



What predicts individuals signed off sick remaining in the job market and how important is the diagnoses?



Agenda for the presentation

- The study group and the current state of the project
- Background
- Danish trends in sick leave
- Prognostic models
- The possibilities with the new data
- A great opportunity for a young ambitious researcher 😊

The studygroup

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Background

- No changes in sick leave in Denmark, despite reforms
- Scarce knowledge on prognosis for return to work after long term sick leave
- The responsibility for vocational rehabilitation has changed from previous strategies with the establishment of "Rehabilitation teams" in the Danish Municipalities.
- The current prognostic tools are not accurate enough

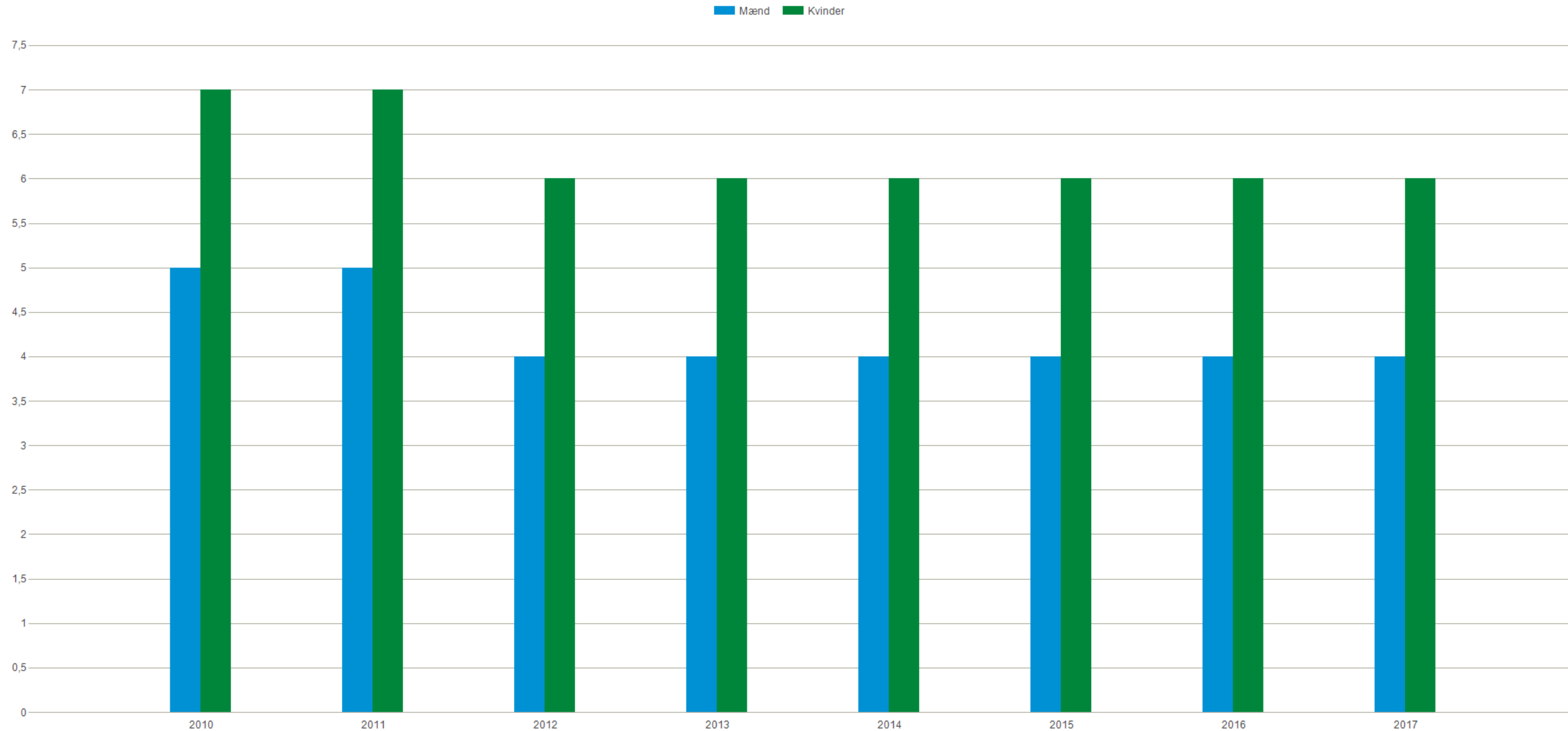
The reform introduced 2014

- Shorter period on sick leave benefit (from 52 to 22 weeks)
- Mandatory contact to the GP
- Advice from a multidisciplinary rehabilitation team
- A co-ordinating case manager
- More focus on work place based interventions

