


# Does subjective social position affect health? Analyzing Nottingham Health Profile with a fixed effects approach

Alexi Gugushvili (with Olga Zelinska, Patrick Präg & Greg Bulczak)

University of Oslo

Prepared for "Harmonized longitudinal data on social structure: Polish research in a cross-national perspective"

1-2 December 2021



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## Social gradient in health

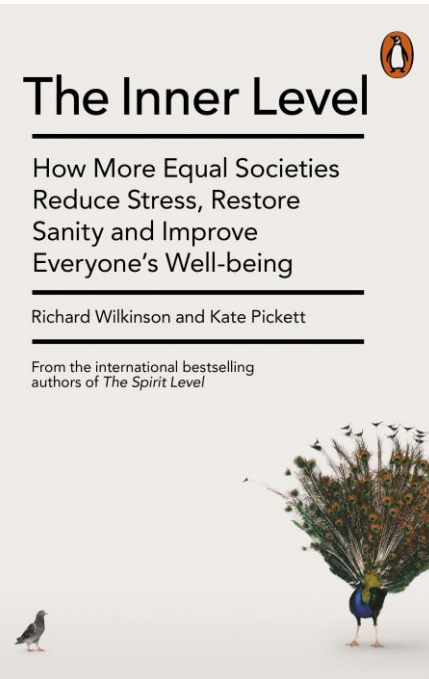
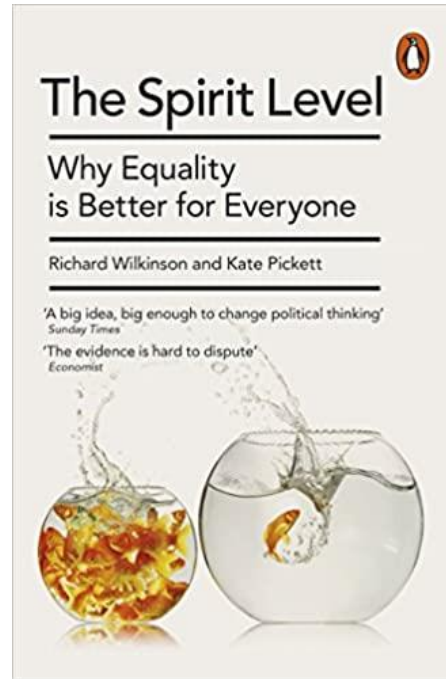
Historical records

The UK “Black Report”

