Rising Gas Prices Effect on Transportation Industry

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what does REMI say?℠

Agenda

- Topic Overview
- Potential impacts
- Model Demo & Notable Results
- Discussion
- Q&A

Recent Transportation Trends

2020	2021	2022
• COVID-19 disrupted the world causing travel to be limited • Not only did it affect passenger travel, but also, the shipping and movement of goods across the country	• The $1.2 Trillion Bipartisan Infrastructure Bill was passed • Biden promised to end new drilling on federal land • As COVID scares dwindle, travel increased	• Russia-Ukraine War creates a de-globalization shift in America with our gas and oil industries • Crude oil up 41% YTD (MarketWatch) • Biden administration restarts oil and gas leases on federal lands

COVID-19 has changed the way the transportation industry is viewed, as well as how it is utilized. Following a successful worldwide vaccine effort, and lifts of all travel restrictions, a long-term shift in mobility patterns might emerge.

Why the increase in gas price?

End to New Drilling on Federal Land

- In 2021, the Biden party announced they were to end new drilling on federal land for the fight against climate change
- Even though the party has restarted drilling leases, we will not see these efforts for a least a year or two

De-Globalization of Gas and Oil

- Russia halted their international shipment of gas and oil causing the US to de-globalize our resources
- Since this is not a main source for the US, the prices have risen

Agenda

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- **Potential impacts**
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Economic Impacts Increased Gas Prices

How can the REMI model be used to understand and plan for the long and short-term impacts of increased gas and oil prices?

Labor Market Changes

Companies are squeezed with fuel costs leading to a much more competitive labor market

Economic Impact

Gas and oil industries benefit while consumers and other industries decline

Consumer Behavior

Consumers try to use less gas leading to less tourism and consumer spending

Carbon Impact

Increased prices lead to decreased fuel consumption and emissions

The Solution to De-Globalization of Gas

Diversion from Fossil Fuels

- EV's, FCEV's, public transit, active mobility
- Helps to alleviate our dependence on fossil fuels in transportation
- Leads to lower emissions in the long term

Issues: Lack this infrastructure and the cost of electric vehicles are still high

Drilling in America is Now Public

- U.S. crude has major impact on global prices
- Relatively short-term solution using existing infrastructure, job creation in relevant states

