Designing and Implementing a Regional Active Transportation Monitoring Program Through a County-MPO-University Collaboration

Sherry Ryan, Dean Sidelinger, Deirdre Browner,
Lindsey McDermid, Shelley Saitowitz, Stephan Vance

2-28-2013

San Diego State University
SANDAG
Active Transportation Research
County of San Diego HHSA Health and Human Services Agency

Background

- ***Communities Putting Prevention to Work***
  - County of San Diego HHSA awarded $16M grant to promote physical activity and healthy eating (2010-2012)
  - Broad-based policy, systems, organizational and environmental changes in communities and schools

BIKES COUNT

BIKES COUNT: Regional Active Transportation Monitoring

FACT SHEET

BIKES COUNT is a regional bicycle counting program sponsored by the County of San Diego Health and Human Services Agency, the Active Transportation Research (ATR) program at San Diego State University, and the San Diego Association of Governments (SANDAG).

Overview

Bicycle counting equipment was recently installed in streets and along bike routes countywide, to record the number of cyclists (and pedestrians in some locations). These results will support decision-making on future bicycle-related enhancements throughout San Diego County. This is the largest regional network of bicycle-counters in the nation.

Equipment

BIKES COUNT is using equipment purchased from Eco-Counter. Their equipment is state-of the-art and can sense the electromagnetic footprint of a bicycle and distinguish it from an automobile. This enables in-street counting of cyclists for the first time. A small logger is installed in the side of the roadway and attached to a loop detector installed in the asphalt in the bicycle lane.

Siting Count Equipment

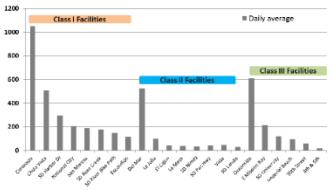
The counting equipment was installed at 28 locations along the SANDAG's Regional Bicycle Network. The Regional Bicycle Network was also stratified by population density, employment density and median household income, and these strata were used to guide the equipment siting in a manner that would be representative of key factors affecting the demand for cycling.

Data Outputs

Data is collected and summarized at 15 minute increments, but is available in summarized formats by hour, day, week, month, or year. The equipment includes a modem that allows for daily data upload without going out into the field. Active Transportation Research is managing the equipment and data access, and has already made bicycle and pedestrian count data available to several projects in the region.

Average Daily Bike Count by Facility Type

Month of September 2012

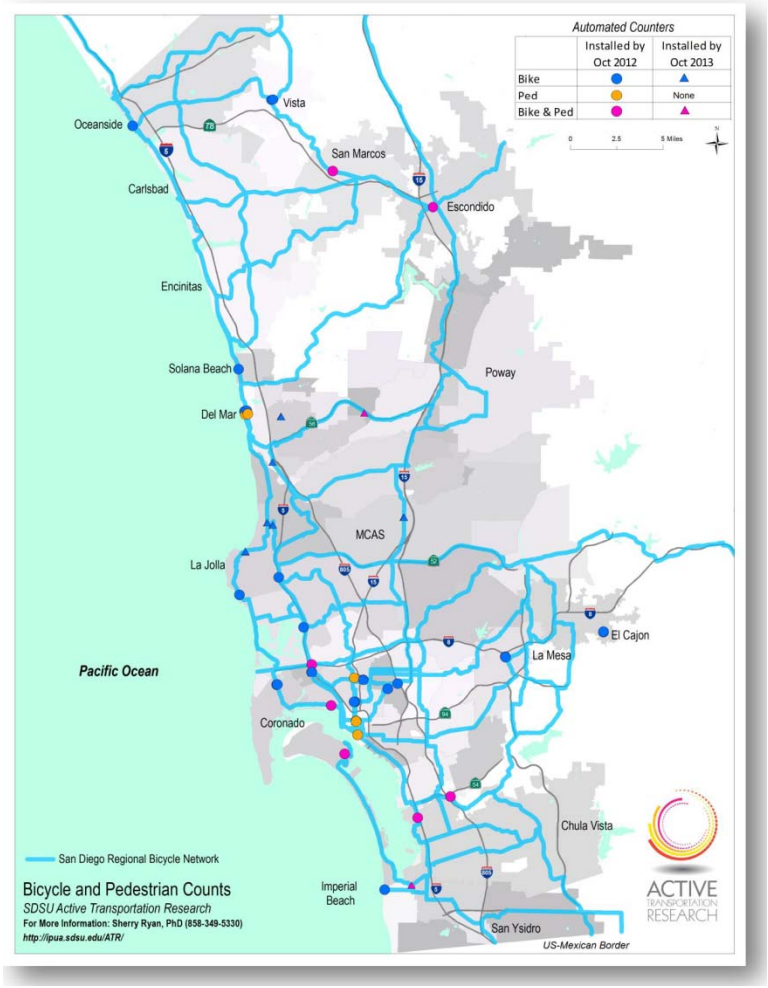


ACTIVE TRANSPORTATION RESEARCH

SAN DIEGO STATE UNIVERSITY

COUNTY OF SAN DIEGO HHSA HEALTH AND HUMAN SERVICES AGENCY

SANDAG



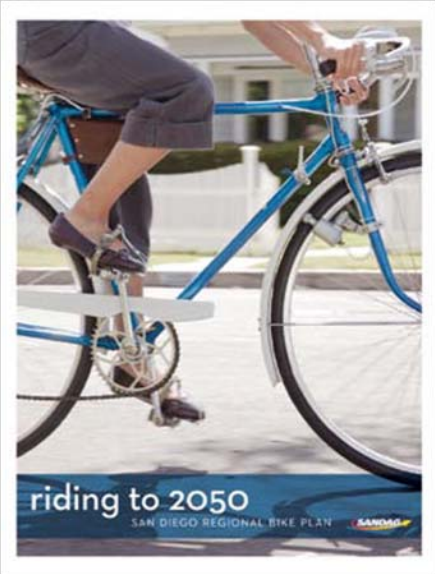
Contribution to the Active Transportation Monitoring Program

COUNTY OF SAN DIEGO HHSA HEALTH AND HUMAN SERVICES AGENCY	▪ *Funding $$$$$$ ($350K)* ▪ *Understanding of active travel data gaps*
SAN DIEGO STATE UNIVERSITY	▪ *Technical capacity* ▪ *Understanding of local/regional planning context*
SANDAG	▪ *Long-term program funding* ▪ *Integration of active travel in project and planning efforts*

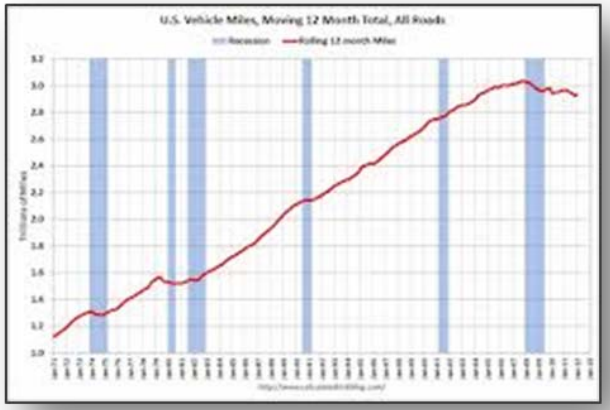
Why Counting?

Measure Change → **Understand** → **Retain Change**

Long Range Planning



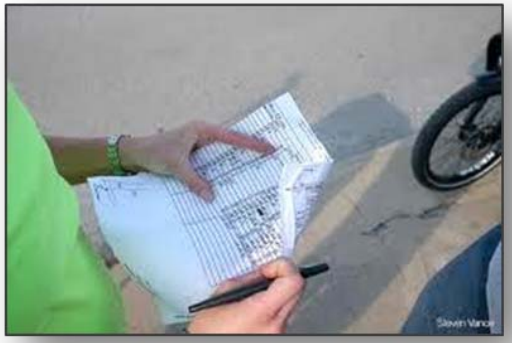
Travel & Health Monitoring

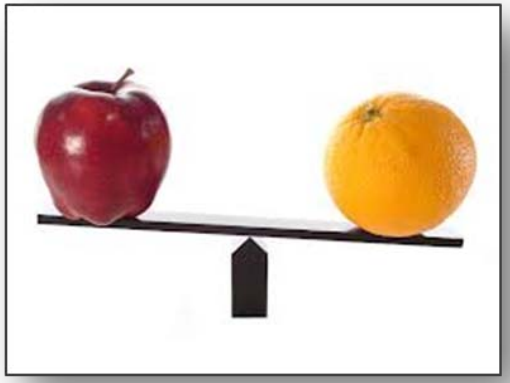


Infrastructure Evaluation

Benefits of Permanent Automated Counting

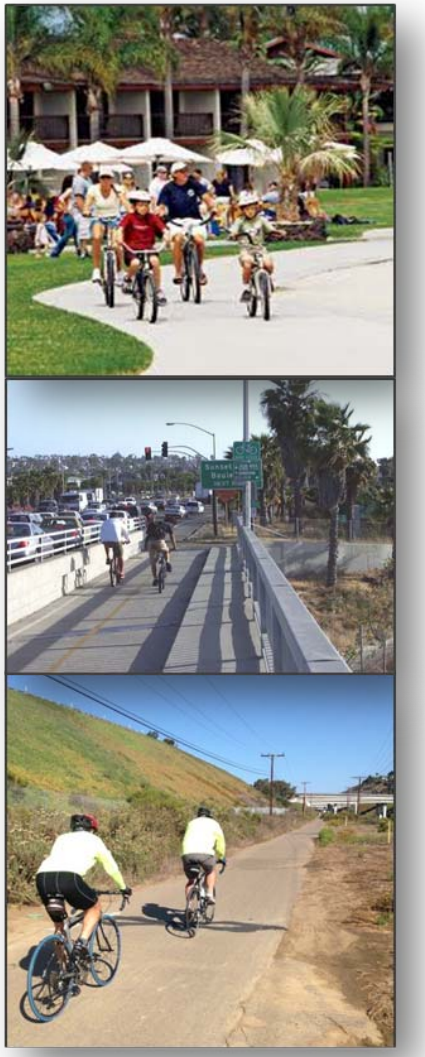
- **Consistency**
  Compare "Apples to Apples"
- **Temporal Quality**
  24-Hour Counts at 15' Intervals
- **Data Accessibility**
  Automated Upload of Data





