Safe Routes to School Regional Training

North Central Texas Council of Governments

May 1, 2019

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Why Safe Routes to School Matters

Safety, Health & Transportation

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The Good, the Bad, and the Ugly

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Fewer kids are biking and walking More parents are driving

Parents driving

School travel by private vehicle accounts for 10-14% of morning rush hour traffic.

(McDonald, Brown, Marchetti Pedroso, 2011)

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The consequences of *this*…

…instead of *this* can be alarming.

Promoting safe walking and bicycling is an ideal strategy to increase physical activity

Safe Routes to School programs

- Make walking and bicycling safe ways to get to school
- Encourage more children to walk and bike to school

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History of Safe Routes to School

- Many child pedestrian fatalities in Denmark during the 1970s
- Odense reduced the number of injured school children by 30% - 40%
- Spread to the UK and Canada in the 1990s; Bronx, NY in 1997

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Benefits of SRTS programs

- Improve safety for pedestrians and bicyclists
- Reduce traffic congestion around schools
- Reduce auto emissions
- Improve children's health
- Teach fundamental safety skills
- Strengthen family bonds
- Increase child's sense of freedom and responsibility
- Provide more transportation options for everyone
- Cost savings for schools
  (reduce need for "hazard" busing)

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Federal Safe Routes to School program

- Provided $1.147 billion to States 2005-2012
- Funded infrastructure and non-infrastructure activities
- Funded State SRTS Coordinators
- Funded National Clearinghouse (National Center for SRTS)

More Information:

www.saferoutesinfo.org

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MAP-21 (2012-2015) - FAST Act (current)

- Established Transportation Alternatives program (TAP), now called TA Set-Aside
- SRTS activities eligible to compete for funding
- State DOT's and MPO's administered funds

More Information:

www.saferoutesinfo.org

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North Central Texas Council of Governments SRTS Funding

- TAP call in 2014 – one funding category for all bicycle and pedestrian projects: $4.9 million for SRTS
- TA-Set Aside call in 2017 – SRTS-specific funding category: $12.2 million for SRTS
- TA Set-Aside call in 2019 (one funding category) (pending RTC approval)

More Information:

www.nctcog.org/SafeRoutesToSchool

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The Ugly:

Today's barriers to walking and bicycling

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How did we get here?

- School siting issues
- Individual barriers to walking to school
- Community issues

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1. School siting issues: A generation ago

- Small (average of 127 students)
- Located in community centers
- 48% of kids walked or biked to school

(U.S. EPA, 2003)

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School siting issues: Today

- Current average enrollment - 520 students
- Mega-schools up to 2,800 students
- Schools located on 10 to 30 acres fringe land
- Lowest-cost construction
  (National Center for Education Statistics, 2013)

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It’s not just distance

Students living within one mile or less who walk or bike to school:

1969 – 89%

2009 – 35%

(U.S. DOT, 2009)

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2. Individual barriers to walking and bicycling to school

- Long distances 62%
- Traffic danger 30%
- Adverse weather 19%
- Fear of crime danger 12%

(CDC, 2005)

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Traffic danger

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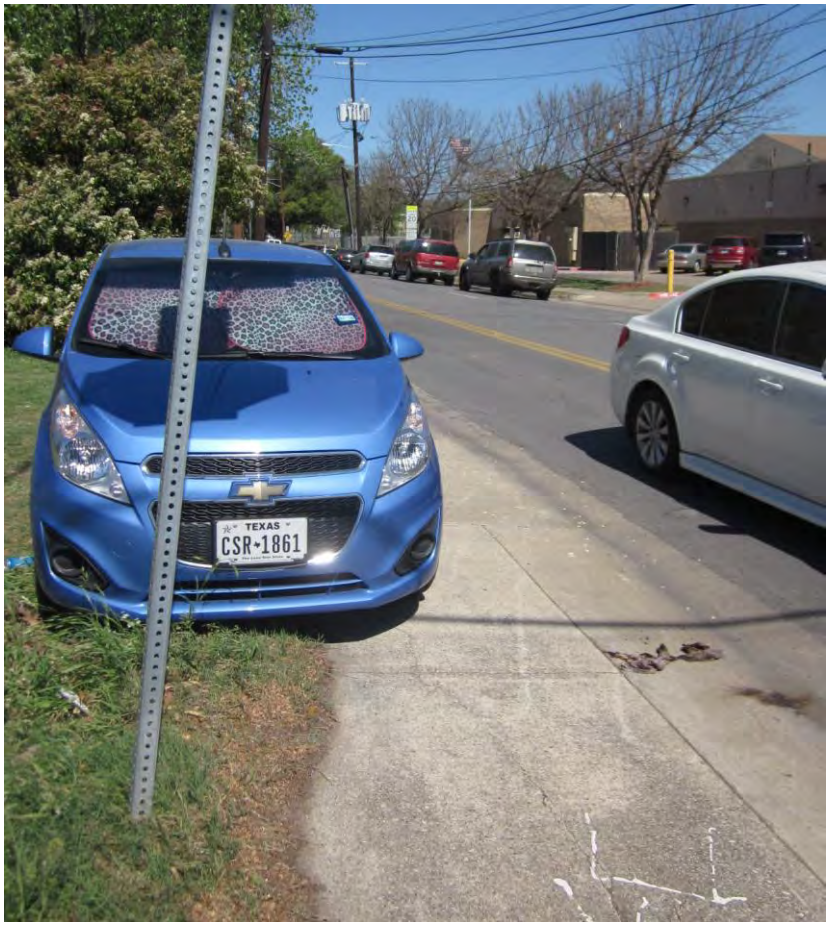
Community conditions make it hard to walk or bike



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Adverse Weather

Is this barrier reflective of changed social norms?

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Fear of crime danger

- Range of concerns is broad, often not unique to walking and bicycling to school
- Both reality and perceptions need to be addressed
- SRTS can be a part of a larger, community-wide response

3. Difficult community issues

- Traffic flow problems
- Abandoned buildings
- Illegal behaviors

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The Bad:

Unintended consequences of less walking and bicycling

- to the environment
- to our health

1996 Summer Olympic Games banned single occupant cars in downtown Atlanta

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Results of the ban

- Morning traffic – ↓ 23%
- Peak ozone – ↓ 28%
- Asthma-related events for kids – ↓ 42%

(Friedman, 2001)

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Air quality

Measurably better around schools with more walkers and cyclists

(U.S. EPA, 2003)

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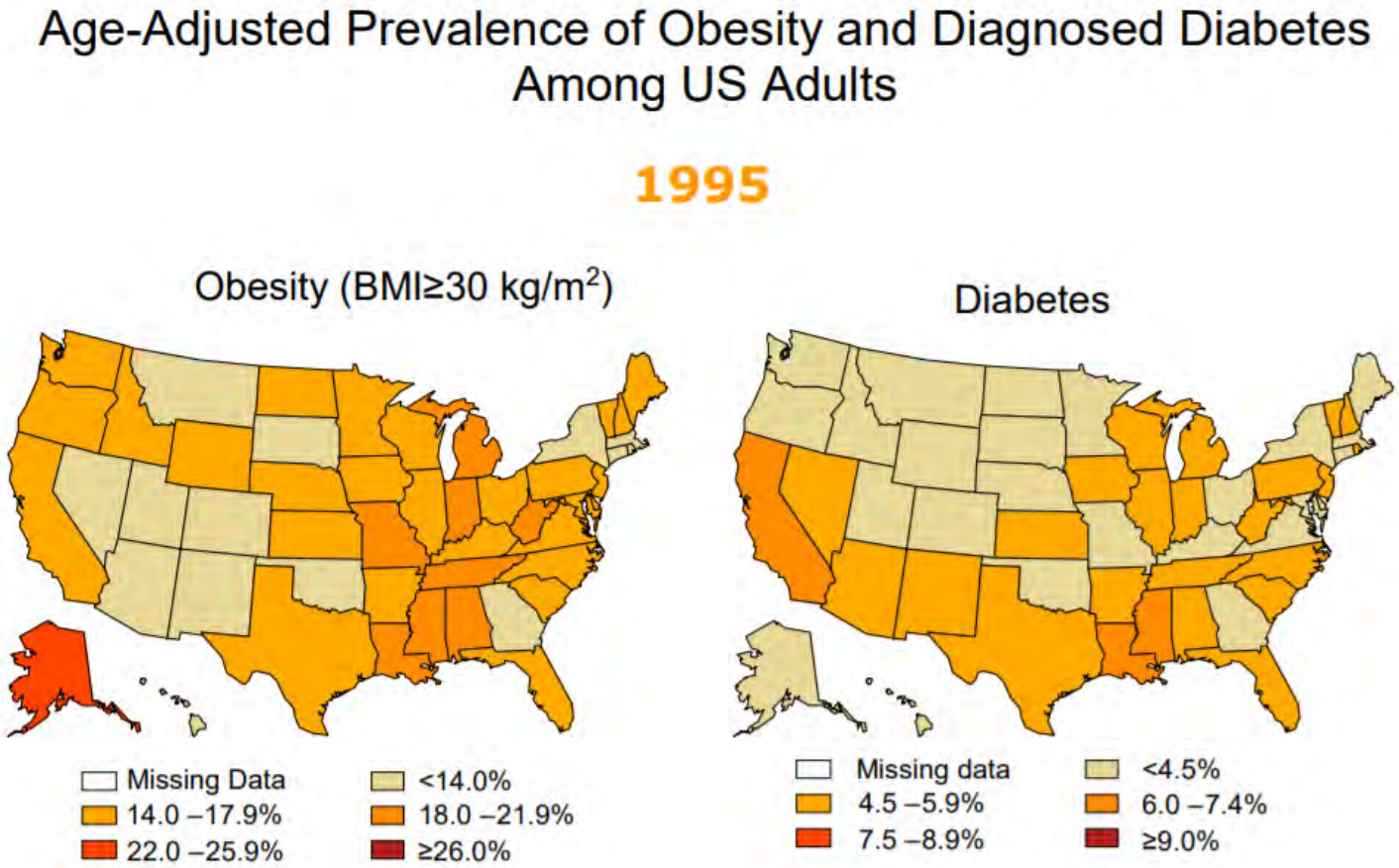
Prevalence of Obesity and Diagnosed Diabetes Among US Adults - 1995



CDC's Division of Diabetes Translation. United States Diabetes Surveillance System available at http://www.cdc.gov/diabetes/data

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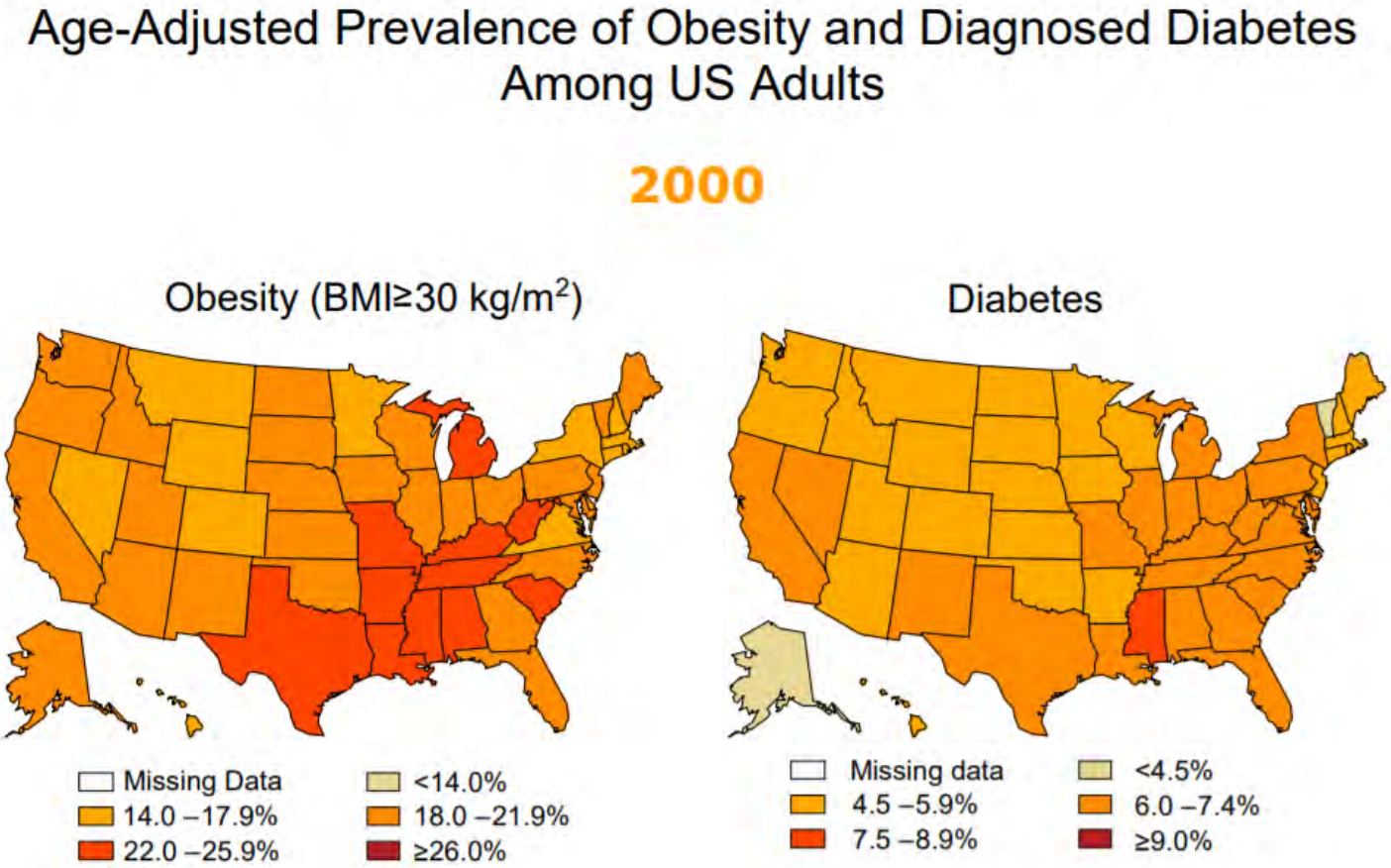
Prevalence of Obesity and Diagnosed Diabetes Among US Adults - 2000



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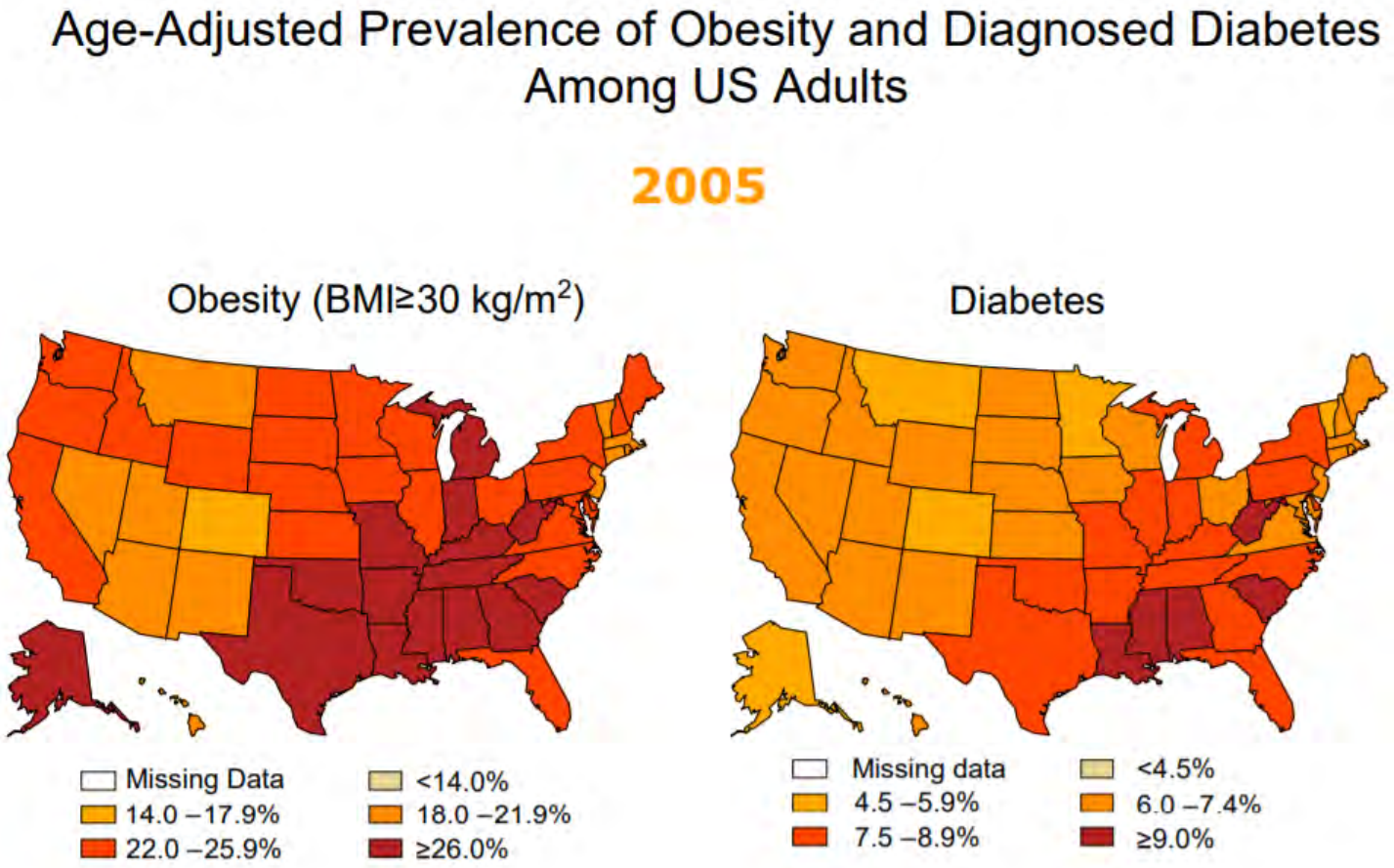
Prevalence of Obesity and Diagnosed Diabetes Among US Adults - 2005



