A geo-spatial comparison of child pedestrian injuries with parental perceptions about traffic risk

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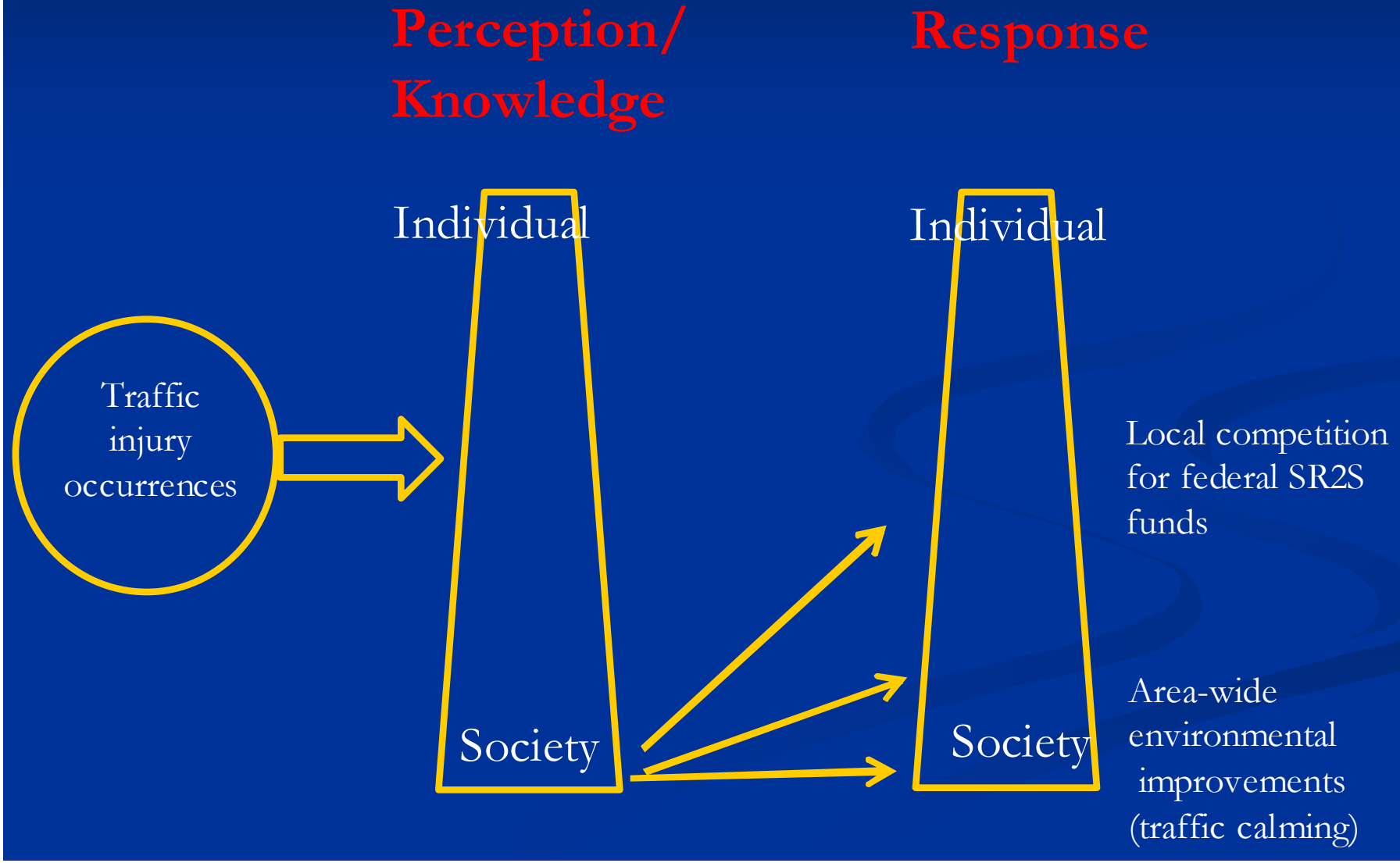
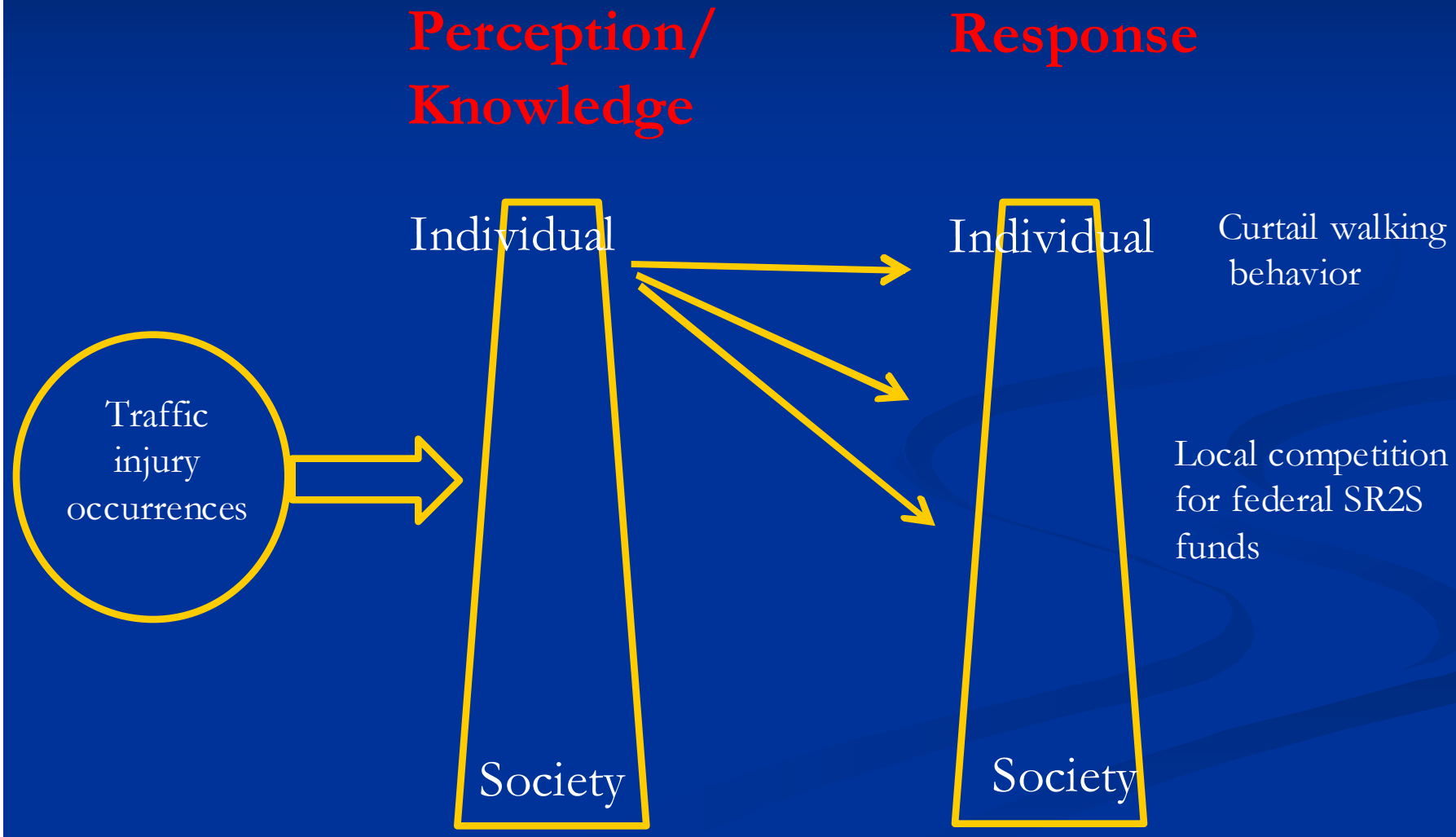
1958. Pulitzer prize winning photo of boy struck by garbage truck.