Presentation Overview

- Technology
- Siting and Installation
- Preliminary Look at Data and Applications



Technology – *Eco-Counter*

Zelt Logger & Inductive Loops

Pyro

Eco-Multi

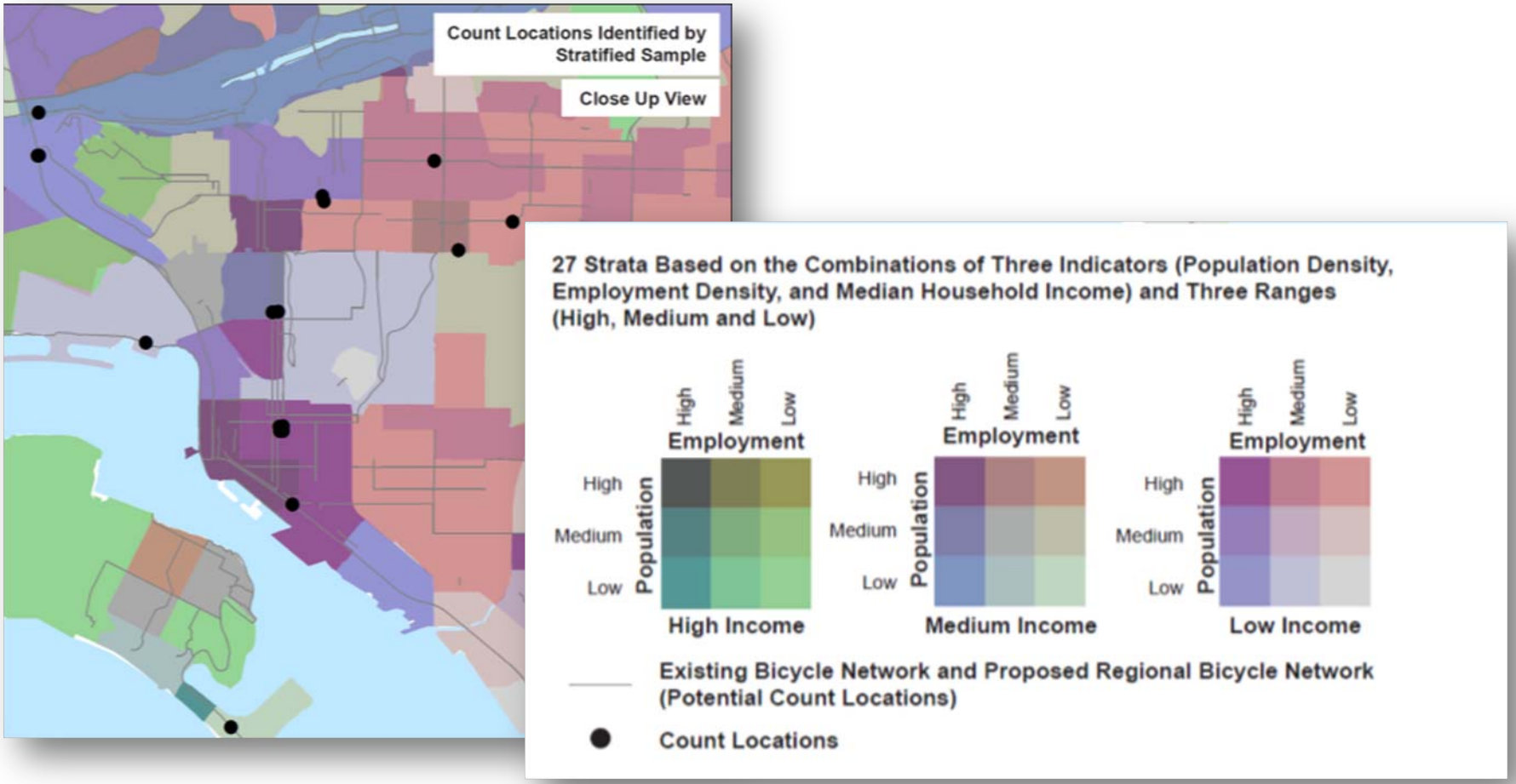
Count Station Siting Criteria

1. Geographic Coverage
2. Synch-up with the *Regional Bicycle Network* and *Smart Growth Opportunity Areas*
3. Representative Sampling of Locations
4. Siting Framework that Supports Expansion

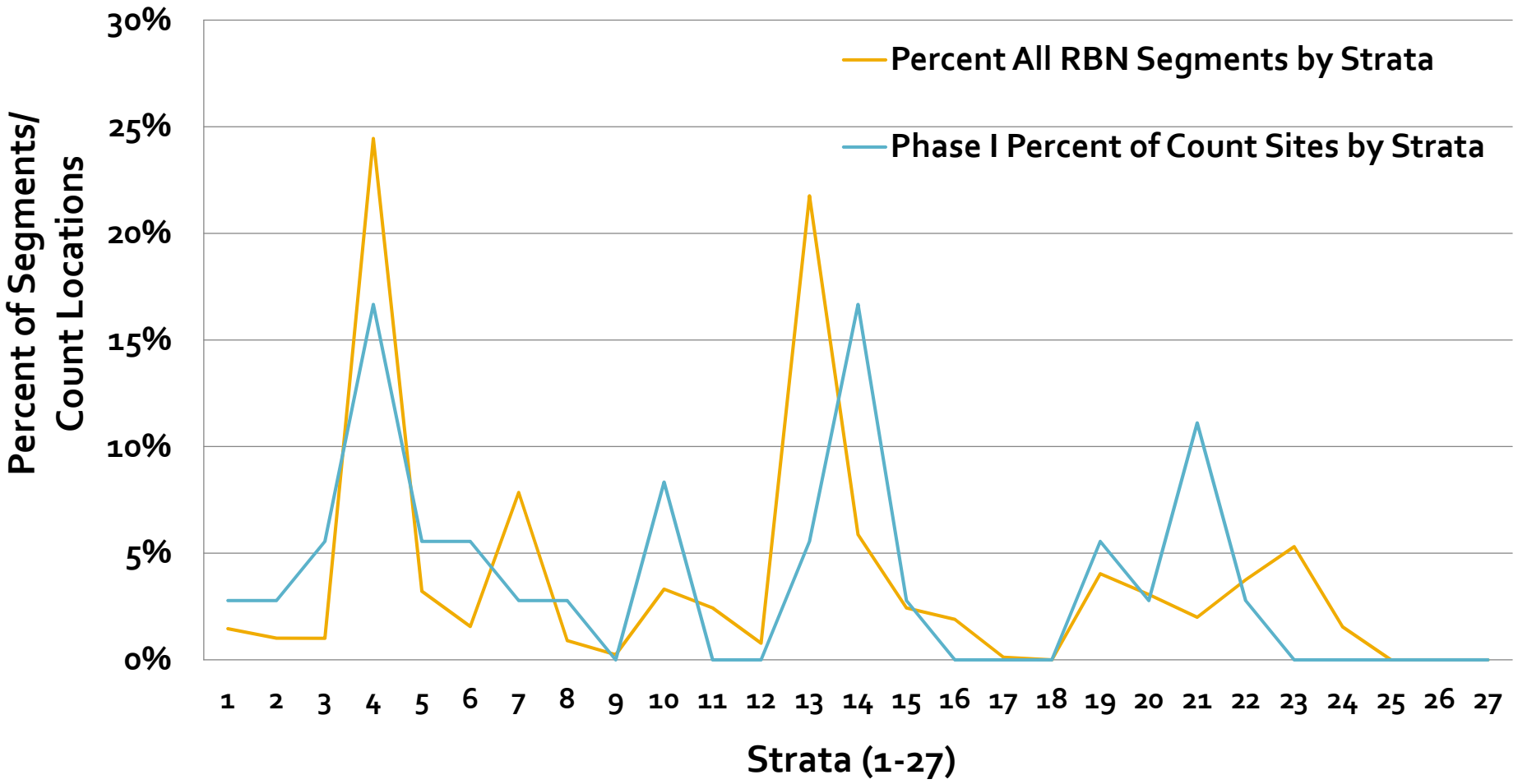
Phase I Siting

- 26 TOTAL SITES
  - 15 Bike Only - *Class II or III*
  - 7 Bike & Ped - *Class I*
  - 4 Pedestrian Only - *Urban*

