



Johnson County

2018 COMPREHENSIVE PLAN

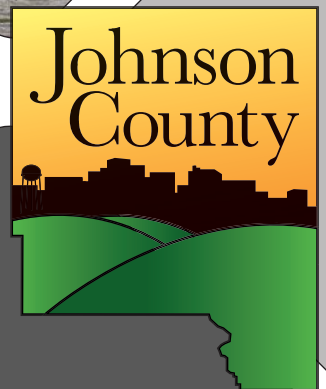
VOLUME 2: APPENDICES

Sustaining Success Through 2028



CONFLUENCE

Adopted: May 17 2018



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Appendix

PROFILE

DATA SOURCES

This plan utilizes local and state agency data as well as the U.S. Census for demographic and economic data. Conducted every ten years based on census tracts, the U.S. Census reveals past trends and helps make future predictions. A short form of the U.S. Census began in 2010. A supplemental program, known as the American Community Survey (ACS), is an ongoing statistical survey that samples a small percentage of the population annually.

The figure below depicts the American Community Survey process. The ACS surveys about age, sex, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, place of work, mode of transportation, place of residence, and costs for essentials. These surveys are available in one- and five-year composite estimates. The five-year estimates combine survey findings for multiple years. While all survey data have a margin of error, the five-year estimate used in this Comprehensive Plan is more accurate than any single-year survey data. The five-year estimate also provides more detail than the basic information collected by the 2010 Decennial Census. One drawback in using the five-year estimate is that the data are less responsive to dynamic changes in any given year. The 2015 Five-Year estimates were the most recent figures available during this Comprehensive Plan process.

Other major data sources used to create this plan include these entities:

- Johnson County Planning, Development and Sustainability
- Johnson County Assessor: Parcel Data
- Johnson County Information Technology: GIS/Mapping
- Iowa Department of Natural Resources
- Iowa Department of Transportation
- Iowa City Area Development Group

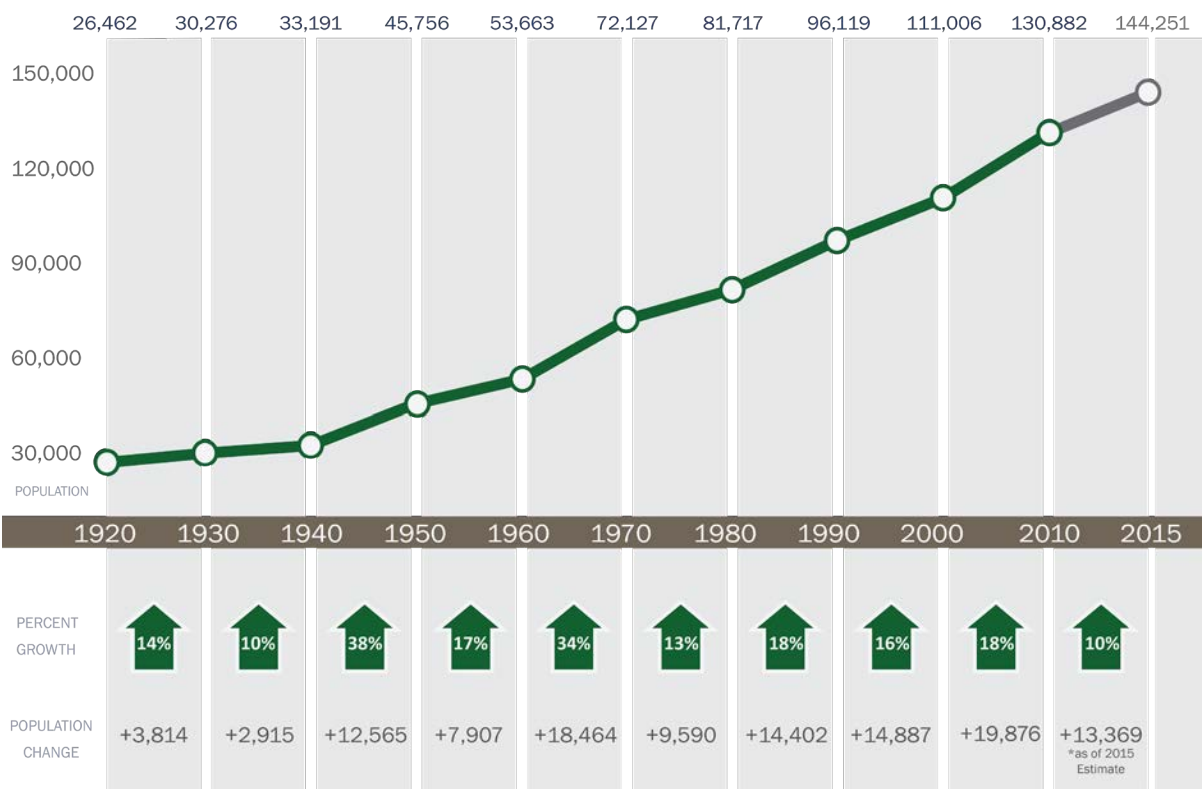
EXTENDED DEMOGRAPHIC PROFILE

The following expands on the demographic profile included in Volume 1, providing figures and more detailed data.

DEMOGRAPHIC TRENDS

Analyzing population trends of the county and its communities helps explain past development patterns and project future growth. As the second fastest-growing county in Iowa, Johnson County has experienced growth of 10% or more each decade since 1920. In the five-year period between 2010 and 2015, Johnson County added another 13,369 people, a 10.2% increase.

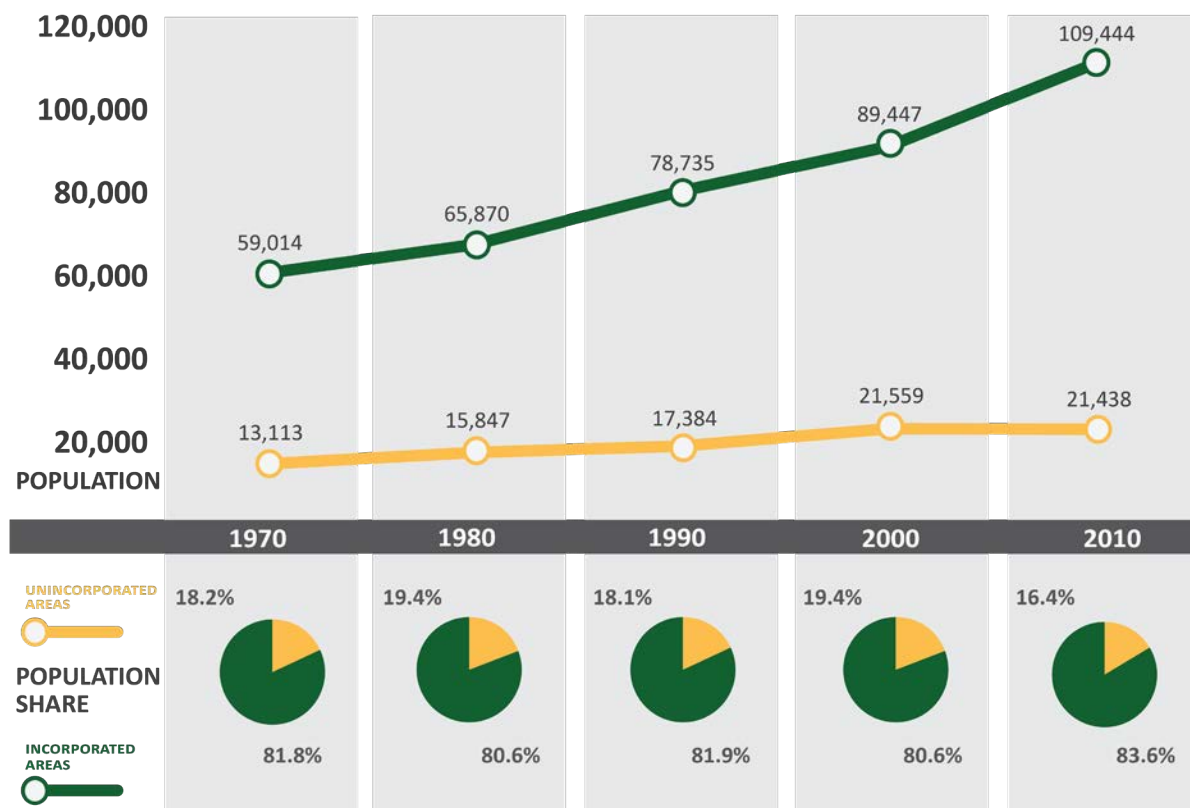
Figure 1. Historical Population (1920–2015)



Source: United States Decennial Census, 1920–2010
American Community Survey, Five-Year Estimates (2011–2015)

Population growth, however, has not been spread evenly across the county. Figure 2 highlights the population gap between the incorporated areas (i.e. within cities) and unincorporated areas (i.e. anywhere outside of cities) from 1970 to 2010. During that 40-year period, the incorporated areas nearly doubled in population—a 100% increase—while unincorporated areas grew by nearly 60%.

Figure 2. Historical Population (1970–2010): Incorporated vs Unincorporated



Source: U.S. Census Bureau via Iowa State Data Center (1970–2010)

Table 1 details the population changes of each community within Johnson County from 1970 to 2010. Iowa City, North Liberty, and Coralville ranked at the top with the greatest number of new residents over this 40-year period. However, the cities of North Liberty, Tiffin, and Shueyville saw the highest rates, or percent, of new population, each at least doubling in population over this 40-year period. Only the land locked city of University Heights saw an overall decrease in population since 1970; however, its population appears to be increasing again.

Table 1. Population Trends (1970–2010)

