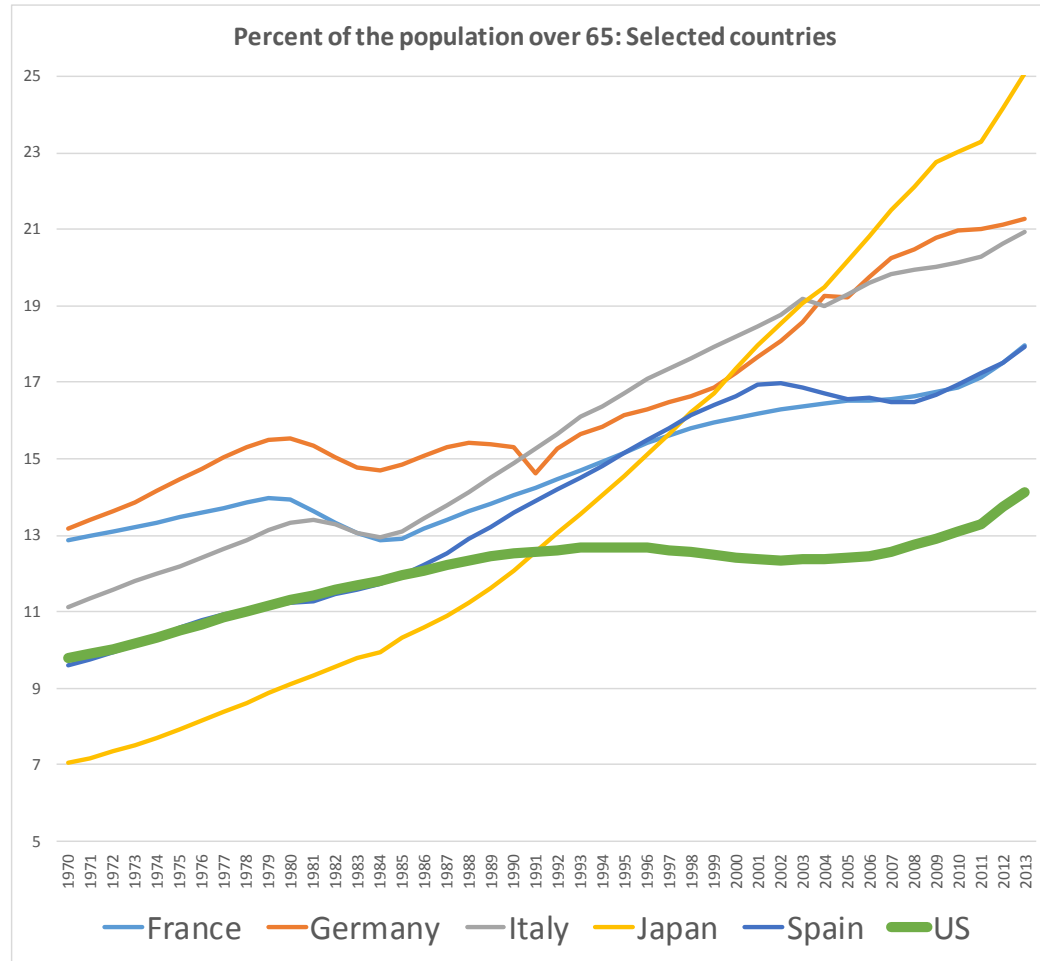


# Immigration and Fertility

Emilio A. Parrado  
Department of Sociology  
University of Pennsylvania

# U.S. Relative comparative advantage in population aging



# The role of immigration

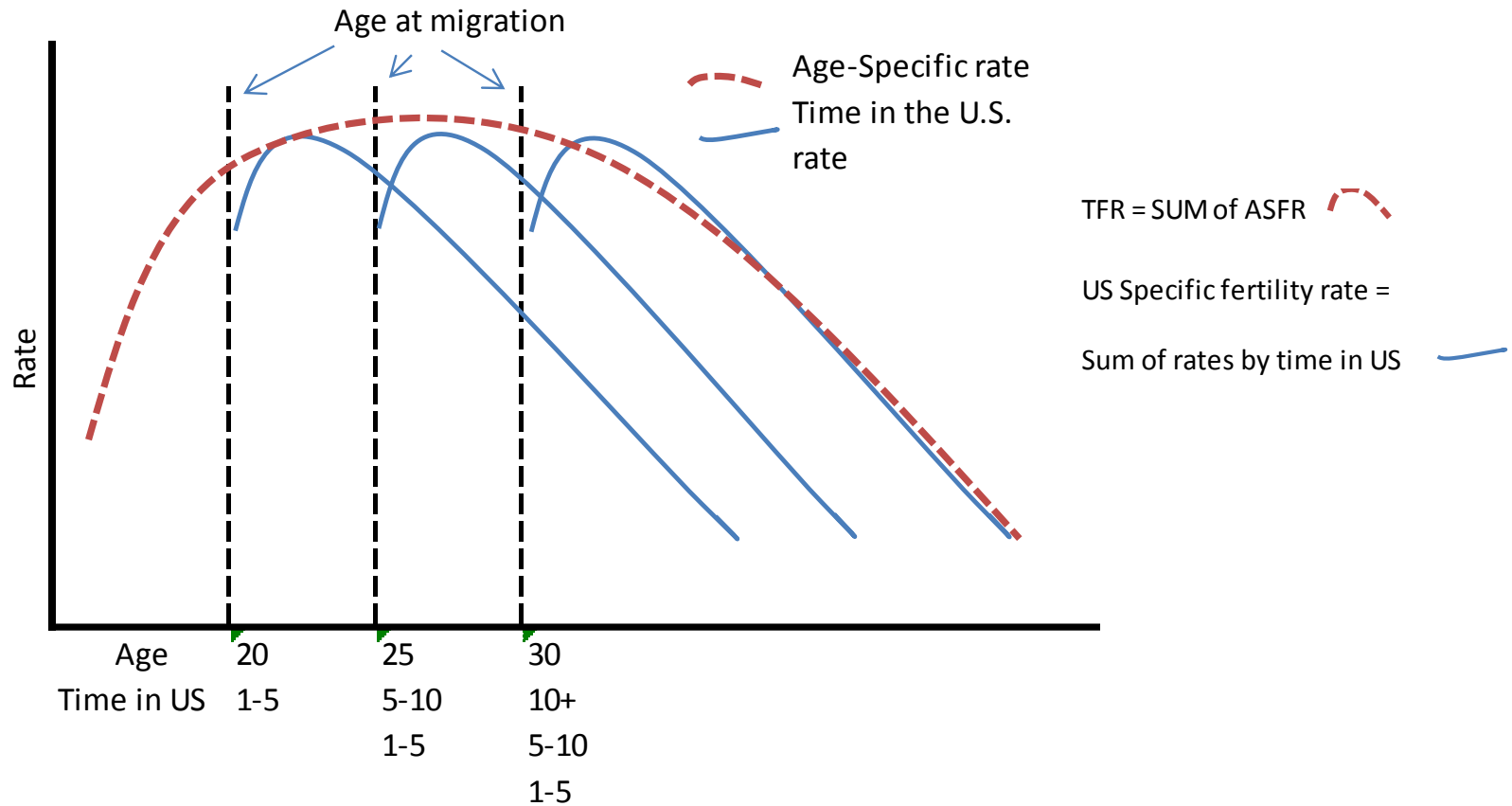
- Immigration a main contributor to growth and rejuvenation of the U.S. population
- Two sources
  - In-migration
  - Fertility
- The fertility contribution of immigration has been overlooked
- Demographers have historically treated immigration and fertility rates as separate processes
  - There is accumulated evidence that they are not independent
  - When immigration rates go up – fertility rates go up and vice versa

# Fertility of immigrants

- Immigrant women a complex group to study in terms of fertility
  - Immigrant women split their fertility between origin and destination
    - Children born abroad enter as immigrants (if brought to the U.S.)
    - Children born in the U.S. – the fertility specific contribution of immigration
- Immigration also shapes fertility *timing* – migration is a disruptive event, and childbearing common soon after arrival
  - Results in serious distortions to period estimates of fertility like the Total Fertility Rate (TFR)
  - The assumptions behind TFR do not apply to immigrants

# Illustration

**Figure 1: Simulation of fertility rates by age at migration and by time in the U.S.**



# The Hispanic case

- That in-migration pushes period estimates of fertility (TFR) up is evident among Hispanics but it also applies to other groups

