

# Unhappiness is Unpredictability/Instability

## Online Appendix (Supplementary Online Material)

Saturday 29<sup>th</sup> November, 2025 14:02

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## 1 Relationships among variables, and choice of controls

We left the original tables in the body of the manuscript, as sequential elaboration of the models with predictors of the dependent variable in addition to main (unpredictability/instability) independent variables is the usual practice. But here we elaborate and use various “robustness” and “sensitivity” checks and provide more discussion.

While overall, some negative effect of the unpredictability/instability measures on SWB often holds, there are many nuances as elaborated here.

Specifically, here we address the editorial by Bartram et al. (2024) as per choice of control variables. We explore what may predict unpredictability/instability.

We proceed as follows. We start with pairwise correlations to get an overall sense of relationships. Then we use Specification Curves Analysis (SCA) to find out how model specification affects statistical significance and effect size of the main (unpredictability/instability) independent variables. Then having identified key control variables with pairwise correlations and SCA we focus on these in additional sensitivity/robustness models.

## 1.1 Pairwise correlations

We take main hours variables from first 2 tables and also 2 main scheduling variables from last 2 tables and control variables from regressions.

In table 1 high correlations are mostly among the main independent variables measuring unpredictability/instability that are in regressions separately<sup>1</sup> Most others are small  $|0 - .3|$ , with few exceptions:

- income is most correlated with other controls, no wonder it then changes significance a lot when introduced in our—it correlates with following, all as expected:
  - married .4
  - education .4
  - paid by the hour -.4
- paid by the hour correlates with education at -.4, also as expected
- a control we introduce in specification #4 in each table, ‘‘number of hours worked last week’’ correlates highly at .6 to .8 with key unpredictability/instability independent variables based on working hours, as expected: ‘‘most hrs/week worked in past month’’, ‘‘fewest hrs/week worked in past month’’, and ‘‘how many hrs/week do you usually work’’.

## 1.2 Specification Curves Analysis (SCA)

Here we use Stata’s speccurve to analyze effect size and statistical significance by specification.

Just to orient discussion, in SCAs below we designate as main in red color middle specification #3, somewhat balancing underfitting and overfitting, from each regression table in the body of the paper.

Figures 1 2 show that family income ‘‘realinc’’ is most important variable—subtraction of income in later specifications across the x axis decreases both significance and effect size most substantially of all variables.

In figure 3—here health decreases significance and effect size as opposed to income earlier, and does so very clearly—once health is added, the drop (towards 0) is clear.

In figure 4 the pattern is more complex—first, dropping health and then income decrease effect size and significance.

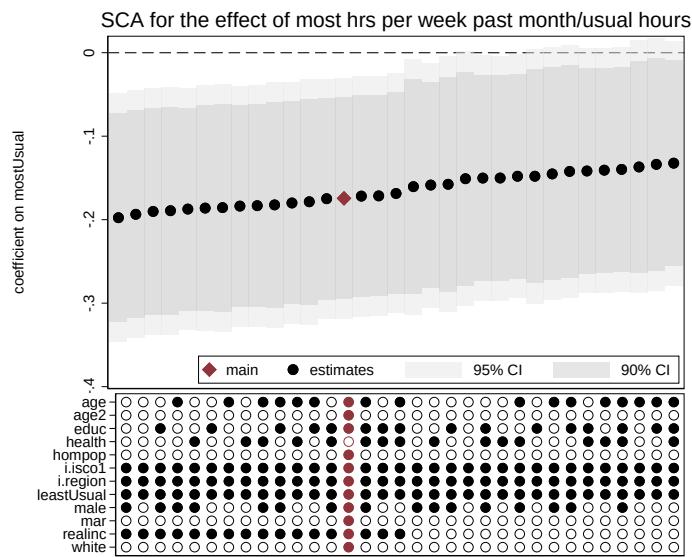
To summarize, clearly both health and income matter for unpredictability/instability’s effect and significance and both can make unpredictability/instability more or less bearable (in terms of SWB).

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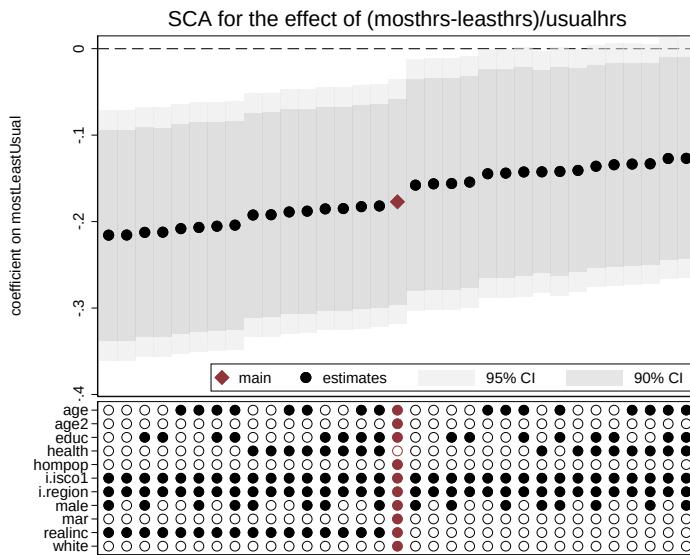
<sup>1</sup>With exception of the first regression table, where we have both ‘‘fewest hrs per week past month/usual hours’’ and ‘‘most hrs per week past month/usual hours’’ that correlate at .4.

**Table 1:** Cross-correlation table

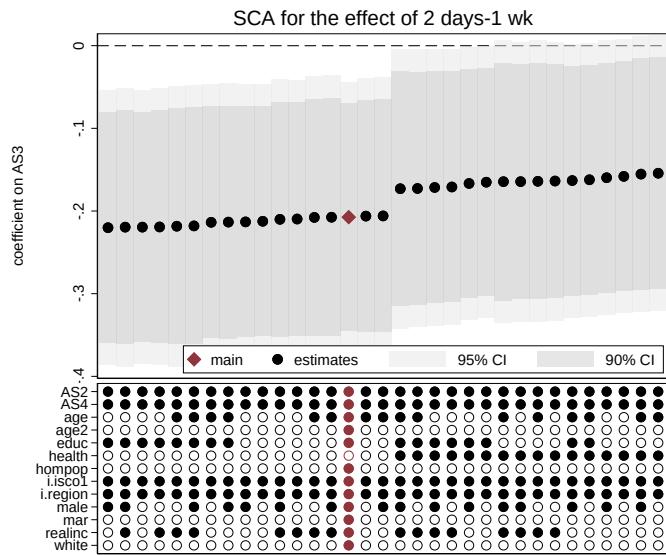
Variables	SWB	most hrs/week worked in past month	fewest hrs/week worked in past month	how many hrs/week do you usually work	fewest hrs per week past month/usual hours	most hrs per week past month/usual hours	(mosthrs-leasthrs)/usualhrs	family income in \$1986, millions	age	age squared	married	highest year of school completed	male	number of persons in household	white	number of hours worked last week	health	decide working hours	paid by the hour
SWB	1.0																		
most hrs/week worked in past month	0.0	1.0																	
fewest hrs/week worked in past month	0.1	0.6	1.0																
how many hrs/week do you usually work	0.1	0.7	0.6	1.0															
fewest hrs per week past month/usual hours	0.0	0.1	0.7	-0.1	1.0														
most hrs per week past month/usual hours	-0.0	0.4	0.1	-0.2	0.4	1.0													
(mosthrs-leasthrs)/usualhrs	-0.1	0.3	-0.5	-0.1	-0.5	0.6	1.0												
family income in \$1986, millions	0.2	0.1	0.1	0.2	-0.1	-0.0	0.0	1.0											
age	0.1	-0.2	-0.1	-0.1	0.0	-0.1	-0.1	0.2	1.0										
age squared	0.1	-0.2	-0.1	-0.2	0.0	-0.1	-0.1	0.2	1.0	1.0									
married	0.2	0.0	0.1	0.0	0.1	0.0	-0.0	0.4	0.2	0.2	1.0								
highest year of school completed	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.1	0.1	0.1	0.1	1.0							
male	0.0	0.3	0.2	0.3	0.1	0.1	0.0	0.1	-0.1	-0.1	0.1	-0.1	1.0						
number of persons in household	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	0.2	-0.2	-0.2	0.3	-0.1	0.0	1.0					
white	0.1	-0.0	-0.0	0.0	-0.1	-0.1	-0.0	0.1	0.1	0.1	0.1	0.1	0.0	-0.0	1.0				
number of hours worked last week	0.1	0.8	0.6	0.8	0.0	0.1	0.0	0.1	-0.0	-0.1	0.0	0.1	0.2	-0.0	0.0	1.0			
health	0.2	-0.0	0.1	-0.0	0.1	0.0	-0.1	0.2	0.0	0.0	0.1	0.2	-0.0	-0.0	0.1	-0.0	1.0		
decide working hours	0.0	0.1	-0.1	0.1	-0.1	0.1	0.2	0.2	0.0	0.0	0.2	0.1	-0.0	0.0	0.1	0.0	0.0	1.0	
paid by the hour	-0.2	-0.1	-0.1	-0.2	0.0	0.1	0.0	-0.4	-0.1	-0.0	-0.1	-0.4	-0.1	0.0	-0.1	-0.1	-0.2	-0.2	



