Chicago Metropolitan Agency for Planning

Chicago Region Socioeconomic Forecast

Final Report

Submitted by:

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1.0 INTRODUCTION

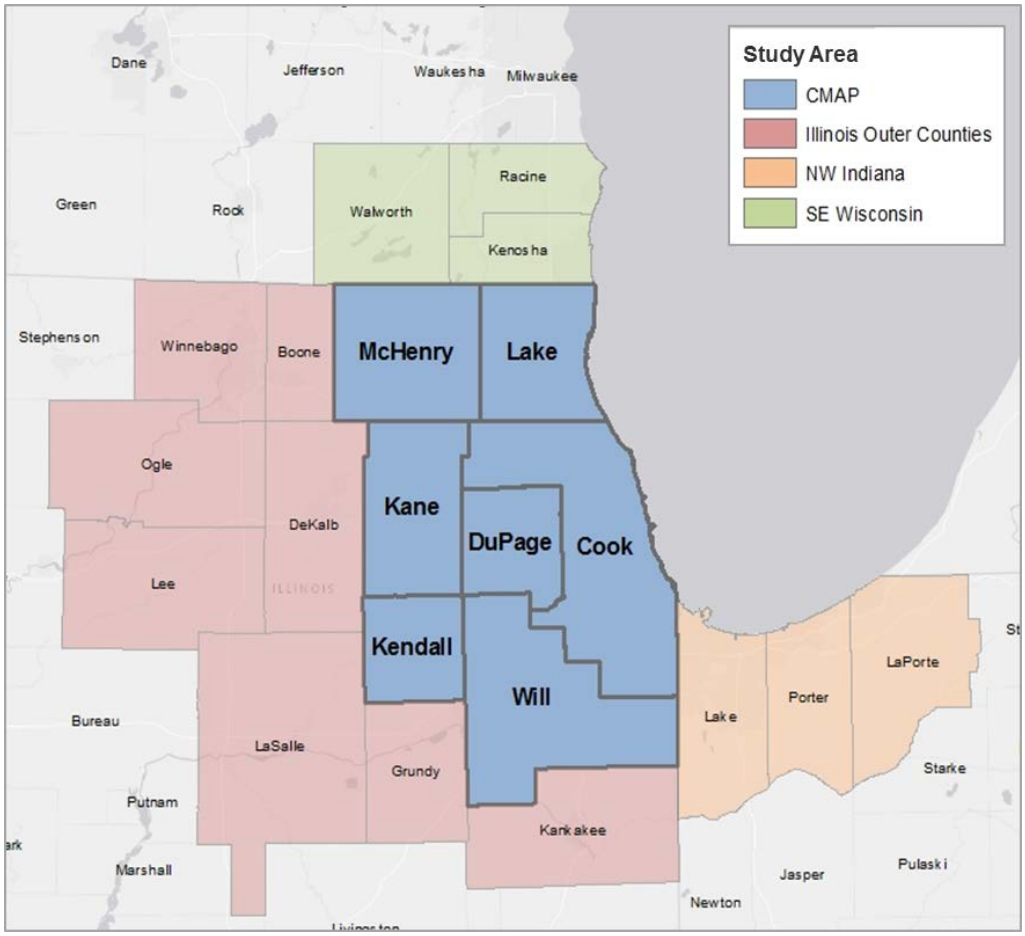
The Chicago Metropolitan Agency for Planning (CMAP) is the official regional planning organization for the northeastern Illinois counties of Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will. The agency developed and currently leads the implementation of metropolitan Chicago's comprehensive regional plan, GO TO 2040, and has commenced the development of its successor ON TO 2050. As CMAP seeks to develop its next long range plan it has retained the Louis Berger Team (Project Team) to produce regional population and employment forecasts for this effort. The forecast's horizon year is 2050 (to correspond with ON TO 2050) and covers a greater 21-county "Modeling Region" (see Table 1-1 and Figure 1-1) to aid in Agency travel model activities.

This document outlines the methodological approach used to develop the regional population and employment projections for the region, and summarizes the resulting forecast scenarios.

TABLE 1.1. SUBREGIONS AND COUNTIES IN CMAP 21-COUNTY MODELING REGION

Subregion	Counties
CMAP	Cook, DuPage, Kane, Kendall, Lake, McHenry, Will
Illinois Outer Counties	Boone, DeKalb, Grundy, Kankakee, La Salle, Lee, Ogle, Winnebago
NW Indiana	Lake, LaPorte, Porter
SE Wisconsin	Kenosha, Racine, Walworth

FIGURE 1-1. MAP OF CMAP 21-COUNTY MODELING REGION



The document is organized in the following manner:

1. Introduction
2. Brief summary of the methodology
3. Employment model: methodology and assumptions
4. Population model: methodology and assumptions
5. Labor force model: methodology and assumptions
6. Household model: methodology and assumptions
7. GO TO 2040 scenarios: methodology and assumptions
8. Reference Forecast results
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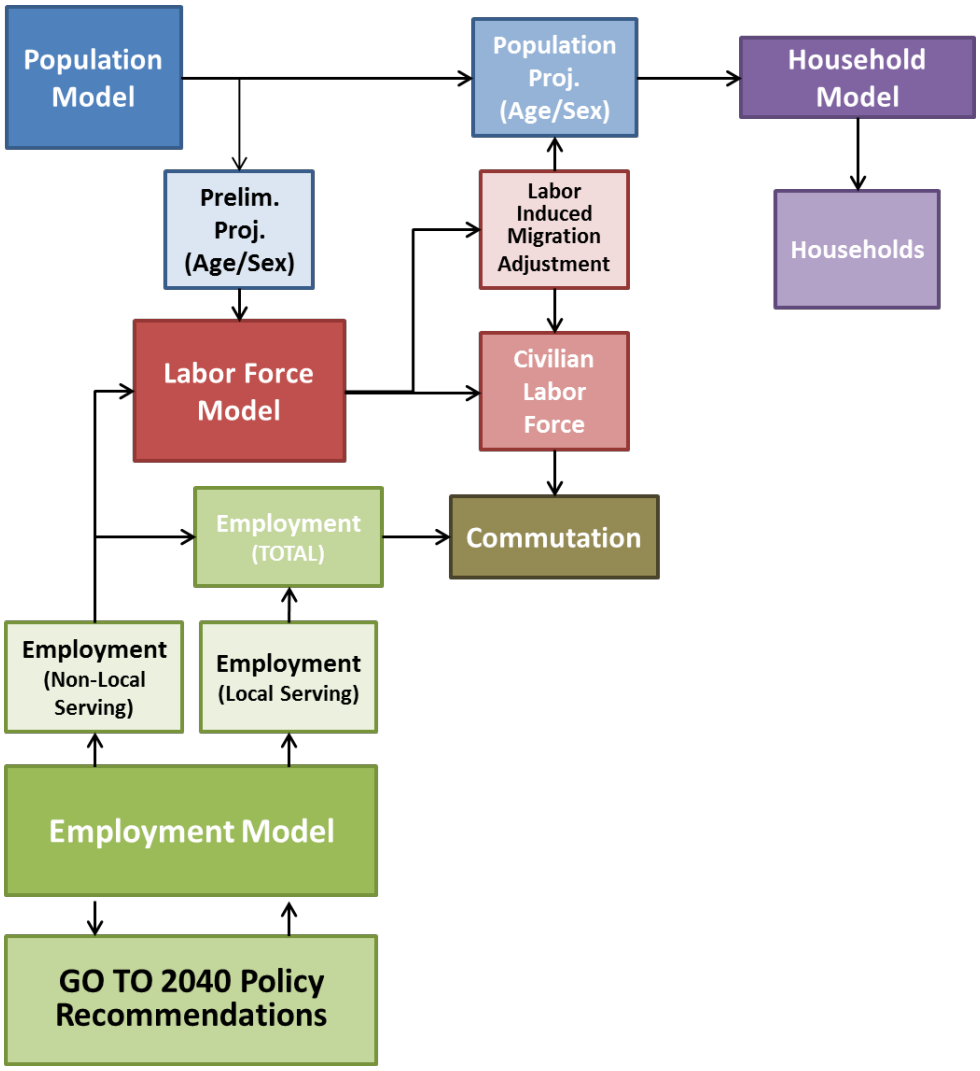
2.0 METHODOLOGY OVERVIEW

Unlike some of the regional agencies that utilized a pure demographic approach to forecasting future population levels, the Project Team employed an economic-demographic method that linked regional population to projected employment growth as shown in the high-level workflow summary presented in Figure 2-1.

FIGURE 2-1. FLOW CHART FOR FORECASTING APPROACH



The proposed population model employs a disaggregated cohort component (CC) forecasting approach that accounts for changes in population through the application of age-specific rates of both natural increase (births and deaths) and net migration. The employment model uses an averaging process that combines independently-developed forecasts from Moody's, and the U.S. Bureau of Labor Statistics (BLS), as well as policy inputs from GO TO 2040. The regional labor demand implied by the employment forecast for non-local serving industries is evaluated against corresponding regional labor supply implied by the preliminary population projections in the labor force model, and any imbalances between the two are addressed through a labor induced migration adjustment to the population forecast. The labor force supply is calculated by applying age-specific labor force participation rates to the population forecast. Household forecasts are ultimately products of the population forecasts and are derived by applying age/sex-specific household formation (headship) rates to the age/sex profiles obtained from the population forecasts. The following sections of this document discuss the details of each forecasting component.

3.0 EMPLOYMENT MODEL

3.1 Benchmark Methodology

The following provides an overview of the employment benchmarking methodology. Benchmarking refers to the process of estimating the most likely historical employment values using publicly available data sources. For reasons including data coverage and the regularity and method of collection, no single data source provides a complete picture of historical employment. Moreover, each data source has its own limitations and is susceptible to bias. We therefore devote considerable attention to establishing a historical employment series that leverages the strengths of each source.

The reason for developing a historical or benchmark series is that forecasts necessarily begin at a historical "jump off point"—in this case, 2014—with employment in future years changing in relation to the last year of the series. Because publicly available employment data are unavailable for some county-industry combinations, the benchmarking process leverages state-level information in order to estimate historical values at the level of geography CMAP requires. The Project Team also developed a national benchmark series for the purpose of deriving a regional forecast using shift-share analysis. Shift-share is a technique used to project future employment by isolating the various factors that explain past trends. The benchmarking process, while seemingly straightforward, involves the following considerations:

1. Preponderance of employment data sources;
2. Multiple components of employment;
3. Difference between place-of-work and place-of-residence employment; and
4. Difference between the number of jobs in a region and the number of workers in a region.

Together, various publicly available data sources provide employment for years 1990-2014 at a county, state, and national level for all 20 two-digit NAICS-classified industry sectors and five industry subsectors chosen for inclusion by CMAP[1].

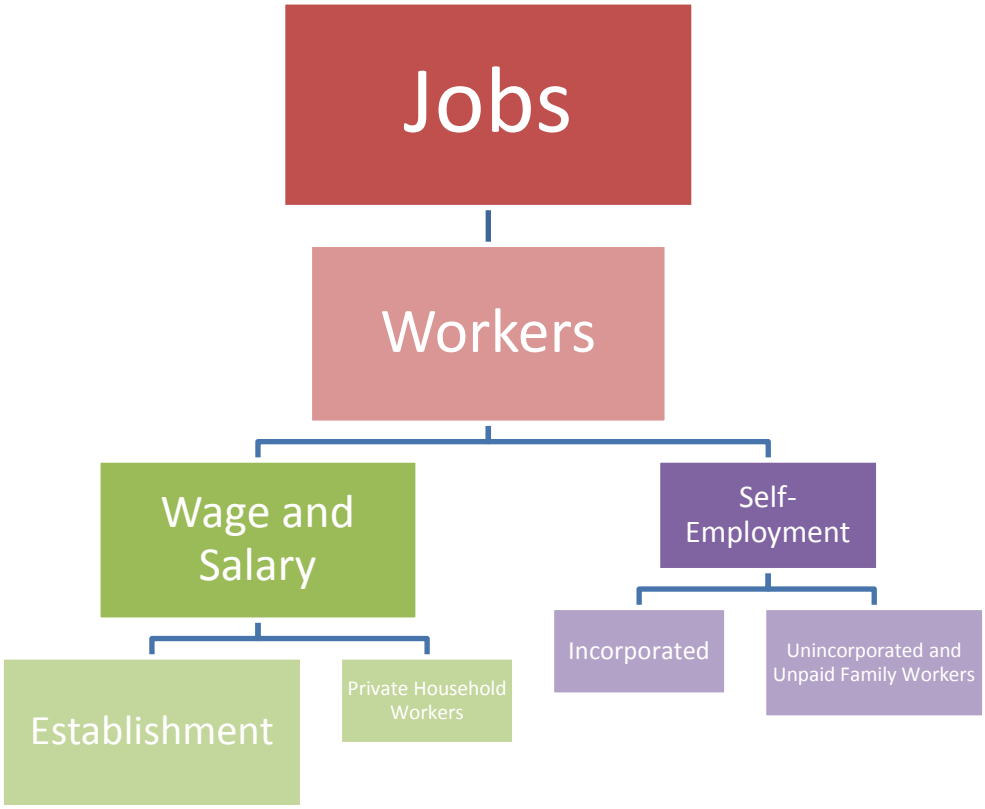
This section presents a discussion of the components of employment, an overview of data sources used, and a detailed description of the actual benchmarking process. The chapter concludes with a section describing next steps in the forecasting process.

3.1.1 Components of Employment

Employment represents the number of jobs in a given geography at a single point in time. The distinction between the number of jobs (total employment) and the number of workers (the workforce) is important. Unemployment exists when members of the workforce want to work but are not employed and multiple jobholding exists when workers hold multiple jobs. Employment statistics reflect the presence of multiple jobholding when the number of jobs exceeds the number of workers, even after accounting for unemployment. Employment forecasts alone (without unemployment rate forecasts) consider filled jobs only, meaning that the number of jobs minus the number of workers equals the number of multiple jobholders. For accounting purposes, there are two categories of employment: wage and salary (or payroll) employment and self-employment (Figure 3-1).

Wage and salary workers are those who are on the payroll of an established employer that may include, in rare cases, private households. This payroll employment typically constitutes a large majority of total employment. Self-employment represents the number of jobs held by proprietors, or people who operate their own incorporated (for tax purposes) or unincorporated business. The self-employed also include unpaid family members. The final benchmark series includes both types of employment; active duty military personnel are excluded.[2]

FIGURE 3-1. COMPONENTS OF EMPLOYMENT AND SOURCES USED



Note: Boxes are not to scale, but are sized according to the relative magnitude of each employment category.

3.1.2 National Employment

The primary source for national payroll employment is the Current Employment Statistics (CES) program, a series published by the U.S. Bureau of Labor Statistics (BLS). Known as the "payroll survey" or "establishment survey," the CES "surveys approximately 146,000 businesses and government agencies [each month], representing approximately 623,000 individual worksites" throughout the U.S.[3]

CES excludes two categories of payroll employment: agricultural workers and private household workers.[4] For this reason, the Project Team used estimates from the Current Population Survey (CPS), another U.S. Census Bureau program that is known as the "household survey," to fill this gap. According to the Census, the CPS sample includes "About 60,000 housing units…drawn from 824 sample areas."[5] Completing the national benchmark series is self-employment data collected through the American Community Survey (ACS), a U.S. Census Bureau program that surveys a small sample of the population every year for detailed socioeconomic characteristics. ACS replaces the decennial census "long form" survey, meaning that

> …in order to deliver more timely information for all the geographic areas served by the decennial long form, the Census Bureau has designed the ACS as a sample survey using a continuous measurement approach to data collection. A sample of 3 million addresses is drawn from the Census Bureau's Master Address File (MAF) each year. For geographic areas with populations larger than 65,000, the sample is sufficient to produce reliable estimates based on a year's worth of responses. However, in order to provide estimates for areas with smaller populations, the sample must be accumulated over a number of years. The Census

> Bureau is producing 3-year estimates for areas down to populations of 20,000 or more and 5-year estimates for all units of census geography."[6]

The national series draws on ACS 1-Year Estimates Table B24070, "Industry By Class of Worker For the Civilian Employed Population 16 Years and Over," for the years 2005-2014. The series is "filled in" from 2004 back to 1990 using year-over-year payroll employment trends by industry. The Project Team therefore holds industry self-employment rates constant from 1990-2004, an assumption that is supported by the fact that the total unincorporated self-employment rate for the nation changed by only 1 percentage point from 1990-2004 and the incorporated self-employment rate by 0.8 percentage points.[7]

CPS also provides self-employment estimates but includes only those self-employed persons whose business is *un*incorporated, effectively resulting in an undercount of the self-employed. According to the BLS *Monthly Labor Review*,[8]

> Beginning [in 1967], a question on business incorporation was added and individuals identified as incorporated self-employed were classified as wage and salary workers. This change in classification had an immediate and marked impact on the measurement of self-employment: with the incorporated self-employed now classified as wage and salary workers instead of being classified as self-employed, a sharp decline was registered in self-employment, from 8.1 million in 1966 to 7.2 million in 1967.

Table 3-1 shows national benchmark employment—a combination of payroll employment and self-employment—for years 2010-2014.

TABLE 3-1. NATIONAL BENCHMARK EMPLOYMENT (THOUSANDS), 2010-2014

Industry Sector	NAICS	2010	2011	2012	2013	2014
Agriculture, Forestry, Fishing and Hunting	11	2,006	2,043	2,036	1,953	2,110
Mining, Quarrying, and Oil and Gas Extraction	21	689	774	835	847	879
Utilities	22	553	553	553	552	571
Construction	23	7,790	7,737	7,870	8,037	8,306
Manufacturing	31-33	12,036	12,211	12,421	12,526	12,691
Wholesale Trade	42	5,831	5,906	6,017	6,072	6,147
Retail Trade	44-45	15,629	15,855	15,985	16,207	16,478
Transportation and Warehousing	48-49	4,727	4,844	4,960	5,026	5,225
Information	51	2,888	2,851	2,862	2,891	2,964
Finance and Insurance	52	6,199	6,194	6,253	6,288	6,341
Real Estate and Rental and Leasing	53	2,595	2,551	2,603	2,640	2,736
Professional and Technical Services	54	9,201	9,433	9,721	10,012	10,251
Management of Companies and Enterprises	55	1,876	1,937	2,027	2,108	2,173
Administrative and Waste Services	56	8,517	8,835	9,143	9,409	9,692
Educational Services	61	3,408	3,510	3,606	3,618	3,721
Health Care and Social Assistance	62	17,992	18,239	18,639	18,990	19,369
Arts, Entertainment, and Recreation	71	2,364	2,376	2,439	2,501	2,592
Accommodation and Food Services	72	11,595	11,866	12,249	12,675	13,062
Other Services except Public Administration	81	7,735	7,847	7,964	7,999	8,318
Government	92	22,490	22,086	21,920	21,853	21,863
Total		**146,121**	**147,648**	**150,102**	**152,202**	**155,489**

Sources: All industry sectors include CES wage and salary employment and ACS self-employment (except Agriculture, which combines CPS wage and salary employment with ACS self-employment, and Government, for which no self-employment exists); Other Services except Public Administration includes CPS private household wage and salary workers
Note: ACS data were retrieved on January 21, 2016, CES on December 15, 2015, and CPS on December 14, 2015.

3.1.3 State Employment

Historical employment for Illinois, Indiana, and Wisconsin includes a combination of American Community Survey, Quarterly Census of Employment and Wages (QCEW), and State and Area Employment (SAE) data. As with the national benchmark series, ACS data provide self-employment by industry. QCEW is the preferred benchmark source for payroll employment because it is virtually free of sampling error. However, the following sectors are not fully covered by QCEW:

- NAICS 48-49: Transportation and Warehousing
- NAICS 52: Finance and Insurance
- NAICS 61: Educational Services
- NAICS 62: Healthcare and Social Assistance
- NAICS 81: Other Services
- NAICS 92: Government

For these sectors the Project Team relied on SAE. Although SAE is subject to sampling error for lightly populated industries, it explicitly estimates employment for sectors not fully covered by QCEW and is

suppression-free.[9] (Employment data are sometimes suppressed in order to protect the confidentiality of large employers, especially when reported for specific industries and low-level geographies.)

SAE is a product of the CES, the same series used to establish national benchmark employment, meaning state-level estimates are consistent with national-level estimates. We use the state series instead of the metro series because state estimates are more robust (i.e., have smaller sampling error).[10] BLS develops and publishes both series. SAE reports nonagricultural payroll employment by state with industry detail. SAE defines employment as

> ...the total number of persons on establishment payrolls employed full or part time who received pay for any part of the pay period which includes the 12th day of the month. Temporary and intermittent employees are included, as are any workers who are on paid sick leave, on paid holiday, or who work during only part of the specified pay period. A striking worker who only works a small portion of the survey period, and is paid, would be included as employed under the CES definitions. Persons on the payroll of more than one establishment are counted in each establishment. Data exclude proprietors, self-employed, unpaid family or volunteer workers, farm workers, and domestic workers. Persons on layoff the entire pay period, on leave without pay, on strike for the entire period or who have not yet reported for work are not counted as employed. Government employment covers only civilian workers.[11]

QCEW is a cooperative effort involving BLS and State Unemployment Insurance agencies. According to BLS, QCEW is a "tabulation of employment and wages of establishments which report to the Unemployment Insurance (UI) programs of the United States. Employment covered by these UI programs represents about 97% of all wage and salary civilian employment in the country."[12] QCEW provides monthly employment and quarterly wage information at a detailed industry level and national, state, and county geographic levels. Estimates represent the number of workers covered by a state UI program who worked during, or received pay for, the pay period including the 12th day of each month.[13]

Excluded from QCEW are members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered under the Railroad Unemployment Insurance Act. For CMAP, coverage of railroad employment is particularly important given the Chicago region's outsize influence in the nation's rail network. As discussed later, coverage of such employees requires using a unique data source. Table 3-2 illustrates the industry sectors for which SAE augments QCEW employment, and shows that estimates for all other sectors are very similar.

TABLE 3-2. COMPARISON OF STATE WAGE AND SALARY EMPLOYMENT BY SOURCE, 2014

Industry Sector	NAICS	Illinois		Indiana		Wisconsin	
		QCEW	SAE	QCEW	SAE	QCEW	SAE
Agriculture, Forestry, Fishing and Hunting	11	17,813	-	14,582	-	25,312	-
Mining, Quarrying, and Oil and Gas Extraction	21	9,882	10,000	6,893	7,100	3,382	4,100
Utilities	22	23,924	23,500	14,134	14,100	10,326	10,400
Construction	23	201,521	201,300	123,046	122,600	102,612	103,700
Manufacturing	31-33	578,843	579,300	507,191	507,100	460,548	464,800
Wholesale Trade	42	299,806	299,200	117,787	117,600	119,388	120,700
Retail Trade	44-45	604,550	604,900	319,045	319,200	300,039	302,800
Transportation and Warehousing	48-49	231,614	247,400	116,772	124,500	87,720	90,800
Information	51	99,127	99,000	35,565	35,600	47,553	47,800
Finance and Insurance	52	278,323	294,500	93,040	95,300	120,616	126,000
Real Estate and Rental and Leasing	53	75,180	74,700	32,894	33,100	24,296	24,500
Professional and Technical Services	54	387,465	386,800	105,197	105,000	100,438	101,200
Management of Companies and Enterprises	55	103,031	103,300	32,123	32,300	58,815	59,400
Administrative and Waste Services	56	425,344	424,900	183,885	183,100	145,720	145,800
Educational Services	61	142,619	154,800	49,715	64,200	34,228	50,100
Health Care and Social Assistance	62	730,169	731,800	371,061	374,000	371,348	379,600
Arts, Entertainment, and Recreation	71	81,744	82,100	40,603	40,300	36,266	36,700
Accommodation and Food Services	72	474,850	474,100	253,146	253,000	225,389	227,200
Other Services, except Public Administration	81	202,764	252,400	83,174	125,700	83,601	138,300
Government	92	751,519	828,500	386,310	426,600	378,622	411,100
Total		**5,720,088**	**5,872,500**	**2,886,163**	**2,980,40**	**2,736,219**	**2,845,00**

Sources: QCEW, SAE

Note: QCEW were retrieved on January 6, 2016 and SAE on December 18, 2015 (after 10:00 AM release)

Because QCEW is a near census, it has the unique advantage of being virtually free of sampling error. However, the state-level QCEW series has three important disadvantages: First, it has a slightly narrower scope than SAE, excluding railroad workers and a portion of agricultural, government, and nonprofit workers. Second, it suppresses data when an employment value could expose a single employer (an issue in sparsely populated geographies and industries). Third, it reports some employment as "unclassifiable" at either the industry or county level.[14]

Developing the self-employment portion of the state benchmark series involves using ACS Table B24070 1-Year Estimates for years 2005-2014. The Project Team again interpolated values backward from 2004 to 1990 using year-over-year payroll employment trends by industry. Table 3-3 shows total state employment values for 2014, the latest benchmark year. The values reflect a combination of payroll employment and self-employment, and information from each of the sources just discussed.

TABLE 3-3. STATE BENCHMARK EMPLOYMENT, 2014

Industry Sector	NAICS	Illinois	Indiana	Wisconsin
Agriculture, Forestry, Fishing and Hunting[1]	11	44,060	29,718	59,923
Mining, Quarrying, and Oil and Gas Extraction[1]	21	10,832	7,011	3,469
Utilities[1]	22	24,770	14,235	10,507
Construction[1]	23	273,684	164,982	139,089
Manufacturing[1]	31-33	596,171	518,914	471,498
Wholesale Trade[1]	42	311,974	122,278	124,336
Retail Trade[1]	44-45	641,272	335,442	318,971
Transportation and Warehousing[2]	48-49	272,354	134,019	101,133
Information[1]	51	105,645	37,910	50,011
Finance and Insurance[2]	52	312,211	101,128	131,908
Real Estate and Rental and Leasing[1]	53	97,927	42,832	32,332
Professional and Technical Services[1]	54	465,367	125,175	123,412
Management of Companies and Enterprises[1]	55	103,031	32,168	58,825
Administrative and Waste Services[1]	56	458,244	203,020	158,451
Educational Services[2]	61	166,469	68,862	54,842
Health Care and Social Assistance[2]	62	785,220	393,000	401,365
Arts, Entertainment, and Recreation[1]	71	95,784	46,872	42,884
Accommodation and Food Services[1]	72	490,527	260,788	235,057
Other Services, except Public Administration[2]	81	314,523	158,075	166,473
Government[2]	92	828,500	426,600	411,100
Total		**6,398,565**	**3,223,029**	**3,095,586**

Sources: ACS self-employment for all sectors except Government, QCEW, SAE

Note: ACS data were retrieved on January 21, 2016, QCEW on January 6, 2016, and SAE on December 18, 2015 (after 10:00 AM release)

[1]QCEW data

[2]SAE data

3.1.4 County Employment

The county benchmark series provides a more complete picture than any single, off-the-shelf county-level employment dataset can provide. This is because the Project Team used the state-level benchmark series to create county allocation shares. County shares were calculated on an industry-by-industry basis by dividing QCEW payroll employment for each county-industry combination into state employment, illustrated as

$$Share_{y,i}^{Cty} = QCEW_{y,i}^{Cty} / Benchmark_{y,i}^{State}$$

y: Year (1990-2014)

i: Industry subscript for each of 20 two-digit NAICS sectors

Cty: County data

$State$: State data

$Benchmark$: Payroll employment series developed using a combination of QCEW and SAE

County QCEW data, which are used to calculate allocation shares, are suppressed for a limited number of county-industry-year combinations.[15] Where there were inter-year breaks in available data, the

Project Team used linear interpolation to fill in the gaps.[16] When data at the beginning or end of a series were unavailable, the Project Team used extrapolation to "pull" values forward (or backward) using year-over-year trends in the rest of the region. Table 3-4 shows benchmark county employment for CMAP counties in 2014 and Table 3-5 shows the same for outer counties.

TABLE 3-4. WAGE AND SALARY EMPLOYMENT BY INDUSTRY FOR CMAP COUNTIES, 2014

Industry Sector	NAICS	Employment
Agriculture, Forestry, Fishing and Hunting	11	2,999
Mining, Quarrying, and Oil and Gas Extraction	21	1,166
Utilities	22	11,223
Construction	23	129,904
Manufacturing	31-33	358,628
Wholesale Trade	42	206,867
Retail Trade	44-45	405,917
Transportation and Warehousing	48-49	179,075
Information	51	73,638
Finance and Insurance	52	215,612
Real Estate and Rental and Leasing	53	58,680
Professional and Technical Services	54	309,719
Management of Companies and Enterprises	55	82,067
Administrative and Waste Services	56	328,982
Educational Services	61	128,997
Health Care and Social Assistance	62	489,048
Arts, Entertainment, and Recreation	71	61,441
Accommodation and Food Services	72	327,267
Other Services, except Public Administration	81	177,262
Government	92	463,274
Total		**4,011,764**

Sources: QCEW, SAE

TABLE 3-5. WAGE AND SALARY EMPLOYMENT BY INDUSTRY FOR OUTER COUNTIES, 2014

Industry Sector	NAICS	Employment
Retail Trade	44-45	94,710
All Other	11-42, 48-49, 51-92	699,073
Total		**793,783**

Sources: ACS, QCEW, SAE

County self-employment values come directly from ACS. Because ACS Table B24070 suppresses some data and is subject to relatively high margins of error at the county level, self-employment estimates come from Table S2407 five-year estimates, a series differentiated by its greater accuracy and industry sectoring scheme. Table S2407 reports place-of-work self-employment by county for 13 distinct industry sectors, the following six of which are combinations of two-digit NAICS categories:

- NAICS 11 and 21: Agriculture, Forestry, Fishing and Hunting, and Mining
- NAICS 22 and 48-49: Transportation and Warehousing, and Utilities

- NAICS 52 and 53: Finance and Insurance, and Real Estate and Rental and Leasing
- NAICS 54, 55, and 56: Professional, Scientific, and Management, Administrative and Waste Management Services
- NAICS 61 and 62: Educational Services, and Health Care and Social Assistance
- NAICS 71 and 72: Arts, Entertainment, and Recreation, and Accommodation and Food Services

Industry self-employment shares derived from ACS Table B24070 1- and 3-year estimates permit the expansion of the combined industry categories listed above into two-digit NAICS. Table B24070 reports self-employment by two-digit NAICS for most county-years.[17] Year-over-year payroll employment trends permit the backward interpolation of county self-employment values from 2008 to 1990.

Notably, ACS assigns NAICS codes based on the type of work an individual performs, whereas QCEW and SAE assign NAICS codes based on the type of work an establishment performs. This is a nonissue for self-employed workers, however, given that the type of work they perform defines the industry in which their establishment is classified. ACS place-of-work employment estimates also have a smaller universe than QCEW and SAE because ACS captures "primary" jobs only. For multiple jobholders, therefore, ACS counts a person's self-defined primary job only—also an assumed nonissue with regard to self-employment.[18]

TABLE 3-6. TOTAL EMPLOYMENT BY COUNTY, 2014

County	State	Wage and Salary	Self-Employment	Total Employment*
CMAP Counties				
Cook	IL	2,525,868	200,255	2,726,125
DuPage	IL	611,802	45,067	656,869
Kane	IL	208,425	18,639	227,064
Kendall	IL	26,854	3,511	30,366
Lake	IL	337,015	32,719	369,733
McHenry	IL	103,288	14,239	117,524
Will	IL	198,512	22,424	220,934
Outer Counties				
Boone	IL	17,240	2,241	19,481
DeKalb	IL	37,985	3,647	41,632
Grundy	IL	18,041	1,739	19,780
Kankakee	IL	44,677	3,580	48,258
LaSalle	IL	44,580	3,742	48,322
Lee	IL	13,440	1,478	14,918
Ogle	IL	16,243	2,380	18,623
Winnebago	IL	129,931	9,798	139,730
Lake	IN	193,189	13,099	206,288
LaPorte	IN	42,204	3,740	45,943
Porter	IN	60,666	5,819	66,485
Kenosha	WI	57,635	5,246	62,881
Racine	WI	76,569	5,977	82,546
Walworth	WI	41,382	5,270	46,653

*Totals may not equal the sum of wage and salary and self-employment due to rounding
Sources: ACS, QCEW, SAE

3.1.5 *Subsector Employment*

The industry subsectors listed below are of special interest to CMAP given the agency's focus on regional industry clusters. Using a unique combination of sources, the Project Team developed CMAP region benchmark employment values for each. Subsectors of special interest were chosen for their size and/or relationship to transportation and manufacturing:

- NAICS 325: Chemicals Manufacturing
- NAICS 332: Fabricated Metal Products Manufacturing
- NAICS 482: Rail Transportation
- NAICS 484: Truck Transportation
- NAICS 488: Support Activities for Transportation
- NAICS 5415: Computer Systems Design Related Services

County employment benchmarking is more complicated for industry subsectors because of data unavailability at the required county-industry level. Similar to the process employed for down-allocating

state control totals to counties, QCEW-derived industry shares form the basis of subsector employment estimates. Estimates for all subsectors except Rail Transportation are a result of calculating subsector-specific employment shares (e.g., Chemical Manufacturing's share of total manufacturing employment) for each county and multiplying those shares by state control totals.

This process excludes Rail Transportation because in QCEW, as in some other publicly available employment data sources, railroad workers go uncounted. Due to legislation following the rail industry's pension crisis during the Great Depression, the Railroad Unemployment Insurance Act (RUIA)—rather than the Federal-State Unemployment Insurance Program—covers railroad workers. The more widely used Unemployment Insurance Program is the source for QCEW employment estimates, resulting in the omission of railroad workers.[19]

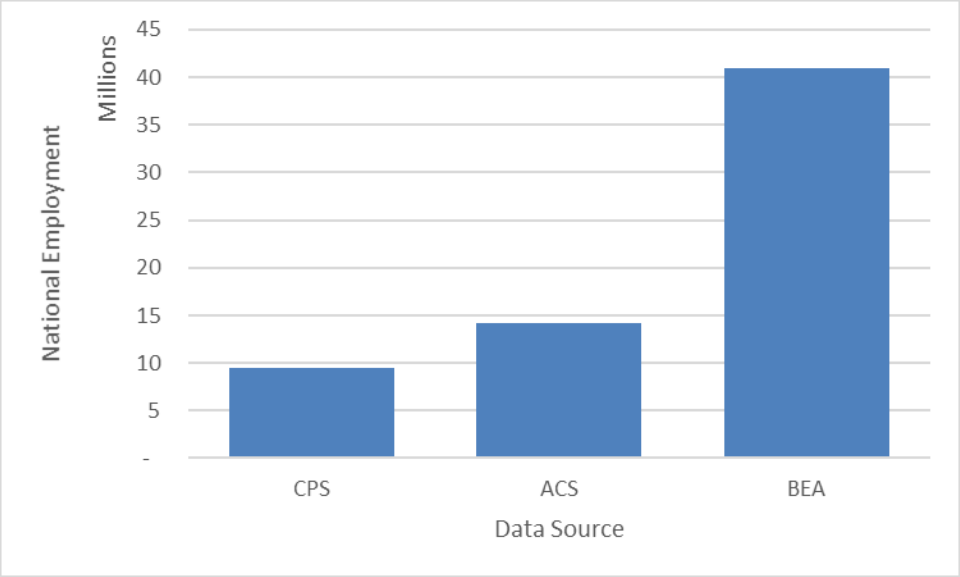
For this reason, the Chicago-based U.S. Railroad Retirement Board (RRB), administrator of RUIA, is the source for county railroad employment estimates. Due to the definition of "employer" in the RUIA, however, employment statistics provided by RRB include workers employed by both the Rail Transportation (NAICS 482) and Business, Professional, Labor, Political, and Similar Organizations (NAICS 8139) industries.[20] Therefore, state-level information on RRB class of employer enables the separation of those who work for railroads from those who work for industries supporting railroads (e.g., railcar pooling) or members of associations.[21] Because RRB provides county employment estimates for years 1998-2013 only, the Project Team used linear extrapolation to pull values forward to 2014 and backward from 1998 to 1990. Additionally, RRB provides class of employer statistics for 2009-2013 only. Therefore total county employment estimates for years 1990-2008 receive the share of actual railroad workers from 2009.

3.1.6 Consideration of Other Data Sources

The benchmark series excludes two additional historical employment estimates, both publicly available: those published by the U.S. Department of Commerce Bureau of Economic Analysis (BEA) and County Business Patterns (CBP), a program of the U.S. Census Bureau. The Project Team excluded BEA data because (a) evidence suggests a significant over count of self-employment and (b) suppression significantly affects estimates for required county-industry combinations prior to 2001. The Project Team excluded CBP data because they are unavailable before 1998, and the fact that employment is measured at a single point in time (March).[22] Single-point estimates instead of 12-month averages are problematic because they do not account for seasonality, a shortcoming that afflicts both payroll employment and self-employment (e.g., salaried carpenters and self-employed carpenters, both of whom may become unemployed during winter months when construction slows).

Regarding BEA's over count limitation, Figure 3-2 illustrates how potentially severe this problem is at a national level. CPS estimates a national self-employment level of 9.4 million in 2014, however, as discussed previously, this concept includes unincorporated self-employed workers only. ACS estimates, which form the basis for the self-employment benchmarking process described above, show a total of 14.2 million for the nation. In comparison, BEA estimates national "proprietor employment" to be 40.9 million.

FIGURE 3-2. NATIONAL SELF-EMPLOYMENT BY SOURCE (MILLIONS), 2014



One possible explanation for BEA's evidenced over count is its use of Internal Revenue Service (IRS) tax return forms as an estimation source for both the number of proprietorships *and* the number of partners. This implies that BEA counts a single owner filing profit or loss statements for multiple Limited Liability Companies—a common practice in some industries—multiple times, for example.

Table 3-7 provides summary characteristics for each employment data source described in previous sections.

TABLE 3-7. SUMMARY OF COMMONLY USED, PUBLICLY AVAILABLE EMPLOYMENT DATA SOURCES

Source	How Used in Benchmark	Collection Method	Concept	Spatial Detail	Industry Detail	Agricultural Workers	Unpaid Family Members or Private HH and Domestic Workers	Proprietors and Self-Employed	Railroad Workers
American Community Survey (ACS)	National, state, and county self-employment	Household survey	Place-of-work	Nation, state, county	Two-digit NAICS	✓	✓	✓	
Bureau of Economic Analysis (BEA)	Not used	UI & RUI filings, Farm Labor Survey, County Business Patterns, ACS, Dept. of Defense, IRS, USDA	Place-of-work and place-of-residence	Nation, state, county	Varies by geography	✓	✓	✓	✓
County Business Patterns (CBP)	Not used	U.S. Census Bureau Business Register (BR)	Place-of-work	Nation, state, county, MSA, ZIP code	Six-digit NAICS	✓			✓
Current Employment Statistics (CES)/State and Area Employment (SAE)	National and state wage and salary	Employer survey	Place-of-work	Nation, state	Two-digit NAICS		✓		✓
Current Population Survey (CPS)	National wage and salary	Household survey	Place-of-residence	Nation	Agricultural, nonagricultural	✓	✓	✓	
Quarterly Census of Employment and Wages (QCEW)	State and county wage and salary	Employer Unemployment Insurance (UI) filings	Place-of-work	Nation, state, county	Six-digit NAICS	✓			
Railroad Retirement Board (RRB)	County wage and salary	Employer Railroad Unemployment Insurance (RUI) filings	Place-of-work	Nation, state, county	NAICS 482, NAICS 8139				✓

3.2 Baseline Forecast Methodology

3.2.1 Use of Third-Party Forecasts

CMAP determined that the methodology used to develop its 2040 forecast overestimated employment. Accordingly, the agency updated its 2040 forecast in 2014 by replacing the model's base year employment estimates with actual values (once they were released).[23] In a methodological departure, the Project Team employed a composite approach that involved averaging two third-party series.[24] County-level payroll employment forecasts developed by Moody's Analytics play a central role in the forecast averaging and benchmark extrapolation processes.[25] Past vintages of Moody's forecasts for the Chicago region are relatively accurate, and CMAP can easily replicate the methodology herein using its existing subscription to DataBuffet. The Project Team also includes national employment projections produced by the U.S. Bureau of Labor Statistics (BLS). The primary reason for doing so is that demographic and workforce trends play a larger role in the BLS methodology and the estimates vary considerably, therefore adding dimension to the forecast average. National employment projected by BLS is allocated to counties using Moody's shares, and Moody's trends are used to interpolate between years for which BLS does not produce estimates and extrapolate beyond the series end year. This means that the ultimate baseline forecast mirrors the industry composition and year-over-year trends found in Moody's, but differs in its control totals. These new control totals are a result of starting with different historical values than Moody's uses (based primarily on QCEW) and hitting future year control totals projected by BLS.

