Luxury or Necessity: How will State and Local Governments Balance Budgets in the Wake of COVID-19?

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SETTING & QUESTION

Estimates of Government Revenue Shortfall in FY2021 due to Pandemic: Different Scenarios		
	Slow Recovery	**Second Wave**
State (Whitaker, 2020)	-122.1 $B	-238.1 $B
Local (Whitaker, 2020)	-48.7 $B	-111.8 $B
Cities (Chernick, Copeland, and Reschovsky , 2020)	-9%	-15%

Our Questions:

1) For which public good & service expenditures are revenue shortfalls felt most?
2) How does that vary by geography and level of government?

EMPIRICAL APPROACH

Our Approach:

- Apply Deaton demand system to estimate budget share changes in face of declining income
- Use the Great Recession as an estimating sample and then project to pandemic, taking revenue shocks under several scenarios from emerging literature

Under $\mathbf{H_o}$: Budget shares remain constant after income shock

- Non-trivial choice: much practitioner focus on optimal public budgeting frameworks
- Empirical literature tends not to support constant budget shares (Reid 1988, Hoene and Pagano 2009, Desai, 2018)

HISTORICAL DATA ON EXPENDITURES: US CENSUS OF GOVERNMENTS

Near-universe of public entities: **86,608 governments**, including

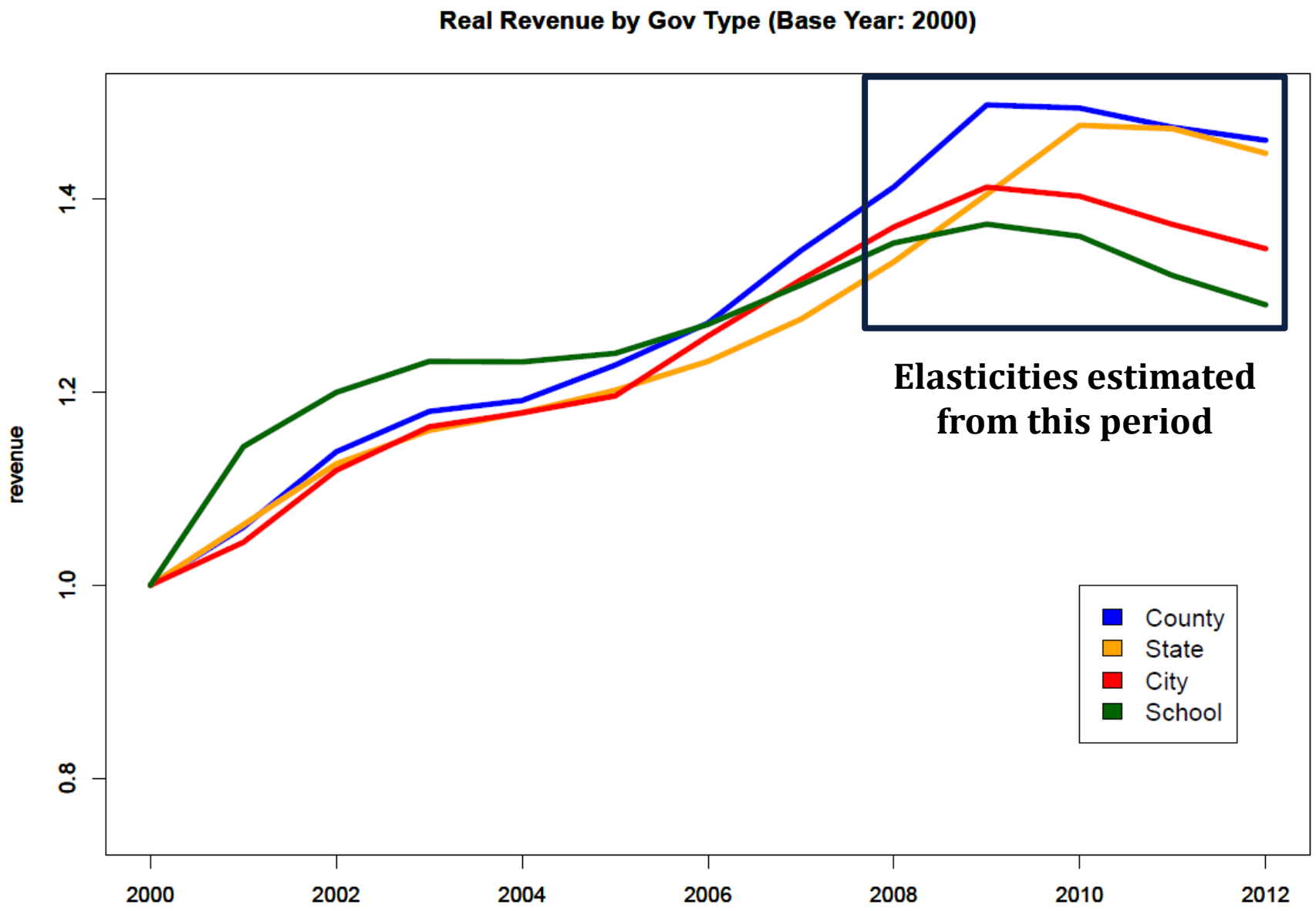
- **50 states**
- **3,021 counties**
- **35,241 cities and towns**
- **13,430 independent school districts**
- **34,866 special government districts**

