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Date of PhD: May 2017

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Short summary of research activity: My current work uses quasi-experimental methods to study the causes and consequences of violence as well as the intra-household effects and educational effects of full-time schooling for elementary school students in Mexico.

Summer sessions of interest: Children and Education.

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Current Positions

Assistant Professor, University of Tennessee, Department of Economics, 2017-present
Research Fellow, Institute for the Study of Labor (IZA), 2022-present

Education

Ph.D. in Economics, Texas A&M University, May 2017

M.A. in Economics, Universidad de Guadalajara, July 2009

B.A. in Mathematics, Universidad de Guadalajara, July 2006

Research Interests

Labor Economics, Development Economics, and Economics of Education.

Peer-Reviewed Publications

"When Crime Comes to the Neighborhood: Short-term Shocks to Student Cognition and Secondary Consequences," with Eunsik Chang. Forthcoming at *Journal of Labor Economics*.

"Violence-induced Migration and Peer Effects in Academic Performance," with Cecilia Peluffo. *Journal of Public Economics*, 217:104778, 2023.

"Uneven Effects, an Evolutionary Model of Poverty Traps After Trade Liberalization," with Leopoldo Gómez-Ramírez. *Review of Political Economy*, 1-19, 2023.

"Some Benefit, Some Are Left Behind: NAFTA and Educational Attainment in the United States," with Leopoldo Gómez-Ramírez, *Economic Inquiry*, 60(4): 1581-1606, 2022.

"Full-Time Schools, Policy-Induced School Switching, and Academic Performance." *Journal of Economic Behavior and Organization*, 196: 79-103, 2022.

"Hidden Violence: How COVID-19 School Closures Reduced the Reporting of Child Maltreatment," with Francisco Cabrera-Hernández, *Latin American Economic Review*, 29(4): 1-17, 2020.

"Easing the Constraints of Motherhood: The Effects of All-Day Schools on Mothers' Labor Supply," with Francisco Cabrera-Hernández, *Economic Inquiry*, 57(2): 890-909, 2019.

"Kingpin Approaches to Fighting Crime and Community Violence: Evidence from Mexico's Drug War," with Jason M. Lindo, *Journal of Health Economics*, 58: 253-268, 2018.

Contributions to Edited Volumes

"Victimización en la Zona Metropolitana de Guadalajara," with Irvin M. Soto Zazueta. *Ensayos Sobre Victimización, Percepción de Inseguridad y Corrupción en México*. México: 2015, editor Willy W. Cortez. pp. 33-54.

"La Espacialidad de la Victimización. Metodología y Caso," with Mauricio Ramírez Grajeda. *Temas de Economía Pública Local*. México: 2011, editor Juan J. Jardon Urrieta. pp. 295-306.

Other Publications

"Kingpin Approaches to Fighting Crime and Community Violence: Evidence from Mexico's Drug War," with Jason M. Lindo. *Cato Research Briefs in Economic Policy* No. 31, July 2015.

"Causas y Costos de la Violencia en México." *Boletín de Política Económica* No. 20, January 2023.

Working Papers

"Full-Time Schools and Educational Trajectories: Evidence from High-Stakes Exams," with Francisco Cabrera-Hernández and Cecilia Peluffo. Revision requested at *Economics of Education Review*.

"Parents' Effective Time Endowment and Divorce: Evidence from Extended School Days," with Cecilia Peluffo and Mariana Viollaz. Under review.

"Women as Caregivers: Full-Time Schools and Grandmothers' Labor Supply," with Francisco Cabrera-Hernández.

"Longer-Term Spillover Effects of Violence: Evidence from High-Stakes Exams," with Cecilia Peluffo.

"Criminal Instruments: Shift-Share Designs and Collinearity," with Enda Hargaden.

Works in Progress

"Improvements in Schooling Opportunities and Teenage Fertility," with Lucas Nogueira Garcez, Cecilia Peluffo, and Mayra Pineda-Torres.

"The Effects of Exposure to Chronic Drug-Related Violence on Academic Performance," with Carlos Trejo-Pech.

Teaching Experience

University of Tennessee

Economics Research Workshop (Spr 22, Spr 20)

Intermediate Microeconomics (Fall 22, Spr 18, Fall 17)

Introduction to Econometrics (Spr 23, Spr 22, Spr 21, Fall 20, Spr 20, Spr 19, Fall 18, Spr 18)

Texas A&M University

Microeconomic Theory (Summer 16)

Universidad de Guadalajara (CUCEA)

Econometrics I (Summer 15, Fall 09)

Econometrics II (Spr 10)

Mathematics III (Fall 10)

Microeconomics (Summer 15, Summer 14, Summer 13)

Statistics II (Spr 12, Fall 11, Spr 11, Fall 10)

Instituto Tecnológico y de Estudios Superiores de Occidente (ITESO)

Econometrics (Spr 12, Fall 11, Spr 11, Fall 10, Spr 10)

Universidad Panamericana (Business School, Campus Guadalajara)

Calculus (Fall 11)
Econometrics (Spr 11)
Financial Mathematics (Spr 12)
Linear Algebra (Spr 12, Fall 11)
Macroeconomics (Fall 11)

Preparatoria Hermosa Provincia

Logic (Spr 06, Fall 06)
Mathematics II (Fall 06)
Physics (Spr 07)

Secundaria Hermosa Provincia

Mathematics I, II, and III (2006-2007)

Fellowships, Honors, and Awards

Haslam Family Faculty Research Fellow (2022-2023)

Finalist, Haslam College of Business Faculty Rising Star Researcher (May 2022)

Finalist, Haslam College of Business Diversity and Inclusion Award (October 2022)

National System of Researchers (SNI), awarded by the National Council of Science and Technology (CONACyT, 2020-2023)

Women Deliver 2019 Conference Scholarship (June 2019)

S. Charles Maurice Fellowship in Economics, awarded by the Department of Economics (Texas A&M University, 2016)

Graduate Student Research Award, presented by the Hispanic/Latino Graduate Student Association for work in Latino/a Education (Texas A&M University, April 2016)

Second Place Among Graduate Researchers, Oral Presentation at the Student Research Week (Texas A&M University, 2016)

Bradley Fellow, awarded by the Private Enterprise Research Center, Texas A&M University (2015-2016)

M. H. Webber Scholar, awarded by the Private Enterprise Research Center, Texas A&M University (Summer 2014)

Graduate Assistantship, awarded by the Department of Economics (Texas A&M University, 2012-2017)

M.A. Studies National Scholarship, awarded by the National Council of Science and Technology (CONACyT), Mexico (2007-2009)

Outstanding Teacher (Secundaria Hermosa Provincia, May 2007)

Academic Excellence Award and Outstanding Student of the University Center of Exact Sciences and Engineering (Universidad de Guadalajara, October 2006)

Third Best GPA of the class of 2006, B.A. in Mathematics (Universidad de Guadalajara, July 2006)

Outstanding Undergraduate Female Student in Mathematics (Universidad de Guadalajara, March 2006)

Departmental and University Service

2023-Current	Undergraduate Research Advisory Council
2022-Current	Graduate Studies Committee, University of Tennessee
2019-Current	Policy Committee, University of Tennessee
Summer 2022	Second Year Paper Committee, University of Tennessee
2021-2022	Faculty Search Committee, University of Tennessee
2018-2020	Undergraduate Committee, University of Tennessee
Spring 2019	Judge at EURẽCA Conference, University of Tennessee
Spring 2019	Department Head Search Committee, University of Tennessee
2017-2018	Faculty Search Committee, University of Tennessee
2015-2016	Department's Representative at the Graduate and Professional Students Council (GPSC), Texas A&M University
2015-2016	Member of the GPSC's Research Committee, Texas A&M University

Professional Activities

Mentoring team: *Association for Mentoring and Inclusion in Economics* (2021-2022)

Editorial Board: *EconoQuantum* (2019-Current)

Mentor: CSWEP mentoring workshop for third- and fourth-year female and non-binary graduate students in economics (November 2022); *UT Promise*, University of Tennessee (2020-Current); and *Women Leaders in STEM, U.S.-Mexico Leaders Network* (2019-Current).