pedestrian safety: theoretical model of perception to response



pedestrian safety: theoretical model of perception to response



general objectives of interest
(which we will not talk about today)

- Quantify parental perception of traffic danger
- Characterize relationship between traffic danger perception and children's walking
- Characterize relationship between traffic danger perception and community-level motivation for environmental improvement

objectives
(to talk about today)

1. Which children have more pedestrian injuries near their home?
2. Which parents perceive the highest levels of traffic risk?
3. How do these parental perceptions compare to actuality?

methods

Population

- Multi-ethnic, urban, primarily lower income population in Oakland, California
- Parents of 5th grade children in 10 public elementary schools

Tool

- Survey taken home by students in fall 2006
- n=336 (52% response rate)

methods

Tool

Key variables from survey

- Demographics:

  Self reported race/ethnicity of child,

  median household income of census block group.

- Parent perception items

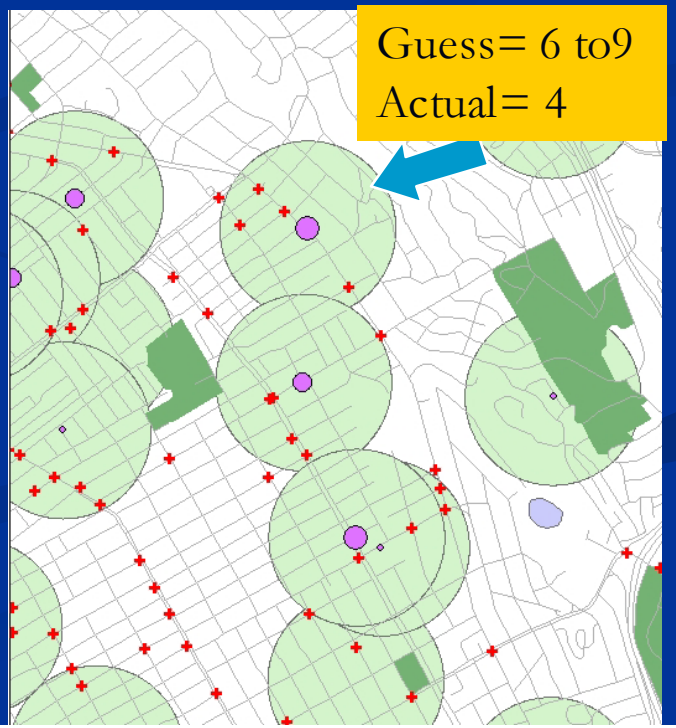
  1. Likert-scale rating of traffic danger

     (5 point scale)

  2. Parent estimations regarding pedestrian injury (5 categories)

spatial data

- Geocoded study participants
- Geocoded locations of police-reported automobile versus pedestrian injuries 2002 -2007
- Calculated numbers of injuries within ¼ mile of each study participant's home



police-reported pedestrian injuries

Child pedestrian injuries within ¼ mile of respondent's address:

Mean: 3.8

Quartiles of injury exposure:

1st (low):	0 or 1
2nd:	2 or 3
3rd:	4 - 5
4th (high):	6 - 15

Likert scale ratings of traffic danger: by risk quartile

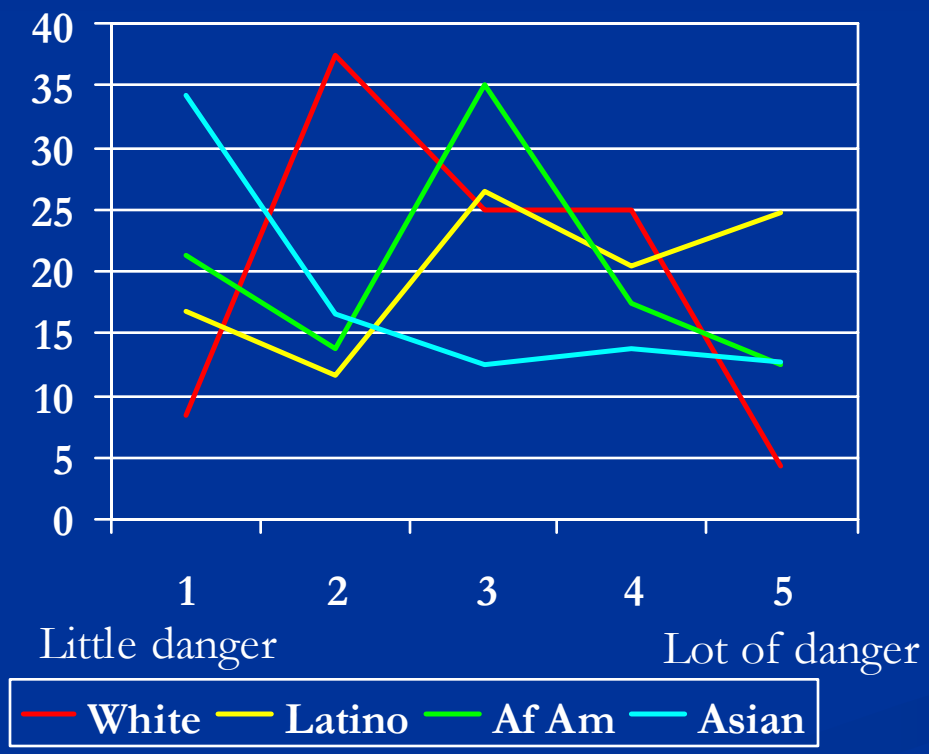
"How would you rate the risk of a child getting hit by a car within 3 blocks (¼ mile) from your home?"

1 2 3 4 5

No significant difference in Likert rating of traffic danger across quartiles of injury.

