




## Article

# “Where Have I Heard It?” Assessing the Recall of Traffic Safety Campaigns in the Dominican Republic

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**Abstract:** Although traffic crashes are the eighth leading cause of death in the world, and are linked to vehicle and infrastructure-related factors, crash-related fatality rates are much higher in low-income countries. Particularly, the Dominican Republic is the country with the highest accident rate in the whole American continent. Therefore, in the past few years, public agencies have been developing different measures aimed at reducing traffic fatalities, including road safety campaigns. The aim of the present study was to assess the recalling of such campaigns among the Dominican population, which may serve as an additional indicator to evaluate their effectiveness in this and other countries of the region presenting similar traffic safety issues. For this cross-sectional study, a nationwide sample composed of 1260 people (50% males and 50% females) with a mean age of 39.3 years was used. The data were collected through personal interviews. Overall, the recall of traffic safety campaigns was found to be very low (9%); male drivers who were employed, possessed a driver’s license and habitually drove were the ones who could commonly remember these campaigns. The results of this study suggest that further evaluation and follow-up could help to maximize the impact of future traffic campaigns and advertisements in the Dominican Republic, as well as in other emerging countries of the region with similar characteristics. Further, key segments of the population such as the female, young, less formally educated and non-driving populations should be also targeted for further actions in this regard.

**Keywords:** traffic safety; human factors; communication campaigns; mass media; transport planning; mobility; sustainability



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## 1. Introduction

Traffic crashes represent a problem with a high economic, social and health-related impact on the population [1]. The latest data recorded by World Health Organization indicate that traffic accidents are the eighth leading cause of death worldwide, explaining almost 1.4 million fatalities yearly [2].

This situation is even more serious in emerging countries, if several existing shortcomings and gaps are considered. In brief, low- and middle-income countries (LMICs) are characterized by having an average low per capita income and a very limited advancement in their development and infrastructure and human development. Even so, economic growth, industrialization, and exportation have been rising with globalization dynamics, often implying unexpected (or *unplanned*) problems for key sectors such as transportation [3]. Colombia, Peru, Ecuador and the Dominican Republic are some noteworthy examples [4]. Emerging countries have a traffic accident death rate of 29.4 per 100,000 inhabitants compared to the world rate of 18.8 per 100,000 inhabitants [5].

For the past few years, the Dominican Republic has been the country with the highest number of fatal victims in traffic accidents. The death rate of traffic accidents fluctuates, but it has been stable at over 20 for every 100,000 inhabitants since 2008 [6]. These data make

the Dominican Republic the country with the highest death rate from traffic accidents in the whole American continent [5].

Deaths related to traffic accidents are the second leading cause of external or violent death in the Dominican Republic. Thus, the data from the Permanent Observatory of Road Safety (Observatorio Permanente de Seguridad Vial—OPSEVI) have shown that the number of casualties caused by traffic accidents was 3204 in 2019 (the latest available data), with men between 15 and 29 years old as the population group with the highest rate [7].

In the past few years, from the National Institute of Traffic and Land Transportation (INTRAN, Dominican Republic), a set of measures have been developed, addressing the awareness of the population and the reduction in traffic crash rates in the country. Thus, new laws and norms have been approved within this scope, and actions have been carried out to improve the public infrastructure and the conditions of public transportation, emphasizing the road education of citizens [8].

In this sense, communications campaigns are very relevant since they are an appropriate way of transmitting changes happening in the traffic and road safety field to the Dominican Republic population [9]. Without appropriate use of the media and advertising campaigns, it will be difficult to achieve a real change in the attitudes and behaviors of road users [10,11]. For this reason, the communication plans of the traffic sector throughout the whole world tend to produce advertisements with a high emotional impact, using fear as their persuasive element [12] in addition to using messages or slogans that, with their repetition through different media, manage to be remembered by users.

In the Dominican Republic, different communication campaigns were developed in the years 2018 and 2019, aimed at both at-risk groups (pedestrians, cyclists, motorcyclists, etc.) and to the population as a whole. This is the case of “safe pedestrian action”, “I use the bike”, or “don’t drive if you drank” [13]. The purpose of the traffic campaigns is to raise public awareness of road safety risk factors in order to reduce accidents and improve mobility, which will have a direct impact on reducing pollution and energy consumption [14].