Trends in sick leave 2010-2017

Andel af beskæftigede med længerevarende sygdom

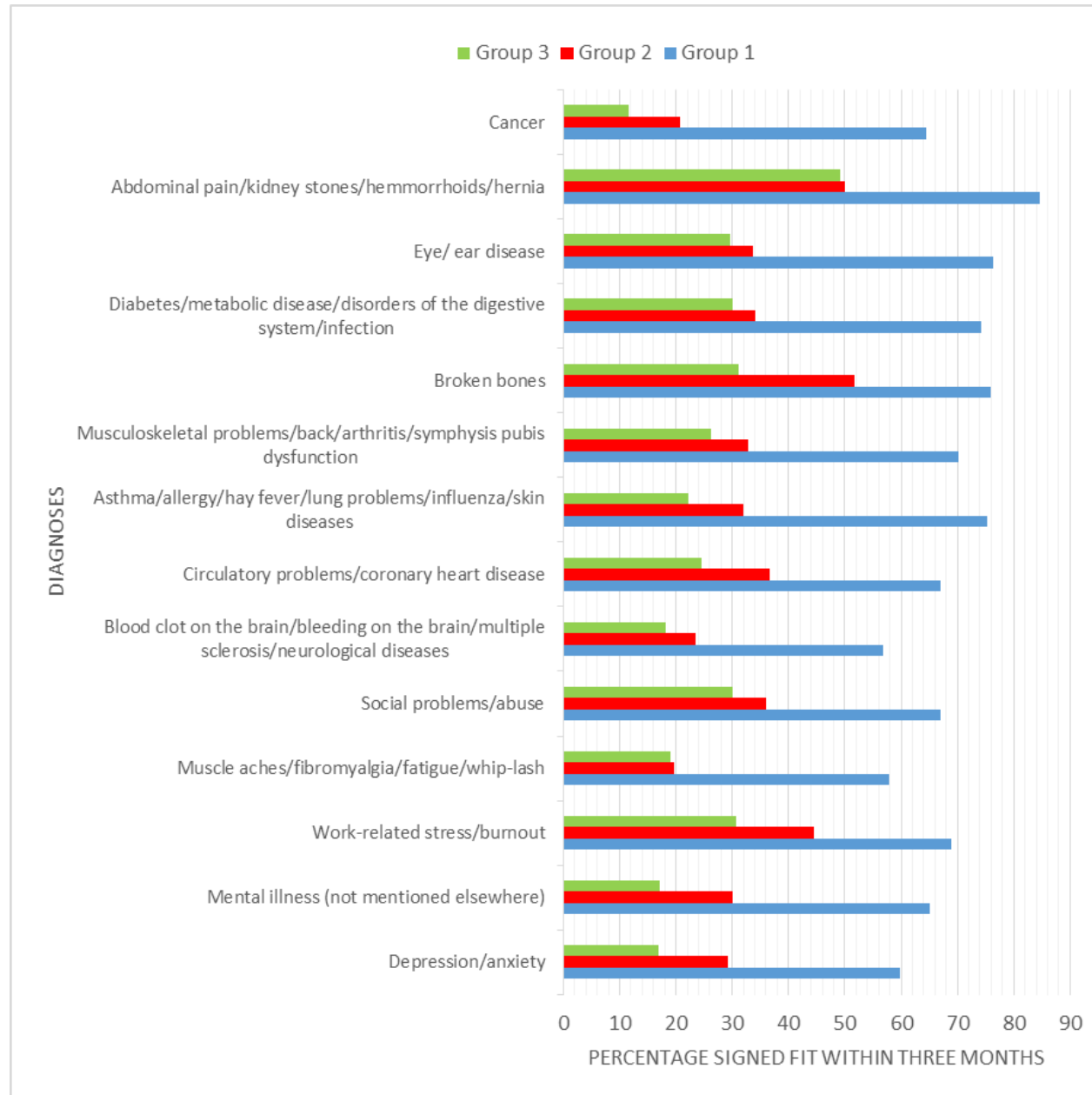
Beskæftigelse: Længerevarende syge i pct. af alle beskæftigede | Socioøkonomisk status: **Beskæftigede i alt** | Køn:



Possible explanations on the missing effect

- Do we find the population at risk?
- Are the vocational rehabilitation plans sufficient?
- Are the vocational rehabilitation plans tailored to the individual?
- Do we have enough knowledge of the population?

The prognostic power in the municipalities



The prognostic power in the Danish registers



Pedersen et al. *BMC Public Health* 2014, **14**:494
<http://www.biomedcentral.com/1471-2458/14/494>



RESEARCH ARTICLE

Open Access

Prediction of future labour market outcome in a cohort of long-term sick- listed Danes

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Abstract

Background: Targeted interventions for the long-term sick-listed may prevent permanent exclusion from the labour force. We aimed to develop a prediction method for identifying high risk groups for continued or recurrent long-term sickness absence, unemployment, or disability among persons on long-term sick leave.

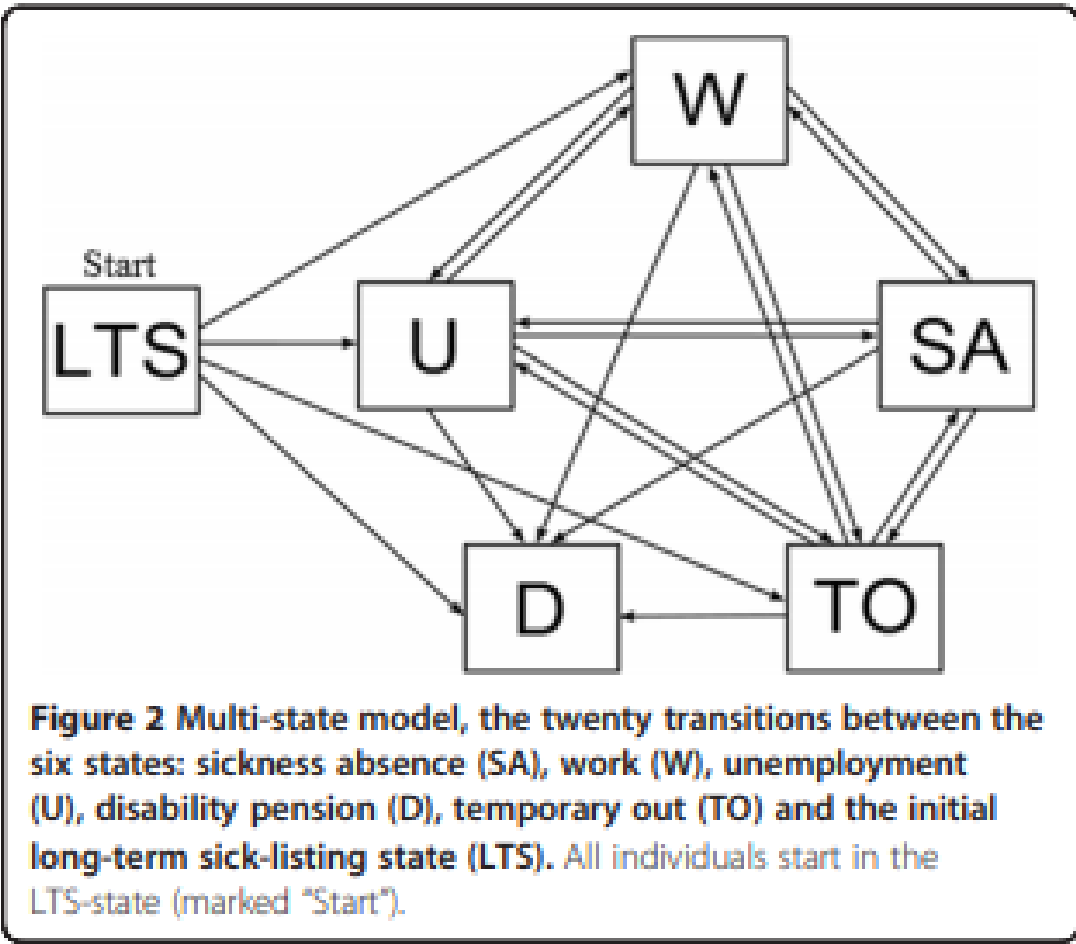
Methods: We obtained individual characteristics and follow-up data from the Danish Register of Sickness Absence Compensation Benefits and Social Transfer Payments (RSS) during 2004 to 2010 for 189,279 Danes who experienced a period of long-term sickness absence (4+ weeks). In a learning data set, statistical prediction methods were built using logistic regression and a discrete event simulation approach for a one year prediction horizon. Personalized risk profiles were obtained for five outcomes: employment, unemployment, recurrent sickness absence, continuous long-term sickness absence, and early retirement from the labour market. Predictor variables included gender, age, socio-economic position, job type, chronic disease status, history of sickness absence, and prior history of unemployment. Separate models were built for times of economic growth (2005–2007) and times of recession (2008–2010). The accuracy of the prediction models was assessed with analyses of Receiver Operating Characteristic (ROC) curves and the Brier score in an independent validation data set.

