



**GAWO** e.V.

**Findings of the Study to support an Impact Assessment on further action at European level regarding Directive 2003/88/EC and the evolution of working time organisation (Deloitte Study)**

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**European Commission**

**DG for Employment, Social Affairs  
and Equal Opportunities**

*Study to support an Impact Assessment  
on further action at European level  
regarding Directive 2003/88/EC and the  
evolution of working time organisation*

**Final report**

*21 December 2010*

**Deloitte.**



Centre for  
**Strategy & Evaluation  
Services**

## Topics of the study

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- Development of working time
- Health and safety aspects of working time, effects of working hours on safety, health and work-life-balance
  - Working long hours
  - Working at unusual times
    - Sundays / Saturdays / Evenings
    - Working shifts
  - Effects of rest periods and their postponement
  - Flexible working hours
- Economic impact
- Impact on public services
- Use of the „opt out“

## Topics to be dealt with here

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- Health and safety aspects of working time, effects of working hours on safety, health and work-life-balance
  - Working long hours
  - Working at unusual times
    - Sundays / Saturdays / Evenings
    - Working shifts
  - Effects of rest periods and their postponement
  - Flexible working hours

# Topics to be dealt with here

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- Working at unusual times
  - **Sundays** / Saturdays / Evenings

## Emerging trends

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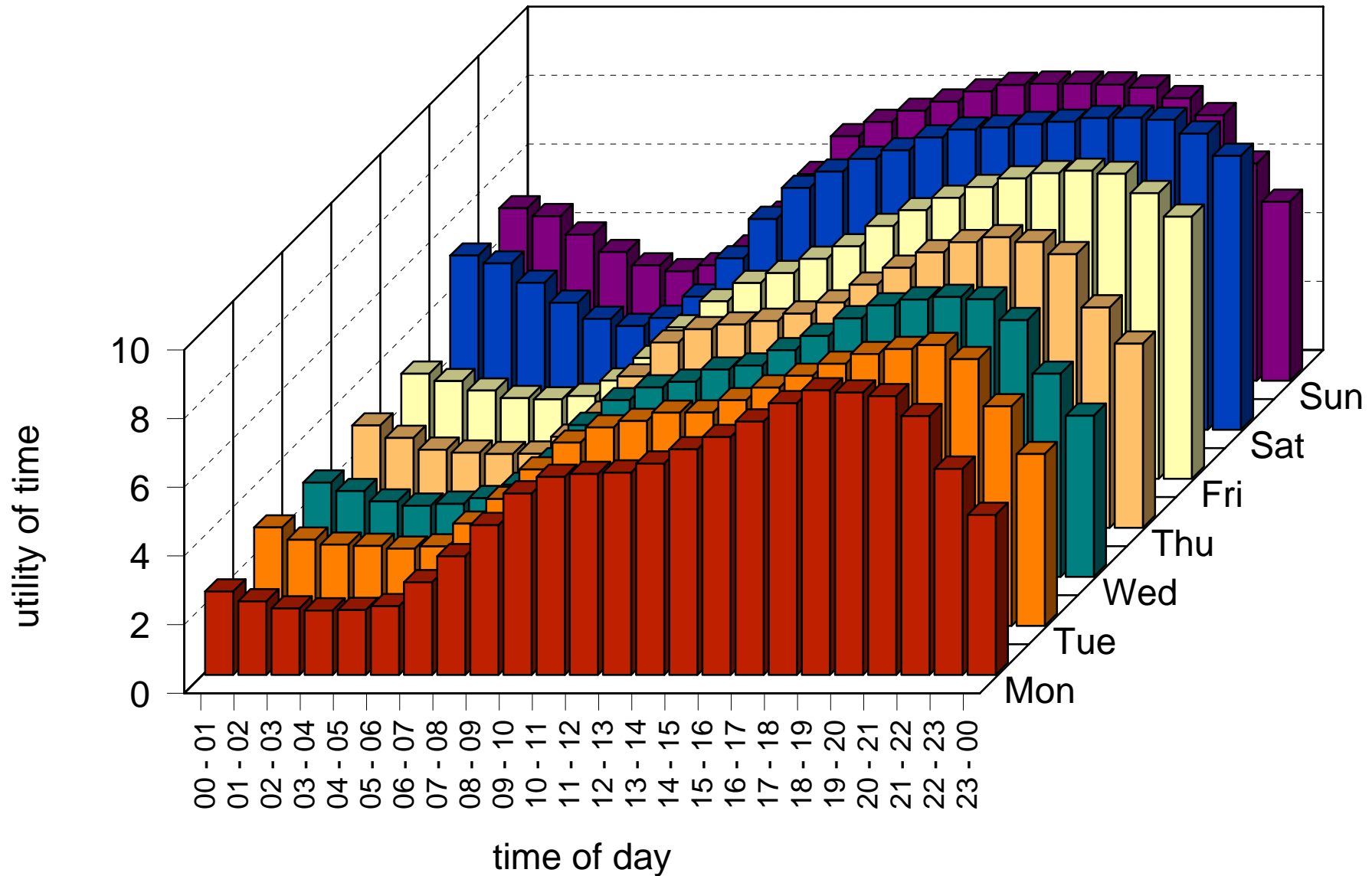
- Substantial increase in unusual working hours
  - Working evenings
  - Working Saturdays
  - Working Sundays
    - beyond working shifts
  
- Usual (or normal / standard) working hours
  - Monday to Friday, 8h, between 07:00 and 17:00

## Normative structure of time

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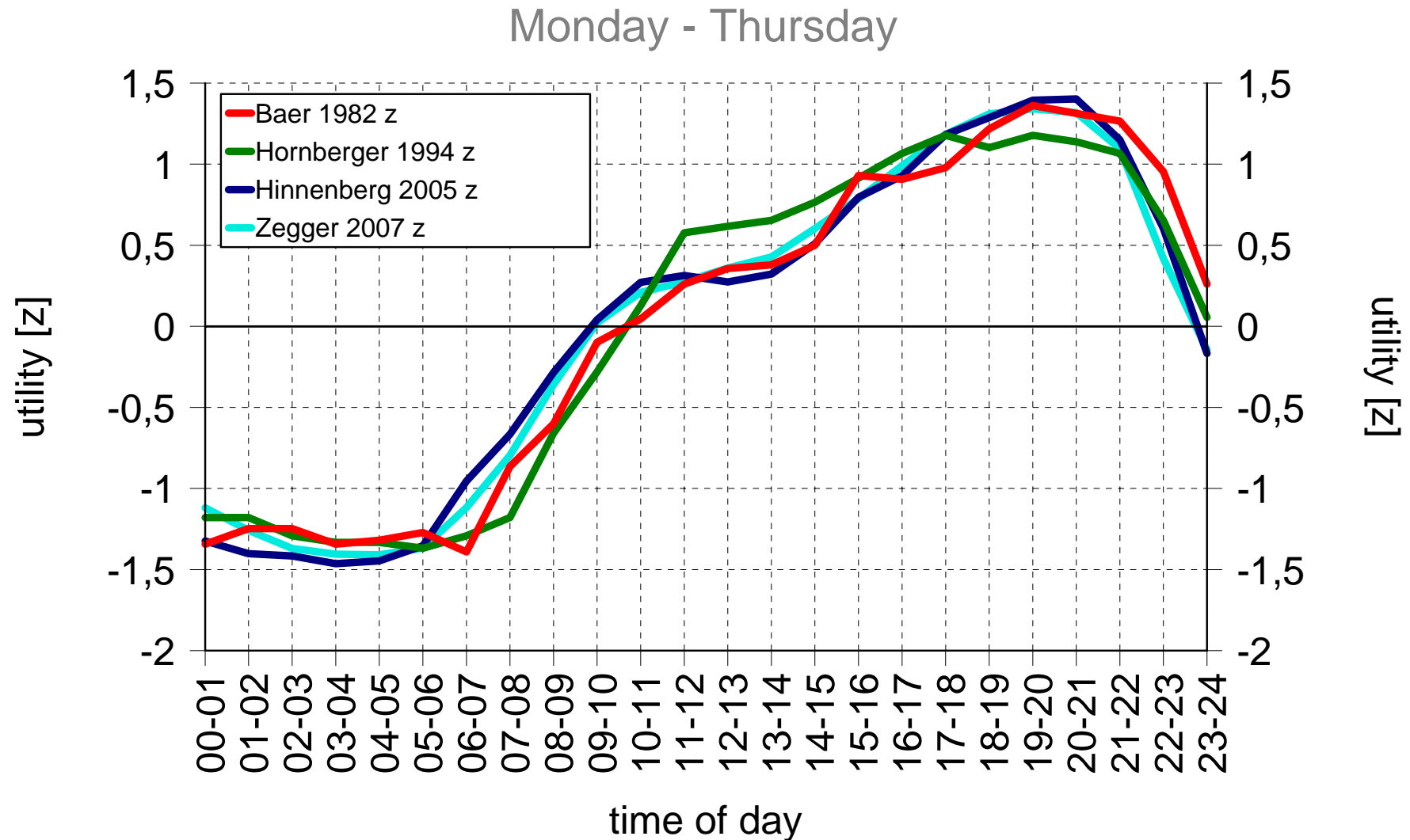
- all societies provide for a day of rest,  
e.g. Sundays, Saturdays or Fridays
- essential: a **common** day of rest
  - a specific day, not an arbitrary day
- agreed on by tradition, religious provisions,  
or more generally: social norms
- with the typical functions of social norms:
  - enabling social behaviour
  - controlling social behaviour
  - synchronizing (social) behaviour

