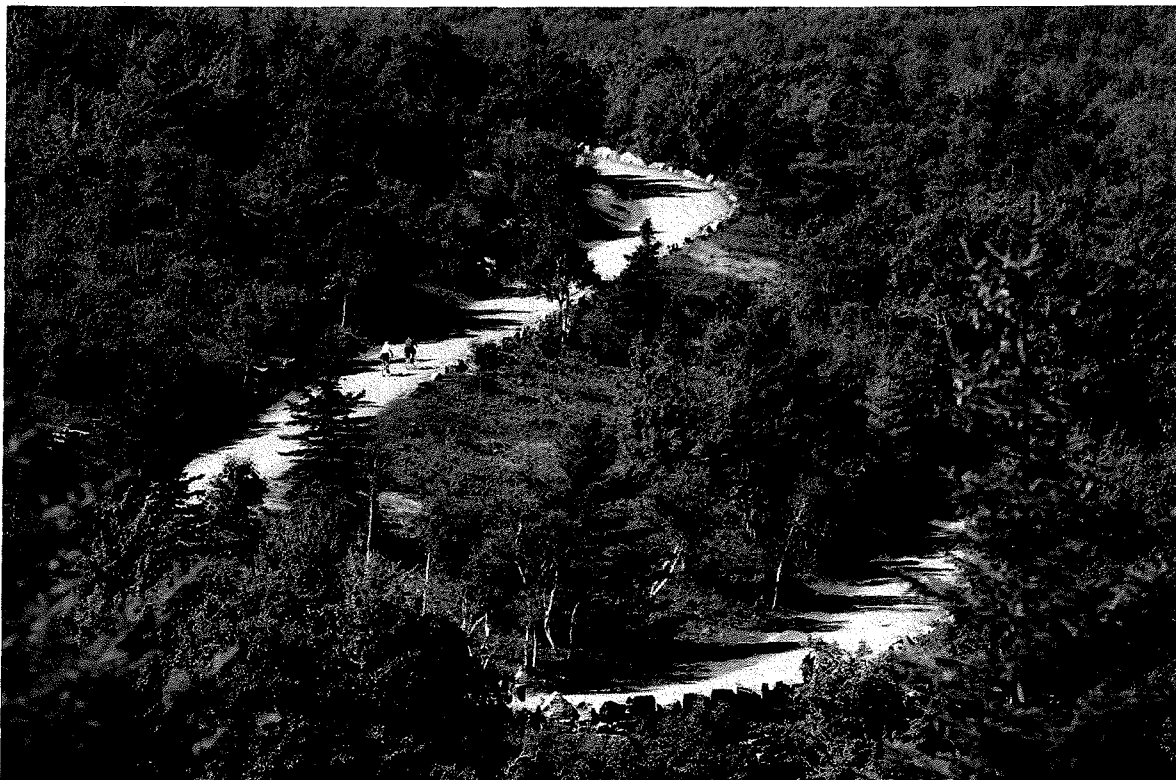




Monitoring Visitor Capacity for Acadia National Park Carriage Roads, 2013

Crowding and Behaviors



Around Mountain Carriage Road

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Executive Summary

In 2012, we determined that increases in carriage road use reported since 2006 are likely the result of the introduction of the Bicycle Express route to Eagle Lake that year, and thus the accuracy of reported use data since then is suspect. *Nevertheless, we analyze the 2013 data and report it with this understanding.* Because of this, a new set of censuses and regression equation are needed and are planned for 2014. In our 2014 report, we will apply the new more applicable regression equation to data from 2006 forward.

Monitoring in 2013 again confirmed the previously reported statistically significant trend of increasing use since 2004. Estimated daily carriage road visitation in 2013 never exceeded 3,000 visitors per day, though there were three days over 2,900. Exceeding 3,000 visitors per day has happened only eight times, on one day each in August of 2000, 2008, 2010, and 2012, and on four days in 2011, two of which exceeded 3,000 visitors per day with the 80% confidence level test. Sixteen days of plus 3,000 visitation meeting the 80% confidence level test are required before standards are violated. *Therefore, PPV standards for crowding (3,000/day) were not violated in 2013.*

Mean daily carriage road visitation in July 2013 was the highest we have seen and almost identical to 2012, with an estimated 1,909 +/- 133 visitors (90% confidence interval). There were 55,363 estimated visits.

Mean daily carriage road visitation in August 2013 was second only to 2010 with an estimated 2,180 +/- 150 visitors (90% confidence interval). There were 65,386 estimated visits. This was the fifth time in the past six years mean daily use was greater than 2,000. For the past eight years mean daily use in August has been greater than 1,900, and these eight means are all considerably higher than most of the ten years before.

There were no violations and only two close approaches to behavior standards in the Low Use Zone and no violations or close approaches in the High Use Zone. *Therefore, behavior standards were not violated in 2013.*

Based on the monitoring results in 2013, the park must continue to emphasize carriage road education annually and at every opportunity:

- seasonal park staff should be trained about courtesy guidelines and communicate them to visitors at every opportunity;
- local bike shops should be urged to continue their courtesy guidelines education for bike rental customers;
- courtesy guidelines should be posted prominently in the park visitor center and other contact areas;
- the presence of interpretation and visitor protection staff on the carriage roads should be continued at the highest level possible;
- reviving the volunteer bike patrol could also be considered.

CONTENTS

INTRODUCTION.....	1
CROWDING STANDARDS.....	1
BEHAVIOR STANDARDS.....	3
METHODS	4
CROWDING	4
<i>Monitoring Daily Carriage Road System Use</i>	5
BEHAVIORS	6
<i>Questions</i>	7
<i>Sampling</i>	7
<i>Data Analysis</i>	7
RESULTS.....	8
DAILY CARRIAGE ROAD USE ESTIMATIONS.....	8
<i>Trends</i>	10
BEHAVIORS	16
<i>Discussion</i>	19
SUMMARY AND RECOMMENDATIONS	21
LITERATURE CITED.....	23
APPENDIX 1: Metrics Considered, Other Data Observations, and Percent of Visitors Experiencing Problem Behaviors Per 2-Hour Visit on the Carriage Roads for 1997, 2000, 2003, and 2006.....	26
APPENDIX 2: Statistical Analysis of Trail Counter (TC) and Census Data 2001-2002	28
APPENDIX 3: Statistical Analysis for Estimated Daily Carriage Road Use and Confidence Intervals: July 1– August 31, 2013.	29
APPENDIX 4: Carriage Road Contact Script and Questionnaire	30
APPENDIX 5: Sampling Plan and Development.....	35
APPENDIX 6: Estimated Daily Carriage Road Use from Trail Counter Counts: July 1 to August 31, 2013.....	36
APPENDIX 7: Estimated Daily Carriage Road Use and a Comparison of the Top Ten Days for July - August 1995, and 1997 – 2013.	37
APPENDIX 8: Descriptive Statistics for Monthly Carriage Road Use and the Top Ten Days for July and August 1995, and 1997- 2013.....	39
APPENDIX 9: Percent of Visitors Experiencing n=0, n=0-1, n=1-2, and n>2 Occurrences of Four Problem Behaviors Per 2-hour Visit in the Low and High Use Zones, 1997, 2000, 2003, 2006, 2010, and 2013..	47

TABLES

TABLE 1: Four Year Mean Percentages and Behavior Standards for N>2 Occurrences of Four Problem Behaviors for the Low and High Use Zones.	4
TABLE 2: Estimated Monthly Carriage Road Use and Mean Daily Carriage Road Use with a 90% Confidence Interval for July and August, 1995, 1997 – 2012.	10
TABLE 2: Coefficients, Standard Errors, and P Values for the Constants and Slopes of the Regression Estimates for Mean Daily Use in July and August, 2004 – 2013.	12
TABLE 3: Top Ten Carriage Road Visitor Use Days for July 1995 and 1997-2013 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.	14
TABLE 4: Top Ten Carriage Road Visitor Use Days for August 1995 and 1997-2010 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.	15
TABLE 5: Entry Location for Carriage Road Visits.	16
TABLE 6: Length of Stay for Carriage Road Visits in Minutes.	17
TABLE 7: Residency of Respondents.	17
TABLE 8: Use of Island Explorer Bus by Carriage Road Visitors.	18
TABLE 9: User Type of Respondents.	18
TABLE 10: Percent of 1997, 2000, 2003, 2006, and 2010 Carriage Road Visitors Experiencing N>2 Occurrences of Four Problem Behaviors Compared with Behavior Standards.	19

FIGURES

FIGURE 1: Acadia National Park Carriage Road System and Monitoring Sites.	2
FIGURE 2: Estimated Carriage Road Visitor Use for July - August, 2013.	9
FIGURE 3: Mean Daily Carriage Road Visitor Use for July 1995, 1997 - 2013 with 90% Error Bars.	11
FIGURE 4: Mean Daily Carriage Road Visitor Use for August 1995, 1997 - 2013 with 90% Error Bars.	11
FIGURE 5: Mean Daily Carriage Road Visitor Use for July 2004 - 2013 with 90% Error Bars, Trend Line and R ² Value.	12
FIGURE 6: Mean Daily Carriage Road Visitor Use for August 2004 - 2013 with 90% Error Bars, Trend Line and R ² Value.	13

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INTRODUCTION

Park managers established a carrying capacity for the Acadia National Park carriage road system in 1997 after three years of research and application of the Visitor Experience Resource Protection (VERP) process (see Manning 1996, Manning 1998a, Manning 1998b, and Jacobi 1997a). This carrying capacity was based on indicators and standards for a quality experience as outlined in VERP (National Park Service 1997). Crowding and four problem behaviors were selected as indicators for a high quality carriage road experience. This report covers monitoring results for crowding and behaviors in 2013. For 1997-2012 monitoring results, see the Literature Cited section of this report. Monitoring data from 1995 are in park files.

The carriage road use monitoring program seeks to answer two questions for the July-August period of peak use. First, when can we be reasonably sure that crowding and behavior standards have been violated? And second, is there an up or down trend in use?

From the VERP process, park managers decided to manage for a diversity of carriage road experiences based on existing use levels and patterns. To provide this diversity, the carriage road system was divided into two zones defined by geography and time.

The High Use Zone defined the heavy visitor use areas and times on the carriage roads. It consisted of the carriage road segments connecting intersections 1-10 and 14-17 (Figure 1). This zone covered the Paradise Hill, Witch Hole Pond, Eagle Lake, Jordan Pond, and Bubble Pond areas. Temporally, the High Use Zone included only the hours between 10:00 a.m. and 5:00 p.m., and only the days between June 20 and Labor Day¹, plus two days each of the Memorial and Columbus Day weekends. All three conditions (location, time of day, and time of year) must occur together to define the High Use Zone.

The Low Use Zone defined the lesser-used areas and times on the carriage roads, and consisted of all locations and times other than those of the High Use Zone.

The same indicators (crowding and problem behaviors) were used for both zones, but different standards were established as described below.

CROWDING STANDARDS

Some background information is needed to better understand the crowding standard. A typical viewscape on the carriage roads is about 100 meters, and this is also the likely limit of the effective viewscape. At 100 meters, people are far away and probably don't influence a sense of crowding. The number of persons seen per viewscape (PPV) at any moment was a concept developed through the research to measure crowding. In the research and in the establishment of standards, PPVs were grouped into ranges of 0, 1-5, 6-10, 11-15, 16-20, and 21-30, and expressed per unit of time. Thus, the number-of-minutes-per-hour visitors see 1-5 PPV, for example, is a measure of crowding.

¹ For simplicity and staffing reasons, we analyze and report data only for July and August, and keep an eye on the end of June and Holidays.

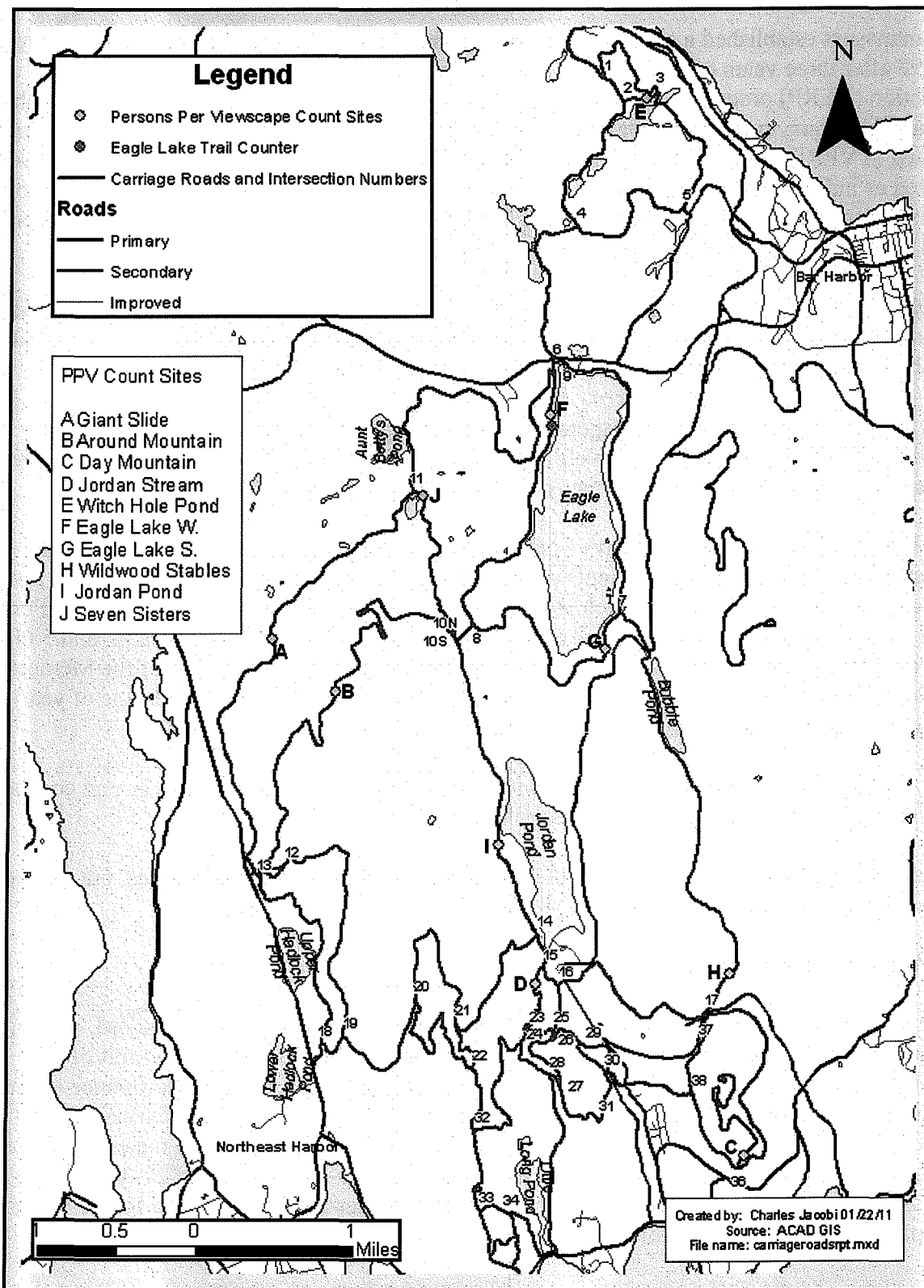


Figure 1: Acadia National Park Carriage Road System and Monitoring Sites.

Three expressions of crowding standards were developed for the visitor experience on the carriage roads:

- Eighty percent of visitors should have a high quality experience 90% of the summer season days (5/15-10/15).
- Total system wide use for the carriage roads should not exceed 3,000 visitors per day.
- PPV-related standards of quality for High and Low Use Zones are as follows:

In the *High Use Zone*, visitors should see 0 PPV at least 31 minutes of each hour, should see 1-5 PPV no more than 27 minutes of each hour, should see 6-10 PPV no more than 2 minutes out of each hour, and should never see more than 10 PPV.

In the *Low Use Zone*, visitors should see 0 PPV at least 48 minutes of each hour, should see 1-5 PPV no more than 11 minutes of each hour, should see 6-10 PPV no more than 1 minute out of each hour, and should never see more than 10 PPV.

Research showed these three expressions of standards for crowding (80%, 3,000 visitors/day, and PPVs) are related. Eighty percent of visitors should have a high quality experience and PPV standards should not be violated if total carriage road use does not exceed 3,000 visitors per day.

The 90% standard for summer season days recognizes that there are some peak use days during the main visitor season and accepts that use will exceed 3,000 per day 10% of the time. Ten percent represents an estimate of the normal number of peak use days (15) occurring between May 15 and October 15, a 150-day season. These peak use days generally occur for 2 days of the Memorial Day, July 4, Labor Day, and Columbus Day holidays (8 days total), and about 7 other days, usually in August. August is the busiest month in the park. Thus when total (system) use exceeds 3,000 per day for the *sixteenth* day during the season, the crowding standard is violated.

BEHAVIOR STANDARDS

Behavior standards were initially developed through resident and visitor questionnaires administered from 1994 - 1997. Appendices 4 and 5 show the questionnaire and sampling plan. Standards were based on the average length of a carriage road visit (which then was about two hours) and informed by NPS policies, the purpose of the carriage road system, the mean number of occurrences of behaviors, and other data described in the research. High Use Zone standards for four problem behaviors (mean number of instances per 2 hours) were: bicycle speed - $n \leq 2$; failure to warn when passing from behind - $n \leq 2$; dogs off leash - $n=0$; and obstructing the road - $n \leq 1$. In the Low Use Zone the standards were: bicycle speed - $n \leq 1$; failure to warn - $n \leq 1$; dogs off leash - $n=0$; and obstructing the road - $n \leq 1$. We applied these standards to monitoring in 1997, 2000, and 2003.

In 2003, we corrected a statistical error and revised all earlier data (see Jacobi 2005a) and, because there were then several violations of standards (a 90% confidence interval for the upper bound), we decided to reevaluate the metric for behavior standards after the 2006 season, when we would have four monitoring cycles of data to inform the decision. Our main concern was that

the standards were set on faulty data. We were also concerned that they may have been too stringent.

