Singleness and The Pandemic Dating Recession

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Michael J. Rosenfeld*

* Michael J. Rosenfeld, Professor of Sociology, Stanford University, 450 Jane Stanford Way, Stanford CA 94305. Web: www.stanford.edu/~mrosenfe. Email: mrosenfe@stanford.edu. Data gathered through the support of the National Science Foundation grant SES 2030593 (funding HCMST 2020 and 2022), and a grant from the United Parcel Service endowment at Stanford University (funding HCMST 2017). Thanks to Jeremy Freese for feedback on the GSS data and to the Graduate Family Workshop and to the JFI editor for general comments. An earlier version of this paper was presented at the Population Association of America conference in Columbus, Ohio in April of 2024.

Replication package is available at https://data.stanford.edu/hcmst2017 and at https://www.openicpsr.org/openicpsr/project/217101

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Abstract:

The Coronavirus pandemic in the US represented a fundamental challenge to casual dating and to romantic relationship formation. The How Couples Meet and Stay Together (HCMST) data for 2017-2022 show that the rate of singleness among US adults rose from 18.9% in 2017 to 24.3% in 2022 (or higher after adjusting for age), implying that more than 10 million more US adults were single during the pandemic in 2022 compared to 2017. HCMST data show that the difficulty in forming new relationships during the pandemic seems to explain most of the rise in pandemic singleness. Young adults were especially affected by the pandemic dating recession. The arrival of COVID-19 vaccines did not ameliorate the pandemic dating recession; on the contrary, vaccinated adults were more likely to describe barriers to dating in 2022. The rise in singlehood during the pandemic has been under-appreciated because our official data sources focus primarily on marriage and cohabitation, leaving casual and informal romantic relationships understudied. The lack of data on casual romantic relationships in the US has led to a lack of appreciation for the potential vulnerability of casual relationships to external shocks such as a pandemic.

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Impacts of the pandemic

The Coronavirus pandemic in the US represented a fundamental challenge to casual dating and romantic relationship formation. The extent of the pandemic's challenge to casual dating has been under-appreciated because our official data sources focus primarily on marriage and cohabitation, leaving casual and informal romantic relationships understudied.

As the age at first marriage in the US has increased from 22.8 in 1960 to 30.1 years in 2022 for men and from 20.3 in 1960 to 28.2 in 2022 for women (U.S. Census Bureau 2022), the stigma that used to accompany singlehood has largely dissipated (Klinenberg 2012). As age at marriage has risen, the percentage of U.S. adults who are married has declined over time (Stevenson and Wolfers 2007; Bloome and Ang 2020). With the declining prevalence of marriage in the U.S. and the increasing diversity of family forms (Rosenfeld 2007; Coontz 1997; McLanahan 2011), it is more important than ever to understand and distinguish between the variety of nonmarital statuses including informal romantic unions and singleness.

Many single adults in the U.S. are single by choice (DePaulo 2023). For the subset of single adults who wanted partners, the social barriers created by the COVID-19 pandemic had the potential to fundamentally inhibit sexual or romantic relationship formation. The AIDS pandemic, though different in many respects from the COVID-19 pandemic, created barriers to relationship formation in the 1980s and 1990s (Eskridge 1996; Shilts [1987] 2000). Newly formed, casual, and informal relationships are the most fragile kinds of romantic relationships (Rosenfeld 2014). Barriers to relationship formation can yield a reduction in the number of relationships and therefore can produce a rise in singleness at the population level.

The COVID-19 pandemic, especially in the early days, made meeting and dating much more difficult, and required prospective daters to assess and negotiate a constantly changing profile of risks (Williams, Miller and Marquez-Velarde 2021). First, the pandemic closed public spaces and bars during the lockdowns in March and April of 2020, and forced people to spend more time at home. Second, after the bars and restaurants reopened, the fear of infection and social distancing rules were barriers to physical intimacy or even to face-to-face conversation with someone new (Lehmiller et al. 2021).

By the Spring of 2022 vaccines against COVID-19 were widely available, weekly mortality from the COVID-19 pandemic had sharply declined, most U.S. adults had taken at least the first course of vaccines (Suthar et al. 2022; Figure 1; Centers for Disease Control and prevention 2022), schools had returned to in-person instruction, offices had opened back up, bars and restaurants were open, public performances returned, and life had returned to at least a semblance of normalcy.

A semblance of normalcy is not, however, true normalcy. People continue to die from the COVID-19 pandemic years after the pandemic emergencies were lifted. Weekly deaths from COVID-19 in the U.S. declined from 8800 per week in 2021 to 4700 per week in 2022 to 1450 per week in 2023, and 900 COVID-19 deaths per week for 2024 (National Center for Health Statistics 2025). Some bars and restaurants that closed in the early lockdowns of March and April, 2020, never reopened (Brizek et al. 2021). Work from home, which rose dramatically during the first stage of the pandemic, remained a part of working life and has become a strong preference of many workers even after offices reopened (Smite et al. 2023; Macaluso 2023). The effect of the pandemic on peoples' behaviors going forward is still to be determined. The COVID-19 pandemic has had a long tail of lingering social effects. We would expect that as life returned to a semblance of normalcy in 2022, any rise in singleness due to the pandemic would have dissipated. However, because the determinants of singleness are poorly understood, and because of the pandemic's long tail, it is unknown *when* social dislocations from the pandemic such as a hypothesized rise in singleness will have dissipated.

The Effects of Crises on Relationship Formation and Dissolution

When social scientists write about the relationship effects of disasters and recessions, they are almost always writing about effects on marriage and divorce (Cherlin et al. 2013; Cohen 2014). Manning and Payne (2021) showed that the early months of the coronavirus pandemic were accompanied by a decline in the number of new marriages and a decline in divorces. Wagner et al (2020) showed a steep decline in marriages recorded in Florida, Hawaii, Dallas and Seattle between 2019 and 2020, even during the latter parts of 2020 when government offices had reopened. The difficulty in gathering family and friends together in the early part of the pandemic undoubtedly delayed some marriages and wedding celebrations. It is unclear whether a decline in marriages in 2020 reflected an increase in singleness or a delay in the formalization of stable committed romantic unions.

The availability of official statistics on marriage and divorce centralizes marriage and divorce as research subjects for family sociology. Even with a decline in the incidence of new marriages or divorces during a crisis, the number of married adults in the U.S. tends to be stable because the existing population of married persons is enormous (135 million in 2020) and the annual divorce rate in the US is less than 2% of married couples per year (Stevenson and Wolfers 2007; Cohen 2014), and because crises can both motivate and delay divorces (Cherlin et al. 2013; Cohen 2014). Heterosexual married couples who have been together for more than 20 years have a yearly breakup rate of about 1% (Rosenfeld 2014).