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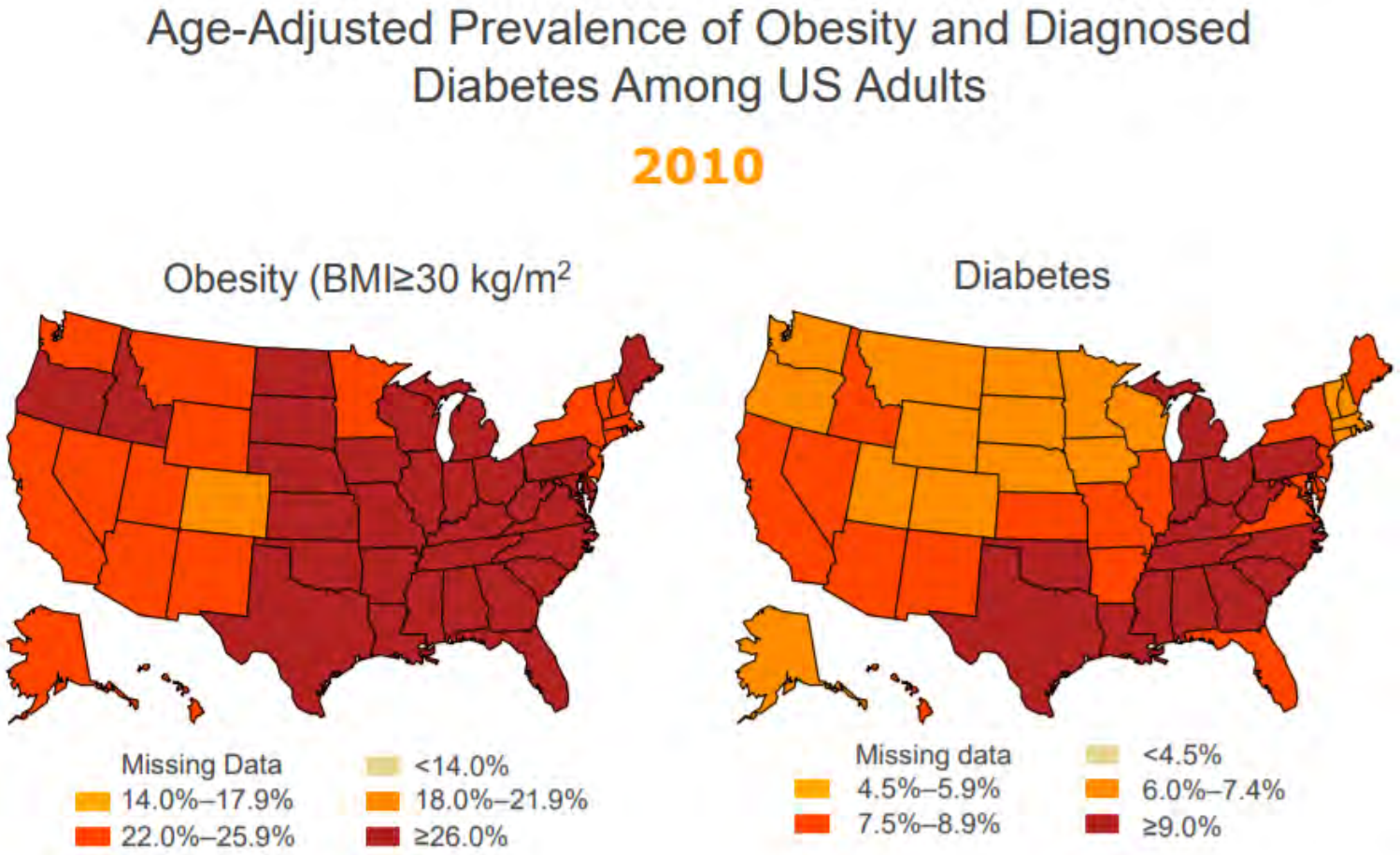
Prevalence of Obesity and Diagnosed Diabetes Among US Adults - 2010



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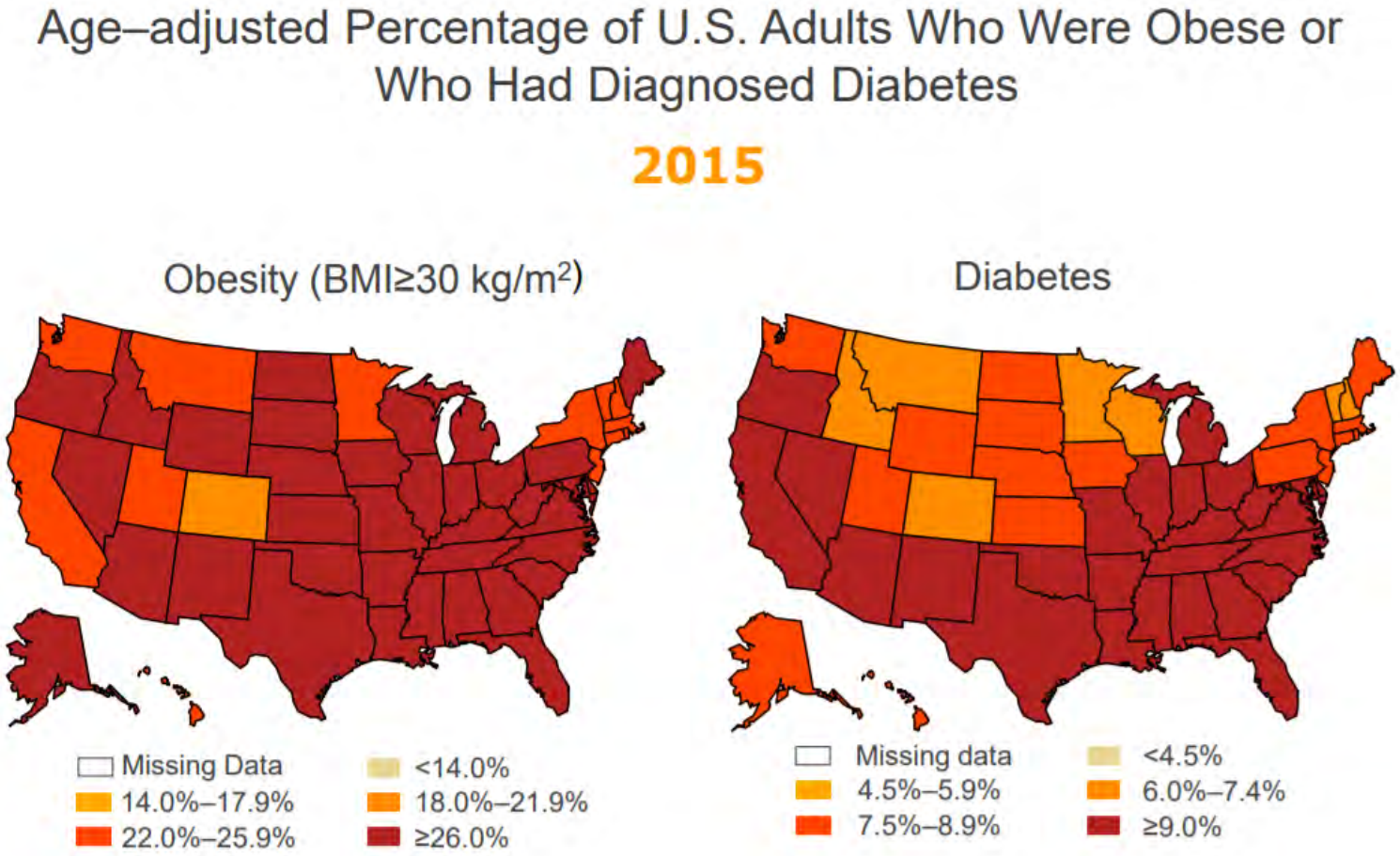
CDC

Prevalence of Obesity and Diagnosed Diabetes Among US Adults - 2015



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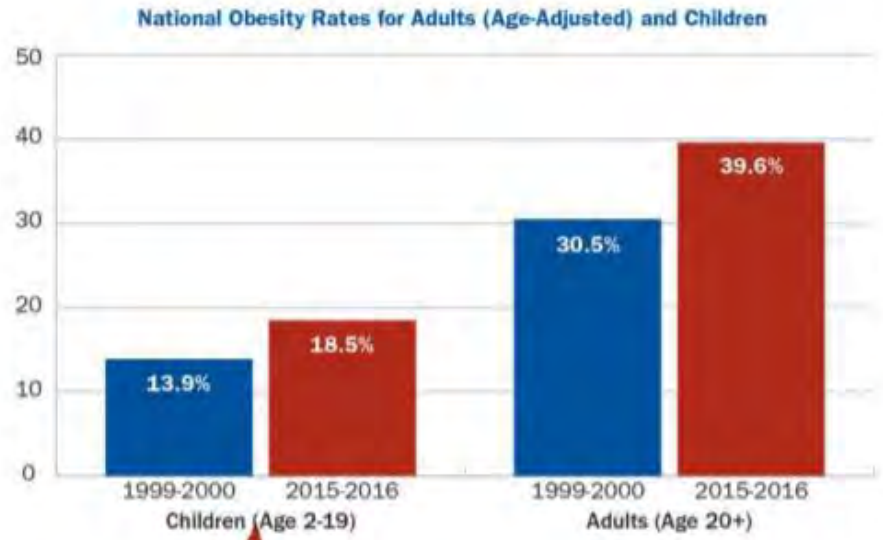
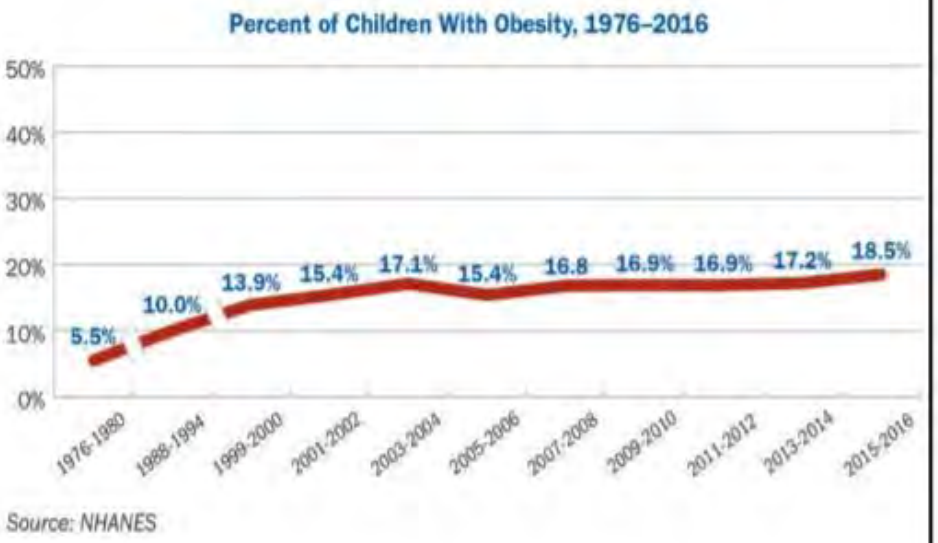
Childhood Obesity Still Rising





Source: NHANES

Trust for America's Health
WWW.TFAH.ORG

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Short and long-term impacts of childhood obesity

- Heart disease and stroke
- Type 2 Diabetes
- Low self esteem
- Sleep apnea
- Several types of cancer
- Osteoarthritis

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Physical activity

Most kids aren't getting the physical activity they need.

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Physical activity recommendation for children and adolescents:

At least 60 minutes of physical activity daily.

(US Depts. of Health and Human Services, 2008)

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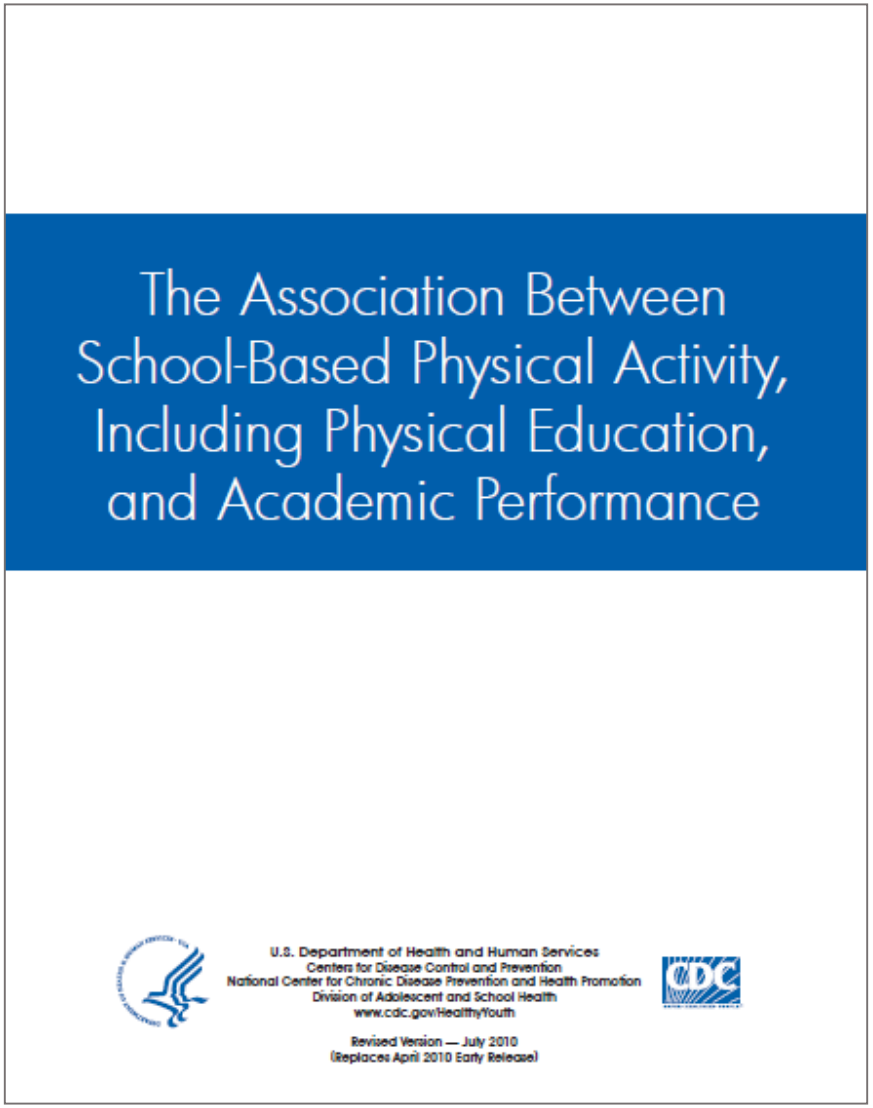
Physical activity and academic performance



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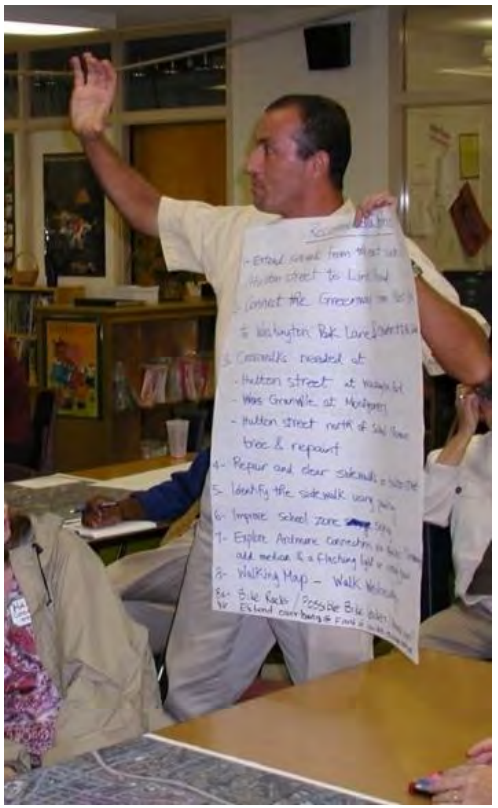
The Good:

Communities are taking action on behalf of their kids



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Safe Routes to School programs are part of the solution…

… to improve unsafe walking and biking conditions

… to increase physical activity

… to improve poor air quality by reducing vehicle emissions

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Research shows SRTS programs work

A study of 801 schools between in 2007-2013 found increases in walking and bicycling.

