

The Iowa Child and Family Household Health Survey Methodology

To the Iowa Department of Public Health

Public Policy Center
The University of Iowa

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METHODOLOGY USED FOR THE IOWA CHILD AND FAMILY HOUSEHOLD HEALTH SURVEY:

**A REPORT ON THE 2000, 2005 AND 2010 SURVEYS TO
THE IOWA DEPARTMENT OF PUBLIC HEALTH**

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Introduction

For over a decade, the Public Policy Center at the University of Iowa, along with program partners at the Iowa Department of Public Health and Child Health Specialty Clinics have been collecting population-based information to assess the health and well-being of families with children in Iowa. In 2000, the Iowa Child and Family Household Health Survey (IHHS) was the first population-based data collection effort about the health and well-being of children and families in the state. The study was then conducted again in 2005, and 2010. Almost 9,000 interviews with Iowa families having been conducted in these three studies. This report provides a brief overview and history of the IHHS, and documents the survey design and procedures used in the IHHS. To improve the power to evaluate many topics in the survey, a series of questions called scaled measures are used for some topics in the IHHS. There is a section devoted to explaining these measures in this report.

History

The Iowa Child and Family Household Health Survey project began in 2000 as a response to the need for population-based public health data to: 1) evaluate the health and health care needs of children and families in Iowa; 2) guide planning activities for programs funded through Title V Maternal and Child Health (MCH) Block Grant; and, 3) to develop policy recommendations for improving the health of children and families in the state. Of particular importance was to provide baseline information for the federal Title V MCH program, including provisions for Medical/Health home, health insurance coverage, appropriate mental/behavioral health care, and quality of managed care and primary care for children and youth with special health care needs (CYHSCNs). With each survey, additional priority areas were identified to be included in future studies. A specific focus of all three surveys was to evaluate the Healthy People 2010 goal of eliminating health disparities. Thus all surveys were designed with an oversample of designated racial/ethnic population subgroups at risk for experiencing health disparities.

Initial seed funding for the 2000 IHHS came from the Federal Maternal and Child Health Bureau (MCHB) through their State Systems Development Initiative (SSDI) <http://mchb.hrsa.gov/programs/ssdi/index.html>. After seeing the success of this initial IHHS, the federal Maternal and Child Health Bureau initiated the National Survey of Child Health, a national survey that also includes state-based data of a similar nature. Many reports, research briefs, journal articles and webinars have been produced using this data since its inception. These reports are available at the project website: <http://ppc.uiowa.edu/health/study/iowa-child-and-family-household-health-survey-ihhs>

Survey development process

The original survey instrument was developed through a collaborative process that included team members from the Iowa Department of Public Health Child Health Specialty Clinics, and the University of Iowa Public Policy Center. Input was sought from Iowa Title V MCH agencies, EPSDT stakeholders, health care professionals, state agency representatives including departments of education, human services, and human rights, and other interested groups.

Validated and reliable survey questions were sought to measure those domains that were deemed most important. Survey items in the initial questionnaire were drawn from questionnaires such as the National Survey of American Families¹, the National Health Interview Survey², and the *hawk-i* evaluation survey³. The CAHMI screener⁴ for Children with Special Health Care Needs (CSHCN), was very newly developed, and was included in our survey to gather prevalence data about CSHCN for the state of Iowa.

A core set of items have been included in each of the three surveys including: 1) Children's functional health status including the identification of children with special health care needs; 2) Children's access to and utilization of health care services including: medical care, dental care, behavioral and emotional health care; 3) health insurance coverage of the child and parent; 4) school performance; 5) child care; 6) socialization, and 7) family environment.

Overall domains for the questions in the three surveys are shown in Table 1.

¹ The NSAF public data can be accessed on <http://www.icpsr.umich.edu/icpsrweb/ICPSR/sdatools/studies/4582>

² The NHIS data information is available on <http://www.cdc.gov/nchs/nhis.htm>

³ The Hawk-I Impact on access and health status can be downloaded from University of Iowa's Institutional Repository on http://ir.uiowa.edu/cgi/viewcontent.cgi?article=1036&context=ppc_health

⁴ The CAHMI Quality Measurement tool is available on <http://www.cahmi.org/pages/Home.aspx>