Likert scale ratings of traffic danger: by race / ethnicity

"How would you rate the risk of a child getting hit by a car within 3 blocks (or ¼ mile) from your home?"



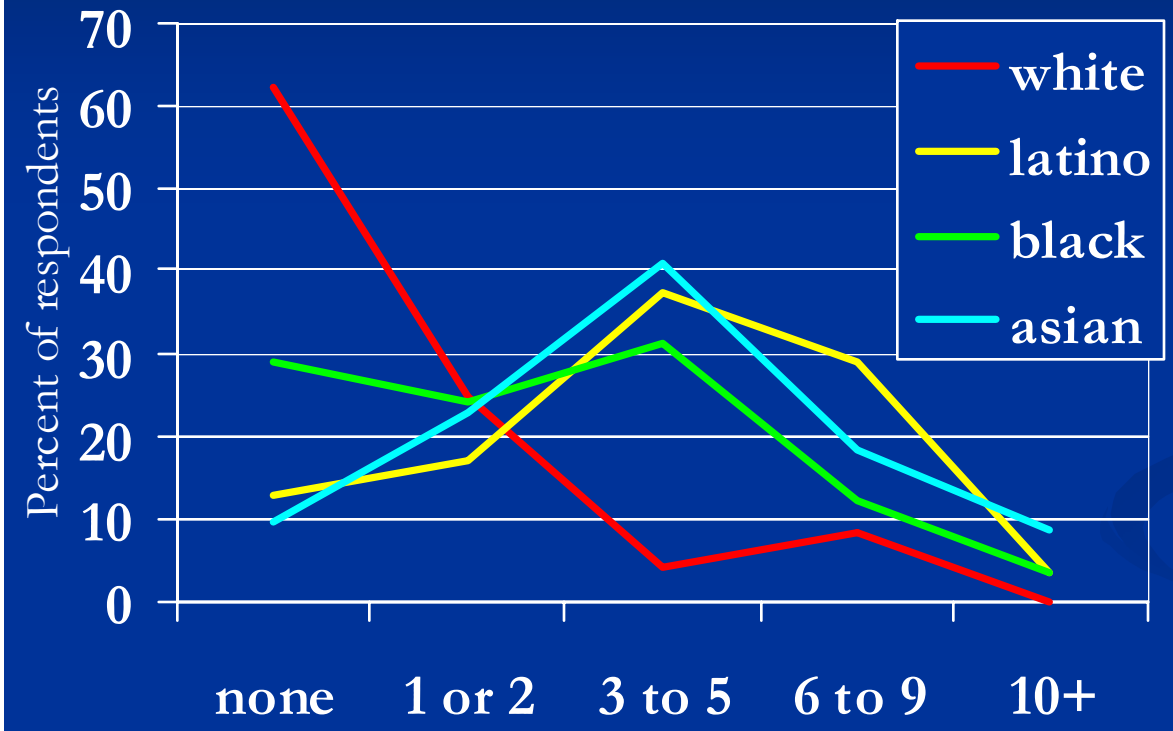
Asians rated danger as lower when compared to all others

(ordered logit OR 0.48, p=0.000)