- 25% increase (5% per year) with education and encouragement programs
- 18% increase with infrastructure improvements

(*McDonald, 2014*)

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Elements of Safe Routes to School programs

- Education
- Encouragement
- Enforcement
- Engineering
- Evaluation

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Education

- Teaches safety skills
- Creates safety awareness
- Fosters life-long safety habits
- Includes parents, neighbors and other drivers

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Encouragement

- Increases popularity of walking and biking
- Is an easy way to start SRTS programs
- Emphasizes fun of walking and biking

Source: Blue Zones Project

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Enforcement

- Increases awareness of pedestrians and bicyclists
- Improves driver behavior
- Helps children follow traffic rules
- Decreases parent perceptions of danger

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Engineering

- Creates safer, more accessible settings for walking and biking
- Can influence the way people behave

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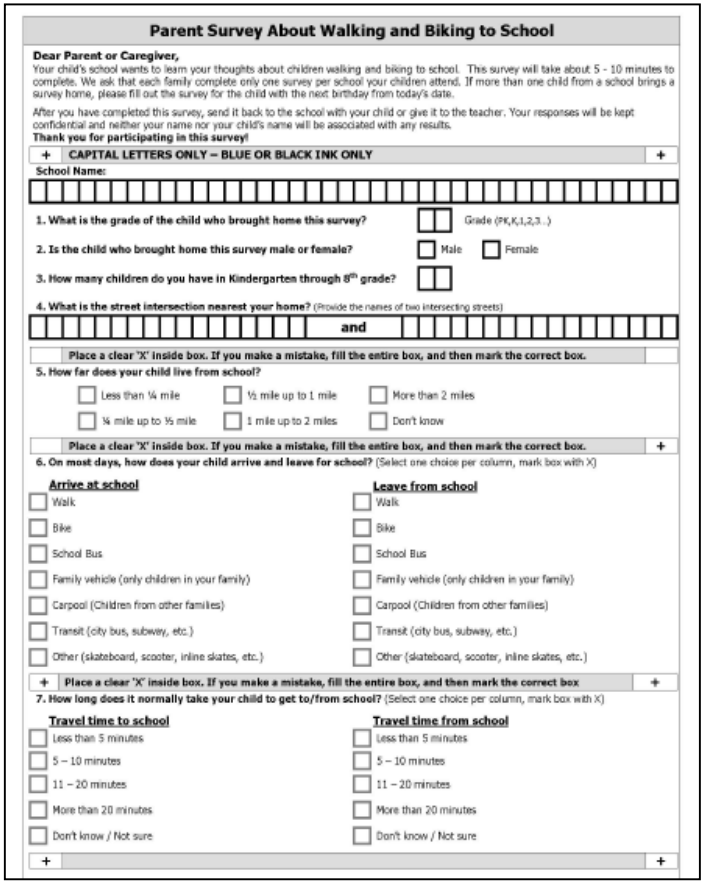
Evaluation

Is the program making a difference?



Parent Survey About Walking and Biking to School

Dear Parent or Caregiver,

Your child's school wants to learn your thoughts about children walking and biking to school. This survey will take about 5 - 10 minutes to complete. We ask that each family complete only one survey per school your children attend. If more than one child from a school brings a survey home, please fill out the survey for the child with the next birthday from today's date.

After you have completed this survey, send it back to the school with your child or give it to the teacher. Your responses will be kept confidential and neither your name nor your child's name will be associated with any results.

Thank you for participating in this survey!

+ CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY +

School Name:

1. What is the grade of the child who brought home this survey? ☐☐ Grade (PK,K,1,2,3...)
2. Is the child who brought home this survey male or female? ☐ Male ☐ Female
3. How many children do you have in Kindergarten through 8th grade? ☐☐
4. What is the street intersection nearest your home? (Provide the names of two intersecting streets)

and

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box.

5. How far does your child live from school?

☐ Less than ¼ mile ☐ ½ mile up to 1 mile ☐ More than 2 miles
☐ ¼ mile up to ½ mile ☐ 1 mile up to 2 miles ☐ Don't know

Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box.

6. On most days, how does your child arrive and leave for school? (Select one choice per column, mark box with X)

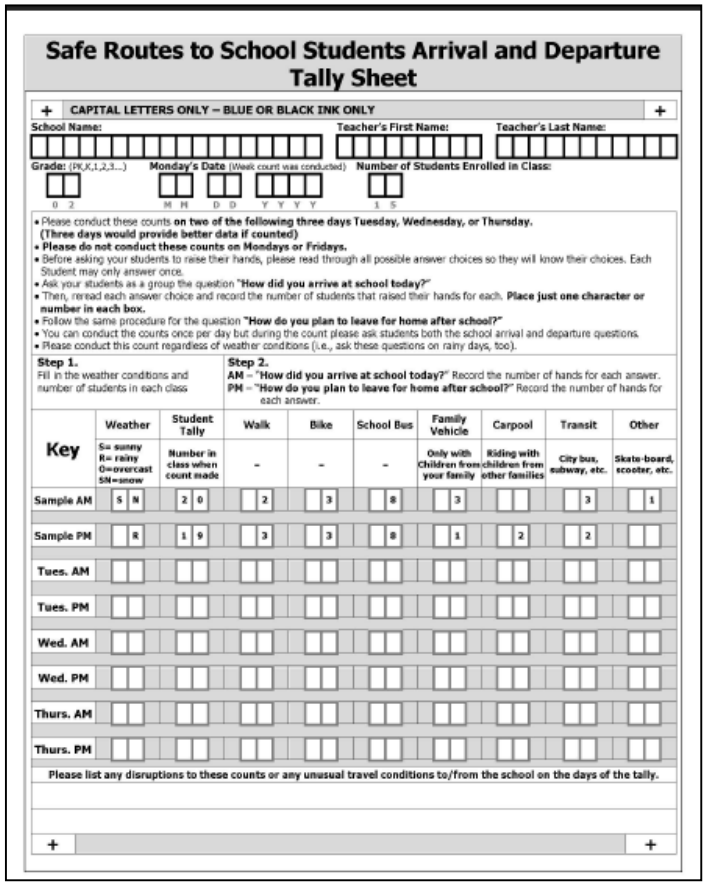
Arrive at school	Leave from school
☐ Walk	☐ Walk
☐ Bike	☐ Bike
☐ School Bus	☐ School Bus
☐ Family vehicle (only children in your family)	☐ Family vehicle (only children in your family)
☐ Carpool (Children from other families)	☐ Carpool (Children from other families)
☐ Transit (city bus, subway, etc.)	☐ Transit (city bus, subway, etc.)
☐ Other (skateboard, scooter, inline skates, etc.)	☐ Other (skateboard, scooter, inline skates, etc.)

+ Place a clear 'X' inside box. If you make a mistake, fill the entire box, and then mark the correct box +

7. How long does it normally take your child to get to/from school? (Select one choice per column, mark box with X)

Travel time to school	Travel time from school
☐ Less than 5 minutes	☐ Less than 5 minutes
☐ 5 – 10 minutes	☐ 5 – 10 minutes
☐ 11 – 20 minutes	☐ 11 – 20 minutes
☐ More than 20 minutes	☐ More than 20 minutes
☐ Don't know / Not sure	☐ Don't know / Not sure

+ +



Safe Routes to School Students Arrival and Departure Tally Sheet

+ CAPITAL LETTERS ONLY – BLUE OR BLACK INK ONLY +

School Name: Teacher's First Name: Teacher's Last Name:

Grade: (PK,K,1,2,3...) 0 2 Monday's Date (Week count was conducted) M M D D Y Y Y Y Number of Students Enrolled in Class: 1 5

- Please conduct these counts **on two of the following three days Tuesday, Wednesday, or Thursday. (Three days would provide better data if counted)**
- **Please do not conduct these counts on Mondays or Fridays.**
- Before asking your students to raise their hands, please read through all possible answer choices so they will know their choices. Each Student may only answer once.
- Ask your students as a group the question **"How did you arrive at school today?"**
- Then, reread each answer choice and record the number of students that raised their hands for each. **Place just one character or number in each box.**
- Follow the same procedure for the question **"How do you plan to leave for home after school?"**
- You can conduct the counts once per day but during the count please ask students both the school arrival and departure questions.
- Please conduct this count regardless of weather conditions (i.e., ask these questions on rainy days, too).

Step 1. Fill in the weather conditions and number of students in each class

Step 2. **AM – "How did you arrive at school today?"** Record the number of hands for each answer. **PM – "How do you plan to leave for home after school?"** Record the number of hands for each answer.

Key	Weather	Student Tally	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
	S= sunny R= rainy O=overcast SN=snow	Number in class when count made	-	-	-	Only with Children from your family	Riding with children from other families	City bus, subway, etc.	Skate-board, scooter, etc.
Sample AM	S N	2 0	2	3	8	3		3	1
Sample PM	R	1 9	3	3	8	1	2	2	
Tues. AM									
Tues. PM									
Wed. AM									
Wed. PM									
Thurs. AM									
Thurs. PM									

Please list any disruptions to these counts or any unusual travel conditions to/from the school on the days of the tally.

+ +

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Every school faces a different challenge

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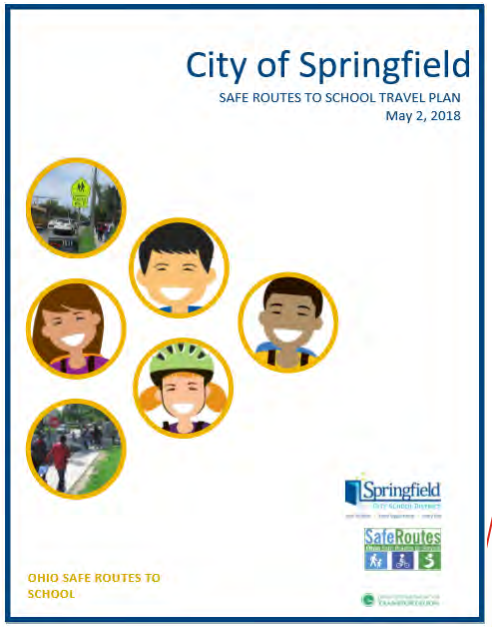
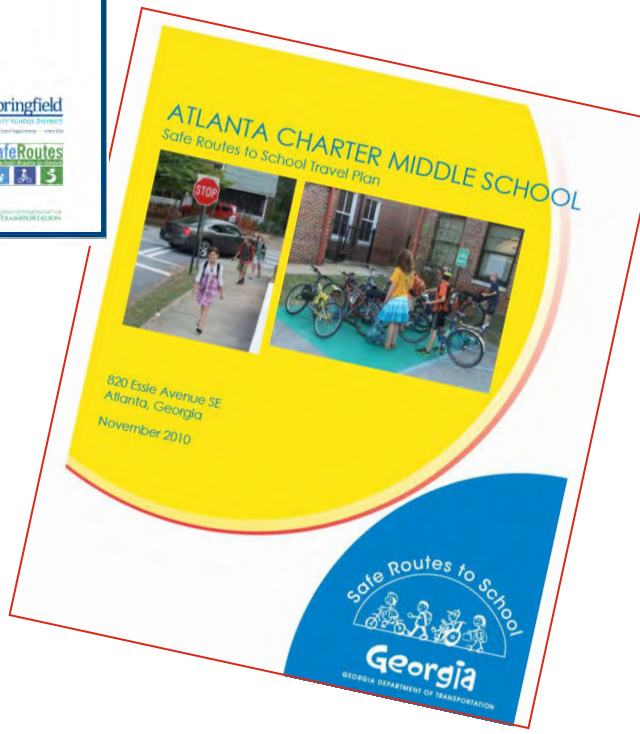
Ideal – Create a SRTS Plan

- Proactive
- Design for what you want
- Secure community buy-in





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Involve Key SRTS Stakeholders

Create a SRTS Team:

- Schools
- School Districts
- Local municipality (planners, engineers, elected officials)
- Law enforcement
- Parents
- Community organizations

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Steps in developing a SRTS Plan

- Bring together the right people/assemble a team
- Gather information
- Identify issues (all E's)
- Identify SRTS strategies (all E's)
- Prioritize strategies
- Secure community buy-in

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Today's Workshop:

- Bring together the right people/assemble a team
- Gather information
- Identify issues (all E's)
- Identify SRTS strategies (all E's)
- Prioritize strategies
- Secure community buy-in

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Gathering Information for a SRTS Plan

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Gathering Information

- School information and student travel modes
- Existing conditions and behaviors
- Behaviors and perceptions

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School Information

- Location and grades served
- Attendance boundaries & where students live
- Arrival/dismissal times
- Student travel modes
- Student walk/bike routes
- Parent perceptions
- Policies/programs

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Existing Conditions - Environment

- Traffic volume and speeds
- Pedestrian and bicyclist crash data
- Personal safety data and concerns
- Walking and bicycling environment

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Existing Conditions - Behaviors

Observe school arrival and dismissal:

- Driver behaviors
- Pedestrian behaviors
- Bicyclist behaviors

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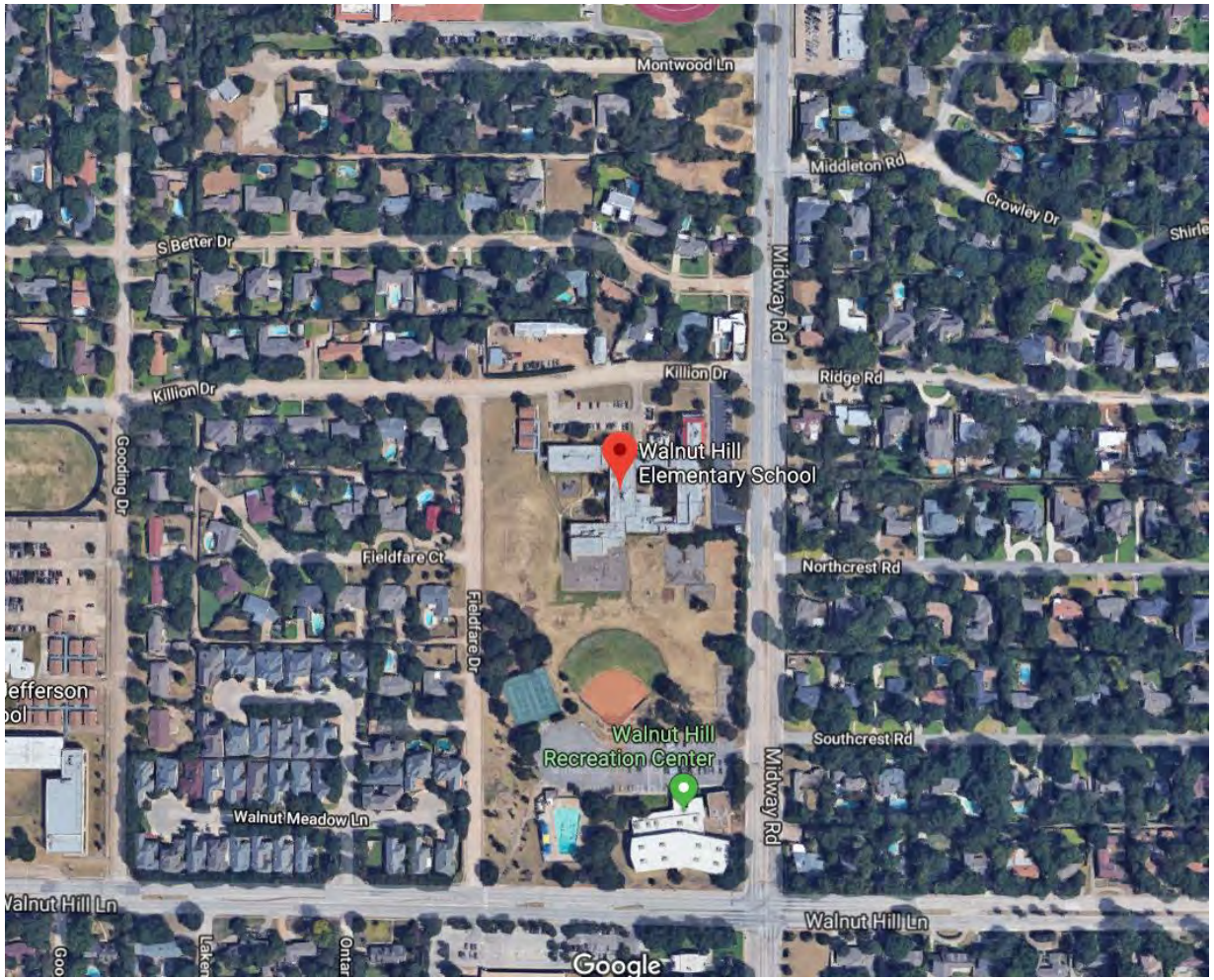
Assessing the Ped/Bike Network

What infrastructure is important?



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Engineering Treatments and Strategies

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Creating safe routes with engineering

- Improve children's safety
- Improve accessibility
- Encourage more bicycling and walking

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Walkways and crossings: Prerequisites for walking

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Connect to the school

- Consider barriers to walking and biking
- Think about the complete route from door-to-door
- What message are we sending?