Table 1. Survey domains in the three IHHS

2000	2005	2010
<ul style="list-style-type: none"> • Functional health status • CYSHCN screener • Insurance coverage • Medical care • Dental care • Behavioral/emotional health • Child care • School performance • Socialization and self-esteem of the child • Family environment 	<ul style="list-style-type: none"> • Functional health status • CYSHCN screener • Asthma • Insurance coverage • Medical/preventive care • Prescription medications • Dental care • Behavioral/emotional health • Emergency room use • Early childhood issues • Parental engagement • Child care • Physical activity • Nutrition • Parenting stress • Maternal well-being/depression • Substance use problems • Gambling • Marital satisfaction 	<ul style="list-style-type: none"> • Functional health status • CYSHCN screener • Access to/need for care • Insurance coverage • Prescription medications • Dental care • Behavioral/emotional health • Emergency room use • Medical home-new • Early childhood issues • Parental engagement • Child care • Physical activity • Nutrition • Substance use problems • Social determinants of health-new • Food insecurity-new

Development of each iteration of the IHHS was responsive to environmental factors such as findings of previous surveys, legislative interest and priorities of funding sources. For example, the 2005 survey included an expanded substance use and abuse section in response to a higher than expected reporting of substance issues in 2000. An expanded section on the early childhood needs and development of young Iowans was also included in 2005 because of an added emphasis on early childhood issues at the state level. In 2005 we asked fewer questions specific to children with special health care needs due to a reduction in support. The 2010 survey was revised to provide a more specific measure for the concept of Medical Home. The Early Childhood emphasis was still included, though the questions within the survey were changed and had less emphasis on child care. The 2010 survey utilized a different sampling strategy from the previous two rounds. These differences are discussed in the follow section.

Data collection

Sample design: The 2000 survey utilized a stratified, Random-Digit-Dialed sampling approach to conduct telephone surveys with about 3,200 families in Iowa. The sample was stratified into eight county-based geographic regions with 400 completed calls in each of the eight regions. This allowed regional estimates to be ascertained. As an additional component, racial and ethnic minority families (children who were non-white and/or Hispanic) were oversampled in order to have enough children to make meaningful statements about the health of minority children in the state. To help compensate for the limitations of a telephone-based sampling design, a convenience sample of families with connections to Title V clinics, and who had no land-line telephone participated in in-person interviews.

In 2005, a combination of a Random Digit Dial (RDD) and List-Assisted sampling design was used to complete 3,600 telephone interviews. More emphasis was placed on early childhood issues in this second survey, and extra questions were added regarding substance use and gambling. Prior to the 2005 survey, it was determined that the regional stratification did not result in enough information to make meaningful statements at the regional level, and a decision was made to sample only statewide. Analysis of the 2,000 oversample data highlighted the need to target more specifically population sub-groups at risk for health disparities. Thus, the oversample only targeted children from the two largest racial/ethnic minority subgroups in Iowa, African-American and Hispanic/Latino.

Table 2. Sampling design for each of the IHHS

2000	2005	2010
Stratified Random Digit Dial	Random Digit Dial (RDD) & List-assisted	Address-based sampling (ABS)

In 2010, about 2,600 families were surveyed using an address-based sampling (ABS) approach. As in 2005, children from African-American and Hispanic/Latino households were oversampled. In response to Iowa Department of Public Health needs for baseline data for their new LAUNCH initiative, families in a 5-zip code area of Polk County were also oversampled. The sampling strategy was radically changed for the 2010 survey.

2010 Sampling Strategy Pilot Test

Due to industry-wide concerns about cold-calling telephone numbers leading to decreased coverage due to caller identification and the lack of landlines for many households, the decision was made to perform a pilot study comparing an address-based sampling design with the random-digit dial and targeted phone sample interviews⁵. The address-based sampling (ABS) design used lists of addresses supplied by the US Postal Service to randomly select households in the geographic area. Selected households received a letter and an invitation to either 1) complete a web-based survey, or 2) send back a card with a telephone number and best time to reach the family. The address-based sample contained telephone numbers for 60% of people on the list, so non-respondents with an included telephone number received follow-up telephone calls. The goal of the pilot was to have 300 completed interviews with parents of children under age 18 in two groups: address-based and List Assisted Random Digit Dial. The cost per interview for the ABS sampling was significantly higher than the list-assisted RDD (\$67 ABS vs \$38 RDD). It also took 38 days for the ABS vs 24 days for the RDD sample⁶.

⁵ Link, M., Battaglia, M., Frankel, M., Osborn, L., Mokdad, A. (2008). A comparison of address-based sampling (ABS) versus random-digit dialing (RDD) for general population surveys. *Public Opinion Quarterly*, 72(1), 6-27.

