

# Chapter 5

## PROJECTED

### TRANSPORTATION DEMAND

Transportation travel demand models are driven, in part, by the relationship of land use activities to the transportation network. Specific inputs of the modeling process are land use activity, including the number of households, vehicles, and employment (Retail, Service and Other) located in a given traffic zone. The modeling process translates this data into vehicle trips on the modeled transportation network. Transportation demand was estimated and assigned to the Kalamazoo Area Transportation Study's transportation network of federal-aid eligible roads using TransCAD software. The Michigan Department of Transportation uses demographic data determined locally as one of the components in the development of the KATS modeling process. Sets of demographic data were developed to establish the 2008 base year transportation model, the 2035 forecast year travel demand model, and intermediate target year models for 2014, 2020, and 2025. A further discussion of the modeling process is provided in the Travel Demand Model chapter.

KATS, in cooperation with the Michigan Department of Transportation and local agencies, developed the demographic factors used to develop the 2008 base model and the forecast year 2035 model and the intermediate target years. The following is a summary of the procedures used to establish the 2008 base demographic information and the procedures used to forecast and distribute the 2035 data. Intermediate target year data was developed in the same way as the method for the 2035 model.

#### METHODOLOGY FOR DETERMINING 2008 BASE DATA

2008 Basic Data Sources Used:

- 1990 and 2000 U.S. Census for Kalamazoo County (population, household, and vehicles);
- 2030 Metropolitan Transportation Plan for the Kalamazoo Area (2007);
- Population and employment projections obtained from the Michigan Department of Transportation Statewide Planning Division;
- 2008 Claritas employment data;
- Kalamazoo area telephone directory and internet searches;
- Regional Economic Model (REMI) Control Totals for Kalamazoo County; and
- W.E. Upjohn Institute projections for Kalamazoo County.

2008 population, household, and vehicle data at the census block group level was initially allocated to the traffic zones in the modeling area by the MDOT Geographic Information System program. Consultation with local planning staffs and other officials from the municipalities within Kalamazoo County assisted in allocating population and households to particular traffic analysis zones based on local knowledge. Comparison between the traffic analysis zone data for the Kalamazoo Area Transportation Study 2030 Transportation Plan and the 2008 data allowed a checked of the data sets to determine the reasonableness of the projections.

**2008 Employment Data:** Establishing employment totals for the county and the study area presented a challenge because of the lack of reliable and complete data sources for employment locations.

Retail, Service and Other employment data from the 2008 Claritas data was first allocated to traffic zones based on employment address location. It became apparent that no single source completely accounted for the total employment in the county. Additional employment data was collected from the internet, telephone book listings, and contact with multiple location employers, and aggregated to the appropriate traffic zones. Employment totals by Retail, Service, and Other categories were compared to control totals provided by the Michigan Department of Transportation Statewide Planning Division and the REMI and W.E. Upjohn Institute control totals for Kalamazoo County. Consultation with local municipal planning staff and other staff from the county township helped allocate employment in each municipality.

## **METHODOLOGY FOR DETERMINING 2035 FORECAST DATA**

2035 Basic Data Sources Used:

- Michigan REMI 2035 Socio-Economic Forecast for Kalamazoo County;
- Kalamazoo County Planning Department;
- Census and American Community Survey numbers; and
- W.E. Upjohn Institute projections for Kalamazoo County.

Historic patterns of growth in employment and population were assumed to continue to occur. Growth by municipality was projected using the data from the 2000 Census through 2008 American Community Surveys to reflect more recent patterns.

The 2035 population, household, and vehicle forecast was developed using a multi-step process. A countywide 2035 population control total was developed from a comparison of the REMI 2035 Population Forecast and the population forecasts developed by the W.E. Upjohn Institute and KATS. Using the data from 2000 through 2008 reduced the projections compared to those in the approved 2030 Transportation Plan.

The potential growth for each traffic zone was based on a review with local agency staff input. These inputs were then used to make an initial distribution of the 2008 - 2035 population figures. 2035 estimates of the number of households and vehicles per zone were calculated using the projected population per household and vehicles per household figures for each zone.

Countywide employment control totals were based on REMI control totals for 2008 and 2035.

