2023 UK STATA CONFERENCE

USE OF STATA IN MODELING THE DETERMINANATS OF WORK ENGAGEMENT

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What will I talk about?

Work engagement in the existing research

At the **beginning of XXI** → the increase of interest in the WE

William Kahn (1990)

Practitioners & Academics (psychology of work and organisation, managemnet science, economy – not so much)

Metaanalysis (frequency of concept using in the scientific articles, models' review etc.)

Searching for a term in google: 2010 – 0,5 milion results (Shuck, Wollard), Today – **223 million**

Work engagement – definition & measurement

Positive state of mind connected with WORK which is characterised by: VIGOR (energy), DEDICATION (enthusiasm) and ABSORPTION

Measurement: UTRECHT WORK ENGAGEMENT SCALE

```
. tabulate Q90a

Q90a - At my work I |
feel full of energy |
[Please tell me how |
often you feel this |      Freq.     Percent        Cum.
--------------------+-----------------------------------
             Always |      8,154       18.60       18.60
      Most of the time |     22,679       51.72       70.33
          Sometimes |      9,882       22.54       92.85
             Rarely |      2,270        5.19       98.05
              Never |        653        1.49       99.53
DK (spontaneous) |        339        0.32       99.85
Refusal (spontaneous) |         65        0.15      100.00
--------------------+-----------------------------------
              Total |     43,850      100.00
```

Research question

In what way do working conditions, occupational characteristics, the level of human capital and some macroeconomic and macrosocial factors inluence or are correlated with the level of work engagement in EU countries?

Sources of data - data combining & cleaning

Final database

115 608 observations/101 variables/36 European countres

Eurofound – EWCS* 2015

Eurofound – EWCS* 2021

The World Bank (The World Governance Indicator/Doing Business)

Eurostat/Office for National Statistics (GDP per capita unemployment/employment rate)

European Social Survey (social trust)

*EWCS – European Working Conditions Survey

Modeling Work Engagement

Dependent (explained) variable
WORK ENGAGEMENT

↓

3 variables into **index**
replace **engagement_index*** =
(eng_energy + eng_enthusiastic + eng_timeflies) / 3 if eng_energy > 0 | eng_enthusiastic > 0 | eng_timeflies > 0

*EWCS concept

Explanatory variables (predictors)

↓

Clastering similar into groups according theory and existing models:

1. Working conditions
2. Working forms
3. Professional characteristics
4. Demographic and macro data
5. Human capital

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              Always  |      8,154       18.60       18.60
      Most of the time |     22,679       51.72       70.31
           Sometimes  |      9,882       22.54       92.85
              Rarely  |      2,278        5.19       98.05
               Never  |        653        1.49       99.53
   DK (spontaneous)   |        139        0.32       99.85
Refusal (spontaneous) |         65        0.15      100.00
----------------------+-----------------------------------
               Total  |     43,850      100.00
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Sources of data - data combining & cleaning

Obstacles

Due to change in the interviewing mode in EWCS (telephone interview) databases were more different than similar (many questions removed or reformulated)

↓

Only some variables: the same questions, scales, cafeteria style/response options → simple *merge* or *append* sometimes impossible

