

The Restriction of Hour of Sales of Liquors: Lima 2010-17: Traffic Accidents (TA) and other Violent Deaths

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Abstract

Objective: Determine the relationship between the hours of sale of spirits "Safe Time" and those killed by traffic accidents (TA).

Material and methods: descriptive research based on the monthly report made by the Metropolitan Municipality of Lima (LM), from the database of the Institute of Legal Medicine registered from 2011 to 2017, with a unit and bivariate analysis characterizing TA, deceased and its relationship with the time of occurrence, day of the week, sex and age, alcohol consumption and data from the National Police of Peru, on frequency of AT and age and sex of deceased.

Results: It is evident that there is a relationship between the variables, considering also that the growth of the vehicle fleet is parallel to the TA. Thus, the department of Lima has a frequency of cases and deaths lower than expected, showing that it is necessary to measure the occurrence by districts. 67% between 26 to 60 years and in the rest of the country 57%, with fewer young men dying. Temporary deaths decreased every day of the week and hours at dawn. The highest frequency of deaths is related to the number of hours spent selling liquor.

Conclusions: The decrease in deaths due to AT in LM is lower than in other countries, possibly due to the lack of commitment of some of the 43 municipalities; however, the change in age and sex after the intervention is like that in Cali. The "safe time" has evidence for its application throughout the country.

Keywords: Liquor; Violent deaths; Accidents

Introduction

The traffic accidents (TA) were registered annually in Peru, between 74,672 to 102,762 in the period 2004-2016 registering in the 2016, about 89304 in all the departments of the country, of which 49304 (55%) occurred in the Department of Lima [1]. These accidents followed a tendency observed by Loayza when affirming that the increase of the automotive fleet, correlated very well with the increase of the accidents, particularly since 1998 [2].

In December 2011 and with the support of a study carried out in the Municipality of La Victoria, in Metropolitan Lima, which evidenced a decrease in the number of wounded in fights and aggressions, homicides and suicides related to the reduction of the hours of sale of liquors, having no effect on deaths in AT, since they are mostly diurnal, with 25.1% of violent deaths with alcohol in greater quantity than 0.5 g per litre of blood, and with RR for men of RR=2.21 (CI 1,43-4,07) 95% greater than the feminine one [3] the ordinance 1568 of restriction of the hours of sale of liquors was promulgated, which was given a term of 3 years to be established in the 43 municipalities that make up Metropolitan Lima.

In its application two periods can be conceived: First Period December 2011 to December 2014. Second period January 2015 to November 2017. The base years for these two periods, would be 2010, January-November 2011 (when not there was ordinance 1568) and 2015 the entry of new mayors, also called year lost in the evolution of safe time.

When the safe hour was in operation, in March 2012, an Observatory was established, which analyzed data from the Institute of Legal Medicine, related to violent deaths (Traffic accidents, suicides and homicides). The months of December of the 2011 and January and February of the 2012, were analyzed for the Municipality by the first author of the present work.

In this regard, the objective of this paper is to determine the relationship between the hours of sale of liquors "Safe Time" and those killed by traffic accidents (TA), based on the evaluation of the effect of establishing these schedules in the districts of Metropolitan Lima.

Material and Methods

Metropolitan Lima is made up of 43 municipalities, each with a municipal government, headed by an elected mayor every four year, and autonomous in its management. The Metropolitan Municipality,

through its metropolitan council, approved ordinance 1568, whose main function is the restriction of alcoholic beverage sales schedules, establishing that commercial establishments can sell liquors from 9:00 am until 11:00 pm the restaurants from Sunday to Thursday until midnight and the Friday and Saturday until 3:00 am nightclubs, Sundays to Wednesdays until 1:00 am and Thursdays to Saturday until 3:00 am; and the bars and cantinas, every day until 11:00 pm [4]. This is in accordance with the district mayors should be established within three years.

The Institute of Legal Medicine, sent to the Municipality of Lima, a monthly information in Excel related to violent deaths, where is characterized the following data: code number, income, time, history, sex, address, age, level of education, occupation, marital status, class of accident: homicide, suicide, accident of transit, place of occurrence, time of the accident, alcohol and district address [5].

