ORIGINAL ARTICLE

Prevalence of transportation safety measures portrayed in primetime US television programs and commercials

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Objective: To determine the prevalence of transportation related safety behaviors, such as seatbelt and helmet use, in primetime US television programs and commercials.

Design: Cross sectional study.

Setting: Top rated television programs and associated commercials from four major US television networks were reviewed for the prevalence of transportation safety related behaviors during a one month period in 2005. Programs were categorized according to the time and network of airing, program type, program rating, and—for commercials—type of product being advertised

Subjects: Occupants of automobiles, motorcycles, or bicycles in 507 instances in which a transportation scene was aired.

Results: Seatbelt use was depicted in 62% and 86% of individuals in television program and commercial automobile scenes, respectively. The prevalence of motorcycle helmet use was 47% in television programs and 100% in commercials. Bicycle helmets were used in 9% of television programs and 84% of commercials. The frequency of seatbelt use in programs and commercials varied by television rating and genre but did not differ by network, time of airing, or age of character portrayed.

Conclusions: The prevalence of safety related behaviors aired on major US networks during primetime slots is higher than previous reports but still much lower than national averages. Commercials, in contrast, portray transportation safety measures with a frequency that exceeds that of US television programs or most national surveys.

Unintentional injuries are the leading cause of death among Americans under age 40 and the fifth leading cause of death overall; motor vehicle collisions (MVCs) account for 42% of all injury related deaths.¹ Seatbelts have been shown to reduce the risk of death in an MVC by at least 50%; however, approximately 80% of passengers in motor vehicles wear safety restraints.^{2–3} Motorcyclists involved in collisions, though smaller in numbers, suffer a mortality rate 27 times that of motor vehicle passengers.² The use of helmets during traffic accidents has been shown to reduce the risk of head injury by 72% and the risk of death by 29%, but only approximately 60% of motorcycle drivers in the US consistently wear helmets.⁴ A similar discrepancy exists among bicyclists, of whom only approximately 40% wear helmets regularly.⁵

A number of studies have examined the prevalence of injury prevention behaviors in various media outlets.^{6–11} Most have focused on programming targeted toward pediatric audiences, since children are more prone to injury related fatalities and may be influenced directly by messages in the media.^{12–14} One review found that more than 1000 studies report a direct link between media exposure and changes in children's behavior patterns.⁶ In another study, authors reported that nearly half of all children's television programming contained at least one unsafe, imitable behavior without consequence.⁷ Not as many studies have focused on the portrayal of transportation related injuries in the broadcast media. In the few that evaluated television shows and films for unsafe motor vehicle practices, investigators consistently found that only 25% of drivers were portrayed wearing safety belts.^{8–11}

According to Nielsen Media Research, Americans watch an average of 4.5 hours of television each day, a large proportion of which is comprised of commercials.¹⁵ To date, only two studies have screened televised commercials for the portrayal of safety behaviors.^{16–17} In response, we sought to determine

the prevalence of transportation injury prevention behaviors (safety belt, motorcycle helmet, bicycle helmet use) as they are portrayed during top rated US television programs and their commercials.

METHODS

Over a four week period (27 June 2005–24 July 2005), two of the authors (AR, ST) independently viewed and categorized the 20 most popular primetime (7pm–11pm, Eastern Daylight Time) television programs (according to Nielsen Media Research ratings) in the US and concurrent commercials from four major US television networks (ABC, NBC, CBS, FOX). On average these programs are viewed by approximately 15 million individuals; the top three rated shows are viewed by approximately 30 million individuals. The two authors screened programs and commercials for transportation related incidents. These incidents were defined as occurrences in which people had an opportunity to demonstrate a transportation related safety behavior. In the case of scenes involving automobiles, drivers or passengers were each scored for their use of a seatbelt, while motorcyclists and cyclists were each assessed for wearing a helmet. An automotive, motorcycle, or bicycle incident was only recorded if it could be determined—within the context of the scene—if the individual demonstrated the appropriate transportation safety behavior. We determined the prevalence of seatbelt or helmet use by setting the denominator as the total number of individuals involved in transportation events.