The 2008 employment for each REMI employment category was adjusted to come up with individual 2035 employment category control totals for the county. A portion of the change was uniformly applied across all traffic zones. The remainder of the change was manually assigned to zones where staff, in consultation with local planning staff and townships, determined the additional changes would most likely occur. Factors such as zoning, land use, available space for expansion, growth trends, local knowledge, and individual agency input were used in hand assignments of the employment projections.

The final step was to aggregate the individual REMI employment categories into the three broader categories used as input to the model. These three broad categories are Retail, Service, and Other. The aggregation was done for 2008 and for 2035 by traffic zones.

Local government planners and officials reviewed the initial 2035 data distributed by traffic zone. Final adjustments in the distribution of the 2035 socio-economic data were based on these local reviews. Local agency staff will monitor their socio-economic changes to assist in the preparation of the next transportation plan.

## METHODOLOGY FOR DETERMINING INTERMEDIATE TARGET YEAR FORECAST DATA

Intermediate target year socio-economic data was projected using the same procedures as noted above for the 2008 base year and the 2035 horizon year of the plan. In general, the projected numbers for population, households, vehicles per household, and employment were made from straight line projections of REMI control totals that were provided to the Kalamazoo Area Transportation Study. These projections were modified based on consultation with local planning staffs and township supervisor knowledge that suggested that an employer or developer was planning on specific developments or changes in employment. Where these specific changes were known or reasonably expected, they were reflected in the target year period and traffic analysis zones as appropriate.

The following table shows a comparison of the 2008 and 2035 demographic data for the KATS transportation modeling study area.

### 2008 AND 2035 DEMOGRAPHIC DATA COMPARISON

	2008 Base	2035 Forecast	Percent Change
Population	245,917	269,976	+8
Households	96,343	106,871	+11
Retail Employment	33,774	30,655	-9
Service Employment	156,429	205,577	+31
Other Employment	88,372	91,965	+4

The REMI projections show a steady increase in the older population. This illustrates the trend of increasing age of drivers as a proportion of the population. Future efforts should look at how to meet special needs of older drivers in the transportation system. Such items could include increased letter sizes and more legible fonts traffic in signs (already being done in the Kalamazoo area on street name and other signs), better retro reflective signs, markings, illumination and traffic signal timing changes.