# Normative structure of time: the utility of time

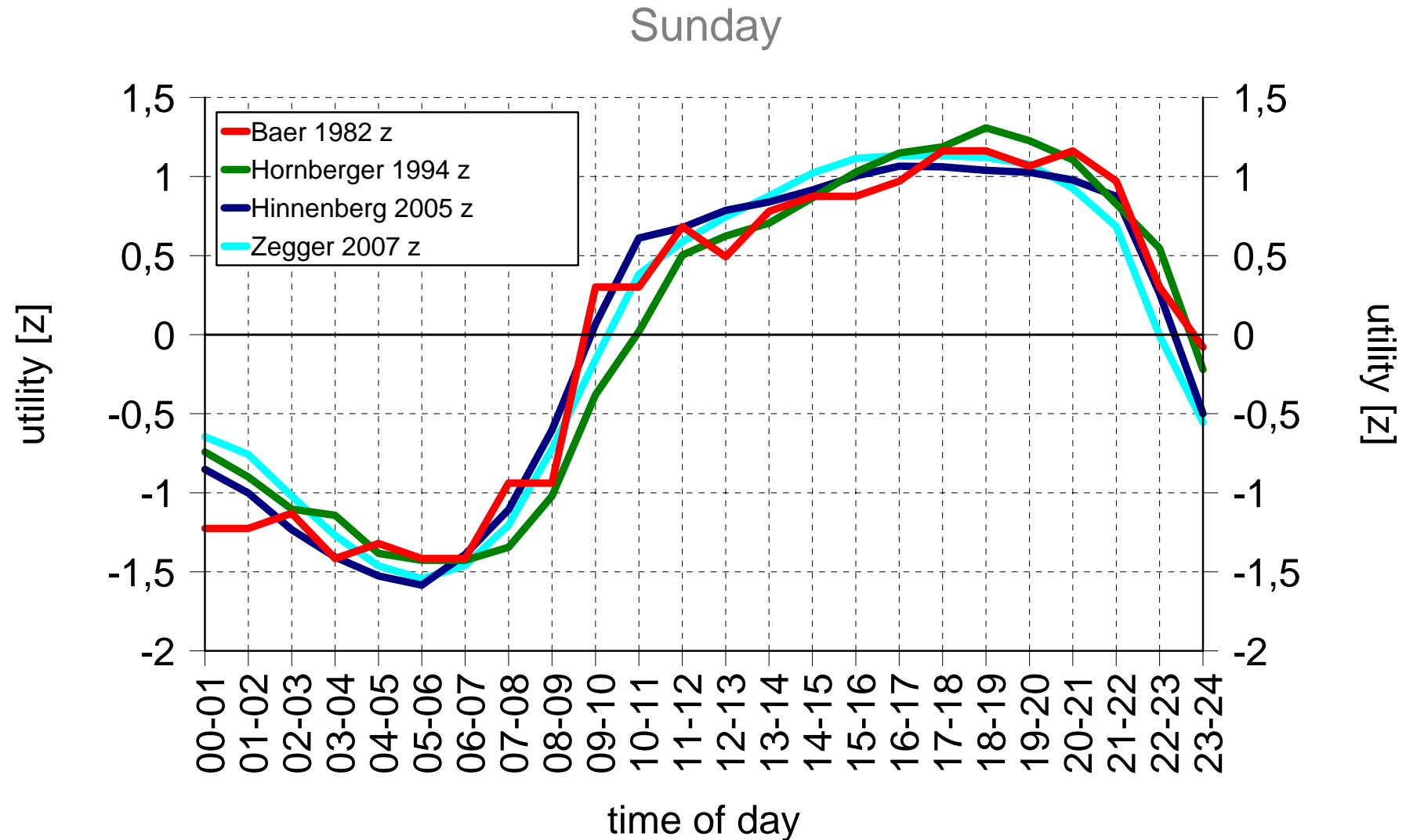




# Utility of time across 25 years



# Utility of time across 25 years



## Normative structure of time

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- evening and weekend society
- Sundays typically used for rest and social interaction
- because the social agreement is that Sunday is a work free day
  - with some well defined exceptions for specific reasons,
    - e.g. social welfare
    - technological necessities,
- not restricted to people with a religious background, but also applies to “nonbelievers”

## Normative structure of time

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- the established normative function of time is, by itself, an important reason to keep Sundays free of work
  - to provide for effective recuperation
  - to provide for effective social interaction
  
- the question is what happens, if this normative structure is violated, i.e. what are the effects of working on Sundays, if there are any?
  - with regard to safety, health and social life

# Effects of working Sundays

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- Effects on safety
- Effects on health
- Effects on work-life-balance

# Effects on safety

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## Effects on safety

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- Horwitz & McCall (2003)
  - Odds ratio of a Sunday injury 3.129
  - Odds ratio of a Saturday injury 1,376
    - as compared to the risk on a Tuesday
  
- Data base: 20,680 accepted compensation claims, Oregon construction workers, 1990-1997

## Effects on safety

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### ➤ Brogmus (2007)

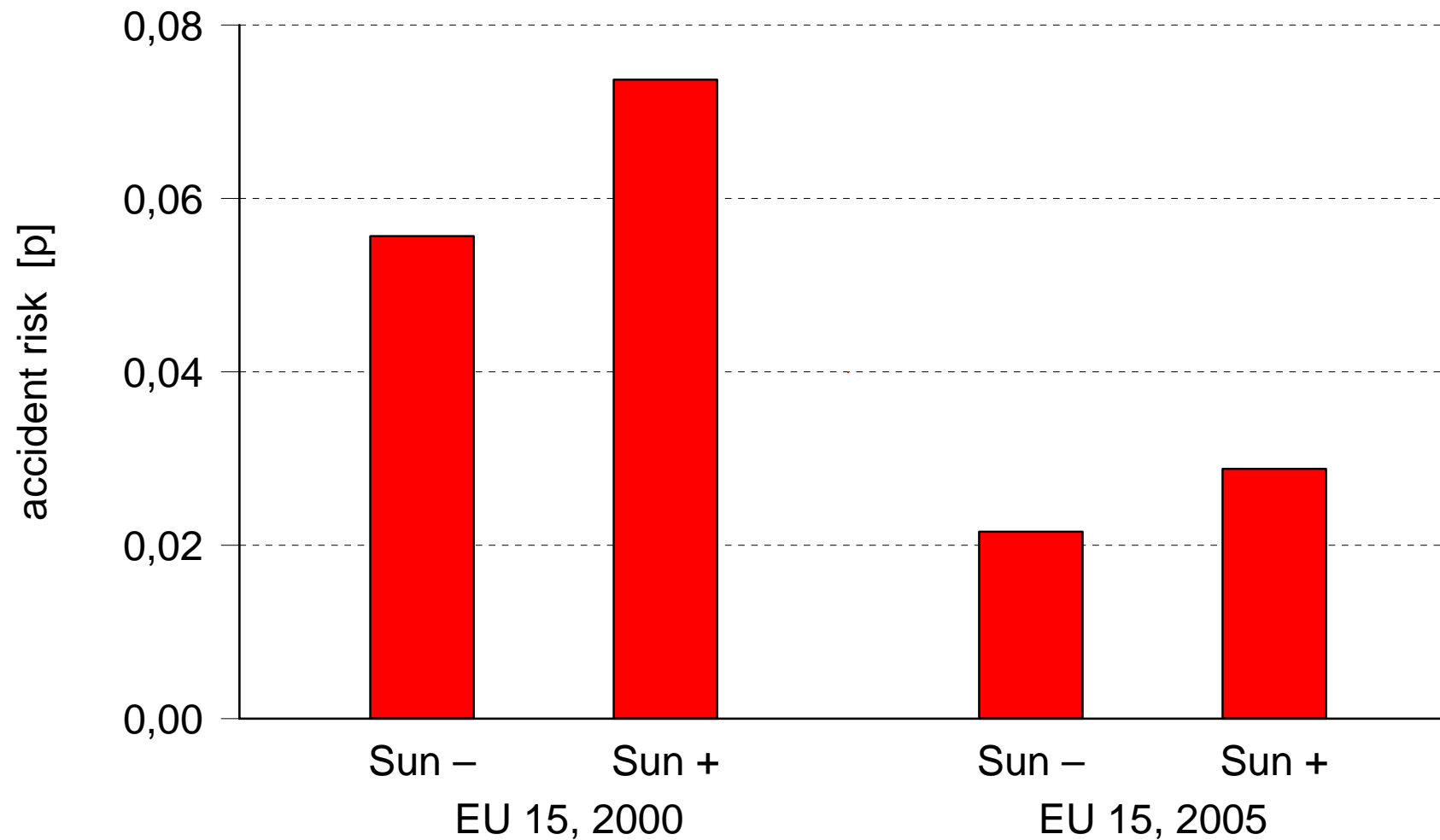
- Higher accident rate on Sundays than on any other weekday

