Respondent Effects Associated with Questionnaires Designed to Accommodate Survey Processing¹

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Abstract

Survey managers acknowledge that paper questionnaires must be designed to accommodate the requirements of data capture systems. It is important, however, to recognize that such design elements can have an effect on respondent behavior. This paper reminds us that even fairly minor changes in the format of a questionnaire can jeopardize successful completion by respondents. In 2005, the paper questionnaire used in the American Community Survey was redesigned to transition from a key-from-paper to an imaging and key-from-image (KFI) data capture methodology. On the surface the proposed changes appeared fairly minor--adding additional white space and removing horizontal lines between questions. The KFI system experts proposed most of the changes and little attention was given to possible respondent implications. The Census Bureau conducted a pretest of this revised questionnaire and analysis of the results identified an increase in nonresponse for selected questions. A closer review of the changes identified the potential for respondent navigation errors. A questionnaire design team was established to redesign this questionnaire to meet technical KFI requirements and address respondent visual miscues apparent in the new questionnaire. This paper reports on the test of the initial and redesigned forms. It provides a valuable lesson in the need to pay attention to both the technical requirements and the visual dynamics of respondent-administered survey instruments.

Key Words: Data Collection, Data Processing, Quality

1. Introduction

The American Community Survey (ACS) is a mixed mode survey conducted by the U.S. Census Bureau that produces annual demographic, housing, social, and economic characteristics for the nation, states, counties, and areas as small as census tracts and block groups. The ACS began national implementation in 2000 and expanded in 2005 from a demonstration stage annual sample of about 800,000 to an approximate 3 million annual sample. The first mode of data collection in the ACS is mail. The mail questionnaire includes about 105 questions (or parts of questions) that require responses in the form of both check boxes and write-ins.

¹ This report is released to inform interested parties of research and to encourage discussion. Any views expressed on methodological issues are those of the authors and not necessarily those of the U.S. Census Bureau.

Of the 230,000 questionnaires mailed each month, about 106,000 are completed and returned by mail. The workload for data capture therefore includes about 1.3 million questionnaires every year. Significant data capture backlogs were experienced in 2005 due to the large sample size increase. To reduce overall costs and improve the efficiency of data capture operations, the Census Bureau decided to shift from a key-from-paper (KFP) data capture system to an integrated Computer-Assisted Data Entry (iCADE) system. The iCADE system combines optical mark recognition and software-directed keying of write-in entries from digital images produced by scanning the paper forms.

While the questionnaire formatting requirements for KFP were limited, the iCADE system required several revisions to the form to facilitate the software's correct orientation and interpretation of responses. These revisions are the focus of this paper. Two attempts were needed to ensure that changes in questionnaire design to accommodate survey processing did not influence respondent behavior in correctly completing the questionnaire.

2. Background

A well-designed questionnaire will facilitate respondent navigation and make it more likely that respondents complete the questionnaire as intended. A set of design principles for self-administered questionnaires is proposed in Dillman (2000). Several of his principles speak to the need to define a clear navigational path and create respondent visual navigation guides. The choice of data capture method should never interfere with the ability to meet these principles. While survey designers need to consider processing requirements, they should never choose a questionnaire design that fulfills those requirements at the expense of the respondent.

The task of completing a mail questionnaire is a visual exercise. The visual design of the questionnaire is therefore central to successful completion of this task by a survey respondent. Jenkins and Dillman (1997) stress the value of designs that follow natural reading and comprehension processes to make sense of visual information. These processes are founded in the concepts of basic Gestalt psychology. Of the seven design principles proposed in Norman (1988), the principle most relevant to this research is the need to make the task clearly visible through the use of visual layouts that clarify the sequence of tasks and the placement of responses. Research has demonstrated that alternative questionnaire formats influence respondent behavior and ultimately, respondent success. For examples, see Redline, Dillman, Dajani, and Scaggs (2003) and Christian and Dillman (2004).

A survey questionnaire, such as the one used in the mail mode of the ACS, relies on verbal, symbolic, numeric, and graphical languages to explain the respondent's task. See Redline and Dillman (2002) for more information on these visual languages. The graphical language, including the format, spatial presentation, use of color and shapes, were manipulated in this redesign effort.

Self-administered questionnaires use multiple conventions to collect respondent information. This paper looks at the use of a matrix or grid that includes questions requiring a check box response, a write-in entry, or both a check box and write-in response.

3. Matrix/Grid Formats

The ACS collects data for all persons in a household. Up until 2008, basic demographic data in the ACS were collected in a matrix where a series of questions were listed across the top of the page and household members were listed down the left side of the page. Respondents were supposed to answer each question for each individual by reading the question once and providing responses for all household members. Based on testing in 2006, the format for collecting basic demographic data was changed to a "sequential" style (Chesnut, 2008). It is this matrix design that was changed the most in the data capture system transition. Similar matrix designs are often used in self-administered questionnaires to save space. Dillman, Smyth, and Christian (2009) acknowledge the inherent complexities of matrix-formatted questionnaires. In particular, they note that, "the structure of the matrix leaves it up to the respondent as to whether to navigate the matrix and fill in answers primarily in columns or in rows or some combination of both." Questionnaire design efforts can improve or complicate respondent horizontal or vertical navigation. Dillman, Gertseva, and Mahon-Haft (2005) summarized the visual design principles used to support redesigned matrices in the United States Department of Agriculture's Agricultural Resource Management Survey. They encouraged respondent navigation with numerous visual cues including the addition of dark horizontal lines and the use of reverse print. Changes were made to these survey forms to facilitate improved respondent navigation across a matrix but no formal testing was undertaken to provide empirical data on the effect of those changes.

4. Tests of Redesigned Matrix

4.1 Initial Test

4.1.1 Design Changes

Several questionnaire design changes were needed to shift from a KFP data capture system to one based in iCADE. A team of iCADE engineers redesigned the 2005 ACS questionnaire to accommodate iCADE data processing requirements. This initial iCADE questionnaire (iCADE1) reflected significant changes to the 2-page grid (or matrix) designed for the collection of names and basic demographic data (sex, age, relationship, marital status, race, and Hispanic origin/ethnicity.) Borders and grid lines were altered and a white margin was added between the two pages. Figures 1a and 1b (in Appendix) display the 2-page grid for the KFP form and the iCADE form. Note that the thick border running across the top of the page was eliminated in iCADE1. The grid lines that were originally black were replaced with light green lines in the redesigned iCADE1 form. Major changes were made to the centerfold area—iCADE1 added a black line border around each page and a white margin between the two pages.

4.1.2. Methodology

In November 2005, an experimental sample panel of 49,702 addresses was used to test this initial iCADE questionnaire. All addresses in this panel received the initial iCADE questionnaire shown in Figure 1b (iCADE1). The ACS production sample of 227,046 addresses for November 2005 was used as the control with all addresses receiving the 2005 KFP questionnaire shown in Figure 1a (KFP1). Both mailings followed identical schedules and mailing strategies that included an advance letter, initial mailing package (with a questionnaire), reminder postcard, and replacement-mailing package (with a second questionnaire) that was mailed to nonrespondents only. To eliminate potential

effects of data capture method, the mail-returned questionnaires from both panels were data captured using identical KFP procedures. The experimental sample panel only used the mail mode for data collection and not telephone and personal visit as in the production ACS. For this reason, we only included mail returns before the start of the telephone phase for production ACS and the first month of returns for the experimental sample panel.

Unedited data from mail returned questionnaires were used to produce item nonresponse rates. The item nonresponse rates for this analysis are defined as the ratio of the number of valid responses to the number of questions requiring a response. All item nonresponse rates are weighted to reflect the ACS sample design. Statistical testing was conducted using a 90 percent confidence level.

4.1.3 Results

A quick tabulation of item nonresponse rates for selected questions revealed increases in item nonresponse for the questions included in the 2-page grid. See Table 1. Item nonresponse rates for all six questions were found to be significantly higher for the iCADE1 questionnaire. The three questions on page 3, the right-hand page (marital status, Hispanic origin/ethnicity, and race) were especially elevated.

Table 1. Item	Nonres	oonse Rates f	for Questions Inclu	ided in the Grid
Question			Difference	Statistical
	KFP1	iCADE1	(iCADE1-	Significance*
	(%)	(%)	KFP1)	
			(%)	
Page 2 (left of fold)				
Sex	4.0	6.2	2.2	Yes
Age	2.4	3.4	1.0	Yes
Relationship	2.5	3.0	0.5	Yes
Page 3 (right of				
fold)				
Marital Status	5.1	9.6	4.5	Yes
Hispanic origin	7.5	13.3	5.8	Yes
Race	6.3	10.8	4.5	Yes

*Statistical significance tested at the 90 percent confidence level

A review of the initial iCADE questionnaire concluded that the changes in format introduced navigation problems. The 2-page matrix design requires respondents to match rows and columns across two pages. The iCADE1 design reduced respondent visual cues linking these two pages. It removed the thick border at the top and bottom of these pages that served to link the pages together. The boxing of the questionnaire area on each page, which was added to assist optical scanning, separated pages 2 and 3. The increased white space at the centerfold reinforced the separateness of the two pages.

In addition, the redesign removed several navigation guides that are critical to successful matrix completion—elements conveying that the pages must be read both vertically and horizontally. Specifically, horizontal and vertical lines connecting the questions at the top of each column with the persons in each row were visually diminished. Respondents got lost navigating the questionnaire and many skipped over the questions on page 3.

As a consequence, the Census Bureau decided to delay the shift to iCADE data capture and redesign efforts were undertaken that would accommodate iCADE-processing requirements without a negative effect on respondent behavior. Staff acknowledged the complexity of the 2-page matrix design, especially for respondents to accurately navigate to the questions on page 3. In 2006 the ACS continued using a KFP questionnaire, identical in content and format to the one used in 2005.

4.2 Second Test

4.2.1 Design Changes

Using the information gleaned from the pre-test, a second team that included iCADE engineers, survey methodologists, and questionnaire design experts redesigned the form, which was put into production in 2007. This redesign was focused on improving horizontal and vertical navigation and reinforcing the connection between page 2 and page 3. Figure 1c (in the Appendix) displays the 2-page grid for this second iCADE form (iCADE2). Specifically, to more clearly connect the two pages, where iCADE1 eliminated the thick border at the top of the page, a narrower border was added back in iCADE2. With respect to the centerfold area, iCADE2 retained the black line around each page but replaced the white margin with a green column to mimic the other grid columns. Both of these visual changes are based in Gestalt psychology, recognizing that our vision uses borders, edges, and patterns to establish groupings. Here we minimized the strong design elements that created two separate groupings (i.e., boxes) across the two pages. The Law of Proximity also supports these changes-visual elements closest together are seem as belonging together. The two pages are brought closer together by these format changes.

In addition, to improve horizontal and vertical navigation, iCADE2 restored the black grid lines that iCADE1 had replaced as light green and iCADE2 also added alternate shadings of green across rows of the grid to more clearly define horizontal organization.

Table 2 summarizes the changes made to the grid relative to the KFP form for the two iCADE questionnaires. Attachment 1 provides facsimiles of the three questionnaires.

	iCADE1	iCADE2
Top grid borders	Thick border was replaced with a black line border	The thick border was added back, but reduced in width.
Side grid borders	A black line border was added to the right and left sides of each page	Same as iCADE1
Interior grid lines	Lighter, green grid lines were added to replace the black horizontal and vertical grid lines	The black horizontal and vertical grid lines were added back
Center margin	A white margin was added to the centerfold area	The white margin was replaced with a green column to mimic the other grid columns
Bottom grid borders, barcodes, and page identifiers	Thick border was replaced with a black line border, barcodes and page identifiers were added to each page	Same as iCADE1

Table 2. Summary of Grid Formatting Chang	es
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4.2.2. Methodology

Timing constraints precluded pre-testing the revised questionnaire. The redesigned iCADE questionnaire shown in Figure 1c (iCADE2) was mailed to the full ACS sample beginning in January 2007. The iCADE questionnaire used in 2007 was identical in content to the 2006 KFP questionnaire (KFP2), which was identical in content and format to the November 2005 KFP questionnaire used as the control for the initial experiment (KFP1). Mail returns received from the January through April 2007 sample panels were all captured using the same data capture procedures used in 2006. For this reason, we chose to compare mail returns from January through April of 2007 with mail returns from January through April of 2007. As was true for the first experiment, both mailings followed identical schedules and strategies and all mail-returned questionnaires were captured using the same methods (key from paper). While this design does not control for possible differences in respondent behavior due to the year, we do not expect this to be a major limitation.

Unedited data from mail returned questionnaires were used to produce item nonresponse rates. Item nonresponse rates were calculated using the same definitions and methods used in the initial test. Our hypothesis was that the design changes would facilitate respondent navigation across the two pages and would therefore result in a reduction in the levels of item nonresponse, especially for the items on page 3.

4.2.3 Results

Table 3 shows comparisons of item nonresponse for the KFP questionnaire with the redesigned iCADE questionnaire. The iCADE questionnaire continued to show increases in the item nonresponse rates for sex but for all other questions the increases in nonresponse that were found in the initial iCADE form were reduced or eliminated.

Tuble 5. Ren	ii i tomes	ponse Rates	tor Questions mere	
Question			Difference	Statistical
	KFP2	iCADE2	(iCADE2-	Significance*
	(%)	(%)	KFP2)	
			(%)	
Page 2 (left of fold)				
Sex	4.2	6.6	2.5	Yes
Age	2.5	2.7	0.1	No
Relationship	2.5	2.5	0.0	No
Page 3 (right of fold)				
Marital Status	5.1	5.2	0.2	Yes
Hispanic origin	7.5	7.6	0.1	Yes
Race	6.5	6.5	0.0	No

Table 3. Item Nonresponse Rates for Questions Included in the Grid

*Statistical significance tested at the 90 percent confidence level

The reduction in the nonresponse rates for the marital status, Hispanic origin, and race items can be attributed to the changes made to the redesigned iCADE questionnaire. The results suggest that the navigational flow of the form was improved. The darker grid lines (as shown on the redesigned iCADE questionnaire in Figure 1c) helped separate the questions, and clarify the person rows. The flow directing the respondent to page three was enhanced by the addition of the green columns in the centerfold, as well as, the readdition of the border running across the top of both pages. The improved navigation in the redesigned iCADE form lead respondents to the items on page three, rather than losing them, as the initial iCADE questionnaire seemed to do (shown in Figure 1b).

The higher nonresponse rate for the sex item is somewhat puzzling. This rate was 2.5 percentage points higher than the rate from the KFP questionnaire, similar to the difference found in the test of the initial iCADE form. This finding suggests that the changes to the gridlines on both iCADE questionnaires did not have an affect on response patterns for this question.

The sex item is the first question on the form, and it is different than the other check box responses of its size. For example, it is the only item with two response categories where the categories are not a "yes/no" response. In addition, the space between the question and the response categories is the largest on the questionnaire. For these reasons, it is possible that this item could have been affected differently than the other questions requiring check box responses. Response may have been impacted by the "halos" surrounding the check boxes, or the difference in font. The checkboxes themselves are also slightly different – the corners of the boxes are rounded in the KFP version and square in the iCADE version, and the line border is slightly thicker in the KFP version. The sex item may have also been affected by the changes to the write-in boxes located on both sides of the question. On both iCADE questionnaires, the write-in boxes are slightly larger and have black borders, which may draw greater attention to those items. Respondent's vision may be directed to these items and away from the sex item, forcing them to skip the sex item entirely. Overall, the sex item seems to be more delimitated in the KFP versions.

Interestingly, when a slightly different ACS grid design was compared with the ACS sequential design (Chesnut, 2008) the sex question was moved to be the second question asked, not the first. In this location the item nonresponse (even in a grid) was reduced to 2.2 percent.

5. Conclusions

Survey designers must recognize that completing a self-administered questionnaire is a visual exercise. For this reason attention must be paid to the potential effect of questionnaire design changes on respondent visual cues for such changes can influence respondent behavior. Questionnaire design changes necessitated by a shift to a new technology should not be undertaken without consideration of the potential impact on respondent behavior. While survey processing requirements warrant attention, they should never be followed at the expense of the respondent.

Acknowledgments

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Figure 1a. KFP questionnaire 2-page grid

	List of Res	sidents	(What is this person's sex?	What is this person's age and what is this person's date of birth? Print numbers in boxes.	How is this person related to Person 1?
	READ THESE	Person 1				
1	FIRST	Last Name (Please print)		Male	Age (in years)	Person 1 (Person 1 is the person living or staying
P at t	lease fill out this form s soon as possible after eceiving it in the mail.	First Name	м	G Female	Month Day Year of birth	nere in whose name this house or apartment is owned, being bought, or rented, if there is no such person, start with the name of any adult living or
•	LIST everyone who is living or staying here for more than 2 months.					staying here.)
•	LIST anyone else staying here who does not have another usual place to stay.	Last Name (Please print)		Male	Age (in years)	Helasoreap of Person 2 to Person 1.
•	DO NOT LIST anyone who is living somewhere else for more than 2 months, such as a <u>college student</u> living away.	First Name	М	C Female	Month Day Year of birth	Grastichild Other relative
		Person 3				Relationship of Person 3 to Person 1.
	this place is a acation home or a emporary residence done no one in the	Last Name (Please print)		Male	Age (in years)	Brother or sister
1000	where no one in this household stays for more than 2 months, do not list any names in the List of Residents. Complete	First Name	м	U Female	Month Day Year of birth	Grandchild Other nonrelative Other nonrelative
a	nd return the form.	Person 4				Relationship of Person 4 to Person 1.
N N	YOU ARE NOT SURE WHOM TO LIST, CALL -800-354-7271.	Last Name (Please print)		Male	Age (in years)	Brother or sister
		First Name	м	C Female	Month Day Year of birth	Grandchild Grandchild Other nonrelative Other nonrelative
		Person 5				Relationship of Person 5 to Person 1.
		Last Name (Piease print)		Male	Age (in years)	Brother or sister
~	if there are marked	First Name	м	U Female	Month Day Year of birth	Grandchild Grandther Onmarted partner Grandchild Forter child In-taw Other nonrelative
•	five people, list them here. We may call you	Person 6		Person	7	Person 8
~	about them.	Last Name (Please print)		Last Name	(Prease print)	Last Name (Prease print)
.	After you've created the List of Residents, answer the questions across the top of the page for the first five people on the list.	First Name	м	First Name	м	First Name MI

marital status?	Is this person Sp Hispanic/Latino? Mark (X) the "No" not Spanish/Hispa	box if hic/Latino.	What is the person con	is person's r siders himself	ace? Mark (Therself to b	(X) one or more : e.	aces to	indicate what thi	ġ	
Now married Widowed Devorced Separated Never married	No, not Spanisk/ Yes, Mexican, Me Chica no Yes, Paerto Rican Yes, Cuban Yes, Cuban Yes, other Spanis Latino — Print gr	ilispanicLatino xikan Am, hVHispanik/ oup, gr	White Black or J American Native or princip	Mrican America I Indian or Alas Print name of e Sal Bilbe. 7	in ka nrolled	Asian Indian Chinese Filipino Japanese Korean Vietnamese Other Asian – Plint race.	Guar Guar Sans Octor Some	re Hawailan nanian or Chamorr san r Pacific Islander – e other race – Print	o Print race below race below. 7	.7
Now married Widowed Dhorced Separated Never married	No, not Spanishi Yes, Mexican, Me Chicano Yes, Puerto Rican Yes, Cuban Yes, Cuban Yes, Cubar Latino — Alint gr	Hspanictatino xican Aan, IVHispanic/ oup. gr	White Hack or J American Native - 1 or princip	African Afrienci Indian of Alias Print name of e sal bilbe. y	in ka nrolied	Asian Indian Crimese Filipino Japanese Korean Vietnamese Other Asian – Atto: race.	O Nath Guar Samo O othe Some	re Hawailan nanian or Chamorr san r Pacific blander – e other race – Print	o Print race below race below. 7	.7
Now married Widowed Divorced Separated Never married	No, not Spaniski Yes, Mexikan, Me Chicano Yes, Puerto Rican Yes, Cuban Yes, Cuban Yes, Cubar Latino — Alint gr	ilispaniotatino xikon Asn, IVVIIspank/ oup. y	White Diack or J American Native -1 or princip	African America I Indian or Alas Print name of e Sal Dilbe, gr	in ka nrolled	Asian Indian Crinese Filipino Japanese Korean Vietnamese Other Asian - Plint race.	O Nath Guar Samo O Othe Some	re Hinvallan nanian or Chamorr pan r Pacific blander – e other race – Print	o Print race below race below. 7	.7
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Now married Wildowed Dhorced Separated Never married	No, not Spanisk/ Yes, Mexican, Me Chicano Yes, Puerto Rican Yes, Cuban Yes, Cuban Yes, Cuban Yes, Cuban	ilispanictatino xikan Am, hVilispanik/ oup. y	White Black or J American Native - J or princip	Mrican America Indian or Alas Print name of e sal bilbe. g	in ka nrolied	Asian Indian Chinese Filipino Japanese Korean Vietnamese Other Asian – Atlot race.	Guar Sami Sami Some	re Hawailan nanian or Chamorr an r Pacific blander – e other race – Print	o Print race below race below. 7	.7
Person 9 Last Name (Please p	rint)	Person 1 Last Name (Pk	O rase print)	1	Person Last Name (11 Piease print)		Person 12 Last Name (Per	ase print)	
First Name	м	First Name		м	First Name		м	First Name		м

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2

List of Resi	dents	1919102i What Is this person's sex?	What is this person's age and what is this person's date of birth? Poid cumbers in boxes	How is this person related to Person 1?	What is this person's marinal status?	NOTE: Please answer BOTH Question Is this person Spanish Hispanic/ Latino? Mark (X) the "No" box if mpt Spanish Hispanic Latino.	13191036 ns 5 and 6. Derson considers himsetifierset	tark (X) one or more f to be.	races to indicate what this
Please fill out this form as soon as possible after receiving it in the mail.	Person 1 Lest Neme (Please print) First Name Mil	_ Male Female	Age (in years) Month Day Year of birth	Person 1 (Person 1 is the person living or staying here in whose name this house or apartment is overed, being bought, or remed. If there is no such person, start with the name of any adult living or atsying here:	Never married Widowed Oronoud Separated Never married	No, not Spanish Wispanistatino Yee, Naviesa, Marican Arn, Chicano Yee, Puene Bican Yee, Caban Yee, Caban Yee, Caban Yee, Caban Spanish Wispanist Latico - Print group: p	White Hade of African American Arrena Index of Alapta Native – Photo name of enrolled or principal triba.gr	Asian Indian Chinese Filipino Japanese Korean Visinamese Other Asian — Pilir Asian —	Native Havarian Guemanian or Ohamorro Samoan Other Pacific Mander — Print race balance Seme other race — Print race balance; Seme other race — Print race balance;
 It is a start of the set of the set	Person 2 Last Name (Please print) First Name Mi	Male Female	Age (in years)	Parlacionably of Person 2 to Person 1. Hubabad or wilk Roome, burder Boo of englisher Housmaa, Brothur ar sister Oomrasia Fahlur on konter Ummerical partner Grandshild Foster child Is hare Ober nonstative Other nolivity Ober nonstative	Nine martiad Widowed Oronad Separated Never matriad	No, not Spanich/RispanicLatino Yen, Maxiean, Maxisan Arn, Chicano Yen, Puene Ricen Yen, Caban Yen, Caban Yen, Caban Yen, Caban Yen, Caban Yen, Caban	White Hack or African American American before or Alapta Native - Print name of entrolled or principal mba	Asian Indian Chinesa Filipino Japanese Korean Vistnamese Qidra Asian – Rist race.	Native Havosian Guamanian or Ohamorro Samoan Other Pacific Mander – Print roce below: Seme other noce – Print race below: yr
If this place is a vacation home or a temporary residence where so care in this household stays for more than 2 months, do not a flow particular of Boy particular of Boy particular only pages 4, 5, and 6 and setum the form	Person 3 Last Name (Peace print) First Name Mi] Male Fermile	Age (in years) Month Day Year of birth	Palationship of Parson 3 to Parson 1. Hibband or write format, barder Ben of angletter Hisbannea, Ordhar ar sitzer Fahar on nach the Umaried parson Grandshild Former child In Jane Other normalities Other nachative	New martied Wildowed Dichonad Separated News martied	No, not Spanish Wispanistatino Yon, Maxima, Manisan Arn, Chisano Yon, Panen Rican Yon, Caban Yon, Caban Yon, Caban Yon, Caban Yon, Caban Lation - Antroproping - 2	White Hade of African American American before or Alapta Native - Philip name of enclud erprincipal tribs	Asian Indian Chinese Filipino Japanese Korean Vistnamese Ophar Asian – Rist race.	Narive Havesian Guamanian or Chamorro Samoan Other Paolic Islander — Print race balaec Seme other nace — Print race balaec.gr
IF YOU ARE NOT SURE WHOM TO LET. CALL 1-600-354-7271.	Person 4. Last Name (Please print) First Name Mi	Male Female	Age (in years) Month Day Year of birth	Palationship of Parson 4 to Parson 1. Hobard or wile format, hurder Son or dropped Housena, Dechar or sizer Fahlur on realizer Grashbild Forse child Is fall or one Obar norealative Other hallow	Never married Widowed Disonwed Disonwed Never married	No, not Spanich/RispanicLatino Yen, Macican, Maxican Arn, Chicano Yin, Panas Riam Yin, Chan Yin, Chan Yin, Chan Yin, Chan Yin, Chan Spanich/Rispanicl Latino - Print group: _p*	White Hack or African American Hencies Index or Modes Hadron – Photo name of entrolled or principal tribe. gr	Asian Indian Chinese Filipino Japanese Korean Other Asian - Hit rate	 Native Herrosian Guamanian or Chamorro Samoan Other Paulic Islander – Print race below. p. 1 Some other race – Print race below. p. 1
If there are more than	Person 5 Last Name (Please print) First Name Mil	Male Female	Age (in years) Month Day Year of birth	Relationship of Person 5 to Person 1. Habshad or wike Roome, barder Bon of draghter Housemaa, incommaa. Brother or mother Ummariad partner Gradohul Some of draghter Gradohul Other normalave	New married Widowed Diversed Separated Never married	No, not Spanich/RispanicLatino Yie, Medican, Merican Arn, Chicano Yie, Poeto Rican Teo, Cites Teo, Cites Yie, other Spanich/Rispanic' Latino - Print grouph: gr	White Black or African American Arranican Indian or Alaska Arranican Indian or Alaska Arranican Indian or Alaska Arranical tribus gr	Asian Indian Chinese Filipino Japanese Korsan Vianamese Obiar Asian — Ritir raza,	Native Havselan Guamanian er Okamorro Samoan Ohar Partie Mander – Print roce balter. Some other race – Print race balter. gr. /
five people, list them bere. We may call you for more information about them. After you've created the list of Residents, mover the questions across the top of the page for the first five people on the list.	Parson G Last Name (Plasse print) First Name Mil	Porso	n 7 ma (Please print) me Mi	Person 8 Last Name (Rease print) First Name Mil	Parson 9 Lost Name (Please p First Name	MI First Name	Mi Brist Name	a print)	Person 12 Last Name (Please print) First Name

Figure 1b. iCADE1 questionnaire 2-page grid

AAPOR – May 14-17, 2009



List of Res	sidents	What is this person's sex?	2 What is this person's age and what is this person's date of birth? Print numbers in boxes.	3 How is this person related to Person 17	What is this person's marital status?	NOTE: Please answer BOTH Ques B is this person Spanish/Hispanic/ Latino? Mark (X) the "No" box if not Spanish/Hispanic/Latino.	 tions 5 and 6. What is this person's race? person considers himself/herse 	Mark (X) one or more races to indicate what this elf to be.
READ THESE INSTRUCTIONS FIRST	Porson 1 Last Name (Please print) List Name (Please print) List Name Mil	Male Female	Age (in years)	Person 1 (Person 1 is the person living or staying here in whose name this house or apartment is owned, being bought or	Now married Widowsd Widowsd Diversed Separated Never married	Ne, not Spariel/NiepadoLatino Yee, Maxican, Maxican Am., Chicano Yee, Parto Rican Yee, Jano Rican Yee, Johan Distan Yee, Johan Distanci Januari, Januari, Januari, Januari, Poly Amura, Januari, Janu	White Disck or African American American Indian or Alaska Native - Print mane of enrolled or principal trible. 2*	Adian Indian Tathoo Kawalian Chinese Guamanian or Chamoro Fibino Somoan Japanese Other Pacific Islander Print race below Korean Some other race Print race below Toricit
people who are living or staying here for more than 2 months.				rented. If there is no such person, start with the name of any adult living or staying here.)		Carolo - Ying Broat		U Vietnamese Other Asian Print Page
On the List of Residents - • Include everyone living or staying here for more than 2 months. In the Person 1 space, list one of the people living here who owns or rents this	Person 2 Last Name (Please print) First Name MI	Male Fernate	Age (in years) Month Day Year of birth	Relationship of Person 2 to Person 1. Husband or wills Boonte, boarder Soo or dispite Housemas, nonmail Brother or sister Fabre or mother Grandshid Other child	Now married Widowed Diversed Separated Never married	Ne, not Spanish Hispanich Litino Ver, Mexican, Mexican Am, Chicano Ver, Ruerto Rican Ver, Cuturn Ver, Cuturn Litino – Print groups pr	White Black or African American American Indian or Alaska Native - Mort canae of errolled or principal Stille. 7	Asian Indian Itative Hawaian Chinese Guamatian of Chanomo Ripipro Iannon Japanese Other Pacific Islander – Print nee belon Jorean Some other rase – Print nee belon Vitananese
house or apartment. Remember to include yourself on the list if you are staving here for				in-law Other nonvelative Other relative				☐ Other Asian - Print root
more than 2 months. • Include anyone staying here who does not have another place to stay, even if they are here for 2 months or less.	Person 3 Last Nama (Please print)	Male Female	Age (in years)	Relationship of Person 3 to Person 1. Hutband or wile Boomer, boarder Sen er daughter Housemula, Forther or sister Brother or sister Commute Father or mother Unmarried partner	Now married Widowsci Divorced Separated Never married	Ne, not Spanish'HispanioLatino Yee, Mexican, Mexican Am, Chicano Yee, Sueto Rican Yee, Ouban Yee, Ouban Yee, Stef Spanish-Hispanio/	White Black or African American American Indian or Alaska Native - Print name of enrolled or principal office.gr	Asian Indian Native Hawsian Chinese Guamanian or Chamorro Filpico Samoan Japanese Other Pactic Islander - Print race belo Korean Some other race Print race belo
Do not include anyone who is living somewhere else for more than 2 months such as a	First Name MU					Latino – Print group 🏆		Vietnamese Other Asian - Print race.
If no one is staying here for more than 2 months, do not list any names in the List of Benidents.	Person 4 Last Name (Pieze print)	Male Samala	Age (in years)	Relationship of Person 4 to Person 1. Husband or wife Roomer, boarder See or daughter Housemase, Housemase, Betther or slater	Now married Wildowed Diversed Separated	Ne, not Spanish HispanicLatino Yes, Munican, Mexican Am, Oticano Yes, Nunto Rican Yes, Quban	White Black or African American American Indian or Alaska Native - Prior name of enrollad or prior name of enrollad	Asian Indian Hative Haveslan Chinese Guamanian or Chamoreo Higino Higino Japanese Other Pacific Mander – Pintr race balt
Complete only pages 4, 5, and 6 and return the form. If you are not sure	First Name Mi	L renar	Month Day Year of birth	Father or mother Ummarried partner Grandchild Foster child In-law Other norrelative	Never married	Ves, other Spanish Hispanic/ Latino - Print group. 7		Korean Korean Other Asian Other asian
1-800-354-7271.	Person 5 Last Name (Please print)	C Male	Age (in years)	Relationship of Person 5 to Person 1. Husband or with Roomer, boarder Son or daughter Housemake, Portice and the Person Perso	Now married Wildowed	Ne, not Spanist/HispanioLatino Yes, Mexican, Mexican Am., Chicano Yes, Puerto Rican	White Black or Alfrican Amortican American Indian or Alaska Nativa – Print name of provided	Asian Indian Native Hawalian Chinese Guamanian or Chamorro Filipino Samoan
If there are more than five people living or staying here, print their names in the spaces for Person 6 through Person	First Name MI	Fernale	Month Day Year of birth	Fibble or mother Grandchild Fotor of mother Grandchild Fotor of child Chier native Other native	Never married	Yee, cuban Yee, cuban Yee, other Spanish-Hinpanic/ Listino - Phint group. 7	or principal tribs. 7	Aspanese Other Face to Bander — Print race ballow: Withannese Other Asian — Print race asian Other Asian —
12. We may call you for more information about them.	Person 6 Last Name (Please print)	Perso Last Nar	n 7 ne (Please print)	Person 8 Last Name (Please print)	Person 9 Last Name (Please)	Person 10 Print) Last Name (Please print)	Person 11 (nt) Last Name (Please p	Person 12 rint) Last Name (Please print)
After you complete the List of Residents, answer the questions asked at the top of pages 2 and 3 for the first five people on the list.	First Name MI	First Nac	me Mi	First Name Mi	First Name	MI First Name	MI First Name	MI First Name M