

Stanford University's  
How Couples Meet and Stay Together:  
Analysis and Interpretation

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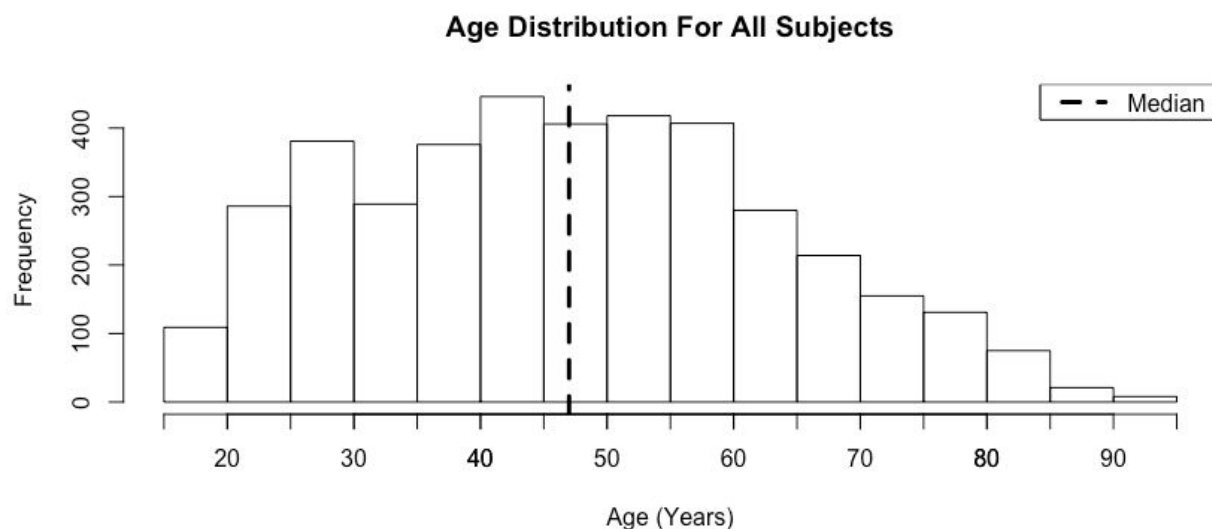
### How Couples Meet and Stay Together

Conducted by Stanford University beginning in 2009, this research study investigates how romantic partners meet in the United States and seeks to describe the nature of modern relationships. The survey lasted for a duration of five years. In total, roughly four thousand survey subjects are included within this dataset ( $N = 4,002$ ) with 3,009 active relationships of some variation present. Surveyed participants resided in locations from across the nation, and were symmetrically distributed by gender. In this report, when matters of gender attraction are discussed, heterosexuals are defined as individuals who reported themselves as being “mostly” or “only” attracted the opposite gender. Likewise, homosexuals are defined as those who reported themselves as being “mostly” or “only attracted to the same gender. When unsuccessful relationships are discussed, those which ended as a result of a partner’s death were excluded from analysis.

#### **1. Give examples of 3 categorical variables, 3 ordinal variables, and 3 numerical variables in the data set. Are any of the categorical or ordinal variables binned?**

Surveyed individuals’ house type, and religion, and gender are categorical features of the dataset. Subjects’ self-reported relationship quality, household income, and gender attraction are present as ordinal features. Numerical features include survey subjects’ age in years, years of education, and the age of their relationship in years (if applicable). Household income is an example of a binned ordinal variable contained in the dataset.

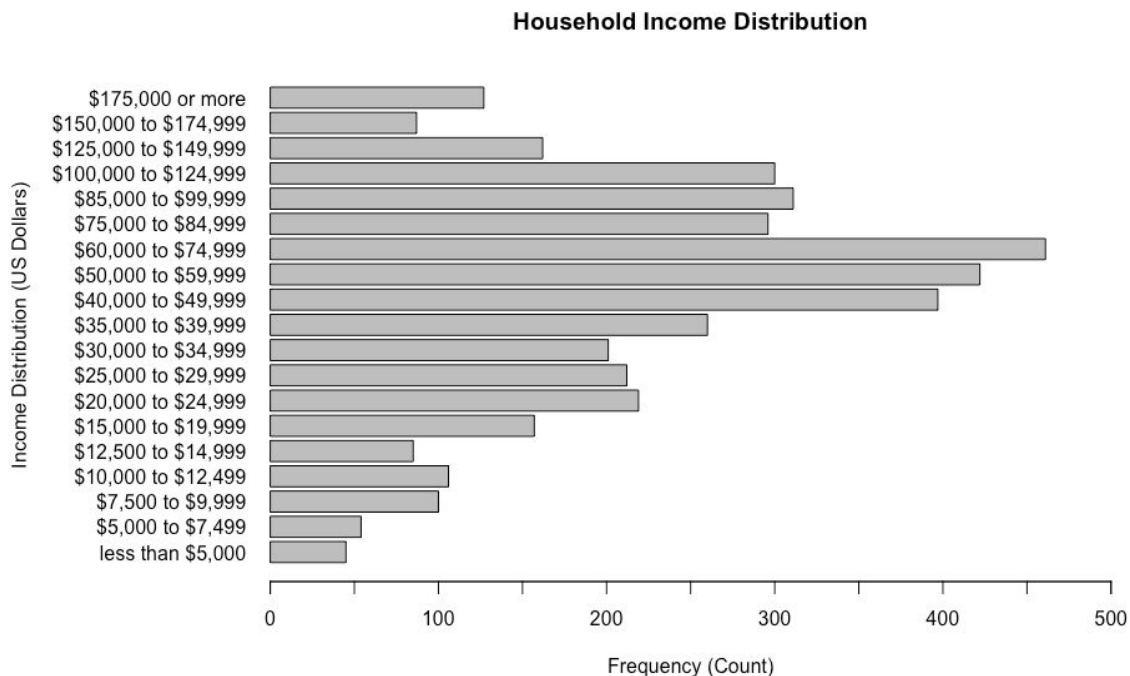
#### **2. What’s the demographic breakdown of the survey subjects? Are there any biases? Do you think the subjects are representative of the United States as a whole?**



