



# Comparing Google Consumer Surveys to Existing Probability and Non-Probability Based Internet Surveys

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## Abstract

This study compares the responses of a probability based Internet panel, a non-probability based Internet panel and Google Consumer Surveys against several media consumption and health benchmarks. The Consumer Surveys results were found to be more accurate than both the probability and non-probability based Internet panels in three separate measures: average absolute error (distance from the benchmark), largest absolute error, and percent of responses within 3.5 percentage points of the benchmark. These results suggest that despite differences in survey methodology, Consumer Surveys can be used in place of more traditional Internet based panels without sacrificing accuracy.

This is an updated version of the second iteration of this whitepaper. You can see the previous version at [http://www.google.com/insights/consumersurveys/static/consumer\\_surveys\\_whitepaper\\_v2.pdf](http://www.google.com/insights/consumersurveys/static/consumer_surveys_whitepaper_v2.pdf)

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## Introduction

Data collection for survey research has evolved several times over the history of the field, from face-to-face interviews and paper based surveying initially, to telephone based surveying starting in the 1970s to Internet-based surveying in the last 10 years. Three factors appear to have played a role in these transitions: data quality, data collection cost and data timeliness.

The Internet has the potential to collect data faster, with similar data quality and less cost. Chang and Krosnick (2009) compared random digit dialing (RDD), a probability based Internet survey (where respondents are chosen to be representative of the population) and a non-probability based Internet survey (where no effort is made to ensure the sample is representative) over the course of the 2000 presidential election. They found the probability based Internet survey produced results that were more closely aligned with actual voting behavior than RDD and non-probability based surveying.

Technology has changed the ways people connect to one another and the way that researchers can access respondents. In 1998 96% of US households had a landline, making almost every household available to RDD polls (Wall Street Journal, 2013). In 2014 only 56% of households had a landline. In the same timeframe, Internet usage went from 36% of US adults to 87% (Pew, 2014). While it is now easier to find a representative sample of users on the Internet, there continue to be challenges with Internet surveys. Internet users tend to be younger, more educated, and have higher incomes (Pew, 2014). For many types of surveys, the trade-off between acquiring a perfectly representative sample and acquiring a closely representative sample quickly and inexpensively has led many commercial and academic institutions to favor Internet based surveys.

In this paper, we introduce Google Consumer Surveys, a new method for performing probability-based Internet surveying which produces timely and cost-effective results while maintaining much of the accuracy of pre-existing surveying techniques. Section one provides an overview of the product, including survey sampling, data collection and post-stratification weighting. Section two compares the results obtained from Consumer Surveys to well known baselines and results obtained from other commercial Internet based surveying techniques. Section three provides a summary of the system along with its limitations.

## Section I: Google Consumer Surveys Overview

### Product summary

Google Consumer Surveys attempts to address many of the issues currently plaguing the research industry, namely - how do we move from probability based approaches to sample collection (through RDD or other probability based methodologies) to an online based approach without significantly decreasing the representativeness of the sample? How do we improve online collection methods so that we don't have professional panelists contaminating our sample? How do we increase participation rates and respondent happiness? How do we find niche populations at reasonable expense? Can we balance the tradeoff between cost and quality?

The core of Consumer Surveys is a "surveywall." A surveywall is similar to the paywalls used by publishers to gate access to premium content but rather than requiring payment or subscription, visitors can instead choose to answer a few questions for access. By reducing the burden to just a few clicks, we increase the response rate of the survey. In conducted trials, the average response rate<sup>1</sup> was 23.1% compared to the latest industry response rates of less than 1% for most Internet intercept surveys (Lavrakas, 2010), 7-14% for telephone surveys (Pew, 2011. Pew, 2012) and 15% for Internet panels (Gallup, 2012).

Consumer Surveys involves three different groups of users: researchers, publishers, and consumers. Researchers create the surveys and pay to have consumers answer them. Consumers encounter these survey questions on publisher websites and answer questions in order to obtain access to the publisher content. Publishers sign up for Consumer Surveys and are paid by Google to have surveys delivered to their site. Thus, Consumer Surveys provides a new way for researchers to perform Internet surveys, for publishers to monetize their content and for consumers to support publishers.

Google Consumer Surveys also maintains a mobile application for Android devices, Google Opinion Rewards (GOR), that can be downloaded by Android users. As of June 2015, more than 2 million users have downloaded and are actively using the application. The incentive model for Google Opinion Rewards is slightly different but serves the same purpose. Google matches surveys to users and sends the user a notification when we have a match. The user answers the survey and in return gets Google Play credit to spend in the Google Play Store. By incentivizing users with Play credits we give content creators an alternative mechanism to accept payment for the game, music, book or movie they create.

