Broadening appraisal to incorporate consideration of gender impacts

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cambiaMO | changing MObility
Research and Innovation for changing MObility
Remodeling of infrastructure: looking for balancing

Infrastructures share

- 80% cars infrastructure
- 75% expenditure for urban highways
- Strongly regressive infrastructure: 0.6 costs for upper income people in respect to low-income people

Modal share

Source: Mobility Survey for MADRID 2004 and EMTA (European Metropolitan Transport Authorities) barometer
Time, health and other gender impacts

Infrastructure Assessment

**Socio-economic impacts**
- LUTI MODEL and CBA analysis:
  - Time saving
  - Costs
  - Social discount rates
- Real state impacts

**Environmental, health and human rights effects**
- Traffic-Emission and health model):
  - Exposition to the emissions
  - Risk characterization
  - Hospital discharges
  - Health costs

**Gender impacts**
- Quantitative method: mobility of caring
  - Mobility in space and time
  - Pollution effects on health
- Qualitative study: Focus group: Security and accessibility to Green space

4 STEPS
- PHASE 1: DATA COLLECTION
- PHASE 2: ASSESSMENT METHODS
- PHASE 3: RESULTS ANALYSIS
- PHASE 4: RECOMMENDATIONS
Land Use and Transport Interaction Model
The case of Madrid: M-30 covering location

Periods of assessment

- 2015. End of the period of analysis
- Behind 2017. Trend checking

Source: Own elaboration from IGN and Madrid City Council data
Location of entrances and exits of M-30 underground tunnel of ventilation perimeters and emission measurement stations
Trends of NO\textsubscript{2} emissions and noise in the city and traffic data.
Superposition of both cutting areas of the census sections with 500 m buffer with respect to the emission focuses.
<table>
<thead>
<tr>
<th>Project</th>
<th>1. Users of infrastructures</th>
<th>2. Benefited by Green space (i.e. residents farway from emissions perimeters)</th>
<th>3. Benefited by Madrid Rio, but not by the infrastructure (e.g. do not use by car)</th>
<th>4. Non-users of the M-30 and affected by emissions and noise</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-30 Tunnel and road capacity increasing</td>
<td>Benefited</td>
<td>Neutral</td>
<td>Affected</td>
<td>Affected</td>
</tr>
<tr>
<td>Madrid Rio - Green Park</td>
<td>Neutral</td>
<td>Benefited</td>
<td>Beneficiados/as</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

Source: Own Elaboration
**Costs/benefits related to the income levels**

\[
WF = \sum_{t=0}^{n} \sum_{ijm} \left[ \frac{1}{1 + r_l^t} \cdot \Delta CS_{ijm}^l(t) + \frac{1}{1 + r_a^t} \cdot \Delta CS_{ijm}^a(t) + \frac{1}{1 + r_h^t} \cdot \Delta CS_{ijm}^h(t) + \frac{1}{1 + r_o^t} \cdot \Delta O_{ijm}(t) + \frac{1}{1 + r_g^t} \cdot \Delta G_{ijm}(t) + \frac{1}{1 + r_s^t} \cdot \Delta E_{ijm}(t) \right] (1)
\]

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Ratio</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time saving per capita</td>
<td>(\times) high income/(\times) low income</td>
<td>1.69</td>
<td>2.24</td>
<td>2.11</td>
</tr>
<tr>
<td></td>
<td>(\times) high income/(\times) medium income</td>
<td>1.31</td>
<td>1.54</td>
<td>1.48</td>
</tr>
</tbody>
</table>

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</thead>
<tbody>
<tr>
<td>Cost per capita / income</td>
<td>(\times) high income/(\times) low income</td>
<td>0.61</td>
<td>0.55</td>
<td>0.51</td>
</tr>
<tr>
<td></td>
<td>(\times) high income/(\times) medium income</td>
<td>0.62</td>
<td>0.53</td>
<td>0.51</td>
</tr>
</tbody>
</table>
Hospital admissions for lung diseases and asthma
More women than men affected by pollution

Nº altas en buffer 500 m atribuibles a contaminación de NO2
(Todas las 4 estaciones con datos 2003-17)
Some data on mobility and gender

VALUES

We mainly move for caring

- ...walking and in public transport
- Lower Satisfaction Index

### Spanish Metropolitan Area

<table>
<thead>
<tr>
<th>Trip purpose (one way)</th>
<th>Gender</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Work</td>
<td>9.5%</td>
<td>12.1%</td>
<td>21.6%</td>
<td>53.9%</td>
</tr>
<tr>
<td>Study</td>
<td>5.2%</td>
<td>5.2%</td>
<td>10.5%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Care</td>
<td><strong>26.6%</strong></td>
<td>14.7%</td>
<td><strong>41.3%</strong></td>
<td>19.0%</td>
</tr>
<tr>
<td>Leisure</td>
<td>8.6%</td>
<td>10.4%</td>
<td>19.0%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Other</td>
<td>4.0%</td>
<td>3.7%</td>
<td>7.7%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Total</td>
<td><strong>53.9%</strong></td>
<td><strong>46.1%</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

