# Tempe Bike Count Report
# 2015

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## Tempe Bicycle Action Group
Rev 2: 2/12/2017

## 1. Abstract

In April  the fifth 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, 15,429 bicyclists were counted by 81 volunteers from a total of 53 different locations, with 15 locations counted for all 5 years from 2011 to 2015. Overall helmet use was 21%, wrong way riding was 17% and sidewalk riding was 38%. Helmet use and wrong way riding were fairly consistent between the four years of bike count data. Sidewalk riding percentage had more variability year-to-year. Helmet use was lower while wrong way and sidewalk riding were higher than values obtained for similar count data in Pima County, AZ (Tucson area).

## 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, over forty years later, Tempe has more than 175 miles of bikeways [1], was recently promoted to the gold-level League of American Bicyclists 'Bicycle Friendly Community' [2] (first inducted 1997), and has the highest percentage of residents who bike to work, at 4.2%, in the county [1]. The City of Tempe has a long-standing commitment to encouraging bicycle and pedestrian travel [1], a goal shared by 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 [3]. Despite bicycling infrastructure progress, collision data is still high, at 1107 pedalcyclist collisions over the 5-year period from 2010 to 2014 [4], [5].

This is the 5th annual Tempe Bike Count Report [6]-[9]. On March 24th, 25th and 26th, 2015, 81 volunteers observed a total of 15,429 cyclists at 53 intersections during morning (7-9 am) and evening (4-6 pm) rush hours. The count of cyclists traveling through an imaginary cordon around the ASU-Tempe campus was 691 per hour in-bound in the morning and 1122 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 vehicular traffic volume data by intersection made available by the City of Tempe [10]. The Tempe bike count method was modeled in part after a similar program by the Pima Association of Governments (PAG) [11]-[14]. Other recent reports on bicycle transportation include those from Maricopa Association of Governments [15], [16] and a Bike Network Connectivity Study for SRP [17].

## 3. Results

A summary of count data and attribute data is shown in Table 1. Count and attribute data are depicted geographically in Appendix A. Historical bike count data by location is tabulated in Appendix F. A detailed tabulation of results for 2015 is given in Appendix G. Raw data is available in reference [18].

| Report | Total Count | # locations | Recorders | Wrong way% | Sidewalk% | Helmet% | Female% |
|---|---|---|---|---|---|---|---|
| Tempe 2015 | 15,429 | 53 | 81 | 16.6% | 37.7% | 21.0% | 24.2% |
| Tempe 2014 | 12,577 | 48 | 78 | 19.2% | 41.8% | 20.6% | 24.7% |
| 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 2014 | 18,426 | 107 | | 2.9% | 4.7% | 47.2% | 28.9% |
| PAG 2013 | 13,265 | 82 | | 2.9% | 6.0% | 50.9% | 28.0% |
| PAG 2012 | 12,211 | 86 | | 3.2% | 7.0% | 54.6% | 24.5% |
| PAG 2011 | 15,898 | 117 | | 2.5% | 5.9% | 50.3% | 26.8% |

Table 1       Summary of count data and attribute data [6]-[9], [11]-[14].

### 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.

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. ARS §28-812 concerns applicability of traffic laws to bicycle riders. Riding on the wrong side is 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. Six intersections had greater than 90% sidewalk riding. The 20 intersections with the highest fraction of sidewalk riding are shown in Figure 2. In all, 37 intersections out of 53 had 25% or more of the cyclists riding on the sidewalk. Tempe City Code sec. 7-52 concerns riding on sidewalks or bicycle lanes. 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 21%. This is substantially lower than that observed in the count by Pima Association of Government (PAG) of roughly 50% [14]. Wrong way riding was 17% and sidewalk riding was 38%, both substantially higher than the PAG count (3% and 5% respectively). 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.
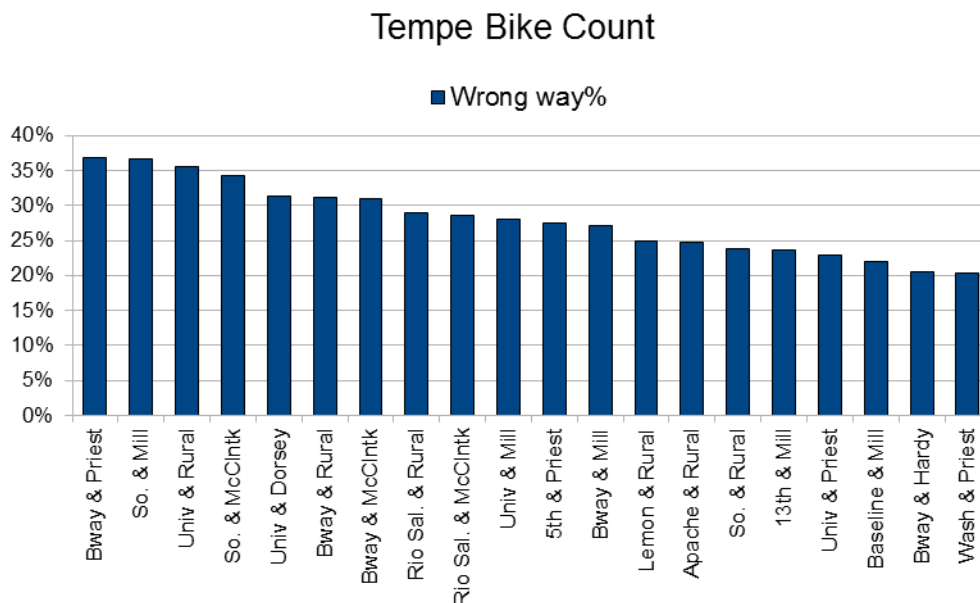


Figure 1          Top 20 locations by percentage of wrong-way riders, by intersection (directions combined)
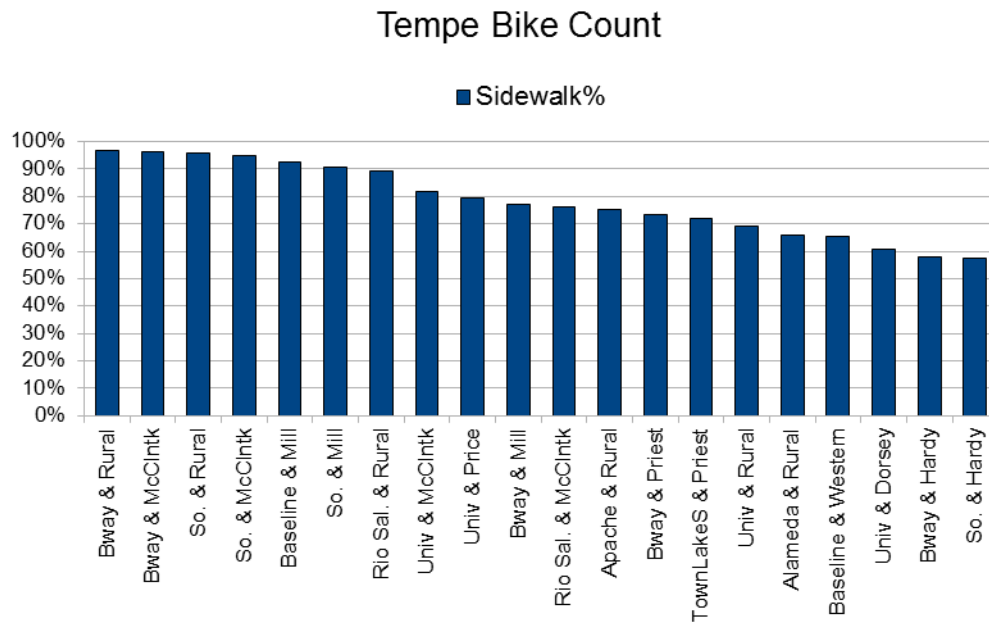
Figure 2      Top 20 locations by percentage of cyclists on sidewalk, by intersection (directions combined).

