

## Sex Ratio Effects on Marital Formation and Dissolution, 1980–2000

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**This is the peer reviewed version of the following article:**

Dollar, C.B. (2015). Sex Ratio Effects on Marital Formation and Dissolution, 1980-2000. *Sociological Inquiry*, 85(4), 556-575. doi: 10.1111/soin.12093,

**which has been published in final form at <http://dx.doi.org/10.1111/soin.12093>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions.**

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### **Abstract:**

Although marriage market characteristics are often used to explain in–out marriage transitions, Guttentag and Secord's sex ratio thesis provides a unique theoretical framework by which to elucidate marriage and divorce. The theory emphasizes the availability of “opposite” sex partners as an important factor, but hypothesized outcomes assume a gendered marriage market whereby males are more socioeconomically powerful than females. Using geographically standardized census tract data ( $N = 65,443$ ), I examine the theory empirically across three decennial time points. After establishing that males, on average, hold a disproportionate amount of socioeconomic power, I conduct cross-sectional regression analyses of marriage and divorce from 1980 to 2000. Results partially support the theory. While female marriage is consistently related to sex ratios as expected, sex ratios influence male marriage as expected only in some time periods and female and male divorce do not operate as expected in any time point. The findings imply that marriage entry and dissolution have distinctive causal mechanisms, suggesting the need for further theorization and research.

**Keywords:** Sex ratio | Marriage | Divorce | Socioeconomic power | Gender

### **Article:**

Marriage market characteristics are often used to explain in–out marriage transitions, with previous studies identifying the sex ratio, or the relative number of males and females, as significantly associated with mate selection (e.g., Albrecht and Albrecht 2001; Bokek-Cohen, Peres, and Kanazawa 2008; South and Lloyd 1992; South, Trent, and Shen 2001). Guttentag and Secord's (1983) sex ratio thesis offers a thought-provoking perspective by which to explain these outcomes. Like other marriage market models, they posit that sex ratios fundamentally influence patterns of marital formation and dissolution; however, Guttentag and Secord argue that sex ratio effects must acknowledge the male dominance of structural relations. This conceptualization of the marriage market is unique in that it links notions of gendered structural imbalance to

demographic dimensions of mate selection and suggests that males and females have different experiences when marital partners are limited.

The focus of this research is to empirically examine Guttentag and Secord's (1983) hypotheses using standardized U.S. Census data from 1980, 1990, and 2000. Although ample research indicates that males, as a group, continue to hold economic, political, and legal power (Burns, Schlozman, and Verba 2001; Coltrane 1994; Connell 2005; Johnson 2004; Ridgeway and Smith-Lovin 1999), economic-based marriage market models do not consistently account for disproportionate structural relations. Thus, I begin by investigating whether or not males, on average, hold a greater amount of socioeconomic power across each decennial census time point. Once this condition is established, I assess the effect of sex ratios on rates of female and male marriage and divorce.

### **Theoretical Background**

The sex ratio thesis seeks to explain male–female relations, including patterns of marriage and divorce, by emphasizing the influential effect of the number of available “opposite” sex partners at ages when men and women most commonly partner (Guttentag and Secord 1983:21). Relying on a social exchange framework, Guttentag and Secord argue that relational dependency is influenced by the number of alternative relationships. Hence, dyadic power, or influence used in interpersonal relationships, largely results from whether one belongs to the sex group that is a part of the numerical minority or numerical majority.<sup>1</sup> Those persons in the numerical majority (females in low sex ratio contexts and males in high sex ratio contexts) are expected to have less interpersonal power and be inclined to enter into or remain in relationships that are materially and psychologically costly because of their relative lack of options for alternative relationships. Stated alternatively, imbalanced sex ratios favor the numerical minority sex group because it influences the opportunity for them to modify expectations or to leave existing relationships more freely in search of other, more satisfying male–female dyads. This “ability” to alter or leave existing relationships increases dyadic power and decreases dyadic dependency.

Guttentag and Secord recognize, however, that these sex ratio effects are shaped by gender-distributed structural power. They define structural power as the relative amount of control that males and females collectively have over social, political, and economic resources. Structural power is used to construct and institutionalize social control mechanisms that influence how dyadic power operates. For example, the sex group that has more structural power can create dominant values that restrict how the numerical minority group can take advantage of its dyadic power.

Guttentag and Secord's sex ratio thesis is only one theoretical perspective developed to explain how sex ratios influence marital entry and dissolution. Other frameworks, sometimes referred to as marital search models, demographic-opportunity models, or rational choice mate selection models, rely exclusively on an economic-based paradigm to elucidate partnering behaviors. Such perspectives view marriage as a function of supply and demand with the sex group in short supply being in high demand, and the sex category in abundant supply being in low demand. In

short, it is the sheer availability of potential partners that influence marital entry and dissolution (e.g., Becker 1981; Grossbard-Shechtman 1993, 2003; Oppenheimer 1988).

