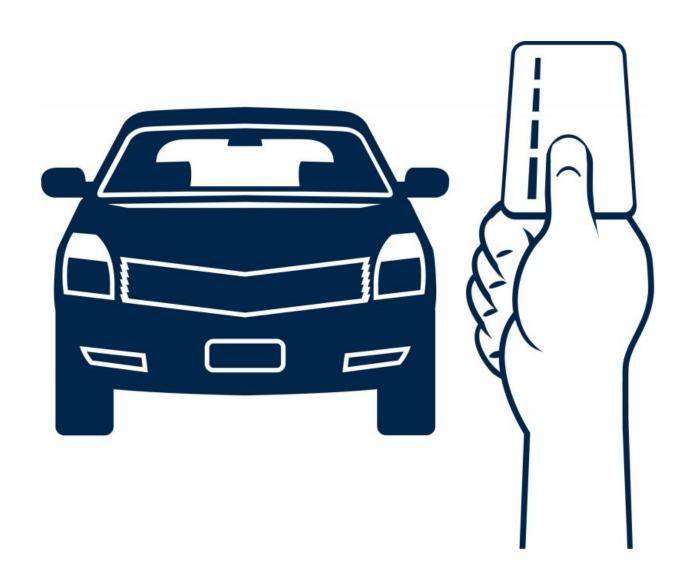# Driver's licenses for self-driving cars?

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Just like people, self-driving vehicles should be required to pass a

licensing test, say University of Michigan researchers.

Michael Sivak and Brandon Schoettle of the U-M Transportation Research Institute say that most driver-licensing tests evaluate three aspects of driving readiness: visual performance, knowledge of rules and regulations related to driving and traffic in general, and driving-related psychomotor skills.

They suggest several arguments in support of the idea:

- Sensing hardware, spatial maps and software algorithms will vary among manufacturers of self-driving vehicles, resulting in variability of onroad performance—as is the case with people.
- Visual and sensing performance of self-driving vehicles in inclement weather is not yet sufficient.
- Visual pattern recognition is a potential problem for current sensing systems in self-driving vehicles (e.g., recognizing downed power lines or flooded roadways).
- Current self-driving vehicles have not yet been tested thoroughly under a variety of demanding conditions (e.g., in snow).
- Onroad performance of some current self-driving vehicles is not yet perfect, even in good weather.
- Self-driving vehicles will face, on rare occasions, ethical dilemmas in their decisionmaking.

Sivak and Schoettle say that for self-driving vehicles—in contrast to inexperienced human drivers—experience under one set of conditions that requires certain hardware or software capabilities does not improve performance under a different set of conditions that requires different hardware or software capabilities.

"Therefore, the underlying logic for the use of graduated driver licensing systems with novice young drivers does not apply to self-driving

vehicles," Sivak said. "A self-driving [vehicle](link) either has the hardware and software to deal with a particular situation or it does not. If it does not, experience in other situations will not be of benefit.

"On the other hand, the GDL approach would be applicable should a manufacturer explicitly decide to limit the operation of its vehicles to certain conditions, until improved hardware or software become available."

For example, a manufacturer might feel confident that its vehicles could handle all situations except nighttime and snow. In such a situation, after passing a licensing test related to the limited [conditions](link), the vehicle would be given a provisional license that would exclude nighttime driving and driving in snow. A full license could then be obtained once future updates to [hardware](link) or software are developed and made available, and the updated vehicle passes an unrestricted licensing test.

Provided by University of Michigan