All governments surveyed every five years (…2002, 2007, 2012…)

Major governments surveyed every year (representing >90% of total dollars)

GREAT RECESSION:

- Large negative shock to public revenues
- We estimate response from changes in expenditure between 2007 and 2012
- *Note: Public budgets tend to increase in real terms; even flat revenue is experienced as significant fiscal stress*



PUBLIC GOODS AND SERVICES: BUDGET SHARES

Allocate expenditures to:

- Civil Administration
- Education – Elementary
- Education – Higher
- Public Safety
- Health
- Transport
- Parks Recreation
- Utilities
- Welfare
- Debt (current only)
- Retirement (current only)
- Unemployment (current only)

- Split all expenditures into **current operations** and **capital outlays**
- Intergovernmental transfers, where targeted, are allocated to funding entity
  - E.g.: State transfer to local governments for safety programs count as State current operations on safety

STATS: SUMMATION OF EXPENDITURES ACROSS GOVERNMENTS

Sums (combined cap & current)	2007 -$B	2012 - $B	2007 - %	2012 - %
• Civil Administration	$347	$352	11.0%	10.0%
• Education – Elementary	$899	$931	28.5%	26.4%
• Education – Higher	$280	$352	8.9%	10.0%
• Public Safety	$245	$273	7.8%	7.8%
• Health	$225	$274	7.1%	7.8%
• Transport	$288	$333	9.1%	9.5%
• Parks Recreation	$99	$98	3.1%	2.8%
• Utilities	$247	$269	7.8%	7.6%
• Welfare	$222	$228	7.0%	6.5%
• Debt (current only)	$105	$123	3.3%	3.5%
• Retirement (current only)	$167	$193	5.3%	5.5%
• Unemployment (current only)	$29	$96	0.9%	2.7%
Total	$3,153	$3,521		

EMPIRICAL METHODOLOGY (1)

Almost Ideal Demand System, Deaton and Muellbauer (1980) in 1st differences:

$$\Delta w_{ig} = \beta_i \Delta \log\left(\frac{X_g}{P}\right) + \sum_j \gamma_{ij} \Delta \log(p_{jg})$$

Variables

- Δw_{ig}: government g's budget share for good i
- X_g/P: g's real expenditure on good i
- p_{jg}: prices of the J goods available to g.

(Each good i's demand is a function of all prices.)

EMPIRICAL METHODOLOGY (2)

Almost Ideal Demand System, Deaton and Muellbauer (1980) in 1st differences:

$$\Delta w_{ig} = \boldsymbol{\beta_i} \Delta \log\left(\frac{X_g}{P}\right) + \sum_j \gamma_{ij} \Delta \log(p_{jg})$$

Features

1. β_i is the sensitivity of budget share to a changes in real expenditures
2. Sum of all goods elasticities, β_i, equals zero in first differences.
3. The null, $\beta_i = 0$, is proportional changes in expenditures with changes in budget
4. $\beta_i < 0$ means that an income reduction leads to an increase in relative budget share for good *i* (less than one–for–one cuts)…. a "necessity" good.
5. $\beta_i > 0$ means that an income reduction leads to a decrease in relative budget share for good *I (*more than one-for-one cuts) …. a "luxury" good.

RESULTS – PART 1

ESTIMATING THE β_i FROM $\Delta w_{ig} = \sum_j \gamma_{ij} \Delta \text{LOG}(p_{jg}) + \beta_i \Delta \text{LOG}\left(\frac{X_g}{P}\right)$

