



The Urban Transportation Center at the  
University of Illinois at Chicago

# **Is Traffic Increasing With Declining Population? Illinois and the Chicago Area**

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## 1. INTRODUCTION.

The state of Illinois is experiencing atypical sociodemographic trends in the basic determinants of transportation demand and in magnitudes not witnessed in recent history. Typically, an increase in transportation demand is correlated with population growth, rising numbers of households and increases in jobs. Each in their own way contribute to more cars and trucks on the road and greater use of public transportation.

The primary purpose for this report is to highlight how in recent years these factors have not all trended in the same direction. While population has declined since 2013, the number of households and jobs have grown. Both of these latter two statistics tend to signal an improvement in the economy and greater use of transportation systems. Job growth and growing numbers of households are typically associated with increases in consumer spending as they consume household items such as appliances, cars and day-to-day necessities.

Population declines in the state have received considerable attention, but the recent increases in the number of jobs and households should be equally or more important for the economic welfare of the state and deserves attention. Indeed, the number of households may be more important than the number of people. In places where two dual-worker households, totaling four people, replace a 5-person family the population has declined, but the number of workers and commuters has increased.

The focus here is to examine, at the gross level, the trend in population, jobs, number of households, labor force participation and income and discuss how these variables collectively effect transportation demand. One of the results has been a noticeable increase in travel, as measured by vehicle miles traveled (VMT). Since 2011 VMT has been rising in both the state of Illinois as well as in the Chicago Metropolitan area while population levels have declined.

## 2. DATA AND STUDY AREA

These findings are based on widely accepted federally collected and disseminated data. Data on population, the number of households and income are derived from the Census Bureau's American Community Survey (ACS) while the Bureau of Labor Statistics (BLS) provides information on the number of jobs. City of Chicago employment level data come from the Illinois Department of Employment Security (IDES). Lastly, the Federal Highway Administration (FHWA) reports VMT.

While the state of Illinois is the principal focus, the report also considers metropolitan Chicago as well as the city of Chicago. The Chicago metropolitan area accounts for a large share of the Illinois total on many statistics, but it can be misleading since the metro area includes four counties in Indiana and one county in Wisconsin. In this regard, wherever possible we adjust for this geographic reality by examining only the nine metropolitan counties located in Illinois. We also examine the city of Chicago though there are some data limitations that preclude direct comparisons.

The data for this report were amassed in late 2019. During the preparation of this report several updates became available and while some were incorporated it was not practical to revise the report every time new data became available. Also, nearly all of the data used in this report are derived from surveys and each number has a margin of error but appear precise in presentation. Generally, we will not discuss the margin of error in presenting these data but it should be understood in interpreting the numbers in this report.

### 3. POPULATION TRENDS

**STATE OF ILLINOIS.** Since population declines have recently received the most attention, we consider it first. Illinois reached its peak population in 2013 with a total of 12.9 million residents, having increased by over 50,000 at the beginning of this decade (Table 1). Since then it has lost over 160,000 residents. Over the first eight years in this decade (2010-2018) there has been a net decrease of 1.2%, or nearly 100,000 residents. Further there has been a drop of approximately 300,000 residents since the year 2000 (2000-2018).

This is in contrast to the increase in population among all of our neighboring states. Each has grown by more than 100,000 (Table 1) with Indiana adding more than 200,000 residents. Indeed, none of them has experienced even a year-over-year decline in population.

Table 1. Population change by state, 2010 - 2018

State	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	TOTAL
Illinois	26,529	16,828	14,150	-9,307	-24,620	-37,447	-40,699	-45,116	-99,682
Iowa	15,287	10,043	16,981	16,426	11,956	10,325	11,852	12,508	105,378
Michigan	3,986	15,409	16,419	17,240	1,984	19,317	24,557	19,468	118,380
Kentucky	21,288	16,893	18,436	9,666	11,516	12,230	15,645	14,528	120,202
Wisconsin	14,276	15,100	17,097	15,022	9,432	11,552	19,093	21,517	123,089
Missouri	13,665	14,440	16,577	15,635	15,452	15,458	21,409	17,840	130,476
Indiana	25,609	21,595	30,727	25,166	14,763	25,048	26,738	31,796	201,442

Source: U.S. Census Bureau; American Community Survey, 1-year data

At the national level, Illinois is not the only state that has experienced population declines (Table 2). During the 2013 to 2018 period other states with population losses include New York, Connecticut, Mississippi, West Virginia and Wyoming. Only West Virginia has experienced a higher percentage loss. It is also the only state that did not gain in population at the beginning of the decade, 2010-2013.

Table 2. Percent change in population for states with population losses 2010-2018

State	2010-13%	2013-18%	2010-18%
Mississippi	0.61%	-0.08%	0.54%
New York	1.18%	-0.44%	0.73%
Connecticut	0.44%	-0.62%	-0.18%
Wyoming	3.12%	-0.75%	2.35%
Illinois	0.45%	<b>-1.22%</b>	-0.78%
West Virginia	-0.02%	-2.59%	-2.61%

Source: U.S. Census Bureau; American Community Survey

**METROPOLITAN CHICAGO.** A discussion of the population of metropolitan Chicago quickly becomes complicated since the geographic definition of the territory has changed substantially in recent decades. For many decades six counties, Cook, DuPage, Lake, Will, Kane and McHenry defined metropolitan Chicago. It was inevitable that Lake County, Indiana to the east, with a common boundary with the city of Chicago, would be added as would Kendall County with the region growing westward. By adding Kenosha County in Wisconsin to the north, it became a tri-state entity. Now the official definition includes four counties in Indiana plus DeKalb and Grundy Counties in Illinois raising the total to fourteen counties. To keep the assessment manageable the focus will be on the original six counties and also the three new Illinois counties to the west, in part because these are all in Illinois and it makes it possible to differentiate between these nine from the rest of the state.

Table 3 shows that like the state, the metro area has also lost population in the second half of the decade, but starting one year later than the state decline. The loss, however, at the end of the decade is smaller than the population gain at the beginning so there has been a net gain of 27,836 since 2010. Unlike the state, both the city of Chicago and the metro area now (2018) have higher populations than at the beginning of the decade.

Table 3. 14-County total metropolitan population and annual change 2010-2018

2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-18
9,470,880	9,500,991	9,529,773	9,553,268	9,564,614	9,557,880	9,540,144	9,520,784	9,498,716	
Change	30,111	28,782	23,495	11,346	-6,734	-17,736	-19,360	-22,068	27,836

Source: U.S. Census Bureau; American Community Survey, 1-year data

An examination by county reveals a mixed picture of population gains and losses. Among the six original counties three have gained in population, Kane, Will and DuPage. While Kane and Will grew throughout the decade DuPage began losing population after 2015 (Table 4). Kane and Will illustrate the point that the population continues to decentralize at the expense of the established population areas, with the Chicago downtown area the most notable exception.

In the new-collar counties, Kendall exhibits the steadiest growth, adding 12,538 people. Grundy has also grown but more modestly. DeKalb is beyond the outer edges of the outward movement and its population has changed little since 2010.

