Kidsights Data: A Technical Guide for Partners

Kidsights Data: A Guide on Preparation, Implementation and Use

This guide provides a comprehensive overview for partners using the Kidsights Measurement Tool to uncover population-level insights into child development. Designed for those at the start of their Kidsights journey, it outlines the process of collecting data, interpreting findings, and sharing results with key audiences like policymakers and community leaders.

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Kidsights Data
Tracking Development from Birth to Five

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Introduction: Why Use Kidsights Data?

Population-level data on child development can help provide insight into how children overall are doing, which groups of children may need additional support, and how large-scale programs influence child development. Kidsights Data is a set of tools, including the online, parent report Kidsights Measurement Tool, that can be used to generate population-level estimates of child development for birth to 59 months and to identify groups of children who may be at risk.

To date, results from Kidsights Data projects have been used to share insight on family and community factors associated with child development, to highlight the need for and benefit of investments in child and family support, and to document the impacts of large-scale investments in universal preschool coverage. More recently, we have begun clarifying how Kidsights Data can provide information on state-level indicators for Title V Maternal and Child Health funds, especially when collected in concert with other questions from the National Survey of Children's Health. As we outline below, framing how Kidsights Data can help inform policies and programs varies by user, and it is an important part of clarifying the value-add for Kidsights Data.

This document is intended for potential partners, new partners beginning their work with the Kidsights Data team, or those curious about generating population-level data on the development of children from birth to five.

BRIEF HISTORY OF KIDSIGHTS DATA

The Kidsights Measurement Tool is an online, parent-report survey of child development. It was developed to create a population-level monitoring tool of child development that extends from birth through age five years. It contains items that index typical child development from existing open-source measurement tools including the Global Scale for Early Development developed by the World Health Organization; UNICEF's Early Child Development Index; and the Healthy and Ready to Learn measure developed by the Health Resources and Services Administration for inclusion in the National Survey of Children's Health. Kidsights Measurement Tool places these items on a new underlying scale that allows measurement for children birth through 59 months using one scale, thus offering the ability to compare scores between children of different ages. For more information on how this tool was developed and its validity, please see our full validation paper. Our measurement toolkit also includes measures of children's psychosocial stress (Psychosocial) and children's home learning environments.

HOW TO USE THIS GUIDE

In this guide, we provide an overview of the steps for using Kidsights Data, along with examples of how the data have been used in different places, the process of preparing and administering an online survey, and questions to consider as you move forward. This guide will accompany discussions with the Kidsights team. In each section, we have included examples from our work with other Kidsights Data projects in blue boxes.

USE CASES

To better understand the potential partners for Kidsights Data, we conducted a series of consultations to ask a variety of potential users about their understanding of population-level data, need for this type of data in the early years, and recommendations for partnerships moving forward. We summarized the results of those conversations in a report: Understanding Users as a Pathway Towards Sustainability and Impact. Results from these conversations revealed the potential value of using Kidsights along with the challenges of capacity such as researching samples of parents and analyzing data, and ensuring that results are targeted towards relevant policy and programmatic questions.

At this point, it is not possible to use the Kidsights Measurement Tool, the Psychosocial Tool, or the home learning environment tool without support and guidance from the Kidsights team, as the online survey is only available by request. As you read below, please keep in mind that all Kidsights Data projects use the Kidsights Measurement Tool to measure normative child development, and at minimum, must collect children's birth date and children's sex within a sample of at least 400 children.

How Kidsights Can Support Your Work

Kidsights Data can lead to positive changes on behalf of children and families by generating data to drive decision-making and investments in child development programs and policies. For Kidsights Data to have the maximum positive impact on your work, perhaps the most critical step is defining what you would like to learn from Kidsights Data and how you will use the resulting data. This step forms the basis for selecting specific items to use and planning the dissemination of survey results. An important step in the preparation phase is to have conversations with your colleagues and partners about what data will be most valuable, who will disseminate results, and how partners envision using the results from the Kidsights Data survey to improve programs and practices. Kidsights leads can include government leaders, advocates for children and families, and programmatic leaders. Having researchers as part of the team can be extremely valuable in defining what to measure and how to analyze and report on the data. These conversations inform us what questions are asked, which families partners want to hear from, and which analyses will be prioritized. We created the People and Partnerships Worksheet as a guide for partners to discuss those questions and convene other stakeholders. The primary purpose for this task is to ensure that partners have a clear idea and strategy for using the data. These decisions will help to inform the recruitment strategy and also outline potential communication products. These conversations should also include a description of the target population and comparisons that are of interest.