## 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 effect of traffic volume on cyclist riding behavior.
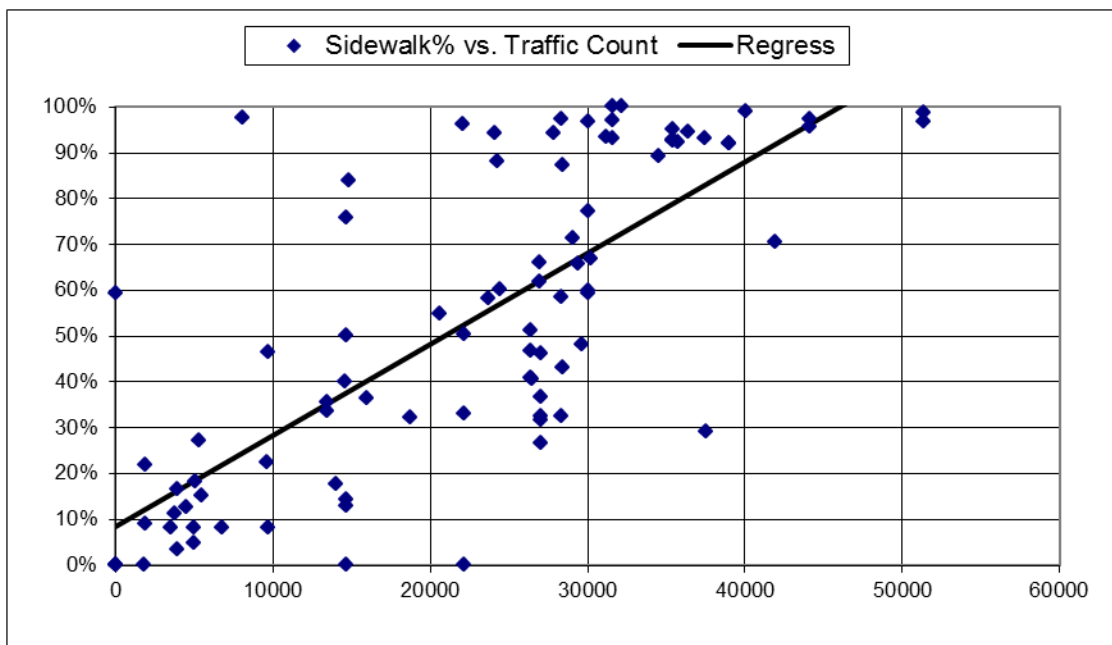


Figure 3      Correlation between sidewalk riding % and vehicular traffic count (24 hour period), E/W and N/S directions separated. $R^2 = 0.57$.
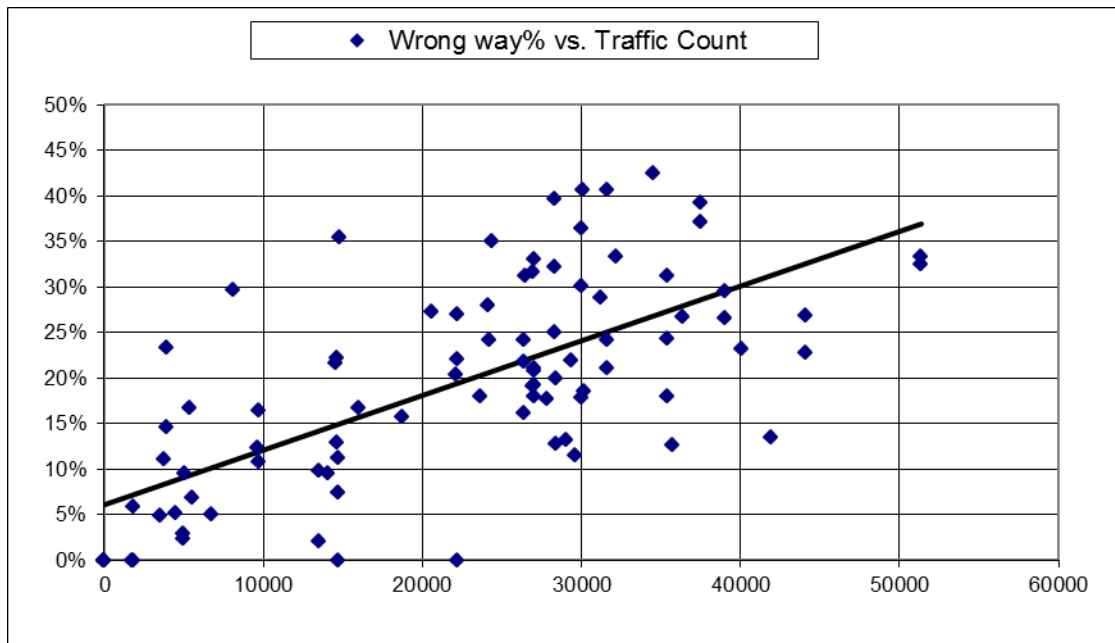
Figure 4        Correlation between wrong way riding % and vehicular traffic count (24 hour period), E/W and N/S directions separated. $R^2 = 0.46$.

With regard to collision data analysis, the reader is referred to Tempe Bike Count Report 2014 [9], section 3b, Figure 5 and Appendix B of that report.

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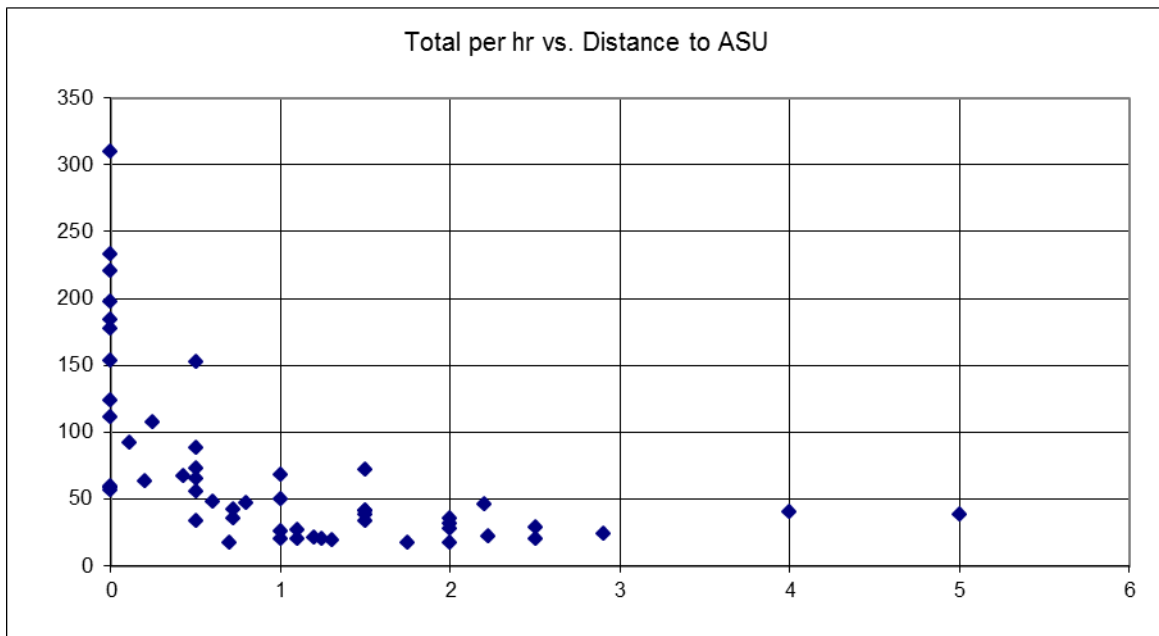


Figure 5        Relationship between cyclist count per hour and distance to ASU (miles).

### c. Error Detection

Error detection methods were applied to the collected data. The detailed procedure is provided in Appendix A. Errors were detected by visual inspection and numerically as attribute count exceeding the bike count for a specific time and direction. Six recording sessions (pairs of count sheets) were thrown out due to anomalies such as high numerical error count or significant missing data. Of the remaining

data, there were 14 transcription errors and 10 recording errors detected numerically, and subsequently corrected, out of 3616 data rows (where "row" is a 15-minute time block containing count and attribute data). A recording error occurs at the time of the count; a transcription error occurs when converting handwritten marks to numbers in a database. Corrections to transcriptions are straight forward and simply involves checking the count sheets. Corrections to recording data errors can be estimated by inferring that either a bike count mark was missed or a false mark was applied to the attribute column. Most of the recording corrections applied here resulted in an increase of 1 count for the given time segment. As a result of these estimated corrections, the total bicycle count increased by 7. Based on the low percentage of errors for included sessions, the counting procedure appears to be sound. 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. In addition, some data fields indicated wrong way and/or sidewalk riding for intersection approaches where motor vehicles are not allowed and wrong way riding is not applicable. These were corrected by nulling the sidewalk and wrong way riding in the appropriate direction since these data contradict the intent of the statistic to represent bad behavior.

## 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 collisions, especially when the bike is going the wrong way on the sidewalk. T.B.A.G. continues to work with the city on plans to improve roads, to add bike lanes, and to work on educational and enforcement campaigns.