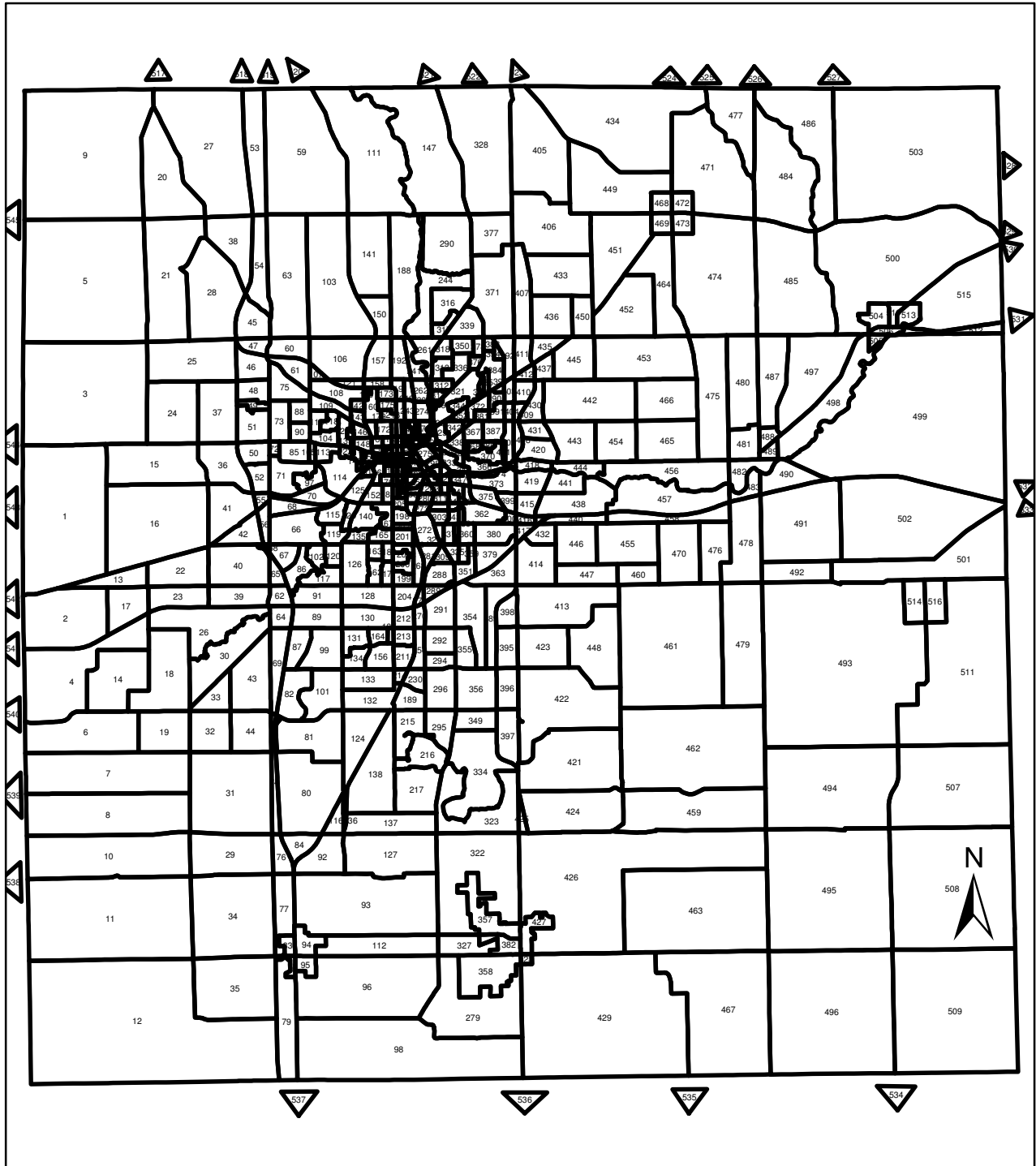
### STATEMENTS OF ERROR IN THE FORECASTING PROCESS

The forecasting and distribution of future households and employment data cannot be made with pin point accuracy due to the nature of the data sources, changes in development plans, unforeseen economic or population factors, and the limits imposed by time and financial resources. Although efforts were made to allocate the data as accurately as possible, in a few instances, due to minor errors in address coding or unidentifiable employer names or addresses, some of the employment data allocated to one zone may actually belong in an adjacent zone. This does not change the overall effect of travel demand on the model because travel activity would be loaded onto the same adjacent network corridor. Therefore, household and employment data for individual zones should be considered as an estimate to be used as a guideline and not an exact total.

**FUTURE UPDATES**

Development of future socio-economic updates for the Transportation Plan, on a four-year basis, may require modifications in the research approach and the type of data resources used. In particular, the availability of accurate employment data needs to be improved for both employment address locations and employer business names.

The following traffic zone maps show the location and boundaries of each traffic zone. A summary table provides a breakdown of the 2002 and 2030 demographic data by jurisdiction, with the study area demographics for Kalamazoo County by traffic analysis zone located in the appendices.



