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16. Abstract

Riders Helping Riders (RHR) is an instructional program that encourages motorcyclists to intervene with their motorcyclist peers to prevent them from drinking and riding. The program is based on focus group research, which found that riders consider themselves to be united by an interest in riding and by a willingness to help other riders in need. A sense of individualism, however, limits the extent to which riders are willing to intervene in drinking and riding. *RHR* is intended to convince motorcyclists that an impaired rider needs their help and that they are in the best position to provide help. The program provides a "toolkit" of techniques for separating drinking from riding, discouraging riders from becoming impaired, recognizing impairment, and discouraging impaired riders from riding. An optional role-playing module is included. At the end of the class, students are asked to sign a pledge to do their best to help an impaired rider live to ride another day. *RHR* was developed with the assistance of instructors from the South Carolina Rider Education Program and pilot-tested by instructors of Georgia's Department of Driver Services, Motorcycle Safety Program. This is Volume I of the report; it describes the development and evaluation of the program and discuses the findings. Volume II is the classroom instructor manual, and Volume III is the classroom student guide.

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Executive Summary

Background

Fatal motorcycle crashes have increased steadily for 9 years, from 2,116 fatal crashes in 1997 to 4,810 in 2006. This has created much concern among traffic safety officials and the motorcycling community. An increase in the number of motorcyclists during that time probably played a role in that increase; however, exposure data for motorcyclists are not sufficiently reliable to understand the contribution of increased exposure to increased crashes. Still, the sheer number of fatalities among motorcyclists seems sufficient cause for concern.

Evidence suggests that alcohol plays a significant role in motorcycle crashes. In fatal crashes, a larger proportion of motorcyclists had been drinking than operators of any other vehicle type. The association of motorcycling with recreation, and recreation with alcohol consumption, may lead to larger proportions of motorcyclists riding after drinking than operators of other vehicle types.

To better understand the attitudes of riders toward drinking and riding and to obtain opinions as to how drinking and riding might be reduced, the National Highway Traffic Safety Administration contracted with Pacific Institute for Research and Evaluation (PIRE) to conduct a focus group study. That study involved discussions with motorcyclists and others familiar with riders' behaviors and attitudes in five U.S. cities in the winter of 2001-2002. Some findings from that study follow:

- Motorcycle riding is often associated with recreation or socializing in a setting that often includes drinking.
- Participants expressed a belief there is a bond between motorcyclists due to common interests, skills, situations, and attitudes associated with riding. This bond may lead riders to come to the aid of riders in trouble, whether known to them or not.
- Participants expressed a belief that drinking and riding is ill-advised, to the extent that few participants would admit to doing so. They, nevertheless, acknowledged that some riders did ride when impaired by alcohol.
- Participants said that motorcyclists are highly individualistic and believed in the importance of personal responsibility, so riders are disinclined to interfere with the decisions of others. Therefore, while they acknowledged that drinking and riding occurs, they are disinclined to intervene to prevent it.
- Participants pointed out that, unlike drivers of passenger vehicles, riders are unlikely to injure others through impaired riding, that is, impaired riders are "only hurting themselves." This makes it difficult to argue with the notion that impaired people should ride if they want to.
- In group riding situations, if a rider becomes impaired, the focus is generally on separating the impaired rider from the group to protect the unimpaired, rather than taking steps to protect the impaired rider.

Subsequent to publication of the focus group report, NHTSA contracted with PIRE to develop and evaluate a program based on the focus group findings to reduce drinking and riding. This final report describes that program and the evaluation and research findings.

The training program developed under this project, *Riders Helping Riders (RHR)*, is intended to convince motorcyclists that impaired riders need their help and that they are in the best position to provide help. The training program takes approximately 30 minutes. It provides a "toolkit" of techniques for separating drinking from riding, discouraging riders from becoming impaired, recognizing impairment, and discouraging impaired riders from riding. An optional role-playing module is included.

Methodology

Program Development

An initial draft version of the program was a PowerPoint presentation. It contained all the elements of the final program: background information on drinking and riding to illustrate the problem; reasons why riders can and should intervene in the drinking and riding of their peers; techniques for separating drinking and riding; preventing impairment of riders who are drinking; and keeping impaired riders from riding. This version was presented to three groups of riders in the Maryland suburbs of Washington, DC. Based on feedback from these groups, the program was modified where appropriate.

In preparation for pilot-testing, the second draft of the program was presented to the South Carolina Rider Education Program (SCREP). At the suggestion of SCREP instructors, the program was modified, including a change from the PowerPoint presentation to printed instructor and student manuals. Ultimately, it was not possible to conduct the pilot test in South Carolina fully; however, some of the SCREP instructors did present the program to students and collected feedback from them. The assistance of the SCREP instructors was invaluable in the development of the *RHR* Program.

An agreement was made with the Georgia Department of Driver Services Motorcycle Safety Program to include *RHR* in all motorcycle instruction conducted by the State for one year—from November 2005 through October 2006. The program was included in all the State's motorcycle classes. The *RHR* did not replace other drinking-and-riding instructions that were already part of the curriculum. A total of 5,252 students received the *RHR* training: 4,889 in Georgia and 363 in South Carolina.

In addition to the *RHR* training in classes, press releases were created that described the drinking-and-riding problem, the peer-intervention message of the *RHR* program, and the inclusion of *RHR* training in Georgia's rider training program. These were released in the summer of 2006 and resulted in media coverage throughout the State.

Evaluation

Data for evaluation of the program came from two sources: questionnaires regarding students' attitudes and behaviors before and after receiving *RHR* training and time-series analysis of crashes in Georgia and California.

Student questionnaires – Each student completed a retrospective pre/post questionnaire that contained questions regarding demographics, as well as the student's attitudes and behaviors with respect to the issues addressed in the program. The questionnaire was completed following *RHR* and before any other alcohol-related instruction. In a retrospective pre/post questionnaire the students are asked what their attitudes and behaviors had been before the instruction and what they will be having completed the instruction. The principal strength of the design is reduction of "response shift bias," which occurs when a subject's internal frame of reference is altered under the influence of a training program. Retrospective pre-tests are no more susceptible to social desirability or impression management bias than traditional pre-test/post-test designs. Questionnaire data was analyzed to determine the extent to which students had been positively affected by the *RHR* instruction. Demographic characteristics of students, and the influence of demographics on questionnaire responses, were also examined.

Time-series analysis – Georgia crash data was analyzed to detect changes in the proportion of motorcycle crashes involving alcohol after the start of *RHR* instruction. For comparison, we analyzed the proportion of alcohol-involved Georgia crashes for other vehicle types, as well as the proportion of California motorcycle crashes involving alcohol obtained from the State Integrated Traffic Records System (SWITRS) data. Georgia data spanned from January 1997 to December 2006, and California data spanned from January 2001 to December 2006. The period included the 12 months while the program was being pilot-tested and the 2 months after the pilot test ended. A longer followup period would have been ideal, but this was impossible because of the project's time limit.

Findings

Student questionnaires – In the post-test, all questionnaire items across all students reflected a statistically significant shift toward the positive (more responsible, more likely to intervene). Questions showing the least change were those where participants were already highly inclined to intervene prior to *RHR* training (e.g., intervening in the drinking and riding of those closely related to them). The same phenomenon was observed in analyses of demographic influences on training (i.e., when one group showed less improvement, it was generally because its pre-test scores were higher [more responsible] leaving less room for improvement).

Time-series analysis – No significant changes were detected in the proportion of motorcycle crashes involving alcohol between the two periods: (1) before and (2) during and after the *RHR* training. There were also no changes in alcohol-involved crashes for other vehicle types in Georgia or for motorcycle crashes in California.

Discussion

Based on responses to the student questionnaire, the *RHR* training appears to have had a significant positive effect on students' willingness to intervene in the drinking and riding of other riders. A caveat is that these findings are based on self-reported changes in attitudes and behavior. A followup

questionnaire to measure long-term effects of the program and to ask about actual instances of drinking-and-riding intervention would have been ideal. Unfortunately, this was impossible within the limitations of this study.

That crash data did not show an effect of the program is not surprising, given the relatively few riders exposed to the program during its one year of operation and its short follow-up period, as well as the difficulty of finding effects of *any* program using crashes as a measure of effectiveness. Given that the purpose of the *RHR* is essentially to cause a change in the culture of motorcycling, a far greater number of riders will need to be exposed to the message, more time will be needed for attitudes and behaviors to change, and a longer span of time will be needed to look for changes in alcohol-involved motorcycle crashes before an analysis of crash data is likely to show any effects of the program on crashes.

Summary

The *RHR* program shows promise for helping reduce alcohol-involved motorcycle crashes. Student feedback suggests that the program had a significant influence. Analysis of crash data showed no effect of the program on the proportion of alcohol-involved motorcycle crashes in Georgia during the pilot test or shortly thereafter. To best achieve a reduction in crashes, the *RHR* training program can be expanded to reach as many riders as possible, through as many channels as possible.

Background

Fatal motorcycle crashes have increased steadily for 9 years, from 2,116 crashes in 1997 to 4,810 in 2006. This has created much concern among traffic safety officials and the motorcycling community.

It is apparent that alcohol plays a significant role in motorcycle crashes. In 2006, 34 percent of motorcycle riders involved in fatal crashes had blood alcohol concentrations (BACs) of .01 grams per deciliter (g/dL) or higher, compared to 27 percent for drivers of passenger cars. No other vehicle type has a higher proportion of alcohol involvement in fatal crashes (NHTSA, 2007). Operating a motorcycle requires greater skill and coordination than operating a passenger vehicle (NHTSA, 1999), which suggests that when errors are made on a motorcycle, the chances of a crash are higher. In the event of a crash, the chances of death or serious injury are higher on a motorcycle (NCSA, 2007). Given the complexity of motorcycle operation, it seems likely that alcohol impairment is more likely to lead to errors (and therefore crashes, serious injury, and death) for motorcycle riders than for drivers of passenger vehicles. It therefore seems reasonable that, to reduce the number of serious motorcycle crashes, we should endeavor to reduce the amount of impaired riding by motorcyclists.

To understand what might be done to decrease drinking and riding, NHTSA funded a study to conduct focus groups with riders and leaders in the motorcycling and motorcycle safety communities. This study identified attitudes toward drinking and riding that might affect intervention attempts, as well as approaches to drinking-and-riding prevention that participants believed might be successful. The final report (Becker et al., 2003) included some important findings:

- Motorcycle riding is often associated with recreation or socializing in a setting that often includes drinking.
- Participants expressed a belief that there is a bond between motorcyclists, due to common interests, skills, situations, and attitudes associated with riding. This bond may lead riders to come to the aid of riders in trouble, whether known to them or not.
- Participants expressed a belief that drinking and riding is ill-advised, to the extent that few participants would admit to doing so. They, nevertheless, acknowledged that some riders did ride when impaired by alcohol.
- Participants indicated that motorcyclists are highly individualistic and believed in the importance of personal responsibility, so they are disinclined to interfere with the decisions of others. Therefore, while they acknowledge that drinking and riding occurs, they were disinclined to intervene to prevent it.
- Participants pointed out that, unlike drivers of passenger vehicles, riders are unlikely to injure others through impaired riding, that is, impaired riders are "only hurting themselves." This makes it difficult to argue with the notion that impaired people should ride if they want to.
- In group riding situations, if a rider becomes impaired, the focus is generally on separating that impaired rider from the group to protect those who are unimpaired, rather than taking steps to protect the impaired rider.

Subsequent to publication of the report, NHTSA solicited proposals for programs that would incorporate the findings of the focus group study. PIRE, as the selected contractor, developed, pilot-tested, and evaluated that program. The project team was well acquainted with the focus group study having also been the team that also performed that study.

The primary focus of the proposed program was to increase riders' willingness and ability to intervene in the drinking and riding of fellow riders. This effort would build primarily upon two findings from the focus group study: the feeling of community among motorcyclists and the expressed willingness of riders to help each other.

The newly developed program was called "*Riders Helping Riders" (RHR)*, which is briefly described under "Program Description." More detailed information is contained in "*Impaired Motorcycle Operation*, *Final Report Volume II: Riders Helping Riders Instructor's Guide" and "Impaired Motorcycle Operation*, *Final Report Volume III: Riders Helping Riders Student Manual"* (McKnight & Becker, 2007a; McKnight & Becker, 2007b).

Program Description

RHR is based on research showing that motorcyclists view themselves as members of a community and that they take care of each other when needed. However, riders often express an unwillingness to intervene in the drinking and riding of fellow riders. The research concluded that there was a tremendous opportunity to reduce death and injury caused by drinking and riding by convincing riders of the appropriateness of intervening in drinking and riding, and by providing them with the tools to do so. *RHR* was designed to do this.

It is important to note that the primary goal of the program is to get audience members to intervene in the drinking-and-riding behavior of their rider peers. The program does not focus on the drinking and riding behavior of the audience members themselves. We recognize that a potential added benefit of the program would be that participants are exposed to information concerning the dangers of drinking and riding that may affect their own willingness to ride under the influence of alcohol.

RHR was designed as a stand-alone curriculum. It was not intended to replace alcohol-related training provided in other training programs. Here is a brief description of the overall structure of *RHR*:

- *Introduction* – This brief section introduces students to the notion that riders feel a connection to other riders, which often leads riders to look out for one other and help one other if they can. This is an important concept in the subsequent discussion on riders helping other riders avoid drinking and riding.

- *Reasons to Help* – This section provides background on the drinking-and-riding problem; the increasing number of motorcyclists who are being killed while riding; the high percentage of motorcyclist fatalities that involve drinking and riding; and the need for riders to intervene.

- *How to Help* – This section gives students a "toolkit" they can use to help prevent impaired riding. The tools are organized in chronological order, from steps that can be taken early to prevent riders from becoming impaired to steps that may be necessary if all else fails and an impaired rider is about to ride. Because this section

contains most of the information, it is the longest section of the program. The subsections of *How to Help* follow:

  - *Separate the drinking from the riding* – Ways to prevent impaired riding by keeping riders away from alcohol when they will be riding.
  - *Provide alternatives to drinking* – Ways to prevent or reduce rider's consumption of alcohol when it is available.
  - *Recognize impairment* – Ways to recognize riders who are impaired or becoming impaired so that steps can be taken to keep that impairment from getting worse, and to prevent impaired riders from riding.
  - *Discourage impaired riding* – Ways to discourage riders from riding should they become impaired.
  - *Prevent impaired riding* – Ways to prevent impaired riders from riding when they cannot be dissuaded from riding.
  - *Promising to help* – A discussion of what students will do in the future to help riders to not ride while impaired.

- *Role-Playing Exercises* – An optional exercise available to classes that have enough time to conduct them. This exercise allows students to practice applying the information they have learned and to become comfortable with taking steps to intervene.

Methodology

This section describes how the *RHR* was developed, pilot-tested, and evaluated. It also describes media coverage of the program, which potentially influenced drinking and riding in Georgia during the pilot-test period.

Curriculum Development

The initial draft curriculum was a Microsoft PowerPoint presentation. This draft was presented to three groups: employees of two motorcycle shops and a rider club that was organized by one of the shops. After each presentation, comments from the audience were incorporated into the presentation as appropriate.

An agreement was made with SCREP to pilot-test the program. Meetings were held with motorcycle safety instructors from SCREP, who suggested modifications to the program. One of the more significant changes was to replace the PowerPoint presentation with printed instructor and student manuals. The change reflected two facts: (1) the SCREP instructors were not equipped with the computers and the projectors to give the presentations, and (2) the program they were currently teaching was based on printed guides. Like the rest of their course, the new version of *RHR* was an instructor-led discussion, with periodic break-out sessions where groups of students were assigned questions and researched the answers in their student guides. Each group then reported its answers to the questions to the rest of the class. This is essentially the same format used in the Motorcycle Safety Foundation (MSF) rider training programs being used in South Carolina and in most of the United States.

Ultimately, it was not possible to conduct the pilot test in South Carolina fully. However, some of the instructors involved in the development of the curriculum did present the program to students and collected feedback from them. The assistance of the SCREP instructors was invaluable in the development of *RHR*.

Pilot-testing

An agreement was made with the Georgia Department of Driver Services Motorcycle Safety Program to include *RHR* in all motorcycle instruction conducted by the State for one year. A one-day training was given to the State's instructors in October of 2005. Inclusion of *RHR* in the Georgia motorcycle safety curriculum began at the start of November 2005 and continued until near the end of October 2006. The program was included in both beginning and experienced rider courses, though the majority of classes were beginning courses. Georgia instructors provided training through the Georgia Department of Driver Services and through Harley-Davidson *Rider's Edge* courses. Some of the instructors from South Carolina who helped develop *RHR* also included it in their classes and received feedback from their students.