As planned, in the fall of 2006, we consulted the University of Vermont research team again about standards. That discussion led us to investigate different metrics than the mean number of occurrences of a problem behavior. Using the behavior occurrence data that we had already transformed to a 2-hour basis (for each individual observation), we calculated simple percentages for the number of respondents experiencing $n=0$, $n=0-1$, $n=1-2$, and $n>2$ behaviors. We did this for 1997, 2000, 2003, and 2006. We also calculated the mean percent for these four years and the cumulative mean percent for $n\leq 1$ occurrences of each behavior and $n\leq 2$ occurrences of each behavior. All of this data was used to inform the selection of new standards for behaviors and can be found in Appendix 1, along with our analysis of the pros and cons and other data observations. We chose only the $n>2$ statistic as our indicator.

Table 1 shows the 4-year mean percentages and new behavior standards for $n>2$ occurrences of the four problem behaviors for each zone.

Table 1: Four Year Mean Percentages and Behavior Standards for $n>2$ Occurrences of Four Problem Behaviors for the Low and High Use Zones.					
Low Use Zone			High Use Zone		
Behavior	4-Year Mean	Standard	Behavior	4-Year Mean	Standard
Startles	3.48%	Not > 5%	Startles	3.71%	Not > 5%
Speed	3.46%	Not > 5%	Speed	5.87%	Not > 10%
Dogs	4.5%	Not > 5%	Dogs	2.17%	Not > 5%
Obstruction	2.6%	Not > 5%	Obstruction	7.32%	Not > 10%

METHODS

CROWDING

Because of the relationships between the three expressions of crowding standards described above, monitoring crowding was most easily done by monitoring total or system carriage road use on a daily basis. This measurement carries the greatest weight for determining when the crowding standard is violated. Violation of the crowding standard will occur when we are 80%² confident carriage road use exceeded 3,000 persons per day for the sixteenth day of the summer season, as described above.

Use monitoring was not supplemented in 2013 by direct counts of PPVs³. Direct counts are used as spot checks of the computer simulation model of carriage road visitor use. Researchers developed the simulation model to estimate PPVs (Manning 1998a). Monitoring relies heavily

² The application of a confidence limit to use estimations will be explained shortly.

³ Ten PPV count sites are mapped in the park's GIS database and shown in Figure 1.

on its validity and outputs. We are unable to conduct enough sample PPV spot counts in a season to represent the entire carriage road system effectively, but they are nonetheless informative. It would take a much greater effort to obtain a representative sample. These counts are ideally conducted every three years but they have been postponed several times; the next is now scheduled for 2014.

Monitoring Daily Carriage Road System Use

We monitor daily carriage road use with an electronic trail counter and a regression relationship established between trail counter counts and censuses of carriage road use. We developed the original regression equation from 12 days of trail counter counts and censuses conducted from 9:00 a.m. to 6:00 p.m. in 1995, 1996, and 1997. We recalibrated this regression equation in 2001-2002, a few years after the Island Explorer Bus was added to the park and Mount Desert Island in 1998. We did this by again conducting twelve censuses of carriage road use over the two years and pairing the census data with traffic counts from the trail counter.

The new regression equation was then used to estimate daily carriage road use as before. A separate report (Jacobi 2003b) describes the results of the censuses and the development of the revised regression equation. Details of this regression relationship ($r^2=0.65$ intercept p-value 0.05; slope p-value 0.001) are described in Appendix 2. The regression equation developed to estimate total carriage road use from trail counter use was $y = 2.41x + 593$, where x is trail counter use and y is total (predicted) carriage road use. This regression equation was constructed based on high use days and should not be applied beyond the high use days of summer and Holidays without great caution.

Eagle Lake is one of the busiest areas of the carriage roads. An electronic trail counter (Diamond Traffic Products, TCS 4420) located 0.3 miles south of the Route 233 overpass on the west side of Eagle Lake (Figure 1, location is mapped in the park's GIS database) monitored visitor traffic passing in both directions on the carriage road. The counter records data hourly and stores it. A hand held "Data Hog" was used to download the hourly data from the trail counter at the end of the season. The data is then uploaded into a computer using Centurion Parks software from Diamond Traffic Products, and exported to Excel for analysis.

There are some unavoidable weather-related problems when using these traffic counters. Rainy or foggy weather causes droplets to condense on the counter lenses and the reflector. When this occurs, the counter should stop counting and record zeroes. It usually does, but sometimes very high hourly counts are recorded during wet weather also. A check of park weather records shows a generally consistent correlation between rain/fog and counts of zero and overcounts.

Our data protocol is to delete overcounts based on our experience with the normal range of variation of hourly data from previous years and a check of park weather records. We also require at least six hours of reliable data (of the nine) for the daily use dataset, that is, if we had to delete four hours or more of overcounts from a given day, we deleted data for the entire day. One problem which we have probably not addressed consistently over the years is how to handle a day in which there are four or more hours of zero counts due to rain, but the remainder of the hourly data appears to be unaffected—that is, it is nonzero but not an obvious overcount. The traffic is usually low during these hours because of the still poor weather, but the traffic counter

has resumed counting. Because the regression equation works best on moderate to high use days, we decided that the six hours of reliable daily data rule should apply not just to overcounts but to days with four or more hours with counts of zero without overcounts for the remaining hours. Using this unreliable data for those few hours of low use for a few days each month does not help our understanding of use on a typical July-August day. It would likely increase mean daily use somewhat, but not excessively unless there were many such rainy days. Thus, the mean monthly data we report for July and August better represents the typical summer use level.

After these quality control checks, for each day between July 1 and August 31, 2010, daily use at the trail counter was calculated by adding the hourly data from 9:00 a.m. to 6:00 p.m., the parameters of the censuses conducted in 2001 and 2002. System-wide daily use estimates were obtained using this total in the regression equation.

We then applied an 80% confidence level to these daily use estimates and compared them to the standard of 3,000 visitors per day. That is, we want to be 80% sure that we actually exceed the 3,000 visitor level for any given day, or alternatively, that eight times out of ten, we would exceed 3,000 visitors per day. Because we are only concerned about exceeding 3,000, this was a one-tailed level of confidence test. We are not interested in the lower bound of the confidence interval. Through an iterative calculation process (see Appendix 3), we calculated the trail counter use level at which we would be 80% sure that a daily use estimate exceeded 3,000 visitors per day. This count level was 1,154 with the new regression equation.

We also calculated mean daily use levels with 90% confidence intervals for the months of July and August. This allows us to look for evidence of increasing or decreasing use trends. We also ran a top ten days analysis, which eliminates most variation in weather from year to year. Finally, because the data since 2004 suggested an increasing trend in use, we ran a regression in Excel (in 2011, Systat) with all of our daily use for July and August (not Mean Daily Use) as the dependent variable and year as the independent variable.

BEHAVIORS

The occurrence of problem behaviors was monitored through a brief questionnaire (Appendix 4) administered to visitors as they exited the carriage roads at each sampling location. Interviewers identified themselves, told visitors the park was monitoring the carriage roads visitor experience, and said the questionnaire was voluntary and would take about three minutes. If they refused to participate, we recorded data on them for non-response bias (by mistake, we recorded Location and Age instead of Location, Date, Time, Primary Activity, MDI Residency, and Reason for Refusal), and then approached the next party exiting the carriage roads. If they agreed, the interviewer stayed with them until they finished and then immediately approached the next party exiting. Visitors who used the carriage roads for less than 15 minutes were excluded from participation. One person per party responded to the questionnaire. Interviewers read questions to respondents and recorded their answers. The contact script and site guidelines are in Appendix 4.

Questions

Question 1 asked for the carriage roads route by intersection number. Interviewers spent the time needed with respondents on this question to get accurate answers. Question 2 asked how many times visitors experienced these four problem behaviors: Bicycles passing from behind without warning (startle); Dogs off leash; Bicycles travelling at excessive speed; and Obstructing the carriage roads. Question 3 asked the length of the carriage road visit. Question 4 asked whether visitors were biking, walking, running or horseback riding. Question 5 asked if visitors were permanent or seasonal residents of Mount Desert Island, or not a resident. Question 6 asked if they had used the Island Explorer bus to reach the carriage roads. Question 7 asked if visitors entered and exited from different locations. We had not asked this question before.

Sampling

A representative sample of carriage road visitors was administered questionnaires stratified by location of entry and time of day. Exact dates were randomly selected for equal representation in July and August. Sampling was based on carriage road census data from 2001-2002 (Jacobi 2003b). Because behavior standards were expressed for two use zones, a goal of 250 completed visitor questionnaires was established for each zone, for a total of 500. This was estimated to be the minimum sample size for reliable data. Five hundred twenty five questionnaires would be distributed with a response rate of 90-95% expected. Details of the development of the sampling plan and the sampling plan itself are found in Appendix 5.

Data Analysis

All data was entered into Excel for analysis. Visitor routes on the carriage roads were examined and assigned to either the High or Low Use Zone based on the intersections passed (by number), distance traveled, length of visit, and time of interview. Most questionnaires were easily assigned to either zone. We used a 2/3 rule, meaning that about 2/3 of their carriage road visit must be in one zone or the other. Some questionnaires were removed from the data analysis because visitor use appeared evenly divided between the two zones, and did not meet the 2/3 rule. Other questionnaires were removed because they were incompletely filled out; for example, if no length of visit was recorded. Some data analysis was performed on the entire sample, but most analysis was done on each group (zone) of questionnaires separately.

As described earlier, we reevaluated our standards for behaviors after the 2006 season and changed our data analysis. We sorted into High and Low Use Zones and transformed the reported number of occurrences for each behavior to a two-hour basis. We then ordered this data from lowest to highest numbers and addressed outliers.

Outliers are unusually high or low data observations. It is difficult to know if they are true observations, the result of unusual visitor temperament, or caused by errors in recording, transcription, or measurement. For behaviors, visitors clearly cannot count the number of occurrences of these behaviors once they go beyond a certain level; they are estimating based on their subjective experience. Any high behavior outliers may be the result of visitors attributing all past experiences to today's experience, extreme sensitivity to certain behaviors, or a knee-jerk response to 1-2 very bad encounters.

Outliers may have a substantial effect on the means for these behaviors and are not representative of the typical experience visitors have on the carriage roads. Fortunately, the new standards eliminate the much of effect of outliers because we are using frequency distributions and not means as the metric. Nonetheless, if a visitor reports 1000 encounters with speeding bikes, should it be discarded from analysis? What about 100, or 50, or 25 encounters? Where do you draw the line? Or because the magnitude doesn't matter as much with a frequency distribution metric, should we include it? We applied a 1% rule previously, eliminating 1% or the two highest observations in each zone (for 200-250 questionnaires). We decided to keep this rule for the frequency distribution metric because these observations do not reflect a typical carriage road experience, but instead represent an extreme experience or reaction.

After removing the outliers, we performed a simple frequency distribution for the number of behaviors in the $n=0$, $n=0-1$, $n=1-2$ and $n > 2$ behavior categories in 2013 for all four behaviors in each zone and compared the $n > 2$ percentages to the new standards.

Answers to questions 4 and 5 (user type and residence) were simply tabulated to help assess whether the sample was representative. We compared percentages of user types and residence location to previous research. Answers to question 6 were also simply tabulated to allow us to gauge whether visitors begin to use the Island Explorer more frequently to access the carriage roads, especially changing the number of one-way trips made. Answers to question 7 were tabulated to assess how often visitors took one-way trips. This might necessitate a revision of the simulation model. No data analysis was performed on subgroups for these questions.

RESULTS

DAILY CARRIAGE ROAD USE ESTIMATIONS

In 2012, we determined that increases in carriage road use reported since 2006 are likely the result of the introduction of the Bicycle Express route to Eagle Lake that year, and thus the accuracy of reported use data since then is suspect. *Nevertheless, we analyze the 2013 data and report it with this understanding.*

The 2013 data was seldom compromised by bad weather. We lost three full days in July and August (July 23, 26, August 9). Figure 2 shows estimated daily carriage road use calculated from the regression equation for July and August 2013⁴. Estimated visitation never exceeded 3,000 visitors per day, though there were three days over 2,900. Exceeding 3,000 visitors per day has happened only eight times, on one day each in August of 2000, 2008, 2010, and 2012, and on four days in 2011, two of which exceeded 3,000 visitors per day with the 80% confidence level test. Sixteen days of $>3,000$ visitors meeting the 80% confidence level test are required to

⁴ Numerical results are in Appendix 6. Remember that daily use estimates are best during July and August when visitation is high because censuses were conducted on high use days. Daily and monthly use estimates for other months (Appendix 6) when daily use is lower are much less reliable, especially if the weather is poor and use is low, because the regression equation constant is high (593).

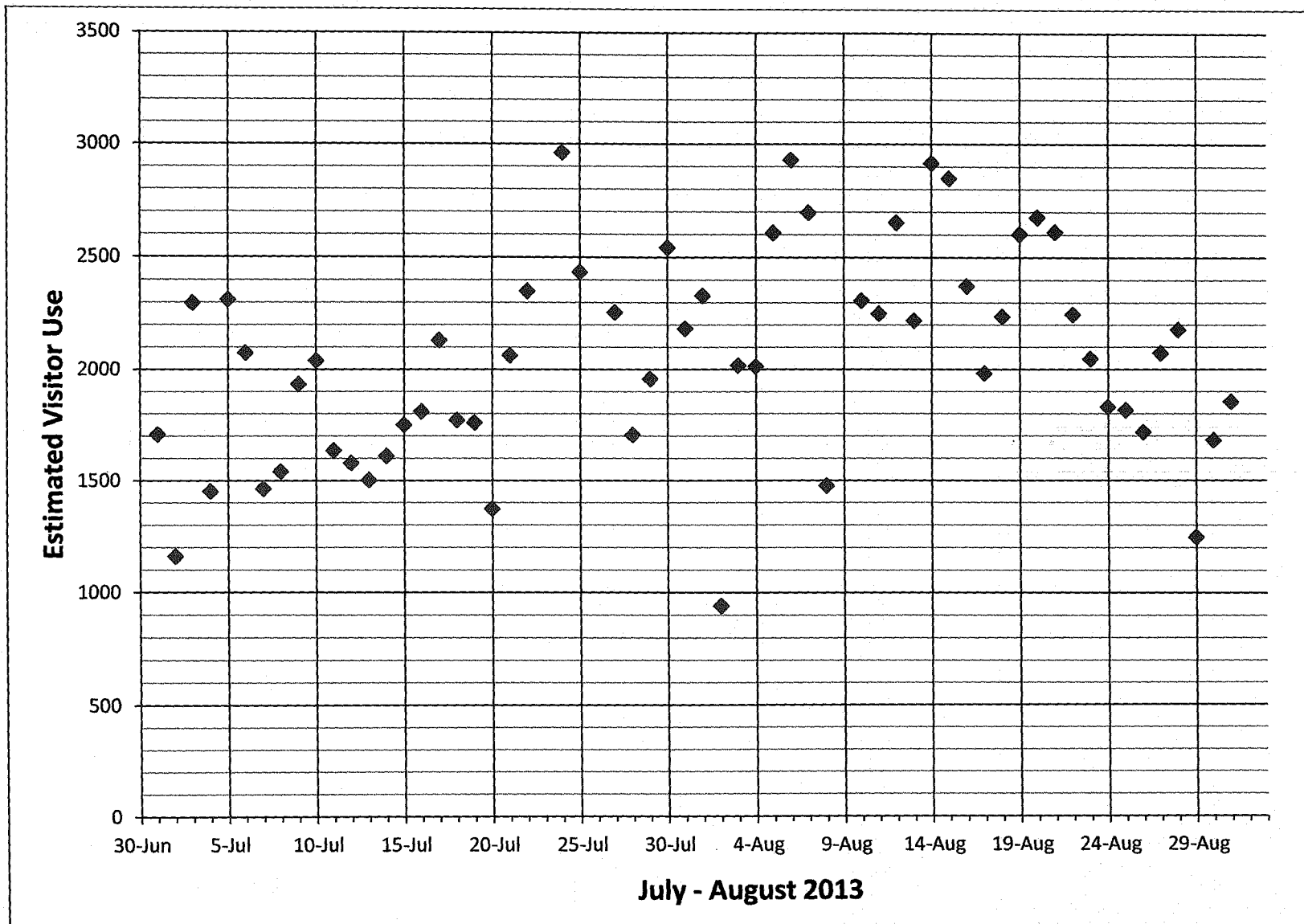


Figure 2: Estimated Carriage Road Visitor Use for July - August, 2013.

violate the standard. Therefore, the crowding standard (3,000/day) was not violated in 2013.

Trends

Eighteen years of daily use estimates for 1995 and 1997 – 2013 are available to help understand trends in use, but they must be treated with caution because of problems with and variations in data collection. Estimates from 1997 (Jacobi 1997b), 1998 (Jacobi 1998) 1999 (Jacobi 2000), and 2008 (Jacobi 2008b) were compromised to some extent by equipment problems creating data loss and overcounts. Estimates from 2002 and later are derived from the new regression equation (Jacobi 2003b) but can be compared with previous years. The 1995 data was also collected using different equipment. We used a TT501 computer in 1995, also manufactured by Diamond Traffic Products. The electronic trail counters used in 1995 had not been upgraded with new circuitry yet. Upgrading caused problems in 1996 resulting in complete data loss for the season. Even given all these issues with data, there is still value in trend analysis.

Table 2 shows the estimated monthly total use and mean daily use for July and August for eighteen years including the 90% confidence intervals for mean daily use (Appendices 7 and 8).

Table 2: Estimated Monthly Carriage Road Use and Mean Daily Carriage Road Use with a 90% Confidence Interval for July and August, 1995, 1997 – 2013.

