

## **eSupplement**

**Table of Contents**, page 1

### **eTables**

**eTable 1.** Changes in mental well-being (No. = 7445), page 2

**eTable 2.** Onset of low mental well-being (No. = 6537), page 3

**eTable 3.** Changes in quality of life (No. = 7445), page 4

**eTable 4.** Onset of low quality of life (No. = 6283), page 5

**eTable 5.** Onset of loneliness (No. = 6418), page 6

**eTable 6.** Changes in mental well-being, quality of life and loneliness, stratified by sex (No. = 7445), page 7

**eTable 7.** Joint effects of housing conditions and quarantine on changes in mental well-being, quality of life and loneliness (No. = 7418), page 8

**eTable 8.** Changes in quality of life, stratified by psychiatric illnesses (No. = 7418), page 9

**eTable 9.** Changes in category of mental well-being (No. = 7445), page 10

**eTable 10.** Changes in category of quality of life (No. = 7445), page 11

**eTable 11.** Changes in category of loneliness (No. = 7445), page 12

### **eFigures**

**eFigure 1.** Flow of participation, page 13

**eTable 1.** Changes in mental well-being (No. = 7445)

	no.	Mean difference (95 % CI)		
		Crude Model	Adjusted model 1	Adjusted model 2
<b>Direct access to outdoor spaces</b>				
None	286	-0.68 [-1.03,-0.33]	-0.72 [-1.08,-0.36]	-0.75 [-1.14,-0.36]
Common yard	465	0.15 [-0.13,0.44]	0.06 [-0.23,0.35]	0.03 [-0.28,0.35]
Balcony	459	0.17 [-0.11,0.45]	0.09 [-0.20,0.38]	0.08 [-0.23,0.39]
Multiple outdoor spaces	1889	0.09 [-0.07,0.25]	0.07 [-0.09,0.23]	0.06 [-0.11,0.22]
Garden	4346	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Urbanicity</b>				
Urban	2698	-0.05 [-0.21,0.10]	-0.19 [-0.36,-0.01]	-0.20 [-0.39,-0.02]
Semi-urban	1602	-0.08 [-0.25,0.10]	-0.13 [-0.32,0.06]	-0.13 [-0.32,0.06]
Rural	3145	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Household density</b>				
Above median	3457	-0.18 [-0.32,-0.05]	-0.19 [-0.32,-0.05]	-0.21 [-0.35,-0.07]
Below median	3988	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Household composition</b>				
Alone	436	-0.17 [-0.47,0.12]	-0.21 [-0.51,0.10]	-0.03 [-0.36,0.31]
Roomies/friends	410	0.12 [-0.18,0.43]	0.03 [-0.28,0.35]	0.13 [-0.22,0.47]
Partner	835	0.30 [0.07,0.53]	0.27 [0.03,0.50]	0.35 [0.10,0.60]
Parents and siblings/children	2880	0.06 [-0.09,0.21]	0.09 [-0.06,0.25]	0.09 [-0.06,0.24]
Parents only	2884	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]

CI: Confidence Intervals.

Mean difference and 95 % CI presented.

Adjusted Model 1. Adjusted for age, sex, current education, part-time work, moving, and geographical region.

Adjusted Model 2. Adjusted model 1, additionally mutually adjusted for other housing conditions

**eTable 2.** Onset of low mental well-being (No. = 6537)

	no.	OR (95% CI)		
		Crude Model	Adjusted model 1	Adjusted model 2
<b>Direct access to outdoor spaces</b>				
None	56/246	1.97 [1.44,2.70]	2.29 [1.65,3.17]	1.72 [1.20,2.48]
Common yard	75/402	1.54 [1.18,2.01]	1.76 [1.33,2.33]	1.45 [1.06,1.98]
Balcony	64/390	1.32 [0.99,1.75]	1.47 [1.09,1.97]	1.24 [0.90,1.69]
Multiple outdoor spaces	218/1657	1.01 [0.86,1.20]	1.09 [0.92,1.30]	1.02 [0.85,1.22]
Garden	499/3842	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>				
Urban	348/2392	1.15 [0.98,1.35]	1.27 [1.06,1.53]	1.14 [0.94,1.38]
Semi-urban	210/1394	1.20 [1.00,1.44]	1.21 [1.00,1.48]	1.21 [1.00,1.48]
Rural	354/2751	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>				
Above median	445/3528	1.27 [1.11,1.46]	1.28 [1.11,1.48]	1.26 [1.08,1.46]
Below median	467/3009	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>				
Alone	79/369	1.70 [1.29,2.23]	2.03 [1.52,2.72]	1.62 [1.17,2.23]
Roomies/friends	64/366	1.32 [0.98,1.77]	1.58 [1.16,2.15]	1.24 [0.88,1.74]
Partner	106/710	1.09 [0.86,1.38]	1.18 [0.93,1.51]	1.03 [0.79,1.34]
Parents and siblings/children	351/2535	0.86 [0.73,1.02]	0.84 [0.71,0.99]	0.84 [0.71,1.00]
Parents only	312/2557	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]

OR: Odds Ratio, CI: Confidence Intervals.