Latinos rated danger as higher when compared to all others

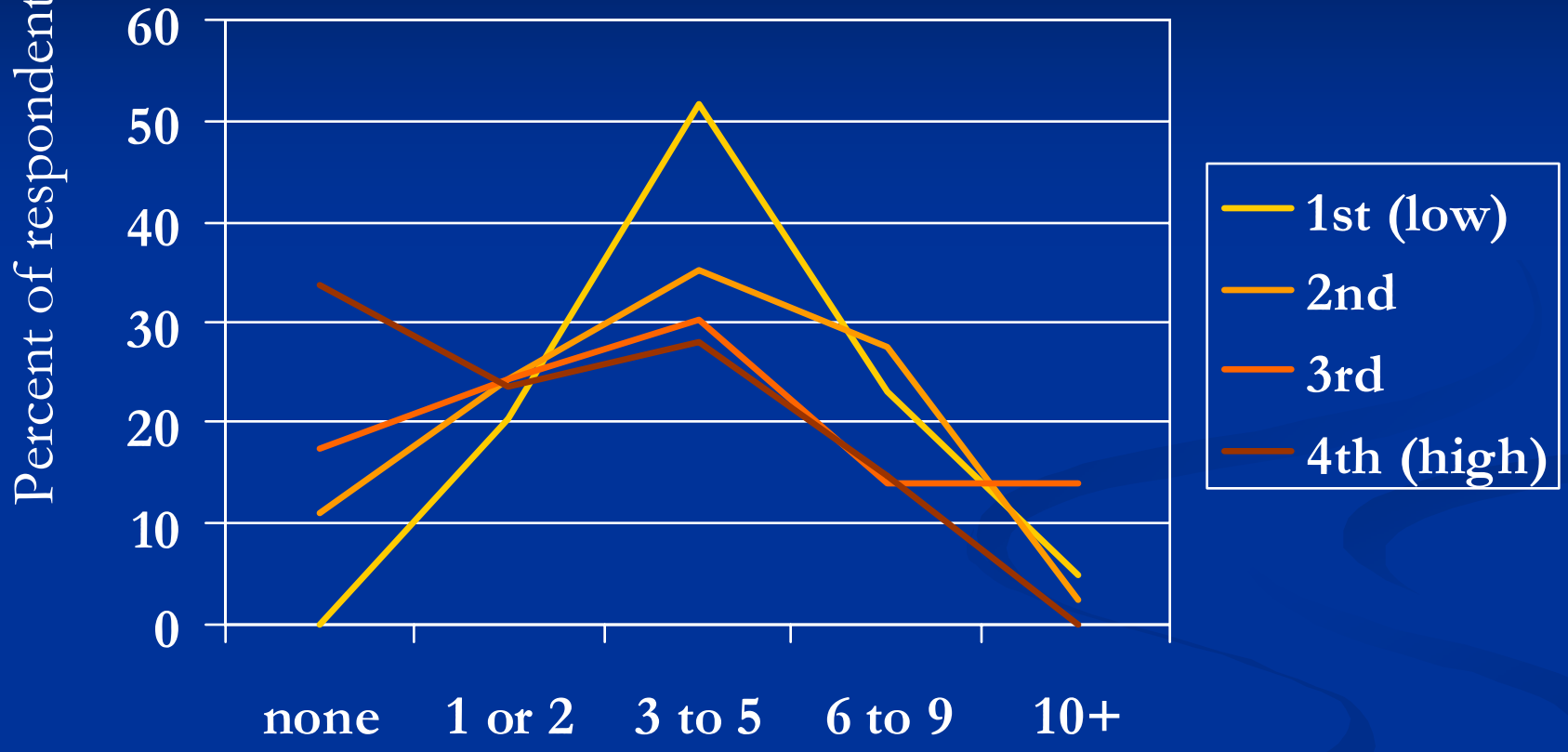
(ordered logit OR 1.93, p=0.036)

distribution of actual traffic injuries