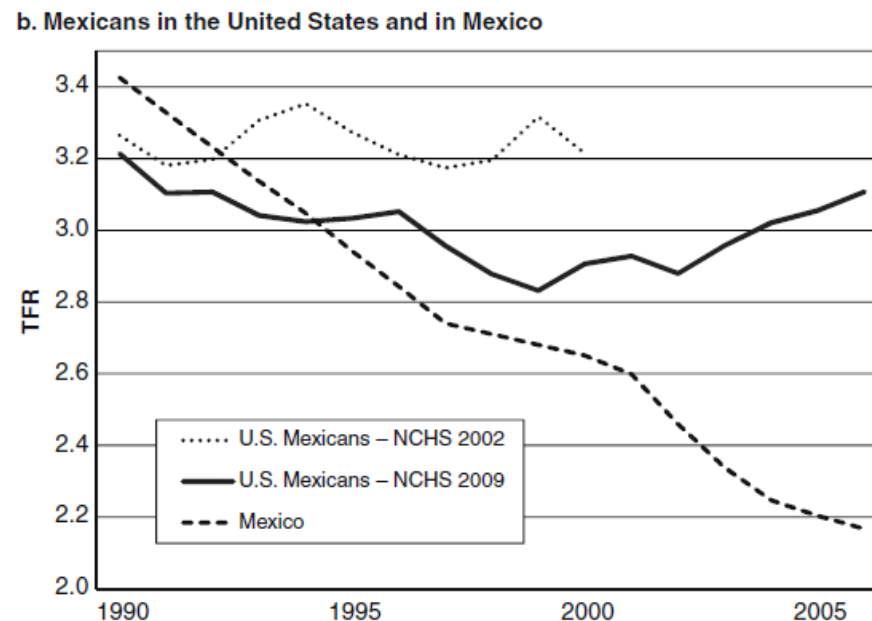


Fig. 1 Vital statistics estimates of the total fertility rate for Hispanics in the United States and in countries of origin, and for Mexicans in the United States and in Mexico

# The high rate is only among immigrants

1068

E.A. Parrado

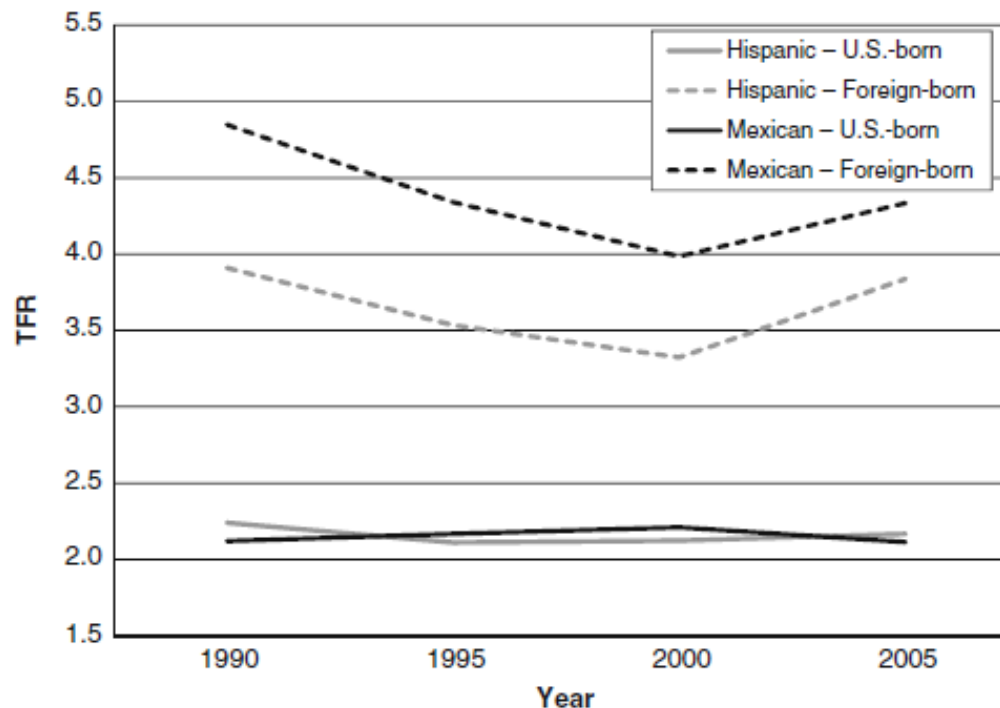


Fig. 2 Vital statistics estimates of the total fertility rate for Hispanics/Mexicans in the United States, by nativity. Birth data are from vital statistics ([http://www.cdc.gov/nchs/data\\_access/Vitalstatsonline.htm](http://www.cdc.gov/nchs/data_access/Vitalstatsonline.htm)). Population estimates are from the 1990 and 2000 censuses and the 2005 American Community Survey

