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Research Article

Singhs, Watanabes, Parks and Nguyens:

A Comparison of Surname-list Samples to Probability Samples Using the California Health Interview Survey, 2001

Ninez A. Ponce and Melissa Gatchell

Abstract

The lack of health data on Asian ethnic subgroups has been noted as the major setback in dispelling the myth of the model minority. Population-representative samples of this relatively low-frequency racial group still fail to yield sufficient sample size to provide disaggregated information on Asian ethnic groups. As such, health information for Asian American subgroups is often acquired from surname list-assisted sampling methods, which may be fraught with biases toward particular groups not representative of the overall population. As one of the first major surveys to use both RDD and surname list-assisted sampling methods to sample Asian subgroups, the 2001 California Health Interview Survey provides the unique opportunity to determine whether significant differences exist between the RDD sample and the list-assisted sample for South Asians, Japanese, Koreans and Vietnamese. For each Asian ethnic group, we performed chi-squared tests to compare the list and RDD sample proportions for several demographic, health access and health status measures. We found that demographic differences in lists versus probability samples are most pronounced among South Asians and Vietnamese and to a lesser extent among Japanese, but is less of an issue among Koreans. In addition, we found that the list and RDD samples did not deviate significantly from each other in most of the health status and health access measures. Particularly for South Asians, Japanese, Koreans and Vietnamese, we conclude that surname lists approximated population-based estimates of their health status and health

access and surname list sampling should continue to be considered as an alternative strategy when cost constraints prohibit investment in probability-based oversamples.

Introduction

The lack of public health data on Asian ethnic groups has been noted by several researchers and advocates in the past two decades as the major setback in dispelling the myth of the model minority (Lin-Fu 1988; Ponce 1989; Yu 1996). Ever since the landmark U.S. Department of Health and Human Services Report of the Secretary's Task Force on Black and Minority Health reported on the putative favorable health of Asian Americans in the aggregate (Heckler 1985), advocates have recurrently appealed to the National Center for Health Statistics to make available disaggregated Asian data from its family of datasets that provide the basis of health policymaking in the U.S. (Mays, Cochran et al. 2004). However, the call for disaggregated information necessarily comes in tandem with potentially costly efforts to achieve adequate samples in surveys to ensure analytic power and to minimize confidentiality risks imposed on the survey subjects. Although the Asian population has grown from 2.8 percent to 4.2 percent between 1990 and 2000 (Barnes and Bennett 2002), a population-representative sample of a relatively low-frequency racial group still yields an insufficient number of cases. For example, Koreans constitute approximately 0.4 percent of the nation's 281 million residents, (Census 2000a) so that a population-representative sample of the National Health Interview Survey, which samples approximately 43,000 households annually, would yield approximately 170 household observations of Koreans—still far too few cases to make meaningful inferences for program and policy development. Moreover, because the NHIS is not formally conducted in any Asian language, most limited-English proficient (LEP) individuals would be systematically excluded, thus diminishing the sample size and biasing it toward a more acculturated segment of the population. Thus, in electing a "do nothing" option to improve Asian health data, the model minority myth is perpetuated at the risk of obscuring the critical health needs of constituent groups.

In the absence of federally financed population-based data, health information for Asian American subgroups is often acquired from convenience samples or samples drawn from surname list-as-

sisted sampling methods. This method of data gathering seeks to fill the current information gaps for specific minority populations whose needs have been underrepresented in population-based surveys. Asian surname lists have been used in numerous health-related studies that examine topics ranging from cancer screening to smoking prevalence (Lee, Lee et al. 1999; Tu, Taplin et al. 1999; Lew, Moskowitz et al. 2001; Azaroff, Levenstein et al. 2003; Ralston, Taylor et al. 2003; Ong 2003; Wong-Kim, Sun et al. 2003). In addition, several studies have shown success in identifying individuals of the targeted race/ethnicity through the use of surname list-assisted sampling (Quan, Ghali et al.; Shin and Yu 1984; Nicoll, Bassett et al. 1986; Hage, Oliver et al. 1990; Choi, Hanley et al. 1993; Sasao 1994; Harland, White et al. 1997; Sheth, Nargundkar et al. 1997; Lauderdale and Kestenbuam 2000; Tjam 2001; Lauderdale and Kestenbaum 2002). Nevertheless, sampling methods utilizing surname lists may be fraught with biases toward particular groups that are not representative of the overall population, especially as it relates to health access and health status indicators. The effects of interracial marriage and its resulting changes in female surnames may be one example of this bias. Although interracial marriages remain a very small proportion of all marriages (1.9 percent), nearly 70 percent of these marriages are between an Asian American or Pacific Islander and an individual of another racial ethnic group (Fields and Casper 2001). In addition, marriages involving individuals of different Asian subgroups may also contribute to biases in the populations derived exclusively from surname lists. These lists not only capture individuals with Asian surnames who are not in fact Asian but also fail to capture the population of Asian Americans with non-Asian surnames.