Some similarities between Guttentag and Secord's sex ratio thesis and economic-based marriage models are clear. For instance, each of these perspectives assumes that marriages involve prospective partners seeking the best suitable match for marital partnership; however, the sex ratio thesis proposed by Guttentag and Secord is exceptional in that it applies a gendered lens to marriage market research by situating an exchange-oriented approach about skewed sex ratios in a broader context of unequal structural power relations. Guttentag and Secord (1983) note that males have historically dominated social, political, and economic resources, and this structural power imbalance results in males and females having different experiences and outcomes when marital partners are limited.

To illustrate, in an area with a high sex ratio, males outnumber females, rendering females more dyadically powerful. Nonetheless, if males collectively hold disproportionate structural power, they can employ their power to direct or control how female dyadic power is employed. For example, a gender order may be established that stigmatizes female promiscuity and adulterates “traditional” notions of the homemaker wife and mother, which isolate females and alters their ability to seek and enter alternative relationships. Thus, the sex category that holds disproportionate structural power has the collective capacity to shape sex-specific expectations, customs, and practices, which influences resource access, accumulation, and dependency (Guttentag and Secord 1983: 26). The historical imbalance of structural power toward males explains why females have been subjected to male definitions of morality and social convention even in high sex ratio areas, where dyadic power is—according to the sex ratio thesis—assumed to be held by females.

### **Sex Ratio Effects on Marriage and Divorce**

Forming intimate relationships with others is an important part of our life-course process and has historically signified entry into adulthood (Amato and Booth 1997; Arnett 2004; Meier, Hull, and Ortyl 2009). Investigations of relational outcomes demonstrate that sex ratios play a significant role in marriage and divorce behaviors (e.g., Lichter et al. 1992; Schoen 1983; South and Lloyd 1995; South, Trent, and Shen 2001), and recent studies note some sex ratio effects on cohabitation and dating practices (Guzzo 2006; Warner et al. 2011).

The majority of extant research in this area focuses on female outcomes and finds that sex ratios are positively associated with female marriage (Fossett and Jill Kiecolt 1993; Lichter et al. 1992; McLaughlin, Lichter, and Johnson 1993; South and Lloyd 1992) and negatively related to divorce (Barber 2003; South 1988; Trent and South 1989). Moreover, Lichter, Anderson, and Hayward (1995) find that women living in high sex ratio societies (i.e., areas where males outnumber females) are more likely than women living in low sex ratio societies to marry a higher-status man, thus providing support for Guttentag and Secord's argument that women, who collectively lack independent access to structural resources, use their dyadic power in high sex ratio settings to engage in hypergamic mate selection. Nonetheless, South (1988) concludes that the expected sex ratio effects associated with high sex ratios on maintaining “traditional”

gendered statuses are weaker in countries where women's economic power is high. His findings indicate that females may rely less on marriage as a way to access structural resources when independent access to structural resources is available.

In an effort to overcome the lack of knowledge about male relationship formation and stability, researchers have begun investigating male-specific outcomes. Findings have been generally inconsistent. Using 1990 Census data, Albrecht and Albrecht (2001) examine male marriage rates among white, black, and Hispanic male populations living in non-metropolitan counties. They find that the proportion of males married is significantly lower in counties marked by a low sex ratio (i.e., areas where females outnumber males), thus concluding support for the sex ratio thesis. Contrary to the theoretical expectations, however, Lloyd and South (1996) find that male marriage probability increases in areas where females outnumber males, although the relationship was only statistically significant among whites. These inconsistencies may be partially explained by the varying levels of analysis and time points examined, but questions about how sex ratios influence sex-specific marriage and divorce remain unanswered. Indeed, no research, to date, separately examines sex ratio effects on male *and* female marriage and divorce outcomes at multiple time points. The present analysis remedies this omission.

### **Current Investigation**

The sex ratio thesis implies that the sex ratio of persons of marriageable and childbearing ages influences relations between males and females, including aspects of relationship formation and preservation. Yet, Guttentag and Secord's hypotheses assume that males consistently dominate socioeconomic relations. Rather than making this assumption, I first answer the question: On average, do males collectively hold more socioeconomic power than females?

Structural power imbalance tilted toward men as a group is important because it informs hypotheses about dyadic relations. Specifically, male dominance of structural relations (1) results in females being more economically, legally, and socially dependent on males and (2) allows males to organize socially and politically to help avoid negative consequences associated with dyadic weakness. Once it is empirically established that males, on average, hold more socioeconomic power than females in each time point, I test Guttentag and Secord's hypotheses about marriage and divorce.