## 5. References

[1] Tempe Transportation Master Plan (Jan 2015), http://www.tempe.gov/home/showdocument?id=30317.
[2] Tempe, AZ Bicycle Friendly Community. The League of American Bicyclists, Fall, 2015. http://www.bikeleague.org/sites/default/files/bfareportcards/BFC_Fall_2015_ReportCard_Tempe_AZ.pdf
[3] Tempe Bicycle Action Group (T.B.A.G.), www.biketempe.org.
[4] Tempe Traffic Collisions. Arizona Bike Law, Dec 11, 2015. http://azbikelaw.org/tempe-traffic-collisions/.
[5] ADOT traffic collision database, http://azbikelaw.org/blog/adot-traffic-collision-database/ http://azbikelaw.org/blog/arizona-crash-facts-2013/
[6] 2011 Tempe Bike Count Report, http://www.biketempe.org/wp-content/uploads/2011/12/Tempe-Bike-Count-2011-Final-Report1.pdf.
[7] Tempe Bike Count Report 2012, http://www.biketempe.org/wp-content/uploads/2013/01/Tempe_Bike_Count_Report_2012.pdf.
[8] Tempe Bike Count Report 2013, http://www.biketempe.org/wp-content/uploads/2014/04/Tempe_Bike_Count_Report_2013.pdf.
[9] Tempe Bike Count Report 2014, http://www.biketempe.org/dls/Tempe_Bike_Count_Report_2014.pdf
[10] Traffic count data from the City of Tempe. http://www.tempe.gov/city-hall/public-works/transportation/traffic-counts-.
[11] 2011 Regional Bicycle/Pedestrian Count Summary, http://www.pagnet.org/documents/bicycle/2011RegionalBicycleCountReport.pdf.

[12]    2012 Regional Bicycle and Pedestrian Count Summary Report,
        http://www.pagnet.org/documents/bicycle/2012RegionalBicycleCountReport.pdf.
[13]    2013 Regional Bicycle and Pedestrian Count Summary Report,
        http://www.pagnet.org/documents/bicycle/2013RegionalBicycleCountReport.pdf.
[14]    2014 Regional Bicycle and Pedestrian Count Summary Report,
        http://www.pagnet.org/documents/bicycle/2014RegionalBicyclePedestrianCountReport.pdf.
[15]    MAG Bicycles Count: Final Report and Implementation Plan,
        https://www.azmag.gov/Documents/BaP_2014-08-21_FINAL-MAG-Bicycle-Count-Data-Summary-Report.pdf
[16]    MAG Bicycle Count Data Summary Presentation,
        https://www.azmag.gov/Documents/BaP_2014-05-21_MAG-Bicycle-Count-Data-Summary-Presentation.pdf.
[17]    Bike Network Connectivity Study for SRP Service Area,
        http://www.public.asu.edu/~mikekuby/BikeNetworkConnectivity/.
[18]    Raw data for Tempe Bike Count: https://github.com/biketempe/DataAnalysis.

## Acknowledgements

**REVISION HISTORY**

| Revision | Description | Date |
|---|---|---|
| 1 | Initial | 3/24/2015 |
| 2 | Correction to data for LocID 102,113,115,116,129,133,146 & Fig 1,2,6,7, Tab 1, App A,B, F relating to algorithm for handling duplicate counts . "15 locations counted for all 4 years" was 21. Cordon out-bound 1122 was 549. Ignore wrong way and sidewalk riding for intersection approaches where motor vehicles are not allowed and wrong way riding is not applicable. | 2/12/2017 |
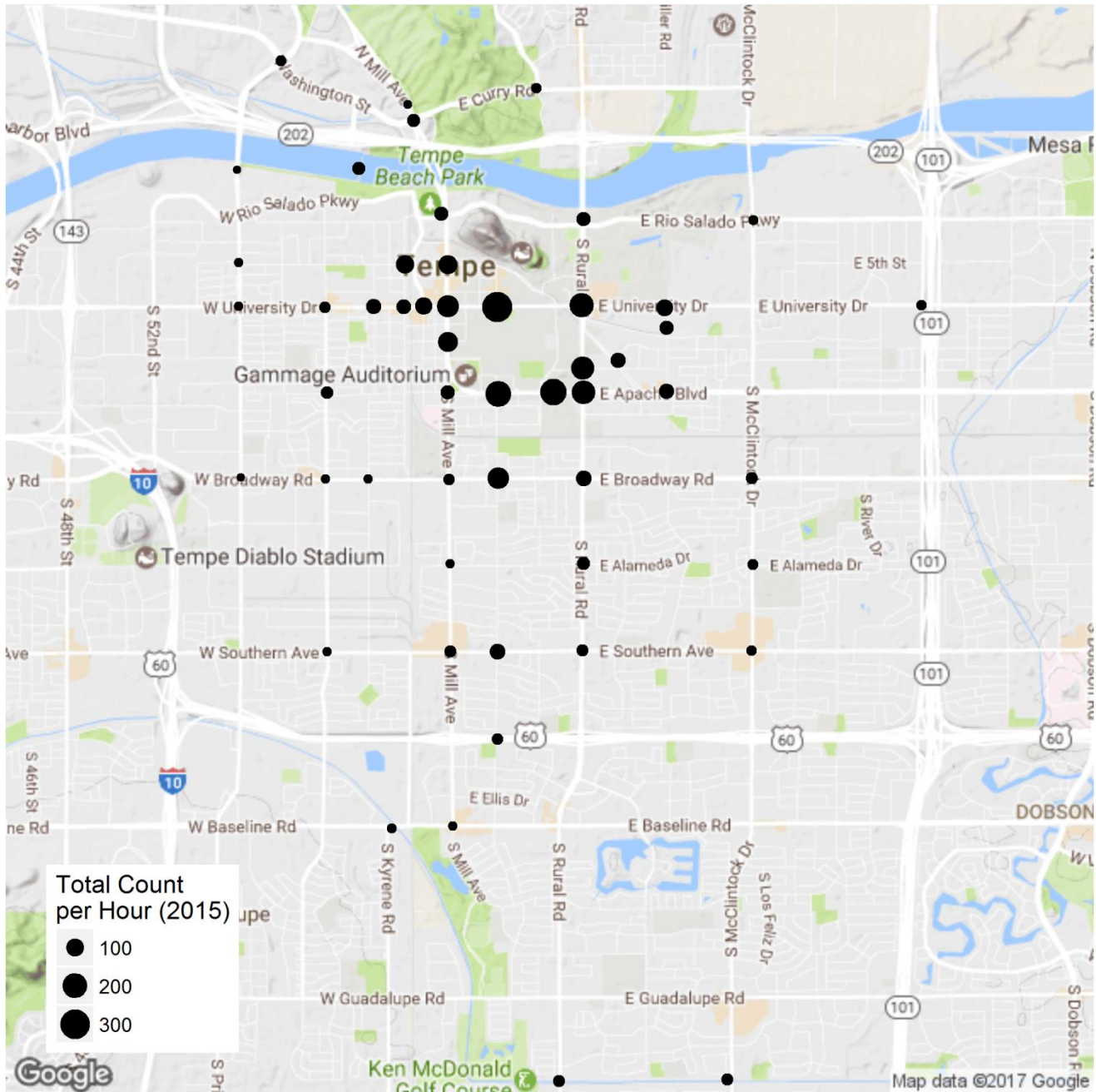
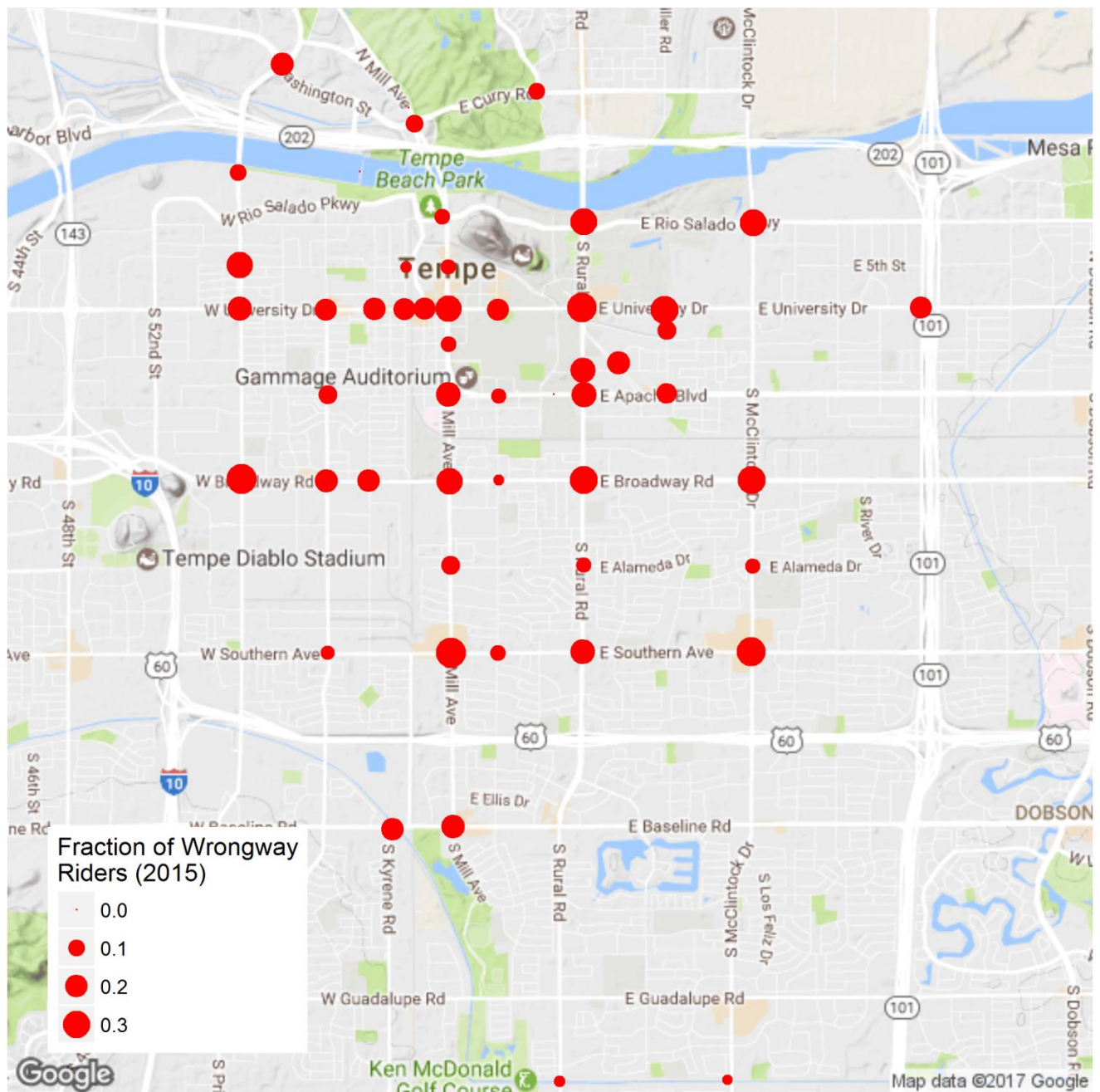Figure A1. Total Bicycle Count per Hour

