Analysis Overview

As described in detail elsewhere (see Saxe & Tighe, 2013; Saxe, Tighe, & Boxer, In press; Tighe, et al., 2010, 2011), our method draws on data from repeated independent samples of the U.S. adult population to estimate the proportion of the population who identify as Jewish. All available and relevant sources of data are reviewed. Analyses based on a representative sample of surveys allow development of a profile of the population and assessment of the reliability of estimates from individual studies. This is particularly important in estimating the size of a small population group.

The full sample of surveys in the SSRI database currently spans the years 2000 to 2012, with additional data from surveys conducted in 1988 and 1992. The database includes a total of 424 independent samples with a combined sample size of 734,314 respondents, of whom 16,279 identify as Jewish by religion. The present report is based on the most recent data, from the years 2006 to 2012, and for the continental United States[4] This subset consists of 348 samples with a total of 328,130 respondents and 6,912 Jewish respondents.

A majority of the surveys (62%) used random digit dialing (RDD) telephone techniques. Thirty-six percent were cell phone surveys and two percent were in-person interviews, mail or other. Landline surveys account for 78% of the cases, and cell phone surveys account for 17% of the cases. Cell phone surveys are typically included as an additional independent sample collected along with a landline sample. It improves estimation of particular demographic groups that tend to be under-represented in landline samples, such as younger and less affluent groups (Baker, et al., 2010; Biemer & Link, 2006; Blumberg & Luke, 2010; Lavrakas, et al., 2010; Link et al., 2007; Pew Research Center for the People and the Press, 2006). Forty-three percent of the surveys were mixed landline and cell phone samples. Given the different methods of selection for landline and cell phone surveys, each is treated as a separate independent sample.

All of the surveys provide data on those who identify as Jewish by religion (JBR), which is the largest proportion (over 80%) of the Jewish population (see Saxe, Tighe and Boxer, In press) and therefore serves as the baseline for generating total population estimates. Often the religious identification question is "What is your religion? Is it Protestant, Roman Catholic, Jewish, something else, or no religion?" Nearly all include Jewish as one of the discrete options. An increasing number of surveys provide no discrete options and ask simply, "What is your religion, if any?" and record all self-generated responses to the question.

The range in estimates of the Jewish population (self-identified by religion) across the sample of surveys is displayed in Figure 1. Each point represents the weighted estimate of the percent Jewish for that survey. Estimates ranged from below 1% to over 4% with most falling between 1.5% and 2%. Because these studies were not designed to estimate the incidence rate of rare groups, the survey weights may not have been optimal for the purpose of Jewish population estimation.[5] For example, many survey weights include adjustments for

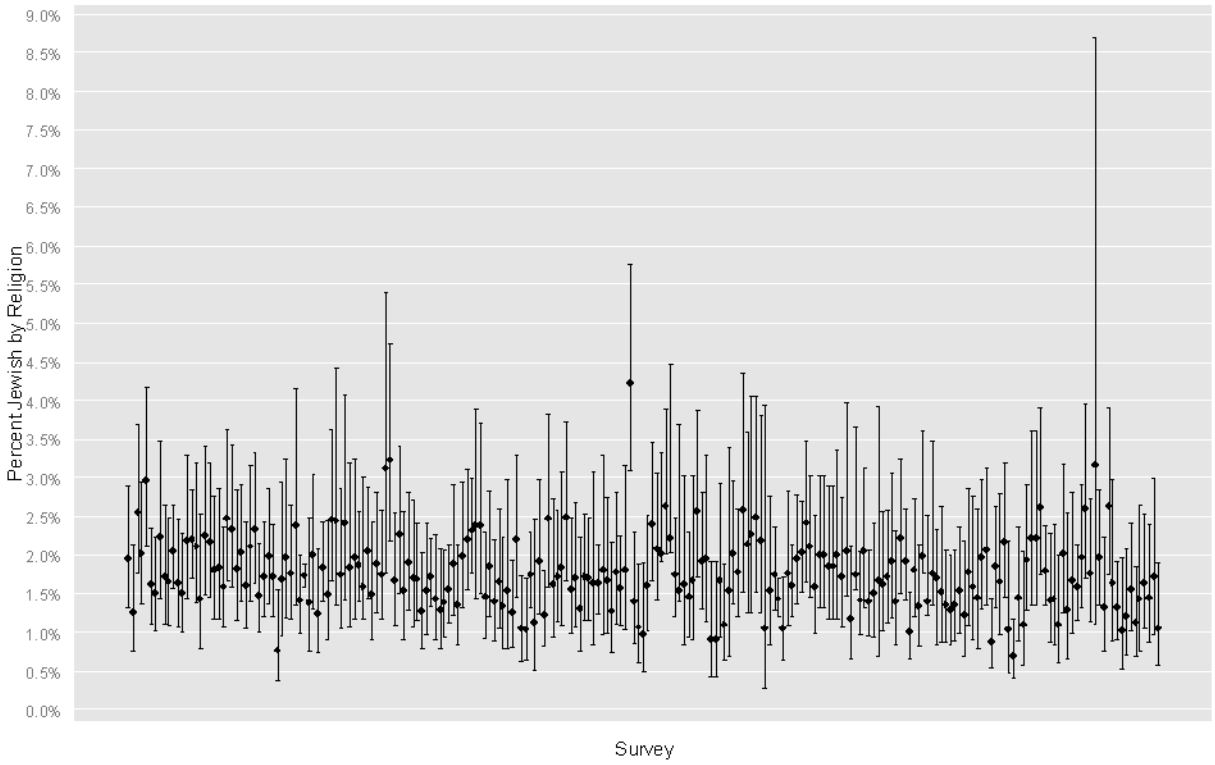


Figure 1. Estimated percent Jewish using existing survey weights, all surveys 2006 to 2012.

