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Perceptions of Safety and Cycling Behavior Based on Traffic Data: Implications for Public Health and City Planning

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RATIONALE

CONTEXT

OUTCOMES

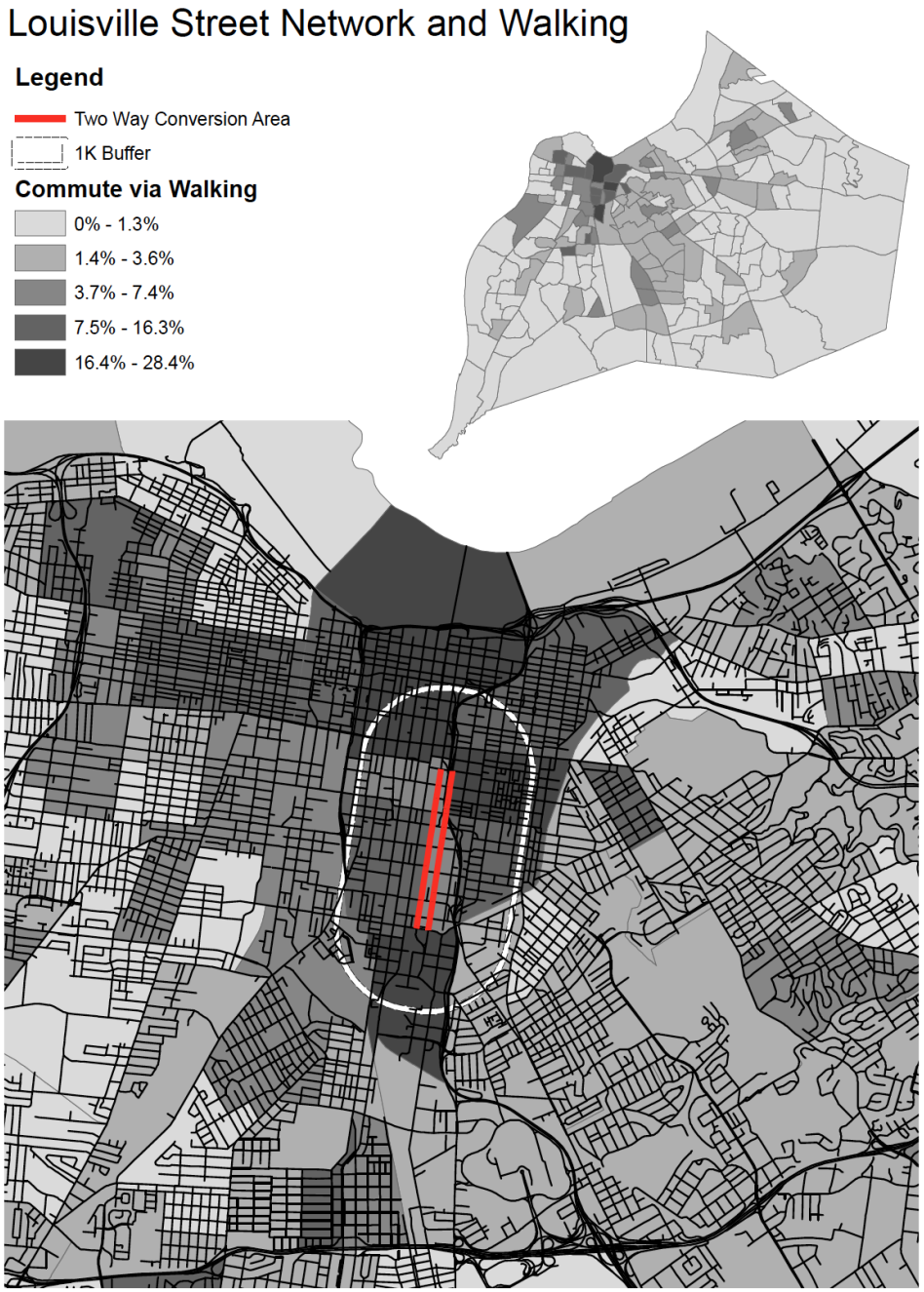
RATIONALE

RATIONALE

Prior work

Louisville, KY

- Brook and First Streets
  - One way multi-lane parallel streets since the 1950's
  - Converted to a two way, single lane street with a bike lane in Summer 2011



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One way Brook Street: July 2007 (Thanks 'Time Machine')

Two-way Brook Street August 2011

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RATIONALE

Street design / typology may be connected to safety (Riggs and Gilderbloom, 2015)

- Two-way conversions compared to existing one-way
  - Decreased
    - Collisions*:
      -36% on Brook
      -60% on First
  - Increased
    - Traffic Volumes
    - Calmer traffic
    - Ped & bike traffic

Speeds up to 50-60 mph were clocked during the am peak on one-way segments (limit is 35 mph)

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RATIONALE

Street design / typology may be connected to safety (Riggs and Gilderbloom, 2015)

- Street typology (not just design features) may have traffic calming effect
  - Hypothesis 1: Perceived Width
  - Hypothesis 2: Visual Interest
- So, What data is needed to test these?

