Preliminary Forecast of Michigan's Long-Run Demographic and Economic Future

Presented to REMI Users

February 15, 2022

Research Seminar in Quantitative Economics
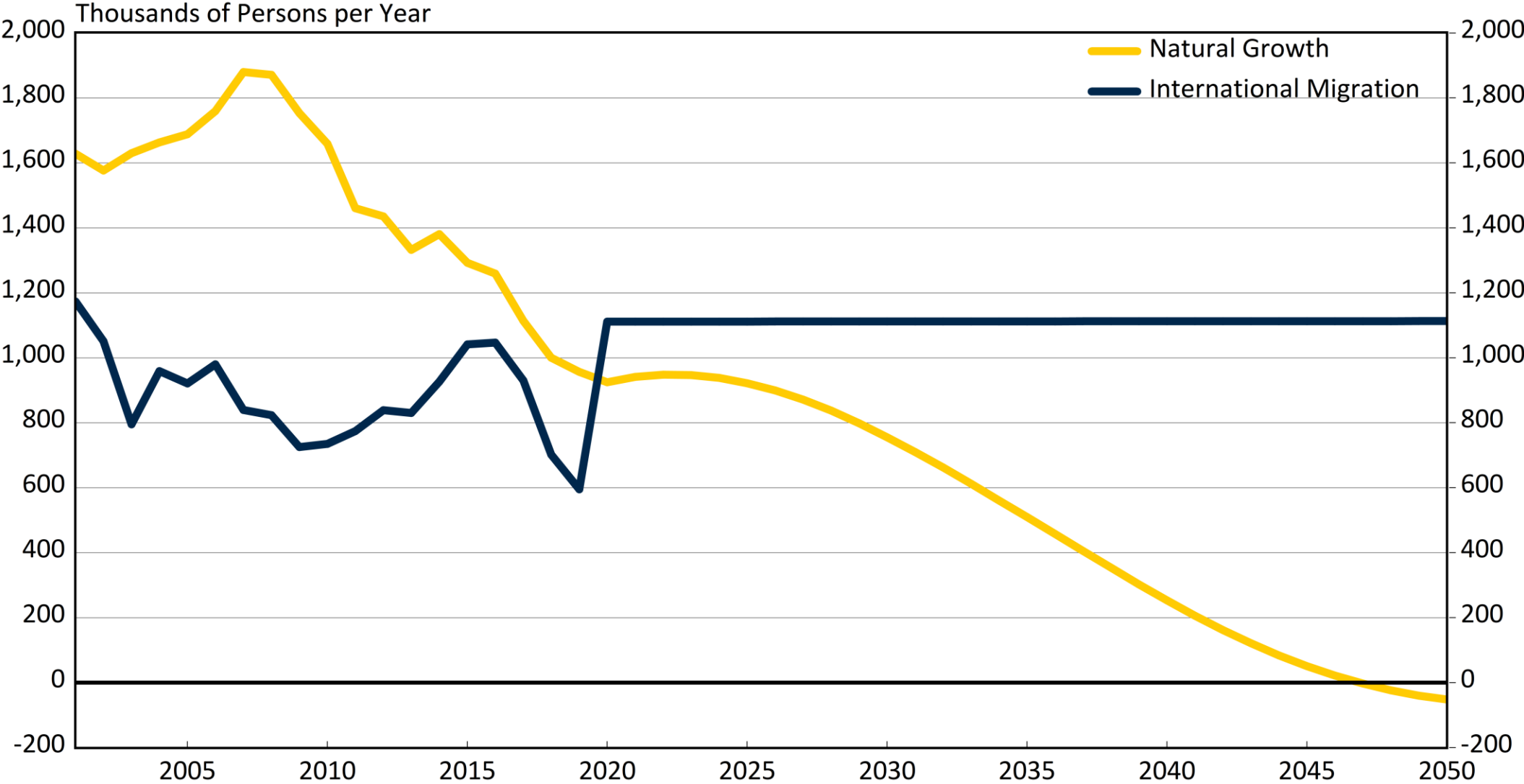
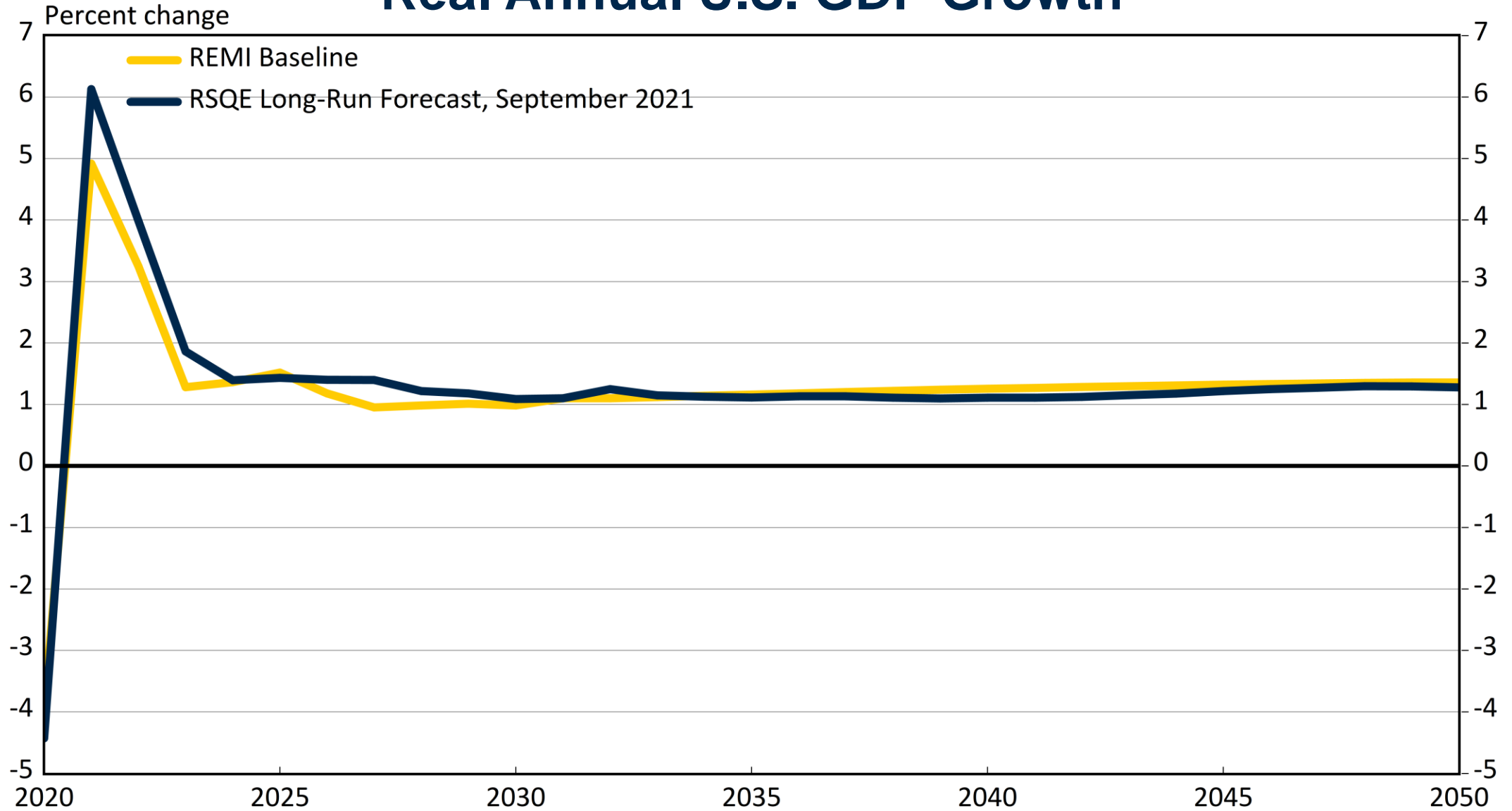# How the Preliminary Forecast was Generated

