

Survey Findings: Attitudes and Experiences with Home Improvement Projects among Hispanics and Non-Hispanics in Fresno and San Diego Counties

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I. Executive Summary

This report presents results of a survey conducted in summer 2016 to understand Hispanic and non-Hispanic homeowner perspectives about home improvement projects, energy efficiency, thermal comfort, hiring contractors, using financing and making major household decisions. The survey is part of a larger research project, EPC-14-037, funded by the California Energy Commission with match funding provided by Energy Upgrade California. The survey was developed based on previous research conducted for the project, including a literature review, market characterization, focus groups and semi-structured interviews; the results of these research activities are published at www.energycenter.org/sociocultural.

We received survey responses from 697 owners of single family homes in Fresno County and San Diego County. Homeowners with surnames for which at least 75% of census respondents self-identified as Hispanic/Latino were targeted for this survey. Ultimately, of the respondents for whom we could identify Hispanic status, 79% were Hispanic and 21% were non-Hispanic, allowing us to compare responses between these groups. In addition to ethnicity, we asked about country of origin (nativity) and measures of acculturation in order to parse the relative importance of these sociocultural factors. Thus, results are presented across three ethnic groups: foreign-born Hispanics, U.S.-born Hispanics and U.S.-born non-Hispanics (foreign-born non-Hispanics were excluded from our analysis due to small sample size), as well as by varying levels of acculturation within the Hispanic group.

The following are key findings of the survey.

- Of eight home improvement project types, kitchen/bathroom remodels and water heater replacements were most commonly reported to have been completed within the past five years. Installing attic insulation and installing a solar electric system were the least common projects.
- The strongest motivator for installing solar PV was saving money on utility bills. Close to half (42%) of those who had replaced or considered replacing a water heater were primarily motivated by an emergency situation of a non-functioning unit, whereas less than 20% of those who had replaced or considered replacing a furnace or central air conditioner were primarily motivated by an emergency break-fix situation.
- Primary motivations among project types did not differ significantly between ethnic groups in most cases. One exception was for air conditioner replacements. While improving comfort was the number one motivation overall, replacing a working unit near the end of its lifespan motivated non-Hispanics more than Hispanics. Health and safety motivated Hispanics more than non-Hispanics.
- Foreign-born Hispanics were less likely than U.S.-born Hispanics to have ever hired a contractor; U.S.-born Hispanics were in turn less likely than U.S.-born non-Hispanics. When examined by acculturation levels (measured by language preferences for conducting various tasks), we find that highly-acculturated Hispanics were more likely to have hired a contractor than those with low acculturation scores.

- The most popular method used to look for a contractor was asking for a recommendation or referral from family, friend or co-worker. U.S.-born non-Hispanic respondents were more likely than Hispanic respondents to look at online reviews/ratings when searching for a contractor.
- When evaluating which contractor to hire, professionalism of the contractor/staff was the most likely attribute to be called “extremely important” for each ethnic group. Licensed/bonded/workman’s compensation insurance was the second or third most important attribute for each ethnic group, although U.S.-born non-Hispanics were significantly more likely (60%) to rate it as extremely important than either U.S.-born Hispanics (48%) or foreign-born Hispanics (39%).
- After cash/savings, credit cards (paid off over time) were the most commonly cited way to fund home repair projects across all ethnic groups.
- Hispanic respondents indicated greater desire to use financing for major projects/purchases than non-Hispanics, however they also reported more difficulty accessing credit.
- When asked about who makes various major household decisions, there were no significant differences between genders.

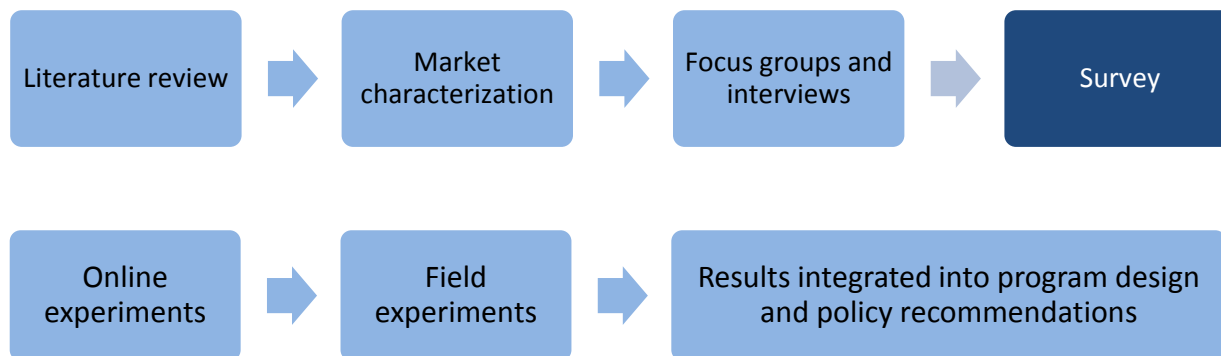
The results of this survey will be used to develop online experiments and field experiments that will ultimately increase the understanding of the roles sociocultural factors play in the adoption of residential energy efficiency measures and inform the design of investor-owned utility programs.

II. Background and Methods

Estimates of cost effectiveness primarily drive the current policy framework used to assess the potential for and likely adoption of residential energy efficiency measures. While an important component of the equation, cost effectiveness calculations alone fail to accurately predict adoption and market potential, as they do not capture the multitude of factors influencing the decision-making process of individual market actors. In recognition of this limitation, the California Energy Commission funded a series of projects designed to explore how sociocultural factors influence adoption of home energy efficiency measures. This report summarizes the findings of a mixed-mode survey conducted in June-August 2016 for one of those projects, EPC-14-037, which focuses on Hispanic owners of single-family homes. Match funding for this project was provided by Energy Upgrade California®. The project team is led by the Center for Sustainable Energy (CSE) and includes Research Into Action, Ghoulem Research, Edward Vine and Dena Gromet.

Earlier research conducted for the project – including a literature review, market characterization, focus groups with homeowners and semi-structured interviews with contractors – informed this survey effort, as shown in Figure 1. Findings for each of these research activities are published at www.energycenter.org/sociocultural. Activities subsequent to this survey include online experiments, field experiments and a final report.

Figure 1. Research phases of EPC-14-037



Research Objectives

The survey was designed to answer the following research questions.

- What types of home improvements have been completed? How many of these were done with a contractor vs. do-it-yourself (DIY)?
- What motivates homeowners to make home improvement projects? How do these motivations differ for energy efficiency-related projects, or for discretionary/planned vs. emergency repair or “break-fix” projects?
- What are the barriers preventing homeowners from completing home improvement projects?

- How do homeowners find contractors? What qualities are most important in contractor selection?
- What are homeowners' expectations for thermal comfort? How does this impact home improvement choices?
- How do homeowners finance projects? What are their attitudes toward financing? Do they have different strategies for financing discretionary vs. break-fix projects?
- What are the family/gender dynamics associated with making home upgrade decisions? Who makes the decision?
- How do these answers vary by Hispanic vs. non-Hispanic identification, generational status, level of acculturation, politics, geography and other demographic/home characteristic variables?

Questionnaire Development and Testing

The project team developed the questionnaire with input from the project's Technical Advisory Committee (TAC), the California Energy Commission and the Social and Economic Sciences Research Center at Washington State University (WSU-SESRC), which administered the survey on behalf of CSE.

Four Hispanic and six non-Hispanic homeowners who were not part of the project team pre-tested the survey; all lived in either the San Diego Gas and Electric (SDG&E) or Pacific Gas and Electric (PG&E) territory (the utilities referenced in the San Diego and Fresno versions of the survey). After completing the survey, the project team asked testers how they interpreted and responded to questions to inform final edits to the survey.

The final questionnaire included 190 items and took an estimated 15-20 minutes to complete. An example of the questionnaire is available in Appendix A.

Sample and Survey Administration

The San Diego County and Fresno County assessors' databases were used to derive the sampling frame. First, we selected single family parcels and excluded properties held in trusts or owned by management companies. Next, we filtered surnames to include only those names for which at least 75% of American Community Survey respondents self-identified as Hispanic/Latino (U.S. Census Bureau, 2000). While San Diego County data identified owner-occupied homes, Fresno County data did not. To maintain a single filtering methodology for both data sources, we chose not to filter records for owner occupancy in either county.¹ The resulting sampling frame included 77,721 San Diego County homeowners and 60,358 Fresno County homeowners. WSU-SESRC then randomly selected 5.05% of each census tract to achieve the final sample of 6,661 homeowners, including 2,954 in Fresno County and 3,707 in San Diego County.

¹ This likely affected the response rate, as some survey invitations would have been sent to homes occupied by tenants. In San Diego County, approximately 70% of single family homes were identified as owner occupied.

This sample size was selected with the intention of achieving 770 responses and 95% confidence interval.

Using the Tailored Design Method (TDM)² to achieve maximum response rates, WSU-SESRC mailed a series of five invitations (presented in both English and Spanish) to recipients. Each round of invitations included a URL and unique access code to take the survey online in either English or Spanish. Two invitation rounds included a hard copy of the survey in English and Spanish. Two rounds included a \$1 bill inside each envelope as a gesture of good will for taking the survey. Adults who lived at the address full time and were involved with making decisions about major home improvements at the residence were invited to take the survey. WSU-SESRC administered the survey between June 17, 2016 and August 16, 2016.

Table 1. Distribution of Surveys

Mailing	Approximate arrival date	Hard copy provided?	\$1 incentive included?
1	June 20, 2016	No	Yes
2	June 30, 2016	No	No
3	July 12, 2016	Yes	Yes
4	July 19, 2016	No	No
5	August 1, 2016	Yes	No

WSU-SESRC conducted data entry of responses from the paper surveys. They entered open-ended answers verbatim; for surveys completed in Spanish, they entered both the Spanish answer and an English translation.

The survey achieved 697 completes and partial completes, representing an 11.7% response rate from all deliverable addresses (Table 2). Of these, 311 were completed online and 386 used the hard copy. Sampling error was 3.7% at a 95% confidence level.

² “The TDM was formulated as an extension of social exchange theory, a sociological theory used to explain why individuals are motivated to engage in certain social behaviors and not others. Applied to surveys it emphasized writing questionnaires that included interesting questions that respondents would see as useful and easy to answer. It also emphasized providing explanations of how answering the survey would be useful to others, personalized correspondence (a significant challenge to the printing technologies of that time), and several coordinated contacts; Emphasis was also placed on establishing the legitimacy of the survey by providing contact information and creating trust that the survey results would be useful when the survey was completed. Use of the TDM produced mail and telephone response rates of 60-70% from most populations (Dillman, 1978)” (Dillman, 2000).

Table 2. Survey Sample and Responses

Result	Number	Percentage
(A) Completed on Web	274	4.1%
(B) Partial Web Complete	37	0.6%
(C) Completed by Mail	386	5.8%
Total completes and partial completes	697	10.5%
(D) Refusal	47	0.7%
(E) Non response	5,230	78.5%
Total Eligible	5,974	89.7%
(F) Undeliverable by mail	685	10.3%
Total Ineligible	2	0.0%
Total Sample	6661	100.0%
Response Rate = (A + B + C) / (A + B + C + D + E)	11.7%	

Representativeness

Systematic differences in the characteristics of respondents vs. non-respondents can skew the results of a survey, thus responses are often weighted to more accurately represent the full target population. In our case, we chose not to weight the survey data because we do not have reliable data on the demographics of our target population: Hispanic homeowners. The census provides data on Hispanics (and other ethnic groups), but it does not offer cross-tabulations of demographic information specific to *homeowners* by ethnicity.

Due to the limitations in data availability we did not examine the demographics of individual respondents for representativeness; however, we did compare the demographics of the census tracts for all individuals invited to complete the survey with those of the respondent census tracts. We ran a test of means to compare the average of the median income for all homes in the population versus the average of the median income for the subset representing the respondent sample. We also compared the average percentage of persons over 25 with a four year degree or more across both groups. The means t-test results show that there were no significant differences in average income ($p=0.1221$) or rates of higher education ($p=0.1723$) between the census tracts of the two groups. Thus, we believe the raw results are not attenuated due to non-response bias.

III. Results

The following sections describe the characteristics of the respondents and their survey answers.

Respondent Demographics and Housing Characteristics

Ethnic Categories, Age and Gender

Of the 697 total respondents, Hispanic or Non-Hispanic status could be determined for 620. Of these, 79% identified as Hispanic. Appendix B contains an explanation of how Hispanics/Non-Hispanics and other data subgroups were defined for analysis in this report.

Table 3. Survey Respondents by Ethnicity Category and Geography (N=697)

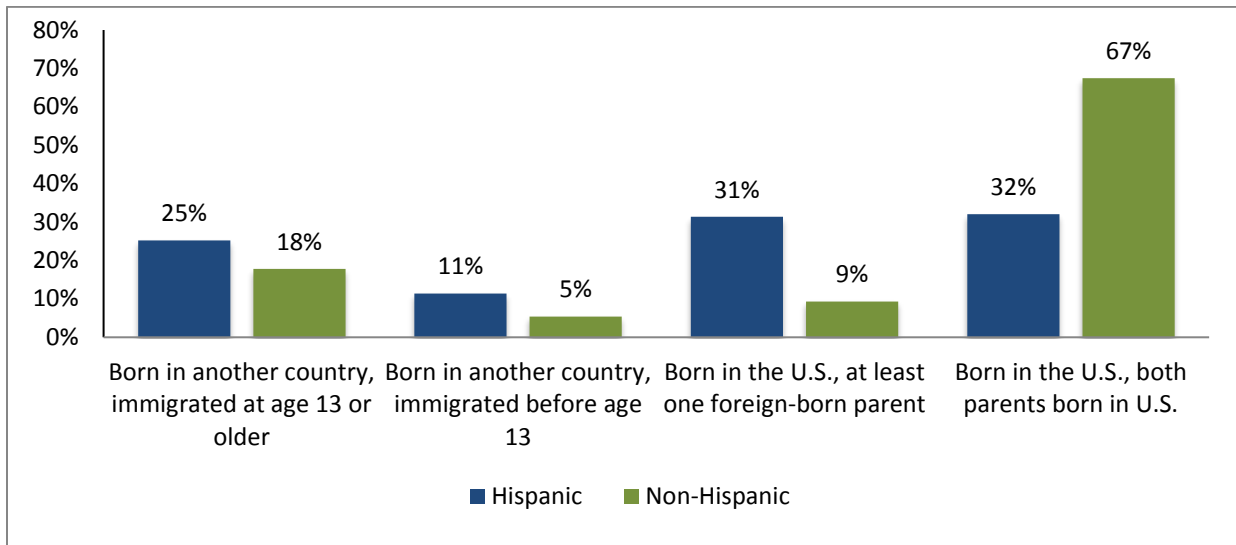
	Fresno	San Diego	Total
Hispanic	34.8%	35.2%	70.0%
Non-Hispanic	4.3%	14.6%	18.9%
Unknown	3.9%	7.2%	11.0%
Total	43.0%	57.0%	100%

The average age of respondents was 53 years. Under one-half (42%) of respondents were male. Non-Hispanic respondents in both Fresno and San Diego counties were significantly more likely to be female.

Nativity

Respondents were asked several questions to identify whether they were foreign or native born (in the United States), to gauge how long they had been in the United States, and to determine if one or both parents had been born in the United States. Hispanic respondents were significantly more likely than non-Hispanic respondents to say they were born in another country or were born in the United States but have only one U.S.-born parent. Overall nearly two-thirds of Hispanics respondents were born in the United States. Our analysis compares responses of U.S.- and foreign-born Hispanics and presents any significant differences by these ethnic categories.

Figure 2. Nativity and Generational Status of Hispanic and Non-Hispanic (N=585)

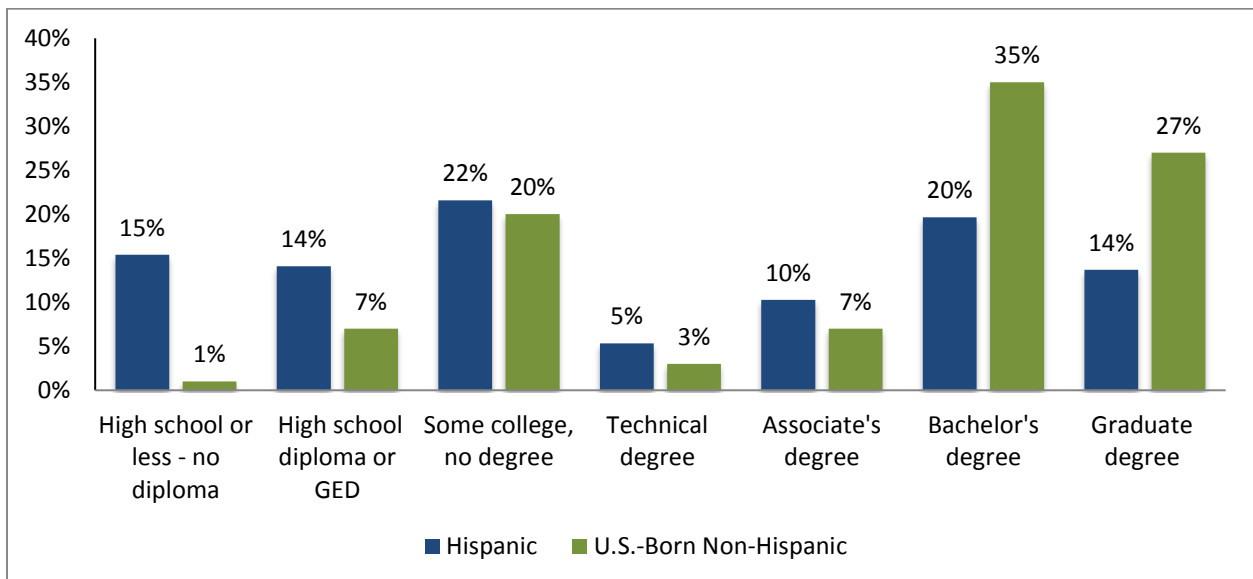


Because this research is focused on differences between Hispanic and non-Hispanic homeowners and due to the small number of foreign-born non-Hispanic respondents who completed the survey (n=30), these data were removed from the remainder of this analysis.

Education Levels

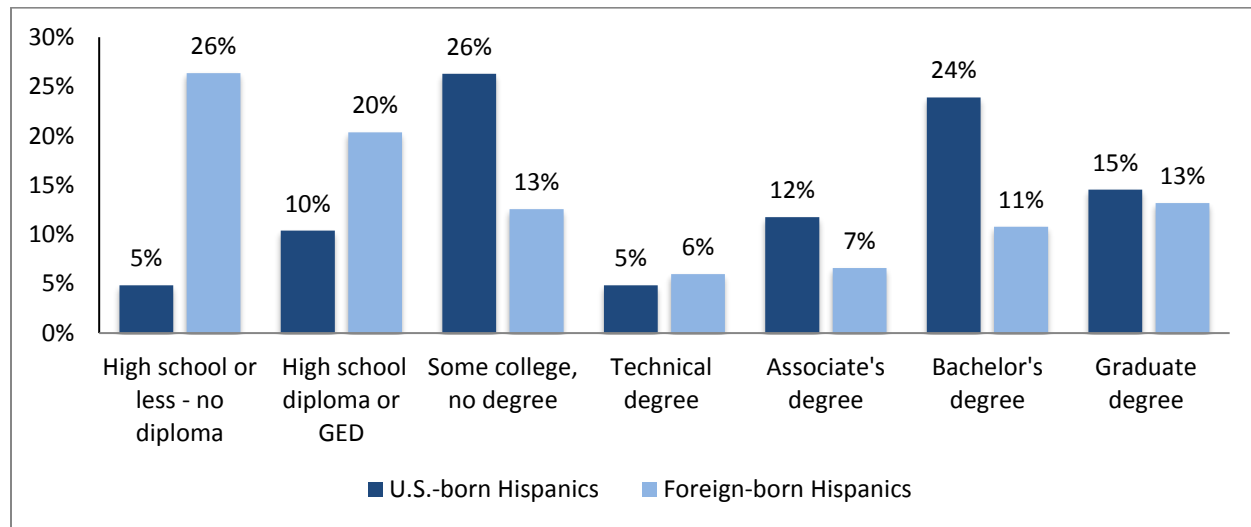
One of the starkest differences observed in the sample was the distribution of education levels. Hispanic respondents had statistically significant lower levels of education than Non-Hispanics. Only 33% of Hispanics had a Bachelor's degree or higher compared to 62% of non-Hispanics ($\chi^2(6, N=568) = 36.2199, p=0.000$).

Figure 3. Education Level by Hispanic and Non-Hispanic Respondents (N = 568)



When comparing U.S.-born to foreign-born Hispanics, we found more differences in education levels. Foreign-born Hispanics were five times more likely to have no high school diploma, while U.S.-born Hispanics were twice as likely to have attended some college or have a Bachelor’s degree (Figure 4: (χ^2 (6, N=439)=68.28, $p=0.000$). Yet the foreign-born population is not solely responsible for the differences between Hispanic and non-Hispanic education levels. When we remove foreign-born Hispanics, we find that U.S.-born non-Hispanics were still 22% more likely to have a Bachelor’s degree or higher than U.S.-born Hispanics (χ^2 (6, N=377)=16.65, $p=0.011$).

Figure 4. Education Level by U.S.- and Foreign-Born Hispanic Respondents (N=439)

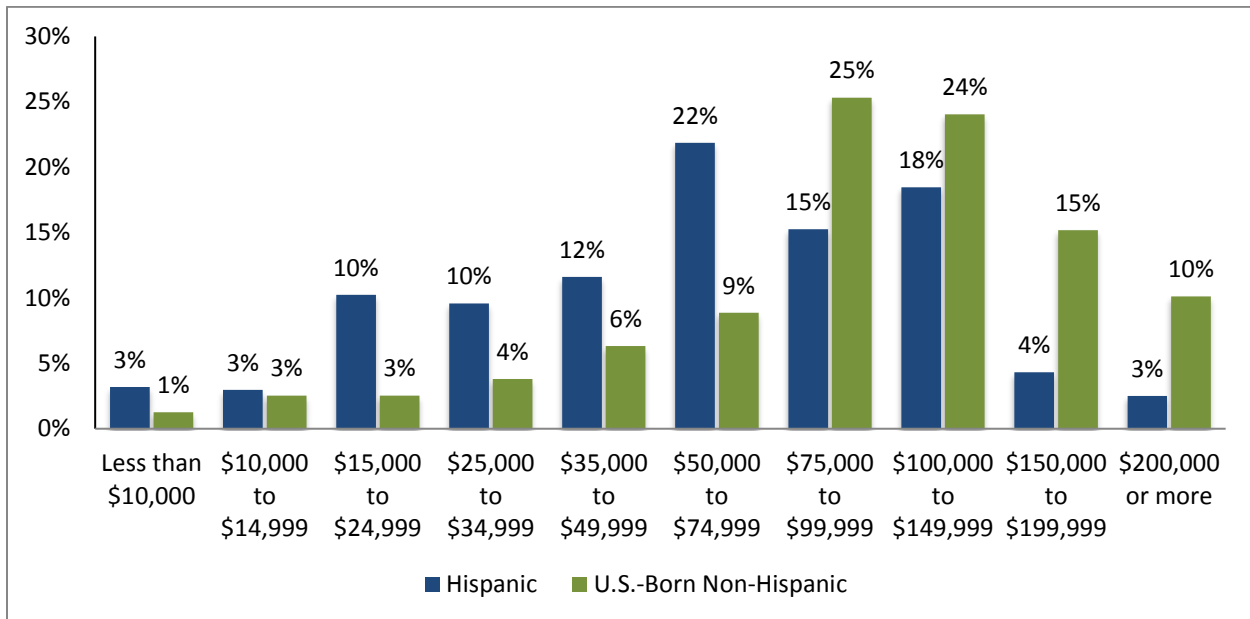


When compared to census data on all California Hispanics, we find that significantly more Hispanic (both native and foreign born) survey respondents have Bachelor’s degree or higher (34% vs. 7%; U.S. Census Bureau, 2010-2014). This is not surprising, given that the survey sample was limited to owners of single family homes.

Income

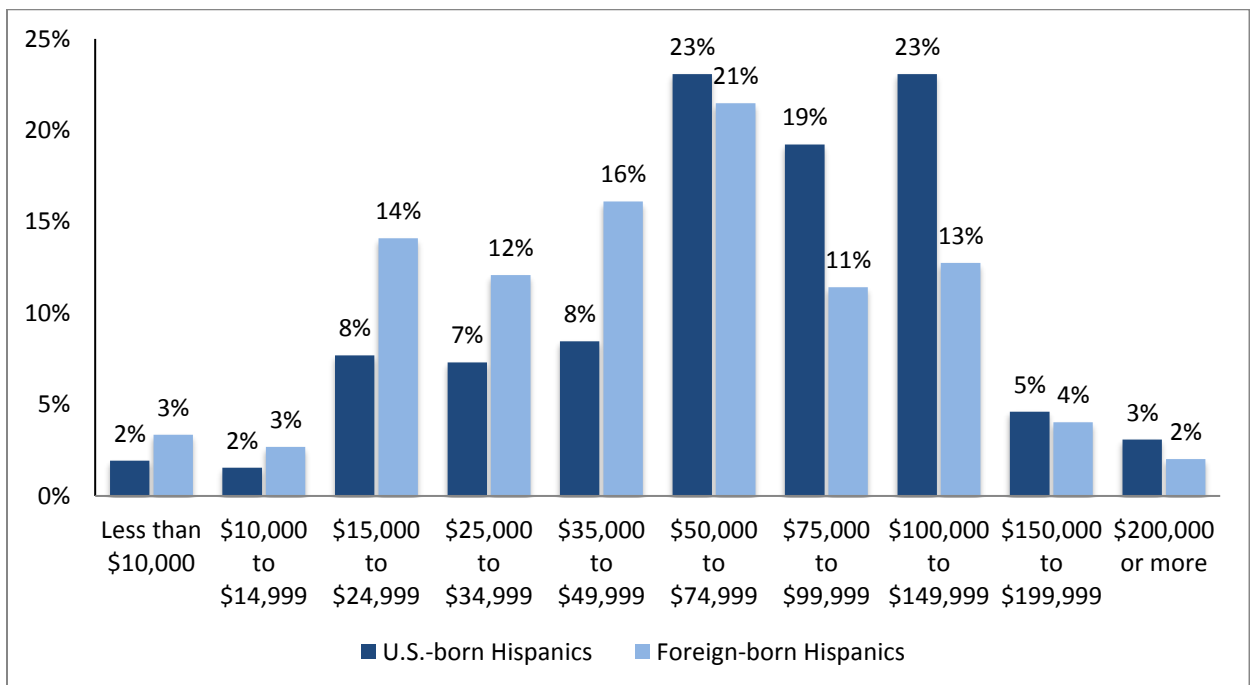
Education levels and income were strongly correlated; thus, it is no surprise that Hispanics reported significantly lower household incomes than their non-Hispanic counterparts ($r=0.4826$, $p=0.000$). Hispanic respondents reported a median household income of \$50,000-\$75,000, while non-Hispanics had a median household income of \$100,000-\$150,000.

Figure 5. Household Income by Hispanic and Non-Hispanic Respondents (N=518)



When we further disaggregated household incomes of Hispanics based on whether they were native or foreign born, we found a divergence. Those born outside the United States were almost twice as likely to have household incomes below \$50,000. The proportion of Hispanics earning between \$75,000 and \$150,000 was nearly twice as large for U.S.-born Hispanics than foreign-born Hispanics ($\chi^2(10, N=409)=21.96; p=0.009$).

Figure 6. Household Income by Native and Foreign Born Hispanic Respondents (N=409)



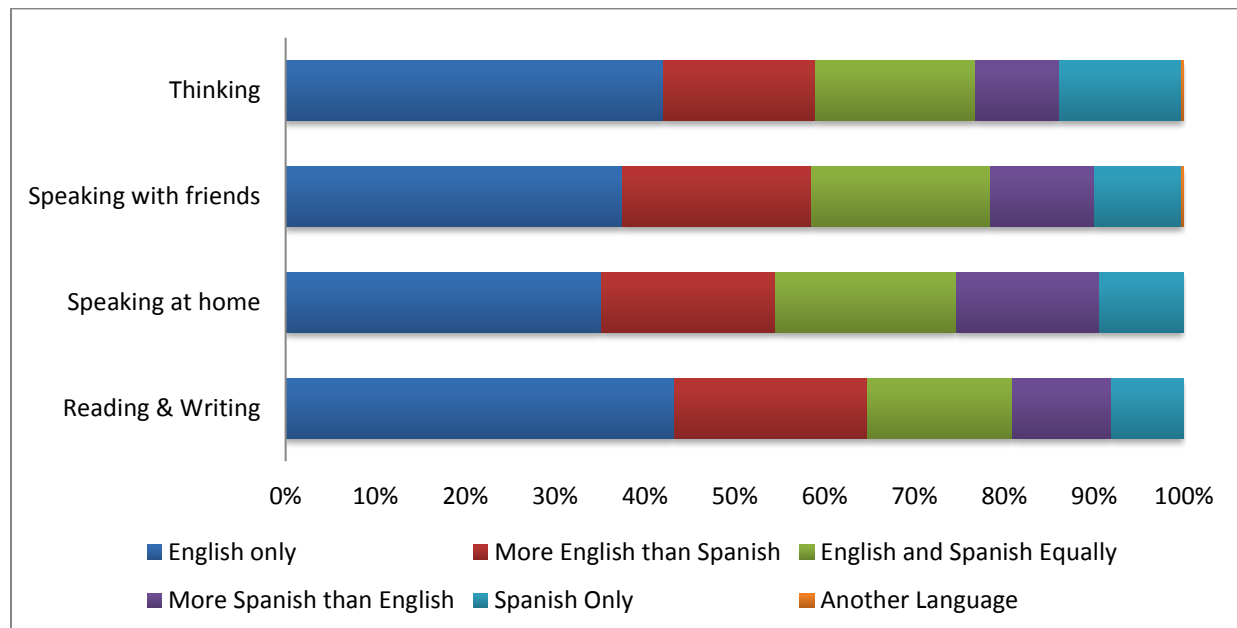
Acculturation

We explored whether Hispanic respondents' perspectives on home energy upgrades varied depending on their level of acculturation, or the process of cultural and psychological change (e.g., by adapting to or borrowing traits from another culture) that results from interactions between cultures. The effects occur at multiple levels from changes in culture and customs, food or language among groups to changes in daily behaviors.

Previous research indicates that language accounts for the greatest proportion of variance in acculturation, and has been suggested as the most reliable indicator of the construct (Marin et al. 1987, Norris et al 1996). We used the Brief Acculturation Scale for Hispanics (BASH) to measure acculturation based on language preferences for various activities. The scale assesses the language preference for doing five tasks, taken from Marin and Sabogal's Language Use subscale of the Short Acculturation Scale for Hispanics where respondents can choose: Only Spanish (1), more Spanish than English (2), both equally (3), more English than Spanish (4), only English (5). An acculturation score is created by summing the values of the response for each task and dividing this sum by the number of tasks with responses. A dichotomous level of acculturation (low, high) can be created; scores less than or equal to 3 indicate a low level of acculturation, and scores greater than 3 indicate a high level of acculturation (Davis and Engel, 2011).

The results of the stated language preferences by task are displayed in Figure 7. More than 40% of the respondents preferred to read and write in English only; less than 10% preferred to read and write in Spanish only. In contrast, about 35% preferred to speak English at home, while the remaining households preferred to speak in Spanish alone or in various combinations with English.

Figure 7. Language Preference for Performing Tasks among Hispanic Respondents (N=475, 475, 477, 494)



When responses were averaged across all categories and grouped according to the rules set out by the BASH guide, we observed that 74% of Hispanic respondents were highly acculturated, with a strong preference to conduct activities in English only or mostly English.

Politics

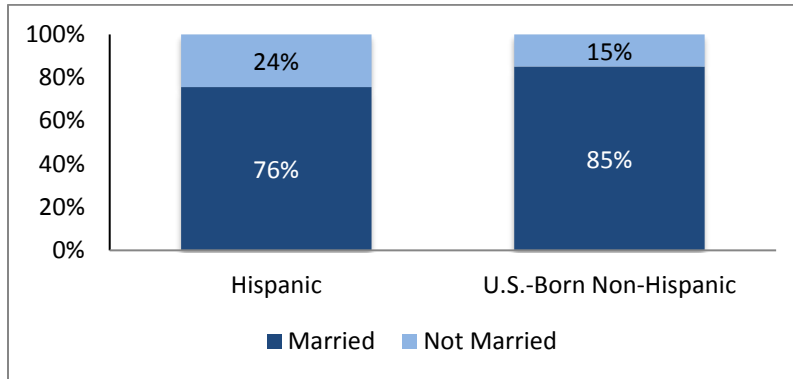
To gauge the political outlook of participants, we asked about political leanings on social issues, fiscal/economic issues and overall. Hispanic and non-Hispanic respondents displayed only marginally significant differences in overall political leanings; most described themselves as moderates and there was an even distribution of those who associated with some degree of liberal leaning or some form of conservative outlook ($t(510, N=512)=-1.596$; $p=0.111$). Similarly, we found little difference between the two groups when we focused on social issues; in general most people identify as “moderate” but as a whole individuals were more centrist to liberal and there were no significant differences between Hispanics and non-Hispanics ($t(515, N=517)=-0.611$; $p=0.542$). Differences between the ethnic groups were most prominent in their outlook on fiscal/economic issues. Non-Hispanic respondents were significantly more conservative-leaning than Hispanic respondents ($t(503, N=505)=-3.025$; $p=0.0026$).

Within the Hispanic group of respondents, we found some interesting trends. U.S.-born Hispanics were significantly more likely to say their views were somewhat liberal to liberal, both in their general political outlook ($t(398, N=400)=-2.168$; $p=0.0307$) and on fiscal issues ($t(393, N=395)=-1.996$; $p=0.046$). Foreign-born Hispanics more often identified with middle-of-the-road views. Regarding social issues, there were no salient differences between the two subsets of Hispanic respondents.

Marital Status

Around three-quarters of Hispanic respondents were married or in a domestic partnership. Hispanics in our sample were significantly less likely to be married or in a domestic partnership than non-Hispanics ($\chi^2(1, N=585)=4.319$, $p=0.038$).

Figure 8. Marriage/Domestic Partnership Status of Hispanic and Non-Hispanic Respondents (N=585)

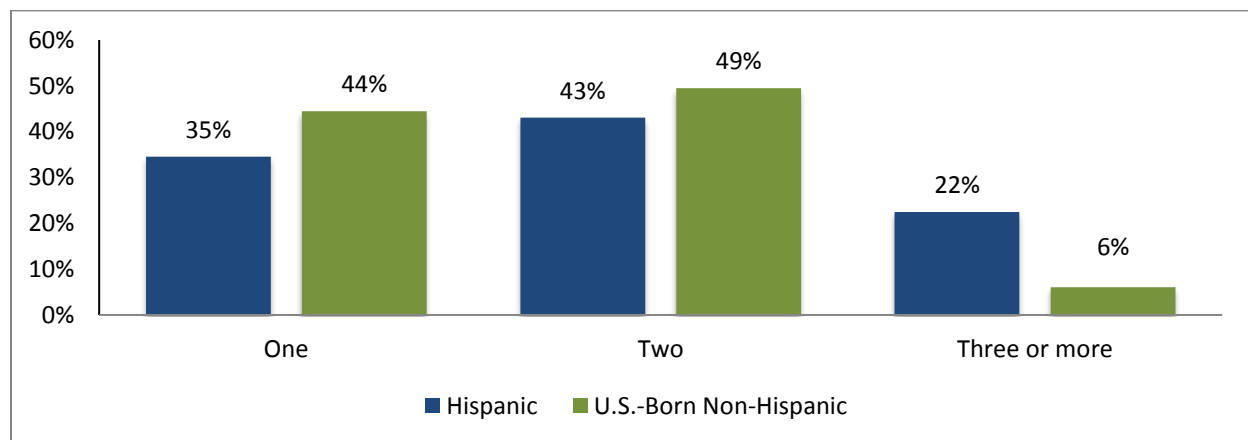


Household Size

Respondents were asked to indicate the number of individuals residing more than 50% of the year in their home and to indicate the age range of each person. The age ranges offered were 0-4 years, 5-17 years, 18-64 years, and 65 and older. The total number of individuals listed across all groups was summed to calculate household size. On average U.S.-born non-Hispanic respondent households were smaller, with an average of 3.05 people compared to 4.41 for Hispanic homes, although the difference was only marginally statistically significant ($t(533, N=535)=13.08; p=0.1084$). This difference in household size appears to be driven by toddlers, which were present in significantly higher numbers in Hispanic homes. This is consistent with census data showing that Hispanic Californians have larger average family sizes than non-Hispanic Californians (U.S. Census Bureau, 2010-2014).

Though the difference in household size was only marginally significant, we found that Hispanic respondents were almost four times more likely to have three or more generations residing in their homes ($\chi^2(2, N=580)=14.238; p=0.001$). This may matter when determining how many individuals are involved in the decision-making process for projects like home retrofits.

Figure 9. Number of Generations in the Home by Hispanic and Non-Hispanic Respondents (N=580)



Housing Characteristics and Tenure

We observed a number of differences in the composition of the dwellings of the target and control groups in our sample. As noted in the table below, Hispanic respondents had statistically longer tenures in their homes, averaging 16.6 years compared to 14.2 years for U.S.-born non-Hispanics ($t(585, N=587)=1.7185$; $p=0.0862$). On average Hispanic, compared to U.S.-born Non-Hispanic, respondents live in homes that were approximately 260 square feet smaller ($t(511, N=513)=-2.0743$; $p=0.0386$), despite their larger family size noted earlier. Additionally, homes occupied by Hispanic respondents were on average five years older than those owned by U.S.-born non-Hispanics ($t(561, N=563)=-2.1422$; $p=0.0326$).

Table 4. Housing Characteristics and Tenure for Hispanic and Non-Hispanic Respondents

	Average Number of Years in Home	Average Square Footage of Home	Average Build Year of Home
Hispanic	16.6	1,798	1973
U.S.-Born Non-Hispanic	14.2	2,065	1978

Energy Bills

Respondents were asked to provide their highest monthly energy utility bill³ from summer/fall 2015 (fall is often the hottest time of the year in San Diego) and their lowest monthly energy utility bill in spring 2016. The lowest bill would give an indication of baseline energy use, whereas the highest bill would approximate the impact of using an air conditioner or fans. We analyzed this data by region because San Diego County has a more temperate climate and lower air conditioning needs than Fresno County and our Hispanic and non-Hispanic respondents were distributed unevenly between the two regions. Homes with solar electric systems were excluded from this analysis.

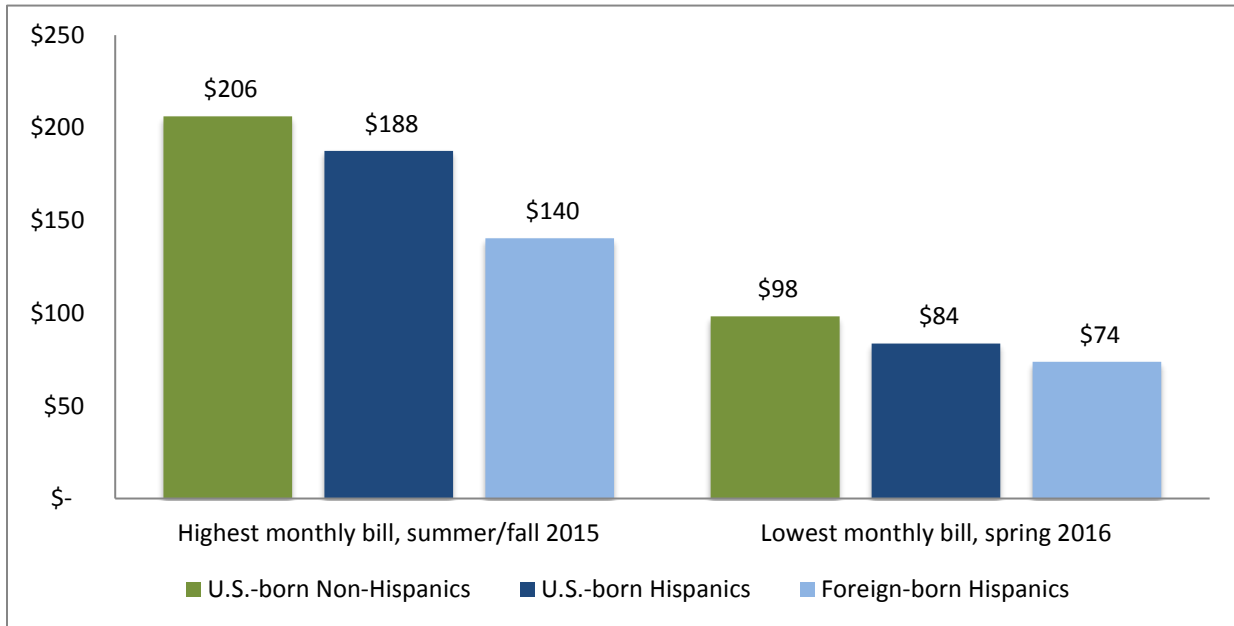
When looking at highest monthly summer/fall bills in San Diego County, we found no significant differences between U.S.-born non-Hispanics and U.S.-born Hispanics; meanwhile foreign-born Hispanics differed from both U.S.-born groups and paid significantly less on their highest monthly summer/fall bills, with an average delta of \$50-\$60 ($ANOVA(F(2, 258)=5.81, p=0.0034)$). When we examined the lowest bills in the spring time in San Diego, we found that the only significant differences were between foreign-born Hispanics and U.S.-born non-Hispanics; on average U.S.-born non-Hispanics paid about \$25 more on their lowest bill than did foreign-born Hispanics ($ANOVA(F(2,252)=3.22, p=0.0418)$).

In Fresno County, we did not observe significant differences between any of the three groups on their highest bills in the summer/fall months ($ANOVA(F(2,208)=0.76, p=0.4697)$). Like in San Diego, during the spring months we found no significant differences in the amounts paid between U.S.-born non-Hispanics

³ Fresno County respondents were asked about their highest monthly PG&E bill; San Diego County respondents were asked about their highest monthly SDG&E bill. These bills would include both electricity and natural gas charges, if any.

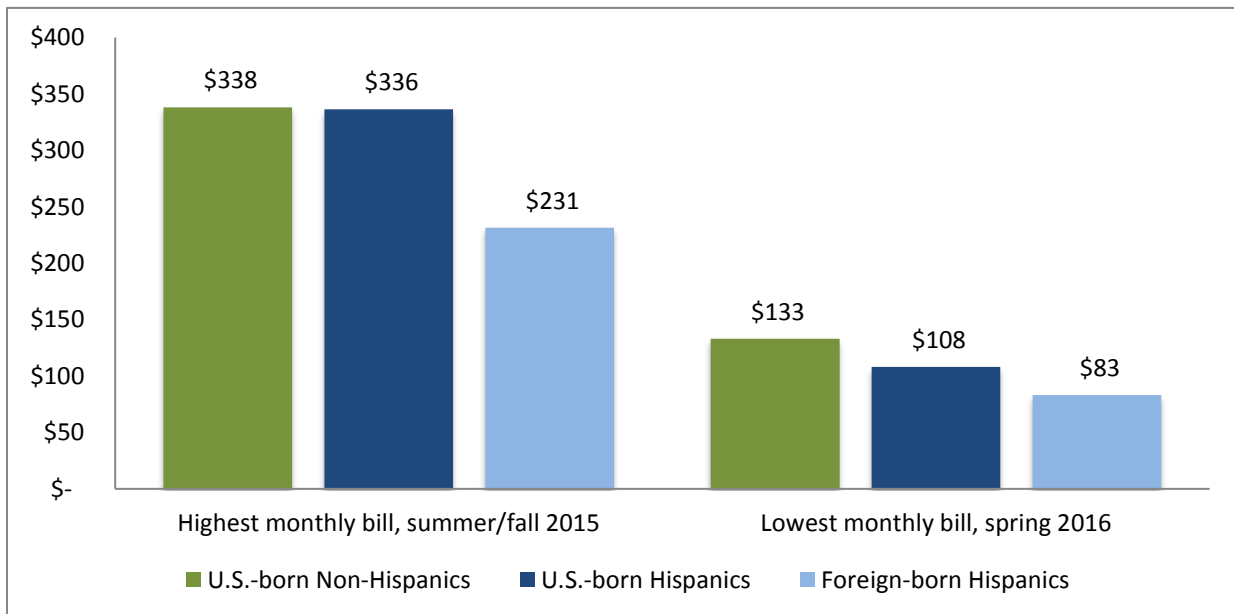
and U.S.-born Hispanic. We also found no differences between the two Hispanic groups but saw that foreign born Hispanics paid significantly less, \$50 on average, than U.S.-born non-Hispanics (ANOVA($F(2,201)=3.00, p=0.0518$)).

Figure 10. Average San Diego County Highest and Lowest Monthly Energy Bill Amounts by Non-Hispanics, and U.S.- and Foreign-Born Hispanics (N=261, 255)



Note: Highest bill: ANOVA($F(2,258)=5.81, p=0.0034$); Lowest bill: ANOVA($F(2,252)=3.22, p=0.0418$)

Figure 11. Fresno County Highest and Lowest Monthly Energy Bill Amounts by Non-Hispanics, and U.S.- and Foreign-Born Hispanics (N=211, 204)

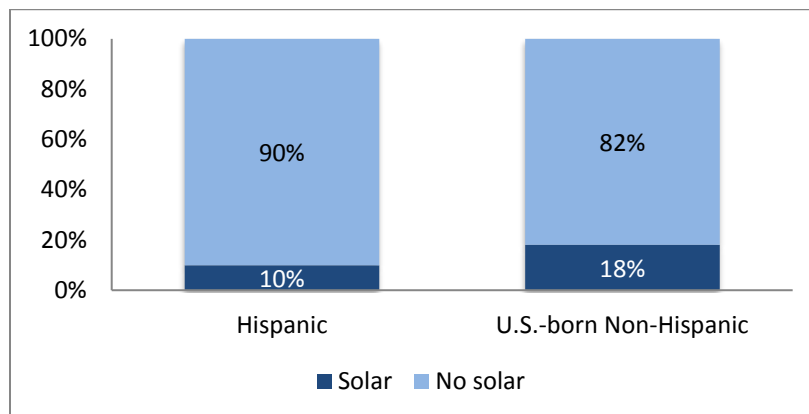


Note: Highest bill: ANOVA($F(2,208)=0.76, p=0.4697$); Lowest bill: ANOVA($F(2,201)=3.00, p=0.0518$)

Presence of solar

Non-Hispanics were twice as likely to say their homes had solar electric systems than Hispanics ($\chi^2(1, N=582)=5.3266, p=0.021$). This may be due in part to lower energy bills experienced by Hispanic respondents, which make the payback on a solar system less attractive, or other factors associated with income and access to credit.

Figure 12. Presence of Solar Electric System at Homes of Hispanic and Non-Hispanic Respondents (N=582)



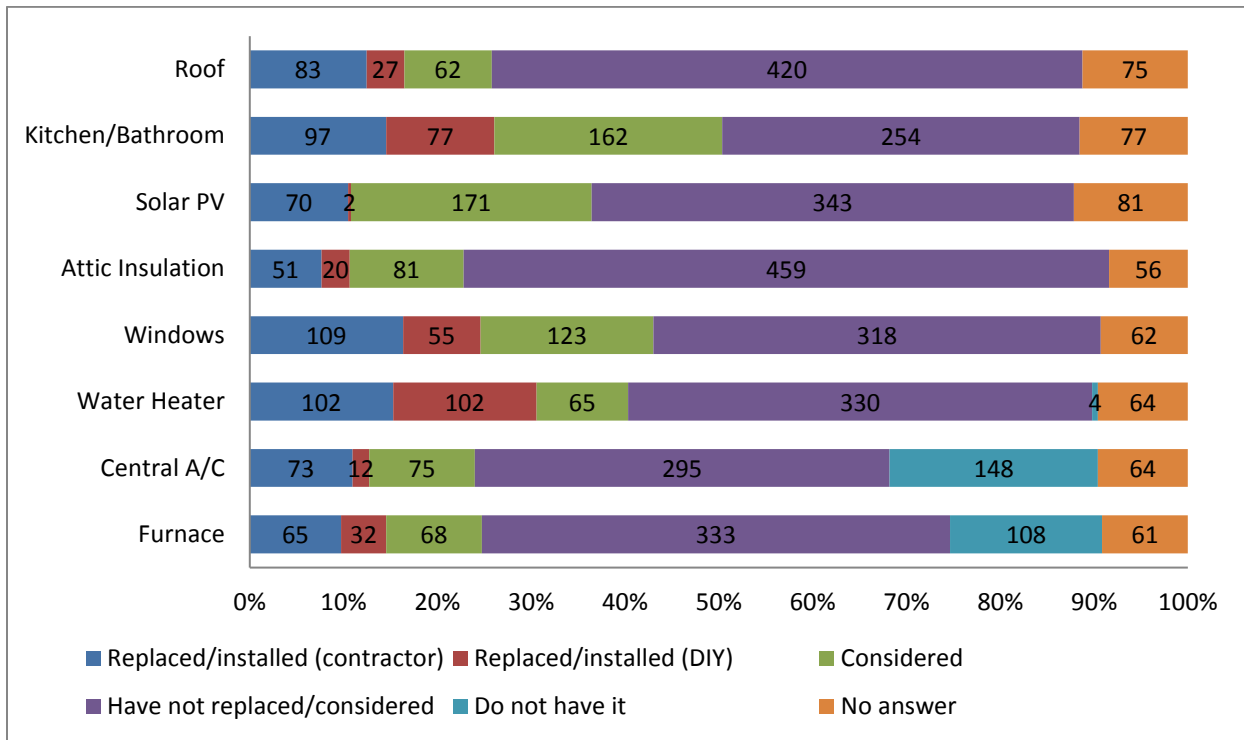
Motivations for Home Improvements

In a series of eight questions, respondents were asked about various home improvement projects. They were asked: “In the last 5 years, have you...

- “replaced or seriously considered replacing a FURNACE in your home?”
- “replaced or seriously considered replacing a CENTRAL AIR CONDITIONER in your home?”
- “replaced or seriously considered replacing a WATER HEATER in your home?”
- “replaced/upgraded or seriously considered replacing/upgrading WINDOWS in your home?”
- “installed or seriously considered installing ATTIC INSULATION in your home?”
- “installed or seriously considered installing a SOLAR ELECTRIC SYSTEM for your home?”
- “remodeled or seriously considered remodeling your KITCHEN or BATHROOM?”
- “replaced or seriously considered replacing the ROOF of your home?”

The types of projects reported by all respondents are shown in Figure 13 below. Of the respondents who answered each question, they most frequently reported they had replaced a water heater (34%), followed by kitchen/bathroom remodels (29%), and window upgrades (27%); the smallest proportion of respondents installed attic insulation (12%). No significant differences emerged between Hispanic and non-Hispanic respondents for the types of project undertaken.

Figure 13. Home Improvement Projects Completed or Considered (N=667)



Motivations to Undertake Energy Related Projects

For projects completed or considered, the questionnaire listed motivations that could have influenced respondents; these motivations emerged as important during earlier focus group discussions as part of this research (Research Into Action and CSE, 2016). Respondents selected “yes” or “no” for each motivation. They were then asked to cite the *primary* motivation for each completed or considered project. Table 5 displays the percent of respondents for each type of project and the primary motivations selected. Notable findings include the following.

- The strongest motivator for installing solar PV was saving money on utility bills, cited by 68% of those who had considered or completed that upgrade.
- Close to half (42%) of those who had replaced or considered replacing a water heater were primarily motivated by an emergency situation of a non-functioning unit. In contrast, only 16% and 13% of those who had replaced or considered replacing a furnace or central air conditioner, respectively, were primarily motivated by an emergency break-fix situation.
- Three primary motivators rose to the top for installing attic insulation: saving energy (32%), saving money (28%) and improving home comfort (27%).
- Helping the environment barely registered as a primary motivator for any of the eight home improvement projects.

Table 5: Primary Motivations among Respondents Who Had Completed or Considered Projects

	Furnace (N=177)	Central A/C (N=167)	Water Heater (N=272)	Windows (N=288)	Attic Insulation (N=148)	Solar (N=245)	Kitchen/ Bathroom (N=342)	Roof (N=186)
To add value to my home	1%	1%	0%	5%	1%	2%	12%	4%
To save money on utility bills	14%	8%	7%	24%	28%	68%	2%	3%
To save energy/not waste energy	14%	10%	9%	25%	32%	21%	1%	2%
To make my home more comfortable	18%	33%	3%	15%	27%	1%	17%	4%
To help the environment	1%	1%	1%	0%	1%	7%	0%	1%
To make my home more functional	3%	2%	4%	6%	3%	0%	26%	2%
Emergency repair or replacement of broken equipment	16%	13%	42%	7%	0%	0%	6%	14%
For the health and safety of my family	14%	10%	5%	8%	8%	2%	5%	6%
To improve my home's appearance	1%	0%	0%	10%	0%	0%	32%	8%
Replacement of working unit nearing end of useful life	20%	23%	29%	0%	0%	0%	0%	58%

The primary motivations did not differ significantly different between U.S.- and foreign-born Hispanics, and only two significant differences emerged in comparing Hispanics and non-Hispanics: central air conditioner and kitchen/bathroom upgrades. For air conditioners (Figure 14), replacing a working unit near the end of its lifespan motivated Non-Hispanics more than Hispanics, while health and safety reasons motivated Hispanics more than Non-Hispanics. For kitchen/bathroom remodels (Figure 15), Hispanics cited comfort more than non-Hispanics. Although we usually think of thermal comfort in relation to energy efficiency projects, the term may be associated with qualities such as spaciousness, design or modernity of equipment in the context of a kitchen or bathroom remodel.

Figure 14. Primary Motivations to Complete or Consider Central A/C Upgrades for Hispanic and U.S.-Born Non-Hispanic Respondents (N=152)

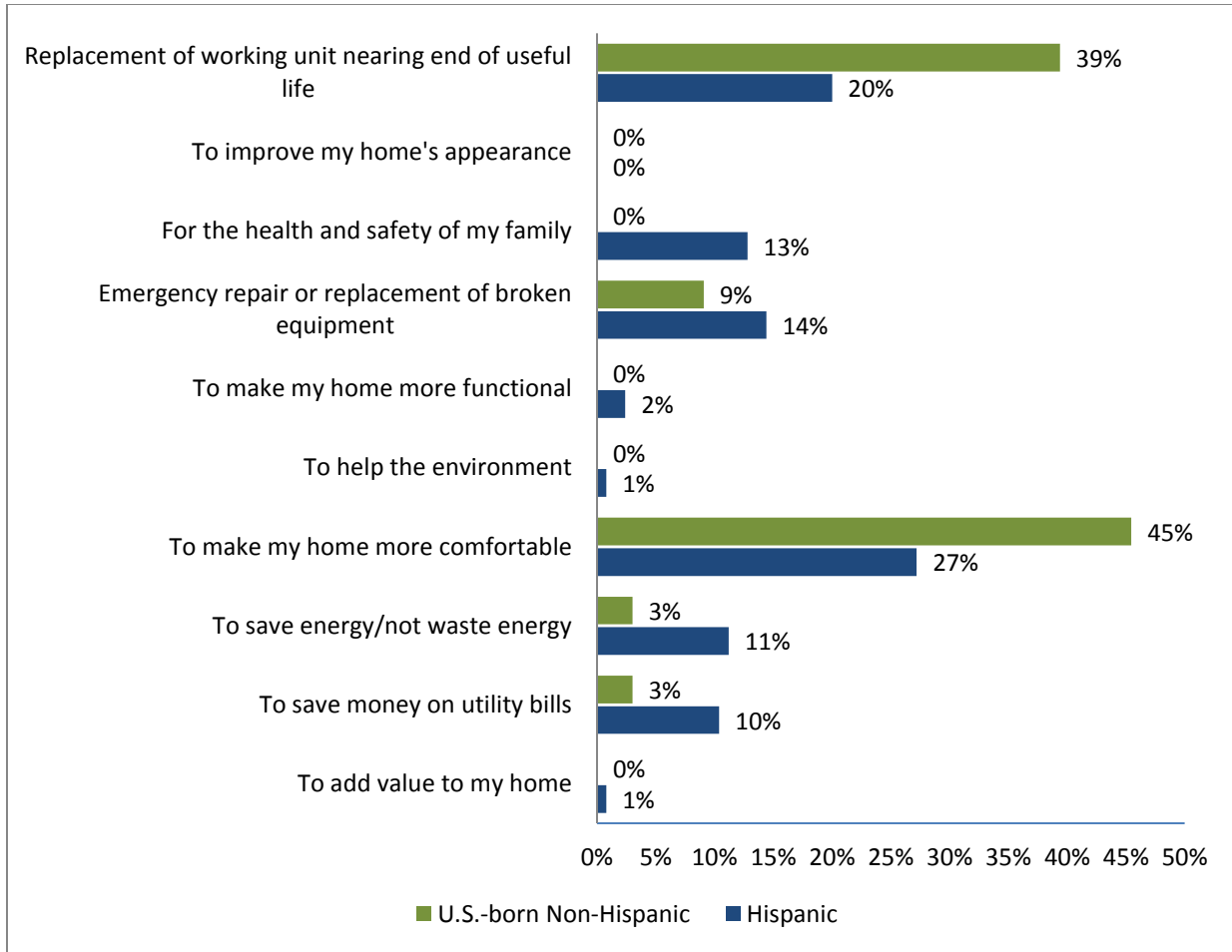
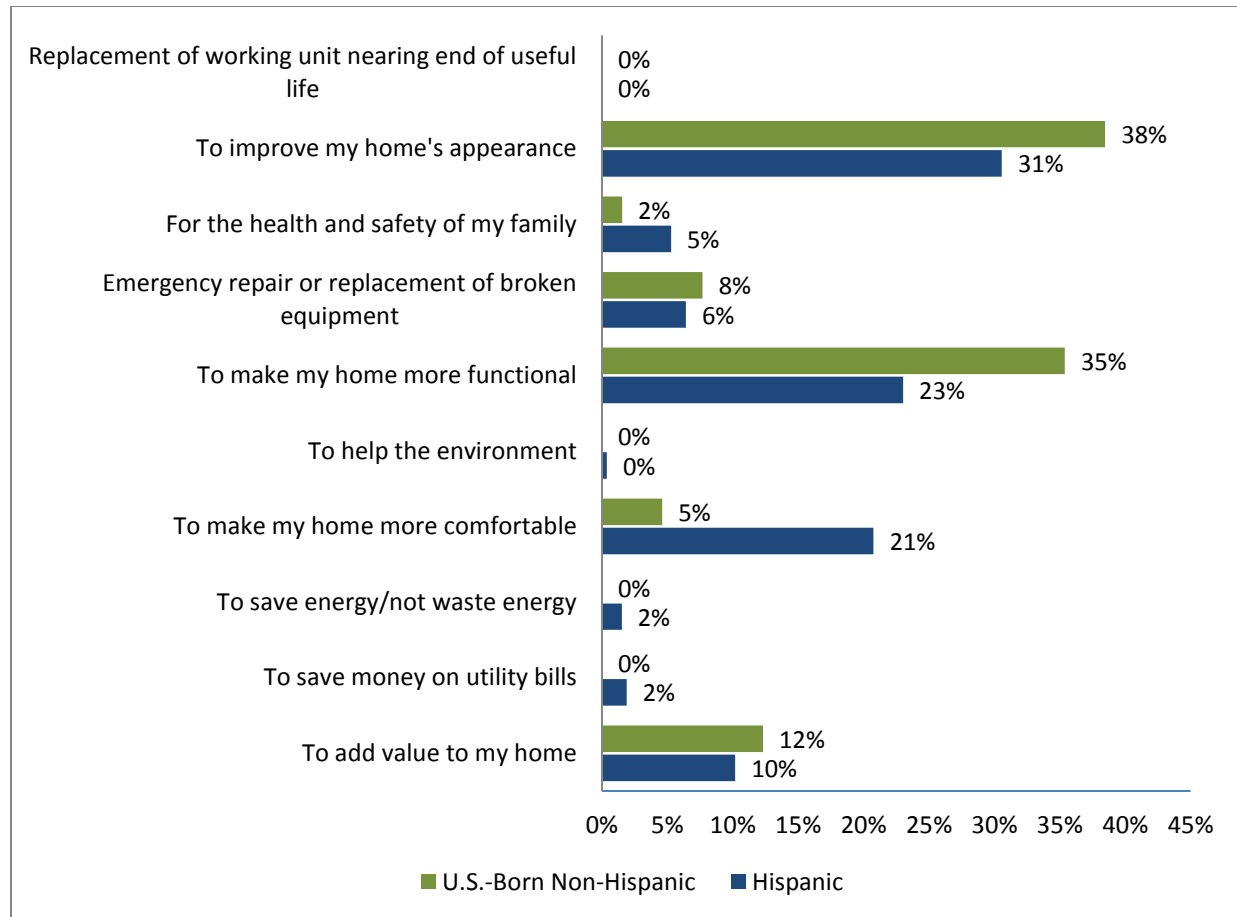


Figure 15. Primary Motivations to Complete or Consider Kitchen/Bathroom Remodels for Hispanic and Non-Hispanic Respondents (N=316)



We also explored if there were any trends among conservative- or liberal-leaning respondents (independent of ethnicity) to cite certain motivations for completing upgrades. First, we grouped those who said their primary motivation was adding value to the home or saving money on utility bills – both motivations associated with financial gain – and compared their political outlook on fiscal issues with the political leanings of respondents who did not cite these motivations. For the majority of upgrade types, we found no difference in the political leanings of individuals motivated by financial gains and all other reasons. The exception was water heater replacements, for which those who indicated a financially-related primary motivation leaned more conservative on fiscal issues than those who were motivated by other reasons ($t(218, N=220)=-1.9055; p=0.0580$).

We then compared the social and fiscal political leanings of those who were primarily motivated by saving energy/not wasting energy or helping the environment – which we grouped together as environmentally-related motivations. Again, we found that for most project types, there was no statistically significant difference between those who cited these motivations and those who did not cite these motivations. The exceptions were for water heater replacements and solar PV installations. For the former, those who cited an environmentally-related primary motivation were more socially

conservative than those who did not ($t(225, 227)=-2.1985, p=0.0289$). For solar PV, we found the opposite relationship, where those who cited an environmentally-related primary motivation were slightly more socially liberal than those motivated by other reasons ($t(211, 213)=2.9507, p=0.0035$).

Completed vs. Considered Projects

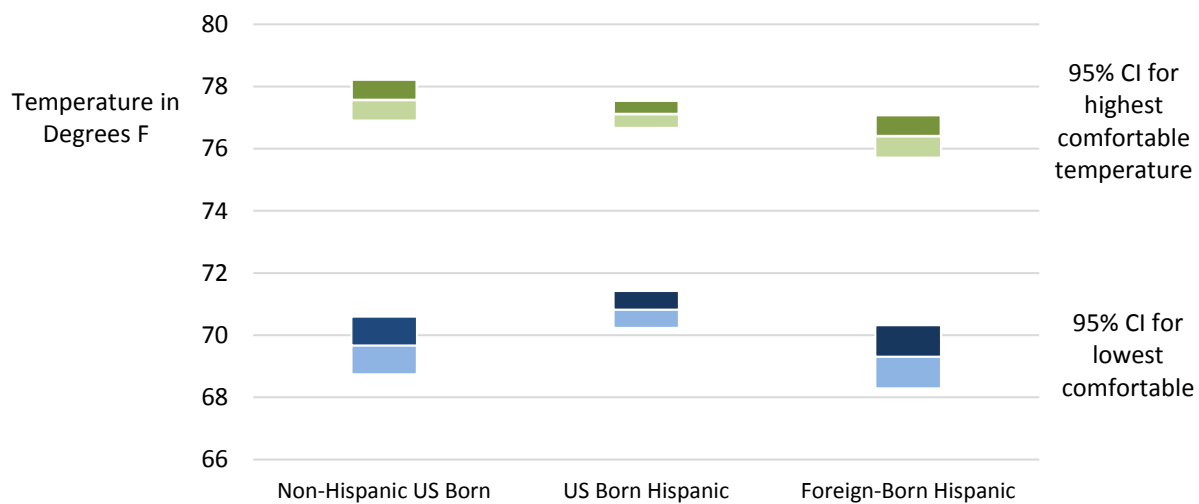
Motivations for *completed* projects did not differ significantly from those for *considered* projects in regard to windows, attic insulation, solar PV or kitchen/bathroom remodels.

Unsurprisingly, respondents more often chose emergency repair as a motivation to replace water heaters, while they more often cited saving energy and money as key motivators for considering this project type. For central air conditioner replacements, respondents more often cited health and safety for considered projects, and emergency repair more often for completed projects. For considered furnace replacements, health and safety was more frequently selected as the primary motivator, while saving money was more frequently cited for completed projects.

Comfort Expectations

To further explore home improvement motivations related to comfort, the survey asked respondents to indicate the temperature range where they feel most comfortable in their homes. U.S.-born Hispanic respondents cited the narrowest temperature range when compared to foreign-born Hispanics and U.S.-born non-Hispanics (Figure 16; $F(2,527)=4.49$; $p=0.01$).

Figure 16: 95% Confidence Intervals for the High and Low Temperature Ranges for Comfort by Group⁴ (N=528)

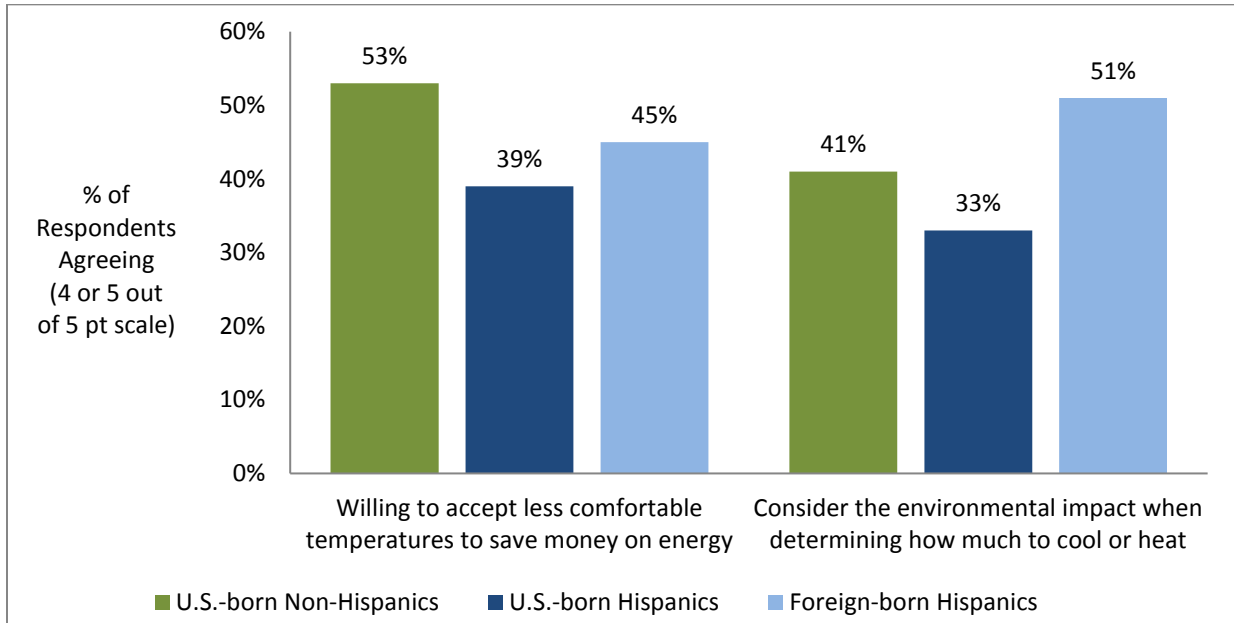


Overall, respondents in San Diego had a wider temperature range they felt was comfortable than respondents in Fresno ($t(634)=2.95$; $p=0.003$). Fresno respondents generally wanted their lowest comfortable indoor temperatures to be warmer than San Diego respondents (72 degrees versus 68 degrees on average). Fresno respondents were slightly more tolerant of hotter indoor temperatures than San Diego respondents (78 degrees versus 76 degrees on average).

U.S.-born Hispanics, non-Hispanics, and foreign-born Hispanics all agreed at similar rates when asked if they agreed their homes were kept at comfortable temperatures in both winter and summer. Similarly, all respondents cited a similar willingness to accept less comfortable temperatures to save money on energy (Figure 17). However, foreign-born Hispanics were more likely to consider the environmental impact when determining how much to cool or heat their homes than both U.S.-born Hispanics and non-Hispanics (Kruskal Wallis Mean Rank Test $\chi^2=20.34$, $p<0.001$, Figure 17).

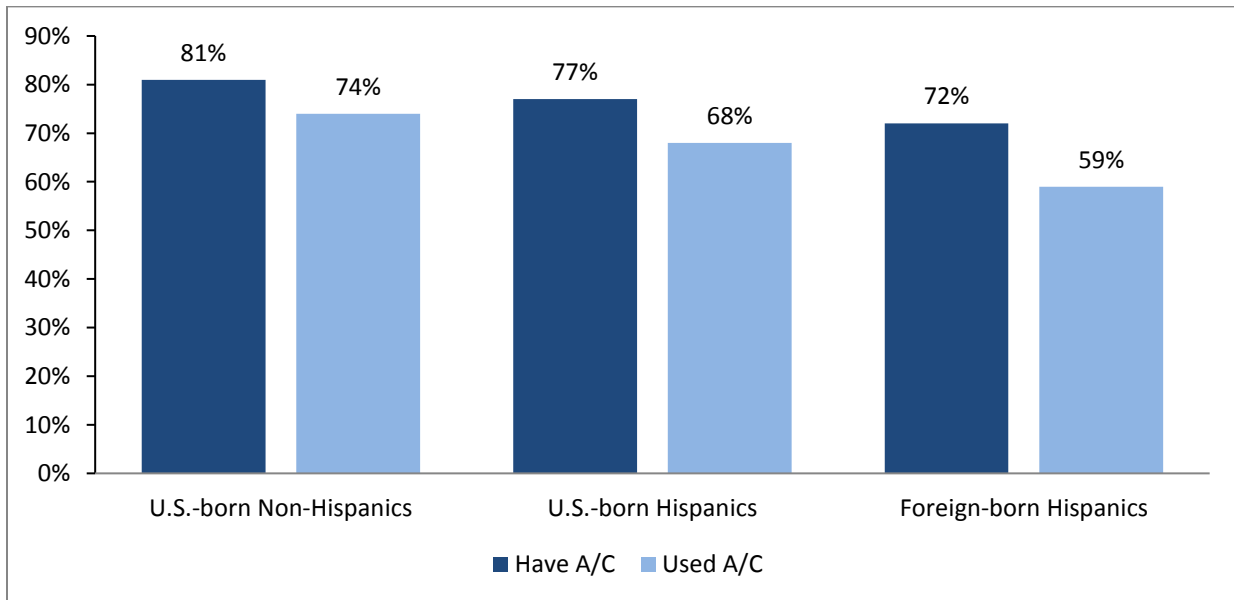
⁴ The average temperature by group is shown by the white line between the colored CI boxes.

Figure 17: Willingness to Forgo Comfort to Save Money or Consider the Environmental Impact by Group (N=551, 545)



While most respondents across the groups indicated they had central air conditioning ($\chi^2(2, N=513) = 2.46, p=0.29$), fewer foreign-born Hispanics said they used such systems to cool their homes in summer (Figure 18; $\chi^2(2, N=501) = 5.95; p=0.05$).

Figure 18: Percent of Respondents with Central A/C Using Central A/C to Cool their Homes in Summer 2015 (N=513, 501)



Hiring Contractors

DIY vs. Hiring a Contractor

The survey asked respondents a series of questions about how they used contractors to do home improvements. Table 6 shows the percentage of respondents, by the three ethnic groups, who reported they had ever hired a contractor to do home improvement or repair projects. U.S.-Born non-Hispanic respondents were more likely to have hired a contractor (82%) than those in the foreign-born Hispanic group (51%) or U.S.-born Hispanic group (63%; χ^2 , $p < 0.001$).

Table 6. Percent of Respondents, by Group, Ever Hiring a Contractor for Home Improvements/Repairs (N=564)

Ethnicity Category	Percentage
Foreign-born Hispanic	51%
U.S.-born Hispanic	63%
U.S.-born Non-Hispanic	82%

Hispanic respondents were equally as likely to report working in construction and the trades as U.S.-born non-Hispanic respondents (18%-19%). Households with members in these industries would presumably be more likely to have or be able to muster the capabilities to professionally complete an upgrade without hiring an outside contractor.⁵ This “professional but not contracted” option for home improvement thus represents a third mode of completing upgrades, in addition to hiring a contractor or normal layperson DIY.

Table 7. Percentage of Hispanic Respondents, by Acculturation Level, Ever Hiring a Contractor for Home Improvement or Repair Projects (N=432)

Level of Acculturation	Percentage Among Hispanic Respondents
Low acculturation	48%
High acculturation	63%

For respondents identifying as Hispanic, we also examined the propensity to have ever hired a contractor for home improvement projects relative to the BASH acculturation index, in the reduced binary form introduced above. As shown in Table 7, low acculturation respondents were less likely to have ever hired a contractor for home improvement or repair (χ^2 , $p = 0.01$). So lower facility or comfort with English may be an impediment to hiring a contractor, albeit one that is often overcome. Acculturation is also associated with other demographic factors such as income (i.e., lower acculturation

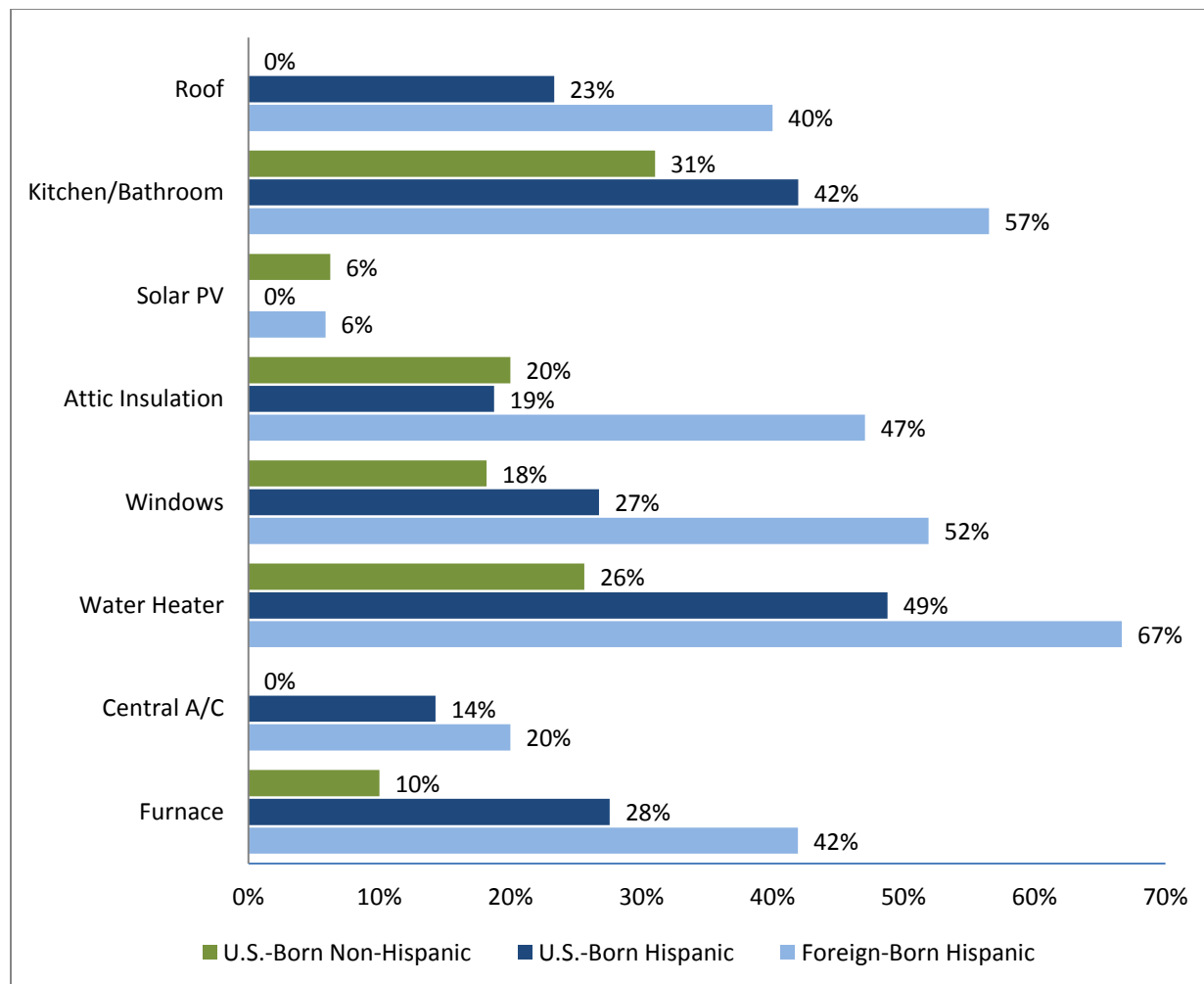
⁵ Also, foreign-born Hispanic respondents have generally been in the U.S. less time than the same-aged respondent born in the US –so they have likely owned a home for a shorter period of time, with a correspondingly shorter period in which they could have pursued upgrades.

households tend to have lower incomes), so it cannot be claimed that lack of English abilities itself *causes* lower levels of hiring contractors. And some contractors, of course, speak Spanish.

For each of the eight home improvement projects covered in the survey (see Figure 13), respondents who had completed an upgrade were asked whether they had hired a contractor to do it, or instead did it themselves (DIY) or with the help of unpaid friends or family. As shown in Figure 19, foreign-born Hispanic respondents were much more likely to use DIY or unpaid help compared to U.S.-born non-Hispanic respondents. In fact, among foreign-born Hispanic respondents, for six of the eight upgrades examined, at least 40% were completed DIY or with unpaid help; the differences are statistically significant ($p < 0.01$) in each of these six cases. Central air conditioner replacements and solar PV installations were the only exceptions.⁶

⁶ Only three DIY installations of solar panels were reported in the entire sample; the data are displayed for completeness

Figure 19. Percent of Respondents Reporting DIY or Using Unpaid Help for Home Improvement Projects, by Group (N=564)



Methods of Looking for a Contractor

Those who said that they had hired a contractor to do home improvement or repairs were queried about how they looked for contractors in the past. This was asked via a series of six Yes/No questions. Table 8 summarizes responses by ethnicity category. Many respondents, especially the U.S.-born non-Hispanic group, indicated that they had used more than one method. By far the most popular approach – ranging from 83% to 90% across the groups – was to ask a friend, family member or coworker for a recommendation or referral.

U.S.-born non-Hispanics were markedly more likely to say that they looked at online reviews than either foreign-born or U.S.-born Hispanic respondents ($p=0.04$). Foreign-born Hispanics might be somewhat more likely to respond to direct contractor marketing than non-Hispanic respondents (30%, versus 17% for U.S.-born non-Hispanics; $p=0.19$). Just 3% of foreign-born Hispanic respondents said they had looked at energy utility website’s contractor lists, which is markedly less than among U.S.-born Hispanic (15%) and U.S.-born non-Hispanic (14%) respondents ($p=0.04$); it should be noted that this question was not

limited to energy-related home improvements where the idea of referencing utility websites would be most relevant. Some respondents volunteered that they used an internet search, their home insurance, their own network, or a big box store (e.g., Home Depot or Costco) to find a contractor.

Table 8. Methods Used to Look for a Contractor (N=365)

	Foreign-Born Hispanic	U.S.-Born Hispanic	U.S.-Born Non-Hispanic	p-value	Summary Comment
Asked for a recommendation or referral from a friend, family member, coworker, etc.?	83%	87%	90%	0.45	Very popular across all ethnicity categories
Look at online reviews/ratings (e.g., Yelp, Angie's List, BBB)?	42%	45%	60%	0.04*	Common, especially among U.S.-born non-Hispanics
Respond to direct contractor marketing (e.g., door-to-door sales, mailers, phone solicitations)?	30%	22%	17%	0.19	Fairly common among foreign-born Hispanics
Look at the yellow pages?	16%	27%	20%	0.15	Surprisingly high levels; least common among foreign-born Hispanics
Post a referral request to a social media group or network (e.g., Facebook, Nextdoor, listserv)?	9%	10%	16%	0.35	Not a common approach for any group
Look at contractor lists provided on the utility website?	3%	15%	14%	0.04*	Rarely reported among foreign-born Hispanics

Note: Differences that are statistically significant according to a χ^2 test at $p < 0.10$ are indicated by an * in p-value column

Choosing a contractor

All respondents, whether or not they had hired a contractor, were asked about how much importance they placed on each of following 11 factors.

- Low price
- Licensed/bonded/workman's compensation insurance
- Recommended by a personal contact
- High rating/positive review online

- Offers warranties
- Handles permitting processes
- Able to conduct business in my preferred language
- Fast estimated time to complete project
- Professional, clear, and detailed proposal
- Depth of knowledge and experience
- Professionalism of the contractor/staff (e.g., appearance, responsiveness to requests)

Responses were collected on a five-point scale.⁷ Most respondents reported selecting their contractors on the basis of multiple criteria, placing high value on several of these, with few saying that any of the listed criteria were only “slightly” or “not at all” important (10% or less, except for about 20% in the case of high online ratings/reviews). Interesting comparisons emerged across the ethnicity categories in terms of what criteria were considered “extremely” important, as shown in Table 9.

Table 9. Percent Choosing "Extremely Important" for Contractor Selection Criteria, by Group

Criteria	Foreign-Born Hispanic	U.S.-Born Hispanic	U.S.-Born Non-Hispanic	p-value
Low price	33%	22%	18%	0.01*
Licensed/bonded/workman's compensation insurance	39%	48%	60%	0.01*
Recommended by personal contact	26%	32%	29%	0.58
High rating/positive review online	22%	27%	31%	0.26
Offers warranties	35%	36%	33%	0.85
Able to conduct business in my preferred language	37%	39%	45%	0.38
Fast estimated time to complete project	28%	32%	46%	0.01
Professional, clear and detailed proposal	25%	26%	23%	0.84
Depth of knowledge and experience	45%	48%	50%	0.77
Professionalism of the contractor/staff (e.g., appearance, responsiveness to requests)	58%	61%	70%	0.15

Note: For cases where differences are statistically significant at $p < 0.10$, entries in bold indicate the highest percentage for the given criteria (row).

⁷ Respondents were asked to select “Not at all important,” “Slightly important,” “Somewhat important,” “Very important,” or “Extremely important” (i.e., a 5-point Likert-like scale).

Professionalism of the contractor/staff was the top-rated criteria across all groups, with depth of knowledge/experience and license/bonding/workman's compensation insurance also ranking highly. Notable differences among the groups include the following.

- Foreign-born Hispanics were more likely than other ethnicity categories to put high importance on low cost (33%), versus 22% and 18% for U.S.-born Hispanic and U.S.-born non-Hispanic groups, respectively. In fact, low price was the least likely category to be rated as extremely important (18%) for both these U.S.-born groups.
- The majority (60%) of U.S.-born non-Hispanic respondents rated licensing, bonding, and/or workman's compensation insurance as "extremely important," indicating higher concern with legal and administrative issues than the other two groups ($p=0.01$).
- U.S.-born non-Hispanic respondents were also significantly more concerned with speed than the other two groups, with 46% rating "fast estimated time to complete project" as "extremely important" ($p=0.01$). Only 28% of foreign-born Hispanics rated fast estimated project completion speed as "extremely important."
- Finally, U.S.-born non-Hispanics may have had somewhat higher expectations for customer service, with 70% rating "professionalism of the contractor/staff" as "extremely important" ($p=0.15$).

These results add dimensionality to Table 8 results on how respondents looked for contractors. In particular, nearly everybody said they asked for personal recommendations, but as seen in Table 9, such recommendations were of only modest importance. Similarly, while about half (less for foreign-born Hispanics) said they looked at online ratings and reviews to find a contractor, Table 9 shows these reviews to be less important than other factors.

Financing

Paying for Planned vs. Emergency Home Improvement Projects

When respondents were asked how they had paid for their most recent planned home improvement, as well as how they had paid for their most recent emergency home repair, funding mechanisms differed as shown in Figure 20 and Figure 21. Few differences in funding sources surfaced across the groups.

Cash was by far the most popular funding mechanism, named by over 60% in each category (i.e., each ethnicity category, for both planned home improvements and emergency repairs). Cash was often used in combination with some other mechanism. For example, 28% of those using cash to pay for a planned home improvement said they also used a credit card that they paid off over time for that home improvement. A modest proportion used credit cards, whether paid off in full the first month, or paid off over time (ranging from a low of 21% for emergency repairs among U.S.-born Hispanic respondents, to a high of 32% for planned home repairs among foreign-born Hispanic respondents). As to using either⁸ a

⁸ i.e., percentages are added across categories.

home equity line of credit, a personal loan from a bank or credit union, or a PACE loan for planned home repairs, roughly a quarter of each group said they had done so (26% of foreign-born Hispanics, 29% of U.S.-born Hispanics, and 22% of U.S.-born non-Hispanics). For emergency repairs (Figure 21), home equity lines of credit, bank/credit union loans, and PACE loans were uncommon, with foreign-born Hispanics reporting the highest levels (13%). Among foreign-born Hispanics, 11% reported having used a payday loan or loan or gift from a friend or family for emergency repairs – still rare but considerably more common than among U.S.-born Hispanics (3%) or U.S.-born non-Hispanics (5%).

Figure 20. Funding mechanism for most recent planned home repair, by ethnicity category (N=441)

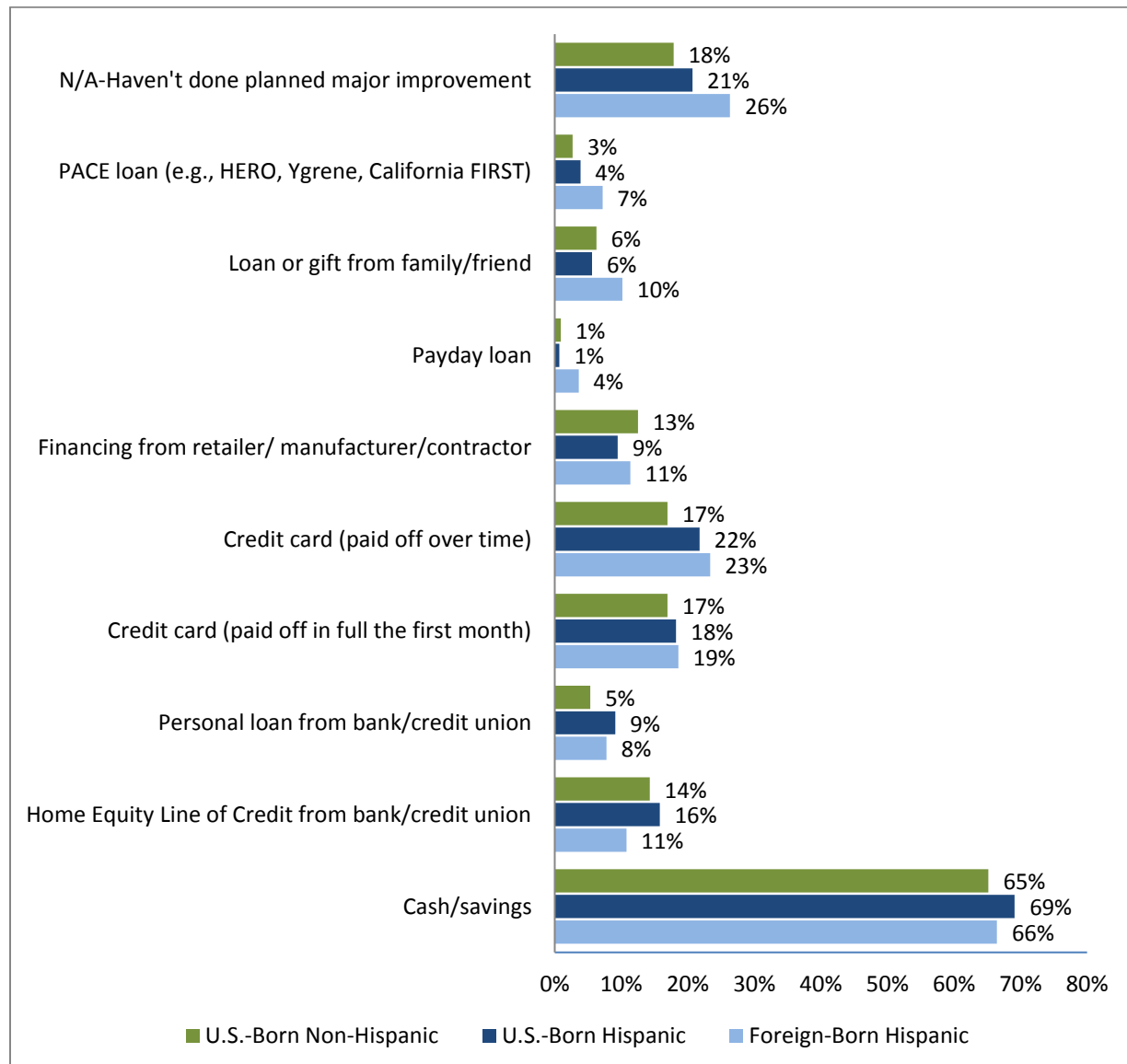
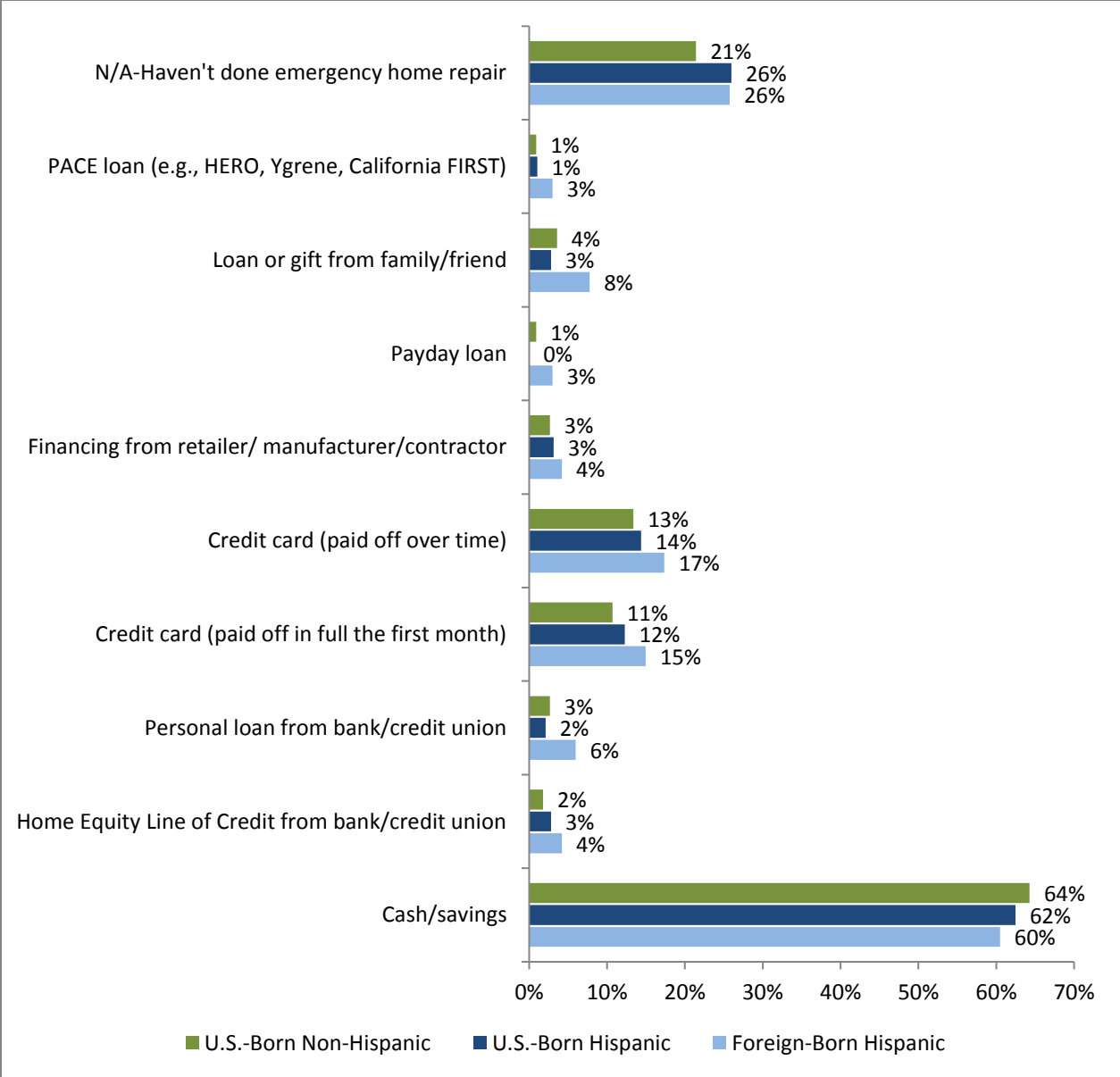


Figure 21. Funding mechanism for most recent emergency home repair, by ethnicity category (N=423)



Financing vs. Saving Cash

Asked about whether they would pursue a desired home improvement project if financing were available but cash were not, half (50%) of the foreign-born Hispanic respondents said they would do so, as shown in Table 10. A lower proportion of U.S.-born Hispanics (40%) and of U.S.-born non-Hispanic respondents (37%) agreed (p=0.13). Across income categories (not shown), respondents from lower income households were somewhat more likely to say that they would wait until they had the cash available than those with higher incomes (57% of those with gross income less than \$50K/year, versus 48% of those with incomes over \$100K).

Table 10. Percent of Respondents, by Group, Who Would Pursue a Desired Non-Emergency Home Improvement If Financing Were Available But Cash Were Not (N=564)

	Would Use Financing to Complete	Would Delay Until They Had Cash
Foreign-Born Hispanic	50%	50%
U.S.-Born Hispanic	40%	60%
U.S.-Born Non-Hispanic	37%	63%

Credit Card Availability and Use

Financing literature focusing on Hispanic residents in the United States often notes that a high percentage of Hispanics are unbanked and otherwise less engaged in credit than other U.S. residents. A recent technical brief by the National Council of La Raza (2015), for example, noted that only 56% of Latinos had credit cards. Our survey covered only homeowners, so higher engagement with credit resources would be expected. In fact, the survey results (Table 11) indicated that a high majority (86%) of foreign-born Hispanic respondents had at least one credit card. This was slightly less than the levels among U.S.-born Hispanic and U.S.-born non-Hispanic respondents (91%-94%); the differences were statistically significant at $p=0.10$. Hispanic households were more likely to carry a balance than non-Hispanics, with three-quarters of both the foreign-born Hispanic group and U.S.-born Hispanics saying that they had done so at least once over the past year, compared to only 62% of U.S.-born non-Hispanic respondents ($p=0.04$).

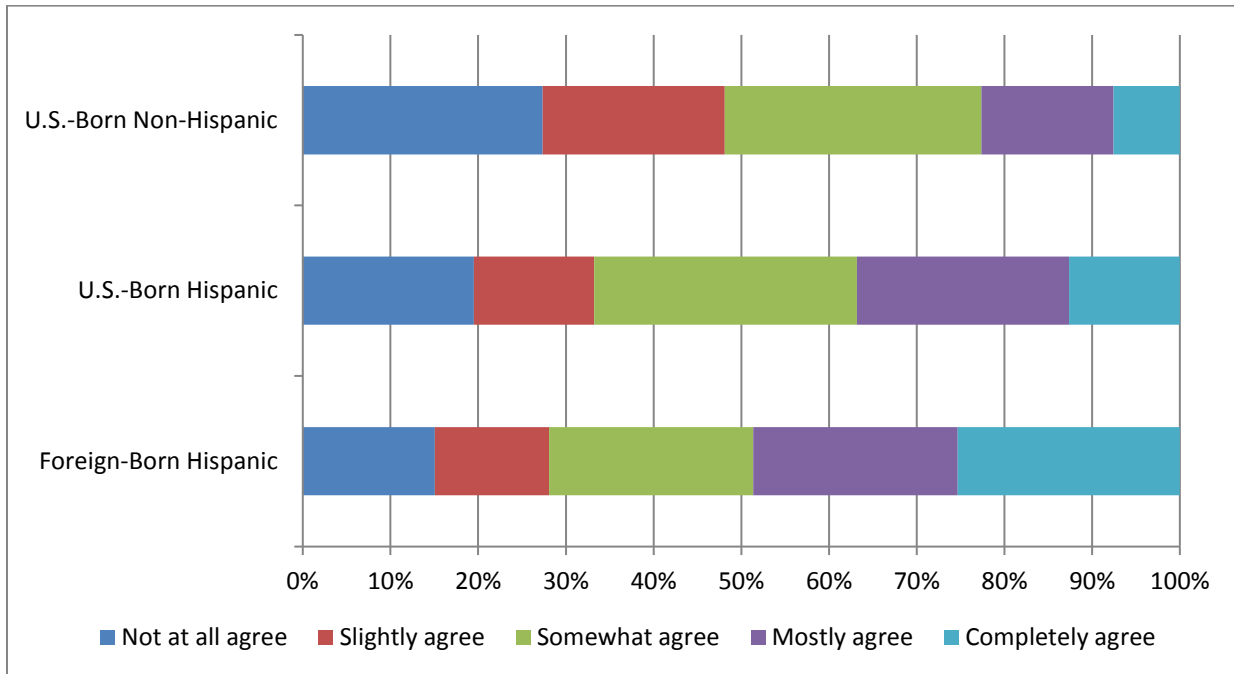
Table 11. Credit Card Possession and Balance Practices, by Group (N=564)

	Have at least one credit card	Carried balance at least one month in last year (% of those with a credit card)
Foreign-Born Hispanic	86%	74%
U.S.-Born Hispanic	91%	75%
U.S.-Born Non-Hispanic	93%	61%

Likelihood to Consider a Large Purchase if Financing Were Available

As shown in Figure 22, foreign-born Hispanics were more likely to say that they would consider a large purchase if they knew financing were available for it, with close to half (44%) agreeing that financing would make them more likely to do so, compared to just 23% of non-Hispanics agreeing. The corresponding statistics for U.S.-born Hispanics fell somewhere in between these two groups, with responses approximately evenly divided between agreeing, disagreeing, and neutral (“somewhat agree”). The differences in answers to this question were statistically significantly different among the ethnicity groups (χ^2 , $p<0.01$).

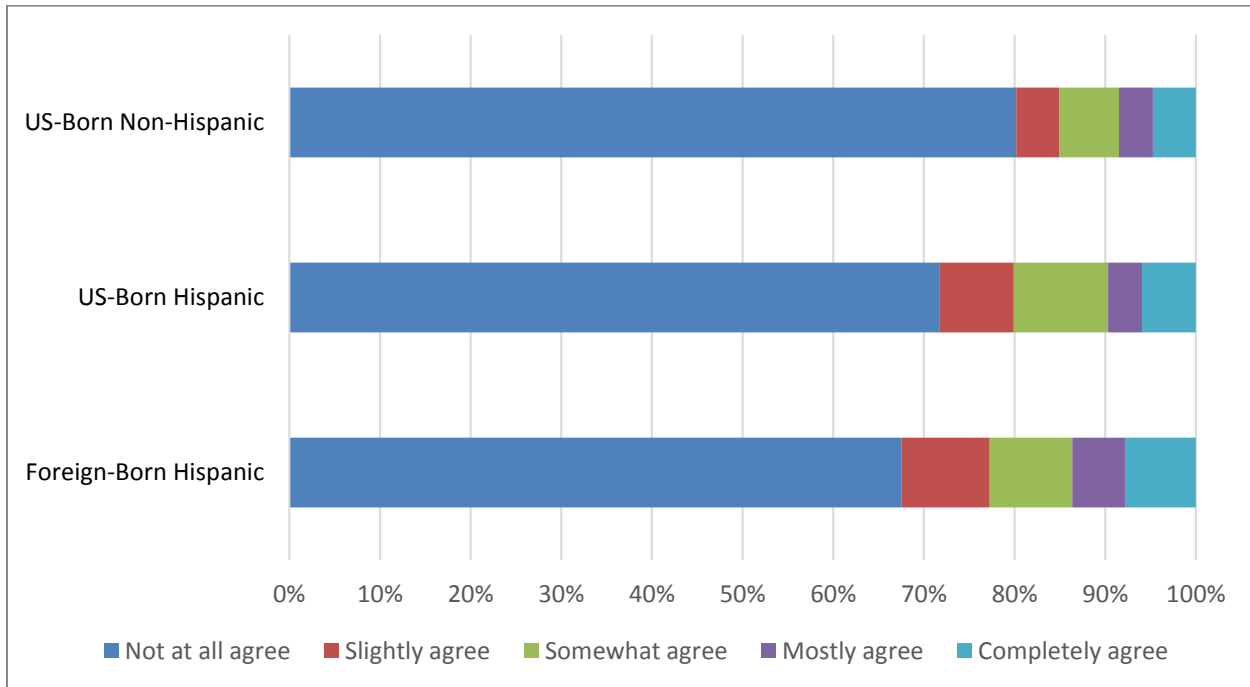
Figure 22. Agreement with Statement "I am more likely to consider a large purchase if I know that there is financing available to help me pay for it," by Group (N=564)



Difficulties in Accessing Credit

Respondents were asked whether they had experienced difficulty accessing credit or financing. Figure 23 compares the results by ethnicity group. U.S.-born Non-Hispanics were the most likely to say that they had no trouble (80% “not at all agree”), but neither had most of foreign-born Hispanics (68%) or U.S.-born Hispanics (72%); these differences are statistically significant (χ^2 , $p=0.08$). There were, however, respondents who indicated that they clearly had some difficulties (“mostly agree” or “completely agree”), slightly more so among foreign-born Hispanic respondents (14%) than for U.S.-born Hispanic (10%) and U.S.-born non-Hispanic respondents (9%).

Figure 23. Agreement with Statement "I have experienced difficulty accessing credit or financing," by Group (N=564)



Family Decision-Making Dynamics

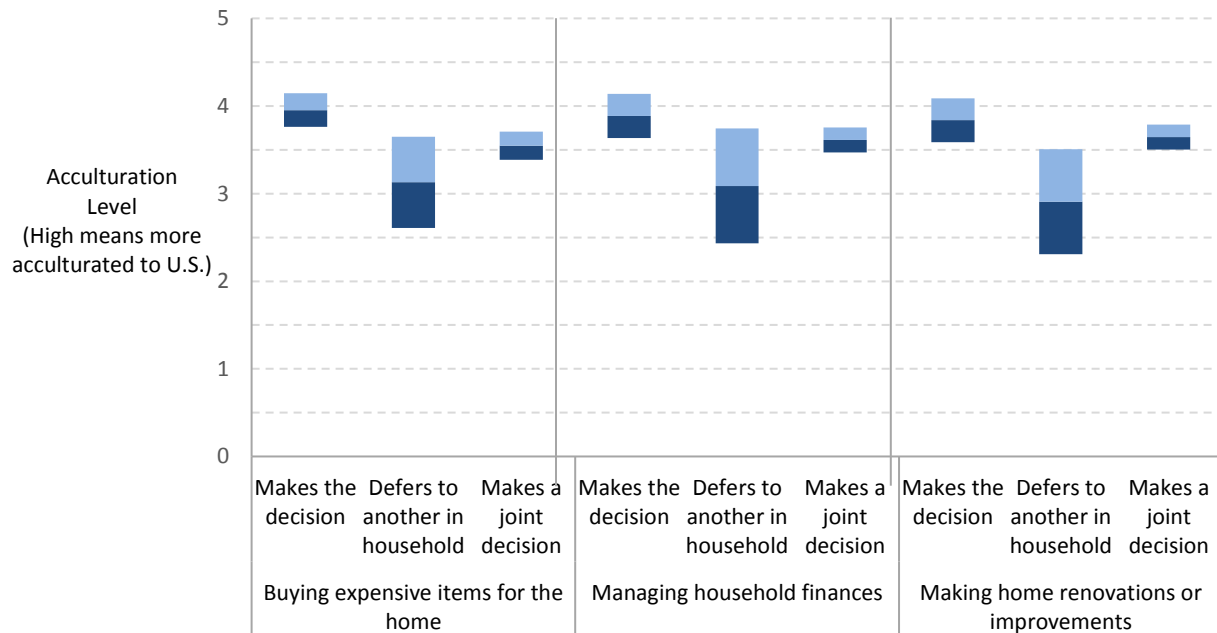
Respondents were asked whether they make household decisions on their own, defer to others, or make them as a family when buying expensive items, managing their household finances, and when making renovations to their home. Most respondents noted making these household decisions jointly with other members of their household (Table 12). More U.S.-born Hispanic respondents noted making the decision on their own when buying expensive items for their home (41% compared to 29% for U.S.-born non-Hispanics and 27% for foreign-born Hispanics ($\chi^2(4, N=533) = 16.9; p=0.002$), and when managing household finances (27% compared to 17% and 18% for U.S.-born non-Hispanics and foreign-born Hispanics respectively ($\chi^2(4, N=525) = 13.5; p=0.01$). Similarly, a larger set of Hispanics, both U.S. and foreign born tended to make home renovation decisions on their own when compared to U.S.-born non-Hispanics (26% and 21% versus 13% for U.S.-born non-Hispanics, ($\chi^2(4, N=523)=13.22; p=0.01$).

Table 12: Percent of Respondents Who Make Decisions on Their Own, Defer to Another, Or Make Them Jointly by Group

Decision	The respondent...	U.S.-born non-Hispanic	U.S.-born Hispanic	Foreign-born Hispanic
Buying expensive items for the home	Makes the decision	29%	41%	27%
	Defers to another in household	5%	3%	9%
	Makes a joint decision	65%	56%	64%
Managing household finances	Makes the decision	17%	27%	18%
	Defers to another in household	1%	3%	6%
	Makes a joint decision	83%	69%	73%
Making home renovations or improvements	Makes the decision	13%	26%	21%
	Defers to another in household	2%	3%	7%
	Makes a joint decision	85%	69%	68%

Hispanic respondents who stated that they are likely to defer to another in their household when making major household decisions are less acculturated to the United States than those respondents who either make the decision themselves or make a joint decision (Figure 24). Specifically, this trend remains the same across the three major household decisions that we asked in the survey: buying expensive items ($F(2,448)=7.31$; $p=0.001$), managing household finances ($F(2,447)=3.58$; $p=0.03$), and when making home renovations ($F(2,448)=4.32$; $p=0.01$).

Figure 24: 95% CI for Acculturation Scale by Decision Making Preference (N=449, 448, 449)



The respondent's gender did not predict who makes decisions in the home (Table 13). Both men and women reported similar rates of making the decision on their own, deferring to another, or making joint decisions (Table 13; $\chi^2(2, N=606)=2.12$; $p=0.35$). This contrasts with literature review findings that suggested that women tended to be the decision maker in Hispanic households (Research Into Action, 2016).

Table 13. Percent of Respondents Who Make Decisions on Their Own, Defer to Another, Or Make Them Jointly by Gender (N=606)

Decision	The respondent...	Men	Women
Buying expensive items for the home	Makes the decision	33%	35%
	Defers to another in household	6%	7%
	Makes a joint decision	60%	58%
Managing household finances	Makes the decision	20%	26%
	Defers to another in household	5%	3%
	Makes a joint decision	74%	71%
Making home renovations or improvements	Makes the decision	21%	25%
	Defers to another in household	5%	4%
	Makes a joint decision	74%	71%

IV. Discussion and Next Steps

Energy costs and project motivations

As noted in the results section above, energy costs, to a large extent, follow the trend seen in income, declining from U.S.-born non-Hispanic, to U.S.-born Hispanic, to foreign-born Hispanic households. This finding is understandable, as households facing greater economic constraints may respond with reduced consumption. There is some indication of this behavior in the survey, with fewer foreign-born Hispanics reporting use of central air conditioning systems even when present in the home. Interestingly, this trend is also present in the data during spring months when air conditioning loads are minimal. This differential could be due to the fact that Hispanic respondents had smaller homes on average, the possibility that larger numbers of Hispanic households participate in income-qualified electricity rate programs and/or other potential conservation behaviors among Hispanic households. Also related to energy bills, U.S.-born non-Hispanic respondents reported significantly higher solar adoption rates than Hispanic respondents. These solar adoption trends are understandable, given strong cost-based motivation reported among survey respondents.

The desire to save money on utility bills played a smaller role in the other home improvement project types investigated in the survey. Indeed, attic insulation and window upgrades were the only other upgrades where more than 20% of those who had completed or considered the project cited bill savings as their primary motivations. For both attic insulation and window upgrades, the primary motivation was saving energy/not wasting energy. Water heater replacements were primarily motivated by an emergency repair situation and furnaces were motivated more by proactive replacements of old units nearing the end of their lifespan.

When examining project motivations across ethnic groups, we found differences related to central air conditioner replacements. While improving comfort was the number one motivator for both groups overall, more non-Hispanics than Hispanics (45% to 27%) reported it as the primary motivation for central air conditioner replacements. In addition, U.S.-born non-Hispanic respondents more frequently cited replacement of a working unit near the end of its useful life than Hispanics (39% vs. 20%, respectively). Together, these two factors constitute an overwhelming majority (84%) of non-Hispanic respondents' primary motivations for this work. Hispanic households, on the other hand, reported a greater variety of motivations for central air conditioner replacements, including higher levels of emergency repair and motivations linked to improve health and safety. This could indicate a challenge to effectively engaging Hispanic households on proactive air conditioner upgrades, although perhaps themes connected to health and safety would strengthen this type of messaging.

Ultimately we did not see many statistically significant differences in motivations between Hispanic and non-Hispanic respondents. This may imply that energy efficiency marketing efforts do not need to parse motivations when targeting these respective populations for certain project types. But it is important to note that the appeal to certain motivations/benefits is only one aspect of the message – other aspects such as who benefits (e.g., family or individual), who is delivering the message, gender of target

audience and language can resonate differently with various ethnic or cultural groups. Further research would also be useful to confirm the motivations results described above.

Finally, data on political ideology revealed that those who installed or considered installing solar PV for environmentally-related motivations were more likely to be socially liberal. This result was in line with our literature review that found that politically-liberal individuals are more likely to invest in energy efficiency and solar than politically-conservative individuals, and that this difference is larger when environmental messages are invoked (Research Into Action, 2016). In contrast, we found that among those who replaced or considered replacing a water heater, environmentally-related motivations were associated with those who tended socially conservative. It is possible that respondents were more strongly motivated by the waste aversion angle within the option of “to save energy/not waste energy” than the environmental benefits of saving energy.

Hiring contractors

Across many of the projects installed by survey respondents, the data revealed significant variations in who performed the work. Foreign-born Hispanic respondents were much more likely to use DIY or unpaid help compared to U.S.-born non-Hispanic respondents and Hispanic respondents with lower levels of acculturation were significantly less likely to have ever hired a contractor for home improvement or repair.

In our previous focus groups, we found that DIY was of interest to most participants (Hispanic or not), even though participants were selected to have recently hired somebody to do a home improvement project (Research Into Action and CSE, 2016). Drawing from our earlier contractor interview results, interviewed contractors were non-committal on this point: most, if not all, were aware of the popular idea that DIY is relatively common among Hispanic households, while noting that the choice to use DIY depends on a variety of factors including income, location, and skills (Moezzi, 2016).

Among foreign-born Hispanics, we found that central air conditioner replacements and solar PV installations were the only project types which were conducted as DIY projects less than 40% of the time. This could reflect an aversion to taking on projects involving electricity as DIY, a perspective mentioned during the focus groups. In addition, as several contractors pointed out in the contractor interviews conducted earlier, improving central air conditioning in a house is often not a matter of plug-and-play replacement of an air conditioning unit requiring basic DIY skill levels, but can require a substantial amount of specialized work in other elements of the air conditioning system. U.S.-born Hispanic respondents were considerably less likely to use DIY than foreign-born Hispanics, though (with the exception of attic insulation, the least popular upgrade) more so than non-Hispanics.

When asked about the sources used to find contractors, the survey indicated that referrals from family and friends was the most popular option among all ethnic groups. The second most popular option – looking at online reviews/ratings – was cited more frequently by U.S.-born non-Hispanics than Hispanics. These results were fairly consistent with the focus group and interview results, though with some differences. Focus group results indicated that Hispanic households were more likely than non-Hispanic households to look to contractor recommendations from friends. Several of the contractors interviewed

stressed the importance of word-of-mouth and personal referrals for Hispanics in particular, though also noting that referrals were important for contractors in general, Hispanic or not.

The focus group results suggested non-Hispanic households were more likely to use online review sites such as Angie’s List, Yelp, or other consumer sites, a finding that is echoed by the survey results. During the contractor interviews, one interviewee commented that the popularity of online contractor reviews depended on location, with activity lower in Fresno than in more longstanding major metropolitan areas such as the San Francisco Bay Area. This could, he mentioned, change within a few years. Another said that “*everybody Googles*” when they have a home problem they want to research – so what shows up on the first pages of that search can be important, including and beyond standard consumer review sites.

Regarding attributes used to evaluate which contractor to hire, both Hispanic and non-Hispanic respondents ranked professionalism as the most important. Among Hispanics (both U.S.-born and foreign-born), the next most important qualities were depth of knowledge/experience, license/bonding/workman’s compensation insurance and the ability to conduct business in preferred language. This generally aligns with our findings in the focus groups, where Hispanic participants stressed the importance of verifying the quality of a contractor’s work as well as licenses and insurance.

The contractors we spoke to in earlier interviews thought that speaking Spanish could give them an edge in gaining Hispanic customers. This did not require that the contractor be a native-level speaker or completely fluent in Spanish in order to win Hispanic customers. Rather, a contractor’s ability to speak some Spanish seemed to have been seen as helping build comfortable relationships with the customer and sending the message that Hispanic customers were valued by the company. Where native or near-native level Spanish ability was considered most important, it seemed, was where customers were uncomfortable with English or perhaps wanted the security of a cultural connection (e.g., an adult negotiating a contractor for an immigrant parent).

Financing

Our literature review indicated that Hispanic Americans may be less likely to trust banks and have a cultural tendency to use cash rather than credit. Hispanic (as well as non-Hispanic) focus group participants reflected a reluctance to use financing for high-cost items. However, the survey results demonstrate a desire among Hispanic respondents to use financing when available. For example, when asked about how they would proceed with a desired (non-emergency) home improvement project if cash were not available but financing were, 50% of foreign-born Hispanics and 40% of U.S.-born Hispanics reported that they would use financing to complete the project rather than wait to save up the cash. This was higher than the 37% of U.S.-born non-Hispanics who reported they would use financing. Similarly, Hispanic respondents agreed more with the statement “I am more likely to consider a large purchase if I know that there is financing available to help me pay for it” than non-Hispanic respondents.

The origins of these differences are unclear, but may have to do with the innate difficulty of asking a generalized hypothetical question on a survey. In real life, such financing may not be available even

were it desired. (Further analysis indicated that the lower the income, the higher the tendency to agree that the availability of financing would increase the likelihood of considering a large purchase.) Indeed, Hispanic survey respondents reported greater difficulty than non-Hispanics accessing credit and lower incidences of owning a credit card. A few Hispanic focus group participants also mentioned difficulties getting loans – a topic that was not brought up by the non-Hispanic focus groups. This trend is consistent with our literature review which found that Hispanic Americans have had challenges meeting lending requirements based on credit scores and employment histories, and have had access to less attractive home financing options than other groups.

While actual propensity to finance a purchase surely depends on what the purchase is (e.g., a much-needed car vs. attic insulation), these results provisionally suggest that easier financing – and specifically, options for consumers that do not qualify for traditional loans and credit options – could help Hispanic households pursue home energy efficiency upgrades, if they considered them valuable. There are signs that Property Assessed Clean Energy (PACE) programs, which qualify customers based on home equity rather than personal credit, are filling part of this niche market. Indeed, our survey results indicated that, while PACE loans were infrequently cited as a funding mechanism for recent home repair projects (this makes sense, given that only solar, energy efficiency or water efficiency projects are typically eligible for PACE), foreign-born Hispanic respondents were slightly more likely to report having used them. Furthermore, one particular PACE offering – the HERO program – was mentioned unprompted by the San Diego-based Hispanic focus group as well as both non-Hispanic focus groups.

Next steps

The next phase of the project will be online experiments, which will be used to conduct randomized control trials (RCTs) to test the effects of different messages on the likelihood to take action on a home energy efficiency upgrade. Based on the survey results discussed here, themes that warrant further investigation and/or confirmation include the following.

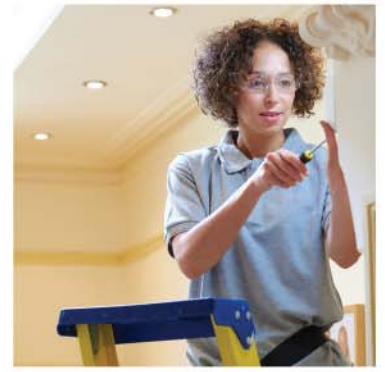
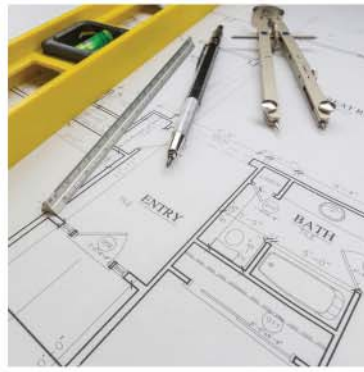
- Motivations
- Family motivations and family decision-making dynamics
- Language preferences
- Contractor selection attributes

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Appendix A – Questionnaire

An example of the English language, Fresno County, hard copy version of the questionnaire is shown on the following pages. Questionnaires were also offered in Spanish and in an online format to all respondents. A slightly different version was provided to the San Diego County sample, with references to the local energy utility changed from PG&E to SDG&E.



Attitudes and Experiences with Home Improvement Projects

A Survey of Fresno County Homeowners



We ask that an adult who lives at this address full time and who is involved with making decisions about major home improvements at this residence complete the survey.

The survey is available in English or Spanish and will take approximately 15-20 minutes to complete. Please answer all questions. Please complete only one survey per household. We appreciate your help.

Q1A In the last 5 years, have you replaced or seriously considered replacing a FURNACE in your home?

(Please select only one)

① Have not replaced or considered replacing a furnace ⇒ **Please go to Q2A**

② N/A- Do not have a furnace ⇒ **Please go to Q2A**

③ Considered replacing but have not yet. *If so, why not?* _____

④ Replaced a furnace using a contractor

⑤ Replaced a furnace myself (DIY) or with the help of unpaid friends/family

→ **Q1B If you replaced or considered replacing a FURNACE, were any of the following a reason for that decision/consideration? (Please select yes or no for each reason)**

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②
J. Replacement of working unit nearing the end of useful life	①	②

Q1C From the list above, which was the single most important reason for considering/replacing a furnace?

Please write the letter for that choice here:

Q2A In the last 5 years, have you replaced or seriously considered replacing a CENTRAL AIR CONDITIONER in your home? (Please select only one)

① Have not replaced or considered replacing a central air conditioner ⇒ **Please go to Q3A on page 2**

② N/A-Do not have a central air conditioner ⇒ **Please go to Q3A on page 2**

③ Considered replacing but have not yet. *If so, why not?* _____

④ Replaced a central air conditioner using a contractor

⑤ Replaced a central air conditioner myself (DIY) or with the help of unpaid friends/family

→ **Q2B If you replaced or considered replacing a CENTRAL AIR CONDITIONER in your home, were any of the following a reason for that decision/consideration? (Please select yes or no for each reason)**

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②
J. Replacement of working unit nearing the end of useful life	①	②

Q2C From the list above, which was the single most important reason for considering/replacing a central air conditioner? Please write the letter for that choice here:

Q3A In the last 5 years, have you replaced or seriously considered replacing a **WATER HEATER** in your home? *(Please select only one)*

① Have not replaced or considered replacing a water heater ⇒ **Please go to Q4A**

② N/A- Do not have a water heater ⇒ **Please go to Q4A**

③ Considered replacing but have not yet. *If so, why not?* _____

④ Replaced a water heater using a contractor

⑤ Replaced a water heater myself (DIY) or with the help of unpaid friends/family

→ **Q3B** If you replaced or considered replacing a **WATER HEATER** in your home, were any of the following a reason for that decision/consideration? *(Please select yes or no for each reason)*

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②
J. Replacement of working unit nearing the end of useful life	①	②

Q3C From the list above, which was the single most important reason for considering/replacing a **WATER HEATER**? Please write the letter for that choice here:

Q4A In the last 5 years, have you replaced/upgraded or seriously considered replacing/upgrading **WINDOWS** in your home? *(Please select only one)*

① Have not replaced or considered replacing/upgrading windows ⇒ **Please go to Q5A on page 3**

③ Considered replacing but have not yet. *If so, why not?* _____

④ Replaced/upgraded windows using a contractor

⑤ Replaced/upgraded windows myself (DIY) or with the help of unpaid friends/family

→ **Q4B** If you replaced/upgraded or considered replacing/upgrading **WINDOWS** in your home, were any of the following a reason for that decision/consideration? *(Please select yes or no for each reason)*

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②

Q4C From the list above, which was the single most important reason for considering/replacing (or upgrading) windows? Please write the letter for that choice here:

Q5A In the last 5 years, have you installed or seriously considered installing ATTIC INSULATION in your home? (Please select only one)

① Have not installed or considered installing attic insulation ⇒ **Please go to Q6A**

③ Considered installing but have not yet. *If so, why not?* _____

④ Installed attic insulation using a contractor

⑤ Installed attic insulation myself (DIY) or with the help of unpaid friends/family

Q5B If you installed or considered installing ATTIC INSULATION, were any of the following a reason for that decision/consideration? (Please select yes or no for each reason)

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②

Q5C From the list above, which was the single most important reason for considering/installing attic insulation? Please write the letter for that choice here:

Q6A In the last 5 years, have you installed or seriously considered installing a SOLAR ELECTRIC SYSTEM for your home? (Please select only one)

① Have not installed or considered installing a solar electric system ⇒ **Please go to Q7A on page 4**

③ Considered installing but have not yet. *If so, why not?* _____

④ Installed a solar electric system using a contractor

⑤ Installed a solar electric system myself (DIY) or with the help of unpaid friends/family

Q6B If you installed or considered installing a SOLAR ELECTRIC SYSTEM for your home, were any of the following a reason for that decision/consideration? (Please select yes or no for each reason)

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②

Q6C From the list above, which was the single most important reason for considering/installing a solar electric system? Please write the letter for that choice here:

Q7A In the last 5 years, have you remodeled or seriously considered remodeling your KITCHEN or BATHROOM?
(Please select only one)

① Have not remodeled or considered remodeling the kitchen or bathroom ⇒ **Please go to Q8A**

③ Considered remodeling but have not yet. *If so, why not?* _____

④ Remodeled my kitchen or bathroom using a contractor

⑤ Remodeled my kitchen or bathroom myself (DIY) or with the help of unpaid friends/family

→ **Q7B If you remodeled or considered remodeling your KITCHEN or BATHROOM, were any of the following a reason for that decision/consideration?** *(Please select yes or no for each reason)*

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②

Q7C From the list above, which was the single most important reason for considering/remodeling the kitchen or bathroom? Please write the letter for that choice here:

Q8A In the last 5 years, have you replaced or seriously considered replacing the ROOF of your home?
(Please select only one)

① Have not replaced or considered replacing the roof ⇒ **Please go to Q9 on page 5**

③ Considered replacing but have not yet. *If so, why not?* _____

④ Replaced the roof using a contractor

⑤ Replaced the roof myself (DIY) or with the help of unpaid friends/family

→ **Q8B If you replaced or considered replacing the ROOF of your home, were any of the following a reason for that decision/consideration?** *(Please select yes or no for each reason)*

	Yes	No
A. To add value to my home	①	②
B. To save money on utility bills	①	②
C. To save energy/not waste energy	①	②
D. To make my home more comfortable	①	②
E. To help the environment	①	②
F. To make my home more functional	①	②
G. Emergency repair or replacement of broken equipment	①	②
H. For the health and safety of my family	①	②
I. To improve my home's appearance	①	②
J. Replacement of roof nearing the end of useful life	①	②

Q8C From the list above, which was the single most important reason for considering/replacing the roof? Please write the letter for that choice here:

Hiring a Contractor

We would like to know about how you choose a contractor to work on your home.

Q9 Have you ever hired a contractor to do home improvement or repair projects?

- 1 Yes
 2 No ⇒ *Please skip to Q11*

Q10 When you looked for a contractor to repair or renovate your home in the past, did you...

(Please select yes or no for each one)

	Yes	No
A. Ask for a recommendation/referral from a friend, family member, co-worker, etc.?	1	2
B. Post a referral request to a social media group or network (e.g., Facebook, Nextdoor, listserve)?	1	2
C. Look at online reviews/ratings (e.g., Yelp, Angie's list, BBB)?	1	2
D. Respond to direct contractor marketing (e.g., door-to-door sales, mailers, phone solicitations)?	1	2
E. Look at contractor lists provided on the PG&E website?	1	2
F. Look at the yellow pages?	1	2
G. Other, please specify: _____	1	2

Q11 How important is/are the following when choosing a contractor? *(Please select one for each row)*

	Not at all Important	Slightly Important	Somewhat Important	Very Important	Extremely Important
A. Low price	1	2	3	4	5
B. Licensed/bonded/insured/workman's comp	1	2	3	4	5
C. Recommended by personal contact	1	2	3	4	5
D. High ratings/positive reviews posted online (e.g., Yelp, Angie's List, BBB)	1	2	3	4	5
E. Offers warranties	1	2	3	4	5
F. Handles permitting process	1	2	3	4	5

Q11 (Continued) How important is/are the following when choosing a contractor?

(Please select one for each row)

	Not at all Important	Slightly Important	Somewhat Important	Very Important	Extremely Important
G. Able to conduct business in my preferred language	1	2	3	4	5
H. Fast estimated time to complete project	1	2	3	4	5
I. Professional, clear, and detailed proposal	1	2	3	4	5
J. Depth of knowledge and experience	1	2	3	4	5
K. Professionalism of the contractor/staff (e.g., appearance, responsiveness to requests)	1	2	3	4	5

Comfort in Your Home

We would like to learn about how comfortable the temperature is inside your home throughout the seasons.

Q12 What do you consider a comfortable, year-round indoor temperature range for your home?
Between _____°F and _____°F

Q13 How much do you agree with the following statements?

(Please select one for each row)

	Not at all Agree	Slightly Agree	Somewhat Agree	Mostly Agree	Completely Agree
A. My home is kept at a comfortable temperature during the <u>summer</u> .	①	②	③	④	⑤
B. My home is kept at a comfortable temperature during the <u>winter</u> .	①	②	③	④	⑤

Q14 How much do you agree with the following statements?

(Please select one for each row)

	Not at all Agree	Slightly Agree	Somewhat Agree	Mostly Agree	Completely Agree
A. I am willing to accept less comfortable temperatures to save money on energy bills.	①	②	③	④	⑤
B. I consider the environmental impact when determining how much to cool or heat my home.	①	②	③	④	⑤

Financing

We would like to know how you typically approach payments of various home improvements and your general outlook on financing options.

Q15 How did you pay for your most recent **PLANNED** major home improvement project (e.g., kitchen or bath remodel, room addition, window upgrade, insulation project, etc.)? (Please select yes or no for each one)

	Yes	No
A. Cash/savings	①	②
B. Home Equity Line of Credit from a bank or credit union	①	②
C. Personal loan from a bank or credit union	①	②
D. Credit card (and I paid off the balance in full the first month)	①	②
E. Credit card (and I paid off the balance over time)	①	②
F. Financing from a retailer, manufacturer or contractor	①	②
G. Payday loan	①	②
H. Loan or gift from family/friend	①	②
I. PACE loan (e.g., HERO, Ygrene, California FIRST)	①	②
J. N/A - Have not done a planned major home improvement project	① N/A	

Q16 How did you pay for your most recent EMERGENCY home repair (e.g., plumbing emergency, leaking roof, broken water heater or HVAC, etc.)? (Please select yes or no for each one)

	Yes	No
A. Cash/savings	①	②
B. Home Equity Line of Credit from a bank or credit union	①	②
C. Personal loan from a bank or credit union	①	②
D. Credit card (and I paid off the balance in full the first month)	①	②
E. Credit card (and I paid off the balance over time)	①	②
F. Financing from a retailer, manufacturer or contractor	①	②
G. Payday loan	①	②
H. Loan or gift from family/friend	①	②
I. PACE loan (e.g., HERO, Ygrene, California FIRST)	①	②
J. N/A - Have not done an emergency home repair	① N/A	

Q17 If you did not have the cash available to do a desired (non-emergency) home improvement project, but had the option to finance that project, which of the following would you do? (Please select one)

- ① Complete the project using financing
- ② Delay the project until I could pay cash

Q18 How much do you agree with the following statements?
(Please select one for each row)

	Not at all Agree	Slightly Agree	Somewhat Agree	Mostly Agree	Completely Agree
A. I am more likely to consider a large purchase if I know there is financing available to help me pay for it.	①	②	③	④	⑤
B. I choose products or services with fewer features or benefits if doing so means I don't have to take out a loan/use credit.	①	②	③	④	⑤
C. I have experienced difficulty accessing credit or financing.	①	②	③	④	⑤

Q19 When considering a loan, how important is/are each of the following items?
(Please select one for each row)

	Not at all Important	Slightly Important	Somewhat Important	Very Important	Extremely Important
A. Interest rate	①	②	③	④	⑤
B. Loan term (number of months or years)	①	②	③	④	⑤
C. Monthly payment	①	②	③	④	⑤
D. Total cost over the loan term	①	②	③	④	⑤

Q20 Do you have at least one credit card?

① Yes

② No

→ **Q20A** Have you carried a balance on your credit card at least once in the last year?

① Yes

② No

Q21 Who in your household is primarily responsible for the following decisions? (Please select one for each row)

	I decide by myself	I defer to my spouse/partner	I jointly decide with spouse/partner	I jointly decide with the entire family	None of these
A. Managing household finances	①	②	③	④	⑤
B. Buying expensive items for the home (e.g., furniture, appliances, electronics)	①	②	③	④	⑤
C. Making home renovations/ improvements	①	②	③	④	⑤

Home Characteristics

Please tell us about your home and your energy consumption.

Q22 How did you cool your home last summer? (Please select one for each row)

	Yes	No
A. Central air conditioning	①	②
B. Window unit air conditioner(s)	①	②
C. Portable room air conditioner(s)	①	②
D. Swamp cooler(s)/evaporative cooling	①	②
E. Whole house fan	①	②
F. Ceiling fan(s)/box fan(s)	①	②
G. Open the windows	①	②
H. Close shades during the day	①	②
I. Other, please specify: _____	①	②

Q23 What is the approximate square footage of your home?

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Number of square feet

Q24 Does your home have a solar electric system?

① Yes

② No

Q25 About how much was your HIGHEST monthly PG&E bill in SUMMER/FALL 2015?

\$

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Q26 About how much was your **LOWEST** monthly PG&E bill in **SPRING 2016**?

\$

Q27 In what year was your home built?

year

Q28 How many years have you lived in your home?

number of years

Q29 How many more years do you expect to live in your home?

number of years

Demographics

Please tell us about yourself. Correct and complete information in this section is important to help us understand the answers provided in other sections. All information will be kept strictly confidential and results will be combined so individuals cannot be personally identified.

Q30 What is your sex?

- ① Male
- ② Female

Q31 In what year were you born?

year

Q32 Are you of Hispanic, Latino, or Spanish origin?

- ① Yes
- ② No ⇒ please skip to Q33
- ③ Other, Specify: _____ ⇒ please skip to Q33

→ Q32A In general, what language do you prefer to perform each of the following tasks? (Please mark one choice for each row)

	English only	More English than Spanish	English and Spanish Equally	More Spanish than English	Spanish only	Another Language
A. Reading and writing	①	②	③	④	⑤	⑥
B. Speaking in the home	①	②	③	④	⑤	⑥
C. Speaking with friends	①	②	③	④	⑤	⑥
D. Thinking	①	②	③	④	⑤	⑥

Q33 What is your race? (Please select all that apply)

- ① White
- ② Black or African American
- ③ American Indian or Alaskan Native
- ④ Asian
- ⑤ Native Hawaiian or Other Pacific Islander
- ⑥ Other, please specify: _____

Q34 What best describes you?

- ① I was born in another country and immigrated to the U.S. at age 13 or older
- ② I was born in another country and immigrated to the U.S. before the age of 13
- ③ I was born in the U.S. but at least one of my parents was foreign-born
- ④ I was born in the U.S. and both of my parents were born in U.S.
- ⑤ Other, *please specify*: _____
- ⑥ Don't know

Q35 What is the highest degree or level of schooling you have completed? (Please select only one)

- ① High school or less – no diploma
- ② High school diploma or GED
- ③ Some college, no degree
- ④ Technical degree or certificate
- ⑤ Associate's degree
- ⑥ Bachelor's degree
- ⑦ Graduate degree (e.g., MS, MBA, JD, PhD)

Q36 Are you married or in a domestic partnership?

- ① Yes
- ② No

Q37 For each group below, please indicate the number of people (including yourself) who live in your household more than 50% of the year.

0-4 year olds	<input type="text"/>
5-17 year olds	<input type="text"/>
18-64 year olds	<input type="text"/>
65 years or older	<input type="text"/>

Q38 How many different generations of individuals (including yourself) live in your home more than 50% of the year?

- ① 1
- ② 2
- ③ 3 or more

Q39 Do you or someone in your household work in any of the following industries?

(Please select yes or no for each one)

	Yes	No
A. Construction or trades	①	②
B. Banking or finance	①	②
C. Energy or utilities	①	②

Q40 What was your total gross family income from all sources (before taxes, deductions, etc.) in 2015?

- ① Less than \$10,000
- ② \$10,000 to \$14,999
- ③ \$15,000 to \$24,999
- ④ \$25,000 to \$34,999
- ⑤ \$35,000 to \$49,999
- ⑥ \$50,000 to \$74,999
- ⑦ \$75,000 to \$99,999
- ⑧ \$100,000 to \$149,999
- ⑨ \$150,000 to \$199,999
- ⑩ \$200,000 or more
- ⑪ Prefer not to state

Q41 In general, how liberal or conservative are you in the following areas? (Please select one for each row)

	Very Liberal	Liberal	Slightly Liberal	Moderate/ middle of the road	Slightly Conservative	Conservative	Very Conservative	None of these	Don't know
A. Social issues	①	②	③	④	⑤	⑥	⑦	⑧	⑨
B. Fiscal/ Economic issues	①	②	③	④	⑤	⑥	⑦	⑧	⑨
C. Overall	①	②	③	④	⑤	⑥	⑦	⑧	⑨

Q42 Are you a member of an environmental organization?

- ① Yes, please specify: _____
- ② No

Additional Comments

Thank you for taking the time to complete this survey!

Your answers will help us plan future educational material related to home improvements in your area.

If you have any additional thoughts about the survey, please share them here.

Please use the postage-paid envelope to return your survey.

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Appendix B – Data Subgroups

We developed various subgroups for secondary analysis as part of this study. The first grouping allowed us to compare Hispanic and non-Hispanic respondents. Although the survey targeted respondents of Hispanic, Latino or Spanish origin,⁹ 19% of respondents said they were non-Hispanic. Thus we ended up with enough sample in both the Hispanic (N=488) and Non-Hispanic (N=132) groups to make robust comparisons.

The second grouping created was for U.S.-born versus foreign-born Hispanics. In order to test whether any differences observed between Hispanics and non-Hispanics was fully attributable to differences in birth origin we analyzed some data looking only at Hispanics and differentiating by birth origin or nativity. Those stating that they were born outside the U.S. were grouped into the “foreign” born category (N=180) and those born in the U.S. with one or two parents also U.S. born were grouped into the U.S. born category (N=388).

The third grouping joined together respondents who reported that had considered a home improvement project but who had not gone forward with it due to project costs generally, not having enough money, or lack of affordability. We were then able to compare the cost-challenged group with those who did not find money a barrier to taking action.

⁹ 609 respondents answered the question about Hispanic, Latino or Spanish origin (those who answered yes are referred to as “Hispanic” in this report). An additional 11 respondents were assigned “Hispanic” status based on open responses.