



# HHS Public Access

Author manuscript

*Popul Res Policy Rev.* Author manuscript; available in PMC 2015 May 26.

Published in final edited form as:

*Popul Res Policy Rev.* 2014 October ; 33(5): 615–628. doi:10.1007/s11113-014-9323-z.

## Recession and Divorce in the United States, 2008-2011

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### Abstract

Recession may increase divorce through a stress mechanism, or reduce divorce by exacerbating cost barriers or strengthening family bonds. After establishing an individual-level model predicting U.S. women's divorce, the paper tests period effects, and whether unemployment and foreclosures are associated with the odds of divorce using the 2008-2011 American Community Survey. Results show a downward spike in the divorce rate after 2008, almost recovering to the expected level by 2011, which suggests a negative recession effect. On the other hand, state foreclosure rates are positively associated with the odds of divorce with individual controls, although this effect is not significant when state fixed effects are introduced. State unemployment rates show no effect on odds of divorce. Future research will have to determine why national divorce odds fell during the recession while state-level economic indicators were not strongly associated with divorce. Exploratory analysis which shows unemployment decreasing divorce odds for those with college degrees, while foreclosures have the opposite effect, provides one possible avenue for such research.

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Crude and refined divorce rates have fallen in the United States since the early 1980s, despite swings in the business cycle (Amato 2010; Kreider and Ellis 2011; Stevenson and Wolfers 2007). Further, over the last century, dramatic waves in period-based divorce rates belie a near-linear upward trend in divorce probabilities for sequential birth cohorts (Schoen and Canudas-Romo 2006). Thus, economic cycles are not the major influence in long-term divorce trends. Nevertheless, the severity of the economic recession that began in 2007 has prompted speculation over its effects on U.S. families, and early effects have apparently been found already, for example, on fertility (Morgan, Cumberworth and Wimer 2011; Sutton, Hamilton and Mathews 2011) and cohabitation (Kreider 2010). In this paper I take advantage of the recently-added marital events questions on the American Community Survey (ACS) to offer the first large-scale multivariate description of the determinants of divorce, with tests of the recession's impact on the odds of divorce.

### Recession and Divorce

Several theories suggest economic recessions might affect couples' odds of divorce, even if only in the short term (Amato and Beattie 2011). On the one hand, economic hardship adds stress to marriages that *increases* the risk of marital conflict and dissolution (Hardie and Lucas 2010; White and Rogers 2000). Job loss and low earnings are perhaps the best studied aspects of economic hardship, with men's conditions usually found to be especially

consequential (Lewin 2005; Ono 1998). But home foreclosure, poverty, wage declines, job shift changes, fear of unemployment, or other economic threats (actual or perceived) may have similar stressing effects.

On the other hand, there are two mechanisms by which economic hardship might *reduce* the occurrence of divorce, at least temporarily. First, loss of a job or a decline in the value of a home may make divorce more costly relative to a spouse's or couple's available resources. Divorcing presents potential costs in housing, legal fees, childcare and losses from diminished economies of scale. The recession may have increased the economic barriers that make these costs insurmountable for some people considering a divorce. Beyond the direct effects, by altering available opportunities and prices, fluctuations in the job and housing markets may shift decision-making in families that do not themselves suffer job loss or experience home foreclosure. Even less directly, bad economic news in the national media may affect individual divorce decisions if it leads to, for example, declines in economic expectations (Hurd and Rohwedder 2010). Second, hard economic times within families may draw some couples closer together in resilience, so that even those considering divorce might set aside their conflicts and pull together, resulting in declining divorce rates (Wilcox 2011).

In the recent recession, men's unemployment and rising rates of home foreclosures in particular have been pronounced features of the household economic landscape (Farber 2011; Mattingly and Smith 2010). The collapse in home prices in particular was much more dramatic than had been seen in the previous six recessions (Gascon 2009), and home foreclosures tripled from 2006 to 2009, to almost 2.5 million per year (Mian, Sufi and Trebbi 2011). The housing crisis contributed to economic stress in millions more households than were directly affected by job loss.