These conversations should help define the factors you think affect young children and families in your program or area. For example, our work to date has demonstrated the profound positive

impact of stimulating home learning environments on children's development, while documenting the negative associations between food insecurity, parenting stress, and economic insecurity on children's development. Other factors to measure can include children's access to healthcare, childcare, and whether children have received support for special health care needs or disabilities.

As a starting point for this discussion, all states have access to the results from the National Survey of Children's Health (NSCH), which contains several questions on influences on child development. One approach is to obtain a report using NSCH data to stimulate the discussion and to provide the groundwork for defining survey questions. While you may include questions on other topics, keep in mind that writing good survey questions is quite challenging and it is a much more reliable option to use survey questions that have already been used in large-scale surveys.

GENERALIZABILITY

Another key question for this phase is which groups of children you'll want to compare, and the extent to which you would like your data to generalize to the underlying population. The gold standard for obtaining a truly representative sample that generalizes to the underlying population is to engage in probabilistic sampling by selecting participants randomly from the full population of children birth to age 59 months.

Probabilistic sampling requires a comprehensive list of children in a population—one that is often possible to obtain for a study that is restricted to children in a specific program (i.e., a programmatic study). If you have a list of parents from which to draw—through a large-scale program, for example—you can use this list to randomly sample and contact parents. If you are interested in getting a representative sample of the entire population of children and families within a state or large city, then the ideal scenario

PROJECT: RAPID

Our Kidsights Data collaborations have varied in terms of how questions were selected. With our partners at RAPID, we deferred to the questions they already include in their ongoing survey. The partnership with the Sixpence program was to supplement the program evaluation. The evaluation team also selected a limited number of questions from the Kidsights Data list of previously used questions based on their interest and the potential to compare the program sample with the statewide sample. With the Colorado Department of Early Childhood's (CDEC) survey for the Universal Preschool Program, we worked very closely with the team to identify which items to include in conjunction with the Kidsights Measurement Tool and the Family Care Indicators. The CDEC team was interested in gathering feedback on the family experience in the first year of the program. Over the course of several weeks, we were able to adapt most questions from a survey conducted previously in the Colorado for the Preschool Development Grant. We supported the team by identifying items and creating crosswalks to compare similar items from different surveys or measures.

is to use a birth registry list or tax records to contact parents.

However, obtaining a population list from a birth registry may not be possible for a study focused on the general population. In such a situation, convenience sampling may be your only option. We recommend incorporating three practices before, during, and after data collection to promote generalizability when convenience sampling is employed.

First, before collecting data, use census information to identify the composition of your sample on relevant demographics. You will need to identify which groups of children – for example, rural vs. urban, children of parents with college degrees vs. those of parents without college degrees, children of various racial and ethnic backgrounds – you would like to compare. These comparisons should be based on demographic characteristics that are routinely collected using U.S. Census data so that we are able to use available census information to judge our sample against the underlying population. Importantly, the sample sizes you decide on for each demographic group intended to be compared (i.e., low vs. high family income) should be sufficiently large to provide statistical evidence – as a rule of thumb, we've found a comparison often requires at least 400 individuals in a group to be compared with another similarly sized group. If available, a statistician can provide a more targeted sample size numbers using technical procedures. Note that the large sample size requirement often necessitates oversampling underrepresented populations, resulting in a skewed composition of your sample to underrepresented populations. This is not a problem for generalizability, but it does necessitate remediation steps to correct after data collection (discussed below).

Second, during data collection, track progress toward the desired sample composition and group sample sizes. Respond to any under-sampling situations that arise by making a conscious effort to target hard-to-reach populations. Conversely, ensure that sample sizes for easier-to-reach populations do not exceed your goal.

Finally, after data collection, employ reweighting techniques (e.g., i.e., raking, propensity score, etc.) to construct sampling weights. The Pew Research Center has a nice description of the various options. The purpose of the sampling weights is to promote generalizability by ensuring that the weighted sample better matches the demographic estimates of the underlying population. These procedures can be implemented in statistical software such as SAS, SPSS, Stata, or R.