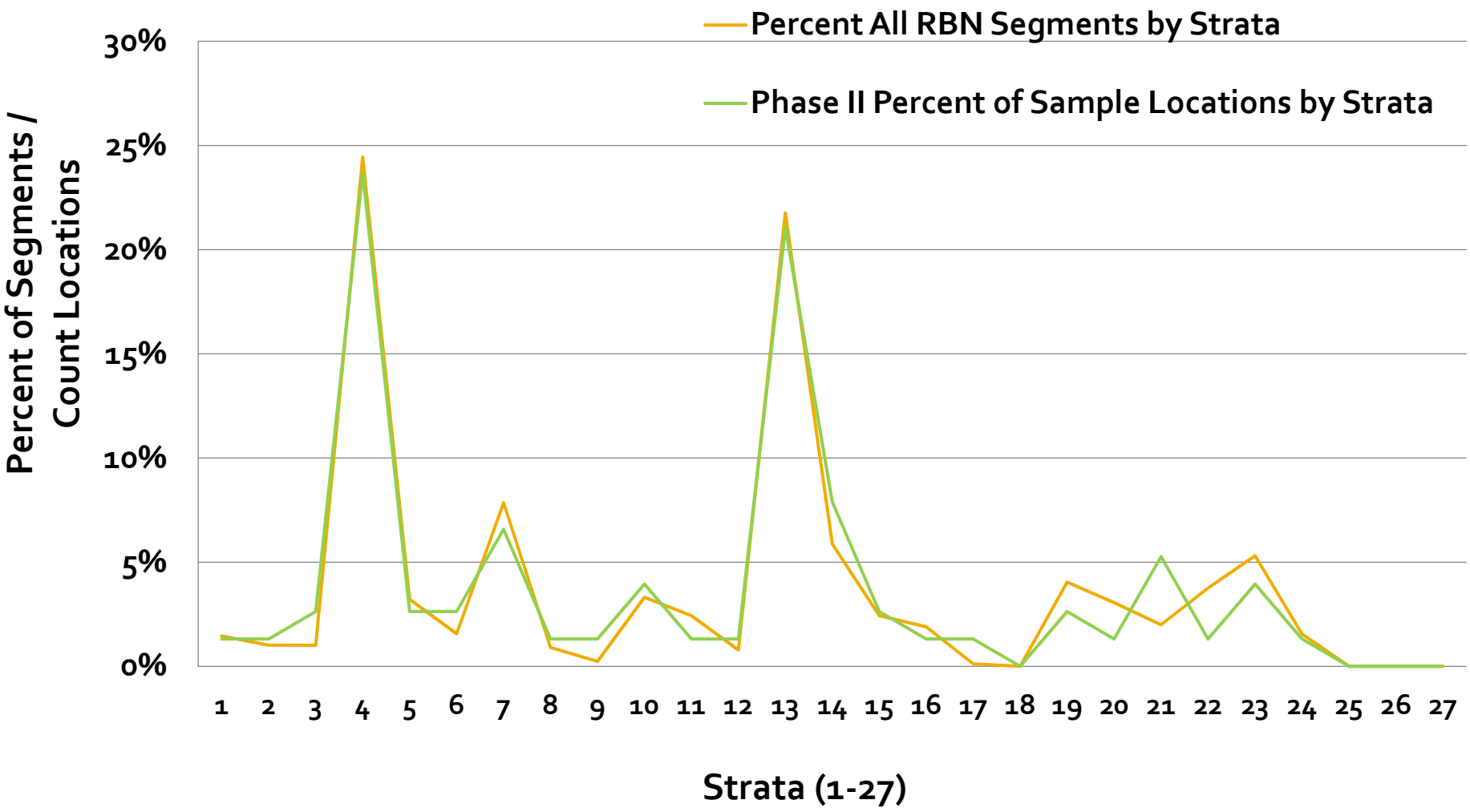
Representative Sampling



Matching 26 Count Sites to Regional Bike Network



Selectively Expand Network to 76 Sites

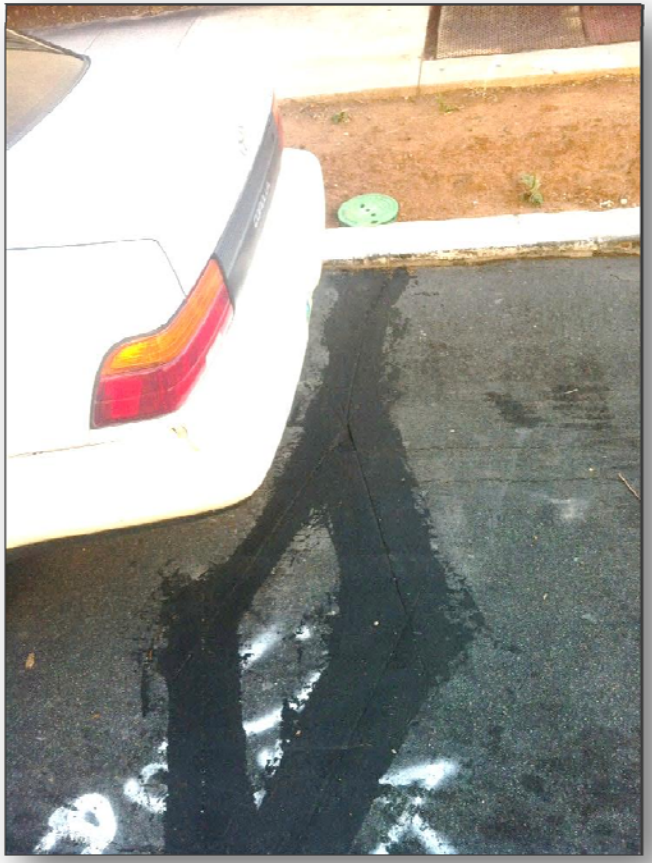


Phase I Installations

	Jurisdiction	Number of Units	Number of Sites	Technology
1	Chula Vista	1	1	Eco-Multi
2	Coronado	1	1	Eco-Multi
3	Del Mar	4	1	Zelt & Pyro
4	El Cajon	2	1	Zelt
5	Escondido	1	1	Eco-Multi
6	Imperial Beach	1	1	Zelt
7	La Mesa	2	1	Zelt
8	National City	1	1	Eco-Multi
9	Oceanside	1	1	Zelt
10	San Diego	17	14	Eco-Multi; Zelt and Pyro
11	San Marcos	1	1	Eco-Multi
12	Solana Beach	1	1	Zelt
13	Vista	2	1	Zelt
	TOTALS	**35**	**26**	