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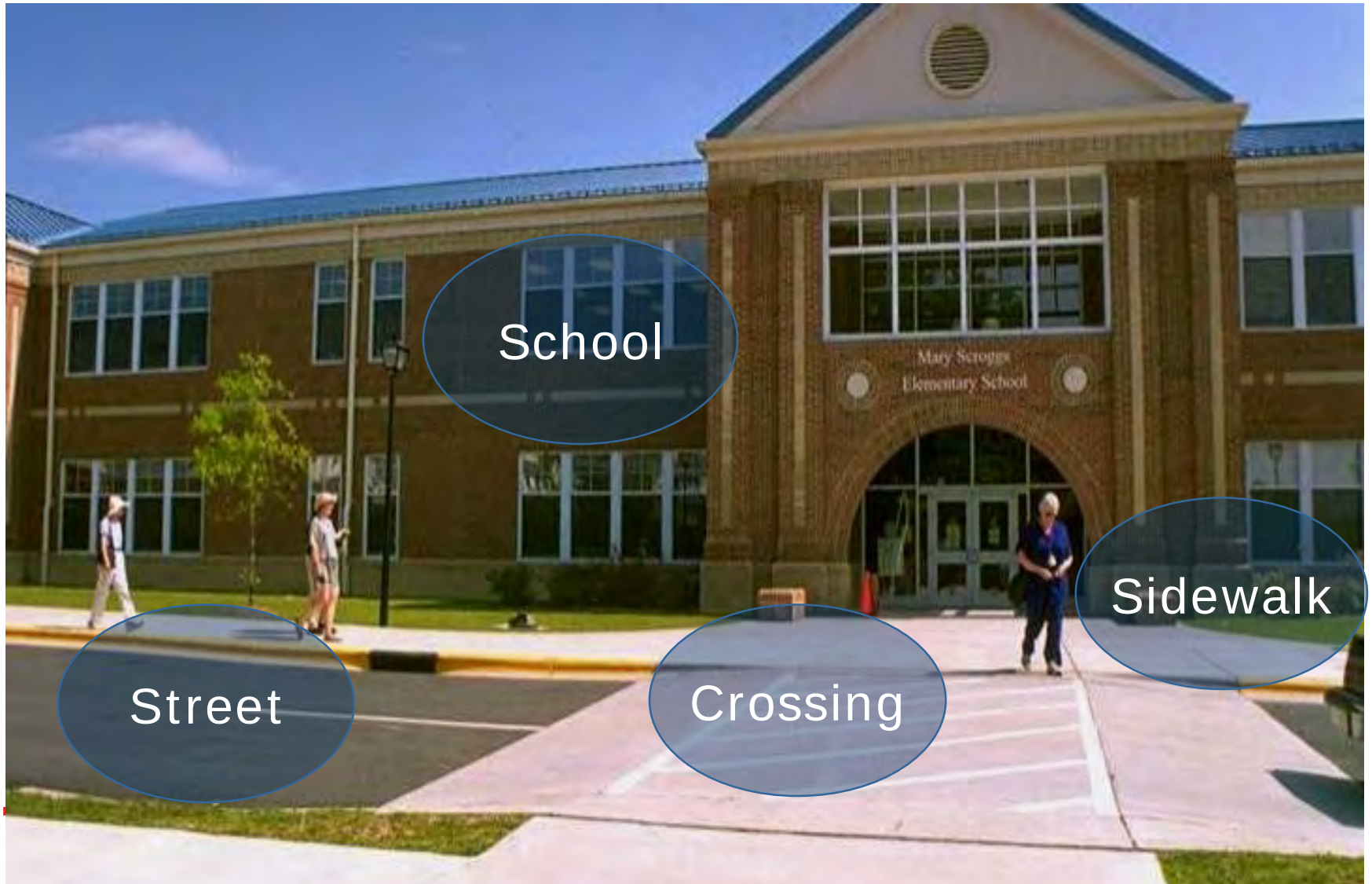
Relationships are everything



Focus on the basics

Engineering topic outline

- **Around the School**
- Along the School Route
- Crossing the Street
- Slowing Down Traffic

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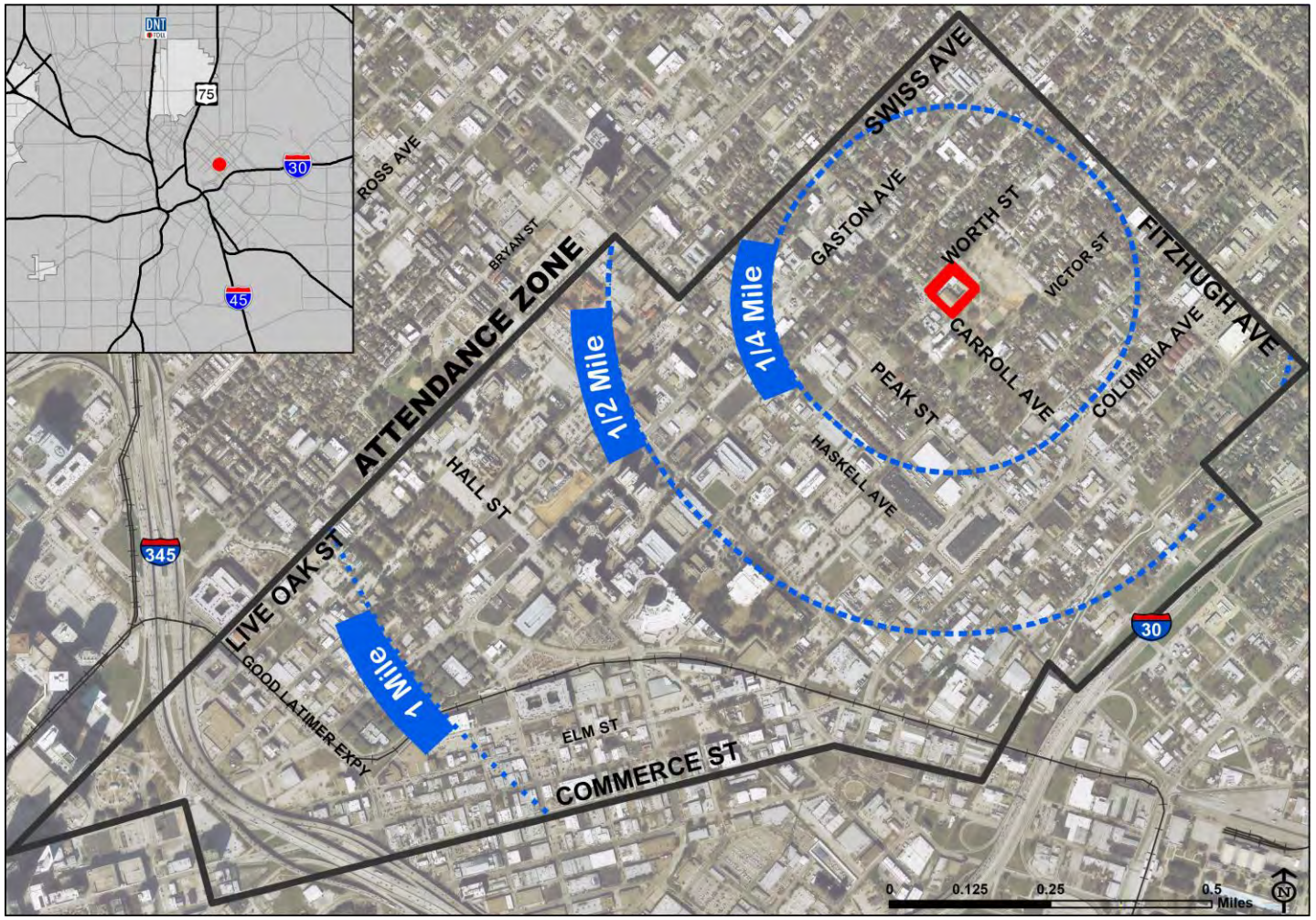
School enrollment boundary



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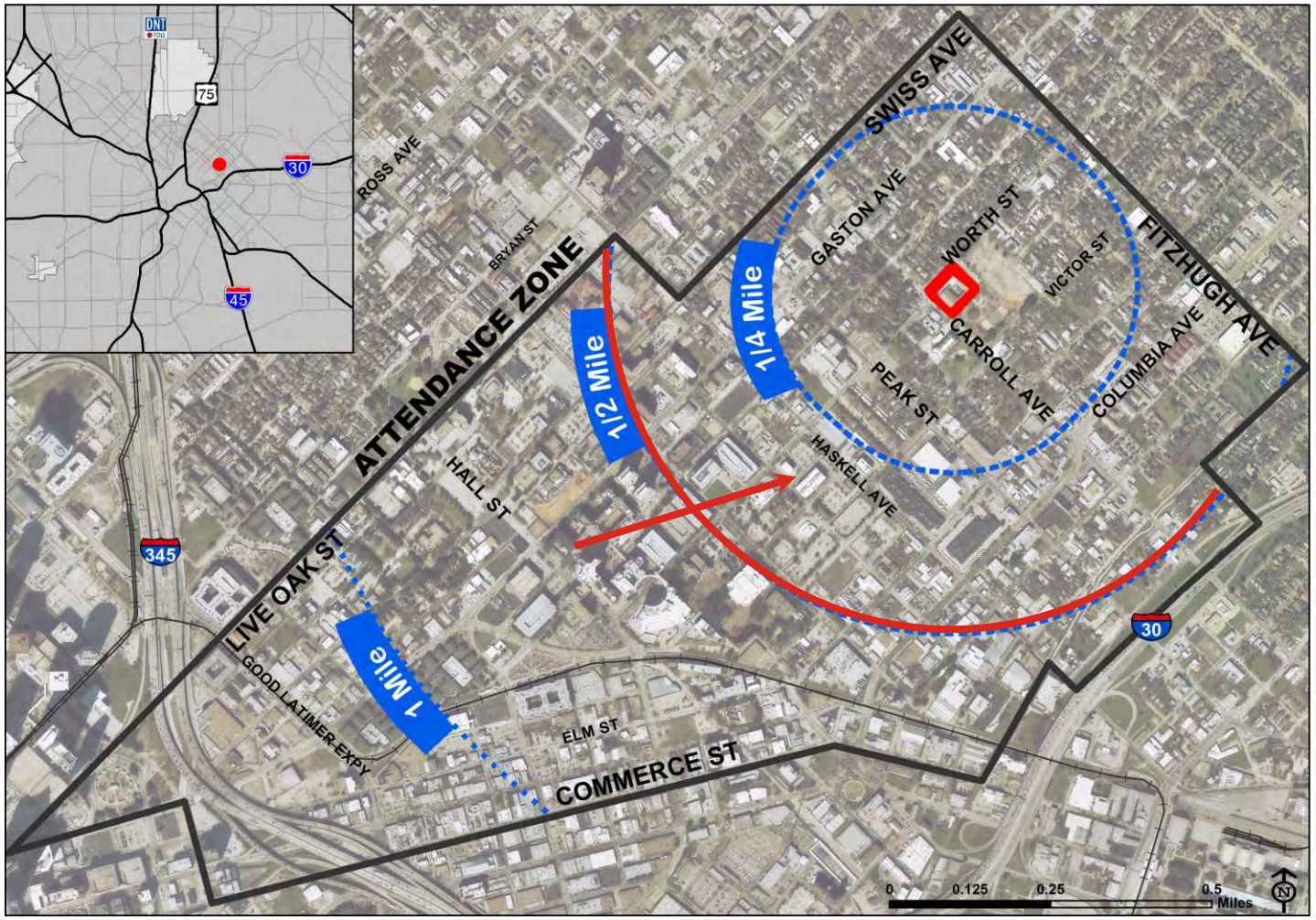
School walk zone



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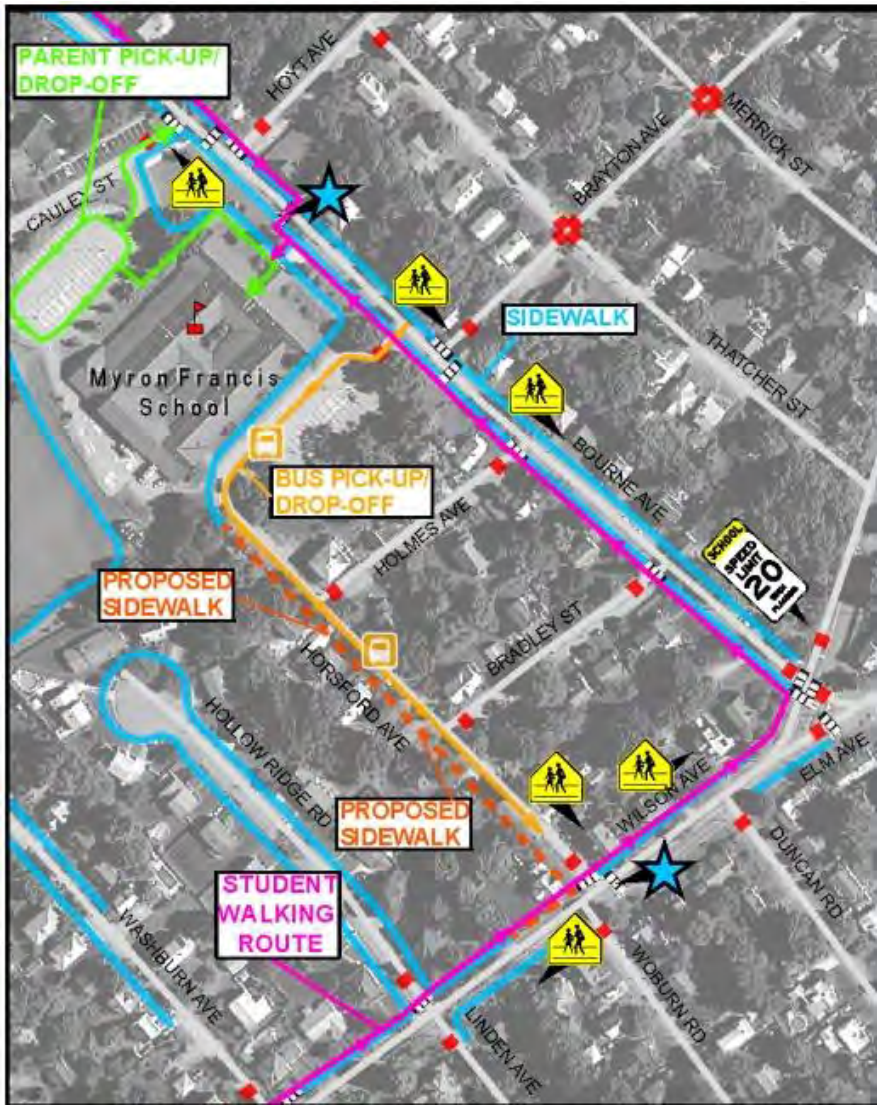
Existing conditions map



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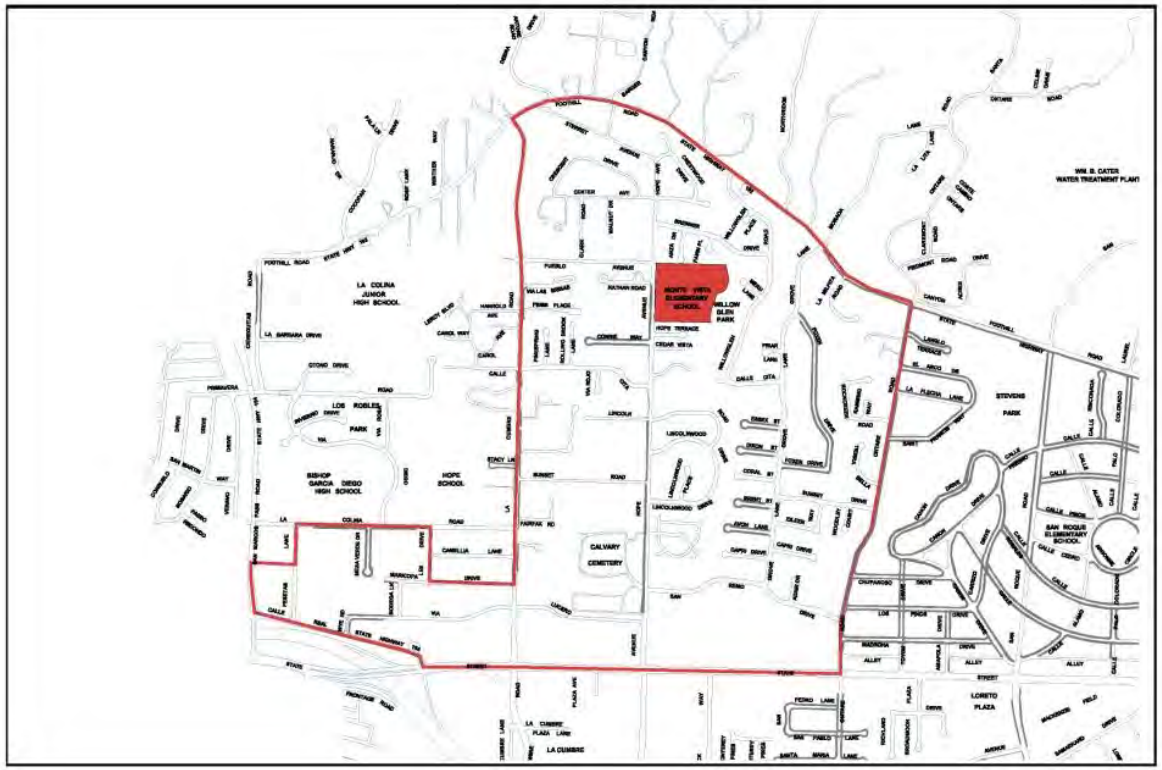
School zone



