



# **A Report on the Applicability of Nielsen Spanish-Language Universe Estimates for Weighting Arbitron Radio Samples**

Arbitron Due Diligence Work  
and Findings

October 30, 2003

## Executive Summary

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Arbitron has conducted an analysis of the applicability of Nielsen's Spanish-language universe estimates (UEs) for use in weighting Arbitron's radio samples. Nielsen's data are collected through enumeration of a sample of Hispanic households. The data are used for household controls, including language, in the Nielsen Hispanic Television Index and Hispanic Station Index services. Nielsen reprocessed the raw data and produced persons-level estimates for Arbitron's Metros that can be used in the Arbitron radio diary service.

There were two important discoveries in the analysis. First, Nielsen's Spanish-language estimates are higher than those that would be produced using Arbitron's own data. Second, a large part of the difference is explained by the difference in the definition of Hispanic households used by the two services. Nielsen's Hispanic households are identified based upon the ethnicity of the householder, regardless of the ethnicity of other household members. Arbitron asks respondents how they identify their household. If a respondent asks for clarification, he or she is asked if any member of the household is Hispanic. If the answer is yes, Arbitron classifies the household as Hispanic.

To understand the differences between Nielsen's and Arbitron's language estimates, Arbitron recontacted Winter 2003 Arbitron Hispanic respondents in the four Hispanic Metros where Nielsen uses in-person interviewing. Using the Nielsen method of identifying Hispanic households produced 9.7 percent fewer Hispanic households than using the Arbitron method. The Spanish-language dominance of persons in households defined as Hispanic using the Nielsen ethnicity questions was 3.7 percentage points higher than that of all Hispanic persons in recontacted sample households. One major conclusion followed Arbitron's analysis of Nielsen's Spanish-language universe estimates: Because radio is a personal medium, Arbitron's radio diary service is based on persons; therefore, it would not be in the best interest of the radio industry to use the Nielsen householder ethnicity question to determine the ethnicity of radio diarykeepers. Thus, to use Nielsen universe estimates to weight Arbitron's Hispanic samples for language, all Hispanic individuals in sampled households must be enumerated.

Nielsen Media Research has agreed to expand its Hispanic enumeration sample base to include all households with any Hispanic resident, regardless of the ethnicity of the householder or the presence of a working television. Beginning with the 2001 enumeration, Nielsen no longer excludes low-density Hispanic geographic areas. Based on these modifications, and Arbitron's analyses of other critical issues, there are no remaining differences that preclude using the Nielsen language UEs for weighting Arbitron's in-tab samples. Arbitron has agreed to proceed to the negotiation of the appropriate business arrangements with Nielsen.

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# I. Introduction

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Arbitron believes that there are two basic quality-of-service benefits that are possible through the implementation of an effective Spanish-language-weighting process. The first is that the stability of reported estimates is expected to be enhanced. This is because weighted proportions of Spanish- and English-dominant Hispanics in the survey sample would be aligned to an accepted universe estimate of language dominance for Hispanics. The second benefit is that levels of listening reported would be based on a representation of the population that would be consistently proportional.

Arbitron is committed to weighting Hispanic diaries by language dominance for its syndicated radio general market service. A requirement for the implementation of any language-weighting process is an acceptable source of population estimates. To be considered acceptable, universe information must:

- be gathered through a respected methodology,
- have language usage categories that are relevant and pertinent to radio media consumption, and
- use methods and definitions that are either identical or highly similar to the methods and definitions of the survey sample to be weighted.

Arbitron has investigated several sources of population information. These include independent demographic companies and Arbitron's own enumeration from radio diary survey placement calls. Additionally, Arbitron has considered the possibility of fielding a separate enumeration survey to assess language usage in Arbitron's Hispanic-controlled Metros. This last alternative, while still an option, is not being actively pursued at this time because of the expense associated with designing and fielding a stand-alone high-quality enumeration survey for the radio industry.

The most readily available and credible external source of population information pertaining to language dominance is the language enumeration of Hispanics conducted by Nielsen Media Research in 19 of its Designated Market Areas (DMA<sup>®</sup>s). This paper represents a report on Arbitron's due diligence in the investigation of the applicability of the Nielsen Hispanic household-based language-use universe estimates for weighting Arbitron person-based radio samples.

## II. Background

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For a number of years, Arbitron has been discussing and analyzing with our customers the need to collect information and weight in-tab samples based on language usage. A series of research tests was conducted in the mid-1990s to evaluate the results of the inclusion of language-preference questions in the Arbitron radio diary and/or in the placement call. This series of controlled experiments represented an effort to develop a methodologically sound survey method of Hispanic language collection. The studies also represented Arbitron's first look at the effects of adding language to the weighting design for Arbitron's Hispanic samples. These tests led to the inclusion of language-preference questions in all bilingual diaries beginning in 1997.

In 1998, Arbitron conducted a language-weighting study/test, using a rolling average of Arbitron's in-tab Spanish-dominant proportions for Spanish-dominance universe estimates. This test found little difference in overall data stability and listening levels with language weighting. This was predictable, given only small variations in in-tab Spanish-dominant proportions from survey to survey in the larger Hispanic-controlled Metros in the test.

In 2002, Arbitron moved the collection of language information from the diary to the placement call. Concurrently, the in-home language-usage question used by Nielsen Media Research in its television service was implemented rather than the three-part language-preference question that had previously been used in the Arbitron radio diary.

While research has shown that language dominance varies by geography and demographic group, both of which are current Arbitron weighting variables, there currently exist no explicit language-dominance controls in the Arbitron sampling or weighting process. Fluctuations in the amount of sample from Spanish-dominant persons from book to book would likely have an impact on reported audience levels for all stations in markets with significant Hispanic and Spanish-speaking populations.

Language-usage weighting, as proposed for implementation by Arbitron, would compare the proportion of Hispanic in-tab to the proportion of Hispanic population by language-usage category. A weighting factor would be calculated and applied to the in-tab proportion so that it is equivalent to the population proportion by each language-usage category after weighting.

### **III. Initial Evaluation of Nielsen's UEs for Arbitron's Use**

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Arbitron received Nielsen enumeration information in May 2003. Arbitron's task was to understand these data and identify sources of differences in the enumeration estimates and Arbitron's Hispanic in-tab Spanish-dominance. Universe estimates used to control for language among Hispanics in Arbitron's radio service must be able to stand up to the scrutiny of all customers of Arbitron radio ratings information. It is important to note that the Nielsen enumeration survey is designed to provide household-level estimates of language usage at a DMA level while Arbitron's need is for persons-level estimates at a Metro level.

Initial analyses focused on the general validity of the estimates themselves. Using available sources, including data from Census 2000 and the Census Bureau's Current Population Surveys, Arbitron conducted an evaluation of Nielsen Media Research language enumeration data during the months of May, June and July 2003. Nielsen provided persons-level information at the Persons 12+ level from their enumeration survey for 18 Arbitron Metro Survey Areas under conditions of a nondisclosure agreement. (San Jose and Riverside-San Bernardino are embedded in the San Francisco and Los Angeles Metros, respectively, with sufficient Nielsen enumeration sample to warrant separate evaluation.) Please refer to Appendix A for a complete list of Arbitron Metros covered by the current Nielsen language enumeration of Hispanics.

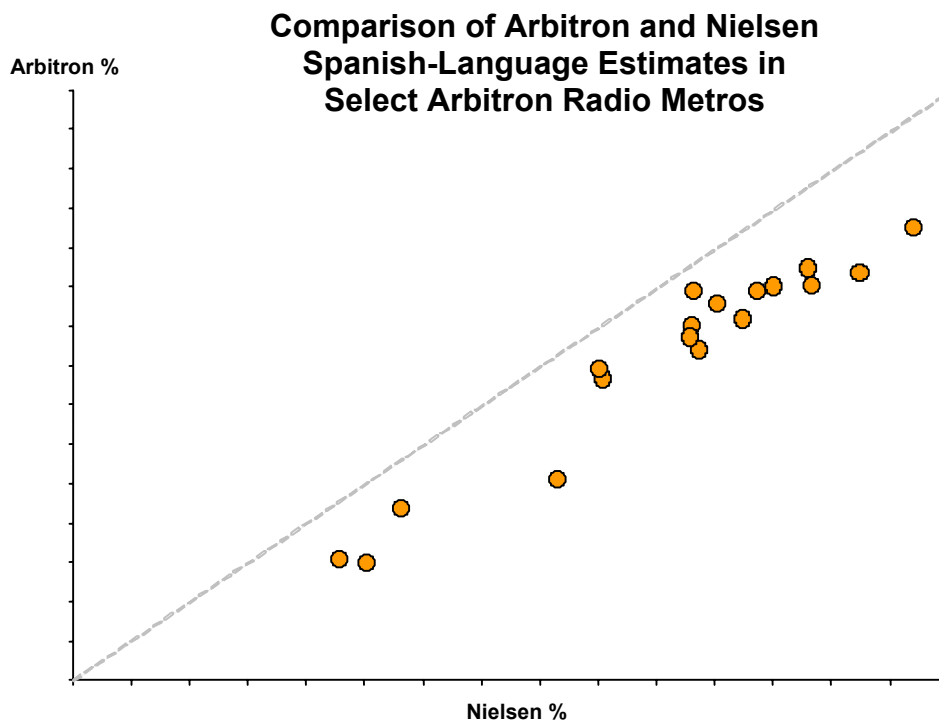
Language universe estimates were evaluated using a two-way language-dominance break: Spanish-Dominant and English-Dominant. Responses of "Both Equally" were included with those of mostly and only English, as English-Dominant. Both Nielsen and Arbitron sample sizes are limiting factors on the use of multi-way language breaks. Nielsen sets identical sample sizes for all of its telephone-based DMA enumerations; therefore, when geographies are limited to Arbitron's Metro areas, sample size may become an issue in some markets. Prior to setting up final language weighting in each Metro, Nielsen and Arbitron Metro sample sizes and Arbitron's current weighting patterns will be analyzed to determine the appropriate language-dominance breaks. While more discrete language-dominance breaks may be used in the future for weighting audience estimates in the larger Metros, this current analysis was performed with two-way breaks for consistency across Metros.

