Pedestrian Environmental Quality Index (P.E.Q.I.)

The PEQI is a quantitative observational tool that was originally developed in 2008 by the San Francisco Department of Public Health to assess the quality and safety of the physical pedestrian environment and inform pedestrian planning needs. Beyond assisting planning, PEQI campaigns can help build social capital and political visibility for neighborhoods and communities. The PEQI has two survey forms and gathers data in six categories: intersection safety, traffic, street design, land use, perceived safety and perceived walkability.

Since the urban fabric of San Francisco differs greatly from Los Angeles, UCLA COEH needed to adapt the original PEQI to better fit Los Angeles street conditions. The survey has also been translated into Spanish. To date, UCLA has implemented the PEQI with four Los Angeles community groups. Two of these groups have already lobbied for and received the safety improvements they sought; the other two groups are currently creating their advocacy campaigns using the findings from their PEQI data. See below for a summary of our work with an East Los Angeles community group, Proyecto Pastoral.

The **paper version** offers a low-tech option to the smart phone application. Everything needed to implement the **paper version** of the PEQI is below.

1. PEQI Full Protocol UCLA v2 (pdf)
2. Training Slides in English
2. Training Slides in Spanish
3. Intersection Form in English (pdf)
3. Intersection Form in Spanish (pdf)
4. Segment Form in English (pdf)
4. Segment Form in Spanish (pdf)
5. Intersection Form Coder's Version (pdf)
6. Segment Form Coder's Version (pdf)
7. Data Entry Spreadsheet with examples
8. Intersection Training Quiz
8. Intersection Training Quiz
9. Cheatsheet Field Guide in English
9. Cheatsheet Field Guide in Spanish

Please direct any questions about the UCLA PEQI to:
Christina Batteate cbatteate@ucla.edu
Photo credits: Christina Batteate and Elina Nasser

WALKABILITY

& PEDESTRIAN SAFETY IN BOYLE HEIGHTS

Using the Pedestrian Environmental Quality Index (PEQI)

History of Camino Seguro

In February 1999, residents of the Pico-Aliso community in Boyle Heights joined together with Proyecto Pastoral to create Camino Seguro ("Safe-Passage" in Spanish) to protect the safety of their children. Camino Seguro arose to combat the gang-violence crisis in Boyle Heights. People were afraid to go out on the street as shootings victimized adults, youth and children alike. The community came together to stand at street corners, schools and churches, held Peace Walks, met with elected officials and law enforcement asking for a response to the crisis. Today, gang-violence has subsided in Boyle Heights but residents are aware that if they don't maintain their efforts, violence can break out again. Camino Seguro has evolved with the community and in addition to providing escorts to children

Piloting the PEQI with community-members

WALKABILITY

Using the Pedestrian Environmental Quality Index (PEQI) for walkability and pedestrian safety in Boyle Heights

on their way to school and to cross dangerous streets, the program has expanded to address issues of environmental health, youth drug and alcohol abuse, preventing gang-activity and relieving post-traumatic stress from living with the many years of violence.

Community-Based Partcipatory Research

In 2009 Proyecto Pastoral teamed up with UCLA's Center for Occupational and Environmental Health (UCLA COEH) with support from The California Endowment to create the academic-community partnership ACCION. This partnership allowed UCLA COEH to fulfill its mandate to provide technical assistance to Los Angeles-area communities and offered Proyecto Pastoral the opportunity to develop their capacity to organize for positive environmental change in their service area.

At the outset of the partnership, focus groups determined that pedestrian safety and walkability were a priority for Proyecto Pastoral members. Walkability is a term used to describe how well a neighborhood lends itself to walking as a means of transportation for residents. It is often expressed as a function of sidewalk and roadway design and presence of pedestrian amenities such as crosswalks, lights and signs. Walkability is an important factor of the built environment that can have long-term impacts on health depending on its presence or absence. Walkable communities promote physical activity and lower-risk for obesity and other chronic diseases and also confer protection to pedestrians from physical harm.

Camino Seguro members' perceptions about the poor pedestrian safety and walkability conditions in their neighborhood were supported by statistical data collected by UCLA COEH. Boyle Heights' (10%) exceeds the Los Angeles City average (7%) for percent of collisions that involved pedestrians. Seventy-five percent of those collisions occurred in the daytime and thirty-nine percent injured a child or minor under 19 years of age. Furthermore, the intersection at 4th St and Gless St, identified by members as very dangerous, was found to be the third most dangerous intersection in Boyle Heights.

Community members collecting PEQI data

To assist Camingo Seguro in addressing walkability, UCLA COEH introduced and trained the members in how to implement the Pedestrian Environmental Quality Index (PEQI). The PEQI is a quantitative observational tool that allows users to assess pedestrian safety and needs, prioritize planning for future improvements and build social capital. The PEQI has distinct survey forms for intersections and street segments and gathers data in six categories: intersection safety, traffic, street design, land use, perceived safety and perceived walkability. All categories evaluated in the PEQI are based in current scientific research and have been reviewed by international experts on walkability. UCLA COEH adapted this tool specifically for use in Boyle Heights.

To implement the PEQI involved a time-consuming process and strong commitment from Camino Seguro members. Members chose the geographic area to be evaluated (see Figure 1). Members then were trained how to collect data using the survey forms. Following the

Collision Statistics	LA City	Boyle Heights
Total collisions	364,029	5,600
Pedestrian/vehicle collisions	25,565	562
% of pedestrians in collisions	7%	10%
# pedestrians in collisions	28,724	634
# pedestrians per collision	1.12	1.13
Pedestrian fatalities	664	12

Source: Los Angeles Department of Transportation 1994-2000

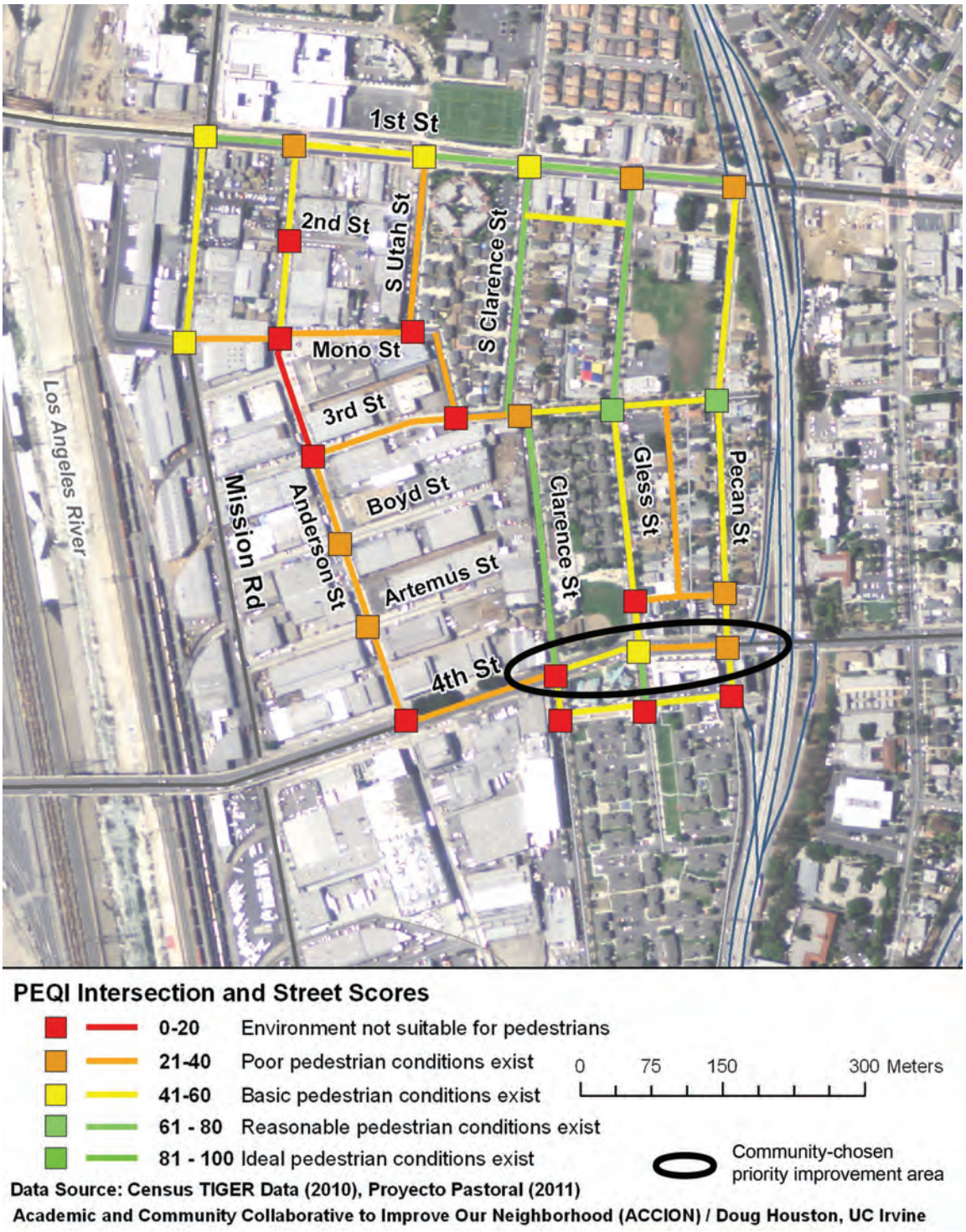


Figure 1 **Proyecto Pastoral PEQI results with priority area for improvement circled in black**

trainings, members took to the streets filling out surveys until their area was covered. Once the street surveys were complete, UCLA COEH calculated the street and intersection scores. Each category in the PEQI receives weighted scores based on their contribution to pedestrian safety and walkability. The final scores of the streets and are reflected in Figure 1.