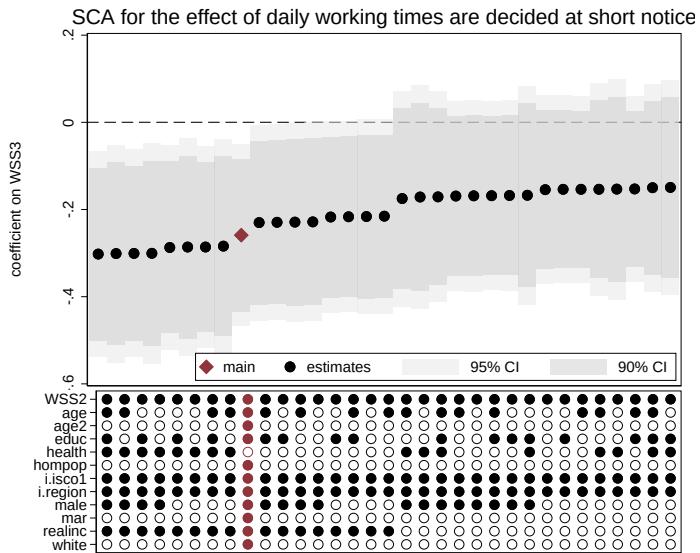
**Figure 1**



**Figure 2**



**Figure 3**



**Figure 4**

### 1.3 Additional sensitivity/robustness models

Finally, as per SCA we focus on health and income and rerun regressions from the body below. We also focus on industry dummies here (which are also explored in greater detail in subsequent section).

All in all across specifications results from the body mostly hold, but depending on the unpredictability/instability variable, significance and effect sizes vary as discussed below.

In table 2 the range of estimates on ‘‘most hrs per week past month/usual hours’’ is -.14 to -.18 sig at least at 10%. Controlling for industry dummies in e5 doesn't change results much relative to e1.

	e1	e2	e3	e4	e5
fewest hrs per week past month/usual hours	0.13	0.23*	0.08	0.18	0.17
most hrs per week past month/usual hours	-0.14+	-0.18*	-0.14+	-0.16*	-0.15*
family income in \$1986, millions		4.33***		3.52***	
health			0.20***	0.16***	
professional					0.00
administrative/managerial					0.00
clerical					-0.22*
sales					-0.23*
service					-0.14
agriculture					-0.27
production,transport					-0.07
craft, technical					-0.22*
constant	2.26***	2.06***	1.70***	1.63***	2.34***
N	488	461	488	461	484
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

**Table 2:** OLS regressions of life satisfaction.

In table 3 (mosthrs-leasthrs)/usualhrs range -.12 to -.19 sig at least at 10%, except p-value slightly higher at .102 when only controlling for health. Controlling for industry dummies in f5 results slightly stronger than in f1.

	f1	f2	f3	f4	f5
(mosthrs-leasthrs)/usualhrs	-0.14+	-0.19**	-0.12	-0.17*	-0.16*
family income in \$1986, millions		4.31***		3.50***	
health			0.19***	0.16***	
professional					0.00
administrative/managerial					0.00
clerical					-0.22*
sales					-0.23*
service					-0.14
agriculture					-0.27
production,transport					-0.07
craft, technical					-0.22*
constant	2.24***	2.11***	1.65***	1.65***	2.36***
N	488	461	488	461	484
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

**Table 3:** OLS regressions of life satisfaction.

In table 4 more unstable as high as .2 without controls, and insignificant controlling for health, or for health and income. Controlling for industry dummies in g5 results similar in g1.

	g1	g2	g3	g4	g5
-1 day	-0.06	-0.03	0.00	0.02	-0.02
2 days-1 wk	-0.20*	-0.16+	-0.13	-0.11	-0.19*
1 wk-	-0.15*	-0.14+	-0.12	-0.11	-0.15*
family income in \$1986, millions		4.20***		3.61***	
health			0.17***	0.14***	
professional					0.00
administrative/managerial					0.00
clerical					-0.22*
sales					-0.23*
service					-0.11
agriculture					-0.38
production,transport					-0.10
craft, technical					-0.22*
constant	2.28***	2.12***	1.73***	1.69***	2.39***
N	497	467	497	467	492
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

**Table 4:** OLS regressions of life satisfaction.

In table 5 here as strong as -.24, controlling for health insig, but controlling both for health and for income back to significance. Industry dummies kill significance in h5 v bivariate h1.

	h1	h5	h2	h3	h4
schedule or shift regularly changes	-0.04	-0.03	-0.04	-0.04	-0.05
daily working times are decided at short notice	-0.20+	-0.16	-0.24*	-0.14	-0.26*
professional	0.00				
administrative/managerial	-0.04				
clerical	-0.20*				
sales	-0.20*				
service	-0.22*				
agriculture	-0.31				
production, transport	-0.13				
craft, technical	-0.30***				
family income in \$1986, millions		4.29***			3.90***
health			0.18***	0.14***	
constant	2.20***	2.35***	2.05***	1.67***	1.65***
N	751	745	705	498	469
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

**Table 5:** OLS regressions of life satisfaction.

## 1.4 Unpredictability/Instability means by income, health, and occupations

Here we provide some additional descriptive statistics. First by income and health. Second, by occupations.

### 1.4.1 Income and health

Here we split income at median in table 6: realinc2 category # being income above the median. In that category there is slightly less unpredictability/instability on ‘‘most hrs per week past month/usual hours’’, ‘‘most hrs per week past month/usual hours’’, and ‘‘daily working times are decided at short notice’’. And there is a big difference on ‘‘2 days-1 wk’’—it is almost 2x lower for those with income above median—unpredictability/instability on this measure is much lower for high earners.