The Nielsen estimates were compared to the Arbitron four-survey enumeration of consenting Hispanic sample. Since Arbitron began collecting language-usage information using a question with verbiage identical to that used in the Nielsen language enumeration in the Winter 2002 survey, data from this and the three subsequent surveys were available for the evaluation.

Nielsen collects enumeration information over a rolling two-year time frame; data for the language-usage estimates were collected during 2001 and 2002.<sup>1</sup>

The Nielsen estimates were consistently higher than the Arbitron estimates in all Metros. In general, Arbitron and Nielsen Spanish-dominant proportions were closer together in higher-density Hispanic Metros and farther apart in lower-density Hispanic Metros. Figure 1 is a plot of the data for each of the 18 Metros. If the Arbitron and Nielsen estimates were identical in each Metro, all of the data points would line up on the diagonal dashed line. The data points closest to the dotted line represent the Metros where Nielsen and Arbitron estimates are closer together. Individual values are not shown in order to maintain the confidentiality of the Nielsen data.

**Figure 1**



These differences between Arbitron’s in-tab numbers and the Nielsen language universe estimates were indeed significant—not due to sampling variation, but to real differences between the two services. The differences were also consistent; that is, as the estimates increased in one service, they increased in the other as well. The correlation was high between the two services, with a correlation coefficient of 0.961 (a coefficient of 1.0 would be a perfect one-for-one relationship).

<sup>1</sup> The Arbitron surveys used were Winter 2002 through Fall 2002. These surveys were used in each Metro except McAllen-Brownsville-Harlingen and Corpus Christi, where only Spring 2002 and Fall 2002 were available.

Lastly, the two sets of estimates were also compared to Census 2000 data. There are several limitations with such a comparison; however, the Census represents the only available validity check of the estimates. The Census asks people who speak a language other than English at home to rate their ability to speak English. This question is asked of persons 5 and older. Arbitron calculated the Census percentage of Hispanics 5+ who did not speak English “very well” or who did not speak English at all. This group was compared to both the Arbitron and the Nielsen Spanish-dominant groups.

We expected that both the Arbitron and Nielsen estimates would be higher than the Census. That is because people who speak mostly Spanish at home but can speak English very well are part of the Spanish-dominant groups in Arbitron and Nielsen, but not in the Census comparison group: “Speak English Less Than Very Well.” The presence of this group raises the Arbitron and Nielsen Spanish-dominant percentages above that of the Census comparison group. We also expected that as the Census percentage increased, the Arbitron and/or Nielsen Spanish-dominant estimate would also increase. That was exactly what we found. The Arbitron estimates were higher than the Census but correlated with the Census data at a coefficient value of 0.977. Likewise, the Nielsen estimates were higher than the Census and produced a correlation coefficient value of 0.961 when tested against the Census data. The difference in these correlation values is not meaningful.

## IV. Overview of Methodological Issues

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Arbitron's next step was to attempt to explain the differences between Nielsen's Spanish-dominance universe estimates and Arbitron's Spanish-dominance proportions. The evaluation of the Nielsen language enumeration focused on determining whether the data from a DMA-based household-level survey would yield logical information for Arbitron Metro Survey Areas. Arbitron also examined whether differences in methods or definitions between Nielsen's enumeration survey and Arbitron's diary survey contributed significantly to the difference in the language-dominance proportions reported by the two companies.

Five methodological or definitional differences were identified by Arbitron:

1. Language of the Interview: Nielsen's Hispanic enumeration calls always begin in Spanish, while Arbitron's placement and conversion calls to high-density Hispanic areas begin in the language used by the respondent to answer the telephone. Both services employ interviewers who are skilled at switching languages based on the needs and desires of respondents. Nielsen's language enumeration study is limited to the Hispanic population, and currently the resulting universe estimates are used as controls in the Nielsen Hispanic Television Index (NHTI) and Nielsen Hispanic Station Index (NHSI) services. Arbitron diary service placement calls must reach respondents in all race/ethnic groups to serve its general-market radio service.
2. Inclusion of Nontelephone Households: Nielsen estimates in four of its DMAs include interviews with nonphone households. In Nielsen's 14 phone enumeration markets, a nonphone adjustment is applied based on the Nielsen national enumeration survey. Arbitron includes only households with telephones in its syndicated radio service.
3. Geographically Excluded Areas: In four of Nielsen's DMAs, the Hispanic enumeration survey uses area probability sampling with door-to-door in-person interviewing. Prior to the development of the 2001 sample frame, for efficiency purposes, Nielsen excluded small portions of Arbitron's Metro geography in these DMAs. All of the excluded portions of these Metro geographies are covered by Arbitron's telephone sampling methodology.<sup>2</sup>
4. Elimination of No-TV Households: Nielsen's enumeration includes only Hispanic households with working television sets, while Arbitron includes all Hispanic households.

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<sup>2</sup> In addition, there is a boundary difference between the Chicago Nielsen DMA and the Arbitron Metro. Kenosha County, WI, included in the Metro of Chicago, is not included in the market's DMA. Therefore, Hispanics residing in Kenosha County, WI, are not currently enumerated for language by Nielsen Media Research.

5. Hispanic-Household Definitions: Nielsen's household-based television service requires a match to Census proportions of total persons in Hispanic households while Arbitron's person-based radio service requires a match to Census proportions of total Hispanic persons. Nielsen classifies a household as Hispanic based on the ethnicity of the householder only, regardless of the ethnicity of other household members. In contrast, Arbitron classifies all household members as Hispanic if any one household member is Hispanic. In both services, only Hispanic households are asked the language question. While both Nielsen and Arbitron use a method of Hispanic identification designed to produce results matching Census definitions, differences in service requirements (Nielsen household-based TV estimates versus Arbitron person-based estimates) dictate differences in the Census estimates applied.

Before deciding to use Nielsen's language-dominance estimates in their current form for Arbitron's language weighting, each of these five methodological differences had to be evaluated. Each required evaluation on two levels. First, it was important to determine how much of the difference in Spanish-dominance could be attributed to the difference in method. If the method was found to make little difference in the resulting estimates, it would become a nonissue. Second, if the difference was found to impact language universe estimates significantly, the question became which methodology provided the best representation of Hispanics by language for the radio diary service. Only differences in methodology producing substantially different language-usage universe proportions for Hispanics would preclude the use of Nielsen's enumeration results in their current form as a source of language population estimates for Arbitron's radio service.

## V. Diary Recontact Study: Methodology and Representativeness

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Because of the lack of empirical evidence concerning the effects of several of the differences between the Arbitron syndicated radio methodology and the Nielsen Hispanic enumeration methodology, Arbitron conducted a recontact study of its Hispanic diarykeepers. Results of the study were used to evaluate the effect of the five methodological differences whenever possible. The study represented a census of all Hispanic households contributing in-tab diaries to the Winter 2003 survey in four Hispanic-controlled Metros. The survey was fielded during a three-week period from mid-June through mid-July 2003. Please refer to Appendix B for a complete discussion of recontact study methodology.

### A. Research Questions

The recontact study was designed to gather the additional information concerning diarykeepers and their households necessary to address the following research questions:

1. What proportion of Arbitron-defined Hispanic households had no working television set during the time of the call, and how would the elimination of those respondents alter the Spanish-dominance of Arbitron's in-tab?
2. What proportion of Arbitron-defined Hispanic households lives in geographic areas not covered by the Nielsen enumeration, and how would the elimination of those respondents alter the Spanish-dominance of Arbitron's in-tab?
3. What proportion of Arbitron-defined Hispanic households would be determined to be non-Hispanic when asked the Nielsen ethnicity questions?
4. Of the Arbitron in-tab diarykeepers identified as Hispanic using Nielsen's methodology, what proportion is Spanish-dominant?
5. Once Arbitron's in-tab households are defined as Hispanic using Nielsen enumeration methodology, how do the Nielsen and Arbitron Spanish-dominant proportions compare?

