

TECHNICAL REPORT

Nebraska Spotlight: Key Findings That Highlight Connections Among Early Childhood Development, Families and Communities

Kidsights Data is an initiative to build demand for and provide population-level data to track the development of children from birth to five in the United States. Kidsights Data has developed the Kidsights Measurement Tool to collect data on the development of children birth to five. Kidsights results can be used to report on overall development for groups of children when measured in the context of factors associated with disparities, such as family income, education, geography and other family characteristics.

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Executive Summary

Evidence is clear that early child development is critical for lifelong health, learning, and well-being, and yet, there has been no form of measurement that offers a population view into how Nebraska's children ages birth to five are developing until now. **This report is the first of its kind in Nebraska:** We now have evidence on child development that generalizes to the population of Nebraska children, aged birth to five. What factors influence child development in Nebraska? Which groups of children are in need of greater support? Kidsights Data offers new insights into those critically important questions.

Until now, there have been no measures of children's development birth to age 5 designed for use at the population level within the United States. The Kidsights Measurement Tool was developed and tested for the first time in Nebraska.

Addressing disparities in early childhood through policies and programs to benefit young children and families can lead to great returns on investments. Due to economic and social inequities, disparities between groups of children based on family income, geography and other factors arise early in life and tend to persist and grow larger over time. Therefore, reliable data on early disparities is important for data-driven decision-making, for example to establish a baseline for measuring child development over time, to inform decisions on where and when to invest, and to judge how much progress we are making. Data can play a critical role in informing policy and programmatic investments as early child development programs are envisioned, built, and scaled.

Using a sample of over 2,500 Nebraska families with young children birth to age 5 that represents the population, we document the many successes, and some challenges, of raising young children in Nebraska.

- Many Nebraska parents, regardless of where they live, their family finances, or their own backgrounds, are providing stimulating and supportive home environments for their children, which we found to be the most powerful element of ensuring healthy development for young children.
- In our study, early disparities in child development are evident in Nebraska based on family and community characteristics, particularly economic insecurity. About half of Nebraska families experience economic strain. Economic strain is associated with lower scores on child development.
- While there were no overall differences in child development scores between rural and urban families, families in rural areas reported more supportive communities and greater levels of economic insecurity than families in urban areas.

- Parent mental health is important. Nearly 60% of parents reported at least one adverse childhood experience, such as abuse, neglect, or an absent parent. Parents' early adverse experiences were associated with lower scores on child development. Eighty-two percent of parents reported having support for parenting. About 30% of parents reported some level of depression or anxiety, which in turn was negatively associated with child development scores.

In all, this groundbreaking report points to the importance of supporting families with young children and encouraging families to continue investing in children's home learning environments.

Recommendations for better supporting Nebraska parents appear in the Discussion and Conclusions.

Kidsights Data Contribution: The Value of Population- Based Data

Existing research has documented substantial disparities in the well-being of groups of children, often revealing inequities based on race/ethnicity, geography, and income across countries and regions. These disparities arise due to social conditions such as inadequate resources, poor nutrition, and elevated levels of emotional stress. Population-level data, or data collected from samples of children that reflect the larger population, are essential for tracking progress toward equity, especially for children under age 5 who are not included in school-based assessments of child learning. In Nebraska, we haven't had data on child development for children birth to age 5 until now. Yet these data can play a critical role in informing policy and programmatic investments as early child development programs are scaled. Comparing patterns associated with equity in early childhood across countries is important for a deeper understanding of inequity—and workable solutions to address it—in various contexts.

In the United States, several studies have documented that population-level disparities in child development, or significant differences between groups of children based on sociodemographic characteristics, emerge before age 5 and tend to persist over time (Fink et al., 2020; Lu et al., 2020; Sania et al., 2019). These group-level disparities are identified using population-level measures of child development that have been used extensively across the globe, in the United States, Australia, Canada, and in more than 80 low- and middle-income countries. For example, using the Early Development Instrument, Halfon et al. (2020) revealed population-level, race/ethnicity, and income-based inequities in child development at the start of school in Los Angeles. Data from the National Survey of Children's Health have also demonstrated inequities in child development for children in the preschool years as a function of family resources, concluding that as many as 60% of U.S. children may start school without being “healthy and ready to learn” (Claussen et al., 2021; Ghandour et al., 2021). But these data do not include children birth to 3, a critical developmental window for setting children up for long-term success.