3.2.2 Third-Party Accuracy and Assumptions

The Project Team first standardized third-party employment forecasts from BLS and Moody's Analytics to the national payroll employment benchmark.[26] Standardization simply refers to the process of aligning the first forecast year with the last benchmark year, and then applying future trends (instead of absolute values) to the benchmark series.

BLS produces a national employment projection for a single year, currently 2024. The procedure BLS uses relies on a projection of the future labor supply, a concept grounded in projections produced by the U.S. Census Bureau. Labor supply is a function of the size of the working age population and the labor force participation rate. Currently, BLS "projects a decline in the labor force participation rate over the coming decade," a result of the aging population.[27] Once BLS estimates the labor force participation rate, the agency estimates aggregate economic growth and final demand for various commodities using a national computable general equilibrium (CGE) model. BLS then uses input-output tables to estimate the amount of labor needed to produce pre-determined levels of industry output.[28] BLS makes the following specific assumptions regarding labor force composition from 2014-2024[29]:

- The U.S. economy will maintain full employment, defined as a 5.2 percent unemployment rate.
- Labor productivity will grow 1.8 percent annually.
- The civilian labor force will grow 0.5 percent annually.
- The median age of the labor force will increase from 41.9 to 42.4.
- The youth (ages 16 to 24) labor participation rate will fall from 55 percent to 49.7 percent.

Moody's Analytics develops baseline and alternative employment forecasts by "specifying, estimating, and then solving simultaneously a large set of equations that mirror the structural workings of the U.S.

economy."[30] The model's core equations are a small set of variables that drive the rest of the model. The core variables include final demand, monetary policy, prices, trade, and labor market conditions.[31]

Figure 3-3 charts actual and forecast payroll employment change in the Chicago region from the first quarter of 1995 through the fourth quarter of 2003. The forecast represents Moody's 1994 vintage, meaning that the series is "frozen in time" and not revised. The actual series represents QCEW nonfarm payroll employment. Between 1995-2000 Q3, the forecast varies by a quarterly average of 0.2 percentage points, never deviating by more than 1.3 percentage points. From the end of 2000 onward, however, Moody's fails to correctly forecast a decline in the rate of regional employment growth associated with a national business cycle contraction.[32] Moody's maximum overestimation during this period is 4.1 percentage points. Across the entire period, the average forecast deviation is 0.7 percentage points.

FIGURE 3-3. COMPARISON OF MOODY'S VINTAGE EMPLOYMENT FORECAST AND ACTUAL EMPLOYMENT, 1995-2003

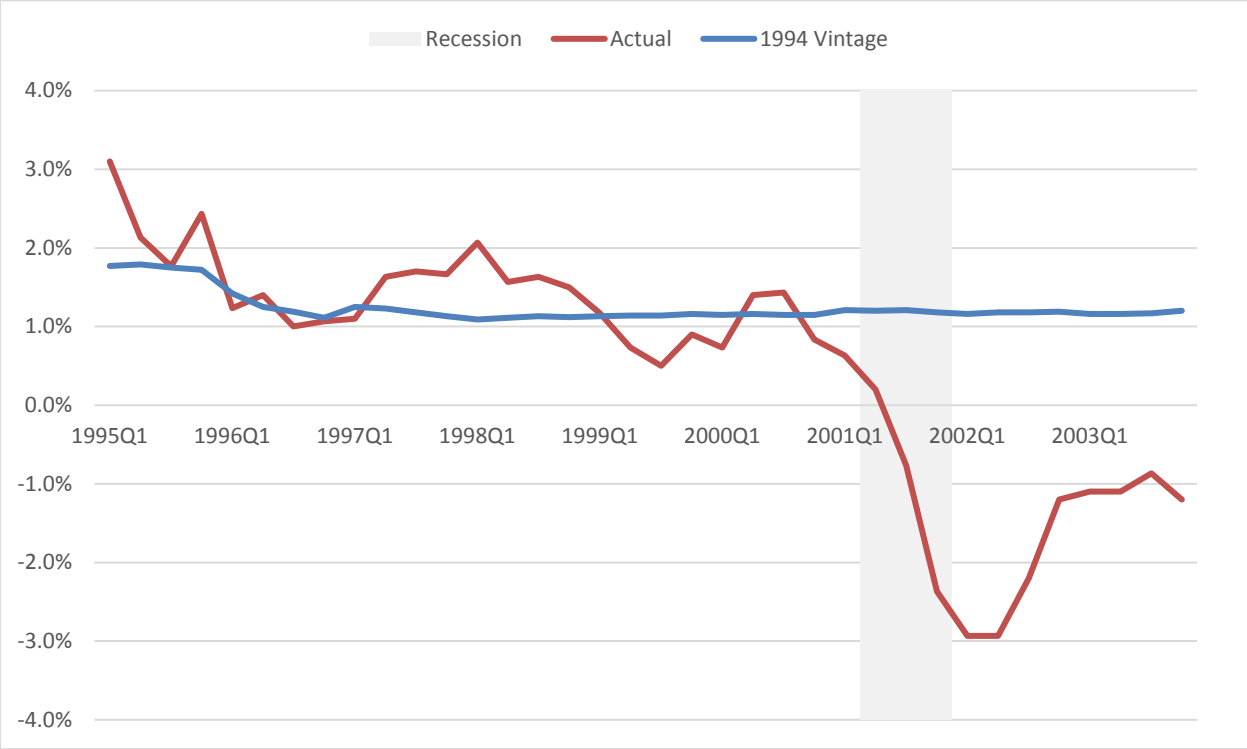
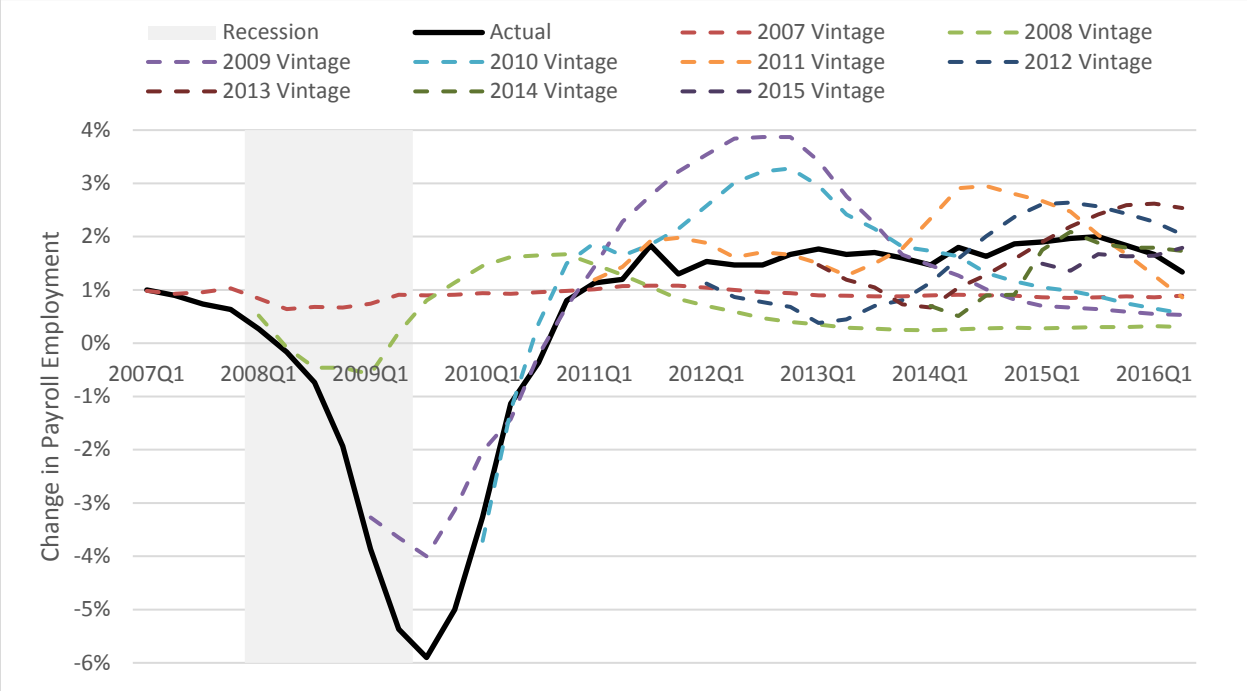


Figure 3-4 provides a similar comparison but for a more recent period (2007-2016 Q2) and with more vintages. While Moody's did not predict the deep decline in employment during the Great Recession, its forecasts have since been relatively accurate. Vintages from 2009 and 2010 overestimated Chicago's rebound while other vintages came within 1 percentage point. In 2016 Q2, the difference between the minimum and maximum forecast values (range) was 2.2 points and the standard deviation was 0.8 points.

FIGURE 3-4. COMPARISON OF MOODY'S VINTAGE EMPLOYMENT FORECASTS AND ACTUAL EMPLOYMENT, 2007-2016



Moody's made a number of important assumptions about the Chicago region when developing the current vintage of its regional employment forecast.[33] According to Moody's, growth in regional Government employment (NAICS 92) is "being driven by local government," with an increase in 2015 representing a recovery from relatively large declines in previous years. Regional employment in Retail Trade (NAICS 44-45) is forecast to decline, and Moody's bases this trend on a continued "structural decline" in the sector that is influenced by labor productivity gains and the growth of e-commerce.

Employment in Transportation and Warehousing (NAICS 48-49) is projected to decline in the Chicago region. Moody's assumes that this sector will experience labor productivity gains through automation, with a short-term countering effect caused by growth in e-commerce (and its associated employment). This trend will likely occur nationwide. Finally, Moody's forecast for growth in Construction (NAICS 23) represents an assumption similar to that made for Government, namely a recovery from "years of lost time." Furthermore, Moody's assumes that there will be increased demand for apartment construction resulting from trends in household formation rates, and continued strength in regional commercial construction.

3.2.3 Forecast Sharing and Standardization

Moody's develops county payroll forecasts using CES and QCEW data such that county forecasts aggregate to state and national benchmarks by industry. The Project Team standardized third-party county forecasts in the same manner as with national forecasts. Because the Moody's forecast series ends in 2045, the Project Team extrapolated (linearly) values to 2050—CMAP's target end year. BLS also requires linear extrapolation and interpolation between years, given that the series provides 10-year forecasts only. For its employment projection, BLS uses a modified two-digit sectoring scheme that combines NAICS 53-56 and NAICS 71-72. We use two-, three-, and four-digit industry shares from Moody's to separate these aggregate sectors into two-digit NAICS and the select subsectors listed previously.

The Project Team used Moody's forecasts to calculate county shares on an industry-by-industry basis for use in the forecast averaging process. This involved dividing standardized payroll employment for each county-industry combination into national employment, illustrated as

$$Share_{y,i}^{Cty} = StdMoodysForecast_{y,i}^{Cty} / StdMoodysForecast_{y,i}^{Nat}$$

y: Year (2015-2050)
i: Industry subscript for each of 20 two-digit NAICS sectors
Cty: County data
Nat: National data
$StdMoodysForecast$: Moody's standardized wage and salary employment forecast

This established Moody's shares for each industry at a county level that were used to share national, standardized BLS- and Moody's-derived employment to counties. This resulted in the following for individual county-industry combinations: (1) a series consisting of national, standardized BLS projections allocated to counties using Moody's county shares ($Share_{y,i}^{Cty}$); (2) a series consisting of national, standardized Moody's forecasts allocated to counties using Moody's county shares; and (3) a combined average of each.

After finalizing the payroll forecast series, the Project Team projected future self-employment by assuming that within each county, historical, industry-specific self-employment rates will remain constant throughout the forecast period. This is consistent with the assumption made during the benchmarking process. While the so-called "gig economy" is re-shaping work arrangements (e.g., Uber drivers), its classification in employment statistics is inconsistent and its impact on future self-employment is unclear.[34]

4.0 POPULATION MODEL

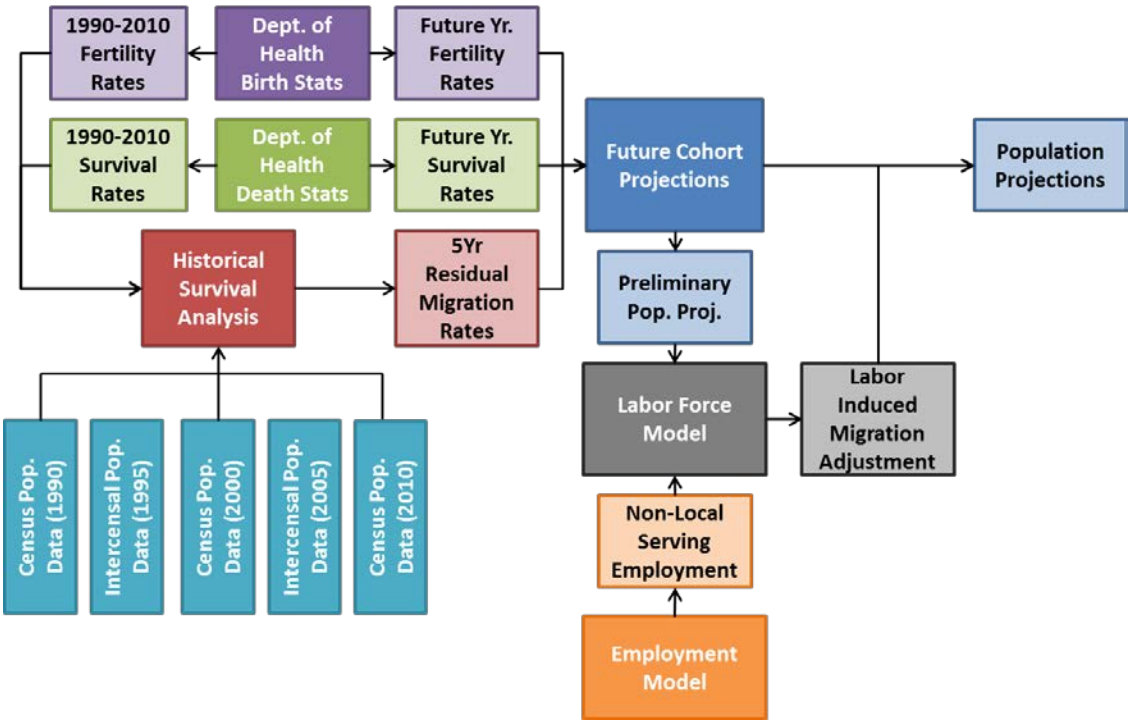
4.1 Overall Population Forecast Methodology

The population model is formed by a disaggregate Cohort Component forecasting method. The components of change of the model are Births, Deaths, and Migration. The CC approach can simply be represented as follows:

Projected Population (P1) = Base Population (Po) + Births – Deaths + Net Migration

The CC method is commonly used in several demographic studies and employs detailed age and sex data. The base year population is stratified by sex into 18 age cohorts. Fertility rates (by age group) are applied to the female population of child bearing age groups to generate an estimate of births during each five-year interval of the 2050 projection horizon. Similarly, survival rates are also applied to each age group to generate estimates of the survived population in each successive five year time increment. The estimated volume of net migration (both in and out migration) is added to the survived population based on historically observed age specific patterns of migration. The remaining part of this section of the document discusses the methodology and assumptions applied to the forecast for each component of the cohort forecasting process outlined above. Figure 4-1 below represents a summary overview of the structure of this cohort component model that shows the links to both the Employment and Labor Force models.

FIGURE 4-1. POPULATION PROJECTION METHODOLOGY



4.2 Births & Fertility Rates

4.2.1 Methodology

The fertility rates applied to the 21-County region model were estimated using birth data compiled from the three State Departments of Health in Illinois, Indiana and Wisconsin, while population data was obtained from the decennial census (1990,2000, and 2010) as well as intercensal estimates spanning the three decennial census counts. Whereas other models estimate Age Specific Fertility Rates (ASFR) using the total female population associated with a given age group, the population model estimated and applied ASFRs on the female household population - recognizing the fact that fertility patterns of population in group quarters are noticeably different than those of the general population.

The number of births for each county in the forecast region was calculated based on projected age-specific fertility rates. ASFRs are calculated by taking the ratio of live births born to women of a certain age group divided by the female household population in the age group, and are expressed as the number of births per 1,000 females (Equation 4-1).

Equation 4-1

$$ {}_nASFR_x = \frac{{}_nB_x}{{}_nPF_x} $$

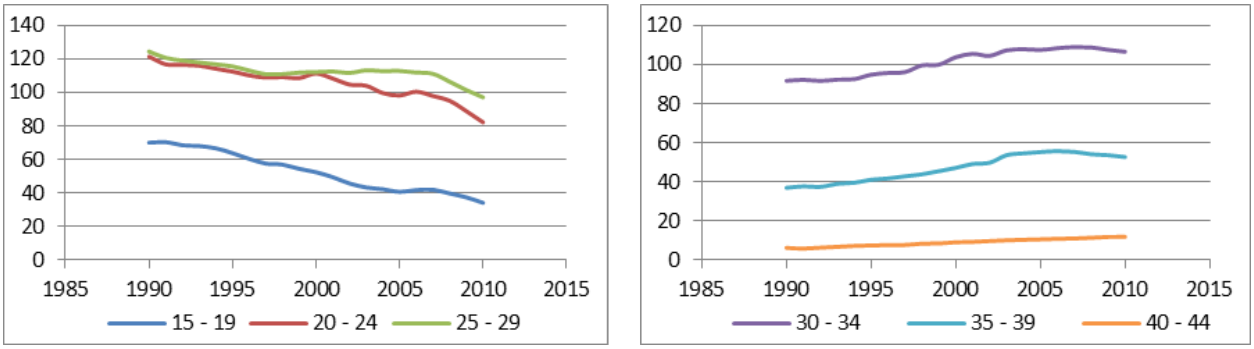
Where:

x = the lowest age in the interval
n = number of years in the age interval
${}_nASFR_x$ = age specific fertility rate

$_nB_x$ = number of births occurring to persons aged x to n + x
$_nPF_x$ = female household population aged x to n + x

Figure 4-2 show historic fertility rates (1990 – 2010) for women of child bearing age for the entire forecast region. The figure shows that fertility rates for women under 30 years of age have been declining – most noticeably for women aged 15-19 and to a lesser extent women aged 20-24. Conversely, the fertility rates for women 30 and over have increased since 1990 but appear to have plateaued in towards 2010. These general trends reflect similar patterns of change observed across the entire country. The sharp drop in fertility rates of young women 15-19 may be driven by policies targeting teen pregnancies while the increasing rates of fertility in women over 30 may be driven by broader societal changes that have seen greater labor force participation of women.

FIGURE 4-2. FORECAST REGION HISTORIC FERTILITY RATES



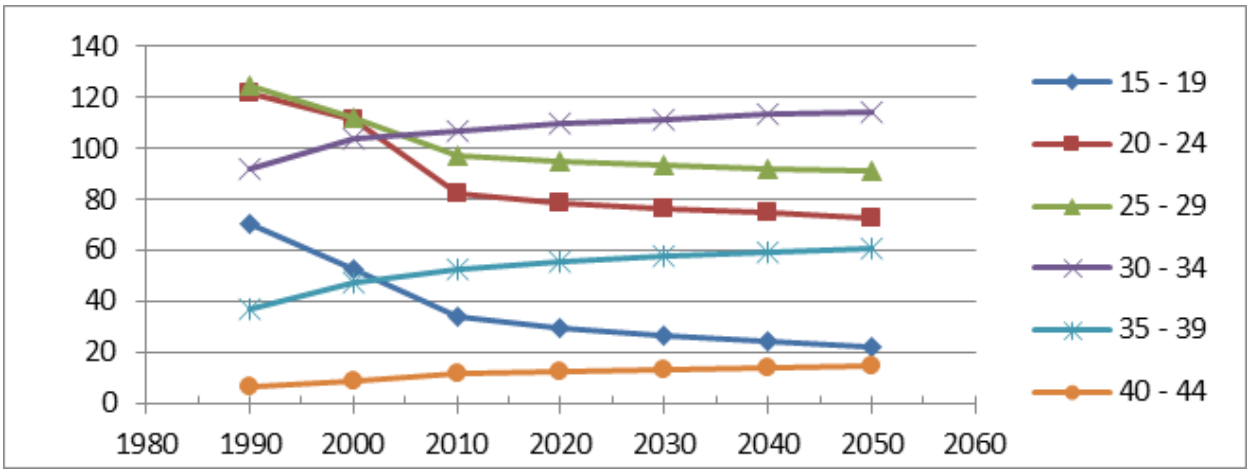
Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census

4.2.2 Assumptions

Two approaches were considered in addressing future ASFR assumptions; holding the most recent rates constant throughout the forecast, and extrapolation of recent historical trends into the future. A justification for holding rates constant is that the direction and magnitude of the future changes cannot be predicted accurately or reliably.[35] On the other hand however, the strength and coherence of recent trends point clearly to directional change that is coherent and systematic enough to be considered for extrapolation into the future. Similar extrapolation approaches have previously been applied in other forecasts with adjustments made to account for gradual slowing in observed rates of change[36]. This type of approach was considered and tested in model development and application for the CMAP forecast.

Based on these trends, the Louis Berger team elected to allow the trends for individual county age-specific fertility rates to continue into the future. However, the Team applied a logarithmic trend projection to moderate the fertility rate changes over the 2050 forecast horizon as shown by the Forecast Region example in Figure 4-3. This logarithmic projection addressed the uncertainty of future rates by allowing some portion of recent trends to continue, while recognizing that the recent changes are likely to slow down in the future; it also ensured that no negative or illogical values were obtained by straight line extrapolation of recent changes.

FIGURE 4-3. FORECAST REGION AGE-SPECIFIC FERTILITY RATE FORECASTS



Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census

4.3 Deaths & Survival Rates

4.3.1 Methodology

Data on deaths were obtained from the three State Departments of Health in Illinois, Indiana and Wisconsin, while population data by age and gender was obtained from the decennial census. Age specific death rates (ASDRs) were estimated for 1990, 2000, and 2010 and subsequently used as the basis for life tables that calculated age specific survival rates.

Age-specific survival rates representing the probability of surviving from one age cohort to the next were calculated using ASDRs for each county. ASDRs represents the proportion of persons in each age group that die in a given year, and are simply calculated as the ratio of the number of deaths observed in that age group divided by the total corresponding population as shown in Equation 4-2.

Equation 4-2

$$ {}_nM_x = \frac{{}_nD_x}{{}_nP_x} $$

Where:

x = the lowest age in the interval
n = number of years in the age interval
${}_nM_x$ = age specific death rate (ASDR)
${}_nD_x$ = number of deaths occurring to persons aged x to n + x
${}_nP_x$ = number of persons aged x to n + x

The ASDRs were used to generate life tables that subsequently helped calculate survival rates by age; these rates represent the percentage of persons who are likely to survive to the next five year time point. The life table is an elegant way of representing the mortality and survival experiences of a cohort of individuals. Starting with ASDRs, life tables are constructed by organizing various elements of the life expectancy and survival rate calculation in the following columns:

Proportion dying (${}_nq_x$). Proportion of persons alive at the beginning of the age interval but dying during the age interval. There is a subtle difference between the ${}_nq_x$ and ${}_nM_x$ measures; the former represent the probability of dying for a given cohort, while the latter represents the annual

mortality rate. Because the denominator in the ${}_nM_x$ calculation does not reflect the population at the beginning of the interval, an adjustment must be made to account deaths occurring during the year. Given this adjustment, it can be shown that ${}_nq_x$ is generally calculated as shown in Equation 4-3:

Equation 4-3

$$ {}_nq_x = \frac{n({}_nM_x)}{1 + ({}_nM_x)(n)(1 - {}_na_x)} $$

Where ${}_na_x$ is a separation factor that represents the proportion of the interval lived by those who die and is typically held at a value 0.5 for most age groups. Equation 4-3 can also be alternatively expressed as shown below in Equation 4-4.

Equation 4-4

$$ {}_nq_x = \frac{2n \times {}_nM_x}{2+(n){}_nM_x} $$

Number surviving (l_x). This is the number of persons who survive to the exact age x out of a beginning cohort of 100,000. Starting with an initial theoretic population of 100,000 at age 0 (i.e. $l_0 = 100{,}000$), l_x in all subsequent age groups is calculated by going back to the previous age group and subtracting the number of people dying (${}_nd_x$) from the l_x.

Number dying (${}_nd_x$). This is the number of deaths of people dying between the interval defined by x and x + n. This is calculated in the table by multiplying l_x by ${}_nq_x$ as described above.

Person years lived during an age interval (${}_nL_x$). This represents the sum total of the person years lived between age x and x + n. Given that deaths are assumed to occur evenly during the interval, this value is calculated as:

Equation 4-5

$$ {}_nL_x = n \times \frac{(l_x + l_{x+n})}{2} $$

Because there is no l_{x+n} that can be used to calculate the nLx measure associated with the terminal age interval (85+), an approximation of ${}_nL_x$ measure is calculated by dividing l_x or ${}_nd_x$ (which are equivalent at the last open age group) by ${}_nM_x$.

Total person-years yet to be lived (T_x). This represents the sum total of person years to be lived in from the beginning of age interval x and x + n, and all subsequent intervals thereafter. This is calculated in the life table by summing the ${}_nL_x$ measures starting with the oldest open age group and working back to the first age group.

Life expectancy (e_x). The average number of years of life remaining to persons alive at the beginning of the age interval x. This is calculated by dividing T_x by l_x.

Age-specific survival rate (${}_nS_x$). The probability of surviving from one age group to the next is one of the primary outputs of the life table calculations described above. This measure is typically calculated for all age cohorts using the general formula presented in Equation 4-6.

Equation 4-6

$$ {}_nS_x = \frac{{}_nL_{x+n}}{{}_nL_x} $$

Figure 4-4 provides a graphical example of some of the elements from Equation 4-6 used to calculate survival rates.

The only exceptions to the use of Equation 4-6 is the calculation of the terminal age interval where once again there is no ${}_nL_{x+n}$ value that can be used in calculation, a second exception is the calculation of survival rates for the first two age cohorts (i.e birth to 0-4, and 0-4 to 5-9). In the case of the last open ended cohort, five year survival rates are estimated by taking the ratio of the T_x values associated with the two oldest age groups (for instance: ${}_5S_{80} = T_{85}/T_{80}$).

The treatment of the first two age intervals simply requires some modifications to account for the different size of the age interval. The survival rate of births into the 0-4 age group is calculated using Equation 4-7 (using a denominator that assumes a beginning cohort of 100,000 multiplied by five), while the five year survival rate of the 0-4 age group is calculated using Equation 4-8.

Equation 4-7

$$ {}_5S_{birth} = \frac{{}_1L_0 + {}_4L_1}{500{,}000} $$

Equation 4-8

$$ {}_5S_0 = \frac{{}_5L_5}{{}_1L_0 + {}_4L_1} $$

FIGURE 4-4. CONCEPTUAL REPRESENTATION OF LIFE TABLE COMPONENTS IN SURVIVAL RATE CALCULATION

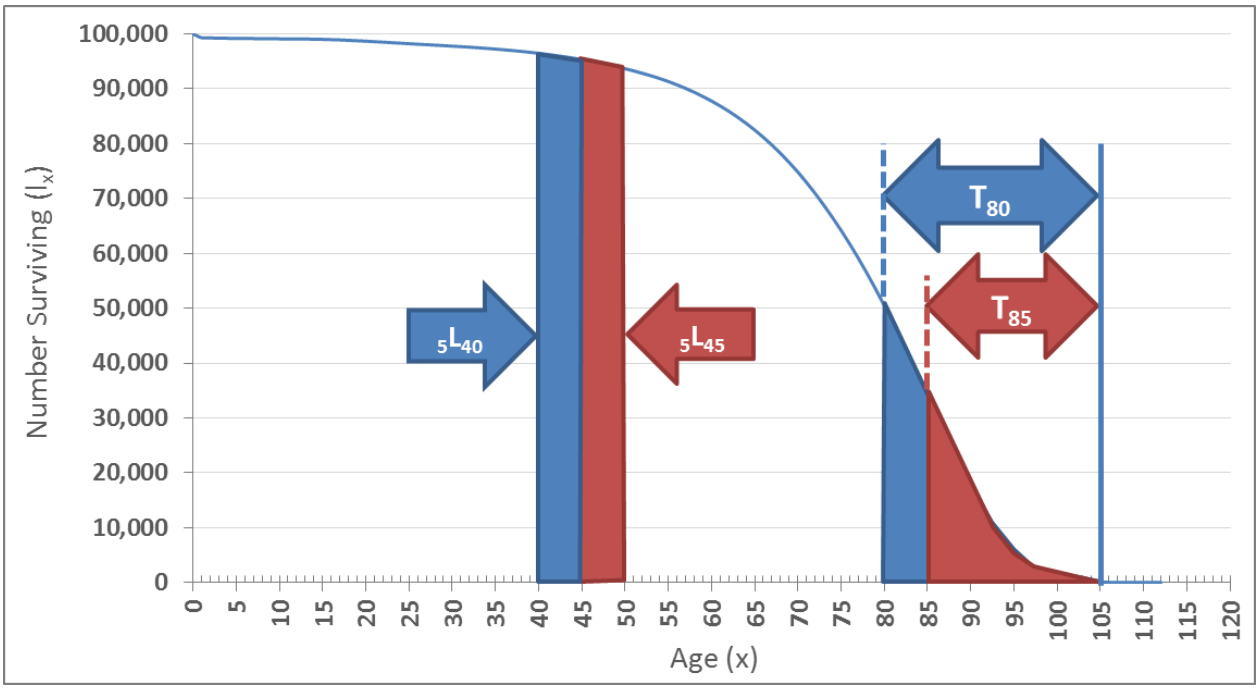


Table 4-1 an example of the life table construction for Cook County (male) based on the procedures briefly described in the prior section and the subsequent calculation corresponding age-specific survival rates. The conversion of ASDRs (${}_nM_x$ in the table) to corresponding probabilities of dying (${}_nq_x$ in the table) is performed using Equation 4-4 as previously described for all age groups with the exception of the first group where the probability of dying was calculated simply as the infant mortality rate (${}_nD_x$ divided by the number of live births).

TABLE 4-1. 2010 LIFE TABLE & SURVIVAL RATE CALCULATION EXAMPLE (COOK COUNTY, MALE)

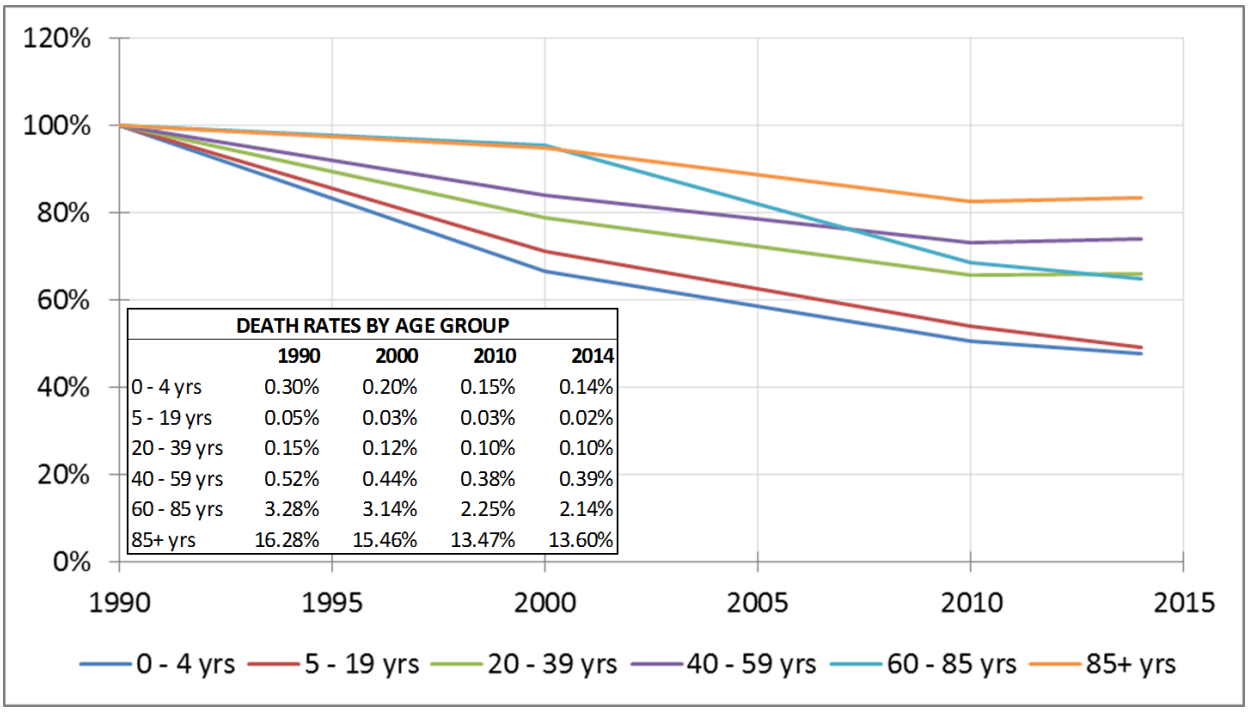
x to x+n	x	n	$_nP_x$	$_nD_x$	$_nM_x$	$_nq_x$	l_x	$_nd_x$	$_nL_x$	T_x	e_x		Live Births		5 Yr Survival Rate (85+)	
0 to 1	0	1	35,281	301	0.0085	0.0081	100,000	808	99,596	7,605,963	76.06		37,250		Births	0.9924
1 to 4	1	4	138,872	30	0.0002	0.0009	99,192	86	396,596	7,506,367	75.68				0 - 4	0.9983
5 to 9	5	5	168,600	24	0.0001	0.0007	99,106	71	495,355	7,109,771	71.74				5 - 9	0.9993
10 to 14	10	5	172,848	25	0.0001	0.0007	99,036	72	495,000	6,614,416	66.79				10 - 14	0.9974
15 to 19	15	5	183,431	163	0.0009	0.0044	98,964	439	493,724	6,119,416	61.83				15 - 19	0.9943
20 to 24	20	5	184,841	262	0.0014	0.0071	98,525	696	490,888	5,625,692	57.10				20 - 24	0.9931
25 to 29	25	5	214,382	293	0.0014	0.0068	97,830	666	487,483	5,134,804	52.49				25 - 29	0.9929
30 to 34	30	5	197,362	296	0.0015	0.0075	97,163	726	484,002	4,647,322	47.83				30 - 34	0.9919
35 to 39	35	5	179,623	312	0.0017	0.0086	96,437	834	480,103	4,163,319	43.17				35 - 39	0.9896
40 to 44	40	5	172,025	423	0.0025	0.0122	95,604	1,168	475,097	3,683,217	38.53				40 - 44	0.9835
45 to 49	45	5	174,306	732	0.0042	0.0208	94,435	1,962	467,271	3,208,120	33.97				45 - 49	0.9741
50 to 54	50	5	172,628	1090	0.0063	0.0311	92,473	2,874	455,180	2,740,849	29.64				50 - 54	0.9605
55 to 59	55	5	148,009	1461	0.0099	0.0482	89,599	4,316	437,206	2,285,669	25.51				55 - 59	0.9437
60 to 64	60	5	119,841	1604	0.0134	0.0648	85,283	5,523	412,610	1,848,463	21.67				60 - 64	0.9226
65 to 69	65	5	82,698	1575	0.0190	0.0909	79,761	7,250	380,678	1,435,853	18.00				65 - 69	0.8858
70 to 74	70	5	60,220	1811	0.0301	0.1399	72,511	10,141	337,201	1,055,175	14.55				70 - 74	0.8334
75 to 79	75	5	46,108	2022	0.0439	0.1976	62,370	12,325	281,038	717,973	11.51				75 -79	0.7571
80 to 84	80	5	35,103	2471	0.0704	0.2993	50,045	14,978	212,781	436,935	8.73				80 - 84	0.6394
85 to 89	85	5	19,859	2294	0.1155	0.4482	35,067	15,715	136,047	224,154	6.39				85 +	0.3931
90 to 94	90	5	6,683	1324	0.1981	0.6625	19,352	12,820	64,709	88,107	4.55					
95+	95	5	1,594	445	0.2792	1.0000	6,532	6,532	23,397	23,397	3.58					

Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census

4.3.2 Assumptions

Figure 4-5 shows both death rates and the relative change in death rates for the Forecast Region since 1990. The figure clearly indicates that mortality rates in the region have fallen since 1990. A review of the survival rates calculated for 1990, 2000 and 2010 show an increased likelihood of survival for each age cohort over that time period. Further survival rate improvements are anticipated during the forecasting horizon due to continued advancements in the factors driving positive historical changes (advances in medical science, motor vehicle safety, etc.)[37]. Figure 4-6 shows how the falling death rates translate into survival rate improvements for both males and females at each age group.

FIGURE 4-5. RELATIVE CHANGE IN DEATH RATES 1990-2014 (1990 = 100%)

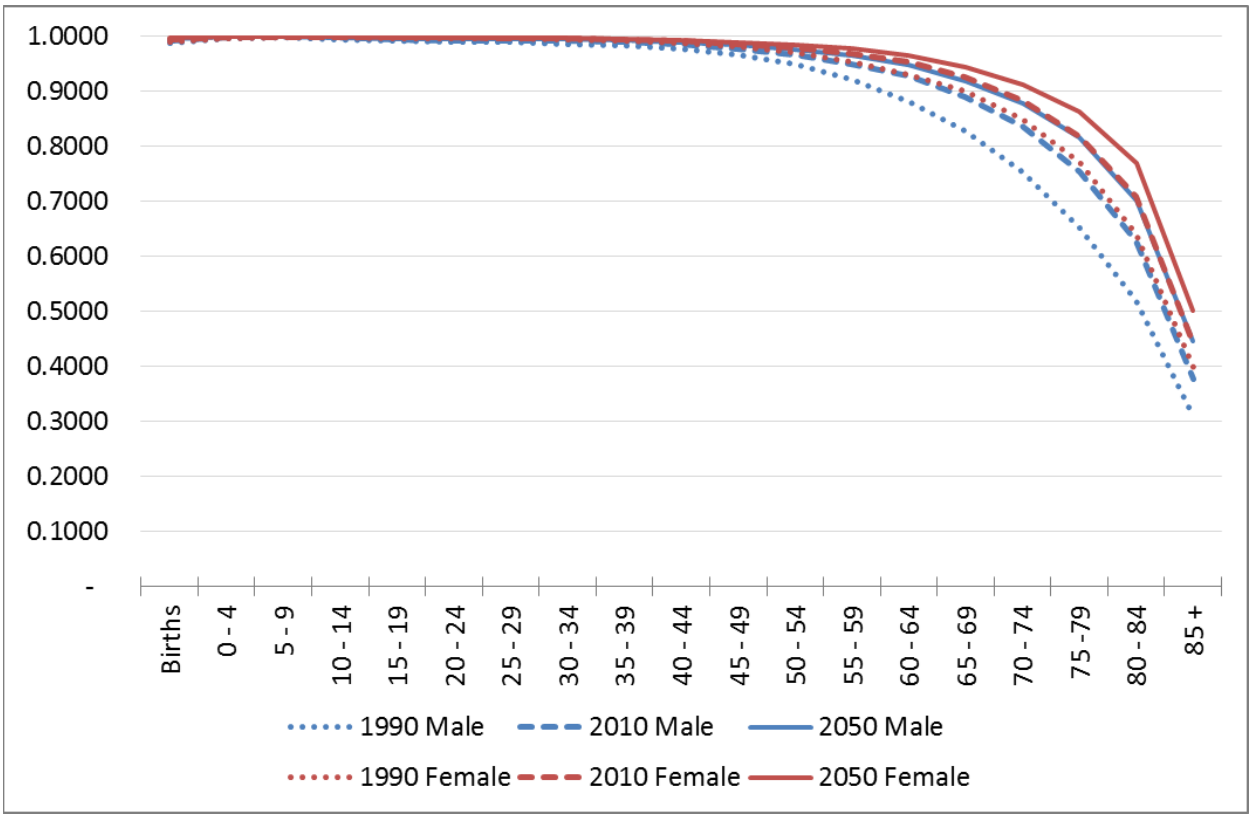


DEATH RATES BY AGE GROUP

	1990	2000	2010	2014
0 - 4 yrs	0.30%	0.20%	0.15%	0.14%
5 - 19 yrs	0.05%	0.03%	0.03%	0.02%
20 - 39 yrs	0.15%	0.12%	0.10%	0.10%
40 - 59 yrs	0.52%	0.44%	0.38%	0.39%
60 - 85 yrs	3.28%	3.14%	2.25%	2.14%
85+ yrs	16.28%	15.46%	13.47%	13.60%

Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census

FIGURE 4-6. FORECAST REGION SURVIVAL RATES



Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census; SSA

Because these trends are likely to continue in the future as advancements in health and medicine, changes in lifestyles, and higher living standards continue to improve, the Louis Berger Team accounted for these improvements in the future survival rates applied to the forecast. Survival rate improvements implied by the Social Security Administration (SSA) life tables between 2010 and 2050, were applied to the 2010 survival rates for each individual county. Adjustments to the 2010 data pivoted off the projected age-specific changes anticipated by the SSA Life Tables between 2010 and 2050. Since SSA life tables are on an annual basis, survival rate estimates for 2010 and 2050 were calculated by summing the annual years lived within each age group interval and applying the summed values into Equation 4-6. The resulting survival ratio estimates are presented in Table 4-2.

