# Additional file for "Changes in the Provision of Instrumental Support by Older Adults in Nine 

## European Countries during 2004-2015: A panel data analysis"

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## A. Model Formulation

## Multilevel approach on growth model

The basic growth model for assessing changes in the outcome across time can be decomposed into two levels:

## 1. Level 1 (within person)

This model has two individual growth parameters, $\alpha_{0 i}$ and $\alpha_{1 i}$. The first growth parameter $\left(\alpha_{0 i}\right)$ represents a given person's initial log-odds of the outcome at baseline (Time=0). The second growth parameter $\left(\alpha_{l i}\right)$ represents the rate of change in the log-odds of the outcome across time for that person.
$\log \left(\frac{\pi_{\mathrm{ij}}}{1-\pi_{\mathrm{ij}}}\right)=\alpha_{0 \mathrm{i}}+\alpha_{1 \mathrm{i}}$ Time $_{\mathrm{ij}}$
Where " $\pi_{\mathrm{ij}}$ " is the probability of answer positively to the social support question for individual $i$ at measurement occasion $j$.
2. Level 2 (Between person)

$$
\begin{align*}
& \alpha_{0 i}=\beta_{00}+\beta_{01} X_{i}+u_{0 j}  \tag{a2.1}\\
& \alpha_{1 \mathrm{i}}=\beta_{10}+\beta_{11} X_{i}+u_{1 j} \tag{a2.2}
\end{align*}
$$

The level 1 growth parameters are the outcomes of level 2 models. Equation a2.1 expresses the association between the first growth parameter and the time-constant predictor $\left(\mathrm{X}_{\mathrm{i}}\right)$. While equation a2.2 determines whether the second growth parameter varies by the value of time-constant predictor across time. Both level-2 models have fixed effects and random effects. The fixed effects in equation a2.1 represents the average initial odds of providing support when predictors equal to zero $\left(\beta_{00}\right)$ and the effect of predictor on the initial odds of the outcome $\left(\beta_{01}\right)$.

In equation a $2.2 \beta_{10}$ express the average rate of change in the odds of support provision when the predictor $\left(X_{i}\right)$ equal to its reference value. While $\beta_{l l}$ capture the, on average, relationship between the
growth rate with the predictor. The random part in equation a2.1, random intercept ( $u_{0 j}$ ), represent the individual deviation from $\beta_{00}$. The random slope ( $u_{1 j}$ ) represent individual deviation from the population trajectory.

## Specifying Multilevel Growth Model for the present study

To test the fit of multilevel growth model for our data, we first specified the unconditional models then added time-varying and time-constant predictors. We also tested within level and cross level interactions.

## Unconditional mean model

The unconditional mean model was specified without any predictors to confirm whether there are 'within-individual variations' (changes in the odds of providing support over time for a given individual) and 'between-individual variations' (variation between individuals in the odds of providing support over time)
$\log \left(\frac{\pi_{\mathrm{ij}}}{1-\pi_{\mathrm{ij}}}\right)=\alpha_{0 \mathrm{i}}$
Note:
$\log \left(\frac{\pi_{i j}}{1-\pi_{i j}}\right)$ is the log-odds that $\mathrm{y}_{\mathrm{ij}}$ equals to one (positive answer to the Providing support question)
$\pi_{\mathrm{ij}}=\mathrm{E}\left(\mathrm{y}_{\mathrm{ij}} \mid \mathrm{x}_{\mathrm{ij}}, \mathrm{u}_{\mathrm{j}}\right)$
$\alpha_{0 i}=\beta_{00}+u_{0 j}$

## Unconditional means growth model

This model included only the outcome and time as predictor to establish whether Time variable is associated with the odds of providing support. Equation a1.1 shows the level 1 unconditional means growth model. Models for growth parameters in this model are shown in equations a3.2 and a3.3.
$\alpha_{1 i}=\beta_{10}+\mathrm{u}_{1 \mathrm{j}}$

