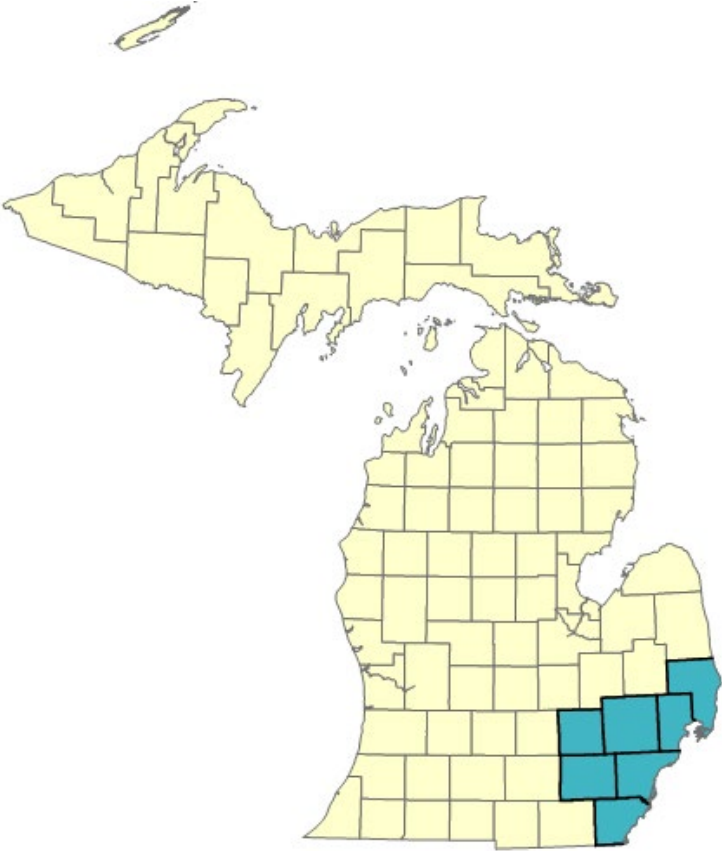


Data Analysis and Visualization for Community and Regional Planning

Presentation to
2024 Great Lakes Data, AI & Analytics Summit
April 18, 2024

Southeast Michigan Region

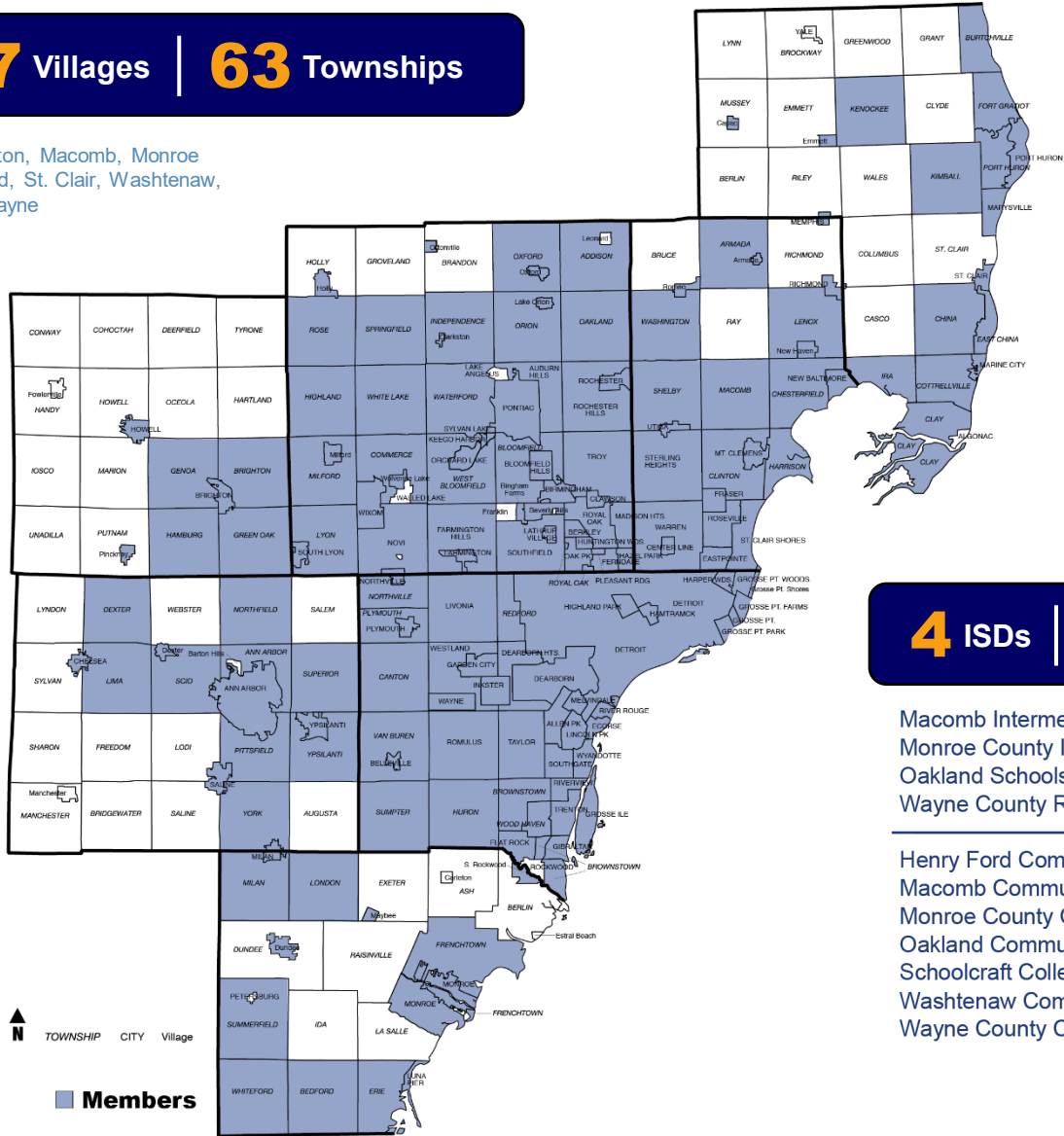


185
Total

87 Cities | **17** Villages | **63** Townships

7 Counties

Livingston, Macomb, Monroe
Oakland, St. Clair, Washtenaw,
and Wayne



4 ISDs | **7** Community

Macomb Intermediate School District
Monroe County Intermediate School District
Oakland Schools
Wayne County Regional Educational Service Agency

Henry Ford Community College
Macomb Community College
Monroe County Community College
Oakland Community College
Schoolcraft College
Washtenaw Community College
Wayne County Community College District

What we do...

Transportation

Environment

**Community &
Economic Development**

Education



SEMCOG Data, Analysis, and Visualization

Data and Maps

- Demographic ▾
- Economic ▾
- Environment ▾
- GIS ▾
- Land Use ▾
- Transportation ▾
- Other ▾