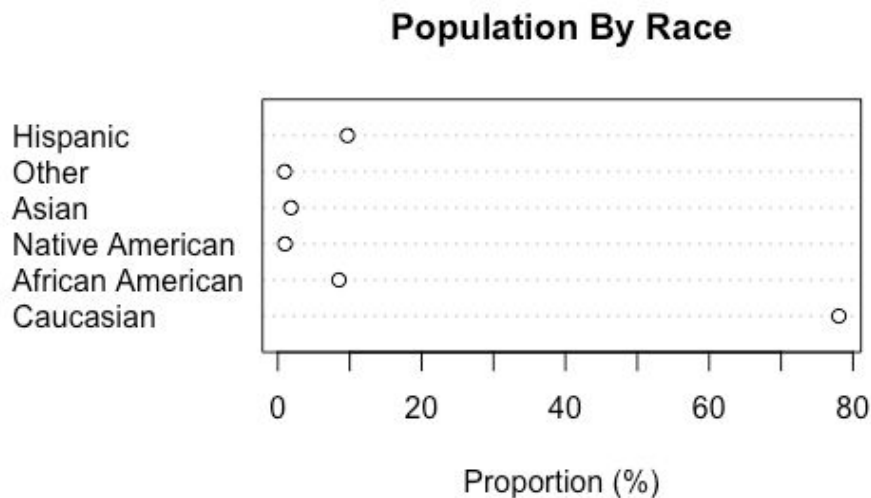
Survey subjects ranged in age from 19 through 95 years old. Individuals between 40 and 60 years of age were most common. The median age of all survey subjects was 47, the mean age was 47.5. Similarity between the mean and median suggests a relatively normal distribution of ages within the dataset. According to the US Census Bureau, the median age nationally in 2009 was 37.4, revealing an underlying bias of this study's population sample. Clearly, older individuals are more highly represented within this dataset in comparison to national proportions, making it less representative of the United States as a whole in terms of age distribution.

51% of survey subjects were female, and 49% were male. A nearly identical proportion is also found in the Census Bureau's data from 2010, indicating that this dataset is in fact representative of the United States as a whole in terms of gender alone.

With regard to income, most survey subjects were relatively wealthy. Households earning between \$60,000 to \$74,999 were the most highly represented income group, significantly higher than the 2009 median income of \$49,777 as defined by the US Census Bureau. This indicates that the underlying population surveyed is more wealthy overall than the 50th percentile of Americans, and thus may not be entirely reflective of the socioeconomic breakdown of the United States as a whole.



In terms of race, Caucasians were by far the most commonly represented racial group, comprising 78% of surveyed participants. Hispanics were a distant second, representing around 9.7% of respondents. African Americans represented 8.5% of the surveyed individuals. Only 1.8% of those surveyed were Asian, and even less were Native Americans (1%) or of other racial backgrounds (0.9%). This breakdown is loosely representative of racial proportion dynamics in the United States, but does not accurately reflect specific distributions. According to the US Census Bureau, in 2009, 72% of individuals residing in the United States were Caucasian, 12.6% were African Americans, 4.8% were Asian, and just under 1% were Native Americans. In comparing the two datasets, it becomes clear how this study overrepresents Caucasians and underrepresents others, including African Americans and especially Asians, thus failing to precisely reflect the United States as a whole. As such, the conclusions drawn from this dataset may not necessarily translate to all communities across the nation.



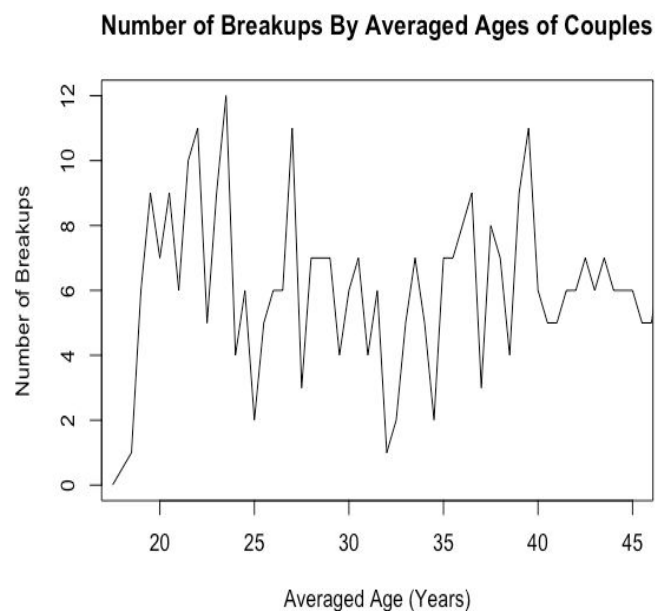
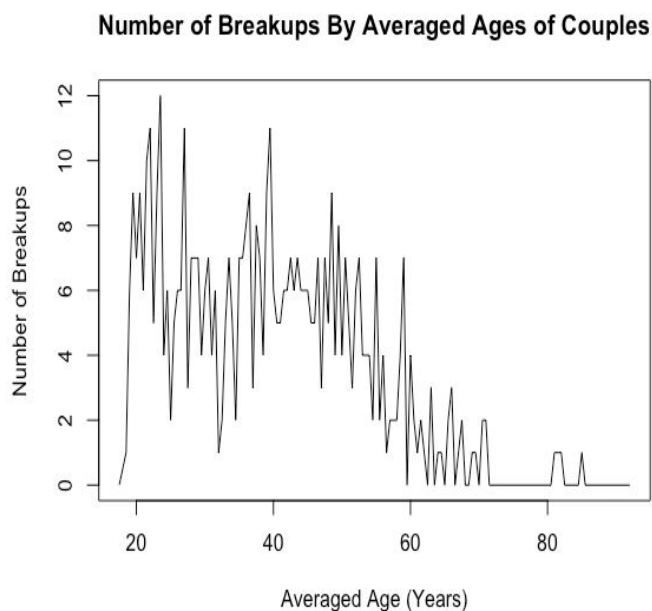
**3. What proportion of the survey subjects eventually broke up? What proportion eventually got married? Among unmarried subjects, did any get married and later break up? If so, do these subjects have anything else in common?**

19.5% of all survey subjects in an active relationship eventually broke up. Relationships that ended due to the death of a partner were excluded from analysis. Only 5.7% of survey subjects involved in a relationship eventually got married. Among initially unmarried subjects, 9 individuals eventually got married then later broke up. Within this segment, being heterosexual, Christian (inclusive), and holding Democratic political views were the most common shared traits, each group representing 77% of initially unmarried subjects who eventually got married then later broke up. Perhaps most interesting, however, is that all 9 individuals described their relationship as either “good” or “excellent” - suggesting that basic, initial romantic compatibility was **not** a contributing factor to their eventual breakups, as none reported of a negative relationship quality.