⁶ A Direct Comparison of ABS and Telephone Sampling in a Pilot Study of Children's Health. Mary E. Losch, Ph.D.,¹ Peter Damiano, D.D.S, M.P.H.,² Jean Willard, M.P.H.,² Ki. H. Park, M.A., Anne Bonsall Hoekstra,

Data collected during the pilot test revealed that address-based sampling provided wider population coverage (Table 3). Those who responded to the ABS sample were less likely to list their race as “white”, more likely to have Hispanic ethnicity, had lower incomes, and fewer years of education. Additionally, 6% of those in the ABS design did not have a landline telephone, and therefore would not be eligible for the list assisted RDD design.

Despite these demographic differences, there were very few differences in responses to the survey questions. Table 3 lists several questions asked on the survey. The only statistically significant difference by demographics was related to the need for prescription medication in the last 12 months. Health status, presence of a chronic condition, TV watching, utilization, presence of a primary care provider, unmet medical needs, and preventive visits were not significantly different between the Random Digit Dial and Address Based Sampling groups. All the differences were assessed using Chi-square test.

Another aspect tested in the pilot survey was using self-administered web-based questionnaires, which, if used widely, has the potential to afford significant cost savings. The web-based surveys were offered as an option to those receiving a letter for the ABS sample.

Based on the concerns about RDD sampling, and the increased coverage rates for the ABS group, the ABS design was chosen as the sampling design for the 2010 IHHS. Just under ¼ of respondents completed the online questionnaire, and the remainder completed the survey over the telephone. Coverage rates are shown in Table 1 for various demographic variables, across all three waves of the survey, as well as the pilot data collection.

Table 3: Coverage by race/ethnicity, income, education, & absence of landline.

Race/Ethnicity	2000	2005	2010 ABS			2010 Pilot	
			Web	Phone	Total	RDD	ABS
Hispanic Ethnicity	3%	3%	3%	7%	6.0%	3%	5%
White Race	93%	96%	94%	92%	93%	97%	92%
Household Income \$80,000+	17% (\$75,000+)	36%	37 %	39%	38%	52%	39%
Household Income <\$25,000	19%	6%	7%	11%	10%	6%	11%
≤ HS Education	34%	22%	10%	22%	19%	15%	20%
Absence of Landline	0%	0.30%	29%	7%	12%	0%	6%

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Cooperation rates

Researchers utilizing telephone-based survey techniques have noticed a decline in response rates over the past decade⁷. The cooperation rates over time are shown in Table 4. 2010 IHHS cooperation rates went against the trend and remained high at 80%. Bias related to non-respondents is difficult to measure because very little is known about people who aren't reached by telephone. Table 4 shows a comparison of overall cooperation rates.

Table 4: Overall Cooperation Rates (Eligible households who agreed to participate)

Year	2000	2005	2010*
Cooperation rate	71%	77%	80%
Sampling method	All random digit dial, stratified sample by 8 regions	Targeted list-assisted and Random digit dial	Address-based sampling. Letter, telephone follow up to non-respondents with available telephone numbers
Number of completed interviews, core	3241	3674	2386 (1859 telephone, 527 online)
Number of interviews, oversample	NA	331	133

* Telephone rate only in 2010. Web-based responses to the address-based sampling in 2010 are not included in this table. There is no way to determine the difference between 'refusals' and 'not eligible' for those who were not reached by telephone.

Survey response comparison

Table 5 shows survey question responses in the three waves of the survey and also for the pilot test data. Patterns of response differences were not vastly different, although there was a steady increase in preventive care for children over the past decade. Although coverage across demographic groups appeared to be wider with the address-based sample, there did not appear to be widely distributed biases in collected information.

⁷ Stephen, B., Luke, J., & Cynamon, M. (2006). Telephone coverage and health survey estimates: Evaluating the need for concern about wireless substitution. *American Journal of Public Health*, 96, 926-931.