The first week of application of the restriction and making use of the surveillance system of traffic accident injuries of the MINSA (Health Minister), the effect of the restriction of hours expended in 3 hospitals emergency transit in Metropolitan Lima was studied.

To be a descriptive correlational study were calculated variables as absolute and relative frequencies to describe the characterization of the data of deaths by traffic accidents as well as for the categorical variables sex, age, marital status, alcohol, time of death and deaths per district. It also took into account data from the National Police of Peru, about frequency of AT and age and sex of the deceased.

For a better analysis was divided into two periods: (a) From December 2011 to December 2014, using as base years the 2010 and the period from January to November 2011 (prior to the secure time); (b) From January 2016-November 2017, using as a base year the year 2015, this by the transition of the change of local authorities in January 2015 (mayors) and have changed the approach of the corpse, fortified by the Institute of Legal Medicine, 0.5 g of alcohol per liter of blood to zero tolerance for that same year.

Results

For the effect of the first week, we compared the week of 27 November to 4 December 2011 (prior to 1568) against the ordinance of 4 to 10 December 2011, in three hospitals, with 56 in the period intervened, against 99 in the previous week (not intervened) meaning a reduction of 43%. Possible decrease of more than one-fifth of the wounded, between midnight and 3:00 am, observed, during the first week of validity of the Ordinance (Figure 1).

The first month and with the data of the IML was observed a likely decline in deaths in traffic accidents, so also in the suicides of more than 40% (Table 1) being further decline in the drunk that in the not drunk.

Violent deaths declined all days of the week, apart from the Friday, its largest decline occurred between 00:00-02:59 am. The first month and with the data of the IML was observed a likely decline in deaths in traffic accidents, so also in the suicides of more than 40% (Table 1) being further decline in the drunk that in the not drunk.

The bulletin of February 2013 reported what happened during the first year, which decreased deaths from traffic accidents and homicides in an 11%, respectively (Table 2). The “Safe time” apparently had no effect on the reduction of suicides. Showed a decrease in cases with positive alcohol, in traffic accidents, from 27 to 22 per cent, and in the

killings of 31 to 28%. The deaths were reduced every day except for the Friday (Figure 2), decreasing in all times significantly, being this decline, more evident between 00:00 and 02:59 am (Figure 3).

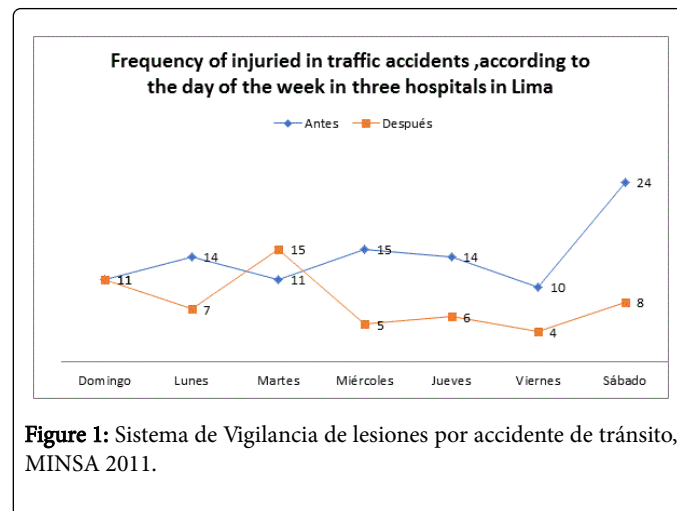


Figure 1: Sistema de Vigilancia de lesiones por accidente de tránsito, MINSA 2011.

Muertes violentas	Diciembre 2010	Diciembre 2011	Variacion 2010-11 %
Homicidios	33	30	9,01
Accidentes de Tránsito	60	32	46,6
Suicidios	31	18	41,9
Total	124	80	35,5

Fuente: IML, 2012

Table 1: Violent Deaths December 2010-December 2011, Metropolitan Lima.

