



# Assessing the Influence of Mission Agencies on Regional Development

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NBER

The Entrepreneurial State and Mission-Oriented  
Innovation Policy: Effects on Regions and Implications  
for Regional Policy

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# What are Mission Agencies?

- Mission agencies are set up for a specific purpose
  - the management of resources,
  - financial oversight of industries or practices, or
  - national issues, especially related to security
- Mission Agencies have *implicit and unintended* spatial impacts
  - User-defined activities in pursuit of the mission
  - Importance of agenda-setting
- Some Mission Agencies have an explicit spatial orientation
  - U.S. Economic Development Administration
  - Tennessee Valley Authority
  - The Swedish Agency for Economic and Regional Growth



# Mission Agencies & Regional Economic Development

- Facilities Location Decisions – infrequent & often political
  - NASA's Johnson Space Center in Houston (1961)
  - National Institutes of Health & the North Carolina Research Triangle (1962)
  - Federal Labs
    - 17 Department of Energy Laboratories (NASEM 2020)
    - 20 Department of Defense (Graddy-Reed & Belz 2024)
- Procurement – continual activity
  - Demand oriented policies (Edler & Georghiou 2007)
  - US spends \$665B annually (10% of the budget)
  - R&D expenditures (\$210B annually)
  - Department of Defense accounts for 2/3

# Mission Agencies Fundamentals

- Procurement function
  - Routine supplies provided by the market
  - Need to innovation -- Meeting well-defined societal objectives
    - R&D as precursor to procurement
    - Subsequent spinoffs
- Monopsony – single purchaser
  - Demand is price inelastic
  - Focus on reliability, quality rather than price
  - Important first user
    - Firms
    - Define consumer markets
- Spatial implications
  - Reinforces conditions for knowledge-based agglomerations
  - Cost accounting allowances for relocation – favors migration of talent

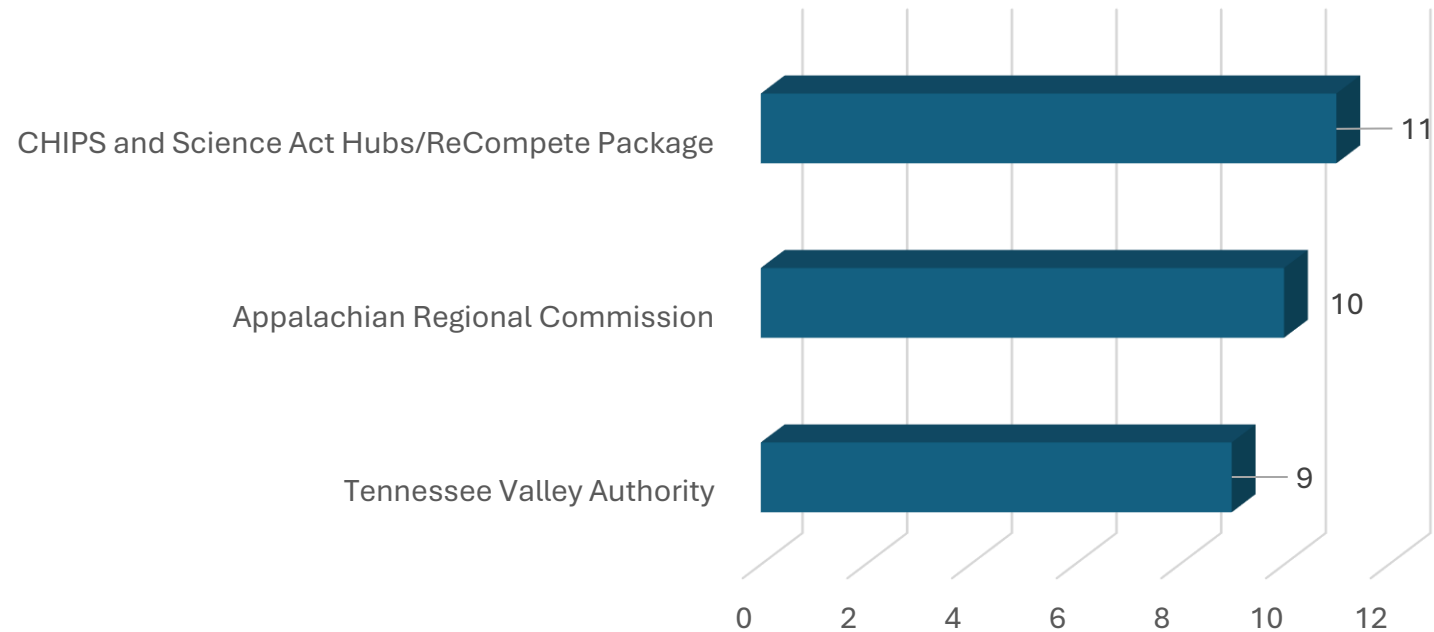
# Organization of Presentation: Reviewing the Literature on the Regional impacts of Mission Agencies

