

CHAPTER 5

PLANNING MATTERS: TRENDS AND CONSIDERATIONS

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Introduction

In addition to understanding the existing land use and transportation state of the region, as presented in Chapter 2, it becomes important to understand some of the trends that are and will continue to occur over the next 10 to 30 years, which will affect how we plan our future land use and transportation system.

As will be presented, the Corridor MPO will grow by of about 94,000 people and 44,000 jobs by 2040. Regardless of whether the Corridor MPO region will achieve the 2040 population and employment growth by 2040, or after or even before, the fact is that if the region achieves economic vitality, it will grow.

It should also be noted that successful cities and regions must grow. Without growth, the region becomes stagnate, property values either remain the same or decrease, and the regions taxing ability is minimized. Lack of quality growth with higher educated and income populations can also affect retail sales and demand for services. Reduced property values and minimized retail sales will affect the jurisdictions ability to provide services.

As will be presented, it is not just the growth in population and employment that will impact the transportation system over the next 30 years, but the fact that there will be demographic changes to an older population. This demographic shift will affect demand for a different housing type and transportation system.

There are other factors which need to be considered in preparing the long range transportation plan, such as availability of funding, infrastructure costs, and environmental considerations.

Population and Employment Growth

In 1980, the Corridor MPO region had approximately 150,000 residents. This population stayed relatively constant through 1990, in spite of continuing suburban growth and development—especially in Marion and Hiawatha. However, by 2000, the region added almost 25,000 residents, adding further pressure for suburban fringe development. The region’s currently estimated population in 2010 stands at 200,000 residents.

The MPO’s Population and Employment Forecasts Technical Advisory Committee developed population projections for the region’s 2005 long-range transportation plan. Those figures were based on county population projections

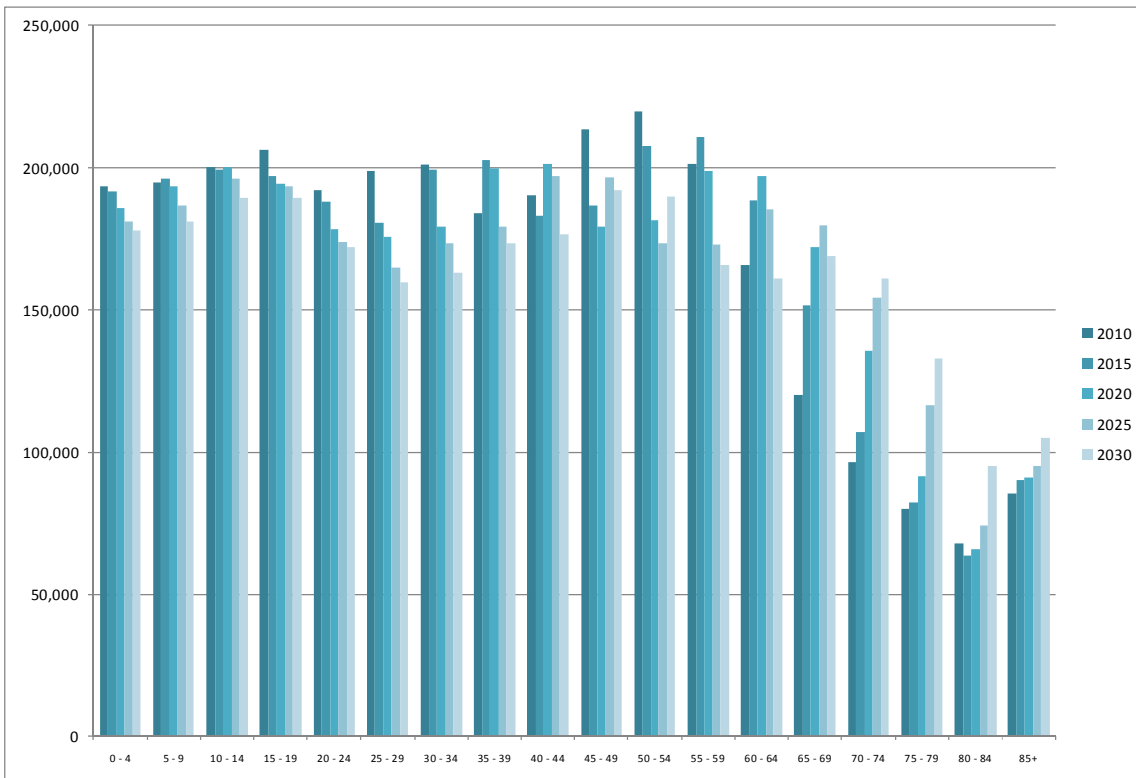
by Woods & Poole and the Census Bureau and were adjusted from the county level to the MPO area. The projections indicate an increase of about 94,000 people and 44,000 jobs by 2040. This is the equivalent of adding three present-day Marion’s to the region by 2040. More recent Woods & Poole and REMI projections show reduced county population figures, so the scenarios in this plan may reflect more growth than is currently anticipated.