The resulting changes in estimated survival rates between 2010 and 2050 are provided in the table. However, to ensure that the application of SSA growth rates did not result in illogical values (survival rates greater than one) when applied to each of the counties, the 'percent closed' was also calculated from the SSA data.

The 'percent closed' metric is intended to reflect the reduction in difference between perfect survival odds, and the corresponding actual survival rate for age group. For instance, the 5-year survival rate for 75-79 year old males improves from 0.706748 in 2010 to 0.790670 in 2050. Therefore the difference between perfect survival in 2010 (one minus 0.706748) narrows from 0.293 to 0.219; a 25 percent reduction. The age/sex-specific 'percent closed' improvements between 2010 and 2050 were then applied to the survival rates of each individual county, with the appropriate interpolation for each time

interval within the forty year forecast horizon. The year 2013 was used as the interpolation mid-point for the 2010-2015 interval, 2018 as the midpoint for the 2015-2020, and so on.

TABLE 4-2. SSA SURVIVAL RATE ESTIMATES 2010-2050

Age	Male				Female			
	2010	2050	% Change	% Closed	2010	2050	% Change	% Closed
Births	0.993774	0.996896	0.3%	50.1%	0.994756	0.997384	0.3%	50.1%
0 to 4	0.998919	0.999394	0.0%	43.9%	0.999125	0.999519	0.0%	45.0%
5 to 9	0.999351	0.999649	0.0%	45.8%	0.999435	0.999693	0.0%	45.7%
10 to 14	0.997542	0.998299	0.1%	30.8%	0.998764	0.999151	0.0%	31.3%
15 to 19	0.994725	0.996210	0.1%	28.2%	0.998008	0.998538	0.1%	26.6%
20 to 24	0.994212	0.995881	0.2%	28.8%	0.997762	0.998361	0.1%	26.8%
25 to 29	0.994203	0.995929	0.2%	29.8%	0.997062	0.997842	0.1%	26.5%
30 to 34	0.992169	0.994499	0.2%	29.8%	0.995446	0.996632	0.1%	26.0%
35 to 39	0.988239	0.991775	0.4%	30.1%	0.992987	0.994822	0.2%	26.2%
40 to 44	0.982617	0.988016	0.5%	31.1%	0.990171	0.992781	0.3%	26.6%
45 to 49	0.976537	0.983945	0.8%	31.6%	0.986221	0.989969	0.4%	27.2%
50 to 54	0.966699	0.977069	1.1%	31.1%	0.978470	0.984331	0.6%	27.2%
55 to 59	0.948264	0.964055	1.7%	30.5%	0.964859	0.974472	1.0%	27.4%
60 to 64	0.918058	0.941015	2.5%	28.0%	0.943232	0.957694	1.5%	25.5%
65 to 69	0.872456	0.905927	3.8%	26.2%	0.910695	0.932285	2.4%	24.2%
70 to 74	0.807811	0.857186	6.1%	25.7%	0.862280	0.895906	3.9%	24.4%
75 to 79	0.706748	0.780670	10.5%	25.2%	0.782263	0.837993	7.1%	25.6%
80 to 84	0.554095	0.642153	15.9%	19.7%	0.653144	0.725660	11.1%	20.9%
85+	0.402265	0.467477	16.2%	10.9%	0.471889	0.528841	12.1%	10.8%

Source: SSA

4.4 Migration Rates

4.4.1 Methodology

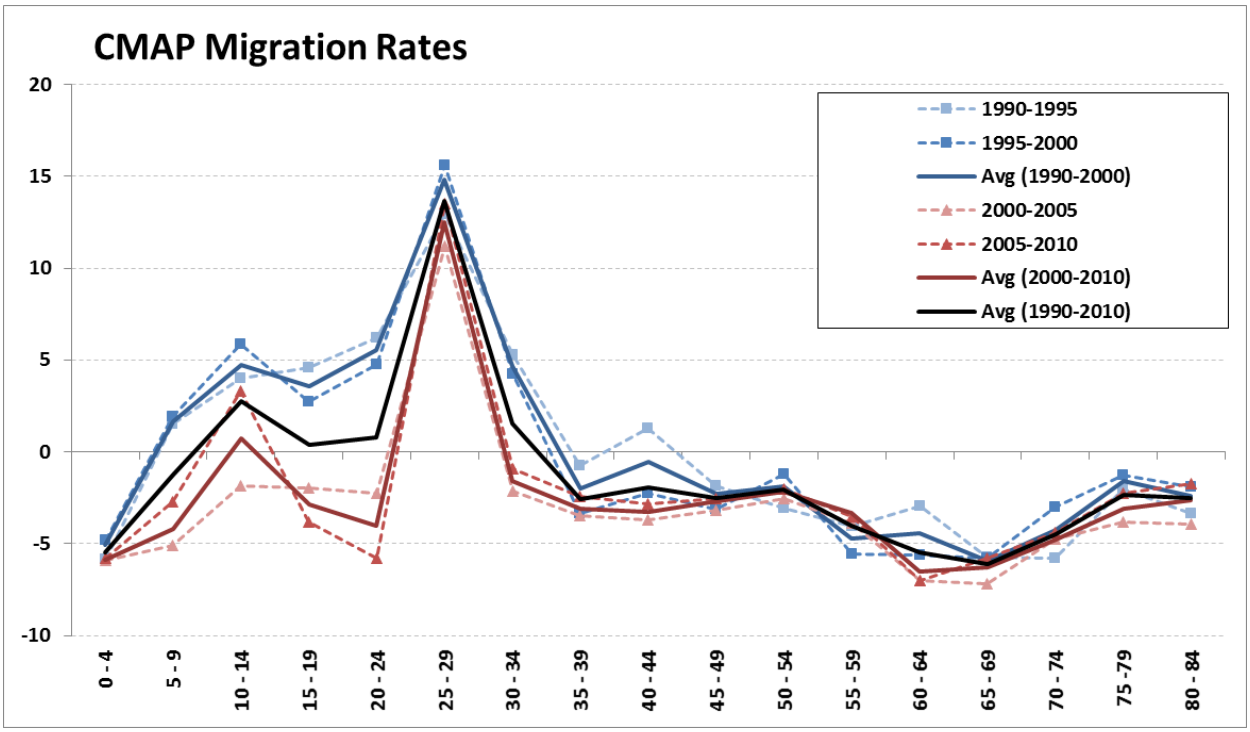
Migration is typically the most uncertain and volatile component of population change. In traditional pure demographic models, this element of the forecasting process is typically addressed by applying a historical rate of migration to the population base at each interval of the forecasting horizon.

As briefly described in the introduction to this document, the migration component of this population forecast is used to link population growth to projected employment forecasts. This economic-demographic approach splits the calculation of the migration component of change into two phases. As per the typical pure demographic approaches, historical age-specific migration rates are applied to the population at risk to arrive at a preliminary population projection for each year of the forecast interval as shown in Figure 2-1. An additional adjustment to the resulting volume of migration is made based on the labor force model's reconciliation of labor demand and supply.

The historical net migration component is calculated through a forward survival analysis that applies survival rates to an enumerated population, yielding an "expected" population for each age/sex group five years later. The difference between the expected and actual enumerated populations five years later at each age group represents the estimated volume of net migrants and is expressed as an age/sex-specific ratio of the initial enumerating population. The Project Team conducted this survival analysis for all 21 counties in the Forecast region. Figure 4-7 presents the results of forward survival analyses for the

aggregated CMAP Region conducted between 1990 and 2010 at five year intervals – the figure also includes averages calculated for 1990-2000, 2000-2010, and 1990-2010.

FIGURE 4-7. CMAP REGION MIGRATION RATES



Sources: Illinois Department of Public Health; Wisconsin Department of Health Services; Indiana State Department of Health; US Census

Although migration rates can vary significantly by age as shown in Figure 4-7, the overall migration experience of a region over a given time period can be summarized by the Crude Migration Rate (CMR). The crude migration rate (CMR) is calculated by taking the sum of net migrants at each age group and dividing that total volume of net migrants by the total enumerated starting population at the beginning of the period. Table 4-3 provides the historical CMR estimates for each county in the Forecast Region obtained from the Applied Population Laboratory at the University of Wisconsin-Madison for each decade starting in 1950. These CMR's were calculated through similar forward survival analysis methods used by the Project Team – the only difference being that the University of Wisconsin-Madison estimates were generated on a decennial basis, while the Project Team's analysis was conducted on a quinquennial basis.

TABLE 4-3. FORECAST REGION CRUDE MIGRATION RATES (CMR) 1950-2010 BY COUNTY

Geography	HISTORIC							
	Crude Migration Rates (CMR) - Rate per 100							
	'50-'60	'60-'70	'70-'80	'80-'90	'90-'00	'00-'10	Max	Min
Cook County, IL	-0.7	-4.2	-12.7	-9.6	-4.7	-10.3	-0.7	-12.7
DuPage County, IL	78.0	39.7	22.8	7.4	3.6	-5.8	78.0	-5.8
Kane County, IL	21.5	6.2	-1.5	3.1	12.3	13.8	21.5	-1.5
Kendall County, IL	30.5	33.6	27.0	-2.8	26.7	91.5	91.5	-2.8
Lake County, IL	39.5	14.6	3.9	6.4	10.8	-0.4	39.5	-0.4
McHenry County, IL	47.2	19.3	22.9	14.8	28.4	9.5	47.2	9.5
Will County, IL	24.5	14.0	17.4	0.7	28.2	23.2	28.2	0.7
CMAP Total	4.9	0.2	-7.1	-5.5	0.6	-4.4	4.9	-7.1
Boone County, IL	5.5	12.3	1.6	1.0	26.7	21.8	26.7	1.0
DeKalb County, IL	11.5	25.6	-3.8	-1.6	7.1	11.6	25.6	-3.8
Grundy County, IL	1.9	8.1	5.7	-1.2	9.5	26.2	26.2	-1.2
Kankakee County, IL	9.4	-6.6	-4.6	-12.8	1.1	5.0	9.4	-12.8
LaSalle County, IL	-3.2	-7.1	-4.1	-7.2	2.3	1.4	2.3	-7.2
Lee County, IL	-4.1	-9.2	-10.3	-9.2	2.6	-0.3	2.6	-10.3
Ogle County, IL	-0.1	1.2	0.5	-6.1	6.1	2.3	6.1	-6.1
Winnebago County, IL	15.7	2.4	-8.1	-6.2	3.1	0.7	15.7	-8.1
Illinois Outer County Tot	6.8	0.9	-5.1	-6.5	4.7	5.2	6.8	-6.5
Lake County, IN	13.7	-8.3	-15.6	-15.1	-4.8	-1.8	13.7	-15.6
LaPorte County, IN	7.1	-0.6	-5.4	-5.8	-1.6	-1.4	7.1	-5.8
Porter County, IN	35.4	28.4	24.7	0.1	7.7	7.7	35.4	0.1
NW Indiana Total	14.5	-3.9	-9.4	-11.3	-2.1	0.1	14.5	-11.3
Kenosha County, WI	15.1	2.1	-3.6	-2.1	8.4	5.4	15.1	-3.6
Racine County, WI	10.0	5.9	-7.7	-6.3	0.4	-2.0	10.0	-7.7
Walworth County, WI	12.2	12.0	7.5	0.8	20.9	7.3	20.9	0.8
SE Wisconsin Total	12.1	5.7	-3.6	-3.5	7.1	2.6	12.1	-3.6
Forecast Region	6.0	0.1	-7.0	-6.0	1.0	-3.1	6.0	-7.0

Source: Applied Population Laboratory University of Wisconsin-Madison

Table 4-3 shows that CMRs in each county can vary widely over time; for instance, the table corroborates the results of the Project Team's survival analysis presented in Figure 4-7. This figure shows that for the CMAP region, the 1990-2000 period had a relatively more positive migration experience compared to the 2000-2010 period, because both the 1990-1995, and 1995-2000 age-specific migration rates generally lie higher than the 2000-2005 and 2005-2010 rates. This translates into a relatively small but positive 1990-2000 CMR of 0.6 compared to a negative CMR of -4.4 for the 2000-2010 period.

Although the CMAP region saw net out-migration in the 2000-2010 period, certain individual counties experienced strong rates of net in-migration (whose migrants could come from counties both inside and outside the forecast region), most notably Will and Kendall counties that recorded a positive CMR of 23.2 and 91.5 respectively. Other counties such as Boone and Grundy in Outer Illinois posted notably strong CMRs in both 1990-2000 and 2000-2010 periods.

4.4.2 Assumptions

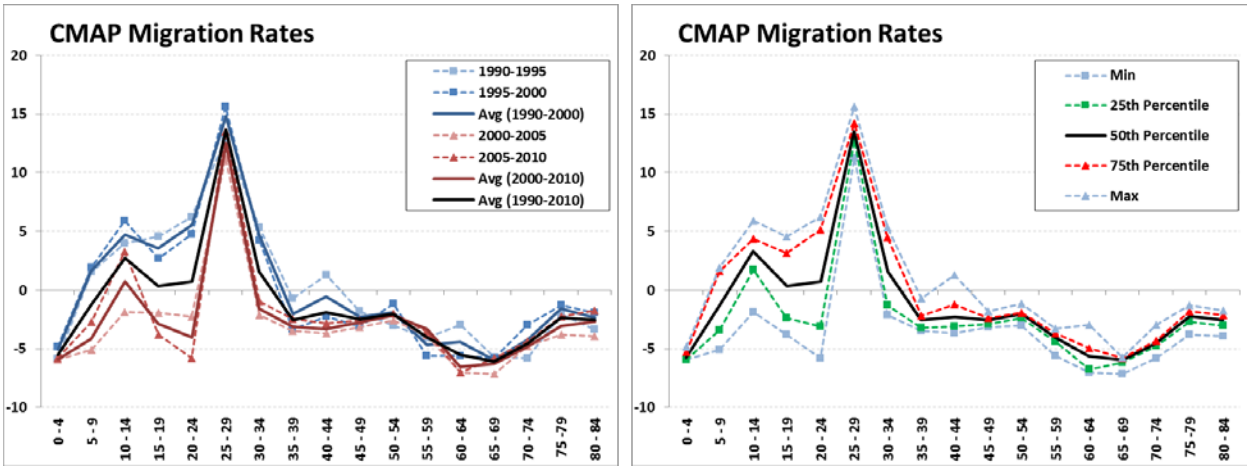
These records of historical CMR data provided a useful benchmark for evaluating the reasonableness of the population forecasts by reviewing the resulting CMRs obtained from proposed projections. Prior to using the Applied Population Laboratory's data for plausibility evaluations, the Project Team first confirmed that the two data sources had a comparable tie-in. Table 4-4 presents the historical net migration volume estimates obtained by the Applied Laboratory's survival analysis for each county over the last six decades. A comparison of the 2000-2010 net migration volumes with corresponding estimates developed by the Project Team show very close similarities – even when compared to the resulting net migration estimates obtained by combining the results of the two quinquennial survival analyses.

TABLE 4-4. FORECAST REGION NET MIGRATION ESTIMATES 1950-2010 BY COUNTY

	APPLIED POPULATION LABORATORY DATA						PROJECT TEAM	
							10-Yr Model	5-Yr Models
	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010	2000-2010	2000-2010
Forecast Region	384,409	7,422	(612,660)	(536,138)	89,110	(310,341)	(286,153)	(290,947)
Cook County, IL	(29,310)	(217,801)	(696,707)	(501,989)	(241,482)	(553,086)	(529,105)	(535,573)
DuPage County, IL	120,629	124,464	112,043	48,577	28,504	(52,607)	(51,628)	(51,486)
Kane County, IL	32,299	12,871	(3,747)	8,529	38,905	55,634	56,180	56,409
Kendall County, IL	3,695	5,886	7,114	(1,046)	10,522	49,925	49,027	49,711
Lake County, IL	70,763	42,877	14,843	28,002	55,588	(2,501)	(1,175)	(625)
McHenry County, IL	23,886	16,217	25,597	21,942	52,000	24,800	24,564	25,019
Will County, IL	32,851	26,859	43,513	2,273	100,863	116,375	117,896	116,794
CMAP Total	**254,813**	**11,373**	**(497,344)**	**(393,712)**	**44,900**	**(361,460)**	**(334,240)**	**(339,751)**
Boone County, IL	938	2,493	409	290	8,231	9,125	8,973	8,966
DeKalb County, IL	4,675	13,261	(2,704)	(1,161)	5,517	10,352	10,036	10,223
Grundy County, IL	363	1,803	1,504	(373)	3,062	9,842	9,637	9,585
Kankakee County, IL	6,880	(6,105)	(4,470)	(13,168)	1,055	5,229	4,376	4,670
LaSalle County, IL	(3,171)	(7,908)	(4,599)	(8,114)	2,512	1,524	1,231	1,246
Lee County, IL	(1,508)	(3,564)	(3,894)	(3,346)	902	(118)	(179)	(194)
Ogle County, IL	(28)	476	235	(2,832)	2,826	1,165	999	1,185
Winnebago County, IL	23,966	5,004	(19,892)	(15,576)	7,786	2,003	2,371	2,548
Illinois Outer County Total	**32,115**	**5,460**	**(33,411)**	**(44,280)**	**31,891**	**39,122**	**37,443**	**38,230**
Lake County, IN	50,455	(42,656)	(85,114)	(78,956)	(22,947)	(8,884)	(8,449)	(8,788)
LaPorte County, IN	5,482	(541)	(5,721)	(6,308)	(1,674)	(1,584)	(1,496)	(1,451)
Porter County, IN	14,176	17,096	21,509	112	9,903	11,367	10,834	10,902
NW Indiana Total	**70,113**	**(26,101)**	**(69,326)**	**(85,152)**	**(14,718)**	**899**	**889**	**663**
Kenosha County, WI	11,376	2,113	(4,222)	(2,616)	10,738	8,113	8,167	8,126
Racine County, WI	10,920	8,297	(13,128)	(10,936)	650	(3,826)	(3,082)	(3,115)
Walworth County, WI	5,072	6,280	4,771	558	15,649	6,811	4,670	4,900
SE Wisconsin Total	**27,368**	**16,690**	**(12,579)**	**(12,994)**	**27,037**	**11,098**	**9,756**	**9,911**

Given the historical variations in migration rates, the Project Team set up the population model to use any one of the seven sampled historic migration rates (as shown in Figure 4-7) as the basis for calculating the preliminary population estimate for each county. The model set up also allowed for a percentile value to be selected from the envelope defined by the seven values for each age group as depicted by the example on the right side of Figure 4-8 that traces the 25th, 50th and 75th percentile rates for the CMAP Region.

FIGURE 4-8. CMAP REGION MIGRATION RATES



4.5 Other Population Model Outputs

The population model also generated estimates for the Group Quarters population and race and ethnicity that pivoted off the primary population outputs discussed above.

4.5.1 Group Quarters Population

The Project Team conducted a review of historic group quarters population to determine if the cohort component model should treat group quarters as a constant level or constant share (by sex and age cohort) of the total population. Table 4-5 shows that for the past three census periods (1990, 2000 and 2010), the group quarters has essentially held a constant share of the total population. Although difficult to predict the development and expansion of group quarter facilities, the data in Table 4-5 suggests that the demand for these facilities grows in some proportion to growth in population. By using the constant share approach, the model implicitly assumes that the housing demand for group quarter populations will either be met through more intensive use or expansion of existing facilities, and/or the development of new facilities. The model, therefore, applies the 2010 GQ share by sex and age cohort to the total population by sex and age cohort at each forecast interval.

TABLE 4-5. GROUP QUARTERS POPULATION, 1990-2010

		CMAP	Illinois Outer Counties	NW Indiana	SE Wisconsin	TOTAL
Total Population	1990	7,300,589	677,505	711,592	378,215	9,067,901
GQ Population	1990	130,479	23,701	14,545	8,683	177,408
GQ % Total Pop.	1990	1.8%	3.5%	2.0%	2.3%	2.0%
Total Population	2000	8,146,264	749,144	741,468	432,167	10,069,043
GQ Population	2000	147,583	24,449	15,668	*	202,344
GQ % Total Pop.	2000	1.8%	3.3%	2.1%	*	2.0%
Total Population	2010	8,431,386	821,555	771,815	464,062	10,488,818
GQ Population	2010	140,320	23,376	16,377	12,305	192,378
GQ % Total Pop.	2010	1.7%	2.8%	2.1%	2.7%	1.8%

Source: U.S. Census

*Data for Wisconsin in 2000 is omitted as the on-campus population of a college that is partially in Walworth County and partially out likely wasn't consistently geocoded in 1990, 2000 and 2010

Table 4-6 shows the institutionalized population levels over time along with its share of the total GQ population. The non-institutionalized population is simply the residual of the total GQ population and the institutionalized population; the non-institutionalized population is not shown as to simplify the table. While the institutionalized share of the total GQ population has shifted somewhat over time across the region, the Project Team has applied the 2010 share to the forecast years. The principal reason for this assumption is the sheer uncertainty in how the institutionalized versus non-institutionalized breakdown will change over time. New institutional facilities and repurposing of old facilities are not demographic trends, but rather official decisions made by both public and private entities. As such, the Project Team believes the 2010 share provides a defensible basis for forecasting the institutional versus non-institutional breakdown of the GQ population. To arrive at age and sex specific profiles, the 2010 share of each age and sex cohort by institutional and non-institutional has been applied to the control total for each forecast year.

TABLE 4-6. INSTITUTIONALIZED GROUP QUARTERS POPULATION, 1990-2010

		CMAP	Illinois Outer Counties	NW Indiana	SE Wisconsin	TOTAL
Total GQ Population	**1990**	130,479	23,701	14,545	8,683	177,408
Inst. GQ Population		68,995	11,508	10,390	4,094	94,987
Inst. % Total GQ Pop.		52.9%	48.6%	71.4%	47.1%	53.5%
Total GQ Population	**2000**	147,583	24,449	15,668	*	202,344
Inst. GQ Population		74,520	13,461	11,199	*	105,489
Inst. % Total GQ Pop.		50.5%	55.1%	71.5%	*	52.1%
Total GQ Population	**2010**	140,320	23,376	16,377	12,305	192,378
Inst. GQ Population		67,914	12,494	11,462	6,838	98,708
Inst. % Total GQ Pop.		48.4%	53.4%	70.0%	55.6%	51.3%

Source: U.S. Census

*Data for Wisconsin in 2000 is omitted as the on-campus population of a college that is partially in Walworth County and partially out likely wasn't consistently geocoded in 1990, 2000 and 2010

4.5.2 Race & Ethnicity

County level projections have been developed for five mutually exclusive race/Hispanic groups:

- White Non-Hispanics
- Black Non-Hispanics
- Asian Non-Hispanics
- Other Non-Hispanics
- Hispanics

Population projections by race and ethnicity were not developed using a separate cohort component model for each group, given that the limitations associated with such an approach are too numerous to outweigh any potential benefits[38]. The methodology, therefore, employs a race-specific overlay on the county level projections, using a proportional allocation method. The share of the population associated with each of the five race/Hispanic categories has been applied to the projected population for each of the forecast year intervals.

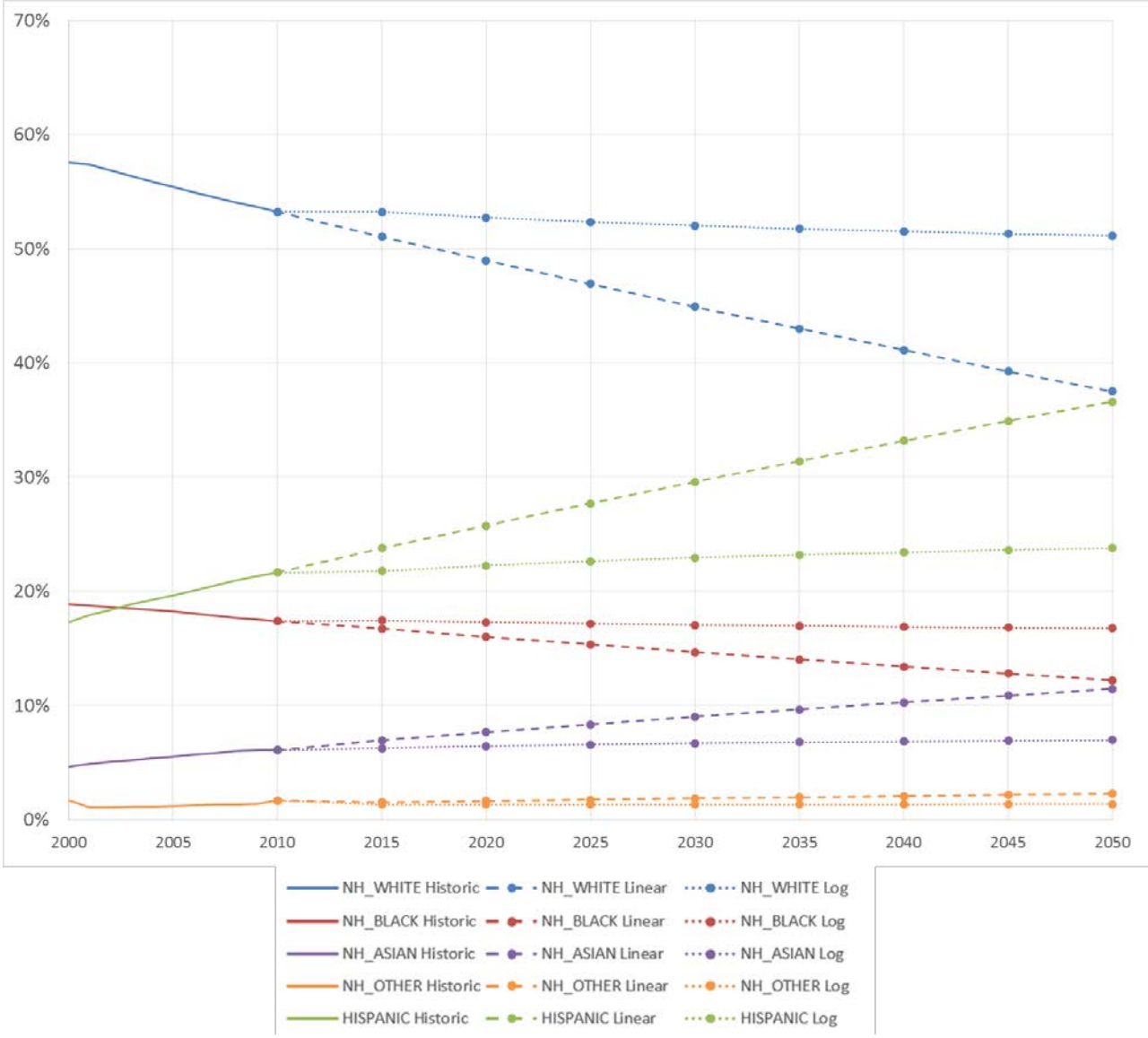
The Project Team determined the future shares using U.S. Census decennial counts and intercensal estimate data from 2000 through 2010. The Project Team created two trend projections using the U.S. Census data:

- A 'best fit' linear projection of the 2000-2010 nominal historical population levels to 2050 and then the subsequent implied share of those values
- A 'best fit' logarithmic projection of the 2000-2010 nominal historical population levels to 2050 and then the subsequent implied share of those values

Figure 4-9 shows the results of the analysis for the CMAP region. The linear extrapolation clearly shows an aggressive continuation of past trends, including a substantial drop in the share of the Non-Hispanic White population and corresponding steep rise in the Hispanic population. The logarithmic trend moderates these sharp slopes, yet maintains the directional shift of past trends. In order to

accommodate the clear demographic trends, yet acknowledge the inherent future uncertainty of race and ethnicity, the Project Team applied a partial linear and partial logarithmic trend in the model. In other words, 50% of the trend is linear and 50% is logarithmic. This provides a balance between the more aggressive trends that have been documented in recent years and the inherent uncertainty about the direction of future growth.

FIGURE 4-9. LINEAR & LOGARITHMIC PROJECTIONS BY RACE/ETHNICITY, CMAP REGION



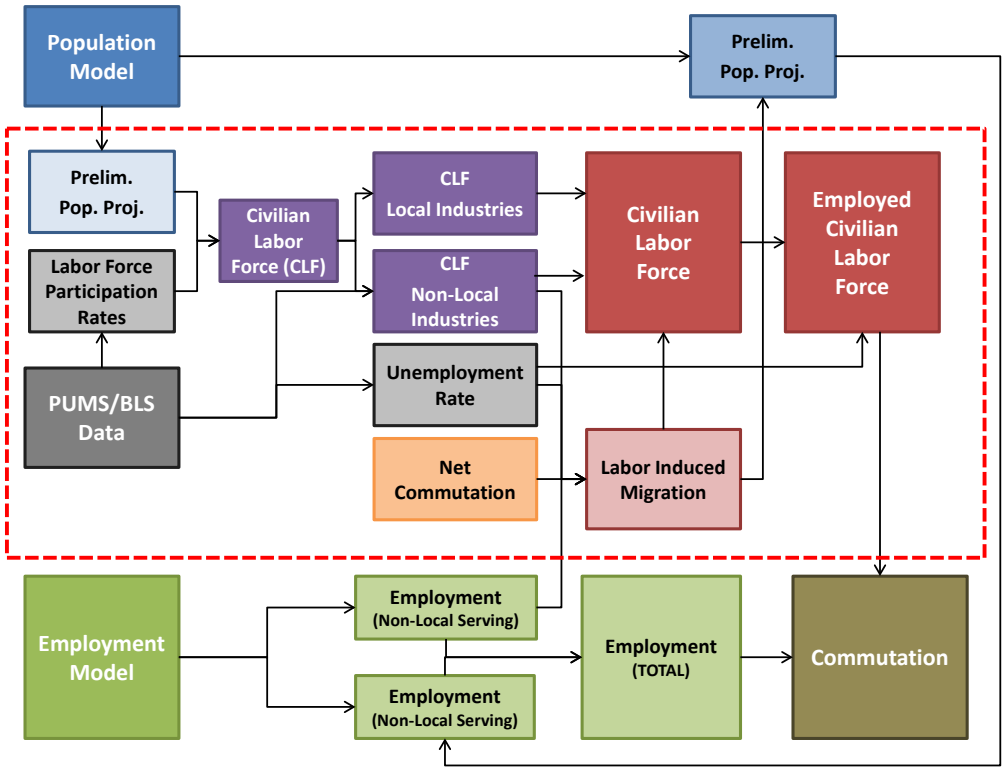
5.0 LABOR FORCE MODEL

This section of the document addresses the labor force component of the 21-County Region and also addresses the net migration component arising from the reconciliation between labor demand and supply.

The dotted red line in Figure 5-1 presents a conceptual overview of the Labor Force Model's structure and workflow – the figure also represents some of the interactions between the Labor Force Model and the

other elements of the forecasting process. The key function of the Labor Force Model within the context of the overall projections are to generate estimates of the Labor Induced Migration Adjustment (LIMA), and to provide an estimate of the employed labor force by county of residence to be reconciled with total employment projections by county of work through the commutation adjustments to historically observed commuter flows associated with the 31-County Region.

FIGURE 5-1. LABOR FORCE MODEL CONCEPTUAL OVERVIEW



The Labor Force Model converts population projection inputs into estimates of civilian labor force by combining various other inputs through a series of calculations that are described in the following sub-sections.

5.1 Civilian Labor Force & Labor Force Participation Rates

The Population Model generates county level forecasts of population distinguished by age and sex. These population volumes are converted into labor force estimates by applying age/sex-specific civilian labor force participation rates derived from PUMS and BLS. The general mathematical expression of the labor force participation rate is presented in Equation 5-1.

Equation 5-1

$$LFPR = \frac{CLF}{POP}$$

Where:

LFPR = Labor Force Participation Rate
CLF = Civilian Labor Force
POP = Resident population

CLF includes both employed and unemployed residents (i.e. those unemployed still actively looking for work) and excludes military personnel. The age/sex-specific labor force participation rate is calculated by taking the ratio of the age/sex-specific civilian labor force and dividing it by the corresponding total population within the appropriate age range.

Estimates of age/sex specific labor force participation rates applied in the model were initially based on the calculations obtained from the 2010 PUMS for each county the 21-County Region. Labor force participation estimates were also obtained from the 2014 PUMS for two reasons: to identify any anomalies that may have resulted from the 'Great Recession'; and also to align with the BLS series that provides the basis for calculating the changes in age/sex-specific labor force participation rates.

The calculation of future year participation rates to be applied in the model were calculated based on changes implied by the BLS estimates for 2014-2024. The estimated change in BLS age/sex specific rates between 2014 and 2024 were used to interpolate national rates for 2015 and 2020 as shown in Table 5-1. The projected change in participation rates relative to 2014 estimates were calculated and these percentage changes were then applied to the 2014 PUMS estimates for each individual county – thereby providing an estimate of projected 2015 and 2020 participation rates. Given that the BLS series was only projected to 2024, the 2024 rates were held constant for 2025 and every other future forecast year.

TABLE 5-1. LABOR FORCE PARTICIPATION RATES (BUREAU OF LABOR STATISTICS)

Age	Gender	Labor Force Participation Rate					% Δ from 2014		
		1994	2014	2015*	2020*	2024	2015	2020	2024
16 to 19	Male	54.1%	33.5%	32.9%	29.9%	27.5%	98.2%	89.3%	82.1%
20 to 24	Male	83.1%	73.9%	73.3%	70.5%	68.3%	99.2%	95.5%	92.4%
25 to 34	Male	92.6%	88.7%	88.5%	87.7%	87.0%	99.8%	98.9%	98.1%
35 to 44	Male	92.8%	90.5%	90.5%	90.3%	90.1%	100.0%	99.7%	99.6%
45 to 54	Male	89.1%	85.6%	85.5%	84.9%	84.4%	99.9%	99.2%	98.6%
55 to 59	Male	76.9%	76.8%	76.8%	76.5%	76.3%	99.9%	99.6%	99.3%
60 to 64	Male	52.8%	61.9%	62.1%	63.0%	63.8%	100.3%	101.8%	103.1%
65+	Male	16.9%	23.0%	23.3%	24.6%	25.7%	101.2%	107.0%	111.7%
16 to 19	Female	51.3%	34.5%	33.6%	29.3%	25.9%	97.5%	85.0%	75.1%
20 to 24	Female	71.0%	67.7%	67.6%	67.0%	66.5%	99.8%	98.9%	98.2%
25 to 34	Female	74.0%	73.8%	73.9%	74.5%	74.9%	100.1%	100.9%	101.5%
35 to 44	Female	77.1%	74.1%	74.1%	74.0%	73.9%	100.0%	99.8%	99.7%
45 to 54	Female	74.6%	73.8%	74.1%	75.7%	77.0%	100.4%	102.6%	104.3%
55 to 59	Female	59.2%	66.4%	67.0%	69.9%	72.2%	100.9%	105.2%	108.7%
60 to 64	Female	37.8%	50.2%	50.6%	52.6%	54.2%	100.8%	104.8%	108.0%
65+	Female	9.2%	15.1%	15.4%	17.1%	18.4%	102.2%	113.1%	121.9%

*Note: 2015 and 2020 rates are interpolated from the 2014 and 2024 rates
Source: BLS 2014-2024 Labor Force Participation Rate Projections, LBG

5.2 Labor Induced Migration Estimates

As indicated in Figure 5-1, the labor demand implied by the employment forecasts was reconciled against labor supply estimates generated from the conversion of preliminary population forecasts into the labor

force estimates. This reconciliation was achieved through the estimation of a labor induced migration adjustment that was to be applied to the initial estimate of net migration – calculated based on historical rates (Section 4.4). By linking migration – the most unpredictable component of population change – to employment, this methodological approach provides greater consistency with employment projections.

However, the assessment of labor flows into and out of the region was limited only to those industries likely to affect migration patterns – that is to say that the local serving industries (e.g. restaurants, food and accommodation, other personal services) were held out from the calculation of labor induced migration. Specifically, four industrial sectors were excluded from the labor supply and demand balance evaluation, namely:

- Retail Trade (NAICS: 44-45)
- Arts, Entertainment, Recreation (NAICS: 71)
- Accommodation & Food Services (NAICS: 72)
- Other Services (NAICS: 81)

Although these four industries were excluded from the labor balancing equation, it should be noted that the historical residual net migration estimate derived from the survival analysis includes migrants into and out of the region from all industrial sectors. The focus of the labor balancing is on 'export based' industries. The simple expression below broadly represents the calculation of the labor induced migration adjustment.

Labor Induced Migration Adjustment (LIMA) = Labor Demand $_{(Basic\ Sectors)}$ ***– Labor Supply*** $_{(Basic\ Sectors)}$

5.2.1 Labor Demand

For each five year interval in the forecasting process, the labor demand implied by the employment model is calculated by first aggregating the total volume of jobs in the 16 basic industry sectors excluding the four industries highlighted above. This includes jobs that are categorized as both Wage & Salary, as well as Self Employed. Based on the baseline employment forecasts discussed in Section 3 of this document, there are total number of 3,977,912 jobs in the Basic Industries projected in 2015 for the 21-County Region (Table 5-2).

TABLE 5-2. LABOR DEMAND - TOTAL BASIC INDUSTRY JOB PROJECTIONS

	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	**4,064,332**	**3,935,819**	**3,655,057**	**3,977,912**	**4,150,394**	**4,230,290**	**4,331,152**	**4,446,299**	**4,572,113**	**4,698,200**	**4,837,644**
CMAP	3,408,638	3,292,016	3,048,394	3,346,955	3,508,509	3,584,683	3,679,564	3,786,256	3,902,311	4,019,569	4,150,411
Illinois Outer Cou	272,172	264,768	249,414	266,208	274,504	277,411	281,156	285,775	290,959	295,924	300,733
NW Indiana	240,769	234,774	222,173	225,672	222,638	220,665	219,410	219,007	218,868	218,246	217,604
SE Wisconsin	142,753	144,261	135,076	139,078	144,743	147,531	151,022	155,260	159,975	164,461	168,896

An adjustment is applied to account for the number of multiple job-holders. It is initially assumed that 4.9% percent of workers hold multiple jobs (based on Current Population Survey data), such that the total number of workers necessary to meet demand is actually less than the aggregate number of jobs. The estimated volume of workers required to meet the employment demand in these industries is calculated by taking the total number of jobs and dividing by 1.049 to address multiple job holders.

5.2.2 Labor Supply

The conversion of preliminary population projections into corresponding labor supply is performed through several steps.

Working force age population is derived from preliminary population projections that include the historical residual net-migration by age – the age/gender-specific historic net migration rates are initially set at the median of level of the historical sample of rates (Section 4.4). This working force age includes all population above 16. The working force age population obtained from the 15-19 age group is simply calculated by assuming that 80 percent of that population is over 16 years of age.

Military personnel estimates were calculated based on age/sex-specific rates of military service obtained from the 2010 PUMS estimates for each county. The resulting estimate of 2010 military personnel for each county was held constant for the duration of the forecasting horizon, and was held out of the calculation of civilian work force using labor force participation rates.

Civilian labor force was calculated by applying the age/sex-specific civilian labor force participation rates to the resulting estimate of working force age persons who were not serving in the military.

Non-basic (local serving) v. basic (non-local serving) age/sex/county-specific splits of the civilian labor force were calculated from the 2010 PUMS data and applied to the civilian labor force estimates discussed above to produce a county level volume of workers in both industrial categories. The total regional volume of available workers in the non-local serving industries was simply aggregated from the all the counties.

Unemployment rates were applied to the resulting estimates of non-local serving labor force estimates. Rates of unemployment were determined by historical BLS estimates by county and aggregated to the 21-County region and indexed to Congressional Budget Office projections of national unemployment rates. The model can apply either the indexed projections or hold constant the recent 2013 rates. The Project Team applied the 2013 rates to best support the economic migration component of the model.

Net Commuters were also accounted for based on the 2006-2010 journey-to-work flows that indicated a net commuting in-flow equal to 0.11 percent. This percentage of workers was added to the volume of resident employed in the non-local serving industries as described above to arrive at the total volume of supplied labor.

5.2.3 Economic Migrant Calculation

The resulting estimate of labor supply generated by proceeding through the steps outlined above was compared to the corresponding labor demand also previously discussed. The difference between these two estimates represented the net regional inflow or outflow of migrants required to balance demand and supply. The following steps outline the ultimate calculation of the net migration adjustment for each individual county by age and sex before re-application in the final cohort component population projections.

Allocation of labor seeking migrant inflow/outflow to the individual counties was performed as a function of two factors: each county's proportional contribution to the change in employment forecasted for the five year interval, and the accounting for cross-commuting patterns associated with each county with respect to all other counties in the Forecast Region. The allocation of migrants into the region assumes that the currently observed patterns of commuting will hold for new labor induced migrants into the region.

