

# Regional Bicycle Data Collection and Metrics

## *San Diego and Maricopa County*

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# Presentation Overview

- San Diego Region –  
*Permanent, Continuous, Automated  
Bike and Ped Count Program*
- Maricopa Association of  
Government (MAG) –  
*Temporary, Continuous, Automated &  
Manual Bike Count Program*



# Eco-Counter Technology – *Permanent & Temporary*

## Zelt Logger & Inductive Loops



## Zelt Logger & Pneumatic Tubes



## Eco-Multi



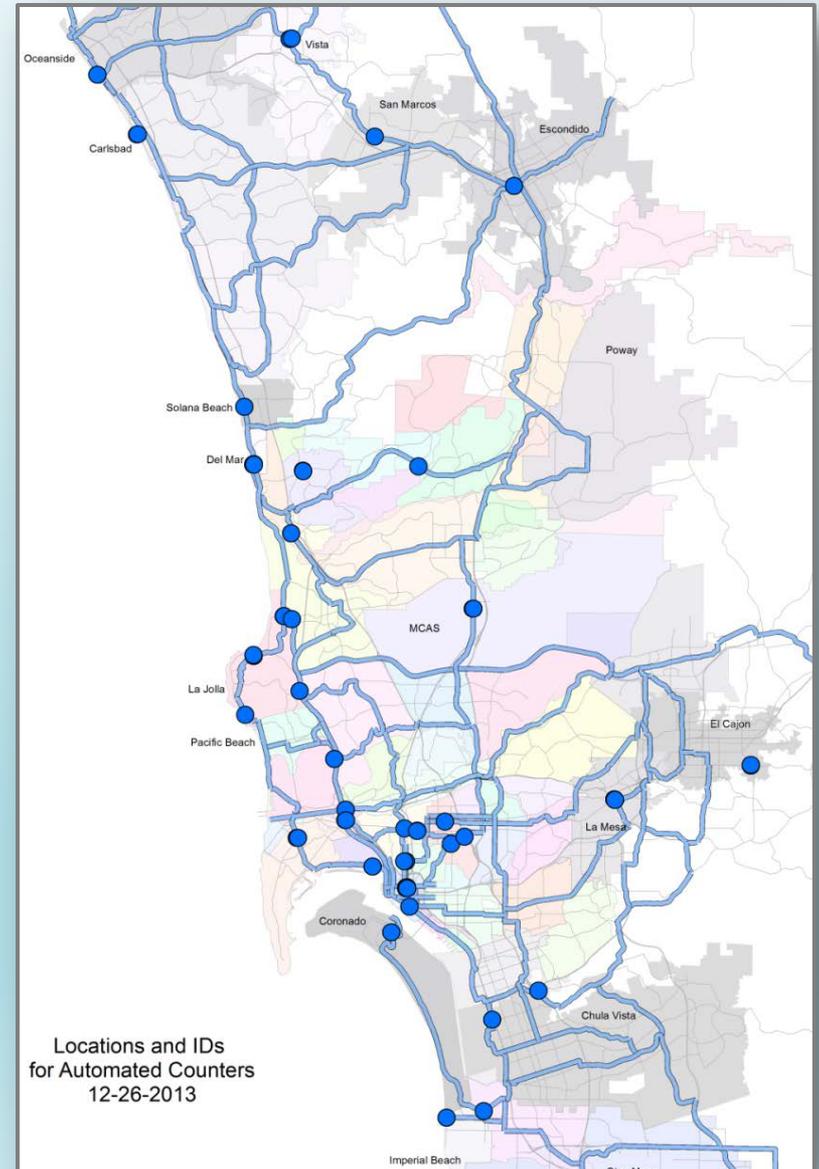
## Pyro



# San Diego Counting Program

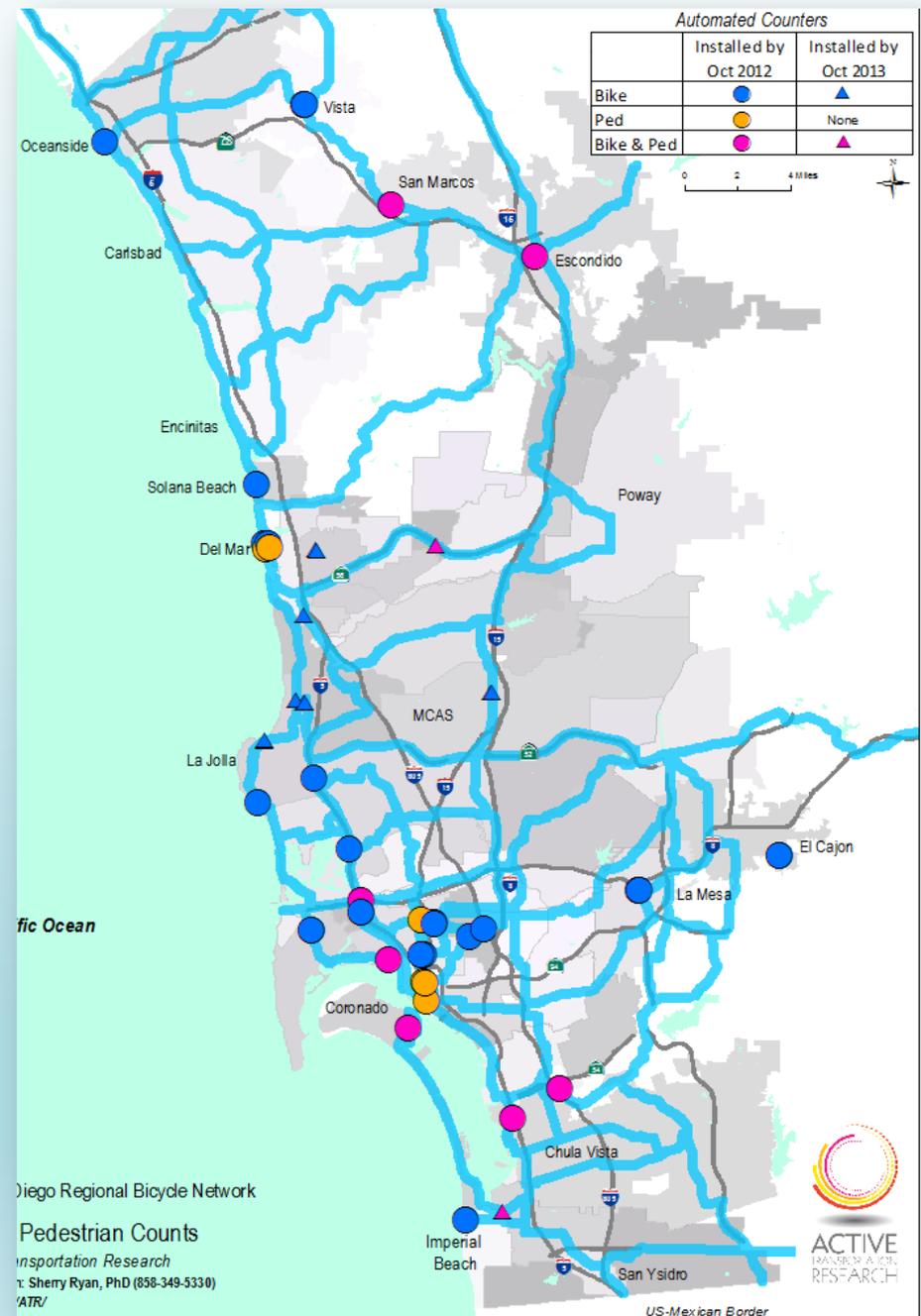
## *Permanent Continuous Automated Counting*