OR and 95 % CI presented.

Adjusted Model 1. Adjusted for age, sex, current education, part-time work, moving, and geographical region.

Adjusted Model 2. Adjusted model 1, additionally mutually adjusted for other housing conditions

Participants with low mental well-being scores at baseline excluded (no. = 912).

Mental well-being scores  $\leq 20$  points on the SWEMWBS indicate possible or probable depression or anxiety.

**eTable 3.** Changes in QoL (No. = 7445)

	no.	Mean difference (95 % CI)		
		Crude Model	Adjusted model 1	Adjusted model 2
<b>Direct access to outdoor spaces</b>				
None	286	0.19 [-0.06,0.45]	0.13 [-0.13,0.39]	0.05 [-0.23,0.33]
Common yard	464	0.28 [0.08,0.49]	0.25 [0.04,0.46]	0.16 [-0.07,0.39]
Balcony	459	0.07 [-0.14,0.28]	0.04 [-0.17,0.25]	-0.04 [-0.27,0.18]
Multiple outdoor spaces	1889	0.21 [0.09,0.32]	0.17 [0.05,0.29]	0.14 [0.02,0.26]
Garden	4346	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Urbanicity</b>				
Urban	2698	0.03 [-0.08,0.14]	-0.04 [-0.17,0.09]	-0.09 [-0.22,0.04]
Semi-urban	1602	0.02 [-0.11,0.15]	-0.01 [-0.15,0.13]	-0.00 [-0.14,0.13]
Rural	3145	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Household density</b>				
Above median	3457	-0.05 [-0.15,0.04]	-0.07 [-0.17,0.03]	-0.11 [-0.21,-0.01]
Below median	3988	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]
<b>Household composition</b>				
Alone	436	0.04 [-0.17,0.26]	-0.01 [-0.23,0.22]	-0.04 [-0.28,0.21]
Roomies/friends	410	0.08 [-0.14,0.31]	0.07 [-0.16,0.30]	0.10 [-0.15,0.35]
Partner	835	0.36 [0.20,0.53]	0.42 [0.24,0.59]	0.40 [0.22,0.58]
Parents and siblings/children	2880	-0.06 [-0.17,0.05]	-0.05 [-0.16,0.06]	-0.05 [-0.16,0.06]
Parents only	2884	0.00 [0.00,0.00]	0.00 [0.00,0.00]	0.00 [0.00,0.00]

QoL: Quality of Life, CI: Confidence Intervals.

Mean difference and 95 % CI.

Adjusted Model 1. Adjusted for age, sex, current education, part-time work, moving, and geographical region.

Adjusted Model 2. Adjusted model 1, additionally mutually adjusted for other housing conditions

**eTable 4.** Onset of low QoL (No. = 6283)

	no.	OR (95 % CI)		
		Crude Model	Adjusted model 1	Adjusted model 2
<b>Direct access to outdoor spaces</b>				
None	78/218	1.10 [0.83,1.46]	1.31 [0.97,1.76]	1.18 [0.85,1.64]
Common yard	113/385	0.82 [0.65,1.03]	0.91 [0.72,1.16]	0.86 [0.66,1.12]
Balcony	131/379	1.04 [0.83,1.30]	1.16 [0.92,1.46]	1.12 [0.87,1.43]
Multiple outdoor spaces	437/1585	0.75 [0.66,0.85]	0.82 [0.72,0.94]	0.81 [0.70,0.93]
Garden	1250/3716	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>				
Urban	706/2273	0.93 [0.82,1.05]	1.04 [0.90,1.20]	1.04 [0.90,1.20]
Semi-urban	433/1345	0.98 [0.85,1.13]	0.99 [0.85,1.15]	0.98 [0.84,1.14]
Rural	870/2665	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>				
Above median	953/2859	1.12 [1.01,1.25]	1.17 [1.05,1.30]	1.18 [1.06,1.33]
Below median	1056/3424	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>				
Alone	121/338	1.17 [0.93,1.49]	1.40 [1.09,1.81]	1.38 [1.04,1.82]
Roomies/friends	106/340	0.95 [0.75,1.22]	1.10 [0.85,1.43]	1.08 [0.81,1.44]
Partner	195/677	0.85 [0.71,1.03]	0.86 [0.70,1.04]	0.86 [0.70,1.06]
Parents and siblings/children	801/2486	1.00 [0.89,1.13]	0.98 [0.87,1.11]	0.98 [0.87,1.11]
Parents only	786/2442	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]

