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# The Price of Violence

Long term effects of assault  
on labor market behavior

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# Violence is bad, but how bad?

Information on the impact of assault is useful for:

- Meeting the needs of victims
- Policy decisions through information on expected benefit of crime reduction strategies
- Sociological understanding of violence



# Identification problem

Robust connection between assault and ill-health (in women), but what are the causal effects?

## Focus: Violence -> ill-health

- Domestic violence -> Psychiatric morbidity  
(Ehrensaft et al, 2006; Kilpatrick et al, 1997; Lindhorst and Oxford, 2008)
- Domestic violence -> Suicide (Stevenson & Wolfers, 2006)
- Domestic violence -> LBW baby (Aizer, 2011)

## Reverse causation & confounding

- Substance abuse -> violence exposure (Kilpatrick et al, 1997)
- Poverty -> violence exposure (Nilsson & Estrada, 2006; Aizer, 2010)



## DATA

- Micro data from administrative registers
- LOUISE/LISA: Swedish population 16-64 years 1994-2010
- National Inpatient Care Register 1987-2002
- Cause of death Register 1999-2010

## SELECTED SAMPLE

- Registered in Sweden at least two consecutive years in 1997-2002
- Not hospitalized because of assault previous to 1998
- Cases have been assaulted between 1998-2003
- Matches are selected on information 1-4 years prior to the assault



## ”TREATMENT”

- hospitalized in 1998-2002 with cause of injury ”assault”

Trauma	Coding	Inclusion criteria
Assault	ICD-10	X85 – Y05, Y08 – Y09
Injury	ICD-10	S00 – T61
Injury severity	ISS	0-7: Mild, 8-15: Moderate, 16-75: Severe

## OUTCOMES

- Work status. *working vs. not working* (1-8 years after)
- Sick leave *number of days* (1-5 years after)
- Income & disposable income (1-8 years after)



# Pre-assault characteristics: assaulted, a random sample non-assaulted

	Women		Men	
	Unselected sample	Assaulted	Unselected sample	Assaulted
Risk occupation (%)	35.8 (0.2)	22.3*** (1.06)	7.6 (0.0)	5.1 (0.3)
Married (%)	42.9 (0.2)	21.0*** (1.04)	36.3 (0.1)	10.9*** (0.4)
Newly separated (%)	7.3 (0.1)	14.0*** (0.89)	7.4 (0.0)	13.2*** (0.5)
Child <4	15.3 (0.2)	13.8 (0.88)	13.1 (0.0)	6.6*** (0.3)
Single parent	10.8 (0.1)	25.9*** (1.12)	2.4 (0.0)	4.2*** (0.3)
Age	37.7 (0.045)	35.9*** (0.253)	37.4 (0.014)	32.6*** (0.139)
Years of schooling	12.4 (0.01)	11.1*** (0.053)	12.09 (0.003)	11.097*** (0.025)
Working (%)	75.2 (0.2)	38.3*** (1.24)	78.8 (0.1)	50.8*** (0.7)
Disposable income (last 4 years, SEK)	140,000 (280)	123,000 (1290)	167,000 (295)	105,000 (957)
Psychiatric diagnose (since 1987, %)	4.0 (0.1)	34.48*** (1.21)	4.1 (0.0)	22.5*** (0.6)
In-care patient (since 1987, %)	55.8 (0.2)	81.6*** (0.99)	35.4 (0.1)	58.6*** (0.7)
Sickness absence (mean last 4 years)	14.1 (0.19)	33.5*** (1.77)	8.0 (0.046)	17.1*** (0.677)
Any DI (last 4 years, %)	5.0 (0.1)	16.49*** (0.947)	3.4 (0.0)	8.0*** (0.4)
Sick leave (last 4 years)	27 (0.37)	81.7*** (3.43)	17.8 (0.095)	40.0*** (1.339)
Observations	500,000	1,536	500,000	9349

Stars on the assaulted indicate whether they differed significantly from the reference population prior to the assault: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Standard errors in parentheses. Real income with year 2010 as base.