Year	July Monthly Use	July Mean 90% CI	Lower Bound	Upper Bound	N ¹	August Monthly Use	August Mean 90% CI	Lower Bound	Upper Bound	N ¹
1995	46,982	1,620 +/- 194	1,426	1,814	29	54,995	1,774 +/- 138	1,636	1,912	31
1997	48,236	1,663 +/- 114	1,549	1,777	29	41,668	1,984 +/- 173	1,811	2,157	21
1998	42,945	1,432 +/- 93	1,339	1,525	31	48,489	1,796 +/- 103	1,693	1,899	27
1999	42,298	1,567 +/- 103	1,464	1,670	27	57,376	1,851 +/- 159	1,692	2,010	31
2000	41,384	1,379 +/- 142	1,237	1,521	30	52,642	1,755 +/- 157	1,598	1,912	30
2001	39,505	1,362 +/- 76	1,286	1,438	29	46,568	1,552 +/- 81	1,471	1,633	30
2002 ²	50,596	1,632 +/- 84	1,544	1,720	31	57,865	1,867 +/- 93	1,774	1,960	31
2003	50,518	1,630 +/- 92	1,538	1,722	28	41,047	1,785 +/- 98	1,687	1,883	23
2004 ³	41,634	1,487 +/- 98	1,389	1,585	28	50,199	1,673 +/- 100	1,573	1,773	30
2005	44,067	1,520 +/- 65	1,455	1,585	29	50,294	1,734 +/- 99	1,635	1,833	29
2006	48,244	1,608 +/- 78	1,530	1,686	30	59,661	1,925 +/- 116	1,809	2,041	31
2007	48,144	1,660 +/- 85	1,575	1,745	29	57,956	1,932 +/- 123	1,809	2,055	30
2008	44,991	1,800 +/- 101	1,699	1,901	25	51,636	2,068 +/- 169	1,898	2,238	25
2009	-- ⁴	--			--	60,602	1,955 +/- 124	1,831	2,079	31
2010	52,652	1,752 +/- 106	1,646	1,858	30	66,272	2,209 +/- 144	2,065	2,353	30
2011	58,228	1,878 +/- 114	1,764	1,992	31	63,432	2,046 +/- 224	1,822	2,270	31
2012	59,095	1,906 +/- 103	1,803	2,009	31	66,893	2,158 +/- 158	2,000	2,316	31
2013	55,363	1,909 +/- 133	1,776	2,042	29	65,386	2180 +/- 150	2,030	2,330	30

1. N equals the number of days in a particular month and year for which reliable data were collected. Monthly totals are not always easily compared because of missing data. Means should be used to make monthly use comparisons.

2. New regression equation in 2002.

3. New computer/counter.

4. No data, equipment malfunction.

Figures 3 and 4 show the mean daily use for July and August for these eighteen years graphically with 90% error bars. These confidence intervals and their associated error bars are different from those in all reports before 2011 and represent corrections due to statistical errors.

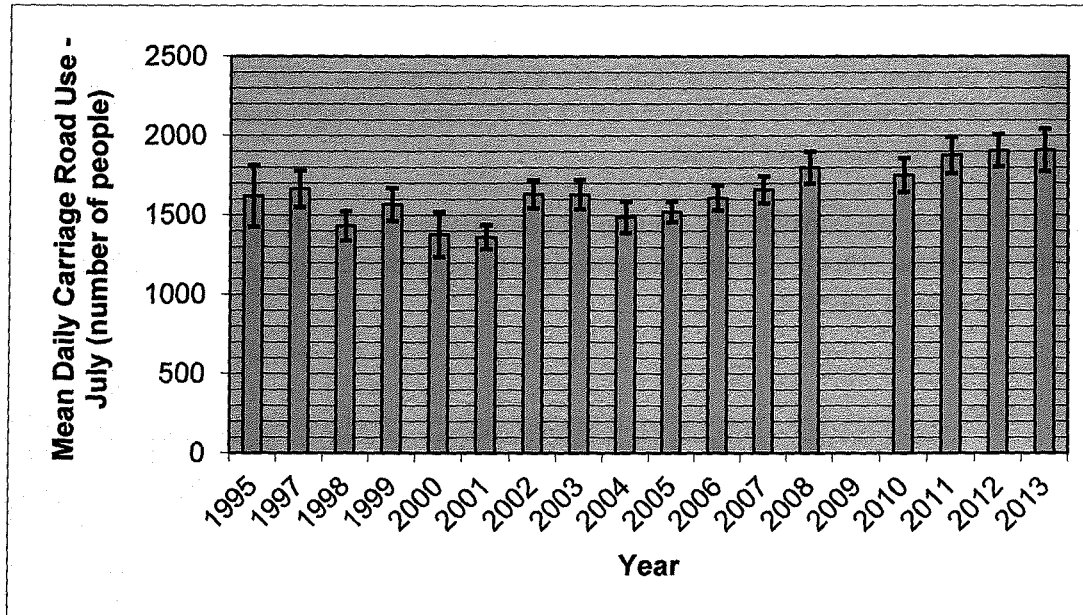


Figure 3: Mean Daily Carriage Road Visitor Use for July 1995, 1997 - 2013 with 90% Error Bars.

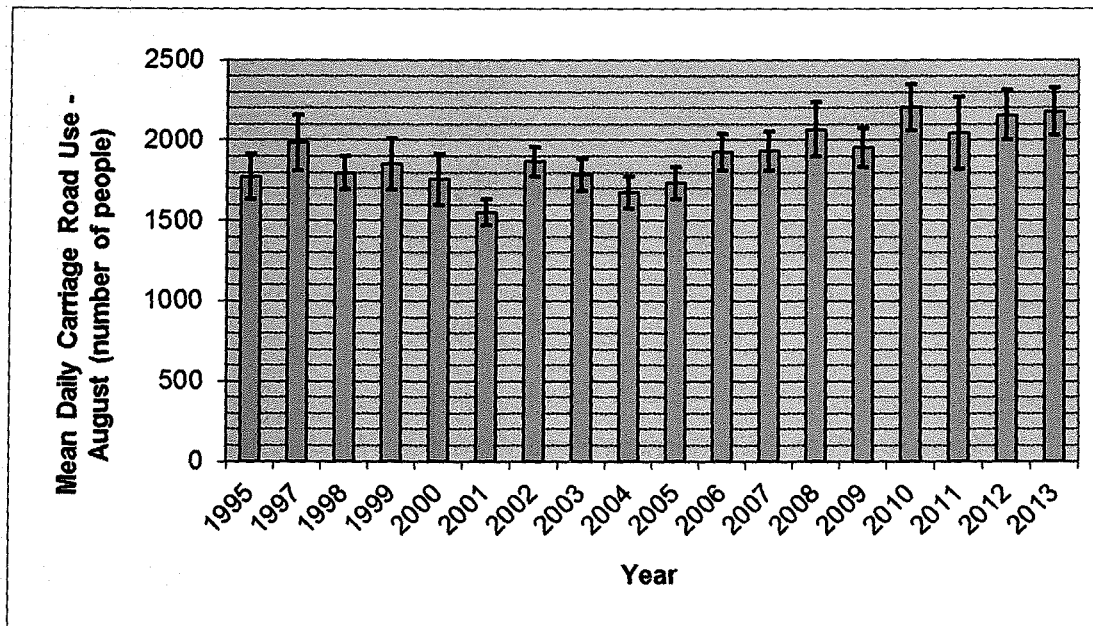


Figure 4: Mean Daily Carriage Road Visitor Use for August 1995, 1997 - 2013 with 90% Error Bars.

Mean daily carriage road visitation in July 2013 was the highest we have seen and almost identical to 2012, with an estimated 1,909 +/- 133 visitors (90% confidence interval). There were 55,363 estimated visits. Previously, we reported non-overlapping confidence intervals for the

monthly means. With the corrections mentioned above, there are now many of these for each month, and we no longer see the value in reporting that the mean for year A was different than year B given the trend data described below.

Mean daily carriage road visitation in August 2013 was second only to 2010 with an estimated 2,180 +/- 150 visitors (90% confidence interval). There were 65,386 estimated visits. This was the fifth time in the past six years mean daily use was greater than 2,000. For the past eight years mean daily use in August has been greater than 1,900, and these eight means are all considerably higher than most of the ten years before.

Until our 2010 report, we consistently said no trends were evident. Regression analysis now shows an upward trend since 2004 for July and August (Figures 5 and 6) that is statistically significant, as shown in Table 2.

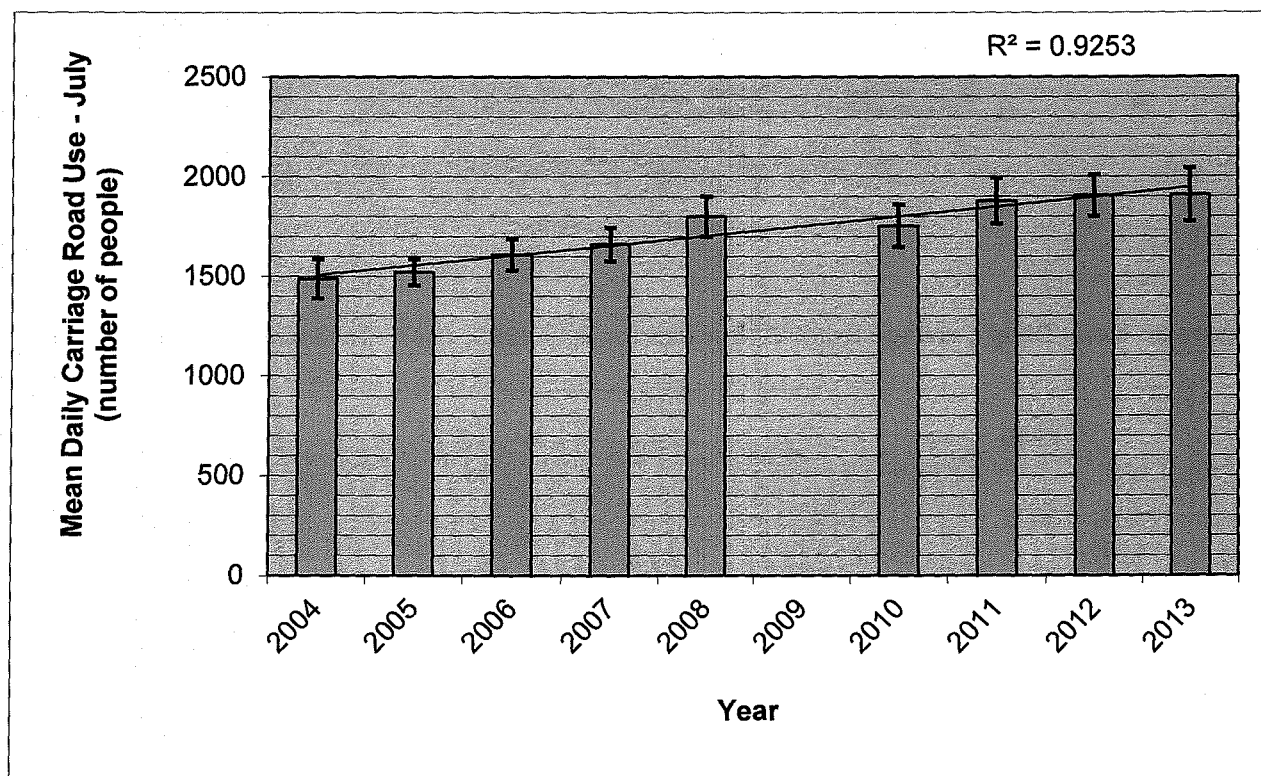


Figure 5: Mean Daily Carriage Road Visitor Use for July 2004 - 2013 with 90% Error Bars, Trend Line and R² Value.

Table 2: Coefficients, Standard Errors, and P Values for the Constants and Slopes of the Regression Estimates for Mean Daily Use in July and August, 2004 – 2013.

July	Coefficient	Standard Error	P Value	August	Coefficient	Standard Error	P Value
Constant	-95942	12880.94262	1.3946E-12	Constant	-105405.73	18799.07758	4.72111E-08
Slope	48.6279586	6.413171273	6.0078E-13	Slope	53.468666	9.359593756	2.70777E-08
Sample Size n = 262*				Sample Size n = 298			

* Note that we used all the data (not monthly means) for the regression.

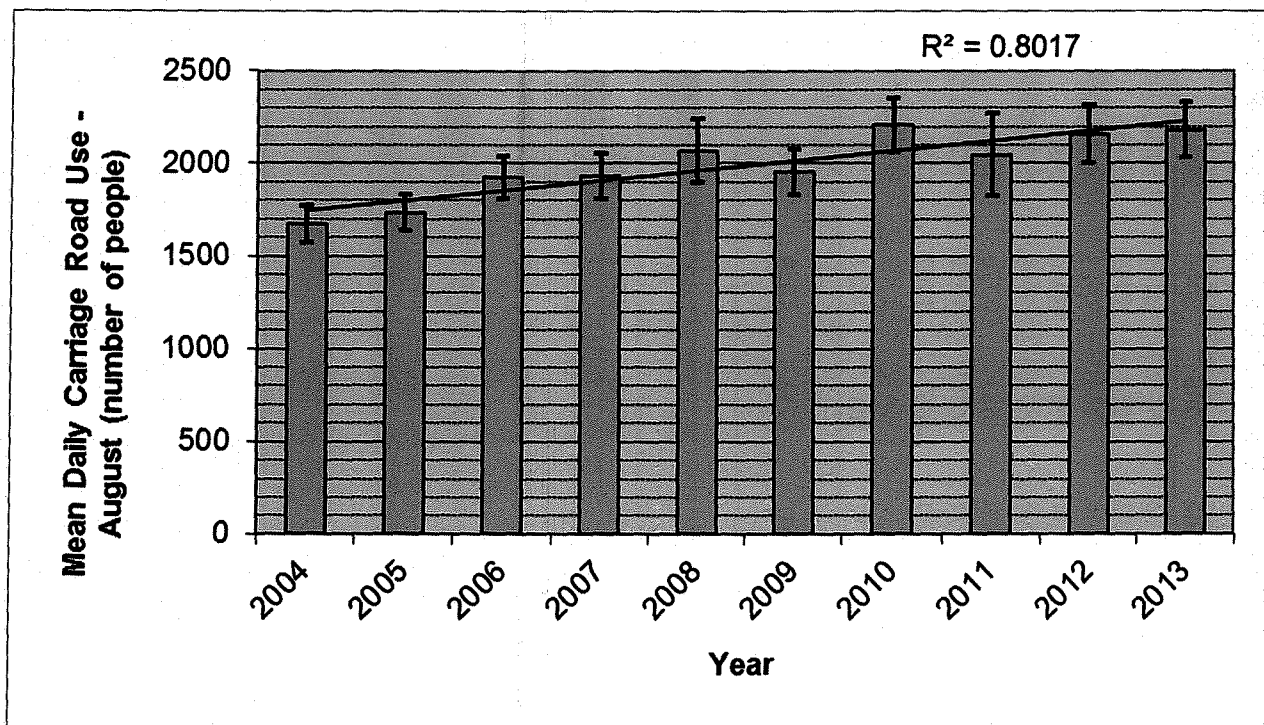


Figure 6: Mean Daily Carriage Road Visitor Use for August 2004 - 2013 with 90% Error Bars, Trend Line and R² Value.

Two more ways of monitoring visitor use trends are a comparison of the top ten busiest days of each month and the number of days per month with use above 2000 persons per day. A top ten analysis helps understand what use is like on the busiest sunny days in these months, and reduces the impact of bad weather years such as 2004 or 2008. Tables 3 and 4 show the data for the top ten busiest days of July and August for 1995 and 1997-2013, including the mean daily use each year for these ten days with a 90% confidence interval (see Appendices 7 and 8 for details), and the number of days of 2000 or more persons per day.

Mean daily use for the top ten days in July 2013 was 2,354, the highest ever. July 2011 was second highest with 2,310. Mean daily use for the top ten days in August 2013 was 2,692, almost identical to 2012 (2691!), and second only to August 2011 with 2,854. We looked at testing for the significance of “top ten” differences but the samples were too small ($n=10$) and the distributions did not always appear normal. There is less variation in the data, but with fewer data points, confidence intervals are often wider because of a higher t value.

There were 12 days with 2,000 or more estimated carriage road visitors in July 2013. This was the third year in a row with ten or more days of 2,000 or more visitors in July. July 2011 was the first such year. August 2013 had 21 days with 2,000 or more estimated visitors, second only to the 22 days in August 2010. Three of the last four Augusts have had 20 or more days with 2,000 or more estimated visitors.

Table 3: Top Ten Carriage Road Visitor Use Days for July 1995 and 1997-2013 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.

Rank #	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	2937	2384	1930	2099	2273	2066	2299	2114	2198	1979	2302	2186	2386
2	2758	2344	1927	2023	2036	1827	2116	2088	2052	1859	1989	2078	2206
3	2616	2088	1849	1927	1862	1598	2066	2015	1905	1784	1955	2047	2189
4	2125	2012	1759	1849	1862	1596	1931	2011	1854	1741	1946	1982	2131
5	2056	1990	1732	1808	1849	1587	1866	1996	1828	1693	1909	1974	2119
6	2018	1966	1672	1808	1813	1579	1849	1938	1729	1683	1770	1936	2078
7	1949	1960	1672	1775	1802	1566	1844	1924	1674	1678	1727	1922	2078
8	1894	1919	1636	1751	1721	1511	1842	1895	1630	1662	1707	1837	1950
9	1832	1884	1606	1745	1715	1484	1808	1796	1621	1647	1707	1823	1948
10	1801	1876	1582	1721	1704	1460	1806	1796	1577	1611	1681	1779	1936
Sum ¹	21986	20423	17365	18506	18638	16274	19427	19574	18068	17338	18693	19564	21020
Mean ²	2199	2042	1737	1851	1864	1627	1943	1957	1807	1734	1869	1956	2102
N=2000+ ⁴	6	4	0	2	2	1	3	4	2	0	1	3	7

Table 3 (cont.): Top Ten Carriage Road Visitor Use Days for July 1995 and 1997-2013 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.

Rank #	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2121
1	-- ⁵	2535	2817	2665	2961								
2	--	2285	2526	2542	2542								
3	--	2249	2374	2441	2434								
4	--	2242	2350	2388	2350								
5	--	2208	2268	2355	2311								
6	--	2013	2254	2232	2297								
7	--	1943	2181	2160	2256								
8	--	1909	2126	2126	2184								
9	--	1905	2107	2011	2131								
10	--	1895	2100	2011	2076								
Sum ¹	--	21184	23103	22931	23543								
Mean ²	--	2118	2310	2293	2354								
N=2000+ ⁴	--	6	11	10	12								

1=sum of number of visitors for top ten days; 2=mean number of visitors for top ten days; 3=confidence interval for the mean number of visitors for the top ten days; 4=number of days with the number of visitors 2,000 or more. 5. No data, equipment malfunction.

Table 4: Top Ten Carriage Road Visitor Use Days for August 1995 and 1997-2013 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.

