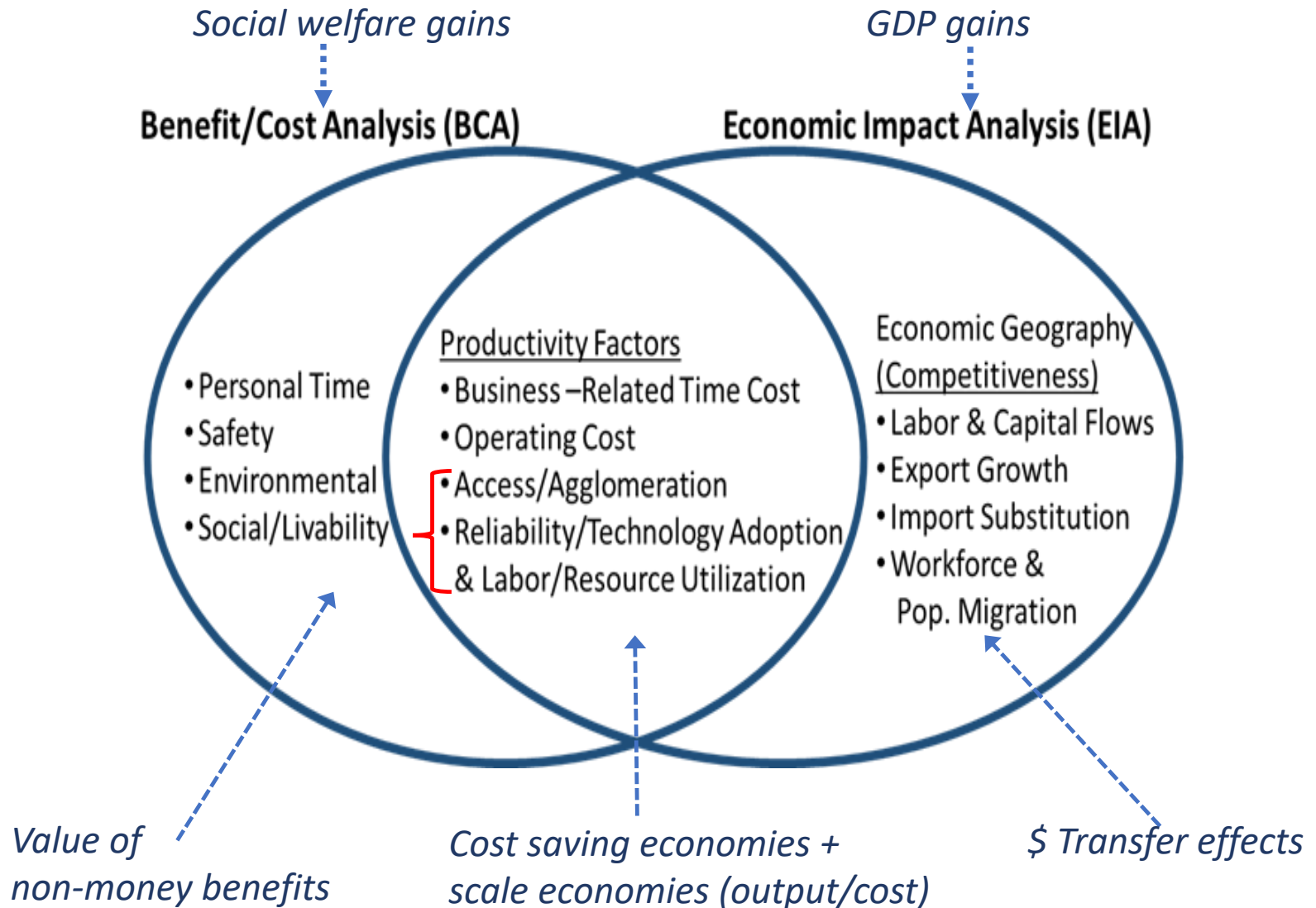


Importance of Considering Wider Economic Benefits in Benefit-Cost Analysis



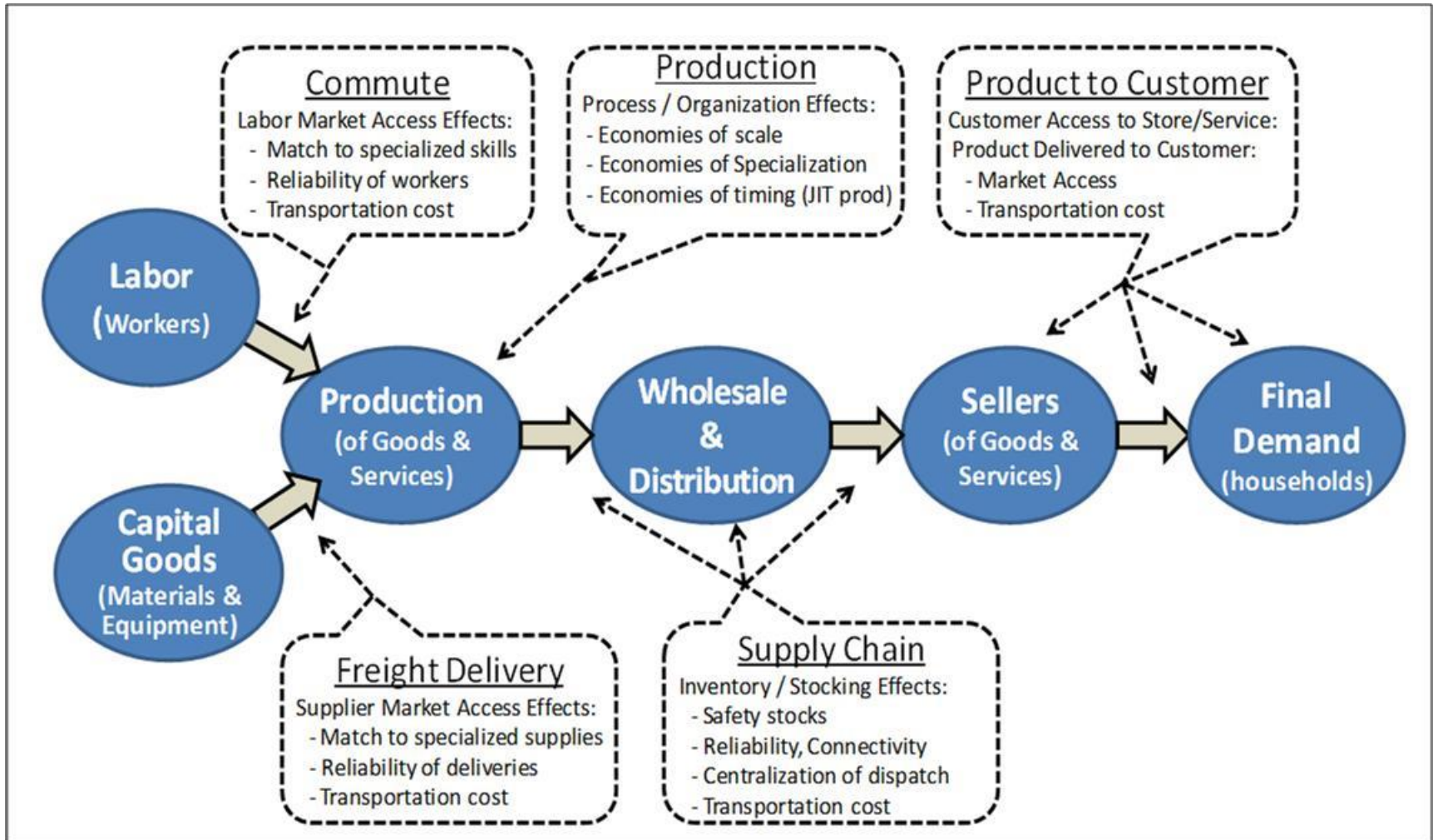
Glen Weisbrod
Economic Development Research Group, Inc.
07 Jun 2018

Benefit-Cost and Economic Impact Analyses



Sources of Productivity Benefit from Transport Investment

Productivity gain from cost savings and scale economies



Sources of (Spatial Scale and Time Threshold) Economies

Covered by TRB Research:

SHRP Project C11 (Tools for Assessing Wider Economic Benefits)

