



Preparing a Benefit-Cost Analysis for a USDOT TIGER Grant

Presented by the Office of the Assistant Secretary for
Transportation Policy
United States Department of Transportation

May 6, 2013



U.S. Department
of Transportation



- \$473.8 million multimodal, merit-based competitive grant program
- \$120 million for rural areas
- Last round the average award was \$10.64 million
- Minimum size \$10 million for urban projects
- Geographic diversity requirement



Why Benefit-Cost Analysis (BCA)?

- President's commitment to data-driven decision-making
- Requirement has applied in all four rounds of TIGER grants
 - No funding for projects for which $C > B$
- Value of BCA in project selection
 - BCA quality matters more than size of the B/C ratio
 - Focus your analysis on how it demonstrates need for your project



Additional Information in BCA Resource Guide

- Recommended monetization values
 - Value of Statistical Life
 - Value of injuries
 - Property damage
 - Travel time
 - Emissions
- Guidance on converting crash data (KABCO to MAIS)
- Additional background & reference texts



Basic Requirements

- Project Summary
 - Base case (“no-build”)
 - Project description
 - Justification and impact on long-term outcomes
 - Affected population(s)
 - Expected economic benefits
 - Alternatives



Basic Requirements

- Monetized estimates of benefits & costs
 - Year-by-year stream of benefits and costs
 - Discounted to present value (3% & 7%)
- Replicable methodology
- Demonstrate Independent Utility



Ridership

- Most benefits depend on ridership (“usership”) estimates
- Provide forecast estimates
 - Basic underlying assumptions
 - Data sources
 - Methodology
- Provide forecasts for intermediate years
 - Not just single forecast year
- Assess reliability of forecasts



EIA vs BCA

- Economic Impact Analysis (EIA) focuses on local benefits
 - Ignores costs to other localities
 - Includes transfer payments as “impacts”
 - Payrolls, tax revenues, real estate investments
- BCA focuses on national benefits (including local)
 - Nets out costs to other areas
 - Includes only productivity increases resulting from job creation, increases in property values



Benefits – Livability

- Livability benefits are often associated with:
 - Accessibility
 - Improved access to jobs, amenities
 - Accessibility to wider range of transportation modes
 - Transit, bicycle lanes, walking
 - Accessibility for disadvantaged communities
 - Land use changes that bring destinations closer
 - Important to show ridership/usership
 - Try to estimate value per user
 - Increases in property values may indicate value



Benefits – Economic Competitiveness

- Benefits in this category typically include:
 - Lower operating costs
 - Travel time savings
 - Savings to passengers, carriers, and shippers
 - Improvements in reliability
- Take care in estimating:
 - Job creation benefits (focus on productivity increases)
 - Leave out multiplier effects
- Can include increases in labor and land productivity
 - But avoid double-counting



Benefits – Safety

- Safety benefits are typically associated with reducing fatalities, injuries, crash costs, and hazmat releases
- Benefits should be based on good crash data and valid analysis of cause (crash causation factors)
 - Available crash data may need to be converted from KABCO to MAIS (see BCA Resource Guide)
- Recommended values for VSL, injuries, property damage are available in BCA Resource Guide



Benefits – State of Good Repair

- State of Good Repair benefits can include:
 - Reducing long-term maintenance and repair costs (life-cycle costs)
 - Travel time savings (from preventing closures of facilities, lack of speed and weight restrictions)
 - Other user benefits from better pavement, improved safety
- Need to consider benefits and costs of alternatives
 - Replacement vs. rehabilitation
- Risk analysis



Benefits – Sustainability

- Environmental sustainability benefits are typically from reduced emissions
 - Greenhouse gases (e.g., CO₂)
 - SO_x
 - NO_x
 - Particulate matter (PM)
 - Volatile organic compounds (VOC)
- May also be water quality, habitat benefits
- Recommended values are available in BCA Resource Guide



Costs

- Provide costs from all sources (local, State, other Federal grants, private)
- Direct capital costs: construction, design, land acquisition
- Beyond capital costs
 - O&M, rehabilitation, life-cycle costs
 - External costs: noise, congestion, pollutants
 - Cost to users during project construction: increased delay, vehicle operating costs
- **Costs of whole project should be compared with benefits of whole project (no “leveraging”)**
 - Can’t just compare TIGER costs to whole-project benefits
 - Can compare benefits and costs of just one phase if it has independent utility



BCA Ratings

- BCAs are reviewed and rated by BCA Review team
 - Very Useful
 - Useful
 - Marginally Useful
 - Not Useful



BCA Ratings

- We also rate the result of the analysis
 - Benefits > Costs
 - Uncertain, but Probably Benefits > Costs
 - Uncertain
 - Uncertain, but Probably Benefits < Costs
 - Benefits < Costs
- We don't rank projects by B/C Ratio
- Better to be conservative and get a modest excess of benefits over costs than to exaggerate benefits to get a big B/C Ratio



Lessons Learned

- **ALWAYS** document and provide reliable sources for data and calculations
- Be realistic in assumptions and estimates
- Qualitative discussion of benefits helps supplement understanding for difficult-to-measure benefits
- Consider the viewpoint of objective reviewers
 - Are estimates plausible and reasonable?
- Focus on demonstrating that benefits clearly exceed costs, **not** on getting a high B/C ratio



BCA Resources

- [April 26, 2013 Federal Register NOFA](#)
- [BCA Resource Guide](#)
- 2010 archived webcast for [Benefit/Cost Analysis for Transportation Infrastructure: A Practitioner's Workshop](#)
- General inquiries to TIGERGrants@dot.gov about BCA before June 3, 2013



Parting Words...

- BCA is an opportunity to objectively demonstrate the need for your project
 - Highlight benefits that are well-documented and align well with program's selection criteria
 - Don't forget to include all the costs of the project
 - Include a ridership/usership estimate, and estimate benefits per user
- Document, document, document
- Be realistic in your assumptions and estimates

The word "TIGER" is written in a large, bold, sans-serif font. The letters are black with orange diagonal stripes running from the top-left to the bottom-right.

U.S. Department
of Transportation



Question and Answer Session

www.dot.gov/tiger



U.S. Department
of Transportation