QoL: Quality of Life, OR: Odds Ratios, CI: Confidence Intervals.

OR and 95 % CI presented.

Adjusted model 1. Adjusted for age, sex, current education, part-time work, moving, and geographical region.

Adjusted model 2. Adjusted model 1, additionally mutually adjusted for other housing conditions

Participants with low quality of life at baseline excluded (no. =1162)

**eTable 5.** Onset of loneliness (No. = 6418)

	no. cases/no.	OR (95 % CI)		
		Crude Model	Adjusted model 1	Adjusted model 2
<b>Direct access to outdoor spaces</b>				
None	64/234	1.56 [1.16,2.11]	1.82 [1.34,2.48]	1.44 [1.01,2.04]
Common yard	74/394	0.96 [0.74,1.25]	1.05 [0.80,1.38]	0.98 [0.73,1.34]
Balcony	89/378	1.28 [1.00,1.64]	1.41 [1.09,1.83]	1.37 [1.04,1.82]
Multiple outdoor spaces	295/1619	0.93 [0.80,1.07]	0.99 [0.85,1.15]	0.97 [0.83,1.13]
Garden	736/3793	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>				
Urban	454/2315	1.01 [0.88,1.16]	1.04 [0.88,1.22]	1.00 [0.85,1.19]
Semi-urban	276/1383	1.04 [0.88,1.22]	1.04 [0.87,1.24]	1.02 [0.85,1.21]
Rural	528/2720	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>				
Above median	620/2945	1.18 [1.05,1.34]	1.21 [1.07,1.37]	1.30 [1.14,1.48]
Below median	638/3473	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>				
Alone	121/362	1.94 [1.53,2.46]	2.37 [1.84,3.06]	2.12 [1.59,2.82]
Roomies/friends	51/352	0.65 [0.48,0.89]	0.74 [0.54,1.03]	0.66 [0.47,0.94]
Partner	111/698	0.73 [0.58,0.91]	0.77 [0.61,0.98]	0.72 [0.56,0.92]
Parents and siblings/children	461/2508	0.87 [0.76,1.00]	0.85 [0.74,0.98]	0.86 [0.74,0.99]
Parents only	514/2498	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]

OR: Odds Ratios, CI: Confidence Intervals.

OR and 95 % CI presented.

Adjusted Model 1. Adjusted for age, sex, current education, part-time work, moving, and geographical region.

Adjusted Model 2. Adjusted model 1, additionally mutually adjusted for other housing conditions

Participants with loneliness at baseline excluded (no. = 1027)

**eTable 6.** Changes in mental well-being, quality of life and loneliness, stratified by sex (No.= 7445)

	Female		Male	
	no.	Mean difference (95 % CI)	no.	Mean difference (95 % CI)
<b>Mental well-being</b>				
<b>Household density</b>				
Above median	2397	-0.17 [-0.34,-0.01]	1060	-0.27 [-0.53,-0.00]
Below median	2816	0.00 [0.00,0.00]	1172	0.00 [0.00,0.00]
<b>Household composition</b>				
Alone	278	0.30 [-0.11,0.71]	158	-0.62 [-1.20,-0.03]
Roomies/friends	267	0.46 [0.04,0.88]	143	-0.51 [-1.12,0.10]
Partner	655	0.43 [0.14,0.71]	180	0.15 [-0.37,0.68]
Parents and siblings/children	2042	0.22 [0.04,0.40]	838	-0.21 [-0.49,0.07]
Parents only	1971	0.00 [0.00,0.00]	913	0.00 [0.00,0.00]
<b>QoL</b>				
<b>Household composition</b>				
Alone	278	-0.17 [-0.48,0.14]	158	0.22 [-0.16,0.61]
Roomies/friends	267	0.28 [-0.04,0.60]	143	-0.21 [-0.61,0.19]
Partner	655	0.48 [0.26,0.70]	180	0.09 [-0.26,0.44]
Parents and siblings/children	2042	-0.06 [-0.19,0.08]	838	-0.02 [-0.21,0.17]
Parents only	1971	0.00 [0.00,0.00]	913	0.00 [0.00,0.00]
<b>Loneliness<sup>a</sup></b>				
	no. cases/no.	OR (95 % CI)	no. cases/no.	OR (95 % CI)
<b>Household composition</b>				
Alone	81/221	1.81 [1.28,2.56]	40/141	3.15 [1.85,5.36]
Roomies/friends	41/224	0.68 [0.45,1.02]	10/128	0.60 [0.28,1.29]
Partner	100/534	0.74 [0.56,0.97]	11/164	0.52 [0.26,1.04]
Parents and siblings/children	344/1740	0.74 [0.62,0.87]	117/768	1.40 [1.04,1.87]
Parents only	418/1674	1.00 [1.00,1.00]	96/824	1.00 [1.00,1.00]