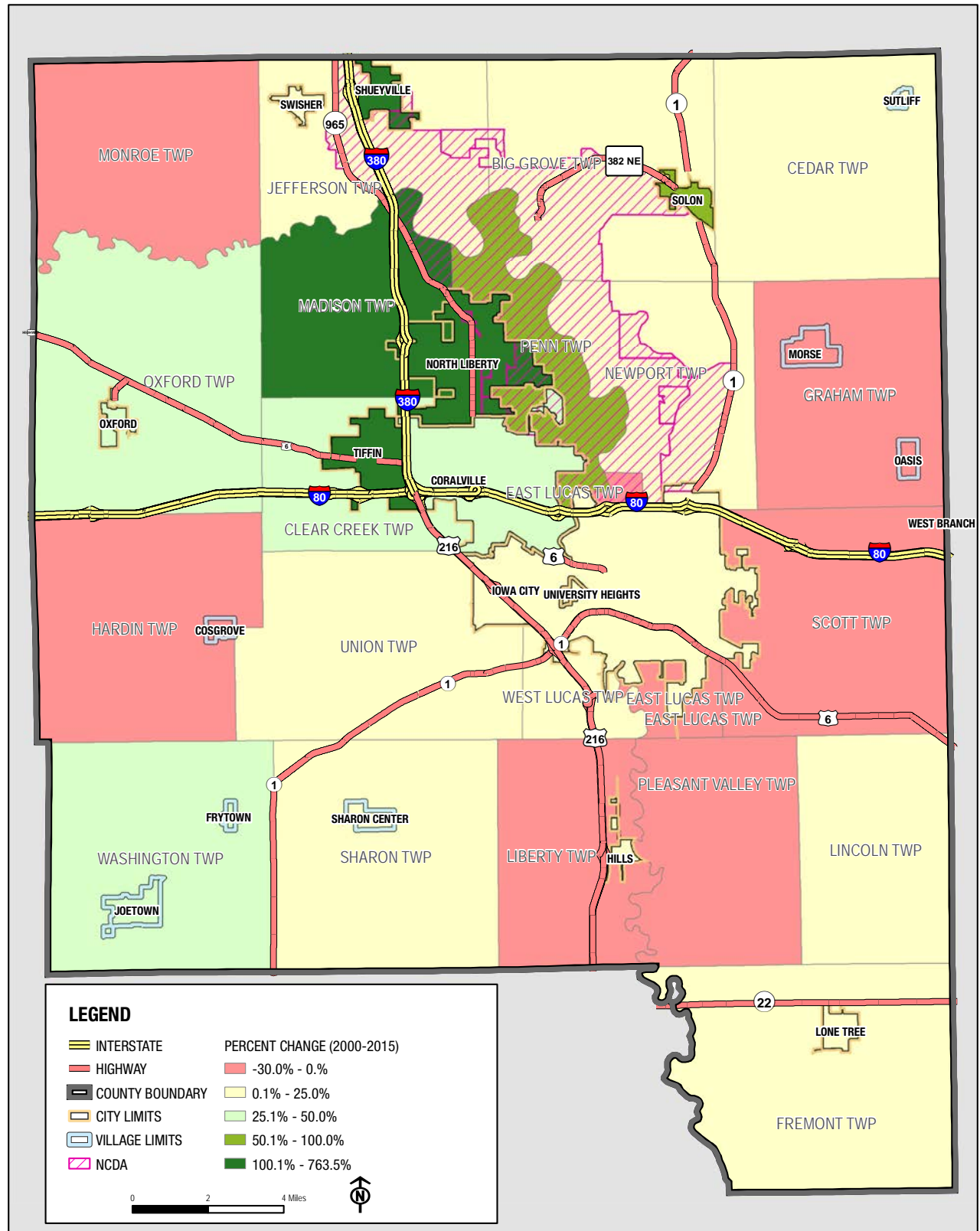
	Total Population by Area					Population Change (1970–2010)	
	1970	1980	1990	2000	2010	Number	Percent
Coralville	6,130	7,687	10,347	15,123	18,907	12,777	208.4%
Hills	507	547	662	679	703	196	38.7%
Iowa City	46,850	50,508	59,738	62,220	67,862	21,012	44.8%
Lone Tree	834	1,014	979	1,151	1,300	466	55.9%
North Liberty	1,055	2,046	2,926	5,367	13,374	12,319	1167.7%
Oxford	666	676	663	705	807	141	21.2%
Shueyville	154	287	223	250	577	423	274.7%
Solon	837	969	1,050	1,177	2,037	1,200	143.4%
Swisher	417	654	645	813	879	462	110.8%
Tiffin	299	413	460	975	1,947	1,648	551.2%
University Heights	1,265	1,069	1,042	987	1,051	-214	-16.9%
Incorporated Areas	59,014	65,870	78,735	89,447	109,444	50,430	85.5%
Unincorporated	13,113	15,847	17,384	21,559	21,438	8,325	63.5%
Johnson County	72,127	81,717	96,119	111,006	130,882	58,755	81.5%

Source: U.S. Census Bureau via Iowa State Data Center

Focusing on more recent years, from 2000 to 2015, all communities within Johnson County have experienced growth. Iowa City, North Liberty, and Coralville ranked at the top with the greatest number of new residents. However, North Liberty, Tiffin, and Shueyville, along with Solon, again saw the highest growth rates, each at least doubling in population over this 15-year period. In contrast, the unincorporated areas of Johnson County saw only a 4% increase in population. This limited growth can be attributed to rural areas being annexed to cities as well as recent county policies put in place to limit non-agricultural growth in the unincorporated parts of the county.

Figure 3 further highlights the areas of growth and decline from 2000 through 2015. The areas with the greatest percentage of growth over this 15-year period are centered on the I-380 corridor within Madison Township and the cities of North Liberty and Tiffin. Penn Township within the North Corridor Development Area gained 2,065 people, an 80% increase, during this time. Areas of decline are primarily located on the east/southeast of the Iowa City metro area (i.e. townships of Graham, Scott, Liberty, Pleasant, West Lucas, and East Lucas) and west (i.e. townships of Monroe and Hardin).

Figure 3. Population Growth: Cities & Townships (2000-2015)



Source: United States Decennial Census (2000)
American Community Survey, Five-Year Estimates (2011–2015)

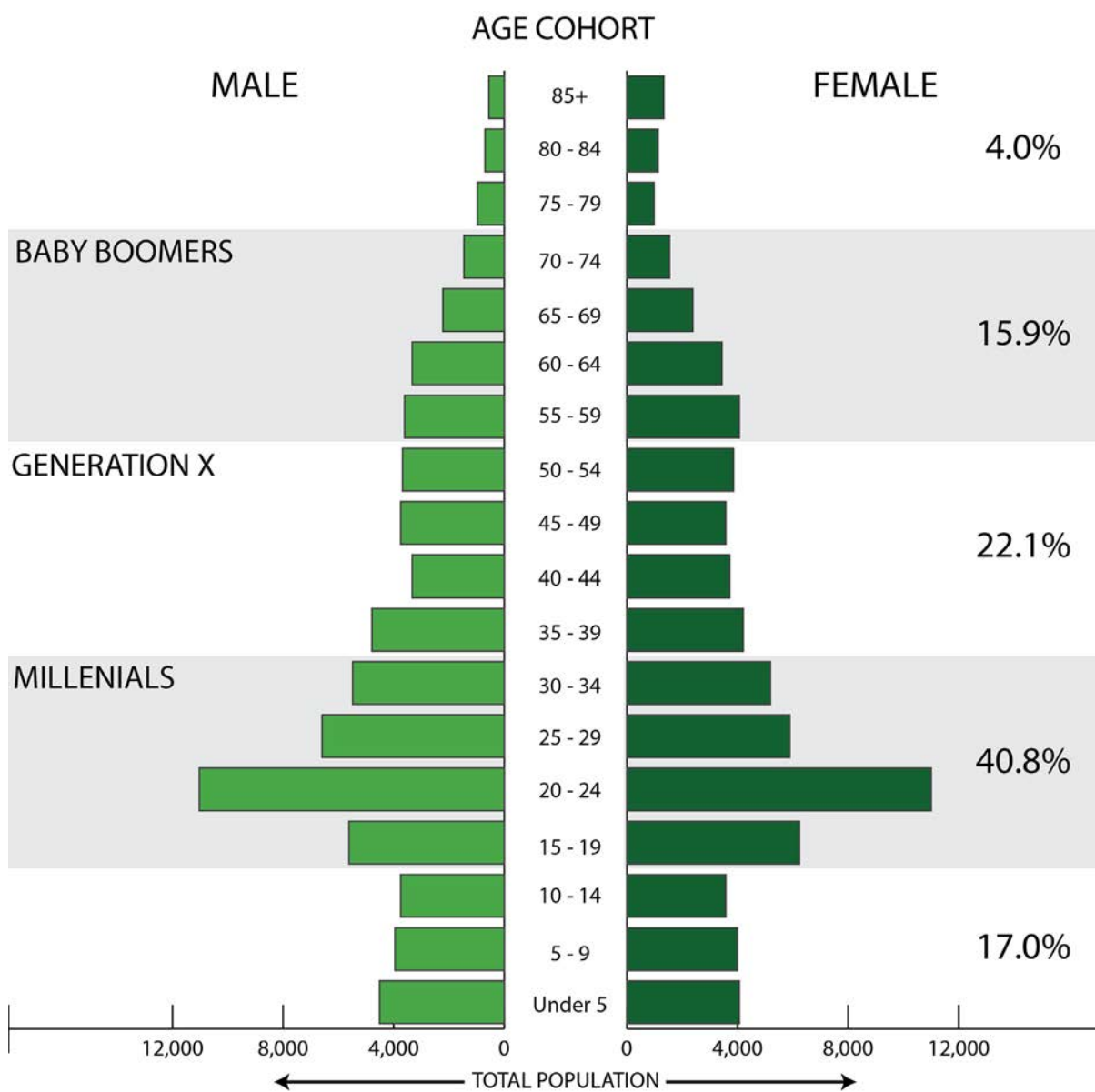
AGE CHARACTERISTICS

While population trends illustrate where and how much growth occurs, analysis of age groups reveals the county's population composition. The U.S. Census assesses populations within five-year age increments, or age cohorts, simplifying a complex process and providing a snapshot of age groups within communities.

Due to the presence of the University of Iowa and Kirkwood Community College, a large portion of the population consists of young adults born between 1980 and the early 2000s (Figure 4). Another key indicator of a growing population is the number of people within the age 24 to 44 demographic group, typically considered the child-rearing age group, which accounts for 43.8% of Johnson County's total population.

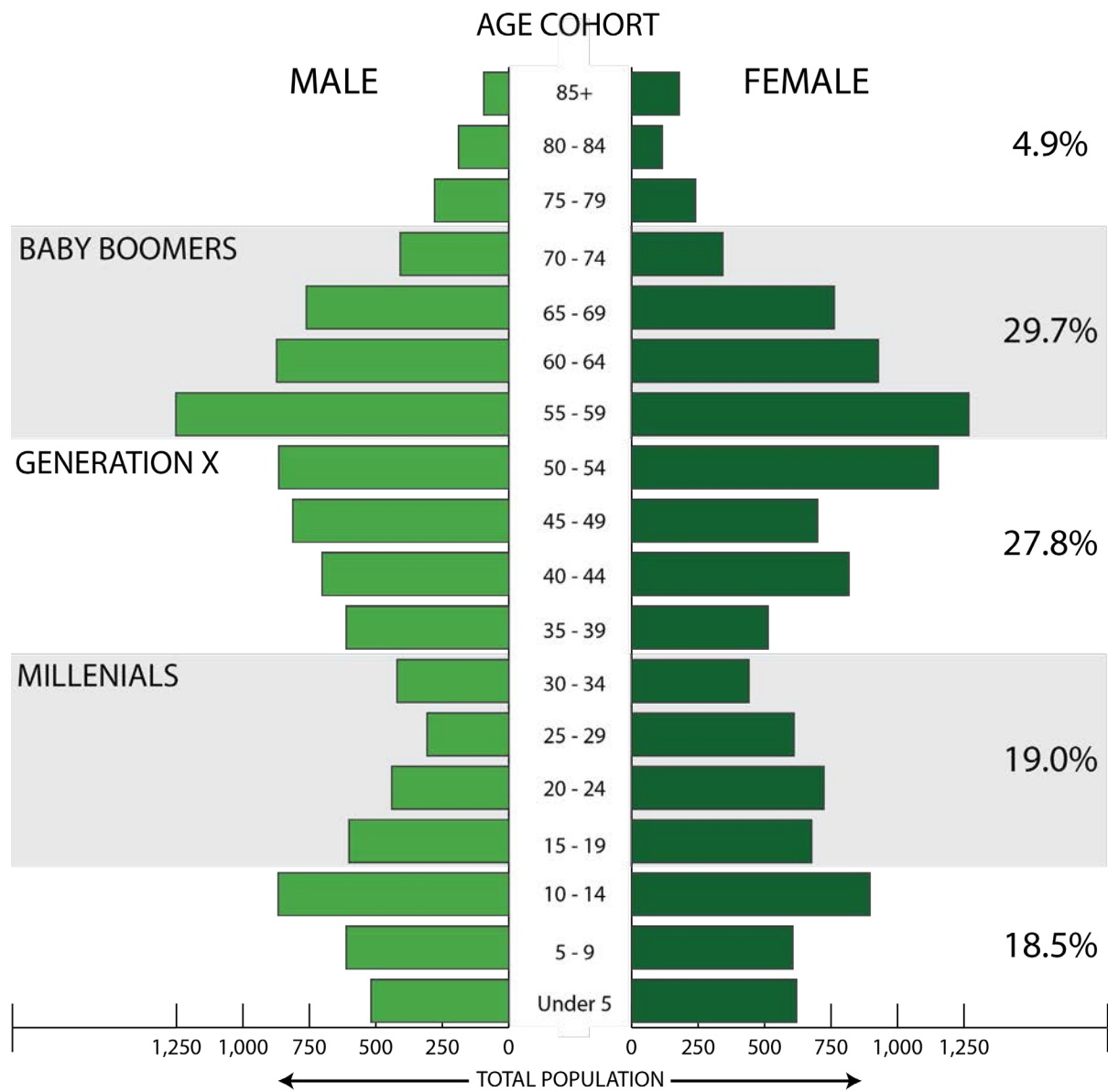
Figure 5 displays only the population of the unincorporated areas, or areas outside of city limits. The population in these areas of Johnson County account for 22,201 people, or just under 16% of the overall total. The two largest cohorts in the 2011–2015 estimates are the Baby Boomers (age 55 to 74), representing 29.7% of the population, and Generation X (age 35 to 54) at 27.8%. Both cohorts are further along in their careers and likely have higher incomes compared to Millennials (age 15 to 34), a difference that gives them the ability to afford housing in the rural areas of Johnson County. In addition, the average age of farmers in Johnson County is 58 years, slightly higher than the state average of 57 years (2012 USDA Ag Census).