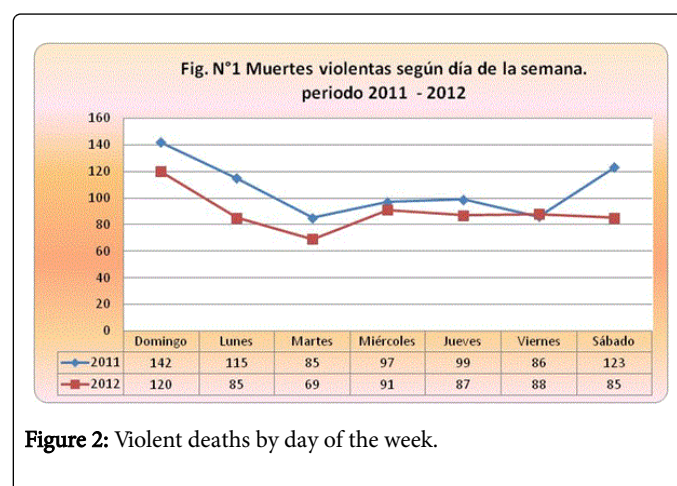


Figure 2: Violent deaths by day of the week.

Deaths from traffic accidents decreased by 11.04%, in both sexes (Table 3), and in all age groups except for those older than 50 years (Table 4), decreased the alcoholics undergoing a 27.27% (Table 5), the decline occurred more in single persons (Table 6). The largest increases in occurrence were presented in Puente Piedra and Comas (Table 7).

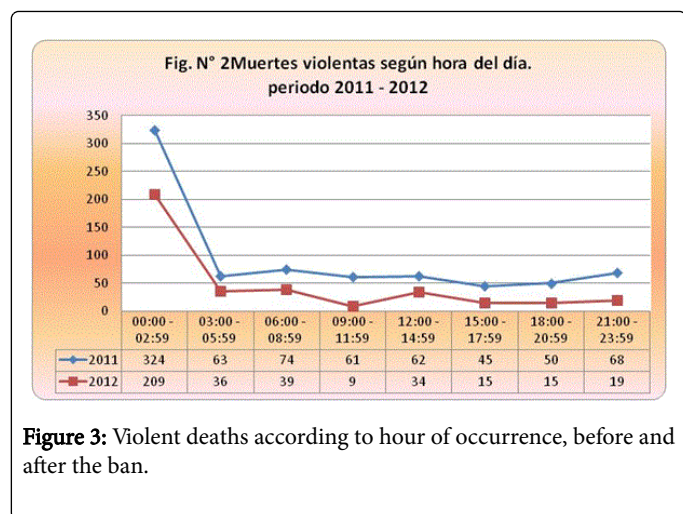


Figure 3: Violent deaths according to hour of occurrence, before and after the ban.

Causa de muerte	2011			2012		
	Casos presentados	Casos con Alcohol POSITIVO	%	Casos presentados	Casos con Alcohol POSITIVO	%
Homicidio	344	105	31	307	86	28
Accidentes de Tránsito(AT)	480	130	27	427	93	22
Suicidio	271	42	15	265	53	20
Total	1095	277	25	999	232	23

Table 2: Injury deaths from external causes, according to the presence or not of alcohol. IML-Lima Metropolitana. Dic. 2010; enero-noviembre 2011 y Dic. 2011; enero-noviembre 2012.

Muertes en accidentes de tránsito	2011	2012	Variación 2011-12 (%)
Varones	357	313	-12.32
Mujeres	123	114	-7.32
Total	480	427	-11.04

Source: IML-Lima Metropolitana. Dic. 2010; enero-noviembre 2011-Dic. 2011; enero-noviembre 2012

Table 3: Deaths in Traffic Accidents according to sex. Dic. 2010; Jan-Nov 2011-Dec. 2011; Jan- Nov 2012.

The same trend was observed for 2013 and 2014.

The year 2015 with new mayors noted an upward trend of violent deaths (Figure 4) by what we considered a new base year to make comparisons.