**Table 4. Annual population change in each of the 14 metropolitan counties**

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-18
<b>Original 6 counties</b>										
Cook	5,199,166	5,219,977	5,240,505	5,254,885	5,257,481	5,247,662	5,228,455	5,204,502	5,180,493	-18,673
DuPage	918,029	924,852	928,823	932,519	933,820	933,965	931,680	930,662	928,589	10,560
Lake	704,192	701,647	702,213	704,462	704,618	704,995	704,644	703,006	700,832	-3,360
Will	678,818	680,799	682,535	683,873	685,369	686,142	688,648	691,017	692,310	13,492
Kane	516,144	519,211	520,885	522,935	526,028	529,330	531,463	533,156	534,216	18,072
McHenry	309,061	308,433	308,180	307,587	307,414	307,650	307,296	308,013	308,570	-491
Total	8,325,410	8,354,919	8,383,141	8,406,261	8,414,730	8,409,744	8,392,186	8,370,356	8,345,010	
Change		29,509	28,222	23,120	8,469	-4,986	-17,558	-21,830	-25,346	19,600
<b>New Illinois collar counties</b>										
Kendall	115,377	116,813	118,257	119,594	121,413	122,937	124,592	126,272	127,915	12,538
DeKalb	105,147	104,438	104,360	104,207	104,570	104,154	103,984	104,151	104,143	-1,004
Grundy	50,152	50,095	50,159	50,187	50,290	50,363	50,306	50,613	50,972	820
Total	270,676	271,346	272,776	273,988	276,273	277,454	278,882	281,036	283,030	
Change		670	1,430	1,212	2,285	1,181	1,428	2,154	1,994	12,354
<b>Indiana</b>										
Lake	495,939	494,888	493,387	491,768	490,973	487,895	486,199	484,766	484,411	-11,528
Porter	164,500	165,507	165,713	166,489	167,182	167,365	167,522	168,544	169,594	5,094
Jasper	33,496	33,423	33,494	33,426	33,514	33,487	33,416	33,459	33,370	-126
Newton	14,234	14,084	14,042	14,025	14,086	13,968	13,985	14,041	14,011	-223
Total	708,169	707,902	706,636	705,708	705,755	702,715	701,122	700,810	701,386	
Change		-267	-1,266	-928	47	-3,040	-1,593	-312	576	-6,783
<b>Wisconsin</b>										
Kenosha	166,625	166,824	167,220	167,311	167,856	167,967	167,954	168,582	169,290	
Change		199	396	91	545	111	-13	628	708	2,665

Source: U.S. Census Bureau; American Community Survey

Both Indiana counties Lake (Gary) and Porter (Valparaiso), to the east, are along Lake Michigan, with the other two counties located directly to the south. Lake County dominates the population change with a drop of 11,528 since 2010. While Porter has gained over 5000 people it is not sufficient to offset the declines in Lake County and the minor drops in Jasper and Newton, the other two Indiana counties.

**CITY OF CHICAGO.** In its early history Chicago was very densely populated and congested. Seeking more livable neighborhoods, the core-area population began to decentralize and the core population began to decline as early as the late 1890s. This outward movement has

characterized the city for much of its history. With room to expand, the city grew rapidly from approximately 2.2 million in 1910 to over 3.6 million in 1950, likely achieving its peak population in the late 1940s. By this time, the outward movement spilled over into suburban areas and for the first time the city began to lose population. Since 1950, the outward movement of population and the city’s population decline has continued with the exception of the 1990s when the population rose by 4%.

Since 2010, the city has followed a pattern not too dissimilar from the state of Illinois with the highest population occurring in 2014. Where it differs is the 2018 population estimate is now higher than the 2010 count, 2,697,529 versus 2,705,994 in 2018 (Table 5) for an increase of approximately 8500.

Within the city there remain areas of growth and also areas of decline. The core area is now growing as the polluting industries common in the late 1890s and early 1900s are no longer present. The interest in downtown living can be traced to the 1970s when dual-worker households became more common. Today the changing downtown skyline is a testament to the growing downtown population and economic vibrancy.

Table 5. City of Chicago population and annual changes

2010	2011	2012	2013	2014	2015	2016	2017	2018	2010-18
2,697,529	2,708,209	2,719,735	2,726,772	2,728,524	2,726,215	2,718,946	2,713,067	2,705,994	
Change	10,680	11,526	7,037	1,752	-2,309	-7,269	-5,879	-7,073	8,465

Source: U.S. Census Bureau; American Community Survey, 1-year data

#### 4. JOBS / WORKERS

From a transportation perspective, the number of jobs in the region is more important than the number of people because the transportation systems tend to be most stressed during commuting periods. This was most noticeable from 1970 to 1990 when the Chicago metropolitan area population grew by approximately 4% but the number of workers grew by 11%. This created an increase in congestion on the highways and at transit facilities well beyond the modest increase in population.

In tracking employment data, recent historical economic cycles are of paramount importance. This decade (2010-2019) began with the recovery from the economic collapse that characterized the end of the previous decade. Nationally, employment had peaked by the end of 2007 and while it initially decreased slowly, the serious drop occurred in the later part of 2008. From January 2008 to January 2010 national employment dropped by over 8,600,000. The recovery started at the very beginning of 2010 and by July 2010, the recovery was well underway.

Illinois was also substantially impacted by the recession of the previous decade. The steady increase in employment, starting with the 60,000+ in 2010-2011 characterized the entire decade (Figure 1). Notice, however, that the population decline started with the 2013-2014 period but did not seem to have any immediate effect on rising employment numbers. Two years later there was a slowing in the increase in employment but it was still a respectable increase of 40,000 employees.

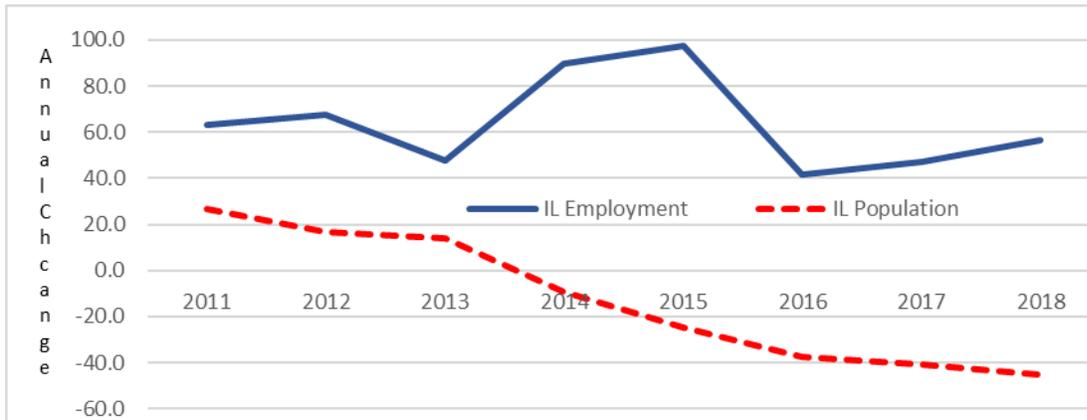


Figure 1. Illinois population and non-farm CES employment change, July 2010-July 2018 (annual change in thousands)

Source: <https://www.bls.gov/opub/ee/2013/sae/sae.htm> and US Census Bureau, ACS

Table 6 shows the number of jobs that were added three years before and six years after Illinois began to lose population in 2013. One might expect that the pace of job creation would be slower once population started to decline. Since the period after 2013 (2013-2019) was twice as long as the period before 2013 (2010-2013) one would expect the ratio of job growth to be less than 2 during this period of population loss. It is counterintuitive to see the growth in jobs after 2013 to be 2.3 times higher than before 2013. Still, it is lower than the country as a whole with an increase 2.79 times higher, but the nation’s population increased substantially.

Table 6. Increase in employment, in thousands (Before and after Illinois began losing population in 2013)

Period	USA	Illinois
2010-2013	5,476	179
2013-2019	15,304	411
Ratio	<b>2.79</b>	<b>2.30</b>

Source: <https://www.bls.gov/sae/tables/state-news-release/home.htm>

Since the data in Table 6 are so unexpected, we also examined the BLS Current Population Survey (CPS) data for the same dates. Nationally the CPS data are derived from monthly interviews of 60,000 households in contrast to the 160,000 establishments surveyed for the Current Employment Statistics (CES) used in Table 6 and Figure 2. For Illinois, the CPS data ratio was 2.24 compared to the 2.30 in the CES data. Both sources clearly indicate that there has not

been a decline in the number of jobs (CES) or workers (CPS) but rather an increase in the annual growth rate. In this report, we generally use the CES employment data since that has a larger sample and is most widely used but the CPS data for unemployment again the most common source for unemployment data.