To demonstrate the commuting pattern impact on the allocation factor calculation, even though Table 5-3 shows that DuPage County has 17 percent of the growth in non-local serving industries between 2025 and 2030, only 12.5 percent of the net economic migrants would be allocated to DuPage due to the fact that a large proportion of DuPage jobs are filled by commuters from outside the county. However, for most other counties, including Cook, there is a fairly close correspondence between each county's share of regional employment growth and associated allocation factors.

The county control total of labor seeking migrants into or out of the region was calculated by multiplying the regional volume described above, by the county-specific allocation factor for each time interval in Table 5-3. County control totals were distributed by age and sex using preliminary labor force distributions of each specific forecasting interval – i.e. raw labor force volumes by age and sex derived from preliminary population interactions with labor force participation rates. Consistent with other demographic forecasts, it was assumed that labor seeking economic migrants were limited to workers between the ages of 20 and 64.

TABLE 5-3. REGIONAL LABOR INDUCED MIGRATION ADJUSTMENT COUNTY ALLOCATION FACTORS

	Share of Interval Employment Growth or Growth Rate								Labor Force Model Reconciliation Allocation Factors							
	2015	2020	2025	2030	2035	2040	2045	2050	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CMAP	92.5%	93.7%	95.3%	94.1%	92.7%	92.2%	93.0%	93.8%	89.2%	90.4%	91.7%	90.6%	89.3%	89.0%	89.6%	90.4%
Cook County, IL	34.1%	56.0%	50.7%	50.6%	50.2%	49.8%	49.6%	49.7%	39.2%	52.7%	49.4%	49.2%	48.7%	48.4%	48.3%	48.5%
DuPage County, IL	27.1%	16.7%	17.5%	17.0%	16.5%	16.3%	16.4%	16.5%	17.0%	12.3%	12.8%	12.5%	12.2%	12.1%	12.1%	12.2%
Kane County, IL	10.4%	3.6%	7.7%	6.8%	6.4%	6.5%	6.7%	7.0%	9.5%	5.0%	7.6%	7.0%	6.7%	6.7%	6.9%	7.1%
Kendall County, IL	0.6%	1.5%	2.4%	2.1%	1.9%	1.8%	1.9%	1.8%	1.8%	1.6%	2.4%	2.1%	2.0%	2.0%	2.0%	2.0%
Lake County, IL	14.0%	9.7%	12.5%	12.5%	12.2%	12.3%	12.9%	13.0%	11.0%	8.8%	10.5%	10.4%	10.3%	10.4%	10.7%	10.8%
McHenry County, I	0.6%	1.5%	0.3%	0.7%	0.9%	1.0%	1.0%	1.2%	2.5%	2.8%	2.2%	2.5%	2.5%	2.6%	2.7%	2.8%
Will County, IL	5.7%	4.7%	4.3%	4.4%	4.5%	4.5%	4.5%	4.7%	8.2%	7.2%	6.9%	6.9%	6.9%	6.8%	6.9%	7.0%
ILLINOIS OUTER CO	5.2%	4.8%	3.6%	3.7%	4.0%	4.1%	3.9%	3.4%	6.7%	6.0%	5.1%	5.2%	5.4%	5.5%	5.4%	4.9%
Boone County, IL	1.5%	0.5%	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%	1.0%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
DeKalb County, IL	0.5%	0.2%	0.4%	0.3%	0.3%	0.4%	0.3%	0.3%	1.1%	0.6%	0.9%	0.8%	0.8%	0.9%	0.9%	0.8%
Grundy County, IL	0.6%	0.4%	0.4%	0.3%	0.3%	0.3%	0.3%	0.3%	0.7%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Kankakee County,	0.7%	1.0%	0.7%	0.6%	0.6%	0.6%	0.6%	0.5%	0.8%	1.2%	0.8%	0.7%	0.8%	0.8%	0.7%	0.6%
LaSalle County, IL	0.8%	0.0%	-0.3%	-0.1%	0.0%	0.0%	-0.1%	-0.1%	1.0%	0.3%	0.1%	0.2%	0.3%	0.3%	0.2%	0.2%
Lee County, IL	0.1%	-0.1%	-0.3%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%	0.2%	0.0%	-0.2%	-0.1%	-0.1%	0.0%	0.0%	0.0%
Ogle County, IL	0.0%	0.0%	-0.2%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	0.1%	0.2%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Winnebago Count	1.1%	2.6%	2.5%	2.4%	2.5%	2.5%	2.5%	2.2%	1.6%	2.6%	2.5%	2.4%	2.5%	2.5%	2.5%	2.2%
NW INDIANA	1.1%	-1.8%	-2.5%	-1.2%	-0.3%	-0.1%	-0.5%	-0.5%	2.0%	-0.2%	-1.0%	0.2%	1.0%	1.2%	0.8%	0.8%
Lake County, IN	0.3%	-2.3%	-3.3%	-2.1%	-1.4%	-1.1%	-1.4%	-1.3%	1.2%	-0.6%	-1.4%	-0.5%	0.1%	0.3%	0.1%	0.2%
LaPorte County, IN	-0.1%	0.4%	0.2%	0.2%	0.3%	0.3%	0.2%	0.2%	0.0%	0.4%	0.2%	0.2%	0.3%	0.3%	0.3%	0.2%
Porter County, IN	0.8%	0.1%	0.7%	0.7%	0.8%	0.8%	0.7%	0.6%	0.8%	0.0%	0.3%	0.4%	0.6%	0.6%	0.5%	0.4%
SE WISCONSIN	1.2%	3.3%	3.5%	3.5%	3.7%	3.7%	3.6%	3.2%	2.1%	3.8%	4.1%	4.1%	4.3%	4.4%	4.2%	3.9%
Kenosha County, V	0.2%	1.6%	2.3%	2.1%	2.2%	2.2%	2.3%	2.1%	0.9%	1.9%	2.5%	2.4%	2.4%	2.5%	2.5%	2.4%
Racine County, WI	0.5%	1.1%	0.6%	0.7%	0.8%	0.8%	0.6%	0.5%	0.5%	1.2%	0.9%	0.9%	1.0%	1.0%	0.9%	0.8%
Walworth County,	0.6%	0.5%	0.6%	0.7%	0.7%	0.7%	0.7%	0.6%	0.7%	0.6%	0.7%	0.7%	0.8%	0.8%	0.8%	0.7%

Economic migrant dependents were also accounted for in the volume of total labor induced migration into or out of the region. The total volume of labor migrant workers (i.e. those between the ages of 20 and 64 as described above) was multiplied by the corresponding age-specific dependency ratios observed in the 2010 population. That is to say the ratio of males aged 0-4, to all male workers aged 20-64 in 2010, was applied to the total volume of male economic migrant workers 20-64 in a given forecast year to arrive at the corresponding volume of male economic migrant dependents aged 0-4. Economic migrant dependents were limited only to those aged 0-19 given that retirees (those above 65) are typically considered to be largely unaffected by changes in local economic conditions.[39]

The resulting total volume of labor induced migrants for each of the subregions is presented in Table 5-4. These numbers represent the incremental migrant workers (and their estimated dependents) required to match regional population growth to regional employment growth.

TABLE 5-4. LABOR INDUCTED MIGRANTS (21-COUNTY REGION)

	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	(19,659)	65,563	25,488	29,220	36,827	40,109	46,728	64,785
CMAP	(17,534)	59,292	23,381	26,476	32,902	35,683	41,879	58,543
Outer Illinois Cou	(1,314)	3,911	1,313	1,506	1,989	2,207	2,504	3,196
NW Indiana	(393)	(153)	(247)	44	358	474	383	549
SE Wisconsin	(417)	2,513	1,041	1,193	1,577	1,746	1,962	2,497

5.3 Workers Living in Households

The Labor Force model was used to forecast the number of employed workers living in households. As described in the preceding section, population volumes from the population model are converted into labor force estimates by applying age/sex-specific civilian labor force participation rates derived from PUMS and BLS. After accounting for the Labor Induced Migration Adjustment, the model provided an estimate of the number of workers for each working age cohort (16-19 through 65+). These estimates were then adjusted by the unemployment rate, which is calculated at the county level for each forecast year using historic BLS data and indexed to Congressional Budget Office projections of national unemployment rates. The age-specific estimates of household workers at the county level were then aggregated to arrive at subregional totals for employed workers in households. This bottom-up approach ensures that the age profile generated in the population model interacts with the age-specific labor force participation rates to generate consistent projections of employed workers in households. For the base year, 2010, the Project Team compared its model estimate of household workers by county to the 2008-2012 ACS estimate of workers in household from the variable, B08137, Means Of Transportation To Work By Tenure. Results from the model were slightly higher than the ACS estimates (on average by about 1%) in the base year, thereby validating the estimation methodology. The results are presented in the Appendix.

6.0 HOUSEHOLD FORMATION MODEL

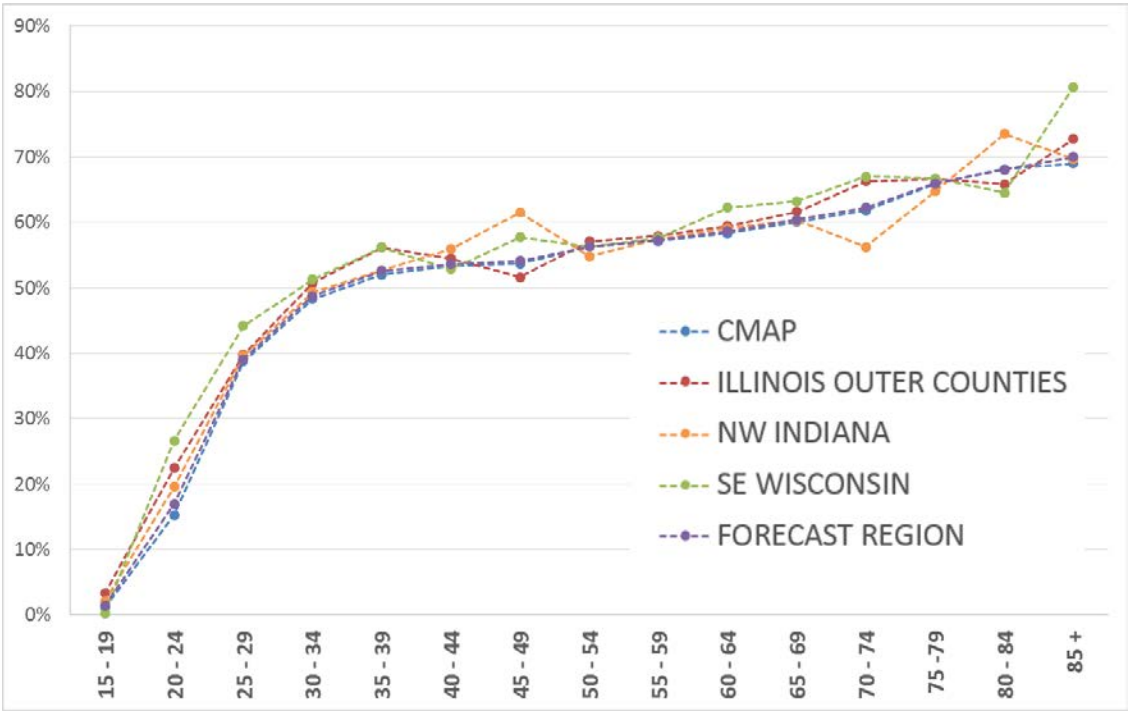
The calculation of households from population totals is an important step in the demographic forecasting process as this variable represents a key unit of analysis in socioeconomic models and plays a crucial role in the regional model's operation.

6.1 Households

6.1.1 Methodology & Assumptions

Given the generally declining household sizes observed in the region, the estimation of households in the 21-County Region relied on the application of age-specific headship rates[40] observed historically. The use of age-specific headship rates helps account for changing household formation patterns, as subsequent waves of the household population are projected to advance into older age groups, each with differing rates of household formation as shown in Figure 6-1 that compares the subregions.

FIGURE 6-1. SUBREGIONAL HEADSHIP RATES BY AGE (2010)



Source: 2010 Census PUMS

The 2010 and 2014 county level headship rates obtained from the PUMS data were first modified through a calibration process designed to ensure correspondence with U.S. Census enumerations of households as demonstrated by the Cook County example in Table 6-1. The 2010 base year population (male and female – first two columns of Table) was multiplied by the raw PUMS headship ratios (third column), and the resulting aggregation of head of households (1,916,088) compared against the Census enumeration of 1,966,356. An adjusted head of households estimate was calculated for each age group by dividing the PUMS derived head of household estimates (i.e, 192,912 for 45-49), by the sum of aggregation of head of households (1,916,088) and then multiplying that result by the Census total household enumeration (1,966,356) in the Table 6-1 example. A revised set of headship rates was then calculated (sixth column) by dividing the adjusted head of household estimate (fifth column) by the total age group population (first and second columns).

This process was conducted for the two years of PUMS data (2010 and 2014) and the resulting adjusted headship rates were used to provide a range of possibilities to be applied in the calculation of future household volumes. The last five columns of Table 6-1 represent the range of options developed for the household forecasting process and include the adjusted 2010 and 2014 headship rates, as well as a minimum, maximum, and average value of all three years.

TABLE 6-1. HEADSHIP RATE CALIBRATION EXAMPLE (COOK COUNTY)

							Adjusted Headship Rates				
Cook County	2010 Base Year HH Population		2010 Headship		2010 Adjusted Headship		Adjusted Headship Rates				
Age Cohort	Males	Females	Ratio	Head of HH	Head of HH	Ratio	2010	2014	Min	Max	Average
Births											
0 - 4	173,825	168,063									
5 - 9	168,356	162,998									
10 - 14	172,455	166,430									
15 - 19	175,612	168,147	1.3%	4,416	4,532	1.3%	1.3%	1.7%	1.3%	1.7%	1.5%
20 - 24	176,718	180,596	16.8%	60,194	61,773	17.3%	17.3%	14.2%	14.2%	17.3%	15.7%
25 - 29	211,156	219,851	40.6%	174,797	179,383	41.6%	41.6%	36.5%	36.5%	41.6%	39.1%
30 - 34	194,679	197,726	49.5%	194,283	199,380	50.8%	50.8%	48.8%	48.8%	50.8%	49.8%
35 - 39	177,224	181,798	51.5%	185,046	189,901	52.9%	52.9%	50.0%	50.0%	52.9%	51.4%
40 - 44	169,071	174,198	53.8%	184,796	189,644	55.2%	55.2%	54.4%	54.4%	55.2%	54.8%
45 - 49	170,779	181,813	54.7%	192,912	197,973	56.1%	56.1%	55.0%	55.0%	56.1%	55.6%
50 - 54	168,800	185,365	57.0%	201,824	207,119	58.5%	58.5%	56.2%	56.2%	58.5%	57.3%
55 - 59	144,970	163,005	57.4%	176,829	181,468	58.9%	58.9%	56.5%	56.5%	58.9%	57.7%
60 - 64	117,670	135,803	60.0%	152,159	156,151	61.6%	61.6%	59.3%	59.3%	61.6%	60.5%
65 - 69	81,195	99,978	61.0%	110,575	113,476	62.6%	62.6%	61.3%	61.3%	62.6%	62.0%
70 - 74	58,850	78,919	64.1%	88,282	90,599	65.8%	65.8%	61.4%	61.4%	65.8%	63.6%
75 -79	44,779	64,226	66.2%	72,114	74,006	67.9%	67.9%	64.7%	64.7%	67.9%	66.3%
80 - 84	33,777	54,240	68.4%	60,225	61,805	70.2%	70.2%	67.7%	67.7%	70.2%	69.0%
85 +	26,062	55,259	70.9%	57,635	59,147	72.7%	72.7%	70.8%	70.8%	72.7%	71.8%
Total	**2,465,978**	**2,638,415**		**1,916,088**	**1,966,356**						
	5,104,393		**1,966,356**		**1,966,356**						

The Project Team elected to rely on the 2010 headship rates obtained from the PUMS data due to the uncertainty of future trends and given the variation in the age-specific direction of change in headship rates on an individual county basis.

6.2 Other Household Model Outputs

6.2.1 Adults & Children Living in Households

In order to project the number of adults (16+) and children (0-15) living in households, it was necessary to isolate the number of 15 year olds for these variables, as the cohort model projects the population in 5 year cohorts, one of which is 15-19. The household population over 16 was applied in the base year, with the residual between the total household population and the population over 16 being the children in households (0-15). The same share of 15 year olds was applied to the forecasted household population over 15 from the cohort model to arrive at the splits in each forecast year.

The Project Team conducted the following steps to arrive at adults and children in households for each forecast interval. Cook County will be used as an illustrative example:

Base Year Estimate (Cook County Example)

1. Calculate the total population and household population over 15 for base year 2010 as well as the population of 15 year olds, using U.S. Census data
    a. Total Population over 15: 4,180,769
    b. Population of 15 year olds: 71,833
    c. Household Population over 15: 4,092,266

2. Determine proportion of 15 year olds in the total population over 15 for base year 2010, using U.S. Census data
    a. Population of 15 year olds (71,833)/ Total Population over 15 (4,180,769) = 1.72%
3. Apply the proportion of 15 year olds in the total population over 15 to the household population over 15 to arrive at the number of 15 year olds in households for base year 2010
    a. Proportion of 15 year olds (1.72%) * Household Population over 15 (4,092,266) = 70,312
4. Arrive at adults in households over 16 by subtracting the number of 15 year olds in households from the total population in households over 15
    a. Household Population over 15 (4,092,266) – Household Population that is 15 (70,312) = 4,021,954
5. Determine number of children in households (0-15) by subtracting the number of adults in households from the total household population.
    a. Total population in households (5,104,391) – Adults in household (4,021,954) = 1,082,439

Future Year Estimates (2025 Cook County Example)

6. Determine adults in household (household population over 16) by applying percent of 15 year olds to the household population over 15 from the cohort model
    a. Household population over 15 from cohort model (4,417,428) – (Household population over 15 from cohort model (4,417,428) * Proportion of 15 year olds (1.72%)) = 4,341,528
7. Determine the number of children in households (0-15) by taking the residual between the total household population and the adults in household (over 16)
    a. Total household population (5,415,900) – adults in household (4,341,528) = 1,074,371

6.3 Household Income

The Project Team compiled household income data by subregion to arrive at an aggregate 21-County region projection for household income. Forecast data from Woods & Poole was used as the basis for the projection and all values were adjusted for inflation to 2009 dollars, to be consistent with Woods & Poole. Woods & Poole provided a future number of households by income bracket out to 2050.

The Louis Berger Team first aggregated the Woods and Poole number of households in each income bracket by county in each subregion to arrive at a future share of each income bracket by subregion. Those shares were then applied to the household control totals for each subregion, as generated by the household model (Section 6.1) to establish the number of households in each bracket by subregion. For example, in the CMAP region, Woods & Poole projects that in 2050, 7% of households will be in the $45,000 to $59,999 bracket. The control total of 4,223,827 households for the CMAP region was then multiplied by 7% to arrive at 291,181 households in that bracket.

Next, the resulting number of households in each income bracket were aggregated across the four subregions to arrive at a 21-County regional total by year and income bracket. The implied shares of each bracket at the 21-County level were used to establish a cumulative percentage by year. Using the cumulative percentage, the Project Team calculated the 25^{th} percentile, median and 75^{th} percentile household income values for each forecast year. The results are presented in the Appendix.

7.0 GO TO 2040 FORECAST SCENARIOS

The Project Team arrived at a baseline forecast using the methodology described in the preceding sections of this document. The results of the baseline forecast are presented in Appendix B. The reference forecast was established through a collaborative effort between CMAP and the Project Team, reflecting targeted investments in the region's transportation system and increasing educational attainment rates, a widely-used measure of human capital accumulation. These scenarios are both consistent with recommendations outlined in GO TO 2040 and the combination of the two has been accepted as the most likely trajectory of growth, or reference forecast. A third scenario, a shift-share forecast, is described below and the results are presented in Appendix C.

7.1 Transportation Scenario

CMAP used TREDIS to estimate the job impacts by industry associated with: (1) construction of all major capital projects identified in the GO TO 2040 Plan Update (2014), (2) a package of arterial improvements, and (3) a doubling in transit ridership; all TREDIS outputs were transmitted to the Project Team. Because TREDIS uses an aggregate industry sectoring scheme (14 sectors), the Project Team allocated job impacts by sector to two-digit NAICS using annual shares from the baseline employment series. The Project Team then added annual, TREDIS-estimated job impacts by industry sector to baseline employment for the CMAP 7 region. Because CMAP's TREDIS model relies on a 2040 demographic forecast, the Project Team extrapolated job impacts linearly for the 2041-2050 period before adding them to baseline employment. Assumptions used for the TREDIS modeling include:

- Input formation
    - 642 miles of arterial improvements
    - $12.33 billion in major capital transit and road improvements from CMAP's 2040 plan
    - Congestion held constant (based on GO TO 2040 goal)
    - Reduction in car trips (reflected in changes to VMT/VHT) associated with increased transit ridership
    - Constant average trip length and trip time for each mode (resulting in travel cost reduction)
    - 2015 road network with "2040 reference" demographic forecast

- TREDIS adjustments
    - Center of CBD used for market access calculation
    - Default factors used for most fields (e.g., safety, value of time)
    - Travel characteristics and market access customized by CMAP

7.2 Human Capital Scenario

The Project Team reviewed several studies that estimate the impact educational attainment has on regional employment growth, considering three to be relevant but ultimately relying on one (Table 7-1). This is because, of the studies reviewed, only one estimates the relationship between educational attainment and employment growth by industry sector. (Also, results from each study are within the same order of magnitude.) This 2004 study of 316 U.S. metropolitan areas, published in the *Journal of Urban Economics*, estimated the relationship between educational attainment in 1970 and employment growth from 1977-1997 in three industry groupings. The author groups industries according to

employment growth and skill intensity, or the degree to which an individual industry employed college-educated workers in 1980.[41]

Results from this study suggest that skill-intensive industries experience the most employment growth as a result of higher educational attainment levels, followed by declining industries (mostly manufacturing) and growing "unskilled" industries. Growth in skill-intensive industries supports the notion that those firms needing highly-educated workers will benefit the most from a highly-skilled workforce. The author posits that (a) unskilled industries experience employment growth partly because of the multiplier effect generated by skilled industries and (b) declining industries experience employment loss because manufacturers in well-educated regions are more likely to adopt new technologies that improve productivity.[42]

TABLE 7-1. SUMMARY OF STUDY FINDINGS

Study	Predictor (Independent) Variable	Response (Dependent) Variable	Percentage Point Increase
Gottlieb and Fogarty (2003)[43]	Percent of the population over 25 with a bachelor's degree or higher, 2000	Annual employment growth rate, 1980-1997	0.040
Simon and Nardinelli (2002)[44]	Percent of (four-year) college graduates in 1940	Annual employment growth rate, 1940-1990	0.068
Simon (2004)[45]	Percent of (four-year) college graduates, 1970	Employment growth, 1977-1997	Rising industries (skilled): 0.052 Rising industries (unskilled): 0.016 Declining industries: 0.028 All industries: 0.023

The Project Team relied on elasticities in Simon (2004) in order to relate changes in educational attainment to changes in regional employment. Adjustments were applied to baseline employment growth rates in a lagged fashion (7-year based on Simon) using separate elasticities for "skilled" industries, "unskilled" industries, and declining industries (based on groupings in Simon). Increases in the level of educational of attainment (bachelor's degree) correspond with goals established and provided by CMAP.

7.3 Shift-Share Scenario

CMAP developed a shift-share-derived forecast for the CMAP region using national Moody's employment forecasts. Shift-share analysis is used to "decompose" regional employment growth into its three major components: the industrial mix effect, national growth effect, and regional competitive effect.[46] To borrow from Emsi, an employment data provider, the industrial mix effect measures the portion of regional, industry-level employment growth that is explained by the growth of that same industry at a national level. The national growth effect represents the portion of regional, industry-level

growth explained by *overall* employment growth nationally—essentially a "rising tide lifts all boats" concept. Finally, the regional competitive effect isolates the amount of regional employment growth by industry that is unique to that area. CMAP produced the employment forecast by holding the regional competitive effect constant while keeping the Moody's national forecast unconstrained. The Shift-Share forecast is a generally pessimistic scenario, with a lower population and employment trajectory than the reference forecast and baseline forecast.

8.0 REFERENCE FORECAST RESULTS

As described above in Section 7, the reference forecast reflects a combination of the transportation and human capital scenario. The results for key variables – employment, population, age and race – are presented in this section.

8.1 Employment Results

Employment in the 21-county forecast region is forecast to reach 6.4 million by 2050, a 31 percent increase over its 2010 level (Table 8-1). The annual growth rate between 2010 and 2050 is expected to be substantially greater than the historical period of 1990-2010. The 7-county CMAP region is expected to contribute 92 percent of the forecast region's growth, with outer counties in Illinois and Wisconsin contributing the rest. The 7-county CMAP region, reference forecasts suggest that total employment will reach 5.4 million by 2050. Outer counties in Illinois will likely see slower employment growth than in the CMAP region while Wisconsin counties experience relatively stronger growth. The NW Indiana subregion will experience virtually no employment growth in the coming decades.

Table 8-2 presents the results for wage and salary employment.

TABLE 8-1. TOTAL EMPLOYMENT FORECASTS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**4,649,324**	**5,296,682**	**4,885,980**	**5,510,372**	**5,746,827**	**6,060,050**	**6,423,295**	**236,656**	**5%**	**0.25%**	**1,537,315**	**31%**	**0.69%**
CMAP Total	3,850,476	4,397,523	4,045,501	4,626,967	4,843,059	5,124,469	5,452,991	195,025	5%	0.25%	1,407,490	35%	0.75%
Illinois Outer County Total	313,851	365,907	340,783	364,511	374,863	388,993	404,363	26,932	9%	0.41%	63,580	19%	0.43%
NW Indiana Total	318,311	337,731	313,447	315,768	313,358	314,433	315,384	(4,864)	-2%	-0.08%	1,937	1%	0.02%
SE Wisconsin Total	166,686	195,522	186,248	203,126	215,546	232,156	250,557	19,563	12%	0.56%	64,308	35%	0.74%

TABLE 8-2. WAGE & SALARY EMPLOYMENT FORECASTS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**4,251,564**	**4,820,107**	**4,454,973**	**5,074,228**	**5,289,245**	**5,571,465**	**5,892,827**	**203,409**	**5%**	**0.23%**	**1,437,854**	**32%**	**0.70%**
CMAP Total	3,524,503	4,002,634	3,689,872	4,260,468	4,456,914	4,710,024	4,999,618	165,369	5%	0.23%	1,309,745	35%	0.76%
Illinois Outer County Total	283,865	330,960	308,394	334,815	344,364	357,390	371,559	24,530	9%	0.42%	63,165	20%	0.47%
NW Indiana Total	292,746	310,324	288,317	293,256	290,932	291,847	292,648	(4,429)	-2%	-0.08%	4,331	2%	0.04%
SE Wisconsin Total	150,449	176,188	168,389	185,689	197,034	212,203	229,002	17,940	12%	0.56%	60,613	36%	0.77%

8.2 Population Results

8.2.1 Total Population

The population levels in the entire 21-County CMAP Forecast Region are expected to increase by approximately 2.8 million between 2010 and 2050, growing at 0.6% per year, as shown in Table 8-3. The CMAP region is expected to grow by over 2.3 million people, while the Illinois Outer Counties, NW Indiana and SE Wisconsin are projected to grow by 221,000, 70,000 and 113,000, respectively over the 40-year

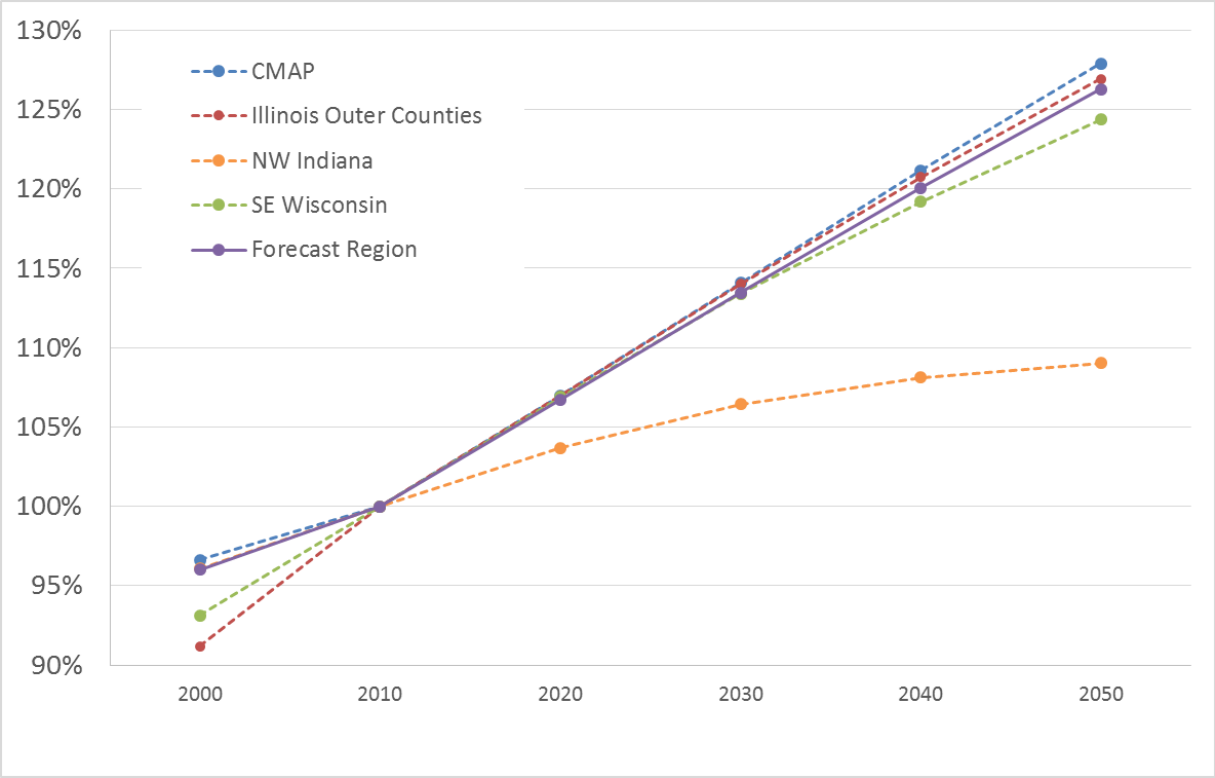
forecast horizon. The projected compound annual growth rates (CAGRs) are generally lower than those observed for the period from 1990-2010.

TABLE 8-3. TOTAL POPULATION FORECASTS

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**9,067,901**	**10,069,043**	**10,488,818**	**11,194,920**	**11,901,524**	**12,594,808**	**13,245,413**	**1,420,917**	**16%**	**0.73%**	**2,756,595**	**26%**	**0.59%**
CMAP Total	7,300,589	8,146,264	8,431,386	9,019,767	9,617,193	10,215,298	10,784,021	1,130,797	15%	0.72%	2,352,635	28%	0.62%
Illinois Outer County	677,505	749,144	821,555	878,920	936,672	991,991	1,042,811	144,050	21%	0.97%	221,256	27%	0.60%
NW Indiana Total	711,592	741,468	771,815	800,267	821,411	834,359	841,480	60,223	8%	0.41%	69,665	9%	0.22%
SE Wisconsin Total	378,215	432,167	464,062	495,965	526,249	553,159	577,102	85,847	23%	1.03%	113,040	24%	0.55%

Figure 8-1 shows the relative population change for the four subregions and the 21-County region as a reference. While CMAP, the Illinois Outer Counties and SE Wisconsin all expect about a 25% increase in population compared to 2010, the weaker growth of 9% in NW Indiana, driven by consistently negative migration rates, is clearly demonstrated in Figure 8-1. Outside of NW Indiana, the pace of growth is generally consistent across the remaining three subregions, growing about 3% over each 5-year time interval.

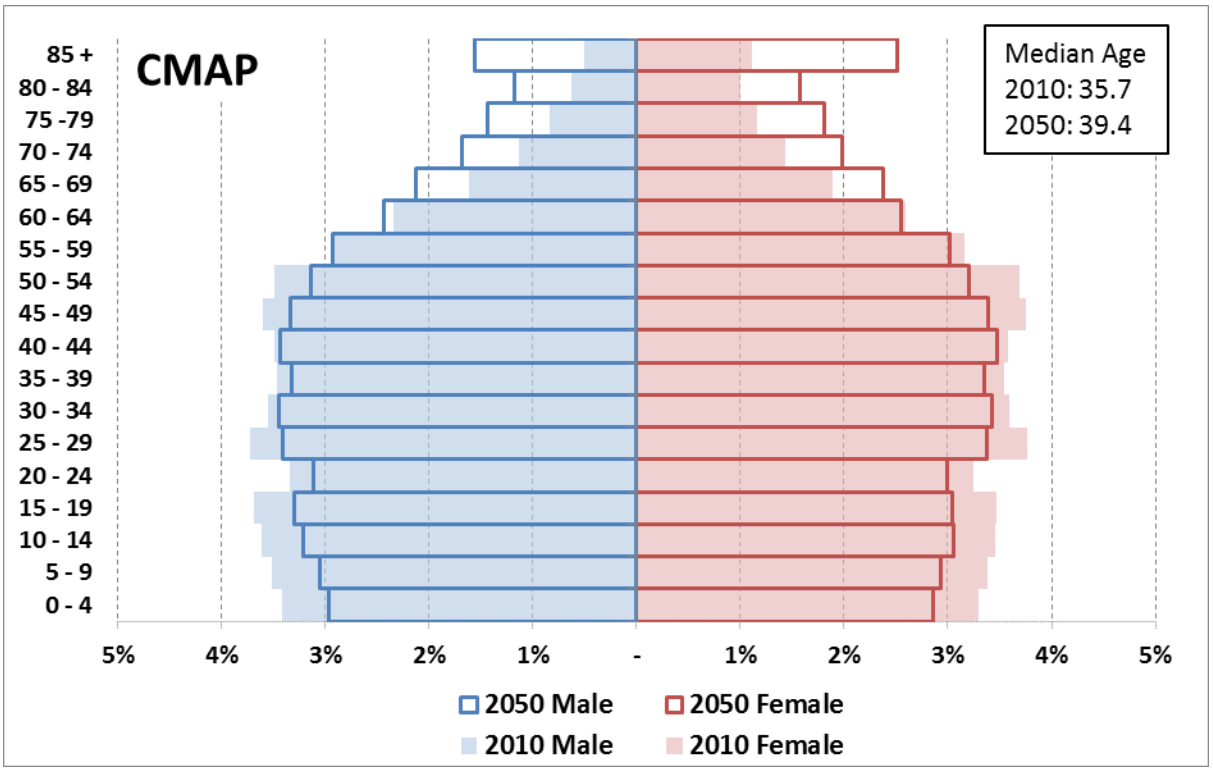
FIGURE 8-1. RELATIVE POPULATION CHANGE BY SUBREGION (2010=100%)

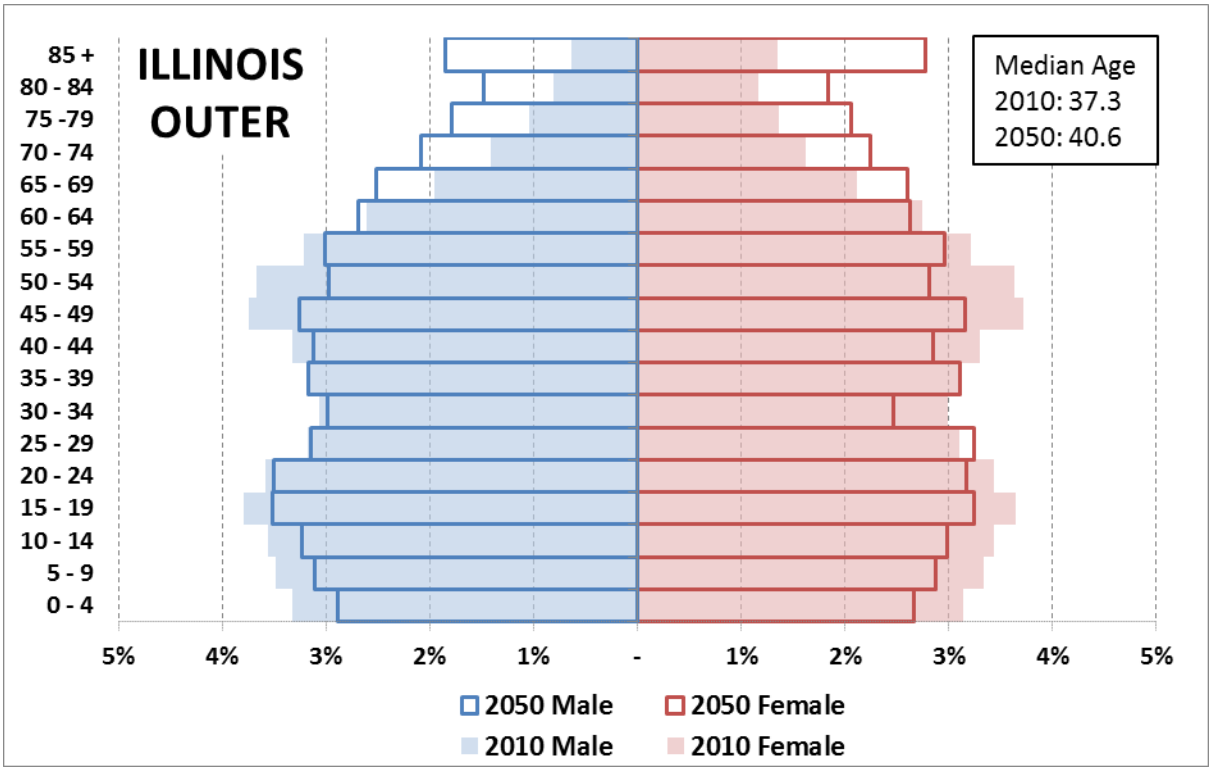


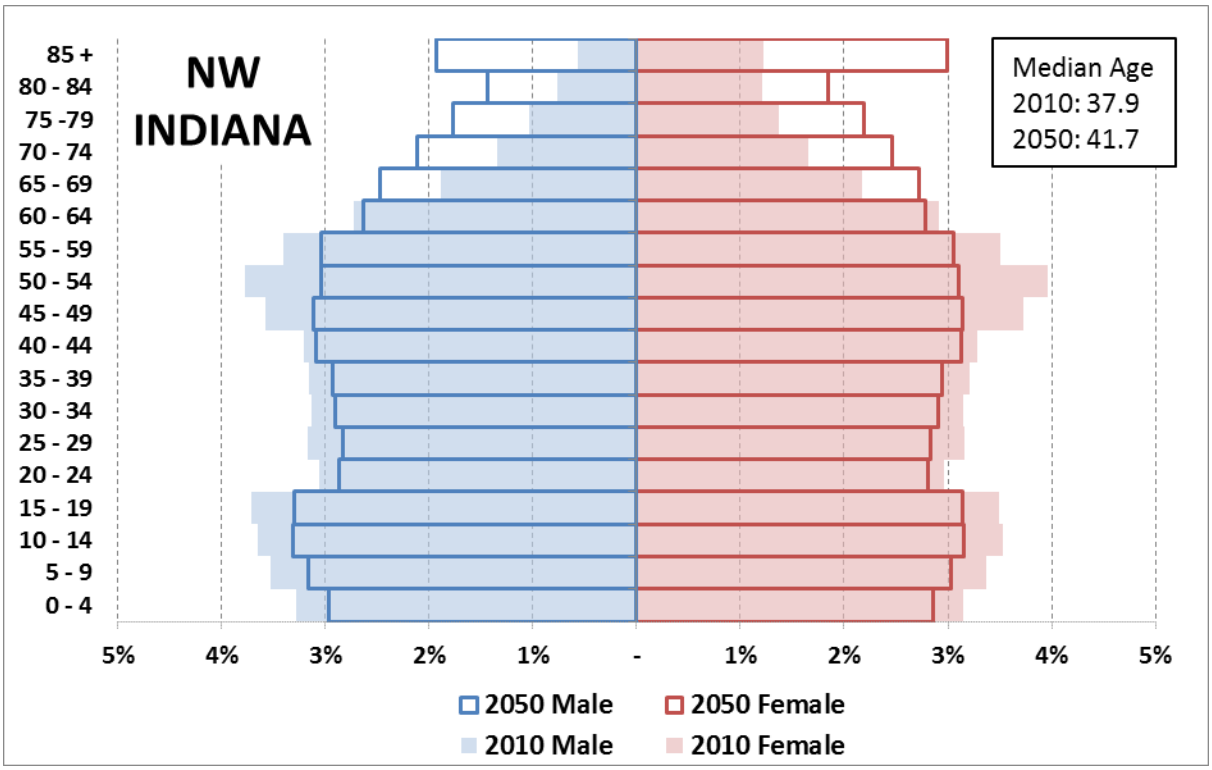
8.2.2 *Age & Race*

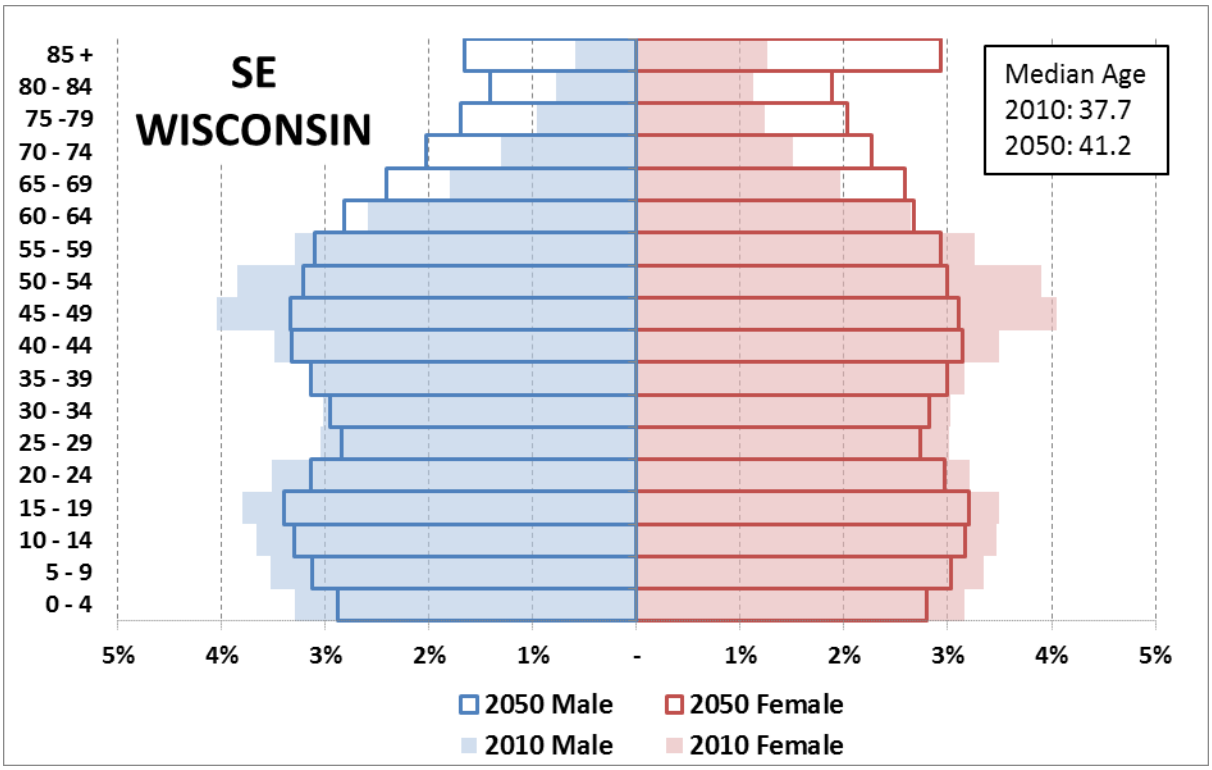
Consistent with trends throughout the nation, the population in the CMAP region is expected to age over time. Figure 8-2 shows population pyramids for the four subregions comparing 2010 to forecast year 2050. The pyramids clearly demonstrate how an increasingly larger share of the population is shifting towards the older cohorts, particularly those 85 and over. Across the subregions, the median age is expected to rise approximately 3.5 years on average between 2010 and 2050.

