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A study on the economic costs of work-related MSDs in Switzerland

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Content

- The study
- Defining work-related musculoskeletal disorders wrMSDs?
- Results
- Modelling:
 - Working conditions and wrMSDs
- Discussion:
 - Economic costs for Switzerland
- Conclusions



The Database

- Source: Fourth European Working Conditions Survey
 - Luxembourg: Office for Official Publications of the European Communities, 2007
- Interview data of a random selection of 847 employees in Switzerland
 - Mastering the languages German, French or Italian
- Cases: n=176
 - Indicating backache and/or muscular pains judged to be work related by the interviewed subjects
- Controls: n=671
 - Indicating neither backache nor muscular pains judged to be work related
- Potential occupational risk factors for wrMSDs included in the data source



Search for risk factors

Source: Fourth European Working Conditions Survey
Luxembourg: Office for Official Publications of the European Communities, 2007

- Step 1:
 - Determination of risk factors for wrMSDs included by the „Dublin-survey“ **Result n = 67**
- Step 2
 - Univariate testing for significant relationships between variables describing the working situation and wrMSDs **Result n = 29**
- Step 3
 - Logistic regression with backwards elimination
 - **Result n = 8**



The question on wrMSDs

- Does your work affect your health, or not?
 - if Yes ----- > CONTINUE WITH . . .
- „How does it affect your health?“
 - . . .
 - „backache“
 - . . .
 - „muscular pains in shoulders, neck and/or upper/lower limbs “
 - . . .

Source: Fourth European Working Conditions Survey
Luxembourg: Office for Official Publications of the European
Communities, 2007



wrMSDs in Switzerland

Prevalences in the Swiss working population 2005

- „ Does your work affect your health, or not?“

Yes: 31%

- ...

18%

- „ backache“

- ...

- „ muscular pains in shoulders, neck and/or upper/lower limbs “

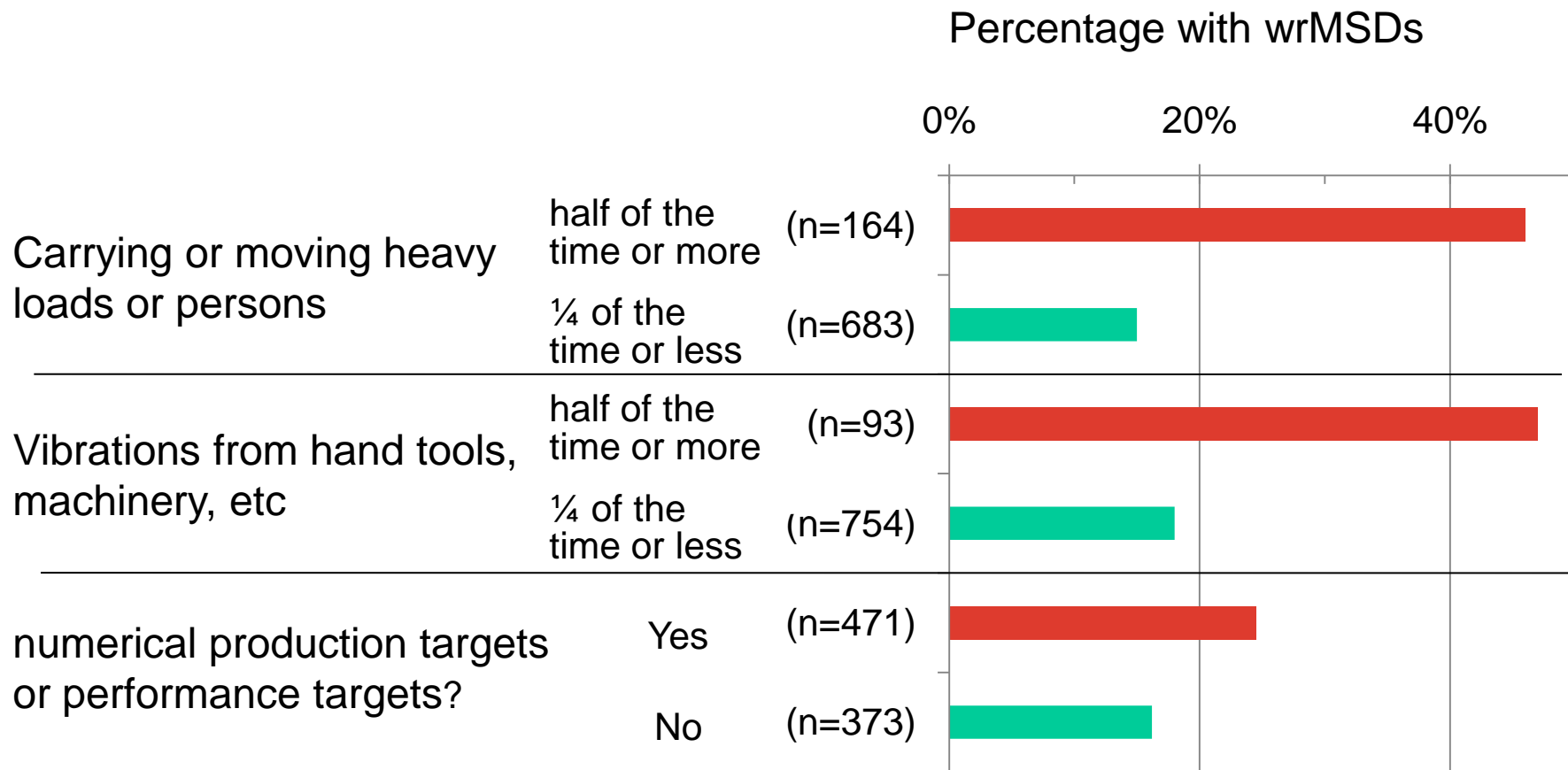
- ...