Referee: *American Economic Journal: Economic Policy, Applied Economics, Contemporary Economic Policy, Economic Inquiry, Economics of Education Review, EconoQuantum, Education Finance and Policy, European Journal of Development Research, Explorations in Economic History, Journal of Economic Behavior and Organization, Journal of Health Economics, Journal of Human Capital, Journal of Human Resources, Journal of Labor Economics, Journal of Policy Analysis and Management, Journal of Public Economics, Journal of Regional Science, Review of Economics of the Household, and Southern Economic Journal.*

Graduate Student Advising

University of Tennessee

Lucas Nogueira Garcez (co-chair, in progress)
Michael Charysh (in progress)
Cathy Wu (in progress)
Bokseong Jeong (Ph.D. in Economics, 2022)
Richard Beem (Ph.D. in Economics, 2022)
Eunsik Chang (Ph.D. in Economics, 2021)
Sangwon Lee (Ph.D. in Economics, 2020)

Undergraduate Student Advising

University of Tennessee

Natalie Varga (Chancellor's Program, 2022-2023)
Lexie Judd (Chancellor's Program, 2020-2021)
Lauren Gateley (HS Program, 2019-2021)
Luke Norton (GLS Program, 2018-2019)

Universidad de Guadalajara

Víctor Hugo Álvarez Cervantes (B.A. in Mathematics, 2009-2010)

Selected Media Coverage

"Cierre de escuelas de tiempo completo, impacto directo para madres trabajadoras," 04/11/2022, El Economista

"Maltrato infantil se detecta 30% menos en CDMX con las escuelas cerradas, advierten especialistas," 01/22/2021, Animal Político

"What History Says Will Happen Next in Iran," 01/07/2020, The Atlantic

"¿Qué sabemos de las causas de los homicidios?," 01/11/2019, Animal Político

"Las escuelas de tiempo completo y la equidad educativa," 11/07/2018, Nexos

"Escuelas de Tiempo Completo: Claroscuro," 10/01/2018, Nexos

"Programa Escuelas de Tiempo Completo: resultados positivos y lecciones aprendidas," 04/25/2018, Nexos

"Will Nabbing of 'El Chapo' Actually Help Mexico Win the War on Drugs?," 01/23/2016, Newsweek

"El Chapo Shows the Folly of the War on Drugs," 01/21/2016, Time

Seminars and Conferences

2023 ASSA Annual Meeting, University of Alabama at Birmingham, Southeastern Micro Labor Workshop, Atlanta Workshop on Public Policy and Child Well-Being, and Escuela Superior Politécnica del Litoral (Guayaquil, Ecuador).

2022 Stanford Institute for Theoretical Economics (SITE) Conference on Gender Economics, Virtual Crime Economics (ViCE) seminar, the University of Arizona, American Society of Hispanic Economists (ASHE) Seminar Research Series, Southeastern Micro Labor Workshop, LACEA Conference, Southern Economic Association Conference, Congreso Anual de Economía y de Políticas Públicas Sobre México, Universidad de Guadalajara, Seminario de Violencias Estructurales at Centro de Investigación y Docencia Económicas (CIDE), and Pontificia Universidad Católica del Perú.

2021 2021 Education, Health and Inequality Mini-Conference (Indiana University); RWI - Leibniz Institute for Economic Research; AEFP Conference; Southeastern Micro Labor Workshop; Universidad de Monterrey; Southern Economic Association Conference; and APPAM Conference.

2020 IZA & Jacobs Center Workshop: Consequences of COVID-19 for Child and Youth Development, Centro de Estudios Espinosa Yglesias, Southern Economic Association Conference, Universidad del Norte (Barranquilla, Colombia), HSE University (Moscow, Russia), Universidad de Guadalajara (Guadalajara, Mexico), AEFP Conference, and Southeastern Micro Labor Workshop.

2019 Southeastern Health Economics Study Group, Southern Economic Association Conference, LACEA Conference, Vanderbilt University, Women Deliver Conference, and Western Economic Association International Conference.

2018 CSWEP-CeMENT Mentoring Workshop (Philadelphia), IZA Gender and Family Economics (Barnard College), AEFP 43rd Annual Conference (Portland), Vision 2027: Evaluation of the Ten Years of Mexico's Full-Time Schools Program (Mexico City), Tennessee Empirical Applied Microeconomics Festival (Knoxville), University of Kentucky, Miami University, National Meeting: Challenges + Strategies = Achievements of Mexico's Full-Time Schools Program (Mexico City), Seminario de Evaluación de la Política Pública: Programa Escuelas de Tiempo Completo (PETC) – Evaluación de los 10 Años del Programa (Campeche, Mexico), Third Workshop on Poverty, Inequality, and Public Insecurity (Universidad de Guadalajara), and Southern Economic Association Conference (Washington DC).

2017 NBER Summer Institute, Annual Southeastern Health Economics Study Group (Vanderbilt), New Frontiers in Development Economics Conference (UConn), University of Tennessee, Emporia University, and Banco de México.

2016 Southern Economic Association Conference, Stata Empirical Microeconomics Conference, and ASHE Conference.

2015 Southern Economic Association Conference, Stata Empirical Microeconomics Conference, and ASHE Conference.

2010 Second International Seminar on Local Public Economics (Universidad Michoacana de San Nicolás Hidalgo).

2009 Mexican Symposium of Mathematical Economics and Econometrics (Instituto Politécnico Nacional), guest speaker at Universidad Autónoma de San Luis Potosí.

Parents' Effective Time Endowment and Divorce: Evidence from Extended School Days

María Padilla-Romo* Cecilia Peluffo† Mariana Viollaz‡§

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Abstract

Policies that extend the school day in elementary school provide an implicit childcare subsidy for families. As such, they can affect parents' time allocation and family dynamics. This paper examines how extending the school day affects families by focusing on marriage dissolution. We exploit the staggered adoption of a policy that extended the availability of full-time elementary schools across different municipalities in Mexico. Using administrative data on divorces, we find that extending the school day by 3.5 hours leads to a significant increase in divorce rates. Moreover, the effect grows with every year of municipalities' exposure to full-time schooling. The effects are largely driven by municipalities with non-traditional social norms about divorce, marriage, and female employment and by women with school-age children. Increased female labor force participation due to the availability of childcare is likely to be one of the mechanisms that relaxed restrictions on marriage dissolution.

JEL classification: J12, J13, J18.
Keywords: Divorce; Childcare; Full-time Schools.