↓

Recoding, re-labeling, generating, replacing if…

Modeling Work Engagement

Dependent (explained) variable

WORK ENGAGEMENT

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*EWCS concept

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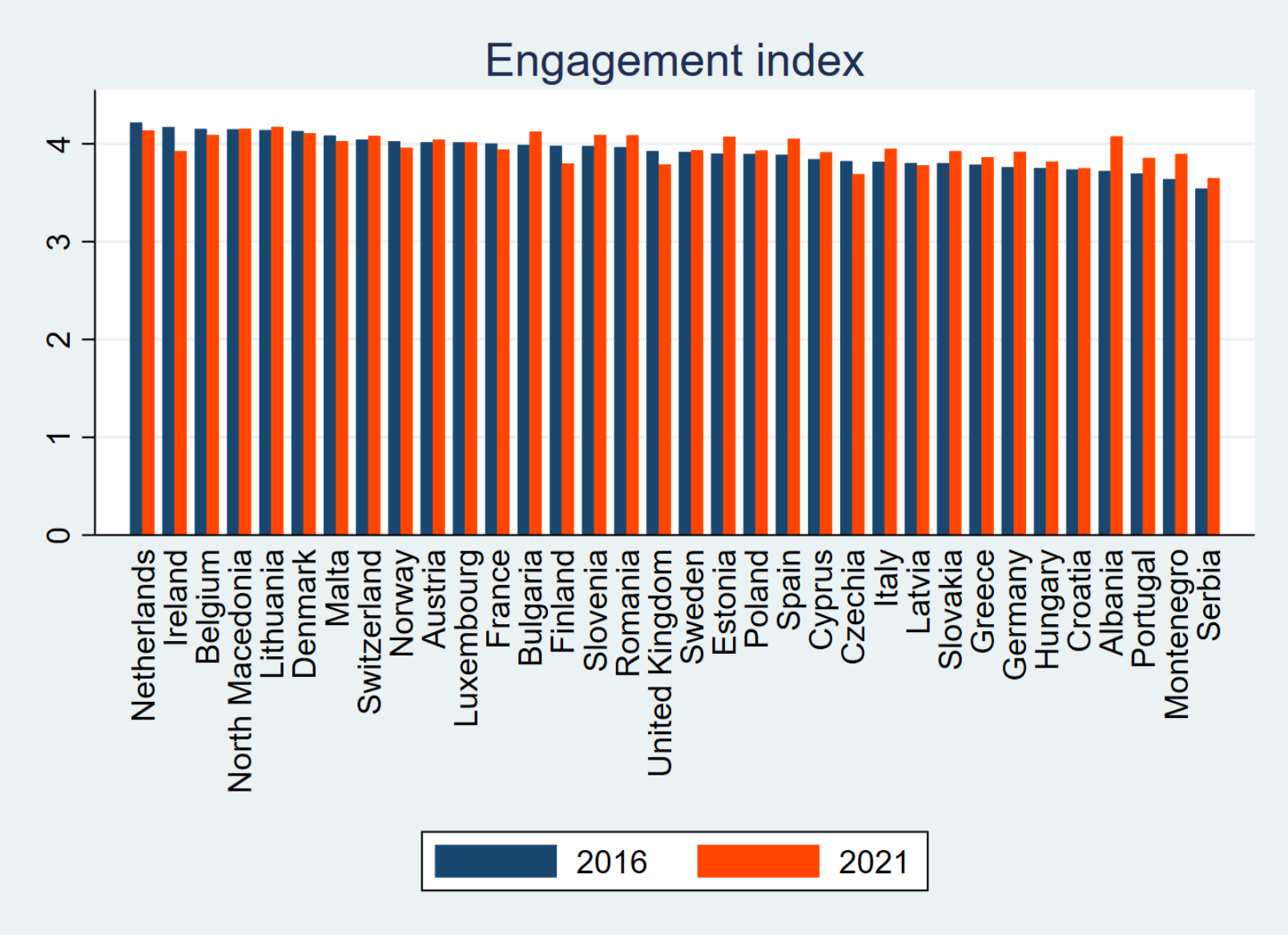
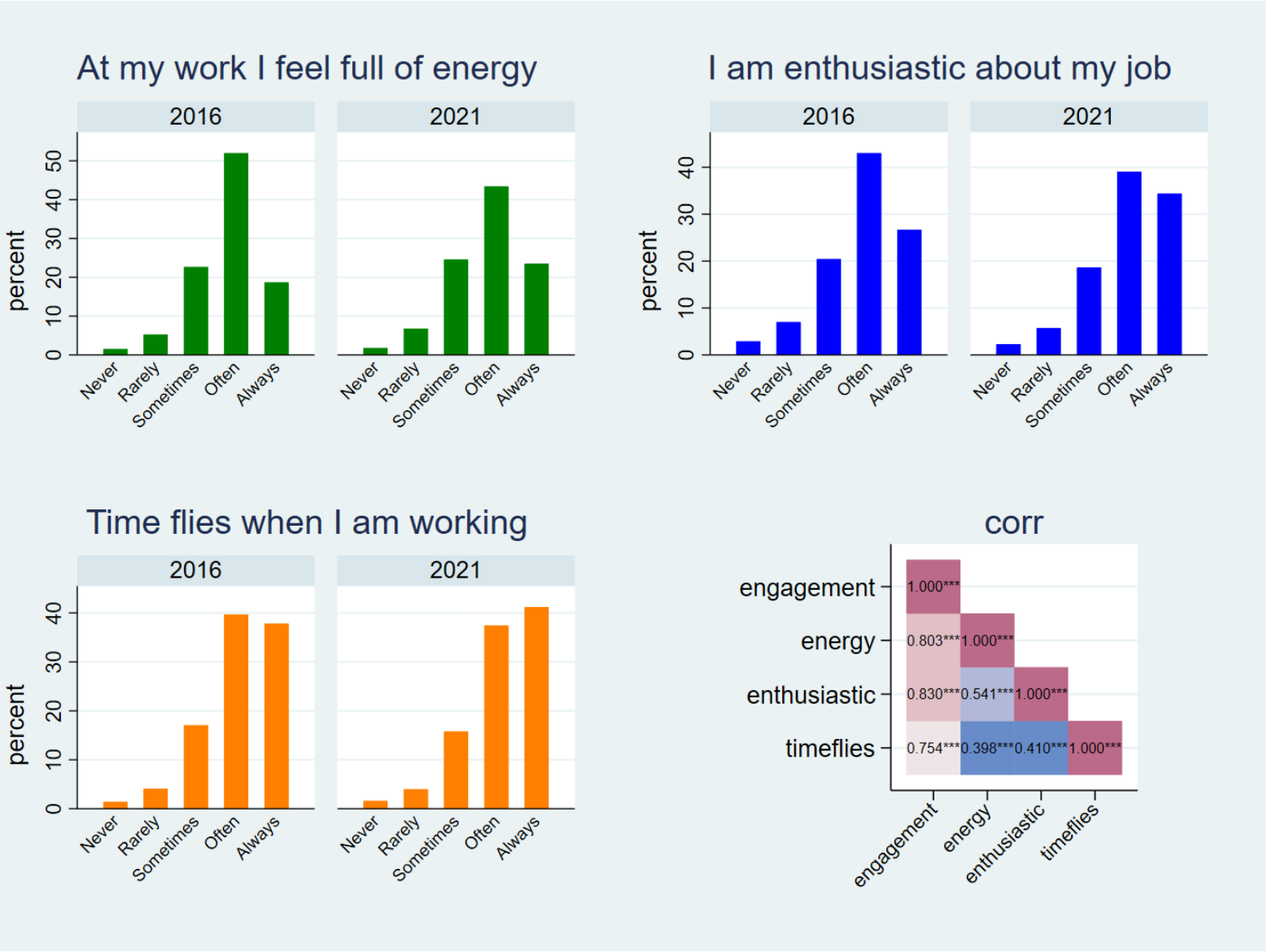