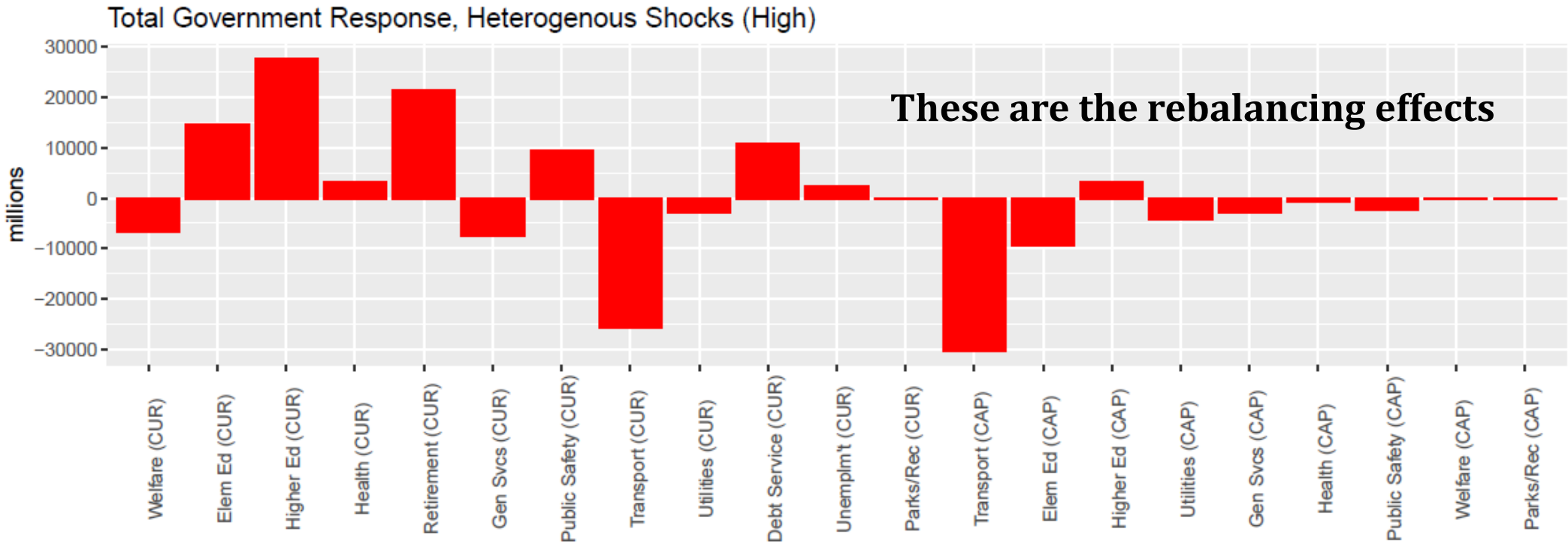
- By expenditure category (education, health, etc.) and by jurisdiction type (state, county, etc.)
- Our best specification: Estimate the β_i for sub-state entities within each state to pick up elasticity heterogeneity

RESULTS FROM β_i ESTIMATIONS:
Summarizing which categories have statistically significant changes in budget shares

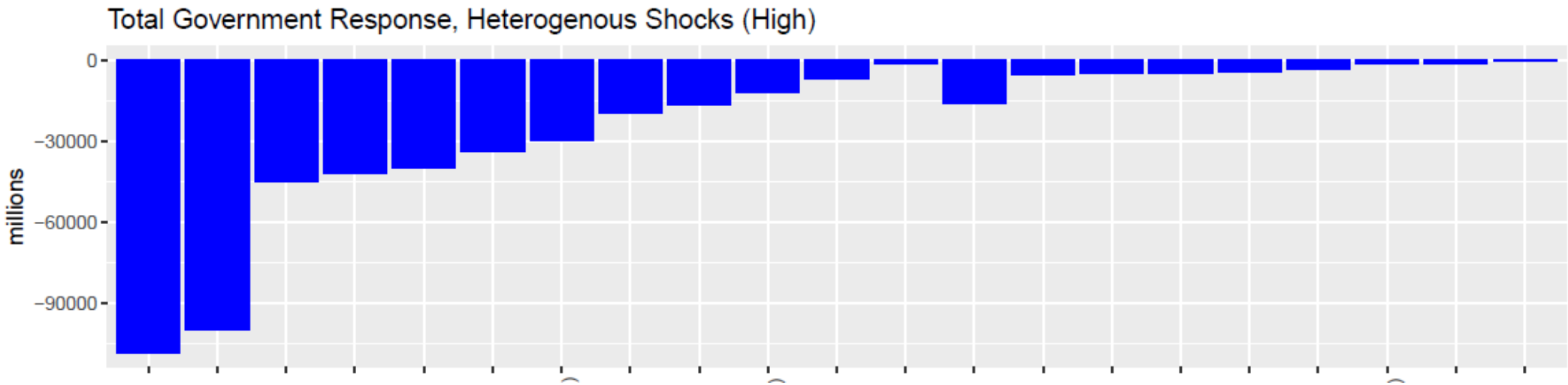
Elasticity	Necessities	Luxuries
State	Higher Education, Retirement	Transport, Civil Admin
County	Public Safety, Civil Admin; Transport	Public Health, Capital Investments
Cities	Public Safety; Civil Admin, Debt	Utilities; Capital Investments

