

2009 Tucson Metropolitan Region Bicycle Count

Introduction

In October 2009, Pima Association of Governments (PAG) coordinated the Tucson metropolitan region's 2nd annual bicycle count. Five primary reasons why PAG conducts an annual bicycle count program are:

1. **Conditions and trend analysis** – document the number of people currently bicycling, how this number is changing over time and characteristics of cyclists
2. **Network planning** – help find locations needing attention and prioritize improvements
3. **Crash analysis** – develop exposure measures (comparing crash data to actual levels of cycling)
4. **Travel Demand Forecasting** – calibrate models
5. **Travel Demand Management** – measure Travel Demand Management and Safety/Outreach program effectiveness by producing tangible data that can be compared over time

Counts were performed throughout the region by jurisdictional and regional staff, and by volunteers from the community, including members of the Tucson-Pima County Bicycle Advisory Committee (TPCBAC) and the Greater Arizona Bicycling Association (GABA). PAG also worked with Professor Mark Hickman, an Associate Professor in the Civil Engineering Department at the University of Arizona to utilize students in his class. The increased number of volunteers made it possible to count at 99 locations in 2009, compared to 53 locations in 2008. In addition to count data, other attributes were collected as well: gender, approximate age, helmet usage, sidewalk riding and wrong-way riding.

The 2009 count was conducted in late October which in the Tucson region typically has pleasant weather for cycling. The first day of the count, Tuesday, October 27 had normal weather for Tucson for late October. However, a cold front came through that night and temperatures dipped to 35 degrees in the morning which broke record lows for the next two days of the count. The record lows likely affected the data for this annual count. There was an effort to gauge how much the weather changed the biking behaviors, and this information is included later in this document.

Methodology

The number of cyclists was recorded at 15-minute intervals at intersections by approach direction. Each weekday count location consisted of a single morning peak-period observation (7-9 a.m.) and a single evening period observation (4-6 p.m.) taken on either Tuesday, Oct 27, Wednesday, Oct 28, OR Thursday, Oct 29. Therefore, the count totals for each weekday location include four-hours of observation. Five locations were counted on the weekend to get baseline data for recreation cycling. These counts were done on either the Saturday or Sunday surrounding the count week. These counts consisted of a single block of morning observation (7-10 a.m.).

Counts and attribute collection were performed via observation only; no cyclist surveys were conducted. See appendix 1 for the data collection sheet used in the count. Locations were chosen based on estimated levels of cycling activity and achieving a reasonable regional/geographic distribution. **Figure 1** is a map of the count locations by area.

Summary of 2009 Count Findings:

- 9,796 Cyclists Counted total
- 99 Count Locations total
- Female – 27.1%; Male – 72.9%
- AM – 52.6%; PM – 47.4%
- <18 – 3.4%; 18-65 – 93.8% ; >65 – 2.8%
- Helmet Usage – 43.4%
- Wrong Way Riding – 4.3%
- Sidewalk Riding – 8.2%

Top 15 Cyclist Locations:

Volume Rank	Location	VOLUME
1	Park & University	900
2	3rd St/Campbell	856
3	Mountain/Helen	724
4	6th St/Highland Ave	540
5	2nd Street/Highland Ave	533
6	Old Spanish/Freeman Rd Weekend Count	316
7	Warren Ave/E. 1st Street	312
8	Stone/University	249
9	4th Ave/9th St	211
10	Mountain/Blacklidge	204
11	Tucson/Elm	204
12	6th St/Park Ave	183
13	Park Ave/Drachman	183
14	Mountain/River Park North	170
15	St. Mary's/Santa Cruz River	167

Comparison to 08 – Comparing the locations that were counted both years ONLY (there were 40 count locations that were the same for both year’s data):

2008 Total – 7722 cyclists
 2009 Total – 5696 cyclists
 Difference – (-2026)
 Percent Change – (-26.2%)

2008 Helmet Usage – 43.8%
 2009 Helmet Usage – 40.8%

2008 Wrong Way – 5.0%
 2009 Wrong Way – 4.2%

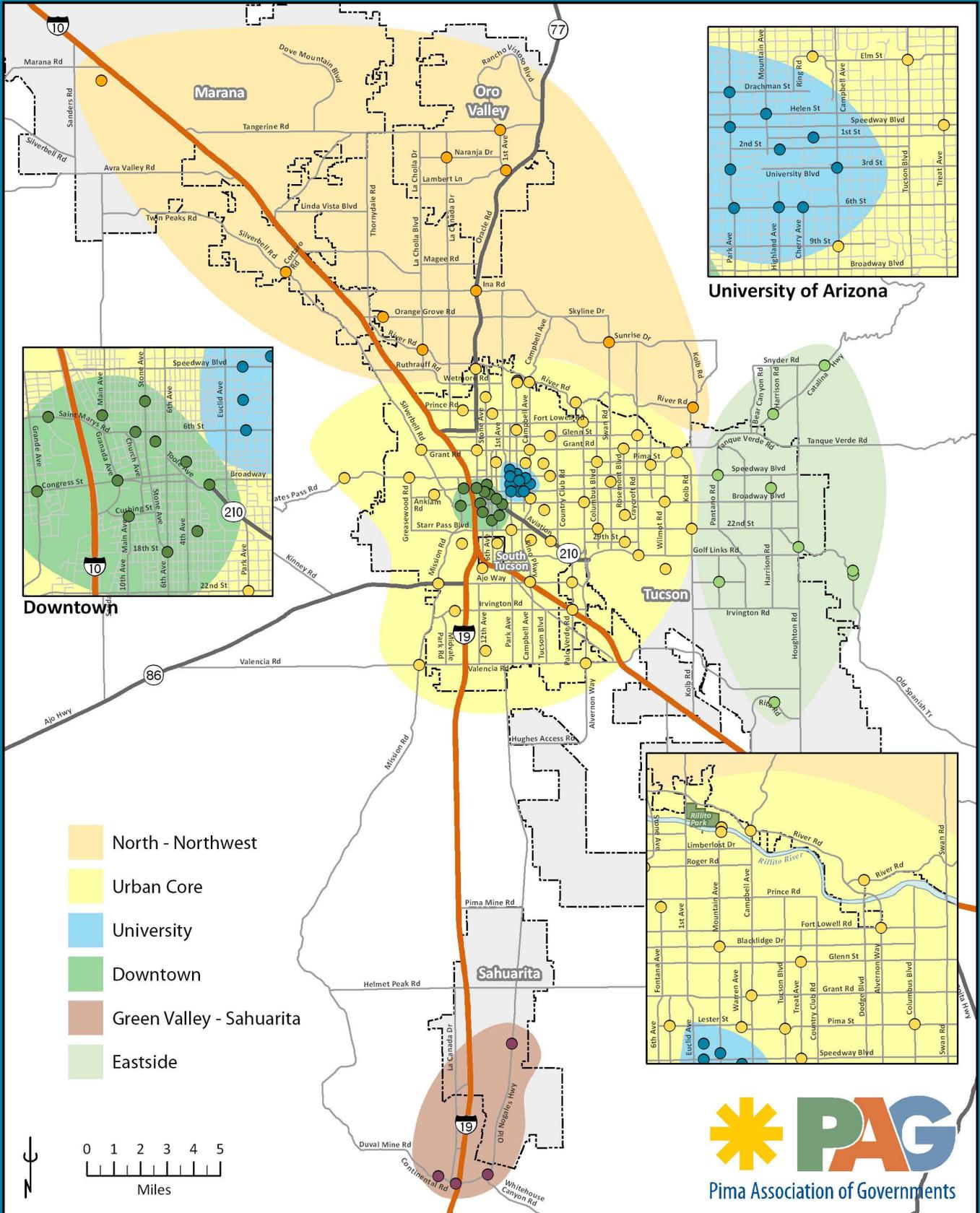
2008 Female – 26.6%; 2008 Male – 73.4%
 2009 Female – 29.2%; 2009 Male – 70.8%

2008 Sidewalk Riding – 8.8%
 2009 Sidewalk Riding – 7.5%

Figure 1: Map of Bicycle Count Locations by Area

Bike Count Areas

OCTOBER 2009



Counts by Location and Area

Count locations were chosen based on estimated levels of cycling activity and achieving a reasonable regional/geographic distribution. Of the 53 count locations counted in 2008, 40 of them were repeated in 2009. The 99 count locations were divided into six categories for purposes of geographic comparison: University, Downtown, Urban Core, North & Northwest, Green Valley/Sahuarita and Eastside.

Figure 2 shows a summary of data collected by count location and area. **Figure 2** also indicates percentages of each attribute by count location and area. Overall, 9,796 bicyclists were counted at 99 locations throughout the region. During the PM peak hours, 47 percent of all cyclists were counted, with 53 percent counted during the AM peak hours. 73 percent of the cyclists counted were male, and more than 90 percent were between the ages of 18 and 65. Approximately 43 percent wore helmets, 4 percent were observed riding on the wrong side of the road and approximately 8 percent were riding on the sidewalk.

As can be seen from Figure 2, the University of Arizona's 10 count locations show the largest number of cyclists counted (4508) in any area, representing the high levels of cycling in and around the university. The proportion of female cycling around the university was the highest in the region at 35 percent. For the 2nd straight year, the university area exhibited one of the lowest levels of wrong-way riding, 3 percent, and sidewalk riding, 6 percent, (two discouraged behaviors). It also had the lowest level of helmet-wearing (an encouraged behavior) at 26 percent.

The 12 Downtown count locations yielded 1,211 cyclists, 74 percent of which were male. 43 percent of downtown cyclists wore helmets, 5 percent were observed wrong-way riding, and 9 percent rode on the sidewalk.

At the 54 Urban Core locations, 2,985 cyclists were counted, over 80 percent of which were male. More than 54 percent of the area's cyclists wore helmets, 6 percent were wrong-way riding (more than any other area), and almost 10 percent rode on the sidewalk (the second-highest proportion in the region).

The 10 North and Northwest area count locations saw 306 cyclists, 57 percent of which were counted in the AM peak hours. Roughly 83 percent were male and 80 percent wore helmets (the second-highest proportion in the region). Just over 6 percent were wrong-way riders, and more than 12 percent rode their bikes on the sidewalk (the highest percentage in the region).

The East area counters observed 765 cyclists at nine locations. Over 80 percent of the cyclists were observed in the AM and nearly 80 percent were male. Over 87 percent wore helmets, the highest proportion in the region. Only 1.3 percent observed were riding the wrong-way; however, nearly 12 percent were on the sidewalk, the highest in the region. This can be attributed to the Rita Rd location where over 70 percent of observed riders were on the sidewalk.

Finally, the four Green Valley/Sahuarita count locations showed 21 cyclists, over 95 percent of which rode in the AM peak hours. All of the cyclists counted were male and no cyclists under 18 years of age were observed. Helmet usage was 76 percent, there were no riders observed riding the wrong-way and less than 5 percent were on the sidewalk.

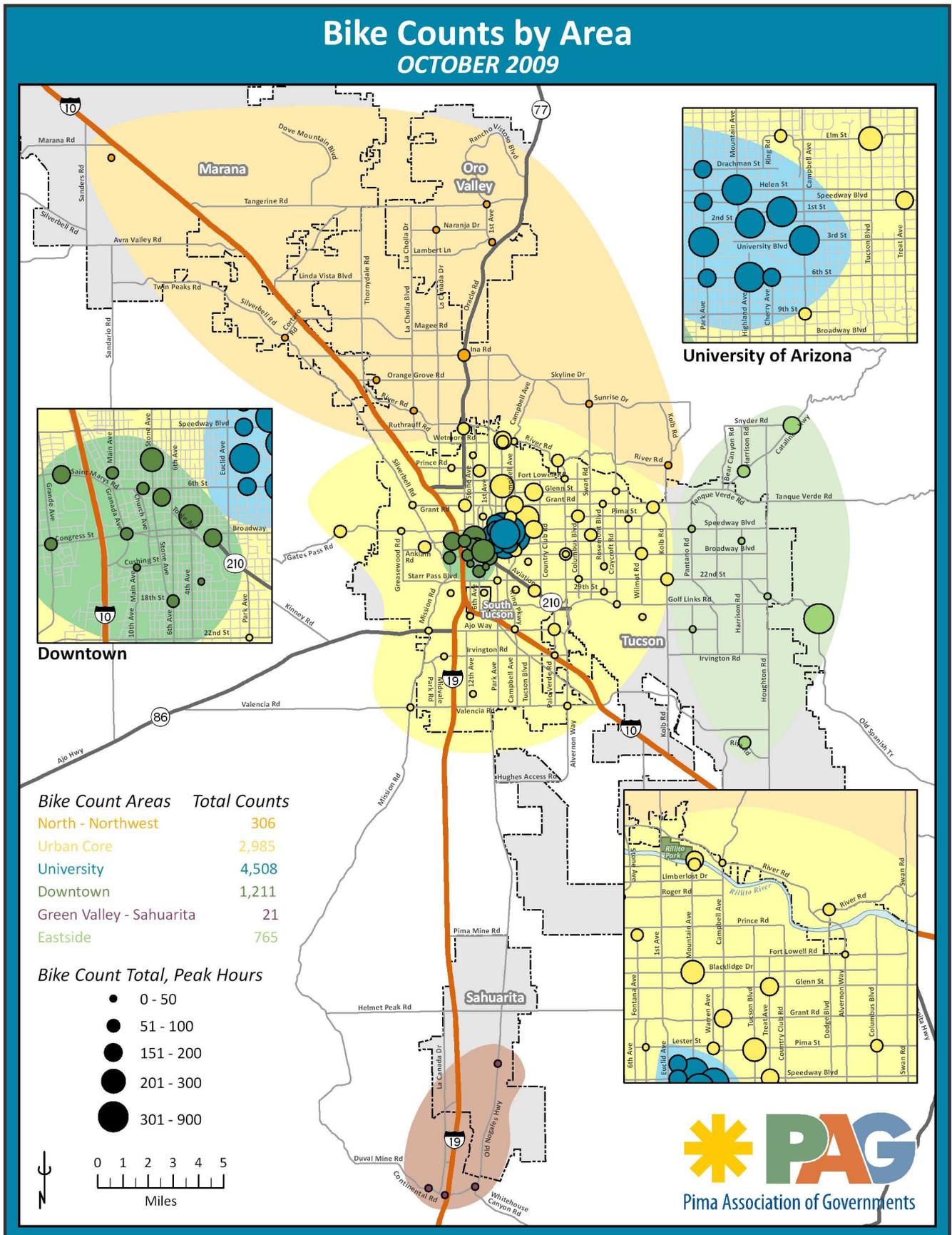
Figure 2a: Summary chart of data collected by count location and area.