**4. Is there a connection between the age of couples (both subject and partner) and whether they break up? Is there a connection between the age of the relationship and whether they break up?**

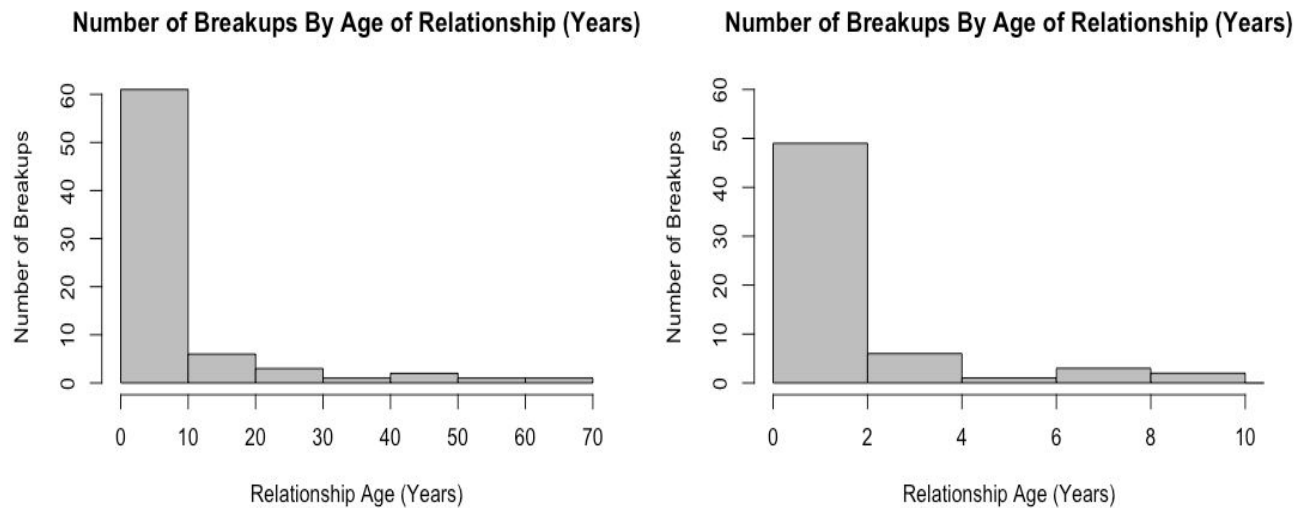
To determine the combined age of couples, survey subjects' age and their partners' ages were averaged in order to compute a numerical age variable that reflected both inputs. Analyzing the number of breakups by the averaged age of couples reveals how young couples broke up more than old couples did. This trend is emphasized in the first graph below (shown on the left).

Couples with an averaged age of 23.5 had the highest number of breakups ( $n = 12$ ), but several other spikes exist, as shown in the second graph on the right, which represents the same data as the first graph but with a restricted x-axis to emphasize regions of that contain the majority of observations for better legibility.



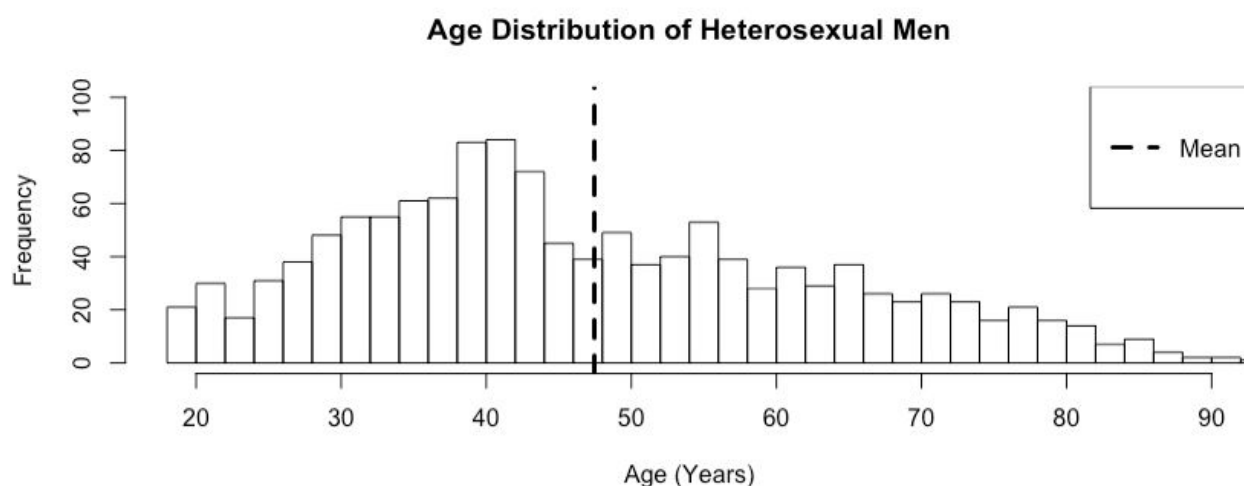
There exists a major connection between the age of a relationship and whether the couple broke up. Younger relationships broke up most frequently. As depicted in the first histogram below, the overwhelming majority of breakups occurred in the first ten years of a relationship (shown below on the left). However, this finding alone is not surprising and rather uninformative.

Rendering the same data with a restricted x-axis (shown below on the right) reveals far more information about the trend. Most significant is how breakups that occurred within the first two years of a relationship account for the vast majority of breakups of all ages, further supporting the conclusion that younger relationships break up more frequently than their older counterparts.



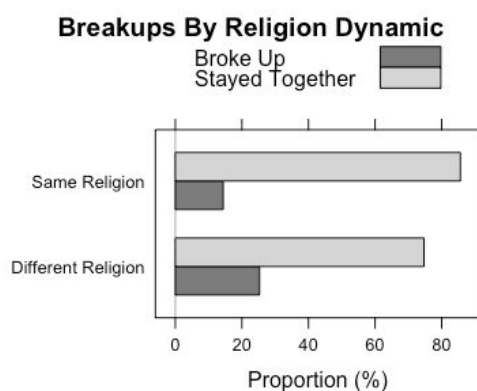
**5. What's the typical age difference between partners? Among heterosexual couples, is one gender more likely to be older?**

The median age difference between partners is 3 years, while the average age difference is 4.7 years. Discrepancy between the mean and median suggests that several long lasting relationships exist in the dataset as outliers, inflating the mean value more than the median, since the mean is a less robust measure of central tendency. Among heterosexual couples, men were on average older than women by a difference of roughly 3 years. The mean of each gender's age is represented by a dotted vertical line in both histograms below.