Issues: It does not address the larger issue of climate change

Agenda

Topic Overview

Potential Impacts

Model Demo & Notable Results

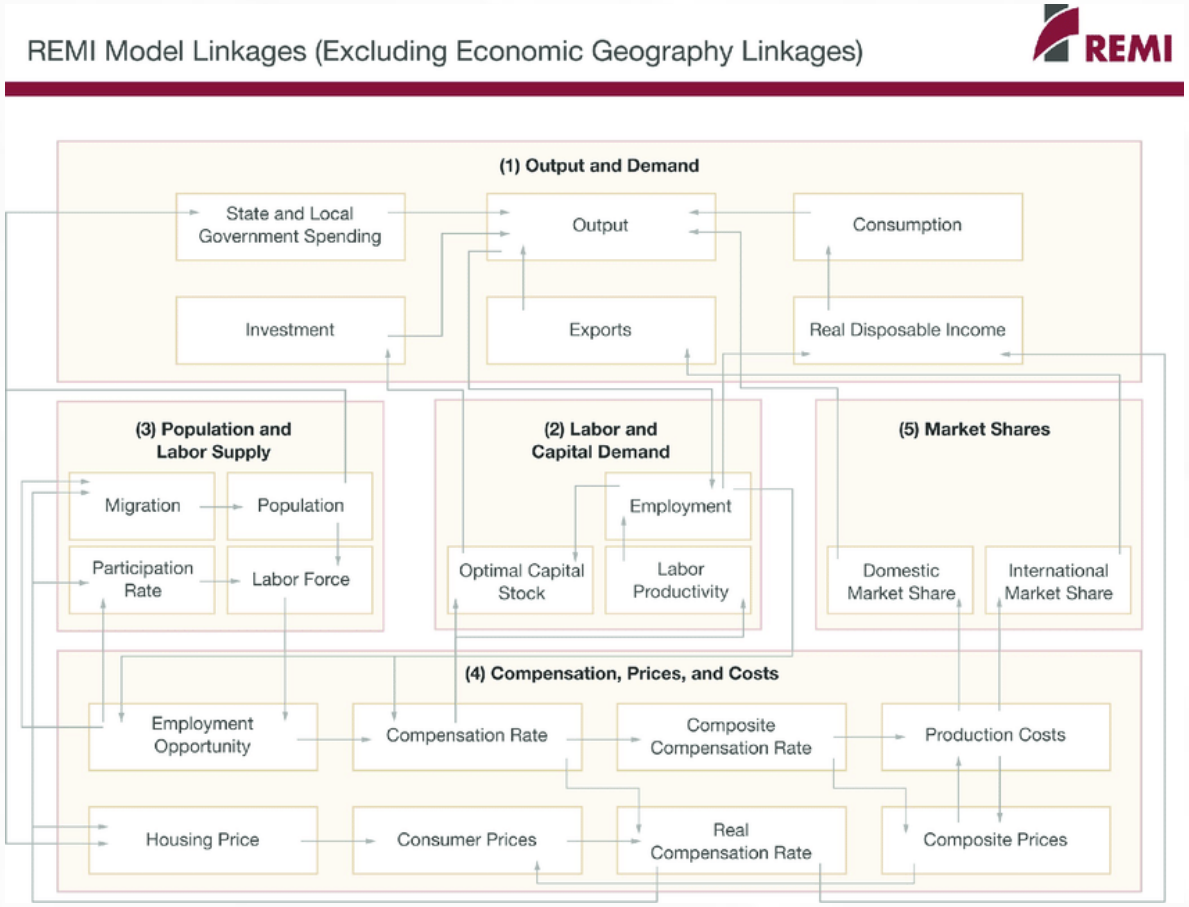
Discussion

Q&A

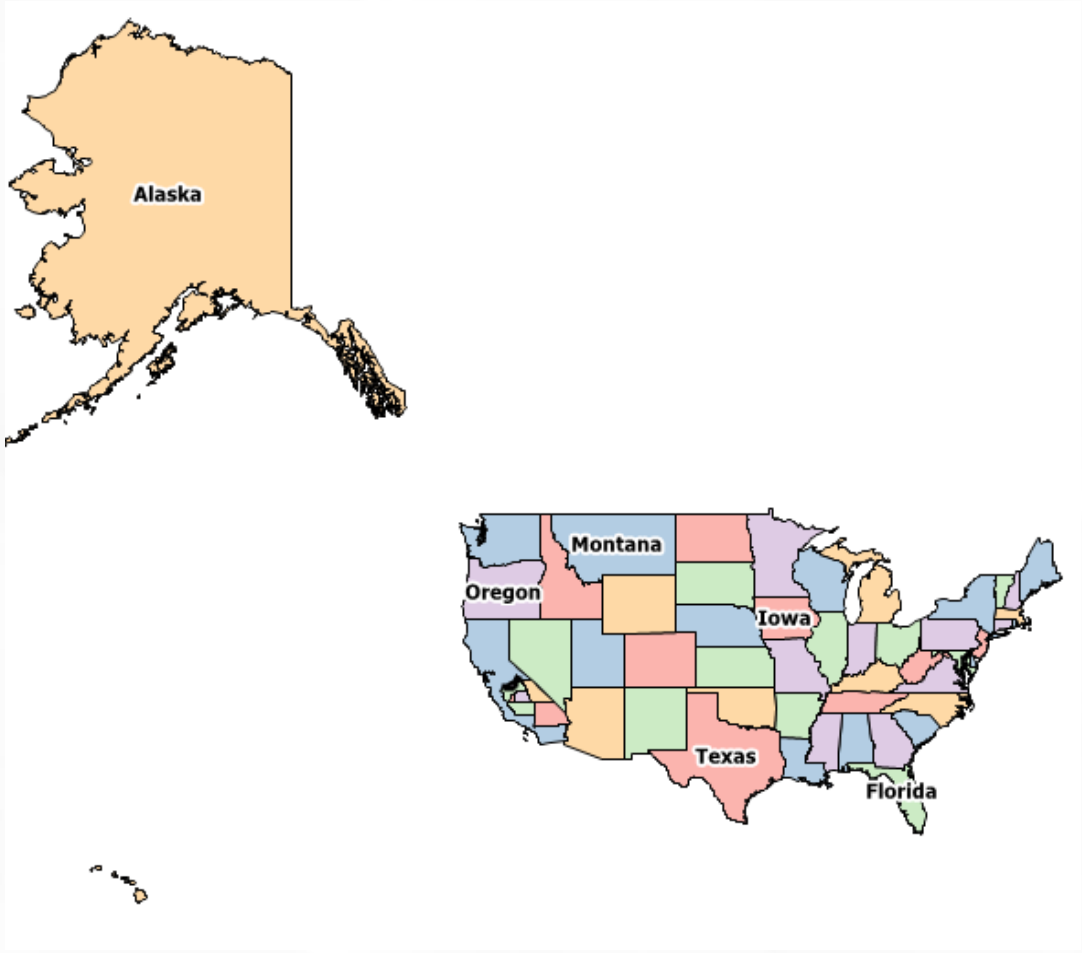
Model Simulation: REMI PI+

PI+ is the premier software solution for conducting dynamic macroeconomic impact analysis of public policy.

As our flagship model, PI+ specializes in generating realistic year-by-year estimates of the total local, state, and national effects of any specific policy initiative.



Model Simulation: REMI PI+



Using a regional model of all the states and select counties of California

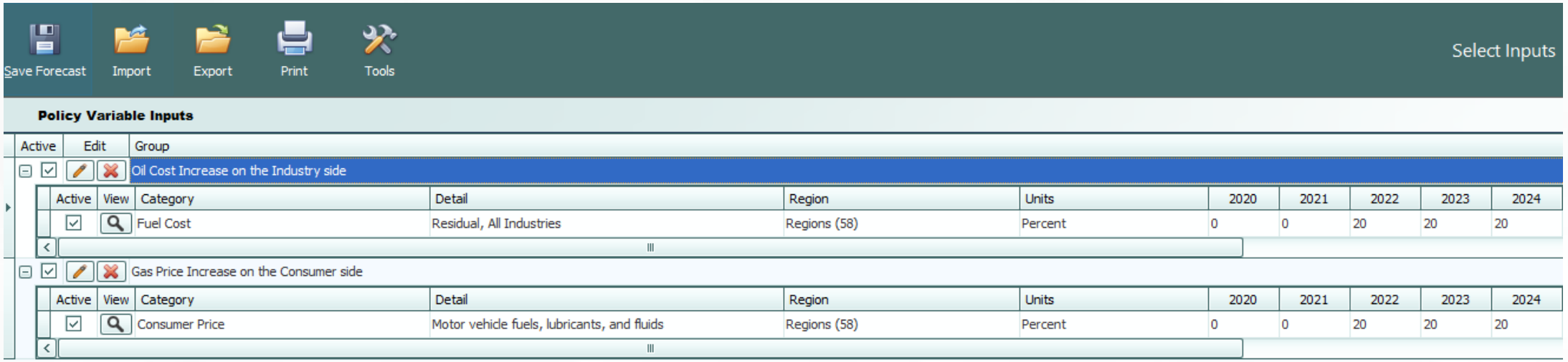
This will help show all the impacts across the country in terms of

- Trade flows
- Trade shares
- Different regional transportation industries

Model Simulation: REMI PI+

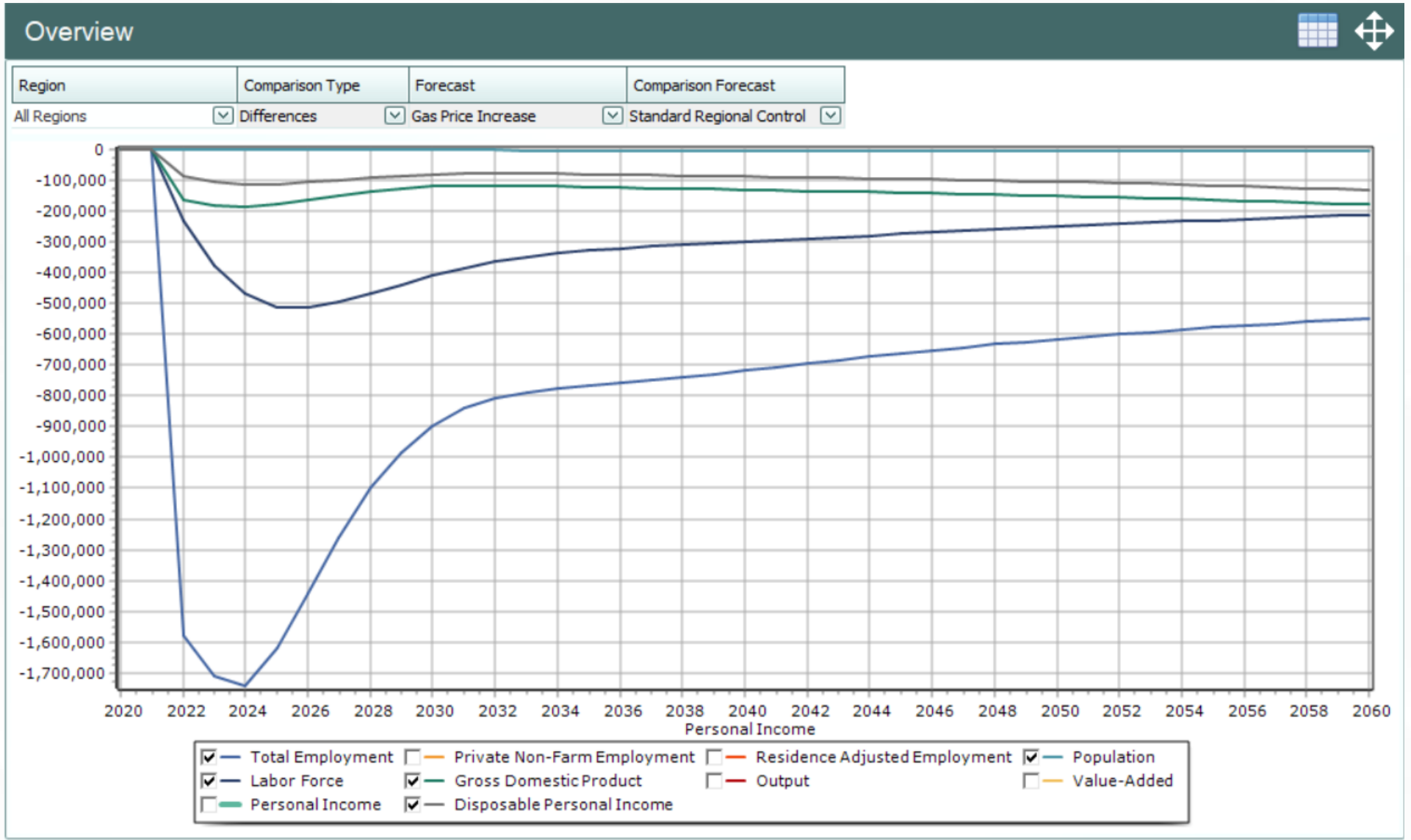
20% Increase in Gas and Oil Price

Inputs



Model Simulation: REMI PI+

20% Increase in Gas and Oil Price



Model Simulation: REMI PI+

20% Increase in Gas and Oil Price leads to a disproportional increase in costs for transportation