# Cohort-TFR and Period-TFR disparity

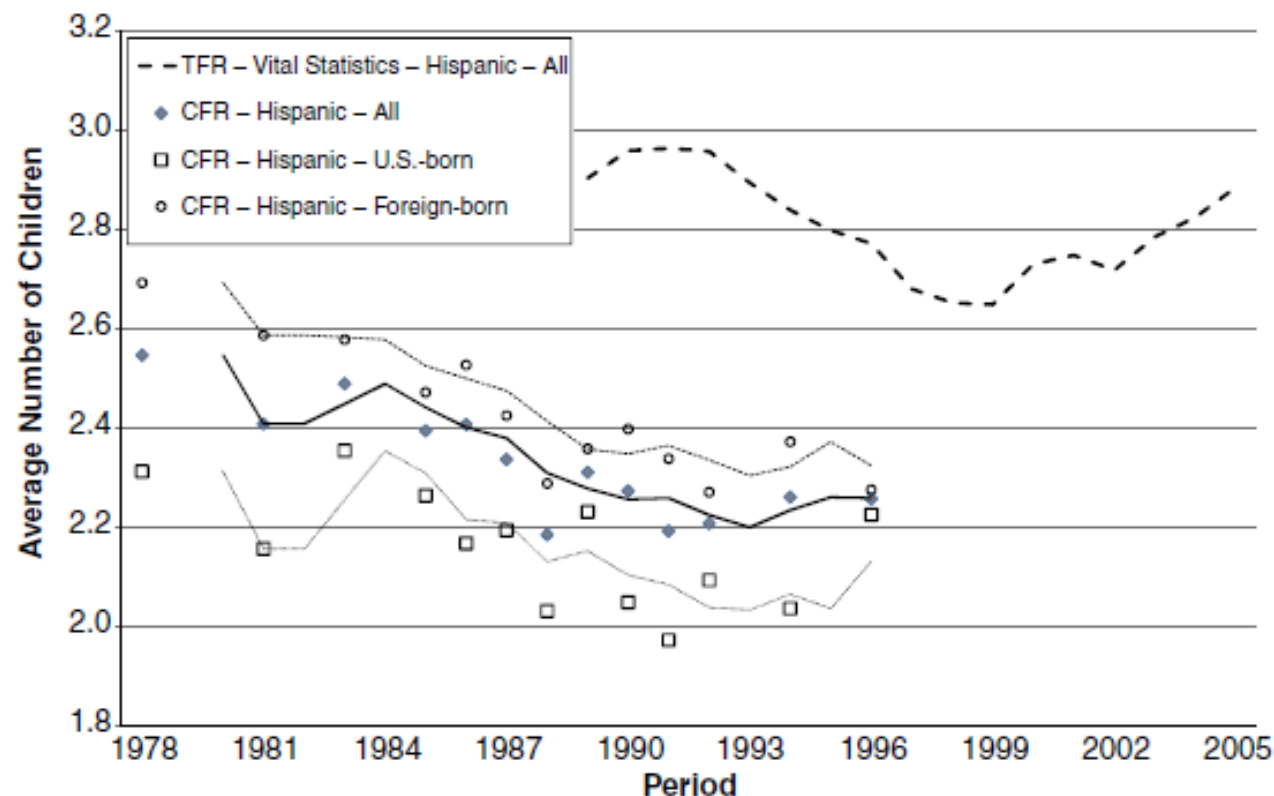


Fig. 7 CFRs for Hispanic women (ages 35–39 and 40–44) and reported TFRs



# Implications for declining fertility rates with the 2007 recession

NOVEMBER 29, 2012

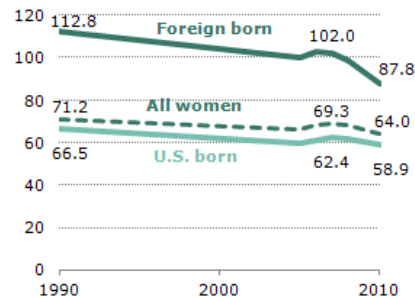


## U.S. Birth Rate Falls to a Record Low; Decline Is Greatest Among Immigrants

BY GRETCHEN LIVINGSTON AND D'VERA COHN

### Foreign-born Women Led Recent Decline in Birth Rates ...

*Births per 1,000 women ages 15 to 44*

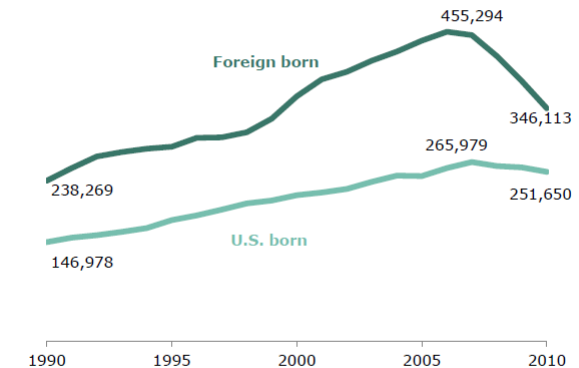


Source: Statistics calculated using National Center for Health Statistics, U.S. Census and American Community Survey data (see Methodology)

PEW RESEARCH CENTER

### Births to Mexican Women, by Nativity, 1990-2010

*Number of births to mothers who are ...*



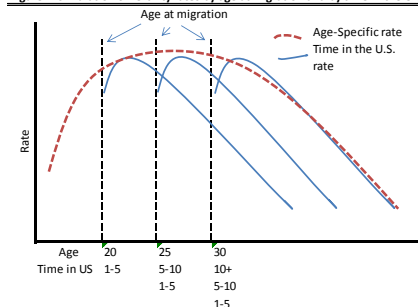
Source: National Center for Health Statistics (see Methodology)

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- Lots of speculation about Hispanic and immigrant fertility

# Compositional change

Figure 1: Simulation of fertility rates by age at migration and by time in the U.S.