13%



The eight identified risk factors for wrMSDs by the logistic regression model:

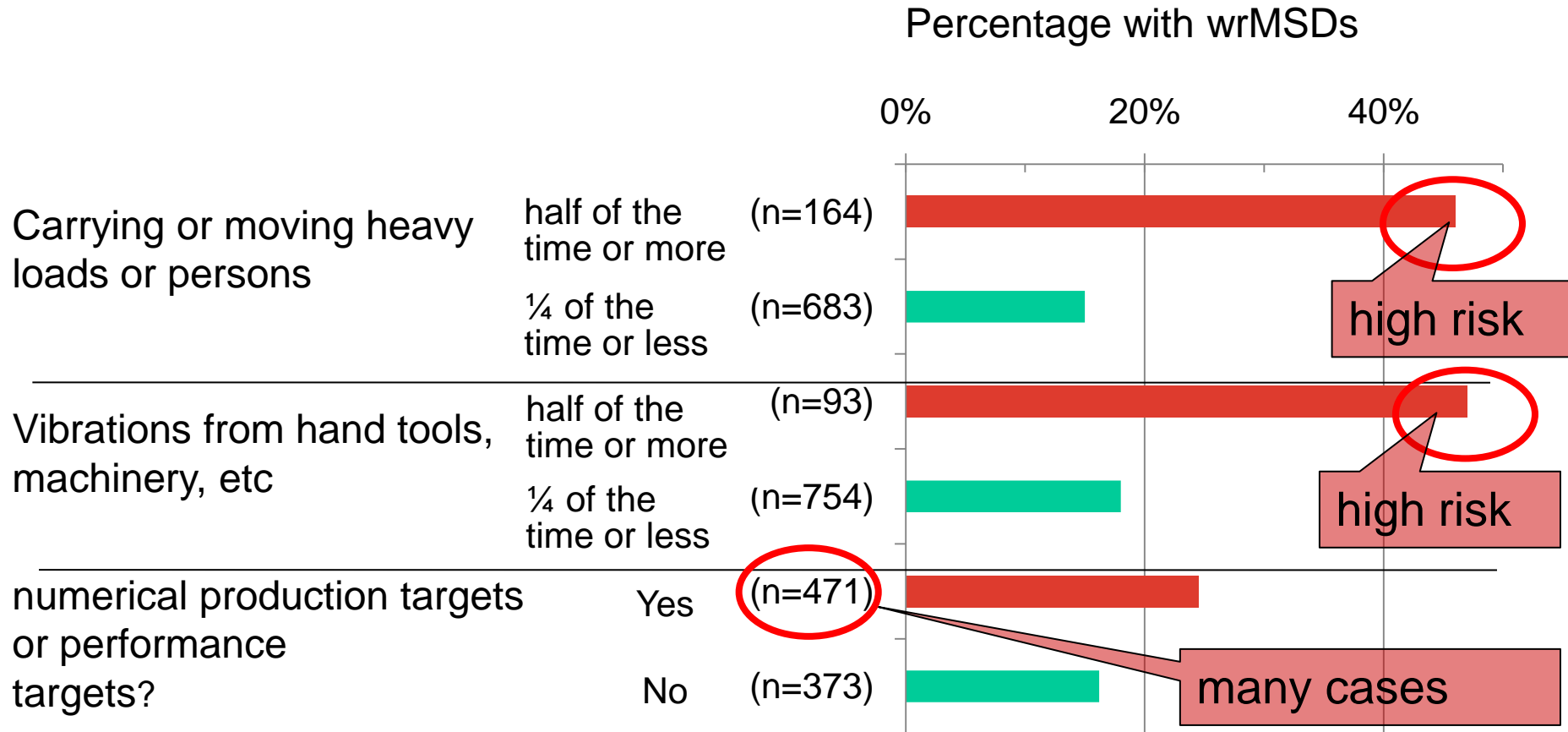
(I) Physical loads and time pressure





The eight identified risk factors for wrMSDs by the logistic regression model :

