

# **Pedestrian Education and Enforcement Programs in the City of Detroit**

**Wayne State University**

**Transportation Research Group (WSU-TRG)**

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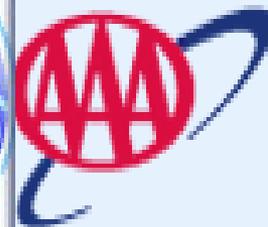
# Introduction

- Detroit Pedestrian Safety Issues
  - FHWA “Focus City”
    - 4<sup>th</sup> most pedestrian fatalities in nation
    - Between 1<sup>st</sup> and 3<sup>rd</sup> nationally in pedestrian fatalities per capita from 2003 to 2007
- NHTSA Focus City/Focus States Grant
- Objectives
  - Develop pedestrian safety model
  - Enforcement Programs
  - Educational Programs

# Detroit Area Pedestrian Safety Action Team – DAPSAT



U.S. Department of Transportation  
**Federal Highway  
Administration**

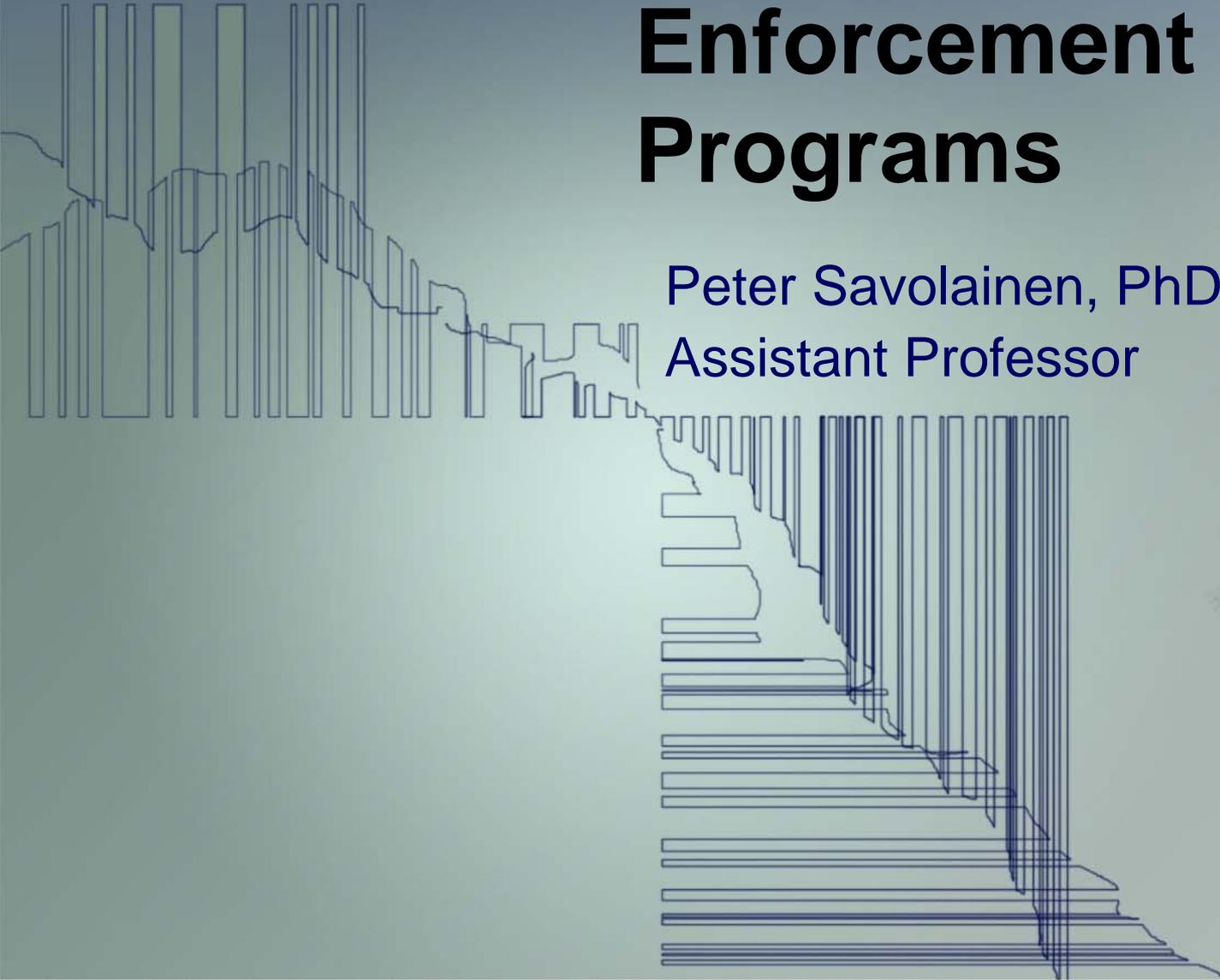


# Program Development

- Enforcement
  - Walk Safely to Wayne State
  - Share the Road
  - Traveling Trashed is Trouble (3T)
- Education
  - Walk Safely to Wayne State
  - Safe Street Crossing Tips
  - Additions to Secretary of State Driver's License Informational Booklet and Driver Test
  - Drive Safely to WSU campaign

# Enforcement Programs

Peter Savolainen, PhD  
Assistant Professor



# Walk Safely to Wayne State



# Public Awareness

- Posters around campus
  - Parking structures
  - Classrooms
  - Apartments
- Informational handouts
- CAMPUSWATCH e-mail



April 2008  
Pedestrian Safety Month

Dear Pedestrian,

You are receiving this flyer because you were observed committing a violation of Michigan law and/or local ordinance while crossing a public thoroughfare. Although you only received a warning, be aware that pedestrians are also subject to receiving **traffic tickets** just like motorists who fail to observe traffic laws. However, simply following these laws is not enough! Pedestrians are the most vulnerable group of road users as they have the least protection and are often least visible to the motorists, so pedestrians must be mindful of motorist behavior at all times when attempting to cross a roadway.

Sincerely,

WSU Transportation Research Group and WSU Department of Public Safety

Crash Statistics	Pedestrian Crossing Laws
<ul style="list-style-type: none"><li>• On average, 34 pedestrians are killed and 675 are injured annually in the City of Detroit.<ul style="list-style-type: none"><li>• The pedestrian is at fault in approximately 1/2 of these cases.</li></ul></li><li>• The intersection of Warren and Cass averages 4 pedestrian crashes per year.<ul style="list-style-type: none"><li>• Other intersections in and around campus also experience high pedestrian crashes.</li></ul></li><li>• One in every 18 pedestrian crashes results in a fatality, whereas 1 in 340 motor vehicle crashes results in a fatality.</li><li>• Follow pedestrian laws and be safe!</li></ul>	<p><b>Flashing "Don't Walk" Phase</b></p> <ul style="list-style-type: none"><li>• Do not enter the street</li><li>• If you have already begun to cross, continue to the other side</li></ul> <p><b>Steady "Don't Walk" Phase</b></p> <ul style="list-style-type: none"><li>• Do not enter the street</li><li>• If you are in the street, get out!</li></ul> <p><b>Steady "Walk" Phase</b></p> <ul style="list-style-type: none"><li>• You may begin to cross the street</li></ul> <p><b>At all locations:</b></p> <ul style="list-style-type: none"><li>• You must cross within a crosswalk if one is present at that location or a nearby location</li></ul> <p>Other examples of unsafe pedestrian behavior include:</p> <ul style="list-style-type: none"><li>• Using cellphone when crossing, using headphones while crossing, and running across the street</li></ul>



