


Welcome to Active Living Research 101

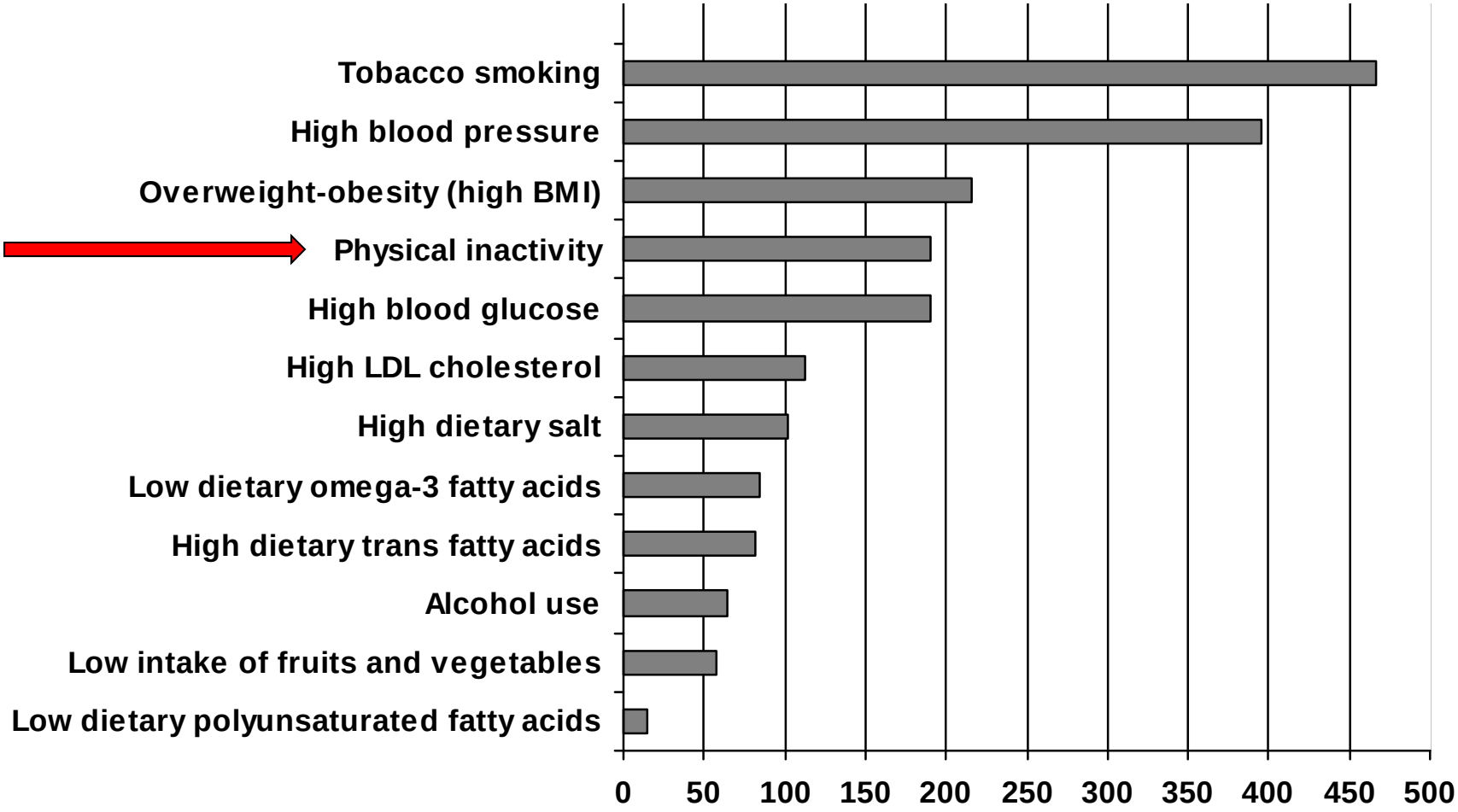
Jim Sallis, PhD, Program Director

Jennifer Dill, PhD, Portland State University

Goals of ALR 101

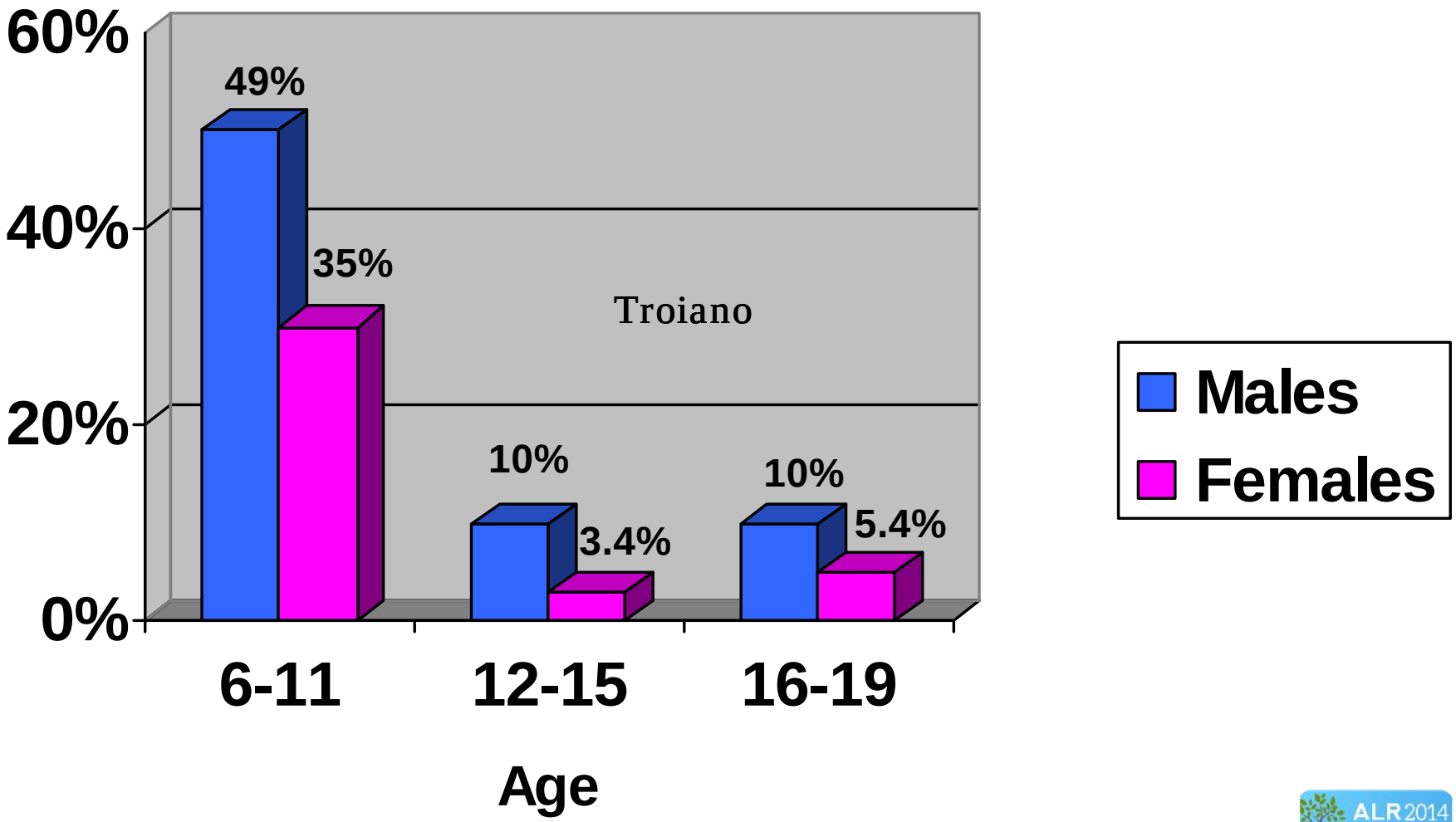
- Why focus on active living?
- Why focus on environments & policies?
- Goals of ALR
- What ALR does
- Who is involved in ALR
- What ALR has accomplished
- Current activities
- How can you participate in ALR?

Deaths (thousands) attributable to individual risk factors in both sexes



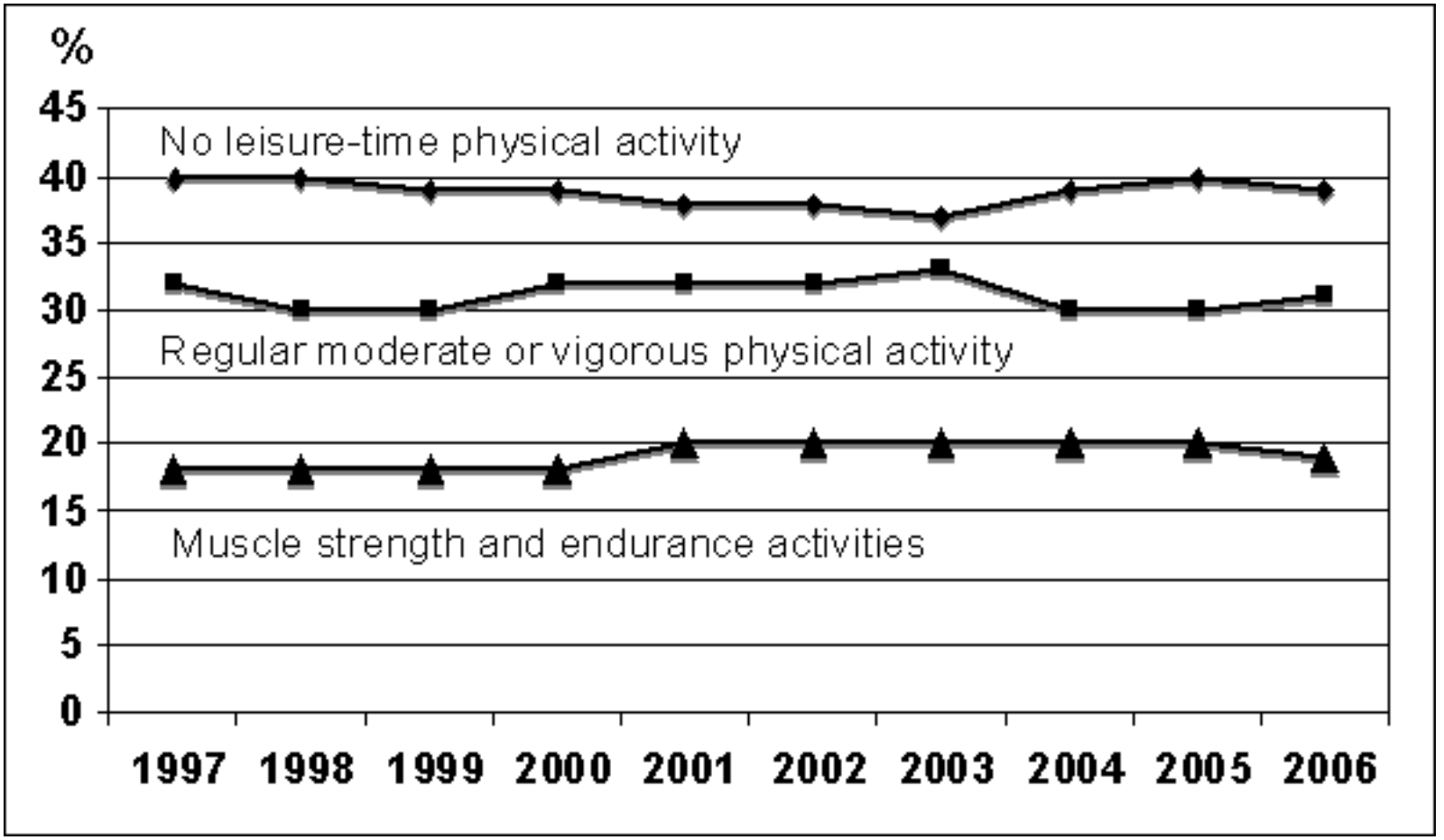
Danaei G et al, PLoS Medicine, 2009

Percentage of youth ages 6-19 meeting 60 min/day physical activity guidelines. Based on accelerometers. NHANES 2003-4



Troiano, MSSE 2007

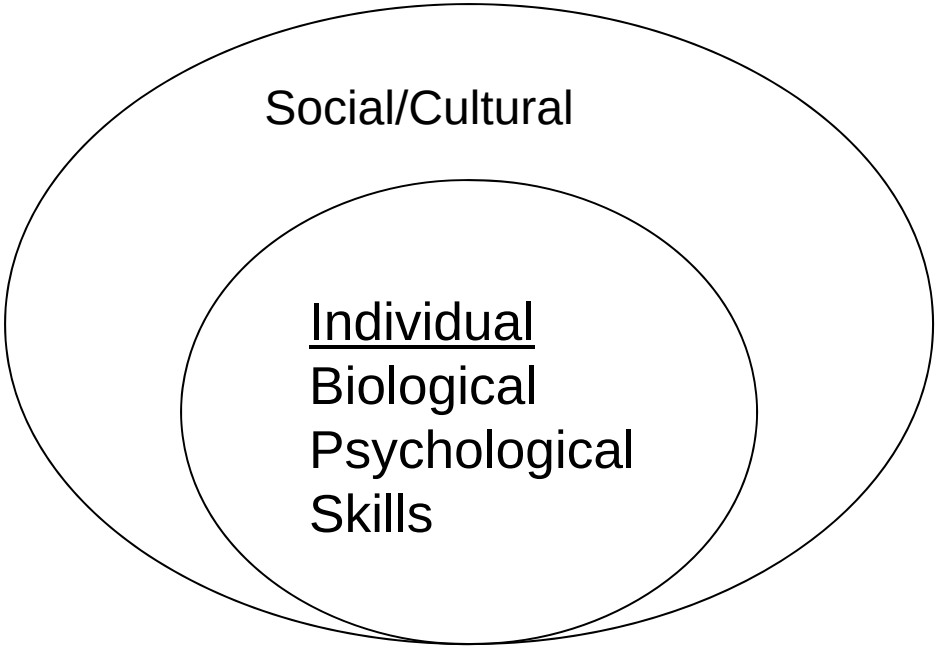
How are we doing in promoting physical activity?