Table 5: Survey response comparisons

Variable	IHHS 2000	IHHS 2005	IHHS 2010	2010 pilot	
				RDD/ Targeted	ABS
Health Status (Excellent)	63%	60%	63%	67%	65%
Chronic Condition (Yes)	17%	21%	19%	12%	11%
Mean hours of TV/video per day	1.4 hours (TV only)	2.6 hours	2.6 hours	1.5 hours	1.6 hours
Does Child Need/Use More Medical Care than Others? (Yes)	11%	13%	11%	11%	14%
Does Child Have Doctor/Nurse? (Yes)	90%	93%	94%	91%	92%
Any Time the Child Could Not Get Care in the Last 12 Months? (Yes)	3%	2%	3%	2%	2%
Last Preventive Care Visit within 12 Months (Yes)	77%	79%	90%	88%	85%

Weighting of the data in the 2010 IHHS

In order to account for biases related to design and data collection factors, the data used in these studies were weighted to provide a representative sample of children in Iowa. The 2000 and 2005 data were weighted to reflect the population distribution from the 2000 Decennial Census. In 2010, the data were weighted to account for family size and post-stratified to reflect the 2010 child population in Iowa based on 2010 census data.

Weighting first consisted of accounting for biases related to family size (i.e., the sampling design originally biased the sample toward children in smaller families because the chances of being the child chosen for the survey were much higher. A child in a one-child household was twice as likely to be the 'chosen' child as a child in a two child household, etc.). In 2005, additional factors accounted for biases related to having a partially targeted sample as opposed to a totally random sample. Results from the targeted calls were compared with random digit dial data, and both were compared to externally collected data sources. A weight related to the design effect was added to the analysis in order to make statistical testing more accurate. Table 6 shows the range and mean of the weights that were used in the surveys.

Table 6. Weighting Factors in the IHHS

Survey year	2000	2005	2010
Minimum weight	.15	.51	.28
Maximum weight	3.95	5.09	3.84
Mean weight	.6770	.6163	.7629

Detail of Scaled Measures

The IHHS utilizes a number of measures that have been developed for use in other surveys. These scaled measures include a combination of different questions from the survey that are summed together to provide a composite 'score' for a specific issue. All scaled measures in this survey are shortened versions of existing scales and were validated for use in the 2002 National Survey of American Families.⁸ The IHHS primarily used 4 scaled measures, the Child School Engagement Scale, Parent Mental Health Scale, Child Behavioral and Emotional Problems Scale, and the Parenting Stress Scale (Aggravation in Parenting). These measures were developed by the National Survey of American Families project, and reflect the need for brief measures that can be used to identify potential issues within families.

Additionally, the CAHMI Children with Special HealthCare Needs screening tool was used to provide a broad indicator of children with special healthcare needs in Iowa. Finally, IHHS has developed a Medical Home tool to measure whether families were able to access care for children through a medical home. This was a process that was begun in the 2000 survey, but evolved to the measure used in the 2010 questionnaire.

Table 7. Source of scaled items in IHHS

	2000	2005	2010	Source
Child School Engagement Scale	✓	✓	✓	Nat. Survey of Amer. Families
Parent Mental Health Scale	✓	✓	✓	Nat. Survey of Amer. Families
Child Behavioral and Emotional Problems Scale	✓	✓	✓	National Health Interview Survey
Parenting Stress Scale	✓	✓	✓	Nat. Survey of Amer. Families
Children with Special Health Care Needs Screener (CSHCN)	✓	✓	✓	CAHMI screener
Medical Home			✓	American Academy of Pediatrics
Neighborhood Characteristic			✓	Nat. Survey of Children's health

⁸ More detail about these scales on The National Survey of American Families can be found here: http://www.urban.org/UploadedPDF/Methodology_6.pdf

Child School Engagement Scale

The Child School Engagement Scale was used in all three waves of the IHHS, 2000, 2005, and 2010.

These items ask how much the child:

- Cares about doing well in school
- Only works on schoolwork when forced to
- Does just enough schoolwork to get by
- Always does homework

On a four point scale:

- All of the time
- Most of the time
- Some of the time
- None of the time

Questions were asked to parents of children ages 6-17. Point scores were created by summing the responses to form a 16 point scale. Two items were reverse coded before creating the sum of the score. A score with less than 10 points indicated very low school engagement. A score greater than or equal to 15 indicated a high level of school engagement. For the IHHS, scores from 10 to 14 were labeled 'moderate school engagement'.