National Population and GDP

➤ We did not change REMI's national population forecast

➤ We modified the REMI model's national GDP forecast in several ways

- We used key parts of RSQE's internal U.S. economic forecast through 2026

- From 2026–2050, we targeted the CBO's long-run forecast for certain variables, aiming for smooth transitions from our internal forecast

- We held the shares of major components of GDP approximately constant at 2030 values

- We increased social insurance and personal taxes

- We adjusted productivity by industry

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Components of U.S. Population Change, REMI Baseline

Thousands of Persons per Year

Legend: Natural Growth, International Migration

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Real Annual U.S. GDP Growth

Percent change

- REMI Baseline
- RSQE Long-Run Forecast, September 2021

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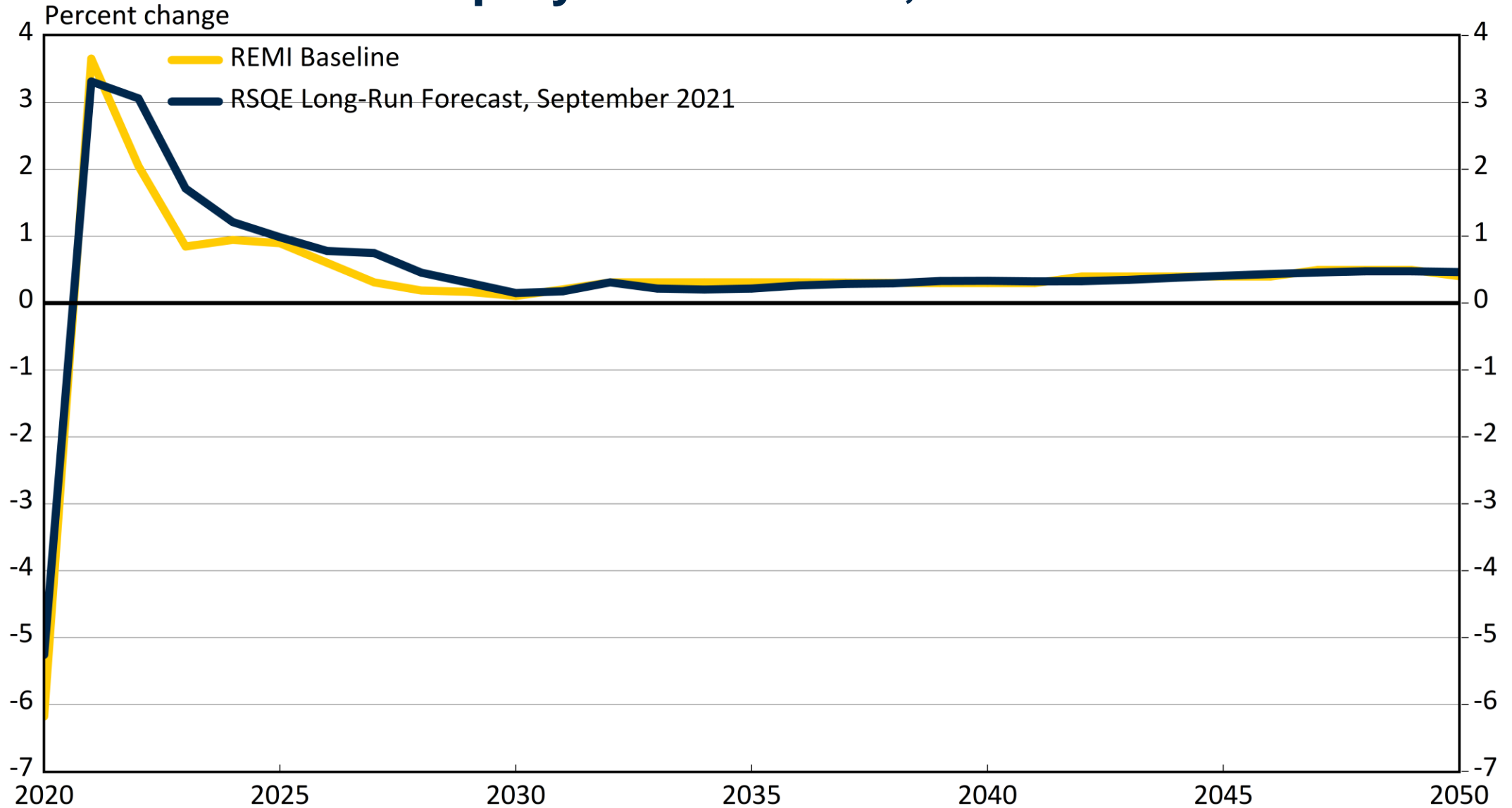
National Employment