Wayne State University  
Transportation Research Group

Wayne State University  
Department of Public Safety

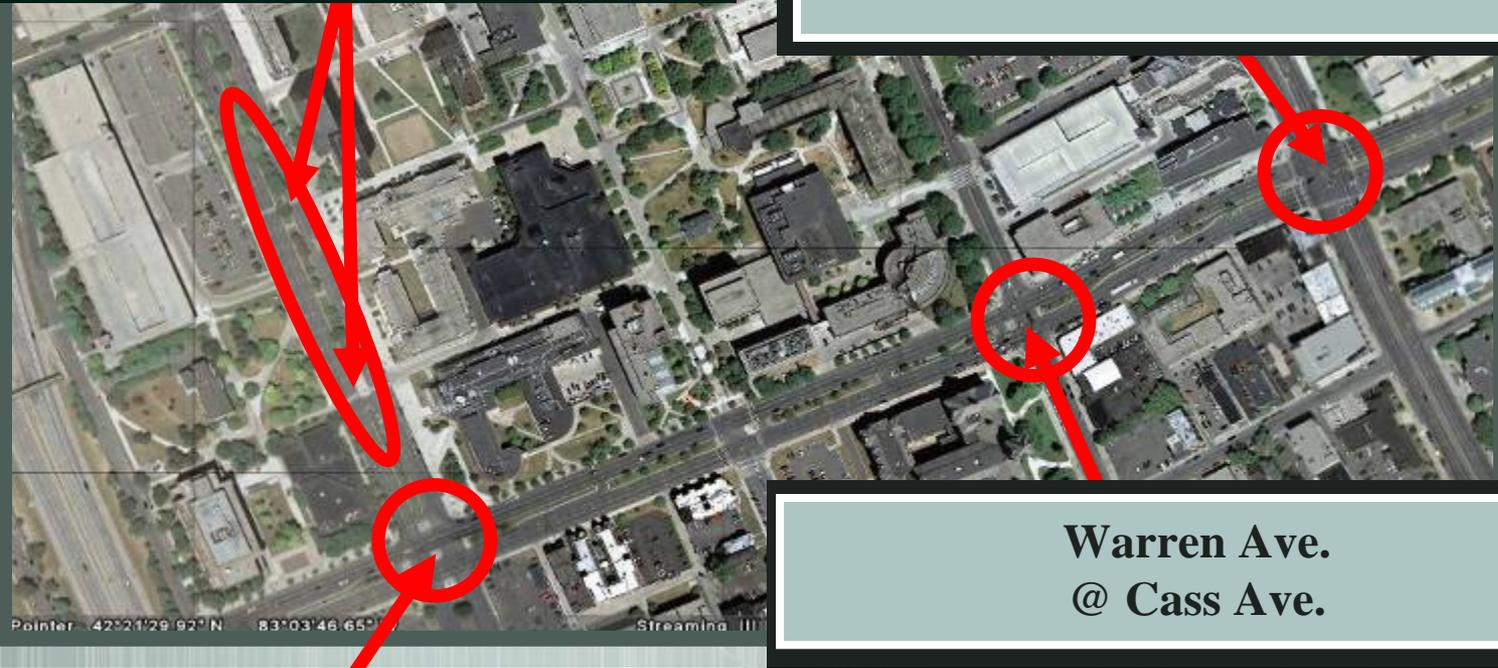
Reference: Culture Impact Crash 02/1/03, Michigan Vehicle Code Section 247.103

