

EVALUATION OF THE STATUTORY CLASSIFICATION OF
THREE-WHEELED, MOTORIZED INVALID VEHICLES

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by

Michael D. Ball
Graduate Legal Assistant

(The opinions, findings, and conclusions expressed in this report are those of the author and not necessarily those of the sponsoring agencies.)

Virginia Highway & Transportation Research Council
(A Cooperative Organization Sponsored Jointly by the Virginia
Department of Highways & Transportation and
the University of Virginia)

Charlottesville, Virginia

March 1978
VHTRC 78-R43

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ABSTRACT

In response to an objection by interested individuals to the fact that Virginia law classifies three-wheeled, motorized invalid vehicles as motorcycles and subjects them to all registration, safety inspection, and operator requirements applicable to other vehicles in that category, the Highway Safety Division of Virginia requested that the Virginia Highway and Transportation Research Council poll fifteen states which permit or prohibit the use of such vehicles on public highways in order to evaluate a request by the objecting individuals for a change in the classification.

The survey of states disclosed widely differing degrees of regulation and an absence of concise data with respect to the number of invalid vehicles in use, the degree to which they are involved in accidents, and the frequency of their use.

On the basis of the information obtained in the survey, it is recommended that Virginia's law be amended to create a special vehicle classification for motorized invalid chairs.

SUMMARY OF FINDINGS

1. Among the states which permit the use of three-wheeled, motorized invalid chairs there is a marked lack of data regarding the number of such vehicles in operation and the extent to which they are involved in accidents.
2. Although a plurality of the states polled exempt three-wheeled invalid vehicles from registration, there are varying degrees of regulation and differences in the approaches taken to regulation.
3. In two of the states a special classification permitting the restricted use of three-wheeled, motorized invalid vehicles is being used with reported success.
4. Among the states that prohibit use of the vehicle on the public highways, the primary objection is the perceived danger to public safety resulting from the difference in speed between the chairs and other vehicles and the unstable handling characteristics of the chairs.
5. The frequency of use and latent demand for the vehicles are difficult to determine. However, the survey disclosed fewer than ten vehicles in operation in four of the five states providing estimates on this item.
6. The highest estimated vehicle population was in the range of 40-50 and was reported by Maine.
7. The survey findings suggest that areas of use may be predicted with some accuracy. The trip purposes often cited were shopping, medical services, recreation, and, in the case of working people, livelihood.

CONCLUSIONS

1. Based on the estimates of motorized wheel chairs in use in the states polled, the initial number to be anticipated in a state of moderate population upon authorization of their use would probably be small.
2. Among the states polled, the position taken by Maine, which has a special statute governing the use of three-wheeled, motorized invalid vehicles, appears to be the most equitable.
3. Despite the absence of statistics to indicate the risk of accidents involving invalid vehicles, public safety would appear to require some form of safety inspection prior to the operation of the vehicles.
4. Where there are few vehicles in use, the licensing of operators may proceed on a case-by-case basis. Where this is unfeasible, certification of operators by one or more physicians may be a reasonable alternative.

RECOMMENDATIONS

Virginia's law should be amended to create a special vehicle classification for motorized invalid chairs. Estimates based on the number of invalid chairs in other states suggest that few vehicles would be involved.

The risk to public safety may be reduced by requiring minimum safety equipment such as brake lights, horn, turn signals, and the display of the slow-moving vehicle emblem. The use of invalid vehicles might also be regulated by restrictions as to where and when the vehicles may be driven, and the participation of physicians in the licensing of operators.

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INTRODUCTION

The statutory classification of motorized invalid vehicles differs among the states polled. Some states either classify the vehicle as a motorcycle or motor vehicle and subject it to all registration, safety inspection, and operator requirements applicable to other vehicles in that category, or they ban the use of the vehicle on the public highways. Other states permit the vehicle to be used under certain circumstances but without the degree of regulation applied to motorcycles.

There are few data to show the effects of the use of motorized invalid chairs in the states polled. Indeed, no state could provide the precise number of motorized invalid chairs being used within its borders. Statistics indicating the number of accidents involving invalid vehicles were also unavailable.