Demographic Shifts: An Aging Population

The state of Iowa as a whole is expected to experience a decline in population between now and 2030 (Note: Demographic data is only forecasted through the year 2030). Despite this, the Corridor MPO region is one of only a few regions in Iowa that is expected to grow, stimulated largely by economic development, job growth, and urbanization.

The state’s population projections also indicate that the age distribution and other population characteristics will experience a shift. While the overall population of the region is expected to increase, the number of residents under 65 is projected to decrease and the number of residents above 65 is projected to increase.

Figure 5-1: Population by Age – 2010 to 2030s



Source: State Data Center of Iowa

Shifting Housing Preferences

The aging population will have a major impact on the housing mix. Those in the 20–50 age range (households with children) are likely to choose to live in single-family homes. Those above 60 will become empty nesters and have a greater propensity to sell single-family homes in search of other types of housing that are smaller, require less upkeep, and offer additional transportation options and easy access to shopping and cultural amenities. The projected age shift indicates a surplus of single-family houses by 2040 and a shortage in medium and higher density housing options if current trends continue.

Most jurisdictions have vast areas of future single-family residential lands. Based on past growth with a younger population, this made sense. This demographic change and its impact to housing demand will have a major impact on the land use plans of the Corridor MPO jurisdictions.

This ever increasing growth in single-family dwelling units is not sustainable giving the aging population. **As the baby boomers hit the retirement age, major shifts in housing choices will be required.** There are regions throughout the United States, which have moved toward understanding the needs of this aging population, and are competing for empty nesters and those entering their retirement years.

If the Corridor MPO jurisdictions would like to keep these seniors within the region, land use plans will need to be modified to provide housing choices desired by this population group.

Employment & Housing

Job growth is directly linked to population growth. When there is an abundance of jobs in a region, domestic in-migration increases as people move to take advantage of the economic opportunities.

One measurement of a region’s attractiveness is the employment housing ratio, which is simply the total number of jobs divided by the number of households. A region which has a ratio greater than 1.5 jobs per household is reasonably stable and may attract employees from outside the region. Conversely, a region that has less than 1.5 jobs per household tends to stagnate or possibly experience a decreasing population.

Obviously there are a number of factors to consider when reviewing these ratios, such as the general condition of the economy and the percent of the population that is retired and not working. These ratios also do not reflect the type of job, whether white collar with higher salaries or entry level positions.



However, the trend in the jobs per household ratio does provide some indication of the region's economic direction. In the Corridor MPO region, the Year 2000 jobs per household ratio was 1.57. Based on regional forecasts, the job per household ratio in 2040 is projected at 1.49. Therefore, the job per household is projected to decline. Granted, part of this decline will be associated with the demographic shift to a more senior population with retired households and the forecast ratio is still within a desirable target area, however, this decline does create a warning, that to maintain economic vitality for the region, it must seek new jobs, and preferably higher paying jobs creating retail sales and services.

Travel Patterns

Travel behavior is influenced by many factors, including demographics, land uses, our lifestyles, the economy, employment locations, and work practices. An understanding of these travel patterns will help shape Connections 2040.

Like most many areas around the mid-west and nation, the Corridor MPO region has seen a gradual decline in walking, bicycling and taking transit in favor of driving alone. In part, this increased shift to automobile travel has been a product of the transportation facilities provided by the region. As presented in Chapter 2, historical transportation investments have been for roadways and not sidewalks or bicycle facilities.



This shift to automobile is also reflected in the increase in two-worker households –which in turn, has increased the need for car trips – and the convenience and flexibility of the personal automobile. Throughout the 1980s, travel (as measured in vehicle miles traveled or VMT) grew about twice as fast as population, primarily because of growth in two-worker households. Over the past 15 to 20 years, the growth in two worker households has stabilized.

However, vehicle miles of travel continue to increase. This current increase is associated with an ever expanding region. New households and jobs have tended to be located in outlying areas, where it takes further to get to. These locations also are too far to walk or ride a bicycle and tend to be of a lower density, which cannot support transit.

Continuing the current trends of an expanding land use with limited financial capacity to keep pace with demand will result in many of the region's major transportation facilities operating at congestion levels.

