One of the basic driver tasks is to follow the road. In daytime driving, when the visibility of the road in clear weather is unobstructed, this is normally not a problem. However, when driving at night on dark roads with low beams, it is often quite difficult to see the direction the road is taking. Indeed, drivers state that poor road guidance is their main problem in night driving. To overcome this problem, roads are fitted with retroreflective pavement markings, which are visible in night driving.

This study was conducted to review the role, effects, and functioning of lane marking in night driving. The report consists of five sections. Section 1 details the scope and the limitations of this report. Section 2 presents a discussion of drivers’ needs for road guidance by means of pavement markers in general and lane markings in particular. Section 3 reviews the voluminous previous research on lane markings, focusing primarily on visibility and photometric characteristics of lane markings in night driving. Section 4 provides a summary of the issues related to lane markings. Section 5 presents the general conclusions and proposals for research topics and technical developments.

The overall conclusion is that while drivers need both long-range guidance (a preview time of at least 5 s) and short-range guidance (a preview time of up to 3 s), present pavement markings often offer only short-range road guidance, especially in wet road conditions. Despite the extensive past research on pavement markings, many general and specific questions remain to be answered.