Television programs and commercials were categorized according to their time slot, network, program genre, program rating, age of person portrayed, and type of product advertised (in the case of commercials). Program ratings fell into three categories: PG, TV-14, or no rating (N/A). Programs

Abbreviation: MVC, motor vehicle collision.

Table 1 Prevalence of seatbelt and helmet use in primetime television programs and commercials

	All	Program	Commercial	p Value
Total number viewed	21,749	79	21,670	
Helmet use/persons in automobile incidents	80% (32/40)	47% (7/15)	100% (25/25)	<0.001
Helmet use/persons in motorcycle incidents	80% (32/40)	47% (7/15)	100% (25/25)	<0.001
Helmet use/persons in bicycle incidents	72% (49/68)	9% (1/11)	84% (48/57)	<0.001

without ratings included news shows, televised sports events, and one film (*Days of Thunder*) which carries a PG-13 rating by the Motion Picture Association of America. Television programs were dichotomized according to genre as either a situational comedy/drama or news/sports/reality show. We used this line of division to differentiate those programs that were scripted from those that primarily used unscripted live action sequences. We estimated the age of people involved in each incident and categorized them into one of four groups: 0–15, 16–25, 26–40, and 41–80 years. Discrepancies in program categorization or number of safety behaviors were resolved by review of the discrepant incidents by both authors. If the findings still did not concur, a third author (GM) served as the arbiter for final decision. Data analysis was performed using SAS software (version 9.0; SAS Institute, Cary, NC, USA). Differences in proportions were assessed by Fisher's exact test. p Values of <0.05 were considered statistically significant.

RESULTS

Seventy nine television programs and 21 670 commercials were viewed and analyzed for the current study. There was a lower proportion of individuals in programs depicted wearing seatbelts compared to commercials; a similar pattern of results was observed for helmet use among motorcyclists and bicyclists (table 1).

Twelve of the 397 individuals observed in automotive incidents were involved in collisions, five of which were in commercials and seven in programs. Of the nine individuals involved a motor vehicle collision, four were depicted without seatbelts. The one individual involved in a motorcycle collision was depicted wearing a helmet. Both persons

involved in the two cycling collisions were also wearing helmets.

Table 2 presents the prevalence of seatbelt use according to program rating, program genre, and the age of the character portrayed. With the exception of PG rated programs, the prevalence of seatbelt use was consistently significantly higher in commercials compared to programs. Within television programs, the prevalence of seatbelt use was similar across program ratings though some of the differences between the groups were near significant. TV-14 programs were less likely to display proper safety restraint practices (41%) compared to shows that had a PG rating (80%, $p = 0.05$) or were not rated (65%) ($p = 0.08$). There were no differences with respect to either program genre or age of the character. With respect to commercials, those occurring during programs rated TV-14 more frequently displayed proper seatbelt use than those shown during PG (76%, $p = 0.003$) or unrated programs (81%, $p = 0.005$). Seatbelt use was also significantly higher in commercials during situational comedies/dramas (91%) compared to those during news/sports/reality programs (76%, $p = 0.0002$). There were no differences between age groups.

With regard to commercial product being sold, seatbelts were worn 92% (200/216) of the time in advertisements selling cars compared to 68% (123/182) in all other commercials ($p < 0.001$). There was no difference in the prevalence of seatbelt use across network or time of airing. There were insufficient data to stratify motorcycle and bicycle helmet use according to predetermined categories.

