The Fertility Of Immigrants from Muslim Majority Countries: Evidence of Assimilation Across Decimal Generations

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Abstract

This paper investigates the differential fertility of immigrants from Muslim majority countries across regions by age of arrival to the United States. We discover patterns linked to fertility in the country of origin, including extremely high fertility for immigrants from Sub-Saharan Africa. We further examined the extent to which Muslim context played a role in this high level of fertility by comparing the fertility of immigrants from Christian majority countries in Sub-Saharan Africa to that of immigrants from Muslim majority countries. Our evidence suggests that educational selection plays a significant role in explaining the differences in immigrant fertility from the different religious contexts of this region.

Introduction

Policy-makers and the public alike are concerned with the assimilation of immigrants. Of particular interest are Muslims living in the United States. In the 9 years after September 11, 2001, the United States started two wars in Muslim countries. The tension between the Muslim world and the United States plays out not only in other countries, but in the form of hostility towards Muslim immigrants within the US. As with any immigrant group, people often wonder if Muslim Americans are assimilating as quickly as past generations of immigrants. However, because of the current political climate, Muslim immigrants are experiencing a unique historical moment that makes this group particularly interesting to study. Past studies examined various forms of assimilation and have particularly focused on Mexican Americans. This paper investigates one form of assimilation, total fertility rates (TFRs), for immigrants from Muslim majority countries.

Immigrants from Muslim countries now represent an increasing share of immigrants to the United States. Since the wave of new immigration, an increasing share of immigrants has been arriving from Asia, and more recently from Africa. In 2009, the DHS reported that 11.2% of all immigrants who gained legal permanent resident status were from Africa. This represents a twofold increase since 2000. The proportion of immigrants from Asia has also increased in this time period, and represented 36.6% of legal permanent residents in 2009 (DHS 2009). Asia and Africa represent approximately 97% of the world Muslim population, so an increased share of immigrants from these regions naturally means more Muslim immigrants (Pew 2009). Additionally, there has been increased migration from Muslim majority countries, with arrival increases of up to 400% since 2000 from some countries (DHS 2009).

Although most Muslims in the United States are immigrants, the population is also increasing by fertility. Research on the fertility of these immigrants is important for several reasons. First, high fertility rates will gradually change the composition of the Muslim population so that it is increasingly made up of native-born Muslims. As more Muslims are native born and their population increases, their incorporation and acceptance into mainstream American society will become an increasingly important issue. Recent events have shown the American public to be uncomfortable with Muslims growing presence in U.S. society. A finding in support of fertility assimilation would provide evidence that Muslims are indeed assimilating to U.S. culture by at least one measure. Second, previous research investigated fertility of certain immigrant groups, but there is a dearth of research distinguishing one immigrant group by religion. Our findings represent new insights into religious context's effect on fertility.

Although there is no direct way to measure Muslim fertility rates using current data, this paper seeks to estimate it using a proxy method. Thus, because of data limitations, our sample only includes persons from Muslim majority countries, not a direct fertility measure for Muslim immigrants. While we cannot generalize our results to all Muslim immigrants in the US, we can conclude that most of our sample is Muslim. This assumption allows us to draw new conclusions about Muslim immigrant fertility, especially how it varies across generations and regions.

Literature Review

Past research posits four general theories about differences between native and immigrant fertility: assimilation, adaptation, disruption and selectivity. Each of these theories expects different fertility outcomes for immigrants in the United States. Our research focuses on two of

these hypotheses, assimilation and selectivity. Our reliance on these two theories has guided our analytic strategies and hypotheses.

Alba and Nee's new assimilation theory says the process of assimilation includes "the decline of ethnic distinction and it's corollary culture and social differences" (Alba and Nee 2003, p 11). Assimilation is not a uniform, but is conceived of as an intergenerational process which acts on all generations simultaneously. This theory has been applied to the fertility of Mexican origin immigrants in the past (Bean and Swicegood, 1985; Bean et al. 1984; Parrado and Morgan 2008). Assimilation theory assumes that immigrants should eventually shed their differences and become indistinguishable from the mainstream (Park and Burgess 1921; Alba and Nee 2003). In the case of fertility, assimilation theory would lead us to expect a downward trend in fertility from the country of origin to the host country. This process would take place through the acculturation of immigrants to US norms. This would not just take place across generations, but also for those who migrated to the United States as children and have increased exposure to the norms compared to their parents.