➢ Our long-run forecast uses the measure of wage and salary employment published by the Bureau of Economic Analysis (BEA)

➢ BEA Employment is much larger than the measures published by the Bureau of Labor Statistics (BLS)

➢ It is actually larger than the labor force estimated by BLS

➢ That means that we cannot estimate the unemployment rate in our forecast (employment > labor force)

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Annual Employment Growth, BEA-Measured

Percent change

- REMI Baseline
- RSQE Long-Run Forecast, September 2021
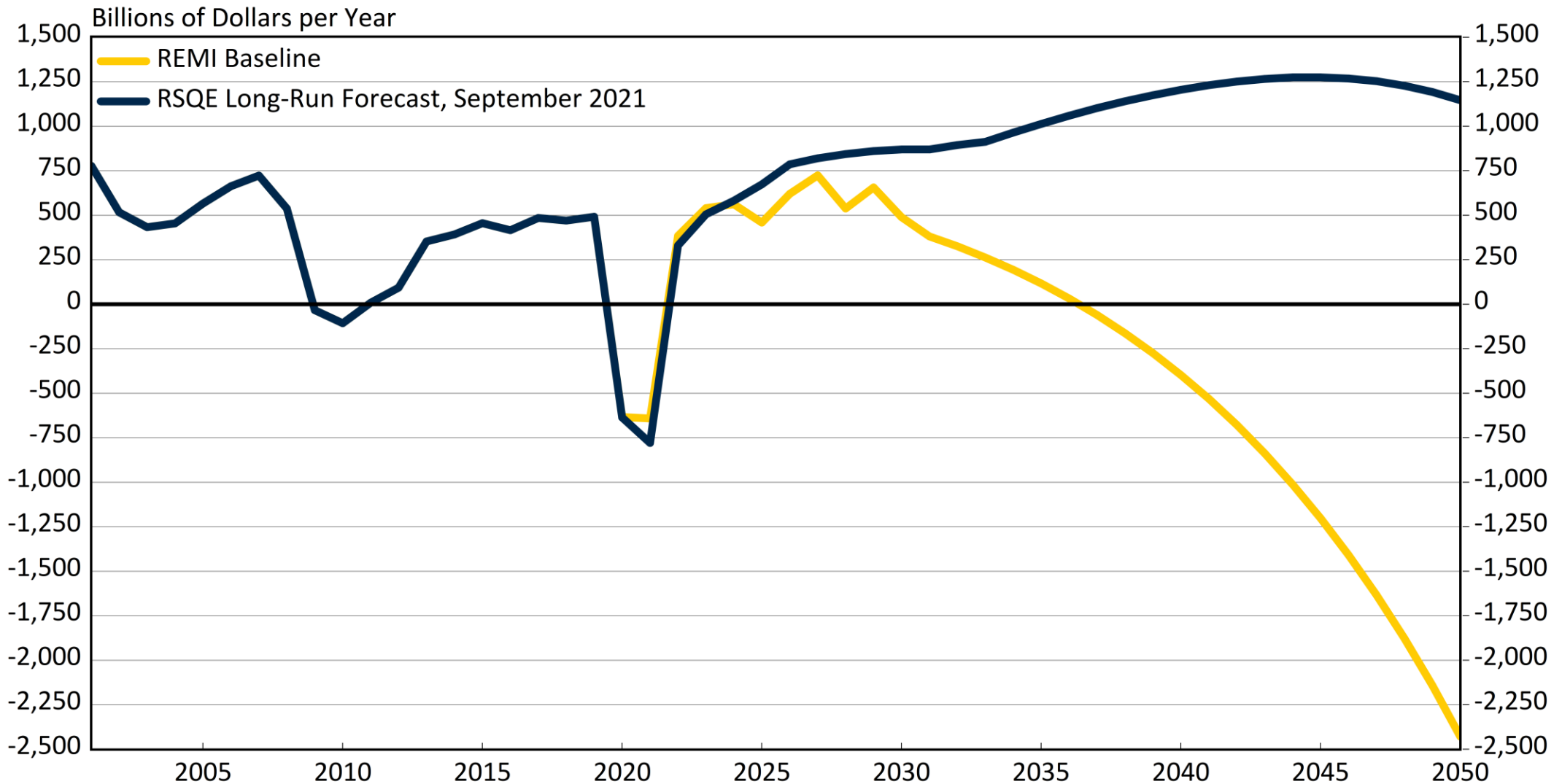
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The Distribution of GDP and Income