Although there is abundant evidence that economic stress increases the odds of divorce at the family level (as noted above), evidence for the cost or resilience predictions is as yet elusive. However, consistent with the expectation that recessions forestall or prevent divorces, several recent studies have analyzed state-level time series of divorce and unemployment rates, and both find that higher unemployment is associated with lower divorce rates since 1980, using a variety of state- and year-level fixed-effects specifications (Amato and Beattie 2011; Chowdhury 2012; Hellerstein and Morrill 2011). This paper builds upon those studies, which do not focus on the recent recession or test indicators of the housing crisis.

Of course, different impacts on divorce during recessions might be operating simultaneously – working in opposite directions for different families, or even presenting opposing influences within the same families. That means a finding of no contextual effect on divorce cannot rule out such mechanisms. But given the severity of the economic shock that began in late 2007 – and some of the unique qualities of this recession – we may be able to discern which, if any, of these mechanisms were active in the recent period.

Thorough individual-level analyses of marital outcomes for the recent recession would optimally involve relationship and homeownership histories as well as employment and

other information for both spouses (e.g., Hansen 2005). However, the introduction of a divorce event question in the American Community Survey in 2008 presents the opportunity to calculate the odds of divorce for large samples of individuals in states for the years 2008-2011, with important covariates such as marital duration, marriage order, education and race/ethnicity (Elliot, Simmon and Lewis 2010).

Both period effects and regional variation contribute evidence to our understanding of possible recession effects on divorce. Changes in national data collection on divorce make long-term period effects difficult to establish. However, the timing of the ACS data on marital events allows us at least to consider how those reported in the 2008 survey – which, taking place in the previous 12 months, presumably were triggered before the recession took hold – compare with those reported in the survey years 2009 to 2011. Such analysis cannot account for trends in the underlying tendency to divorce that are driven by factors outside the range of economic cycles, such as long-term cultural changes, but any sudden shifts after 2008 will be suggestive of recession effects.

Regional variation offers another avenue of investigation, with its own advantages and limitations. If recession indicators across states are associated with rising divorce rates, that would be consistent with the stress perspective, as economic shock and hardship fray marital relationships. If, on the other hand, states with more severe recession symptoms have lower divorce rates, that might be consistent either with the costs-of-divorce perspective, or with the family resilience argument. However, the absence of state-level variation associated with economic conditions will not rule out recession effects, since the recession may have national-level effects that are not picked up by state variation, such as the effect of national news reports suggested above.

Although the focus of this paper is the recent recession, this paper also presents, to my knowledge, the first multivariate analysis divorce events using the new data from the American Community Survey. That is itself an important contribution to the literature on divorce, as this data source will be an important one for analyzing family transitions in the years to come.

## Hypotheses

From this review, two hypotheses emerge for period effects for 2008-2011, and for state-level effects. If in the aggregate the recession exacerbated marital stress more than it created obstacles to divorce, we should see an increase in divorces after 2008, holding constant the characteristics of marriages in the population ( $H_{1a}$ ). However, if the barriers to divorce created by the recession – from employment and housing insecurity, or other factors – are greater than any increased impetus toward divorce resulting from marital stress, then divorces will have decreased after 2008, relative to expectations established in 2008 ( $H_{1b}$ ).

Alternatively, we may detect recession effects by modeling variation across states according to their levels of unemployment and home foreclosures. Using these simple state-level indicators of the severity of recession – drawing from the employment and housing crises – such tests might help illuminate the mechanisms for such an association. If economic hardship puts strain on marital relationships then the local prevalence of unemployment or

home foreclosure may increase the odds of divorce, either by increasing hardship directly or by raising the visible threat of economic strain in ways that increase marital stress. Thus, *ceteris paribus*, divorce rates should be higher in states with greater unemployment and foreclosure rates ( $H_{2a}$ ).

On the other hand, divorce is often costly, and economic crises may make it unaffordable for more people, especially those needing to sell a home. These economic trends may increase the relative costs of divorce by making it more difficult or less lucrative to sell homes and/or find new jobs. Foreclosures represent a potential shock to couples, but also contaminate real estate markets for all sellers. And, although the evidence is scant, Wilcox (2010) speculates that couples experiencing economic hardship may rally around their relationships – especially postponing or reconsidering divorce, thus divorce rates may be lower in states with greater unemployment and foreclosure rates ( $H_{2b}$ ). In the next section I describe the research design, before turning to the results.

