Towards a Framework for Identifying and Measuring the Benefits of Accessibility

Daphne Federing and David Lewis
OBJECTIVES

- EXPLAIN MOTIVATION FOR ESTABLISHING A WIDE VIEW OF BENEFITS
- PROVIDE SYSTEMATIC NARRATIVE BASIS FOR A POLICY AND POLITICAL DIALOGUE
- MOVE TOWARDS A STANDARDIZED AND QUANTIFIABLE EVALUATION FRAMEWORK
Most mandates acknowledge accessibility as a human right; BUT

Mandates also acknowledge (i) **costs** and (ii) **cost-benefit balancing** as legitimate considerations in their execution

- Costs viewed broadly and easy to count
- Benefits viewed narrowly
## Examples of Constraining Language

<table>
<thead>
<tr>
<th>Country / Governing Body</th>
<th>Laws/Rule Regarding Access and Prohibiting Discrimination on Basis of Disability</th>
<th>Limits on Accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>Covered by the Canadian Charter of Rights, Freedoms and the Canada Transportation Act</td>
<td>Service providers must make provision for accessible transport up the point of ‘undue hardship’ [Canada Transportation Act and Council of Canadians with Disabilities v. Via Rail Canada Inc., 2007]</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Human Rights Act 1993 (Amended Human Rights Amendment Act 2001)</td>
<td>Accommodation required, including for access to “places, vehicles, and facilities,” except “when it would not be reasonable to require the provision of such special services or facilities” (Section 43)</td>
</tr>
<tr>
<td>European Union</td>
<td>European Accessibility Act (Proposed 2015)</td>
<td>Accessibility requirements referred to in Article 3 apply to the extent that they do not impose a disproportionate burden on the economic operators concerned.” [Directive Of The European Parliament and Of The Council, Article 12]</td>
</tr>
</tbody>
</table>
“A factor relied on to justify the continuity of a discriminatory barrier in almost every case is the cost of reducing or eliminating it to accommodate the needs of the person seeking access. **But tribunals must be wary of putting too low a value on accommodating the disabled**”

2007 Canadian Supreme Court Decision
COUNTERING THE RISK

- Policy and Regulatory Action

- Sufficient capital investment to trigger a self-sustaining market for accessibility

- Each require a *strong policy/political narrative and quantitative framework*
OBJECTIVE 2
SYSTEMATIC NARRATIVE

BASIS FOR POLICY AND POLITICAL NARRATIVE
ACCESSIBILITY IMPROVEMENT

Agency Benefits

User Benefits

People with Disabilities
(Physical, Developmental, Sensory)

People without Disabilities
(Encumbered, Unencumbered)

Non-User Benefits

Capability Value

Society-at-Large

People with Disabilities

Worker Safety
O&M Savings
Mobility

Improved Quality of Time Spent
Improved Safety

Mobility

Improved Quality of Time Spent
Improved Safety

Wider Destination Sheds
Cost Savings
Time Savings
Health Outcomes

Net New Employment & Increased Education/Income
Macroeconomic Impacts

Comfort
Convenience
Greater Independence & Integration
Reduced Stigmatic Harm
Reduced Fatalities
Reduced Injuries
Reduced Property Damage
Wider Destination Sheds
Cost Savings
Time Savings
Comfort
Convenience
Reduced Stigmatic Harm
Reduced Fatalities
Reduced Injuries
Reduced Property Damage
OBJECTIVE 3
QUANTIFICATION

TWO METHODOLOGIES AT PLAY

• BENEFIT-COST ANALYSIS
  • Quantification in original units
  • Monetary-equivalent value
  • Qualitative Specificity -- only as much determinacy as actually available

• CAPABILITY APPROACH
  • Freedom to achieve well-being of primary moral importance
  • Freedom to achieve well-being understood in terms of people’s real opportunities to do and be what they have reason to value
  • Human development metrics
### OBJECTIVE 3
**QUANTIFICATION: USE VALUE; PEOPLE WITH DISABILITIES; MOBILITY**

