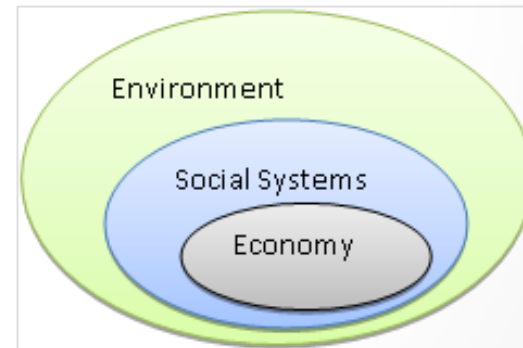




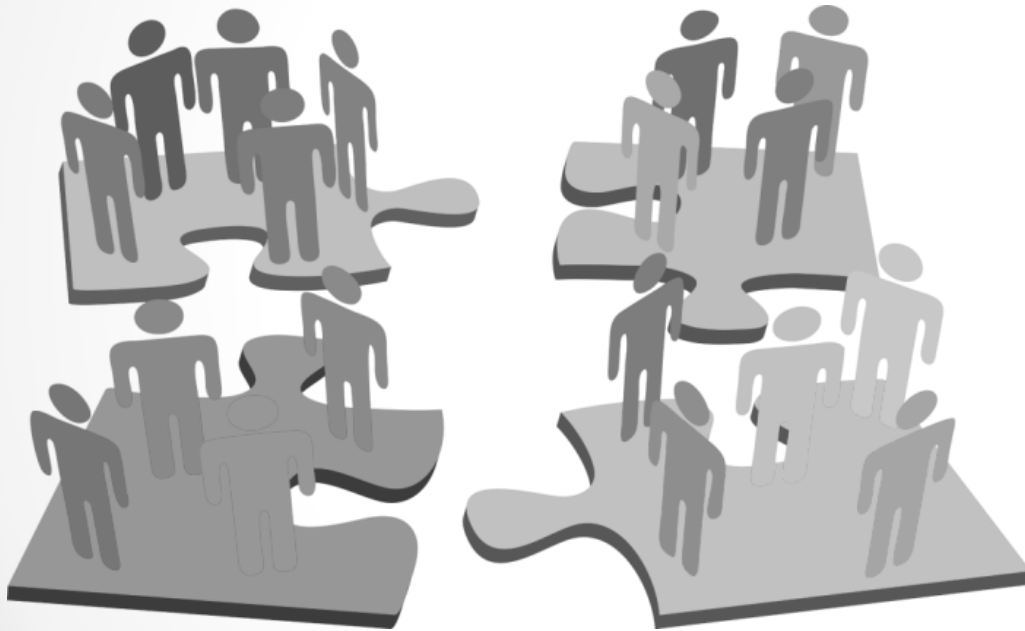
Sustainable Development and Transportation Decision Making: Embedding community preferences in Visualizations



