

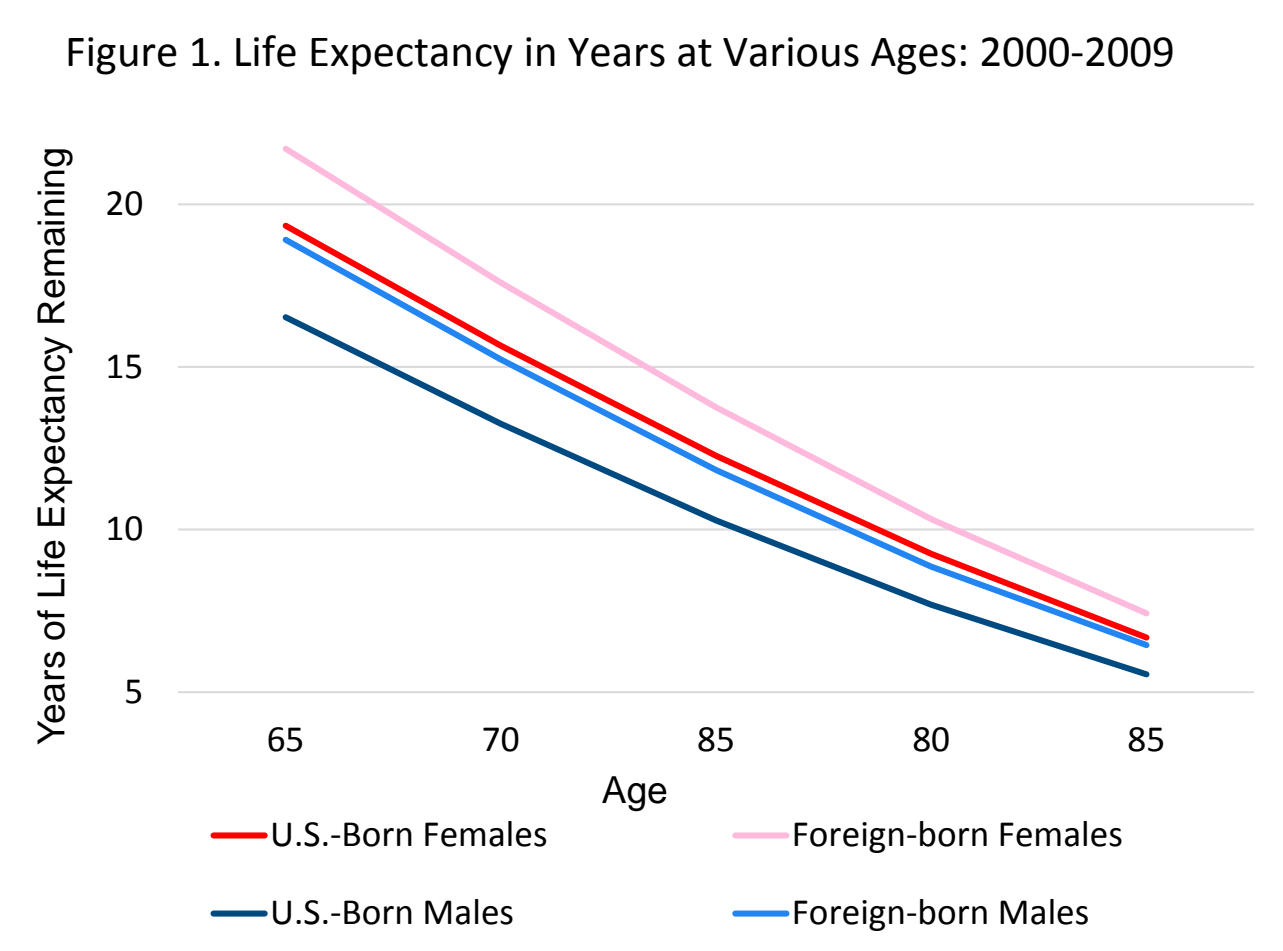
# Implementing Hispanic Life Tables to Estimate Foreign-Born Emigration

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## BACKGROUND

The **U.S. Census Bureau's Population Estimates Program** measures the annual flow of foreign-born emigration to estimate net international migration (NIM). A modified residual method is applied to American Community Survey<sup>1</sup> (ACS) data to estimate emigration rates for the foreign born by specific country of birth and duration groups. In the current method, foreign-born population groups are survived forward using U.S. total life tables developed by the National Center for Health Statistics (NCHS), regardless of race, ethnicity, and foreign-born status. This may be problematic since **the foreign born experience a mortality advantage relative to their native-born counterparts.**



**Figure 1** depicts nativity-specific life tables for the 65 plus population derived by Mehta et al. 2016. Both foreign-born men and women have a mortality advantage at age 65 that continues throughout the oldest ages. This mortality advantage is present at almost every age from birth, which suggests that using nativity-specific life tables to survive the foreign-born population may result in a more accurate emigration and NIM estimate.