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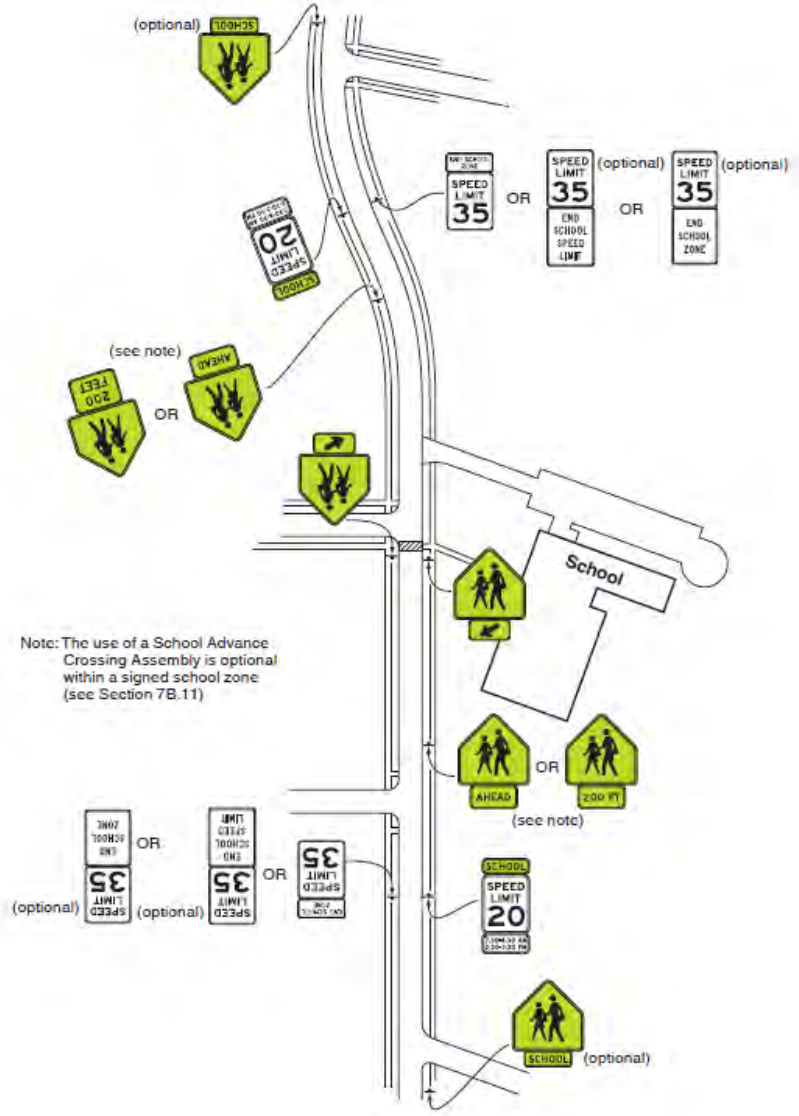
Signing and marking the school zone

- **M**anual on
- **U**niform
- **T**raffic
- **C**ontrol
- **D**evices



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School area speed limit signing

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Speed feedback signs

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School crosswalk signs and warning signs

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Fluorescent yellow-green post covers

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Parking regulations

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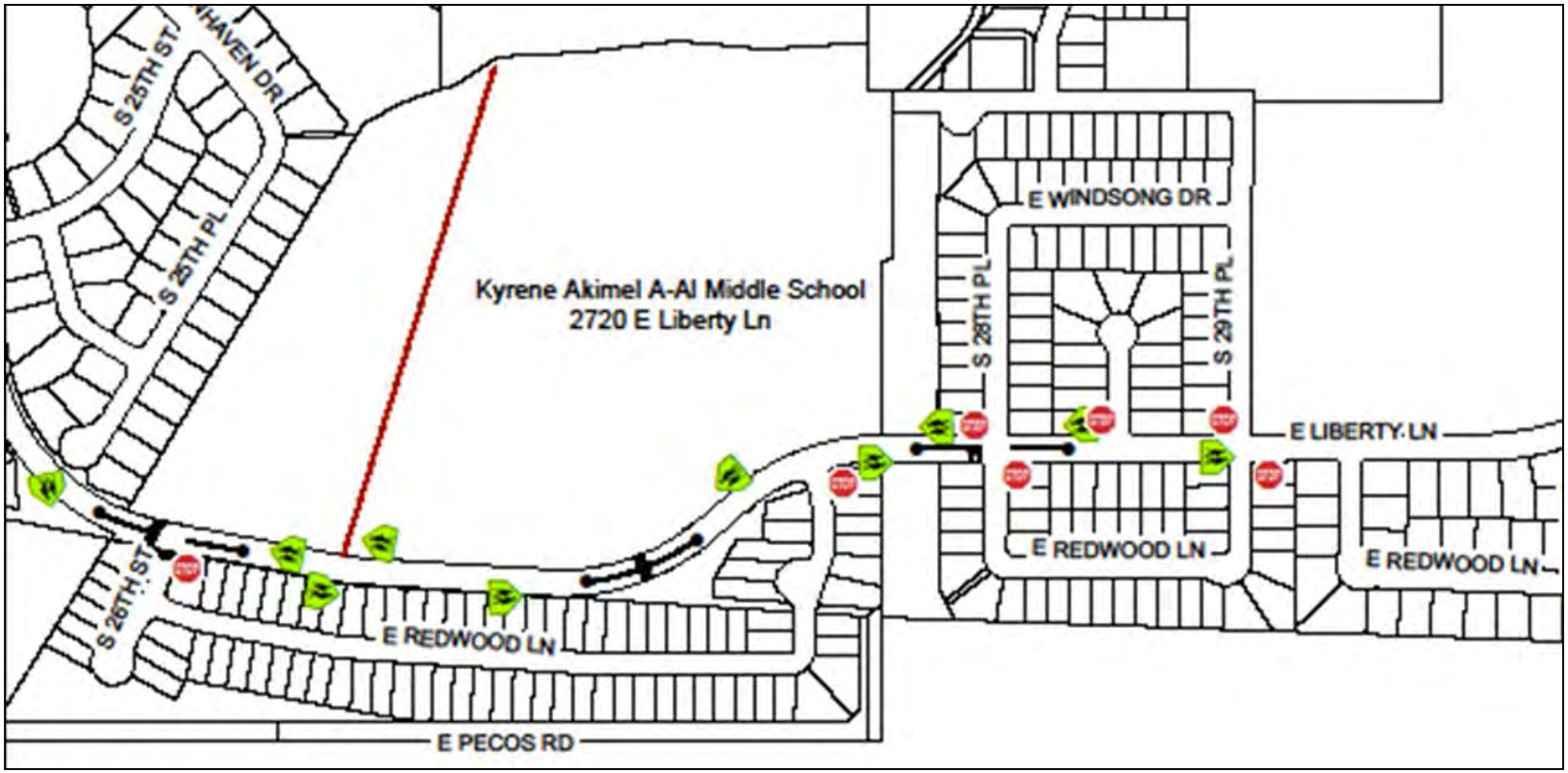
Keep signs simple

School pavement markings

Sample school traffic control plan



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Engineering topic outline

- Around the School
- **Along the School Route**
  - **Sidewalks**
  - **On-street bicycling**
  - **Pathways**
  - **Connectivity**
- Crossing the Street
- Slowing Down Traffic

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What's wrong with this picture?

What's wrong with this picture?

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Perception versus reality

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Sidewalks are essential

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Sidewalks on both sides are preferred

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Limit driveway crossings

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Connections to the school

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Sidewalk design criteria

Connect all sidewalks in the school walking route

Accommodate pedestrian desire lines outside of splash zones

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Provide sidewalk buffers

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No sidewalk buffer

TOOLE DESIGN

Good sidewalk buffer

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Provide wide enough sidewalks

- Recommended minimum: 5’
- Preferred minimum: 6’
- At schools: 8’-10’

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Repair sidewalks

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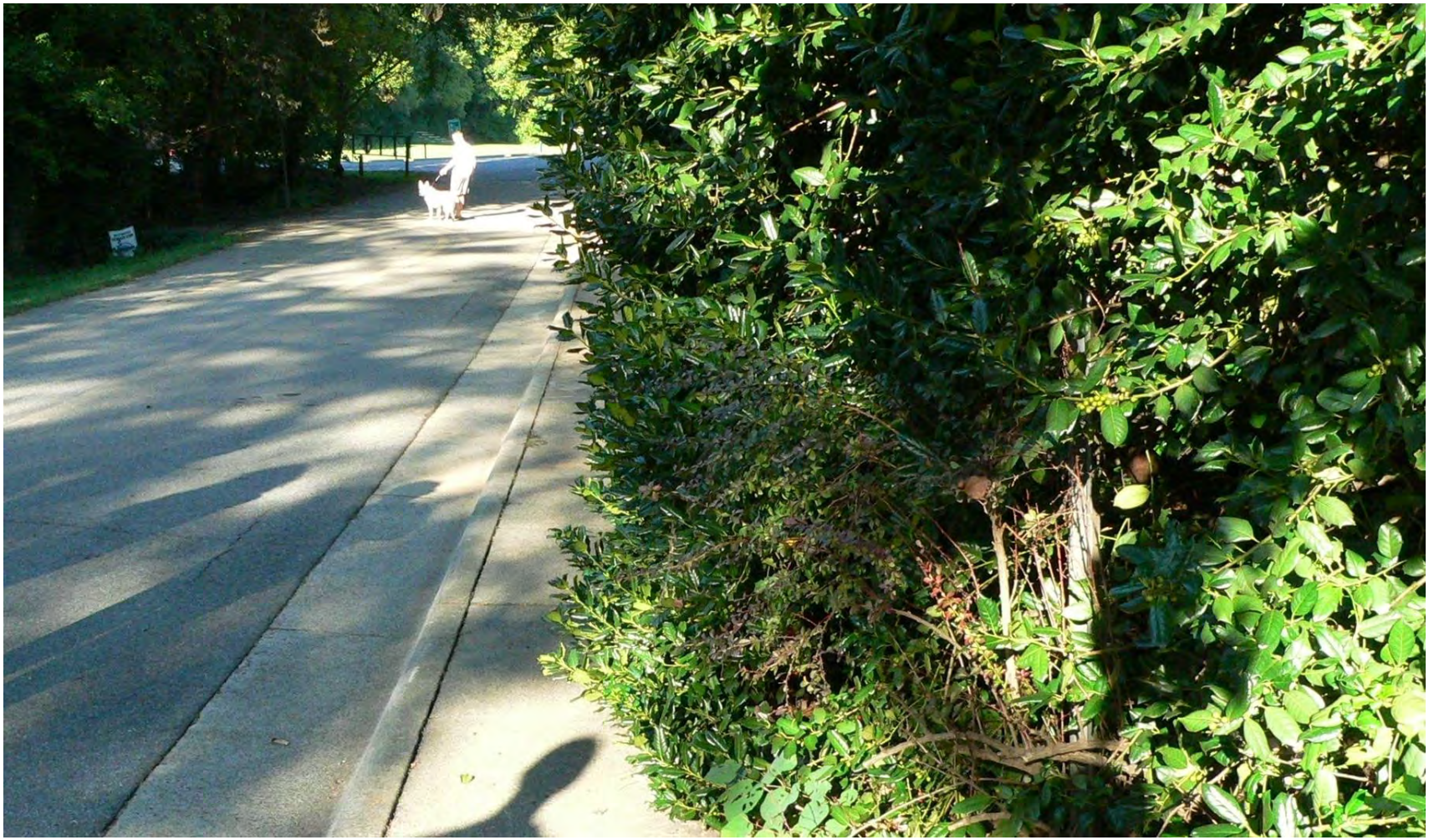
Maintain landscaping to provide clear walkways and sight distances



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Remove obstacles from sidewalks

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Install street lighting

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Meet Americans With Disabilities Act (ADA) requirements for universal design

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Curb ramp design

- Two ramps per corner
- Eight ramps per intersection

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Warning strip – 4’ x 2’

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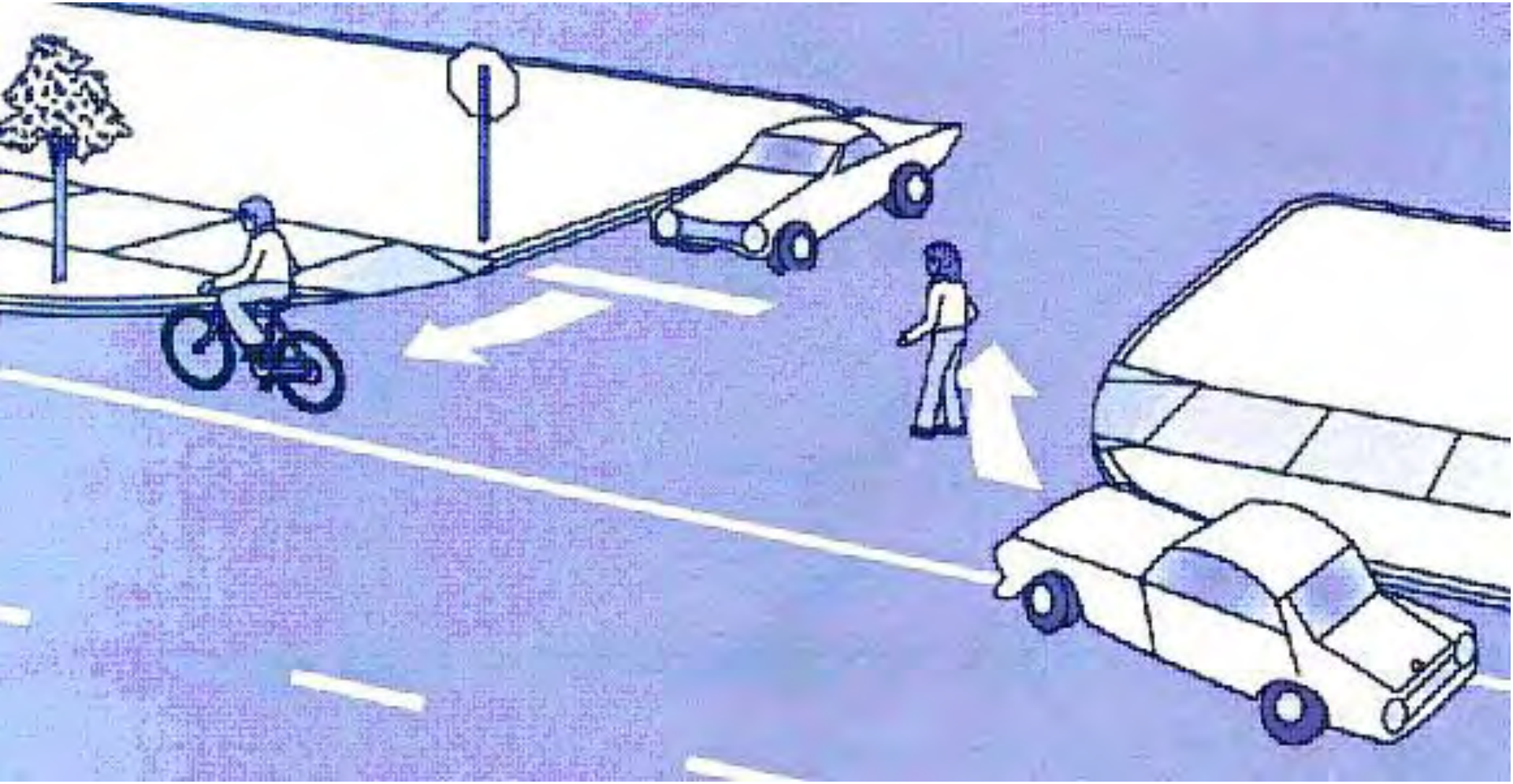
Don’t build driveways like intersections



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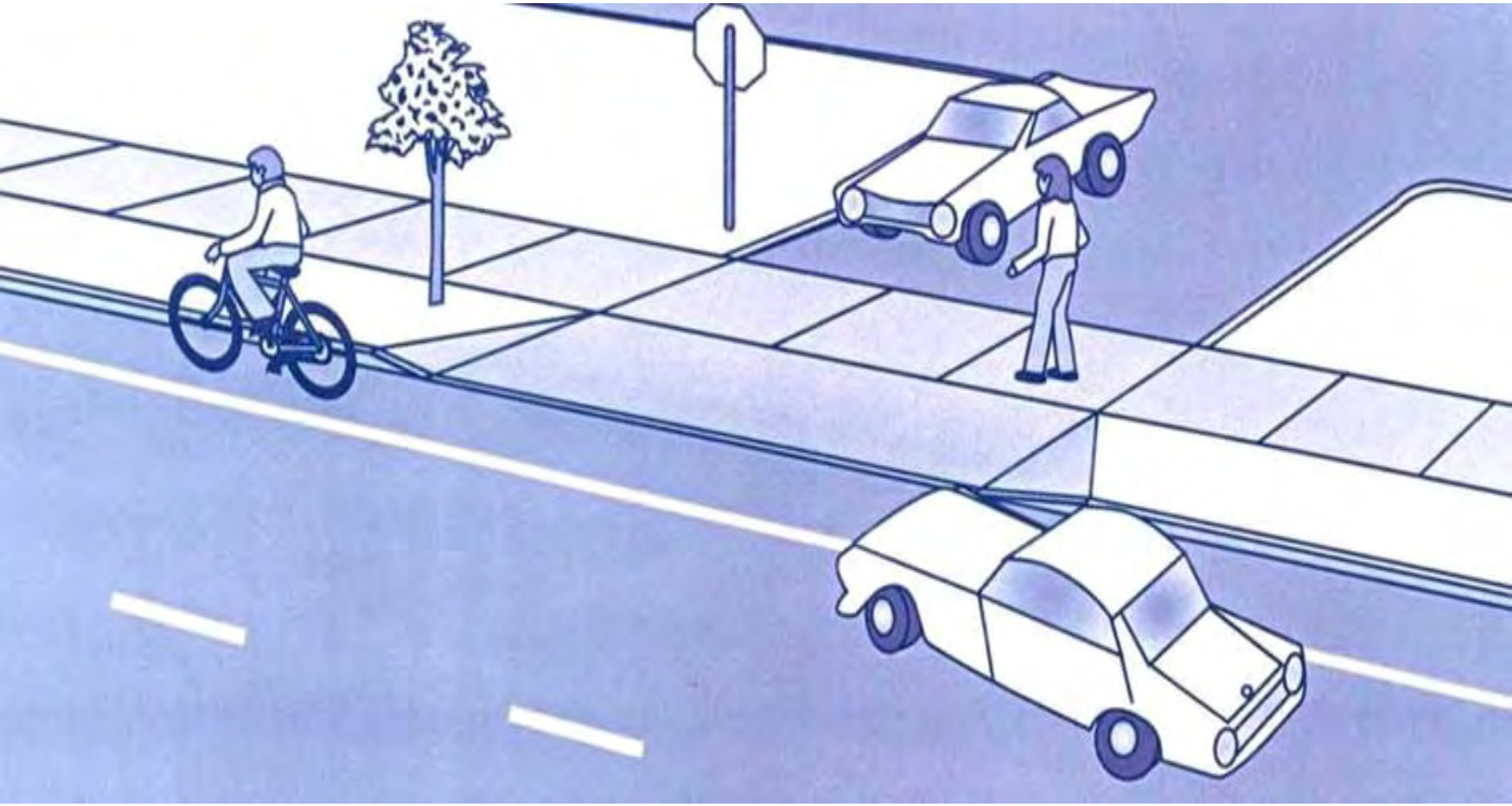
Build driveways like driveways