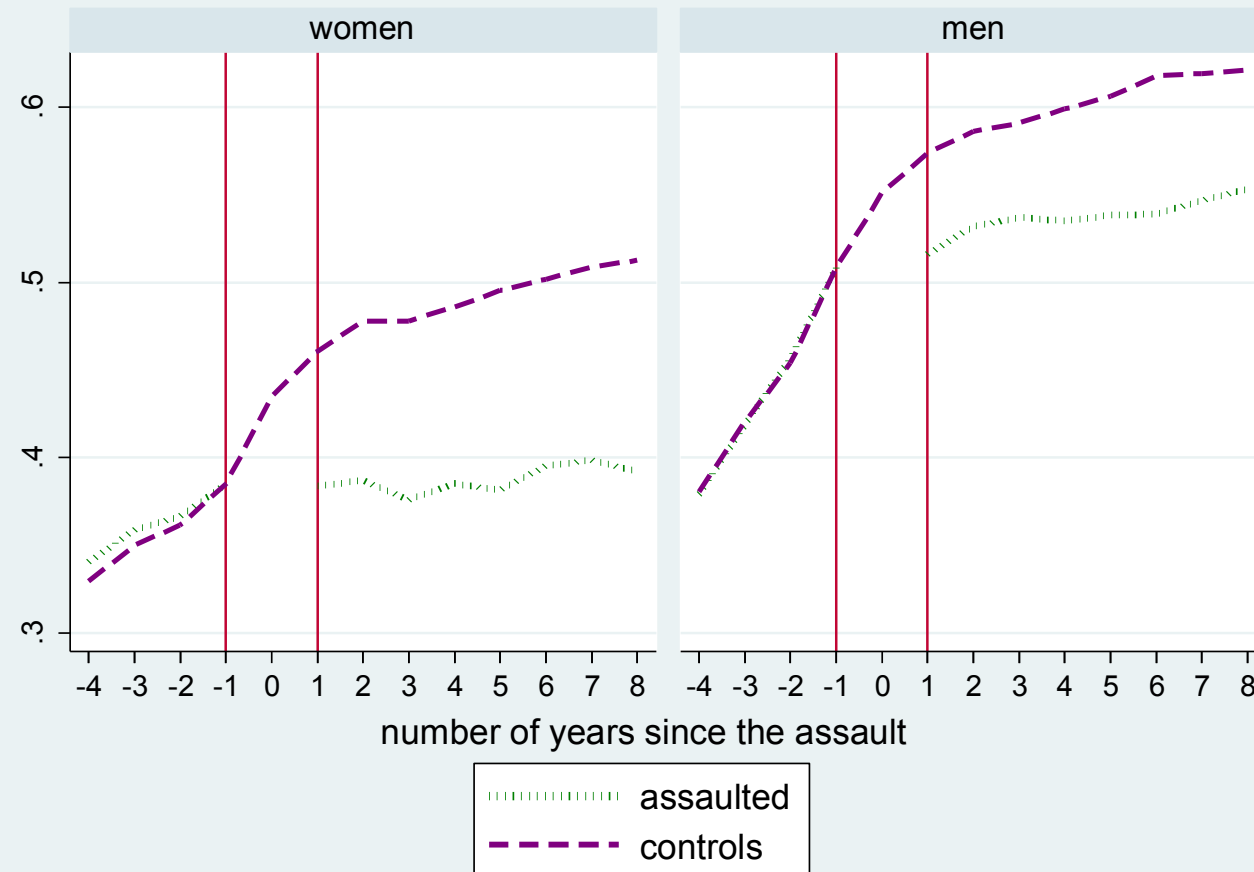
# Pre-assault characteristics: assaulted, a random sample non-assaulted