### Data collection

With Consumer Surveys, researchers create and run surveys of up to 10 questions. We've found that by limiting the number of questions and question types, we can improve response rates and respondent happiness and increase the data quality. Questions can be of different forms, including multiple choice, image choice, Likert rating scale (5, 7 or 11 points) or open-ended numeric or textual fields, as well as several others.

Questions can be specified to be screening questions (screeners), meaning that only users that answer in specified ways continue to the next question(s). The completion rate for surveys with screeners averages 18.43% but trial participants have expressed that the value of the screening question outweighs the increased non-response.

Unlike traditional surveys which explicitly ask respondents for demographic and location information, Consumer Surveys infers approximate demographic and location information using the respondent's IP address<sup>2</sup> and DoubleClick cookie<sup>3</sup>. The respondent's nearest city can be determined from their IP address.

<sup>1</sup> Using Princeton Survey Research Associates International (PSRAI) methodology.

<sup>2</sup> A number assigned to a device connected to the internet.

<sup>3</sup> An advertising cookie used on AdSense partner sites and certain Google services to help advertisers and publishers serve and manage ads across the web.

Income and urban density can be computed by mapping the location to census tracts and using the census data to infer income and urban density. Gender and age group<sup>4</sup> can be inferred from the types of pages the respondent has previously visited in the Google Display Network using the DoubleClick cookie.<sup>5</sup> This information is used to ensure each survey receives a representative sample and to enable survey researchers to see how sub-populations answered questions. Inferring this demographic data enables Consumer Surveys researchers to ask fewer questions in a survey, which in turn increases response rates.

Google Opinion Rewards (GOR) gives researchers additional targeting capabilities like geo-location and new types of questions formats, like audio and video stimulus or asking users to take pictures using their phone. When a user sets up their account with Google Opinion Rewards, we ask them a set of demographic questions which are used to provide the sub population splits for GOR targeted surveys.

### Sampling

Probability based Internet survey platforms typically recruit respondents via telephone using RDD telephone sampling techniques, but then require that panel members answer surveys online. By contrast, Consumer Surveys makes use of the inferred demographic and location information to employ stratified sampling. The target population for Internet access among the U.S. population of adults is obtained from the most recent Current Population Survey (CPS) Internet use supplement (October 2010) and is formed from the joint distribution of age group, gender and location. Since this inferred demographic and location information can be determined in real time, allocation of a respondent to a survey is also done in real time, enabling a more optimal allocation of respondents across survey questions. This reduces the size of the weights used in post-stratification weighting which in turn reduces the variance introduced by weighting. Consumer Surveys gives researchers the ability to target specific sub-populations through two methods: demographic targeting and screening (described in Data Collection). Demographic targeting enables researchers to target a survey to a specific demographic sub-population (age, gender or location).

Sampling over the Google Opinion Rewards (GOR) mobile panel is demographically balanced in a similar fashion to the Web surveys. However, as GOR users specify their demographic information through the app, the sampling scheme balances the sample for each survey with respect to users' declared demographics rather than inferring them through location.

### Post-stratification weighting

Consumer Surveys uses post-stratification weighting to compensate for sample deficiencies. Although Consumer Surveys attempts to build an optimal allocation of respondents to each question over the life of the survey, this is not always possible in practice due to additional constraints such as completing the survey in a timely manner, publisher inventory at the time, and competition with other surveys. Thus, post-stratification weighting is used to reduce this sampling bias. The same CPS Internet target population used in sampling is also used in weighting. To reweight to this population, a simple cell weighting method is used, where cells are formed from a combination of age group, gender and location. The particular combination used for reweighting is a function of the number of respondents for the question and if the population is targeted (e.g. it is not useful to reweight by gender for a survey targeting males). The possible weighting options, ordered by priority, include: (age, gender, state), (age, gender, region), (age, state), (age, region), (age, gender), (age), (region), (gender).<sup>6</sup> The weighting option is automatically chosen for a particular view and is shown as part of the report in Consumer Surveys.

<sup>4</sup> Age groups supported: 18-24, 25-34, 35-44, 45-54, 55-64, and 65+.


<sup>5</sup> See the privacy section for details.