Media Coverage

The basic message of *RHR* is that riders can and should do whatever they can to intervene in the drinking and riding of their rider peers. It was acknowledged that there are many ways in which the message could be communicated—safety instruction is just one. Because we were interested in how

communication of the message (and adoption of its philosophy) might affect alcohol-related motorcycle crashes in Georgia, we wanted to communicate the *RHR* message to as many riders as possible, within the limited resources of the project. We therefore created press releases and sent them to Georgia media outlets to correspond with the Fourth of July holidays (i.e., July 1st through 4th) in 2006. The press releases were later modified slightly to take advantage of the publicity surrounding two high-profile motorcycle crashes. The modified press releases were sent out shortly after the Fourth of July in 2006. Two press releases resulted in media coverage of the *RHR* program, including TV news stories in several large markets in Georgia, plus some print and Internet news stories. It is uncertain how many riders may have been exposed to the *RHR* message through these stories. A copy of one press release is included as Appendix A.

Evaluation

Two means of evaluation were used to determine the effectiveness of the *RHR* program:

- A pre-test/post-test questionnaire of students; and
- A time-series analysis of Georgia's crash data, with a comparison to California's crash data.

The project team did not attempt to conduct an analysis of alcohol-related motorcycle crashes for those students exposed to RHR. Reasons included the relatively small number of motorcycle crashes likely from that sample of riders, potential difficulties in identifying RHR students in the State's crash files, potential difficulty obtaining exposure data (e.g., annual miles ridden) for those riders, and difficulties identifying an appropriate comparison group of riders.

Student Questionnaire

Students who took the *RHR* courses were given a questionnaire to determine how the program had affected their attitudes and future intentions to intervene in drinking and riding of peers. The questionnaire also collected some demographic information about the students. To avoid any confusion as to which material the questionnaire was addressing, it was given immediately after the *RHR* session and before any other alcohol-related material was presented. The questionnaire was a retrospective pre-test/post-test design (Pratt et al., 2001). This design offers advantages for the evaluation of changes in knowledge and attitudes in response to exposure to the curriculum. With this design, students completed a single questionnaire at the close of the training, asking them to report their attitudes and knowledge before and after they were exposed to the intervention. The principal strength of the design is reduction of "response shift bias," which occurs when a subject's internal frame of reference is altered under the influence of a training program (Howard et al., 1979). For example, in a traditional pre-test, if subjects are asked to agree whether they have been doing "everything possible" to intervene in the drinking and riding of their friends, they may agree strongly, based on a limited understanding of the possible ways to intervene. After training, they may be more willing to intervene than before, yet because they have a new understanding of different ways to intervene, they may no longer agree that they will do "everything possible" in the future. In this case, even though they are now feeling more responsible, the post-training response has shifted toward being less responsible because the training has shifted their perspective. Retrospective pre-tests are no more susceptible to social desirability or impression management bias than traditional pre-test/post-test designs (Howard et al., 1981), perhaps less so, and also offer the ease of a single administration of an instrument.

A copy of the student questionnaire is included as Appendix B

Time-Series Analysis of Crash Data

Georgia crashes from January 1997 through December 2006 were analyzed to determine the effect, if any, of the *RHR* program on alcohol-related motorcycle crashes. The proportion of motorcycle crashes in which alcohol was a factor were compared to alcohol-related crashes for drivers of passenger vehicles, pickup trucks, vans, and sport utility vehicles (SUVs). For additional comparison, a time-series analysis of the proportion of California motorcycle crashes involving alcohol was conducted on data from SWITRS covering January 2001 through December 2006. The span of time during which the effects of the program might appear was the 12 months while the program was being pilot-tested and the 2 months after the pilot test (the last 2 months of 2006). A longer followup period would have been ideal, but this was impossible because of the project's time limits.

An alcohol-related crash was defined as one in which any of the following were true:

- The rider had a BAC ≥ .01 g/dL;
- The crash report showed that the driver had been drinking;
- The crash report listed driving under the influence of alcohol as a contributing factor; or
- The rider refused to provide a breath sample.

The crash data was stratified by vehicle type, and within each vehicle type, by a binary indicator of alcohol involvement. These crashes were then aggregated by these strata for each vehicle type into monthly totals: alcohol-involved drivers versus non-alcohol-involved drivers. The preponderance rate, or odds, of alcohol as a factor in crashes were measured as a ratio of the alcohol-involved drivers in crashes (numerator) to alcohol-negative drivers (denominator).

Results

This section discusses the result of the student questionnaires and the time-series analysis of Georgia and California crashes.

Questionnaire Results

A total of 5,252 students completed questionnaires. The questionnaire contained questions related to the characteristics of the students, questions related to the effect that *RHR* had on their attitudes, and likely effect of *RHR* on future behavior. Not every student responded to every question, but no question received less than a 97.6-percent response rate.

Demographics

Tables showing complete questionnaire results for each demographic question are provided in Appendix C. A brief description follows:

- 68 percent of students were males.
- 21 percent were age 21 to 30; 28 percent, 31 to 40; 26 percent, 41 to 50; and 18 percent, 51 or older.
- 90 percent were employed.
- 61 percent were married or living with a significant other; 15 percent, separated or divorced; and 22 percent, never married.
- 74 percent were White; 18 percent, African-American; 3 percent, Hispanic; and 2 percent, Asian/Pacific Islander.
- 57 percent had little or no previous riding experience; 31 percent had some experience; 4 percent considered themselves very experienced; and 7 percent were returning to riding after a long break.
- 52 percent were new or returning riders who had not ridden in the past year; 29 percent rode fewer than 1000 miles in the past year; and 11 percent rode between 1,000 and 3,000 miles in the past year.
- 66 percent of students were in Georgia's Department of Driver Services classes; 27 percent were in Harley-Davidson Rider's Edge classes; and 7 percent were in South Carolina Rider Education Program classes.

Behavior and Attitudes

Students were asked 14 questions concerning the effect of *RHR* on certain attitudes and future behaviors. According to the design of a retrospective pre-test/post-test, behavior-related questions relate to how likely they would have been to behave a certain way prior to the *RHR* instruction, and how likely they would be to behave that way after *RHR*. Attitude-related questions asked how strongly students agreed or disagreed with certain statements before *RHR* and after. Table 1 shows the questions, by type, from the greatest change to the least change pre/post change.

Table 1. Pre-test/post-test Differences in Attitude and Behavior

	Mean Pre-test Selection	Mean Post-test Selection	Mean Difference	t
Questions regarding willingness to help different type of motorists (4-point scale)				
18. Would you stop and help a rider you do not know?	2.49	3.22	0.73	56.28
19. Would you stop and help a rider you know?	3.52	3.85	0.32	29.20
20. Would you stop and help a driver of a car?	2.22	2.41	0.19	24.14
Questions regarding intervening in drinking and riding (4-point scale)				
21. Would you watch how much riders around you are drinking?	2.91	3.67	0.76	53.89
22. Would you stop a fellow rider you did not know from drinking and riding?	2.62	3.38	0.76	60.57
23. Would you talk to the friends of a drinking rider you did not know in an effort to prevent that rider from drinking and riding?	2.94	3.60	0.66	54.95
24. Would you think about ways to discourage drinking and riding if you were planning a group ride?	3.35	3.87	0.52	40.88
25. Would you think about ways to discourage drinking and riding if you were planning a private party?	3.33	3.83	0.50	42.45
26. If you noticed, by watching, that riders you knew were impaired, would you try to stop them from riding?	3.39	3.84	0.45	39.32
27. Would you stop your best friend from drinking and riding?	3.84	3.96	0.12	19.43
28. Would you stop your boyfriend, girlfriend, or relative from drinking and riding?	3.87	3.97	0.09	16.23
Attitude questions (5-point scale)				
29. You can't leave it up to a drinking rider to decide whether he or she is safe to ride.	4.26	4.62	0.36	33.83
30. Even if riders have not had enough to drink to be obviously intoxicated, they can still be a danger to themselves.	4.45	4.77	0.32	35.72
31. A person who has been drinking is the least capable of deciding how safe he or she is to ride.	4.42	4.68	0.26	28.48

Behavior-related questions (questions 18 to 28) used a 4-point scale to record how often a rider might behave a certain way (never, rarely, sometimes, often). Attitude-related questions (questions 29 to 31) used a 5-point scale (strongly disagree, disagree, do not agree or disagree, agree, strongly agree) to record riders' agreement with statements concerning drinking and riding. A paired-samples T-test indicated that means across all students changed in the positive (more responsible, more likely to intervene) direction for responses to all questions, and that all changes were statistically significant (not attributable to chance). Means for pre-test and post-test are provided, along with mean change. The t value indicates the likelihood that pre-post differences were by chance -- the higher the value, the less likely that results were attributable to chance. Appendix D provides graphs showing the shift toward more positive responses for all questions.

Demographics and Pre-test/post-test Changes

Differences between pre-test and post-test responses were calculated for each question, for each student. These were treated as measures of pre-test/post-test "improvement" for each questionnaire item. An analysis of variance was performed to determine whether improvement varied significantly as a function of demographic variables. Analyses of variance were also performed to determine whether there were significant differences by demographic group for pre-test responses or for post-test responses. The results helped determine the extent to which differences in *improvement* were a function of differences in willingness to intervene *before* training versus differences *after* training. Cases in which there were significant differences in improvement on questionnaire items between demographic groups are discussed in the following paragraphs, and the graphs showing pre-test and post-test responses for different demographic groups are included in Appendix E – Student Questionnaire Results: Demographics and Pre-Test/Post-Test Changes. Where there were no significant effects of a particular demographic variable for a particular question, the results for that combination of question and demographic variable are not presented.

- *Age group* – An analysis of the influence of age group on increased willingness to intervene showed a significant group effect for all questions related to intervening with people known to the student (questions 21 to 26). These effects were primarily due to the 6 percent of students age 20 and younger. When these students were removed from the sample, the only questions showing a significant influence of age group were questions 25 and 26 ($p = .000$), which deal with intervening with best friends, boyfriends, girlfriends, and relatives. In these cases, the increase in willingness was greater for the older age group. For questions 21 to 26, means for the older groups were significantly lower ($p <= .002$) for the pre-test questions. Differences in improvement may have been a function of older subjects being more affected by the training, though it seems as likely that a ceiling effect limited the amount of improvement among younger students.

- *Gender* –Only question 24 (concerning making plans for a group ride) showed a significant gender effect: males showed more improvement than females ($p = .001$). Females also had significantly higher means ($p = .000$) both pre-test and post-test the training for this question, which suggests that the reduced improvement among males was not simply the result of a ceiling effect.

- *Employment* – Students employed full-time showed significantly greater improvement ($p = .001$) than part-time workers in willingness to watch how much

other riders are drinking (question 21). Full-time employees had significantly lower pre-test scores (p=.000) but not post-test scores, suggesting either that they were more affected by the training or that part-time employees' reduced improvement was due to having limited room for improvement.

- *Marital status* – There were significant differences (p = .000) in marital status for improvement in willingness to intervene with best friends, boyfriends, girlfriends, and relatives (questions 25 and 26). This may be related to the age effect, as Never Married and Living With Boyfriend/Girlfriend were at the low end of the scale; Widowed was at the high end; and Married, Divorced, and Separated were in the middle for these questions. When a marital status variable was created where Never Married and Living With Boyfriend/Girlfriend = 1; Married, Divorced, and Separated = 2; and Widowed = 3, that variable correlated significantly (p=.000) with age (r = .419) and age group (r = .422), suggesting that marital status effects are confounded with age effects. Marital status significantly influenced responses to question 22 ("If you knew riders were impaired, would you try to stop them from riding?"); however, no pattern could be discerned for these differences.

- *Urbanization* – Responses to question 21 (willingness to monitor others' drinking) varied significantly by the type of area in which the student lives, with students living in rural areas showing the least amount of improvement and students living in suburbs and cities showing more improvement. Because the rural subjects showed significantly more willingness to monitor drinking in the pre-test, their relative lack of improvement is likely due to a ceiling effect rather than a lack of response to the training.

- *Race* – Improvement scores differed significantly by race for questions 18, 19, 21 (p = .000), and 24 (p = .006) and total improvement score (p = .001). Overall, White students showed the least improvement, and African-America, Hispanic, and Asian students (in no regular order) had higher improvement scores. White students started with significantly higher means on the pre-test items, which suggests that the reduced improvement among White students may have been caused by a ceiling effect.

- *Riding experience* – Improvement in scores varied significantly by riding experience for total improvement score and all questions except questions 25 and 26 (intervening with best friends, boyfriends, girlfriends, and relatives). Significance was p <.005 for all but question 20, which was p = .006. Overall, the students with Little or No Experience showed the greatest improvement, and the Very Experienced showed the least improvement; those with Some Experience and those Returning to Riding After Some Time Away were in the middle. This may have been because riders with more experience tended to have significantly higher means for pre-test questions. These differences were significant for all but behavior questions 25 and 26 and the three attitude questions (29-31).

Differences between findings for age group and riding experience may seem strange to some who would expect the two variables to be highly related. When the responses to the question of riding experience were recoded into three groups (1 = Little or No Experience, 2 = Some Experience or

Returning to Riding After Time Away, and 3 = Very Experienced), riding experience correlated significantly (p= .000) but not strongly with age (r=.101) and age group (r = .094). This weak correlation is likely a reflection of the fact that, unlike passenger car drivers, many older motorcyclists may be relatively new to riding, or may have had little recent experience.

Time-Series Analysis

To understand the effect that RHR might have had on alcohol-involved motorcycle crashes, time-series analyses were performed using crash data from Georgia and California. Time-series analyses were performed on monthly aggregated ratios, using auto-regressive integrated moving average ARIMA intervention analysis. After differencing the motorcycle ratio series to achieve stationarity (a necessary assumption) and accounting for temporal trend and drift elements, the binary function representing intervention (pre-test and post-test) was estimated as a regressor along with other AR and MA parameters. The intervention estimate was a nonsignificant .83 percent decrease that was not statistically different from zero change (t=0.04, p=.97). Tests for comparison series (other vehicle types) were not performed, as visual inspection of the plots indicated these were little different from the treatment group's experience, and with the zero effect found for motorcycles, there was no effect to be found by testing the contrast groups. The results of the time-series analysis for California motorcycle crashes showed no significant differences (p=.26) in alcohol involvement between two periods: (1) the one year before the start of *RHR* in Georgia and (2) the 12 months of the program and the 2 months following.

Figure 1 shows the proportion of Georgia motorcycle crashes and passenger car crashes where the rider had been drinking, as identified in the Georgia crash records for the 120 months from January 1997 through December 2006. It also shows the proportion of California motorcycle crashes where the rider had been drinking, starting in January 2001. Figure 2 shows the same crash trends using smoothed curves to facilitate understanding of the overall trends. In both figures, a vertical gray line indicates the point at which *RHR* was introduced. In Georgia, decreasing alcohol involvement for motorcycle crashes appears to begin early in 2001 and continues until early 2004. Differences between the proportion of alcohol-involved crashes for the 12 months *before* the introduction of *RHR* and the 14 months *after* the introduction of *RHR* are nonsignificant.