	Women		Men	
	Unselected sample	Assaulted	Unselected sample	Assaulted
Risk occupation (%)	21.1 (1.0)	22.4 (1.1)	5.3 (0.3)	5.1 (0.3)
Married (%)	21.6 (1.1)	21.1 (1.0)	10.8 (0.4)	10.9 (0.4)
Newly separated (%)	12.2 (0.8)	14.0 (0.9)	13.0 (0.5)	13.2 (0.5)
Child <4	15.2 (0.9)	13.8 (0.9)	6.9 (0.4)	6.6 (0.3)
Single parent	26.1 (1.1)	25.9 (1.1)	4.2 (0.3)	4.2 (0.3)
Age	36.1 (0.25)	35.9 (0.25)	32.5 (0.14)	32.6 (0.14)
Years of schooling	11.1 (0.052)	11.1 (0.053)	11.1 (0.025)	11.1 (0.025)
Working (%)	38.5 (1.2)	38.3 (1.2)	51.0 (0.7)	50.8 (0.7)
Disposable income (last 4 years, SEK)	127,000 (4,579)	123,000 (1,285)	105,000 (752)	105,000 (977)
Psychiatric diagnose (since 1987, %)	32.9 (1.2)	34.5 (1.2)	21.1 (0.6)	22.5* (0.6)
In-care patient (since 1987, %)	81.2 (1.0)	81.6 (1.0)	60.0 (0.7)	58.6 (0.7)
Sickness absence (mean last 4 years)	31.4 (1.7)	33.6 (1.77)	16.0 (0.65)	17.1 (0.68)
Any DI (last 4 years, %)	16.6 (1.0)	16.5 (0.9)	8.2 (0.4)	8.0 (0.4)
Sick leave (last 4 years)	79.4 (3.34)	79.8 (3.29)	40.4 (1.37)	39.9 (1.33)
Observations	500,000	1,536	500,000	934 <sup>7</sup>

Stars on the assaulted indicate whether they differed significantly from the reference population prior to the assault: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Standard errors in parentheses. Real income with year 2010 as base.



