds ULB of 8	0%
	Other rubber tire vehicle (tractor)	29% of fleet exceeds ULB of 14	43%
Percentage of assets with condition rating below 3.0 on FTA TERM Scale	Administrative/maintenance facility	0% of facilities rated under 3.0 on TERM scale	0%

Source: FTA final rule: Transit Asset Management; National Transit Database; Iowa Performance Targets for January 1, 2020[24]

Federal rules for transit safety were published in July 2018 with the intent that public transportation agency safety plans and targets are in place by July 2020 for each individual transit agency that receives Section 5307 funding (large urban agencies in Iowa). In April 2020, the deadline for completing safety plans was extended to December 31, 2020. All safety plans will incorporate measures on fatalities, injuries, safety events, and system reliability as shown in Figure 5.6. Public Transportation Agency Safety Plan (PTASP) regulations require that seven individual safety performance targets are reported.

24 https://iowadot.gov/systems_planning/fpmam/Iowa-2020-transit-asset-management-targets.pdf

Figure 5.6: Public Transportation Agency Safety Plan (PTASP) performance measures for States, public transit providers, and MPOs

Performance Measure	Description
Fatalities *(total)*	Total number of reportable fatalities and rate per total vehicle revenue miles
Fatalities *(per 100,000 vehicle revenue miles)*	
Injuries *(total)*	Total number of reportable injuries and rate per total vehicle revenue miles
Injuries *(per 100,000 vehicle revenue miles)*	
Safety Events *(total)*	Total number of reportable events and rate per total vehicle revenue miles
Safety Events *(per 100,000 vehicle revenue miles)*	
System Reliability *(failures per 100,000 vehicle revenue miles)*	Mean distance between major mechanical failures

Sources: FTA rulemaking: Public Transportation Agency Safety Plans; National Public Transportation Safety Plan

Plan Performance Measures

While the system performance measures help gauge the overall health of the public transit system, they may not be ideal for measuring the effectiveness of this Plan. Given that there are 30 strategies across four goal areas, any number of characteristics or factors related to these items could impact system performance. As such, it will be important to develop more specific performance measures tied to each strategy in order to determine how effective they are at implementing the overall vision of the Plan. Performance measures, or indicators, along with desired trend direction or specific targets, can be added to the execution matrix to help track progress.

Additionally, establishing performance measures for each strategy can also help assess the return-on-investment with regards to investing resources in particular strategies. For example, if contributing a certain amount of resources to a strategy results in a noticeable gain in transit ridership, then it may be worthwhile to sustain or increase the investment into that strategy. Likewise, should a particular strategy fail to achieve its intended results, then the implementation of it will likely need to be adjusted.

5.3. Next Steps

Monitoring Implementation

The performance measures and triggers described in the previous sections will be monitored and reviewed over time. The purpose of a periodic review of these measures is to bring the Plan into a more focused short-term perspective while providing more detailed information to decision-makers. This review or running assessment will be an additional planning tool representing a continual assessment of the current situation, incorporating lessons learned from the implementation of action items up to that point. This running assessment can alert decision-makers to potential adjustments that should be considered and whether planned future strategy implementation is able to be supported. This assessment can consider all elements affecting investment in the public transit system, not just the indicators, triggers, and performance measures that were defined.

Future Studies

In addition to implementing strategies and monitoring their impacts, a number of studies were specifically noted in the action items. These studies could potentially affect the monitoring of other action items by modifying their implementation or adding or removing efforts entirely, based on the results. Studies that are considered "specified" are those that specifically state 'study' in the strategy description and tend to focus on methodology and processes that arrive at a particular conclusion or result. Some strategies may not result in a dedicated study but may nonetheless require some analytical effort in order to influence a decision, strategy, or implementation. These "implied" studies focus mainly on effects rather than the methodology that produced the results.