- Bidentomics – Recent U.S. Policies use mission agencies for explicit economic development purposes
- Empirical Studies
  - Evidence about DOD and the Cold War Build Up - Markusen, Hall, Campbell & Detrick (1991)
  - WWII OSRD & Cities - Gross and Sampat (2023)
  - The NASA Windfall - Kanter & Whalley (2023)
  - Soviet Science Cities - Schweiger, Stepanov, and Zacchia (2022)
- Reflective Conclusions

# Historic Place-Based Investments

Total funding in billions (2022 \$) for select place-based policies<sup>1</sup>

- \$80 Billion in place-based investments across ARPA, IIJA, and CHIPS and Science Act<sup>2</sup>
- \$11 Billion in the CHIPS and Science Act for Regional Technology and Innovation Hubs and Reconnect Pilot Program<sup>1</sup>



<sup>1</sup> Bartik, T., Asquith, B. and Bolter, K. (2022). *The CHIPS and Science Act offers funding for place-based policies unparalleled in U.S. History*. Upjohn Institute.

<sup>2</sup> Muro, M., Maxim, R., Parilla, J., de Souza Briggs, X. (2022). *Breaking down an \$80 Billion surge in place-based industrial policy*. Brookings Institution.

# A New U.S. Era of Federal Investment in Innovation

Collectively \$3.8 Trillion in spending

## American Rescue Plan Act (2021)

- Economic recovery and pandemic response, with regional economic stimulation programs and infrastructure funds (esp. **transportation, broadband**)
- Example programs: Economic adjustment assistance (**Build Back Better Regional Challenge; Good Jobs Challenge**)

## Infrastructure Investment and Jobs Act (2021)

- Investments in America's critical infrastructure systems (transportation, broadband, water/wastewater, and energy)
- Example programs: **Regional hydrogen hubs; Regional direct air capture hubs; Regional commissions**

## Inflation Reduction Act (2022)

- Investments and incentives in the energy sector, focused on American-made clean energy technologies
- Example programs: **Clean energy production tax credits; Solar and wind siting in low-income community credits**