Volume Rank	Location	VOLUME			GENDER		AGE			OTHER ATTRIBUTES												
		AM Total	PM Total	Total	Female	Male	<18	18-65	>65	Wearing Helmet	Wrong-Way Riding	Sidewalk Riding	AM %	PM %	Female %	Male %	<18 %	18-65 %	>65 %	Helmet %	Wrong-Way %	Sidewalk %
8	Stone/University	98	151	249	84	165	2	239	8	77	5	11	39.4%	60.6%	33.7%	66.3%	0.8%	96.0%	3.2%	30.9%	2.0%	4.4%
9	4th Ave/9th St	101	110	211	59	152	2	207	2	76	21	30	47.9%	52.1%	28.0%	72.0%	0.9%	98.1%	0.9%	36.0%	10.0%	14.2%
15	St. Mary's/Santa Cruz River	113	54	167	40	127	7	153	7	113	6	8	67.7%	32.3%	24.0%	76.0%	4.2%	91.6%	4.2%	67.7%	3.6%	4.8%
21	7th St/7th Ave	43	68	111	32	79	2	86	23	47	4	3	38.7%	61.3%	28.8%	71.2%	1.8%	77.5%	20.7%	42.3%	3.6%	2.7%
24	Snake Bridge (Bdwy/Aviation)	39	66	105	35	70	3	99	3	57	4	12	37.1%	62.9%	33.3%	66.7%	2.9%	94.3%	2.9%	54.3%	3.8%	11.4%
34	9th Ave./6th St.	26	43	69	11	58	1	68	0	22	6	10	37.7%	62.3%	15.9%	84.1%	1.4%	98.6%	0.0%	31.9%	8.7%	14.5%
38	Davis St/Main St (Bike Church)	38	26	64	8	56	5	59	0	43	2	6	59.4%	40.6%	12.5%	87.5%	7.8%	92.2%	0.0%	67.2%	3.1%	9.4%
39	18th ST/6TH Ave.	38	24	62	11	51	1	58	3	11	7	7	61.3%	38.7%	17.7%	82.3%	1.6%	93.5%	4.8%	17.7%	11.3%	11.3%
44	Congress/Granada	24	32	56	10	46	0	56	0	19	2	12	42.9%	57.1%	17.9%	82.1%	0.0%	100.0%	0.0%	33.9%	3.6%	21.4%
48	Congress/Grande	38	16	54	7	47	0	53	1	38	4	8	70.4%	29.6%	13.0%	87.0%	0.0%	98.1%	1.9%	70.4%	7.4%	14.8%
63	3rd Ave/16th Street	12	24	36	15	21	1	35	0	9	3	1	33.3%	66.7%	41.7%	58.3%	2.8%	97.2%	0.0%	25.0%	8.3%	2.8%
69	Cushing/Main Street	16	11	27	5	22	0	25	2	11	0	1	59.3%	40.7%	18.5%	81.5%	0.0%	92.6%	7.4%	40.7%	0.0%	3.7%
	DOWNTOWN TOTAL	586	625	1211	317	894	24	1138	49	523	64	109	48.4%	51.6%	26.2%	73.8%	2.0%	94.0%	4.0%	43.2%	5.3%	9.0%
6	Old Spanish/Freeman Rd WE	316		316	78	238	2	297	17	309	2	0			24.7%	75.3%	0.6%	94.0%	5.4%	97.8%	0.6%	0.0%
22	Snyder/Catalina WE	109		109	23	86	2	105	2	103	1	0			21.1%	78.9%	1.8%	96.3%	1.8%	94.5%	0.9%	0.0%
29	Rita/Esmond-Rankin	44	39	83	17	66	62	20	1	52	1	59	53.0%	47.0%	20.5%	79.5%	74.7%	24.1%	1.2%	62.7%	1.2%	71.1%
33	Old Spanish/Freeman Rd	45	28	73	7	66	0	72	1	73	0	0	61.6%	38.4%	9.6%	90.4%	0.0%	98.6%	1.4%	100.0%	0.0%	0.0%
43	Catalina HY/Harrison	48	8	56	13	43	0	54	2	54	0	0	85.7%	14.3%	23.2%	76.8%	0.0%	96.4%	3.6%	96.4%	0.0%	0.0%
57	Pantano Rd/Speedway Blvd	14	27	41	5	36	7	30	4	17	4	11	34.1%	65.9%	12.2%	87.8%	17.1%	73.2%	9.8%	41.5%	9.8%	26.8%
61	Old Spanish	22	17	39	3	36	0	34	5	37	0	0	56.4%	43.6%	7.7%	92.3%	0.0%	87.2%	12.8%	94.9%	0.0%	0.0%
67	Pantano Rd/Escalante	14	16	30	5	25	6	24	0	14		13	46.7%	53.3%	16.7%	83.3%	20.0%	80.0%	0.0%	46.7%	0.0%	43.3%
80	Harrison/5th Street	9	9	18	4	14	4	14	0	8	2	6	50.0%	50.0%	22.2%	77.8%	22.2%	77.8%	0.0%	44.4%	11.1%	33.3%
	EAST TOTAL	621	144	765	155	610	83	650	32	667	10	89	81.2%	18.8%	20.3%	79.7%	10.8%	85.0%	4.2%	87.2%	1.3%	11.6%
91	Whitehouse Canyon/Continental	7	1	8	0	8	0	8	0	7	0	0	87.5%	12.5%	0.0%	100.0%	0.0%	100.0%	0.0%	87.5%	0.0%	0.0%
94	Camino del sol/Continental	6	0	6	0	6	0	6	0	5	0	0	100.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	83.3%	0.0%	0.0%
95	Continental/I19	5	0	5	0	5	0	3	2	3	0	1	100.0%	0.0%	0.0%	100.0%	0.0%	60.0%	40.0%	60.0%	0.0%	20.0%
98	Old Nogales/Nogales	2	0	2	0	2	0	2	0	1	0	0	100.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	50.0%	0.0%	0.0%
	GREEN VALLEY / SAHUARITA	20	1	21	0	21	0	19	2	16	0	1	95.2%	4.8%	0.0%	100.0%	0.0%	90.5%	9.5%	76.2%	0.0%	4.8%
45	Ina/Oracle	40	16	56	11	45	0	54	2	48	2	1	71.4%	28.6%	19.6%	80.4%	0.0%	96.4%	3.6%	85.7%	3.6%	1.8%
51	Sabino Canyon/River	35	15	50	16	34	2	48	0	44	0	0	70.0%	30.0%	32.0%	68.0%	4.0%	96.0%	0.0%	88.0%	0.0%	0.0%
53	Tangerine/1st Ave	25	19	44	5	39	6	38	0	39	0	0	56.8%	43.2%	11.4%	88.6%	13.6%	86.4%	0.0%	88.6%	0.0%	0.0%
56	River/La Cholla	11	30	41	7	34	3	38	0	22	10	13	26.8%	73.2%	17.1%	82.9%	7.3%	92.7%	0.0%	53.7%	24.4%	31.7%
60	Swan/Sunrise	14	26	40	0	40	0	40	0	36	0	1	35.0%	65.0%	0.0%	100.0%	0.0%	100.0%	0.0%	90.0%	0.0%	2.5%
64	La Canada/Naranja	26	7	33	5	28	4	27	2	31	0	5	78.8%	21.2%	15.2%	84.8%	12.1%	81.8%	6.1%	93.9%	0.0%	15.2%
78	Camino de la Tierra/Orange Grove	7	15	22	4	18	8	13	1	8	0	0	31.8%	68.2%	18.2%	81.8%	36.4%	59.1%	4.5%	36.4%	0.0%	0.0%
86	CDO Park/1st Ave	13	2	15	3	12	0	13	2	13	0	0	86.7%	13.3%	20.0%	80.0%	0.0%	86.7%	13.3%	86.7%	0.0%	0.0%
96	Silverbell/Cortaro	2	1	3	1	2	1	2	0	2	1	0	66.7%	33.3%	33.3%	66.7%	33.3%	66.7%	0.0%	66.7%	33.3%	0.0%
97	Grier/Sandario	0	2	2	0	2	0	2	0	1	0	0	0.0%	100.0%	0.0%	100.0%	0.0%	100.0%	0.0%	50.0%	0.0%	0.0%
	NORTH / NORTHWEST TOTAL	173	133	306	52	254	24	275	7	244	13	20	56.5%	43.5%	17.0%	83.0%	7.8%	89.9%	2.3%	79.7%	4.2%	6.5%
1	Park & University	448	452	900	332	568	0	887	13	234	14	29	49.8%	50.2%	36.9%	63.1%	0.0%	98.6%	1.4%	26.0%	1.6%	3.2%
2	3rd St/Campbell	428	428	856	289	567	1	836	19	319	12	22	50.0%	50.0%	33.8%	66.2%	0.1%	97.7%	2.2%	37.3%	1.4%	2.6%
3	Mountain/Helen	374	350	724	239	485	5	709	10	222	24	22	51.7%	48.3%	33.0%	67.0%	0.7%	97.9%	1.4%	30.7%	3.3%	3.0%
4	6th St/Highland Ave	222	318	540	198	342	1	534	5	122	46	92	41.1%	58.9%	36.7%	63.3%	0.2%	98.9%	0.9%	22.6%	8.5%	17.0%
5	2nd Street/Highland Ave	221	312	533	178	355	0	531	2	117	8	10	41.5%	58.5%	33.4%	66.6%	0.0%	99.6%	0.4%	22.0%	1.5%	1.9%
7	Warren Ave/E. 1st Street	136	176	312	116	196	1	305	6	55	11	12	43.6%	56.4%	37.2%	62.8%	0.3%	97.8%	1.9%	17.6%	3.5%	3.8%
12	6th St/Park Ave	96	87	183	80	103	0	183	0	36	13	56	52.5%	47.5%	43.7%	56.3%	0.0%	100.0%	0.0%	19.7%	7.1%	30.6%
13	Park Ave/Drachman	100	83	183	63	120	1	182	0	19	4	8	54.6%	45.4%	34.4%	65.6%	0.5%	99.5%	0.0%	10.4%	2.2%	4.4%
17	Speedway/Park Ave	76	67	143	23	120	0	143	0	13	3	11	53.1%	46.9%	16.1%	83.9%	0.0%	100.0%	0.0%	9.1%	2.1%	7.7%
18	6th St/Cherry Ave	63	71	134	39	95	0	133	1	12	11	23	47.0%	53.0%	29.1%	70.9%	0.0%	99.3%	0.7%	9.0%	8.2%	17.2%
	UA TOTAL	2164	2344	4508	1557	2951	9	4443	56	1149	146	285	48.0%	52.0%	34.5%	65.5%	0.2%	98.6%	1.2%	25.5%	3.2%	6.3%

Figure 2b: Summary chart of data collected by count location and area continued.