Fuel price surge pushes cost of running empty higher

Some carriers could see $2,000 to $3,000 per truck in incremental deadhead expense

Cost of airline tickets going up as jet fuel costs rise

Consumption Commodity Prices

Region	Category	Comparison Type	Forecast	Comparison Forecast
All Regions	Consumption Commodity Prices	Differences	Gas Price Increase	Standard Regional Control

Commodity	Units	2020	2021	2022	2023	2024	2025	2026	2027
Motor vehicle fuels, lubricants, and fluids	2012=1 (Nation)	0.000	0.000	+0.159	+0.160	+0.162	+0.165	+0.168	+0.171
Air transportation	2012=1 (Nation)	0.000	0.000	+0.022	+0.020	+0.020	+0.020	+0.021	+0.021
Postal and delivery services	2012=1 (Nation)	0.000	0.000	+0.020	+0.020	+0.020	+0.020	+0.020	+0.021
Water transportation	2012=1 (Nation)	0.000	0.000	+0.018	+0.017	+0.017	+0.017	+0.018	+0.018
Ground transportation	2012=1 (Nation)	0.000	0.000	+0.009	+0.007	+0.007	+0.007	+0.007	+0.007

FUEL

College students thought they would finally get a good spring break. Now, fuel prices are ruining it.

BY CARMELA CHIRINOS

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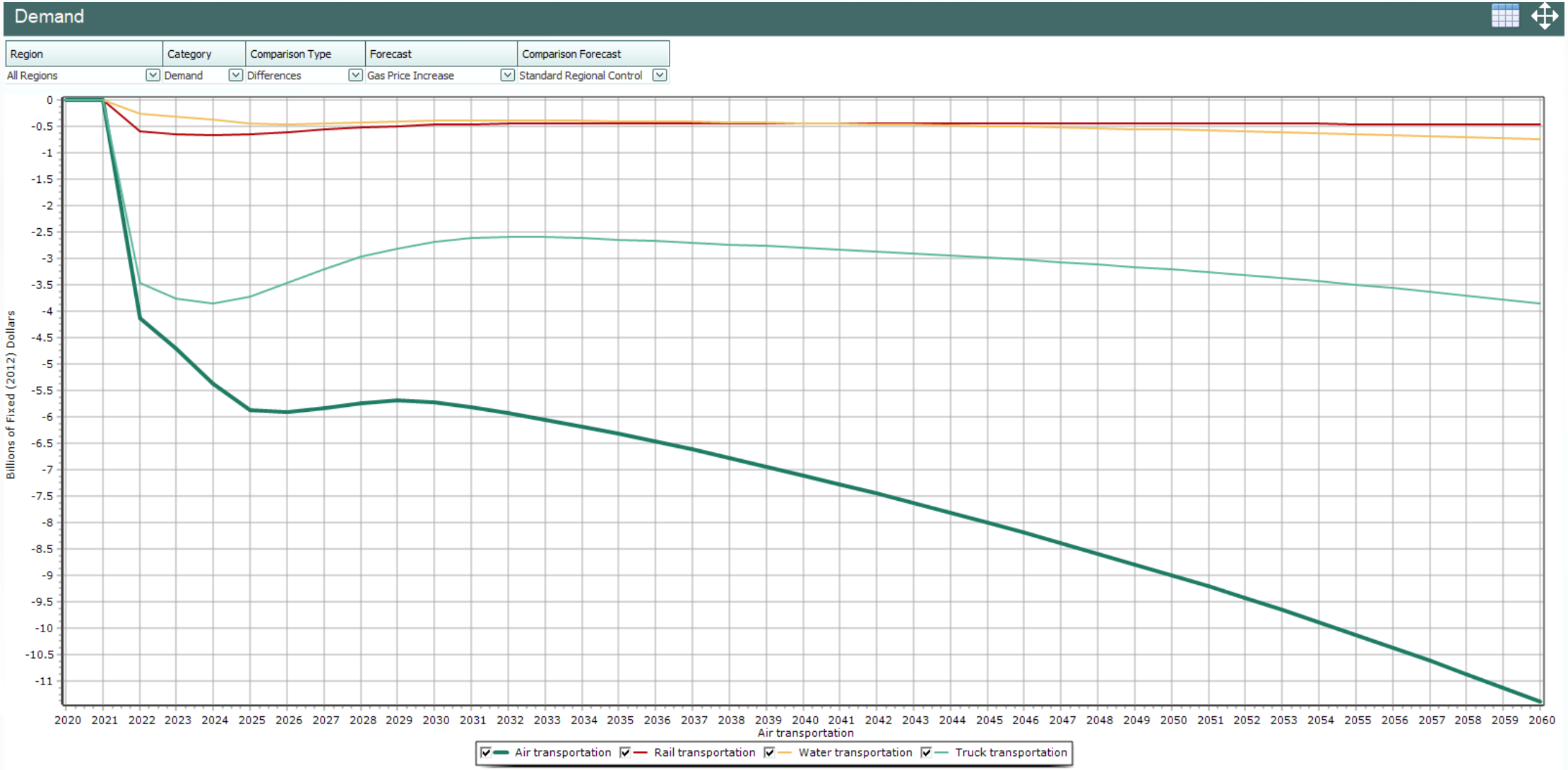
Model Simulation: REMI PI+