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Along the school route: Bikeways

- Local streets
- Bike lanes
- Shoulders
- Pathways

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What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

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Local streets – where most kids ride

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Bicycle lanes

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Install bicycle racks

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Yes – high school students will bike given the opportunity

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Along the school route: Pathways

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Success story: Mill Valley path

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What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

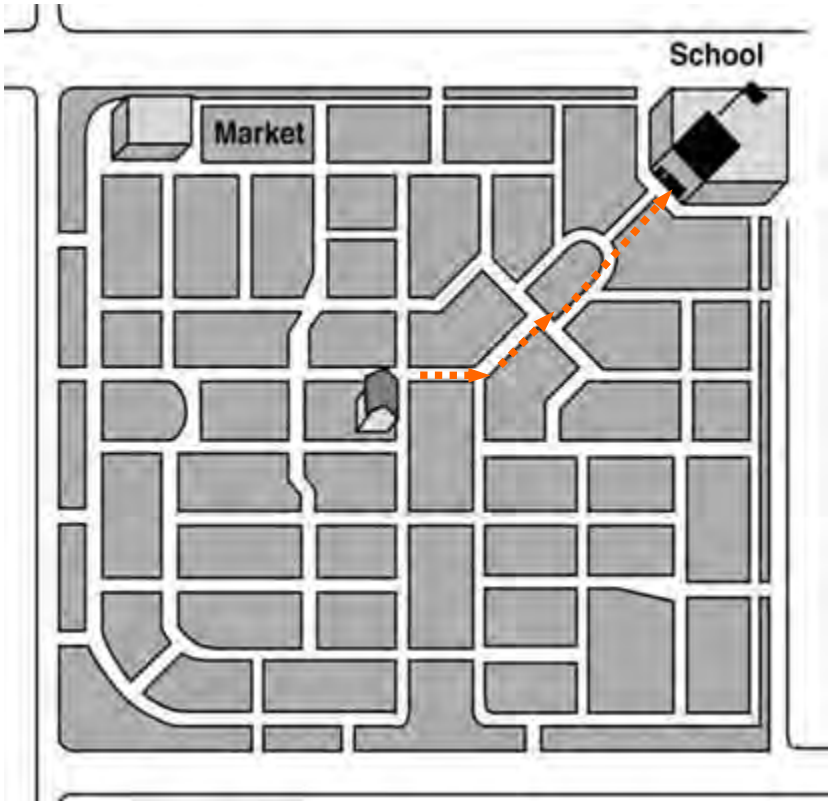
TOOLE DESIGN

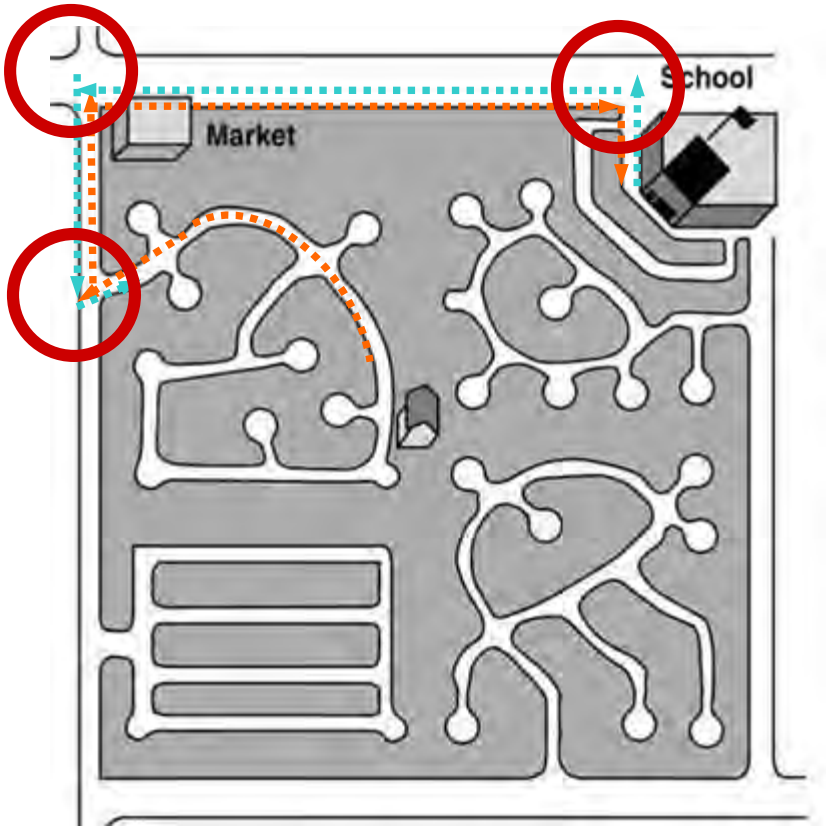
Connectivity creates a pedestrian-friendly street system

- Reduces walking distance
- Offers more route choices – disperses traffic
- Less traffic = more pedestrian friendly

TOOLE DESIGN

Connectivity can reduce walking distances and crossings required





TOOLE DESIGN

Connecting cul-de-sacs

TOOLE DESIGN

Formal and informal connections

TOOLE DESIGN

Engineering topic outline

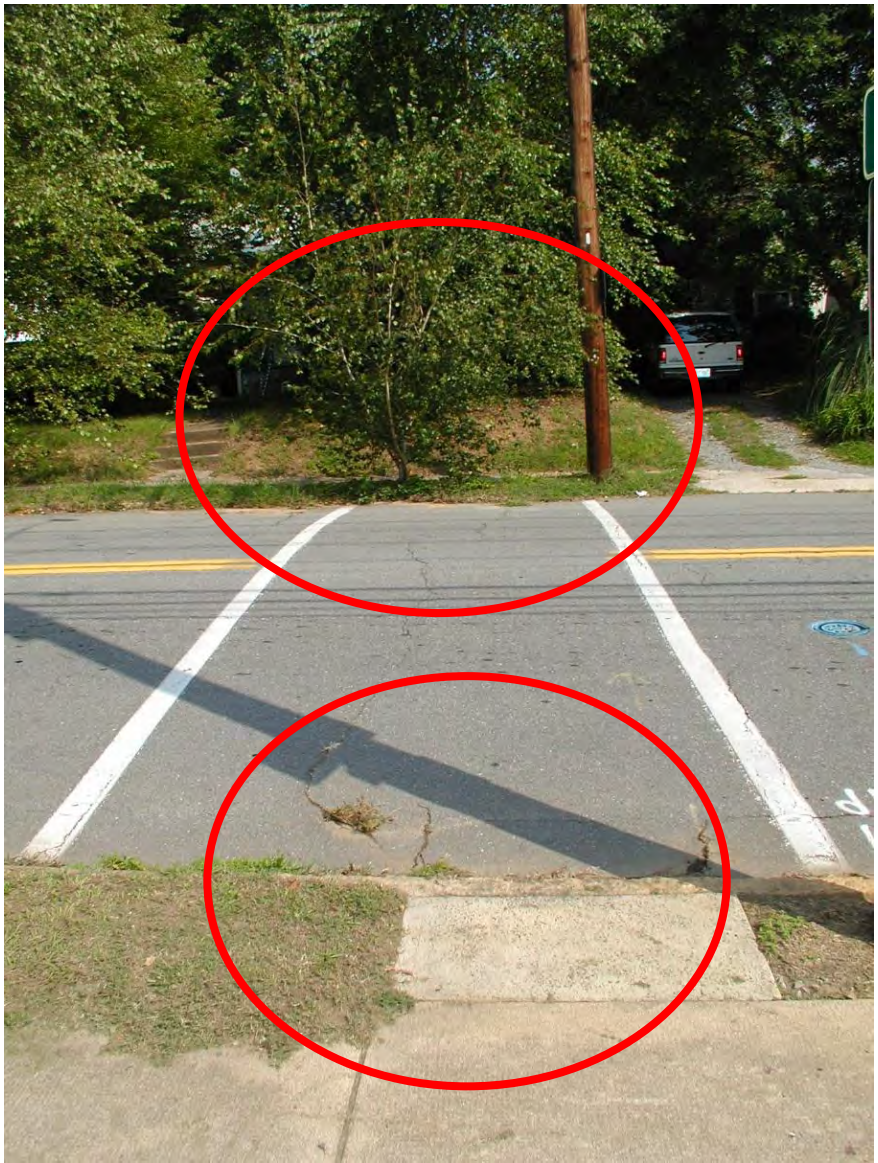
- Around the School
- Along the School Route
- **Crossing the Street**
  - **Shortening crossing distances**
  - **Marking crosswalks**
  - **Creating visible crossings**
  - **Using stop signs and traffic signals**
- Slowing Down Traffic

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?



TOOLE DESIGN

Principles for creating safe crossings

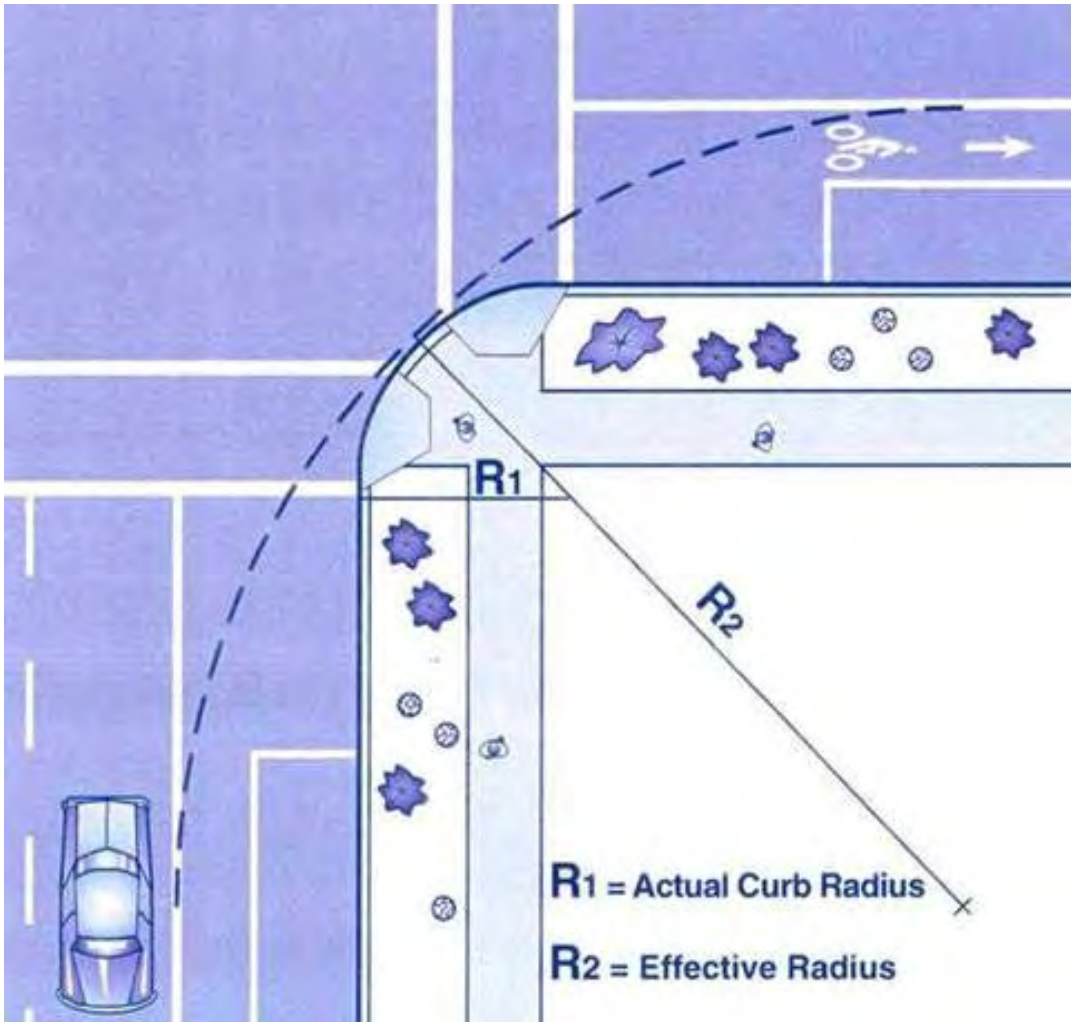
- Reduce crossing distance
- Use appropriate traffic control
  - Marked crosswalks
  - Warning signs or flashers
  - Stop signs and traffic signals
  - Crossing guards
- Slow vehicle speeds

TOOLE DESIGN

Large turn radius

TOOLE DESIGN

Curb radii: Keeping it tight



TOOLE DESIGN

Wide, multi-lane roads are barriers

TOOLE DESIGN

Pedestrian and bicycle bridges

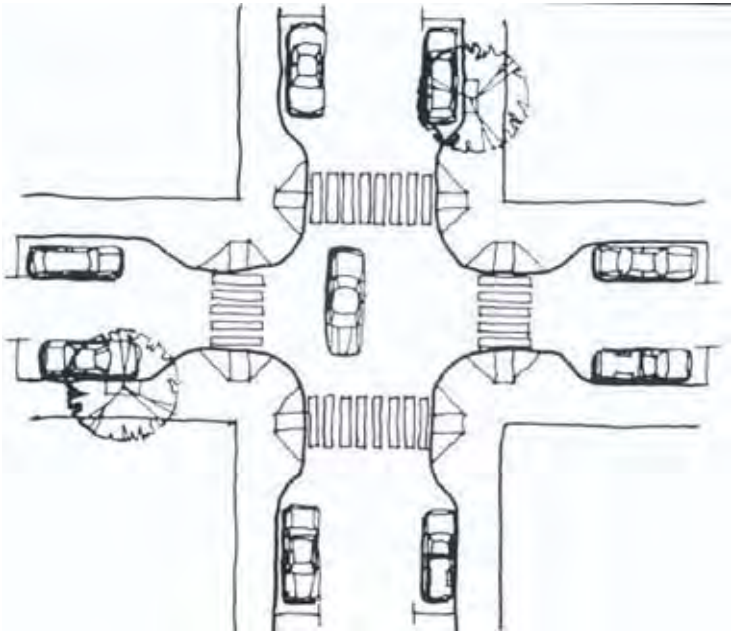
- Expensive
- Often not used
- Consider topography and circumstances