A brief description of one of the more common types of motorized invalid vehicles would be in order. (The model for the following description is the "Chair-E-Yacht," manufactured in Shoshoni, Wyoming.) The vehicle in question resembles a golf cart in some respects, although it is powered by a 5 horsepower internal combustion engine rather than by electricity. Standard equipment includes an electric starter, an alternator with a 12-volt battery, a right-hand throttle and left-hand brake attached to a handlebar steering device, a right-hand ramp lever controlling a ramp located at the rear of the vehicle to permit access by wheelchair, and an upholstered interior. The normal speed is 12-15 mph. The body and ramp are fiberglass and the frame is steel. Optional equipment includes turn signals, horn, windshield, brake lights, headlights, taillights, and seat belts.

PURPOSE AND SCOPE

The purpose of the survey was to examine the various approaches taken by selected states in regulating the use of three-wheeled, motorized invalid chairs, and to determine the impact of such use.

The following objectives were considered essential to a comprehensive evaluation.

1. A determination of the number of three-wheeled, motorized invalid chairs in use on the public highways.
2. A record of the number of accidents involving motorized invalid chairs.
3. A comparison of the restrictions states have placed on the operation of motorized invalid chairs with respect to mandatory equipment, procedures for the licensing of operators, registration, areas of use, etc.
4. Identification of the difficulties encountered by the states resulting from the use of motorized invalid chairs.

METHOD

The motor vehicle divisions and other appropriate governmental departments of fifteen states were polled by telephone. The manufacturer and the Virginia distributor of the more common type of three-wheeled, motorized invalid chairs also provided relevant information. The U. S. Department of Transportation, the Transportation Research Board, and the President's Committee on Employment of the Handicapped supplied information pertaining to the means of transportation for the handicapped.

NUMERICAL DISTRIBUTION AND ACCIDENT STATISTICS

Of the fifteen states in the survey none was able to give the number of three-wheeled, motorized invalid chairs in use on the public highways, nor could any of the states cite the number of accidents involving motorized invalid vehicles. However, estimates of both were provided.

Four of the states estimated that there were between five and ten three-wheeled, motorized invalid chairs in use on the public highways. One state estimated that there were "no more than fifty," one reported "an insignificant number" in use, and the remainder stated that they had no data. (See Table 1.)

Table 1

Numerical Distribution of Three-Wheeled,
Motorized Invalid Chairs

State	Number in Use				
	0-10	10-20	20-30	30-40	40-50
Arkansas*					
California*					
Georgia*					
Kentucky	X				
Maine					X
Maryland*					
Montana*					
Nevada*					
New Mexico*					
North Carolina*					
Oklahoma*					
Oregon	X				
Vermont	X				
West Virginia*					
Wyoming	X				

*No data

No state could provide concise information concerning accidents involving motorized invalid chairs; the invariable response was that none had been reported.

There are several explanations for the lack of data. For example, it becomes difficult to establish the number of invalid vehicles when the state has waived the registration requirements or has classified them as motorcycles.

Although the search for the information in question was not confined to the states themselves, other potential sources of data, including the Disabled American Veterans, the U. S. Department of Health, Education and Welfare, the Veterans Administration, and the U. S. Department of Transportation, were unable to assist in this aspect of the survey.

REGULATING THE USE OF THREE-WHEELED, MOTORIZED INVALID CHAIRS

The states polled revealed varying degrees of regulation of motorized invalid vehicles. Table 2 shows that —

1. two states make the use of the vehicles on the public highways illegal;
2. five states classify three-wheeled, motorized invalid vehicles as motorcycles or motor vehicles;
3. six states exempt the vehicles from registration; and
4. two states, while requiring registration, have created a special statutory classification for invalid vehicles.

Table 2

Motor Vehicle Laws and the Three-Wheeled,
Motorized Invalid Chair

State	Illegal	Motorcycles/ Motor Vehicles	Exempt From Registration	Special Statutory Classification
Arkansas	X			
California			X	
Georgia			X	
Kentucky		X		
Maine				X
Maryland		X		
Montana		X		
Nevada			X	
New Mexico			X	
N. Carolina				X
Oklahoma	X			
Oregon			X	
Vermont		X*		
W. Virginia			X	
Wyoming		X*		

*Proposed amendment creating special statutory classification pending.

The two states that forbid the use of motorized invalid chairs cited safety considerations as being paramount. The difference in speed between the chairs and other vehicles and the lack of protection for the driver in case of accident were given as the two primary reasons for the states' position. 2173

Invalid vehicles in the second category are classified as motorcycles or motor vehicles (or both) and the states subject them to all registration, safety inspection, and operator requirements applicable to other vehicles in that category. As an exception, however, the Vermont legislature has provided that a restricted license may be issued to a physically handicapped person for the operation of a "three-wheeled motorcycle" where authorization is granted by the Commissioner of Motor Vehicles. Although information was unavailable regarding the possible difficulties with the definition of "physically handicapped person" and its practical application, it may be assumed that some form of certification by a physician would be a minimum requirement.