<table>
<thead>
<tr>
<th>CLASS OF BENEFIT</th>
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<th>BENEFICIARY</th>
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<tbody>
<tr>
<td>USE</td>
<td>MOBILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>WIDER ACCESS TO DESIRED DESTINATIONS, GENERATED TRIPS.</td>
<td>DEMAND ANALYSIS; GEOGRAPHIC INFORMATION SYSTEMS; GRAVITY AND ISOCHRONIC INDICES; QUALITY-ADJUSTED LIFE YEARS.</td>
<td>WILLINGNESS TO PAY/ACCEPT</td>
</tr>
<tr>
<td>USE</td>
<td>MOBILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>TIME SAVINGS</td>
<td>DEMAND ANALYSIS</td>
<td>VALUE OF TIME</td>
</tr>
<tr>
<td>USE</td>
<td>MOBILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>IMPROVED HEALTH OUTCOMES</td>
<td>QUALITY-ADJUSTED LIFE YEARS</td>
<td>VALUE OF QUALITY-ADJUSTED LIFE YEARS.</td>
</tr>
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</table>
Mobility as a Healthcare Intervention

QUALITY-ADJUSTED LIFE YEARS

With Mobility Intervention

Without Mobility Intervention
Valuation of Quality-Adjusted Life Years

- Annuitize Value of Statistical life over 35 years to convert to Value of a Statistical Life Year

- Value of Life $6.5M ≈ VSLY of $300,000 (r=3%)
## OBJECTIVE 3
### QUANTIFICATION: USE VALUE, PEOPLE WITH DISABILITIES; QUALITY

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<tr>
<td>USE</td>
<td>QUALITY OF TIME SPENT</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>INCREASED COMFORT</td>
<td>DEMAND ANALYSIS</td>
<td>WILLINGNESS TO PAY VOT PREMIUMS</td>
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<tr>
<td>USE</td>
<td>QUALITY OF TIME SPEND</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>INCREASED CONVENIENCE</td>
<td>DEMAND ANALYSIS</td>
<td>WILLINGNESS TO PAY VOT PREMIUMS</td>
</tr>
<tr>
<td>USE</td>
<td>QUALITY OF TIME SPENT</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>REDUCED STIGMATIC HARMS</td>
<td>COST MONETIZATION OR DEMAND ANALYSIS</td>
<td>WILLINGNESS TO PAY VOT PREMIUMS</td>
</tr>
</tbody>
</table>
2011: Valuation of Stigmatic Harm Included in U.S. Federal Government Guidelines for Cost-Benefit Analysis

Cost Monetization -- Breakeven Analysis

Weighted Value of Time

Qualitative Specificity
### OBJECTIVE 3

**QUANTIFICATION: USE-VALUE, PEOPLE WITH DISABILITIES; SAFETY**

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<tbody>
<tr>
<td>USE</td>
<td>SAFETY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>REDUCED FATALITIES, INJURIES, PROPERTY DAMAGE</td>
<td>DEMAND AND INCIDENCE ANALYSIS</td>
<td>WILLINGNESS-TO-PAY BASED STATISTICAL VALUE OF LIFE, LIMB, SUFFERING, PROPERTY</td>
</tr>
</tbody>
</table>
### OBJECTIVE 3
QUANTIFICATION: USE-VALUE, PEOPLE WITHOUT DISABILITIES; MOBILITY, SAFETY, MACRO-ECONOMIC IMPACTS

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<tr>
<td>USE</td>
<td>Mobility</td>
<td>People without Disabilities</td>
<td>Wider access to desired destinations, generated trips.</td>
<td>Demand Analysis; Geographic Information Systems; Gravity and Isochronic Indices</td>
<td>Willingness to Pay/Accept; Value of Quality-Adjusted Life Years.</td>
</tr>
<tr>
<td>USE</td>
<td>Mobility</td>
<td>People without Disabilities</td>
<td>Time Savings</td>
<td>Demand Analysis</td>
<td>Value of Time</td>
</tr>
<tr>
<td>USE</td>
<td>Mobility</td>
<td>People without Disabilities</td>
<td>Increased Comfort</td>
<td>Demand Analysis</td>
<td>Willingness to Pay Premiums</td>
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<td>USE</td>
<td>Mobility</td>
<td>People without Disabilities</td>
<td>Increased Convenience</td>
<td>Demand Analysis</td>
<td>Willingness to Pay Premiums</td>
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<tr>
<td>USE</td>
<td>Safety</td>
<td>People without Disabilities</td>
<td>Reduced fatalities, injuries, property damage</td>
<td>Demand and Incidence Analysis</td>
<td>Statistical Value of Life, Limb, Suffering, Property</td>
</tr>
<tr>
<td>USE</td>
<td>Macroeconomic Impacts</td>
<td>Society-at-Large</td>
<td>Income gains through higher labour market participation and educational attainment</td>
<td>Input-Output Analysis</td>
<td>Direct, Indirect and induced GDP; Return on Disability</td>
</tr>
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</table>
TRIGGERING A VIRTUOUS CIRCLE OF SELF-SUSTAINING ACCESSIBILITY AND RETURN ON DISABILITY