The social science literatures on marriage, divorce, and cohabitation are vast, while the literature on informal non-cohabiting relationships (Strohm et al. 2009), and the literature on singleness (DePaulo 2023; Klinenberg 2012; Tessler 2023b; Tessler 2023a) are tiny by comparison (Bergström and Brée 2023). Informal, non-coresidential relationships are the least stable kind of relationships. Rosenfeld (2014) showed that of newly formed romantic relationships of duration less than two months, 60% had broken up within a year. Given the low stability and higher turnover of informal, noncoresidential relationships, it follows that these informal relationships should especially be more vulnerable to disruption and therefore should be studied to see if their prevalence changes during natural disasters such as a major pandemic.

Definitions of singlehood

Scholarship's understanding of singlehood is subject to limitations in how relationships are defined in our nationally representative surveys. To be single was traditionally defined as being an unmarried adult, because for a long time there was scant data on romantic relationships outside of marriage. In 1990 the U.S. census distinguished between unmarried partners and roommates for the first time, helping researchers to expand their categories of relationships to include unmarried partners and thereby document national trends in nonmarital cohabitation. Before 1990, it was possible in the U.S. Census to identify people who lived together (coded into one category as roommates or partners) who were not of the same sex but were of similar age and to surmise that they might have been cohabiting heterosexual romantic partners. This was the imputed relationship category of POSSLQ: People of the Opposite Sex Sharing Living Quarters (Casper and Cohen 2000).

In the General Social Survey, consistent questions were asked over time about "steady partners" beginning in 1986 in addition to marital and cohabiting partners, which allowed for an appropriately broader definition of romantic partnerships and a concomitant narrowing of the definition of singlehood (Bergström and Brée 2023). Strohm (2009) et al used the 1996 and 1998 GSS question 'ROMANCE', with its broader definition of relationships, to define Living Apart Together (LAT) relationships.

In defining singlehood it is important to distinguish between definitions that are declarative, ie. "I am single…" as against definitions that define singlehood exclusively in the negative, as an absence of some important marker: not married; not married or cohabiting; not in a steady relationship, and so on (Bergström and Brée 2023). Declarative definitions of singlehood, though rarely available in our nationally representative data, have important advantages of specificity and presumably of accuracy. In this paper I rely on data from the How Couples Meet and Stay Together surveys which allow for a declarative definition of singlehood.

Singleness can occur as an initial status, or as a result of transitions out from partnered status due to breakups or due to the death of the partner. Outflows from singleness are due to the formation of romantic relationships. A rise in singleness can have different causes: a reduction or delay in the formation of new relationships, an increase in breakups, an increase in the mortality of partners, or any combination of these. The COVID-19 pandemic could have been associated with any or all of these potential sources of increased singleness. The pandemic could have created obstacles to dating, could have caused an increase of breakups due to stress and dislocations, and certainly caused some increase in singleness due to mortality of partners from COVID-19.

Dating, relationships, and the Life Stage

Different sources of singleness have strong life course associations. Mortality of partners is a source of singleness that is heavily concentrated among older adults. COVID-19 disease was known, early in the pandemic, to be especially deadly to people over 80 years of age (Bonand et al. 2020). At the other end of the age distribution, young adults are the people who are most active in the dating market. Young adulthood is the life stage where people are most likely to experiment with meeting, dating, and hooking up (Armstrong, England and Fogarty 2012; Hamilton and Armstrong 2009; Bogle 2008). Lewis et al (2022) showed, using NHANES data for 2013-2016, that the percentage of US women who had had a new sexual partner in the past year dropped from 31.9% for age 20-24, to 8.4% for age 40-44.

Dating is a subset of a broader spectrum of courtship and relationship formation activities. Heterosexual dating behavior, wherein the man picks up his female date and the two head out for a planned activity potentially including dinner, dancing, drinks, a movie, or a show, arrived as a gendered cultural innovation in the early 20th century U.S., accompanying urbanization and then the diffusion of car ownership (Bailey 1988). In some corners of U.S. society, dating is now seen as anachronistic. Young adults in the U.S. may go through a life stage wherein they skip over dating and go directly to hooking up (Bogle 2008). With the phrase "pandemic dating recession" I mean to imply a broad recession in all types of relationship formation, not just a recession in formal dating, though the closure of restaurants and bars during the pandemic especially impacted formal dating.

Because the types of romantic and sexual relationships are so varied, singleness is difficult to define. An accurate definition of singlehood is especially important if we take a life course perspective into account (Rindfuss 1991; Shanahan 2000). As the median age at first marriage has risen steadily since the 1960s, young adults in the U.S. in their 20s and 30s are increasingly likely not to be married. Some are cohabiting with partners but many young adults have a series of hookups, sexual or romantic partners without having had a spouse, a cohabiting partner, or a 'steady partner' (Bogle 2008; Wade 2017).

Aside from arranged marriages which are rare in the U.S., every long-term romantic relationship in the U.S. starts with a date, a hookup, a setup, an online flirtation, a chance meeting or some other early, fragile, difficult-to-define connection. The chance meetings and in-person dates, the first interactions between strangers, were likely to have been most subject to barriers during the COVID-19 pandemic. Because dating and experimentation are primarily the province of the young, any pandemic obstacles to dating and relationship formation were likely to have been most felt by younger adults. Mortality of partners, and its associated increase in singleness, was most likely to have been felt by adults over 80 years of age.

Hypotheses:

Because there are many U.S. adults in romantic or sexual relationships that are neither marital nor cohabitational:

Hypothesis 1: The declarative definition of singleness ("I am single…") will yield a significantly and meaningfully smaller population of single adults compared to a traditional definition which defines singleness as the absence of a spouse or cohabiting partner.

Hypothesis 2: The COVID-19 pandemic was associated with a rise in singleness (narrowly and declaratively defined) among adults in the U.S.

Because marital relationships are the most stable relationship type, and the most common form of romantic relationship in the U.S. with an enormous existing base of married couples, and because governmental office closures can delay divorces as well as weddings, we might not expect the percent of adults who are married to have changed much during the pandemic. The most fragile kind of relationships, new relationships, are most likely to have been disrupted during the pandemic. Therefore:

Hypothesis 3: Nonmarital and non-cohabiting relationships declined more during the pandemic than marriages and cohabitations.

Young adulthood is the life stage in which people tend to date and experiment more, and have more and shorter romantic relationships (Hamilton and Armstrong 2009; Bogle 2008). Middle aged adults and older adults tend to be married, or if single, tend to be less active in the dating market, therefore:

Hypothesis 4: Because young adulthood is the life stage where there is the most dating and new relationship formation activity, the barriers to social interaction associated with the COVID-19 pandemic especially impacted young adults.

There are also reasons to expect that singleness in the later life course stages would have been especially impacted by the pandemic.

Hypothesis 5: Because older Americans had more personal risk of mortality from the COVID-19 pandemic, we would expect that the oldest Americans were most likely to lose spouses and partners to the pandemic and were most likely to experience an increase in singleness.

There are different sources of singleness and different routes through which the pandemic can have increased singleness in the U.S.