# KATS 2035 Model Traffic Analysis Zones (TAZ)

Data Source: MCGI, MDOT, KATS

## SUMMARY OF DEMOGRAPHICS

Kalamazoo County Population Estimates 2008 - 2035										
Jurisdiction	2008	2009	2010	2015	2020	2025	2030	2035		
<b>COUNTY TOTALS</b>	<b>245,917</b>	<b>245,918</b>	<b>247,480</b>	<b>252,629</b>	<b>255,845</b>	<b>259,902</b>	<b>264,871</b>	<b>269,976</b>		
City of Kalamazoo	72,835	72,050	71,776	71,533	71,336	71,155	71,015	70,904		
City of Portage	46,565	46,369	46,570	49,838	50,231	50,698	51,308	51,999		
City of Galesburg	1,941	1,928	1,938	1,976	2,050	2,157	2,297	2,471		
City of Parchment	1,818	1,801	1,798	1,794	1,792	1,792	1,792	1,793		
Village of Augusta	860	853	853	853	858	864	872	883		
Village of Climax	756	748	747	749	751	753	756	759		
Village of Richland	760	763	771	777	783	787	791	794		
Village of Schoolcraft	1,523	763	1,508	1,508	1,511	1,513	1,517	794		
Village of Vicksburg	2,206	2,184	2,181	2,182	2,191	2,203	2,221	2,243		
Alamo Township	4,046	3,993	3,973	3,957	3,945	3,936	3,932	3,927		
Brady Township	3,588	3,615	3,669	3,827	3,972	4,104	4,218	4,314		
Charleston Township	2,073	2,073	2,096	2,121	2,149	2,176	2,212	2,247		
Climax Township	1,709	1,697	1,701	1,702	1,708	1,710	1,746	1,784		
Comstock Township	15,291	15,259	15,330	15,418	15,510	15,609	15,724	15,853		
Cooper Township	10,446	10,460	10,558	10,662	10,784	10,912	11,046	11,192		
Kalamazoo Township	22,492	22,418	22,494	22,586	22,685	22,789	22,902	23,018		
Oshtemo Township	19,386	21,361	21,694	22,996	25,064	27,820	31,157	35,209		
Pavilion Township	5,775	5,729	5,732	5,746	5,775	5,815	5,868	5,926		
Prairie Ronde Township	2,188	2,188	2,209	2,240	2,277	2,325	2,382	2,445		
Richland Township	5,831	5,844	5,889	5,948	6,020	6,098	6,194	6,276		
Ross Township	4,515	4,546	4,605	4,704	4,806	4,899	5,000	5,076		
Schoolcraft Township	4,030	4,005	4,013	4,030	4,056	4,089	4,125	4,171		
Texas Township	13,756	13,742	13,825	13,906	13,984	14,054	14,114	14,173		
Wakeshma Township	1,527	1,529	1,550	1,576	1,607	1,644	1,682	1,725		

## SUMMARY OF DEMOGRAPHICS

Jurisdiction	Kalamazoo County Dwelling Units 2008 - 2035									
	2008	2009	2010	2015	2020	2025	2030	2035		
<b>COUNTY TOTALS</b>	<b>96,343</b>	<b>96,450</b>	<b>97,069</b>	<b>99,216</b>	<b>100,612</b>	<b>102,398</b>	<b>104,575</b>	<b>106,871</b>		
City of Kalamazoo	27,688	27,343	27,220	27,115	27,026	26,949	26,881	26,833		
City of Portage	18,807	18,725	18,808	20,138	20,303	20,494	20,739	21,022		
City of Galesburg	746	741	744	760	790	835	891	961		
City of Parchment	768	761	759	758	757	757	757	758		
Village of Augusta	352	349	349	349	351	354	357	3		
Village of Climax	267	264	263	265	265	266	267	268		
Village of Richland	330	332	336	339	340	342	344	346		
Village of Schoolcraft	610	376	605	606	608	610	612	391		
Village of Vicksburg	455	454	456	459	465	472	480	489		
Alamo Township	1,462	1,441	1,434	1,429	1,423	1,420	1,418	1,416		
Brady Township	362	362	367	379	391	402	411	419		
Charleston Township	777	777	787	796	805	817	830	845		
Climax Township	638	634	636	636	638	639	652	667		
Comstock Township	5,928	5,914	5,944	5,981	6,012	6,052	6,097	6,142		
Cooper Township	3,814	3,818	3,855	3,895	3,939	3,986	4,035	4,087		
Kalamazoo Township	9,515	9,481	9,517	9,554	9,598	9,643	9,691	9,740		
Oshemo Township	8,789	9,715	9,866	10,478	11,438	12,723	14,279	16,171		
Pavilion Township	2,095	2,078	2,080	2,083	2,095	2,110	2,129	2,150		
Prairie Ronde Township	1,253	1,184	1,248	1,254	1,265	1,278	1,295	1,255		
Richland Township	2,122	2,129	2,143	2,163	2,192	2,216	2,252	2,282		
Ross Township	1,810	1,821	1,846	1,885	1,927	1,964	2,005	2,036		
Schoolcraft Township	2,328	2,329	2,346	2,396	2,449	2,496	2,543	2,588		
Texas Township	4,903	4,896	4,927	4,955	4,982	5,008	5,030	5,050		
Wakeshma Township	524	526	533	543	553	565	580	594		