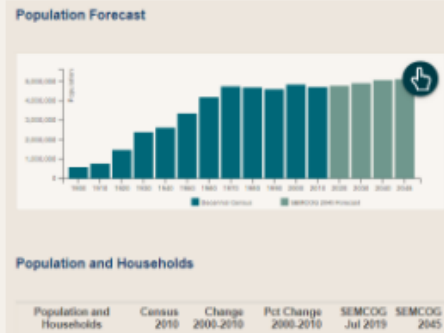
- Bicycle & Pedestrian ▶
- Multimodal ▶
- Safety ▶
- Traffic Data ▶
- Infrastructure ▶

SEMCOG provides insightful data analysis and direct assistance to member governments. SEMCOG for up-to-date information on demographics, socio-economics, housing, forecasting, and reporting are designed to meet those needs.

Other planning organizations depend on SEMCOG's data collection, analysis,

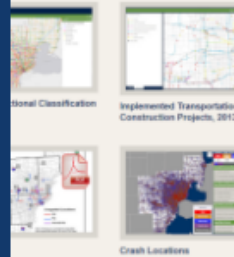
- Bridge Condition 📄
- Flood Risk Tool 📄
- Implemented Transportation Projects 📄
- National Functional Classification of Roads 📄
- Pavement Condition 📄
- Road Jurisdiction 📄
- TIP and RTP Projects 📄

Community Profiles



Delve into data about how people live, work, and travel in your community.

Maps Gallery



Explore SEMCOG's full suite of maps and apps for regional, county, community, and local planning.

Open Data Portal



Browse and download SEMCOG's open data.

Economic Trends

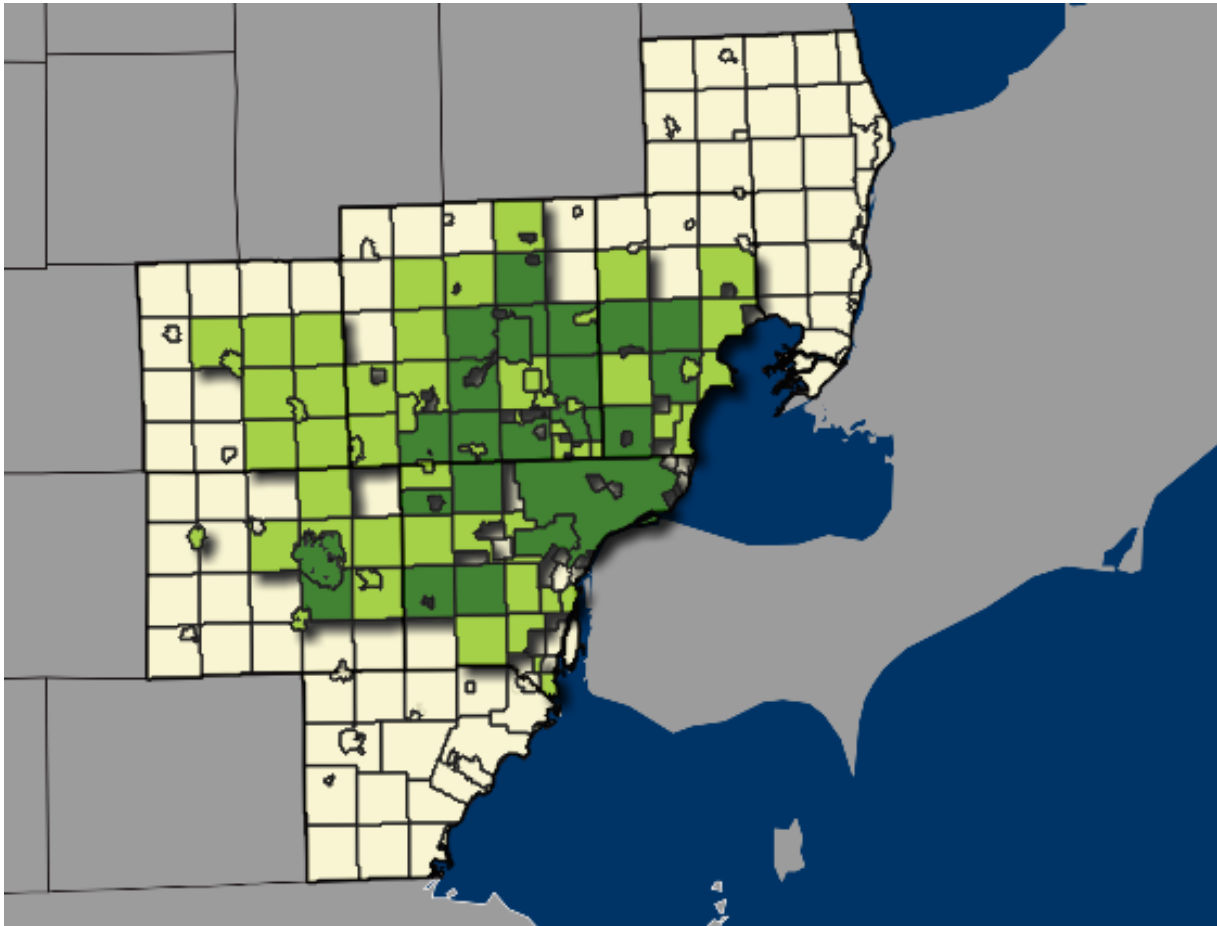
Employment in Southeast Michigan (Thousands)