Communication campaigns have been shown to have a certain level of effectiveness. It is difficult to isolate the impact of advertisements, as they are usually broadcast in conjunction with the implementation of other preventive measures [15]. However, previous research shows that campaign effectiveness significantly increases when they are used to complement regulations and sanctions [16,17]. Therefore, it is essential to make ads with appropriate features so that users remember the message and apply it in their journeys.

However, as has been previously mentioned, carrying out a campaign does not necessarily imply that the population will perceive and incorporate all the information that needs to be transmitted. Although recall is not the only important element in raising awareness among the population, it is a necessary first step in the process of acquiring appropriate road behavior. Therefore, the objective of this research is to find out to what extent the inhabitants of the Dominican Republic remember the communication and advertisement campaigns related to traffic, mobility, and road safety that have been carried out in recent years. Likewise, we will analyze whether there are population groups that are especially inclined to remember such advertisements, with the aim of improving the efficacy of future campaigns in the country.

After reviewing the literature and stating the objective of the study, the materials and methods used will be presented. Subsequently, the obtained results will be developed, and the data will be contrasted with other studies in this thematic area in the discussion. Finally, the most relevant conclusions will be presented.

## 2. Materials and Methods

### 2.1. Participants

The sample was composed of 1260 adult inhabitants of the Dominican Republic. The sample distribution was proportional to the population, according to the ONE census (National Statistical Office), by age ( $M = 39.3$ ;  $SD = 15.37$ ), gender, habitat and province [18]

(Table 1). To obtain the necessary representativeness, the minimum sample size should be about  $n = 680$  if we assume a level of confidence of 99%, a maximum margin of error of 5% ( $\alpha = 0.05$ ) and a beta ( $\beta$ ) of 0.20, which allows for an 80% power (Table 1). Participation was voluntary and anonymous. The personal information management was carried out in accordance with the current laws on data protection, complying with ethical requirements.

**Table 1.** Sociodemographic data of the study participants.

Variable	Category	Total		Male		Female	
		n	%	n	%	n	%
Age range	18–24	260	20.6%	136	21.6%	124	19.7%
	25–34	311	24.7%	146	23.2%	165	26.2%
	35–49	366	29.0%	193	30.6%	173	27.5%
	50–64	221	17.5%	108	17.1%	113	17.9%
	>65	102	8.1%	57	17.1%	55	8.7%
	Total	1260	100%	630	100%	630	100%
Level of studies	Cannot read or write	25	2.0%	14	2.2%	11	1.7%
	Can read and write but no studies	9	0.7%	3	0.5%	6	1%
	Primary studies, not completed	265	21%	138	21.9%	127	20.2%
	Primary studies, completed	80	6.3%	44	7%	36	5.7%
	High school, not completed	273	21.7%	145	23%	128	20.3%
	High school, completed	342	27.1%	177	28.1%	165	26.2%
	Technical training	6	0.5%	3	0.5%	3	0.5%
	University studies, not completed	153	12.1%	58	9.2%	95	15.1%
	University studies, completed	99	7.9%	43	6.8%	56	15.1%
	Graduate or Doctoral studies	8	0.6%	5	0.8%	3	0.5%
Total	1260	100%	630	100%	630	100%	
Do you drive a motor vehicle?	Yes	580	46.0%	458	72.7%	122	19.4%
	No	680	54.0%	172	27.3%	508	80.6%
	Total	1260	100%	630	100%	630	100%
Do you have a driver's license?	Yes	273	21.7%	244	38.7%	29	4.6%
	No	987	78.7%	386	61.3%	601	95.4%
	Total	1260	100%	630	100%	630	100%
Do you normally drive?	Yes	470	37.3%	392	62.2%	78	12.4%
	No	790	62.7%	238	37.8%	552	87.6%
	Total	1260	100%	630	100%	630	100%
Type of driver	Professional	202	35.1%	190	41.5%	12	9.8%
	Private	373	64.9%	264	57.6%	109	89.3%
	Total	685	100%	454	100%	121	100%

## 2.2. Design, Procedure and Instruments

The data reported in this study were collected through the National Survey on Mobility of the Dominican Republic from the year 2019 [19]. The questionnaire included issues related to the knowledge of institutions and traffic laws, public transportation, private transportation, on-foot movements, bike use, ITS systems and measures, among which the variables of the present research are included. It is a pioneer questionnaire in Latin America, where such exhaustive and complete instruments have not been administered. It began to be administered in 2018 to assess the situation in the country and detect the evolution and changes in the way Dominicans move as a result of the implementation of the various initiatives carried out by INTRANT.