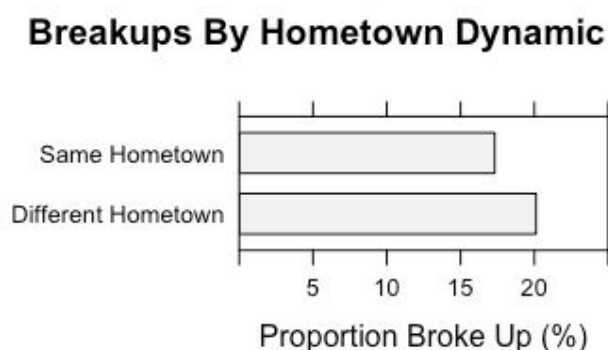


**6. Does common background between partners seem to be related to whether they break up? At a minimum, consider religion, education level, and hometown.**

Shared religion between partners seems to be correlated with more successful relationships. Couples who shared religious beliefs had a lower breakup rate (14%) than couples without a shared religious background (25%). Relationships that ended due to the death of a partner were excluded from this analysis. Nevertheless, one cannot definitively conclude from this observed correlation alone that a common religious background somehow innately prevents breakups.

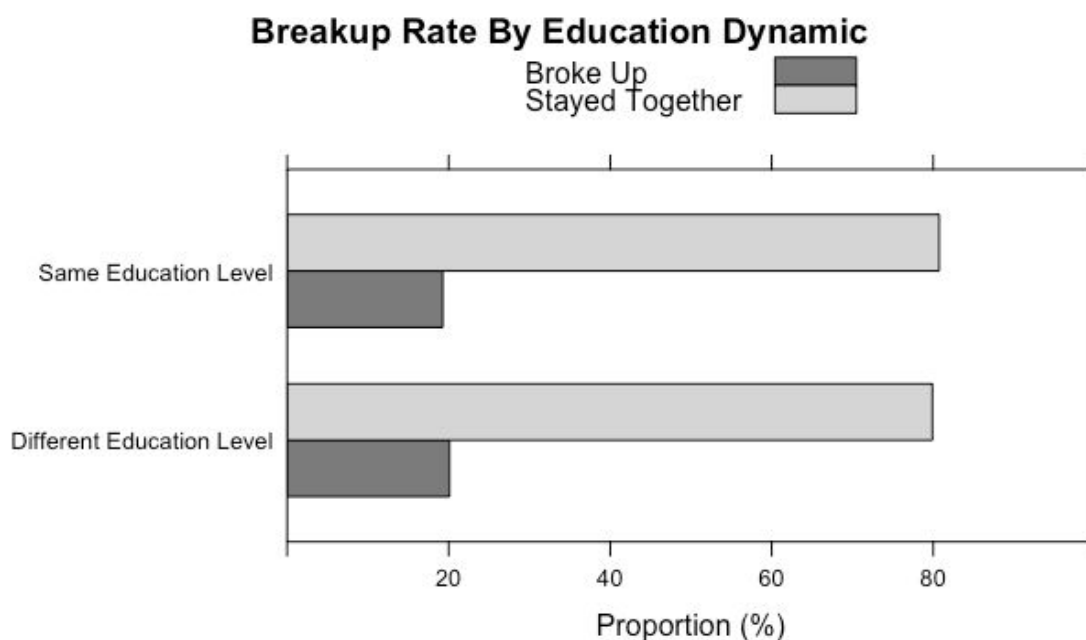


Being from the same hometown did have a small impact on relationships' success. Couples who were both from the same hometown broke up at slightly lower rates (17%) than those who were not from the same hometown (20%). As such, this aspect of a common background does seem to play a small important role in predicting whether a relationship will result in a breakup, but this observed trend is much less pronounced than that of a shared religious background.



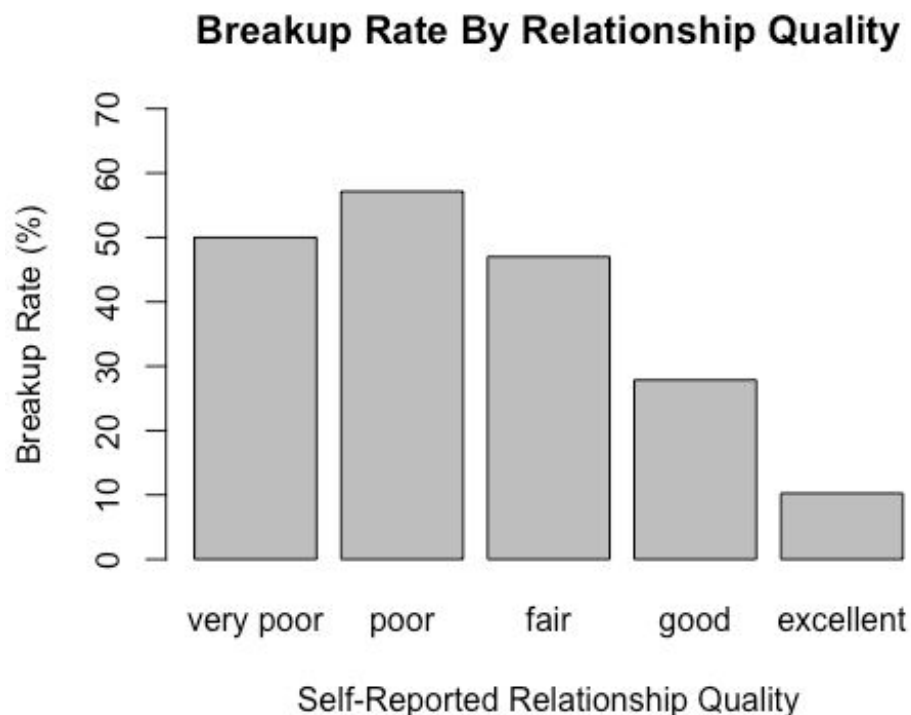


Being of the same education level had little, if any, significant relation towards whether a couple would break up or not. For this analysis, couples with a three year difference in education received or less were classified as being of the same education level, and couples with a difference of more than three years were classified as being of a different education level. Couples of the same education level did break up slightly less than couples of different education levels, by a difference of 0.84%. This is not an extreme difference. While somewhat surprising, this finding is not unreasonable, since such a wide range of education types exist. The provided dataset does not differentiate between the types of education received, it only contains information on how many years each person was educated. Perhaps including additional data relating to the primary field pursued or the general nature of one's academic career would yield different results in analysis.