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1 Introduction

Childcare availability affects families' time allocation and family members' opportunities to conduct activities outside their households. Limited access to childcare coupled with gender norms limiting female labor force participation restricts women's opportunity to allocate their time to market activities. Because the opportunity to earn income tends to be correlated with intra-household bargaining power, this situation directly affects families' dynamics. This paper sheds light on the connection between childcare availability and divorce, an important and unexplored issue, given that early family environments are strong predictors of short- and long-run student outcomes (Heckman, 2006). Specifically, we examine how extending the school day by 3.5 hours in public elementary schools in Mexico affects divorce. In doing so, we provide the first evidence on the effects of access to full-time schools (FTS hereafter) on marriage dissolution and, to our knowledge, the first causal evidence regarding the impact of the availability of subsidized childcare on divorce.

FTS affect families' decisions due to the implicit childcare subsidy they provide. A dimension in which FTS can affect families is their effect on family structure, specifically through marriage dissolution. Most of the literature on FTS has focused on examining the impact of extensions in the school day on students' learning, finding mixed results.[1] Recent studies have found that the availability of FTS has significant intra-household effects, increasing the labor force participation of mothers and extended family members (Contreras and Sepúlveda, 2017; Padilla-Romo and Cabrera-Hernández, 2019; Cabrera-Hernández and Padilla-Romo, 2020; Kozhaya and Martínez Flores, 2020).[2] However, little is known about how the increase in the availability of FTS affects other dimensions of household dynamics.

Considering a simple two-good model of labor supply decisions in which caregivers choose

[1] See, for example, Cerdan-Infantes and Vermeersch (2007), Bellei (2009), Arzola González (2010), Pires and Urzua (2010), Dias Mendes (2011), Xerxenevsky (2012), Llambí (2013), Orkin (2013), Almeida et al. (2016), Hincapie (2016), Cabrera-Hernández (2020), Agüero et al. (2021), Padilla-Romo (2022), and Cabrera-Hernández et al. (2022). For a discussion on the effects for Latin American and Caribbean countries, see Holland et al. (2015).

[2] Other important outcomes that have been studied are teenage pregnancy (Kruger and Berthelon, 2009) and child labor (Kozhaya and Martínez Flores, 2020).

between home time (that includes time spent caring for children) and consumption goods, extensions in the school day provide school-age children's main caregivers with a higher *effective time endowment*, by freeing time that was previously spent providing child care.[3] Given that children's main caregivers tend to be mothers or other female family members, this allows for a higher female labor force participation.[4] As intra-household bargaining models suggest, the position of women in bargaining can increase if the level of utility they can independently achieve increases. In this case, women's outside option can increase either because of a higher female individual income (for women who increase their labor supply) or due to the potential of increasing their income (for those women who do not adjust their labor supply but can do so because of their expanded time endowment).[5]

From a theoretical perspective, the direction of the expected effect of changes in bargaining power and female economic independence that may result from the extension in FTS on marriage stability is inconclusive. In line with the *independence effect hypothesis* (Ross et al., 1975), divorce can increase due to the potential increase in independent sources of income for women.[6] Moreover, female employment may lead to within-household conflict or higher intimate partner violence (Eswaran and Malhotra, 2011; Heath, 2014; Krishnan et al.,

[3]The simplifying assumption is that the consumption goods bundle does not include childcare services due (for example) to lack of availability. Suppose we assume that alternative paid sources of childcare are available. In that case, the school day extension can be interpreted as in line with a model in which the price of childcare services (included in the consumption bundle) declines.

[4]For the particular case of the FTS program implemented in Mexico, there is evidence that this policy significantly increased female employment (Padilla-Romo and Cabrera-Hernández, 2019; Kozhaya and Martínez Flores, 2020; Cabrera-Hernández and Padilla-Romo, 2020). The connection between childcare and female labor force participation (in countries different from Mexico) has been studied by Gelbach (2002), Berlinski and Galiani (2007), Lefebvre and Merrigan (2008), Goux and Maurin (2010), Bauernschuster and Schlotter (2015), Nollenberger and Rodriguez-Planas (2015), Carta and Rizzica (2018), Eckhoff Andresen and Havnes (2019), and Berthelon et al. (2022), among others.

[5]Increases in labor force participation (and improvements in the type of employment) have been identified as positively associated with women's bargaining power (Anderson and Eswaran, 2009; Heath and Jayachandran, 2018). Importantly, increasing women's labor force participation is not a necessary condition for higher bargaining power. For example, Majlesi (2016) shows that higher employment opportunities for women in Mexico lead to increases in women's bargaining power.

[6]In the same direction, Becker (1981) explains that the gains from marriage are reduced, and divorce becomes more attractive when there is an increase in female earnings. An important related dimension that may affect marriage dissolution is the relative earnings of the spouses. In their analysis for the United States, Bertrand et al. (2015) find that marriages in which the husband earns less than the wife are more likely to get a divorce. Using variation in manufacturing plant openings in Mexico, Estefan Dávila (2018) shows that a reduction in the male-female earnings inequality increases divorce rates.

2010; Luke and Munshi, 2011; Guarnieri and Rainer, 2018) which are likely to affect divorce rates.[7] Yet, the increase in labor force participation of women can lead to lower economic stress for the family and reduce marital conflict, or to lower intimate partner violence due to a reduction in exposure to the abusive partner (Chin, 2012).[8] Moreover, if childcare has a deterrence effect on divorce due to the burden it imposes on the parent receiving custody of children (Cherlin, 1977), the implicit reduction in childcare costs originated by this policy can affect divorce rates directly.[9] Given the complexity of the mechanisms in place and the lack of consensus on their expected effect on divorce, empirical evidence is crucial to shed light on the potential effects of access to subsidized childcare on divorce. In this paper, we fill this gap in the literature by studying a policy that provides a large implicit childcare subsidy by extending the school day from 4.5 to 8 hours for students enrolled in public elementary schools in Mexico.

Our empirical approach relies on leveraging plausibly exogenous variation from a large-scale expansion in FTS across Mexican municipalities from 2007 to 2016. To identify the dynamic effects of the extension in the school day on divorce rates over time, we combine administrative records from all divorces in Mexico with annual school-level census data on enrollment and participation in the FTS program. Our estimates are obtained using the estimation method proposed by Borusyak et al. (2021), which produces estimates that are robust to heterogeneous and dynamic treatment effects across municipalities and years. We find that, as a result of an average increase in FTS availability of 24 percentage points, the divorce rate increased by 0.045 divorces per 1,000 individuals (a 14% increment relative to divorces in treated municipalities in the year prior to the opening of the first FTS). The effect rises over time, reaching an increase of 0.117 in the divorce rate after the municipalities provided extended school days for seven years (when the expansion in FTS reached 32

[7]Domestic violence can also be affected by the gender wage gap. For the United States, Aizer (2010) finds that declines in the gender wage gap lead to the reduction of violence against women.

[8]See Heath and Jayachandran (2018) for an excellent discussion of the literature on female labor force participation in developing countries, its causes, and consequences.

[9]Cherlin (1977) describes this effect for families with children in preschool in the United States.

percentage points).

To assess the validity of the estimated effects on divorce rates, we estimate placebo effects by comparing the evolution of divorce rates in municipalities not exposed to the FTS program and municipalities implementing this program before the roll-out took place. We find that the outcome variables for these two groups of municipalities evolved in a parallel way prior to the program's implementation, which supports our identification strategy. Moreover, we show that endogenous migratory responses are unlikely to drive our results.

