Driving Change: The Economic Impact of Alternative Funding Mechanisms

Owen Karpeles, Alexander Infeld, Alexander Karhunen, Shreeya Gurav

Regional Economic Models, Inc.

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In this webinar, we will explore the possible methods for consistent infrastructure funding using REMI's Tax-PI and TranSight models. We will discuss a possible road usage fee in the form of a toll and the funds it would raise; an increase in the gas tax; and the overall economic impacts of each mechanism on a theoretical Colorado economy.

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Brief History

- **1991** - Colorado increased gas tax to $0.22/gallon

- **2020** - the Colorado Department of Transportation introduced 25-year statewide plan

- **2021** - Congress passed Infrastructure Investment and Jobs Act
  - the Colorado General Assembly passed SB 21-260

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Why Is This Important?

Economic Development

Congestion Costs

Supply Chain

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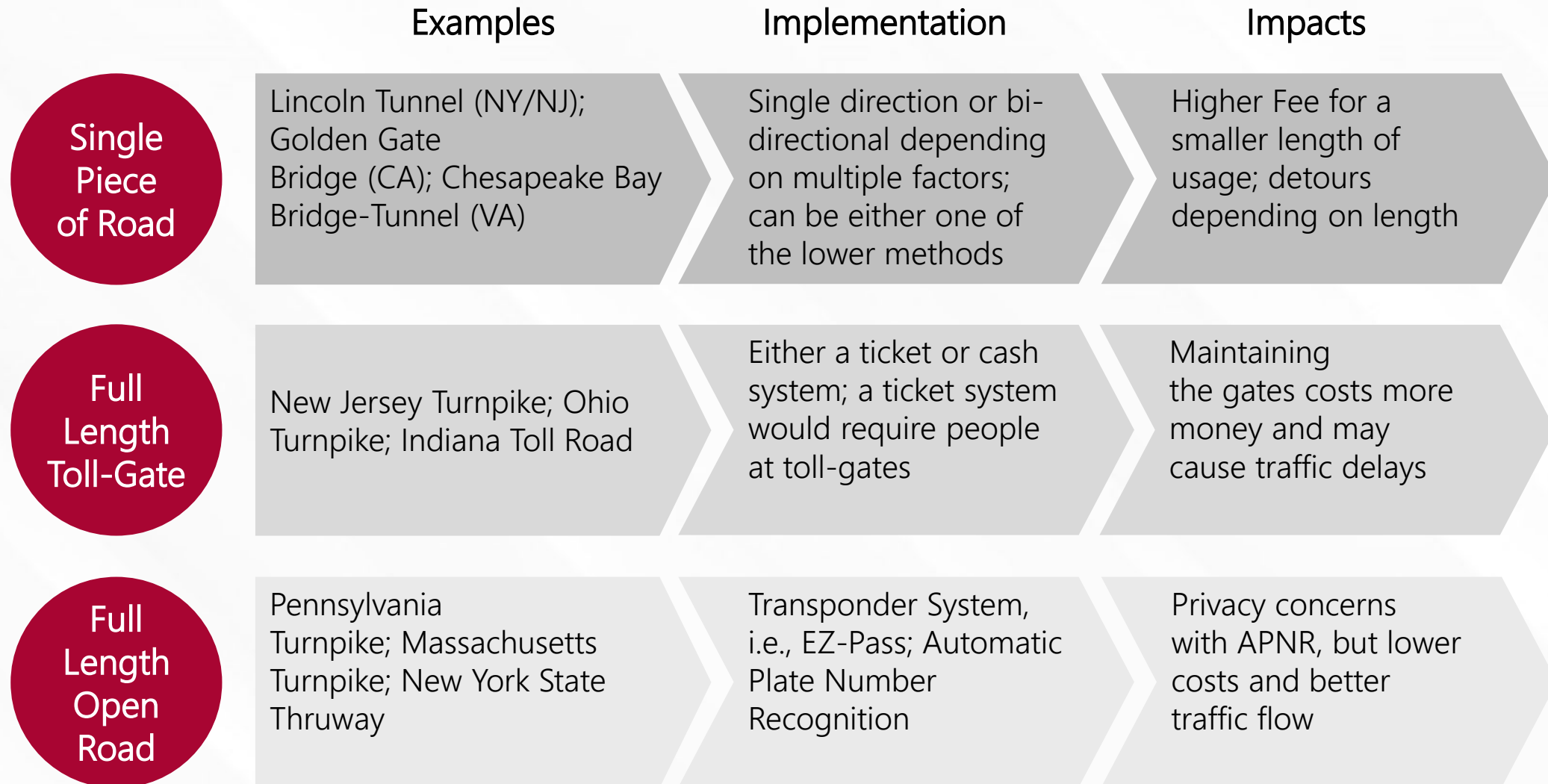
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3 Possible Road Usage Fees

Virginia: Flat Fee

- Done during registration as a formula
- Based on fuel efficiency
- Only fuel-efficient vehicles pay

Utah: Mileage-Based

- Flat 1.06 cents per mile up to a flat fee
- Flat fee based on fuel-efficiency
- Voluntary, so all can participate, fuel-efficient vehicles pay more

Nation-Wide: Tolls

- Single Piece of Infrastructure
- Express Lanes
- Road itself

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Different Types of Tolls

	Examples	Implementation	Impacts
Single Piece of Road	Lincoln Tunnel (NY/NJ); Golden Gate Bridge (CA); Chesapeake Bay Bridge-Tunnel (VA)	Single direction or bi-directional depending on multiple factors; can be either one of the lower methods	Higher Fee for a smaller length of usage; detours depending on length
Full Length Toll-Gate	New Jersey Turnpike; Ohio Turnpike; Indiana Toll Road	Either a ticket or cash system; a ticket system would require people at toll-gates	Maintaining the gates costs more money and may cause traffic delays
Full Length Open Road	Pennsylvania Turnpike; Massachusetts Turnpike; New York State Thruway	Transponder System, i.e., EZ-Pass; Automatic Plate Number Recognition	Privacy concerns with APNR, but lower costs and better traffic flow

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What is the problem?