The Path Forward

Once all the PEQI results were in, UCLA COEH and Proyecto members met to discuss the data and to decide where to focus initial improvements. Members were encouraged that the scientific data reflected their perceptions of problem areas and were proud to see their hard work validated in the maps. Using members on-the-ground experience,

Categories evaluated by the PEQI

Intersection Safety
- Crosswalks
- Countdown Signal
- Traffic Signal
- Crossing Speed
- No Turn on Red
- Traffic Calming Features
- Pedestrian Signs

Traffic
- Number of Lanes
- Two-Way Traffic
- Vehicle Speed
- Traffic Volume
- Traffic Calming Feature

Street Design
- Sidewalk Width
- Sidewalk surface
- Sidewalk obstructions
- Presence of Curb
- Driveway Cuts
- Trees, Gardens
- Public Seating
- Buffers

Perceived Safety
- Illegal Graffiti
- Litter
- Pedestrian-Scale Light
- Construction Sites
- Abandoned Buildings

Land Use
- Public Art
- Historic Site
- Retail

Perceived Walkability
- Visual Attractiveness
- Feeling of Safety
- Smells
- Noise
- Overall Walkability

Community members reviewing pedestrian statistics maps

Proyecto Pastoral member recommendations for improvement on 4th Street segment

1. Lights embedded in the crosswalk for increased pedestrian visibility
2. Installation of a crosswalk mid-block at 4th Street and Clarence street
3. Give more time to cross at crosswalk at 4th Street and Gless street
4. Enforce speed limit at 25 mph

UCLA COEH research and the community-collected PEQI results, members decided that 4th Street between the 101 freeway and Clarence street were in the most dire need of immediate improvement (see black circle in Figure 1). Through a consensus building and voting process members decided on the design recommendations in the chart below to make the 4th St segment safer for pedestrians.

Due to nearby Dolores Mission Church, School and Youth Technology Center an ideal means of funding these improvements is through collaboration with the local City Council District 14 office and Safe Routes to School funding. While Proyecto Pastoral will take the lead in applying for the Safe Routes to School funds, they recognize that longer-term changes will need to occur in their area to improve safety. Longer term change will focus on cleaning up the area's alleyways that are hot-spots for gang-activity and advocating for land use policy change that would mitigate pollution from industrial uses adjacent to homes and schools. With the continued commitment of Camino Seguro members, Boyle Heights is on its way to achieving a more healthy and safe environment for all.

This work was made possible by:

The California Endowment

Proyecto Pastoral at Dolores Mission

COEH Center for Occupational & Environmental Health

The University of California Let There Be Light UCLA

For more information visit www.coeh.ucla.edu or www.proyectopastoral.org

Pedestrian Environmental Quality Index: Los Angeles
Toolkit for Implementation

PEQI Full Protocol UCLA v2 Table of Contents

Additional Items Needed for the PEQI

can be downloaded from: http://www.coeh.ucla.edu/node/127

Data entry sheet	This MS Excel spreadsheet can be used to enter data from a PEQI data collection, so it can be analyzed.	see website
Training slides	This PowerPoint presentation can be used to train new PEQI data collection volunteers. (English & Spanish)	see website
Illustrated Guide —Cheatsheet"	This handout is useful during the training and for users while collecting data. (English & Spanish)	see website
Training Quizzes	These PowerPoint Intersection & Segment quizzes can help to refresh or reinforce your trainings.	see website
Original S.F. PEQI training guide & documentation	Document originally produced by the San Francisco Dept of Public Health to accompany the original PEQI.	See website
S.F. PEQI Summary	This is a brief description of the PEQI, from the San Francisco Department of Public Health, that can be useful for outreach.	See website

Glossary of Terms

Term	Definition
abandoned buildings	A building which appears to be uninhabited and uncared for, often with boarded windows and/or a temporary chain-link fence surrounding its lot.
additional pedestrian signage	any sign about pedestrians
bike lanes	A designated place for bikes to ride on the street.
bike racks	A designated place for bikes to park, usually a metal U-shaped object bolted to the sidewalk.
buffer	A distance of 2-3 feet between the pedestrian sidewalk and moving motor vehicle traffic. Often this is a grassy median, parallel street parking, and/or a bike lane.
bulbouts	Where the curb and sidewalk are extended into the street at an intersection in order to reduce the distance pedestrians have to cross (see picture).
chicanes	A type of traffic calming feature which creates a serpentine path down the street, slowing traffic (see photo).
construction sites	Anywhere that construction is impacting the quality of being a pedestrian on the street. May be on the street or sidewalk itself, or a nearby building/lot.
crossing speed	How fast a pedestrian must be moving in order to cross the intersection in the allowed time.
crossing time	The time pedestrians are allowed to cross the intersection by the signal.
Crosswalk	a designated place for pedestrians to safely cross the street, usually marked on the street surface in using paint
crosswalk scramble	A special type of signal where motor traffic stops in every direction while pedestrian traffic is allowed to go in every direction at once.
curb cuts	Where pedestrians exit the sidewalk to cross the street at an intersection, a curb cut is a part of the curb shaped like a ramp that allows wheelchair access.
curbs	A part of the street hardscape preventing cars from driving from the street onto the pedestrian areas.
drains & dips	In this case, any imperfection in the street surface which forces motor traffic to slow down. Particularly storm drains.
driveway cuts	Where the curb is broken in order to allow traffic to pass into and out of driveways

illegal graffiti	Graffiti is distinct from art (usually) because of its aesthetic qualities; it is informal and illegal.
Intersection	place where two streets come together.
Intersection identifiers	Unique identification numbers (or letters) used to identify each intersection in this PEQI study.
intersection length	The distance from one curb to the other across an intersection.
ladder crosswalks (aka zebra-stripe crosswalks)	Crosswalks with large stripes painted in them.
litter	Trash on the street and sidewalk.
major graffiti	Major graffiti includes large illegal graffiti, either mural-style or gang-style or otherwise.
margin	The part of the street hardscape in between the sidewalk and the motor vehicle area.
medians	A strip of land, usually landscaped, in between the two directions of traffic on a street.
mini-circles	A type of intersection where motor traffic moves around a small circle.
minor graffiti	Minor graffiti includes very small "tagging" on signs, posts, walls, and newspaper stands. It also includes graffiti stickers and small pieces of spray-painted graffiti.
no turn on red signs	A sign indicating that it is not legal to make a right-turn on a red stoplight at this intersection.
partial closures	Where motor traffic is prohibited from driving on part of the street segment.
pavement treatments	A different texture or color or material in the pavement at pedestrian crossing areas, designed to be aesthetically pleasing and hilight the safe area for crossing.
pedestrian	a person who is on foot or is using a wheelchair to move down the street.
pedestrian refuges	A place where pedestrians can safely wait to cross all or part of a street. Often these are place on medians at large streets.
pedestrian signal	part of a stop light that tells pedestrians when they have the right-of-way
pedestrian-scale street lighting	Street lighting that illuminates the pedestrian areas of the street (does not include the large overhead lights that are intended to illuminate the motor vehicle part of the street).
perceived walkability	Your overall impression of how much the physical environment supports and encourages walking on this street segment.

permanent sidwalk obstruction	Any obstruction which cannot be removed readily, such as a large pole or fence.
planters/gardens	In this case, any well-tended landscaping should be counted as a garden or planter.
public art/historical sites	Any attractive public artwork, fountain, historical site, or historic building on this street segment.
public seating	A bench or other seating designed to be used by the public, including bus stop benches.
right-of-way	Laws and conventions governing who has precidence, or the right to proceed first through traffic lights and other traffic settings.
roundabouts	A type of intersection where motor traffic moves around a large circle.
rumble strips	A pavement treatment which makes noise when it's driven upon, alerting motorists to be aware.
Segment, or street segment -	this is the part of a street in between two intersections.
semi-diverters	Barriers preventing the movement of motor traffic in certain directions only; for example bollards which prevent a right turn at an intersection.
sidewalk	The part of the street hardscape that is designed for pedestrian use.
sidewalk impedement	Anything in the surface of the sidewalk that might obstruct a pedestrian's smooth motion down a sidewalk or pose a tripping hazard.
sidewalk obstruction or large sidwalk obstruction	any object which reduces the width of the sidewalk so that two people could not walk side-by-side past it, or that reduces the overhead clearance so that someone would have to duck to pass under it.
sidewalk surface condition	The smoothness of the surface of the sidewalk.
signal	traffic light
speed enforcements	Any sign or other special reminder/enforcement of the speed limit.
speed humps	A bump or hump in the street designed to slow motor vehicles down.
speed limit	The maximum allowed speed on this street.
speed tables	A sidewalk which is built on top of a wide speed bump.
stop light	The electronic signal directing traffic at an intersection; always includes signals for motor traffic. May also include signals directing pedestrian traffic.

stop signs	A sign indicating that motor traffic must come to a stop at an intersection.
storefront/retail use	Any retail establishment whose entrance is on the street segment.
Street segment identifiers	Unique identification numbers (or letters) used to identify each street segments in this PEQI study.
stride length	The number of feet in each of a person's steps.
temporary sidewalk obstruction	Any obstruction which could be removed easily, such as a car, trees and shrubs, or temporary construction.
traffic calming feature	any street feature which slows the speed of traffic, increases dirver awearenes, increases pedestrian visibility, or provides extra safety for pedestrians.
two-way traffic	Traffic that moves in two directions on the street (as opposed to one-way traffic)
vehicle lanes	Lanes are designated to keep motor traffic orderly. They do not need to be painted on the street to be counted. Do not count dedicated turning lanes.
visually attractive	Your overall impression of how visually attractive the street segment is.
Walkability	the physical environment's ability to support and encourage walking.
width of sidewalk	The measured width of the sidewalk in feet and inches. It should be measured at the middle of the block, not at the intersections where it is often much wider.

Data collection protocol

This document explains how to collect the PEQI instrument in a new study area. It includes a complete step-by-step description of how to scope and plan a new project.

Introduction to the PEQI instrument
What it is and what it can do for your community.

The Pedestrian Environmental Quality Index (or "PEQI") is a survey of the street environment from the perspective of pedestrians. This survey allows a community to collect specific data about the elements of the physical environment that determine "walkability" of their neighborhood. It's based on trained observers who fill out a set of specific questions about the elements they see on each block and intersection in your study.

This information can be aggregated to produce an index of walkability, known as the PEQI. Some examples of the data that are captured are displayed on a map and shown below.

Data about walkability can be used to identify priority areas for improving the walkability of an area. Either the individual data elements or the index, or both together, can be used to show what elements and what specific streets/intersections need the most help.