## Data and Method

I estimate odds of divorce for married women by state from the 2008-2011 American Community Survey (ACS), using data made available by IPUMS (Ruggles et al., 2010). The ACS is an annual survey of more than 2.2 million U.S. households, weighted to represent the national population. Because of its large sample size, it offers the opportunity to analyze divorce for all 50 states and District of Columbia, with some crucial individual-level covariates (Elliot, Simmon and Lewis 2010). In contrast, the vital statistics registration of divorces excludes 5 states, including California, and does not include covariates (Tejada-Vera and Sutton 2010). Further, unlike vital statistics, the data permit coding divorces according to individuals' state of residence rather than the state in which the divorce occurred. This is especially important for Nevada, for which vital records include many divorces for people who live in other states; the ACS provides a divorce rate for those who report living in Nevada.

My analysis sample includes women who are: (a) ages 20 and older; (b) currently married or divorced in the 12 months preceding the survey, and; (c) living in the U.S. one year before the survey. Women report whether they have divorced in the previous 12 months. I code women according to their residence in one of the 50 states or the District of Columbia; however, because divorce often takes a year or more to unfold, I use the location in which the women were living one year earlier, and exclude those living outside the country at that time. This is uniquely possible with the ACS data.

The cross-sectional nature of the data, and its household construction, impose limitations, for example precluding consideration of cohabitation and work history, homeownership at the time of the divorce, or spouse characteristics (since the divorced spouses are no longer present). I estimate logistic regression models for the odds of divorce among women who are currently married or were divorced in the previous year, with state-level fixed effects and robust standard errors adjusted for the clustering within states.

## Individual variables

Sweeney and Phillips (2004), using data from 1995, predict divorce using measures of race, age at marriage, education, and premarital fertility history, which are commonly associated with divorce outcomes (Amato 2010). Only some of those variables are available here, but the ACS data are much more recent; large-scale analyses of divorce risks have recently relied on the Current Population Survey's marital history, which ended in 1995, or other surveys from the 1990s or early 2000s (e.g., Phillips and Sweeney 2006; Bulanda and Brown 2007).

The ACS includes information on the year of the most recent marriage, which allows construction of a marital duration variable; and on marriage order (Martin and Bumpass 1989). I use a linear term for marital duration, and a linear as well as quadratic term for age. Foreign-born status, which is associated with lower odds of divorce (Phillips and Sweeney 2006), is entered as a dummy variable, as are the common race and ethnicity categories (Bulanda and Brown 2007). Education in the ACS includes many categories, but after examining initial models, I collapsed them to three: high school complete or less, some college but no BA, and BA or higher degree complete.

## State variables

State-level unemployment data are from the Bureau of Labor Statistics' Local Area Unemployment Statistics Program, which publishes annual average unemployment rates for every state and the District of Columbia (BLS 2013a). Real estate foreclosure data are from the private company Realtytrac, which for the years 2006-2009 released an annual report that included the percentage of housing units with at least one foreclosure filing during the calendar year (Realtytrac 2007, 2008, 2009, 2010).

Levels of unemployment and foreclosures reflect economic conditions that may influence divorce rates, while changes in these measures reflect the severity of the recessionary shock net of the baseline rates. Amato and Beattie (2011) find the strongest effects of unemployment on divorce in the contemporaneous year or with a one-year lag. However, the ACS asks not about the calendar year, but rather about the 12 months previous to the interview. Therefore, I lag state variables two years, and also use state fixed effects, which make effect of the lagged variables interpretable as change effects. The lagged unemployment rates range from 2.7% to 13.3%. Housing units in foreclosure represented .01% to 10.17% of all units. Because of the skewed distribution of the foreclosure variable, I transform that variable with a natural log function. The variables used in the regressions are summarized in Table 1.