The survey was administered through personal, in-person interviews with a duration of approximately 20 min. The sample was obtained during a time span from 24 November to 7 December 2019. The gathering of information was carried out through a CAPI system (Computer Assisted Personal Interviews) on tablets, recording and geo-referencing the

interviews, with the aim of expediting the duration of the interview and minimize any recording mistakes.

In order to achieve the proposed objectives, the following variables were taken into account:

- Recall of traffic safety campaigns: obtained from the following questions. Do you remember any campaign or message on traffic, mobility and/or road safety? With one possible answer, yes/no; What was the topic? With an open answer (therefore, coded during the data processing phase); Who issued it? With an answer to be chosen among the options INTRANT/Presidency of the Republic/Private Company/Other; and through which media did you access this campaign/message? With a multiple-choice answer (Press/Television/Radio/Web/Social networks/Other).
- Sociodemographic variables and driving data: gender, age group, habitat, children, job situation, does he/she drive a motor vehicle? Does he/she habitually drive? Is he/she a professional driver? Does he/she have a driver's license? What type of license?

### 2.3. Data Processing

For this study, descriptive (frequency) analyses were carried out with the aim of describing and characterizing the general remembrance of traffic campaigns among the Dominican population. Moreover, Chi-square ( $\chi^2$ ) analyses were performed in order to obtain possible statistical associations with sociodemographic variables. Subsequently, and after basic statistical parameters were tested and met, a binary logistic regression (i.e., *Logit*) model was designed, using the fact of having recalled at least a traffic safety campaign as a dependent and binomial variable, where 1 = Yes and 0 = No, using basic demographic variables whose coverage is common to the whole population. Statistical analyses were carried out using the ©IBM SPSS (Statistical Package for Social Sciences) version 26.0 (Armonk, NY, USA).

### 2.4. Ethics

This type of study does not require ethical approval. No personal data were used, and the participation was anonymous, implying no potential risks for the integrity of our participants. However, the "Ethics Committee of Research in Social Sciences in Health" from the University Institute on Traffic and Road Safety of the University of Valencia (Spain) was consulted, certifying that the research responds to the general ethical principles relevant to research in Social Sciences. The Committee expressed its approval for the research. All participants gave their consent before taking part in the study and after receiving an explanation of its objectives, as well as all the previously mentioned considerations, from the research staff.

## 3. Results

The recall of these traffic safety-related communication campaigns or messages on traffic safety awareness in the Dominican Republic can be considered, at first glance, as very low, as only 9% of the sample answered positively to the corresponding question (Figure 1). More than half of the participants had seen the campaigns on TV (62.8%), and they had been produced by different organizations, among which the INTRANT stands out (35.4%).

Concerning the topic of the campaigns, there are not any that stand out. In Table 2, it can be observed that the use of seatbelts, safety and mobility, the don't drive if you drank campaign, and respect the laws are the most repeated elements, despite showing only a small difference from the rest. Moreover, it is remarkable that 21.2% of participants do not remember what the advertisement was about.

After analyzing the data depending on the different sociodemographic characteristics, we found that the only cases in which significant differences are produced are gender and job situation. Men and people who are currently employed are the ones who remember traffic campaigns the most (Table 3). Concerning the data related to driving, it is observable how people who drive any motor vehicle are those who remember this type of campaign

the most. In relation to this, there is also a significant difference in the habitual driving and driver’s license variables. On the other hand, no differences appear depending on the type of license, and neither on the type of driver (professional or private) (Table 3).