The most recent Bureau of Labor Statistics employment data show that in the last thirteen months Illinois jobs have increased by 78,600 (Table 7, using BLS Current Employment Statistics, CES, during the writing of this report additional data came available, thus the 13-month period). There is a remarkable increase in employment given the decline in population. The only state neighboring state that had a higher per capita increase in employment is Kentucky. All the others have lower rates.

The two states that are part of the Chicago Metro area, Wisconsin and Indiana, together have about the same number of people as Illinois but their combined increase in employment is only 26,100 or one-third of the 78,600 increase in Illinois.

There has recently been considerable discussion about employers moving from the Illinois part of the Chicago area into these two states but the data in Table 7 do not suggest that there has been great movement to areas across the state line. Perhaps people are moving in larger numbers than the number of employers. The CES data reflect where the jobs are located.

Table 7. CES Employment and change in employment by adjacent states

State (employment in 000s)	Sept. 2018	Oct. 2019	Sept. 2018 - Oct. 2019
Illinois	6,120.1	6,198.7	78.6
Indiana	3,147.1	3,161.1	14.0
Iowa	1,582.5	1,596.1	13.6
Kentucky	1,933.8	1,964.5	30.7
Michigan	4,419.0	4,422.3	3.3
Missouri	2,890.9	2,921.6	30.7
Wisconsin	2,970.3	2,982.4	12.1
6 adjacent states	16,943.6	17,048.0	104.4
Ratio: 6 states total/Illinois	<b>2.8</b>	<b>2.8</b>	<b>1.3</b>

Source: <https://www.bls.gov/sae/tables/state-news-release/home.htm>

A longer-term view shows that employment levels in Illinois have been rather volatile (Table 8). The state’s employment level is now 162K higher than it was in 2000 but it is evident that the recession hit the state hard since it lost 409K jobs in a two-year period (2008-2010).

By 2017 the previous declines in the number of jobs had been overcome. In the subsequent two years another 132K jobs were added. Also, Figure 1 shows that since the beginning of this decade (2010) there has been steady job growth. For each of the years in this decade annual employment has increased from a low of 41K to a high of 97K. This is reminiscent of the 1990s with steady employment increases for an eight-year period.

Table 8. Illinois January to January employment change

Span of years	Employment change
2000-2004	-214.0
2004-2008	192.0
2008-2010	-409.4
2010-2017	461.4
2017-2019	132.0
<b>2000-2019</b>	<b>162.3</b>

Source: <https://data.bls.gov/pdq/SurveyOutputServlet>

**EMPLOYMENT INCREASE IN METRO CHICAGO.** The gains in employment are not evenly distributed throughout the state. Table 9 shows that much of the net increase is attributable to the Chicago Metro area but recall that part of the metropolitan area extends into Wisconsin and Indiana but clearly many of the state’s jobs are in the Illinois portion.

Table 9. Employment change, 2010 – 2019 (July data in thousands)

	Illinois	Metro Chicago	Metro Chicago/Illinois*
2010	5,621.1	4,264.8	0.76
2019	6,210.5	4,848.5	0.78
Increase	589.4	583.7	0.99
<b>% increase</b>	<b>10.5%</b>	<b>13.7%</b>	

\* Note that parts of metropolitan area extend into Wisconsin and Indiana

Source: <https://www.bls.gov/sae/home.htm>

The original six counties of the Chicago Metro area seem to be the driving force in economic activity. The October 2, 2019 economic summary update indicated that the four of the fourteen counties with average weekly wages above \$1000 were Cook, DuPage, Lake IL and Grundy. Only two had less than \$800, Newton and Jasper, both in Indiana.

Table 10. Unemployment percentages for all places reported in the BLS update

Place	United States	Metro Chicago	Cook Illinois	DuPage Illinois	Kenosha Wisc.	Lake Indiana
Unemployment	3.8	3.7	3.8	2.9	4.2	4.4

Source: [https://www.bls.gov/regions/midwest/summary/blssummary\\_chicago.pdf](https://www.bls.gov/regions/midwest/summary/blssummary_chicago.pdf)

The same source shows that the Metro Chicago area’s August 2019 unemployment rate is lower than the national level (Table 10), 3.7% versus 3.8% for the nation--other BLS source put the national level at 3.7%. This may seem to be a trivial difference but given the higher-than-national figure in recent Illinois history it is important. Further the figure for the state of Illinois for August 2019 was 4.0%, down from 4.4% in April, 2019 when the national level was 3.6%.

Lastly, we present data collected and reported by the State of Illinois Department of Employment Security (IL DES). We only present these data because the standard BLS source used throughout this report do not readily provide data by city, necessary in the next section. The limitation of these data is that it does not include many agricultural, domestic, government and railroad workers as well as many independent contractors.

Therefore, the IL DES data (2010-2018) show much smaller increases in the six-county metro area employment, likely since the GIG economy has expanded greatly in this decade but not reported in the IL DES data. The Pew Research Center reported that in 2016 approximately 24% of the population earned some income in the “digital platform economy.”

Interestingly, the largest gains were, in order, Will, DuPage and Lake Counties. Conversely, Cook County had a substantial loss with most of the decline attributed to Northwestern Suburban Sector, one of the five sectors reported. West and South sectors also registered declines. As we see below, however, Chicago had a substantial increase in employment.

In total the IL DES data present an intriguing picture with Chicago and the collar counties experiencing healthy employment increases while several established suburban areas in Cook County experiencing noticeable declines. It suggests a diverse economy with many employers seeking the centrality of Chicago and its young work force while others are responding to lower real estate costs accessible to the growing populations in the collar counties.

**EMPLOYMENT INCREASE WITHIN THE CITY OF CHICAGO.** To repeat, unlike the comprehensive state and metro federal data cited above, here we do not have the same source so we utilize Illinois unemployment insurance IDES data (Illinois Department of Employment Securities). While not as encompassing as federal data, it nevertheless provides longitudinal data useful in this study.

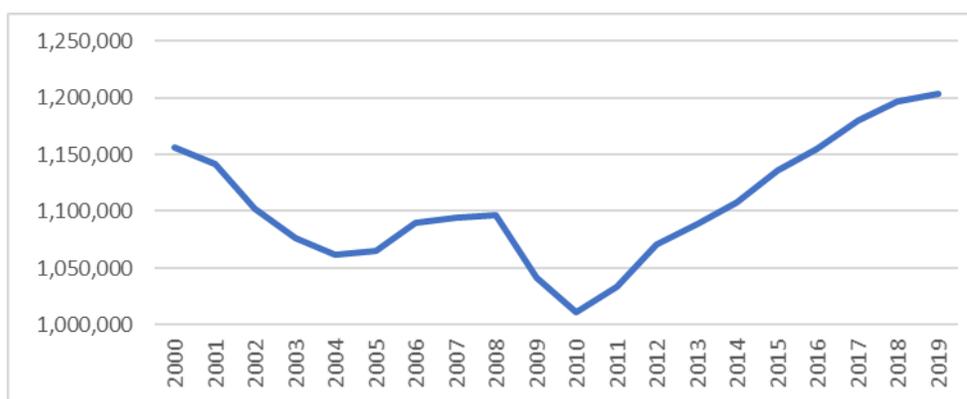


Figure 2. Employment in Chicago, 2000-2019  
Source: Illinois Department of Employment Security

It is evident that throughout the entire decade the number of jobs in Chicago have steadily increased and like the state, the city levels are now higher than at any time this decade. There

have been nearly 200,000 additional jobs since 2010 and approximately 50,000 more than at the beginning of the millennium (year 2000).

