So What’s a Bicycle Lane in Utah Good For, Anyway?

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Presentation Overview

• Background
• Active Transportation Policy
• Household Survey
• Data Collection
• Results
• Conclusions
• Limitations
• Questions and Discussion
Background

• Bicycling as an alternate mode of transportation has been on the rise
• It is environmentally friendly in nature and the associated health benefits have made it a popular choice for many types of trips
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Background

• **Purpose:**
  - Increase understanding of the travel demand impacts of implementing bicycle corridors as compared to adding vehicle lanes

• **Results:**
  - Determine how UDOT can be more involved in providing bicycle corridors and identifying when and where this makes sense
Active Transportation Policy

“It is the policy of the Department that the needs of bicyclists, pedestrians, and other Active Transportation users will be routinely considered as an important aspect in funding, planning, design, construction, operation, and maintenance of Department transportation facilities. Active Transportation needs for a project will be documented within the Project Definition Document process. This policy applies statewide, to facilities in urban, suburban, and rural settings. All transportation activities that are funded by or through Department and planned, designed, constructed, or maintained on state facilities will adhere to this policy. These activities will be referred to as Projects for the purposes of this Policy.”

- Inclusion of Active Transportation, UDOT 07-117
Household Survey

• A review of the most recent household survey data was conducted to understand the needs and thoughts of those who may or may not ride a bicycle
Household Survey

• As part of the household survey, individuals were asked how often they ride a bicycle:
  – More than 50% of the respondents reported that they never ride a bicycle
  – More than 25% of the respondents reported having not ridden a bicycle in the past two weeks
How often do you ride a bicycle?

- 6-7 days per week: 56%
- 4-5 days per week: 7%
- 1-3 days per week: 3%
- 1 day in the last 2 weeks: 1%
- Not in the last 2 weeks: 6%
- I never bike: 27%
Household Survey

- When asked why respondents did not ride a bicycle:
  - More than 50% of respondents reported that they do not own a bicycle
  - Less than 10% reported noted a lack of bicycle facilities as a reason for not riding a bicycle
Reasons for not riding a bicycle?

- Do not own a bike
- Health
- Do not enjoy biking
- No facilities to change after biking
- Takes too long to travel to destination
- Too few on-street marked bike lanes
- Too few off-street bike paths or trails
- Feel unsafe biking in traffic
- Need to use vehicle for other reasons
- Too busy
- Poor weather

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Household Survey

- When asked about the general purpose for bicycling:
  - Nearly 90% of respondents reported exercise
  - Approximately 10% reporting bicycling to/from work and another 5% to/from school
General purpose for bicycling?

- Other reason
- Recreation Event
- Visit friends/family
- Personal business
- Shopping
- Go to/from other travel mode
- Go/from school
- Go to/from work
- Bike with (accompany) children
- Socialize with others
- Exercise
Household Survey

• The final review of the household survey was to determine to what degree respondents agree with different aspects of active transportation.

• Most responses resulted in agreement (or neutral opinions) with respect to active transportation.
Data Collection

- Bicycle infrastructure classification
- Site locations
- Data collection methods
Bicycle Infrastructure Classification

• Bicycle infrastructure according to AASHTO:
  – Shared lane (no special provisions)
  – Shared lane (wide outside lanes)
  – Marked shared lanes
  – Paved shoulder
  – Bicycle lanes
  – Bicycle boulevards
  – Shared use path (independent of right-of-way)
  – Shared use path (adjacent to roadways)
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Bicycle Infrastructure Classification

- The majority of the bicycle infrastructure studied for this research was bicycle lanes.
Site Locations

• Data were collected in 5 counties/9 cities:
  – Davis County
  – Salt Lake County
  – Utah County
  – Washington County
  – Weber County
Data Collection Methods

• Method 1:
  – Jamar Trax Cycles Plus units over a continuous 48 hour count
  – Data were collected on Tuesdays, Wednesdays, and Thursdays
Data Collection Methods