Figure 4. Population Pyramid: Incorporated & Unincorporated Areas (2015 ACS)



Source: American Community Survey, Five-Year Estimates (2011–2015)

Figure 5. Population Pyramid: Unincorporated Areas Only (2015 ACS)



Source: American Community Survey, Five-Year Estimates (2011–2015)

EDUCATIONAL ATTAINMENT & INCOME

Educational attainment, defined as the highest degree or level of schooling completed by an individual, can be used to assess a community's or region's labor force potential. Higher educational attainment is typically an indicator of higher income levels and a greater ability to choose where to live. According to the 2015 American Community Survey, 94.8% of the overall county population age 25 and older had attained a high school level education. This slightly exceeds the 91.5% rate seen at the state level. More Johnson County residents (51.4%) attained a college-level education (bachelor's degree or higher) compared to the overall state population (26.7%). This difference can likely be attributed to the presence of the University of Iowa and its many medical and professional degree programs.

Within Johnson County, the higher education rate is 54.3% for the urban areas and 38.5% for rural areas. While nearly all communities in Johnson County exceed the educational attainment seen at the state level, residents with the highest rates of education attainment reside in University Heights, Iowa City, and Coralville.

Table 2. Educational Attainment

City/Area	High School or Higher	Bachelor's or Higher
Coralville	95.3%	56.0%
Hills	93.1%	24.8%
Iowa City	95.2%	58.6%
Lone Tree	95.0%	22.6%
North Liberty	97.3%	47.2%
Oxford	90.8%	20.0%
Shueyville	97.6%	47.7%
Solon	97.9%	43.0%
Swisher	97.9%	34.5%
Tiffin	97.4%	33.0%
University Heights	100.0%	82.1%
Johnson County	94.8%	51.4%
Incorporated Areas	95.6%	54.3%
Unincorporated Areas	91.6%	38.5%
State of Iowa	91.5%	26.7%

Source: American Community Survey, Five-Year Estimates (2011–2015)

Educational attainment rates and annual median income are typically correlated—the higher the educational attainment, the higher the median income level. This is generally true for Johnson County and its communities. Of note, among all Johnson County communities, Iowa City has the lowest median household income, which can be attributed to a larger, more diverse population than in the other communities.

In some Johnson County cities, the average household income is nearly double the county and state median. A family household is defined as a household with two or more individuals who are related by birth, marriage, or adoption, although they also may include other unrelated people. Non-family households consist of people who live alone or who share their residence with unrelated individuals.

Shueyville has educational rates slightly below the county average, but has the highest overall and family median household income of any other community in the county. A closer look at the total household income shows that over half of Shueyville residents have an income of greater than \$100,000, and only 7.3% have incomes less than \$35,000. This could indicate that cities such as Shueyville, Solon, and North Liberty are communities people chose to live in due to the mix of housing options and access to amenities and services that attract higher income households.

Table 3. Median Household Income

City/Area	Median HH Income-Family & Non-family	Median HH Income-Family Only	Total Household Income		
			Less than \$35,000	\$35,000 to \$100,000	Greater than \$100,000
Coralville	\$58,744	\$84,990	30.5%	41.9%	27.6%
Hills	\$50,417	\$57,335	36.2%	46.7%	17.2%
Iowa City	\$42,375	\$64,656	42.4%	38.3%	19.5%
Lone Tree	\$61,667	\$63,061	37.4%	42.8%	19.7%
North Liberty	\$72,451	\$82,633	21.9%	47.4%	30.7%
Oxford	\$60,441	\$70,243	28.7%	53.0%	18.4%
Shueyville	\$111,875	\$130,029	7.3%	39.4%	53.4%
Solon	\$75,833	\$88,876	17.5%	46.3%	36.3%
Swisher	\$74,615	\$85,036	9.0%	61.2%	29.8%
Tiffin	\$57,125	\$69,083	13.4%	70.4%	16.4%
University Heights	\$52,386	\$83,408	39.6%	31.1%	29.3%
Johnson County	\$55,700	\$77,010	32.9%	42.2%	24.9%
State of Iowa	\$53,183	\$68,446	32.4%	48.1%	19.4%

Source: American Community Survey, Five-Year Estimates (2011–2015)

Table 4 details the difference between the household incomes of urban and rural populations. The household incomes of residents in unincorporated areas are in line with the higher income communities, with a higher-than-average portion of households earning more than \$100,000 a year. This may indicate that the unincorporated areas and those higher-income communities have a higher cost of living, offer fewer social services, and have residents who choose to live in those locations. This living choice is probably due to more desirable housing options with larger lots sizes as well as access to the parks and other scenic open space areas abundant across Johnson County.

Table 4. Annual Household Income: Incorporated vs Unincorporated

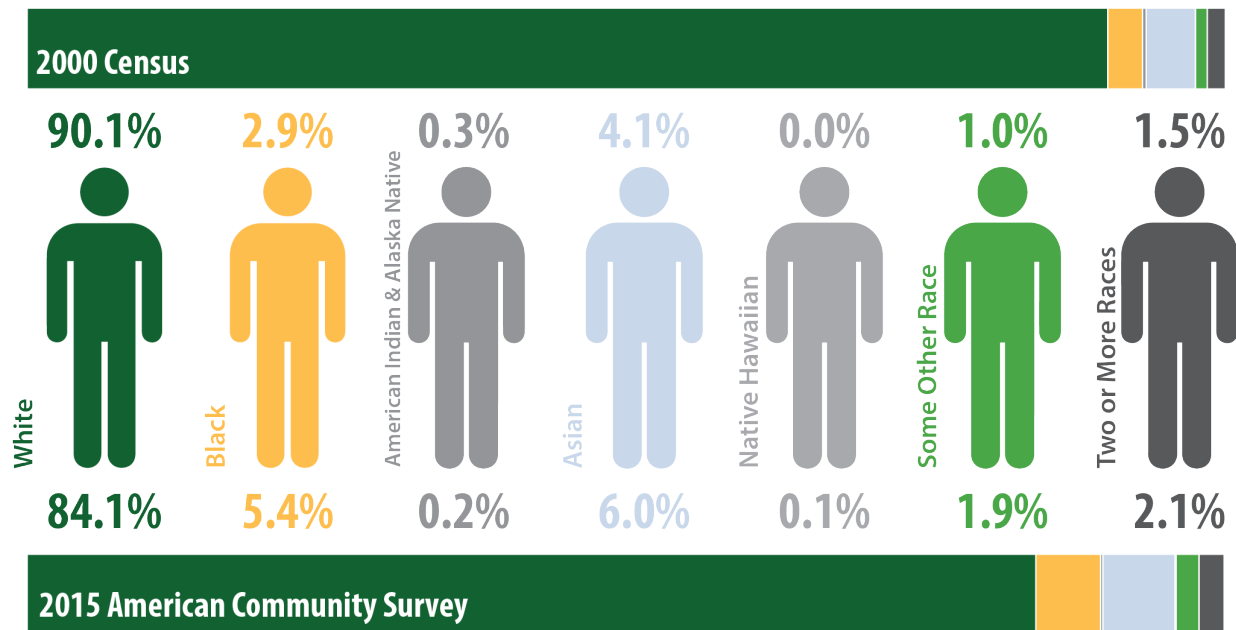
Annual Income & Benefits	Incorporated Areas		Unincorporated Areas	
	Number	Percent	Number	Percent
Less than \$35,000	16,895	36.1%	1,323	15.4%
\$35,000 to \$100,000	19,294	41.2%	4,097	47.7%
Greater than \$100,000	10,652	22.7%	3,165	36.9%
TOTAL HOUSEHOLDS	46,841	100.0%	8,585	100.0%

Source: American Community Survey, Five-Year Estimates (2011–2015)

ETHNIC & RACIAL DIVERSITY

While Johnson County predominantly includes Caucasian or white residents (84.1%), the population has diversified since 2000 (Figure 6). The 2015 American Community Survey (ACS) shows that from 2000 to 2015, Blacks as well as the Asian demographic group both saw substantial growth and combined now make up 11.4% of the overall population. Demographic groups categorized as “Some Other Race” and “Two or More Races” both experienced a slight increase during this period. Residents identifying as Hispanic or Latino also doubled from 2.5% of the overall population in 2000 to 5.2% in 2015 (see Figure 7 on the following page).

Figure 6. Demographic Trends (2000, 2015): Race & Ethnicity

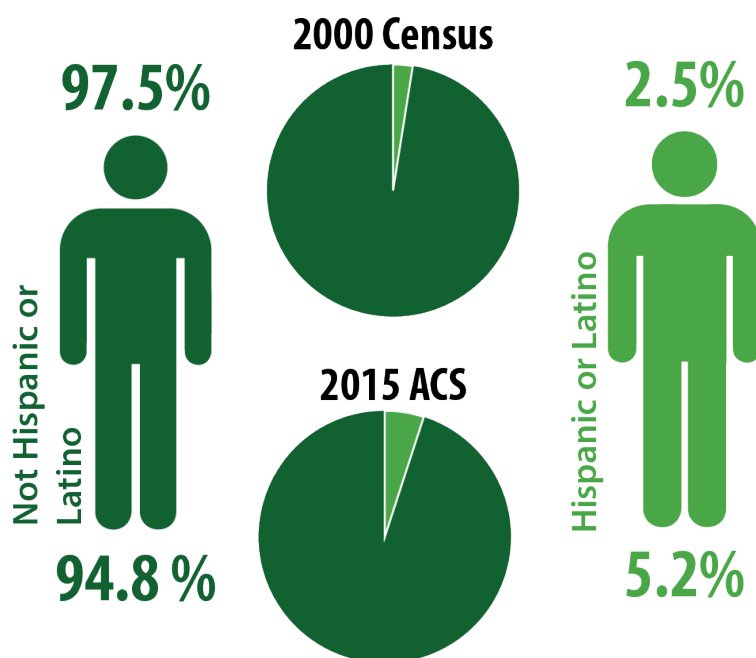


Source: US Census Bureau, Decennial Census (2000)
American Community Survey, Five-Year Estimates (2011–2015)

DEFINITION The U.S. Census Bureau must adhere to the 1997 Office of Management and Budget (OMB) standards on race and ethnicity, which guide the Census Bureau in classifying how people identify themselves on the Census. The table describes the origin of these categories:

White	A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
Black or African American	A person having origins in any of the Black racial groups of Africa.
American Indian/Alaska Native	A person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment.
Asian	A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
Native Hawaiian or Other Pacific Islander	A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Figure 7. Demographic Trends (2000, 2015): Hispanic/Latino Population