# Walk Safely to Wayne State: Phase I

## March – April 2008

**Anthony Wayne Drive  
Mid-Block Locations**

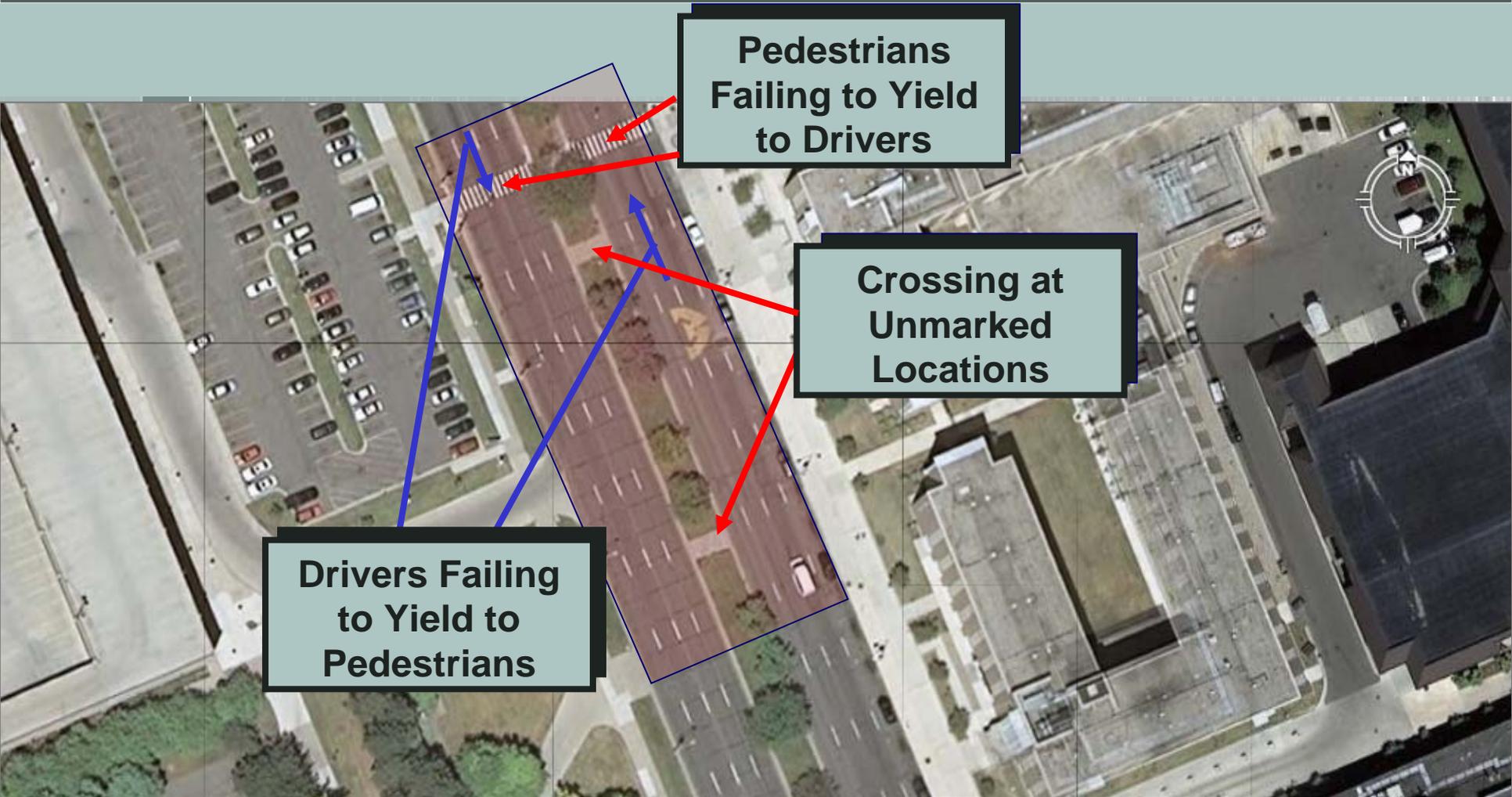
**Woodward Ave.  
@ Warren Ave.**



**Warren Ave.  
@ Cass Ave.**

**Warren Ave. @  
Anthony Wayne Dr.**

# Enforcement at Anthony Wayne Drive Mid-Block Locations



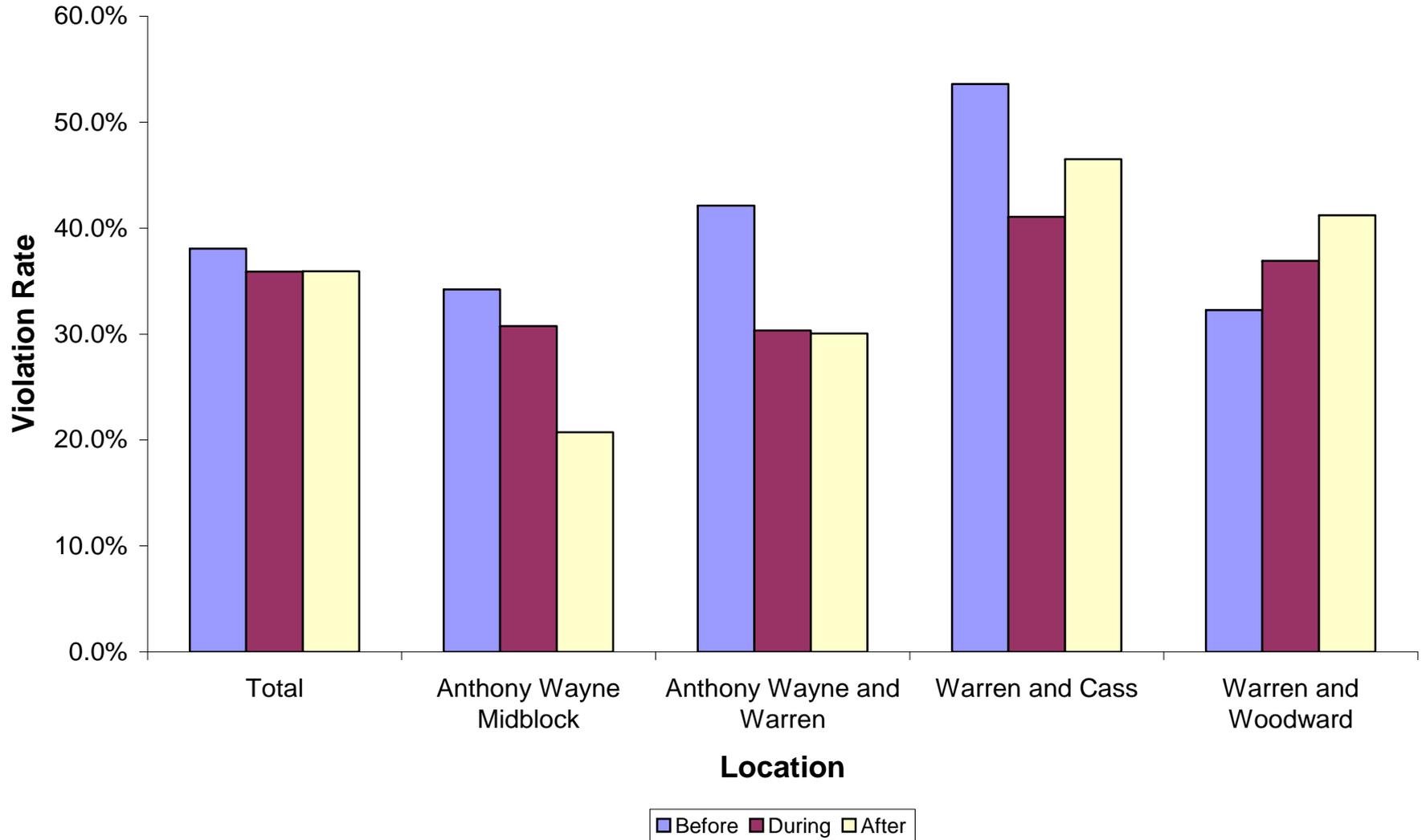
**Pedestrians  
Failing to Yield  
to Drivers**

**Crossing at  
Unmarked  
Locations**

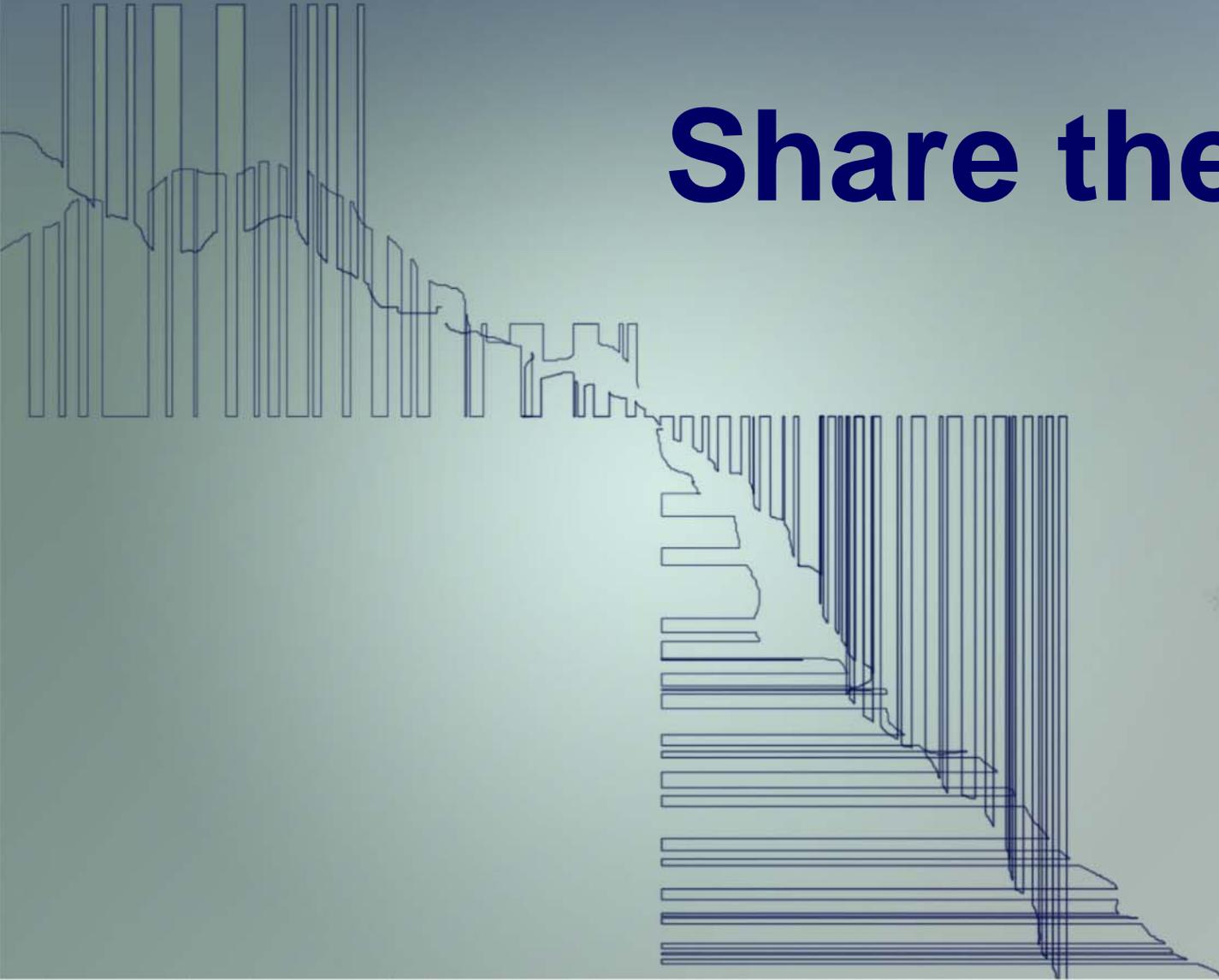
**Drivers Failing  
to Yield to  
Pedestrians**