- 54 units in 37 TOTAL SITES
  - 24 Bike Only - *Class II or III*
  - 9 Bike & Ped - *Class I*
  - 4 Pedestrian Only - *Urban*



# Four Count Network Siting Criteria

- 1. Presence of existing and planned unbuilt bicycle facility*
- 2. Representative of the majority of cities*



# Count Location Siting Criteria

## 3. Representative of the regional bike network

### Census Data Inputs to Sampling Strata (by Census Block Group)

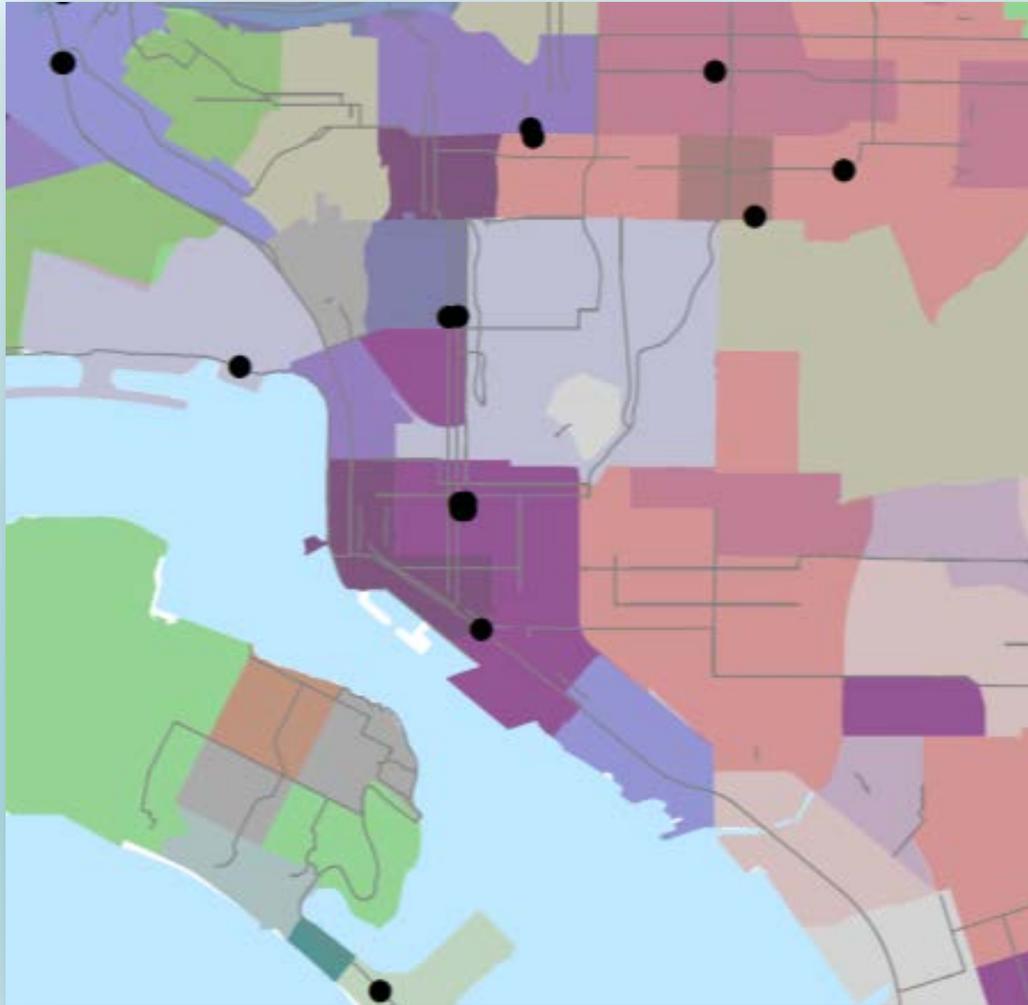
Category	Range	Breaks	Standard Deviation Range
<b>Population Density</b>			
High	1	Greater than 11.2 persons per acre	+0.5 and above
Medium	2	5.05 – 11.2 persons per acre	-0.5 and +0.5
Low	3	Less than 5.05 persons per acre	Below -0.5
<b>Employment Density</b>			
High	1	Greater than 5.56 jobs per acre	+0.5 and above
Medium	2	1.59 – 5.56 jobs per acre	0 and +0.5
Low	3	Less than 1.59 jobs per acre	Below 0 (below mean)
<b>Median Income</b>			
High	1	Greater than \$59,558	+0.5 and above
Medium	2	\$35,863 - \$59,558	-0.5 and +0.5
Low	3	Less than \$35,863	Below -0.5