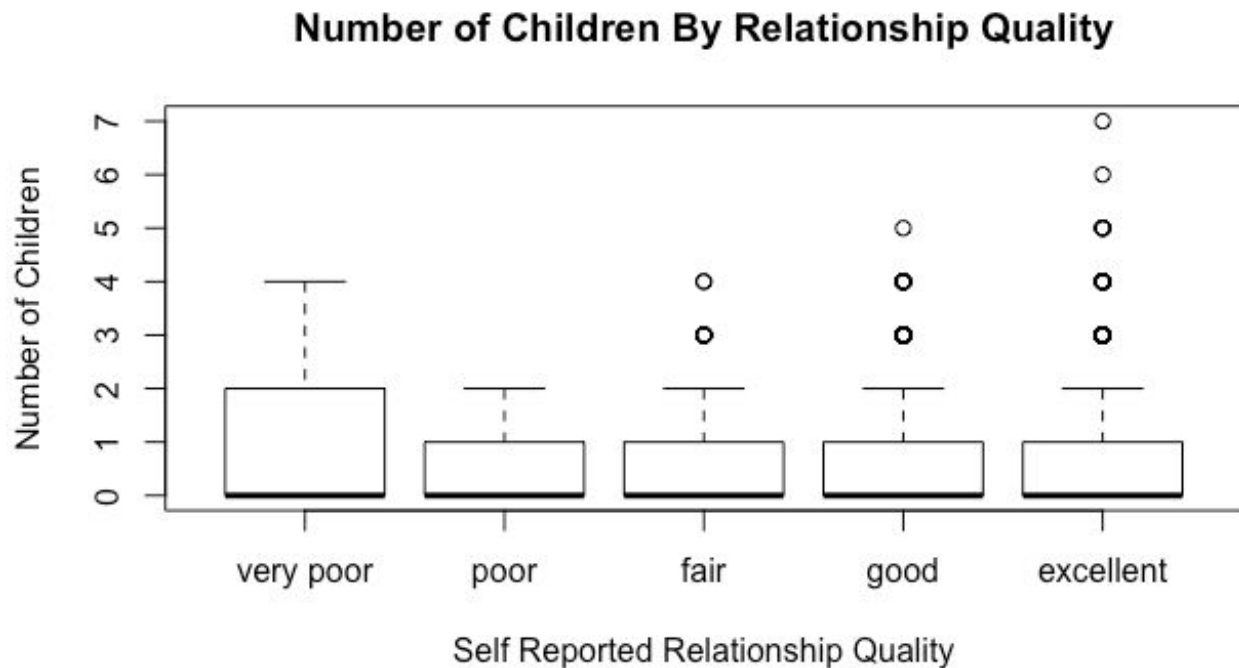


**7. Is self-reported relationship quality relevant for determining whether a couple will break up? What about parental approval? Is there a connection between relationship quality and number of children?**

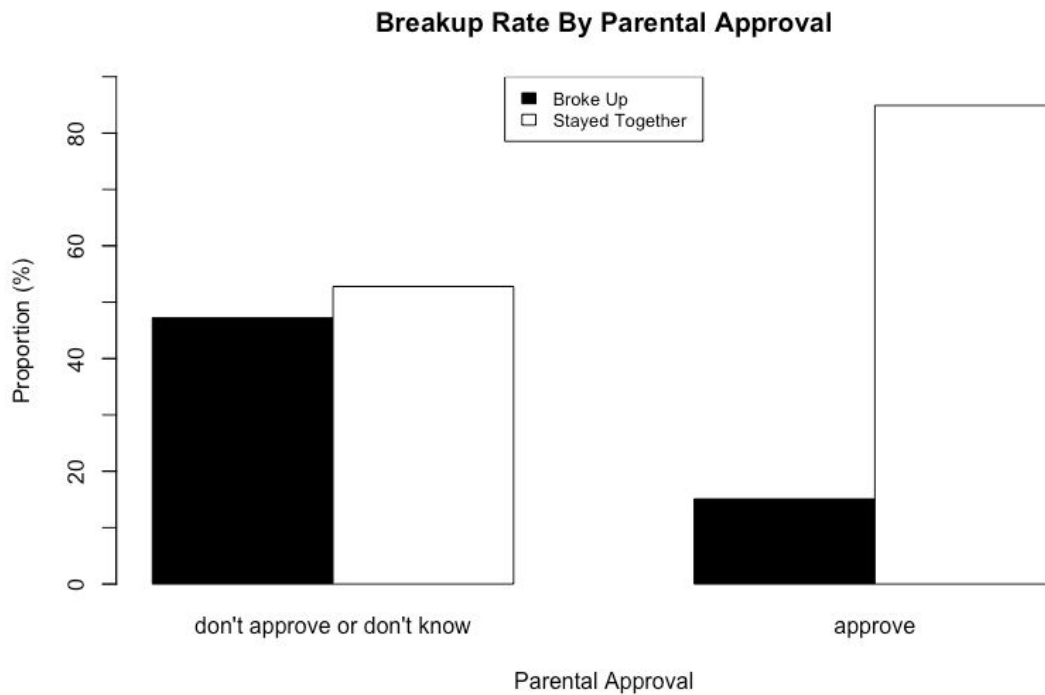
Couples who reported of a positive relationship quality were less likely to break up, while those who reported of a negative relationship quality were more likely to break up. Those with a self-described “poor” relationship quality broke up more frequently (57%) than those who reported an “excellent” relationship quality (10%), at more than five times the rate. Clearly, self-reported relationship quality is a relevant factor in predicting a relationship’s chances of success. However, based on this apparent connection alone, one cannot definitively conclude that breakups are entirely caused by negative reports of relationship quality. Furthermore, the data does not support any notion that a couple's’ fate can be exclusively determined through analysis of self-reported relationship quality.