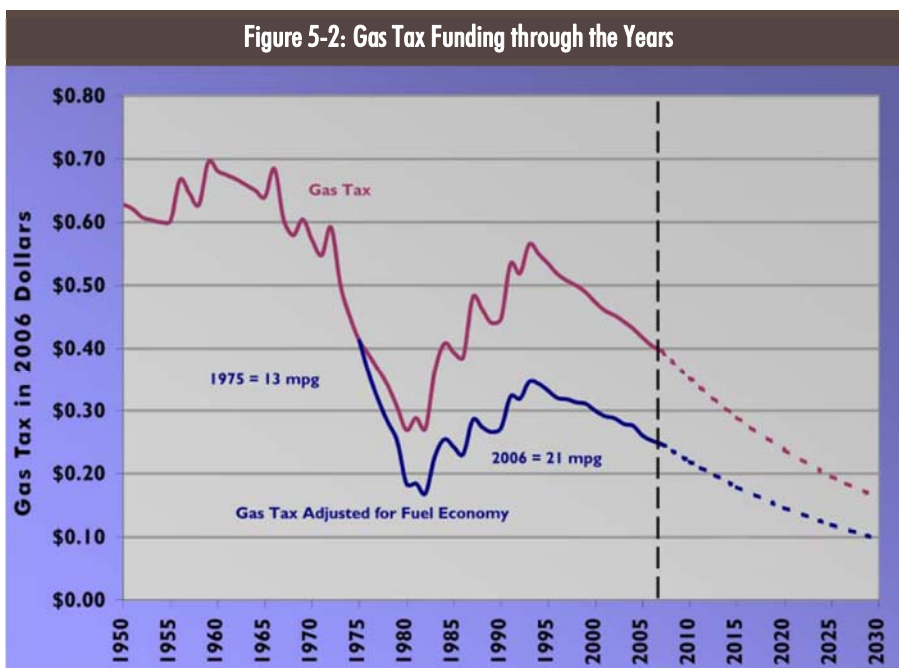
National Trends: Factors Which Affect Our Planning

In addition to how we plan our land uses and transportation system, there are other factors that influence how we should plan for a more sustainable future. Two key factors that influence how we plan for the future is the ever decreasing available funding, increased maintenance costs, and increased construction costs. These three factors create the perfect storm for limiting what can be done and requiring increased diligence in being good stewards of what little funding is available.

Funding

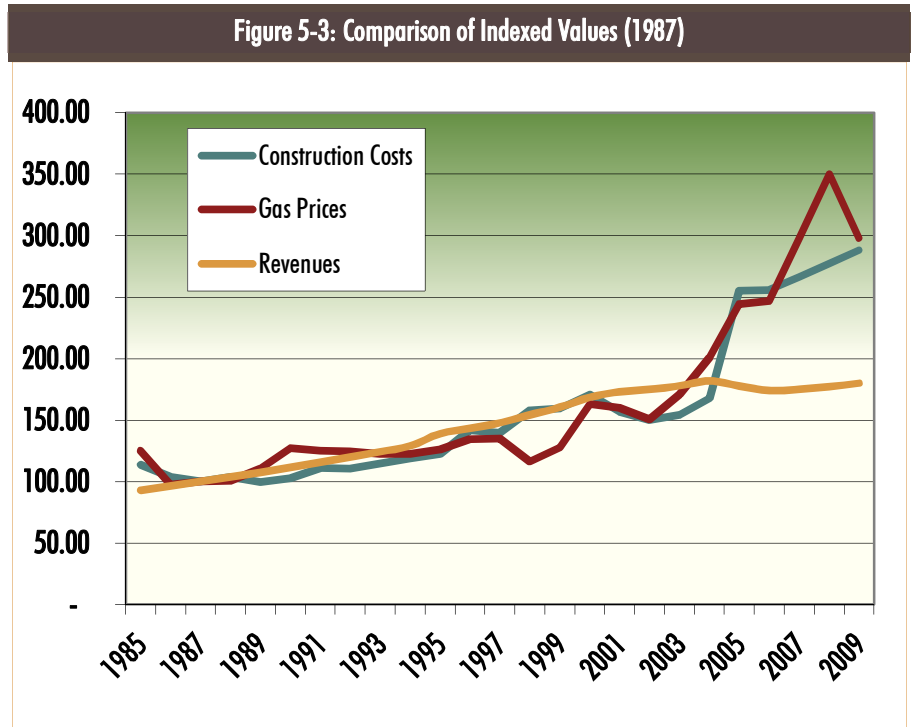
Historically, funding of the regional transportation system relied on federal and state gas taxes. Introduced in the 1950s, these gas tax dollars built the interstate highway system, freeways, expressways, and arterials throughout the United States. When the state and federal gas taxes were first introduced in the 1950s, the 2006 dollar equivalent was approximately 65 to 70 cents per gallon. Today, the federal and state gas tax per gallon is 40.1 cents, which has not changed since 1990.

