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Physical Impairment *and* Medical Care Spending *by* Road Accident Victims

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DEST/IFSTTAR

ECTRI
European Conference of Transport Research Institutes

FERSI
Road Safety Research

Outline

I. Introduction
II. State of the Art
III. Object of the study
IV. Data, variables, methods
V. Main results
VI. Conclusion

I. Introduction

Road traffic accidents are:

- A major public health problem

  ninth main cause of GBD *(Global Burden of Disease)* [WHO]

- Have an economic impact

  250 000 seriously injured every year costing 2% of EU GDP

  [European Commission, 2012]

I. Introduction

- Economic repercussions were often analyzed at the society level

What about economic consequences for victims?

- Economic consequences for two main reasons:

- Physical injuries can cause work disruption
- High medical expenses due to health deterioration

II. State of the art

- Accident repercussions on victim's income and employment are by far the most studied

  - DANO (2004), DUGUET & LE CALINCHE (2012)

- Medical expenses and adherence to safety measures

  - BERGER & PILAND (1997)
  - LAWRANCE, MAX & MILLER (2003)



II. State of the art

- Effect of medical coverage on costs for victims and use of care

  HAAS (1994), DOYLE (2002)



- Different socioeconomic consequences for victims (income, employment, etc)

  CARNIS & al (2011)

III. Object of the study

- Original data about road victim's medical expenses
- Medical expenses incurred by victims with different disabilities
- How do victim's medical expenses vary ?
  (age, seriousness of the injury, income,…)

IV. Data, variables, method

- Data: "Disability & Health" survey, France (2008)
- Sample: (N= 777), traffic -related disability
- Information: medical expenses
- Method: Explaining the total expenditure of out-of-hospital care, follow-up and rehabilitation

V. Main Results (1)

- Particular diseases related to road accidents (chronic)
- Source of recurring expenses (LT consequences)

ICD 10 classification	N	%
Dorsopathies (Car accident back pain)	256	**32.95%**
Arthropathies (Dashboard syndrome)	214	**27.54%**
Injury, poisoning and certain other consequences of external causes	171	22.01%
Episodic and paroxysmal disorders	134	17.25%

V. Main Results (2)

Effect of seriousness of injury on different medical expenses

(amount in euro)

Average expense	Total paralysis	Partial paralysis, Amputation	Major joint discomfort	Loss of muscular strength
N	**36**	**82**	**388**	**37**
Out-of-hospital care	**11712.33**	**3662.11**	**2070.46**	**1588.81**
Transport	1381.83	625.46	116.30	236.52
Nursing care	4004.64	180.38	133.54	36.12
Pharmaceuticals	2388.15	754.91	718.43	461.25
Physiotherapy	643.87	464.41	163.21	182.98
Out-of-hospital care + follow-up & rehabilitation	**11741.32**	**6041.60**	**2098.07**	**2424.25**

V. Main Results (3)

- The level of medical expenses is influenced:
  - Primarily, by the seriousness of physical impairment
  - Exemption from user fees
  - The Age of the victims
  - The Marital status
  - The state of health of the victim

V. Main Results (4)

- No significant effect of:
  - Gender
- Limited effect of socioeconomic variables
  - Income
  - Employment status

- Interaction effect between the variables age & seriousness of physical impairment

VI. Conclusion

- The microeconomic approach foregrounds important issues masked by an aggregated analysis
- Severely injured victims support high medical expenses
- Corporal damage leads to an acceleration of health capital deterioration
- Further investigations of LT consequences for road accident victims (medical expenses, health and well-being consequences, insurance coverage?)

Thank you for your attention

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Variables	Reference category	Category	Coefficient	Pr>T
Seriousness of physical impairment	Total paralysis	Partial paralysis	-27968	**<.0001*** **
		Major discomfort	-28647	**<.0001*** **
		Loss of muscular strength	-28922	**<.0001*** **
Domicile modification	Yes	No	-2187.3934	**0.0005*** **
Age	>70 years	<25 years	-25891	**0.0001*** **
		25-60 years	-23424	**<.0001*** **
		60-70 years	-20586	**0.0001*** **
Sex	Female	Male	-181.55	0.6629
Marital status	Unmarried	Married	1212.74	**0.0207** **
		Widowed	2294.74	**0.0080*** **
		Divorced	865.84	0.1749
Employment status	Working	Unemployed	750.06	0.1710
Complementary Universal Health Care Coverage	Yes	No	1674.09	**0.0207***
Income per unit of consumption	<Minimum Welfare Benefit (RMI) (671.97)	RMI-SMIG (minimum wage)	-1145.39	**0.0710***
		SMIG-2 SMIG	-391.58	0.5362
		2 SMIG-3 SMIG	-932.33	0.2690
		> 3 SMIG	-600.06	0.6280
State of health	Very bad	Good	-4002.09	**<.0001*** **
		Average	-3563.99	**<.0001*** **
		Poor	-3490.04	**<.0001*** **
Hospitalisation	No	Yes	1626.59	**0.0005*** **
Exemption from user fee	Not exempted	Exempted	1594.57	**0.0006*** **
Seriousness of physical impairment* age				**0.0001*** **