Hypothesis 6: A rise in singleness during the pandemic would have been due mainly to transitions out of partnered statuses, due to breakups and mortality of partners.

Hypothesis 7: A rise in singleness during the pandemic would have been due mainly to pandemic barriers to relationship formation.

The arrival of vaccination against COVID-19 dramatically reduced the mortality risk of COVID-19 infection for those who were vaccinated. Furthermore, the arrival of vaccines signaled a new stage in the pandemic wherein people returned to work in person, restaurants reopened, mask mandates expired or were withdrawn, and a sense of normalcy began to return, Therefore:

Hypothesis 8: The pandemic's effect on singleness (if any) will be dramatically reduced after vaccinations against COVID-19 disease were widely available and once bars and social meeting places had opened back up.

Data:

In order to estimate the association between the COVID-19 pandemic and singleness among U.S. adults, one needs a reliable and broad measure of singleness. Immediately one encounters a difficulty: official statistics in the U.S. and the most-used U.S. family surveys measure singleness only as the absence of marriage and cohabitation (Gates 2011). Informal non-cohabiting unions in the U.S. do not leave an official record trail the way marriage and divorce do. Cohabiting unions are easily captured on household surveys. The absence of an official record makes the prevalence of non-marital non-cohabiting unions difficult to measure accurately, especially across time and across a disruptive disaster such as the COVID-19 pandemic. The lack of large sample national surveys that accurately and declaratively measure adult singleness over time requires a careful analysis of the data available from smaller surveys, and careful attention to how singleness is defined.

Among available survey data in the U.S., the How Couples Meet and Stay Together studies for 2017-2022 (Rosenfeld, Thomas and Hausen 2023 hereafter HCMST) allow the broadest definition of romantic couplehood and therefore the most specific measure of singleness. The HCMST surveys ask about three kinds of relationships: marriage, sexual partnerships (boyfriends and girlfriends), and a third category including "romantic partner who is not yet a sexual partner," leaving the single category defined declaratively and narrowly as "I am single with no boyfriend, no girlfriend, and no romantic or sexual partner." The relationship categories were asked about in the HCMST surveys separately from questions about cohabitation, and without regard to subjects' relationship intentions vis-à-vis the partners (consistent with recommendations by Gates 2011). Unless otherwise specified, singleness will mean the narrow and declarative definition.

HCMST 2017 was a survey of 3,510 adults (minimum age of 18) originally surveyed in July, 2017 with follow-up surveys fielded in September of 2020 with 2,107 subjects and in March and April of 2022, with 1,722 subjects. HCMST surveys were Internet surveys, conducted by survey firm Ipsos, using subjects who were regular survey subjects in an established panel known as the KnowledgePanel (which was formerly part of Knowledge Networks). Panelists were scientifically recruited into this invitation-only panel via postal mailings to a random selection of residential addresses. To ensure that non-internet households were included, Ipsos provided a tablet and ISP connection to those who needed them. Because of this probability-based sampling approach, KnowledgePanel findings can be reported with a margin of sampling error and projected to the general population. Because HCMST 2017-2022 surveys were fielded entirely online, they were not impacted by the pandemic's restrictions on face-to-face interactions.

The quality of representative Internet surveys such as the KnowledgePanel has been shown to equal or exceed the quality of the best representative phone surveys (Chang and Krosnick 2009, Fricker et al. 2005). The Survey completion rate was 60% in HCMST 2017. By 2020, 1,079 of the original 3,510 HCMST 2017 subjects had withdrawn or been retired from the

KnowledgePanel, as part of the regular cycle of turnover in panel participation. The completion rate was 2,107/2,431=87% for HCMST 2020 for the 2,431 subjects remaining in the panel. For HCMST 2022, there were 2,073 subjects remaining in the panel and the completion rate was 1,722/2,073=83%. Self-identified gay, lesbian and bisexual respondents were oversampled in the HCMST surveys; the weights account for this oversampling. Factoring in historical data on the rate at which subjects answered initial requests to join the KnowledgePanel in the years before 2017, and the rate at which subjects completed their initial demographic surveys to enter the KnowledgePanel (Callegaro and DiSogra 2008), the cumulative response rate can be calculated as 11% for HCMST 2017.

See the supplemental appendix on "Other Data Sources" for a brief review of other potential sources of data. Surveys that were traditionally fielded in-person (such as GSS and NSFG) were severely impacted by the pandemic, whereas HCMST as an Internet-only survey was in a good position to measure change during the pandemic.

Propensity to be active in the dating market was determined by a closed-ended HCMST question asked of single respondents "In the past year, have you ever met someone for dating, for romance, or for sex?"

HCMST 2020 and 2022 surveys asked single respondents "Did you find that during the coronavirus pandemic you longed for a relationship more or less than during previous times in your life?" with possible answers "I am longing for a relationship More now than before," "About the same," and "I am longing for a relationship Less now than before." HCMST 2020 and 2022 also asked "How has the coronavirus pandemic affected your ability to meet new people face-to-face for romance, dating or sex?," with three options: "It is EASIER to meet people face-to-face Now than it was before the pandemic;" "No Change;" and "It is HARDER to meet people face-to-face Now than it was before the pandemic." Regardless of the answer to the closed-ended question, the next question was an open-ended question, "How and why has the coronavirus (also known as COVID-19) pandemic affected your dating life?" The open-ended questions were coded inductively in a manner described by Thomas (2006).

[Table 1 here]

Results part 1a: the rise in pandemic singleness

Table 1 shows a relationship profile of US adults from HCMST 2017, 2020 and 2022. In 2017, the category of persons in romantic relationships that were not cohabiting or marital constituted 11.3% of adults (weighted, or 400 unweighted subjects out of 3510). There were more adults in unmarried non-cohabiting unions than in unmarried cohabiting unions in the US in 2017. Because the unmarried non-cohabiting romantic unions are not identifiable as relationships in most data sources (and therefore are typically counted as single), Table 1 supports Hypothesis 1 in that the declarative category of singleness is substantially and meaningfully smaller than the traditional definition of singleness (i.e., not married or cohabiting).

From July 2017 to September of 2020, the adult percentage married in HCMST was nearly unchanged, 59.9% and 60.0%, respectively. The percentage living with unmarried partners also did not change significantly (9.9% and 9.6%, respectively). Unmarried noncoresidential romantic partnerships declined sharply and significantly (supporting Hypothesis 3), and the percentage of adults who were single rose accordingly, from 18.9% to 23.6% of adults (supporting Hypothesis 2). From September, 2020 to March and April of 2022, the rate of singleness rose again, to 24.3%.

Even as pandemic restrictions receded and as vaccination rates reached 79% of adults in the Spring of 2022 (according to weighted HCMST 2022 data), romantic partnership rates in the Spring of 2022 had still not returned to their pre-pandemic levels. Hypothesis 8, that any pandemic rise in singleness would dissipate once vaccinations were available is not supported in Table 1 because the rise in singleness appears to have been at least as great in 2022 as it was in 2020.