Method 2:
- Manual bicycle counts by the research team
- Data were collected during peak hours of Tuesdays, Wednesdays, and Thursdays

Data recorded:
- Bicycle volume
- Travel direction
- Gender
- Age
- Purpose of bicycling
- Location of bicyclist (sidewalk, road, etc.)
Results

• Mixed model analysis
• AADT comparison
• Speed comparison
• Lanes comparison
• Road classification comparison
Mixed Model Analysis

- A Mixed Model Analysis was completed on the data collected to identify correlation and relationships between volume, infrastructure, AADT, and speed limit
- Although the results were not significant at a 95% confidence level, the results did show distinct trends in the data
Mixed Model Analysis

• Key results of the analysis:
  – Bicycle infrastructure vs. bicycle volume:
    • 66% increase in volume when bicycle infrastructure is present (p = 0.0862) (includes St. George)
    • 40% increase in bicycle volume when bicycle infrastructure is present (p = 0.2061) (no St. George)
  – AADT vs. bicycle volume:
    • 18% reduction in volume when AADT is doubled (p=0.0873)
AADT Comparison

• A detailed comparison of bicycle rates to AADT was conducted:
  – For all data points
  – On with roadways with bicycle infrastructure
  – On roadways without bicycle infrastructure (non-infrastructure)
AADT Comparison

- Analysis revealed a gradual decrease in bicycle rate as AADT increased for all data (with and without bicycle infrastructure)
- Not statistically significant
AADT Comparison

- Bicycle rates tend to decrease as the AADT increases on roadways with bicycle infrastructure
- Not statistically significant, but they do reveal a distinct trend in the data
No apparent trends observed between bicycle rates and AADT on roadways without bicycle infrastructure
Not statistically significant
Posted Speed Comparison

A detailed comparison of bicycle rates to posted speed was conducted:

– For all data points
– On roadways with bicycle infrastructure
– On roadways without bicycle infrastructure (non-infrastructure)
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Posted Speed Comparison

• A decrease in bicycle rates occurs as posted speed increases for all data (with and without bicycle infrastructure)

• Statistically significant at a 95% confidence level
Bicycle rates tend to decrease as the posted speed increases on roadways with bicycle infrastructure. Not statistically significant at a 95% level, but are at a 90% level and do reveal a distinct trend in the data.
Posted Speed Comparison

- Bicycle rates increase slightly as the posted speed increases on roadways without bicycle infrastructure.
- Not statistically significant.
Lanes Comparison

- A comparison of the bicycle rates to the number of road lanes was conducted to determine if bicyclists would use roads with more or less lanes.
- The results reveal very little difference between the bicycle rates and the number of lanes.
Road Classification Comparison

• A comparison of the bicycle rates to road classification was conducted to determine if a correlation exists.
• The analysis revealed very little difference between the road classifications.
Preliminary Conclusions

- Utah residents do not perceive a lack of infrastructure as a reason not to ride a bicycle
- Utah residents are generally in favor of, or neutral toward, active transportation options (this has been further emphasized with results of the Wasatch Choices 2040 project)
- The perception is that attitudes are changing in Utah with respect to active transportation
Preliminary Conclusions

- Adding bicycle infrastructure tends to increase bicycle volume (40-66% increase)
- As AADT increases, volumes tend to decrease (18% volume reduction for double AADT)
- A comparison between volume and posted speed shows the most significant results – as posted speed increases, volumes decrease significantly
Preliminary Conclusions

• UDOT should participate in active transportation throughout the state
• UDOT should focus installation of bicycle infrastructure on lower speed roadways
• UDOT should work with local and county agencies in meeting overall mobility goals and providing alternatives for active transportation
Limitations

- Lack of before data – not able to show trends (this research forms a baseline)
- Small sample size (42 sites) – because there was no existing data, all data had to be collected specifically for this project
Questions and Discussion

• For more information, contact:
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