<sup>6</sup> Google Consumer Surveys divides the United States into four regions, West (CA, AK, WA, OR, HI, ID, MT, WY, NV, UT, CO, AZ, NM), Midwest (ND, SD, NE, KS, MO, IA, MN, WI, MI, IL, IN, OH), South (TX, OK, AR, LA, KY, TN, MS, AL, FL, GA, SC, NC, VA, WV, MD, DC, DE) and Northeast (PA, NY, NJ, ME, VT, NH, MA, RI, CT).

Preview of post-surveywall content.

**Fair Use Digital Circulation Strategy Information Overload**  
*The Work of Art in the Age of Mechanical Reproduction*  
Matthew Dodd from the January 16, 2013 issue

Jurgen Habermas R&D Android cops beat The Weekender mathewi Tim Carmody attracting young readers tweets, collaboration tags the medium is the message blog plagiarism horse-race coverage advertising the other longer Book Review. ...



Privacy put the paper to bed Fuego news.me photo source: proimoz/flickr

Please complete the following survey to access this premium content.

Question 1 of 3 or fewer:  
Have you bought Girl Scout Cookies this year?

Yes

Not yet, but I plan to

No, I don't plan to

OR

[Show me a different question](#)

[Skip survey](#)

Google [INFO](#) [PRIVACY](#)

Google Consumer Surveys surveywall.

Redacted post-surveywall content.

Figure 1. An example Consumer Surveys surveywall on www.limaohio.com. Once the user has answered this question, they can continue reading the article.

## Section II: Comparing Google Consumer Surveys to Existing Internet and Telephone Surveys

### Method

#### Respondents

Two survey research firms were hired to administer an identical questionnaire, with one performing a probability based Internet survey and the other a non-probability based Internet survey. Both are well known for administering such surveys and each was asked to provide “1,000-2,000 responses for each question from a representative sample of American adults 18 years and older, residing in the United States.”

Consumer Surveys respondents were administered the same questionnaire. This process was repeated thirteen times for Consumer Surveys over the course of eight months to determine the variability of the responses. Each of the Consumer Surveys attempted to represent the U.S. Internet population as determined by the CPS Internet Supplement. The probability sample Internet survey was conducted with members of a panel recruited via RDD methods. Respondents that wanted to participate but did not have a computer or Internet connection were provided with one at no cost. The respondents were a subset of the individuals on the panel and they completed the survey via the Internet. The non-probability sample Internet survey recruited a stratified random sample of respondents via email. Consumer Surveys employed a surveywall on partner publisher sites and blocked access to the content of the site until the user either paid for the content or answered one question from the survey.

#### Measures

Three questions measuring media consumption were asked in the same questionnaire administered to the probability based panel and the non-probability based panel. The same questions were also asked to the Consumer Surveys respondents; however, questions were asked one at a time and each respondent did not necessarily answer more than one question. Primary demographics (age, gender, income, race, education and location) were captured for each of the respondents in the panel surveys either via the questionnaire or at the time respondents signed up for the panel. Consumer Surveys utilized the users’ DoubleClick cookies to infer age and gender. Approximate location was determined using the IP address of the respondent. Income and urban density were computed by mapping the location to census tracts and using the census data to infer income and urban density (for details, see Data Collection in Section I).

#### Benchmarks

Three media benchmarks were measured in a large (200,000 respondent) semi-annual RDD telephone survey conducted by a respected research provider. The benchmarks measured Video on Demand (VoD), Digital Video Recorder (DVR) and satellite dish usage in American households. Four health benchmarks were also measured against responses drawn from the Consumer Surveys respondents. Large government surveys from the CDC with response rates of over 80% were used to obtain health benchmarks for smoking, asthma, disability and car accident incidence rates.

#### Weighting

To reduce the effects of non-response and non-coverage bias or under- and over-sampling resulting from the study-specific sample, post-stratification weighting was done on the responses from each of the methodologies. The non-probability panel data was weighted to reflect the latest Census including age, gender, household income, and region. The probability based panel and Consumer Surveys respondents were weighted by the most recent data from the Current Population Survey (CPS) Internet Supplement, including age, gender and geography.

#### Analysis

### Accuracy measure

We considered the media and health benchmarks to be the gold standard and used those to determine the error of the various survey platforms by computing the deviations between the benchmarks and the other survey methodologies. For each survey, the average absolute error was computed for each question and the survey as a whole as well as the maximum of the absolute error and the percent of responses within 3.5 percentage points of the benchmarks (Yeager, Krosnick, Chang et al., 2009). The above analyses were first conducted with post-stratification weights on the panel data and the Consumer Surveys data and then repeated without post-stratification weights on the Consumer Surveys data.

