LAZIOSANITÀ
AGENZIA DI SANITÀ PUBBLICA

REGIONE LAZIO

How Socioeconomic Status Influences Road Traffic Injuries And Home Injuries In Rome

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background

- Socioeconomic status (SES) is a relevant predictor of various health conditions

- evidence from literature shows that mortality from injuries is influenced by SES in all age population, while the evidence is less clear on morbidity

- There are some limitations of studies on morbidity

  - difficulties in the calculation of either the outcome or the exposure variables
  - the level of injury severity is difficult to collect
  - in the case of hospitalizations, a number of other factors may influence the likelihood of hospitalization.

background

- The identification of socioeconomic gradients in risk for injury provides opportunities for targeting of preventive interventions to high risk groups

- The city of Rome have been recognized as one of the cities with the higher incidence of road traffic injuries in developed countries

- In our region, that includes Rome, unintentional injuries account for the 27% of all the emergency department (ED) visits and for children it is one of the most frequent causes of hospitalization

aims

- To explore the possible relationships between health outcomes of Road Traffic Injuries (RTI) and Home injuries (HI) and socioeconomic status in a population-based study.

  - The evaluation of the association between unintentional injuries and SES is performed according to the severity of injury (ED consultation, hospitalization, mortality).

- To verify if the socio-economic gradient is present for all the age groups or for both sexes.

Methods: data sources

- RTI and HI surveillance in Lazio region based on the integration between:
  - Emergency Information System: data on unintentional injury (road traffic, home, sport/leisure, work, school, other) collected by all the 60 ED in the region
  - Hospital Information System: hospital discharge records
  - Mortality Registry: data on death certificate of persons died in the region

- The census tract database with the information on SES composite index (educational level, occupational category, unemployment rate, one-person families, large families, crowding index, dwellings rented or owned)

1 'most privileged areas' to 5 'most deprived areas'.

Methods: population

- Each road traffic/home trauma patient (resident in Rome) in the year 2005 listed by in the Emergency Information system was searched in the Hospital discharge database for subsequent hospitalizations

  N= 78.005 road traffic injury ED patients N= 49.124 Home injury ED patients

- The Emergency/hospital integrated database was linked to the mortality registry to identify deaths that occurred within 30 days from the first emergency visit.

  N= 250 road traffic injury deaths N= 286 Home injury deaths

- For each injured subject the SES index of its census tract of residence was obtained

  87% of patients

Methods: statistical analysis

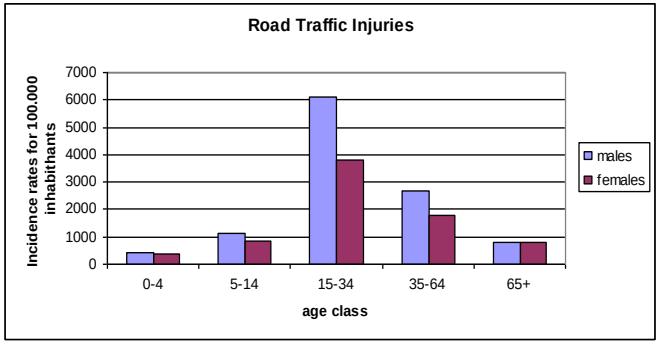
- For each level of SES, we computed ED visit rate, hospitalization rate and mortality rate, adjusted by sex and age.

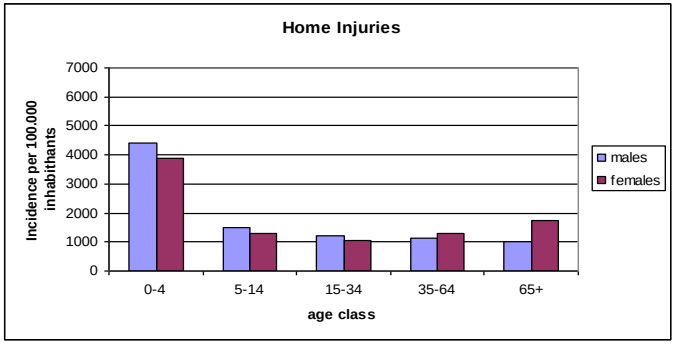
- IRR and 95% confidence intervals have been estimated using Poisson Regression.