Rank #	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1	2561	2795	2333	2613	3132	2142	2663	2246	2237	2396	2620	2906	3024
2	2460	2714	2292	2613	2811	2072	2367	2165	2201	2393	2605	2605	2706
3	2357	2616	2267	2504	2504	1941	2254	2112	2008	2102	2545	2403	2689
4	2315	2512	2267	2330	2431	1933	2227	2076	1999	2061	2511	2335	2663
5	2198	2325	2246	2319	2403	1857	2148	2059	1991	2020	2290	2249	2651
6	2153	2289	2189	2316	2112	1756	2124	2006	1970	1977	2244	2220	2429
7	2084	2270	2069	2205	2017	1732	2107	1984	1943	1974	2179	2215	2376
8	2070	2229	1985	2191	1985	1699	2051	1871	1890	1936	2131	2208	2338
9	2046	2004	1966	2180	1933	1680	2044	1871	1854	1917	2076	2174	2331
10	1970	1998	1898	2164	1930	1677	2020	1859	1847	1912	2044	2165	2210
Sum ¹	22214	23752	21512	23435	23259	18488	22005	20248	19941	20688	23244	23480	25418
Mean ²	2221	2375	2151	2344	2326	1849	2201	2025	1994	2069	2324	2348	2542
N=2000+ ⁴	9	9	7	16	7	2	11	6	3	5	11	15	14

Table 4 (cont.): Top Ten Carriage Road Visitor Use Days for August 1995 and 1997-2013 Ranked 1 – 10 with 80% Confidence Intervals for the Mean Number of Visitors Per Day and the Number of Days with More Than 2000 Visitors.

Rank #	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2121
1	2547	3224	3484	3132	2930								
2	2526	2983	3375	2904	2916								
3	2487	2831	3212	2704	2848								
4	2463	2670	3130	2704	2697								
5	2417	2598	2904	2677	2677								
6	2364	2562	2718	2656	2653								
7	2311	2535	2509	2545	2612								
8	2196	2518	2465	2540	2607								
9	2143	2511	2410	2535	2603								
10	2136	2410	2338	2509	2374								
Sum ¹	23591	26843	28544	26905	26917								
Mean ²	2359	2684	2854	2691	2692								
N=2000+ ⁴	16	22	15	20	21								

1=sum of number of visitors for top ten days; 2=mean number of visitors for top ten days; 3=confidence interval for the mean number of visitors for the top ten days; 4=number of days with the number of visitors 2,000 or more.

BEHAVIORS

Five hundred four questionnaires were completed by visitors. Twenty-five others were incomplete and unusable, or could not be classified as either the High or Low Use Zone. Twenty-one people declined to participate. Of the 504 questionnaires, 47% (n=239) were assigned to the High Use Zone and 53% (n=265) to the Low Use Zone. These were not far off the target of 250 for each zone.

Table 5 shows the percent of questionnaires administered by entry location. Our two-zone sampling plan was based on entry location and time. Note that as expected, almost no surveys administered at Brown or Parkman Mountain ended up classified in the High Use Zone.

Table 5: Entry Location for Carriage Road Visits.

	Visitor Center	Duck Brook	Eagle Lake	Bubble Pond	Jordan Pond	Brown Mtn	Parkman Mtn	Wildwood Stables
Entire Sample	7%	16%	29%	7%	10%	14%	11%	6%
Low Use Zone	5%	11%	19%	5%	9%	26%	20%	5%
High Use Zone	10%	23%	41%	8%	11%	1%	0%	6%

The entire sample represents eight hundred hours of carriage road visits and the average length of stay was 96 minutes. Twelve percent of respondents were summer residents and 9% were year-round residents of Mount Desert Island; 79% were not residents. Fifty-eight percent of respondents were bikers, 31% walkers, and 8% runners. Three percent were equestrians. Ten percent used the Island Explorer bus for access to the carriage roads.

In 2013, we asked visitors if they entered and exited the carriage roads at different locations because the simulation model was built on very few, if any, one way trips. There was no Island Explorer Bus at the time the model was built. In the entire sample, 25% of carriage road visitors entered and exited at a different location.

Three hundred ninety-six hours of carriage road visits are represented in the Low Use Zone sample. The average visit length was 91 minutes. Eighteen percent of respondents were seasonal residents and 12% were year-round residents of Mount Desert Island. Nonresident visitors comprised the remaining 70%. Forty-eight percent of Low Use Zone respondents were bicyclists, 37% walkers, and 11% runners. Four percent were equestrians. Five percent used the Island Explorer bus to reach the carriage roads. Twenty-one percent entered and exited from different locations.

Four hundred three hours of carriage road visits are represented in the High Use Zone sample. The average length of a visit was 101 minutes. Five percent of respondents were seasonal residents and 6% were year-round residents of Mount Desert Island. Nonresident visitors comprised the remaining 88%. Sixty-nine percent of High Use Zone respondents were bicyclists, 25% walkers, and 5% runners. One percent were equestrians. Fifteen percent used the Island Explorer bus to reach the carriage roads. Thirty percent entered and exited from different locations.

Tables 6 – 9 compare Length of Stay, Residency, Island Explorer Bus Use, and User Type for the entire sample, the Low Use Zone, and the High Use Zone over the five monitoring years. From Table 6 it appears that length of stay has declined across both zones since 1997. Table 7 shows that residency has been slightly variable with more summer residents sampled in 2000 and more year-round residents sampled in 2006. We also see that summer and year round residents are less likely to be sampled in the High Use Zone and more likely to be sampled in the Low Use Zone. Table 8 shows that carriage road visitors were fairly consistent in their use of the Island Explorer bus to access the carriage roads until 2013 when there was a noticeable rise in bus use. Most of this was in the High Use Zone where the Bike Express runs to Eagle Lake regularly. For User Type, we see in Table 9 that in 2000, 2010, and 2013 we sampled more walkers and fewer bicyclists than other years, and that most of this occurred in the Low Use Zone. From all the monitoring and earlier research, we know that residents are more often walking than biking, staying less time than nonresidents, and entering at less busy times and places.

Table 6: Length of Stay for Carriage Road Visits in Minutes.

	1997	2000	2003	2006	2010	2013
Entire Sample	105	107	108	94	91	96
Low Use Zone	94	99	95	86	81	91
High Use Zone	116	115	126	102	100	101

Table 7: Residency of Respondents.

Entire Sample						
Residency	1997	2000	2003	2006	2010	2013
Year Round	–	12%	13%	19%	15%	9%
	16%(combined)					
Summer	–	18%	13%	11%	14%	12%
Not a resident	84%	70%	74%	70%	71%	79%
Low Use Zone						
Residency	1997	2000	2003	2006	2010	2013
Year Round	–	14%	15%	24%	16%	12%
	22%(combined)					
Summer	–	24%	16%	15%	17%	18%
Not a resident	78%	62%	69%	61%	67%	70%
High Use Zone						
Residency	1997	2000	2003	2006	2010	2013
Year Round	–	9%	10%	13%	13%	6%
	11%(combined)					
Summer	–	13%	9%	6%	11%	6%
Not a resident	89%	78%	81%	81%	76%	88%

Table 8: Use of Island Explorer Bus by Carriage Road Visitors.

	1997	2000	2003	2006	2010	2013
Entire Sample	-- ¹	7%	5%	4%	6%	10%
Low Use Zone	--	6%	3%	2%	3%	5%
High Use Zone	--	8%	6%	6%	9%	15%

1. Island Explorer began service in 1999.

Table 9: User Type of Respondents.

Entire Sample						
Type of Use	1997	2000	2003	2006	2010	2013
Bike	66%	60%	61%	57%	53%	58%
Walk	26%	28%	25%	26%	35%	31%
Run	8%	11%	11%	13%	10%	8%
Horse		1%	3%	3%	2%	3%
Low Use Zone						
Type of Use	1997	2000	2003	2006	2010	2013
Bike	55%	48%	49%	49%	47%	48%
Walk	33%	37%	30%	33%	38%	37%
Run	12%	14%	16%	18%	11%	11%
Horse	--	1%	5%	4%	4%	4%
High Use Zone						
Type of Use	1997	2000	2003	2006	2010	2013
Bike	79%	71%	75%	69%	60%	69%
Walk	18%	21%	20%	20%	32%	25%
Run	3%	8%	4%	9%	7%	5%
Horse	--	0%	1%	2%	1%	1%

Non-response bias (n=21) could not be analyzed because we used the wrong nonresponse form and collected gender and age data and not type of use and residency data. We can say non-respondents were spread across a variety of times, dates, and locations of entry. There were eight females and 13 males, and three respondents ~30 and under, seven ~31-40, six ~41-50 and one 60 plus. We think non-response bias in this survey was negligible, as it has been in the past.

Table 10 compares behavior standards to the measured percent of n>2 occurrences for four problem behaviors for both zones and all monitoring years. Remember that we changed indicators and established new standards after the 2006 monitoring cycle. Violations of standards are shown in the largest bold print and close approaches to violations are shown in large bold print.

In 2013, there were no violations and only two close approaches (for Speed and Obstruction) to behavior standards in the Low Use Zone, and no violations or close approaches in the High Use Zone. Table 10 also shows that behavior problems (violations and close approaches) are clearly more prevalent in the Low Use Zone for every behavior, and that 2013 was a good year in this regard with only two close approaches. The greater percentage of local residents in this zone is a likely explanation for this.

Table 10: Percent of 1997, 2000, 2003, 2006, 2010, and 2013 Carriage Road Visitors Experiencing n>2 Occurrences of Four Problem Behaviors Compared with Behavior Standards.

Low Use Zone							
Behavior	Standard	1997	2000	2003	2006	2010	2013
Startles	Not > 5%	5.20¹	4.93²	1.15	2.65%	5.24	3.46
Speed	Not > 5%	3.72	4.04	2.69	3.41%	2.02%	4.23
Dogs	Not > 5%	4.46	6.28	3.08	4.17	2.02%	2.69
Obstruct	Not > 5%	1.86	3.59	2.31	2.65%	5.24	5.00
High Use Zone							
Behavior	Standard	1997	2000	2003	2006	2010	2013
Startles	Not > 5%	3.42	3.28	3.40	4.76	5.68	2.53
Speed	Not > 10%	6.41	6.15	3.40	7.54%	4.80	4.64
Dogs	Not > 5%	1.28	3.28	2.91	1.19%	0.00	0.42
Obstruct	Not > 10%	4.70	7.38	7.28	9.92	6.11	7.17

1. Large bold numbers are violations of standards.

2. Small bold are close approaches of standards, within 1%.

For a look at the behavior percentages of n=0, n=0-1, n=1-2 and n>2 occurrences for this and previous years see Appendix 9.

Discussion

Use Increases. In 2013, we determined that the reason for the sudden and persistent increase in carriage road use may lie with the Island Explorer Bicycle Express route. We repeat our discussion of this here (Jacobi 2013):

“In 2001 and 2002, we recalibrated our regression estimator for carriage road use because we wanted to see if the Island Explorer bus had changed the way visitors access and use the carriage road system (Jacobi 2003b). Substantial bus use could invalidate the simulation model which was built on actual visitor routes without a bus system in operation. Would the introduction of the bus increase use overall, change the number of one-way trips, or alter the distribution of visitors entering the 11 major access points? The censuses showed no change.

The recent increases in carriage road use began in 2006, the same year the Island Explorer bus shifted the newly introduced Bicycle Express from the Jordan Pond House to Eagle Lake, not far from the trail counter location.

Bicycle Express vans with trailers are scheduled to depart the Village Green for Eagle Lake about every 30 minutes from 9:15 a.m. to 4:45 p.m. with a slight break in service at noon. Only one van is needed for this schedule. A second van/trailer is held in reserve to respond to demand at either location, and on busy days the vans run about every 15 minutes.

The vans hold 11 passengers, and thus when responding to demand they can deliver a maximum of 44 people/hour to Eagle Lake. Therefore, on the busiest of days, 300-400 bicyclists are delivered daily to Eagle Lake, and that is all the Bicycle Express can handle. More money, vans, and drivers would be needed to respond to any more demand, and even then they might not be accommodated at the Village Green because of the many other buses coming and going. The Eagle Lake Bicycle Express delivered 12,000 bicyclists in 2006 and 19,000 in 2012; this is an increase of 58% (T. Crikelair, personal communication).

With 300-400 people entering the carriage road system at Eagle Lake via the Bicycle Express, many of them (maybe most) will eventually travel the west side of Eagle Lake and trip the trail counter. This increases the overall visitation estimate for the carriage road system because of the regression equation estimator. It also raises a number of questions listed below, for which we try to provide some admittedly speculative answers.

1. Has overall carriage road system use really increased or is the increase concentrated near Eagle Lake? Without the convenience of the Bicycle Express would these bicyclists drive to Eagle Lake with a rental bike on their car or go somewhere else? Or would they even choose to bicycle at all?

The most recent regression equation to estimate use was based on the 2001 - 2002 proportions of use entering the system from the 11 access points. This concentrated increase in use at one access point clearly changes those proportions. It seems unlikely that this level of increase in use at one access point is matched by proportional increases at the other access points. *New carriage road censuses are needed to reflect this change, with the trail counter location remaining where it is.*

2. What is happening to the desired high quality carriage road visitor experience based on visitor use levels (crowding) as a result of the increase?

Once estimated carriage road use exceeds 3,370 visitors per day (and the 80% confidence level test is reached), the simulation model predicts that we are violating the associated PPV (persons-per-view) standards in the high and low use zones. It seems likely that we have seen more carriage road use estimates over 3,000 visitors per day since 2006 (four in 2011) due to the Bicycle Express. The most likely scenario is that we may be violating standards in the vicinity of Eagle Lake, or perhaps in more of the entire high use zone, because of this concentrated influx of bicyclists. The low use zone may be insulated from significant changes in the visitor experience.

3. How has this increase in use affected behaviors and the behavior standard?

With higher use around Eagle Lake, the greater the chance is that behavior standards are violated in that area. Behavior monitoring in 2013 may give some answers.

4. Does this really matter?

Maybe. Maybe not. As long as *daily* use from the Bicycle Express does not increase substantially from the current level with the Bicycle Express, we may have reached a new plateau where the experience has diminished somewhat in quality around Eagle Lake (or more of the high use zone of the carriage road system) but the low use zone experience remains relatively intact. After all, the standard is not violated until we reach the 16th day of the season we have met the 80% confidence level test for a daily use limit of 3,000 visitors. The most we have seen is the two days meeting this test in 2011.

A new set of carriage road censuses is needed to develop an updated regression equation accounting for the new distribution of entries due to the Bicycle Express. This regression will be applied to use estimates from 2006 on and compared with earlier regression estimates. We would expect the new regression estimates to be slightly lower than the old ones."

One thing we can add to this discussion for question 3 above is that 2013 behavior monitoring for the high use zone showed no violations or close approaches to standards in spite of this increased use.

Entry and Exit Location Data. Survey data for entry and exit locations show a somewhat surprising percentage of visitors taking one way trips on the carriage roads. Data from question 6 about Island Explorer Bus use show this use was substantially higher in 2013. If this entry/exit data is accurate, it suggests the need to develop a new simulation model. However, at the Jordan Pond House (and some other sites), administering surveys is challenging because there is no single location that ensures a representative sample. It is also difficult to ensure that respondents are actually finishing their carriage road experience there. They are often in the middle of it and it is hard to know if they have understood this question correctly when asked. Protocols for administering surveys at all sites should be tightened and strictly followed in 2016 to ensure greater accuracy, or a separate survey should be administered to get at this issue more closely.

SUMMARY AND RECOMMENDATIONS

As we summarize 2013 carriage road use data, we reiterate that the introduction of the Bicycle Express route to Eagle Lake in 2006 very likely affected the validity of reported use data since then, including of course 2013. Because of this, a new set of censuses and regression equation are needed and are planned for 2014. In our 2014 report, we will apply the new more applicable regression equation to data from 2006 forward.

Monitoring in 2013 again confirmed the statistically significant trend of increasing use since 2004. Estimated daily carriage road visitation in 2013 never exceeded 3,000 visitors per day, though there were three days over 2,900. Exceeding 3,000 visitors per day has happened only eight times, on one day each in August of 2000, 2008, 2010, and 2012, and on four days in 2011, two of which exceeded 3,000 visitors per day with the 80% confidence level test. Sixteen days of plus 3,000 visitation meeting the 80% confidence level test are required before standards are violated. *Therefore, the standard for crowding (3,000/day) was not violated in 2013.*

Mean daily carriage road visitation in July 2013 was the highest we have seen and almost identical to 2012, with an estimated 1,909 +/- 133 visitors (90% confidence interval). There were 55,363 estimated visits.

Mean daily carriage road visitation in August 2013 was second only to 2010 with an estimated 2,180 +/- 150 visitors (90% confidence interval). There were 65,386 estimated visits. This was the fifth time in the past six years mean daily use was greater than 2,000. For the past eight years mean daily use in August has been greater than 1,900, and these eight means are all considerably higher than most of the ten years before.

There were no violations and only two close approaches to behavior standards in the Low Use Zone and no violations or close approaches in the High Use Zone. Therefore, behavior standards were not violated in 2013.

Based on the monitoring results in 2013, the park must continue to emphasize carriage road education annually and at every opportunity:

- seasonal park staff should be trained about courtesy guidelines and communicate them to visitors at every opportunity;
- local bike shops should be urged to continue their courtesy guidelines education for bike rental customers;
- courtesy guidelines should be posted prominently in the park visitor center and other contact areas;
- the presence of interpretation and visitor protection staff on the carriage roads should be continued at the highest level possible;
- reviving the volunteer bike patrol should also be considered.

Carriage road use monitoring will continue in 2014 with electronic trail counters and a new set of carriage road censuses to develop a new regression equation due to the redistribution of use from the Bicycle Express.