### Variation between survey platforms

Comparisons of variation between samples on each platform were limited due to the number of surveys run using the probability and non-probability based panels. However, the goal of this study was to compare the differences between platforms so most of the analysis focuses on the differences between the average Consumer Surveys sample and the samples provided by the other platforms. The benchmark and media consumption based surveys were run five times in a six month period to compare the variation of responses across surveys and to measure how the publisher website mix affected the validation metrics. Consumer Surveys were targeted so that some attempted to get a representative sample of the U.S. Internet population while others only asked respondents of a given publisher site. Using this methodology we could test the bias introduced by each publisher independently. Subsequent studies will focus on reducing the bias introduced by individual content providers.

## Results

### Accuracy across benchmarks

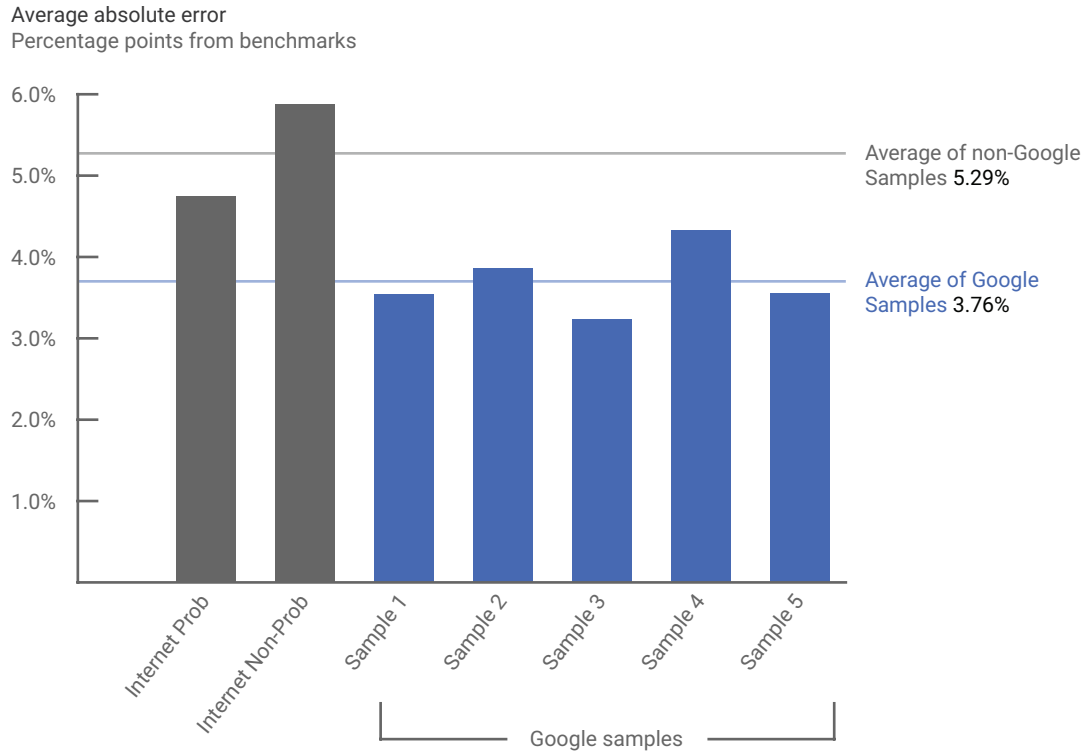
The average absolute error (the absolute difference between the percentage of the population that choose the answer and the benchmark) was measured for each survey platform (including Consumer Surveys) using a seven question validation survey (see Table 2).

#### Raw results

We were only able to capture raw results and weighted results from the Google Consumer Surveys platform. Both panel results came back weighted, without the raw counts. In the media consumption based comparisons the raw results were less accurate than the weighted results (average absolute errors of 3.42% weighted vs. 3.88% raw). The raw results of health benchmarks were slightly more accurate, though not significantly more accurate (average absolute errors of 4.14% weighted vs. 4.08% raw)

#### Weighted results

After post-stratification of the Consumer Surveys results, accuracy for the media benchmark was best (average absolute error 3.42%), and slightly less accurate for the government health survey (average absolute error 4.14%). The probability sample Internet survey and the non-probability Internet survey were both marginally less accurate than the Consumer Surveys (4.70% and 5.87% respectively). As expected, post-stratification increased the average accuracy of the Consumer Surveys. The average absolute error for the non-Google samples was 5.29% across all benchmarks, while the Google samples averaged 3.82%.