### Definition of 27 Sampling Strata

		High	Medium	Low			High	Medium	Low			High	Medium	Low	
		Employment			Employment			Employment					Employment		
High	Population	1	2	3	High	Population	4	5	6	High	Population	7	8	9	
Medium		10	11	12	Medium		13	14	15	Medium		16	17	18	
Low		19	20	21	Low		22	23	24	Low		25	26	27	
		High Income			Medium Income			Low Income							

# Count Location Siting Criteria

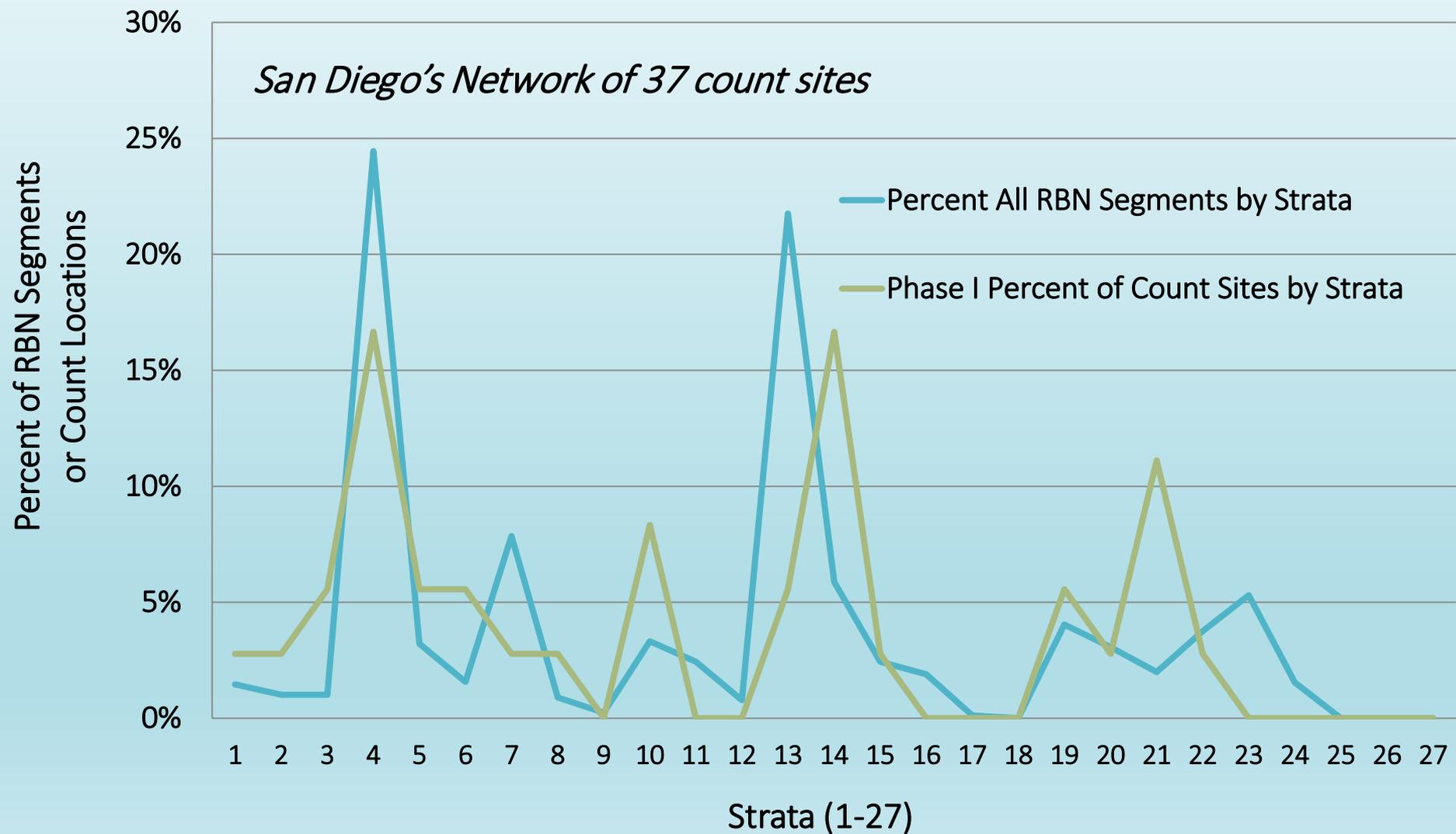
3. *Representative of the regional bike network*