### B. Cooperation and Response

Overall, cooperation with the recontact study was very good. Among the 3,366 Arbitron Hispanic households in the starting sample, we were able to reach 2,006. This resulted in a 70 percent response rate among usable sample numbers at the time of the recontact. The 2,006 completed household interviews represent 5,084 in-tab persons out of the total in-tab of 8,464 Arbitron-defined Hispanics in-tab to the sample Metros. Table 1 provides the sample disposition for the total sample and for each Metro.

<b>Table 1: Hispanic Recontact Study Response Statistics</b>										
<b>Calling Status</b>	<b>Total Sample</b>		<b>Chicago</b>		<b>Los Angeles</b>		<b>Miami</b>		<b>New York</b>	
		<b>%</b>		<b>%</b>		<b>%</b>		<b>%</b>		<b>%</b>
<u>Usable Numbers</u>										
Total Completes	2,006	69.9	235	78.1	760	77.2	441	56.9	570	70.6
Refusals	300	10.5	20	6.6	86	8.7	114	14.7	80	9.9
Unable to Reach										
Qualified Respondent	167	5.8	12	4.0	40	4.1	62	8.0	53	6.6
Language Problems	3	0.1	0	0.0	1	0.1	1	0.1	1	0.1
Answering Machines	276	9.6	20	6.6	69	7.0	101	13.0	86	10.7
Blocked Calls	97	3.4	9	3.0	23	2.3	52	6.7	13	1.6
No Answers	19	0.7	5	1.7	6	0.6	4	0.5	4	0.5
<u>Unusable Numbers</u>										
Disconnects	474		55		147		145		127	
Business/Government	11		0		6		5		0	
Computer Lines	13		1		3		7		2	
<b>Total Sample</b>	<b>3,366</b>		<b>357</b>		<b>1,141</b>		<b>932</b>		<b>936</b>	

The entire Nielsen householder question, including probes to encourage respondents to provide the name of one of the householders, was scripted in the recontact study. Using responses to each part of the question, the ease with which interviewers collected the name of a single household member who fulfilled the role of householder was determined. For only four interviews out of 1,941 with answers to this question did interviewers need to use any of the probes, and on all of those occasions, respondents eventually provided the information. In a total of 65 (3.2 percent) completed interviews, respondents refused to provide a response to this question.

### **C. Representativeness of Completed Interviews**

To be able to draw reliable conclusions from the results of this study, it is important that the composition of the recontacted sample match the total in-tab from the Winter 2003 survey as closely as possible. One measure used to evaluate the general quality of the recontact study results is sample distributions by age/gender groups. Table 2 below shows population estimates and unweighted in-tab diary distributions for the Winter 2003 survey in the four test Metros combined. The age/gender distribution for in-tab diaries in the recontacted sample is remarkably similar to that of the Winter 2003 sample as a whole. The distribution of the population as a whole is used as a control measure. And, for four of the nine individual comparisons, the recontacted sample proportion is closer to the population, and in one case the two samples are

the same as that of the original in-tab. Since age and gender are generally accepted to be determiners of radio listening, the similarity of the profiles of the recontacted sample and the total Winter 2003 in-tab is important to the credibility and projectability of the results of this study. A complete distribution of Hispanic population and in-tab for the four combined Metros is included in Appendix C.

<b>Table 2: Arbitron Unweighted Hispanic In-Tab Sample by Age and Gender Groups</b>			
	<b>Hispanic Population</b>	<b>Winter 2003 In-Tab</b>	<b>Recontacted Hispanic In-Tab</b>
Men 18+	43.1	40.3	39.6
Women 18+	44.1	46.4	46.2
Teens	12.8	13.3	14.2
Persons 12-24	29.1	29.8	31.0
Persons 18-34	39.6	39.4	38.8
Persons 18-49	65.8	66.6	66.4
Persons 25-49	49.5	50.1	49.6
Persons 25-54	55.3	56.0	55.6
Persons 35-64	40.1	40.9	40.9
Total Sample	9,710,900	8,464	5,084

Another factor critical to the representativeness of the survey results is the composition of the recontacted sample by language usage. Bias could have been introduced into these results if the language dominance of persons represented by completed interviews were radically different than that of the starting sample. For example, if the completed interviews represented a disproportionate number of English-dominants, the language dominance of the Arbitron Hispanic in-tab adjusted using Nielsen methodology could have been distorted. This was not the case. Overall, completed interviews represented a relatively similar proportion of starting in-tab persons by language dominance. The Spanish dominance of the recontacted sample, 60.8 percent, is approximately three points higher than that of the Winter 2003 Hispanic in-tab as a whole, 58.0 percent. For all four Metros, the Spanish dominance of the recontacted sample was higher than that of the Winter 2003 in-tab. This shows that the Spanish-dominant Hispanic in-tab diarykeepers, hypothesized to be more difficult to reach, were well represented in the recontacted sample.

Table 3 shows proportions at the aggregate and at the individual Metro levels.

<b>Table 3: Unweighted Arbitron Hispanic In-Tab Spanish-Dominant Proportions</b>					
	<b>Total Survey</b>	<b>Chicago</b>	<b>Los Angeles</b>	<b>Miami</b>	<b>New York</b>
<b>Language Dominance</b>	<b>% of In-Tab</b>	<b>% of In-Tab</b>	<b>% of In-Tab</b>	<b>% of In-Tab</b>	<b>% of In-Tab</b>
Winter 2003 In-Tab	58.0	60.7	54.0	68.2	53.2
Recontacted In-Tab	60.8	63.2	57.3	72.7	56.7

Another measure of the representiveness of the recontacted Hispanic in-tab sample is the proportion of the diarykeeper's listening to Spanish-language stations. On average, diarykeepers in the Winter 2003 Hispanic in-tab reported 99.1 total quarter-hours of listening compared to 100.8 total quarter-hours for the recontacted sample. In addition, for the Winter 2003 sample, 45.2 percent of total listening was to Spanish-language stations; this compares to 48.4 percent of total listening to Spanish-language stations for the recontacted sample, 3.2 percentage points difference. The proportion of total quarter-hours spent listening to Spanish-language stations overall and for the language dominance groups for the Winter 2003 sample is strikingly similar to that of the recontacted sample in each of the four Metros. This finding provides further evidence that the results of the study can be projected to the Winter 2003 in-tab as a whole.

<b>Table 4: Proportion of Total Listening to Spanish-Language Stations</b>						
	<b>Winter 2003 In-Tab</b>			<b>Recontacted In-Tab</b>		
	<b>Total Metro</b>	<b>Spanish-Dominant</b>	<b>English-Dominant</b>	<b>Overall Metro</b>	<b>Spanish-Dominant</b>	<b>English-Dominant</b>
	(%)	(%)	(%)	(%)	(%)	(%)
<b>Chicago</b>	53.2	76.0	14.7	55.3	75.4	16.9
<b>Los Angeles</b>	48.7	69.3	19.5	50.5	69.9	19.9
<b>Miami</b>	31.3	39.0	11.7	33.7	40.1	11.7
<b>New York</b>	50.2	73.7	20.5	52.9	75.0	20.5
<b>Total Sample</b>	45.2	62.2	17.9	48.4	64.8	18.7

## VI. Due Diligence Results

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### A. Language of the Interview

Nielsen interviewers begin all enumeration calls in Spanish. This has been a concern for Arbitron in evaluating Nielsen's enumeration results as a source of language universe estimates. While using Spanish to initiate calls for a Hispanic-only service can be deemed appropriate methodology, it would be inappropriate for Arbitron to do so in its general market service, even in high-density Hispanic areas. This is because beginning calls in Spanish could potentially increase the number of non-Hispanic persons refusing to participate in the ratings collection process. Therefore, if the language used to introduce the enumeration calls were responsible for the differences between the Nielsen enumeration estimates and Arbitron's in-tab diary Spanish-dominance, the Nielsen enumeration would not be a satisfactory source for Hispanic language population estimates.

Nielsen has published the results of an extensive study evaluating the impact of the language of the call on language universe estimates derived from their enumeration of Hispanics.<sup>3</sup> Nielsen provided Arbitron with a copy of the published results, presented in September 2002. Members of Arbitron's Executive and Research staffs discussed the findings with senior Nielsen research staff and accept it as being methodologically sound. Based on this study, Arbitron does not believe that the language used to begin the interview is a significant factor affecting language dominance proportions in the Nielsen enumeration study of Hispanics.