SPECTRUM OF GENERALIZABILITY				
	OPTION 1	**OPTION 2**	**OPTION 3**	**OPTION 4**
Define the Sample	Census of the entire population	Sample representing the population	Sample based on specific criteria intended to generalize to underlying population	Convenience sample
Recruitment	Recruit the entire population	Recruit from the entire population using a cohort or other system for randomly identifying participants	Recruit from the entire population using criteria for identifying groups to compare based on demographic characteristics	No strategy for recruitment, looking for responses from whomever responds; can compare sample characteristics to underlying population
Process	Recruit parents of every child aged birth to age 5 within the population	Monitor sample and compare to publicly available data on specific criteria (census and NSCH); target recruitment toward values from public data; weight data post hoc	Monitor sample based on criteria, target recruitment towards reaching criteria (e.g. 50% of responses from parents with 4-year high school degree)	Monitor sample towards total number of responses
Advantages	Strongest evidence to make claims about the population	Strong evidence to make claims about the population	Easier to recruit and collect data	Of the options, easiest to recruit and collect
Disadvantages	Not at all feasible, even for present-day census	Need publicly available data for the geographic area	Claims from data are limited- must be very clear in describing the sample	Few if any claims can be made about the underlying population from the data collected
	Most likely to be generalizable <——————> Least likely to be generalizable			

Table was originally prepared for the Understanding Users as a Pathway Towards Sustainability and Impact.

EXISTING GENERALIZABLE DATA SOURCES

In our work to date in Nebraska—and relevant to all states—we have utilized data from both the American Community Survey (administered by the U.S. Census Office) and the National Survey of Children's Health (administered by the U.S. Department of Health and Human Services) to compare samples we obtained in Nebraska to the state population of young children. While both surveys are nationally representative, at the time of our studies, only the American Community Survey was large enough to provide sufficiently precise estimates of demographic compositions at the level of the state. In the future, states will be able to opt-in to "oversampling" the National Survey of Children's Health to meet precision thresholds at the state level. Sufficient precision of demographic estimates for geographic units smaller than a state (e.g. counties, cities, etc.) is only available in very large cities (e.g., New York City, Phoenix, etc.) or very large counties (Los Angeles County), and only within the American Community Survey. Demographic data from the American Community Survey can be obtained from the University of Minnesota's Integrated Public-Use Microdata Series repository as well as John Hopkins University's The Child and Adolescent Health Measurement Initiative. The table below summarizes our discussions about generalizability and implications for using Kidsights Data.

ETHICAL APPROVAL

Depending on how you contact parents and who will have access to the resulting data, your project may require either ethical approval (if data that has any identifiable information for individuals will be used by university-based researchers) or approval within your government to contact parents for this purpose. Because these rules differ by location and institution, it is the responsibility of your team to determine whether ethical approval is needed and who should apply. Our team is ready to help.

At the end of this phase, you should ideally have:

- Clearly defined research questions, ideally no more than 3-5. For example, these questions can include:
  - How do children enrolled in a specific program compare to Kidsights Data existing samples?
  - Which groups of children, based on demographic characteristics (i.e., urban vs. rural, based on parent education or income, race/ethnicity), are most at risk of early disparities in development?
  - Which factors, such as parent stress, access to childcare, and home learning environments, are associated with child development?
  - Following on your research questions, which groups of children you'd like to compare.
- A plan for at least one way to share the main "headline," such as a brief, webinar, or other ways to use the data to influence the narrative on children in a geographic area or program.
- Clarity on whether ethical approval is needed, and if so, who should apply, how long the approval process may take, and what is required for the application.

Deciding on the Specific Questions to Ask

Our recommendation is to use the Kidsights Data measurement tools along with the battery of questions that accompany the National Survey of Children's Health and a few additions. We have added additional questions on childcare access and quality, given the centrality of childcare for many families. We also have expanded the questions on food and housing security due to the financial strain faced by many families with young children. As noted below, we also have asked questions of parents on their own Adverse Childhood Experiences (ACES). An inventory of all questions used in Phase 1 or Phase 2 can be provided.