- We checked for an effect modification of age and sex on SES/inury relationship

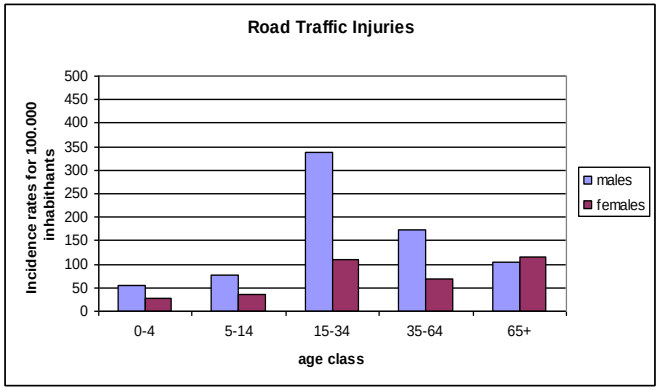
Results

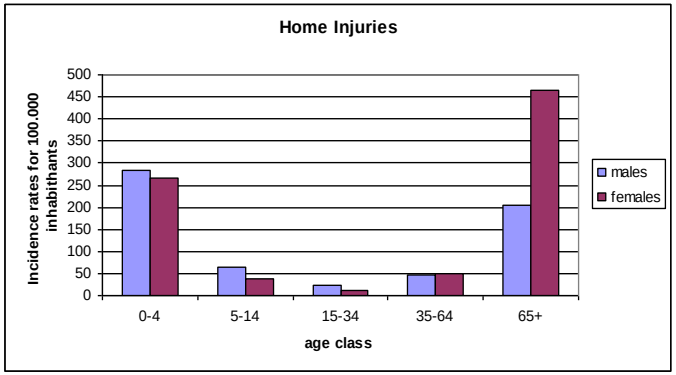
ED visit rate by place of trauma, gender and age. Lazio, 2005





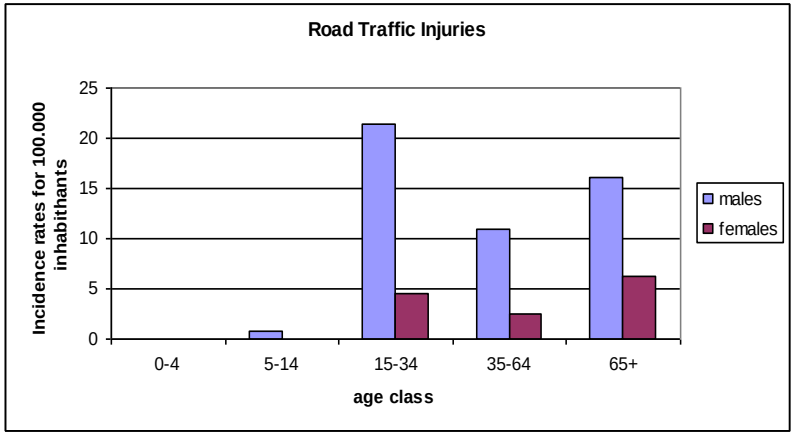
Hospitalisation rate by place of trauma, gender and age. Lazio, 2005

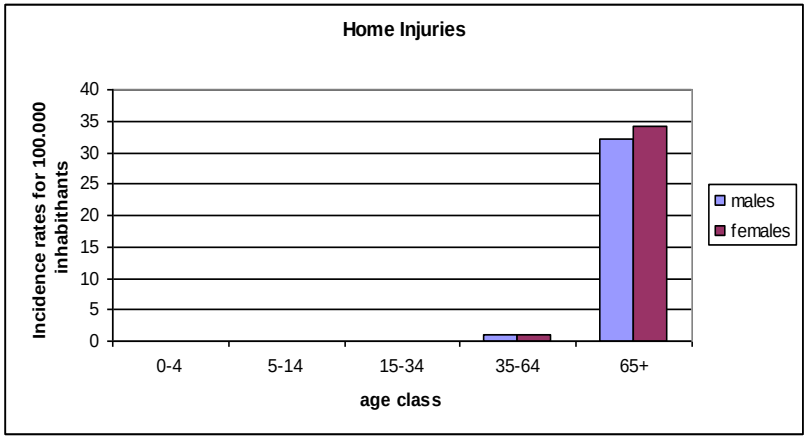




Results

Mortality rate (within 30 days from the injury) by place of trauma, gender and age. Lazio, 2005





Results

ED visit, hospitalisation and 30d mortality by place of trauma, sex, age and SES of the CT of residence. Lazio, 2005

