

## Background

- Public Involvement (PI) in the transportation planning process has been mandated by SAFETEA-LU.
- SAFETEA-LU requires transportation agencies to "employ visualization techniques to describe plans" to the public.
- How the public in the U.S. perceive the effectiveness of the various visualization techniques remains uncertain.

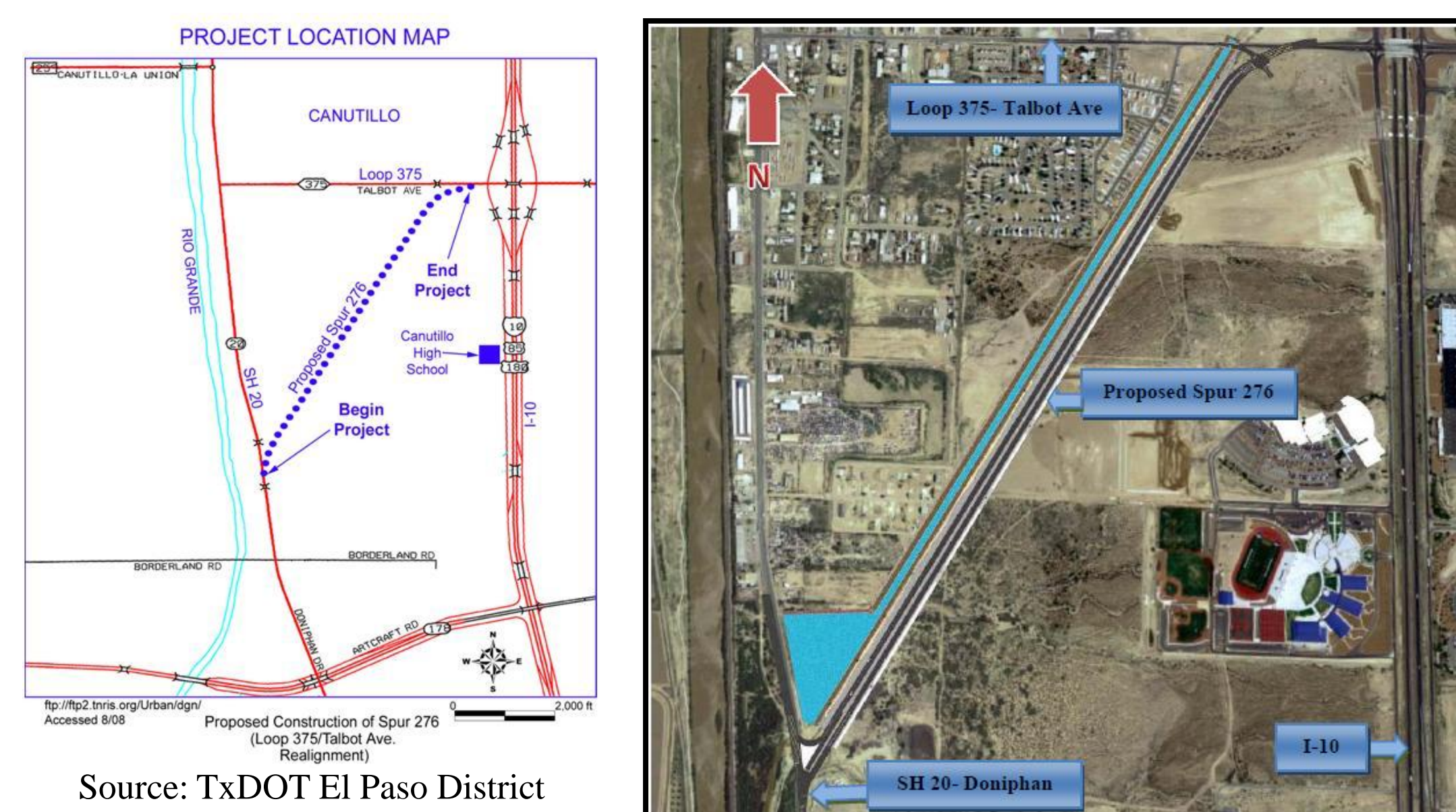
## Visualization

- Visualization may be defined as the simulated representation of proposed transportation improvements and their associated impacts in a manner sufficient to convey to the layperson the full extent of the improvement.
- Two-Dimensional (2-D) visualization technique
