Current headlighting and road lighting are only partly effective in reducing the risk of driving at night. Various forms of night vision enhancement systems, using a variety of sensing technologies, are being developed to further reduce this risk. Two major sensing technologies are receiving particular development interest and are both currently available on new vehicles: far infrared (FIR) systems, which generate images by passively detecting thermal emissions from objects and surfaces in the road scene, and near infrared (NIR) systems, which actively illuminate the scene in the near infrared spectrum and capture the reflected radiation. The images generated by these systems, and the ways they are used by drivers, are expected to differ. There is evidence that the major safety problem caused by darkness is increased risk of pedestrian collisions. Because pedestrians are usually prominent among far infrared sources in roadway scenes, their detection may be especially enhanced in FIR views.

To compare pedestrian detection in NIR and FIR views, a test vehicle equipped with each type of system was driven at night on several roads with pedestrians standing along the route. Video clips, recorded from both systems simultaneously, were later shown in a laboratory setting to 16 subjects (eight younger than 30 years and eight older than 60 years). Subjects pressed a button as soon as they saw each pedestrian. Detection distances with FIR were significantly greater than with NIR. Younger subjects had greater detection distances than did older subjects, and both age groups had greater detection distances with FIR. The effectiveness of NIR and FIR systems can be expected to depend on the details of implementation as well as any inherent advantages of either technology. To the extent that the two systems used in this experiment reasonably represent the respective technologies, the results support the expected enhancement of pedestrian detection in FIR systems.