TOOLE DESIGN

Tools to reduce crossing distance

TOOLE DESIGN

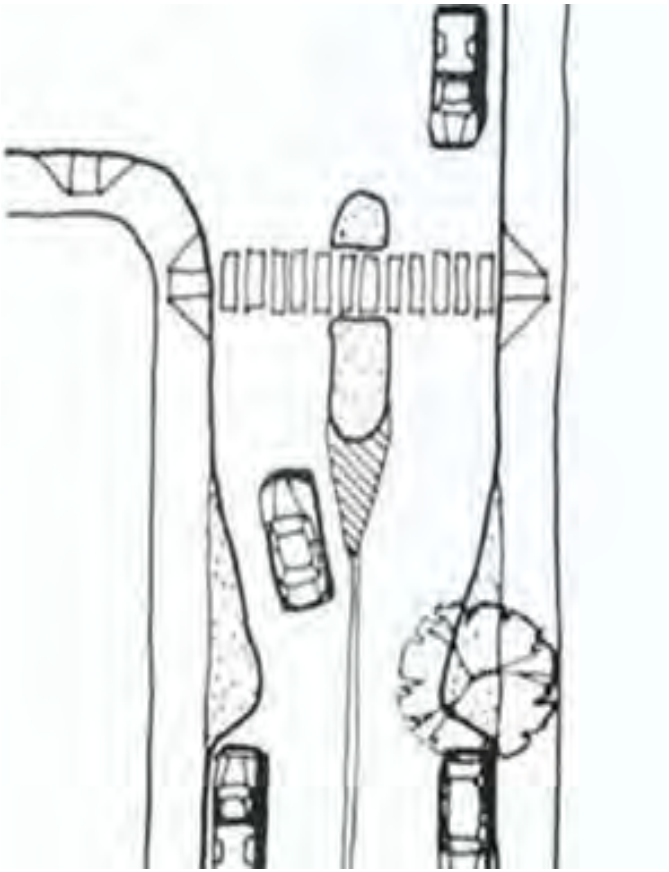
Curb extensions at crossings



Reduce the crossing distance

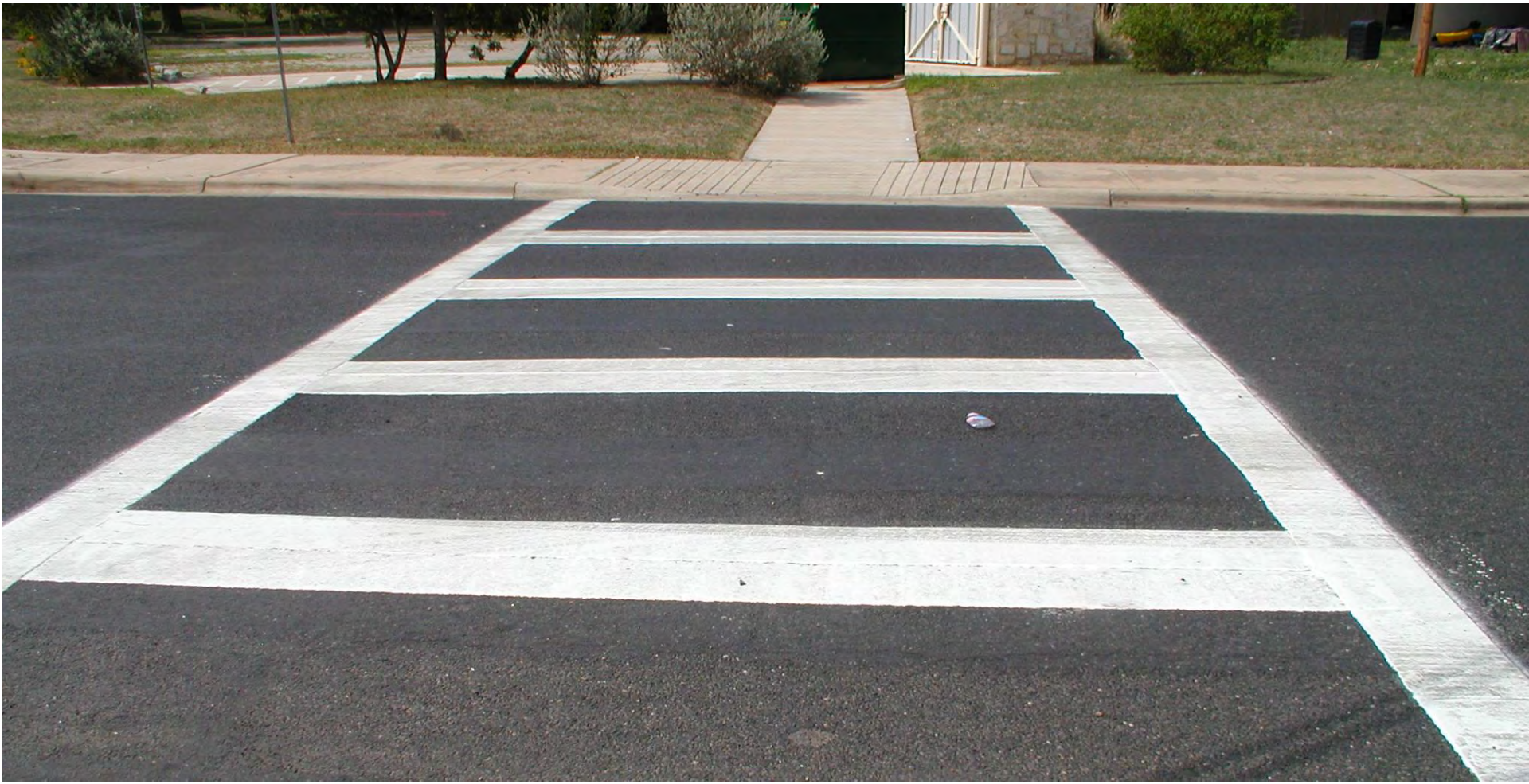
TOOLE DESIGN

Crossing islands



TOOLE DESIGN

Marking crosswalks



TOOLE DESIGN

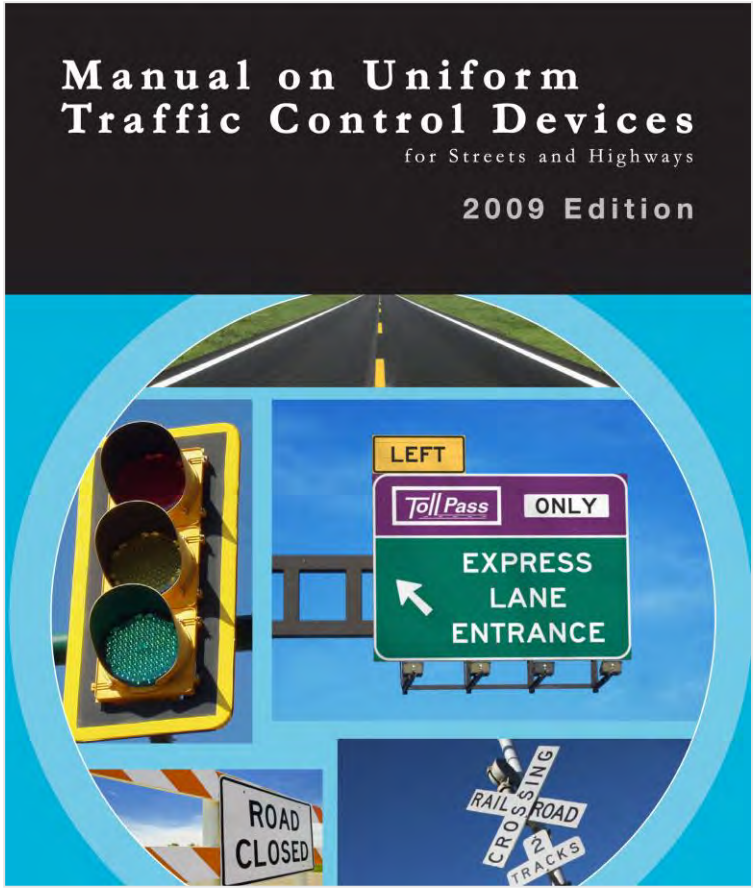
Why install marked crosswalks?

- Indicate a preferred pedestrian crossing location
- Alert drivers to an often-used pedestrian crossing
- Indicate school walking routes

TOOLE DESIGN

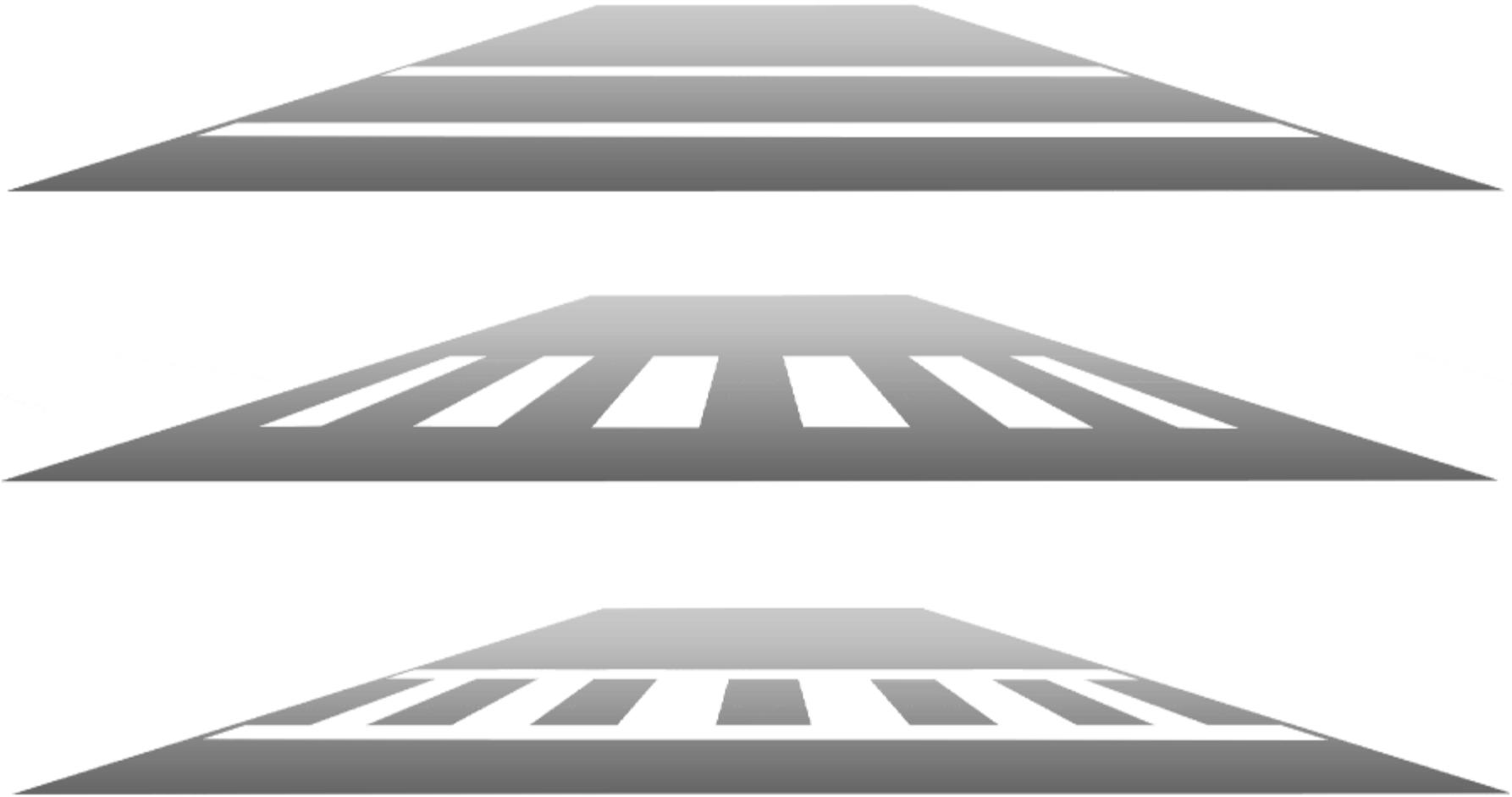
Where to install marked crosswalks

- Signalized intersections
- School routes
- Uncontrolled crossings (see MUTCD guidelines)



TOOLE DESIGN

Install high-visibility markings



TOOLE DESIGN

What the pedestrian sees

TOOLE DESIGN

What the driver sees (same crosswalk)

TOOLE DESIGN

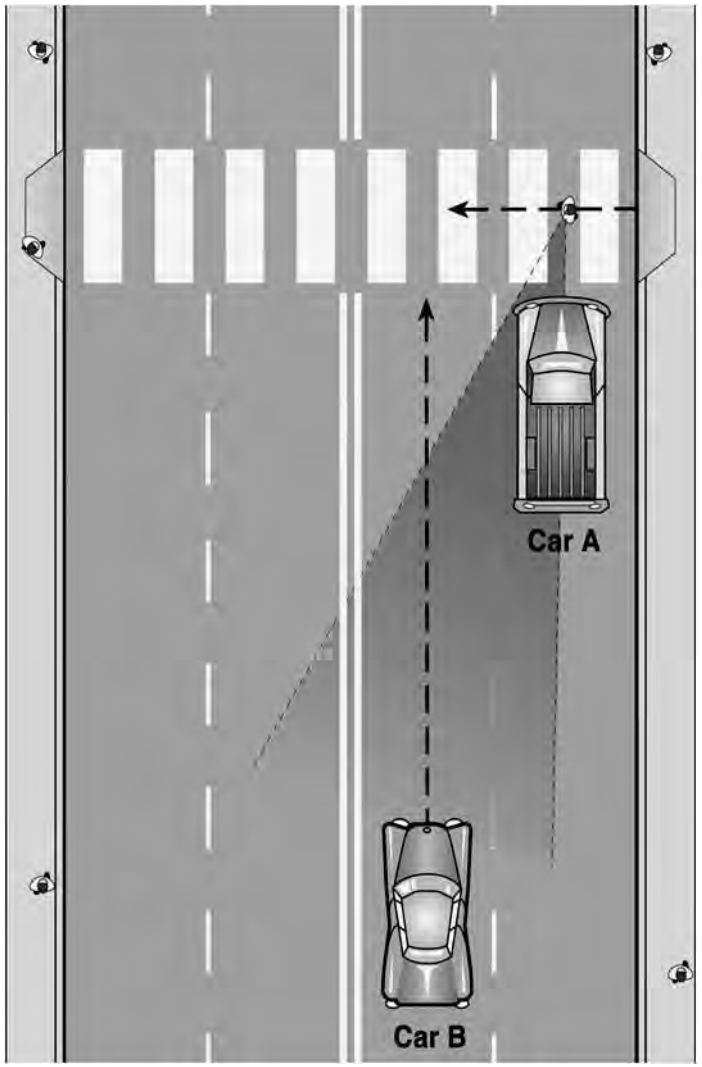
High visibility markings

TOOLE DESIGN

“Multiple threat” crashes

1st car stops to let pedestrian cross, blocking sight lines

2nd car doesn’t stop, hits pedestrian at high speed

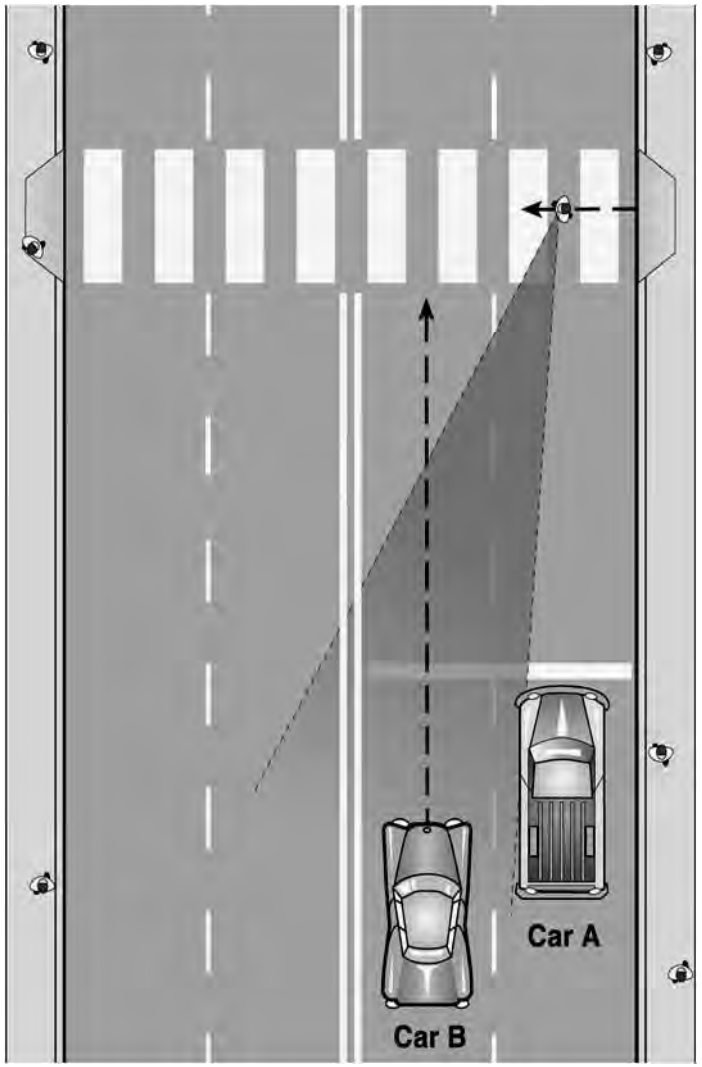


TOOLE DESIGN

Solution: Advance stop/yield line

1st car stops further back, opening up sight lines

2nd car can be seen by pedestrian



TOOLE DESIGN

‘Yield here for pedestrian’ signs

TOOLE DESIGN

In-street signage

Source: City of McKinney, 2019

TOOLE DESIGN

Rectangular rapid flash beacon (RRFB)

- Pedestrian activated (push button or passive detection)
- Beacon is yellow and has a rapid flash
- Yield rates increased from approx. 20% to 80% (CMF = 0.53)
- Not yet in MUTCD – FHWA gave interim approval in 2008.