- Data base: representative sample of the U.S. population



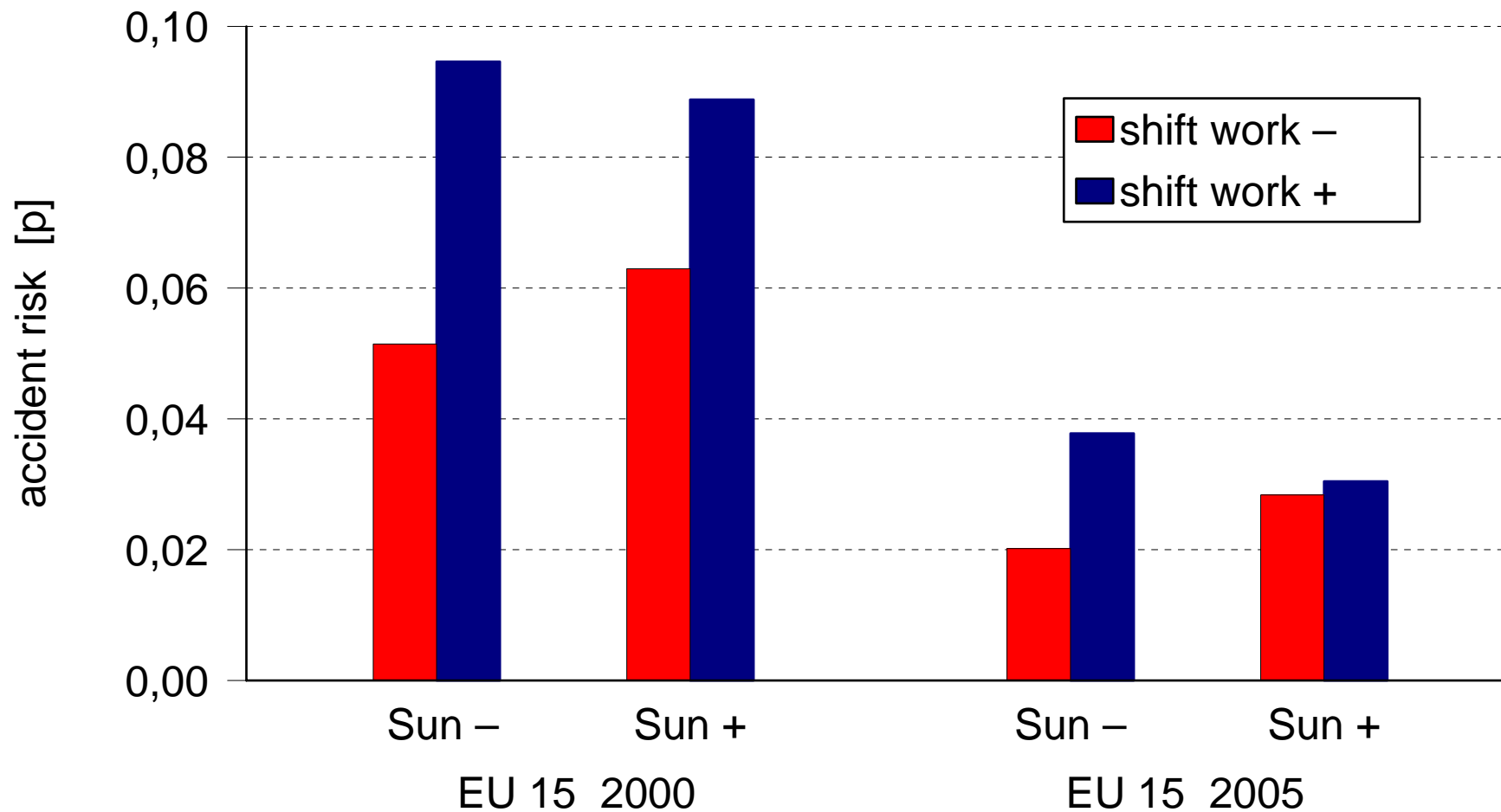
# Effects on safety

## Accident risk for working on Sundays, EU15 2000 und 2005



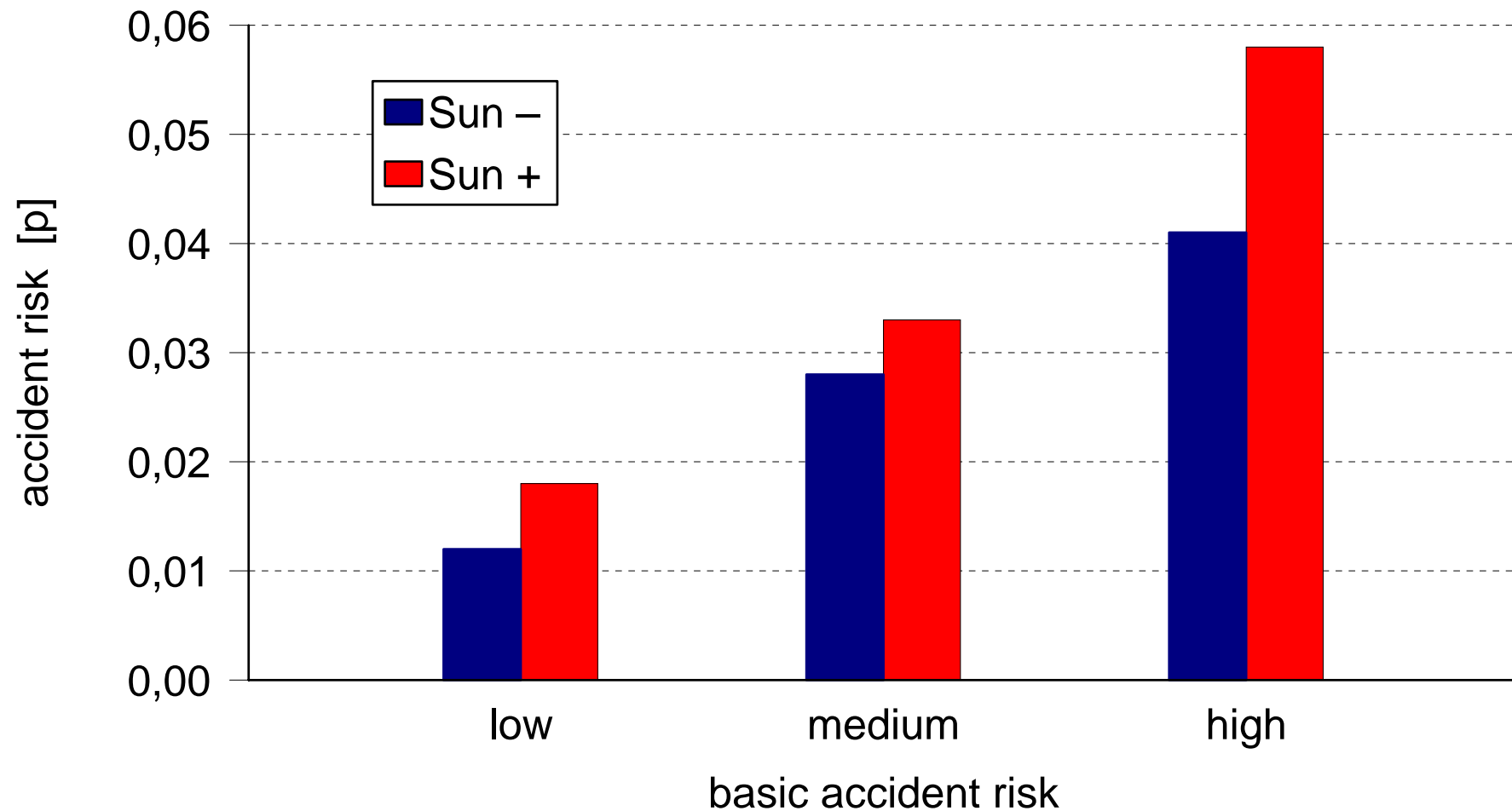
# Effects on safety

## Effects of working Sundays, controlled for working shifts



# Effects on safety

## Effects of working Sundays at different a priori accident risks



# Effects on safety accident risk, logistic regression

Model 1: without controlling for potential confounders ( $R^2=0,002$ )

Variable	Sign.	Odds Ratio	95 % CI
Work on Sundays	.027	1.335	1.034 – 1.725

Model 2: controlling for type and intensity of work load ( $R^2=0,068$ )

Variables	Sign.	Odds Ratio	95 % CI
Gender	.001	0.638	0.514 – 0.792
Phys. work load	.001	1.710	1.581 – 1.849
Ment. work load	.009	1.150	1.035 – 1.278
Autonomy	.007	0.876	0.796 – 0.965
Work on Sundays	.044	1.238	1.007 – 1.522

# Effects on safety accident risk, logistic regression

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Model 3: controlling for potential confounders,  
including working time characteristics ( $R^2=0,083$ )

Variables	Sign.	Odds Ratio	95 % CI
Gender	.008	0.732	0.580 – 0.932
Phys. work load	.001	1.623	1.489 – 1.778
Ment. work load	.012	1.150	1.031 – 1.283
Autonomy	.058	0.908	0.822 - 1.003
<b>Work on Saturdays</b>	<b>.009</b>	<b>1.389</b>	<b>1.084 – 1.780</b>
<b>Work on Sundays</b>	<b>.519</b>	<b>1.087</b>	<b>0.844 – 1.398</b>