# Work status

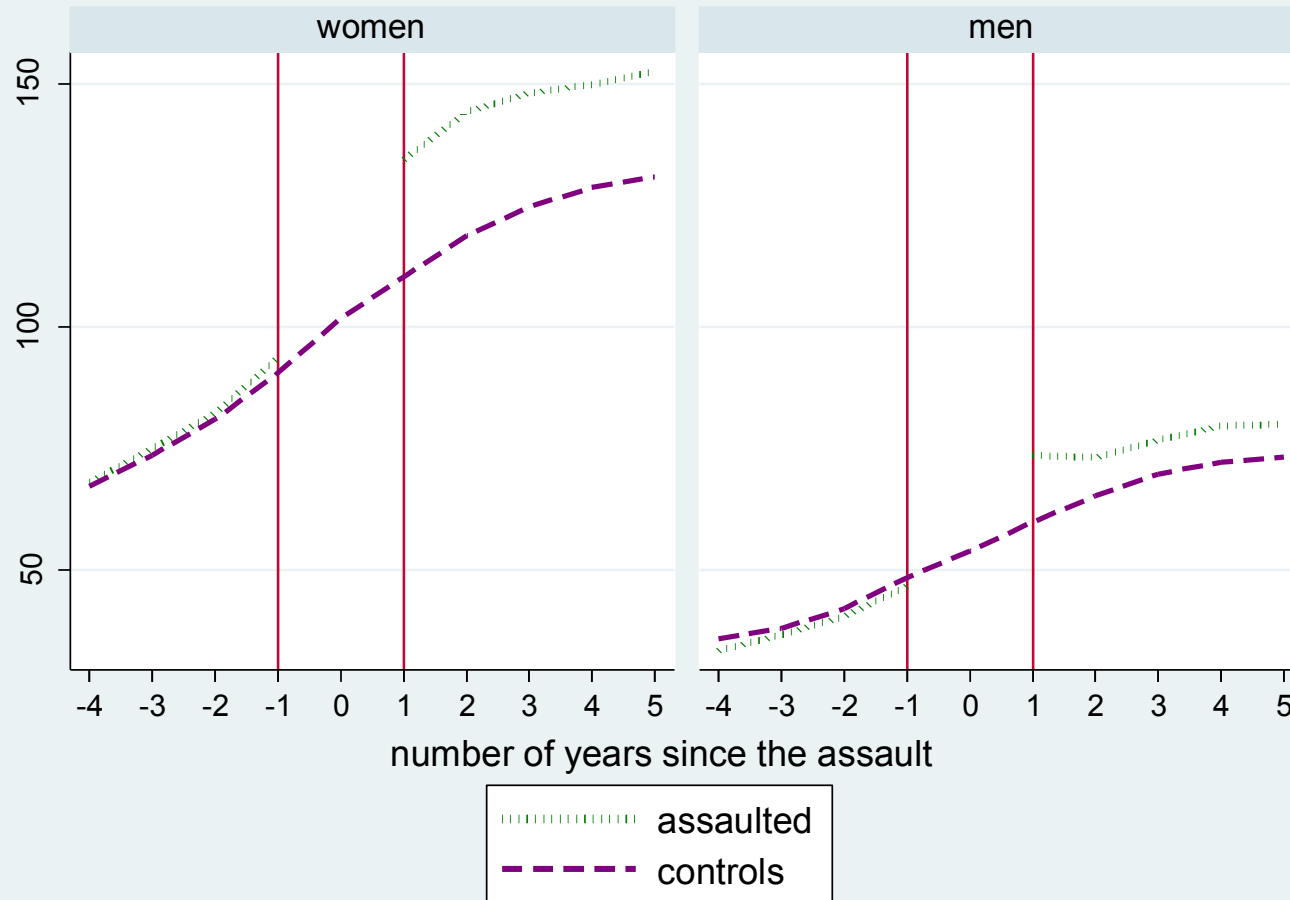


Graphs by sex





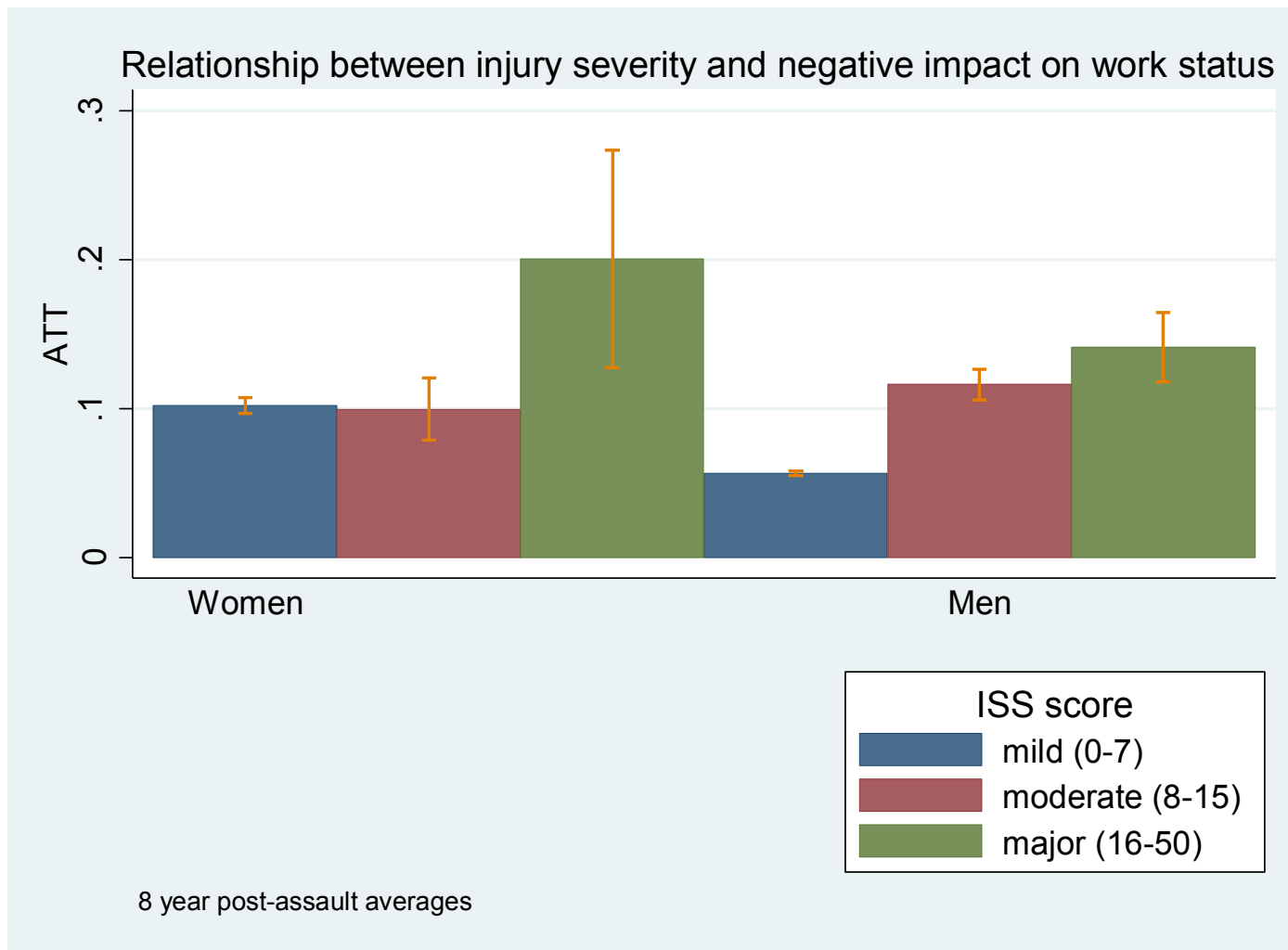
# Sick leave



Graphs by sex