Aerial Imagery



Census 2020

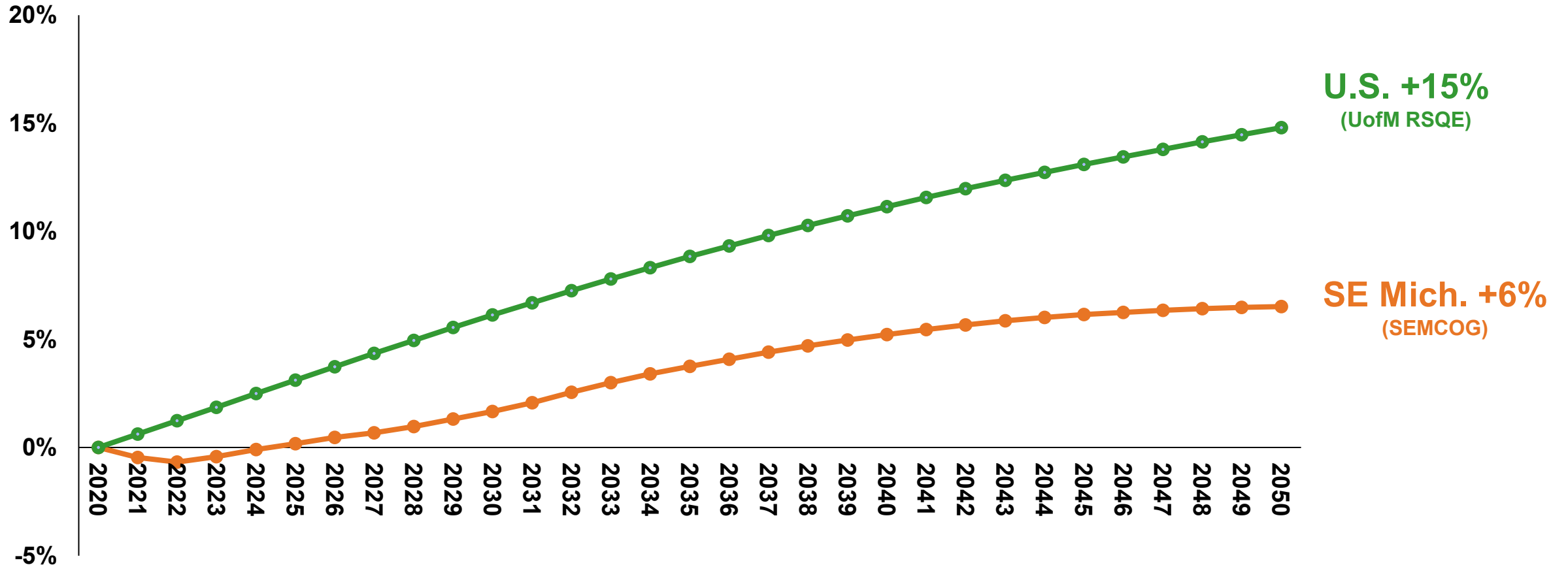
SEMCOG's 2050 Forecasts



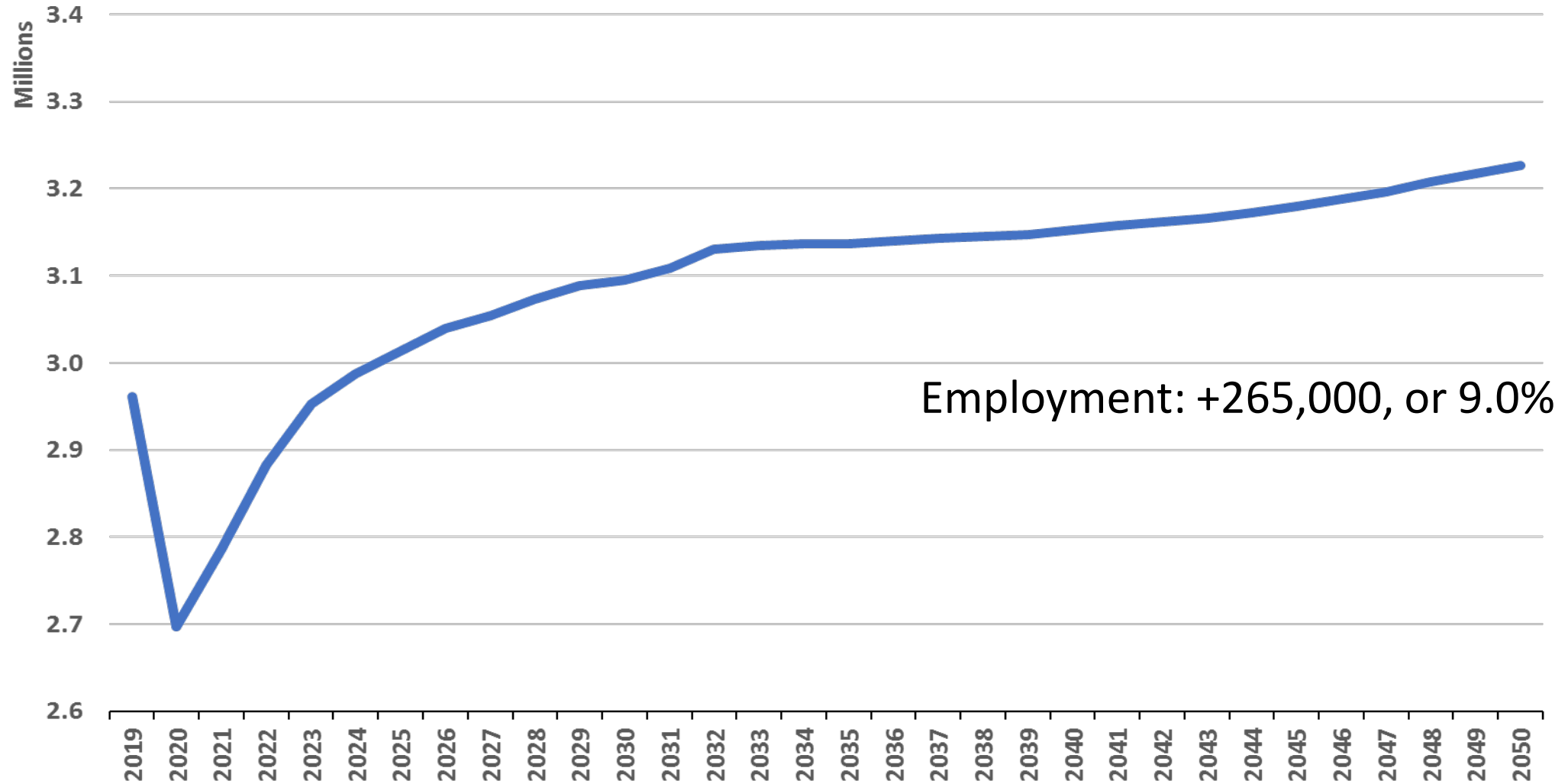
- **Forecast of**
 - Population by age
 - Households by type
 - Employment by industry, etc.
- **Forecast for**
 - Region
 - Counties
 - Communities
 - School Districts
 - Traffic Analysis Zones, etc.
- **A process of**
 - Computer modeling (REMI, UrbanSim)
 - Expert analysis
 - Local review
- **Adopted by SEMCOG**
 - Executive Committee
 - General Assembly