In table 7, those in good or excellent health (v poor or fair), have actually more instability on first 2 metrics, but slightly less on the following 2, and much less on the last one (‘‘2 days-1 wk’’).

realinc2	fewest hrs per week past month/usual hours	most hrs per week past month/usual hours	most hrs per week past month/usual hours	daily working times are decided at short notice	2 days-1 wk
1	0.85	1.19	0.34	0.05	0.25
2	0.85	1.16	0.31	0.04	0.13

**Table 6**

gooExcHea	fewest hrs per week past month/usual hours	most hrs per week past month/usual hours	most hrs per week past month/usual hours	daily working times are decided at short notice	2 days-1 wk
0.8	1.15	0.34	0.06	0.29	
1	0.86	1.2	0.33	0.05	0.18

**Table 7**

### 1.4.2 Occupations

Here we use International Standard Classification of Occupations (ISCO) that we collapsed to 1-digit groupings.

Clearly unpredictability/instability is an attribute of occupations. Hence, it is a key variable to consider here. While in the body of the paper we do include more elaborate specifications these dummies, here we provide more information: means (and counts) of each unpredictability/instability measure by occupation.

Note, there are very few people in agriculture—can’t interpret agriculture.

On leastU1 “fewest hrs per week past month/usual hours” not much difference except that service is slightly lower. So service varies more than others—the lowest hours for service are lower than elsewhere relative to usual hours.

On mostUsl “most hrs per week past month/usual hours” and mostLel “(mosthrs-leasthrs)/usualhrs” not much difference, but production/transport is slightly higher. Production/transport hours highest hours are higher than for other occupations relative to usual hours. And in production/transport there is also bigger difference between most and least hours relative to usual hours ((mosthrs-leasthrs)/usualhrs) versus other occupations.

On WSS3 “daily working times are decided at short notice”: production/transport and especially craft/technical are much higher, 2x or more than the rest.

On AS3 “2 days-1 wk” is higher on professional and craft/technical, but especially on service, 2x or more higher.

Thus while there are different patterns across unpredictability/instability metrics, production/transport, craft/technical, and service show different levels. Most if not all of these are probably as expected. We do not make too much out of it as occupational sectors are not the focus of the paper, rather a control variable; and cell sizes are quite small in the table below

```
. tabstat leastUsual mostUsual mostLeastUsual WSS3 AS3, by(isco1)format(%9.2f)noto stat(mean n)
```

Summary statistics: Mean, N  
Group variable: isco1 (1 digit occupation)

isco1	leastU1	mostUsl	mostLel	WSS3	AS3
professional	0.83   74	1.16   74	0.34   74	0.03   110	0.24   74
administrative/ managerial	0.83   107	1.20   107	0.34   106	0.04   159	0.14   108
clerical	0.88   86	1.18   85	0.30   85	0.04   128	0.16   85
sales	0.88   53	1.16   53	0.28   53	0.04   79	0.19   53
service	0.78   61	1.16   62	0.38   61	0.04   94	0.36   66
agriculture	0.68   3	1.28   3	0.60   3	0.25   4	0   3
production/transpo	0.88   39	1.28   39	0.39   39	0.07   69	0.15   39
craft/technical	0.87   65	1.17   64	0.30   64	0.11   103	0.22   65

## 2 Using personal income instead of family income

In the body of the paper we have used family income; now as a robustness check we use personal income (they correlate at .73).

Note that using family income in the body of the paper as opposed to person's income is somewhat adjusted by controlling for size of the household.

Income is an important variable as per discussion in this appendix in other sections. And likewise using personal income v family income has large effect on many estimates as elaborated below.

Results on “most hrs per week past month/usual hours” are cut by as much as half. Still the sign is the same, but we mostly lost the statistical significance. In fact, in both tables 8 and 9 we have lost statistical significance on unpredictability/instability measures.

	a1	a2	a3	a4	a5
fewest hrs per week past month/usual hours	0.13	0.08	0.06	0.04	0.02
most hrs per week past month/usual hours	-0.14+	-0.09	-0.11	-0.10	-0.08
r's income in constant usd	0.00+	0.00	0.00	0.00	-0.00
age			0.34***	0.31***	0.33***
age squared			-0.00	-0.00	-0.00
married			0.34***	0.31***	0.33***
highest year of school completed			-0.02	-0.03*	-0.04**
male			0.09	0.08	0.07
number of persons in household			-0.02	-0.02	-0.02
white			0.04	0.03	0.03
professional			0.00	0.00	0.00
administrative/managerial			-0.02	-0.01	0.01
clerical			-0.14	-0.17	-0.11
sales			-0.23+	-0.25*	-0.19+
service			-0.14	-0.11	-0.08
agriculture			-0.16	-0.04	0.04
production,transport			-0.12	-0.10	0.02
craft, technical			-0.18	-0.18	-0.16
new england			0.00	0.00	0.00
middle atlantic			-0.11	-0.05	-0.03
east north central			-0.31*	-0.23+	-0.24+
west north central			-0.34*	-0.31*	-0.33*
south atlantic			-0.30*	-0.28*	-0.28*
east south atlantic			-0.21	-0.12	-0.10
west south central			-0.19	-0.13	-0.13
mountain			-0.11	-0.06	-0.03
pacific			-0.29*	-0.18	-0.17
number of hours worked last week			0.00	0.00	0.00
health				0.19***	0.19***
decide working hours					-0.01
paid by the hour					-0.18*
constant	2.26***	2.19***	2.58***	2.07***	2.29***
N	488	415	412	412	396

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 8:** OLS regressions of life satisfaction.

	b1	b2	b3	b4	b5
(mosthrs-leasthrs)/usualhrs	-0.14+	-0.09	-0.09	-0.08	-0.05
r's income in constant usd	0.00+	0.00	0.00	0.00	-0.00
age		0.00	0.00	0.00	0.01
age squared		-0.00	-0.00	-0.00	-0.00
married		0.34***	0.31***	0.33***	
highest year of school completed		-0.02	-0.03*	-0.04**	
male		0.09	0.08	0.07	
number of persons in household		-0.02	-0.01	-0.02	
white		0.05	0.04	0.03	
professional		0.00	0.00	0.00	
administrative/managerial		-0.02	-0.02	0.00	
clerical		-0.15	-0.17	-0.11	
sales		-0.23+	-0.25*	-0.20+	
service		-0.14	-0.11	-0.08	
agriculture		-0.15	-0.03	0.05	
production,transport		-0.13	-0.11	0.02	
craft, technical		-0.18	-0.18	-0.17	
new england		0.00	0.00	0.00	
middle atlantic		-0.11	-0.05	-0.04	
east north central		-0.31*	-0.23+	-0.24+	
west north central		-0.34*	-0.31*	-0.34*	
south atlantic		-0.29*	-0.28*	-0.28*	
east south atlantic		-0.20	-0.12	-0.10	
west south central		-0.20	-0.13	-0.14	
mountain		-0.11	-0.06	-0.03	
pacific		-0.29*	-0.18	-0.18	
number of hours worked last week		0.00	0.00	0.00	
health			0.19***	0.19***	
decide working hours					-0.01
paid by the hour					-0.18*
constant	2.24***	2.18***	2.54***	2.02***	2.24***
N	488	415	412	412	396

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 9:** OLS regressions of life satisfaction.

