

Tempe Bike Count Report

2013



Tempe Bicycle Action Group

Report date: 3/22/2014

Update: Rev1, 5/7/2014

1. Abstract

In April the third annual city-wide bike count in Tempe was conducted as a way of understanding cycling habits and to identify routes and intersections that are problematic or dangerous. In total, 14,750 bicyclists were counted by 77 volunteers from a total of 91 different locations, with 26 locations common between 2011, 2012 and 2013. Overall helmet use was 19%, wrong way riding was 17% and sidewalk riding was 41%. Helmet use and wrong way riding were fairly consistent between Tempe 2011, 2012 and the current year. Sidewalk riding percentage had more variability year-to-year. Helmet use was much lower and wrong way and sidewalk riding were much higher than the values obtained for a similar count in Pima County, AZ (Tucson area) in 2011 [1].

2. Introduction

In 1974, the Planning Department of the City of Tempe released the comprehensive Tempe Bikeway Plan, the first plan of its kind in Arizona. The Bikeway Plan aimed to “encourage use of the bicycle for everyday transportation,” among other goals, as a way to decrease automobile traffic, reduce the environmental impacts of transportation, and raise the quality of living in Tempe. Now, almost forty years later, Tempe has more than 165 miles of dedicated bikeways, has been a League of American Bicyclists ‘Bicycle Friendly Community’ for fourteen years, and has one of the highest percentages of commuter cyclists in the country. Further increasing ridership is a current goal of the city, a goal shared by the Tempe Bicycle Action Group (T.B.A.G.). T.B.A.G. is a non-profit 501(c)(3) organization dedicated to advancing the bicycle as a safe, efficient, and sustainable form of transportation.

On March 26th, 27th and 28th, 2013, 77 volunteers observed cyclists at 54 intersections during morning (7-9 am) and evening (4-6 pm) rush hours, counting 14,750 cyclists. The count of cyclists travelling through an imaginary cordon around the ASU-Tempe campus was 412 per hour in-bound in the morning and 879 per hour out-bound in the afternoon. Besides a count, additional data was collected covering rider gender, helmet use, riding on the sidewalk, and riding on the wrong side of the street (against traffic). In addition to these data, our analysis considers vehicle traffic volume data by intersection made available by the City of Tempe. The Tempe bike count was modeled in part after a similar program by the Pima Association of Governments (PAG) [1].

3. Results

a. Attribute Analysis

Attributes collected were wrong-way riding, riding on the sidewalk, wearing a helmet, and gender. The high incidences of cyclists riding against traffic, riding on the sidewalk and riding without a helmet are all matters of significant concern.

At the intersection of Southern Road and Mill Avenue, 44% of the 45 east/west (E/W) cyclists (on Southern) were riding the wrong direction, and 98% of the riders at this location/direction rode on the sidewalk. There is no bike lane on Southern Road at this intersection. The 20 intersections with the highest fraction of wrong-way riding are shown in Figure 1. In all, there were 13 intersections at which 25% or more of the cyclists observed were riding the wrong direction. Riding on the wrong side is illegal as well as dangerous, as motorists often do not anticipate or look for wrong-way traffic. While some of the intersections with high wrong-way riding lack a dedicated bike lane in the problem direction, many, such as several along University Drive in the ASU area, do have bike lanes.

Sidewalk riding had even higher percentages. For Rural Road, 9 locations monitored between Broadway Road and Rio Salado Parkway had greater than 50% sidewalk riding, while 4 locations on Rural had more than 90% sidewalk riding. The 20 intersections with the highest fraction of sidewalk riding are shown in Figure 2. In all, 35 intersections out of 54 had 25% or more of the cyclists riding on the sidewalk. While legal (if riding with traffic), sidewalk riding can create a hazard for pedestrians and it can create conflicts between motorists and cyclists, as motorists often do not anticipate relatively fast-moving traffic on sidewalks. This is especially true when the sidewalk traffic is moving opposite of street traffic.

Overall helmet use was 19%. This is substantially lower than that observed in the Pima Association of Government’s (PAG; Tucson area) count of 50% [1]. Wrong way riding was 17% and sidewalk riding was 41%, both substantially higher than Tucson. Wrong-way riding was counted for both on-street and

on-sidewalk riding. The calculation of overall attribute percentages was weighted according to the total count for each intersection/direction.

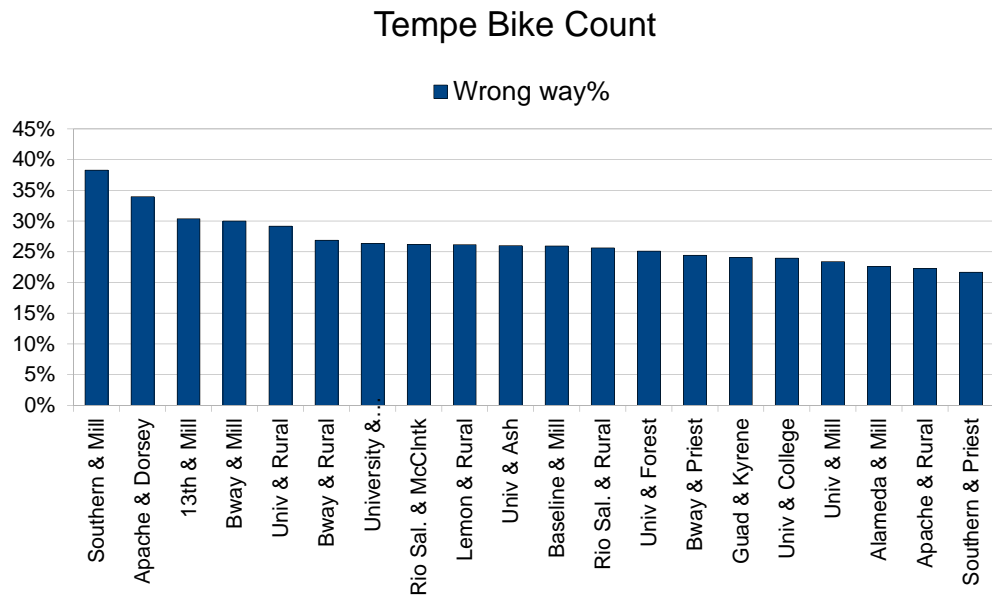


Figure 1 Top 20 locations by percentage of wrong-way riders, by intersection (directions combined)

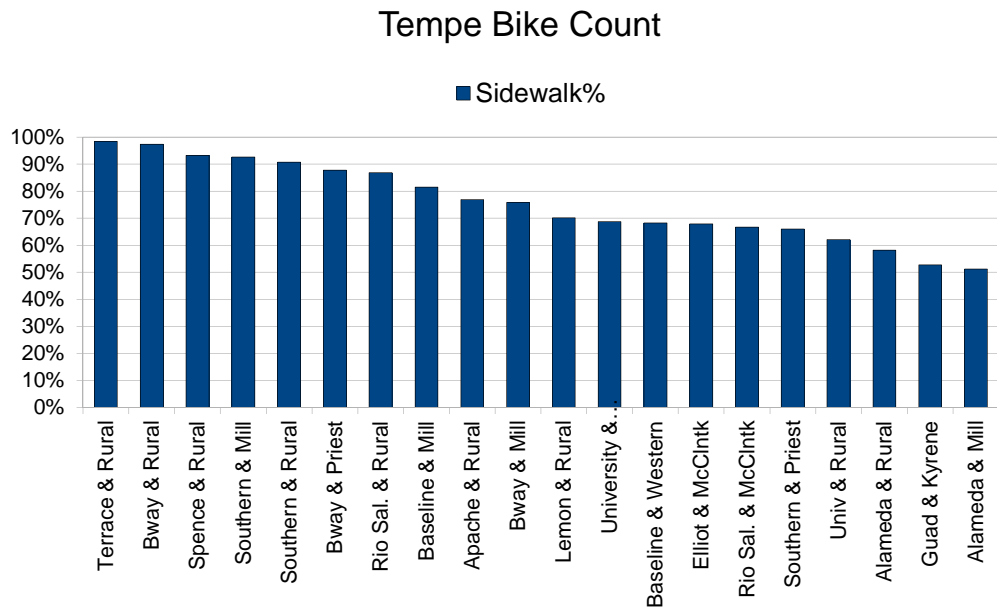


Figure 2 Top 20 locations by percentage of cyclists on sidewalk, by intersection (directions combined).