# Walk Safely to Wayne State Results

## Violation Rate by Location and Time Period

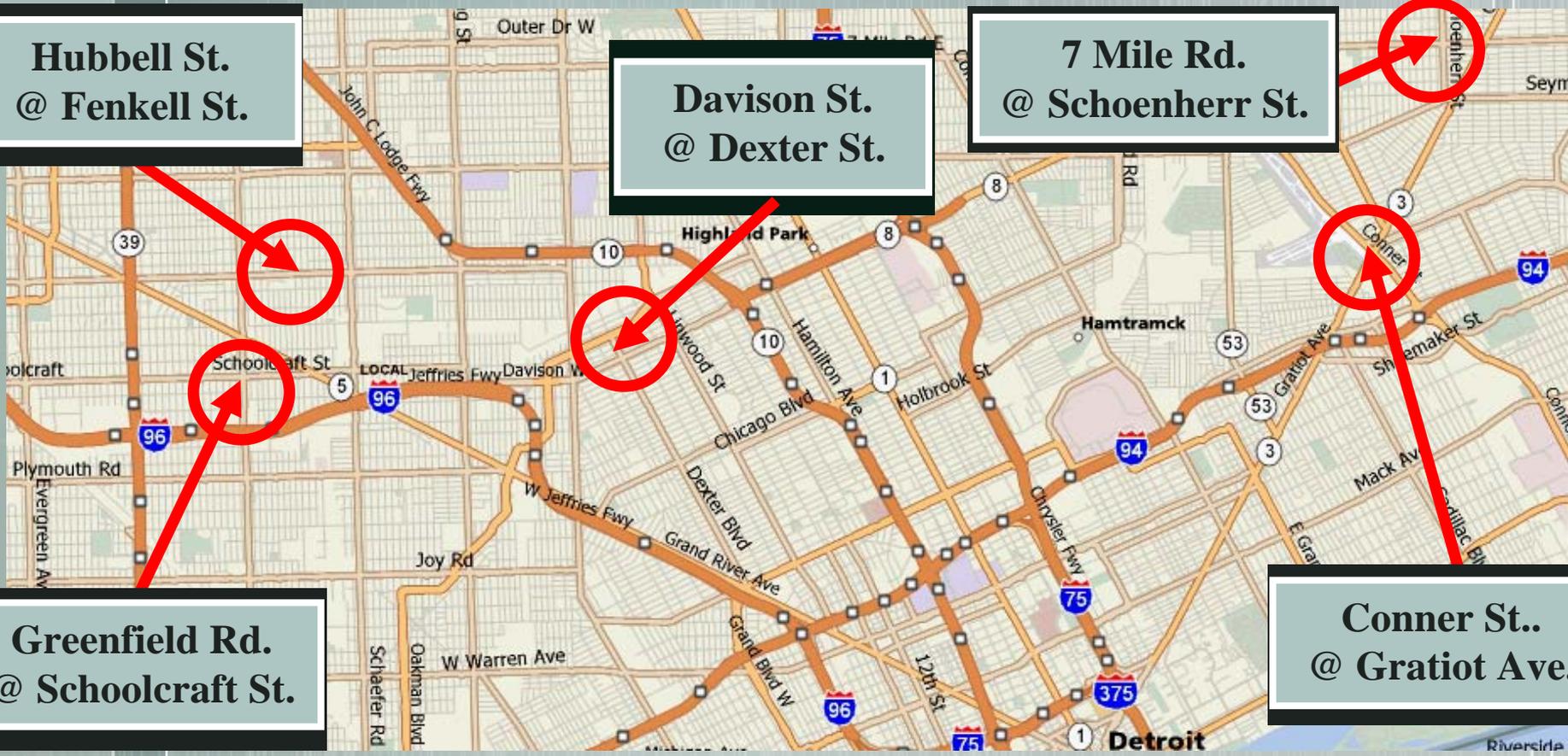


# Share the Road



# Share the Road: Phase I

## October – November 2008



**Hubbell St.  
@ Fenkell St.**

**Davison St.  
@ Dexter St.**

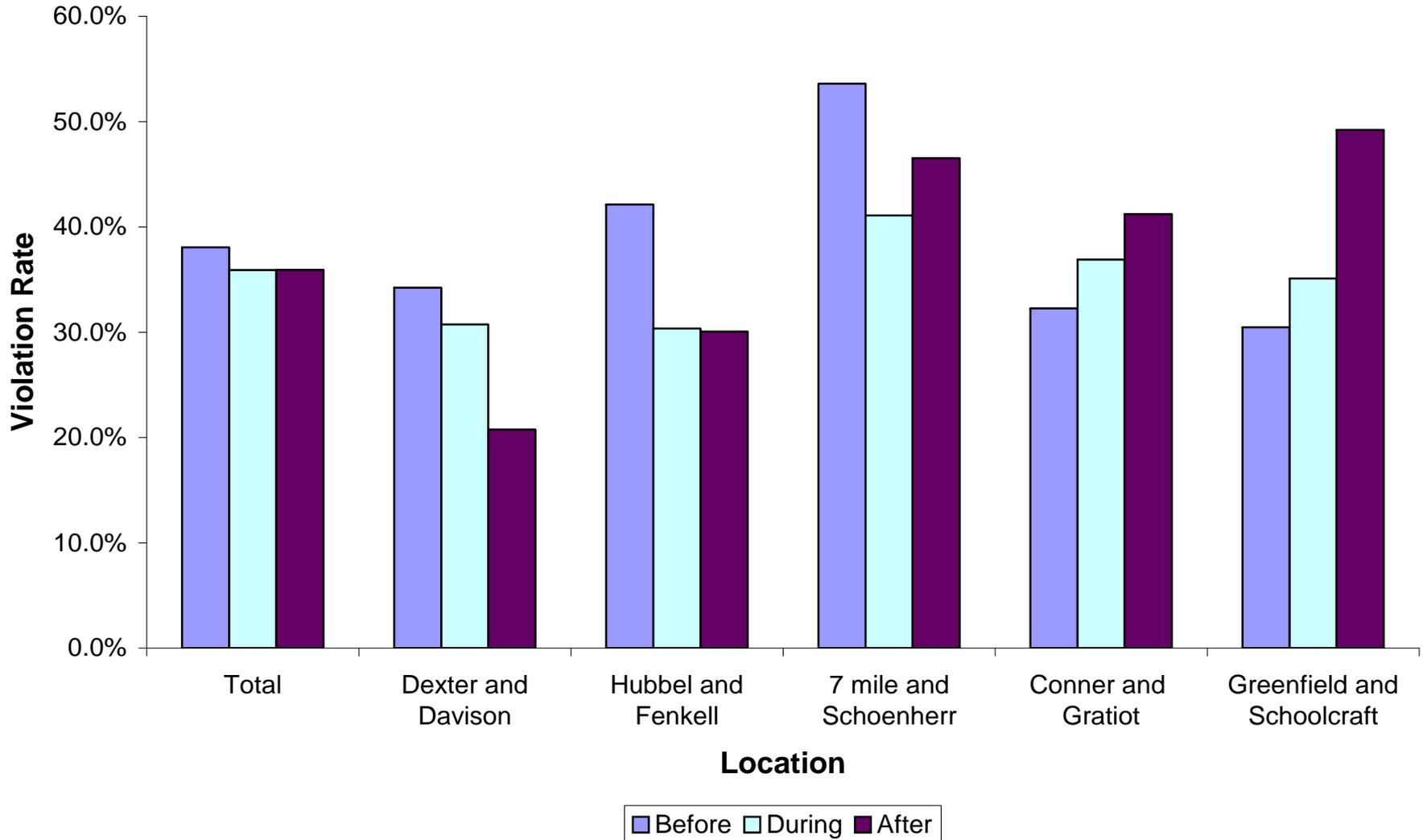
**7 Mile Rd.  
@ Schoenherr St.**

**Greenfield Rd.  
@ Schoolcraft St.**

**Conner St..  
@ Gratiot Ave.**

# Share the Road Results

## Violation Rate by Location and Time Period



# Risk Index Function Development



# Risk Index Function

$$RI = w_1 X_1 + w_2 X_2 + \dots + w_n X_n$$

Factors Included in Risk Index Function:	Weight
• Total Crashes	→ 3.9
• Pedestrian Crashes	→ 8.9
• 18-and-under Pedestrian Crashes	→ 5.6
• Average Daily Traffic	→ 3.1
• Distance to Nearest School	→ 4.9
• Pedestrian Crashes per Total Crashes	→ 5.7
• Pedestrian Crash Rate	→ 3.6
• Total Crash Rate	→ 7.1
• Speed Limit Major Road	→ 3.4
• Speed Limit Minor Road	→ 3.0