Percent Population Change, 2020-2050

U.S., and Southeast Michigan

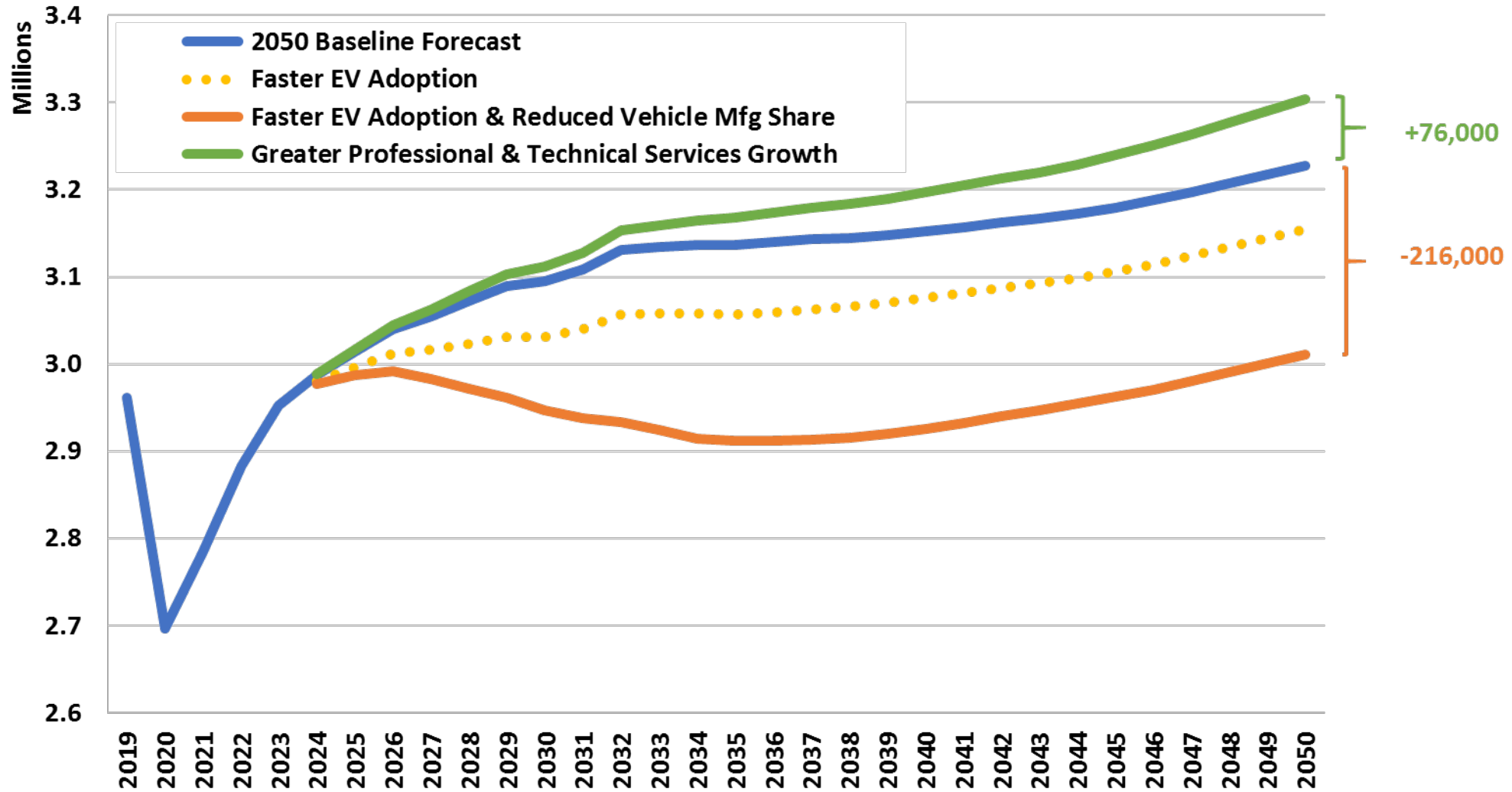


Southeast Michigan Employment Forecast 2019-2050