The extension in the availability of childcare does not affect divorce homogeneously across areas. The increased number of hours elementary school students spend in school leads to a more pronounced rise in divorce rates in areas with non-traditional social norms about divorce, marriage, and female employment. We also document a larger increase in the probability of divorce or separation for women with children in the potentially exposed age range in comparison to women with no children in the same age range or with younger children. Consistent with the short-term labor supply responses to FTS in Mexico documented in Padilla-Romo and Cabrera-Hernández (2019), we find that, for the sample of women with children potentially affected by the introduction of FTS, childcare availability through extended school days leads to a rise in female labor force participation. This finding indicates that the higher effective time endowment women get due to the introduction of full-time schooling is used in the labor market, resulting in higher female economic independence.

We contribute to several strands of the literature. We add to the literature on female economic independence and divorce, which includes studies examining the connection between female non-labor income, labor income, and potential earnings and marriage stability (Ross et al., 1975; Becker et al., 1977; Hoffman and Duncan, 1995; Weiss and Willis, 1997; Jalovaara, 2003; Bobonis, 2011; Hankins and Hoekstra, 2011; Bergolo and Galván, 2018; Berniell et al., 2020). We also contribute to the literature on the intra-household effects of (public) full-time schools (Contreras and Sepúlveda, 2017; Padilla-Romo and Cabrera-Hernández, 2019; Kozhaya and Martínez Flores, 2020; Cabrera-Hernández and Padilla-Romo, 2020; Berthelon

et al., 2022) and, more generally, to the literature on the connection between public expenditure and family outcomes (Dickert-Conlin, 1999; Halla et al., 2016; Dahl et al., 2016; Bastian, 2017).

The paper proceeds as follows. Section 2 describes the institutional features related to divorce in Mexico and the FTS program we study. Section 3 presents the data. Section 4 discusses the identification strategy. Section 5 presents the estimated results, and Section 6 concludes.

2 Background

The FTS program expansion we analyze extended the school day for students enrolled in public Mexican elementary schools from 4.5 to 8 hours. This federally funded program was launched starting in the 2007-2008 academic year, and it was aimed at improving education quality by expanding learning opportunities through an extended school schedule. Each state assigned schools to this program following broad guidelines established by the Secretariat of Public Education. These guidelines include the requirement that the schools operate only in one shift and provide services for vulnerable students.[10] The FTS program represents one of the largest investments in education in the past decades in Mexico. In Figure 1, we show the timing of implementation, considering the first year in which the first school in each municipality was incorporated in the FTS program. In 2007, the program only covered 500 schools. Over time, the coverage increased, reaching more than 25% of public elementary schools in more than 80% of the municipalities in Mexico.

The extension in the length of school days may affect marriage stability by impacting female employment. How female labor market decisions and women's independence more generally evolve depends on the gender norms prevailing in society. Social norms affect female labor market participation because of their influence in the intra-household distribution

[10]See Padilla-Romo and Cabrera-Hernández (2019), Cabrera-Hernández (2020), Cabrera-Hernández and Padilla-Romo (2020), and Padilla-Romo (2022) for a detailed description of the program.

of time spent in childcare (Jayachandran, 2021). Like many developing countries, Mexico exhibits significant gender differences in the prevalence of unpaid work. By 2019, women spent 67% of their time carrying out unpaid work while men allocated 28% of theirs. Looking specifically at gender differences in the time allocated to domestic work, women spent (on average) 30.8 hours per week, and men spent 11.6 hours in the same activities. When focusing on the care of children, women spent 24.1 hours per week, and men spent 11.5 per week taking care of children aged 14 years or younger.[11] The absence of affordable and high-quality formal childcare options can exacerbate this issue since it often results in relying on care by mothers and other female family members (Padilla-Romo and Cabrera-Hernández, 2019; Cabrera-Hernández and Padilla-Romo, 2020; Talamas, 2020).

Gender norms regarding care are also reflected in individuals' views about female labor force participation. According to the World Values Survey 2017-2020 (Haerpfer et al., 2020), 31.5% (21.4%) of individuals in Mexico agree (strongly agree) with the statement "*When a mother works for pay, the children suffer.*" To put this information in context, the level of agreement (strong agreement) in the U.S., Canada, and the U.K. is 17.4%, 16.6%, and 19.9% (3.3%, 4.4%, and 3.4%), respectively. In terms of intra-household dynamics, 28.8% (24.2%) of individuals in Mexico agree (strongly agree) with the statement indicating "*If a woman earns more money than her husband, it's almost certain to cause problems.*" In the case of the United States, only 10% (0%) of agreement (strong agreement) with the same statement is reported. To examine how prevalent social norms interact with the impact of FTS on divorce, in Section 5.2, we separately examine how the extension of the school day affected divorces in areas with different social norms about the family, divorce, and female employment.

Before the implementation of the FTS program, elementary school days of 4.5 hours imposed additional constraints on the possibility that primary caregivers participate in the labor market. While in Mexico women's labor force participation remains relatively low, it

[11] Data from the 2019 Mexican Time Use Survey.

has increased as a response to childcare subsidies (Padilla-Romo and Cabrera-Hernández, 2019; Calderon, 2014).[12] Given the relevance of the within-household income distribution as a potential source of conflict, in Section 5.3.2, we analyze how the reform affected female labor force participation.

Considering divorce regulation, Mexico has legalized divorce relatively earlier than other Latin American countries, allowing for mutual consent divorce and divorce with a cause in 1917 (Brazil, Argentina, and Chile legalized divorce in 1977, 1987, and 2004, respectively). Over time, the country implemented reforms that extended the possible causes for divorce and allowed for non-fault unilateral divorce.[13] In our regressions, we control for the state-level implementation of unilateral divorce laws.

3 Data

Data on divorce filings come from the National Institute of Statistics and Geography (INEGI). These administrative data contain individual divorce records and cover all divorces in Mexico. We calculate divorce rates per 1,000 people using municipality-level population projections from the National Population Council (CONAPO) for each academic year (August to July) and municipality.

To measure access to FTS, we rely on school-level census data on enrollment and participation in the FTS program from the Secretariat of Public Education. For each academic year, we match the availability of FTS in each municipality with information on the municipality of residence of the divorcing wife to capture exposure to the extension in the school day.[14] To examine how the availability of FTS in a municipality evolves over time once mu-

[12] By 2016, only 43.92% of women older than 15 were economically active in Mexico (ILOSTAT).

[13] For the case of Mexico, Aguirre (2019) and Hoehn-Velasco and Penglase (2021) describe the legal changes over time and analyze the effect of unilateral divorce laws on divorce.

[14] Information on the municipality where marriages took place is also available. Given that the average length of marriages in our sample is 13 years (with a median of 11 years), the municipality of residence is likely to provide a more accurate measure of exposure to the program than the municipality of marriage. We provide evidence on the absence of endogenous migratory responses to the program in the population of individuals filing for divorce in Section 5.1.

nicipalities start implementing the program, we follow Padilla-Romo and Cabrera-Hernández (2019) and define the predicted capacity of FTS in municipality m and academic year t using Equation 1:

$$FTS_{mt} = \frac{\sum_{s \in m} \bar{e_s} FT_{st}}{\sum_{s \in m} \bar{e_s}} \tag{1}$$

where $\bar{e_s}$ is the average enrollment at school s from 2001 to 2006 (prior to program implementation) and FT_{st} is equal to one if elementary school s participates in the FTS program at academic year t and zero otherwise.