## Foreign born representation among women 14-44 before, immediately after, and after the recession

### Percent in the total U.S. population

2004-08	12.1
2009-13	12.3
2014-17	12.3

### Racial/Ethnic composition of the foreign born population

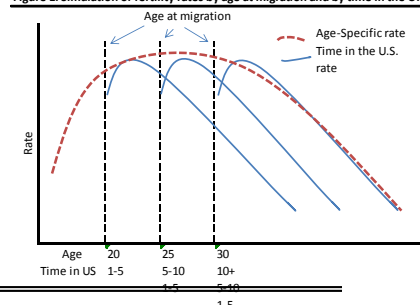
	NH-White	Hispanic (N-M)	Mexican	NH-Black	Asian (N-C)	Chinese	other
2004-08	15.5	18.6	32.2	7.9	18.7	5.6	1.5
2009-13	14.5	19.4	30.1	8.1	20.1	6.0	1.8
2014-17	14.4	20.5	25.5	8.8	21.6	7.1	2.1

### Percent foreign born within racial/ethnic groups

	NH-White	Hispanic (N-M)	Mexican	NH-Black	Asian (N-C)	Chinese
2004-08	2.9	41.3	39.7	6.9	64.2	68.0
2009-13	3.0	39.0	32.3	7.1	61.0	63.7
2014-17	3.1	37.1	25.6	7.7	58.6	62.2

# Composition change: Time in U.S.

Figure 1: Simulation of fertility rates by age at migration and by time in the U.S.



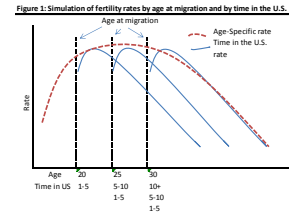
## Composition of the foreign born population according to time in the U.S. and race/ethnicity

Years in U.S.	Total foreign born			NH-White			Hispanic			Mexican		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17
1-4	26.1	22.6	25.7	29.6	29.0	33.1	23.2	15.5	17.2	22.3	11.9	10.0
5-9	28.8	25.6	21.0	30.1	24.6	21.1	29.2	25.8	17.8	29.6	24.7	15.2
10-14	20.2	25.1	22.3	20.0	24.5	20.1	20.6	27.6	25.6	21.3	29.4	27.3
15-19	15.1	15.0	18.7	12.6	13.8	16.6	16.4	16.7	23.1	16.8	18.4	27.2
20-24	7.2	9.2	9.1	5.4	6.7	7.1	7.7	11.4	12.0	7.3	12.7	14.9
25+	2.7	2.5	3.3	2.3	1.6	2.1	2.9	3.0	4.4	2.8	3.0	5.4

	NH-Black			Asian			Chinese		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17
1-4	26.5	25.3	27.2	29.4	31.3	34.3	26.9	34.2	39.8
5-9	29.4	26.6	25.1	21.1	25.4	24.8	27.9	23.0	24.2
10-14	18.9	24.3	21.0	20.0	21.0	18.5	21.0	21.4	15.3
15-19	14.0	13.2	16.6	14.4	13.1	13.7	15.6	12.8	13.3
20-24	8.2	7.9	7.2	6.7	7.1	6.4	6.1	6.5	5.6
25+	3.1	2.7	3.0	2.5	2.1	2.3	2.5	2.1	1.9

# Implications for fertility rates: TFR and US-TFR



## All Hispanic Women

Age	Total			Native			Foreign-Born			Yrs. in U.S.	Foreign-Born		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17		2004-08	2009-13	2014-17
14-19	4.1	3.0	1.9	3.6	2.9	1.8	11.4	8.0	4.8	0-4	13.5	11.8	8.8
20-24	13.8	10.8	8.4	12.2	9.9	8.0	17.9	15.5	11.1	5-9	12.6	12.4	11.0
25-29	13.6	12.5	10.8	12.1	10.9	10.0	15.5	15.3	13.3	10-14	9.4	8.8	8.2
30-34	10.9	10.3	10.0	9.6	9.2	9.5	12.0	11.5	10.8	15-19	5.9	5.9	6.0
35-39	6.2	6.2	6.1	5.1	5.3	5.3	6.9	6.8	6.8	20-24	3.4	3.6	3.8
40-44	2.1	2.3	2.4	1.7	1.9	2.0	2.5	2.6	2.7	25-30	1.3	2.0	2.0
<b>TFR</b>	2.6	2.3	2.0	2.3	2.0	1.8	3.4	3.1	2.5	<b>US-TFR</b>	2.3	2.2	2.0
Percent decline			0.6			0.4			0.9				0.3
			22.5			18.0			<b>26.3</b>				<b>13.5</b>