CI: Confidence Interval, OR: Odds Ratio, QoL: Quality of Life.

Mean difference and 95 % CI and OR and 95 % CI presented.

Results displayed for interaction terms for which the likelihood ratio test indicated interaction (p<0.2).

Adjusted Model 2: Adjusted for age, sex, current education, part-time work, moving, and geographical region, and additionally mutually adjusted for housing conditions.

<sup>a</sup>Participants with loneliness at baseline excluded (no. = 1023)

**eTable 7.** Joint effects of housing conditions and quarantine on changes in mental well-being, quality of life and loneliness (No. = 7418)

	Mean difference (95 % CI)		
	no.	Mental well-being	QoL
<b>Direct access to outdoor spaces</b>			
No access, NQ	214	-1.01 [-1.45,-0.57]	N/A
No access, Q	72	-0.06 [-0.77,0.65]	N/A
Common yard, NQ	346	0.06 [-0.30,0.41]	N/A
Common yard, Q	117	-0.19 [-0.75,0.37]	N/A
Balcony, NQ	354	0.10 [-0.24,0.45]	N/A
Balcony, Q	103	-0.18 [-0.77,0.41]	N/A
Multiple outdoor spaces, NQ	1445	0.07 [-0.12,0.26]	N/A
Multiple outdoor spaces, Q	439	-0.07 [-0.36,0.23]	N/A
Garden, NQ (referent)	3292	0.00 [0.00,0.00]	N/A
Garden, Q	1036	-0.07 [-0.28,0.13]	N/A
<b>Urbanity</b>			
Urban, NQ	2073	N/A	-0.22 [-0.42,-0.01]
Urban, Q	615	N/A	-0.31 [-0.60,-0.03]
Semi-urban, NQ	1223	N/A	-0.17 [-0.39,0.04]
Semi-urban, Q	373	N/A	-0.10 [-0.43,0.23]
Rural, NQ (referent)	2355	N/A	0.00 [0.00,0.00]
Rural, Q	779	N/A	-0.12 [-0.36,0.12]
<b>Household composition</b>			
Alone, NQ	327	-0.05 [-0.42,0.33]	N/A
Alone, Q	109	0.03 [-0.56,0.62]	N/A
Roomies/friends, NQ	298	-0.05 [-0.44,0.35]	N/A
Roomies/friends, Q	112	0.60 [0.02,1.17]	N/A
Partner, NQ	643	0.43 [0.15,0.71]	N/A
Partner, Q	191	0.07 [-0.38,0.51]	N/A
Parents and siblings/children, NQ	2171	0.11 [-0.06,0.29]	N/A
Parents and siblings/children, Q	696	-0.02 [-0.27,0.23]	N/A
Parents only, NQ (referent)	2212	0.00 [0.00,0.00]	N/A
Parents only, Q	659	-0.06 [-0.32,0.20]	N/A
<b>Total</b>	<b>7418<sup>a</sup></b>		

CI: Confidence Interval, OR: Odds Ratio, QoL: Quality of Life, Q: Quarantined, NQ: Not Quarantined, N/A: Not applicable.

Mean difference and 95 % CI and OR and 95 % CI presented.