### B. Inclusion of Nontelephone Households

Nielsen's Spanish-language universe estimates are based on both telephone and nontelephone households. In Chicago, Los Angeles, Miami and New York, surveys are based on area-probability samples and, thus, in-person interviews are included as one means of data collection. For these DMAs, nonphone households are interviewed and included in the calculation of estimates. In the remaining DMAs enumerated for language, language estimates include a nonphone adjustment computed using phone-to-nonphone ratios by language-use strata from Nielsen's national in-person interview survey. Arbitron does not measure nonphone households, but does include persons in nonphone homes in its listening estimate projections. This is a concern to Arbitron's Hispanic broadcasters. It has been hypothesized that the language-dominance of Hispanic nonphone households is different than that of the Hispanic population as a whole.

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<sup>3</sup> Timothy E. Dolson, Natalie E. Coser, Paul J. Lavrakas, and S. Scott Bell, "Language of Content, Nonresponse, and Measurement Error in a Multimodal National Language Enumeration Survey," paper presented at AAPOR. (September 2002).

U.S. Census data from 2000 showed total U.S. telephone penetration among Hispanics to be relatively close to that of the general population, approximately 95.2 percent for Hispanics versus 97.6 percent for the general population. In the 18 Metros for which Nielsen has supplied language-usage estimates, the Census-based phone penetration for Hispanics ranges from a low of 92.1 percent in the McAllen-Brownsville-Harlingen Metro to a high of 98.6 percent in the San Jose Metro. Although these proportions are relatively high, there remains concern that the change in the Census telephone-availability question has led to the inclusion of cellular-telephone-only households as telephone households. Households with only a cellular telephone and no land-line telephone are excluded from Arbitron's RDD sample base. Since there are no publicly available data on the subject of cell-phone-only households, we expect that this is still a very small group. Please refer to Appendix D for a discussion of the questions used in Census 2000 and those questions used in the Current Population Survey (CPS). Annual trends of Hispanic telephone penetration estimates from the CPS are also provided in this Appendix.

Nielsen provided Arbitron with the language dominance of persons residing in Nielsen's Hispanic telephone and nontelephone households. Table 5 below shows the aggregate Spanish-language dominance of persons living in telephone versus nontelephone households calculated from the Nielsen language enumerations in those Metros where Nielsen uses telephone-based samples.<sup>4</sup> Data included those telephone and nontelephone households enumerated as a part of Nielsen's National Enumeration survey. The Spanish-dominant percent of persons living in households without telephones, calculated from the table below is 61.3 percent; 9.9 points higher than the 51.4 percent Spanish dominance of persons living in telephone households. While the difference in language-dominance does appear to be substantial (9.9 percentage points) across these Metros, the nonphone sample records represent less than seven percent of the total sample records in the national Nielsen samples. Proportions of nontelephone households and the language dominance of those households vary across Metros. Based on the totality of these data, Arbitron acknowledges the addition of nonphone households to be a positive contribution to the overall quality of language-usage universe estimates. Therefore, the inclusion of nonphone data in the Nielsen Media Research Hispanic language universe estimates will not stand in the way of using these data to weight Arbitron's Hispanic samples for language.

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<sup>4</sup> Printed courtesy of Nielsen Media Research.

<b>Table 5: Language Dominance of Telephone vs. Nontelephone Households</b>		
<b>Nielsen National Enumeration Sample (13 telephone-enumerated Metros)</b>		
<b>Language Dominance</b>	<b>Telephone Homes</b>	<b>Nontelephone Homes</b>
All Spanish	27.2%	39.5%
Mostly Spanish	24.2%	21.8%
Mostly English	33.1%	24.1%
All English	15.5%	14.6%

### C. Geographically Excluded Areas

In each of the four DMAs where Nielsen conducts in-person enumeration interviews, certain geographic areas defined as low-Hispanic-penetration areas are not enumerated by Nielsen for efficiency reasons.<sup>5</sup> Arbitron’s random-digit telephone samples include all areas of these Metros. Because the areas excluded from Nielsen’s Spanish-language enumeration are lower-density Hispanic areas, it is reasonable to assume that the Hispanic residents in those areas would more likely be English-dominant. Theoretically, Arbitron’s inclusion of Hispanics living in these areas could possibly account for a part of the difference between Nielsen’s Spanish-language universe estimates and the language dominance of Arbitron’s in-tab samples.

To test this hypothesis, the entire Arbitron in-tab sample from 2002 in these four Metros was matched to the Nielsen-provided listing of block groups not enumerated. The table below shows, for each Metro, the number of Arbitron diaries in-tab from the “missed” areas, those diaries as a percentage of the total survey Hispanic in-tab and the Spanish-dominant percent of those diarykeepers. The Spanish-dominance of diaries from areas not enumerated by Nielsen is 27 percent overall, much lower than the overall Spanish-dominant estimates in these Metros. While this does not appear to be a significant issue in the Los Angeles and Miami Metros, it is an area of concern for the New York Metro and an even larger concern for Chicago.

<b>Table 6: Arbitron Hispanic In-Tab from Areas Excluded in Nielsen Enumeration</b>				
<b>Metro</b>	<b>In-Tab in Missed Areas</b>	<b>Total Metro Hispanic In-Tab</b>	<b>% of Total Metro Hispanic In-Tab</b>	<b>Primary Spanish % of In-Tab from Missed Areas</b>
Chicago	145	3,776	3.8	24.8
Los Angeles	29	12,035	0.2	37.9
Miami	13	8,477	0.2	23.1
New York	154	9,213	1.7	27.2

<sup>5</sup> See Footnote 2 on page 7 of this report.

In the recontact study, 19 households with 36 in-tab persons had returned diaries from areas of the Metros not included in the Nielsen enumeration. Nearly all of these persons were in-tab to the Chicago and New York Metros (20, 15, and 1 in Chicago, New York, and Los Angeles, respectively.) Of the excluded area in-tab persons who answered the householder ethnicity questions, nearly 60 percent were classified as Hispanic households using Nielsen's definition. The group as a whole was 30.6 percent Spanish-dominant, appreciably lower than the overall average for both Nielsen and Arbitron, 62.0 percent and 58.0 percent, respectively. Nielsen has stated that it no longer excludes any geographic areas from its area-probability samples. Therefore, the issue of market coverage will not impact Arbitron's use of Nielsen Hispanic language universe estimates.

#### **D. Elimination of No-Working-TV Households**

The Nielsen enumeration, conducted for the purpose of controlling for language usage in Hispanic households in its television service, includes only households with a working television; Arbitron includes all households in its radio surveys. If the Spanish-language usage of persons in households with no television set were found to be different than that of the Metro as a whole, eliminating these households from language-usage estimates could potentially change the Spanish-dominant proportion. Nielsen estimates that an average of two percent of the Hispanic population does not have a working television.

The Nielsen "presence of working television" questions used in the recontact study allowed the evaluation of the households included in the Arbitron Radio survey that would have been excluded from the Nielsen enumeration based on not having a television in the household. The recontact study identified 14 households returning 32 in-tab diaries in households, with no working television. This represents approximately 0.7 percent of the sample. Among these households, 84.6 percent were determined to be Hispanic households, using Nielsen's methodology. The in-tab persons in these adjusted Hispanic households were 59.4 percent Spanish-dominant versus an overall Spanish dominance of 64.5 percent for all Hispanic in-tab persons in recontacted households. Since the total number of households without televisions represented less than one percent of Arbitron's total in-tab and the difference within these households is small, the exclusion of no-TV households is not considered a material difference and will not contribute to the decision regarding population estimates. To fully represent persons in the Hispanic radio listening audience, Nielsen has agreed to collect language information from nontelevision households and include these data in Nielsen's person-level language universe estimates.

## **E. Hispanic-Household Definitions**

Both Arbitron and Nielsen currently assign individual respondent ethnicity based on a household-level ethnicity classification. In both services, once the household has been classified as Hispanic, all household members, considered to be Hispanic, are enumerated for language usage. Because Nielsen's Hispanic television services are based on the viewing of persons in Hispanic households, Nielsen's language classification method strives to match the Census-based estimates for persons in Hispanic households. Hispanic-household identification begins by first identifying the householder and then the ethnicity of that person. The householder is the person or one of the people living in the household who owns, is buying, or rents the home. If the householder is Hispanic, the household is considered Hispanic. If the householder is not Hispanic, neither is the household, regardless of the ethnicity of any other persons living in the household.

In contrast, Arbitron's method of classification is designed to identify all Hispanic persons participating in its person-based radio service. The classification is also used to dispense survey differential treatments and bilingual materials. Arbitron determines the ethnicity of households consenting to participate in its radio diary survey by simply asking if the respondent's household is of Spanish or Hispanic origin. Interviewer instructions state that if a respondent says the residents of the household are of more than one ethnicity, the ethnicity of the household is Hispanic "if at least one member of the household is Hispanic." The Arbitron method of ethnicity assignment results in the inclusion of more persons in these households who are non-Hispanics, but includes more Hispanic of persons than Nielsen.