Studies specified in the Plan strategies:

- **Service Goal Area:** "Study how to most effectively implement intercity transit bus systems in Iowa"
- **Service Goal Area:** "Study and define a statewide minimum level of essential transit service necessary to meet critical needs, particularly in the event of severe and sustained disruptions to demand or service"
- **Funding Goal Area** "Conduct a benefit-cost analysis or economic impact study of transit services and projects in order to measure the impact and overall benefit to social welfare"

Studies implied in the Plan strategies:

- **Service Goal Area:** "Examine effects of offering fare-free statewide bus service"
- **Service Goal Area:** "Examine bus service hours for people who work nights and weekends"
- **Service Goal Area:** "Examine the effects of creating more urban transit services in areas that are currently covered by regional transit services"
- **Funding Goal Area** "Examine alternative ways of funding public transit that do not rely only on existing federal and state sources"

Transit Dependency Analysis

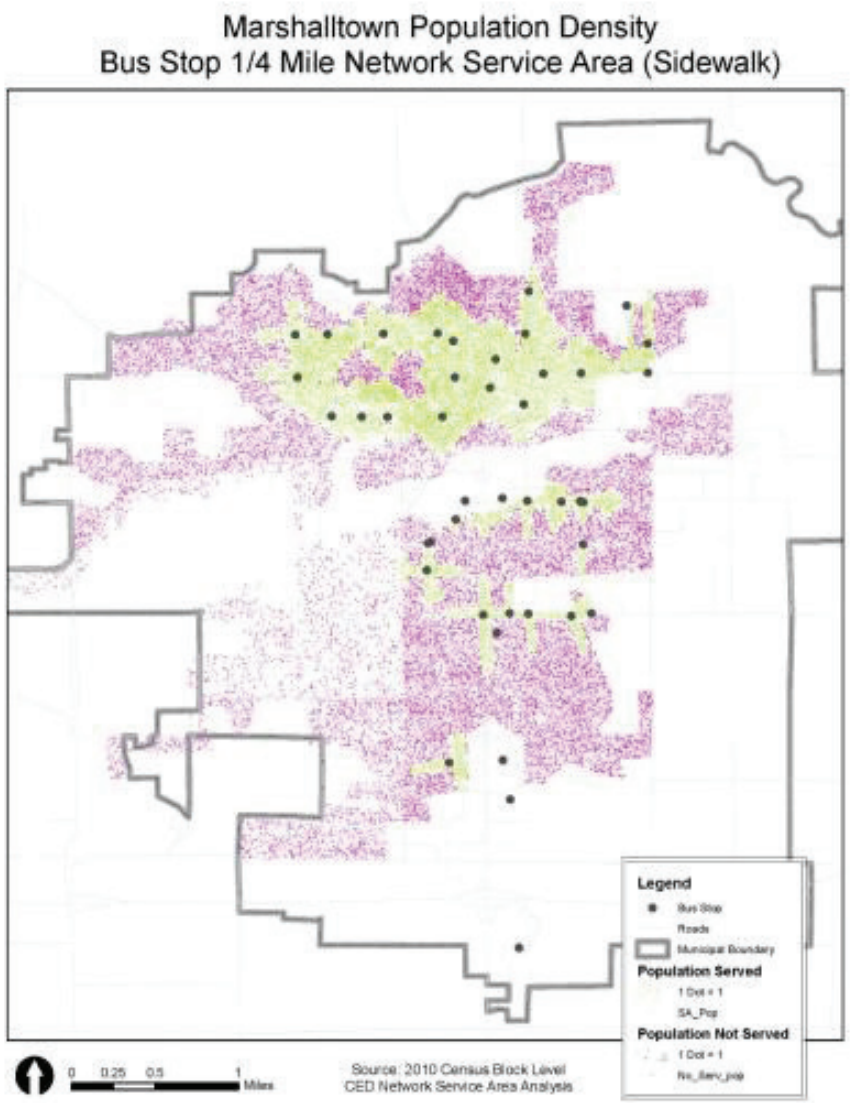
In addition to the specified and implied studies noted above, there are a few other existing and/or ongoing efforts that impact public transit decision-making. The transit dependency analysis discussed in Chapter 3 is one such effort. This analysis can be continued through conversations with transit agencies regarding service enhancements or outreach to particular demographic groups in efforts to increase transit ridership. This study could also serve as a sort of prediction or forecast that could lead to implementation of a follow-on study.