There is an apparent connection between relationship quality and number of children. However, it is important to note that most couples did not have any children at all, regardless of their relationship quality. Among those who did, 75% of couples who reported of a “very poor” relationship quality had two children or less. In contrast, 75% of relationships in the other quality ranks had one child or less. However, the unsatisfied couples in a very bad relationship were not the only ones to have more than two kids. The only couples with more than four children all reported of positive relationship quality. Furthermore, a seven-child household, the maximum of this dataset, was only observed in an “excellent” relationship, suggesting that relationship quality certainly might play a role in how many children a couple has.

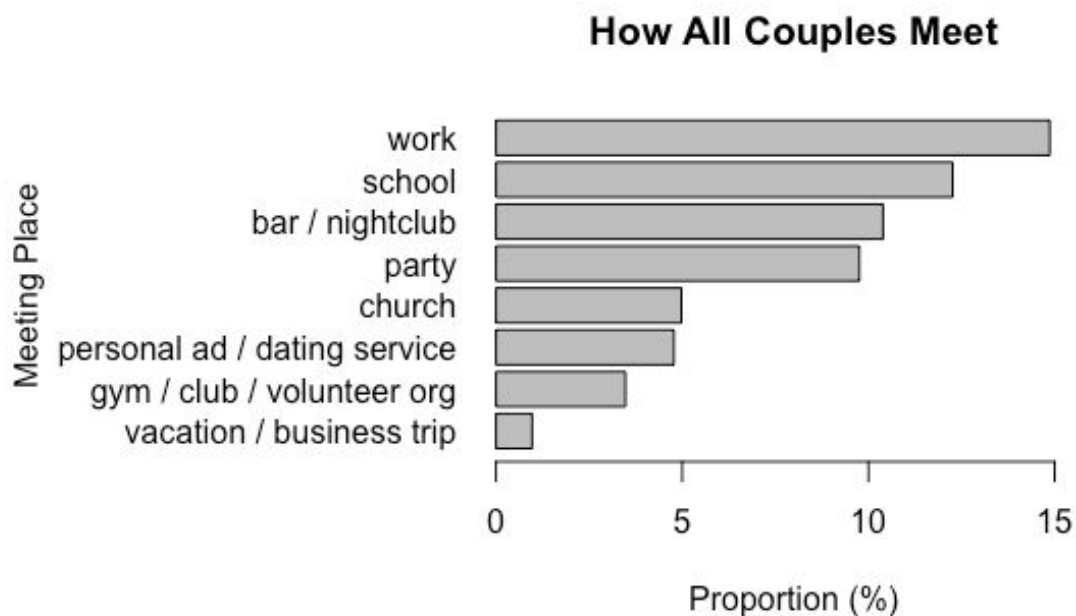


Parental approval is also directly correlated with the success of a relationship. Those who did receive parental approval were significantly more likely to stay together (85%) than those who did not receive explicit parental approval (52%). Likewise, those who did not receive parental approval were more than twice as likely to break up (47%) than those who did receive explicit parental approval (15%).

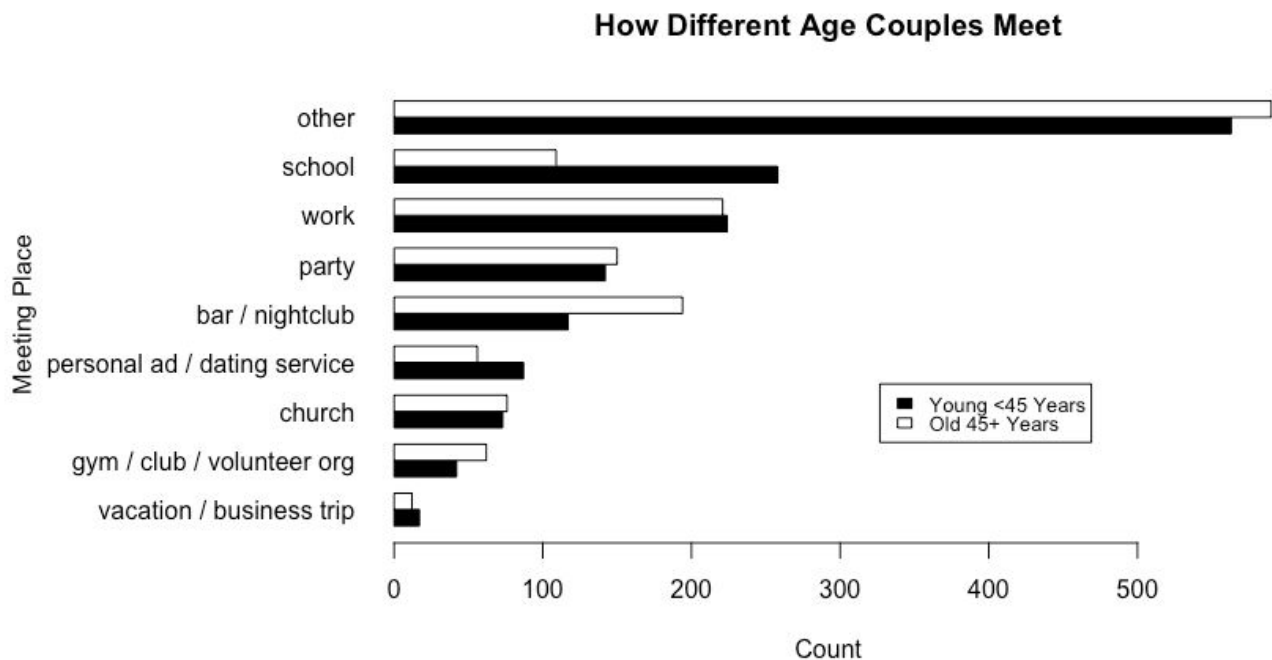


### 8. How do couples meet? Is there a difference between how young and old couples meet?

The vast overall majority (90%) of surveyed couples met offline. Less than 9.6% met online. The most common location for couples to meet is not specifically defined in this dataset and is thus grouped into the “other” category (38%). Excluding those, the most popular meeting locations are work (14%), school (12%), and bars / night clubs (10%). This seems reasonable enough, since these locations are all relatively accessible to a wide range of individuals from various demographic backgrounds. In stark contrast, meeting on a vacation / business trip was least common (<1%). This also seems logical, because not everyone works a job that involves business trips. Likewise, not everyone can afford vacations, so it would make sense that comparatively few couples meet in this manner. Furthermore, business trips and vacations are temporary by definition, making it harder for relationships to manifest since either the subject or their partner would return home soon after meeting.