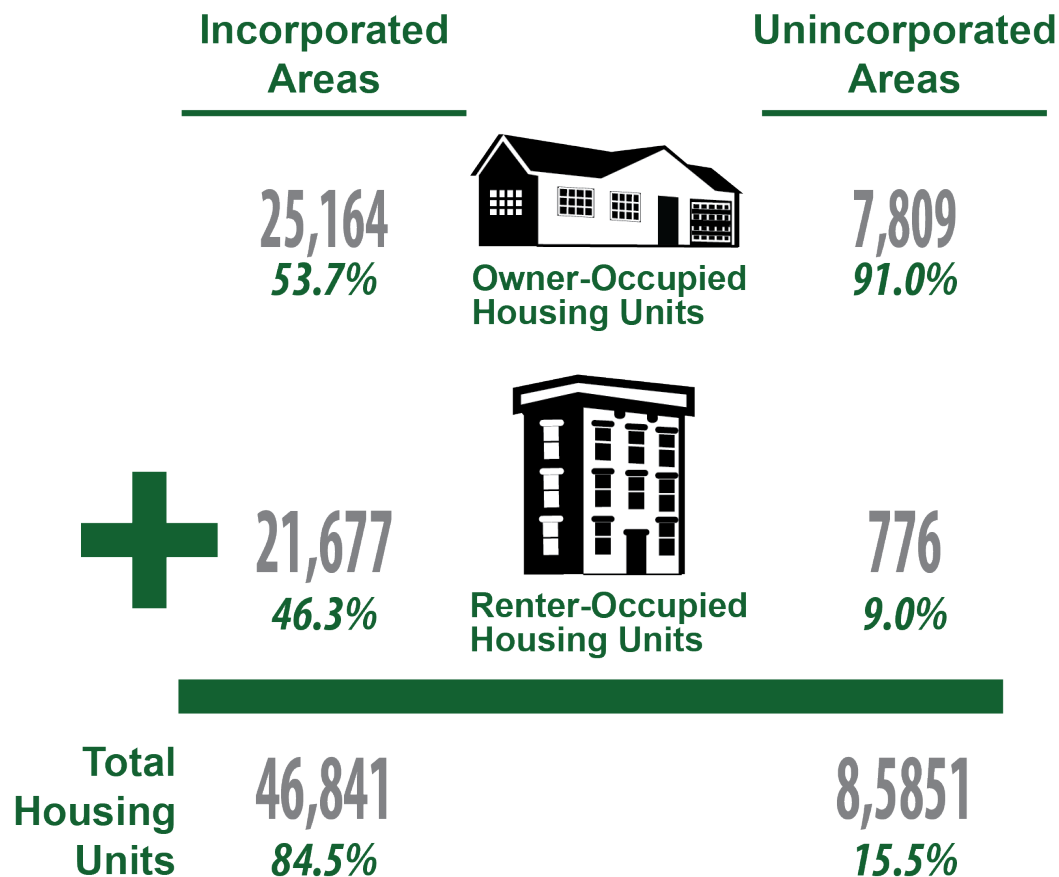


Source: US Census Bureau, Decennial Census (2000)
American Community Survey, Five-Year Estimates (2011–2015)

HOUSING CHARACTERISTICS

As shown in Figure 8, owner-occupied housing is much less common in the urban (incorporated areas) at 54% than in the rural (unincorporated areas) at 91%. This figure also shows the majority of all housing units (84.5%) are within the incorporated cities, and only 15.5% of housing is in the unincorporated areas.

Figure 8. Housing Tenure: Incorporated & Unincorporated Areas (ACS 2015)



Source: American Community Survey, Five-Year Estimates (2011–2015)

As shown in Figure 9, for both urban and rural areas, over half of all housing units in the county were built after 1980. Of all homes built in the incorporated areas of Johnson County, one in four was built between 2000 and 2016, out-pacing rural housing during this 16-year period. For rural areas, one in every four homes was built in the 1990s, but this trend saw a decline in the 2000s. Just over one in four housing units in the unincorporated areas was built prior to 1960.

Figure 9. Age of Housing: Incorporated & Unincorporated Areas (ACS 2015)



Source: American Community Survey, Five-Year Estimates (2011–2015)

Table 5 below compares the change in household types from 2000 (U.S. Census) to 2015 (ACS) for unincorporated areas only. The overall number of households grew by 15.1% from 7,458 households to 8,585 households during this 15-year period. Non-family households grew at a higher rate than family households with an increase of 18.6%, adding 302 households.

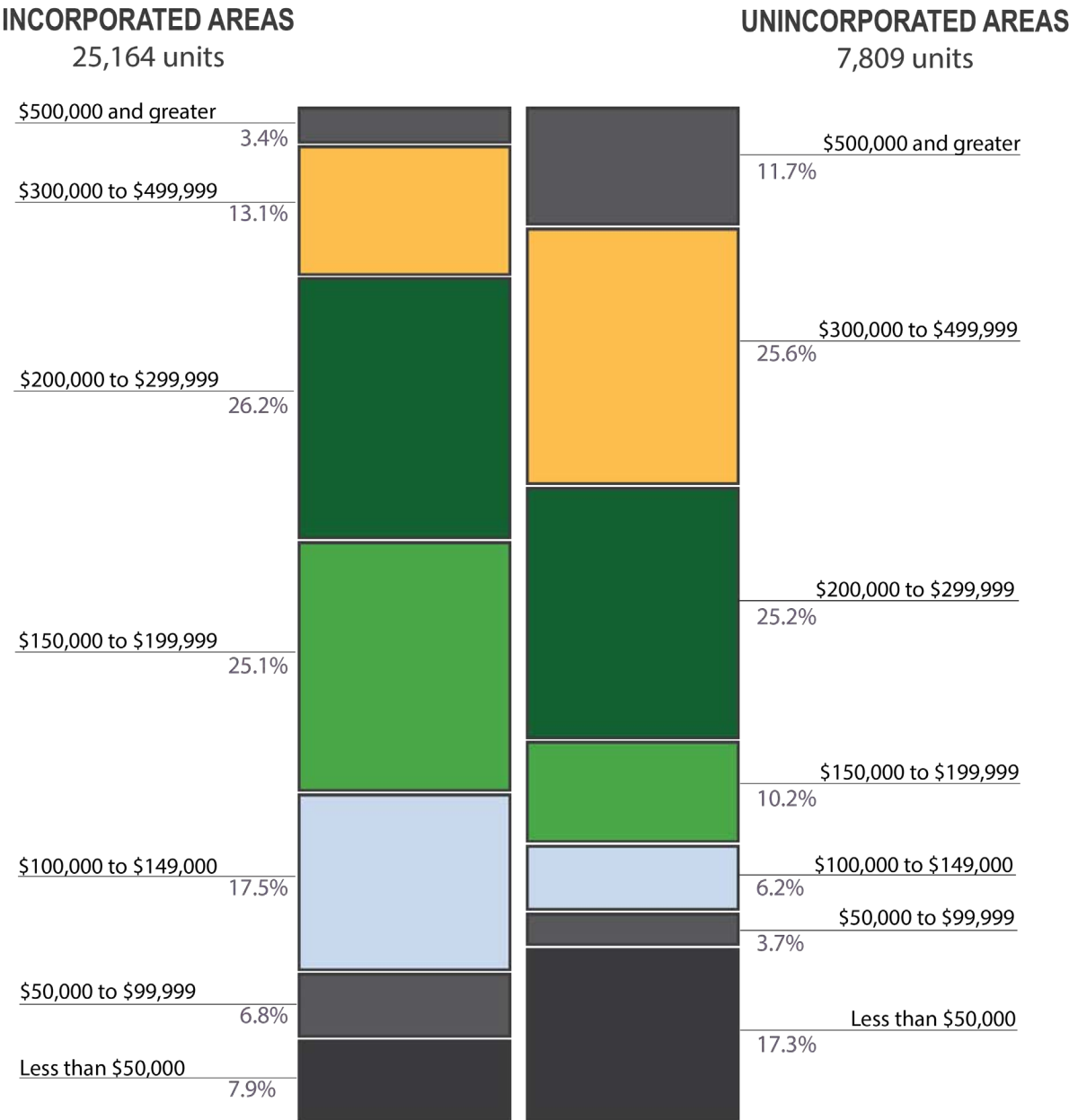
Table 5. Housing Trend: Household by Family Type (Unincorporated Areas)

Household Type	2000 Census	2015 ACS	Change (2000–2015)	% Change (2000–2015)
FAMILY HOUSEHOLDS	5,835	6,660	825	14.1%
Married couples	5,339	5,961	622	11.7%
With related children under age 18	2,379	2,201	(178)	-7.5%
NON-FAMILY HOUSEHOLDS	1,623	1,925	302	18.6%
Living Alone	1,238	1,517	279	22.5%
TOTAL HOUSEHOLDS	7,458	8,585	1,127	15.1%

Source: U.S. Census Bureau (2000); American Community Survey, Five-Year Estimates (2015)

As shown in the Figure 10, owner-occupied housing valued at \$300,000 or more represents nearly 37.3% of all housing in the unincorporated areas compared to 16.4% in the incorporated areas. At the same time, 17.3% of the owner-occupied housing stock in the unincorporated areas is valued at \$50,000 or less compared to only 7.9% of similar housing in the incorporated areas. One in four owner-occupied units in rural and urban areas is valued within the \$200,000 to \$299,000 range.

Figure 10. Value of Owner-Occupied Units: Incorporated & Unincorporated Areas



Source: American Community Survey, Five-Year Estimates (2011–2015)

The housing costs for rental units are largely the same across Johnson County. Table 6 shows that nearly 55% of both incorporated and unincorporated rental units charge a range of \$500 to \$999 per month. Another quarter of the rental units fall into the \$1,000 to \$1,499 price range. The only major difference between the rural and urban rents is at the \$2,000 and above price range: No rental units in the rural areas exceed \$2,000, while 4.7% of urban rentals do.

Table 6. Gross Monthly Rental Cost: Incorporated & Unincorporated (2015)

Gross Rent	INCORPORATED AREAS		UNINCORPORATED AREAS	
	Number of Units	% of Total Units	Number of Units	% of Total Units
Less than \$500	1,582	7.5%	68	10.6%
\$500 to \$999	11,755	55.4%	351	54.8%
\$1,000 to \$1,499	5,377	25.4%	159	24.8%
\$1,500 to \$1,999	1,481	7.0%	63	9.8%
\$2,000 to \$2,499	742	3.5%	0	0.0%
\$2,500 to \$2,999	190	0.9%	0	0.0%
\$3,000 or more	74	0.3%	0	0.0%
TOTAL UNITS	21,201	100.0%	641	100.0%

Source: American Community Survey, Five-Year Estimates (2015)

Table 7 highlights the housing cost burden for renters in the incorporated and unincorporated areas of the county. Cost-burdened households are those paying 30% or more of their income toward housing. Johnson County has a significant proportion of households in the house-burdened category: 57% of urban renters and 30.6% of rural renters. In contrast, about half of all rural renters put 20% or less of their income towards housing. Significantly, almost half of all urban renters use 35% or more of their income for housing, compared to nearly 19% of rural dwellers—part of this difference is due to more households with lower incomes living in urban areas, closer to services and employment.

Table 7. Housing Cost Burden for Renters: Incorporated & Unincorporated (2015)

Percent of Household Income	INCORPORATED AREAS		UNINCORPORATED AREAS	
	Number of Units	% of Total Units	Number of Units	% of Total Units
Less than 15.0%	2,025	10.0%	196	30.6%
15.0% to 19.9 %	2,290	11.3%	118	18.4%
20.0% to 24.9%	2,570	12.7%	50	7.8%
25.0% to 29.9%	1,848	9.1%	81	12.6%
30.0% to 34.9%	1,569	7.7%	76	11.9%
35.0% or more	9,998	49.3%	120	18.7%
TOTAL UNITS	20,300	100.0%	641	100.0%

Source: American Community Survey, Five-Year Estimates (2015)

POPULATION PROJECTIONS

Projecting population growth is vital in managing growth and development and determining future infrastructure and services needs. The projections below utilize historic population growth rates to estimate population growth up to 2040. By examining longer periods of growth, population projections ignore short-term peaks and valleys in historic population growth, an approach that creates a more stable model. Shorter-term models better account for recent trends, but are more impacted by short-term increases or declines in population. Tables 8 and 9 below show two different population projections for both the incorporated and unincorporated areas of Johnson County:

- Long-Term Trend: 40-year trend (1970–2010)
- Short-Term Trend: 10-year trend (2000–2010)

Using Census Bureau data, an annual growth rate was calculated and assumed to continue into the future. The rate was applied to the 2010 base year population to determine a population projection figure for every five years until 2040.