An alternative solution that has been previously proposed is to focus data collection efforts in geographical regions, states and localities with a greater proportionate representation of Asians (Ponce 1989; Yu 1996). The Asian population (single and multiracial) constitutes 11 percent of California's total population, compared to 4.2 percent nationally (Barnes and Bennett 2002). With over 4 million Asians, California is home to the lion's share (35 percent) of the Asian population in the U.S. (Barnes and Bennett 2002). Such an effort in collecting information on California's multiethnic population came to fruition in 2001, with the California Health Interview Survey (CHIS 2001). CHIS 2001 is a population-based survey that pro-

vides a sample with which to study the health of Asian Americans in California. Most relevant to this study, CHIS 2001 provides the unique opportunity to test whether and to what extent the sample yields from surname-lists differ from population-representative observations; it is the first major survey effort to use a dual mode strategy of random-digit-dial (RDD) and surname list-assisted (list) sampling methods targeting specific Asian subgroups. This information has considerable importance to community-based organizations dedicated to serving Asian ethnic groups and to national policymakers who make investment decisions in health based on population-based evidence. For example, if a list sample constitutes a much more vulnerable population than the population-based studies, then community service agencies can rely on this information-gathering strategy to attend to the groups that are most disadvantaged. On the other hand, if a list sample does not differ from the RDD sample, then information drawn from a list sample could be considered as a cost-effective strategy to produce data estimates comparable to more expensive probability-based samples and oversamples. If this is the case, then such data could be considered as valid information sources by federal agencies, such as the Office of Disease Prevention and Health Promotion—the agency that provides oversight in developing Healthy People goals and objectives, the nation's decennial benchmark for monitoring the progress of the nation's health.

In this paper we seek to determine whether significant differences exist between the CHIS 2001 RDD sample and the oversample for the following Asian subgroups: South Asians, Japanese, Koreans and Vietnamese. Several demographic characteristics, as well as selected measures of health access and health status, were chosen based on the goals/objectives formulated in Healthy People 2010 (U.S. Department of Health and Human Services 2000).

Methods

Data Source

CHIS 2001 is a joint project of the UCLA Center for Health Policy Research, the California Department of Health Services, and the Public Health Institute. Its development included the input of over 200 community-based researchers and advocates in California and the nation. Funded through various federal, state, and private foundation sources, CHIS 2001, a telephone survey, includes

a random-digit-dial (RDD) component as its core survey, supplemented by a surname-list assisted oversample of South Asians, Japanese, Koreans, Vietnamese and Cambodians. Chinese and Filipinos, the two largest Asian subgroups in California as well as nationally, were not included in the oversampling efforts as these groups were sufficiently represented from the probability-based core sample (California Health Interview Survey 2002a; California Health Interview Survey 2002b).

The CHIS 2001 core RDD component was a multi-stage sample: a household was randomly selected from one of the forty-one county and county-group strata, and then within a sampled household, an adult was randomly selected for interview (California Health Interview Survey 2002a). For the list samples, the CHIS 2001 data collection agency purchased a proprietary list of the most common surnames for each ethnic group. Survey administration for the oversample followed the same protocols as the core RDD component. The questionnaire included modules on health care access, health insurance, and selected chronic conditions (California Health Interview Survey 2002b). The overall weighted response rate was 37.7 percent, a rate similar to other telephone surveys such as California's Behavioral Risk Factor Survey (California Health Interview Survey 2002c; California Health Interview Survey 2002d).