## Results

The ACS provides estimates for the number of divorced women for the years 2008-2011, which, along with the number of married women, can be used to calculate a refined divorce rate, as shown in Table 2.<sup>1</sup> We cannot directly compare these numbers with those generated

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<sup>1</sup>The analysis that follows is slightly different because it includes only those women age 20 and older who were living in the U.S. twelve months before the survey.

by the vital statistics system, for two reasons. First, the method of collecting data is different, with ACS relying on a national survey and vital statistics relying on administrative records. Second, the national vital statistics system has not provided national coverage for a number of years, including the 10 most recent years before the ACS marital events questions were added. However, for reference I have produced Figure 1, which shows divorces per 1,000 married women from 1940 to 1997 from the vital statistics system, along with the ACS estimates above. It shows that the one-year drop in divorce rates from 2008 to 2009 is steep by the historical standards of the vital statistics data.

The global financial crisis began to emerge in 2007, and the recession is formally dated from December 2007 (National Bureau of Economic Research 2010), at which point U.S. gross output began to decline and unemployment rose to 5%. The unemployment rate peaked in October 2009 and did not fall below 9% until late 2011 (Bureau of Labor Statistics 2013b).

An individual-level model predicting divorce from the pooled 2008-2011 data is shown in Table 3, with dummy variables for each year. Consistent with the aggregate trends, this model confirms that net odds of divorce dropped sharply in 2009, and then rebounded. This is consistent with  $H_{1b}$ , with the recession have a suppressing effect on divorce, or what Hellerstein and Morrill (2011) term a pro-cyclical effect. To assess the scale of this effect, I estimated a regression model using 2008 only (not shown), and applied the coefficients from that model to the 2009-2011 sample. Thus, Figure 2 shows the divorce rate that would have occurred had the effects observed in 2008 prevailed as the composition of the sample changed in the later years, compared with the observed divorce rate. The figure shows that a decline in divorce – from 21 to 19.7 per 1,000 married women – was expected based on changes to the composition of the married-woman sample (e.g., increasing education levels). However, there was a sharp deviation from that expectation in 2009, followed by a rebound back toward the expected level. Relative to predicted divorces, the observed trend cumulatively represents approximately 150,000 divorces fewer than expected based on 2008 propensities, or 4% of divorces over the years 2009-2011.

Other effects in the individual-level model are consistent with previous research, established here for the first time using the American Community Survey. Marital duration is associated with declining odds of divorce. Second and third marriages have much higher odds of divorce. College graduates have lower divorce rates than those with high school education or less, and those with some college have the highest rates. Foreign born women have lower divorce odds, as do Asian/Pacific Islanders, American Indians and Blacks have higher rates than non-Latina Whites.

Models with state variables and fixed effects are presented in Table 4 (with individual control variables not shown). In Model 1 the state unemployment and foreclosure rates are added to the individual model described above. Of these, foreclosure rates are positively associated with divorce odds, net of other factors. However, that effect is reduced by about two-thirds, and is no longer statistically significant, when the state fixed effects are added in Model 2. Likelihood ratio tests on the nested models (not shown) confirm that the addition of state unemployment and foreclosure rates significantly improve both models – with and



without state fixed effects. Thus, there is partial evidence for  $H_{2a}$  (increasing divorce from economic crisis).

### Supplementary analysis

We cannot know the mechanism by which these state-level economic crisis variables may affect divorce rates, especially because the data do not permit identification of individuals who were unemployed or foreclosed upon prior to their divorce. However, having microdata with individual covariates raises the possibility of assessing whether the association between state variables and odds of divorce is conditional on individual characteristics. As an exploratory examination of this possibility, Table 5 presents models that include interactions between the state variables and a dummy variable indicating a BA degree or higher education, with and without state fixed effects.

The interaction model results show that unemployment rates have a negative effect on divorce for those with a BA degree or higher, while foreclosure rates have a positive effect on those with a BA degree. In both cases the main effects (for those with less than a BA degree) are not significant, and the addition of state fixed effects does not alter that pattern. To see the magnitude of these relationships, Figure 3 shows the state-year means of predicted probabilities of divorce, by education level and unemployment rates (right) and foreclosure rates (left). Although the slopes are not dramatic, the results suggest that higher unemployment rates widen the education gap in divorce rates, while higher foreclosure rates narrow that gap. Without the ability to investigate the possible mechanisms for these relationships in greater depth, I leave these supplementary results as suggestive for future research.