The sex ratio thesis argues that when males hold a greater amount of structural power, sex ratios will be positively related to female marriage rates and negatively related to female divorce rates. Accordingly, in high sex ratio areas where females are relatively scarce and have dyadic power, males use their collective socioeconomic power to “encourage” females to enter and maintain marriage, increasing the rate of female marriage and decreasing the rate of female divorce—even though females hold dyadic power. Males, as a group, may, for example, use their disproportionate structural power to define “appropriate” ways in which females negotiate or leave relationships, which could include making divorce difficult or debasing women who leave romantic relationships. Conversely, in low sex ratio areas where females are numerous, males are less likely to employ their structural power to limit women's dyadic power because of the

relatively ample availability of “opposite” sex partners, thus making female marriage is less prevalent and female divorce is more prevalent.

- H1: When males have greater socioeconomic power, the sex ratio of the population of marriageable age and the proportion of females who are married are positively related. Thus, areas with lower sex ratios (i.e., more females than males) will have lower proportions of females who are married, and areas with higher sex ratios (i.e., more males than females) will have higher proportions of females who are married.
- H2: When males have greater socioeconomic power, the sex ratio of the population of marriageable age and the proportion of females who are divorced are inversely related. Thus, areas with lower sex ratios (i.e., more females than males) will have higher proportions of females who are divorced, and areas with higher sex ratios (i.e., more males than females) will have lower proportions of females who are divorced.

The sex ratio thesis also predicts that sex ratio effects are positively related to male marriage and negatively related to male divorce. These postulations also presume male control of socioeconomic power. Males are expected to use their disproportionate structural power to inform and institutionalize sex-specific norms that encourage their independence from females, yet because persons are desirous of emotional and sexual companionship, male marriage entry and stability is hypothesized to increase in high sex ratio contexts because men are motivated by the shortage of women to commit to marriage as a way to obtain and maintain a relationship with an “opposite” sex partner. According to this interpretation, in *low* sex ratio contexts, men will be *less* likely to commit to marriage because their greater independence produces less incentive to marry and preserve marital relations. Thus, males may perceive the large number of unattached women to signify that such committed partnerships are unnecessary and may use their dyadic and structural power to avoid or postpone marriage (Guttentag and Secord 1983; also see Albrecht and Albrecht 2001 and Uecker and Regnerus 2010).

- H3: When males have greater socioeconomic power, the sex ratio of the population of marriageable age and the proportion of males who are married are positively related. Thus, areas with lower sex ratios (i.e., more females than males) will have lower proportions of males who are married, and areas with higher sex ratios (i.e., more males than females) will have higher proportions of males who are married.
- H4: When males have greater socioeconomic power, the sex ratio of the population of marriageable age and the proportion of males who are divorced are inversely related. Thus, areas with lower sex ratios (i.e., more females than males) will have higher proportions of males who are divorced, and areas with higher sex ratios (i.e., more males than females) will have lower proportions of males who are divorced.

## **Data and Methods**

The present analyses examine localized sex ratio effects using data from the Neighborhood Change Database (NCDB 2003). The NCDB contains census tract information gathered by the U.S. Census Bureau in 1980, 1990, and 2000. Tract-level analysis allows researchers to

investigate the characteristics and influences of relatively proximate surroundings. Generally containing between 2,500 and 8,000 inhabitants (with an average of about 4,000 people), a census tract is the U.S. Census Bureau's statistical equivalent of a large neighborhood.

I rely on census tracts as the unit of analysis since the majority of marital unions involve people who live close to one another (Goldman, Westoff, and Hammerslough 1984; Hirschman and Matras 1971; also see Senn et al. 2010; Warner et al. 2011). Moreover, extant research suggests that large levels of aggregation may mask significant sex ratio effects (Fossett and Jill Kiecolt 1991). Notwithstanding these earlier findings, it could be argued that increases in mobility and technological communication over the last few decades have expanded the marriage market. For this reason, I conduct supplemental analyses at the county and state level. The outcomes are not substantively different, so I report only the tract-level results.

Between each decennial census, tract boundaries may change. The NCDB, however, includes recalculated and normalized boundaries that correspond to the 2000 census tract boundaries. This standardization allows accurate comparisons of geographic space over time without having to identify and control for census boundary changes. Such standardization is extremely advantageous since boundary changes are common. Boundaries are often redrawn in order to account for extensive neighborhood changes, largely due to population density changes (i.e., large rates of out-migration or rapid population growth). Tatian (2003) concludes that about 70 percent of tracts experienced boundary changes from 1980 to 2000, and 49 percent of tracts were redefined from 1990 to 2000. Because the NCDB has standardized all of the tract-level data, it allows researchers to investigate data across various census periods using 2000 boundaries as though those boundaries were also in place in 1980 and 1990 (see NCDB's Data Users' Guide, Appendix J for more information about standardization techniques).