But then on the last 2 measures there is a great deal of effect. In table 10 ‘‘2 days-1 wk’’ is actually more significant than with family income in the body of the manuscript. And then in table 11 we see about the same significance as with family income in the body of the manuscript.

	c1	c2	c3	c4	c5
never	0.00	0.00	0.00	0.00	0.00
-1 day	-0.06	-0.02	-0.02	0.01	0.02
2 days-1 wk	-0.20*	-0.21*	-0.24**	-0.20*	-0.21*
1 wks-	-0.15*	-0.15+	-0.15+	-0.12	-0.08
r's income in constant usd		0.00+	0.00	0.00	-0.00
age			-0.01	-0.01	0.00
age squared			0.00	0.00	-0.00
married			0.33***	0.31***	0.32***
highest year of school completed			-0.02+	-0.03**	-0.04**
male			0.09	0.08	0.07
number of persons in household			-0.01	-0.01	-0.01
white			0.06	0.05	0.05
professional			0.00	0.00	0.00
administrative/managerial			0.00	0.01	0.02
clerical			-0.13	-0.16	-0.11
sales			-0.26*	-0.27*	-0.22+
service			-0.14	-0.12	-0.07
agriculture			-0.22	-0.11	-0.02
production,transport			-0.17	-0.16	-0.02
craft, technical			-0.20	-0.21+	-0.18
new england			0.00	0.00	0.00
middle atlantic			-0.08	-0.03	-0.01
east north central			-0.30*	-0.23+	-0.24+
west north central			-0.38*	-0.36*	-0.33*
south atlantic			-0.30*	-0.28*	-0.27*
east south atlantic			-0.19	-0.11	-0.07
west south central			-0.17	-0.12	-0.12
mountain			-0.09	-0.05	-0.01
pacific			-0.29*	-0.19	-0.18
number of hours worked last week				0.00	0.00
health				0.18***	0.19***
decide working hours					-0.01
paid by the hour					-0.18*
constant	2.28***	2.23***	2.85***	2.35***	2.42***
N	497	418	415	415	399

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust

std err

**Table 10:** OLS regressions of life satisfaction.

	d1	d2	d3	d4	d5
schedule or shift regularly changes	-0.04	0.01	-0.00	-0.02	-0.06
daily working times are decided at short notice	-0.20+	-0.26*	-0.30**	-0.28*	-0.30**
r's income in constant usd	0.00**	0.00	0.00	0.00	0.00
age		-0.01	-0.01	-0.01	-0.00
age squared		0.00	0.00	0.00	0.00
married		0.33***	0.31***	0.32***	
highest year of school completed		-0.02	-0.03*	-0.04**	
male		0.08	0.11+	0.09	
number of persons in household		-0.03	-0.01	-0.01	
white		0.00	0.02	0.03	
professional		0.00	0.00	0.00	
administrative/managerial		-0.08	-0.01	0.01	
clerical		-0.16+	-0.18+	-0.13	
sales		-0.19+	-0.23*	-0.21+	
service		-0.19+	-0.16	-0.12	
agriculture		-0.00	0.06	0.16	
production,transport		-0.21*	-0.12	0.01	
craft, technical		-0.22*	-0.18	-0.17	
new england		0.00	0.00	0.00	
middle atlantic		-0.01	-0.05	-0.03	
east north central		-0.22*	-0.24+	-0.24+	
west north central		-0.17	-0.38*	-0.37*	
south atlantic		-0.13	-0.29*	-0.28*	
east south atlantic		-0.10	-0.13	-0.11	
west south central		-0.17	-0.12	-0.14	
mountain		0.07	-0.07	-0.04	
pacific		-0.19+	-0.21	-0.19	
number of hours worked last week			0.00	-0.00	
health			0.18***	0.18***	
decide working hours				-0.01	
paid by the hour				-0.21**	
constant	2.20***	2.14***	2.73***	2.24***	2.50***
N	751	632	628	418	396

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust

std err

**Table 11:** OLS regressions of life satisfaction.

### 3 Beta (fully standardized) coefficients

	aa1	aa2	aa3	aa4	aa5
fewest hrs per week past month/usual hours	0.06	0.10*	0.08	0.07	0.06
most hrs per week past month/usual hours	-0.08+	-0.09*	-0.09*	-0.09*	-0.08*
family income in \$1986, millions		0.21***	0.10+	0.07	0.05
age			0.14	0.11	0.14
age squared			-0.13	-0.10	-0.14
married			0.24***	0.22***	0.23***
highest year of school completed			-0.07	-0.11+	-0.13*
male			0.06	0.04	0.04
number of persons in household			-0.02	-0.00	0.00
white			0.04	0.04	0.03
professional			0.00	0.00	0.00
administrative/managerial			0.02	0.02	0.03
clerical			-0.08	-0.08	-0.06
sales			-0.07	-0.07	-0.05
service			0.02	0.03	0.04
agriculture			-0.05	-0.04	-0.03
production,transport			-0.03	-0.01	0.03
craft, technical			-0.10+	-0.10+	-0.09
new england			0.00	0.00	0.00
middle atlantic			-0.07	-0.04	-0.04
east north central			-0.14+	-0.10	-0.11
west north central			-0.11*	-0.10+	-0.11+
south atlantic			-0.17*	-0.16*	-0.17*
east south atlantic			-0.08	-0.05	-0.05
west south central			-0.09	-0.07	-0.06
mountain			-0.06	-0.04	-0.04
pacific			-0.13*	-0.08	-0.08
number of hours worked last week				0.04	0.03
health				0.20***	0.20***
decide working hours					-0.02
paid by the hour					-0.11*
constant	***	***	***	***	***
N	488	461	455	454	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust

std err

**Table 12:** OLS regressions of life satisfaction.

	bb1	bb2	bb3	bb4	bb5
(mosthrs-leasthrs)/usualhrs	-0.08+	-0.11**	-0.10*	-0.09*	-0.08+
family income in \$1986, millions		0.21***	0.10+	0.07	0.06
age			0.14	0.11	0.14
age squared			-0.13	-0.10	-0.13
married			0.24***	0.22***	0.23***
highest year of school completed			-0.07	-0.11+	-0.13*
male			0.06	0.04	0.04
number of persons in household			-0.02	-0.00	0.00
white			0.04	0.04	0.04
professional			0.00	0.00	0.00
administrative/managerial			0.02	0.02	0.03
clerical			-0.08	-0.08	-0.06
sales			-0.07	-0.07	-0.05
service			0.02	0.03	0.04
agriculture			-0.05	-0.04	-0.03
production,transport			-0.03	-0.01	0.03
craft, technical			-0.10+	-0.10+	-0.09
new england			0.00	0.00	0.00
middle atlantic			-0.07	-0.04	-0.04
east north central			-0.14+	-0.10	-0.11
west north central			-0.11*	-0.10+	-0.11+
south atlantic			-0.17*	-0.16*	-0.17*
east south atlantic			-0.08	-0.05	-0.05
west south central			-0.09	-0.07	-0.07
mountain			-0.06	-0.04	-0.04
pacific			-0.13*	-0.08	-0.08
number of hours worked last week				0.04	0.03
health				0.19***	0.20***
decide working hours					-0.01
paid by the hour					-0.11*
constant	***	***	***	***	***
N	488	461	455	454	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust

std err

**Table 13:** OLS regressions of life satisfaction.

	cc1	cc2	cc3	cc4	cc5
never	0.00	0.00	0.00	0.00	0.00
-1 day	-0.03	-0.01	-0.01	0.00	0.02
2 days-1 wk	-0.12*	-0.10+	-0.13*	-0.10*	-0.10+
1 wks-	-0.10*	-0.09+	-0.11*	-0.09+	-0.05
family income in \$1986, millions		0.20***	0.09+	0.07	0.05
age			0.02	0.01	0.10
age squared			-0.01	-0.00	-0.09
married			0.23***	0.22***	0.23***
highest year of school completed			-0.10	-0.13*	-0.15*
male			0.06	0.05	0.04
number of persons in household			-0.01	-0.00	0.01
white			0.06	0.05	0.05
professional			0.00	0.00	0.00
administrative/managerial			0.03	0.03	0.03
clerical			-0.07	-0.08	-0.06
sales			-0.08	-0.07	-0.05
service			0.02	0.02	0.05
agriculture			-0.07	-0.06	-0.05
production,transport			-0.05	-0.03	0.01
craft, technical			-0.11+	-0.11+	-0.09
new england			0.00	0.00	0.00
middle atlantic			-0.06	-0.03	-0.03
east north central			-0.14+	-0.11	-0.12
west north central			-0.14*	-0.13*	-0.12*
south atlantic			-0.16*	-0.16*	-0.17*
east south atlantic			-0.08	-0.06	-0.05
west south central			-0.08	-0.07	-0.07
mountain			-0.06	-0.04	-0.03
pacific			-0.14*	-0.11	-0.10
number of hours worked last week			0.05	0.03	
health				0.17**	0.18***
decide working hours					-0.02
paid by the hour					-0.12*
constant	***	***	***	***	***
N	497	467	460	459	443

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

Table 14: OLS regressions of life satisfaction.

	dd1	dd2	dd3	dd4	dd5
schedule or shift regularly changes	-0.02	-0.02	-0.03	-0.06	-0.07
daily working times are decided at short notice	-0.07+	-0.08*	-0.09*	-0.11**	-0.11**
family income in \$1986, millions	0.21***	0.11*	0.08	0.04	
age		-0.15	0.03	0.08	
age squared		0.16	0.01	-0.06	
married		0.24***	0.23***	0.24***	
highest year of school completed		-0.07	-0.12*	-0.15*	
male		0.07+	0.08+	0.07	
number of persons in household		-0.06	-0.00	0.01	
white		0.00	0.02	0.03	
professional		0.00	0.00	0.00	
administrative/managerial		-0.03	0.03	0.03	
clerical		-0.08+	-0.08	-0.06	
sales		-0.07	-0.05	-0.05	
service		-0.05	0.01	0.03	
agriculture		-0.04	-0.04	-0.03	
production,transport		-0.07	-0.02	0.02	
craft, technical		-0.14**	-0.09	-0.08	
new england		0.00	0.00	0.00	
middle atlantic		-0.03	-0.04	-0.04	
east north central		-0.09	-0.11	-0.12	
west north central		-0.03	-0.14*	-0.13*	
south atlantic		-0.07	-0.17*	-0.18*	
east south atlantic		-0.03	-0.06	-0.05	
west south central		-0.07	-0.07	-0.07	
mountain		0.00	-0.05	-0.04	
pacific		-0.09+	-0.12+	-0.11+	
number of hours worked last week			0.03	0.01	
health				0.17***	0.18***
decide working hours					-0.02
paid by the hour					-0.13*
constant	***	***	***	***	***
N	751	705	697	460	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

Table 15: OLS regressions of life satisfaction.

## 4 Interactions by groups

We postpone them to appendix and we do not make much of them as sample size is relatively small at about 450 observations and accordingly statistical power is low as well.

Furthermore our focus in the manuscript is on the main effect, future research, when more data becomes available, can focus on specific effects by groups. Nevertheless here we provide some preliminary results

## 4.1 Gender

In table 16 for males there is some positive effect from fewest hours, and insignificant from most hours.

	x1	x2	x3	x4	x5
fewest hrs per week past month/usual hours	-0.10	-0.01	-0.05	-0.11	-0.12
0	0.00	0.00	0.00	0.00	0.00
male	-0.43+	-0.48+	-0.52+	-0.59*	-0.61*
male			0.00	0.00	0.00
0 × fewest hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
male × fewest hrs per week past month/usual hours	0.37+	0.37+	0.35	0.40+	0.36
most hrs per week past month/usual hours	-0.35*	-0.37*	-0.40**	-0.41**	-0.42**
0 × most hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
male × most hrs per week past month/usual hours	0.20	0.19	0.26	0.27	0.31
family income in \$1986, millions	4.27***	1.90+	1.40	1.04	
age	0.00	0.00	0.00	0.00	
age squared	-0.00	-0.00	-0.00	-0.00	
married	0.29***	0.27***	0.27***	0.29***	
highest year of school completed	-0.01	-0.02+	-0.02+	-0.03*	
number of persons in household	-0.01	0.00	0.00	0.00	
white	0.08	0.07	0.06	0.06	
professional	0.00	0.00	0.00	0.00	
administrative/managerial	0.01	0.01	0.03		
clerical	-0.14	-0.15	-0.11		
sales	-0.15	-0.14	-0.11		
service	0.01	0.03	0.05		
agriculture	-0.38	-0.30	-0.26		
production,transport	-0.07	-0.04	0.05		
craft, technical	-0.22+	-0.22*	-0.20+		
new england	0.00	0.00	0.00		
middle atlantic	-0.15	-0.10	-0.10		
east north central	-0.26*	-0.20	-0.21		
west north central	-0.32*	-0.30*	-0.33*		
south atlantic	-0.29*	-0.28*	-0.29*		
east south atlantic	-0.23	-0.17	-0.15		
west south central	-0.21	-0.18	-0.16		
mountain	-0.17	-0.14	-0.12		
pacific	-0.29*	-0.21+	-0.20		
number of hours worked last week	0.00	0.00			
health		0.17***	0.18***		
decide working hours			-0.01		
paid by the hour			-0.14+		
constant	2.63***	2.46***	2.80***	2.39***	2.54***
N	488	461	455	454	438
+ 0.10 * 0.05 ** 0.01 *** 0.001; robust std err					

**Table 16:** OLS regressions of life satisfaction.

In table 17 for males there is no significant effect.

	x1	x2	x3	x4	x5
0	0.00	0.00	0.00	0.00	0.00
male	0.15+	0.08	0.08	0.07	0.05
(mosthrs-leasthrs)/usualhrs	-0.11	-0.18	-0.17	-0.14	-0.14
0 × (mosthrs-leasthrs)/usualhrs	0.00	0.00	0.00	0.00	0.00
male × (mosthrs-leasthrs)/usualhrs	-0.07	-0.05	-0.01	-0.04	-0.00
family income in \$1986, millions		4.24***	1.95+	1.51	1.13
age		0.01	0.00	0.01	
age squared		-0.00	-0.00	-0.00	
married		0.30***	0.28***	0.29***	
highest year of school completed		-0.01	-0.02+	-0.03*	
number of persons in household		-0.01	-0.00	0.00	
white		0.06	0.05	0.05	
professional		0.00	0.00	0.00	
administrative/managerial		0.03	0.03	0.04	
clerical		-0.13	-0.14	-0.10	
sales		-0.15	-0.14	-0.10	
service		0.03	0.06	0.09	
agriculture		-0.37	-0.30	-0.26	
production,transport		-0.06	-0.02	0.08	
craft, technical		-0.20+	-0.20+	-0.17	
new england		0.00	0.00	0.00	
middle atlantic		-0.13	-0.07	-0.07	
east north central		-0.23+	-0.17	-0.18	
west north central		-0.29*	-0.26+	-0.29+	
south atlantic		-0.28*	-0.26*	-0.28*	
east south atlantic		-0.21	-0.14	-0.12	
west south central		-0.18	-0.15	-0.14	
mountain		-0.14	-0.10	-0.08	
pacific		-0.25*	-0.16	-0.16	
number of hours worked last week		0.00	0.00		
health			0.17***	0.17***	
decide working hours				-0.01	
paid by the hour				-0.15*	
constant	2.17***	2.08***	2.30***	1.84***	1.99***
N	488	461	455	454	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

Table 17: OLS regressions of life satisfaction.