## 5. LABOR FORCE PARTICIPATION RATES (LFPRs)

The labor force participation rate (LFPR) is the “percentage of the civilian noninstitutional population 16 years and older that is working or actively looking for work” (BLS definition). It is important in assessing the demand for transportation particularly if we can assume that most people commuted to and from work. The number of commuters can vary even with a constant population as it depends on the LFPR. As it fluctuates, it not only has an effect on traffic but it also on the overall economy.

Figure 3 indicates that nationally LFPR increased steadily from the mid-1960s to the latter part of the 1990s when it reached 67.2%. This was largely driven by the number of females entering the labor force. While the male rate dropped during that time, it was minor compared to the rise in the number of females. The late 1990s represented a period of full employment with high LFPRs matched with low unemployment rates.

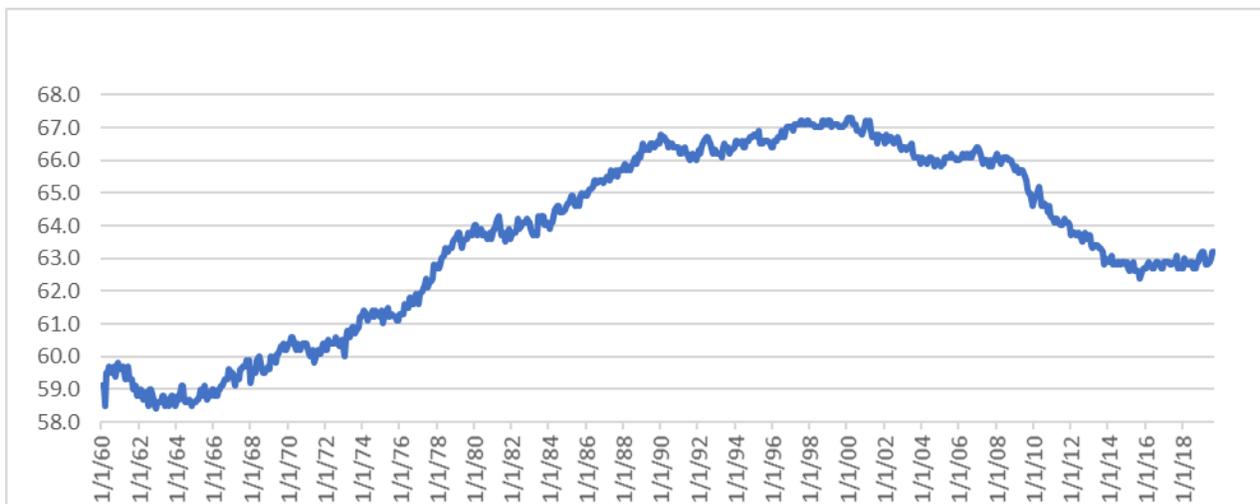


Figure 3. Monthly national labor force participations rates (LFPR), January 1960-September 2019

Source: <https://fred.stlouisfed.org/series/CIVPART>

More recently, the LFPR had dropped to 62.4 in September 2015 before rising to 62.9 a year later. In the last two years it has bounced between 62.7 and 63.2 so it’s hard to say that there has been a sustained increase in this statistic for many years.

In September 2019, the national labor force reached 164 million. This is the non-institutional population aged 16 and over that is working or actively looking for work. In essence, each one-point drop in the LFPR is equivalent to 1.64 million fewer workers. In order to return from

63.2% to 67.2%, near the beginning of this millennium, the number of workers would have to increase by approximately 6.5 million. This is not impossible since the current job openings are approximately 7 million. Further, when the LFRP was 67.2% the unemployment rate was 3.9% not greatly different than the rate today (3.5% in November 2019). Many, however, may not possess the skills necessary to be hired or they may be uninterested due to low wages. Still, the Illinois number of jobs could continue to rise even with more population losses. If this happened then the LFRP would increase and could possibly rise to levels experienced a few decades ago.

This raises the question: does the aging population add to the LFRP decline? This does not appear to be the case. The percent in the primary working age 16-64 group in the nation has shown little change during this millennium (Table 11). The increase in the proportion of those 65 and over is balanced by a nearly equivalent decline in the percent under 16. Further, the percent of population 65 and over still working has increased from 17% in 2009 to nearly 20% in 2019. These trends appear to substantially offset each other and as such do not seem to be a major contributing factor to a decline in the LFRP.

**Table 11. Percent of the US population under 16 and 65 and over, 2000 and 2017**

Age	2000	2017
<16	22.84%	20.00%
16-64	64.73%	64.40%
65+	12.43%	15.60%

Source: U.S. Census Bureau; 2000 Decennial Census and 2017 1-Yr American Community Survey

By national standards, Illinois' LFRP has been high and but it has dropped during this millennium. Starting from 69.8 it declined dramatically followed by a partial recovery from a low of 65.9 in 2003 to a high of 68.8 at the end of 2007 (Figure 4). Illinois' rate then continued to drop before recovering to 65.5 at the beginning of 2016. It subsequently declined to 64.4 in the summer of 2016 and since then has risen to 64.9.

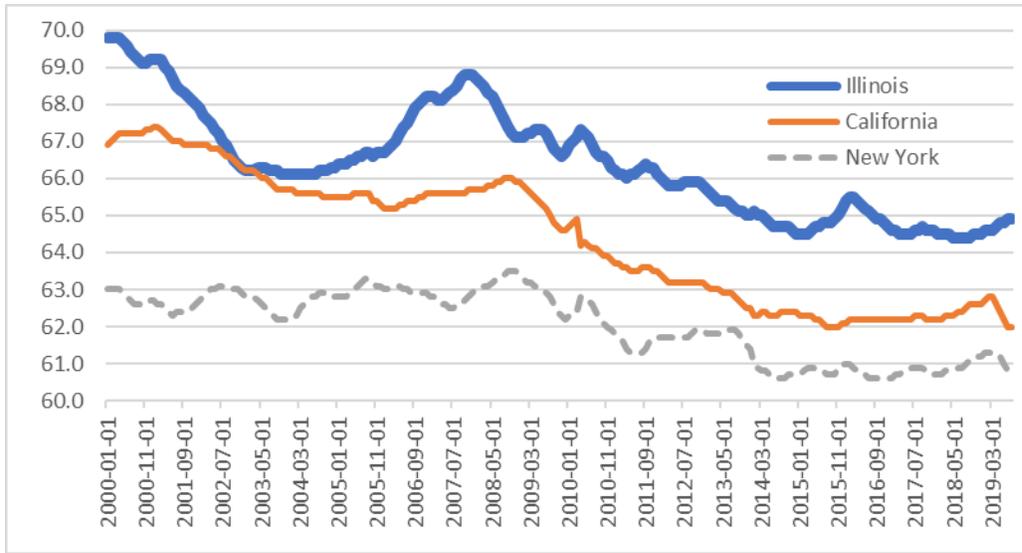


Figure 4. Labor force participation rates, 2000-2019

Source: <https://fred.stlouisfed.org/release/tables?rid=446&eid=784070#snid=784137>

The Illinois rate, then, is nearly two percentage points higher than the national rate implying that a higher level is not on the immediate horizon. Still a return to the prosperous times marked by the beginning of the millennium may be possible. With a higher LFPR a higher proportion of the population is working and contributing to the economic health of the state.

A comparison of the Illinois LFPR with two other large states is included because their trend lines seems to fit Illinois better than the adjacent states in the Midwest. With the exception of the 2003-2004 period, in recent history the pattern of this statistic in Illinois seems to match California and New York (Figure 4). While the patterns seem similar, the Illinois LFPR has traditionally been higher than those in California and New York. It reached a peak at the beginning of the millennium when it hit 69.8% when the LFPR was approximately seven points lower in New York.