With the increased use of electric vehicles and reduced gas tax revenues, there is an increased demand for the support of transportation infrastructure.

Alternative funding mechanisms will be necessary to continue building new infrastructure and maintain current roads, rails, and bridges.

We need excess funds to invest in the maintenance of existing transportation system, built new roadways and infrastructure.

How are we modeling this problem?

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3 Funding Scenarios

Alternative Funding Mechanisms

"Do Nothing"

Evaluating the effect of not investing in regional infrastructure

Gas Tax

Evaluating the effect of adding more yearly revenue collected from a tax on gas

Road Usage Fee

Levying a full-length open road toll on I-25 which connects major cities

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3 Funding Scenarios Impact Analysis

"Do Nothing" Effect

- Effects on transportation cost in the short, medium and long run
- Lack of investments
- Effect on employment and GDP

Gas Tax Effect

- A shift in consumer habits increasing the demand for EVs
- Increased use of public transportation
- Potential decrease in prices of automobiles and car insurance

Road Usage Fee Effect

- Additional funding for the state
- Increased population base that contribute towards state revenue

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Model Simulation: REMI Tax-PI

REMI Tax-PI is the only commercially available dynamic macroeconomic and fiscal impact analysis tool.

Tax-PI allows users to understand the deep linkages and relationship between a budget and its economic foundation
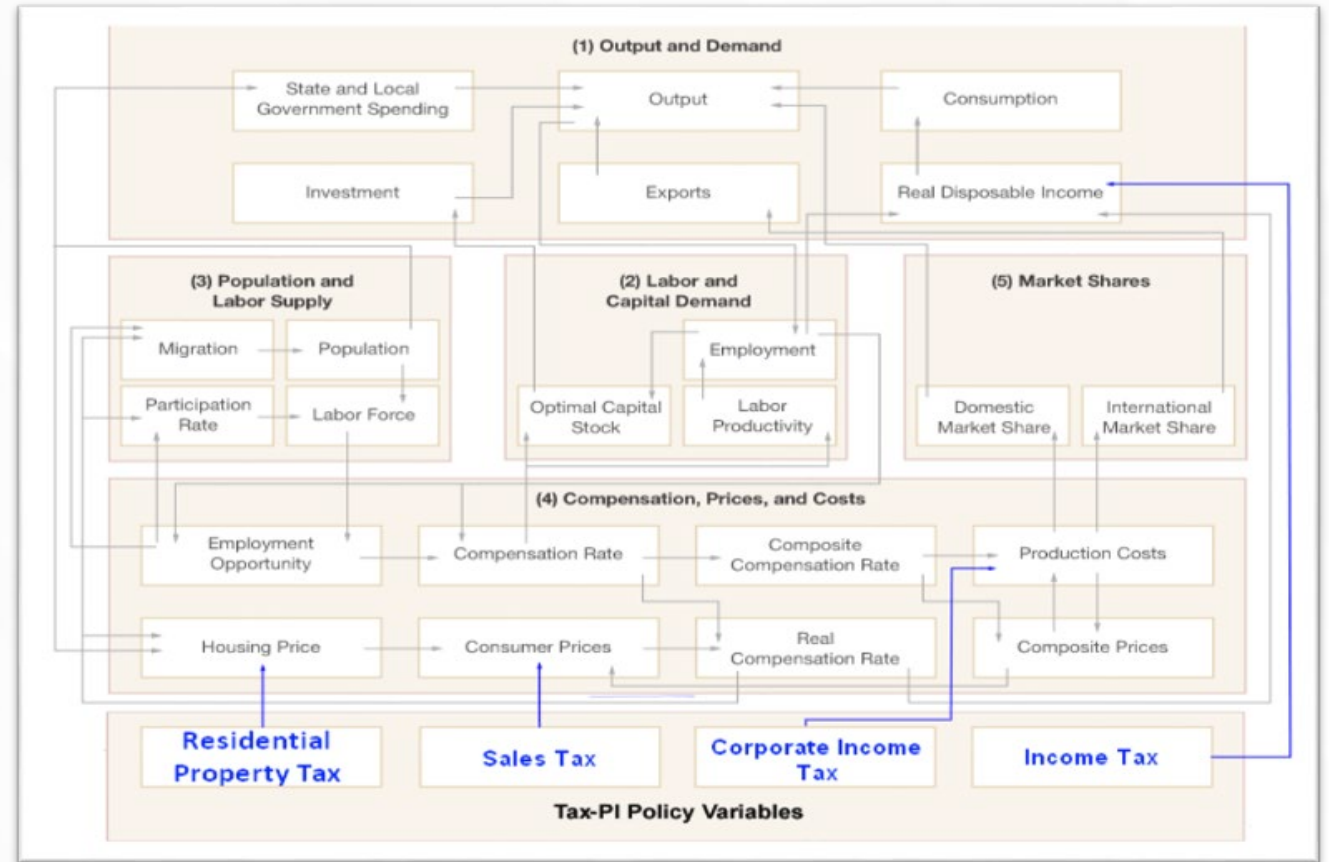
Model Simulation: REMI TranSight

TranSight is the premier software solution for comprehensive evaluations of the total economic effects of transportation policy.

