

# Developing and Evaluating Population-Level Interventions Aimed at Behavior Change to Reduce Ped/Bike Crashes

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# Presentation overview

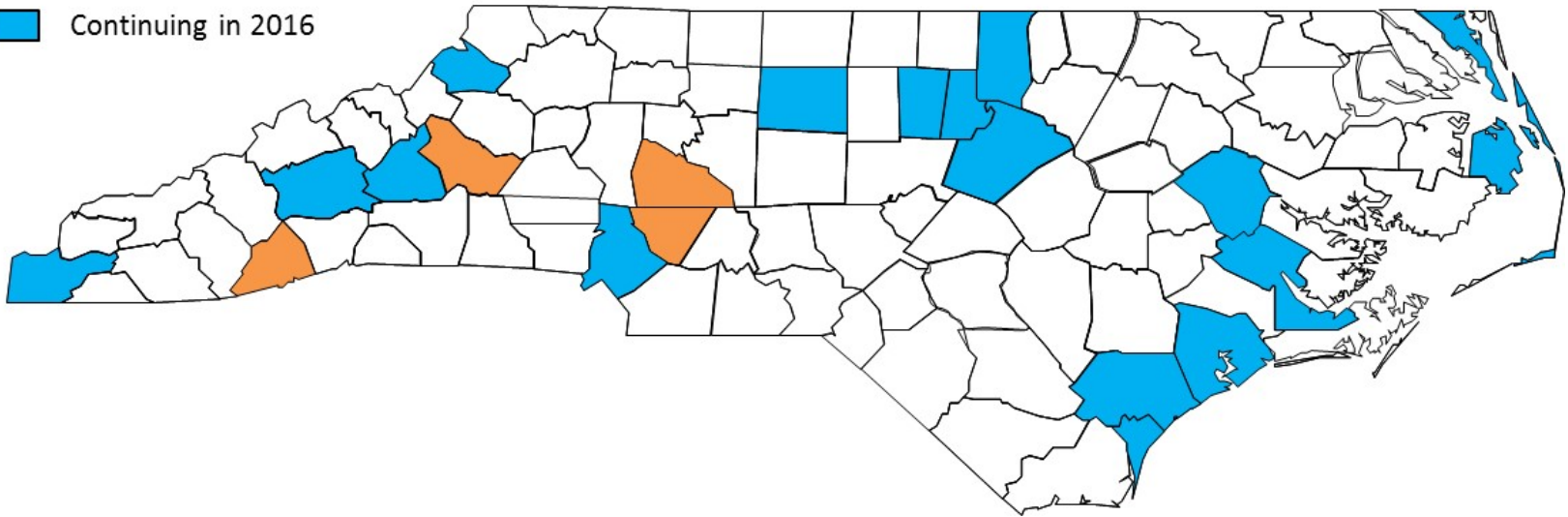
- Watch for Me NC program background
- Key challenges and lessons regarding behavior change interventions:
  - Development
  - Delivery (and evaluation)
  - Outcome evaluation
- Future research needs



# Watch for Me NC background

- 2009-2011: Crash analysis/problem ID, coalition building, & program development
- 2012-2013: Pilot testing, expansion, & refinement
- 2014-2016: Statewide roll out & further evaluation

 New in 2016  
 Continuing in 2016



	2012 (Pilot)	2013 (Pilot)	2014	2015	2016
# of coalitions	4	10	14	18	25

# Challenge #1: Intervention development

- Conceptually sound, evidence-based
  - Limited ped/bike examples/evaluations
  - Public Health, psychology, and social science theories of behavior change
- Identify/target “modifiable” behaviors
  - Acknowledging the complexities of human behavior