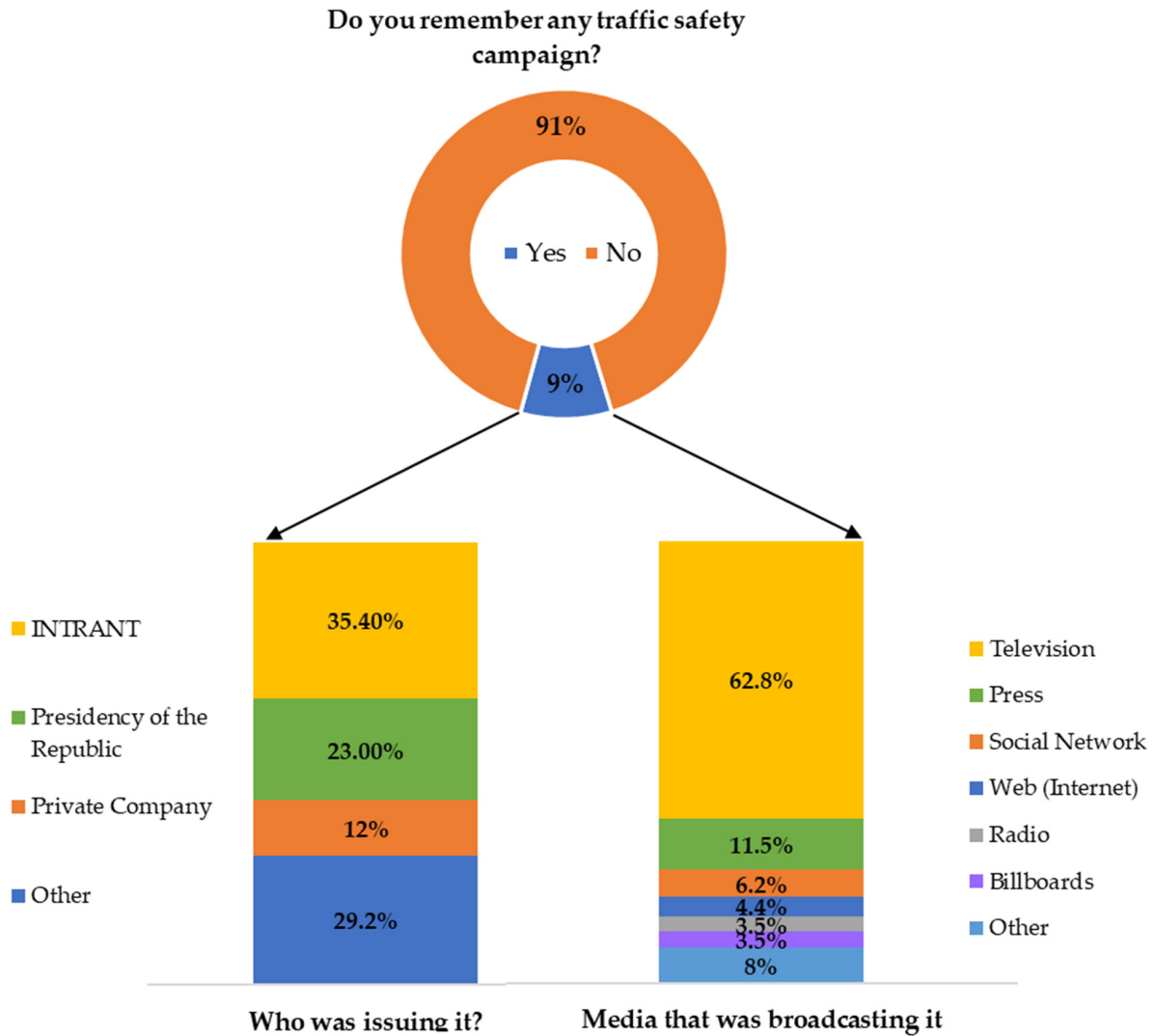


Figure 1. Overall data on the recall of traffic safety campaigns.

Table 2. Topics addressed by the traffic safety campaigns remembered by population.

Topic of the Campaign	Frequency	Valid Percentage
Use of the seatbelt	11	9.7
Safety and mobility	11	9.7
“Don’t drive if you drank”	9	8.0
Respect the laws	9	8.0
Be careful	6	5.3
Drive slowly	5	4.4
Use of the cellphone	4	3.5
Accidents prevention	4	3.5
Transportation	3	2.7
Safety helmet	3	2.7
Land transportation	2	1.8
Yield sign	2	1.8
Easter holidays	2	1.8

Table 2. Cont.