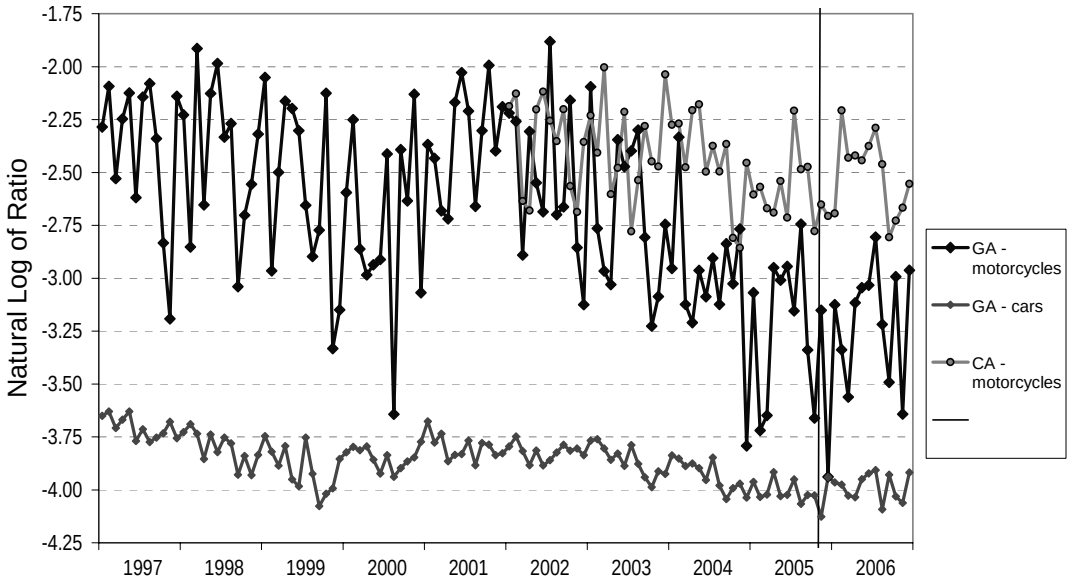

Figure 1. Ratio of Alcohol to Non-Alcohol-Involved Crashes for Georgia Motorcycles (GA MC), California Motorcycles (CA MC), and Georgia Passenger Cars (GA PC)

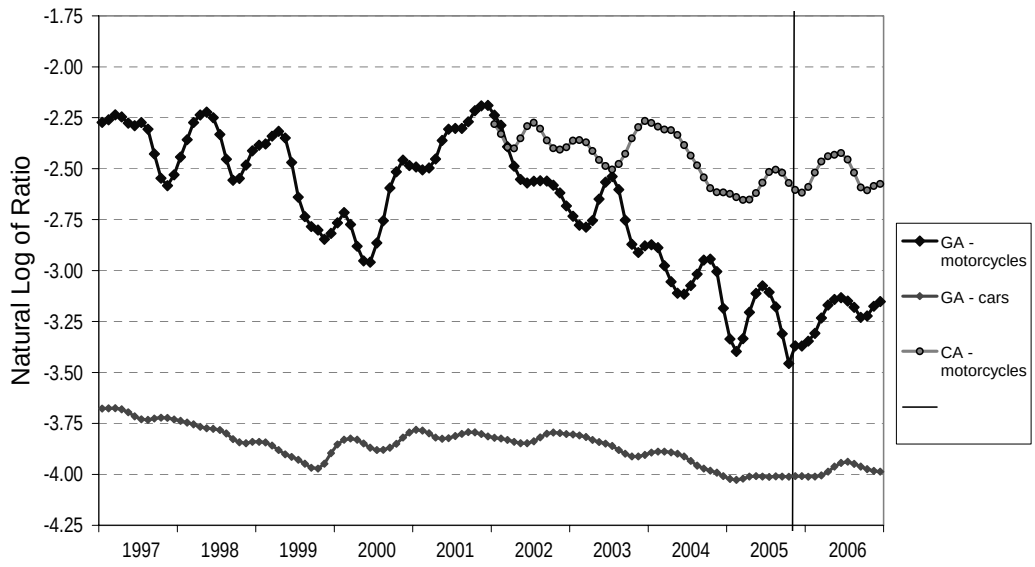

Figure 2. Ratio of Alcohol to Non-Alcohol-Involved Crashes for Georgia Motorcycles (GA MC), California Motorcycles (CA MC), and Georgia Passenger Cars (GAPC) (Smoothed)

The reason for the decrease in the proportion of alcohol-involved crashes from 2001 to 2004 is unknown. There was no corresponding decrease in proportions of alcohol involvement for either Georgia passenger car crashes or California motorcycle crashes. No specific drinking and motorcycling prevention programs were known to have been conducted in Georgia during the period for which data are shown. Because the decrease in alcohol crashes had ended by the start of the program, there would be no reason to believe that the program was responsible for ending the decreasing trend in alcohol-involved motorcycle crashes.

Discussion

Student Questionnaire

Results of the student questionnaire show that students clearly reported having been positively influenced by *RHR*. The questions that showed the greatest change in willingness to intervene were those that dealt with riders unknown to the intervening rider. Large changes were also reported for willingness to plan and observe riders for signs of impairment. The least change was associated with willingness to intervene with those closest to the intervener. Examination of means for pre-test responses shows that this is due to a ceiling effect (i.e., these items changed least because they had the least room to change—students were already highly prepared to intervene in the drinking-and-riding behavior of those closest to them). Examination of the graphs in Appendix D shows that, in most cases, increased means for post-test responses to questions concerning willingness to intervene were primarily due to students answering that they would be willing to intervene "often" in the future.

Questions regarding helping various types of motorists (not necessarily impaired) were related to the portion of the curriculum that discusses riders' tendency to help other riders. This information primarily prepares students for the notion of helping impaired riders. The results related to these questions are not tremendously important to understanding the effects of *RHR*. The effect to the intervention questions was similar, where riders showed more of an increase in willingness to help riders unknown to them; this did not transfer to any significant increase in willingness to help passenger car drivers. This suggests that the program successfully communicated to students, who may not have believed it before *RHR*, the notion that riders can and do help other riders based on membership in the riding community.

As with the behavior questions, responses to all three attitude questions changed for the positive after *RHR*. Increased means were largely the result of more students reporting that they Strongly Agree with the questions regarding the need to intervene with impaired riders. Means for pre-test and post-test responses were similar for the three attitude questions.

Examining the influence of students' demographic characteristics revealed significant differences between groups in an increased willingness to intervene and more responsible attitudes. In most cases, those groups who improved the least were those who started with higher (more responsible) scores on the pre-test. One way to look at this is that there was a ceiling effect that prevented capturing the extent of improvement of those who started out relatively more responsible. Another way to look at it is that the training was apparently most effective for those who needed it most (i.e., the people who started the training with less responsible behavior and attitudes).

An obvious limitation of this study is that it relies on students' reports of their future willingness to intervene. Ideally, students would also have been given a questionnaire several months after the class to determine whether they were still as willing to intervene or whether and to what extent they *had* intervened in the months since the class. Unfortunately, such a followup study was not possible given the resources available for this project.

Time-Series Analysis

An analysis of crash data showed no change in alcohol-involved motorcycle crashes following the introduction of *RHR* to motorcycle safety instruction in Georgia. This is not surprising. Further, it should not be considered proof that *RHR* was not effective. Over 1 year, 4,889 Georgia students were exposed to the program. The majority of these were new riders who were not riding a significant number of miles per year. An unknown number of riders were also exposed to the *RHR* message of alcohol peer intervention through news stories that resulted from news releases in the summer of 2006. By comparison, vehicle registration data for 2005 shows 142,010 registered motorcycles in Georgia (www.fhwa.dot.gov/policy/ohim/hs05/xls/mv1.xls) and licensing data for 2002 (published in 2007) shows there were 231,013 people in Georgia with motorcycle licenses (MSF, 2007). The purpose of the program is to attempt to change the culture of motorcycling such that the motorcycling community, which has expressed an unwillingness to intervene in impaired riding in the past, becomes willing to intervene in the future. To accomplish this culture change will certainly require spreading the *RHR* message through more outlets than were available during this project, and it will require more than the 14 months following initiation of the program to register effects on alcohol-involved crashes.

Summary

RHR training appears to have had a significant positive effect on students' willingness to intervene in the drinking and riding of other riders. A caveat is that these findings are based on *self-reported* changes in attitudes and behavior and that the post-training measure was taken immediately after training. Ideally, a followup questionnaire would have been used to measure long-term effects of the program and to ask about actual instances of drinking-and-riding intervention.

That crash data did not show an effect of the program is not surprising, given the relatively few riders exposed to the program over the course of one year, the short followup period, and the difficulty of finding effects of a program using crashes as a measure. The purpose of *RHR* is essentially to cause a change in the culture of motorcycling. It is therefore reasonable to suggest that a far greater number of riders will need to be exposed to the message, more time will be needed for attitudes and behaviors to change, and a longer period will be needed to look for changes in alcohol-involved motorcycle crashes before an analysis of crash data is likely to show any effects of the program on crashes.

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Appendix A – Press Release

NEWS RELEASE
FOR IMMEDIATE RELEASE

PRESS RELEASE

For more information:

Contact: Jeanne Phillips
or Jim Gogek
888-846-PIRE (7473)

High Profile Motorcycle Crashes Highlight Importance of Georgia's New Safety Program

The recent serious motorcycle crash of Ben Roethlisberger, and fatal crash of GA Southern receiver Teddy Craft, is bringing a greater awareness to the issue of motorcycle safety. While alcohol played no role in the crashes of Roethlisberger and Craft, impaired riding is nevertheless one of the largest factors in motorcycle crashes in Georgia and across the US.

In fact, **alcohol is involved in 34 percent of all deadly motorcycle crashes…** compared to 26 percent for passenger cars. Research shows that *alcohol contributes to a higher percentage of fatal motorcycle crashes than it does for any other type of vehicle.* Here in Georgia, nearly a third of all motorcycle fatalities involve alcohol.

But a new state-wide program is getting out the "ride sober" message across Georgia – using a source riders trust the most – other riders. The program is called **Riders Helping Riders** and it builds on the close-knit community of motorcyclists to train riders to intervene when other riders are drinking, much the same as they would help when any other rider is in trouble.

Riders Helping Riders is included in all motorcycle safety training programs by the Georgia Department of Driver Services. It teaches ways to reduce or eliminate the likelihood of riding after drinking, how to keep an eye on riders who are drinking, and how to know whether they're becoming impaired and would be a danger to themselves and others.

Riders Helping Riders was designed by Pacific Institute for Research and Evaluation (PIRE) and funded by the National Highway Traffic Safety Administration. If the Georgia pilot program is successful, it may be instituted nationwide.

We would be happy to coordinate your coverage of Motorcycle Safety Program Instructors and their classes in cities across the state.

Appendix B – Student Questionnaire

Location: | | | | | | | | | | | | *Date:* | | / | | / | | | | |

Participant Information Form

Part I. Please complete the questions below. The information you provide will be used only to summarize the characteristics of the group. The data collected will remain confidential. Your name and address are not needed. If you are uncomfortable with a particular question, you do not have to answer it.

q1. What is your age?

q2. Are you: *(please choose one)*

- ⬭ **1 Male**
- ⬭ **2 Female**

q3. Are you employed outside the home?

⬭ **1 Yes** ⬭ **2 No**

IF YES, do you work...?

⬭ **1 Full time** ⬭ **2 Part time**

IF YES, what is your occupation?

q3a.

q4. What is your marital status?

- ⬭ **1 Married**
- ⬭ **2 Living with girlfriend/partner**
- ⬭ **3 Single, never married**
- ⬭ **4 Separated**
- ⬭ **5 Divorced**
- ⬭ **6 Other, please specify**

q4_other

q5. Where do you live?

- ⬭ **1 In the city**
- ⬭ **2 In a suburb**
- ⬭ **3 In a housing area that is not in a city or town**
- ⬭ **4 In a rural area**

q6. Do you consider yourself to be:

- ⬭ **1 African-American/Black**
- ⬭ **2 Hispanic/Latino**
- ⬭ **3 Asian/Pacific Islander**
- ⬭ **4 White**
- ⬭ **5 Mixed Race**
- ⬭ **6 Other, please specify**

q6_other

q7. I would describe my level of riding experience as:

- ⬭ **1 Little or no experience (new rider)**
- ⬭ **2 Some experience**
- ⬭ **3 Very experienced**
- ⬭ **4 Returning to riding after time away**

q8. I have participated in 'Riders Helping Riders' as part of a/an:

- ⬭ **1 Basic rider course**
- ⬭ **2 Experienced rider course**
- ⬭ **3 Other class**
- ⬭ **4 Seminar or club meeting**
- ⬭ **5 Other (describe)**

q8_other _____

_____

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(Part I Continued)

q9. Are you a member of a motorcycle club or similar motorcycle-riding related group?

- ◯ **1 Yes**
- ◯ **2 No**
- ◯ **3 Not applicable/I am a new or returning rider**

q10. When do you do most of your motorcycle riding? *(choose one)*

- ◯ **1 Morning/evening rush hours**
- ◯ **2 Weekends**
- ◯ **3 Night**
- ◯ **4 Not applicable/I am a new or returning rider**

q11. Do you ride principally for: *(choose one)*

- ◯ **1 Routine transportation**
- ◯ **2 Recreation**
- ◯ **3 Transportation and Recreation**
- ◯ **4 Not applicable/I am a new or returning rider**
- ◯ **5 Other, please specifiy**

q11_other | | | | | | | | | | | | |

q12. In the past year, I have rode:

- ◯ **1 Less than 1000 miles**
- ◯ **2 1000 - 3000 miles**
- ◯ **3 3000 - 5000 miles**
- ◯ **4 5000 miles or greater**
- ◯ **5 Not applicable/I am a new or returning rider**

q13. Do you usually ride your motorcycle: *(choose one)*

- ◯ **1 Alone**
- ◯ **2 With a few friends (not in a club)**
- ◯ **3 In a group with club members**
- ◯ **4 Not applicable, I am a new or returning rider**
- ◯ **5 Other, please specify**

q13_other | | | | | | | | | | | | |

q14. Prior to this class or seminar, have you taken a rider training course?

- ◯ **1 Yes**
- ◯ **2 No**

q15. How often are you in situations where riders are drinking alcoholic beverages?

- ◯ **1 Never**
- ◯ **2 Seldom**
- ◯ **3 A few times a month**
- ◯ **4 A few times a week**
- ◯ **5 Almost every day**
- ◯ **6 Not applicable/I am a new or returning rider**
- ◯ **7 Other, please specify**

q15_other | | | | | | | | | | | | |

q16. Where does this drinking take place? *(check all that apply)*

- ◯ **q16_1 At private parties and social gatherings**
- ◯ **q16_2 At riding club meetings**
- ◯ **q16_3 Bike nights at bars/restaurants**
- ◯ **q16_4 Rallies a**
- ◯ **q16_5 Informa**
- ◯ **q16_6 Not app**
- ◯ **q16_7 Other, p**

q16_other | | | | |

This option creates a separate column in the database for each choice in the field. Selected choices will have a "1" in their respective columns while unselected choices will have a "0".

q17. Please mark the answer that best describes your opinion with regard to the following statement:

"Drinking alcohol prevents a motorcycle rider from riding safely."

In my opinion, I:

- ◯ **1 Strongly disagree**
- ◯ **2 Disagree**
- ◯ **3 Do not agree or disagree**
- ◯ **4 Agree**
- ◯ **5 Strongly agree**

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RIDERS HELPING RIDERS

PILOT PRETEST/POSTTEST

We'd like to ask you a few questions regarding your views on helping other riders.

Part II. For each of the statements, please darken one circle (on the left) for **BEFORE** attending *'Riders Helping Riders'* and one circle (on the right) for **AFTER** attending *'Riders Helping Riders'*.

BEFORE ATTENDING *'RIDERS HELPING RIDERS'*					AFTER ATTENDING *'RIDERS HELPING RIDERS'*			
NEVER	RARELY	SOMETIMES	OFTEN	STATEMENT	NEVER	RARELY	SOMETIMES	OFTEN
N	R	S	O		N	R	S	O
○ 1	○ 2	● 3	○ 4	*Example...*	○ 1	○ 2	○ 3	● 4
				Answer Each of the Questions Below "On An Average Day..."				
N *q18_bef* ○	R ○	S ○	O ○	18. Would you stop and help a rider you know?	N ○	R ○	S ○	O ○ *q18_aft*
N *q19_bef* ○	R ○	S ○	O ○	19. Would you stop and help a rider you did not know?	N ○	R ○	S ○	O ○ *q19_aft*
N *q20_bef* ○	R ○	S ○	O ○	20. Would you stop and help a driver of a car?	N ○	R ○	S ○	O ○ *q20_aft*
N *q21_bef* ○	R ○	S ○	O ○	21. Would you watch how much riders around you are drinking?	N ○	R ○	S ○	O ○ *q21_aft*
N *q22_bef* ○	R ○	S ○	O ○	22. If you noticed by watching, that riders you knew were impaired, would you try to stop them from riding?	N ○	R ○	S ○	O ○ *q22_aft*
N *q23_bef* ○	R ○	S ○	O ○	23. Would you think about ways to discourage drinking and riding if you were planning a private party?	N ○	R ○	S ○	O ○ *q23_aft*
N *q24_bef* ○	R ○	S ○	O ○	24. Would you think about ways to discourage drinking and riding if you were planning a group ride?	N ○	R ○	S ○	O ○ *q24_aft*
N *q25_bef* ○	R ○	S ○	O ○	25. Would you stop your best friend from drinking and riding?	N ○	R ○	S ○	O ○ *q25_aft*
N *q26_bef* ○	R ○	S ○	O ○	26. Would you stop your boyfriend, girlfriend, or a relative from drinking and riding?	N ○	R ○	S ○	O ○ *q26_aft*
N *q27_bef* ○	R ○	S ○	O ○	27. Would you talk to the friends of a drinking rider you did not know in an effort to prevent that rider from drinking and riding?	N ○	R ○	S ○	O ○ *q27_aft*
N *q28_bef* ○	R ○	S ○	O ○	28. Would you stop a fellow rider you did not know from drinking and riding?	N ○	R ○	S ○	O ○ *q28_aft*

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Part III. For each of the statements, please darken one circle (on the left) for **BEFORE** attending *'Riders Helping Riders'* and one circle (on the right) for **AFTER** attending *'Riders Helping Riders'*.