Most of the rise in singleness during the pandemic came at the cost of the declining percentage of adults in nonmarital noncoresidential relationships. In other words, the decline of casual noncohabiting relationships fed the rise of singleness during the pandemic. The prevalence of marriage and cohabiting relationships remained relatively stable during the pandemic, which is one reason why the sharp rise in true (declaratively defined) singleness has been under-reported.

The changes reported in Table 1 from 2017 to 2022 understate the rise of singleness somewhat, because HCMST is a panel dataset, meaning the minimum age rises with each successive wave. In 2017 the minimum age was 18, and in 2020 the subjects were three years older so the minimum age was 21. By 2022, the minimum age was just under 23 years old. The change in minimum age is important because the youngest adults are the most likely to be single (See Figure 1A below, and see also Rosenfeld and Thomas 2012; Figure 2). Of the subjects ages 18-20 in HCMST 2017, 25% had *never* had a romantic partner. If the pandemic had had no effect on romantic partnership formation in the US, we would have expected to see the rate of singleness decline slightly across waves as the cohort under study aged and as young adults gained relationship experience.

The bottom row of Table 1 corrects for the age bias that accrued in the HCMST data as the age of the youngest respondents increased from wave to wave. If we eliminate ages 18-20 from the HCMST 2017 sample (simulating aging the population by 3 years, as in HCMST 2020), the singleness rate in HCMST 2017 declines from 18.9% to 17.5%. If we eliminate ages 18-22 (simulating aging the population by 5 years, as in HCMST 2022), the singleness rate for HCMST 2017 drops to 16.8%, yielding singleness ratios of 0.189/ 0.175=1.08 for 2020 and 0.189/0.168=1.125 for 2022. I use these singleness ratios to correct for age bias in the singleness rates of HCMST 2020 and 2022 respectively, making the assumption that the age distribution of US adults did not change from 2017 to 2022, and that the ratio of singleness between young adults and older adults was the same in 2020 and 2022 as in 2017.

With an adult US population of 252 million in September of 2020, a rise in singleness of 4.7% (23.6%-18.9%=4.7%) corresponds to an increase of 11.8 million single persons, compared to what the number of single persons would have been if the rate from 2017 applied. By 2022 the rate of singleness was even higher, 24.3%, corresponding to an increase of 13.7 million single adults (based on an April, 2022 adult US population of 254.6 million) compared to what we would have expected if the rate of singleness were fixed at the pre-pandemic 2017 rate. If we use the age-adjusted rate of singleness for adults 18 and over in 2022 of 27.3%, the implied increase in singles is (0.273-0.189)*254,600,000 =21.4 million more single adults in 2022 compared to 2017, due to a rise in the rate of singlehood.

Appendix Figure 1 shows that HCMST 2017 substantially over-estimated marriage and cohabitation (combined) compared to the Current Population Survey (CPS) in 2017; CPS had no measure of other kinds of relationships. It is possible that HCMST 2017 had a sample that was biased to under-estimate singleness compared to the adult U.S population. HCMST 2017-2022 was a panel study. Potential bias in the HCMST 2017 sample (with respect to singleness) can be controlled for if we take advantage of the panel nature of the data.

[Table 2 here]

Unlike Table 1, which uses all the subjects in the HCMST 2017-2022 surveys (whether subjects responded to follow-up surveys or not), Table 2 takes advantage of the panel nature of the HCMST data and includes only the subjects who were re-interviewed, so we have within-individual comparisons. Measuring change across time within individuals in Table 2 helps to allay doubts that the apparent changes over time in singlehood reported in Table 1 could be due to initial biases in the 2017 HCMST sample.

The panel nature of HCMST data allow for weights to correct for the inverse of the predicted propensity to be re-interviewed (McGuigan et al. 1997) which were applied in Table 2. Because younger and single survey respondents from 2017 were less likely to respond to surveys in 2020 and 2022, failure to account for attrition leads to a downward bias in estimates of singleness in 2020 and 2022. Correcting for attrition bias raises the estimate of the rise in singleness in 2022 (compared to 2017) from 7.3 million to 11.8 million adults. For the 2020 data, properly correcting for panel attrition raises the estimate of the pandemic rise in singleness from 9.2 million to 11.2 million adults.

In addition to correcting for panel attrition, a second correction is necessary: to correct for the panel aging as discussed above. After correcting for panel attrition and aging, the HCMST data yield final estimates of 12.1 million additional singles in 2020 and 13.3 million additional adult singles in 2022, compared to 2017. Table 2's panel data analysis yields results that are consistent with Table 1, reinforcing Table 1's support for Hypothesis 2 (that the pandemic would be associated with a rise in adult singleness). Both for 2020 and 2022 the rise in singleness from 2017 was highly significant and corresponded to estimated increases of more than 12 million single adults in 2020 and 2022 from the baseline rate of singleness in 2017. Sample sizes in

HCMST are modest, meaning that tests of change in singlehood from 2017 to 2022 in racial, educational, gender by age, and sexual identity groups are not robust (to changes in weights, to differences between cross-sectional and panel HCMST data), which is why no estimates for those subsets are presented.

Results 1b: Relationship Formation and Dissolution factors associated with the apparent Rise in Pandemic Singlehood

Population singleness is a function of non-entry into romantic unions and dissolution of existing romantic unions. In HCMST 2020, 53.4% of single adults reported that the pandemic had made it harder to meet new people face-to-face, 46.1% reported no change, and only 0.5% thought the pandemic had made it easier to meet new people face-to-face. By March and April of 2022, in the post-vaccine stage of the pandemic 40.6% of study subjects reported that the pandemic made it harder to meet new people but as we have seen, the singlehood rate in 2022 had not yet caught up to the subjective improvement in dating prospects. Almost no one thought that the pandemic made it *easier* to meet potential romantic partners. Attitudinal data about the difficulties of meeting people face-to-face during the pandemic support Hypothesis 7, that barriers to relationship formation seem to have been the primary drivers of a pandemic increase in singleness. A Pew study found similar results on the difficulty of dating during the pandemic (Brown 2022).

In HCMST 2022, 385 out of 1722 subjects were single (unweighted; the weighted value was 418 single persons out of 1722 adults). Of the 385 single adult subjects, 252/385= 65.5% had been continuously single since 2017. Of the 69 single men under 40 years of age in HCMST 2022, 55/69=80% had been continuously single, that is single in 2017, single in 2020, and single in 2022. In other words, the majority of single adults in HCMST 2022 were continuously single since well before the coronavirus pandemic. HCMST data suggest that the high rate of singleness in 2022 was primarily due to slower initiation of and uptake of new relationships rather than increased breakups during the COVID-19 pandemic or COVID-19-related mortality.

