

Living Arrangements and Health in Mid-Life: Insights from Sequence Analysis

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Background

A substantial body of research has examined the relationship between living arrangements and long-term outcomes. Stable cohabitation with a partner is typically associated with better physical and mental health in the long run. In contrast, the effects of other arrangements, such as living alone or with relatives, appear more complex and context-dependent. Meanwhile, alternative forms of living—such as co-housing and communal arrangements, involving non-relatives and non-partners—remain largely understudied, despite their increasing prevalence in contemporary society.

This study aims to address two key gaps in the existing literature. First, few studies consider a broad range of living arrangements simultaneously when examining their long-term effects on physical and mental health, limiting comparative insights. Second, while much research focuses on the living trajectories of either younger or older adults, significantly less attention has been paid to individuals in mid-life—a stage marked by important social, economic, and health transitions.

Methodology

Data

We use data from *Understanding Society*—the UK Longitudinal Household Survey—which currently comprises 14 waves, to examine trajectories in living arrangements and their long-term effects on health outcomes among mid-life adults.

Our sample selection follows two criteria. First, to capture sufficiently long-term trajectories, we retain only individuals who participated in at least 10 consecutive survey waves with no gaps in participation. This ensures that no imputation is required for living arrangement data over time, although we apply multiple imputation for missing values in control variables. Specifically, we prioritize respondents who participated in all of the ten most recent waves (5th–14th). If unavailable, we include respondents who completed a full earlier ten-wave sequence (4th–13th, otherwise 3rd–12th, 2nd–11th, or, as a last option, 1st–10th).

Second, we restrict the sample to individuals aged 40–55 at the end of the observation period, when health outcomes were measured. This mid-life population remains relatively understudied, as most prior research has focused on younger or older cohorts.

Applying these criteria yields a final analytical sample of 5,523 individuals.

Clusters of living arrangements

For each of the ten years, we classify respondents' living arrangements into one of six categories: living alone; cohabiting with a partner only; cohabiting with a partner and children; living with

children only; living with relatives (i.e. parents or other members of their natal family); or living with non-relatives (i.e. housemates, excluding all aforementioned relationship types). Using sequence analysis (with optimal matching) and cluster analysis, we identify seven distinct clusters representing common trajectories of living arrangements over the 10-year period.

The seven clusters are illustrated in the figure below and can be interpreted as follows:

- Cluster 1: Individuals who predominantly lived with relatives;
- Cluster 2: Individuals who moved between living arrangements over time; this group can be interpreted as reflective of a higher level of instability compared to others.
- Cluster 3: Individuals who predominantly lived with a partner and children, but experienced some instability (with transitions into or out of this living arrangement over the ten-year period);
- Cluster 4: Individuals who mostly lived with their children, without a partner;
- Cluster 5: Individuals who consistently lived in a nuclear family arrangement (with partner and children) throughout the entire period;
- Cluster 6: Individuals who mostly lived with a partner, without children;
- Cluster 7: Individuals who mostly lived alone.

Cluster 5 is the largest group, comprising 48.81% of the sample, while Cluster 1 is the smallest, representing 4.04%. The prevalence of Cluster 5 is expected, given that the nuclear family is the socially normative living arrangement for this age group. We use this group as the reference category in our regression analyses: this enables us to assess whether deviations from this normative trajectory are associated with better or worse outcomes, comparatively.

Outcome variables

We regress the identified clusters, along with a set of control variables, on two outcome measures: respondents' physical and mental health in the final year of the 10-year period. These health outcomes are captured using indices provided by the survey, which summarize a wide range of health-related variables¹. In both cases, higher index values indicate better health.

Controls

We control for a range of confounding variables that are known or suspected to influence both the respondent's living arrangement trajectory and their health outcomes. All control variables refer either to fixed characteristics of the individual (e.g., sex, ethnic minority status) or to attributes measured at the start of the 10-year sequence (e.g., age, their level of education). In addition, we account for socio-economic background and early life conditions, including: the highest educational attainment of the respondent's parents; a binary indicator for not living with both biological parents at age 16; and whether the respondent's father was employed when they were 14. Finally, we include health- and lifestyle-related variables: whether the respondent had been diagnosed with a serious illness before age 30 (based on a list of 17 conditions included in the first

¹ See https://www.understandingsociety.ac.uk/documentation/mainstage/variables/sf12pcs_dv/ and https://www.understandingsociety.ac.uk/documentation/mainstage/variables/sf12mcs_dv/

five waves of *Understanding Society*), and whether they began smoking or drinking alcohol before age 16.