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APPENDIX 1: METRICS CONSIDERED, OTHER DATA OBSERVATIONS, AND PERCENT OF VISITORS EXPERIENCING PROBLEM BEHAVIORS PER 2-HOUR VISIT ON THE CARRIAGE ROADS FOR 1997, 2000, 2003, AND 2006

We considered the following metrics for the expression of new standards:

1. The annual percent of visitors experiencing $n=0$ occurrences of a behavior *should not fall below X%*;
2. The annual percent of visitors experiencing $n>2$ occurrences of a behavior *should not exceed X%*;
3. The four-year rolling mean percent of visitors experiencing $n=0$ occurrences of a problem behavior *should not fall below X%*;
4. The four-year rolling mean percent of visitors experiencing $n>2$ occurrences of a problem behavior *should not exceed X%*;
5. The cumulative four-year rolling mean percent of visitors experiencing $n\leq 1$ occurrences of a problem behavior *should not fall below X%*;
6. The cumulative four-year rolling mean percent of visitors experiencing $n\leq 2$ occurrences of a problem behavior *should not fall below X%*;
7. The sum of the four-year mean percent of visitors experiencing $n>0$ occurrences of a problem behavior (the sum of the non zero means, the inverse of the metric in number 3 above) *should not exceed X%*.

Our selection of new standards was also informed by the following observations from this data and other factors listed below.

1. Data over four cycles show there is no difference in the annual mean occurrences of the startle behavior between the high and low use zones.
2. Data over four cycles show there are differences in the annual mean occurrences of the speed, dogs, and obstruction behaviors between the high and low use zones, but not for the cumulative mean metric for $n\leq 2$.
3. Data show there are more occurrences of dogs off leash in the low use zone than the high use zone, and this is explained by use patterns of local residents. The intuitive sense that standards for the low use zone should be more stringent than the high use zone is confounded by this real world data. We felt standards could reflect this real world data.
4. Data generally indicate existing conditions on the carriage roads are acceptable for most visitors.
5. There should be some substantive difference in behavior standards between the two zones for at least two of the four behaviors or else the zones become meaningless. Said another way, it is OK for standards to be the same for each zone for 1 or 2 of the four behaviors, but not three or four.
6. Using cumulative percentages for standards allows for more variation in data creating less likelihood for violating standards, but it also reduces differentiation between zones.
7. The number of instances of a behavior for $n>2$ may be more difficult to manage for depending on the number of outliers in a given year.
8. We did not want to set a much lower standard for the high use zone simply to illustrate the difference in zones. That is, we did not want to allow a large deterioration in the high use zone experience just to differentiate the zones. We decided the 5% was enough of a difference between zones for a metric.

For simplicity and rigor, we selected annual standards for $n>2$ occurrences of a behavior rather than cumulative standards. Standards were informed by the four-year mean and we decided to set them 1-5 percent above it, at either 5 or 10 percent depending on the behavior. Standards and 4-year means are outlined in Table 1. The standards are the same in each zone for the startles and dogs behaviors; there is a 5% difference in standards between zones for the speed and obstruction behaviors. Standards for dogs $n>2$ will be the most difficult to achieve.

We did consider a standard for the $n=0$ category, set at 5-8 percent below the four-year mean using a percent divisible by five for ease of understanding. Once again for simplicity, we decided this was not needed since we would be monitoring all these percentages anyway. Should there be a substantial change in the $n=0$ category over time, we would see it and it would inform decisions.

Percent of Visitors Experiencing Problem Behaviors Per 2-Hour Visit on Carriage Roads for Four Monitoring Cycles¹

Low Use Zone # Starts	1997	2000	2003	2006	Mean	Cumulative % for means
0	90.33	91.93	95.38	93.94	92.90	
up to 1	2.23	0.9	1.15	1.89	1.54	94.44
1 to 2	2.23	2.24	2.31	1.52	2.07	96.52
> 2	5.20	4.93	1.15	2.65	3.48	
	100.00	100	100.00	100.00	Sum nonzero means	7.10
High Use Zone # Starts	1997	2000	2003	2006	Mean	Cumulative % for means
0	89.74	93.85	92.23	91.27	91.77	
up to 1	2.99	2.05	1.46	1.59	2.02	93.80
1 to 2	3.85	0.82	2.91	2.38	2.49	96.29
> 2	3.42	3.28	3.40	4.76	3.71	
	100.00	100.00	100.00	100.00	Sum nonzero means	8.23
Low Use Zone # Speed	1997	2000	2003	2006	Mean	Cumulative % for means
0	89.59	92.83	95.38	91.67	92.37	
up to 1	2.60	0.45	0.77	2.65	1.62	93.99
1 to 2	4.09	2.69	1.15	2.27	2.55	96.54
> 2	3.72	4.04	2.69	3.41	3.46	
	100.00	100.00	100.00	100.00	Sum nonzero means	7.63
High Use Zone # Speed	1997	2000	2003	2006	Mean	Cumulative % for means
0	85.47	86.07	90.78	85.71	87.01	
up to 1	5.13	2.87	1.94	1.98	2.98	89.99
1 to 2	2.99	4.92	3.88	4.76	4.14	94.13
> 2	6.41	6.15	3.40	7.54	5.87	
	100.00	100.00	100.00	100.00	Sum nonzero means	12.99
Low Use Zone # Dogs Off	1997	2000	2003	2006	Mean	Cumulative % for means
0	84.39	81.61	88.08	90.91	86.25	
up to 1	3.35	4.93	4.62	1.14	3.51	89.75
1 to 2	7.81	7.17	4.23	3.79	5.75	95.50
> 2	4.46	6.28	3.08	4.17	4.50	
	100.00	100.00	100.00	100.00	Sum nonzero means	13.75
High Use Zone # Dogs Off	1997	2000	2003	2006	Mean	Cumulative % for means
0	89.74	86.48	90.78	93.25	90.06	
up to 1	6.41	6.97	3.88	3.57	5.21	95.27
1 to 2	2.56	3.28	2.43	1.98	2.56	97.83
> 2	1.28	3.28	2.91	1.19	2.17	
	100.00	100.00	100.00	100.00	Sum nonzero means	9.94
Low Use Zone # Obstruct	1997	2000	2003	2006	Mean	Cumulative % for means
0	93.31	91.48	93.85	90.53	92.29	
up to 1	3.35	1.35	2.31	2.27	2.32	94.61
1 to 2	1.49	3.59	1.54	4.55	2.79	97.40
> 2	1.86	3.59	2.31	2.65	2.60	
	100.00	100.00	100.00	100.00	Sum nonzero means	7.71
High Use Zone # Obstruct	1997	2000	2003	2006	Mean	Cumulative % for means
0	83.33	84.02	82.52	83.73	83.40	
up to 1	7.69	4.51	4.85	2.78	4.96	88.36
1 to 2	4.27	4.10	5.34	3.57	4.32	92.68
> 2	4.70	7.38	7.28	9.92	7.32	
	100.00	100.00	100.00	100.00	Sum nonzero means	16.60

1. Removed outliers (1% of dataset) before analysis.

APPENDIX 2: STATISTICAL ANALYSIS OF TRAIL COUNTER (TC) AND CENSUS DATA 2001-2002

Date	Trail Counter	Census	Ratio
July 3, 2001	502	1956	25.66%
July 13, 2001	335	1374	24.38%
July 19, 2001	419	1770	23.67%
July 27, 2001	464	1956	23.72%
August 2, 2001	403	1736	23.21%
August 16, 2001	649	2127	30.51%
July 9, 2002	374	1178	31.75%
July 18, 2002	471	1487	31.67%
July 25, 2002	422	1643	25.68%
August 2, 2002	511	1704	29.99%
August 13, 2002	636	2104	30.23%
August 16, 2002	531	1840	28.86%
Average	476.41667		

Regression Statistics

Multiple R	0.806966402277151
R Square	0.651194774404128
Adjusted R Square	0.616314251844541
Standard Error	178.25915838376
Observations	12

Analysis of Variance

	df	Sum of Squares	Mean Square	F	Significance F
Regression	1	593241.641593241	641189818.66929525759	0.001511224265161	
		189804	04	49	61
Residual	10	317763.27531776	32754768		
		476863	63		
Total	11	911004.916			
		66667			

	Coefficients	Standard Error	t Statistic	P-value	Lower 95.00%	Upper 95.00%
Intercept	592.880626068	270.3342972	1.931387616000	0.050689774844	-9.46172463692743	1195.22297677416
	614	331919	31	6512		
x1	2.40693239236	0.557057374	3.207979885190	0.01213053021	1.16573120916797	3.64813357557111
	954	6615334	59	39851		

APPENDIX 3: STATISTICAL ANALYSIS FOR ESTIMATED DAILY CARRIAGE ROAD USE AND CONFIDENCE INTERVALS: JULY 1– AUGUST 31, 2013.

[illegible]

APPENDIX 3 (cont.): STATISTICAL ANALYSIS FOR ESTIMATED DAILY CARRIAGE ROAD USE AND CONFIDENCE INTERVALS: MAY 1- JUNE 30, 2013.

Analysis of Variance									
	df	Sum of Square	Mean Square	F	Significance F				
Regression	1	593241.6412	593241.641	18.66929526	0.00151122				
Residual	10	317763.2755	31776.3275						
Total	11	911004.9167							
	Coefficients	Standard Error	t Statistic	P-value	Lower 95.00%	Upper 95.00%	x	x-xbar	x-xbar ²
Intercept	593	270.3342973	2.19313876	0.050689775	-9.4617246	1195.223	502	25.5833	654.507
x1	2	0.557057377	4.32079799	0.001213053	1.16573121	3.6481336	335	-141.42	19998.7
							419	-57.417	3296.67
							464	-12.417	154.174
							403	-73.417	5390.01
							649	172.583	29785
							374	-102.42	10489.2
							471	-5.4167	29.3403
							422	-54.417	2961.17
							511	34.5833	1196.01
							636	159.583	25466.8
							531	54.5833	2979.34
							5717		102401
							476.417		
Regression Statistics									
x ave	476			Multiple R	0.8069664				
sumx-xbar sq	102401			R Square	0.65119477				
numb of obs	12			Adjusted R Square	0.61631425				
				Standard Error	178.259158				
My x observation	1154			Observations	12				
Predicted y	3370								
Error of y	421								
Confidence Intervals									
Have to adjust for A25	t10	80% CI	90% CI	95% CI	60% CI				
		1.372	1.812	2.228	0.879				
		577.047879	762.1069658	937.07192	369.69758				
May	Obsvd x	Pred y	Error of Y	80%CI	90%CI	95% CI	60%CI		
1	43	696.38	304.49	417.77	551.74	678.41	267.65		
2	43	696.38	304.49	417.77	551.74	678.41	267.65		
3	37	681.94	307.15	421.41	556.56	684.33	269.99		
4	136	920.22	265.30	363.99	480.73	591.09	233.20		
5	115	869.68	273.78	375.63	496.10	609.99	240.66		
6	54	722.85	299.66	411.13	542.98	667.64	263.40		
7	81	787.84	288.00	395.13	521.85	641.66	253.15		
8	66	751.74	294.44	403.97	533.52	656.01	258.81		
9	34	674.72	308.48	423.24	558.97	687.30	271.16		
10	69	758.96	293.14	402.19	531.17	653.12	257.67		
11	40	689.16	305.82	419.59	554.15	681.37	268.82		
12	64	746.92	295.30	405.16	535.09	657.94	259.57		
13	73	768.59	291.42	399.83	528.05	649.29	256.16		
14	116	872.08	273.38	375.07	495.36	609.08	240.30		
15	122	886.53	270.93	371.72	490.93	603.63	238.15		
16	95	821.54	282.08	387.01	511.13	628.47	247.95		
17	99	831.17	280.40	384.71	508.09	624.74	246.48		
18	155	965.96	257.84	353.76	467.21	574.47	226.64		
19	154	963.55	258.23	354.29	467.91	575.33	226.98		
20		592.88	323.82	444.28	586.76	721.46	284.63		
21	50	713.23	301.41	413.54	546.16	671.54	264.94		
22		592.88	323.82	444.28	586.76	721.46	284.63		
23		592.88	323.82	444.28	586.76	721.46	284.63		
24		592.88	323.82	444.28	586.76	721.46	284.63		
25		592.88	323.82	444.28	586.76	721.46	284.63		
26	216	1112.78	235.52	323.13	426.76	524.73	207.02		
27	253	1201.83	223.41	306.52	404.83	497.77	196.38		
28	160	977.99	255.92	351.12	463.72	570.18	224.95		
29	70	761.37	292.71	401.60	530.39	652.16	257.29		
30	98	828.76	280.82	385.29	508.85	625.67	246.84		
31	101	835.98	279.57	383.57	506.58	622.88	245.74		
June	Obsvd x	Pred y	Error of Y	80%CI	90%CI	95% CI	60%CI		
1	164	987.62	254.39	349.02	460.95	566.77	223.61		
2	161	980.40	255.53	350.59	463.02	569.33	224.61		
3	149	951.51	260.17	356.96	471.43	579.67	228.69		
4	159	975.58	256.30	351.64	464.41	571.04	225.29		
5	181	1028.54	248.00	340.26	449.38	552.55	217.99		
6	182	1030.94	247.63	339.75	448.71	551.73	217.67		
7	159	975.58	256.30	351.64	464.41	571.04	225.29		
8		592.88	323.82	444.28	586.76	721.46	284.63		
9	202	1079.08	240.40	329.83	435.61	535.81	211.31		
10	235	1158.51	229.15	314.39	415.22	510.55	201.42		
11	58	732.48	297.91	408.74	539.82	663.75	261.86		
12		592.88	323.82	444.28	586.76	721.46	284.63		
13	229	1144.07	231.13	317.11	418.80	514.95	203.16		
14	134	915.41	266.10	365.09	482.17	592.87	233.90		
15	306	1329.40	208.41	285.94	377.65	464.35	183.20		
16	277	1259.60	216.25	296.70	391.85	481.81	190.08		
17	222	1127.22	233.47	320.33	423.06	520.18	205.22		
18	234	1156.10	229.48	314.84	415.81	511.28	201.71		
19	366	1473.82	195.47	268.18	354.19	435.50	171.82		
20	288	1286.08	213.17	292.47	386.26	474.94	187.37		
21	257	1211.46	222.18	304.83	402.59	495.02	195.30		
22	324	1372.73	204.04	279.95	369.72	454.61	179.35		
23	341	1413.64	200.29	274.79	362.92	446.24	176.05		
24	370	1483.45	194.78	267.24	352.94	433.97	171.21		
25	488	1767.46	185.65	254.71	336.40	413.63	163.19		
26	333	1394.39	202.01	277.15	366.04	450.07	177.56		
27	361	1461.78	196.36	269.41	355.81	437.49	172.60		
28	92	814.32	283.34	388.74	513.41	631.28	249.06		
29		592.88	323.82	444.28	586.76	721.46	284.63		
30	401	1558.06	190.23	261.00	344.71	423.84	167.22		

[illegible]31

APPENDIX 4: CARRIAGE ROAD CONTACT SCRIPT AND QUESTIONNAIRE

Hi. Have you folks got a moment? (I'm Charlie Jacobi, a volunteer for the park.) It looks like you've just finished a ride/walk on the carriage roads... (I'd like to make you an offer you can refuse.) We're monitoring the experience on the carriage roads through a brief questionnaire that will take about three minutes of your time. Participation is voluntary. We'd like to have your help if you are interested.

Please use the above script as closely as possible when contacting people. What is in parentheses is optional. Visitors will be contacted as they leave the carriage roads so their experience is complete and the least disturbance is caused. They should have been out there at least 15 minutes. Only one person per party is needed to fill out the questionnaire. Others can help if they like. You must help them with the first question using the map. You can then give them the clipboard for the other questions. Once they are finished, or you are finished with them contact the next party exiting the carriage roads, or returning to their car.

Other Guidelines:

At Bubble Pond and the three lots at Jordan Pond, you should work the parking lots for respondents as they return to their cars. The overflow parking area is often the best spot at Jordan Pond. At Eagle Lake work the main exit to the parking area most of the time, and vary it by going to the boat launch or working the road. At Brown and Parkman you can also work the parking lots. If rain or low traffic causes us to miss our quota, we will go out the next day at the same time and location.



Acadia National Park 2013 Carriage Road Monitoring Survey

OMB Number: 1024-0224

Expires: 8/21/2014

NPS Number:

1. What was your route on the carriage roads today? Please list intersection numbers in order [SHOW CARRIAGE ROAD SYSTEM MAP WITH NUMBERED INTERSECTION].

2. Please indicate the number of times you experienced the following behaviors on your visit to the carriage roads today. If you did not experience a particular behavior today, please enter zero. Please enter a number in each blank.

Bicycles startling you by passing from behind without warning. _____

Bicycles traveling at excessive speeds. _____

Dogs off leash. _____

Visitors obstructing or blocking carriage roads. _____

3. How long (hours and minutes) was your trip on the carriage roads today? _____

4. Which of the following was your primary activity on the carriage roads today? Circle one.

Biking

Walking

Running

Horseback riding

5. Which of the following best describes your residency on Mount Desert Island? Check one.

Permanent Resident___ Summer Resident (returning annually for 1-6 months)___ Not a Resident___

6. Did you use the Island Explorer Bus to reach or leave the carriage roads today? Circle one.

Yes No

7. Did you enter at one carriage road access location and leave at a different location? Circle one.

Yes No

Thank you for your help.

PRIVACY ACT and PAPERWORK REDUCTION ACT statement:

16 U.S.C. 1a-7 authorizes collection of this information. This information will be used by park managers to better serve the public. Response to this request is voluntary. No action may be taken against you for refusing to supply the information requested. Permanent data will be anonymous. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Burden estimate statement: Public reporting for this form is estimated to average 3 minutes per response. Direct comments regarding the burden estimate or any other aspect of this form to: Charlie Jacobi, Acadia National Park, PO Box 177, Bar Harbor, ME 04609, Charlie_jacobi@nps.gov.

Number _____ Date/Time _____ Site _____ Interviewer _____

(The above information will be entered by the interviewer.)

Data Analysis and Topic Areas. Data from these questions will be analyzed as follows.

Question 1 will allow us to sort visitors into either the high use zone or the low use zone established for the carriage roads. Different standards exist for the number of behaviors in each zone. **Topic Area 3:** Trip Behaviors.

Question 2 will allow us to calculate the average number of occurrences for each behavior in each zone to compare with the standards. **Topic Area 5:** Crowding and Visitor Experiences

Question 3 will allow us to calculate the average length of a carriage road visit for the entire sample to verify it is still about two hours and normalize the behavior occurrences per unit of time. **Topic Area 2:** Trip Behaviors.