Michael Marmot

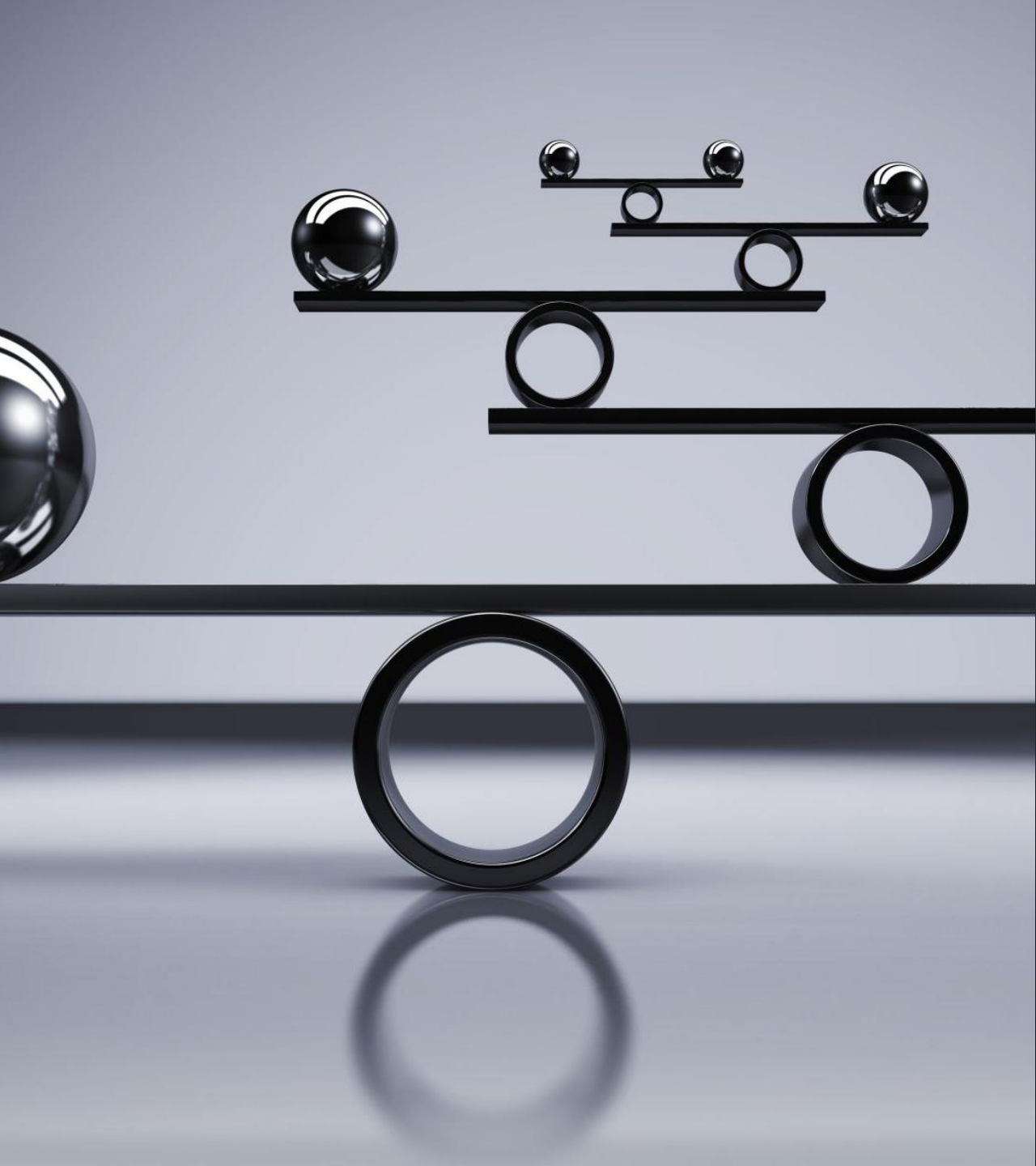
Johan Mackenbach

2009



2019

Wilkinson and Pickett



# Subjective socioeconomic position and health



Global trends  
in social  
sciences



Increasing  
awareness on the  
importance of  
subjectivity



Individuals  
having better  
perceptions on  
their place in  
social hierarchy



Social Science & Medicine  
Volume 56, Issue 6, March 2003, Pages 1321-1333



## Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study

Archana Singh-Manoux <sup>a</sup>, Nancy E Adler <sup>b</sup>, Michael G Marmot <sup>a</sup>

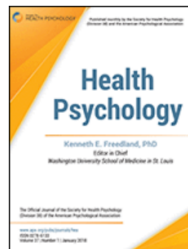


Social Science & Medicine  
Volume 67, Issue 2, July 2008, Pages 330-340



## Socioeconomic status and health: The role of subjective social status ☆

Panayotes Demakakos <sup>a</sup>, James Nazroo <sup>b</sup>, Elizabeth Breeze <sup>a</sup>, Michael Marmot <sup>a</sup>



APA PsycArticles: Journal Article

## Subjective social status and health: A meta-analysis of community and society ladders.

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Zell, E., Strickhouser, J. E., & Krizan, Z. (2018). Subjective social status and health: A meta-analysis of community and society ladders. *Health Psychology, 37*(10), 979–987.  
<https://doi.org/10.1037/hea0000667>



Psychology & Health >  
Volume 19, 2004 - Issue 2

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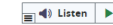
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Altmetric



Original Articles

## Subjective social status: reliability and predictive utility for global health

Don Operario, Nancy E. Adler & David R. Williams  
Pages 237-246 | Received 07 May 2002, Accepted 10 Oct 2003, Published online: 01 Feb 2007