Table 8 shows the Long-Term Trend for both incorporated and unincorporated areas. Both the urban and rural areas of Johnson County are projected to experience a positive annual population growth over this 40-year period resulting in average annual growth rates of 1.54% and 1.23%, respectively. When applied to the 2010 base year population, the 2040 projected population shows an increase of 63,865 people residing in the urban areas and an increase of 9,452 people residing in the rural areas. The population share gap slightly widens to 84.9% urban and 15.1% rural, from 83.6% urban and 16.4% rural in 2010 (Figure 2).

Table 8. Population Projection Through 2040: Long-Term Trend (1970–2010)

	Incorporated Areas		Unincorporated Areas			
Year	Annual Rate 1.54%	Population Change	Annual Rate 1.23%	Population Change	Total Population	Total Population Change
2015	118,158	8,714	22,784	1,346	140,942	10,060
2020	127,566	9,408	24,214	1,430	151,780	10,838
2025	137,723	10,157	25,734	1,520	163,456	11,677
2030	148,688	10,966	27,349	1,615	176,037	12,581
2035	160,527	11,839	29,066	1,717	189,593	13,555
2040	173,309	12,781	30,890	1,824	204,199	14,606
TOTAL		63,865		9,452		73,317
Population Share	84.9%		15.1%			

Source: U.S. Census Bureau (1970–2010)

Due to increased urbanization in Johnson County since 2000, the Short-Term Trend yields a different outcome than the Long-Term Trend. The incorporated areas are projected to experience a 2.02% annual growth using the short Short-Term Trend, but the population in the unincorporated areas will experience an annual decline of 0.06%. This scenario results in a 2040 projected population increase of 89,827 people in the urban areas of Johnson County and a decline of 359 people in the rural areas. The population share gap widens even further between urban and rural, to 90.4% and 9.6%, respectively.

Table 9. Population Projection Through 2040: Short-Term Trend (2000–2010)

	Incorporated Areas		Unincorporated Areas			
Year	Annual Rate 2.02%	Population Change	Annual Rate -0.06%	Population Change	Total Population	Total Population Change
2015	120,939	11,495	21,378	-60	142,317	11,435
2020	133,642	12,703	21,318	-60	154,960	12,643
2025	147,679	14,037	21,258	-60	168,937	13,977
2030	163,190	15,511	21,198	-60	184,388	15,451
2035	180,331	17,140	21,138	-60	201,469	17,081
2040	199,271	18,941	21,079	-59	220,350	18,881
TOTAL		89,827		-359		89,468
Population Share	90.4%		9.6%			

Source: U.S. Census Bureau (2000–2010)

Other Population Projection Resources

The Iowa State Data Center provides population projections benchmarked by the 2010 Decennial Census from Woods and Poole Economics, Inc., an experienced independent firm that specializes, since 1983, in long-term county economic and demographic projections. The Woods and Poole report estimated an overall annual growth of 1.53% for Johnson County, equating to an increase of nearly 99,234 people by 2040. Woods and Poole does not provide a breakdown between urban and rural population; however, as both rural and urban populations grow, county infrastructure and resources will be affected.

Table 10. Population Projection 2040: Short-Term Trend (2000–2010), Woods and Poole

Year	Annual Rate 1.53%	Population Change
2015	145,645	12,574
2020	158,456	12,811
2025	171,417	12,961
2030	184,445	13,028
2035	197,529	13,084
2040	210,695	13,166
TOTAL		99,234



Source: Woods and Poole via Iowa State Data Center

HOUSING NEEDS ASSESSMENT

The number of housing units required to serve Johnson County's projected population growth is based on the current occupancy rate and the number of persons per household, for each form of housing tenure, or utilization. Owner-occupied and renter-occupied units are the two primary forms of housing tenure. Figure 8, referenced earlier, exhibits the difference between tenure in incorporated and unincorporated areas of Johnson County. While incorporated areas have a nearly 50/50 split between owner-occupied and rental-occupied units, 91% of occupied housing in the unincorporated areas are owner-occupied with only 9% renter-occupied. These ratios of owner versus renter units, combined with the average household size for each form of tenure, equate to the total number of owner and renter housing units required to serve Johnson County's projected population.

The Short-Term Trend yields a net loss in population for unincorporated areas, which means there would be few or no new housing units needed. However, to accommodate the growth demands of the Long-Term Trend for the unincorporated areas, approximately 3,000 owner-occupied units and 330 renter-occupied units would need to be constructed in these rural areas of Johnson County (See Figure 11).

Figure 11. Unincorporated Area New Housing Forecast: Long-Term Trend

Projection Year	Projected Population Growth	 Owner-Occupied Housing Units	 Renter-Occupied Housing Units
2020	1,430	525	58
2025	1,520	558	62
2030	1,615	593	66
2035	1,717	630	70
2040	1,824	669	74
TOTAL	8,106	2,974	330

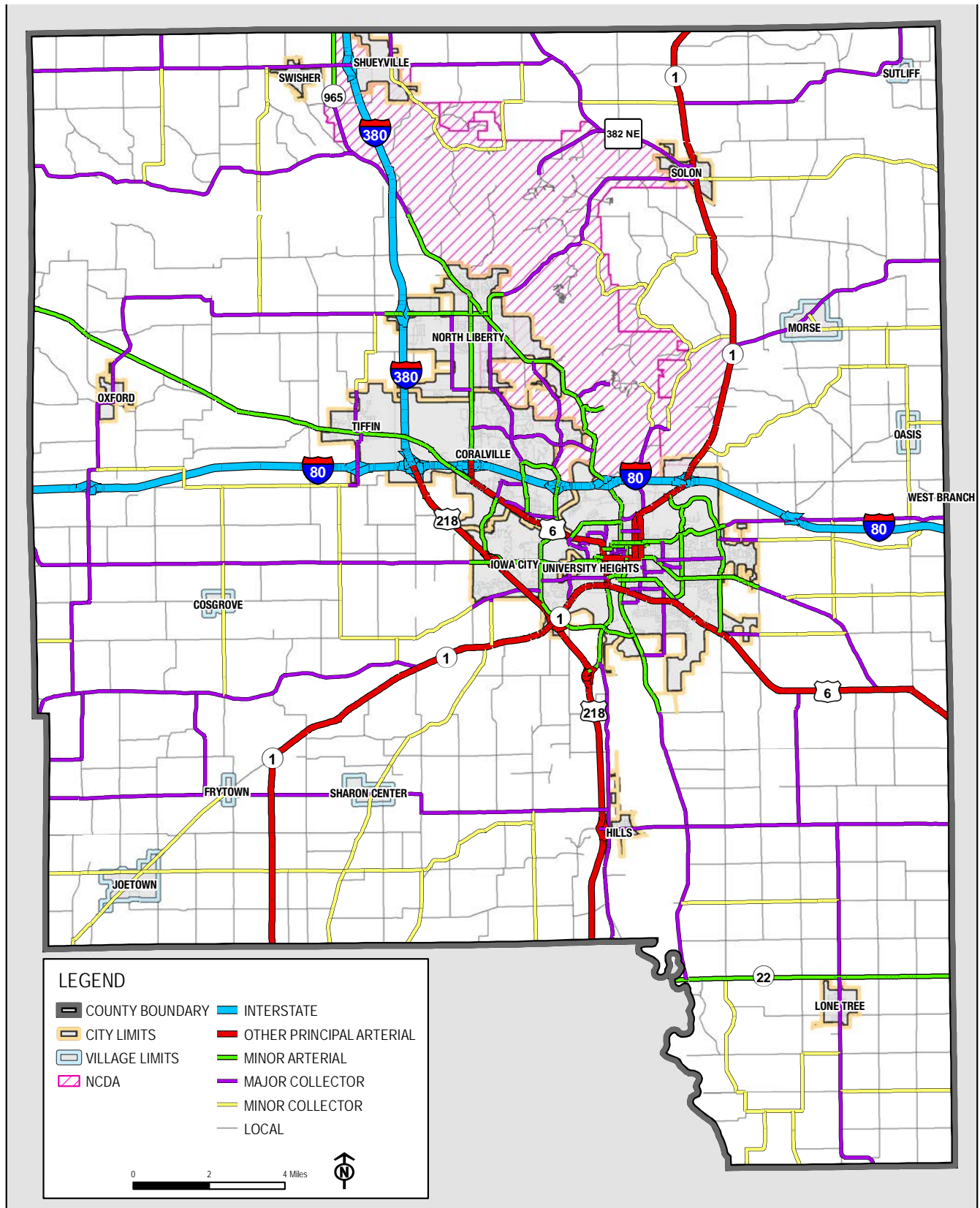
Source: Projection based on U.S. Census Bureau (1970–2010)

ROAD INFRASTRUCTURE FEDERAL FUNCTIONAL CLASSIFICATIONS

The federal functional classification is the process that categorizes streets and highways into classes based on the type of service they are intended to provide. The federal functional classifications include these six classes (see Map 1):

- **Interstate (e.g. I-80, I-380):** A divided, limited-access facility with no direct land access and no at-grade crossing or intersections. Interstates are intended to provide the highest degree of mobility, serving higher traffic volumes and longer trip lengths.
- **Other Arterial (e.g. US 218, US 6, Iowa 1):** Provide a high degree of mobility, similar to interstates. However, freeways provide access only at grade-separated interchanges, while expressways also provide limited at-grade access to intersecting major streets.
- **Minor Arterial (e.g. US 6 west of Coralville, Dubuque St, Iowa 22):** Collect and distribute traffic flow through urban areas and between major destinations. Minor arterials carry a high share of urban travel and focus on movement as the primary function, not necessarily localized access.
- **Major Collector (e.g. Prairie du Chien Road, Mehaffey Bridge Road, Sand Road SE):** Provide for land access and traffic circulation within and between residential neighborhoods and commercial and industry areas, as well as distribute traffic movements from these areas to arterial streets. Collectors do not typically accommodate long through trips and are not continuous for long distances.
- **Minor Collector (e.g. Sharon Center Road, Sugar Bottom Road, Sandy Beach Road):** Similar to a major collector road, but with more land access, slower speed limits, and lower traffic volumes.
- **Local Road:** Offer the lowest level of mobility and highest level of local property access. Local roads typically make up the largest percentage of street mileage and provide direct access to adjacent land uses.

Map 1. Federal Functional Classification (2015)



Data Source: Iowa Department of Transportation

PARKS & RECREATION AREAS

Note: The numbers following the park titles correlate to identifiers on Map 2.

F.W. Kent Park (1)

The park is located three miles west of Tiffin on Highway 6. The Johnson County Conservation Board Headquarters and the Conservation Education Center are located on the 1,052-acre property. Numerous recreational opportunities include hiking trails, fishing ponds, and modern campsites.

Lake Macbride State Park (2)

Located 4 miles west of Solon, Lake Macbride State Park is Iowa's largest state park, where 2,180 acres support outdoor activities including fishing, boating, swimming, camping, hiking, and picnicking. A portion of the park borders Coralville Lake, one of Iowa's largest artificial lakes, constructed by the U.S. Army Corps of Engineers.

Macbride Nature Recreation Area (3)

The Macbride Nature Recreation Area (MNRA) is a 485-acre peninsula leased by the U.S. Army Corps of Engineers to the University of Iowa since 1969. UI Recreational Services has managed the property since 1984. Hiking and cross-country skiing trails total 10 kilometers. MNRA is also the home of the environmental education programs: School of the Wild, Wildlife Camps, and Iowa Raptor Project. MNRA is located 15 miles north of Iowa City on Mehaffey Bridge Road, near Solon.