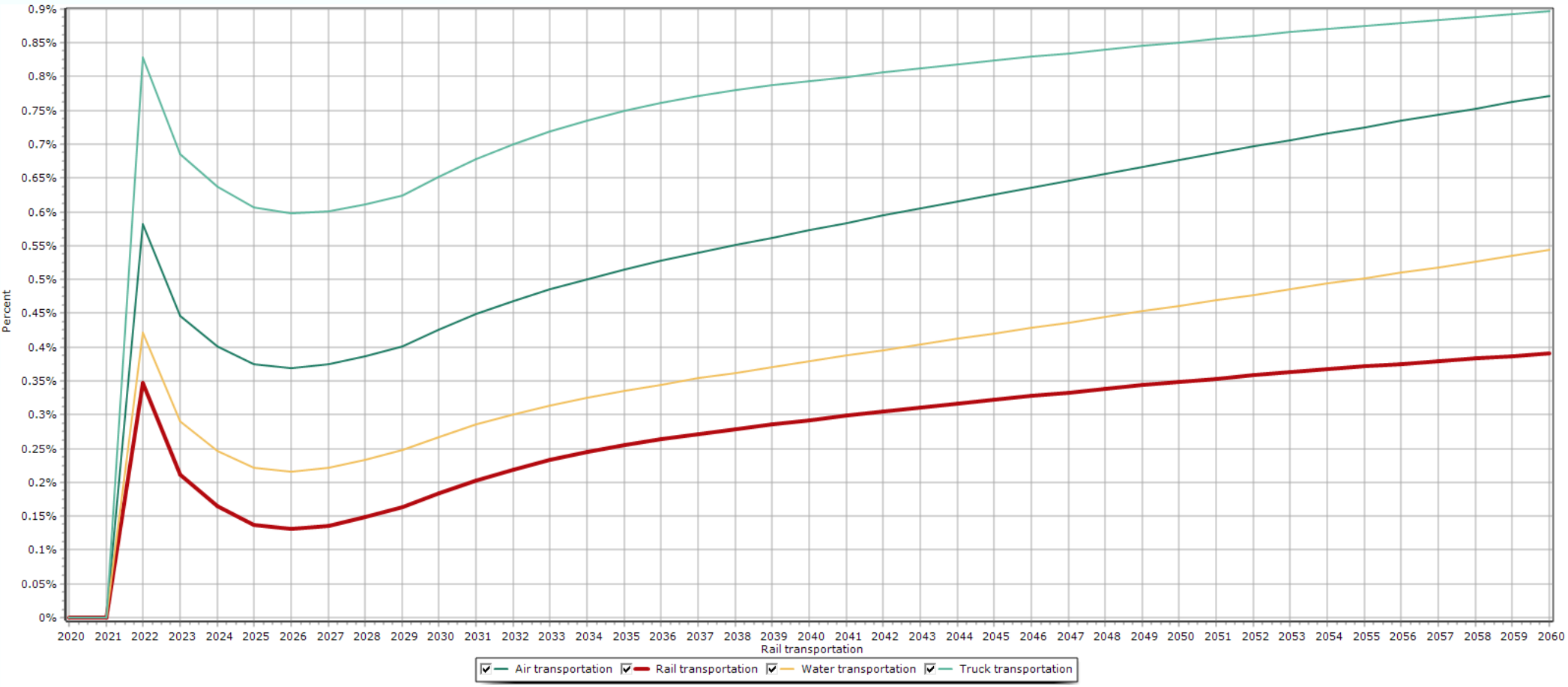
20% Increase in Gas and Oil Price



Model Simulation: REMI PI+

20% Increase in Gas and Oil Price

Transportation Output



Relative input costs in all travel industries are increasing

Truck and air transportation are hit the hardest with increased input costs

Model Simulation: REMI PI+

20% Increase in Gas and Oil Price

Transportation Output

Employment by Industry

Region	Category	Comparison Type	Forecast	Comparison Forecast
All Regions	Employment	% Change	Gas Price Increase	Standard Regional Control

Industry	Units	2020	2021	2022	2023	2024	2025	2026	2027
Air transportation	Percent	0.000%	0.000%	-1.745%	-1.894%	-2.002%	-2.012%	-1.930%	-1.845%
Rail transportation	Percent	0.000%	0.000%	-0.821%	-0.919%	-0.941%	-0.883%	-0.788%	-0.680%
Water transportation	Percent	0.000%	0.000%	-0.891%	-1.061%	-1.157%	-1.149%	-1.072%	-0.970%
Truck transportation	Percent	0.000%	0.000%	-0.948%	-1.003%	-0.992%	-0.896%	-0.770%	-0.638%

Employment by Industry

Region	Category	Comparison Type	Forecast	Comparison Forecast
All Regions	Employment	Differences	Gas Price Increase	Standard Regional Control

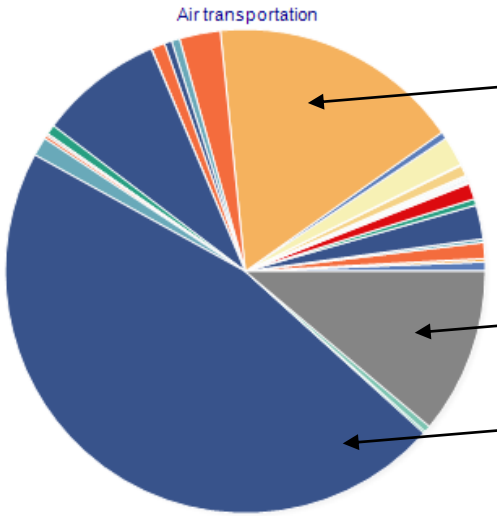
Industry	Units	2020	2021	2022	2023	2024	2025	2026	2027
Air transportation	Thousands (Jobs)	0.000	0.000	-7.120	-8.397	-9.619	-10.451	-10.377	-10.038
Rail transportation	Thousands (Jobs)	0.000	0.000	-1.439	-1.585	-1.601	-1.495	-1.326	-1.135
Water transportation	Thousands (Jobs)	0.000	0.000	-0.432	-0.538	-0.625	-0.674	-0.672	-0.603
Truck transportation	Thousands (Jobs)	0.000	0.000	-22.380	-23.282	-22.711	-20.480	-17.503	-14.411

- Employment decreases by the highest percentage amount for air transportation
- Employment decreases the most overall however in trucking

Model Simulation: REMI PI+

20% Increase in Gas and Oil Price

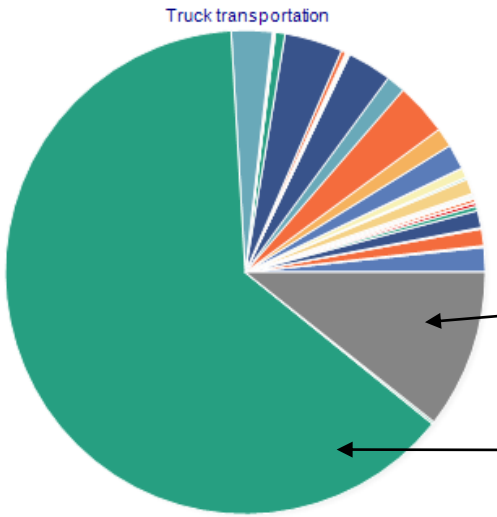
Truck and Air Transportation Employment Results



Information and Record Clerks (68 thousand jobs)

Material Moving Workers (44 thousand jobs)

Air Transportation Workers (185 thousand jobs)



Material Moving Workers (44 thousand jobs)

Motor Vehicle Operators (1480 thousand jobs)

- Employment decreases the most in the motor vehicle operators
- Employment decreases are followed by material moving workers in both industries

Model Simulation: REMI PI+

Trade Flows

Destination	Year	Category	Industry
Idaho	2022	Trade Flows	All Industries

Origin	Units	Data
Delaware	Billions of Fixed (2012) Dollars	-0.00064
Florida	Billions of Fixed (2012) Dollars	-0.00574
Georgia	Billions of Fixed (2012) Dollars	-0.00546
Hawaii	Billions of Fixed (2012) Dollars	-0.00129
Iowa	Billions of Fixed (2012) Dollars	-0.00479
Idaho	Billions of Fixed (2012) Dollars	-0.80994
Illinois	Billions of Fixed (2012) Dollars	-0.01065
Indiana	Billions of Fixed (2012) Dollars	-0.00862
Kansas	Billions of Fixed (2012) Dollars	-0.00729
Kentucky	Billions of Fixed (2012) Dollars	-0.00353
Louisiana	Billions of Fixed (2012) Dollars	-0.01863
Massachusetts	Billions of Fixed (2012) Dollars	-0.00366
Maryland	Billions of Fixed (2012) Dollars	-0.00149
Maine	Billions of Fixed (2012) Dollars	-0.00056
Michigan	Billions of Fixed (2012) Dollars	-0.01012
Minnesota	Billions of Fixed (2012) Dollars	-0.00810
Missouri	Billions of Fixed (2012) Dollars	-0.00473
Mississippi	Billions of Fixed (2012) Dollars	-0.00337
Montana	Billions of Fixed (2012) Dollars	-0.02176
North Carolina	Billions of Fixed (2012) Dollars	-0.00502
North Dakota	Billions of Fixed (2012) Dollars	-0.00403
Nebraska	Billions of Fixed (2012) Dollars	-0.00315
New Hampshire	Billions of Fixed (2012) Dollars	-0.00071
New Jersey	Billions of Fixed (2012) Dollars	-0.00314
New Mexico	Billions of Fixed (2012) Dollars	-0.00477
Nevada	Billions of Fixed (2012) Dollars	-0.01158
New York	Billions of Fixed (2012) Dollars	-0.01133
Ohio	Billions of Fixed (2012) Dollars	-0.00927
Oklahoma	Billions of Fixed (2012) Dollars	-0.00577
Oregon	Billions of Fixed (2012) Dollars	-0.01602
Pennsylvania	Billions of Fixed (2012) Dollars	-0.00637
Rhode Island	Billions of Fixed (2012) Dollars	-0.00042
South Carolina	Billions of Fixed (2012) Dollars	-0.00257
South Dakota	Billions of Fixed (2012) Dollars	-0.00178
Tennessee	Billions of Fixed (2012) Dollars	-0.00515
Texas	Billions of Fixed (2012) Dollars	-0.07149
Utah	Billions of Fixed (2012) Dollars	-0.03477
Virginia	Billions of Fixed (2012) Dollars	-0.00250
Vermont	Billions of Fixed (2012) Dollars	-0.00025
Washington	Billions of Fixed (2012) Dollars	-0.07955