Parent Mental Health Scale

These questions were asked in all three waves of the survey, however, due to length constraints, in 2005 it was only asked of parents of children ages 5 and under. The questions ask parents how much of the time during the past month they:

- Had been a very nervous person
- Felt calm or peaceful
- Felt downhearted and blue
- Been a happy person
- Felt so down in the dumps that nothing could cheer them up

Response categories included:

- All of the time
- Most of the time
- Some of the time
- None of the time

The 5-item parent mental health scale was designed to measure mental health status, primarily depression, of the parent completing the survey. This scale was adapted for the National Survey of American Families (NSAF) from the Mental Health Inventory 5 (MHI-5) used in the Medical Outcomes Study. Responses were summed and multiplied by five to create a scale with scores ranging from 25 to 100. Higher scores indicated better mental health. Scores of 67 or lower indicated poor mental health, and the cutoff point was established by the NSAF.

Child Behavioral and Emotional Problems Scale

These questions were asked in all three waves of the survey. Parents were asked if each statement were true, sometimes true or never true for their child.

These questions were asked for children in both age groups:

- Doesn't get along with other kids
- Can't concentrate or pay attention for long
- Has been unhappy, sad, or depressed

Children ages 6-11 only:

- Feels worthless or inferior
- Has been nervous, high-strung or tense
- Acts too young for his/her age

Ages 12-17 only:

- Has trouble sleeping
- Lies or cheats
- Does poorly at school work

Questions ask during the past month, if it was:

- Often true
- Sometimes true
- Never true

The Child Behavioral and Emotional Problems Scale was developed for the National Health Interview Survey to measure children's mental health status. These items in this scale were part of the Child Behavior Checklist (CBCL). The Child Behavioral and Emotional Problems Scale asks six questions, tailored for two age groups: 6-11 and 12-17. Responses to these questions are summed to create a score along an 18 point scale. A score less than or equal to 12 indicates high levels of behavioral and emotional problems. A score of 18 indicates few behavioral and emotional problems. In the IHHS, scores in the 13-17 range were labeled as 'moderate' behavioral and emotional problems.

Parenting Stress Scale

These questions were asked in all three waves of the survey. How much of the time during the past month have you:

- Felt your child is much harder to care for than most
- Felt your child does things that really bother you a lot
- Felt you are giving up more of your life to meet your child's needs than you ever expected
- Felt angry with your child

Response categories included:

- All of the time
- Most of the time
- Some of the time
- None of the time



This scale was adapted by the National Survey of American Families (NSAF) from the evaluation of the Job Opportunities and Basic Skills (JOBS) program. The NSAF name for this scale is the Aggravation in Parenting Scale. Although the IHHS used the scale from NSAF in entirety, the IHHS workgroup changed the name to the 'Parenting Stress Scale'. The responses to the four-item scale were summed for a total of 16 points, with higher scores indicating lower parenting stress. Scores less than or equal to 11 indicated high levels of parenting stress; scores equal to 16 indicate low levels of aggravation in parenting. For the IHHS, scores from 12-15 were labeled as 'moderate parenting stress'.

Children with Special Health Care Needs Screener (CSHCN)

These questions were asked in all three waves of the survey. Parents were asked if any of the following applied to their child:

- Child needs or uses medicine prescribed by a doctor
- Child needs or uses more medical care, mental health or educational services than is usual for most children of the same age
- Child is limited or prevented in his or her ability to do the things most children of the same age can do
- Child needs or gets special therapy such as physical, occupational, or speech therapy
- Child has any kind of emotional, developmental, or behavioral problem for which he or she needs or gets treatment or counseling

Children who meet any of the above criteria because of a condition that is expected to last at least 12 months, are considered to be CSHCN (see <http://cahmi.org/ViewDocument.aspx?DocumentID=115>).

