

Towards a temporal compensation approach for unusual working hours – how much additional time off is needed to balance out negative health effects?

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Prevalence of unusual working hours is high

- Over 50% of all workers in the European Union regularly work at least one day in the weekend. (Eurofound, 2012)
- 40% work in the evening at least sometimes. (Eurostat, 2013)

Negative health effects of work on evenings and weekends

- Evenings and weekends are needed for recovery from the effects of work-related strain and for social interaction.
- Unusual working hours are associated with a higher risk of occupational injuries/“accidents”, health problems, and poor work-life balance. (Wirtz et al., 2012)
- Financial compensation (i.e., extra pay) does not seem to be effective in terms of recovery from work strain resulting from unusual working times.

Towards a temporal compensation

- A reduction in working hours and, thus, additional free time could help employees with unusual hours to maintain a similar health status as workers with regular/normal working times (see Figure 1 for Sunday work).
- Therefore, the research question was, how much more time off would be needed to compensate negative health effects of work on evenings and weekends?

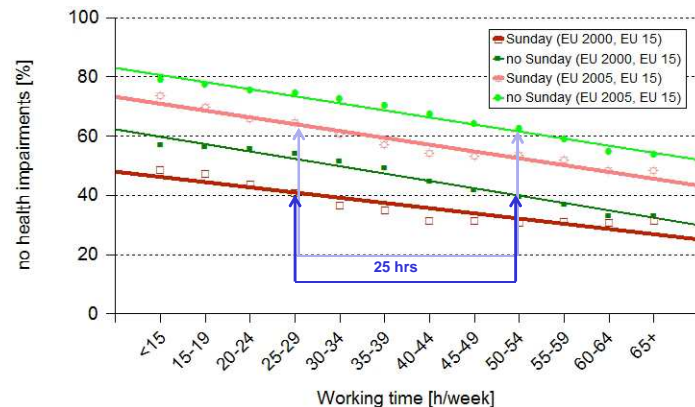


Figure 1: Relative frequencies (linear trends) of reporting “no work-related health impairments” by regular Sunday work and usual working hours per week in two European samples (15 original member states of EU).

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How much reduction in working hours is needed to maintain a comparable health status?

- We conducted logistic regressions in two samples from the European Working Conditions Surveys (EU 2000, 15 original member states, $n=17,910$; EU 2005, 31 states, $n=23,934$) in order to
 - predict the risk of reporting at least 1 health impairment by unusual working times and working hours per week (Table 1),
 - calculate the hours needed to reduce health impairments to the same level as workers with regular working hours (Table 2).

Table 1: Risk of reporting “ ≥ 1 work-related health impairment(s)” by working hours per week and unusual working times estimated with logistic regression analyses.

Parameter	EU 2000 EU 15		EU 2005 EU 31		EU 2005 EU 15	
	OR ^a	95% CI ^b	OR ^a	95% CI ^b	OR ^a	95% CI ^b
Working hrs (cont.)	1.01	1.00-1.02	1.02	1.01-1.02	1.02	1.01-1.02
Evenings (ref: no)	1.27	1.17-1.39	1.14	1.05-1.25	1.32	1.19-1.48
Saturdays (ref: no)	0.86	0.79-0.93	1.04	0.96-1.14	0.91	0.81-1.02
Sundays (ref: no)	1.23	1.11-1.37	1.17	1.05-1.29	1.46	1.28-1.67

^a OR=Odds Ratio; estimates controlled for age, sex, physical work load, mental work load, autonomy, shift work, night work
^b CI = Confidence Interval

Table 2: Calculation of additional free time off needed for equal health impairments with estimates from EU 2005 (EU 31, Table 1), using full-time and part-time work examples.

Parameter (EU 2005, EU 31)	OR	Risk Increase [%]	Temporal Comp. [h]	Remaining h/wk full-time (40 h) [h]	Remaining h/wk part-time (19 h) [h]
Working hrs	1.02		2		
Evenings	1.14	14	-7.0	33	12
Saturdays	1.04	4	-2.0	38	17
Sundays	1.17	17	-8.5	31.5	11.5
Combined effects			-17.5	22.5	1.5

Conclusions

- A temporal compensation (i.e., additional free time) might reduce the negative health effects of work on weekends and evenings.
- Up to 17 hours of additional free time could be necessary for compensation of regular work on evenings and weekends.
- Such a compensation might make unusual working hours economically less attractive.

References

- Eurofound (2012), *Fifth European Working Conditions Survey*, Publications Office of the European Union, Luxembourg
- Wirtz, A., Nachreiner, F., Rolfes, K. (2011), Working on Sundays-effects on safety, health, and work-life balance, *Chronobiology International*, 28, 361-70.