We restrict our sample to municipalities that have existed and maintained their geographic boundaries from 2000 to 2016. We also drop from the analysis municipalities that experienced the first FTS expansion in the 2007/2008 academic year because many of the 500 schools that adopted the program were already full-time before 2007.[15]

We use information from the Mexican Employment and Occupation Survey (ENOE), for the years 2005-2016, on women's household composition, marital status, and labor force participation. ENOE is a dynamic quarterly panel where each household is kept in the sample for five consecutive quarters. While ENOE contains information on the municipality of residence, the survey is not representative at the municipality level. However, ENOE is representative of 32 urban areas all over Mexico, which we use in our analysis. In each survey wave, we identify whether women 18 years or older are divorced or separated and whether they participate in the labor market, distinguishing between women in households with and without school-age children (ages 5-11). To avoid giving more weight to women that have been in the sample for more than one quarter, we keep observations of each women's first interview. Finally, we match data on FTS availability in each urban area with ENOE using women's place of residence and the academic year.[16]

[15] After imposing these restrictions, our analytical sample includes 2,266 of the 2,456 existing municipalities in 2016.

[16] For example, for FTS availability during the academic year 2009/10, we match the predicted share of FTS in the urban area with ENOE from the last two quarters of 2009 and the first two quarters of 2010.

Using information from the 2005 World Values Survey for Mexico, we construct five state-level measures that we use as proxies for traditional or non-traditional norms about divorce, marriage, and female employment before the intervention.[17] The first measure captures people's opinions on whether divorce can be justified. The second measure indicates if a person agrees with marriage being an outdated institution. The third measure indicates whether a person would not like to have unmarried couples as neighbors. The last two measures capture people's agreement with statements about women's right to have a job and the value of having a paid job versus being a housewife.

To classify states as having traditional social norms for each of the five measures mentioned above, we define individual-level indicator variables equal to one if the social norms are traditional and equal to zero if the social norms are non-traditional.[18] For each of these variables, we calculate state-level averages that we then match with the divorce records at the municipality level used in our main estimations. We classify municipalities as exhibiting traditional social norms in a particular dimension when the value of its measure is above the sample median of the municipality distribution.

Table 1 shows descriptive statistics for municipalities that by 2016 had implemented the FTS program (*Ever Treated*) and municipalities that had not implemented the program (*Never Treated*). Ever-treated municipalities had higher divorce rates than never-treated municipalities prior to the roll-out of the FTS program. In terms of social norms, on average, never-treated municipalities are more likely to belong to a state classified as having

[17] The 2005 World Value Survey did not include the state of Colima.

[18] For the measure capturing whether divorce can be justified, an individual is considered to have traditional social norms if, on a scale from 1 to 10, where 1 means divorce is never justifiable and 10 means that divorce can always be justified, the person's answer is 1 or 2; non-traditional norms are captured by the values 3 to 10. For the measure that captures people's opinion about marriage, an individual is considered to have traditional norms if she indicates that marriage is an outdated institution, and non-traditional if she answers the opposite. For the third measure, a person is considered to have traditional norms when saying she would not like to have an unmarried couple as neighbors, and non-traditional otherwise. An individual is considered to have traditional norms about female employment when agreeing with the statement "when jobs are scarce, men should have more right to a job than women", and non-traditional when disagreeing or not agreeing nor disagreeing with the statement. Finally, we consider that a person has traditional social norms when she agrees or strongly agrees with the statement "being a housewife is as satisfying as having a paid job", and has non-traditional social norms when disagreeing or strongly disagreeing with the statement.

traditional social norms about divorce, marriage, and female employment. In addition, ever-treated municipalities are, on average, more populous and more likely to be located in a state that allows for unilateral divorce by 2016.[19]

4 Identification Strategy

To identify the effects of FTS on divorce, we use administrative data on divorce records and exploit municipality-level variation in the availability of elementary FTS. We estimate the following fixed effects model:

$$DR_{mt} = \alpha_m + \gamma_t + \sum_{k=0}^{7} \delta_k FTS_{m,t-k} + \theta X_{st} + \lambda_m t + u_{mt} \tag{2}$$

where DR_{mt} is the divorce rate in municipality m in academic year t, α_m are municipality fixed effects, γ_t are academic year fixed effects, and u_{mt} is an error term that we allow to be correlated within municipalities. Our variable of interest, $FTS_{m,t-k}$, is an indicator equal to one k years after the municipality opened its first FTS, and zero otherwise. Because Mexico implemented state-level reforms introducing unilateral divorce laws, we control for state-level changes in divorce laws introducing an indicator X_{st} equal to one if the state s has unilateral divorce laws in period t.[20] To allow for the possibility of differential divorce trends across municipalities, we include municipality-specific linear time trends as controls ($\lambda_m t$). The coefficients δ_k identify the average effect of $k+1$ years of implementation of the FTS program on municipalities' divorce rates.

To estimate the effects on the probability of divorce or separation and on female labor force participation by household composition, we rely on individual level household survey

[19]For most of the states, we rely on information from García-Ramos (2021) to identify the timing of the introduction of these laws. In addition, we combine information from Hoehn-Velasco and Penglase (2021) with information from alternative sources for the cases in which the date is missing in García-Ramos (2021).

[20]Mexico has 31 states and Mexico City with 2,456 municipalities that are geographic units within states.

data for the period 2005-2016. We estimate the following model:

$$Y_{iaw} = \alpha_a + \gamma_w + \beta FTS_{aw} + \theta X_{sw} + \lambda_a w + u_{iaw} \tag{3}$$

where Y_{iaw} is either an indicator for divorced (or separated) or an indicator for participation in the labor market for woman i in urban area a and year-quarter w. The variable FTS_{aw} is an indicator equal to one if by year-quarter w the urban area a has already started the implementation of the FTS program. Since each urban area is densely populated and can comprise several municipalities, most areas open their first FTS during the first year of program adoption, leaving us with little variation to estimate the effects of FTS availability. To avoid this issue, we define an urban area as implementing the program if the predicted FTS availability is above a threshold defined by the median FTS availability across women in urban areas with FTS.[21] The variables α_a, γ_w, X_{sw}, and $\lambda_a w$ are urban area fixed effects, survey wave fixed effects, an indicator equal to one if state s has unilateral divorce laws in wave w, and urban area-specific time trends, respectively; and u_{iaw} is an error term that we allow to be correlated within urban areas. In this case, β identifies the average effect of exposure to the extension in the school day in the urban area where a woman lives on the probabilities of divorce (or separation) and labor force participation.

Our empirical approach exploits the staggered adoption of the FTS program across municipalities. Estimation of Equations 2 and 3 using two-way-fixed-effects (TWFE) under ordinary least squares (OLS) produces estimates that are not robust to heterogeneous and dynamic effects over time and across groups (Goodman-Bacon, 2021; Sun and Abraham, 2021; de Chaisemartin and D'Haultfœuille, 2020). To overcome this concern, we obtain our estimates following the methodology developed by Borusyak et al. (2021). This method produces estimates that are robust to heterogeneous and dynamic treatment effects across municipalities and years under standard common-trends assumptions.

[21] The median predicted availability of FTS is 3.27%.