In 2000, the United States housed 65,443 census tracts, and the NCDB contains information for each of these tracts. Even so, two points are notable. First, the Census Bureau did not tract all rural areas in the United States until 1990, so approximately 14,000 tracts are not populated with relevant 1980 data even though persons were expected to be living in these areas. Second, the information contained in the NCDB is not as extensive as the data contained in the full census. For example, although the year-specific censuses provide detailed cross-tabulations of subgroups (e.g., employment and marriage by sex and race-ethnic identification), this information is not available in NCDB.

Measures

### **Gender Structure**

As stated previously, the sex ratio thesis assumes that marriage markets are gendered because of the consistent, male dominance of socioeconomic power. The theorists explicitly argue that this disproportionate power relation is observable and measurable through labor force participation since such participation encourages involvement in other sociopolitical realms and can be used to augment legal and cultural power (Guttentag and Secord 1983:26). Critics may argue that labor force participation does not directly lead to socioeconomic power, but it is an essential part of attaining such power as it allows more equalized financial independence, which can be used to

resist “traditional” notions of a stay-at-home wife and mother (Becker 1981; Blumberg 1979; Chafetz 1990; Guttentag and Secord 1983; South 1988).

I operationalize gender structure by calculating a ratio of relative female–male labor force participation. This ratio is computed by dividing the relative proportion of females who are employed in the civilian labor force and armed forces by the relative proportion of males who are similarly employed. A score of 1 denotes an equal number of females and males working, a score below 1 indicates that males hold more socioeconomic power, and a score above 1 indicates that females hold more socioeconomic power. Male-dominated structural relations will be empirically established if the mean score of female–male labor force participation falls below 1.

## **Dependent Variable**

### **Marriage Rates**

The NCDB defines marriage as a formalized legal or common-law husband and wife who are at least 15 years of age or older and live in the same household. In answering questions about marital status, respondents indicate whether their spouse is currently present or absent in the home. Persons reporting that they are “married, spouse absent” reflect situations where married persons are living apart because one party lives a considerable distance from home due to civilian employment, military deployment, or other reasons that do not indicate marital separation or discord. Marriage proportions are computed by adding the number of married persons with a spouse present to the number married with a spouse absent, dividing the number of married persons by the total number of persons aged 15 and over, and multiplying the outcome by 100. The proportions of female and male marriage are computed separately using this computation. The data do not include race–ethnic-specific measures, so overall marriage outcomes are assessed. Although some may criticize this variable construction, it is notable that interracial marriage has increased since 1965 (Lee and Edmonston 2005; Qian and Lichter 2011) and some ethnic groups participate in exogamy at increasing rates (Lichter 2012). Therefore, employing race–ethnic-specific models may unnecessarily restrict marriage market examinations. Support for the theory will be found if the marriage rates are lower in low sex ratio areas or higher in high sex ratio areas.

### **Divorce Rates**

Following the Census Bureau's classification, the NCDB defines divorce as the current legal dissolution of marriage. I compute a sex-specific divorce rate in order to separately assess male and female outcomes. The proportion of divorced females and males is calculated by respectively dividing the number of currently divorced females or males by the total number of females or males aged 15 and over, and multiplying the outcome by 100. As with marriage, data on divorce are not available by race–ethnicity, so I assess overall divorce outcomes for 1980, 1990, and 2000. Support for the theory will be suggested if divorce rates are higher in low sex ratio areas and divorce rates are lower in high sex ratios.

## **Independent Variable**

### **Sex Ratios**

Sex ratios are calculated by determining the number of males for every 100 females (Glick, Beresford, and Heer 1963; Schoen 1981). A sex ratio of 100 denotes a balanced sex ratio, meaning that there are an equal number of males and females in a given area. Numbers exceeding 100 indicate more men than women (high sex ratio), whereas numbers below 100 indicate more women than men (low sex ratio). For clarification, a sex ratio of 108 reveals that the specified area has 108 men for every 100 women, and a sex ratio of 98 indicates 98 men for every 100 women.

Guttentag and Secord's (1983:19) sex ratio thesis emphasizes the significant implications of imbalanced sex ratios of males and females “at ages when men and women most commonly marry,” which directs an age-specific calculation that corresponds to consistent patterns of partnering. Scholars have previously documented the difficulty in developing relevant sex ratio measures (e.g., Fossett and Jill Kiecolt 1991), although research identifies the contemporary marriage pools as relatively expansive (Fossett and Jill Kiecolt 1991; Goldman, Westoff, and Hammerslough 1984; Guttentag and Secord 1983; Schoen 1983; South 1991). Therefore, I calculate age-specific sex ratios using the population of males and females aged 15–44. Nonetheless, in recognition of recent changes in marital entry delay (Goldstein and Kenny 2001; Klinenberg 2012), I also calculate and examine sex ratios among age intervals of 18–64, 18–44, and 18–34, and given prior findings that that being unemployed hinders male marriage (e.g., Cherlin 2000; Edin and Kefalas 2005; Fossett and Jill Kiecolt 1991, 1993; Lichter, LeClere, and McLaughlin 1991; Lichter et al. 1992; Lloyd and South 1996; McLanahan and Casper 1995; Schoen and Cheng 2006; South 1991), I calculate and examine age-male employment-specific subgroups, which includes only the employed male population. The sex ratio effects were nearly identical across these supplemental analyses, so the remainder of the article reports the results from the analysis of the population aged 15–44 to remain consistent with prior research in this area.