BEFORE ATTENDING *'RIDERS HELPING RIDERS'*						AFTER ATTENDING *'RIDERS HELPING RIDERS'*					
STRONGLY DISAGREE	DISAGREE	DO NOT AGREE OR DISAGREE	AGREE	STRONGLY AGREE	STATEMENT	STRONGLY DISAGREE	DISAGREE	DO NOT AGREE OR DISAGREE	AGREE	STRONGLY AGREE
SD 1	D ● 2	NA/ND 3	A 4	SA 5	*Example...*	SD 1	D 2	NA/ND 3	A 4	SA ● 5
SD *q29_bef*	D	NA/ND	A	SA	29. You can't leave it up to the drinking rider to decide if he or she is safe to ride.	SD	D	NA/ND	A	SA *q29_aft*
SD *q30_bef*	D	NA/ND	A	SA	30. A person who has been drinking is the least capable person to tell how safe he or she is to ride.	SD	D	NA/ND	A	SA *q30_aft*
SD *q31_bef*	D	NA/ND	A	SA	31. Even if riders have not had enough to drink to be obviously intoxicated, they can still be a danger to themselves.	SD	D	NA/ND	A	SA *q31_aft*

Thank you for your participation.

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Appendix C – Student Questionnaire Results: Demographic Questions

Age	Number	Percent
<21	284	5.4
21-30	1,119	21.3
31-40	1,464	27.9
41-50	1,357	25.8
51-60	724	13.8
>60	191	3.6
Missing	113	2.2

Gender	Number	Percent
Male	3,563	67.8
Female	1,652	31.5
Missing	37	.7

Employment Status	Number	Percent
Employed	4,719	89.9
Unemployed	489	9.3
Missing	44	.8

Marital Status	Number	Percent
Married	2,868	54.6
Living with significant other	316	6.0
Single, never married	1,150	21.9
Separated	95	1.8
Divorced	686	13.1
Other	79	1.5
Missing	58	1.1

Urbanization	Number	Percent
Live in the city	1,252	23.8
Live in a suburb	2,625	50.0
Live in a housing area that is not in a city or town	320	6.1
Live in a rural area	1,007	19.2
Missing	48	.9

Race	Number	Percent
African-American/Black	923	17.6
Hispanic/Latino	150	2.9
Asian/Pacific Islander	96	1.8
White	3,874	73.8
Mixed Race	82	1.6
Other	61	1.2
Missing	66	1.3

Riding Experience	Number	Percent
Little or no experience (new rider)	2,977	56.7
Some experience	1,629	31.0
Very experienced	199	3.8
Returning to riding after time away	363	6.9
Missing	84	1.6

Took *RHR* as part of:	Number	Percent
Basic rider course	4,862	92.6
Experienced rider course	127	2.4
Other class	35	.7
Seminar or club meeting	9	.2
Other (describe)	53	1.0
Missing	166	3.2

Member of a motorcycle club or group?	Number	Percent
Yes	731	13.9
No	3,487	66.4
Not applicable/I am a new or returning rider	933	17.8
Missing	101	1.9

Primary riding time	Number	Percent
Morning/evening rush hours	458	8.7
Weekends	1,913	36.4
Night	51	1.0
Not applicable/I am a new or returning rider	2,713	51.7
Missing	117	2.2

Primary riding purpose	Number	Percent
Routine transportation	180	3.4
Recreation	1,882	35.8
Transportation and recreation	815	15.5
Not applicable/I am a new or returning rider	2,230	42.5
Other	19	.4
Missing	126	2.4

Miles ridden in last year	Number	Percent
Less than 1,000 miles	1,528	29.1
1,000 – 3,000 miles	550	10.5
3,000 – 5,000 miles	179	3.4
5,000 miles or greater	134	2.6
Not applicable/I am a new or returning rider	2,733	52.0
Missing	128	2.4

Usually rides:	Number	Percent
Alone	1,262	24.0
With a few friends (not in a club)	943	18.0
In a group with club members	105	2.0
Not applicable, I am a new or returning rider	2,746	52.3
Other	74	1.4
Missing	122	2.3

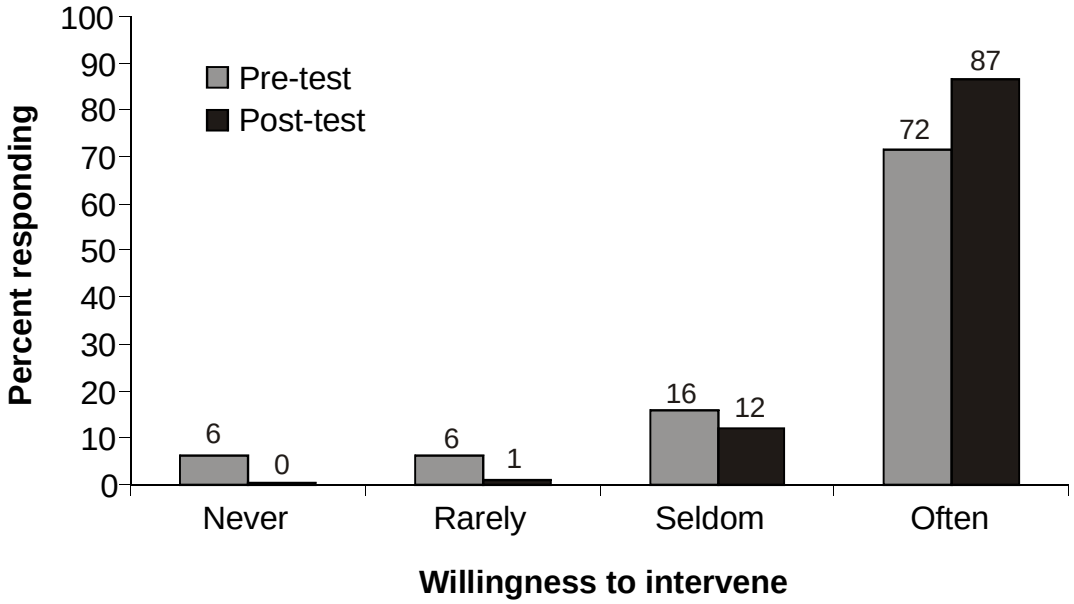
Training prior to current class?	Number	Percent
Yes	408	7.8
No	4,740	90.3
Missing	104	2.0

How often are you in a situation where riders are drinking alcoholic beverages?	Number	Percent
Never	1,413	26.9
Seldom	1,238	23.6
A few times a month	318	6.1
A few times a week	62	1.2
Almost every day	12	.2
Not applicable/I am a new or returning rider	2,084	39.7
Other	13	.2
Missing	112	2.1

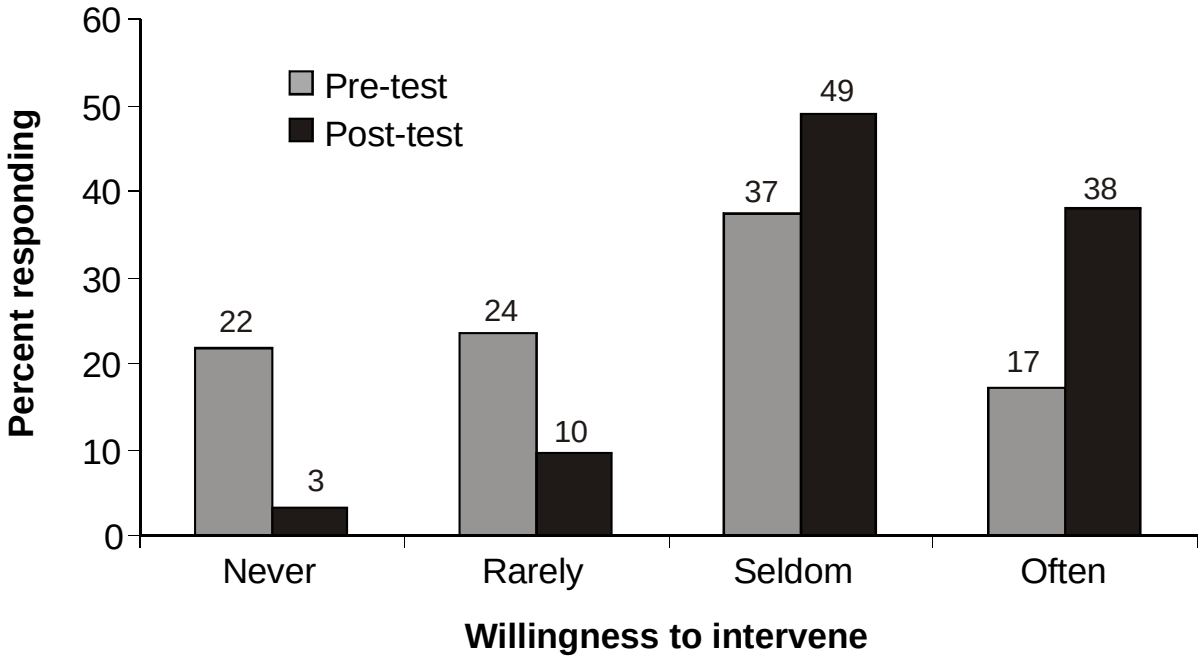
Students reported seeing riders drink at the following locations:	Percentage of students reporting:
Private parties and social gatherings	15.6
Riding club meetings	1.7
Bike nights at bars/restaurants	11.4
Informal group rides	8.1
Other	2.1

Appendix D – Student Questionnaire Results: Behavior and Attitude Questions

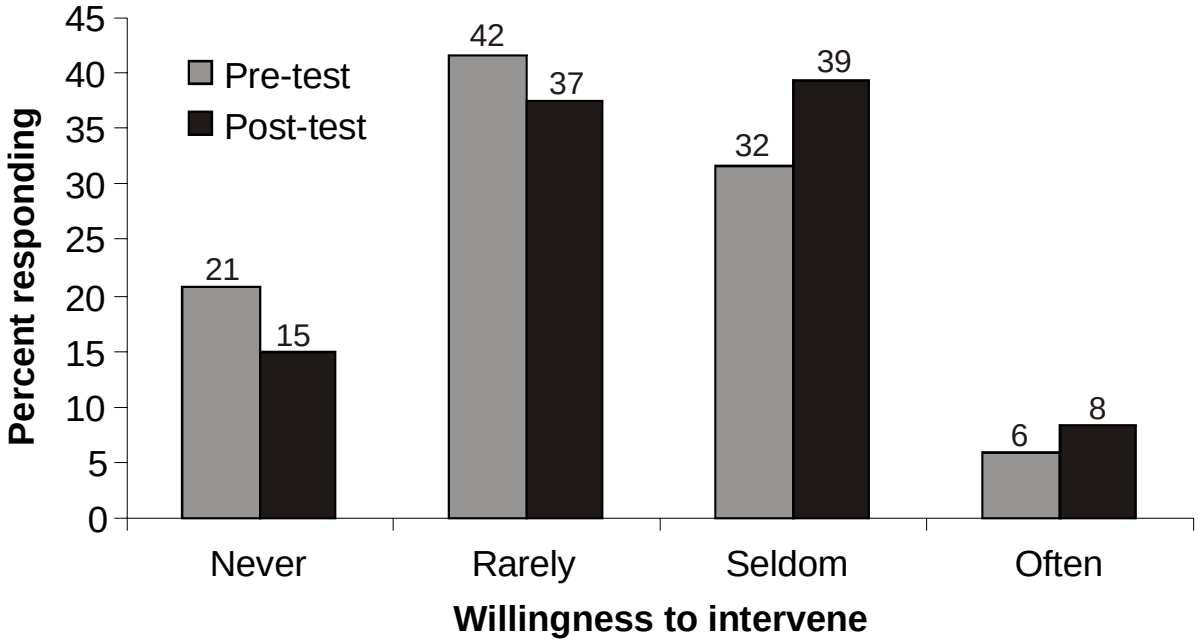
Q 18 - Would you stop and help a rider you know?



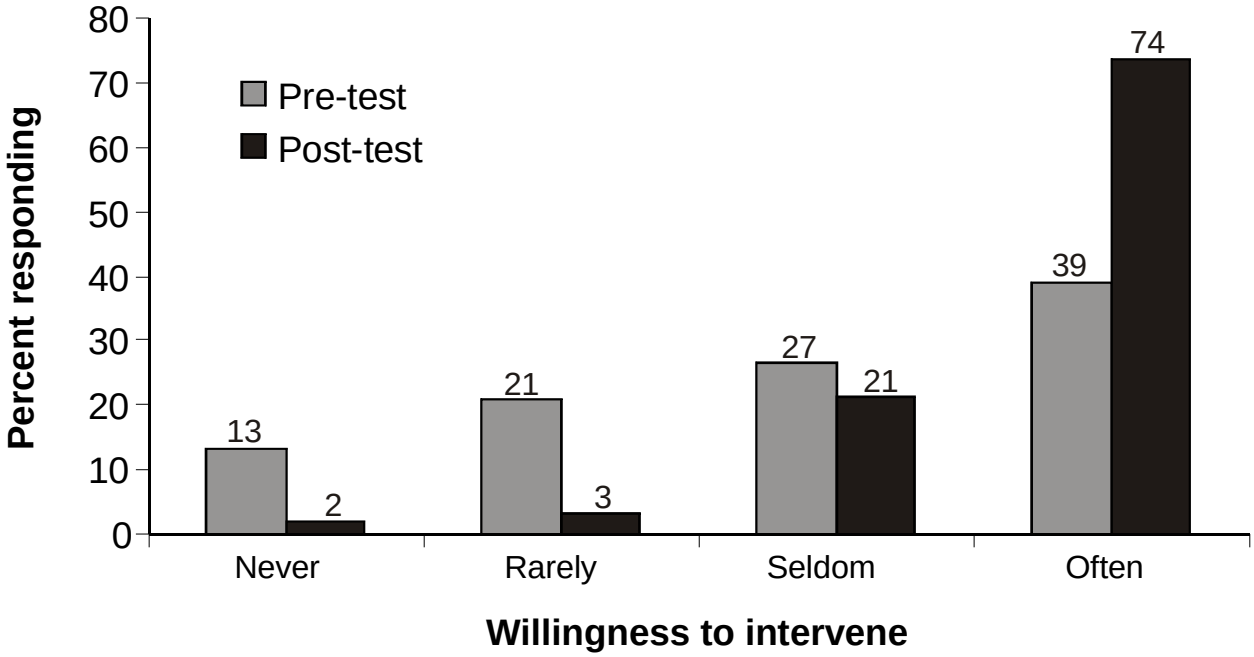
Q 19 - Would you stop and help a rider you did not know?



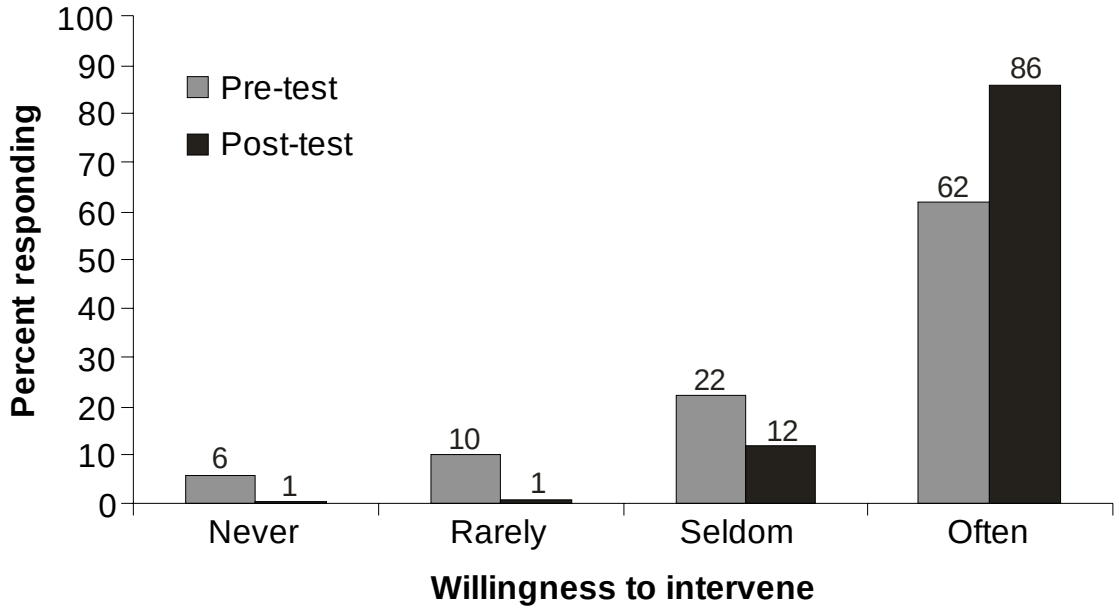
Q 20 - Would you stop and help a driver of a car?