	ROAD TRAFFIC INJURY			HOME INJURY		
	ED visit	Hospitalization	30 day-mortality	ED visit	Hospitalization	30 day-mortality
	N= 67732	**N= 3981**	**N=250**	**N=42260**	**N=4071**	**N=286**
	%	**%**	%			
SEX						
males	*58.3*	*65.1*	*76.4*	*44.7*	*32.8*	*42.0*
female	*41.7*	*34.9*	*23.6*	*55.3*	*67.2*	*58.0*
AGE CLASS						
0-4	*0.7*	*1.3*		*12.0*	*8.2*	*0.0*
5-14	*3.4*	*3.3*	*0.4*	*7.7*	*2.9*	*0.0*
15-34	*46.0*	*35.4*	*32.4*	*16.9*	*2.8*	*0.0*
35-64	*40.2*	*37.2*	*32.8*	*35.8*	*14.7*	*4.2*
65+	*9.7*	*22.8*	*34.4*	*27.6*	*71.4*	*95.8*
SES						
I (high)	*17.0*	*17.8*	*12.8*	*17.2*	*20.1*	*20.3*
II (medium-high)	*18.1*	*18.2*	*20.0*	*18.9*	*21.4*	*26.2*
III (medium)	*19.2*	*21.0*	*21.6*	*19.6*	*20.2*	*22.4*
IV (medium-low)	*20.7*	*19.7*	*21.2*	*20.5*	*18.7*	*16.1*
V (low)	*25.0*	*23.4*	*24.4*	*23.7*	*19.5*	*15.0*

Results

IRR and 95% confidence intervals estimated using Poisson Regression. Road traffic injuries. Lazio, 2005

	ED VISITS		HOSPITALIZATION		MORTALITY	
	IRR	95% CI	IRR	95% CI	IRR	95% CI
SEX						
males	**1**		**1**		**1**	
females	**0.68**	**0.67 - 0.69**	**0.49**	**0.46 - 0.53**	**0.28**	**0.21 - 0.37**
AGE CLASS						
0-4	**0.49**	**0.45 - 0.54**	**0.36**	**0.27 - 0.47**	**-**	**- - -**
5-14	**1.17**	**1.12 - 1.23**	**0.48**	**0.40 - 0.57**	**0.04**	**0.01 - 0.26**
15-34	**5.95**	**5.80 - 6.11**	**1.92**	**1.77 - 2.09**	1.11	0.82 - 1.51
35-64	**2.67**	**2.60 - 2.74**	**1.04**	**0.96 - 1.13**	**0.59**	**0.43 - 0.80**
65+	**1**		**1**		**1**	
SES						
I (high)	**1**		**1**		**1**	
II (medium-high)	1.01	0.99 - 1.04	0.97	0.88 - 1.08	1.48	0.95 - 2.31
III (medium)	**1.06**	**1.03 - 1.08**	**1.12**	**1.01 - 1.23**	**1.59**	**1.03 - 2.47**
IV (medium-low)	**1.12**	**1.09 - 1.14**	1.04	0.94 - 1.16	**1.58**	**1.02 - 2.45**
V (low)	**1.27**	**1.24 - 1.30**	**1.19**	**1.08 - 1.32**	**1.78**	**1.16 - 2.74**

Results

IRR and 95% confidence intervals estimated using Poisson Regression. home injuries. Lazio, 2005

	ED VISITS		HOSPITALIZATION		MORTALITY	
	IRR	95% CI	IRR	95% CI	IRR	95% CI
SEX						
males	**1**		**1**		**1**	
females	**1.14**	**1.12 - 1.16**	**1.68**	**1.57 - 1.79**	1.05	0.83 - 1.33
AGE CLASS						
0-4	**2.93**	**2.83 - 3.03**	**0.81**	**0.72 - 0.90**	-	- - -
5-14	0.98	0.95 - 1.02	**0.15**	**0.13 - 0.18**	-	- - -
15-34	**0.80**	**0.78 - 0.82**	**0.05**	**0.04 - 0.06**	-	- - -
35-64	**0.86**	**0.84 - 0.88**	**0.14**	**0.13 - 0.15**	**0.03**	**0.02 - 0.05**
65+	**1**		**1**		**1**	
SES						
I (high)	**1**		**1**		**1**	
II (medium-high)	**1.07**	**1.04 - 1.11**	1.04	0.95 - 1.14	1.25	0.89 - 1.76
III (medium)	**1.11**	**1.08 - 1.15**	1.01	0.92 - 1.12	1.11	0.78 - 1.58
IV (medium-low)	**1.18**	**1.14 - 1.22**	1.01	0.91 - 1.11	0.89	0.60 - 1.31
V (low)	**1.33**	**1.29 - 1.37**	**1.11**	**1.01 - 1.22**	0.91	0.61 - 1.35