A summary of count data and attribute data is shown in Table 1. Count and attribute data are depicted geographically in Appendix A.

	Total Count	# locations	Recorders	Wrong way%	Sidewalk%	Helmet%	Female%
Tempe 2013	14,750	54	91	17.2%	40.6%	19.0%	26.1%
Tempe 2012	6,563	28	20	18.7%	45.8%	17.6%	29.8%
Tempe 2011	9,407	45	58	17.5%	31.8%	17.2%	24.8%
PAG 2011	15,898	117		2.5%	5.9%	50.3%	26.8%

Table 1 Summary of count data and attribute data.

b. Correlation Analysis

Both sidewalk riding and wrong way riding are positively correlated with vehicular traffic volume as shown in Figure 3 and Figure 4. That is, the higher the volume of vehicular traffic in a particular direction, the higher the incidence of both riding on the sidewalk and riding against traffic. These correlations indicate the need to recognize the affect of traffic volume on cyclist riding behavior.

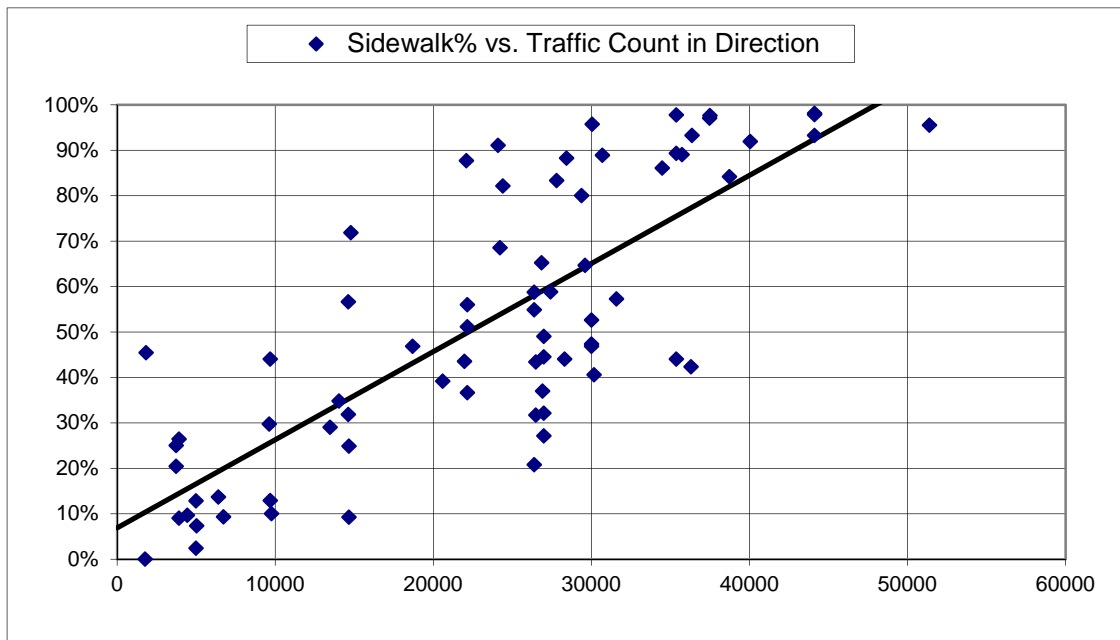


Figure 3 Correlation between sidewalk riding and vehicular traffic count, by E/W and N/S directions. $R^2 = 0.62$.

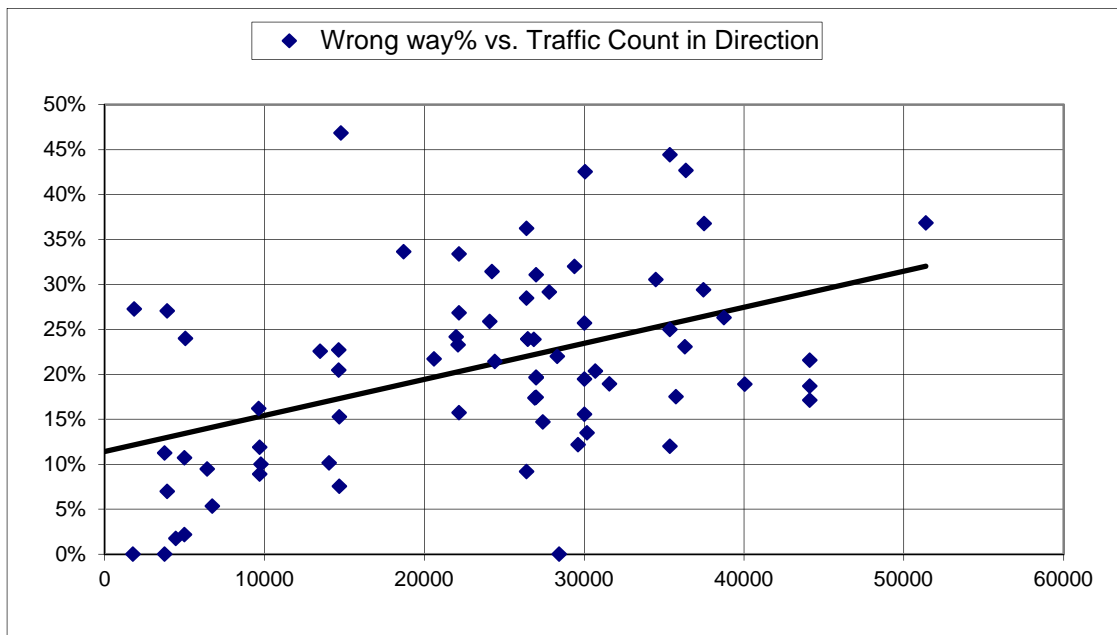


Figure 4 Correlation between wrong way riding and vehicular traffic count, by E/W and N/S directions. $R^2 = 0.21$.

The plot in Figure 5 shows that the highest bicycle usage areas are adjacent to the ASU campus.

