The Demography of Singlehood: Typology, Duration, and Cohort Change

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Background and motivation

Over the past several decades, family demographers have rigorously investigated the changing nature of family and union formation, documenting persistent delay and complexity (Elzinga and Liefbroer 2007; Smock and Schwartz 2020; Van Winkle 2018). However, demographers have paid less attention to the direct study of singlehood. Our existing demographic knowledge about singlehood is inferred from evidence about delayed timing of union formation and changes in living arrangements (Chao et al. 2020; Coleman 2013; Esteve et al. 2020; Manning et al. 2014; Sobotka and Toulemon 2008). Namely, these analyses *imply* that as people delay family formation, there are more single people and "more singlehood." However, this approach overlooks the dynamic and complex nature of singlehood shaped by the second demographic transition which introduced, i.e., union instability, serial cohabitation, and non-marital childbearing (Eickmeyer and Manning 2018; Hiekel and Fulda 2018; Jalovaara and Fasang 2017). This paper takes a step towards a systematic and empirical Demography of Singlehood that conceptualizes singlehood as a multidimensional and dynamic state. Applying a novel life course approach and comparing British and American women, I answer two questions: 1) what is the duration of singlehood? and 2) what is the typology of singlehood?

The duration of singlehood (DoS, hereafter) represents the total duration of time that people are single over the life course or in a given life stage. The DoS is a useful metric that intuitively summarizes the total exposure to singlehood regardless of the timing of the first union or the number of unions people might have had. Measuring singlehood as a duration allows us to conceptualize singlehood as a holistic demographic outcome that is sensitive to its dynamic features. In the current analysis, I estimate the duration of singlehood as the average number of months that American and British women were single, i.e., not married nor cohabiting, between ages 18 and 30 and compare DoS across birth cohorts born between 1957 and 1984. Comparing DoS across cohorts offers insight into whether younger cohorts are single for a longer time. Since there are counteracting demographic forces at play, i.e., early yet unstable partnerships, it is unclear whether younger birth cohorts have experienced a longer or similar DoS than earlier cohorts who experienced different timing and rates of cohabitation in their early adulthood. As this is a descriptive paper, I also describe DoS by race and offer estimates for different definitions of singlehood (a future version will include life table estimates).

Another life course concept that is useful in understanding the demography of singlehood is – trajectory. Though existing scholarship has done a magnificent job in documenting the timing of first partnerships, we should also pay attention to the timing, order, and spells of singlehood as they occur over the life course (Aisenbrey and Fasang 2010; Jalovaara and Fasang 2017). Another aspect of singlehood that could have changed over time is the types and prevalence of singlehood trajectories or profiles. Each person has a unique life course sequence, regardless of which states are the center of the analysis. However, some trajectories have more in common than others, especially when factoring in the temporality of multiple events and spells. Thinking of singlehood as trajectories allows us to investigate whether there was cohort change in the types of unique singlehood trajectories.

To answer this question, I use sequence and latent cluster analysis to understand the typology of singlehood trajectories across cohorts. Sequence analysis quantifies how people's singlehood changes over the life course, while cluster analysis identifies which trajectories compose a "profile." This typology is then used to investigate cohort change in the prevalence of each profile and how each profile is associated with other demographic and socio-economic characteristics. Sequence and latent cluster analysis is a flourishing method in the study of family formation over the life course in Europe (Elzinga and Liefbroer 2007; Jalovaara and Fasang 2017; Van Winkle 2018), but less common in the US (for an exception, see Castro (2020)). In addition, existing research often focuses on multiple family-related states, such as childbearing, cohabitation, and marriage.

However, I center my analysis on two states – single and partnered, without further specification. This liberal approach highlights the "big picture" of singlehood between ages 18 and 30 that is unconditional on marital status, childbearing, or living arrangement.

Methodology

Data and sample. I compare the US and the UK because both countries have demonstrated similar yet distinct family and union formation trends, wherein the UK is closer to the US than the rest of Europe in relation to family formation trends (Perelli-Harris and Lyons-Amos 2015). Moreover, the two countries have different yet comparable datasets that provide detailed marriage and cohabitation histories and childbearing information, which produce comparable estimates that align with national vital statistics (Perelli-Harris and Lyons-Amos 2015).

