

# An analysis of the macroeconomic effects of 2017-2025 federal fuel economy and greenhouse gas emissions standards

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**SCHOOL OF PUBLIC AND  
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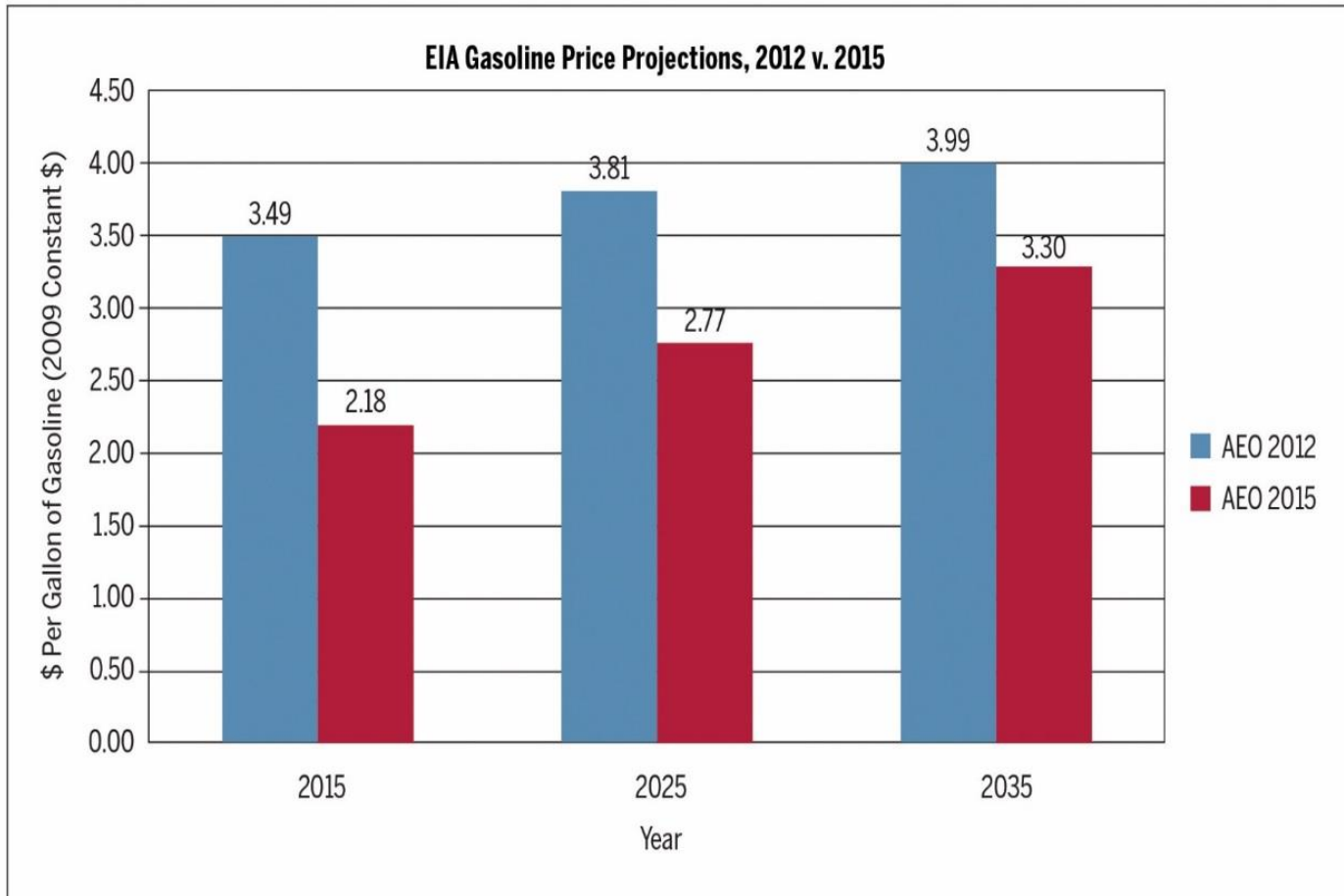
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# Summary

- **Research question:** What are the macroeconomic effects of 2017-2025 fuel economy/GHG standards?
- **Main findings:** short-term economic losses but long-term gains