Topic of the Campaign	Frequency	Valid Percentage
Allowed speed	2	1.8
Know how to drive	2	1.8
Pollution	2	1.8
Passengers	1	0.9
OMSA buses	1	0.9
Relieve traffic jams	1	0.9
Using the metro	1	0.9
Moto-taxi riders' training	1	0.9
Cyclists' corridor	1	0.9
Price of trip	1	0.9
Number of plate	1	0.9
Better traffic	1	0.9
Better roads	1	0.9
Color of cars	1	0.9
December advertisements	1	0.9
NS/NC	24	21.2
Total	113	100.0

Table 3. Memories of traffic campaigns depending on sociodemographic variables.

Variable	Category	Do You Remember Any Traffic Safety Campaign?				Test Value
		Yes		No		
		n	%	n	%	
Gender *	Man	72	11.4%	558	88.6%	Chi <sup>2</sup> (1) = 9.342; <i>p</i> < 0.010 **
	Woman	41	6.5%	589	93.5%	
Age	18–24	20	7.7%	240	92.3%	Chi <sup>2</sup> (4) = 2.143; <i>p</i> = 0.709
	25–34	29	9.3%	282	90.7%	
	35–49	35	9.6%	331	90.4%	
	50–64	17	7.7%	204	92.3%	
	>65	12	11.8%	90	88.2%	
Habitat	Urban	91	8.8%	938	91.2%	Chi <sup>2</sup> (1) = 0.107; <i>p</i> = 0.744
	Rural	22	9.5%	209	90.5%	
Do you have children?	Yes	85	8.8%	886	91.2%	Chi <sup>2</sup> (1) = 0.238; <i>p</i> = 0.625
	No	28	9.7%	261	90.3%	
Job situation *	Unemployed	26	5.7%	432	94.3%	Chi <sup>2</sup> (3) = 12.515; <i>p</i> < 0.010 **
	Retired	4	9.8%	37	90.2%	
	Part-time employee	29	13.6%	184	86.4%	
	Full-time employee	40	10.3%	350	89.7%	
Do you drive a motor vehicle *	Yes	69	11.9%	511	88.1%	Chi <sup>2</sup> (1) = 11.288; <i>p</i> < 0.001 ***
	No	44	6.5%	636	93.5%	
Do you have a driver's license *	Yes	42	15.4%	231	84.6%	Chi <sup>2</sup> (1) = 17.575; <i>p</i> < 0.001 ***
	No	71	9.1%	729	92.8%	
Type of license	01	8	25%	24	75%	Chi <sup>2</sup> (5) = 3.658; <i>p</i> = 0.600
	02	23	13.8%	144	86.2%	
	03	9	17.6%	42	82.4%	
	04	1	9.1%	10	90.9%	
	05	0	0%	1	0%	
Do you habitually drive *	Yes	56	11.9%	414	88.1%	Chi <sup>2</sup> (1) = 7.973; <i>p</i> < 0.010 **
	No	57	7.2%	733	92.8%	
Type of driver	Professional	22	10.9%	180	89.1%	Chi <sup>2</sup> (1) = 0.106; <i>p</i> = 0.745
	Private	44	11.8%	329	88.2%	

\*\*\* Significant at the level  $p < 0.001$ ; \*\* Significant at the level  $p < 0.010$ ; \* Significant at the level  $p < 0.050$ .

If we focus on the media that were issuing the advertisement or campaign, it is interesting how the only sociodemographic variable reflecting significant results is age ( $\text{Chi}^2(24) = 39.252; p = 0.026$ ). In Table 4, we can observe that, despite television being the media from which all groups remember most campaigns, it comes out as especially remarkable for young people between 25 and 34 and people between 50 and 64. Likewise, people between 35 and 49 have had more access to campaigns through the press and the internet than the rest of groups.