Another change that caught our attention was the increase of the corpses for distillation, which came to be the 20% in 2014, reaching close to or above 50%, this was the product of the change that was

made by the Institute of Legal Medicine, of 0.05 g per litre to zero g of alcohol in the blood, with a tendency to decrease further in 2017.

Table 8 shows us that the decline of distillation in the period 2015-17, occurs at the expense of traffic accidents, increasing the AT of not drunk (Table 9).

Muertes en accidentes de tránsito	2011	2012	Variación 2011-12 (%)
0 - 9	32	21	-34.38
Oct-24	54	45	-16.67
25 - 49	183	131	-28.42
50	211	230	9
Total	480	427	-11.04

Source: IML-Lima Metropolitana. Dic. 2010; enero-noviembre 2011-Dic. 2011; enero-noviembre 2012

Table 4: Deaths in Traffic accidents according to age. Dic. 2010; Jan-Nov 2011-Dec. 2011; Jan-Nov 2012.

Muertes en accidentes de tránsito	2011	2012	Variación 2011-12 (%)
with alcohol	130	93	-28.46
without alcohol	350	334	-4.57
Total	480	427	-11.04

Fuente: IML-Lima Metropolitana. Dic. 2010; enero- noviembre 2011-Dic. 2011; enero- noviembre 2012

Table 5: Drunken bodies of people killed in traffic accidents. December- January-November 2010; 2011-November 2012.

Muertes en accidentes de tránsito	2011	2012	Variación 2011-12 (%)
Bachelors	279	253	-9.32
Merried	80	75	-6.25
Divorced	0	3	-
Viudows	9	4	-55.56
N/A	112	92	-17.86
Total	480	427	-11.04

Fuente: IML-Lima Metropolitana. Dic. 2010; enero-noviembre 2011-Dic. 2011; enero-noviembre 2012

Table 6: Deaths in Traffic Accidents according to civil status. Dic. 2010; jan-nov 2011-Dec. 2011; jan-nov 2012.

Muertes en Accidentes de Tránsito	2011	2012	Variación 2011-12 (%)
Ancón	4	1	-75
Ate	16	15	-6.25

Breña	10	4	-60
Carabayllo	5	6	20
Chaclacayo	2	1	-50
Chorrillos	7	9	28.57
Cieneguilla	2	4	100
Comas	23	29	26.09
El Agustino	57	38	-33.33
Independencia	5	6	20
Jesús María	15	11	-26.67
La Molina	9	9	0
La Victoria	9	13	44.44
Lince	2	1	-50
Lima	53	41	-22.64
Los Olivos	10	10	0
Lurigancho	10	10	0
Lurín	14	17	21.43
Pueblo Libre	1	8	700
Miraflores	20	16	-20
Pachacamac	2		-100
Pucusana	5	5	0
Puente Piedra	29	35	20.69
Punta Negra	1	0	-100
Rímac	3	4	33.33
San Bartolo	0	1	-
San Borja	4	9	125
San Isidro	8	8	0
San Juan de Lurigancho	35	14	-60

San Juan de Miraflores	46	40	-13.04
San Luis	1	1	0
San Martín de Porres	23	18	-21.74
San Miguel	5	5	0
Santa Anita	7	9	28.57
Santa Rosa	1	2	100
Santiago de Surco	15	9	-40
Surquillo	1		-100
Villa El Salvador	12	9	-25
Villa María Del Triunfo	6	5	-16.67
otro	2	4	100
Total General	480	427	-11.04

Table 7: Deaths in traffic accidents by place of occurrence. Dec. 2010; jan-nov 2011-Dec. 2011; jan-nov 2012. : IML-Lima Metropolitana. Dec. 2010; enero- noviembre 2011-Dec. 2011; enero-noviembre 2012.