Engagement index
0
1
2
3
4
Netherlands
Ireland
Belgium
North Macedonia
Lithuania
Denmark
Malta
Switzerland
Norway
Austria
Luxembourg
France
Bulgaria
Finland
Slovenia
Romania
United Kingdom
Sweden
Estonia
Poland
Spain
Cyprus
Czechia
Italy
Latvia
Slovakia
Greece
Germany
Hungary
Croatia
Albania
Portugal
Montenegro
Serbia
2016
2021


At my work I feel full of energy
2016
2021
percent
0
10
20
30
40
50
Never
Rarely
Sometimes
Often
Always
I am enthusiastic about my job
2016
2021
percent
0
10
20
30
40
Never
Rarely
Sometimes
Often
Always
Time flies when I am working
2016
2021
percent
0
10
20
30
40
Never
Rarely
Sometimes
Often
Always
corr
engagement
energy
enthusiastic
timeflies
1.000***
0.803*** 1.000***
0.830*** 0.541*** 1.000***
0.754*** 0.398*** 0.410*** 1.000***
engagement
energy
enthusiastic
timeflies

Engagment index values – raw data	Obs	Mean	Std. Dev.	Min	Max
	2016				
energy	43,646	3.81114	0.84912	1	5
enthusiastic	43,608	3.834847	0.992722	1	5
timeflies	43,666	4.083154	0.912188	1	5
engagement	43,513	3.91054	0.743823	1	5
	2021				
energy	35,794	3.801559	0.932941	1	5
enthusiastic	35,778	3.975124	0.980793	1	5
timeflies	35,807	4.126288	0.926062	1	5
engagement	35,689	3.967702	0.738489	1	5
kwallis test by country and year, p<0.001					
Engagment - dummy (1 - Often/always)					
	2016				
energy	43,646	0.706434	0.455401	0	1
enthusiastic	43,608	0.696524	0.459764	0	1
timeflies	43,666	0.774332	0.418026	0	1
engagement	43,513	0.60529	0.488794	0	1
	2021				
energy	35,794	0.669135	0.470531	0	1
enthusiastic	35,778	0.733943	0.441901	0	1
timeflies	35,807	0.786159	0.410022	0	1
engagment_index	35,689	0.627869	0.48338	0	1
kwallis test by country and year, p<0.001					

Variable	Obs	Mean	Std. Dev.	Min	Max
part_time	111,995	1.82357	0.381185	1	2
usual_hour~k	111,290	39.0136	12.97009	1	168
totalhour	111,290	39.7282	13.75106	1	328
usual_days	78,270	5.01069	0.997512	1	7
hours_othe~k	5,407	15.0847	14.65248	0	160
telework	62,618	3.1185	1.804509	1	6
night	114,760	1.31	0.462493	1	2
noise	91,233	1.98115	1.211407	1	5
chemicals	115,311	1.68081	1.164316	1	5
infect	115,270	1.51694	1.07451	1	5
tiring_pos~s	91,169	2.40017	1.299172	1	5
lifting	115,398	1.34891	0.905825	1	5
carrying_l~s	115,452	1.96399	1.223251	1	5
repetitive~s	91,201	2.69707	1.524617	1	5
dealing_cu~s	115,340	3.2904	1.538028	1	5
computer	115,425	3.53158	1.611857	1	5
loc_home	115,056	2.17098	1.496812	1	5
commute_ti~s	68,484	42.7448	36.96349	1	480
osh_risk	114,349	1.71805	0.449952	1	2
ISCO_1_08	115,420	5.10121	2.430923	1	10
employee_s~d	114,691	1.14986	0.356939	1	2
selfemp_di~r	79,895	0.08333	0.276389	0	1
selfemp_bu~r	79,895	0.02384	0.152563	0	1
selfemp_wo~f	79,895	0.1114	0.314624	0	1
selfemp_su~r	79,895	0.01351	0.115425	0	1
selfemp_fr~r	79,895	0.0293	0.16865	0	1
selfemp_pa~y	79,895	0.00344	0.058568	0	1
selfemp_wi~s	16,927	1.67957	0.466658	1	2
NACE_broad~s	115,315	5.97484	3.11924	1	16
private_se~r	114,272	1.49184	0.873256	1	5
wp_size	85,237	4.36867	1.983883	1	8
number_job~r	115,408	1.07552	0.264235	1	2
gender_rec~d	115,608	1.48459	0.504107	1	9
age	115,316	42.4956	12.49371	15	89
seniority	114,067	9.84273	10.0821	0	75
ISCED_11	115,082	5.47237	1.874073	1	9