FIGURE 8-2. POPULATION PYRAMIDS









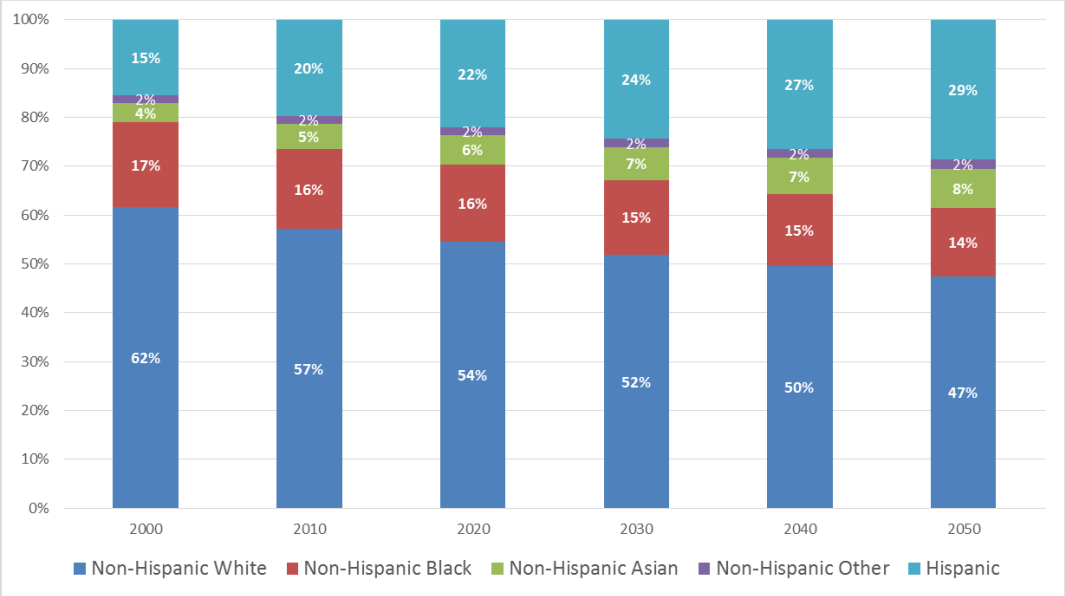
As discussed in Section 4.5.2, the Project Team applied a partial linear and partial logarithmic trend to the historic population of each of the five mutually exclusive race/Hispanic groups at the county level. This enabled the recent trends and likely trajectory of growth to continue, albeit at a moderated pace.

Across all subregions, the share of the Non-Hispanic White population is projected to decrease substantially, with a corresponding rise in the Hispanic share of the population (Figure 8-3). While the Non-Hispanic Black share of the population is forecasted to decrease modestly at the 21-County Region level and for CMAP, it is conversely projected to increase slightly for the Illinois Outer Counties, NW Indiana and SE Wisconsin.

FIGURE 8-3. RACE & ETHNICITY RESULTS

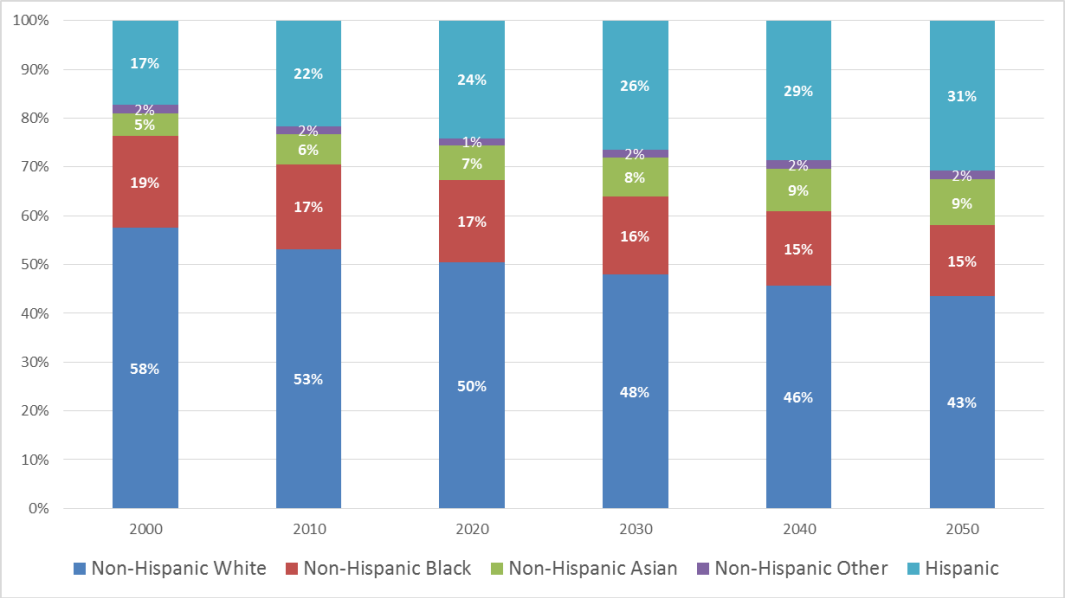
FORECAST REGION

	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	6,202,933	6,002,969	6,096,711	6,174,848	6,241,904	6,271,543	(199,964)	-3%	-0.33%	268,574	4%	0.11%
Non-Hispanic Black	1,751,989	1,704,947	1,781,415	1,825,485	1,855,455	1,874,873	(47,042)	-3%	-0.27%	169,926	10%	0.24%
Non-Hispanic Asian	393,728	539,825	670,748	798,607	929,538	1,061,731	146,097	37%	3.21%	521,906	97%	1.71%
Non-Hispanic Other	162,929	178,331	172,938	199,660	227,104	254,546	15,402	9%	0.91%	76,215	43%	0.89%
Hispanic	1,557,464	2,062,746	2,473,106	2,902,924	3,340,807	3,782,719	505,282	32%	2.85%	1,719,973	83%	1.53%



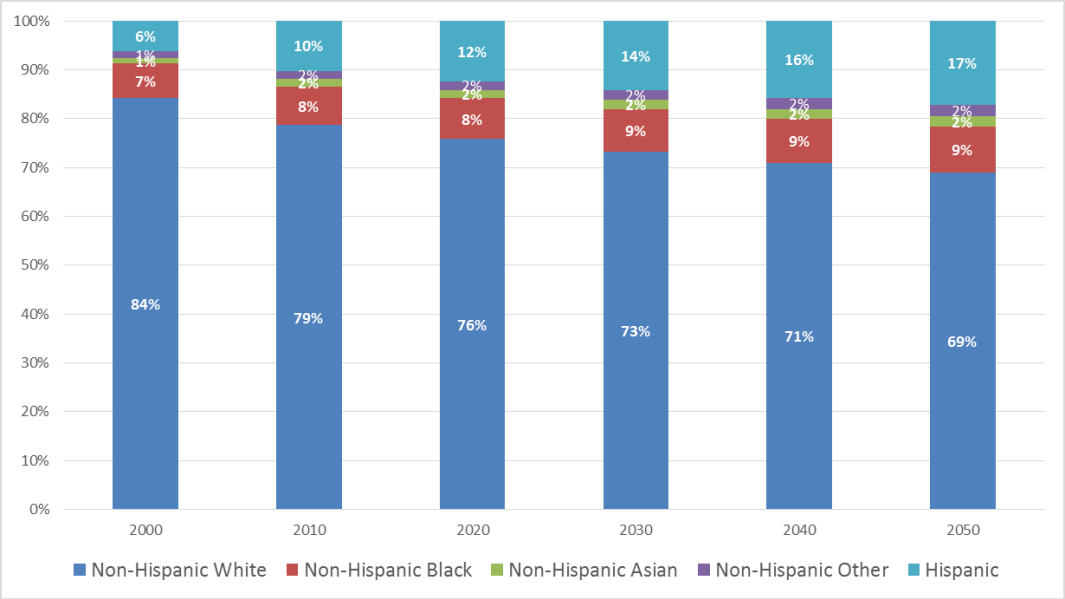
CMAP

	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	4,687,259	4,486,557	4,550,578	4,608,290	4,662,482	4,686,348	(200,702)	-4%	-0.44%	199,791	4%	0.11%
Non-Hispanic Black	1,537,534	1,465,417	1,522,768	1,549,392	1,564,301	1,570,794	(72,117)	-5%	-0.48%	105,377	7%	0.17%
Non-Hispanic Asian	375,993	513,694	638,490	760,854	886,597	1,013,923	137,701	37%	3.17%	500,229	97%	1.71%
Non-Hispanic Other	136,276	142,109	133,437	153,379	174,437	195,879	5,833	4%	0.42%	53,770	38%	0.81%
Hispanic	1,409,202	1,823,609	2,174,493	2,545,278	2,927,482	3,317,077	414,407	29%	2.61%	1,493,468	82%	1.51%



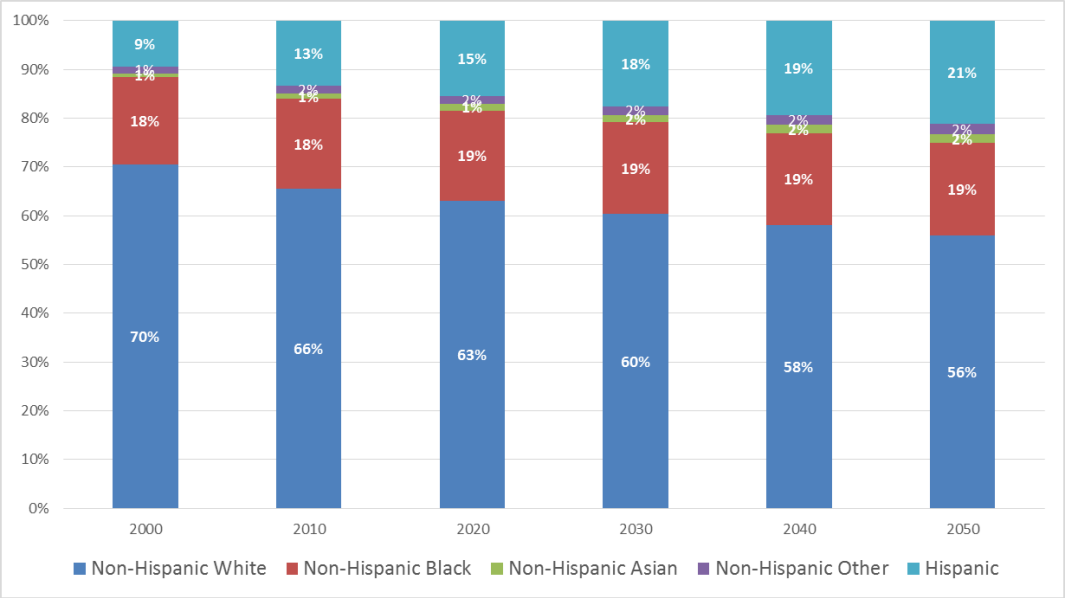
IILINOIS OUTER COUNTIES

	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	630,600	646,316	666,306	685,839	704,277	719,981	15,716	2%	0.25%	73,665	11%	0.27%
Non-Hispanic Black	53,083	64,769	73,345	81,805	89,708	97,003	11,686	22%	2.01%	32,234	50%	1.01%
Non-Hispanic Asian	8,790	12,377	14,971	17,297	19,545	21,672	3,587	41%	3.48%	9,295	75%	1.41%
Non-Hispanic Other	9,901	14,361	15,873	18,842	21,690	24,391	4,460	45%	3.79%	10,030	70%	1.33%
Hispanic	46,770	83,732	108,426	132,889	156,771	179,764	36,962	79%	6.00%	96,032	115%	1.93%

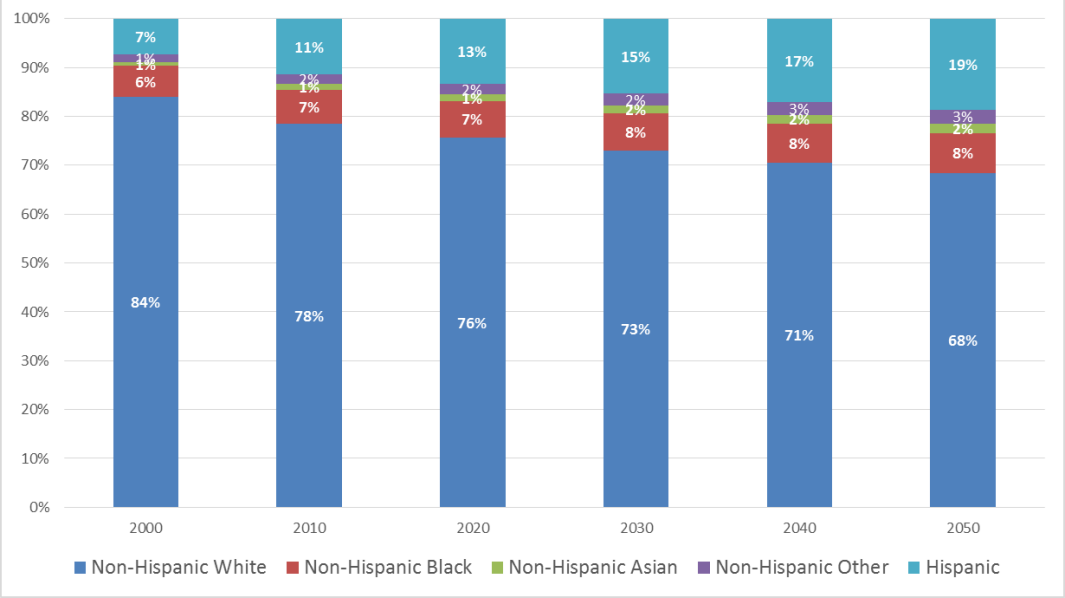


NW INDIANA

	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	522,121	506,100	504,267	496,404	484,616	470,631	(16,021)	-3%	-0.31%	(35,469)	-7%	-0.18%
Non-Hispanic Black	133,738	141,990	148,676	153,789	157,235	159,348	8,252	6%	0.60%	17,358	12%	0.29%
Non-Hispanic Asian	5,672	8,511	10,577	12,364	13,964	15,402	2,839	50%	4.14%	6,891	81%	1.49%
Non-Hispanic Other	10,328	12,525	13,014	14,751	16,281	17,643	2,197	21%	1.95%	5,118	41%	0.86%
Hispanic	69,609	102,689	123,732	144,104	162,262	178,456	33,080	48%	3.96%	75,767	74%	1.39%



SE WISCONSIN	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	362,953	363,996	375,560	384,315	390,529	394,583	1,043	0%	0.03%	30,587	8%	0.20%
Non-Hispanic Black	27,634	32,771	36,626	40,500	44,211	47,728	5,137	19%	1.72%	14,957	46%	0.94%
Non-Hispanic Asian	3,273	5,243	6,709	8,092	9,432	10,734	1,970	60%	4.82%	5,491	105%	1.81%
Non-Hispanic Other	6,424	9,336	10,615	12,689	14,696	16,634	2,912	45%	3.81%	7,298	78%	1.45%
Hispanic	31,883	52,716	66,456	80,653	94,291	107,422	20,833	65%	5.16%	54,706	104%	1.80%



8.2.3 Population in Households and Group Quarters

The following tables, 8-4 through 8-7 present the population in households and population in Group Quarters, broken out by institutional and non-institutional.

TABLE 8-4. POPULATION IN HOUSEHOLDS FORECASTS

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**8,890,493**	**9,870,849**	**10,296,440**	**10,984,701**	**11,671,167**	**12,337,680**	**12,964,299**	**1,405,947**	**16%**	**0.74%**	**2,667,859**	**26%**	**0.58%**
CMAP Total	7,170,110	7,998,681	8,291,066	8,864,772	9,447,814	10,025,113	10,574,429	1,120,956	16%	0.73%	2,283,363	28%	0.61%
Illinois Outer County	653,804	724,695	798,179	853,847	908,161	960,268	1,008,623	144,375	22%	1.00%	210,444	26%	0.59%
NW Indiana Total	697,047	725,800	755,438	783,223	803,335	814,895	821,276	58,391	8%	0.40%	65,838	9%	0.21%
SE Wisconsin Total	369,532	421,673	451,757	482,858	511,857	537,404	559,971	82,225	22%	1.01%	108,214	24%	0.54%

TABLE 8-5. TOTAL POPULATION IN GROUP QUARTERS FORECASTS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**192,378**	**210,219**	**230,357**	**257,128**	**281,113**	**88,735**	**46%**	**0.95%**
CMAP Total	140,320	154,995	169,379	190,185	209,591	69,271	49%	1.01%
Illinois Outer County T	23,376	25,073	28,511	31,723	34,188	10,812	46%	0.95%
NW Indiana Total	16,377	17,044	18,075	19,464	20,203	3,826	23%	0.53%
SE Wisconsin Total	12,305	13,107	14,392	15,755	17,131	4,826	39%	0.83%

TABLE 8-6. NON-INSTITUTIONAL GROUP QUARTERS FORECASTS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**93,670**	**103,298**	**113,332**	**126,197**	**138,280**	**44,610**	**48%**	**0.98%**
CMAP Total	72,406	80,178	86,952	97,203	107,163	34,757	48%	0.98%
Illinois Outer County Total	10,882	11,924	13,958	15,255	16,268	5,386	49%	1.01%
NW Indiana Total	4,915	5,311	5,880	6,595	7,012	2,097	43%	0.89%
SE Wisconsin Total	5,467	5,886	6,542	7,144	7,837	2,370	43%	0.90%

TABLE 8-7. INSTITUTIONAL GROUP QUARTERS FORECASTS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**98,708**	**106,920**	**117,025**	**130,930**	**142,834**	**44,126**	**45%**	**0.93%**
CMAP Total	67,914	74,816	82,427	92,983	102,428	34,514	51%	1.03%
Illinois Outer County Total	12,494	13,150	14,553	16,468	17,920	5,426	43%	0.91%
NW Indiana Total	11,462	11,733	12,195	12,868	13,191	1,729	15%	0.35%
SE Wisconsin Total	6,838	7,221	7,850	8,611	9,295	2,457	36%	0.77%

9.0 APPENDIX

9.1 Appendix A – Reference Forecast Variables

As described in Section 7, the reference forecast was established through a collaborative effort between CMAP and the Project Team, reflecting targeted investments in the region's transportation system and increasing educational attainment rates, a widely-used measure of human capital accumulation. These scenarios are both consistent with recommendations outlined in GO TO 2040 and the combination of the two has been accepted as the most likely trajectory of growth, or reference forecast.

TABLE 9-1. REFERENCE FORECAST – TOTAL POPULATION

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**9,067,901**	**10,069,043**	**10,488,818**	**11,194,920**	**11,901,524**	**12,594,808**	**13,245,413**	**1,420,917**	**16%**	**0.73%**	**2,756,595**	**26%**	**0.59%**
CMAP Total	7,300,589	8,146,264	8,431,386	9,019,767	9,617,193	10,215,298	10,784,021	1,130,797	15%	0.72%	2,352,635	28%	0.62%
Illinois Outer County	677,505	749,144	821,555	878,920	936,672	991,991	1,042,811	144,050	21%	0.97%	221,256	27%	0.60%
NW Indiana Total	711,592	741,468	771,815	800,267	821,411	834,359	841,480	60,223	8%	0.41%	69,665	9%	0.22%
SE Wisconsin Total	378,215	432,167	464,062	495,965	526,249	553,159	577,102	85,847	23%	1.03%	113,040	24%	0.55%

TABLE 9-2. REFERENCE FORECAST – TOTAL HOUSEHOLDS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**3,277,511**	**3,647,127**	**3,871,150**	**4,267,037**	**4,645,149**	**4,950,469**	**5,222,208**	**593,639**	**18%**	**0.84%**	**1,351,058**	**35%**	**0.75%**
CMAP Total	2,633,148	2,925,723	3,088,156	3,412,829	3,727,764	3,987,248	4,223,827	455,008	17%	0.80%	1,135,671	37%	0.79%
Illinois Outer Count	251,583	282,674	312,508	345,763	376,632	401,790	423,761	60,925	24%	1.09%	111,253	36%	0.76%
NW Indiana Total	254,395	277,332	292,486	311,568	326,555	334,588	337,455	38,091	15%	0.70%	44,969	15%	0.36%
SE Wisconsin Total	138,385	161,398	178,000	196,878	214,198	226,843	237,165	39,615	29%	1.27%	59,165	33%	0.72%

TABLE 9-3. REFERENCE FORECAST – HOUSEHOLD SIZE

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**2.71**	**2.71**	**2.66**	**2.57**	**2.51**	**2.49**	**2.48**	**(0.05)**	**-2%**	**-0.10%**	**(0.18)**	**-7%**	**-0.17%**
CMAP Total	2.72	2.73	2.68	2.60	2.53	2.51	2.50	(0.04)	-1%	-0.07%	(0.18)	-7%	-0.17%
Illinois Outer Cour	2.60	2.56	2.55	2.47	2.41	2.39	2.38	(0.04)	-2%	-0.09%	(0.17)	-7%	-0.18%
NW Indiana Total	2.74	2.62	2.58	2.51	2.46	2.44	2.43	(0.16)	-6%	-0.29%	(0.15)	-6%	-0.15%
SE Wisconsin Total	2.67	2.61	2.54	2.45	2.39	2.37	2.36	(0.13)	-5%	-0.25%	(0.18)	-7%	-0.18%

TABLE 9-4. REFERENCE FORECAST – POPULATION IN HOUSEHOLDS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**8,890,493**	**9,870,849**	**10,296,440**	**10,984,701**	**11,671,167**	**12,337,680**	**12,964,299**	**1,405,947**	**16%**	**0.74%**	**2,667,859**	**26%**	**0.58%**
CMAP Total	7,170,110	7,998,681	8,291,066	8,864,772	9,447,814	10,025,113	10,574,429	1,120,956	16%	0.73%	2,283,363	28%	0.61%
Illinois Outer County	653,804	724,695	798,179	853,847	908,161	960,268	1,008,623	144,375	22%	1.00%	210,444	26%	0.59%
NW Indiana Total	697,047	725,800	755,438	783,223	803,335	814,895	821,276	58,391	8%	0.40%	65,838	9%	0.21%
SE Wisconsin Total	369,532	421,673	451,757	482,858	511,857	537,404	559,971	82,225	22%	1.01%	108,214	24%	0.54%

TABLE 9-5. REFERENCE FORECAST – POPULATION IN HOUSEHOLDS BY AGE

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
CMAP Total	0 - 4	608,964	596,775	564,666	528,702	556,270	578,922	602,224	616,604	620,623	622,455	627,395
CMAP Total	5 - 9	637,647	575,633	580,358	570,330	543,087	565,267	590,034	615,791	632,460	638,979	644,033
CMAP Total	10 - 14	599,563	625,663	595,459	601,888	601,632	570,025	590,685	617,552	645,327	664,580	674,476
CMAP Total	15 - 19	538,969	562,882	577,580	577,732	592,927	588,978	559,346	579,403	605,922	633,763	654,673
CMAP Total	20 - 24	513,946	524,745	527,630	575,711	578,243	587,851	582,587	554,960	577,642	599,817	625,230
CMAP Total	25 - 29	617,592	602,754	623,539	626,784	686,430	692,762	704,019	700,620	671,887	692,944	720,853
CMAP Total	30 - 34	640,211	603,744	596,348	641,266	656,279	714,210	725,762	741,603	741,301	713,255	733,675
CMAP Total	35 - 39	669,285	613,959	586,298	580,697	634,674	644,191	704,765	718,349	737,648	739,963	713,987
CMAP Total	40 - 44	648,217	638,861	590,149	571,405	575,272	624,793	634,143	696,712	710,946	732,924	738,432
CMAP Total	45 - 49	561,813	620,929	614,051	564,970	557,037	556,896	606,573	615,656	678,971	693,121	717,908
CMAP Total	50 - 54	481,222	538,917	597,549	587,537	549,041	538,433	539,113	589,297	597,853	661,719	676,939
CMAP Total	55 - 59	360,934	454,922	507,465	560,331	557,946	517,496	509,580	511,419	561,469	569,046	634,665
CMAP Total	60 - 64	281,503	327,447	412,358	466,325	521,669	514,528	476,795	472,314	475,246	525,043	531,846
CMAP Total	65 - 69	234,376	247,212	291,063	372,262	419,760	470,739	462,780	429,242	428,133	431,999	480,280
CMAP Total	70 - 74	216,843	199,899	212,150	255,717	329,464	371,339	418,120	411,170	382,513	383,674	387,804
CMAP Total	75 -79	179,690	175,459	163,989	179,976	218,826	284,226	321,997	364,572	360,666	337,951	340,911
CMAP Total	80 - 84	118,571	131,435	130,578	127,153	141,385	173,814	228,415	261,315	298,612	298,725	283,289
CMAP Total	85 +	89,336	104,189	119,836	137,116	144,831	159,933	190,875	245,255	297,893	354,060	388,034
CMAP Total	**TOTAL**	7,998,681	8,145,424	8,291,066	8,525,900	8,864,772	9,154,401	9,447,814	9,741,834	10,025,113	10,294,018	10,574,429

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Illinois Outer County To	0 - 4	50,411	52,062	53,091	50,698	52,394	54,115	55,003	56,597	56,242	58,358	57,727
Illinois Outer County To	5 - 9	55,057	53,849	56,025	56,071	54,340	55,684	57,473	58,576	60,311	60,209	62,437
Illinois Outer County To	10 - 14	56,638	57,922	57,438	59,215	60,043	58,086	59,365	61,361	62,652	64,621	64,765
Illinois Outer County To	15 - 19	51,502	55,349	56,313	55,886	58,327	58,935	56,865	59,351	61,067	62,472	64,103
Illinois Outer County To	20 - 24	45,976	53,167	52,622	54,523	54,299	57,196	57,979	57,015	60,754	62,146	63,388
Illinois Outer County To	25 - 29	46,389	45,264	50,341	49,376	54,641	51,125	57,390	53,356	57,682	52,087	65,220
Illinois Outer County To	30 - 34	49,487	48,689	48,580	52,669	52,434	57,556	54,297	60,735	56,897	61,494	55,669
Illinois Outer County To	35 - 39	58,548	52,043	50,566	50,233	54,902	54,492	59,749	56,735	63,227	59,645	64,359
Illinois Outer County To	40 - 44	58,518	59,317	53,275	51,001	51,297	55,705	55,391	60,751	57,869	64,465	61,114
Illinois Outer County To	45 - 49	52,122	58,864	60,262	53,705	52,031	52,011	56,483	56,404	61,811	59,185	65,825
Illinois Outer County To	50 - 54	44,802	52,413	59,076	59,470	53,695	51,761	51,816	56,388	56,399	61,899	59,425
Illinois Outer County To	55 - 59	35,541	44,803	52,090	57,455	58,545	52,585	50,821	51,009	55,580	55,679	61,373
Illinois Outer County To	60 - 64	28,223	34,821	43,345	50,036	55,760	56,720	51,121	49,527	49,774	54,385	54,629
Illinois Outer County To	65 - 69	24,464	27,297	32,923	41,122	47,609	53,194	54,390	49,308	47,866	48,227	52,714
Illinois Outer County To	70 - 74	23,901	22,310	24,447	29,567	37,079	43,058	48,284	49,541	45,008	43,844	44,301
Illinois Outer County To	75 -79	20,224	20,029	19,097	20,801	25,267	31,866	37,198	41,973	43,332	39,652	38,787
Illinois Outer County To	80 - 84	13,392	15,047	15,156	14,549	15,985	19,565	24,922	29,382	33,501	35,009	32,354
Illinois Outer County To	85 +	9,499	11,587	13,532	14,801	15,200	16,505	19,615	24,729	30,295	36,121	40,432
Illinois Outer County To	**TOTAL**	724,695	764,834	798,179	821,177	853,847	880,155	908,161	932,738	960,268	979,499	1,008,623

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
NW Indiana Total	0 - 4	51,170	50,807	49,598	47,884	48,624	48,818	49,153	49,127	48,745	48,777	48,879
NW Indiana Total	5 - 9	54,554	52,693	53,138	52,747	51,037	51,758	51,966	52,360	52,397	52,043	52,112
NW Indiana Total	10 - 14	54,485	55,988	55,302	55,148	54,822	53,089	53,875	54,091	54,511	54,575	54,281
NW Indiana Total	15 - 19	53,835	51,550	53,822	52,671	52,608	52,341	50,654	51,645	51,772	52,156	52,243
NW Indiana Total	20 - 24	44,138	45,352	43,167	45,985	44,539	44,697	44,425	42,865	44,073	44,007	44,412
NW Indiana Total	25 - 29	44,974	45,869	47,158	45,128	47,981	46,633	46,795	46,498	45,021	46,048	46,123
NW Indiana Total	30 - 34	46,844	45,729	47,025	48,287	46,372	49,191	47,945	48,190	47,973	46,495	47,618
NW Indiana Total	35 - 39	55,025	48,279	48,003	48,524	49,829	48,000	50,835	49,698	49,982	49,816	48,359
NW Indiana Total	40 - 44	60,485	55,215	49,159	49,127	49,722	51,049	49,348	52,181	51,156	51,448	51,360
NW Indiana Total	45 - 49	55,765	59,493	55,392	49,172	49,131	49,750	51,134	49,551	52,393	51,412	51,764
NW Indiana Total	50 - 54	47,650	54,588	58,962	54,606	48,547	48,518	49,215	50,667	49,165	52,000	51,094
NW Indiana Total	55 - 59	36,616	46,035	52,689	56,943	52,776	46,957	47,048	47,817	49,301	47,872	50,741
NW Indiana Total	60 - 64	29,156	34,081	43,136	49,281	53,328	49,319	43,947	44,269	45,077	46,571	45,243
NW Indiana Total	65 - 69	25,365	26,640	31,044	39,614	45,286	49,087	45,375	40,501	40,986	41,841	43,344
NW Indiana Total	70 - 74	24,547	22,175	22,882	27,526	35,285	40,456	44,009	40,767	36,506	37,134	38,038
NW Indiana Total	75 -79	19,798	20,040	18,225	19,249	23,313	30,063	34,681	37,961	35,376	31,872	32,600
NW Indiana Total	80 - 84	12,701	14,116	14,539	14,034	14,982	18,288	23,787	27,769	30,730	28,997	26,384
NW Indiana Total	85 +	8,692	10,350	12,197	14,239	15,040	16,253	19,144	24,307	29,733	34,789	36,683
NW Indiana Total	**TOTAL**	725,800	739,002	755,438	770,164	783,223	794,268	803,335	810,262	814,895	817,853	821,276

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
SE Wisconsin Total	0 - 4	29,086	30,129	29,904	28,309	28,993	29,840	30,494	31,373	31,777	32,405	32,736
SE Wisconsin Total	5 - 9	31,999	31,052	31,840	32,354	31,157	31,622	32,496	33,260	34,226	34,754	35,506
SE Wisconsin Total	10 - 14	33,336	33,906	33,072	33,719	34,664	33,360	33,831	34,726	35,565	36,619	37,298
SE Wisconsin Total	15 - 19	30,946	31,737	31,278	31,388	32,272	33,090	31,945	32,602	33,319	34,101	35,136
SE Wisconsin Total	20 - 24	26,456	28,758	28,334	29,012	29,250	30,095	31,097	30,053	30,876	31,246	31,956
SE Wisconsin Total	25 - 29	25,419	25,161	27,204	27,210	29,011	28,708	29,874	30,410	29,394	29,826	31,188
SE Wisconsin Total	30 - 34	29,822	28,135	27,340	29,160	29,632	31,293	31,148	32,349	32,998	32,039	32,482
SE Wisconsin Total	35 - 39	36,086	31,888	28,643	29,059	31,302	31,734	33,469	33,503	34,744	35,544	34,706
SE Wisconsin Total	40 - 44	35,644	36,565	31,815	29,155	29,887	31,969	32,524	34,313	34,424	35,702	36,636
SE Wisconsin Total	45 - 49	30,785	36,135	36,920	32,248	29,860	30,391	32,528	33,193	34,974	35,151	36,508
SE Wisconsin Total	50 - 54	26,128	31,087	35,485	36,570	32,365	29,811	30,385	32,576	33,291	35,059	35,322
SE Wisconsin Total	55 - 59	19,903	25,720	30,021	34,304	35,713	31,442	29,050	29,700	31,907	32,641	34,395
SE Wisconsin Total	60 - 64	15,698	18,772	24,036	28,383	32,744	33,924	29,871	27,722	28,468	30,664	31,412
SE Wisconsin Total	65 - 69	13,520	14,428	17,270	22,086	26,080	30,144	31,241	27,410	25,573	26,385	28,517
SE Wisconsin Total	70 - 74	12,989	12,089	12,840	15,548	19,955	23,637	27,453	28,530	25,118	23,512	24,342
SE Wisconsin Total	75 -79	10,843	10,839	9,929	10,947	13,316	17,170	20,486	23,926	25,020	22,173	20,847
SE Wisconsin Total	80 - 84	7,292	8,269	8,373	7,611	8,456	10,369	13,497	16,241	19,147	20,196	18,053
SE Wisconsin Total	85 +	5,720	6,399	7,453	8,208	8,202	8,844	10,468	13,326	16,584	20,226	22,932
SE Wisconsin Total	TOTAL	421,673	441,069	451,757	465,271	482,858	497,444	511,857	525,214	537,404	548,244	559,971

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	0 - 4	739,630	729,774	697,259	655,592	686,281	711,695	736,874	753,701	757,387	761,995	766,736
Forecast Region	5 - 9	779,257	713,228	721,361	711,502	679,621	704,331	731,969	759,987	779,393	785,985	794,089
Forecast Region	10 - 14	744,021	773,478	741,271	749,969	751,160	714,560	737,756	767,729	798,054	820,396	830,819
Forecast Region	15 - 19	675,252	701,518	718,993	717,677	736,134	733,344	698,809	723,000	752,080	782,492	806,156
Forecast Region	20 - 24	630,516	652,022	651,753	705,231	706,331	719,839	716,087	684,894	713,345	737,215	764,986
Forecast Region	25 - 29	734,374	719,048	748,242	748,499	818,062	819,227	838,079	830,885	803,984	820,905	863,384
Forecast Region	30 - 34	766,364	726,297	719,293	771,382	784,717	852,250	859,152	882,878	879,170	853,282	869,443
Forecast Region	35 - 39	818,943	746,169	713,510	708,513	770,707	778,416	848,819	858,284	885,600	884,968	861,411
Forecast Region	40 - 44	802,864	789,957	724,398	700,688	706,178	763,516	771,406	843,957	854,394	884,540	887,542
Forecast Region	45 - 49	700,485	775,421	766,625	700,095	688,060	689,047	746,719	754,803	828,150	838,869	872,005
Forecast Region	50 - 54	599,801	677,005	751,072	738,183	683,648	668,522	670,529	728,928	736,708	810,677	822,780
Forecast Region	55 - 59	452,994	571,480	642,265	709,033	704,979	648,480	636,499	639,946	698,257	705,238	781,174
Forecast Region	60 - 64	354,581	415,121	522,875	594,025	663,502	654,491	601,735	593,831	598,565	656,663	663,130
Forecast Region	65 - 69	297,726	315,577	372,300	475,083	538,735	603,164	593,786	546,461	542,559	548,452	604,855
Forecast Region	70 - 74	278,281	256,473	272,319	328,358	421,784	478,489	537,865	530,009	489,145	488,165	494,485
Forecast Region	75 -79	230,556	226,368	211,240	230,972	280,722	363,325	414,362	468,432	464,394	431,648	433,145
Forecast Region	80 - 84	151,956	168,867	168,646	163,347	180,807	222,035	290,620	334,707	381,989	382,927	360,079
Forecast Region	85 +	113,248	132,524	153,018	174,363	183,272	201,536	240,102	307,617	374,505	445,196	488,081
Forecast Region	TOTAL	9,870,849	10,090,328	10,296,440	10,582,512	10,984,701	11,326,269	11,671,167	12,010,048	12,337,680	12,639,614	12,964,299

TABLE 9-6. REFERENCE FORECAST – WORKERS IN HOUSEHOLDS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**4,915,140**	**5,500,224**	**5,740,196**	**6,042,896**	**6,386,418**	**1,471,278**	**30%**	**0.66%**
CMAP Total	3,989,579	4,494,241	4,712,959	4,975,871	5,278,849	1,289,270	32%	0.70%
Illinois Outer County	371,835	412,512	426,579	450,886	477,098	105,264	28%	0.63%
NW Indiana Total	333,488	353,162	354,256	358,301	361,394	27,906	8%	0.20%
SE Wisconsin Total	220,238	240,309	246,402	257,838	269,076	48,838	22%	0.50%

TABLE 9-7. REFERENCE FORECAST – HOUSEHOLD INCOME FOR 21-COUNTY REGION (2009$)

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
25th Percentile	$ 31,190	$ 34,962	$ 28,082	$ 30,781	$ 36,556	$ 43,880	$ 50,451	$ (3,108)	-10%	-0.52%	$ 22,369	80%	1.48%
Median	$ 58,893	$ 64,705	$ 56,541	$ 62,412	$ 72,195	$ 83,190	$ 91,140	$ (2,352)	-4%	-0.20%	$ 34,600	61%	1.20%
75th Percentile	$ 94,113	$107,765	$ 98,139	$ 103,670	$ 114,302	$ 123,948	$ 134,071	$ 4,026	4%	0.21%	$ 35,932	37%	0.78%