Results displayed for interaction terms for which the likelihood ratio test indicated interaction ( $p < 0.2$ ), otherwise N/A is displayed

Adjusted for age, sex, current education, part-time work, moving, and geographical region, and additionally mutually adjusted for housing conditions

<sup>a</sup>27 observations omitted due to lacking data on quarantine status



**eTable 8.** Changes in QoL, stratified by psychiatric illnesses (No. = 7418)<sup>a</sup>

	No psychiatric illness		Psychiatric illness	
	no.	Mean difference (95 % CI)	no.	Mean difference (95 % CI)
<b>Household composition</b>				
Alone	341	-0.00 [-0.27,0.26]	95	0.08 [-0.66,0.83]
Roomies/friends	350	0.10 [-0.17,0.37]	60	-0.23 [-1.12,0.67]
Partner	709	0.43 [0.23,0.62]	125	0.41 [-0.26,1.08]
Parents and siblings/children	2556	-0.07 [-0.19,0.05]	311	0.15 [-0.29,0.59]
Parents only	2494	0.00 [0.00,0.00]	377	0.00 [0.00,0.00]
<b>Total</b>	<b>6450</b>		<b>968</b>	

QoL: Quality of Life, CI: Confidence Interval.

Mean difference and 95 % CI presented.

Results displayed for interaction terms for which the likelihood ratio test indicated interaction (p<0.2).

Adjusted Model 2: Adjusted for age, sex, current education, part-time work, moving, and geographical region, and additionally mutually adjusted for housing conditions

<sup>a</sup>27 observations omitted due to missing data on psychiatric illnesses.

**eTable 9.** Changes in category of mental well-being (No. = 7445)

no. cases, (ref.normal to normal) low to low/low to normal/normal to low	RRR (95 % CI)		
	Low to low (6.9 %)	Low to normal (5.3 %)	Normal to low (12.3 %)
<b>Direct access to outdoor spaces</b>			
None (ref. 190)24/16/56	1.46 [0.88,2.40]	1.11 [0.62,1.99]	1.71 [1.19,2.45]
Common yard (ref. 327)31/32/75	1.22 [0.79,1.89]	1.36 [0.87,2.13]	1.44 [1.05,1.96]
Balcony (ref. 326)40/29/64	1.53 [1.04,2.26]	1.25 [0.80,1.94]	1.23 [0.90,1.68]
Multiple outdoor spaces (ref. 1439)121/111/218	1.03 [0.81,1.29]	1.27 [0.99,1.63]	1.03 [0.86,1.24]
Garden (ref. 3343)295/209/499	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>			
Urban (ref. 2044)160/146/348	0.73 [0.56,0.94]	0.95 [0.72,1.26]	1.14 [0.94,1.38]
Semi-urban (ref. 1184)116/92/210	0.98 [0.76,1.27]	1.13 [0.84,1.50]	1.22 [1.00,1.49]
Rural (ref. 2397)235/159/354	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>			
Above median (ref. 2542)267/181/467	1.37 [1.14,1.66]	1.01 [0.82,1.26]	1.26 [1.09,1.46]
Below median (ref. 3083)244/216/445	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>			
Alone (ref. 290)35/32/79	1.48 [0.96,2.29]	1.44 [0.91,2.28]	1.58 [1.15,2.19]
Roomies/friends (ref. 302)25/19/64	1.02 [0.62,1.68]	0.85 [0.49,1.46]	1.23 [0.87,1.73]
Partner (ref. 604)64/61/106	1.28 [0.92,1.78]	1.28 [0.90,1.82]	1.02 [0.78,1.33]
Parents and siblings/children (ref. 2245)194/129/312	0.97 [0.79,1.20]	0.81 [0.64,1.04]	0.84 [0.71,0.99]
Parents only (ref. 2184)193/156/351	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Total (no.)</b> (ref.5625)511/397/912			

RRR: Relative Risk Ratios, CI: Confidence Intervals.

RRR and 95 % CI presented.

Adjusted Model 2: Adjusted for age, sex, current education, part-time work, moving, geographical region, and mutual adjustment for housing conditions.