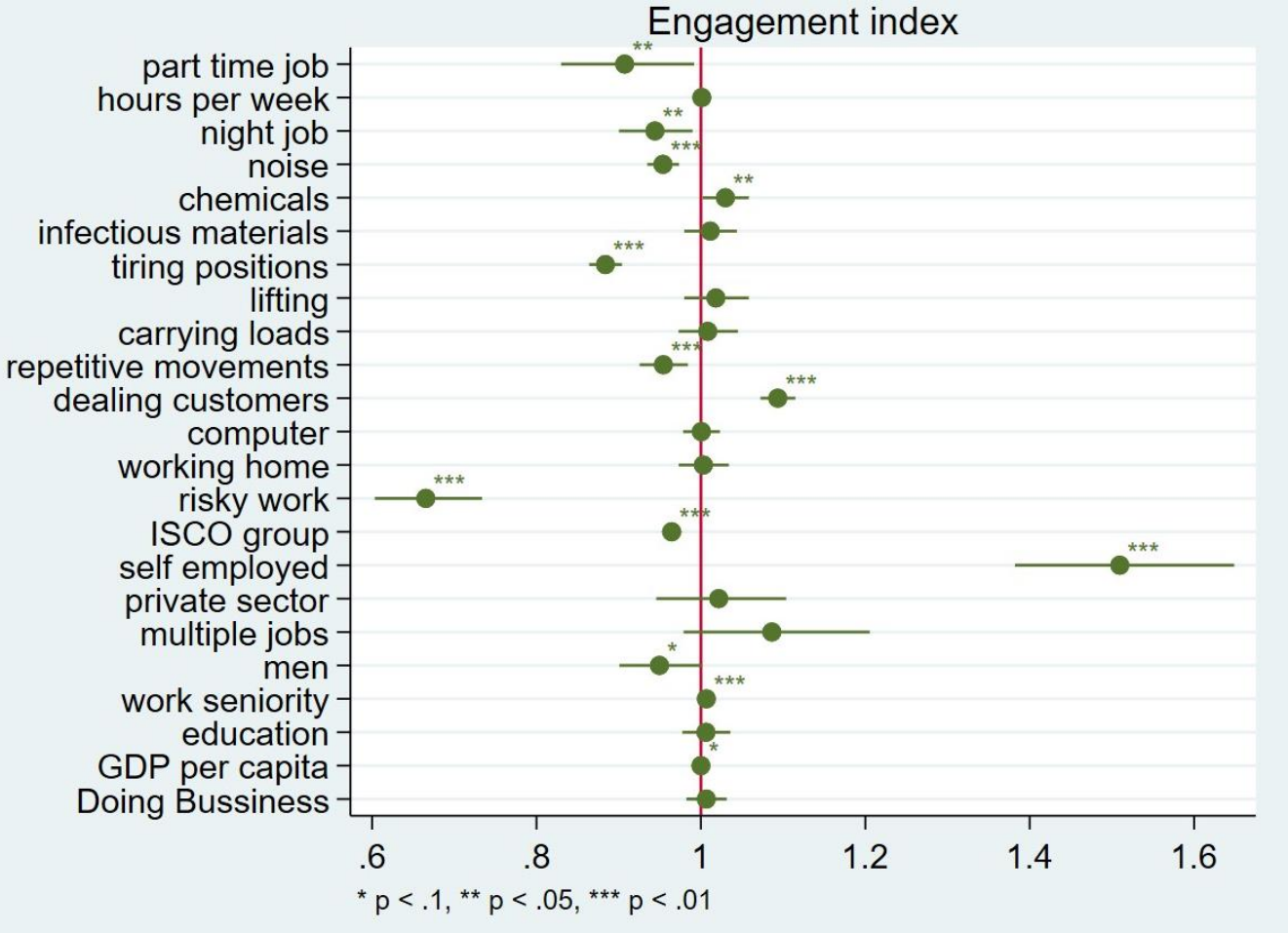
Explanatory variables

PLUS MACRO VARIABLES:

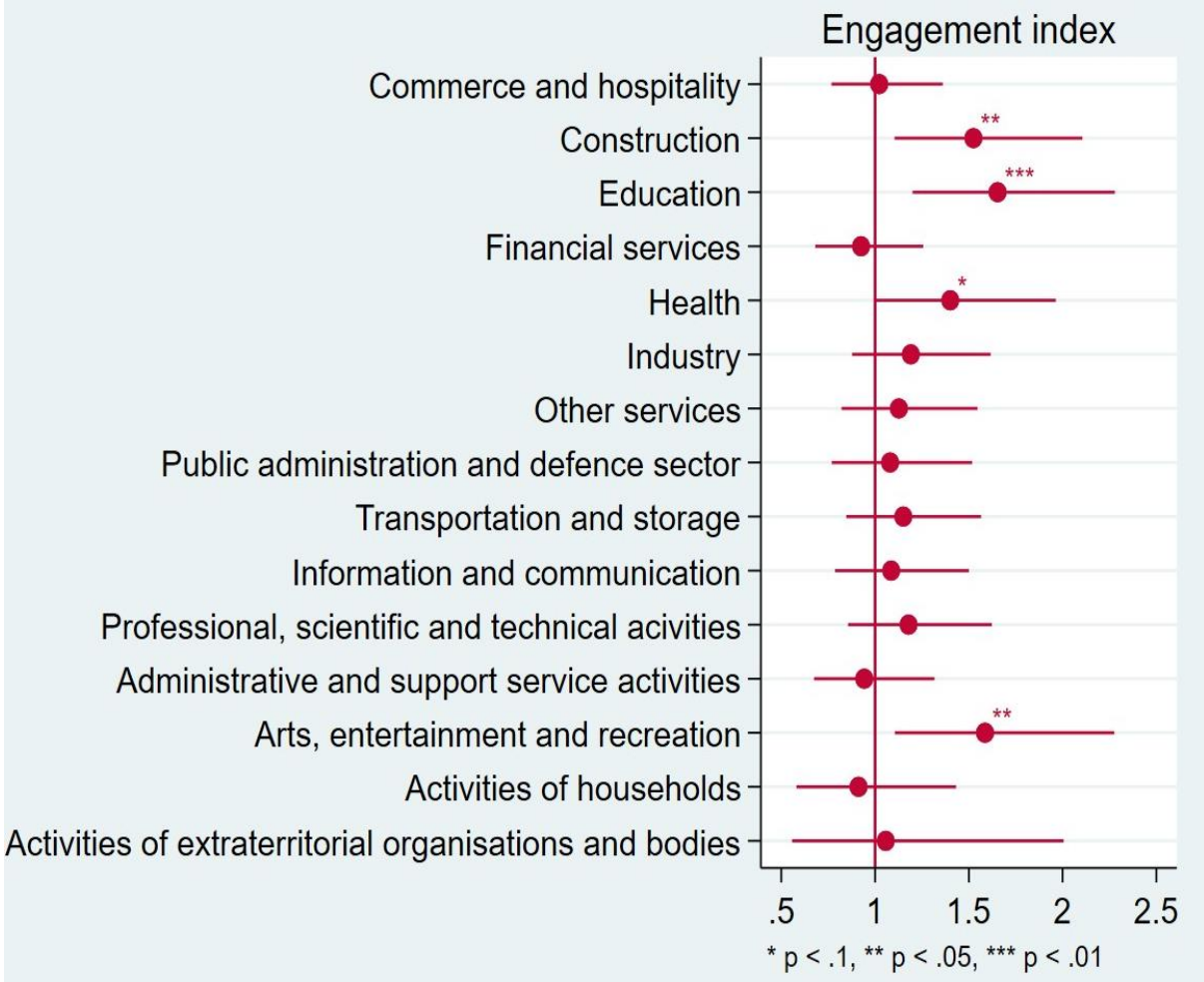
GDP per capita

Doing Business

Continue



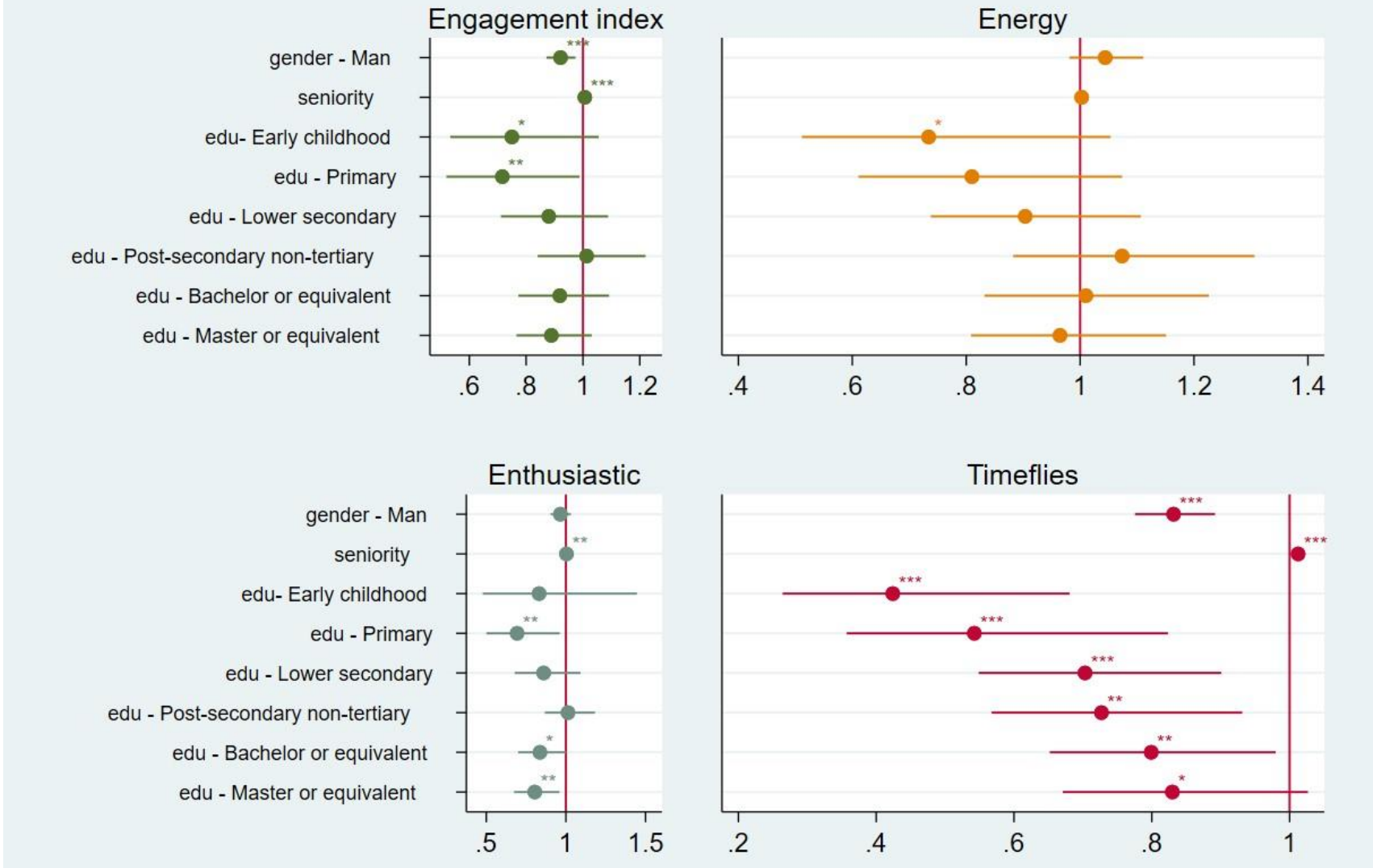
Non-continue variables



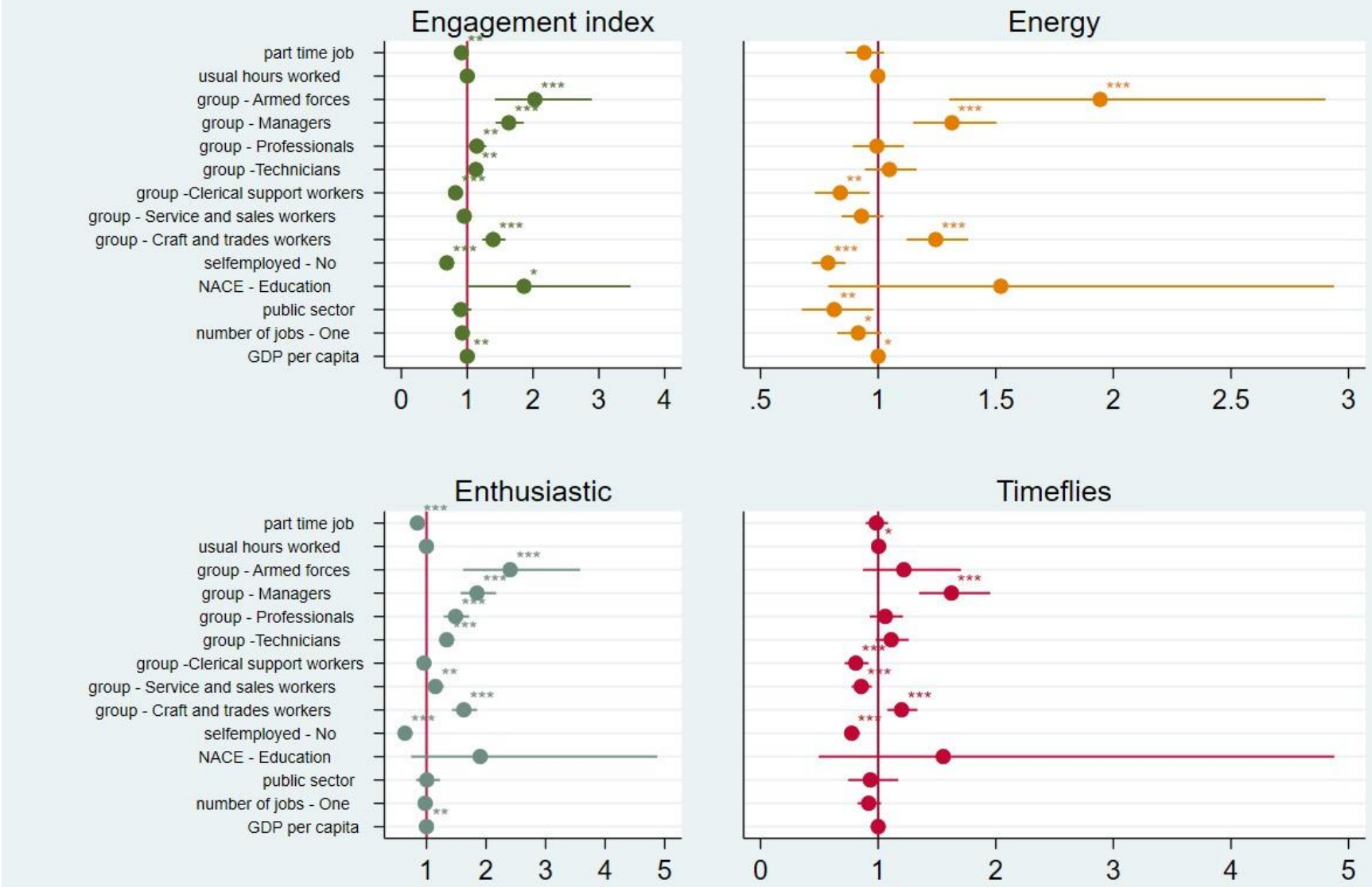
VARIABLES	index	energy	enthusiastic	timeflies
part time job	0.907**	0.933	0.842***	0.969
usual hours week	1.001	0.999	1.000	1.004**
night job	0.944**	0.946**	0.964	0.917***
noise	0.954***	0.957***	0.963***	0.973**
chemicals	1.030**	1.009	1.027*	1.020
infectious materials	1.011	1.000	1.016	0.994
tiring positions	0.884***	0.875***	0.890***	0.922***
lifting	1.018	1.041*	1.043**	0.944***
carrying loads	1.008	1.021	1.006	1.040**
repetitive movements	0.954***	0.933***	0.937***	0.955***
dealing customers	1.093***	1.084***	1.098***	1.044***
computer	1.001	0.966***	1.008	0.997
working home	1.003	0.967**	1.016	1.041**
risk work	0.665***	0.575***	0.620***	0.815***
ISCO (professional group)	0.964***	0.981***	0.948***	0.966***
selfemployed	1.510***	1.335***	1.620***	1.312***
private sector	1.022	1.096**	0.985	0.988
multiple jobs	1.086	1.094	1.020	1.103*
men	0.950*	1.075**	1.010	0.865***
seniority	1.007***	1.003	1.004**	1.013***
ISCED (edu)	1.006	1.012	1.016	1.034**
GDP per capita	1.000*	1.000*	1.000**	1.000
NACE				
Doing Bus	1.007	0.990	1.027*	1.005
Constant	0.922	5.891**	0.292	2.155
Observations	55,024	55,137	55,114	55,154
*** p<0.01, ** p<0.05, * p<0.1				