Another change is automobile fuel economy. In the 1950s, average fuel economy was approximately 13 miles per gallon. In 2006, average fuel economy was 21 miles per gallon. Therefore, the gas tax effectiveness per mile of travel is half what it once was. Furthermore, fuel economy requirements for the future will increase and further reduce gas tax effectiveness. This relationship of effective gas tax revenue in 2006 dollars is presented in Figure 5-2.



Another major factor that has eroded transportation funding is the increase in construction costs. What might have cost \$100 in 1985 now costs \$300, as presented in Figure 5-3.

Our limited transportation dollars are also being dramatically impacted by the need to maintain our existing road and bridge infrastructure. From the 1950s through 1990s, when federal and state gasoline fuel tax dollars were relatively plentiful, there were ample funds to build new roads and bridges. **These roads and bridges were designed to last 30 to 50 years. These same roads and bridges are now 30 to 50 years old and are falling apart.** The cost to reconstruct our roads and bridges is higher now than when they were new.



In summary, a perfect storm of dwindling gas tax revenue, increased fuel efficiency resulting in less gasoline tax dollars collected, increased cost of construction, and an increased need for maintaining our existing road and bridge infrastructure is leaving the Corridor MPO region, like other states and regions throughout the United States, wanting for more transportation dollars. Being smarter in how we plan our future land uses and transportation system will help minimize the transportation dollars needed.

Maintenance Costs

During the period of 1960 to 1990 when the gas tax dollars were strong and construction costs were more affordable, roads and bridges were being constructed throughout the United States. Typically, these roads and bridges are designed for a lifespan of 30 to 50 years, provided that they are maintained.

Many of these roads and bridges constructed decades ago are in major need of repair. Adequately maintaining the transportation system is a major challenge for the Corridor MPO region, the State of Iowa and the entire country. Many metropolitan areas have neglected their maintenance responsibilities in lieu of policies favoring expansion.

