State Motorcycle Safety Association

# INFORMATIONAL REPORT: DEFINITION OF A MOTORCYCLE

STATE MOTORCYCLE SAFETY ASSOCIATION (SMSA)

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# Introduction

As transportation evolves and modern technological advances take hold, the once-clear boundaries between vehicle definitions and categories crumble with every innovation. The motorcycle is now at the center of a definitional identity crisis for on-road transportation.

The rise in alternative modes of transportation has given birth to new vehicles that defy what was once easily identifiable. Autocycles, which resemble cars, are in some jurisdictions regulated as motorcycles. In contrast, uncodified micromobility options like motorized scooters, motorized unicycles, and motorized bicycles also share the same space in traffic with other vehicles that must be licensed and registered. They are used on both sidewalks and roads, which blurs general guidelines and creates a substantial risk for road users and pedestrians alike.

Unlike the traditional motorcycle, which falls under the purview of regulatory policy and infrastructure design, how these newer vehicle innovations are regulated requires consideration. Society and law are struggling to keep pace as these blurred lines create regulatory ambiguity, safety concerns, and enforcement challenges, signaling a critical need to rethink how we define and govern key elements within the shared United States (U.S.) transportation system in a future that refuses to fit neatly into the past.

# Background

Motorcycles have long been present on roads, providing mobility and economic accessibility along with advantages and risks. This makes their operation and use different from more traditional on-road passenger or commercial vehicles. In the United States, as part of federal transportation policy, motorcycles are officially regulated under the Federal Motor Vehicle Safety Standards (FMVSS), specifically in the Code of Federal Regulations (CFR) Title 49, Chapter V, Parts 565, 566, and 571. These regulations are developed and maintained by the National Highway Traffic Safety Administration (NHTSA).

It is inappropriate to examine motorcycle definitions without considering how other countries and international organizations define their vehicles. Australia and the European Union (EU) serve as good models with very distinct descriptions and classifications of motorized cycles, which lead to more precise definitions and facilitate managing licensing and registration across large areas.

In the United States, federal code provides the official framework for how motorcycles are identified and meet vehicle safety standards by manufacturers as well as meet motorcycle safety requirements for production, import, export, and use on road. It also serves as the basis for state and lower jurisdictions to develop codes, regulations, laws, and classifications for vehicles, specifically for on-road use.

The history of the motorcycle's legal definition by the United States Department of Transportation (U.S. DOT) tracing back to the early development of FMVSS by NHTSA in the 1960s and 70s, when federal agencies began setting minimum safety and labeling requirements for vehicles entering the U.S. market. Over time, these definitions evolved to keep pace with changes in vehicle design, technology, and use, but have also been further restricted by federal agencies like the Environmental Protection Agency (EPA) to conform to other governmental efforts. FMVSS criteria for what constitutes a motorcycle are still grounded in those basic features, primarily a motor vehicle with two or three wheels designed for on-road use, excluding low-speed electric bicycles or other lightweight devices below a speed of 31 MPH (50 KMH) as described in CFR 571.

Under Part 565, which covers vehicle identification number (VIN) requirements, manufacturers must code the vehicle type. Motorcycles have their own classification, distinct from passenger cars or trucks. Part 566 requires that manufacturers register with NHTSA and identify the types of vehicles they produce, including motorcycles. Part 571 outlines safety standards motorcycles must meet, such as speed, braking performance, lighting, and mirrors. While these parts serve regulatory purposes, they also reinforce that motorcycles are a vehicle type with distinct engineering and safety needs.

# Scope of the Issue

## Characteristics of Motorcycles

Motorcycles lack the engineered structure and safety countermeasures present in typical passenger and commercial vehicles, which makes riders more vulnerable. They rely heavily on balance and rider skills, making them more physically engaging than most other vehicles. Their smaller size allows for different maneuvering in traffic but also makes them less visible to other drivers. Acceleration, braking, and turning involve significantly different dynamics compared to traditional on-road vehicles. These differences are not just mechanical; they also influence how motorcycles and motorcyclists interact with road design, other roadway users, licensure, and physical space needs.

Understanding how motorcycles are defined and how they differ from other vehicles is crucial when developing policies, laws, codes, regulations, insurance standards, traffic safety enforcement, infrastructure, and educational programs for support. These practical means of transportation require a thoughtful approach because they don't fit neatly into the same category as larger, enclosed vehicles. As states continue to find ways to promote safer travel for all road users, recognizing the fundamental differences in motorcycle design and operation is a key step toward creating more inclusive and effective transportation strategies.