Figure 4 provides some insight into the difference between Illinois and the other two large states. Each percentage point in Illinois is equivalent to approximately 100,000 workers. Since the 2019 difference between Illinois and California is three points, it would be equivalent to almost 300,000 employed individuals. The difference with New York is even greater at four percentage points. This gives us an additional perspective on how to interpret an increase or decrease in employment discuss in a previous section. It suggests that a large increase in Illinois is not eminent.

Despite the observation made above the data for the adjacent states suggest that there may be room for higher LFPRs given Illinois' history. While Illinois exhibits some similarities with Indiana, both Iowa and Wisconsin have consistently higher LFPRs. In many months, the difference is more than two percentage points.

Further, while most states show a decline in the last ten years, Iowa shows an uptick in the last year. Specifically, approximately 1.5 percentage points in the last eighteen months. If Illinois were to add one point in the LFPR, it would translate to an increase of approximately 60,000 jobs with a constant population. This suggests that the state could continue to lose population without negatively affecting the number of jobs.

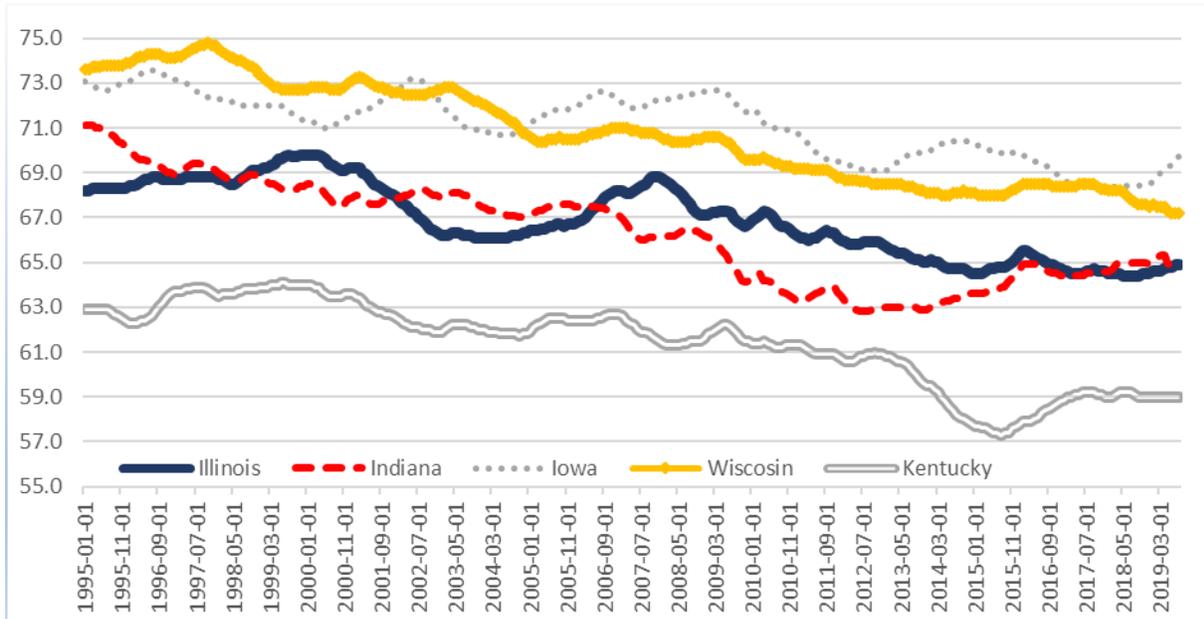


Figure 5. Labor force participation rates in adjacent states, 1995-2019

Source: <https://fred.stlouisfed.org/release/tables?rid=446&eid=784070#snid=784137>

## 6. NUMBER OF HOUSEHOLDS

In many regards the number of jobs and the number of households is more important than the number of people. The increase in the number of households tends to be synonymous with improvement in the economy. Households are formed when the young or the old members move to form their own households. They buy the essentials that are necessary to live independently. In this regard, the rise in the number of households in Illinois is more important than the number of people. Further, household formation rates tend to increase during periods of prosperity and retreat during recessions.

Table 12 shows that over the twelve-year period there was an increase of over 117,000 households (we selected the longest time period readily available by the U.S. Census, American Community Survey data). This increase is not substantially lower than the approximately 175,000 additional residents in the same period.

Table 12. Change in the number of Illinois households and population, 2005-2017

Illinois	Households	Population
2005	4,691,020	12,609,903
2010	4,752,857	12,840,762
2017	4,808,672	12,786,196
2005-2010	61,837	230,859
2010-2017	55,815	-54,566
<b>2005-2017</b>	<b>117,652</b>	<b>176,293</b>

Source: U.S. Census Bureau, ACS 1-Year data and <https://fred.stlouisfed.org/series/ILPOP>

What is telling is the change from 2010 to 2017. They are nearly of the same magnitude but oddly one is positive and the other is negative. It partly compensates for the unusually high positive ratio of 3.7 from 2005-2010. One would generally expect a ratio reflecting average household size, which for Illinois is typically around 2.6. This suggests that large households are leaving, replaced by small households. Census defines families as two or more related individuals living together, while households include all individual including families as well as one-person households.

Metropolitan Chicago also has an unusually high increase in households given the low population growth. Again, since Indiana and Wisconsin are part of the metropolitan area, we cannot be too specific but it appears that the Chicago area is experiencing a similar trend of unusual expansion in the number of households given the change in population.

Table 13. Metro Chicago households and population, 2010-2017

Metro Chicago	Households	Population
2010	3,415,317	9,470,880
2017	3,488,312	9,520,784
2010-2017	72,995	49,904

Source: American Community Survey, 2010 and 2017, 1-year data

Despite the problem with metropolitan Chicago extending beyond the state boundary, it might nevertheless be informative to assess the trend in downstate Illinois (outside the metro area). Table 14 suggests that with a population to household ratio of 6.1 there may be small households moving in replacing larger households that are migrating from the state.

Table 14. Summary of changes in Illinois, households and population, 2010-2017

	Households	Population
Metro Chi	72,995	49,904
Downstate	-17,180	-104,470
Illinois	55,815	-54,566

Sources: see Tables 12 and 13; also note that actual Downstate numbers are slightly higher 'Metro Chicago' includes counties in Indiana and Wisconsin

Statewide population initially increased but since 2013 it has steadily declined (Figure 5). There were not dramatic changes from year to year with an overall smooth pattern. Conversely the number of households has both increased and decreased but the 2017 level is 1.5% higher than the 2011 total despite the population loss.

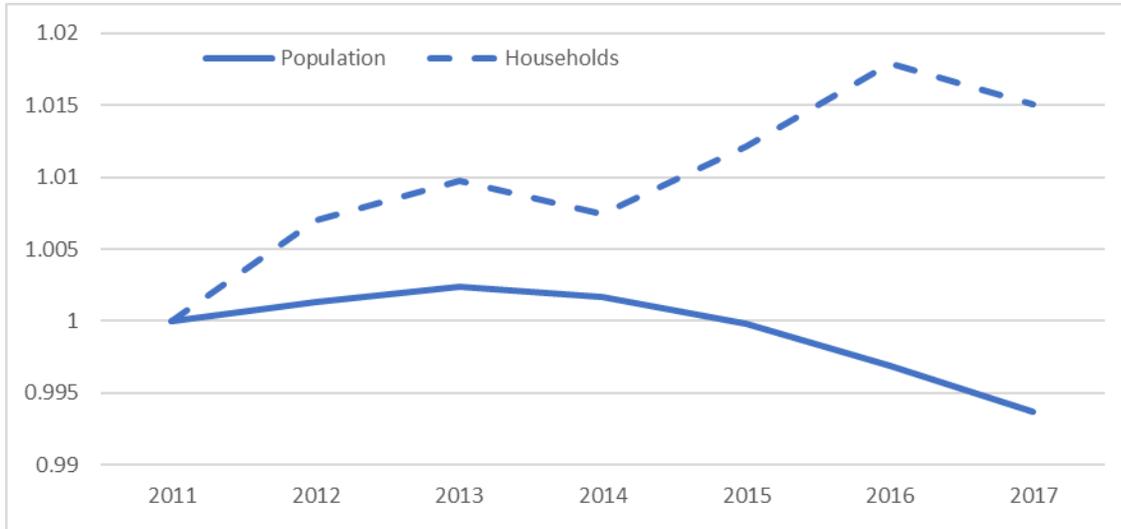


Figure 5. Changes in Illinois population and households, 2011-2017 (2011=1.0)

Source: U.S. Census, American Community Survey

## 7. MEDIAN HOUSEHOLD INCOME AND HOMEOWNERSHIP RATES

**REAL MEDIAN HOUSEHOLD INCOME.** Frequently one of the key determinants of the amount of travel is household income. Consequently, we examine the inflation adjusted real median household income in Illinois and the adjacent states. In short, Illinois' household income has exceeded the national income level for several decades.

