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A Report to Congress on the Federal and State Regulatory Status of Autocycles

Report to the House and Senate Committees on Appropriations

National Highway Traffic Safety Administration

U.S. Department of Transportation

Washington, DC 20590

Executive Summary

The U.S. Congress asked the National Highway Traffic Safety Administration (NHTSA) to report on Federal and State regulations for certain three-wheeled vehicles called "autocycles." The Fiscal Year 2019 appropriations report states in relevant part, "[T]he Committee directs NHTSA to conduct research on the appropriate safety standards and existing State and Federal regulations of Autocycles and report to the House and Senate Committees on Appropriations within 180 days of enactment of this Act."

This report discusses the existing Federal safety regulations that apply to autocycles. Please note that NHTSA does not use the term "autocycle" in its regulations and, as such, it currently regulates all autocycles the same as conventional motorcycles. Otherwise stated, autocycles are subject to the same minimum Federal Motor Vehicle Safety Standards (FMVSS) that are applicable to motorcycles, rather than those FMVSS that are applicable to light vehicles (e.g., passenger cars and light trucks).

This report also discusses State autocycle regulations, including some specific examples. This report does not provide a comprehensive survey of every State's current regulations. It is important to note that State regulations involve not just safety features and equipment that are regulated by NHTSA but also other aspects like operator licensing, vehicle registration, and other factors that are outside the scope of NHTSA's regulatory authority. Although the term "autocycle" is generally accepted to mean a three-wheeled vehicle with a car-like configuration, various definitions created by States and other entities identify an assortment of features required for a three-wheeled vehicle to be classified as an autocycle. NHTSA is aware of 38 States that have a definition for "autocycle," as well as other entities that have an "autocycle" definition such as the American Association of Motor Vehicle Administrators (AAMVA).

Other than describing the current Federal minimum safety standards applicable to autocycles, this report does not set forth any new NHTSA determinations of "appropriate" standards for autocycles. For NHTSA to determine the appropriateness of new or additional Federal standards, NHTSA would need to follow existing statutes and executive orders governing its regulatory approach. NHTSA would begin the regulatory process by taking a data-driven approach to determining what the appropriate safety standards would be for autocycles and would use science and data to identify safety risks and potential economic impacts. The agency's research would include test and evaluation of the safety of existing vehicles and technology, which would depend on availability of existing vehicles. This research, which would underpin NHTSA's subsequent regulatory actions, cannot be addressed within the scope of this report as it would involve longer-term activities including but not limited to data collection and analysis, test procedure development, vehicle testing and evaluation, cost and benefit assessment, and publication of notices to seek and respond to public input.

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Introduction

In report language accompanying the Fiscal Year 2019 appropriations bill (House Report, Departments of Transportation, and Housing and Urban Development, and Related Agencies Appropriations Bill, 2019, H.R. Rep. No. 115-750), NHTSA was asked to report to Congress on the regulatory environment affecting types of vehicles known as "autocycles." The language of the House report follows:

> *Autocycles* — The Committee recognizes the growth of three-wheel light-duty vehicles, also called Autocycles, as a method of passenger transportation. Under Federal regulations, these vehicles are currently classified as motorcycles though they have different physical and operational characteristics than traditional automobiles and two-wheel motorcycles. 38 states have now recognized this difference by establishing new regulations and definitions for Autocycles. The Committee is concerned that a patchwork of laws and inconsistent regulations now exists, absent a Federal standard for Autocycles, thereby causing confusion and hindering the growth of this emerging industry. The Committee directs NHTSA to conduct research on the appropriate safety standards and existing state and Federal regulations of Autocycles and report to the House and Senate Committees on Appropriations within 180 days of enactment of this Act.

The first action contained in this bill language is to "research appropriate safety standards for autocycles," and the second action is to report on "existing state and Federal regulations for autocycles." Regarding the first action, this report does not set forth any new NHTSA determinations of "appropriate" standards for autocycles. The research this would entail cannot be addressed within the scope of this report as it would involve longer-term activities such as data collection and analysis, test procedure development, vehicle testing and evaluation, and cost