CONTEXT


HCM2010
HIGHWAY CAPACITY MANUAL
TRB
TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

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CONTEXT

Moving Camera Survey Method

Source: NCHRP Report 616

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CONTEXT
Analysis of Video data from Two-way Stop Controlled Intersections (Johnston and Pande, 2015)

- At TWSC intersections bicyclist perceptions on major and minor street approaches are governed by different physical characteristics
- Agencies may be able to improve bicyclist perceptions of TWSC intersection approaches by disallowing parking on bicycle lanes (and enforcing it) and providing shared lane markings

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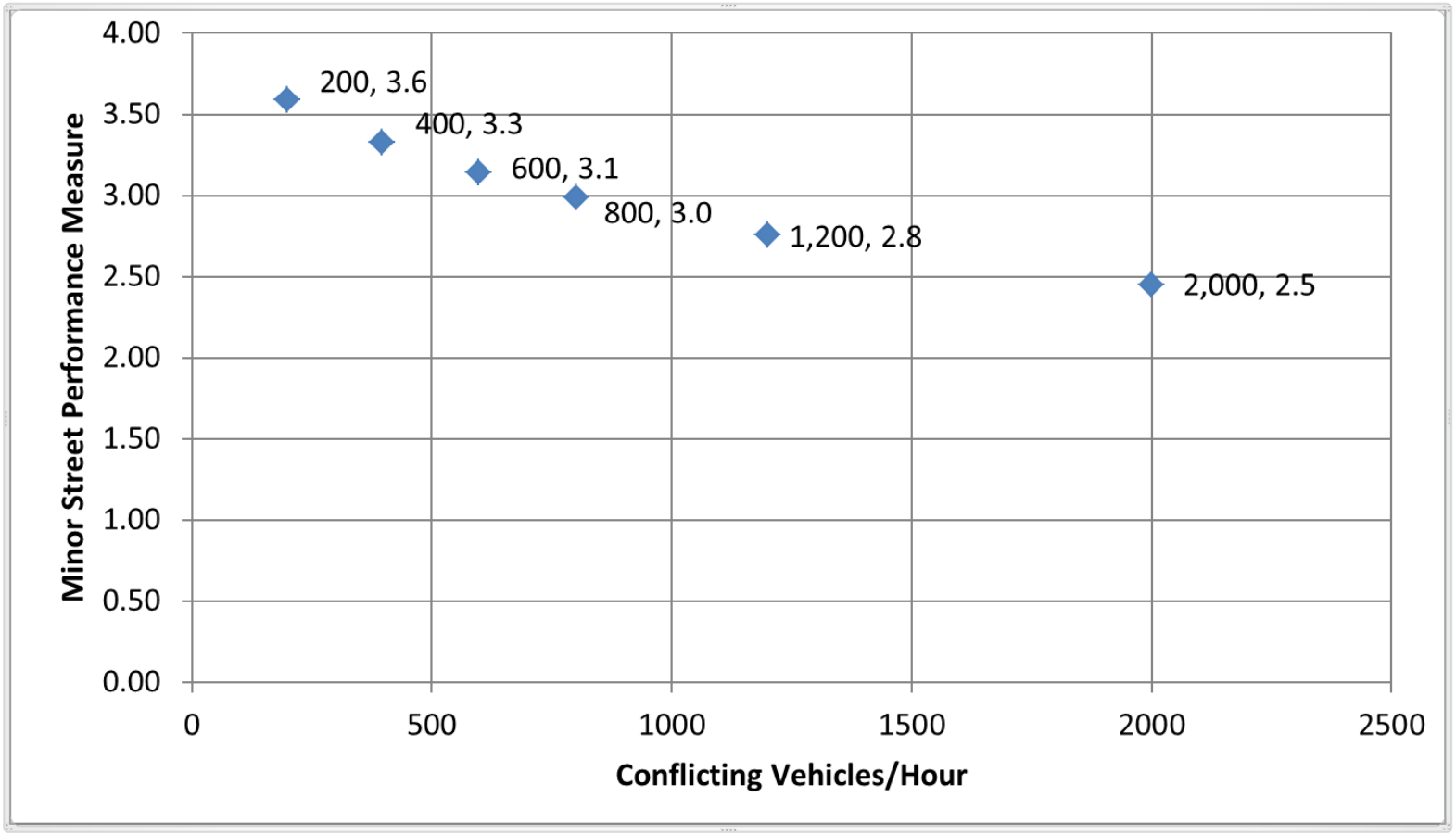
Sensitivity of Minor Street Approach Bicyclist LOS Score to Conflicting Vehicular Volumes



CONTEXT

Moving Camera Survey Method

On Bike Video

Car Dash Video

CONTEXT
Survey

- Usual travel mode and general comfort
- Perception of safety
- Perception of speed
- Perception of passing distance
- Willingness to let child ride in condition

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Limitations

- Survey self-selection of participation
- Psychological attribution of individual experience (i.e. placing videos in your own built environment)
- Only cycling treatment tested: assumes only Class III Bikeway (e.g. no separation) and assured all streets had parking

OUTCOMES

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Importance of Perception?

- Preliminary outcomes seem to indicate that, consistent with other work, well-marked lane separation appears to be preferred but varies based on cyclist experience (still gathering data!)
- Comfort on a bicycle on a certain route is heavily connected to cyclist skill level.
- More research both intersections and corridors and the implications for planning and design for active transportation—especially for children.
- Expanded work needed in the interface between bicycle and pedestrians at these locations

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Questions

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