### **Control Variables**

Marriage, family, and economic patterns often differ by regions (Goldscheider and Waite 1986; Lichter, Anderson, and Hayward 1995; Lichter, LeClere, and McLaughlin 1991; Lichter et al. 1992), so I create a series of dummy-scored region measures and enter them into the models. Southern region serves as the reference category. Since prior research finds that persons housed in long-term treatment and/or correctional facilities are hindered from fully participating in intimate relationships, including marriage (e.g., Collins 2005; Fossett and Jill Kiecolt 1991), I control for the proportion of the population living in group quarters. I also include a measure of population size (total population divided by 1000). Finally, the percent of the population that is foreign-born is modeled since extant research identifies some differences in foreign-born populations' patterns of relational formation and stability and since migration patterns, which directly relate to the proportion of the population that is foreign-born, have been linked to economic development and opportunities, possibly influencing marriage and divorce conditions.

### **Analytic Technique**



The present analyses rely on cross-sectional linear regression modeling. Due to the large sample size, I estimate robust standard errors.<sup>2</sup> Given the potential for spatial relevance, I perform cluster analysis to “correct” for geographically proximate tracts. Because most marriages involve persons who live relatively near one another, I first specify a county identifier, but in an effort to recognize that many people may travel outside of their county for recreation and work activities and that state laws regarding marriage and divorce may be more salient than county boundaries, I also employ clustering specifying a state identifier. The cluster models provide more conservative estimates than non-cluster models, but the models were substantively the same. For parsimony, I present and discuss results from the conventional (non-cluster) models.

## Results

Table 1 presents descriptive statistics for all study variables. Because the hypotheses set forth above are expected to occur when males, as a group, hold more socioeconomic power than females, it is important to establish whether this argument is empirically accurate. As shown in Table 1, the ratio moves closer to 1 across each decennial census, suggesting that females' participation in the labor market is increasing relative to males. Nonetheless, the mean ratio remains below 1, thus never reaching full parity. Hence, males are consistently overrepresented in the paid labor market, which suggests that males collectively hold disproportionate socioeconomic power across each of the time points examined.

**Table 1.** Descriptive Statistics for Tract-Level Data ( $N = 65,443$ )

<b>Variable</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>
Sex Ratio	100.01 [29.80]	101.93 [31.11]	102.99 [35.47]
Female Marriage	53.94 [18.71]	55.93 [12.90]	53.93 [12.73]
Male Marriage	57.88 [19.32]	60.26 [12.57]	57.66 [12.38]
Female Divorce	6.70 [4.70]	9.30 [4.35]	10.83 [4.53]
Male Divorce	5.28 [4.26]	7.39 [3.90]	8.92 [4.18]
Female–Male Labor Force Participation	.72 [3.88]	.83 [7.76]	.88 [5.77]
Population Size (by 1000s)	2.76 [2.10]	3.80 [1.76]	4.30 [2.14]
Foreign-born	.06 [.06]	.07 [.11]	.10 [.13]
Group Quarters	.02 [.09]	.03 [.09]	.03 [.10]

Means, Standard Deviations [in Brackets].

Also shown in Table 1, the sex ratio steadily increases over the three decennial census time points but across each time point there is, on average, more men than women. This steady increase and the relatively high average sex ratio over time are due to the age-specific sex ratio calculations. The sex ratio among younger populations is high (i.e., exceeds 100); however, when including the entire population, the national-level sex ratio is low (i.e., falls below 100). For example, in 2000, the sex ratio for the population aged 18 years and younger was 106, and this high sex ratio continues until the 30–34 age range when women begin to slightly outnumber men. The descriptive statistics for each dependent variable of interest are consistent with prior sociohistorical research (e.g., Coontz 1997). The data show that marriage rates have fluctuated from 1980 to 2000, while divorce rates have considerably increased.

Tables 2 and 3 detail the results of models predicting female-specific outcomes. As shown in Table 2, female marriage is consistently and positively linked to sex ratios in all 3 time points, supporting hypothesis 1. However, I find little support for hypothesis 2, which posits that sex ratios are negatively related to female divorce. As indicated in Table 3, although the association between sex ratios and female divorce is negative, as expected, in 1980, the relationship is not statistically significant and the effect size is small. The relationship between sex ratios and female divorce is positive and statistically significant in 1990 and 2000, although the effect size remains small. This unexpected finding does not support Guttentag and Secord's (1983) thesis, but does suggest support for other marriage search models (Becker 1981; Grossbard-Shechtman 1993). I discuss this issue further in the concluding section.