For the *United States*, I use the National Survey of Family Growth (NSFG) data which collects information about marriage, cohabitation, and childbearing among a nationally representative sample of American women ages 15-49. I use the following cycles: 2002, 2006-2010, 2011-2013, 2013-2015[1]. Each woman was asked about up to five partnerships (except for the 2002 cycle which asked about up to 8). For the *United Kingdom*, I use Understanding Society (UKHLS) survey data from 2009 to 2019, a representative household panel survey of the UK population (Buck and McFall 2011). UKHLS collects detailed retrospective histories for up to 12 co-residential unions (marriages, civil partnerships, or cohabitations), which lasted at least three months. These histories have been harmonized with prospective data (Nandi et al. 2020). I limit the analysis to respondents who reported their histories at or after age 30 to avoid downward bias towards younger adults' shorter life courses. I only include women with valid cohabitation and marriage histories and exclude cases with more than two missing values in socioeconomic characteristics (elaborated below). This resulted in a total sample of 29,167 women and 4,229,215 person-months (N_{NSFG}=14,562, N_{UKHLS}=14,605).

Measures. The main variable of interest is *singlehood*. I classify a woman as single if in a given month she is not reportedly cohabiting or married. In this primary definition of singlehood, women may or may not have children. For descriptive purposes, I also show the duration of singlehood using two alternative definitions for singlehood: 1) not partnered *and* not a parent, and 2) not married. In this version of the paper, the duration of singlehood (DoS) is simply the number of months a woman was observed single. However, as the results will show, given the lack of significant change in DoS over time, it is unlikely that other methods will yield different results. This is approach is also more holistic than other studies that limit DoS from living parental home to forming a union (van den Berg and Verbakel 2022).

Analytic strategy. To answer the first research question (the duration of singlehood), I use regression analysis to predict the number of months women were single and show the results with and without adjusting for socioeconomic characteristics and population weights. I use sequence and latent cluster analysis for the second research question (the topology of singlehood trajectories). Sequence analysis measures a woman's singlehood trajectory as a succession of singlehood states between ages 18 and 30. In this paper, I only distinguish between two singlehood states: 1) single and 2) not single (i.e., partnered). To create a typology of singlehood trajectories, I use optimal matching (OM) and cluster analysis. This method compares each pair of sequences in the sample using an OM algorithm to generate a matrix of pairwise OM distances. The pairwise OM distances reflect the overall similarity between each pair of sequences, taking into account variations in timing, order, and duration of states that are observed in the sequences (Abbott and Tsay 2000; Aisenbrey and Fasang 2010; Studer and Ritschard 2016). I use the OM-Future algorithm to emphasize the timing of transitions. I chose a five-cluster solution based on empirical fit measures that validate the overall consistency of the groups as well as the theoretical and substantive interpretation of the smallest groups.

[1] The last two NSFG cycles (2015-2017, 2017-2019) are not included because the public data only includes start and end year of marriages and cohabitations and therefore are not comparable. This is also a primary reason why I focus on 18-30, because the 1980-1984 birth cohort reached 35 in the cycles that are not available.

Summary of Results

Figure 1 shows the *duration of singlehood* across the different definitions by cohort and country. As expected, DoS is stable when measured as "not partnered," with or without children. However, there is a significant increase in the duration of singlehood as not *married*. American women from the 1957-1964 birth cohort spent, on average, 88 months not married. This has significantly increased to 101 months on average among the youngest birth cohort in the sample. In contrast, the duration of singlehood with or without children between ages 18 and 30 has remained stable among American women (54 months). Overall, the pattern is similar for British women, with some exceptions. First, the duration of singlehood, defined as not married, has also significantly increased across cohorts. British women from the 1957-1964 birth cohort spent, on average, 89 months not married, and this increased to 111 months on average among the 1980-1984 birth cohort. However, we also see a small descriptive change in the duration of singlehood defined by parental status. The results suggest a small decrease in the number of months women were single without children. The full paper further describes these trends by race and ethnicity.