# Count Location Siting Criteria

## 3. Representative of the regional bike network



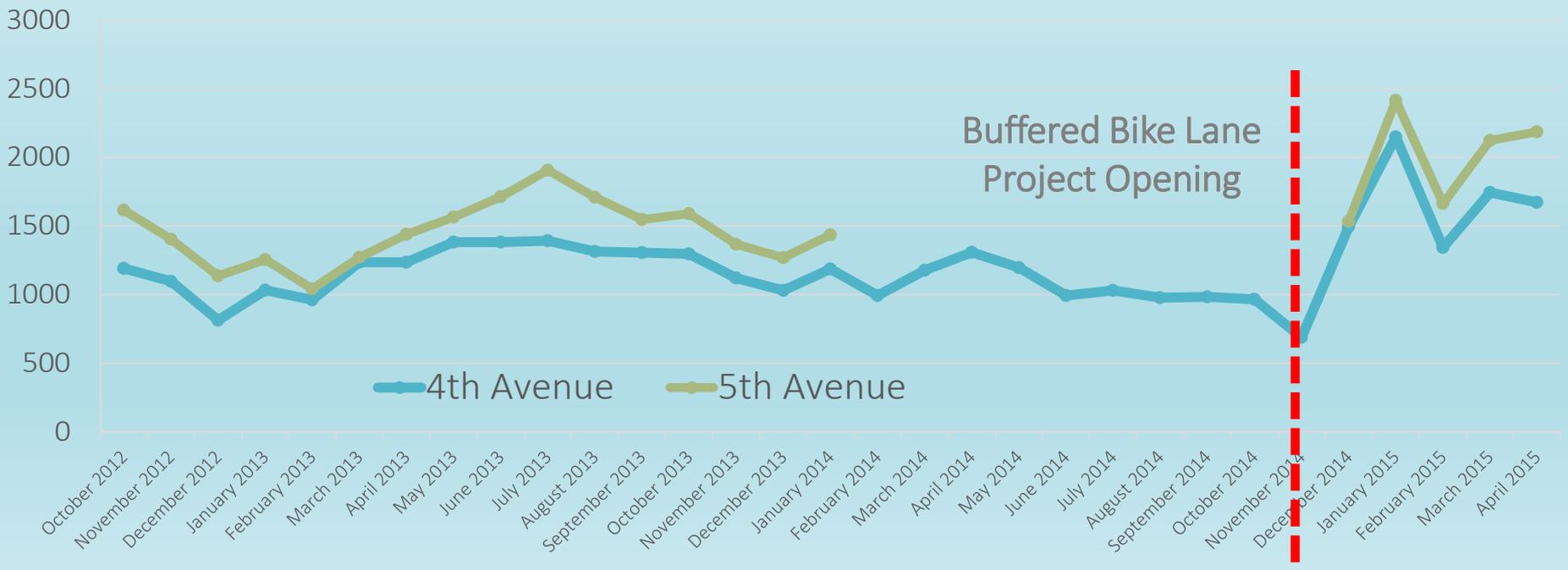
# Impact of Improved Bike Facilities of Activity Levels



1,100 -1500 cyclists/month

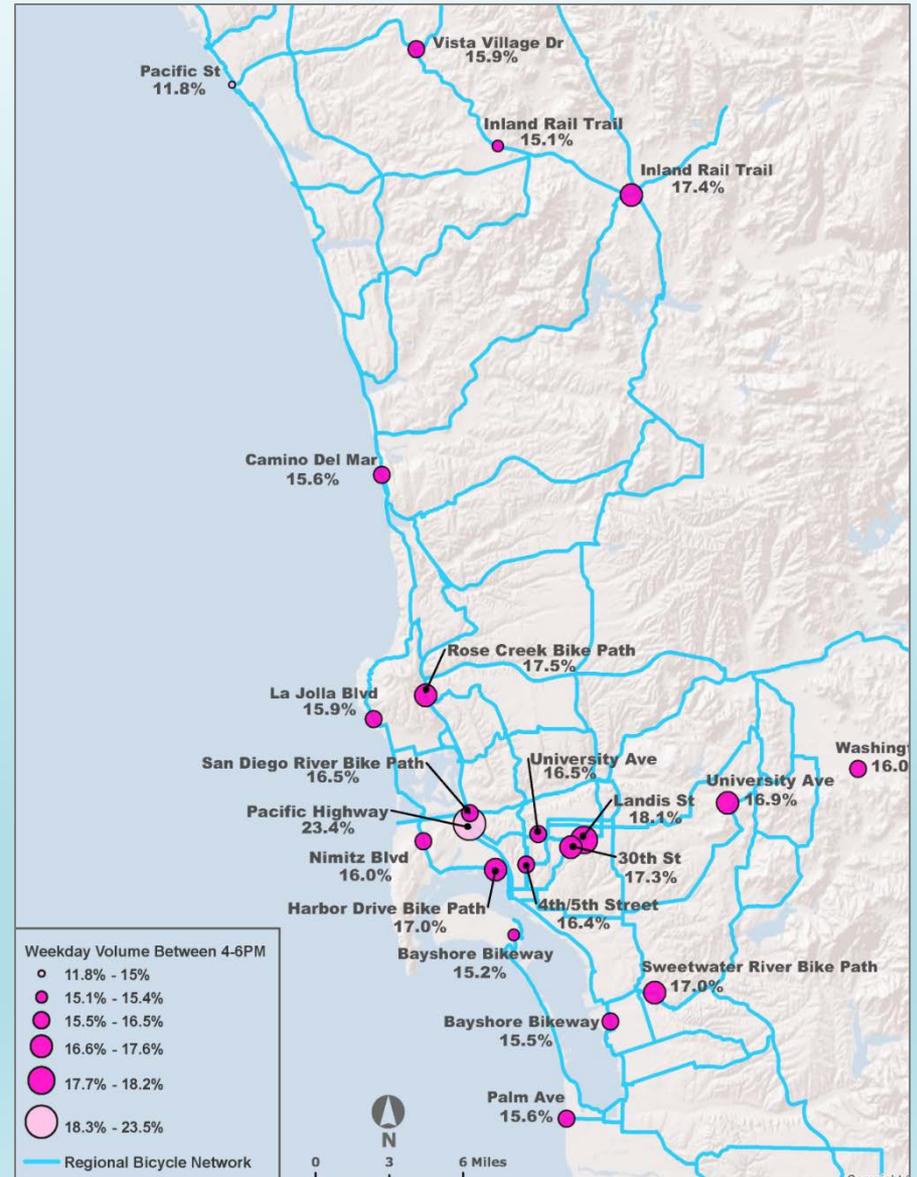


1,800 - 2,000 cyclists/month



# Percent of Daily Cycling between 4PM-6PM

Pacific Highway (San Diego)	23.4%
Landis St (San Diego)	18.1%
Rose Creek Bike Path (San Diego)	17.5%
Inland Rail Trail (Escondido)	17.4%
30th Street (San Diego)	17.3%
Harbor Drive Bike Path (San Diego)	17.0%
Sweetwater River Bike Path (National City)	16.9%
University Avenue (La Mesa)	16.9%
San Diego River Bike Path (San Diego)	16.5%
University Ave (San Diego)	16.5%
4th/5th Ave (San Diego)	16.4%
Washington Avenue (El Cajon)	16.0%
Nimitz Boulevard (San Diego)	16.0%
Highway 101 (Solana Beach)	16.0%
La Jolla Blvd (San Diego)	15.9%
Vista Village Drive (Vista)	15.9%
Camino Del Mar (Del Mar)	15.6%
Palm Avenue (Imperial Beach)	15.6%
Bayshore Bikeway (Chula Vista)	15.5%
Bayshore Bikeway (Coronado)	15.2%
Inland Rail Trail (San Marcos)	15.1%
Pacific Street (Oceanside)	11.8%
<i>Standard Deviation</i>	1.9%
<i>Mean</i>	16.5%