In other parts of the world, including many temperate countries in Asia, motorcycles are considered an affordable and practical transportation option for underserved communities who cannot afford vehicles commonly found in the United States. Motorcycles are a standard and often primary mode of transportation in large cities and urban areas where owning, repairing, and parking cars are too expensive.

In the United States, similar mindsets are becoming more common. In large cities, college campuses, and urban areas, where affordable individual transportation options are available, there are alternatives to unreliable and costly public transit schedules. Add the benefits of micromobility, where technology is rapidly increasing the speed and agility of both personal and public transportation, and a new generation of mobility begins to challenge existing safety standards and definitions.

## Current Motorcycle Definitions

Presently, NHTSA defines motorcycles as motor vehicles with two or three wheels, designed for use on public roads. This definition, codified through CFR Chapter 49 Parts 565, 566, and 571.3, has served as the foundation for how motorcycles are identified, manufactured, and regulated in the United States. It emerged in the late 20th century as part of broader efforts to establish consistent safety standards for all motor vehicles. Under Part 565, manufacturers assign a VIN that classifies motorcycles separately from cars or trucks. Part 566 requires manufacturers to register with NHTSA and declare the types of vehicles they produce. Part 571 outlines the performance and equipment standards that apply to motorcycles on the road.

Across the states, motorcycle definitions vary widely, reflecting decades of independent legislative development and differing approaches to traffic safety. While most states define a motorcycle as a motor vehicle with a saddle or seat and no more than three wheels, the specific criteria—such as engine displacement, top speed, wheel configuration, and whether automotive-style controls are present—differ significantly. Some states classify three-wheeled vehicles and autocycles as motorcycles, while others regulate them separately.

While these regulations created an essential baseline for motorcycle safety and design, they now reflect a more limited perspective of what motorcycles are and what they have become. In recent years, the transportation landscape has grown significantly more diverse. New vehicle designs, including three-wheeled, four-wheeled, single-track, dual-track, or tri-track designs, high-powered scooters, and alternative riding formats, increasingly fall into regulatory gray areas. Meanwhile, inconsistencies in how states define motorcycles, autocycles, bicycles, scooters, mopeds, and their sub-categories create confusion for riders, manufacturers, insurers, and law enforcement alike.

# Importance of a National Definition

Vehicle definitions determine how vehicles are classified, how operators are licensed, what equipment is required, how crash data is collected, and how training programs are designed. Inconsistent or outdated definitions create gaps that undermine safety, enforcement, and regulatory clarity. As new vehicle types emerge (e.g., three-wheeled vehicles, autocycles, electric motorcycles, and low-power mobility devices) the need for a consistent national framework becomes even more critical.

A clear national definition provides a foundation that supports states, manufacturers, training programs, and safety partners. This shared baseline reduces confusion for riders who travel between states, strengthens national safety analysis, and helps states maintain internal clarity when building or updating their own statutes. Together, these benefits reinforce compliance and reduce opportunities for ambiguity or legal loopholes.

While states develop their own definitions, it is essential to understand what those definitions influence and why establishing a national definition can provide meaningful benefits.

## Regulation and Traffic Safety

A national motorcycle definition provides a foundation that states may apply to reach minimal safety standards. Motorcycle operation is inherently risky with unique performance characteristics and roadway risks. Without a clear definition at the national level, motorcyclist safety could be impacted, increasing crash severity and reducing protection for riders. These safety requirements include, but are not limited to:

- Equipment standards (lighting, braking systems, mirrors, tires) that depend on how a vehicle is classified.
- Personal protective equipment (helmets, eye-protection, clothing) that provide both impact protection and conspicuity for the rider.
- Crashworthiness and stability expectations which vary significantly between two-wheeled motorcycles, three-wheeled vehicles, and enclosed autocycles.
- Roadway behavior (e.g., lane positioning, visibility, and vulnerability) differs from passenger vehicles and must be regulated accordingly.
- Training for on-road use

These safety requirements may also hold relevance to other motorcycle-like vehicles, however many of these vehicles may be exempt from essential safety requirements as they do not fall under the federal definition of a motorcycle.