# What do we mean by “behavior”?

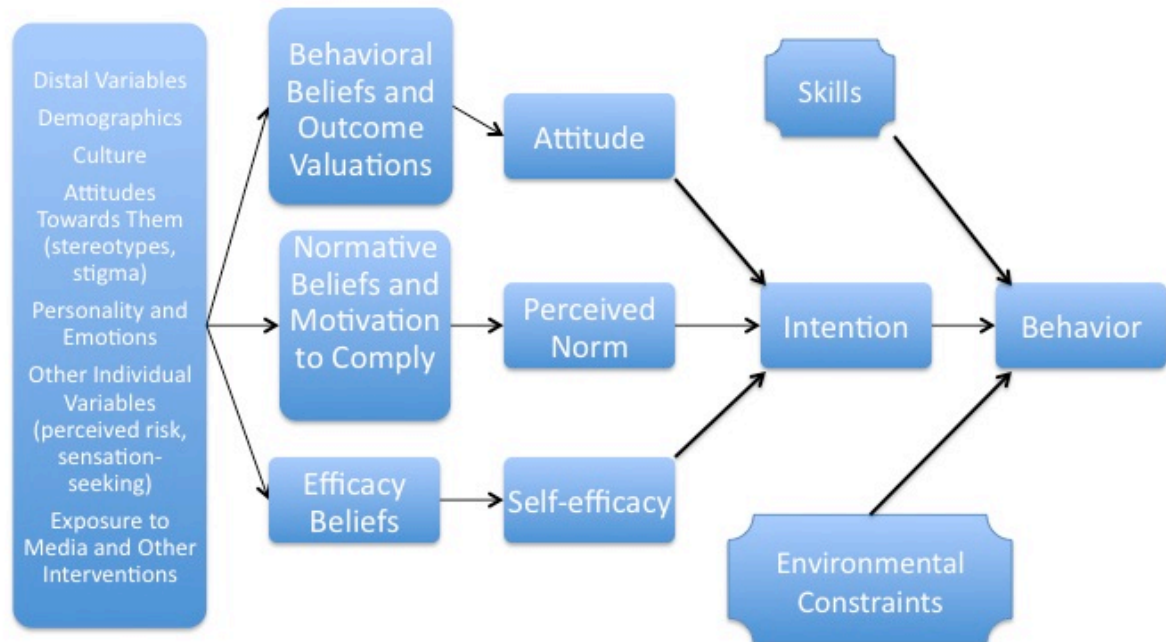
- No simple behaviors: speeding, distraction, crosswalk use, yielding, etc.
- Many aspects to consider:
  - Conscious / planned vs. unconscious / spontaneous / involuntary
  - Rational vs. irrational
  - New vs. familiar
  - One time vs. habitual or over a duration of time



# Lessons from Public Health

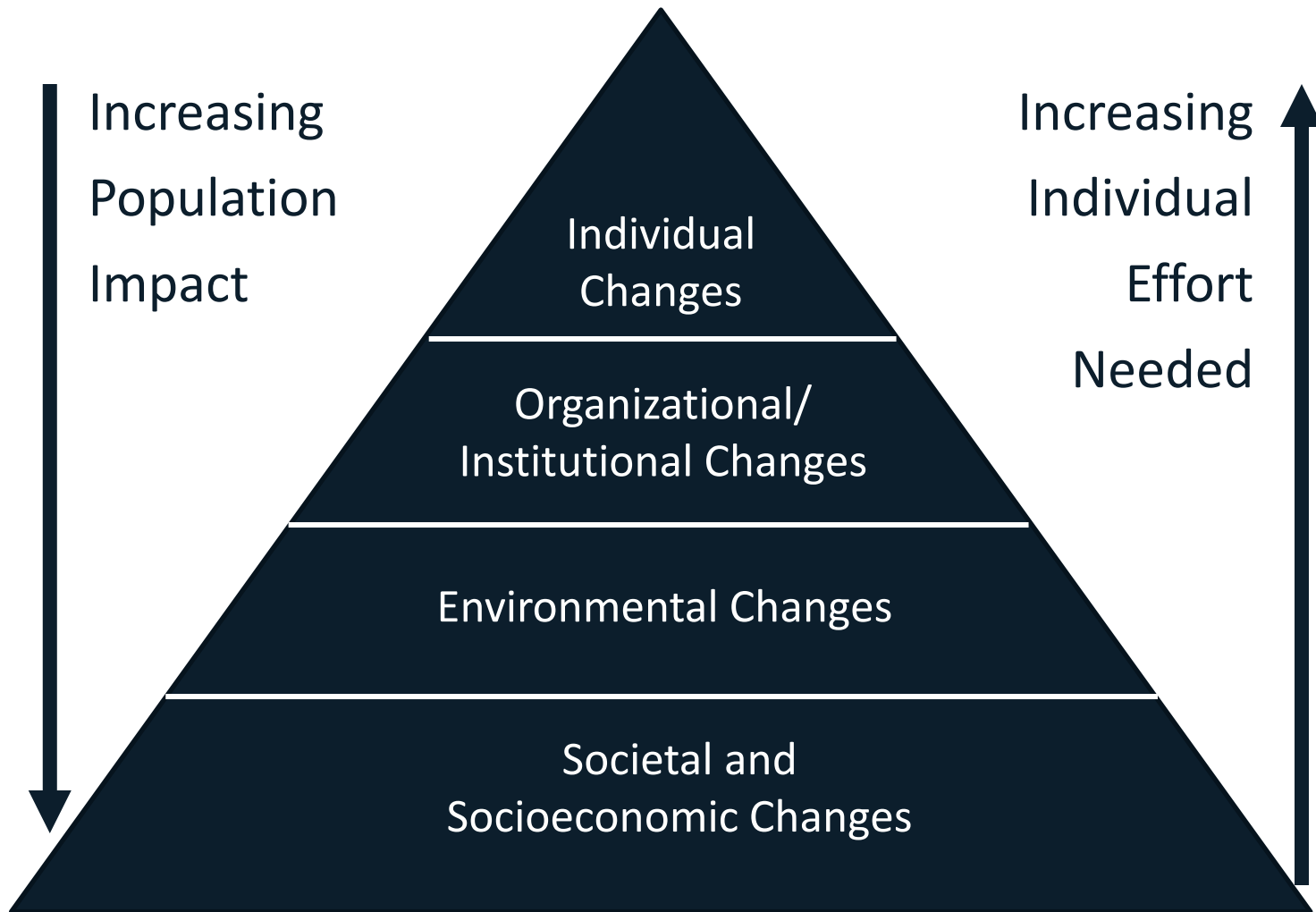
- Identify a target population and behavior(s)
- Develop/apply conceptual models

