**Supplementary Document**

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| **Table S1** The recoding method for education, leisure activities and health status. |
| **Variables** | **Definition** | **Recoding method in SPSS** |
| Used for the description of baseline characteristics | Used for the Multinomial Logistic Regression Analysis |
| Education | Years of schooling. | 0 = "without schooling" | 0 = “without schooling education” |
| 1 = "1-6 years" | 1 = “having schooling education” |
| 2 = "≥ 6 years" |
| Frequency of leisure activity  | The frequency of leisure activity defined as two categorical (low and high). The sum score of the eight activities ranges from 8 to 40, with a low score representing a high frequency. The high frequency was defined as “being scored at 40th percentile or below”, and low frequency as “being scored over 40th percentile”.  | 0 = "low frequency leisure activity" | Same as descriptive data |
| 1 = "high frequency leisure activity" |
| Health Status |
| BMI | Body mass index, calculated as weight in kilograms divided by height in meters squared.  | 0 = "underweight (< 18.5 kg/m2)" | 1="underweight" |
| 1 = "normal (18.5 - 23.9 kg/m2)" | 2="normal" |
| 2 = "overweight (24 - 27.9 kg/m2)" | 0="combined overweight & obese " |
|  3 = "obese (≥28 kg/m2)" |
| CVDs | Includes four diseases: cardiovascular diseases, hypertension, diabetes heart disease, cerebrovascular disease. | 0 = "CVDs (+), having at least one CVD" | Same as descriptive data |
| 1 = "CVDs (-), without CVD" |
| Other chronic diseases (non-CVDs) | Includes eight diseases: bronchitis, emphysema, pneumonia, asthma; tuberculosis; cancer; gastric or duodenal ulcer and arthritis. | 0 = "non-CVDs (+), having at least one non-CVD" | Same as descriptive data |
| 1 = "non-CVDs (-), without non-CVD" |

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| **Table S2** Average Posterior Probabilities of Group Assignment and Bayesian Information Criterion (BIC) Statistics of Model Fit |
| 　 | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | BIC(N=9311) | BIC (N=2038) |
| 2 groups | 0.94  | 0.99  |  |  |  | -23947.48 | -23939.89 |
| **3 groups** | **0.93**  | **0.86**  | **0.97**  |  |  | **-23778.93** | **-23767.54** |
| 4 groups | 0.92  | 0.90  | 0.80  | 0.97  |  | -23579.13 | -23563.94 |
| 5 groups | 0.92  | 0.91  | 0.81  | 0.89  | 0.97  | -23479.75 | -23460.76 |

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| **Table S3** The Maximum Likelihood Estimates from the Censored Normal Model |
|  **Parameter** | **Estimate** | **Standard Error** | **T for H0:Parameter=0** |
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| Intercept | 27.989  | 0.285  | 98.104\*\*\* |
| Linear | -0.746  | 0.285  | -2.621\*\* |
| Quadratic | -0.176  | 0.064  | -2.759\*\* |
| Cubic | 0.014  | 0.004  | 3.887\*\*\* |
| Intercept | 28.179  | 0.499  | 56.518\*\*\* |
| Linear | -3.119  | 0.647  | -4.823\*\*\* |
| Quadratic | 0.885  | 0.193  | 4.593\*\*\* |
| Cubic | -0.096  | 0.014  | -6.761\*\*\* |
| Intercept | 29.526  | 0.114  | 259.623\*\*\* |
| Linear | -0.333  | 0.047  | -7.163\*\*\* |
| Quadratic | 0.016  | 0.004  | 4.097\*\*\* |
| Sigma | 4.555  | 0.042  | 108.158\*\*\* |
| Group membership |  |  |  |
| Group 1 (%) | 14.0  | 1.061  | 13.227\*\*\* |
| Group 2 (%) | 4.5  | 0.512  | 8.821\*\*\* |
| Group 3 (%) | 81.5  | 1.120  | 72.741\*\*\* |
| BIC=-23774.7 (N=9311) BIC=-23764.1 (N=2038) | AIC=-23724.8 |
| \* *P* < 0.05, \*\* *P* < 0.01, \*\*\* *P* < 0.001. |



**Figure S1** Trajectories of Mini-Mental State Examination (MMSE) scores with different groups: 2 groups (A), 4 groups (B) and 5 groups (C). The solid lines represent estimated values, and the dotted lines show the 95% confidence intervals.



**Figure S2** Odds Ratios and 95% Confidence Intervals (CIs) for the Association Between Baseline Variables and Cognitive Trajectory Groups After Logistic Regression Analysis. \*Normal weight as reference. ADL, activities of daily living; CVD, cardiovascular diseases; MMSE, Mini-Mental State Examination.



**Figure S3** Trajectories of Mini-Mental State Examination (MMSE) Scores with the Attrition Extension.