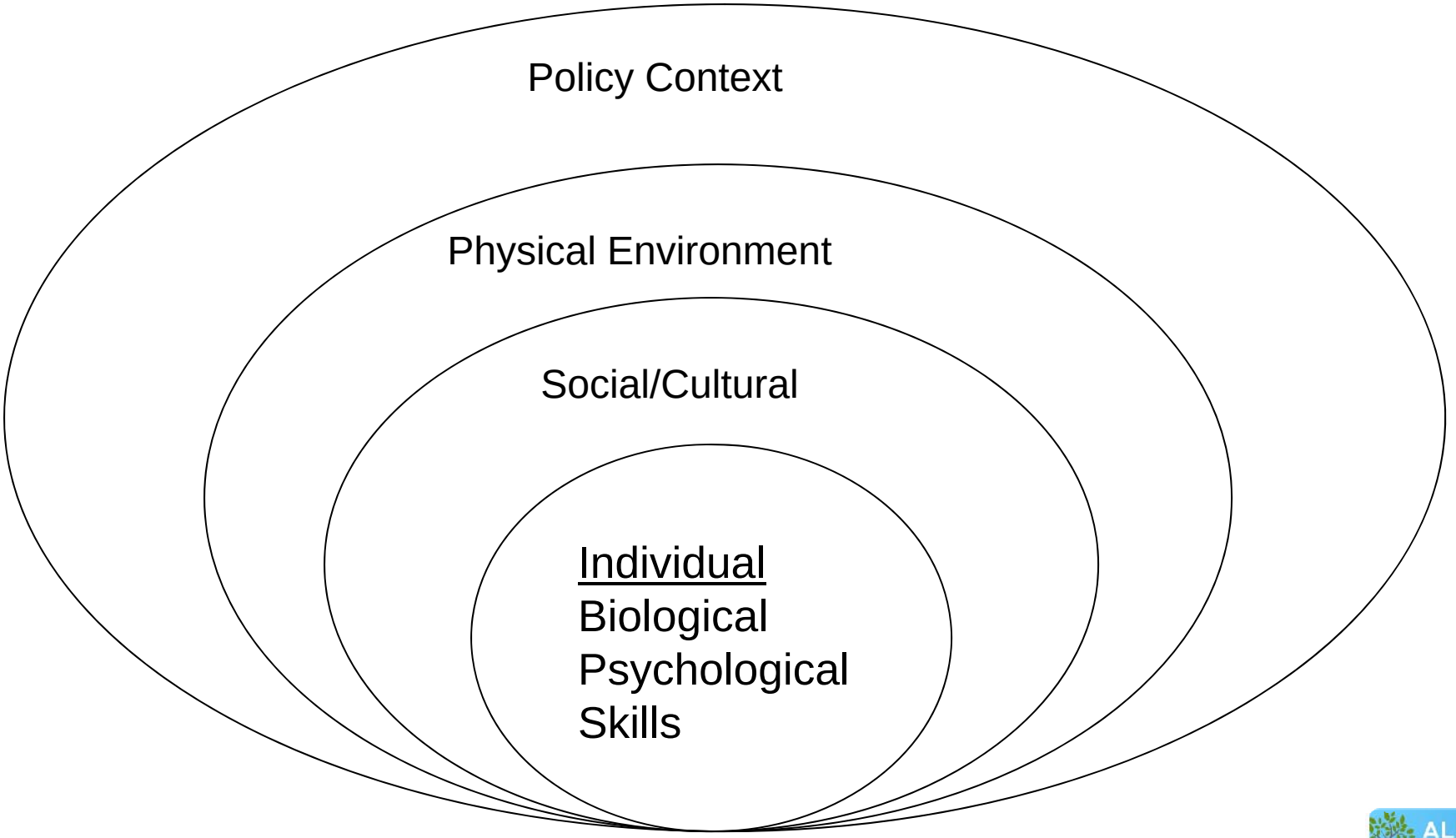
Reported Physical Activity by Adults in the USA: 1997-2006 The Healthy People 2010 Database

Healthy People 2010 Database for men & women combined

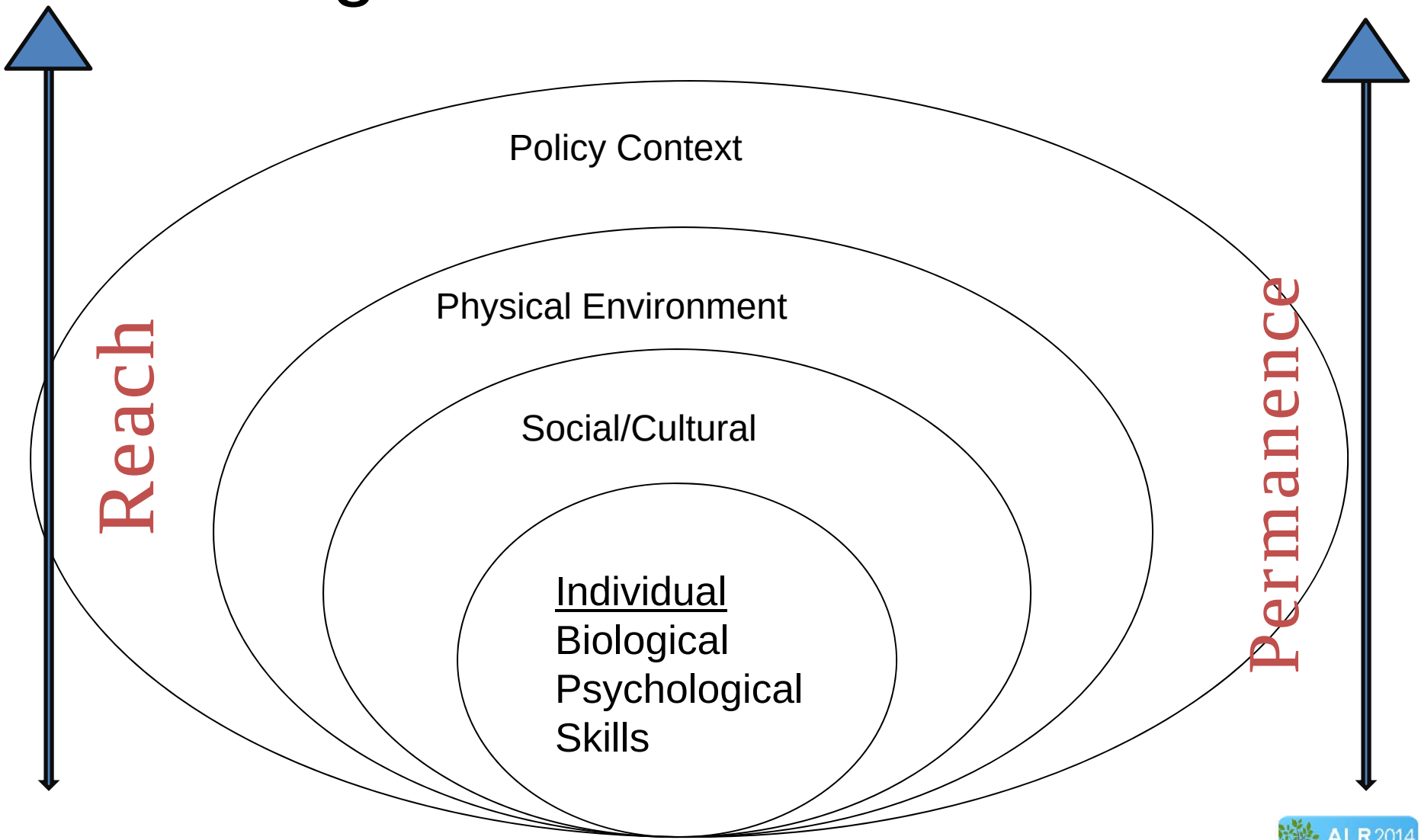
Most models of health behavior



An ecological model of health behavior



An ecological model of health behavior



Practical policy rational for PA environment & policy research

- IOM, CDC, Surgeon General, AHA, WHO, National PA Plan, and many other groups recommend policy changes as essential for improving PA, diet, and obesity.
- Policy initiatives with the intent to change PA and obesity are occurring in governments, school districts, and industry.
- Evidence is needed as a basis for this work.

Elements of an active living community

Comm Design
Destinations

Transportation System

Home

School & Preschool

Park & Rec

Active Living Research goals: 2001-2015

- Establish a strong research base
  - Administer a $28 million research budget
  - Contribute to reversing childhood obesity
  - Focus on ethnic, racial, & income groups at highest risk of obesity
- Build a transdisciplinary & diverse field of researchers
- Stimulate & inform policy change
  - Primary goal for 2012-2015

Phases of ALR

- 1: 2001-2007. Part of RWJF's active living initiative. Focus on whole population
- 2: 2008-2012. Part of RWJF's childhood obesity initiative. Focus on youth, especially groups at highest risk
- 3: 2013-2015. Focus is on translating new knowledge to changes in policy and practice

Building evidence

- Calls for proposals 1-10 & Rapid Response
  - 230 grants funded. Almost 400 papers published
- Conference
  - Only venue for all relevant disciplines to come together
  - Highly competitive abstract selection
  - Best papers in journal supplement with wide distribution
- Website
  - Free access to journals & conference slides
  - Measurement resources
  - Literature searches; article database

Progression of research

- Begin with measurement development
- Correlational studies, because randomized trials are rarely possible
- Understanding environmental disparities
- Rapid response grants to evaluate policy & environment changes
- Economic studies because **$** drives decisions

Gutman Research Associates

Evaluation of Active Living Research

Ten Years of Progress in Building a New Field

Dianne C. Barker, MHS, Marjorie A. Gutman, PhD

(Am J Prev Med 2014;46(2):208–215) © 2014 American Journal of Preventive Medicine

"ALR has probably done more to move this whole field of active living forward than anything before or anything that has come since."

Number of competitive grants by topic area

Note: Grants could be coded in multiple categories

	ALR I (n=91)	ALR II (n=123)
Built Environment	65	46
Health, Economics, Policy Process	4	29
Recreation	24	26
Schools	18	65
Social Environment, including crime, disorder	11	31

2011 Grantee Survey respondents by race/ethnicity

- In the 2006 evaluation, 26% of grantees were people of color.
- In the 2011 evaluation, that increased to 34%.

Grantee Race/ethnicity	%
American Indian/Alaska Native	2
African American	9
Asian	10
Latino/Hispanic	9
Multiple race/ethnicity	3
White	66

Field building: Cultivating new relationships

- Architecture
- Environment & Behavior
- Geography
- Landscape Architecture
- Parks & Recreation
- Planning
- Transportation
- Criminology
- Economics/Law/Policy
- Advocates/Policymakers

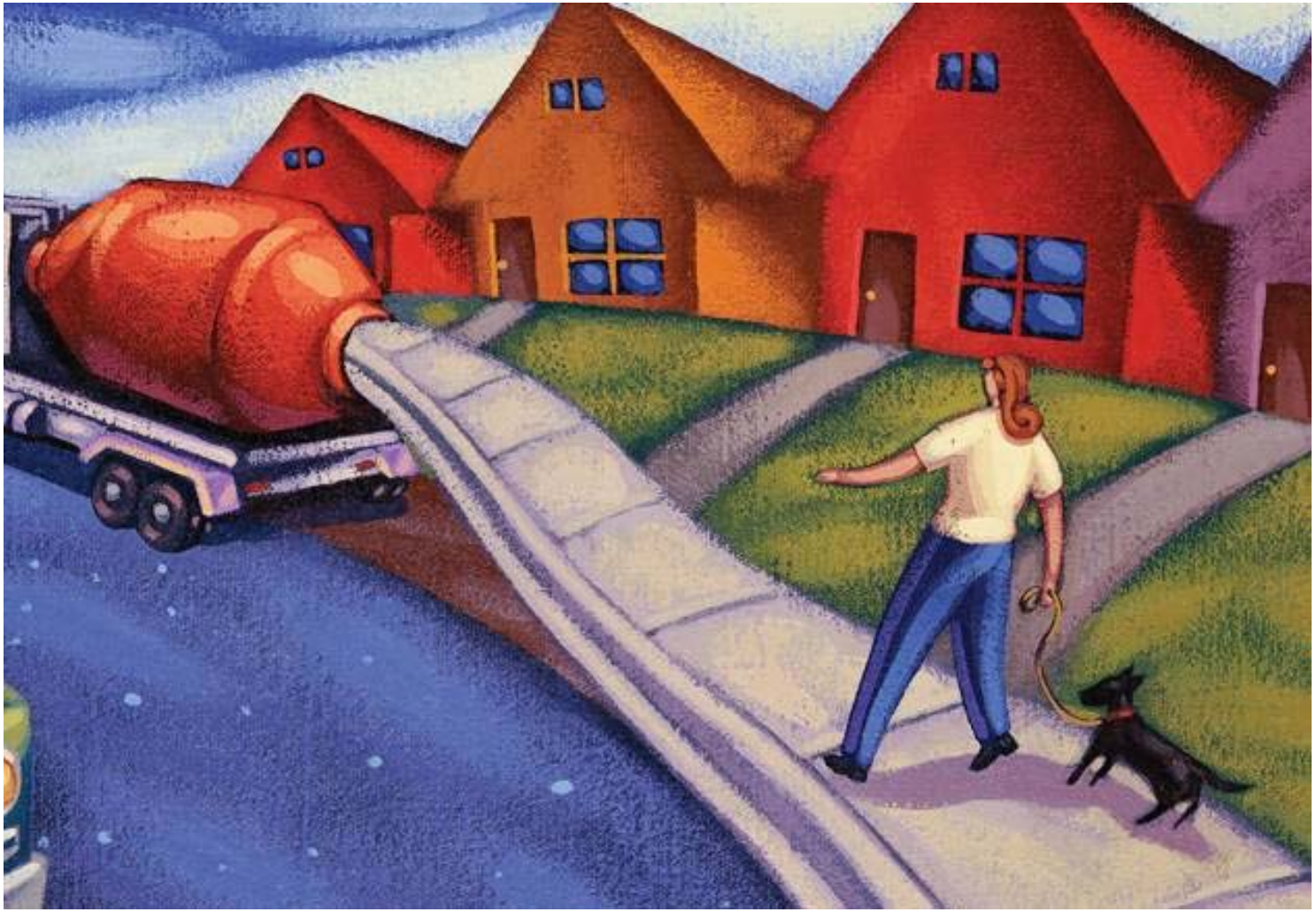
Building a transdisciplinary field

- Multidisciplinary advisory committee
- Recruiting non-traditional partners through talks at conferences
- Broad distribution of Calls for Proposals
- Seminar Program with many organizations to bring speakers from other fields
- Principal Investigators from 25+ fields