The reasons for differences in the identification of Hispanic persons lie in the differences in service definitions and resulting data usage. The Census Bureau's Current Population Survey was used to evaluate the overall significance of the definitional differences. Based on these data, Arbitron's Hispanic identification includes approximately 11.6 million households, while Nielsen identifies approximately 10.0 million households as Hispanic. Appendix E includes a complete explanation of the difference in household ethnicity assignment and the resulting difference in the number of persons included as Hispanics in the universe for the two services.

### **1. Adjustments to Hispanic In-Tab with Nielsen Ethnicity Questions**

Arbitron Hispanic in-tab diarykeeping households were reassigned ethnicity based on their answers to the Nielsen ethnicity questions in the recontact survey: the identification of the householder and the ethnicity of that household member. The number of Hispanic households and persons in-tab for the Winter 2003 survey were adjusted to reflect the results of the recontact. A full 9.7 percent of the 1,941 recontacted households that started out as Hispanic as defined by Arbitron's method did not qualify as Hispanic when asked the Nielsen Hispanic household question (Arbitron Adjusted Non-Hispanic). On a Metro level, proportions varied

from a low of 7.2 percent Arbitron Hispanic respondents who were considered non-Hispanics in Los Angeles to a high of 12.2 percent in New York (see Table 7 below).

The percent of households determined to be non-Hispanic with the Nielsen question was slightly lower, 9.4 percent, when the households from the Nielsen nonenumerated areas and those with no television sets were excluded from the calculation. To evaluate the effect of the adjustments to ethnicity apart from the effect of geographic-area and no-TV exclusions, those sample records were excluded from the person-level comparisons in this section. Language differences for these small groups were discussed in previous sections of this report.

<b>Table 7: Ethnicity Changes with Adjustments Based on Nielsen Hispanic Household Classification</b>					
	<b>Total Sample</b>	<b>Chicago</b>	<b>New York</b>	<b>Los Angeles</b>	<b>Miami</b>
<b>All Recontacted Households</b>					
Adjusted Hispanic	90.3%	88.0%	87.8%	92.8%	90.4%
Adjusted Non-Hispanic	9.7%	12.0%	12.2%	7.2%	9.6%
Total Households	1,941	226	549	740	426
<b>TV and Geographically Included Households Only</b>					
Adjusted Hispanic	90.6%	89.3%	88.0%	93.0%	90.3%
Adjusted Non-Hispanic	9.4%	10.7%	12.0%	7.0%	9.7%
Total Households	1,908	214	540	733	421

## **2. Distributions of Adjusted Hispanic In-Tab Persons by Age/Gender and Residence**

To evaluate the general impact of the ethnicity adjustment to Arbitron Hispanic samples in the test Metros, the distribution of the recontacted sample by age and gender was evaluated. Table 8 below includes the distribution of in-tab from households that started out as Hispanic defined by Arbitron’s method and also qualify as Hispanic when asked the Nielsen Hispanic household question (Arbitron Adjusted Hispanic In-Tab) as well as the distribution of those Arbitron Hispanic in-tab persons from households that did not qualify as Hispanic when asked the Nielsen Hispanic household question (Arbitron Adjusted Non-Hispanic In-Tab). These distributions are compared to those of the overall recontact sample and to the total Hispanic population. The results showed the distribution of the adjusted Hispanic in-tab to be remarkably similar to that of the entire recontacted sample. Based on these data, redefining Hispanic households had little effect on the new Hispanic sample distribution. In contrast, the distribution of the smaller, Arbitron adjusted non-Hispanic group was somewhat different from the recontact sample as a whole. For many of these comparisons, the data suggest that adjusting Hispanic in-tab served to move the in-tab distribution by age and gender slightly, but insignificantly, further away from the population. Please refer to Appendix D for discrete distributions by age and gender based on the recontact study.

<b>Table 8: Unweighted Hispanic In-Tab Sample by Age and Gender Groups</b>				
	<b>Hispanic Population</b>	<b>Total Recontacted In-Tab</b>	<b>Arbitron Adjusted Hispanic In-Tab</b>	<b>Arbitron Adjusted Non-Hispanic In-Tab</b>
Men 18+	43.1	39.6	39.4	41.1
Women 18+	44.1	46.2	45.9	49.1
Teens	12.8	14.2	14.7	9.8
Persons 12-24	29.1	31.0	32.1	20.7
Persons 18-34	39.6	38.8	39.5	31.8
Persons 18-49	65.8	66.4	66.1	69.3
Persons 25-49	49.5	49.6	48.7	58.4
Persons 25-54	55.3	55.6	54.6	65.4
Persons 35-64	40.1	40.9	39.7	52.9
Total Sample	9,710,900	5,084	4,644	440

Within Metros controlled for ethnicity, Arbitron creates high-density areas defined as one or more zip codes within a county where the Hispanic population is 25 percent or greater. As with all counties in the Metro, it is Arbitron’s goal to match our in-tab samples to the population in these high-density Hispanic areas (HDHAs). According to Census-based population estimates, 75 percent of the Hispanic population in the recontact study Metros reside in an HDHA. For the total Winter 2003 in-tab in these Metros, a slightly higher proportion, 77 percent, resides in HDHAs.

Based on the location of the residence, a greater portion of the Arbitron adjusted Hispanic sample lived in high-density Hispanic areas versus the overall in-tab for the Winter 2003 survey. Over 80 percent of those in-tab persons defined as Hispanic when asked the Nielsen Hispanic household question live in an HDHA while only a little over half of the Arbitron Hispanics that were non-Hispanics when asked the Nielsen Hispanic household question lived in these areas. The difference in the proportion of adjusted Hispanics versus adjusted non-Hispanics residing in HDHAs was over 30 percent for the Chicago, Los Angeles, and Miami Metros (see Table 9 below). These comparisons show that a substantial proportion of Arbitron Hispanics adjusted to be non-Hispanics with the Nielsen methodology live outside of high-density Hispanic areas. This makes intuitive sense given that these households are more likely to be mixed households comprised of persons who are Hispanic living with others who are non-Hispanic.

<b>Table 9: Proportion of Unweighted Hispanic In-Tab Sample Residing in High-Density Hispanic Areas</b>				
<b>Metro</b>	<b>Hispanic Population</b>	<b>Winter 2003 In-Tab</b>	<b>Arbitron Adjusted Hispanic In-Tab</b>	<b>Arbitron Adjusted Non-Hispanic In-Tab</b>
Chicago	61.3%	70.9%	72.5%	39.1%
Los Angeles	88.2%	88.8%	91.6%	56.7%
Miami	76.8%	78.1%	81.6%	40.4%
New York	61.6%	62.8%	66.5%	69.3%
Total Survey	75.0%	77.0%	80.6%	50.7%

### **3. Language-Dominance Differences with Hispanic-Ethnicity Adjustments**

For households that completed the household ethnicity portion of the recontact interview, in-tab persons were 60.8 percent Spanish-dominant (based on their responses to the language questions included in the Winter 2003 placement interview). The complete Winter 2003 in-tab sample in these Metros was 58.0 percent Spanish-dominant. After the adjusted non-Hispanics were removed from the total, the proportion of Spanish-dominant persons was 64.5 percent, an overall gain of 3.7 percentage points versus the total recontacted sample. The difference was found to be higher for every market, although the magnitude of differences varied by Metro.

Noteworthy is the language dominance of those 440 in-tab persons who were defined as Hispanic in Arbitron’s survey but considered non-Hispanic when asked the Nielsen household question. Overall, results indicate that the 22.5 percent Spanish dominance of this group is a full 42 percentage points below the Spanish-dominant proportion for the households defined as Hispanic by both Arbitron and Nielsen. In the test Metros, the Spanish-dominant proportions range from a low of 7.1 percent in Los Angeles to a high of 45.5 percent in Miami. The hypothesis is that the low Spanish-dominance proportion for this group is indicative of the mix of Hispanics and non-Hispanics residing in these households (see Tables 10 and 11 below).

<b>Table 10: Unweighted Hispanic In-Tab Language Use Breakdowns</b>				
	<b>Winter 2003 In-Tab</b>	<b>Recontacted Hispanic In-Tab</b>	<b>Arbitron Adjusted Hispanic In-Tab</b>	<b>Arbitron Adjusted Non-Hispanic In-Tab</b>
<b>Spanish Dominance</b>	<b>58.0</b>	<b>60.8</b>	<b>64.5</b>	<b>22.5</b>
All Spanish	35.4	37.2	39.5	13.4
Mostly Spanish	22.6	23.6	25.0	9.1
Mostly English	24.3	22.6	22.0	28.9
All English	17.6	16.5	13.5	48.6
Total	8,449	5,077	4,637	440

Note: There were 15 in-tab diaries in the test Metros in Winter 2003 with no language information.