The CHIS 2001's multi-language administration ensured the participation of Asian populations who have limited proficiency in English—a group typically left out in population-based health surveys. Conducted in Cantonese, Mandarin, Korean, Vietnamese and Khmer, in addition to English and Spanish, the survey provides information on the predominant Asian immigrant groups in California and in the U.S. The survey questionnaire also underwent extensive cultural adaptation for Asian groups and refereed translation processes to maximize cross-cultural equivalence across questionnaire items (Ponce, Lavarreda et al. 2004).

Analysis Plan

We analyzed the nonelderly adult cases of the RDD and oversample files of the CHIS 2001 for single race South Asian, Japanese, Korean and Vietnamese adults ages eighteen to sixty-four. Study subjects also included multiracial individuals who reported that they primarily identified with one of these specific Asian ethnic

groups. Cambodians were excluded from the analysis because there were too few observations in both the RDD (n=71) and the list (n=126) files. We selected demographic characteristics (age, gender, marital status, years lived in the U.S., English language proficiency, citizenship, education, income as percent of poverty level and area of residence) relevant to depicting socioeconomic status, immigration history and acculturation. In accordance to the priorities set forth by Healthy People 2010 (U.S. Department of Health and Human Services 2000), we evaluated access to care measures (health insurance status, usual source of care, physician visits, and breast, cervical and colorectal cancer tests) and health status indicators (self-rated general health, physical activity, tobacco use, diabetes, heart disease and high blood pressure). For each Asian ethnic group, we performed chi-squared tests to compare the list and RDD sample proportions for each selected demographic, health access and health status characteristic. Sample sizes for each ethnic group by sampling modality ranged from 257 to 462, yielding sufficient power to perform two-sample tests of proportions (Table 1).

Results

Socio-demographic Characteristics

The extent of similarities and differences between the list and the RDD samples varied by Asian ethnic group (Table 2). For the South Asian group, the list sample had higher proportions of adults who were ages thirty-five to forty-four, married, lived in the U.S. for five years or longer, and who were naturalized citizens. There were also more South Asians reached by list-assisted methods who held a college degree or higher, who reported the highest household income category of 300 percent federal poverty level or higher, and who lived in the suburbs. The South Asian RDD sample had significantly higher proportions below poverty, and who lived in the U.S. for less than a year. But this randomly sampled South Asian group also had more adults who were U.S.-born.

There were fewer but still appreciable demographic differences between the Japanese list and RDD samples. The list sample had higher proportions of older adults ages fifty-five to sixty-four, males, college graduates, and urban or second city dwellers. Socio-demographically, the list and RDD samples were most similar for Koreans, who had only two significantly different character-

Table 1: The CHIS RDD and List Samples Asian Adults Ages 18-64

	List		RDD****		List + RDD	
	N	%	N	%	N	%
Asian Ethnic Group						
South Asian	421	27%	374	11%	795	16%
Japanese	257	17%	346	10%	603	12%
Korean	273	18%	404	11%	677	13%
Vietnamese	462	30%	274	8%	736	14%
Chinese*	0	0%	1229	35%	1229	24%
Filipino*	0	0%	831	23%	831	16%
Cambodian**	126	8%	71	2%	197	4%
Other Asians***	0	0%	31	1%	31	1%
Total	1539	100%	3560	100%	5099	100%

Source: California Health Interview Survey 2001: Asian RDD and Oversample Public Use File.
* Not included in the comparison because RDD sample only.
**Not included in comparison because of small sample size. ethnic group
***Not included in comparison because aggregated category renders meaningless comparisons.
****RDD sample only included single race or multiracial individuals who most identifie with a specific Asian subgroup.

istics: the list-assisted sample had greater numbers of limited-English proficient (LEP) adults and non-citizens compared to the RDD sample. In contrast, there were numerous socio-demographic differences between the list and RDD Vietnamese samples. The Vietnamese list sample had a greater representation of adults who were older, who lived in the U.S. ten to fourteen years, who were LEP, who had less than a high school education and who were below poverty. The RDD sample had higher proportions of younger adults ages eighteen to thirty-four, males, those with fifteen or more years of U.S. tenure, college graduates, and those with incomes at 300 percent FPL or higher.