Grounded in over 20 years of modeling experience, decision-makers depend on TranSight to forecast the short-and-long-term impacts of transportation investments on jobs, population, income, and other economic variables

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Model Simulation: Model Info
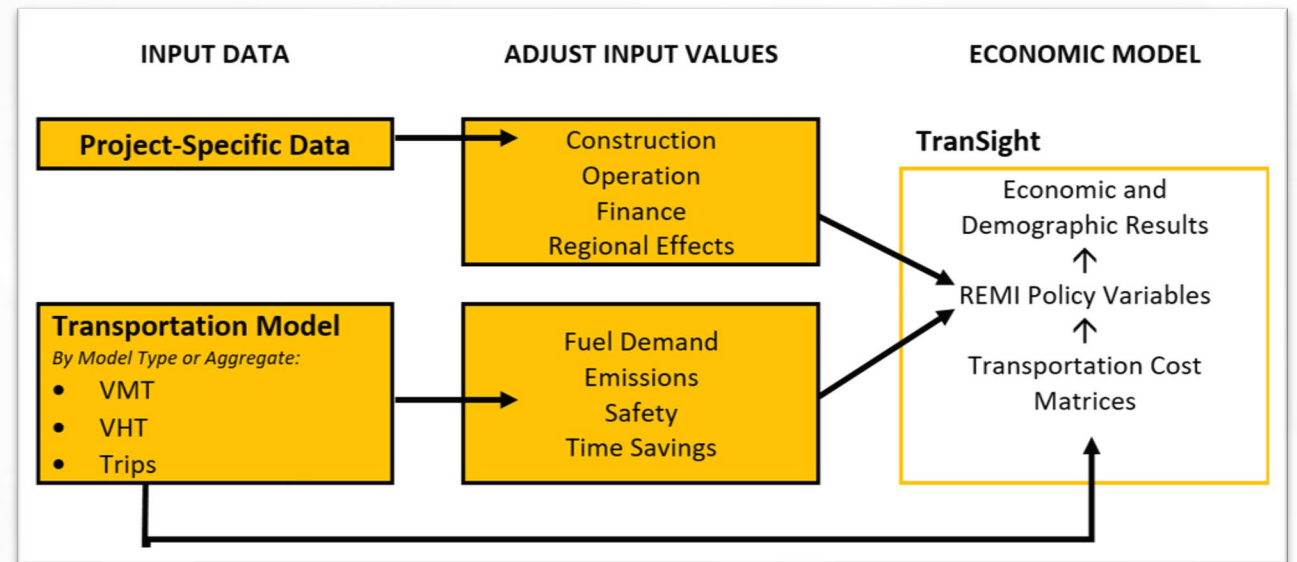
Control Forecast

- "Business as Usual" Forecast
  - No changes to industry or new indicators
    - Forecast results are measured in differences to the standard control

Revenue Generation Comparison

- Using Policy Variables and Budget Components to Model Custom Scenario
  - Gas Tax vs. Road Usage Fee
    - Capture widespread economic effects in REMI Tax-PI

Value of Network

- Revenue Increases Fund Infrastructure Maintenance in the Region
  - Captures the long-term value of the transportation network
    - Results derived from REMI TranSight

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Model Inputs: Budget File - Revenues

Model Inputs: Indicators & Policy Variables

Example: Indicator - Income Tax

Model Inputs: Indicators & Policy Variables

Example: Policy Variable - Income Tax

Model Inputs: Budget File - Expenditures

Model Inputs: Indicators & Policy Variables

Example: Indicator - Education Spending

Model Inputs: Indicators & Policy Variables

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Example: Policy Variable - Education Spending

Model Inputs: Revenue Changes

	2023	2024	2025	2026	2027	2028	2029	2030		2060
	150	150	150	150	150	150	150	150	...	150

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Model Inputs: Revenue Changes

	2023	2024	2025	2026	2027	2028	2029	2030		2060
	150	150	150	150	150	150	150	150	...	150

Model Inputs: TranSight Inputs

	Save Forecast	Import	Export	Print	Tools

Policy Variable Inputs

Active	Edit	Group			
☑	🖊 ❌ ⊕	Cost of Not Raising Either Tax			

	Active	View	Category	Detail	Region	Units
▶	☑	🔍	Transportation Costs	Colorado to Colorado	Interregional	Proportion
	☑	🔍	Accessibility Costs	Colorado to Colorado	Interregional	Proportion

2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
0	0	0.001	0.0016	0.0022	0.0028	0.0034	0.004	0.0046	0.0052	0.0058	0.0064	0.007	0.0076	0.0082	0.0088	0.0094	0.01	0.01
0	0	0.001	0.0016	0.0022	0.0028	0.0034	0.004	0.0046	0.0052	0.0058	0.0064	0.007	0.0076	0.0082	0.0088	0.0094	0.01	0.01