➢ We consider various trends in the REMI model's built-in forecast to be unrealistic

➢ The trade deficit rises to 8 percent of GDP and stays at that level for a sustained period

➢ Growth of transfer payment income substantially outstrips growth of personal income tax revenues and social insurance payments

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Distribution of GDP

GDP Components	2021 Actual	2026 RSQE	2026 REMI	2050 RSQE	2050 REMI
Consumption	70.2%	70.6%	70.5%	71.0%	76.3%
Durable Goods	11.4%	11.3%	10.5%	11.5%	18.0%
Motor Vehicles & Parts	3.2%	2.8%	2.6%	2.6%	3.6%
Other Durable Goods	8.2%	8.6%	8.0%	8.9%	14.4%
Non-Durable Goods	17.3%	15.8%	15.2%	15.9%	16.8%
Services	42.5%	43.5%	44.7%	43.6%	41.6%
Residential Investment	3.6%	3.4%	3.2%	3.0%	1.9%
Business Investment	14.8%	16.1%	15.9%	16.8%	17.1%
Inventory Change	-0.2%	0.6%	0.4%	0.6%	0.3%
Government	17.4%	16.2%	16.1%	14.0%	12.5%
Net Exports	-6.6%	-6.9%	-6.1%	-5.4%	-8.1%

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Social Insurance Contributions and
Personal Income Taxes Paid Minus Transfer Income

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Emerging Trends

➢ E-commerce replacing bricks and mortar stores

➢ Electric vehicles replacing ICE vehicles

➢ Infrastructure for electric vehicles (construction sector)

➢ Autonomous vehicles (not presently incorporated)

➢ Impacts of climate change (not presently incorporated)

- International migration

- Domestic migration

➢ Other ideas?