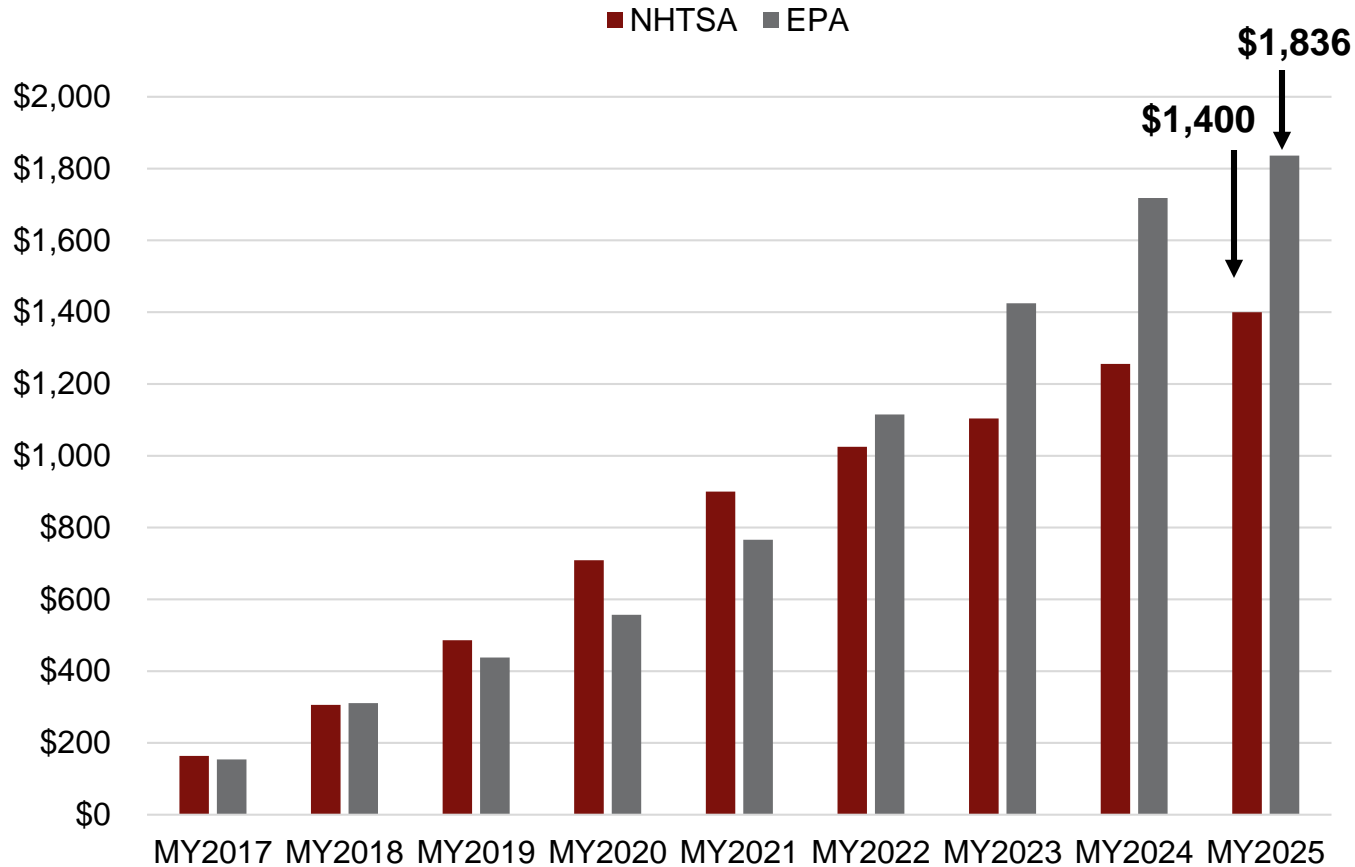
# 2012 VS. 2016 PERSPECTIVES

# Gas Price Projections



Source: EIA. (2012). Annual energy outlook 2012 with projections to 2035.; EIA. (2015). Annual energy outlook 2015 with projections to 2040.