TABLE 9-8. REFERENCE FORECAST – POPULATION BY RACE/ETHNICITY

CMAP

	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Non-Hispanic White	4,687,259	4,486,557	4,550,578	4,608,290	4,662,482	4,686,348	(200,702)	-4%	-0.44%	199,791	4%	0.11%
Non-Hispanic Black	1,537,534	1,465,417	1,522,768	1,549,392	1,564,301	1,570,794	(72,117)	-5%	-0.48%	105,377	7%	0.17%
Non-Hispanic Asian	375,993	513,694	638,490	760,854	886,597	1,013,923	137,701	37%	3.17%	500,229	97%	1.71%
Non-Hispanic Other	136,276	142,109	133,437	153,379	174,437	195,879	5,833	4%	0.42%	53,770	38%	0.81%
Hispanic	1,409,202	1,823,609	2,174,493	2,545,278	2,927,482	3,317,077	414,407	29%	2.61%	1,493,468	82%	1.51%

Illinois Outer Counties

	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	630,600	646,316	666,306	685,839	704,277	719,981	15,716	2%	0.25%	73,665	11%	0.27%
Non-Hispanic Black	53,083	64,769	73,345	81,805	89,708	97,003	11,686	22%	2.01%	32,234	50%	1.01%
Non-Hispanic Asian	8,790	12,377	14,971	17,297	19,545	21,672	3,587	41%	3.48%	9,295	75%	1.41%
Non-Hispanic Other	9,901	14,361	15,873	18,842	21,690	24,391	4,460	45%	3.79%	10,030	70%	1.33%
Hispanic	46,770	83,732	108,426	132,889	156,771	179,764	36,962	79%	6.00%	96,032	115%	1.93%

NW Indiana

	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	522,121	506,100	504,267	496,404	484,616	470,631	(16,021)	-3%	-0.31%	(35,469)	-7%	-0.18%
Non-Hispanic Black	133,738	141,990	148,676	153,789	157,235	159,348	8,252	6%	0.60%	17,358	12%	0.29%
Non-Hispanic Asian	5,672	8,511	10,577	12,364	13,964	15,402	2,839	50%	4.14%	6,891	81%	1.49%
Non-Hispanic Other	10,328	12,525	13,014	14,751	16,281	17,643	2,197	21%	1.95%	5,118	41%	0.86%
Hispanic	69,609	102,689	123,732	144,104	162,262	178,456	33,080	48%	3.96%	75,767	74%	1.39%

SE Wisconsin

	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	362,953	363,996	375,560	384,315	390,529	394,583	1,043	0%	0.03%	30,587	8%	0.20%
Non-Hispanic Black	27,634	32,771	36,626	40,500	44,211	47,728	5,137	19%	1.72%	14,957	46%	0.94%
Non-Hispanic Asian	3,273	5,243	6,709	8,092	9,432	10,734	1,970	60%	4.82%	5,491	105%	1.81%
Non-Hispanic Other	6,424	9,336	10,615	12,689	14,696	16,634	2,912	45%	3.81%	7,298	78%	1.45%
Hispanic	31,883	52,716	66,456	80,653	94,291	107,422	20,833	65%	5.16%	54,706	104%	1.80%

Forecast Region

	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	6,202,933	6,002,969	6,096,711	6,174,848	6,241,904	6,271,543	(199,964)	-3%	-0.33%	268,574	4%	0.11%
Non-Hispanic Black	1,751,989	1,704,947	1,781,415	1,825,485	1,855,455	1,874,873	(47,042)	-3%	-0.27%	169,926	10%	0.24%
Non-Hispanic Asian	393,728	539,825	670,748	798,607	929,538	1,061,731	146,097	37%	3.21%	521,906	97%	1.71%
Non-Hispanic Other	162,929	178,331	172,938	199,660	227,104	254,546	15,402	9%	0.91%	76,215	43%	0.89%
Hispanic	1,557,464	2,062,746	2,473,106	2,902,924	3,340,807	3,782,719	505,282	32%	2.85%	1,719,973	83%	1.53%

TABLE 9-9. REFERENCE FORECAST – NON-INSTITUTIONAL GROUP QUARTERS POPULATION

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050	2010-2050 CAGR
Forecast Region	**93,670**	**103,298**	**113,332**	**126,197**	**138,280**	**44,610**	**48%**	**0.98%**
CMAP Total	72,406	80,178	86,952	97,203	107,163	34,757	48%	0.98%
Illinois Outer County Total	10,882	11,924	13,958	15,255	16,268	5,386	49%	1.01%
NW Indiana Total	4,915	5,311	5,880	6,595	7,012	2,097	43%	0.89%
SE Wisconsin Total	5,467	5,886	6,542	7,144	7,837	2,370	43%	0.90%

TABLE 9-10. REFERENCE FORECAST – INSTITUTIONAL GROUP QUARTERS POPULATION

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050	2010-2050 CAGR
Forecast Region	**98,708**	**106,920**	**117,025**	**130,930**	**142,834**	**44,126**	**45%**	**0.93%**
CMAP Total	67,914	74,816	82,427	92,983	102,428	34,514	51%	1.03%
Illinois Outer County Total	12,494	13,150	14,553	16,468	17,920	5,426	43%	0.91%
NW Indiana Total	11,462	11,733	12,195	12,868	13,191	1,729	15%	0.35%
SE Wisconsin Total	6,838	7,221	7,850	8,611	9,295	2,457	36%	0.77%

TABLE 9-11. REFERENCE FORECAST – TOTAL EMPLOYMENT

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010	1990-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Forecast Region	**4,649,324**	**5,296,682**	**4,885,980**	**5,510,372**	**5,746,827**	**6,060,050**	**6,423,295**	**236,656**	**5%**	**0.25%**	**1,537,315**	**31%**	**0.69%**
CMAP Total	3,850,476	4,397,523	4,045,501	4,626,967	4,843,059	5,124,469	5,452,991	195,025	5%	0.25%	1,407,490	35%	0.75%
Illinois Outer County	313,851	365,907	340,783	364,511	374,863	388,993	404,363	26,932	9%	0.41%	63,580	19%	0.43%
NW Indiana Total	318,311	337,731	313,447	315,768	313,358	314,433	315,384	(4,864)	-2%	-0.08%	1,937	1%	0.02%
SE Wisconsin Total	166,686	195,522	186,248	203,126	215,546	232,156	250,557	19,563	12%	0.56%	64,308	35%	0.74%

TABLE 9-12. REFERENCE FORECAST – TOTAL EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference		1990-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
11	Agriculture, Forestry,	10,787	8,674	5,639	5,960	6,173	6,473	6,938	(5,148)	-48%	-3.19%	1,299	23%	0.52%
21	Mining, Quarrying, an	2,214	1,673	1,159	1,375	1,440	1,507	1,526	(1,055)	-48%	-3.18%	367	32%	0.69%
22	Utilities	25,531	15,843	10,369	11,883	11,670	11,433	10,892	(15,162)	-59%	-4.41%	523	5%	0.12%
23	Construction	218,751	251,666	173,363	215,709	238,040	278,600	345,090	(45,387)	-21%	-1.16%	171,727	99%	1.74%
31-33	Manufacturing	634,042	584,297	370,381	368,536	335,190	313,110	294,741	(263,660)	-42%	-2.65%	(75,641)	-20%	-0.57%
42	Wholesale Trade	244,644	247,914	207,653	222,450	226,124	228,435	223,686	(36,991)	-15%	-0.82%	16,033	8%	0.19%
44-45	Retail Trade	432,299	448,113	413,364	436,746	440,746	451,662	473,162	(18,935)	-4%	-0.22%	59,798	14%	0.34%
48-49	Transportation and Wa	165,943	207,002	179,216	196,153	190,767	185,526	179,258	13,272	8%	0.39%	42	0%	0.00%
51	Information	102,092	116,305	79,181	82,029	83,583	85,538	86,838	(22,910)	-22%	-1.26%	7,657	10%	0.23%
52	Finance and Insurance	240,337	256,733	231,215	240,936	257,470	279,409	295,978	(9,122)	-4%	-0.19%	64,763	28%	0.62%
53	Real Estate and Rental	78,134	90,977	76,497	78,272	75,439	73,354	75,165	(1,638)	-2%	-0.11%	(1,332)	-2%	-0.04%
54	Professional and Tech	261,686	368,555	330,046	413,092	439,407	476,513	533,940	68,360	26%	1.17%	203,894	62%	1.21%
55	Management of Comp	63,984	65,070	75,126	83,881	80,884	79,225	76,887	11,142	17%	0.81%	1,761	2%	0.06%
56	Administrative and Wa	210,815	327,052	294,330	406,936	493,908	596,028	694,257	83,515	40%	1.68%	399,927	136%	2.17%
61	Educational Services	73,862	90,020	126,632	138,855	134,623	131,804	123,233	52,770	71%	2.73%	(3,399)	-3%	-0.07%
62	Health Care and Social	304,835	395,316	486,313	569,058	615,190	654,916	690,302	181,477	60%	2.36%	203,989	42%	0.88%
71	Arts, Entertainment, a	43,631	65,529	69,192	79,219	80,177	80,007	78,844	25,562	59%	2.33%	9,652	14%	0.33%
72	Accommodation and F	224,509	269,303	304,342	378,471	416,138	460,077	514,770	79,833	36%	1.53%	210,428	69%	1.32%
81	Other Services, except	174,518	205,941	210,209	224,023	226,435	230,412	235,803	35,691	20%	0.93%	25,595	12%	0.29%
92	Government	337,862	381,542	401,273	473,383	489,656	500,442	511,681	63,411	19%	0.86%	110,408	28%	0.61%
	Total Employment	**3,850,476**	**4,397,523**	**4,045,501**	**4,626,967**	**4,843,059**	**5,124,469**	**5,452,991**	**195,025**	**5%**	**0.25%**	**1,407,490**	**35%**	**0.75%**

TABLE 9-13. REFERENCE FORECAST – WAGE & SALARY EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference		1990-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
11	Agriculture, Forestry	4,849	4,278	2,789	3,293	3,423	3,601	3,872	(2,061)	-42%	-2.73%	1,083	39%	0.82%
21	Mining, Quarrying, a	2,176	1,649	1,120	1,310	1,376	1,444	1,467	(1,056)	-49%	-3.27%	347	31%	0.68%
22	Utilities	25,531	15,843	10,369	11,883	11,670	11,433	10,892	(15,162)	-59%	-4.41%	523	5%	0.12%
23	Construction	156,233	179,821	119,852	158,045	174,559	204,460	253,451	(36,381)	-23%	-1.32%	133,599	111%	1.89%
31-33	Manufacturing	610,164	561,902	355,690	356,208	323,977	302,637	284,879	(254,474)	-42%	-2.66%	(70,811)	-20%	-0.55%
42	Wholesale Trade	230,159	233,111	194,978	212,068	215,545	217,721	213,170	(35,181)	-15%	-0.83%	18,193	9%	0.22%
44-45	Retail Trade	404,221	419,057	386,519	411,778	415,471	425,685	445,876	(17,702)	-4%	-0.22%	59,357	15%	0.36%
48-49	Transportation and W	150,860	187,434	162,776	179,461	174,412	169,496	163,645	11,916	8%	0.38%	869	1%	0.01%
51	Information	95,305	108,513	73,821	77,544	79,008	80,852	82,078	(21,484)	-23%	-1.27%	8,257	11%	0.27%
52	Finance and Insuranc	224,085	238,757	215,274	225,396	240,776	261,198	276,601	(8,811)	-4%	-0.20%	61,328	28%	0.63%
53	Real Estate and Rent	57,400	66,245	56,360	60,822	58,547	56,856	58,186	(1,040)	-2%	-0.09%	1,826	3%	0.08%
54	Professional and Tec	216,896	303,593	270,587	347,735	370,046	401,436	449,883	53,691	25%	1.11%	179,296	66%	1.28%
55	Management of Com	63,903	64,991	74,976	83,676	80,689	79,035	76,704	11,073	17%	0.80%	1,728	2%	0.06%
56	Administrative and W	195,461	301,544	272,113	384,426	466,582	563,037	655,796	76,652	39%	1.67%	383,683	141%	2.22%
61	Educational Services	70,441	85,706	120,533	131,618	127,580	124,881	116,740	50,091	71%	2.72%	(3,793)	-3%	-0.08%
62	Health Care and Soci	281,500	364,717	448,993	527,822	570,562	607,356	640,133	167,493	60%	2.36%	191,140	43%	0.89%
71	Arts, Entertainment,	35,226	53,486	56,273	65,705	66,543	66,439	65,502	21,047	60%	2.37%	9,229	16%	0.38%
72	Accommodation and	215,743	258,700	291,751	364,810	401,122	443,479	496,200	76,008	35%	1.52%	204,449	70%	1.34%
81	Other Services, exce	146,487	171,745	173,827	183,484	185,371	188,537	192,860	27,340	19%	0.86%	19,033	11%	0.26%
92	Government	337,862	381,542	401,273	473,383	489,656	500,442	511,681	63,411	19%	0.86%	110,408	28%	0.61%
	Total Wage & Salary	**3,524,503**	**4,002,634**	**3,689,872**	**4,260,468**	**4,456,914**	**4,710,024**	**4,999,618**	**165,369**	**5%**	**0.23%**	**1,309,745**	**35%**	**0.76%**

9.2 Appendix B – Baseline Forecast Variables

The baseline forecast applies the assumptions set forth in the methodology section of this document. It represents the application of the population, employment, labor force and household models without additional effects introduced through GO TO 2040. The results are somewhat less optimistic than the reference scenario with slightly lower growth trajectories for population and employment.

TABLE 9-14. BASELINE FORECAST – TOTAL POPULATION

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**9,067,901**	**10,069,043**	**10,488,818**	**11,139,206**	**11,801,256**	**12,434,121**	**12,989,139**	**1,420,917**	**16%**	**0.73%**	**2,500,321**	**24%**	**0.54%**
CMAP Total	7,300,589	8,146,264	8,431,386	8,969,941	9,526,790	10,070,571	10,552,391	1,130,797	15%	0.72%	2,121,005	25%	0.56%
Illinois Outer County	677,505	749,144	821,555	875,239	930,631	982,736	1,028,969	144,050	21%	0.97%	207,414	25%	0.56%
NW Indiana Total	711,592	741,468	771,815	799,597	820,754	833,104	839,385	60,223	8%	0.41%	67,570	9%	0.21%
SE Wisconsin Total	378,215	432,167	464,062	494,428	523,081	547,710	568,394	85,847	23%	1.03%	104,332	22%	0.51%

TABLE 9-15. BASELINE FORECAST – TOTAL HOUSEHOLDS

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**3,277,511**	**3,647,127**	**3,871,150**	**4,247,772**	**4,608,799**	**4,890,360**	**5,125,735**	**593,639**	**18%**	**0.84%**	**1,254,585**	**32%**	**0.70%**
CMAP Total	2,633,148	2,925,723	3,088,156	3,395,666	3,695,132	3,933,312	4,136,942	455,008	17%	0.80%	1,048,786	34%	0.73%
Illinois Outer Count	251,583	282,674	312,508	344,463	374,377	398,226	418,399	60,925	24%	1.09%	105,891	34%	0.73%
NW Indiana Total	254,395	277,332	292,486	311,321	326,288	334,091	336,640	38,091	15%	0.70%	44,154	15%	0.35%
SE Wisconsin Total	138,385	161,398	178,000	196,322	213,002	224,731	233,755	39,615	29%	1.27%	55,755	31%	0.68%

TABLE 9-16. BASELINE FORECAST – HOUSEHOLD SIZE

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**2.71**	**2.71**	**2.66**	**2.57**	**2.51**	**2.49**	**2.48**	**(0.05)**	**-2%**	**-0.10%**	**(0.18)**	**-7%**	**-0.17%**
CMAP Total	2.72	2.73	2.68	2.60	2.53	2.51	2.50	(0.04)	-1%	-0.07%	(0.18)	-7%	-0.18%
Illinois Outer Cour	2.60	2.56	2.55	2.47	2.41	2.39	2.38	(0.04)	-2%	-0.09%	(0.18)	-7%	-0.18%
NW Indiana Total	2.74	2.62	2.58	2.51	2.46	2.44	2.43	(0.16)	-6%	-0.29%	(0.15)	-6%	-0.15%
SE Wisconsin Total	2.67	2.61	2.54	2.45	2.39	2.37	2.36	(0.13)	-5%	-0.25%	(0.18)	-7%	-0.18%

TABLE 9-17. BASELINE FORECAST – POPULATION IN HOUSEHOLDS

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**8,890,493**	**9,870,849**	**10,296,440**	**10,929,824**	**11,572,469**	**12,179,617**	**12,712,396**	**1,405,947**	**16%**	**0.74%**	**2,415,956**	**23%**	**0.53%**
CMAP Total	7,170,110	7,998,681	8,291,066	8,815,653	9,358,752	9,882,624	10,346,552	1,120,956	16%	0.73%	2,055,486	25%	0.56%
Illinois Outer County	653,804	724,695	798,179	850,246	902,255	951,231	995,124	144,375	22%	1.00%	196,945	25%	0.55%
NW Indiana Total	697,047	725,800	755,438	782,567	802,697	813,674	819,238	58,391	8%	0.40%	63,800	8%	0.20%
SE Wisconsin Total	369,532	421,673	451,757	481,358	508,765	532,088	551,483	82,225	22%	1.01%	99,726	22%	0.50%

TABLE 9-18. BASELINE FORECAST – POPULATION IN HOUSEHOLDS BY AGE

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
CMAP Total	0 - 4	608,964	596,775	564,666	526,670	552,938	574,650	596,495	609,267	611,559	611,408	613,123
CMAP Total	5 - 9	637,647	575,633	580,358	568,186	539,327	560,717	584,095	608,257	623,163	627,526	629,113
CMAP Total	10 - 14	599,563	625,663	595,459	599,690	597,675	564,932	584,305	609,622	635,618	652,643	658,824
CMAP Total	15 - 19	538,969	562,882	577,580	575,643	589,134	584,011	552,835	571,521	596,416	622,154	639,489
CMAP Total	20 - 24	513,946	524,745	527,630	574,427	575,199	583,529	576,897	547,778	569,051	589,421	611,986
CMAP Total	25 - 29	617,592	602,754	623,539	624,728	682,979	687,915	697,202	692,060	661,551	680,535	704,846
CMAP Total	30 - 34	640,211	603,744	596,348	639,011	652,217	709,217	718,810	732,426	730,180	699,976	716,693
CMAP Total	35 - 39	669,285	613,959	586,298	578,555	630,561	638,926	697,974	709,493	726,420	726,426	696,935
CMAP Total	40 - 44	648,217	638,861	590,149	569,188	571,428	619,499	627,248	688,062	700,134	719,317	720,993
CMAP Total	45 - 49	561,813	620,929	614,051	562,710	553,191	552,050	599,778	607,219	668,571	680,214	700,653
CMAP Total	50 - 54	481,222	538,917	597,549	585,213	545,224	533,661	532,995	581,080	587,964	649,398	660,706
CMAP Total	55 - 59	360,934	454,922	507,465	558,322	554,185	512,936	503,789	504,297	552,143	557,861	619,680
CMAP Total	60 - 64	281,503	327,447	412,358	464,979	518,604	510,266	471,614	465,953	467,602	514,990	519,206
CMAP Total	65 - 69	234,376	247,212	291,063	372,262	418,485	467,907	458,893	424,523	422,320	425,008	471,036
CMAP Total	70 - 74	216,843	199,899	212,150	255,717	329,464	370,170	415,556	407,672	378,263	378,425	381,489
CMAP Total	75 -79	179,690	175,459	163,989	179,976	218,826	284,226	320,975	362,316	357,573	334,172	336,224
CMAP Total	80 - 84	118,571	131,435	130,578	127,153	141,385	173,814	228,415	260,491	296,755	296,147	280,101
CMAP Total	85 +	89,336	104,189	119,836	137,116	144,831	159,933	190,875	245,255	297,342	352,516	385,455
CMAP Total	**TOTAL**	7,998,681	8,145,424	8,291,066	8,499,546	8,815,653	9,088,360	9,358,752	9,627,291	9,882,624	10,118,138	10,346,552

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Illinois Outer County To	0 - 4	50,411	52,062	53,091	50,528	52,143	53,818	54,626	56,127	55,672	57,671	56,889
Illinois Outer County To	5 - 9	55,057	53,849	56,025	55,890	54,057	55,354	57,071	58,081	59,709	59,486	61,536
Illinois Outer County To	10 - 14	56,638	57,922	57,438	59,029	59,745	57,720	58,925	60,835	62,019	63,859	63,817
Illinois Outer County To	15 - 19	51,502	55,349	56,313	55,706	58,044	58,582	56,421	58,822	60,443	61,728	63,178
Illinois Outer County To	20 - 24	45,976	53,167	52,622	54,400	54,058	56,880	57,576	56,515	60,157	61,436	62,522
Illinois Outer County To	25 - 29	46,389	45,264	50,341	49,223	54,438	50,834	57,009	52,889	57,105	51,446	64,347
Illinois Outer County To	30 - 34	49,487	48,689	48,580	52,486	52,169	57,269	53,902	60,224	56,295	60,754	54,826
Illinois Outer County To	35 - 39	58,548	52,043	50,566	50,059	54,612	54,157	59,360	56,232	62,587	58,903	63,412
Illinois Outer County To	40 - 44	58,518	59,317	53,275	50,819	51,021	55,346	54,965	60,252	57,256	63,685	60,188
Illinois Outer County To	45 - 49	52,122	58,864	60,262	53,508	51,739	51,668	56,027	55,871	61,188	58,436	64,837
Illinois Outer County To	50 - 54	44,802	52,413	59,076	59,281	53,405	51,416	51,401	55,848	55,777	61,164	58,524
Illinois Outer County To	55 - 59	35,541	44,803	52,090	57,277	58,260	52,248	50,412	50,525	54,961	54,971	60,494
Illinois Outer County To	60 - 64	28,223	34,821	43,345	49,927	55,517	56,401	50,741	49,073	49,245	53,711	53,837
Illinois Outer County To	65 - 69	24,464	27,297	32,923	41,122	47,507	52,964	54,086	48,944	47,430	47,717	52,064
Illinois Outer County To	70 - 74	23,901	22,310	24,447	29,567	37,079	42,965	48,076	49,267	44,678	43,449	43,836
Illinois Outer County To	75 -79	20,224	20,029	19,097	20,801	25,267	31,866	37,118	41,794	43,094	39,364	38,440
Illinois Outer County To	80 - 84	13,392	15,047	15,156	14,549	15,985	19,565	24,922	29,320	33,361	34,818	32,121
Illinois Outer County To	85 +	9,499	11,587	13,532	14,801	15,200	16,505	19,615	24,729	30,256	36,013	40,257
Illinois Outer County To	**TOTAL**	724,695	764,834	798,179	818,972	850,246	875,555	902,255	925,349	951,231	968,612	995,124

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
NW Indiana Total	0 - 4	51,170	50,807	49,598	47,837	48,590	48,795	49,122	49,075	48,674	48,692	48,765
NW Indiana Total	5 - 9	54,554	52,693	53,138	52,697	50,987	51,731	51,936	52,308	52,318	51,944	51,982
NW Indiana Total	10 - 14	54,485	55,988	55,302	55,095	54,768	53,047	53,840	54,038	54,429	54,468	54,136
NW Indiana Total	15 - 19	53,835	51,550	53,822	52,620	52,558	52,300	50,608	51,591	51,696	52,055	52,102
NW Indiana Total	20 - 24	44,138	45,352	43,167	45,957	44,494	44,660	44,388	42,816	44,016	43,931	44,306
NW Indiana Total	25 - 29	44,974	45,869	47,158	45,091	47,951	46,594	46,753	46,444	44,952	45,972	46,014
NW Indiana Total	30 - 34	46,844	45,729	47,025	48,237	46,333	49,171	47,901	48,127	47,893	46,400	47,500
NW Indiana Total	35 - 39	55,025	48,279	48,003	48,471	49,779	47,970	50,809	49,632	49,888	49,707	48,219
NW Indiana Total	40 - 44	60,485	55,215	49,159	49,074	49,667	51,006	49,309	52,131	51,061	51,327	51,206
NW Indiana Total	45 - 49	55,765	59,493	55,392	49,119	49,078	49,704	51,084	49,489	52,314	51,291	51,597
NW Indiana Total	50 - 54	47,650	54,588	58,962	54,545	48,494	48,476	49,163	50,595	49,077	51,896	50,930
NW Indiana Total	55 - 59	36,616	46,035	52,689	56,887	52,717	46,915	47,001	47,747	49,204	47,762	50,598
NW Indiana Total	60 - 64	29,156	34,081	43,136	49,248	53,274	49,268	43,903	44,210	44,993	46,463	45,113
NW Indiana Total	65 - 69	25,365	26,640	31,044	39,614	45,255	49,037	45,328	40,460	40,932	41,763	43,243
NW Indiana Total	70 - 74	24,547	22,175	22,882	27,526	35,285	40,429	43,963	40,725	36,469	37,085	37,966
NW Indiana Total	75 -79	19,798	20,040	18,225	19,249	23,313	30,063	34,658	37,922	35,340	31,839	32,555
NW Indiana Total	80 - 84	12,701	14,116	14,539	14,034	14,982	18,288	23,787	27,750	30,698	28,967	26,356
NW Indiana Total	85 +	8,692	10,350	12,197	14,239	15,040	16,253	19,144	24,307	29,721	34,763	36,649
NW Indiana Total	**TOTAL**	725,800	739,002	755,438	769,541	782,567	793,707	802,697	809,368	813,674	816,324	819,238

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
SE Wisconsin Total	0 - 4	29,086	30,129	29,904	28,258	28,892	29,704	30,300	31,115	31,447	31,998	32,217
SE Wisconsin Total	5 - 9	31,999	31,052	31,840	32,299	31,039	31,464	32,282	32,978	33,867	34,308	34,937
SE Wisconsin Total	10 - 14	33,336	33,906	33,072	33,662	34,541	33,185	33,596	34,423	35,183	36,145	36,690
SE Wisconsin Total	15 - 19	30,946	31,737	31,278	31,334	32,156	32,926	31,715	32,308	32,955	33,651	34,561
SE Wisconsin Total	20 - 24	26,456	28,758	28,334	28,980	29,164	29,959	30,907	29,798	30,556	30,857	31,468
SE Wisconsin Total	25 - 29	25,419	25,161	27,204	27,164	28,925	28,580	29,682	30,156	29,073	29,435	30,687
SE Wisconsin Total	30 - 34	29,822	28,135	27,340	29,109	29,522	31,151	30,945	32,069	32,645	31,609	31,940
SE Wisconsin Total	35 - 39	36,086	31,888	28,643	29,000	31,176	31,559	33,235	33,198	34,349	35,058	34,095
SE Wisconsin Total	40 - 44	35,644	36,565	31,815	29,096	29,760	31,788	32,271	33,988	34,022	35,195	35,989
SE Wisconsin Total	45 - 49	30,785	36,135	36,920	32,191	29,741	30,217	32,282	32,866	34,564	34,655	35,864
SE Wisconsin Total	50 - 54	26,128	31,087	35,485	36,503	32,241	29,648	30,151	32,258	32,885	34,559	34,699
SE Wisconsin Total	55 - 59	19,903	25,720	30,021	34,249	35,585	31,282	28,840	29,416	31,535	32,175	33,802
SE Wisconsin Total	60 - 64	15,698	18,772	24,036	28,344	32,644	33,765	29,675	27,477	28,147	30,250	30,882
SE Wisconsin Total	65 - 69	13,520	14,428	17,270	22,086	26,044	30,049	31,094	27,230	25,347	26,088	28,133
SE Wisconsin Total	70 - 74	12,989	12,089	12,840	15,548	19,955	23,604	27,367	28,396	24,953	23,305	24,069
SE Wisconsin Total	75 -79	10,843	10,839	9,929	10,947	13,316	17,170	20,458	23,852	24,903	22,028	20,665
SE Wisconsin Total	80 - 84	7,292	8,269	8,373	7,611	8,456	10,369	13,497	16,219	19,088	20,102	17,936
SE Wisconsin Total	85 +	5,720	6,399	7,453	8,208	8,202	8,844	10,468	13,326	16,569	20,181	22,850
SE Wisconsin Total	TOTAL	421,673	441,069	451,757	464,588	481,358	495,266	508,765	521,072	532,088	541,601	551,483

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	0 - 4	739,630	729,774	697,259	653,293	682,563	706,966	730,543	745,584	747,352	749,769	750,994
Forecast Region	5 - 9	779,257	713,228	721,361	709,072	675,411	699,265	725,385	751,623	769,056	773,264	777,567
Forecast Region	10 - 14	744,021	773,478	741,271	747,476	746,730	708,885	730,666	758,918	787,249	807,116	813,467
Forecast Region	15 - 19	675,252	701,518	718,993	715,303	731,892	727,820	691,579	714,241	741,509	769,588	789,329
Forecast Region	20 - 24	630,516	652,022	651,753	703,764	702,915	715,029	709,768	676,908	703,780	725,645	750,282
Forecast Region	25 - 29	734,374	719,048	748,242	746,206	814,293	813,923	830,645	821,550	792,681	807,389	845,893
Forecast Region	30 - 34	766,364	726,297	719,293	768,843	780,241	846,807	851,558	872,846	867,013	838,739	850,959
Forecast Region	35 - 39	818,943	746,169	713,510	706,085	766,128	772,611	841,378	848,554	873,244	870,095	842,661
Forecast Region	40 - 44	802,864	789,957	724,398	698,176	701,877	757,640	763,794	834,433	842,473	869,524	868,376
Forecast Region	45 - 49	700,485	775,421	766,625	697,529	683,750	683,640	739,171	745,445	816,638	824,597	852,951
Forecast Region	50 - 54	599,801	677,005	751,072	735,542	679,364	663,200	663,711	719,781	725,703	797,017	804,860
Forecast Region	55 - 59	452,994	571,480	642,265	706,735	700,746	643,381	630,042	631,985	687,842	692,768	764,573
Forecast Region	60 - 64	354,581	415,121	522,875	592,499	660,038	649,701	595,933	586,714	589,988	645,415	649,038
Forecast Region	65 - 69	297,726	315,577	372,300	475,083	537,291	599,958	589,401	541,157	536,029	540,575	594,477
Forecast Region	70 - 74	278,281	256,473	272,319	328,358	421,784	477,167	534,962	526,059	484,363	482,264	487,360
Forecast Region	75 -79	230,556	226,368	211,240	230,972	280,722	363,325	413,209	465,884	460,909	427,403	427,884
Forecast Region	80 - 84	151,956	168,867	168,646	163,347	180,807	222,035	290,620	333,781	379,901	380,034	356,514
Forecast Region	85 +	113,248	132,524	153,018	174,363	183,272	201,536	240,102	307,617	373,888	443,473	485,211
Forecast Region	TOTAL	9,870,849	10,090,328	10,296,440	10,552,647	10,929,824	11,252,888	11,572,469	11,883,079	12,179,617	12,444,674	12,712,396

TABLE 9-19. BASELINE FORECAST – WORKERS IN HOUSEHOLDS

	2010	2020	2030	2040	2050	Difference		CAGR
Forecast Region	**4,915,140**	**5,467,811**	**5,685,484**	**5,957,251**	**6,249,652**	**1,334,512**	**27%**	**0.60%**
CMAP Total	3,989,579	4,465,124	4,663,409	4,898,397	5,154,610	1,165,031	29%	0.64%
Illinois Outer County	371,835	410,468	423,469	446,241	470,174	98,339	26%	0.59%
NW Indiana Total	333,488	352,820	353,931	357,662	360,336	26,847	8%	0.19%
SE Wisconsin Total	220,238	239,399	244,675	254,951	264,532	44,294	20%	0.46%

TABLE 9-20. BASELINE FORECAST – HOUSEHOLD INCOME FOR 21-COUNTY REGION (2009$)

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
25th Percentile	$ 31,190	$ 34,962	$ 28,082	$ 30,781	$ 36,556	$ 43,880	$ 50,451	$ (3,108)	-10%	-0.52%	$ 22,369	80%	1.48%
Median	$ 58,893	$ 64,705	$ 56,541	$ 62,412	$ 72,195	$ 83,190	$ 91,140	$ (2,352)	-4%	-0.20%	$ 34,600	61%	1.20%
75th Percentile	$ 94,113	$107,765	$ 98,139	$ 103,670	$ 114,302	$ 123,948	$ 134,071	$ 4,026	4%	0.21%	$ 35,932	37%	0.78%

TABLE 9-21. BASELINE FORECAST – POPULATION BY RACE/ETHNICITY

CMAP							2000-2010			2010-2050		
	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Non-Hispanic White	4,687,259	4,486,557	4,524,222	4,563,625	4,595,160	4,584,787	(200,702)	-4%	-0.44%	98,230	2%	0.05%
Non-Hispanic Black	1,537,534	1,465,417	1,515,439	1,536,113	1,543,492	1,538,409	(72,117)	-5%	-0.48%	72,992	5%	0.12%
Non-Hispanic Asian	375,993	513,694	634,855	753,509	873,687	991,487	137,701	37%	3.17%	477,793	93%	1.66%
Non-Hispanic Other	136,276	142,109	132,679	151,898	171,904	191,571	5,833	4%	0.42%	49,462	35%	0.75%
Hispanic	1,409,202	1,823,609	2,162,747	2,521,645	2,886,327	3,246,136	414,407	29%	2.61%	1,422,527	78%	1.45%

ILLINOIS OUTER COUNTIES	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	630,600	646,316	663,535	681,496	697,855	710,671	15,716	2%	0.25%	64,355	10%	0.24%
Non-Hispanic Black	53,083	64,769	73,054	81,273	88,841	95,645	11,686	22%	2.01%	30,876	48%	0.98%
Non-Hispanic Asian	8,790	12,377	14,908	17,179	19,349	21,360	3,587	41%	3.48%	8,983	73%	1.37%
Non-Hispanic Other	9,901	14,361	15,808	18,721	21,486	24,062	4,460	45%	3.79%	9,701	68%	1.30%
Hispanic	46,770	83,732	107,935	131,962	155,206	177,232	36,962	79%	6.00%	93,500	112%	1.89%

NW INDIANA	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	522,121	506,100	503,812	495,907	483,726	469,229	(16,021)	-3%	-0.31%	(36,871)	-7%	-0.19%
Non-Hispanic Black	133,738	141,990	148,576	153,731	157,097	159,086	8,252	6%	0.60%	17,096	12%	0.28%
Non-Hispanic Asian	5,672	8,511	10,569	12,355	13,947	15,369	2,839	50%	4.14%	6,858	81%	1.49%
Non-Hispanic Other	10,328	12,525	13,004	14,738	16,255	17,597	2,197	21%	1.95%	5,072	40%	0.85%
Hispanic	69,609	102,689	123,637	144,023	162,079	178,105	33,080	48%	3.96%	75,416	73%	1.39%

SE WISCONSIN	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	362,953	363,996	374,388	381,997	386,684	388,645	1,043	0%	0.03%	24,649	7%	0.16%
Non-Hispanic Black	27,634	32,771	36,522	40,270	43,792	47,025	5,137	19%	1.72%	14,254	43%	0.91%
Non-Hispanic Asian	3,273	5,243	6,688	8,040	9,333	10,561	1,970	60%	4.82%	5,318	101%	1.77%
Non-Hispanic Other	6,424	9,336	10,582	12,611	14,549	16,379	2,912	45%	3.81%	7,043	75%	1.42%
Hispanic	31,883	52,716	66,249	80,163	93,352	105,783	20,833	65%	5.16%	53,067	101%	1.76%

FORECAST REGION	2000	2010	2020	2030	2040	2050	2000-2010 Difference	2000-2010	2000-2010 CAGR	2010-2050 Difference	2010-2050	2010-2050 CAGR
Non-Hispanic White	6,202,933	6,002,969	6,065,957	6,123,025	6,163,425	6,153,332	(199,964)	-3%	-0.33%	150,363	3%	0.06%
Non-Hispanic Black	1,751,989	1,704,947	1,773,591	1,811,386	1,833,222	1,840,165	(47,042)	-3%	-0.27%	135,218	8%	0.19%
Non-Hispanic Asian	393,728	539,825	667,019	791,083	916,316	1,038,777	146,097	37%	3.21%	498,952	92%	1.65%
Non-Hispanic Other	162,929	178,331	172,072	197,968	224,194	249,609	15,402	9%	0.91%	71,278	40%	0.84%
Hispanic	1,557,464	2,062,746	2,460,567	2,877,794	3,296,965	3,707,256	505,282	32%	2.85%	1,644,510	80%	1.48%

TABLE 9-22. BASELINE FORECAST – NON-INSTITUTIONAL GROUP QUARTERS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050	2010-2050 CAGR
Forecast Region	**93,670**	**102,850**	**112,485**	**124,795**	**135,953**	**42,283**	**45%**	**0.94%**
CMAP Total	72,406	79,798	86,230	96,009	105,168	32,762	45%	0.94%
Illinois Outer County Total	10,882	11,879	13,877	15,127	16,068	5,186	48%	0.98%
NW Indiana Total	4,915	5,306	5,875	6,586	6,995	2,080	42%	0.89%
SE Wisconsin Total	5,467	5,867	6,503	7,074	7,722	2,255	41%	0.87%

TABLE 9-23. BASELINE FORECAST – INSTITUTIONAL GROUP QUARTERS POPULATION

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050	2010-2050 CAGR
Forecast Region	**98,708**	**106,532**	**116,302**	**129,709**	**140,790**	**42,082**	**43%**	**0.89%**
CMAP Total	67,914	74,491	81,807	91,938	100,672	32,758	48%	0.99%
Illinois Outer County Total	12,494	13,114	14,500	16,379	17,777	5,283	42%	0.89%
NW Indiana Total	11,462	11,724	12,182	12,845	13,152	1,690	15%	0.34%
SE Wisconsin Total	6,838	7,203	7,813	8,547	9,189	2,351	34%	0.74%

TABLE 9-24. BASELINE FORECAST – TOTAL EMPLOYMENT

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**4,649,324**	**5,296,682**	**4,885,980**	**5,470,020**	**5,676,984**	**5,949,472**	**6,245,712**	**236,656**	**5%**	**0.25%**	**1,359,732**	**28%**	**0.62%**
CMAP Total	3,850,476	4,397,523	4,045,501	4,586,615	4,773,216	5,013,891	5,275,408	195,025	5%	0.25%	1,229,907	30%	0.67%
Illinois Outer County	313,851	365,907	340,783	364,511	374,863	388,993	404,363	26,932	9%	0.41%	63,580	19%	0.43%
NW Indiana Total	318,311	337,731	313,447	315,768	313,358	314,433	315,384	(4,864)	-2%	-0.08%	1,937	1%	0.02%
SE Wisconsin Total	166,686	195,522	186,248	203,126	215,546	232,156	250,557	19,563	12%	0.56%	64,308	35%	0.74%

TABLE 9-25. BASELINE FORECAST – TOTAL EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
11	Agriculture, Forestry	10,787	8,674	5,639	5,867	5,990	6,201	6,561	(5,148)	-48%	-3.19%	922	16%	0.38%
21	Mining, Quarrying, a	2,214	1,673	1,159	1,354	1,395	1,443	1,447	(1,055)	-48%	-3.18%	288	25%	0.56%
22	Utilities	25,531	15,843	10,369	11,796	11,586	11,371	10,860	(15,162)	-59%	-4.41%	491	5%	0.12%
23	Construction	218,751	251,666	173,363	210,431	234,928	271,117	320,011	(45,387)	-21%	-1.16%	146,648	85%	1.54%
31-33	Manufacturing	634,042	584,297	370,381	367,137	336,343	313,319	294,220	(263,660)	-42%	-2.65%	(76,161)	-21%	-0.57%
42	Wholesale Trade	244,644	247,914	207,653	221,472	224,843	227,317	222,909	(36,991)	-15%	-0.82%	15,256	7%	0.18%
44-45	Retail Trade	432,299	448,113	413,364	432,683	432,618	437,226	449,771	(18,935)	-4%	-0.22%	36,407	9%	0.21%
48-49	Transportation and V	165,943	207,002	179,216	194,437	189,059	183,272	176,022	13,272	8%	0.39%	(3,194)	-2%	-0.04%
51	Information	102,092	116,305	79,181	81,691	83,006	84,901	86,289	(22,910)	-22%	-1.26%	7,108	9%	0.22%
52	Finance and Insuranc	240,337	256,733	231,215	238,393	252,124	271,834	286,741	(9,122)	-4%	-0.19%	55,526	24%	0.54%
53	Real Estate and Rent	78,134	90,977	76,497	77,446	74,577	71,919	73,044	(1,638)	-2%	-0.11%	(3,453)	-5%	-0.12%
54	Professional and Tec	261,686	368,555	330,046	407,457	431,614	463,387	511,649	68,360	26%	1.17%	181,603	55%	1.10%
55	Management of Com	63,984	65,070	75,126	82,737	80,101	77,816	74,604	11,142	17%	0.81%	(522)	-1%	-0.02%
56	Administrative and V	210,815	327,052	294,330	401,385	480,004	574,587	662,742	83,515	40%	1.68%	368,412	125%	2.05%
61	Educational Services	73,862	90,020	126,632	138,027	133,796	130,612	122,102	52,770	71%	2.73%	(4,530)	-4%	-0.09%
62	Health Care and Soci	304,835	395,316	486,313	565,666	606,019	643,826	676,235	181,477	60%	2.36%	189,922	39%	0.83%
71	Arts, Entertainment,	43,631	65,529	69,192	78,471	78,829	77,868	75,692	25,562	59%	2.33%	6,500	9%	0.22%
72	Accommodation and	224,509	269,303	304,342	374,899	405,904	443,210	488,646	79,833	36%	1.53%	184,304	61%	1.19%
81	Other Services, exce	174,518	205,941	210,209	221,908	222,550	223,791	225,710	35,691	20%	0.93%	15,501	7%	0.18%
92	Government	337,862	381,542	401,273	473,358	487,931	498,876	510,153	63,411	19%	0.86%	108,880	27%	0.60%
	Total Employment	**3,850,476**	**4,397,523**	**4,045,501**	**4,586,615**	**4,773,216**	**5,013,891**	**5,275,408**	**195,025**	**5%**	**0.25%**	**1,229,907**	**30%**	**0.67%**

TABLE 9-26. BASELINE FORECAST – WAGE & SALARY EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
11	Agriculture, Forestry	4,849	4,278	2,789	3,242	3,321	3,450	3,662	(2,061)	-42%	-2.73%	873	31%	0.68%
21	Mining, Quarrying, a	2,176	1,649	1,120	1,290	1,333	1,383	1,392	(1,056)	-49%	-3.27%	271	24%	0.54%
22	Utilities	25,531	15,843	10,369	11,796	11,586	11,371	10,860	(15,162)	-59%	-4.41%	491	5%	0.12%
23	Construction	156,233	179,821	119,852	154,178	172,277	198,968	235,032	(36,381)	-23%	-1.32%	115,180	96%	1.70%
31-33	Manufacturing	610,164	561,902	355,690	354,856	325,092	302,839	284,376	(254,474)	-42%	-2.66%	(71,314)	-20%	-0.56%
42	Wholesale Trade	230,159	233,111	194,978	211,136	214,324	216,655	212,430	(35,181)	-15%	-0.83%	17,452	9%	0.21%
44-45	Retail Trade	404,221	419,057	386,519	407,948	407,810	412,079	423,834	(17,702)	-4%	-0.22%	37,315	10%	0.23%
48-49	Transportation and V	150,860	187,434	162,776	177,891	172,850	167,436	160,692	11,916	8%	0.38%	(2,084)	-1%	-0.03%
51	Information	95,305	108,513	73,821	77,224	78,462	80,250	81,559	(21,484)	-23%	-1.27%	7,738	10%	0.25%
52	Finance and Insuranc	224,085	238,757	215,274	223,017	235,776	254,117	267,969	(8,811)	-4%	-0.20%	52,695	24%	0.55%
53	Real Estate and Rent	57,400	66,245	56,360	60,180	57,878	55,744	56,544	(1,040)	-2%	-0.09%	184	0%	0.01%
54	Professional and Tec	216,896	303,593	270,587	342,992	363,483	390,378	431,102	53,691	25%	1.11%	160,515	59%	1.17%
55	Management of Com	63,903	64,991	74,976	82,535	79,908	77,630	74,427	11,073	17%	0.80%	(549)	-1%	-0.02%
56	Administrative and V	195,461	301,544	272,113	379,182	453,447	542,783	626,027	76,652	39%	1.67%	353,914	130%	2.10%
61	Educational Services	70,441	85,706	120,533	130,833	126,796	123,752	115,669	50,091	71%	2.72%	(4,864)	-4%	-0.10%
62	Health Care and Soci	281,500	364,717	448,993	524,676	562,056	597,070	627,088	167,493	60%	2.36%	178,095	40%	0.84%
71	Arts, Entertainment,	35,226	53,486	56,273	65,085	65,424	64,662	62,883	21,047	60%	2.37%	6,610	12%	0.28%
72	Accommodation and	215,743	258,700	291,751	361,366	391,257	427,220	471,019	76,008	35%	1.52%	179,268	61%	1.20%
81	Other Services, exce	146,487	171,745	173,827	181,753	182,191	183,119	184,605	27,340	19%	0.86%	10,778	6%	0.15%
92	Government	337,862	381,542	401,273	473,358	487,931	498,876	510,153	63,411	19%	0.86%	108,880	27%	0.60%
	Total Wage & Salary	**3,524,503**	**4,002,634**	**3,689,872**	**4,224,537**	**4,393,202**	**4,609,783**	**4,841,319**	**165,369**	**5%**	**0.23%**	**1,151,447**	**31%**	**0.68%**

9.3 Appendix C – Shift-Share Forecast Variables

As described in Section 7, CMAP developed a shift-share-derived forecast for the 7-county region using national Moody's employment forecasts. Shift-share analysis is used to "decompose" regional employment growth into its three major components: the industrial mix effect, national growth effect, and regional competitive effect.[47] To borrow from Emsi, an employment data provider, the industrial mix effect measures the portion of regional, industry-level employment growth that is explained by the growth of that same industry at a national level. The national growth effect represents the portion of regional, industry-level growth explained by *overall* employment growth nationally—essentially a "rising tide lifts all boats" concept. Finally, the regional competitive effect isolates the amount of regional employment growth by industry that is unique to that area. CMAP produced the employment forecast by holding the regional competitive effect constant while keeping the Moody's national forecast unconstrained. The Shift-Share forecast is a generally pessimistic scenario, with a lower population and employment trajectory than the reference forecast and baseline forecast.