  - Maps, photographs, artist's renderings, charts or graphs, architecture and engineering drawings
  - Uses graphics to portray horizontal and vertical references of a project
  - Relatively low production time and cost
- Three-Dimensional (3-D) visualization technique
  - Incorporates horizontal, vertical and depth references of an object or a scenario to provide viewers the feel of depth
  - Usually produced from a 3-D model constructed in a software environment and then presented in static form in posters, display screens or scaled 3-D models
- Four-Dimensional (4-D) visualization technique
  - 3-D models that add time dimension to make the image dynamic
  - Includes animations, including videos or simulated movements
  - Relatively higher cost, effort, time, skills to prepare.

## Project 1 – Proposed Spur 276 in El Paso, TX

- A Texas Department of Transportation (TxDOT) project.
- Initial PI revealed that the public wanted a mixed use recreation (bicycle cum jogging) path, and a channel lined with local materials.
- Visualization models were developed to convey the revised design.
- Models were constructed with GoogleEarth, then converted to 2-D, 3-D and 4-D (fly through) modes.
- Scenes were edited, and English and Spanish subtitles added using PowerDirector.

### Spur 276 – 2-D Visualization Models



### Spur 276 – 3-D Visualization Models



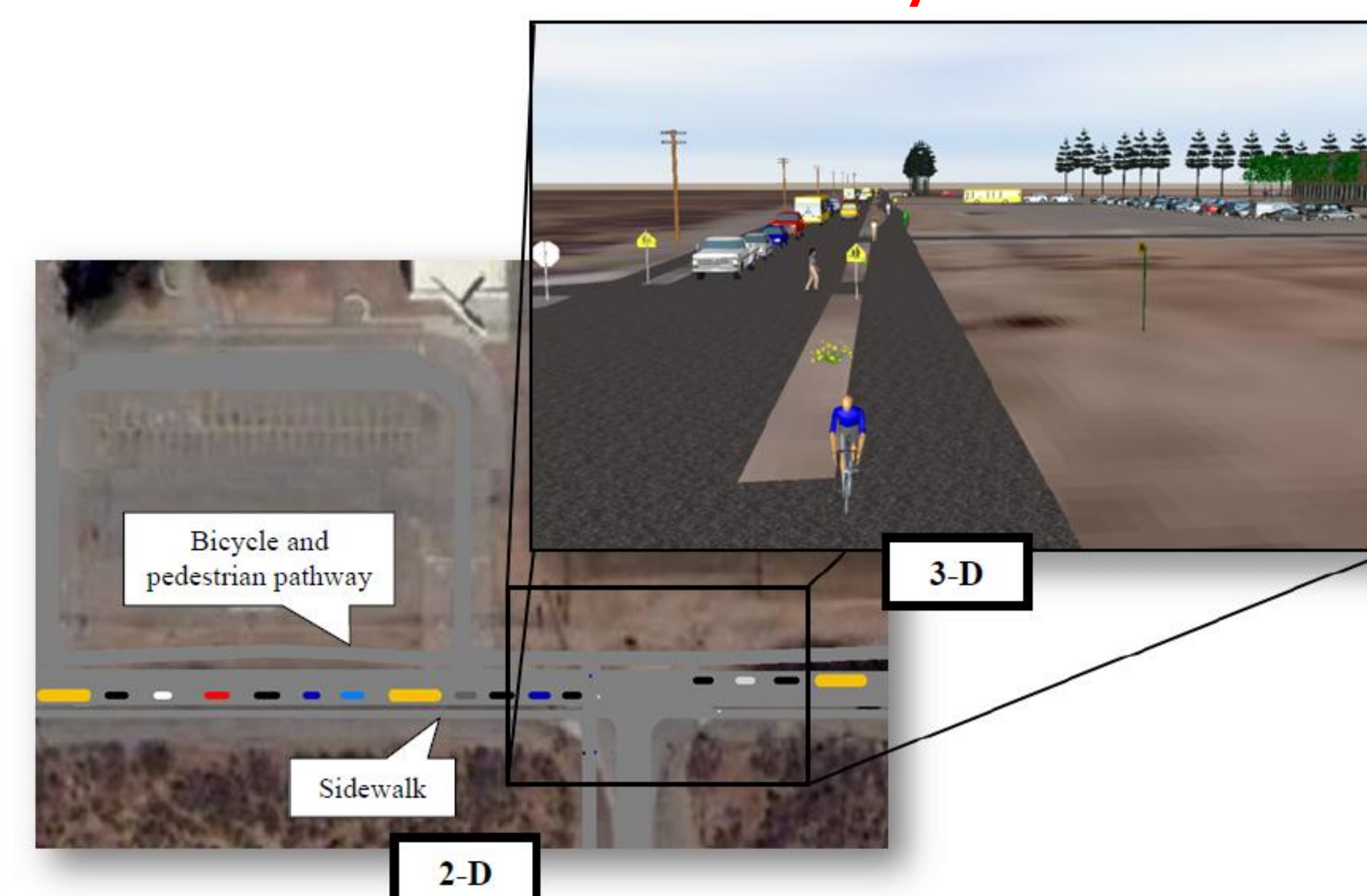
## Project 2 – Bicycle & Pedestrian Pathway Along Lisa Dr., Chaparral, NM