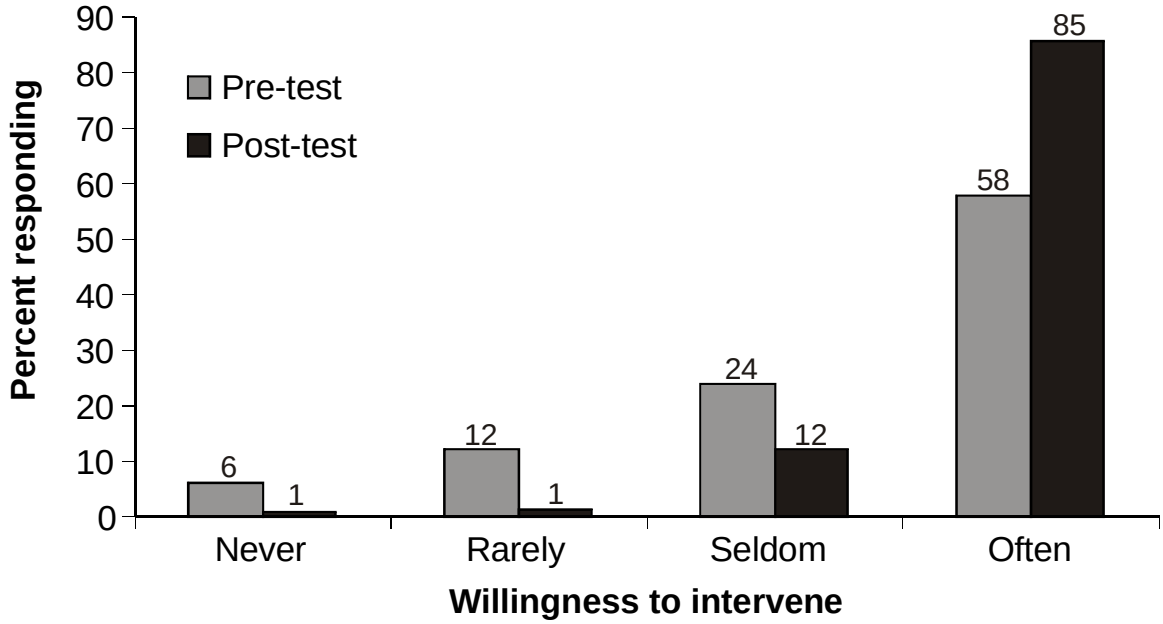
Q 21 - Would you watch how much riders around you are drinking?



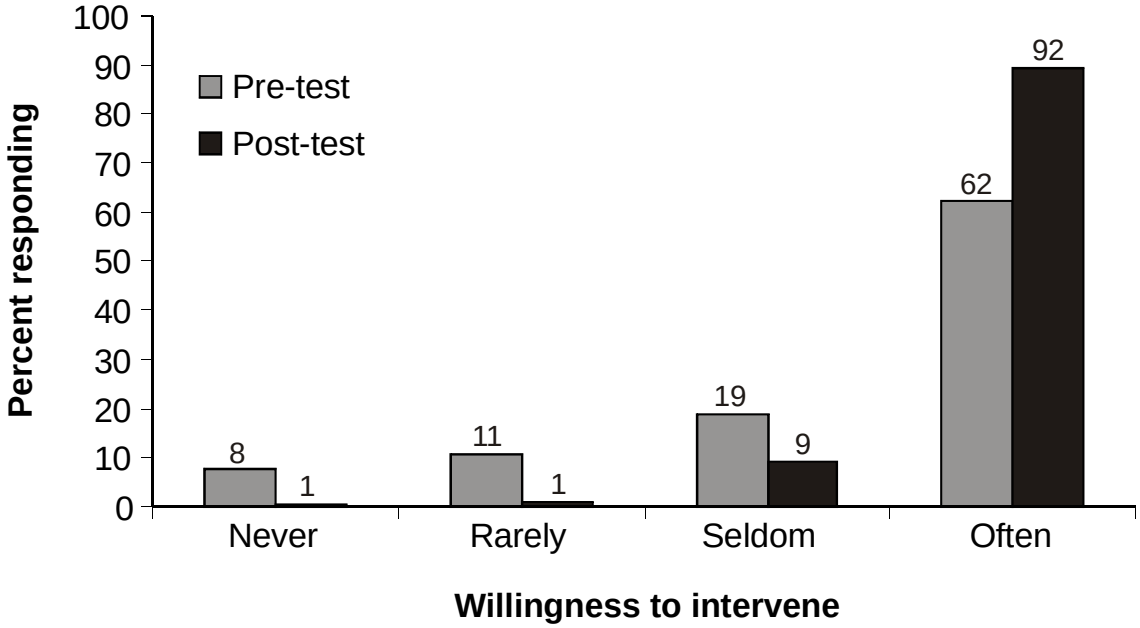
Q 22 - If you noticed by watching, that riders you knew were impaired, would you try to stop them from riding?



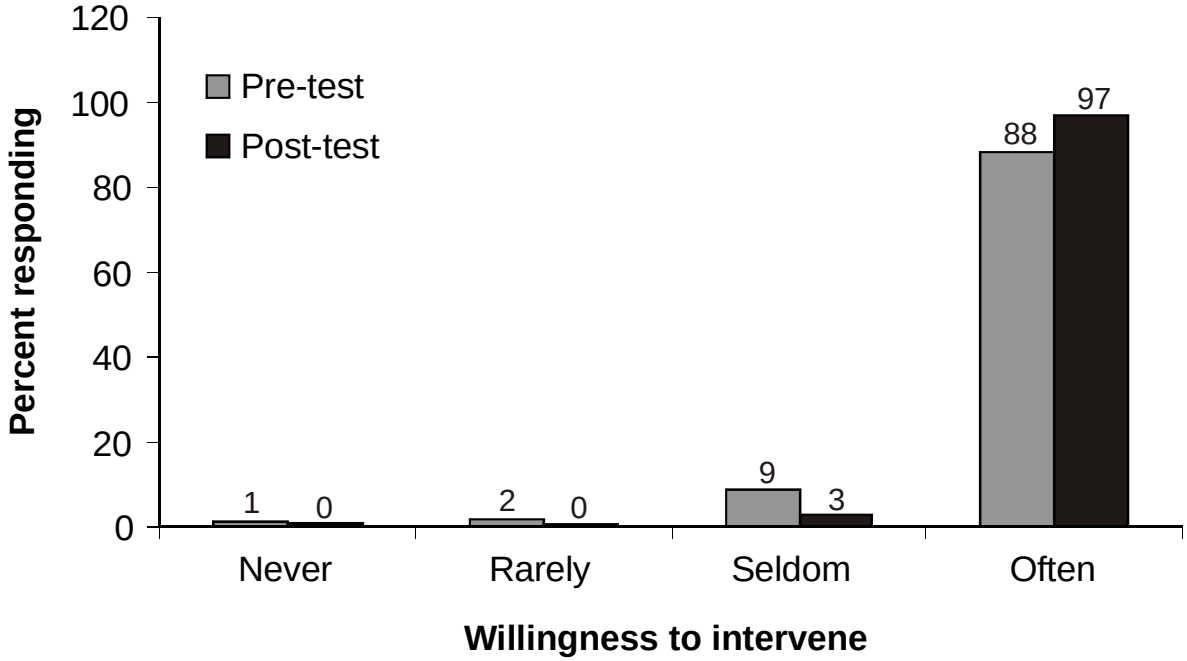
Q 23 - Would you think about ways to discourage drinking and riding if you were planning a private party?



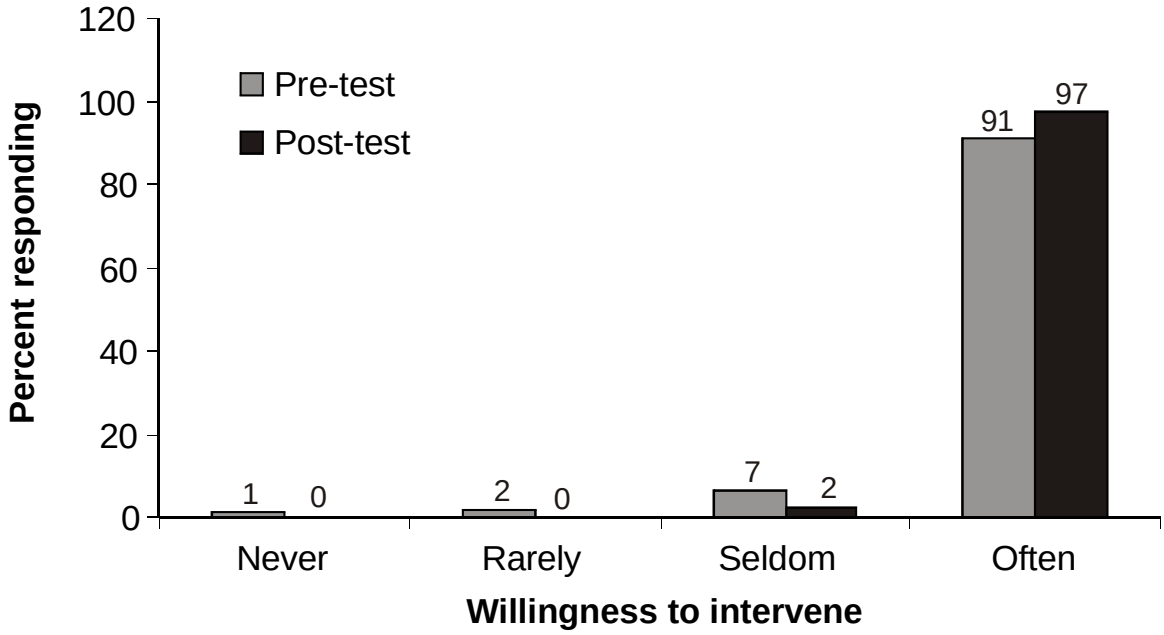
Q 24 - Would you think about ways to discourage drinking and riding if you were planning a group ride?



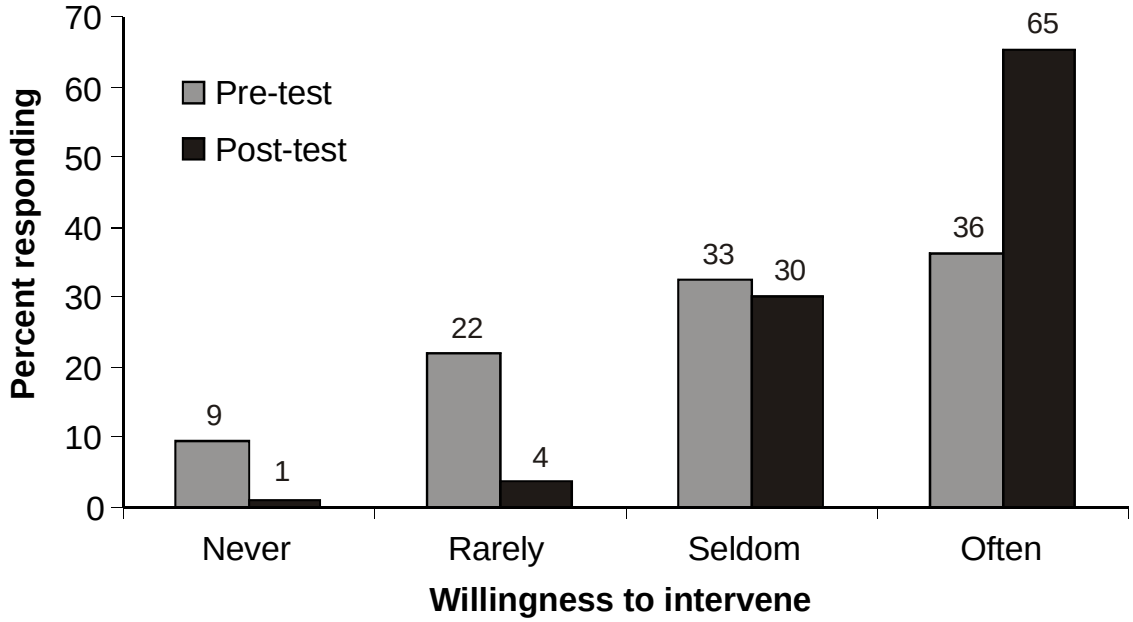
Q 25 - Would you stop your best friend from drinking and riding?



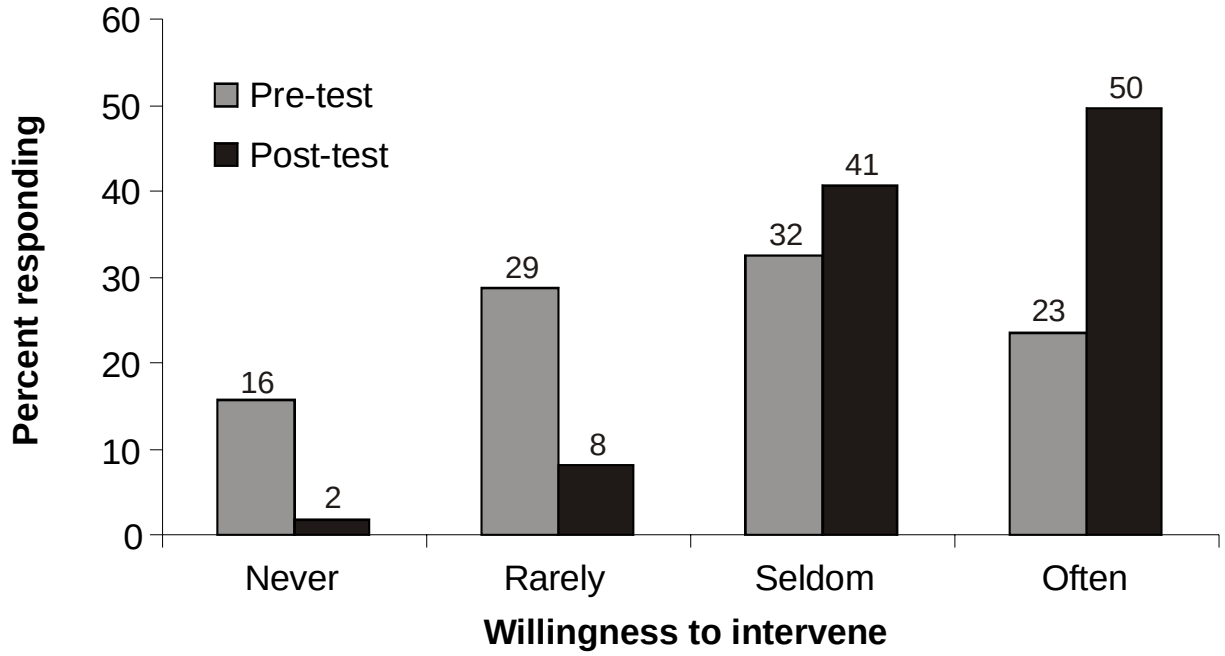
Q 26 - Would you stop your boyfriend, girlfriend or relative from drinking and riding?



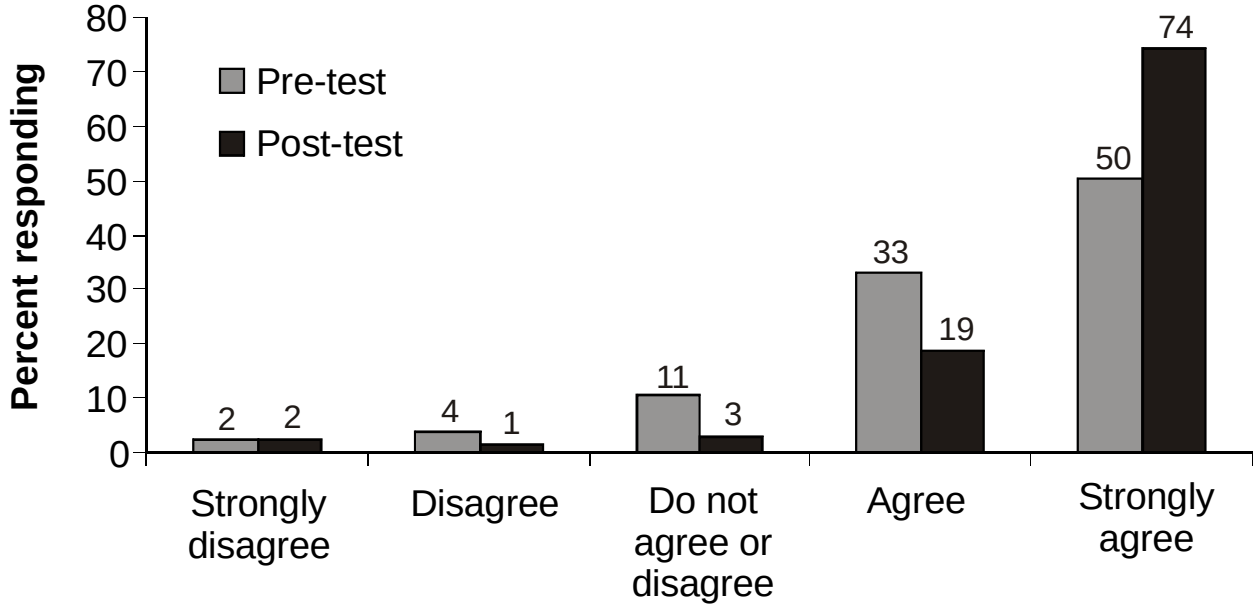
Q 27 - Would you talk to the friends of a drinking rider you did not know in an effort to prevent that rider from drinking and riding?