The decisions about the items that accompany the Kidsights Measurement Tool in the survey have become an important topic in collaborations with other organizations/partners. The only items we require for Kidsights scores are the items in the Kidsights Measurement Tool: 1) the child's age in days, and 2) the child's biological sex. We highly recommend the Family Care Indicators and the Psychosocial Scale, but we do not require either set of items. Decisions on other items should be made based on the research questions and plans for using the resulting data.

ADDITIONAL RECOMMENDATIONS FOR DECIDING ON SURVEY QUESTIONS

One lesson learned from Phase 2 is the importance of communicating the content and indicating any type of sensitive questions to both parents who are answering the survey and other stakeholders. Most of the survey items focus on questions about child development outcomes. However, we recognized that some of the accompanying questions might be triggering or upsetting to participants. We have identified the following topics to be potentially sensitive for participants:

- Parent Adverse Childhood Experiences
- Child Adverse Childhood Experiences
- Parent mental health using depression and anxiety screener
- Parenting stress
- Child behaviors, especially concerning or problematic behaviors

Research has demonstrated a strong relationship between these topics and child development and that is why we find it is important to include some or all the topics in our surveys. We received feedback from recruitment partners that it is not necessary to remove the item, but rather, it is important to clearly communicate to parents why these topics are included in the introduction to the survey, and also helpful to briefly mention why the information provided by the items is helpful. Additionally, we created a block for the sensitive questions and added a disclaimer before the block of questions to warn parents of the nature of the questions and explain that they do not have to answer if they do not feel comfortable doing so. The same intentionality and respect for participants' experiences is necessary when reporting results.

By the end of this phase, you will have:

- A spreadsheet of questions to include alongside the Kidsights Measurement Tools
- An initial plan to use these survey questions to analyze data and share results
- Alignment of your survey questions with the research questions, to make sure you have survey questions that will give you the information you need to answer your research questions.

Preparing the Survey for Distribution

This section is focused on the steps needed before putting the Kidsights Data survey into the field. Our team will provide a link to an online survey that you can distribute. It can be completed on mobile phones or computers. Our team can also assist you in entering the final list of survey questions into the online survey. It is possible to use a paper version of the survey. However, the paper version is complicated for parents to use because it requires them to skip to the right child development questions based on children's ages. For that reason, we do not recommend administering the survey on paper.

USING THE KIDSIGHTS MEASUREMENT TOOL IN SPANISH AND OTHER LANGUAGES

There is a strong desire from partners to have the Kidsights Data survey in multiple languages. To date, the survey has only been translated into Spanish for use within the United States. We can use the existing version of the Spanish survey as needed, noting that we need a larger sample size to be able to test it fully. For other languages, it is possible to translate the survey, but it should be noted that it typically requires a large investment in translation and back-translation to ensure all items are functioning well.

The first time the Spanish translation was used was in the Phase 2, Nebraska Statewide Survey (2022-2023). Kidsights Data worked with a translation group at the University of Nebraska Medical Center (UNMC) (contact: Athena Ramos, aramos@unmc.edu) to translate the demographic items. The Global Scales for Early Development (GSED) management team at the World Health Organization (WHO) provide a Spanish translation for the GSED items, and Spanish translations for the Early Childhood Development Index (ECDI) and National Outcome Measure (NOM) items were published online. The number of participants that responded to the survey using the translation was n = 95. A larger sample is needed to fully test the survey in Spanish to ensure its consistency with the English version. Because the Kidsights items come from existing surveys, we can rely on the translation work completed to date by other organizations. The GSED items developed by WHO and the ECDI items developed by the United Nations International Children's Emergency Fund (UNICEF) have been translated into many languages to date, but the NOM items have not been translated as extensively.

REACHING THE DESIRED SAMPLE

The estimated minimum sample size when using Kidsights Data is 1,000 responses. However, this is independent of any quota-stratified sampling that needs to be done to make between-group comparisons, as we mentioned in the section above on clarifying the research questions. To make the between-group comparisons, we roughly estimate that 400 responses are needed for each group. In our experience, it has not been difficult to reach the minimum sample size. The more challenging task has been reaching the minimum sample for the comparison groups and ensuring that hard-to-reach groups within the population are represented. It is helpful to identify these groups ahead of time rather than waiting to distribute the survey and seeing if members of the hard-to-reach groups respond to the survey.