Share of Fleet by Vehicle Type, RSQE Forecast

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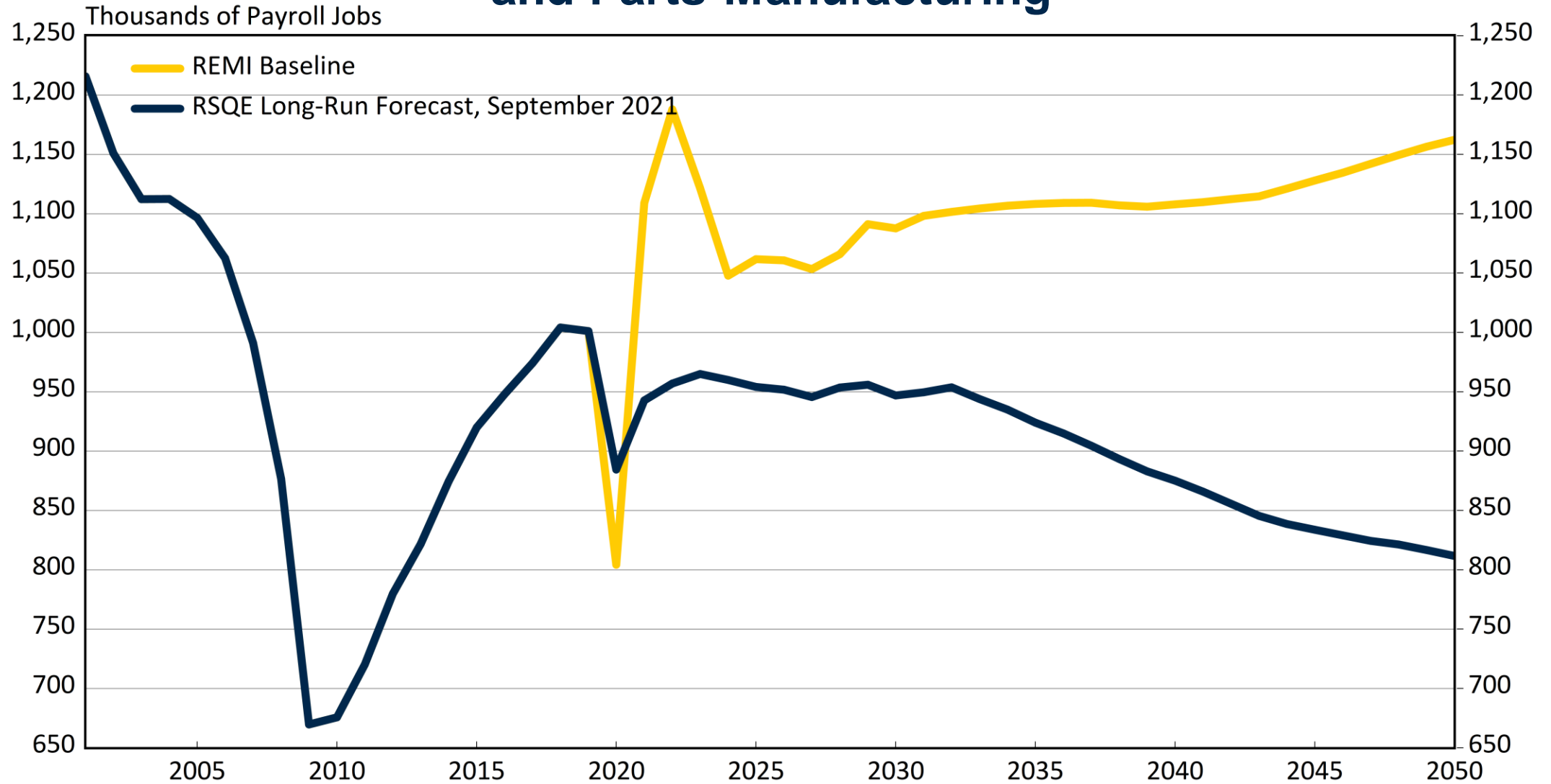LSA RESEARCH SEMINAR IN QUANTITATIVE ECONOMICS UNIVERSITY OF MICHIGAN
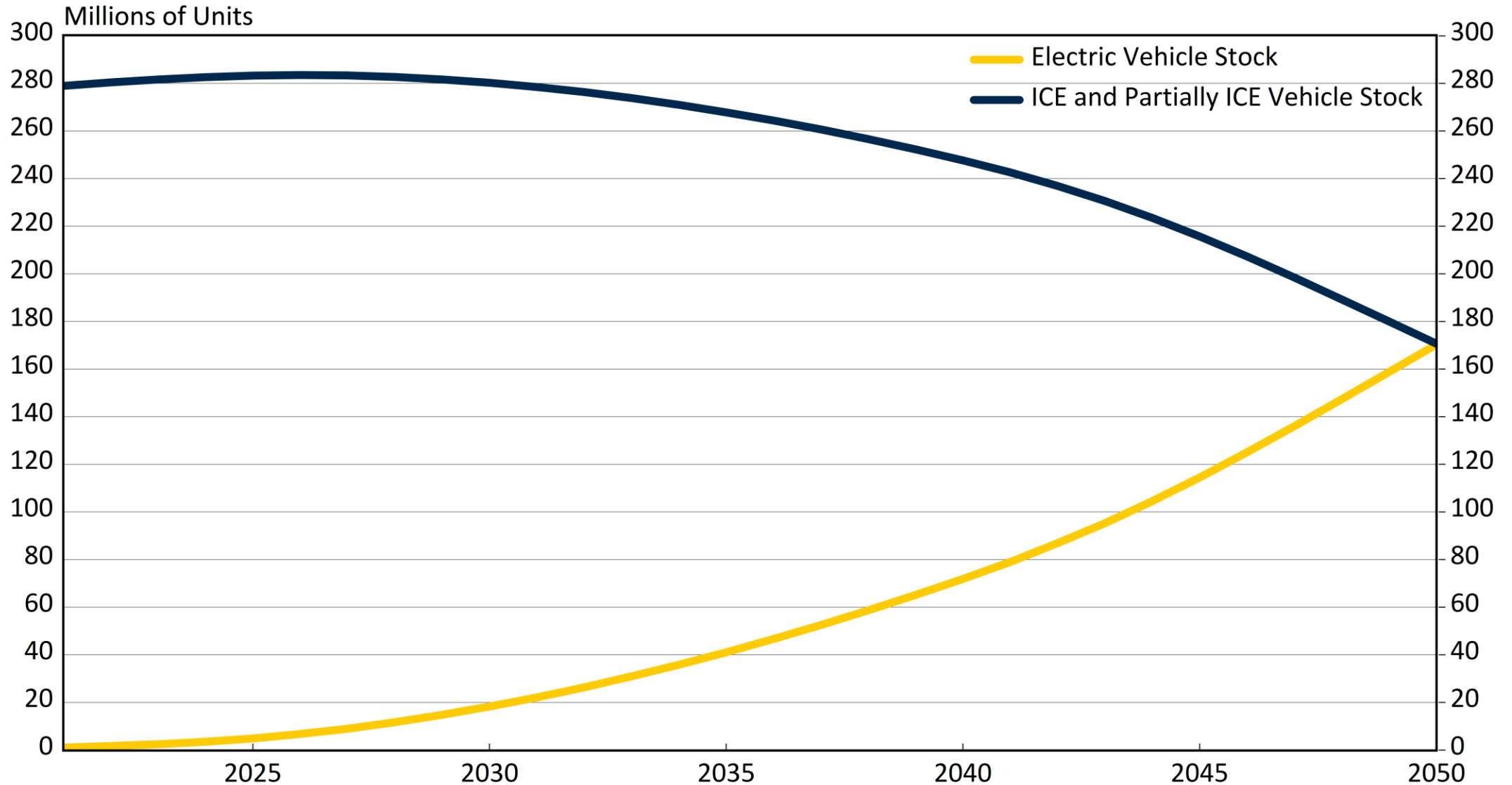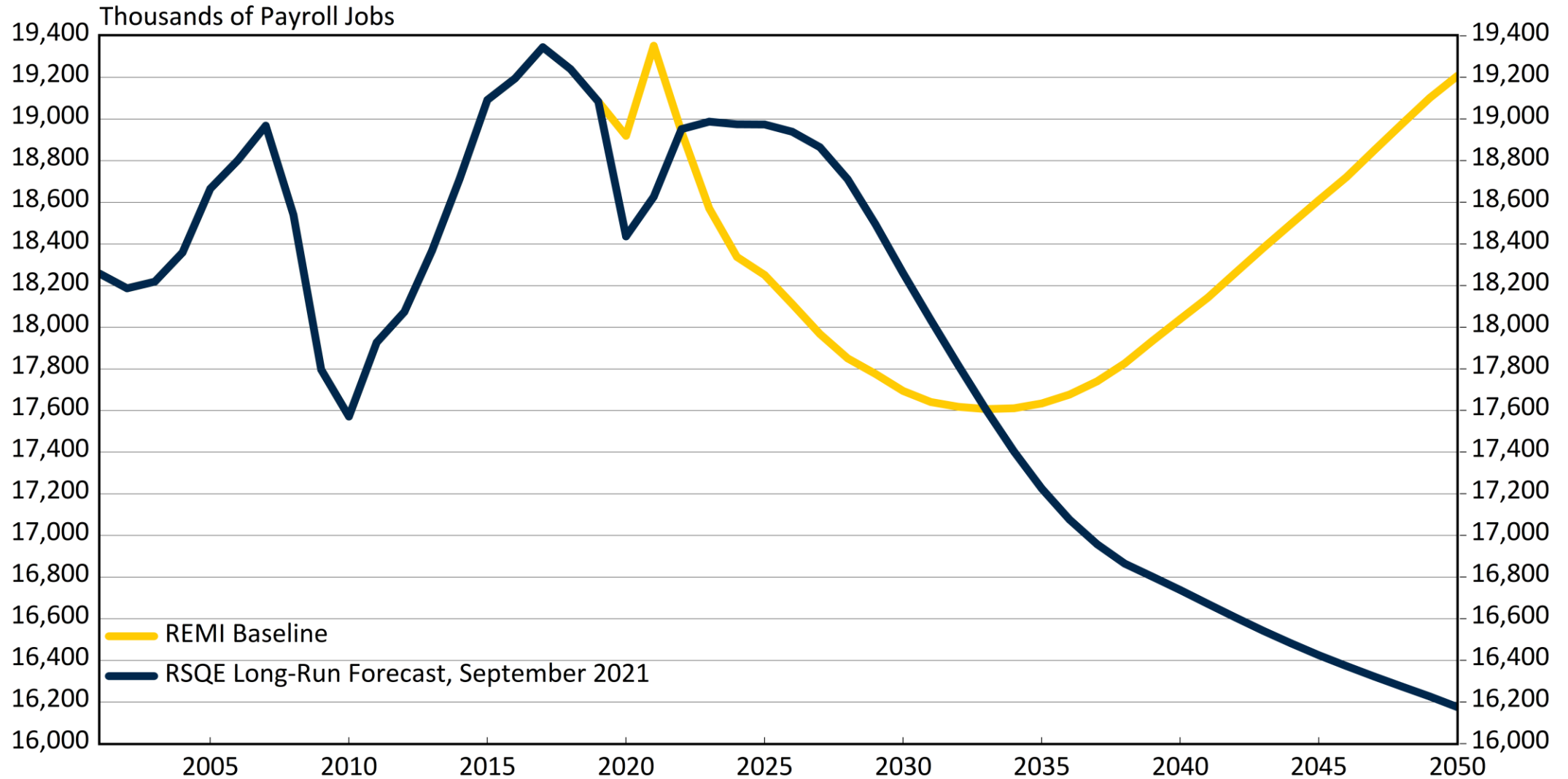
Productivity and Employment Changes by Industry