by race/ethnicity of respondent



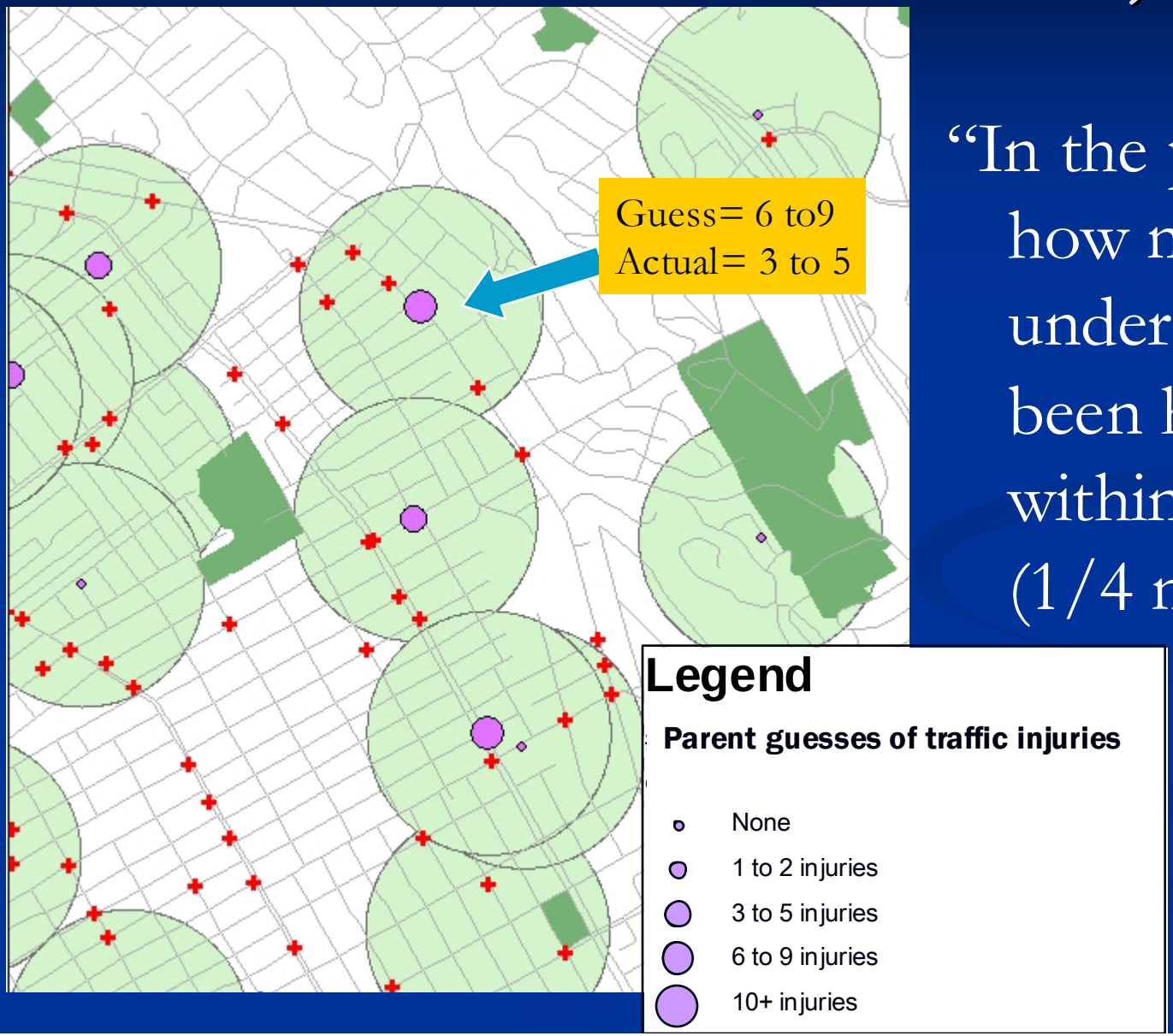
	Mean
White	1.1 (SD 1.9)
Latino	4.4 (SD 3.1)
African American	3.3 (SD 3.1)
Asian	4.2 (SD 3.1)