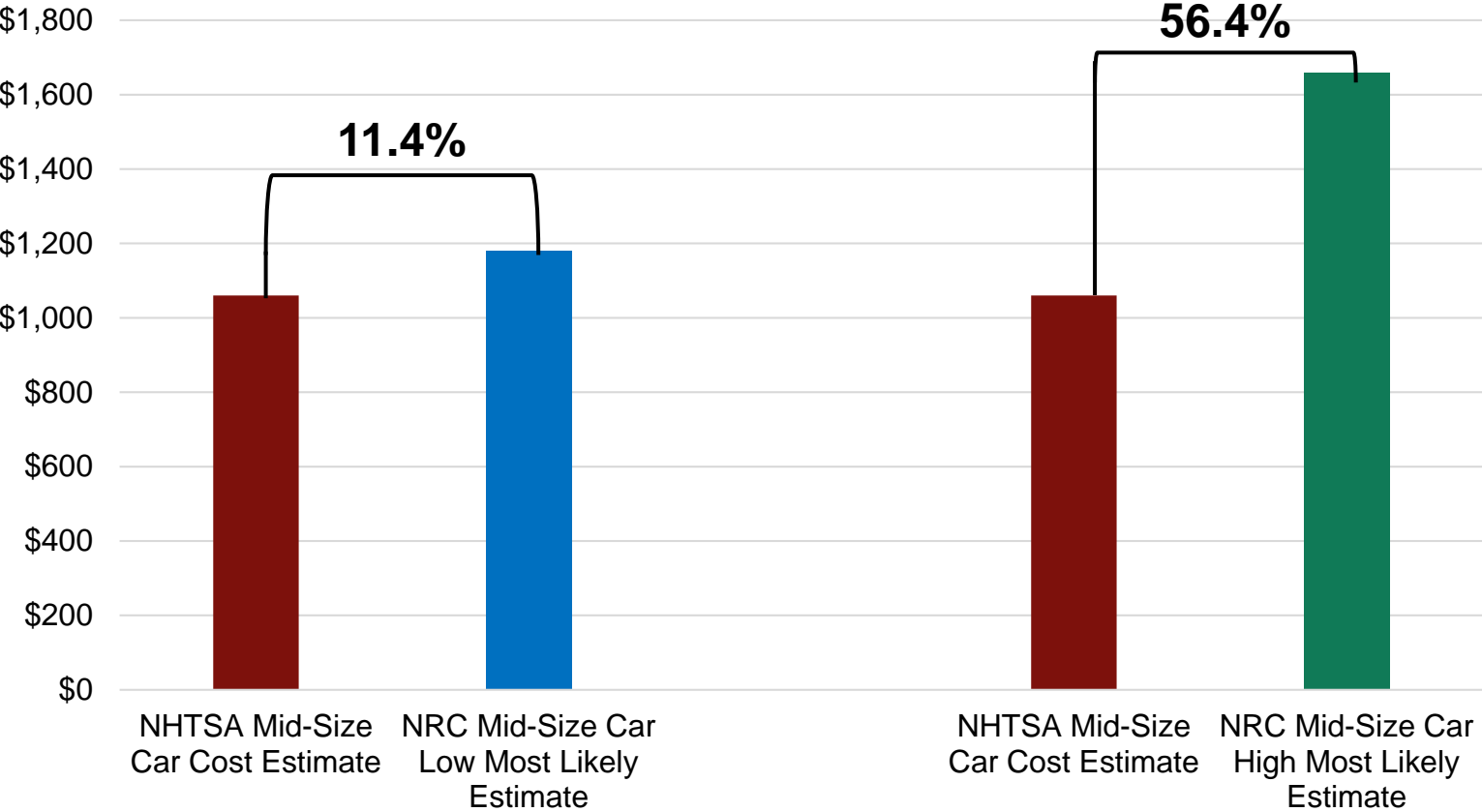
# Price premium for the average Light-Duty Vehicle due to the CAFE/GHG standards



Source of EPA figures: Federal Register, Table I-24, page 62665

Source of NHTSA figures: Federal Register, Table I-15, pages 62659-62660

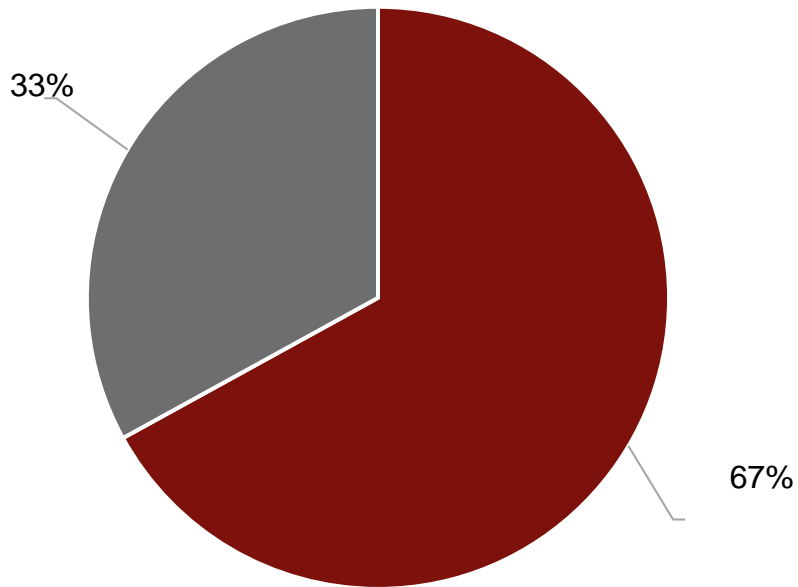
# Incremental Cost of Producing a Mid-Size Car: NRC Low Most Likely and High Most Likely Estimates, MY 2025



Source of data: NRC (2015)