census regions of the Northeast, West, South, and Midwest, which could deflate estimates of Jews. The Jewish population, however, varies substantially within each region, particularly within certain metropolitan areas. Jews are also more likely to be older and college educated, though the latter also varies by age (see Tighe et al., 2010, 2011). Survey weights need to be optimized for estimation of these factors and have sufficient number of respondents to estimate these factors reliably in order to have confidence in a population estimation based on these data. This is not feasible for estimates derived from most single surveys analyzed on their own.

Cross-Survey Model

To overcome limitations associated with analysis of single surveys, respondent-level data from the individual studies are combined. Weighting factors associated with estimation of the Jewish population are estimated directly. These factors include geographic location and variation by age, education, and the interaction of age and education. Although one survey might have no Jewish respondents in certain age groups or in non-metropolitan areas, across all of the surveys we have a sufficient number of observations with which to estimate these factors. Data are combined using hierarchical Bayesian analysis methods to account for the clustering of respondents within surveys. This enables us both to estimate the population and account for the different sampling variances across the different sources of data (see Appendix E for model specification and parameter estimates).

Population Estimates

Consistent with SSRI's previous research, the overall 2012 estimate of the U.S. adult population who identify as Jewish by religion is 1.80% (CI: 1.75% - 1.85%), corresponding to 4.2 million U.S. adults (CI: 4,091,000 to 4,328,000; See Table 1). Distributions varied by age, education, race, and metropolitan status. For example, among older Americans, aged 65 years and older, 2.5% identify as Jewish by religion compared to 1.4% of 34 to 45-year-olds. A higher proportion of college graduates identify as Jewish (3.8%) compared to non-college graduates (1.0%).

Demographic Distribution

Figure 2 displays the distribution by age for Jewish adults (by religion) overall in comparison to U.S. population totals. Just over 12% of Jewish adults are aged 18 to 24 years, similar to the 12.8% among all U.S. adults. Among those between the ages of 25 and 55, however, there are fewer Jewish adults in comparison to the proportion observed among all U.S. adults. Nearly a quarter (24%) of all Jewish adults (by religion) are aged 65 years and older, compared to 18% within this age group

TABLE 1: 2006 TO 2012 POPULATION MODEL, ADULT JEWISH POPULATION BY RELIGION, ESTIMATES BASED TO CPS 2012

	U.S. Adults		Jewish Adults				
	Population	Pct	Percentage of U.S. Adults (CI)		Population	Lower Bound	Upper Bound
Total All Groups	**233,167,034**		**1.8**	**(1.8,1.9)**	**4,206,000**	**4,091,000**	**4,328,000**
Age							
18-24 years	29,919,014	12.8	1.7	(1.6,1.9)	517,000	468,000	564,000
25-34 years	40,957,750	17.6	1.5	(1.3,1.6)	600,000	550,000	650,000
35-44 years	39,682,053	17.0	1.4	(1.3,1.5)	570,000	532,000	610,000
45-54 years	43,680,336	18.7	1.7	(1.6,1.7)	722,000	683,000	762,000
55-64 years	37,675,421	16.2	2.1	(2.0,2.2)	787,000	747,000	828,000
65+ years	41,252,460	17.7	2.5	(2.3,2.6)	1,010,000	966,000	1,053,000
Education							
Non-College	167,390,130	71.8	1.0	(1.0,1.1)	1,700,000	1,624,000	1,783,000
College Grad	65,776,904	28.2	3.8	(3.7,3.9)	2,505,000	2,427,000	2,585,000
Race							
White, non-Hisp	155,417,364	66.7	2.4	(2.4,2.5)	3,748,000	3,650,000	3,856,000
Black, non-Hisp.	27,762,952	11.9	0.3	(0.2,0.3)	70,000	57,000	85,000
Hispanic	34,556,565	14.8	0.7	(0.6,0.8)	229,000	197,000	266,000
Other non-Hisp.	15,430,154	6.6	1.0	(0.9,1.2)	158,000	136,000	182,000
Metropolitan							
Non-Metro	36,696,976	15.7	0.3	(0.3,0.4)	126,000	113,000	142,000
Metro	196,470,058	84.3	2.1	(2.0,2.1)	4,080,000	3,965,000	4,201,000

Notes: a) Source: (U.S. Census Bureau, *Current Population Survey,2012 Annual Social and Economic (ASEC) Supplement*, March 2012).

FIGURE 2: AGE DISTRIBUTION OF U.S. JEWISH POPULATION: 2012.