It started the millennium with a level well above the national and Indiana levels but only slightly higher than in Wisconsin (Figure 6, see more comparisons in Figure 7). In two year, by 2002, the Illinois income level dropped substantially and found itself behind Wisconsin. By 2007, it regained its lead status but due to the recession incomes began to decline again. It bottomed out in 2011 when the median income was only about \$650 higher than the national figure and again lower than in Wisconsin. Income began to rise and by 2014, it was \$1400 above the national level. In the next year, incomes rose by over \$5,700 and continued to rise to the current level of \$70,145 (in 2018). This places Illinois approximately \$7,000 above the national median as well as the Wisconsin median and \$10,000 above Indiana.

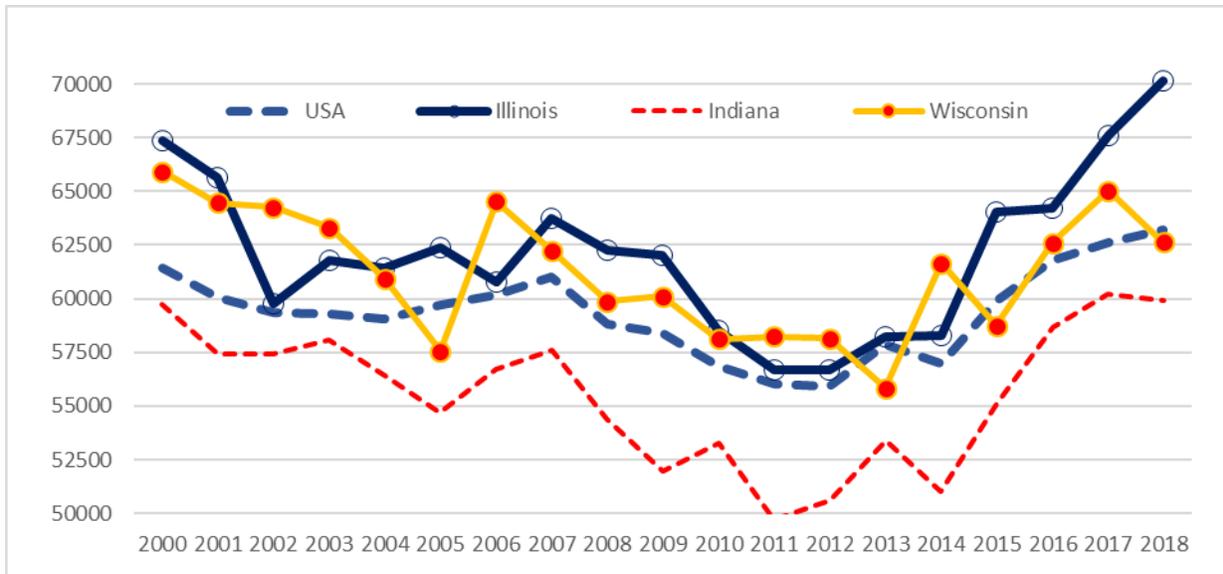


Figure 6. Real median household incomes by state and the United States

Source: <https://fred.stlouisfed.org>

Not only is the Illinois income level higher than the national level it also exceeds all adjacent states. Figure 7 shows that Illinois has been behind Wisconsin in some years but when Illinois registered its greatest gain in 2014, Wisconsin’s income actually retreated. The 2018 difference was over \$7000. That year the difference with Indiana was even greater, exceeding \$10,000.

Illinois’ median household income currently exceeds that of all adjacent states with Iowa being its biggest rival (Figure 7). Its income surpassed that of Illinois in 2012 and remained ahead for a few years. Currently it lags Illinois by only approximately \$1400.

At the other end of the spectrum are Kentucky and Missouri. While Kentucky remained substantially behind Illinois, Missouri has achieved large increases and has recently surpassed both Michigan and Indiana and now has an income level nearly equivalent to that in Wisconsin, just below the national level. Missouri gained on these states in part because Michigan’s median declined by \$6100 during this period, 2000-2018, and Wisconsin’s median declined by \$3300. Indiana’s median increased but by only \$138. This makes Illinois’ increase (2000-2018) of \$2788 even more remarkable, \$1000 more than the national increase.

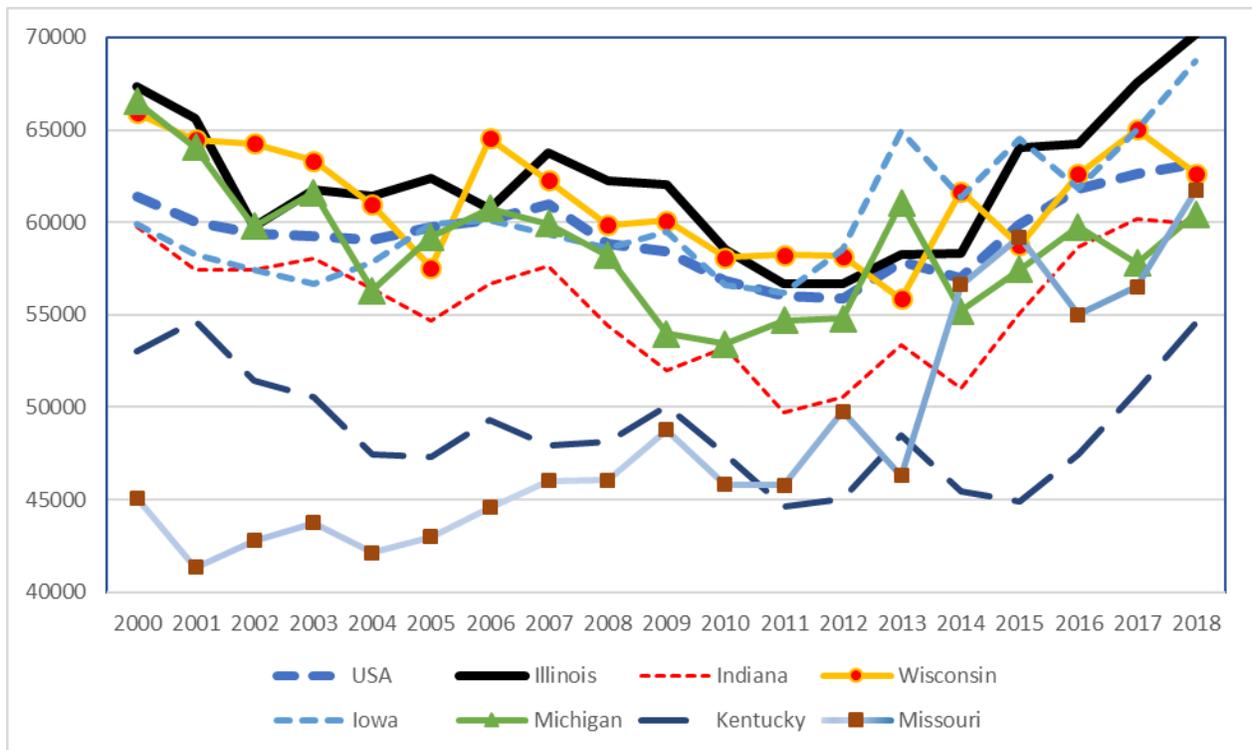


Figure 7. Real median household income for the US and all adjacent states, 2000-2018

Source: <https://fred.stlouisfed.org>

The importance of Figure 7 is that it shows that like many states, the household incomes in Illinois initially declined but in Illinois they have sharply recovered and again outpace the incomes in adjacent states.