Results: In comparison with a null model which ignored the predictor variables, logistic regression achieved only moderate prediction accuracy for the five outcome states. Results obtained with discrete event simulation were comparable with logistic regression.

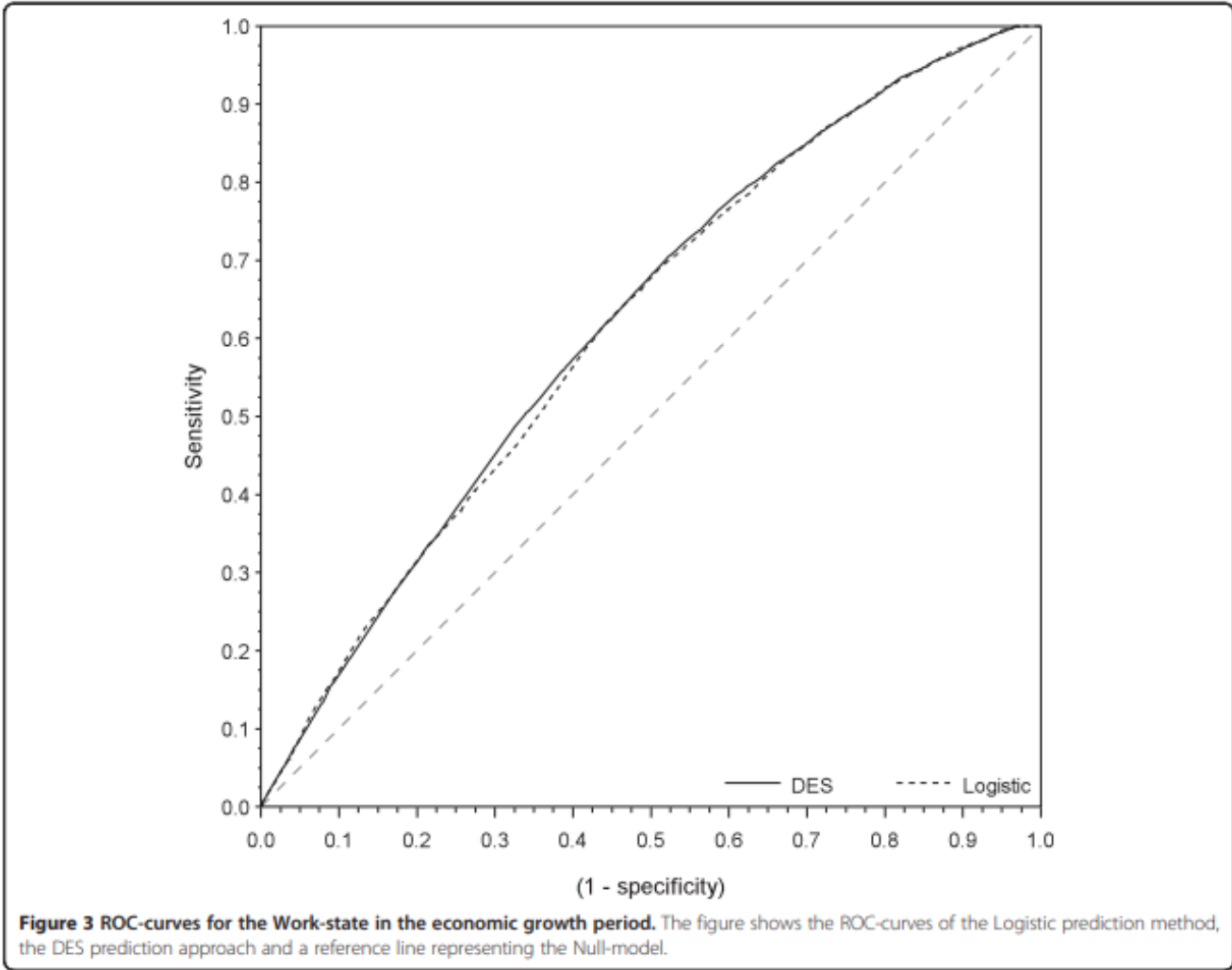
Conclusions: Only moderate prediction accuracy could be achieved using the selected information from the Danish register RSS. Other variables need to be included in order to establish a prediction method which provides more accurate risk profiles for long-term sick-listed persons.