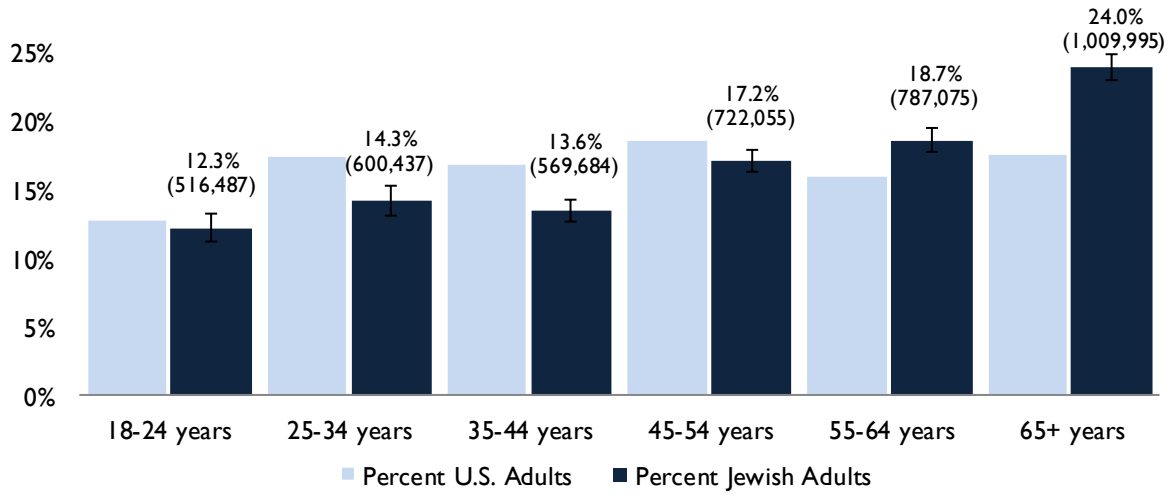
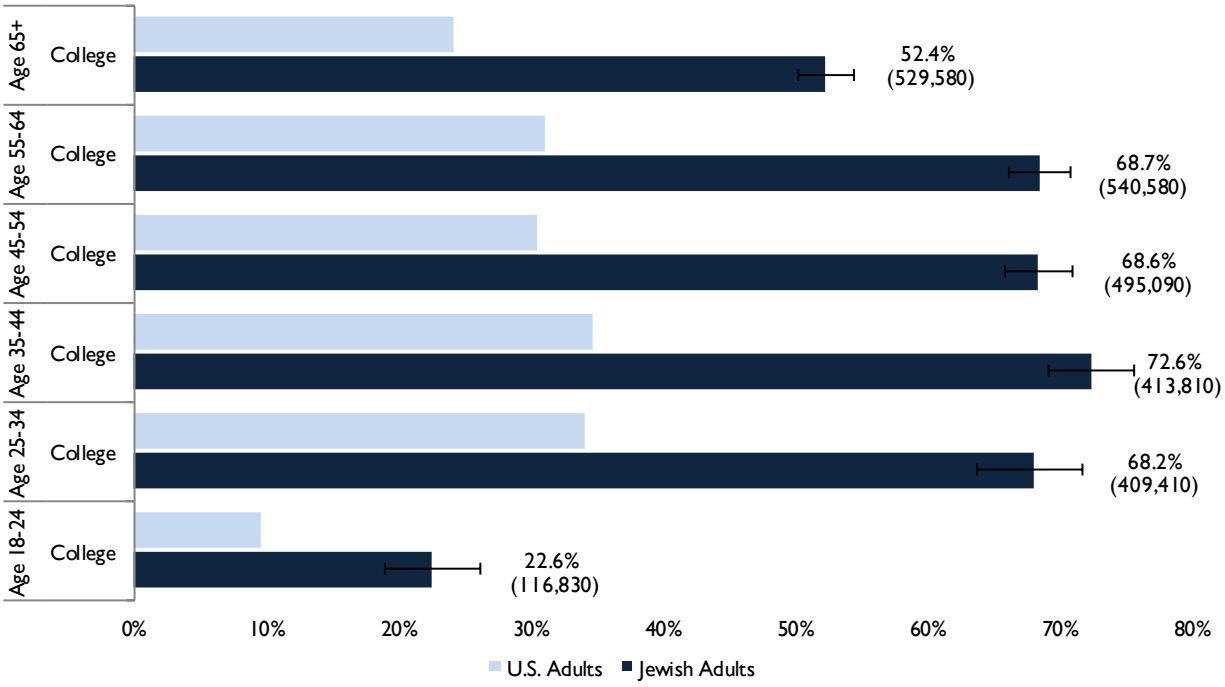


FIGURE 3: EDUCATIONAL ATTAINMENT FOR U.S. ADULTS AND JEWISH ADULTS.



among all U.S. adults. This is, in part, explained by longevity and the increased life expectancy among higher educated whites in the United States (Olshansky et al., 2012).

Jewish adults are also more likely to be college educated compared to other U.S. adults (see Figure 3). This is true across all age groups. Fifty-two percent of Jewish adults aged 65 and over are college graduates, compared to just 24% of U.S. adults.

Although Jews are for the most part, non-Hispanic white, just over 5% of Jewish adults identify as Hispanic, nearly 4% identify with some other non-White group and just under 2% identify as African American (see Figure 4).

Geographic Distribution

Figure 5 displays how the Jewish population (by religion) is distributed throughout the continental United States. Just over 20% of the population resides in New York State, 14% resides in California, followed by 12% in Florida; 8% in New Jersey; and 5% in Massachusetts and Pennsylvania. An interactive presentation of these data which includes demographic distributions of the Jewish population by state and local area is available online (http://ajpp.brandeis.edu/).

FIGURE 4: RACIAL COMPOSITION OF U.S. AND JEWISH ADULTS.