## Adding time-constant predictors

At this stage, we added time-constant covariates to the unconditional growth model by substituting the growth parameters in equation a1.1 with equations a4.1 and a4.2
$\alpha_{0 \mathrm{i}}=\beta_{00}+\beta_{01}$ Age at baseline ${ }_{i}+\beta_{02}$ Man $_{\mathrm{i}}+\beta_{03}$ Middle edu. level $_{\mathrm{i}}+\beta_{04}$ High edu. level ${ }_{\mathrm{i}}+$
$\alpha_{1 \mathrm{i}}=\beta_{10}+\beta_{11}$ Age at baseline ${ }_{i}+\beta_{12}$ Man $_{\mathrm{i}}+\beta_{13}$ Middle edu. level $_{\mathrm{i}}+\beta_{14}$ High edu. level $_{\mathrm{i}}+$ $\beta_{15}$ Central region $+\beta_{16}$ Northern $^{\text {region }}{ }_{i}+\mathrm{u}_{1 \mathrm{j}}$

## Adding time-varying predictors

The time-varying covariates are added in equation a 1.1 , as in
$\log \left(\frac{\pi_{\mathrm{ij}}}{1-\pi_{\mathrm{ij}}}\right)=\alpha_{0 \mathrm{i}}+\alpha_{1 \mathrm{i}}$ Time $_{\mathrm{ij}}+\alpha_{2 \mathrm{i}}$ No partner ${ }_{\mathrm{ij}}+\alpha_{3 \mathrm{i}}$ Household size ${ }_{\mathrm{ij}}+$
$\alpha_{4 i}$. Number of living children ${ }_{\mathrm{ij}}+\alpha_{5 \mathrm{i}} \mathrm{Poor} \mathrm{health}_{\mathrm{ij}}+\alpha_{6 \mathrm{i}}$ Time $_{\mathrm{ij}} \mathrm{x}$ No partner ${ }_{\mathrm{ij}}+\alpha_{7 \mathrm{i}}$ Time $_{\mathrm{ij}} \times$ Poor health ${ }_{\mathrm{ij}}+$
$\alpha_{8 i}$ Retired $_{\mathrm{ij}}{ }^{\mathrm{j}} \alpha_{9 \mathrm{i}}$ Not employed ${ }_{\mathrm{ij}}$
With the growth parameters $\alpha_{0 \mathrm{i}}$ and $\alpha_{1 \mathrm{i}}$ as in Equation a4.1 and a4.2, while the parameters for other time-varying predictors are only fitted as fixed effect.

## Interaction between predictors

We tested interaction between age at baseline with the other time-constant predictors as well as between region and other predictors. We keep interactions terms which were significant or changed the time estimate. For the final model, in the level 1, we specified interaction between time with marital status and time with self-perceived health. While the level 2 model include interactions between age at baseline with sex, region with sex and highest education level. The final model (Model 5) used in the current study is as follows:

$$
\begin{align*}
& \log \left(\frac{\pi_{\mathrm{ij}}}{1-\pi_{\mathrm{ij}}}\right)=\beta_{00}+\beta_{01} \text { Age at baseline }_{\mathrm{i}}+\beta_{02} \text { Man }_{\mathrm{i}}+\beta_{03} \text { Middle edu. level }_{\mathrm{i}}+ \\
& \beta_{04} \text { High edu.level }_{i}+\beta_{05} \text { Central region }_{i}+\beta_{06} \text { Northern region }_{i}+\beta_{20} \text { No partner }_{i j}+ \\
& \beta_{40} \text { N. living children }_{\mathrm{ij}}+\beta_{50} \text { Poor health }_{\mathrm{ij}}+\beta_{30} \text { Household size }_{\mathrm{ij}}+ \\
& \beta_{22} \text { Man }_{\mathrm{i}} \mathrm{XNo} \text { partner }{ }_{\mathrm{ij}}+\beta_{07} \text { Age at baseline }{ }_{i} \times \text { Man }_{\mathrm{i}}+\beta_{08} \text { Middle edu. level }_{\mathrm{i}} \mathrm{X} \\
& \text { Central region }{ }_{i}+\beta_{09} \text { High edu. level }_{\mathrm{i}} \mathrm{x} \text { Central region }{ }_{\mathrm{i}}+\beta_{010} \text { Middle edu. level }_{\mathrm{i}} \mathrm{x} \\
& \text { Northern region }{ }_{i}+\beta_{011} \text { High edu. level }_{i} x \text { Northern region }_{i}+\beta_{012} \text { Man }_{i} x \\
& \text { Central region }{ }_{i}+\beta_{013} \text { Man }_{\mathrm{i}} \times \text { Northern region }_{\mathrm{i}}+\beta_{25} \text { Central region }_{\mathrm{i}} \mathrm{X} \text { No partner } \mathrm{r}_{\mathrm{ij}}+ \\
& \beta_{26} \text { Northern region }_{i} \times \text { No partner }{ }_{i j}+\beta_{45} \text { Central region }_{i} \times N \text {. living children }{ }_{i j}+ \\
& \beta_{46} \text { Northern region }_{\mathrm{i}} \times \mathrm{N} \text {. living children }{ }_{\mathrm{ij}}+\beta_{10} \text { Time }_{\mathrm{ij}}+\beta_{17} \text { Age at baseline }_{\mathrm{i}} \times \mathrm{Man}_{\mathrm{i}} \mathrm{X} \\
& \text { Time }_{i j}+\beta_{18} \text { Age at baseline }_{i} \times \text { Woman }_{i} \mathrm{X} \text { Time }_{\mathrm{ij}}+\beta_{15} \text { Central region }_{\mathrm{i}} \mathrm{XTime} \mathrm{~T}_{\mathrm{ij}}+ \\
& \beta_{16} \text { Northen region }_{i} \mathrm{X} \text { Time }_{\mathrm{ij}}+\beta_{13} \text { Middle edu. level }_{\mathrm{i}} \mathrm{X} \text { Time }_{\mathrm{ij}}+\beta_{14} \text { High edu. level }_{\mathrm{i}} \mathrm{X} \\
& \text { Time }_{\mathrm{ij}}+\beta_{70} \text { Time }_{\mathrm{ij}} \times \text { Poor health }_{\mathrm{ij}}+\beta_{60} \text { Time }_{\mathrm{ij}} \times \text { No partner }_{\mathrm{ij}}+\beta_{65} \text { Central region }_{\mathrm{i}} \mathrm{X} \\
& \text { Time }_{\mathrm{ij}} \times \text { No partner }_{\mathrm{ij}}+\beta_{66} \text { Northern region }_{\mathrm{i}} \times \text { Time }_{\mathrm{ij}} \times \text { No partner }{ }_{\mathrm{ij}}+\beta_{80} \text { Retired }_{\mathrm{ij}}+ \\
& \beta_{90} \text { Not employed }{ }_{i j}+u_{0 i}+u_{1 j} \text { Time }_{i j} \tag{a6.0}
\end{align*}
$$