and benefit assessment. For NHTSA to determine the appropriateness of new or additional Federal standards, NHTSA would need to follow existing statutes and executive orders governing its regulatory process. This process includes conducting a data-driven assessment to determine what the appropriate safety standards would be for autocycles and using science and various information sources to assess the potential benefits and costs of the regulatory action. NHTSA's approach to researching appropriate safety standards for autocycles would have to consider many factors including but not limited to data collection and analysis, test procedure development, crashworthiness capabilities, and crash avoidance features. Such a research effort may require physical testing of vehicles such as barrier impact tests and dynamic testing on a test track. Relatively few candidate vehicles for testing may exist in the domestic fleet given the very small autocycle market size. NHTSA would seek input from interested parties including vehicle manufacturers, safety advocates, vehicle standards-development organizations, and the general public in order to determine if NHTSA's current approach to regulating autocycles needs updating and, if so, what additional safety standards may be appropriate for these vehicles. NHTSA would follow established rulemaking procedures requiring the agency to publish one or more notices seeking comment from the public. It may also be necessary for NHTSA to conduct a regulatory analysis of the costs and benefits of autocycle regulation, i.e., the impact on manufacturers' and consumers' costs, availability of vehicle choices in both the short and long term, and the safety benefits in terms of injuries, fatalities, and property damage.

This report addresses the second action in the above bill language, discussing the existing Federal safety regulations that apply to autocycles. Please note that NHTSA does not use the term "autocycle" in its regulations and as such currently regulates all autocycles the same as conventional motorcycles. Otherwise stated, autocycles are subject to motorcycle safety

standards rather than those for light vehicles (e.g., passenger cars and light trucks). This report also discusses State autocycle regulations, including some specific examples. It is important to note that State regulations involve not just safety features and equipment which are regulated by NHTSA but also other aspects like operator licensing, vehicle registration, and other factors which are outside the scope of NHTSA's regulatory authority.

Types of Three-Wheeled Vehicles

Three-wheeled vehicles may exist in many different configurations, ranging from those that closely resemble ordinary two-wheeled motorcycles to those that resemble passenger cars. In between these extremes, there is a spectrum of possible three-wheeled vehicle configurations having a mix of features associated with either motorcycles (e.g., handlebars, saddle-type seats) or light passenger vehicles (e.g., steering wheel, bench or bucket seats). There are several distinct types of three-wheeled vehicles that can be grouped according to their similar design characteristics.

A small subset of three-wheeled vehicles referred to as "autocycles" exists that have a more car-like configuration. These vehicles may have little resemblance to conventional motorcycles.

Although the term "autocycle" generally means a three-wheeled vehicle with car-like characteristics, definitions created by some States and other entities are inconsistent, identifying a variety of different features for these vehicles to be classified as autocycles. Consequently, NHTSA is not able to cite a standardized definition for "autocycle" that is recognized by all States and used throughout the industry.

The overall autocycle market appears to be very small compared to the sales volumes in the light vehicle and motorcycle market segments in the United States. It is difficult to determine the number of autocycle manufacturers and importers in the United States, and NHTSA lacks information on domestic sales or production volumes of autocycles. NHTSA also does not have information about the typical operational profile for autocycles (e.g., recreational, commuting, or other uses).

NHTSA is aware of only one autocycle (the Slingshot, manufactured by Polaris Industries) produced and sold in significant numbers in the United States. An average of roughly five thousand of these vehicles has been sold annually over the last five years,[1] which is comparable to the volumes of some conventional motorcycles. Because that vehicle is open-bodied (i.e., it does not have an occupant enclosure or permanent roof, doors, or windows), whether it is considered an autocycle depends on the details of each State's "autocycle" definition.

Federal Regulation of Three-Wheeled Vehicles

The National Traffic and Motor Vehicle Safety Act (Safety Act) directs NTHSA to issue Federal Motor Vehicle Safety Standards (FMVSS) to reduce motor vehicle crashes and related deaths and injuries.[2] The Safety Act requires manufacturers of motor vehicles and motor vehicle equipment to certify that their products comply with all applicable FMVSS in effect at the time of their manufacture. FMVSS cover a wide range of vehicle performance, characteristics, and

[1] This three-wheeled vehicle, equipped with a steering wheel, side-by-side bucket seats, and foot pedals for brake and throttle control, is known to have total domestic sales of roughly 30,000 units since its introduction into the United States market in 2014. This information was reported by Polaris representatives to NHTSA in a May 7, 2019 meeting.