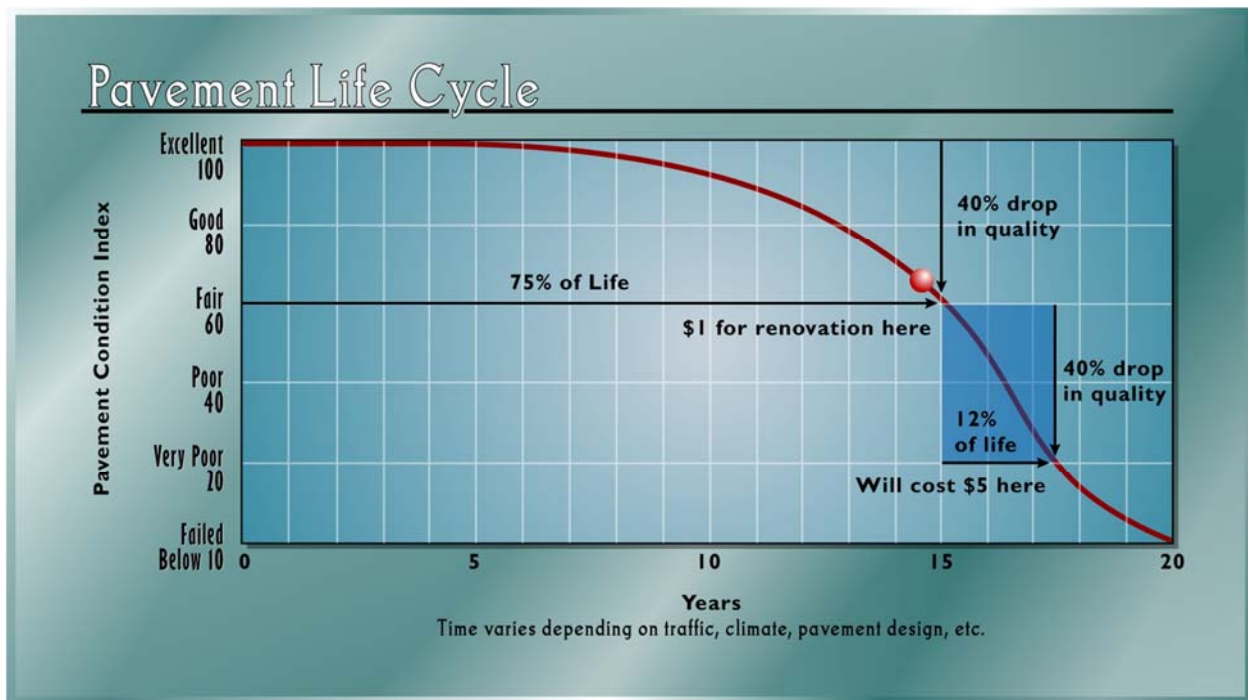


Preservation of the existing system is fiscally responsible, and publicly desired. Maintaining the existing transportation system was the number one priority received during the Connections 2040 planning process.

Road and bridge infrastructure deteriorate at known predictable rates, taking into account materials, craftsmanship, weather conditions, traffic type and volume, along with several other factors. Preventive maintenance, if institutionalized, can extend the deterioration point, pushing off major rehabilitation/reconstruction for a decade or more.

As presented in Figure 5-4, a new facility will not require much maintenance for approximately 15 years. If the needed minor maintenance is not performed at that time, deterioration accelerates to where the maintenance becomes significantly more costly.

Figure 5-4: Pavement Life Cycle

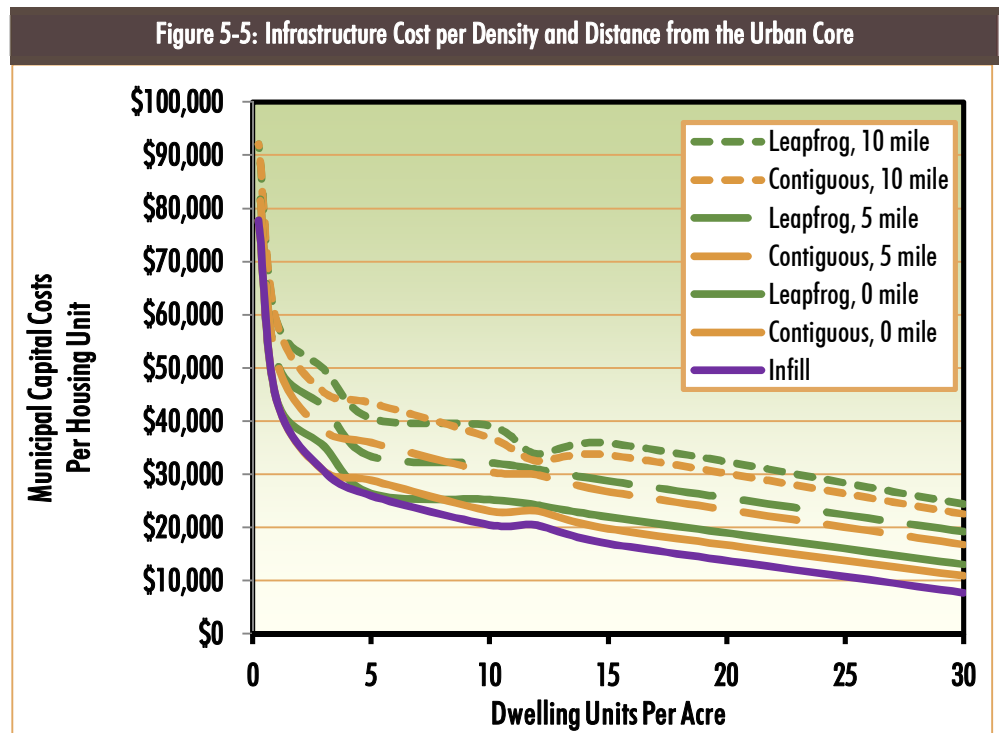


Infrastructure Costs

New outlying, low-density residential development is costly to municipalities and rarely provides the property tax revenue sufficient to cover the public cost to build and maintain new streets and infrastructure. It thus requires current taxpayers to, in essence, subsidize the newcomers. The more spread out development is, the more miles of local roads and water and sewer lines are needed to support it. Figure 5-5 shows how municipal capital costs of infrastructure relate to density of development. The lowest residential densities—less than 5 units per acre—have exponentially higher municipal infrastructure costs than higher residential densities. Municipal capital costs of providing infrastructure also increases the further new development is located from existing development. Infrastructure costs of leapfrog development 10 miles away from existing development can be up to 3 times higher than infrastructure costs for infill development (see Figure 5-5).