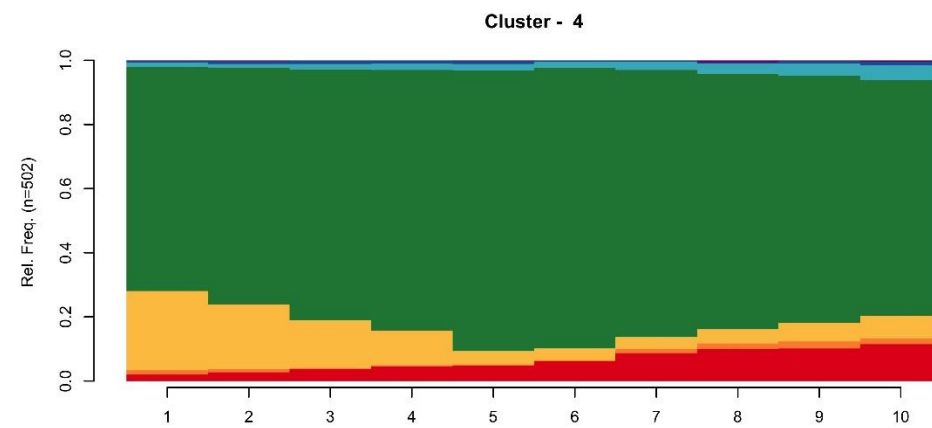
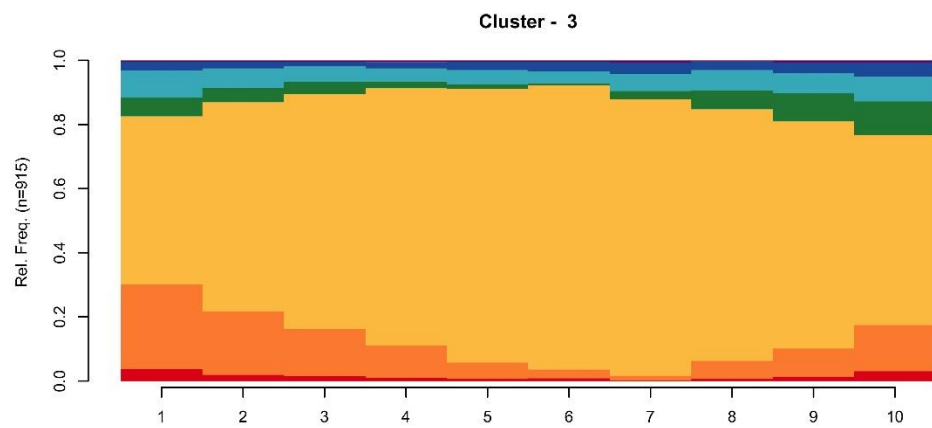
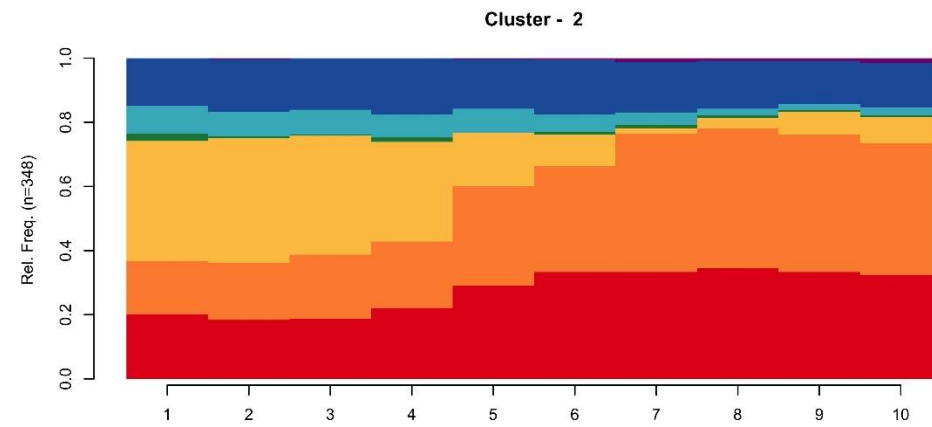
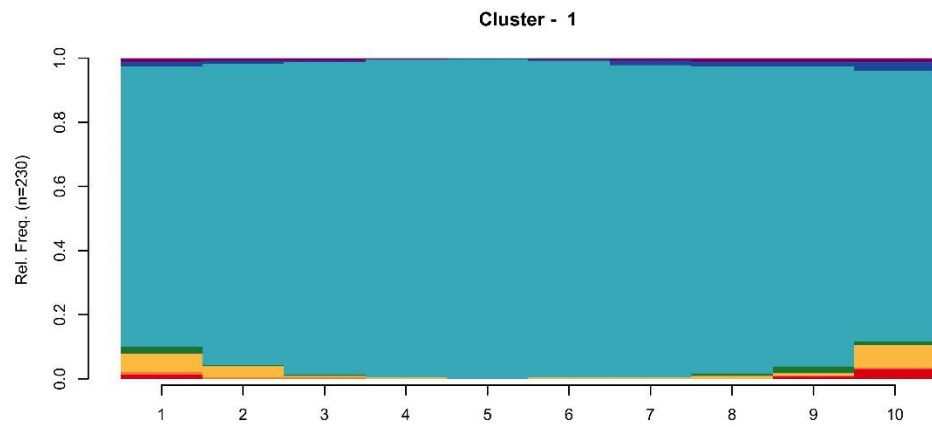
Preliminary results