Question 4 will allow a comparison of the percentages of various user types to previous research and monitoring to show whether user populations are changing. The ratio of hikers to bikers is important to know and can help interpret results of monitoring. **Topic Area 3:** Trip Behaviors

Question 5 is important because visitors and residents were found to have very different standards for the number of acceptable behaviors. Analysis by residency also helps interpret the results of monitoring. **Topic Area 1:** Respondent Characteristics and Knowledge.

Question 6 will let us know how many carriage road visitors are using the new Island Explorer bus to access the carriage roads. This is important because use of the bus may change the locations used to access the carriage roads or the way carriage roads are used (for example, more one-way trips may take place). **Topic Area 3:** Trip Behaviors.

Question 7 allows us to track more accurately one way trips on the carriage roads, with or without the use of the Island Explorer bus. Too many one-way trips would invalidate the simulation model, which was built mostly on round trips from the same point. **Topic Area 3:** Trip Behaviors.

APPENDIX 5: SAMPLING PLAN AND DEVELOPMENT

	AM 9-10	AM 10-11	AM 11-12	PM 12-1	PM 1-2	PM 2-3	PM 3-4	PM 4-5	PM 5-6	Total	Low Zone	High Zone
VC	254	336	304	248	191	130	122	82	57	1724	2650	3200
DB	459	712	659	564	391	322	218	208	193	3726	3016	3034
EL	600	716	626	438	373	401	360	232	164	3910	802	2479
ELB	323	782	610	521	356	296	221	100	105	3314	6468	1888
BPS	83	97	114	132	61	104	44	81	61	777		1635
BPN	116	83	109	80	87	74	100	61	40	750		1261
JPE	101	152	178	173	109	75	59	41	13	901		910
JPW	166	322	434	323	320	233	137	105	45	2085		14407
BR	225	405	322	199	143	143	145	105	54	1741		
PK	235	221	263	145	102	100	115	82	68	1331		
WWS	88	79	110	63	102	81	67	24	2	616		
	2650	3905	3729	2886	2235	1959	1588	1121	802	20875		

	AM 9-10	AM 10-11	AM 11-12	PM 12-1	PM 1-2	PM 2-3	PM 3-4	PM 4-5	PM 5-6		Low Zone
VC	254	336	304	248	191	130	122	82	57		VC 0.048083
DB	459	712	659	564	391	322	218	208	193		DB 0.100804
EL	600	716	626	438	373	401	360	232	164		EL/ELB 0.184292
ELB	323	782	610	521	356	296	221	100	105		BPS/BPN 0.046382
BPS	83	97	114	132	61	104	44	81	61		JPE/JPW 0.050247
BPN	116	83	109	80	87	74	100	61	40		BR 0.269171
JPE	101	152	178	173	109	75	59	41	13		PK 0.205782
JPW	166	322	434	323	320	233	137	105	45		WWS 0.095238
BR	225	3200	3034	2479	1888	1635	1261	910	54		1
PK	235								68		
WWS	88								2		
	2650								802		

	AM 9-10	AM 10-11	AM 11-12	PM 12-1	PM 1-2	PM 2-3	PM 3-4	PM 4-5	PM 5-6		High Zone
BR		405	322	199	143	143	145	105	1462		VC 0.098077
PK		221	263	145	102	100	115	82	1028		DB 0.213369
WWS		79	110	63	102	81	67	24	526		EL/ELB 0.418685
		705	695	407	347	324	327	211	3016		BPS/BPN 0.085167
											JPE/JPW 0.184702
											1

This spreadsheet shows how the sampling regime for distributing carriage road questionnaires was developed for use in 2006.

This shows all the census data for 2001-2002 distributed by location and time of day.

The heavy black line circumscribes the high use zone data which totals 14407.

All else is low use zone data which totals 6468. Percentages were calculated by adding the appropriate numbers and dividing by 6468 or 14407.

Percentages were then used to allocate questionnaires to each site in each zone as shown below.

High Zone	Percent	N Total	N=10-130	N=130-5
VC	0.098077	24.51933	13	12
DB	0.213369	53.34213	26	27
EL/ELB	0.418685	104.6713	53	52
BP	0.085167	21.29173	10	11
JP	0.184702	46.17547	23	23
		250	125	125

Low Zone	Percent	N Total	N<10	N>5	N=10-130	N=130-5
VC	0.048083	12.02072	6	6		
DB	0.100804	25.20099	13	12		
EL/ELB	0.184292	46.07297	23	23		
BP	0.046382	11.59555	6	6		
JP	0.050247	12.56184	6	7		
BR	0.269171	67.29283	6	5	28	28
PK	0.205782	51.44558	6	6	20	19
WWS	0.095238	23.80952	2	2	10	10
		250	68	67	58	57

High Zone	Date	Location	Time	N	DOW
	07/07/06	DB	130-5	14	F
	07/10/06	BP	10-130	10	M
	07/13/06	EL	130-5	13	H
	07/15/06	DB	10-130	13	S
	07/18/06	EL	130-5	13	T
	07/22/06	DB	10-130	13	S
	07/23/06	JP	10-130	11	SU
	07/24/06	BP	130-5	11	M
	07/29/06	VC	130-5	12	S
	07/31/06	EL	10-130	14	M
	08/01/06	EL	10-130	13	T
	08/06/06	JP	10-130	12	SU
	08/08/06	EL	10-130	13	T
	08/09/06	EL	130-5	13	W
	08/11/06	VC	10-130	13	F
	08/17/06	DB	130-5	13	H
	08/20/06	EL	10-130	13	SU
	08/22/06	JP	130-5	11	T
	08/25/06	EL	130-5	13	F
	08/27/06	JP	130-5	12	SU
				250	

SU	4	SU	5
M	3	M	4
T	4	T	3
W	1	W	5
H	2	H	3
F	3	F	1
S	3	S	7
	20		28

Low Zone	Date	Location	Time	N	DOW	
	07/01/06	EL	>5	11	S	Brown
	07/01/06	BP	>5	6	S	10 +130 0.839747 56.50897
	07/02/06	DB	>5	12	SU	<10 >5 0.160253 10.78386
	07/06/06	PK	130-5	10	H	1 67.29283
	07/06/06	VC	<10	6	H	
	07/08/06	PK	10-130	10	S	
	07/09/06	BR	>5	5	SU	10 +130 0.772352 39.73408
	07/16/06	WWS	>5	2	SU	<10 >5 0.227648 11.7115
	07/22/06	JP	>5	7	S	1 51.44558
	07/23/06	PK	10-130	10	SU	
	07/23/06	WWS	<10	2	SU	
	07/24/06	BP	<10	6	M	Wildwoods
	07/25/06	DB	<10	13	T	10 +130 0.853896 20.33086
	07/27/06	BR	130-5	14	H	<10 >5 0.146104 3.478664
	08/05/06	BR	<10	6	S	1 23.80952
	08/05/06	EL	<10	11	S	
	08/07/06	EL	<10	12	M	
	08/07/06	EL	>5	12	M	
	08/09/06	BR	130-5	14	W	
	08/11/06	BR	10-130	14	F	
	08/12/06	JP	<10	6	S	
	08/21/06	WWS	130-5	10	M	
	08/22/06	PK	>5	6	T	
	08/23/06	PK	130-5	9	W	
	08/29/06	BR	10-130	14	T	
	08/30/06	WWS	10-130	10	W	
	08/30/06	PK	<10	6	W	
	08/30/06	VC	>5	6	W	
				250		

APPENDIX 6: ESTIMATED DAILY CARRIAGE ROAD USE FROM TRAIL COUNTER COUNTS: JULY 1 TO AUGUST 31, 2013

	Coefficient 2.406932392	Intercept 592.8806									
MAY	DATAHOGTTL	CTRRTL	DLYUSE	JUNE	DATAHOGTTL	CTRRTL	DLYUSE	JULY	DATAHOGTTL	CTRRTL	DLYUSE
1	43		696	1	164		988	1	463		1707
2	43		696	2	161		980	2	236		1161
3	37		682	3	149		952	3	708		2297
4	136		920	4	159		976	4	357		1452
5	115		870	5	181		1029	5	714		2311
6	54		723	6	182		1031	6	616		2076
7	81		788	7	159		976	7	362		1464
8	66		752	8				8	394		1541
9	34		675	9	202		1079	9	557		1934
10	69		759	10	235		1159	10	601		2039
11	40		689	11	58		732	11	433		1635
12	64		747	12				12	410		1580
13	73		769	13	229		1144	13	378		1503
14	116		872	14	134		915	14	423		1611
15	122		887	15	306		1329	15	481		1751
16	95		822	16	277		1260	16	506		1811
17	99		831	17	222		1127	17	639		2131
18	155		966	18	234		1156	18	490		1772
19	154		964	19	366		1474	19	485		1760
20				20	288		1286	20	324		1373
21	50		713	21	257		1211	21	611		2064
22				22	324		1373	22	730		2350
23				23	341		1414	23			
24				24	370		1483	24	984		2961
25				25	488		1767	25	765		2434
26	216		1113	26	333		1394	26			
27	253		1202	27	361		1462	27	691		2256
28	160		978	28	92		814	28	462		1705
29	70		761	29				29	567		1958
30	98		829	30	401		1558	30	810		2542
31	101		836		N=27	Total	32069	31	661		2184
	N=26	Total Average	21538 828				1188		N=30	Total Average	55363 1909
AUGUST	DATAHOGTTL	CTRRTL	DLYUSE	SEPT	DATAHOGTTL	CTRRTL	DLYUSE	OCT	DATAHOGTTL	CTRRTL	DLYUSE
1	722		2331	1	625		2097	1	220		1122
2	145		942	2	299		1313	2	197		1067
3	592		2018	3				3	194		1060
4	590		2013	4	387		1524	4	169		1000
5	837		2607	5	254		1204	5	258		1214
6	971		2930	6	429		1625	6	243		1178
7	874		2697	7	358		1455	7	114		867
8	367		1476	8	109		855	8	194		1060
9				9	619		2083	9	218		1118
10	713		2309	10	286		1281	10	227		1139
11	689		2251	11	272		1248	11	254		1204
12	856		2653	12	263		1226	12	327		1380
13	676		2220	13	76		776	13	420		1604
14	965		2916	14	377		1500	14	236		1161
15	937		2848	15	395		1544	15	152		959
16	740		2374	16	160		978	16	127		899
17	577		1982	17	310		1339	17	109		855
18	683		2237	18	331		1390	18	109		855
19	835		2603	19	262		1223	19	231		1149
20	866		2677	20	266		1233	20	156		968
21	839		2612	21	621		2088	21	158		973
22	687		2246	22	258		1214	22	75		773
23	604		2047	23	262		1223	23	76		776
24	514		1830	24	163		985	24	56		728
25	508		1816	25	243		1178	25	81		788
26	467		1717	26	300		1315	26	87		802
27	615		2073	27	316		1353	27	68		757
28	659		2179	28	277		1260	28	50		713
29	272		1248	29	313		1346	29	54		723
30	452		1681	30	170		1002	30	25		653
31	524		1854		N=29	Total	38858	31	12		622
	N=30	Total Average	65386 2180				1340		N=31	Total Average	30166 973

APPENDIX 7: ESTIMATED DAILY CARRIAGE ROAD USE AND A COMPARISON OF THE TOP TEN DAYS FOR JULY - AUGUST 1995, AND 1997 – 2013.

July	95	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	1894	1136		1152	1111	1076	1604	1796	1284	997	1727	1476	1950		1397	1625	1777	1707
2	2758	1495	1416	937	2273	2066	1134	1796	1146	1683	1573	2047	1936		1539	1936	2160	1161
3	2937	1090	1672	1680	2036	1587	1175	1772	1392	1741	2302	1922	1734		1676	2526	2355	2297
4	1631	1446	1927	1721	1721	1362	1481	1674	1854	1462	1532	1426	1585		1847	1498	1267	1452
5	1607	2384	663	1359	1862	1598	2299	1734	1674	1611	1707		2119		1621	1792	1962	2311
6	2018	1819	1438		1862	1511	1931	1551	1168	1341	1618	1779	1585		1659	1893	2232	2076
7		1476	1490		875	1294	1385	1512	1274	1536	1597	1702			1748	1637	1529	1464
8		1990	1432		1215	1041	1806	1924	1288	1486	1185	1036			1585	1914	1597	1541
9	1597	924	1060	1495	1272	1111	1493	1532	976		1445	1433			1481	1118	1647	1934
10	723	1228	888		1011		1842	1387	1279		1517	1741	1539		1207	1700	2011	2039
11	2125	1606	970	1677	1688	1250	1705	834	1481	1209	1524	1262	1392		930	1751	1941	1635
12	1576	1647	1389	1634	1536	1193	1464	1544	1568	1421	1430	1320			1640	1604	1700	1580
13	1497	1234	1636	1680	1188	1160	1471	1484	1577	1548	1301	1529	1551		1895	1782	1474	1503
14	1155	1606	1427	1808	837	1237	1366	1782	1344	1510	1370	1469	1236			1934	1520	1611
15	1234	1876	1226	1541	1011	1111	1650	2088		1450	1120	1421	1801		1734	1635	1751	1751
16	1559	1359	1258	1490	774	1130	1777	1570		1211	1546	1823	1717		1825	1613	2126	1811
17	457	1650	1275	1111	752	1163	1844	1163	1349	1252	1681	1974	1625		1303	1705	1890	2131
18	277	1413	1492	970	546	1337	1727	1476	1452	1678	1640	1666	1604		1577	2100	1938	1772
19	2616	1585	1408	1745	1642	1362	1274	1580		1647	1770	1476	1464		1909	2181	1984	1760
20	1801	1966	1095	1751	1555	1460	1508	1508	1430	1418	1654		1517		2249	2254	1909	1373
21	1327	1669	1849	1927	1296	1315	1688	2011	1729	1693		1539	1881		2242	2107	1700	2064
22	1832		1582	1808	657	1253	1849	1618	1539	1457	1558	1541	2131		1943	1606	1873	2350
23	1752	2088	1492	1509	1479	1566	1866	1293	1621	1433	1332	1982	2189		1698	1293	2011	
24	1656	1960	1220	1392	1704	1359	2066	1135	930	1430	1999	2078			1435	2126	1890	2961
25	2056	1552	1672	992	1849	1579	1609	2015	1828	1527	1955	1837			1727	2374	2665	2434
26	1949	1919	1606	2099	1715	1073	1633	1469	1905	1979	1948	1669	1948		2535	1763	2388	
27	1645	1878	1759	2023		1484	1397	1325	2198	1662	1707	1739	1741		2208	2817	1635	2256
28	1358	1884	1930	1849	891	1596	1623	1938	1202	1859	1625	1548	2206		2285	2350	1710	1705
29	540	2344	1519	1775	1411	1827	1004	2114	2051	1587	1327	1587	2078		1751	2268	1469	1958
30	1645	2012	1732	1525	1813		1808	1996	1630	1452	1657	1936	2386		2013	1317	2542	2542
31	1759		1422	1650	1802	1402	2116	1895	1714	1784	1909	2186	2078		1905	2011	2441	2184
Total	46981	48236	42945	42300	41384	39503	50595	50516	41883	44067	48244	48144	44991		52562	58228	59095	55363
Average	1620	1663	1432	1567	1379	1362	1632	1630	1496	1520	1608	1660	1800		1752	1878	1906	1909
+2000 Days	6	4	0	2	2	1	3	4	2	0	1	3	7		6	11	10	12
Top Ten																		
July	95	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
	2937	2384	1930	2099	2273	2066	2299	2114	2198	1979	2302	2186	2386		2535	2817	2665	2961
	2758	2344	1927	2023	2036	1827	2116	2088	2051	1859	1989	2078	2206		2285	2526	2542	2542
	2616	2088	1849	1927	1862	1598	2066	2015	1905	1784	1955	2047	2189		2249	2374	2441	2434
	2125	2012	1759	1849	1862	1596	1931	2011	1854	1741	1946	1982	2131		2242	2350	2388	2350
	2056	1990	1732	1808	1849	1587	1866	1996	1828	1693	1909	1974	2119		2208	2268	2355	2311
	2018	1966	1672	1808	1813	1579	1849	1938	1729	1683	1770	1936	2078		2013	2254	2232	2297
	1949	1960	1672	1775	1802	1566	1844	1924	1674	1678	1727	1922	2078		1943	2181	2160	2256
	1894	1919	1636	1751	1721	1511	1842	1895	1630	1662	1707	1837	1950		1909	2126	2126	2184
	1832	1884	1606	1745	1715	1484	1808	1796	1621	1647	1707	1823	1948		1905	2107	2011	2131
	1801	1876	1582	1721	1704	1460	1806	1796	1577	1611	1681	1779	1936		1895	2100	2011	2076
Total	21986	20423	17365	18508	18637	16274	19427	19573	18067	17338	18693	19564	21020	0	21184	23103	22931	23543
Average	2199	2042	1737	1851	1864	1627	1943	1957	1807	1734	1869	1956	2102	0	2118	2310	2293	2354
+2000 Days	6	4	0	2	2	1	3	4	2	0	1	3	7		6	11	10	12

**APPENDIX 7 (cont): ESTIMATED DAILY CARRIAGE ROAD USE AND A COMPARISON OF THE TOP TEN DAYS
FOR JULY - AUGUST 1995, AND 1997 – 2013.**