Growing outward also means either greater distances need to be traveled to provide police, fire, hospital, and other public services (resulting in longer emergency response times) or the construction and staffing of additional outlying facilities. In winter months, more spread out development also means more roads that need to be traversed by snow plows, resulting in longer waits for clearing service in remote areas.



Source: Urban Land Institute

Environmental Considerations

The environment is an important aspect to be considered early in the transportation process to identify obstacles, consider effects, mitigate effects, and determine costs prior to construction. State and local agencies can achieve significant benefits by incorporating environmental and community values into transportation decisions early in planning and carrying these considerations through project development and delivery. Benefits include:

- **Relationship-Building Benefits:** By enhancing inter-agency participation and coordination efforts and procedures, transportation planning agencies can establish more positive working relationships with resource agencies and the public.
- **Process Efficiency Benefits:** Improvements to inter-agency relationships may help to resolve differences on key issues as transportation programs and projects move from planning to design and implementation. Conducting some analysis at the planning stage can reduce duplication of work, leading to reductions in costs and time requirements, thus moving through the project development process faster and with fewer issues.
- **On-The-Ground Outcome Benefits:** When transportation agencies conduct planning activities equipped with information about resource considerations and in coordination with resource agencies and the public, they are better able to conceive transportation programs and projects that serve the community's transportation needs more effectively. This leads to smaller negative impacts, and incorporates more effective environmental stewardship.

(from FHWA website: <http://www.environment.fhwa.dot.gov/integ/index.asp>)

Land Use

The planning area abounds with prime farmland. Agriculture is rooted in the history and traditions of the area. The land use framework outlined in this plan encourages compact development within existing corporate limits to preserve farmland. Farmland determinations are often related to soil suitability, which can be obtained from the Natural Resources Conservation Service (NRCS). In addition to soil suitability, slope is also considered in determining environmental impacts. Areas, such as bluffs, with significant slope where erosion and runoff may be an issue should be avoided.



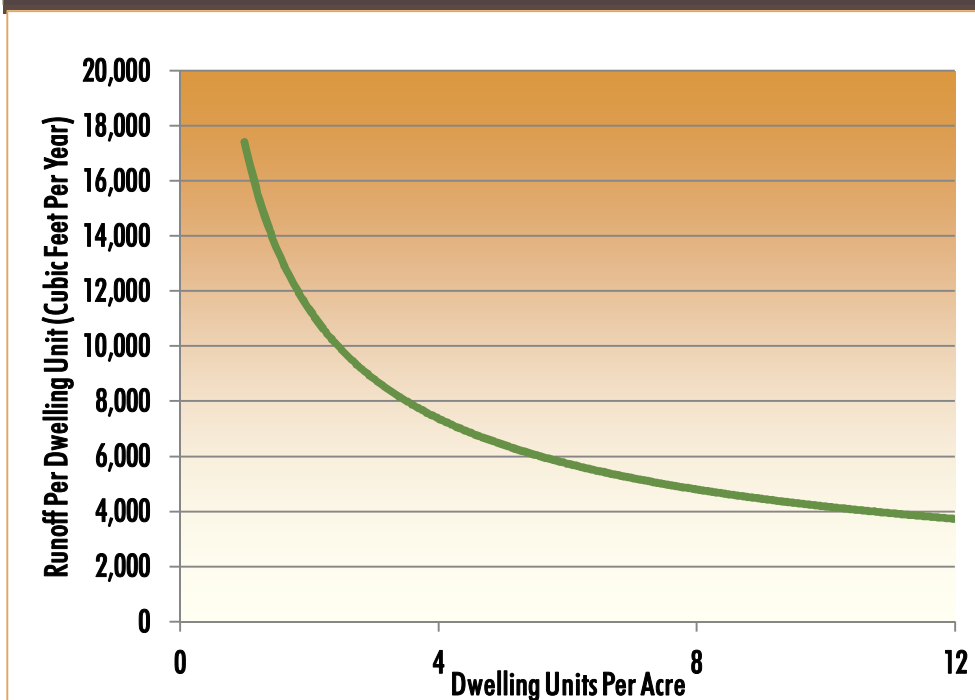
Stormwater Runoff

Stormwater runoff is rain water that cannot be absorbed into the ground and instead flows across land to swales, storm sewers, or directly into creeks or streams. Runoff picks up pollutants and deposits them in waterways and also contributes to flooding during severe weather events.

Runoff contributes to the “flashiness” of waterways. This means there is a larger-than-normal difference between dry and wet weather conditions, with very low flow in dry weather and very high flow in wet weather. The inundation of high flow in wet weather can lead to scouring, erosion, and waterway degradation. Also, as stormwater runoff volumes increase, traditional stormwater infrastructure (sewers, pipes) may not have adequate capacity.