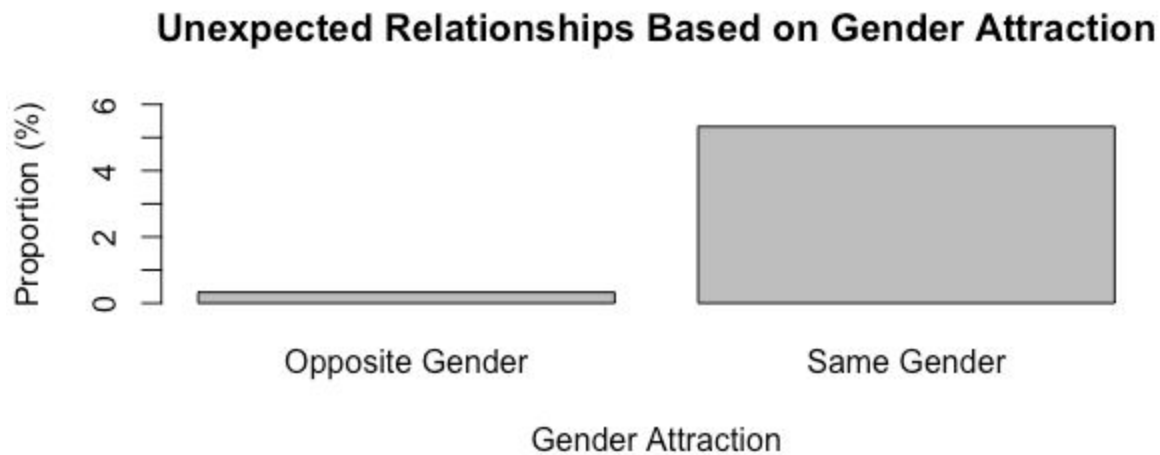


When accounting for age, major differences in the ways young and old couples meet are revealed. In the following analysis, couples are defined as “old” if the relationship included a survey subject with an age greater than 45 years old. Relationships involving survey subjects that were 45 years and under are defined as “young” couples. As before, the overwhelming majority of both young and old couples met in ways not specifically defined in the dataset, and were thus grouped together in the “other category”. For young couples, school was by far the most common meeting location. More than twice as many young couples met at school than old couples. Meanwhile, work was the most common meeting location for old couples, slightly more so than for young couples. Another noteworthy distinction is how more young couples met on personal ads / dating services than old couples, perhaps as a result of the rise of the internet and mobile smartphone culture, in combination with a plethora of dating service providers targeting younger audiences through related channels.



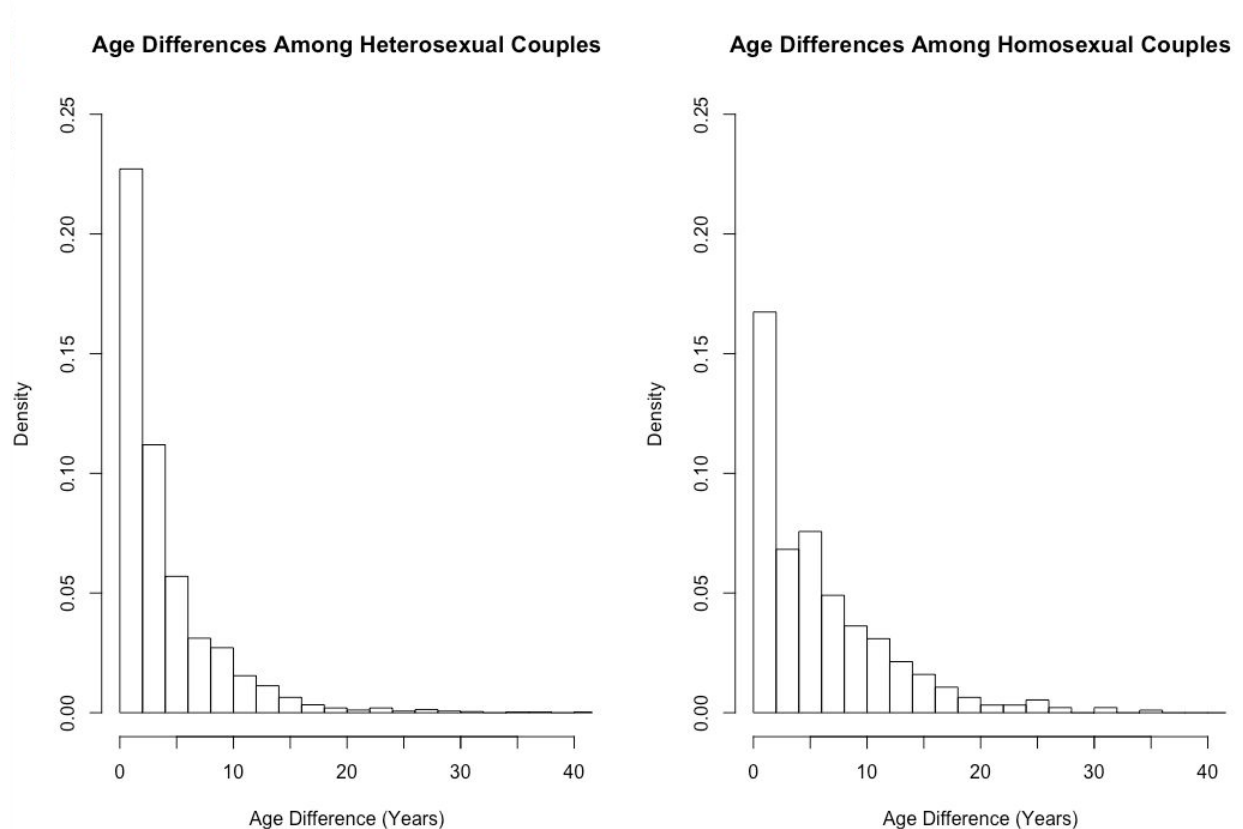
**9. Were any of the survey subjects dating someone from the gender they're less attracted to? Did more of these couples break up compared to other couples?**

In total, 33 subjects dated someone from the gender they are less attracted to. Survey subjects who identified as being “equally” attracted to both genders were excluded from this analysis. 25 homosexual individuals participated in heterosexual relationships, while only 8 heterosexuals participated in same-sex relationships. Unexpected relationships based on survey subjects’ gender attraction were far more common among homosexual individuals (5.33%) than heterosexuals (0.05%), suggesting that certain societal dynamics exist that perhaps disproportionately affect homosexuals more than heterosexuals. This trend is shown in the graph below. Regardless of whether the survey subject identified as heterosexual or homosexual, a higher proportion of these unexpected relationships based on gender attraction resulted breakups (27%) in comparison to those who dated according to their stated gender preference (19.5%).