distribution of actual traffic injuries by income quartile of respondent



Not enough variation in neighborhood income to demonstrate statistically significant variation.

estimations of traffic injuries



"In the past 5 years, how many kids under 18 have been hit by a car within 3 blocks (1/4 mile) of your home?

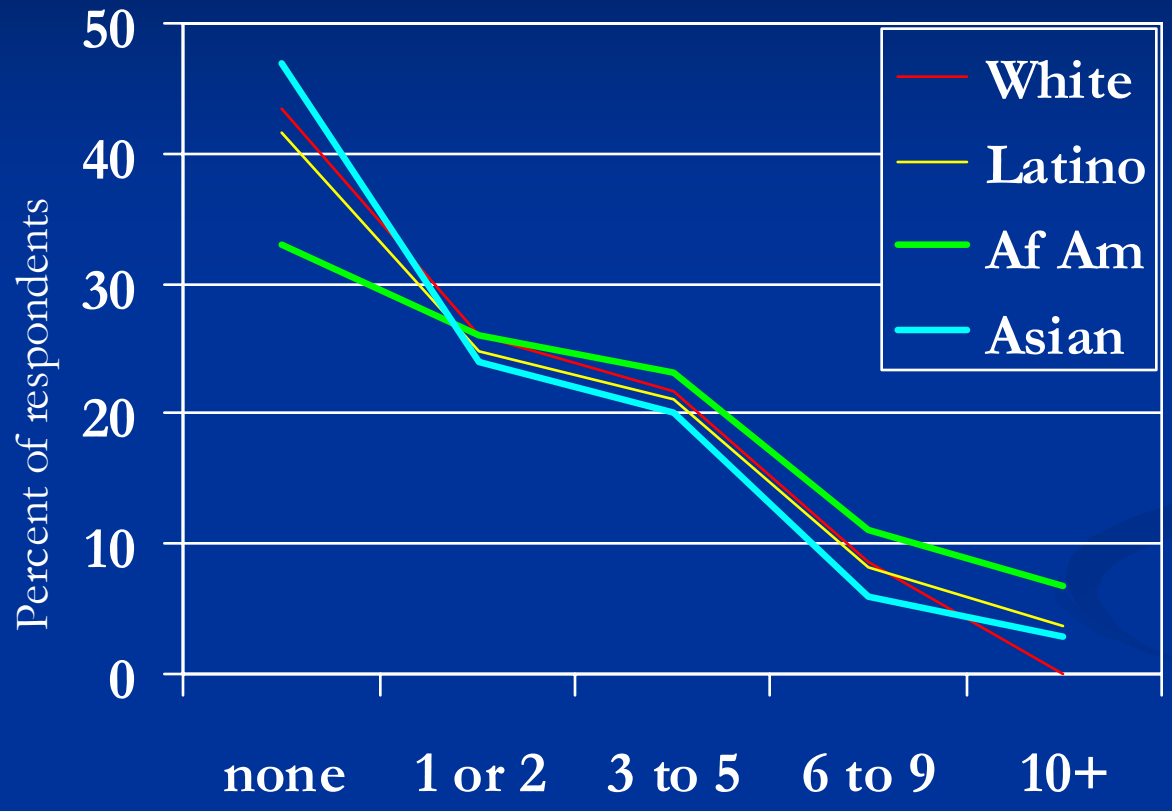
estimations of traffic injuries: by risk quartile