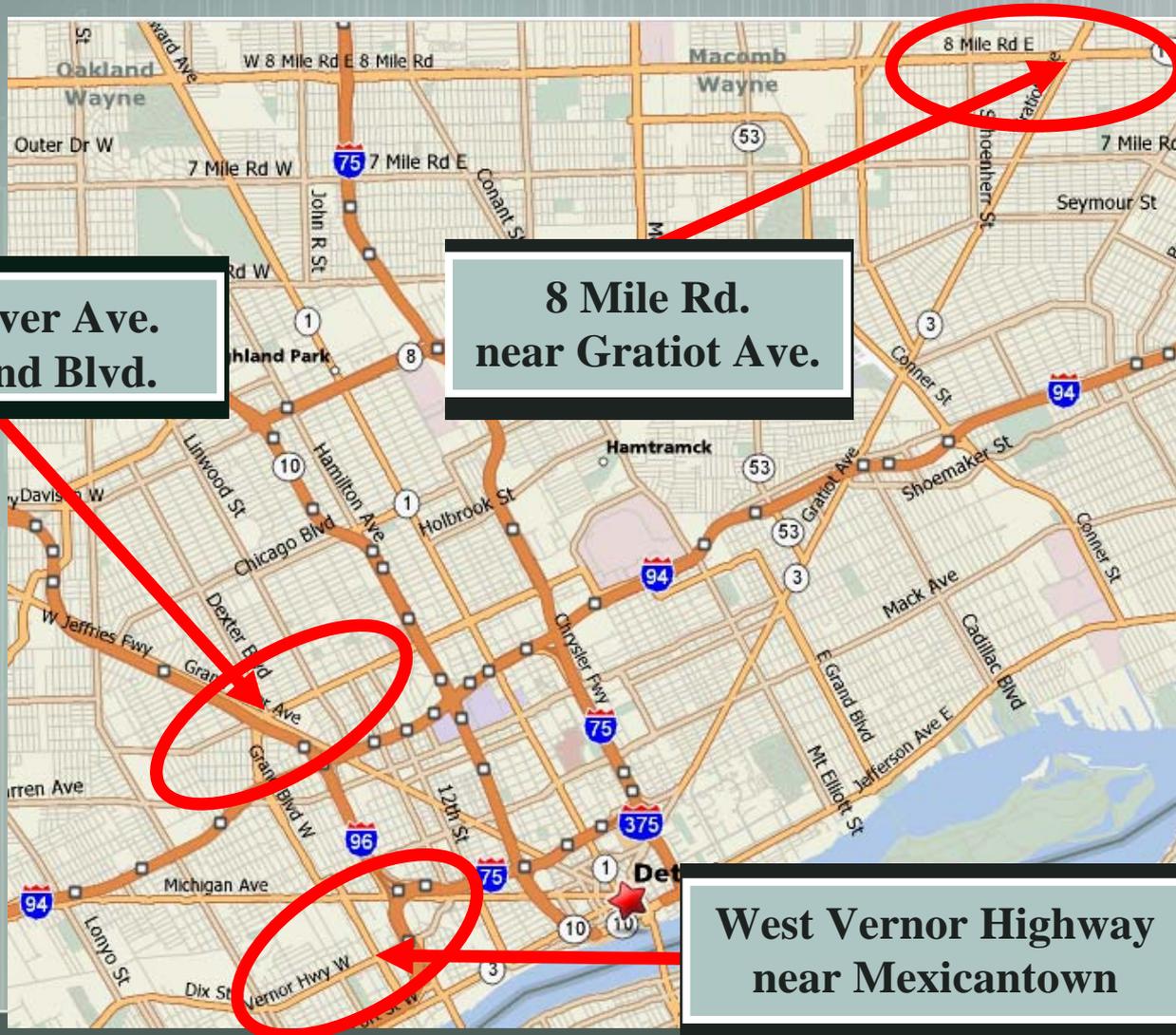
# Risk Index Function Results

<b>Rank</b>	<b>Intersection</b>	<b>Risk Index Function</b>
1	Conner St. and Gratiot Ave.	157.2
2	Davison St. and Dexter Ave.	141.2
3	Fenkell St. and Hubbell St.	130.8
4	7 Mile Rd. and Joann St.	120.6
5	Warren Ave. and Cass Ave.	119.3

# Traveling Trashed is Trouble (3T)



# Traveling Trashed is Trouble: Phase I December 2008 – January 2009



**Grand River Ave.  
near Grand Blvd.**

**8 Mile Rd.  
near Gratiot Ave.**

**West Vernor Highway  
near Mexicantown**

# Traveling Trashed is Trouble

- Conducted in coordination with “Over the Limit, Under Arrest”
- Public Awareness Campaign
  - Posters
    - Placed in area bars and liquor stores
      - Near entrance and registers
      - In restrooms
  - Blood Alcohol Content (BAC) cards
    - Placed near register in liquor stores
    - Handed out by bartenders
    - Distributed at Detroit Auto Show

# Traveling Trashed is Trouble

## TRAVELING TRASHED IS **Trouble**

### DRIVE SOBER!

FROM 2004 TO 2007,  
4.0% OF FATAL CRASHES  
IN DETROIT INVOLVED  
ALCOHOL.



## TRAVELING TRASHED IS **Trouble**



### WALK SOBER!

EACH YEAR, 34 PEDESTRIANS ARE KILLED AND 675 ARE  
INJURED IN THE CITY OF DETROIT.  
ALCOHOL OR DRUGS PLAY A ROLE IN APPROXIMATELY HALF  
OF THESE FATALITIES.

MEN								WOMEN								
Approximate BAC Percentage (g/mL)								Approximate BAC Percentage (g/mL)								
Number Of Drinks	Body Weight in Pounds							Number Of Drinks	Body Weight in Pounds							
	100	120	140	160	180	200	220		240	100	120	140	160	180	200	220
0	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00	.00	.00	.00	.00
1	.04	.03	.03	.02	.02	.02	.02	1	.05	.04	.03	.03	.03	.02	.02	.02
2	.08	.06	.05	.05	.04	.04	.03	2	.09	.08	.07	.06	.05	.05	.04	.04
3	.11	.09	.08	.07	.06	.06	.05	3	.14	.11	.10	.09	.08	.07	.06	.06
4	.15	.12	.11	.09	.08	.08	.07	4	.18	.15	.13	.11	.10	.09	.08	.08
5	.19	.16	.13	.12	.11	.09	.09	5	.23	.19	.16	.14	.13	.11	.10	.09
6	.23	.19	.16	.14	.13	.11	.10	6	.27	.23	.19	.17	.15	.14	.12	.11
7	.26	.22	.19	.16	.15	.13	.12	7	.32	.27	.23	.20	.18	.16	.14	.13
8	.30	.25	.21	.19	.17	.15	.14	8	.36	.30	.26	.23	.20	.18	.17	.15
9	.34	.28	.24	.21	.19	.17	.15	9	.41	.34	.29	.26	.23	.20	.19	.17
10	.38	.31	.27	.23	.21	.19	.17	10	.45	.38	.32	.28	.25	.23	.21	.19