**Table 2.** Tract-Level OLS Regression Predicting Female Marriage

	<b>1980</b>	<b>1990</b>	<b>2000</b>
Sex Ratio	.074 <sup>a</sup> [.005]	.097 <sup>a</sup> [.004]	.067 <sup>a</sup> [.003]
Population size	-.408 <sup>a</sup> [.034]	.427 <sup>a</sup> [.029]	1.12 <sup>a</sup> [.023]
Group Quarters	-68.03 <sup>a</sup> [1.07]	-70.09 <sup>a</sup> [1.01]	-43.70 <sup>a</sup> [1.20]
Foreign-born	-27.23 <sup>a</sup> [.550]	-26.31 <sup>a</sup> [.406]	-18.65 <sup>a</sup> [.345]
Northeast	-.056 [.143]	-.714 [.136]	.041 [.143]
Midwest	2.95 <sup>a</sup> [.143]	1.28 <sup>a</sup> [.122]	.358 <sup>a</sup> [.128]
West	3.54 <sup>a</sup> [.154]	3.40 <sup>a</sup> [.141]	2.42 <sup>a</sup> [.144]
Constant	53.75 <sup>a</sup> [.595]	47.15 <sup>a</sup> [.426]	44.55 <sup>a</sup> [.335]
R-square	.236	.221	.134

Unstandardized regression coefficients, robust standard error [in brackets], t-statistic (in parenthesis). <sup>a</sup>  $p < .05$ .

**Table 3.** Tract-Level OLS Regression Predicting Female Divorce

	<b>1980</b>	<b>1990</b>	<b>2000</b>
Sex Ratio	-.00005 [.011]	.002 <sup>b</sup> [.001]	.006 <sup>a</sup> [.001]
Population Size	.090 <sup>a</sup> [.011]	-.012 [.010]	-.136 <sup>a</sup> [.008]
Group Quarters	-2.35 <sup>a</sup> [.350]	-2.51 <sup>a</sup> [.394]	-6.24 <sup>a</sup> [.377]
Foreign-born	2.81 <sup>a</sup> [.205]	.111 [.162]	-2.89 <sup>a</sup> [.146]
Northeast	-2.35 <sup>a</sup> [.054]	-1.43 <sup>a</sup> [.047]	-1.18 <sup>a</sup> [.050]
Midwest	-.270 <sup>a</sup> [.058]	.198 <sup>a</sup> [.044]	.669 <sup>a</sup> [.045]
West	1.24 <sup>a</sup> [.064]	1.55 <sup>a</sup> [.055]	1.11 <sup>a</sup> [.057]
Constant	7.41 <sup>a</sup> [.142]	9.00 <sup>a</sup> [.055]	10.95 <sup>a</sup> [.129]
R-square	.084	.054	.054

Unstandardized regression coefficients, robust standard error [in brackets]. <sup>a</sup>  $p < .05$ . <sup>b</sup>  $p < .10$ .

Tables 4 and 5 present information regarding male-specific outcomes. Unlike female marriage, which is consistently and positively associated with sex ratios, the sex ratio-male marriage link is negative in 1980 but changes to a positive direction in 1990 and 2000, although it is not statistically significant in 1990 (see Table 4). Thus, more recent years indicate some support for hypothesis 3, which suggests that sex ratio effects may be variable rather than static. Contrary to the theory but similar to the models predicting female divorce, Table 5 shows that the data reveal

no support for the theory's prediction of male divorce. Rather than the expected negative relationship, sex ratios and male divorce are positively associated across all 3 time points when other variables are held constant.

**Table 4.** Tract-Level OLS Regression Predicting Male Marriage

	1980	1990	2000
Sex Ratio	-.015 <sup>a</sup> [.003]	.002 [.002]	.014 <sup>a</sup> [.002]
Population Size	-.219 <sup>a</sup> [.027]	.449 <sup>a</sup> [.026]	1.09 <sup>a</sup> [.024]
Group Quarters	-65.87 <sup>a</sup> [.855]	-65.00 <sup>a</sup> [.819]	-35.76 <sup>a</sup> [1.13]
Foreign-born	-21.91 <sup>a</sup> [.544]	-27.92 <sup>a</sup> [.407]	-21.26 <sup>a</sup> [.345]
Northeast	.599 <sup>a</sup> [.134]	.052 [.130]	1.29 <sup>a</sup> [.140]
Midwest	3.02 <sup>a</sup> [.131]	1.69 <sup>a</sup> [.115]	1.28 <sup>a</sup> [.123]
West	1.39 <sup>a</sup> [.141]	1.37 <sup>a</sup> [.132]	1.48 <sup>a</sup> [.140]
Constant	66.36 <sup>a</sup> [.393]	61.33 <sup>a</sup> [.281]	53.66 <sup>a</sup> [.323]
R-square	.283	.259	.130

Unstandardized regression coefficients, robust standard error [in brackets]. <sup>a</sup>  $p < .05$ .