<b>Table 11: Unweighted Hispanic In-Tab Spanish-Dominant Proportions</b>				
	<b>Winter 2003 In-Tab</b>	<b>Recontacted Hispanic In-Tab</b>	<b>Arbitron Adjusted Hispanic In-Tab</b>	<b>Arbitron Adjusted Non-Hispanic In-Tab</b>
Chicago	60.7	63.2	69.3	14.5
Los Angeles	54.0	57.3	60.6	7.1
Miami	68.2	72.7	75.4	45.5
New York	53.2	56.7	60.6	25.6
Total Sample	8,449	5,077	4,637	440

Note: There were 15 in-tab diaries in the test Metros in Winter 2003 with no language information.

Once Arbitron's in-tab Hispanic samples from the Winter 2003 survey were subjected to and adjusted by the Nielsen Hispanic-household definition, the Winter 2003 Spanish-dominant proportions in the test Metros moved significantly closer to the Nielsen language universe estimates.

These results confirm the hypothesis that the method of classifying a Hispanic household does have a substantial effect on the proportion of Spanish-dominant persons in Arbitron samples. These findings show that using the identical methods for Hispanic household definition would bring Arbitron's and Nielsen's language-dominance proportions closer together.

## VII. Conclusions

Arbitron's due diligence on the Nielsen Spanish-language universe estimates has led us to conclude that the question of what constitutes a Hispanic household is the most important issue that must be resolved before the Nielsen enumeration estimates can be used to control for language in the Arbitron radio survey. Results support the premise that the method of classifying a household does alter the proportion of Arbitron's in-tab Spanish-dominant persons. Including all Hispanics in the sample, not only those Hispanics residing in households with a Hispanic householder, can have a significant effect on language-usage estimates.

**Figure 2**

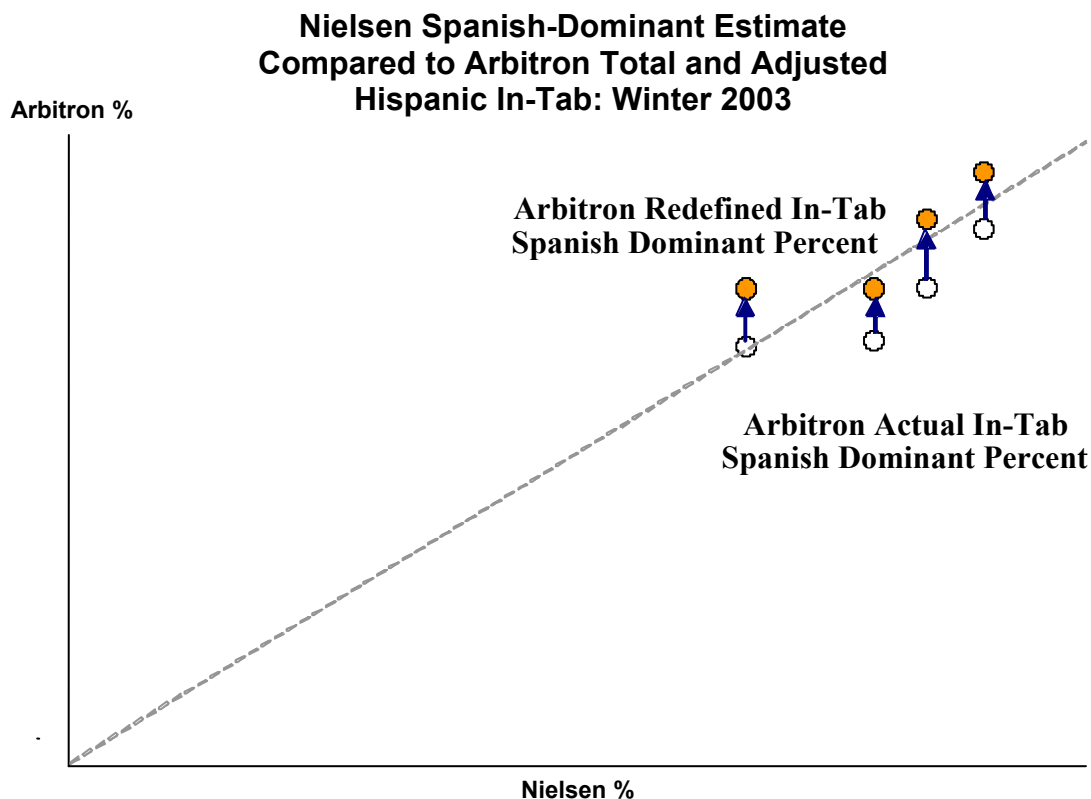


Figure 2 above shows the effect of the Nielsen definition of Hispanic households on the resulting Spanish dominance of Arbitron's samples in the four tested Metros in the Winter 2003 survey. Arbitron's actual in-tab Spanish-dominance proportions plotted against Nielsen's proportion of Spanish-dominance are represented by the clear points. The solid points represent Arbitron's Hispanic Spanish-dominant proportion for those same Metros with Hispanic households defined using Nielsen's ethnicity methods. The directional arrows indicate the movement of the proportions that could be expected if Arbitron were to have used the Nielsen method to define

Hispanic households for the Winter 2003 survey. Remember that a perfect match would show the points on the dotted diagonal line.

The end result is that were Arbitron to switch to the Nielsen Hispanic-household definition, fewer in-tab diaries would be defined as Hispanic and the members of those households would have a higher Spanish-dominant proportion. However, adopting the Nielsen definition of a Hispanic household would not be in the best interest of the radio industry or of Arbitron's radio station clients. It is critically important to the quality of Arbitron's survey results that the personal radio diary service identifies all Hispanic persons in the population. To include Hispanic persons in our samples as nonethnics (Hispanics living in households with non-Hispanic householders) would serve to dilute the Hispanic radio audience. Also, the distributions of in-tab samples by age and gender group and by residence in high-density Hispanic areas demonstrate that the inclusion of mixed households serves to bring the Hispanic in-tab samples closer in line with total Hispanic population estimates.

Nielsen remains Arbitron's best source for language-dominance universe estimates. There have been no other acceptable third-party sources thus far, although Arbitron has reviewed the proposals of two companies. Another alternative, Arbitron conducting an industry-funded enumeration study, remains on the table; however, it is a very expensive solution.

In discussions with Arbitron, Nielsen Media Research has agreed to expand its Hispanic enumeration and gather additional data to be used in calculating person-level Spanish-language universe estimates for Arbitron's use in weighting its in-tab diary samples. Discussions with Nielsen have addressed the methodological issues reviewed in this document. Most important, Nielsen has agreed to collect ethnicity and language information from all persons in all households with at least one Hispanic resident in addition to those households with a Hispanic householder. The remaining four methodological differences have also been resolved:

- Based on Nielsen's extensive research study, Arbitron is satisfied that Nielsen's method of beginning all Hispanic enumeration calls in Spanish has no effect on resulting language universe estimates.
- The inclusion of nontelephone households (or nontelephone adjustments), also included in Census universe estimates, will add a measure of quality to the Nielsen person-level Hispanic language universe estimates.
- Nielsen is no longer excluding low-density Hispanic geographic areas from its sample frames. Universe estimates available for use in 2006 will exclude no geographic areas.

- Ethnicity and language information will be collected from households without a working television for the purpose of calculating person-level language universe estimates.

Based on Arbitron's analyses and Nielsen's modifications to the Hispanic language enumeration methodology, there remain no methodological obstacles to using language universe estimates from the Nielsen Media Research enumeration for weighting Arbitron's in-tab diary samples. Resulting Hispanic language universe estimates are expected to meet with industrywide acceptance. Lastly, Arbitron remains committed to and believes that language weighting for Hispanics will add quality to the Arbitron radio diary service in ethnically controlled Metros.

## **Appendix A: Arbitron Hispanic-Controlled Metros Covered by Nielsen's 2002-2003 Enumeration**

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Albuquerque  
Chicago  
Corpus Christi  
Dallas-Ft. Worth  
El Paso  
Fresno  
Houston-Galveston  
Los Angeles  
McAllen-Brownsville-Harlingen  
Miami-Ft. Lauderdale-Hollywood  
New York  
Phoenix  
Riverside-San Bernardino  
Sacramento  
San Antonio  
San Diego  
San Francisco  
San Jose

## **Appendix B: Recontact Study Methodology**

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A telephone interview methodology was used to recontact in-tab households from the Winter 2003 survey in the four largest Hispanic radio Metros. These are also Metros where Nielsen conducts in-person enumeration interviews: Los Angeles, New York, Chicago and Miami. Nielsen Media Research provided Arbitron with the verbatim script used in its enumeration interviews, including the Spanish translation. First, respondents were asked about the presence of a working television in the household. Then they were asked to identify the householder as being “the person or one of the people living in the household who owns, is buying, or rents the home.” The standard probes used by Nielsen interviewers were programmed into the script in order to measure ease of compliance. Finally, respondents were asked about the ethnicity of the named householder.