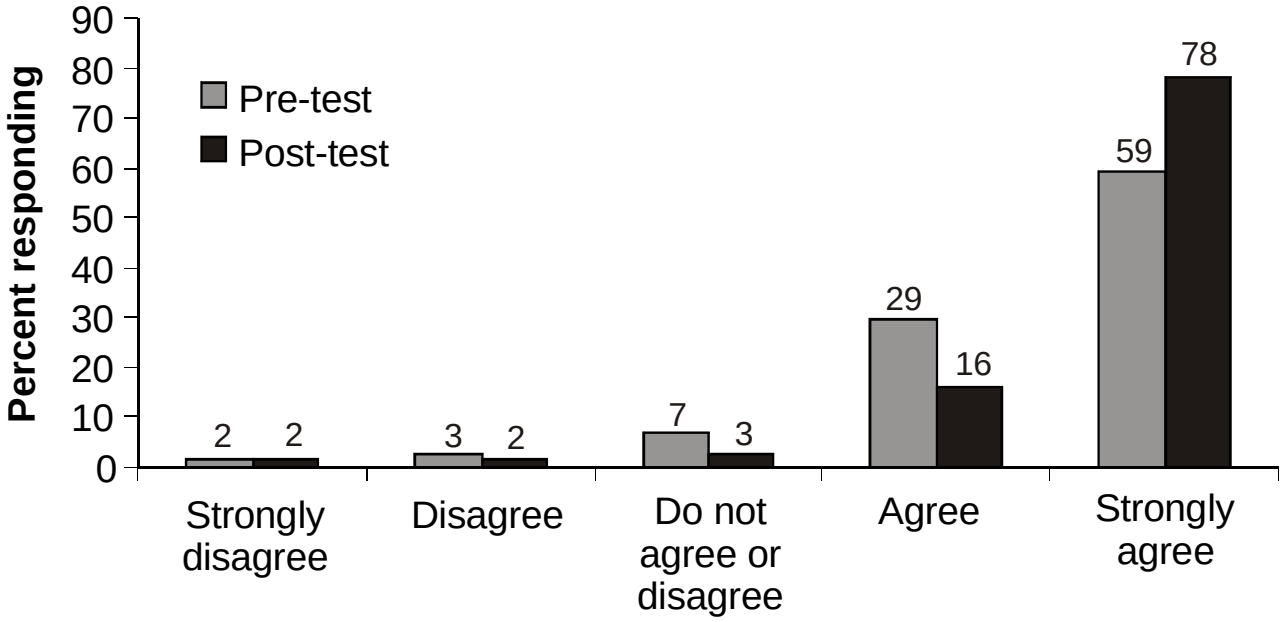
Q 28 - Would you stop a fellow rider you did not know from drinking and riding?



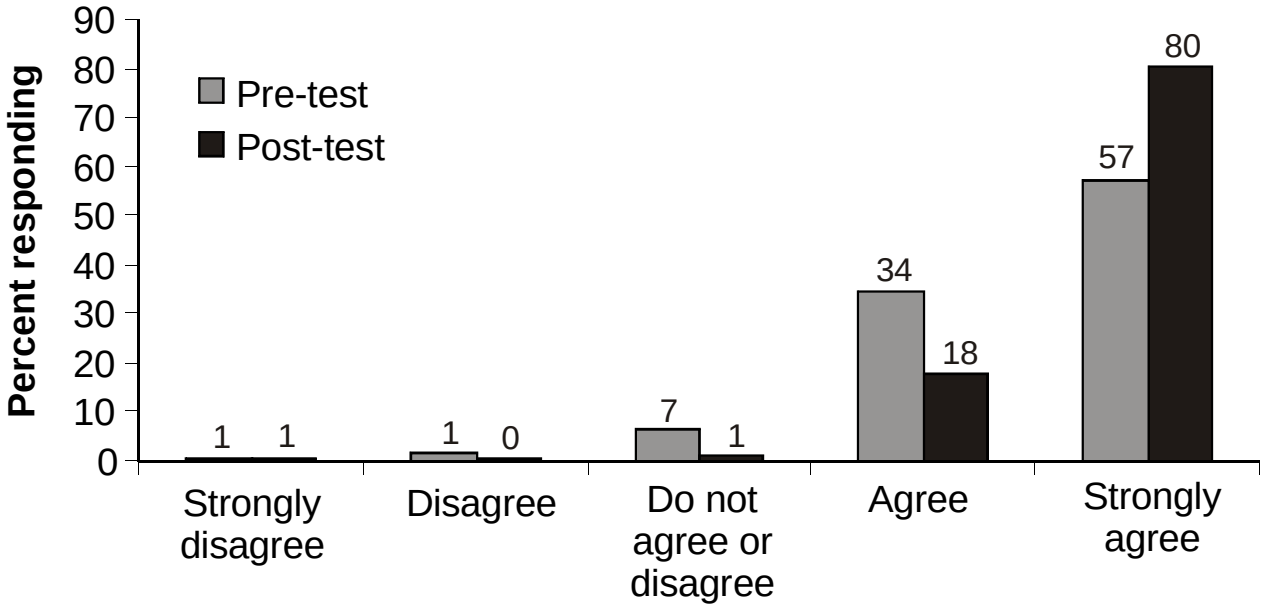
Q 29 - You can't leave it up to a drinking rider to decide whether he or she is safe to ride



Q 30 - A person who has been drinking is the least capable of deciding how safe he or she is to ride

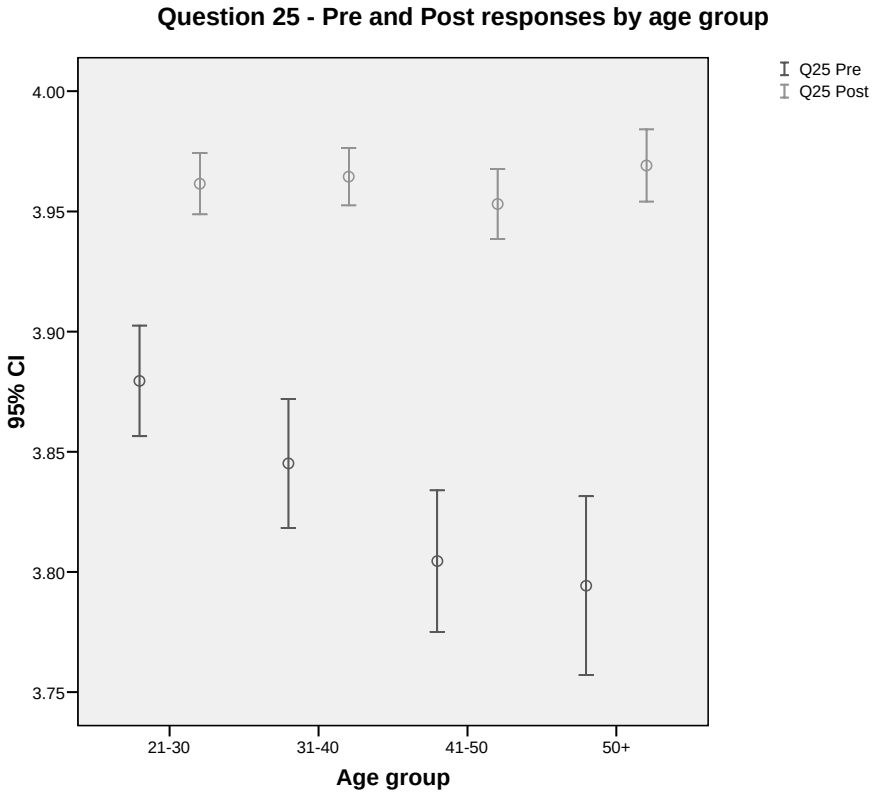


Q 31 - Even if riders have not had enough to drink to be obviously intoxicated, they can still be a danger to themselves

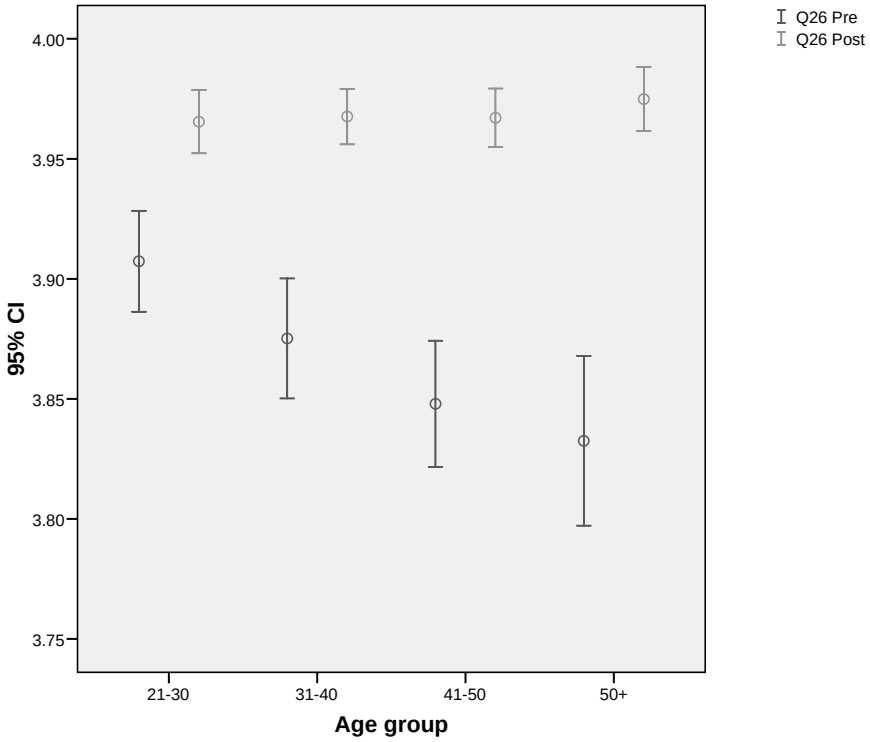


Appendix E – Student Questionnaire Results: Demographics and Pre-test/post-test Changes

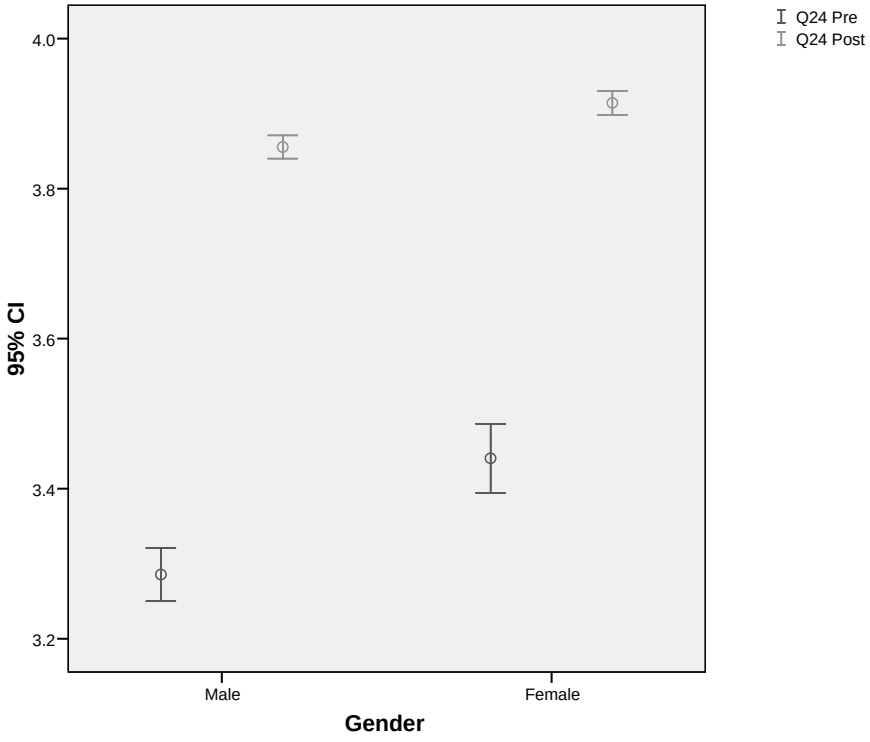
This appendix contains graphs showing means and 95-percent confidence intervals for pre- and post-test responses by demographic groups. These are presented for questionnaire items that showed significant effect of demographics and were discussed in the section on Demographics and Pre-Test/Post-Test Changes on pages 13-14 of this report. The values on the y axes for each chart are based on willingness to intervene as expressed in responses to the questionnaire items, where 1 = Never, 2 = Rarely, 3 = Seldom, and 4 = Often.



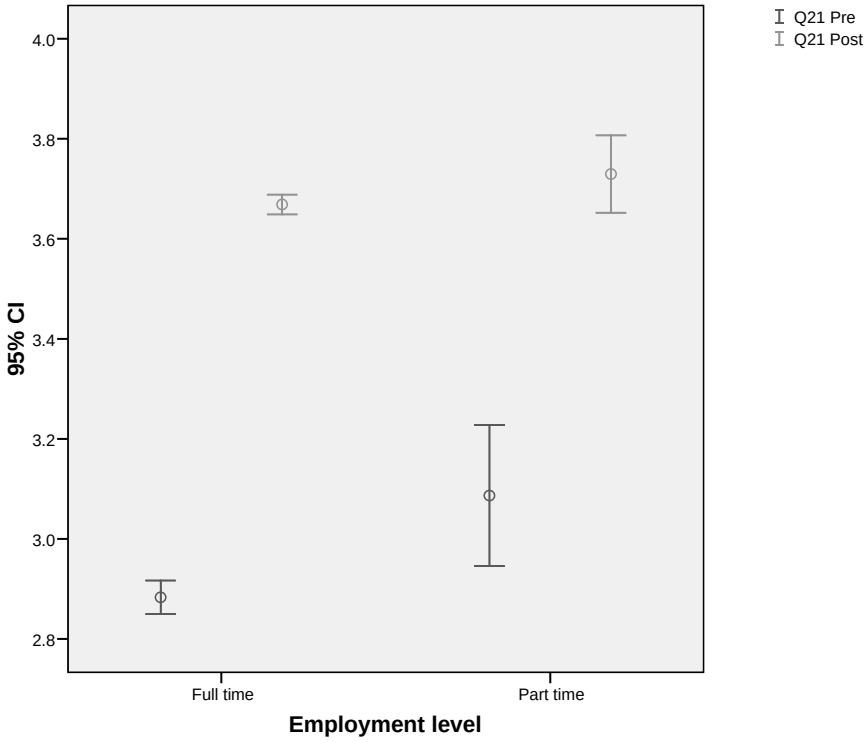
Question 26 - pre and post responses by age group



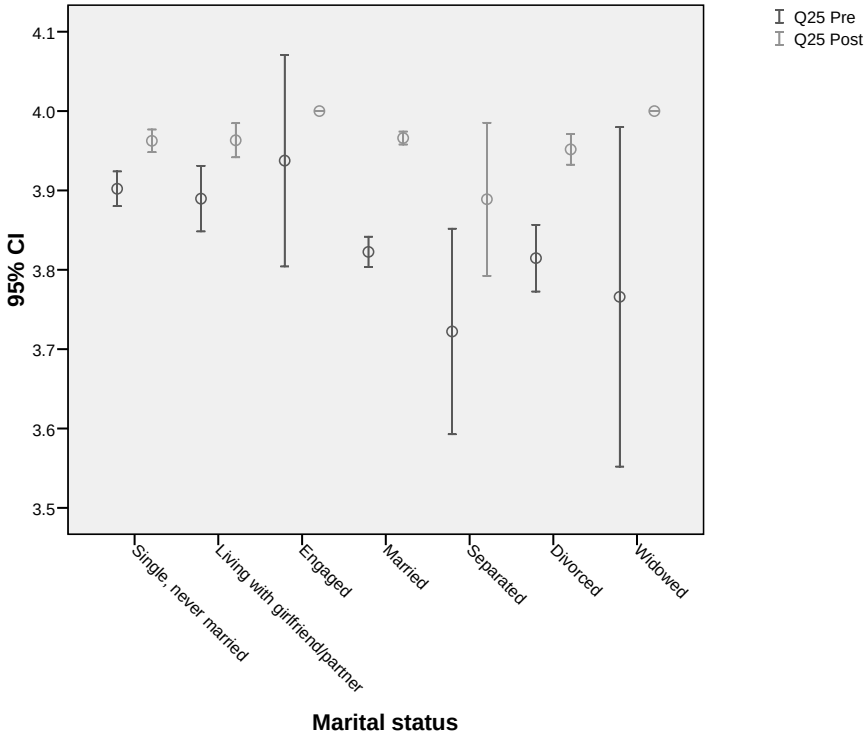
Question 24 - pre and post responses by gender