Trade Flows

Trade Flows

Destination	Year	Category	Industry
Idaho	2060	Trade Flows	All Industries

Origin	Units	Data
Delaware	Billions of Fixed (2012) Dollars	-0.00052
Florida	Billions of Fixed (2012) Dollars	-0.00671
Georgia	Billions of Fixed (2012) Dollars	-0.00719
Hawaii	Billions of Fixed (2012) Dollars	-0.00272
Iowa	Billions of Fixed (2012) Dollars	-0.00540
Idaho	Billions of Fixed (2012) Dollars	-0.75779
Illinois	Billions of Fixed (2012) Dollars	-0.01133
Indiana	Billions of Fixed (2012) Dollars	-0.01104
Kansas	Billions of Fixed (2012) Dollars	-0.00745
Kentucky	Billions of Fixed (2012) Dollars	-0.00481
Louisiana	Billions of Fixed (2012) Dollars	-0.01910
Massachusetts	Billions of Fixed (2012) Dollars	-0.00351
Maryland	Billions of Fixed (2012) Dollars	-0.00191
Maine	Billions of Fixed (2012) Dollars	-0.00070
Michigan	Billions of Fixed (2012) Dollars	-0.01536
Minnesota	Billions of Fixed (2012) Dollars	-0.00888
Missouri	Billions of Fixed (2012) Dollars	-0.00578
Mississippi	Billions of Fixed (2012) Dollars	-0.00370
Montana	Billions of Fixed (2012) Dollars	-0.02052
North Carolina	Billions of Fixed (2012) Dollars	-0.00768
North Dakota	Billions of Fixed (2012) Dollars	-0.00364
Nebraska	Billions of Fixed (2012) Dollars	-0.00355
New Hampshire	Billions of Fixed (2012) Dollars	-0.00076
New Jersey	Billions of Fixed (2012) Dollars	-0.00377
New Mexico	Billions of Fixed (2012) Dollars	-0.00463
Nevada	Billions of Fixed (2012) Dollars	-0.01396
New York	Billions of Fixed (2012) Dollars	-0.00891
Ohio	Billions of Fixed (2012) Dollars	-0.01095
Oklahoma	Billions of Fixed (2012) Dollars	-0.00579
Oregon	Billions of Fixed (2012) Dollars	-0.02039
Pennsylvania	Billions of Fixed (2012) Dollars	-0.00717
Rhode Island	Billions of Fixed (2012) Dollars	-0.00046
South Carolina	Billions of Fixed (2012) Dollars	-0.00364
South Dakota	Billions of Fixed (2012) Dollars	-0.00189
Tennessee	Billions of Fixed (2012) Dollars	-0.00736
Texas	Billions of Fixed (2012) Dollars	-0.07788
Utah	Billions of Fixed (2012) Dollars	-0.03897
Virginia	Billions of Fixed (2012) Dollars	-0.00309
Vermont	Billions of Fixed (2012) Dollars	-0.00028
Washington	Billions of Fixed (2012) Dollars	-0.09115

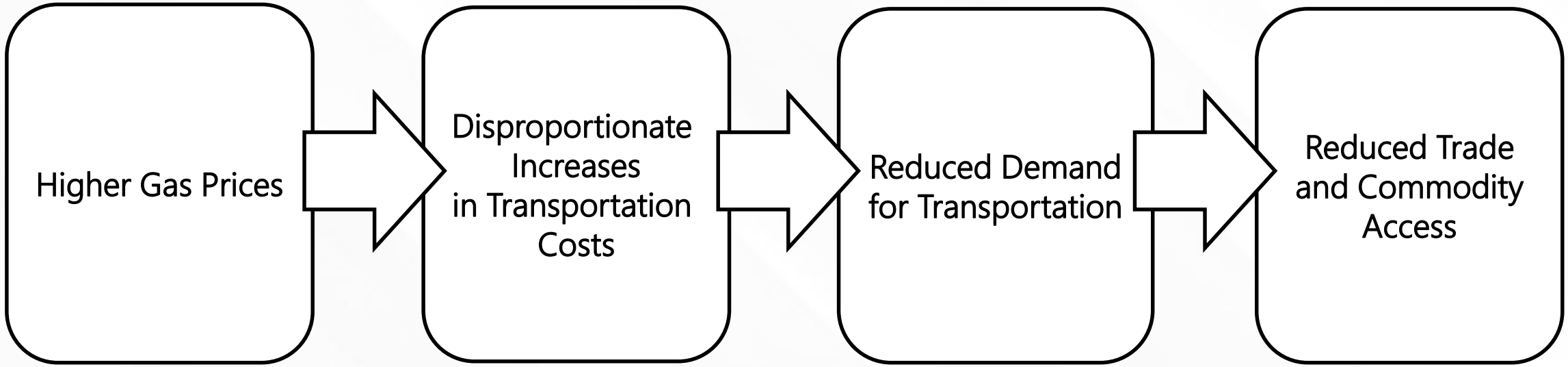
Idaho Trade Flows show long term reduction in trade between states

Transportation's disproportionate decline, especially in trucking and air transit, play a very large role

A reduction in trade harms the economy further

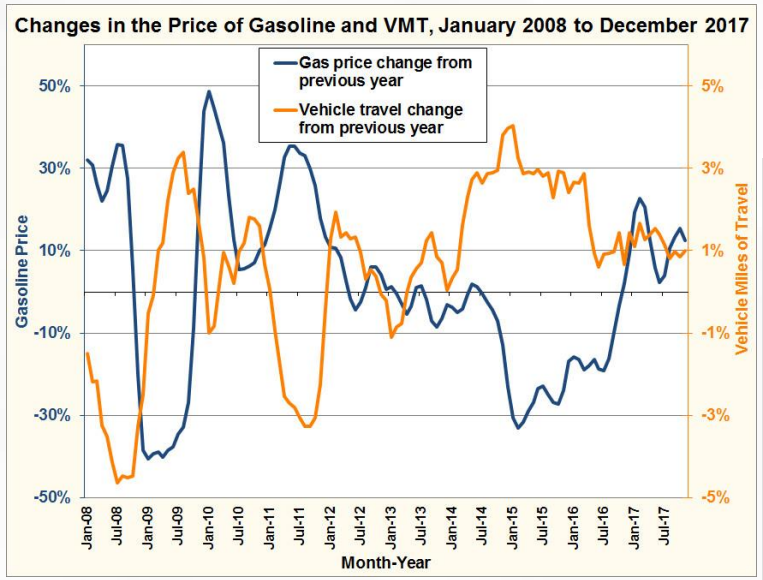
We see this across all states in the country