5 Results

5.1 Main Estimates

Panel (a) of Figure 2 presents the evolution of the predicted capacity of FTS in a municipality during the first year in which the first FTS was opened ($k = 0$) and for subsequent years ($k \in [1, 7]$). On average, during the first year in which a municipality implements the program, the predicted FTS availability increases by 18 percentage points. The effect reaches its maximum of 32 percentage points six years after, when the municipality had implemented the program for seven years.

Panel (b) of Figure 2 shows the estimated results of FTS on the average divorce rate. In the first two years of program implementation, the divorce rate is not affected by the (first) expansion of the FTS program relative to municipalities that did not implement it yet; the estimated effects are close to zero and statistically insignificant. However, in the third year of implementation ($k = 2$) the divorce rate significantly increases by 0.045 per 1,000 individuals.

The effects on divorce increase with every year of municipalities' exposure to the FTS program. This increasing effect reflects a combination of increased length of exposure (in years since the first opening of an FTS in a municipality) and the expansion in the capacity that occurs over time within municipalities implementing this program, as shown in Panel (a). After the municipalities have been providing extended school days for seven years and FTS availability increased (on average) by 32 percentage points, this large expansion in the availability of implicit childcare subsidies translates into an average increase in the divorce rate of 0.117 divorces per 1,000 individuals.[22]

To examine the validity of the underlying assumptions for identification, to the left of zero, Figure 2 shows estimates of placebo effects. In Panel (a), estimates of placebo effects

[22]Our main results rely on the estimation method proposed by Borusyak et al. (2021), which is one of several estimators available to address issues related to staggered treatments and heterogeneous effects. In Figure A.1 of the Online Appendix, we show that the estimates are robust to using the interaction-weighted estimator (Sun and Abraham, 2021).

are zero by construction because they measure the effects on the predicted capacity of FTS in a municipality before the program roll-out. Considering the estimates of the effects of the extension in the school day on divorce, in Panel (b), we find that placebo estimates are close to zero and statistically insignificant, which provides support to our identification strategy.

Finally, because the average duration of marriages in the sample of divorcing individuals is 13 years (with a median duration of 11 years), we use the municipality of residence of the wife at the moment of divorce to capture exposure to the FTS program. A potential concern is that endogenous migratory responses induced by the program may affect our estimates. We examine the extent to which FTS explains the number of divorces in which the municipality of residence of the wife differs from the municipality of marriage as a share of the total number of divorces in the municipality of residence. In Figure A.2 (presented in the Online Appendix), we show that FTS expansion is not correlated with changes in this share, indicating that endogenous migration is unlikely to bias our estimates.

5.2 The Role of Social Norms about Divorce, Marriage, and Female Employment

Our main estimates show that the divorce rate significantly increases due to the availability of implicit childcare subsidies. In this sub-section, we analyze the extent to which lack of access to free childcare constitutes a restriction on marriage dissolution in areas with different social norms.

Panels (a)-(e) of Figure 3 show the estimated effects of the availability of FTS on divorce rates separately for municipalities with traditional and non-traditional social norms about divorce, marriage, and female employment.[23] Results in panels (a)-(e) indicate that the estimated effects from the overall sample are mainly driven by municipalities with non-traditional social norms. That is, where people responded at lower rates that divorce could

[23]Recall from Section 3 that municipalities with traditional and non-traditional social norms are defined as having, respectively, a state-level average norm above and below the sample median of the municipality distribution.

never be justified, marriage was not an outdated institution, they did not want unmarried couples living together as neighbors, men should have more right to a job than women, and that being a housewife was as satisfying as having a paid job.[24] Our estimates suggest that while financial constraints can impose substantial restrictions on divorce in states where perceptions about marriage, divorce, and female employment are less traditional, childcare subsidies are unlikely to affect marriage stability in areas where traditional social norms are more prevalent.

Given that the estimated effects are consistently higher for municipalities with non-traditional social norms, a potential concern is that these differences are driven by differential exposure to FTS across municipalities with traditional and non-traditional social norms. However, the expansion in FTS availability is typically higher in municipalities with traditional social norms.[25] Therefore, the larger effects on the probability of divorce (or separation) are unlikely to be driven by higher intensity of treatment in municipalities with non-traditional social norms.

5.3 Effects by Household Composition

The estimates in Section 5.1 show that FTS availability has a positive and significant effect on municipality divorce rates. In this section, we rely on individual-level household survey data to examine how the effects on divorce (or separation) vary by household composition. In addition, we complement our analysis by examining effects on female labor force participation.

5.3.1 Childcare Availability and Divorce

To account for the fact that the extension in the school day is likely to particularly affect women with children, in Table 2, we allow our estimates to vary by the presence of school-

[24] In the Online Appendix (Table A.1), we show the point estimates and pre-treatment effects. Overall, of the eleven placebo estimates, only two are statistically significant at conventional levels, providing support in favor of the parallel trends assumption.

[25] Details on treatment intensity by area are provided in Online Appendix (Table A.1).

age children. We first estimate the effects on the probability of being divorced or separated for women living in households where the youngest individual is between 5 and 11 years old. This group of women are likely to be impacted by the extension of school days. The intuition of focusing on the age of the youngest child is that the extension in the school day for elementary school students is less likely to significantly affect the effective time endowment of women with school-age children but who, at the same time, perform caring activities for younger children. In Column 1, we find that FTS availability increases the probability of divorce (or separation) of this group of women by 2.4 percentage points.

The second group of women we consider are those who are unlikely to be directly affected by the extension in the school day. In this case, we exclude from the sample women living in households where the youngest child is in the potentially exposed age range (i.e., between 5 and 11 years old). In Column 2, we find that for these women, the effect on the probability of divorce or separation is close to zero and statistically insignificant.

5.3.2 Childcare Availability and Female Economic Independence

The availability of childcare subsidies can translate into increased bargaining power and economic independence for women, who are typically the primary caregivers for children. Increased female labor supply can ease couples' financial restrictions and facilitate divorce when partners cooperatively make decisions. Higher female labor force participation can also lead to divorce due to within-household conflict. Importantly, higher divorce risk can also lead to an increase in the labor force participation of women (Bargain et al., 2012). This implies that increases in labor force participation can act as a mechanism that facilitates divorce and as a response to increases in the risk of divorce and divorce rates.

In Table 2, Columns 3 and 4, we estimate the effects of the implicit subsidy to childcare on female labor force participation for the same subsamples presented in Section 5.3.1. Consistent with findings in other studies, longer school days lead to an increase in the participation of women in the labor market (Contreras and Sepúlveda, 2017; Padilla-Romo

and Cabrera-Hernández, 2019; Cabrera-Hernández and Padilla-Romo, 2020; Kozhaya and Martínez Flores, 2020; Berthelon et al., 2022). The effects are driven by women whose younger child is potentially exposed to the program. Our estimate in Column 3 indicates that the extension in the school day increased the probability of actively participating in the labor market by 3.5 percentage points for women with potentially exposed children.

6 Conclusion

This study provides the first causal evidence on the effects of implicit childcare subsidies, through longer school days, on marriage dissolution. We find that the availability of FTS in a municipality increases the divorce rate per 1,000 people by 0.045 two years after the first FTS opened and that the effect increases over time, reaching 0.117 divorces per 1,000 people after seven years. Our main estimates suggest that the availability of FTS led to 23,329 additional divorces between 2009 and 2016, or approximately 5 percent of the total number of divorces filed during this time frame.[26]

Mothers and other female family members spend a disproportionate fraction of their time caring for children. Longer school days provide them with an increase in their effective time endowment that results in improved opportunities to acquire individual income. As a result, the intra-household bargaining positions are likely to be modified. Our results show that longer school days led to higher divorce rates in areas with less traditional social norms in terms of divorce, marriage, and female employment, where lack of access to childcare was more likely to impose restrictions on marriage dissolution. We also document higher divorce or separation probabilities for mothers of potentially exposed children in comparison to non-mothers or women with younger children.