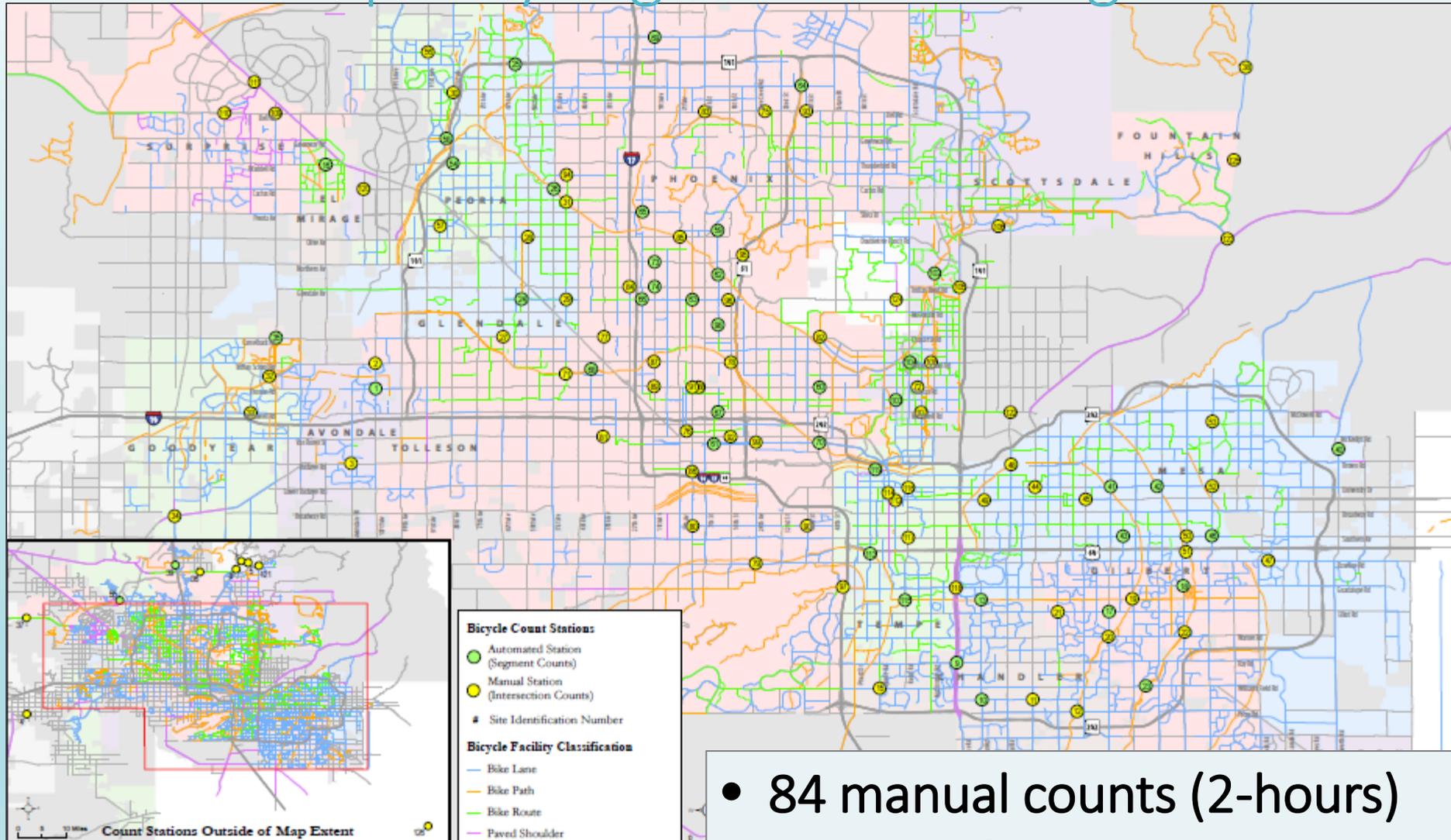


# Public Access to Continuous Count Data via SANDAG's Website

<http://www.eco-public.com/ParcPublic/?id=681>



# Maricopa Association of Governments Temporary Regional Count Program



- 84 manual counts (2-hours)
- 44 2-week continuous counts

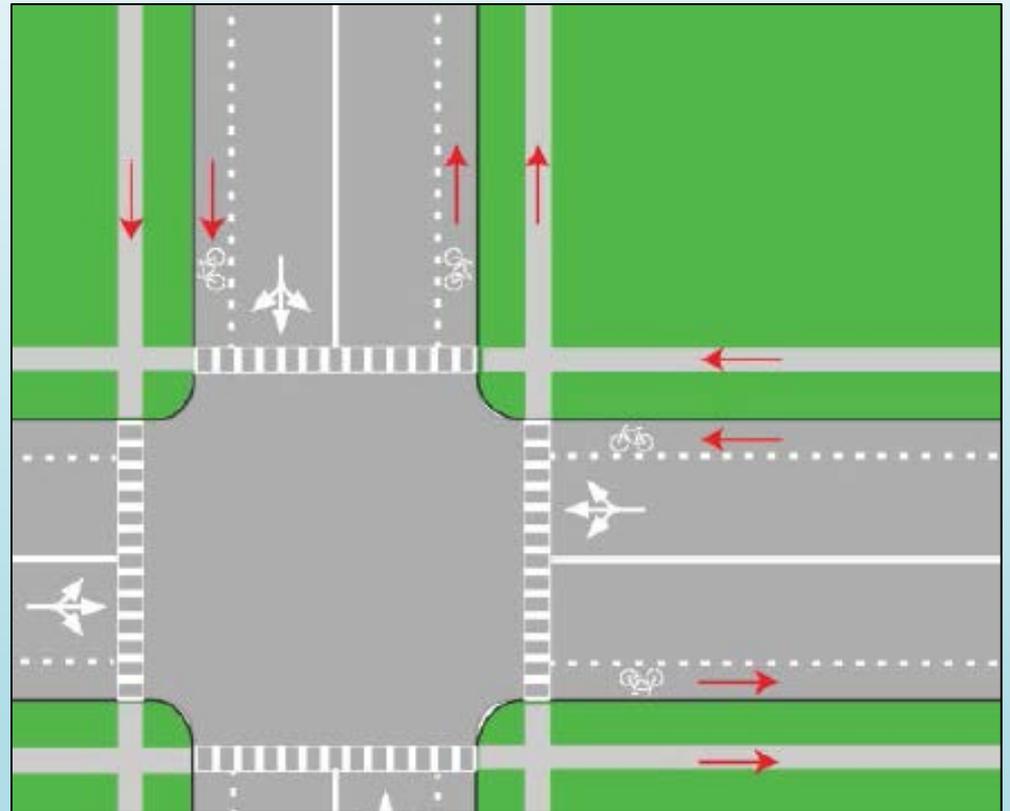
# Pneumatic Tubes for Temporary Continuous Counting