ALR conference evaluations: 75-95% rated 4 or 5 across years

Conference Goals
Stimulated ideas likely to lead to changes in my research
Learned new concepts from another discipline likely to enhance my work
New contacts might lead to collaboration
Builds capacity to conduct transdisciplinary studies

Research is not easy to put into practice



Communicating results: Getting the word out

- Website: about 12,000 visits per month
  - Research briefs are widely downloaded
  - Measures are very popular
  - Participate in MOVE! blog
- Webinar series: www.dialogue4health.org
- ALR Newsletter: sign up
- Facebook, Twitter, Youtube

Translating research to policy

- Regular input from policy makers on research priorities & communication strategies
  - DO policy-relevant research
- Research briefs for policymakers & advocates
- Sessions at ALR Conference with policymakers
- Research Translation Grants to communicate results from ALR grants
- Lay summaries of ALR journal articles & grants

Conference brings together researchers & practitioners

- Presentations & workshops invited from practitioners & researchers
- Practice/policy and research presentations integrated in same sessions
- Dots on name badges. Mingle with both colors
- Goals
  - Practitioners & policy-makers generate new research ideas
  - Researchers communicate useful findings


Impact of Park Renovations on Park Use and Park-based Physical Activity

Deborah Cohen, Bing Han, Jennifer Isacoff, Bianca Shulaker, Stephanie Williamson, Terry Marsh, Thom McKenzie, Rajiv Bhatia, Megan Wier

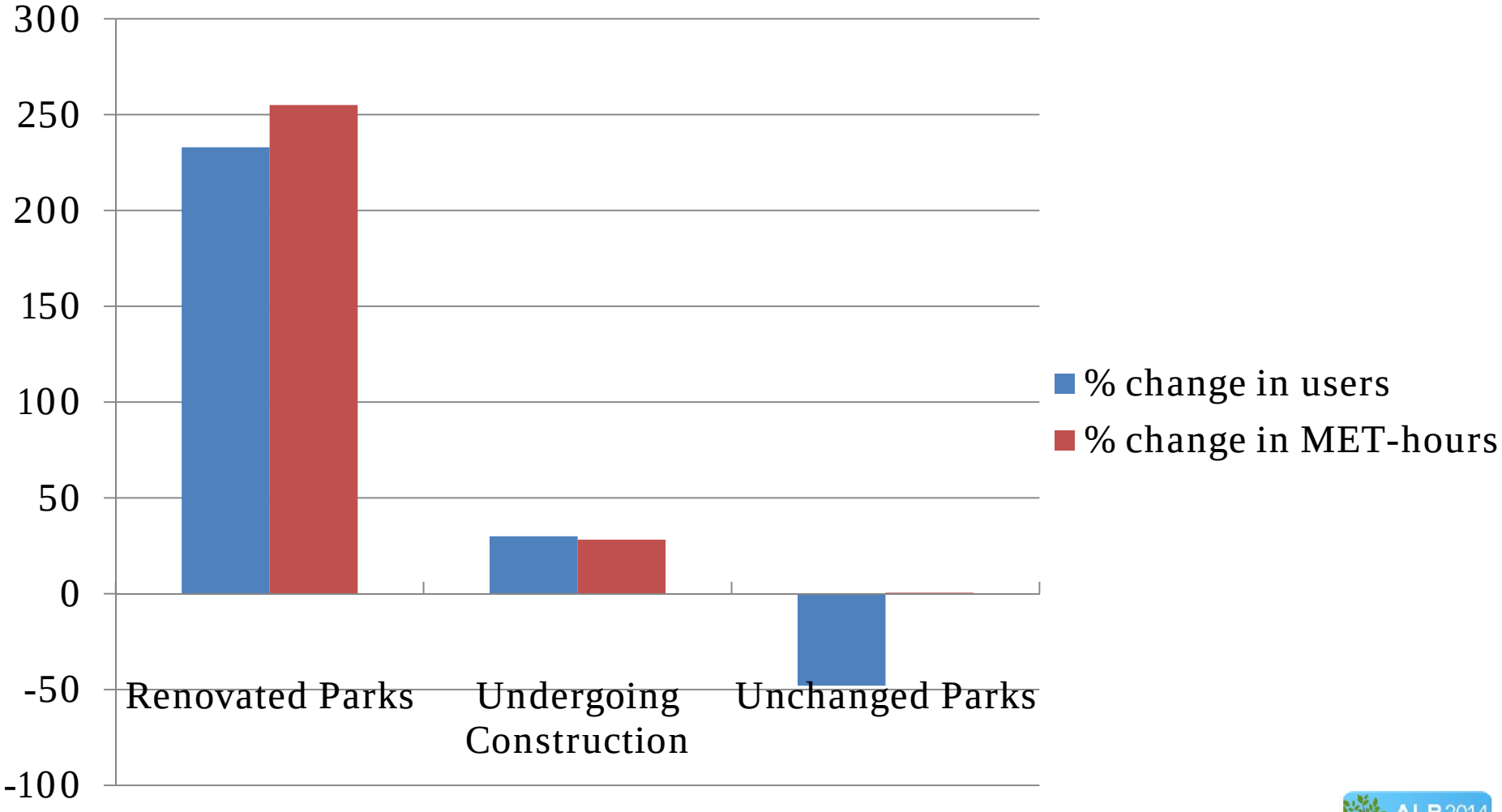
RAND Corporation

Funded by RWJF- Active Living Research

Study objective

- To determine the impact of park renovations on park use and physical activity among park users, especially youth, but studying 6 parks
- Two parks underwent extensive renovations
  - installation of completely new play equipment,
- Comparison parks had no changes or construction was in progress
- All parks in urban, low-income neighborhoods

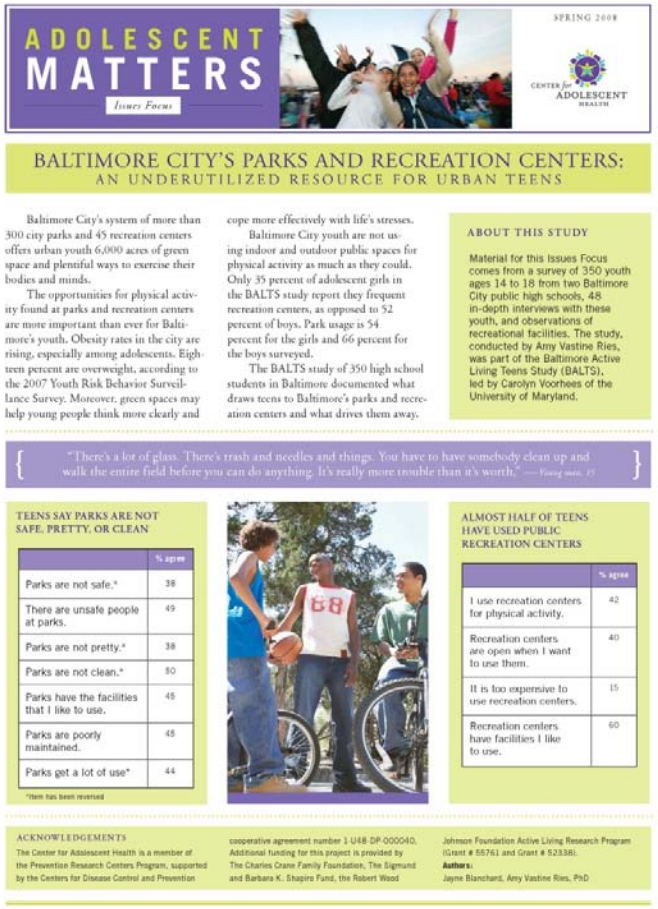
Changes in the number of park users and MET-hours gained



What we know through ALR-funded research on built environment

Baltimore

- Interviews with African American high school students
- Key environmental barriers to PA
  - Lack of places for PA
  - Crime, violence, drugs
  - Unsafe places for PA



ADOLESCENT MATTERS
Issues Focus
SPRING 2008
CENTER for ADOLESCENT HEALTH

BALTIMORE CITY'S PARKS AND RECREATION CENTERS:
AN UNDERUTILIZED RESOURCE FOR URBAN TEENS

Baltimore City's system of more than 300 city parks and 45 recreation centers offers urban youth 6,000 acres of green space and plentiful ways to exercise their bodies and minds.

The opportunities for physical activity found at parks and recreation centers are more important than ever for Baltimore's youth. Obesity rates in the city are rising, especially among adolescents. Eighteen percent are overweight, according to the 2007 Youth Risk Behavior Surveillance Survey. Moreover, green spaces may help young people think more clearly and cope more effectively with life's stresses.

Baltimore City youth are not using indoor and outdoor public spaces for physical activity as much as they could. Only 35 percent of adolescent girls in the BALTS study report they frequent recreation centers, as opposed to 52 percent of boys. Park usage is 54 percent for the girls and 66 percent for the boys surveyed.

The BALTS study of 350 high school students in Baltimore documented what draws teens to Baltimore's parks and recreation centers and what drives them away.

ABOUT THIS STUDY

Material for this Issues Focus comes from a survey of 350 youth ages 14 to 18 from two Baltimore City public high schools, 48 in-depth interviews with these youth, and observations of recreational facilities. The study, conducted by Amy Vastine Ries, was part of the Baltimore Active Living Teens Study (BALTS), led by Carolyn Voorhees of the University of Maryland.

{ "There's a lot of glass. There's trash and needles and things. You have to have somebody clean up and walk the entire field before you can do anything. It's really more trouble than it's worth." — Young man, 15 }

TEENS SAY PARKS ARE NOT SAFE, PRETTY, OR CLEAN

	% agree
Parks are not safe.*	38
There are unsafe people at parks.	49
Parks are not pretty.*	38
Parks are not clean.*	50
Parks have the facilities that I like to use.	45
Parks are poorly maintained.	45
Parks get a lot of use*	44

*Item has been reversed

ALMOST HALF OF TEENS HAVE USED PUBLIC RECREATION CENTERS

	% agree
I use recreation centers for physical activity.	42
Recreation centers are open when I want to use them.	40
It is too expensive to use recreation centers.	15
Recreation centers have facilities I like to use.	60

ACKNOWLEDGEMENTS

The Center for Adolescent Health is a member of the Prevention Research Centers Program, supported by the Centers for Disease Control and Prevention cooperative agreement number 1-U48-DP-000040. Additional funding for this project is provided by The Charles Crane Family Foundation, The Sigmund and Barbara K. Shapiro Fund, the Robert Wood Johnson Foundation Active Living Research Program (Grant # 55761 and Grant # 52338).

Authors:
Jayne Blanchard, Amy Vastine Ries, PhD

What we know through ALR-funded research on built environment

Rural MS, KY, SC, CA

- Input from children & parents
- Barriers to activity
  - no shoulders on roads
  - heavy truck traffic
  - no access to school grounds
  - lack of parks
  - lack of safety, crime and wild animals

What we know through ALR-funded research on PA/PE in schools

Texas

Evaluation of State Law on PA and Coordinated School Health Policy

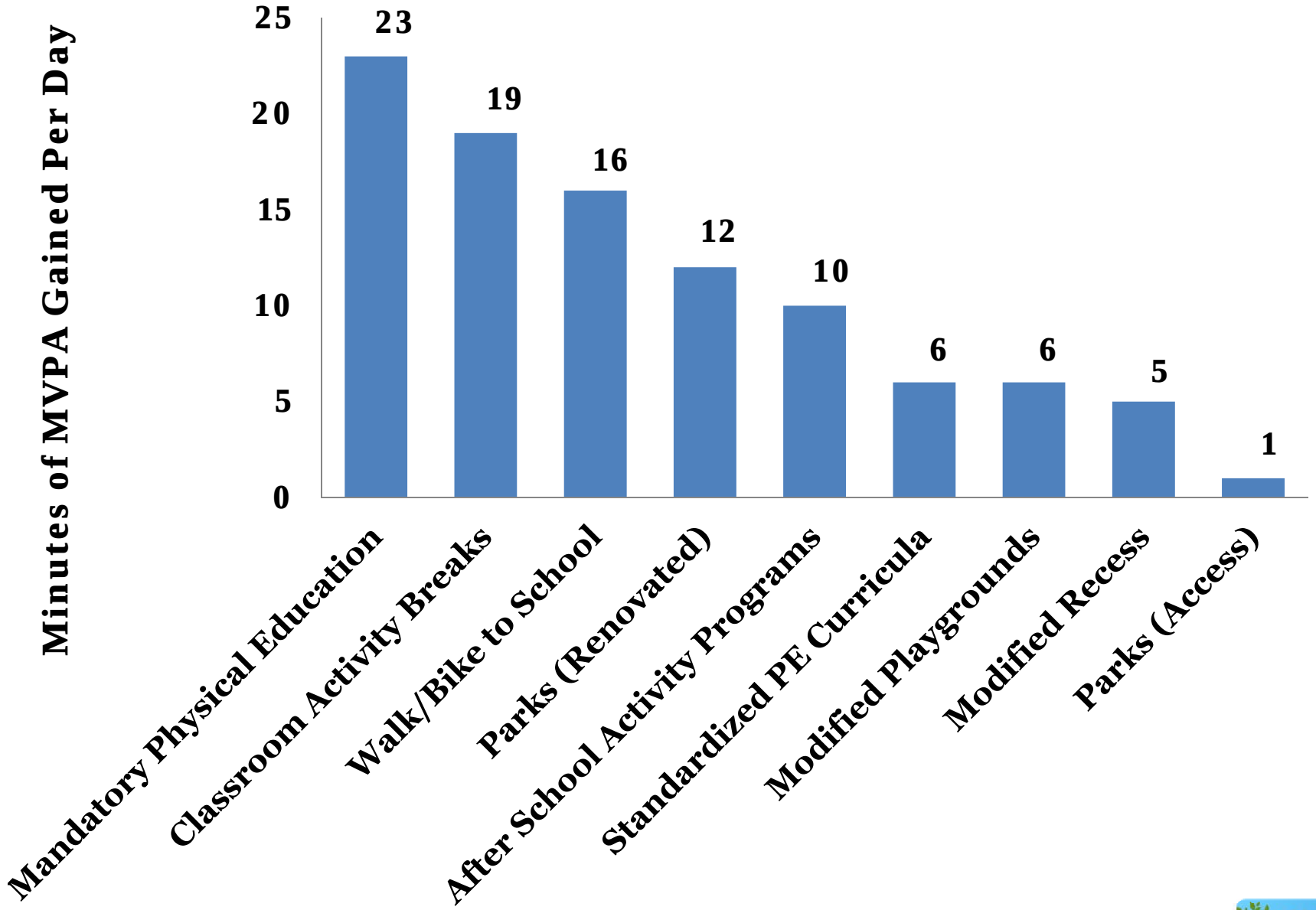
- 97% of principals & district officials are aware of physical activity requirements
- 179 average minutes of structured student physical activity per week
  - Exceeding the 135 minutes required by the bill
- Strong implementation of policy was due to support from local community organizations