# Effects on health

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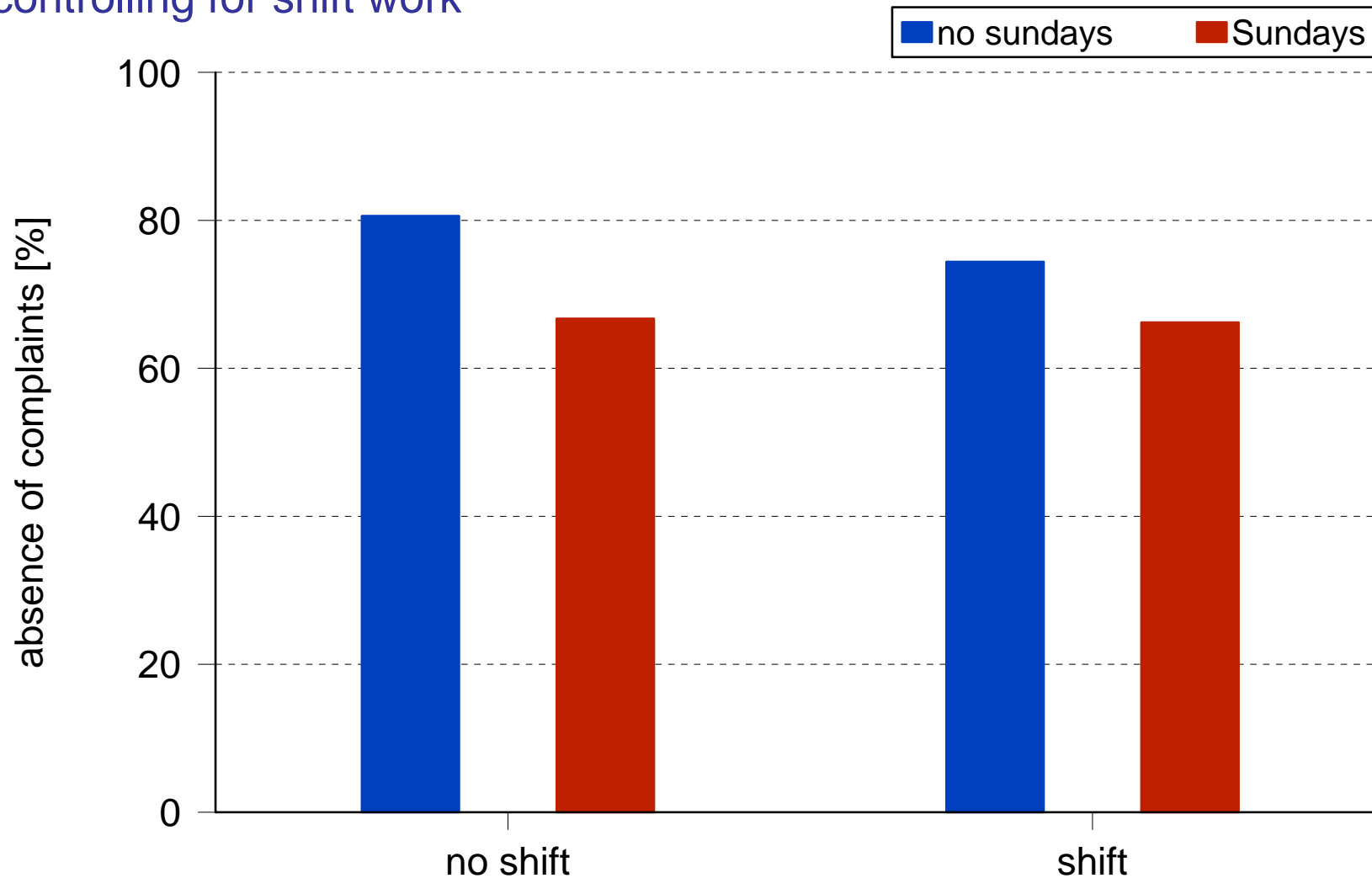
## Effects on health

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- Evidence for a negative effect of work at unusual hours, e.g. Sundays, on health
  - Lipscomb et al., 2002
  - Boissnard et al., 2003
  - Jamal, 2004
  - Lyonette & Clark, 2009
  - Nachreiner, 2009
  - Wirtz, 2010
  - Wirtz & Nachreiner, 2010
  - Wirtz et al., 2011a,b

# Effects on health

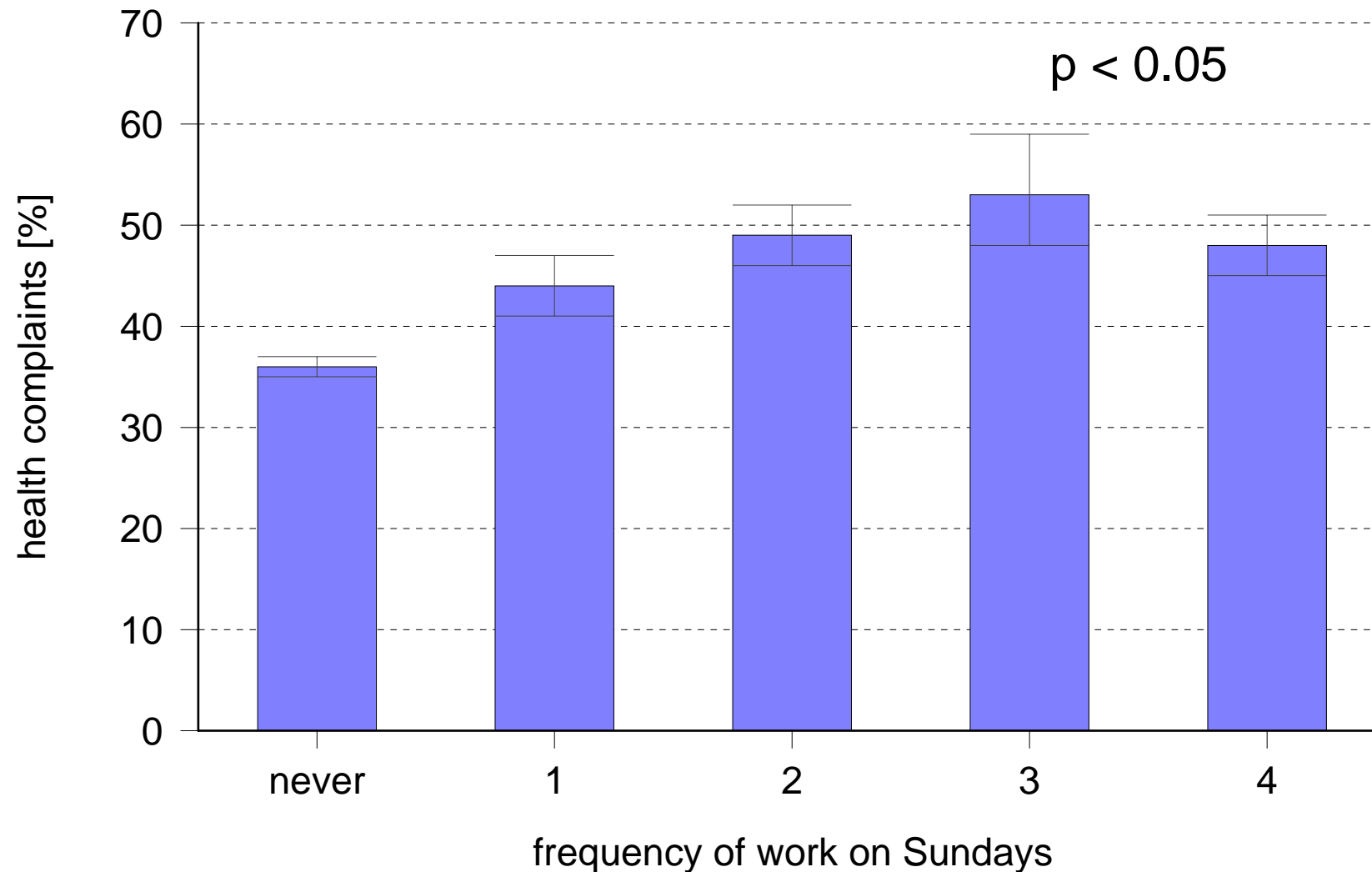
Absence of health complaints, EU 2005, EU31, employed workers,  
controlling for shift work