DISCUSSION

In the present study, we determined that the portrayal of seatbelt and helmet use during primetime US television programming was more prevalent than previously cited in

Table 2 Prevalence of seatbelt use in primetime television programs and commercials stratified by program rating, program genre, and age of character portrayed

	All	Program	Commercial	p Value
Program rating				
PG	77% (40/52)	80% (8/10)	76% (32/42)	0.8
TV-14	88% (155/177)	41% (7/17)	92% (148/160)	<0.001
N/A	76% (128/169)	65% (37/57)	81% (90/111)	0.02
p Value*	0.06/0.86/0.004	0.05/0.35/0.08	0.003/0.50/0.005	
Program genre				
Situational comedy/drama	87% (227/262)	66% (31/47)	91% (196/215)	<0.001
News/sports/reality	70% (96/136)	57% (21/37)	76% (74/98)	0.03
p Value†	0.0001	0.39	0.0002	
Age of character (years)				
0–15	89% (67/75)	60% (3/5)	91% (64/70)	0.08
16–25	78% (61/78)	57% (12/21)	86% (49/57)	0.006
26–40	82% (125/153)	62% (21/34)	87% (103/118)	<0.001
>40	76% (70/92)	67% (16/24)	79% (54/68)	0.2
p Value‡	0.06/0.14/0.03/ 0.53/0.74/0.29	0.91/0.94/0.78/ 0.74/0.51/0.70	0.33/0.38/0.06/ 0.81/0.38/0.15	

*p Values for the comparison of PG v TV-14, PG v N/A, and TV-14 v N/A.

†p Values for the comparison of situation comedy/drama v news/sports/reality.

‡p Values for the comparison of 0–15 v 16–25, 0–15 v 26–40, 0–15 v >40, 16–25 v 26–40, 16–25 v >40, 26–40 v >40.

other studies, but still below national averages. We found that only 62%, 47%, and 9% of characters on the most popular primetime television programs were portrayed using seatbelts, motorcycle helmets, or bicycle helmets, respectively, when engaged in the corresponding transportation activity. These proportions differ from other reports, which estimate the prevalence of safety belt and bicycle helmet use in films and television programs to range from 10% to 35% and 3% to 6%, respectively.^{7-11 18} We could only identify one study that calculated the prevalence of motorcycle helmet use in the media.¹⁸ This study evaluated the 50 top grossing G and PG rated movies and found that the driver was wearing a helmet in three of five (60%) motorcycling scenes. Much of the variability in published estimates can be attributed to differences in populations, media formats, time periods, and demographics of characters studied. Irrespective of these variables, however, all studies to date, including the current one, have found the prevalence of transportation safety practices in the media to be well below what is reported among the general US population. In fact, recent surveys estimate that approximately 80% of Americans wear motor vehicle safety restraints, while approximately 60% of motorcyclists and 40% of bicyclists report wearing helmets.²⁻⁵

Primetime commercials, in contrast, depicted the use of seatbelts and helmets with a frequency that exceeds the national average. This trend remained consistent across all strata. Of the two other studies that have examined the transportation safety content of commercials, one focused only on automobile advertisements¹⁶ while the other limited its scope to general safety behaviors in commercials surrounding sports events.¹⁷ The former study found that, from 1983 to 1998, safety features served as the primary theme in 2% of commercials and the secondary theme only 8% of the time. Although this study did not record the incidence of seatbelt use, investigators observed that 49% of commercials showed vehicles traveling at very high speeds. The latter survey found that 20% of sports event commercials displayed at least one violent or unsafe behavior, of which automobile commercials constituted the largest proportion (31%). This finding contradicts our data, which revealed a slightly higher incidence of seatbelt use in commercials for automobiles compared to other advertisements. The discrepancy may be attributable to the differential categorization scheme and outcome of interest between studies. Secular trends in marketing may also contribute to the difference, as our study was conducted in the summer of 2005, three years after and one season earlier than the previous study was completed.