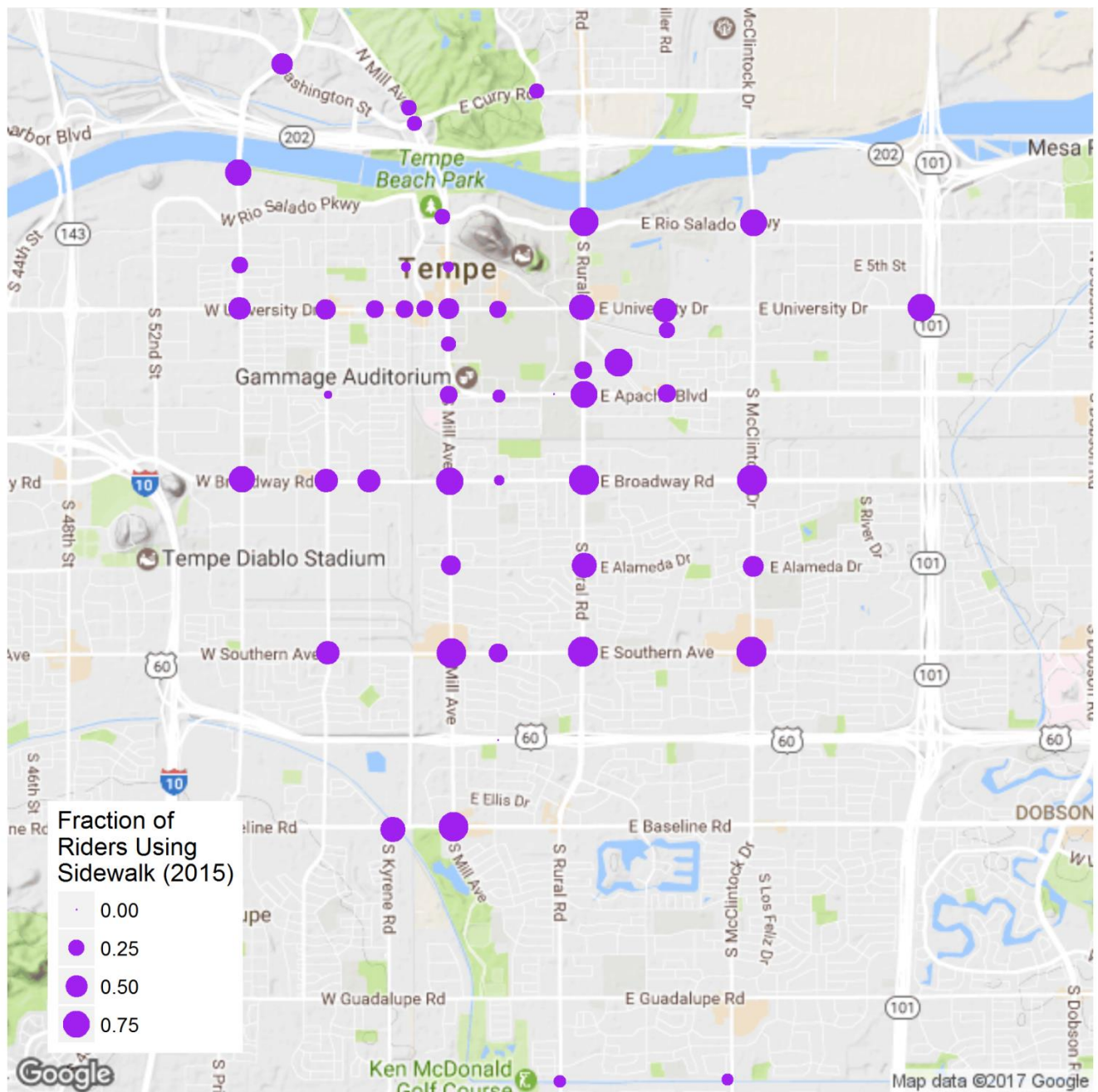Figure A2. Percent of Wrong Way Riders
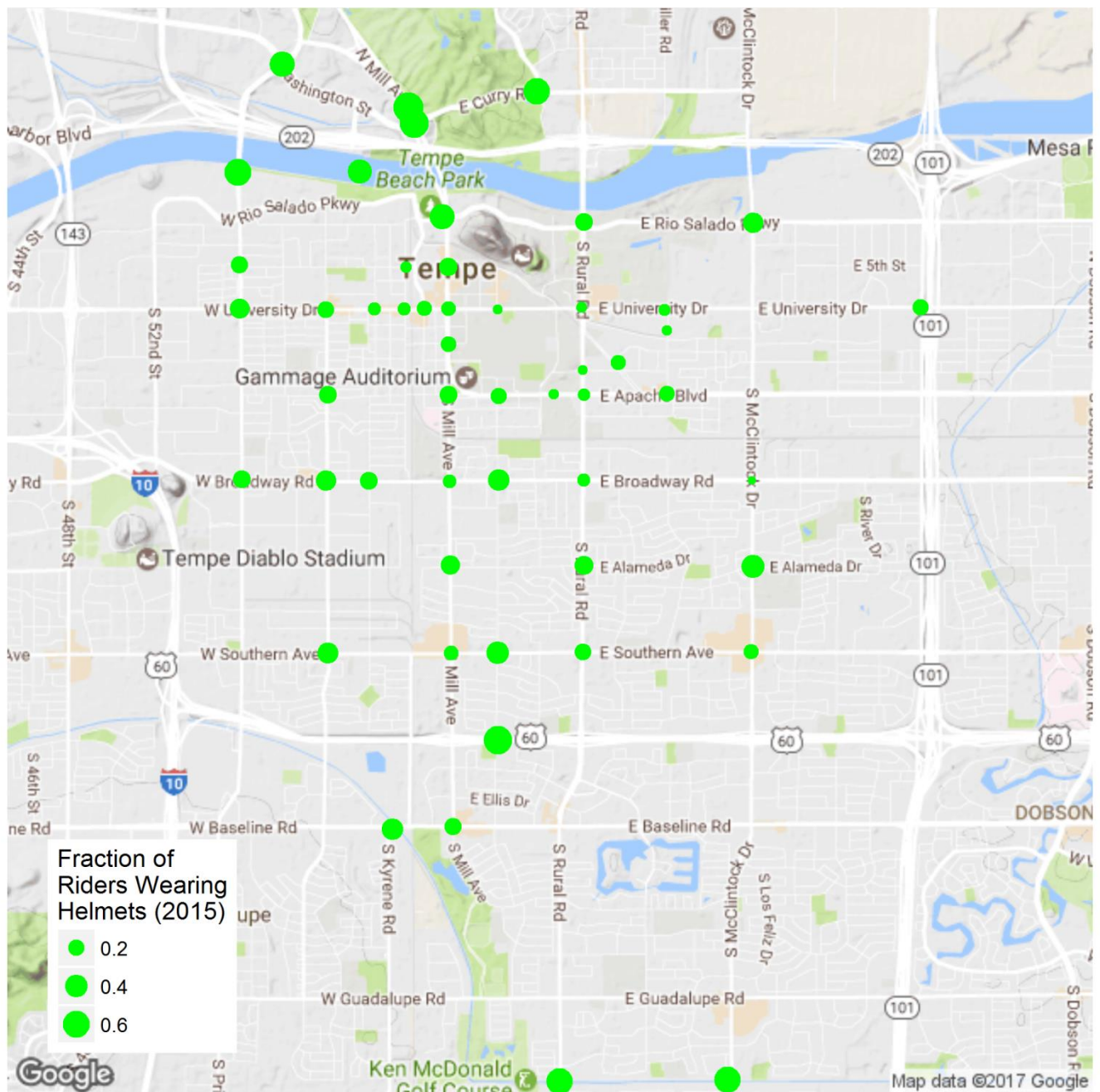
Figure A3. Percent of Riders Using Sidewalk