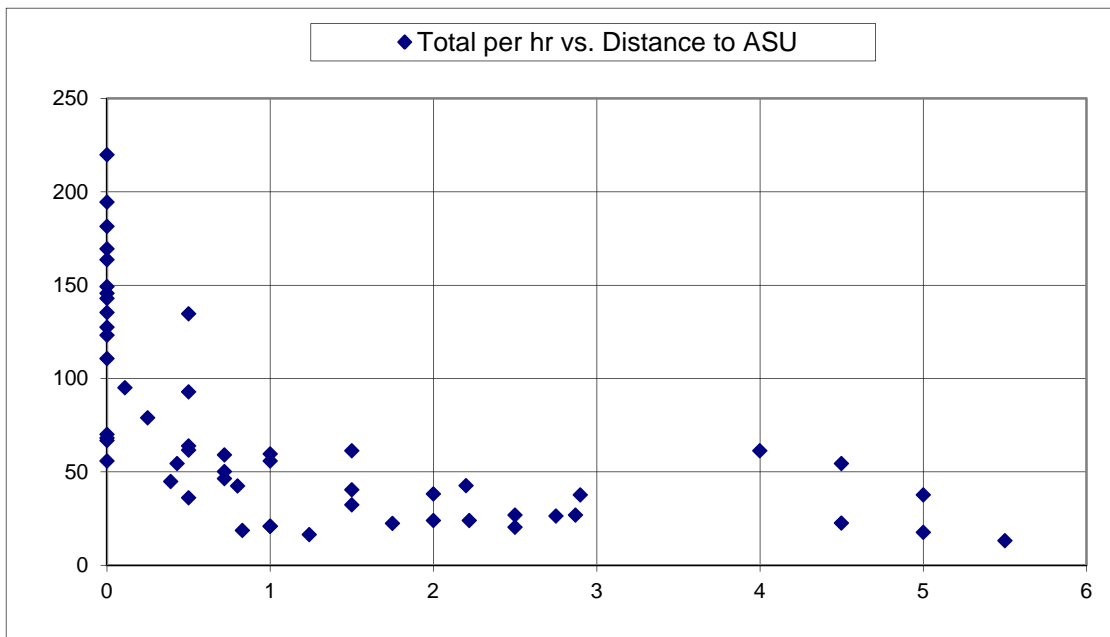


Figure 5 Relationship between cyclist count per hour and distance to ASU (miles).

c. Error Detection

Error detection methods were applied to the collected data. The detailed procedure is provided in Appendix A. Seven count locations had errors in attribute data indicated by the attribute count exceeding the bike count for a specific time and direction. There were 10 errors detected out of 3296 data points, some due to recording and the rest to transcribing. Based on this low percentage of errors, the counting procedure appears to be sound. As a result of corrections, the total bicycle count increased by 6.

4. Recommendations

The City of Tempe has made great strides in developing the city as a bicycle-friendly community. This bike count indicates that there is still work to do to improve bicycle safety both in terms of infrastructure improvement (bicycle lanes and paths) and education. In particular, we recommend that the city look at bike lanes on routes that are popular with cyclists. Sidewalk riding is a concern relating to car-bike accidents, especially when the bike is going the wrong way on the sidewalk. T.B.A.G. [3] would like to work with the city on plans to improve these roads, to add bike lanes, and to work on educational and enforcement campaigns in these areas.

Detected errors were reduced substantially relative to last year's count. This improvement is likely due to the following corrections made in the overall count process:

- 1) Training
- 2) Count sheet (simplification, *e.g.*, removal of lower-priority metrics)

The use of cross-checking reduced the effect of errors even further.

While the detection of errors may indicate problems in the data collection methodology, it does not imply the results are less accurate than comparable count data analysis results in other cities. The fact that error detection methods were applied to detect questionable data improves the final data analysis accuracy.

5. References

- [1] 2011 Regional Bicycle/Pedestrian Count Summary, www.pagnet.org.
- [2] Traffic count data from the City of Tempe, www.tempe.gov/traffic.
- [3] Tempe Bicycle Action Group (T.B.A.G.), www.biketempe.org.
- [4] 2011 Tempe Bike Count Report, <http://www.biketempe.org/wp-content/uploads/2011/12/Tempe-Bike-Count-2011-Final-Report1.pdf>.
- [5] Tempe Bike Count Report 2012, http://www.biketempe.org/wp-content/uploads/2013/01/Tempe_Bike_Count_Report_2012.pdf.

Acknowledgements

Tempe Bike Count 2013 was a concerted effort by a diverse team representing a wide cross-section of the bicycle-interest community. Many thanks go out to the volunteers who contributed their time to recording data and other areas of this effort.

Report author, statistical analysis:

- Clifford Anderson, Six Sigma Black Belt

Bike count coordination:

- Scott Walters, T.B.A.G.

Bike count training coordination:

- Tim Tagtmeyer, T.B.A.G.

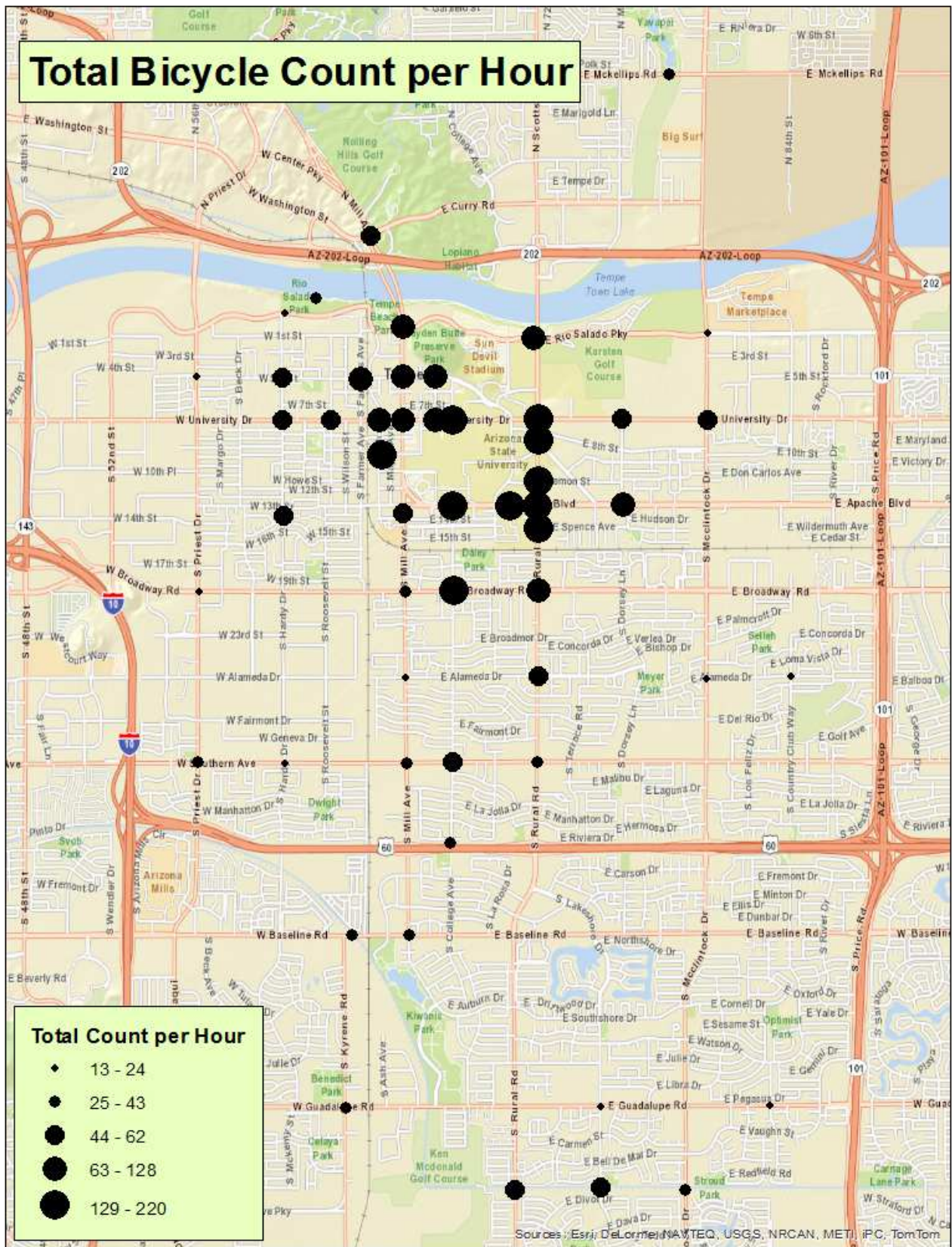
Other bike count contributors:

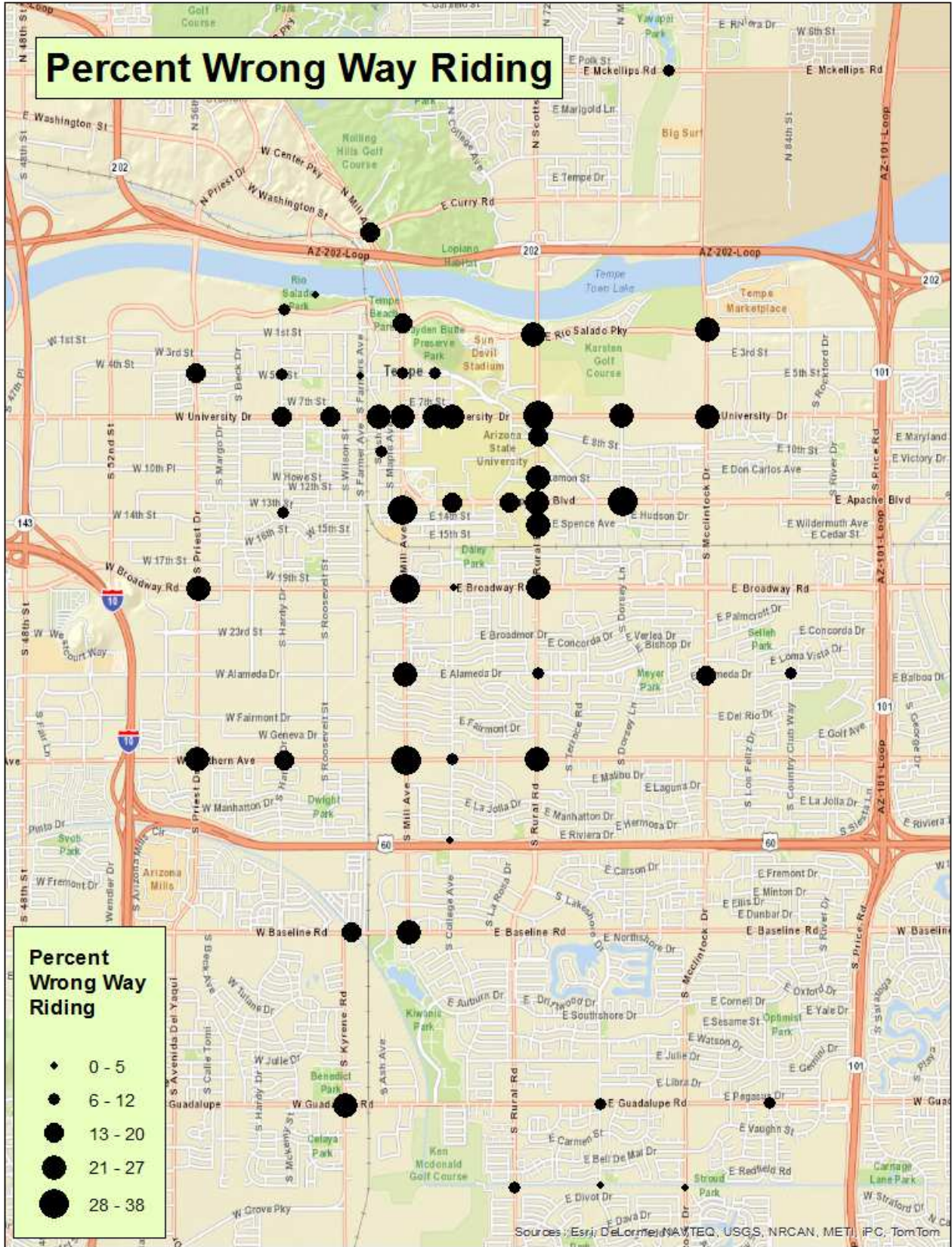
- Lindsey Conrow, ASU, School of Geographical Sciences and Urban Planning
- Jenn and Ryan Guzy, T.B.A.G., co-recipients of the 2013 Tempe Bike Hero Award

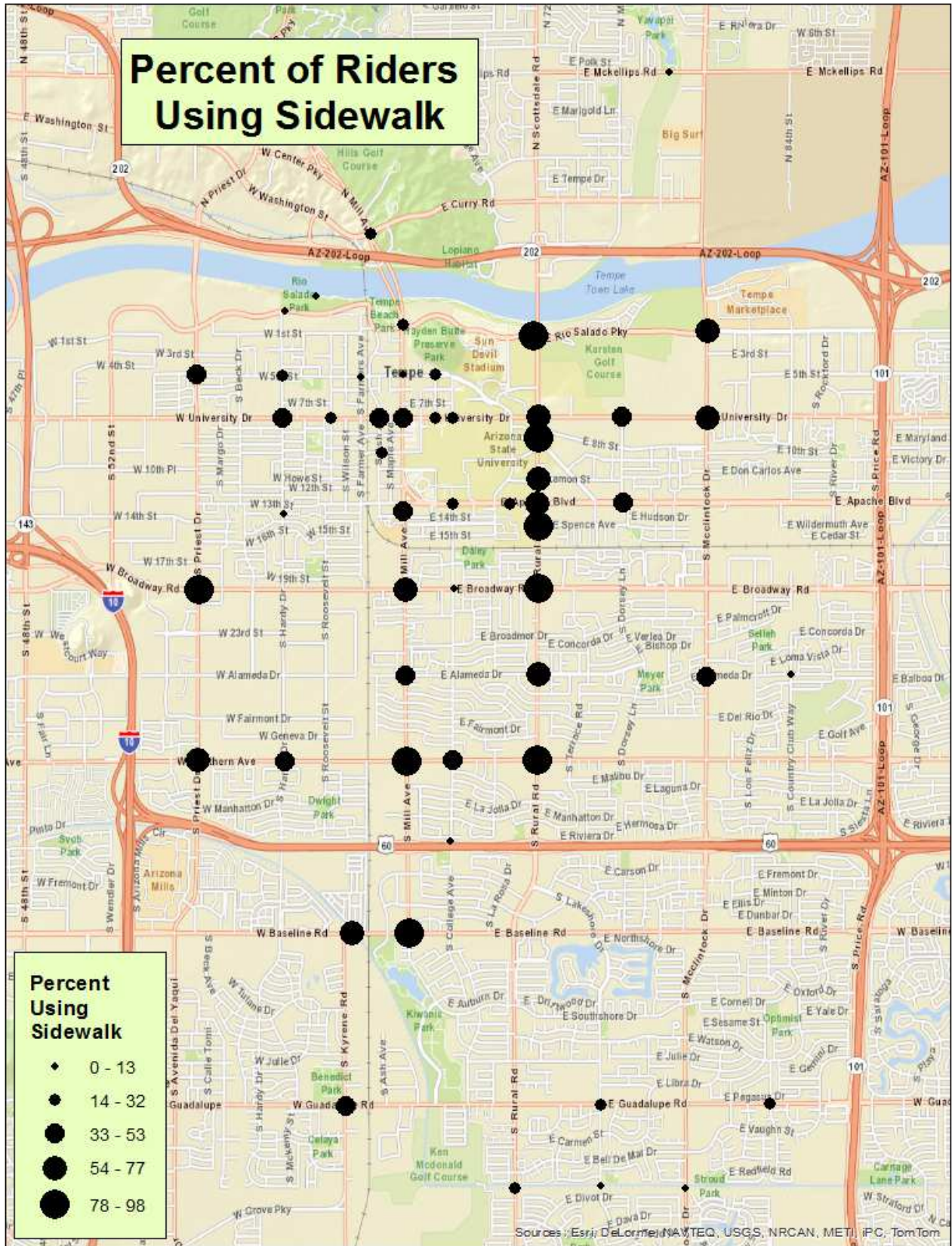
Count recorders:

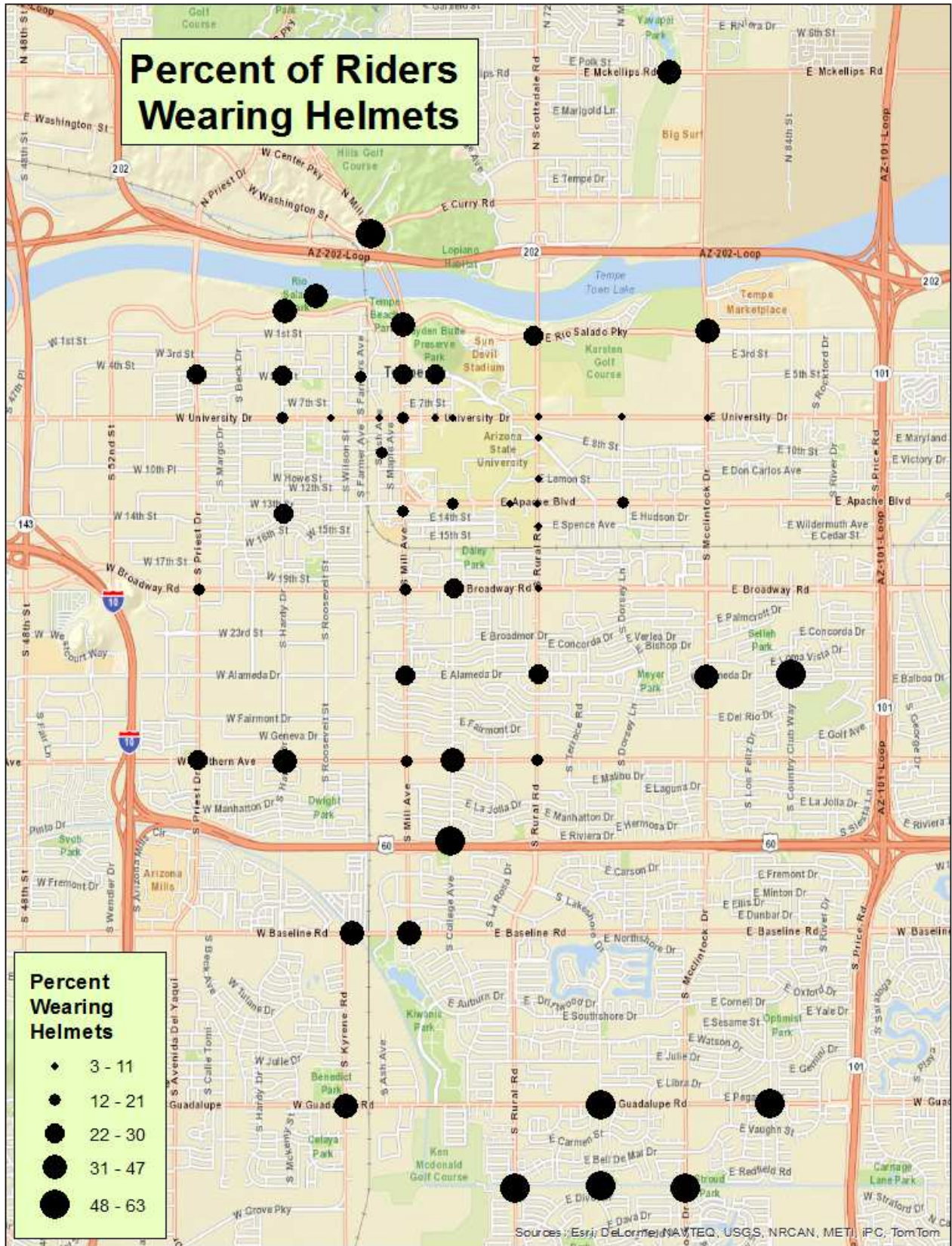
- 77 individuals

Appendix A Geographical Presentation of Statistics









Appendix B Methodology

Locations and times for collecting data were selected based on the following characteristics:

- a. Highest estimated volume of bicycle traffic
- b. Intersections
- c. Establishment of cordon around (traffic in and out of) ASU
- d. Coverage of a representative sample of the City of Tempe
- e. Practicality of volunteer participation
- f. Data collected during previous bike count

The total number of intersections in the initial plan was capped at about 50, but was limited practically by volunteer participation.

The cordon for ASU was defined as follows:

- West border: Mill Ave
- South border: Apache Blvd
- East border: Rural Rd
- North border: Rio Salado Pkwy

The time periods 7-9am and 4-6pm were believed to include the peak time periods while also allowing volunteers to participate without interfering with their normal work schedules. Tuesday, Wednesday and Thursday were anticipated to be the highest volume days of the week and roughly equivalent to each other (volunteers were allowed to select, at will, any one of the three days for data collection). The data collection worksheet was designed with 15 minute bins.

The set of instructions conveyed to recorders is shown in Appendix D. Three training sessions were held.

Bicycle count data was collected for each of the directions (typically 4) of each intersection. For analysis, the two opposite direction counts were added, e.g., east was added to west.

Error detection methods were applied to the collected data. For each cyclist observed, instructions required that one notation be recorded in the count column, with attribute data recorded in addition in each respective column as applicable. Therefore, for a given 15 minute bin, if the sum of notations for any one attribute exceeds the count column total, an error has occurred. Possible causes for errors include:

- a. accidental double-counting in the attribute column
- b. accidental uncounted data in the count column
- c. improper procedure followed
- d. data translation error from hand-written sheets to database

There were 10 total data entry errors detected out of 3,296 data points. The errors came from 7 data sheets. Based on this low percentage of errors, there does not appear to be any procedural errors by this method of error detection. The errors were reviewed case by case and all appear to be accidental errors rather than procedural. All errors were corrected. Four of the errors were transcription errors while 6 were recording errors.

Average bike count per hour vs. time of day, as shown Figure 6, peaked for the AM counts at the end of the morning shift. For the PM counts peaks occurred for the 4:15-4:30 and 5:45-6:00PM segments.

Since these are aggregate counts, it is possible that some areas have peak ridership at other times. The data was likely influenced by class schedule at ASU.