Rose Canyon Bike Path - Zelt

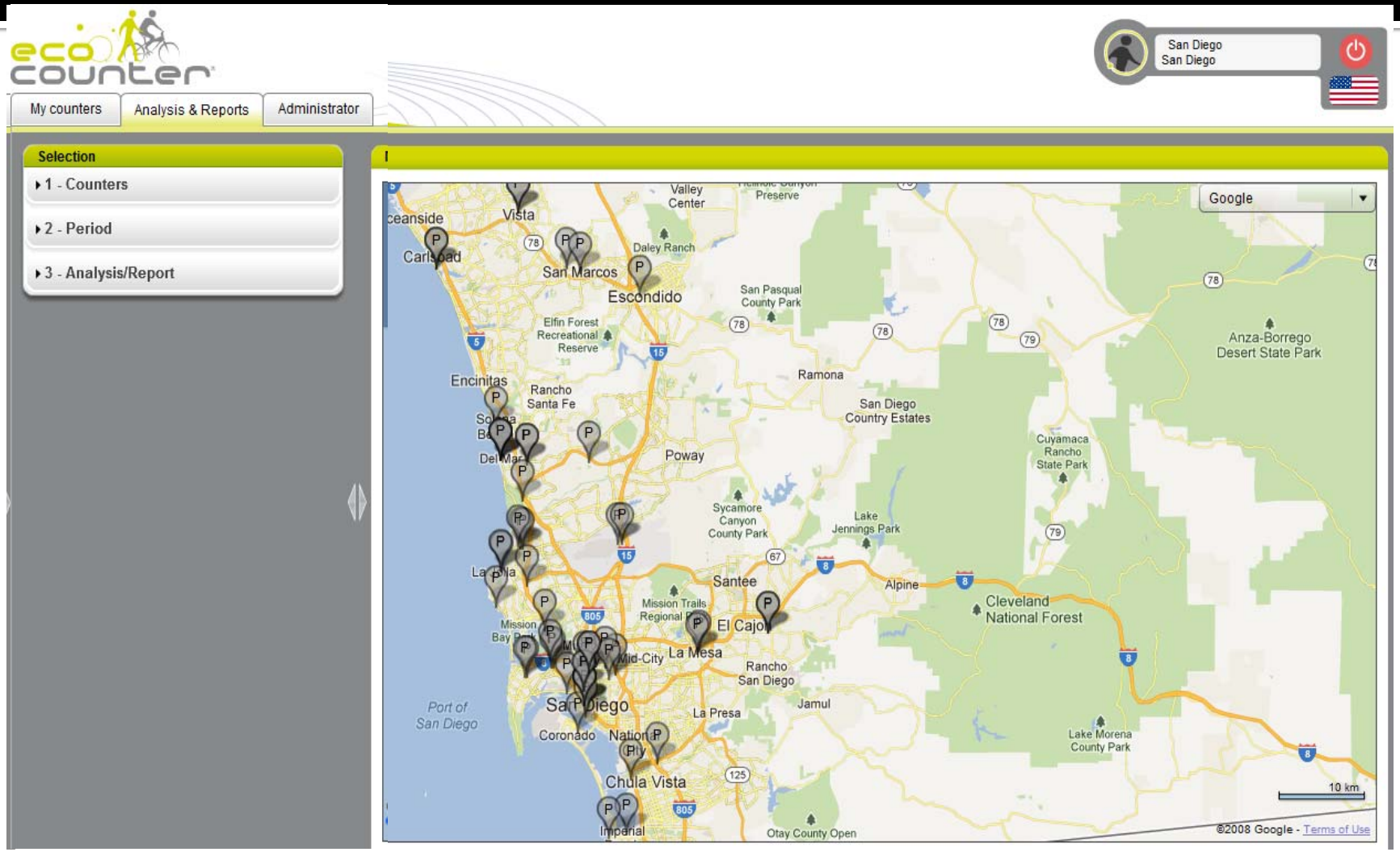
4th Avenue - Zelt



Pacific Highway - *Zelt*

San Diego River Bike Path
Eco-Multi

Automated Web-Based Data Upload



Eco-Visio Web-based Software

Data Downloads

Time Intervals

- Annual
- Monthly
- Weekly
- Daily
- Hourly
- 15-minutes

Formats

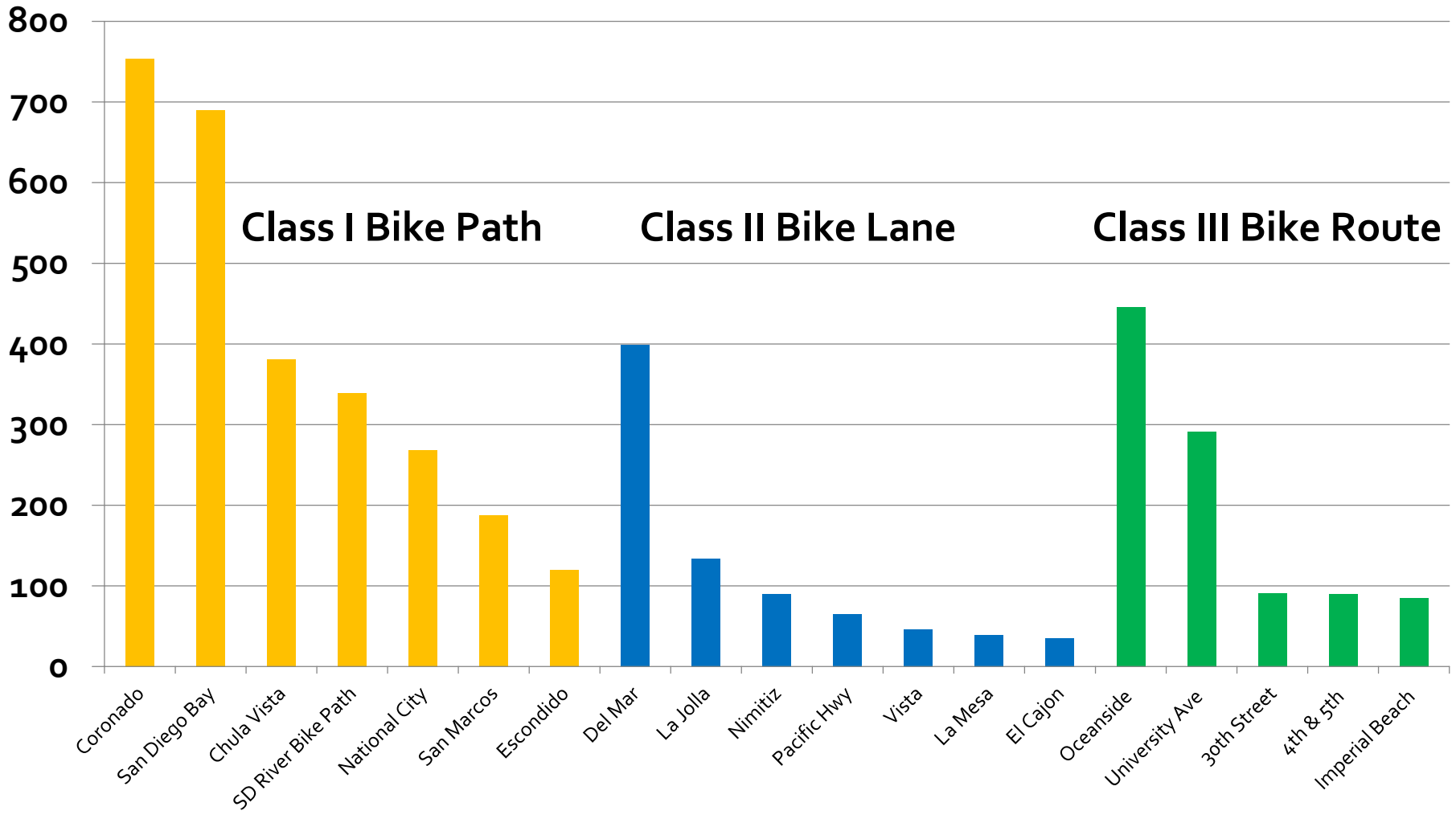
- Excel Spreadsheets
- Ready-made Charts
- Averages
- Word and PDF Reports

Data Applications

- Understanding Order of Magnitude
- Usage by Facility Types
- Temporal Patterns
  - *Month of Year*
  - *Day of Week*
  - *Hour of Day*
- Improved Measures of Health, Air Quality and Safety

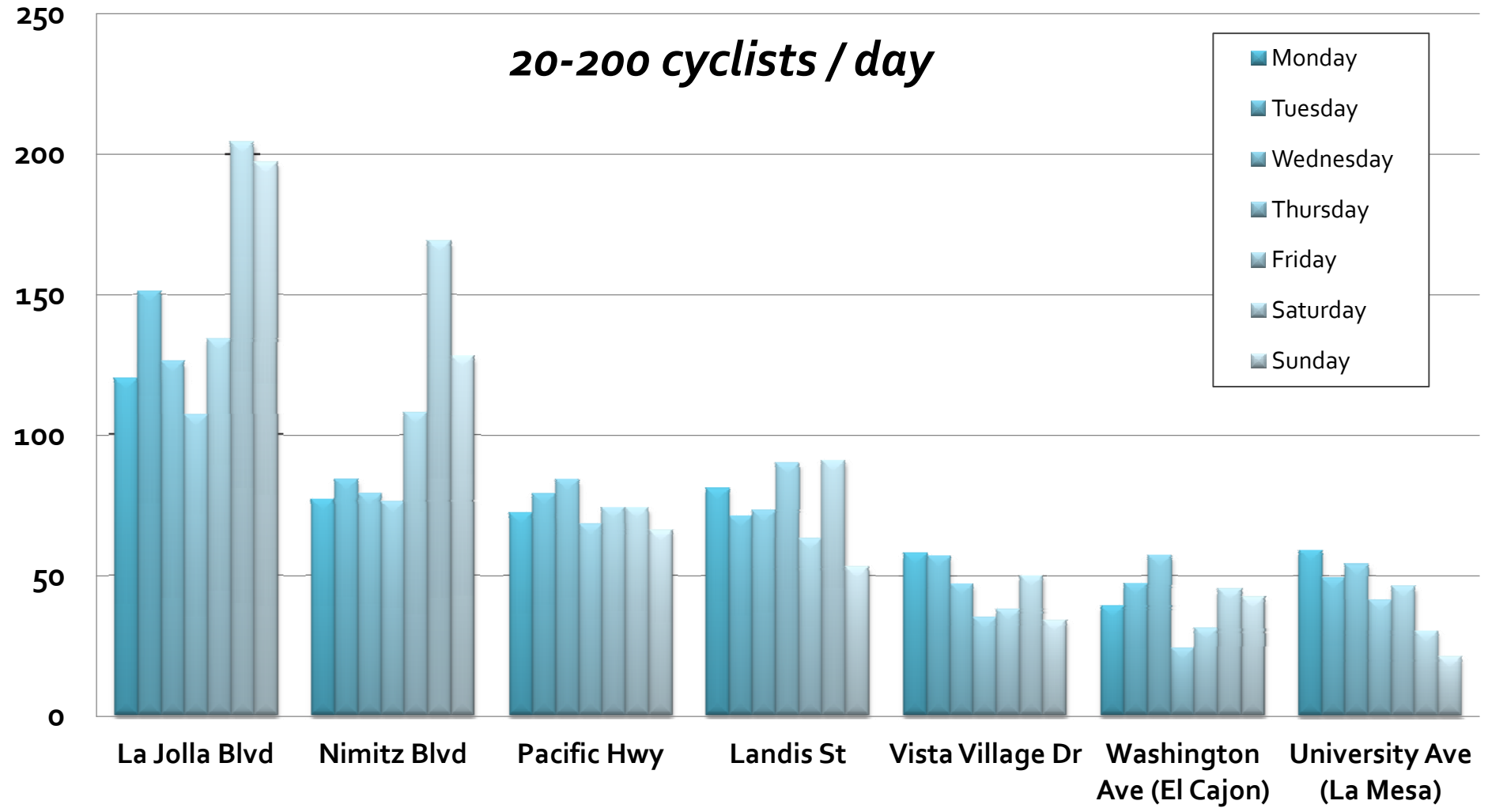
Average Daily Bicycle Travel by Facility Type

October 2012



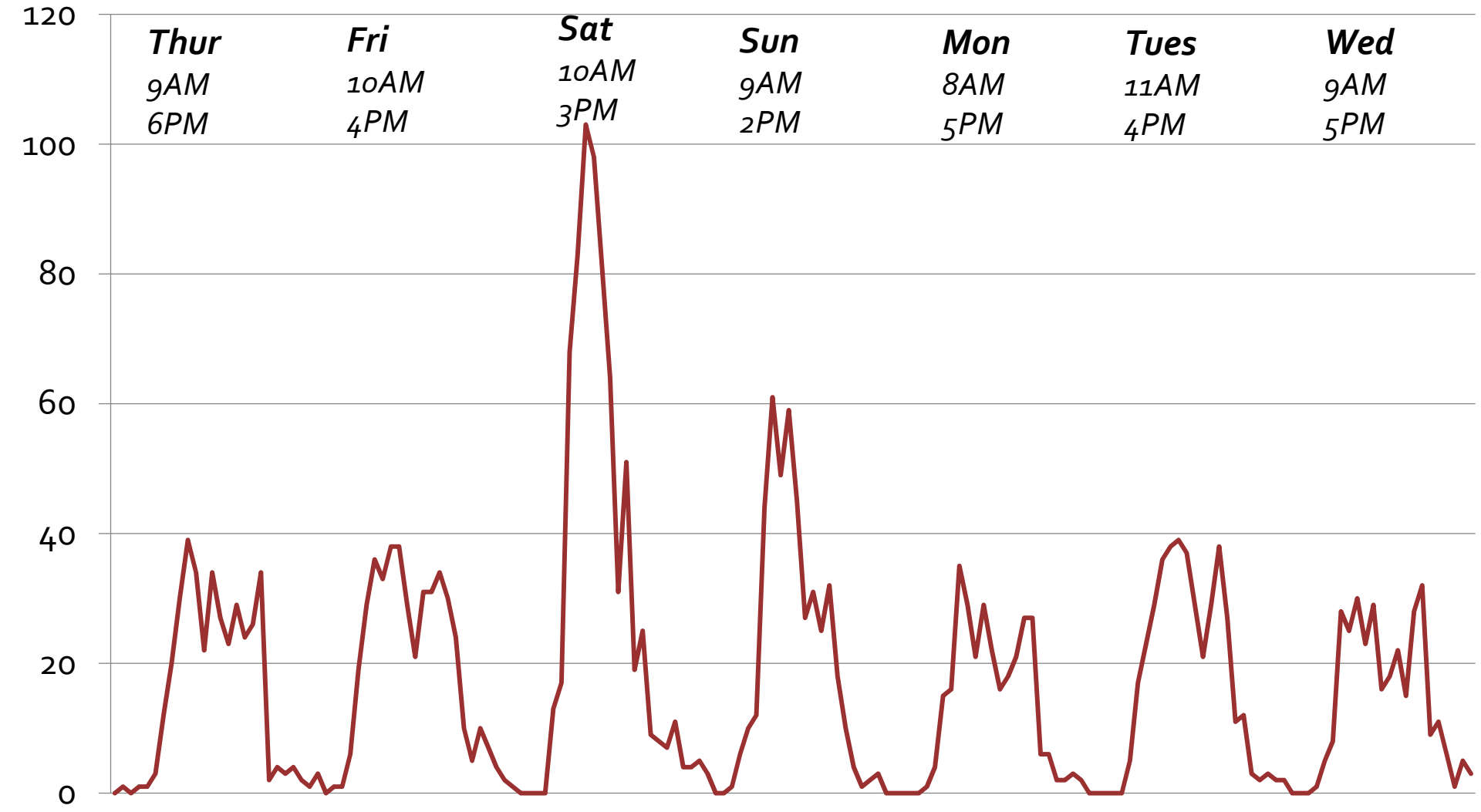
Daily Cyclists along Class II Bike Lane

Last Week of September 2012



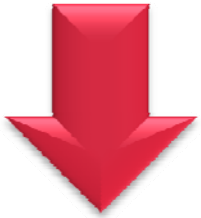
Hourly Cyclists - Rose Canyon Bike Path

1st Week of November – Hourly Volumes



Key Future Data Applications

Estimating Community-wide
Daily Bicycle Volumes



Improved Assessments of Health, Air Quality,
Safety related to Cycling

Estimating Daily Bicycle Volumes

Percent of Total Daily Volume Occurring Between 4PM - 6PM

(4PM-6PM Manual Count)