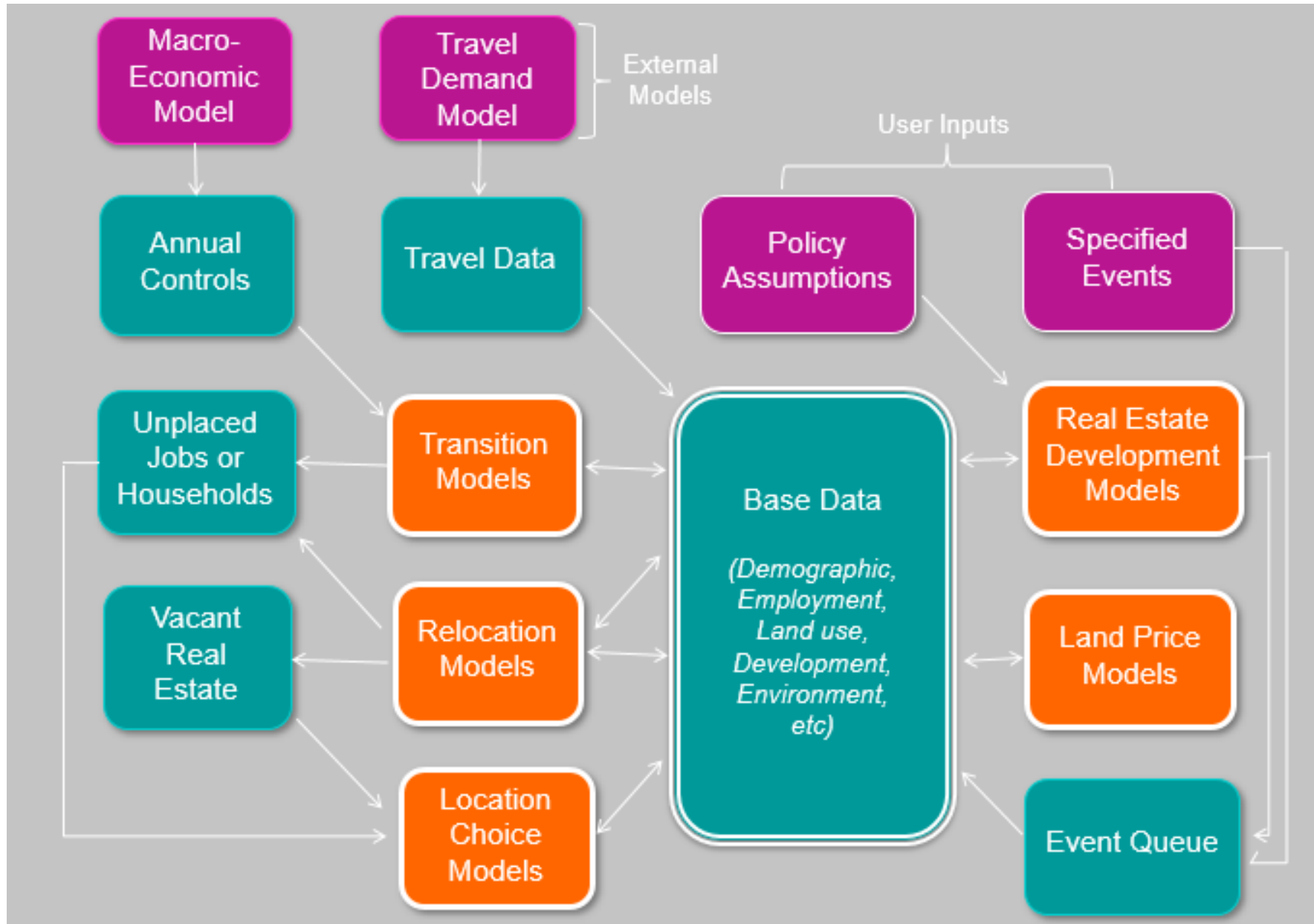
Source: SEMCOG 2050 Forecast.

The range of scenarios for Southeast Michigan



Source: SEMCOG 2050 Forecast.