37	Urban Core	10	Mountain/Blacklidge	89	115	204	51	153	1	203	0	109	2	3	43.6%	56.4%	25.0%	75.0%	0.5%	99.5%	0.0%	53.4%	1.0%	1.5%	
39	Urban Core	11	Tucson/Elm	102	102	204	56	148	4	195	5	94	5	13	50.0%	50.0%	27.5%	72.5%	2.0%	95.6%	2.5%	46.1%	2.5%	6.4%	
38A	Urban Core	14	Mountain/River Park North	98	72	170	42	128	1	165	4	121	0	0	57.6%	42.4%	24.7%	75.3%	0.6%	97.1%	2.4%	71.2%	0.0%	0.0%	
58A	Urban Core	16	Mountain/River Park North WE	158		158	42	116	14	105	39	130	0	0			26.6%	73.4%	8.9%	66.5%	24.7%	82.3%	0.0%	0.0%	
42	Urban Core	19	Speedway/Treat	85	48	133	39	94	9	122	2	71	4	4	63.9%	36.1%	29.3%	70.7%	6.8%	91.7%	1.5%	53.4%	3.0%	3.0%	
14	Urban Core	20	Campbell/Grant	54	58	112	32	80	1	109	2	40	12	44	48.2%	51.8%	28.6%	71.4%	0.9%	97.3%	1.8%	35.7%	10.7%	39.3%	
45	Urban Core	23	Glenn/Treat	44	64	108	23	85	5	101	2	72	4	2	40.7%	59.3%	21.3%	78.7%	4.6%	93.5%	1.9%	66.7%	3.7%	1.9%	
86	Urban Core	25	Ring Rd/Warren	44	47	91	24	67	0	85	6	36	4	3	48.4%	51.6%	26.4%	73.6%	0.0%	93.4%	6.6%	39.6%	4.4%	3.3%	
18	Urban Core	26	Pima/Columbus	40	50	90	15	75	2	84	4	41	6	3	44.4%	55.6%	16.7%	83.3%	2.2%	93.3%	4.4%	45.6%	6.7%	3.3%	
59	Urban Core	27	Gates Pass/Camino de Oeste WE	88		88	14	74	1	85	2	86	0	0			15.9%	84.1%	1.1%	96.6%	2.3%	97.7%	0.0%	0.0%	
38B	Urban Core	28	Mountain/River Park South	44	40	84	16	68	3	76	5	60	0	0	52.4%	47.6%	19.0%	81.0%	3.6%	90.5%	6.0%	71.4%	0.0%	0.0%	
41	Urban Core	30	Oracle/Rillito Pathway	24	58	82	10	72	0	79	3	61	4	7	29.3%	70.7%	12.2%	87.8%	0.0%	96.3%	3.7%	74.4%	4.9%	8.5%	
4	Urban Core	31	Yavapai/Fontana	34	46	80	15	65	31	49	0	6	16	4	42.5%	57.5%	18.8%	81.3%	38.8%	61.3%	0.0%	7.5%	20.0%	5.0%	
10	Urban Core	32	ALV/B'WAY	40	39	79	10	69	5	74	0	35	8	19	50.6%	49.4%	12.7%	87.3%	6.3%	93.7%	0.0%	44.3%	10.1%	24.1%	
91	Urban Core	35	Bristol/Aviation SUP	47	22	69	4	65	0	66	3	51	0	0	68.1%	31.9%	5.8%	94.2%	0.0%	95.7%	4.3%	73.9%	0.0%	0.0%	
47	Urban Core	36	Tanque Verde/Kolb	46	22	68	5	63	0	65	3	53	4	6	67.6%	32.4%	7.4%	92.6%	0.0%	95.6%	4.4%	77.9%	5.9%	8.8%	
72	Urban Core	37	9th St/Campbell	28	40	68	13	55	0	67	1	32	2	3	41.2%	58.8%	19.1%	80.9%	0.0%	98.5%	1.5%	47.1%	2.9%	4.4%	
98	Urban Core	40	River/Dodge	42	19	61	13	48	4	56	1	54	4	7	68.9%	31.1%	21.3%	78.7%	6.6%	91.8%	1.6%	88.5%	6.6%	11.5%	
31	Urban Core	41	Kolb/22nd	37	21	58	3	55	0	57	1	11	4	13	63.8%	36.2%	5.2%	94.8%	0.0%	98.3%	1.7%	19.0%	6.9%	22.4%	
55	Urban Core	42	St. Mary's/Anklam	22	36	58	13	45	0	58	0	51	0	0	37.9%	62.1%	22.4%	77.6%	0.0%	100.0%	0.0%	87.9%	0.0%	0.0%	
75	Urban Core	46	Grant/Oracle	18	38	56	4	52	5	49	2		8	19	32.1%	67.9%	7.1%	92.9%	8.9%	87.5%	3.6%	0.0%	14.3%	33.9%	
34	Urban Core	47	Broadway/Wilmot	26	29	55	4	51	3	49	3	29	11	18	47.3%	52.7%	7.3%	92.7%	5.5%	89.1%	5.5%	52.7%	20.0%	32.7%	
52	Urban Core	49	3rd/Swan	20	33	53	10	43	5	47	1	31	4	6	37.7%	62.3%	18.9%	81.1%	9.4%	88.7%	1.9%	58.5%	7.5%	11.3%	
73	Urban Core	50	Palo Verde/Ajo	24	27	51	3	48	0	51	0	40	1	0	47.1%	52.9%	5.9%	94.1%	0.0%	100.0%	0.0%	78.4%	2.0%	0.0%	
89	Urban Core	52	Reid Park SUP @ Alvemon	18	29	47	13	34	6	36	5	16	1	1	38.3%	61.7%	27.7%	72.3%	12.8%	76.6%	10.6%	34.0%	2.1%	2.1%	
100	Urban Core	54	Roger/Stone	25	19	44	4	40	10	33	1	15	7	13	56.8%	43.2%	9.1%	90.9%	22.7%	75.0%	2.3%	34.1%	15.9%	29.5%	
92	Urban Core	55	River Rd./Campbell	29	13	42	19	23	12	29	1	33	2	4	69.0%	31.0%	45.2%	54.8%	28.6%	69.0%	2.4%	78.6%	4.8%	9.5%	
6	Urban Core	58	4th Ave/29th St	16	24	40	0	40	2	34	4	9	10	12	40.0%	60.0%	0.0%	100.0%	5.0%	85.0%	10.0%	22.5%	25.0%	30.0%	
40	Urban Core	59	Tucson/Arroyo Chico	16	24	40	11	29	0	36	4	27	3	3	40.0%	60.0%	27.5%	72.5%	0.0%	90.0%	10.0%	67.5%	7.5%	7.5%	
21	Urban Core	62	Craycroft/Golf Links	15	23	38	5	33	0	37	1	27	7	9	39.5%	60.5%	13.2%	86.8%	0.0%	97.4%	2.6%	71.1%	18.4%	23.7%	
79	Urban Core	65	4th Ave/Lester	13	20	33	12	21	12	21	0	4	0	0	39.4%	60.6%	36.4%	63.6%	36.4%	63.6%	0.0%	12.1%	0.0%	0.0%	
9	Urban Core	66	Alvemon/Ft.Lowell	15	16	31	4	27	4	26	1	13	5	11	48.4%	51.6%	12.9%	87.1%	12.9%	83.9%	3.2%	41.9%	16.1%	35.5%	
80	Urban Core	68	22nd Street/Park Ave	13	14	27	3	24	0	27	0	11	2	5	48.1%	51.9%	11.1%	88.9%	0.0%	100.0%	0.0%	40.7%	7.4%	18.5%	
93	Urban Core	70	22nd Street/Columbus	6	20	26	1	25	9	13	4	5	5	9	23.1%	76.9%	3.8%	96.2%	34.6%	50.0%	15.4%	19.2%	19.2%	34.6%	
99	Urban Core	71	29th Street/Rosemont	12	14	26	1	25	9	16	1	4	3	5	46.2%	53.8%	3.8%	96.2%	34.6%	61.5%	3.8%	15.4%	11.5%	19.2%	
58B	Urban Core	72	Mountain/River Park South	26		26	4	22	0	24	2	22	0	0			15.4%	84.6%	0.0%	92.3%	7.7%	84.6%	0.0%	0.0%	
74	Urban Core	73	Rosemont/Winsett	12	13	25	5	20	9	16	0	8	5	1	48.0%	52.0%	20.0%	80.0%	36.0%	64.0%	0.0%	32.0%	20.0%	4.0%	
83	Urban Core	74	Silverlake/Santa Cruz River	10	14	24	3	21	4	20	0	11	2	5	41.7%	58.3%	12.5%	87.5%	16.7%	83.3%	0.0%	45.8%	8.3%	20.8%	
23	Urban Core	75	Prince/Fairview	4	19	23	1	22	0	23	0	3	2	4	17.4%	82.6%	4.3%	95.7%	0.0%	100.0%	0.0%	13.0%	8.7%	17.4%	
71	Urban Core	76	Craycroft/Glenn St	11	12	23	3	20	12	8	3	15	0	2	47.8%	52.2%	13.0%	87.0%	52.2%	34.8%	13.0%	65.2%	0.0%	8.7%	
97	Urban Core	77	Rosemont/Grant	13	10	23	3	20	0	18	5	11	4	9	56.5%	43.5%	13.0%	87.0%	0.0%	78.3%	21.7%	47.8%	17.4%	39.1%	
57	Urban Core	79	Silverbell/Ironwood Hill	9	11	20	2	18	0	20	0	12	3	4	45.0%	55.0%	10.0%	90.0%	0.0%	100.0%	0.0%	60.0%	15.0%	20.0%	
69	Urban Core	81	Kino/I-10 Ramp	7	11	18	4	14	0	18	0	13	2	3	38.9%	61.1%	22.2%	77.8%	0.0%	100.0%	0.0%	72.2%	11.1%	16.7%	
101	Urban Core	82	Campbell/Silverlake	14	4	18	2	16	1	17	0	4	2	0	77.8%	22.2%	11.1%	88.9%	5.6%	94.4%	0.0%	22.2%	11.1%	0.0%	
35	Urban Core	83	Mission/Ajo	7	10	17	1	16	3	14	0	11	2	4	41.2%	58.8%	5.9%	94.1%	17.6%	82.4%	0.0%	64.7%	11.8%	23.5%	
8	Urban Core	84	Aviation Path/Stella	8	8	16	4	12	0	16	0	10	5	6	50.0%	50.0%	25.0%	75.0%	0.0%	100.0%	0.0%	62.5%	31.3%	37.5%	
96	Urban Core	85	Sahuara/Lee	10	6	16	2	14	3	12	1	5	2	0	62.5%	37.5%	12.5%	87.5%	18.8%	75.0%	6.3%	31.3%	12.5%	0.0%	
78	Urban Core	87	10th Ave/43rd	6	7	13	1	12	0	13	0	1	5	6	46.2%	53.8%	7.7%	92.3%	0.0%	100.0%	0.0%	7.7%	38.5%	46.2%	
70	Urban Core	88	Palo Verde/Irvington	7	5	12	0	12	0	12	0	7	0	2	58.3%	41.7%	0.0%	100.0%	0.0%	100.0%	0.0%	58.3%	0.0%	16.7%	
22	Urban Core	89	Liberty/Bilby	4	7	11	0	11	5	6	0	2	1	1	36.4%	63.6%	0.0%	100.0%	45.5%	54.5%	0.0%	18.2%	9.1%	9.1%	
84	Urban Core	90	Irvington/Santa Cruz River	5	5	10	0	10	0	10	0	5	1	2	50.0%	50.0%	0.0%	100.0%	0.0%	100.0%	0.0%	50.0%	10.0%	20.0%	
82	Urban Core	92	Speedway/Greasewood	4	4	8	2	6	0	7	1	4	1	0	50.0%	50.0%	25.0%	75.0%	0.0%	87.5%	12.5%	50.0%	12.5%	0.0%	
11	Urban Core	93	ALV/Valencia	3	3	6	0	6	1	1	4	4	0	0	50.0%	50.0%	0.0%	100.0%	16.7%	16.7%	66.7%	66.7%	0.0%	0.0%	
68	Urban Core	99	Mission Rd/Valencia	0	2	2	0	2	0	1	1	1	0	0	0.0%	100.0%	0.0%	100.0%	0.0%	50.0%	50.0%	0.0%	50.0%	0.0%	0.0%
			URBAN CORE TOTAL	1592	1393	2985	571	2414	196	2661	128	1627	185	295	53.3%	46.7%	19.1%	80.9%	6.6%	89.1%	4.3%	54.5%	6.2%	9.9%	
				AM Total	PM Total	Total	Female	Male	<18	18-65	>65	Wearing Helmet	Wrong-Way Riding	Sidewalk Riding	AM %	PM %	Female %	Male %	<18 %	18-65 %	>65 %	Helmet %	Wrong-Way %	Sidewalk %	
Regional Total				5156	4640	9796	2652	7144	336	9186	274	4226	418	799	52.6%	47.4%	27.1%	72.9%	3.4%	93.8%	2.8%	43.1%	4.3%	8.2%	

Figure 3: Map indicating volume of cyclists per count location. Count volume symbols are color-coded by count area and proportional to the volume of cyclists at each location.



Gender

Women represented 27 percent of the riders observed. The percentage of female cyclists varied between 0 percent and 45 percent, depending on count location. The University of Arizona area had the highest average of female cyclists, with 34.5 percent. However, the intersection with the highest percent (45.2) was in the Urban Core at River Rd. and Campbell Ave. No female cyclists were observed in the Green Valley / Sahuarita locations. **Figure 4** shows the locations with the highest proportion of women. The data indicates that “low-stress bikeways” have a higher proportion of female riders than other types of bikeways. Low-stress bikeways are bike facilities such as shared-use paths and residential routes that reduce conflicts between people riding bicycles and people driving. **Figure 5** shows the percentage of women by area. **Figure 6** shows a map depicting the gender-split throughout the region.