TOOLE DESIGN

Rectangular rapid flash beacon

TOOLE DESIGN

Pedestrian hybrid beacon

- Pedestrian activated
- Solid red phase brings all cars to a stop
- Can reduce pedestrian crashes by 55% (CMF = 0.45) (FHWA)
- In the MUTCD
- Should be strongly considered for all crossings where speed limits are ≥ 40 mph

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

Parking restrictions at corners

Better visibility for both drivers and pedestrians

TOOLE DESIGN

Engineering topic outline

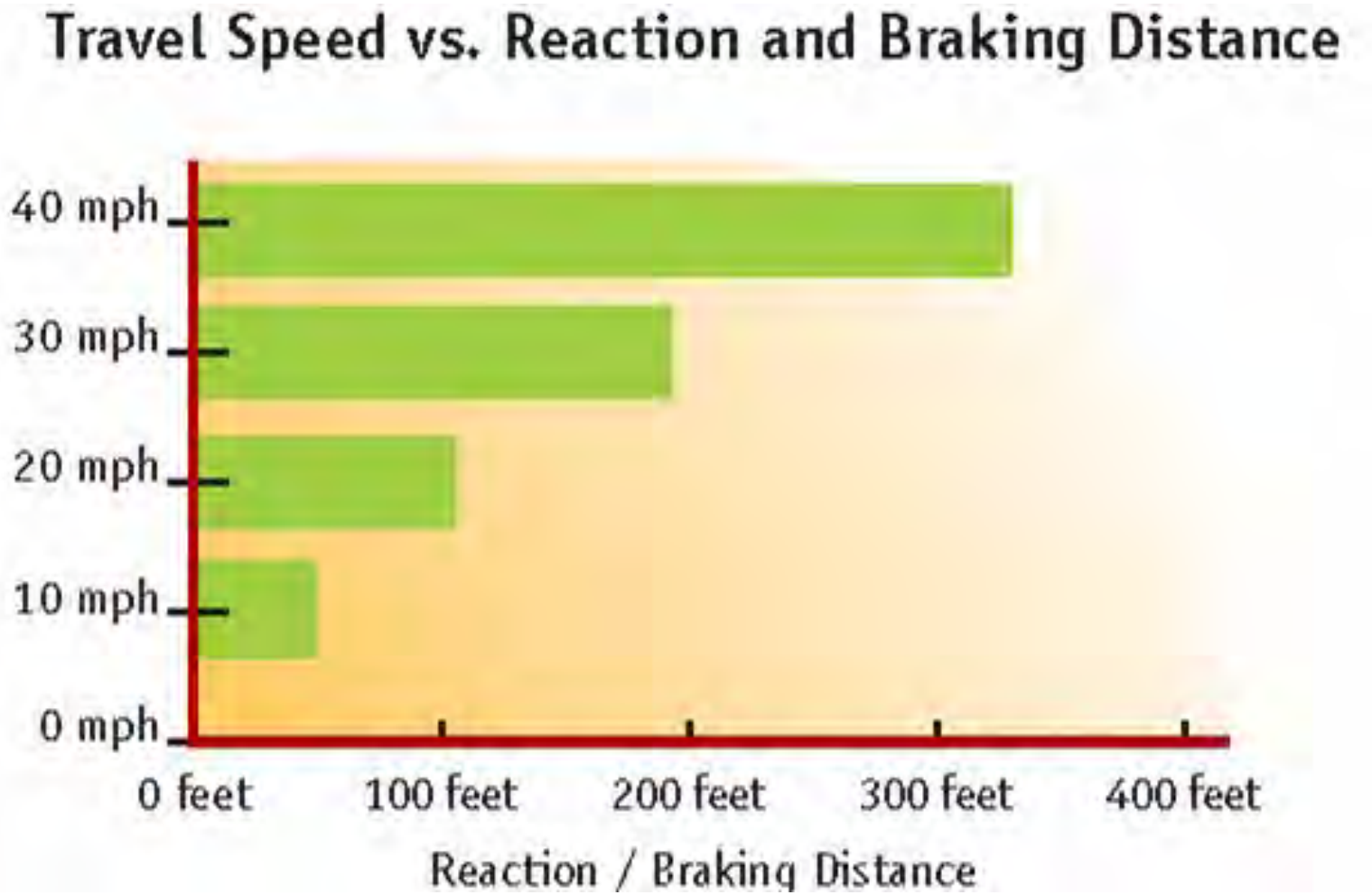
- Around the School
- Along the School Route
- Crossing the Street
- **Slowing Down Traffic**

TOOLE DESIGN

Slowing down traffic

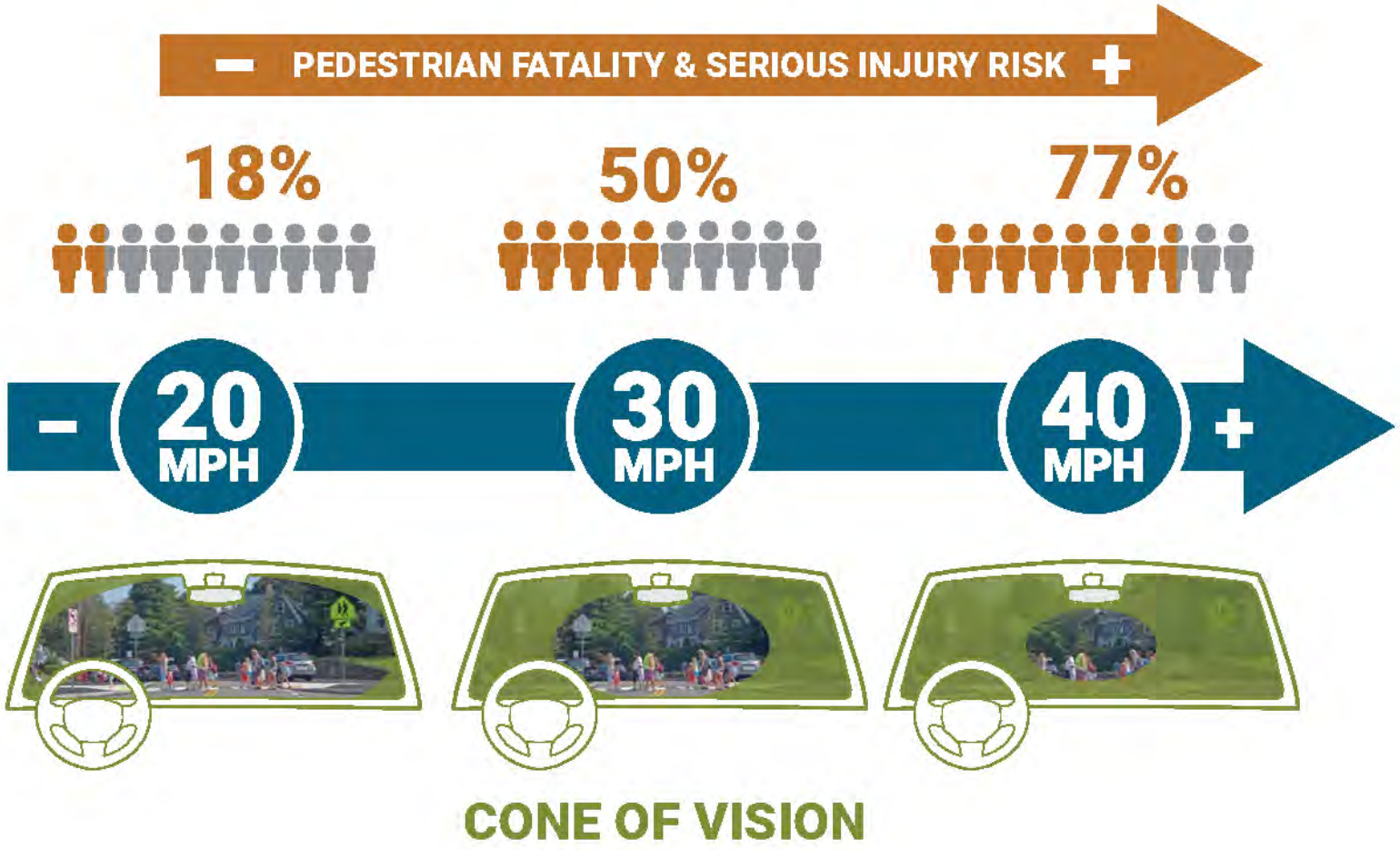
TOOLE DESIGN

High speeds increase stopping distance



TOOLE DESIGN

High speeds increase ped injuries



TOOLE DESIGN

Design can invite desired use

TOOLE DESIGN

Modern roundabout

- Slows vehicles as they enter, travel through and exit.

- Reduces potential conflict points.

TOOLE DESIGN

Narrow lanes reduce speeds

Use paint to reduce lane width

TOOLE DESIGN

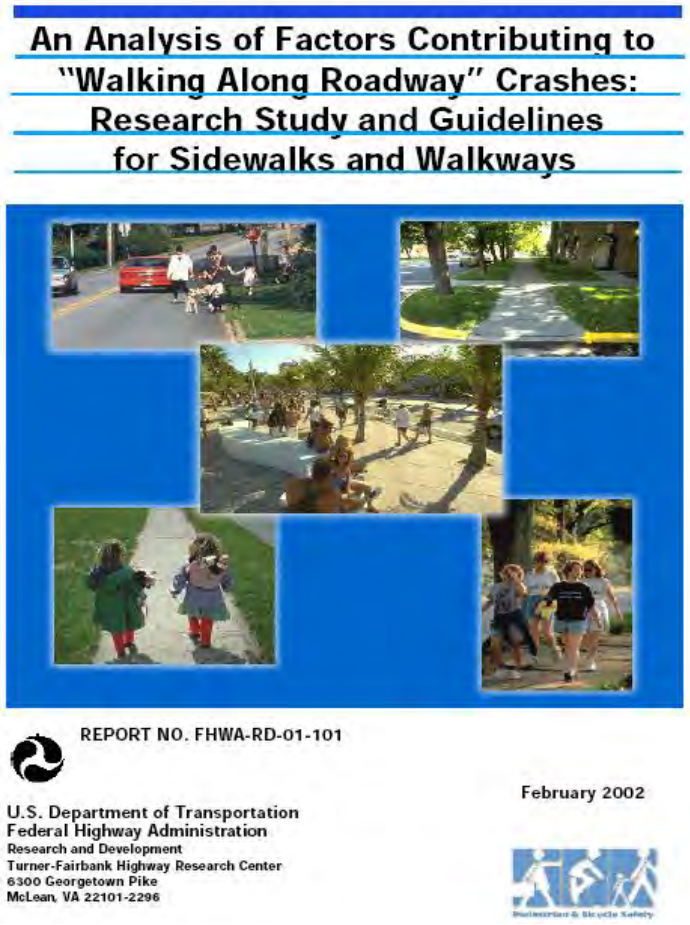
Speed humps slow traffic on local streets

TOOLE DESIGN

Raised crosswalks

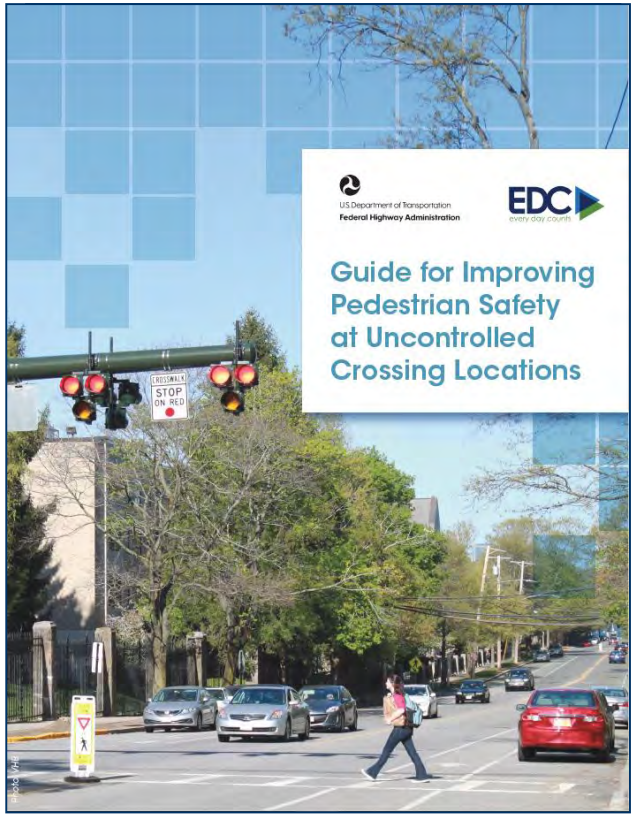
TOOLE DESIGN

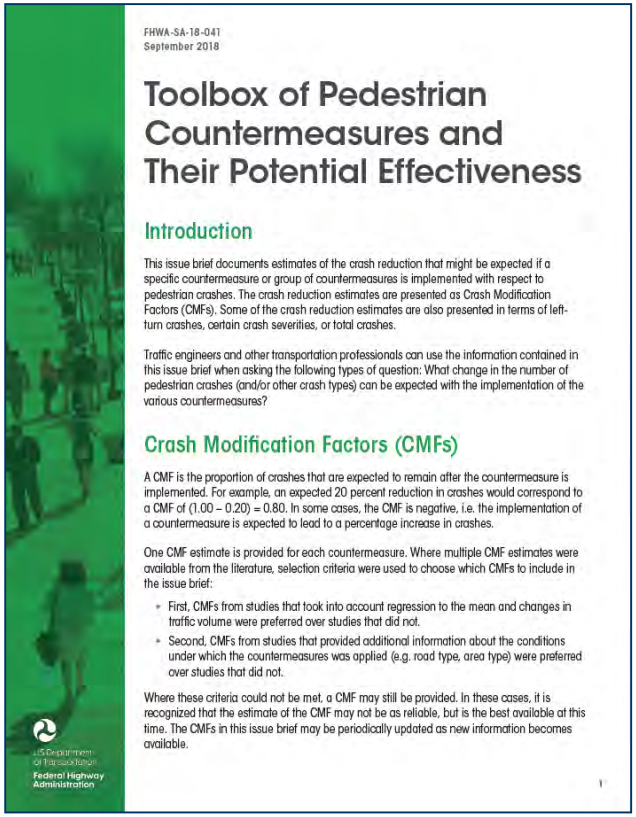
FHWA references



TOOLE DESIGN

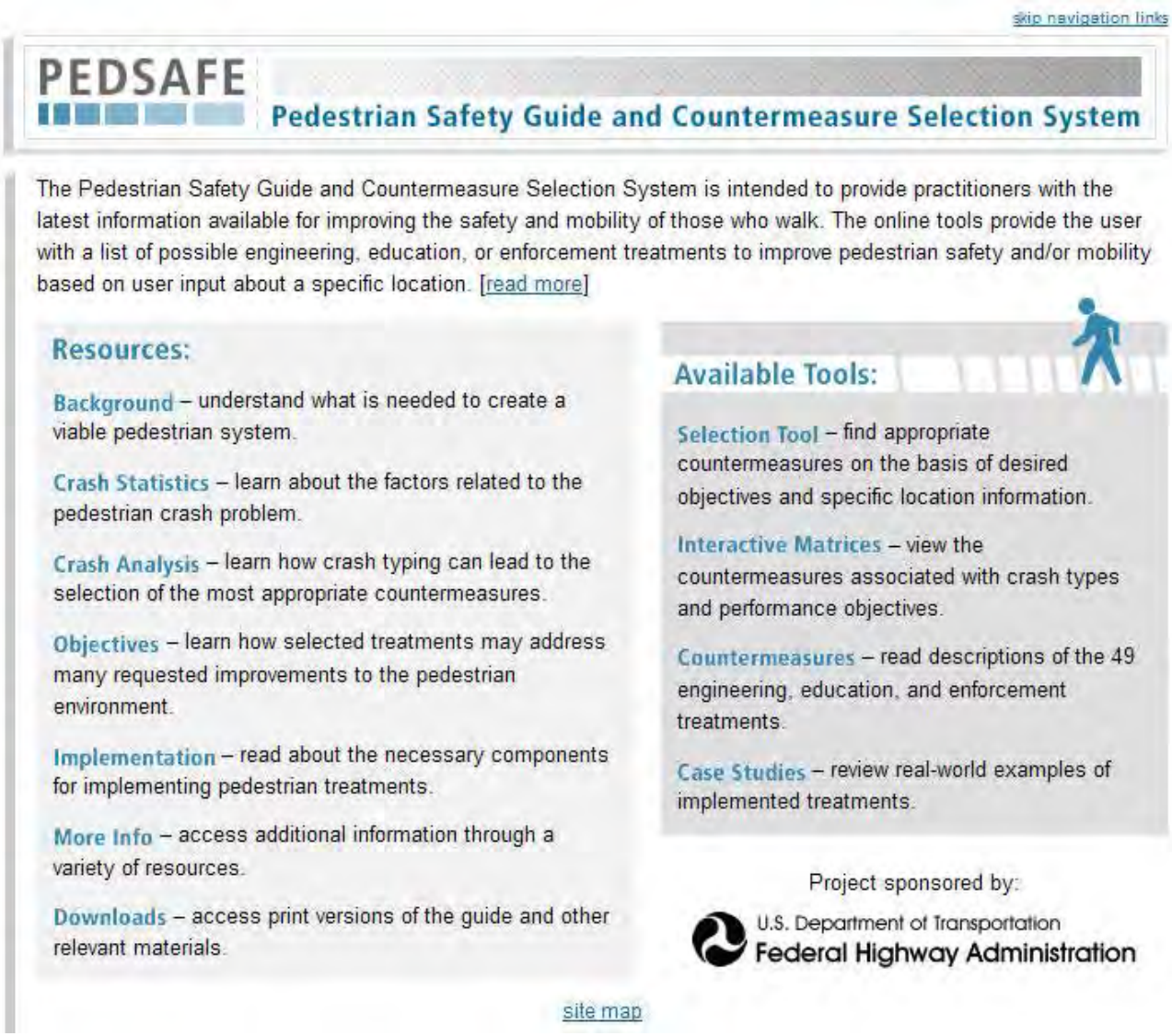
FHWA references





TOOLE DESIGN

PEDSAFE



TOOLE DESIGN

Summary

1. Focus first on the basics
2. Identify and program longer-term improvement needs (e.g. sidewalks)
3. Match the treatment to the type of problem
4. Provide and maintain facilities along the school route
5. Provide safe street crossings
6. Slow down traffic speeds

TOOLE DESIGN