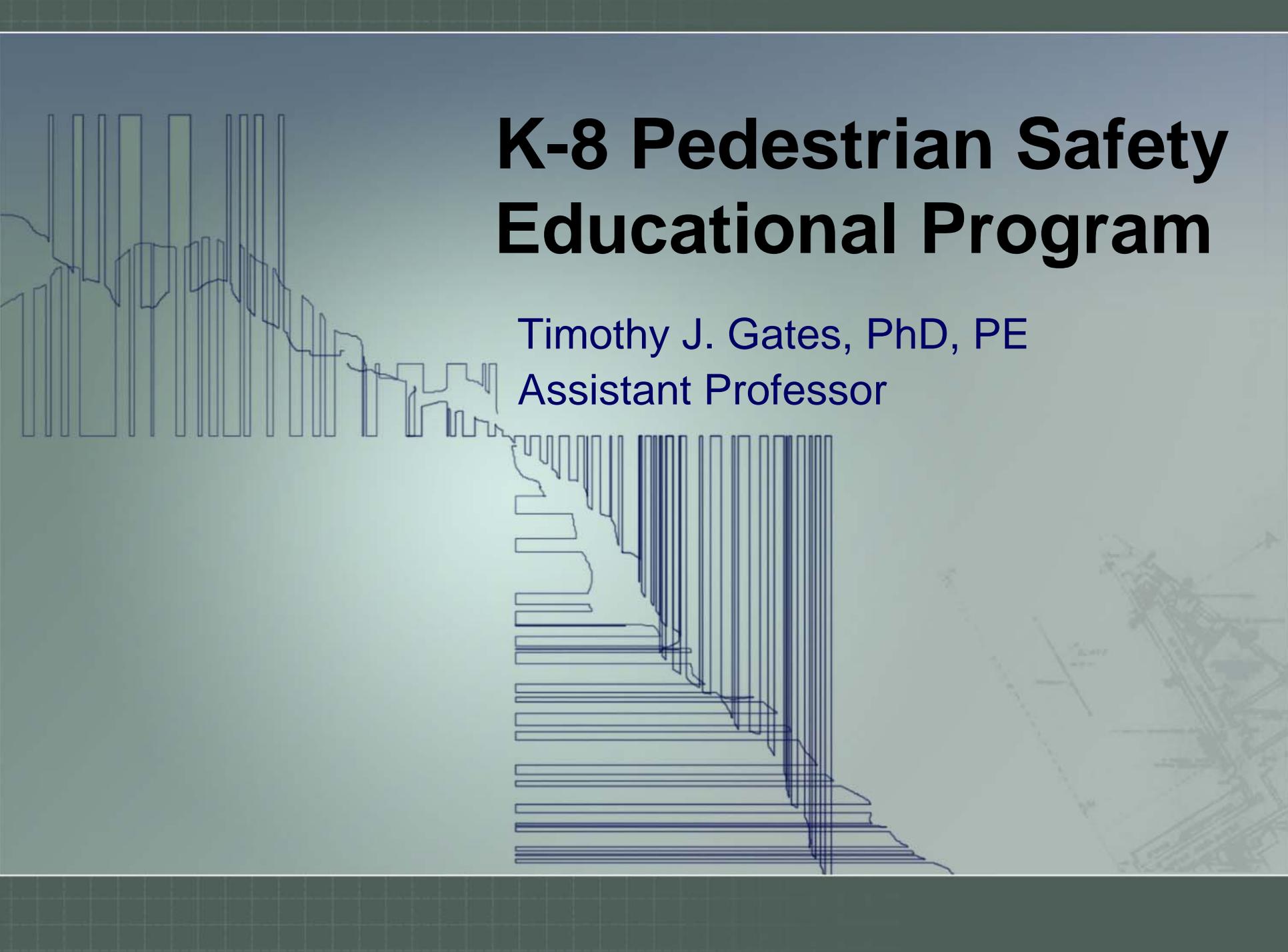
Your body can eliminate on average .015 grams of alcohol per hour.

MEN								WOMEN								
Approximate BAC Percentage (g/mL)								Approximate BAC Percentage (g/mL)								
Number Of Drinks	Body Weight in Pounds							Number Of Drinks	Body Weight in Pounds							
	100	120	140	160	180	200	220		240	100	120	140	160	180	200	220
0	.00	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00	.00	.00	.00	.00
1	.04	.03	.03	.02	.02	.02	.02	1	.05	.04	.03	.03	.03	.02	.02	.02
2	.08	.06	.05	.05	.04	.04	.03	2	.09	.08	.07	.06	.05	.05	.04	.04
3	.11	.09	.08	.07	.06	.06	.05	3	.14	.11	.10	.09	.08	.07	.06	.06
4	.15	.12	.11	.09	.08	.08	.07	4	.18	.15	.13	.11	.10	.09	.08	.08
5	.19	.16	.13	.12	.11	.09	.09	5	.23	.19	.16	.14	.13	.11	.10	.09
6	.23	.19	.16	.14	.13	.11	.10	6	.27	.23	.19	.17	.15	.14	.12	.11
7	.26	.22	.19	.16	.15	.13	.12	7	.32	.27	.23	.20	.18	.16	.14	.13
8	.30	.25	.21	.19	.17	.15	.14	8	.36	.30	.26	.23	.20	.18	.17	.15
9	.34	.28	.24	.21	.19	.17	.15	9	.41	.34	.29	.26	.23	.20	.19	.17
10	.38	.31	.27	.23	.21	.19	.17	10	.45	.38	.32	.28	.25	.23	.21	.19

Your body can eliminate on average .015 grams of alcohol per hour.

# 3T Results

- Targeted Enforcement Campaign
  - 79 Vehicles Stopped
  - 170 Violations
    - 14 Open Intox
    - 15 Expired Plates
    - 19 Speeding
    - 11 Red Light/Stop Sign Violations
    - 2 Safety Belt
    - 109 Others (e.g., no insurance, no license)



# K-8 Pedestrian Safety Educational Program

Timothy J. Gates, PhD, PE  
Assistant Professor

# K-8 Program Background

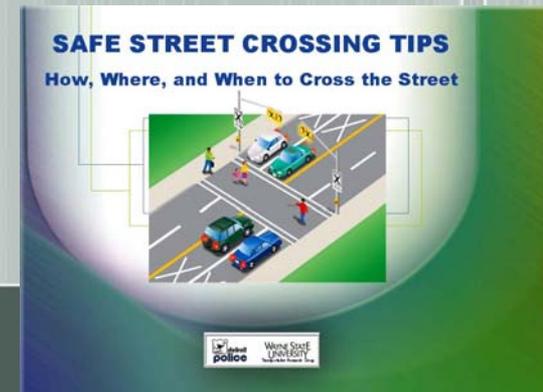
- Detroit Child Pedestrian Safety Issues
  - 171 total child pedestrian crashes per year
  - Represents 21% of all pedestrian crashes
  - 46% occur between 4:00 PM and 9:00 PM
  - 63% of the fatalities occur at midblock areas
- Objectives
  - Develop a pedestrian safety program for K-8 students.
  - Present the pedestrian safety program to Detroit K-8 students.
  - Perform an objective evaluation of the program effectiveness.

# K-8 Program Details

- Designed in PowerPoint with photos, animations, and videos
  - Photos/videos taken near Detroit schools
- Included common Detroit scenarios
  - Signalized and unsignalized intersections
  - Intersections without crosswalks
  - Midblock areas
  - Locations with no sidewalks or impassable sidewalks
- Students were trained in
  - Proper search methods
  - Crossing location and path selection
  - When to start crossing
- Included an interactive component

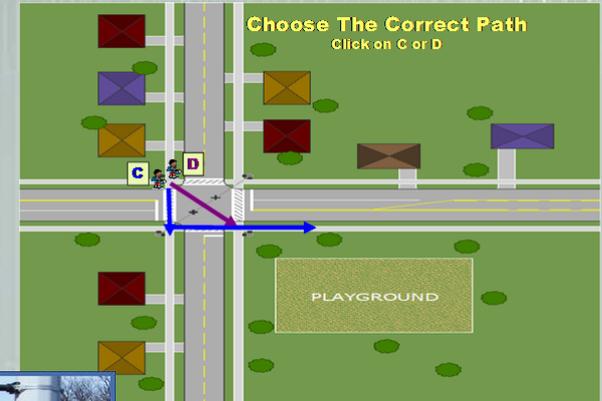
# K-8 Program Summary

- “Safe Street Crossing Tips”
- Presented at 18 Detroit schools since May 07
  - 14 public
  - 4 charter
- Pre/Post testing at 16 schools
- Behavior evaluation at 10 schools
- Findings presented at TRB
- Publication in upcoming TRR