**Table 5.** Tract-Level OLS Regression Predicting Male Divorce

	1980	1990	2000
Sex Ratio	.018 <sup>a</sup> [.001]	.018 <sup>a</sup> [.001]	.011 <sup>a</sup> [.0009]
Population Size	-.092 <sup>a</sup> [.011]	-.200 <sup>a</sup> [.010]	-.270 <sup>a</sup> [.008]
Group Quarters	-.618 [.400]	-1.01 <sup>a</sup> [.409]	-4.83 <sup>a</sup> [.332]
Foreign-born	.927 <sup>a</sup> [.187]	-3.20 <sup>a</sup> [.143]	-6.25 <sup>a</sup> [.119]
Northeast	-1.88 <sup>a</sup> [.050]	-1.45 <sup>a</sup> [.042]	-1.46 <sup>a</sup> [.045]
Midwest	-.264 <sup>a</sup> [.054]	.165 <sup>a</sup> [.038]	.524 <sup>a</sup> [.040]
West	.686 <sup>a</sup> [.059]	1.03 <sup>a</sup> [.047]	.652 <sup>a</sup> [.050]
Constant	4.47 <sup>a</sup> [.173]	6.56 <sup>a</sup> [.147]	9.69 <sup>a</sup> [.110]
R-square	.073	.085	.112

Unstandardized regression coefficients, robust standard error [in brackets]. <sup>a</sup>  $p < .05$ .

## Conclusion and Discussion

The data reveal partial support for Guttentag and Secord's (1983) sex ratio theory. I find that men as a group hold greater socioeconomic power than females. This finding is consistent with other contemporary research, which concludes that men collectively hold economic, political, and cultural status that is superior to women (e.g., Burns, Schlozman, and Verba 2001; Coltrane 1994; Connell 2005; Johnson 2004; Kimmel 1994; Ridgeway and Smith-Lovin 1999). In addition, sex ratios are strong and consistent predictors of female marriage in the theoretically expected direction. Nevertheless, sex ratio effects on male marriage and female and male divorce are less supportive of the theory.

Only a few studies have investigated sex ratio effects on male marriage transition, and although some scholars find support for Guttentag and Secord's theory (e.g., Albrecht and Albrecht 2001; Lloyd and South 1996), others conclude no support (e.g., Stone, Shackelford, and Buss 2007). My results suggest that the mixed findings may be due to the time period being examined.

Specifically, although the relationship is not statistically significant, I find that sex ratios are negatively related to male marriage in 1980. Conversely, the relationship between sex ratios and male marriage is positive in 1990 and 2000. These findings imply that sex ratio effects may not be static, and future research should examine the potential for skewed sex ratios to have differing long-term and temporary effects. Clarifying such differences would greatly inform further theorization about the explanatory scope of sex ratios.

I also find that the relationship between sex ratio and rates of divorce among females and males is not supportive of the theory. Instead of the expected negative relationship, the data reveal a rather consistent, positive relationship between sex ratios and divorce. For example, I find that high sex ratio areas, where men outnumber women, have higher proportions of divorce, and low sex ratio areas, where women outnumber men, are marked with lower proportions of divorce. Although not supportive of Guttentag and Secord's (1983) thesis, these findings suggest *some* support for economic-based marriage market models. Rooted in the notions of supply and demand and ignoring gender differences in structural power, economic-based models posit that the numerical majority sex group will be less likely to exit existing relationships due to the limited number of "opposite" sex partners (Becker 1981; Grossbard-Shechtman 1993, 2003; Oppenheimer 1988; South and Lloyd 1995; South, Trent, and Shen 2001).

The present findings endorse economic-based models when predicting female divorce outcomes. Specifically, models predicting female divorce generally reveal that females living in high sex ratio contexts are relatively likely to dissolve relationships perhaps because of the ample opportunities to form new, potentially more satisfying relationships, whereas females living in low sex ratio contexts are relatively likely to remain in relationships, which may be due to the few alternatives available. Findings regarding the sex ratio-male divorce outcomes, however, are not explainable using Guttentag and Secord's (1983) theory or demographic-opportunity perspectives. Results indicate that in high sex ratio areas, men are more likely to divorce even though there are a limited number of women partners, and in low sex ratio areas, men are less likely to divorce despite the apparent abundance of female partners. It could be argued that these findings imply that men are more likely to divorce even if women are limited because women may use their dyadic power to negotiate marital relations in ways that make men view marriage as too costly. In the same vein, women may be less likely to exert dyadic power when men are scarce in hopes that relinquishing dyadic power will encourage men to remain in existing marital relations. Such interpretations should be subjected to empirical scrutiny, but the unexpected findings highlight the need for further investigations. In fact, apart from the present research, I am unaware of any study examining sex ratio effects on male divorce, so there is ample opportunity for additional exploration.