Any household resident 16 years of age or older could be interviewed. A minimum of 12 attempts was made to each household at varying times of the day and evening. Three full weekends were included in the calling schedule. Late in the calling schedule a single attempt was made between 7:30 and 9:00 in the morning and another between 9:30 and 10:00 in the evening to attempt contact with household members not at home during the traditional calling hours of 9:00AM to 9:30PM. Callbacks were scheduled at the convenience of respondents; one conversion contact was made with any household refusing at the time of the initial contact. Because the study was a recall of Arbitron’s Winter 2003 Hispanic diarykeepers, the interviewing service used available telephone information services to attempt contact with respondents whose numbers had been disconnected or were not in service.

Only bilingual interviewers called the sample. All interviews began in the language the respondent used to answer the telephone. Interviewers were alert to the respondents’ wishes and, when in doubt, asked the respondent what language they preferred to use during the remainder of the call. Calls were monitored to ensure adherence to the script and to evaluate the interviewers’ skill in script delivery and the respondent’s comfort with the question flow.

## Appendix C: Unweighted Distribution of Winter 2003 Recontact Study Population versus Samples by Age and Gender

Demo Group	Hispanic Population	Winter 2003 In-Tab	Total Adjusted In-Tab	Arbitron Adjusted Hispanic In-Tab	Arbitron Adjusted Non-Hispanic In-Tab
Men 18+	43.1	40.3	39.6	39.4	41.1
Men 18-24	8.6	8.1	8.4	8.8	4.3
Men 25-34	12.1	11.0	10.2	10.2	10.4
Men 35-44	9.5	8.7	8.5	8.3	10.5
Men 45-49	3.5	3.5	3.8	3.5	6.4
Men 50-54	2.7	2.7	2.8	2.7	3.4
Men 55-64	3.7	3.7	3.5	3.5	3.6
Men 65+	3.0	2.6	2.4	2.4	2.5
Women 18+	44.1	46.4	46.2	45.9	49.1
Women 18-24	7.7	8.4	8.4	8.6	6.6
Women 25-34	11.2	11.9	11.8	11.9	10.5
Women 35-44	9.4	10.9	11.1	10.7	15.4
Women 45-49	3.8	4.1	4.2	4.1	5.2
Women 50-54	3.1	3.2	3.2	3.2	3.6
Women 55-64	4.4	4.1	3.8	3.7	4.8
Women 65+	4.5	3.8	3.7	3.7	3.0
Teens	12.8	13.3	14.2	14.7	9.8
Boys 12-17	6.6	6.2	6.8	7.0	5.7
Girls 12-17	6.2	7.1	7.4	7.7	4.1
Total Sample	9,710,900	8,464	5,084	4,644	440

## **Appendix D: Census Questions Concerning Telephone Penetration**

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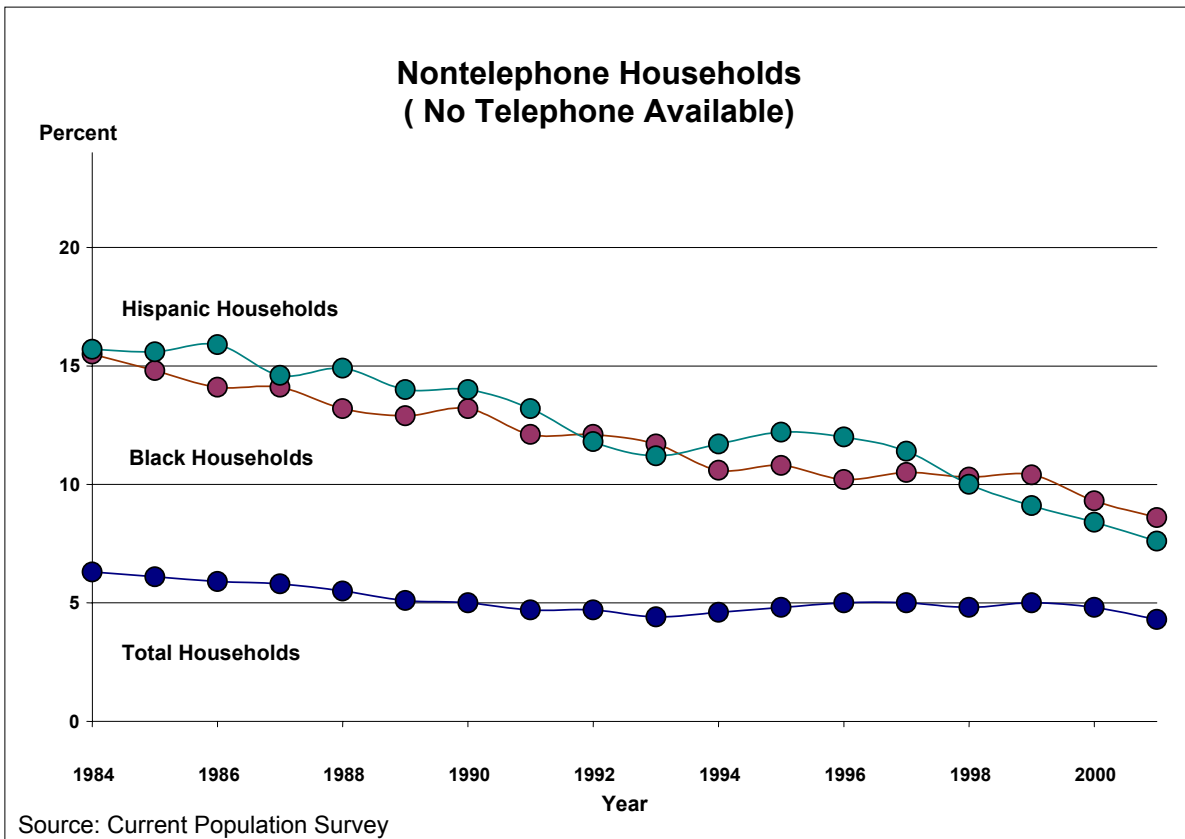
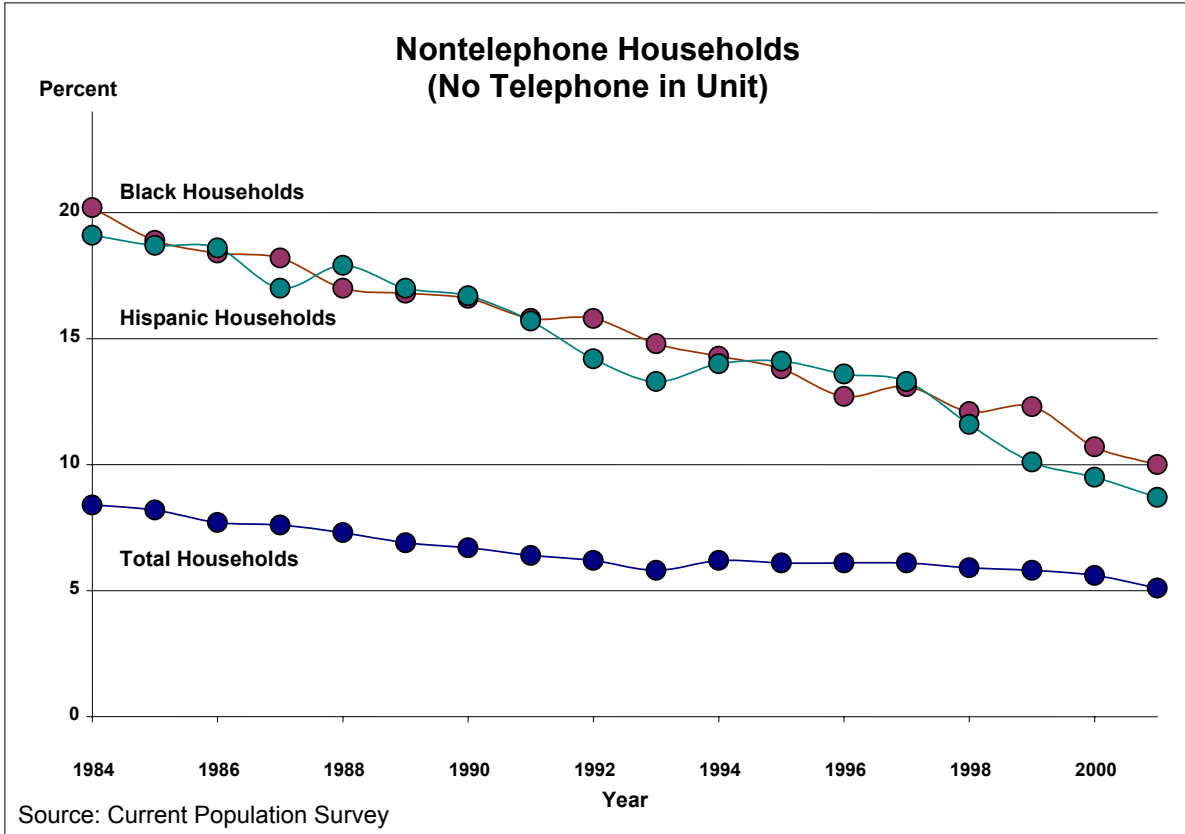
Census 2000 results show telephone penetration for Hispanic households to be at 95.2 percent. The penetration for total households is 97.6 percent. Prior to Census 2000, the Census telephone penetration question was “Do you have a telephone in this house or apartment?” For Census 2000, the question was modified to ask, “Is there telephone service available in this household, apartment, or mobile home from which you can both make and receive calls?” In theory, the Census 2000 question includes cell phones or even a neighbor’s phone, depending on how the respondent interprets the question.