Coralville Lake & Reservoir (4)

Coralville Lake, one of Iowa's largest artificial lakes, was constructed by the U.S. Army Corps of Engineers. The Coralville Dam was built in 1949 to provide flood control down river to Coralville and Iowa City. Amenities include fishing, boating, swimming, camping, hiking, and picnicking.

Cedar River Crossing (5)

This 407-acre tract is located 6 miles northeast of Solon. Approximately 200 acres are in the Cedar River floodplain. This land, which is a federally designated Wetland Reserve Program Project, includes shoreline and is maintained as a wildlife area with public hunting, fishing, and hiking.

Frytown Conservation Area (6)

This 94-acre tract is located 10 miles southwest of Iowa City just off Highway 1. Nearly 30 acres of former pasture land are planted in a variety of hardwood trees and shrubs. This area is also one of the few remaining forested areas in this quadrant of the county.

Ciha Fen Preserve (7)

Located 1.25 miles southeast of Sutliff, the preserve is a sand prairie and savanna complex on a wind-deposited sand ridge. The Ciha Fen is one of the only two documented remaining nutrient-poor fens known in the state of Iowa. The fen has numerous rare plant and animals species.

Clear Creek Area (8)

Located south of highway 6 on Half Moon Avenue and due West of Tiffin on the south side of the railroad tracks, this area features riparian timber along Clear Creek. Hunting, hiking, and bird watching can all be enjoyed at the Clear Creek Area.

Hills Access (9)

Acquired in 1973, this popular 40-acre river access park is adjacent to the Iowa River and .5 miles east of the town of Hills. Substantial river shoreline provides good fishing access to the Iowa River. Facilities include a boat ramp, picnic tables, latrines and potable water, and electric camping sites.

Williams Prairie State Preserve (10)

The 21-acre Williams Prairie State Preserve is located north of Oxford, Iowa. Better classified as a sedge meadow, the preserve is known to contain nearly 315 species of vascular plants and eight bryophytes (mosses and liverworts). The wet conditions of the site likely saved it from more intensive agricultural activity, but the site has been hayed and possibly grazed by earlier owners.

River Junction Access (11)

This 12-acre area located 3 miles west of Lone Tree and .5 mile south of Highway 22 was acquired in 1971. The Iowa River bounds the area on the west. The English River flows into the Iowa just a few hundred feet south of the boat ramp.

Walker Park (12)

This little park is located 6 miles west of Lone Tree and .5 mile south of Highway 22 in the Village of River Junction. The park actually predates the existence of the Conservation Board in Johnson County by more than fifty years. It is named in honor of Henry Walker, an early settler of the county. Walker donated the land for the site of the former River Junction Methodist Chapel and the adjoining 3 acres for a park. The church building was removed many years ago.

Sutliff Access (13)

This river access, slightly less than a half-acre, is located in the tiny settlement of Sutliff in Cedar Township. It is owned by the Iowa Department of Natural Resources and has been operated under the Johnson County Conservation Board since 1986.

Pechman Creek Delta (14)

This 380-acre property along the Iowa River provides 2.3 miles of access to the Iowa River and another 1.7 miles of stream and wetland-slough access. The project site is a delta formation wetland complex, where Pechman Creek has cut through an intact bottomland oak savanna. The site provides excellent habitat for a wide variety of wildlife species and for people to learn more about the diverse Iowa landscape.

Solon Prairie (15)

The Solon Prairie, located within the city limits of Solon, is a 3-acre tract of wet-mesic prairie. The area is reputed to be a virgin prairie that has apparently never been plowed. In 1966 the Solon Gun Club acquired the property from the Kessler family who had owned it since 1876. For the next 17 years the land was used for a trapshooting range, and a small clubhouse was located there. In 1983, the Solon Gun Club conveyed ownership to the Johnson County Conservation Board. The area is preserved as a natural prairie and is available for public use as a botanical study area. A prairie management plan was developed for it in 1984.

Scott Church Park (16)

This 5-acre roadside park is located 6 miles southeast of Iowa City at the junction of American Legion Road and Highway 6. Scott Church has the distinction of being the "first" county park. It was acquired and developed by the fledgling Johnson County Conservation Board in 1965 under a sponsoring agreement from the Iowa Highway Commission for the development of a highway safety rest area. Facilities include a picnic area, picnic shelter, picnic tables, a swing set, a mowed play area, potable water supply, and a pit toilet.

Wildlife Management Areas

Below is a list of the major WMAs in Johnson County (letters to correspond to Map 2) :

- Hawkeye WMA 13,708 acres (AA)
- Redbird Farms WMA 464 acres (BB)
- Jerry Quinlan WMA 118 acres (CC)
- Larry Quinlan WMA 72 acres (DD)
- Hanging Rock Ridge WMA 41 acres (EE)
- Swan Lake WMA 36 acres (FF)

OTHER PROTECTED AREAS

In addition to the public parks, recreation areas, and wildlife management areas, there are several organizations that hold private conservation on areas within the county.

Bicycle and Pedestrian Facilities

The list below highlights the larger recreational trails located in the unincorporated areas of Johnson County. The letters correlate to identifier markers on Map 2:

Sugar Bottom Trails (A)

More than 11 miles of mountain bike trails within the Sugar Bottom Recreation Area.

Herbert Hoover Trail (B)

Completion of this trail (slated for 2018) will create a connection to a larger system of trails from Iowa City to Cedar Falls via the Cedar River Trail (Cedar Rapids) and Cedar Valley Nature Trail.

F.W. Kent Park (C)

More than 2 miles of crushed limestone trails and 7.7 miles of grass nature trails.

Iowa River Corridor Trail (D)

Nearly 16 miles of paved trail running from North Liberty, through the North Corridor Development Area, and down through Iowa City.

Lake MacBride State Park Trails (E)

Over 4 miles of crushed limestone trail starting at the western edge of Solon and running along the North side of the lake, and nearly 8.5 miles of dirt trails throughout the park.

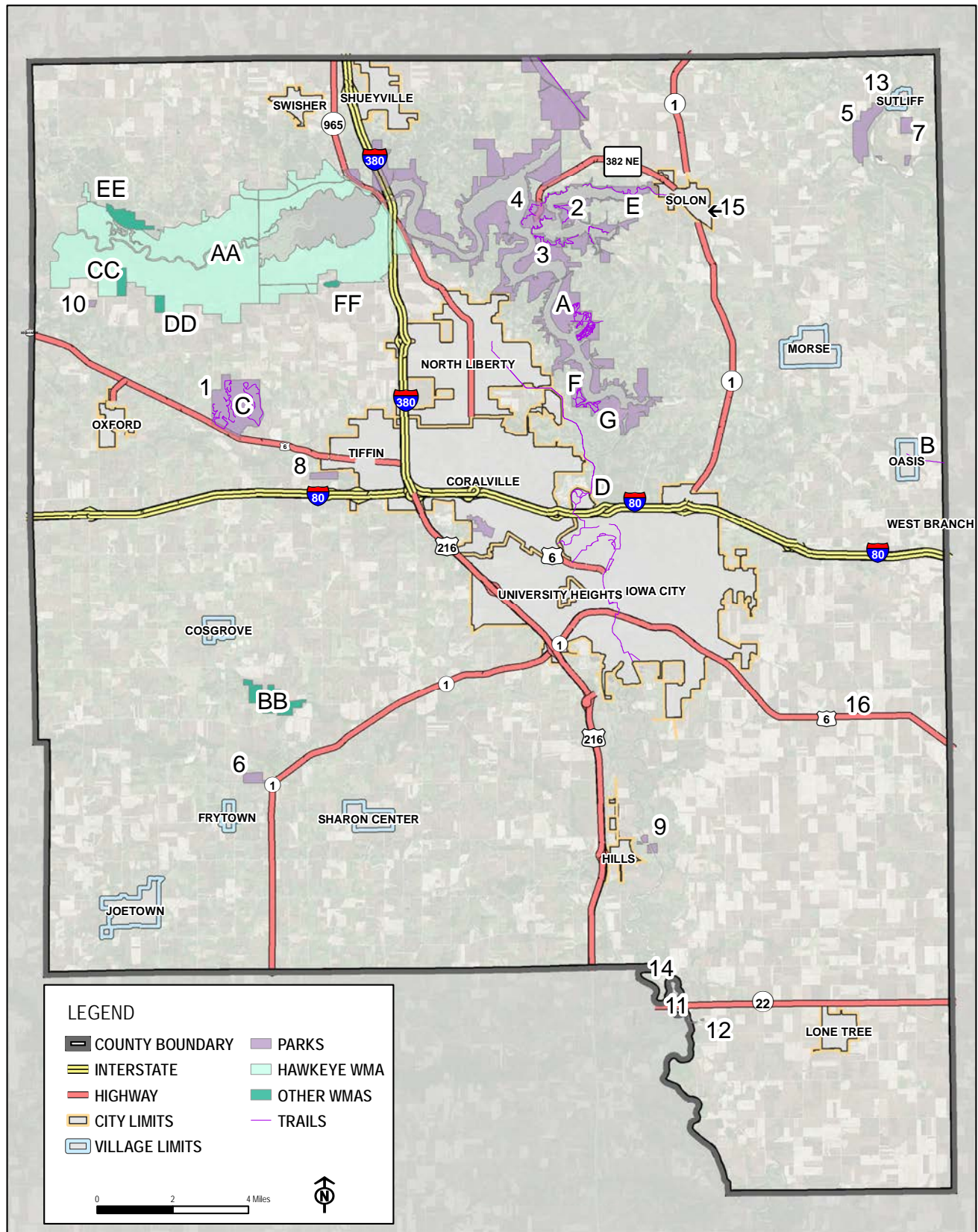
Squire Point Trail (F) & Woodpecker Trail (G)

Contiguous trails encompassing more than 4 miles of hiking trails along the Iowa River.

Iowa River Water Trail (not shown on map)

72 miles of unobstructed paddling from Iowa City to the Mississippi River. A total of 23 miles is within Johnson County, starting in Iowa City.

Map 2. Johnson County Parks, Trails, and Wildlife Management Areas (WMAs)



Data Source: Johnson County GIS Department

NATURAL & ENVIRONMENTAL CONDITIONS

This section reviews environmental and natural resource issues in order to identify opportunities and natural barriers to future development in Johnson County. The results help identify appropriate growth areas on the Future Land Use Map while avoiding slope, floodplain, woodlands, and wetlands. Areas that limit development or are deemed to have high environmental value should be preserved or developed in a way to minimize damage to the existing environment. This section references three maps that appear on the subsequent pages.

Slope

Map 3 on page 32 highlights the variety of Johnson County terrains: rolling hills around the Iowa River and major tributaries, and very flat farmlands, especially in the southeast quadrant of the county. Generally, slopes in the 6% to 15% category are viewed as having a significant impact on development. Development in these areas should execute erosion management plans, and development on slopes over 15% should generally be discouraged. While flatter areas of the North Corridor Development Area (NCDA) have been highly sought after by developers, the desire for rural residential housing in this area has provided home builders the motivation to invest more money in site preparation and grading to meet demand.

Flood Hazard Areas

Map 4 on page 33 displays the areas of Johnson County designated as Special Flood Hazard Areas. The Iowa River running north to south and Clear Creek running east to west pose the greatest risk of flooding with the heaviest impacted area located south of Iowa City to the county boundary. The southern portion of the NCDA also has potential to be heavily impacted by flooding although flows can largely be controlled by the Coralville Dam. On occasion the Cedar River impacts the Village of Sutliff as a result of its low-lying elevation along the river.