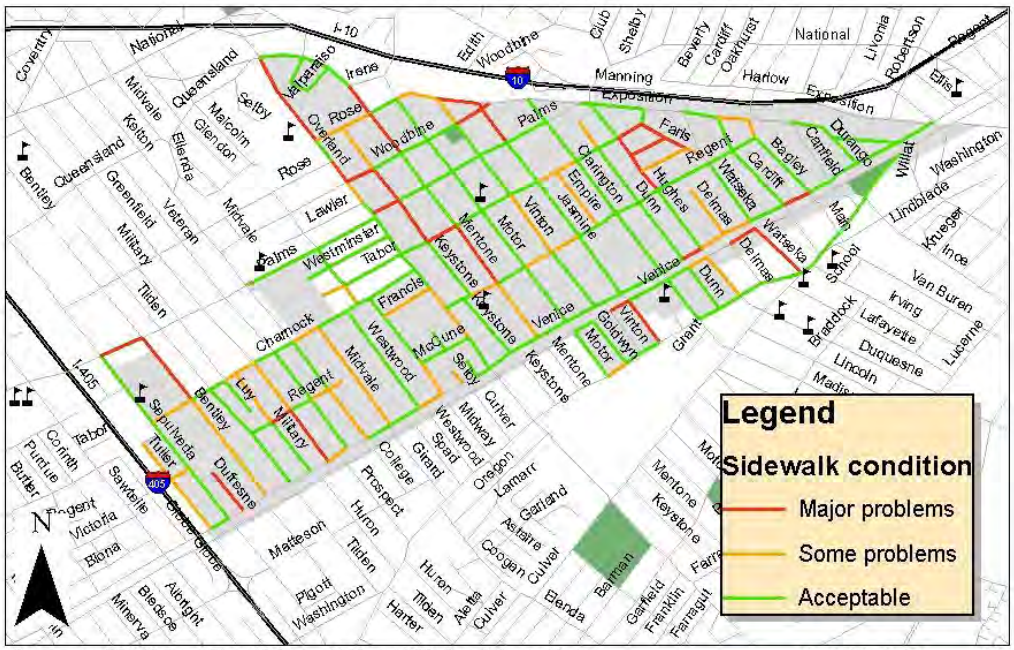
The PEQI is designed to be collected by volunteer data collectors. This toolkit includes a training to instruct data collectors in how to fill out each of the items on the form on each block and intersection in your study area. It also includes the form itself.

PEQI was developed in 2008 by the San Francisco Department of Public Health. The original survey instrument and materials about its development are available at their website: http://www.sfphes.org/HIA_Tools_PEQI.htm

The PEQI was modified for use in Los Angeles by Malia Jones, MPH. Key changes were made to the original instrument in order to make it applicable to the Los Angeles Environment.

Sidewalk Condition

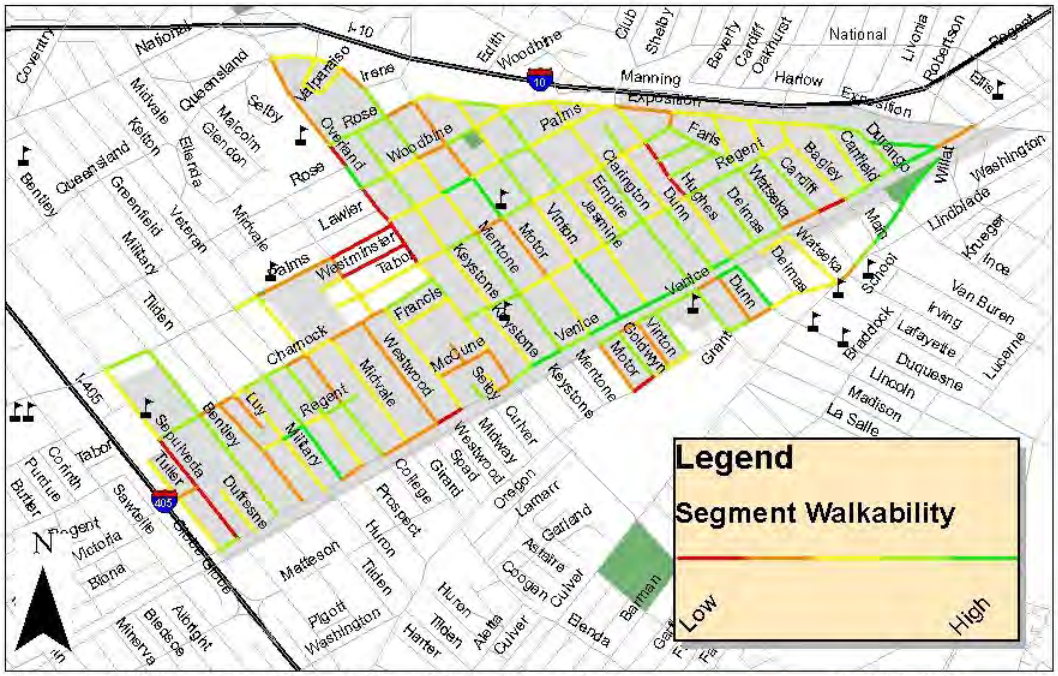
Pedestrian Environmental Quality Assessment, 2009



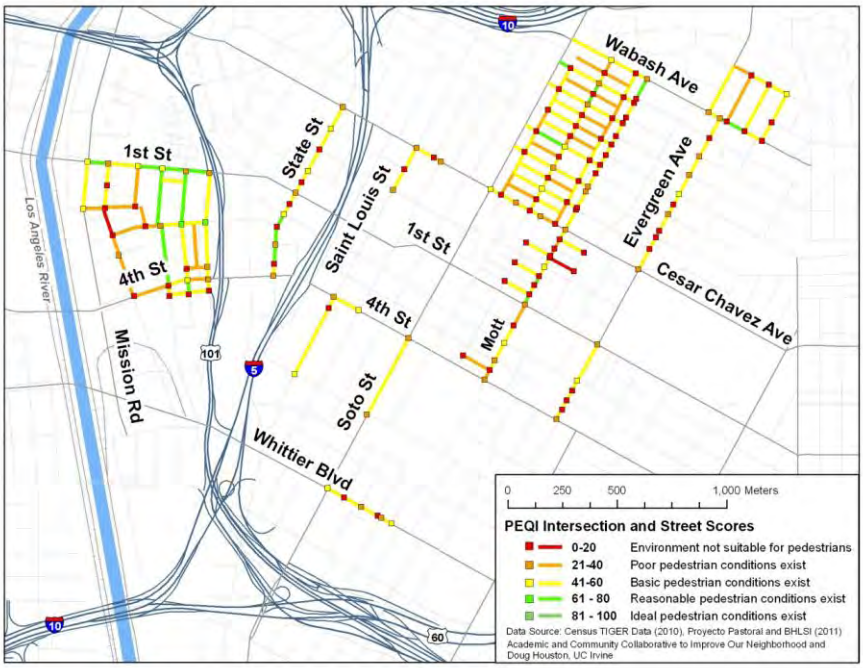
Data source: ESRI Tigerline Files, US Census 2000, and PEQI Data Collection Project
Map created by Malia Jones

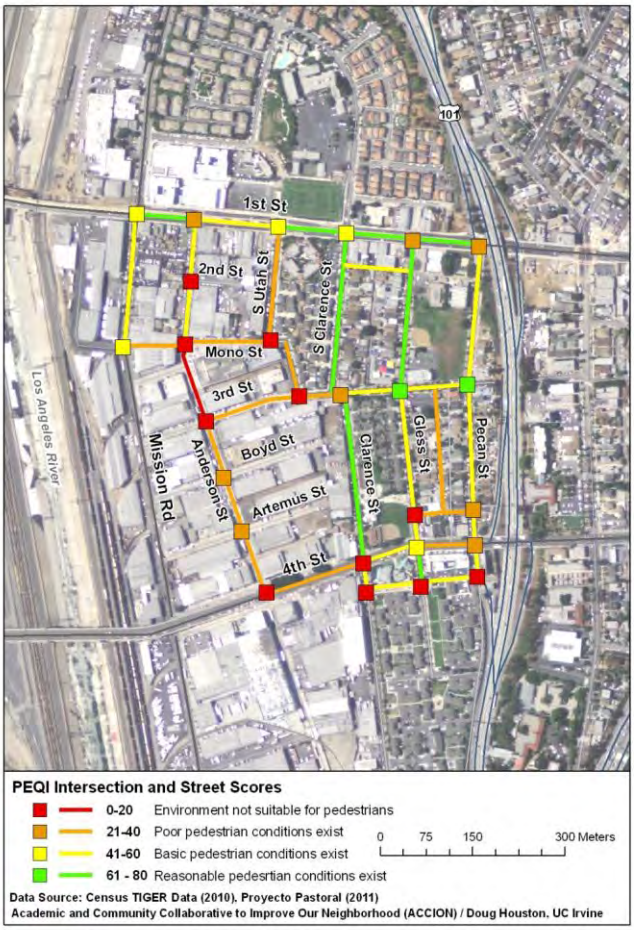
CJ Walkability Index--Segments

Pedestrian Environmental Quality Assessment, 2009



Data source: ESRI Tigerline Files, US Census 2000, and PEQI Data Collection Project
Map created by Malia Jones


Wabash Ave
1st St
State St
Saint Louis St
1st St
Evergreen Ave
4th St
Cesar Chavez Ave
4th St
Mott
Mission Rd
Soto St
Whittier Blvd
Los Angeles River
10
101
5
60
0 250 500 1,000 Meters
PEQI Intersection and Street Scores
0-20 Environment not suitable for pedestrians
21-40 Poor pedestrian conditions exist
41-60 Basic pedestrian conditions exist
61 - 80 Reasonable pedestrian conditions exist
81 - 100 Ideal pedestrian conditions exist
Data Source: Census TIGER Data (2010), Proyecto Pastoral and BHLSI (2011)
Academic and Community Collaborative to Improve Our Neighborhood and Doug Houston, UC Irvine


101
1st St
2nd St
S Utah St
S Clarence St
Mono St
3rd St
Boyd St
Anderson St
Mission Rd
Los Angeles River
Artemus St
4th St
Clarence St
Gless St
Pecan St
PEQI Intersection and Street Scores
0-20 Environment not suitable for pedestrians
21-40 Poor pedestrian conditions exist
41-60 Basic pedestrian conditions exist
61 - 80 Reasonable pedesrtian conditions exist
0 75 150 300 Meters
Data Source: Census TIGER Data (2010), Proyecto Pastoral (2011)
Academic and Community Collaborative to Improve Our Neighborhood (ACCION) / Doug Houston, UC Irvine

Step 1. Scoping
What is the area we will study?

First thing, you should go out onto a nearby block with the PEQI form and a pencil and try to complete it. This will give you a very good sense of what is involved with the form and what you will need.