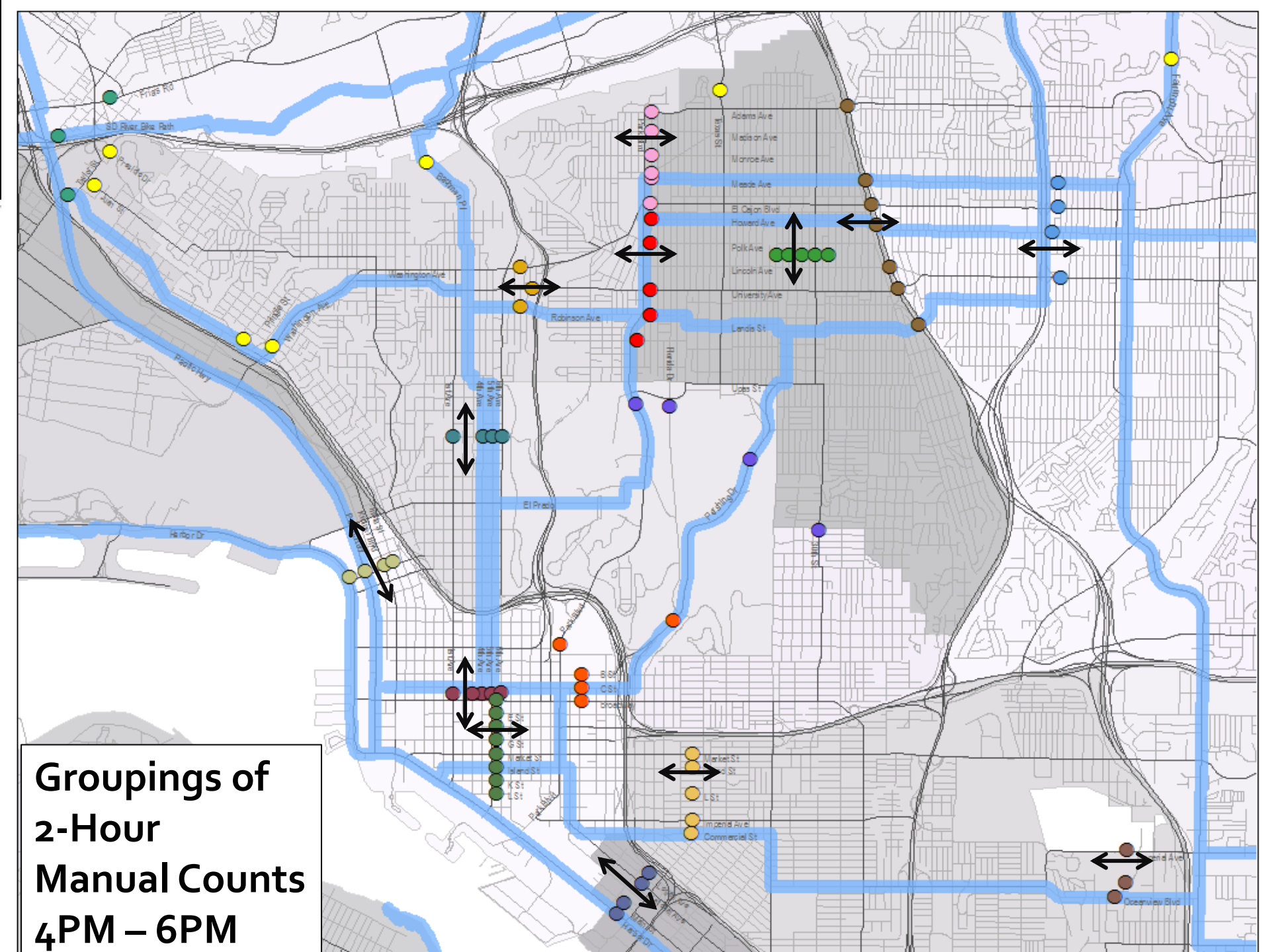
÷

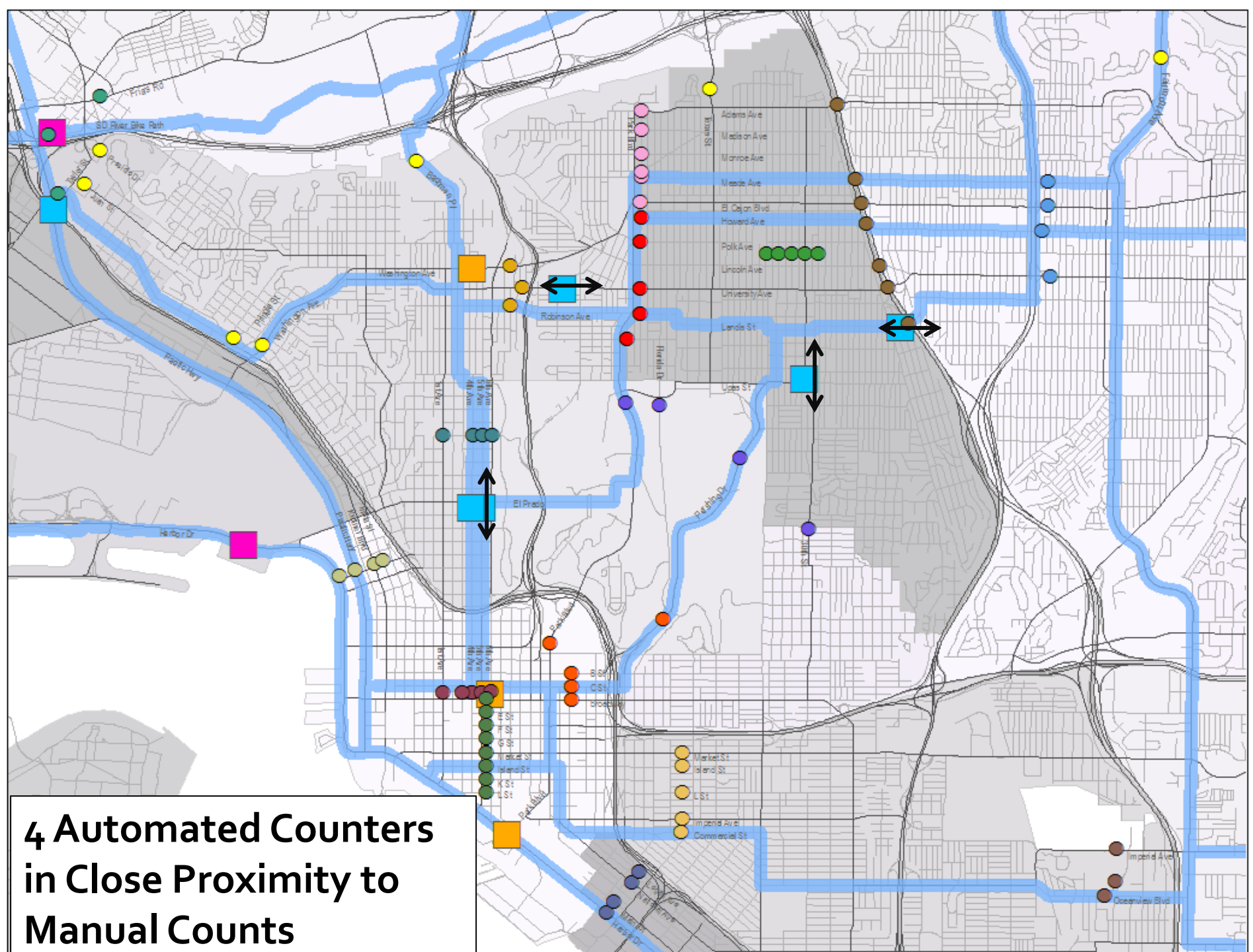
(Percent of

Total Daily Volume Occuring 4PM-6PM)