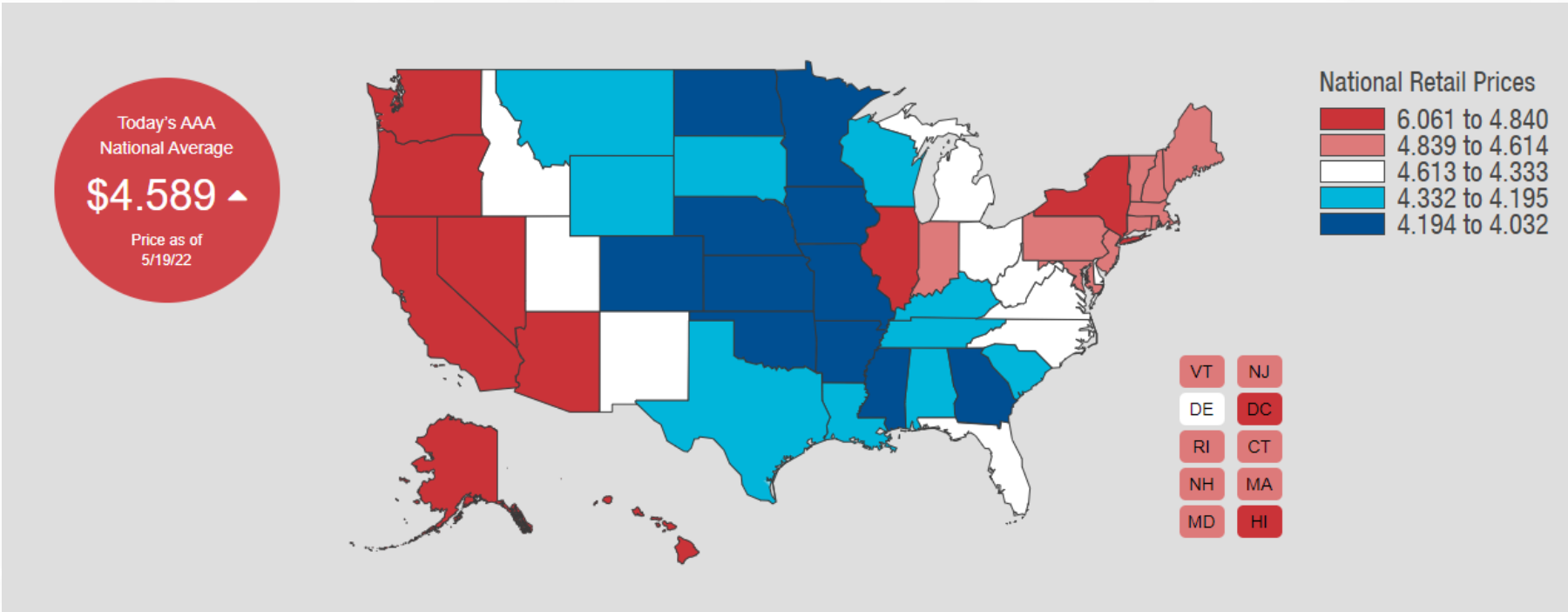
Model Simulation: REMI PI+



Gas Price Increases

- Prices highest in Northeast and West Coast states, lowest in the Midwest, South





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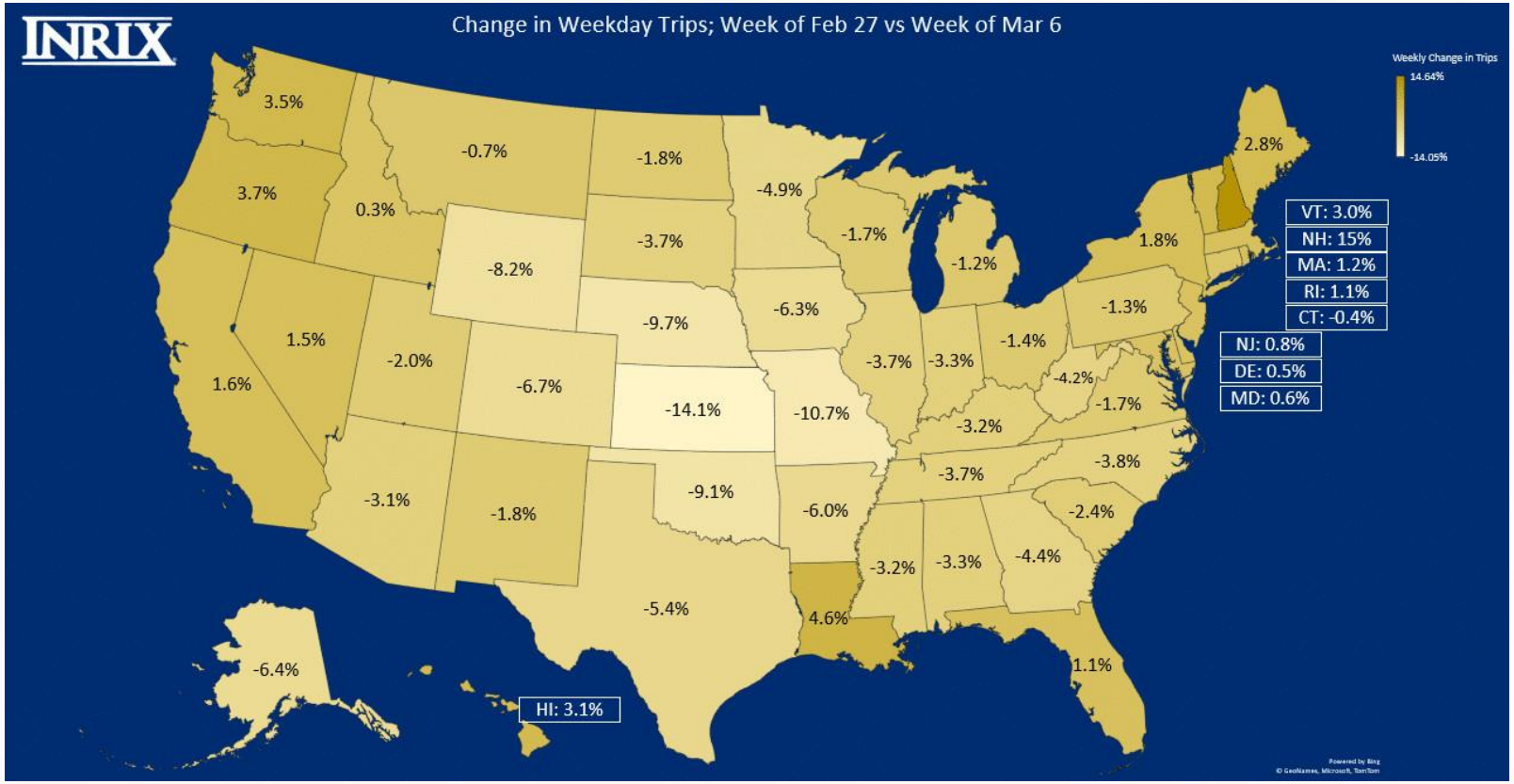
Reduced Auto Transportation

- Overall 2% decrease in weekday vehicle trips over a week period
- Despite relatively lower gas prices, trips reduced the most in Midwest states
  - Longer trips
  - Agricultural diesel costs



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Non-auto Trends

May 9, 2022
6:55 PM EDT
Last Updated 10 days ago

United States

U.S. passenger railroad Amtrak to increase trains as demand returns

By David Shepardson

2 minute read

March 18, 2022
4:30 PM EDT
Last Updated 2 months ago

The Great Reboot

U.S. booking sites seeing strong demand for 2022 travel

By Doyinsola Oladipo

3 minute read

CNBC TRAVEL

For the first time since the pandemic, leisure and business flights surpass 2019 levels

PUBLISHED THU, MAY 19 2022•5:21 AM EDT | UPDATED 5 HOURS AGO

Monica Buchanan Pitrelli
@MONICAPITRELLI

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LOGISTICS REPORT

Trucking Boom Is Hitting the Brakes as Freight Demand Slows

Rates are sliding and shipping demand and capacity appear to be coming into balance following a period of strong ea
companies

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Proposed Solution

- Biden is looking at reducing some of this squeeze with fuel prices by leasing more federal lands for drilling

- We will look at the hypothetical impact of this policy in Louisiana with increasing oil & gas extraction

Model Demo Set-Up

Hypothetical Results for Increased Drilling Leases and Lowered Prices

Biden Administration to Restart Oil, Gas Leasing on Public Lands

- Increase employment in the oil & gas extraction industry in Louisiana by 5%
- Decrease the price of gas and oil by 1% starting in 2026