**Figure 2.** Average absolute error over the 13 trials conducted on Consumer Surveys compared with single trials from the probability based and non-probability based Internet panels.

### Other accuracy metrics

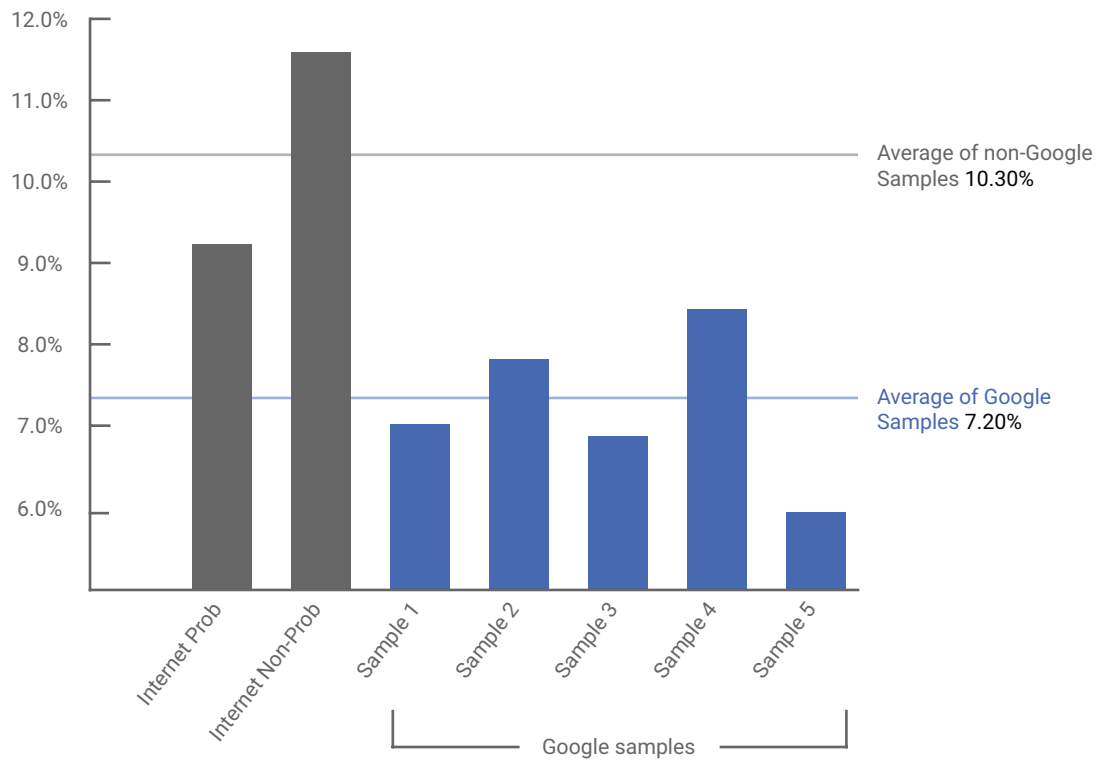
#### Largest absolute error

The largest absolute error is another measure of accuracy, identifying the largest spread from the health and media benchmarks to each of the survey platforms. Measures without post-stratification weighting were less accurate based on this metric (11.70% for unweighted Consumer Surveys vs 8.40% for weighted). After post-stratification both the probability based sample and the non-probability based survey had larger absolute error when compared to Consumer Surveys' 8.40% (vs 9.20% and 11.40% respectively). The average of the largest absolute error measures across all benchmarks was 10.3% for the non-Google samples while the Google samples average 7.46%.