## SUMMARY OF DEMOGRAPHICS

Kalamazoo County Employment 2008 - 2015												
Jurisdiction	2008 Retail	2008 Service	2008 Other	2008 Total	2010 Retail	2010 Service	2010 Other	2010 Total	2015 Retail	2015 Service	2015 Other	2015 Total
<b>COUNTY TOTALS</b>	<b>33,774</b>	<b>156,429</b>	<b>88,372</b>	<b>278,575</b>	<b>36,069</b>	<b>169,067</b>	<b>92,069</b>	<b>297,205</b>	<b>35,749</b>	<b>176,243</b>	<b>90,758</b>	<b>302,750</b>
City of Kalamazoo	3,514	37,627	13,850	54,991	3,750	40,666	14,357	58,773	3,716	42,614	14,180	60,510
City of Portage	7,076	17,798	12,319	37,193	7,559	19,216	12,872	39,647	7,496	19,861	12,606	39,963
City of Galesburg	19	257	118	394	20	278	125	423	20	287	123	430
City of Parchment	81	195	55	331	87	209	56	352	86	218	55	359
Village of Augusta	40	363	77	480	42	393	82	517	41	416	81	538
Village of Climax	29	345	367	741	31	375	388	794	31	384	390	805
Village of Richland	79	787	191	1,057	84	855	198	1,137	84	888	199	1,171
Village of Schoolcraft	45	419	128	592	49	452	132	633	47	469	130	646
Village of Vicksburg	139	289	779	1,207	149	311	814	1,274	148	318	795	1,261
Alamo Township	82	286	309	677	88	311	323	722	86	321	323	730
Brady Township	55	402	272	729	58	436	284	778	57	458	280	795
Charleston Township	15	174	744	933	16	187	779	982	16	201	762	979
Climax Township	5	127	97	229	5	138	100	243	5	148	98	251
Comstock Township	1,371	3,272	4,406	9,049	1,466	3,534	4,626	9,626	1,452	3,651	4,584	9,687
Cooper Township	64	606	872	1,542	69	653	908	1,630	67	681	895	1,643
Kalamazoo Township	666	3,868	2,813	7,347	710	4,185	2,931	7,826	704	4,373	2,897	7,974
Oshtemo Township	2,592	6,218	1,924	10,734	2,770	6,706	2,009	11,485	2,747	6,911	1,987	11,645
Pavilion Township	28	256	897	1,181	29	272	937	1,238	29	286	921	1,236
Prairie Ronde Township	16,932	78,381	44,401	139,714	18,082	84,742	46,255	149,079	17,922	88,340	45,598	151,860
Richland Township	94	946	357	1,397	101	1,023	373	1,497	99	1,068	368	1,535
Ross Township	18	541	857	1,416	19	586	874	1,479	19	618	874	1,511
Schoolcraft Township	419	546	739	1,704	448	586	770	1,804	443	610	760	1,813
Texas Township	409	2,650	1,650	4,709	435	2,870	1,720	5,025	432	3,034	1,697	5,163
Wakeshma Township	2	76	150	228	2	83	156	241	2	88	155	245