## Mexican Women

Age	Total			Native			Foreign-Born			Yrs. in U.S.	Foreign-Born		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17		2004-08	2009-13	2014-17
14-19	4.6	3.4	1.9	3.9	3.2	1.9	14.7	11.8	6.2	0-4	15.8	14.7	10.7
20-24	15.3	11.8	9.0	13.3	10.8	8.8	20.4	17.9	12.8	5-9	14.0	13.6	12.0
25-29	14.6	13.2	11.3	12.7	11.6	10.5	16.9	16.4	14.0	10-14	10.2	9.4	8.4
30-34	11.1	10.5	10.2	9.6	9.1	9.6	12.3	12.2	11.1	15-19	6.5	6.3	6.1
35-39	6.4	6.1	6.1	4.9	5.1	5.5	7.4	7.0	6.8	20-24	3.5	3.8	3.9
40-44	2.2	2.4	2.3	1.8	1.9	1.9	2.4	2.7	2.6	25-30	1.0	2.0	2.0
<b>TFR</b>	2.7	2.4	2.1	2.4	2.1	1.9	3.9	3.5	2.7	<b>US-TFR</b>	2.6	2.5	2.2
Percent decline			24.9			17.9			<b>28.9</b>				<b>15.6</b>

# Illustration: Hispanics

Figure 1: Fertility rates by time in the U.S. and age at migration **BEFORE** the recession

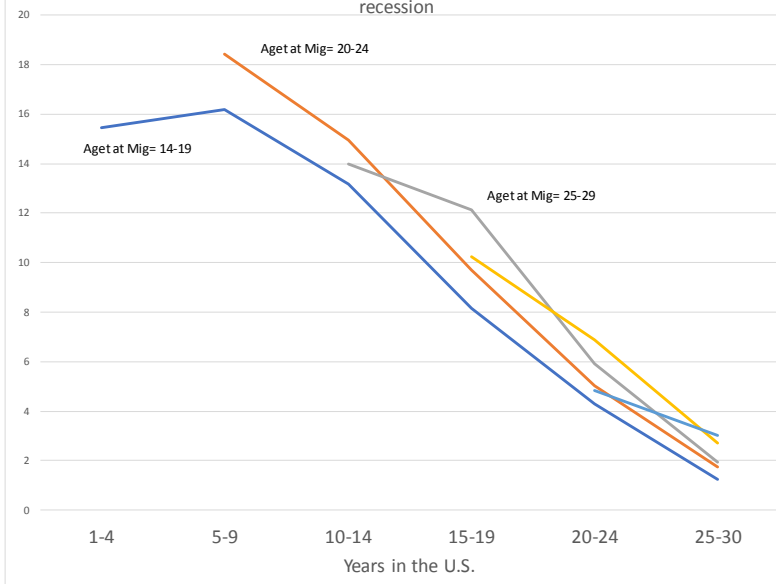


Figure 2: Age specific fertility rates **BEFORE** the recession

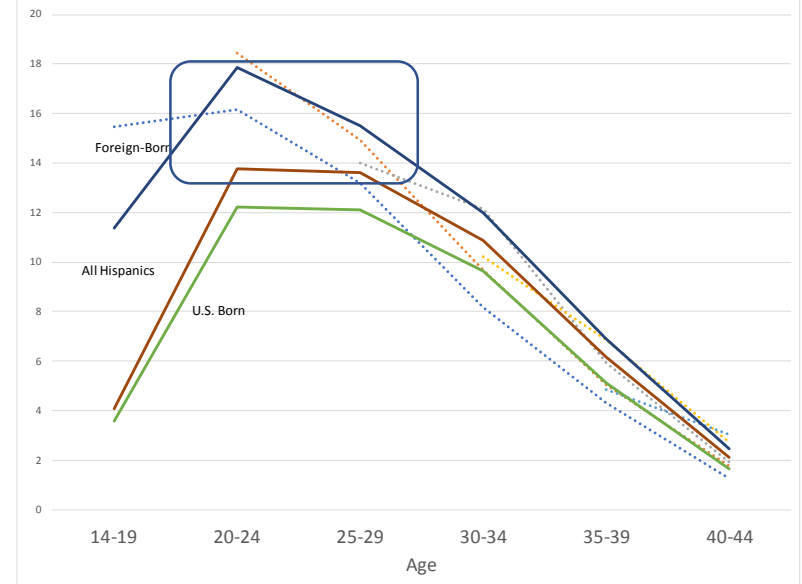


Figure 3: Fertility rates by time in the U.S. and age at migration **AFTER** the recession