TABLE 9-27. SHIFT-SHARE FORECAST – TOTAL POPULATION

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**9,067,901**	**10,069,043**	**10,488,818**	**11,171,216**	**11,658,447**	**12,091,196**	**12,314,248**	**1,420,917**	**16%**	**0.73%**	**1,825,430**	**17%**	**0.40%**
CMAP Total	7,300,589	8,146,264	8,431,386	8,998,024	9,408,951	9,782,824	10,005,556	1,130,797	15%	0.72%	1,574,170	19%	0.43%
Illinois Outer County	677,505	749,144	821,555	877,742	914,731	951,046	957,319	144,050	21%	0.97%	135,764	17%	0.38%
NW Indiana Total	711,592	741,468	771,815	800,171	826,954	837,986	845,057	60,223	8%	0.41%	73,242	9%	0.23%
SE Wisconsin Total	378,215	432,167	464,062	495,279	507,811	519,340	506,316	85,847	23%	1.03%	42,254	9%	0.22%

TABLE 9-28. SHIFT-SHARE FORECAST – TOTAL HOUSEHOLDS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**3,277,511**	**3,647,127**	**3,871,150**	**4,258,963**	**4,560,968**	**4,768,679**	**4,877,945**	**593,639**	**18%**	**0.84%**	**1,006,795**	**26%**	**0.58%**
CMAP Total	2,633,148	2,925,723	3,088,156	3,405,442	3,656,008	3,831,948	3,937,274	455,008	17%	0.80%	849,118	27%	0.61%
Illinois Outer Count	251,583	282,674	312,508	345,353	368,892	386,613	391,644	60,925	24%	1.09%	79,136	25%	0.57%
NW Indiana Total	254,395	277,332	292,486	311,533	328,529	336,085	338,974	38,091	15%	0.70%	46,488	16%	0.37%
SE Wisconsin Total	138,385	161,398	178,000	196,635	207,539	214,033	210,053	39,615	29%	1.27%	32,053	18%	0.41%

TABLE 9-29. SHIFT-SHARE FORECAST – HOUSEHOLD SIZE

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**2.71**	**2.71**	**2.66**	**2.57**	**2.51**	**2.48**	**2.47**	**(0.05)**	**-2%**	**-0.10%**	**(0.19)**	**-7%**	**-0.18%**
CMAP Total	2.72	2.73	2.68	2.60	2.53	2.51	2.49	(0.04)	-1%	-0.07%	(0.19)	-7%	-0.19%
Illinois Outer Cour	2.60	2.56	2.55	2.47	2.40	2.38	2.36	(0.04)	-2%	-0.09%	(0.19)	-8%	-0.20%
NW Indiana Total	2.74	2.62	2.58	2.51	2.46	2.44	2.43	(0.16)	-6%	-0.29%	(0.15)	-6%	-0.15%
SE Wisconsin Total	2.67	2.61	2.54	2.45	2.38	2.36	2.34	(0.13)	-5%	-0.25%	(0.20)	-8%	-0.21%

TABLE 9-30. SHIFT-SHARE FORECAST – POPULATION IN HOUSEHOLDS

								1990-2010			2010-2050		
	1990	2000	2010	2020	2030	2040	2050	Difference		CAGR	Difference		CAGR
Forecast Region	**8,890,493**	**9,870,849**	**10,296,440**	**10,961,336**	**11,431,960**	**11,842,294**	**12,049,056**	**1,405,947**	**16%**	**0.74%**	**1,752,616**	**17%**	**0.39%**
CMAP Total	7,170,110	7,998,681	8,291,066	8,843,325	9,242,605	9,599,158	9,808,199	1,120,956	16%	0.73%	1,517,133	18%	0.42%
Illinois Outer County	653,804	724,695	798,179	852,692	886,625	920,146	924,902	144,375	22%	1.00%	126,723	16%	0.37%
NW Indiana Total	697,047	725,800	755,438	783,132	808,875	818,590	825,041	58,391	8%	0.40%	69,603	9%	0.22%
SE Wisconsin Total	369,532	421,673	451,757	482,188	493,856	504,400	490,914	82,225	22%	1.01%	39,157	9%	0.21%

TABLE 9-31. SHIFT-SHARE FORECAST – POPULATION IN HOUSEHOLDS BY AGE

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
CMAP Total	0 - 4	608,964	596,775	564,666	528,527	554,663	571,651	587,671	595,416	592,771	585,457	578,823
CMAP Total	5 - 9	637,647	575,633	580,358	570,146	541,391	557,560	574,467	593,345	603,053	600,049	592,867
CMAP Total	10 - 14	599,563	625,663	595,459	601,700	599,882	562,073	574,362	593,615	614,016	623,272	620,385
CMAP Total	15 - 19	538,969	562,882	577,580	577,552	591,243	581,388	543,632	556,041	574,943	593,025	601,501
CMAP Total	20 - 24	513,946	524,745	527,630	575,599	577,148	582,666	570,576	535,702	550,849	564,365	578,892
CMAP Total	25 - 29	617,592	602,754	623,539	626,604	684,638	684,998	688,948	678,266	641,440	651,277	665,991
CMAP Total	30 - 34	640,211	603,744	596,348	641,070	654,420	705,329	708,020	716,705	708,803	670,261	675,943
CMAP Total	35 - 39	669,285	613,959	586,298	580,512	632,816	635,800	686,482	691,950	703,923	695,986	657,474
CMAP Total	40 - 44	648,217	638,861	590,149	571,214	573,541	616,387	617,044	669,884	675,992	687,614	680,115
CMAP Total	45 - 49	561,813	620,929	614,051	564,776	555,318	549,217	589,833	591,182	644,271	647,693	659,211
CMAP Total	50 - 54	481,222	538,917	597,549	587,337	547,359	531,101	524,244	565,718	566,751	617,404	619,443
CMAP Total	55 - 59	360,934	454,922	507,465	560,158	556,334	510,829	496,054	491,359	532,556	531,049	580,854
CMAP Total	60 - 64	281,503	327,447	412,358	466,209	520,416	508,871	465,556	455,261	452,153	491,698	488,547
CMAP Total	65 - 69	234,376	247,212	291,063	372,262	419,650	469,559	457,477	418,859	412,464	410,802	449,520
CMAP Total	70 - 74	216,843	199,899	212,150	255,717	329,464	371,238	417,040	406,321	373,096	369,503	368,645
CMAP Total	75 -79	179,690	175,459	163,989	179,976	218,826	284,226	321,909	363,625	356,391	329,615	328,305
CMAP Total	80 - 84	118,571	131,435	130,578	127,153	141,385	173,814	228,415	261,244	297,840	295,210	276,342
CMAP Total	85 +	89,336	104,189	119,836	137,116	144,831	159,933	190,875	245,255	297,845	353,512	385,340
CMAP Total	**TOTAL**	7,998,681	8,145,424	8,291,066	8,523,628	8,843,325	9,056,638	9,242,605	9,429,747	9,599,158	9,717,794	9,808,199

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Illinois Outer County To	0 - 4	50,411	52,062	53,091	50,684	52,306	53,303	53,438	54,504	53,601	54,406	52,251
Illinois Outer County To	5 - 9	55,057	53,849	56,025	56,056	54,246	54,827	55,781	56,333	57,472	56,082	56,538
Illinois Outer County To	10 - 14	56,638	57,922	57,438	59,200	59,946	57,204	57,598	58,955	59,617	60,224	58,592
Illinois Outer County To	15 - 19	51,502	55,349	56,313	55,872	58,234	58,088	55,164	57,016	58,064	58,136	58,029
Illinois Outer County To	20 - 24	45,976	53,167	52,622	54,513	54,235	56,576	56,564	54,945	58,015	58,262	57,930
Illinois Outer County To	25 - 29	46,389	45,264	50,341	49,364	54,559	50,396	55,975	51,490	54,984	48,496	59,441
Illinois Outer County To	30 - 34	49,487	48,689	48,580	52,655	52,343	56,633	52,659	58,571	54,276	57,256	50,229
Illinois Outer County To	35 - 39	58,548	52,043	50,566	50,219	54,809	53,680	57,930	54,451	60,310	55,609	58,255
Illinois Outer County To	40 - 44	58,518	59,317	53,275	50,986	51,205	54,832	53,739	58,271	54,920	60,042	55,290
Illinois Outer County To	45 - 49	52,122	58,864	60,262	53,690	51,932	51,120	54,680	54,087	58,579	54,703	59,324
Illinois Outer County To	50 - 54	44,802	52,413	59,076	59,455	53,605	50,973	50,205	54,052	53,534	57,382	53,379
Illinois Outer County To	55 - 59	35,541	44,803	52,090	57,441	58,450	51,815	49,322	48,930	52,731	51,699	55,316
Illinois Outer County To	60 - 64	28,223	34,821	43,345	50,027	55,691	56,073	49,837	47,719	47,397	50,783	49,696
Illinois Outer County To	65 - 69	24,464	27,297	32,923	41,122	47,601	53,130	53,780	48,087	46,138	45,947	49,257
Illinois Outer County To	70 - 74	23,901	22,310	24,447	29,567	37,079	43,050	48,225	48,986	43,902	42,276	42,224
Illinois Outer County To	75 -79	20,224	20,029	19,097	20,801	25,267	31,866	37,191	41,922	42,851	38,688	37,412
Illinois Outer County To	80 - 84	13,392	15,047	15,156	14,549	15,985	19,565	24,922	29,377	33,461	34,625	31,576
Illinois Outer County To	85 +	9,499	11,587	13,532	14,801	15,200	16,505	19,615	24,729	30,292	36,094	40,164
Illinois Outer County To	**TOTAL**	724,695	764,834	798,179	821,002	852,692	869,635	886,625	902,426	920,146	920,710	924,902

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
NW Indiana Total	0 - 4	51,170	50,807	49,598	47,880	48,619	49,141	49,523	49,406	48,947	49,030	49,173
NW Indiana Total	5 - 9	54,554	52,693	53,138	52,743	51,030	52,097	52,420	52,682	52,592	52,257	52,393
NW Indiana Total	10 - 14	54,485	55,988	55,302	55,143	54,814	53,438	54,337	54,476	54,730	54,766	54,502
NW Indiana Total	15 - 19	53,835	51,550	53,822	52,667	52,601	52,683	51,098	52,008	52,034	52,362	52,438
NW Indiana Total	20 - 24	44,138	45,352	43,167	45,983	44,534	44,865	44,792	43,210	44,333	44,236	44,603
NW Indiana Total	25 - 29	44,974	45,869	47,158	45,125	47,975	46,908	47,067	46,826	45,306	46,333	46,393
NW Indiana Total	30 - 34	46,844	45,729	47,025	48,282	46,366	49,564	48,346	48,393	48,201	46,779	47,931
NW Indiana Total	35 - 39	55,025	48,279	48,003	48,519	49,823	48,358	51,353	50,031	50,079	50,052	48,653
NW Indiana Total	40 - 44	60,485	55,215	49,159	49,122	49,714	51,372	49,796	52,619	51,380	51,514	51,567
NW Indiana Total	45 - 49	55,765	59,493	55,392	49,168	49,124	50,082	51,554	49,905	52,705	51,603	51,799
NW Indiana Total	50 - 54	47,650	54,588	58,962	54,601	48,539	48,871	49,659	50,998	49,403	52,309	51,295
NW Indiana Total	55 - 59	36,616	46,035	52,689	56,938	52,767	47,262	47,482	48,165	49,507	48,074	51,037
NW Indiana Total	60 - 64	29,156	34,081	43,136	49,278	53,320	49,520	44,275	44,613	45,319	46,723	45,388
NW Indiana Total	65 - 69	25,365	26,640	31,044	39,614	45,283	49,080	45,562	40,803	41,303	42,062	43,481
NW Indiana Total	70 - 74	24,547	22,175	22,882	27,526	35,285	40,454	44,002	40,934	36,774	37,413	38,226
NW Indiana Total	75 -79	19,798	20,040	18,225	19,249	23,313	30,063	34,679	37,955	35,519	32,099	32,834
NW Indiana Total	80 - 84	12,701	14,116	14,539	14,034	14,982	18,288	23,787	27,767	30,725	29,111	26,570
NW Indiana Total	85 +	8,692	10,350	12,197	14,239	15,040	16,253	19,144	24,307	29,732	34,786	36,758
NW Indiana Total	**TOTAL**	725,800	739,002	755,438	770,110	783,132	798,300	808,875	815,098	818,590	821,510	825,041

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
SE Wisconsin Total	0 - 4	29,086	30,129	29,904	28,305	28,943	29,192	29,245	29,741	29,711	29,324	28,366
SE Wisconsin Total	5 - 9	31,999	31,052	31,840	32,350	31,103	30,921	31,092	31,417	31,934	31,396	30,706
SE Wisconsin Total	10 - 14	33,336	33,906	33,072	33,714	34,608	32,631	32,358	32,728	33,063	33,016	32,204
SE Wisconsin Total	15 - 19	30,946	31,737	31,278	31,384	32,219	32,398	30,564	30,733	30,923	30,630	30,282
SE Wisconsin Total	20 - 24	26,456	28,758	28,334	29,009	29,219	29,701	30,054	28,499	28,852	28,421	27,933
SE Wisconsin Total	25 - 29	25,419	25,161	27,204	27,207	28,963	28,100	28,831	28,907	27,374	26,840	27,053
SE Wisconsin Total	30 - 34	29,822	28,135	27,340	29,156	29,580	30,559	29,776	30,713	30,860	28,789	27,871
SE Wisconsin Total	35 - 39	36,086	31,888	28,643	29,054	31,241	30,905	31,812	31,444	32,347	31,883	29,515
SE Wisconsin Total	40 - 44	35,644	36,565	31,815	29,150	29,829	31,177	30,869	32,048	31,723	31,918	31,158
SE Wisconsin Total	45 - 49	30,785	36,135	36,920	32,243	29,809	29,717	31,032	31,039	32,158	31,287	31,163
SE Wisconsin Total	50 - 54	26,128	31,087	35,485	36,565	32,307	29,129	29,033	30,606	30,632	31,089	29,977
SE Wisconsin Total	55 - 59	19,903	25,720	30,021	34,299	35,658	30,822	27,825	28,007	29,572	29,131	29,294
SE Wisconsin Total	60 - 64	15,698	18,772	24,036	28,380	32,703	33,358	28,793	26,250	26,531	27,696	27,082
SE Wisconsin Total	65 - 69	13,520	14,428	17,270	22,086	26,077	30,104	30,706	26,410	24,214	24,596	25,754
SE Wisconsin Total	70 - 74	12,989	12,089	12,840	15,548	19,955	23,635	27,417	28,043	24,203	22,267	22,696
SE Wisconsin Total	75 -79	10,843	10,839	9,929	10,947	13,316	17,170	20,484	23,895	24,597	21,374	19,752
SE Wisconsin Total	80 - 84	7,292	8,269	8,373	7,611	8,456	10,369	13,497	16,239	19,122	19,857	17,406
SE Wisconsin Total	85 +	5,720	6,399	7,453	8,208	8,202	8,844	10,468	13,326	16,582	20,209	22,701
SE Wisconsin Total	TOTAL	421,673	441,069	451,757	465,215	482,188	488,731	493,856	500,043	504,400	499,722	490,914

		2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Forecast Region	0 - 4	739,630	729,774	697,259	655,396	684,532	703,288	719,878	729,067	725,031	718,217	708,613
Forecast Region	5 - 9	779,257	713,228	721,361	711,295	677,771	695,404	713,760	733,777	745,052	739,784	732,505
Forecast Region	10 - 14	744,021	773,478	741,271	749,757	749,250	705,345	718,654	739,775	761,426	771,278	765,683
Forecast Region	15 - 19	675,252	701,518	718,993	717,474	734,297	724,558	680,459	695,798	715,963	734,152	742,250
Forecast Region	20 - 24	630,516	652,022	651,753	705,104	705,137	713,807	701,987	662,357	682,050	695,284	709,359
Forecast Region	25 - 29	734,374	719,048	748,242	748,300	816,135	810,402	820,821	805,489	769,104	772,946	798,878
Forecast Region	30 - 34	766,364	726,297	719,293	771,163	782,708	842,086	838,800	854,381	842,141	803,085	801,974
Forecast Region	35 - 39	818,943	746,169	713,510	708,304	768,689	768,743	827,577	827,875	846,660	833,530	793,897
Forecast Region	40 - 44	802,864	789,957	724,398	700,473	704,290	753,768	751,448	812,821	814,015	831,088	818,130
Forecast Region	45 - 49	700,485	775,421	766,625	699,877	686,183	680,136	727,098	726,213	787,713	785,287	801,497
Forecast Region	50 - 54	599,801	677,005	751,072	737,958	681,811	660,073	653,140	701,374	700,321	758,185	754,095
Forecast Region	55 - 59	452,994	571,480	642,265	708,837	703,210	640,727	620,684	616,460	664,367	659,952	716,500
Forecast Region	60 - 64	354,581	415,121	522,875	593,894	662,130	647,821	588,461	573,842	571,401	616,900	610,712
Forecast Region	65 - 69	297,726	315,577	372,300	475,083	538,611	601,872	587,525	534,159	524,119	523,408	568,012
Forecast Region	70 - 74	278,281	256,473	272,319	328,358	421,784	478,376	536,683	524,284	477,975	471,458	471,791
Forecast Region	75 -79	230,556	226,368	211,240	230,972	280,722	363,325	414,263	467,397	459,358	421,777	418,303
Forecast Region	80 - 84	151,956	168,867	168,646	163,347	180,807	222,035	290,620	334,628	381,148	378,803	351,894
Forecast Region	85 +	113,248	132,524	153,018	174,363	183,272	201,536	240,102	307,617	374,452	444,601	484,964
Forecast Region	TOTAL	9,870,849	10,090,328	10,296,440	10,579,955	10,961,336	11,213,304	11,431,960	11,647,314	11,842,294	11,959,736	12,049,056

TABLE 9-32. SHIFT-SHARE FORECAST – WORKERS IN HOUSEHOLDS

	2010	2020	2030	2040	2050	Difference		CAGR
Forecast Region	**4,915,140**	**5,485,252**	**5,598,138**	**5,766,265**	**5,881,264**	**966,124**	**20%**	**0.45%**
CMAP Total	3,989,579	4,480,481	4,591,199	4,737,549	4,855,682	866,103	22%	0.49%
Illinois Outer County	371,835	411,791	414,145	429,387	431,977	60,143	16%	0.38%
NW Indiana Total	333,488	353,107	357,126	359,752	362,814	29,325	9%	0.21%
SE Wisconsin Total	220,238	239,873	235,667	239,577	230,792	10,554	5%	0.12%

TABLE 9-33. SHIFT-SHARE FORECAST – HOUSEHOLD INCOME FOR 21-COUNTY REGION (2009$)

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference		1990-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
25th Percentile	$ 31,190	$ 34,962	$ 28,082	$ 30,781	$ 36,556	$ 43,880	$ 50,451	$ (3,108)	-10%	-0.52%	$ 22,369	80%	1.48%
Median	$ 58,893	$ 64,705	$ 56,541	$ 62,412	$ 72,195	$ 83,190	$ 91,140	$ (2,352)	-4%	-0.20%	$ 34,600	61%	1.20%
75th Percentile	$ 94,113	$107,765	$ 98,139	$ 103,670	$ 114,302	$ 123,948	$ 134,071	$ 4,026	4%	0.21%	$ 35,932	37%	0.78%

TABLE 9-34. SHIFT-SHARE FORECAST – POPULATION BY RACE/ETHNICITY

CMAP	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	4,687,259	4,486,557	4,539,225	4,506,801	4,463,493	4,345,235	(200,702)	-4%	-0.44%	(141,322)	-3%	-0.08%
Non-Hispanic Black	1,537,534	1,465,417	1,519,412	1,518,456	1,501,557	1,463,799	(72,117)	-5%	-0.48%	(1,618)	0%	0.00%
Non-Hispanic Asian	375,993	513,694	636,909	743,969	848,041	939,035	137,701	37%	3.17%	425,341	83%	1.52%
Non-Hispanic Other	136,276	142,109	133,108	149,961	166,861	181,338	5,833	4%	0.42%	39,229	28%	0.61%
Hispanic	1,409,202	1,823,609	2,169,370	2,489,765	2,802,871	3,076,149	414,407	29%	2.61%	1,252,540	69%	1.32%

ILLINOIS OUTER COUNTIES	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	630,600	646,316	665,431	670,793	676,925	664,645	15,716	2%	0.25%	18,329	3%	0.07%
Non-Hispanic Black	53,083	64,769	73,240	79,408	85,208	87,310	11,686	22%	2.01%	22,541	35%	0.75%
Non-Hispanic Asian	8,790	12,377	14,950	16,789	18,559	19,496	3,587	41%	3.48%	7,119	58%	1.14%
Non-Hispanic Other	9,901	14,361	15,851	18,344	20,695	22,152	4,460	45%	3.79%	7,791	54%	1.09%
Hispanic	46,770	83,732	108,270	129,397	149,659	163,716	36,962	79%	6.00%	79,984	96%	1.69%

NW INDIANA	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	522,121	506,100	504,194	498,496	484,814	468,837	(16,021)	-3%	-0.31%	(37,263)	-7%	-0.19%
Non-Hispanic Black	133,738	141,990	148,665	155,598	159,045	162,169	8,252	6%	0.60%	20,179	14%	0.33%
Non-Hispanic Asian	5,672	8,511	10,577	12,473	14,071	15,574	2,839	50%	4.14%	7,063	83%	1.52%
Non-Hispanic Other	10,328	12,525	13,013	14,837	16,332	17,676	2,197	21%	1.95%	5,151	41%	0.86%
Hispanic	69,609	102,689	123,723	145,549	163,724	180,800	33,080	48%	3.96%	78,111	76%	1.42%

SE WISCONSIN	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	362,953	363,996	375,041	370,890	366,743	346,400	1,043	0%	0.03%	(17,596)	-5%	-0.12%
Non-Hispanic Black	27,634	32,771	36,577	39,125	41,567	41,961	5,137	19%	1.72%	9,190	28%	0.62%
Non-Hispanic Asian	3,273	5,243	6,699	7,784	8,810	9,321	1,970	60%	4.82%	4,078	78%	1.45%
Non-Hispanic Other	6,424	9,336	10,599	12,228	13,774	14,552	2,912	45%	3.81%	5,216	56%	1.12%
Hispanic	31,883	52,716	66,362	77,784	88,446	94,082	20,833	65%	5.16%	41,366	78%	1.46%

FORECAST REGION	2000	2010	2020	2030	2040	2050	2000-2010 Difference		2000-2010 CAGR	2010-2050 Difference		2010-2050 CAGR
Non-Hispanic White	6,202,933	6,002,969	6,083,890	6,046,980	5,991,974	5,825,117	(199,964)	-3%	-0.33%	(177,852)	-3%	-0.08%
Non-Hispanic Black	1,751,989	1,704,947	1,777,894	1,792,587	1,787,378	1,755,238	(47,042)	-3%	-0.27%	50,291	3%	0.07%
Non-Hispanic Asian	393,728	539,825	669,134	781,014	889,482	983,426	146,097	37%	3.21%	443,601	82%	1.51%
Non-Hispanic Other	162,929	178,331	172,571	195,370	217,662	235,719	15,402	9%	0.91%	57,388	32%	0.70%
Hispanic	1,557,464	2,062,746	2,467,726	2,842,495	3,204,701	3,514,748	505,282	32%	2.85%	1,452,002	70%	1.34%

TABLE 9-35. SHIFT-SHARE FORECAST – NON-INSTITUTIONAL GROUP QUARTERS

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**93,670**	**103,119**	**111,155**	**121,638**	**129,477**	**35,807**	**38%**	**0.81%**
CMAP Total	72,406	80,021	85,259	93,599	100,366	27,960	39%	0.82%
Illinois Outer County Total	10,882	11,910	13,679	14,719	15,171	4,289	39%	0.83%
NW Indiana Total	4,915	5,310	5,900	6,599	7,003	2,088	42%	0.89%
SE Wisconsin Total	5,467	5,878	6,317	6,721	6,937	1,470	27%	0.60%

TABLE 9-36. SHIFT-SHARE FORECAST – INSTITUTIONAL GROUP QUARTERS POPULATION

	2010	2020	2030	2040	2050	2010-2050 Difference	2010-2050 CAGR
Forecast Region	**98,708**	**106,761**	**115,331**	**127,265**	**135,715**	**37,007**	**37%**	**0.80%**
CMAP Total	67,914	74,679	81,087	90,067	96,992	29,078	43%	0.89%
Illinois Outer County Total	12,494	13,139	14,427	16,182	17,245	4,751	38%	0.81%
NW Indiana Total	11,462	11,729	12,179	12,797	13,012	1,550	14%	0.32%
SE Wisconsin Total	6,838	7,213	7,638	8,219	8,466	1,628	24%	0.54%

TABLE 9-37. SHIFT-SHARE FORECAST – TOTAL EMPLOYMENT

	1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
Forecast Region	**4,649,324**	**5,296,682**	**4,885,980**	**5,511,589**	**5,608,054**	**5,808,168**	**6,011,489**	**236,656**	**5%**	**0.25%**	**1,125,508**	**23%**	**0.52%**
CMAP Total	3,850,476	4,397,523	4,045,501	4,628,184	4,704,286	4,872,587	5,041,185	195,025	5%	0.25%	995,684	25%	0.55%
Illinois Outer County	313,851	365,907	340,783	364,511	374,863	388,993	404,363	26,932	9%	0.41%	63,580	19%	0.43%
NW Indiana Total	318,311	337,731	313,447	315,768	313,358	314,433	315,384	(4,864)	-2%	-0.08%	1,937	1%	0.02%
SE Wisconsin Total	166,686	195,522	186,248	203,126	215,546	232,156	250,557	19,563	12%	0.56%	64,308	35%	0.74%

TABLE 9-38. SHIFT-SHARE FORECAST – TOTAL EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
11	Agriculture, Forestry	10,787	8,674	5,639	4,811	3,379	2,392	1,880	(5,148)	-48%	-3.19%	(3,759)	-67%	-2.71%
21	Mining, Quarrying, a	2,214	1,673	1,159	856	592	404	265	(1,055)	-48%	-3.18%	(894)	-77%	-3.62%
22	Utilities	25,531	15,843	10,369	10,131	7,782	5,889	4,124	(15,162)	-59%	-4.41%	(6,244)	-60%	-2.28%
23	Construction	218,751	251,666	173,363	200,985	183,295	186,562	205,979	(45,387)	-21%	-1.16%	32,616	19%	0.43%
31-33	Manufacturing	634,042	584,297	370,381	353,202	291,637	251,603	220,772	(263,660)	-42%	-2.65%	(149,609)	-40%	-1.29%
42	Wholesale Trade	244,644	247,914	207,653	219,253	208,937	194,274	164,473	(36,991)	-15%	-0.82%	(43,180)	-21%	-0.58%
44-45	Retail Trade	432,299	448,113	413,364	440,610	426,636	417,808	428,104	(18,935)	-4%	-0.22%	14,740	4%	0.09%
48-49	Transportation and V	165,943	207,002	179,216	204,131	192,052	178,805	169,189	13,272	8%	0.39%	(10,027)	-6%	-0.14%
51	Information	102,092	116,305	79,181	76,556	68,173	62,306	56,057	(22,910)	-22%	-1.26%	(23,124)	-29%	-0.86%
52	Finance and Insuranc	240,337	256,733	231,215	236,675	248,722	277,403	295,677	(9,122)	-4%	-0.19%	64,462	28%	0.62%
53	Real Estate and Rent	78,134	90,977	76,497	74,491	66,644	61,307	61,615	(1,638)	-2%	-0.11%	(14,882)	-19%	-0.54%
54	Professional and Tec	261,686	368,555	330,046	387,512	365,470	351,978	335,541	68,360	26%	1.17%	5,495	2%	0.04%
55	Management of Com	63,984	65,070	75,126	87,916	87,039	85,902	78,199	11,142	17%	0.81%	3,073	4%	0.10%
56	Administrative and V	210,815	327,052	294,330	412,685	487,709	582,539	627,752	83,515	40%	1.68%	333,421	113%	1.91%
61	Educational Services	73,862	90,020	126,632	141,157	136,811	132,387	116,066	52,770	71%	2.73%	(10,566)	-8%	-0.22%
62	Health Care and Soci	304,835	395,316	486,313	587,955	628,924	654,062	658,644	181,477	60%	2.36%	172,332	35%	0.76%
71	Arts, Entertainment,	43,631	65,529	69,192	80,915	79,616	76,133	72,720	25,562	59%	2.33%	3,527	5%	0.12%
72	Accommodation and	224,509	269,303	304,342	386,942	428,356	488,843	591,917	79,833	36%	1.53%	287,575	94%	1.68%
81	Other Services, exce	174,518	205,941	210,209	227,323	224,907	222,142	225,787	35,691	20%	0.93%	15,578	7%	0.18%
92	Government	337,862	381,542	401,273	494,076	567,606	639,846	726,424	63,411	19%	0.86%	325,150	81%	1.49%
	Total Employment	**3,850,476**	**4,397,523**	**4,045,501**	**4,628,184**	**4,704,286**	**4,872,587**	**5,041,185**	**195,025**	**5%**	**0.25%**	**995,684**	**25%**	**0.55%**

TABLE 9-39. SHIFT-SHARE FORECAST – WAGE & SALARY EMPLOYMENT BY NAICS-2 (CMAP REGION)

NAICS		1990	2000	2010	2020	2030	2040	2050	1990-2010 Difference	1990-2010 CAGR		2010-2050 Difference	2010-2050 CAGR	
11	Agriculture, Forestry	4,849	4,278	2,789	2,658	1,873	1,331	1,049	(2,061)	-42%	-2.73%	(1,739)	-62%	-2.41%
21	Mining, Quarrying, a	2,176	1,649	1,120	815	566	387	255	(1,056)	-49%	-3.27%	(865)	-77%	-3.63%
22	Utilities	25,531	15,843	10,369	10,131	7,782	5,889	4,124	(15,162)	-59%	-4.41%	(6,244)	-60%	-2.28%
23	Construction	156,233	179,821	119,852	147,258	134,414	136,915	151,281	(36,381)	-23%	-1.32%	31,429	26%	0.58%
31-33	Manufacturing	610,164	561,902	355,690	341,387	281,881	243,187	213,386	(254,474)	-42%	-2.66%	(142,304)	-40%	-1.27%
42	Wholesale Trade	230,159	233,111	194,978	209,019	199,162	185,163	156,741	(35,181)	-15%	-0.83%	(38,237)	-20%	-0.54%
44-45	Retail Trade	404,221	419,057	386,519	415,422	402,171	393,779	403,416	(17,702)	-4%	-0.22%	16,897	4%	0.11%
48-49	Transportation and V	150,860	187,434	162,776	186,759	175,586	163,356	154,453	11,916	8%	0.38%	(8,323)	-5%	-0.13%
51	Information	95,305	108,513	73,821	72,370	64,441	58,892	52,984	(21,484)	-23%	-1.27%	(20,837)	-28%	-0.83%
52	Finance and Insuranc	224,085	238,757	215,274	221,410	232,594	259,323	276,320	(8,811)	-4%	-0.20%	61,046	28%	0.63%
53	Real Estate and Rent	57,400	66,245	56,360	57,884	51,722	47,518	47,697	(1,040)	-2%	-0.09%	(8,663)	-15%	-0.42%
54	Professional and Tec	216,896	303,593	270,587	326,203	307,780	296,522	282,718	53,691	25%	1.11%	12,131	4%	0.11%
55	Management of Com	63,903	64,991	74,976	87,702	86,828	85,696	78,013	11,073	17%	0.80%	3,037	4%	0.10%
56	Administrative and V	195,461	301,544	272,113	389,857	460,726	550,295	592,975	76,652	39%	1.67%	320,862	118%	1.97%
61	Educational Services	70,441	85,706	120,533	133,800	129,653	125,434	109,950	50,091	71%	2.72%	(10,582)	-9%	-0.23%
62	Health Care and Soci	281,500	364,717	448,993	545,350	583,300	606,564	610,776	167,493	60%	2.36%	161,783	36%	0.77%
71	Arts, Entertainment,	35,226	53,486	56,273	67,112	66,078	63,222	60,414	21,047	60%	2.37%	4,141	7%	0.18%
72	Accommodation and	215,743	258,700	291,751	372,974	412,899	471,207	570,565	76,008	35%	1.52%	278,814	96%	1.69%
81	Other Services, exce	146,487	171,745	173,827	186,188	184,120	181,770	184,668	27,340	19%	0.86%	10,841	6%	0.15%
92	Government	337,862	381,542	401,273	494,076	567,606	639,846	726,424	63,411	19%	0.86%	325,150	81%	1.49%
	Total Wage & Salary	**3,524,503**	**4,002,634**	**3,689,872**	**4,268,377**	**4,351,183**	**4,516,296**	**4,678,208**	**165,369**	**5%**	**0.23%**	**988,336**	**27%**	**0.60%**

9.4 Appendix D – Benchmarking Methodology: Download Instructions

9.4.1 National Benchmark Employment

9.4.1.1 Current Employment Statistics

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Paste the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. You should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	NAICS
CEU1021000001	21
CEU4422000001	22
CEU2000000001	23
CEU3000000001	31-33
CEU4142000001	42
CEU4200000001	44-45
CEU4300000001	48-49
CEU5000000001	51
CEU5552000001	52
CEU5553000001	53
CEU6054000001	54
CEU6055000001	55
CEU6056000001	56
CEU6561000001	61
CEU6562000001	62
CEU7071000001	71
CEU7072000001	72
CEU8000000001	81
CEU9000000001	92

9.4.1.2 Current Population Survey

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Past the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. If you selected HTML Table as the output type, you should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	NAICS
LNU02032184	11
LNU02032190	81

9.4.1.3 American Community Survey

1. Visit the American FactFinder website at http://factfinder.census.gov/
2. Click on Download Center
3. Click NEXT
4. Select American Community Survey from the drop-down menu
5. Select 2005 ACS
6. Click ADD TO YOUR SELECTIONS
7. Click NEXT
8. Select United States – 010 from the drop-down menu
9. Select United States
10. Click ADD TO YOUR SELECTIONS
11. Click NEXT
12. Type B24070 into the Refine your search results input field
13. Click GO
14. Select the table
15. Click NEXT
16. Click OK
17. Click Download
18. Repeat steps 5-17 for 2006 ACS, 2007 ACS 1-year estimates, 2008 ACS 1-year estimates, 2009 ACS 1-year estimates, 2010 ACS 1-year estimates, 2011 ACS 1-year estimates, 2012 ACS 1-year estimates, 2013 ACS 1-year estimates, and 2014 ACS 1-year estimates.