Estimated Energy Expenditures for School-Based Policies and Active Living

David R. Bassett, PhD, Eugene C. Fitzhugh, PhD, Gregory W. Heath, DHSc, MPH, Paul C. Erwin, MD, DrPH, Ginny M. Frederick, MS, Dana L. Wolff, MS, Whitney A. Welch, MS, Aaron B. Stout, MS

(Am J Prev Med 2013;44(2):108–113)

- ALR Commissioned Analysis
- Substantial media coverage
- Lay summary on ALR website



Bassett et al, Am J Prev Med, 2013

Research Briefs & Syntheses

- Parks
- Economic benefits of open space & walkable communities
- Transportation policies
- Active travel to school
- Power of Trails
- Active education
- After school programs
- School PA policies
- Playgrounds
- Environmental disparities
- Recess
- Counting bikes & peds
- Classroom activity breaks
- Bicycle interventions
- Sedentary behaviors

Our research is being used

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Why Boys Fail'

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USA TODAY interview

First lady says:
'Let's move'
on child obesity

Getting the program rolling: Michelle Obama helps students from Washington's Bancroft Elementary School harvest sweet potatoes from the White House garden Oct. 29.

By Alex Brandon, AP

Obama's mission: End problem in a generation

Today, the self-described "mom in chief" is launching Let's Move, a campaign to help other parents deal with a national health crisis she describes in epic terms.

The goal: to eliminate childhood obesity in a

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By Thomas Fra
USA TODAY

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- CDC: Communities Putting Prevention to Work ($200M)
- CDC: Community Transformation Grants ($100M)
- Health Dept capacity
- Foundation projects
- NIKE Designed to Move
- Urban Land Institute

How can I participate in ALR?

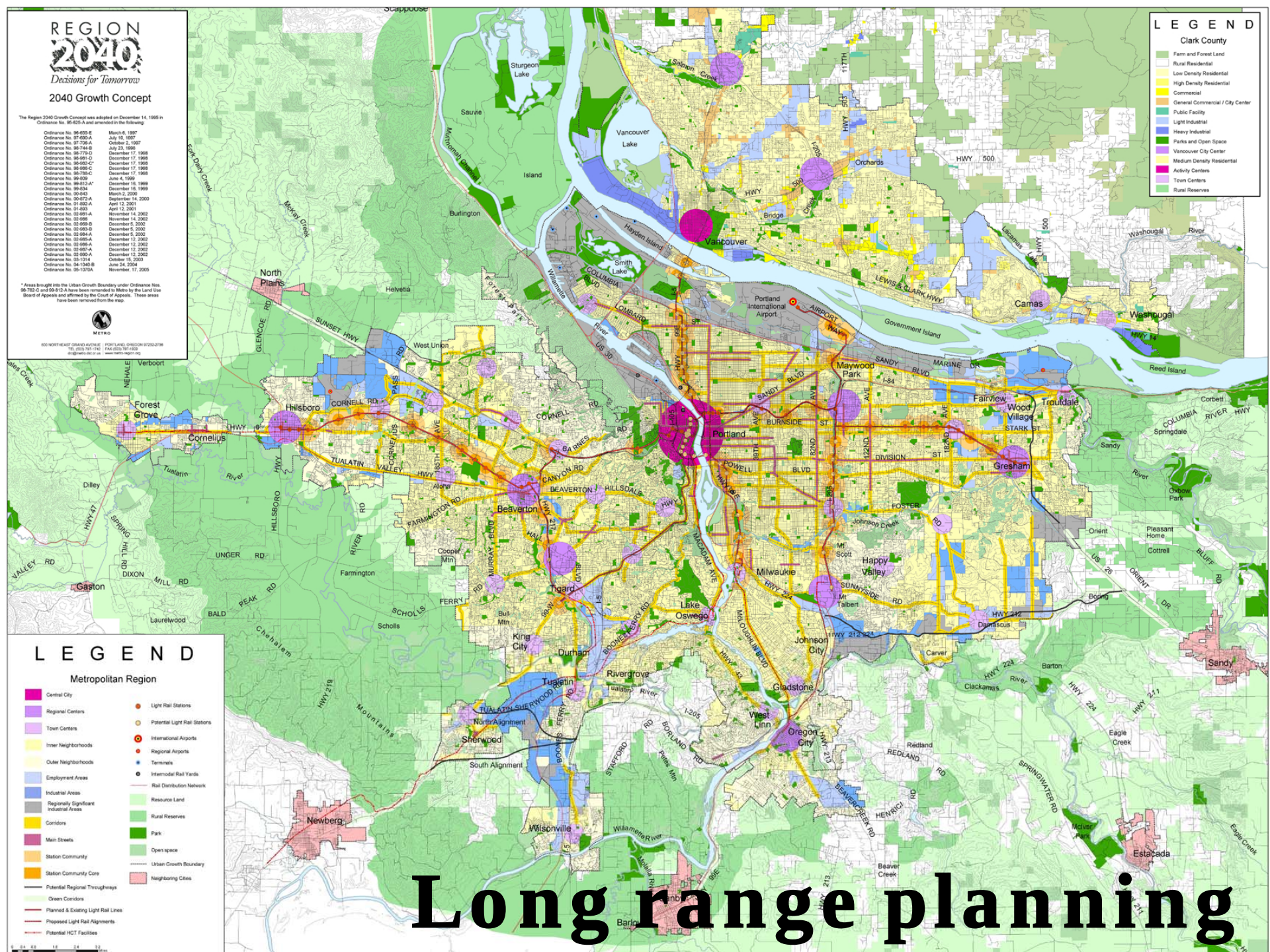
- Stay informed and interact through social media, MOVE! blog, webinars, newsletter
  - Write a guest blog for Move!
- Meet 20 new people during the conference & be open for new collaborations
- If practitioner, learn about and use evidence in your work
- If researcher, get study ideas from practitioners
- If researcher, do policy relevant research, and communicate your findings to lay audiences


Active Living Research 101: **Urban Planning & Transportation Perspective**

Jennifer Dill, Ph.D.

Portland State University

WHAT DO PLANNERS DO?


REGION 2040
Decisions for Tomorrow
2040 Growth Concept
The Region 2040 Growth Concept was adopted on December 14, 1995 in Ordinance No. 95-625-A and amended in the following:
Ordinance No. 96-655-E March 6, 1997
Ordinance No. 97-690-A July 10, 1997
Ordinance No. 97-706-A October 2, 1997
Ordinance No. 98-744-B July 23, 1998
Ordinance No. 98-779-D December 17, 1998
Ordinance No. 98-781-D December 17, 1998
Ordinance No. 98-782-C* December 17, 1998
Ordinance No. 98-786-C December 17, 1998
Ordinance No. 98-788-C December 17, 1998
Ordinance No. 99-809 June 4, 1999
Ordinance No. 99-812-A* December 16, 1999
Ordinance No. 99-834 December 16, 1999
Ordinance No. 00-843 March 2, 2000
Ordinance No. 00-872-A September 14, 2000
Ordinance No. 01-892-A April 12, 2001
Ordinance No. 01-899 April 12, 2001
Ordinance No. 02-951-A November 14, 2002
Ordinance No. 02-966 November 14, 2002
Ordinance No. 02-969-B December 5, 2002
Ordinance No. 02-983-B December 5, 2002
Ordinance No. 02-984-A December 5, 2002
Ordinance No. 02-985-A December 12, 2002
Ordinance No. 02-986-A December 12, 2002
Ordinance No. 02-987-A December 12, 2002
Ordinance No. 02-990-A December 12, 2002
Ordinance No. 03-1014 October 15, 2003
Ordinance No. 04-1040-B June 24, 2004
Ordinance No. 05-1070A November, 17, 2005
* Areas brought into the Urban Growth Boundary under Ordinance Nos. 98-782-C and 99-812-A have been remanded to Metro by the Land Use Board of Appeals and affirmed by the Court of Appeals. These areas have been removed from the map.
METRO
600 NORTHEAST GRAND AVENUE PORTLAND, OREGON 97232-2736
TEL (503) 797-1742 FAX (503) 797-1930
drd@metro.dst.or.us www.metro-region.org
LEGEND
Clark County
Farm and Forest Land
Rural Residential
Low Density Residential
High Density Residential
Commercial
General Commercial / City Center
Public Facility
Light Industrial
Heavy Industrial
Parks and Open Space
Vancouver City Center
Medium Density Residential
Activity Centers
Town Centers
Rural Reserves
LEGEND
Metropolitan Region
Central City
Regional Centers
Town Centers
Inner Neighborhoods
Outer Neighborhoods
Employment Areas
Industrial Areas
Regionally Significant Industrial Areas
Corridors
Main Streets
Station Community
Station Community Core
Potential Regional Throughways
Green Corridors
Planned & Existing Light Rail Lines
Proposed Light Rail Alignments
Potential HCT Facilities
Light Rail Stations
Potential Light Rail Stations
International Airports
Regional Airports
Terminals
Intermodal Rail Yards
Rail Distribution Network
Resource Land
Rural Reserves
Park
Open space
Urban Growth Boundary
Neighboring Cities
Long range planning

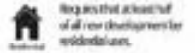

jiffy lube


ZUPANS
Belmont DAIRY


1. R1 to CN2
2. R1 to R1(NC)
3. R2 to CN2
3a. R2 to R2(NC)
5. CM to R2
5. R1 to R2
6. CM to CS
R1 to CS
R2 to
SE 122ND AVENUE REZONE PROJECT
An Implementation Measure of the SE 122nd Avenue Study
Recommended Draft - September 2012
Find more information at
www.portlandoregon.gov/bps
Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.
City of Portland, Oregon

What will the different zones look like?

Five of Portland's eight commercial zones are being considered for SE 122nd Avenue

	General Commercial	Neighborhood Commercial 2	Neighborhood Commercial 1	Storefront Commercial	Mixed Commercial/ Residential
	Commercial development designed for access by motor vehicles.	Meant for small sites near less dense residential neighborhoods. Designed for access by motor vehicles.	Meant for small sites near denser residential neighborhoods. Uses are limited to 5,000 sq. ft. to keep a local feel.	Meant to preserve or enhance older commercial areas that have a walkable, "storefront character."	Promotes development with commercial and housing uses on the same site. Residential uses are required.
Examples Built examples from around Portland					
Permitted Uses Uses that are always allowed					
Limited Uses Allowed, but with limitations, or subject to additional city review					
Building & Site Requirements	Height: MAX; FAR: 3 to 1; Lot Coverage: MAX; Parking required; Minimum landscaping required; Buildings; Site Plans	Height: MAX; FAR: .75 to 1; Lot Coverage: MAX; Parking required; Minimum landscaping required; Buildings; Site Plans	Height: MAX; FAR: .75 to 1; Lot Coverage: MAX; Parking NOT required; Minimum landscaping required; Buildings; Site Plans	Height: MAX; FAR: 3 to 1; Lot Coverage: MAX; Parking NOT required; Landscaping NOT required; Buildings; Site Plans	Height: MAX; FAR: 1 to 1; Lot Coverage: MAX; Parking NOT required; Landscaping NOT required; Buildings; Site Plans

The Pedestrian Network

Background

The pedestrian network is the system of private and public ways that pedestrians use to move through the outdoor environment. These routes should take people efficiently and comfortably from one destination point to another. They should be safe from moving vehicles and enjoyable to walk along. The pedestrian paths should be designed to safely accommodate pedestrians, bicyclists, and motorists.

This guideline may be accomplished by:

A. Providing safe, attractive, and convenient pedestrian connections and transitions from sidewalks to building entrances.

▼

Guideline E1:

Create an efficient, pleasant, and safe network of sidewalks and paths for pedestrians that links destination points and nearby residential areas while visually and physically buffering pedestrians from vehicle areas.

Main Entrances

Background

Entrances often establish the character for an entire building or complex. In successful project design the main entrance should be visible and inviting from the street. In pedestrian-friendly environments the best location for the front entry is directly off the street sidewalk and clearly visible from the street. Entrances set back from the sidewalk should have a well demarcated walkway leading to them.

In residential areas porches are ideal entries because they add interest and detail to the front facade of buildings and provide an outdoor area for people to use as an extension of their house. Porches also allow people to interact with their neighbors and watch the neighborhood for criminal activity.