APPROACHES TO RECRUITMENTS			
Recruitment Strategies	**Description**	**Advantages**	**Disadvantages**
Open	Use of social media, public flyers, and partner support	Broader distribution reaches a more diverse population	More possibility of fraud
Targeted	Access to a list of parent emails or partnerships with organizations/ programs that have access to parents of young children	Parents more likely to complete the survey when they receive the information from a trusted source Less of a possibility of fraud when it is being disseminated using contact information	Potentially harder to get at specific populations. For example, if you partner with childcare programs, it is harder to capture children not attending childcare

DEVELOPING A RECRUITMENT STRATEGY

One of the most important steps in preparing to use the Kidsights Measurement Tool is developing a recruitment strategy. The recruitment strategy is how you plan to get in contact with parents to have them complete the survey. We have defined two potential paths, open or targeted, that are described in the table below. Open recruitment assumes there is no existing list or way to directly contact families with young children and aims to distribute the survey link far and wide. Open recruitment includes but is not limited to sharing information on social media or asking partners to share on their social media channels, contacting programs and childcare providers to distribute information to the families they serve, posting flyers in public locations, such as grocery stores, libraries, laundromats, etc. However, the survey link circulating more broadly increases the probability of fraud. Targeted recruitment relies on having a list of emails or working with partners that can distribute the survey link directly to families with young children. Independent of which strategy is chosen, it will be important to work with strong partners.

For Phase 1, we used a more targeted recruitment strategy, mostly relying on partners with some community outreach; however, in the final push to reach the desired sample, the link was shared through social media. In Phase 2, we pursued an open recruitment approach with a big social media push to begin recruitment. Unfortunately, it also led to a large number of ineligible responses, which will be discussed more in the Collection section beginning on page 13.

Our recommendation for recruitment is to engage strong partners and gatekeepers from hard-to-reach communities. Strong partners should have a direct connection to families with young children and be willing to circulate the recruitment materials and follow up with families to encourage completion of the survey. For example, we were not seeing the responses needed in the rural communities in Nebraska in Phase 2. Our contacts at Communities for Kids followed up on the initial recruitment activities in rural counties where they work, and we saw a significant increase in responses from those areas.

We define gatekeepers as trusted members of the communities you are trying to reach that can help distribute and promote the survey. It is important for the gatekeepers to understand the purpose and content of the survey and the intended use of the data. It might be worth contracting or incentivizing gatekeepers to support recruitment. In Phase 2, one of the goals was to oversample certain groups to make comparisons across groups. We reached out to several gatekeepers in the Black/ African American community when we were behind in collecting responses for comparisons, and to community partners to recruit from rural and Hispanic populations. Their support helped to boost response rates from these groups in Phase 2. However, we were not able to reach the needed sample size for comparisons across racial/ethnic groups in our most recent study in Nebraska. This underscores how important it is to have broad stakeholder engagement to reach communities that you would like to be adequately represented in your survey results.

Incentives

Incentives for completing the survey is one strategy for increasing response rates. In Nebraska, when doing our statewide survey, we used incentives; RAPID also uses incentives. We offered $20 to Nebraska respondents at the start, and then increased the incentive to $40 for populations that we had trouble reaching with the $20 incentive. Nebraska state law requires collection of addresses and that gift cards are mailed. We found that about one-third of the respondents were willing to provide all necessary information for gift cards to be processed. RAPID can provide gift cards online to respondents, which reduces the amount of time required to process names and addresses through the mail.

At the end of this phase you should have:

- A recruitment strategy and a list of partners who can help you reach parents.

Data Collection

The following section describes the process to field the survey.

DISTRIBUTION

Here are some examples of the recruitment materials: Recruitment Materials

With Qualtrics, there is also the potential to send the survey link using a contact list. We used this feature in the follow-up activities in Phase 1 and for Phase 2. The benefit of using this feature in Qualtrics was that we could monitor who had completed the survey, who had clicked on the link, and who had done neither. Additionally, we could send reminders to participants who had not opened the survey or had not finished it after opening it. This function is helpful, especially when a contact list exists.