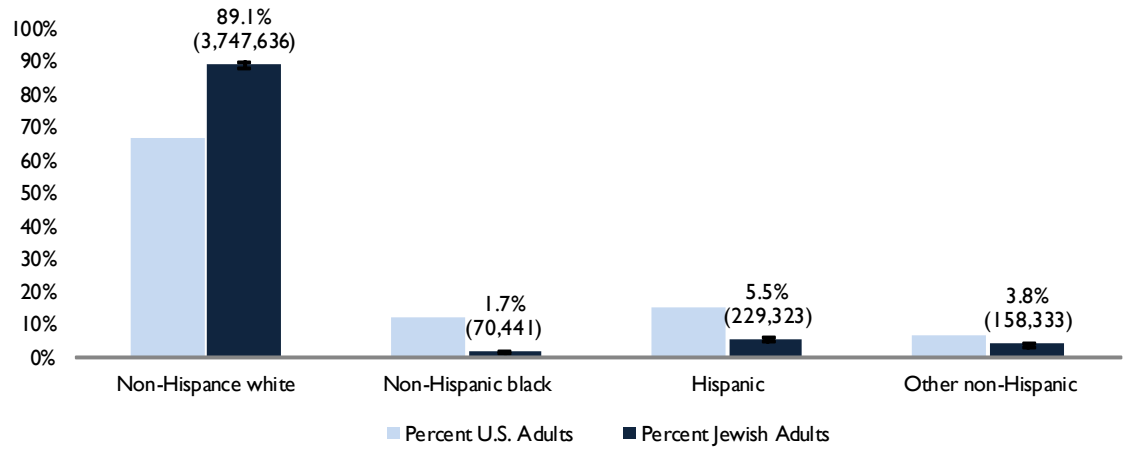
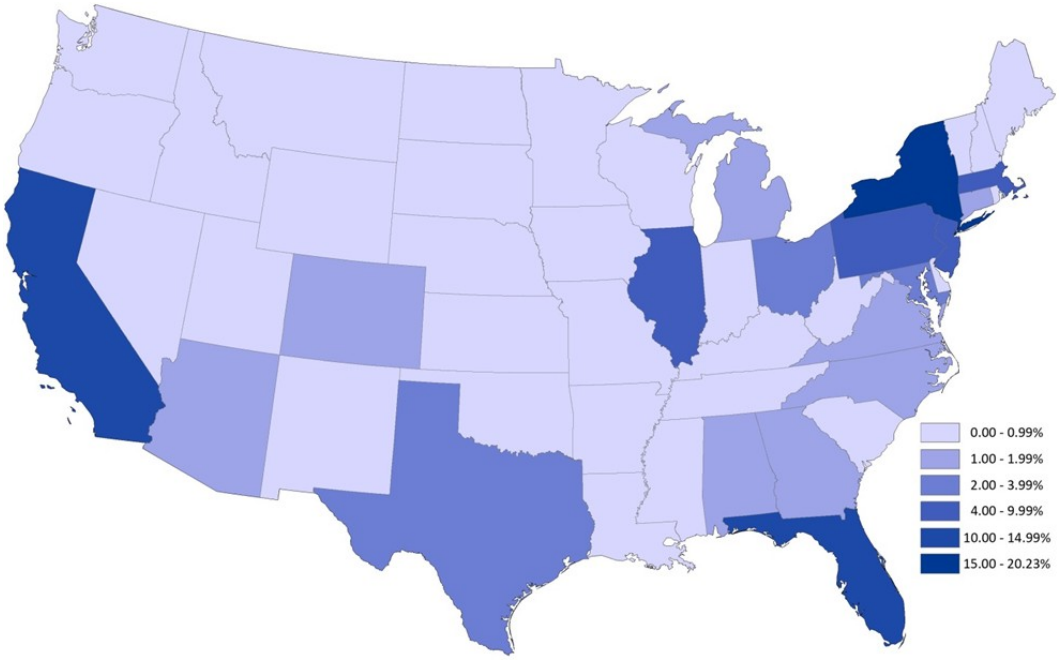


FIGURE 5. GEOGRAPHIC DISTRIBUTION OF JEWISH (JBR) ADULTS.



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Nearly 80% of the U.S. Jewish population lives in 10 states. Table 2 displays the detailed estimates for these states in which the Jewish population (self-identified by religion) is between 2% and 20% of the total (see Appendix B for estimates for all states).