2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

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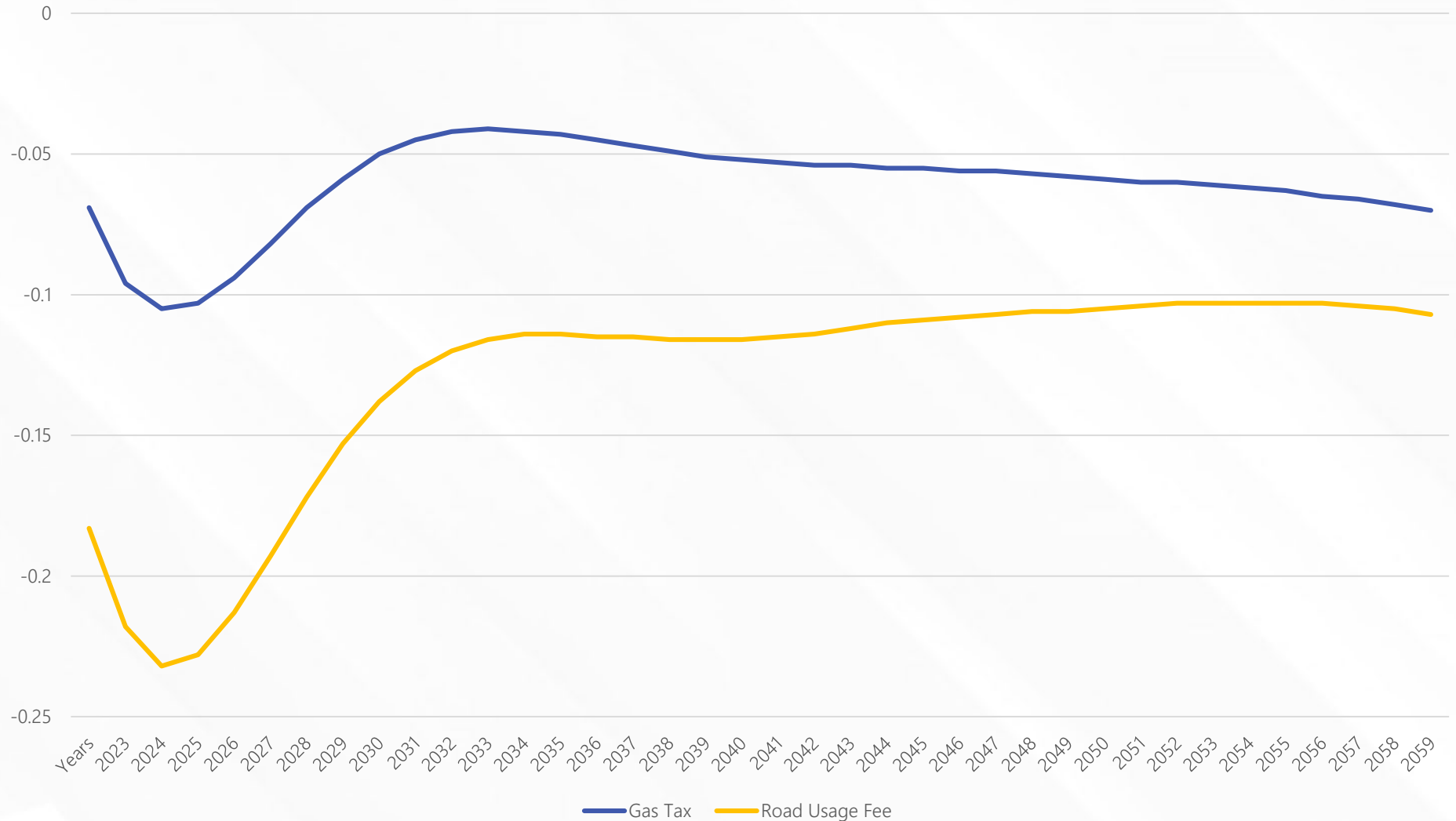*what does REMI say?*[sm]

Gas Tax vs RUF: GDP

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GDP Comparison

Key Takeaways:

- The GDP takes an initial dip when both taxes go into effect

- After its initial recovery, the Gas Tax GDP starts to decline over time while the RUF GDP sustains itself

Y Axis: Billions of Fixed $
X Axis: Years

Legend: Gas Tax (blue), Road Usage Fee (yellow)