# 10. Does the typical age difference between partners vary between heterosexual and homosexual couples?

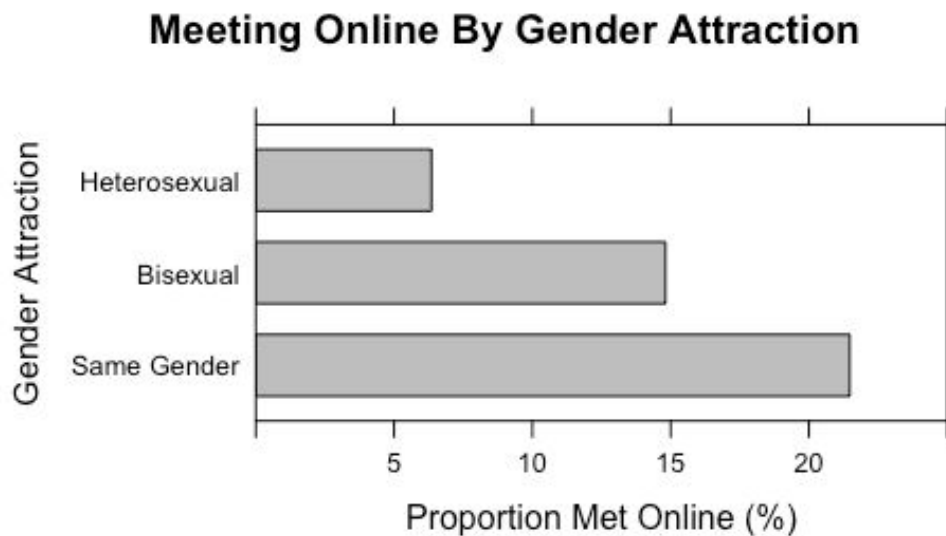
The typical age difference between partners varied dramatically between heterosexual couples and homosexual couples. The median age difference between heterosexual partners was 3 years and the mean was 4.3 years. In stark contrast, the median age difference among homosexual couples was 5 years, and the mean age difference between homosexual partners was 6.5 years, more than double that of heterosexual couples. As shown in the histograms below, homosexual couples had a much more diverse spread of age differences than heterosexuals. These results could be of great value to relationship counselors, psychologists, and therapists who interact with a wide range of patients, by concretely describing the nuanced differences between various relationship dynamics.





**11. Does the rate at which survey subjects meet partners online differ by gender attraction?**

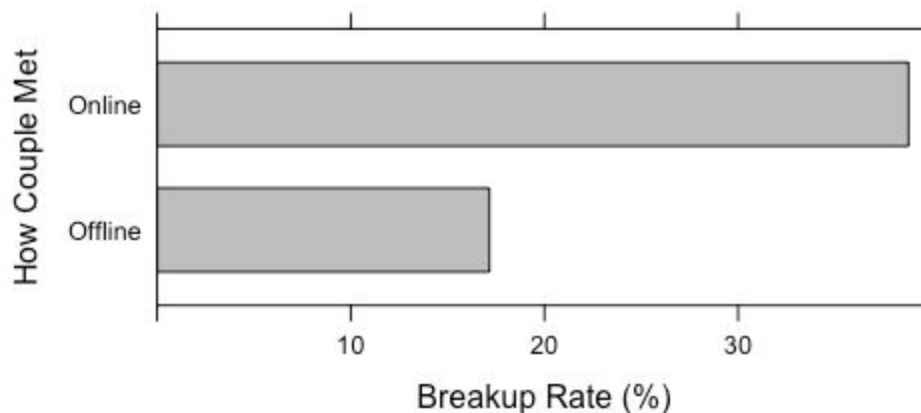
There is massive variation in how often survey subjects met partners online depending on their gender attraction. More than 20% of subjects attracted to the same gender met partners online, by far the highest rate of any sexual orientation. Just over 6% of heterosexual survey subjects met partners online, less than a third of those attracted to the same gender. At more than double the rate of heterosexuals, 14% of bisexual subjects met their partners online. Clearly, meeting partners online is a far more common occurrence among individuals seeking partners of the same gender, and suggests that this population subset is perhaps more accepting of this unconventional dating method. Perhaps this observed trend is a result of both bisexuals and homosexuals being minority populations, with fewer potential partners than heterosexuals. These results could be of interest to companies in the business of providing dating services, giving detailed contextual information about the consumer behavior of various audience segments.



## 12. Does information about whether a couple met online have a connection to whether they broke up?

There is a huge difference in the success of relationships depending on whether they were initiated online. Couples who did meet online were more than twice as likely to break up in comparison to those who met offline. Given that couples who meet online presumably have more direct access to objective information about their partners than those who meet offline, this result is somewhat unexpected. On the other hand, people can more easily lie, misrepresent, or withhold information about themselves online, so this result does seem logical. Nevertheless, even though variation between these groups is clearly apparent, one cannot definitively conclude from this result alone that meeting online directly causes breakups to occur, or that couples who meet offline are somehow immune from breaking up in absolute terms. These findings are particularly relevant for individuals who would like to maximize their chances of a successful relationship. Organizations involved in matchmaking through conventional or modern approaches could also find these results valuable in helping them better understand target audiences. In addition, this information could also be useful for relationship counselors to better serve their patients, highlighting differences between couples who met traditionally versus those who met through modern, digital channels.

**Breakup Rate By Whether Couple Met Online**



Sources Cited:

US Census Bureau:

<http://www.census.gov/hhes/www/income/data/historical/household/>