Source: Mehta, NK, IT Elo, M Engelman, DS Lauderdale, BM Kestenbaum. 2016 "Life Expectancy Among U.S.-born and Foreign-Born Older Adults in the United States: Estimates From Linked Social Security and Medicare Data." *Demography* 53(4): 1109-34. Note: Figure is based on data pooled between 2000 and 2009.

## RESEARCH HYPOTHESES

Nativity-specific life tables are not currently available<sup>2</sup>, but using Hispanic life tables to survive the Hispanic foreign-born population would improve the method used to generate NIM estimates, since Hispanic life tables more accurately reflect the mortality experience of the Hispanic foreign-born population than U.S. total life tables.

This research addresses the following hypotheses:

- ❖ Using Hispanic sex-specific life tables to survive ahead the Hispanic foreign-born population will cause an increase in the foreign-born expected population.
- ❖ The largest increase in expected population will occur in the Mexican-born and Other groups since these groups are predominately Hispanic<sup>3</sup>.
- ❖ This methodological change will cause a decrease in total NIM due to an increase in emigration for Hispanics.

<sup>1</sup> We refer to this as the ACS-to-ACS Residual Method.  
<sup>2</sup> Nativity-specific life tables are currently being constructed in a collaboration by NCHS and the U.S. Census Bureau.  
<sup>3</sup> Asian and Canadian/European born may change slightly since the most recently available U.S. total and Hispanic life tables are from 2014. Also, small numbers of Asians and Canadian/European foreign-born may indicate being Hispanic.

## THE RESIDUAL METHOD

The residual method measures cohort change in the foreign-born population between time 1 (T1) and time 2 (T2). This method uses ACS data to measure foreign-born population and immigration and NCHS life tables to measure deaths. Cohort change not accounted for by deaths and immigration is assumed to be emigration. Foreign-born emigration is calculated separately for seven mutually exclusive groups. (See Figure 2).

Figure 2. Deriving Emigration Rates Using the ACS-to-ACS Residual Method

Cohort	Foreign-born Emigrant Groups	Duration in U.S. (years)
1	Recent Mexican-born male	< 10
2	Recent Mexican-born female	< 10
3	Non-recent Mexican	10 +
4	Recent Canadian and European	< 10
5	Recent Asian-born	< 5
6	Recent Other	< 10
7	Non-recent Other	10 +

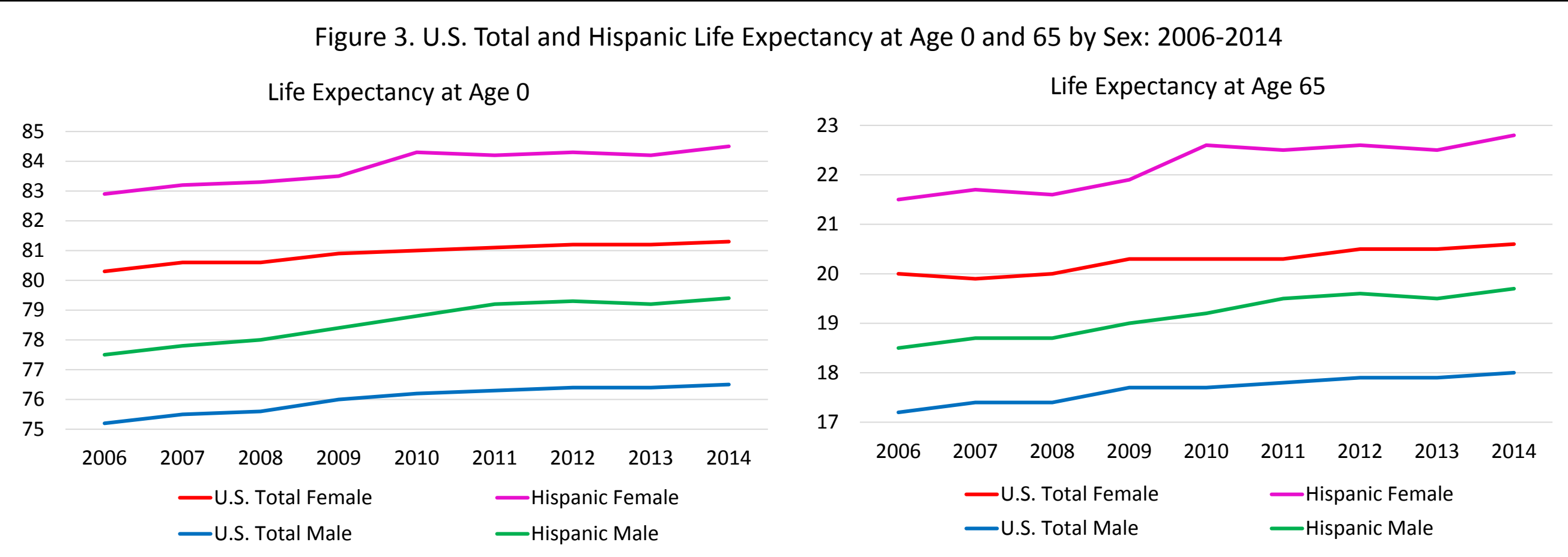
Observed cohort (T1) × Survival rates from life tables = Expected cohort (T2)