➢ Converting GDP to Employment by Industry

- REMI has a methodology to convert GDP to real output by industry. We do not adjust this methodology.

- The REMI model forecasts time-series estimates of output per worker by industry. We adjust that forecast to generate employment forecasts that we judge to be more reliable.

National Employment in Motor Vehicles, Bodies, and Parts Manufacturing

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National Employment in Retail Trade

Thousands of Payroll Jobs

REMI Baseline

RSQE Long-Run Forecast, September 2021

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National Employment in Transportation and Warehousing

Thousands of Payroll Jobs

- REMI Baseline
- RSQE Long-Run Forecast, September 2021

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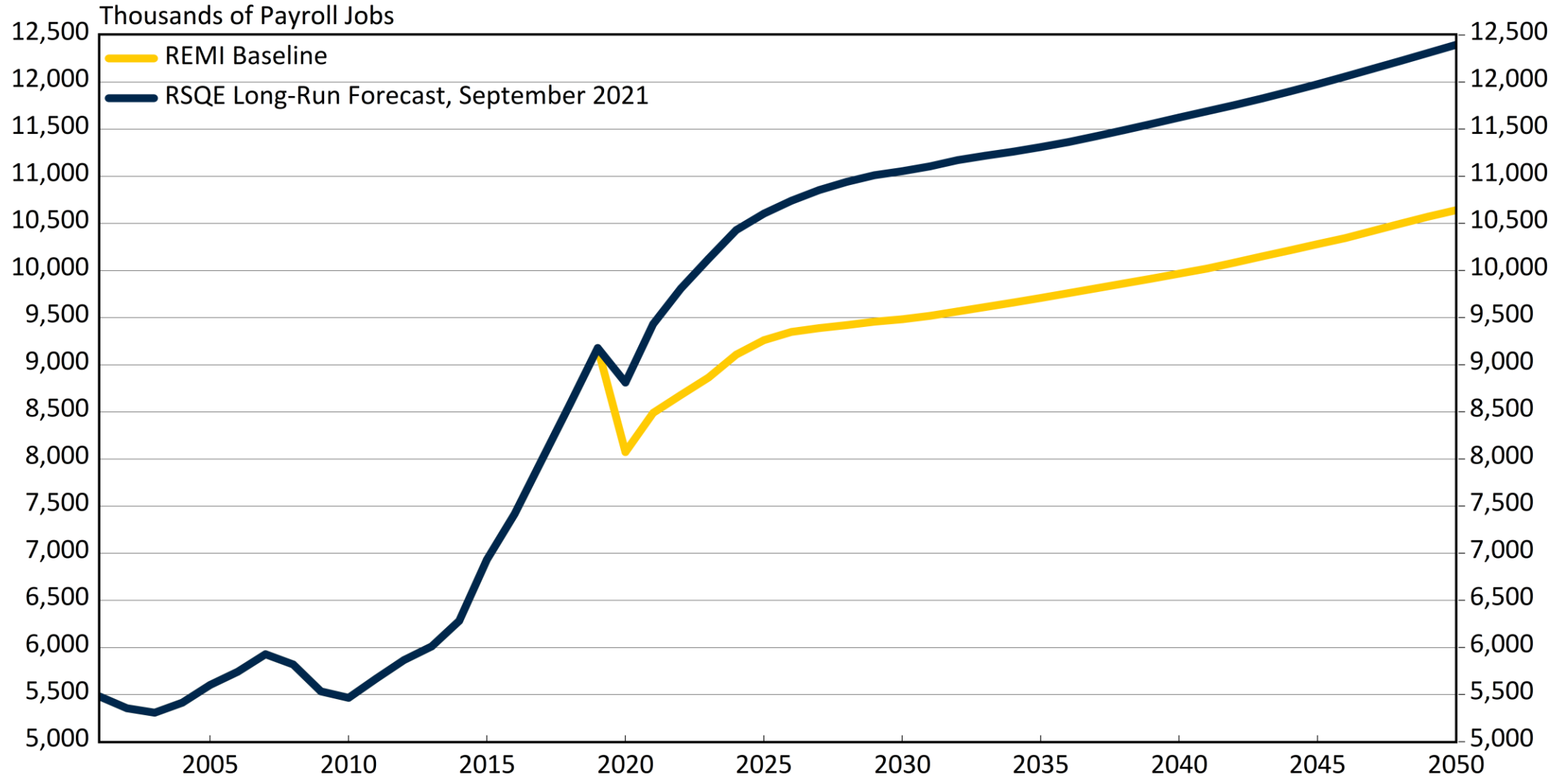
Michigan Employment Forecast