PREDICT THE EFFECT ON COVID-19 ON PUBLIC GOODS PROVISIONS

- Requires an assumption about the intensity of the COVID-19 economic shock on government budgets
- In the paper, we use 3 simulations:
  - A 9% government revenue shock (akin to "slow recovery" in literature)
  - A 15% government revenue shock (akin to "second wave" in literature)
  - Heterogeneous shocks by State (a la Whitaker (2020)):
    - "Second wave" with muted economic effects (e.g., partial shutdowns)

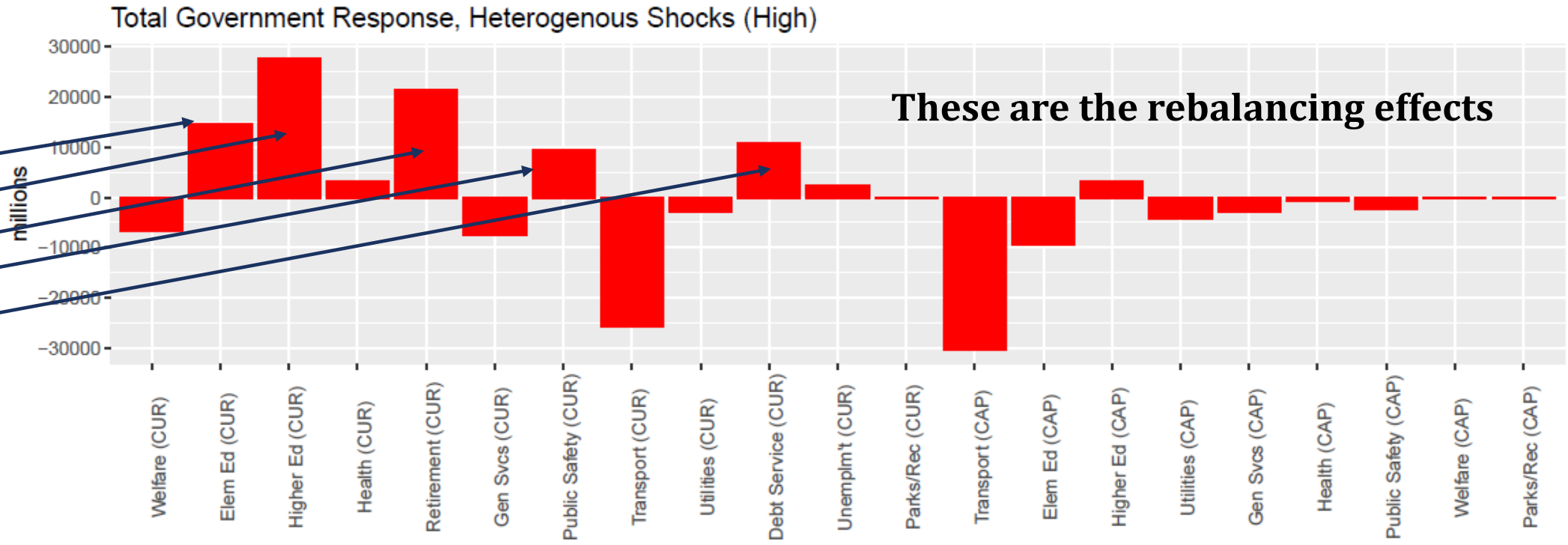


These are the rebalancing effects



Necessities:

- K-12 Educ.
- Higher Ed
- Retirement
- Safety
- Debt Pymt



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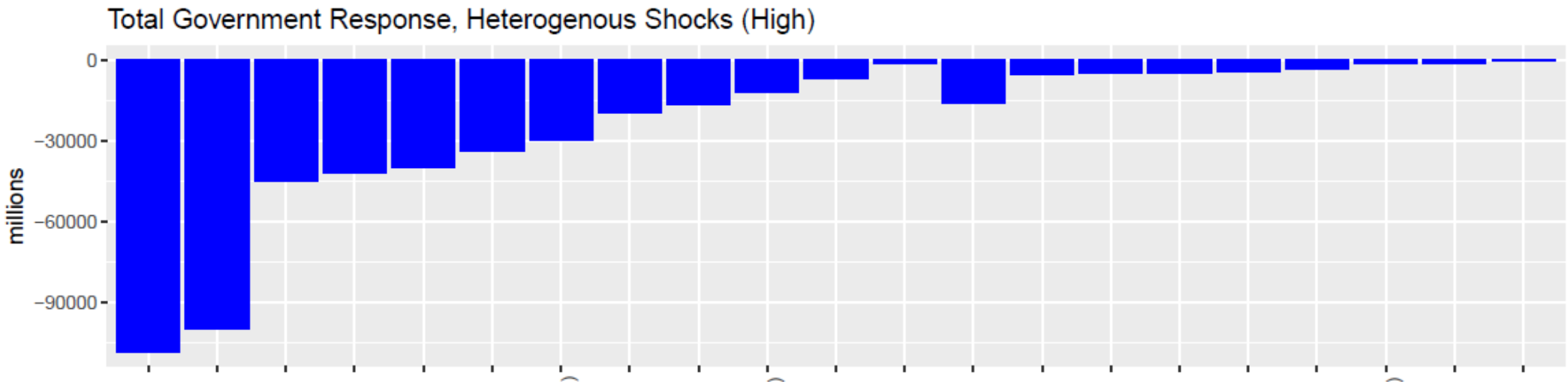
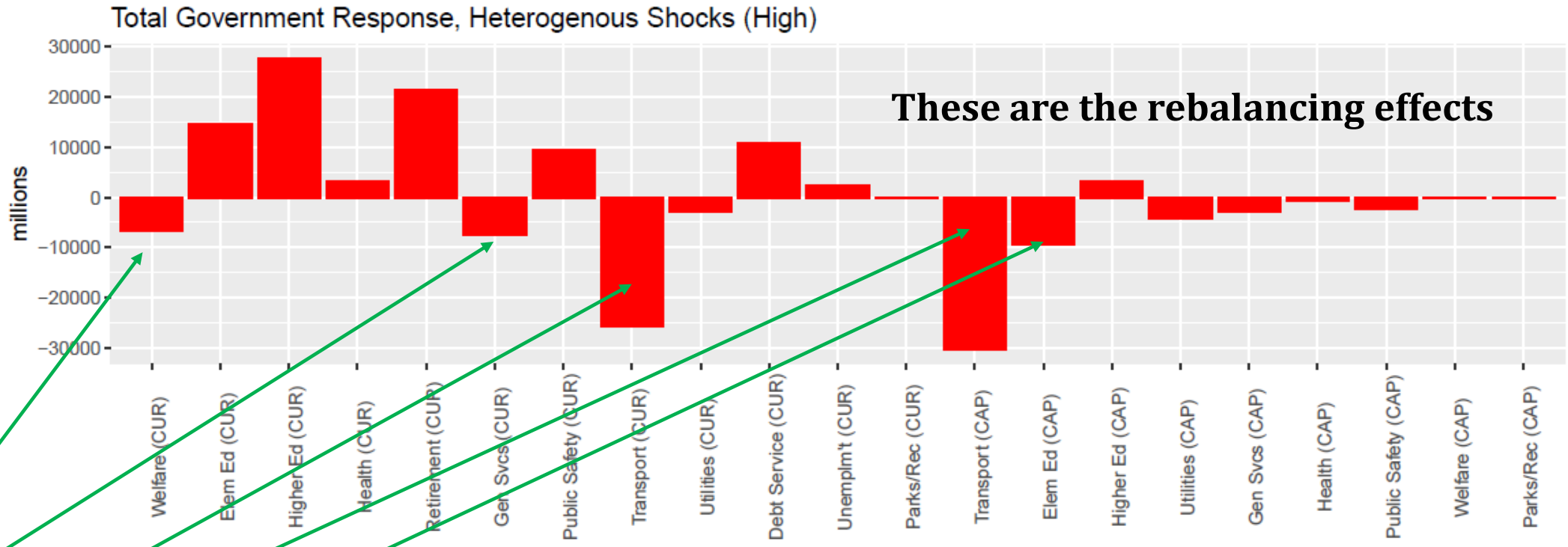


Necessities:
- K-12 Educ.
- Higher Ed
- Retirement
- Safety
- Debt Pymt

Luxuries:
- Welfare
- Civil Admin
- Transport
  - Current
  - Capital
- K-12 Ed Capital