"In the past 5 years, how many children (under 18) do you think have been hit by a car within 3 blocks (¼ mile) from your home?"

None 1 or 2 3 to 5 6-9 10 +

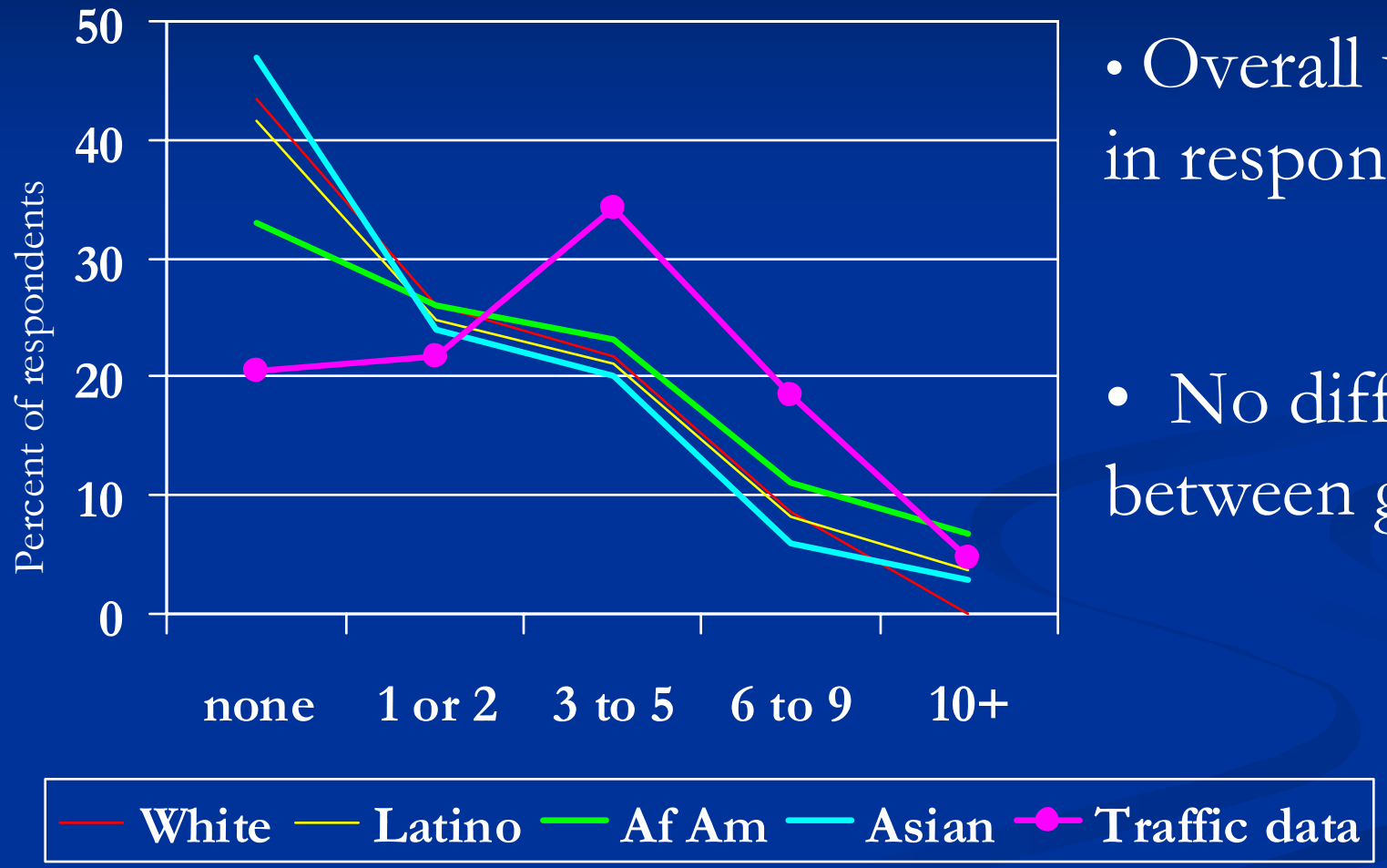
Overall, parents in the highest risk quartile guess higher numbers of injuries

estimations of traffic injuries: by race / ethnicity



- Overall uniformity in responses.
- No difference between groups

estimations of traffic injuries: by race / ethnicity



- Overall uniformity in responses.
- No difference between groups

over and underestimation

Generated "concordance" variable.