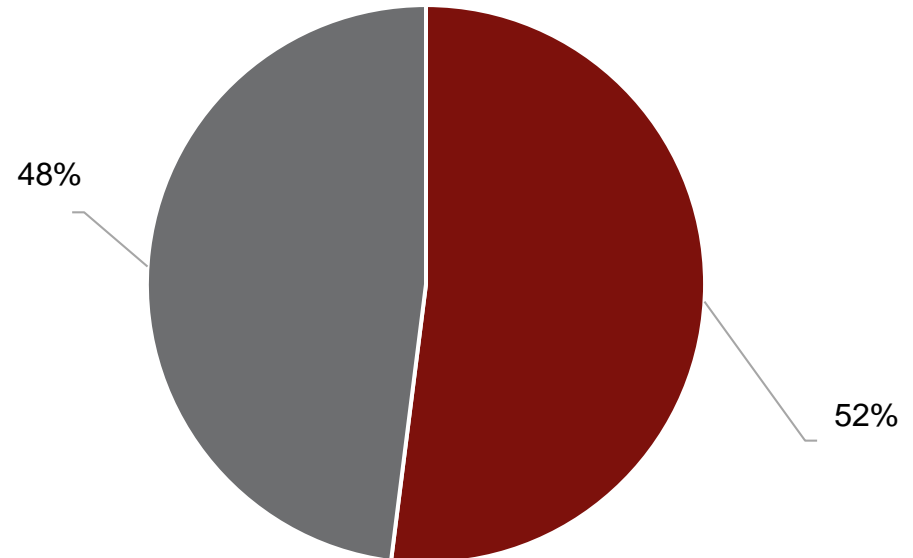
# Market Share

2012 Projection for 2025 (AEO 2012)



■ Passenger ■ SUV/light trucks

2016 Projection for 2025 (AEO 2015)



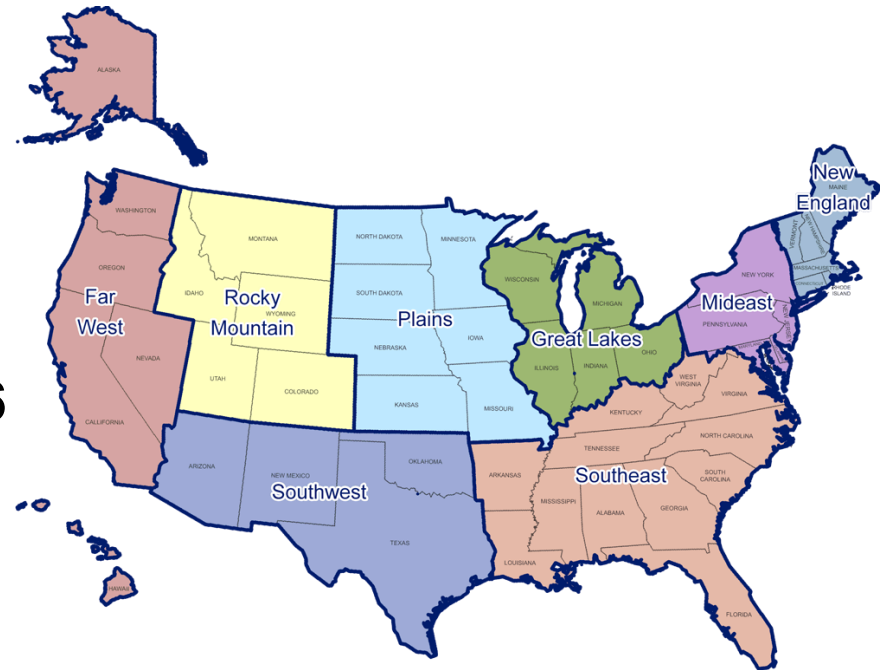
■ Passenger ■ SUV/light trucks

# MACROECONOMIC MODELING



# Model

- REMI PI+ 2.0.2: input-output, computable general equilibrium, econometric, and economic geography modeling components
- 160-industry-sector, 9-region
- Baseline: Standards freeze at 2016
- Analysis: 2017-2035
- Indicators: Employment, GDP, Personal Disposable Income