Table A1. Model Building

|  | Model 1: Unconditional mean model ( $\mathrm{n}=34838$ ) Odds Ratio (95\% Confidence Interval) | Model 2: Unconditional growth model ( $\mathrm{n}=34838$ ) Odds Ratio (95\% Confidence Interval) | Model 2A: + time-constant variables ( $\mathrm{n}=34838$ ) <br> Odds Ratio ( $95 \%$ Confidence Interval) | ```Model 2B: + time variant variables ( \(\mathrm{n}=\mathbf{3 4 8 3 8}\) ) Odds Ratio (95\% Confidence Interval)``` | Model 3 ( $\mathrm{n}=34838$ ) <br> Odds Ratio (95\% Confidence Interval) |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| Parti: For intercept |  |  |  |  |  |
| Intercept | 0.389***---(0.374,0.405) | $0.526 * *-\cdots(0.4940 .559)$ | $0.965-\cdots-1-10.828,1.124)$ | $1005-\cdots-100001.255)$ | $1.283-\cdots-10.0$ |
| Sex |  |  |  |  |  |
| Women |  |  | (1.000,1.000) |  |  |
| Men |  |  |  |  | 0.881 - |
| Baseline age |  |  | 0.948***---(0.942,0.955) | 0936***-.-(0.9280.944) | 0.930*** |
| Sexx Baseline age |  |  |  |  |  |
| Women x baseline age |  |  |  |  | 1---------1.000,1.000) |
| Men x baseline age |  |  |  |  | 1.017**-... (1.005,1.028) |
|  |  |  |  |  |  |
| Low |  |  | (1.000,1.000) | (1.000, 1.000$)$ | (1.000,1.000) |
| Middle |  |  | $1.259 * * *-(1.098,1.444)$ | $1.234^{* *}-(1.0761 .415)$ | 1.099 - 0.9381 .288$)$ |
|  |  |  | 1.329***-- (1.143,1.545) | 1.306***- (1.123, 1.519$)$ | 1.271 - ${ }^{*}$ |
| Employment status |  |  |  |  |  |
| Employed |  |  |  | (1.000, 1.000$)$ | (1.000,1.000) |
| Retired |  |  |  | $1.320 * * *-1.190,1.464)$ | 1.301 *** (1.173, 1.443$)$ |
| Not employed |  |  |  | 1.131*- | 1.109 - 0 |
|  |  |  |  |  |  |
| South |  |  |  |  |  |
| Central |  |  |  |  | $1-1.000,1.000)$ |
|  |  |  | 1.877 - | $1.865 * * *-1.628 .2 .137)$ | 1.373*- |
| Marital |  |  |  |  |  |
| With partner |  |  |  | (1.000, 1.000$)$ |  |
| No partner |  |  |  |  | 0.992----(0.822,1.197) |
| Number of living children |  |  |  | 0.973-....... 0.9451 .002$)$ | 0.978 |
| Self perceived health |  |  |  |  |  |
| Poor |  |  |  | (1.000, 1.000$)$ | (1.000,1.000) |
| Good |  |  |  | 1.336*** (1.238, 1.442$)$ | 1.122 - 0 |
| Household size |  |  |  | $0.914 * * *(0.8700 .961)$ | 0.916*** (0.872,0.963) |
|  |  |  |  |  |  |
| Women x with partner |  |  |  |  | $1-1.0001 .000)$ |
| Men x no partner |  |  |  |  | 0.741**----(0.619,0.888) |


|  | Model 1: Unconditional mean model ( $\mathrm{n}=\mathbf{3 4 8 3 8}$ ) <br> Odds Ratio (95\% Confidence Interval) | Model 2: Unconditional growth model ( $\mathbf{n}=\mathbf{3 4 8 3 8}$ ) Odds Ratio (95\% Confidence Interval) |  | $\begin{aligned} & \hline \text { + time-constant } \\ & \text { les }(\mathbf{n}=\mathbf{3 4 8 3 8}) \\ & (95 \% \text { Confidence } \\ & \text { nterval) } \\ & \hline \end{aligned}$ | $\begin{array}{r} \hline \text { Model 2I } \\ \text { variab } \\ \text { Odd } \\ \text { Confic } \\ \hline \end{array}$ | $\begin{aligned} & \text { time variant } \\ & (\mathbf{n}=\mathbf{3 4 8 3 8}) \\ & \text { atio (95\% } \\ & \text { ce Interval) } \\ & \hline \end{aligned}$ | Model 3 ( $\mathrm{n}=34838$ ) <br> Odds Ratio (95\% Confidence Interval) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Region $x$ Sex |  |  |  |  |  |  |  |  |
| Central x women |  |  |  |  |  |  |  | (1.000,1.000) |
| South x men |  |  |  |  |  |  | 0.692 | (0.561,0.853) |
| North x men |  |  |  |  |  |  | $1.228 *$ | (1.017,1.484) |
| Region x Education |  |  |  |  |  |  |  |  |
| Central x low |  |  |  |  |  |  |  | (1.000,1.000) |
| South x middle |  |  |  |  |  |  | 1.640* | (1.260,2.136) |
| South x high |  |  |  |  |  |  | 1.269 | (0.897,1.795) |
| North x middle |  |  |  |  |  |  | 1.106 | (0.885,1.382) |
| North x high |  |  |  |  |  |  |  | (0.752,1.199) |
| Region x Marital status |  |  |  |  |  |  |  |  |
| Central x with partner |  |  |  |  |  |  |  | (1.000,1.000) |
| South x no partner |  |  |  |  |  |  | 0.631 * | (0.437,0.911) |
| North x no partner |  |  |  |  |  |  | 1.547 * | (1.144,2.091) |
| Region x Number of children |  |  |  |  |  |  |  |  |
| South x number of children |  |  |  |  |  |  | 0.917 * | (0.853,0.987) |
| Central x number of children |  |  |  |  |  |  |  | (1.000,1.000) |
| North x number of children |  |  |  |  |  |  | 1.041 | (0.973,1.114) |
| Part ii: For time slope |  |  |  |  |  |  |  |  |
| Time |  | $0.926 * * *--(0.9170 .934)$ | 0.964 *** | (0.944,0.984) | 0.946 *** | (0.927,0.967) | $0.916^{*}$ | (0.893,0.940) |
| Age x Time |  |  | 0.997*** | (0.996,0.998) | 0.998*** | (0.997,0.999) |  |  |
|  |  |  |  |  |  |  |  |  |
| Women x time |  |  | 1 | (1.000,1.000) | 1 | (1.000, 1.000 |  |  |
| Men x time |  |  | 0.993 | (0.978,1.008) | 0.993 | (0.9781.008) |  |  |
| Sex Agex Time |  |  |  |  |  |  |  |  |
| Women xage x |  |  |  |  |  |  | $0.998{ }^{\text {a }}$ | (0.997,1.000) |
| Men x age x time |  |  |  |  |  |  | $0.998^{*}$ | (0.997,0.999) |
|  |  |  |  |  |  |  |  |  |
| South x time |  |  | $0.973 *$ | (0.953,0.994) | 0.975 | (0.955,0.996) | 0.975 | (0.952,0.998) |
| Central x time |  |  | 1 | (1.000,1.000) |  | (1.00001.000) |  | (1.000,1.000) |
| North x time |  |  | -0.979* | (0.961,0.996) | 0.979* | (0.962,0.996) | 0.991 | (0.970,1.012) |
|  |  |  |  |  |  |  |  |  |
| Low x time |  |  | 1 | (1.000,1.000) | 1. | (1.00021.000) |  | (1.000,1.000) |
| Middle x xime |  |  | 1.012 | (0.994,1.031) | 1.011 | (09931.030) | 1.011 | (0.993,1.030) |
| High x time |  |  | 1.026* | (1.005,1.046) | 1.023* | (1.002,1.044) | 1.021* | (1.001,1.042) |
| Self-perceived health x Time |  |  |  |  |  |  |  |  |
| Poor x time |  |  |  |  |  |  |  | (1.000,1.000) |