While the present analyses inform us about sex ratio effects across various time periods, it is not without limitations. First, the NCDB does not contain data about relational commitment outside of marriage; thus, the data limit attention to an examination of marriage. Although marriage is often used as the primary indicator of committed relationships, non-marital cohabitation is increasing, and there is some indication that sex ratios differently influence non-marital romantic relationship formation and dissolution among men and women (e.g., Guzzo 2006; Warner

et al. 2011). Future studies on non-marital romantic relations are necessary to fully assess sex ratio effects on various sexual and mating behaviors. In addition, the NCDB does not contain information about the number of marriages or date of marriage and divorce, so I am unable to assess how sex ratios may influence remarriage. Third, Guttentag and Secord's (1983) reliance on the sex ratio as a factor explaining gender inequality assumes that a population is made up of discrete male and female groups. While sex is a fundamental sorting device across societies, sociologists have long-understood these categories as social constructions (Goffman 1977; Kessler and McKenna 1978). In fact, arranging sex into dualistic groups stems from heteronormative assumptions, which treats heterosexual relations as "the normative and natural form of sexual expression" (Elliott 2012:18). Extant research has established, however, that heteronormative ideals do not always reflect lived experiences (e.g., Sedgwick 1990). Since the sex ratio thesis assumes that relations between males and females are natural and conventional, it largely ignores the formation and dissolution of homosexual partnerships and overlooks heterosexuality as a sociopolitical institution (Ingraham 2005; Rich 1980).

Finally, Guttentag and Secord (1983) conceptualize structural power as a complex phenomenon that should take into account multiple legal, political, and economic factors. Unfortunately, the NCDB does not contain information on political or legal representation or any sex-specific indicators on education, occupation, income, or wealth. This limitation impedes the creation of a comprehensive measure of gender-distributed structural power. Nonetheless, Guttentag and Secord (1983:168) identify paid employment as one of the primary dimensions of socioeconomic power, hypothesizing that women's involvement in paid work lessens the structural power of men over women. Since economic means are often used to obtain other sources of power, the structural power measure used here provides a first step to studying sex ratio effects on marital formation and stability in the context of unequal structural power.

This research should spark interest in further inquiry. As mentioned earlier, although the dataset used herein preclude any examination of cohabitation, dating, or sexual relations, future research about sex ratio effects on seeking and appraising non-marital relationships is needed, especially given the increases in non-marital cohabitation and changing dating practices. It is also important for future research to better specify models that examine how relative access to economic, legal, and political resources among males and females influence relationship formation and dissolution. Indeed, some evidence suggests that decreases and delays in marriage and increases in divorce may be related to a declining reliance of females on the political and economic arrangement of marriage (e.g., Burns and Scott 1994; Ehrenreich 1995; Thistle 2006) though some scholars argue that the effect may be transitory (e.g., Coontz 1997). Finally, individual-level, qualitative assessments of sex ratio effects may reveal additional insights, especially in relation to how sex ratios may influence individual psychosocial well-being. Some scholars have linked lower levels of self-esteem, greater levels of depression, and other psychological vulnerabilities to sex ratio imbalances in China, finding that some men experience and develop such psychological distress due to a lack of available partners (Zhou et al. 2011). I am unaware of any such studies in the United States even though many U.S. neighborhoods have experienced highly skewed sex ratios for several decades and persons living in the United States consider marriage entry and stability to be one of the most valued life experiences (e.g., Edin and

Kefalas 2005; Manning et al. 2007; Nelson 2006; Sharpe and Ganong 2011; Thornton and Young-DeMarco 2001).

Patterns of intimate relationship formation and dissolution reflect widespread social ideals and customs. Scholars should continue to investigate these significant life events so that we can broaden our knowledge about these experiences. Though mating and sexual practices are complex phenomena, the relative number of available partners seems to be an influential factor in predicting relational outcomes; thus, sociologists should remain committed to examining this demographic feature in future theoretical and empirical works.

## Notes

1) In the present analysis, dyadic power may be thought of marital power—the power relations between married spouses. However, I use the phrase “dyadic power” to remain consistent with Guttentag and Secord's (1983) conceptualization, which seeks to describe various sexual or mating relationships between males and females.

2) When examining many thousands of cases, as I do here, tests of statistical significance may produce invalid results (Bentler and Bonett 1980; Granger 2003). Additionally, heteroskedasticity is not uncommon when analyzing a large number of cases, and standard errors may need to be adjusted to account for this (Angrist and Pischke 2009). Since robust standard errors are commonly larger and more conservative than classical (non-robust) standard errors, I estimate robust standard errors to minimize concerns that the large number of observations is artificially inflating statistical significance. I conducted additional analysis using classical standard errors, and the standard errors were principally the same, so results are substantively identical.

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