## Licensing and Operator Competency

Licensing systems rely on statutory definitions to determine:

- Who must obtain a motorcycle license and/or endorsement
- What skills and knowledge tests are required
- Whether a vehicle requires specialized training (e.g., two-wheel vs. three-wheel skills)
- Minimum age requirements and restrictions

A national motorcycle definition provides a foundation for licensing requirements, enabling states to align testing and endorsement processes with the distinct performance characteristics and safety needs of motorcycle operation.

## Enforcement and Legal Clarity

A national definition creates a single, authoritative baseline that supports enforcement and legal clarity across all states. Even though officers enforce only their own state's statutes, a unified federal definition ensures that manufacturers, courts, training programs, and data systems are all working from the same foundation. This reduces ambiguity when officers encounter unfamiliar vehicle types, strengthens the legal defensibility of citations and crash reports, and minimizes classification disputes in court. It also ensures that VIN classifications, equipment standards, and manufacturer certifications align with what officers expect to see on the road.

The safety implications that come with similar state and national definitions of a motorcycle include but are not limited to:

- Clarifying which vehicles must be registered, insured, and inspected
- Ensuring helmet laws and protective-gear requirements apply appropriately
- Reducing ambiguity during traffic stops and crash investigations
- Supporting consistent adjudication in courts
- Data collection at the state and national levels

For the legal system, a national definition reduces conflicting interpretations between states, supports consistent judicial outcomes, and improves the reliability of national crash and enforcement data used to shape policy. In short, it stabilizes the entire enforcement ecosystem by ensuring everyone from manufacturers to officers to judges is speaking the same language.

## Data Collection and Crash Reporting

Accurate crash data is essential for national safety analysis, funding decisions, and program development. A clear national definition:

- Ensures comparable data across states
- Improves the accuracy of national motorcycle fatality and injury statistics
- Supports evidence-based policymaking
- Helps identify emerging risks associated with new vehicle types

### Training and Public Education

Effective motorcycle safety training depends on accurate and uniform vehicle classifications. Although states maintain authority over their own definitions, a national motorcycle definition offers a unifying framework that supports alignment of training curricula and public education materials across jurisdictions. By establishing this common foundation, states and training providers can more consistently emphasize the critical operational skills unique to motorcycle riding, including balance, leaning/counter-steering, hazard perception, and crash-avoidance.

The definition of a motorcycle:

- Ensures training curricula match the vehicles that riders operate
- Supports consistent instructor certification standards
- Helps states develop targeted safety campaigns
- Ensures that public education materials reflect accurate legal requirements

### Emerging Vehicle Technologies

The rapid growth of new vehicle types has exposed gaps in the current federal and state definitions. The growing use of vehicles that look and operate similarly to motorcycles is a cause for concern and could lead to operators legally riding these similar vehicles without the training needed to manage the unique risks of operation. Examples include, but are not limited to:

- Autocycles
- eBicycles/eMotos
- Motorized standing devices
- Low-speed vehicles

While these vehicles require balance and different rider inputs, offer limited physical protection, and interact with traffic and road design in ways, they are not manufactured for on-road use.

A uniform definition helps determine whether these vehicles should be regulated as motorcycles, passenger vehicles, or a separate category. This prevents regulatory gaps that could compromise safety.

## Conclusion

A uniform motorcycle definition is essential for a coherent and effective national traffic safety system. While each state retains full authority over its vehicle classifications, a shared foundational definition strengthens regulatory consistency, improves enforcement, ensures proper licensing and training, enhances data accuracy, and supports safer outcomes for all road users. As vehicle technology evolves, establishing and maintaining a clear, harmonized definition across states will remain a critical component of roadway safety and public policy and ensure that emerging vehicle types are classified consistently across the country.

To support greater clarity, consistency, and safety across states, this document concludes with a suggested national motorcycle definition that states may use as a reference when developing or refining their own statutory language.

**The term "motorcycle" means a motor vehicle, as originally manufactured, with motive power, having a seat or saddle requiring the rider to sit upon, designed to travel on not more than three wheels in contact with the ground, steering controlled by handlebars, acceleration and braking controlled by hand and/or foot controls and capable of reaching speeds in excess of 30 mph. Subcategories of this are as follows: two-wheel, three-wheel (trike [two wheels in the rear], reverse trike [two wheels in front], and sidecar rig [two-wheel with a sidecar attached]). "Motorcycle" excludes autocycle, farm tractor, power wheelchair, personal assistive mobility devices, motorized foot scooters, electric-assisted bicycle and/or other motorcycle-looking devices that do not exceed 30 mph, and all powered/wheeled devices not manufactured for use on public roadways.**