The UrbanSim Model



Input Data

Base-year Data	Data Source	Processing & Software	Results
Households	Census ACS, PUMS, SEMCOG estimates, REMI	Population synthesizer	1.8M households (size, children, income, age of head, building)
Persons	Census ACS, PUMS, SEMCOG estimates, REMI	Population synthesizer	4.7M persons (age, race, worker, householder)
Jobs	MDOT employment	Geocoding & review	2.7M jobs (sector, building)
Parcels	County and community assessors	GIS editing and cleaning	1.8M parcels (land use type, area, value, city, zone, school district...)
Buildings	Imagery and local	GIS editing and cleaning	1.6M buildings (building types, sqft, value, parcel)
Master Plan	Communities	GIS editing and cleaning	1.8M parcel-based land use regulations, imputed height constraints
Transportation	SEMCOG travel model, MGF network	TransCAD, ArcGIS	Highway and transit networks and zone-based travel time (2811 by 2811 zones)
Events	Communities	ArcGIS	development and job event tables

Input Data (continued)

- Accessibilities:
 - » Parcel based (calculation) & zone based (travel model)
 - » Single travel mode (auto, transit, bike and walk) or composite index: utility based
 - » Major service types: jobs, transit, shopping, parks, hospitals and health centers
- Real estate development data: sqft cost; garage/parking costs; FAR, building heights.....
- Job space information: building square feet per job by types
- Relocation rates for households and employments
- Labor participation rate forecast (REMI or BLS)
- Income growth projections (per capita or HH; REMI)
- Historical residential and non-residential development or decline by communities
- School enrollment data (Michigan Department of Education)
- Crime statistics (FBI)

Output Data Example

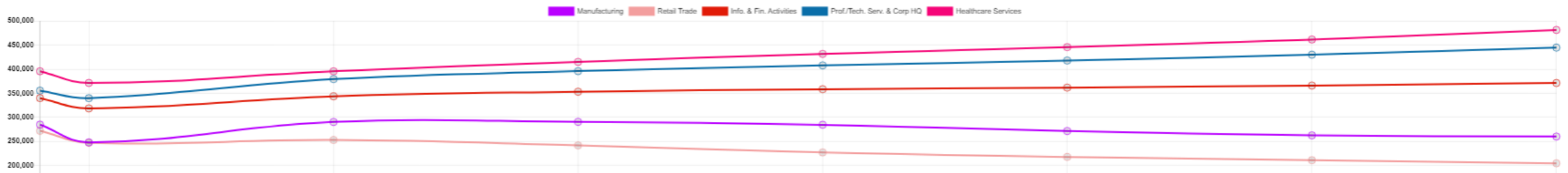
Population and Households

	2020	2030	2040	2050	Change 2020 - 2050	
					Number	Percent
Total Population	4,830,489	4,904,007	5,075,897	5,138,535	308,046	6.4%
Household Population	4,755,920	4,818,866	4,985,198	5,045,038	289,118	6.1%
Group Quarters Population	74,569	85,142	90,699	93,497	18,928	25.4%
Population Age 0-4	264,191	262,403	270,534	259,438	-4,753	-1.8%
Population Age 5-17	789,455	710,352	720,409	717,884	-51,771	-6.7%
Population Age 18-24	447,220	439,672	420,997	428,881	-18,339	-4.1%
Population Age 25-64	2,538,887	2,480,728	2,572,414	2,629,383	90,596	3.6%
Population Age 65-84	714,838	896,276	913,057	874,054	159,216	22.3%
Population Age 85+	96,098	114,578	178,488	229,095	132,997	138.4%
Housing Units	2,103,775	2,159,438	2,194,480	2,210,499	106,724	5.1%
Household Size	2.48	2.41	2.42	2.43	-0.03	-1.2%
Households	1,936,635	2,002,013	2,058,633	2,074,416	137,781	7.1%
With Children (Age 0-17)	560,138	525,090	537,229	534,673	-15,465	-2.8%
Without Children (Age 0-17)	1,386,497	1,476,923	1,521,404	1,539,743	153,246	11.1%
With Seniors (Age 65+)	591,180	720,555	775,591	784,759	193,599	32.7%
Without Seniors (Age 65+)	1,345,475	1,281,468	1,283,042	1,289,657	-55,818	-4.1%
With One Person Only	589,420	628,299	650,818	680,729	71,309	12.1%

Employment by Sector

	2019	2030	2040	2050	Change 2019 - 2050	
					Number	Percent
Total Jobs	2,981,789	3,095,012	3,152,120	3,226,982	265,193	9.0%
Nat Res & Construction	139,452	164,484	166,181	167,029	27,577	19.8%
Manufacturing	284,764	290,609	271,628	280,013	-24,751	-8.7%
Wholesale Trade	101,294	105,456	108,703	108,917	7,623	7.5%
Retail Trade	271,928	241,714	217,748	204,591	-67,337	-24.8%
Transportation & Utilities	146,550	182,884	186,383	190,363	43,813	29.9%
Info. & Fin. Activities	339,888	353,179	361,669	371,229	31,343	9.2%
Prof./Tech. Serv. & Corp HQ	355,396	395,822	417,934	444,783	89,387	25.2%
Admin, Supp., & Waste Serv.	193,512	198,858	213,614	228,585	35,073	18.1%
Education Services	196,508	200,081	205,943	208,817	12,309	6.3%
Healthcare Services	395,637	415,018	445,713	481,349	85,712	21.7%
Leisure and Hospitality	269,180	277,740	282,214	283,728	14,546	5.4%
Other Services	170,809	170,944	175,124	178,152	7,343	4.4%
Public Administration	97,053	98,414	99,366	99,408	2,355	2.4%