Figure 2 shows the results of latent cluster analysis using the sequence analysis approach, including American and British women together. The analysis indicates that there are *five overall clusters of singlehood trajectories*. Cluster 1 is the largest cluster which includes over a third (34%) of all women in the sample. This cluster represents a trajectory characterized by being mostly or continuously single. Although some sequences in this cluster include union formation, these unions were either earlier in the life course and short-lived. The next sizable cluster is Cluster 3 (24%). This cluster is characterized by the lowest duration of singlehood (20 months). Women in this cluster were single during their early 20s and transitioned into a stable partnership very early in their life course. The next prevalent clusters are clusters 2 (18%) and 5 (16%). The primary distinction between these clusters is the age at the transition to stable partnerships (i.e., exiting singlehood). Women in these clusters were single longer than women in Cluster 3, but in Cluster 2, they transitioned into a stable partnership earlier than in Cluster 5. Lastly, the cluster with the smallest prevalence is Cluster 4, characterized by disrupted singlehood (8%). The full paper further describes the DoS and socio-demographic characteristics associated with each cluster.

Figure 3 shows the adjusted predicted membership probability for the sample's oldest (1957-1964) and youngest (1980-1984) birth cohorts. Although there have been significant changes in the tempo of specific union formation events, taking a life course approach that centers singlehood suggests that there has also been significant stability among American women. In contrast, Figure 3 shows pronounced cohort changes among British women. First, younger British women are more likely to be mostly single between ages 18 and 30, even though their total duration of singlehood was not significantly different. Second, British women in the youngest birth cohort are significantly less likely to belong to Cluster 3 than the oldest birth cohort. This significant gap suggests that younger British women are less likely than their older counterparts to only experience a short duration of singlehood in their early 20s. Finally, we also see an increase in the likelihood of women from the youngest birth cohort belonging to Cluster 5, which was characterized by delayed partnerships.

Summary of discussion

Defining singlehood as not being in a cohabitation or marriage revealed a story of some change and plenty of stability. Namely, I show that the duration of singlehood remained stable across cohorts. However, the results also show that even when considering that younger birth cohorts are more likely to experience serial cohabitation and re-partnering (Eickmeyer and Manning 2018; Gałęzewska et al. 2017; Song 2021), their total singlehood time between ages 18 and 30 is similar to the DoS of women from older cohorts who primarily experienced early marriages. *Meaning younger birth cohorts are not necessarily single for longer if we focus on partnerships rather than marriage* because what younger women seem to postpone and delay is marriage but not partnerships, especially in the US (Manning 2020). Furthermore, the typology of singlehood trajectories highlighted the heterogeneity in singlehood trajectories, thus underscoring another dimension to our understanding of cohort change in the experience of singlehood at the population level. Nonetheless, the lack of cohort change require

singlehood scholars and family demographers to exercise caution, clarity, and critique when discussing the daily issues and experiences of "single people" and especially when attempting to contextualize "singlehood" within a framework of "delayed family formation" because clearly what is being delayed is *marriage* but not romantic partnerships. If anything, the cohort stability in the duration of singlehood should ignite even more critique about the foregoing of marriage but not romantic partnerships. The paper further discusses what this implies for demographers studying union formation and singlehood.