Figure A4. Percent of Riders Wearing Helmets

# Appendix B  Methodology

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

    a. High anticipated bicycle count
    b. Intersections
    c. Recent or planned infrastructure improvements
    d. High incidence of bicycle collisions
    e. Establishment of cordon around (traffic in and out of) ASU
    f. Coverage of a representative sample of the City of Tempe
    g. Practicality of volunteer participation
    h. Historical count location
    i. Stakeholder recommendations (e.g., City of Tempe)

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 chosen to be consistent with prior years and to include the morning and afternoon peak time periods while also allowing volunteers to participate with minimal interference with their normal work schedules. Tuesday, Wednesday and Thursday were selected to be consistent with prior years' counts, and are 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 consisted of 15 minute bins.

The set of instructions conveyed to recorders is shown in Appendix D. Training sessions were held and made available to all recorders.

Bicycle count data was collected for each of the directions (typically 4) of each intersection. For analysis, two statistics reported are a) the sum of all directions; and b) the sum of the two opposite direction counts, e.g., E/W = sum of east, west.

Total count per hour is calculated as the sum of the A.M. and P.M. sessions (4 hours total) divided 4, or if data is available only for A.M. or P.M., then the total for 2 hours is divided by 2. In the unusual event of duplicate valid counts, the counts are averaged so that total count per hour is consistent. Note that because of the difference between AM and PM count averages as shown in Figure B1, averages reported that consist of only AM or only PM are potentially skewed. This should be taken into account when comparing data between years.

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

Time of day for the manual count was consistent with prior Tempe counts. It is intended to capture the peak morning and afternoon "rush hour" bicycle traffic, while accommodating work schedules of prospective volunteers. Average bike count per hour vs. time of day, as shown in Figure B1, peaked for the AM counts at the end of the morning shift (8:45 to 9:00 am). For the PM counts, relative peaks occurred for the 4:15-4:30 and 5:45-6:00PM segments. PM counts were higher than AM, on average. Since these are averages over all locations, it is possible that some areas exhibited peak ridership at other times. The data was likely influenced by class schedule at ASU.
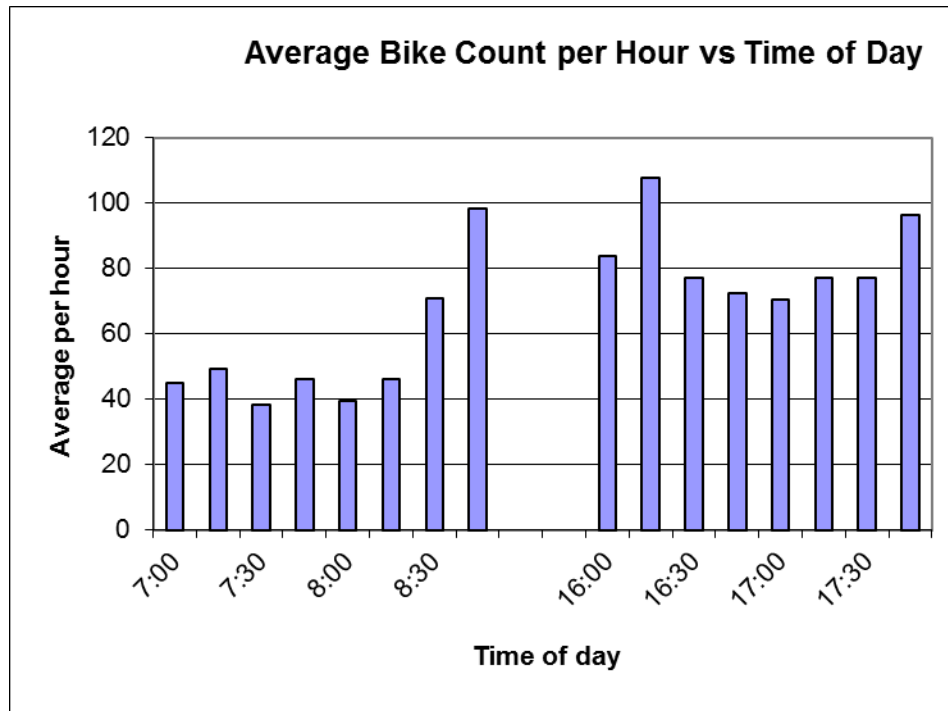


Figure B1. Average bike count per hour vs. time of day

Traffic count was obtained from City of Tempe data [10][14]. 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.

# Count Sheet

page #: _____

Name: _____

Date: _____

**Intersection of streets:** _____

**Location ID#:** _____

Check for every cyclist: | Also check all that apply:

| Hour | | Approach Direction | COUNT | FEMALE | Wearing HELMET | Wrong Way Riding | Riding on Sidewalk |
|---|---|---|---|---|---|---|---|
| AM | PM | | | | | | |
| :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 Spinelli's Volunteer Appreciation Party, Bicycle Cellar (200 E 5th St #105, Tempe), Boulders on Broadway's hostess desk or mail to Tempe Bicycle Action Group, PO Box 1884, Tempe, AZ 85280. Thank you for your participation! 2015 versions 1.

# 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)
5. **Columns "Count"** = Total # Cyclists
   a. Approach Direction (NB, SB, EB, WB): Record the approach direction (northbound, southbound –etc.)
   b. note: turn direction is <u>not</u> 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 a 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 <u>is</u> wearing a Helmet
   d. **Wrong-Way Riding**  - cycling against traffic
   e. **Sidewalk Riding** – does not include quick transitions at intersections or parking lots etc.
8. **Special cases**
   a. if there are multiple riders on a bike (tandem, child carrier or trailer, riding on BMX pegs, etc), each person gets counted
   b. Mopeds and e-bikes operating under peddle power are included in the count

**Notes**:
• Count sheets with pre-filled shift (location, hour, am/pm, intersection, location id) and counter's name were given to most new counters (those attending a training session), starting 2015.