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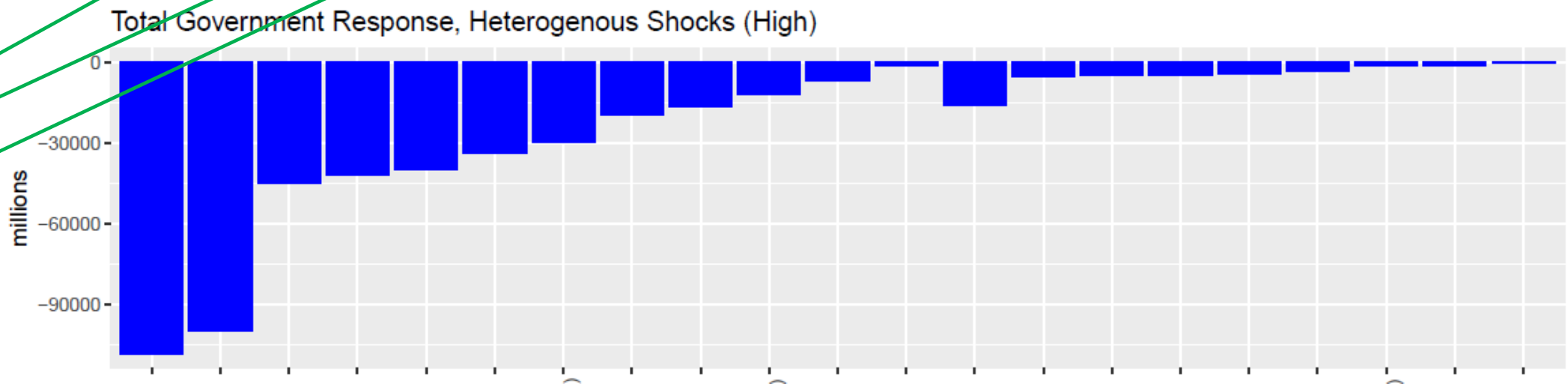
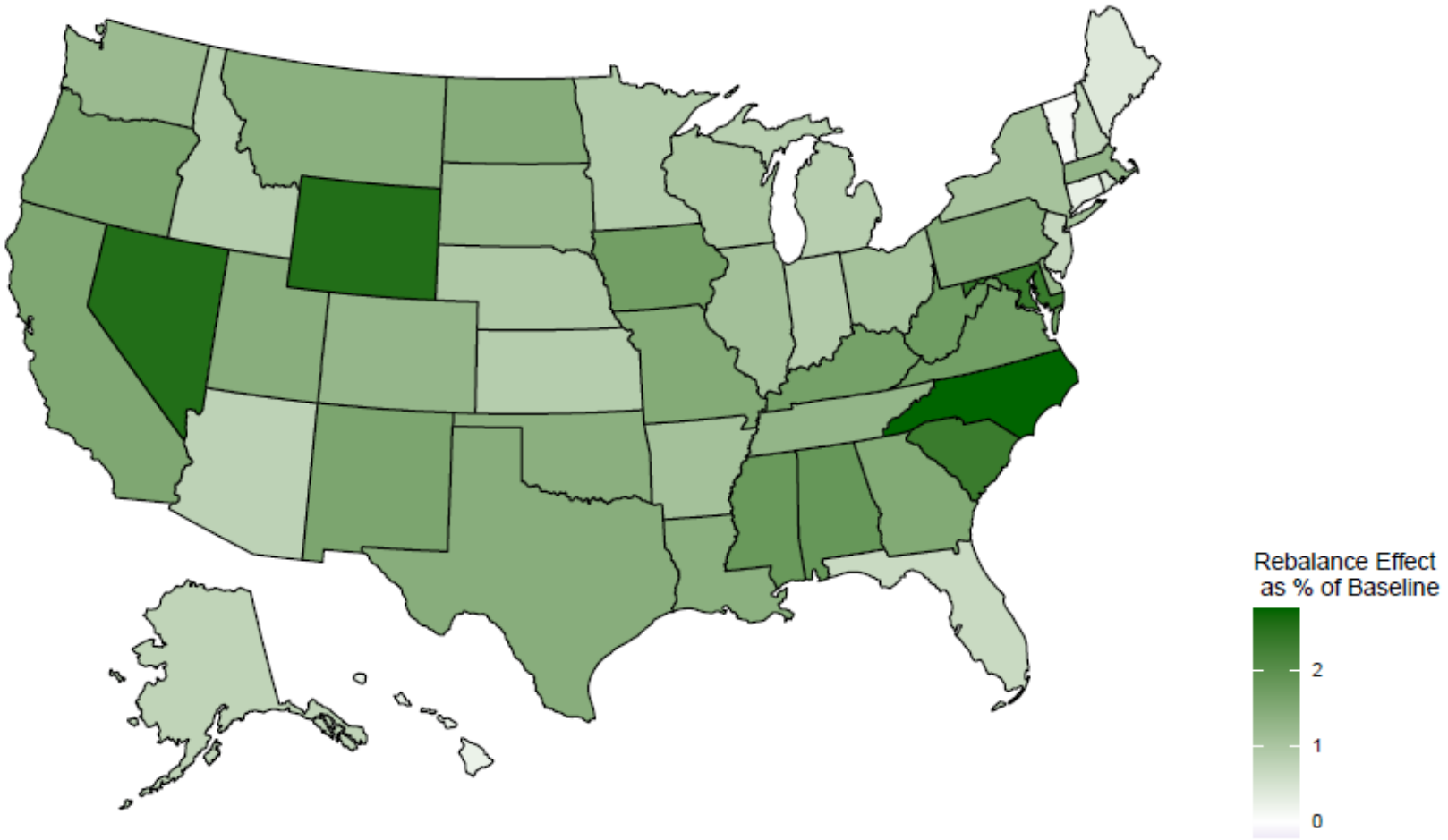