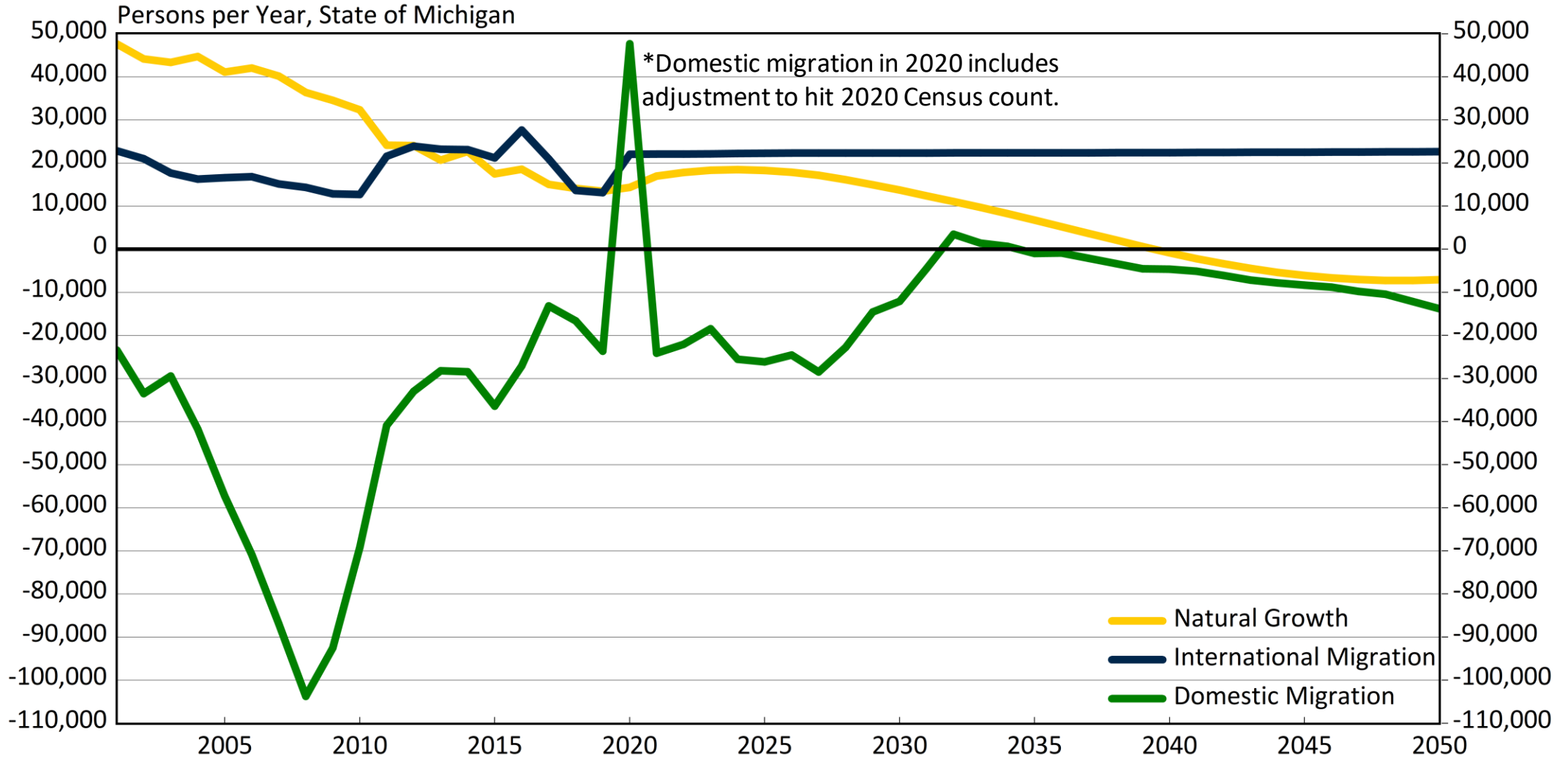➢ RSQE's Michigan's employment forecast from September 2021 guides county-level forecast from 2021 through 2026