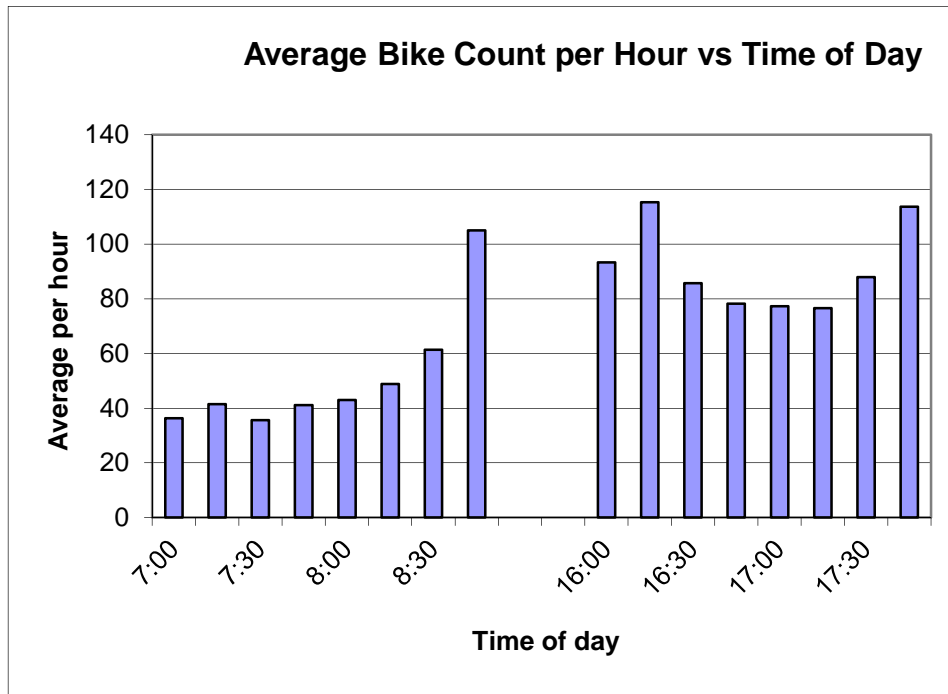


Figure 6 Average bike count per hour vs. time of day

Traffic count was obtained from City of Tempe data [2]. This data represents vehicular traffic flow over a 24-hour period in the two opposite directions (e.g., east and west, or north and south). The locations are generally not at intersections. Vehicular data has been collected over a number of years, but the locations change somewhat from year to year. The following method was used to interpret vehicular traffic data for the purpose of this study:

- The most recent data for each sampling location was used.
- For the two sides of a given intersection/direction (east/west or north/south), the larger of the two values was used. If data was available for only one side, that value was used.

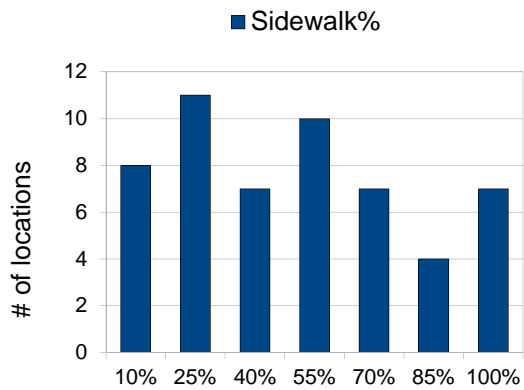
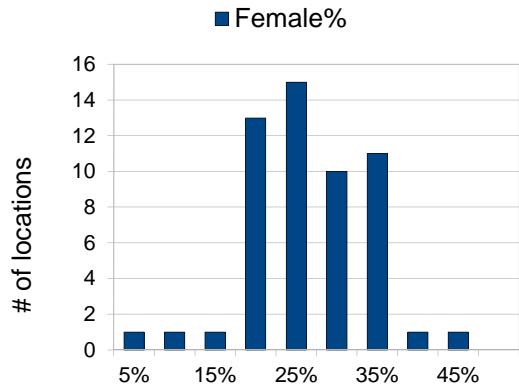
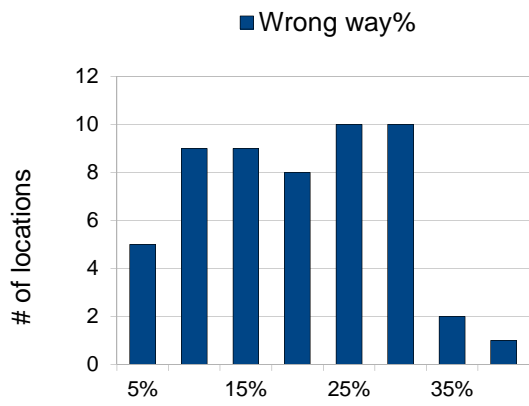
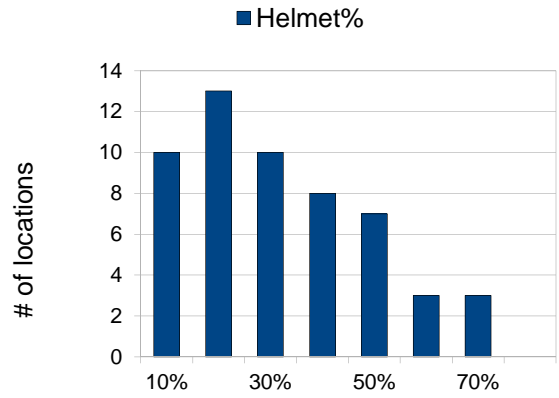
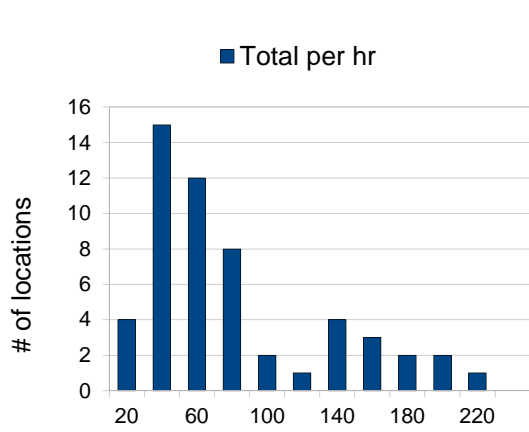
Appendix C - Bike Count Form

Name:		Count Sheet		page #:	
Date:		Location ID#:		Intersection of streets:	
		Check for every cyclist:		Also check all that apply:	
Hour	Approach	COUNT	FEMALE	Wearing	Wrong Way
__AM __PM	Direction			HELMET	Riding
:00	NB				
	SB				
	EB				
	WB				
:15	NB				
	SB				
	EB				
	WB				
:30	NB				
	SB				
	EB				
	WB				
:45	NB				
	SB				
	EB				
	WB				
Observations/ Notes:					
Construction etc.					
Return all completed sheets to the Bicycle Cellar (200 E. 5th St #105, Tempe; ask about the Bike Count discount!), Boulders on Broadway's hostess desk or mail to Scott Walters, PO Box 692, Tempe, AZ 85280. Thank you for your participation!					

Appendix D - Bike Count Instructions

1. **Count Form Structure.**
 - a. 1 hr: each form tracks 1 full hr of activity, broken into 15 minute increments.
 - b. Total # of Cyclists recorded in “Count” Column. Attributes broken out in following columns.
2. **Fill In:** - Important please include the following info on each tracking sheet.
 - a. Your Name (cell#)
 - b. Location ID# & Location (Intersection) – this info was sent to you in your volunteer confirmation email.
 - c. Hour (i.e. 4-5pm) – please record hr in far left column
 - d. Total Hrs (bottom left) = total amount of time you were able to stay & count that location (i.e. 1.5 hrs or 2hrs)
 - e. Page # (example: 1 of 2 – etc)
3. **Count Shifts** (2 hr) – you will need at least 2 count sheets per shift. Busier locations may require more sheets. Extra count sheets will be available.
 - AM Rush hour: 7-9am
 - PM Rush hour: 4-6pm
4. **Priority 1:** Count (Bikes & Pedestrians)
5. Columns “**Count**” = Total # Cyclists and “**Pedestrians**” = Total # of pedestrians
 - a. Approach Direction (NB, SB, EB, WB): Record the approach direction (northbound, southbound –etc)
 - b. note: turn direction is not recorded
 - c. Intervals – the data is recorded in 15 minute intervals.
6. **Priority 2:** Record Attributes
once you’ve marked the cyclists (or pedestrian) then break out the attributes as well as you can.
7. **Cyclist Attributes:** **** Default = Male without Helmet ****
 - a. **Approach Direction** (NB, EB, WB, SB)
 - b. **Gender:** Male is assumed * Mark if cyclist Female
 - c. **Helmet** (No Helmet is assumed) - Mark if the cyclist is wearing a Helmet
 - d. **Wrong-Way Riding** - cycling against traffic
 - e. **Sidewalk Riding** – does not include quick transitions at intersections or parking lots etc.