Once you have a sense of what is on the form, the first step in performing a PEQI assessment in your neighborhood is to identify the area of study—that is, what blocks and intersections will we need to capture data about? When deciding what area to include in your assessment, think about the following:

- What areas do key stakeholders want data about? What are our priority areas? What areas are most amenable to change?
- How many volunteers will I have? How much time will they have to give?
- How much time do I have to spend organizing the project?

The PEQI is best collected by teams of at least 2 volunteers working together. Each team can probably collect about 1/2 linear miles of street in one data collection session, lasting between 2 and 4 hours. So if you decide to capture 3 linear miles of street, you will need to have 12 volunteers at your data collection event.

3 miles / ½ miles per team = 6 teams of at least 2 people = 12 people

Mark out the study area on a map. It can be helpful to draw on the map what areas you will assign to each data collection team to give you a sense of how many volunteers to recruit.

Step 2. Tailoring the survey
What is unique to my area?

In this step, talk with your stakeholders to learn what walkability means to them in your study area. Are there specific problems they are concerned about? For example, in a recent project in Carson, CA, residents were concerned about whether pedestrians had enough time to cross wide streets.

Read through the PEQI forms to see if these important areas are captured. If they are not, you may want to modify the form to include new elements. Ask additional questions of your volunteers. For example, in Boyle Heights, we asked volunteers to note the number of idling trucks they passed as they walked down each block. Each new question should ask about ONLY ONE thing—don't bunch multiple ideas into one question. It should have specific, well-defined answers printed on the form to make it as simple as possible for your data collectors to answer. It's well worth pilot testing your new questions on a few people to make sure they are easy to understand and answer.

Don't add too many items or your data collectors will get tired and be unable to finish.

We do not recommend deleting items. This could lead to a situation where you can't use the formulas for calculating the indexes because you did not collect some parts of the formulas.

Step 3. Planning the data collection

Next you will need to plan your volunteer training and data collection event.

Logistics
You will need to print enough PEQI forms to have one for every intersection and segment in your study. The PEQI form is divided into two parts. There is one part for each intersection and a second part for each street segment. The segment form can be completed once for *each side* of the street *OR* once for the *worse side* of the segment. We recommend that you print the forms on different colored paper to help your volunteers keep them separated. Note that you will need twice as many street segment forms as you have street segments, if you choose to evaluate *both sides* of the segment.

In addition to forms, each team will also need:

- 1 clipboard
- Pencils
- 1 tape measure, at least 12 feet long
- 1 stop watch
- Nametags

Training takes two hours. Data collection usually takes between 2-4 hours for each ½ mile segment (including the intersections). We have performed training from 10 am – 12pm, followed by a break and lunch, followed by the data collection event in the afternoon. This works fairly well. We have also conducted an evening training, followed by morning data collection. It is important to conduct data collection soon after your training, to make sure your volunteers remember how to fill out the forms.

You may want to consider the liability situation of your study. When the first Neighborhood Council (NC) project was completed in 2009, NC events were covered by the City of Los Angeles' liability policy. Your situation might be different.

Assigning your study area to teams
It is extremely important that your data collectors accurately identify the street segment or intersection they are assessing on each and every form they fill out. In fact this is the most important thing they will do. If they don't identify them well, you'll get a pile of forms back that cannot be attached to individual streets. This is useless.

How do you identify segments and intersections? Label each street segment in your study area with its own unique number, and each intersection with its own unique letter. It is helpful to write them on a map.

Assign a set of segments and intersections to each team. You should do this in advance of the training, because it takes some time to complete. Try to divide the study area evenly across your teams according to how much distance they will have to cover. For example:

Team #	Intersections	Segments
1	a, b, c, d	1, 2, 3, 4, 5
2	e, f, g, h	6, 7, 8
3	i, j, k	9, 10
4	l, m, n, o, p	11, 12, 13, 14, 15

Prepare a map for each team indicating which street segments and intersections they will be responsible for. You may even want to fill in the segment and intersection ID's on the forms they will use, and include these in a packet that you will give to the team.

Step 4. Training your volunteers

Use the included PowerPoint presentation to train your volunteers. The first section is about walkability and why it is important for health. The second section, which is much longer, goes through each item on the PEQI form one at a time, providing instructions about how to answer the questions. At the end of training, you should lead your volunteers to a nearby block and have them complete one full set of practice forms. Stand nearby to answer questions as they come up.

Training and practice should take about 2 hours in total. This may vary depending on your volunteers' comfort with the training materials.

You should practice the training and practice completing the entire form to make sure you understand how to collect each item in advance of your training event. It is recommended to practice with your volunteers on the street. However, if group size or other factors do not allow, a set of quizzes are included in the toolkit.

If you have made modifications to the PEQI survey form, you will need to add these to the training slides. Explain exactly how you want your data collectors to handle your new items.

For training, you will need:

- A projector and computer to run the presentation
- Practice PEQI forms (1 per person)
- Pencils, tape measures, stopwatches to use for practice
- Supplies to mark out a stride length measuring range, at least 25 feet long. We have used tape applied to a carpeted floor and marked with a marker, and chalk applied to a sidewalk.

Before training begins, mark out a stride length measuring range on the ground. Place a line across the beginning of the range and mark it with the word "Start". Then use a tape measure to measure in a straight line across the floor. Mark the following distances:

At this distance…	mark this number
120 inches	1 feet
130	1.1
140	1.2
150	1.3
160	1.4
170	1.5
180	1.6
190	1.7
200	1.8
210	1.9
220	2.0
230	2.1
240	2.2
250	2.3
260	2.4
270	2.5
280	2.6
290	2.7
300	2.8

During the training, you will have each of your volunteers stand with her heels at the "start" line. Then she will take 10 natural steps and stop. The place where she stops will be marked with her stride length in feet. Round to the nearest marker.

Step 5. Collecting Data

After your volunteers have been trained, assign them to teams and give them their materials—forms, pencils, clipboards, tape measures, stop watches, name tags, and area assignments. Tell them to complete each of their team's assigned segments and intersections, and return their completed forms at a specific time and location.

Step 6. Data entry and cleaning

Now that you have the data about walkability, enter it into an MS Excel spreadsheet so you can use it. The included data entry sheet can be used for this purpose. There is one tab for each of the two kinds of forms. Within each tab, there is one row for each intersection or side of each street segment. An example has been provided at the top of each form, which shows how we set up the scoring sheets and calculated the weighted values and final scores.

The person doing your data entry should use the –coder's version" forms to understand how to convert the checks and boxes to numeric data.

If you have modified the PEQI forms you will need to modify this sheet and give your data entry person instructions about how to code the responses, turning them from checkboxes to numeric data.

Step 7. Data analysis and mapping

First, your data analyst should condense your data so that there is only one row per intersection and one row per street segment. Because you have separate information on the two sides of each street segment, you need to consolidate these rows to create an overall score for each street segment. You may also find that two or more teams surveyed the same parts of the neighborhood, resulting in having more than one record for each street/intersection. You should use the average (or mean) value for each item between the two sides of the street segment.

Now that your data are entered, you can look at them in aggregate or individually.

To calculate overall PEQI scores for each segment and intersection in your study area, first create weighted items according to the weights listed on the formula sheet included in the toolkit. Then add the items according to the formulas.

You can sort the data from lowest to highest to see what streets perform the worst on specific elements or overall. You can adjust the weights on the items that go into the PEQI score to emphasize the concerns of your community.

An expert in GIS software can help you show your results on a map by attaching the individual data elements or the index scores to the map. You may also use an image editing software, like Adobe Photoshop, to draw in lines on a map over the streets with colors reflecting each intersection and segments' final score.

Step 8. Presenting your results

Once you know exactly what the walkability situation of your neighborhood is, present your results to your stakeholders! Be sure to highlight the elements they identified as being most important to them, and suggest approaches to fixing the problems. For example you might notice that almost every segment had some graffiti. A graffiti cleanup program might be a good approach to improving the physical environment in this case. Or, you might notice that many of the intersections did not allow enough time for pedestrians to safely cross the street. You can use this information to ask the City to make them safer.

PEQI: Intersection Form *(sample only- download original form from website)*

Team (names): | **Date:**

Intersection ID: _____

This is the intersection of : _____ and _____
Street 1 **Street 2**

		0 directions	1 directions	2 directions	3 directions	4+ directions
1. Crosswalks						
2. Ladder crosswalks						
3. Pedestrian signals	**a. WITH countdowns**					
	b. NO countdowns					
4. Stop signs						
5. No Turn On Red signals/signs						
6. Curb cuts at pedestrian crossings						

7. Signal at intersection ☐ **yes** ☐ **no → if no, skip to item 8**

Cross street <u>ONLY</u> with a green light or walk signal. Measure across larger street.

a. Crossing time: Measure crossing time (in seconds): _____ seconds

b. Crossing distance: Measure crossing distance (in paces): _____ paces

Length of my stride: _____ feet in my stride

8. Crosswalk scramble ☐ **yes** ☐ **no**

9. Intersection Traffic Calming Features

Indicate if any of the following are present

Yes	No	
☐	☐	**pavement treatments**
☐	☐	**median or middle-divider**
☐	☐	**mini-circles or roundabouts**
☐	☐	**speed tables, speed humps or speed bumps**
☐	☐	**bike lane at intersection**
☐	☐	**partial closures**
☐	☐	**drains, dips or other unintentional features that slow traffic**
☐	☐	**curb extensions/bulb-outs**
☐	☐	**lights set in crosswalk**
☐ other (explain: _____)		

10. Additional signs for pedestrians ☐ **yes** ☐ **no**

PEQI: Segment Form *(sample only- download original form from website)*

Team (names): | **Date:**

Segment ID: _____

This street is _____
Name of this street

Between: _____ **and** _____
Cross Street 1 **Cross Street 2**

Vehicle Traffic

11. Number of lanes *Do not include turn only lanes*	☐ 4 or more lanes ☐ 3 lanes ☐ 2 lanes ☐ 1 lane ☐ no lanes		
12. Two-way traffic	☐ yes ☐ no		
13. Vehicle Speed / Posted Speed Limit	☐ not posted	☐ 10 mph ☐ 15 mph ☐ 20 mph ☐ 25 mph ☐ 30 mph	☐ 35 mph ☐ 40 mph ☐ 45 mph ☐ 50 mph ☐ 55+ mph