Figure 4 – Top 12 Female Ridership Locations

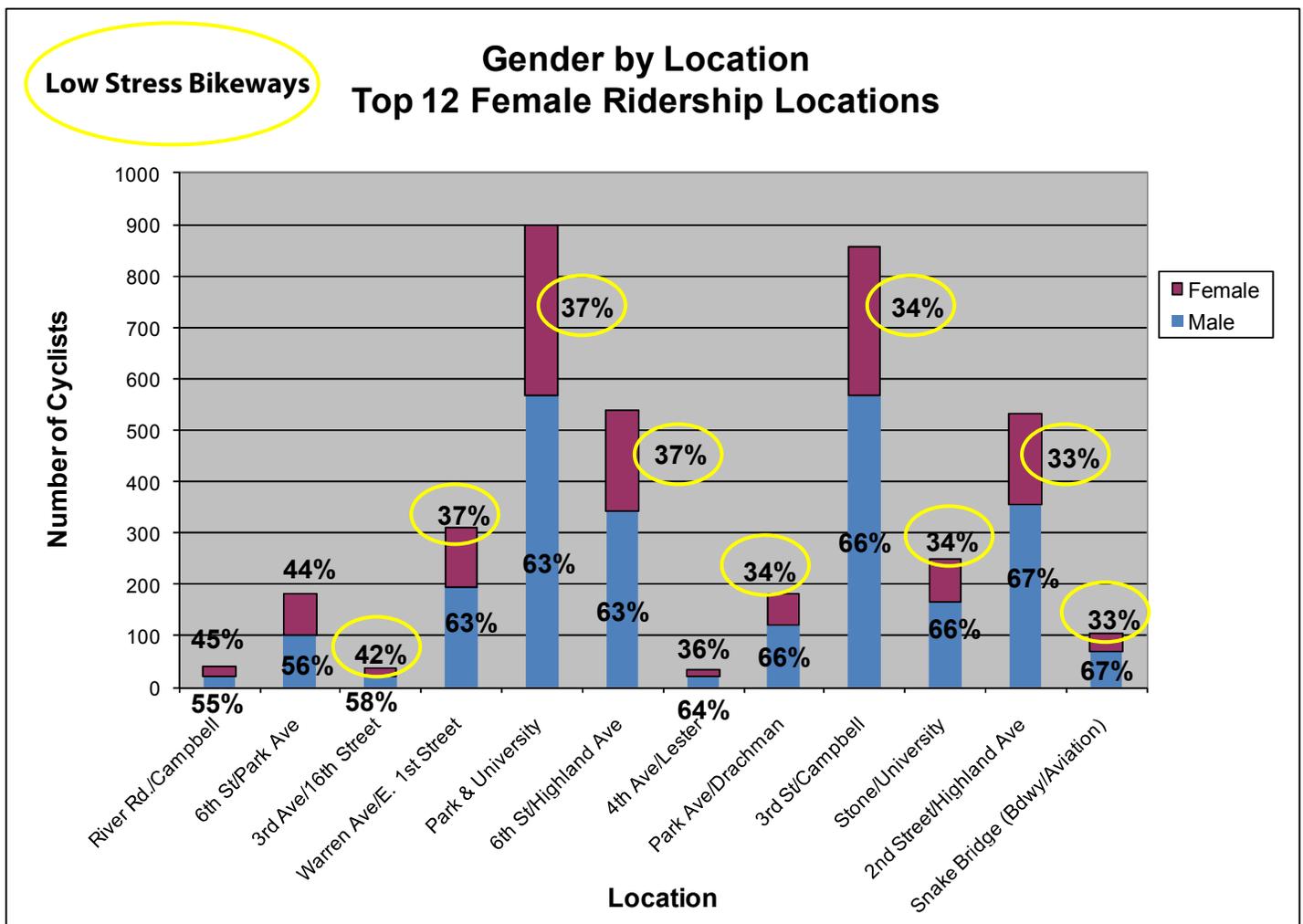


Figure 5 – Gender by Area

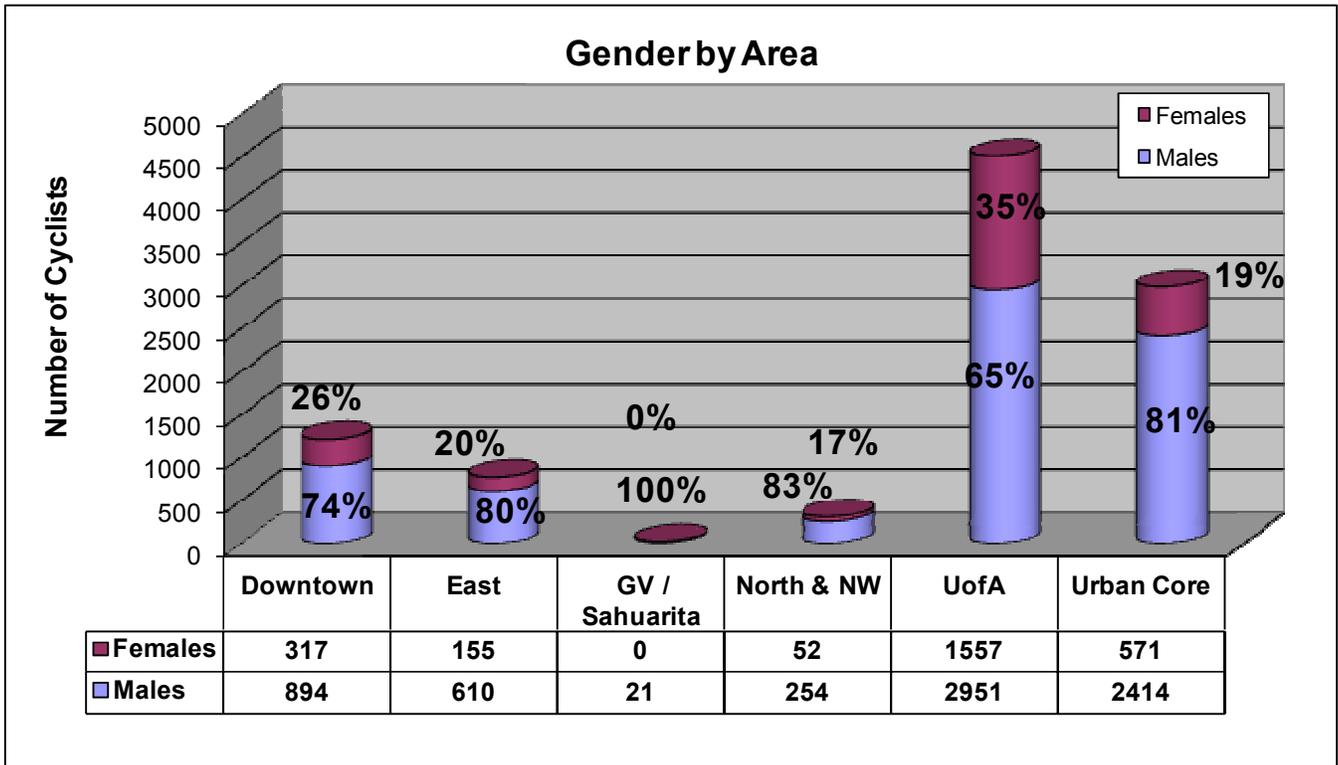
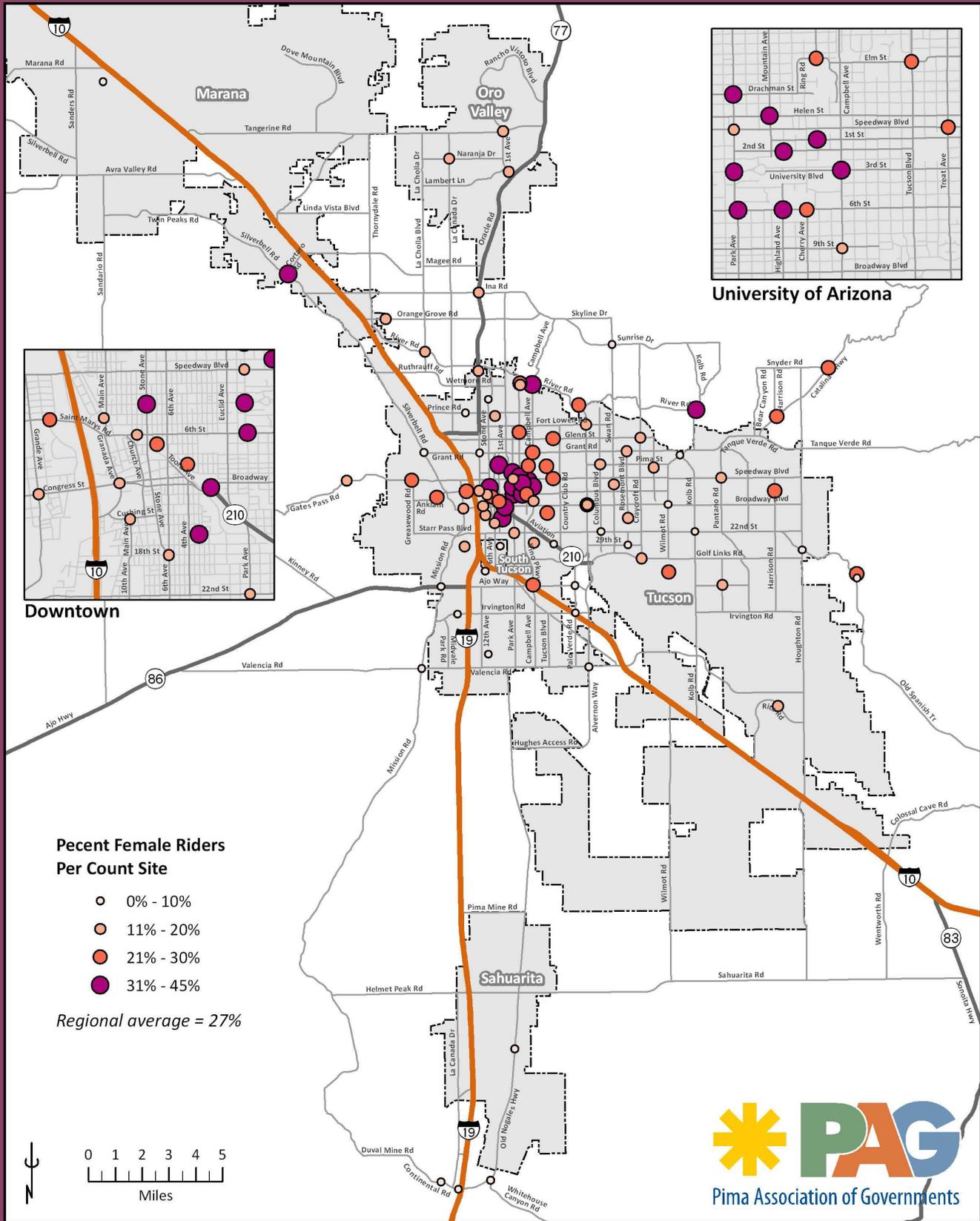


Figure 6 – Percentage of Female Riders

Bike Counts: Female Riders

OCTOBER 2009



Helmet Usage

Bicycle helmets provide substantial protection against head injuries for cyclists of all ages involved in crashes, including crashes involving motor vehicles. Tracking helmet usage is an important way to gauge education and outreach efforts aimed at increasing safe riding behaviors.

Region wide, 43 percent of cyclists wore helmets. Helmet usage varied between 0 percent and 100 percent, depending on count location. The East area had the highest rate of helmet wearing at 25 percent. The University of Arizona had the lowest rate of helmet wearing at 28 percent.

Figure 7 shows the locations with the highest rate of helmet usage, and **Figure 8** shows the locations with the lowest rate of usage. **Figure 9** shows helmet usage by area while **Figure 10** is a map of helmet usage.