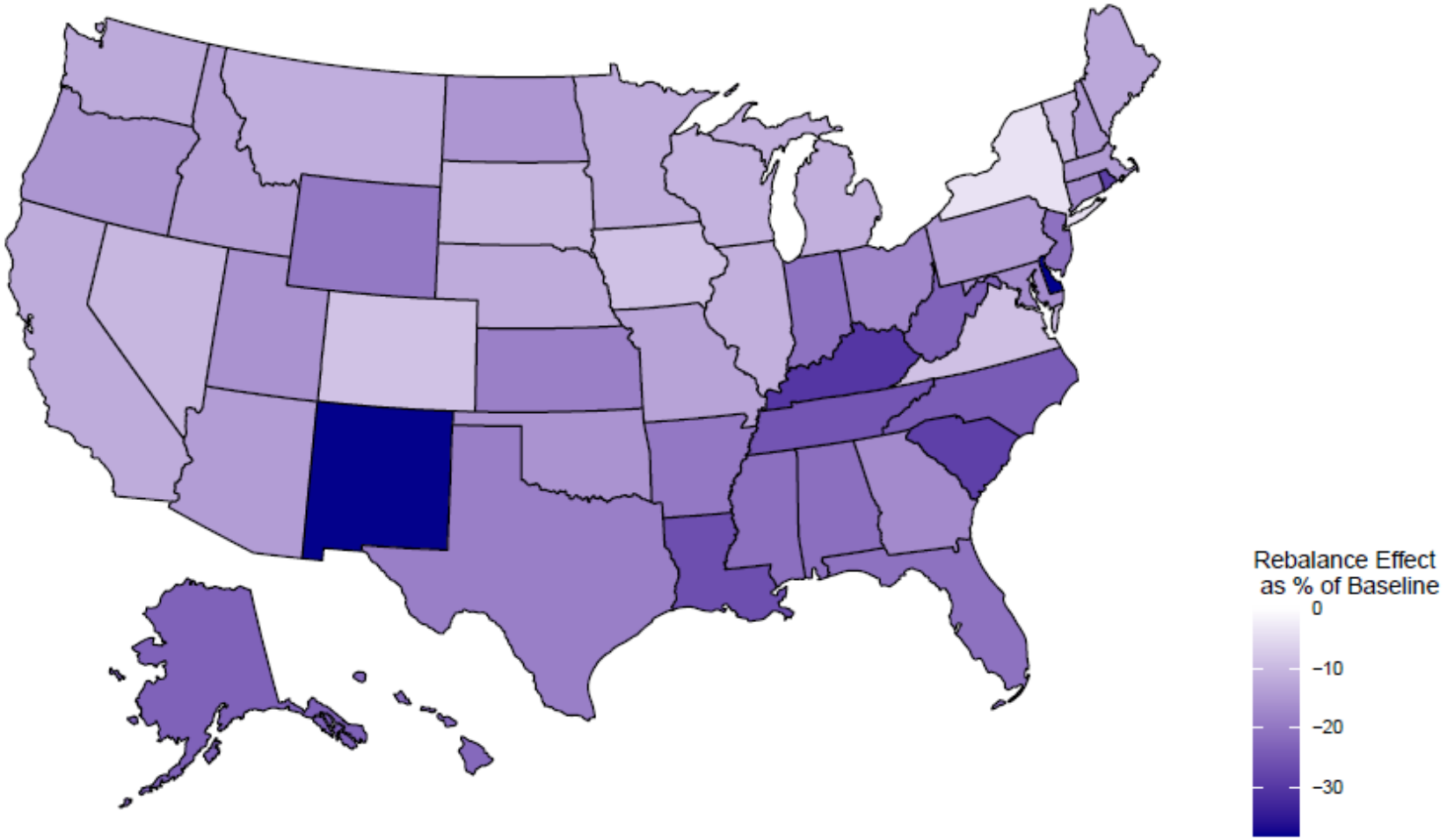
RESULTS – PART 2: HETEROGENEITIES BY STATE