# Appendix E – Additional Graphs
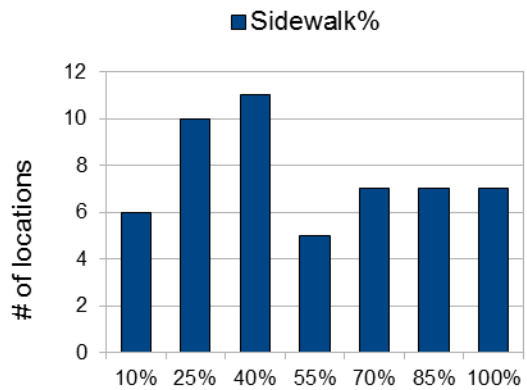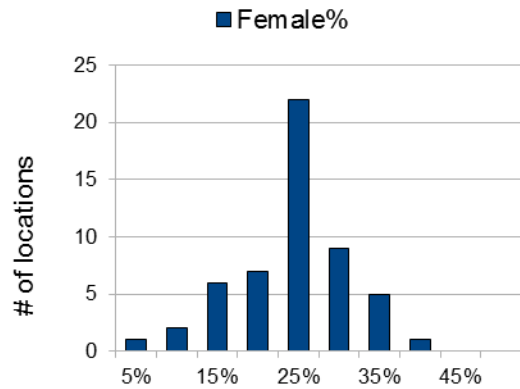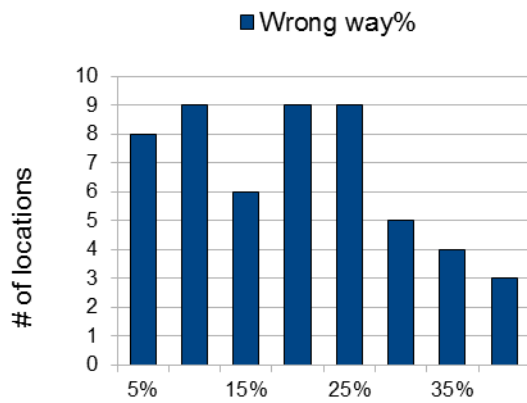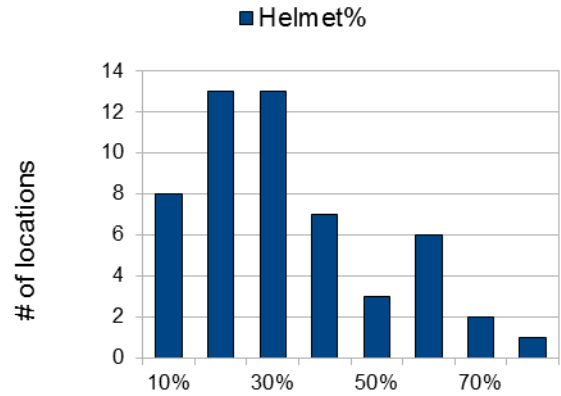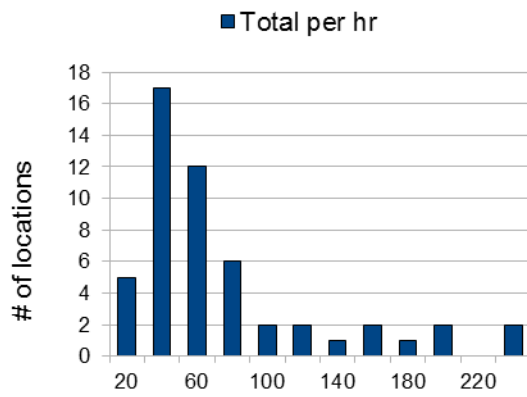
# Appendix F – Historical Bike Count Data

| Loc ID | Location or Intersection: E/W | Location or Intersection: N/S | 2011 Total per hr | 2012 Total per hr | 2013 Total per hr | 2014 Total per hr | 2015 Total per hr |
|---|---|---|---|---|---|---|---|
| 101 | Washington/Curry | Mill Ave | 35 | | 45 | 29 | 48 |
| 102 | Rio Salado Pkwy | Mill Ave | 47 | | 68 | 64 | 60 |
| 103 | Rio Salado Pkwy | Rural Rd | 48 | 44 | 70 | 61 | 57 |
| 104 | Rio Salado Pkwy | McClintock Dr | 39 | 19 | 21 | 30 | 26 |
| 105 | Rio Salado Pkwy | Hardy Dr | 8 | | 19 | | |
| 106 | 5th St | Mill Ave | 118 | 91 | 111 | 101 | 112 |
| 107 | 5th St | Forest Ave | 48 | | 67 | | |
| 108 | 5th St | Farmer Ave | | | 79 | 78 | 107 |
| 109 | 5th St | Hardy Dr | | 32 | 59 | | |
| 110 | 5th St | Priest Dr | 18 | | 17 | 20 | 20 |
| 111 | 10th St | Mill Ave | | 138 | 136 | 113 | 124 |
| 112 | Superstition Fwy | College Ave | 33 | 28 | 38 | 28 | 36 |
| 113 | 13th St | Mill Ave | 49 | 32 | 56 | 53 | 58 |
| 114 | 13th St | Hardy Dr | | | 50 | 40 | 43 |
| 115 | University Dr | College Ave | 452 | 174 | 220 | 216 | 310 |
| 116 | University Dr | Dorsey Ln | 66 | | 62 | 73 | 88 |
| 117 | University Dr | Rural Rd | 116 | 181 | 143 | 145 | 197 |
| 118 | University Dr | Mill Ave | 93 | 117 | 123 | 141 | 154 |
| 119 | University Dr | Ash Ave | 88 | 61 | 95 | 96 | 92 |
| 120 | University Dr | Roosevelt St | 46 | 51 | 55 | 53 | 68 |
| 121 | University Dr | Hardy Dr | 62 | 35 | 47 | 57 | 36 |
| 122 | McKellips Rd | Greenbelt Path | 42 | 41 | 43 | 44 | 47 |
| 123 | Western Canal | Rural Rd | | 45 | 62 | 41 | 40 |
| 124 | Western Canal | McClintock Dr | | | 38 | 38 | 38 |
| 125 | Western Canal | Lakeshore Dr | 86 | 43 | 55 | | |
| 126 | Baseline Rd | Western Canal | 25 | | 38 | 37 | 25 |
| 127 | Elliot Rd | McClintock Dr | 10 | | 13 | | |
| 128 | Alameda Dr | McClintock Dr | 22 | | 24 | 18 | 31 |
| 129 | Alameda Dr | Rural Rd | | | 60 | 64 | 50 |
| 130 | Alameda Dr | Country Club Wy | 12 | | 21 | | |
| 131 | Apache Blvd | Rural Rd | | 191 | 146 | 180 | 184 |
| 132 | Apache Blvd | S Dorsey Ln | 38 | | 64 | 66 | 66 |
| 133 | Apache Blvd | College Ave | | 233 | 164 | 243 | 220 |
| 134 | Apache Blvd | Paseo Del Saber | 121 | 102 | 182 | | 233 |
| 135 | Lemon St | Rural Rd | 151 | | 149 | 168 | 177 |
| 136 | Spence St | Rural Rd | 92 | 135 | 170 | | |
| 137 | Broadway Rd | Priest Dr | 16 | | 23 | | 17 |
| 138 | Broadway Rd | Rural Rd | | 65 | 93 | 72 | 73 |
| 139 | Broadway Rd | College Ave | 105 | | 135 | 150 | 152 |
| 140 | Southern Ave | Priest Dr | 19 | | 27 | | |
| 141 | Southern Ave | College Ave | | 70 | 62 | 66 | 72 |
| 142 | Southern Ave | Rural Rd | | | 33 | 43 | 41 |
| 143 | Southern Ave | Hardy Dr | 25 | 23 | 24 | 31 | 22 |
| 144 | Southern Ave | Mill Ave | 48 | 48 | 41 | 40 | 38 |
| 145 | Alameda Dr | Mill Ave | 30 | 24 | 21 | 22 | 20 |

| 146 | Broadway Rd | Mill Ave | | 37 | 36 | 27 | 34 |
|-----|-------------|----------|---|----|----|----|----|
| 147 | Baseline Rd | Mill Ave | 17 | | 27 | 16 | 21 |
| 148 | Guadalupe Rd | Kyrene Rd | | | 27 | | |
| 149 | Guadalupe Rd | Country Club Wy | 12 | | 18 | | |
| 150 | Guadalupe Rd | Lakeshore Dr | 23 | | 23 | | |
| 151 | University Dr | Forest Ave | 130 | 90 | 128 | | |
| 152 | Tempe Lake S. | TCA Bridge | | 36 | 43 | 18 | 47 |
| 153 | Apache Blvd | McAllister Ave | | | | | |
| 154 | Terrace Rd | Rural Rd | | | 195 | | |
| 155 | University Dr | McClintock Dr | | | 56 | 67 | 68 |
| 156 | Crosscut Canal | Mill Ave | | | | 36 | 18 |
| 157 | Curry Rd | College Ave | | | | 27 | 27 |
| 158 | Washington St | Priest Dr | | | | | 33 |
| 159 | Broadway Rd | McClintock Dr | | | | 32 | 41 |
| 160 | Broadway Rd | Hardy Dr | | | | 24 | 20 |
| 161 | University Dr | Price Rd | | | | 25 | 28 |
| 162 | Broadway Rd | Roosevelt St | | | | 20 | 20 |
| 163 | University Dr | Farmer Ave | | | | 60 | 64 |
| 164 | Southern Ave | McClintock Dr | | | | 34 | 29 |
| 165 | University Dr | Priest Dr | | | | 26 | 21 |
| 166 | 8th St | Dorsey Ln | | | | | 56 |
| 167 | Town Lake Path S | Priest Dr | | | | | 17 |