It should be noted that among the five states which classify motorized invalid chairs as motorcycles or motor vehicles, Vermont and Wyoming are considering amendments to the motor vehicle law. The Vermont proposal would permit the use of an invalid vehicle by a handicapped person who holds an operator's license restricted to the operation of the specified vehicle. The Wyoming proposal would create a category of vehicles known as "pedestrian vehicles." It is more detailed than the Vermont amendment, specifying the equipment to be included on the vehicle, special permit requirements for operators, permit restrictions, exemptions from registration and fees, and definitions of pedestrian vehicle and physical disability.

Six states exempt three-wheeled, motorized invalid chairs from registration requirements. Among the six, however, certain restrictions are in effect. West Virginia, California, and New Mexico, for example, emphasized the fact that the operator of an invalid vehicle would have to refer to local ordinances before using the vehicle on a public highway. Oregon and California also underlined the state policy restricting the use of the vehicles to the handicapped, while Georgia noted that before the vehicle could be operated on the streets it would have to undergo the state safety inspection.

Maine and North Carolina have created a special statutory classification for invalid vehicles.

Section 253 of Maine's motor vehicle laws refers to "Motorized Invalid Chairs" and is reproduced in part below.

The Secretary of State on application shall issue, without the payment of any fee, a registration certificate and registration plates for a motorized invalid chair owned and operated by any invalid person when such application is accompanied by the certification of at least 2 physicians as to such person's physical incapacity.

The statute goes on to provide that the Commissioner of Motor Vehicles may restrict the use of invalid vehicles "to those streets and highways and hours of the day as will, in his judgment, minimize the danger of injury to the operator." The section concludes with a provision that registration will be permitted only where the vehicle is equipped with adequate brakes and horn.

The North Carolina statute refers to "Motorized Wheelchairs or Similar Vehicles" and authorizes the Division of Motor Vehicles to issue a special operator's license and permanent registration plates. The applicant must not only be qualified to operate the vehicle but must depend upon it as a means of transportation or for his livelihood. The registration plates are valid only on the vehicle for which they are issued and then only while the vehicle is owned by the person to whom they were originally issued.

DIFFICULTIES ATTENDANT UPON USE OF THREE-WHEELED, MOTORIZED INVALID CHAIRS

A number of potential problems are associated with the use of three-wheeled, motorized invalid vehicles, among which the following are often cited.

1. Danger to the operator because of insufficient protection afforded by the vehicle in the event of an accident.
2. Difficulty in drafting and applying a statute to regulate operation effectively.

3. Threats to public safety created by the difference in speed between the chairs and other vehicles and the invalid vehicle's unstable handling characteristics.
4. Difficulty in predicting the disruption of the flow of traffic because of the unknown demand for motorized invalid chairs.

Regarding the first objection, states considering a change in the vehicle classification must weigh the dangers posed by the vehicle with the benefits of use. When a serious accident occurs, the risk to the operator of the invalid chair is great. The more popular type of invalid vehicle, for example, has a fiberglass shell and an open cockpit. Even if the operator were wearing a crash helmet, personal injury, including the possible aggravation of any previous disability, would be probable.

The argument against use which focuses on the danger to the operator may be met in part by the observation that other vehicles which protect the operator less, such as two-wheeled and three-wheeled motorcycles, mopeds, and bicycles, are permitted to use public highways. The handicapped individual who depends on a three-wheeled, motorized invalid chair for his livelihood may point out that many bicycles, mopeds, and motorcycles are used in unessential activities.

The second of the more common objections to invalid vehicles, that complications in drafting and applying an adequate statute argue against their use, must contend with the fact that several states have created and applied a special vehicle classification with reported success. Maine, for example, which reported the highest number of motorized invalid chairs in use, claimed that its statute had created no major difficulties, despite the fact that the state's Division of Motor Vehicles was handling applications on a case-by-case basis. Indeed, the policy of the Division in determining the applicant's ability to operate the vehicle is to send the examiner to the applicant's home.