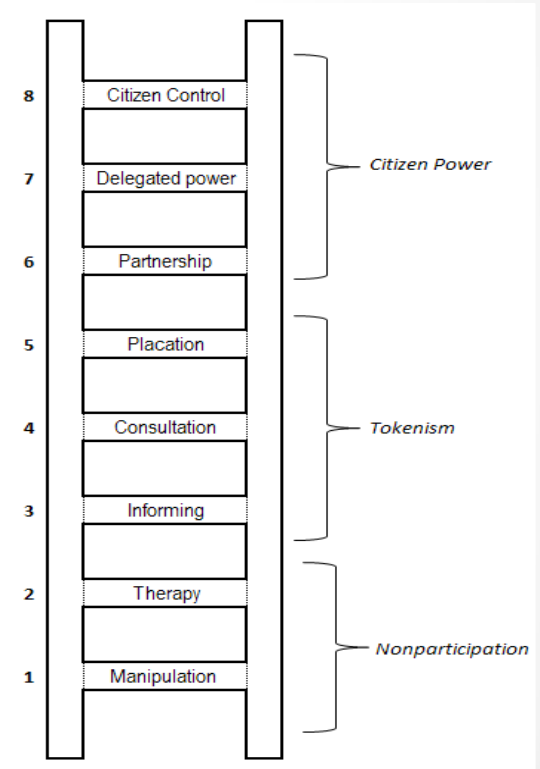
Introduction



Introduction



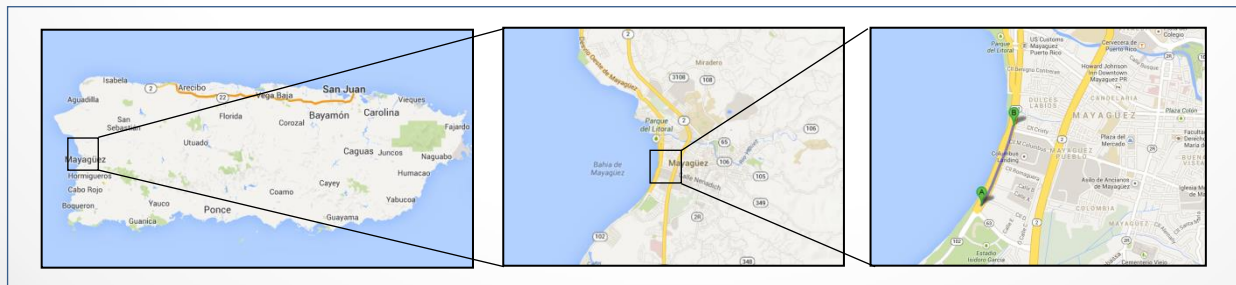
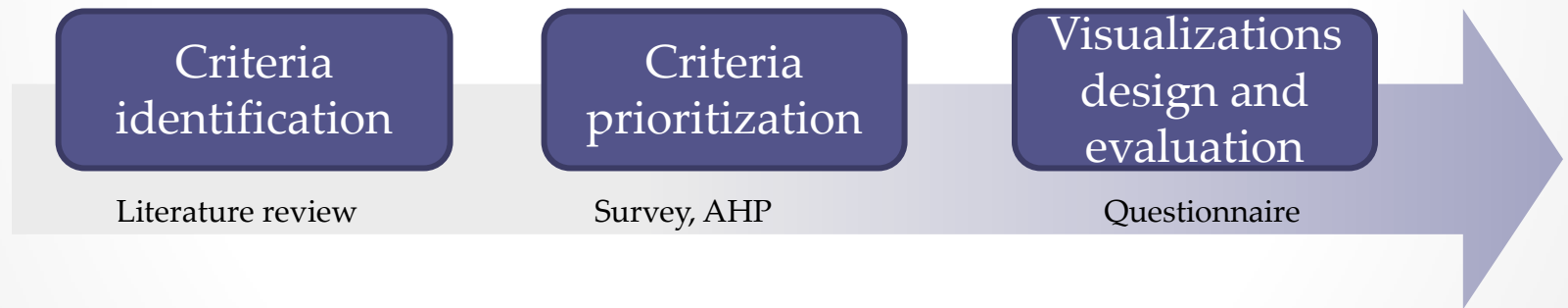
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Eight rungs on the ladder of citizen participation (Arnstein, 1969)

Overview

- The project objective is to evaluate visualization as a tool to assist in participatory decision-making processes for transportation projects.
- Holistic community involvement for project development is needed and mandated.
- Visualizations are effective and democratic means to convey design ideas to public, empowering the whole process.
- Case study developed in the community in Mayaguez, PR.



Geographical location of the case study area

Overview

Early involvement

- Solicitation of community values and needs
- Design criteria prioritization



Context-Sensitive designs

- Conjoint features based on preferences
- Five 3-D fly-through animations



Validation of preferences

- Visual preference surveys
- Feedback from community members



Criteria identification

Literature review

Criteria prioritization

Survey, AHP

Visualizations design and evaluation

Questionnaire

Design Criteria

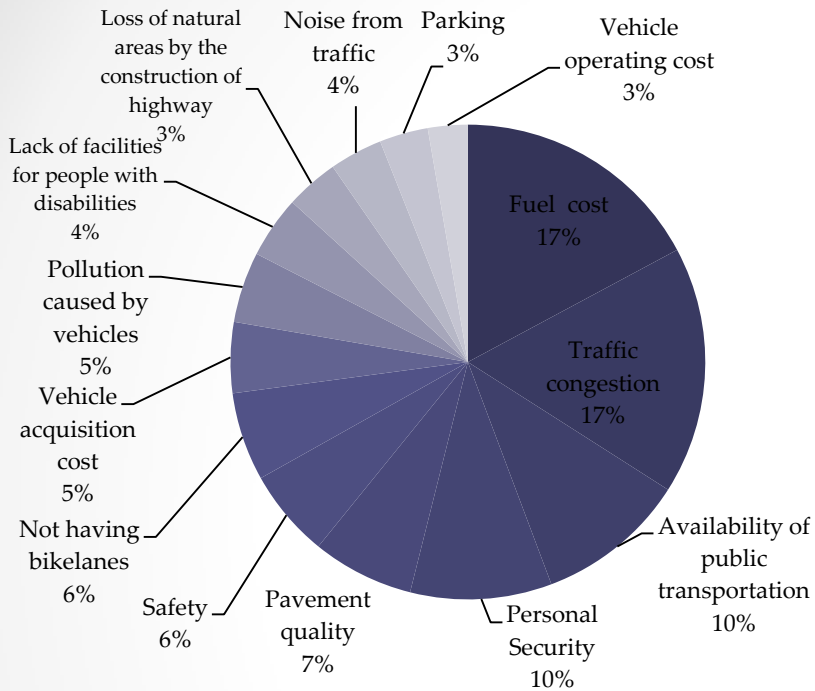


Figure: Main issues affecting the quality of life Community of "Dulces Labios" (n=114)