Model Simulation: REMI PI+

5% increase in employment for Oil and Gas Extraction across all states
1% decrease in gas prices across the US

- *1% decrease in Consumer Price for Motor Vehicle Fuels*
- *1% decrease in Fuel Cost for Residual fuel type*

Inputs

Policy Variable Inputs

Increase in Gas and Oil Extraction in Louisiana

Active	View	Category	Detail	Region	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	203
☑	🔍	Employment	Industry (Exogenous Production): Oil and gas extraction	Louisiana	Percent	0	0	5	5	5	5	5	5	5	5	5	5	5	5	5

Reduction in Fuel Prices for Consumers

Active	View	Category	Detail	Region	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	203
☑	🔍	Consumer Price	Motor vehicle fuels, lubricants, and fluids	Regions (58)	Percent	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1

Fuel Cost Reduction for Industries

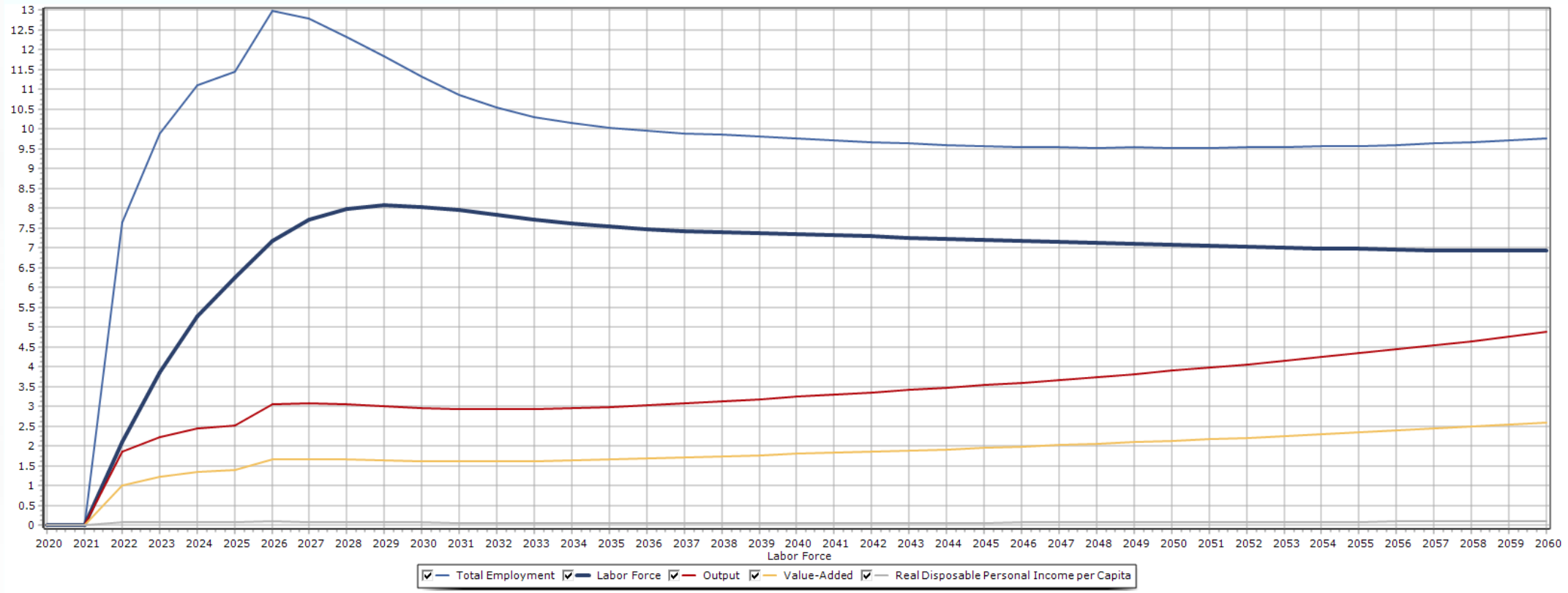
Active	View	Category	Detail	Region	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	203
☑	🔍	Fuel Cost	Residual, All Industries	Regions (58)	Percent	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1

Model Simulation: REMI PI+

Louisiana Results

Economic Summary

Region	Comparison Type	Forecast	Comparison Forecast
Louisiana	Differences	Regional Simulation 1	Standard Regional Control



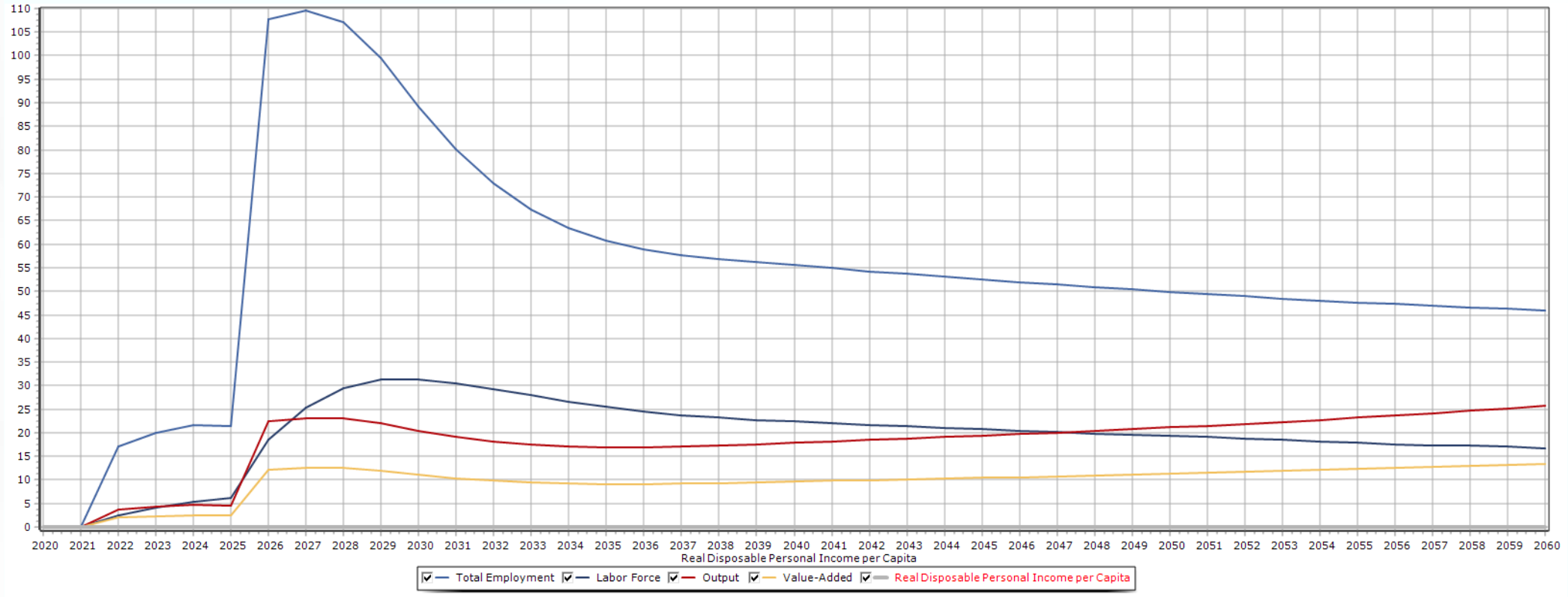
Category	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Total Employment	Thousands (Jobs)	0.000	0.000	+7.645	+9.893	+11.114	+11.434	+12.983	+12.789	+12.331	+11.846	+11.313	+10.868	+10.546	+10.309	+10.142	+10.027	+9.948	+9.892	+9.848	+9.801
Labor Force	Thousands	0.000	0.000	+2.100	+3.850	+5.266	+6.246	+7.175	+7.718	+7.980	+8.073	+8.040	+7.943	+7.829	+7.717	+7.619	+7.537	+7.473	+7.423	+7.392	+7.362
Output	Billions of Fixed (2012) Dollars	0.000	0.000	+1.859	+2.227	+2.441	+2.517	+3.057	+3.069	+3.039	+3.001	+2.957	+2.930	+2.923	+2.931	+2.953	+2.986	+3.028	+3.075	+3.127	+3.180
Value-Added	Billions of Fixed (2012) Dollars	0.000	0.000	+1.004	+1.215	+1.342	+1.393	+1.648	+1.661	+1.651	+1.638	+1.620	+1.611	+1.612	+1.621	+1.637	+1.658	+1.683	+1.711	+1.739	+1.767
Real Disposable Personal Income per Capita	Thousands of Fixed (2012) Dollars	0.000	0.000	+0.081	+0.082	+0.081	+0.072	+0.096	+0.084	+0.075	+0.068	+0.061	+0.057	+0.053	+0.051	+0.050	+0.050	+0.050	+0.050	+0.051	+0.051