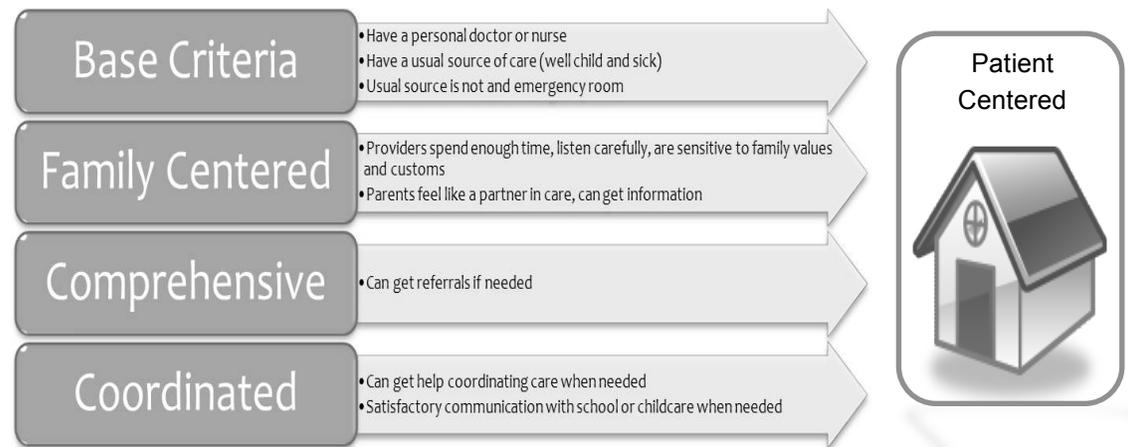
The CSHCN screener was developed by the Child and Adolescent Health Measurement Initiative (CAHMI), a collaborative that was coordinated by the Foundation for Accountability (FAACT). The five item, parent survey-based instrument was designed and developed to meet the federal Maternal and Child Health Bureau definition of Children with Special Health Care Needs. Identification of children is based on having one or more current functional limitations or service use needs resulting from physical, emotional, behavioral, developmental or other health condition. The screener asks for a yes or no answer to the questions, and follows up each yes question asking if this is because of a condition, and if so, if the condition is expected to last at least 12 months.

Medical Home Tool

The patient-centered medical home concept is an effort to provide care to patients that assures ease of access to health care, including extended hours of care, improved communication and care coordination, and team-based approaches to health care⁹. The goal is to increase quality of health care while reducing costs.

The 2010 IHHS included a series of new questions designed to measure the percent of children in the state whose health care is provided through a medical home. In order to qualify as having a medical home for the purposes of this study, children needed to have: 1) a personal doctor or nurse, AND 2) if care was needed, a regular source of both sick and well-child care; children were also required to have adequate referrals, or care coordination, or family-centered care when needed (See Figure 1).

Figure 1. Criteria included in the Patient Centered Medical Home measure in the 2010 IHHS



Neighborhood Characteristics

The neighborhood characteristic measures are an effort to assess respondents' environments such as safe neighborhood, safe communities, and safe schools. These measures are part of the National Survey of Children's Health¹⁰ and the indicators were developed initially by the Maternal and Child Health Bureau. The IHHS used six items to create 3 indicators:

- (1) Children live in supportive neighborhood,
- People in this neighborhood help each other out.
 - We watch out for each other's children in this community.
 - There are people I can count on in this community.
 - If my child were outside playing and got hurt or scared, there are adults nearby who I trust to help my child.

⁹ American Academy of Pediatrics. National Center for Medical Home Implementation. <http://medicalhomeinfo.org/>. Accessed May 2012.

¹⁰ National Survey of Children's Health (NSCH) and the neighborhood characteristic indicators can be seen at <http://childhealthdata.org/browse/survey>.

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- (2) Children live in safe communities, and
 - How often do you feel CHILD is safe in your community or neighborhood?
 - (3) children attend safe schools (asked for parents' with children 6-17 years).
 - How often do you feel CHILD is safe at school?

Impact

Significant effort has gone into the methodological rigor of the IHHS as has been explained in this report. This gives the data credibility and allows users to be comfortable that the information is as accurate as possible for a population-based survey. While difficult to know all of the ways in which the data have been used, and thus the full impact of the IHHSs over the past 15 years, this project has assisted in the long-term planning and evaluation for programs benefitting Iowa's children and families. It has been the source for over 20 reports, briefs and webinars as well as numerous presentations across the state and the nation. This survey has provided data for the comprehensive needs assessment for federal Title V planning purposes, has been a rich source of data for the Early Childhood Iowa initiative, the Maternal, Infant and Early Childhood Home Visiting (MIECHV) program, Iowans Fit for Life initiative, Project LAUNCH, and other state and local programs that assist children and families in Iowa.

Additionally, the information from the IHHS is sought out frequently by users in and outside the state. From the IHHS project website at the UI Public Policy Center, we have been able to identify that there have been over 3000 page views since January 2012 and 1067 report downloads (the UI PPC website has changed so we are not able to track activity prior to this date). The IHHS webpage is consistently one of the top 5 or 6 most active webpages on our site. The IHHS, as has been mentioned, was the primary catalyst for the National Survey of Children's Health and also a key reason Iowa is a major player in the National Network of State and Local Health Surveys: <http://www.statelocalhealthsurveys.net/>.