## An Integrative Model of Behavior Prediction



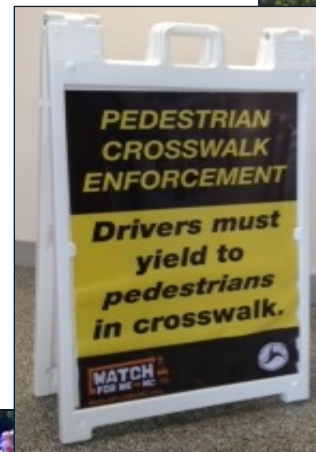
Fishbein, M. & Yzer, M.C. (2003). Using theory to design effective health behavior interventions. *Communication Theory*;13:164-183.

# Conceptual model for intervention development



# Intervention elements

- Individual/social
  - Paid/earned/social media
  - Public outreach/engagement
  - High-visibility enforcement
- Organizational
  - Trainings for officers
  - Intra-agency capacity building
  - Tech support and templates
- Environmental
  - Low-cost engineering measures





# Challenge #2: Evaluating program delivery

- Measuring intervention fidelity and “intensity”
  - Poor (or poorly understood) metrics to compare “intensity” of program delivery
- Knowing what “intensity” threshold may be necessary to change behaviors
  - Key gap in research
- Data collection from local agencies
  - Significant under-reporting
  - May lead to misclassification of “exposure” to the intervention

# Watch for Me NC program delivery evaluation

- Multiple data sources and measures:

	2012 (Pilot)	2013 (Pilot)	2014	2015	2016
<b>Agencies Involved</b>	10	20	36	35	ongoing
<b>Officers Trained</b>	43	55	118	116	
<b>Local Outreach Events Reported</b>	12	71	105	120	
<b>Safety Operations Conducted</b>	37 involving 150+ officers	55 involving 200+ officers	92 involving 264+ officers	97 involving 350+ officers	
<b>Gross Media Impressions</b>	3.8M	10.5M	33.7M	51.5M	
<b>Citations / Warnings Issued</b>	172 / 460	162 / 318	93 / 1,821	248 / 1,316	