9.4.2 State Benchmark Employment

9.4.2.1 State and Area Employment

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Paste the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. If you selected HTML Table as the output type, you should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	State	NAICS	Series ID	State	NAICS
SMU17000001000000001	Illinois	21	SMU55000001000000001	Wisconsin	21
SMU17000004322000001	Illinois	22	SMU55000004322000001	Wisconsin	22
SMU17000002000000001	Illinois	23	SMU55000002000000001	Wisconsin	23
SMU17000003000000001	Illinois	31-33	SMU55000003000000001	Wisconsin	31-33
SMU17000004100000001	Illinois	42	SMU55000004100000001	Wisconsin	42
SMU17000004200000001	Illinois	44-45	SMU55000004200000001	Wisconsin	44-45
SMU17000004340008901	Illinois	48-49	SMU55000004340008901	Wisconsin	48-49
SMU17000005000000001	Illinois	51	SMU55000005000000001	Wisconsin	51
SMU17000005552000001	Illinois	52	SMU55000005552000001	Wisconsin	52
SMU17000005553000001	Illinois	53	SMU55000005553000001	Wisconsin	53
SMU17000006054000001	Illinois	54	SMU55000006054000001	Wisconsin	54
SMU17000006055000001	Illinois	55	SMU55000006055000001	Wisconsin	55
SMU17000006056000001	Illinois	56	SMU55000006056000001	Wisconsin	56
SMU17000006561000001	Illinois	61	SMU55000006561000001	Wisconsin	61
SMU17000006562000001	Illinois	62	SMU55000006562000001	Wisconsin	62
SMU17000007071000001	Illinois	71	SMU55000007071000001	Wisconsin	71
SMU17000007072000001	Illinois	72	SMU55000007072000001	Wisconsin	72
SMU17000008000000001	Illinois	81	SMU55000008000000001	Wisconsin	81
SMU17000009000000001	Illinois	92	SMU55000009000000001	Wisconsin	92
SMU18000001000000001	Indiana	21			
SMU18000004322000001	Indiana	22			
SMU18000002000000001	Indiana	23			
SMU18000003000000001	Indiana	31-33			
SMU18000004100000001	Indiana	42			
SMU18000004200000001	Indiana	44-45			
SMU18000004340008901	Indiana	48-49			
SMU18000005000000001	Indiana	51			
SMU18000005552000001	Indiana	52			
SMU18000005553000001	Indiana	53			
SMU18000006054000001	Indiana	54			
SMU18000006055000001	Indiana	55			
SMU18000006056000001	Indiana	56			
SMU18000006561000001	Indiana	61			
SMU18000006562000001	Indiana	62			
SMU18000007071000001	Indiana	71			
SMU18000007072000001	Indiana	72			
SMU18000008000000001	Indiana	81			
SMU18000009000000001	Indiana	92			

9.4.2.2 Quarterly Census of Employment and Wages

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Paste the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. If you selected HTML Table as the output type, you should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	State	NAICS
ENU1700010511	Illinois	11
ENU1700010521	Illinois	21
ENU1700010522	Illinois	22
ENU1700010523	Illinois	23
ENU1700010531-33	Illinois	31-33
ENU1700010542	Illinois	42
ENU1700010544-45	Illinois	44-45
ENU1700010548-49	Illinois	48-49
ENU1700010551	Illinois	51
ENU1700010552	Illinois	52
ENU1700010553	Illinois	53
ENU1700010554	Illinois	54
ENU1700010555	Illinois	55
ENU1700010556	Illinois	56
ENU1700010561	Illinois	61
ENU1700010562	Illinois	62
ENU1700010571	Illinois	71
ENU1700010572	Illinois	72
ENU1700010581	Illinois	81
ENU1700010192	Illinois	92
ENU1700010292	Illinois	92
ENU1700010392	Illinois	92
ENU1700010399	Illinois	92
ENU1700010599	Illinois	92
ENU1800010511	Indiana	11
ENU1800010521	Indiana	21
ENU1800010522	Indiana	22
ENU1800010523	Indiana	23
ENU1800010531-33	Indiana	31-33
ENU1800010542	Indiana	42
ENU1800010544-45	Indiana	44-45
ENU1800010548-49	Indiana	48-49
ENU1800010551	Indiana	51
ENU1800010552	Indiana	52
ENU1800010553	Indiana	53
ENU1800010554	Indiana	54
ENU1800010555	Indiana	55
ENU1800010556	Indiana	56
ENU1800010561	Indiana	61
ENU1800010562	Indiana	62
ENU1800010571	Indiana	71
ENU1800010572	Indiana	72
ENU5500010511	Wisconsin	11
ENU5500010521	Wisconsin	21
ENU5500010522	Wisconsin	22
ENU5500010523	Wisconsin	23
ENU5500010531-33	Wisconsin	31-33
ENU5500010542	Wisconsin	42
ENU5500010544-45	Wisconsin	44-45
ENU5500010548-49	Wisconsin	48-49
ENU5500010551	Wisconsin	51
ENU5500010552	Wisconsin	52
ENU5500010553	Wisconsin	53
ENU5500010554	Wisconsin	54
ENU5500010555	Wisconsin	55
ENU5500010556	Wisconsin	56
ENU5500010561	Wisconsin	61
ENU5500010562	Wisconsin	62
ENU5500010571	Wisconsin	71
ENU5500010572	Wisconsin	72
ENU5500010581	Wisconsin	81
ENU5500010192	Wisconsin	92
ENU5500010292	Wisconsin	92
ENU5500010392	Wisconsin	92
ENU5500010399	Wisconsin	92
ENU5500010599	Wisconsin	92

ENU1800010581	Indiana	81
ENU1800010192	Indiana	92
ENU1800010292	Indiana	92
ENU1800010392	Indiana	92
ENU1800010399	Indiana	92
ENU1800010599	Indiana	92

9.4.2.3 American Community Survey

1. Visit the American FactFinder website at http://factfinder.census.gov/
2. Click on Download Center
3. Click NEXT
4. Select American Community Survey from the drop-down menu
5. Select 2005 ACS
6. Click ADD TO YOUR SELECTIONS
7. Click NEXT
8. Select State – 040 from the drop-down menu
9. Select All States within the United States and Puerto Rico
10. Click ADD TO YOUR SELECTIONS
11. Click NEXT
12. Type B24070 into the Refine your search results input field
13. Click GO
14. Select the table
15. Click NEXT
16. Click OK
17. Click Download
18. Repeat steps 5-17 for 2006 ACS, 2007 ACS 1-year estimates, 2008 ACS 1-year estimates, 2009 ACS 1-year estimates, 2010 ACS 1-year estimates, 2011 ACS 1-year estimates, 2012 ACS 1-year estimates, 2013 ACS 1-year estimates, and 2014 ACS 1-year estimates.

9.4.3 County Benchmark Employment

9.4.3.1 Quarterly Census of Employment and Wages

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Paste the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. If you selected HTML Table as the output type, you should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	County	NAICS	Series ID	County	NAICS
ENU1703110511	Cook	11	ENU1709710511	Lake	11
ENU1703110521	Cook	21	ENU1709710521	Lake	21
ENU1703110522	Cook	22	ENU1709710522	Lake	22
ENU1703110523	Cook	23	ENU1709710523	Lake	23
ENU1703110531-33	Cook	31-33	ENU1709710531-33	Lake	31-33
ENU1703110542	Cook	42	ENU1709710542	Lake	42
ENU1703110544-45	Cook	44-45	ENU1709710544-45	Lake	44-45
ENU1703110548-49	Cook	48-49	ENU1709710548-49	Lake	48-49
ENU1703110551	Cook	51	ENU1709710551	Lake	51
ENU1703110552	Cook	52	ENU1709710552	Lake	52
ENU1703110553	Cook	53	ENU1709710553	Lake	53
ENU1703110554	Cook	54	ENU1709710554	Lake	54
ENU1703110555	Cook	55	ENU1709710555	Lake	55
ENU1703110556	Cook	56	ENU1709710556	Lake	56
ENU1703110561	Cook	61	ENU1709710561	Lake	61
ENU1703110562	Cook	62	ENU1709710562	Lake	62
ENU1703110571	Cook	71	ENU1709710571	Lake	71
ENU1703110572	Cook	72	ENU1709710572	Lake	72
ENU1703110581	Cook	81	ENU1709710581	Lake	81
ENU1704310511	DuPage	11	ENU1711110511	McHenry	11
ENU1704310521	DuPage	21	ENU1711110521	McHenry	21
ENU1704310522	DuPage	22	ENU1711110522	McHenry	22
ENU1704310523	DuPage	23	ENU1711110523	McHenry	23
ENU1704310531-33	DuPage	31-33	ENU1711110531-33	McHenry	31-33
ENU1704310542	DuPage	42	ENU1711110542	McHenry	42
ENU1704310544-45	DuPage	44-45	ENU1711110544-45	McHenry	44-45
ENU1704310548-49	DuPage	48-49	ENU1711110548-49	McHenry	48-49
ENU1704310551	DuPage	51	ENU1711110551	McHenry	51
ENU1704310552	DuPage	52	ENU1711110552	McHenry	52
ENU1704310553	DuPage	53	ENU1711110553	McHenry	53
ENU1704310554	DuPage	54	ENU1711110554	McHenry	54
ENU1704310555	DuPage	55	ENU1711110555	McHenry	55
ENU1704310556	DuPage	56	ENU1711110556	McHenry	56
ENU1704310561	DuPage	61	ENU1711110561	McHenry	61
ENU1704310562	DuPage	62	ENU1711110562	McHenry	62
ENU1704310571	DuPage	71	ENU1711110571	McHenry	71
ENU1704310572	DuPage	72	ENU1711110572	McHenry	72
ENU1704310581	DuPage	81	ENU1711110581	McHenry	81
ENU1708910511	Kane	11	ENU1719710511	Will	11
ENU1708910521	Kane	21	ENU1719710521	Will	21
ENU1708910522	Kane	22	ENU1719710522	Will	22
ENU1708910523	Kane	23	ENU1719710523	Will	23

ENU1708910531-33	Kane	31-33	ENU1719710531-33	Will	31-33
ENU1708910542	Kane	42	ENU1719710542	Will	42
ENU1708910544-45	Kane	44-45	ENU1719710544-45	Will	44-45
ENU1708910548-49	Kane	48-49	ENU1719710548-49	Will	48-49
ENU1708910551	Kane	51	ENU1719710551	Will	51
ENU1708910552	Kane	52	ENU1719710552	Will	52
ENU1708910553	Kane	53	ENU1719710553	Will	53
ENU1708910554	Kane	54	ENU1719710554	Will	54
ENU1708910555	Kane	55	ENU1719710555	Will	55
ENU1708910556	Kane	56	ENU1719710556	Will	56
ENU1708910561	Kane	61	ENU1719710561	Will	61
ENU1708910562	Kane	62	ENU1719710562	Will	62
ENU1708910571	Kane	71	ENU1719710571	Will	71
ENU1708910572	Kane	72	ENU1719710572	Will	72
ENU1708910581	Kane	81	ENU1719710581	Will	81
ENU1709310511	Kendall	11			
ENU1709310521	Kendall	21			
ENU1709310522	Kendall	22			
ENU1709310523	Kendall	23			
ENU1709310531-33	Kendall	31-33			
ENU1709310542	Kendall	42			
ENU1709310544-45	Kendall	44-45			
ENU1709310548-49	Kendall	48-49			
ENU1709310551	Kendall	51			
ENU1709310552	Kendall	52			
ENU1709310553	Kendall	53			
ENU1709310554	Kendall	54			
ENU1709310555	Kendall	55			
ENU1709310556	Kendall	56			
ENU1709310561	Kendall	61			
ENU1709310562	Kendall	62			
ENU1709310571	Kendall	71			
ENU1709310572	Kendall	72			
ENU1709310581	Kendall	81			

Combine the five individual series for each county listed below to produce NAICS 92 values:

Series ID	County	NAICS	Series ID	County	NAICS
ENU1703110192	Cook	92	ENU1709710192	Lake	92
ENU1703110292	Cook	92	ENU1709710292	Lake	92
ENU1703110392	Cook	92	ENU1709710392	Lake	92
ENU1703110399	Cook	Unclassified	ENU1709710399	Lake	Unclassified
ENU1703110599	Cook	Unclassified	ENU1709710599	Lake	Unclassified
ENU1704310192	DuPage	92	ENU1711110192	McHenry	92
ENU1704310292	DuPage	92	ENU1711110292	McHenry	92
ENU1704310392	DuPage	92	ENU1711110392	McHenry	92
ENU1704310599	DuPage	Unclassified	ENU1711110399	McHenry	Unclassified
ENU1708910192	Kane	92	ENU1711110599	McHenry	Unclassified
ENU1708910292	Kane	92	ENU1719710192	Will	92
ENU1708910392	Kane	92	ENU1719710292	Will	92
ENU1708910599	Kane	Unclassified	ENU1719710392	Will	92
ENU1709310192	Kendall	92	ENU1719710399	Will	Unclassified
ENU1709310392	Kendall	92	ENU1719710599	Will	Unclassified
ENU1709310599	Kendall	Unclassified			

Use the following series for the 14 outer counties:

Series ID	County	NAICS	Series ID	County	NAICS
ENU1700710544-45	Boone (IL)	44-45	ENU1808910544-45	Lake (IN)	44-45
ENU1703710544-45	DeKalb (IL)	44-45	ENU1809110544-45	LaPorte (IN)	44-45
ENU1706310544-45	Grundy (IL)	44-45	ENU1812710544-45	Porter (IN)	44-45
ENU1709110544-45	Kankakee (IL)	44-45	ENU5505910544-45	Kenosha (WI)	44-45
ENU1709910544-45	LaSalle (IL)	44-45	ENU5510110544-45	Racine (WI)	44-45
ENU1710310544-45	Lee (IL)	44-45	ENU5512710544-45	Walworth (WI)	44-45
ENU1714110544-45	Ogle (IL)	44-45			
ENU1720110544-45	Winnebago (IL)	44-45			

Series ID	County	NAICS	Series ID	County	NAICS
ENU1700710010	Boone (IL)	All	ENU1808910010	Lake (IN)	All
ENU1703710010	DeKalb (IL)	All	ENU1809110010	LaPorte (IN)	All
ENU1706310010	Grundy (IL)	All	ENU1812710010	Porter (IN)	All
ENU1709110010	Kankakee (IL)	All	ENU5505910010	Kenosha (WI)	All
ENU1709910010	LaSalle (IL)	All	ENU5510110010	Racine (WI)	All
ENU1710310010	Lee (IL)	All	ENU5512710010	Walworth (WI)	All
ENU1714110010	Ogle (IL)	All			
ENU1720110010	Winnebago (IL)	All			

9.4.3.2 American Community Survey

1. Visit the American FactFinder website at http://factfinder.census.gov/
2. Click on Download Center
3. Click NEXT
4. Select American Community Survey from the drop-down menu
5. Select 2009 ACS 5-year estimates
6. Click ADD TO YOUR SELECTIONS
7. Click NEXT
8. Select County – 050 from the first drop-down menu
9. Select Illinois from the second drop-down menu (or Indiana or Wisconsin for outer counties)
10. Select All Counties within Illinois (or Indiana or Wisconsin for outer counties)
11. Click ADD TO YOUR SELECTIONS
12. Click NEXT
13. Type S2407 into the Refine your search results input field
14. Click GO
15. Select the table
16. Click NEXT
17. Click OK
18. Click Download
19. Repeat steps 5-18 for 2010 ACS 5-year estimates, 2011 ACS 5-year estimates, 2012 ACS 5-year estimates, 2013 ACS 5-year estimates, and 2014 ACS 5-year estimates.

9.4.4 Subsector Benchmark Employment

For all subsectors except Rail Transportation (NAICS 482):

1. Visit the U.S. Bureau of Labor Statistics website at http://www.bls.gov/ http://www.bls.gov/ces/
2. Along the top menu bar, hover over Data Tools and click Series Report
3. Paste the series IDs below into the text field and click Next. Select Multi-series table, specify the year range, and select Annual Data as the time period. Select the output type and click Retrieve Data. If you selected HTML Table as the output type, you should see a time series table with years along the top and series IDs along the side. Series IDs correspond with the NAICS listed below.

Series ID	County	NAICS	Series ID	County	NAICS
ENU17031105325	Cook	325	ENU17031105488	Cook	488
ENU17043105325	DuPage	325	ENU17043105488	DuPage	488
ENU17089105325	Kane	325	ENU17089105488	Kane	488
ENU17093105325	Kendall	325	ENU17093105488	Kendall	488
ENU17097105325	Lake	325	ENU17097105488	Lake	488
ENU17111105325	McHenry	325	ENU17111105488	McHenry	488
ENU17197105325	Will	325	ENU17197105488	Will	488
ENU17031105332	Cook	332	ENU170311055415	Cook	5415
ENU17043105332	DuPage	332	ENU170431055415	DuPage	5415
ENU17089105332	Kane	332	ENU170891055415	Kane	5415
ENU17093105332	Kendall	332	ENU170931055415	Kendall	5415
ENU17097105332	Lake	332	ENU170971055415	Lake	5415
ENU17111105332	McHenry	332	ENU171111055415	McHenry	5415
ENU17197105332	Will	332	ENU171971055415	Will	5415
ENU17031105484	Cook	484			
ENU17043105484	DuPage	484			
ENU17089105484	Kane	484			
ENU17093105484	Kendall	484			
ENU17097105484	Lake	484			
ENU17111105484	McHenry	484			
ENU17197105484	Will	484			

For the Rail Transportation subsector:

1. Visit the U.S. Railroad Retirement Board website at https://secure.rrb.gov/
2. Hover over the PUBLIC button in the main taskbar
3. Click on Financial, Actuarial & Statistical
4. Click on Annual under the Railroad Retirement Act and Railroad Unemployment Insurance Act Data section
5. Click on Historical Data next to Total Railroad Employment by State, County and ZIP Code, 2014
6. Select the year from the appropriate drop-down menu under the Annual Railroad Retirement Act and Railroad Unemployment Insurance Act Reports section (the two relevant drop-down menus are Total Employment by State, Class of Employer & Last Railroad Employer and Total Railroad Employment by State & County)

9.5 Baseline Forecast Methodology: Download Instructions

9.5.1 National Forecast Employment

9.5.1.1 Bureau of Labor Statistics

1. Visit the U.S. Bureau of Labor Statistics Employment Projections website at http://www.bls.gov/emp/
2. Scroll down and click the All EP Tables button
3. Scroll down to the Employment section and click on the hyperlink titled 2.1 Employment by major industry sector

9.5.1.2 Moody's Analytics

1. Visit the Moody's Data Buffet website at http://www.databuffet.com/
2. In the Quick Start box, click New Basket
3. Past the series IDs below into the text field
4. Click Run in the menu bar
5. Click Click here to download your file

Series ID	NAICS
REFRA.US	11
REFHA.US	11
RE21A.US	21
RE22A.US	22
RE23A.US	23
REMFA.US	31-33
RE42A.US	42
RERTA.US	44-45
RETUA.US	48-49
RE51A.US	51
RE52A.US	52
RE53A.US	53
RE54A.US	54
RE55A.US	55
RE56A.US	56
RE61A.US	61
RE62A.US	62
RE71A.US	71
RE72A.US	72
RE81A.US	81
REGVA.US	92

9.5.2 County Forecast Employment

9.5.2.1 Moody's Analytics

1. Visit the Moody's Data Buffet website at http://www.databuffet.com/
2. In the Quick Start box, click New Basket
3. Paste the series IDs below into the text field
4. Click Run in the menu bar
5. Click the Click here to download your file hyperlink that pops up

Series ID	County	NAICS	Series ID	County	NAICS
REFRA.IL031	Cook	11	REFRA.IL097	Lake	11
REFHA.IL031	Cook	11	REFHA.IL097	Lake	21
RE21A.IL031	Cook	21	RE21A.IL097	Lake	21
RE22A.IL031	Cook	22	RE22A.IL097	Lake	22
RE23A.IL031	Cook	23	RE23A.IL097	Lake	23
REMFA.IL031	Cook	31-33	REMFA.IL097	Lake	31-33
RE42A.IL031	Cook	42	RE42A.IL097	Lake	42
RERTA.IL031	Cook	44-45	RERTA.IL097	Lake	44-45
RETUA.IL031	Cook	48-49	RETUA.IL097	Lake	48-49
RE51A.IL031	Cook	51	RE51A.IL097	Lake	51
RE52A.IL031	Cook	52	RE52A.IL097	Lake	52
RE53A.IL031	Cook	53	RE53A.IL097	Lake	53
RE54A.IL031	Cook	54	RE54A.IL097	Lake	54
RE55A.IL031	Cook	55	RE55A.IL097	Lake	55
RE56A.IL031	Cook	56	RE56A.IL097	Lake	56
RE61A.IL031	Cook	61	RE61A.IL097	Lake	61
RE62A.IL031	Cook	62	RE62A.IL097	Lake	62
RE71A.IL031	Cook	71	RE71A.IL097	Lake	71
RE72A.IL031	Cook	72	RE72A.IL097	Lake	72
RE81A.IL031	Cook	81	RE81A.IL097	Lake	81
REGVA.IL031	Cook	92	REGVA.IL097	Lake	92
REFRA.IL043	DuPage	11	REFRA.IL111	McHenry	11
REFHA.IL043	DuPage	11	REFHA.IL111	McHenry	11
RE21A.IL043	DuPage	21	RE21A.IL111	McHenry	21
RE22A.IL043	DuPage	22	RE22A.IL111	McHenry	22
RE23A.IL043	DuPage	23	RE23A.IL111	McHenry	23
REMFA.IL043	DuPage	31-33	REMFA.IL111	McHenry	31-33
RE42A.IL043	DuPage	42	RE42A.IL111	McHenry	42
RERTA.IL043	DuPage	44-45	RERTA.IL111	McHenry	44-45
RETUA.IL043	DuPage	48-49	RETUA.IL111	McHenry	48-49
RE51A.IL043	DuPage	51	RE51A.IL111	McHenry	51
RE52A.IL043	DuPage	52	RE52A.IL111	McHenry	52
RE53A.IL043	DuPage	53	RE53A.IL111	McHenry	53
RE54A.IL043	DuPage	54	RE54A.IL111	McHenry	54
RE55A.IL043	DuPage	55	RE55A.IL111	McHenry	55
RE56A.IL043	DuPage	56	RE56A.IL111	McHenry	56
RE61A.IL043	DuPage	61	RE61A.IL111	McHenry	61
RE62A.IL043	DuPage	62	RE62A.IL111	McHenry	62
RE71A.IL043	DuPage	71	RE71A.IL111	McHenry	71
RE72A.IL043	DuPage	72	RE72A.IL111	McHenry	72
RE81A.IL043	DuPage	81	RE81A.IL111	McHenry	81
REGVA.IL043	DuPage	92	REGVA.IL111	McHenry	92

REFRA.IL089	Kane	11
REFHA.IL089	Kane	11
RE21A.IL089	Kane	21
RE22A.IL089	Kane	22
RE23A.IL089	Kane	23
REMFA.IL089	Kane	31-33
RE42A.IL089	Kane	42
RERTA.IL089	Kane	44-45
RETUA.IL089	Kane	48-49
RE51A.IL089	Kane	51
RE52A.IL089	Kane	52
RE53A.IL089	Kane	53
RE54A.IL089	Kane	54
RE55A.IL089	Kane	55
RE56A.IL089	Kane	56
RE61A.IL089	Kane	61
RE62A.IL089	Kane	62
RE71A.IL089	Kane	71
RE72A.IL089	Kane	72
RE81A.IL089	Kane	81
REGVA.IL089	Kane	92
REFRA.IL093	Kendall	11
REFHA.IL093	Kendall	11
RE21A.IL093	Kendall	21
RE22A.IL093	Kendall	22
RE23A.IL093	Kendall	23
REMFA.IL093	Kendall	31-33
RE42A.IL093	Kendall	42
RERTA.IL093	Kendall	44-45
RETUA.IL093	Kendall	48-49
RE51A.IL093	Kendall	51
RE52A.IL093	Kendall	52
RE53A.IL093	Kendall	53
RE54A.IL093	Kendall	54
RE55A.IL093	Kendall	55
RE56A.IL093	Kendall	56
RE61A.IL093	Kendall	61
RE62A.IL093	Kendall	62
RE71A.IL093	Kendall	71
RE72A.IL093	Kendall	72
RE81A.IL093	Kendall	81
REGVA.IL093	Kendall	92
REFRA.IL197	Will	11
REFHA.IL197	Will	11
RE21A.IL197	Will	21
RE22A.IL197	Will	22
RE23A.IL197	Will	23
REMFA.IL197	Will	31-33
RE42A.IL197	Will	42
RERTA.IL197	Will	44-45
RETUA.IL197	Will	48-49
RE51A.IL197	Will	51
RE52A.IL197	Will	52
RE53A.IL197	Will	53
RE54A.IL197	Will	54
RE55A.IL197	Will	55
RE56A.IL197	Will	56
RE61A.IL197	Will	61
RE62A.IL197	Will	62
RE71A.IL197	Will	71
RE72A.IL197	Will	72
RE81A.IL197	Will	81
REGVA.IL197	Will	92

Series ID	County	NAICS	Series ID	County	NAICS
RERTA.IL007	Boone (IL)	44-45	RERTA.IN089	Lake (IN)	44-45
RERTA.IL037	DeKalb (IL)	44-45	RERTA.IN091	LaPorte (IN)	44-45
RERTA.IL063	Grundy (IL)	44-45	RERTA.IN127	Porter (IN)	44-45
RERTA.IL091	Kankakee (IL)	44-45	RERTA.WI059	Kenosha (WI)	44-45
RERTA.IL099	LaSalle (IL)	44-45	RERTA.WI101	Racine (WI)	44-45
RERTA.IL103	Lee (IL)	44-45	RERTA.WI127	Walworth (WI)	44-45
RERTA.IL141	Ogle (IL)	44-45			
RERTA.IL201	Winnebago (IL)	44-45			

Series ID	County	NAICS	Series ID	County	NAICS
RETOTA.IL007	Boone (IL)	All	RETOTA.IN089	Lake (IN)	All
RETOTA.IL037	DeKalb (IL)	All	RETOTA.IL091	LaPorte (IN)	All
RETOTA.IL063	Grundy (IL)	All	RETOTA.IL127	Porter (IN)	All
RETOTA.IL091	Kankakee (IL)	All	RETOTA.WI059	Kenosha (WI)	All
RETOTA.IL099	LaSalle (IL)	All	RETOTA.WI101	Racine (WI)	All
RETOTA.IL103	Lee (IL)	All	RETOTA.WI127	Walworth (WI)	All
RETOTA.IL141	Ogle (IL)	All			
RETOTA.IL201	Winnebago (IL)	All			

Subtract the following from the series IDs listed immediately above:

Series ID	County	NAICS	Series ID	County	NAICS
REPHA.IL007	Boone (IL)	Private HH	REPHA.IN089	Lake (IN)	Private HH
REMLA.IL007	Boone (IL)	Military	REMLA.IN089	Lake (IN)	Military
REPHA.IL037	DeKalb (IL)	Private HH	REPHA.IN091	LaPorte (IN)	Private HH
REMLA.IL037	DeKalb (IL)	Military	REMLA.IN091	LaPorte (IN)	Military
REPHA.IL063	Grundy (IL)	Private HH	REPHA.IN127	Porter (IN)	Private HH
REMLA.IL063	Grundy (IL)	Military	REMLA.IN127	Porter (IN)	Military
REPHA.IL091	Kankakee (IL)	Private HH	REPHA.WI059	Kenosha (WI)	Private HH
REMLA.IL091	Kankakee (IL)	Military	REMLA.WI059	Kenosha (WI)	Military
REPHA.IL099	LaSalle (IL)	Private HH	REPHA.WI101	Racine (WI)	Private HH
REMLA.IL099	LaSalle (IL)	Military	REMLA.WI101	Racine (WI)	Military
REPHA.IL103	Lee (IL)	Private HH	REPHA.WI127	Walworth (WI)	Private HH
REMLA.IL103	Lee (IL)	Military	REMLA.WI127	Walworth (WI)	Military
REPHA.IL141	Ogle (IL)	Private HH			
REMLA.IL141	Ogle (IL)	Military			
REPHA.IL201	Winnebago (IL)	Private HH			
REMLA.IL201	Winnebago (IL)	Military			

9.5.3 Subsector Forecast Employment

9.5.3.1 Moody's Analytics

1. Visit the Moody's Data Buffet website at http://www.databuffet.com/
2. Hover over New in the top menu bar
3. Click Basket
4. Paste the series IDs below into the text field
5. Click Run in the menu bar
6. Click the Click here to download your file hyperlink that pops up

Series ID	County	NAICS	Series ID	County	NAICS
RE325A.IL031	Cook	325	RE484A.IL031	Cook	484
RE325A.IL043	DuPage	325	RE484A.IL043	DuPage	484
RE325A.IL089	Kane	325	RE484A.IL089	Kane	484
RE325A.IL093	Kendall	325	RE484A.IL093	Kendall	484
RE325A.IL097	Lake	325	RE484A.IL097	Lake	484
RE325A.IL111	McHenry	325	RE484A.IL111	McHenry	484
RE325A.IL197	Will	325	RE484A.IL197	Will	484
RE332A.IL031	Cook	332	RE488A.IL031	Cook	488
RE332A.IL043	DuPage	332	RE488A.IL043	DuPage	488
RE332A.IL089	Kane	332	RE488A.IL089	Kane	488
RE332A.IL093	Kendall	332	RE488A.IL093	Kendall	488
RE332A.IL097	Lake	332	RE488A.IL097	Lake	488
RE332A.IL111	McHenry	332	RE488A.IL111	McHenry	488
RE332A.IL197	Will	332	RE488A.IL197	Will	488
RE482A.IL031	Cook	482	RE5415A.IL031	Cook	5415
RE482A.IL043	DuPage	482	RE5415A.IL043	DuPage	5415
RE482A.IL089	Kane	482	RE5415A.IL089	Kane	5415
RE482A.IL093	Kendall	482	RE5415A.IL093	Kendall	5415
RE482A.IL097	Lake	482	RE5415A.IL097	Lake	5415
RE482A.IL111	McHenry	482	RE5415A.IL111	McHenry	5415
RE482A.IL197	Will	482	RE5415A.IL197	Will	5415

End Notes

[1] The Project Team provided historical employment values for all industry sectors and select subsectors for the CMAP 7 region. For the 14 outlying counties, the Project Team provided Retail Trade (NAICS 44-45) and total employment only.
[2] The civilian workforce generally excludes active duty military personnel and employees of the Central Intelligence Agency, National Security Agency, National Imagery and Mapping Agency, and Defense Intelligence Agency.
[3] U.S. Bureau of Labor Statistics, "Current Employment Statistics – CES (National)," accessed August 8, 2016, http://www.bls.gov/ces/.
[4] U.S. Bureau of Labor Statistics, "BLS Information, Monthly Employment Situation Report: Quick Guide to Methods and Measurement Issues," accessed August 8, 2016, http://www.bls.gov/bls/empsitquickguide.htm.
[5] U.S. Census Bureau, "Current Population Survey (CPS), Sampling," accessed August 8, 2016, http://www.census.gov/programs-surveys/cps/technical-documentation/methodology/sampling.html.
[6] U.S. Census Bureau, 2009, *A Compass for Understanding and Using the American Community Survey Data*, Washington, DC: U.S. Department of Commerce, https://www.census.gov/content/dam/Census/library/publications/2009/acs/ACSResearch.pdf.
[7] Steven F. Hipple, "Self-employment in the United States," Monthly Labor Review, September 2010, http://www.bls.gov/opub/mlr/2010/09/art2full.pdf.
[8] Ibid
[9] U.S. Bureau of Labor Statistics, 2016, *Technical Notes for the Current Employment Statistics Survey*, Washington, DC: U.S. Department of Labor, http://www.bls.gov/web/empsit/cestn.pdf
[10] Phone conversation with BLS on March 15, 2016
[11] U.S. Bureau of Labor Statistics, "State and Metro Area Employment, Hours, & Earnings, Frequently Asked Questions (FAQs)," accessed August 8, 2016, http://www.bls.gov/sae/790faq2.htm.
[12] U.S. Bureau of Labor Statistics, "Quarterly Census of Employment and Wages, Frequently Asked Questions (FAQs)," accessed August 8, 2016, http://www.bls.gov/cew/cewfaq.htm.
[13] U.S. Bureau of Labor Statistics, "Quarterly Census of Employment and Wages, Frequently Asked Questions (FAQs)," accessed August 8, 2016, http://www.bls.gov/cew/cewfaq.htm.
[14] A fourth disadvantage afflicts QCEW but primarily at a sub-state level. When compared with survey-gathered estimates, QCEW shows evidence of "headquartering bias," or overestimation of employment in Cook and DuPage counties that may be caused in part by multi-establishment employers incorrectly reporting all employees as working at a primary physical location. The Project Team confirmed with the Illinois Department of Employment Security that this is possible when filling out the state's UI 3/40 form (phone conversation on January 29, 2016). After conferring with the Project Team, CMAP decided not to attempt to adjust QCEW for possible overestimations.
[15] QCEW sometimes includes unclassified values (assigned NAICS 99) when there is an inability to allocate employment across appropriate industries. Unclassified employment in the study region represents just 0.1 percent of total employment and was therefore ignored for the purpose of allocating state-level employment to counties (discussed later).
[16] Linear interpolation involves computing an average annual change in employment by subtracting pre-gap employment from post-gap employment and dividing by the number of gap years plus one. The Project Team added this average annual change to pre-gap employment and repeated the process for each subsequent year.
[17] Self-employment is available for all CMAP counties for years 2009-2010, and all but Kendall County for years 2011-2014. Developing Kendall County self-employment from 2011-2014 relied on extrapolated 2010 shares.
[18] The Project Team bases this assumption on evidence that few workers for whom self-employment is their primary source of income also work a second job. For more information, see Small Business Trends, "Secondary Self-Employment in Decline," May 19, 2014, http://smallbiztrends.com/2014/05/secondary-self-employment-decline.html.

[19] Kevin Whitman, "An Overview of the Railroad Retirement Program," *Social Security Bulletin* 68, no. 2 (2008), https://www.ssa.gov/policy/docs/ssb/v68n2/v68n2p41.html.
[20] 45 U.S. Code § 231, Cornell University Legal Information Institute, https://www.law.cornell.edu/uscode/text/45/231
[21] U.S. Railroad Retirement Board, "Financial, Actuarial & Statistical Historical Data," accessed August 9, 2016, http://www.rrb.gov/act/historical.asp#hist6.
[22] U.S. Census Bureau, "County Business Patterns (CBP), About this Program," accessed August 9, 2016, http://www.census.gov/programs-surveys/cbp/about.html.
[23] Chicago Metropolitan Agency for Planning, *Socioeconomic Forecast Update Overview, GO TO 2040 Update Appendix*, accessed August 9, 2016, http://www.cmap.illinois.gov/documents/10180/332742/Update+Socioeconomic+Forecast+FINAL.pdf/41d87400-d211-4763-b941-b487022d8032.
[24] Third-party in the context of this project describes auxiliary forecast vendors.
[25] Moody's industry-level employment forecasts do not include self-employment. The Project Team contacted Moody's on August 15, 2016, to confirm that this has not changed since retrieving the forecasts.
[26] The Project Team retrieved BLS forecasts on April 11, 2016, and Moody's forecasts on April 10, 2016.
[27] Emily Richards, "Overview of projections to 2024," *Monthly Labor Review*, December 2015, http://www.bls.gov/opub/mlr/2015/article/overview-of-projections-to-2024-1.htm
[28] U.S. Bureau of Labor Statistics, *Chapter 13, Employment Projections*, Handbook of Methods, accessed August 9, 2016, http://www.bls.gov/opub/hom/pdf/homch13.pdf.
[29] U.S. Bureau of Labor Statistics, "Economic News Release, Employment Projections: 2014-24 Summary," December 8, 2015, http://www.bls.gov/news.release/ecopro.nro.htm
[30] Mark Zandi and Scott Hoyt, 2015, "U.S. Macro Model Methodology" (West Chester, PA: Moody's Analytics).
[31] Sunayana Mehra, 2012, "Moody's Analytics Global National Forecast Methodology" (West Chester, PA: Moody's Analytics), https://www.economy.com/methodology/global.
[32] There was only one national business cycle contraction during this period, beginning in March 2000 and lasting eight months. See National Bureau of Economic Research, "US Business Cycle Expansions and Contractions," accessed August 16, 2016, http://www.nber.org/cycles.html.
[33] E-mail conversation with Sarah Crane, Moody's Analytics, on May 19, 2016.
[34] Katz, Lawrence F., and Alan B. Krueger. March 29, 2016. "The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015. https://krueger.princeton.edu/sites/default/files/akrueger/files/katz_krueger_cws_-_march_29_20165.pdf.
[35] S. K. Smith, J. Tayman , D. A. Swanson, (2013). *A Practitioners Guide to State and Local Population Projections*,p88, Springer
[36] S. K. Smith, J. Tayman , D. A. Swanson, (2013). *A Practitioners Guide to State and Local Population Projections*,p89, Springer
[37] F. C. Bell, M. L. Miller, (2005). *Life Tables for the United States Social Security Area 1900-2100*, Social Security Administration Pub No. 11-11536
[38] According to a 2011 Census brief, "An individual's responses to the race question and to the Hispanic origin question were based upon self-identification. The U.S. Census Bureau collects race and Hispanic origin information following the guidance of the U.S. Office of Management and Budget's (OMB) 1997 Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity. These federal standards mandate that race and Hispanic origin (ethnicity) are separate and distinct concepts and that when collecting these data via self-identification, two different questions must be used." For the purposes of this analysis, the share of the population identifying as Hispanic is presented, regardless of what race the individual identifies as. The racial categories, therefore, are based on those not identifying as Hispanic.
Caution should be exercised when looking at race categories over time, as the 2000 Census was the first time individuals were "presented with the option to self-identify with more than one race and this continued with the 2010 Census, as prescribed by OMB." A 2001 release from the Census, *Questions and Answers for Census 2000 Data on Race* states that data "on race from Census 2000 are not directly comparable with those from the 1990 census and previous censuses due, in large part, to giving respondents the option to report more than one race. Other factors, such as reversing the order of the questions on race and Hispanic origin and changing question

wording and format, also may affect comparability." Despite these caveats Census and ACS data on race are the most comprehensive measure available and are robust enough to show how these categories have changed over time.

The categories are defined as follows for each Census year:

Defined Category	1990	2000	2010
Non-Hispanic White	Non-Hispanic: White	Non-Hispanic: White Alone	Non-Hispanic: White Alone
Non-Hispanic Black	Non-Hispanic: Black	Non-Hispanic: Black Alone	Non-Hispanic: Black Alone
Non-Hispanic Asian	Non-Hispanic: Asian or Pacific Islander	Non-Hispanic: Asian Alone	Non-Hispanic: Asian Alone
Non-Hispanic Other	Non-Hispanic: American Indian, Eskimo, or Aleut; Non-Hispanic: Other race	Non-Hispanic: American Indian and Alaska Native Alone; Non-Hispanic: Native Hawaiian and Other Pacific Islander Alone; Non-Hispanic: Some other race alone; Non-Hispanic: Two or more races	Non-Hispanic: American Indian and Alaska Native Alone; Non-Hispanic: Native Hawaiian and Other Pacific Islander Alone; Non-Hispanic: Some other race alone; Non-Hispanic: Two or more races
Hispanic	Hispanic	Hispanic	Hispanic

*Overview of Race and Hispanic Origin: 2010 (*2011*).* http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf
Questions and Answers for Census 2000 Data on Race (2001).
https://www.census.gov/census2000/raceqandas.html

[39] K. Smith, J. Tayman , D. A. Swanson, (2013). *A Practitioners Guide to State and Local Population Projections*,p226, Springer

[40] A headship rate is the ratio of household-heads (self-identified classification by census respondents) and the corresponding household population.

[41] The author's industry sectoring scheme does not conform entirely to NAICS but, in general, skill-intensive sectors include NAICS 42, 52, 54, 61, and 62, and unskilled sectors include NAICS 11, 22, 23, 31-33, 44-45, 48-49, 71, and 81.

[42] The author borrows this empirically supported theory from Enrico Moretti, 1999, "Workers' Education, Externalities and Technology Adoption: Evidence from Plant-Level Production Functions," Center for Labor Economics, University of California, Berkeley, Working Paper No. 21, http://cle.berkeley.edu/wp/wp21.pdf.

[43] Paul D. Gottlieb and Michael Fogarty, 2003, "Educational Attainment and Metropolitan Growth," Economic Development Quarterly 17(4): 325-336.

[44] Curtis J. Simon and Nardinelli, Clark, 2002, "Human capital and the rise of American cities, 1900-1990," *Regional Science and Urban Economics* 32: 59-96.

[45] Curtis J. Simon, 2004, "Industrial reallocation across US cities, 1977-1997," *Journal of Urban Economics* 56: 119-143.

[46] Rob Sentz, "Understanding Shift-share," December 5, 2011, Emsi, http://www.economicmodeling.com/2011/12/05/understanding-shift-share-2/.

[47] Rob Sentz, "Understanding Shift-share," December 5, 2011, Emsi, http://www.economicmodeling.com/2011/12/05/understanding-shift-share-2/.