[2] H.R. Rep. No. 89-1776, at 10 (1966). The Safety Act, as amended, is now codified at 49 U.S.C. §§ 30101 *et seq*.

equipment. The Safety Act also requires motor vehicle manufacturers to notify consumers about any safety-related defects in their motor vehicles and remedy the defect.[3]

NHTSA does not regulate vehicle usage or operation on roads as this takes place at the State and local level. Vehicle registration, driver licensing, and rider equipment regulations such as whether helmets are required for motorcycle operation are among the areas regulated directly by individual States. NHTSA administers highway safety grant programs that can incentivize States to amend or enact laws affecting these issues (e.g., graduated driver licensing, impaired driving prevention). NHTSA does not currently have highway safety grant programs specifically targeting three-wheeled vehicles, including autocycles, nor programs that incentivize adoption of motorcycle registration, licensing, or helmet use laws for such vehicles.

Under Federal law, no State or local government may enforce a law on the safety performance of a motor vehicle or motor vehicle equipment that differs in any way from the Federal standard.[4] The preemptive force of the Federal motor vehicle safety standard does not extend to State and local traffic laws, such as speed limits. Compliance with the Federal safety standard does not automatically exempt any person from liability at common law, including tort liability for harm caused by negligent conduct, except where preemption may apply.[5] The Federal safety standard would supersede if the effect of a State law tort claim would be to impose a performance standard on a motor vehicle or equipment manufacturer that is inconsistent with the Federal standard.[6]

[3] 49 U.S.C. §§ 30118-30120.
[4] 49 U.S.C. § 30103(b).
[5] 49 U.S.C. § 30103(e).
[6] *See* Geier v. American Honda Motor Co., 529 U.S. 861 (2000).

NHTSA Definition of 'Motorcycle'

NHTSA's regulatory definition may be found in 49 CFR 571.3 and is:

> *Motorcycle* means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground.

All three-wheeled motor vehicles, including autocycles, are classified as "motorcycles" under the above NHTSA definition and are subject to fewer FMVSS than light passenger vehicles.[7]

NHTSA Safety Standards for Motorcycles

Under current NHTSA regulations, motorcycles are subject to the following safety standards:

FMVSS No. 106	Brake Hoses
FMVSS No. 108	Lamps, Reflective Devices, and Association Equipment
FMVSS No. 111	Rearview Mirrors
FMVSS No. 116	Motor Vehicle Brake Fluids
FMVSS No. 119	New Pneumatic Tires for Vehicles Other Than Passenger Cars
FMVSS No. 120	Tire Selection and Rims for Motor Vehicles Other Than Passenger Cars
FMVSS No. 122	Motorcycle Brake Systems
FMVSS No. 123	Motorcycle Controls and Displays

[7] The FMVSS apply to motor vehicles and motor vehicle equipment. The Safety Act defines "motor vehicle" as "a vehicle driven or drawn by mechanical power and manufactured primarily for use on public streets, roads, and highways, but does not include a vehicle operated only on a rail line." 49 U.S.C. § 30102(a)(7). NHTSA explained its current interpretation of the term "motor vehicle" with respect to two and three-wheeled vehicles in a notice of draft interpretation published in 2005. 70 Fed. Reg. 34,810 (June 15, 2005). NHTSA stated that it would not consider a two- or three-wheeled vehicle with a maximum speed capability of less than 20 mph to be a "motor vehicle" except in very limited circumstances (for example, if the vehicle has an easily-removable speed governor). NHTSA uses various criteria to determine whether a two- or three-wheeled vehicle capable of speeds of 20 mph or greater is a motor vehicle (for example, whether the vehicle is manufactured primarily for off-road use).

NHTSA also has a standard for certification of motorcycle helmets (FMVSS No. 218).

Prior NHTSA Rulemakings on Three-Wheeled Vehicle Classification

NHTSA engaged in rulemaking efforts in the 1970s[8] to address the safety of three-wheeled vehicles in the United States by amending the definition of "motorcycle" to remove certain three-wheeled vehicles because of the similarities between those vehicles and four-wheeled passenger cars. In 1973 the agency proposed to limit the 'motorcycle' definition to include only two-wheeled vehicles and three-wheeled vehicles without a full or partial passenger enclosure. In response to comments, a revised definition was adopted stating that a motorcycle is a two-wheeled vehicle with motive power or a three-wheeled vehicle with motive power, a handlebar for steering, and a seat that is straddled by the driver. However, the agency was petitioned to not adopt that definition, and NHTSA issued another proposal, this time defining a motorcycle as a two-wheeled vehicle with motive power, or a three-wheeled vehicle with motive power and a handlebar for steering but with no passenger enclosure or provision for such enclosure, other than a windscreen. Ultimately, due to comments about the lack of a demonstrated safety need and other factors opposing the proposed definition change, NHTSA did not pursue that effort to revise the regulatory definition of 'motorcycle.'

