

*M. Nagorniy, Master student  
O. Morgal, Senior lecturer, research advisor  
National Technical University of Ukraine  
«Igor Sikorsky Kyiv Polytechnic Institute»*

## **PORTABLE VEHICLE SAFETY ISSUES**

Nowadays portable vehicles on electric motors become more and more popular. Very often you can see people on the streets riding self-balancing scooters, mono-wheels and electric scooters. They gradually take their place next to bicycles and roller skates.

But along with the popularization of such devices, there is a big question of security.

Let's start with self-balancing scooters, or hoverboards, as they are also called. They are quite simple to manage. They are able to develop a sufficiently high speed and have high maneuverability. At the same time, they are also relatively affordable in terms of price. This is due to the mass production of self-balancing scooters by Korean and Chinese companies. In the process of cheapening, unreliable materials and malfunctioning electronics began to be used. The result was that the hoverboard became dangerous to use, even exploding.

Next on the list are monocoils. Their design is simpler, and therefore they are more reliable. They are not explosive, rarely to break, and due to their small size and high maneuverability they are safer to operate. However, they are much more complex to manage, and they allow to develop a higher speed, which does not simplify their management. In addition, a collision even with a small obstacle can lead to a crash of the pilot. They have more simple and reliable design, but more complex management.

Furthermore, I consider it necessary to write about electric scooters. Unlike the two previous devices, they do not use gyrostabilizers for control. In addition, they have a clear advantage in the form of the possibility of using them without wasting a charge or even with a discharged battery in the so-called “muscular” mode. Electric scooters are capable of driving at high speed, but have moderate maneuverability. They are more reliable on the road due to high stability, but have a big disadvantage in the form of the relative fragility of the steering wheel, which during the operation takes into account the main load.

Last but not least I would like to mention segveis. They are much more reliable than the devices described earlier. They are easy to manage, stable, fast. Their main disadvantages are significantly larger dimensions, which create difficulties in transportation, as well as a high price comparable to a cheap car. Thus, they are simply less accessible.

In general, I would like to say that such portable vehicles will continue to gain popularity. They provide an opportunity for people to move faster and over long distances without exerting any extra effort. However, it is worth remembering that in addition to the increasing availability of these devices, the danger from their use will

also increase. I believe that, just as in some countries of the world, it is worth gradually limiting their use in order to protect both pedestrians and users themselves.

### REFERENCES

1. Emma Ailes (2015). <https://www.bbc.com/news/magazine-34053740> - How the 'hoverboards' took off - in spite of laws against them. *BBC News*
2. Nellie Bowles (2018). <https://www.nytimes.com/2018/06/12/technology/bird-electric-scooter-investment.html> - Bird, the Electric Scooter Start-Up, Is Said to Draw an Investment Frenzy. *The New York Times*
3. Bianca Seidman (2015). <https://www.cbsnews.com/news/portable-motorized-unicycles-whiz-through-streets/> - Motorized unicycles whiz through city streets. *CBD News*