Download citation <https://doi.org/10.1080/08870440310001638098>

Full Article

Figures & data

References

Citations

Metrics

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# Potential mechanisms

## Social–psychological explanations

- The significance of social comparisons, relative deprivation
- Feelings of dissatisfaction, resentment and injustice
- Sense of inferiority, shame and incompetence

## Psychoneurobiological explanations

- Functions of the autonomic nervous system and the immune system
- The biological processes particularly relevant for stress-related disorders – cardiovascular diseases, depression
- Increased release of stress hormones such as cortisol, the production of proinflammatory cytokines

# Is evidence convincing?

Mostly cross-sectional data

Unobserved individual characteristics?

Usually one measure of health (e.g. SRH)



## Subjective social status and health: Multidisciplinary explanations and methodological challenges

Jens Hoebel , Thomas Lampert

First Published September 19, 2018

Review Article

[Find in PubMed](#)

 Check for updates

<https://doi.org/10.1177/1359105318800804>

A way forward?

*“Confounding from unmeasured factors can be addressed in observational population studies when repeated observations are available, as is the case with panel studies (Gangl, 2010). These longitudinal data at the individual level can then be used to calculate fixed-effects estimators (also known as within-person estimators) using regression models with fixed effects.”*



# Research design

- ◇ All POLPAN waves which include health outcome data of our interest
- ◇ Nottingham Health Profile (NHP: 38) as a summary measure and its specific components
- ◇ Subjective social position: *“When comparing various social groups in our country, people believe that some of them are located higher than others. Here is an example of a scale [Scale from 0 to 10]... Please indicate where on this scale you would locate yourself”*
- ◇ Other determinates of health: *age, education, occupational status, income, marital status, settlement type, period effects*
- ◇ Comparing random effects (between estimates) and fixed effects (withing estimates) models

# NHP in POLPAN

**P09A.** I will read some statements describing how people might feel. For each statement I would like you to say “yes” if the statement is true in your case, or “no” if it is false in your case. If you are not sure whether to say “yes” or “no”, give the answer that is more true at this time.

	yes	no	other
01. I'm tired all the time.	1	0	8
[R-13, S-13]			
02. I have pain at night.	1	0	8
03. Things are getting me down.	1	0	8
04. I have unbearable pain.	1	0	8
05. I take pills to help me sleep.	1	0	8
[R-13, S-13]			
06. I've forgotten what it's like to enjoy myself.	1	0	8
[R-13, S-13]			
07. I'm feeling on edge.	1	0	8
08. I find it painful to change position.	1	0	8
[R-13, S-13]			
09. I feel lonely.	1	0	8
10. I can walk about only indoors.	1	0	8
11. I find it hard to bend.	1	0	8
12. Everything is an effort.	1	0	8
13. I'm waking up in the early hours of the morning.	1	0	8
14. I'm unable to walk at all.	1	0	8
[R-13, S-13]			
15. I'm finding it hard to make contact with people.	1	0	8
[R-13, S-13]			
16. The days seem to drag.	1	0	8
17. I have trouble getting up and down stairs and steps.	1	0	8
18. I find it hard to reach for things.	1	0	8
19. I'm in pain when I walk.	1	0	8
[R-13, S-13]			
20. I lose my temper easily these days.	1	0	8
[R-13, S-13]			
21. I feel there is nobody that I am close to.	1	0	8
[R-13, S-13]			
22. I lie awake for most of the night.	1	0	8