Guideline D2:

Make the main entrances to houses and buildings prominent, interesting, pedestrian accessible, and transit-oriented.

Corners that Build Active Intersections

Background

Pedestrian paths cross at intersections where options for travel routes increase and views open down the streets. The design of the intersection, the orientation and placement of buildings, and the treatment of building corners can strengthen an intersection and contain and support increased activity. Sidewalk and street treatments, as well as street furnishings, also contribute to the success of the space.

This guideline may be accomplished by:

A. Providing access to the interior of the building at the corner.

▼

Guideline E4:

Create intersections that are active, unified, and have a clear identity through careful scaling detail and location of buildings, outdoor areas and entrances.

Parking Areas and Garages

Background

Vehicular access and parking areas should not be the dominant visual element in any development. This can be done by not locating parking areas in front of buildings or on corner lots where they are highly visible, limiting vehicular access across pedestrian paths and using landscaping to screen and visually break up large parking areas.

Parking needs to be within reasonable proximity of main entrances for convenience and to allow for informal surveillance. Parking garages should complement adjacent buildings and enhance the pedestrian environment.

Guideline D4:

Integrate parking in a manner that is attractive and complementary to the site and its surroundings.

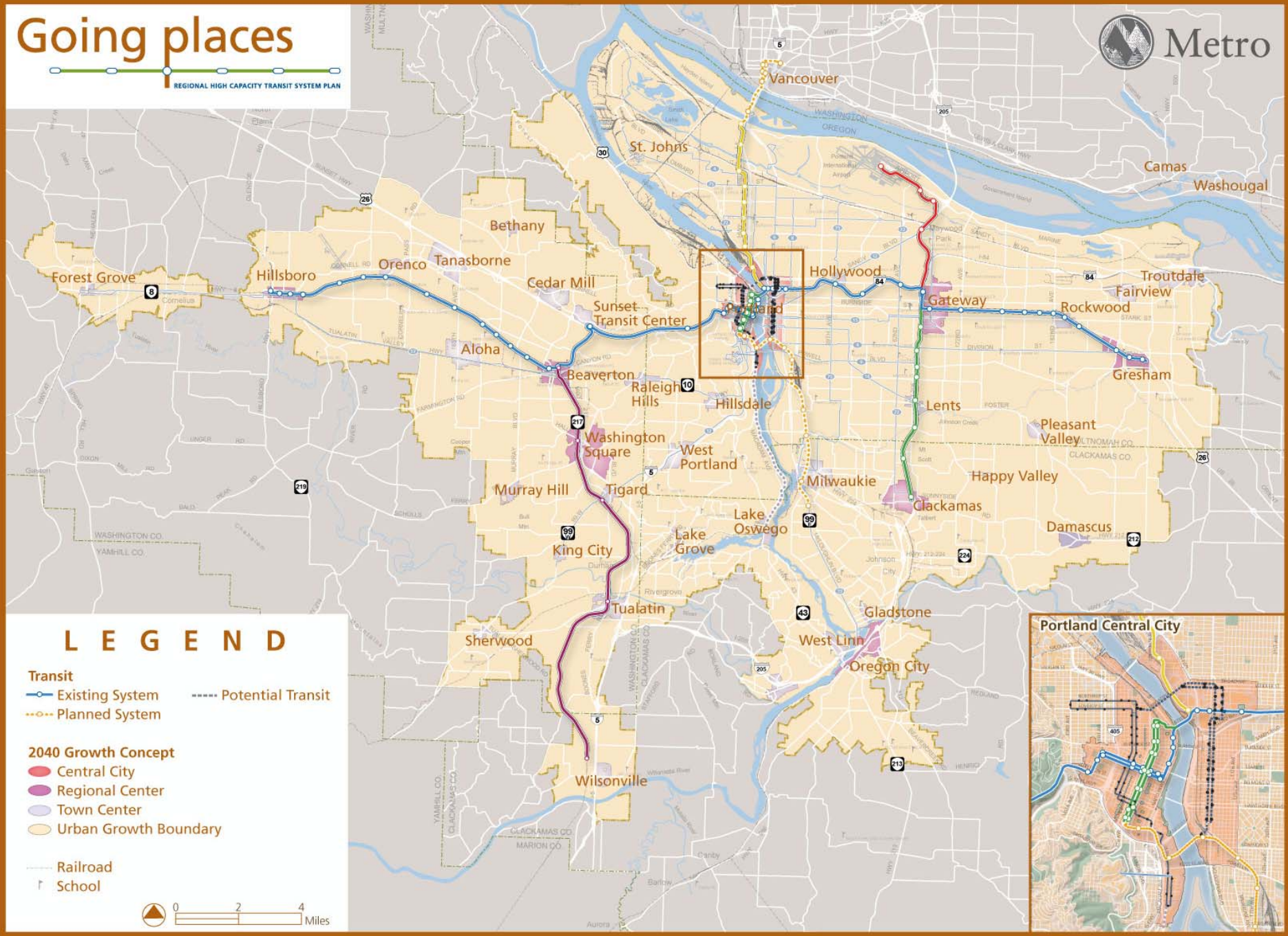
Locate parking in a manner that minimizes negative impacts on the community and its pedestrians.

Design parking garage exteriors to visually respect and integrate with adjacent buildings and environment.

Going places

REGIONAL HIGH CAPACITY TRANSIT SYSTEM PLAN

Metro



LEGEND

Transit

- Existing System
- Potential Transit
- Planned System

2040 Growth Concept

- Central City
- Regional Center
- Town Center
- Urban Growth Boundary

- Railroad
- School

0 2 4 Miles

City of Portland
Recommended Bikeway Network

AS ADOPTED
FEBRUARY 11, 2010

EXISTING, FUNDED, OR SUGGESTED BICYCLE FACILITIES

Trails
- Existing or funded trail
- Future trail

Separated in-roadway bikeways (bike lanes, buffered bike lanes, cycle tracks)
- Existing or funded bike lane or separated in-roadway
- Future separated in-roadway
- Future separated in-roadway or enhanced shared roadway
- Future separated in-roadway or advisory bike lane
- Future separated in-roadway, advisory bike lane, or enhanced shared roadway

Bicycle boulevards / advisory bike lanes
- Existing or funded bicycle boulevard
- Future bicycle boulevard
- Future advisory bike lane (suggested)
- Future enhanced shared roadway or advisory bike lane
- Future bicycle boulevard or advisory bike lane

Enhanced shared roadways
- Funded enhanced shared roadway
- Future enhanced shared roadway
- Future bicycle boulevard or enhanced shared roadway

For facility descriptions, please see Appendix G, Glossary, of the Portland Bicycle Plan for 2030.

1:48,200
1 inch = 3,600 feet
Miles
0 0.5 1
Contour interval 20 feet

COLUMBIA RIVER

CENTRAL CITY AREA

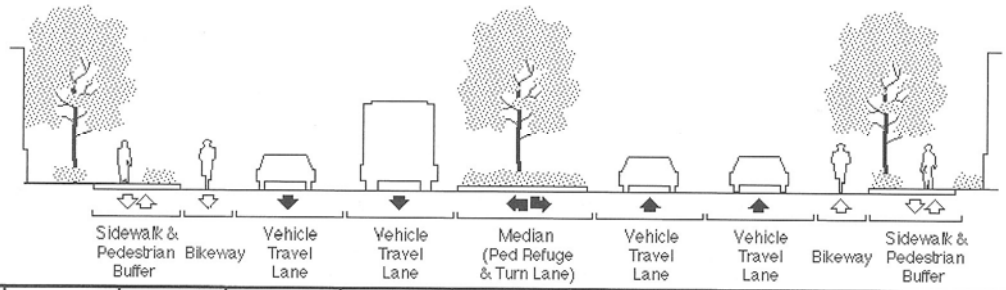
1:24,000
1 inch = 2,000 feet
Feet
0 1000 2,000
Contour interval 20 feet

Existing data layers, including the hillshade, USGS contours, parks and waterbodies, city and county boundaries, parks, and the ways are from the Metro RLIS data layers.
www.oregonmetro.gov

Portland Bicycle Plan for 2030

PORTLAND TRANSPORTATION

www



Regional Street

2040 Design District	Buildings Oriented Toward Street	Vehicle Travel Lanes	Vehicle Speed	Turn/ Median	Street Connect	Drive-ways	On-Street Parking	Transit Amenities	Pedestrian Amenities	Improved Ped Xings	Bikeways	Freight Function
Corridor, Some Main Streets, Inner Neighborhood, Outer Neighborhood	All major intersections and transit stops	Usually 4; add'l lanes in some situations	Moderate	Mix of medians and turn lanes that provide pedestrian refuge	Some to many	Few (combined when possible)	Allowed	High-quality service supported with amenities at major stops and station areas	Moderate sidewalk width with buffering; lighting and special crossing amenities tied to major transit stops	At signaled intersection	Striped or shared	Primary freight routes; provide access to markets and may include loading amenities within the right of way

Sidewalk Corridors Section A • Guidelines for Sidewalk Corridors

Table A-1 Recommended Widths for Sidewalk Corridor Zones

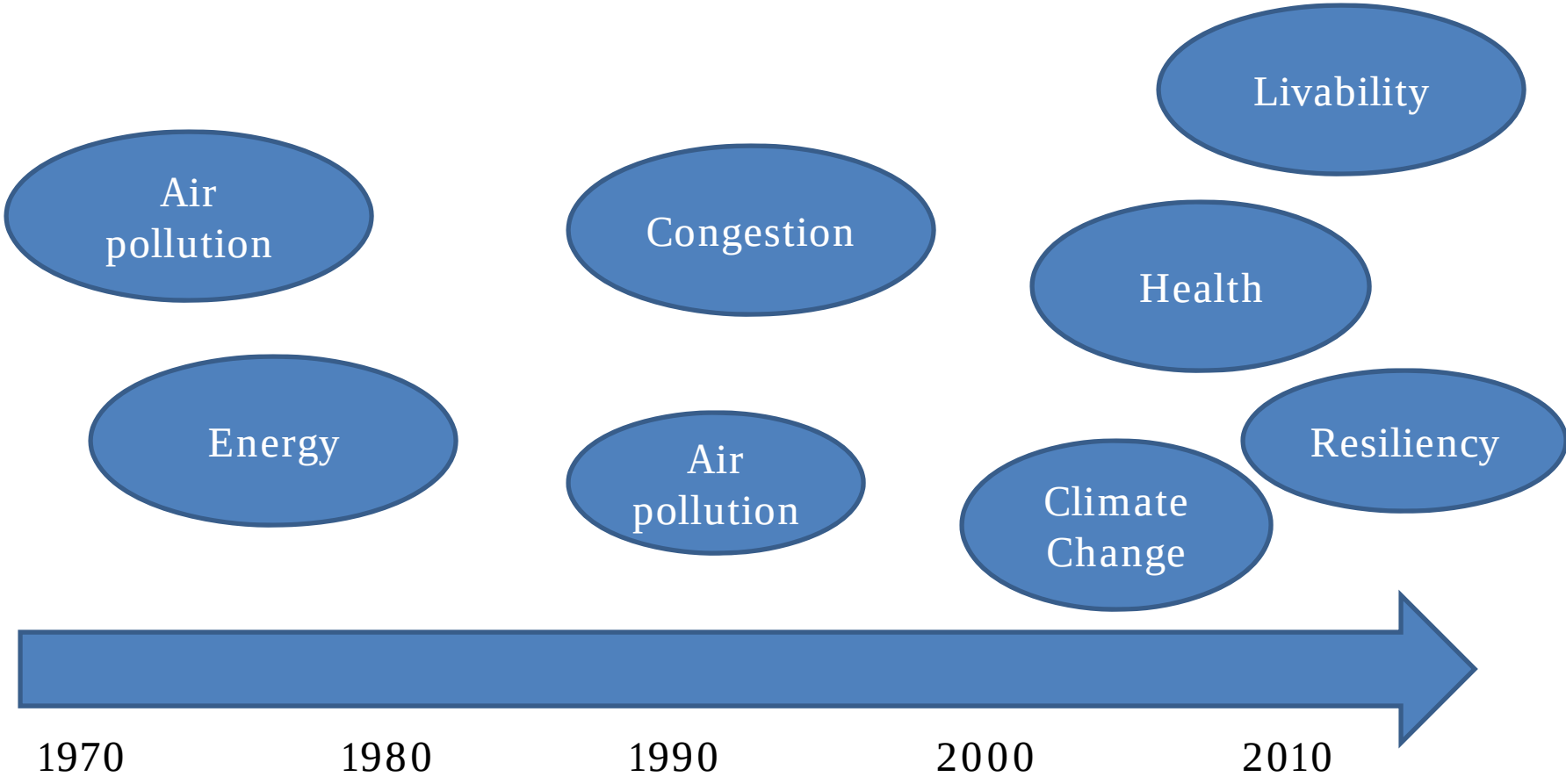
Sidewalk Corridor	Application	Recommended Configuration
4.6 m (15' - 0")	**Recommended** in Pedestrian Districts, especially for arterial streets or where ROW width is 24.5 m (80'-0").	 Curb Zone: 150 mm (0' - 6") · Furnishings Zone: 1.2 m (4' - 0") · Through Pedestrian Zone: 2.5 m (8' - 0") · Frontage Zone: 750 mm (2' - 6")
3.7 m 12' - 0"	**Recommended** for City Walkways, for local streets in Pedestrian Districts, and for streets where ROW width is 18.2 m (60'-0").	 Typical Commercial · Typical Residential Curb Zone: 150 mm (0' - 6") · Furnishings Zone: 1.2 m (4' - 0") · Through Pedestrian Zone: 1.9 m (6' - 0") · Frontage Zone: 450 mm (1' - 6")