14. Street Traffic Calming Features

Indicate if any of the following are present

Yes	No	
☐	☐	street median
☐	☐	speed tables, speed humps or speed bumps
☐	☐	drains, dips or other unintentional features that slow traffic
☐	☐	chicanes
☐	☐	rumble strips
☐	☐	speed limit enforcements
☐		other (explain: _____)

Sidewalks

15. Width of sidewalk	☐ no sidewalk ☐ less than 5 feet ☐ 5 feet – 7 feet 11 inches ☐ 8 feet – 11 feet 11 inches ☐ 12 feet or more

16. Sidewalk *surface* condition-- *An impediment is anything which poses a tripping hazard or interrupts the smooth surface of the sidewalk.* *Choose only one option from the right*	☐ **no sidewalk** ☐ **significant impediments in surface** ☐ **few impediments in surface** ☐ **no impediments in surface**
17. Large sidewalk *obstructions* *An obstruction is any object which reduces the width of the sidewalk or hangs low so that people must duck to pass under while on the sidewalk.* *Choose only one option from the right.*	☐ **no sidewalk** ☐ **permanent obstructions** ☐ **temporary obstructions** ☐ **both permanent and temporary obstructions** ☐ **no obstructions**
18. Presence of curb	☐ **yes** ☐ **no**
19. Driveway cuts *how many present*	_____ **driveway cuts**
20. Trees *Choose the one that best describes this street*	☐ **continuously lined** ☐ **a few trees; sporadically lined** ☐ **no trees**
21. Planters/gardens *public and private*	☐ **yes** ☐ **no**
22. Public seating *including bus stops*	☐ **yes** ☐ **no**
23. Presence of buffers *Indicate if any of the following are present*	**Yes No** ☐ ☐ **bike lane** ☐ ☐ **parallel street parking—not time-restricted** ☐ ☐ **parallel street parking—time-restricted** ☐ ☐ **grassy or paved margin**

Land Use	
24. Storefront/retail use *Count the number of stores*	_____ **shops or businesses of any type**
25. Public art/historical sites	☐ **yes** ☐ **no**

Safety and aesthetic qualities	
26. Illegal graffiti	☐ **Major graffiti** ☐ **Little or no graffiti**
27. Litter	☐ **yes** ☐ **no**

28. Pedestrian-scale street lighting *Choose only one option from the right.*	☐ **yes, private** ☐ **yes, public** ☐ **yes, both private and public** ☐ **no pedestrian-scale street lighting**
29. Construction Sites	☐ **yes** ☐ **no**
30. Abandoned/boarded up buildings	☐ **yes** ☐ **no**
31. Vacant Lots	☐ **yes** ☐ **no**
32. Bike rack(s) present on this street segment	☐ **yes** ☐ **no**
Perceived Walkability: Please circle the number that your team thinks best describe this street segment.	
33. Street segment is visually attractive for walking.	**Strongly Agree 1 Agree 2 Disagree 3 Strongly Disagree 4**
34. Street segment feels safe for walking.	**Strongly Agree 1 Agree 2 Disagree 3 Strongly Disagree 4**
35. Are there obvious strong odors anywhere on this street segment (e.g., vehicle exhaust, urine stench, rotting garbage, etc)?	**No Odors 1 A Little Odor 2 Some Odors 3 A lot of Odors 4**
36. How noisy do you find this street segment?	**No Noise 1 Little Noise 2 Some Noise 3 A lot of Noise 4**
37 . On a scale of 1 to 10, how walkable do you find this street segment?	**Not Walkable 1 2 3 4 5 6 7 8 9 10 Very Walkable**

Pedestrian Environmental Quality Index (PEQI)—CODER'S VERSION

Neighborhood:	Team Number:	Date:

Intersection Form

Intersection ID: _____

This is the intersection of: _____ and _____
Street 1 Street 2

		0 directions	1 directions	2 directions	3 directions	4+ directions
1. Crosswalks		0	1	2	3	4
2. Ladder crosswalks		0	1	2	3	4
3. Pedestrian signals	a. WITH countdowns	0	1	2	3	4
	b. NO countdowns	0	1	2	3	4
4. Stop signs		0	1	2	3	4
5. No Turn On Red signals/signs		0	1	2	3	4
6. Curb cuts at pedestrian crossings		0	1	2	3	4

7a. Signal at intersection		☐ 1 yes ☐ 0 no → if no, skip to item 8
See weights and measures sheet for how to calculate 7b, 7c and 7d.	Cross street <u>ONLY</u> with a green light or walk signal. Measure across larger street.	7b. Crossing time: Measure crossing time (in seconds): _____ seconds 7c. Crossing distance: Measure crossing distance (in paces): _____ paces 7d. Length of my stride: _____ feet in my stride
8. Crosswalk scramble		☐ 1 yes ☐ 0 no
9. Intersection Traffic Calming Features None = 0 1-2 features = 1 3-4 features = 2 5+ features = 3		☐ none ☐ curb extensions/bulbouts ☐ pavement treatments or lights set in crosswalk ☐ mini-circles or roundabouts ☐ speed tables, speed humps or speed bumps ☐ bike lane at intersection ☐ partial closures ☐ dips, drains, or bumps in street ☐ other (explain: _____)
10. Additional signs for pedestrians		☐ 1 yes ☐ 0 no

Street Segment Form - CODER'S VERSION		
Fill out this form once for each side of the street.		
Neighborhood:	**Team Number:**	**Date:**
Segment ID: _____ **This street is**_____ Name of this street **Between:** _____ **and** _____ Cross Street 1 Cross Street 2 **Side of street: N S E W**		

Vehicle Traffic			
11. Number of lanes **(do not include turning-only lanes)**	☐ **4** 4 or more lanes ☐ **3** 3 lanes ☐ **2** 2 lanes ☐ **1** 1 lane ☐ **0** no lanes		
12. Two-way traffic	☐ **1** yes ☐ **0** no		
13. Vehicle Speed / Posted Speed Limit	☐ **0** not posted	☐ **10** 10 mph ☐ **15** 15 mph ☐ **20** 20 mph ☐ **25** 25 mph ☐ **30** 30 mph	☐ **35** 35 mph ☐ **40** 40 mph ☐ **45** 45 mph ☐ **50** 50 mph ☐ **55** 55+ mph
14. Street Traffic Calming Features **None = 0** **1 or more = 1**	☐ none ☐ chicanes ☐ street medians ☐ speed tables, speed humps or speed bumps ☐ rumble strips ☐ speed limit enforcements ☐ dips, drains, or other unintentional features that slow traffic ☐ other (explain: - _____)		

Sidewalks	
15. Width of sidewalk	☐ **0 no sidewalk** ☐ **1 less than 5 feet**

	☐ 2 5 feet – 7 feet 11 inches ☐ 3 8 feet – 11 feet 11 inches ☐ 4 12 feet or more
16. Sidewalk surface condition-- **An impediment is anything which poses a tripping hazard or interrupts the smooth surface of the sidewalk.**	☐ 0 no sidewalk ☐ 1 significant impediments in surface ☐ 2 few impediments in surface ☐ 3 no impediments in surface
17. Large sidewalk obstructions **An obstruction is any object which reduces the width of the sidewalk or hangs low so that people must duck to pass under while on the sidewalk.**	☐ 0 no sidewalk ☐ 1 permanent obstructions ☐ 2 temporary obstructions ☐ 3 both permanent and temporary obstructions ☐ 4 no obstructions in sidewalk
18. Presence of curb	☐ 1 yes ☐ 0 no
19. Driveway cuts	_____ driveway cuts
20. Trees	☐ 1 continuously lined ☐ 2 a few trees; sporadically lined ☐ 3 no trees
21. Planters/gardens	☐ 1 yes ☐ 0 no
22. Public seating **(including bus stops)**	☐ 1 yes ☐ 0 no
23. Presence of buffers **(check all that apply)**	☐ 1 bike lane ☐ 1 parallel street parking—not time-restricted ☐ 1 parallel street parking—time-restricted ☐ 1 grassy or paved margin ☐ 1 none
Land Use	
24. Storefront/retail use	_____ shops or businesses of any type
25. Public art/historical sites	☐ 1 yes ☐ 0 no
Safety and aesthetic qualities	
26. Illegal graffiti	☐ 1 Major graffiti

	☐ 0 Little or no graffiti
27. Litter	☐ 1 yes ☐ 0 no
28. Pedestrian-scale street lighting	☐ 1 yes, private ☐ 2 yes, public ☐ 3 yes, both private and public ☐ 0 no
29. Construction Sites	☐ 1 yes ☐ 0 no
30. Abandoned/boarded up buildings	☐ 1 yes ☐ 0 no
31. Vacant Lots	☐ 1 yes ☐ 0 no
32. Bike rack(s) present on this street segment	☐ 1 yes ☐ 0 no
Perceived Walkability: Please circle the number that your team thinks best describe this street segment.	
33. Street segment is visually attractive for walking.	Strongly Agree 1 Agree 2 Disagree 3 Strongly Disagree 4
34. Street segment feels safe for walking.	Strongly Agree 1 Agree 2 Disagree 3 Strongly Disagree 4
35. Are there obvious strong odors anywhere on this street segment (e.g., vehicle exhaust, urine stench, rotting garbage, etc)?	No Odors 1 A Little Odor 2 Some Odors 3 A lot of Odors 4
36. How noisy do you find this street segment?	No Noise 1 Little Noise 2 Some Noise 3 A lot of Noise 4
37. On a scale of 1 to 10, how walkable do you find this street segment?	Not Walkable 1 2 3 4 5 6 7 8 9 10 Very Walkable

Weights and Formulas

Weights for creating PEQI overall score--INTERSECTION

Item	Original Value	Weighted Value
1. Crosswalks	0	8
	1	11
	2	15
	3	18
	4+	21
2. Ladder Crosswalks	0	8
	1	11
	2	16
	3	20
	4+	24
3a. Pedestrian signals	4 with countdowns	21
WITH coutdown	3 with countdowns	17
	2 with countdowns	13
	1 with countdown	9
3b. Pedestrian signals	4 without countdowns	19
WITHOUT countdown	3 without countdowns	15
	2 without countdowns	11
	1 without countdown	7
3a *or* 3b.	None	5
4. Stop signs	0	8
	1	11
	2	16
	3	20
	4+	24
5. No turn on red signs	0	5
	1	8
	2	11
	3	15
	4	19
6. Curb cuts	0	5
	1	8
	2	11
	3	15
	4+	19
7a. Signal at Intersection	0	See Step 1 below
	1	See Step 1 below
7b,c. crossing speed = ((paces*stride)/crossing time)	<=3.5	9
	>3.5	20

8. Scramble	0	5
	1	19
9. Count of intersection TCF's	0	9
	1 or 2	15
	3 or 4	17
	5+	20
10. Additional pedestrian signs	0	7
	1	17

Intersection formula:
How you calculate the score will depend on whether or not there was a traffic signal at the intersection.