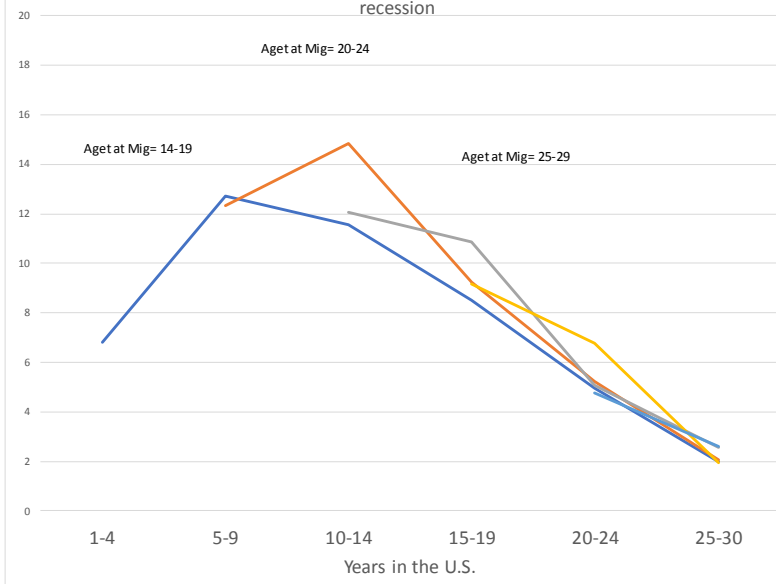
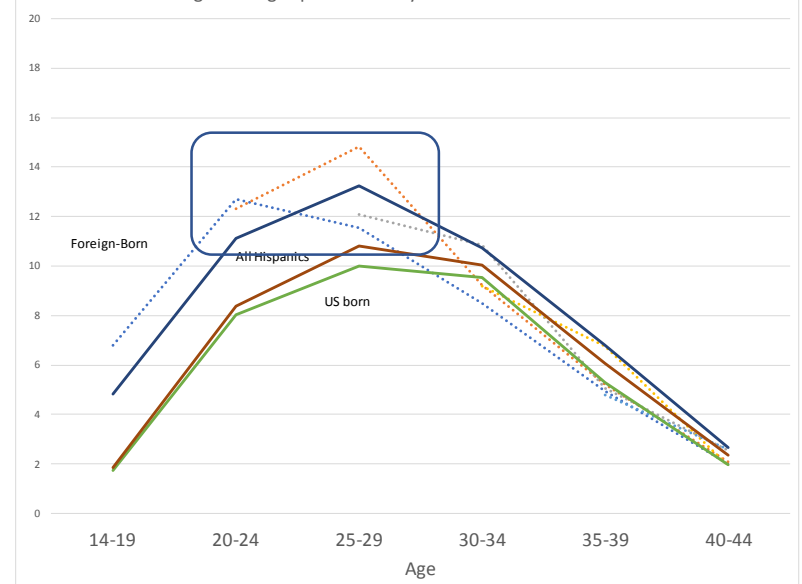


Figure 4: Age-specific fertility rates **AFTER** the recession



# Conclusions

- Immigrants contribute to the U.S. population through net migration and fertility
- The level of U.S. fertility is strongly connected to immigration rates
- The close association between the timing of migration and childbearing implies that periods with large inflows associated with higher fertility
- In contrast, reduction in immigration flows will lower fertility rates
- Clear evidence of the connection as applied to fertility rates before and after the recession
  - Fertility decline not only the outcome of foregone or postponed fertility but also of the reduction in immigration
- Significant reductions in immigration have a double negative impact on U.S. population growth and aging
- Thinking about a summary implication, continued immigration increases the TFR by around 10-15 percent (without translating into larger family size)

# Implications for fertility rates: TFR and US-TFR

## White women

Age	Total			Native			Foreign-Born			Yrs. in U.S.	Foreign-Born		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17		2004-08	2009-13	2014-17
<b>TFR</b>	2.0	1.8	1.7	1.9	1.8	1.7	2.1	2.1	2.0	<b>US-TFR</b>	1.7	1.9	1.9
Percent decline			11.3			11.5			4.1				-7.2

## Black women

Age	Total			Native			Foreign-Born			Yrs. in U.S.	Foreign-Born		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17		2004-08	2009-13	2014-17
<b>TFR</b>	2.1	2.0	1.8	2.1	1.9	1.7	2.7	2.7	2.8	<b>US-TFR</b>	2.2	2.4	2.5
Percent decline			13.9			16.1			-1.7				-11.3