SUMMARY OF DEMOGRAPHICS

Jurisdiction	Kalamazoo County Employment 2018 - 2025											
	2018 Retail	2018 Service	2018 Other	2018 Total	2020 Retail	2020 Service	2020 Other	2020 Total	2025 Retail	2025 Service	2025 Other	2025 Total
<b>COUNTY TOTALS</b>	<b>35,302</b>	<b>181,875</b>	<b>91,685</b>	<b>308,862</b>	<b>34,883</b>	<b>185,292</b>	<b>91,890</b>	<b>312,065</b>	<b>33,650</b>	<b>194,712</b>	<b>91,911</b>	<b>320,273</b>
City of Kalamazoo	3,669	44,099	14,279	62,047	3,624	45,020	14,295	62,939	3,504	47,533	14,242	65,279
City of Portage	7,403	20,382	12,785	40,570	7,313	20,695	12,830	40,838	7,045	21,557	12,850	41,452
City of Galesburg	20	298	122	440	20	304	123	447	19	321	124	464
City of Parchment	84	222	56	362	84	227	56	367	81	236	56	373
Village of Augusta	41	437	81	559	41	448	82	571	40	479	83	602
Village of Climax	30	392	395	817	30	395	396	821	29	405	405	839
Village of Richland	83	910	201	1,194	81	926	202	1,209	79	961	202	1,242
Village of Schoolcraft	47	485	132	664	47	493	134	674	45	518	132	695
Village of Vicksburg	145	328	805	1,278	143	330	805	1,278	139	342	804	1,285
Alamo Township	85	328	329	742	85	332	332	749	82	345	335	762
Brady Township	57	477	285	819	57	491	286	834	55	519	292	866
Charleston Township	16	212	776	1,004	15	219	779	1,013	15	236	783	1,034
Climax Township	5	157	98	260	5	162	97	264	5	177	96	278
Comstock Township	1,434	3,749	4,633	9,816	1,416	3,802	4,646	9,864	1,366	3,956	4,670	9,992
Cooper Township	65	701	913	1,679	65	716	918	1,699	64	756	924	1,744
Kalamazoo Township	695	4,540	2,908	8,143	689	4,639	2,907	8,235	665	4,908	2,890	8,463
Oshemo Township	2,713	7,072	1,996	11,781	2,680	7,164	1,993	11,837	2,580	7,435	1,994	12,009
Pavilion Township	28	296	935	1,259	28	302	940	1,270	28	320	947	1,295
Prairie Ronde Township	17,698	91,162	46,064	154,924	17,488	92,875	46,168	156,531	16,870	97,596	46,179	160,645
Richland Township	98	1,102	375	1,575	98	1,121	378	1,597	94	1,176	378	1,648
Ross Township	19	641	876	1,536	19	654	876	1,549	18	700	876	1,594
Schoolcraft Township	438	628	762	1,828	432	640	762	1,834	418	677	753	1,848
Texas Township	427	3,164	1,721	5,312	421	3,241	1,726	5,388	407	3,456	1,735	5,598
Wakeshma Township	2	93	158	253	2	96	159	257	2	103	161	266

## SUMMARY OF DEMOGRAPHICS

Kalamazoo County Employment 2030 - 2035								
Jurisdiction	2030 Retail	2030 Service	2030 Other	2030 Total	2035 Retail	2035 Service	2035 Other	2035 Total
<b>COUNTY TOTALS</b>	32,208	205,577	91,965	329,698	30,655	218,259	91,885	340,799
City of Kalamazoo	3,357	50,605	14,220	68,182	3,200	53,929	14,189	71,318
City of Portage	6,738	22,665	12,851	42,254	6,423	23,879	12,830	43,132
City of Galesburg	18	344	122	484	18	365	123	506
City of Parchment	78	247	56	381	74	261	54	389
Village of Augusta	39	517	83	639	36	564	84	684
Village of Climax	28	421	409	858	26	435	414	875
Village of Richland	75	1,004	202	1,281	72	1,054	205	1,331
Village of Schoolcraft	43	549	132	724	41	587	133	761
Village of Vicksburg	132	358	805	1,295	127	374	800	1,301
Alamo Township	79	361	338	778	74	381	338	793
Brady Township	53	554	292	899	49	596	295	940
Charleston Township	14	258	787	1,059	14	283	785	1,082
Climax Township	5	195	96	296	5	215	97	317
Comstock Township	1,307	4,141	4,688	10,136	1,246	4,352	4,712	10,310
Cooper Township	63	798	927	1,788	59	844	930	1,833
Kalamazoo Township	637	4,521	2,930	8,036	559	4,825	2,910	8,294
Oshtemo Township	2,468	7,767	1,980	12,215	2,354	8,136	1,971	12,461
Pavilion Township	28	340	950	1,318	25	367	950	1,342
Prairie Ronde Township	16,147	103,405	46,182	165,734	15,393	109,798	46,146	171,337
Richland Township	90	1,245	378	1,713	86	1,326	379	1,791
Ross Township	17	748	882	1,647	17	804	888	1,709
Schoolcraft Township	399	712	751	1,862	381	754	746	1,881
Texas Township	391	3,708	1,742	5,841	374	4,004	1,744	6,122
Wakeshma Township	2	114	162	278	2	126	162	290