= *Estimated Total Daily Volume*

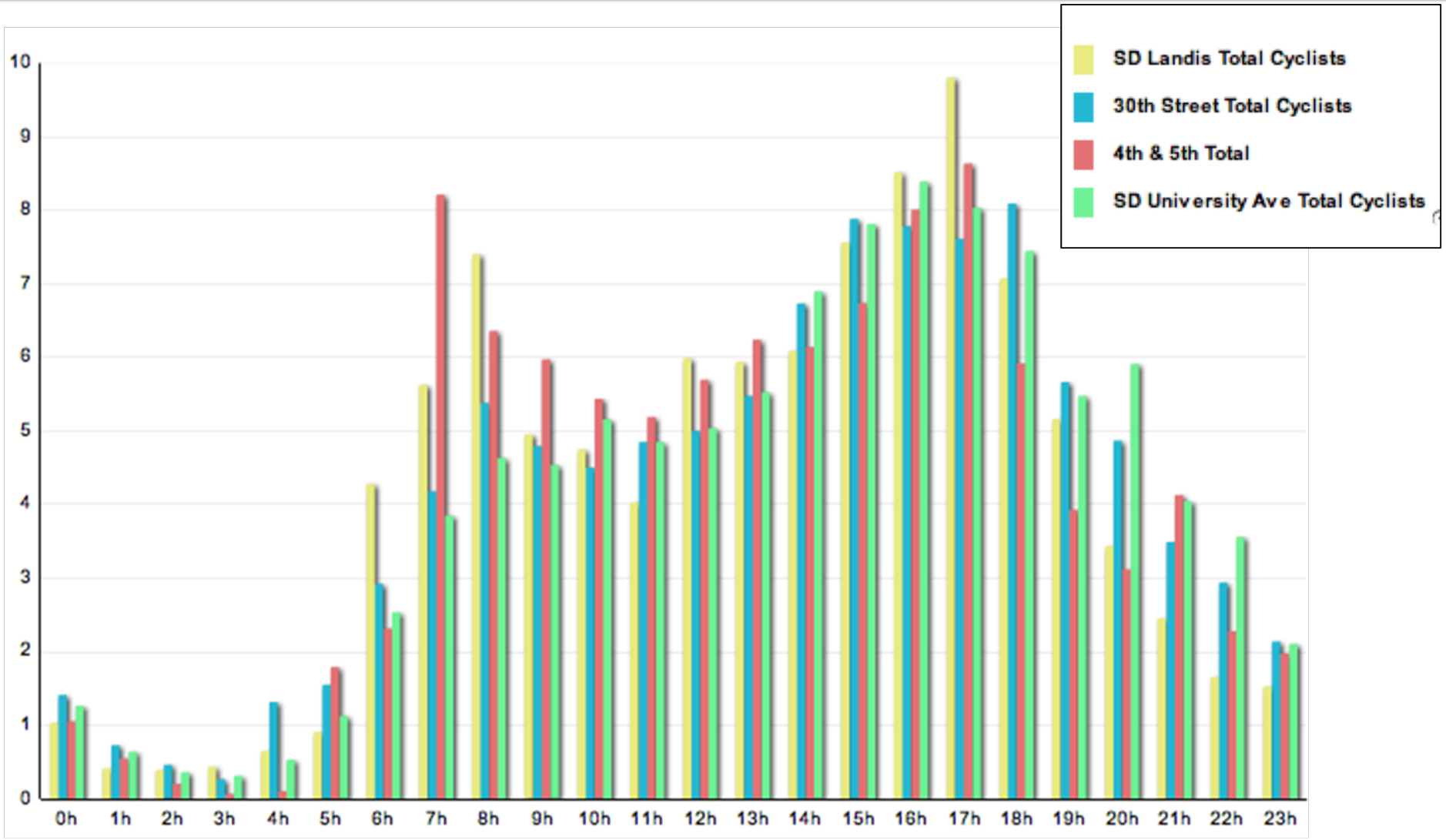
50 Cyclist 4PM-6PM ÷ 15% = 333 Daily Cyclists

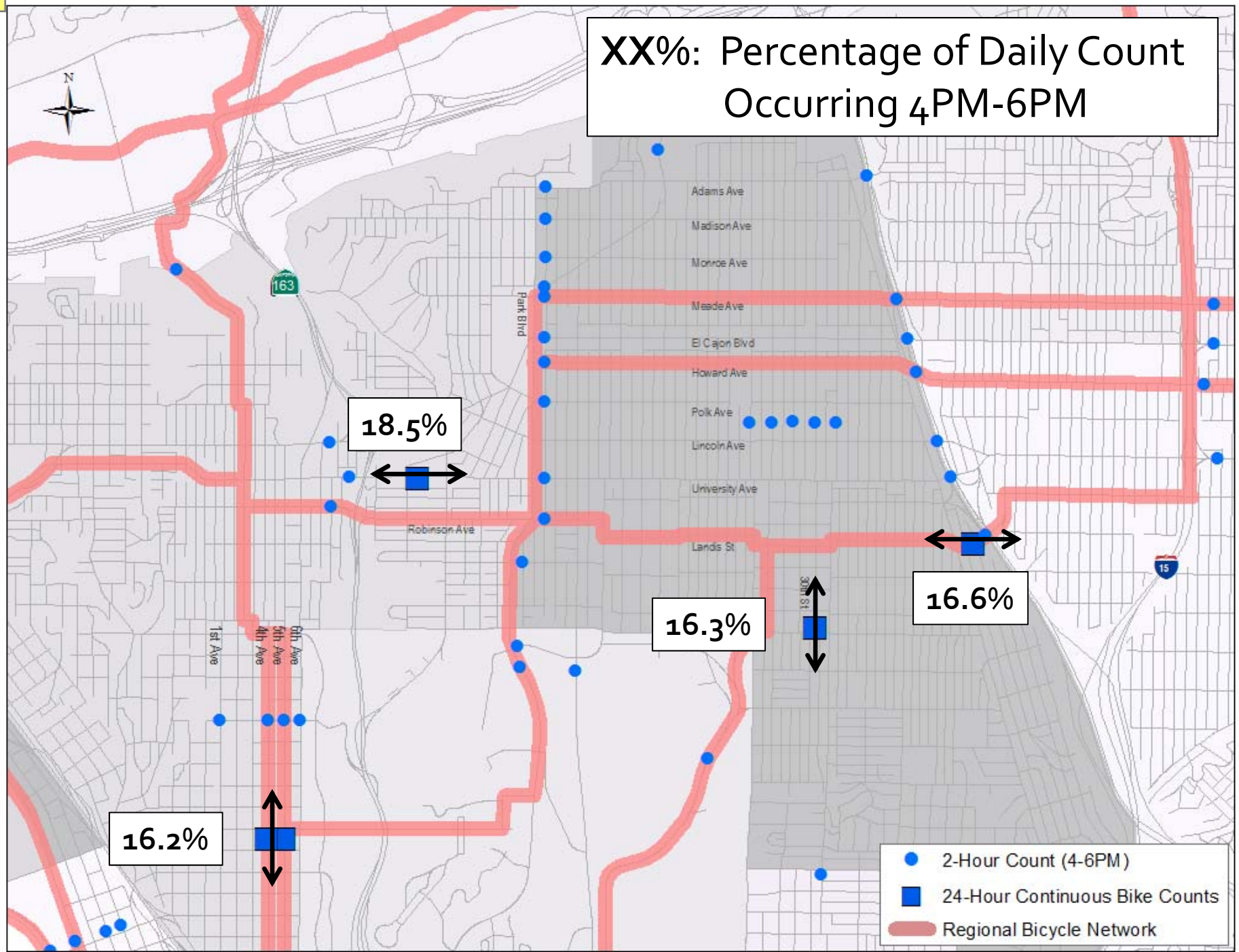

Groupings of
2-Hour
Manual Counts
4PM – 6PM

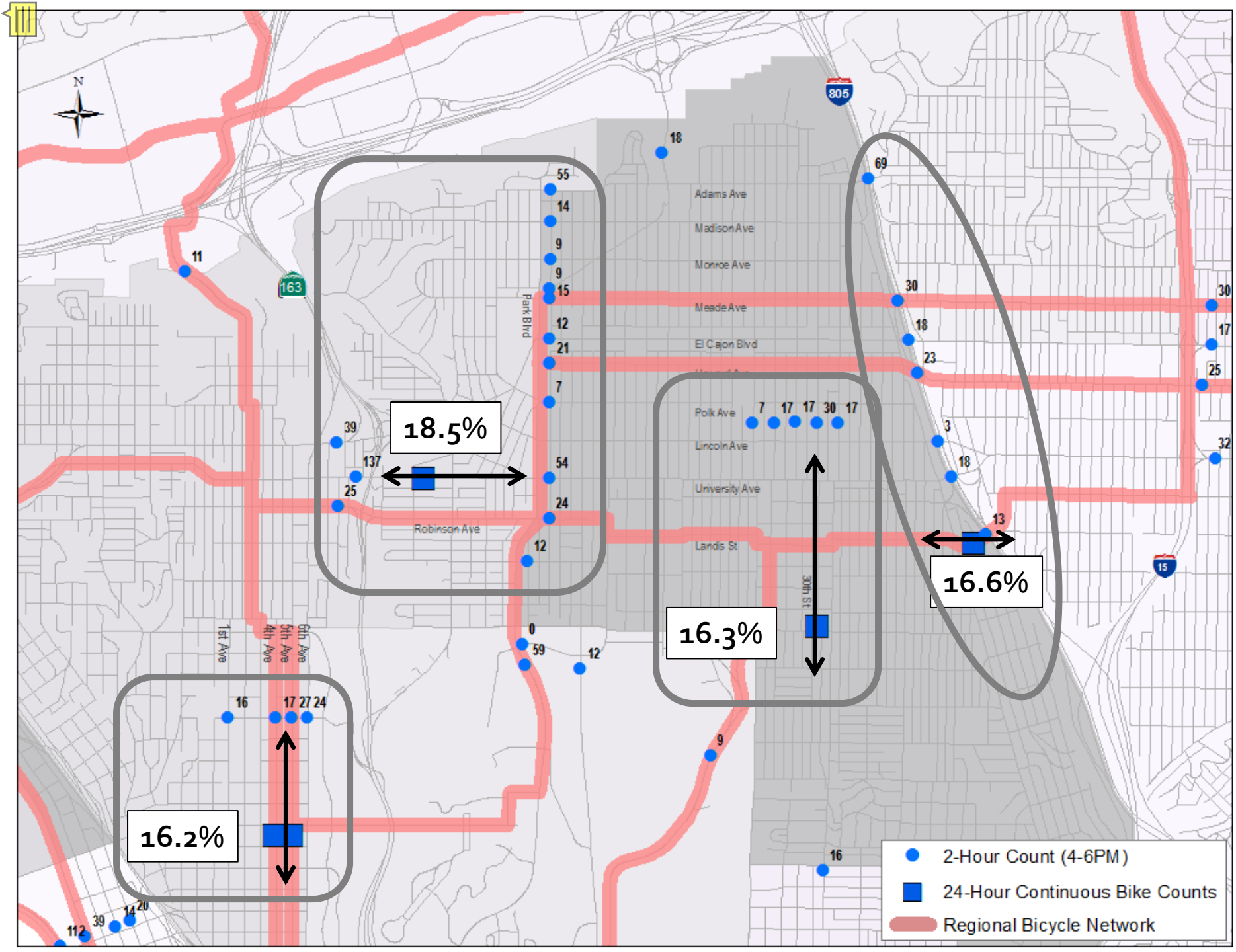


4 Automated Counters in Close Proximity to Manual Counts

Average Percent of Daily Volume by Hour




XX%: Percentage of Daily Count Occurring 4PM-6PM
N
Adams Ave
Madison Ave
Monroe Ave
Meade Ave
El Cajon Blvd
Howard Ave
Polk Ave
Lincoln Ave
University Ave
Landis St
Robinson Ave
Park Blvd
30th St
1st Ave
4th Ave
5th Ave
6th Ave
163
15
18.5%
16.3%
16.6%
16.2%
2-Hour Count (4-6PM)
24-Hour Continuous Bike Counts
Regional Bicycle Network