- A El Paso Metropolitan Planning Organization (MPO) initiative to illustrate off-street and on-street bicycle lane to residents.
- VISSIM was used to simulate the traffic conditions with off-street and on-street bicycle lanes, then converted to 3-D and 4-D models.
- Scenes were edited, and English and Spanish subtitles added using PowerDirector.

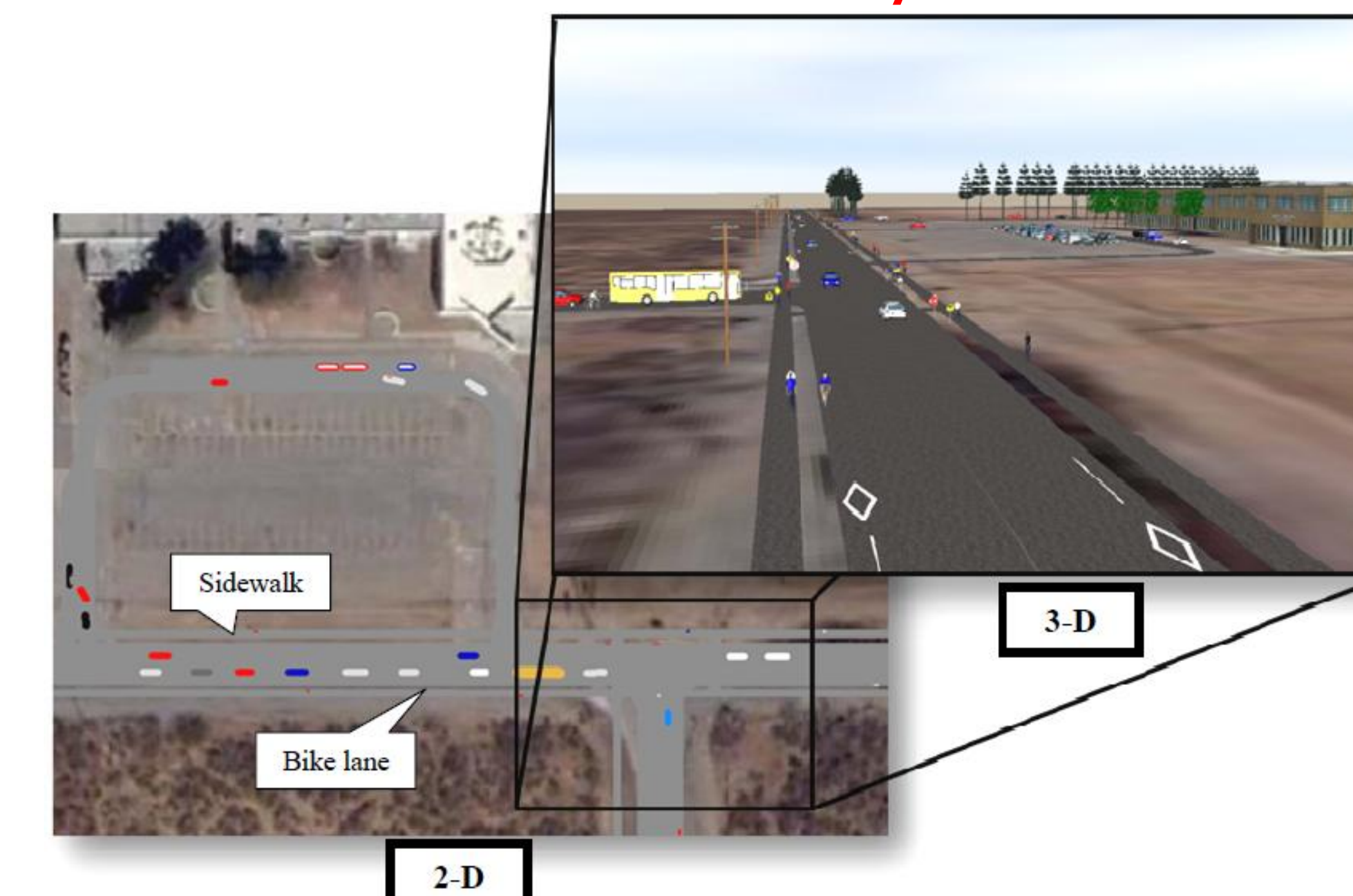
### Lisa Dr. – 2-D Photographs of Existing Scenes