**eTable 10.** Changes in category of QoL (No. = 7445)

	no. cases, (ref.normal to normal) low to low/low to normal/normal to low	RRR (95 % CI)		
		Low to low (9.5 %)	Low to normal (6.1 %)	Normal to low (27.1 %)
<b>Direct access to outdoor spaces</b>				
None	(ref. 140)37/31/78	1.41 [0.91,2.18]	1.87 [1.17,3.00]	1.16 [0.84,1.60]
Common yard	(ref. 272)45/35/113	0.95 [0.65,1.38]	1.11 [0.72,1.71]	0.86 [0.66,1.12]
Balcony	(ref. 248)46/34/131	1.09 [0.76,1.58]	1.21 [0.80,1.85]	1.11 [0.87,1.42]
Multiple outdoor spaces	(ref. 1148)189/115/437	1.06 [0.87,1.30]	1.03 [0.81,1.32]	0.81 [0.71,0.93]
Garden	(ref. 2466)395/235/1250	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>				
Urban	(ref. 1567)253/172/706	0.88 [0.71,1.10]	1.05 [0.80,1.37]	1.04 [0.90,1.21]
Semi-urban	(ref. 912)158/99/433	0.98 [0.78,1.23]	1.10 [0.83,1.44]	0.99 [0.85,1.15]
Rural	(ref. 1795)301/179/870	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>				
Above median	(ref. 1906)378/220/953	1.51 [1.28,1.79]	1.12 [0.91,1.37]	1.18 [1.06,1.32]
Below median	(ref. 2368)334/230/1056	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>				
Alone	(ref. 217)64/34/121	2.14 [1.49,3.08]	1.49 [0.95,2.35]	1.39 [1.06,1.83]
Roomies/friends	(ref. 234)40/30/106	1.15 [0.76,1.73]	1.38 [0.87,2.20]	1.05 [0.79,1.40]
Partner	(ref. 482)81/77/195	1.05 [0.78,1.42]	1.54 [1.11,2.14]	0.84 [0.68,1.04]
Parents and siblings/children	(ref. 1685)246/148/801	0.84 [0.70,1.01]	0.90 [0.72,1.14]	0.98 [0.87,1.11]
Parents only	(ref. 1656)281/161/786	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Total (no.)</b>	(ref. 4274)712/450/2009			

QoL: Quality of Life, RRR: Relative Risk Ratios, CI: Confidence Intervals.

RRR and 95 % CI presented.

Adjusted model 2: Adjusted for age, sex, current education, part-time work, moving, geographical region, and mutual adjustment for housing conditions.

**eTable 11.** Changes in category of loneliness (No. = 7445)

no. cases, (ref.not lonely to not lonely) lonely to lonely/lonely to not lonely/not lonely to lonely	RRR (95 % CI)		
	Lonely to lonely (16.9 %)	Lonely to not lonely (7.6 %)	Not lonely to lonely (6.1 %)
<b>Direct access to outdoor spaces</b>			
None (ref. 170)26/26/64	1.91 [1.16,3.16]	1.41 [0.87,2.27]	1.44 [1.02,2.03]
Common yard (ref. 320)39/32/74	1.63 [1.08,2.48]	0.94 [0.62,1.44]	0.98 [0.73,1.33]
Balcony (ref. 289)28/53/89	1.31 [0.84,2.04]	1.75 [1.23,2.48]	1.35 [1.02,1.78]
Multiple outdoor spaces (ref. 1324)115/155/295	1.15 [0.90,1.46]	1.21 [0.98,1.51]	0.97 [0.83,1.13]
Garden (ref. 3057)255/298/736	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Urbanicity</b>			
Urban (ref. 1861)169/214/454	1.00 [0.77,1.30]	0.96 [0.76,1.23]	1.01 [0.85,1.20]
Semi-urban (ref.1107)99/120/276	1.01 [0.77,1.33]	0.98 [0.76,1.26]	1.02 [0.85,1.21]
Rural (ref.2192)195/230/528	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household density</b>			
Above median (ref. 2325)225/287/620	1.19 [0.98,1.46]	1.23 [1.03,1.48]	1.29 [1.13,1.46]
Below median (ref. 2835)238/277/638	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Household composition</b>			
Alone (ref. 241)43/31/121	1.88 [1.23,2.89]	1.23 [0.79,1.92]	2.10 [1.58,2.79]
Roomies/friends (ref. 301)29/29/51	1.01 [0.63,1.61]	0.83 [0.52,1.31]	0.66 [0.47,0.94]
Partner (ref. 587)38/99/111	0.63 [0.42,0.94]	1.48 [1.11,1.97]	0.72 [0.56,0.92]
Parents and siblings/children (ref. 2047)179/193/461	0.99 [0.79,1.23]	0.89 [0.72,1.09]	0.86 [0.74,0.99]
Parents only (ref. 1984)174/212//514	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
<b>Total (no.)</b> (ref. 5160)463/564/1258			

RRR: Relative Risk Ratios, CI: Confidence Intervals.

RRR and 95 % CI presented.

Adjusted model 2: Adjusted for age, sex, current education, part-time work, moving, geographical region, and mutual adjustment for housing conditions.

eFigure 1. Flow of participation

