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Abstract
In this paper, I trace the geography of marriage in the United States in a geographical scale of county level. I present the changes of marriage rates in 3316 counties from 1970 to 2010 at four points of time. Using data from the National Historical Geographic Information System (NHGIS) provides marital status of men and women from 14 years old to over 65. Despite the fact that proportion of currents married individuals has reduced in the past four decades ago, the results show the geographic analysis of marriage has unveiled a substantial amount of spatial heterogeneity across counties. This paradox between country and county level reminds us the importance of contextual level factors. The regional fluctuations of marriage point to the presence of the eco-demographic effects in the geo-historical patterns of marriage in the United States.

Keywords: Marriage; county level; spatial analysis.

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1. Introduction
Statistics have indicated that the proportion of current married decreased considerably in several previous decades in the United States. In 1960, more than 70 percent of all adults ages 18 and older were married; but today just 51 percent of adults in the U.S. are married. In contrast, other types of living arrangements such as cohabitation, single-person households and single parenthood have increased in recent decades, and also immigration is an important source to diminish marriage numbers (Cohn et al., 2018; Roghani, 2014). This study is an effort to understand spatial heterogeneity in marriage rate across the United States in the county level. In addition, this study examines whether, despite the decreased in the proportion of current married individuals, there has been continuity in the regional patterning of marriage over the last four decades.

2. Theoretical Framework of the Research
Prevalence of other types of living arrangements such as cohabitation have different structures than marriage and ultimately different outcomes for individuals, their children, and even the society. Cohabitation is a non-legal coresidential and less stable union than marriage. Cohabitors have no responsibility for financial support of their partners and they are more likely than married couples to value separate leisure activities and to keep their social lives independent. In addition, the temporary and informal nature of cohabitation makes it more difficult and riskier for extended family to invest in and support the relationship. Therefore, it highly likely that cohabiters have a smaller common social network than married couples. Ultimately, cohabitation and marriage have different outcomes for children's well-being. The literature has indicated that marriage is connected with child well-being. Children who grew up other living arrangements than marriage have higher rates of behavioral problems and earlier transition to adulthood (Amato et al., 2006).
There are three main explanations for the declining the proportion of married people on the United States. First, divorce is a factor in diminishing the share of adults who are currently married compared with five decades age. However, divorce
rates have leveled off in the past two decades after climbing through the 1960s and 1970s, thus, divorce plays a less role than the past. Second, the increasing age of first marriage is an important factor in explaining the diminishing share of Americans who are currently married. Finally, marital status is known to be an important determinant of female labor force participation, and women seem to invest more in their careers if they delay fertility and marriage (Pew Research Center, 2018). The United States is not the only country where marriage has been losing "market share" for the five decades ago. The same trend has been observed in most other western countries, and these long-term reductions appear to be unrelated to the business cycle. The declines have persisted through different economic conditions. However, the availability of geographic data affects the research questions and the interpretation of results (Weeks, 2004). This research is an effort to assess the effects of geography on this trend as an important contextual level. It is expected that marriage decline has been persistent over the effects of geography in the county level from 1970 to 2010.

3. Data and Method
The data of this research is used from the National Historical Geographic Information System (NHGIS) that provides aggregate census data and GIS-compatible boundary files for the United States between 1790 and 2014. This data includes five points of time (1970, 1980, 1990, 2000, and 2010), and different conditions of marital status by county level. To identify current married individuals in the data, the whole of the population including never married, now married, widowhood, and divorced (aged 14 to over 65) are added to dominator, and now married individuals are considered for the nominator. This calculation gives us the ratio of the current married population for each points of time. The main aim of this paper is to show that despite the reduction in the proportion of now married individuals in the US, whether this trend will change by the effect of geography in the county level. Because the data is collected over time on the same geography, it is possible to assess whether the ratio has changed much between two points of time. Therefore, when the data provides five different points of time, I can compare the differences between the prior point and the latter point and ultimately mapping the changes between these two different points of time.

4. Results
The comparison of marriage rate between 1970 to 1980 indicates that most of counties had negative or close to zero growth in the ratio of marriage. However, the Figure1 indicates that most of the increases in the current married individuals are observed in western and eastern coasts. In comparison with the first map, the second map (Figure 2) shows the most of counties had an increase in the current married ratio (1980-1990). This growth is better seen in the most of southeastern counties than other parts of the country. The comparison of marriage rate between 1990 to 2000 indicates that a reduction in the ratio of current married in the eastern counties in comparison to the changes in 1980-1990. However, some of the West north central counties have higher ratios than other counties in southern parts of the country. Lastly, the comparison of marriage rate between 2000 to 2010 provides interesting results. Despite, the reduction in the proportion of current married in the US, most of counties between 2000 and 2010 had an increase from 0.04 to 0.2 in the marriage ratio. However, West north central counties had negative or zero growth in this period.
5. Conclusion

This paper is an effort to understand the changes in the geography of marriage in the United States at the county level from 1970 to 2010 and assesses changes in the ratio of current married individuals in four different points of time. The findings indicate that despite the overall reduction of proportion of currently married, the changes are quite diverse across counties over time. The local heterogeneity is also observed in different points of time. Such diversity shows us the importance of contextual factors. Despite the reduction in marriage, the regional and local patterning of marriage have a fluctuated condition over time, which shows the eco-demographic effects in the historical patterns of marriage. The rich geography of marriage provides researchers opportunities to have more accurate views regarding contextual level predictors in the lowest possible geographic details. The lack of geographic awareness in social science studies is not primarily because of a lack of interest among researchers, but may be related to the limited access to geographical data and analyses (Boyle, 2014). The findings of the paper show that despite the overall reduction in the proportion of current married in the US, this trend cannot be consistent in the county level over time. One of the obvious examples for the paradox between the fluctuation of ratio in currently married in the county level and the country level is the changes between 2000 and 2010. The results by the Figure 4 show an increase in the current married ratio in the most counties between 2000 and 2010, which is different than was expected by the country level trends. The explanation for this paradox can be answered by the interaction between individual and contextual level variables. By race, the share who had ever married was similar for all the races in 1960, but the decline in marriage has been particularly severe for African Americans in 2010. By educational attainments, the likelihood of having ever been married has reduced for all groups, but most for the least educated individuals. In addition, better job prospects, and incomes may raise the likelihood of marriage because these characteristics make individuals more attractive commodities in the marriage market (Cohn et al., 2008). These factors highlight the significance of structural factors in particular socioeconomic status affecting marriage, which have been used to explain marriage patterns. Therefore, the findings of the current research demonstrates individuals’ socioeconomic status, regional effects, and marriage can have highly complex relationships and it needs more accurate data and studies to understand these associations.

References