N
805
163
15
Adams Ave
Madison Ave
Monroe Ave
Meade Ave
El Cajon Blvd
Polk Ave
Lincoln Ave
University Ave
Landis St
Robinson Ave
Park Blvd
30th St
1st Ave
4th Ave
5th Ave
6th Ave
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2-Hour Count (4-6PM)
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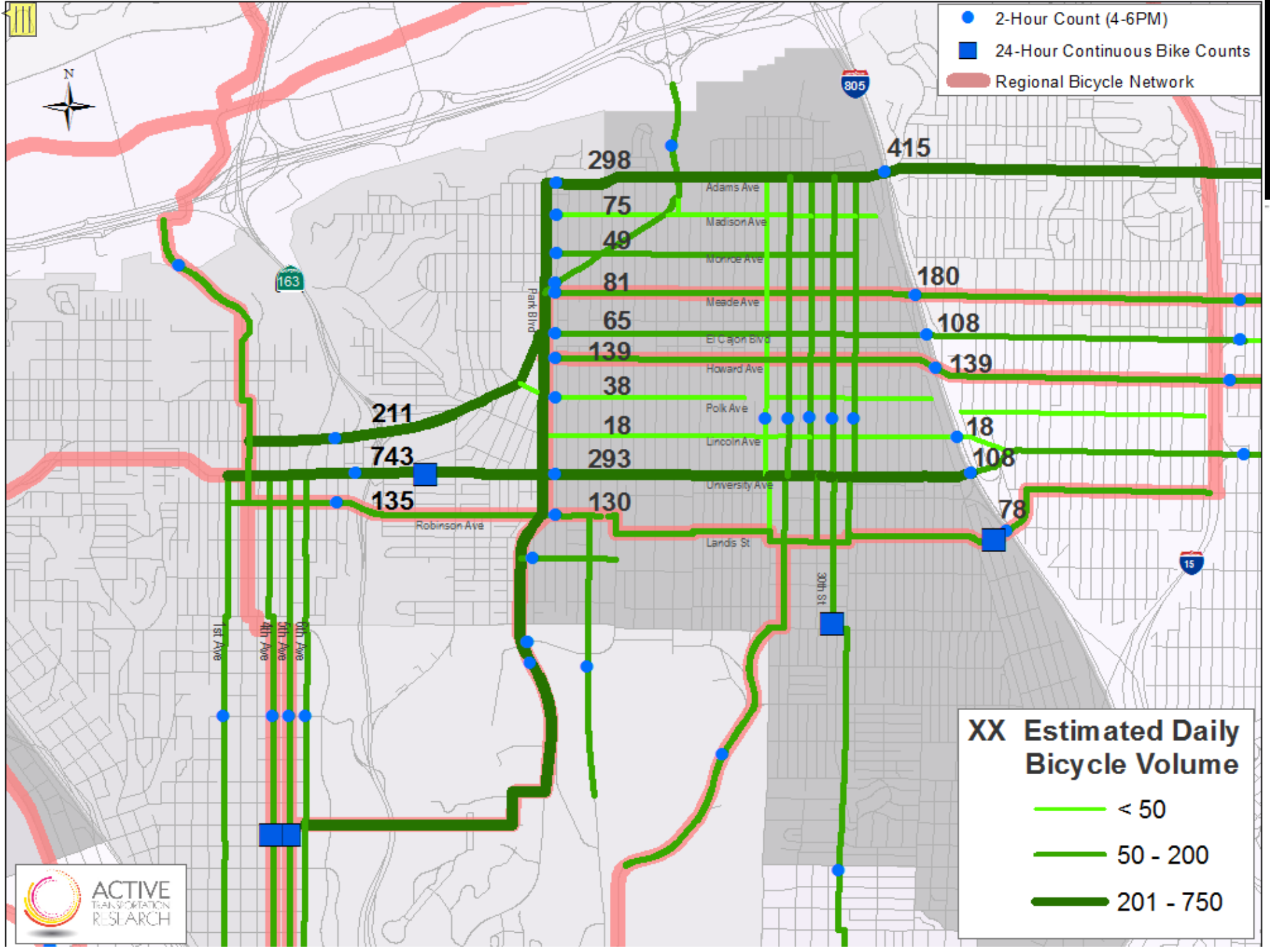
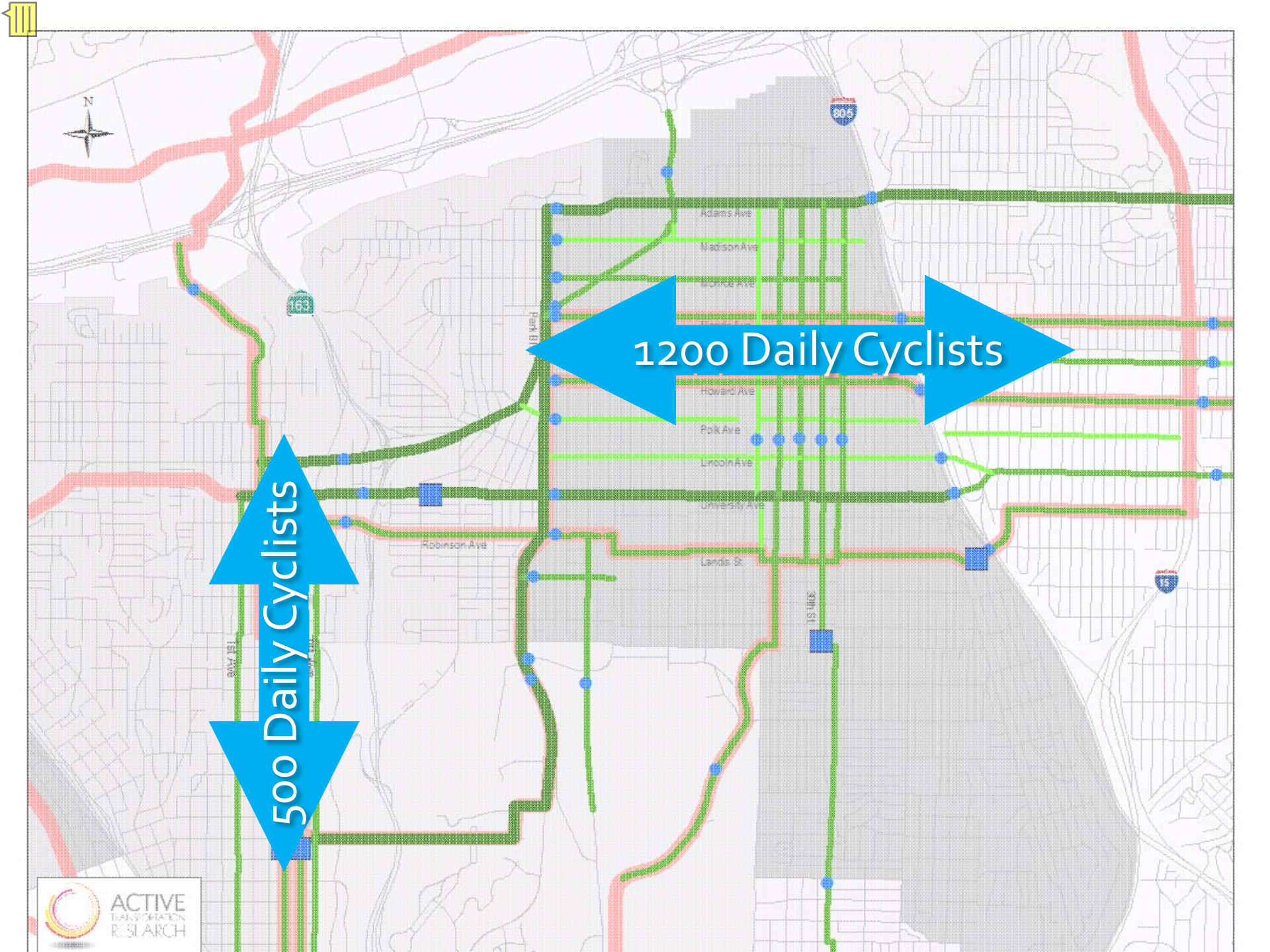

2-Hour Count (4-6PM)
24-Hour Continuous Bike Counts
Regional Bicycle Network
N
805
163
15
298
75
49
81
65
139
38
18
293
130
415
180
108
139
18
108
78
211
743
135
Adams Ave
Madison Ave
Monroe Ave
Meade Ave
El Cajon Blvd
Howard Ave
Polk Ave
Lincoln Ave
University Ave
Landis St
Robinson Ave
Park Blvd
30th St
1st Ave
4th Ave
5th Ave
6th Ave
XX Estimated Daily Bicycle Volume
< 50
50 - 200
201 - 750
ACTIVE TRANSPORTATION RESEARCH


1200 Daily Cyclists
500 Daily Cyclists
ACTIVE TRANSPORTATION RESEARCH

Improved Health Assessment of Cycling

GPS Data Collection Combined with Daily Volumes

East – West Bike Flows in North Park

29 Average Minutes per Bike Trip (GPS Data; N=332)

X 1,200 Average Daily Bike Trips (Estimated Daily Volume)

