Quantifying Economic Effects of Transportation Investments

Methods and Applications for Regional Planning

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1 My Background & Utah Connection

Experience:

- Graduate education at University of Utah (Transportation Planning)
- 3+ years developing economic impact methods for transportation investments
- Direct experience with Utah's transportation planning context
- Led economic assessments for Utah's Unified Transportation Plan 2023-2050

What Excites Me About WFRC

Supporting investment prioritization 2034 Olympic legacy planning Nation's fastest-growing region Activity-based modeling *Ready to contribute from day one*

Technical Expertise:

- Travel demand modeling: Cube, TransCAD (complementing WFRC's existing expertise)
- Economic impact modeling: IMPLAN, TREDIS
- R-based automated workflows for reproducible analysis
- Bridging transportation modeling with economic quantification

- Brief personal intro: 3+ years experience in travel demand modeling and economic impact analysis
- Excited to discuss how these methods can support WFRC's regional planning mission
- Draw from experience with Utah UTP 2023-2050 and multiple MPO projects

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2 The Opportunity: From Performance to Impact

WFRC's Strong Foundation: - Sophisticated travel demand modeling capabilities - Activity-based modeling transition underway - Regional transportation planning expertise - Growing region with complex investment decisions

The Next Step I'd Love to Support: Moving from "How does the system perform?" to "What does this investment do for our region's economy?"

Traditional Analysis:

- Travel time savings
- VMT reduction
- Crash reduction
- Emissions benefits

Enhanced Analysis:

- Regional job creation
- Economic multiplier effects
- Business attraction potential
- Return on investment metrics

This enhanced perspective helps justify investments to stakeholders and supports competitive grant applications.

- Set up the problem: MPOs need to justify investments beyond just traffic metrics
- WFRC faces unique challenges with rapid growth and upcoming Olympics
- Economic analysis helps prioritize limited resources

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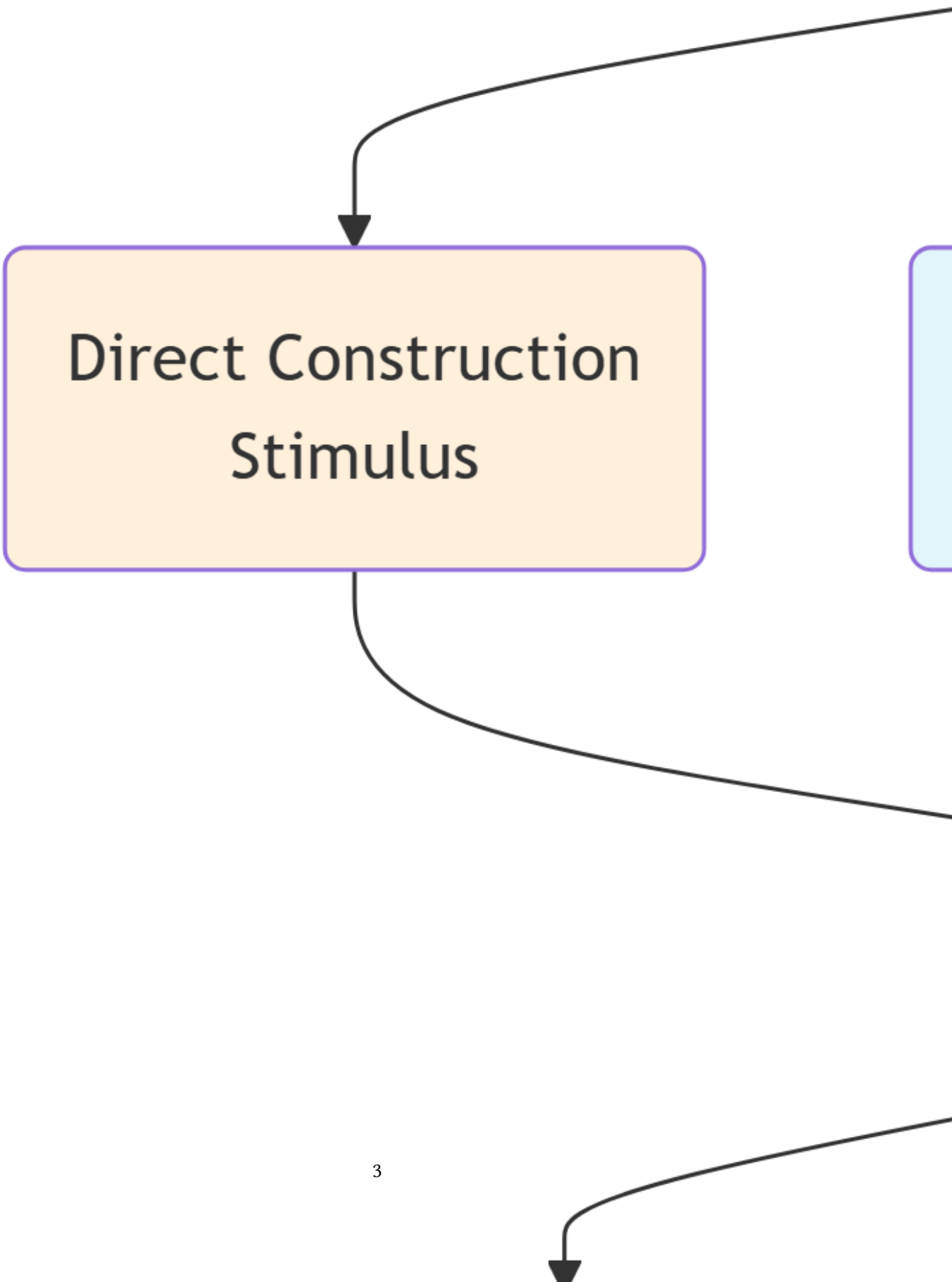
3 Economic Impact Framework I've Applied