Results

IRR in specific subgroups of population. Lazio, 2005

		ROAD TRAFFIC INJURIES						HOME INJURIES					
		ED VISITS		HOSPITALIZATION		MORTALITY		ED VISITS		HOSPITALIZATION		MORTALITY	
		IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI
GENDER	SES*												
MALES	I (high)	**1**		**1**		**1**		**1**		**1**		**1**	
	II	1.02	0.99 - 1.05	0.92	0.81 - 1.05	1.70	1.00 - 2.90	1.09	1.04 - 1.15	1.00	0.84 - 1.19	1.02	0.62 - 1.69
	III	1.08	1.04 - 1.11	1.04	0.91 - 1.17	1.77	1.04 - 3.00	1.17	1.12 - 1.23	0.91	0.76 - 1.08	0.90	0.53 - 1.53
	IV	1.16	1.12 - 1.20	1.01	0.89 - 1.15	1.85	1.10 - 3.13	1.30	1.24 - 1.36	1.02	0.85 - 1.21	0.47	0.24 - 0.91
	V (low)	1.33	1.29 - 1.38	1.20	1.06 - 1.35	2.13	1.28 - 3.55	1.54	1.47 - 1.61	1.26	1.07 - 1.49	0.80	0.45 - 1.41
FEMALES	I (high)	**1**		**1**		**1**		**1**		**1**		**1**	
	II	1.00	0.97 - 1.04	1.07	0.90 - 1.27	1.06	0.47 - 2.40	1.06	1.02 - 1.10	1.06	0.94 - 1.19	1.48	0.92 - 2.36
	III	1.03	0.99 - 1.07	1.27	1.08 - 1.50	1.27	0.57 - 2.79	1.08	1.03 - 1.12	1.06	0.95 - 1.20	1.31	0.81 - 2.13
	IV	1.06	1.02 - 1.10	1.11	0.93 - 1.32	1.06	0.46 - 2.44	1.10	1.05 - 1.14	1.01	0.90 - 1.14	1.33	0.81 - 2.19
	V (low)	1.19	1.15 - 1.24	1.17	0.98 - 1.38	1.08	0.47 - 2.49	1.18	1.14 - 1.23	1.03	0.91 - 1.16	1.02	0.59 - 1.76
AGE CLASS	SES°												
0-4	I (high)	**1**		**1**				**1**		**1**			
	II	1.23	0.90 - 1.69	2.53	0.89 - 7.17			1.14	1.03 - 1.25	0.93	0.64 - 1.35		
	III	1.22	0.89 - 1.68	1.45	0.46 - 4.58			1.25	1.14 - 1.37	0.96	0.67 - 1.39		
	IV	1.58	1.18 - 2.13	2.09	0.73 - 6.02			1.28	1.16 - 1.40	1.12	0.79 - 1.58		
	V (low)	1.67	1.26 - 2.23	2.71	0.99 - 7.40			1.39	1.27 - 1.52	1.40	1.01 - 1.93		
5-14	I (high)	**1**		**1**				**1**		**1**			
	II	1.08	0.94 - 1.25	0.89	0.50 - 1.60			1.03	0.92 - 1.15	1.07	0.58 - 1.97		
	III	1.22	1.06 - 1.41	1.17	0.68 - 2.01			1.03	0.92 - 1.15	1.25	0.69 - 2.25		
	IV	1.29	1.12 - 1.47	0.81	0.45 - 1.46			1.06	0.95 - 1.18	1.16	0.64 - 2.09		
	V (low)	1.53	1.34 - 1.74	1.30	0.78 - 2.17			1.13	1.02 - 1.26	1.22	0.69 - 2.16		
15-34	I (high)	**1**		**1**		**1**		**1**		**1**			
	II	1.03	0.99 - 1.08	0.90	0.74 - 1.08	1.94	0.88 - 4.29	1.09	1.00 - 1.19	1.23	0.58 - 2.60		
	III	1.08	1.03 - 1.12	1.02	0.85 - 1.22	1.67	0.74 - 3.75	1.14	1.05 - 1.24	1.19	0.56 - 2.51		
	IV	1.18	1.14 - 1.23	1.13	0.95 - 1.35	1.55	0.69 - 3.49	1.31	1.21 - 1.42	2.35	1.22 - 4.54		
	V (low)	1.35	1.31 - 1.40	1.26	1.07 - 1.48	1.51	0.68 - 3.34	1.54	1.43 - 1.66	2.24	1.17 - 4.30		
35-64	I (high)	**1**		**1**		**1**		**1**		**1**		**1**	
	II	1.00	0.96 - 1.04	0.96	0.81 - 1.14	1.40	0.65 - 3.01	1.08	1.03 - 1.14	0.99	0.75 - 1.32	0.65	0.11 - 3.87
	III	1.03	0.99 - 1.07	1.13	0.96 - 1.33	1.55	0.73 - 3.28	1.13	1.07 - 1.19	1.19	0.90 - 1.56	1.29	0.29 - 5.76
	IV	1.07	1.03 - 1.12	1.01	0.85 - 1.19	1.21	0.55 - 2.67	1.25	1.19 - 1.32	1.50	1.15 - 1.94	0.33	0.03 - 3.15
	V (low)	1.23	1.18 - 1.28	1.20	1.02 - 1.40	1.96	0.96 - 4.03	1.47	1.40 - 1.55	1.64	1.27 - 2.13	0.65	0.11 - 3.92
65+	I (high)	**1**		**1**		**1**		**1**		**1**		**1**	
	II	0.96	0.90 - 1.04	1.07	0.87 - 1.30	1.20	0.56 - 2.57	1.05	0.99 - 1.11	1.05	0.94 - 1.17	1.28	0.90 - 1.82
	III	1.03	0.96 - 1.11	1.21	1.00 - 1.48	1.57	0.76 - 3.23	1.08	1.02 - 1.14	0.98	0.88 - 1.10	1.10	0.76 - 1.58
	IV	0.96	0.89 - 1.04	0.97	0.79 - 1.20	1.92	0.94 - 3.90	1.03	0.98 - 1.10	0.89	0.79 - 1.00	0.92	0.62 - 1.36
	V (low)	0.99	0.92 - 1.07	0.98	0.79 - 1.22	1.92	0.93 - 3.96	1.09	1.03 - 1.16	0.95	0.84 - 1.07	0.93	0.62 - 1.39