| 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 Dir | Loc to ASU | Lane in Dir | Dir |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | Washington/Curry | Mill Ave | 33 | 25 | 40 | 73% | 12% | 22% | 0.16 | 9628 | 0.6 | 1 | NS |
| 102 | Rio Salado Pkwy | Mill Ave | 44 | 33 | 56 | 57% | 7% | 14% | 0.11 | 14670 | 0 | 1 | NS |
| 103 | Rio Salado Pkwy | Rural Rd | 35 | | 35 | 12% | 33% | 99% | 0.2 | 51380 | 0 | 0 | NS |
| 104 | Rio Salado Pkwy | McClintock Dr | 15 | 8 | 23 | 16% | 30% | 92% | 0.15 | 39025 | 1 | 0 | NS |
| 106 | 5th St | Mill Ave | 51 | 40 | 63 | 32% | 11% | 13% | 0.2 | 14670 | 0 | 1 | NS |
| 108 | 5th St | Farmer Ave | 16 | 21 | 11 | 14% | 2% | 3% | 0.13 | | 0.25 | 0 | NS |
| 110 | 5th St | Priest Dr | 16 | | 16 | 26% | 32% | 32% | 0.03 | 28310 | 1.24 | 1 | NS |
| 111 | 10th St | Mill Ave | 45 | 30 | 60 | 31% | 16% | 47% | 0.25 | 26392 | 0 | 0 | NS |
| 112 | Superstition Fwy | College Ave | 36 | 32 | 40 | 66% | 0% | 0% | 0.27 | 1774 | 2 | 1 | NS |
| 113 | 13th St | Mill Ave | 23 | 14 | 32 | 28% | 24% | 51% | 0.19 | 26392 | 0 | 1 | NS |
| 114 | 13th St | Hardy Dr | 19 | 19 | 19 | 32% | 11% | 8% | 0.3 | 9690 | 0.72 | 1 | NS |
| 115 | University Dr | College Ave | 174 | | 174 | 6% | 10% | 18% | 0.26 | 5044 | 0 | 1 | NS |
| 116 | University Dr | Dorsey Ln | 8 | 7 | 9 | 18% | 44% | 75% | 0.3 | | 0.5 | 1 | NS |
| 117 | University Dr | Rural Rd | 50 | 31 | 69 | 8% | 33% | 97% | 0.27 | 51380 | 0 | 0 | NS |
| 118 | University Dr | Mill Ave | 70 | 44 | 96 | 22% | 22% | 41% | 0.19 | 26392 | 0 | 1 | NS |
| 119 | University Dr | Ash Ave | 27 | 23 | 30 | 20% | 13% | 29% | 0.23 | | 0.11 | 1 | NS |
| 120 | University Dr | Roosevelt St | 12 | 13 | 11 | 13% | 30% | 32% | 0.15 | | 0.43 | 1 | NS |
| 121 | University Dr | Hardy Dr | 17 | 17 | 17 | 31% | 16% | 46% | 0.19 | 9690 | 0.72 | 1 | NS |
| 122 | McKellips Rd | Greenbelt Path | 39 | 27 | 51 | 45% | 0% | 0% | 0.15 | 0 | 2.2 | 1 | NS |
| 123 | Western Canal | Rural Rd | 8 | 7 | 10 | 44% | 22% | 66% | 0.22 | 29395 | 4 | 0 | NS |
| 124 | Western Canal | McClintock Dr | 7 | 7 | 7 | 48% | 19% | 67% | 0.37 | 30170 | 5 | 1 | NS |
| 126 | Baseline Rd | Western Canal | 8 | 11 | 5 | 60% | 0% | 0% | 0.2 | | 2.9 | 1 | NS |
| 128 | Alameda Dr | McClintock Dr | 13 | 5 | 21 | 14% | 18% | 94% | 0.12 | 27807 | 2 | 0 | NS |
| 129 | Alameda Dr | Rural Rd | 32 | 32 | | 16% | 13% | 92% | 0.17 | 35740 | 1 | 0 | NS |
| 131 | Apache Blvd | Rural Rd | 101 | 87 | 115 | 9% | 23% | 96% | 0.19 | 44120 | 0 | 0 | NS |
| 132 | Apache Blvd | S Dorsey Ln | 9 | 6 | 12 | 6% | 17% | 43% | 0.17 | | 0.5 | 0 | NS |
| 133 | Apache Blvd | College Ave | 157 | 138 | 176 | 23% | 2% | 8% | 0.3 | 4997 | 0 | 1 | NS |
| 134 | Apache Blvd | Paseo Del Saber | 108 | 79 | 138 | 5% | 0% | 0% | 0.34 | | 0 | 1 | NS |
| 135 | Lemon St | Rural Rd | 73 | 60 | 87 | 6% | 37% | 29% | 0.26 | 37510 | 0 | 0 | NS |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 137 | Broadway Rd | Priest Dr | 10 | 10 | 10 | 30% | 35% | 60% | 0.2 | 24403 | 1.75 | 1 | NS |
| 138 | Broadway Rd | Rural Rd | 50 | 40 | 61 | 12% | 27% | 97% | 0.26 | 44120 | 0.5 | 0 | NS |
| 139 | Broadway Rd | College Ave | 139 | 131 | 148 | 38% | 3% | 5% | 0.26 | 4997 | 0.5 | 1 | NS |
| 141 | Southern Ave | College Ave | 53 | 45 | 61 | 48% | 5% | 12% | 0.27 | 4442 | 1.5 | 1 | NS |
| 142 | Southern Ave | Rural Rd | 21 | 19 | 23 | 23% | 23% | 99% | 0.07 | 40059 | 1.5 | 0 | NS |
| 143 | Southern Ave | Hardy Dr | 12 | 10 | 15 | 48% | 2% | 33% | 0.23 | 13469 | 2.22 | 1 | NS |
| 144 | Southern Ave | Mill Ave | 18 | 14 | 23 | 16% | 42% | 89% | 0.3 | 34482 | 1.5 | 1 | NS |
| 145 | Alameda Dr | Mill Ave | 12 | 12 | 12 | 19% | 19% | 62% | 0.32 | 26912 | 1 | 1 | NS |
| 146 | Broadway Rd | Mill Ave | 20 | 18 | 22 | 14% | 32% | 66% | 0.18 | 26912 | 0.5 | 1 | NS |
| 147 | Baseline Rd | Mill Ave | 8 | 3 | 14 | 15% | 24% | 88% | 0.24 | 24224 | 2.5 | 1 | NS |
| 152 | Tempe Lake S. | TCA Bridge | 10 | 10 | | 60% | 0% | 0% | 0.15 | 0 | 0.8 | 1 | NS |
| 155 | University Dr | McClintock Dr | 18 | 16 | 20 | 21% | 27% | 94% | 0.14 | 36366 | 1 | 1 | NS |
| 156 | Crosscut Canal | Mill Ave | 11 | 10 | 12 | 77% | 0% | 0% | 0.09 | 14670 | 0.7 | 1 | NS |
| 157 | Curry Rd | College Ave | 18 | 20 | 17 | 66% | 7% | 15% | 0.16 | 5499 | 1.1 | 1 | NS |
| 158 | Washington St | Priest Dr | 13 | 11 | 14 | 54% | 18% | 58% | 0.08 | 23678 | 1.5 | 1 | NS |
| 159 | Broadway Rd | McClintock Dr | 23 | 15 | 30 | 4% | 29% | 93% | 0.14 | 31175 | 1.5 | 0 | NS |
| 160 | Broadway Rd | Hardy Dr | 13 | 12 | 14 | 47% | 10% | 35% | 0.25 | 13469 | 1.3 | 1 | NS |
| 161 | University Dr | Price Rd | 9 | 8 | 11 | 0% | 30% | 97% | 0.19 | 8101 | 2 | 0 | NS |
| 162 | Broadway Rd | Roosevelt St | 12 | 8 | 17 | 40% | 17% | 27% | 0.27 | 5329 | 1.1 | 1 | NS |
| 163 | University Dr | Farmer Ave | 12 | 13 | 10 | 4% | 15% | 22% | 0.28 | | 0.2 | 1 | NS |
| 164 | Southern Ave | McClintock Dr | 12 | 10 | 15 | 22% | 27% | 92% | 0.2 | 39001 | 2.5 | 0 | NS |
| 165 | University Dr | Priest Dr | 12 | 11 | 13 | 21% | 25% | 58% | 0.06 | 28310 | 1.2 | 1 | NS |
| 166 | 8th St | Dorsey Ln | 24 | 10 | 38 | 8% | 17% | 46% | 0.19 | | 0.5 | 1 | NS |
| 167 | Town Lake Path S | Priest Dr | 9 | 5 | 14 | 46% | 14% | 70% | 0.19 | 41943 | 2 | 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 Dir | Loc to ASU | Lane in Dir | Dir |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | Washington/Curry | Mill Ave | 16 | 12 | 20 | 62% | 10% | 17% | 0.19 | 14035 | 0.6 | 1 | EW |
| 102 | Rio Salado Pkwy | Mill Ave | 16 | 7 | 24 | 37% | 13% | 50% | 0.16 | 14634 | 0 | 1 | EW |
| 103 | Rio Salado Pkwy | Rural Rd | 23 | | 23 | 44% | 22% | 76% | 0.31 | 14634 | 0 | 1 | EW |
| 104 | Rio Salado Pkwy | McClintock Dr | 11 | 15 | 7 | 55% | 27% | 55% | 0.11 | 20597 | 1 | 1 | EW |
| 106 | 5th St | Mill Ave | 61 | 61 | 61 | 21% | 5% | 8% | 0.28 | 6739 | 0 | 1 | EW |
| 108 | 5th St | Farmer Ave | 92 | 80 | 103 | 8% | 5% | 8% | 0.21 | 3508 | 0.25 | 1 | EW |
| 110 | 5th St | Priest Dr | 5 | | 5 | 11% | 11% | 11% | 0 | 3747 | 1.24 | 1 | EW |
| 111 | 10th St | Mill Ave | 79 | 71 | 87 | 11% | 4% | 8% | 0.36 | | 0 | 1 | EW |
| 112 | Superstition Fwy | College Ave | | | | | | | | | 2 | 0 | EW |
| 113 | 13th St | Mill Ave | 35 | 19 | 52 | 22% | 23% | 16% | 0.25 | 3917 | 0 | 1 | EW |
| 114 | 13th St | Hardy Dr | 24 | 17 | 31 | 18% | 15% | 3% | 0.44 | 3917 | 0.72 | 1 | EW |
| 115 | University Dr | College Ave | 136 | | 136 | 6% | 31% | 40% | 0.21 | 26482 | 0 | 1 | EW |
| 116 | University Dr | Dorsey Ln | 80 | 62 | 99 | 9% | 30% | 59% | 0.31 | 30015 | 0.5 | 1 | EW |
| 117 | University Dr | Rural Rd | 147 | 103 | 192 | 8% | 37% | 60% | 0.28 | 30015 | 0 | 1 | EW |
| 118 | University Dr | Mill Ave | 84 | 59 | 109 | 10% | 33% | 46% | 0.22 | 27003 | 0 | 1 | EW |
| 119 | University Dr | Ash Ave | 65 | 49 | 82 | 16% | 21% | 26% | 0.22 | 27003 | 0.11 | 1 | EW |
| 120 | University Dr | Roosevelt St | 56 | 52 | 60 | 11% | 18% | 31% | 0.2 | 27003 | 0.43 | 1 | EW |
| 121 | University Dr | Hardy Dr | 19 | 14 | 25 | 12% | 21% | 36% | 0.21 | 27003 | 0.72 | 1 | EW |
| 122 | McKellips Rd | Greenbelt Path | 8 | 2 | 14 | 3% | 35% | 84% | 0 | 14788 | 2.2 | 1 | EW |
| 123 | Western Canal | Rural Rd | 32 | 29 | 36 | 59% | 0% | 0% | 0.28 | | 4 | 1 | EW |
| 124 | Western Canal | McClintock Dr | 31 | 24 | 39 | 58% | 0% | 0% | 0.33 | | 5 | 1 | EW |
| 126 | Baseline Rd | Western Canal | 17 | 14 | 20 | 25% | 28% | 94% | 0.25 | 24094 | 2.9 | 0 | EW |
| 128 | Alameda Dr | McClintock Dr | 19 | 20 | 17 | 64% | 1% | 11% | 0.2 | | 2 | 1 | EW |
| 129 | Alameda Dr | Rural Rd | 19 | 19 | | 49% | 0% | 22% | 0.3 | 1841 | 1 | 1 | EW |
| 131 | Apache Blvd | Rural Rd | 83 | 73 | 94 | 12% | 27% | 50% | 0.29 | 22165 | 0 | 1 | EW |
| 132 | Apache Blvd | S Dorsey Ln | 57 | 54 | 61 | 21% | 16% | 32% | 0.18 | 18699 | 0.5 | 1 | EW |
| 133 | Apache Blvd | College Ave | 64 | 63 | 65 | 13% | 22% | 33% | 0.33 | 22165 | 0 | 1 | EW |
| 134 | Apache Blvd | Paseo Del Saber | 125 | 121 | 128 | 8% | 0% | 0% | 0.29 | 22165 | 0 | 1 | EW |
| 135 | Lemon St | Rural Rd | 104 | 73 | 135 | 6% | 16% | 32% | 0.3 | | 0 | 1 | EW |
| 137 | Broadway Rd | Priest Dr | 7 | 5 | 10 | 14% | 39% | 93% | 0.25 | 37476 | 1.75 | 0 | EW |
| 138 | Broadway Rd | Rural Rd | 23 | 20 | 26 | 10% | 41% | 97% | 0.25 | 30063 | 0.5 | 0 | EW |
| 139 | Broadway Rd | College Ave | 13 | 12 | 15 | 12% | 12% | 48% | 0.29 | 29614 | 0.5 | 0 | EW |
| 141 | Southern Ave | College Ave | 20 | 16 | 24 | 21% | 18% | 95% | 0.14 | 35372 | 1.5 | 0 | EW |
| 142 | Southern Ave | Rural Rd | 21 | 9 | 32 | 18% | 24% | 93% | 0.17 | 35372 | 1.5 | 0 | EW |