Direct Construction Stimulus

Key insight from my experience: Not all transportation benefits create wider economic impacts. Understanding this distinction helps prioritize projects that maximize both mobility and economic returns.

- This is where my technical skills differentiate me from other candidates
- Systematic approach that emphasizes the practical insight about different types of benefits

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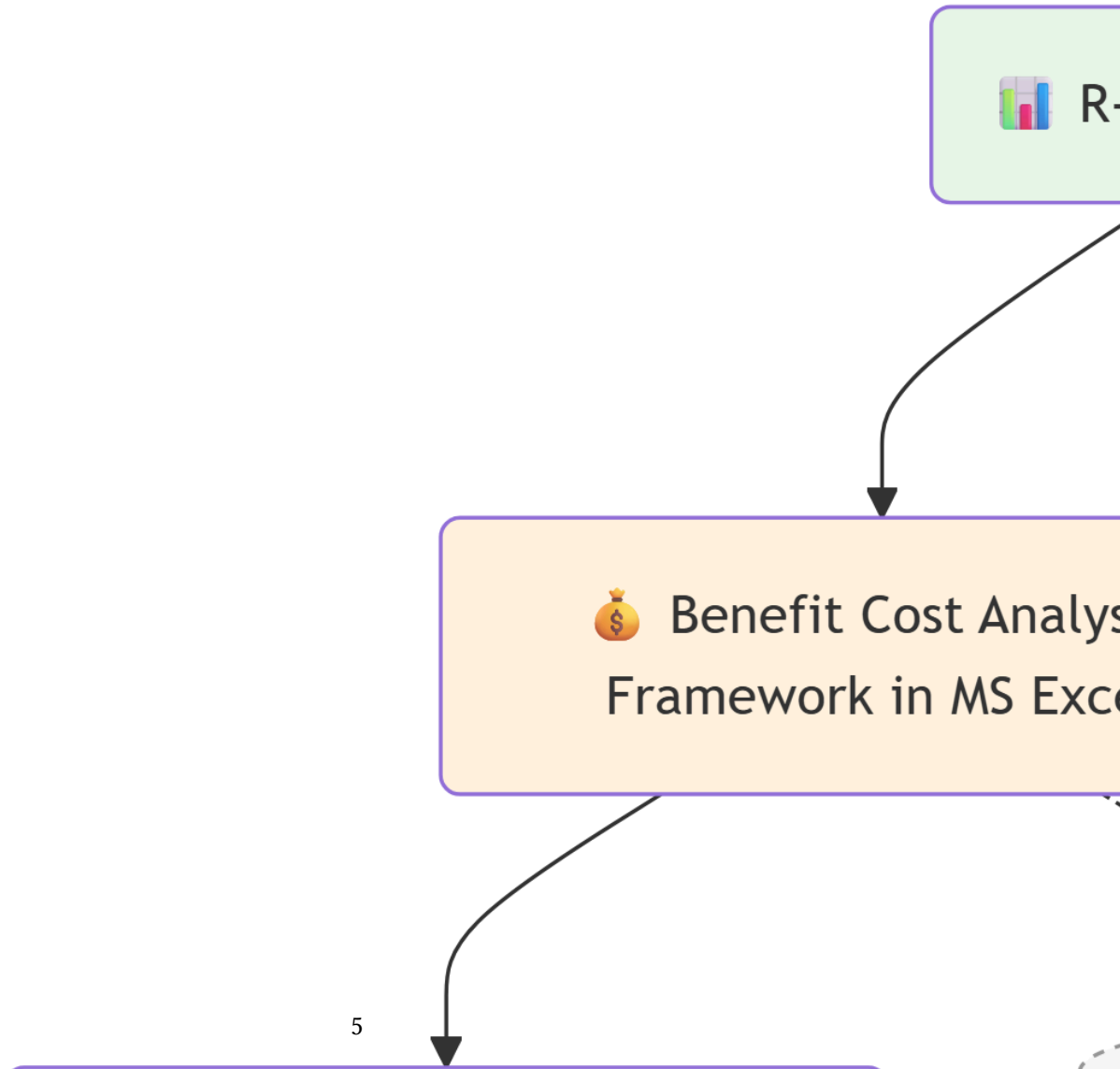
4 Real Application: Utah's Unified Plan 2023-2050