**Table 4.** Media issuing the traffic campaigns remembered, depending on the age group.

Diffusion Media	Age Range									
	18–24		25–34		35–49		50–64		>65	
	n	%	n	%	n	%	n	%	n	%
Television	11	55.0%	22	75.9%	19	54.3%	12	70.6%	7	58.3%
Press	2	10.0%	1	3.4%	8	22.9%	1	5.9%	1	8.3%
Social network	0	0.0%	3	10.3%	1	2.9%	2	11.8%	1	8.3%
Web (Internet)	0	0.0%	2	6.9%	3	8.6%	0	0.0%	0	0.0%
Radio	0	0.0%	1	3.4%	1	2.9%	2	11.8%	0	0.0%
Billboards	3	15.0%	0	0.0%	0	0.0%	0	0.0%	1	8.3%
Other	4	20.0%	0	0.0%	3	8.6%	0	0.0%	2	16.7%
Total	20	100%	29	100%	35	100%	17	100%	12	100%

A binary logistic regression analysis was carried out taking into account the independent variables: sex, age, habitat, educational level and driving status (being or not a driver).

This significant model, conducted through a binomial logistic regression technique, was fitted using both demographic and road safety and demographic variables. The function defining the binary logistic regression model is presented below:

$$P(Y = 1; X_i) = e^{z_i} / 1 + e^{z_i}$$

$$\text{where } z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{10} X_{10} + \varepsilon$$

The variables included in the model were defined as:

$Y_i = 1$ , which implies having recalled at least one traffic safety campaign performed in the country.

$Y_i = 0$ , which implies not remembering any traffic safety campaign performed.

$X_1, X_2, \dots, X_n$ : Independent (whether continuous or categorical–dummy) variables included in the model, where Sex ( $X_1$ ; dummy variable), Age ( $X_2$ ) and Educational level ( $X_3$ ) represent the three independent variables of the model, as shown in Table 5.

**Table 5.** Logistic Regression Model (Logit). Dependent variable: Having remember at least one traffic safety campaign.

Variables in the Equation	B	S.E. <sup>c</sup>	Wald	Df <sup>d</sup>	Sig.	Exp(B) <sup>e</sup>
Sex (Male) <sup>a</sup>	0.777	0.212	13.436	1	<0.001 ***	2.175
Age	0.018	0.007	6.981	1	0.008 **	1.018
Educational level <sup>b</sup>	0.398	0.053	56.698	1	<0.001 ***	1.489
Constant	−5.842	0.516	128.385	1	<0.001 ***	0.003

Success categories = <sup>a</sup> Being a male, <sup>b</sup> Ranging from “No studies (Cannot read or write)” to “Graduate or Doctoral studies”, as specified in Table 1; <sup>c</sup> Standard Error; <sup>d</sup> Degrees of Freedom; <sup>e</sup> Odds Ratio (OR) \*\*\* Significant at the level  $p < 0.001$ ; \*\* Significant at the level  $p < 0.010$ .

The final solution presented an overall accuracy percentage of 91.0%, explained 19.1% of the variance among subjects (Nagelkerke’s  $R^2 = 0.191$ ) and showed a  $-2\text{Log-likelihood}$  coefficient of 690.412. The basic parameters and variables included in the model are presented in Table 5, showing its Beta coefficients, significance level and odds ratio (OR). Three of the study variables had significant results (Table 5), indicating that sex (i.e., the



fact of being a man), a greater age and educational level are significant predictors of the fact of remembering at least one of the road safety communication campaigns previously conducted in the Dominican Republic. The greatest Wald ( $\chi^2$ ), that is, the individual test statistic for each predictor variable, corresponded to the variable “Educational level” (Wald = 56.698), which has shown to be the most relevant demographic predictor among those included in the significant model.

#### 4. Discussion

The core aim of this study was to assess to what extent inhabitants of the Dominican Republic remember traffic safety campaigns. In general terms, the results reflect a very low recall of advertisement campaigns in the scope of traffic, mobility and road safety, even below the data obtained in previous years (in 2018, the rate of remembrance was 11.2%) [20]. This implies a huge issue for the country, since it indicates that, at the moment, the population is not aware of traffic accidents being the second leading cause of violent death in the Dominican Republic, when citizens are actually essential to reverse the situation [7].

Thus, although in recent years, multiple communication campaigns have been carried out within the traffic and road safety sector in the Dominican Republic, the recall of these campaigns remains low. In Table 6, the main campaigns carried out during 2019 in the country, most of them broadcasted by different media, are shown. [21,22].