= 34,800 Minutes of Daily Cycling

OR

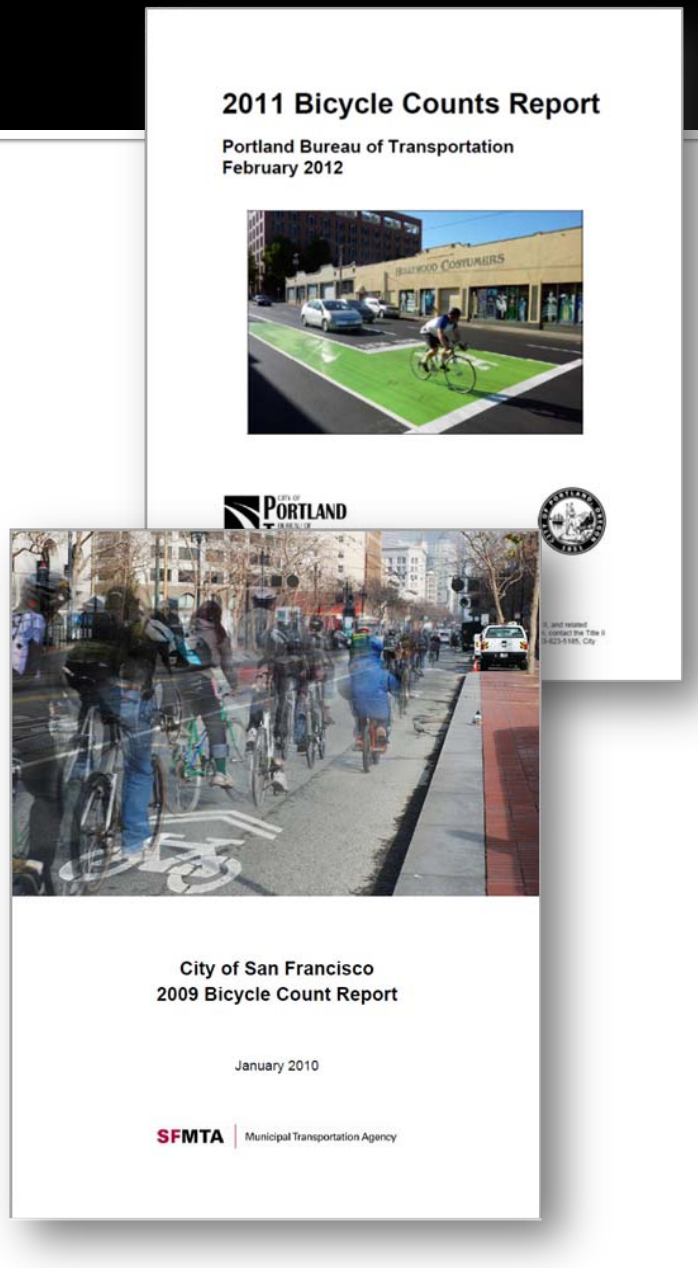
= 580 Daily Bicycle Hours of Travel

Improved Air Quality & Safety Assessments

- **Air Quality – (bicycle volumes & intercept surveys)**
  - Intercept Cyclists, and ask…
    - Is your trip replacing an auto trip?
    - What's your origin / destination (trip length)
    - Calculate vehicle-miles avoided via cycling
- **Safety – (bicycle volumes & collision data)**
  - Bicycle Collisions ÷ Daily Estimated Cycling Volumes

Next Steps

- Secure Funding for System Sustainability and Expansion
- Structure Regional Data Access
- Integrate Data into Mainstream Planning and Evaluation

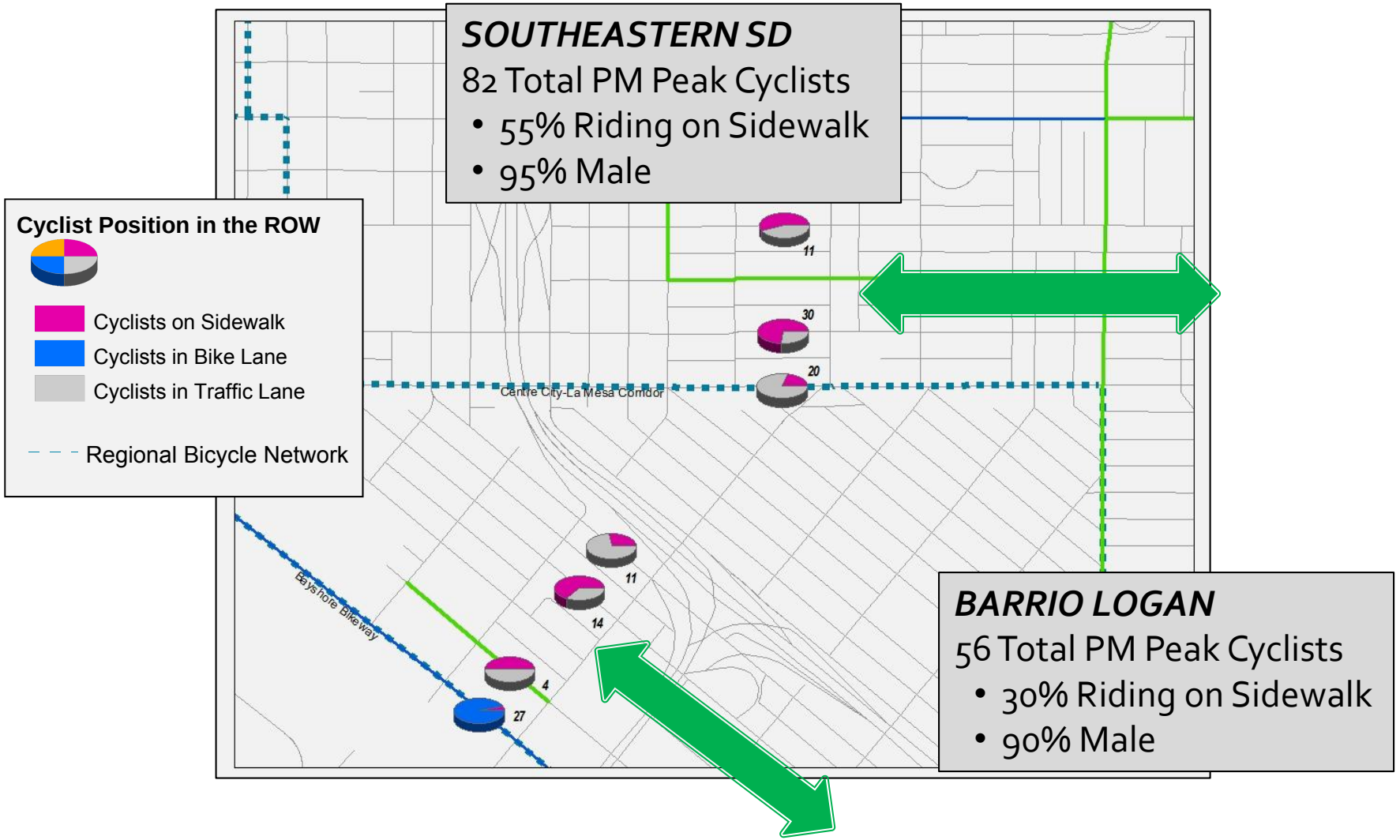


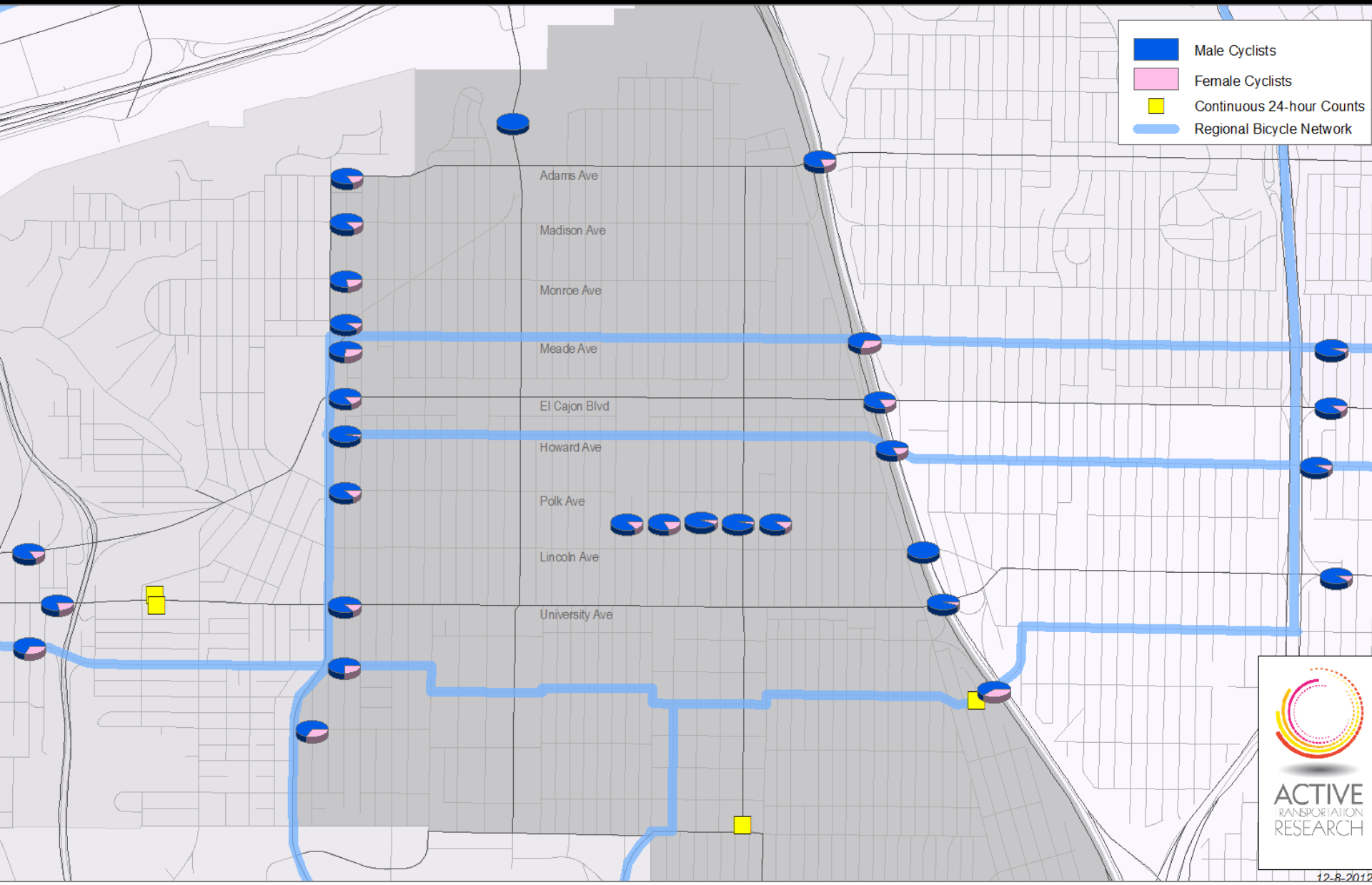
Thank You!

Sherry Ryan, PhD
sryan@mail.sdsu.edu
858-349-5330

http://ipua.sdsu.edu/ATR/

Cyclist Gender and Sidewalk Cycling




Male Cyclists
Female Cyclists
Continuous 24-hour Counts
Regional Bicycle Network
Adams Ave
Madison Ave
Monroe Ave
Meade Ave
El Cajon Blvd
Howard Ave
Polk Ave
Lincoln Ave
University Ave
ACTIVE
TRANSPORTATION
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12-8-2012