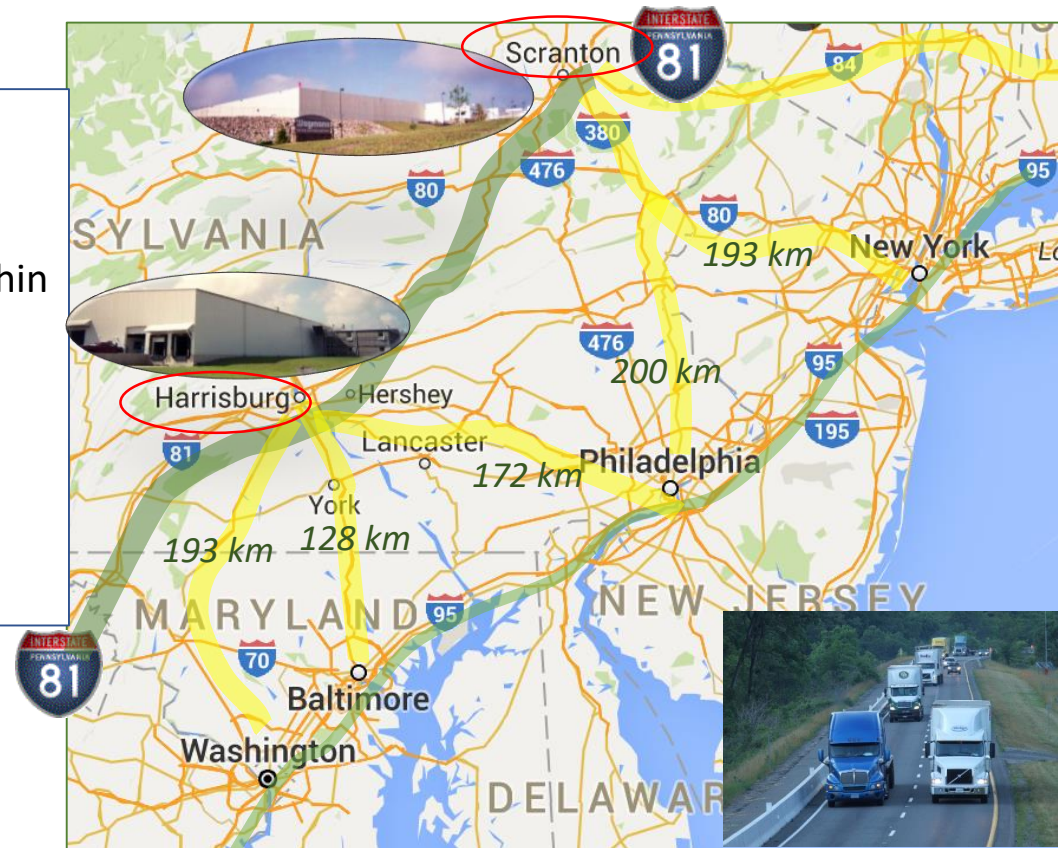
NCHRP Report 786 (Guidebook for Calculating Productivity Benefits)

- **Increased scale of labor markets**
enlarges workforce access to jobs, increasing labor force participation rate and productivity via skill matching (valued by high tech industries)
- **Increased density + scale of same day delivery markets**
increases density of delivery sites, expanding productivity (daily deliveries) per driver and per truck (FedEx, UPS, DHL effect)
- **Reliability also enables more efficient supply chain technologies**
enables lean production and just-in-time delivery, reduces warehouse stocking costs (valued for manufacturing & distribution centers)
- **Increased intermodal connectivity enables additional efficiency gains**
enables intermodal transfers with cost savings not captured by single mode models (highway benefit for air, rail and marine travel)

Supply Chains - Enabling Efficient Logistics Centers

With I-95 Corridor built up, newer I-84 enables improved logistics reliability, with centralized warehousing located in distant Pennsylvania for J.I.T. delivery to major eastern cities (New York, Philadelphia, Baltimore, Washington, DC)

Specialization: wholesale distribution
Cluster location: outside major metro
Cluster span: 16 km (10 miles)
Distance to markets: same day delivery within 290 km (180 miles)
Purpose: regional distribution to (multiple) urban markets
Technology: centralized warehouse
Productivity: highway connectivity, scale economies



Supply Chains – Enabling Efficient Intermodal Transfers

New intermodal rail center with adjacent warehouse park at south edge of Chicago area. Connects manufacturers via interstate highways (I-80, I-55 and I-355 beltway). Rail service to west coast ports for Asian sea trade. Import electronics and retail, export agricultural products.

Specialization: import/export
Cluster location: rural (metro fringe)
Service area: 290 km (180 miles)
Cluster span: 3 km (2 miles)
Purpose: regional distribution/transfer
Productivity: scale economies (widens truck distribution area), efficiency of intermodal transfer



Labor Market Scale – Enabling Effective R&D Clusters

Silicon Valley in California and Denver Tech Center represent highway oriented clusters facing growing traffic congestion. Solution has been to develop new transit services to maintain access to large, skilled labor market and connectivity to R&D centers.

Specialization: computer & biotech R&D

Cluster location: suburban

Cluster span: 16 km (10 miles)

Purpose: access to R&D and skilled labor

Productivity: worker reliability, urbanization (labor force scale economies), and localization (for knowledge sharing)



Conclusions

- Our metrics for user benefit do not capture economies of scale and time coordination -- that accrue to production and supply chains.
- These factors make a difference -- not all transportation projects generate the same efficiency and income effects.
- The failure to include these factors in BCA is a key reason why most states prefer multi-criteria rating systems as a way to acknowledge the importance of freight & labor market access, as well as connectivity effects.