Jobs by Sector



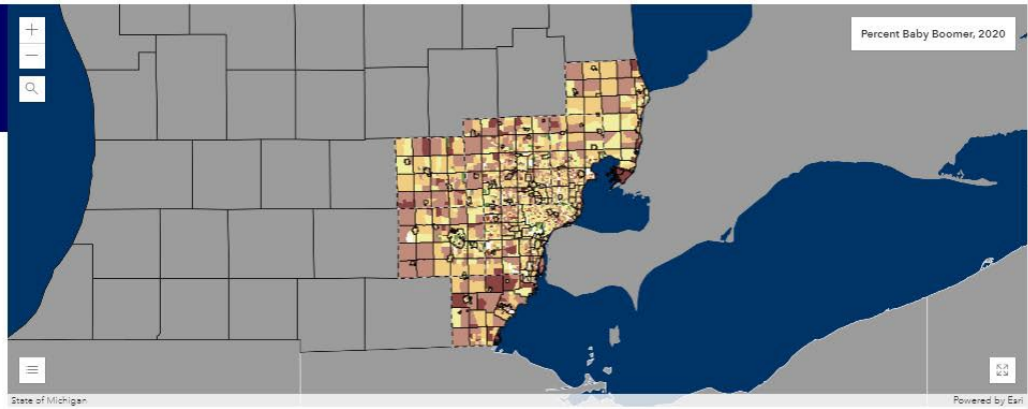
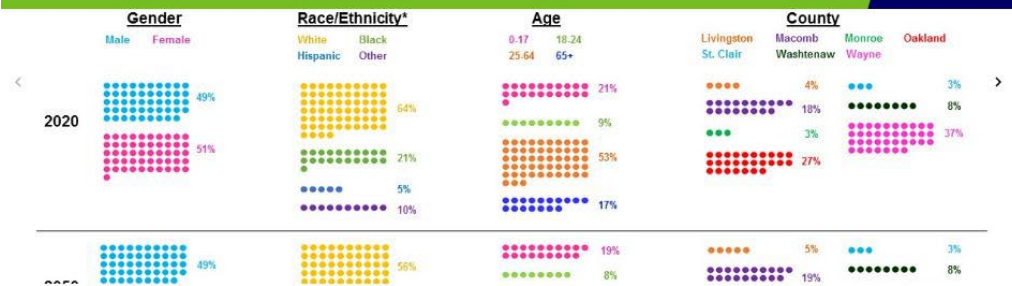


2050 Southeast Michigan Regional Development Forecast

The region is projected to grow by 315,000 people in the next 3 decades. It will also be older, and racially and ethnically diverse. The region is projected to experience significant demographic transitions in the coming years because of declining birth rates and aging population. By the end of this decade, all the baby boomers will be older than 65 and, the older population is projected to outnumber the children (under 18 years) for the first time in the region's history. Because of these transformative trends, net international migration is expected to overtake natural increase as a leading cause of population growth in the coming decades.

Use the map below to pan, zoom (using the +, or double click), or search to explore your community. Moving your mouse over a slide carousel will pause the slides. You can right click to download a slide as an image.