Another way to test for a pandemic-associated reduction in the formation of new relationships is to compare the prevalence of recently formed relationships before and during the pandemic. In HCMST 2017, for subjects at least 23 years old, 5.5% of romantic relationships had been formed in the 12 months prior to the survey. In HCMST 2022 (also for subjects at least 23 years old), only 3.2% of existing romantic relationships had been formed in the 12 months prior to survey, and the difference in recent relationship rate between the surveys was significant at the 0.001 level. Romantic relationships of 12 months' duration or less are generally non-marital, non-cohabiting relationships. The lower uptake of new, generally non-marital and non-cohabiting relationships during the pandemic supports Hypothesis 7, that barriers to relationship formation were the primary drivers of the pandemic dating recession.

COVID-19 mortality appears to be a minor contributor to the high rate of singleness observed in HCMST 2022 except for subjects 80 years old and over (see Figure 2 below). Among the 385 single adults in HCMST 2022, approximately 89 would not have been single if the lower singleness rate from 2017 applied, and 26 of the single respondents in 2022 had a partner or spouse die between 2020 and 2022. Given the increased mortality rate during the pandemic (Murphy et al. 2021; Ahmad, Cisewski and Anderson 2022) I estimate there were approximately four single subjects in HCMST 2022 whose partners or spouses died due to COVID-19, meaning that less than 5% of the rise in singleness from 2017 to 2022 was due to the deaths of partners from COVID-19.

Some of the continuously single adults identified in HCMST 2020 and 2022 were undoubtedly continuously single by choice (DePaulo 2023; Tessler 2023b). Between 14% and 15% of single subjects in HCMST 2020 and HCMST 2022 reported longing for a relationship more than they had at previous times in their lives, suggesting that about one out of seven single adults were feeling lonelier during the pandemic than they remembered feeling before. See Appendix Figure 2, showing the rate of longing for a relationship peaking for single people in their early 40s.

[Figure 1 here]

Results part 2a: Age Correlates of Singleness and Dating

Panel A of Figure 1 shows rates of singlehood by age and gender from HCMST 2017 for two different definitions of singlehood: Not married or cohabiting (a typical definition of singleness in the literature) and the narrower and more specific HCMST declarative definition of singlehood. Panel A shows that among young adults and especially among young adult women in the U.S., there is an enormous gap between the two definitions, consistent with Hypothesis 1. Forty eight percent of women in their 20s were not married or cohabiting in 2017, but only nineteen percent were declaratively single, meaning almost 30 percent of women in their 20s were in romantic relationships but not married or cohabiting. As individuals age, the two definitions of singlehood converge because older people tend to be either married or if single are less active at dating, meeting new partners, or hooking up. For women in their seventies, 33 percent were not married or cohabiting, and 29 percent were declaratively single, meaning only about four percent had nonmarital and non-cohabiting partners.

The gap between the two definitions of singleness is at least in part a function of dating activity and the life course. Panel B of Figure 1 shows the prepandemic dating participation from HCMST 2017 for declaratively single adults by age and gender, with dating participation defined as having met at least one new person in the past 12 months for dating, romance, or sex. Among all U.S. single adults, 84% reported meeting no new partners for dating, romance, or sex in the 12 months prior to HCMST 2017, but the rate of nonparticipation in dating and meeting partners is gendered and highly correlated with age (see also Appendix Table 2). For single men there was a steady decline in dating activity with age from 24% activity (meeting at least one new partner in the past 12 months) for declaratively single men in their 20s to 3% dating activity for men in their 70s in the smoothed data. For women the life course decline in dating activity was even more steep. For declaratively single women in their 20s, 37% had met at least one new person in the past 12 months for dating, romance or sex. For declaratively single women in their 70s, none (zero out of 50 women) had met any new person in the past 12 months for dating, romance, or sex.

Most older and single respondents in HCMST 2020 answered a closed-ended question by indicating that their dating lives had not changed during the pandemic. In answering that the pandemic had not affected their dating lives, the open-ended answers from older adults tended to all share a similar theme about the incompatibility of dating with their life stage: “I am well past the dating age so it hasn’t affected me at all,” wrote one single 77-year-old female. A 73-year-old single man wrote, “I have no dating life.” Others expanded on this theme of life course dating inactivity, writing about how even though they were divorced they still interacted with their ex and were not interested in starting over, or else why their former spouse's death left them uninterested in dating someone new. The life stage of older adulthood includes experience with the cost of loss and breakup. One woman wrote, "At 78 years old I have no interest in obtaining a boyfriend. I have been married 3 times and all ended in divorce."

Figure 1 panel C charts the probability of describing (in an open-ended answer) barriers to dating that arose during the pandemic by age, showing that barriers to dating were more salient to younger adults in HCMST 2020 data. One 24-year-old woman wrote, "No social events, no church or Bible studies, bars close early, must be socially distanced at gyms. There's nowhere to really meet new people besides dating apps." A 28-year-old male wore, "I have nowhere to go to meet people. I don't want to go to bars or parties, and they shouldn't be allowed to be open. It's too risky." A 25-year-old male wrote, "Most places are shutdown. Less opportunity to meet someone. Meeting someone online is fine but then you can't take it any further because of COVID."

People (especially younger adults) who wanted to date but found their dating options blocked were concerned not only about their own safety (as by this time, 6 months into the pandemic, it was clear that the coronavirus was less lethal to younger adults), but were also concerned about the safety of people around them. One 22-year-old man wrote "With the whole pandemic thing I don't really go out to socialize all that much since I have immune-compromised friends and friends with asthma so I just don't see people and can't really meet people." A 23-year-old man wrote, "I go to college, and it's done mostly online now. I don't get to go out to meet people. I live with my parents so they don't want me to possibly bring home coronavirus because my grandma is 88, and they don't want her to get it."

[Figure 2 here]

Figure 2 shows that the increase in singlehood during the pandemic was experienced primarily by young adults age 35 and younger, supporting Hypothesis 4. For adults 40 to 80, the rate of singleness was similar before and during the pandemic. People age 40-80 were likely to be stably partnered before the pandemic, and if single, were less likely than younger people to be active in the dating market. Also, unlike adults over age 80, partnered people 40-80 were much less likely to have lost their partners due to COVID-19 mortality, because of the steep age gradient in COVID-19 mortality (Bonand et al. 2020).

At ages over 80 singleness rose significantly from 2017 to 2022 in the HCMST data, due primarily to the mortality of spouses, supporting Hypothesis 5. Respondents over age 90 are especially sparse in the HCMST data, but the difference in singlehood during the pandemic compared to before the pandemic in this over-80 age group was significant nonetheless. In HCMST 2022 there was a rise in (weighted) singleness for subjects over 80 years old, from 20% in 2017 and 22% in 2020 to 31% in 2022. The difference was statistically significant at the $P<0.001$ level. Six of the seven relationship dissolutions reported in HCMST 2022 subjects over age 80 were due to the death of the partner.