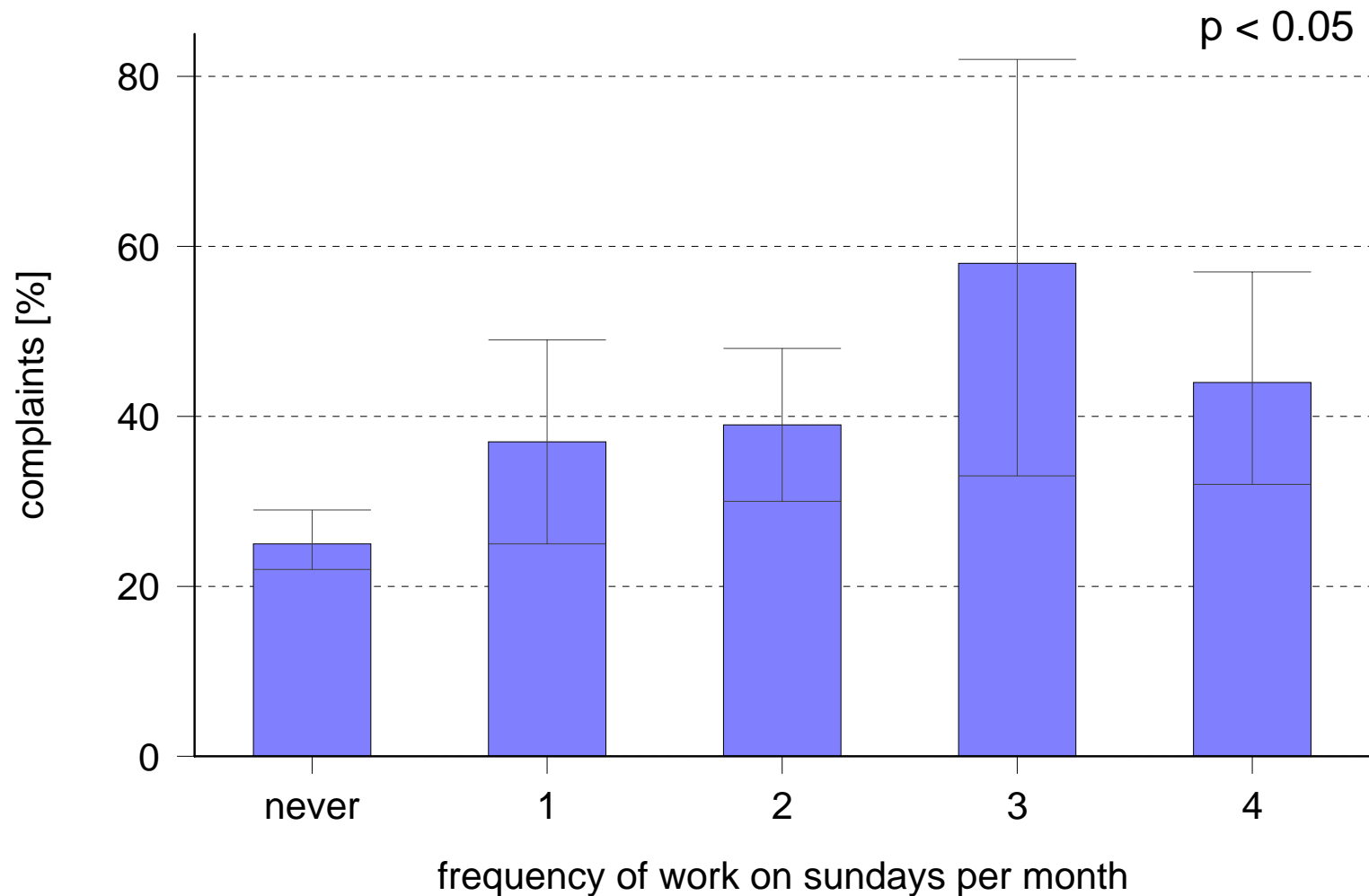
## Effects on health

Frequency of health complaints by number of Sundays/month, EU 2005, EU31, employed workers, without shift workers



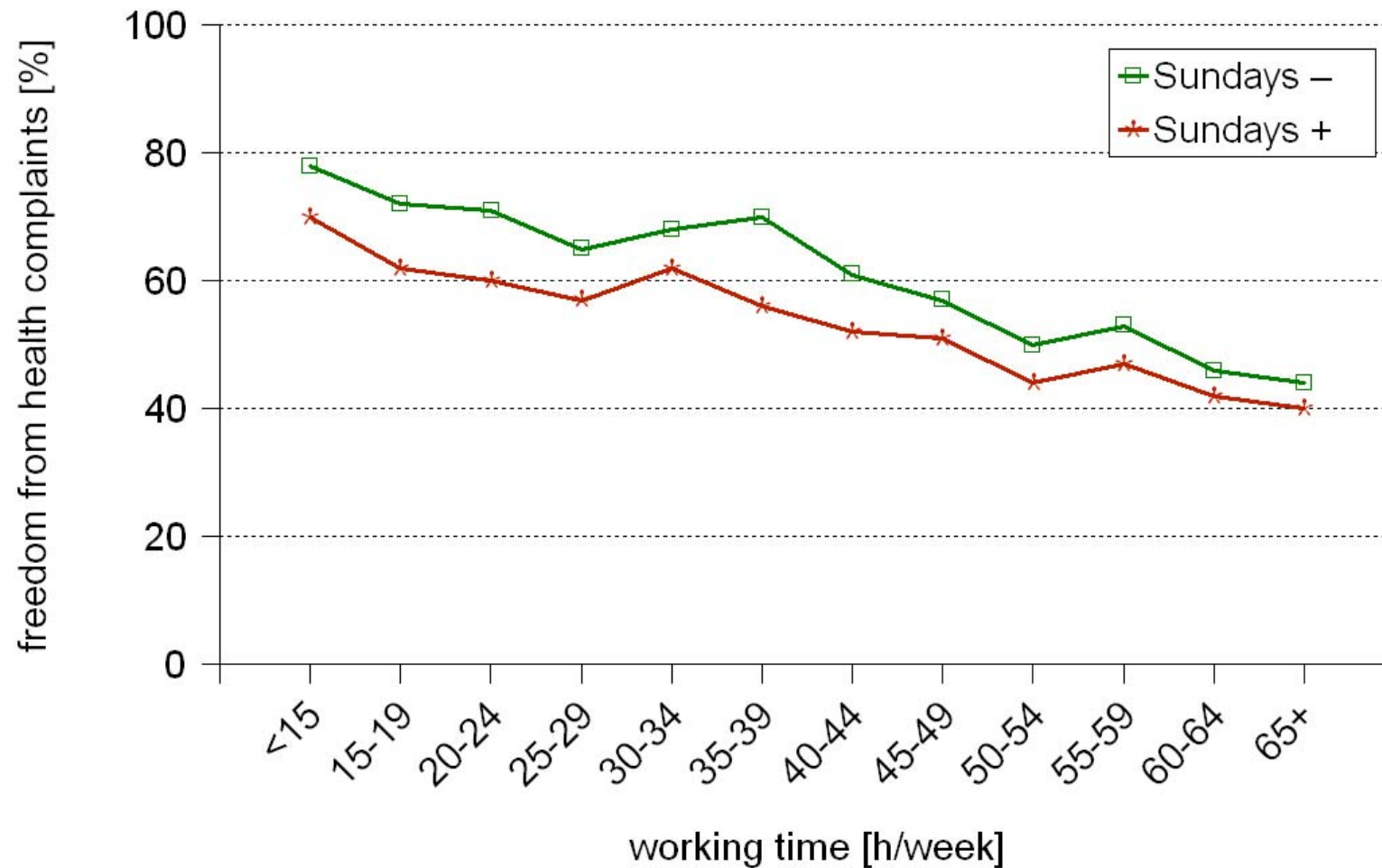
# Effects on health

Frequency of health complaints by number of Sundays/month,  
EU 2005, EU31, employed workers, retail sector



# Effects on health

Absence of health complaints, EU 2005, EU31, employed workers,  
no shift work



# Effects on health

Sleep problems, working time and work on Sundays,  
EU 2005, EU31, employed workers, no shift work