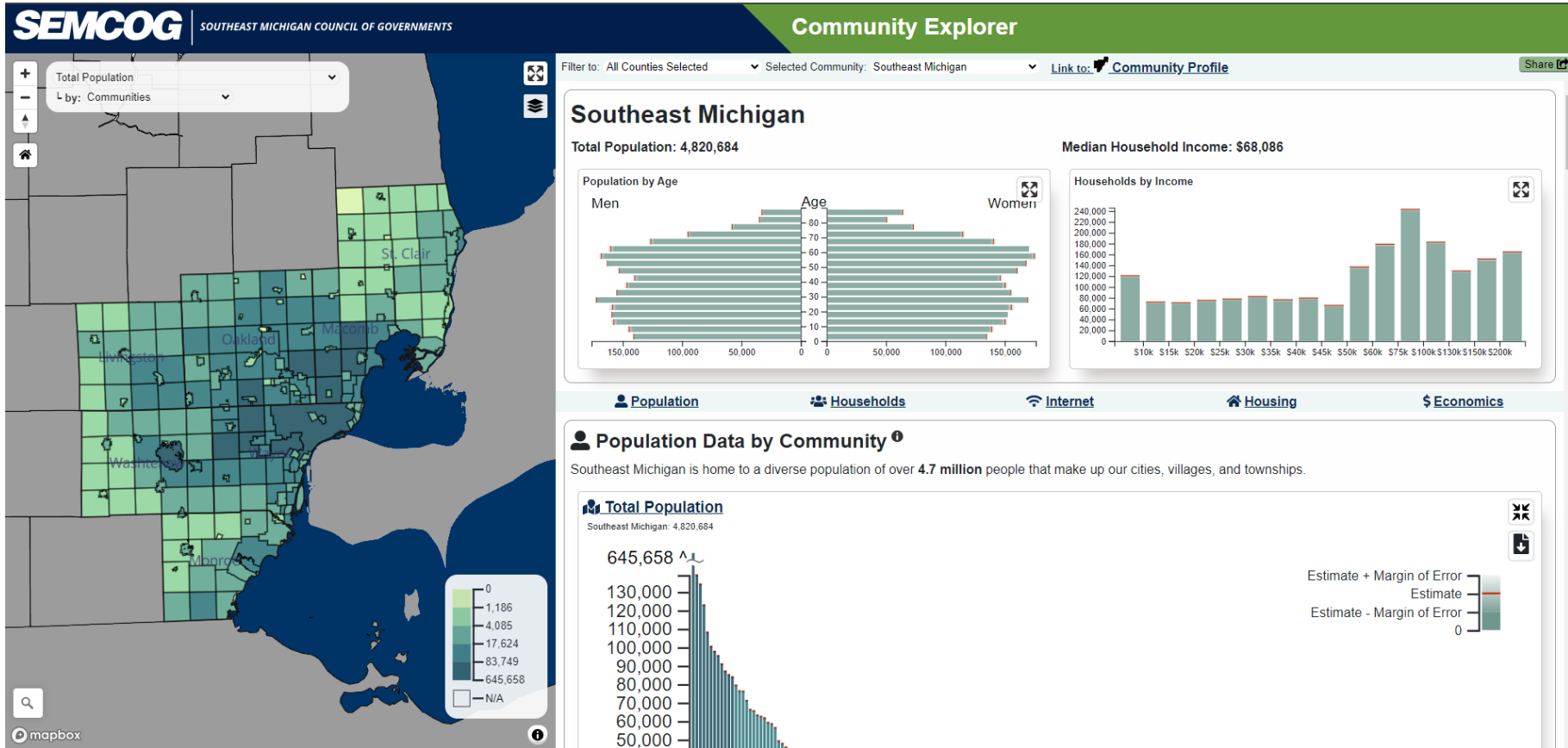
Demographic Shifts from 2020 to 2050



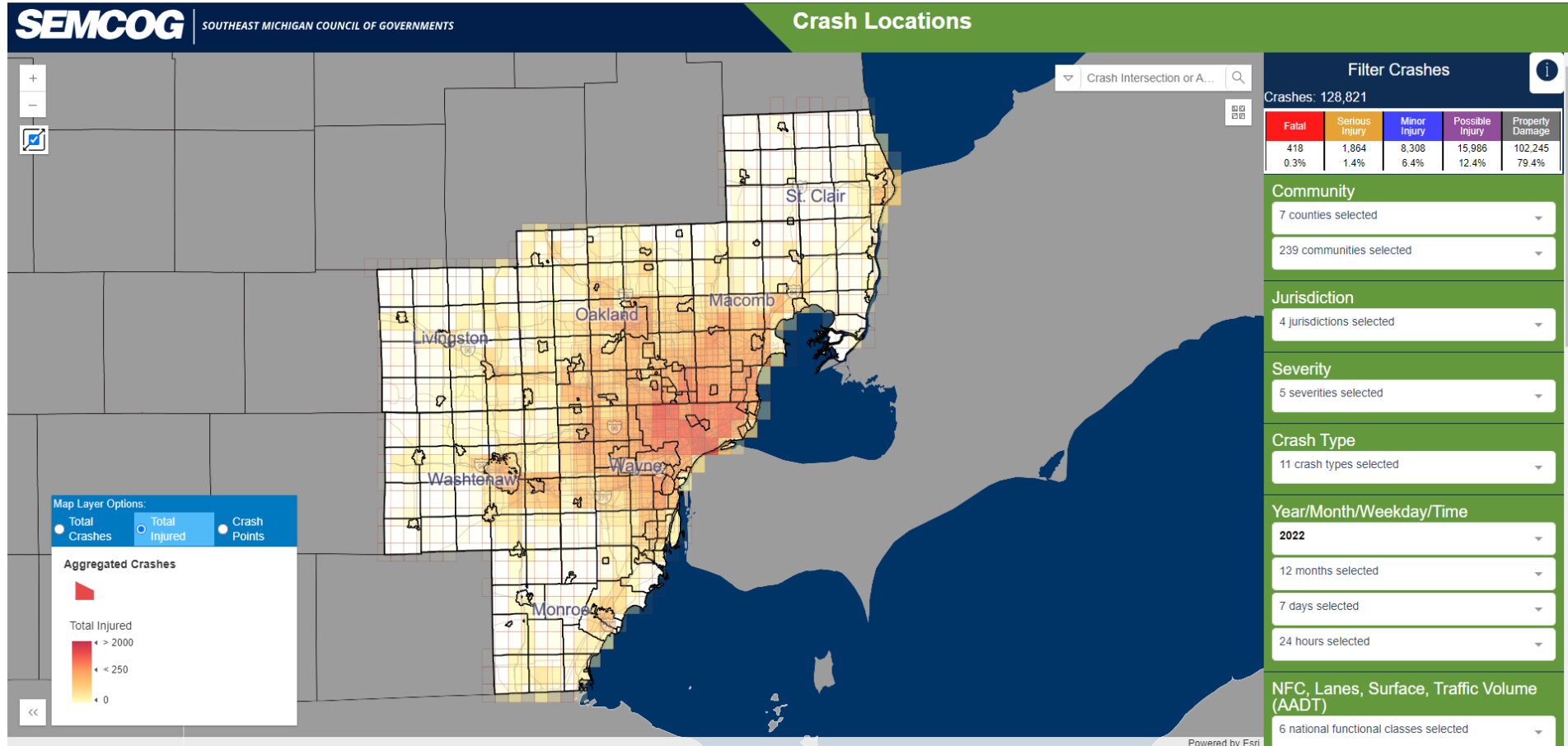
Data Visualization using Custom Applications

- **Rapid overview of 3 applications**
 - **Showing:**
 - » **A demo of the tool**
 - » **Development stack**
 - » **Data stack**
 - » **My favorite one or two components**

Community Explorer



Crash Locations



Laborsheds



CART