One critique of assimilation theory is that it assumes that immigrants experience a homogenous experience in their country of origin. Prior to migration, immigrants are not necessarily exposed to the same norms and values. For example, every family in a high fertility society does not desire a large number of children. Rather, this is conditioned on social factors that vary within a society. These social factors create sub-groups in society, and these groups differ in their valuation of norms by religion, class or ethnicity, to name a few. This is especially important when considering immigration from countries most affected by phenomena such as brain drain (Docquier and Marfouk, 2000).

Data and Methods

The authors used pooled data from the 2006-2009 American Community Survey Public Use Microdata Set. Although the Current Population Survey includes more detailed questions about fertility, the extremely small sample size made it not feasible as a data source for studying this small population. Our limited sample size prevented us from conducting a more through cohort analysis, but since most immigrants from Muslim majority countries arrived after the 1965 period, this should not seriously bias our sample. Additionally, the migration flow of Muslims from these countries is also recent, which provides more support that our sample will be representative of Muslim immigrants in the United States.

Our sample included females ages 15-49 from all Muslim majority countries listed in the ACS 5% PUMS. We defined a Muslim majority country as 65% or more Muslim. Because there is some religious selection in migration, we chose not to use 50% as a cut off point. Evidence supporting this decision can be found in statistics from the NIS. Nigeria is a country with approximately 50.4% Muslims (Pew 2009). However, in the NIS sample, only 5.39% of Nigerians were Muslim. In contrast, Pakistan is 96.3% Muslim (Pew 2009) and the NIS shows that 73.26% of Pakistanis who came to the US were Muslim.

We also chose to exclude Lebanon from our analysis. The Lebanese migration flow to the United States included some Muslims, but a significant portion was made up of Christians fleeing persecution in the region. We additionally restricted populations originating from the Middle East that are known ethnic Christians. This included Chaldeans, Armenians and Assyrians, which are overwhelmingly made up of non-Muslims. Any person that reported one of these ancestries and reported being born in a Muslim majority country was excluded in our analysis. Based on our restrictions we can assume that most of our sample is likely Muslim, but

we will only speak in general terms about persons from Muslim majority countries rather than extrapolating to Muslims.

We calculated total fertility rates (TFRs) for immigrant groups using the standard formula for a total fertility rate using the weighted data from the ACS. Age-specific fertility rates were calculated by five year age intervals from 15-45. The sum of the ASFRs was the multiplied by 5:

$$TFR = 5 \sum_{i=15-19}^{40-45} f_i/1000$$

where f_i is the age-specific fertility rate for grouped ages (Rowland 2003). Total fertility rates indicate the average number of children a woman expects to have in her lifetime. In this case, it would be the average number of children a female immigrant from a Muslim majority region would be expected to have in her lifetime.

Generation definitions

We divided our sample further into two generations, the first and the 1.5 generation. Although various definitions of the 1.5 generation are used, we selected age 18 as our cut-off point. For the purposes of our analyses, the 1.5 generation includes anyone who entered the United States when they were less than 18 years of age. There were several reasons for using this age as our boundary between generations. First, most females will enter into sexual relationships intended to produce children after the age of 18. Second, cutting the sample at 18 ensures the maximum exposure to secondary education in the United States. The benefits of secondary education have a twofold impact in this case. First, education of women has a strong negative influence on fertility. Since the United States mandates education to the age of 16,

these young women will have exposure here they may not get in their countries of origin. Furthermore, it would increase their chances of getting a higher education, which would further decrease their fertility. Second, through their peers and the school system we expect these young women will have some exposure to the sexual mores of the United States.

We also calculated TFRs for women who came to the United States at various other age cut offs, but found ourselves restricted by the sample size. Thus, we felt the difference between children and adults was the clearest distinction to draw in our analyses. It captured patterns that were consistent, regardless of the age cut offs used.

Regional definitions

Based on previous literature, we also divided our sample into 5 regions, Southeast Asia, Sub-Saharan Africa, North Africa, Middle East, and Others. We derived this regions using geographic definitions, but also cultural and historical ones. Table 2 lists the countries and the sample size of each region. Generally, we made the decision to group countries that share a common culture and history. Some countries did not clearly fit into one category, such as Sudan. Although the trend in geography is to group Sudan with North Africa, this country maintains other cultural similarities to the other countries grouped in Sub-Saharan Africa. Additionally, we found the TFR in Sudan more closely resembled other countries in that region. Thus, despite geographic trends, we felt the cultural ties and general milieu was more like that of Sub-Saharan Africa. Other countries of contention, Pakistan and Bangladesh, were included in the Southeast Asia category because in many ways their ties are stronger to this region than the Middle East. Additionally, this group has a shared colonial history, and is often grouped for analysis in European studies of fertility (Coleman and Dubac 2010).

The final region was not comprised of leftover countries, but grouped because of their shared communist past and ties to Russia. Although Afghanistan was also under the influence of Russia, today they share more ties to the Middle East. This is reflected in their extremely high fertility rate compared to the rest of the former communist countries. In contrast, Kazakhstan still shares many linguistic and economic ties to Russia and has a TFR that is much lower than the Middle East. Although other researchers might choose to group these countries differently, as with our choice in generational groupings, several analyses ensured our results were representative of general patterns in each region.

Education

To examine selection of immigrants from Sub-Saharan Africa, we also included a breakdown of education. Education has a very strong inverse effect on fertility (Karsada et al. 1986). It is a source of empowerment, and has been shown to effect fertility in both developing and developed countries. Through education, women gain access to the labor market, which in turn further lowers fertility rates. We used a standard five category classification for educational attainment (less than high school, high school, some college, bachelors degree, post-secondary degree) but also included a category for "no schooling". As you will see, this category was much more common among our immigrants of interest than the general native born population. The high percentage of immigrants from Sub-Saharan Africa that fell into this category made it necessary to distinguish from less than a high school education.

Hypotheses

Relying on these two theories, we formed three hypotheses that guided our analyses. First, we expect that immigrants from Muslim majority countries will have higher fertility than the native US population. The overall immigrant fertility rate is 2.73, well above the native-born

fertility rate of 1.97 (Camarota 2003). Our sample comes from countries with high fertility, and we expect this pattern to be replicated in the host country context. Additionally, we hypothesize that immigrants from Muslim majority countries will have higher fertility than the most common immigrant group, Mexicans. Since fertility in the country of origin is closely correlated with fertility in the host country, immigrants from Muslim majority countries should have higher TFRs than foreign-born Mexicans. We also expect Muslim majority countries fertility rates to fall in between that of their home country and the host country.

We also hypothesize immigrants from Muslim majority countries will show variation between their region of origin. Within our sample, the TFRs varied greatly by region. From Table 1, in the countries in Sub-Saharan Africa, the TFR is as high as 6.47, while in the post-communist countries it is much lower, between 1.82 and 2.49. We believe this variation will translate into regional fertility differences among immigrants in the host country.

We further expect that fertility will vary by generation, as predicted by assimilation theory. Exposure to American culture for immigrants from Muslim majority countries should result in lower fertility. Therefore, immigrants from the 1.5 generation should experience lower TFRs than immigrants from the first generation. These women have a greater risk of exposure to American culture because they are required to attend at least some school in the United States. In contrast, women that arrived to the United States as adults would have a lower chance of attending school than the 1.5 generation. We expect this finding to be consistent across regions.

Table 2 is a list of descriptive statistics for the regions and generation as well as the overall sample. The average age of arrival for all persons from Muslim majority countries was 24.5. However, this varies somewhat by region, ranging from 23.7 to 26.6 for North Africa and

Communist countries respectively. Overall, there is not much variation and the age at arrival reflects the general pattern of all immigrants migrating to the United States.

Also in table 2, we list the average TFR for immigrants from the regions we studied in their country of origin. They ranged from 2.29 to 4.69. The TFR in Sub-Saharan Africa was highest, and the Communist Countries were the lowest. Since TFR in the country of origin is closely linked to the TFR in the host country, we expect this pattern to be reflective of the regional patterns for immigrants in the United States. It is interesting to note that the TFR for the Middle East is the second lowest overall. This is somewhat surprising given the relatively high fertility rates in this region (seen in Table 1).

Results:

Overall, we found that immigrants from Muslim majority countries had a TFR of 2.73. This is much higher compared to the native TFR of 1.97 but slightly lower than the TFR for Mexican immigrants of 3.27 (ACS 2005-2008). This confirms our first hypothesis about comparisons between Muslim majority country fertility and native fertility. However, the higher TFR value for foreign-born Mexicans in our data was unexpected. Because Mexicans have a longer history of immigration than Muslim majority immigrants, the cross section of this data could be reflective of more recent fertility among this group. Although the TFR for foreign-born Mexicans is high, as you will see, it does not begin to approach the highest fertility rates for some Muslim majority regions in our analysis, which exceed 4 children per woman.

Regional results mirrored those found in our overall statistics and strongly parallel the TFR in their country of origin. The TFR of immigrant women from Muslim majority countries in Sub-Saharan Africa was 5.11, a difference of almost 2 children per woman from any other region. The next highest fertility rate was among immigrant women from North Africa, with

3.57 children born per woman. The other three regions in the analysis all had TFRs of around 2.5, which is higher than native-born fertility but not especially high.

As a comparison to the Muslim majority countries in SS Africa, we also calculated a TFR for Christian majority countries in Sub-Saharan Africa in the ACS. We found that immigrants from Christian majority countries had an overall TFR of 2.48, much lower than the 5.11 TFR for Muslim majority countries in Sub-Saharan Africa. Since selection plays a significant role in which immigrants are granted visas from Africa, the difference in the TFRs in the United States is somewhat surprising. Immigrants all over Sub-Saharan Africa have high fertility rates, but it appears that immigrating from a Muslim majority country has a particularly strong effect on these women's fertility in the United States.

This discrepancy in fertility rates between Muslim majority and Christian majority countries in Sub-Saharan Africa led us to investigate this further. Table 4 presents the breakdown of educational attainment for both of these regions. Immigrants from Muslim majority countries were almost five times as likely to have no formal schooling, and twice as likely to have completed less than a high school degree compared to immigrants from Christian majority countries. On the other end of the spectrum, immigrants from Christian majority countries were almost three times more likely to have completed a post-secondary degree. This provides evidence for selection theory operating on the fertility rates of immigrants from Muslim majority countries. Figures 1 and 2 divide the sample further by generation. We see that for adults coming from Muslim majority countries, almost 20 percent reported having no formal schooling, compared to less than 10 percent in the 1.5 generation. Interestingly, immigrants from Muslim majority countries of the one half generation were also less likely to achieve a post-secondary education or bachelors degree. There is little variation in the Christian majority

countries of sub-Saharan Africa. Generational differences provide further evidence that immigrants from sub-Saharan Africa are highly selected on education, which in turn effects their fertility rates in the United States.

Next, we look at the generational differences of all immigrants from Muslim majority countries. In support of our hypothesis, women who immigrated when they were 12 or younger had higher fertility than those who immigrated after they were 12. Table 3 shows the TFR for the 1.5-generation fertility was only 1.75, even lower than that of native-born Americans. This suggests that women from Muslim majority countries with some exposure to US culture have fewer children than women who move to the United States in adulthood. This provides support for assimilation theory, where exposure to United States norms leads to a process of acculturation, here measured by fertility rates. Immigrant regions with fertility rates as low as natives certainly appear to have assimilated into the mainstream of US fertility.

Discussion

This study provides evidence of assimilation to US fertility rates for immigrants from Muslim majority countries. Greater exposure to American culture during the formative years of childhood appears to decrease fertility rates for immigrants from Muslim majority countries compared to those immigrants who came as adults. In some cases, this decrease is as low or lower than the fertility of native-born Americans of all races. This provides support that by at least one measure, people immigrating from Muslim majority countries show evidence of assimilation within one generation.

The discrepancy between immigrants from Christian and Muslim Sub-Saharan Africa was particularly striking. The overall TFR differs by more than 2 children per woman, and the gap between the first generations'' TFRs is even greater. There are several explanations for

these differences. First, it is possible growing up in a Muslim context in Africa limits women's access to education so they cannot possibly be selected as the immigrants from Christian majority countries. This is not necessarily supported by statistics, as women's educational attainment all across the region is very low, not just in the Muslim majority countries we analyzed. Another explanation related to educational selection is that women from Christian majority countries are very highly selected on education while women from Muslim majority countries are not. These women from Muslim countries could be migrating to places other than the United States, such as their former colonizers in Europe. Finally, it is important to consider the religious violence and resulting refugee situation around the 10th parallel, where most of our Muslim majority countries in Sub-Saharan Africa fell. It is possible that immigrants from Muslim majority sub-Saharan Africa are simply more likely to be refugees, and thus be among the worst advantaged entering US society.

Our findings suggest that although high fertility rates will play a significant role in increasing the Muslim population in the United States, it will only do so as long as adult migrants from Muslim countries are immigrating. With exposure to US culture, fertility rates of these groups approach native levels, even within half of a generation. While our results provide more insight into this understudied population, without a large-scale survey that purposefully asks religion, researchers cannot make clear statements about the fertility of US Muslims. Demographers must acknowledge the interest in this group of immigrants, and work to assemble more proxy methods of capturing their demographic processes. If the flow of migrants from Africa and Asia continues to increase, future work can begin to tease out cohort effects for these groups as well as look into the fertility outcomes of the second generation that could not be addressed in this paper.

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Table 1: TFR by country of origin: 2000-2005 Estimate	
Middle East	
Afghanistan	7.07
Iran	2.04
Iraq	4.26
Jordan	3.13
Kuwait	2.18
Saudi Arabia	3.35
Syria	3.08
Turkey	2.14
Yemen	5.50
Formerly Communist Countries	
Albania	2.06
Azerbaijan	1.82
Kazakhstan	2.31
Uzbekistan	2.49
North Africa	
Algeria	2.38
Egypt	2.89
Morocco	2.38
Southeast Asia	
Bangladesh	2.83
Indonesia	2.18
Malaysia	2.60
Pakistan	3.52
Sub-Saharan Africa	
Guinea	5.44
Senegal	4.69
Sierra Leone	6.47
Somalia	6.04
Sudan	4.23

Source: United Nations Estimate, 2007.

Table 2: Summary Statistics by Region and Generation

	Average Age of Entry	Total Fertility Rate	Sample Size
Middle East	24.7	2.31	11071
F.C. Countries	26.6	2.29	2372
North Africa	23.7	3.73	3882
Southeast Asia	24.1	2.57	9352
Sub-Saharan Africa	24.0	4.69	1493
Total	24.5	2.73	28170

Source: 2005-2008 American Community Survey

Table 3: Total Fertility Rate by Generation and Region

	First Generation	1.5 Generation
F.C. Countries	2.42	1.65
Southeast Asia	2.94	2.08
Sub-Saharan Africa	5.11	3.68
North Africa	3.61	2.74
Middle East	4.19	1.77
Total	3.49	1.78

Source: 2005-2008 American Community Survey

Table 4: Educational Attainment for Sub-Sahara African Immigrants to the United States by Religious Majority

	Muslim Majority Sub-Saharan Africa	Christian Majority Sub-Saharan Africa
No formal schooling	14.6	3.0
Less than high school	31.7	15.7
High school	23.3	23.9
Some college	18.8	29.4
Bachelors degree	8.2	17.7
Post-secondary degree	3.4	10.4
Total	100.0	100.0

Source: 2005-2008 American Community Survey

Figure 1: Educational Attainment of First Generation Immigrants in Sub-Saharan African Countries

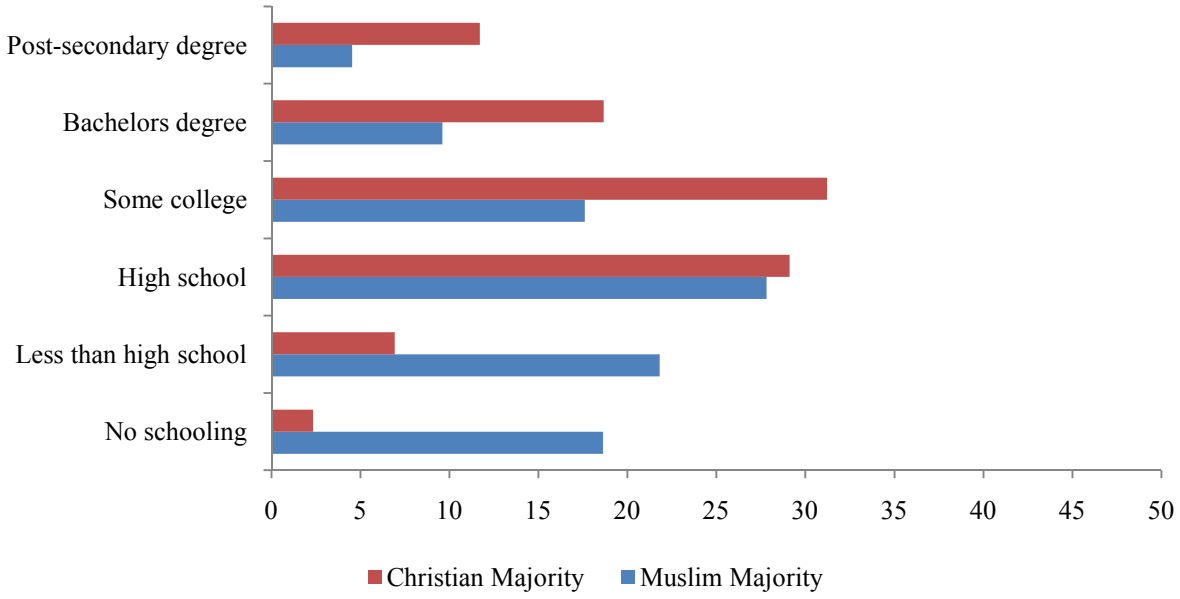

Figure 2: Educational Attainment of the 1.5 Generation Immigrants in Sub-Saharan African Countries