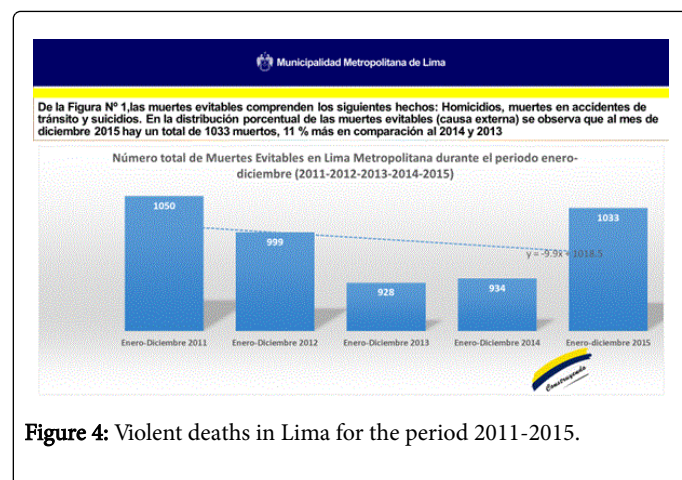


Figure 4: Violent deaths in Lima for the period 2011-2015.

Año	Homicidios Alcoholizados	%	Suicidios Alcoholizados	%	A de Transito Alcoholizados	%	Total Alcoholizados	%
2015	232	34.5	114	17	326	48.5	672	100
2016	161	33.1	91	18.7	234	48.1	486	100
2017	173	38.3	78	17.3	201	44.4	452	100

Table 8: Frequency of traffic accidents, homicides, and suicides, according to presence of alcohol.

Año	Homicidios Alcoholizados	No	%	Suicidios Alcoholizados	No	%	A de Transito Alcoholizados	No	%	Total No Alcoholizados	%
2015	154		30.3	83		16.3	272		53.4	509	100
2016	175		31.8	99		18	276		50.2	550	100

2017	198	30.5	105	16.2	347	53.3	650	100
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Table 9: Frequency of traffic accidents, homicides, and suicides, according to absence of alcohol.

The data of the National Police of Peru, from 2004- 2016, corroborate the fact that the AT are correlated with the growth of the fleet until 2014 (Figure 5) and show that these in the department of Lima, have a different behaviour to the behaviour of the rest of the country, as that Lima has a linear trend, which did not reflect the national increases (Figure 6) In addition, for the 2016, has a higher incidence in females (23% in Lima *Versus* 19% in the rest of the country) and the percentage of adults of 26 to 60 years is 67% in Lima against 57% in the rest of the country.

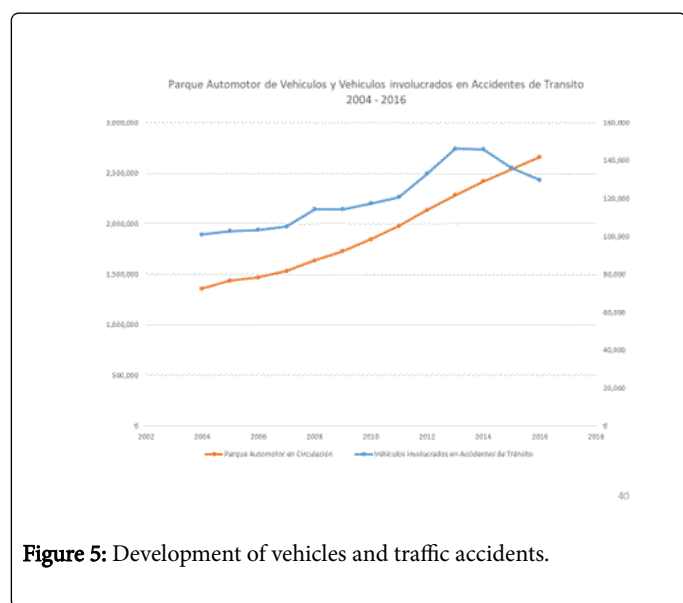


Figure 5: Development of vehicles and traffic accidents.