Counted over eight, 2-weeks periods in Oct and Nov 2013

# Manual Counting

- 4 Movements Recorded along Every Intersection Approach  
*(336 2-way, 2-hour segment counts)*
- Location of Cyclist Sidewalk, Travel Lane or Bike Lane

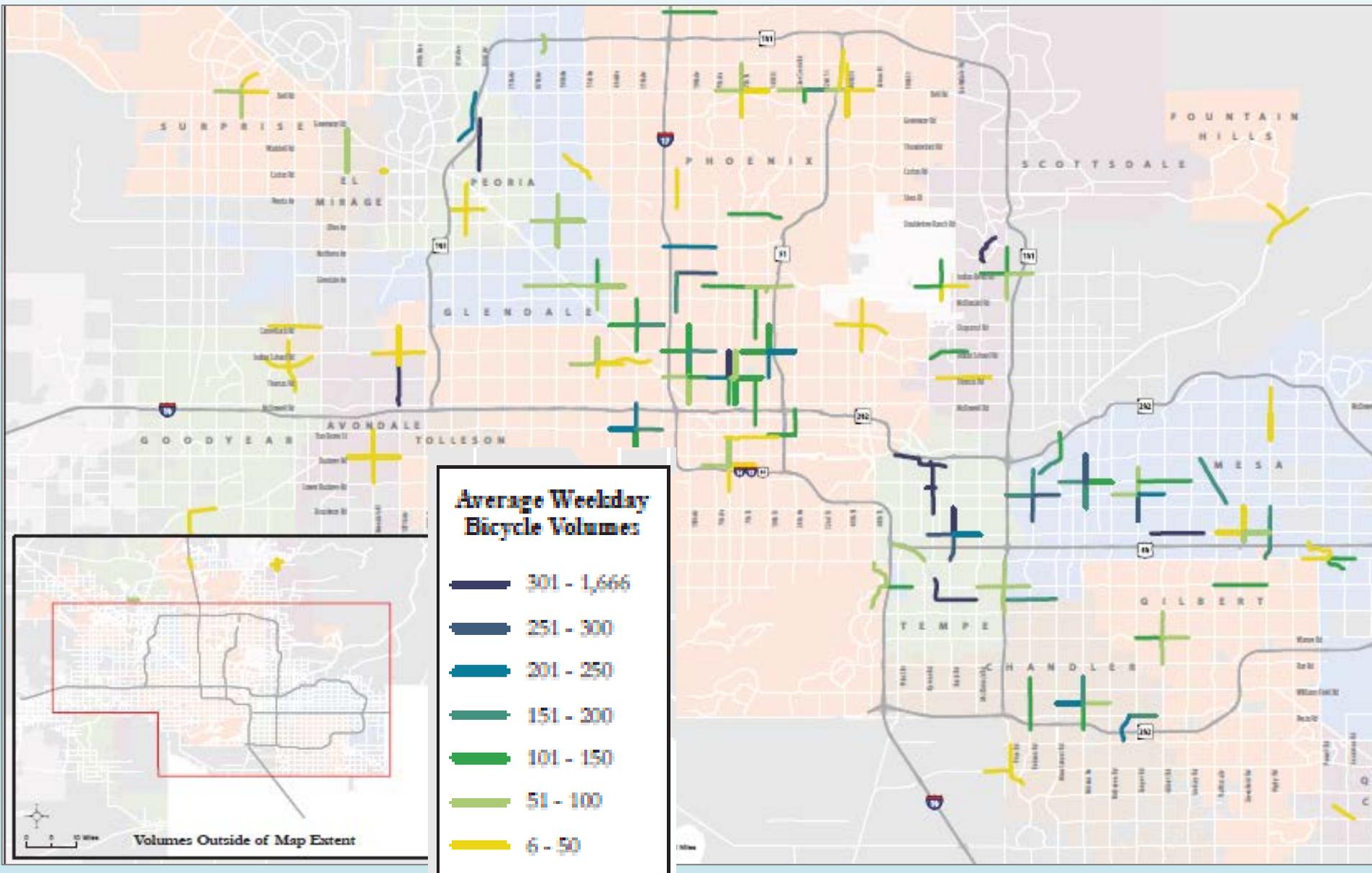


# PM Peak Period Percent of Total Daily Travel

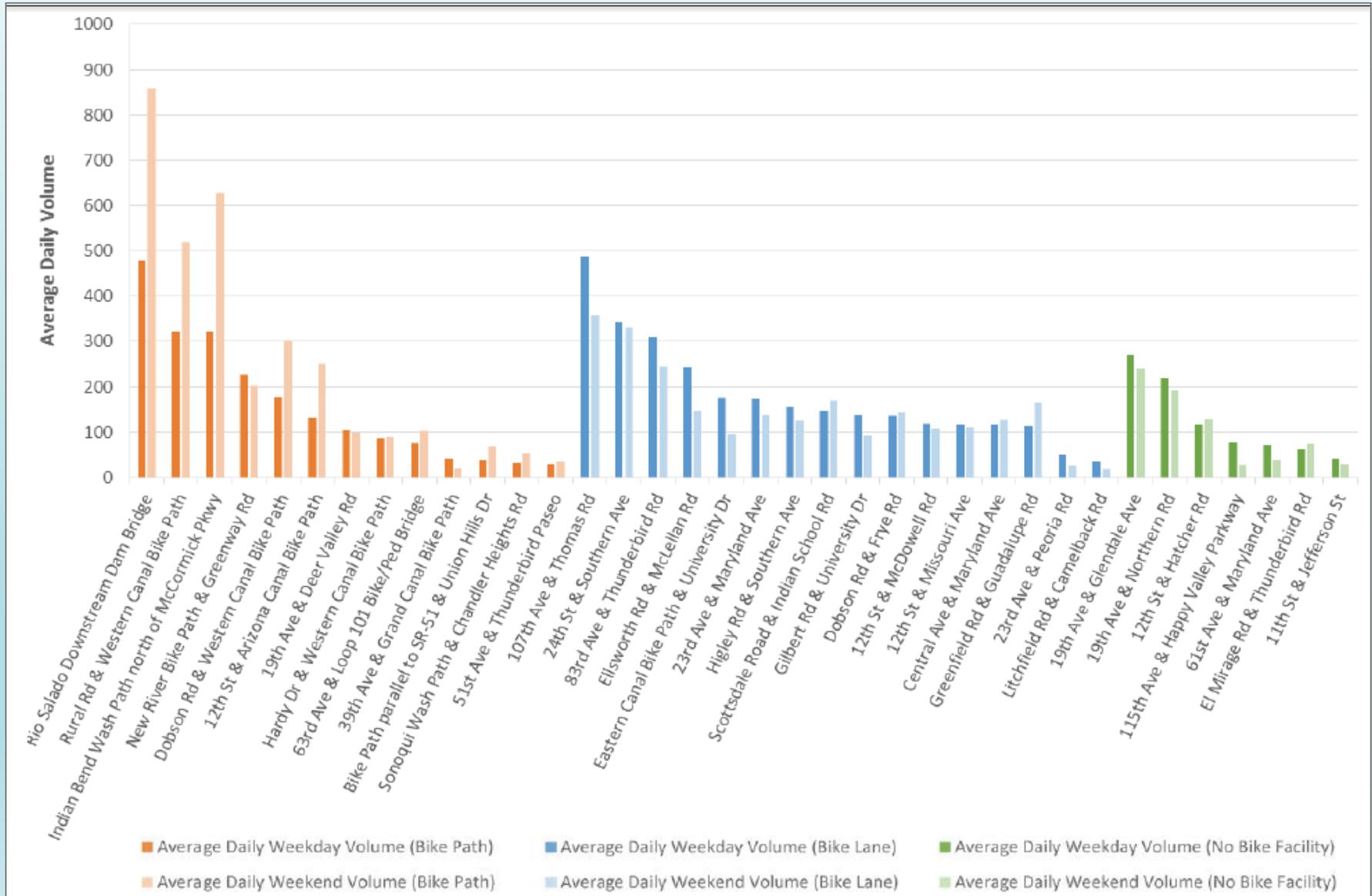