**Table 6.** Communication campaigns in the traffic sector in the Dominican Republic during 2019.

Campaign	Motto/Main Content
Deployment of police and health personnel at Christmas and Easter, with communication through the media and social networks.	Pact For Life
National campaign aimed at road safety for cyclists and sustainable transport.	I ride the bike
Campaign to promote the use of helmets and caution on the roads.	Ride Safe
Awareness-raising among citizens, with the aim of not driving under the influence of alcohol.	Take it Seriously: If you drink don't drive
Improvement of pedestrian mobility	Safe Pedestrian
Promoting the implementation of the Santo Domingo Tourist Corridor	Tourist Corridor
Preventing the risk of deaths and injuries related to the transportation of children to and from school.	Safe School Environments
Citizen information and education through the media and social networks.	Driver's Licenses
Promotion of safe traffic behaviors of citizens	Road Safety Education
Promotion of sustainable travel by foot, public transport and bicycle.	National Sustainable Mobility Week
Promotion of social responsibility and citizen engagement	Road Safety Week
Proposals for innovative solutions aimed at young people	HACKAMÉRICAS
Promotion of the Road Safety Education Park and its activities	Road Safety Education Park in Ciudad Juan Bosch
Promotion of safety and awareness activities	Holy union 2018 for your Values and your Safety
Citizen awareness-raising at points of high vehicular and pedestrian concentration	Discover Barahona
Implementation of various bicycles for the promotion of sustainable mobility	“United in Action for the Climate”
Road safety education and information for visitors	Seminar at the Book Fair

In this sense, it is convenient to remark that there is only one campaign that is remembered for its slogan. *This is Don't drive if you drank*, which refers to alcohol consumption when driving [22]. It is a message that was heavily emphasized during the year before the



survey, and, in a way, it is positive that this slogan is one of the most remembered elements. In this sense, it would be useful to reflect on which variables are present in this campaign (and not in other ones) so that this situation may be reproduced.

The *Don't drive if you drank* campaign was broadcasted by different media, such as television, radio, newspapers, digital press and social networks. Likewise, there were acts and events related to this campaign in universities, where there was an attempt to raise young people's awareness of the detriments of alcohol consumption while driving (INTRANT, 2020b). This is important since it indicates that the message was strengthened enough for the majority of the population to access it, and therefore achieves an adequate spread, both of which are essential aspects of social marketing [23,24].

However, it must be distinguished between the recall of a campaign and its actual effectiveness. Biases can be generated and distort the recall of the advertisement, causing the message to be different from the one internalized by the users [25]. In this sense, it would be interesting to go deeper into further research on other elements that influence the effectiveness of a campaign, beyond recall, such as the change in attitudes and behaviors and the impact of the increase of knowledge on the viewer [26]. Therefore, the monitoring and evaluation of campaigns are also fundamental, being particularly important in the early years of the evolution of media campaigns in low- and middle-income countries [27].

The advertisements related to this campaign do not present especially violent images; they rather inform by providing a clear message. Maybe a higher impact could have been achieved had they used a more emotional component [28], as happens in other countries with similar campaigns, such as Spain [29] or Mexico [30]. In Spain, the highest peak of deaths caused by traffic accidents occurred at the end of the 1980s. At this time, the Dirección General de Tráfico (DGT) changed its approach to communication campaigns, starting to make advertisements with much more raw images, showing in a realistic way the terrible consequences that can result from irresponsible driving behavior. This contributed to the reduction in the accident rate that occurred during the 1990s in this country [12]. However, the communication strategy was changed in the following years because the prolonged high impact levels substantially reduced the effectiveness of the campaigns [31]. These results are repeated in advertisements that promote healthy behaviors beyond the transit sector (e.g., tobacco or safe sex), where it has been shown that high-impact campaigns could attract the viewer's attention but prevent learning and retention of public health problems [32]. For this reason, several studies indicate that the most appropriate formula is to intersperse campaigns with low and high visual impact so as not to habituate the user [33]. It is important to take as a reference the strategies and advertisements made in other countries because campaign messages that have proven to be effective in one environment can also be tested in other contexts (with prior adaptation), which could save resources and time [27].

