Nighttime Observations of Safety Belt Use: An Evaluation of California’s Primary Law

James E. Lange, PhD, and Robert B. Voas, PhD

On January 1, 1993, California became the first state in the United States to modify an existing safety belt law from a secondary to a primary enforcement law.¹ The primary law gives police the authority to stop a vehicle solely on the basis of their observation of noncompliance with the safety belt law. The secondary law permitted police officers to cite unbelted occupants only when the vehicle was stopped for another violation.

Immediately after implementation of the primary enforcement law, a California statewide telephone survey² found that 55% of respondents reported increased use of safety belts. Daytime observation studies at traffic intersections found use rate increases of between 13 and 20 percentage points,³ and Winnicki’s⁴ time-series graph of California’s Fatality Analysis Reporting System data indicates an approximately 15 percentage point increase in usage rates among drivers and passengers.

Observation studies in California reported to date have been conducted only during the day. By excluding nighttime weekend drivers, they may be omitting a particularly high-risk segment of the driving population. Analyses of fatal accident statistics are problematic because inclusion in the fatality sample is dependent, in part, on safety belt use. Further, some risky behaviors, such as alcohol use, are correlated both with fatal accidents and with failing to use a safety belt,⁵ so changes in these risk variables may have consequences for safety belt use that are not related to safety belt laws.

Community Roadside Surveys

Oceanside and Salinas in California were sites for an experimental, community-

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¹ Winnicki, E., & Voas, R. B. (1997). The effects of California’s new primary law: A statewide telephone survey. Accident Analysis & Prevention, 29(3), 361-370.
² Winnicki, E., & Voas, R. B. (1997). Daytime and nighttime observations of California’s new primary law. Accident Analysis & Prevention, 29(5), 577-587.
³ Winnicki, E., & Voas, R. B. (1997). The effects of California’s new primary law on street observation studies. Accident Analysis & Prevention, 29(6), 613-622.
⁴ Winnicki, E., & Voas, R. B. (1997). The effects of California’s new primary law on the fatality analysis reporting system. Accident Analysis & Prevention, 29(7), 715-723.
⁵ Winnicki, E., & Voas, R. B. (1997). The effects of California’s new primary law on alcohol and drug use. Accident Analysis & Prevention, 29(8), 825-833.
Methods

The procedures for data collection have been discussed in detail in other publications. Briefly, roadside survey locations in each community were selected on the basis of traffic flow and safety concerns. The same locations were used throughout the testing period. Drivers were selected at random by a police officer who signaled the next oncoming vehicle into the site when an interview bay became free. Commercial vehicles, motorcycles, and recreational vehicles were excluded from the sample. In total, 18,510 drivers (70.9% of them male), 9119 in Salinas and 9391 in Oceanside, were successfully interviewed and breath tested. Participation rates varied between 89% and 91% per year, but they did not change systematically over time. Safety belt observations were missing for only 41 drivers, and these drivers were dropped from the analyses.

Results

The data from the 2 cities were combined, and a graph of safety belt use rates over time was constructed. The graph shows a dramatic increase in safety belt use that coincides with implementation of the primary law on January 1, 1993 (see Figure 1). Safety belt use jumped from 73.0% (95% confidence interval [CI] = 71.9%, 74.1%) to 95.6% (95% CI = 95.2%, 96.0%) after the law’s implementation. A logistic regression procedure showed that the odds of safety belt use before the law’s implementation were 2.7 times greater than after the law’s implementation, reaching significance (OR = 2.7) after the law’s implementation, reaching significance (P < .0005). An analysis similar to the combined analysis was conducted for each site separately. While there were small but significant differences between the sites, both sites demonstrated strong, reliable effects.

Figure 2 presents data, collected in the roadside sample, on the relative increase in safety belt use rates for high- and low-risk drivers. Before implementation of the primary law, safety belt use varied greatly depending on certain demographic variables. High-risk drivers, such as those with blood alcohol concentrations over 0.10, had much lower safety belt use rates (53.4%; 95% CI = 44.8%, 62.0%). After implementation, even drivers with blood alcohol concentrations over 0.10 greatly increased their safety belt use (92.1%; 95% CI = 87.6%, 96.6%), bringing them within about 3 percentage points of the overall average rate. These results indicate that the law’s effect was broad based, reaching those most likely to be involved in a crash and therefore maximizing the injury prevention potential of the law.
Discussion

The immediate increase in safety belt use from 73.0% to 95.6% is comparable to the increase found in observational studies conducted when the secondary law went into effect. Campbell and Campbell7 report that in daytime observations, the rate jumped from 18% to 47% in 1986, when the law was implemented.

The change reported here was possibly inflated by the procedures used to gather the data. Some drivers, on being waved into the survey site, may have fastened their safety belts to avoid being cited. Approaching drivers could see the police vehicle at the survey site from a distance of about 1 to 2 city blocks; the "voluntary survey" signs, however, could be seen only when the drivers drew closer to the survey site. However, vehicles were directed into the site without being given a chance to stop; therefore, the drivers had little opportunity to fasten their safety belts. If the difference can be accounted for by this behavior, it demonstrates that there is broad knowledge of the law and near-universal compliance with it—at least in a perceived enforcement area.

The results presented here fit within the context of other research that also demonstrated the remarkably strong impact of the primary law in California. The immediate impact of the law suggests there was a strong media campaign to inform the public of the law’s modification. The National Highway Traffic Safety Administration8 noted that the campaign was as strong as might be expected for a new law, not merely a revision of an existing law. Awareness of the law must have been quite high to effect the immediate and nearly universal compliance that was observed.

Many drivers may also feel that failing to wear a safety belt is a readily observable offense. In that respect the situation is similar to that of motorcycle helmet laws, infringements of which are also easily observed. It may not be a coincidence that helmet law implementation has been shown to have equally dramatic results on compliance.9

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References