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From REMI Tax-PI
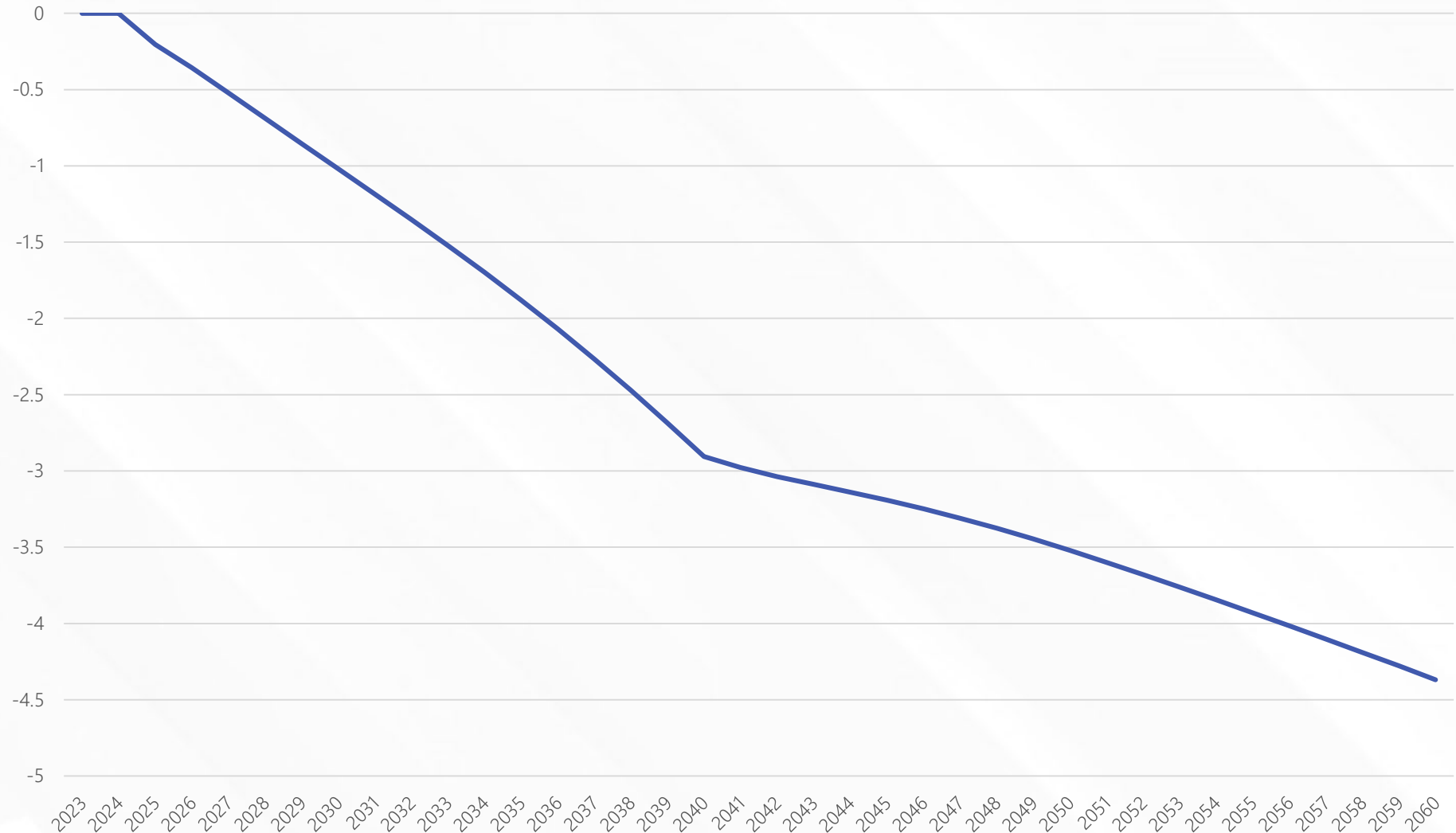
"Do Nothing" Scenario: GDP