- We converted to BEA employment basis

➢ Statewide BEA employment values were used for 2020

➢ Extend statewide forecast through 2050

- After 2026, the REMI model (incorporating our U.S. forecast) takes over to generate long-term results

- Long-term results in the REMI model largely driven by the combination of the U.S. macro forecast and the local demographics

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Key Constraints on the Local Forecasts

Key Constraints on Long-Term Growth

➢ Demographic components of population growth:

- Natural growth (births minus deaths)

- International migration

- Domestic migration

➢ Population aging

➢ Limited growth of labor force

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Statewide Components of Population Growth

Persons per Year, State of Michigan

*Domestic migration in 2020 includes adjustment to hit 2020 Census count.

Natural Growth
International Migration
Domestic Migration

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Share of Population Age 65 and Older

2020

2050

Share of Population 65+, 2020

- Less than 17%
- 17% to 20%
- 20% to 25%
- 25% to 30%
- Greater than 30%

Share of Population 65+, 2050

- Less than 17%
- 17% to 20%
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RSQE: February 2022

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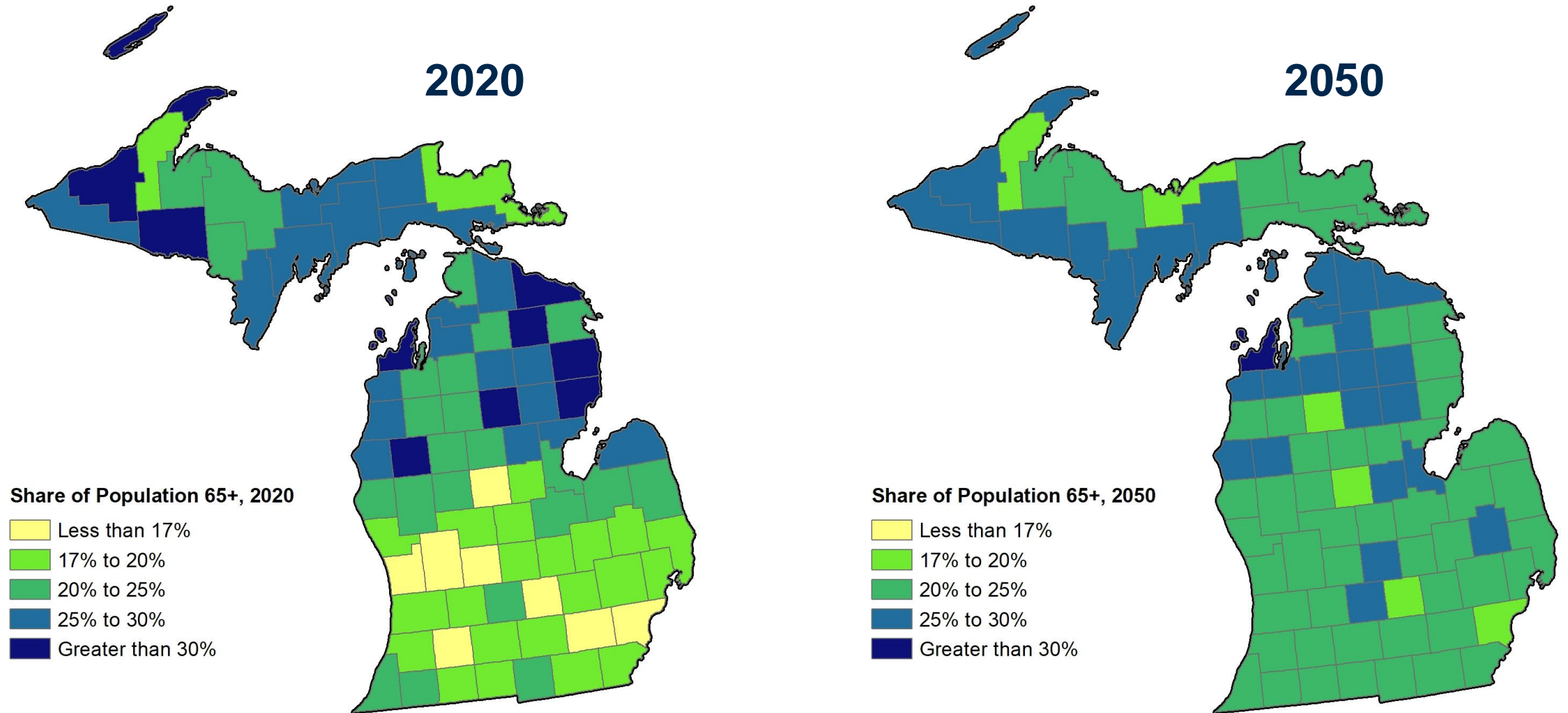
Labor Force Participation Rate by Age Group

	2019	2020	2050
Total	61.5%	60.2%	59.9%
Ages 16-19	36.0%	33.9%	33.9%
Ages 20-21	64.2%	62.1%	60.2%
Ages 22-24	76.0%	74.1%	73.0%
Ages 25-54	82.3%	81.2%	82.3%
Ages 55-59	71.9%	71.0%	74.0%
Ages 60-61	62.9%	61.6%	67.0%
Ages 62-64	52.2%	51.4%	59.0%
Ages 65-69	33.2%	31.6%	41.3%
Ages 70-74	19.5%	19.4%	25.0%
Ages 75+	8.3%	8.5%	10.8%

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