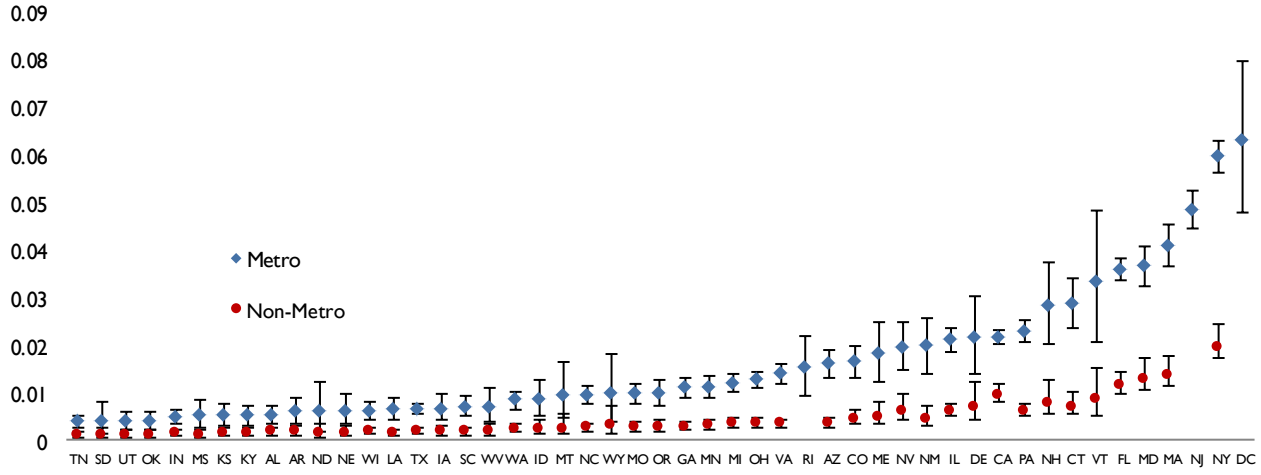
Not surprisingly, along with the concentration of Jews in a small number of states, the population is also concentrated primarily in metropolitan areas (97%), rather than in non-metropolitan areas. The distribution within metropolitan versus non-metropolitan areas, however, varies by state (see Figure 6). For example, in New York state 2% of adults outside of metropolitan areas identify as Jewish by religion, compared to 1.3% in states like Massachusetts and Maryland. In non-metropolitan areas of states like Pennsylvania and Illinois, less than one percent (0.6%) of adults are Jewish by religion (see Appendix C for detailed estimates).

TABLE 2: JEWISH POPULATION DISTRIBUTION BY STATES WITH THE LARGEST PROPORTION OF JEWISH POPULATION (SELF-IDENTIFIED BY RELIGION)

	U.S. Adults		Jewish Adults					
	Population	Pct	Percentage of U.S. Adults (CI)		Population	Lower Bound	Upper Bound	Percentage within US Jewish. Adults (CI)	
National Estimates	233,167,034		1.8	(1.8,1.9)	4,206,000	4,091,000	4,328,000		
New York	15,049,800	6.5	5.7	(5.3, 6.0)	850,800	803,900	897,600	20.2	(19.3, 21.2)
California	28,306,635	12.1	2.1	(2.0, 2.3)	604,900	564,500	645,800	14.4	(13.5, 15.2)
Florida	15,040,152	6.5	3.5	(3.3, 3.7)	523,900	489,600	562,800	12.5	(11.7, 13.3)
New Jersey	6,621,896	2.8	4.9	(4.5, 5.3)	321,200	294,900	349,500	7.6	(7.1, 8.2)
Massachusetts	5,100,843	2.2	4.0	(3.6, 4.5)	205,200	184,100	228,400	4.9	(4.4, 5.4)
Pennsylvania	10,023,029	4.3	2.0	(1.8, 2.2)	197,900	179,800	218,100	4.7	(4.3, 5.2)
Illinois	9,605,615	4.1	1.9	(1.7, 2.2)	185,500	164,900	207,800	4.4	(3.9, 4.9)
Maryland	4,446,450	1.9	3.6	(3.2, 4.0)	158,600	141,000	178,300	3.8	(3.4, 4.2)
Texas	18,605,982	8.0	0.6	(0.5, 0.7)	110,100	94,900	126,900	2.6	(2.3, 3.0)
Ohio	8,664,530	3.7	1.0	(0.9, 1.2)	89,100	76,900	103,400	2.1	(1.8, 2.5)

Notes: a) Source: (U.S. Census Bureau, *Current Population Survey,2012 Annual Social and Economic (ASEC) Supplement*, March 2012).

FIGURE 6. DISTRIBUTION OF JEWISH (JBR) ADULTS BY METROPOLITAN STATUS ACROSS STATES.



County-Level Estimates

The synthesis models for county-level estimates are based on 185 independent samples, which include a total of 235,000 respondents, and 4,841 Jewish respondents. For estimation purposes, counties were combined using Public Use Microdata Areas (PUMAs) used in the American Community Survey (ACS).[6]

County-level population models were similar to the national-level model. In addition to the clustering of respondents within surveys and states, the nesting of respondents within counties/county-groups was also included. Full model specification and parameter estimates are included in Appendix E. Estimates were post-stratified to the ACS 2011 for the six categories of age, two categories of education, four categories of race, the age x education interaction, as well as by state and county/ county-group.

The largest population centers, combining across counties, ordered by the size of the estimated JBR (Jewish by religion) population is displayed in Figure 7. The greatest percentage resides in the five boroughs of New York City (13%), with the next largest in Southern Florida (Miami, Palm Beach and Broward counties; 8.6%). Areas outside of New York City (Long Island & Westchester) account for 7% of the total population. And, Los Angeles County (including Venture and Orange counties), which encompasses one of the largest geographic areas, also accounts for just over 7% of the total population. The Boston area accounting for nearly 5% of the population, includes western suburbs and counties in western Massachusetts,[7] with the next largest areas Northern New Jersey, Chicago, Philadelphia, and Washington DC.