### Discussion

This analysis of the divorce rate among a sample of about 2.8 million U.S. women in 2008-2011 provides evidence for effects of the economic crisis on the odds of divorce. The national divorce rate declined during the recession in these data, from 20.9 per 1,000 married women in 2008 to 19.5 in 2009, before rebounding to 19.8 in 2010. Net of individual-level controls and state fixed effects, the divorce rate fell sharply in 2009, significantly more than would be expected by the changing composition of the married-woman population. Compared with expectations established in 2008, approximately 150,000 divorces, or 4% of divorces, did not occur in the years 2009-2011.

However, the relative odds of divorce are not significantly greater in states where unemployment rates are higher, which is not consistent with recent time-series results at the state level reported by Amato and Beattie (2011) and Hellerstein and Morrill (2011) for earlier periods. Whether this discrepancy results from specific features of this time period or the individual-level multivariate models I use remains to be seen. On the other hand, higher foreclosure rates are associated with higher levels of divorce, but not after state fixed effects are added to the model. The lack of consistent effects for state economic factors weakens our confidence that the drop in the odds of divorce after 2008 was related to the recession.

Given these simple measures of state economic conditions, and the lack of additional factors associated with conditions across states – including policy responses, popular perceptions, and the dispersion of economic conditions within states – the lack of strong results should not be taken as clear indication that such effects do not exist. With additional variables and more detailed measures, such effects might indeed emerge. Nevertheless, these results should interject a note of caution into the fast-moving discourse on the effects of the recession, which the news media and public have been eager to consume. Consider the response to W. Bradford Wilcox's (2009:17) early conclusion that “one piece of good news emerging from the last two years is that marital stability is up.” Bishop Richard Williamson (2009) declared that “every cloud has a silver lining,” and called the report “some good news for Christmas.” The *New York Times* columnist Ross Douthat (2009) paraphrased the report to say, “economic stress seems to have made American marriages slightly more stable overall.” These conclusions were undoubtedly premature, even if we finally conclude that some divorces were delayed or forestalled by the recession.

Supplementary analysis raises the possibility that economic conditions have disparate effects on divorce depending on levels of education. Interaction models showed negative effects of unemployment for people with BA degrees, and positive effects of foreclosures for those with BA degrees. Further research should consider how economic conditions affect marital disruption disparately across social class lines.

History shows that fluctuations in divorce rates resulting from changing economic conditions may reflect the *timing* of divorce more than the odds of divorce for specific marriages or birth cohorts (Schoen and Canudas-Romo 2006). In fact, the long-term effects of this recession may in the end follow from changes in the timing and quality of marriages during the down years, rather than from the dynamics within already-married couples (Cvrcek 2011). Further impacts of these events on American family structure and behavior are likely to emerge in future studies.