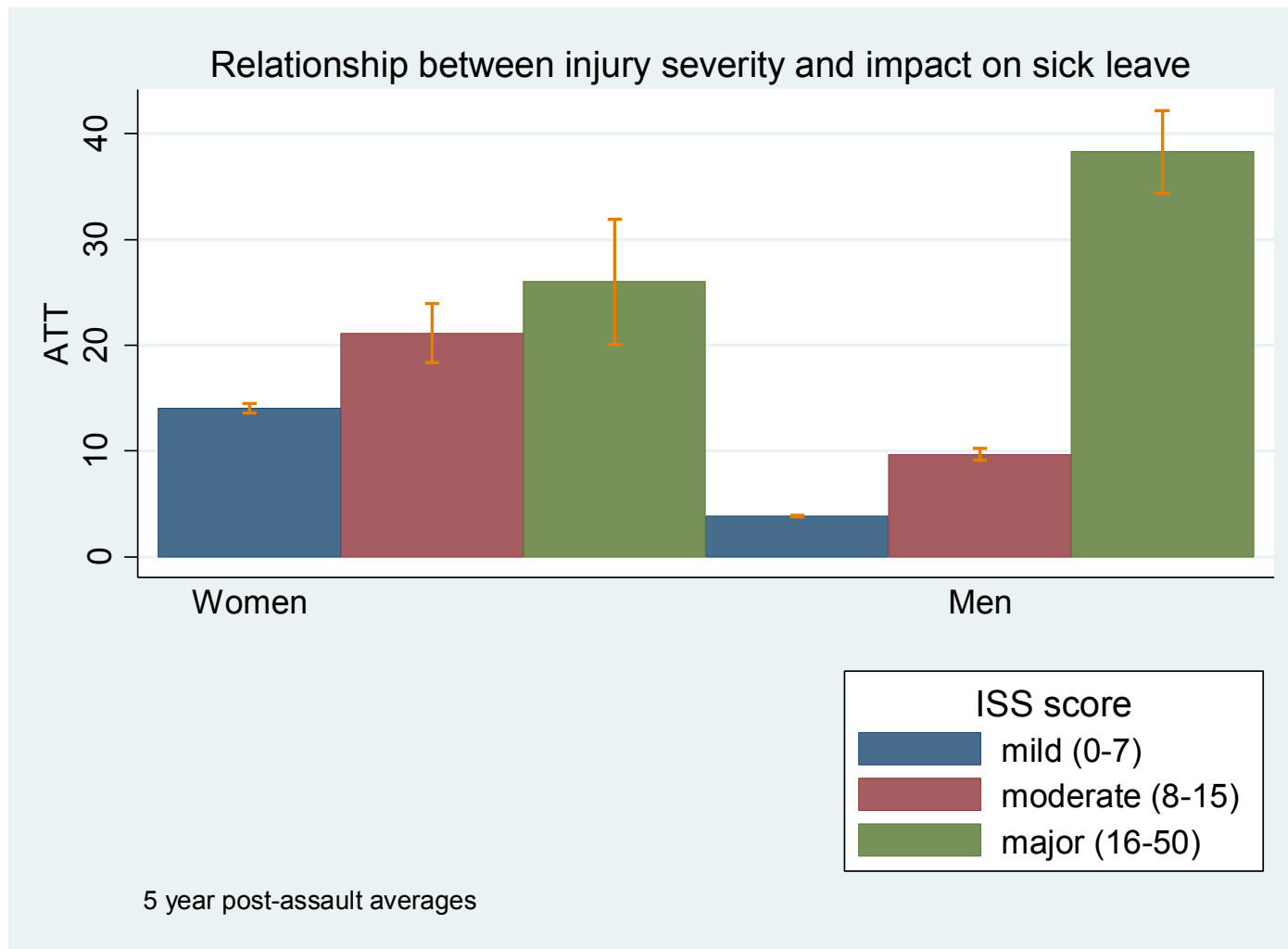


# Direct effects of physical injury



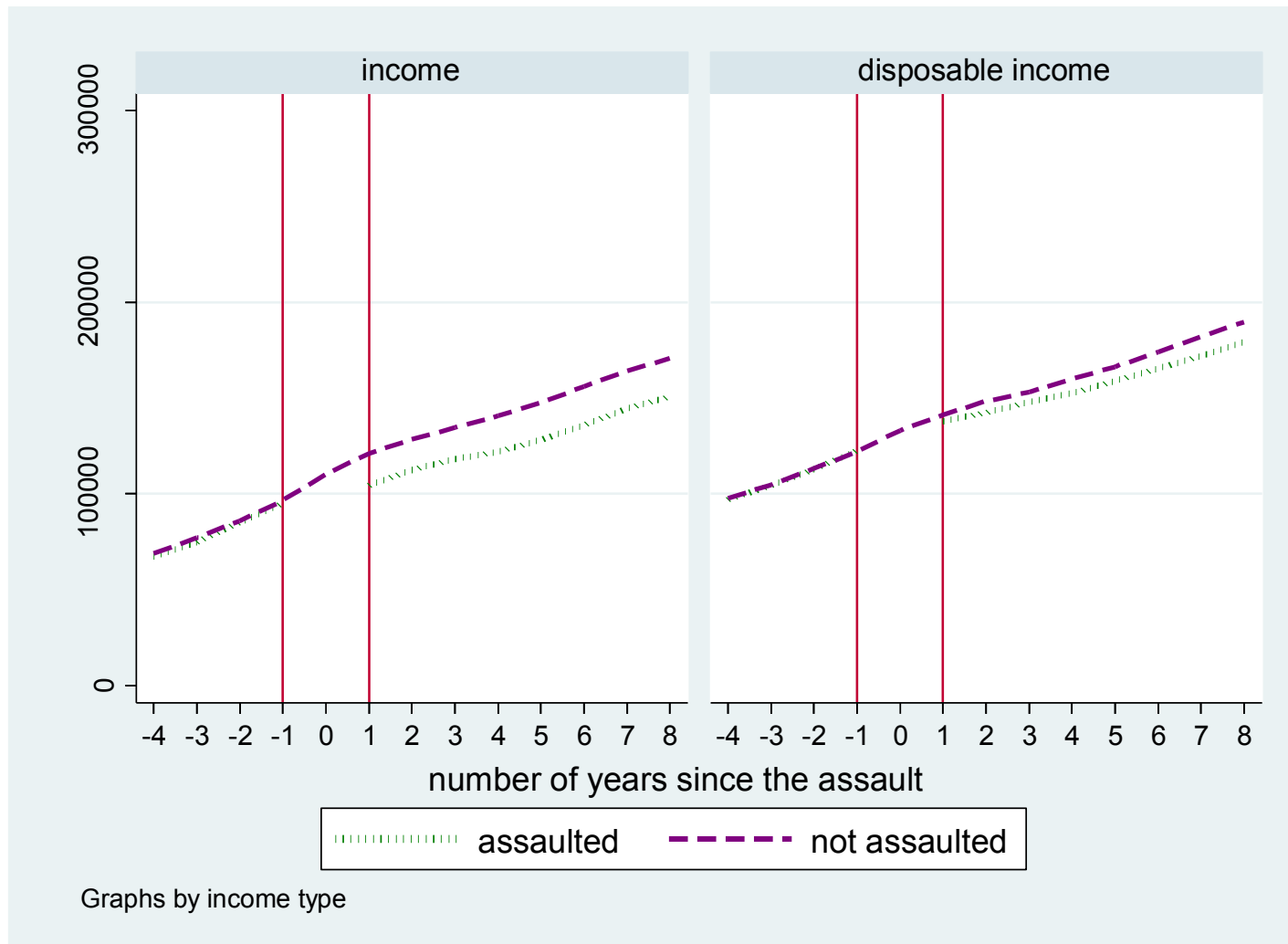


# Direct effects of physical