On the other hand, the use of social networks is necessary because it makes the problem feel closer to the population, especially to young people, the group that uses them the most [34]. It is surprising that, according to the present research, young Dominicans do not have more memories of campaigns seen on social media. This can indicate that the way of conveying the information was not adequate or that the INTRANT social networks do not have enough engagement yet to influence the thoughts and behaviors of their followers [35]. Therefore, it is necessary to establish a good relationship with users through an accessible social network that will allow interaction with followers, with frequent publications, relevant and interesting information for Dominicans, encouraging users' participation, answering their questions and paying attention to their suggestions. These easy strategies can turn the INTRANT profile into a better communication source, with a more significant impact on the population and a very low economic cost [36].

However, this is a process that can take time. Therefore, future campaigns in the Dominican Republic must focus on television, since it is clearly the medium from which campaigns are remembered the most. This is interesting, since it is consistent with what happens in many countries around the world, where the television is still the preferred

medium for advertising [37]. Thus, according to a study conducted by Nielsen IBOPE, in the Dominican Republic, open TV channels in 2019 reached more than 99.24% of all people in Santo Domingo and the province of Santiago. Viewers' consumption time increased to 115 min per day, consolidating television as the medium with the greatest impact and reach in the country. Largely because of this, 67% of the advertising investment in 2019 was made in this medium [38]. Regarding age groups, children (4–11 years) reached 15%, adolescents (12–17) 9.6%, young adults (18–34) 22%, adults (35–54) 30% and seniors over 55 years 23% [38]. Similar data are obtained in other emerging countries. In Latin America, television is widely consumed by the population as a whole, although more and more people opt for on-demand services, especially young people [39].

In this sense, despite the rise of social networks, this type of media is only useful for supporting the main advertisements issued on television, and this does not even apply to every case [40,41]. Thus, in future campaigns, the Dominican Republic could follow up with this strategy, issuing most information through television and using the rest of the media as a complement for establishing the new ideas and behaviors in the population.

Another expected element that should be remarked on is that the most influential variable in the recall of traffic campaigns is being a driver. All variables where a significant difference appeared between groups share this unifying element: driving a motor vehicle, being a habitual driver, and having a driver's license. Even in the case of the gender and job situation variables this link has been found, since those who drive the most in the Dominican Republic are men and people who have a job. This phenomenon can be explained because drivers may have more interest to pay attention to traffic advertisements in comparison with non-drivers. This is a key element in the attention to and retention of information [42,43].

Such circumstances may be useful for future campaigns, as it is drivers who cause most traffic accidents due to human error [44,45]. However, it should not be forgotten that pedestrians and motorists are the most vulnerable groups, being those who die the most from a traffic accident. Thus, the subject matter of the spots should be especially aimed at drivers, warning of the importance of the human factor, with special emphasis on distractions, alcohol and drug consumption and speeding due to their significant influence on accident rates [46,47].

In addition, emphasis should be placed on motorcyclists since, in the Dominican Republic, motorcycles represent more than 55% of the country's vehicle fleet [48]. This situation also occurs in many of the emerging countries of Latin America, especially because of motorcycle cabs (or moto-taxis), which are motorcycles that act as public transport two-wheeled vehicles for the movement of travelers [49]. These vehicles are involved in a high number of traffic accidents, and may be influencing variables such as drowsiness, fatigue and high workload [50]. Therefore, it would be relevant to act specifically on this risk group in future campaigns carried out in these countries.

## 5. Conclusions

The improvement of road safety and mobility in the Dominican Republic is necessary because of the high accident rates and deaths that have been happening in the country in recent decades [51]. The first step for users to remember the communication campaigns that are being carried out in the Dominican Republic is to increase their awareness of road safety and their appropriate behaviors on the road. This research establishes that the recall of the campaigns is very low. Hence, a change in the design and elaboration of the advertisements in this sector is necessary.

Thus, given the circumstances, the elaboration of future campaigns in the Dominican Republic might require extensive further evaluation and follow-up, a fact that could help to maximize the impact of future traffic campaigns and advertisements in the Dominican Republic, as well as in other emerging countries of the region with similar characteristics. Further, this study found that not all population segments in terms of sex, education and income have the same remembrance level, and gaps in terms of access to information

channels and sources may possibly be enhancing it. In this regard, key segments of the population, such as the female, young, with lesser educational levels and non-driving population, that have been found as benefiting less from them should also be targeted for further campaigns and communicative strategies aimed at strengthening traffic safety.

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