MONITORING

During data collection, monitoring is necessary to evaluate progress toward reaching sample goals and to identify potential fraudulent responses. If your team has access to the online survey, you may be on point for monitoring survey responses.

REACHING THE DESIRED SAMPLE

During the preparation phase, certain decisions will be made about the desired sample based on the criteria on group-level comparisons described above. Monitoring activities will track progress toward reaching the desired sample, including the total sample size and the sample size for group comparisons. Depending on the goals for the sample, we recommend analyzing the data weekly, specifically to identify any gaps in the sample and develop recruitment strategies to address the gaps.

IDENTIFYING FRAUD

During Phase 2, the need to monitor for potential fraud emerged. The recruitment strategy in Phase 2 began with a large social media push, which led to individuals completing the survey that did not

PROJECT: NEBRASKA

In Phase 1 and 2 in Nebraska, the main approach to distribute the survey was providing the survey link or the QR code in some type of recruitment material for the study. We created flyers with the QR code to put up at different locations in the community, such as grocery stores, libraries, laundromats, apartment complexes, etc. We also drafted email templates and text message templates for partners and we cold-called and emailed providers to ask for their support in distributing the survey link to the families they serve. Many providers were willing to help. Some partners, especially individual childcare providers, requested that we draft our emails in a way that would allow them to directly forward it to their families to cut down on the work they would need to do on their end. We also created social media posts with the survey link for Facebook that individuals or groups could post and share. Sending the survey link was most successful; however, some responses came from scanning the QR code.

meet the inclusion criteria or individuals attempting to complete the survey multiple times to receive the incentive. Because there was little that we could do to block ineligible individuals from taking the survey without potentially limiting eligible individuals as well, we developed a plan to evaluate the survey responses for fraud. Here is the information that was evaluated in the process of declaring a response ineligible/potentially fraudulent.

- ***Duplicate IP address.*** We collected the IP address of the participant in Qualtrics and noticed patterns of IP addresses being recorded more than once with different responses.
- ***Incomplete responses***. Qualtrics provided information about what percentage of the survey was completed by the participant. Ideally, the participant completed 100 percent of the survey; however, completing 92 percent of the survey signaled that the participant responded to the Kidsights Measurement Tool. Any responses with less than 92 percent of the survey complete were categorized as ineligible.
- ***Completed survey too quickly.*** Qualtrics reports the amount of time it takes each participant to complete a survey. In Phase 2, the survey took between 20-30 minutes to complete. Any responses with a duration significantly less than 20-30 minutes were identified as ineligible.
- ***Screen out children too young or old.*** Within the survey, participants were asked to report their child's birthdate at two different points. At the start of the survey, the birthdate question was used to screen out children if the participant reported a birthdate in the future or birthdate that would mean the child was older than 2,190 days. If either of these were true, the survey would end automatically.
- ***Screen out those without a Nebraska zip code.*** Participants were asked to report their zip code in the survey. We created an exhaustive list of Nebraska zip codes. If the participant did not report a valid Nebraska zip code, their response was marked as ineligible.
- ***Mark any observations where the county was not reported, or the recorded county does not align with the state zip code list.*** One survey question asked which county the participant lived in and provided a drop-down list of all Nebraska counties. If the participants did not respond to the question or if the country did not align with the zip code reported, the response was flagged for further review. We did not immediately categorize these responses as ineligible because of the possibility that participants did not know which county they lived in.
- ***rIP package authors recommend blocking based on IP_Hub information.*** These are IP addresses based on server farms.
- ***ip2Location is outside of Nebraska.*** This indicates the person is not a Nebraska resident.
- ***Non-Nebraska gift card zip code.*** The zip code at end of survey for mailing gift code is not a Nebraska zip code.
- ***Multiple inconsistences.*** For survey and survey_n_screener, identify observations with multiple and inconsistent responses for items across age forms.

- ***Responses to items reflect scores which warrant further scrutiny.*** Certain responses require additional review before being allowed to be included. For example, if a parent indicates that a 6-month-old can climb stairs and speak in sentences.

Mailing Incentives

During Phase 1 and Phase 2, participants received gift cards by mail for completing the survey. It is UNMC policy that gift cards must be sent by mail. At the end of the survey, we asked participants to provide their full address. This step became another check for ineligible responses because the gift card had to be mailed to a valid Nebraska address.