Access to Care Characteristics

Despite the numerous differences in socio-demographic characteristics between the list and RDD samples, there were few, though notable differences in the measures of access to health care (Table 3). Among South Asians, the RDD sample had double the uninsured rate (9.9 percent) and trailed by ten percentage points in having em-

Table 2: Demographic Characteristics of South Asian, Japanese, Korean and Vietnamese by Type of Sample, Adults Ages 18-64

	South Asian			Japanese			Korean			Vietnamese		
	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value
Age												
18-34	45.6	50.3	0.189	24.9	26.6	0.640	40.3	42.6	0.555	26.4	35.4	0.010
35-44	31.1	24.6	0.041	26.1	30.3	0.250	30.8	27.2	0.317	27.1	26.3	0.818
45-54	15.2	17.6	0.352	28.8	29.5	0.855	16.5	16.3	0.960	28.4	25.9	0.473
55-64	8.1	7.5	0.757	20.2	13.6	0.029	12.5	13.9	0.597	18.2	12.4	0.039
Male Gender	55.6	55.6	0.993	56.8	43.1	0.001	40.3	40.8	0.887	46.8	55.1	0.028
Marital Status												
Married	77.7	71.6	0.042	52.5	49.7	0.494	67.3	63.8	0.327	67.5	62.1	0.121
Never Married	17.6	20.6	0.280	30.7	30.3	0.918	23.5	24.7	0.751	20.8	25.7	0.135
Other	4.8	7.8	0.079	16.7	19.9	0.316	9.2	11.5	0.353	11.7	12.1	0.885
Years Lived in the U.S.												
< or = 1 year	3.3	7.7	0.012	6.3	9.1	0.282	6.9	6.2	0.669	1.3	0.8	0.472
2-4 years	19.8	19.9	0.757	25.0	10.9	0.112	13.4	10.4	0.219	7.5	4.2	0.067
5-9 years	20.6	17.5	0.173	10.9	17.3	0.098	11.7	11.2	0.761	24.1	19.8	0.143
10-14 years	13.6	18.1	0.163	6.3	12.7	0.076	21.5	16.0	0.066	27.9	21.7	0.050
15+ years	42.7	36.8	0.035	51.6	50.0	0.293	46.6	56.3	0.051	39.2	53.6	0.000
Limited English Proficient	3.4	4.3	0.611	27.5	16.8	0.268	42.0	35.0	0.010	58.2	44.2	0.000

Table 2 Continued

	South Asian			Japanese			Korean			Vietnamese		
	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value
Citizenship Status												
US Born	5.2	9.9	0.012	74.7	68.2	0.082	8.4	11.4	0.212	1.3	3.6	0.034
Naturalized Citizen	50.1	40.6	0.007	8.6	13.3	0.069	42.1	48.8	0.089	70.3	73.7	0.326
Non-Citizen	44.7	49.5	0.175	16.7	18.5	0.575	49.5	39.9	0.014	28.4	22.6	0.088
Education												
Less than High School (H.S.)	1.2	1.3	0.851	0.8	0.9	0.905	4.4	5.2	0.634	30.4	20.8	0.005
Grade 12 / H.S. Diploma	5.7	7.8	0.247	7.8	14.5	0.011	17.2	20.8	0.248	29.3	29.9	0.839
Some College/Vocational School/ AA or AS Degree	9.0	12.6	0.107	23.3	26.9	0.324	14.7	15.6	0.738	18.9	19.0	0.961
BA or BS Degree or higher	84.1	78.3	0.038	68.1	57.8	0.010	63.7	58.4	0.165	21.3	30.3	0.006
Poverty Level as a % of FPL												
0-99% FPL	2.1	5.9	0.006	5.4	4.6	0.646	7.0	6.7	0.888	37.7	29.6	0.026
100-199% FPL	9.0	10.2	0.587	6.2	8.7	0.263	21.2	17.6	0.233	22.5	18.2	0.169
200-299% FPL	11.9	14.2	0.336	5.1	8.7	0.088	19.0	18.8	0.939	12.1	13.9	0.492
300%+ FPL	77.0	69.8	0.022	83.3	78.0	0.110	52.7	56.9	0.283	27.7	38.3	0.003
Area of Residence												
Urban or 2nd city	55.7	62.6	0.046	68.1	60.1	0.044	70.6	69.6	0.991	80.5	76.3	0.428
Suburban	41.2	34.2	0.046	28.0	34.4	0.096	28.3	27.5	0.917	19.0	23.0	0.153
Small town/Rural	3.1	3.2	0.922	3.9	5.5	0.364	1.1	3.0	0.105	0.4	0.7	0.596

Source: California Health Interview Survey 2001: Asian Oversample Public Use File

ployment-based coverage (75.1 percent) than the list sample. The Japanese RDD sample also had considerably lower proportions (63.6 percent vs. 73.5 percent) of women age forty and older who had a recent mammogram, and slightly though still significantly lower proportions who had a recent Pap test (81.9 percent vs. 84.8 percent). There were no significant differences between the list and RDD samples in the selected access to care measures among Koreans. Among the Vietnamese, compared to the RDD sample, the list sample consisted of greater ranks of the uninsured—a consequence of the significantly fewer numbers with employment-based coverage.