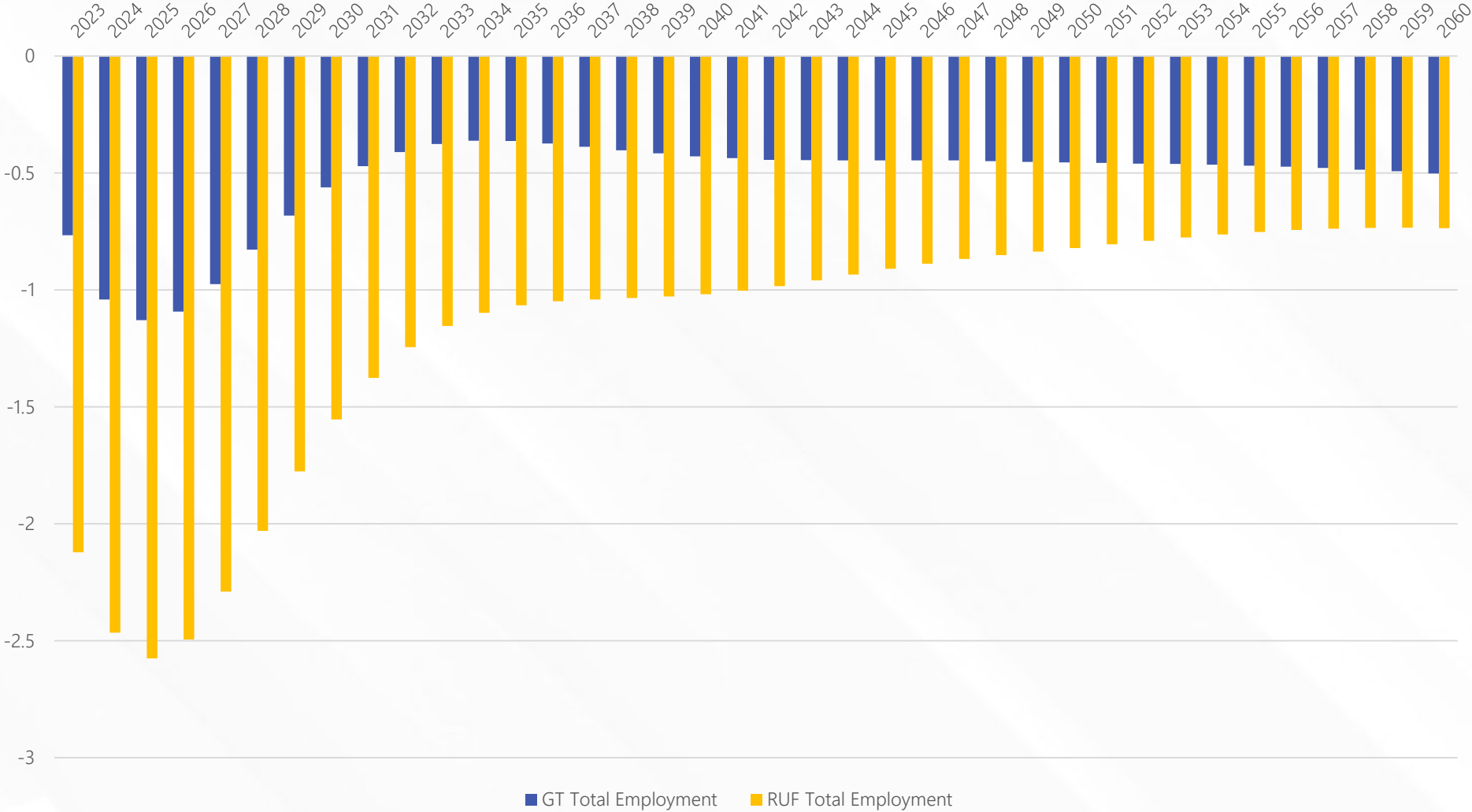GDP: Neither Revenue Increase

Key Takeaways:

- GDP will not recover from the lack of infrastructure funding on its own

- It's important to note this scenario does not include the reinvestment of collected funds

  Y Axis: Billions of Fixed $
  X Axis: Years

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From REMI TranSight

Gas Tax vs RUF: Employment
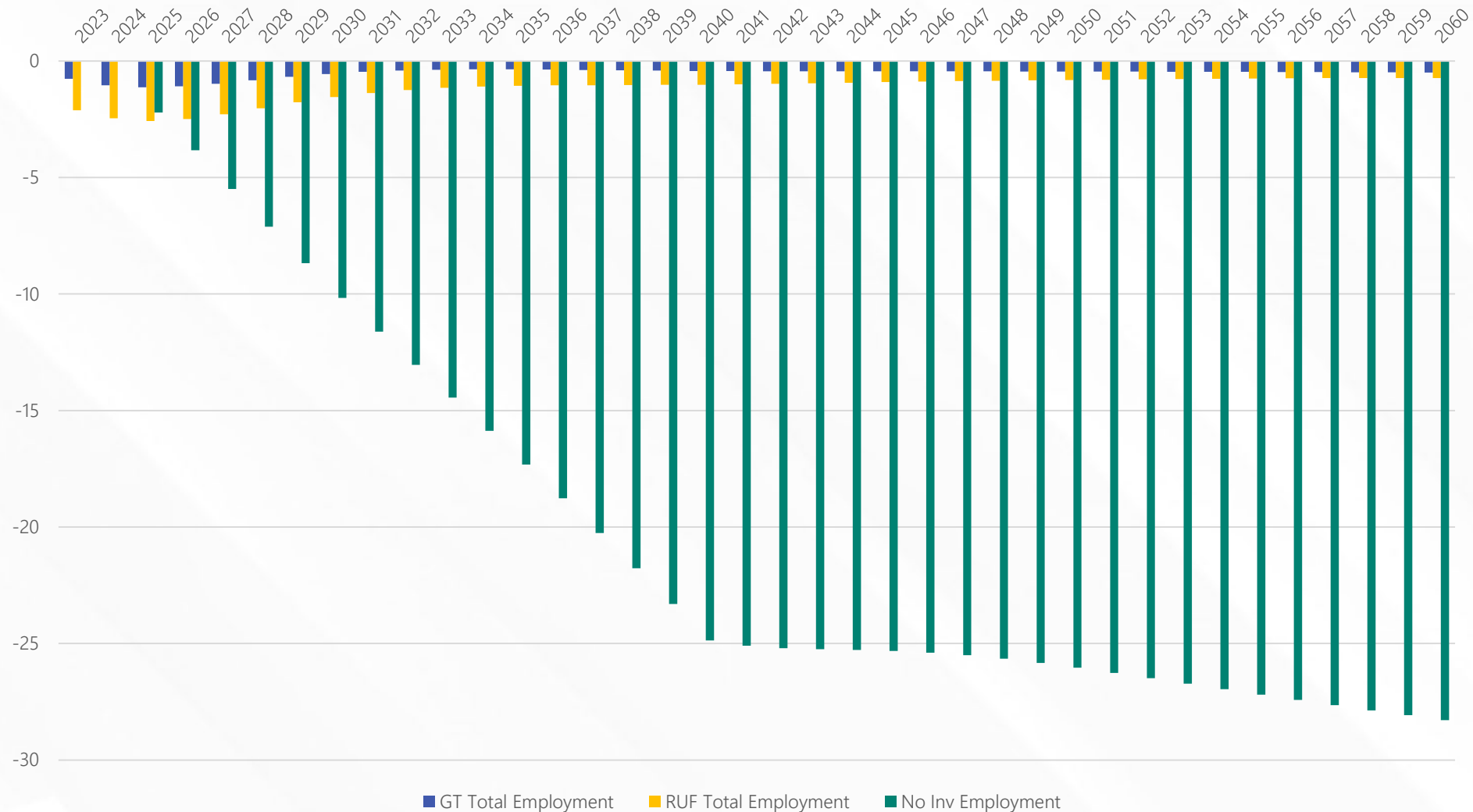

Key Takeaways:

- Similar to the GDP graph, both the gas tax and RUF take a dive

- However, the RUF shows an increasing trend at a faster rate than the gas tax. While the gas tax starts decreasing after 2036

Y Axis: Thousands of Jobs
X Axis: Years

Employment Comparison No Investment

■ GT Total Employment   ■ RUF Total Employment

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From REMI Tax-PI

"Do Nothing" Scenario: Employment

Key Takeaway:

- While employment does take a considerable hit with the gas tax & RUF, it is considerably less compared to the scenario where there is no investment

Y Axis: Thousands of Jobs
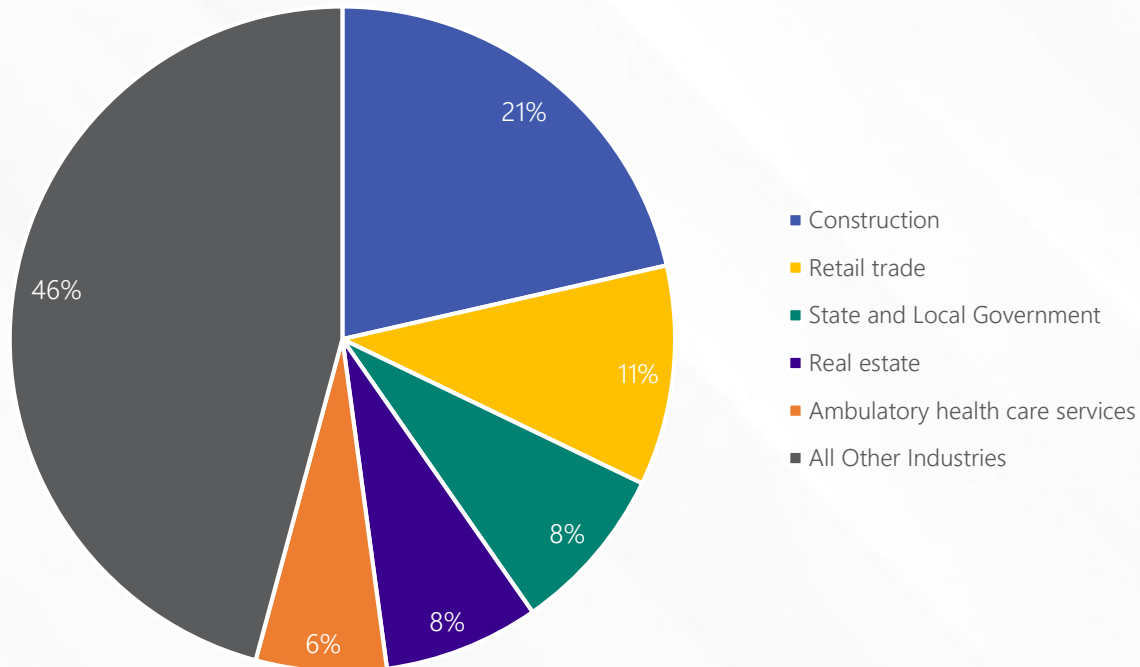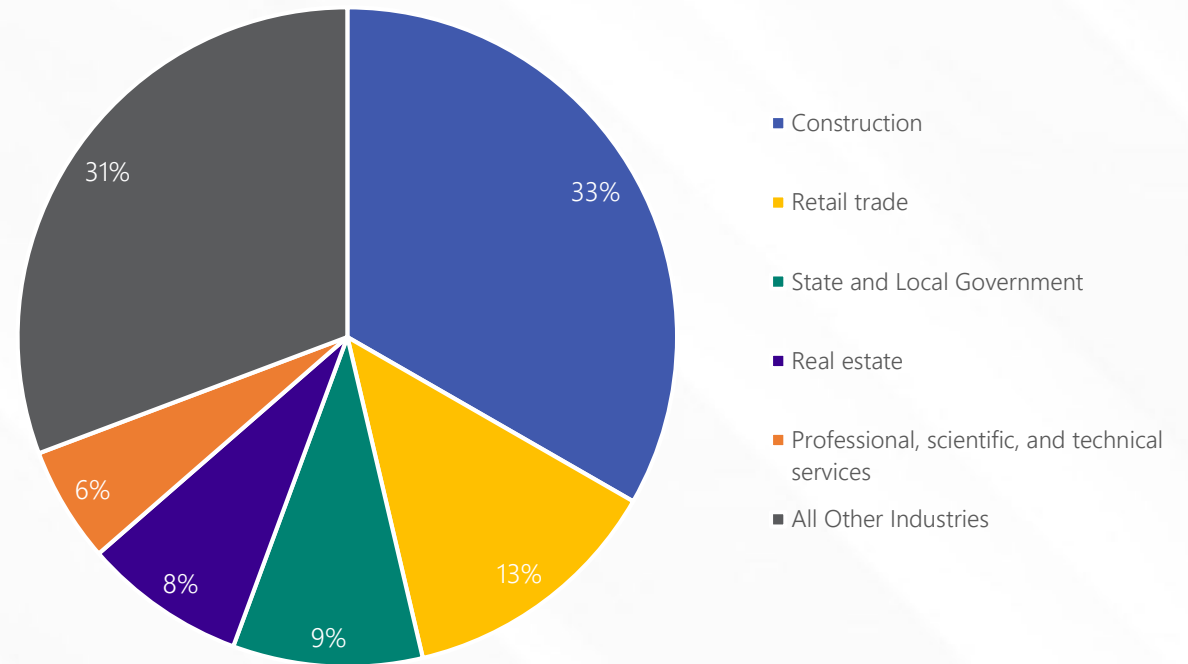X Axis: Years