Model Simulation: REMI PI+

US Results

Economic Summary

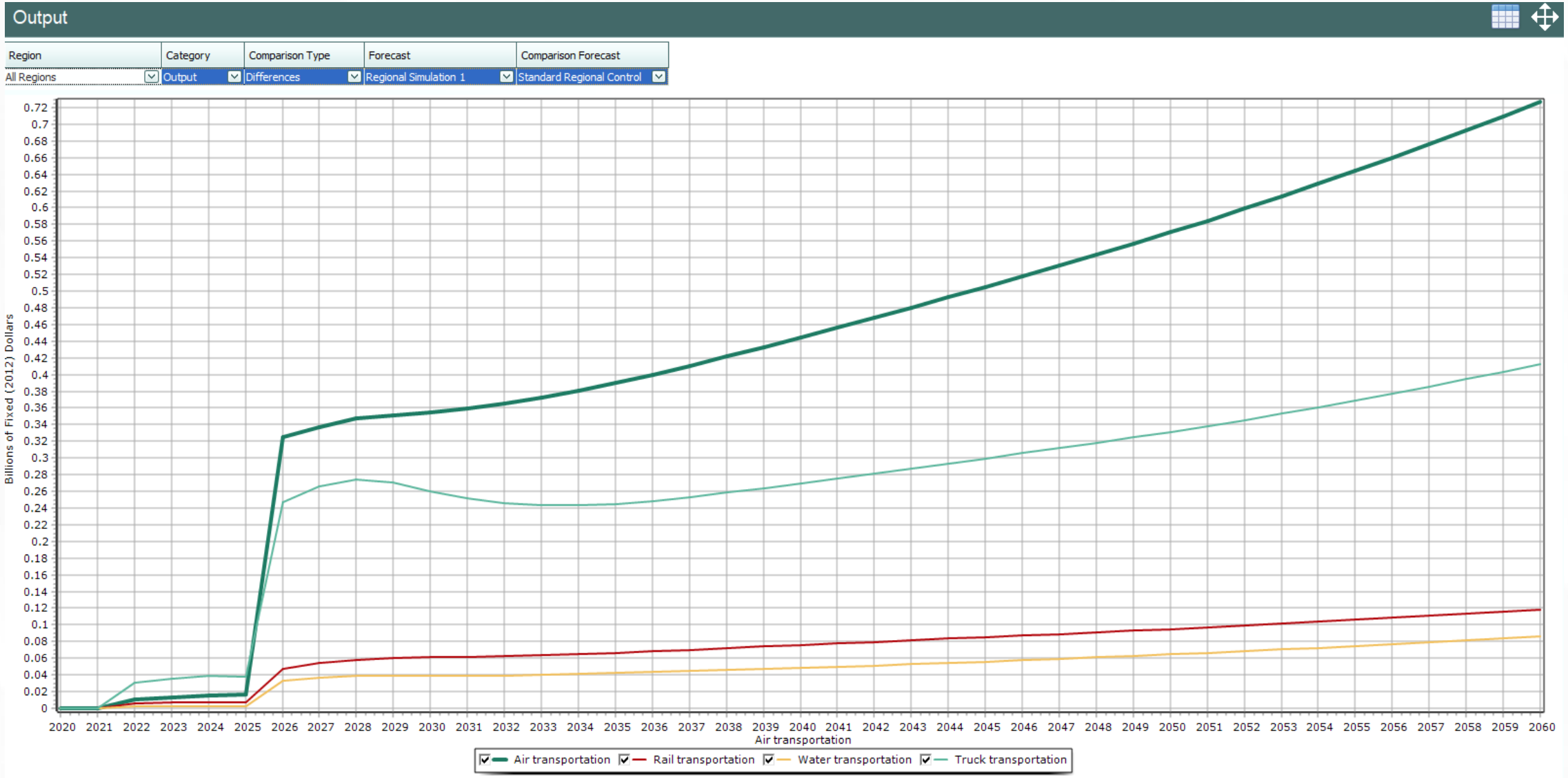
Region	Comparison Type	Forecast	Comparison Forecast
All Regions	Differences	Regional Simulation 1	Standard Regional Control



Category	Units	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Total Employment	Thousands (Jobs)	0.000	0.000	+17.015	+19.976	+21.679	+21.343	+107.753	+109.574	+107.085	+99.509	+89.254	+80.041	+72.822	+67.296	+63.360	+60.716	+58.937	+57.712	+56.860	+56.163
Labor Force	Thousands	0.000	0.000	+2.417	+4.110	+5.386	+6.094	+18.441	+25.323	+29.483	+31.323	+31.323	+30.493	+29.231	+27.920	+26.589	+25.446	+24.494	+23.771	+23.197	+22.756
Output	Billions of Fixed (2012) Dollars	0.000	0.000	+3.741	+4.305	+4.643	+4.629	+22.395	+23.102	+23.053	+22.026	+20.481	+19.124	+18.111	+17.414	+17.019	+16.877	+16.909	+17.058	+17.293	+17.568
Value-Added	Billions of Fixed (2012) Dollars	0.000	0.000	+2.026	+2.335	+2.528	+2.524	+12.200	+12.566	+12.542	+11.975	+11.116	+10.358	+9.793	+9.405	+9.187	+9.111	+9.131	+9.214	+9.341	+9.487
Real Disposable Personal Income per Capita	Thousands of Fixed (2012) Dollars	0.000	0.000	+0.003	+0.002	+0.003	+0.002	+0.035	+0.032	+0.032	+0.031	+0.030	+0.029	+0.029	+0.029	+0.029	+0.029	+0.030	+0.030	+0.030	+0.031

Model Simulation: REMI PI+

Revival of the Transportation Industry



Agenda

Topic Overview

Potential Impacts

Model Demo & Notable Results

Discussion

Q&A

Discussion

- Consumers are hurting with increased prices yet gas and oil industries are benefiting from this deglobalization, despite costs of divesting from Russia
  - Exxon - $9.3b Q1 2022 profits
  - Shell - $9.13b Q1 2022 profits

- We are seeing similar trends in agriculture with the conflict in Ukraine: while prices go up our natural resources are becoming more and more valuable in the global market
  - FAO Food Price Index up 12.6% in March
  - FAO Cereal Price Index up 17% in March
  - FAO Vegetable Oil Index up 23% in March

- Both are commodities the US has a global role in producing

Discussion

Environment Impact

- Crisis has forced us to reevaluate our dependence on gas & oil
- With rising prices, greater incentive for alternatives

Natural Resources

- US is rich with other natural resources
- With increased deglobalization and prices the US benefits

Electric Vehicle Adoption

- EV's seeing greater use, but not across the board
- Electricity has greater consistency, but EV components vulnerable

Transportation

- Change in demand not uniform
  - Modes
  - Sectors
  - Regions and states

Thank you for attending!

For more information, please contact
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Sources

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