Significant reductions in total number of crashes have been observed when both countermeasures were installed. A year later, both countermeasures were installed simultaneously. Clearview fonts are mostly effective during nighttime installations. Drivers who have never noticed the countermeasure before, especially when both countermeasures were used, observed the greatest, in the summarizing table above, when using both countermeasures (27.20% for under-65 years at night).

### Conclusions:
- Significant reductions in total number of crashes were observed when both countermeasures were installed by during time of the day (nighttime), age-groups, and crash severity (fatal/injury). This study serves as a reference for transportation agencies future informed decision making. The countermeasures are not only reducing crashes but also providing significant annual cost savings.

### Recommendations:
- The continued use of the countermeasures as they reduce crashes and are economically beneficial. This study serves as a reference for transportation agencies future informed decisions.

### Acknowledgments:
The following are acknowledged for their participation in the project: Kimberly Larkines, MDOT; Valentin Kwigizile, PhD, WMU (advisor); Jun-Sook Oh, PhD, WMU; Ron Van Houten, Phd, WMU; Diana Prieto, PhD, WMU; and Richard Boasting, MSE, WMU.

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**Summary of Safety Benefits**

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>CF &amp; FYS</th>
<th>FYS Only</th>
<th>CF Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fatal/injury</td>
<td>7.00</td>
<td>3.70</td>
<td>3.43</td>
</tr>
<tr>
<td>Total</td>
<td>20.20***</td>
<td>18.10***</td>
<td>2.56</td>
</tr>
<tr>
<td>Total Night</td>
<td>25.90***</td>
<td>25.75</td>
<td></td>
</tr>
<tr>
<td>Total Under-65</td>
<td>24.10***</td>
<td>15.60***</td>
<td>10.28</td>
</tr>
<tr>
<td>Total Under-65</td>
<td>19.30***</td>
<td>12.80***</td>
<td>7.45</td>
</tr>
<tr>
<td>Total Under-65</td>
<td>27.20***</td>
<td>9.8</td>
<td>19.29</td>
</tr>
<tr>
<td>Total 65-and-above</td>
<td>10.00</td>
<td>0.20</td>
<td>9.82</td>
</tr>
<tr>
<td>Total 65-and-above</td>
<td>8.80</td>
<td>6.20</td>
<td>2.77</td>
</tr>
</tbody>
</table>

Where: CF = Clearview Font and FYS = Fluorescent Yellow Sheeting

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**Crash Data Collection**

- The data consisted of 1590 participants from Michigan metropolitan areas.
- Analyses distinguished between those who had noticed the difference between the standard and countermeasure and those who have never noticed before.

**Conditions Targeted:**

1. High-speed roads.
2. Far distances (for Clearview fonts only).
3. Inclement weather, and

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**Survey of Michigan Drivers Cont’d**

- Survey data records (2004-2013) from the Office of Highway safety planning (OHSHP)
- Development of Safety Performance Functions (SPFs)

**General equation:**

\[ N_{\text{crash category}} = \exp\left(\text{Constant} \times (B_{\text{cat}} + B_{\text{cat}^2} + B_{\text{cat}^3})\right) \]

Where:

- \( N_{\text{crash category}} \) = Crashes per year in the category considered
- \( \text{Constant} \) and \( B_{\text{cat}}, B_{\text{cat}^2}, B_{\text{cat}^3} \) are the coefficients.

It was not possible to estimate SPFs for all age categories due to sample size.

Before-after with comparison method was used.

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**Evaluation of The Effectiveness of Clearview Font and Fluorescent Yellow Sheeting on Michigan’s Freeways**

Lusanni M. Acosta

Transportation Research Center for Livable Communities (TRCLC), Western Michigan University (WMU)

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**Abstract:**

Halation and irradiation make guide sign fonts hard to recognize. Drivers missing the needed information tend to be anxious and confused potentially causing fatal accidents. In order to avoid or mitigate the situation a newer font, Clearview, is installed to provide better readability in nighttime and from far distances. In a similar context, the lack of brightness in sheeting material for warning signs leads to missing the cautionary information. Installation of fluorescent yellow sheeting has provided signs with more noticeable and brighter materials. This study evaluates the effectiveness of the Clearview fonts along with fluorescent yellow sheeting installed in Michigan freeways. Through observational before and after studies Safety Performance Functions (SPFs) and Crash Modification Factors (CMFs) are developed and estimated, respectively. Thus, crash reductions provided by the fonts and sheeting materials are presented. Significant reductions in total crashes (e.g. 24.10%) are observed for different crash conditions including age, time of the day and crash severity.

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**Research Objectives and Scope:**

1. Evaluating the safety benefits of Clearview font legend on guide signs on freeways, and fluorescent yellow sheeting on warning signs.
2. Developing Safety Performance Functions (SPF) and Crash Modification Factors (CMF) for these improvements.

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**Findings from Literature Review:**

- Clearview font is mostly effective during night time (decreases crashes by 8-10%)
- Fluorescent yellow sheeting are easier to detect from farther distances.