## Continued P09A

	yes	no	other
23. I feel as if I'm losing control of my life.	1	0	8
[R-13, S-13]			
24. I'm in pain when I'm standing.	1	0	8
[R-13, S-13]			
25. I find it hard to get dressed by myself.	1	0	8
[R-13, S-13]			
26. I soon run out of energy.	1	0	8
[R-13, S-13]			
27. I find it hard to stand for long (at the kitchen sink, waiting in a line).	1	0	8
[R-13, S-13]			
28. I'm in constant pain.	1	0	8
[R-13, S-13]			
29. It takes me a long time to get to sleep.	1	0	8
30. I feel I am a burden to people.	1	0	8
[R-13, S-13]			
31. Worry is keeping me awake at night.	1	0	8
32. I feel that life is not worth living.	1	0	8
[R-13, S-13]			
33. I need help to walk outside (a walking aid or support by someone).	1	0	8
34. I'm finding it hard to get along with people.	1	0	8
35. I sleep badly at night.	1	0	8
[R-13, S-13]			
36. I'm in pain when going up or down stairs.	1	0	8
37. I wake up feeling depressed.	1	0	8
[R-13, S-13]			
38. I'm in pain when I'm sitting.	1	0	8



ELSEVIER

Data in Brief

Volume 35, April 2021, 106936



Data Article

# The Polish Panel Survey (POLPAN) dataset: Capturing the impact of socio-economic change on population health and well-being in Poland, 1988–2018

Olga Zelinska <sup>a</sup> , Alexi Gugushvili <sup>a, b, c</sup>   , Grzegorz Bulczak <sup>a</sup>, Irina Tomescu-Dubrow <sup>a, d</sup>, Zbigniew Sawiński <sup>a</sup>, Kazimierz M. Słomczyński <sup>a, d</sup>

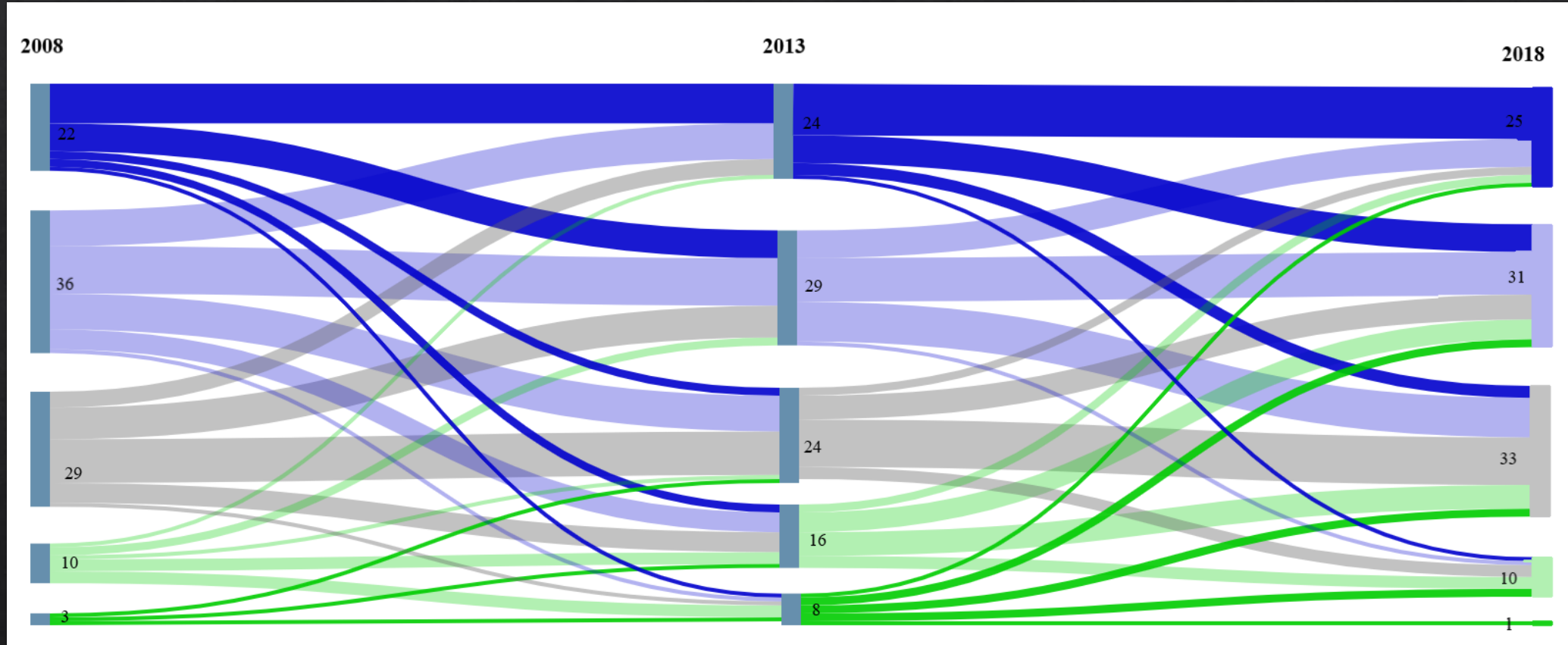
<sup>a</sup> Institute of Philosophy and Sociology, Polish Academy of Sciences, Warsaw, Poland