Expected cohort (T2) -- Observed cohort (T2) = Emigration estimate for the cohort (T1-T2)

## DATA AND ANALYSIS

We simulate Vintage 2017 (V2017) estimates by including NCHS Hispanic life tables. The expected population at T2 for each group is calculated using NCHS Hispanic life tables to survive forward foreign-born Hispanics, and U.S. total life tables for non-Hispanics. We compare the differences in the expected T2 populations between the simulation and V2017 estimates.

## RESULTS



Source: NCHS Life Tables 2006-2014 [https://www.cdc.gov/nchs/products/life\\_tables.htm](https://www.cdc.gov/nchs/products/life_tables.htm)

**Figure 3** shows that Hispanic men and women have higher life expectancies at age 0 and age 65. From 2006 to 2014 life expectancy disparities increase slightly, which creates larger differences in ratios used to survive ahead each foreign-born emigrant group.

## NUMERIC DIFFERENCES

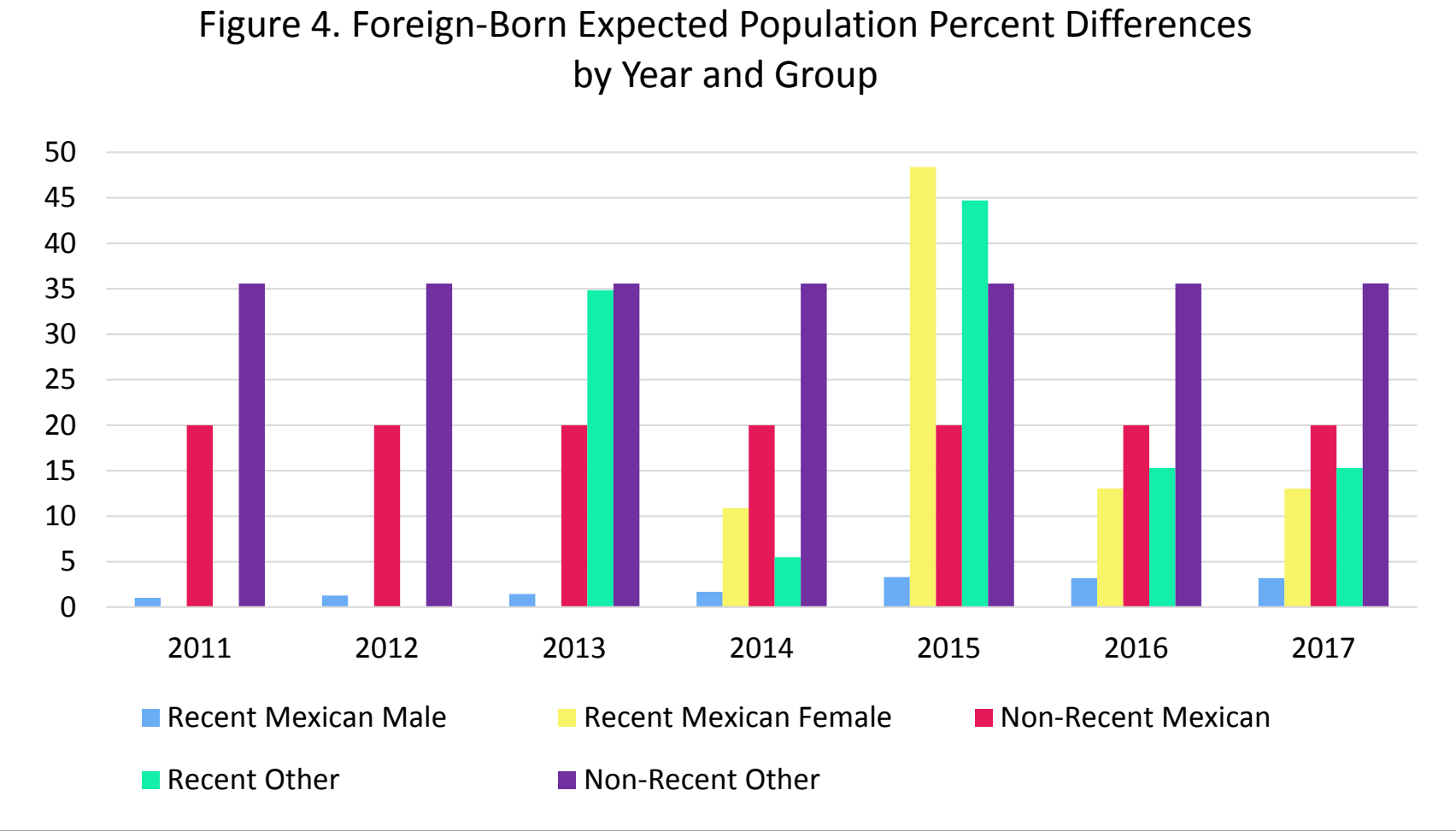
Table 1. Foreign-Born Expected Population Numeric Differences by Year and Group