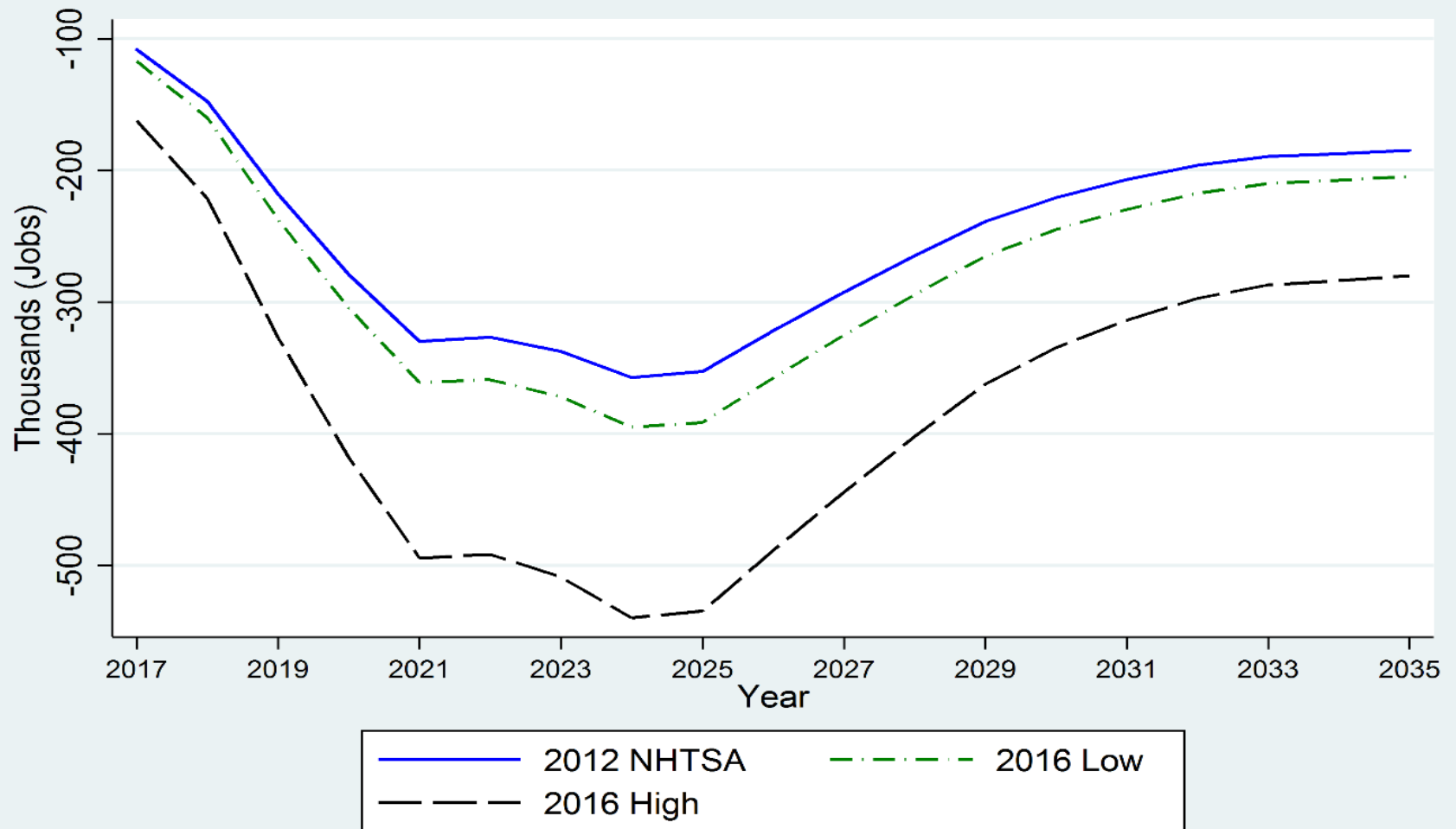


Source of Map: U.S. BEA, <http://united-states.reaproject.org/>

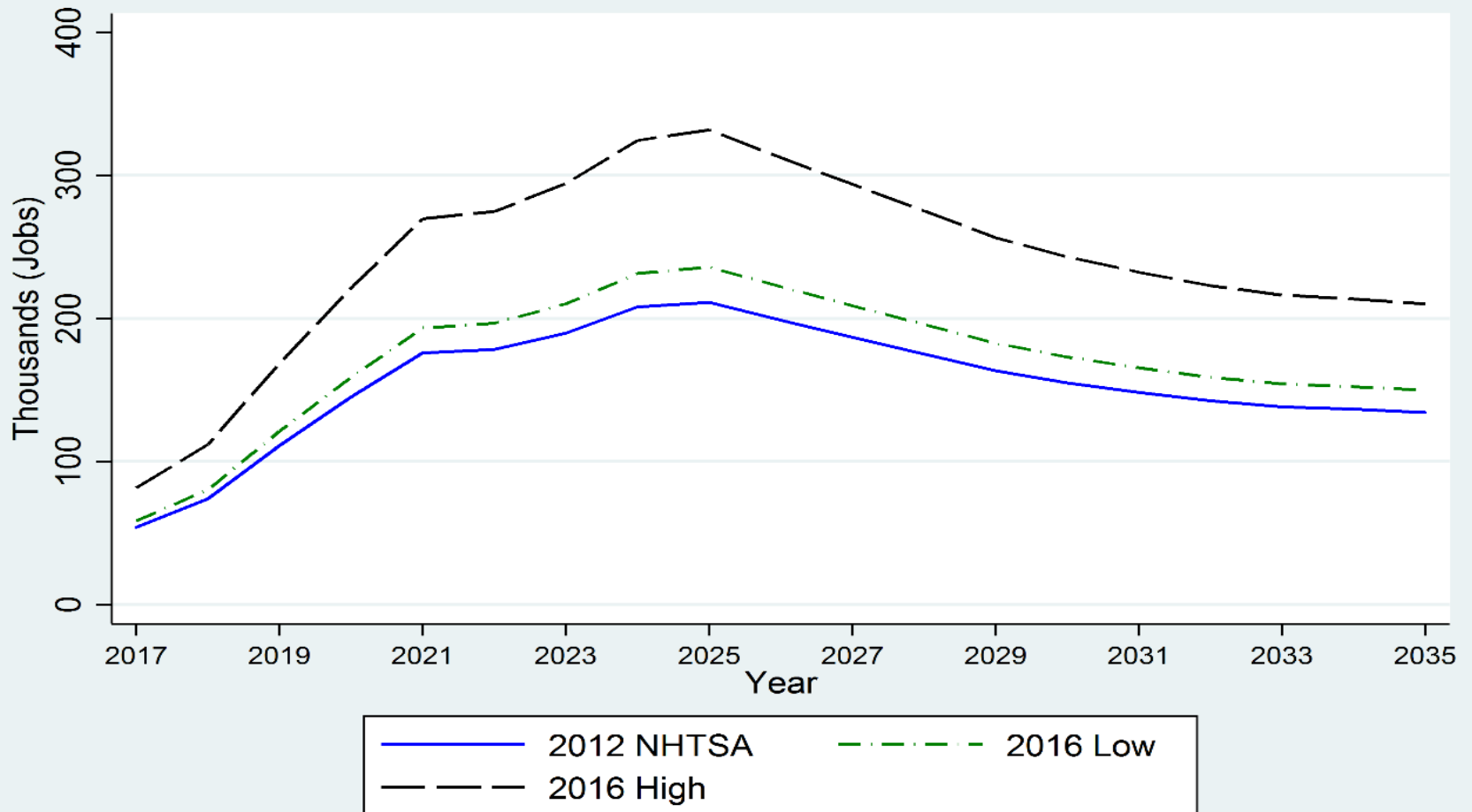
# Regulatory Mechanisms

1. **Price Premium** on Vehicle Consumers  
(Individuals, Government, Industry)
  2. **Auto Industry Innovation** in the auto supply chain
  3. **Gas Savings** for all Vehicle Consumers  
(Individuals, Government, Industry)
- The scope does not include environmental or security impacts