Figure 7 – Highest Helmet Usage Locations

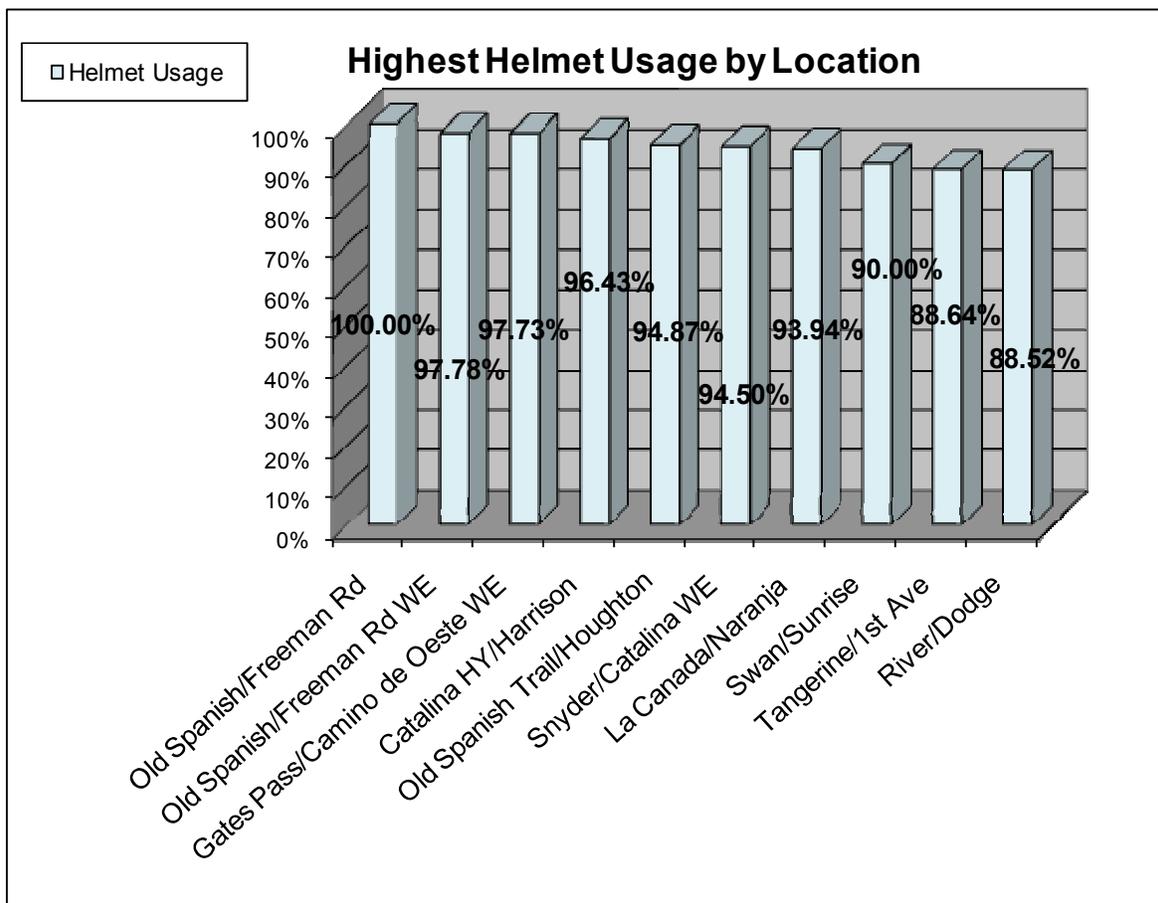


Figure 8 - Lowest Helmet Usage Locations

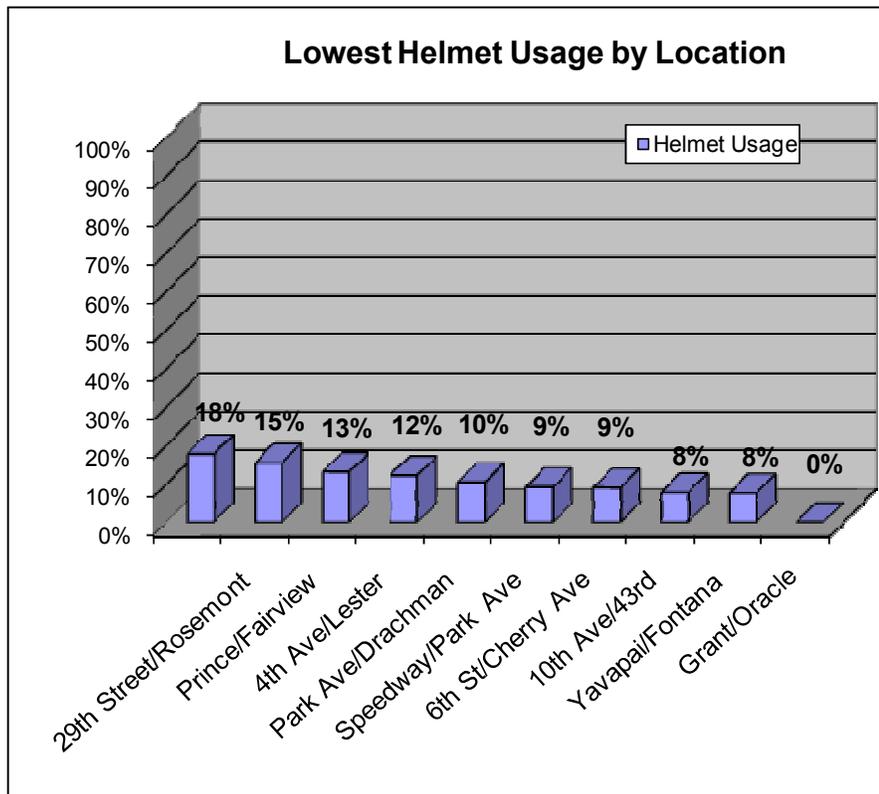


Figure 9 - Helmet Usage by Area

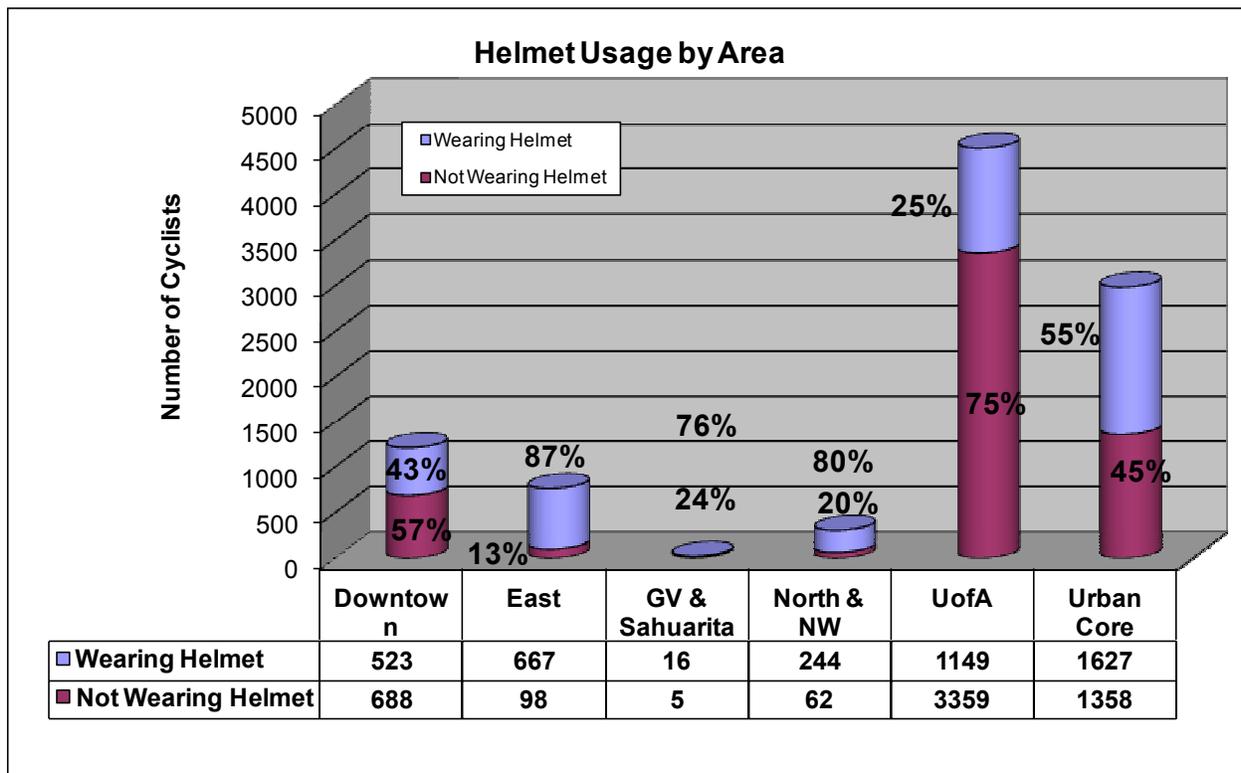
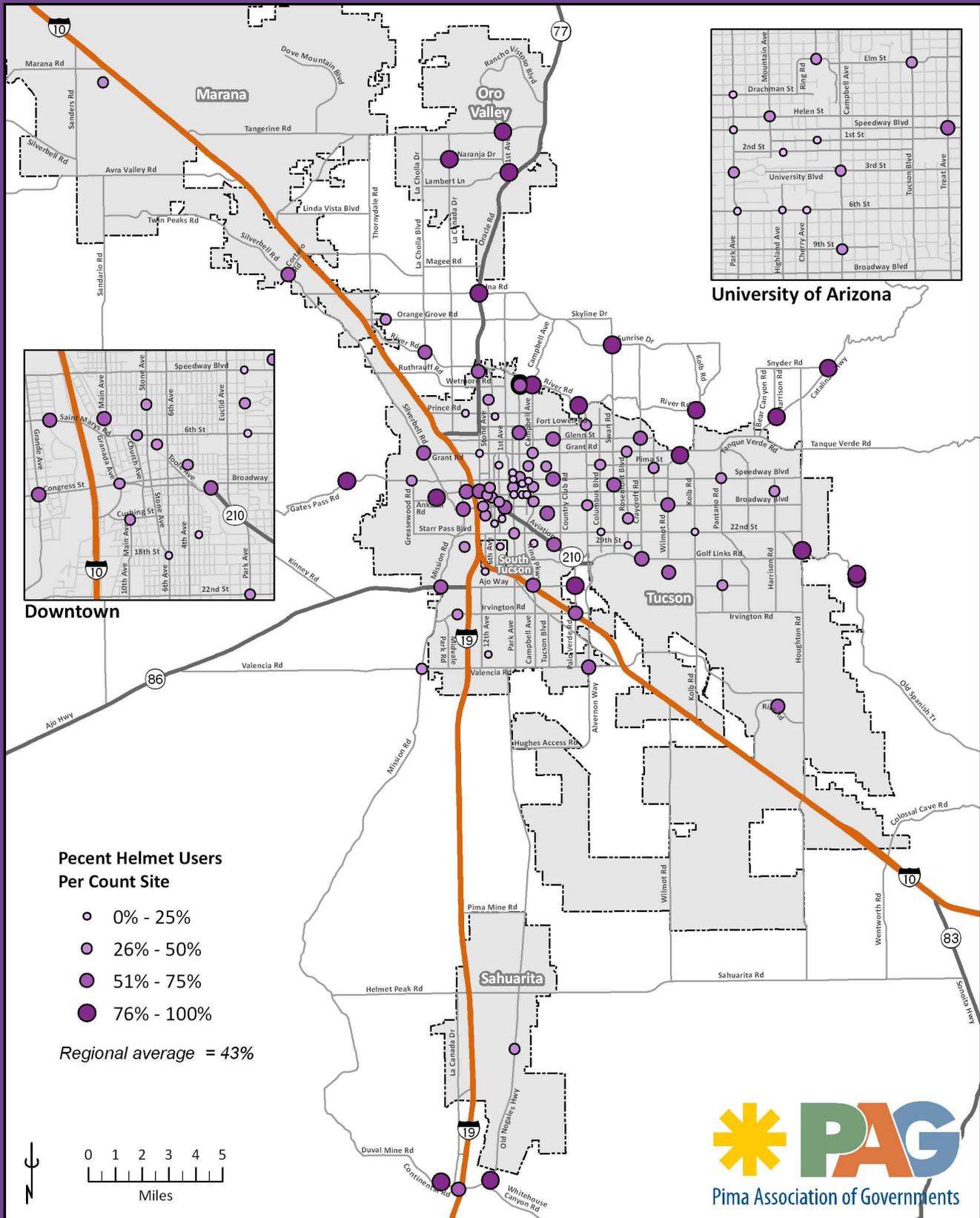


Figure 10 – Helmet Usage

Bike Counts: Helmet Users

OCTOBER 2009



Age

The vast majority of cyclists counted in the region were between the ages of 18 and 65. Cyclists under 18 years of age comprised 3.4 percent of the total and those over 65 made up 2.8 percent. **Figures 11** and **12** show locations with the highest rates for cyclists under 18 and over 65, respectively. **Figure 13** indicates age by location area. **Figure 14** shows a map depicting age ranges through the region.