injury





# Income effects



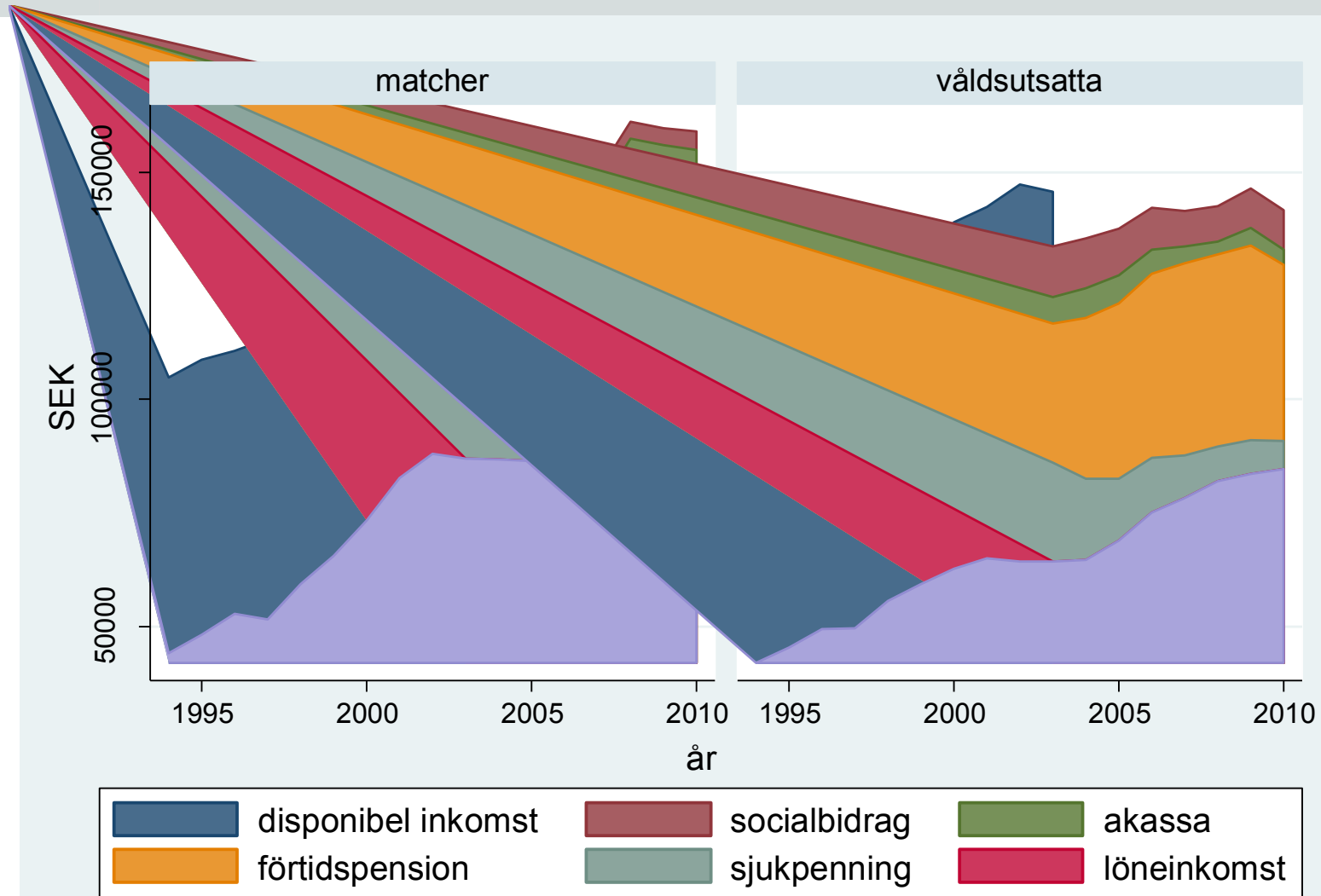


# Summing up

- Large selection *and* large causal effect of violence on work status and sick leave, in both men and women.
- Physical injuries explain majority of effect in men, not so much in women.
- Effects remain over time