The third argument against invalid vehicles, which is based on the danger posed by their low speed and unstable handling characteristics, is the most difficult to evaluate because of the lack of dependable data. As pointed out above, no state could provide concise information regarding accidents involving invalid vehicles beyond the response that none had been reported. This may be explained by the fact that many of the states reported less than ten invalid vehicles, a situation that not only reduces the risk of accidents but minimizes the predictive value of any accident statistics even when available.

Data from Great Britain indicate that single vehicle accidents involving three-wheeled cars occur at over three times the rate for other cars, although the overall injury accident rate is only about 30 percent greater.⁽¹⁾ But it should be emphasized that the full text of the study referred to was unavailable and that the information cited was taken from an abstract at the time this report was written. It should also be noted that the study took place abroad under unknown conditions — perhaps irrelevant to those in the U. S. generally or those in Virginia — and involved vehicles which may not be comparable to the motorized invalid chair. Conclusions based on the abstract should, therefore, be suspended in favor of a full analysis of the report.

The fourth objection focuses on the fact that the degree of possible disruption of the flow of traffic is almost impossible to predict because of the difficulty in determining the demand for motorized invalid chairs. In other words, the problem is one of identifying "latent demand":

[T]he number of trips taken (i.e., measured historical demand) reflects only what people do given the variety of constraints working on them.... These constraints, separately or jointly, restrict the number of trips individuals can and will make; the difference between the trips people actually make and what they might make under some different set of conditions represents what may be called their latent demand for transportation.⁽²⁾

Measurement of the latent demand among those who need transportation has been shown to be difficult,^(3,4) and although better methods of measurement may be developed,⁽⁵⁾ only the most general information is currently available.⁽⁶⁾

Despite the difficulty of predicting the number of trips that would be taken on a daily basis through the use of the motorized invalid vehicle, the general purposes for which the handicapped need transportation may be determined by reference to a survey conducted in the Washington metropolitan area for the U. S. Department of Transportation.⁽⁷⁾

The survey involved 250 elderly and handicapped people. The population of interest was defined as "residents of the Washington metropolitan area of all ages having chronic conditions which limit their mobility so that they need another

person's aid or a mechanical aid to get around outdoors, or just have difficulty getting around." (8) The estimated size of this population at the time of the survey (1974) was 46,648 in the Washington metropolitan area. (9)

The interviews were divided into ten categories and involved five disability groups in each of two age groups, "under 65" and "65 and over." (See Table 3.) Respondents completed questionnaires designed to reveal their current use of and need for transportation. Patterns of travel were then compared to those found in a 1968 transportation survey of 50,000 residents conducted by the Metropolitan Washington Council of Governments. The relevant findings of the survey are set forth below. (10)

The elderly and handicapped took .74 trips per person per day for purposes of work, shopping, medical/dental, social/recreational and church, while the total population traveling for all purposes registered an average of 1.80.

The majority of commuter trips (to work and school) occurred between 6:00 a.m. - 9 a.m. and 4:00 p.m. - 7:00 p.m. The peak for medical and personal business trips took place between 6:00 a.m. - 9:30 a.m., for social and recreational trips between noon and 3:00 p.m. There was an even daily distribution of shopping trips.

For unemployed job seekers, transportation had little effect on their unemployment. However, while transportation had no effect on employed job seekers in holding or seeking a job, transportation difficulties do discourage active job seeking.

The use of social services is disrupted when accessible transportation is unavailable.

Both the elderly and handicapped would travel more — for shopping, social and church trips in particular — if transportation were barrier free.

Both groups reported fewer trips during morning and evening rush hours, late at night, and during inclement weather.

Although the cost of transportation is an important factor for both groups, the primary concern of the handicapped is the presence of physical barriers in systems of transportation.

It should be noted that the two categories, handicapped and elderly, often overlap, for the majority of handicapped people are 65 or over. (11)

In sum, the survey disclosed that the elderly and the handicapped travel about one-half to one-third as much as the population as a whole. (12) The frequency and purpose of trips as well as the time periods preferred for travel were generally determined. Thus, while the latent demand for invalid vehicles may remain beyond exact prediction, available data can serve as a basis for possible restrictions of the area, time, and, if necessary, the frequency of use.

Table 3

Percent Disabled by Age and Type of Disability
(From reference 13.)

Age	Type of Disability					Total
	Information	Respiratory	Cardiac	Neuro-musculo skeletal	Paralysis/ Limb Absence	
under 65	4	4	9	13	14	44
65 & over	8	3	14	9	12	56
Total	12	7	23	22	26	100

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