Variation within States

Within states there is variability in the geographic distribution of the Jewish population. In New York state, for example, the Jewish population is more highly concentrated in counties in the New York City Area (see Figure 8). In Brooklyn/Kings county, 11.2% of adults are JBR, accounting for 5% of the total U.S. JBR population. In Manhatten, 13.8% of all adults are JBR. The other counties with the highest concentration of the JBR population are Nassau (12.7% of the county, 3% of U.S. JBR), Queens (6.1% of the county, 2.5% of U.S. JBR) , Westchester (9.7% of the county, 1.8% of U.S. JBR) and Suffolk (5.7% of the county, 1.5% of U.S. JBR). The remainder of the state accounts for less than 5% of the total JBR population.

See Appendix D for full list of county-level estimates, also available online at: http://ajpp.brandeis.edu.

FIGURE 7. DISTRIBUTION OF THE JEWISH ADULT (JBR) POPULATION BY TOP POPULATION AREAS.[8]

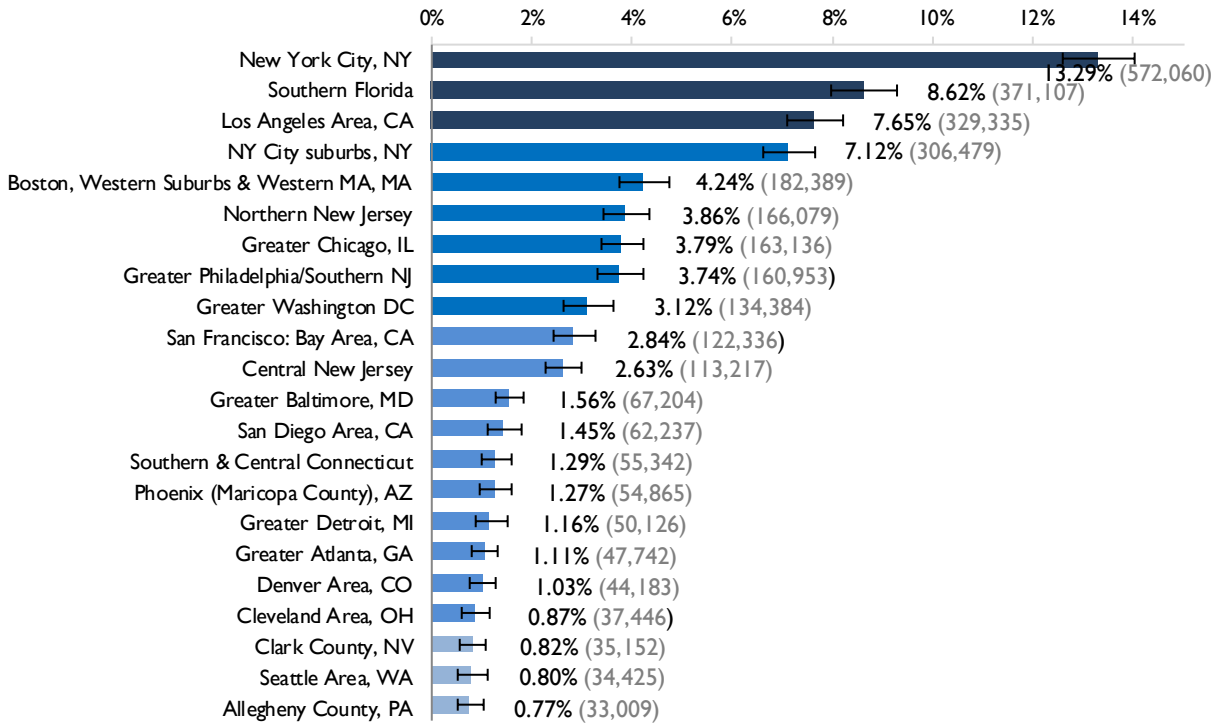
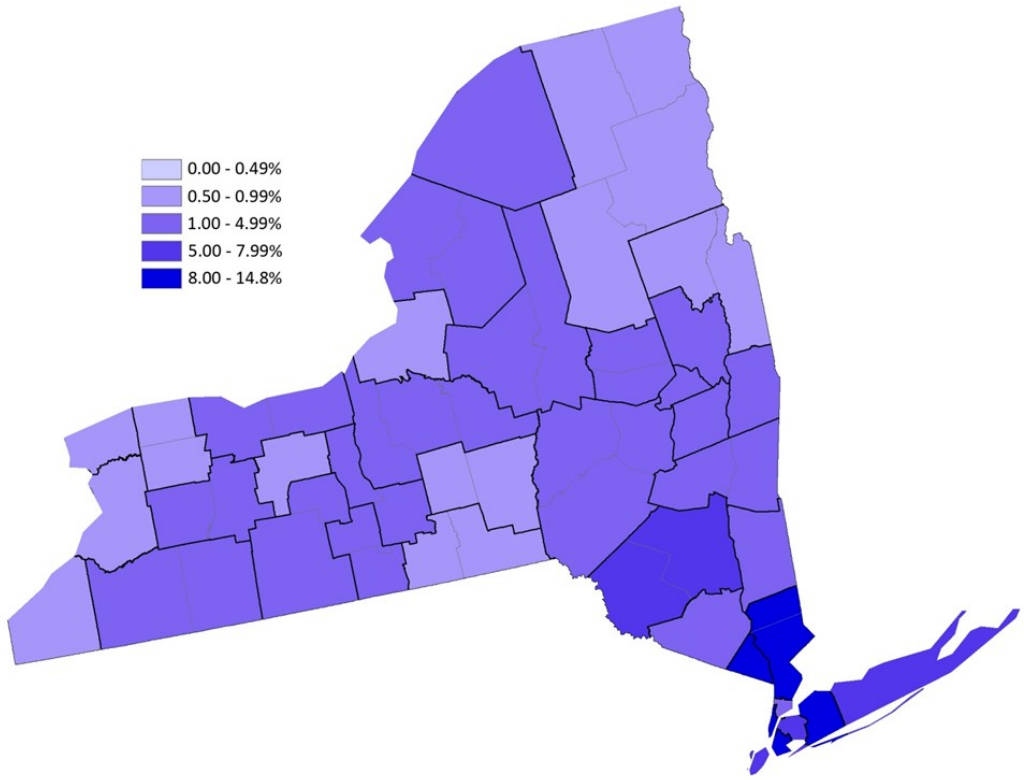