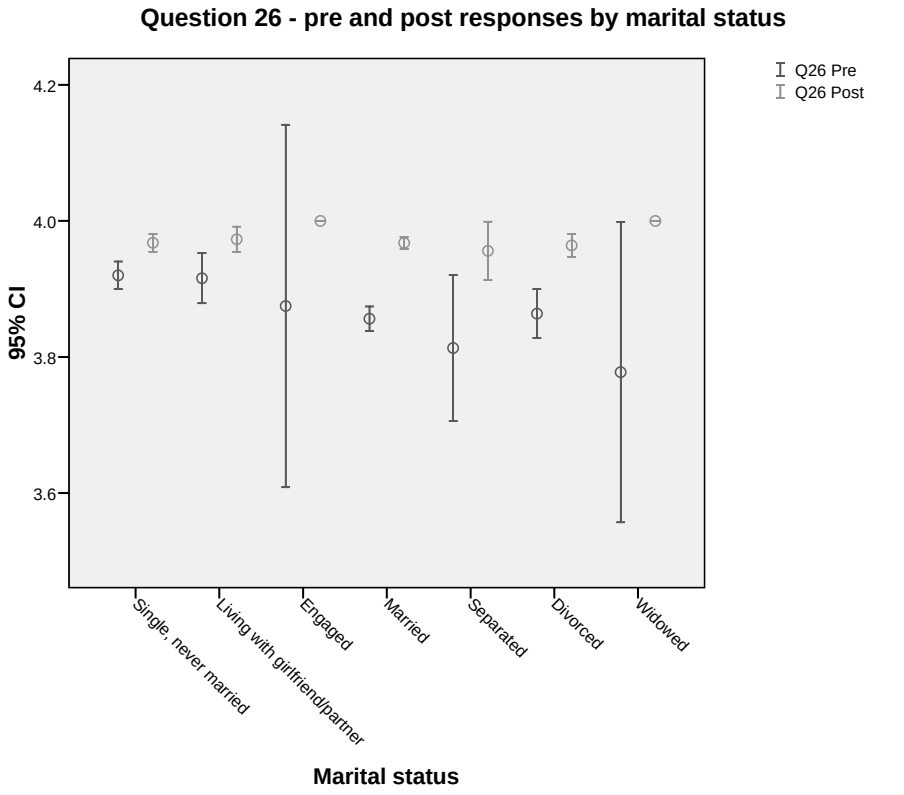


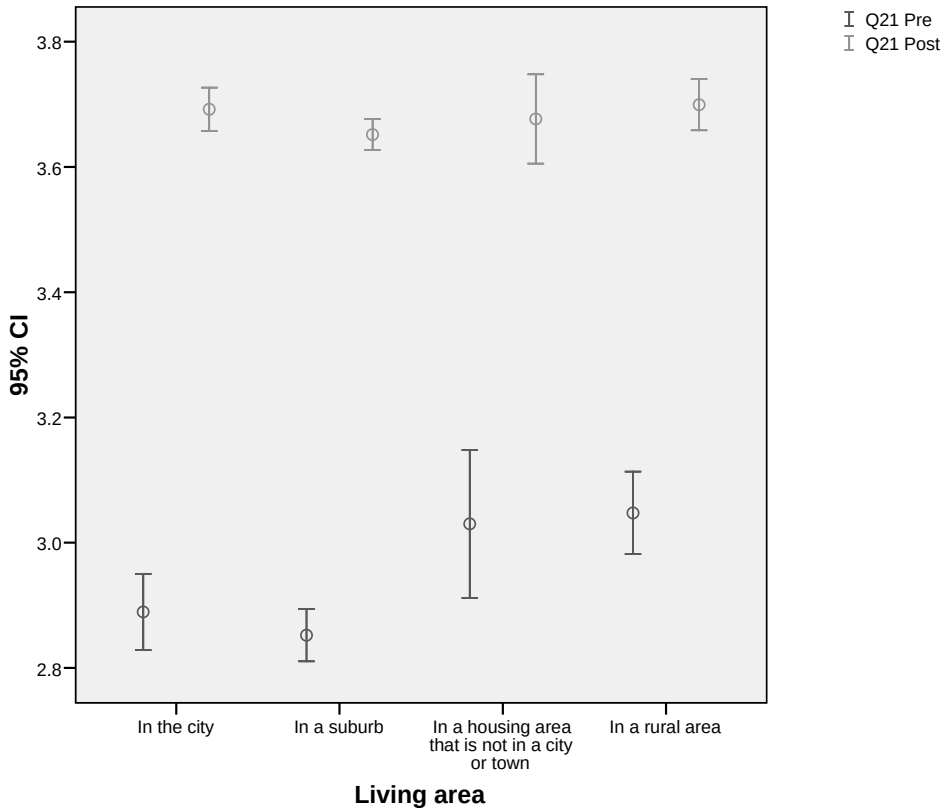
Question 21 - pre and post responses by employment level



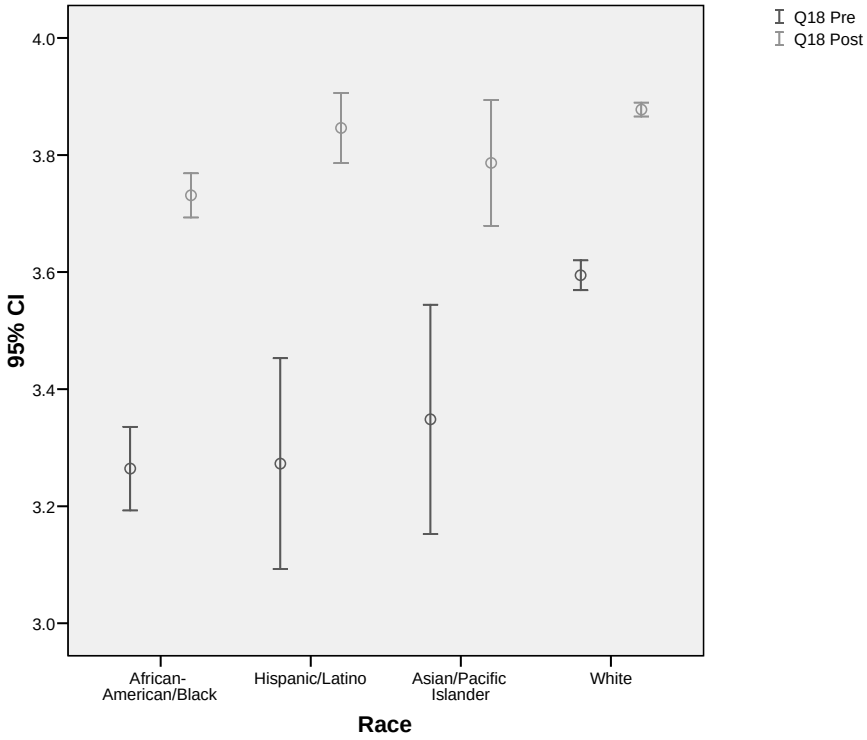
Question 25 - pre and post responses by marital status



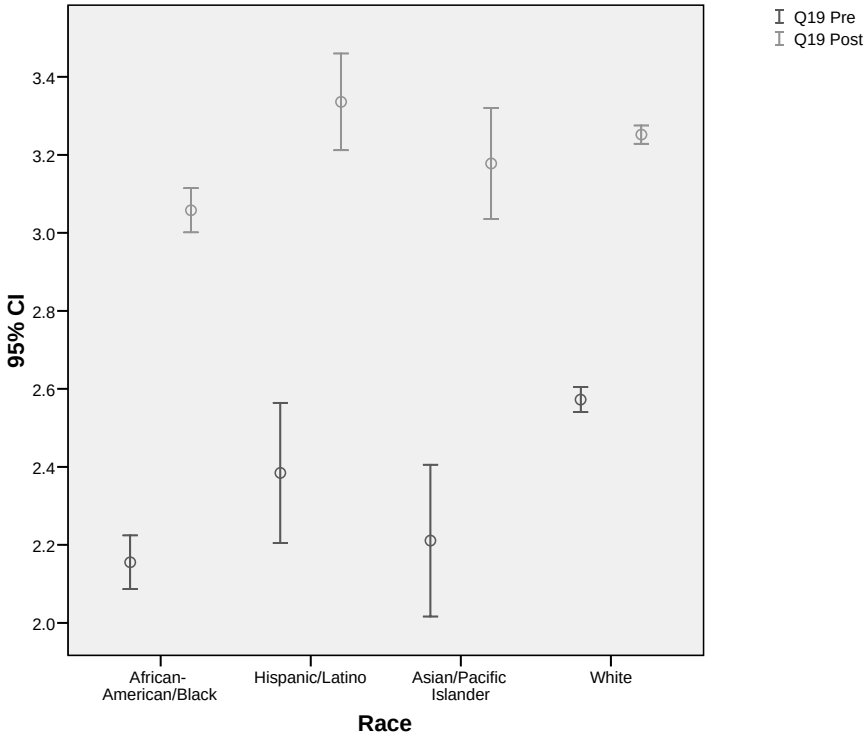

Question 26 - pre and post responses by marital status
Q26 Pre
Q26 Post
95% CI
4.2
4.0
3.8
3.6
Single, never married
Living with girlfriend/partner
Engaged
Married
Separated
Divorced
Widowed
Marital status


Q21 Pre
Q21 Post
95% CI
3.8
3.6
3.4
3.2
3.0
2.8
In the city
In a suburb
In a housing area that is not in a city or town
In a rural area
Living area

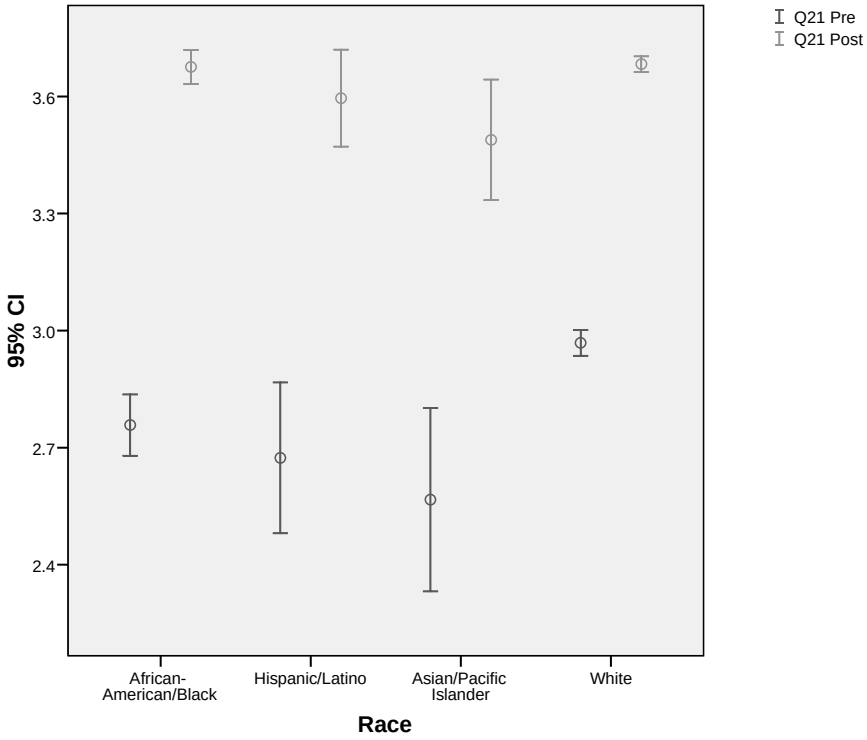
Question 18 - pre and post responses by race



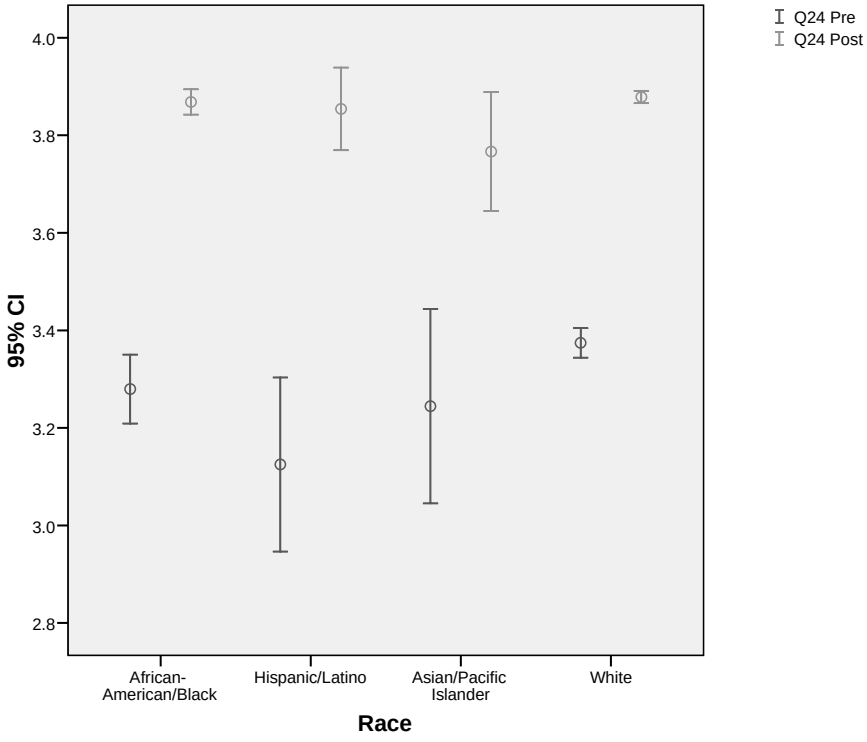
Question 19 - pre and post responses by race



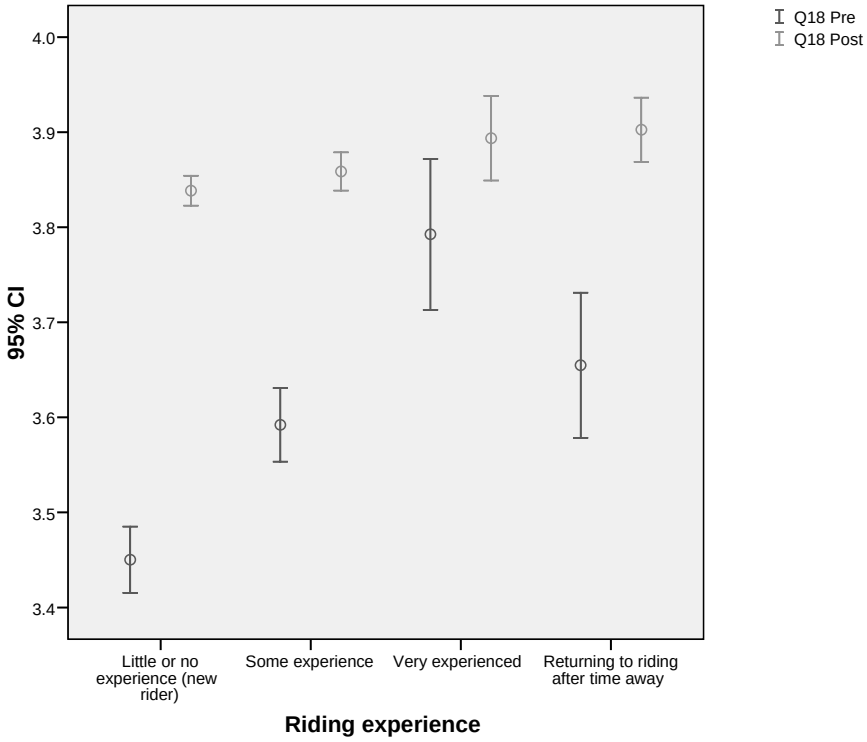
Question 21 - pre and post responses by race