### Largest absolute error

Percentage points from benchmarks

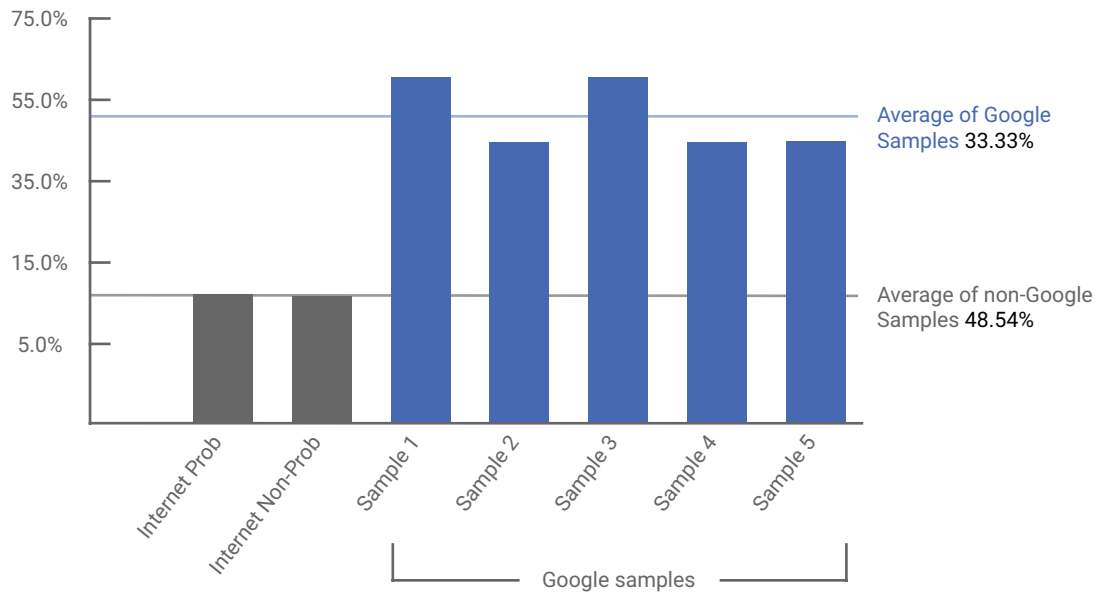


**Figure 3.** Largest absolute error over the five trials conducted on Consumer Surveys compared with single trials from the probability based and non-probability based Internet panels.

### Percent of results within 3.5 percentage points

The final measure of accuracy used is percentage of measurements within 3.5 absolute percentage points of the benchmarks. Post-stratification weighted Consumer Surveys data averaged 49.45% of results within 3.5 percentage points while the unweighted Consumer Surveys data averaged 42.86% of results within 3.5 percentage points. Both the probability based sample and the non-probability based Internet survey had 33.33% of results within 3.5 percentage points.

Percent within 3.5 absolute percentage points



**Figure 4.** Percent of responses within 3.5 absolute percentage points over the five trials conducted on Consumer Surveys compared with single trials from the probability based and non-probability based Internet panels.

## Section III: Conclusions and Limitations

### Conclusions

Google Consumer Surveys provides both a new way to perform Internet surveys and a new method for publishers to monetize their content. Since Consumer Surveys run directly within publisher sites, the respondents may be more representative than respondents of more traditional internet surveys.

Response rates for Google Consumer Surveys are higher than telephone surveys and standard Internet panels, and are much higher compared to many Internet intercept surveys. This higher response rate is due, in part, to the short survey length of Consumer Surveys and the inferred demographic data.

Accuracy of Consumer Surveys is better than both the probability and non-probability based Internet panels on three separate measures: average absolute error (distance from the benchmark), largest absolute error, and percent of responses within 3.5 percentage points of the benchmarks. These results suggest that despite differences in survey methodology, Google Consumer Surveys can be used in place of more traditional Internet-based panels without sacrificing accuracy.

### Limitations

Since Google Consumer Surveys only allows up to ten questions per survey, survey designs that depend on lengthy questionnaires are not possible. Also, bias can be introduced into surveys attempting to represent the U.S. population as Internet penetration in America is only 87%. Internet users tend to be younger, more educated, and have higher incomes than non-users. Furthermore Google Consumer Surveys are served on our publisher network which, while large, does not fully encompass the breadth of Internet content available and therefore represents a sample of a broad set of websites rather than of the Web as a whole. Our initial study focused on two types of benchmarks (media usage and health) derived from large population surveys. We believe that these benchmarks represent the U.S. population, but their reach is limited in terms of the diversity of the subject matter. It is possible that Google Consumer Surveys has inherent bias in other areas and the researcher should be aware of those potential limitations. Finally, because of the way Consumer Surveys are presented to potential respondents (a format that protects premium content and prevents the user from reading the content) some types of questions may be regarded as too sensitive or suspicious. For example, asking a user about their bank account or credit card usage may appear as an advance from an untrustworthy advertiser or website. Consumer Surveys attempts to mitigate these issues by branding the survey as “powered by Google” and providing quick access to more information about how and why the data is collected, but some bias may exist for these types of questions.