Year	Recent Mexican Male	Recent Mexican Female	Non-Recent Mexican	Recent Canadian and European	Recent Asian	Recent Other	Non-Recent Other	Total
2010	216	183	2,216	5	1	0	2,081	4,702
2011	888	0	9,455	18	2	0	8,703	19,066
2012	805	0	10,290	19	3	0	9,127	20,244
2013	763	0	10,660	21	4	1,594	9,420	22,462
2014	723	649	11,030	23	6	1,646	9,632	23,709
2015	692	613	11,460	23	6	1,641	9,939	24,374
2016	667	592	11,560	28	5	1,733	10,190	24,775
2017	579	522	11,830	27	5	1,797	10,300	25,060
<b>Total</b>	<b>5,333</b>	<b>2,559</b>	<b>78,501</b>	<b>164</b>	<b>32</b>	<b>8,411</b>	<b>69,392</b>	<b>164,392</b>

Source: U.S. Census Bureau, Population Division, Vintage 2017 and Simulated Estimates. Note: Numeric differences are calculated subtracting the simulated expected populations calculated by using only US total life tables from the Vintage 2017 expected populations derived using Hispanic life tables method. Numbers are shown up to 4 significant digits.

**Table 1** shows using Hispanic life tables increases expected T2 populations for expected groups, resulting in an increase of 164,392 emigrants between 2010 and 2017. Non-recent Mexicans have the largest numeric increase over time, followed by non-recent Others. Non-recent groups have the largest increases in expected population because they tend to be older than recent groups. Additionally, the Other category shows large expected differences, since a majority of that group is from Central/South America and indicates being Hispanic.

## PERCENT DIFFERENCES



Source: U.S. Census Bureau, Population Division, Vintage 2017 and Simulated Estimates

**Figure 4** shows percent differences in foreign-born expected populations, which vary by duration and group. **Increases in the expected populations for both non-recent Mexicans and non-recent Others are consistent from 2010 to 2017 (20% and 36%, respectively).** Of recent groups, recent Other has the largest percent increases in the expected population. Increases in 2015 reflect an ACS year of entry question change that resulted in increased Hispanic population.

## CONCLUSIONS

- ❖ Utilizing Hispanic life tables results in a cumulative increase in emigration of 164,392, which decreases NIM by 164,392.
- ❖ Next steps include creating nativity-specific life tables that will best reflect life expectancy trends of the foreign-born population by region. The Population Estimates Program is currently working with NCHS to create these tables.
- ❖ These results will inform our ongoing methodological research to improve our emigration estimation methodology.



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