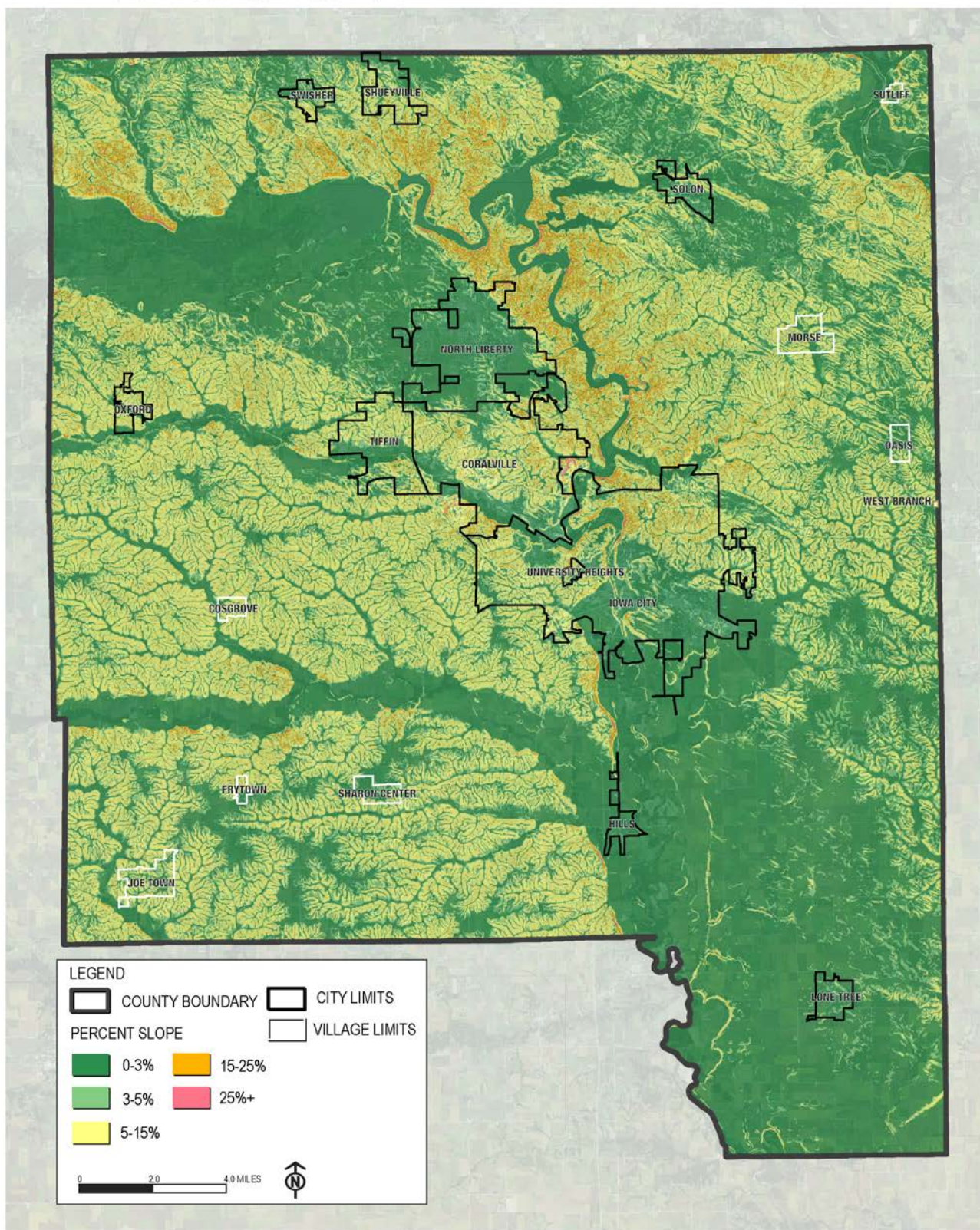
Soil Infiltration Rates

Map 5 on page 34 illustrates that the vast majority of the soil profiles in Johnson County exhibit a moderate infiltration rate, according to the Soil Survey Geographic Database (SSURGO) provided by the U.S. Department of Agriculture Natural Resource Conservation Service division. As a result, the ability to develop a site, either residentially or nonresidentially, is rarely limited by surface water infiltration ability.

Woodlands

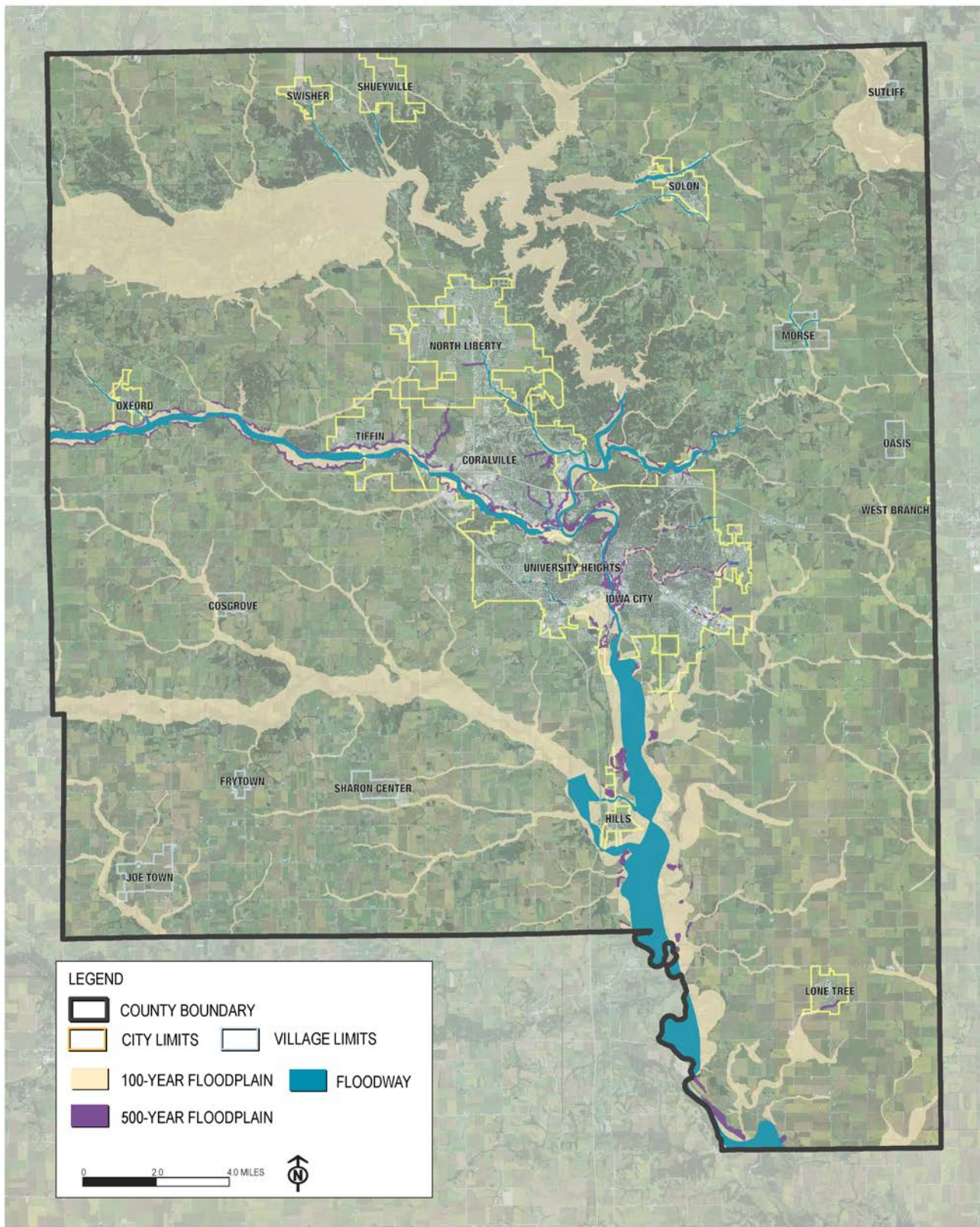
Map 6 on page 35 highlights the area along the Iowa River and Coralville Reservoir north of Iowa City as the most concentrated forest area in the county. This area is also home to Lake Macbride State Park, Macbride Nature Recreation Area, and the Sugar Bottom Recreational Area.