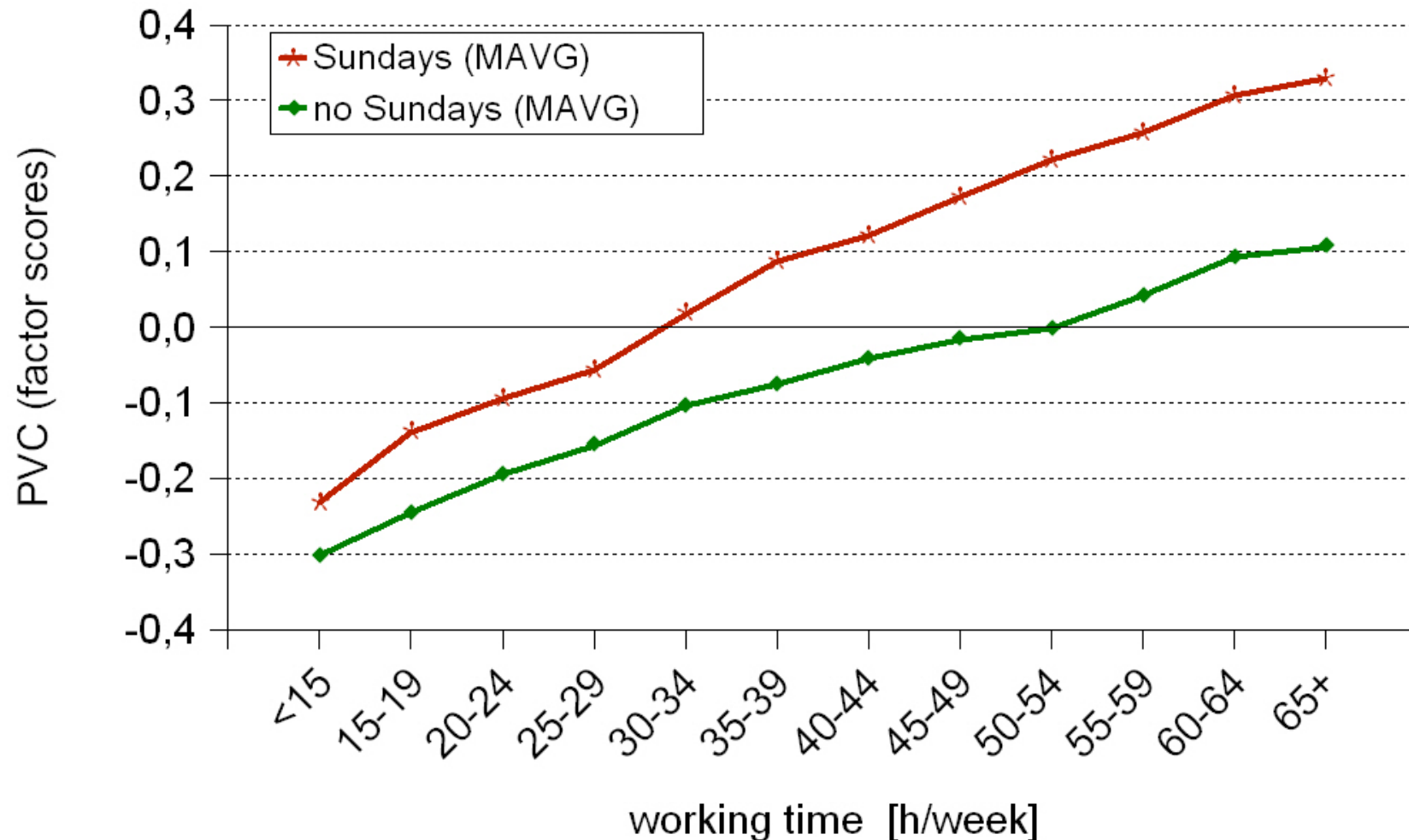
# Effects on health

Heart troubles, working time and work on Sundays,  
EU 2005, EU31, employed workers, no shift work



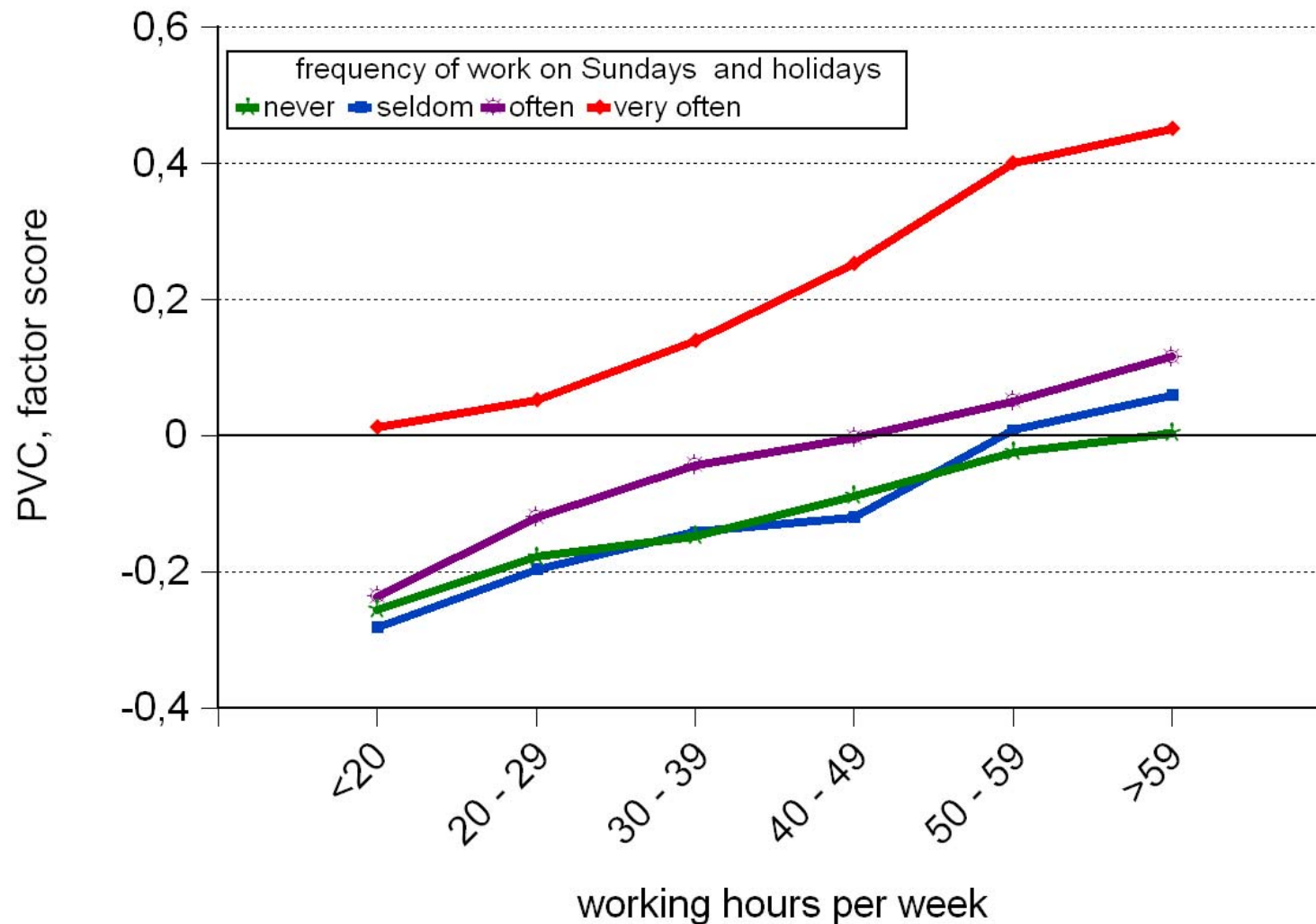
# Effects on health

Psycho-vegetative complaints, working time and work on Sundays, means of 2 European and 2 German samples, employed workers



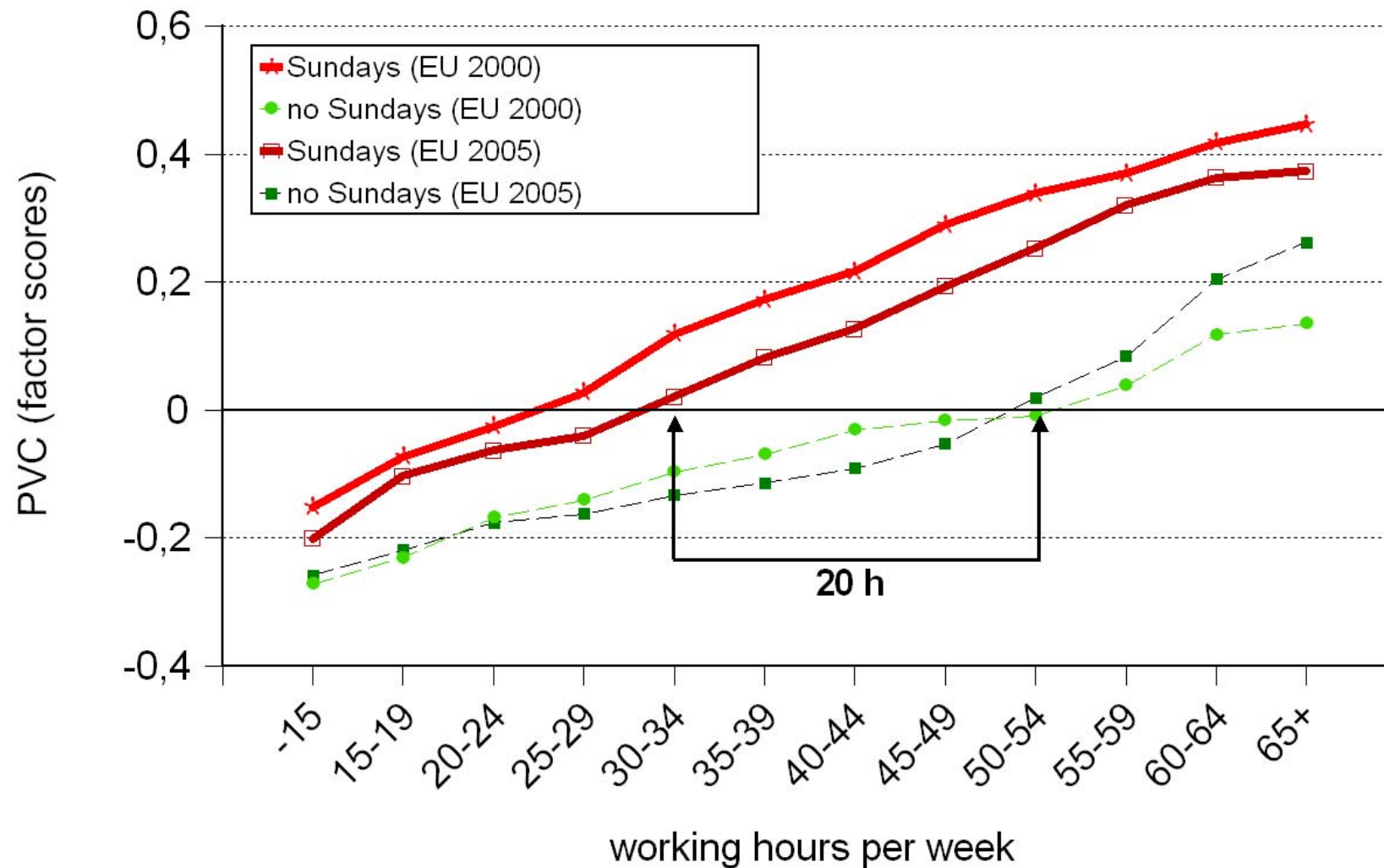
# Effects on health

Psychovegetative complaints (MAVG), working hours per week and frequency of work on Sundays and holidays, employed workers, GA 2004, FRG