FIGURE 8. DISTRIBUTION OF THE JBR POPULATION WITHIN NEW YORK STATE.



Total Population Estimates

Including Children and Non-religiously Identified Jews

The data synthesis approach enables development of highly reliable estimates of the Jewish population who identify as Jewish in response to standard questions about religion. Two groups, however, are not represented in the cross-survey estimates based on the religious identification question:

- Jews who identify as such, but do not consider their religion to be Jewish.
- Children (those under 18 years of age)

In both cases, several alternative methods to estimate the size of these sub-populations can be applied. The methods require inferences from a variety of data sources.

Non-religiously Identified Jews

The majority of those who consider themselves Jewish in the United States identify as "Jewish by religion" (JBR) when asked by survey researchers. Some, however, do not. For the JBR population, the data synthesis approach can provide highly reliable estimates of the total population. For the "Jewish not by religion" (JNBR) population, national-level data to describe these individuals is available only in a few specific studies, such as the NJPS and AJIS.[9] Only a few general population surveys include assessment of Jewish ethnic or cultural identification and, while useful, it only provides partial data to generate an estimate of how many people in the United States identify as ethnic or secular Jews (i.e., JNBRs).

One such study is the American National Election Study (ANES) which includes an item that asks: "In addition to being American, what do you consider your main ethnic group or nationality group?" Only 10% of those who identified as Jewish by religion indicated Jewish in response to this open-ended question. Among those who did not identify as Jewish by religion, 0.3% indicated Jewish as the main ethnic group with which they identify. This corresponds to an increase in the estimated size of the Jewish population by 14%.[10]

Targeted surveys of the Jewish population are often inadequate for purposes of overall population estimation. However, to the extent that they contain representative samples of religiously and non-religiously identified Jews, they can provide useful information regarding the relative proportion of non-religiously identified Jews within the total Jewish population. For example, previous administrations of the NJPS (1990, 2001-2002) along with other targeted surveys such as the AJIS (2000, 2008) and SAJ (see Boxer et al., 2013) all include similar questions that enable one to estimate the proportion of the total Jewish population who identify as Jewish but not when asked about religion. Anyone who did not identify as Jewish in response to the initial religious identification question was asked follow-up questions about whether either of their parents were Jewish, whether they were raised Jewish, and whether they considered themselves Jewish (see Table 3).

Analysis of NJPS 2001 yielded an estimate of 15.8% of Jewish adults who identified as Jewish in response to the follow-up

TABLE 3: ESTIMATES OF THE TOTAL ADULT JEWISH POPULATION ACROSS SURVEYS THAT INCLUDE JEWS WHO DO NOT IDENTIFY AS JEWISH BY RELIGION

	NJPS 2001[a]	AJIS 2001[b]	AJIS 2008[b]	GSS 2008-2012	SAJ 2012
Jewish by religion (JBR)	3,066,300	2,930,000	2,800,000	3,919,824	4,206,000
Consider self Jewish (CSJ)	582,975			798,048	971,000
Raised Jewish	328,936				
No religion., J. parent(NRJP)	775,907	1,120,000	1,288,000		*307,000*
Total JBR+CSJ[d]	3,649,275	4,050,000	4,088,000	4,717,762	5,177,000
Total proportion of secular/other Jews[e]	.16	.27	.31	.17	.19

Notes: a) Secondary analysis conducted by SSRI. b) (Kosmin, 2009) Estimates for AJIS 2008 JBR is the mid-point estimate (2.7 -2.8 million). c) Based on 2008 and 2010 SSRI population estimates; CSJ adjusted based on results from SAJ 2010. d) Total for AJIS was calculated by adding the estimates of JBR and NRJP. e) This row indicates the degree to which the total population increases from the base JBR estimate with the inclusion of those who consider themselves Jewish, but not by religion.

questions after not identifying as Jewish by religion.[11] AJIS 2001 estimated 2.9 million Jewish by religion. Including a broader definition of others who could be considered to be Jewish by parentage, increases the population to 4 million; thus, 27% of the total Jewish population identifies as Jewish but not by religion.