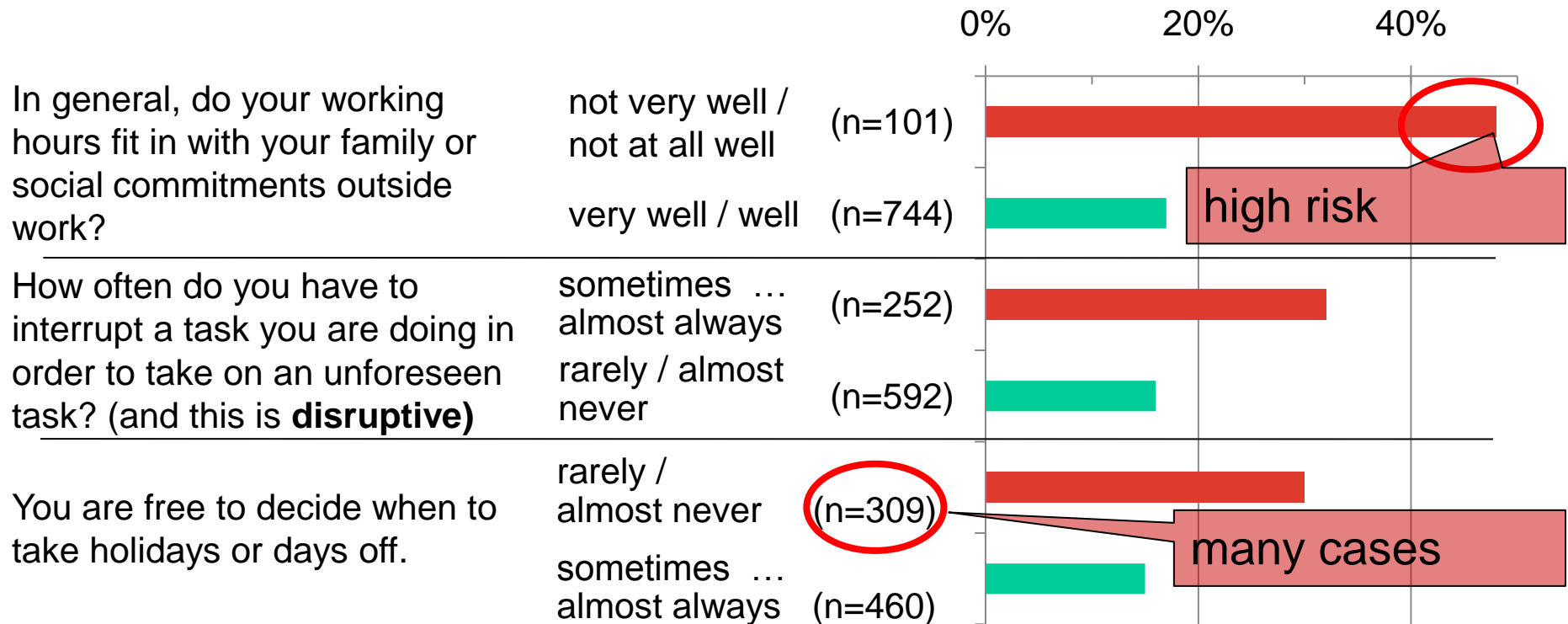
(I) Physical loads and time pressure





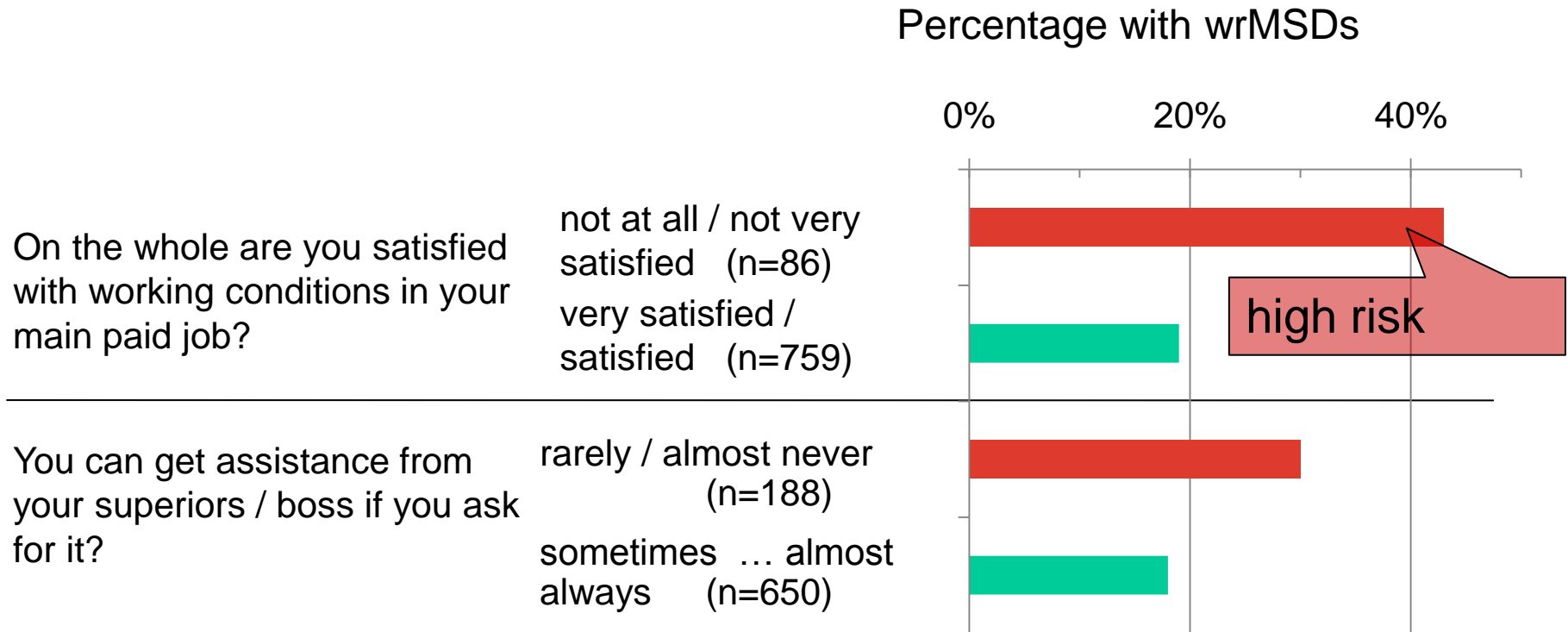
The eight identified risk factors for wrMSDs by the logistic regression model: (II) working time