Likewise in table 18 and 19 for males there is no significant effect.

	x1	x2	x3	x4	x5
0	0.00	0.00	0.00	0.00	0.00
male	0.08	0.06	0.10	0.10	0.10
never	0.00	0.00	0.00	0.00	0.00
-1 day	-0.10	-0.06	-0.00	0.07	0.08
2 days-1 wk	-0.18	-0.10	-0.13	-0.08	-0.09
1 wks-	-0.20+	-0.17+	-0.19+	-0.15	-0.08
0 × never	0.00	0.00	0.00	0.00	0.00
0 × -1 day	0.00	0.00	0.00	0.00	0.00
0 × 2 days-1 wk	0.00	0.00	0.00	0.00	0.00
0 × 1 wks-	0.00	0.00	0.00	0.00	0.00
male × never	0.00	0.00	0.00	0.00	0.00
male × -1 day	0.05	0.03	-0.03	-0.11	-0.08
male × 2 days-1 wk	-0.04	-0.13	-0.17	-0.18	-0.14
male × 1 wks-	0.16	0.12	0.08	0.07	0.00
family income in \$1986, millions		4.10***	1.84+	1.45	0.99
age		0.00	0.00	0.00	
age squared		-0.00	0.00	-0.00	
married		0.31***	0.29***	0.31***	
highest year of school completed		-0.02+	-0.03*	-0.03*	
number of persons in household		-0.01	-0.00	0.00	
white		0.08	0.07	0.07	
professional		0.00	0.00	0.00	
administrative/managerial		0.04	0.04	0.05	
clerical		-0.11	-0.12	-0.10	
sales		-0.16	-0.15	-0.11	
service		0.03	0.04	0.10	
agriculture		-0.53	-0.45	-0.38	
production,transport		-0.11	-0.07	0.04	
craft, technical		-0.22+	-0.22+	-0.18	
new england		0.00	0.00	0.00	
middle atlantic		-0.10	-0.06	-0.06	
east north central		-0.23+	-0.18	-0.19	
west north central		-0.33*	-0.32*	-0.30*	
south atlantic		-0.27*	-0.25*	-0.26*	
east south atlantic		-0.21	-0.15	-0.12	
west south central		-0.18	-0.16	-0.15	
mountain		-0.12	-0.09	-0.07	
pacific		-0.27*	-0.20	-0.19	
number of hours worked last week		0.00	0.00		
health			0.15**	0.16***	
decide working hours				-0.01	
paid by the hour				-0.16*	
constant	2.24***	2.09***	2.51***	2.05***	2.09***
N	497	467	460	459	443

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

Table 18: OLS regressions of life satisfaction.

	x1	x2	x3	x4	x5
0	0.00	0.00	0.00	0.00	0.00
male	0.11*	0.08	0.09+	0.10	0.09
male			0.00	0.00	0.00
schedule or shift regularly changes=0	0.00	0.00	0.00	0.00	0.00
schedule or shift regularly changes=1	-0.11	-0.07	-0.10	-0.17	-0.18
0 × schedule or shift regularly changes=0	0.00	0.00	0.00	0.00	0.00
0 × schedule or shift regularly changes=1	0.00	0.00	0.00	0.00	0.00
male × schedule or shift regularly changes=0	0.00	0.00	0.00	0.00	0.00
male × schedule or shift regularly changes=1	0.13	0.08	0.07	0.13	0.12
daily working times are decided at short notice=0	0.00	0.00	0.00	0.00	0.00
daily working times are decided at short notice=1	0.01	0.05	-0.06	-0.11	-0.08
0 × daily working times are decided at short notice=0	0.00	0.00	0.00	0.00	0.00
0 × daily working times are decided at short notice=1	0.00	0.00	0.00	0.00	0.00
male × daily working times are decided at short notice=0	0.00	0.00	0.00	0.00	0.00
male × daily working times are decided at short notice=1	-0.35	-0.43	-0.28	-0.31	-0.39
family income in \$1986, millions		4.17***	2.20*	1.78	0.87
age		-0.01	0.00	0.00	
age squared		0.00	0.00	-0.00	
married		0.31***	0.29***	0.30***	
highest year of school completed		-0.01	-0.02+	-0.03*	
number of persons in household		-0.03	-0.00	0.01	
white		0.00	0.03	0.04	
professional		0.00	0.00	0.00	
administrative/managerial		-0.04	0.04	0.05	
clerical		-0.13	-0.13	-0.10	
sales		-0.13	-0.10	-0.08	
service		-0.09	0.03	0.07	
agriculture		-0.28	-0.29	-0.21	
production,transport		-0.15	-0.04	0.06	
craft, technical		-0.25**	-0.17	-0.15	
new england		0.00	0.00	0.00	
middle atlantic		-0.07	-0.08	-0.08	
east north central		-0.15	-0.18	-0.19	
west north central		-0.08	-0.34*	-0.33*	
south atlantic		-0.12	-0.28*	-0.29*	
east south atlantic		-0.07	-0.16	-0.14	
west south central		-0.15	-0.14	-0.14	
mountain		0.01	-0.10	-0.09	
pacific		-0.17+	-0.21+	-0.21	
number of hours worked last week		0.00	0.00		
health			0.15***	0.16***	
decide working hours				-0.01	
paid by the hour				-0.18*	
constant	2.15***	2.02***	2.57***	1.98***	2.16***
N	751	705	697	460	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 19:** OLS regressions of life satisfaction.

## 4.2 Age

gen a20=0

replace a20=1 if age<30

replace a20=. if age>=.

gen a30\_54=0

replace a30\_54=1 if age>29 & age <55

replace a20=. if age>=.

gen a55=0

replace a55=1 if age>54 & age <200

replace a55=. if age>=.