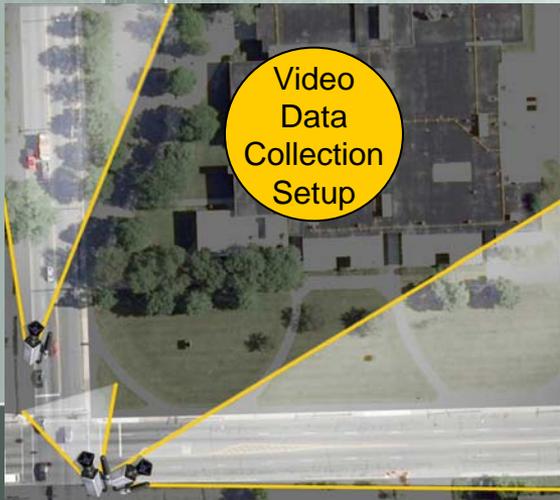
# K-8 Program – Detroit Stats

- 4,300 children trained by program
- 3,500 children given pre/post test
- 4,800 child pedestrian crossing observations



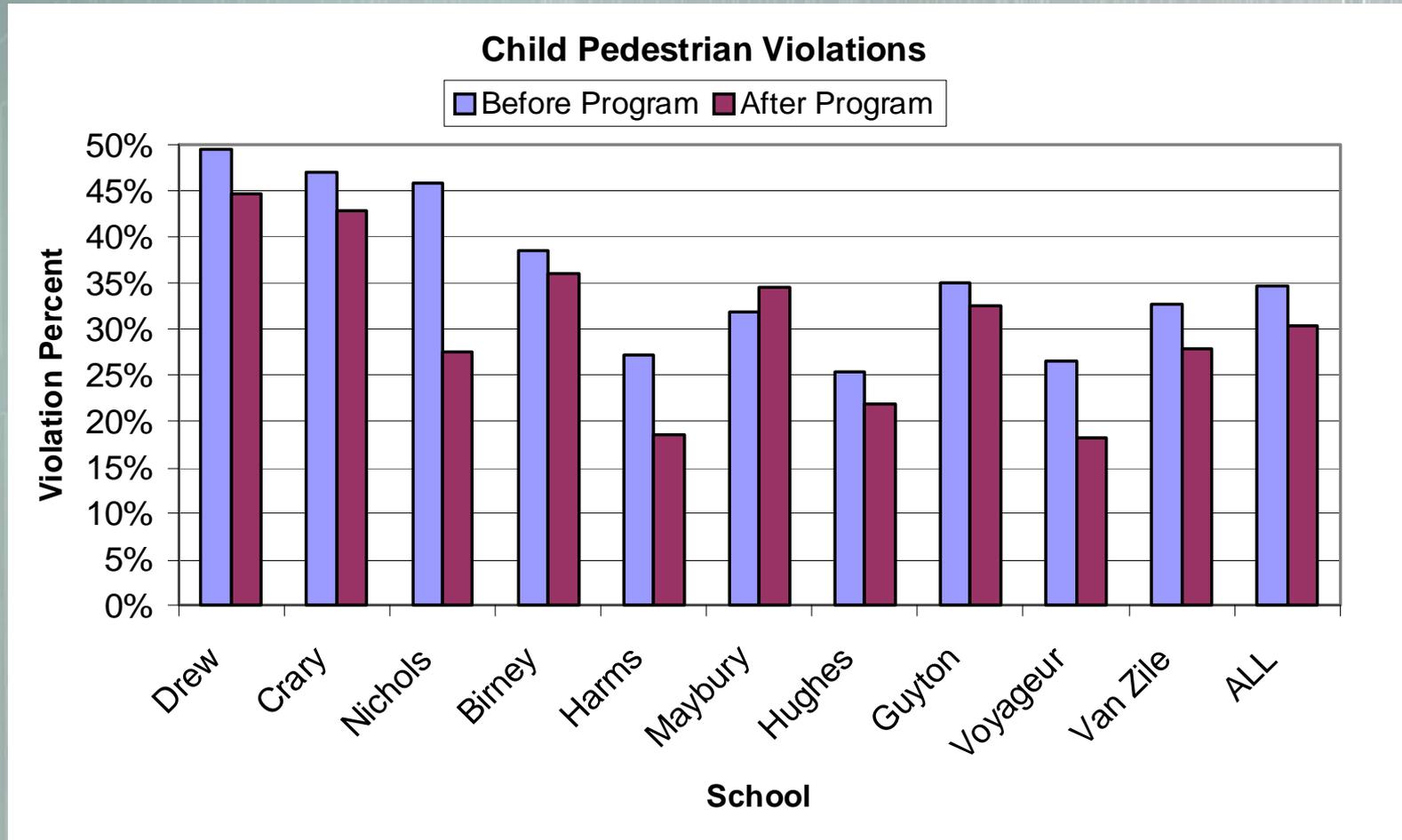
# K-8 Program – Behavioral Study

- B&A observation of child ped violations
  - Entered the crosswalk during the Flashing DON'T WALK phase,
  - Entered the crosswalk during the Steady DON'T WALK phase,
  - Crossed at an intersection but outside of the crosswalk, and
  - Crossed at an unmarked midblock location.



# K-8 Program – Behavioral Results

- *By School*



# K-8 Program – Pre/Post Testing

- Same multiple choice test was given immediately before and after the program presentation.
- Test questions were shown on the screen – Answers recorded by students on a half-sheet of paper
- Responses were tracked by school, grade, and age.