Currently, cell phones are not included in Arbitron’s Random Digit Dial (RDD) telephone sample frame. There remains a question, therefore, concerning whether the Census nontelephone household number actually represents the proportion of households unreachable through the current Arbitron methodology.

We also track telephone penetration using the Census Bureau’s Current Population Survey (CPS.) Three times annually, this survey includes questions about telephone availability. Since there is bounce in data collected during individual months, CPS data are released as annual averages. The CPS asks, “Is there a telephone in this house or apartment?” If there is no telephone, the interviewer asks, “Is there a telephone elsewhere on which people in this household can be contacted?” These questions have been used, continuously, since 1984. The CPS is administered by an interviewer; the Census is mostly self-administered.

According to the results of the CPS, the annual average percents for no “telephone in this house or apartment” for Hispanic households in 1990 and 2000 were 16.7 and 9.5, respectively, compared to 6.7 and 5.6 for the total population. For the question concerning no “telephone elsewhere on which people can be contacted,” the proportions for Hispanic households for 1990 and 2000 were 14.0 and 8.4, respectively, compared to 5.0 and 4.8 for the general population. The figures below show the trends for nonphone data from 1984 to 2001 for these two questions.

While these numbers show the nontelephone proportions to be greater for both black and Hispanic households versus the general population, it is clear that the gap has narrowed substantially from 1984 to today. The remaining gap does, however, make a case for including either interviews with nontelephone households or a nontelephone adjustment in language-usage universe estimates.



## Appendix E: Census, Nielsen, and Arbitron Hispanic Household Classification

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To help clarify some of the definitions for Census and population data, this section will look at how a single household would be categorized in the Census, in the Nielsen television service, and in the Arbitron radio service. The example household is composed of a married couple with a 13-year-old child. The husband is Hispanic, the wife is not, and they consider their child Hispanic because of the cultural and family traditions that they observe. The wife is co-owner of their house. She is the person who answers the questions posed by the Census, Nielsen and Arbitron questionnaires. She considers herself to be the householder. Census also considers her to be the householder since she put her information on the first column of the Census form.

### 1. U.S. Census

The decennial Census counts population and housing units. A housing unit may be either occupied or vacant. Persons may be either in households or in group quarters. All persons, whether in households or not, were asked to report their sex, age, race and whether or not they are Hispanic.

In Census tabulations, a household is usually defined as an occupied housing unit or as all of the persons who occupy a housing unit. In detailed tabulations, the characteristics of the householder are used to define the household. (The number of householders equals the number of occupied housing units.) The householder characteristics include race and ethnicity as well as age, sex, and marital status. A *householder* is a “person ... who owns, is buying, or rents this house, apartment or mobile home<sup>6</sup>.” On the Census form, this person becomes Person 1—the first person in the household to be listed and to answer the Census questions. Other members of the household (Person 2, Person 3, etc.) are asked how they are related to Person 1.

Members of the broadcasting and advertising businesses usually call the householder the “Head of Household.” There are technical differences between the two terms and “Head of Household” is actually an obsolete concept. However, media people tend to use the terms interchangeably. Data available today are all based on the Census householder definition, not on the Head of Household concept.

The family in our example has two Hispanics (husband and child) in the Census. The wife is not Hispanic. Since the wife is the “Person in column 1,” the household is counted as a *non*-Hispanic household.

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<sup>6</sup> Summary File 1 Technical Documentation, prepared by the U.S. Census Bureau, 2001.

## **2. Nielsen Media Research**

Household characteristics are used in the Nielsen Hispanic Television Index meter service to weight its panel samples to the universe. Household ratings are the “topline” information in Nielsen surveys. Nielsen collects household-level information such as number of television sets, cable/satellite service, etc. Age and sex information for each person in the household is also collected. The race, ethnicity and age of the householder are also used to characterize the household.

For Nielsen, our example family is non-Hispanic. The respondent/householder (wife) was asked for her ethnicity. This matches the Census. Her response is assigned to the household and to all of its members. The husband and child are not counted as Hispanics in Nielsen panels.

## **3. Arbitron**

Arbitron is not concerned with households. Arbitron respondents are asked about race/ethnicity in order to qualify the household for the language enumeration and for Differential Survey Treatments (DST). Having identified which household will receive these treatments, Arbitron does not continue to track the race or ethnic status of the household. However, persons in Black or Hispanic households continue to be tracked and identified as Black or Hispanic. Their listening will be weighted to Census-based estimates of Black or Hispanic population by age and sex. Hispanic persons also retain their Spanish- or English-dominant characteristics.

In our example household, the non-Hispanic wife either characterizes the household as Hispanic (because of their Latino traditions) or tells the Arbitron interviewer that there are both Hispanic and non-Hispanic family members. In either case, the household is categorized as Hispanic: They will receive bilingual materials and extra contacts. If the wife described the household as Hispanic, the interviewer accepted that answer and did not probe further. If the wife was unsure how to describe the household because there are Hispanics and non-Hispanics, the interviewer was instructed to categorize the household as Hispanic. When the Arbitron diaries are returned, all three members of the family are counted as Hispanic.

In both Nielsen and Arbitron, this household has matches with the Census and differences from the Census. There are also differences between Arbitron and Nielsen.

Persons: In the Census, there were two Hispanic persons and one non-Hispanic person in the household. Nielsen had no Hispanics while Arbitron had three.

Household: This is a non-Hispanic household in both the Census and in Nielsen. Arbitron does not use household data for audience estimates. But internally, the

household was categorized as Hispanic for the purpose of language-usage enumeration and for our survey operations (DST).

To evaluate the overall significance of these differences in definition, Arbitron created estimates of persons and households based on the two different definitions of Hispanic households: the Nielsen householder definition and the Arbitron “any” definition. The estimates came from the March demographic supplement to the Census Bureau’s Current Population Survey and are for the Total U.S., not local markets. To create stable estimates, we used an average of three years’ data (March 2000 – March 2002).

#### 4. Overall Estimates

Based on these estimates, 11,594,000 households would be defined as Hispanic using the Arbitron definition of a Hispanic household while 9,958,000 households with a Hispanic householder would be defined as Hispanic with Nielsen; or Nielsen’s universe is approximately 86 percent of Arbitron’s.

In the table below, there are a total of 32,086,000 persons 12 and over in the 11.6 million Arbitron-defined Hispanic households, versus a total of 27,253,000 in the 10.0 million Nielsen-defined Hispanic households. Based on methodological definitions, Arbitron would “find” all U.S. Hispanic persons, or 27,704,000. Nielsen’s 10.0 million Hispanic households would include 25,514,000 Hispanic persons 12+, or 7.9 percent fewer. Both Arbitron and Nielsen definitions result in the inclusion of non-Hispanics as Hispanics based on household definitions. Arbitron would include 4,382,000 non-Hispanic persons in the Arbitron-defined 11.6 million Hispanic households while Nielsen would include 1,739,000 non-Hispanics in its Hispanic-defined households (2,643,000 fewer). Arbitron’s definition yields an approximately 15 percent larger population of persons aged 12 and over in Hispanic households.

<b>Persons in Hispanic Households: Arbitron Definition and Nielsen Definition</b>					
<b>Source: CPS - March 2000, 2001, 2002 (Averaged)</b>					
	<b>Arbitron Definition</b>	<b>% of Total Persons</b>	<b>Nielsen Definition</b>	<b>% of Total Persons</b>	<b>Percent Difference</b>
Total Hispanic Households	11,594,000		9,958,000		
Total Persons 12+	32,086,000	100.0%	27,253,000	100.0%	-15.1%
Hispanic Persons 12+	27,704,000	86.3%	25,514,000	93.6%	-7.9%
Non-Hispanic Persons 12+	4,382,000	13.7%	1,739,000	6.4%	-60.3%

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