	y1	y2	y3	y4	y5
fewest hrs per week past month/usual hours	0.15	0.27+	0.23	0.17	0.15
a20=0	0.00	0.00	0.00	0.00	0.00
a20=1	-0.44	-0.38	-0.29	-0.25	-0.20
a20=0 × fewest hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
a20=1 × fewest hrs per week past month/usual hours	0.29	0.16	0.06	0.11	0.08
most hrs per week past month/usual hours	-0.14	-0.18+	-0.20*	-0.16+	-0.16
a20=0 × most hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
a20=1 × most hrs per week past month/usual hours	0.14	0.23	0.24	0.18	0.17
fewest hrs per week past month/usual hours	0.00				
a55=0	0.00	0.00	0.00	0.00	0.00
a55=1	0.43	0.49+	0.25	0.46	0.38
a55=0 × fewest hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
a55=1 × fewest hrs per week past month/usual hours	-0.32	-0.23	-0.10	-0.13	-0.12
fewest hrs per week past month/usual hours					0.00
fewest hrs per week past month/usual hours				0.00	
fewest hrs per week past month/usual hours		0.00			
most hrs per week past month/usual hours	0.00				
a55=0 × most hrs per week past month/usual hours	0.00	0.00	0.00	0.00	0.00
a55=1 × most hrs per week past month/usual hours	-0.11	-0.23	-0.14	-0.29	-0.23
most hrs per week past month/usual hours				0.00	
most hrs per week past month/usual hours			0.00		
most hrs per week past month/usual hours	0.00				
family income in \$1986, millions	4.53***	2.25+	1.78	1.37	
married		0.30***	0.28***	0.30***	
highest year of school completed		-0.01	-0.02+	-0.03*	
male		0.06	0.04	0.04	
number of persons in household		-0.01	-0.00	0.00	
white		0.06	0.05	0.05	
professional		0.00	0.00	0.00	
administrative/managerial		0.02	0.03	0.04	
clerical		-0.13	-0.14	-0.10	
sales		-0.15	-0.13	-0.10	
service		0.01	0.03	0.06	
agriculture		-0.32	-0.23	-0.18	
production,transport		-0.06	-0.02	0.08	
craft, technical		-0.20+	-0.20+	-0.17	
new england		0.00	0.00	0.00	
middle atlantic		-0.12	-0.06	-0.06	
east north central		-0.22+	-0.16	-0.17	
west north central		-0.27+	-0.24	-0.27+	
south atlantic		-0.27*	-0.25+	-0.27*	
east south atlantic		-0.20	-0.11	-0.11	
west south central		-0.19	-0.15	-0.14	
mountain		-0.13	-0.08	-0.08	
pacific		-0.25*	-0.15	-0.16	
number of hours worked last week		0.00	0.00	0.00	
health			0.17***	0.18***	
decide working hours				-0.01	
paid by the hour				-0.15+	
constant	2.23***	2.01***	2.42***	1.92***	2.09***
N	485	458	455	454	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 20:** OLS regressions of life satisfaction.

	y1	y2	y3	y4	y5
(mosthrs-leasthrs)/usualhrs	-0.14	-0.21*	-0.21*	-0.17+	-0.16
a20=0	0.00	0.00	0.00	0.00	0.00
a20=1	-0.02	0.00	-0.00	0.03	0.04
a20=0 × (mosthrs-leasthrs)/usualhrs	0.00	0.00	0.00	0.00	0.00
a20=1 × (mosthrs-leasthrs)/usualhrs	-0.05	0.05	0.12	0.06	0.07
(mosthrs-leasthrs)/usualhrs	0.00				
a55=0	0.00	0.00	0.00	0.00	0.00
a55=1	0.01	0.03	0.02	0.04	0.03
a55=0 × (mosthrs-leasthrs)/usualhrs	0.00	0.00	0.00	0.00	0.00
a55=1 × (mosthrs-leasthrs)/usualhrs	0.11	-0.01	-0.02	-0.07	-0.04
(mosthrs-leasthrs)/usualhrs				0.00	0.00
(mosthrs-leasthrs)/usualhrs		0.00			
family income in \$1986, millions		4.43***	2.11+	1.68	1.28
married			0.31***	0.29***	0.30***
highest year of school completed			-0.01	-0.02+	-0.03*
male			0.07	0.04	0.04
number of persons in household			-0.01	0.00	0.00
white			0.06	0.05	0.05
professional			0.00	0.00	0.00
administrative/managerial			0.03	0.03	0.04
clerical			-0.13	-0.14	-0.10
sales			-0.16	-0.15	-0.11
service			0.02	0.05	0.08
agriculture			-0.34	-0.25	-0.20
production,transport			-0.05	-0.01	0.09
craft, technical			-0.20	-0.20+	-0.17
new england			0.00	0.00	0.00
middle atlantic			-0.12	-0.07	-0.07
east north central			-0.23+	-0.17	-0.18
west north central			-0.29*	-0.27+	-0.30*
south atlantic			-0.27*	-0.26*	-0.27*
east south atlantic			-0.21	-0.14	-0.12
west south central			-0.19	-0.16	-0.15
mountain			-0.14	-0.10	-0.09
pacific			-0.25*	-0.16	-0.16
number of hours worked last week			0.00	0.00	0.00
health				0.17***	0.17***
decide working hours					-0.01
paid by the hour					-0.15*
constant	2.24***	2.10***	2.44***	1.93***	2.10***
N	485	458	455	454	438

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 21:** OLS regressions of life satisfaction.

In table 22 one could be tempted to read into significant estimates on  $a20 = 1x - 1day$ , but there are only 11 such persons, and in actual estimation in specification y5 only 11 due to missing data on other variables:

	a20		
-1 day	0	1	Total
0	321	92	413
1	69	13	82
Total	390	105	495

	a20		
-1 day	0	1	Total
0	296	82	378
1	54	11	65

Thus we abort these fruitless exercises here.

	y1	y2	y3	y4	y5
a20=0	0.00	0.00	0.00	0.00	0.00
a20=1	0.05	0.15	0.15	0.15	0.13
never	0.00	0.00	0.00	0.00	0.00
-1 day	-0.02	0.09	0.13	0.14	0.19
2 days-1 wk	-0.19	-0.17	-0.18	-0.16	-0.14
1 wks-	-0.25*	-0.21*	-0.23*	-0.19+	-0.14
a20=0 × never	0.00	0.00	0.00	0.00	0.00
a20=0 × -1 day	0.00	0.00	0.00	0.00	0.00
a20=0 × 2 days-1 wk	0.00	0.00	0.00	0.00	0.00
a20=0 × 1 wks-	0.00	0.00	0.00	0.00	0.00
a20=1 × never	0.00	0.00	0.00	0.00	0.00
a20=1 × -1 day	-0.24	-0.42*	-0.40*	-0.38+	-0.36+
a20=1 × 2 days-1 wk	-0.11	-0.10	-0.10	-0.08	-0.07
a20=1 × 1 wks-	-0.08	-0.16	-0.07	-0.04	0.01
a55=0	0.00	0.00	0.00	0.00	0.00
a55=1	-0.06	-0.01	0.02	0.03	0.04
a55=0 × never	0.00	0.00	0.00	0.00	0.00
a55=0 × -1 day	0.00	0.00	0.00	0.00	0.00
a55=0 × 2 days-1 wk	0.00	0.00	0.00	0.00	0.00
a55=0 × 1 wks-	0.00	0.00	0.00	0.00	0.00
a55=1 × never	0.00	0.00	0.00	0.00	0.00
a55=1 × -1 day	0.02	-0.17	-0.27	-0.25	-0.31
a55=1 × 2 days-1 wk	0.10	0.04	-0.08	-0.02	-0.09
a55=1 × 1 wks-	0.37*	0.28	0.25	0.20	0.17
family income in \$1986, millions		4.43***	2.11+	1.74	1.29
married			0.31***	0.30***	0.32***
highest year of school completed			-0.02+	-0.03*	-0.03*
male			0.07	0.05	0.04
number of persons in household			-0.00	0.00	0.01
white			0.07	0.07	0.06
professional			0.00	0.00	0.00
administrative/managerial			0.05	0.05	0.06
clerical			-0.13	-0.14	-0.11
sales			-0.17	-0.16	-0.13
service			0.02	0.03	0.08
agriculture			-0.54	-0.46	-0.41
production, transport			-0.13	-0.10	0.01
craft, technical			-0.23*	-0.23*	-0.20+
new england			0.00	0.00	0.00
middle atlantic			-0.08	-0.05	-0.05
east north central			-0.18	-0.14	-0.16
west north central			-0.29*	-0.28*	-0.28+
south atlantic			-0.23+	-0.22+	-0.25+
east south atlantic			-0.15	-0.10	-0.09
west south central			-0.11	-0.10	-0.10
mountain			-0.08	-0.06	-0.05
pacific			-0.25+	-0.19	-0.19
number of hours worked last week			0.00	0.00	0.00
health				0.14**	0.15**
decide working hours					-0.02
paid by the hour					-0.16*
constant	2.29***	2.09***	2.48***	2.03***	2.19***
N	494	464	460	459	443