|  | Model 1: Unconditional mean model ( $\mathrm{n}=34838$ ) <br> Odds Ratio (95\% Confidence Interval) | ```Model 2: Unconditional growth model ( \(\mathbf{n}=\mathbf{3 4 8 3 8}\) ) Odds Ratio ( \(95 \%\) Confidence Interval)``` | Model 2A: + time-constant variables ( $\mathrm{n}=\mathbf{3 4 8 3 8}$ ) <br> Odds Ratio (95\% Confidence Interval) | ```Model 2B: + time variant variables ( }\textrm{n}=\mathbf{34838}\mathrm{ ) Odds Ratio (95% Confidence Interval)``` | Model 3 ( $\mathrm{n}=34838$ ) <br> Odds Ratio (95\% Confidence Interval) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Good x time |  |  |  |  | 1.030*** (1.013,1.048) |
| Marital status x Time |  |  |  |  |  |
| With partner x time |  |  |  |  | 1-1.-.-....-(1.000,1.000) |
| No partner x time |  |  |  |  | 1.026*-- $1.003,1.050)$ |
| Marital status x Region x Time |  |  |  |  |  |
| With partner x central x time |  |  |  |  | (1.000,1.000). |
| No partner x south x time |  |  |  |  | 1.035 - 0. |
| No partner x north x time |  |  |  |  | 0.952* - 0 - 0.9160 .990 ) |
| Random Effect |  |  |  |  |  |
| Intercept | 1.719 -----.-(1.592,1.857) | 2.873------ (2.5173.279) | 2.352 ----- (2.039,2.713) | 2.319 - .-.... (2.009-2.678) | 2.26 -...... (1.954,2.613) |
| Time slope |  | 0.023--------(0.019,0028) | 0.022------- (0.018,0027) | 0.022 - - - 0 (0.01800.027) | 0.021-1.-. 0 (0.017,0.026) |
| Covariance |  | $-0.119^{-\cdots-\cdots-0.0 .0 .0 .083)}$ | -0.136 ${ }^{(-0.170,-0.102)}$ | $-0.137-\cdots-\cdots(-0.170,-0.103)$ | $-0132-\cdots \cdots(-0.166,-0.099)$ |
| Intraclass correlation | 0.343 | 0.466 | 0.417 | 0.414 | 0.407 |