TRAFFIC SIGNAL **Step 1.** IF traffic_signal==1, then add: (pedestrian_signals + no_turn_on_red + crossingspeed+scramble)	**NO TRAFFIC SIGNAL** **Step 1.** IF traffic_signal==0, then take: (stop_signs * 2)
TRAFFIC SIGNAL **Step 2.** Add above to: (crosswalks + ladder_crosswalks + curb_cuts + TCF_count + addl_ped_signs)	**NO TRAFFIC SIGNAL** **Step 2.** Add above to: (crosswalks + ladder_crosswalks + curb_cuts + TCF_count + addl_ped_signs)
TRAFFIC SIGNAL **Step 3.** Adjust the score so that it's range is 0-100 using this formula: (unadjusted score – minimum score) * (100/(max score-min score))	**NO TRAFFIC SIGNAL** **Step 3.** Adjust the score so that it's range is 0-100 using this formula: (unadjusted score – minimum score) * (100/(max score-min score))

Weights for creating PEQI overall score—SEGMENTS

Item	Original Value	Weighted Value
lanes	0	24
	1	22
	2	19
	3	9
	4+	4
two-way traffic	0	7
	1	10
speed limit	<20	27
	0 (not posted)	22
	20-25	22
	26-35	12
	35+	2
Count of TCF's in segment	1+	20
	0	7
Sidewalk width	0	4
	1	7
	2	13
	3	19
	4	22
Sidewalk surface condition	3	24
	2	17
	1	7
	0	4
Sidewalk obstructions	4 (no obstructions)	15
	2 (temp obstructions)	10
	1 (perm obstructions)	9
	3 (both temp and perm)	8
	0 (no sidewalk)	5
Curb	1	17
	0	7
Driveway cuts	0	17
	1-5	15
	5+	5
Trees	1	16
	2	11
	3	7
Planters	1	9
	0	4
Public seating	1	13
	0	7

Buffers	bike and parking and margin (all three)	24
	two of the above (any two)	21
	bike only	13
	parking only	13
	margin only	13
	none	4
Retail use	3+	19
	1-2	11
	0	9
Public art	1	14
	0	6
Graffiti	1	5
	0	9
Litter	0	10
	1	5
Ped-scale lighting	3 (both pub and priv)	25
	2 (public only)	20
	1 (private only)	15
	0 (none)	7
Construction	0	13
	1	7
Abandoned buildings	0	13
	1	7
Bike racks	1	10
	0	5
Vacant lots	0	13
	1	7
Visually attractive	1	20
	2	15
	3	10
	4	5
Feels Safe	1	20
	2	15
	3	10
	4	5
Strong Odors	1	20
	2	15
	3	10
	4	5

Noise	1	20
	2	15
	3	10
	4	5
Overall subjective walkability	1	1
	2	3
	3	5
	4	7
	5	9
	6	11
	7	13
	8	15
	9	17
	10	19

Segment formula:

Step 1. Add up the weighted values using this formula: Segment PEQI = (number_lanes + two_way + speed_limit + tcf_count + sidewalk_width + surface + obstructions + curb + curb_cuts + trees + planters + seating + buffers + retail + public_art + graffiti + litter + ped-scale_lights + construction + abandoned_bldgs + bike_racks + vacant_lots + attractive + feels_safe + strong_odors + noisy + walkable)
Step 2. Adjust the score so that it's range is 0-100 using this formula: (unadjusted score – minimum score) * (100/(max score-min score))

Sample Minimum and Maximum Scores: INTERSECTION FORM

			With a Traffic Signal(s)		Stop sign(s) only	
Item	**Original Value (from Coder's version)**	**Weighted Value**	**MIN With signals**	**MAX With signals**	**Min Score**	**Max Score**
Crosswalks	0	8	8		8	
	1	11				
	2	15				
	3	18				
	4+	21		21		21
Ladder Crosswalks	0	8	8		8	
	1	11				
	2	16				
	3	20				
	4+	24		24		24
Pedestrian signals	4 with countdowns	21		21		
	4 without countdowns	19				
	3 with countdowns	17				
	3 without countdowns	15				
	2 with countdowns	13				
	2 without countdowns	11				
	1 with countdown	9				
	1 without countdown	7				

	None	5	5			
Stop signs	0	8			16	
	1	11				
	2	16				
	3	20				
	4+	24				48
No turn on red signs	0	5	5			
	1	8				
	2	11				
	3	15				
	4	19		19		
Curb cuts	0	5	5		5	
	1	8				
	2	11				
	3	15				
	4+	19		19		19
crossing speed = ((paces*stride)/crossing time)	<=3.5	9	9			
	>3.5	20		20		
Scramble	0	5	5			
	1	19		19		

Count of intersection TCF's	0	9	9		9	
	1 or 2	15				
	3 or 4	17				
	5+	20		20		20
Additional pedestrian signs	0	7	7		7	
	1	17		17		17
			61	**180**	**53**	**149**
			Min Score: with signal	**Max Score : with signal**	**Min Score : stop sign only**	**Max Score: stop sign only**

Sample Minimum and Maximum Scores: SEGMENT FORM

Item	Original Value	Weighted Value	Min Score	Max Score
lanes	0	24		24
	1	22		
	2	19		
	3	9		
	4+	4	4	
two-way traffic	0	7	7	
	1	10		10
speed limit	<20	27		27
	0 (not posted)	22		
	20-25	22		
	26-35	12		
	35+	2	2	
Count of TCF's in segment	1+	20		20
	0	7	7	
Sidewalk width	0	4	4	
	1	7		
	2	13		
	3	19		
	4	22		22
Sidewalk surface condition	3	24		24
	2	17		
	1	7		
	0	4	4	

Sidewalk obstructions	none (4)	15		15
	temporary only (2)	10		
	permanent only (1)	9		
	both temp and permanent (3)	8		
	no sidewalk (0)	5	5	
Curb	1	17		17
	0	7	7	
Driveway cuts	0	17		17
	1-5	15		
	5+	5	5	
Trees	1	16		16
	2	11		
	3	7	7	
Planters	1	9		9
	0	4	4	
Public seating	1	13		13
	0	7	7	
Buffers	bike and parking and margin (all three)	24		24
	two of the above (any two)	21		
	bike only	13		
	parking only	13		
	margin only	13		
	none	4	4	
Retail use	3+	19		19
	1-2	11		

	0	9	9	
Public art	1	14		14
	0	6	6	
Litter	0	10		10
	1	5	5	
Graffiti	1	5	5	
	0	9		9
Ped-scale lighting	Private and public	25		25
	public only	20		
	private only	15		
	None	7	7	
Construction	0	13		13
	1	7	7	
Abandoned buildings	0	13		13
	1	7	7	
Bike racks	1	10		10
	0	5	5	
Vacant lots	0	13		13
	1	7	7	
Visually attractive	1	20		20
	2	15		
	3	10		
	4	5	5	
Feels Safe	1	20		20
	2	15		
	3	10		
	4	5	5	

Strong Odors	1	20		20
	2	15		
	3	10		
	4	5	5	
Noise	1	20		20
	2	15		
	3	10		
	4	5	5	
Overall subjective walkability	1	1	1	
	2	3		
	3	5		
	4	7		
	5	9		
	6	11		
	7	13		
	8	15		
	9	17		
	10	19		19
			146	**463**
			Min Score Segment	**Max Score Segment**

Pedestrian Environmental Quality Index Training Program

The PEQI was developed by the San Francisco Department of Public Health and modified for the Los Angeles street environment by Malia Jones, MPH of UCLA

Last modified April 1, 2010

Agenda

1. What is walkability and what does it have to do with health?
2. Street and intersection identification
3. PEQI assessment instructions
4. Practice using the PEQI

What is "walkability"?

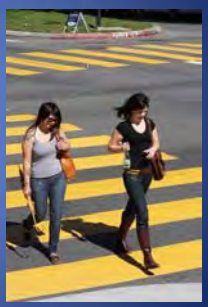
- Walkability means the physical environment's ability to support and encourage walking
- The *quality* and *safety* of the environment from the perspective of pedestrians
- Includes:
  - Safety features
  - Traffic conditions
  - Aesthetic conditions

"Walkability" and your health: 1

1. Walking reduces our dependence on cars
   - This reduces air pollution, noise pollution, traffic accidents

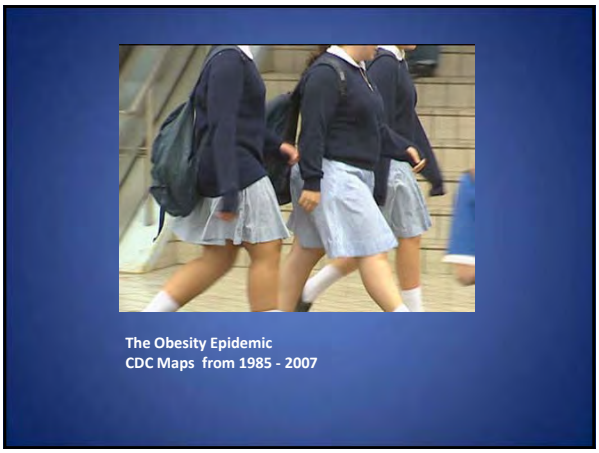
"Walkability" and your health: 2

2. Increases physical activity
   - Regular moderate physical activity (such as walking or cycling) reduces the risk of serious disease and obesity

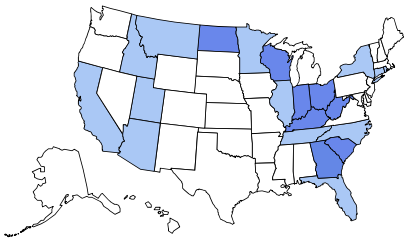


What is obesity?