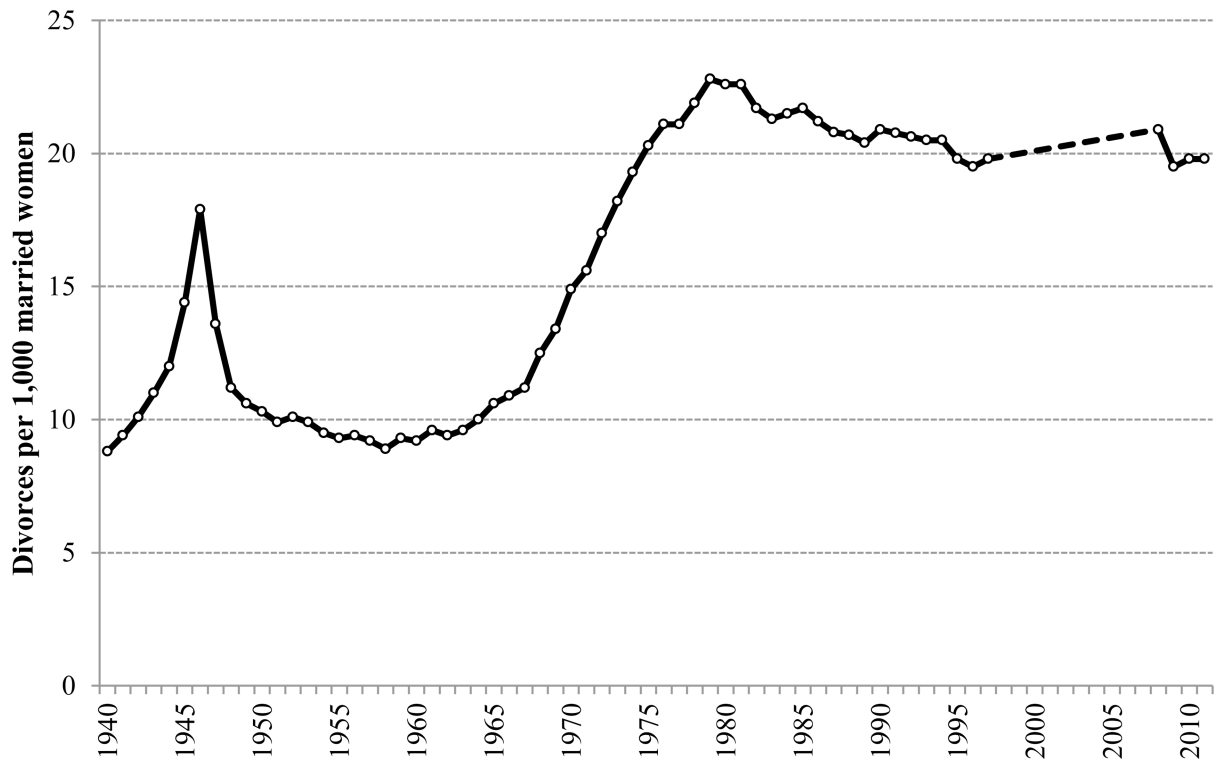
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**Figure 1. Refined divorce rates, 1940-2011**

Sources: 1940-1997, various National Center for Health Statistics Vital Statistics Reports; 2008-2011, American Community Surveys.