Figure 1. Trends in Duration of Singlehood, various definitions

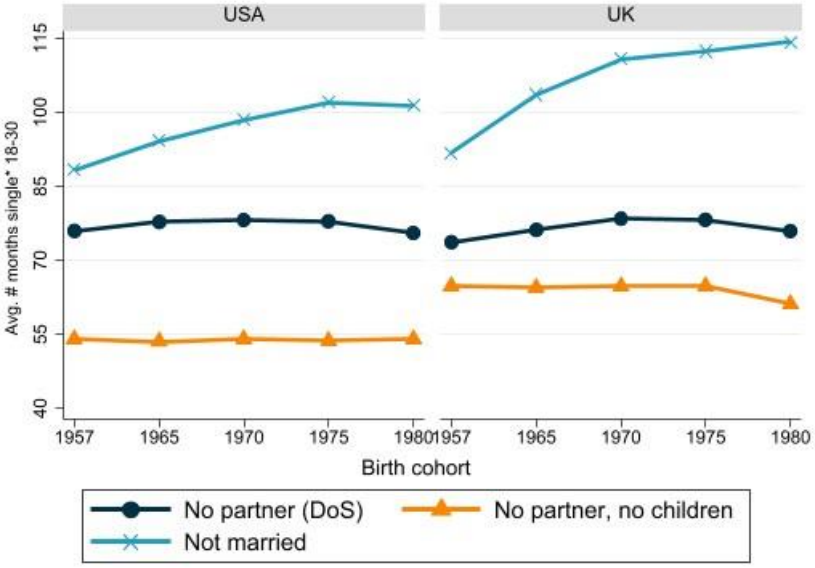
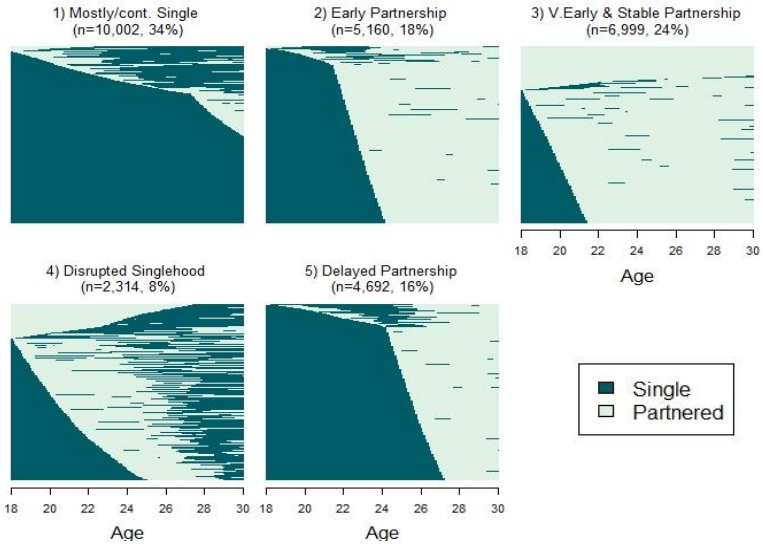
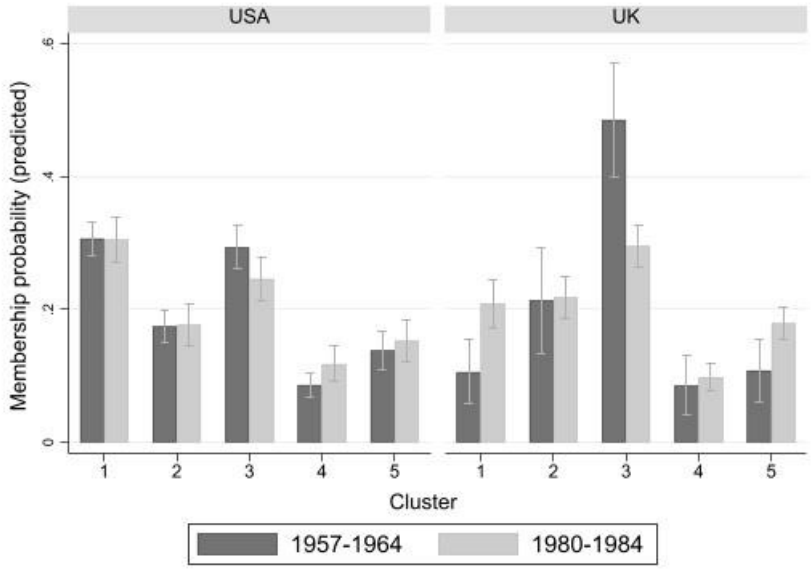


Figure 2. Latent Cluster Typology of Singlehood



Singlehood = not partnered.

Figure 3. Cohort change in Cluster Membership



Cluster 1 = mostly/consistently single. Cluster 2 = early partnership. cluster 3 = very early and stable partnerships. cluster 4 = disrupted singlehood. Cluster 5 = delayed partnership.
Adjusted probabilities are predicted using a weighted multinominal regression analysis controlling for race, education, age at interview. Point estimates and confidence intervals are also presented in table A4 in supplementary material.

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