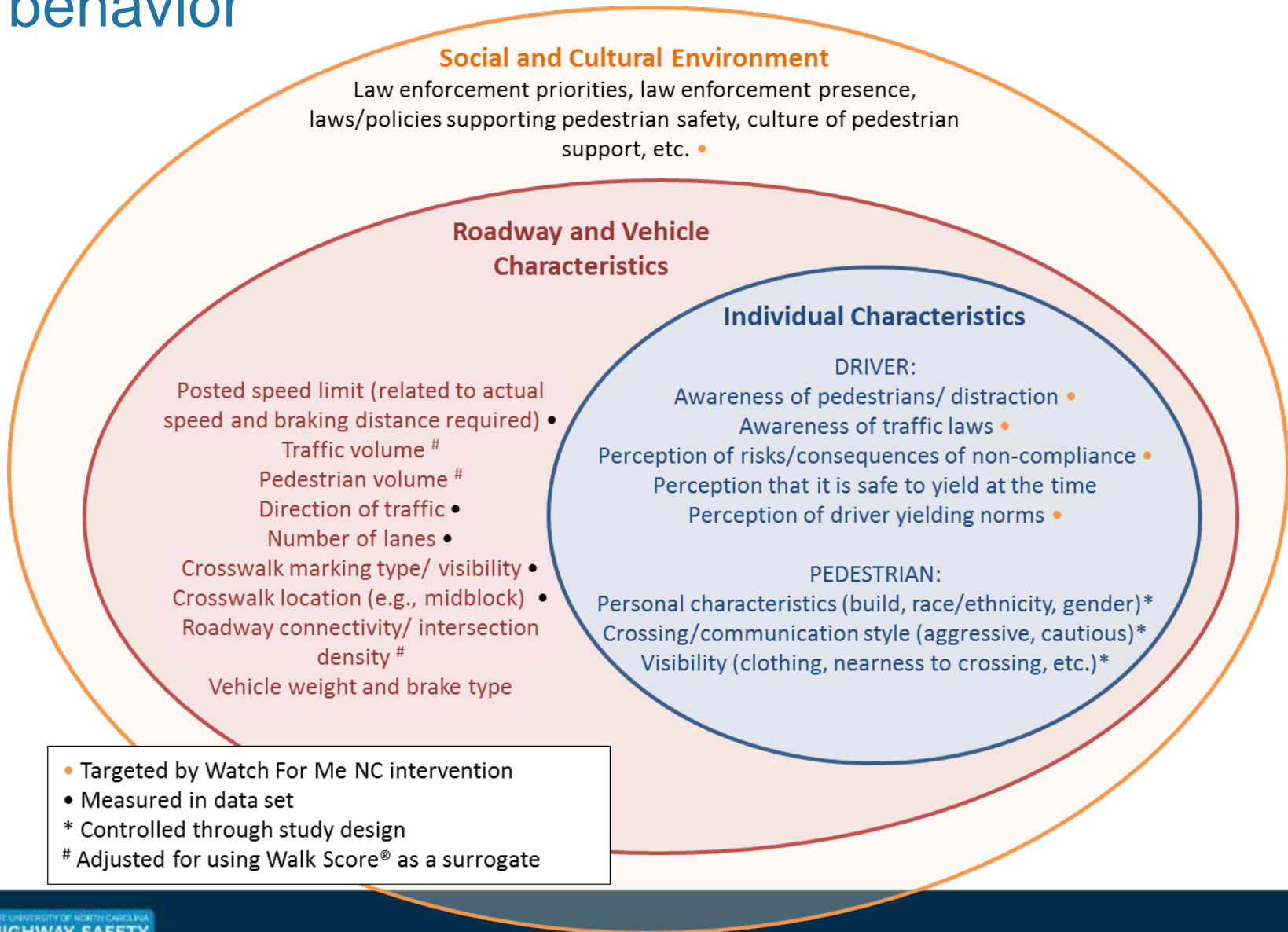
# Challenge #3: Evaluating behavioral intervention outcomes

- What to measure: proximal vs. distal outcomes
- When to measure it: short term vs. long term
- Teasing apart the effects of different program elements, and measuring interactions

# Watch for Me NC outcomes of interest

1. Knowledge of laws
  - Officer survey pre/post training (each year, 2012-2015)
  - Public survey (phone based) in 2015
2. Attitudes/perceptions of social norms (surveys)
3. Self-reported behaviors (surveys)
4. Observed behaviors
  - Pre/post design with comparison group
  - 2012, 2013, and 2015 field data collection
5. “Capacity” and organizational changes
  - Survey and interviews (each year, 2013-2016)
6. Ped/bike crashes (slated for 2017)

# Conceptual model for evaluating driver yielding behavior



# Findings to date

- Significant increases in officer knowledge of laws, capacity to conduct enforcement operations, and organizational/policy changes
- Public perceptions of social norms more predictive of self-reported behaviors than knowledge of the law
- Driver compliance with yielding laws is improving:
  - Short term (6 months): 4-7% average increase in yielding rates at 8 sites receiving enhanced enforcement
  - Longer term (1+ year): 15-16% average increase (9 sites observed)
  - Sites with sustained, routine enforcement had highest compliance
  - Covariates associated with higher rates of driver yielding: High visibility crosswalks, low-speed roads, <3 lanes

# Future research needs

1. Better understanding of behavioral phenomena, and how influenced by social and built environment
2. Enhanced, consistent metrics to measure/ compare intervention delivery
3. Validation of attitude, perception, and behavioral measurement tools
4. Better understanding of relationship between behavioral and crash outcomes
5. Crash-based evaluations of long-term, comprehensive interventions