## B. Type of instrumental support and recipients of instrumental support

Table B1. Type of instrumental support provided by wave and region

| Type of Instrumental support provided | Wave | South |  | Central |  | North |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | n | \% | n | \% | n | \% |
| Personal care | 1 | 231 | 45.38 | 287 | 17.45 | 139 | 13.52 |
| Practical household help | 1 | 336 | 66.01 | 1315 | 79.94 | 899 | 87.45 |
| Paperwork | 1 | 187 | 36.74 | 599 | 36.41 | 345 | 33.56 |
| Personal care | 2 | 194 | 42.45 | 309 | 20.22 | 151 | 17.22 |
| Practical household help | 2 | 305 | 66.74 | 1262 | 82.59 | 750 | 85.52 |
| Paperwork | 2 | 170 | 37.2 | 525 | 34.36 | 282 | 32.16 |
| Personal care | 6 | 95 | 40.95 | 238 | 18.49 | 90 | 12.41 |
| Practical household help | 6 | 142 | 61.21 | 1077 | 83.68 | 634 | 87.45 |
| Paperwork | 6 | 93 | 40.09 | 395 | 30.69 | 167 | 23.03 |

Note: Data on type of support was only available in wave 1,2 and 6 .
Table B2. Type of relationship with support recipient by wave and region

| Type of Instrumental support provided | Wave | South |  | Central |  | North |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | n | \% | n | \% | n | \% |
| Parents/children/partner | 1 | 278 | 54.62 | 1055 | 64.02 | 720 | 70.04 |
| Friends \& neighbour | 1 | 142 | 27.9 | 457 | 27.73 | 351 | 34.14 |
| Extended family /other relationships | 1 | 163 | 32.02 | 405 | 24.58 | 209 | 20.33 |
| Parents/children/partner | 2 | 255 | 55.68 | 985 | 64.17 | 629 | 71.72 |
| Friends \& neighbour | 2 | 126 | 27.51 | 419 | 27.3 | 251 | 28.62 |
| Extended family /other relationships | 2 | 131 | 28.6 | 357 | 23.26 | 166 | 18.93 |
| Parents/children/partner | 4 | 118 | 52.21 | 484 | 57.08 | 313 | 61.49 |
| Friends \& neighbour | 4 | 60 | 26.55 | 326 | 38.44 | 201 | 39.49 |
| Extended family /other relationships | 4 | 82 | 36.28 | 193 | 22.76 | 103 | 20.24 |
| Parents/children/partuer | 5 | 106 | 45.89 | 455 | 53.72 | 342 | 61.96 |
| Friends \& neighbour | 5 | 68 | 29.44 | 346 | 40.85 | 236 | 42.75 |
| Extended family /other relationships | 5 | 87 | 37.66 | 223 | 26.33 | 106 | 19.20 |
| Parents/children/partuer | 6 | 121 | 51.93 | 687 | 53.3 | 413 | 56.97 |
| Friends \& neighbour | 6 | 64 | 27.47 | 511 | 39.64 | 324 | 44.69 |
| Extended family /other relationships | 6 | 66 | 28.33 | 288 | 22.34 | 106 | 14.62 |

## C. Interaction Plots



Fig. C1. Interaction plot of sex and region on the odds of instrumental support provision


Fig. C2. Interaction plot of sex and age at baseline on the odds of instrumental support provision


Fig. C3. Interaction plot of marital status and region on the odds of instrumental support provision


Fig. C4. Interaction plot of sex and marital status on the odds of instrumental support provision


Fig. C5. Interaction plot of education level and region on the odds of instrumental support provision


Fig. C6. Interaction plot of number of living children and region on the odds of instrumental support provision


Fig. C7. Interaction plot of sex, age at baseline and time on the odds of instrumental support provision


Fig. C8. Interaction plot of region and time on the odds of instrumental support provision


Fig. C9. Interaction plot of highest education level and time on the odds of instrumental support provision