VARIABLES	index	energy	enthusiastic	timeflies
Commerce and hospitality	1.022	1.080	1.054	0.906
Construction	1.524**	1.425**	1.624***	1.373***
Education	1.653***	1.597***	1.969***	1.337**
Financial services	0.925	0.966	0.914	1.043
Health	1.401*	1.376**	1.586***	1.305**
Industry	1.191	1.155	1.248	1.092
Other services	1.127	1.102	1.293*	0.979
Public administration and defence sector	1.080	1.213	1.102	0.954
Transportation and storage	1.151	1.113	1.170	1.059
Information and communication	1.086	1.255*	1.220	0.948
Professional, scientific and technical acivities	1.178	1.165	1.283	1.048
Administrative and support service activities	0.942	1.022	0.961	0.968
Arts, entertainment and recreation	1.586**	1.555**	2.072***	1.092
Activities of households	0.912	1.043	0.800	0.935
Activities of extraterritorial organisations	1.057	1.286	1.132	0.941

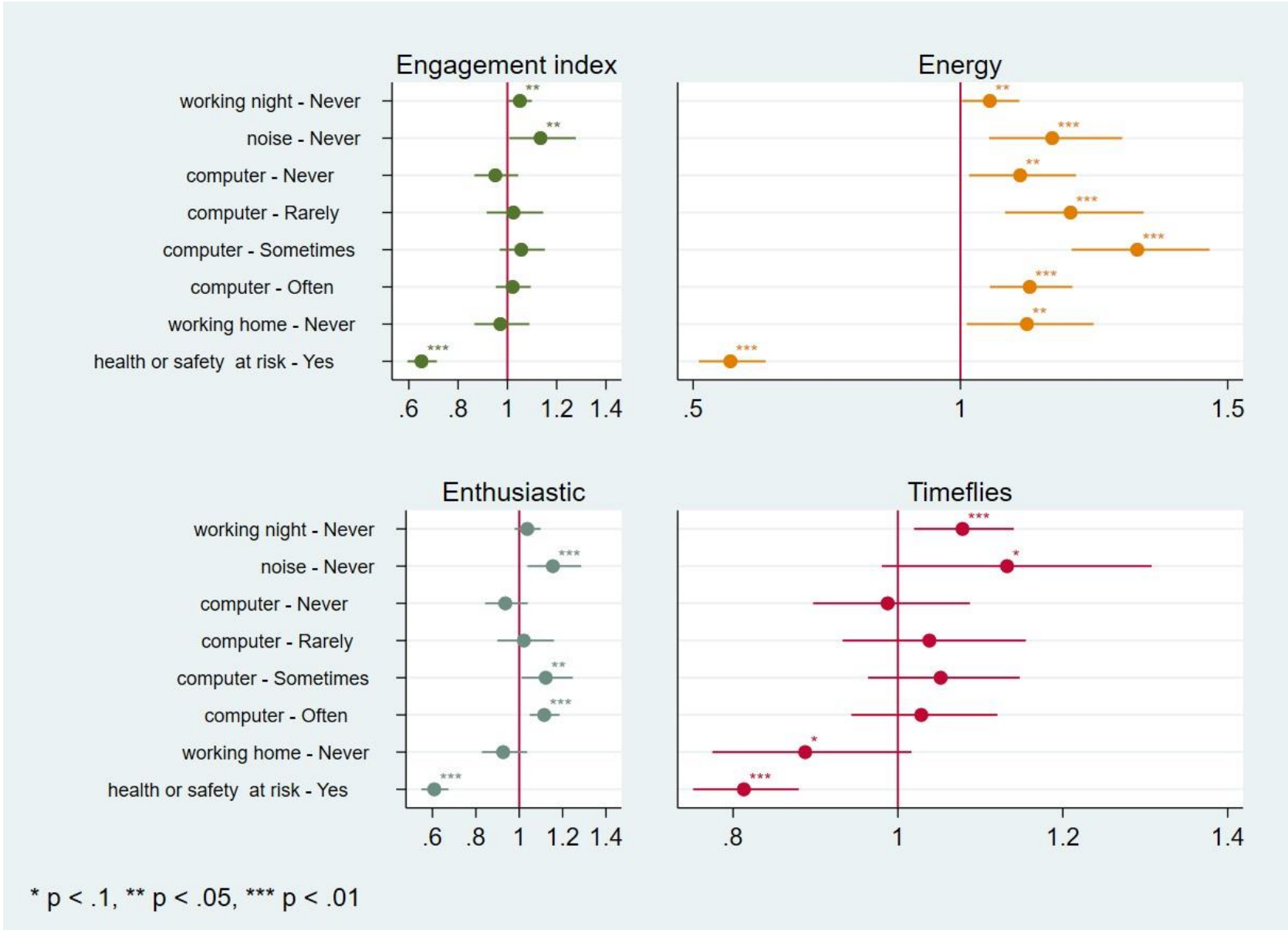
Ordinal variables

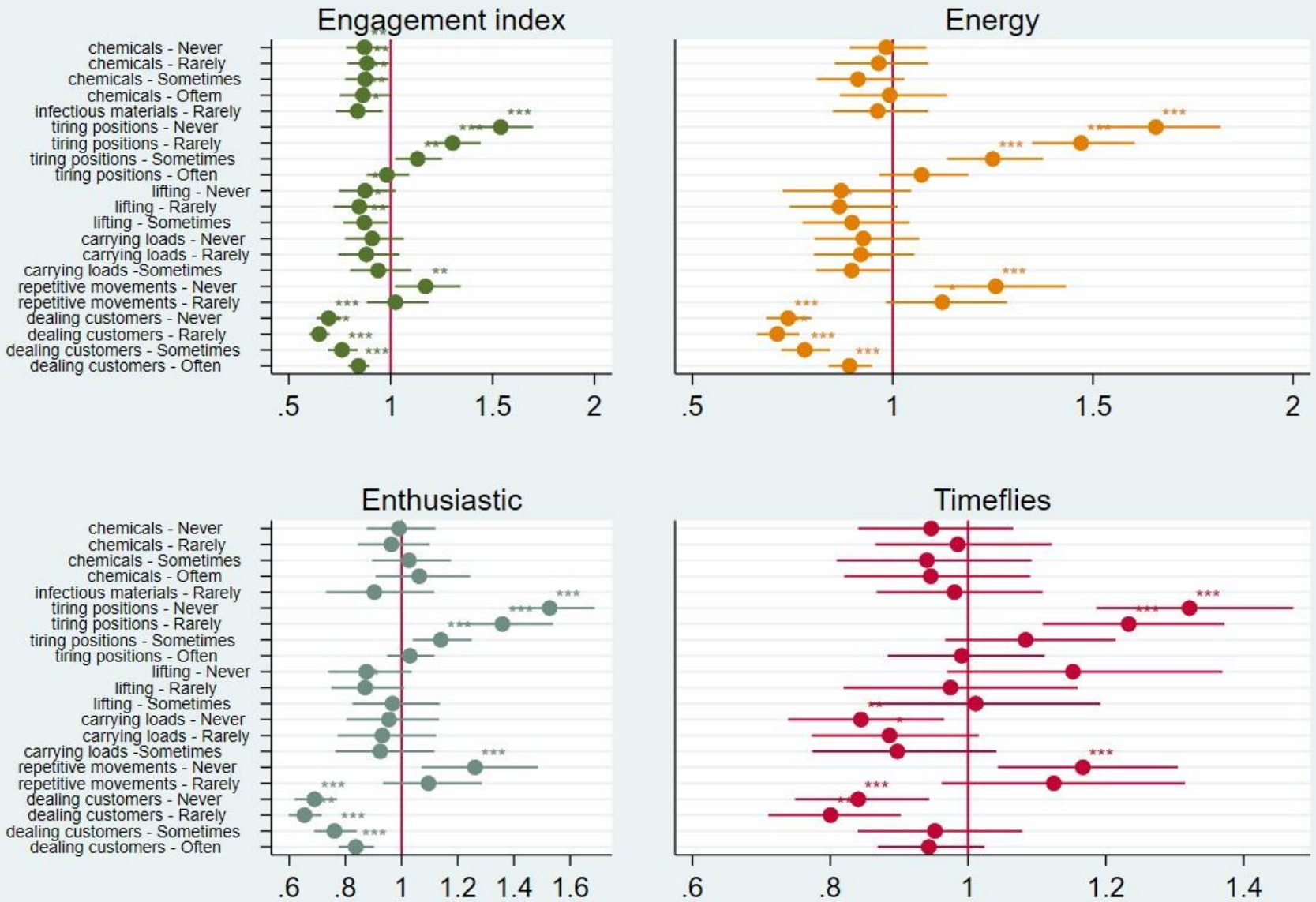


* p < .1, ** p < .05, *** p < .01


Engagement index
part time job
usual hours worked
group - Armed forces
group - Managers
group - Professionals
group -Technicians
group -Clerical support workers
group - Service and sales workers
group - Craft and trades workers
selfemployed - No
NACE - Education
public sector
number of jobs - One
GDP per capita
0
1
2
3
4
Energy
.5
1
1.5
2
2.5
3
Enthusiastic
1
2
3
4
5
Timeflies
0
1
2
3
4
5

* p < .1, ** p < .05, *** p < .01


Engagement index
working night - Never
noise - Never
computer - Never
computer - Rarely
computer - Sometimes
computer - Often
working home - Never
health or safety at risk - Yes
.6
.8
1
1.2
1.4
Energy
.5
1
1.5
Enthusiastic
Timeflies
* p < .1, ** p < .05, *** p < .01


Engagement index
chemicals - Never
chemicals - Rarely