At the two ends of the age spectrum, different processes were implicated in the rise of singleness during the pandemic. For young people, pandemic dating barriers were obstacles to the formation of new relationships. For middle aged adults, neither dating barriers nor COVID-19 mortality of partners had much impact on their relationship statuses during the pandemic. For adults over 80 years old, mortality of partners has always been a leading source of singleness. During the height of the COVID-19 pandemic mortality was especially fierce for persons over age 80 (Bonand et al. 2020) and there was a significant increase in singlehood in the over-80 population during the pandemic as a result.

[Table 3 here]

Results Part 2b: The association of vaccination with perceptions of pandemic dating in 2022

Although Hypothesis 8 assumed that COVID-19 vaccination availability would have lowered or eliminated pandemic dating barriers, Table 3 suggests that subjects who were fully vaccinated and boosted were *more* likely to describe pandemic barriers to dating compared to subjects who were either partially vaccinated or unvaccinated. There are several rationales for this interesting association between vaccination and dating barriers.

First, vaccinated people may have been the more cautious people to begin with. Second, vaccination and the subsequent loosening of pandemic restrictions did not immediately alter the social environment. People remained cautious. The salience of caution during the post-vaccine period of the COVID-19 pandemic was reinforced by the fact that the vaccines turned out to be not as effective at preventing infection as they were at reducing the chance of the worst effects of infection (Lin et al. 2022). Vaccines proved to be an incomplete solution to the COVID-19 pandemic. From the HCMST 2022 open-ended answers, a 75-year-old female wrote, "Did not take chances during pandemic even after vaccination and booster. Vaccinations only insure against getting very ill and I do not enjoy being sick." A 32-year-old man wrote, "I'm immunocompromised so I can't meet people in person. This obviously wasn't an issue before the pandemic."

Third, vaccination availability added a new barrier to dating. Vaccinated people often wanted to find other vaccinated people to date (Campbell et al. 2023) but matching on vaccination status required adding a potentially awkward question about vaccination (with its implications about vaccination attitude and political orientation) to the pre-date checklist. The dating apps introduced vaccination status as an option users could add to their profiles early in 2021 (Thorbecke and Kolinovsky 2021), but this apparently did not resolve the awkwardness of vaccine matching.

Dating during the post-vaccine part of the pandemic began to intersect with political polarization in the U.S. in a new way. One man wrote, "You have to find a lady that had all 3 vaccines." A 33-year-old man wrote, "After I got fully vaccinated, I became very careful to determine whether a partner (be it for sex, friends, or romance) believed in the pandemic, and the vaccines. Those that think COVID is a 'hoax' are automatically stricken from my list of people I want to try and meet."

The dating complications of vaccination status matching is a potential explanation for why singleness continued to rise from 2020 to 2022 despite the intervention of vaccine availability and the concomitant decline in COVID-19 mortality, against the expectations of Hypothesis 8. Orth and Joyner (2022) found using a survey experiment that during the COVID-19 pandemic there was stronger dating selectivity in the U.S. on political party affiliation than on race or religion.

Conclusion

HCMST data suggest that the number of (declaratively and narrowly defined) single adults in the US grew by more than 10 million during the coronavirus pandemic. Even as the pandemic abated, mortality declined, vaccination became routine and masks were mostly retired by the Spring of 2022, the rise in singleness had not abated. Dating during the COVID-19 pandemic was awkward and difficult, even after vaccines became widely available and mask mandates were mostly lifted. Young adults were the group most affected by what we may call the pandemic dating recession, as single adults under age 40 are the single adults who in pre-pandemic times tended to be most active in the dating market, and they had the most to lose when social life was restricted by the pandemic.

Because official data sources in the US fail to collect data on casual romantic relationships, the casual dating population has not been well monitored and the pre-pandemic baseline historical trends in singlehood are unknown if we adopt a broad definition of romantic relationships to include casual and non-steady relationships as the HCMST surveys do. According to HCMST data, there were 27.6 million US adults in non-marital, non-cohabiting romantic relationships in 2017 and there were 46.0 million single adults in the US in 2017. The HCMST 2020 and 2022 data show that the coronavirus pandemic was associated with an increase of more than 10 million in the number of single adults in the US.

The observed rapid rise in singleness, if accurate, qualifies as a pandemic dating recession. The pandemic dating recession is consistent with data from HCMST and Pew (Brown 2022) showing that adults in the US thought it was more difficult to meet people during the pandemic, and this is consistent with HCMST data showing that about one out of seven single adults in the US were longing for a relationship more than before the pandemic. The salience of pandemic dating barriers, especially for younger adults, also emerged from open-ended answers in the HCMST data.

The pandemic dating recession has been mostly invisible to scholars because our most-used surveys lack sufficiently broad measures of romantic relationships and therefore lack sufficiently specific definitions of singleness. Demographer Gary Gates (2011) noted the longstanding bias in US survey data towards measuring marriage and non-marital cohabitation, while overlooking other kinds of intimate relationships. Our collective failure to have better data sources about non-marital, non-cohabiting romantic relationships hinders research on relationships in general, because most romantic relationships start as non-marital, non-cohabiting, not-yet-steady unions. The GSS surveys with their POSSLQ and POSSLQY questions provide valuable trend data on 'steady' relationships (see the Appendix section on "other data sources"). The HCMST surveys with their broader measures of relationships are a step towards survey coverage of the actual breadth of romantic relationships.

Limitations:

HCMST, as an Internet-only survey, was better situated than the GSS (traditionally an in-person survey) to measure social change due to the pandemic. Along with advantages the HCMST data have limitations, including a modest sample size which leaves room for some uncertainty about how the pandemic dating recession was experienced differently in different demographic subpopulations. An additional potential shortcoming of the HCMST data is panel attrition. HCMST respondents who were young and single in 2017 were more likely to be lost to follow-up in the pandemic waves of 2020 and 2022 which means that panel attrition exerted a downward bias on the estimate of the rise in singleness during the pandemic. Reweighting the HCMST data to account for attrition raised the estimate of the increase in singleness during the pandemic but did not change the substantive conclusions.

The comparison with CPS data (for marriage and cohabitation) in Appendix Figure 1 suggests that US adults in marriage and cohabitation were overrepresented in HCMST 2017. Even if adults in marriages and cohabitations were over-represented in HCMST 2017, the longitudinal within-individual results from Table 2 show that the individuals from HCMST 2017 experienced a sharp rise in singleness between 2017 and 2022 which corresponded to a growth in singleness of between 11.2 and 13.3 million US adults, consistent with our cross-sectional HCMST data comparisons. The panel data results show that potential bias in HCMST 2017's marital status and cohabitation status profile cannot explain the observed rise in singleness between HCMST 2017 and HCMST 2022.

Discussion:

Forming and maintaining romantic relationships is one of the most important developmental tasks of young adulthood (Arnett 2004). Having a romantic partner is a potential stabilizing counterweight to all manner of shocks and challenges. During the coronavirus pandemic partnered people (especially people with coresident partners) had someone to lean on and talk to and make meaning with (Rosenfeld and Hausen 2023). It is not clear what proportion of single adults managed to have functionally the same degree of support during the pandemic from their more diverse support networks as partnered adults had from their partners. Older adults bore the brunt of the devastating mortality cost of the COVID-19 pandemic (Bonand et al. 2020). Young adults bore the brunt of the dating recession that resulted from the closure of social spaces during the pandemic, because young adults were more likely to be single and because single young adults tend to be more active in the dating market compared to older single adults.