Pre Test Answer Sheet

Your Age: \_\_\_\_\_

Circle Your Grade: K 1 2 3 4 5 6 7 8

(1.) Circle one only:        A    B

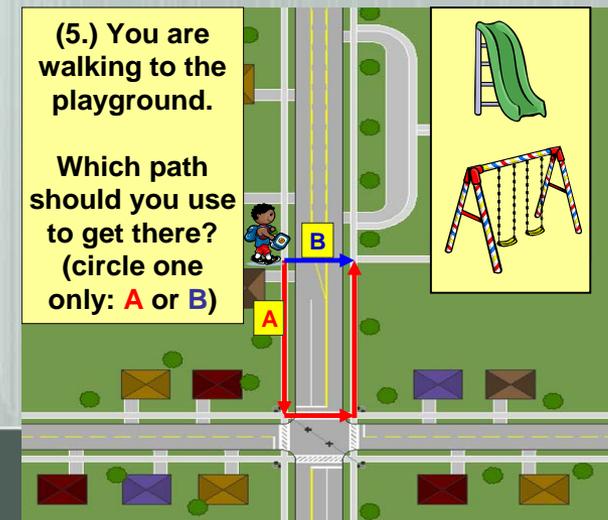
(2.) Circle all that apply: A    B    C

(3.) Circle all that apply: A    B    C

(4.) Circle one only:        A    B

(5.) Circle one only:        A    B

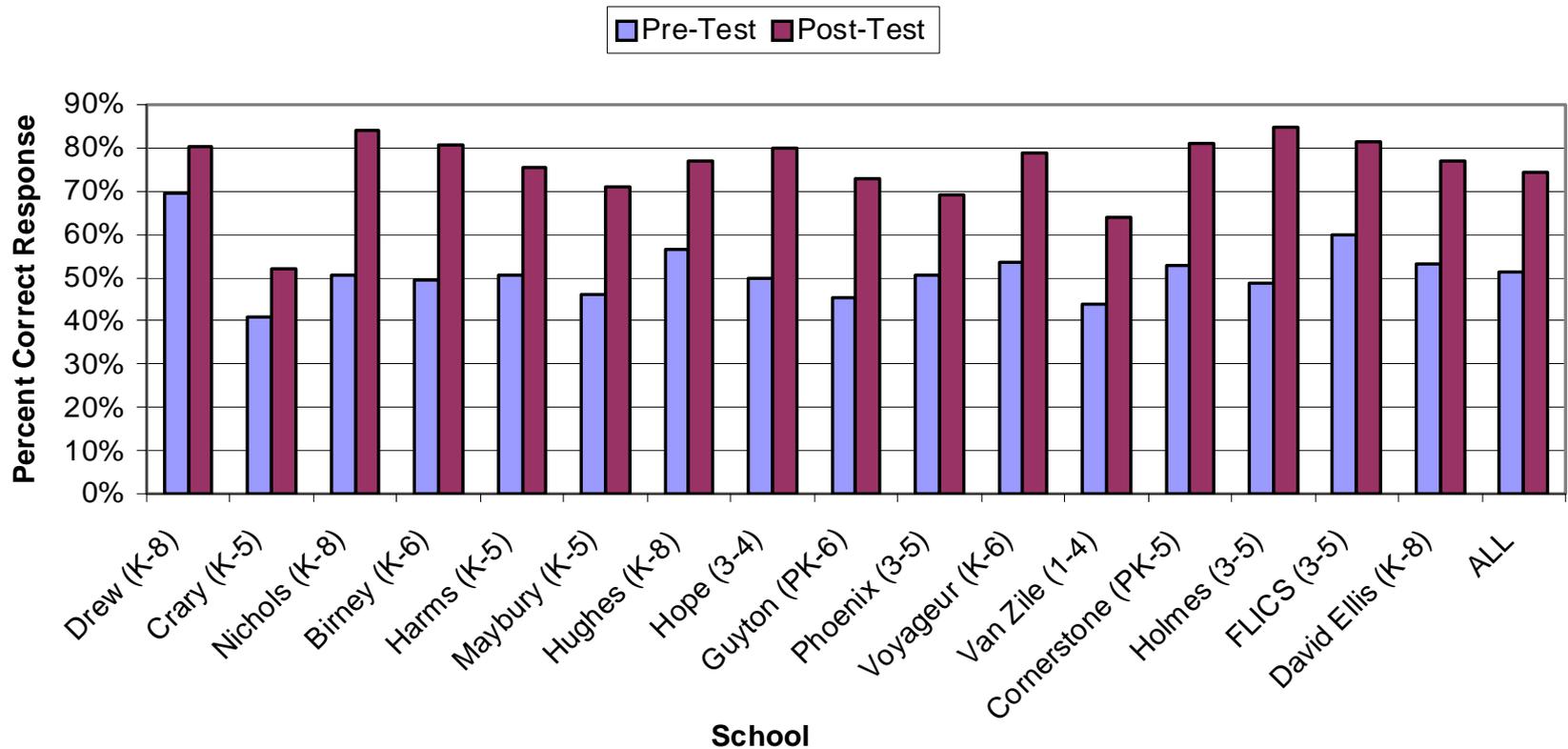
(6.) Circle all that apply: A    B    C



# K-8 Program – Testing Results

- By School

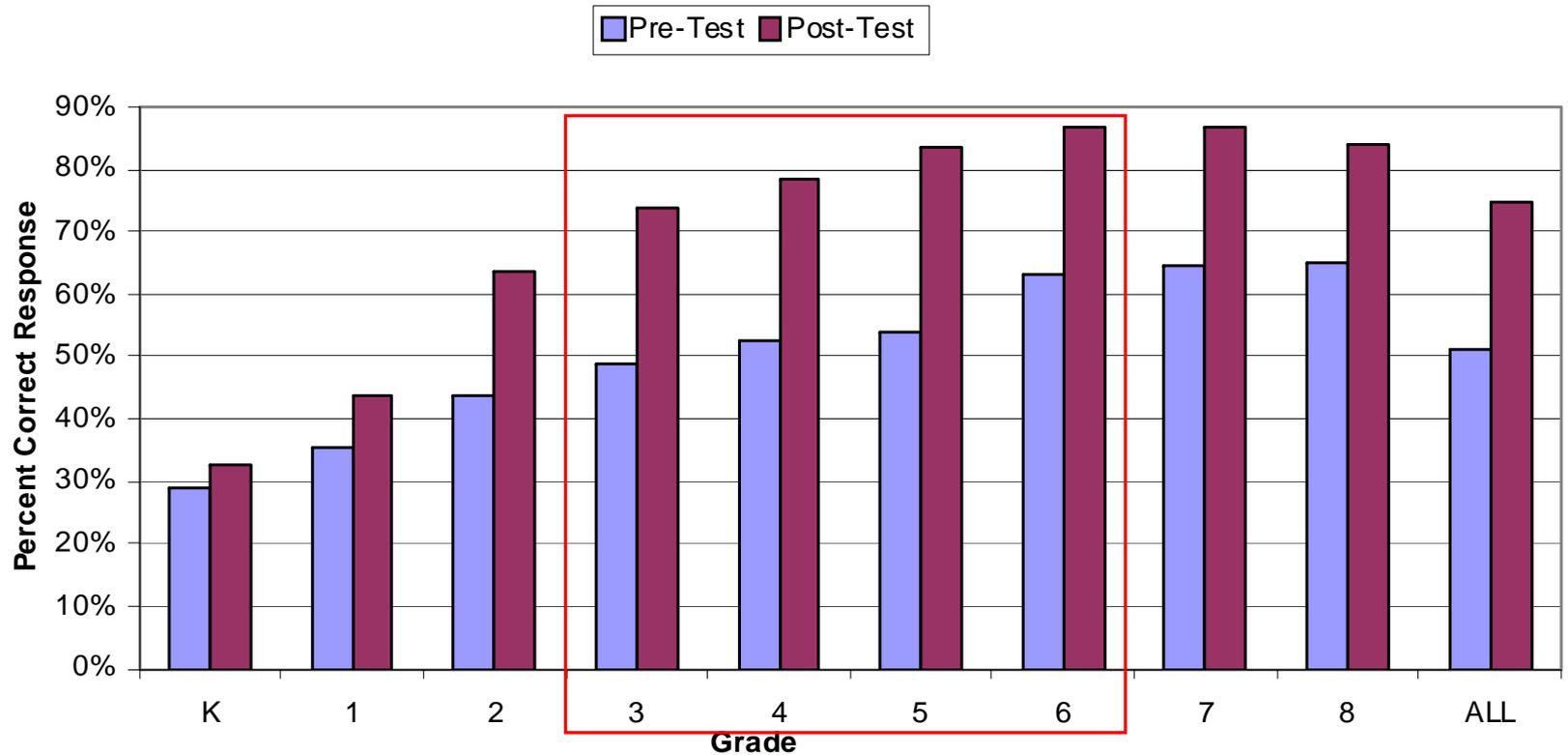
Testing Results, by School



# K-8 Program – Testing Results

- *By Grade*

Testing Results, by Grade



# K-8 Overall Results

- Pre- and Post-Testing
  - 23.2% overall improvement in correct response
  - All 16 schools showed significant improvements
  - Grades 3-6 showed the most significant gains
- Behavioral Observations
  - 4.44% overall decrease in violation rate
  - 9 of 10 schools showed decreased violations
- Conclusions
  - Program best suited for grades 3-6
    - Program modified for K-2 and 7-8
  - Keep audience size under 100
    - Individual classrooms for K-2

# K-8 Program – Phase II

- Selected schools will be revisited in April-May
  - 6 months to 1 year after initial presentation
- Students will receive re-training
- Before and after data will be collected
  - Violations
  - Pre/Post Test
- Evaluation
  - Long-term effects of original program
  - Effects of re-training

# High School Safety Program

- Draft Title: “Cross Safely – Your Life Depends on It!”
- Program content
  - Ped safety consequences
  - Right-of-way laws
  - Other traffic safety info
- Delivery strategies
  - Graphic videos
  - Jeopardy format
- Four schools
  - Late March and early April

# Questions?

## For more info, contact:

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Enforcement –  
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[savolainen@wayne.edu](mailto:savolainen@wayne.edu)

**Copies of the K-8 program are available on CD**