Results

IRR in specific subgroups of population. Lazio, 2005

	ED visits							
	MALES				children aged 0-4 years			
	RTI		HI		RTI		HI	
	IRR	95% CI	IRR	95% CI	IRR	95% CI	IRR	95% CI
SES								
I (high)	**1**		**1**		**1**		**1**	
II	1.02	0.98 - 1.05	1.07	1.01 - 1.14	1.23	0.90 - 1.69	**1.14**	**1.03 - 1.25**
III	**1.07**	**1.04 - 1.11**	**1.18**	**1.12 - 1.25**	1.22	0.89 - 1.68	**1.25**	**1.14 - 1.37**
IV	**1.16**	**1.12 - 1.20**	**1.34**	**1.27 - 1.42**	**1.58**	**1.18 - 2.13**	**1.28**	**1.16 - 1.40**
V (low)	**1.33**	**1.29 - 1.37**	**1.64**	**1.55 - 1.72**	**1.67**	**1.26 - 2.23**	**1.39**	**1.27 - 1.52**

Discussion

- The risk of road traffic injury ED visits, hospitalization and mortality are higher for subjects from a deprived area of residence;

- The risk of ED visits from home injuries show a trend similar to that reported from RTIs, although the effect is less marked;

- In our data the SES effect is stronger and more consistent among males than females, and among children than adults.

- **Future research will be orientated towards the attempt to better describe individual socio-economic determinants from those area-based**

Limits

- the indicator of socioeconomic status is that it was not calculated based on the individual, but was area-based

- There's no information on the role of the road user (pedestrian, driver, passenger) and the type of vehicle, as well as the dynamic of home injury;

- Patients born outside Italy (especially irregular) have lower probability to be classified according to the SES level;

- Since a standardized definition of home injury mortality does not exist (and the certificate of death lacks to report the place of death), we used our integrated surveillance system to identify deaths that occurred within 30 days from the first ED visit

Thank you!

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