### Ohio

<table>
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<tr>
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</tr>
<tr>
<td>Study</td>
<td>1.8%</td>
<td>1.5%</td>
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<td><strong>10.5%</strong></td>
</tr>
<tr>
<td>Care</td>
<td><strong>23.3%</strong></td>
<td><strong>18.0%</strong></td>
<td><strong>41.3%</strong></td>
<td><strong>23.1%</strong></td>
</tr>
<tr>
<td>Leisure</td>
<td>11.8%</td>
<td>11.3%</td>
<td><strong>23.1%</strong></td>
<td><strong>10.4%</strong></td>
</tr>
<tr>
<td>Other</td>
<td>5.5%</td>
<td>4.9%</td>
<td>10.4%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Total</td>
<td><strong>51.7%</strong></td>
<td><strong>48.3%</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
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We basically move for caring

- **Mobility of care-giving**
  trips to carry out errands, daily shopping (food, medicines, etc.) and visits to health centers, as well as accompanying dependent persons (minors, elderly and/or disabled)

- **Caring mobility**
  40% of daily trips, but during the COVID19 this percentage enormously increased at 60%, for **work 20% out of COVID time** and the rest of trips includes study, leisure and personal management

- ...but transport planning is mostly related with commuting
A young woman walks through the city. She is very aware of her appearance and the reaction (supposed or real) she provokes in the people she encounters. She walks through a group of construction workers eating their meals, lined up on the sidewalk. Her stomach stirs in terror; her face tightens under self-control and inattention; her way of walking and carrying becomes rigid and dehumanized. No matter what they tell him, he will be unbearable. She knows that she will not be physically assaulted or hurt. They will only do it metaphorically. What they are going to do is invade her. They are going to use their body with their eyes. They will evaluate your market price. They will comment on your shortcomings or compare them with those of other passers-by. They will involve you in their fantasies without asking you if you are willing to do so. They will make you feel ridiculous, grotesquely sexual, or horribly ugly. Above all, they're going to make it feel like a thing.

Tax Meredith, 1970, The Woman and Her Mind
Key Takeways from US survey

We found:

• Women indicate they are less willing to share and more wary of unproven technology.

• But in reality, even though women’s usage of ride-hailing services is slightly less than men overall, their level of sharing is 1.5 times greater!

• Women express a lower level of willingness/interest to ride or buy autonomous vehicles and share rides in an AV ride-hailing setting. Is the presence of a human driver important/reassuring?

We recommend:

• Develop safety protocols and targeted campaigns for enhancing women’s experience with shared and automated transport services.

• Special services such as female-only services may enhance shared/automated mobility adoption among women.

• More research to untangle stated intentions versus actual behaviors
The notion of needs related to the notion of benefit: estimating the benefits of a population means measuring how much the needs are covered.

Current benefit-based methodologies do not always succeed in highlighting unmet needs (i.e. CBA).

Making needs visible is essential for identifying mobility activities (Measuring transport equity, 2019, Di Ciommo et al.).
How reorienting transport planning for needs?

- **Next step**: to reorient the transport system to trips of care-giving.
- **Transport planning**: between the supply of transport systems mainly built for work and the unmet mobility needs for care-giving purposes.
- **Mobility for care-giving** purposes needs for improvements at the local scale, more than to optimising high-capacity road infrastructure.
Imbalance

Women workers in Transport

Women consumers of transport

Source: Col·lectiu Punt 6, 2014
Encouraging innovations in planning developments with concepts such as the ‘15-minute city’ being championed by the Mayor of Paris.

Operational and technological innovations for caregivers with the increasing in frequency of bus services in Valladolid during the pandemic.
- **City of Ha Noi** has specific provisions *to increase* the employment status of women in the sector of metro rail

- **More women in the decision places, more services alignment with the mobility care-giving needs**
It is more crucial than ever to have evaluation tools and Researchers embrace diversity and for that, we need a method who champion it.

- The Diversity, Equity and Inclusive (DEI) method will address critical gaps in research and creating a level playing field for **Women**, including
  - ethnic minorities,
  - low-income,
  - women with functional diversity,
  - genders minorities
DEI Maturity Index

- Communication and Education
- Assessment
- Culture
- Investment and Infrastructure
- Compensation, Recruitment, and Retention
- Data Acquisition/Collection

Goal 2026

Source: CUPRA
Incorporation of DEI into mission and strategic priorities

Use of inclusive language in communication

Education of new and existing members

COMMUNICATION

• Incorporation of DEI into mission and strategic priorities
• Use of inclusive language in communication
• Education of new and existing members

ASSESSMENT

• Collection of data, type of data, and how it’s used
• Assessments and reviews of current gender policies in transport DEI efforts/goals
• Accountability to DEI goals in all activities taken by the diversity ambassador team
DEI Maturity Index

CULTURE

- Efforts to welcome diversity
- Engagement of senior and young women leaders
- Diverse representation in leadership
- Address workplace discrimination

INFRASTRUCTURE

- Dedicated staff for DEI
- Dedicated resources for DEI
- Recruitment of women, Gender Minorities
- Recruitment of Women with Disabilities
...to be able to transform it from an universal point of view

- Assessing before acting
- Rethinking planning including gender and DEI impacts
- Rethink the organization of services
- Rethinking the design of public space
Thanks

contact

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