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Driver Information Load

USSCF ON-PREMISE SIGNS / RESEARCH CONCLUSIONS

On-Premise Commercial Signs and Driver Information Load

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It has been suggested that, either through a proliferation of signs or too much information on individual signs, on premise commercial signs can result in a phenomenon known as "driver information overload." Driver information overload has been defined as "providing a motorist with too much information, through a series of devices or conditions, for a driver to have adequate time to perceive and respond properly." (Lerner, et al., 2003). These researchers described driver information load as being comprised of *Information Search Demand*, which encorporates the specific sign or sign array being attended to and the general visual environment in which the sign is located, and *Driving Task Demand*, which includes the number of roadway geometric features (e.g., curves and lane drops), traffic volume, and travel speed.

In a review of the literature on this topic Lerner and his colleagues concluded, "The information load imposed by a given array of information is not simply a function of the total number of "bits" of information contained within the array," and "The ability of the driver to "shed" irrelevant or lower priority information is an important attribute." In evaluating information overload, another researcher (Gordon, 1981) similarly concluded, "The view that overload is simply accounted for by the amount of displayed sign information is naive. Information load is largely determined by what the driver does with the displayed information." Related to the issue of on-premise signs containing too much information, Gordon found that non-essential sign text does not increase sign scanning time. In other words, critical sign information is gleaned as quickly on signs that have superfluous secondary information as on signs that do not, and that non-essential items are simply skipped: "The eye scans [quickly]… in search for the sought-for item."

While there have been numerous studies on the affect of highway sign content, display, and placement on driver information overload, there is less research related to on-premise commercial signs. A few conducted in the 1970's touched on this issue while evaluating the possible distraction effect of commercial signs. In a study on distraction by

irrelevant information, Johnston and Cole (1976) concluded, “the human operator has the capacity to shed irrelevant information.” Tindall 1977 (in Andreassen, 1985) found that drivers are more likely to ignore signs that are not relevant to the driving task and more likely to attend to signs that have a direct effect on driving performance. Sanderson 1974 (in Andreassen, 1985) reported that when an advertising sign was placed among traffic signs, the subject drivers had significantly greater recall of the traffic signs.

In general, all these studies indicate that, while there may indeed be too much information on any particular sign, or too many signs in a given visual area (commercial or otherwise), drivers are not required to attend to all signs or all portions of signs. If there is potential for information overload brought about by having too much information on an individual commercial sign or by having too many commercial signs in an array, drivers will disregard those portions of the signs that are irrelevant and quickly scan past signs that do not match their search criteria.

However, while on-premise commercial signs can contribute to the information load on a driver, because they are not necessary to the primary driving tasks of speed maintenance and lane positioning they are perhaps the first to be disregarded in an overload situation. As it has been established that commercial signs play an important role in traveler navigation and wayfinding, disregarding these signs will not be optimal from a safety and traffic flow perspective. It is therefore certainly disadvantageous, for highway safety reasons, to have commercial signs with information that is not Legible to the driver. **

In summary, the research on driver attention to road signs indicates that too much information on individual on-premise commercial signs and/or too many of these signs in a given area may lead to drivers disregarding some signs (mainly irrelevant signs) or some information on the signs (typically secondary). How this will affect on-premise sign effectiveness and indeed what constitutes driver information overload for both on-premise and highway signs is still up to debate. Even at the end of their six-year research study, Lerner, et al. (2003) were unable to determine a “red line” above which information load becomes information overload on highway signs. As no research has been conducted on information load of on-premise commercial signs, it is impossible to

state with any confidence what combination of sign content, sign array, driver and environmental variables constitutes information overload for these signs.

References

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**number of signs or "glut" of commercial signs along a given roadway is a function primarily of local zoning and business or office property development. If there a smaller commercial lots along a roadway (say with lot frontages of 50'-75'), and each has a freestanding sign, these signs will be installed closer together. A roadway with commercial lot frontages of 125' - 200' will appear to have more relaxed sign spacing. Glut is not a technical word, whether positive or negative. Sign frequency and/or sign spacing is not a subjective matter but a function of the commercial development density and lot sizes.

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