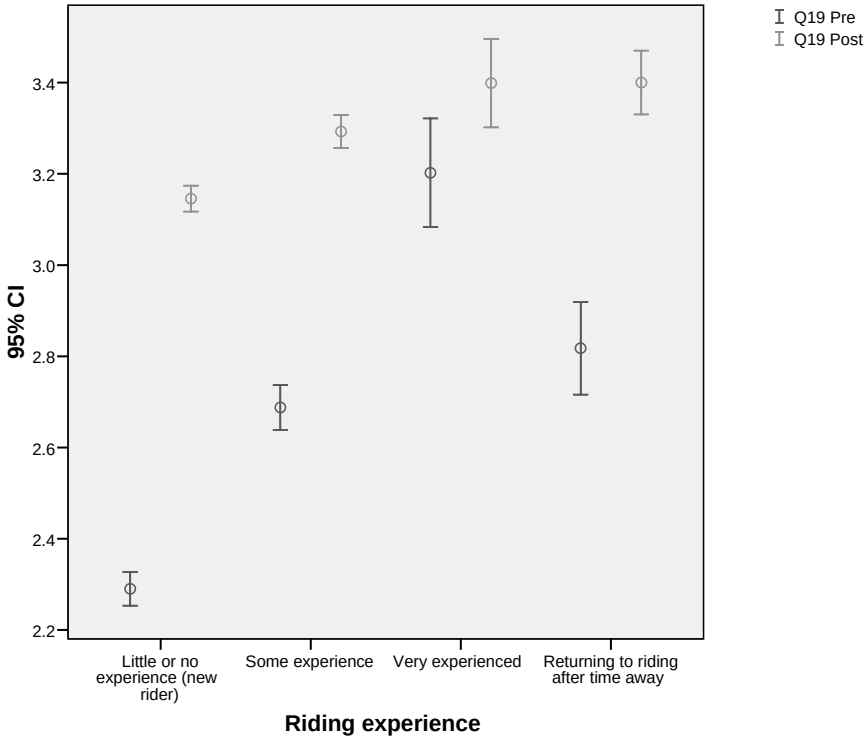
Question 24 - pre and post responses by race



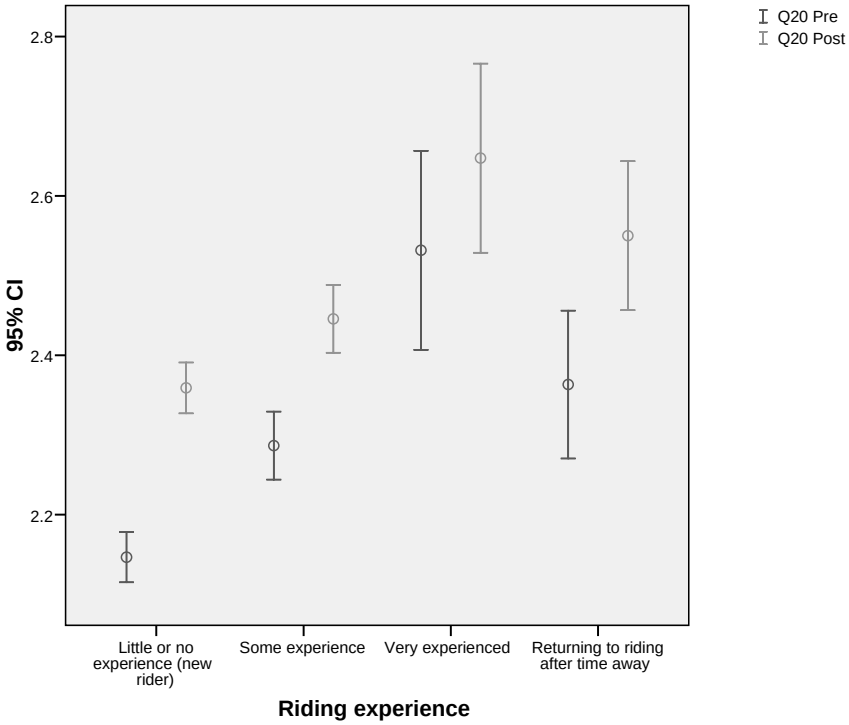
Question 18 - pre and post responses by riding experience



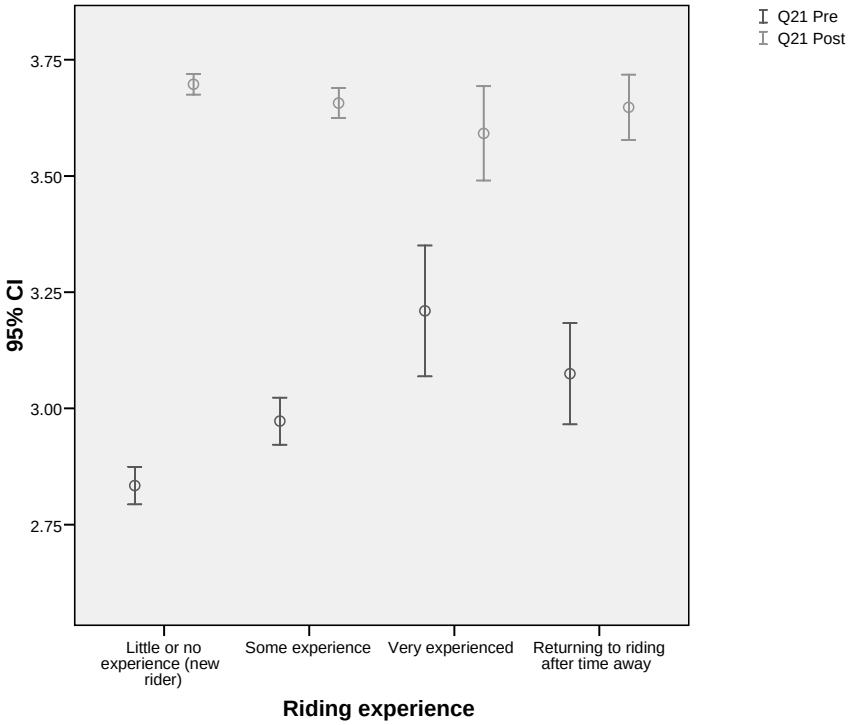
Question 19 - pre and post responses by riding experience



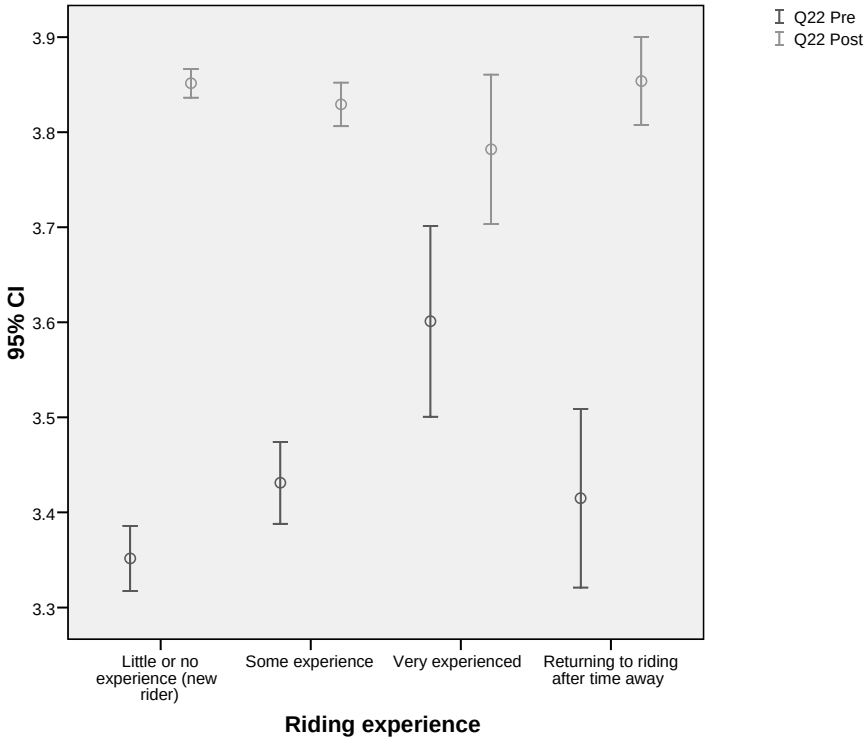
Question 20 - pre and post responses by riding experience



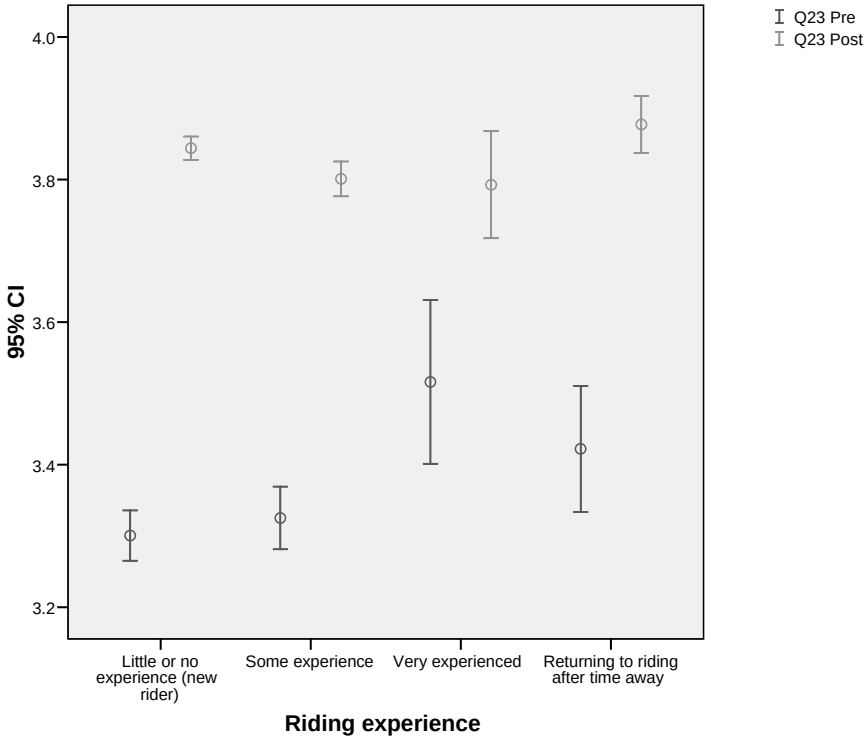
Question 21 - pre and post responses by riding experience



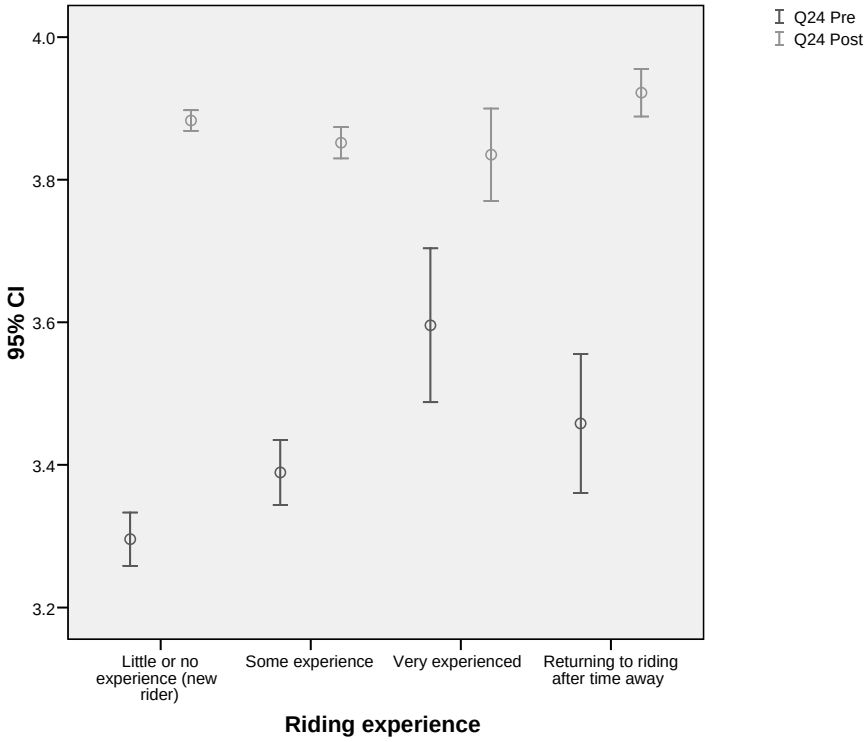
Question 22 - pre and post responses by riding experience



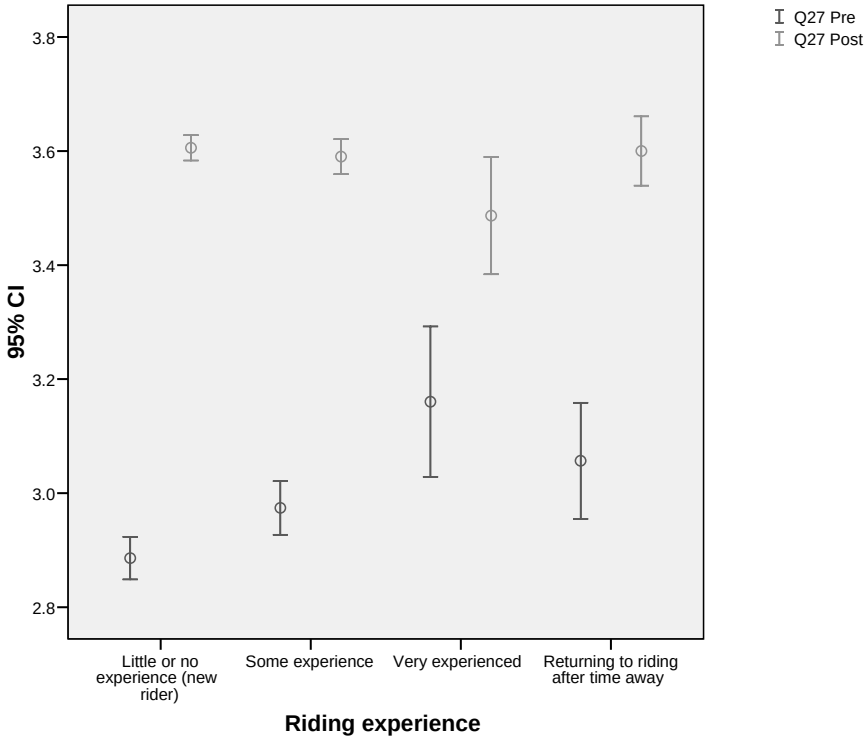
Question 23 - pre and post responses by riding experience

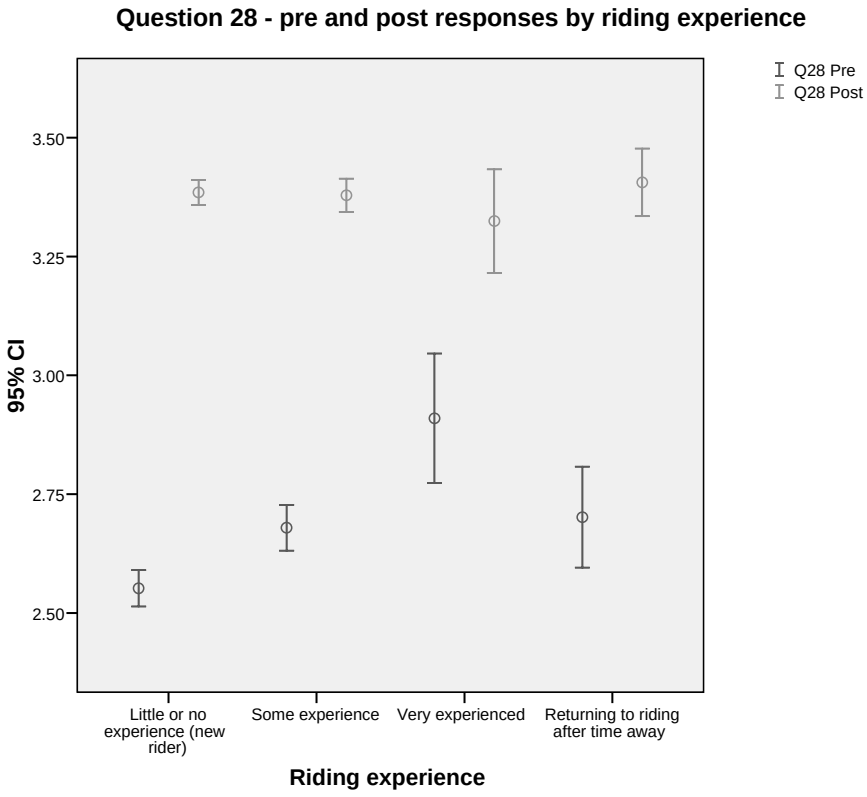


Question 24 - pre and post responses by riding experience



Question 27 - pre and post responses by riding experience




Question 28 - pre and post responses by riding experience
Q28 Pre
Q28 Post
95% CI
3.50
3.25
3.00
2.75
2.50
Little or no experience (new rider)
Some experience
Very experienced
Returning to riding after time away
Riding experience

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