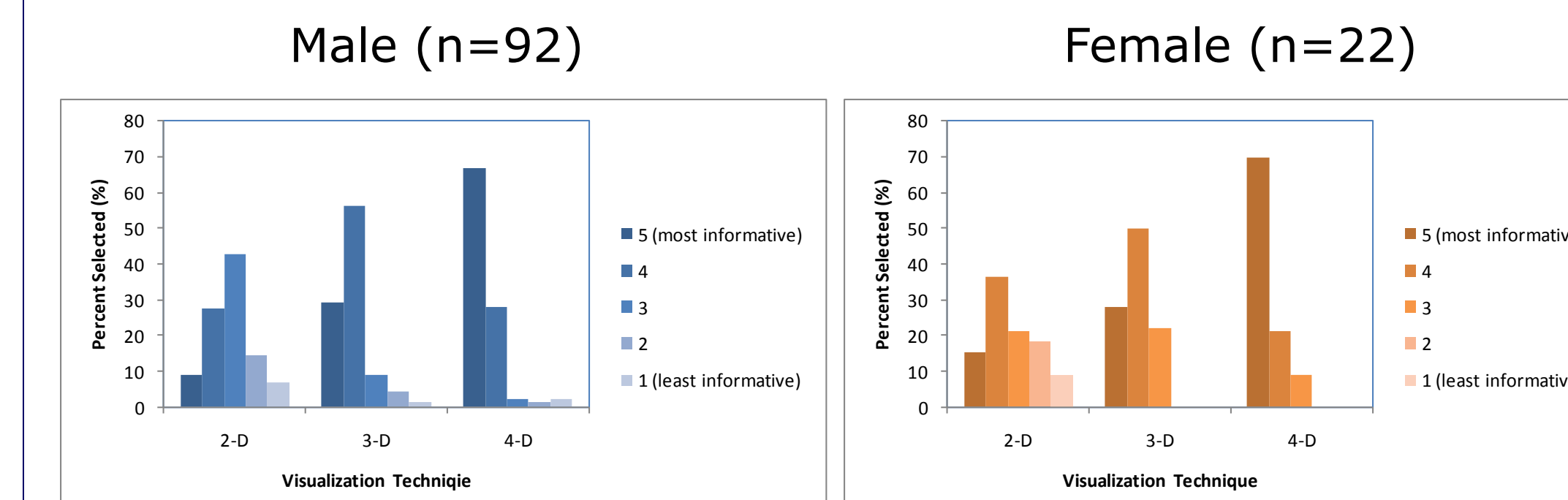
### Lisa Dr. – Off-Street Bicycle Lane



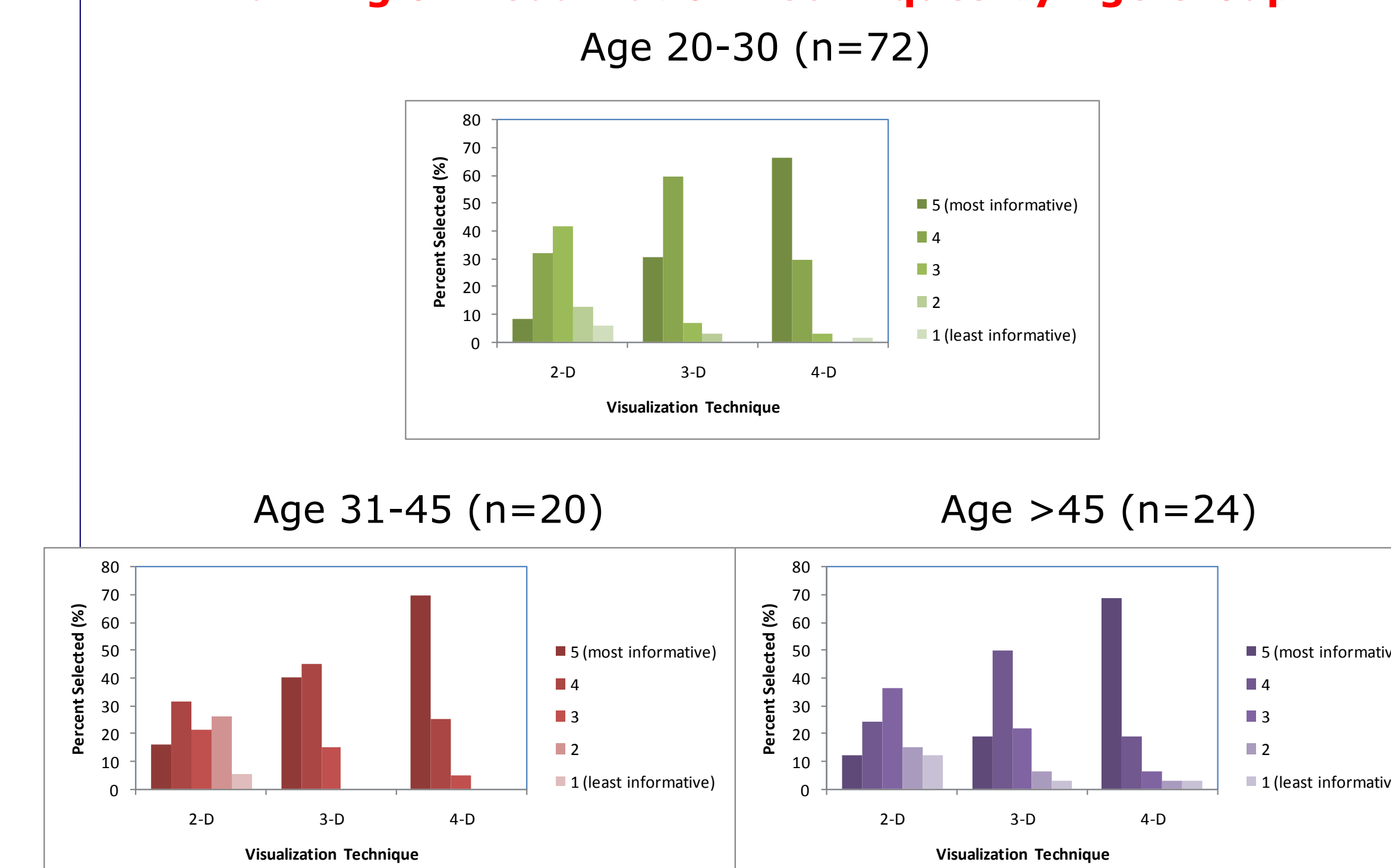
### Lisa Dr. – On-Street Bicycle Lane



## Rating of Visualization Techniques by Gender



## Ranking of Visualization Techniques by Age Group



With better visualization tools, will you be more willing to participate in the transportation planning process (as a resident)?

Answer Options	Questionnaire Response Percent	Questionnaire Response Count	Online Response Percent	Online Response Count
Yes	89.3%	25	75.0%	93
No	0.0%	0	12.1%	15
Not sure	10.7%	3	12.9%	16
	answered question	28		124
	skipped question	3		12

## Summary

- Majority of the respondents ranked the information presented by the 2-D, 3-D and 4-D visualization techniques in increasing order of their abilities to convey the proposed project concepts.
- More than 71% of the respondents thought that transportation agencies should devote more time and budget to develop advanced visualization models to encourage public participation.
- More than 75% of the respondents indicated that they would be more willing to participate and encourage others to participate in the transportation planning process if better visualization tools were used.
- Among the survey respondents, males outnumbered females by the ratios of 1.6 to 1 in the public meetings and 4.2 to 1 in the internet-based survey. It highlights a need to encourage more female in the community to participate in the PI process in transportation planning.
- More than 52% of the respondents from public meetings were above 45 years old. On the other hand, more than 57% of the respondents who took the internet-based surveys were 30 years old or younger. This imbalance in statistics indicates the different media preferences among the age groups in communicating with the transportation planning agencies.
- The high percentage of internet-based survey respondents who were 30 years old or younger indicates that internet may be a good medium to reach out to young residents.