Figure 11 – Top 10 Locations, Under 18-Years of Age

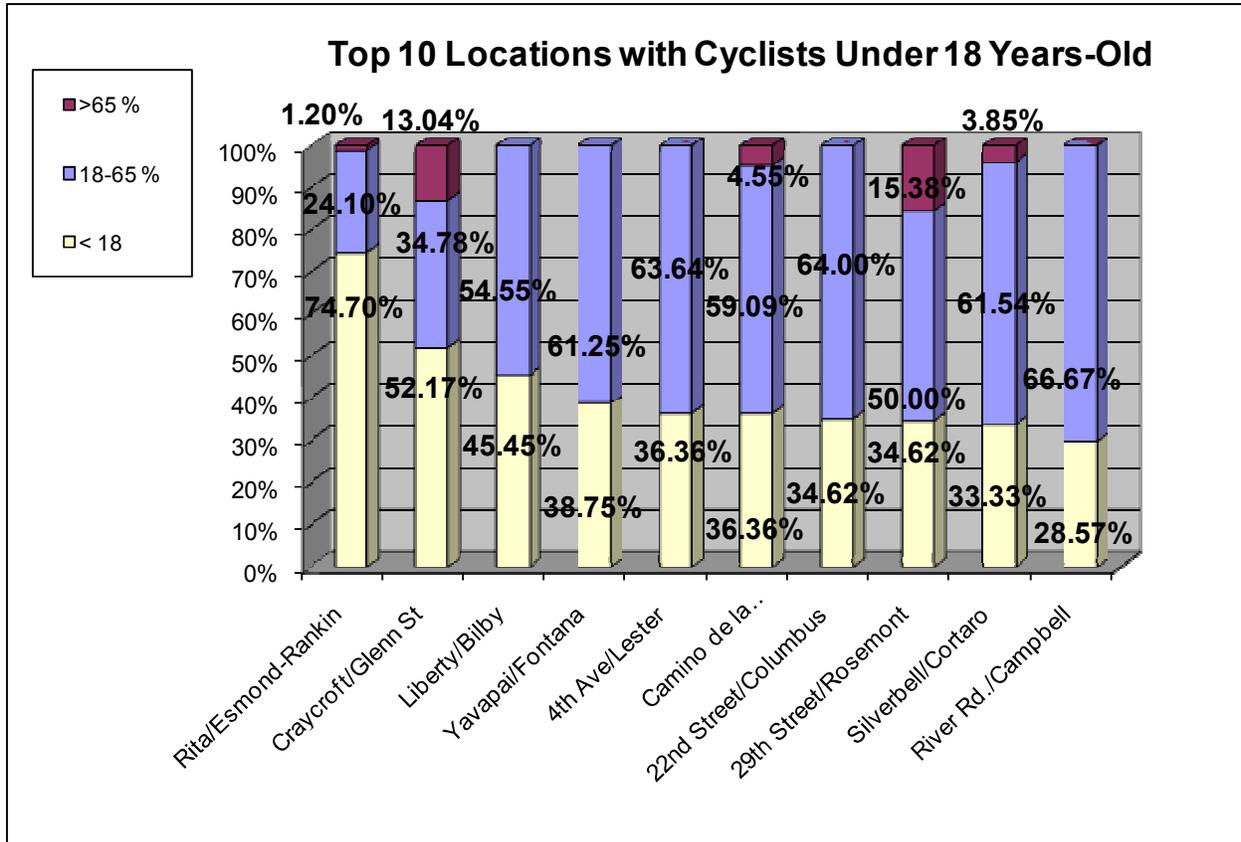


Figure 12 - Top 10 Locations, Over 65 Years of Age

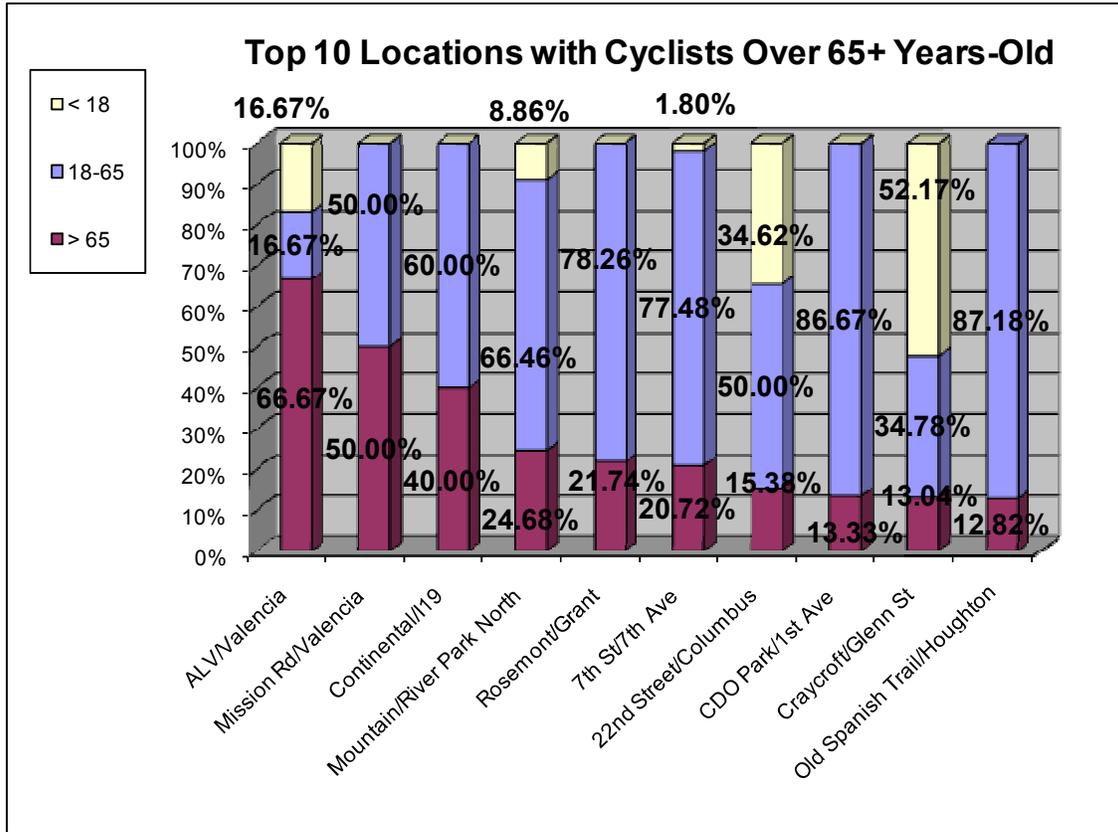


Figure 13 - Age by Area

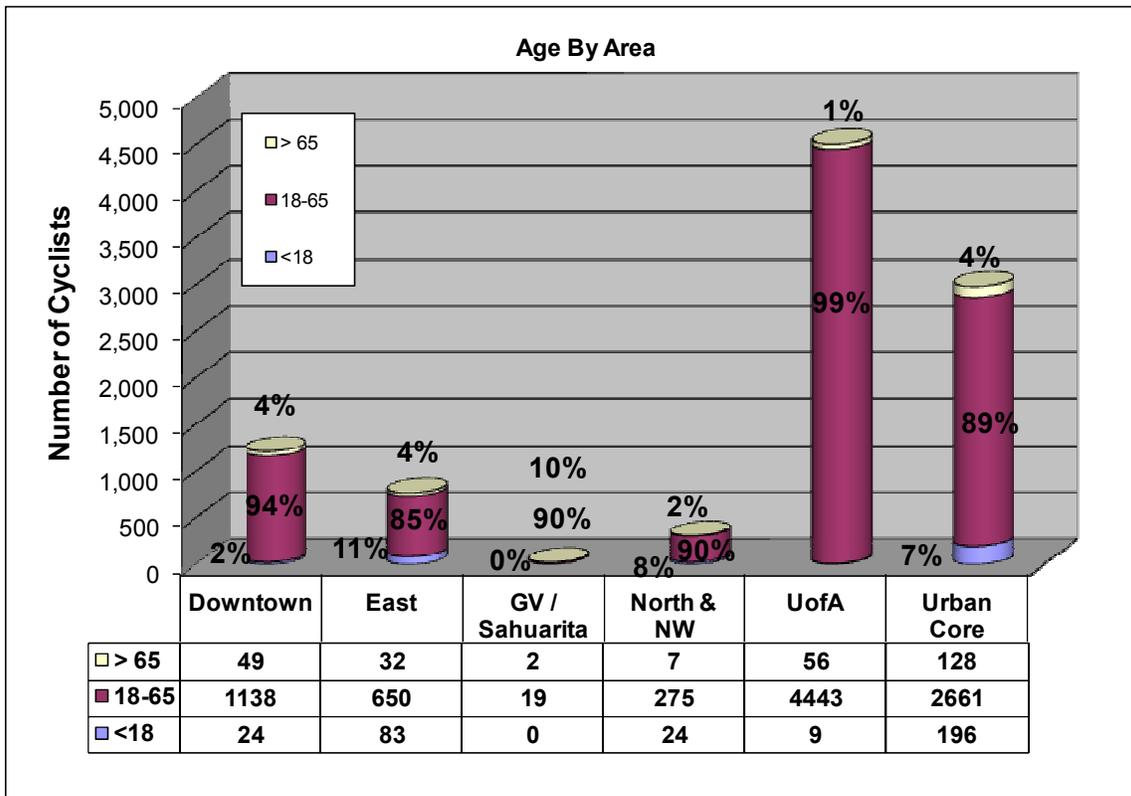
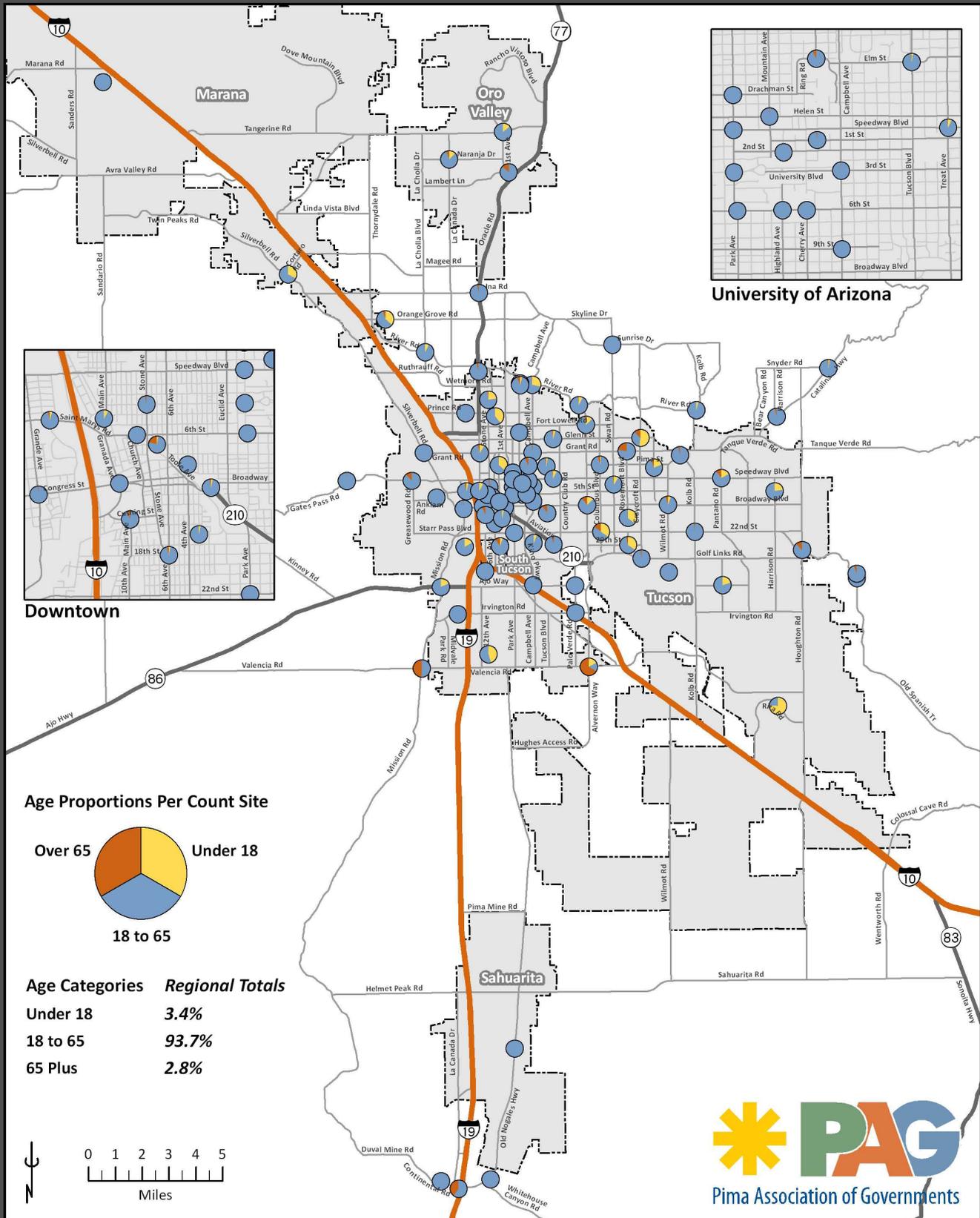


Figure 14 – Age Range

Bike Counts: Age 18 - 65 OCTOBER 2009



Wrong-Way Riding

Bicycling on the left side of the road is a dangerous and illegal way to ride. Traffic signals and signs are posted for traffic traveling on the right side of the road, and drivers, when entering and exiting intersections and driveways, do not expect to see cyclists on that side of the roadway. Tracking wrong-way riding is an important way to gauge education and outreach efforts aimed at increasing safe riding behaviors, and to identify potentially needed improvements.

The regionwide 2009 count average for wrong-way riding was 4.3 percent. **Figure 15** shows the top 10 locations for wrong-way riding. **Figure 16** shows wrong-way riding by area. The Urban Core and North & Northwest areas had the highest rates for wrong-way riding, at 7 percent and 6 percent, respectively. **Figure 17** shows a map depicting wrong-way riding in the region.