As shown in the table, two clusters stand out for their consistent association with poorer health outcomes—both physical and mental—relative to the normative trajectory of stable nuclear-family living: individuals who lived mostly alone, and those who lived with children but without a partner throughout the ten-year observation period. These are the only clusters that display significantly worse physical and mental health outcomes than the baseline category when the analysis is restricted to men (Models 2 and 5, respectively).

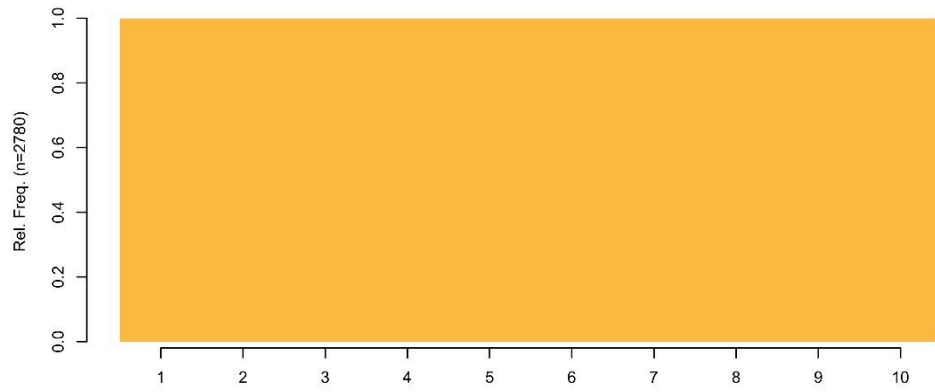
Among women, however, all clusters are associated with poorer physical and mental health compared to the baseline trajectory (Models 3 and 6). This female subsample appears to drive the overall pattern observed in the pooled analysis, where the same trend emerges. This is unsurprising, given that being female is itself significantly associated with lower physical and mental health in the full-sample regressions (Models 1 and 4).

In terms of coefficient magnitude, living with children and no partner is linked to the greatest decline in physical health across all model specifications. In contrast, for mental health, living alone shows the most pronounced negative association in all three analytical samples.

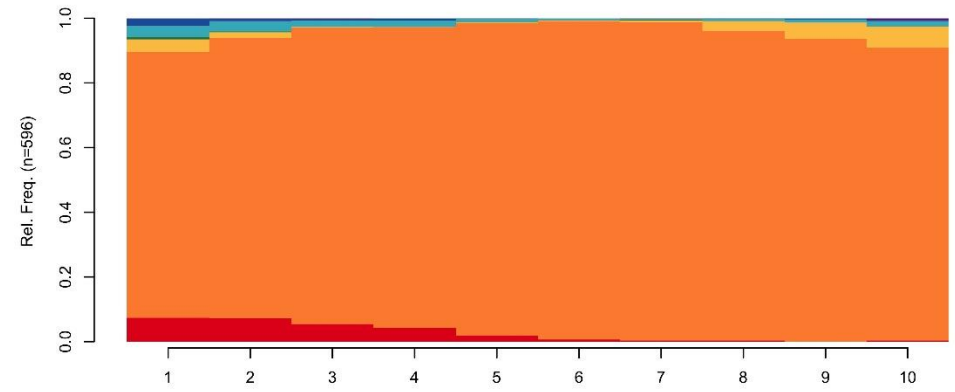
Figure: Cumulative frequency distribution of living arrangement categories by cluster



Cluster - 5



Cluster - 6



Cluster - 7

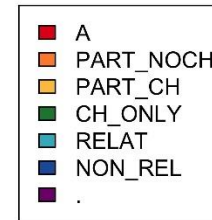
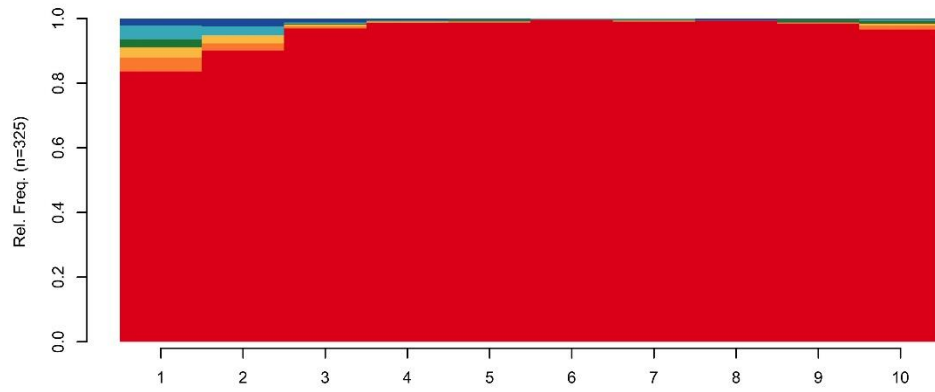