What I contributed to Utah's $36 billion transportation plan:

Methodology: - Integrated travel demand model outputs with benefit-cost analysis framework and economic impact analysis - Custom R and MS Excel based workflows linking transportation performance to economic metrics - Scenario-based analysis across multi-modal investment alternatives

Key Results: - Construction phase: 50,000+ direct jobs - Societal Benefits: $40+ B present value (28 years) - Economic Impact: $540 B regional output increase (28 years) - Return Ratio: $5.11 economic activity per dollar invested annually


R-
Benefit Cost Analys
Framework in MS Exc
IMPLAN Economic

Reproducible, automated pipeline

Relevance to WFRC: This same methodology can support WFRC's RTP development, Olympic planning, and federal grant applications.

- Show concrete results and proven methodology
- Emphasize the technical pipeline I've built
- Connect directly to their upcoming needs
- Numbers are impressive but not overwhelming

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5 Potential Applications for WFRC

Areas where economic impact analysis could enhance WFRC's work:

Investment Prioritization:

- Compare economic returns across RTP projects
- Identify investments with highest job creation potential
- Quantify equity impacts across communities

Major Project Support:

- FrontRunner electrification business case
- Transit routes expansion
- Point of the Mountain development
- 2034 Olympic transportation investments

Stakeholder Communication:

- Translate technical analysis into economic narratives
- Support federal grant applications with economic justification
- Demonstrate transportation's role in regional competitiveness

Technical Integration:

- R-based workflows compatible with WFRC's analytical environment
- Automated reporting for consistent analysis
- Integration with activity-based model transition

My perspective: Economic impact analysis works best when it complements and enhances existing technical capabilities rather than replacing them.

- Connect directly to WFRC's current priorities and challenges
- Show how this isn't just academic - it's immediately useful
- Emphasize the R integration since that matches WFRC's technical environment
- Shows understanding of WFRC's major initiatives

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6 What I'm Excited to Explore with WFRC

Questions I'd love to explore with the WFRC team:

- How to communicate the economic value of transportation investments to stakeholders?
- What role might economic analysis play in the activity-based modeling transition?
- How to best support economic justification for major transportation investments in the future?
- What are the priorities for federal grant applications where economic impact matters?

Thank you for this opportunity!

I'm eager to contribute to WFRC's mission of building consensus around data-driven transportation solutions that enhance quality of life in the Wasatch Front.

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7 Technical Deep-Dive {.smaller}

R-Based Economic Impact Pipeline

```
# Example workflow integrating with WFRC's existing processes
library(tidyverse); library(sf); library(targets)

# 1. Process travel demand model outputs
wfrc_benefits <- process_travel_model_results(
  cube_outputs = "model_scenarios/",
  performance_measures = c("time_savings", "vmt_reduction", "crashes")
)

# 2. Apply economic impact methodology
regional_impacts <- calculate_economic_impacts(
  benefits = wfrc_benefits,
  construction_costs = project_investments,
  study_area = wasatch_front_counties,
  multipliers = utah_implan_data
)

# 3. Generate stakeholder communications
impact_dashboard <- create_interactive_results(regional_impacts)
grant_narrative <- generate_economic_justification(regional_impacts)
```

Benefits: Reproducible, well-documented analysis that can be adapted for different projects and scenarios.

- Have this ready if they want to dig into technical implementation

- Shows actual R code skills and modern workflow practices
- Demonstrates understanding of reproducible research principles

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Additional Experience Portfolio

Economic impact methodologies applied across multiple contexts:

- **Bowling Green-Warren County MPO (KY)**: $180M MTP economic analysis for 200,000+ population
- **Lower Savannah COG (SC)**: Multi-county freight corridor impact assessment
- **Des Moines Area MPO**: Scenario-based Multimodal investment economic evaluation
- **Ohio DOT Cleveland**: Intersection improvement benefit-cost analysis

Consistent Approach: Automated R workflows linking travel demand model outputs with regional economic impact assessment using IMPLAN and other industry-standard tools.

What this demonstrates: I can adapt the methodology to different regional contexts while maintaining analytical rigor and technical consistency. Each project has strengthened my ability to communicate complex economic concepts to diverse stakeholder groups.

- Shows breadth of experience across different regions and project types
- Demonstrates that the methodology is transferable and scalable
- All used similar R-based integration approaches