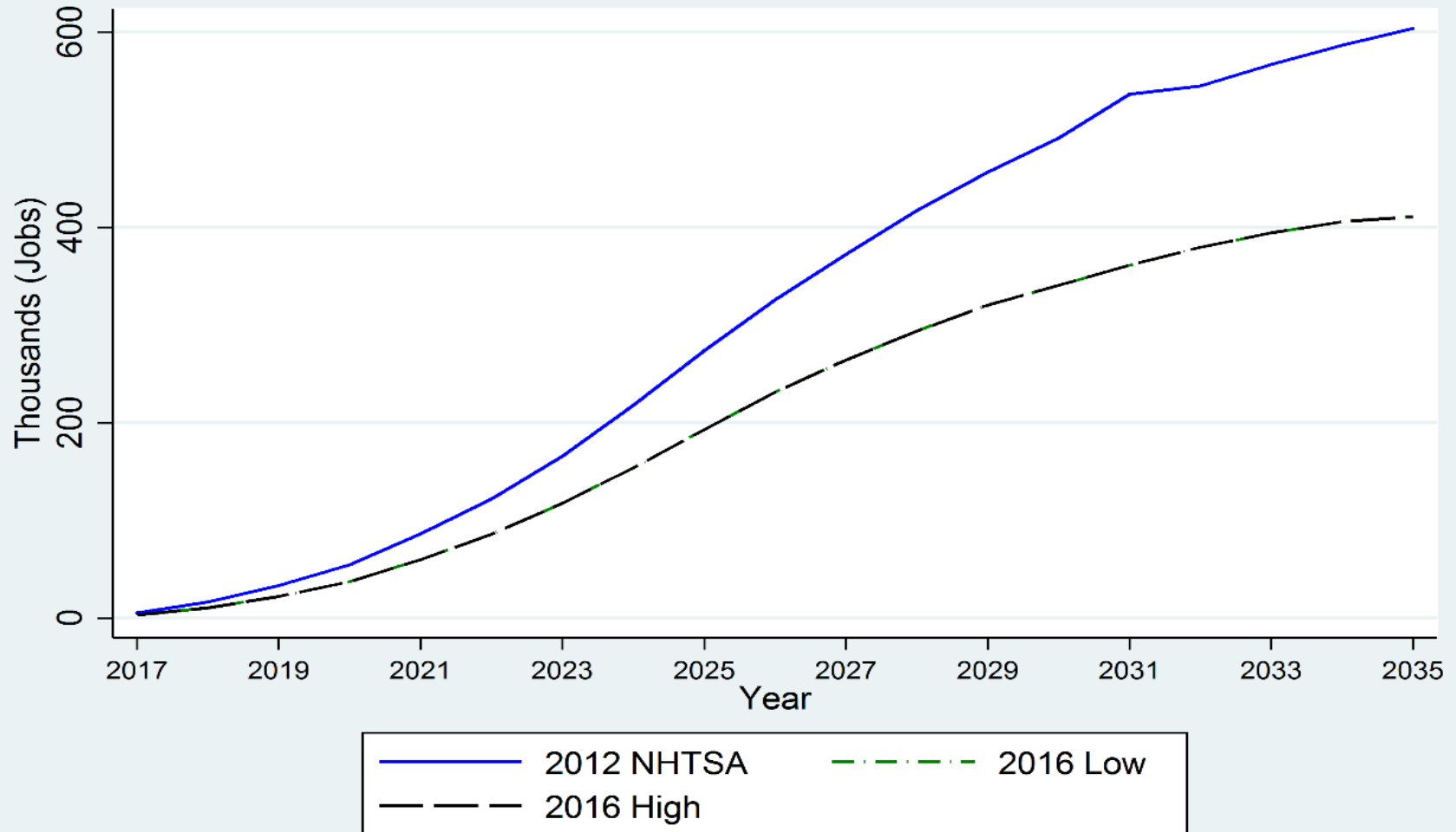
# Price Premium: Employment



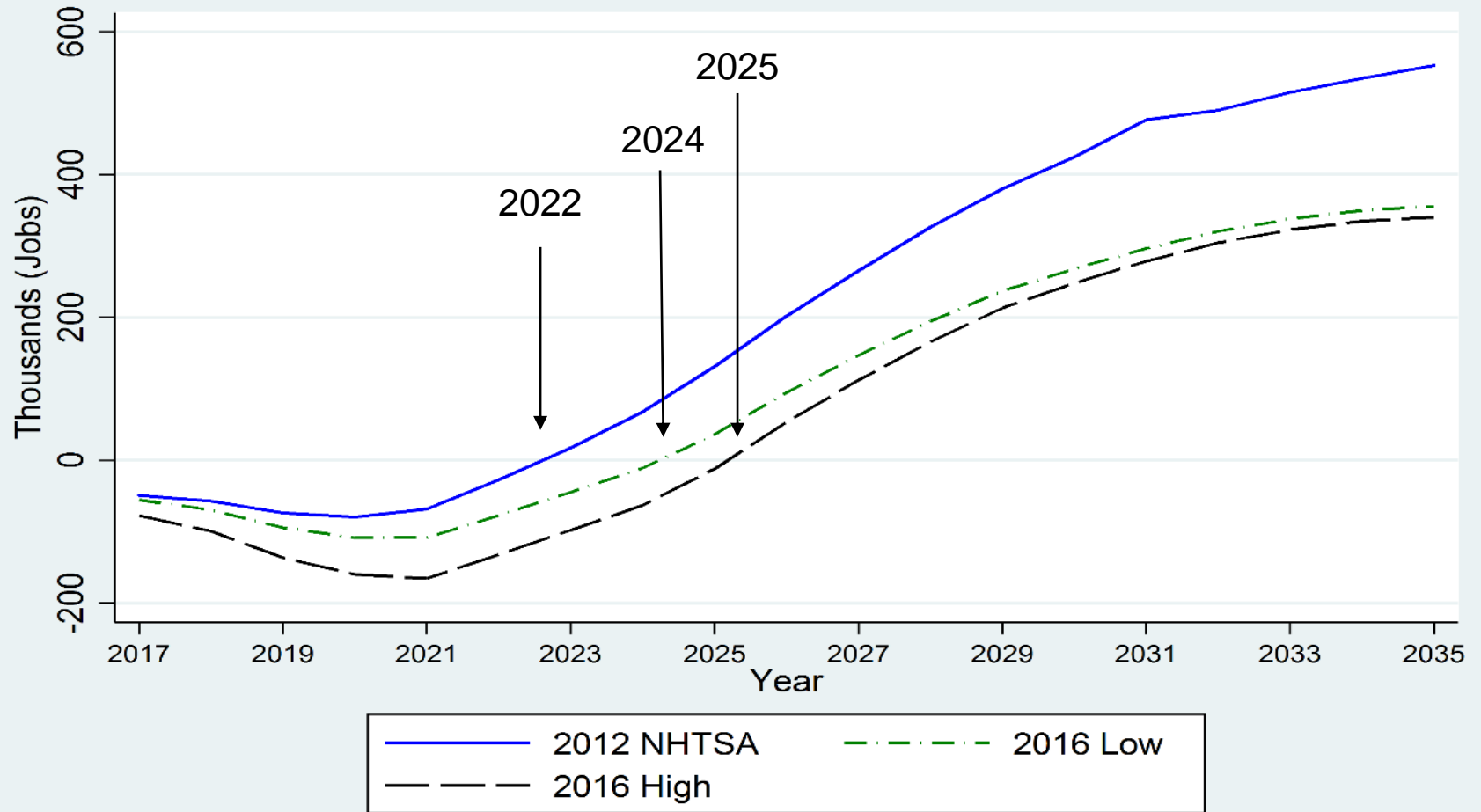
# Auto Industry Innovation: Employment



# Gas Savings (by Calendar Year): Employment



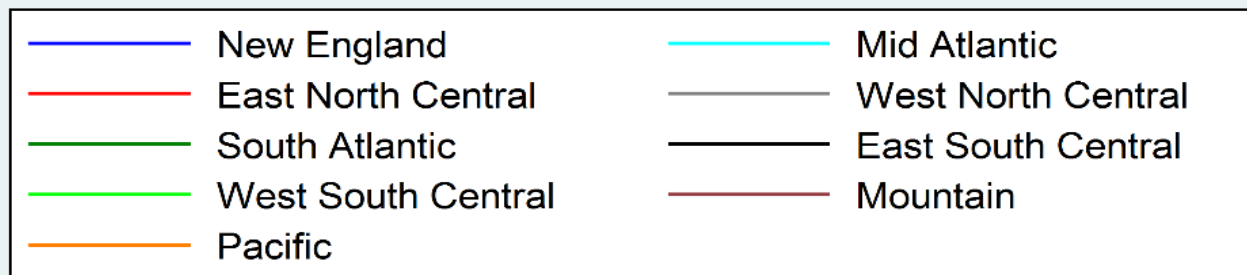
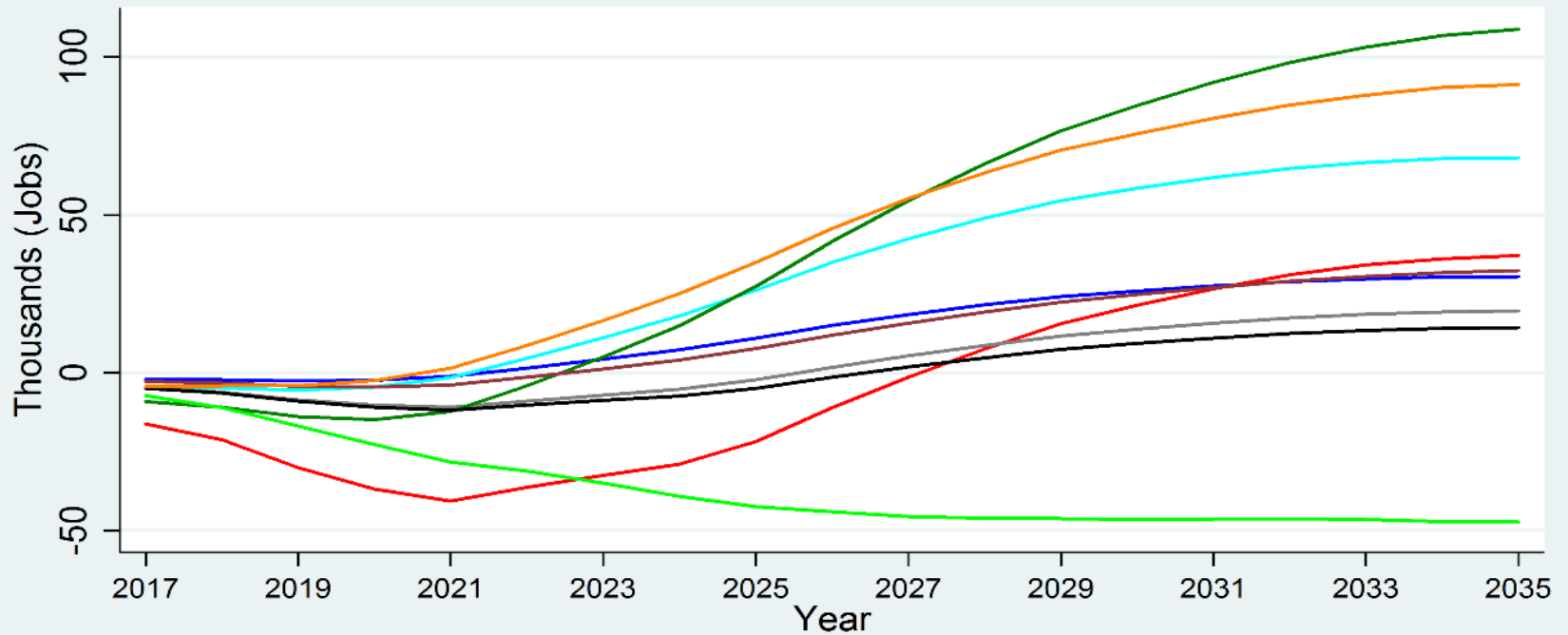
# Combined Effects



# Cumulative GDP

<b>Dataset and Indicator</b>	<b>2017-2025</b>	<b>2017-2035</b>	<b>Break-Even Year</b>
<b>NHTSA 2012 Perspective GDP (Billions 2009\$)</b>	-28.7	308.7	2027
<b>2016 Low Perspective GDP (Billions 2009\$)</b>	-58.9	148.5	2030
<b>2016 High Perspective GDP (Billions 2009\$)</b>	-94.9	93.4	2032

# Regional Combined Effects





# Sensitivity Analyses

- Location of supply chain innovation: percent in U.S. vs. elsewhere
- Gas revenue recycling
- Location of oil supply reductions
- Gas prices
- In future: assumption that 100% of price premium is used in supply chain innovation?

# Conclusion

- The economy recovers from the negative shock of vehicle prices:
  - Annual employment: by 2024 or 2025 under 2016 Perspective assumptions
  - Cumulative GDP: by 2027-2032
- Implications for Trump Administration decisions about the future of the CAFE/GHG program?