## Acknowledgements

The authors would like to thank the entire Consumer Surveys team for their effort in making this product, Art Owen<sup>7</sup> for his advice on statistical methods and for his feedback on this manuscript, Mike Murakami for his advice on survey methodology and for his feedback on this manuscript, and Adam Baker for his work on typesetting this manuscript.

## Privacy

Privacy is very important to Google. Users always have the option to pass on a question and have the ability to opt-out of the DoubleClick cookie completely. IP location is approximate to the nearest city. The results of Google Consumer Surveys are only available to a survey researcher in aggregate form across many users and are never resold. For additional details, please see the Ads section of the Google Privacy Center (<http://www.google.com/privacy/ads>).

<sup>7</sup> Art Owen is a professor of Statistics at Stanford University. His contributions to this project were as a consultant for Google and not part of his Stanford responsibilities.

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## Appendix: Data

**Table 1.** Survey sample descriptions.

Survey	Invitations <sup>†</sup>	Responses	PSRAI Response Rate	Cost	Time to results	Average Absolute Error	Field Dates	Prob- ability Sample	Quota Used	Incentives Offered
<b>Non-Google Surveys</b>										
Internet Probability	1,995	1,165	2.6%	\$8,100.00	8 days	4.70%	Jul 20–26, 2011	Y	N	Points; free Internet access; sweepstakes
Internet Non- probability	10,085	2,017	N/A	\$6,900.00	23 days	5.87%	Aug 16– 19, 2011	N	Y	Points; sweepstakes
<b>Average</b>	<b>6,040</b>	<b>1,591</b>	<b>0.026</b>	<b>\$7,500.00</b>	<b>15.5 days</b>	<b>5.29%</b>				
<b>Google Consumer Surveys</b>										
Sample 1	7,712	1,916	25.23%	\$1,340.90	1 day	3.56%	Nov 6–7, 2011	-	N	Access to online content
Sample 2	29,320	3,001	10.66%	\$2,100.80	1 day	3.97%	Dec 14–15, 2011	-	N	Access to online content
Sample 3	40,763	3,010	7.78%	\$2,106.90	1 day	3.09%	Jan 10–12, 2012	-	N	Access to online content
Sample 4	20,191	3,262	16.46%	\$2,283.50	12 hours	4.49%	Jan 23, 2012	-	N	Access to online content
Sample 5	20,805	2,556	23.63%	\$1,789.16	4 hours	3.71%	Jan 30, 2012	-	N	Access to online content
Sample 6	36,765	2,500	6.80%	\$1,750.00	1 day	5.24%	Feb 17, 2012	-	N	Access to online content
Sample 7	24,038	2,500	10.40%	\$1,750.00	1 day	5.04%	Mar 19, 2012	-	N	Access to online content
Sample 8	5,190	1,500	28.90%	\$1,500.00	1 day	3.86%	May 17, 2012	-	N	Access to online content
Sample 9	5,792	1,500	25.90%	\$1,500.00	1 day	4.43%	May30, 2012	-	N	Access to online content
Sample 10	6,017	1,500	24.93%	\$1,500.00	1 day	4.37%	Jun 12, 2012	-	N	Access to online content
Sample 11	3,348	1,500	44.80%	\$1,500.00	1 day	3.11%	Jun 26, 2012	-	N	Access to online content
Sample 12	3,304	1,500	45.40%	\$1,500.00	1 day	2.76%	Jul 11, 2012	-	N	Access to online content
Sample 13	7,036	1,500	21.32%	\$1,500.00	1 day	3.01%	Jul 25, 2012	-	N	Access to online content
<b>Average</b>	<b>16,175</b>	<b>2,134</b>	<b>22.48%</b>	<b>\$1,493.94</b>	<b>1 day</b>	<b>3.76%</b>				

<sup>†</sup> For Consumer Surveys samples, an impression of the survey is equivalent to an invitation.