[26]These numbers are calculated using the estimated effects in Panel (b) of Figure 2.

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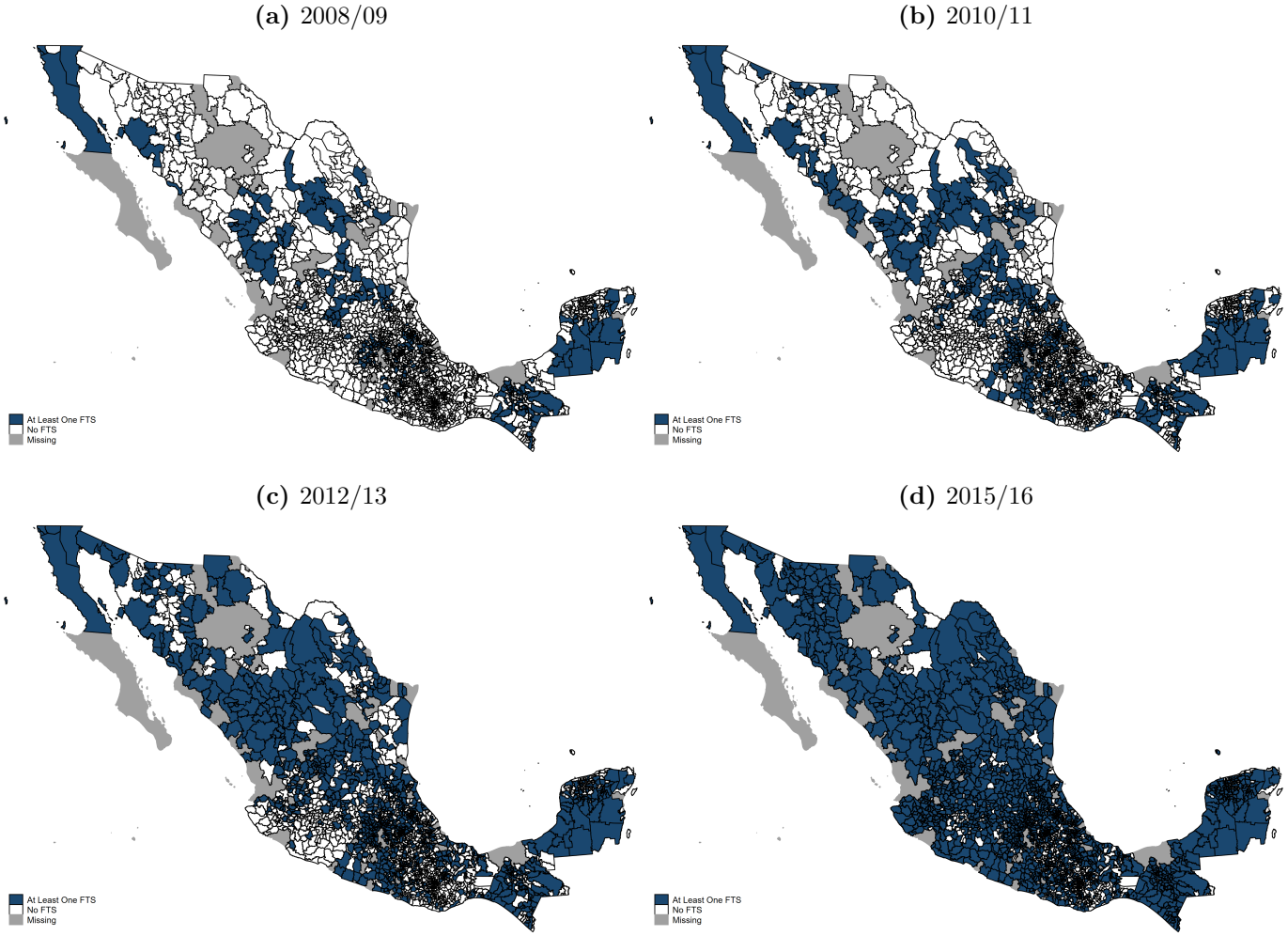
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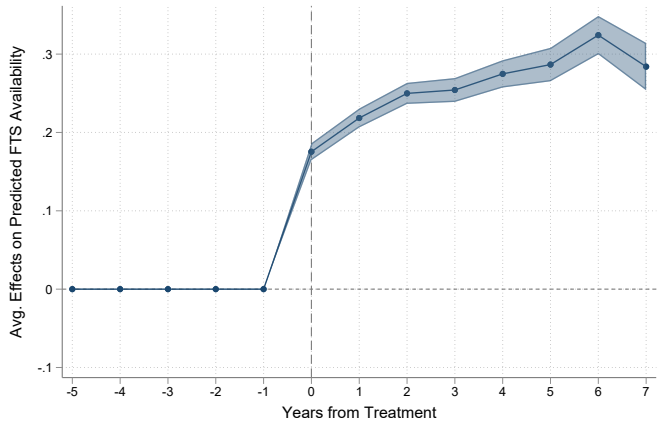
Figure 1: Municipalities with and without Full-time Schools by Academic Year



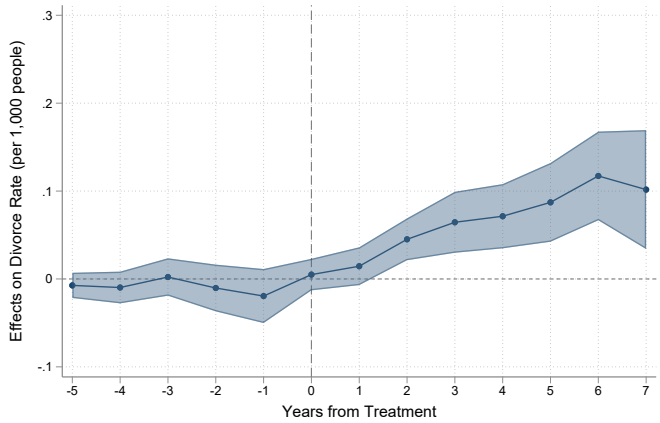
Notes: Each panel shows all 2,456 municipalities in Mexico and the staggered adoption of the Full-time Schools program. Overall, 231 municipalities had FTS in 2008/09, 522 in 2010/11, 942 in 2012/13, and 1,596 in 2015/16.