Fig. C10. Interaction plot of self-perceived health and time on the odds of instrumental support provision


Fig. C11. Interaction plot of marital status and time on the odds of instrumental support provision


Fig. C12. Interaction plot of region, marital status, and time on the odds of instrumental support provision

## D. Predicted probability plots



Fig. D1. Predicted probability of instrumental support provision by region


Fig. D2. Predicted probability of instrumental support provision by marital status in Northern Europe


Fig. D3. Predicted probability of instrumental support provision by marital status in Central Europe


Fig. D4. Predicted probability of instrumental support provision by marital status in Southern Europe


Fig. D5. Predicted probability of instrumental support provision by household size over region


Fig. D6. Predicted probability of instrumental support provision by number of living children over region


Fig. D7. Predicted probability of instrumental support provision by self-perceived health over region


Fig. D8. Predicted probability of instrumental support provision by employment status over region

## E. Characteristics of sample and non-sample

Table E1. Characteristics of the eligible sample* and the final sample

|  | Eligible sample | Final sample | Total | p-value |
| :---: | :---: | :---: | :---: | :---: |
| Age at baseline, (Mean $\pm$ s.d), $\mathbf{n}=8636$ ) | $61.6 \pm 8.1$ | $62.5 \pm 8.2$ | $62.4 \pm 8.2$ | $0.1012^{\text {a }}$ |
| Number living children, (Mean $\pm$ s.d), $\mathbf{n}=8620$ ) | $2.4 \pm 1.6$ | $2.2 \pm 1.4$ | $2.3 \pm 1.4$ | $0.0458{ }^{\text {a }}$ |
| Household size, (Mean $\pm$ s.d), $\mathbf{n}=8636$ ) | $2.5 \pm 1.0$ | $2.3 \pm 1,0$ | $2.3 \pm 1.0$ | $0.0003^{\text {a }}$ |
| Region (n(\%), $\mathrm{n}=8636$ ) |  |  |  |  |
| South | 77 (27.3) | 2213 (26.5) | 2290 (26.52) | $0.794^{\text {b }}$ |
| Central | 134 (47.5) | 4139 (49.6) | 4273 (49.48) |  |
| North | 71 (25.2) | 2002 (24.0) | 2073 (24) |  |
| Sex ( $\mathrm{n}(\%)$ ), $\mathbf{n}=8636$ ) |  |  |  |  |
| Women | 144 (51.0) | 4704 (56.3) | 4848 (56.14) | $0.081{ }^{\text {b }}$ |
| Men | 138 (48.9) | 3650 (43.7) | 3788 (43.86) |  |
| Education (n(\%), $\mathbf{n}=\mathbf{8 5 7 1}$ ) |  |  |  |  |
| Low | 119 (54.8) | 4010 (48.0) | 4129 (48.17) | $0.134^{\text {b }}$ |
| Middle | 58 (26.7) | 2515 (30.1) | 2573 (30.02) |  |
| High | 40 (18.4) | 1829 (21.9) | 1869 (21.81) |  |
| Marital Status (n(\%), $\mathbf{n}=8623$ ) |  |  |  |  |
| With partner | 238 (87.5) | 6360 (76.2) | 6598 (76.52) | $0.000^{\text {b }}$ |
| Without partner | 34 (12.5) | 1991 (23.9) | 2025 (23.48) |  |
| Employment Status (n(\%), $\mathbf{n}=8600$ ) |  |  |  |  |
| Employed | 109 (41.9) | 2813 (33.7) | 2922 (33.98) | $0.023{ }^{\text {b }}$ |
| Retired | 101 (38.9) | 3715 (44.5) | 3816 (44.37) |  |
| Not employed | 50 (19.2) | 1812 (21.7) | 1862 (21.65) |  |
| Self-perceived health (n(\%), $\mathbf{n}=\mathbf{8 6 1 2}$ ) |  |  |  |  |
| Poor | 49 (18.3) | 1919 (23.0) | 1968 (22.85) | 0.070 |
| Good | 219 (81.7) | 6425 (77.0) | 6644 (77.15) |  |
| Provided social support ( $\mathrm{n}(\%)$ ), $\mathbf{n}=\mathbf{8 5 9 3}$ ) |  |  |  |  |
| Yes | 87 (33.5) | 3186 (38.2) | 3273 (38.09) | $0.119^{\text {b }}$ |
| No | 173 (66.5) | 5147 (61.8) | 5320 (61.91) |  |

p-value was obtained from ${ }^{\text {a }}$ two-sample $t$-test and ${ }^{\text {b }}$ Chi-squared test

* aged 50 and over in wave 1 ; participated in at least waves 1 and 6 ; and have never moved to a nursing home.