chemicals - Sometimes
chemicals - Oftem
infectious materials - Rarely
tiring positions - Never
tiring positions - Rarely
tiring positions - Sometimes
tiring positions - Often
lifting - Never
lifting - Rarely
lifting - Sometimes
carrying loads - Never
carrying loads - Rarely
carrying loads -Sometimes
repetitive movements - Never
repetitive movements - Rarely
dealing customers - Never
dealing customers - Rarely
dealing customers - Sometimes
dealing customers - Often
.5
1
1.5
2
Energy
.5
1
1.5
2
Enthusiastic
chemicals - Never
chemicals - Rarely
chemicals - Sometimes
chemicals - Oftem
infectious materials - Rarely
tiring positions - Never
tiring positions - Rarely
tiring positions - Sometimes
tiring positions - Often
lifting - Never
lifting - Rarely
lifting - Sometimes
carrying loads - Never
carrying loads - Rarely
carrying loads -Sometimes
repetitive movements - Never
repetitive movements - Rarely
dealing customers - Never
dealing customers - Rarely
dealing customers - Sometimes
dealing customers - Often
.6
.8
1
1.2
1.4
1.6
Timeflies
.6
.8
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1.2
1.4

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References

Eurofound. (2022). European Working Conditions Telephone Survey, 2021. [data collection]. UK Data Service. SN: 9026, DOI: 10.5255/UKDA-SN-9026-1

European Foundation for the Improvement of Living and Working Conditions. (2017). European Working Conditions Survey, 2015. [data collection]. 4th Edition. UK Data Service. SN: 8098, http://doi.org/10.5255/UKDA-SN-8098-4

Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work.
And the only way to do great work is to love what you do.
If you haven't found it yet, keep looking (Steve Jobs).

Thank you for your attention!