Perhaps the most important point is, however, that while the state’s population was declining its median household income was not. To the contrary, it has experienced dramatic income increases since the population began to decline. In 2013 when Illinois’ population began to decline the state’s median household income was only \$380 above the national median. By 2018, it was nearly \$7000 above.

**HOMEOWNERSHIP RATES.** Homeownership is another measure of economic status. While it does not imply residing in a single-family home, (condo ownership is included) in many places it suggests more driving to complete daily activities. Further, in many cases state homeownership rates are dominated by large metro areas. Nationally homeownership rates within metropolitan areas have been ten points lower than outside metropolitan areas.

Table 15 shows homeownership rates for four peer states that have the five largest metropolitan areas in the nation; Texas has two. It is not surprising that New York and

California have the two lowest homeownership rates in the nation. Texas with the fourth and fifth largest metro areas and occasionally ranks low in homeownership.

Illinois is close to the national average. In 2010 it was above the national as well as at the end of 2018 and the beginning of 2019. In the last two quarters it has dipped below but it remains within the margin of error. In essence, it is not statistically different than the national figure of 64.8 percent.

Like the nation Illinois has not returned to the homeownership levels of fifteen years ago. The national level peaked in the second quarter of 2004 at 69.2%, well before the recession that began about five years later. In 2005 each of the four quarters in Illinois registered over 70%.

**Table 15. Homeownership rates by quarter, United States and states with large metropolitan areas**

	2010 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3
US	66.9	64.8	64.2	64.1	64.8
Illinois	68.7	65.8	65.3	63.4	64.4
Texas	64.7	63.3	61.3	62.0	63.0
California	56.2	56.0	54.0	53.2	56.3
New York	54.6	52.3	51.9	51.3	51.6

Comparing metropolitan-level data, in the first quarter of 2019 the Chicago metropolitan area registered the highest homeownership level among the ten largest metropolitan areas at 65.1%. New York and Los Angeles were under 50% while Miami was 62%, higher than Dallas and Houston. Washington and Philadelphia were closest to Chicago. This is a snapshot in time and as can be in Table 15 the rates fluctuate considerably from quarter to quarter. Further, a thorough assessment needs to include a discussion of the margin of error in each statistic.

The Chicago area does not always rank on top among the ten largest metropolitan areas but it has traditionally had affordable home prices combined with high wages. The far-reaching public transportation network and the lack of topographic constraints has allowed the region to grow territorially which has contributed to affordable prices on the fringe and it has relieved price pressures on the existing, historical housing markets.

## 8. TRAVEL METRICS

With the focus on the interrelations between sociodemographic data and the demand for transportation services, an examination of travel demand is appropriate. While there are numerous ways to assess travel activity perhaps the best measure is vehicle miles traveled (VMT). This not only includes personal vehicles but also trucks, i.e., all vehicles on the road. Consequently, it is also a metric that reflects overall economic activity. Finally, we also examine a measure that assess changes in traffic congestion during peak periods.

**ILLINOIS VEHICLE MILES TRAVELED (VMT).** Annual VMT data are available for the state of Illinois and its urban and rural areas. Figure 8 shows how Illinois' statewide VMT initially grew then declined and then began to grow again. The initial steady growth actually started in 1982 with a total of 62,835 million VMT to a high of 109,135 million VMT in 2004. During that period the growth was nearly uniform without the irregularities seen in Figure 8.

It is not surprising that the decline began in 2004. At the end of 2004 the national homeownership rate also peaked at 69.2% and declined steadily until the second quarter of 2016 at 62.9%. The difference is that VMT seems to be returning the 2004 high while homeownership is not.

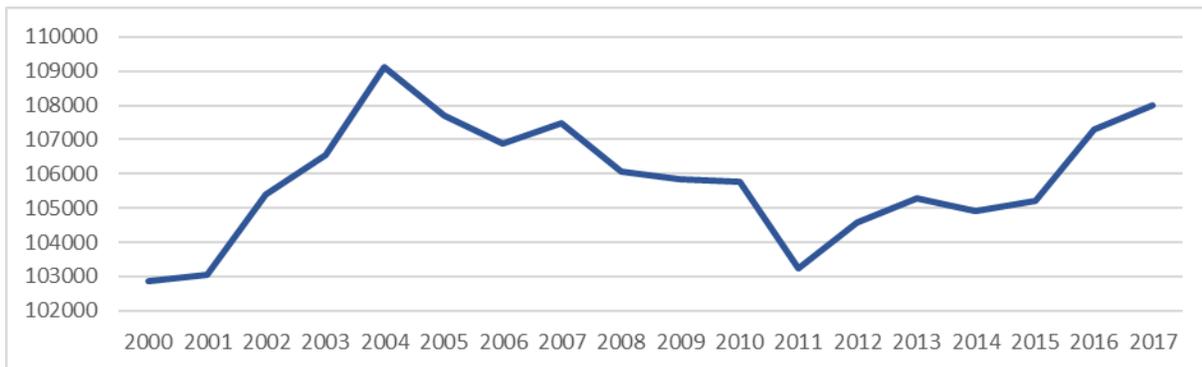


Figure 8. Millions of vehicle miles traveled annually in Illinois, 2000-2017

Source: <https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

Essentially both VMT in Illinois and national homeownership rates were a precursor to the more complete economic downturn felt more widely several years later. Illinois' VMT started to recover much earlier than homeownership rates and it may return much more quickly to pre-recession levels. The 2017 level was 108,011 million VMT compared to 109,135 in 2004, so the level today (end of 2019) may be closer to the 2004 level. Note that the last data are for 2017.

Recalling that Illinois started to lose population in 2013, it appears that the slight VMT decrease from 2013 to 2014 may be synonymous with the circumstances that led to the population decline. If that were true then it is surprising that the visually obvious rise (Figure 8) starting in 2015 corresponded with the large population declines also starting in 2015. The last two years, 2016 and 2017, illustrate a strong negative relationship between population and VMT trends, suggesting that the discussion above, the role of the growth in employment and the number of households, may be playing a much larger role than population loss.

Recently the 2018 data became available but they only show a miniscule change of 0.05% drop in Illinois' total VMT from 2017. This came about by a small decrease in rural VMT offset partially by a smaller urban increase. By comparison the state VMT total also decreased in Indiana which had the largest population increase of the adjacent states during this decade. Taking a slightly longer-term perspective the 2016-2018 VMT change was +0.5% in Illinois,

+2.8% in Wisconsin and a -1.7% in Indiana. It at least demonstrates that year-to-year changes are difficult to explain and longer-term assessment is wise.

**URBAN VMT TRENDS.** An examination of the importance of the Chicago area may provide more insight into why VMT is increasing. Here we only have indirect data on the part of the Chicago Metro area that is within Illinois, i.e., the original six counties plus Kendall, Grundy and DeKalb. Recall that Kane, Will and Kendall, of the nine counties, did not experience year-over-year population declines.