# Effects on health

## Psychovegetative complaints, work on Sundays and working hours per week





# Effects on work-life-balance

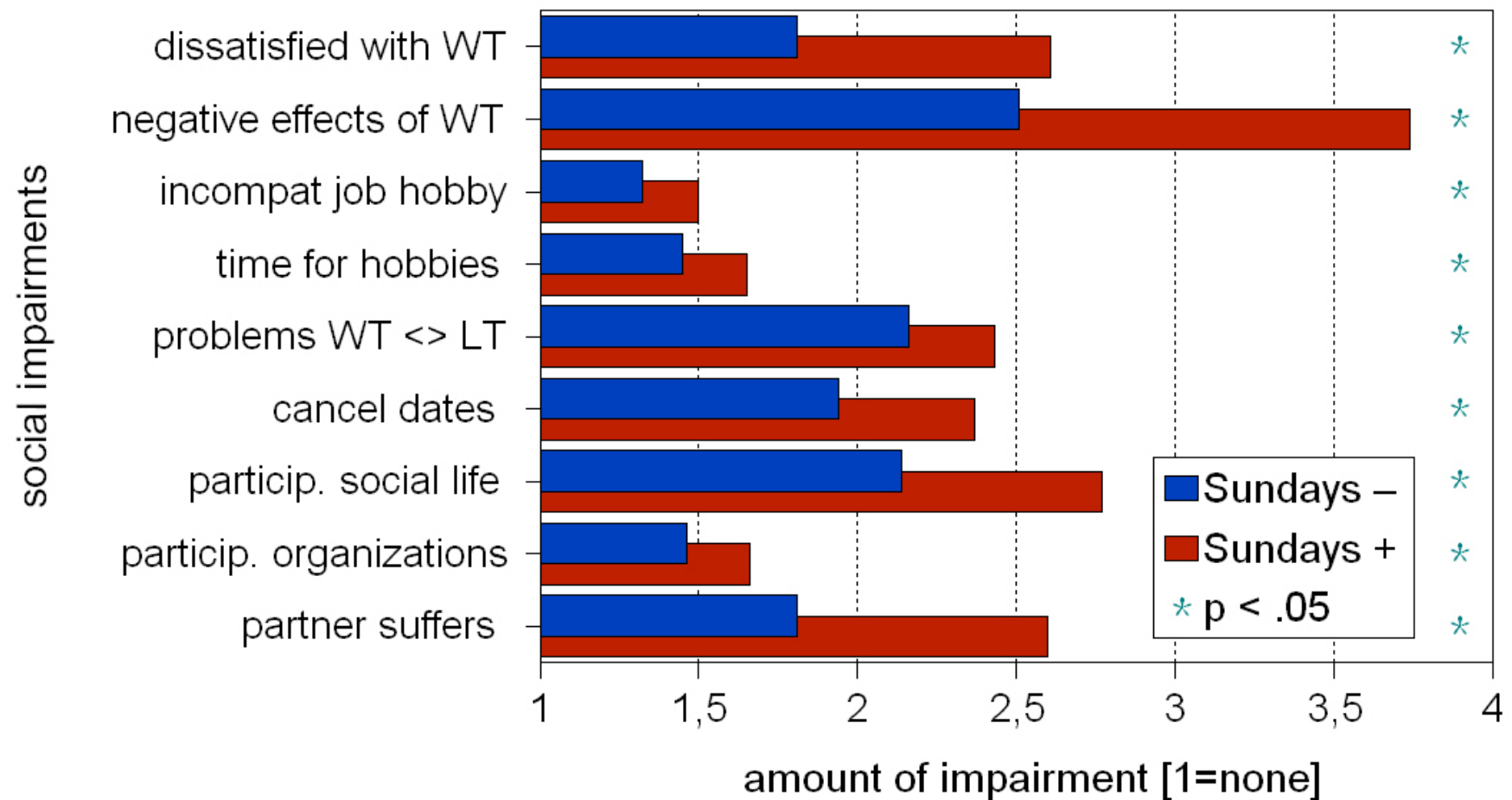
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## Effects on work-life-balance /social impairments

- Substantial amount of evidence for negative effects of work at unusual times on work-life-balance
  - Fagan & Burchell, 2002
  - Janßen & Nachreiner, 2004
  - Albertsen et al., 2008
  - Lyonette & Clark, 2009
  - Tucker et al., 2010
  - Wirtz et al., 2008
  - Wirtz, 2010
  - Wirtz & Nachreiner, 2010
  - Wirtz et al., 2011a,b

