Quantitative Assessment in Land Use and Transportation

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Overview

Assessment Steps Recap

1. Use research questions developed and indicators identified in scoping

2. Profile existing conditions by collecting data for indicators that answer your research questions

3. Evaluate how the proposal will change selected indicators

4. Use results to develop recommendations and mitigations to address negative health impacts and maximize health benefits
A Health Impact Assessment of the Humboldt County General Plan Update
Proposal
Update Humboldt County’s General Plan, including development scenarios to accommodate future growth in the county

Collaborators
Board of Supervisors
Public Health Branch
County Planning Department
The California Endowment
Human Impact Partners
HumPAL (community organization)
Proposed Alternatives

Alternative A
“Focused growth”
All new units built in areas with existing infrastructure
6,000 units over 25 years

Alternative B
Build primarily in areas with existing infrastructure
Some expansion to areas outside city centers
12,000 units (6,000 urban/6,000 non-urban)

Alternative C
Requires expansion of infrastructure
Allows new housing in outlying areas
18,000 units (6,000 urban/12,000 non-urban)
Assessment Steps

For 35 indicators selected

- Literature review
- Collection of existing conditions data
- Analysis of how 3 alternatives would impact indicators, including vulnerable populations
- Potential mitigations
Assessment: Vehicle Miles Traveled

Existing Conditions
In Humboldt County, VMT = 27 miles/person/day (2006)
California VMT = 24 miles/person/day

VMT affects health
Collisions, walking/biking, proximity to goods and services, social cohesion, global warming

Disparities
Seniors may be unable/unwilling to drive
Low-income people may not have access to cars or may need to spend large percent of income on driving

VMT: Average vehicle miles traveled per person per day
Assessment: VMT Findings

Alternative A (baseline)
Reduced individual travel expenses and time
Increased transit, walking, and biking

Alternative B
200 million more miles driven in the county annually

Alternative C
400 million miles more
# Combining Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Empirical Literature</td>
<td>In CA, per capita VMT is 2.7 times higher in rural areas when compared with urban areas.</td>
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<tr>
<td>Indicator</td>
<td>In 2006, Humboldt residents traveled 27 vehicle miles per capita per day.</td>
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<tr>
<td>Focus group</td>
<td>Raised the issue of walkability many times, and desire to analyze and minimize VMT.</td>
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<tr>
<td>Original analysis</td>
<td>Using Alternative A as a baseline, Alternative B would generate 16% (over 200 million miles) more VMT annually in the county, and Plan Alternative C would generate 32% (over 400 million miles) more VMT annually.</td>
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Examples of Transportation-related Recommendations

- Encourage employer-based incentives for transit
- Increase public education about public transit
- Raise priority of non-motorized modes of transport
- Collect data about pedestrian and bicycle use
- Establish pedestrian and bicycle routes to schools
Humboldt Outcomes

No decision yet on General Plan Update

Recommendations included in Circulation and Housing Elements

HIA included as appendix to EIS

Built collaboration between planning & public health agencies

Built awareness about health and land use among elected officials, general public, planners, community groups

Other counties interested in using the approach
Specialized Assessment Tools

Healthy Development Measurement Tool (HDMT)

Pedestrian Environmental Quality Index (PEQI)

Air Quality Modeling

Noise Modeling

Pedestrian Injury Collision Modeling
Healthy Development Measurement Tool

Over 120 measurable community health indicators and development targets

Data for San Francisco in the form of maps and tables, often disaggregated by neighborhood

Data is routinely measured, collected and updated by SFDPH

Used to support comprehensive and health responsive planning
PEQI: A spatial assessment tool to assess environmental factors that support or prevent safe walking
Modeling vehicle source PM$_{2.5}$

CAL3QHCR Line Source Dispersion Model

A 1 $\mu g/m^3$ change in PM$_{2.5}$ predicts a 1.4% change in non-injury mortality!

Air Quality Model Inputs

Traffic data
Vehicle emissions rates
Traffic speed
Temperature and humidity
Surface meteorology
Number of receptors
The exposure threshold for increased incidence of heart disease is 65 dBA

Noise Model Inputs

- Vehicle types and volumes
- Temporal distribution of traffic
- Use traffic noise model to find exposure as function of distance
- Add topography and building sizes
- Add stationary sources
Pedestrian Injury Collision Modeling

Developing a Collision Model

Traffic volume
Arterial streets (% without transit)
Land area
Percent car ownership
Percent commuting via walking or transit
Number of residents

Citywide Target Rate Comparison: 104/100,000 Population
- Exceeds or Meets (<= 104/100,000)
- 1 - 2 Times (105 - 208/100,000)
- 2 - 5 Times (209 - 520/100,000)
- > 5 times (>= 521/100,000)
- Excluded because of Small Population

% Change in Pedestrian Injury
- 20%
- 21%
- 15%
- 24%

Injury collision rates resulting from Eastern Neighborhoods Rezoning
Thank You!

Questions?

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