**Table 2.** *Benchmark measurements.*

Type	Question	Yes	No	Source
Media	Does your household have a satellite dish?	28.7%	71.3%	Scarborough RDD telephone Poll (Scarborough 1H 2011, 208,274 respondents)
Media	Have you watched any programs or events on Video-On-Demand in the past 12 months?	20.6%	79.4%	Scarborough RDD telephone Poll (Scarborough 1H 2011, 208,274 respondents)
Media	Does your household own or use a digital video recorder (DVR)?	43.1%	56.9%	Scarborough RDD telephone Poll (Scarborough 1H 2011, 208,274 respondents)
Health	Have you smoked 100 or more cigarettes in your lifetime and now smoke every day or occasionally?	20.6%	79.4%	<a href="http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm#national">http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm#national</a>
Health	Have you been diagnosed with asthma at any point in your lifetime?	13.8%	86.2%	<a href="http://apps.nccd.cdc.gov/brfss/list.asp?cat=AS&amp;yr=2010&amp;qkey=4417&amp;state=All">http://apps.nccd.cdc.gov/brfss/list.asp?cat=AS&amp;yr=2010&amp;qkey=4417&amp;state=All</a>
Health	In the past year have you been in a car accident while driving that involved property damage, an injury or fatality?	4.0%	96.0%	<a href="http://www.distraction.gov/research/PDF-Files/Distracted-Driving-2009.pdf">http://www.distraction.gov/research/PDF-Files/Distracted-Driving-2009.pdf</a>
Health	Because of a physical or mental health condition do you have difficulty with daily life activities, walking, or working around the house or at a job?	20.8%	79.2%	<a href="http://apps.nccd.cdc.gov/brfss/list.asp?cat=DL&amp;yr=2010&amp;qkey=4000&amp;state=All">http://apps.nccd.cdc.gov/brfss/list.asp?cat=DL&amp;yr=2010&amp;qkey=4000&amp;state=All</a>

**Table 3. Overall accuracy metrics.**

Evaluative Criteria	Non-Google Surveys			Google Consumer Surveys					
	Internet Probability	Internet Non-probability	Average	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
<b>Average absolute error</b>									
Media Benchmarks	4.70%	5.87%	5.29%	3.40%	4.73%	1.77%	3.27%	3.07%	3.50%
<i>Without Post-Stratification</i>	-	-	-	5.67%	5.07%	3.10%	4.97%	4.50%	3.87%
Health Benchmarks	-	-	-	3.68%	3.40%	4.08%	5.63%	4.20%	6.55%
<i>Without Post-Stratification</i>	-	-	-	5.20%	4.03%	3.95%	4.80%	4.60%	5.28%
Combined Average Absolute Error	4.70%	5.87%	5.29%	3.56%	3.97%	3.09%	4.49%	3.71%	5.24%
<i>Without Post-Stratification</i>	-	-	-	5.40%	4.47%	3.59%	4.89%	3.99%	4.67%
<b>Largest absolute error</b>									
All	9.20%	11.40%	10.30%	7.00%	7.70%	7.00%	8.40%	5.90%	7.60%
<i>Without Post-Stratification</i>	-	-	-	11.70%	10.30%	7.20%	7.40%	8.00%	6.50%
<b>% of answers with 3.5 pp of benchmarks</b>									
All	33.30%	33.30%	33.30%	57.14%	42.86%	57.14%	42.86%	42.86%	14.29%
<i>All Without Post-Stratification</i>	-	-	-	14.29%	42.86%	42.86%	28.57%	42.86%	28.57%



## Google Consumer Surveys (continued)

Evaluative Criteria	Sample 7	Sample 8	Sample 9	Sample 10	Sample 11	Sample 12	Sample 13	Average
<b>Average absolute error</b>								
Media Benchmarks	6.03%	3.70%	2.73%	6.03%	1.63%	2.37%	2.23%	3.42%
<i>Without Post-Stratification</i>	4.47%	4.23%	3.70%	4.73%	2.00%	2.13%	2.03%	3.88%
Health Benchmarks	4.28%	3.98%	3.95%	3.13%	4.23%	3.05%	3.60%	4.14%
<i>Without Post-Stratification</i>	4.43%	4.65%	3.13%	3.33%	3.78%	3.15%	2.70%	4.08%
Combined Average Absolute Error	5.03%	3.86%	3.43%	4.37%	3.11%	2.76%	3.01%	3.82%
<i>Without Post-Stratification</i>	4.44%	4.47%	3.37%	3.93%	3.01%	2.71%	2.41%	3.95%
<b>Largest absolute error</b>								
All	7.00%	8.70%	8.20%	7.90%	7.20%	8.20%	6.20%	7.46%
<i>Without Post-Stratification</i>	7.40%	9.60%	5.70%	6.90%	7.70%	6.80%	5.90%	7.78%
<b>% of answers with 3.5 pp of benchmarks</b>								
All	14.29%	57.14%	71.43%	28.57%	71.43%	71.43%	71.43%	49.45%
<i>All Without Post-Stratification</i>	28.57%	42.86%	42.86%	42.86%	71.43%	57.14%	71.43%	42.86%