Public Health Tools for Environmental Policy

Rajiv Bhatia, MD, MPH
San Francisco Department of Public Health
Work of the Department of Public Health Program on Health, Equity and Sustainability

- Inter-disciplinary program to advance health equity and environmental justice
- Engages with public institutions and private profit organizations working in diverse policy sectors
- Conducts research and applied analysis to increase the consideration of health in policy making
- Develops innovative public health policies and laws
Health Impact Assessment

- A systematic process to judge the effect of societal decisions on health
- Uses a holistic definition of health—determinants, behaviors, diseases
- Considers multiple adverse and beneficial effects using multiple methods
- Strives for transparency and engagement with stakeholders
- Identifies health promoting decision alternatives
San Francisco Road Pricing HIA (2011)

- **Decision:**
  - Proposed program to charge $3 during AM/PM rush hours to travel into or out of the congested northeast quadrant of San Francisco. Revenues would fund transport improvements.
  - Decision will be made by legislative body

- **Scope of Analysis:**
  - Active transportation & mortality
  - Particulate pollution & mortality
  - Traffic noise, stress and IHD
  - Pedestrian and cyclist injury
  - Equity in traffic density
  - Economic valuation
### Health Impacts

#### (Annual Estimates)

#### 2005: Existing Conditions

<table>
<thead>
<tr>
<th>Health Impacts</th>
<th>Citywide</th>
<th>Northeast Quadrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Death From Air Pollution</td>
<td>65</td>
<td>24</td>
</tr>
<tr>
<td>Stress From Traffic Noise</td>
<td>92,500</td>
<td>36,800</td>
</tr>
<tr>
<td>Heart Attacks From Traffic Noise</td>
<td>31</td>
<td>18</td>
</tr>
<tr>
<td>Pedestrians Injured by Motor Vehicles</td>
<td>810</td>
<td>360</td>
</tr>
<tr>
<td>Cyclists Injured by Motor Vehicles</td>
<td>270</td>
<td>135</td>
</tr>
<tr>
<td>Cycling Benefits - Lives Saved</td>
<td>23</td>
<td>8</td>
</tr>
<tr>
<td>Walking Benefits - Lives Saved</td>
<td>130</td>
<td>69</td>
</tr>
</tbody>
</table>

#### Change: 2005 - 2015 BAU

<table>
<thead>
<tr>
<th>Health Impacts</th>
<th>Citywide</th>
<th>Northeast Quadrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Death From Air Pollution</td>
<td>2%</td>
<td>-3%</td>
</tr>
<tr>
<td>Stress From Traffic Noise</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>Heart Attacks From Traffic Noise</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Pedestrians Injured by Motor Vehicles</td>
<td>6%</td>
<td>1%</td>
</tr>
<tr>
<td>Cyclists Injured by Motor Vehicles</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>Cycling Benefits - Lives Saved</td>
<td>9%</td>
<td>13%</td>
</tr>
<tr>
<td>Walking Benefits - Lives Saved</td>
<td>6%</td>
<td>10%</td>
</tr>
</tbody>
</table>

#### Change: 2005 - 2015 RP

<table>
<thead>
<tr>
<th>Health Impacts</th>
<th>Citywide</th>
<th>Northeast Quadrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Death From Air Pollution</td>
<td>-3%</td>
<td>-4%</td>
</tr>
<tr>
<td>Stress From Traffic Noise</td>
<td>8%</td>
<td>10%</td>
</tr>
<tr>
<td>Heart Attacks From Traffic Noise</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Pedestrians Injured by Motor Vehicles</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Cyclists Injured by Motor Vehicles</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>Cycling Benefits - Lives Saved</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>Walking Benefits - Lives Saved</td>
<td>8%</td>
<td>12%</td>
</tr>
</tbody>
</table>

#### Change: 2015 BAU - 2015 RP

<table>
<thead>
<tr>
<th>Health Impacts</th>
<th>Citywide</th>
<th>Northeast Quadrant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Death From Air Pollution</td>
<td>-5%</td>
<td>-12%</td>
</tr>
<tr>
<td>Stress From Traffic Noise</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Heart Attacks From Traffic Noise</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Pedestrians Injured by Motor Vehicles</td>
<td>-5%</td>
<td>-9%</td>
</tr>
<tr>
<td>Cyclists Injured by Motor Vehicles</td>
<td>-2%</td>
<td>-3%</td>
</tr>
<tr>
<td>Cycling Benefits - Lives Saved</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td>Walking Benefits - Lives Saved</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>

#### Confidence in Quantitative Estimate

- **High**
- **Moderate**
- **Low**

---

2015 BAU: 2015 under "Business As Usual" - no road pricing; 2015 RP: 2015 with road pricing

**Red:** Increases in Negative Health Impacts

**Green:** Increases in Health Benefits

**Black:** Neutral/Flat Impacts
Healthy Development Measurement Tool

1) Framework of Community health objectives
2) Community-level Health Indicators
3) Policy and Design Strategies
4) Development Targets
5) Public Health Evidence
San Francisco areas exceeding California PM 2.5 standard for annual average
Relative elementary school quality and accessibility illustrates needs for future school planning.
Integrating Health into the EIA Process

- City proposed rezoning of historically industrial lands
- Potential environmental impacts on residents from noise, air pollutants, traffic hazards, and limited infrastructure
- SFDPH contributed analysis and mitigations to EIR as “cooperating agency”
- EIA required new mitigations to protect respiratory health, reduce noise exposure and added “improvement measures” to reduce pedestrian injuries
Interagency Pedestrian Safety Planning

- Very high rate of fatal and non-fatal pedestrian injuries in San Francisco
- Many structural and policy barriers to addressing pedestrian safety
- 2010 Mayoral directive on pedestrian safety establishing long range targets and action plan
- Department of Public Health is leading policy and planning efforts with transportation and planning agencies
- City using Department of Public Health assessment and forecasting tools to prioritize actions and investments
Health performance metrics integrated in the Bay Area Transportation Plan

- GHG reduction
- Adequate housing
- Healthy and Safe Communities
  - PM 2.5 attributable mortality
  - Transportation Injuries
  - Active transportation time
- Open Space preservation
- Household transportation costs
- Reduction of Travel times
- Economic vitality—GDP growth
- Transportation system maintenance
Local health agency engagement with environmental policy and planning: outcomes

- Direct Outcomes
  - Public understanding of health determinants
  - Changes to policy design
  - Accountability to EIA mandates

- Indirect Outcomes
  - Understanding of the strategic role of health evidence
  - Methodological capacity
  - Cooperation with planning, transportation, housing, and economic sectors
  - Identification of policy and regulatory gaps
Resources: The SF Bay HIA Collaborative

SF HIA Collaborative
www.hiacollaborative.org

SF Department of Public Health
www.sfphes.org

UC Berkeley HIA Group
http://sites.google.com/site/ucbhia

Human Impact Partners
www.humanimpact.org