[8] See May 16, 1973 NPRM, 38 FR 12818 (May 16, 1973); November 27, 1973 Final Rule, 38 FR 32580 (Nov. 27, 1973); and April 30, 1974 Response to Petitions for Reconsideration, 39 FR 15039 (Apr. 30, 1974), and new NPRM, 39 FR 15046 (Apr. 30, 1974). Comments in response to the April 30, 1974 NPRM mostly reasserted statements that were made and addressed in the earlier rulemaking. No further rulemaking action was taken.

NHTSA Autocycle Classification for Data Collection; Crash Data

Starting in 2017, NHTSA improved data gathering for autocycles by adding two new vehicle body-type classifications to the motorcycle classifications already in use for motor vehicle crash reporting[9]. "Unenclosed Three Wheel Motorcycle/Unenclosed Autocycle [1 Rear Wheel]" is used for, "A large motorcycle with three wheels, configured with two front wheels and a saddle with handle bars or seat(s) and a steering wheel but not completely enclosed." Another new body type classification, "Enclosed Three Wheel Motorcycle/Enclosed Autocycle [1 Rear Wheel]" is used for, "A large motorcycle with three wheels, configured with two front wheels, a seat(s) and steering wheel and completely enclosed." NHTSA also added an "unknown" classification specifically for three-wheeled vehicles, to separate them from unknown two-wheeled motorcycle types.

With the new body-type codes, crashes involving autocycles that previously were grouped with other motorcycle crashes can be singled out.[10]

In NHTSA's 2017 fatal crash data employing these new body type classifications, there were three fatal crashes with four occupant fatalities involving these types of vehicles. The make/model of the involved three-wheeled vehicle in both crashes was the Polaris Slingshot which, as mentioned previously, is an open-bodied vehicle that is considered to be an autocycle under some, but not all, existing State definitions. There were no fatal crashes in 2017 involving

[9] Vehicle types for FARS are assigned according to the "FARS/CRSS Coding and Validation Manual" DOT HS 812 828, available on the NHTSA website here.

[10] The new NHTSA body type classifications do not distinguish autocycles from motorcycle-based three-wheelers configured with two front wheels. Nevertheless, with the aid of make/model information available in the database, it still is possible in most cases to single-out crash-involved autocycles.

vehicles in the "Enclosed Three Wheel Motorcycle/Enclosed Autocycle [1 Rear Wheel]" body-type classification in NHTSA's crash data.

Regulation of Three-Wheeled Vehicles in the States

In the past decade, most States have created a separate vehicle classification for autocycles. A 2017 report on autocycles by the National Conference of State Legislatures (NCSL) found that 31 States had adopted an autocycle classification.[11] (Since that report was published, several more States have adopted this classification.[12]) The report notes that the majority of States with an autocycle classification define an "autocycle" as having three wheels and a steering wheel. However, the report found a variety of different design elements used by different States to define an "autocycle," including:

- foot pedals (fifteen States);
- a roll cage or bar (ten States);
- whether the driver sits or straddles the seat (fifteen States);
- seat belts (nineteen States);
- air bags (four States).

Other referenced design elements include seating configuration (e.g., tandem seating), antilock brakes, and the degree of occupant enclosure (e.g., partially enclosed.)

State regulations for autocycles (and autocycle operators) can differ from those for conventional motorcycles. Some States waive helmet requirements for some or all autocycles.

[11] Steven Lambert & Douglas Shinkle, Transportation Review: Autocycles. National Conference of State Legislatures (Mar. 2017), *available at* http://www.ncsl.org/research/transportation/transportation-review-autocycles.aspx (last accessed June 14, 2019).

[12] NHTSA believes the current number is 38 States, but ongoing State legislative activity makes this number subject to change.

The NCSL report found that thirteen States require occupants to wear protective headgear, although some such States waive this requirement if the autocycle has certain safety features like an enclosed cabin to protect occupants. In some States, an autocycle may be legally operated without a motorcycle license.