The pandemic dating recession is an important but understudied contributor to what the former U.S. Surgeon General (2023) described as the "epidemic of loneliness and isolation" in the U.S. Because forming and maintaining friendships and romantic relationships is such an important developmental task for young adults, and because the pathway through young adulthood is a winding road (Arnett 2004), loneliness peaks at age 19 (Shovestul et al. 2020). Time-use studies showed sharp increases in social isolation and sharp decreases in out-of-household social engagement in the U.S. in the pandemic year of 2020 (Kannan and Veazie 2023). Because young adults were the loneliest adults before the pandemic, the pandemic increases in social isolation and the pandemic decreases in social engagement were likely to have had especially negative impacts on young adults. Research on loneliness and social isolation imply greater challenges for young adults during the pandemic, and this is consistent with the finding here that the pandemic dating recession especially impacted young adults.

By some measures, including time-use studies, social isolation was increasing for at least a generation and out-of-household social engagement was decreasing in the U.S. for decades before the COVID-19 pandemic (Kannan and Veazie 2023; Putnam 2000; McPherson, Smith-Lovin and Brashears 2006). The long-term pre-pandemic increase in social isolation in the U.S. is disputed (Paik and Sanchagrin 2013; Fischer 2009; Fischer 2005). Whether pre-pandemic social isolation was increasing in the U.S. or not, the pandemic dating recession undoubtedly worsened social isolation, especially for single young adults. The mortality impact of the COVID-19 pandemic has mostly receded by early 2025 (National Center for Health Statistics

2025). HCMST data show the pandemic dating recession peaked in 2022 in the U.S. Because of the lack of post-2022 data on true (declarative) singleness in the U.S., the current status of the pandemic dating recession as of January, 2025 is unknown.

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Table 1: The Rise of Singleness during the Coronavirus Pandemic in the US.

Survey year	2017 panel→ 2017	2020	2022
Married	59.9	60.0	57.8
Unmarried partner, living together	9.9	9.6	9.3
Unmarried partner, not living together	11.3	6.8	8.6
Declarative Singles	18.9	23.6	24.3
Total	100%	100%	100%
Age-corrected percent single for ages ≥18	18.9	25.5	27.3
N	3,510	2,107	1,722

Source: HCMST 2017, 2020 and 2022, each wave weighted by its respective combo_weight. comparison of 2020 and 2017 is χ^2= 44.5 on 3 df, P=1.2×10^{-9}. Comparison of 2017 and 2022 is χ^2= 25.6 on 3 df, P=1.1×10^{-5}. Comparison of 2020 and 2022 is χ^2=5.3 on 3 df, P=0.15. Age correction accounts for the fact that the youngest members of the adult population are among the people who are most likely to be single. The minimum age in HCMST 2017 was 18. For HCMST 2020 the minimum age was 21. For HCMST 2022, the minimum age was slightly less than 23. Singleness is defined declaratively and narrowly as "I am single with no boyfriend, no girlfriend, and no romantic or sexual partner."

Table 2: The rise in Singleness among U.S. adults during the pandemic, HCMST panel data

	Adjusted for age bias?	Adjusted for panel attrition?	Change in % single (95% CI)	Sig	Sample Size	Implied change in adult single population (95% CI), in millions of persons
2017 to 2020	N	N	3.67% (2.34, 5.00)	***	2,107	9.2M (5.9M, 12.6M)
2017 to 2020	N	Y	4.45% (3.07, 5.84)	***	2,107	11.2M (7.7M, 14.7M)
2017 to 2020	Y	Y	4.81% (3.32, 6.31)	***	2,107	12.1M (8.4M, 15.9M)
2017 to 2022	N	N	2.85% (1.30, 4.41)	***	1,722	7.3M (3.3M, 11.2M)
2017 to 2022	N	Y	4.63% (2.97, 6.29)	***	1,722	11.8M (7.6M, 16.0M)
2017 to 2022	Y	Y	5.21% (3.34, 7.08)	***	1,722	13.3M (8.5M, 18.0M)

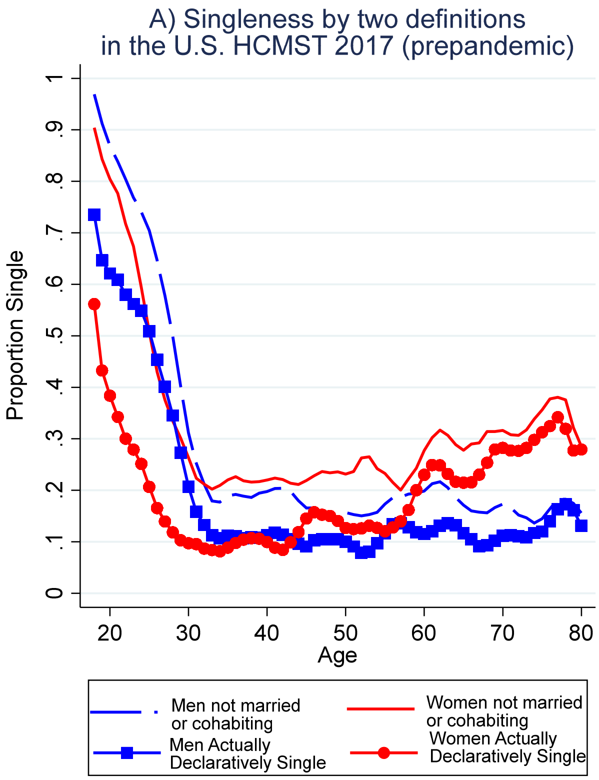
Source: Weighted data from HCMST 2017, 2020, and 2022 panel data. Original sample size in HCMST 2017 was 3,510. Attrition from 2017 to 2020 was 40%, and 51% from 2017 to 2022. Age bias adjustment corrects for the effect on singleness of the panel members aging. Change in % single is additive change to the baseline of 18.9% single in HCMST 2017 for adults age 18 and over. Singleness is defined declaratively and narrowly as "I am single with no boyfriend, no girlfriend, and no romantic or sexual partner." US adult population via CPS: in September, 2020: 252,011,000; in April, 2022: 254,574,000