Transportation system management and operations

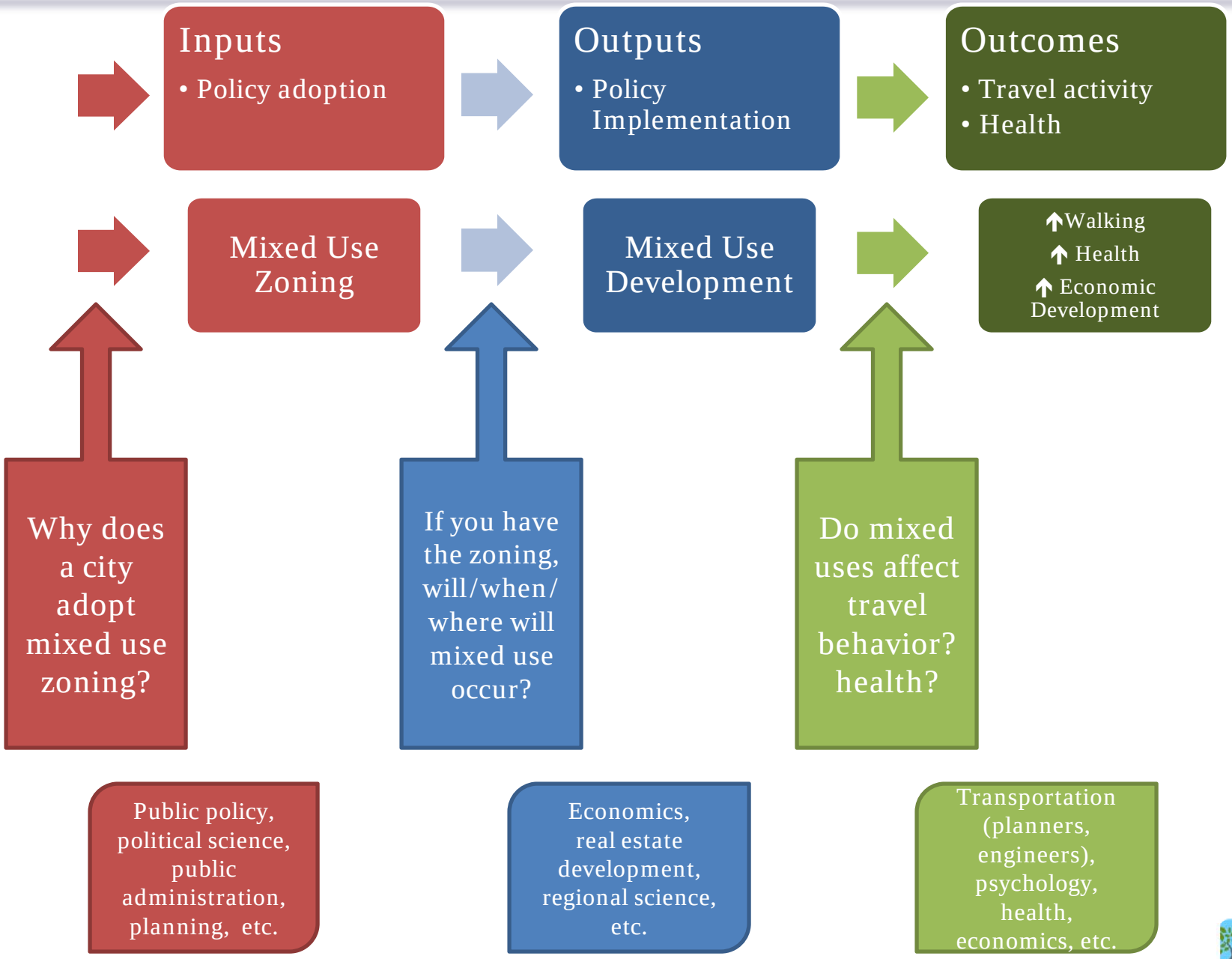
We don’t control everything

- Existing buildings, etc.
- The market: developers, bankers, etc.
- Politics
- Lack of regional planning
- Federal regulations

Multiple Objectives



PLANNING RESEARCH


Inputs
• Policy adoption
Outputs
• Policy Implementation
Outcomes
• Travel activity
• Health
Mixed Use Zoning
Mixed Use Development
↑Walking
↑ Health
↑ Economic Development
Why does a city adopt mixed use zoning?
If you have the zoning, will/when/ where will mixed use occur?
Do mixed uses affect travel behavior? health?
Public policy, political science, public administration, planning, etc.
Economics, real estate development, regional science, etc.
Transportation (planners, engineers), psychology, health, economics, etc.

Planning/transportation vs. health research

- Language
- Outcome measures (aka dependent variables)
- Data sources
- Funding sources
- Journal styles
- Databases

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LAND USE & URBAN DESIGN

Travel & the Built Environment Meta-Analysis

Table 4. Weighted average elasticities of walking with respect to built environment variables.

		Total number of studies	Number of studies with controls for self-selection	Weighted average elasticity of walking (e)
Density	Household/population density	10	0	0.07
	Job density	6	0	0.04
	Commercial floor area ratio	3	0	0.07
Diversity	Land use mix (entropy index)	8	1	0.15
	Jobs-housing balance	4	0	0.19
	Distance to a store	5	3	0.25
Design	Intersection/street density	7	2	0.39
	% 4-way intersections	5	1	−0.06
Destination accessibility	Job within one mile	3	0	0.15
Distance to transit	Distance to nearest transit stop	3	2	0.15

Table 3. Weighted average elasticities of VMT with respect to built-environment variables.

		Total number of studies	Number of studies with controls for self-selection	Weighted average elasticity of VMT(e)
Density	Household/population density	9	1	−0.04
	Job density	6	1	0.00
Diversity	Land use mix (entropy index)	10	0	−0.09
	Jobs-housing balance	4	0	−0.02
Design	Intersection/street density	6	0	−0.12
	% 4-way intersections	3	1	−0.12
Destination accessibility	Job accessibility by auto	5	0	−0.20
	Job accessibility by transit	3	0	−0.05
	Distance to downtown	3	1	−0.22
Distance to transit	Distance to nearest transit stop	6	1	−0.05

Ewing, R., & Cervero, R. (2010). Travel and the Built Environment. *Journal of the American Planning Association, 76(3), 265-294*

WALKABILITY

Measuring the Unmeasurable

Ewing, R. & Handy, S., Measuring the Unmeasurable: Urban Design Qualities Related to Walkability, *Journal of Urban Design*, Vol. 14. No. 1, 65–84, February 2009

Table 2. Summary of models[a]

Urban design quality	Significant physical features	Coefficients	*p*-values
Imageability	people (#)	0.0239	0.000
	proportion of historic buildings	0.970	0.000
	courtyards/plazas/parks (#)	0.414	0.000
	outdoor dining (y/n)	0.644	0.000
	buildings with non-rectangular silhouettes (#)	0.0795	0.036
	noise level (rating)	−0.183	0.045
	major landscape features (#)	0.722	0.049
	buildings with identifiers (#)	0.111	0.083
Enclosure	proportion street wall—same side	0.716	0.001
	proportion street wall—opposite side	0.940	0.002
	proportion sky across	−2.193	0.021
	long sight lines (#)	−0.308	0.035
	proportion sky ahead	−1.418	0.055
Human scale	long sight lines (#)	−0.744	0.000
	all street furniture and other street items (#)	0.0364	0.000
	proportion first floor with windows	1.099	0.000
	building height—same side	−0.00304	0.033
	small planters (#)	0.0496	0.047
	urban designer (y/n)	0.382	0.066
Transparency	proportion first floor with windows	1.219	0.002
	proportion active uses	0.533	0.004
	proportion street wall—same side	0.666	0.011
Complexity	people (#)	0.0268	0.000
	buildings (#)	0.0510	0.008
	dominant building colours (#)	0.177	0.031
	accent colours (#)	0.108	0.043
	outdoor dining (y/n)	0.367	0.045
	public art (#)	0.272	0.066

The role of attitudes

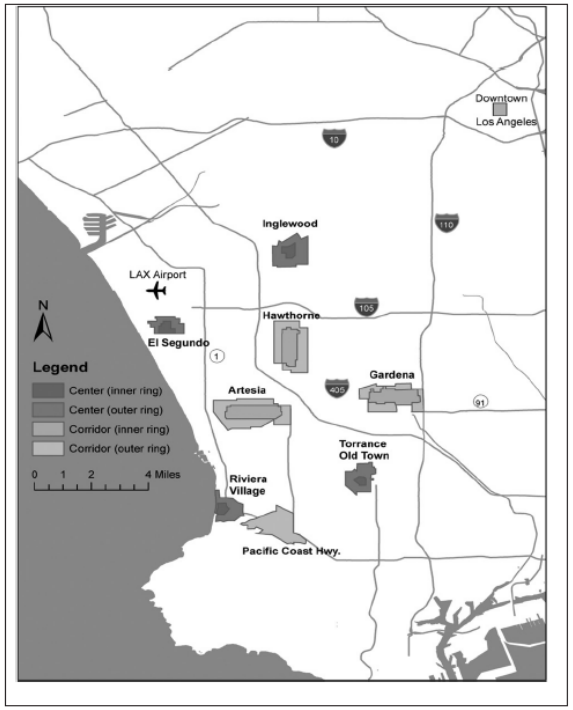


Figure 1. Map of South Bay study areas

	HIGH walk attitudes	LOW walk attitudes
Household with children	-	
Other race (excl. Hispanic, AA, Asian)		-
Female		-
Age, under 26		-
Age, 26-40		+
Foreign born status		-
Businesses per acre	+	
Violent crime rate		-
Intersection density		-

Joh, Kenneth, Mai T. Nguyen, and Marlon G. Boarnet (2012). "Can Built and Social Environmental Factors Encourage Walking among Individuals with Negative Walking Attitudes?" Journal of Planning Education and Research, 32(2), 219-236.

COMPLETE STREETS

Road Diets and Crashes

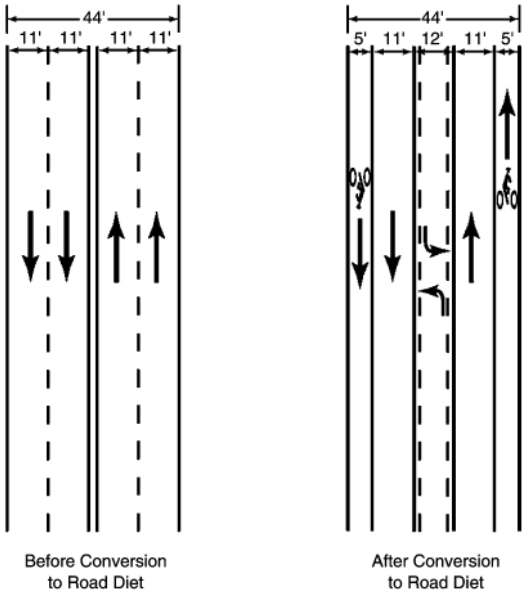


FIGURE 1 Representative road diet.

TABLE 3 Summary of Findings

Analysis Category	Comparison			
	Road Diets Before vs. After	Comparison Sites Before vs. After	"Before" Period Road Diets vs. Comparison Sites	"After" Period Road Diets vs. Comparison Sites
Crash Frequency	Reduction in "After" Period	No Change	No Difference	Road Diets Lower
Crash Rates	No Change	No Change	Road Diets Lower	Road Diets Lower
Crash Severity	No Change	No Change	No Difference	No Difference
Crash Type	No Change	No Change	Difference: 1. Road diets had a higher percentage of angle crashes 2. Road diets had a lower percentage of rear-end crashes	Difference: 1. Road diets had a higher percentage of angle crashes 2. Road diets had a lower percentage of rear-end crashes

Herman F. Huang, J. Richard Stewart, and Charles V. Zegeer (2002), Evaluation of Lane Reduction "Road Diet" Measures on Crashes and Injuries, *Transportation Research Record* 1784: 80-90

Do complete streets cost more?

"The volatility of the overall economy and the construction market affect project cost more substantially than adding features to a street..."

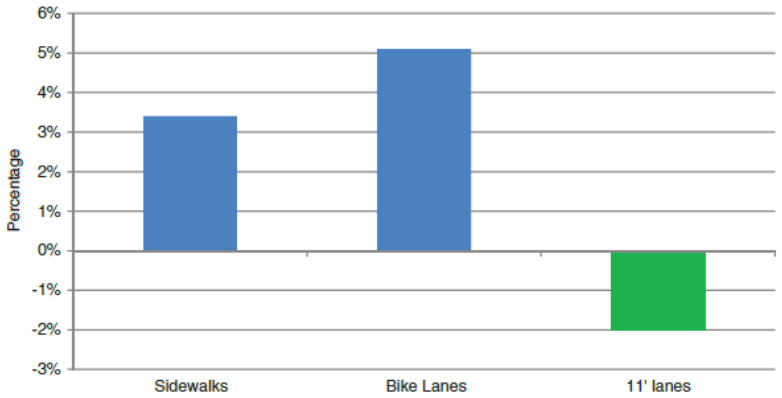


FIGURE 1 Percentage of costs for sidewalks and bike lanes per mile.