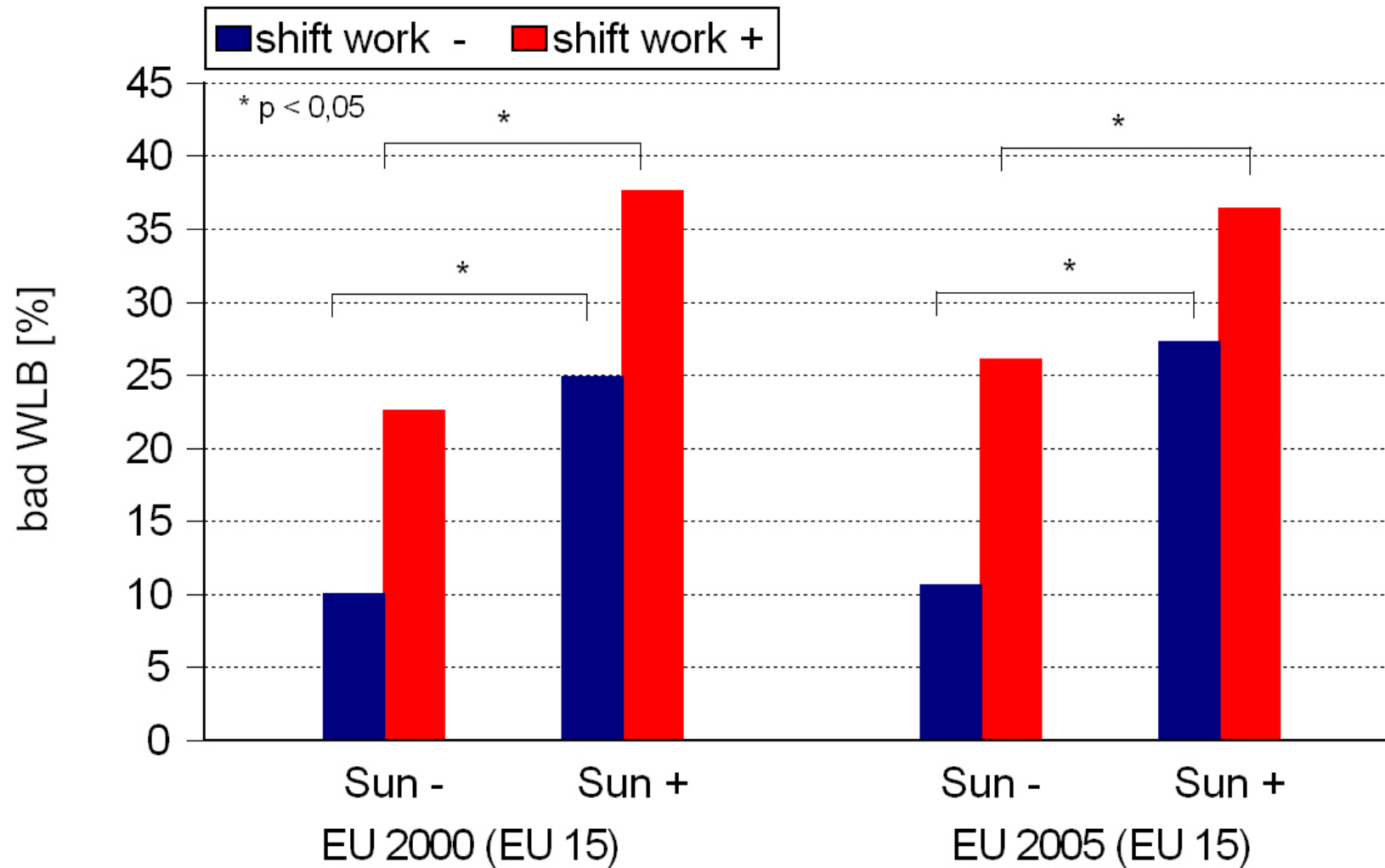
# Effects on social life

## Working on Sundays and social impairments



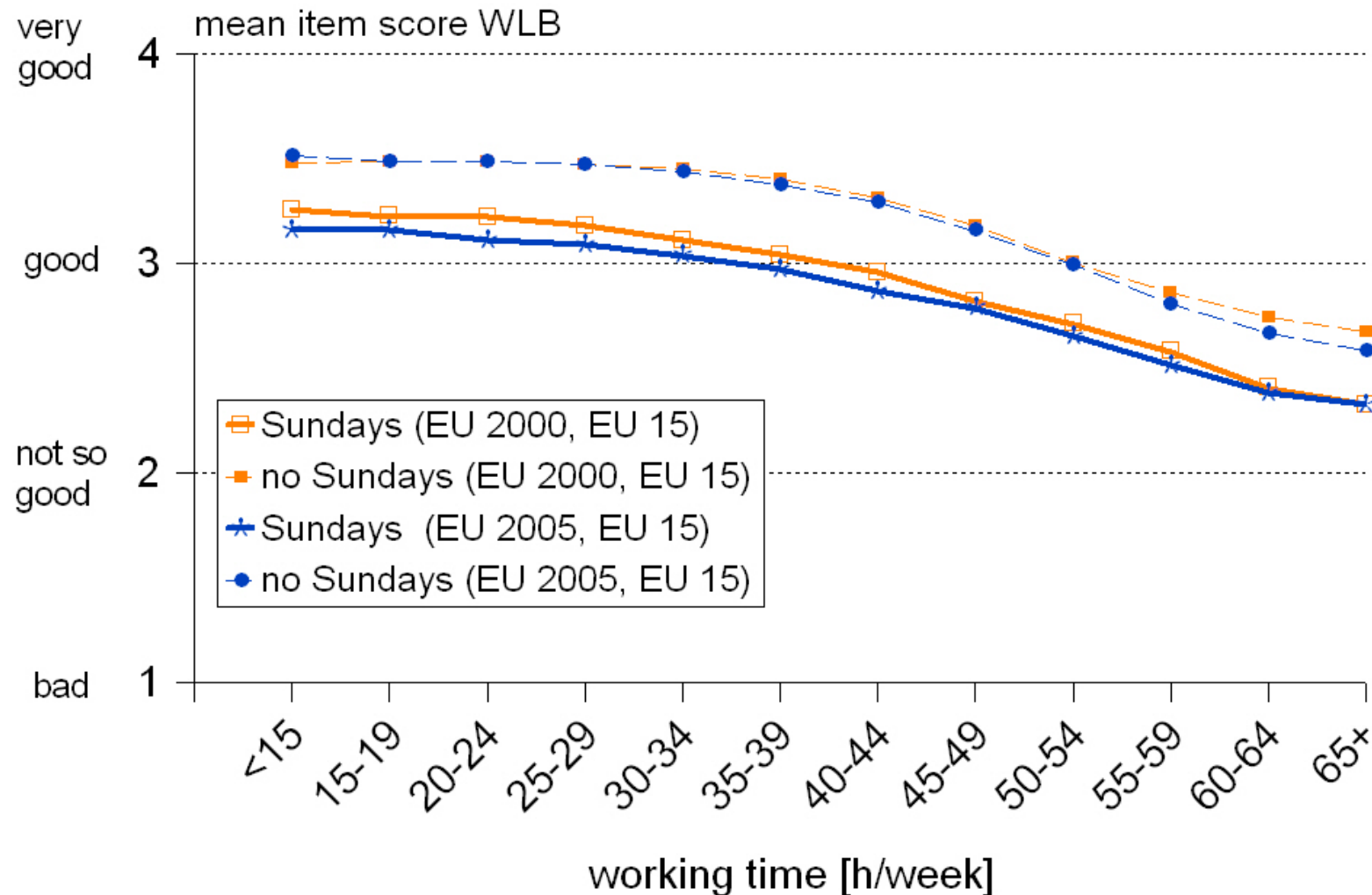
data from Janßen & Nachreiner, 2004, survey on flexible working hours

# Effects on work-life-balance



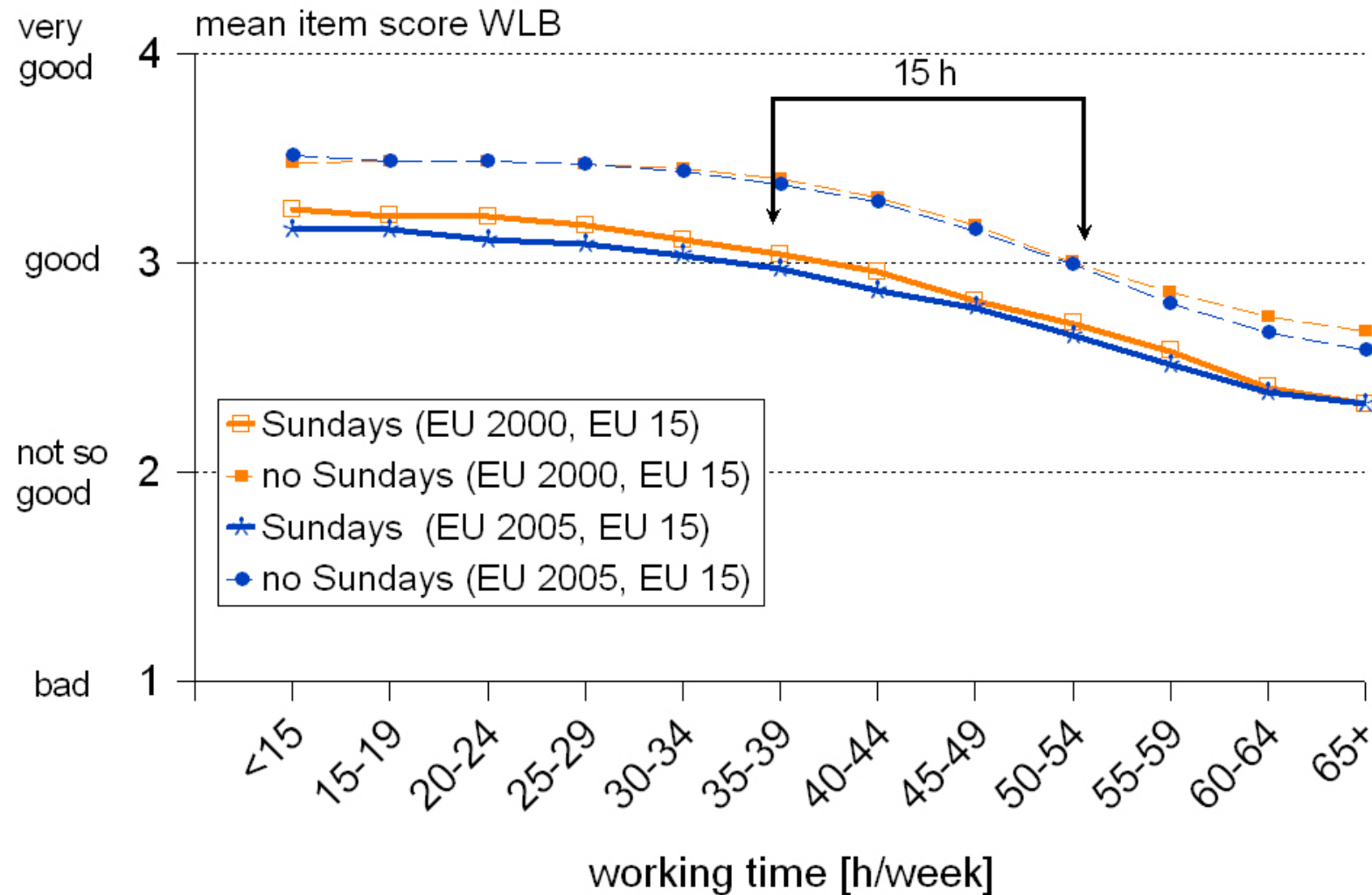
# Effects on social life

## Work-life balance, working time and work on Sundays, employed workers



# Effects on social life

## Work-life-balance, working time and work on Sundays, employed workers



# Conclusions

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- There are obviously severe adverse effects of working on Sundays
- with regard to
  - safety
  - health
  - social life / work-life-balance
- these effects can obviously not be compensated / prevented by time off on a different

# Conclusions

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- While the mechanisms for social impairments are rather obvious, i.e. a reduction in socially highly usable time, the mechanisms for the demonstrated health and safety effects are not as clear.
- One hypothesis is that the recuperative value of Sundays is different to that of other days off. Resting on Sundays may be different to resting on a workday due to the different (normative) functions of the Sunday as compared to other days.



# Conclusions

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- The results clearly demonstrate, that Sundays should thus be kept free of work as far as possible, in order to avoid or minimize the negative effects of work on Sundays on safety, health and social life,
  - both from an individual perspective,
  - but also from a societal perspective

***Thank you  
for your attention!***

for further information please contact:

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[www.gawo-ev.de](http://www.gawo-ev.de)

## 2 very recent publications

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- Wirtz, A., Nachreiner, F., Rolfes, K. (2011)  
Working on Sundays – Effects on Safety, Health,  
and Work-life Balance.  
Chronobiology International, 28(4): 361-370
- Wirtz, A., Nachreiner, F., Rolfes, K. (2011)  
Sonntagsarbeit – Auswirkungen auf Sicherheit,  
Gesundheit und Work-Life-Balance der  
Beschäftigten.  
Z.Arb.Wiss., 65, 136-146