Employment Comparison Including No Investment

Legend: GT Total Employment | RUF Total Employment | No Inv Employment

From REMI Tax-PI and TranSight

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Gas Tax Vs. RUF: - Employment Breakdown (Y2025)

"Do Nothing" Scenario: Commodity Access Index
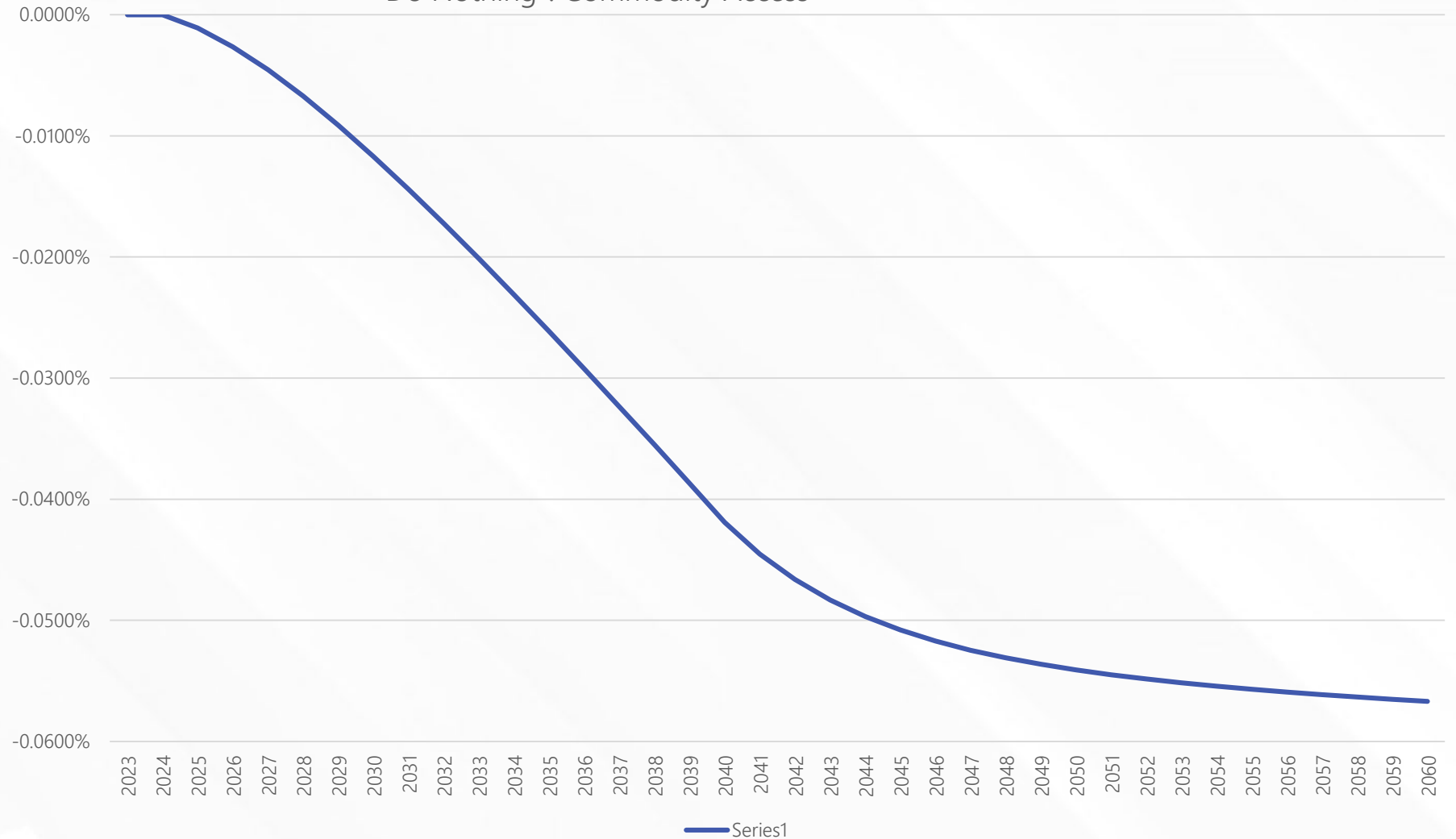
Key Takeaway:

- As commodity access decreases due to people not being able to access businesses, prices of commodities will be expected to increase

Y Axis: Percent Decrease
X Axis: Years

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From REMI TranSight

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Conclusions

- There is no "right answer" on which revenue stream is more effective, they each impact the regional economy in a uniquely different way

- A miniscule increase in transportation costs leads to long-term economic loss, which is representative of what would happen if there is insufficient funding to pay for transportation infrastructure

- Evaluating simulations like this are useful in performing long-term economic impact analysis

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Thank you for attending!

For more information, please contact
info@remi.com

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