TABLE 3 Four-Lane Divided Streets with Curb and Gutter

Street Option	Construction Costs per Mile ($ millions)	Sidewalk (%)	Bike Lanes (%)	Lane Width (%)	Difference[a] (%)
12-ft lanes (75-ft F-F)	5.20	na	na	na	na
12-ft lanes + bike lanes (85-ft F-F)	5.60	na	4.9	na	5.0[b]
12-ft lanes + bike lanes + 5-ft sidewalk (85-ft F-F)	5.80	3.1	4.7	na	8.0[b]
11-ft lanes (71-ft F-F)	5.05	na	na	–2.8[c]	–3.0[c]
11-ft lanes + bike lanes (81-ft F-F)	5.40	na	5.1	–2.8[c]	2.5[b]
11-ft lanes + bike lanes + 6-ft sidewalk (81-ft F-F)	5.60	3.2	4.9	–2.8[c]	5.0[b]

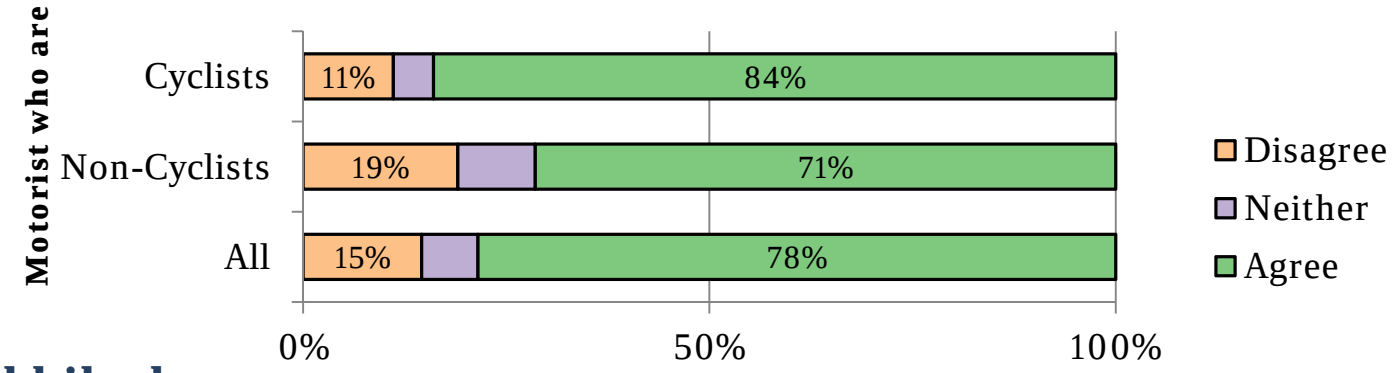
NOTE: Dimensions are measured face of curb to face of curb (F-F). F-F dimension includes standard gutter pan dimension of 2 ft for outside curb. Median dimension of 23 ft includes median curb and gutter.
[a]Rounded to nearest 0.5% for clarity.
[b]Positive costs.
[c]Negative costs.

James Shapard and Mark Cole, (2013) Do Complete Streets Cost More Than Incomplete Streets? *Transportation Research Record: Journal of the Transportation Research Board*, No. 2393:134–138.

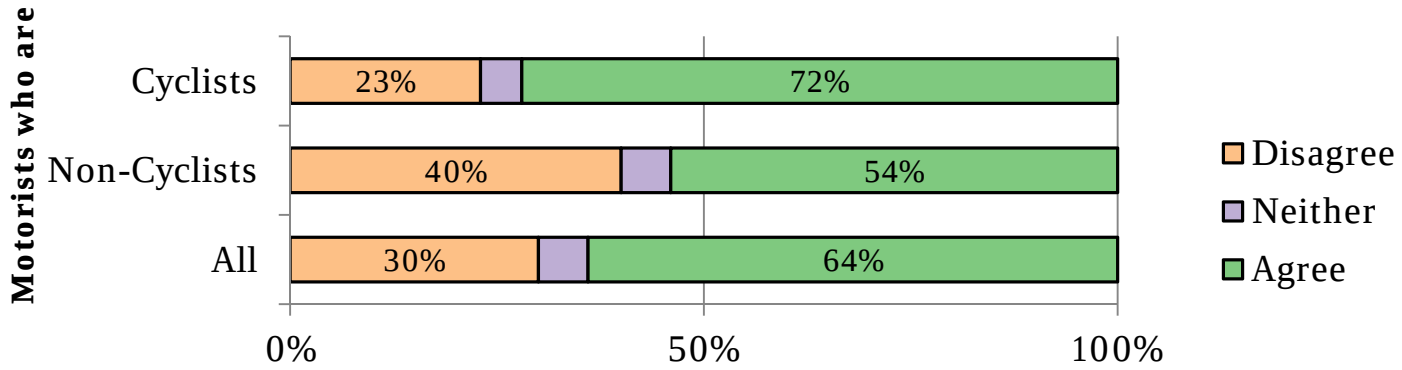
Motorists' Perceptions

I like that bikes and cars are more separated…

cycle track



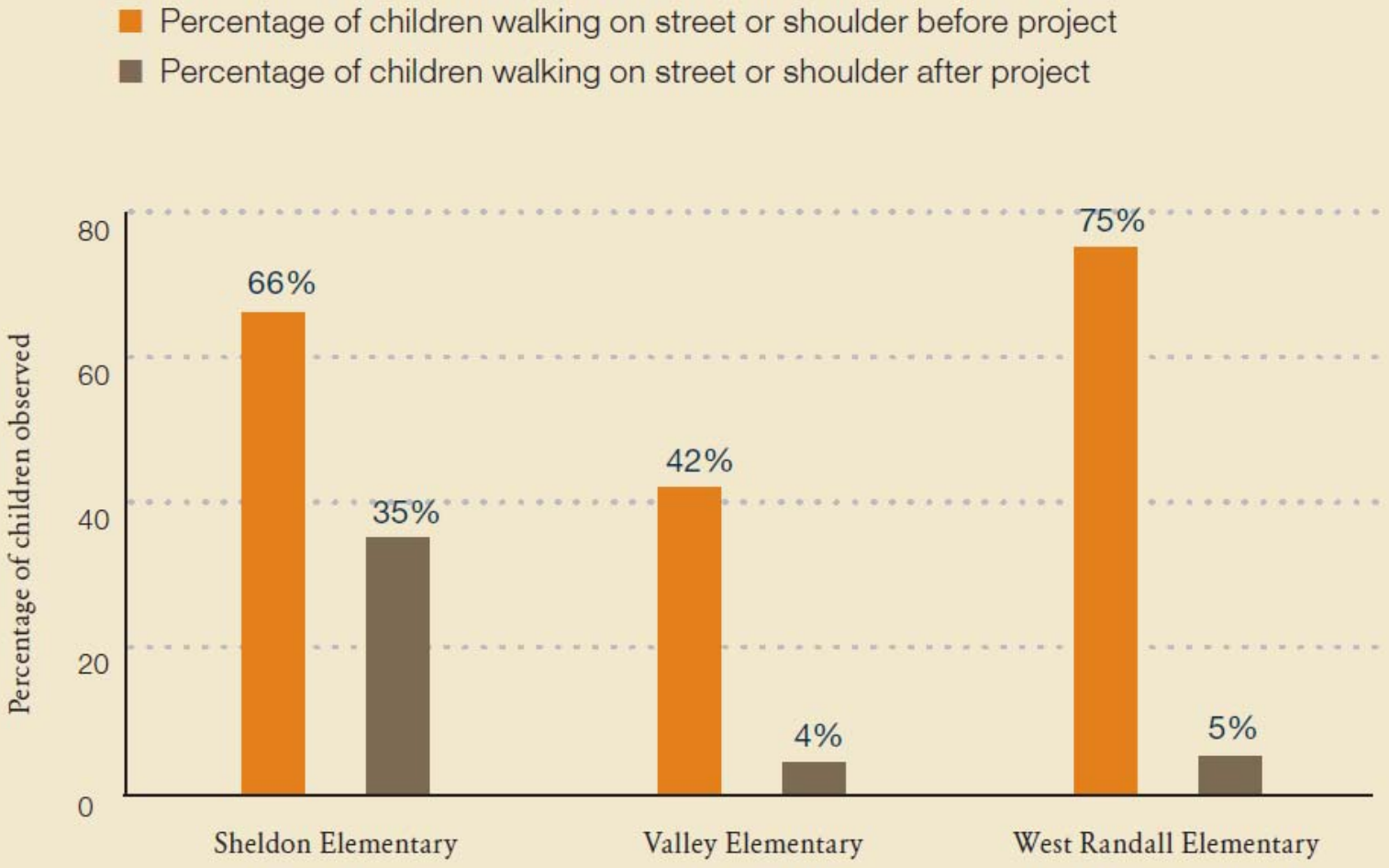
buffered bike lane



Chris Monsere, Nathan McNeil, and Jennifer Dill, "Multi-User Perspectives on Separated, On-Street Bicycle Infrastructure," *Transportation Research Record: Journal of the Transportation Research Board*, 2314: 22-30, 2012.

SAFE ROUTES TO SCHOOL

Change in children's walk location after sidewalk improvement[32]



Boarnet, M. G., Day, K., Anderson, C., McMillan, T., & Alfonzo, M. (2005). California's safe routes to school program - Impacts on walking, bicycling, and pedestrian safety. *Journal of the American Planning Association, 71(3), 301-317.*

Safety and School Travel: How Does the Environment Along the Route Relate to Safety and Mode Choice?

~1,000 5th and 6th graders in Toronto, Ontario

Traced route to and from school on a map

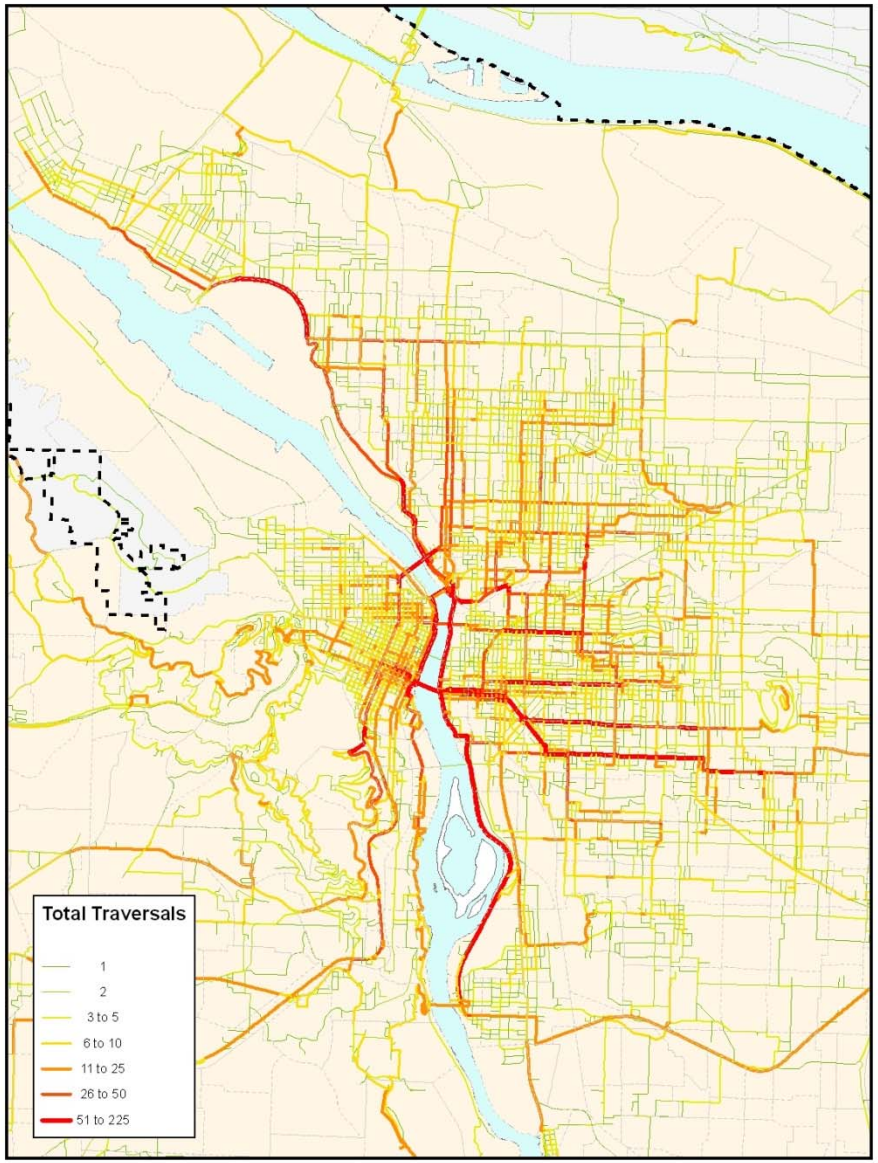
Parent survey

Effects on odds of walking...	TO school	FROM school
Boy	+	+
Vehicles per licensed driver	-	
Inner suburb location (vs. central city)	-	-
Distance to school	-	-
Intersections cross on route	-	-
Maximum traffic on route	-	
Missing sidewalks on route (%)	-	
Income of neighborhood		-
Parking at school	-	
Parental attitudes:		
Safe area to walk alone: (yes)	+	+
Fear of strangers (agree)	-	-
Busy streets to cross (strongly agree)	-	-