Development increases stormwater runoff, as pervious vegetated land is replaced by impervious surfaces of rooftops, roads, driveways, and even suburban lawns. Typically, low-density residential development is thought to have more pervious area than denser development. However, much of the surfaces thought to be pervious in low-density development often acts like impervious surface. Contrary to some perceptions that large residential lots provide the benefit of open space, lawns are often nearly as impervious as pavement due to compaction, which is exacerbated by mowing, and a dense mat of roots on top of compacted soil (Figure 5-6).

Figure 5-6: Stormwater Runoff by Density



Source: *Protecting Water Resources with Higher-Density Development*, US EPA 2006.

Low-density developments also typically require more off-site infrastructure, which is impervious. This includes additional roads, driveways, and parking lots. Low density residential development tends to encourage activities that can be harmful to water quality. For example, increased car use can mean more oil and waste from vehicles and more lawns can bring lawn fertilizers, which can be picked up by runoff and deposited into waterways.

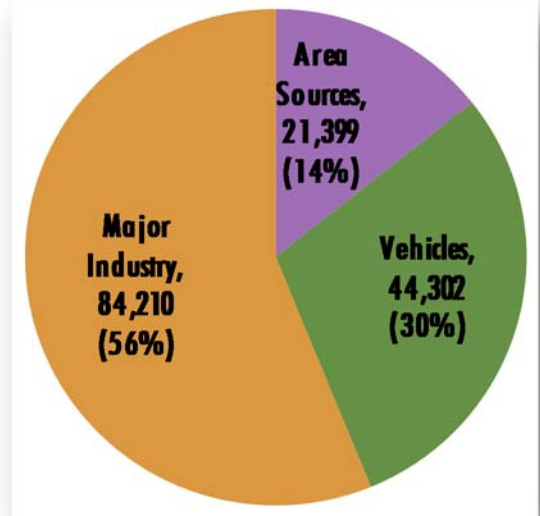
Air Quality/Climate Change

Global climate change may result from natural factors or human activities, but the prevailing scientific opinion is that most of the warming observed over the last 50 years is attributable to human activities such as the burning of fossil fuels, land clearing or agriculture. These activities have caused substantial quantities of greenhouse gases to be released into the atmosphere. **In 2004, the United States emitted about 7.3 billion metric tons of greenhouse gases or about 25 tons per year per person.**

Of the four major sectors nationwide – residential, commercial, industrial, and transportation – transportation accounts for the highest amount of greenhouse gas emissions (approximately 35 to 40%); these emissions are entirely generated from direct fossil fuel combustion. Although there are no adopted federal regulations to control global climate change or greenhouse gas emissions, concern over global climate change is increasing and transportation planning will need to try to reduce greenhouse gas emissions. By promoting a more compact form of land development, the Plan attempts to limit increases in vehicle trips and/or vehicle miles traveled, thereby reducing potential greenhouse gas emissions.

The Corridor MPO region has good air quality and is currently in attainment for all of the U.S. Environmental Protection Agency’s criteria pollutants. However, air quality is of growing concern due to steady annual increases in vehicle miles traveled. More than half the air pollution in the region comes from vehicle emissions, so the more miles traveled, the more air pollution generated. While air pollution affects everyone, children and older residents are the most at risk. By working to preserve air quality, the region will save in health care costs that are associated with unhealthy air.

Figure 5-7: Linn County Air Quality
(Tons per Year)



Source: *Air Quality for Linn County: What You Should Know*, Linn County Public Health – Air Quality Division

Environmental Justice

Environmental justice is a term used to acknowledge and address the tendency to locate undesired land uses or facilities, such as highways, landfills, and sewage treatment plants in areas populated by the disenfranchised who lack the clout of more prosperous and politically influential segments of the population. Such patterns have not been identified in the Cedar Rapids region through the LRTP planning process, nor is it within the scope of a LRTP to address such broad social equity issues. However, it is within the realm of the LRTP to address the transportation needs of the disadvantaged.

The most prominent form of “transportation discrimination” in the Cedar Rapids region is ignoring the needs of those without access to a private automobile in an auto-dominated landscape and transportation system. The limited availability and excessive travel times associated with reliance upon public transit for longer trips, coupled with the dearth of facilities to accommodate pedestrians and cyclists for shorter trips, should be considered an important matter of social equity in determining transportation improvement project priorities.