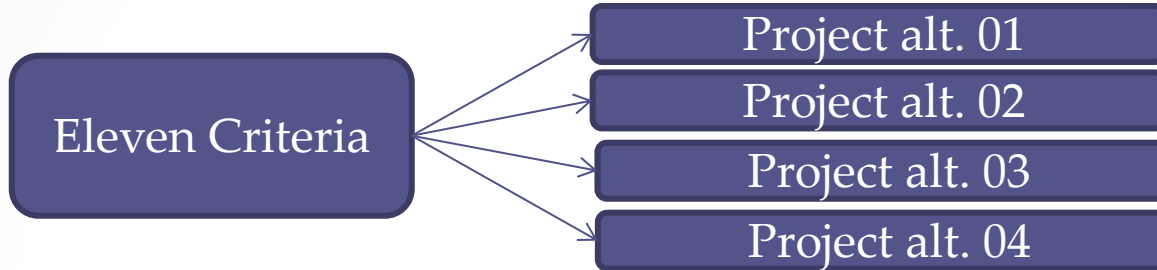
Criteria	Eigenvalue
Generation of employment and economic activity in the community	0.19
Reduction of air and water pollution	0.13
Safety Improvements of transportation infrastructure and operations	0.12
Infrastructure for bicycle pedestrian movement	0.1
Including greenery and landscaping	0.08
Ecologically friendly Infrastructure. (Recycled materials, Solar energy, etc.)	0.08
Preservation of cultural, historic and archeological elements	0.07
Reduction of vehicle operation cost	0.06
Self – Sustainable financial system	0.06
Reduction of travel time	0.05
Rapid construction of the infrastructure	0.05

Table: Hierarchy of selected evaluation criteria based on eigenvalues



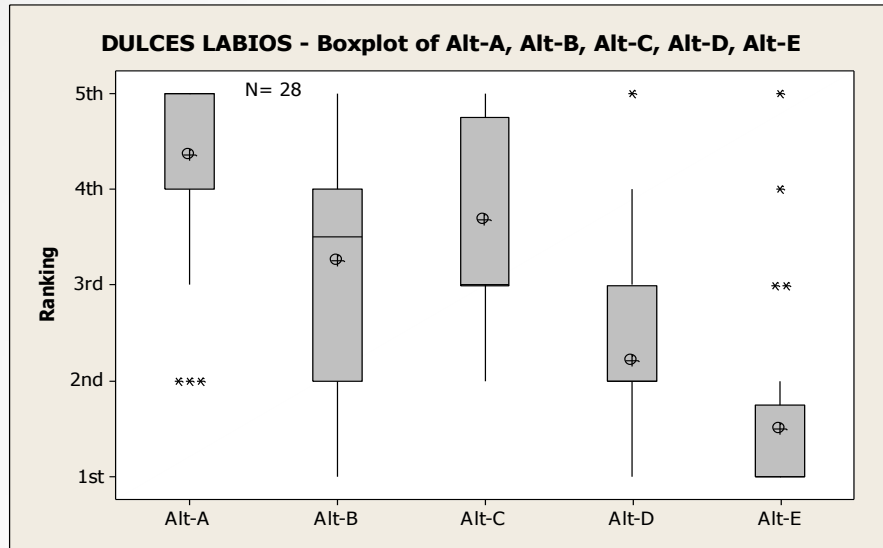
Visualizations

- Humans are inherently visual
- Visualizations are tools used to convey effectively complex characteristics of objects at appropriate and understandable scales

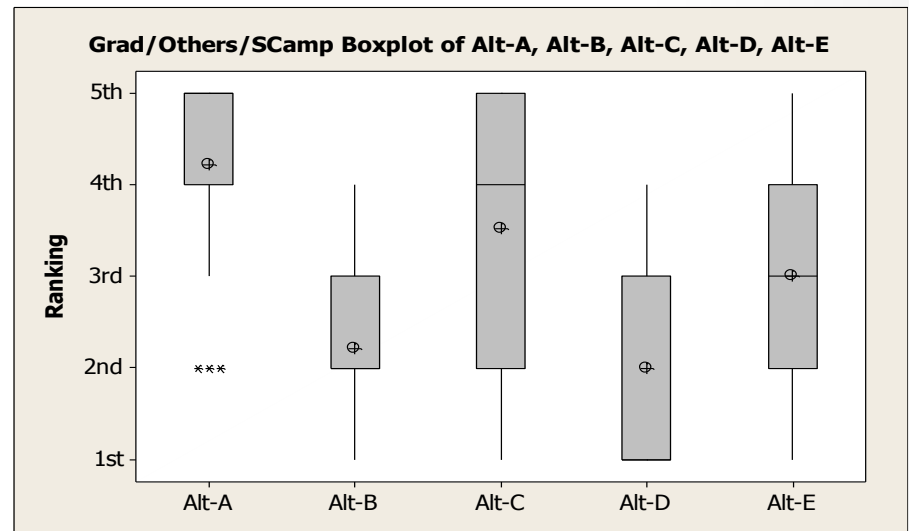


Figures: Visualization of alternative s “Do-nothing”, and Alt “E”, PR 102 “Litoral”, Mayaguez, community of “Dulces Labios”.

Validation of preferences



Figures: Preferred alternatives.
Community of "Dulces Labios" and "Others" group





Gracias

Sustainable Development and Transportation Decision Making:
Embedding community preferences in Visualizations

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