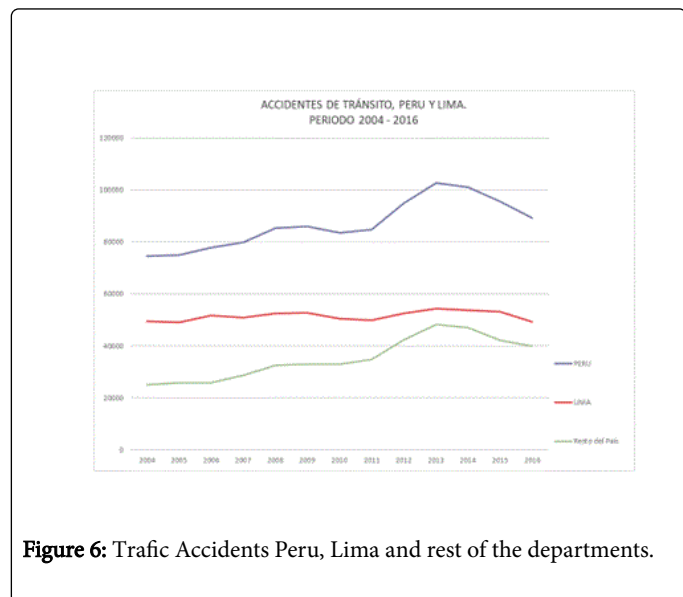


Figure 6: Traffic Accidents Peru, Lima and rest of the departments.

Discussion

Despite the political changes of 2015 and 2016 and its management, the trend from 2012 is lower than the existing in the year 2010 until November 2011, prior to the law, as well as the trend in all regions of the country except for Lima, show similar trends, in relation to the incidence of AT, which could mean a decrease in expected number by the public policy of “Safe time” in force in Metropolitan Lima.

It is interesting to note how the figures of detection of drunk drivers, the Pass of 9.29 in 2012 and 7.41 in 2013 to 2.9, 2.4 and 0.9 per cent in the 2014.2 015 and 2016, with sampling between 83476 and 83707 drivers of vehicles [1] agree with the establishment of the “Safe time”, which was established in December 2011, which could mean, which at the beginning this was not taken seriously by the citizen, and it is not until 2014, that a decrease in the proportion of positive results, and with sustained results later.

However, our decline is small compared with that of other cities in different countries: Bogota, Cali and Medellin in Colombia, Asuncion in Paraguay, and from Diadema in Sao Paulo, Brazil [6-9] Cali, record an additional change, because when the mayor leave, they removed the ban, which in a subsequent local government turned to established, causing a rise in homicides and then back down, tied to the ordinance [6]. This fact is very similar to what happened in Metropolitan Lima, since the change of government in the districts, the dead by AT in the 2015-year increased; what is explained by Huánuco Toralva, who evidence that among the 43 districts, 14 of them get worse during 2015, the incidence of AT, recommending the evaluation by district in Metropolitan Lima [10,11].

The differences between weekdays and weekends, as noted, before the “Safe time”, [12] however, the decline in every day apart from the Friday we did see another defect of the ban, which was exploited by the brewing industry, to promote the Thursday of legs (Friends), Thursday nights are extended until 3:00 am. Hence the correlation that exists between the number of hours of sale of spirits and violent deaths and attacks, [3] is real, but it would have as an additional factor explaining the free hours on weekends.

The decrease in cases in the hours of after midnight for all violent deaths, had already been noted in the aggressions in the study of La Victoria, 2009 [5].

The changes of age and sex, to an experience of restriction of hours was referred by CISALVA who, in Cali, they observed an increase of the age of the dead by murder, as the mayor next to Guerrero, repealed the ordinance, that when you go back to the restriction, the age returned to increase [13].

Conclusion

The sale of liquor "Safe Hour" has to do with the decline of the dead by traffic accidents.

The application of the hours of sale of liquor "Safe Hour" must be equally restrictive for all districts of Lima, and this should have compliance equally throughout the Region.

As evidence that the deaths by AT have been greater on Fridays, the Ordinance should indicate the closing of the sale on Thursday in the middle of the night.

The fact that the decrease is more marked in the drunk than in the not drunk, you would define, an indicator of the effectiveness of the program.

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