| 143 | Southern Ave | Hardy Dr | 10 | 7 | 13 | 21% | 13% | 87% | 0.18 | 28429 | 2.22 | 0 | EW |
| 144 | Southern Ave | Mill Ave | 20 | 15 | 25 | 15% | 31% | 93% | 0.2 | 35372 | 1.5 | 0 | EW |
| 145 | Alameda Dr | Mill Ave | 9 | 7 | 11 | 44% | 6% | 9% | 0.24 | 1841 | 1 | 1 | EW |
| 146 | Broadway Rd | Mill Ave | 14 | 9 | 20 | 11% | 21% | 93% | 0.25 | 31585 | 0.5 | 0 | EW |
| 147 | Baseline Rd | Mill Ave | 12 | 14 | 11 | 29% | 20% | 96% | 0.24 | 22102 | 2.5 | 0 | EW |
| 152 | Tempe Lake S. | TCA Bridge | 42 | 25 | 59 | 47% | 0% | 0% | 0.16 | 0 | 0.8 | 1 | EW |
| 155 | University Dr | McClintock Dr | 50 | 45 | 56 | 15% | 18% | 77% | 0.34 | 30015 | 1 | 1 | EW |
| 156 | Crosscut Canal | Mill Ave | 7 | 6 | 8 | 74% | 0% | 59% | 0.15 | 0 | 0.7 | 1 | EW |
| 157 | Curry Rd | College Ave | 9 | 8 | 10 | 42% | 17% | 36% | 0.11 | 15990 | 1.1 | 1 | EW |
| 158 | Washington St | Priest Dr | 21 | 17 | 25 | 52% | 22% | 40% | 0.08 | 14565 | 1.5 | 1 | EW |
| 159 | Broadway Rd | McClintock Dr | 19 | 18 | 20 | 3% | 33% | 100% | 0.24 | 32138 | 1.5 | 0 | EW |
| 160 | Broadway Rd | Hardy Dr | 7 | 5 | 9 | 7% | 41% | 100% | 0.15 | 31585 | 1.3 | 0 | EW |
| 161 | University Dr | Price Rd | 19 | 17 | 22 | 29% | 13% | 71% | 0.14 | 29056 | 2 | 1 | EW |
| 162 | Broadway Rd | Roosevelt St | 8 | 6 | 11 | 3% | 24% | 97% | 0.27 | 31585 | 1.1 | 0 | EW |
| 163 | University Dr | Farmer Ave | 52 | 43 | 62 | 13% | 19% | 32% | 0.2 | 27003 | 0.2 | 1 | EW |
| 164 | Southern Ave | McClintock Dr | 17 | 14 | 20 | 12% | 40% | 97% | 0.22 | 28316 | 2.5 | 0 | EW |
| 165 | University Dr | Priest Dr | 9 | 5 | 13 | 43% | 20% | 43% | 0.06 | 28413 | 1.2 | 1 | EW |
| 166 | 8th St | Dorsey Ln | 32 | 9 | 56 | 6% | 10% | 10% | 0.23 | | 0.5 | 1 | EW |
| 167 | Town Lake Path S | Priest Dr | 8 | 11 | 5 | 74% | 6% | 74% | 0.29 | | 2 | 1 | EW |