Map 3. Slope Analysis: Percent Slope

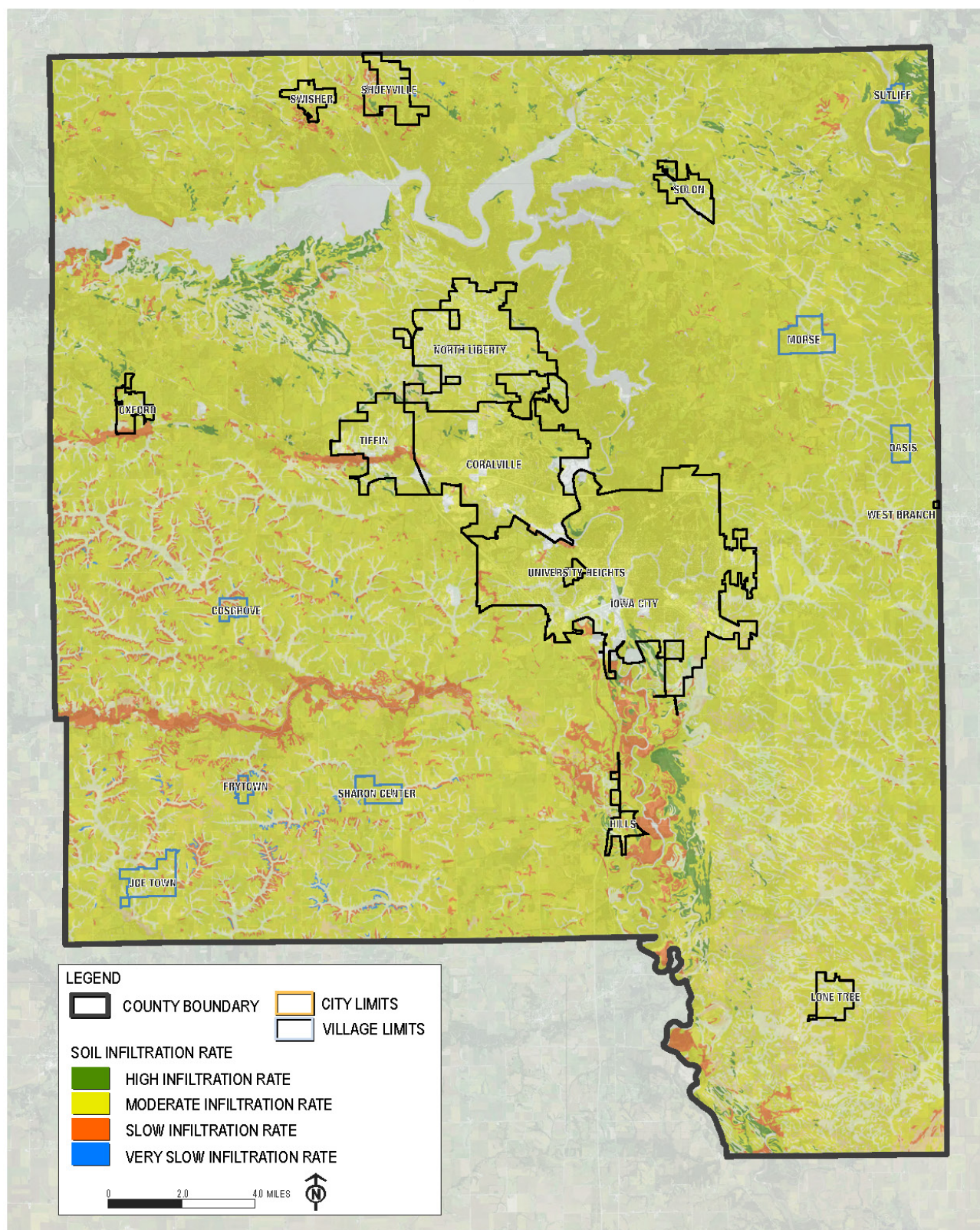


Data Source: Iowa Department of Natural Resources

Map 4. Flood Hazard Areas of Johnson County



Map 5. Soil Infiltration Rate in Johnson County



Data Source: Iowa Department of Natural Resources

APPENDIX A | PROFILE



FRINGE AREA AGREEMENTS

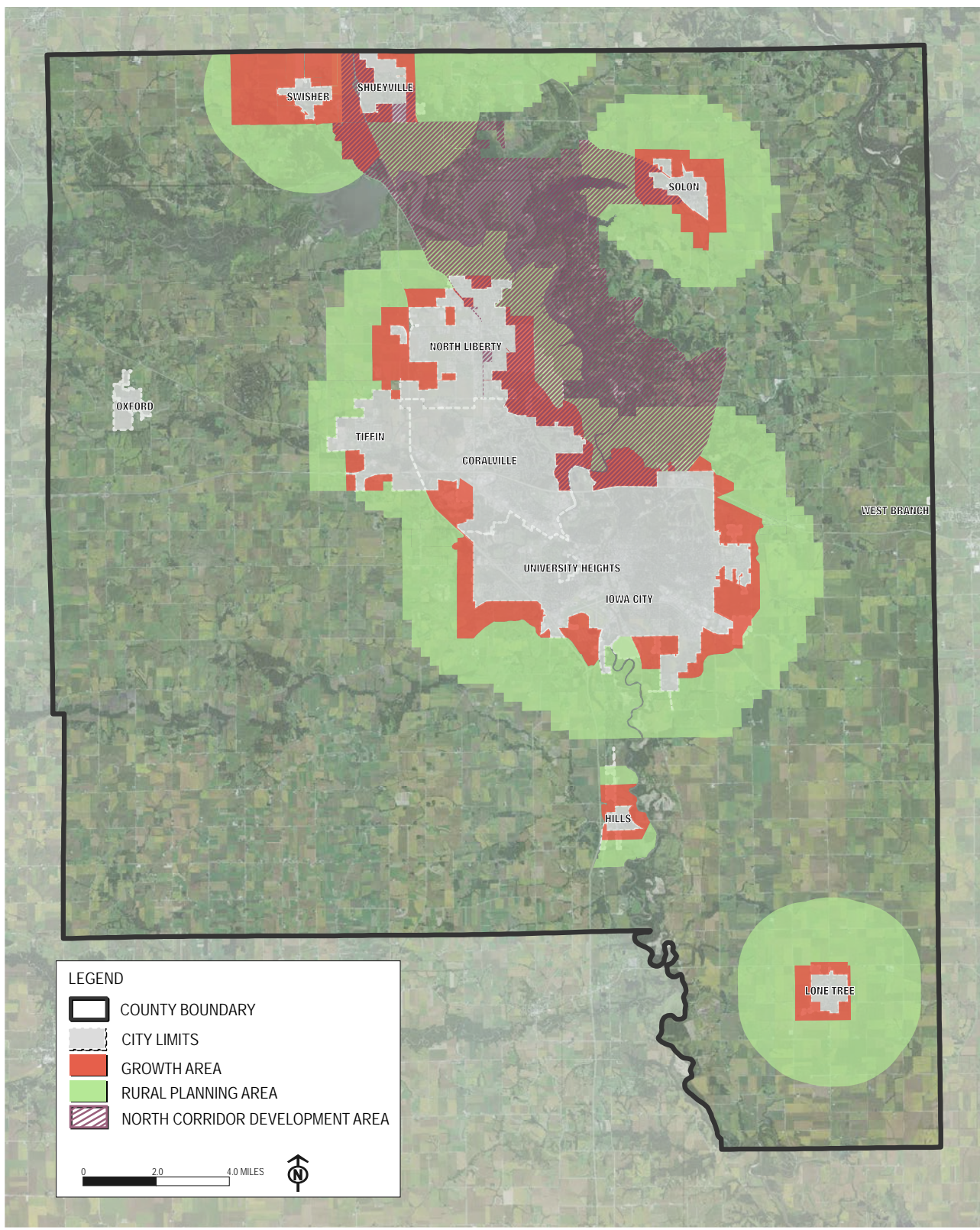
Many issues related to planning and zoning are regional in nature and cross municipal boundaries. The State Code of Iowa grants "extraterritorial jurisdiction" to incorporated cities, in which the cities have the authority to review all land uses within two miles of city limits. In these "fringe areas," Johnson County and its incorporated cities have entered into cooperative agreements addressing mutual concerns about land use planning. See Table 11 below for an overview of the active Fringe Area Agreements between Johnson County and various incorporated cities. Map 7 highlights the fringe areas where an incorporated city has identified the location of future growth (i.e. "Growth Areas") and the areas to remain under Johnson County jurisdiction (i.e. "Rural Planning Area").

Table 11. Fringe Area Agreement Schedule (November 2017)

Municipality	Date of Current Agreement	Next Review Date	Expire Date	Other Information
Cedar Rapids & Swisher	8/11/2004	-	8/11/2019	Review upon request from any party.
Coralville	4/9/1999	4/9/2017	4/9/2019	Three-year review period.
Ely	5/21/2009	5/21/2019	5/21/2029	Five-year review period.
Hills	4/19/2010	4/19/2016	4/19/2030	Three-year review period.
Iowa City	10/13/2006	10/13/2016	10/13/2016	Review upon request from any party. Auto renew every five years, unless one party objects.
Lone Tree	7/11/2002	-	7/11/2022	Review upon request from any party.
North Liberty	3/25/2014	3/25/2017	3/25/2034	Three-year review period.
Oxford	N/A	N/A	N/A	No fringe area agreement.
Shueyville	7/23/2002	7/23/2017	7/23/2017	Review upon request from any party. Auto renew every five years, unless one party objects.
Solon	9/11/2008	9/11/2017	9/11/2028	Three-year review period.
Swisher	7/15/2015	7/15/2018	7/15/2035	Three-year review period.
Tiffin	6/6/1997	N/A	6/30/2006	Agreement has expired.
West Branch	N/A	N/A	N/A	No fringe area agreement.

Source: Johnson County Planning, Development and Sustainability Department (2017)

Map 7. Fringe Area Agreements (November 2017)

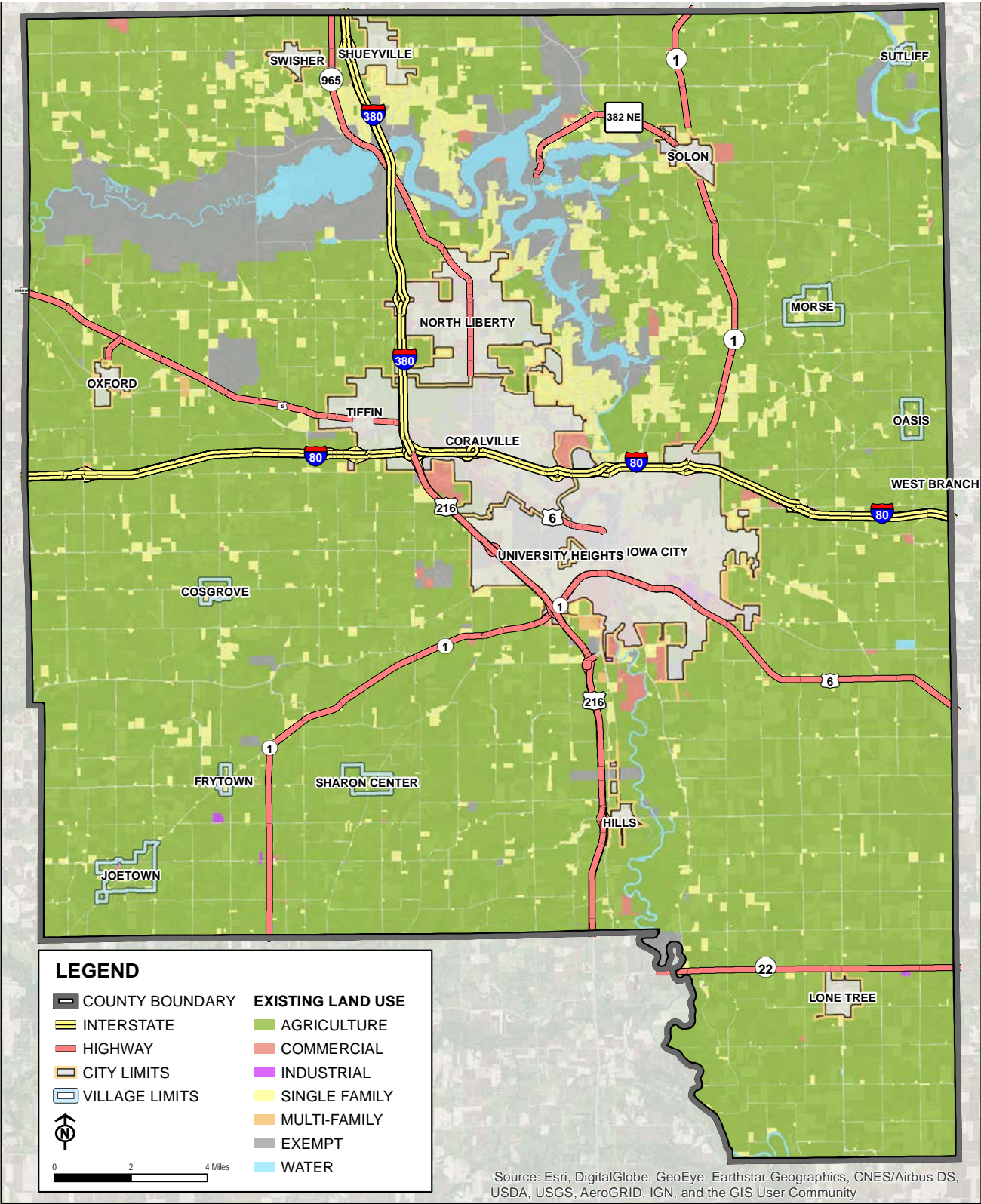


ASSESSOR PROPERTY CLASS

Figure 12. Existing Land Use Categories Based on Accessors Property Class (2017)

AGRICULTURE	Typical uses include land devoted to agricultural use or crop production and very low-density residential development. Residential dwellings should be limited to no more than one dwelling unit per 40 acres. This land use category may also include areas of land significantly impacted by wetlands or floodplain and areas of steep topography or natural tree cover or other sensitive areas preserved as open space.
RESIDENTIAL	This land use category is made of up of single-family detached dwellings with a typical density of one home per 3.5 acres. Areas zoned for residential shall be limited to locations that can support and accommodate the designated residential densities. Lots should include public or private street frontage and driveway access.
EXEMPT	Exempt parcels are owned by a city, county, utility provider, charitable organizations, or some other entity claiming partial or full exemption from property taxes. Parks and other recreational properties owned by the county or some other governmental agency is included in this category.
COMMERCIAL	This land use category is for retail and office uses and restricted to areas that have the infrastructure to support the traffic and utility demands of these uses. Site and building design should include features to minimize negative impacts from noise, light, and vehicular traffic and accommodate pedestrian and bicycle circulation as well as vehicular access.
INDUSTRIAL	This land use category allows for research and development and testing facilities; manufacturing and assembly; and warehousing, shipping, distribution facilities with outdoor storage. Site sizes can range from small single user building lots to large facilities. Industrial uses are generally located away from urban residential areas although light industrial uses may be present near residential areas.
MULTI-FAMILY RESIDENTIAL	A parcel of land with a structure being utilized by two or more families within a semi-detached structure. The primary use of this land use category is parcels with multiple lots available for lease to manufactured housing units. This category may also include single-family dwelling units that are attached horizontally to one or more units, typically referred to as duplexes, cottage homes, townhomes, and row-houses and multifamily dwelling units attached both horizontally and vertically with two or more dwelling units, typically referred to as apartments or condominiums.
WATER	A parcel completely covered by water.

Map 8. Existing Land Use: Assessor's Property Class (2016)





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