## Asian women

Age	Total			Native			Foreign-Born			Yrs. in U.S.	Foreign-Born		
	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17	2004-08	2009-13	2014-17		2004-08	2009-13	2014-17
<b>TFR</b>	1.9	1.8	1.7	1.7	1.5	1.4	2.1	2.1	1.9	<b>US-TFR</b>	1.9	2.0	1.8
Percent decline			0.2			0.2			0.2				0.1
			11.4			12.7			9.5				7.2

# Illustration: NH-Whites

Figure 1: Fertility rates by time in the U.S. and age at migration BEFORE the recession

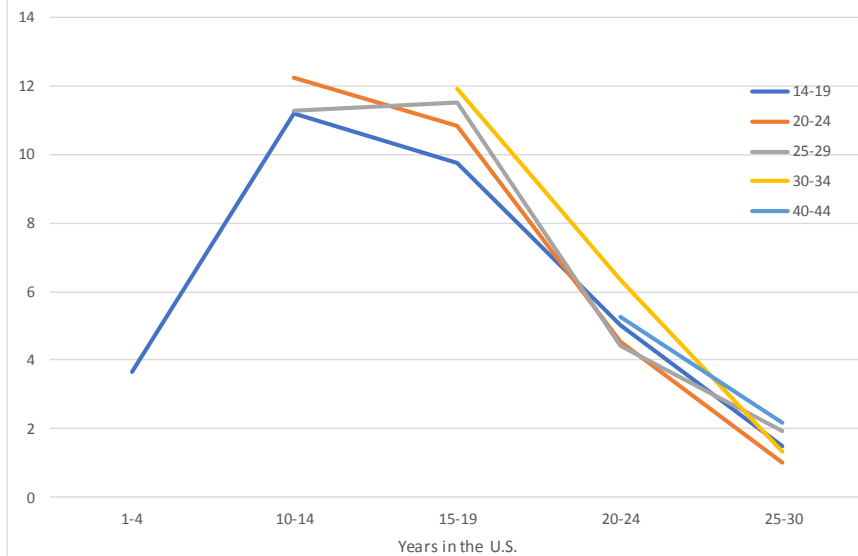
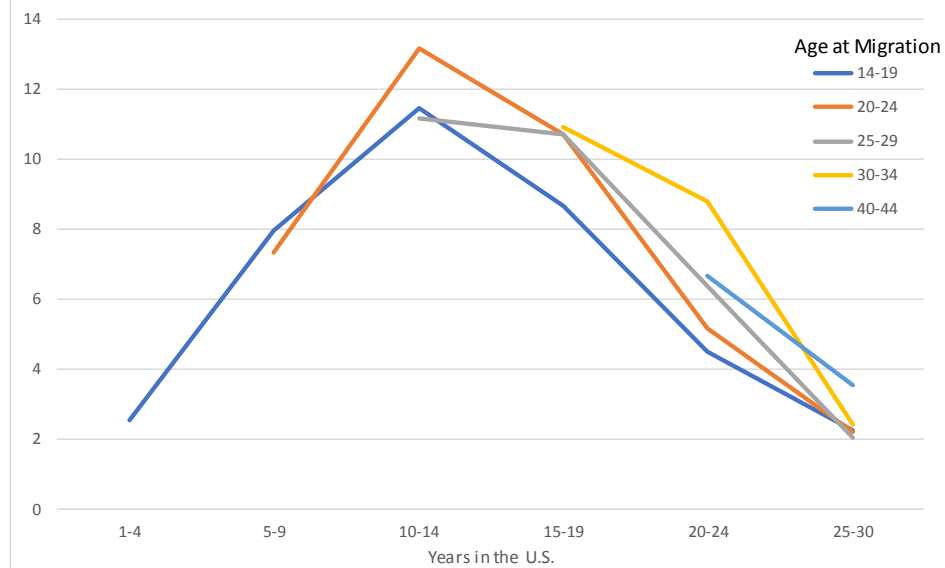


Figure 2: Fertility rates by time in the U.S. and age at migration AFTER the recession





# Extending the Cohort Component Method

$$P(t) = P(t - 1) + B(t) - D(t) + M(t)$$

$$P(t) = P(t - 1) + B_{Natives}(t) + B_{Foreign}(t) - D(t) + M(t)$$

$$B_{Natives}(t) = \sum_m ASFR_{Natives}(t, m) \times P_{Natives}(t, m)$$

$$B_{Foreign}(t) = \sum_a \sum_x USFR(t, a, x) \times P_{Foreign}(t, a, x)$$