Health Status Indicators

There were virtually no differences in health status characteristics (self-rated general health, physical activity, tobacco use, diabetes, heart disease and high blood pressure) among all four Asian ethnic groups (Table 4). Selected health status measures were comparable between the list and RDD samples among South Asians and Japanese. Among Koreans, a higher proportion in the list sample reported "good" health. Conversely, Vietnamese in the list sample had the lowest proportions who reported that their health was "excellent," a vastly lower rate compared to the Vietnamese RDD sample and to all other groups.

Discussion

We sought to evaluate the performance of surname-list assisted sampling strategies in depicting population-based estimates. This is particularly relevant for heath policy since the benchmarking and priority setting of national efforts such as Healthy People 2010 are based on population-based baselines and targets. Indeed, a recent review article concluded that "significant data gaps remain" to generate baseline information on AAPIs needed to monitor the progress of Healthy People 2010 (Ghosh 2003). This conclusion comes nearly a decade after a review article by Andersen et al. that concluded that despite the rapid growth of the Asian and Pacific Islander population, this group is underrepresented in the published work, largely due to the paucity of data (Andersen, Harada et al. 1995). Thus, without a grand-scale effort to oversample Asians in probability-based sampling frames, the surname-assisted list sampling has been an alternative approach to advancing

Table 3: Access to Care among South Asian, Japanese, Korean and Vietnamese by Type of Sample, Adults Ages 18-64

	South Asian			Japanese			Korean			Vietnamese		
	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value
Health Insurance Status												
Uninsured	4.8	9.9	0.005	5.8	7.2	0.498	37.7	33.2	0.222	21.9	13.9	0.007
Public	2.6	5.1	0.068	3.9	5.2	0.449	4.4	6.7	0.210	33.3	29.2	0.244
Employment-Based	85.7	75.1	0.000	77.8	78.6	0.816	42.1	45.5	0.379	40.0	51.5	0.003
Privately Purchased	6.9	9.9	0.125	12.5	9.0	0.166	15.8	14.6	0.682	4.8	5.5	0.669
Had Usual Source of Care	88.6	86.9	0.461	87.9	84.7	0.254	57.0	64.0	0.064	85.2	89.1	0.108
Had Doctor visit in past 12 months	80.7	80.9	0.988	77.7	75.4	0.568	66.3	68.8	0.493	82.8	80.3	0.382
Breast Cancer Screening												
Had Mammogram within past 2 years (age 40+)	73.2	72.7	0.898	73.5	63.6	0.008	61.8	66.5	0.649	62.5	67.8	0.765
Cervical Cancer Screening												
Had Pap within past 3 years (age 18+)	79.9	77.6	0.630	84.8	81.9	0.021	73.5	69.1	0.506	70.2	74.3	0.161
Colorectal Cancer Screening												
Had FOBT in the Past Year	8.4	9.4	0.759	11.8	13.1	0.992	8.1	6.6	0.618	14.9	11.6	0.194
Had CRC in past 5 Years	25.8	26.8	0.984	39.8	34.0	0.199	32.7	26.5	0.534	21.5	30.3	0.761
Had Either CRC or FOBT	37.3	37.5	0.846	44.0	43.3	0.416	40.0	31.8	0.498	32.0	37.9	0.643
Had CRC and FOBT	6.0	3.6	0.499	11.9	10.3	0.497	7.3	4.7	0.575	9.5	6.1	0.182

Source: California Health Interview Survey 2001: Asian Oversample Public Use File

Table 4: Health Status among South Asian, Japanese, Korean and Vietnamese by Type of Sample, Adults Ages 18-64