- Benefit-Driven Regulation and Enforcement
- Research & Development
- New Technology and Design Improvement
- Capital Investment in Accessibility
- Self-Sustaining Accessibility
- Application to Transportation, Built Environment, Workplace, Home

Sets Off Capital Investment
Self-Generating Virtuous Circle
Available Technology Spurs Investment
## OBJECTIVE 3
**QUANTIFICATION: NON-USE VALUE**

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<tbody>
<tr>
<td>NON-USE</td>
<td>CROSS-SECTOR</td>
<td>SOCIETY AT-LARGE</td>
<td>SOCIAL SERVICE AGENCY RESOURCES</td>
<td>DEMAND AND BUDGET ANALYSIS</td>
<td>BUDGETARY RESOURCE SAVINGS</td>
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<tr>
<td>NON-USE</td>
<td>OPTION VALUE</td>
<td>SOCIETY AT-LARGE</td>
<td>INSURANCE</td>
<td>DEMOGRAPHIC ANALYSIS; STATED PREFERENCE ANALYSIS</td>
<td>WILLINGNESS TO PAY/CONTINGENT VALUATION ANALYSIS</td>
</tr>
<tr>
<td>NON-USE</td>
<td>EXISTENCE VALUE</td>
<td>SOCIETY AT-LARGE</td>
<td>CIVIC SOCIETY</td>
<td>STATED PREFERENCE</td>
<td>CONTINGENT VALUATION</td>
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</tbody>
</table>
## OBJECTIVE 3
**QUANTIFICATION: CAPABILITY**

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<th>CLASS OF BENEFIT</th>
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<th>DESCRIPTION</th>
<th>QUANTIFICATION</th>
<th>INDEXING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPABILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>ACCESS TO FREEDOMS THROUGH DUE PROCESS; POLITICAL PROCESS; JUDICIAL PROCESS</td>
<td>PERIODIC RANDOMIZED SAMPLE SURVEY</td>
<td>INDEX OF PARTICIPATION IN DAILY LIFE</td>
<td></td>
</tr>
<tr>
<td>CAPABILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>INCREASED LIFE-OPPORTUNITIES THROUGH ACCESS TO HEALTH, EMPLOYMENT, EDUCATION, SOCIAL OUTLETS …</td>
<td>PERIODIC RANDOMIZED SAMPLE SURVEY</td>
<td>INDEX OF HEALTH, EDUCATION, AND WELLNESS</td>
<td></td>
</tr>
<tr>
<td>CAPABILITY</td>
<td>PEOPLE WITH DISABILITIES</td>
<td>INCREASED SUBJECTIVE WELL-BEING</td>
<td>PERIODIC RANDOMIZED SURVEY</td>
<td>INDEX OF SUBJECTIVE WELL-BEING</td>
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INFLUENCE OF CAPABILITY INDICES

- Human Development Index now an official government statistic in many countries
- Annual publication has been found to inspire serious political discussion and renewed efforts, nationally and regionally, to improve lives
- Examples: United States AHDI; Roma in Central Europe; Mapuche populations in Mexico
INFLUENCE OF CAPABILITY INDEXES: American Human Development Index
To achieve economically sustainable accessibility:
Trigger a virtuous circle of self-sustaining investment in accessible technology and design

To trigger virtuous circle: Ensure sufficient capital investment and R&D in accessibility

To ensure sufficient capital investment and R&D: Need strong narrative on benefits and quantitative framework

Adoption of framework can be comprehensive to maintain broad focus

Quantitative application of framework can be gradual depending on nation-state and agency resources and data