Figure 2: Estimated Effects on Municipalities' Predicted Full-time Schools Availability and Divorce Rates

(a) Average Effects on Predicted Full-time Schools Availability

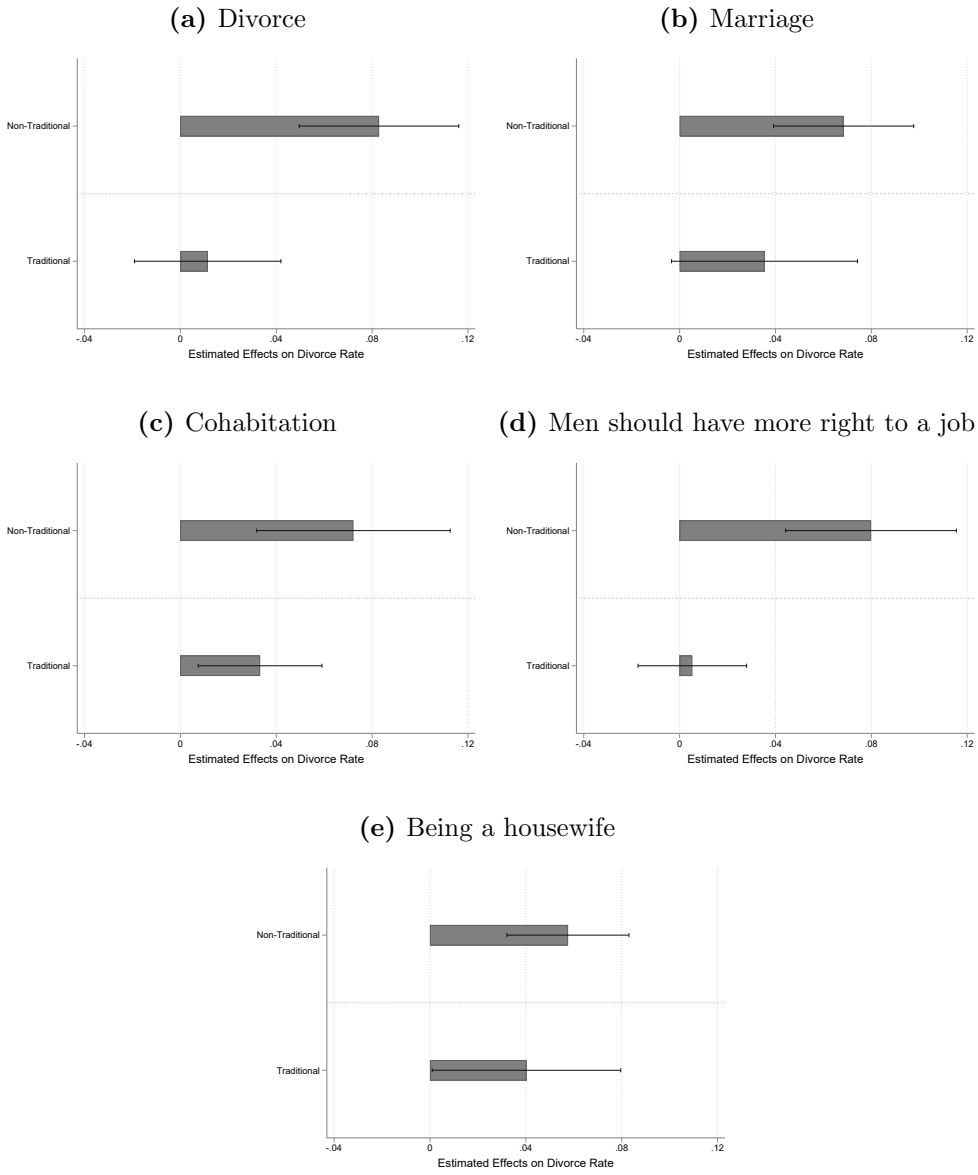


(b) Average Effects on Divorce Rates



Notes: Panel (a) shows the evolution of the predicted share of Full-time Schools seats in a municipality after its first expansion of the Full-time Schools program. Panel (b) shows the estimated effects of the availability of Full-time Schools on divorce rates. All estimates are obtained using the Borusyak et al. (2021)'s estimator and include municipality-fixed effects, academic year fixed effects, and municipality-specific linear time trends. Estimates control for the implementation of unilateral divorce laws. Coefficients and confidence intervals are estimated using the Stata command *did_imputation* and are plotted using the *event_plot* command. Standard errors for confidence intervals are clustered at the municipality level.

Figure 3: Estimated Effects on Divorce Rates: The Role of Social Norms about Divorce, Marriage, and Female Employment



Notes: All estimates are obtained using the Borusyak et al. (2021)'s estimator and include municipality-fixed effects, academic year fixed effects, and municipality-specific linear time trends. The outcome variable is the municipality level divorce rate. The estimates are presented separately for municipalities with non-traditional and traditional social norms, as defined in Section 3. Estimates control for the implementation of unilateral divorce laws. Coefficients and confidence intervals are estimated using the Stata command *did_imputation* and are plotted using the *event_plot* command. Standard errors for confidence intervals are clustered at the municipality level.

Table 1: Descriptive Statistics by Treatment Intensity

	Ever Treated		*Never Treated*		*Difference*
	Mean	Std Dev	Mean	Std Dev	
	(1)	(2)	(3)	(4)	(5)
Divorce Rate (pre-intervention)	0.257	(0.356)	0.125	(0.263)	-0.132***
Traditional Social Norm: Divorce	0.444	(0.497)	0.551	(0.497)	0.107***
Traditional Social Norm: Marriage	0.411	(0.492)	0.560	(0.496)	0.149***
Traditional Social Norm: Cohabitation	0.380	(0.485)	0.730	(0.444)	0.350***
Traditional Social Norm: Men should have more right to a job	0.431	(0.495)	0.612	(0.487)	0.181***
Traditional Social Norm: Being a housewife	0.443	(0.497)	0.600	(0.490)	0.157***
Population (in 1,000)	42.300	(111.882)	8.177	(11.926)	-34.123***
Municipality with Unilateral Divorce Law	0.457	(0.498)	0.346	(0.476)	-0.111***

Notes: Divorce rates are reported for 2000-2007, prior implementation of the Full-time Schools Program. We classify municipalities as exhibiting traditional social norms in a particular dimension when the value of its measure is above the sample median of the municipality distribution. Municipality with Unilateral Divorce Law is an indicator equal to one if the municipality is located in a state that passed unilateral divorce laws by 2016. Never Treated are municipalities that were not covered by the FTS program by 2016 (N=670). Ever Treated are municipalities that implemented the program by 2016 (N=1,596). Data sources: divorce data from INEGI; Information on Social Norms was obtained from the 2005 World Values Survey carried out in Mexico; Population from CONAPO. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.

Table 2: Estimated Effects on Divorce and Labor Force Participation by Household Composition

	Divorce or Separation		*Labor Force Participation*	
	(1)	(2)	(3)	(4)
FTS × post	0.024***	0.002	0.035***	0.011
	(0.005)	(0.002)	(0.006)	(0.007)
Pre-trend	0.001	-0.005*	-0.017	0.000
	(0.006)	(0.003)	(0.012)	(0.006)
N	229904	829914	229847	829779

Notes: Each column represents a different regression. All estimates are obtained using the Borusyak et al. (2021)'s estimator and include urban area fixed effects, year-quarter fixed effects, and urban area-specific time trends. Estimates control for the implementation of unilateral divorce laws. Women 18 years and older. Columns 1 and 3: Households where the youngest individual is between 5 and 11 years old. Column 2 and 4: Exclude households in which the youngest individual is between 5 and 11 years old. The outcome variable in Columns 1 and 2 is one if the individual is divorced or separated, and 0 otherwise. The outcome variable in Columns 3 and 4 is one if the individual participates in the labor market, and 0 otherwise. ENOE weights are used in the regressions. Coefficients are estimated using the Stata command *did_imputation*. Standard errors are clustered at the urban area level. *, **, *** Significant at the 10%, 5%, and 1% levels, respectively.