## Public Meetings and Surveys

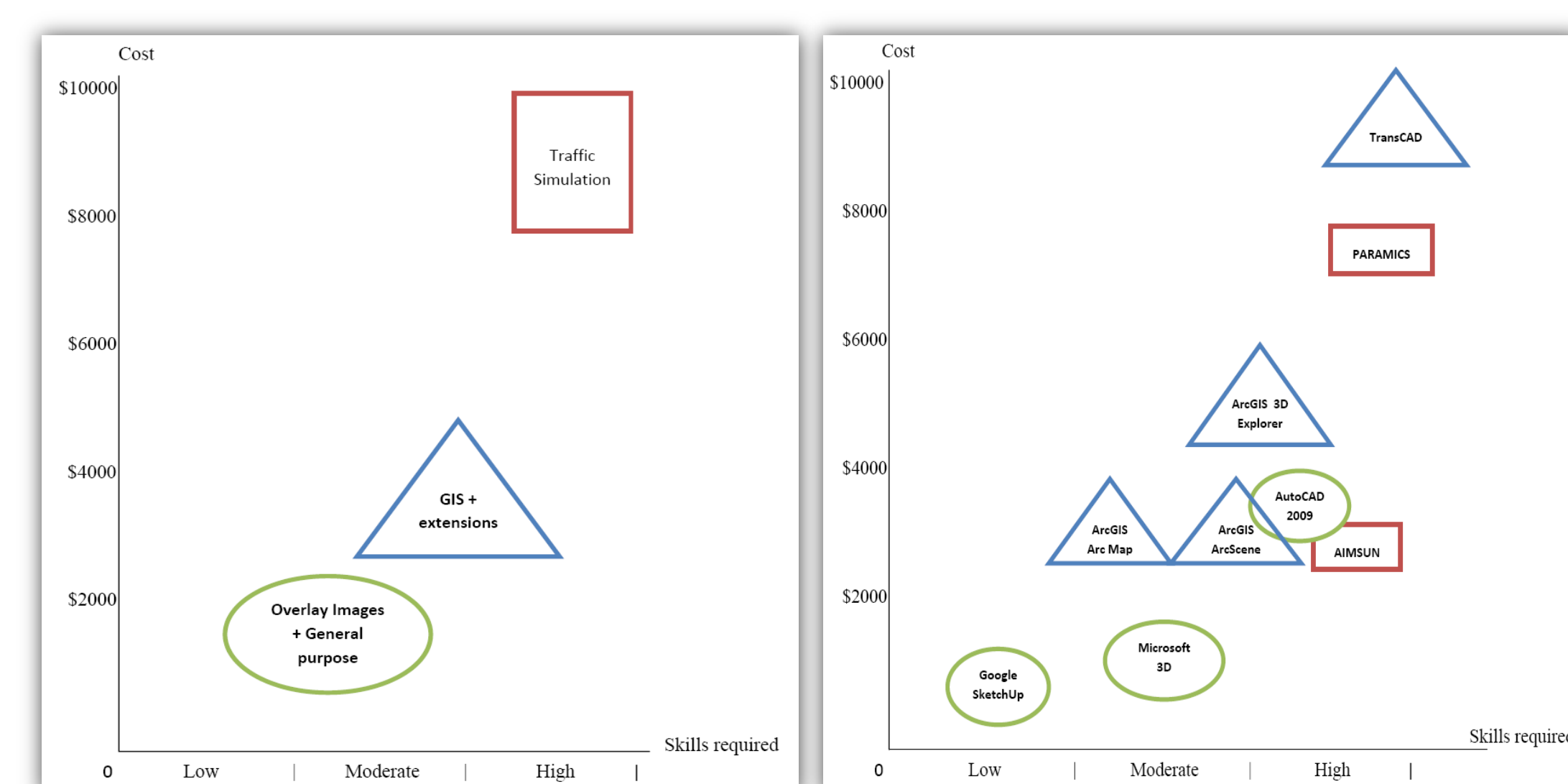
Location	Address	Date	Time
El Paso Main Public Library	501 N. Oregon St	July 16	6:00-7:45 p.m.
Mission Valley Branch Library	601 N. Yarbrough	July 21	6:00-7:45 p.m.
Chaparral Community Center	109 Lisa Dr Chaparral	July 28	12:00-2:00 p.m.
Irvin Schwartz Library	1865 Dean Martin	July 29	6:00-7:45 p.m.
Dorris Van Doren Regional Branch Library	551 Redd Rd	July 30	6:00-7:45 p.m.

- Questionnaire and internet-based surveys were conducted in English and Spanish.
- 31 questionnaire and 136 internet survey respondents.



## Acknowledgements

- Federal Highway Administration (FHWA) Contract DTFH61-DTFH61-08-P-00201.
- El Paso MPO
- TxDOT El Paso District



## Objective and Scope

- The objective of this research is to address the gap by examining
  - How the public perceive the effectiveness of the various visualization techniques in conveying a project's design; and
  - To what extent the use of better visualization techniques would encourage them to participate in the public involvement process.
- Two case studies are selected to build 2-D, 3-D and 4-D visualization models.
- The models were used to conduct questionnaire surveys at public meetings and the internet.