MAP WHAT MATTERS MORE / LESS ACROSS STATES

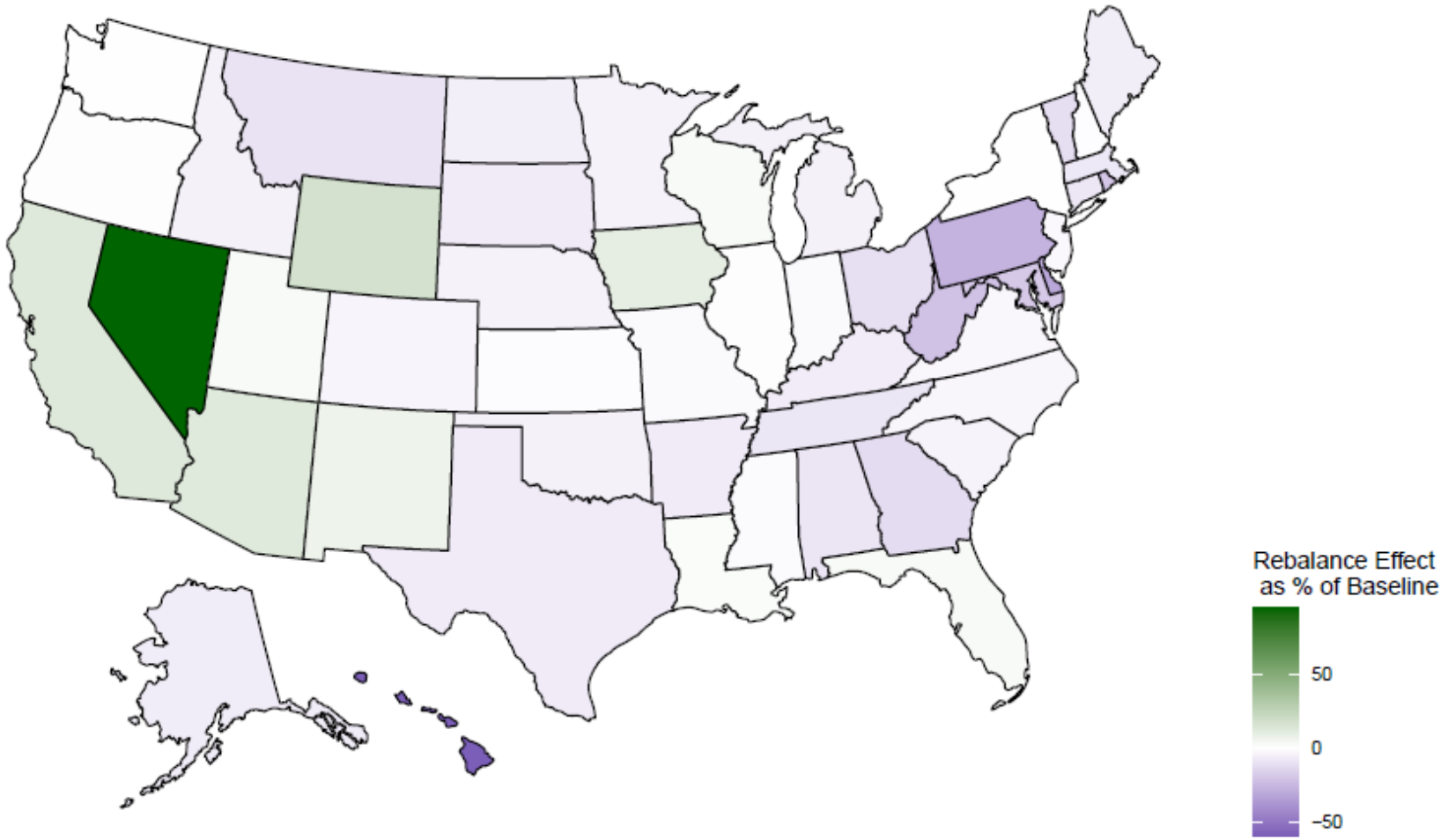
Reduction due to Rebalancing, 2nd Wave Scenario: Elem Ed (CUR)



Reduction due to Rebalancing, 2nd Wave Scenario: Transport (CUR)



Reduction due to Rebalancing, 2nd Wave Scenario: Parks/Rec (CUR)



TAKEAWAYS

1. Crisis response of shifting capital allocations to current spending

2. Classification of public goods and services into “necessities” and “luxuries”:
   a) Necessities: education (K12 and Higher), retirement, public safety
   b) Luxuries: capital spending, transportation, welfare
   c) Priorities vary by level of government

3. Wide regional heterogeneities in budgetary priorities
   a) Exogenous factors (weather; geography) shape fiscal response
   b) Demographic factors also appear important (e.g., unemployment allocations)