	South Asian			Japanese			Korean			Vietnamese		
	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value	List (%)	RDD (%)	p-value
Self-rated General Health Status												
Excellent	26.8	32.1	0.105	27.2	25.1	0.562	12.8	18.4	0.056	4.3	14.3	0.000
Very Good	37.5	34.5	0.373	45.5	39.6	0.145	27.1	28.0	0.805	15.7	13.6	0.442
Good	30.9	28.9	0.538	22.2	27.7	0.120	45.8	38.0	0.040	36.7	33.7	0.410
Fair/Poor	4.8	4.5	0.891	5.1	7.5	0.225	14.3	15.6	0.641	43.2	38.5	0.206
Physical Activity												
Sedentary	27.6	25.4	0.493	21.0	17.7	0.296	25.0	29.0	0.246	43.4	38.8	0.221
Exercise	72.4	74.6	0.493	79.0	82.3	0.341	75.0	71.0	0.262	56.6	61.2	0.236
Tobacco Use												
Currently Smokes	7.8	9.1	0.526	19.5	14.2	0.083	21.0	23.5	0.420	16.7	19.8	0.297
Quit Smoking	9.0	9.4	0.871	23.3	24.6	0.729	18.4	16.8	0.618	13.9	14.7	0.779
Never Smoked Regularly	83.1	81.6	0.558	57.2	61.3	0.314	60.7	59.7	0.838	69.5	65.6	0.243
Has Diabetes	4.5	2.9	0.246	5.8	4.9	0.617	3.7	4.5	0.611	3.9	5.1	0.435
Has Heart Disease	2.6	2.7	0.957	3.9	2.6	0.370	1.5	2.3	0.478	7.2	6.2	0.625
Has High Blood Pressure (HBP)	12.1	9.9	0.319	21.4	20.5	0.793	12.5	10.2	0.348	16.4	15.0	0.648

Source: California Health Interview Survey 2001: Asian Oversample Public Use File

the understanding of Asian subgroups. However, little is known about the viability of this approach in producing population-based health status and health care access estimates.

As expected, given the heterogeneity of the Asian population, our results were mixed. Surname list sampling appeared to yield a more advantaged group among South Asians and Japanese, but not among Koreans and Vietnamese. South Asian observations drawn from list samples had more years of schooling, had higher incomes, and tended to have greater U.S. tenure and to live in the suburbs. The Japanese adults from the list sample were slightly better off than the RDD sample in terms of education, being older and a higher proportion of males. These human capital characteristics are associated with higher earnings in the job market. However, household income was comparable between the list and RDD samples. It was also interesting that the fewest differences between the list and the RDD sample were among Koreans, although samples drawn from a surname list tended to be LEP and non-citizen. Yet among the Vietnamese, the disadvantage accumulated on several counts: list-sampled adults tended to be poorer, older, and immigrant. They also lived fewer years in the U.S. and lacked a high school diploma.

Surprisingly, despite the socio-demographic differences, particularly among the South Asians, Japanese and Vietnamese, there was little dissimilarity in health care access and health status by type of sample. On all health access measures, the Korean list-sample was similar to the RDD sample. For South Asians and Vietnamese, the uninsured rate and job-based health coverage rates differed by type of sample consistent with the direction of the advantages indicated in the socio-demographic characteristics: South Asians in the list-sample were less likely to be uninsured and more likely to have employment-based coverage, whereas Vietnamese in the list-sample were more likely to be uninsured and less likely to be have health insurance from their jobs. More Japanese women from the list sample had mammograms and pap tests than the RDD sample. Higher mammogram rates may be attributable to a higher proportion of older women (ages fifty-five to sixty-four) in the list sample. The list sample also had higher levels of educational attainment. There were even fewer differences in health status measures, and these were confined to subjective measures of self-rated health among Koreans and Vietnamese.

