The existing literature on the effects of infrared-reflective (IRR) and antireflective (AR) automotive glazing on thermal comfort and visual performance was reviewed. First, 78 articles on the broader topic of thermal comfort in motor vehicles were analyzed in order to establish common themes. Much of that work is based on models of thermal comfort developed in other domains (primarily architectural). It is generally agreed in architectural research that thermal comfort can be predicted if the values of six parameters are known (air temperature, humidity, air velocity, radiant temperature, occupant clothing level, and occupant activity level). Because of the major differences between vehicular and architectural environments, however, the extension of existing thermal comfort models to automotive domains is not yet validated.

Eight experimental studies that examined IRR glazing were then reviewed in detail. Results showed that IRR windshields consistently reduce cabin and interior surface temperatures. This effect is increased when IRR glazing is also applied to the side and rear windows. The use of IRR glazing has also been shown to reduce air conditioner (A/C) workload, and thus has implications for reducing A/C compressor and/or engine size. Although IRR glazing has been shown to be more efficient than infrared-absorbing glazing (a widely used solar-control glazing), the research on IRR glazing and thermal comfort is limited by a lack of statistical analysis, a lack of subjective response measures, and a tendency to not measure all six parameters listed above.

There are two main conclusions: First, automotive glazing research would benefit from both comparative analyses of thermal comfort models and examinations of how objective measures of thermal comfort correlate with subjective measures. Second, more research is needed on both the visual performance outcomes associated with IRR and AR glazing, and on the effects of thermal stress and thermal discomfort on driving performance.