Figure 15 – Wrong-Way Riding Top 10 locations

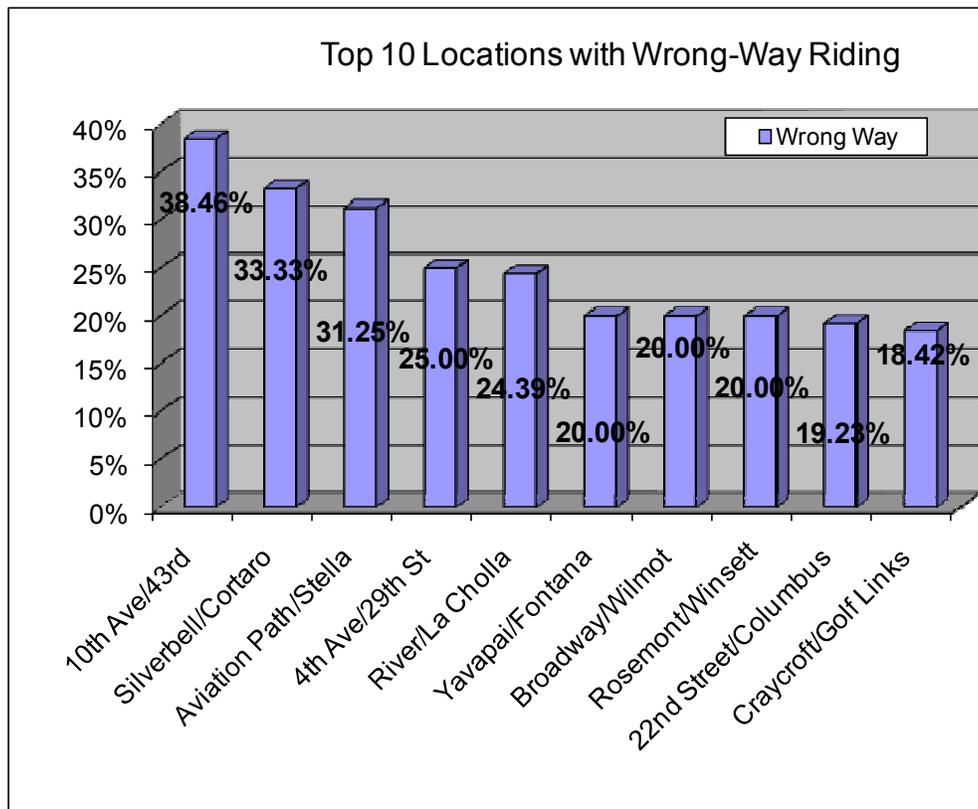


Figure 16 – Wrong-Way Riding by Area

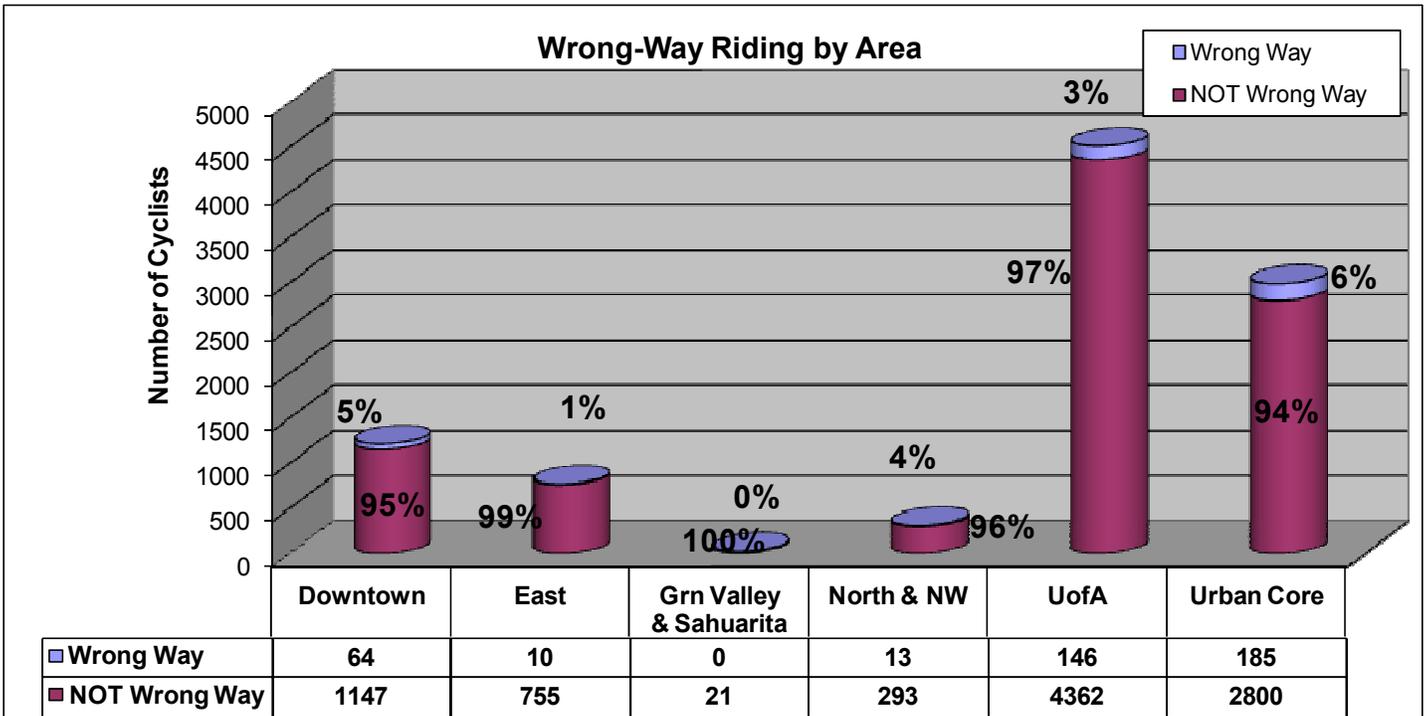
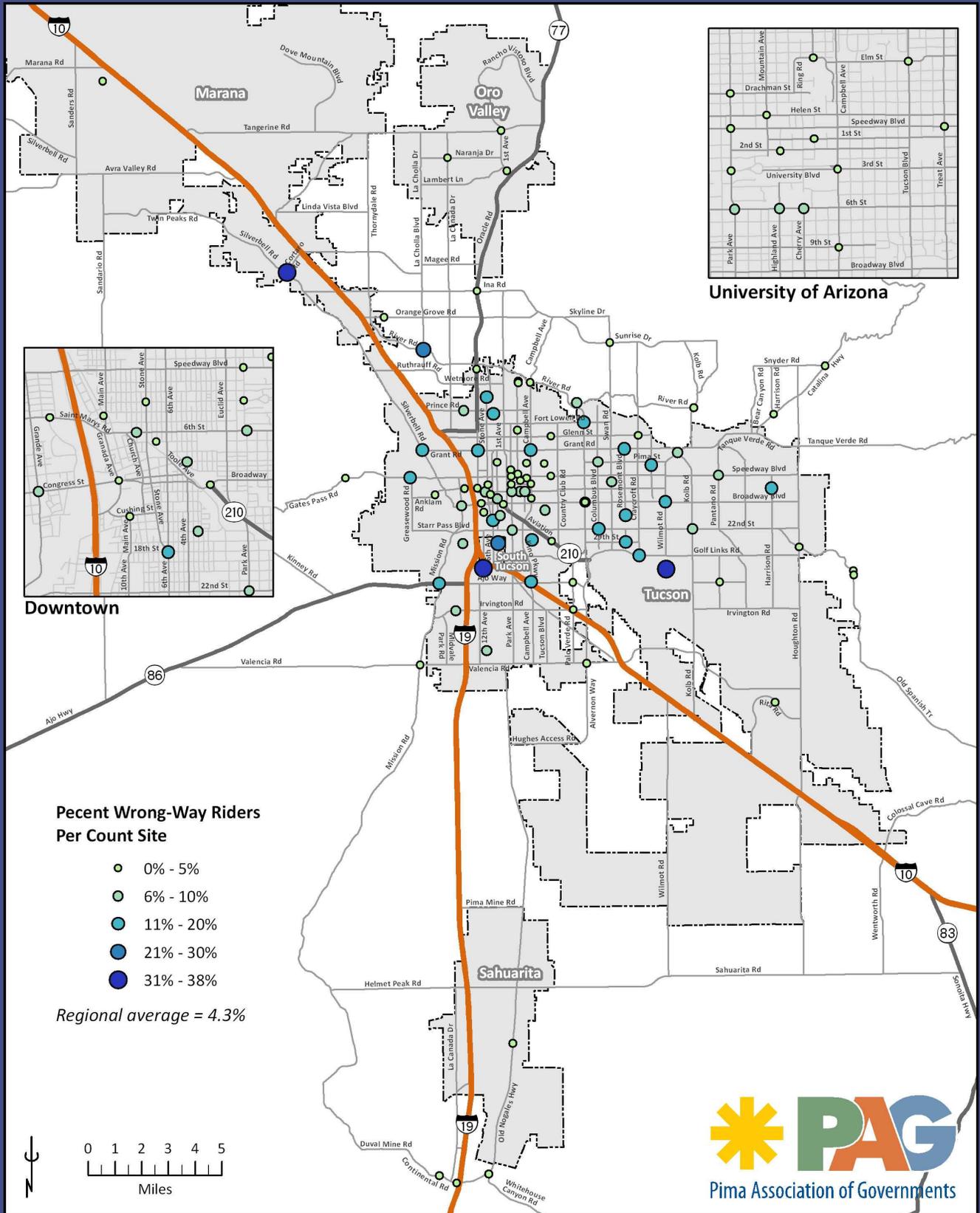


Figure 17 – Wrong-Way Riding

Bike Counts: Wrong-Way Riders OCTOBER 2009



Sidewalk Riding

Much like wrong-way riding, riding on the sidewalk is an unsafe and prohibited activity in many of the jurisdictions in the region. Cyclists riding on the sidewalk often go unseen by auto drivers and can constitute a danger to pedestrians due to their comparatively high speed. Tracking sidewalk riding is another important way to gauge education and outreach efforts aimed at increasing safe riding behaviors, and to identify potentially needed improvements.

The regional average for sidewalk riding for the 2009 count was 8.2 percent. Sidewalk riding varied from 0 percent to 71 percent, depending on count location. The location with the most sidewalk riding was Rita Rd / Esmond-Rankin. **Figure 18** shows locations with the highest rate of sidewalk riding. **Figure 19** shows sidewalk riding by area. The Urban Core and North & Northwest areas had the highest rates for sidewalk riding, both at 12 percent. **Figure 20** shows a map depicting sidewalk riding throughout the region.

Figure 18 – Locations with Highest Rates of Sidewalk Riding

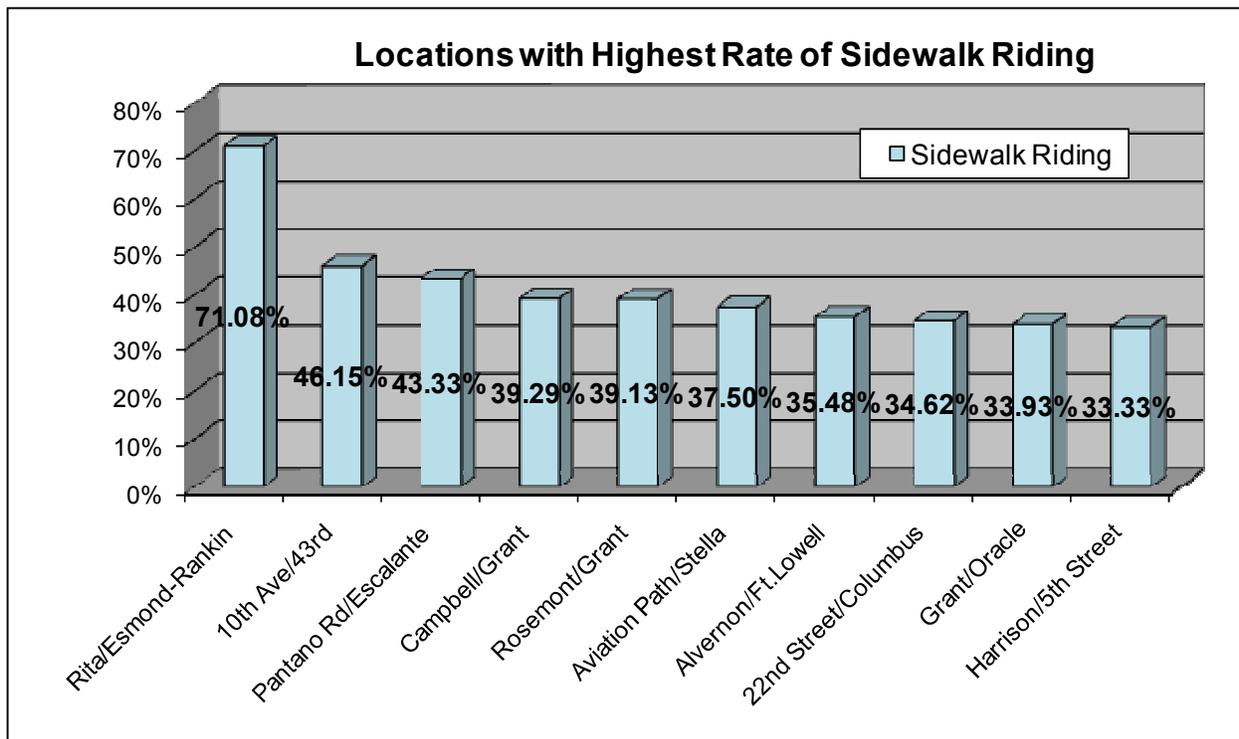


Figure 19 – Sidewalk Riding by Area

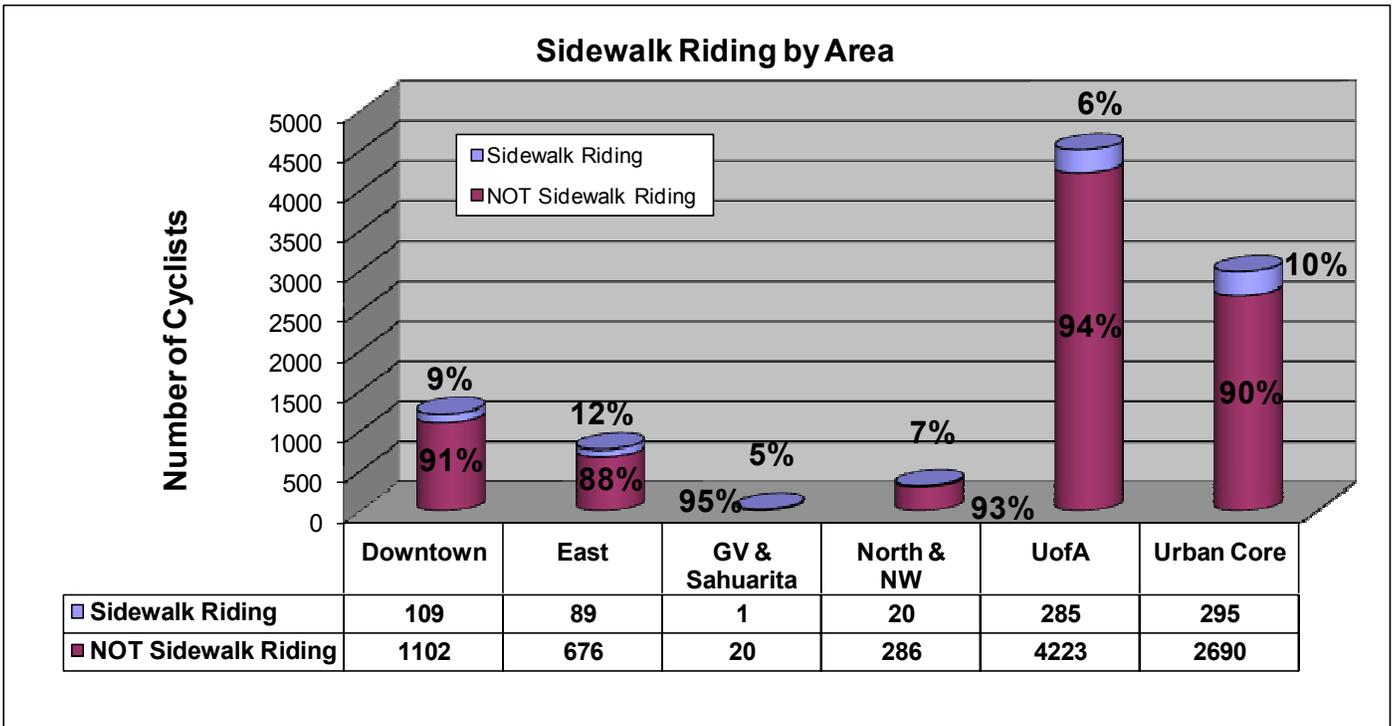
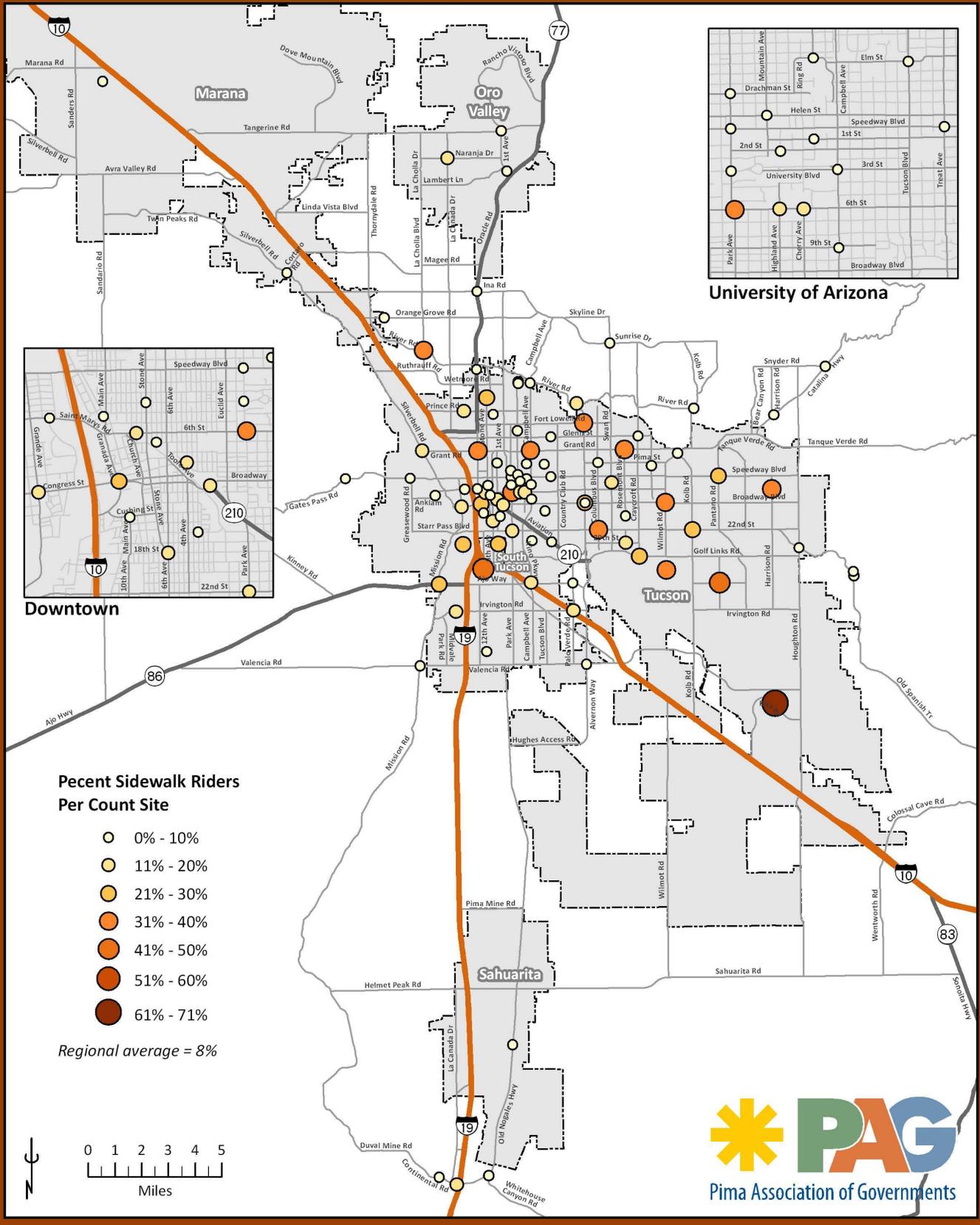