The study had several limitations. First, we only examined bivariate relationships that could be modified by other variables. For example, the health insurance differences between the South Asians list and RDD samples may be less pronounced had we accounted for socioeconomic characteristics. However, sample size limitations prevented us from a multivariate exploration, and the distributions of the proportions were sufficiently instructive in conveying compositional differences. Second, the fact that the Korean and Vietnamese list sample was more disadvantaged, but not the South Asian and Japanese samples may be an artifact of the in-language administration of the Korean and Vietnamese list samples. To illustrate, in the list sample the Korean language was used to contact the households, thus Korean Americans who do not speak Korean may have been systematically excluded from the list oversamples, so that there would be higher proportions of LEP among the Korean list sample. This was also true for the Vietnamese list sample administration, where Vietnamese was the initial and predominant language of contact and interview. Thus, immigrant/LEP bias in the list sample was not evident in the Japanese and South Asian samples chiefly because the survey was not administered in Japanese and a South Asian language. Third, our study subjects were single race Asians and multiracial Asians who "most-identified" as being one of the four Asian ethnic groups we studied. Our inclusion criteria of comparing only the equivalent responses to the ethnic identification questions in 2001 CHIS increased the internal validity of our study. But the generalizability of our results can only be extended to single Asian race and multiracial individuals who were willing to disclose a primary race identification. In the future the changing nature of the multi-race status of the next generations may prove to be the most complex challenge facing those who use surname list-samplings.

In addition, this study highlights the differences in RDD and list-assisted sample from only one population-based survey of California residents. Previous work examining whether CHIS data could be used for Asian American populations nationwide demonstrated that the demographic profile of California's Asian American population is quite different from that of the rest of the nation (Ong and Ong 2002). Thus, the results found in this study may not pertain to Asian populations outside California. Several other population-based surveys do oversample minority populations,

including the National Health Interview Survey (NHIS), the National Health and Nutrition Examination Survey (NHANES), and the 2001 Commonwealth Fund Survey on Disparities in Quality of Health Care. The National Health Interview Survey oversamples both black and Hispanic persons (Centers for Disease Control and Prevention/National Center for Health Statistics 2000), and the NHANES oversamples Mexican Americans and Blacks. The Commonwealth Fund Survey oversampled Asian, African American and Hispanic households (Princeton Survey Research Associates 2002).

Lastly, as a telephone survey, households without telephones were excluded, so that our findings may have excluded poorer households, the homeless, migrant workers and other transient populations. However, in California, households without telephones constituted less 2 percent of California's population (Census 2000b). In addition, a non-telephone adjustment was included in the weighting to reduce the impact of this selection bias on our estimates (California Health Interview Survey 2002e).

Despite these limitations, our findings inform researchers, community workers and policymakers on the value of surrogate sampling strategies that aim to capture the health needs of the diverse Asian American population. First, we found that the compositional difference in lists versus probability samples is most pronounced among South Asians and Vietnamese and to a lesser extent among Japanese, but is less of an issue among Koreans. Thus findings from surveys that use surname lists among Koreans are perhaps the closest to population-based health estimates relative to the other Asian subgroups we studied. Second, caution must be made in generalizing findings from the list-assisted estimates of South Asians and Japanese, particularly if these subjects were interviewed only in English, a limitation of CHIS 2001. Not only are list-assisted South Asians and Japanese more advantaged socioeconomically, but this compositional difference translates to a rosier picture of health insurance coverage among South Asians and seemingly better access to breast and cervical cancer screening among Japanese than population-based estimates. Third, caution must also be made in the inference of estimates from list-assisted Vietnamese samples because our findings clearly identify systematic disadvantages among the list sample compared to the RDD sample. Thus, although the surname list strategy widely used in

several Vietnamese health surveys is useful in targeting the most vulnerable segments of the population, the results may not be generalized to population needs, specifically as it relates to health insurance coverage and general health status. Lastly, but perhaps the biggest finding of this study, we found that the list and RDD samples did not deviate significantly from each other in most of the health status and health access measures. This suggests that despite vast socio-demographic compositional differences, there is an equilibrating (though not necessarily ameliorating) effect of the health care system context, idiosyncratic cultural behaviors, and the interaction of the individual with the health care system that seems to anchor the health care access and health status indicators by Asian ethnicity, regardless of whether that ethnic group was recruited by a probability-based sample or by a surname list sample. Future studies should delve into the contribution of context and culture to better understand this leveling effect, despite significant sampling-related variations in socioeconomic status.

At this point in time and specifically for South Asians, Japanese, Koreans and Vietnamese, we conclude that surname lists generally yielded "close enough" population-based estimates of their health status and health access. Surname list sampling should continue to be considered as an alternative strategy when cost constraints prohibit investment in probability-based oversamples. Furthermore, for many of the Healthy People 2010 indicators such as cancer screening, smoking reduction, and physical activity where sampling modality resulted in virtually zero differences, policymakers could judiciously consider the validity of surname-list estimates, especially when the alternative for Asian ethnic groups is no data.

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