Recommendations for Future Surveys

There are some preventative steps that can be taken to cut down on the number of fraudulent responses. The following section is specific to Qualtrics, but many of the features could be included independent of the platform where the survey is hosted.

- ***Use a captcha.*** Including a captcha question prevents most bots from being able to access the survey because they need to click a box. We have included a captcha at the beginning of every survey.
- ***Include validation questions.*** It might be helpful to include some questions that are intended to check if a person is actually reading through the questions or simply clicking at random. These questions would also help to weed out any bots that made it through the captcha. We have not used these approaches before, but the suggestion was made by RAPID as something they do to identify fraudulent or ineligible responses. Some example questions are:
  - Multiple choice: What color is a banana?
    - Pink
    - Purple
    - Yellow
    - Orange
    - Blue
  - Write in: Type the word, hello, in the blank.
  - Multiple choice: Select [Likert scale response] for the following question.

Analysis

DATA SHARING

In Phase 2, we provided the Kidsights Measurement Tool to RAPID and the Colorado Department of Early Childhood through Qualtrics for specific data collection purposes. After completing data collection, the item-level data was sent back to our team to compute scores. To do this, UNMC requires a data sharing agreement to be in place. In both situations, we deferred to the partner's data

sharing agreement/Memorandum of Understanding (MOU) because they owned the data, but we had to complete and submit the UNMC Data Use Intake Form. Once the form is submitted, an individual from sponsored programs will manage the process. In future collaborations, this process will not be necessary because we will use the Shiny app platform available for partners to upload their data and download scores.

DATA CLEANING

Data cleaning refers to the process of preparing raw data that is collected and transforming it into a form that can be implemented into statistical software for analysis. In Phase 1 and 2, a significant amount of cleaning was necessary due to the design of the survey on Qualtrics.

Collapsing equivalent items across age forms. To include all the rules of administration of the Global Scale for Early Development items, items had to be repeated across multiple age forms. This creates a problem for statistical software because there are multiple raw variables for each question, even if only one of the raw variables has a recorded response by the participant (and a missing response for the other variables). To prepare for statistical software, these multiple variables had to be collapsed into a single item response variable. In Phase 1 and 2, we contracted Matt Anderson to write a SAS program that collapsed the repeated variables into one variable for analysis, with the appropriate variable name for scoring.

Transforming survey responses into numeric format. Qualtrics provided item response data in a qualitative format (e.g., "Never", "Sometimes", "Always"), but statistical software needs response information into numeric format (e.g., 0 = "Never", 1 = "Sometimes", 2 = "Always"). Once equivalent items were collapsed across age forms, Marcus Waldman wrote an R program to assign appropriate numbers to the qualitative responses.

Obtaining the child's age in days. The child's age in days is needed for scoring (see below). Qualtrics provides separate variables for day, month, and year of the child's date of birth. One variable is provided on the date the parent started the survey. We calculated the child's age in days by first collapsing the three date of birth variables into one date variable and then using R to subtract the dates to calculate the age of the child in days. Microsoft Excel similarly allows the subtraction of dates.

COMPUTING THE KIDSIGHTS SCORES

Kidsights scores were calculated by first calibrating the scale, and then applying item response theory scoring techniques. Specifically, a graded response model was fit to the data in Phase 1 and 2. Next, expected-a-posteriori scores were calculated. More technical details can be found in the validation paper. An online app was developed so that researchers can calculate scores.

DATA ANALYSIS

Initial psychometrics and instrument validation of the Kidsights Measurement Tool has been completed. The Kidsights team will continue to conduct psychometric work on the instrument to reflect new items, form changes, etc. The Kidsights team will also update the scoring app as new data comes in to ensure that scores remain comparable over versions and time. Individual sites using the Kidsights Measurement Tool will be responsible for conducting any invariance testing to rule out threats to valid inferences about specific research questions due to construct irrelevant variance.

Additionally, research teams will also be responsible for implementing all statistical analyses used to draw conclusions about specific substantive research questions (e.g., group differences, age gradients in scores, etc.). The Kidsights Team can provide limited consulting on study design before data collection (i.e., providing guidance of reasonable effect size assumptions to make sample size determinations, referring users to data sources with population demographic estimates, etc.) and analytical plans for statistical analyses upon completion of data collection (i.e., methods and procedures to be implemented by the individual sites).