Aug	95	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
1	1628	1,998	1549	1460	1899	1857	2044	1787	1503	1344	2006	2174	1084	1710	2116	2299	1909	2331
2	1611	1,685	1479	2066	1022	1318	1823		1847	2396	1676	1941		1849	2333	1779	2704	942
3	2357	1,887	1783	2137	1389	1419	1705	1871	1991	1909	1890	1722		2311	2598	3130	2155	2018
4	315	2,616	2292	2205	1655	1443	1779	1163	2201	1977	1869	1604		2547	2562	2410	2059	2013
5	2561	1,900	2333	2107	1451	1680	2051		1794	1339	1931	1717	2706	2143	2335	2232	2244	2607
6	2163		1985	1998	1530	1677	2367	1534	1837	1565	1698	2215	2338	2526	2263	1991	2393	2930
7	1953		1653	1892		2072	2663		1527	1486	1883	2039	2169	2047	2066	1183	2904	2697
8	2070	1,558	1593	973	3132	1756	2227		1512	1678	2620			1804	2302	1009	2677	1476
9	1466	1,881	1547	2330	2403	1245	2006		1999	1917	2179	2906	1296	2136	2131	3212	2545	
10	754	2,325	2069	2613	2431	1541	1917		1890	1912	1931	2220		2136	2487	2983	1262	2309
11	1783	2,714	1492	2316	2504	1571	1628		1970	1936	1922	1893		2331	2364	2670	3375	2251
12	1956	2,795	2246	1704	1710	1732	2254		2008	1698	1678	2018		2196	2511	2465	1204	2653
13	2198	2,512	2267	2319	1985	1549	2124	1272		1546	1970	1849	3024	2463	2237	1996	3132	2220
14	1970		1781	1302	1933	2142	1873	2059	1211	1459	2076	2605	2689	2003	1982	2148	2704	2916
15	2084	2,229	1783	578	1626	1933	2148	2165	937	1832	1719	2035	2376	1647	2213	1938	2400	2848
16	2460		1294	2504	1609	1699	1871	1544	1471	2102	2605	2335		1378	1792	1233	593	2374
17	2046	1,650	1966	2613	2811	1408	1565	1871	2237	2393	2244	2102	2210	1943	3224	3484	2656	1982
18	1552	2,270	1422	2118	1802	1354	1654	2112	1943	1830	1989	1125	2663	1881	2831	2718	1719	2237
19	2315		2189	2191	1751	1359	1972	2076	1753	1573	2044	2403	1459	2078	2535	2116	2203	2603
20	1911	2,289	2267	1868	1198	1190	1895	2247	1854	1488	1094	2208	2651	2417	2381	1886	2540	2677
21	1635		1674	1492	2017		2020	1984	1313	1486	1688	2249	2429	2104	2018	2338	2509	2612
22	1770		1729	1291	2112	1941	2107	1859	1808	2061	2511	2165	2150	1751	1823	1909	2425	2246
23	1514		1898	2164	1930	1606	1739	1775	1799	1974	2545	2003	1804	1262	2124	2904	2535	2047
24	1604			2180	1538	1636	1565	1731	1779	1782	2290	1375	1924	1974	2518	2509	2059	1830
25	1576		1688	2115	1519	1245	1139	1765	1640	2020	2131	1618	1772	2039	1719	1900	1794	1816
26	1714	2,004	1642	2295	1422	1451	1447	1681	1719	1599	1705	1313	1931	2035		2100	1844	1717
27	1683	1,748	1503	1536	1291	1258	1676	1695	1515	1532	1666	1842	2006	1890	2410	1373	1770	2073
28	1552	1,160	1367	1348	1400	1544	1775	1789	1211	1339	923	1681	1520	1828	1695	682	1166	2179
29	1656	1,209		1136	1277	1419	1681	1488	1548	1120	1837	1671	1678	737	1647	1332	2376	1248
30	1745	1,558		1179	1095	1397	1438	1573	1168		1806	1527	1972	1308	1471	1623	1996	1681
31	1393	1,680		1345	1207	1125	1712	2006	1209		1536	1402		1329	1339	1556	1587	1854
Total	54995	41668	48491	57375	52639	46567	57865	41047	50196	50294	59661	57956	51696	60602	66272	63432	66893	65386
Average	1774	1984	1796	1851	1755	1552	1867	1785	1673	1734	1925	1932	2068	1955	2209	2046	2158	2180
+2000 Days	9	9	7	16	7	2	11	6	3	5	11	15	14	16	22	15	20	21
Top Ten																		
Aug	95	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
	2561	2795	2333	2613	3132	2142	2663	2246	2237	2396	2620	2906	3024	2547	3224	3484	3132	2930
	2460	2714	2292	2613	2811	2072	2367	2165	2201	2393	2605	2605	2706	2526	2983	3375	2904	2916
	2357	2616	2267	2504	2504	1941	2254	2112	2008	2102	2545	2403	2689	2487	2831	3212	2704	2848
	2315	2512	2267	2330	2431	1933	2227	2076	1999	2061	2511	2335	2663	2463	2670	3130	2704	2697
	2198	2325	2246	2319	2403	1857	2148	2059	1991	2020	2290	2249	2651	2417	2598	2904	2677	2677
	2153	2289	2189	2316	2112	1756	2124	2006	1970	1977	2244	2220	2429	2364	2562	2718	2656	2653
	2084	2270	2069	2205	2017	1732	2107	1984	1943	1974	2179	2215	2376	2311	2535	2509	2545	2612
	2070	2229	1985	2191	1985	1699	2051	1871	1890	1936	2131	2208	2338	2196	2518	2465	2540	2607
	2046	2004	1966	2180	1933	1680	2044	1871	1854	1917	2076	2174	2331	2143	2511	2410	2535	2603
	1970	1998	1898	2164	1930	1677	2020	1859	1847	1912	2044	2165	2210	2136	2410	2338	2509	2374
Total	22214	23752	21512	23435	23259	18488	22005	20248	19940	20688	23244	23480	25418	23591	26843	28544	26905	26917
Average	2221	2375	2151	2344	2326	1849	2201	2025	1994	2069	2324	2348	2542	2359	2684	2854	2691	2692
+2000 Days	9	9	7	16	7	2	11	6	3	5	11	15	14	16	22	15	20	21

APPENDIX 8: DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS FOR JULY AND AUGUST 1995, AND 1997- 2013.

All Days		All Days		All Days		All Days		All Days	
Jul-95		Jul-97		Jul-98		Jul-99		Jul-00	
Mean	1620.034483	Mean	1663.310345	Mean	1431.5	Mean	1566.666667	Mean	1379.466667
Standard Error	114.2222197	Standard Error	66.76263194	Standard Error	54.55573445	Standard Error	60.30171056	Standard Error	83.30158108
Median	1645	Median	1647	Median	1435	Median	1650	Median	1445
Mode	1645	Mode	1606	Mode	1672	Mode	1680	Mode	1862
Standard Deviation	615.1054778	Standard Deviation	359.5277759	Standard Deviation	298.814064	Standard Deviation	313.3368794	Standard Deviation	456.2615503
Sample Variance	378354.7488	Sample Variance	129260.2217	Sample Variance	89289.84483	Sample Variance	98180	Sample Variance	208174.6023
Kurtosis	0.665640087	Kurtosis	-0.326092813	Kurtosis	0.390465969	Kurtosis	-0.225896149	Kurtosis	-0.99074012
Skewness	-0.17862501	Skewness	-0.016756421	Skewness	-0.557202449	Skewness	-0.621215609	Skewness	-0.12108225
Range	2660	Range	1460	Range	1267	Range	1162	Range	1727
Minimum	277	Minimum	924	Minimum	663	Minimum	937	Minimum	546
Maximum	2937	Maximum	2384	Maximum	1930	Maximum	2099	Maximum	2273
Sum	46981	Sum	48236	Sum	42945	Sum	42300	Sum	41384
Count	29	Count	29	Count	30	Count	27	Count	30
Confidence Level(90.0%)	194.3069483	Confidence Level(90.0%)	113.5719767	Confidence Level(90.0%)	92.69712116	Confidence Level(90.0%)	102.851677	Confidence Level(90.0%)	141.5399652
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
Jul-95		Jul-97		Jul-98		Jul-99		Jul-00	
Mean	2198.6	Mean	2042.3	Mean	1736.5	Mean	1850.6	Mean	1863.7
Standard Error	130.7379227	Standard Error	57.15826955	Standard Error	40.30942818	Standard Error	40.06611203	Standard Error	54.95372801
Median	2037	Median	1978	Median	1702	Median	1808	Median	1831
Mode	#N/A	Mode	#N/A	Mode	1672	Mode	1808	Mode	1862
Standard Deviation	413.4296124	Standard Deviation	180.7503189	Standard Deviation	127.4696042	Standard Deviation	126.700171	Standard Deviation	173.7789464
Sample Variance	170924.0444	Sample Variance	32670.67778	Sample Variance	16248.5	Sample Variance	16052.93333	Sample Variance	30199.12222
Kurtosis	-0.73391113	Kurtosis	0.493374797	Kurtosis	-1.135260857	Kurtosis	0.123065804	Kurtosis	2.965064652
Skewness	0.953735093	Skewness	1.313348998	Skewness	0.545268094	Skewness	1.090386049	Skewness	1.668593455
Range	1136	Range	508	Range	348	Range	378	Range	569
Minimum	1801	Minimum	1876	Minimum	1582	Minimum	1721	Minimum	1704
Maximum	2937	Maximum	2384	Maximum	1930	Maximum	2099	Maximum	2273
Sum	21986	Sum	20423	Sum	17365	Sum	18506	Sum	18637
Count	10	Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	239.6573757	Confidence Level(90.0%)	104.7775625	Confidence Level(90.0%)	73.89173369	Confidence Level(90.0%)	73.44570772	Confidence Level(90.0%)	100.736389
Top Ten CL is:	wider		less wide		less wide		less wide		less wide

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days		All Days		All Days	
Jul-01		Jul-02		Jul-03		Jul-04		Jul-05	
Mean	1362.172414	Mean	1632.096774	Mean	1629.548387	Mean	1486.79812	Mean	1519.5496
Standard Error	44.59144225	Standard Error	52.13001436	Standard Error	54.13674122	Standard Error	57.4250154	Standard Error	38.4226321
Median	1337	Median	1633	Median	1580	Median	1456.96935	Median	1509.92187
Mode	1362	Mode	#N/A	Mode	1796	Mode	#N/A	Mode	#N/A
Standard Deviation	240.1322655	Standard Deviation	290.2476362	Standard Deviation	301.4206185	Standard Deviation	303.86462	Standard Deviation	206.912206
Sample Variance	57663.50493	Sample Variance	84243.69032	Sample Variance	90854.38925	Sample Variance	92333.7071	Sample Variance	42812.661
Kurtosis	1.245965276	Kurtosis	0.113982038	Kurtosis	0.224954801	Kurtosis	0.04646263	Kurtosis	0.69404038
Skewness	0.997441712	Skewness	-0.002153612	Skewness	-0.469422201	Skewness	0.40817947	Skewness	-0.1972533
Range	1025	Range	1295	Range	1280	Range	1268.45337	Range	982.028416
Minimum	1041	Minimum	1004	Minimum	834	Minimum	929.851161	Minimum	997.245268
Maximum	2066	Maximum	2299	Maximum	2114	Maximum	2198.30453	Maximum	1979.27368
Sum	39503	Sum	50595	Sum	50516	Sum	41630.3475	Sum	44066.9383
Count	29	Count	31	Count	31	Count	28	Count	29
Confidence Level(90.0%)	75.85588062	Confidence Level(90.0%)	88.47823254	Confidence Level(90.0%)	91.88417148	Confidence Level(90.0%)	97.8113639	Confidence Level(90.0%)	65.3619269
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
Jul-01		Jul-02		Jul-03		Jul-04		Jul-05	
Mean	1627.4	Mean	1942.7	Mean	1957.3	Mean	1806.69663	Mean	1733.76658
Standard Error	58.11295514	Standard Error	52.03610926	Standard Error	34.43933475	Standard Error	63.916582	Standard Error	35.5324965
Median	1583	Median	1857.5	Median	1967	Median	1778.29483	Median	1688.03486
Mode	#N/A	Mode	#N/A	Mode	1796	Mode	#N/A	Mode	#N/A
Standard Deviation	183.7692998	Standard Deviation	164.5526258	Standard Deviation	108.9067389	Standard Deviation	202.121979	Standard Deviation	112.36362
Sample Variance	33771.15556	Sample Variance	27077.56667	Sample Variance	11860.67778	Sample Variance	40853.2946	Sample Variance	12625.5831
Kurtosis	3.317218535	Kurtosis	1.089471586	Kurtosis	-0.79158755	Kurtosis	-0.0903076	Kurtosis	1.43068006
Skewness	1.849467313	Skewness	1.373238114	Skewness	-0.235893441	Skewness	0.82333635	Skewness	1.33574425
Range	606	Range	493	Range	318	Range	620.988557	Range	368.260656
Minimum	1460	Minimum	1806	Minimum	1796	Minimum	1577.31597	Minimum	1611.01303
Maximum	2066	Maximum	2299	Maximum	2114	Maximum	2198.30453	Maximum	1979.27368
Sum	16274	Sum	19427	Sum	19573	Sum	18066.9663	Sum	17337.6658
Count	10	Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	106.527609	Confidence Level(90.0%)	95.38806432	Confidence Level(90.0%)	63.13118957	Confidence Level(90.0%)	117.166312	Confidence Level(90.0%)	65.1350786
Top Ten CL is:	wider		wider		less wide		wider		same

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days		All Days		All Days	
Jul-06		Jul-07		Jul-08		Jul-09		Jul-10	
Mean	1608.12471	Mean	1660.14765	Mean	1799.62025	no data	Mean	1752.05927	
Standard Error	45.9053025	Standard Error	50.0018322	Standard Error	58.8632987		Standard Error	62.5757304	
Median	1607.40263	Median	1666.37247	Median	1740.98738		Median	1730.15618	
Mode	1707.29032	Mode	1476.22481	Mode	1584.53677		Mode	#N/A	
Standard Deviation	251.433697	Standard Deviation	269.268107	Standard Deviation	294.316494		Standard Deviation	342.741391	
Sample Variance	63218.904	Sample Variance	72505.3134	Sample Variance	86622.1984		Sample Variance	117471.661	
Kurtosis	0.95426324	Kurtosis	-0.2662505	Kurtosis	-0.7953623		Kurtosis	0.49923331	
Skewness	0.49971356	Skewness	-0.0376075	Skewness	0.13292562		Skewness	0.06678409	
Range	1181.8038	Range	1150.51368	Range	1150.51368		Range	1605.42391	
Minimum	1119.99882	Minimum	1035.75619	Minimum	1235.53157		Minimum	929.851161	
Maximum	2301.80262	Maximum	2186.26987	Maximum	2386.04526		Maximum	2535.27507	
Sum	48243.7413	Sum	48144.2818	Sum	44990.5063		Sum	52561.778	
Count	30	Count	29	Count	25		Count	30	
Confidence Level(90.0%)	77.9989388	Confidence Level(90.0%)	85.0596621	Confidence Level(90.0%)	100.708162		Confidence Level(90.0%)	106.324115	
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
Jul-06		Jul-07		Jul-08		Jul-09		Jul-10	
Mean	1869.27687	Mean	1956.40783	Mean	2102.02724	no data	Mean	1869.27687	
Standard Error	60.9608922	Standard Error	39.6787102	Standard Error	44.1548014		Standard Error	60.9608922	
Median	1839.67161	Median	1955.20436	Median	2098.41684		Median	1839.67161	
Mode	1707.29032	Mode	#N/A	Mode	2077.95791		Mode	1707.29032	
Standard Deviation	192.775268	Standard Deviation	125.475099	Standard Deviation	139.629742		Standard Deviation	192.775268	
Sample Variance	37162.3038	Sample Variance	15744.0004	Sample Variance	19496.4648		Sample Variance	37162.3038	
Kurtosis	1.73648735	Kurtosis	-0.3083577	Kurtosis	0.55974236		Kurtosis	1.73648735	
Skewness	1.25409256	Skewness	0.35402446	Skewness	0.66059936		Skewness	1.25409256	
Range	620.988557	Range	406.771574	Range	450.096357		Range	620.988557	
Minimum	1680.81407	Minimum	1779.4983	Minimum	1935.9489		Minimum	1680.81407	
Maximum	2301.80262	Maximum	2186.26987	Maximum	2386.04526		Maximum	2301.80262	
Sum	18692.7687	Sum	19564.0783	Sum	21020.2724		Sum	18692.7687	
Count	10	Count	10	Count	10		Count	10	
Confidence Level(90.0%)	111.748199	Confidence Level(90.0%)	72.7355564	Confidence Level(90.0%)	80.940737		Confidence Level(90.0%)	111.748199	
Top Ten CL is:	wider		less wide		less wide			wider	

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days			
<i>Jul-10</i>		<i>Jul-11</i>		<i>Jul-12</i>		<i>Jul-13</i>	
Mean	1752.05927	Mean	1878.33781	Mean	1906.28928	Mean	1909.05766
Standard Error	62.5757304	Standard Error	67.4428875	Standard Error	60.7692847	Standard Error	75.2051299
Median	1730.15618	Median	1791.53296	Median	1890.21719	Median	1810.78842
Mode	#N/A	Mode	#N/A	Mode	2010.56381	Mode	#N/A
Standard Deviation	342.741391	Standard Deviation	375.506106	Standard Deviation	338.349058	Standard Deviation	404.992019
Sample Variance	117471.661	Sample Variance	141004.835	Sample Variance	114480.085	Sample Variance	164018.536
Kurtosis	0.49923331	Kurtosis	0.20497398	Kurtosis	-0.2285023	Kurtosis	0.15148644
Skewness	0.06678409	Skewness	0.3453103	Skewness	0.44065445	Skewness	0.50458821
Range	1605.42391	Range	1699.29427	Range	1398.42772	Range	1800.38543
Minimum	929.851161	Minimum	1117.59189	Minimum	1266.8217	Minimum	1160.91667
Maximum	2535.27507	Maximum	2816.88616	Maximum	2665.24942	Maximum	2961.3021
Sum	52561.778	Sum	58228.4721	Sum	59094.9678	Sum	55362.672
Count	30	Count	31	Count	31	Count	29
Confidence Level(90.0%)	106.324115	Confidence Level(90.0%)	114.468175	Confidence Level(90.0%)	103.14133	Confidence Level(90.0%)	127.933773
Top Ten		Top Ten		Top Ten			
<i>Jul-10</i>		<i>Jul-11</i>		<i>Jul-12</i>		<i>Jul-13</i>	
Mean	1869.27687	Mean	1956.40783	Mean	2102.02724	Mean	2354.27375
Standard Error	60.9608922	Standard Error	39.6787102	Standard Error	44.1548014	Standard Error	80.3944244
Median	1839.67161	Median	1955.20436	Median	2098.41684	Median	2304.20956
Mode	1707.29032	Mode	#N/A	Mode	2077.95791	Mode	#N/A
Standard Deviation	192.775268	Standard Deviation	125.475099	Standard Deviation	139.629742	Standard Deviation	254.229492
Sample Variance	37162.3038	Sample Variance	15744.0004	Sample Variance	19496.4648	Sample Variance	64632.6347
Kurtosis	1.73648735	Kurtosis	-0.3083577	Kurtosis	0.55974236	Kurtosis	3.31749571
Skewness	1.25409256	Skewness	0.35402446	Skewness	0.66059936	Skewness	1.62204429
Range	620.988557	Range	406.771574	Range	450.096357	Range	885.75112
Minimum	1680.81407	Minimum	1779.4983	Minimum	1935.9489	Minimum	2075.55098
Maximum	2301.80262	Maximum	2186.26987	Maximum	2386.04526	Maximum	2961.3021
Sum	18692.7687	Sum	19564.0783	Sum	21020.2724	Sum	23542.7375
Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	111.748199	Confidence Level(90.0%)	72.7355564	Confidence Level(90.0%)	80.940737	Confidence Level(90.0%)	147.372059
	wider	Top Ten CL is:	less wide		less wide		wider