Figure 20 – Sidewalk Riding

Bike Counts: Sidewalk Riders

OCTOBER 2009



Comparing 2008 and 2009 Data

Over time, the annual bicycle count will show trends in cycling behavior in the Tucson region. Since 2009 is only the second year of the count, it is premature to make any true comparisons between years. Also, the bike count helps to gauge cycling levels but it is only a snapshot in time at certain locations and does not account for all the cycling behavior. However, it is common practice to take a look at data from year-to-year.

Forty locations that were counted in 2008 also were counted in 2009. The table below summarizes the count data for the repeat locations.

2009 Total	2008 Total	Change	% Change
5696	7722	-2026	-26.23673

You can see that the data suggests there was less cycling activity in 2009 than 2008. There are likely several reasons for the decrease:

- Cold Temperatures – There were record lows reached during the 2009 count. It is likely that many commuters were not prepared for the lows and instead chose not to bike. There were repeat counts at a few locations that suggest the data taken during the very cold days underestimate the cycling activity. The next section goes into more detail about the likely impact of the cold temperatures.
- Gas Prices – During the 2008 count, gas prices were still as high as \$3.50 a gallon. They had started to fall at that time and by the 2009 count, were back down to \$2.50 gallon. During the period where gas prices were very high, many cities saw an increase in alternative transportation users. The 2008 count could have been higher than average due to the high gas prices.
- Recession – In 2009, the Tucson region experienced higher rates of unemployment than in 2008. More unemployment normally results in less travel overall. The recession also could have played a role in lower bicycle commuting numbers.

Again, two years of data does not indicate a general trend but rather gives two separate fields of data. That said, the following table shows the attribute data percentages for the same locations in 2008 and 2009.

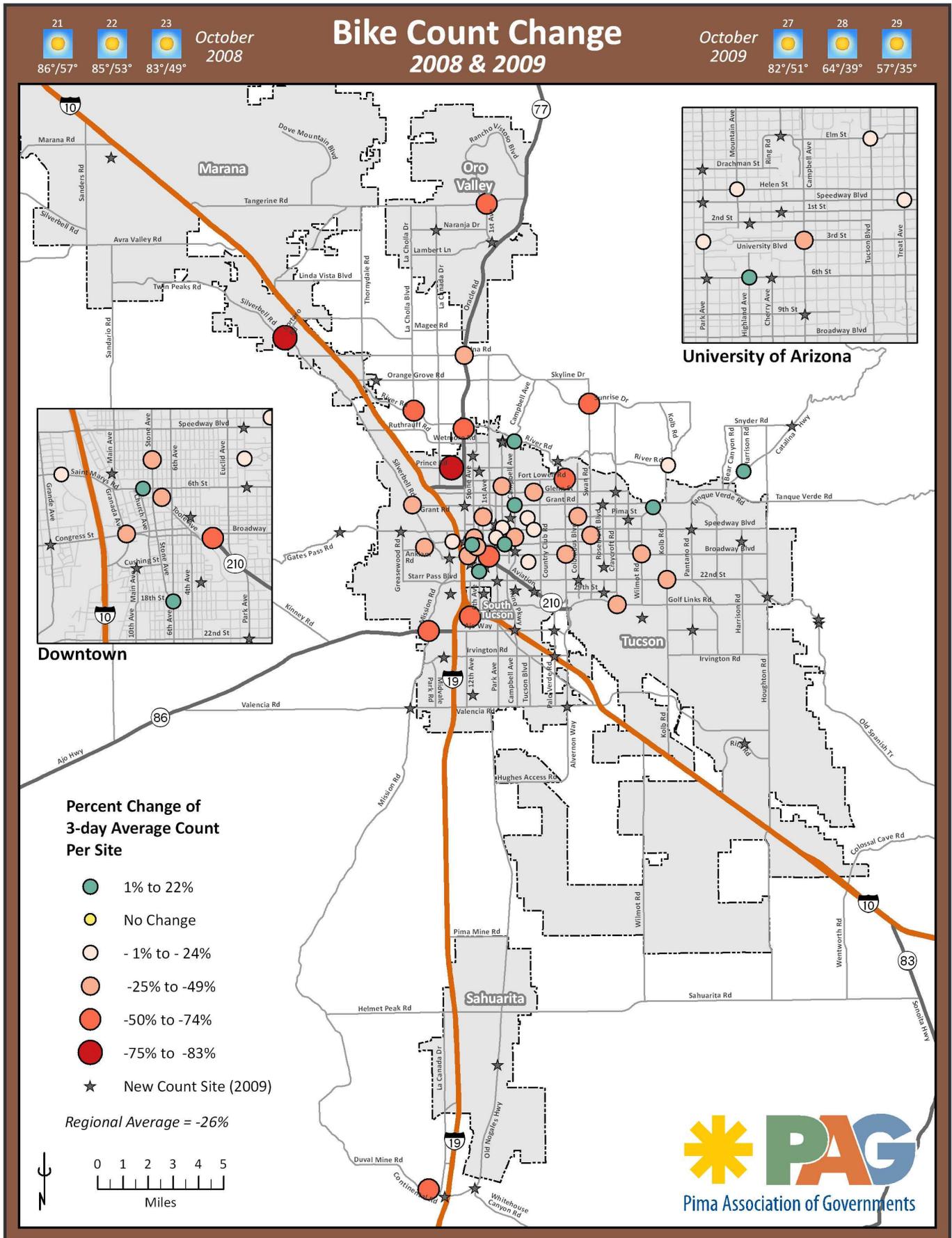
	Female %	Male %	Age <18 %	Age 18-65 %	Age >65 %	Wearing Helmet %	Wrong-Way Riding %	Riding On Sidewalk %
2008 Count	26.6%	73.4%	4.1%	93.3%	2.62%	43.78%	4.96%	8.77%
2009 Count	29.16%	70.84%	1.77%	95.98%	2.25%	40.77%	4.21%	7.48%

In general, attribute percentages are fairly consistent between 2008 and 2009. **Figure 21** is a table that compares 2008 and 2009 count data for each location that was counted both years. **Figure 22** is a map that compares count volumes from 2008 to 2009.

Figure 21 – Table comparing 2008 and 2009 count numbers by location.

Location	2009 Total	2008 Total	Change	% Change
Park & University	900	1058	-158	-14.93
3rd St/Campbell	856	1229	-373	-30.35
Mountain/Helen	724	825	-101	-12.24
6th St/Highland Ave	540	501	39	7.78
Stone/University	249	339	-90	-26.55
Mountain/Blackledge	204	372	-168	-45.16
Tucson/Elm	204	223	-19	-8.52
St. Mary's/Santa Cruz River	167	198	-31	-15.66
Speedway/Treat	133	147	-14	-9.52
Campbell/Grant	112	107	5	4.67
7th St/7th Ave	111	174	-63	-36.21
Glenn/Treat	108	162	-54	-33.33
Snake Bridge (Bdwy/Aviation)	105	269	-164	-60.97
Pima/Columbus	90	138	-48	-34.78
Oracle/Rillito Pathway	82	248	-166	-66.94
ALV/B'WAY	79	116	-37	-31.90
9th Ave./6th St.	69	58	11	18.97
Tanque Verde/Kolb	68	63	5	7.94
18th ST/6TH Ave.	62	60	2	3.33
Kolb/22nd	58	87	-29	-33.33
St. Mary's/Anklam	58	90	-32	-35.56
Catalina HY/Harrison	56	46	10	21.74
Congress/Granada	56	78	-22	-28.21
Ina/Oracle	56	95	-39	-41.05
Broadway/Wilmot	55	87	-32	-36.78
3rd/Swan	53	94	-41	-43.62
Sabino Canyon/River	50	64	-14	-21.88
Tangerine/1st Ave	44	103	-59	-57.28
River Rd./Campbell	42	39	3	7.69
River/La Cholla	41	83	-42	-50.60
Tucson/Arroyo Chico	40	46	-6	-13.04
Swan/Sunrise	40	93	-53	-56.99
Craycroft/Golf Links	38	56	-18	-32.14
4th Ave/Lester	33	44	-11	-25.00
Alvernon/Ft. Lowell	31	71	-40	-56.34
Prince/Fairview	23	91	-68	-74.73
Silverbell/Ironwood Hill	20	38	-18	-47.37
Mission/Ajo	17	61	-44	-72.13
10th Ave/43rd	13	33	-20	-60.61
Camino del sol/Continental	6	18	-12	-66.67
Silverbell/Cortaro	3	18	-15	-83.33
	2009 Total	2008 Total	Change	% Change
	5696	7722	-2026	-26.24

Figure 22 –Map Indicating the Change in the Number of Cyclists from 2008-2009



Impact of Record Low Temperatures on 2009 Count

It is particularly difficult to compare 2008 with 2009 data considering the record low temperatures that occurred during two of the three days of the 2009 count. The freezing temperatures likely played a huge role in the decreased numbers of cyclists. More years of data are needed to see if the 2009 count was an anomaly.

However, in an effort to gain some idea of how the weather impacted the data, recounts were taken at a few busy locations. The recounts used the same methodology for the same time-period. Both banks of the Rillito River Park at Mountain Ave were recounted and the numbers in the total represent the sum of the counts. The 3rd Street / Campbell Ave counts were done for the p.m. count only. The recounts were done at only two locations; therefore, the data gathered is by no means sufficient to determine the impact of the cold weather. However, you can see that the warmer recounts resulted in higher count numbers.

<i>Location</i>	<i>Original</i>	<i>Warmer Recount</i>		
Mountain/River Park North AND South	278	394		
3rd Street / Campbell*	428	539		
Total	706	933	Difference	% Change
			227	32.15%

* This repeat count was done for only the p.m. count.

Conclusion

The results for the second annual bicycle count are overall consistent with the first annual count. However, the number of cyclists counted at the same locations shows there was a decrease in cycling activity. Without more data it is impossible to determine whether the record low temperatures resulted in the lower count numbers or whether there was actually lower bicycling activity.

Not surprisingly, the area with the highest level of cycling activity is the area in and around the University of Arizona.

29 percent of cyclists observed were female. Figure 4 of this report shows the locations with the highest percentages of female riders. The 2009 data helps support the assumption that females prefer lower-stress bikeways, which are bike facilities that are more physically separated from automobiles such as shared use paths and residential streets. More data needs to be gathered to confirm this concept.

The second annual count again suggests the regional helmet usage (43%) is low compared to other bicycle-friendly communities. For example, the San Francisco 2009 count suggests that 65 percent of the cyclists wear a helmet.

In only its second year, the regional bicycle count is useful to planners and engineers to identify areas needing increases in targeted enforcement, education and outreach. For example, stencils were installed near intersections with the highest percentage of wrong-way riding to help educate cyclists the proper direction to ride. Over time the annual count will help the region evaluate the effectiveness of the programs geared at bicycling encouragement and safety.

Appendix Item 1 – Data Collection Sheet

Bike Count Sheet									
Date:		Location:			Type of Bikeway:				
HOUR	APPROACH DIRECTION	COUNT	INDICATE GENDER IF:		INDICATE AGE IF:		WEARING HELMET	WRONG WAY RIDING	RIDING ON SIDEWALK
			FEMALE		<18	65+			
	:00	NB							
		SB							
		EB							
		WB							
	:15	NB							
		SB							
		EB							
		WB							
	:30	NB							
		SB							
		EB							
		WB							
	:45	NB							
		SB							
		EB							
		WB							

Observations: