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Estimating the Muslim Population in the United States Using Census 2000 Data

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INTRODUCTION

There has been a Muslim presence in the United States for centuries. It is virtually certain that many of the slaves brought to the Americas from Africa were Muslim because western Africa, from which most slaves came, has a long history of Muslim civilization (Nyang, 1992), dating back to the 11th and 12th centuries (Levtzion, 1968). For example, the northern part of Nigeria has been largely Muslim since at least the 1300s, and Nigeria was frequented by slave traders in the seventeenth and eighteenth centuries. According to Haddad (1986a), there is evidence that as early as 1717 there were Arabic-speaking slaves in America who reportedly ate no pork and believed in Allah and Muhammad. There is some evidence that as many as ten percent of slaves brought to North America were Muslim (Austin, 1984), but Christianity was imposed upon the slave population, and slaves who refused to convert were persecuted or killed (Nyang, 1999).

In the late nineteenth and early twentieth centuries, Muslim (as well as Christian) migrants entered the United States from various middle eastern nations, including what are now Lebanon, Syria, and Iraq (Haddad, 1986b). Although these immigrants established a clear presence for Islam in American society (Haddad, 1986b; Rashid, 1999), it was not easy to be other than a Christian in the United States. The passage of the highly restrictive national origins quota system in the US in the 1920s effectively cut off immigration from all but northwestern European and Latin American countries, until that law was replaced by the less restrictive Immigration Act of 1965. The post-World War II partition of Palestine, and subsequent political and economic unrest in the region led to refugee migration to the United States, but the volume of migrants and refugees from a number of predominantly Muslim nations has increased

largely because of the liberalization of immigration laws in the mid-1960s.

Efforts began within the African-American population to build a community of Islam during the Reconstruction period following the American Civil War. Initially these activities were outside the mainstream of Islam (McCloud, 1995), but since the 1970s there appears to have been a steady (albeit largely unmeasured) increase in the number of African-Americans who adhere to mainstream Islam (American Muslim Council, 1991; Rashid, 1999).

Although the number of Muslims in the United States is almost certainly large and growing, it is not certain *how large* or at *what rate* the population is increasing. For this reason, the geographic distribution of the Muslim population also is somewhat uncertain, although anecdotal evidence can be used to discern the basic patterns that exist. My purpose in this paper is to review estimates that have been made of the size of the Muslim population in the United States, and compare them with new estimates that I derive from proxy measures based on Census 2000 data. I then use the census-based measures to estimate the geographic distribution of the Muslim population in the United States in 1990 and 2000, and from this I am able to calculate rates of growth by different areas of the country.

1. ESTIMATING THE NUMBER OF MUSLIMS IN THE UNITED STATES

In the United States, unlike in Canada and several other countries in the world, religion has never been asked as part of the regular government-funded decennial censuses. The Census Bureau did collect information in its Census of Religious Bodies from 1906-1936, but Public Law 94-521 prohibits the Census Bureau from asking a question on religious affiliation on a mandatory basis and so it cannot be included as part of the decennial census. Questions on religion were asked as part of the March 1957 Current Population Survey, in anticipation that a question on religion might be included in the 1960 decennial census, but ultimately that plan was dropped by the Census Bureau.

Surveys can fill in gaps in census data, but only recently in the United States have surveys begun routinely to include "Islam" or "Muslim" as a category of response when a question about religion is asked. Since most residents of the U.S. are at least nominally Christian, even small samples are able to provide reasonable estimates of the number of such individuals and many Christian churches keep membership lists which are compiled by various groups to estimate the total population of Christians by branch of Christianity (see, for example, the website http://www.adherents.com). For less populous groups, estimation is more problematic even at the national level and, of course, relatively small national surveys provide little information about the geographic distribution of a population. For these reasons, it is necessary to employ indirect methods in the estimation of the Muslim population.

People have been trying to figure out how many Muslims reside in the United States since at least 1973, when Lovell suggested that there might be 900,000 Muslims in the US and Canada, based on "preliminary tabulations from a religious census being conducted by a committee through the Islamic Center of Washington, D.C." (reprinted as Lovell, 1992:60). The "census" consisted of a questionnaire sent to Muslim community leaders throughout the US and Canada asking for their assessment of the local Muslim population. Since Canada has approximately one-tenth the population of the US, if we assume that Muslims were distributed proportionately between the two countries, it would imply that approximately 820,000 were in the US circa 1970. In 1980 Thomas Phillipp argued that "there are perhaps 200,000 to 300,000 Muslims in the United States today; it is impossible to obtain more accurate figures... This estimate however does not include 2 million Afro-Americans claimed by the Nation of Islam... Nor does this estimate include Muslim students in the United States" (Phillipp, 1980, p. 732). If we include those

persons, the number of Muslims in the US by his estimate would have been about 2.3 million in 1980. In a more systematic analysis, Ghayur (1981) estimated that there were 1.2 million Muslims in the United States in 1980. His method was to list the immigrant ethnic groups that were composed predominantly of Muslims and then to estimate the number of persons in each group using census data and immigration data. He then added his estimate of 75,000 African-Americans to reach his total of 1.2 million. A similar method was used by Weekes (1984) to estimate a total of 1.4 million Muslims in the United States as of approximately 1980. The principal difference between the estimates of Ghayur and Weekes is that Weekes estimated a larger number of African-Americans to be Muslim than did Ghayur.

Stone (1991) estimated that in 1980 the immigrant Muslim population in the U.S. was 2.3 million. To this she added, somewhat arbitrarily, one million African-American Muslims, for a total Muslim population in 1980 of 3.3 million. She began with the 1980 Census of Population and used place of birth and ancestry to estimate the number of people who were of probable Muslim origin. She then used Immigration and Naturalization Service data on immigrants by country of origin to estimate the number of immigrant Muslims added to the US population after the census, applying to each set of immigrants a fraction equal to the proportion of persons in each country of origin who were estimated to be Muslim. She then applied a birth rate of approximately 16 births per thousand per year, added in new immigrants since 1980 and produced an estimate of 4.0 million Muslims in 1986. Further updating using the same methodology generated a 4.6 million figure for 1988 which appeared in Time magazine and was widely quoted at the time (Oatling, 1988).

A much lower, and also highly publicized number was published by Kosmin and his associates as part of the 1989-90 National Survey of Religious Identification (NSRI) (Goldstein and Kosmin, 1991; Kosmin, 1991; Kosmin and Lachman, 1993). These data were from a national probability sample of households designed especially, although not exclusively, to provide estimates of the Jewish population in the United States. Based on telephone interviews with 113,000 households in the United States, the NSRI initially concluded that there were 527,000 Muslim adults in the US, representing 0.3 percent of the total US adult population. Applying that same percentage across all ages produced an estimate of 750,000 Muslims as of 1990. The researchers were subjected to considerable criticism for this finding and although they defended their results (see the Appendix of Kosmin and Lachman, 1993), they also acknowledged that the overall response rate to the telephone interviews was only 50 percent, even after four attempts to make contact. They also acknowledged problems with language and they acknowledged that immigrants from countries like Iran, "with their experience of persecution" (Kosmin and Lachman, 1993, p. 287) might have been reluctant to reveal their religion, even if they cooperated with the rest of the survey. Ultimately, the weighting for Muslim households was adjusted upward to increase their overall estimate of the US Muslim population to 1.2 million as of 1988 – a number well below Stone's estimate of 4.6 million.

Despite its shortcomings, the NSRI study demonstrated the potential utility of deriving estimates of the population of all religious groups, including Muslims, from survey data. From the mid-1990s through 2001 there were several surveys from which estimates can be drawn of the Muslim population, including an updated version of the NSRI called ARIS – the American Religious Identification Survey of 2001. This survey was based on a random digit-dialed telephone survey of 50,281 American residential households in the 48 states of the continental U.S. Among these responding households, 219 were identified as Muslim. This produced a weighted number of 1,104,000 Muslim adults. "Allowing for a sampling error of +/-0.5 percent, the ARIS-2001 figure maybe adjusted upwards to its maximum range of 1.0 percent of all 208 million American adults. With such an adjustment, the total national figure for US Muslims is 2.2 million, giving a total national population (including children) of just under 3 million" (Kosmin and Mayer, 2001, p. 1).

Several other national surveys have collected information on religious identification of respondents and included the category of Muslim in the coded responses. These results are shown in Table 1, drawing upon data made available by the American Religious Data Archive (http://www.thearda.com). For each survey listed in the table, I have downloaded the data files and calculated the number of Muslim respondents. All of these surveys are of adults (people aged 18 and older) and so the assumption has to be made that the population under age 18 has the same representation of Muslims as does the adult population. Accepting this assumption, I have calculated the percentage of respondents in each survey who indicated that they were Muslim and then applied that percentage to the total U.S. population for the year of the study, using the population estimates of the U.S. Census Bureau. It can be seen that all numbers hover close to one million. They are all within the same range as the ARIS, so if we accept the reasoning that each survey may somewhat underestimate Muslims, we can accept the Kosmin and Mayer suggestion of an upper limit of approximately 3 million Muslims as of the year 2000.

Table 1. Estimates of the Size of the Muslim Population in the United States Based on National Survey Data

Survey	Total	Muslims	Muslims as fraction of total	Implied Muslims in US population	Blacks Muslims	% of Black who are Muslim
Religion & Politics survey 1994-1995 (weighted)	26,726	88	0.003	872,723	59	2.2
Religion & Politics Survey 1996 (weighted)	4,150	21	0.005	1,357,764	13	3.0
God and Society in North America Survey, 1996	3,002	10	0.003	893,804	4	2.0
Civic Involvement Survey 1997 (run with weight 1)	3,267	11	0.003	914,444	1	0.2
GSS 1998	2,832	13	0.005	1,261,716	6	1.5
GSS 2000	2,817	12	0.004	1,198,722	8	1.9
American Religious Identification Survey 2001	50,281	219	0.004	1,239,886	59	1.4
AVERAGE						1.7

Source: Data courtesy of American Religious Data Archive (http://www.thearda.com).

Another study conducted in 2001 of the Muslim population was completed as part of a larger study of American congregations called "Faith Communities Today," which was coordinated by the Hartford Seminary's Institute for Religious Research. The project involved surveying a congregational leader at each of more than 30,000 congregations of all major religious groups across the country. In this process the study identified 1,209 mosques in the United States and 631 of these were randomly selected to be included in the survey. Responses were received from 416 (66 percent) of those 631 (Bagby, Perl, and Froehle, 2001). A leader from each responding mosque provided estimates of the number of people attending each Friday's *Jum'ah* prayer. The average attendance was reported to be 292 people per mosque, which would imply that 353,000 Muslims pray at a mosque in the U.S. each Friday. A multiplier of 5.56 was then somewhat arbitrarily applied to this number to estimate the total number of people associated with a mosque (an average of 1,625). This implies that 2 million Muslims are associated with a mosque even if only 18 percent of those attend Friday prayer. Another somewhat arbitrary multiplier was applied to that number to estimate the total number of Muslims, whether or not associated with a mosque. This number was

estimated to be 6-7 million, which the authors called "reasonable" (Bagby, Perl, and Froehle, 2001, p. 3) although it is of course highly dependent upon the multipliers used.

Although the estimate from the mosque study was twice the highest value estimated from the ARIS, the mosque study found that about 30 percent of people associated with mosques were converts and that most of these individuals were African-American. The ARIS estimated that 27 percent of Muslims were black, so both of these studies imply that about 30 percent of Muslims are African-American. Table 1 shows that the nationwide surveys implied that an average of 1.7 percent of the African-American population was Muslim. If we round that to 2 percent and combine it with the estimate that 30 percent of the Muslim population is African-American, then once we know the number of African-Americans, we can solve the equation for the number of Muslims. Census 2000 counted 34.7 million African-Americans, and 2 percent of that number would be 694,000. If that number is 30 percent of the Muslim population, then the number of Muslims would have to be 2.3 million. In order for the Muslim population to be larger than this, then either African-Americans must account for a smaller fraction of all Muslims, or else a much larger fraction of African-Americans must be Muslim. The data currently available, as shown in Table 1, do not provide evidence of either one of those possibilities. The highest percent Muslim among blacks as shown in Table 1 is 3 percent. If that were the correct number, and 30 percent of Muslims are black, then the resulting Muslim population is 3.5 million. In order for the number of Muslims to be 7 million (the top estimate derived from the mosque study), if we assume that 30 percent are black, then 6 percent of blacks must be Muslim. Alternatively, if it is true that 2 percent of blacks are Muslim, then blacks could represent no more than 10 percent of a population of 7 million Muslims.

2. GEOGRAPHIC DISTRIBUTION OF THE MUSLIM POPULATION

The available survey data reviewed above (see also Smith, 2001) suggest that the Muslim population of the United States is probably around 3 million. None of these estimates , however, provides enough information to tell us about the spatial patterning of the Muslim population within the United States. We need a much bigger database to accomplish that task, and so I have turned to the census data to provide proxies for the Muslim population at sufficient geographic detail so that a spatial pattern can be discerned.

Although others have used census data for the purpose of estimating the number of Muslims in the U.S. (see, for example, Stone, 1991), my analysis builds on the Public Use Microdata Sample (PUMS) from the 1990 census, which no one previously has utilized for this purpose. These data provide us with the opportunity to generate estimates of the spatial distribution of the Muslim population. The 1990 estimates at the state level then provide a way to use regression analysis to estimate the Muslim population by state for 2000, using information that has just recently become available from Census 2000.

2.1. How can Census Data Be Used to Estimate the Muslim Population?

We are in a the midst of a brief historical window of opportunity when census data can be used to help identify the Muslim population in the United States because it is still true that most Muslims in the U.S. are either immigrants or are residing in households of immigrants. Thus, despite the lack of a question about religion, we can make inferences about the "possibly Muslim" population by using information that is derived about ancestry, country of birth, and language. In another generation, when most Muslims will have been born in the United States, it will become more difficult to identify them from these kinds of census questions.

Other researchers have used census data for this purpose, as I have already noted, and my

use involves the same caveats offered by previous researchers: Not all people from predominantly Muslim countries are Muslim; not all people who speak the language spoken in predominantly countries are Muslim; not all people who share the ancestry of those who are Muslim are themselves Muslim; and some people who are Muslim will not share any of the characteristics of ancestry, language, or place of birth that are being used as proxies for being Muslim. With respect to the concern that not all people who might seem to be Muslim are necessarily Muslim, the use of the census data works on the "where there is smoke there is probably fire" theory. That is to say, the existence of a large Arab community, for example, in a particular part of the United States probably signals the existence of a Muslim community even if we acknowledge that many Arabs in the United States are not Muslim. The presence in a region of people who are Arab, along with people who are Indonesian, along with people who are from Iran, probably increases the likelihood that there will be a substantial Muslim population, even if not all such people are Muslim.

With respect to the existence of Muslims who are not immigrants and do not share any of the language, place of birth or ancestry characteristics with other Muslims, it turns out that in the United States most such individuals are African-American, so the task becomes one of estimating the percentage of a local African-American population that might be Muslim. The estimating percentage comes from outside the census data and is based initially on a national average, but then is applied to the census data to derive a number that will be added to the "possibly Muslim" population identified through the combination of language, ancestry, and place of birth. The following sections describe the methodology in more detail.

2.2. The "Possibly Muslim" Population in 1990 Derived from the PUMS data

The estimating process begins with the 5 percent Public Use Microdata Sample (PUMS) from the 1990 census. This file contains all of the information collected for each member of the household from a 5 percent sample of all households enumerated in the 1990 census. These are responses to the "long-form" questionnaire which was administered to a one in six sample (17 percent) of all households, so the data represent nearly one in three of all long-form questionnaires from the 1990 census. The geographic scale goes down to the level of the Public Use Microdata Area (PUMA) which is smaller than a state, but larger than a census tract, and is designed to be sufficiently large in area so that privacy is maintained, but sufficiently small in area so as to provide the possibility of spatial analysis of the data. For this analysis, I have aggregated data at the state level and the data are weighted to reflect the total population from which they were drawn.

People were assigned to the "possibly Muslim" category based on ancestry if their answer to the first or second ancestry question indicated a category that is typically associated with Muslims. The 1990 census (long-form) asked "What is this person's ancestry or ethnic origin?" I coded as having possible Muslim ancestry those persons whose ancestry (either Ancestry 1 or 2) was from a predominately Muslim country (as delimited in Weeks 1988; and updated in Belt 2002). The ancestries included as "possibly Muslim" included (in Census Bureau numbering order): Turkish Cypriot (019), Albanian (100), Azerbaijani (101), Turkestani (168), Bosnian (177), most North African and Southwest Asian ancestries (400 through 499, with the exception of Israelis, Chaldeans, Armenians, Coptics, and a few other non-Muslim ancestries), Nigerian Fulani (554), Nigerian Hausa (555), Somali (568), Afghani (600), Bangladeshi (603), Pakistani (680), Indonesian (730), and Malaysian (770). In some instances, people responded that their ancestry was "Muslim" or "Islam," but the Census Bureau did not code those responses separately. Instead, they were given a code of "998" which we coded in conjunction with the language question.

Language was then examined as a potential index of Muslim identification, especially for the immigrant population. The census asked "Does this person speak a language other than English at home?" and if the answer was yes, a follow-up question asked "What is this language?" The languages coded as being typically spoken by immigrants from predominantly Muslim countries included (in Census

Bureau numbering order): Yugoslav (649), Persian (656), Afghan (657), Kurdish (658), Kirghiz (687), Uzbek (689), Azerbaijani (690), Turkish (691), Indonesian and Malay languages (732 through 741), Arabic (777), Hausa (782), Somali (783), Sudanese (784), Swahili (791) and Fulani (794).

The third characteristic that might identify a person who is potentially Muslim is place of birth outside the United States. We chose those countries estimated to have a Muslim majority (Weeks, 1988) for inclusion in this category. The countries are predominantly in the north of Africa, western Asia, and southeast Asia.

Overall, this process identified 1,891,959 people who might have been Muslim, based on their possession of one or more these characteristics according to the 1990 PUMS data. Of this number, only 23 percent fit all three categories of place of birth, ancestry, and language, while another 20 percent fit into two of the three categories, and 57 percent fit into only one of three categories, of which ancestry was the most common (38 percent of all of the "possibly Muslim"). In the interest of setting an upper bound on the number of Muslims, I have included all of these individuals in the category of "Possibly Muslim." To this group we must now add the estimated number of African-Americans who are Muslim.

2.3. Adding African-Americans to the Possibly Muslim Population

The only way to determine the likely number of African-Americans who are Muslim is to use survey results that cross-tabulate race by religion. As already shown in Table 1, the data suggest that approximately 2 percent of African-Americans are Muslim. If we assume that this percentage has remained steady over time, then in 1990 this would represent a total of 599,729 of the 29,986,060 blacks enumerated in the census that year. Only a small fraction of those people would have already been included in our estimate of the possibly Muslim population since in that group there were only 29,328 blacks who were born in the United States and, of these, only 16,572 indicated that their ancestry was "Afro-American." If we assume no overlap, then adding 599,729 African-Americans to the already estimated possibly Muslim population yields a total of 2,491,680 Muslims in the United States in 1990. Given the methods of estimation that I have employed, this almost certainly represents an upper limit on the number of Muslims in that year.

While it may be relatively easy to estimate the total number of African-Americans who are Muslim, it is more complex to estimate the geographic distribution of those individuals. It is unlikely that in every community two percent of the African-American community is Muslim. It is more likely that the presence of a larger immigrant Muslim population will encourage conversion (or reversion as it is usually called within Islam), whereas a smaller immigrant population of Muslims will probably be associated with a smaller number of African-Americans who are Muslim, even in the presence of an otherwise large African-American community. I have used these two constraints – the size of the African-American community as enumerated in the census, and the number of possibly Muslim people as estimated by the PUMS data – to estimate the state-by-state distribution of African-Americans who are Muslim in 1990. If we assume that 2 percent of African Americans are Muslim and that the total Muslim population is 2,491,680, then African-Americans represented 24 percent of all Muslims in the United States in 1990. This percentage is on the low end of the estimates assembled by Smith (2001), but that is largely because Smith assumes that there are fewer Muslims than the above total would suggest. As the estimate of the total population of Muslims goes down, then the percentage of those people that are African-American obviously increases in the absence of any change in the assumption about the number of African-Americans who are Muslim.

Given the above percentages, the population of African-American Muslims was constrained initially to be the smaller of either 2 percent of the total state African-American population or 24 percent of the total Muslim population in the state (which involved multiplying the PUMS possibly Muslim total for that state by 0.317). However, we wanted the total African-American Muslim population to sum to 599,729, so the totals for each state are controlled to that value. These numbers are then added to the PUMS estimate of the

possibly Muslim population to produce the state-level estimate of the number of Muslims residing in that state in 1990. These data, along with the implied percentage of the total population that is Muslim, are shown in Table 2.

Table 2. Estimates of the Muslim Population by State: United States 1990 and 2000

State	"Possibly Muslim" from 1990 PUMS	African-American Muslims 1990	Total Muslims 1990	"Possibly Muslim" from regression equation applied to Census 2000	African American Muslims 2000	Total Muslims 2000	Change from 1990 to 2000	Percent change	Percent of all Muslims	Location Quotient
New York	252,704	85,480	338,184	416,317	79,533	495,850	157,666	46.62	14.57%	2.161
California	407,590	66,039	473,629	403,122	59,731	462,853	-10,775	-2.28	13.60%	1.130
Texas	88,598	41,985	130,583	218,905	63,443	282,348	151,765	116.22	8.30%	1.120
Michigan	114,085	38,619	152,704	185,001	37,274	222,275	69,571	45.56	6.53%	1.850
Illinois	86,787	41,127	127,914	167,782	49,520	217,302	89,388	69.88	6.39%	1.447
Florida	88,362	41,873	130,235	149,790	61,621	211,411	81,176	62.33	6.21%	1.094
New Jersey	118,040	30,999	149,039	176,741	30,126	206,867	57,828	38.80	6.08%	2.033
Virginia	63,210	29,954	93,164	122,500	36,682	159,182	66,018	70.86	4.68%	1.860
Ohio	77,115	34,527	111,642	86,042	34,334	120,376	8,734	7.82	3.54%	0.877
Pennsylvania	64,840	30,727	95,567	86,906	32,311	119,217	23,650	24.75	3.50%	0.803
Massachusetts	70,076	8,973	79,049	89,969	9,062	99,031	19,982	25.28	2.91%	1.290
Maryland	42,473	20,127	62,600	62,664	28,603	91,267	28,667	45.79	2.68%	1.425
Georgia	24,822	11,763	36,585	52,551	23,987	76,538	39,953	109.21	2.25%	0.773
North Carolina	20,667	9,794	30,461	40,840	18,641	59,481	29,021	95.27	1.75%	0.611
Connecticut	47,539	8,200	55,739	36,196	8,175	44,371	-11,368	-20.40	1.30%	1.077
Missouri	16,016	7,590	23,606	25,006	11,414	36,420	12,814	54.28	1.07%	0.538
Louisiana	16,308	7,728	24,036	24,256	11,072	35,328	11,292	46.98	1.04%	0.654
Washington	24,804	4,479	29,283	29,851	5,020	34,871	5,588	19.08	1.02%	0.489
Arizona	21,551	3,304	24,855	29,255	4,192	33,447	8,591	34.57	0.98%	0.539
Indiana	18,887	8,950	27,837	21,876	9,985	31,861	4,024	14.46	0.94%	0.433
Tennessee	13,422	6,360	19,782	21,862	9,979	31,841	12,058	60.96	0.94%	0.463
Minnesota	17,326	2,839	20,165	26,607	4,531	31,138	10,973	54.42	0.92%	0.523
Wisconsin	15,972	7,311	23,283	18,323	8,033	26,356	3,073	13.20	0.77%	0.406
Colorado	16,290	3,981	20,271	21,685	4,355	26,040	5,769	28.46	0.77%	0.501
Oklahoma	13,288	6,297	19,585	16,382	6,885	23,267	3,683	18.80	0.68%	0.558
Nevada	7,810	2,355	10,165	14,805	3,574	18,379	8,214	80.81	0.54%	0.761
Kentucky	8,340	3,952	12,292	12,256	5,594	17,850	5,558	45.22	0.52%	0.365
Kansas	8,900	4,218	13,118	13,752	4,068	17,820	4,703	35.85	0.52%	0.548
Oregon	14,496	1,381	15,877	15,796	1,469	17,265	1,388	8.74	0.51%	0.417
Alabama	10,647	5,045	15,692	11,318	5,166	16,484	792	5.04	0.48%	0.307
South Carolina	9,054	4,291	13,345	10,465	4,777	15,242	1,897	14.22	0.45%	0.314
Rhode Island	8,610	1,162	9,772	10,605	1,238	11,843	2,071	21.19	0.35%	0.934
New Hampshire	6,811	215	7,026	10,474	238	10,712	3,686	52.46	0.31%	0.717
West Virginia	7,499	1,683	9,182	8,873	1,510	10,383	1,201	13.08	0.31%	0.475
Utah	4,966	346	5,312	9,565	466	10,031	4,719	88.83	0.29%	0.371
Mississippi	5,799	2,748	8,547	6,836	3,120	9,956	1,409	16.49	0.29%	0.289
Iowa	7,258	1,438	8,696	7,895	1,632	9,527	831	9.56	0.28%	0.269
District of Co	7,518	3,563	11,081	6,380	2,912	9,292	-1,788	-16.14	0.27%	1.343
Nebraska	7,878	1,716	9,594	6,859	1,808	8,667	-927	-9.66	0.25%	0.419
New Mexico	6,279	903	7,182	6,808	906	7,714	532	7.41	0.23%	0.351
Delaware	3,304	1,566	4,870	4,972	2,269	7,241	2,372	48.70	0.21%	0.764
Arkansas	4,146	1,965	6,111	4,270	1,949	6,219	108	1.77	0.18%	0.192
Maine	4,343	154	4,497	4,505	178	4,683	187	4.15	0.14%	0.804
Hawaii	4,880	813	5,693	2,408	581	2,989	-2,705	-47.51	0.09%	0.204
Vermont	3,920	58	3,978	2,701	81	2,782	-1,197	-30.08	0.08%	0.378
Idaho	2,096	101	2,197	1,805	144	1,949	-248	-11.28	0.06%	0.225
Alaska	1,354	642	1,996	1,355	575	1,932	-64	-3.20	0.06%	0.255
South Dakota	1,076	97	1,173	1,737	124	1,861	687	58.56	0.05%	0.204
North Dakota	1,275	105	1,380	1,405	103	1,506	126	9.13	0.04%	0.194
Montana	2,022	71	2,093	2,331	71	1,402	-691	-33.02	0.04%	0.129
Wyoming	906	108	1,014	247	98	345	-669	-65.95	0.01%	0.058
	1,891,959	599,726	2,491,680	2,710,852	693,164	3,403,016	911,336	36.58	100.00%	

2.4. Estimating the Muslim Population by State for 2000

The PUMS data for Census 2000 were not available at the time of this writing, but we can use the SF3 (detailed long-form) data to derive estimates consistent with the 1990 derivation. We do that by generating an ordinary least-squares regression model from the 1990 census data in which we predict the 1990 state estimates of the Muslim population from 1990 census variables on ancestry, language, and place of birth measured at the state level. We then apply that regression model to the Census 2000 variables on ancestry, language, and place of birth measured at the state level in order to generate estimates of the "possibly Muslim" population in each state in the year 2000. To accomplish this task, we need comparable variables available from both Census 2000 and the 1990 at the state level. We also must use only a small number of predictor variables because the relatively small number of states (48 continental states) means that the regression model has to be parsimonious in its choice of variables. We also seek to have at least one variable from each of the three categories of characteristics – ancestry, language, and place of birth. Finally, we seek a set of variables that captures some of the regional diversity in the origin of Muslim immigrants to the United States.

Given the above considerations, three dependent variables were chosen as the variables used to predict the number of possibly Muslim people in each state in 1990:

(1) the number of people who indicated that they were of Arab ancestry (meaning that they responded 'Arab' or indicated that their ancestry was an Arab country) (ARAB_ANC);

(2) the number of people who indicated that they spoke the Persian language at home (PERS), and

(3) the number of people born in Pakistan (PAKI_POB).

These three variables combined to predict the number of possibly Muslim people in each state with considerable precision. Actually, only two of the three variables remained in the model. Because of the high collinearity between the number of people of Arab ancestry and the number of persons speaking Persian (r = .897), the latter variable dropped out of the model, leaving the two variables of people of Arab ancestry and the number of people born in Pakistan as the two predictors of the number of "possibly Muslim" people.

The overall R^2 was .996, and there was only one outlier beyond 3 standard deviation units in terms of the standard residuals – the possibly Muslim population of Texas was overpredicted by the regression model. Two states, New York and Ohio, were slightly underpredicted, and each had a standard residual that was greater than 2, but less than 3. It was not clear from the data why these states were not more accurately predicted. The regression model that was then used to predict the number of possibly Muslim people in each state in 2000 was as follows:

N_2000 = -339.849 + (ARAB_ANC * 1.35) + (PAKI_POB * 4.94).

Applying this regression to the same predictor variables drawn from Census 2000 generated an estimate of the number of possibly Muslim persons by state for the year 2000, and these results are shown in Table 2. The total number of "possibly Muslim" (exclusive of African-Americans) for 2000 was 2,709,852. The estimates by state then provide input for the calculation of the number of African-American Muslims in 2000 and ultimately the estimate of the total Muslim population by state in 2000.

African-American Muslims in 2000 were estimated in the same way as they had been for the year 1990. In 2000 the total U.S. African-American population was enumerated in the census to be 34,658,190. The population of African-American Muslims was constrained initially to be the smaller of either 2 percent of the total state African-American population or 20 percent of the total Muslim population in the state (which involved multiplying the PUMS possibly Muslim total for that state by 0.256). However, we want the total African-American Muslim population to sum to 693,164, so the totals for each state were controlled to that value. These numbers were then added to the regression-based estimate of the possibly Muslim population in 2000 to produce the state-level estimate of the number of Muslims residing in that state in 2000. These

data, are shown in Table 2 where it can be seen that the total Muslim population in 2000 was estimated by this method to be 3,403,016, which is higher than, but still generally in line with most other estimates of the Muslim population in the United States. Once again, given the methodology that I employed, this number almost certainly represents the upper bound of the number of Muslims.

3. DISCUSSION OF FINDINGS

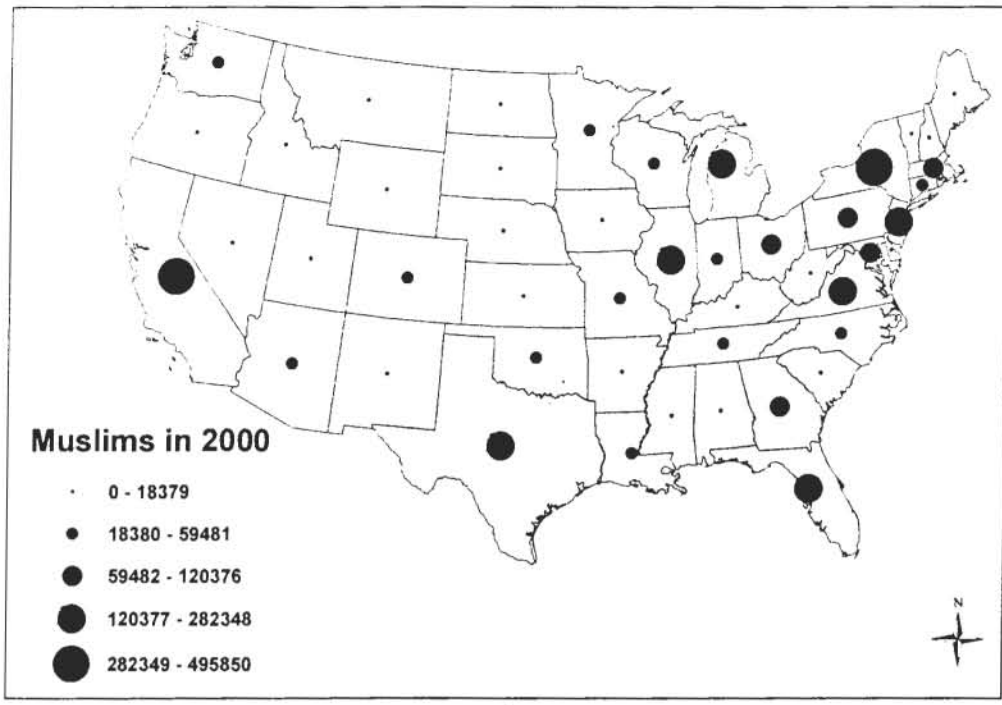
New York had more Muslims than any other state as of 2000, reversing places with California which had been the home of more Muslims than New York in 1990, but which slipped to second in 2000. Nearly half a million Muslims were estimated to be living in New York state, accounting for almost 15 percent of the nation's Muslim population. The ARIS survey also found that New York was the state with the greatest number of Muslims (Kosmin and Mayer, 2001), although in that study 24 percent of all Muslims were estimated to be in New York. That number seems anecdotally to be too high, and the estimates shown in Table 1 seem more reasonable in terms of geographic distribution. On the other hand, if we combine the states of New York, New Jersey and Connecticut, we have accounted for 22 percent of the Muslim population in the United States.

New York's increase between 1990 and 2000 could have come at California's expense, since the estimates show a slightly smaller population in California in 2000 than in 1990, whereas New York's population increased more than any other state. Nonetheless, California is estimated to have 463,000 Muslims, nearly as many as in New York. Texas was a close second in terms of the growth in the Muslim population between 1990 and 2000 and that increase of more than 150,000 pushed it from fifth place in 1990 to third place in 2000, ahead of Michigan and New Jersey, which had been third and fourth, respectively, in 1990. These results have to be tempered by the caution that Texas was the only state for which in 1990 the regression model significantly overstated the estimated Muslim population, so it is possible that growth in Texas was not quite as rapid as these numbers show. However, if we control for that effect by comparing the predicted number of Muslims in 1990 in Texas with the predicted number in 2000, the difference is still an increase of 130,000 and Texas is still the second fastest growing state with respect to the number of Muslims.

Michigan and Illinois round out the top five most populous Muslim states which when combined account for 49 percent of Muslims in the United States. The states that comprise the remainder of the top ten are, in order, Florida, New Jersey, Virginia, Ohio and Pennsylvania. These then states combine to account for 73 percent of Muslims. Notably, however, there are four states – Massachusetts, Maryland, Georgia, and North Carolina – that experienced significant absolute increases in the number of Muslims between 1990 and 2000 even though they are not (yet) among the top ten in terms of the total population of Muslims. The latter of these two states, Georgia and North Carolina, were in the top five in terms of the percentage change in population between 1990 and 2000. Along with Texas, Utah and Nevada the Muslim population also increased by more than 80 percent in that intercensal period. This was substantially above the 37 percent increase in the entire Muslim population, which in turn was substantially higher than the 13 percent increase in population size of the whole U.S. population during that period of time.

The Muslim population was thus growing almost three times as fast as the U.S. population, and that growth was geographically uneven. Figure 1 maps the population of Muslims by state in 2000, showing proportionately the numbers by each state. Muslims are concentrated especially along the east coast (42 percent are in states that are bordered by the Atlantic ocean), and in the Great Lakes region, with Texas and California looking somewhat like geographic outliers on the map.

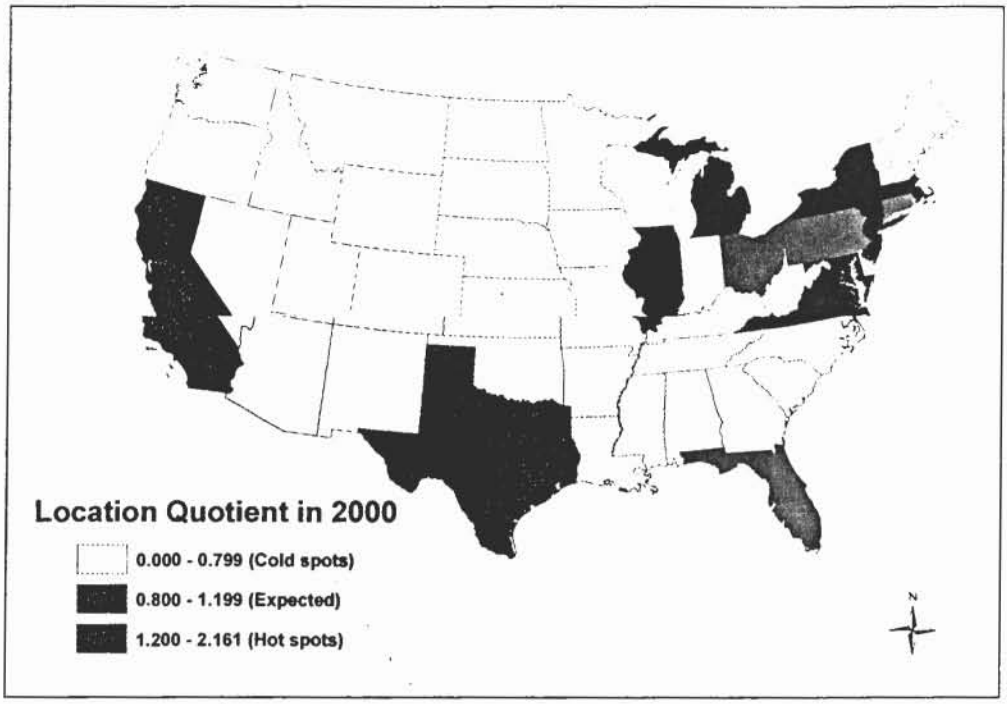
Figure 1. Number of Muslims by State : 2000



The clustering of Muslims in specific areas cannot be discerned from this map, of course, because it doesn't take into account the size of the total state population. Location quotients provide us with a quick and easy way to assess the state-by-state clustering of Muslims. This measure calculates the ratio of the percentage of all Muslims that are in a state to the percentage of the total population in that state. A value greater than 1 indicates that there are more Muslims than would be expected if Muslims were distributed geographically in the same way that the entire population is distributed. A value less than one indicates that there are fewer Muslims than would be expected. The far right column in Table 2 shows the location quotient, and these values are mapped in Figure 2. In that map, the "hot spots" are those states with a location quotient that is at least 1.2. New York and New Jersey both have location quotients higher than 2, indicating that both states have more than twice as many Muslims as you would expect given the total populations of those states. There is another concentration in the Washington, D.C. area, where the District of Columbia and its surrounding states of Maryland and Virginia all have location quotients well above1. A third cluster is in the upper Midwest-Great Lakes region where both Michigan and Illinois have location quotients clearly higher than 1.

Of some interest is the fact that neither California nor Texas has a location quotient that is very far above 1. They are in the "expected" group of states with location quotients between 0.8 and 1.2, indicating that the number of Muslims is roughly proportionate to the state's share of total population. Both California and Texas have attracted Muslims probably because they were, in the 1990s, centers of the information technology boom, and the rapid increase in the Muslim population in Texas was actually just bringing that state's Muslim population up to the number that might be expected given the total population size in Texas. I mentioned that New York's gain in Muslims might have been California's loss, but it is more realistic to think that in the 1990s the higher educated immigrant Muslim population was being attracted away from high-tech firms in California toward those kinds of firms in Texas. California was hit by a recession in

Figure 2. Location Quotients of Muslims by State: 2000



the first part of the decade of the 1990s that did not affect Texas, and housing prices in Texas have been consistently lower than in California, making Texas a more attractive location if salaries are otherwise commensurate. Finally, the map shows that most states, especially those in the middle of the country, were "cold spots," indicating that there were fewer Muslims than would be expected on the basis of total population.

CONCLUSION

No one can know for certain how many Muslims there are in the United States, but all but one recent study suggest that the number is not currently very far above 3 million. None of the previous studies was able to provide estimates of the population of Muslims at the state level, but I have done so in this paper by combining results from the 1990 Public Use Microdata Sample with detailed (SF3) data released in late 2002 by the U.S. Census Bureau. I have combined data on ancestry, language, and place of birth to estimate the "possibly Muslim" population, which is largely exclusive of the African-American Muslim population. The latter group has been estimated from census data, but based on survey data from which one can derive the percentage of the black population that is Muslim, constrained by survey data suggesting the percentage of the Muslim population that is estimated to be African-American. The overall numbers of Muslims estimated by this method – 2.5 million in 1990 and 3.4 million in 2000 – are slightly higher than the results from survey data, and suggest that the numbers for each state are reasonable, albeit probably maximum, representations of the actual numbers of Muslims in those states.

These estimates provide the most quantifiable data thus far produced of the geographic distribution of the Muslim population. Those researchers familiar with the U.S. Muslim population may not be sur-

prised to see the clusters of Muslims in the New York-New Jersey area, the Washington, D.C., area and the upper Midwest-Great Lakes. Nor will they be surprised by the large numbers of Muslims in California and Texas. However, the numbers and details are of considerable interest. In particular, these data suggest that California has a very large Muslim population, but it is probably declining in size rather than growing. Issues of interfaith relations can perhaps be projected from the fact that the Muslim population is growing in percentage terms most quickly in parts of the "Bible Belt" (especially the states of Texas, Georgia, and North Carolina) and in the western mountain states that are increasingly dominated by Mormons, including Utah and Nevada.

REFERENCES

American Muslim Council (1991), *Fact Sheet: U.S. Muslim Population*, Washington, D.C., American Muslim Council.

AUSTIN A.D. (1984), *African Muslims in Antebellum America: A Sourcebook*, New York, Garland Publishing Co.

BAGBY I., P. PERL, and B. FROEHLE (2001), *The Mosque in America: A National Portrait*, Washington, D.C., Council on American-Islamic Relations.

BELT D. (2002), The World of Islam, *National Geographic*, (January).

GHAYUR M.A. (1981), Muslims in the United States: Settlers and Visitors, *The Annals of the American Academy of Political and Social Science*, n° 454, pp. 150-163.

GOLDSTEIN S. and B. KOSMIN (1991), Religious and Ethnic Self-Identification in the United States 1989-90: A Case Study of the Jewish Population. Presented at Population Association of America, Washington, D.C.

HADDAD Y.Y. (1986a), *A Century of Islam in America*, The American University, Washington, D.C.

HADDAD Y.Y. (1986b), Muslims in America, *The Muslim World*, n° 76, pp. 93-122.

KOSMIN B. (1991), *Research Report: The National Survey of Religious Identification 1989-90*, City University of New York, Graduate School and Graduate Center, New York.

KOSMIN B. and S. LACHMAN (1993), *One Nation Under God: Religion in Contemporary American Society*, New York, Crown Trade Paperbacks.

KOSMIN B. and E. MAYER (2001), *Profile of the U.S. Muslim Population*, Graduate Research Center of the City University of New York, New York.

LEVTZION N. (1968), *Muslims and Chiefs in West Africa*, Oxford, Clarendon Press.

LOVELL E.K. (1992), "A survey of the Arab-Muslims in the United States and Canada", in *Islam in North America: A Sourcebook*, edited by M. A. Köszegi and J. G. Melton, New York, Garland Publishing, Inc.

McCLOUD A.B. (1995), *African American Islam*, New York, Routledge.

NYANG S. (1992), "Islam in the United States of America: A review of sources", in *Islam in North America: A Sourcebook*, edited by M. A. Köszegi and J. G. Melton, New York, Garland Publishing, Inc.

NYANG S.S. (1999), *Islam in the United States of America*, Chicago, ABC International Group, Inc.

OATLING R.N. (1988), Americans facing toward Mecca, *Time*, May, 23.

PHILLIPP T. (1980), "Muslims", in *The Harvard Encyclopedia of American Ethnic Groups*, edited by S. Thernstrom. Cambridge, MA, The Belknap Press of Harvard University Press.

RASHID S. (1999), Islamic Influence in America: Struggle, Flight, Community, *Journal of Muslim Minority Affairs*, vol. 19, pp. 7-31.

SMITH T.W. (2001), *Estimating the Muslim Population in the United States*, The American Jewish Committee, New York.

STONE C. (1991), "Estimate of Muslims Living in America", in *The Muslims of America*, edited by Y. Y. Haddad, New York, Oxford University Press.

WEEKES, R.A. (1984), *Muslim Peoples: A World Ethnographic Survey*, Westport, CT, Greenwood Press.

WEEKS J.R. (1988), The Demography of Islamic Nations, *Population Bulletin*, vol. 43, pp. 1-53.