Keywords: Labour market, Long-term sick-listed, Risk profiling, Logistic regression, Discrete event simulation, Register data, Registry

The multi-state model



ROC-curves



The possibility for improving the models

Original article

Scand J Work Environ Health. 2012;38(2):120–133. doi:10.5271/sjweh.3272

The Danish national return-to-work program – aims, content, and design of the process and effect evaluation

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The Danish national return-to-work (RTW) program aims to improve the management of municipal sickness benefit in Denmark. A study is currently ongoing to evaluate the RTW program. The purpose of this article is to describe the study protocol. The program includes 21 municipalities encompassing approximately 19 500 working-age adults on long-term sickness absence, regardless of reason for sickness absence or employment status. It consists of three core elements: (i) establishment of multidisciplinary RTW teams, (ii) introduction of standardized workability assessments and sickness absence management procedures, and (iii) a comprehensive training course for the RTW teams. The effect evaluation is based on a parallel group randomized trial and a stratified cluster-controlled trial and focuses on register-based primary outcomes – duration of sickness absence and RTW – and questionnaire-based secondary outcomes such as health and workability. The process evaluation utilizes questionnaires, interviews, and municipal data. The effect evaluation tests whether participants in the intervention have a (i) shorter duration of full-time sickness absence, (ii) longer time until recurrent long-term sickness absence, (iii) faster full RTW, (iv) more positive development in health, workability, pain, and sleep; it also tests whether the program is (v) cost-effective. The process evaluation investigates: (i) whether the expected target population is reached; (ii) if the program is implemented as intended; (iii) how the beneficiaries, the RTW teams, and the external stakeholders experience the program; and (iv) whether contextual factors influenced the implementation.

The program has the potential to contribute markedly to lowering human and economic costs and increasing labor force supply. First results will be available in 2013. The trial registrations are ISRCTN43004323, and ISRCTN51445682.

What is the potential of the data

- 75.279 patients screened for the project
- 51.873 patients included in the project
- 6 – 8 years follow-up
- A unique source of diagnoses
- Data on life-style factors, workability and sleep

The new model

Old model	New model = Old model +
Gender	DIAGNOSES
Age	Stratification group
Socio-economic position	Level of education
Jobtype	Ethnicity
Chronic disease status	Marital status
History of sickness absence	Life style factors
History of unemployment	BMI
	Self-rated workability
	Quality of sleep

The great offer to a young researcher

- A two year full finaced study with high quality supervision
- Access to two productive institutions in the field of vocational rehabilitation
- Can be expanded to a Ph.D project if wanted
- If interested please feel free to contact me during the conference

Always remember that vocational rehabilitation is about taking care of the ones who are most in need of our help