- 30-40 lbs or more above healthy weight
- Depends on height
- For people who are still growing, depends on age & gender

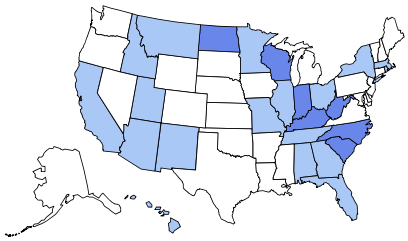


Obesity Trends* Among U.S. Adults
BRFSS, 1985
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



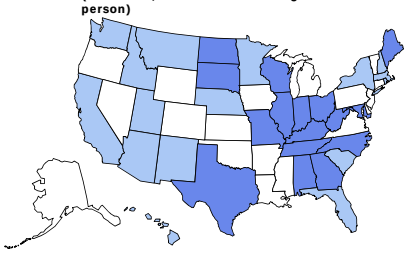
No Data <10% 10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1986
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



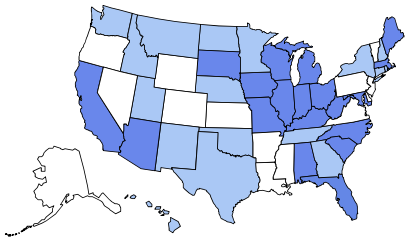
No Data <10% 10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1987
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



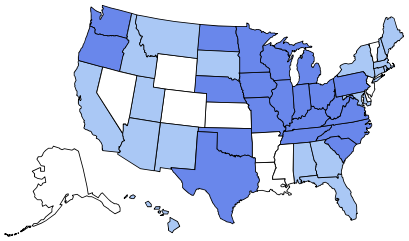
No Data <10% 10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1988
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



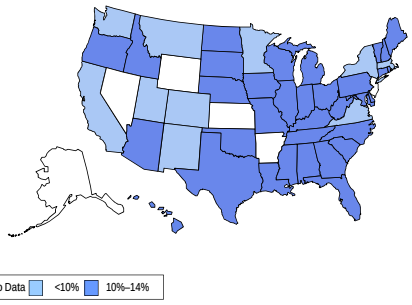
No Data <10% 10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1989
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)

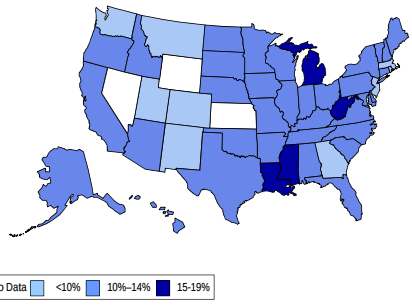


No Data <10% 10%–14%

Obesity Trends* Among U.S. Adults
BRFSS, 1990
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults
BRFSS, 1991
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults
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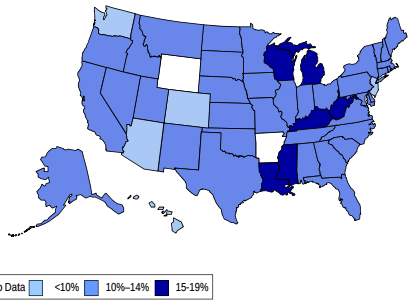

Obesity Trends* Among U.S. Adults
BRFSS, 1993
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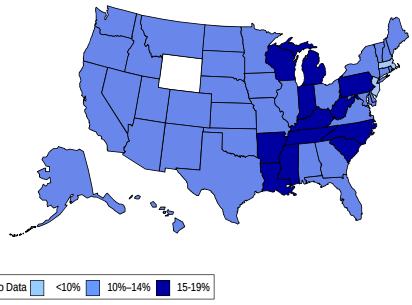
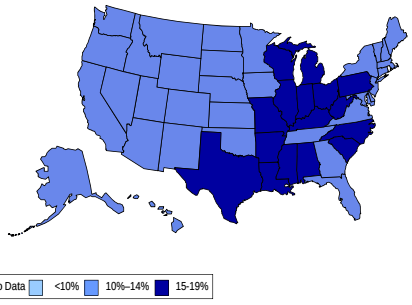
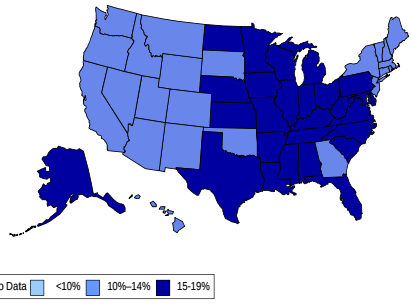


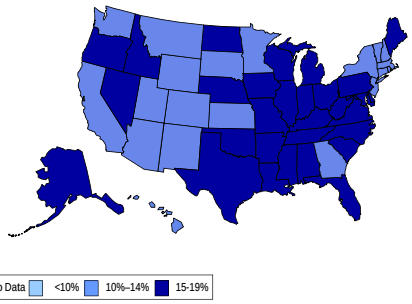
Obesity Trends* Among U.S. Adults
BRFSS, 1994
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults
BRFSS, 1995
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)

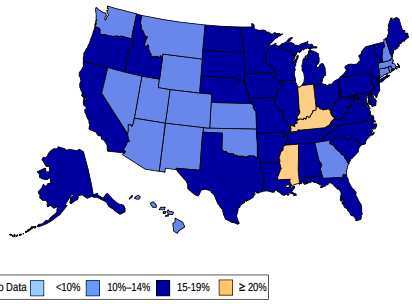


Obesity Trends* Among U.S. Adults
BRFSS, 1996
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



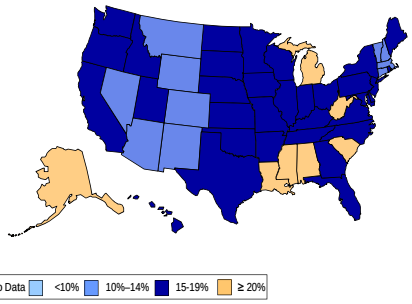
No Data | <10% | 10%–14% | 15-19%

Obesity Trends* Among U.S. Adults
BRFSS, 1997
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



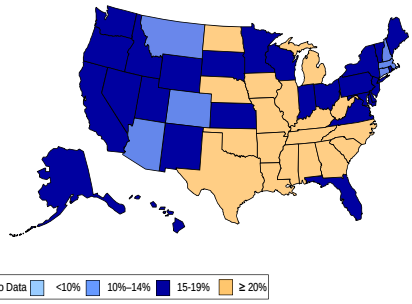
No Data | <10% | 10%–14% | 15-19% | ≥ 20%

Obesity Trends* Among U.S. Adults
BRFSS, 1998
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



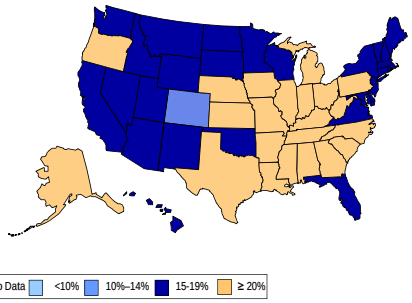
No Data | <10% | 10%–14% | 15-19% | ≥ 20%

Obesity Trends* Among U.S. Adults
BRFSS, 1999
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



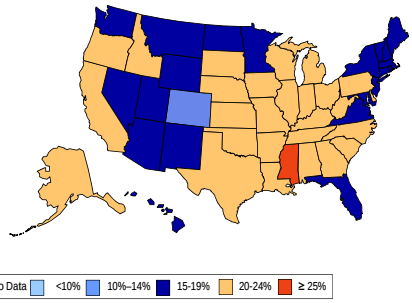
No Data | <10% | 10%–14% | 15-19% | ≥ 20%

Obesity Trends* Among U.S. Adults
BRFSS, 2000
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



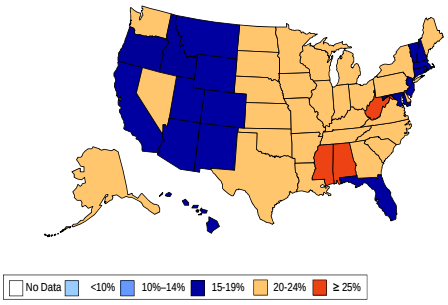
No Data | <10% | 10%–14% | 15-19% | ≥ 20%

Obesity Trends* Among U.S. Adults
BRFSS, 2001
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)

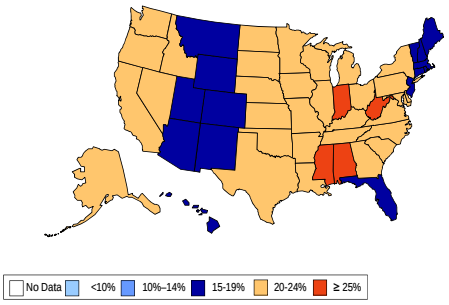


No Data | <10% | 10%–14% | 15-19% | 20-24% | ≥ 25%

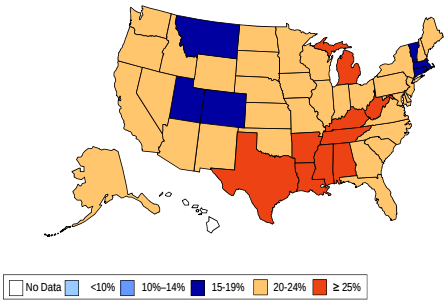
Obesity Trends* Among U.S. Adults
BRFSS, 2002
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



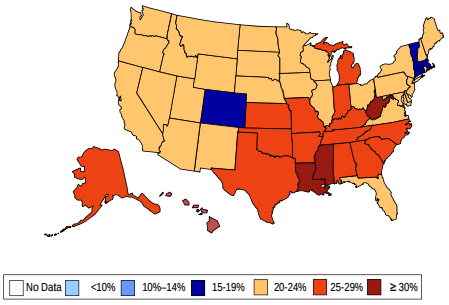
Obesity Trends* Among U.S. Adults
BRFSS, 2003
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



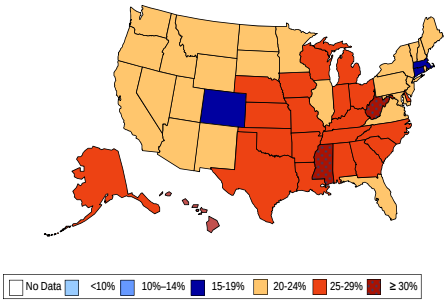
Obesity Trends* Among U.S. Adults
BRFSS, 2004
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



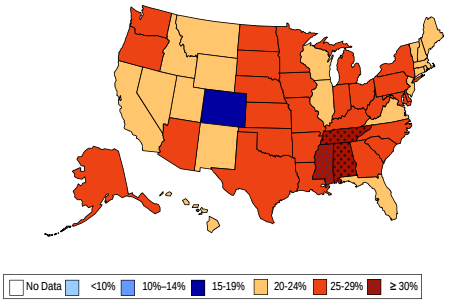
Obesity Trends* Among U.S. Adults
BRFSS, 2005
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



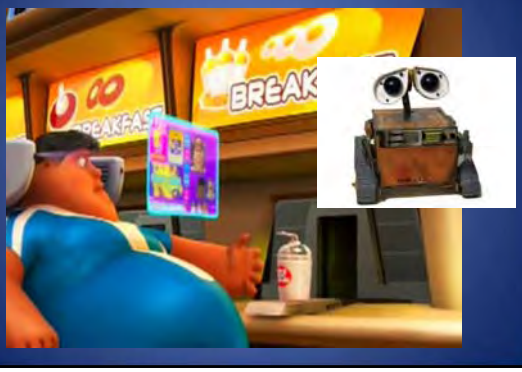
Obesity Trends* Among U.S. Adults
BRFSS, 2006
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



Obesity Trends* Among U.S. Adults
BRFSS, 2007
(*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



2050?