Because the present study was restricted to a four week span of summer programming on four network channels, we are limited in generalizing our results to the broader audience of cable and network programming at other times of the year. Our restricted focus to primetime shows was intentional however, as we sought to characterize transportation safety behaviors as they are portrayed on the most widely watched television shows and commercials—namely those that are shown during primetime programming. We also deliberately chose the evening hours when people of driving age (>16 years) are more likely to watch television. These restrictions are likely to have resulted in the exclusion of certain subpopulations, such as children and adolescents, who may be of more interest than older populations when evaluating the prevalence of recreational helmet use. Our study was further limited by potential misclassification of program and commercial categories. Though likely to be a non-differential bias, our ability to interpret the presence or absence of differences across categories such as program type, genre, and character age may have suffered as a result. Finally, many of the most popular television programs during

Key points

- Seatbelts, motorcycle helmets, and bicycle helmets have proven benefits in decreasing morbidity and mortality of persons involved in traffic accidents, yet a low proportion of the US population reports using them on a consistent basis.
- Safety behaviors depicted on television programs and commercials may influence the perceptions of Americans, as they are exposed to an average of more than four hours per day of television programming.
- Transportation safety behaviors, such as proper seatbelt and helmet use, are much less frequently portrayed in primetime television programs than in their associated commercials.
- The prevalence of seatbelt and helmet use within the US population is much higher than in primetime television programming but lower than in commercials.
- The importation of US television programs by other countries extends the audience for potentially unsafe behaviors.

the study period were also among the most popular programs in countries such as the United Kingdom,¹⁹ Canada,²⁰ and Australia,²¹ though the commercials viewed during these programs were likely to differ. However, in terms of the safety behaviors portrayed in the programs themselves, the results of this study have implications for viewers in these and perhaps other countries as well.

Implications for prevention

Despite the limitations of the current study, it is clear that, in our restricted sample of primetime television US programming, responsible transportation safety behaviors are portrayed with greater frequency than in the past, but still fall short of what is reflected in the commercials that run along side them or in the audiences that watch them. As Americans spend an average of almost one fifth of their day watching television,¹⁵ the messages that are transmitted regarding transportation safety practices are likely to influence the public's perception of seatbelt and helmet use. Moreover, because US television programs are imported by other countries, the impact of the portrayal of unsafe behaviors could be more extensive than just the US television audience. Interventional studies, to date, have primarily focused on pediatric populations, assessing the impact of safety messages in television programming on children's behavior.^{13 14} Whether a similar influence exists among adults is not known but is an issue worthy of investigation as such information is needed to inform recommendations regarding the media's portrayal of safety behaviors.

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LACUNAE

Attack of the dummies

The Los Angeles Times has reported on a spate of lawsuits involving department store dummies (mannequins). A woman shopper sued JC Penney after she was allegedly thwacked on the head by a dummy. She said she was ambushed by a legless female mannequin, a skirmish that left her with a bloodied scalp, a cracked tooth, recurring shoulder pain and numbness in her fingers. She wanted to buy a certain blouse, but the only one in her size was being worn by a mannequin; when a salesclerk tried to remove the garment, the dummy's arm flew off and struck her head. The alleged episode was the latest in a string of mannequin mayhem incidents nationwide. "There are a slew of lawsuits like this", said a mannequin manufacturer, who joked that stores should run background checks on dummies before letting them mingle with shoppers. Getting roughed up by a dummy is not a slapstick affair. The fiberglass figures can weigh as much as 100 pounds. In 1990, a Florida woman collected \$175 000 after a faceless Macy's dummy fell on to her neck and reportedly injured a disc. In 1993, a Minnesota woman was knocked unconscious by a falling mannequin at a Dayton's department store, according to the Minneapolis Star Tribune. She needed five stitches and several chiropractic sessions to recover but did not sue. In 2001, a Canadian shopper in Vancouver won a \$330 000 verdict after a Gap store mannequin landed on her head. The shopper was apparently jinxed when it came to store displays. A few years earlier, while shopping at a lighting store, she was beamed by a falling chandelier. Most of the cases involved mannequins toppling over on to customers, but an Indiana woman claimed she caught herpes from the lips of a CPR training dummy. She dropped her lawsuit against the American Red Cross in 2000 after further tests showed that she did not have the disease, according to news reports (contributed by Ian Scott).