One such follow-on study to the transit dependency analysis could be similar to the transit optimization study conducted by Iowa State University (ISU) Extension and Outreach (see Figure 5.7).[25] Expanding on the demographic data such as that used in the transit dependency analysis and available through the U.S. Census Bureau, ISU's approach goes into greater detail and focuses on factors that are specific and unique to a transit system. Through the examination of land uses, existing routes, and anticipated growth patterns, ISU's effort takes the identified need areas or gaps and seeks to implement solutions to expand transit service and increase ridership.

Minimum level of essential transit service

As stated earlier in this chapter, defining a minimum level of essential transit service for public transportation will be among the first items examined, before the decision-support matrix can be developed or any agreed upon emergency measures can be drafted. Determining this level of service may involve some of the inputs or findings of the transit dependency analysis, population density and distribution, employment density and type, and transportation mode availability and infrastructure. Additionally, the criteria that trigger particular decisions with regard to prioritizing the maintenance of minimum service levels may also need to be incorporated into any existing response plans or emergency management processes that pertain to the preservation and sustainment of transportation systems.

Figure 5.7: Transit optimization product example



Source: Iowa State University Extension and Outreach

25 "Geospatial and Data Science Team Pilots 'Data Science for the Public Good' Project in Marshalltown", Iowa State University Extension and Outreach: https://www.extension.iastate.edu/communities/geospatial-and-data-science-team-pilots-%E2%80%98data-science-public-good%E2%80%99-project-marshalltown

Marketing and Outreach

Given the relationship between the Iowa DOT and the transit agencies, most marketing efforts will likely be geared toward encouraging public support for and utilization of Iowa's public transit services. Additionally, as discussed in the communication matrix, a variety of existing stakeholder groups and organizations will continue to be leveraged in order to better coordinate passenger transportation services across the state.

Outreach for this Plan will utilize several different lines of communication, both with key stakeholders and users of public transit services. While a website has already been established and will continue to be utilized for the dissemination of Plan-related information, other channels such as the Iowa DOT's blog and social media outlets will also be used to promote the awareness of this Plan.

This Plan will also be made available to the public in an accessible and interactive format through Esri's story mapping capabilities. Story maps are a combination of traditional text and graphic products, combined with maps and charts, to produce a content-rich user experience that highlights the key aspects of the Plan without having to search through a multi-page document.

Moving Forward

Iowa has a long history of providing public transit for its residents to access work, school, medical appointments, and social activities. This Plan's intent is to build on that history by providing a framework for the Iowa DOT and its partners to support the public transit system envisioned for the state. The investigation and analysis conducted throughout development of the Plan has led to the following general conclusions.

- Public transit is transitioning into a period where services will need to adjust to effectively operate alongside emerging transportation and micro-mobility options
- There is a critical funding shortfall that will worsen over time if action is not taken to identify new or additional sustainable financial resources
- As the state emerges from the COVID-19 pandemic, the resulting long-term changes to transportation user preferences will need to be monitored in light of their impact to optimal public transit service

Implementation of the Plan, monitoring its performance, as well as sharing and gathering information or feedback will be a continuous effort in the years following the publication of this Plan. These steps will be undertaken by the Iowa DOT Public Transit and Systems Planning Bureaus, Iowa's public transit systems, and many human service, business, and community partners throughout the state. Collectively, these activities of execution, monitoring, and receiving feedback will be instrumental as inputs for the next Plan update, which is expected to continue on a five-year cycle. It is through these efforts that the Plan seeks to carry out its mission and meet the intent of supporting the wellbeing of all Iowans, enhancing mobility, rightsizing the system, and accommodating the needs of passengers throughout the State.

The Iowa Department of Transportation would like to thank our stakeholder partners who have contributed their invaluable input and perspective in the development of this public long range plan.

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