	<b>22 Sites in San Diego County</b>	<b>44 Sites in Maricopa County</b>	<b>Difference</b>
<b>Weekday Mean</b>	16.5%	16.8%	0.3%
<b>Weekday Median</b>	16.2%	16.5%	0.3%
<b>Weekend Mean</b>	21.2%	17.8%	3.4%
<b>Weekend Median</b>	21.2%	16.1%	5.1%

Use PM peak period factor to expand 336 2-hour manual counts

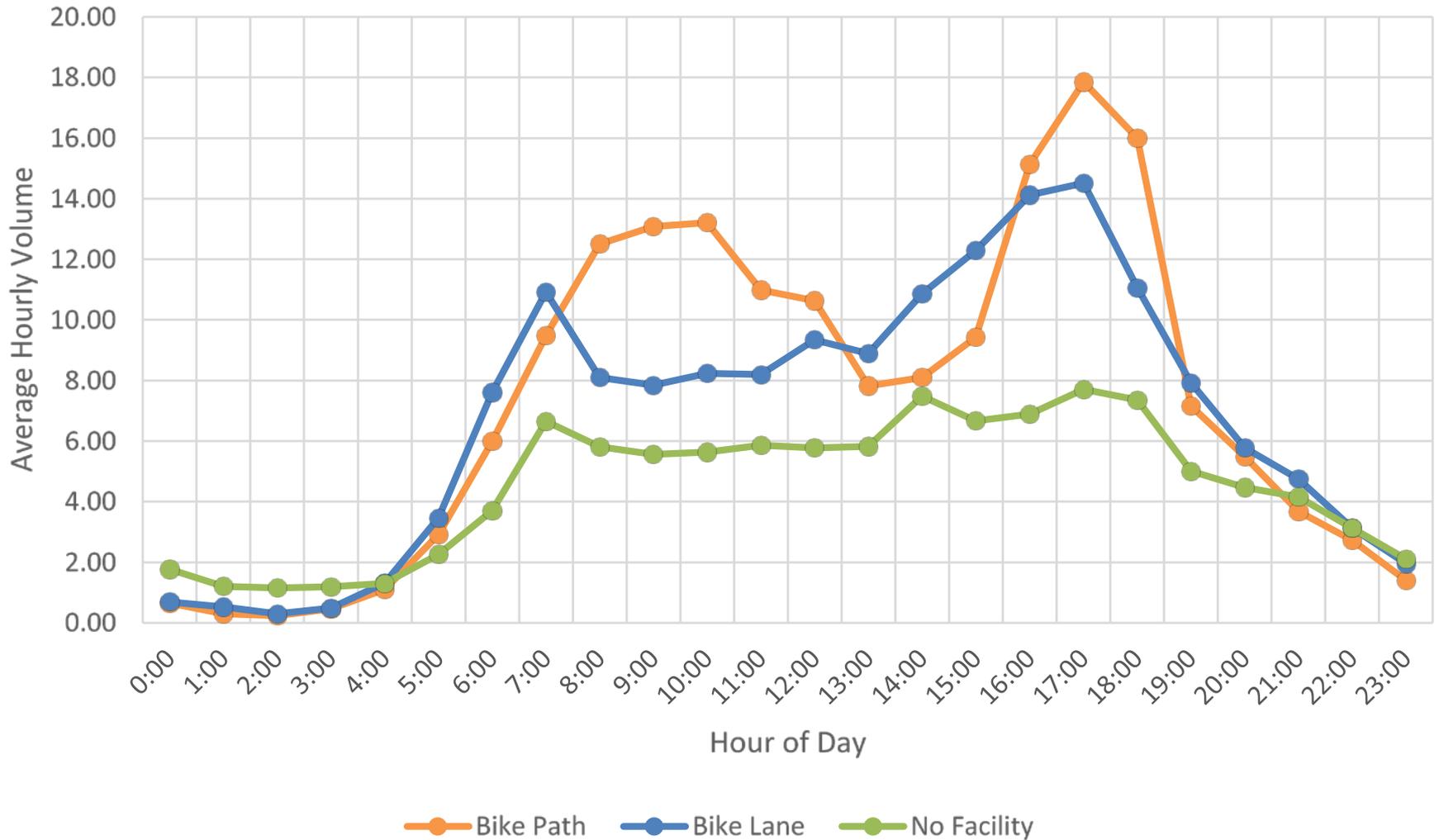
# Average Daily Weekday Cyclists – 380 segments