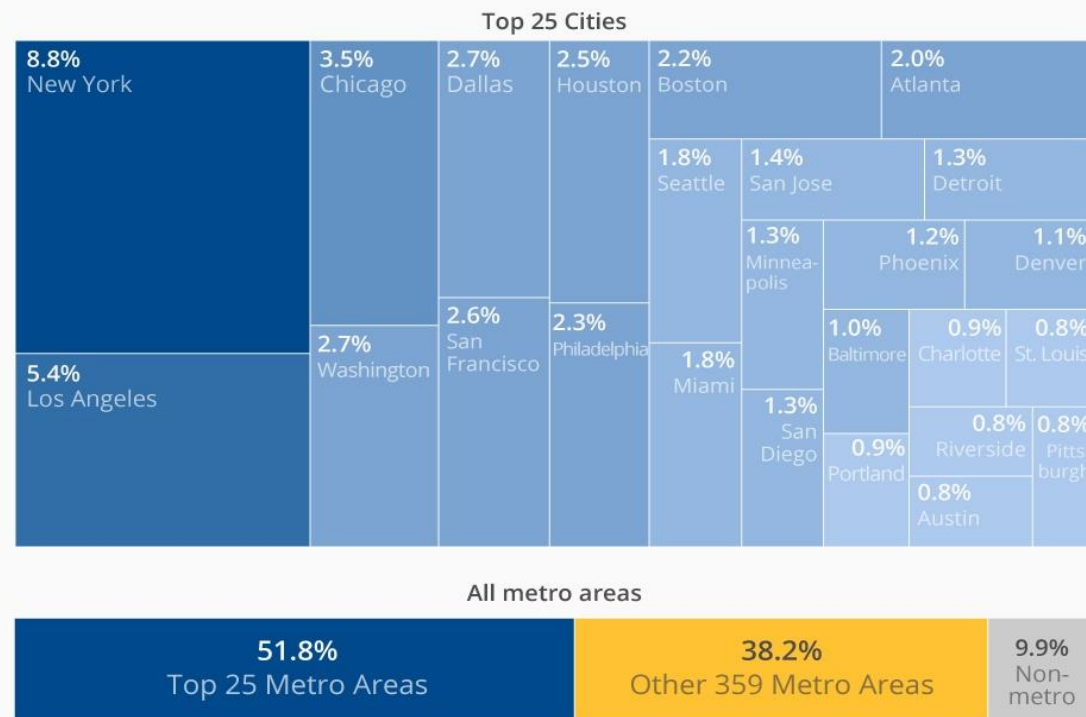
## CHIPS and Science Act (2022)

- **Supporting US advanced manufacturing and supply chain resilience in emerging technologies through place-based investments**
- **Example programs: CHIPS for America Fund; Regional technology and innovation hubs; Regional innovation engines**

# 25 Metropolitan Areas Produce Half of US GDP

## The Top 25 Metro Areas Make Up Half of U.S. GDP

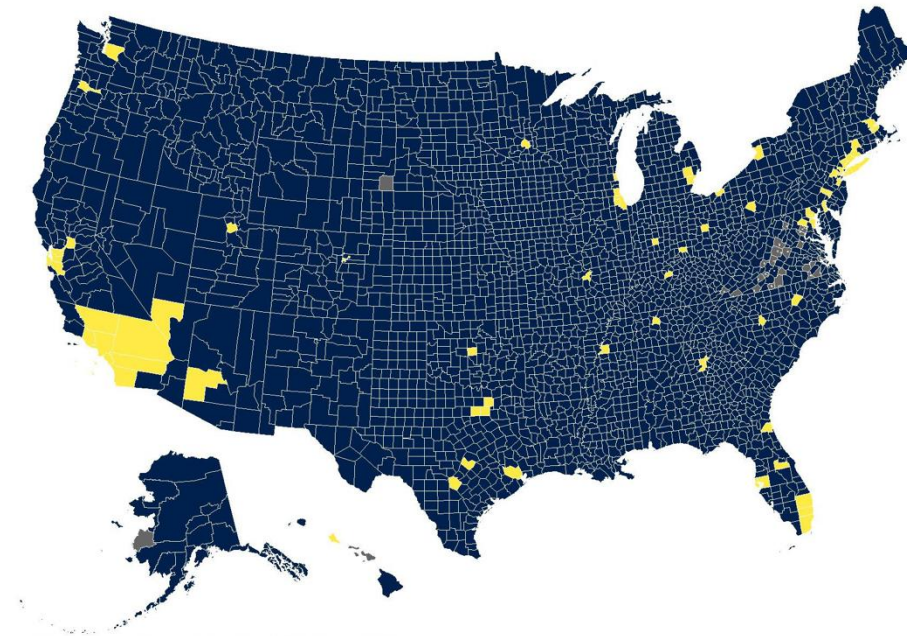
Percent of U.S. GDP in 2017 by metropolitan area



Source: Bureau of Economic Analysis (2019)

## GDP Concentration: United States

Counties in yellow concentrate 50% of the Country's GDP



Source: Bureau of Economic Analysis (2019)



# NSF & EDA: CATALYZING INNOVATION



EDWARD RUP ABOUT

## NAVIGATION

From your data points on maps to new insights from our Data to Drive website initiatives.