Walkability and your health 4:
The Health Belief Model and Physical Activity

Why are people getting more overweight?

Personal factors

- Traditional or family foods/eating habits
- Other demands on time
- Obese parents
- Financial situation

Constraints on behavior

- Barriers in the environment prevent healthy eating
- Barriers in the environment prevent physical activity

Adapted from Northern Territory Government Australia. "Health Belief Model." Available at: http://www.nt.gov.au/health/healthdev/health_promotion/practice/framework/model.pdf. Accessed March 2009.

32

Barriers to walking in the environment

- **Danger** from motor vehicles, crime & violence
- Lack of **sidewalks** or poor repair/design of sidewalks
- **Aesthetic qualities** of the area (shade, noise, attractiveness of paths)
- Existence and quality of **facilities** for exercise (e.g., parks, sports fields/courts, walking paths, etc)
- **Distance** to destinations

33

How Assessment Helps

- When we assess the pedestrian environment, we can:
  - Identify problem areas
  - Identify priorities
  - Ask the city to focus on our priorities
- When we do an on-the-ground assessment we also get to:
  - Meet our neighbors
  - Get to know our neighborhood as pedestirans
  - Eat free food and have a fun day!

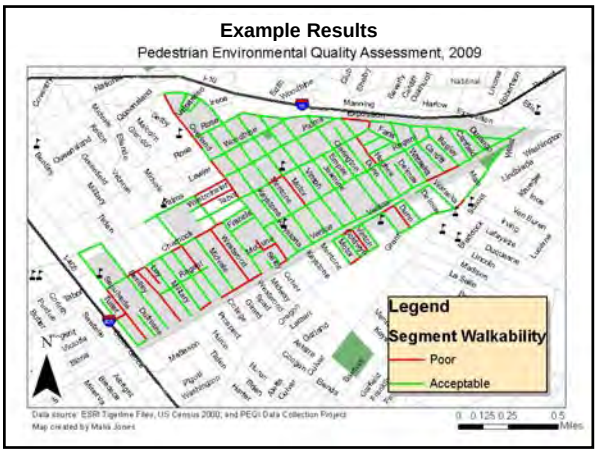
The PEQI Form

PEQI Form: overview

- Developed by the SF Dept of Public Health
- Street segment + intersection items
- Grouped into 5 Domains:
  - Intersection safety
  - Traffic
  - Street Design
  - Land Use
  - Perceived safety

How it works

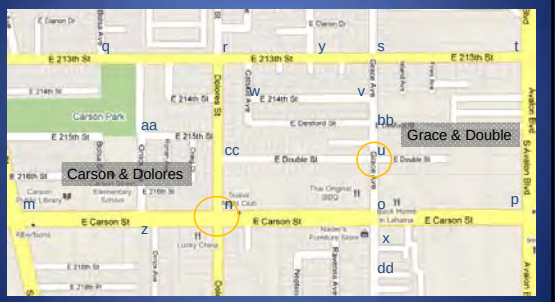
- You complete the PEQI form on every street segment and intersection
- We enter the data and use them to compute a PEQI score



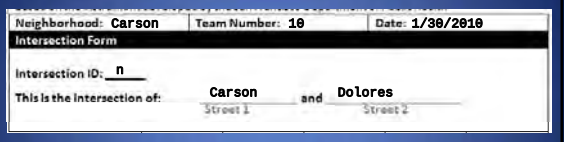
Identifying your location

DO THIS RIGHT.

Intersection Identifiers



Intersection Identifiers



Street Segment Identifiers

Segment Identifiers

Neighborhood: Carson	Team Number: 10	Date: 1/30/2010

Segment ID: 32

This street is Carson (Name of this street)

Between: Grace (Cross Street 1) and Ravenna (Cross Street 2)

Side of street: N (S) E W

Part 1: Measuring Intersection Quality

1. Crosswalks

- Designated places for pedestrians to cross the street
- Heighten driver & pedestrian awareness
- X in the box indicating the number of crosswalks

1. Crosswalks

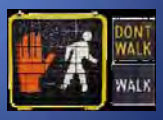
		0 directions	1 directions	2 directions	3 directions	4+ directions
1. Crosswalks						X
2. Ladder crosswalks						
3. Pedestrian signals	a. WITH countdowns					
	b. NO countdowns					
4. Stop signs						
5. No Turn On Red signals/signs						
6. Curb cuts at pedestrian crossings						

2. Ladder Crosswalks

- Crosswalks with large stripes.
- Encourage pedestrians to stay within the safer locations
- More visible to motorists
- X the number of ladder crosswalks present

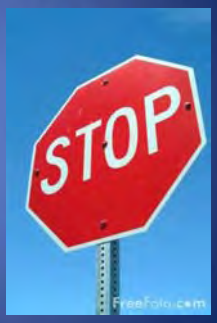
3a and b. Pedestrian Signal

- Tell pedestrians how much time they have to cross, making it easier for them to make smart choices
- Count the number of directions that have pedestrian signals WITH countdowns
- Count the number of directions that have pedestrian signals WITHOUT countdowns
- X the appropriate boxes
- Mark both items



4. Stop Signs

- Force motorists to slow down
- Allow pedestrians more time to cross
- Count the number of directions this intersection has stop signs



5. No Turn on Red Sign

- Motorists often look to the left when making a right turn, but forget to look to the right for pedestrians
- Count the number of directions for which a "no turn on red" sign is posted and X the appropriate box

6. Curb cuts at pedestrian crossings

- Necessary for people in wheelchairs
- Handy for people using strollers and carts
- Count the # of *directions* where there are curb cuts

6. Curb cutouts at pedestrian crossings

- NOT the number of curb cuts!

6. Curb cutouts at pedestrian crossings

7. Traffic signal at Intersection

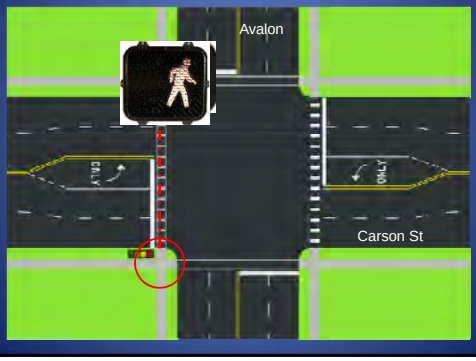
- Signal = traffic light
- Check yes or no
- IF YES, then continue to measure the crossing distance and time allowed in 7a & 7b
- IF NO SIGNAL, DO NOT ATTEMPT TO MEASURE.

DO NOT CROSS WHERE THERE IS NO TRAFFIC LIGHT.

7a. Crossing Time

- DO NOT COMPLETE if there is no traffic light
- Use your stopwatch to measure how much time pedestrians are given to cross
  - Time how long is given to cross the **larger** street
  - Use your stopwatch
  - Start when the light turns green OR the walk sign comes on
  - Stop when the light turns red OR the walk sign turns solid red
  - Record the time in seconds

7a. Time to cross: practice scenario



7b. Intersection Length in Paces

- DO NOT COMPLETE if there is no pedestrian signal.
- Cross the larger street
- Count the number of your steps that it takes to cross the street
  - Count from curb to curb
  - Follow the crosswalk if there is one
- Record the number of steps you took
- Write down your stride length in feet

7b. Estimate your stride length now

- Go to the stride length measuring range!
- Start with heels at line
- Take 10 steps in a straight line
- Mark where your heel landed on the 10th step
- WRITE DOWN YOUR STRIDE LENGTH NOW
- You'll have to enter it on every intersection form

7a & 7b. The real story is Crossing Speed

- For a street to be safe for pedestrians, there must be enough time to cross

8. Crosswalk Scramble

- A scramble stops all traffic in all directions while pedestrians cross in all directions.

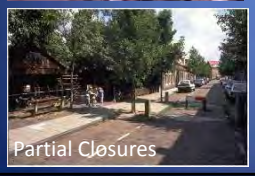
9. Intersection Traffic Calming Features

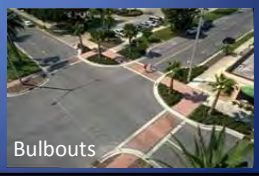
- Traffic calming features slow the speed of traffic, increase driver awareness and pedestrian visibility, or provide extra safety for pedestrians
- Check for the presence of each one on the form and others you see that are not listed
  - Check all that apply
  - If the same one appears twice, just check it once
  - If you see one not listed, write it down under "other"

9. Traffic Calming Features


Bike Lanes

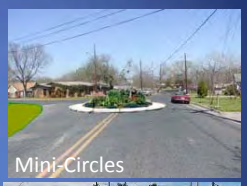

Pavement Treatments

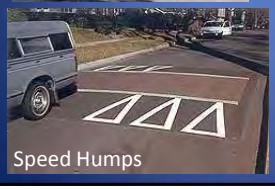

Partial Closures


Bulbouts

9. MORE Traffic Calming Features

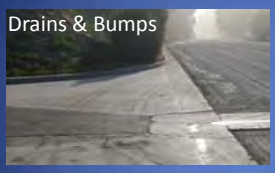

Speed Tables


Mini-Circles


Speed Humps


Median

9. MORE Traffic Calming Features


Drains & Bumps

10. Additional Pedestrian Signage

- Signs can increase driver and pedestrian awareness
- Mark 'yes' if there are any signs related to pedestrians at the intersection (other than the walk signal)