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Research Note

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Safety Issues for Vehicles Adapted for Use by Persons with Disabilities

The number of persons with disabilities participating in employment, recreational, and other activities has steadily increased since passage of the Americans with Disabilities Act (ADA) of 1990. In 1995, the Census Bureau estimated that 26.1% of those persons between the ages of 21 and 64 with severe disabilities were employed, approximately 3.7 million persons. In addition, the Census Bureau estimates that 25.9% of the 2.3 million long-term users of mobility equipment (e.g., wheelchair, cane, walker, crutches) in this age group are employed, almost 600,000 persons. Many persons with disabilities need specific types of modifications made to and/or adaptive equipment added to their motor vehicles to meet their transportation needs. Based upon 1995 data, NHTSA estimates that approximately 383,000 registered vehicles have modifications with adaptive equipment to be used by and/or to transport persons with disabilities. [See *Estimating the Number of Vehicles Adapted for Use by Persons with Disabilities*, NHTSA Research Note, December 1997.]

The number of vehicles with adaptive equipment is expected to continue to increase as the U. S. population ages and as access to employment, travel, and recreation continues to improve for persons with disabilities, as a result of the ADA. To guide agency research in this area, NHTSA began soliciting information on potential safety issues for users of adapted vehicles via the NHTSA Internet site in 1997. [Internet users may visit *http://www.nhtsa.dot.gov/cars/rules/adaptive* for NHTSA's questionnaire on *Automotive Safety Issues for Persons with Disabilities*]. Users (drivers and passengers) of vehicles with adaptive equipment were invited to complete a brief questionnaire on the type of vehicle modified for use and the equipment and/or modification(s) in use. Users were also asked to make an assessment of the safety of the modified vehicle. The responses to the questionnaire were obtained by inviting respondents to complete it rather than obtaining responses from a random sample of users of adapted vehicles, and therefore, may not be representative of the population of users of adapted vehicles. It was expected, however, that those choosing to complete the questionnaire could be biased toward persons with safety concerns regarding their adapted vehicles, and as a result, would provide NHTSA with insight into potential safety issues for adapted vehicles. The following provides a summary of questionnaire responses to date.

A total of fifty-nine visitors to the NHTSA web site completed the *Automotive Safety Issues for Persons with Disabilities* questionnaire during the period May 1997 - March 1998. The majority, 36/59 or 61%, were drivers of the adapted vehicle. Ten of the respondents (17%) were passengers in the adapted vehicle, while 13 of the respondents (22%) used the vehicle as both passenger and driver.

Equal numbers of questionnaire respondents (20/59) indicated that the adapted vehicle being used was either a passenger car or standard van, each representing 34% of those responding. Almost the same proportion of respondents indicated that the modified vehicle in use was a minivan (17 of 59 or 29% of respondents). None of the respondents indicated that the modified vehicle was a heavy truck (over 10,000 pounds GVWR) or a motor home. Table 1 provides

information on the type of adapted vehicle in use by questionnaire respondents.

Table 1
Type of Vehicle Adapted for Use by Persons with Disabilities

Vehicle Type	No. Of Respondents	% Total
Passenger Car	20	34%
Van	20	34%
Minivan	17	29%
Pickup	1	2%
Sport Utility	1	2%
Total	59	100%*

*** Percentages may not add to 100% due to rounding.**

Questionnaire respondents were next asked to choose from a list of 25 specific vehicle modifications or adaptations presently in use in their vehicles. The choices ranged from modifications for the purposes of accomodating users of wheechairs (e.g., securement, ramp, raised roof, hoist or carrier, lift, etc.) to vehicle control adaptations (e.g., power assist hand control, joystick, electonic gas/brake, steering control devices, etc.). Questionnaire respondents could select as many choices from the list of adaptations as were applicable. Table 2 provides details on the five types of modifications most often reported by respondents.

Table 2
Top Five Modifications/Adaptations in Use by Persons with Disabilities

Type of Modification	% Respondents Reporting Use
Hand Control	56%
Wheelchair Securement	42%
Lift	34%
Automatic Door Opener	31%
Steering Control Device	29%

Finally, questionnaire respondents were asked to rate their feelings about the safety of their adapted vehicle by responding to the question "How do you feel about the safety of your automotive equipment or modified vehicle?" Respondents used a scale of 0 (don't feel safe at all) to 5 (feel very safe) to answer this question. Table 3 provides details on the choices questionnaire respondents made regarding the safety of their vehicles.

Table 3
How Users of Adapted Vehicles Rated the Safety of Their Vehicles

Safety Rating	No. Of Respondents	% Total
0 - Don't Feel Safe	2	3%
1	5	8%
2	6	10%
3	8	14%
4	23	39%
5 - Feel Very Safe	15	25%
Total	59	100%

*** Percentages may not add to 100% due to rounding.**

As shown in Table 3, more than 3/4 of the respondents, 78%, rated their adapted vehicles as 3, 4, 5, indicating that most felt their vehicles to be safe (average safety rating=3.5). By vehicle type, however, users of adapted passenger cars rated their vehicles slightly safer (average rating=4) than users of adapted minivans (average rating=3.2) and users of adapted vans (average rating=3.1)

NHTSA plans to continue to monitor website visitors' responses to the *Automotive Safety Issues for Persons with Disabilities* questionnaire to determine if the patterns reported here remain consistent. Questions regarding this research note may be directed to Delmas Johnson at (202) 366-5382 or Gayle Dalrymple at (202) 366-5559. For additional copies, please call (202) 366-4198 or toll free, 1-800-934-8517. This research note and other traffic safety information is available to Internet users at http://www.nhtsa.dot.gov/people/ncsa.