Appendix E – Additional Graphs



Appendix F Data Summary

Loc ID	Location or Intersection: E/W	Location or Intersection: N/S	Total per hr	AM per hr	PM per hr	Helmet%	Wrong way%	Sidewalk%	Female%	Traffic Count	Traffic Dir	Loc to ASU	Lane in Dir	Dir
101	Washington/Curry	Mill Ave	28	20	36	65%	16%	30%	0.23	14035	9628	0.39	1	NS
102	Rio Salado Pkwy	Mill Ave	57	39	76	44%	15%	25%	0.22	14670	14670	0	1	NS
103	Rio Salado Pkwy	Rural Rd	50	39	61	21%	28%	99%	0.23	14634		0	0	NS
104	Rio Salado Pkwy	McClintock Dr	10	10		11%	32%	100%	0.21	20597		1	0	NS
105	Rio Salado Pkwy	Hardy Dr	14	12	16	44%	11%	7%	0.13	9784		0.83	1	NS
106	5th St	Mill Ave	60	45	74	30%	8%	9%	0.24	14670	14670	0	1	NS
107	5th St	Forest Ave	24	10	37	20%	0%	17%	0.28			0	0	NS
108	5th St	Farmer Ave	11	11	12	9%	9%	9%	0.2			0.25	0	NS
109	5th St	Hardy Dr	24	22	26	27%	9%	14%	0.21	6409	6409	0.72	1	NS
110	5th St	Priest Dr	13	7	19	32%	22%	44%	0.12	28310	28310	1.24	1	NS
111	10th St	Mill Ave	36	27	45	28%	28%	55%	0.26	26392	26392	0	0	NS
112	60 Fwy	College Ave	38	36	41	61%	0%	0%	0.23	1774	1774	2	1	NS
113	13th St	Mill Ave	20	11	30	15%	36%	59%	0.24	26392	26392	0	1	NS
114	13th St	Hardy Dr	25	28	23	29%	9%	13%	0.18	9690	9690	0.72	1	NS
115	University Dr	College Ave	120	65	175	13%	24%	7%	0.28	26482	5044	0	1	NS
116	University Dr	Dorsey Ln	5	3	8	5%	33%	48%	0.24	30015		0.5	1	NS
117	University Dr	Rural Rd	45	35	55	6%	37%	96%	0.3	51380	51380	0	0	NS
118	University Dr	Mill Ave	93	33	152	14%	9%	21%	0.15	27003	26392	0	1	NS
119	University Dr	Ash Ave	32	25	39	20%	16%	31%	0.36	27003		0.11	1	NS
120	University Dr	Roosevelt St	6	4	9	16%	20%	24%	0.12	27003		0.43	1	NS
121	University Dr	Hardy Dr	21	18	24	21%	12%	44%	0.15	27003	9690	0.72	1	NS
122	McKellips Rd	Greenbelt Path	35	21	49	51%	0%	0%	0.18	14788		2.2	1	NS
123	Western Canal	Rural Rd	13		13	32%	32%	80%	0.36	29395	29395	4	0	NS
124	Western Canal	McClintock Dr	9	8	11	32%	14%	41%	0.22	30170	30170	5	1	NS
125	Western Canal	Lakeshore Dr	13	13	13	60%	0%	0%	0.32			4.5	1	NS
126	Baseline Rd	Western Canal	10	6	14	44%	0%	3%	0.08	24094		2.9	1	NS
127	Elliot Rd	McClintock Dr	9	7	11	35%	15%	59%	0.18	38743	27418	5.5	1	NS
128	Alameda Dr	McClintock Dr	12	6	19	19%	29%	83%	0.23	27807	27807	2	0	NS
129	Alameda Dr	S Rural Rd	34	21	48	15%	18%	89%	0.28	35740	35740	1	0	NS

Loc ID	Location or Intersection: E/W	Location or Intersection: N/S	Total per hr	AM per hr	PM per hr	Helmet%	Wrong way%	Sidewalk%	Female%	Traffic Count	Traffic Dir	Loc to ASU	Lane in Dir	Dir
130	Alameda Dr	Country Club Wy	8	8		56%	6%	13%	0.44			2.5	1	NS
131	Apache Blvd	Rural Rd	82	72	92	8%	19%	93%	0.23	44120	44120	0	0	NS
132	Apache Blvd	S Dorsey Ln	9	5	14	6%	36%	33%	0.14	18699		0.5	0	NS
133	Apache Blvd	College Ave	191		191	20%	11%	13%	0.34	22165	4997	0	1	NS
134	Apache Blvd	Paseo Del Saber	86	63	109	6%	0%	0%	0.28	22165		0	1	NS
135	Lemon St	Rural Rd	75	59	91	3%	37%	98%	0.28	37510	37510	0	0	NS
136	Spence St	Rural Rd	118	127	110	8%	17%	98%	0.29	44120	44120	0	0	NS
137	Broadway Rd	Priest Dr	14	11	18	30%	21%	82%	0.2	37476	24403	1.75	1	NS
138	Broadway Rd	Rural Rd	70		70	6%	22%	98%	0.22	44120	44120	0.5	0	NS
139	Broadway Rd	College Ave	114	89	140	34%	2%	2%	0.29	29614	4997	0.5	1	NS
140	Southern Ave	Priest Dr	13	12	15	31%	23%	42%	0.13	36313	36313	2.75	1	NS
141	Southern Ave	College Ave	86		86	23%	2%	10%	0.1	35372	4442	1.5	1	NS
142	Southern Ave	Rural Rd	19	19		19%	19%	92%	0.24	40059	40059	1.5	0	NS
143	Southern Ave	Hardy Dr	16	16		48%	23%	29%	0.06	28429	13469	2.22	1	NS
144	Southern Ave	Mill Ave	18		18	22%	31%	86%	0.19	35372	34482	1.5	1	NS
145	Alameda Dr	Mill Ave	13	10	16	22%	20%	55%	0.24	1841		1	1	NS
146	Broadway Rd	Mill Ave	35	15	55	17%	17%	37%	0.09	31585	26912	0.5	1	NS
147	Baseline Rd	Mill Ave	9	10	8	37%	31%	69%	0.11	24224	24224	2.5	1	NS
148	Guadalupe Rd	Kyrene Rd	12	11	13	35%	24%	65%	0.11	26863	26863	2.87	1	NS
149	Guadalupe Rd	Country Club Wy	10	6	14	23%	4%	13%	0.18			5	1	NS
150	Guadalupe Rd	Lakeshore Dr	12	11	13	57%	9%	11%	0.32			4.5	1	NS
151	University Dr	Forest Ave	57	30	83	13%	27%	32%	0.41	26482		0	0	NS
152	Tempe Lake	TCA Bridge	21	12	31	40%	0%	0%	0.31			0.8	0	NS
154	Terrace Rd	Rural Rd	84		84	4%	27%	97%	0.33			0	0	NS
155	University Dr	McClintock Dr	22	14	31	6%	43%	93%	0.21	36366	36366	1	1	NS
101	Washington/Curry	Mill Ave	17	20	15	57%	10%	35%	0.2	14035	14035	0.39	1	EW
102	Rio Salado Pkwy	Mill Ave	11	9	14	59%	23%	32%	0.27	14670	14634	0	1	EW
103	Rio Salado Pkwy	Rural Rd	21	13	29	53%	20%	57%	0.18	14634	14634	0	1	EW
104	Rio Salado Pkwy	McClintock Dr	12	12		61%	22%	39%	0.09	20597	20597	1	1	EW
105	Rio Salado Pkwy	Hardy Dr	5	5	5	30%	10%	10%	0	9784	9784	0.83	1	EW