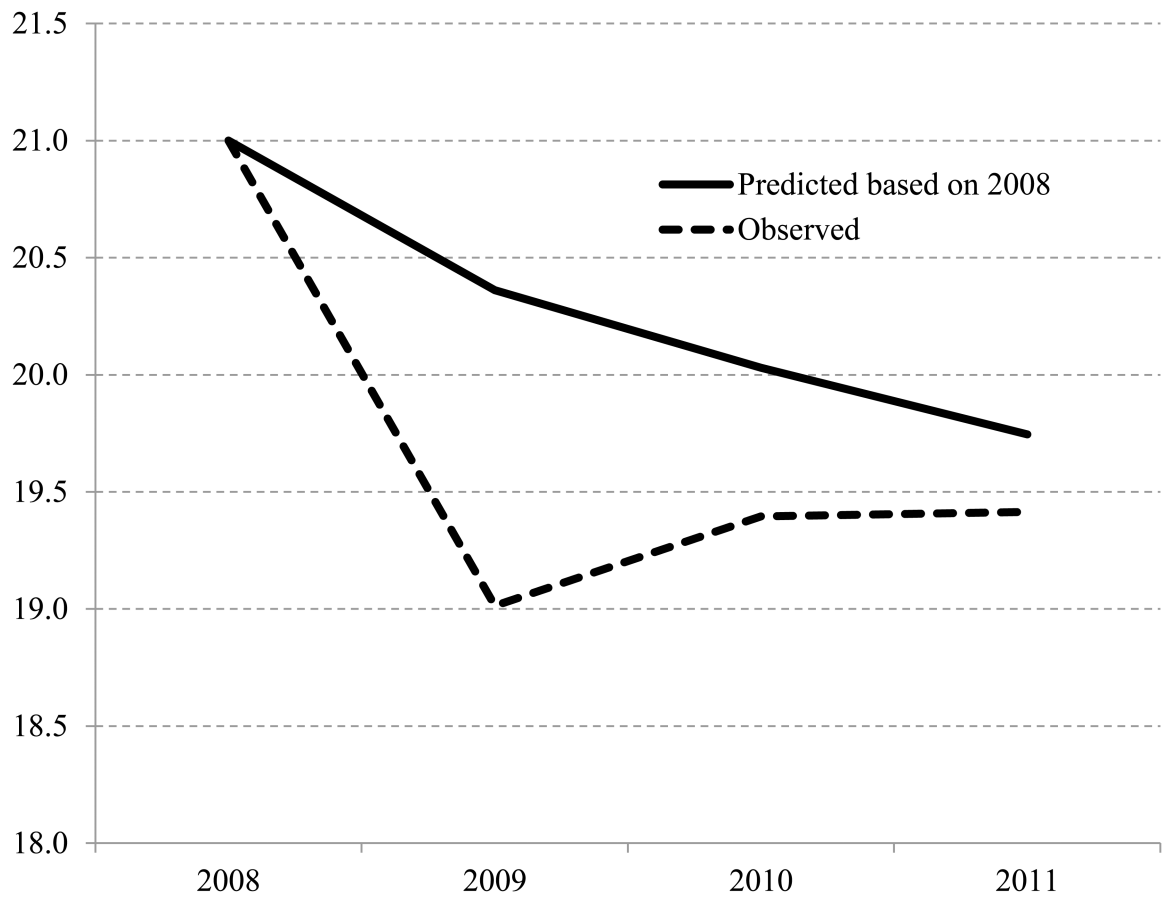


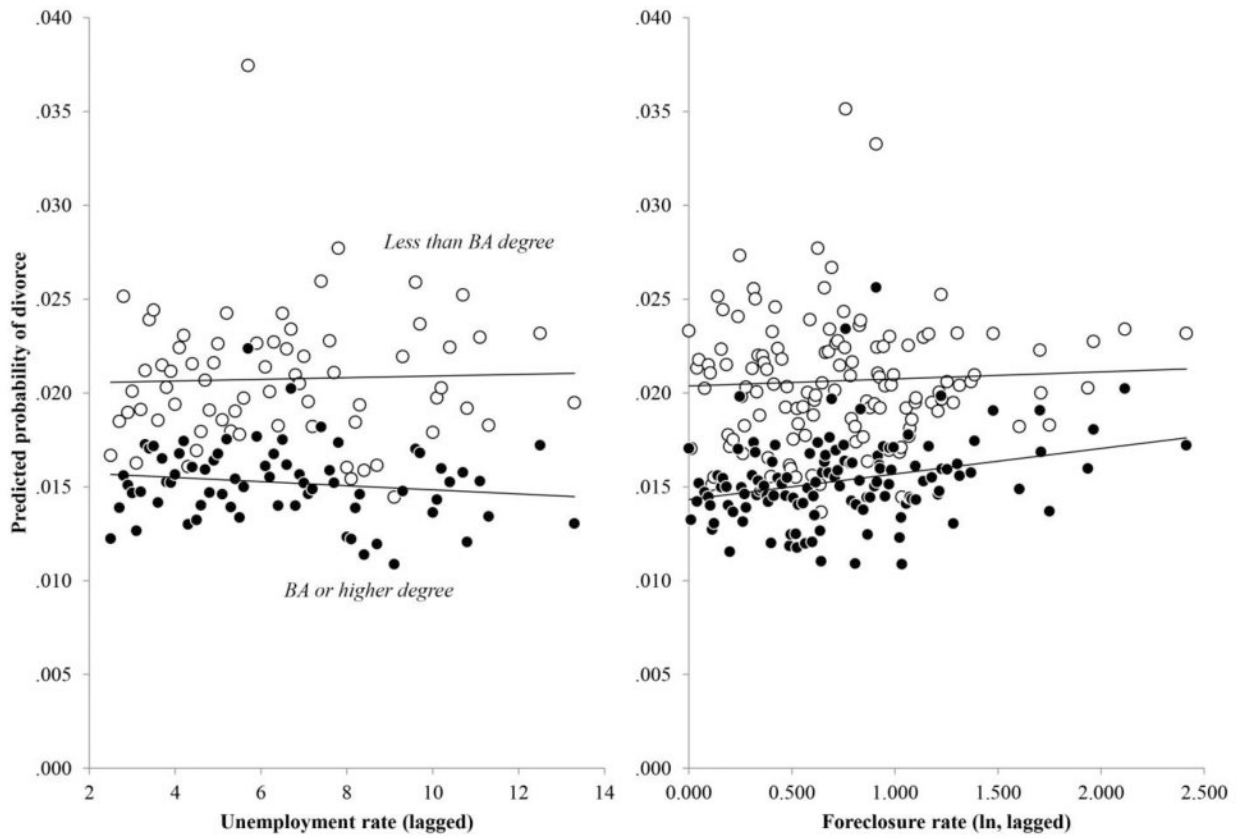
Figure 2. Divorce rate observed and predicted based on 2008 propensities