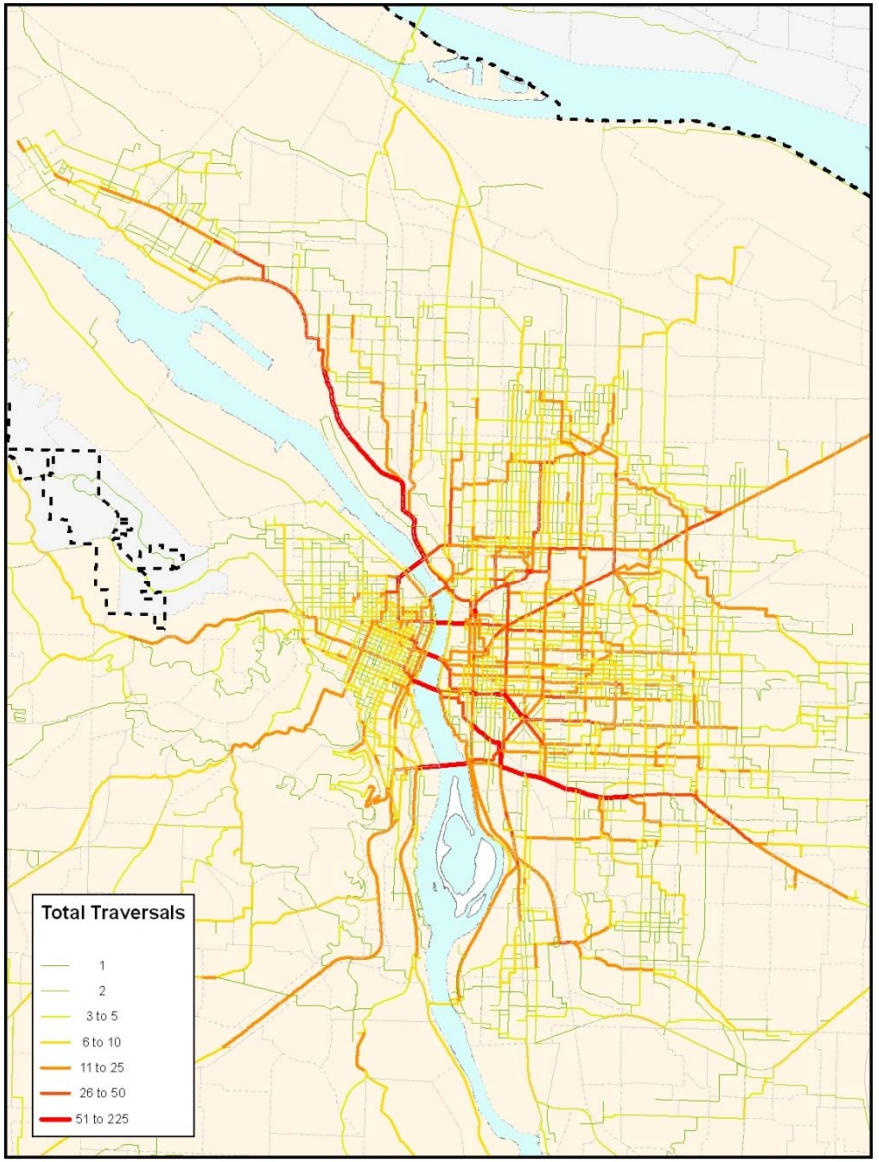
Larsen, K., Buliung, R. N., & Faulkner, G. E. J. (2013). Safety and School Travel: How Does the Environment Along the Route Relate to Safety and Mode Choice? *Transportation Research Record(2327), 9-18*

BICYCLING INTERVENTIONS

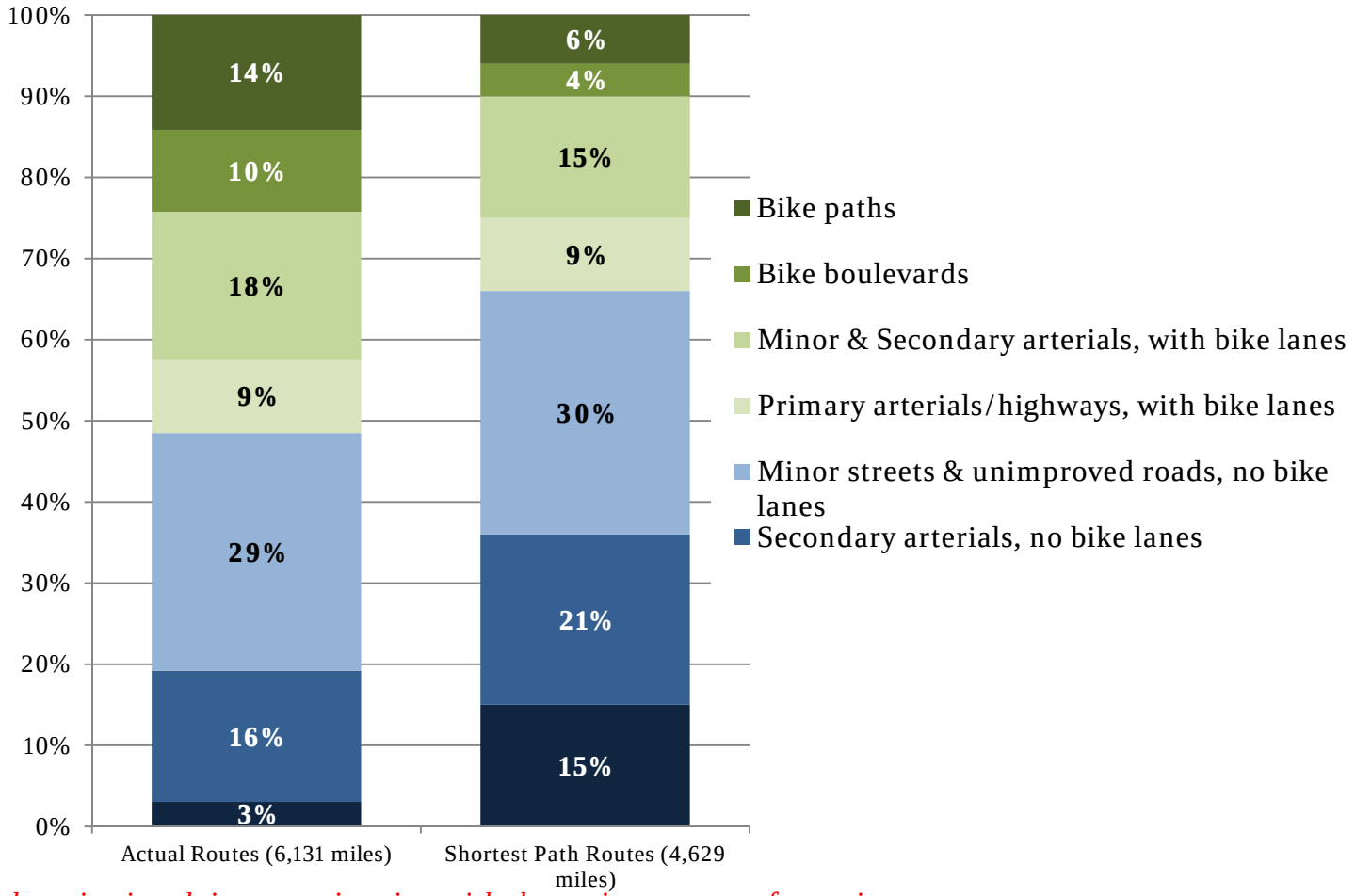
Actual Trips



Shortest Paths

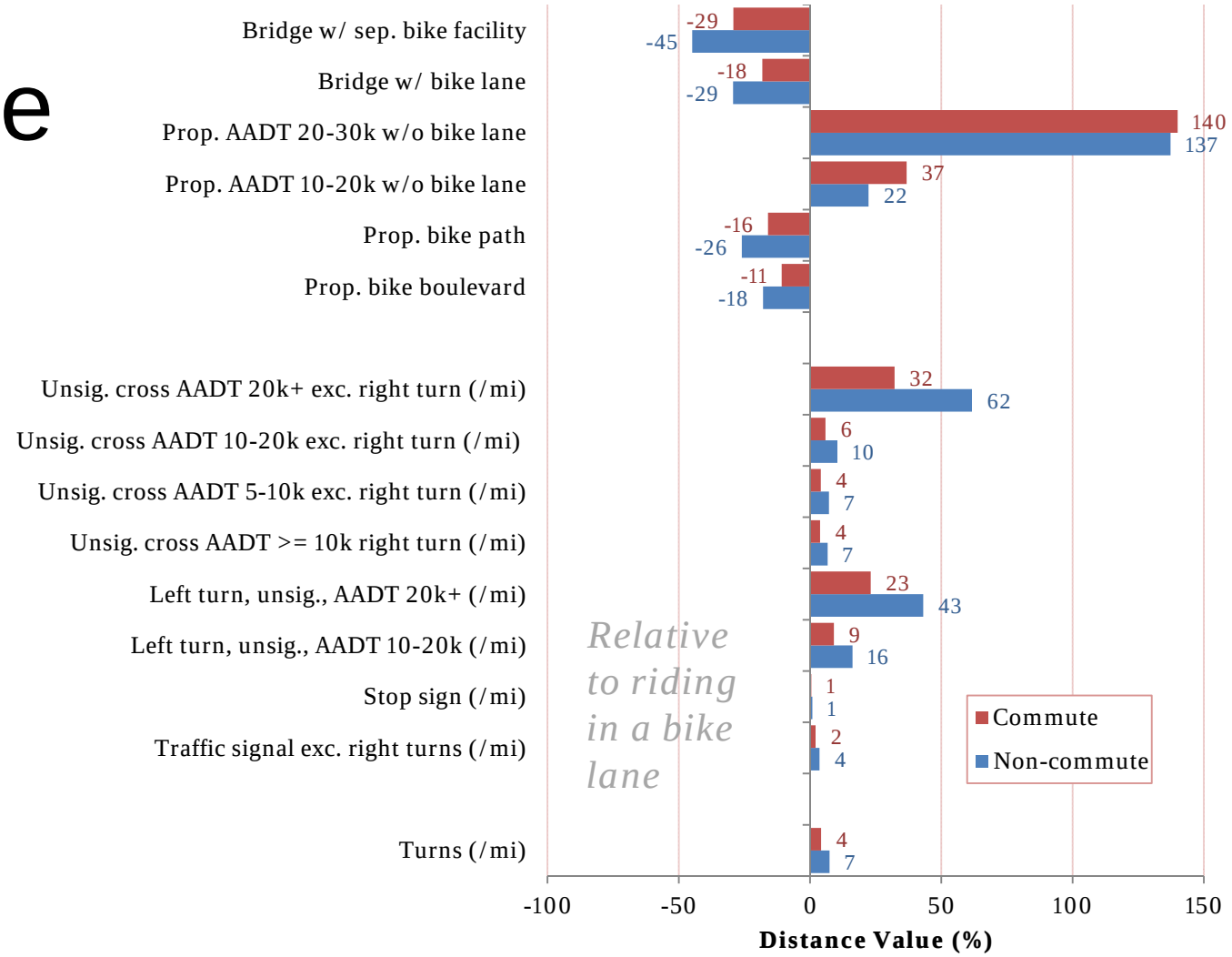


Cyclists are going longer distances to use bicycle infrastructure



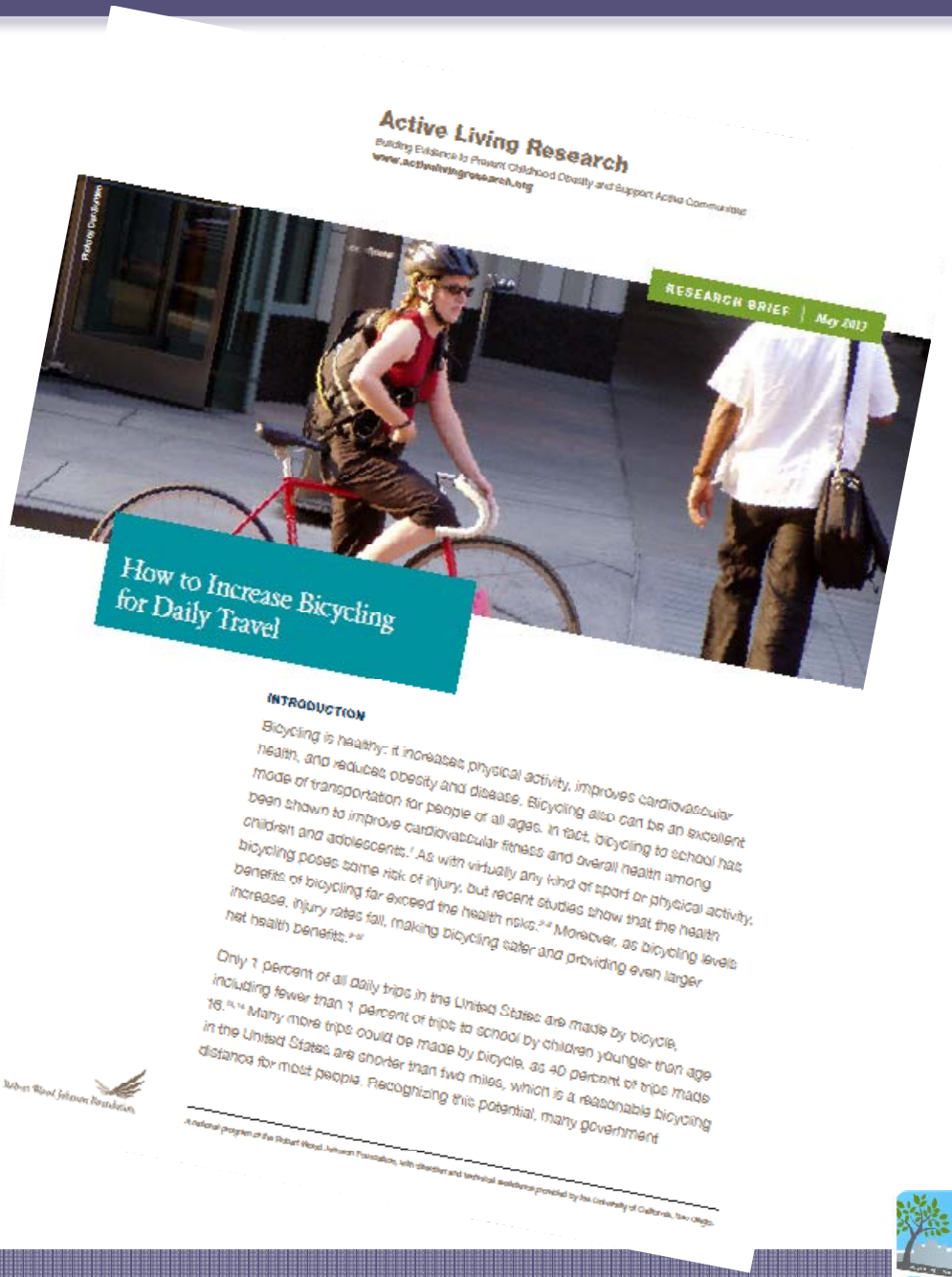
Excludes trips involving transit, trips with the main purpose of exercise, organized rides, and trips starting and ending at the same place

The Relative Value of Facilities



Joseph Broach, Jennifer Dill, and John Gliebe, "Where Do Cyclists' Ride? A Route Choice Model Developed with Revealed Preference GPS Data," Transportation Research-Part A. 46: 1730–1740, 2012.

ALR Research Brief



Concluding thoughts

- Planning & transportation as fields…
  - focus on practice
  - are inherently multi-disciplinary
- Multi-disciplinary collaboration is very important
  - Utilize the literature from different fields
  - Don’t forget the engineers!