Providing transit and trail linkages between these lower income and minority population groups with existing and future employment areas can be beneficial. Investing in transportation improvements within these areas can also help promote local investments as well.

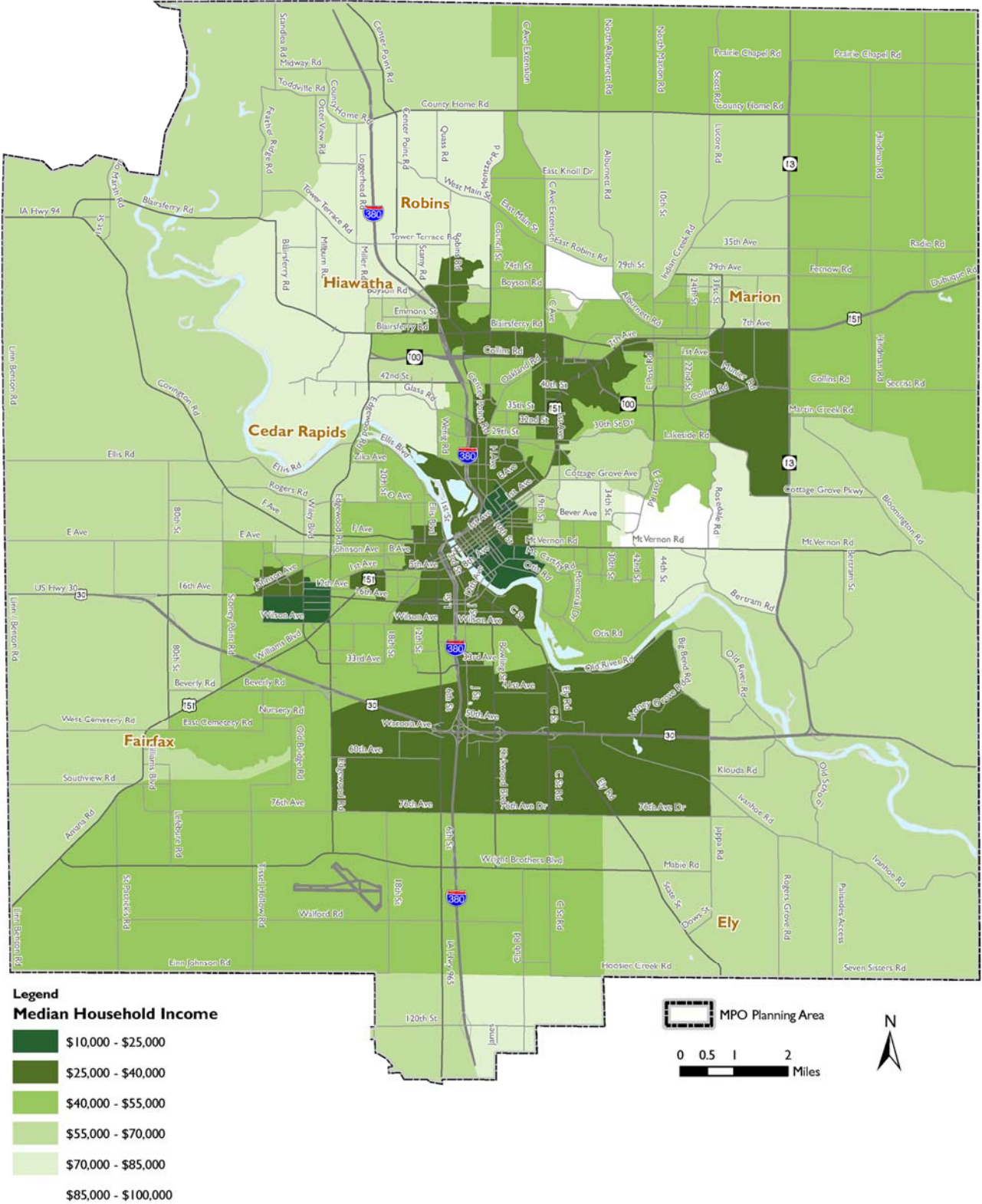
Figure 5-8 presents population by income where the darker colors reflect the lower household income. In Figure 5-9, higher minority populations where the darker colors are indicated.

Both lower income and higher minority populations are located in and around the Cedar Rapids urban core. As this is implemented, targeting improved transportation solutions for these areas will greatly improve mobility opportunities for minorities and those with less income and provide increased mobility and economic vitality for the region. *(Please see Chapter 11: Implementation as to how lower income populations and higher minority population areas were addressed in the plan.)*



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Figure 5-8: Population by Income



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Figure 5-9: Minority Population