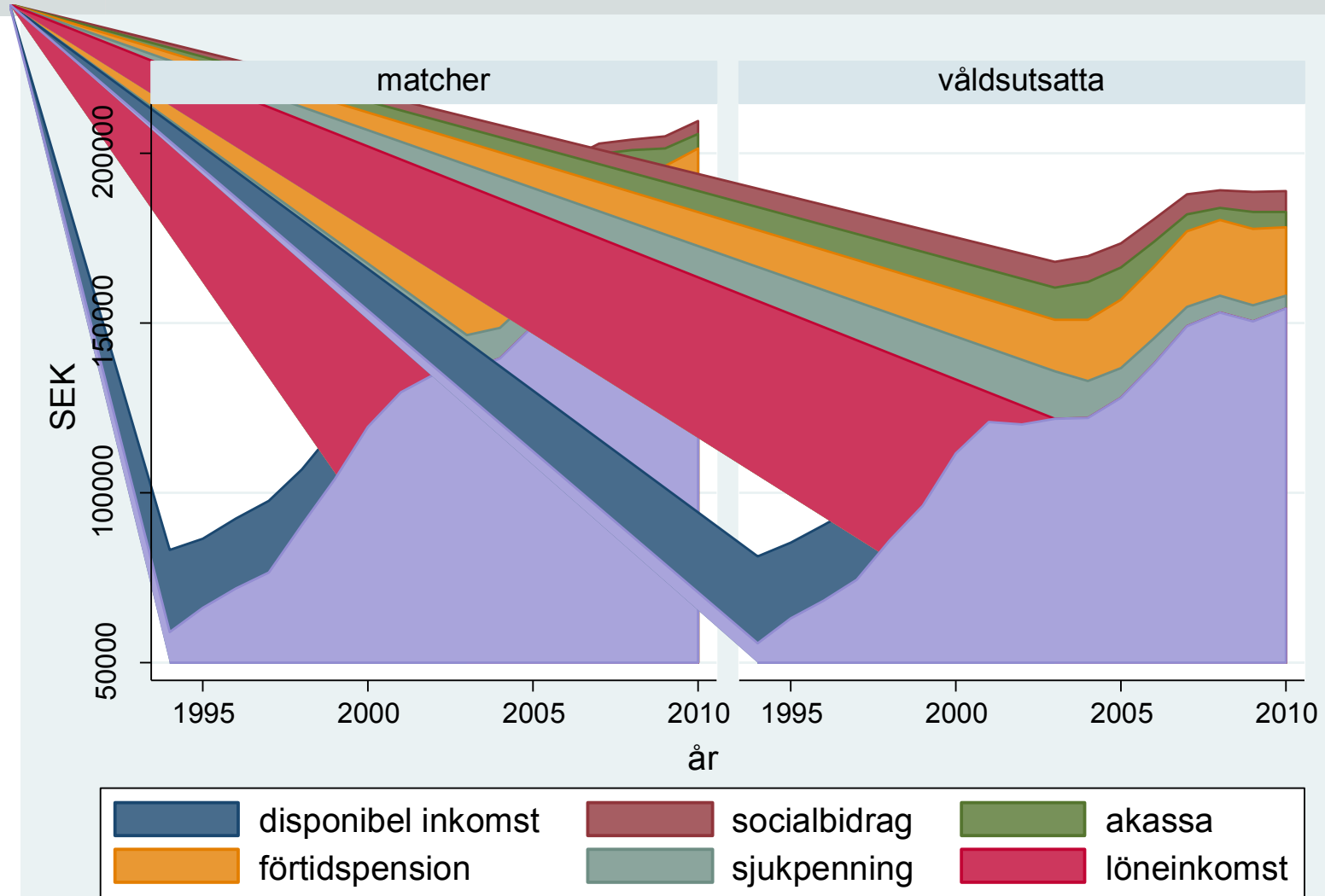
# Changes over time? Composition of income: Women



Graphs by assault



# Changes over time? Composition of income: Men



Graphs by assault