Table. Linear Regression Results for Physical and Mental Health Outcomes by Sample Restriction (Standard Errors in Parentheses)

| | Physical health | | | Mental health | | |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | All sample (1) | Men (2) | Women (3) | All sample (4) | Men (5) | Women (6) |
| Clusters of living arrangements trajectories ("With partner and children" is the baseline) | | | | | | |
| With relatives | -2,504 ** (0.672) | -0,629 (0.822) | -4,477 ** (1.046) | -1,984 ** (0.741) | -0,538 (0.992) | -3,447 ** (1.097) |
| Unstable arrangements | -2,056 ** (0.541) | -1,263 (0.662) | -2,777 ** (0.839) | -1,519 * (0.598) | -1,368 (0.801) | -1,569 (0.882) |
| Unstably with partner and children | -1,089 ** (0.365) | -0,352 (0.491) | -1,604 ** (0.520) | -1,039 ** (0.403) | -0,673 (0.594) | -1,298 * (0.547) |
| With children only | -4,486 ** (0.476) | -6,106 ** (1.307) | -4,533 ** (0.556) | -4,070 ** (0.525) | -3,126 * (1.578) | -4,307 ** (0.585) |
| With a partner, no children | -1,525 ** (0.430) | -0,908 (0.538) | -2,118 ** (0.654) | -0,953 * (0.475) | -0,505 (0.650) | -1,376 * (0.687) |
| Alone | -2,590 ** (0.559) | -2,915 ** (0.668) | -2,232 * (0.895) | -4,427 ** (0.617) | -4,282 ** (0.806) | -4,450 ** (0.940) |
| Sex (female) | -1,258 ** (0.264) | | | -1,714 ** (0.292) | | |
| Age at base year | -0,249 ** (0.028) | -0,227 ** (0.038) | -0,249 ** (0.040) | 0,180 ** (0.031) | 0,180 ** (0.045) | 0,186 ** (0.042) |
| Ethnic minority | -2,560 ** (0.363) | -2,967 ** (0.498) | -2,283 ** (0.513) | 0,319 (0.402) | -0,519 (0.599) | 0,989 (0.541) |
| Education ("Lower" is the baseline) | | | | | | |
| Secondary education | 0,693 (0.412) | 0,154 (0.552) | 1,175 (0.604) | 0,235 (0.444) | 0,304 (0.650) | 0,159 (0.609) |
| High education | 2,357 ** (0.365) | 2,196 ** (0.518) | 2,492 ** (0.515) | 0,432 (0.389) | 0,388 (0.582) | 0,459 (0.527) |
| Parental education ("Lower" is the baseline) | | | | | | |
| Secondary education | 1,308 ** (0.393) | 1,015 (0.547) | 1,483 ** (0.568) | 1,001 * (0.437) | 1,118 (0.666) | 0,943 (0.581) |
| High education | 1,750 ** (0.507) | 1,011 (0.663) | 2,276 ** (0.741) | 1,113 * (0.553) | 1,153 (0.818) | 1,106 (0.736) |
| Not living with both parents at 16 | -0,523 (0.346) | -0,903 (0.481) | -0,245 (0.498) | -0,238 (0.383) | -0,169 (0.601) | -0,256 (0.501) |
| Father was working at 14 | 0,912 | 1,567 * (0.518) | 0,533 (0.515) | 1,430 * (0.389) | 1,305 (0.582) | 1,461 (0.527) |

| | | | | | | |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | (0.571) | (0.790) | (0.755) | (0.594) | (0.948) | (0.753) |
| Started drinking/smoking before 16 | -0,864 ** | -0,829 * | -0,841 * | -0,557 | -0,062 | -0,893 * |
| | (0.274) | (0.374) | (0.394) | (0.303) | (0.456) | (0.407) |
| Diagnosed with a major illness by 30 | -2,788 ** | -1,660 ** | -3,514 ** | -1,740 ** | -1,464 * | -1,854 ** |
| | (0.339) | (0.475) | (0.472) | (0.379) | (0.568) | (0.499) |
| Intercept | 60,462 ** | 59,125 ** | 59,455 ** | 39,841 ** | 39,444 ** | 38,214 ** |
| | (1.351) | (1.820) | (1.873) | (1.469) | (2.187) | (1.943) |
| Observations | 5523 | 2344 | 3179 | 5523 | 2344 | 3179 |

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