One example of a State with an autocycle category is Colorado. Colorado defines an "autocycle" as a "three-wheeled motorcycle that does not use handlebars or any other device that is directly connected to a single front wheel to steer and in which the driver and each passenger ride in a fully or partly enclosed seating area that is equipped with safety belts for all occupants..."[13] A "partly enclosed seating area" is defined as "a seating area that is entirely or partly surrounded on the sides by the frame or body of a vehicle but is not fully enclosed."[14] A motorcycle license endorsement is not necessary to operate an autocycle.[15] Colorado does not require helmets for motorcycle occupants 18 years and older.[16]

In Virginia, drivers of three-wheeled motorcycles or autocycles[17] that have non-removable roofs, windshields, and enclosed bodies are not required to wear helmets.[18]

Other States, while not employing an autocycle category, also regulate three-wheeled vehicles with certain characteristics differently than conventional motorcycles. For example, in California, fully enclosed three-wheeled vehicles not less than 7 feet in length and 4 feet in width

[13] COLO. REV. STAT. § 42-1-102.
[14] *Id.*
[15] COLO. REV. STAT. § 42-2-103.
[16] COLO. REV. STAT. § 42-4-1502.
[17] The Virginia Code defines an autocycle as "a three-wheeled motor vehicle that has a steering wheel and seating that does not require the operator to straddle or sit astride and is manufactured to comply with Federal safety requirements for motorcycles. Except as otherwise provided, an autocycle shall not be deemed to be a motorcycle." Va. Code § 46.2-100.
[18] VA. CODE § 46.2–910.

and weighing 900 pounds or more are subject to the State's mandatory seat belt and child restraint laws.[19] However, occupants of those vehicles are not required to wear helmets.[20]

Additionally, according to a 2011 study,[21] at least 24 States have specific operator testing for three-wheeled motorcycles/motorcycles with sidecars and 27 States restrict licenses to three-wheeled motorcycles/motorcycles with side cars if such a vehicle is used for driver testing.

AAMVA Best Practices

The issue of regulating three-wheeled vehicles continues to be a focus area for State transportation officials. In 2010, the American Association of Motor Vehicle Administrators (AAMVA), a nonprofit organization representing State and provincial officials in the United States and Canada who enforce motor vehicle laws, formed the Three Wheel Vehicle Working Group to review the issues States encounter with three-wheeled vehicles.[22] In October 2013, the Working Group released its "Best Practices for the Regulation of Three-Wheel Vehicles" (AAMVA Best Practices),[23] which describes different types of three-wheeled vehicles and offers guidance to States on registering and licensing these vehicles. The AAMVA Best Practices categorizes three-wheeled vehicles as "three-wheel motorcycles" and further categorizes a subset of these vehicles as an "autocycle," which is defined as a "three-wheel motorcycle that has a steering wheel and seating that does not require the operator to straddle or sit astride it." Because of the different handling characteristics associated with autocycles, the AAMVA Best Practices recommends different operator licensing requirements. For autocycles, AAMVA

[19] CAL. VEHICLE CODE § 27315.1.
[20] CAL. VEHICLE CODE § 27803.
[21] 2011 AAMVA Motorcycle Licensing and Safety Survey of the States, *available at* http://www.aamva.org/Motorcycle-Licensing.
[22] http://www.aamva.org/CWG-Three-Wheel-Vehicle-Working-Group/.
[23] http://www.aamva.org/Best-Practices-and-Model-Legislation/.

recommends that States require a passenger car license; for three-wheel motorcycles, AAMVA recommends a motorcycle endorsement or license. The AAMVA best practices further recommend that three-wheeled vehicles be registered in a manner that distinguishes between three-wheel motorcycles and autocycles.[24]

Conclusion

The request concerning regulations applicable to autocycles in NHTSA's 2019 appropriations legislation includes two parts. The first part, to "research appropriate safety standards for autocycles," is the action the agency would take when initiating a rulemaking on that topic. That research, which would underpin NHTSA's subsequent regulatory actions, cannot be addressed within the scope of this report as it would involve longer-term activities including but not limited to data collection and analysis, test procedure development, vehicle testing and evaluation, cost and benefit assessment, and publication of notices to seek and respond to public input.

The second part of the request, to report on current Federal and State autocycle regulations, is addressed in this report. At the Federal level, NHTSA's regulations include a regulatory definition of 'motorcycle' which classifies three-wheeled vehicles including autocycles the same as conventional motorcycles. Thus, the FMVSS that apply to motorcycles also apply to autocycles.

At the State level, although the term "autocycle" is generally accepted to mean a three-wheeled vehicle with a car-like configuration, various definitions created by States and other

[24] See ANNE TEIGEN ET AL., NAT'L CONFERENCE OF STATE LEGISLATURES, TRAFFIC SAFETY TRENDS: STATE LEGISLATIVE ACTION 2014 (Feb. 2015).

entities identify an assortment of features required for a three-wheeled vehicle to be classified as an autocycle. NHTSA is aware of 38 States that have a definition for "autocycle," as well as other entities that have an "autocycle" definition such as AAMVA.