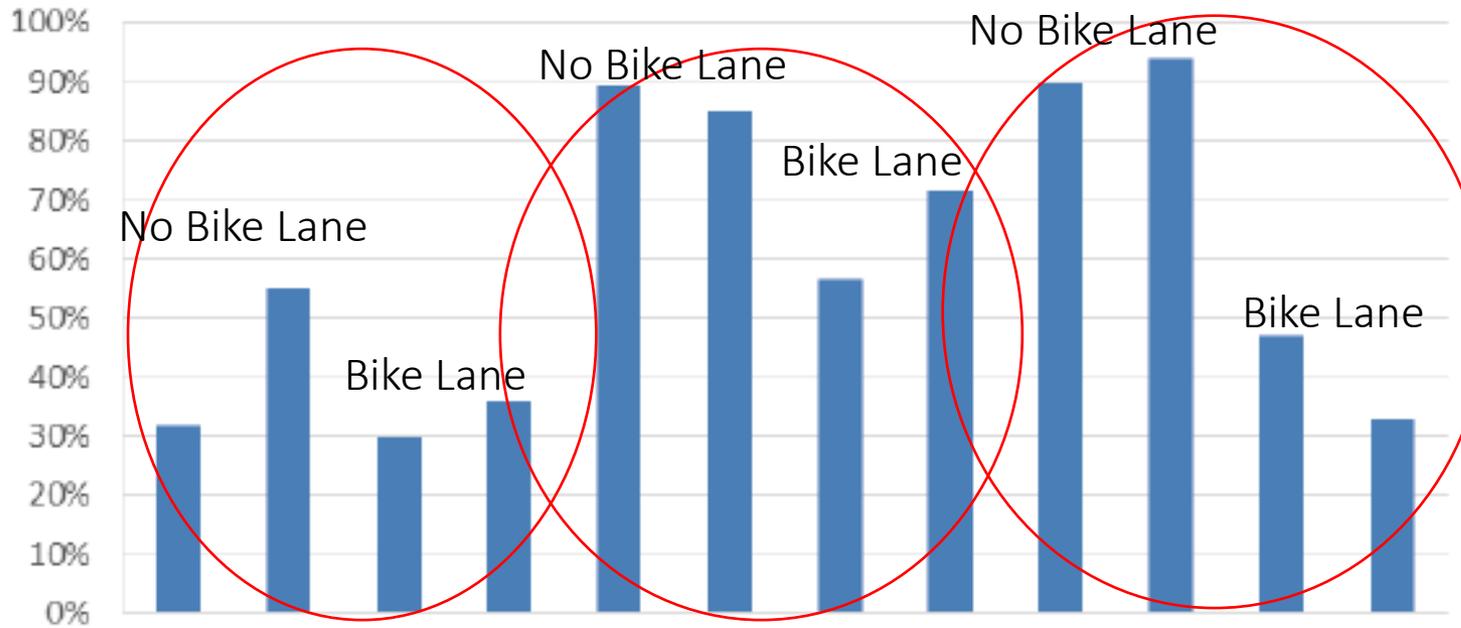
# Comparing Average Daily Cycling at 44 Sites by Facility Type



# Average Hourly Weekday Bike Volume



Percent Sidewalk Cycling



2-Lane Roadway, No Right-Turn-Only  
2-Lane Roadway, No Bike Lane, Right-Turn-Only  
2-Lane Roadway, Bike Lane, Right-Turn-Only  
4-Lane Roadway, No Right-Turn-Only  
4-Lane Roadway, No Bike Lane, Right-Turn-Only  
4-Lane Roadway, Bike Lane, Right-Turn-Only  
6-Lane Roadway, No Right-Turn-Only  
6-Lane Roadway, No Bike Lane, Right-Turn-Only  
6-Lane Roadway, Bike Lane, Right-Turn-Only

2-Lane

4-Lane

6-Lane



# Improved Air Quality, Safety, Health Assessments

## Safety – (cycling exposure rates)

- *Bicycle collisions ÷ Average daily bike volumes*

## Air Quality – (VMT/emissions avoided via cycling)

- *Determine rate of bike trips replacing car trips and average bike trip length*
- *Average bike trip length in miles x Average daily bike volumes = VMT avoided*

## Health – (minutes of moderate physical activity per day)

- *Average bike trip length in minutes x Average daily bike volumes*

*Thank You*

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