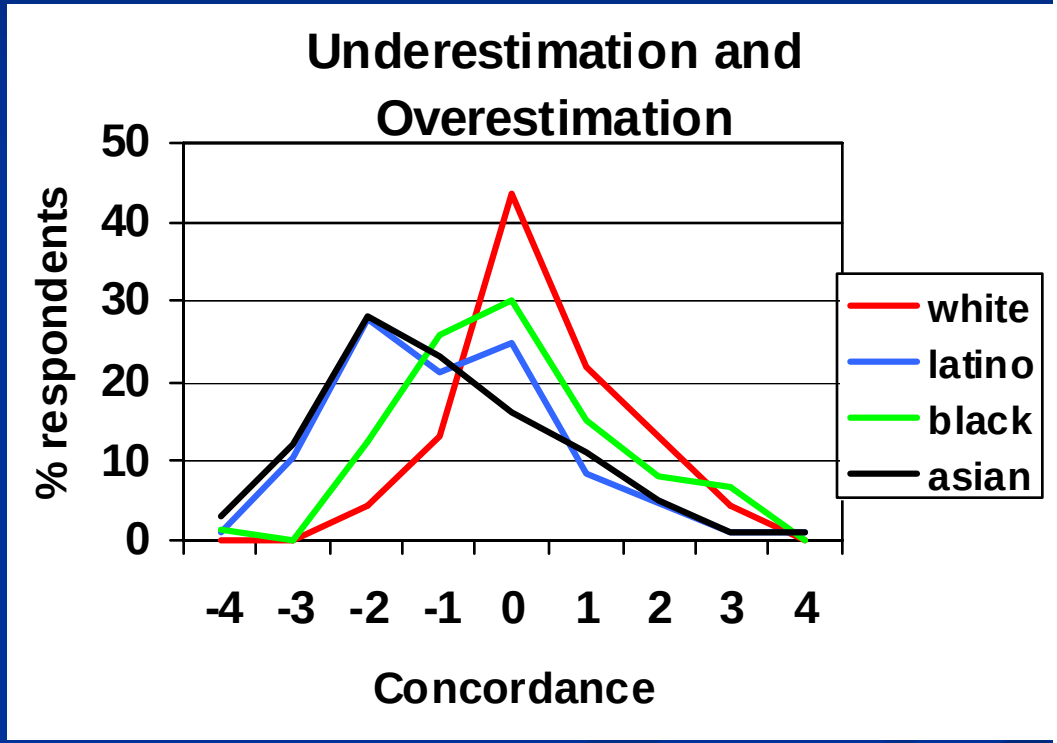
(Actual injuries minus parent's estimation)

Lowest quartile of risk: guesses are significantly *larger* than actual (overestimation)

All other quartiles, guesses are smaller than actual injuries. (underestimation)

over and underestimation

- Asians and Latinos made similar (significant) underestimations of traffic injuries.
- Recall, were on opposite ends of the Likert scale of traffic danger.



conclusion

- Parent's ratings of traffic danger on a Likert scale are not a good predictor of the actual number of pedestrian injuries.
- In particular, Asian parents systematically rate traffic danger as lowest – though they "tie" the Latino parents in terms of risk.
- In particular, Asian and Latino parents systematically underestimated the numbers of child pedestrian injuries that had occurred near their homes.

in summary

- In practice, many communities enact environmental interventions for pedestrian safety based on resident requests.

- Those at highest risk do not necessarily have a perception of traffic danger that reflects this.

in summary

Implementation of traffic interventions needs to balance resident requests for traffic interventions with objective measures of injury potential.

acknowledgements

Collaborators:

Mike Jerrett (School of Public Health, UC Berkeley)

Irene Yen (Division of Medicine, UC San Francisco)

Thank you:

Oakland Police Department, Traffic Division

Robert Wood Johnson Foundation, Health and Society Scholars Program (Cohort 3 scholar 2005-2007)