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**Figure 3. Predicted probabilities of divorce (state means), by unemployment and foreclosure rates and education level**

**Table 1**  
**Variables used in the analysis**

	Mean	Std dev	Min	Max
Divorced	.020	.128	0	1
Age	48.584	14.866	20	95
Marriage duration	21.427	16.261	0	81
Second marriage	.190	.395	0	1
Third marriage	.047	.219	0	1
Less than high school	.116	.310	0	1
High school graduate	.276	.449	0	1
Some college	.308	.462	0	1
BA	.192	.394	0	1
MA or higher	.108	.315	0	1
Foreign born	.187	.367	0	1
Hispanic	.131	.311	0	1
American Indian	.012	.115	0	1
Asian/P.I.	.063	.235	0	1
Black	.083	.255	0	1
White	.815	.366	0	1
Unemployment, percent (lagged)	6.063	2.232	2.5	13.3
Foreclosures, percent (ln, lagged)	.831	.438	.00	2.413

*N* = 2,765,205



**Table 2**  
**Divorces and divorce rates, 2008-2011**

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Divorced women	1,309,921	1,219,656	1,250,086	1,251,239
Divorce per 1,000 married women	20.9	19.5	19.8	19.8

*Source:* American Community Surveys.

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**Table 3**  
**Logistic regression coefficients for divorce on individual variables (robust standard errors)**

Intercept	3.091	(.105)***
Year		
2008 (ref.)	--	
2009	-.066	(.017)***
2010	-.028	(.016)
2011	-.012	(.018)***
Marriage variables		
Marital duration	-.020	(.001)***
First marriage (ref.)	--	
Second marriage	.424	(.019)***
Third marriage or higher	.836	(.041)***
Age	.006	(.004)
Age-squared	-.0004	(.0000)***
Education		
High school or less (ref.)	--	
Some college	.067	(.022)**
BA or higher	-.331	(.028)***
Foreign born	-.363	(.040)***
Race / ethnicity		
White (ref.)	--	
Hispanic	.012	(.042)
American Indian	.238	(.041)***
Asian/Pacific Islander	-.127	(.052)*
Black	.454	(.024)***
Percent concordant	68.0	
Pseudo r-squared	.047	
Degrees of freedom	15	

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

$N = 2,765,205$

**Table 4**  
**Logistic regression coefficients for divorce on individual and state variables (*robust standard errors*)**

	Model 1		Model 2	
Intercept	-3.098	(.107)***	--	
Year				
2008 (ref.)	--		--	
2009	-.063	(.017)***	-.066	(.017)***
2010	-.034	(.018)	-.026	(.014)
2011	.006	(.006)	.014	(.051)
State variables (lagged)				
Unemployment	-.009	(.011)	-.007	(.013)
Foreclosures (ln)	.073	(.034)*	.024	(.043)
State fixed effects	No		Yes	
Percent concordant	68.0		68.1	
Pseudo r-squared	.047		.048	
Degrees of freedom	17		67	

Note: Individual-level control variables not shown.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

$N = 2,765,205$

**Table 5**  
**Logistic regression coefficients for divorce on individual and state variables with**  
**interaction effects (*robust standard errors*)**

	Model 1		Model 2	
Intercept	-3.100	(.104)***	--	
State variables (lagged)				
Unemployment	-.003	(.011)	-.001	(.013)
BA or higher * Unemployment	-.027	(.009)**	-.027	(.009)**
Foreclosures (ln)	.036	(.036)	-.013	(.046)
BA or higher * Foreclosures (ln)	.165	(.059)**	.159	(.059)**
State fixed effects	No		Yes	
Percent concordant	68.0		68.2	
Pseudo r-squared	.047		.048	
Degrees of freedom	19		67	

Note: Individual-level control variables and year effects not shown.

\*  
 $p < .05$

\*\*  
 $p < .01$

\*\*\*  
 $p < .001$

N = 2,765,205