Loc ID	Location or Intersection: E/W	Location or Intersection: N/S	Total per hr	AM per hr	PM per hr	Helmet%	Wrong way%	Sidewalk%	Female%	Traffic Count	Traffic Dir	Loc to ASU	Lane in Dir	Dir
106	5th St	Mill Ave	51	42	61	18%	5%	9%	0.38	14670	6739	0	1	EW
107	5th St	Forest Ave	44	39	49	24%	13%	18%	0.28			0	1	EW
108	5th St	Farmer Ave	68	57	79	20%	5%	9%	0.37			0.25	1	EW
109	5th St	Hardy Dr	36	24	47	18%	11%	20%	0.41	6409	3747	0.72	1	EW
110	5th St	Priest Dr	4	4	4	13%	0%	25%	0.44	28310	3747	1.24	1	EW
111	10th St	Mill Ave	100	74	125	13%	6%	10%	0.37	26392		0	1	EW
112	60 Fwy	College Ave								1774		2	0	EW
113	13th St	Mill Ave	36	26	46	17%	27%	26%	0.22	26392	3917	0	1	EW
114	13th St	Hardy Dr	25	12	39	20%	7%	9%	0.32	9690	3917	0.72	1	EW
115	University Dr	College Ave	100	73	128	8%	24%	43%	0.27	26482	26482	0	1	EW
116	University Dr	Dorsey Ln	57	42	72	10%	19%	47%	0.31	30015	30015	0.5	1	EW
117	University Dr	Rural Rd	98	73	124	8%	26%	47%	0.28	51380	30015	0	1	EW
118	University Dr	Mill Ave	117	42	192	4%	17%	27%	0.19	27003	27003	0	1	EW
119	University Dr	Ash Ave	64	38	89	6%	31%	44%	0.28	27003	27003	0.11	1	EW
120	University Dr	Roosevelt St	48	38	59	9%	20%	32%	0.25	27003	27003	0.43	1	EW
121	University Dr	Hardy Dr	26	19	33	10%	20%	49%	0.2	27003	27003	0.72	1	EW
122	McKellips Rd	Greenbelt Path	8	6	11	22%	47%	72%	0.16	14788	14788	2.2	1	EW
123	Western Canal	Rural Rd	49		49	54%	1%	0%	0.32	29395		4	1	EW
124	Western Canal	McClintock Dr	29	32	26	54%	0%	0%	0.22	30170		5	1	EW
125	Western Canal	Lakeshore Dr	42	32	53	53%	0%	0%	0.16			4.5	1	EW
126	Baseline Rd	Western Canal	28	16	40	32%	26%	91%	0.19	24094	24094	2.9	0	EW
127	Elliot Rd	McClintock Dr	5	3	7	42%	26%	84%	0.11	38743	38743	5.5	0	EW
128	Alameda Dr	McClintock Dr	12	12	13	56%	0%	17%	0.13	27807		2	1	EW
129	Alameda Dr	S Rural Rd	26	24	28	36%	4%	17%	0.25	35740		1	1	EW
130	Alameda Dr	Country Club Wy	13	13		68%	8%	4%	0.4			2.5	1	EW
131	Apache Blvd	Rural Rd	64	42	87	8%	27%	56%	0.28	44120	22165	0	1	EW
132	Apache Blvd	S Dorsey Ln	55	41	69	14%	34%	47%	0.22	18699	18699	0.5	1	EW
133	Apache Blvd	College Ave	68	78	59	14%	16%	37%	0.39	22165	22165	0	1	EW
134	Apache Blvd	Paseo Del Saber	96	88	104	10%	33%	51%	0.32	22165	22165	0	1	EW
135	Lemon St	Rural Rd	75	51	99	3%	15%	43%	0.35	37510		0	1	EW

Loc ID	Location or Intersection: E/W	Location or Intersection: N/S	Total per hr	AM per hr	PM per hr	Helmet%	Wrong way%	Sidewalk%	Female%	Traffic Count	Traffic Dir	Loc to ASU	Lane in Dir	Dir
136	Spence St	Rural Rd	51	40	63	4%	32%	82%	0.26	44120		0	1	EW
137	Broadway Rd	Priest Dr	9	8	9	6%	29%	97%	0.21	37476	37476	1.75	0	EW
138	Broadway Rd	Rural Rd	24		24	11%	43%	96%	0.15	44120	30063	0.5	0	EW
139	Broadway Rd	College Ave	21	22	20	4%	12%	65%	0.26	29614	29614	0.5	0	EW
140	Southern Ave	Priest Dr	14	13	14	24%	20%	89%	0.19	36313	30697	2.75	0	EW
141	Southern Ave	College Ave	38		38	6%	12%	44%	0.07	35372	35372	1.5	0	EW
142	Southern Ave	Rural Rd	14	14		21%	25%	89%	0.21	40059	35372	1.5	0	EW
143	Southern Ave	Hardy Dr	9	9		35%	0%	88%	0	28429	28429	2.22	0	EW
144	Southern Ave	Mill Ave	23		23	9%	44%	98%	0.16	35372	35372	1.5	0	EW
145	Alameda Dr	Mill Ave	8	7	10	36%	27%	45%	0.27	1841	1841	1	1	EW
146	Broadway Rd	Mill Ave	26	10	42	4%	19%	57%	0.17	31585	31585	0.5	0	EW
147	Baseline Rd	Mill Ave	18	14	23	38%	23%	88%	0.23	24224	22102	2.5	0	EW
148	Guadalupe Rd	Kyrene Rd	16	15	17	56%	24%	44%	0.26	26863	21981	2.87	1	EW
149	Guadalupe Rd	Country Club Wy	16	14	19	47%	4%	15%	0.19			5	1	EW
150	Guadalupe Rd	Lakeshore Dr	11	11	11	55%	14%	32%	0.11			4.5	1	EW
151	University Dr	Forest Ave	71	53	89	7%	24%	32%	0.27	26482	26482	0	1	EW
152	Tempe Lake	TCA Bridge	21	13	30	41%	0%	0%	0.27			0.8	0	EW
154	Terrace Rd	Rural Rd	111		111	5%	7%	100%	0.31			0	0	EW
155	University Dr	McClintock Dr	34	31	37	12%	16%	53%	0.22	36366	30015	1	1	EW

Total			75	53	97	19%	17%	41%	0.26					
Max			191	127	192	68%	47%	100%	0.44					
Min			4	3	4	3%	0%	0%	0					

Revision History

Rev 1 Correct Appendix F “EW” bike count and attribute data; and correlations Fig. 3 & 4. Replace Fig. 5 (combined directions was by dir).