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days		All Days		All Days	
<i>Aug-95</i>		<i>Aug-97</i>		<i>Aug-98</i>		<i>Aug-99</i>		<i>Aug-00</i>	
Mean	1774.032258	Mean	1984.190476	Mean	1795.962963	Mean	1850.806452	Mean	1754.633333
Standard Error	81.45853862	Standard Error	100.4661426	Standard Error	60.61448121	Standard Error	93.53070244	Standard Error	92.68984846
Median	1745	Median	1900	Median	1729	Median	2066	Median	1640.5
Mode	1552	Mode	1558	Mode	1783	Mode	2613	Mode	#N/A
Standard Deviation	453.5419484	Standard Deviation	460.3937032	Standard Deviation	314.9620834	Standard Deviation	520.7569119	Standard Deviation	507.6832085
Sample Variance	205700.2989	Sample Variance	211962.3619	Sample Variance	99201.11396	Sample Variance	271187.7613	Sample Variance	257742.2402
Kurtosis	2.974483824	Kurtosis	-0.643093943	Kurtosis	-1.073562639	Kurtosis	-0.462830538	Kurtosis	0.747216345
Skewness	-1.11425981	Skewness	0.078358896	Skewness	0.371350783	Skewness	-0.589868327	Skewness	0.976768263
Range	2246	Range	1635	Range	1039	Range	2035	Range	2110
Minimum	315	Minimum	1160	Minimum	1294	Minimum	578	Minimum	1022
Maximum	2561	Maximum	2795	Maximum	2333	Maximum	2613	Maximum	3132
Sum	54995	Sum	41668	Sum	48491	Sum	57375	Sum	52639
Count	31	Count	21	Count	27	Count	31	Count	30
Confidence Level(90.0%)	138.2563886	Confidence Level(90.0%)	173.2757864	Confidence Level(90.0%)	103.3851442	Confidence Level(90.0%)	158.7459996	Confidence Level(90.0%)	157.4918237
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
<i>Aug-95</i>		<i>Aug-97</i>		<i>Aug-98</i>		<i>Aug-99</i>		<i>Aug-00</i>	
Mean	2221.4	Mean	2375.2	Mean	2151.2	Mean	2343.5	Mean	2325.8
Standard Error	61.4998103	Standard Error	87.57077138	Standard Error	49.76607501	Standard Error	55.17150029	Standard Error	129.199312
Median	2175.5	Median	2307	Median	2217.5	Median	2317.5	Median	2257.5
Mode	#N/A	Mode	#N/A	Mode	2267	Mode	2613	Mode	#N/A
Standard Deviation	194.4794762	Standard Deviation	276.923094	Standard Deviation	157.3741472	Standard Deviation	174.4676029	Standard Deviation	408.5640981
Sample Variance	37822.26667	Sample Variance	76686.4	Sample Variance	24766.62222	Sample Variance	30438.94444	Sample Variance	166924.6222
Kurtosis	-0.86048538	Kurtosis	-1.080165421	Kurtosis	-1.484536642	Kurtosis	-1.07054267	Kurtosis	-0.01511313
Skewness	0.535867951	Skewness	0.127682219	Skewness	-0.53164405	Skewness	0.70317005	Skewness	0.904399873
Range	591	Range	797	Range	435	Range	449	Range	1202
Minimum	1970	Minimum	1998	Minimum	1898	Minimum	2164	Minimum	1930
Maximum	2561	Maximum	2795	Maximum	2333	Maximum	2613	Maximum	3132
Sum	22214	Sum	23752	Sum	21512	Sum	23435	Sum	23258
Count	10	Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	112.736097	Confidence Level(90.0%)	160.5271127	Confidence Level(90.0%)	91.22683521	Confidence Level(90.0%)	101.1355901	Confidence Level(90.0%)	236.8369284
Top Ten CL is:	less wide		less wide		less wide		less wide		wider

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days		All Days		All Days	
<i>Aug-01</i>		<i>Aug-02</i>		<i>Aug-03</i>		<i>Aug-04</i>		<i>Aug-05</i>	
Mean	1552.233333	Mean	1866.612903	Mean	1784.652174	Mean	1673.19211	Mean	1734.26457
Standard Error	47.56004513	Standard Error	55.05679721	Standard Error	57.27468688	Standard Error	58.8102194	Standard Error	57.9310732
Median	1542.5	Median	1871	Median	1787	Median	1766.26017	Median	1697.66259
Mode	1419	Mode	1565	Mode	1871	Mode	1211.46225	Mode	1339.02967
Standard Deviation	260.4970955	Standard Deviation	306.5432734	Standard Deviation	274.6797488	Standard Deviation	322.116838	Standard Deviation	311.968377
Sample Variance	67858.73678	Sample Variance	93968.77849	Sample Variance	75448.96443	Sample Variance	103759.257	Sample Variance	97324.2682
Kurtosis	-0.2610235	Kurtosis	0.79120608	Kurtosis	0.013940939	Kurtosis	-0.3871769	Kurtosis	-0.2466044
Skewness	0.542112075	Skewness	0.206935013	Skewness	-0.450310724	Skewness	-0.4292361	Skewness	0.29191472
Range	1017	Range	1524	Range	1084	Range	1299.74349	Range	1275.67417
Minimum	1125	Minimum	1139	Minimum	1163	Minimum	937.071958	Minimum	1119.99882
Maximum	2142	Maximum	2663	Maximum	2247	Maximum	2236.81545	Maximum	2395.67299
Sum	46567	Sum	57865	Sum	41047	Sum	50195.7634	Sum	50293.6724
Count	30	Count	31	Count	23	Count	30	Count	29
Confidence Level(90.0%)	80.81055659	Confidence Level(90.0%)	93.44574649	Confidence Level(90.0%)	98.34890415	Confidence Level(90.0%)	99.9260313	Confidence Level(90.0%)	98.5483392
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
<i>Aug-01</i>		<i>Aug-02</i>		<i>Aug-03</i>		<i>Aug-04</i>		<i>Aug-05</i>	
Mean	1848.9	Mean	2200.5	Mean	2024.9	Mean	1993.95597	Mean	2068.81157
Standard Error	53.1397424	Standard Error	61.64112083	Standard Error	41.73952297	Standard Error	41.7763625	Standard Error	57.5819974
Median	1806.5	Median	2136	Median	2032.5	Median	1980.47715	Median	1998.52914
Mode	#N/A	Mode	#N/A	Mode	1871	Mode	#N/A	Mode	#N/A
Standard Deviation	168.0426203	Standard Deviation	194.9263394	Standard Deviation	131.991961	Standard Deviation	132.108458	Standard Deviation	182.090264
Sample Variance	28238.32222	Sample Variance	37996.27778	Sample Variance	17421.87778	Sample Variance	17452.6446	Sample Variance	33156.8643
Kurtosis	-0.936401164	Kurtosis	3.039906036	Kurtosis	-0.94299769	Kurtosis	0.15997227	Kurtosis	0.44665186
Skewness	0.643780715	Skewness	1.673726854	Skewness	0.148625481	Skewness	0.96310494	Skewness	1.32620888
Range	465	Range	643	Range	387	Range	389.923048	Range	483.793411
Minimum	1677	Minimum	2020	Minimum	1859	Minimum	1846.8924	Minimum	1911.87958
Maximum	2142	Maximum	2663	Maximum	2246	Maximum	2236.81545	Maximum	2395.67299
Sum	18489	Sum	22005	Sum	20249	Sum	19939.5597	Sum	20688.1157
Count	10	Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	97.41114849	Confidence Level(90.0%)	112.9951352	Confidence Level(90.0%)	76.51325894	Confidence Level(90.0%)	76.58079	Confidence Level(90.0%)	105.554304
Top Ten CL is:	wider		wider		less wide		less wide		wider

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days		All Days		All Days	
<i>Aug-06</i>		<i>Aug-07</i>		<i>Aug-08</i>		<i>Aug-09</i>		<i>Aug-10</i>	
Mean	1924.53538	Mean	1931.85712	Mean	2067.8488	Mean	1954.89379	Mean	2209.0555
Standard Error	68.2148944	Standard Error	72.2161927	Standard Error	99.0332033	Standard Error	73.112348	Standard Error	84.8519831
Median	1921.50731	Median	1972.05289	Median	2135.72429	Median	2003.34301	Median	2250.05358
Mode	1931.13504	Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	379.804458	Standard Deviation	395.544377	Standard Deviation	495.166017	Standard Deviation	407.072326	Standard Deviation	464.753452
Sample Variance	144251.426	Sample Variance	156455.355	Sample Variance	245189.384	Sample Variance	165707.878	Sample Variance	215995.771
Kurtosis	1.13431081	Kurtosis	0.17307601	Kurtosis	-0.5553366	Kurtosis	1.48835223	Kurtosis	0.0393129
Skewness	-0.3434712	Skewness	0.1568799	Skewness	-0.1268621	Skewness	-0.948291	Skewness	-0.1625181
Range	1696.88734	Range	1781.12997	Range	1939.98751	Range	1810.01316	Range	1990.53309
Minimum	922.630364	Minimum	1124.81268	Minimum	1083.89483	Minimum	737.29657	Minimum	1233.12464
Maximum	2619.5177	Maximum	2905.94266	Maximum	3023.88234	Maximum	2547.30973	Maximum	3223.65773
Sum	59660.5969	Sum	57955.7135	Sum	51696.2199	Sum	60601.7074	Sum	66271.6649
Count	31	Count	30	Count	25	Count	31	Count	30
Confidence Level(90.0%)	115.77847	Confidence Level(90.0%)	122.704483	Confidence Level(90.0%)	169.434132	Confidence Level(90.0%)	124.090726	Confidence Level(90.0%)	144.174295
Top Ten		Top Ten		Top Ten		Top Ten		Top Ten	
<i>Aug-06</i>		<i>Aug-07</i>		<i>Aug-08</i>		<i>Aug-09</i>		<i>Aug-10</i>	
Mean	2324.42779	Mean	2348.01573	Mean	2541.77378	Mean	2359.08762	Mean	2684.26418
Standard Error	71.1819255	Standard Error	75.1202876	Standard Error	77.7256986	Standard Error	49.3637	Standard Error	80.2274291
Median	2266.9021	Median	2234.40852	Median	2540.08893	Median	2390.85912	Median	2579.80332
Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	225.097013	Standard Deviation	237.551207	Standard Deviation	245.79024	Standard Deviation	156.101726	Standard Deviation	253.701407
Sample Variance	50668.6652	Sample Variance	56430.576	Sample Variance	60412.8423	Sample Variance	24367.7487	Sample Variance	64364.4039
Kurtosis	-1.8521371	Kurtosis	2.81461934	Kurtosis	-0.0174926	Kurtosis	-1.4693496	Kurtosis	0.98977996
Skewness	0.20392846	Skewness	1.77415244	Skewness	0.58509306	Skewness	-0.4010987	Skewness	1.28111958
Range	575.256842	Range	741.335177	Range	813.543149	Range	411.585439	Range	813.543149
Minimum	2044.26086	Minimum	2164.60748	Minimum	2210.33919	Minimum	2135.72429	Minimum	2410.11458
Maximum	2619.5177	Maximum	2905.94266	Maximum	3023.88234	Maximum	2547.30973	Maximum	3223.65773
Sum	23244.2779	Sum	23480.1573	Sum	25417.7378	Sum	23590.8762	Sum	26842.6418
Count	10	Count	10	Count	10	Count	10	Count	10
Confidence Level(90.0%)	130.484507	Confidence Level(90.0%)	137.70397	Confidence Level(90.0%)	142.479983	Confidence Level(90.0%)	90.4892363	Confidence Level(90.0%)	147.065937
Top Ten CL is:	wider		wider		less wide		less wide		wider

**APPENDIX 8 (cont): DESCRIPTIVE STATISTICS FOR MONTHLY CARRIAGE ROAD USE AND THE TOP TEN DAYS
FOR JULY AND AUGUST 1995, AND 1997- 2013.**

All Days		All Days		All Days	
<i>Aug-11</i>		<i>Aug-12</i>		<i>Aug-13</i>	
Mean	2046.20193	Mean	2157.85254	Mean	2179.53046
Standard Error	132.102293	Standard Error	92.9475444	Standard Error	88.2338937
Median	1996.12221	Median	2203.1184	Median	2228.39119
Mode	#N/A	Mode	2703.76033	Mode	#N/A
Standard Deviation	735.514437	Standard Deviation	517.510025	Standard Deviation	483.276939
Sample Variance	540981.487	Sample Variance	267816.626	Sample Variance	233556.6
Kurtosis	-0.2579518	Kurtosis	-0.3145196	Kurtosis	0.23741353
Skewness	0.05645098	Skewness	-0.45055	Skewness	-0.5513383
Range	2890.7258	Range	2067.55493	Range	1988.12616
Minimum	592.880626	Minimum	1064.63937	Minimum	941.885823
Maximum	3483.60643	Maximum	3132.1943	Maximum	2930.01198
Sum	63432.2599	Sum	66893.4287	Sum	65385.9138
Count	31	Count	31	Count	30
Confidence Level(90.0%)	224.21205	Confidence Level(90.0%)	157.756232	Confidence Level(90.0%)	149.920593
Top Ten		Top Ten		Top Ten	
<i>Aug-11</i>		<i>Aug-12</i>		<i>Aug-13</i>	
Mean	2854.44364	Mean	2690.52221	Mean	2691.72567
Standard Error	134.429023	Standard Error	61.7479677	Standard Error	53.2664283
Median	2810.86883	Median	2666.45288	Median	2665.24942
Mode	#N/A	Mode	2703.76033	Mode	#N/A
Standard Deviation	425.101897	Standard Deviation	195.264219	Standard Deviation	168.443236
Sample Variance	180711.623	Sample Variance	38128.1152	Sample Variance	28373.1239
Kurtosis	-1.6663579	Kurtosis	2.07847274	Kurtosis	0.18246147
Skewness	0.23281584	Skewness	1.48400227	Skewness	-0.155792
Range	1145.60643	Range	623.39549	Range	556.001383
Minimum	2338	Minimum	2508.79881	Minimum	2374.0106
Maximum	3483.60643	Maximum	3132.1943	Maximum	2930.01198
Sum	28544.4364	Sum	26905.2221	Sum	26917.2567
Count	10	Count	10	Count	10
Confidence Level(90.0%)	246.42358	Confidence Level(90.0%)	113.190998	Confidence Level(90.0%)	97.6433787
Top Ten CL is:	wider		less wide		less wide

APPENDIX 9: PERCENT OF VISITORS EXPERIENCING N=0, N=0-1, N=1-2, AND N>2 OCCURRENCES OF FOUR PROBLEM BEHAVIORS PER 2-HOUR VISIT IN THE LOW AND HIGH USE ZONES, 1997, 2000, 2003, 2006, 2010, AND 2013.

LOW USE ZONE							
Behavior	Occurrences	1997	2000	2003	2006	2010	2013
Startle	0	90.33	91.93	95.38	93.94	91.13	92.69
	0-1	2.23	0.90	1.15	1.89	1.21	1.54
	1-2	2.23	2.24	2.31	1.52	2.42	2.31
	>2	5.20	4.93	1.15	2.65	5.24	3.46
Speed	0	89.59	92.83	95.38	91.67	91.13	90.77
	0-1	2.60	0.45	0.77	2.65	2.82	1.92
	1-2	4.09	2.69	1.15	2.27	4.03	3.08
	>2	3.72	4.04	2.69	3.41	2.02	4.23
Dogs Off	0	84.39	81.61	88.08	90.91	94.35	89.23
	0-1	3.35	4.93	4.62	1.14	2.42	4.23
	1-2	7.81	7.17	4.23	3.79	1.21	3.85
	>2	4.46	6.28	3.08	4.17	2.02	2.69
Obstruct	0	93.31	91.48	93.85	90.53	89.92	91.54
	0-1	3.35	1.35	2.31	2.27	2.02	1.92
	1-2	1.49	3.59	1.54	4.55	2.82	1.54
	>2	1.86	3.59	2.31	2.65	5.24	5.00

HIGH USE ZONE							
Behavior	Occurrences	1997	2000	2003	2006	2010	2013
Startle	0	90.33	93.85	92.23	93.94	86.46	90.30
	0-1	2.23	2.05	1.46	1.89	2.62	2.95
	1-2	2.23	0.82	2.91	1.52	5.24	4.22
	>2	5.20	3.28	3.40	2.65	5.68	2.53
Speed	0	89.59	86.07	90.78	91.67	88.65	87.34
	0-1	2.60	2.87	1.94	2.65	1.75	2.95
	1-2	4.09	4.92	3.88	2.27	4.80	5.06
	>2	3.72	6.15	3.40	3.41	4.80	4.64
Dogs Off	0	84.39	86.48	90.78	90.91	98.25	96.20
	0-1	3.35	6.97	3.88	1.14	1.75	1.27
	1-2	7.81	3.28	2.43	3.79	0.00	2.11
	>2	4.46	3.28	2.91	4.17	0.00	0.42
Obstruct	0	93.31	84.02	82.52	90.53	86.90	86.50
	0-1	3.35	4.51	4.85	2.27	2.62	3.80
	1-2	1.49	4.10	5.34	4.55	4.37	2.53
	>2	1.86	7.38	7.28	2.65	6.11	7.17