The federal sources used here do not specifically report VMT data for the Chicago area but there are data on urban versus rural VMTs in Illinois. The urban category includes only urbanized areas, which require a central city of at least 50,000 residence and only include areas that have at least 1000 inhabitants per square mile. This quickly becomes very complicated since the Chicago area has several urbanized areas including DeKalb, Round Lake Beach, Kenosha and Chicago. In effect, the urban group does not use counties as metropolitan definitions do and therefore are territorially much more confined areas. There are seventeen urban areas totally or partially in Illinois.

In Illinois just over 76% of the state's 2017 VMT, 108,011, is attributed to urban areas. This is in contrast to the 34.1% of the public *road miles* and the 36.2% of the *lanes miles* that fall within the urban areas. While we hesitate to estimate how much of this in the Chicago area it is reasonable to assume that a high percentage, perhaps well over half of the state's VMT. Recall that the Chicago Metro area accounts for approximately three-quarters of the jobs in Illinois (Table 9).

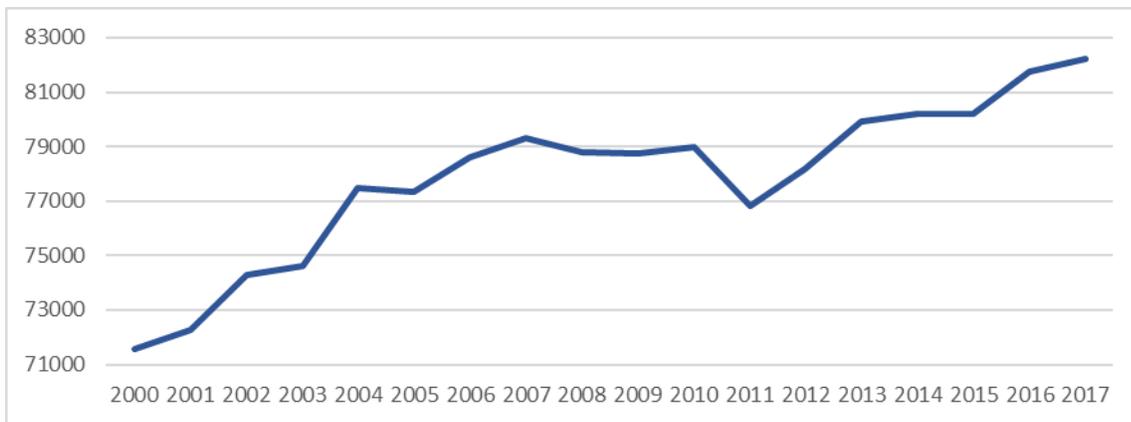


Figure 9. Millions of annual VMT in Illinois urban areas, 2000-2017

Source: <https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

It is clear that the urban trend in VMT (Figure 9) is very different from the statewide trend (Figure 8). The urban miles largely exhibit growth during the decade with the exception of the

2010-2011 drop. Given that the population declines occurred in the last several years, the VMT steady increase since 2011 does not mirror the trend in population change.

**CONGESTION DATA.** Another perspective regarding changes in travel is presented by the Mobility Reports by the Texas A&M Transportation Institute. The Institute analyzes a comprehensive set of data to derive measures of congestion in urban areas. It produces annual reports, most of which are readily available on their web site. The most recent 2019 report provides 2017 data.

Table 16 includes sample congestion metrics for the Chicago urban area, 2010 and 2017. It shows that the total annual delays traveling during peak periods, in hours, has changed very little. The increase from 71 hours to 73 hours is likely not statistically significant but Table 15 also shows that the Chicago urban area had the second highest total delay in 2010 but dropped to seventh highest in 2017. This indicates that the “yearly delay per auto commuter” increased more in other urban areas. The highest 2017 values were in Los Angeles (119 hours), San Francisco (103 hours) and Washington (102 hours).

While the metrics in Table 16 may not be precise and may not illustrate major changes, they are in keeping with the VMT data that shows more traffic over time. There is consistency in the two measures, VMT and congestion changes.

**Table 16. Chicago urban area congestion metrics**

Year	Delay hours	Delay rank	TTI*	TTI rank
2010	71	2	1.24	13
2017	73	10	1.32	16

\*TTI is the ratio of travel time in the peak period to travel time at free-flow conditions. A Travel Time Index (TTI) of 1.30 indicates a 40-minute free-flow trip takes 52 minutes in the peak period.

Sources: <https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-report-2019.pdf>

[https://transops.s3.amazonaws.com/uploaded\\_files/TTI%20Urban%20Mobility%20Report%202011.pdf](https://transops.s3.amazonaws.com/uploaded_files/TTI%20Urban%20Mobility%20Report%202011.pdf)

## 9. SUMMARY

Recently there has been considerable discussion about the decrease in the state’s population. This suggests that there has also been a corresponding decline in other related indicators such as the number of households and jobs. Declines in jobs and households typically contribute to lower demand for transportation demand. However, with the exception of short periods, this is not happening. Quite to the contrary, in Illinois number of jobs and households are on the rise pointing to a healthy economy. Increases in employment and growing number of households lead to the consumption of big-ticket items such as appliances, cars and homes, they counteract a drop in population.

The demand for transportation services are also stimulated by growing median household incomes. In the last four years (2014-2018) the median household income grew by nearly \$12,000 exceeding the income growth in adjacent states and keeping Illinois' income level higher than any of the six adjacent states. In 2018, Illinois' median household income level was \$7000 higher than in Wisconsin and \$10,000 higher than in Indiana.

The rising incomes together with more jobs and more households creates a compounding effect that results in increasing demand for goods and services. These goods and services need to be accessed or delivered resulting in more traffic. Homeownership rates are also related to household incomes and while Illinois is near the national level it is much higher than peer states with large metropolitan areas such as in California and New York, that cause lower levels.

If the labor force participation were to also increase, it would further stimulate the economy. It is at the lowest point in this millennium despite the increase in the number of jobs but nevertheless is higher than the national level. If this statistic were to grow steadily in the near future it would further contribute to more traffic.

Most importantly, all this has translated to rising numbers of miles traveled on the state's highways (VMT) especially in urban areas. It may reflect more commuting to and from work, more shopping trips, more freight being transported or a host of other transportation needs as jobs increase and households are formed. There is also evidence that congestion in the Chicago area is growing.

Perhaps surprising is that the state's VMT started to decline in 2004 as did the national homeownership rate. Both were precursors to the economic downturn that was felt more widely in 2009. While the national homeownership struggles to return to 2004 levels, the state's VMT is now approaching the 2004 level. The national homeownership rate has dropped from 69.2% in 2004 but has recently started to rise to 64.1% in 2019.

Most importantly, the data provided in this report show that several of the state's socioeconomic trends are positive even with the recent decreases in population. There are also national headwinds that may keep all indicators from reaching higher, but over the last several years, there are encouraging statewide trends. For example, nationally job growth rate has declined in recent years. Nationally the largest job increases the previous decade were in 2014 and 2015 but the 2019 increase was the lowest in eight years.

In bullet-point form, these are the points that need attention in assessing the changes in the demand for transportation services that result in more traffic:

1. Since 2010, the state has lost approximately 100,000 residents (2010-2018). Even more since 2018.
2. From 2000-2019 the number of jobs in Illinois has increased by 160,000 and since 2010 increased by nearly 600,000 (after the serious drop during the recession, 2008-2009).

3. Even with declines in population there have been substantial increases in the number of households. Households are primary units that contribute to economic activity.
4. Labor force participation has followed the national trend, decreasing for over ten years but may increase in the coming years.
5. Illinois' real median household incomes have increased by nearly \$12,000 since 2014 and are higher than at any time this millennium and remains higher than in all of the six adjacent states.
6. Illinois homeownership is near the national level but much higher than in peer states where rates are pulled down by the largest metropolitan areas (CA, NY and TX).
7. Vehicle miles traveled by all vehicles in Illinois has increased during the time in which population has been declining.