+ 0.10 \* 0.05 \*\* 0.01 \*\*\* 0.001; robust  
std err

**Table 22:** OLS regressions of life satisfaction.

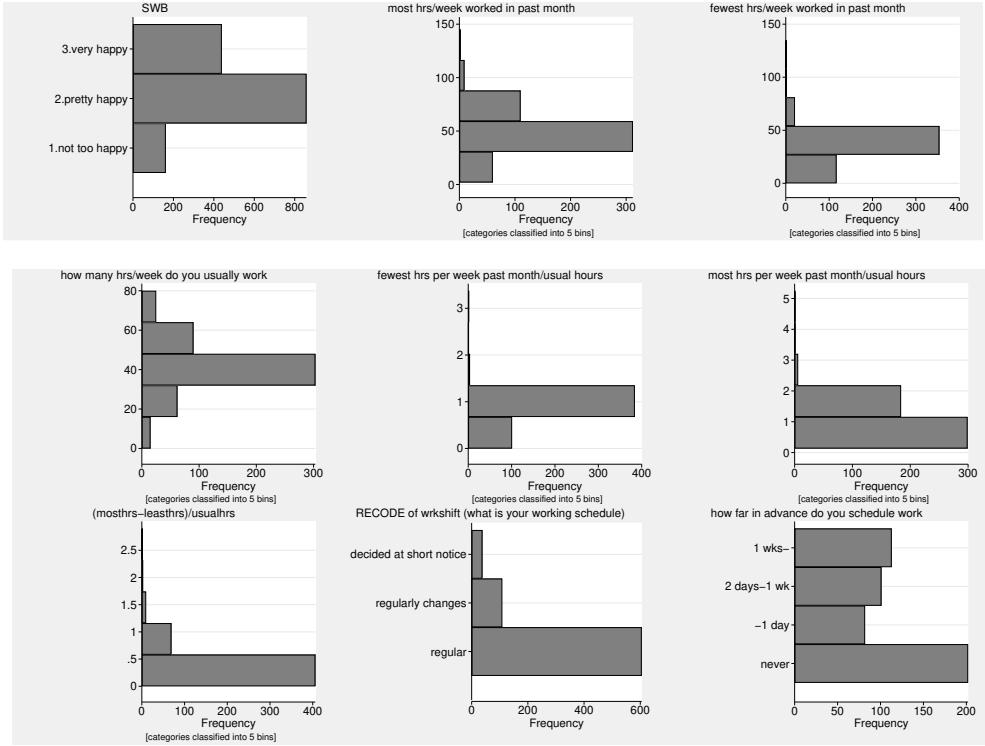
## 5 Descriptive Statistics

### 5.1 Distributions of Variables

## 6 Other/minor points

### 6.1 Directionality of effect from health and income to SWB

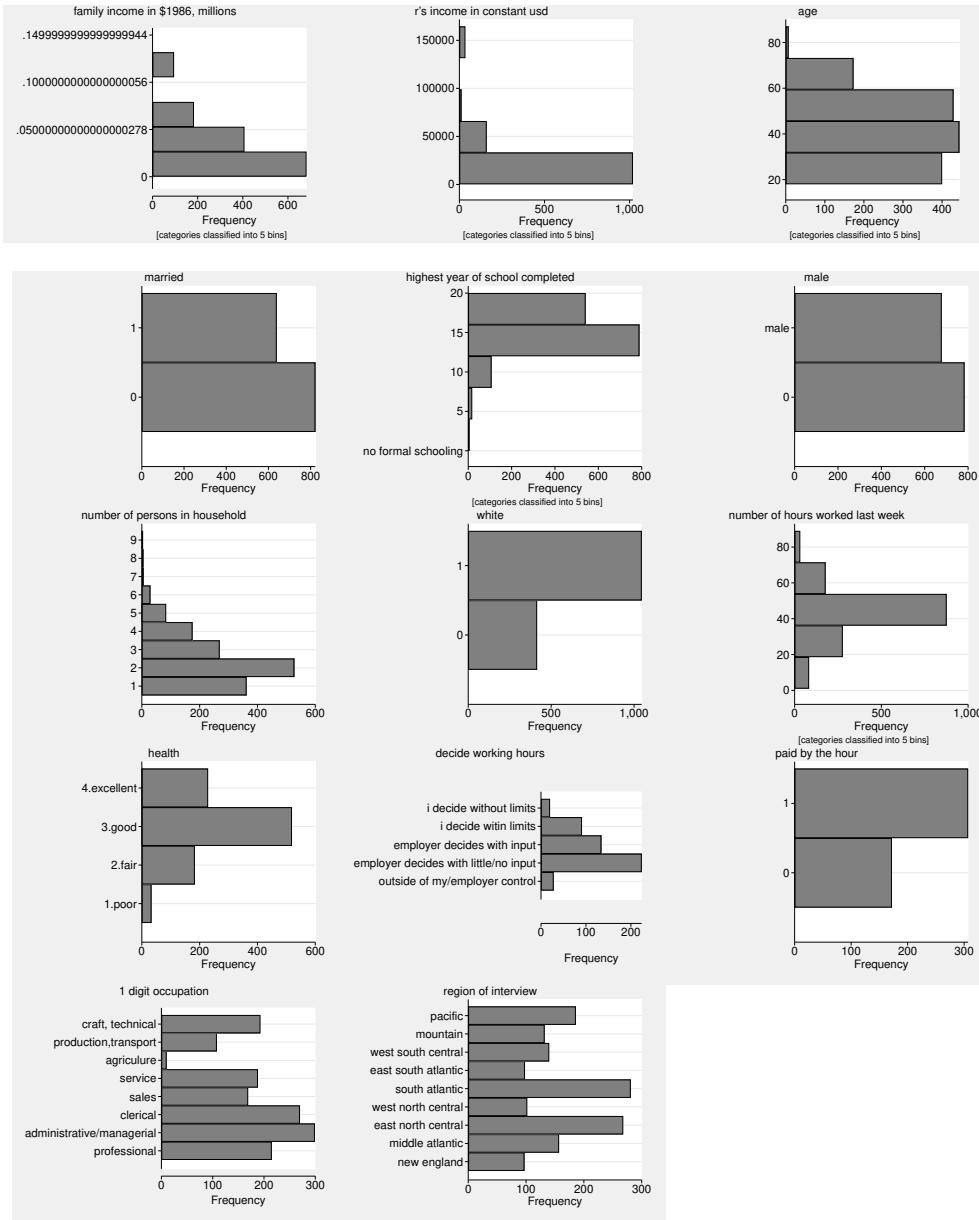
The direction of causality of some SWB determinants such as health may be disputed, i.e., whether health predicts happiness or happiness predicts health (Diener 2015). But recent evidence supports our assumption that health causing happiness is predominant (Liu et al. 2016). The same logic applies to the role of income in SWB estimation and whether it is income that predicts SWB or vice versa (Easterlin 1974, Helliwell et al. 2004). While in general it is assumed that income predicts SWB (e.g., Okulicz-Kozaryn 2011, 2016), longitudinal and (quasi) experimental designs are recommended to tackle reverse causality (Diener 1994, Helliwell et al. 2004).



**Figure 5:** Variables' distribution.

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**Figure 6:** Variables' distribution.