Percentage with wrMSDs



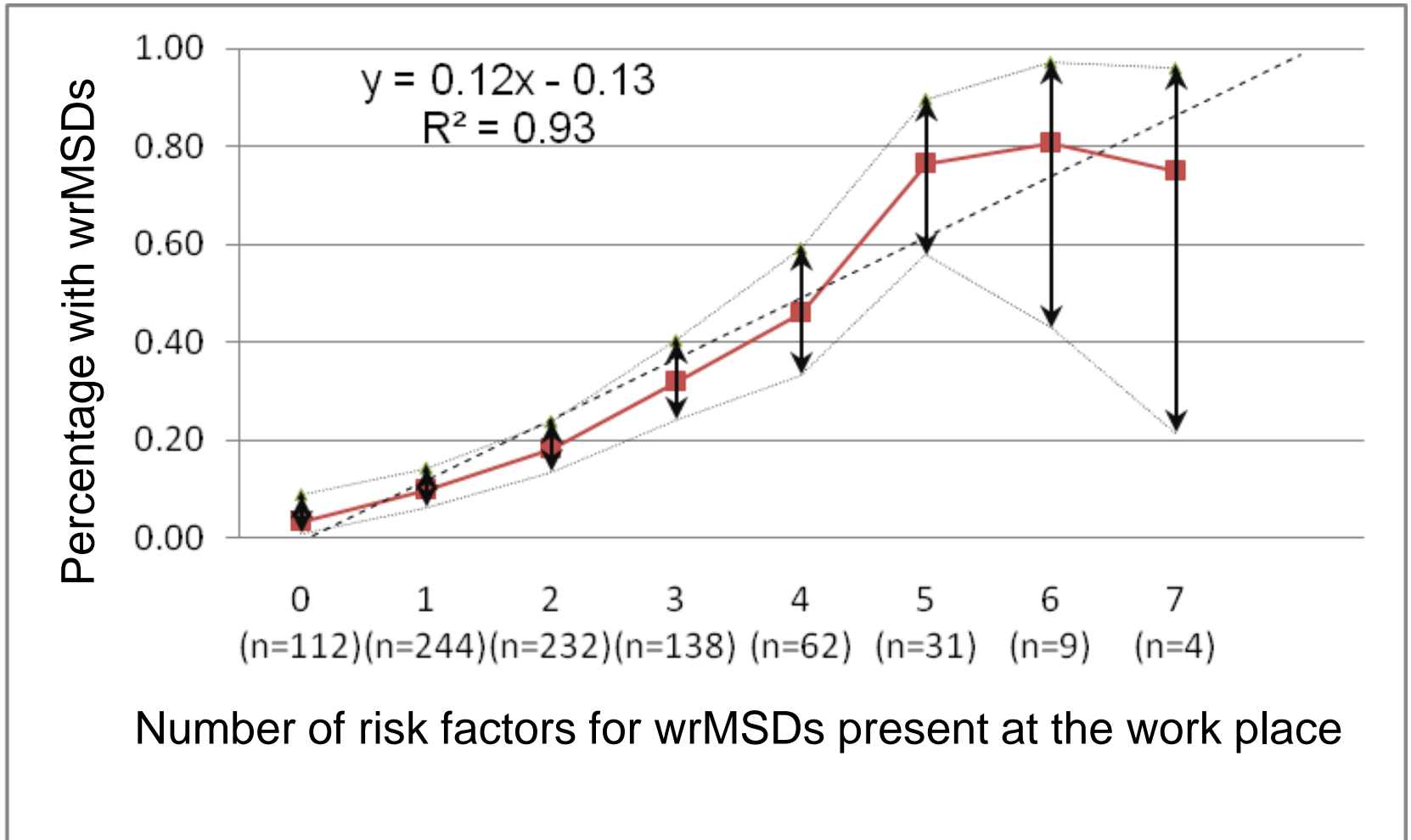


The eight identified risk factors for wrMSDs by the logistic regression model: (III) work satisfaction and collaboration





The used, simplified model for estimating the economic costs caused by wrMSDs





Estimations for Switzerland (3.2 Million employed persons)

	Employed Swiss (3.2 Millionen)
Cases with wrMSDs thereof due to occupational risks	670'000 cases 560'000 cases
Absence from work due to health problems caused by your work thereof due to occupational risks	1.6 million days 1.6 million days
Work situations with increased risks for wrMSDs	1.8 million employees



Costs due to absence from work: 970 million Swiss Franks (= US\$)

Assumption*: one day of absence costs 600 CHF

The model shows:

- Absences from work due to wrMSDs cost Swiss companies huge amounts of money.
- Most subjectively work-related MSDs can be explained by risk factors at work.
- **Conclusion: A big deal of these losses can be avoided!**

* Suvapro: Absenzenmanagement: Der Werkzeugkasten aus der Praxis für die Praxis. Bestellnummer, 2790.d, www.suva.ch, SUVA Luzern, 2009



Costs due to reduced production by cases with wrMSDs: 3'300 million Swiss Franks (= US\$)

Assumption*: three percents reduction of efficiency in cases with wrMSDs.

- Reduced capacity in cases with wrMSDs leads to a loss of production equal to 3'300 million per year.
- > 80% of these losses due to unfavorable working conditions.
- **Conclusion: A big deal of these losses can be avoided!**

* Lötters F, Meerding W-J, Burdorf A: Reduced productivity after sickness absence due to musculoskeletal disorders and its relation to health outcomes.
Scandinavian journal of work, environment & health, 31:367-74, 2005

* Hagberg M, Tornqvist EW, Toomingas A: Self-reported reduced productivity due to musculoskeletal symptoms: association with workplace and individual factors among white-collar computer users.
Journal of occupational rehabilitation, 12:151-62, 2002



Costs due to lower efficiency in working conditions characterized by the presence of risks for wrMSDs: 5'500 million Swiss Franks (= US\$)

Assumption*: In work places characterized by increased risks for wrMSDs, five percentage increase in productivity can be reached improving organization and ergonomics.

- **Conclusion: Optimizing the design of work improves productivity of companies and protects workers' health.**

* Lahiri S, Gold J, Levenstein Ch: Net-cost model for workplace interventions.
Journal of safety research ECON proceedings 36:241-55, 2005