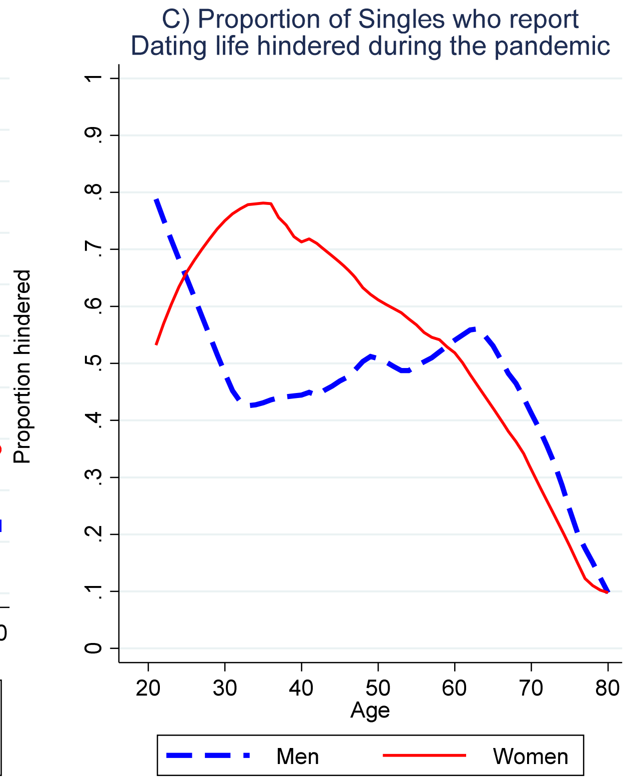
*** P<0.001

Table 3: Predictors of perceived pandemic dating constraints. Logistic regression coefficients (SE)

Wave	Wave 2, 2020	Wave 2, 2020	Wave 3, 2022	Wave 3, 2022	Wave 3, 2022	Wave 3, 2022
Data from closed or open-ended question	Closed	Open	Closed	Closed	Open	Open
Age	-0.01* (0.0048)	-0.030*** (0.0056)	-0016*** (0.0051)	-0.019*** (0.057)	-0.0080 (0.0063)	-0.015** (0.007)
Fully vaccinated and Boosted against COVID-19				0.55** (0.19)		1.14*** (0.28)
N	468	387	478	474	391	388
Chisquare	4.72 (1 df)	30.9 (1 df)	10.12 (1 df)	18.2 (2 df)	1.59 (1 df)	19.9 (2 df)

Source: Weighted HCMST 2020 and 2022 data.





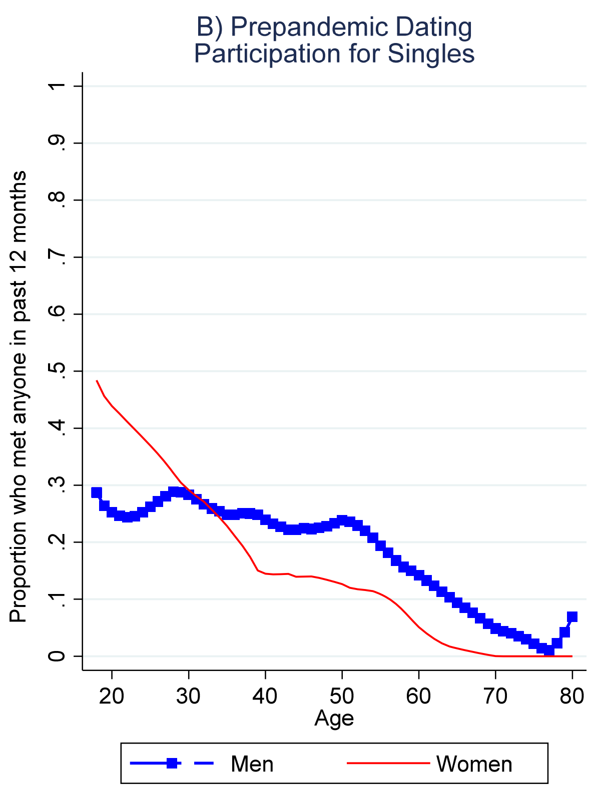


Figure 1: Age and Gender Associations with Singleness and Dating before and during the Pandemic.

Source: Weighted HCMST data from 2017 (panels A and B) and 2020 (panel C), smoothed by local linear regressions. In Panel A, the competing definitions of singleness are either “not married or cohabiting”, or the narrower HCMST declarative definition of singleness, meaning “I am single, with no boyfriend, no girlfriend and no romantic or sexual partner” In Panels B and C, “single” uses the narrower declarative definition. Panel C reflects pandemic dating barriers from a coded open-ended HCMST 2020 question.

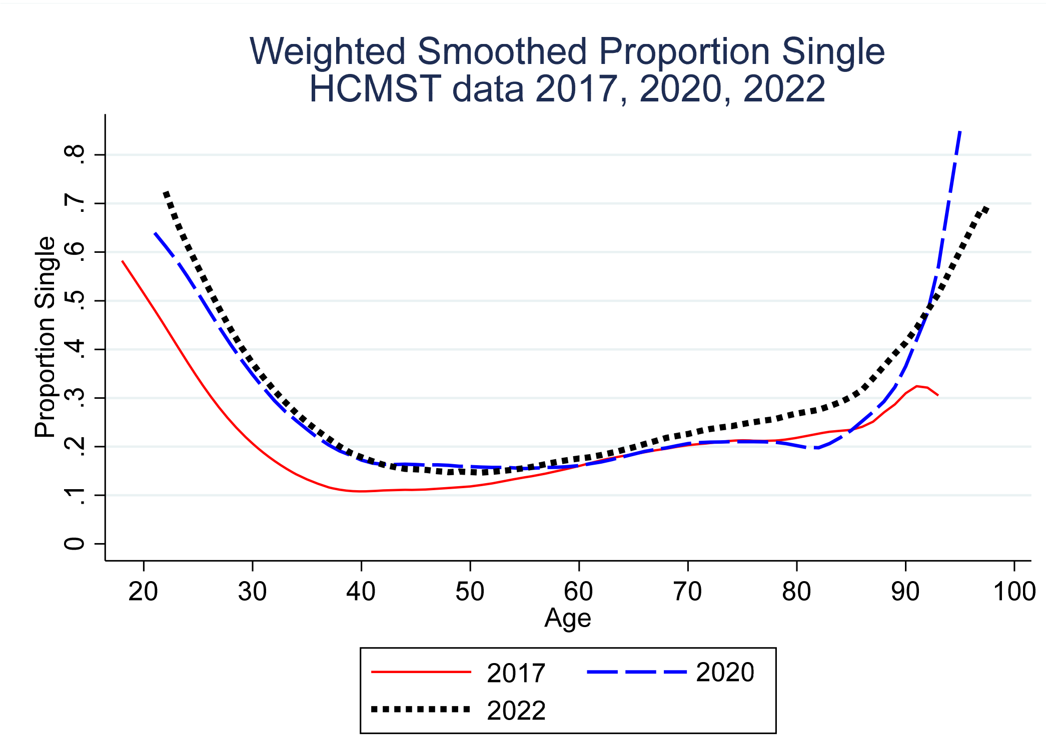


Figure 2: The rise of Singleness especially for young adults during the pandemic

Source: Weighted HCMST data 2017,2020, and 2022, smoothed with local polynomial regressions degree one. Singleness defined declaratively with no sexual or romantic partner.