At the end of this phase you should have:

- Analyses of your main headlines from your survey, including
  - Documentation of group-level differences in child development
  - Characteristics of families and children that you see as important to highlight, ready for dissemination in the next phase

Dissemination

After data analysis, Kidsights Data emphasizes the strategic dissemination of key findings. These findings uncover critical stories about infants and young children from birth to age five, offering valuable insights for parents, policymakers, funders, and the public. By sharing these data-driven stories, Kidsights Data empowers stakeholders to make informed decisions that positively impact early childhood development and support evidence-based investments in young children's futures.

The results from the survey can be packaged in several different types of communications products, including but not limited to technical reports, briefs, email communications, news releases, and social media posts. The important discussion to have when deciding what communications products to develop is the intended audience. For example, will you target policy makers, parents, funders, or the general public etc.? Each audience will need tailored outreach and use of channels they are known to use.

In Phase 2, we started with a technical report that highlighted the results demonstrating the relationships between the Kidsights scores and family and child characteristics. The intended audience for the report was policymakers, programs managers, and practitioners. From this report, we created a two-page brief that summarized the technical report in an easily digestible format a lay person would understand. We used this brief primarily to disseminate the results to parents, but it can be used by anyone interested in the key findings from the statewide survey. In addition to sending the brief to families, we also engaged interested parents in focus groups to ask about their reaction to the results and how the data could be used. These conversations were very productive and provided great insight into the parent perspective.

We have found that it is helpful to use quotes from parents in our communication products to help tell the story of the data in a more personal way. We also concentrated effort on rolling out the results on social media platforms, primarily LinkedIn, Facebook, and Instagram. Based on the results from our conversation with parents, the format for the posts included the data from the survey, a parent quote to personalize the data, and resources connected to the content of the data. Parents noted that they felt frustrated receiving data without any information about where they could find resources or what they could do to support their child. We have also worked with First Five Nebraska to create a brief focused on the results for children from birth to three years of age and we are in the process of putting together a brief on psychosocial development.

Another benefit of partnering with Kidsights Data is the assistance with dissemination strategies, planning, and implementation from a strategic communications consultant. This support ensures that findings are not only shared effectively but also tailored to resonate with key audiences, maximizing their impact on policies, programs, and community awareness.

At the end of this phase you should have:

- Briefs, social media posts and other ways of sharing your Kidsights Data findings. You may also find it helpful to follow up with parents, policymakers and community members to learn more about their reactions to the findings and how you can use the data to improve the lives of children and families.

Conclusion: Discovering and Putting Kidsights Data Into Action

This technical guide provides an essential overview of how to partner with the Kidsights Data initiative, navigate the data collection process, and generate and disseminate meaningful insights on child development. Designed for new and potential partners, including those curious about population-level data to track children's development, the guide equips you with an overview of the process.

By working with Kidsights Data, you join a collaborative effort to shine a light on the developmental successes and needs of children across communities or states. Your partnership ensures that the insights gathered are not only insightful but also actionable, fostering better outcomes for young children.

If you have questions or need additional support, the Kidsights Data team is here to help. Please reach out at Abbie Raikes at abbie.raikes@unmc.edu. Together, we can turn data into meaningful action for children and families across the United States.

Appendix

EXPERIENCES WITH PARTNERS

STAGES	ACTIVITIES	RAPID	SIXPENCE	COLORADO UPK
Preparation	Deciding on the questions	Used the RAPID survey question	Had their own program evaluation survey; selected additional questions that Kidsights had use previously used	Reviewed and selected questions that Kidsights had use previously used; worked with Kidsights to write new questions about the program; difficulty getting questions approved with the internal processes
Implementation	Distribution of the survey	Sent a link to a survey with only the Kidsights items	Sent a link to a survey with only the Kidsights items; had a separate survey also circulating that collected additional information about the program experience, the child, and the family	Sent a link
Dissemination	Packaging the results and disseminating	Data included in a manuscript on the validation of the Kidsights Measurement Tool	Monitor sample based on criteria, target recruitment towards reaching criteria (e.g. 50% of responses from parents with 4-year high school degree)	Monitor sample towards total number of responses