## OVERVIEW

Use this interactive, government sponsored initiative, innovation, and entrepreneurship and development to see the best of U.S. investment in science and technology support that is the best of what there is about various initiatives across the U.S. National Science Foundation and the Economic Development Administration, they help with opportunities available to create more interconnected ideas happen tomorrow to each for enhancing all.

## SELECT INITIATIVES

EDA 0000, Phase-1 60

EDA 0000, Phase-2 21

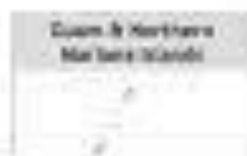
NSF Explorer Type-1 44

## ABBREVIATIONS

NSF: National Science Foundation  
EDA: Economic Development Administration

For more information please visit the about page.

Data as of Dec 15, 2021



# The **RISE** of the **GUNBELT**



Ann **MARKUSEN** Peter **HALL**

Scott **CAMPBELL** Sabine **DETRICK**

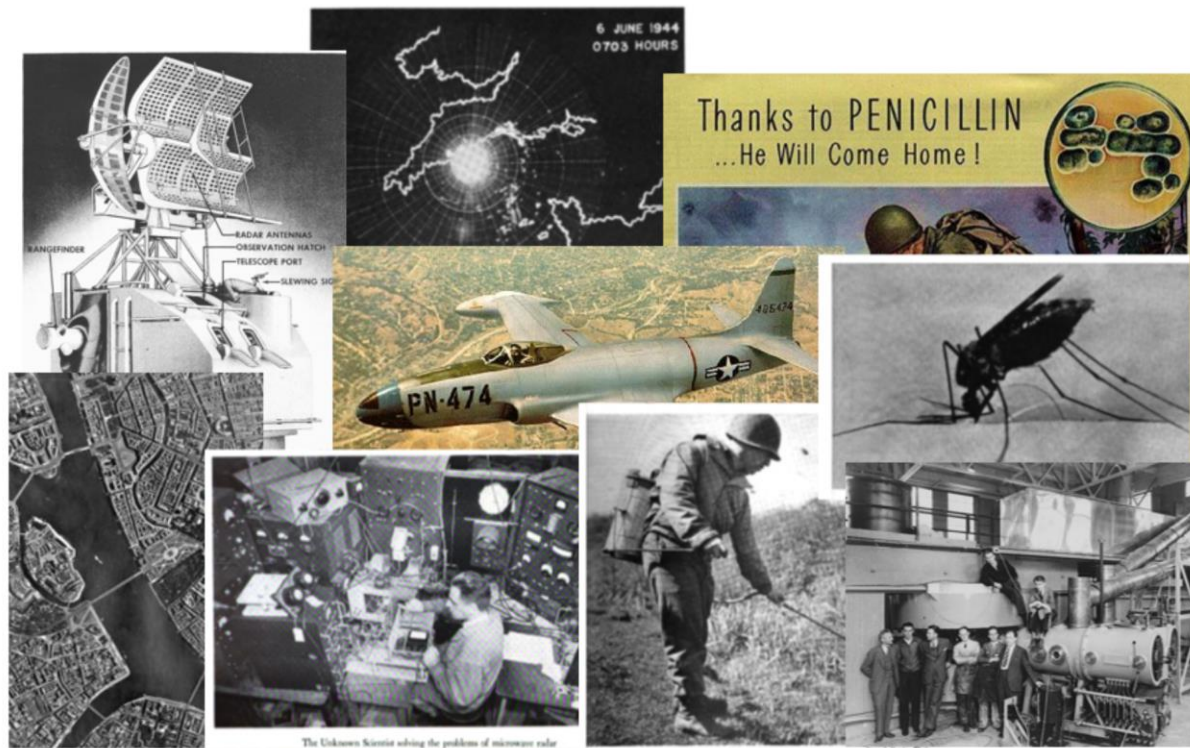
- The locus of economic activity moves from the industrial Midwest to the coasts
  - Document employment changes from 1940 to 1980
  - Detailed case studies of both those that gain and those that lose
- A New Locational Logic
  - Administrative decisions based on
    - Preferences of Generals and decision makers
    - Location of military bases
  - Continual pressure to Innovate
    - Focus on new technologies and new firms
    - University & federal lab presence
  - Politics
    - Southern governors
    - Tip O'Neil & the Massachusetts's Share
  - *The Rise of the Entrepreneurial State (Eisinger 1988)*