More recent sources of data include AJIS 2008 (Kosmin, 2009), the SAJ 2010 & 2012, as well as the General Social Survey (Smith, Marsden & Hout, 2011). AJIS 2008 did not report a separate estimate for those who consider themselves Jewish but not by religion. Instead, they identify Jews of no religion as those who have at least one Jewish parent. Using this broader definition, the total number of Jewish adults in the United States increases by a factor of nearly 1.5. Beginning in 2008, a series of questions was added to the General Social Survey to include assessment of non-religious Jews. All who indicated "None" or did not answer questions about their current religious identification were asked "Do you consider yourself Jewish for any reason?" In addition, their parents' religious identification was assessed. These questions were also added to the Knowledge Network Panel (Knowledge Networks, December 17, 2010), which consists of a probability sample of approximately 50,000 adults in the United States, of whom 1,087 identify as Jewish by religion and an additional 274 indicated that they consider themselves to be Jewish even though they do not identify by religion as Jewish. This would correspond to an increase by a factor of 1.25, or 20% of all Jewish adults. Including only those in the panel who responded to the SAJ 2010, the proportion is 18% of adults in the sample.

Included in Table 3 is each survey's estimate of the Jewish population who identify by religion as Jewish (JBR) along with estimates of those who did not identify as Jewish by religion but who indicated that they were Jewish by other criteria. As described in Saxe and Tighe (2013), the SAJ 2012 indicated that 76.7% of Jewish adults self-declared as Jewish by religion. An additional 17.7% self-declared as Jewish but not by religion, and 5.6% did not self-declare as Jewish but had at least one Jewish parent. With the current base JBR population estimated as 4.2 million through data synthesis, the total adult Jewish

population including these additional subpopulations would be 5.5 million.[12] For the core Jewish population defined as those who self-declared either by religion or considered themselves to be Jewish, the total population is estimated to be 5.2 million, of which 19% consider themselves Jewish, but not by religion. This estimate is similar to the GSS 2008-2012, though the latter is based to a much smaller sample.

As additional data from targeted studies become available, even more precise estimates of the JNBR population can be developed. Important to the analysis will be assessing variability across communities in the proportion of ethnic/secular Jews and assessing trends. At present, however, the estimate of 19% JNBRs derived from our SAJ studies, will be used. Because it is based both on parentage and self-identification, it is likely an underestimate of the Jews who would be accepted by the community as such. It implies, as well, that our estimate of the total Jewish population is conservative, albeit within the bounds of those used in socio-demographic research of U.S. Jewish populations.

Children

A number of methods for estimating the size of the child population are described in previous work (Saxe & Tighe, 2013; Saxe, Tighe & Boxer, 2013; Tighe, et al., 2011). These include extrapolating from the cross-survey estimate of the adult population and the use of targeted surveys. From the data synthesis analysis there is an estimated number of 517,000 Jewish adults aged 18-24 (see Table 1). Taking into consideration 19% for those who are not represented in the cross-survey estimate (i.e., do not identify by religion but still consider themselves to be Jewish), this would be an additional 119,000 adults for a total of 636,000 adults in this age group, or 90,900 within each age cohort. Assuming, on average, an equivalent distribution across age groups (some ages might be higher, some lower), yields an estimate of 1.6 million children, or 1.3 million if limited only to the portion of the 18 to 24-year-old adult population who identify by religion as Jewish.

Our estimate of the number of children, extrapolating from the distribution of 18 to 24-year-olds who self-identify as Jewish by religion, is similar to what would one get if one were to apply the estimate of 1.5 total fertility proposed by DellaPergola (2005, 2013). Total fertility, in DellaPergola's analysis, is an estimate of the total number of children birthed to women between the ages of 18 to 44. The estimated number of JBR adults in this age group is 1,687,000, about half of whom are women. Assuming an average of 1.5 children per woman would yield an estimated 1.3 million JBR children. In addition, if JNBR adults are added, the estimate of children would be 1.56 million, nearly identical to the SSRI estimate.

As an alternative, a recent targeted survey, SAJ 2012, found that among all Jewish adults aged 18 or over, the average number of children was 0.41 (95% CI: 0.32 - 0.50) (Saxe, Tighe & Boxer, In press). If the total adult population, including those non-religiously identified, is estimated to be 5.2 million, with an average of .4 children per adult, the estimated number of Jewish children would be 2.1 million.

The range of our estimate of the number of children is, thus, between 1.3 and 2.1 million. The upper range of this estimate is perhaps the number of children who could claim Jewish identity, but some of these children are neither being raised as Jews nor

are considered as such by their parents. Further analysis of SAJ 2012 indicated wide variation in whether children of Jewish adults were being raised Jewish, from 60% of children in single-child households, and 56% of children for those with two children up to 76% of those with three or more children. Accounting for this variability, the estimated number of children was 1.3 million children (Saxe & Tighe, 2013), similar to the estimate of the size of the child population extrapolating from the JBR estimate of 18 to 24-year-olds and similar to the estimates based on total fertility.

For purposes of estimating the Jewish population, we will use the 1.6 million estimate based on the extrapolation of population estimates for the 18 to 24 year age group (1.3 million JBR and 307,000 JNBR). This estimate is based on the synthesis data and closely matches other estimates.

Total Population

Table 4 provides the total Jewish population and takes into account the cross-survey estimate of 4.2 million Jewish adults self-identified by religion, along with an estimate of the 971,000 Jewish adults who do not self-identify by religion, and an estimate of 1.6 million children.

Table 4: TOTAL JEWISH POPULATION ESTIMATE: 2012

Adults	
Jewish by religion	4,206,000
Jewish not by religion	971,000
Total Jewish adults	**5,177,000**
Children	
Jewish by religion	1,330,000
Jewish not by religion	307,000
Total Jewish population	**6,814,000**