<sup>b</sup> Department of Sociology and Human Geography, University of Oslo, Postboks 1096 Blindern, Oslo 0317, Norway

<sup>c</sup> Nuffield College, University of Oxford, Oxford, UK

<sup>d</sup> CONSIRT–The Ohio State University, Polish Academy of Sciences, Columbus, OH, United States

# Self-assessed social position compared to that of the father, percentage distribution within each POLPAN wave for individuals appearing in all three waves



■ Much higher  
 ■ Somewhat higher  
 ■ The same  
 ■ Somewhat lower  
 ■ Much lower

	RE	FE
<b>Subjective position</b>	<b>-7.84***</b>	
Age		
Age squared		
Education		
Occupational status		
Std. income		
Married		
Size of locality		
Intercept		
Observations	2754	2754

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Outcome measure:  
NHP total score

Comparing random vs  
fixed effects estimates

	RE	FE
<b>Subjective position</b>	<b>-7.84***</b>	<b>-3.26*</b>
Age		
Age squared		
Education		
Occupational status		
Std. income		
Married		
Size of locality		
Intercept		
Observations	2754	2754

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Outcome measure:  
NHP total score

Comparing random vs  
fixed effects estimates

	RE	FE
<b>Subjective position</b>	<b>-7.84***</b>	<b>-3.26*</b>
Age	-1.10	-4.42
Age squared	0.03***	0.06**
Education	-7.17***	7.19
Occupational status	-0.19	0.09
Std. income	-2.44	-1.49
Married	-17.6***	-0.94
Size of locality	-1.62	1.91
Intercept	129.8***	105.1
Observations	2754	2754

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Outcome measure:  
NHP total score

Comparing random vs  
fixed effects estimates

Do the components of NHP tell us something about the mechanisms?



ENERGY  
LEVEL



PAIN



EMOTIONAL  
REACTION



SLEEP



SOCIAL  
ISOLATION



PHYSICAL  
ABILITIES



# Subjective social position and specific components of NHP

	<b>Energy level</b>	<b>Pain</b>	<b>Emotional reaction</b>	<b>Sleep</b>	<b>Social isolation</b>	<b>Physical abilities</b>
RE	-2.09	-1.70***	-1.30***	-1.38***	-1.26***	-0.65***
<b>FE</b>						

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Subjective social position and specific components of NHP

	<b>Energy level</b>	<b>Pain</b>	<b>Emotional reaction</b>	<b>Sleep</b>	<b>Social isolation</b>	<b>Physical abilities</b>
<b>RE</b>	-2.09	-1.70***	-1.30***	-1.38***	-1.26***	-0.65***
<b>FE</b>	-0.76	-0.99**	-0.31	-0.67*	-0.86*	-0.47*

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Discussion



Differences between individuals in subjective social position are strongly linked to their health outcomes by five out of six NHP components (RE results)



Changes in subjective social position is linked with changes in four out of six components of NHP (FE results)



Personality characteristics are not confounding the association between subjective social status and health



Do our results then indicate that subjective social position and health are causally associated?

# Limitations

01

We do not know if some unobserved time-varying characteristics affect both perceptions and health

02

Explaining self-reported health measures by self-reported social position might be problematic

03

Using lagged variables is problematic as it might lead to up to 10 years gap between SEP and NHP