Table E2. Characteristics of SHARE sample (age $\geq 50$ from the nine countries) and the final sample

|  | SHARE sample | Final sample | Total | p-value |
| :---: | :---: | :---: | :---: | :---: |
| Age at baseline, (Mean $\pm$ s.d), $\mathbf{n}=\mathbf{2 1 4 8 3}$ ) | $66.9 \pm 10.8$ | $62.5 \pm 8.2$ | $65.2 \pm 10.1$ | $0.000^{\text {a }}$ |
| Number living children, (Mean $\pm$ s.d), $\mathrm{n}=21423$ ) | $2.2 \pm 1.6$ | $2.2 \pm 1.4$ | $2.2 \pm 1.5$ | $0.000^{\text {a }}$ |
| Household size, (Mean $\pm$ S.d), $\mathbf{n}=\mathbf{2 1 4 8 3}$ ) | $2.1 \pm 1.0$ | $2.3 \pm 1,0$ | $2.2 \pm 1.0$ | $0.000^{\text {a }}$ |
| Region (n(\%), $\mathbf{n}=21483)$ |  |  |  |  |
| South | 2573 (19.6) | 2213 (26.5) | 4786 (22.3) | $0.000^{\text {b }}$ |
| Central | 7943 (60.5) | 4139 (49.6) | 12082 (56.2) |  |
| North | 2613 (19.9) | 2002 (24.0) | 4615 (21.5) |  |
| Sex (n(\%), $\mathrm{n}=21483)$ |  |  |  |  |
| Women | 7016 (53.4) | 4704 (56.3) | 11720 (54.6) | $0.000^{\text {b }}$ |
| Men | 6113 (46.6) | 3650 (43.7) | 9763 (45.5) |  |
| Education (n(\%), $\mathrm{n}=\mathbf{2 1 2 8 3})$ |  |  |  |  |
| Low | 6771 (52.4) | 4010 (48.0) | 10781 (50.7) | $0.000^{\text {b }}$ |
| Middle | 4026 (31.1) | 2515 (30.1) | 6541 (30.7) |  |
| High | 2132 (16.5) | 1829 (21.9) | 3961 (18.6) |  |
| Marital Status (n(\%), $\mathbf{n}=\mathbf{2 1 4 3 1})$ |  |  |  |  |
| With partner | 9123 (69.8) | 6360(76.2) | 15483 (72.25) | $0.000^{\text {b }}$ |
| Without partner | 3957 (30.3) | 1991 (23.9) | 5948 (27.75) |  |
| Employment Status (n(\%), $\mathbf{n}=\mathbf{- 1 4 3 1 )}$ |  |  |  |  |
| Employed | 3020 (23.2) | 2813 (33.7) | 5833 (27.3) | $0.000^{\text {b }}$ |
| Retired | 7307 (56.2) | 3715 (44.5) | 11022 (51.7) |  |
| Not employed | 2674 (20.6) | 1812 (21.7) | 4486 (21.0) |  |
| Self-perceived health (n(\%), $\mathbf{n}=\mathbf{2 1 3 7 8})$ |  |  |  |  |
| Poor | 4557 (35.0) | $1919(23.0)$ | 6476 (30.3) | $0.000^{\text {b }}$ |
| Good | 8477 (65.0) | 6425 (77.0) | 14902 (69.7) |  |
| Provided social support ( n (\%), $\mathrm{n}=21315$ ) |  |  |  |  |
| Yes | 3749 (28.9) | 3186 (38.2) | 6935 (32.5) | $0.000^{\text {b }}$ |
| No | 9233 (71.1) | 5147 (61.8) | 14380 (67.5) |  |

p-value was obtained from ${ }^{\text {a }}$ two-sample t test and ${ }^{\mathrm{b}}$ Chi-squared test