# America, Jump-started: World War II R&D & the Takeoff of the U.S. Innovation System

## Gross & Sampat (2023)

- Shock – Unprecedented experiment large-scale gov't R&D funding
- June 1940 Meeting of Scientists to urge funding of R&D and military technology
  - National Defense Research Committee (NDRC), which evolves into the U.S. Office of Scientific Research and Development (OSRD)
  - New agency: from a one-page proposal to a 1,500-person, multi-billion dollar operation engaging tens of thousands of scientists around the country in the war effort
- Distinctive from R&D in “peacetime”
  - Demand-driven: focused on specific military problems
  - Applied by nature:
  - Mostly taking basic science as given
  - Birth of *Big Science* -- Engaged universities/academics as well as firms

# Example World War II innovations



# Project uses (nearly) complete digitized archival OSRD records

- All contracts ( $\approx 2250$ )
- All contractors (hundreds)
- All inventions & patents (thousands)
- All research articles (thousands)
- All technical reports (tens of thousands)
- Plus, rich contextual information
  
- Data described in 2023 *Research Policy* Article
- Defined Geographic counterfactuals
  - Treated versus untreated

# Results: OSRD Investment catalyzed the takeoff of tech agglomerations in the U.S.

- Long-term outcomes : 30 year + horizon
  - By 1970: Top quartile of treated clusters producing 50% more patents relative to untreated clusters
  - Sustained impacts driven by Marshallian dynamics
- How can transient shocks have sustained effects?
  - WW2 R&D programs brought together firms, universities, and the military to solve urgent problems under a new model
  - Taking existing assets and putting them to work
  - Local ecosystem sinew: new capabilities and collaboration patterns which persist after the war ends



# Evidence from the US *Moonshot*



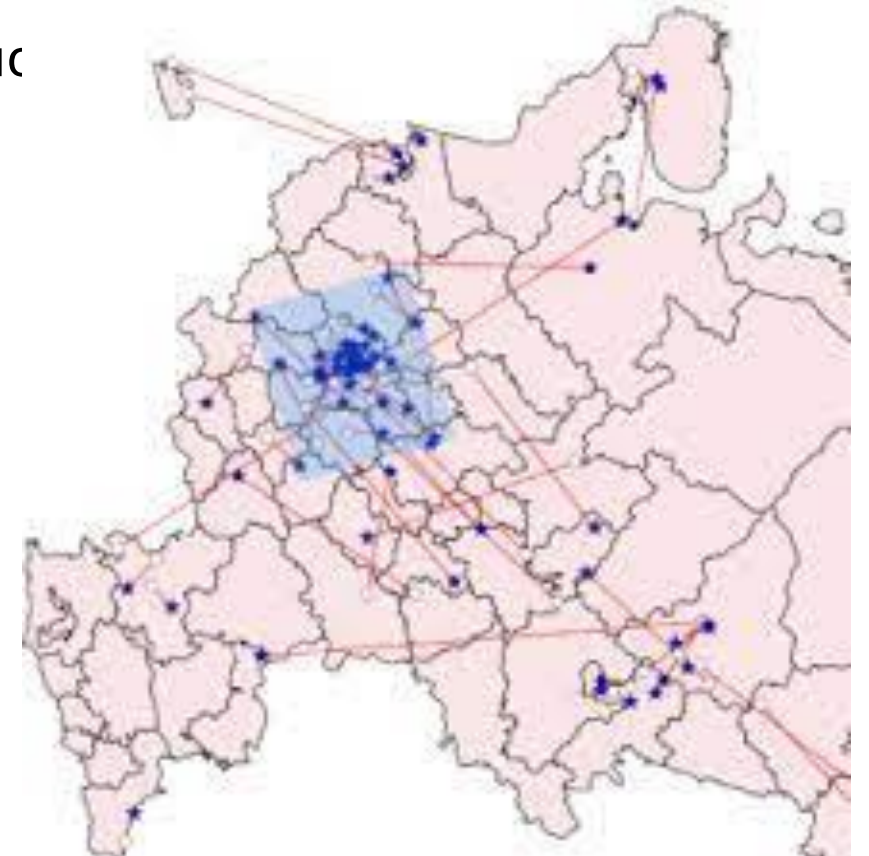
# The long-term effects associated with the NASA windfall: Kanter & Whalley (2023): Public R&D & Growth

- 1) Space Race expanded activity in county-industry pairs that were already specialized in space-related technology
- 2) Lower multiplier than overall government or defense spending: smaller impact on manufacturing value-added, employment and investment
- 3) No evidence of localized technological knowledge spillovers
- 4) Induced a migration response to locations with ex-ante capabilities
- 5) Limited long-term local impacts
  - Reinforced existing patterns



# Evidence from the Soviet Space Race: Schweiger, Stepanov & Zacchia (2022)

- Soviet government created Science Cities
  - 95 mid-sized cities created or developed to conduct
  - Choice based on secrecy-usability tradeoff
  - Investment in knowledge
  - Encouraged migration through higher wages
- Subsequent dissolution of the Soviet Union
  - All terminated
  - Funding resumes for 14 cities in 2000s
- Long term gains in productivity & innovation



# Local Economic Development, Agglomeration Economies, and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority (Kline & Moretti 2014)

- Tennessee Valley Authority Created in (1933)
  - *“The program was intended to modernize the economy of the Tennessee Valley region via a series of large-scale infrastructure investments, including electricity-generating dams and an extensive network of new roads, canals, and flood control systems.”*
  - Part of the New Deal economic development orientation
- Credible Counterfactual
  - Proposal of 7 New Authorities in 1937
  - Similar to TVA catchment region
  - Not passed by Congress
- Significant positive effects for the TVA region
- Significant increase in national manufacturing productivity
- Benefits exceeded the program’s costs

# Mission Agencies & regions: What the evidence suggests induces long-term effects?



R&D shocks can drive regional growth take-offs - Gross & Sampat (2023)

Reinforces the advantage of U.S. Eastern Elites  
What might have happened with more dispersed funding?



Relocation through wage subsidies - Schweiger, Stepanov & Zacchia (2022)

Seeding greenfield locations  
Wage subsidy of 150% of local ex ante wage to high skilled workers



Physical Infrastructure Investment – Kline & Moretti (2014)

Von Ehrlich & Seidel (2018) - German reunification

# Industrial policy & regions: What the evidence suggests induces long-term effects?



Investments in Universities &  
University Research

Andrews (2023)  
Hausmann (2021)  
Kantor & Whalley (2014 & 2019)



Trade Protection

Jahusz (2018)



Transfer of Management Practices

Giorcelli (2019)  
Bianchi & Girtcelli (2022)



Large-scale industrial upgrading

Criscuolo *et. al.* (2019)  
Lane (2021)  
Choi & Levchenko (2023)

# Rethinking the Role of Mission Agencies

- Mission Agencies are important and deserve our attention
- The Paradox of *Grand Challenges* in a time of austerity policy ?
- Mission-focused innovation ... aimed at meeting the ‘Grand Challenges’ risk neglecting the needs of the local economic context and diffusion processes (Brown, 2020), and thus may entrench (any regional) gap.
- Myers & Lanahan (2023) DOE R&D project topics induce nearby firms to work on those topics and increase non-funded firm productivity
- Grand challenges versus incremental progress?
  - Do Grand Challenges crowd-out other activities?

# Rethinking the Role of Government

- The entrepreneurial state has a developmental role to play by encouraging by an appropriate institutional environment (Schumpeter 1939: 86)
- Policy focuses on the *Skew* in economic outcomes
  - High growth winners versus SMEs
- *The Moon and the Ghetto* (Nelson 1979)
  - Need for more and better public policy analysis
- Need for policy advice from non-economists
  - Understanding context
  - Appreciation of the importance of implementation (Sunley et al. 2023)



# Thank you

Comments Appreciated

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