Data on the early patterns of inequity are critical for designing effective strategies, including program and policy interventions at the community and state levels. By highlighting groups of children at risk for adverse developmental outcomes, documenting

disparities in child development in very young children can lead to more effective interventions. The stage of development from birth through age 3 is especially critical to capture because of the rapid pace of neurological development. **Until now, there have been no measures of children's development birth to age 5 designed for use at the population level within the United States.**

For this study, we generated population-level estimates of child development and home environments across the state of Nebraska, focusing on children birth to age 5. We report on two measures of child development, the Kidsights Measurement Tool and the Psychosocial Stress Scale. The Kidsights Measurement Tool focuses on typical child development across language, cognitive, motor and social-emotional domains, which we refer to as the Kidsights scores of child development or child development scores. The Psychosocial Stress Scale indexes symptoms of children's psychosocial stress. As outlined in greater detail below, our sample roughly approximates the greater population of children and families across the state. This provides us with confidence that our findings accurately reflect key characteristics and experiences of Nebraska's children statewide.

Our Kidsights results include multiple aspects of children's and family development. In this report, we have prioritized themes with significance for child development, including:

- Children's home learning environments
- Family economic security
- Trouble finding child care that affects parents' employment
- Parent and child mental health
- Children with special health care needs
- Children's communities and neighborhoods
- Parent and child adverse childhood experiences
- Parenting demands and supports

Kidsights Data Development and Methodology

MEASURES OF CHILDREN’S DEVELOPMENT AND FAMILY CHARACTERISTICS

We were interested in measuring multiple aspects of children’s development and family characteristics, to provide as much insight into group-level strengths and disparities as possible. We took questions directly from the National Survey of Children’s Health to index family economic and food security, children’s special health care needs, neighborhood and community characteristics, and demands of parenting (e.g., Ghandour et al., 2019). We added questions on children’s home learning environments using the Family Care Indicators, which were developed by the World Health Organization (Kariger et al., 2012). We also added questions on family functioning and parental anxiety and depression (Löwe et al., 2005; Spitzer et al., 2006).

DEVELOPMENT OF THE KIDSIGHTS MEASUREMENT TOOL

The Kidsights Measurement Tool for children birth to five was developed by integrating items from the Global Scales for Early Development (GSED) and the National Outcome Measures (NOM) indexing normative developmental milestones in motor, cognitive, language, and social/emotional development. A scale to index child development birth through age 5 was calibrated using a 2PL item response theory (IRT) model (preliminary evidence was obtained through an online survey conducted in Lincoln and Omaha in 2020–2021). Our results indicate that it is feasible to calibrate a vertically equatable scale (meaning that scores can be compared across ages) of children’s development birth to age 5 with the intention of drawing conclusions about population differences in children’s overall development. In addition, validation evidence shows strong longitudinal and concurrent associations between Kidsights scores and direct assessments of children’s development (Waldman et al., available upon request). To complete the Kidsights Measurement Tool, parents answer “yes” or “no” questions about children’s development, based on children’s ages. Most parents can answer the questions in 10 minutes or less. The Psychosocial Stress scale has 49 items indexing behavioral issues in five areas: dysregulation in sleep and eating, demonstration of internalizing and externalizing problems, and low levels of social competence. Parents respond using never, sometimes, or often. Early results indicate strong functioning and predicted associations with family characteristics and child development (Waldman et al., under review and available upon request).

HOW WE COLLECTED THE DATA AND ESTIMATED RESULTS

For the data reported here, we recruited parents through health care providers, child care and parenting support programs, community organizations and social media posts from July 2022 to January 2023. We gave parents a link to an online questionnaire, which included several questions on family demographics, family income and financial stress, and the child's adverse childhood experiences, child development, health, and home learning environment. Many of these items were sourced from the American Communities Survey (ACS) or the National Survey on Children's Health (NSCH). Respondents could complete the survey using their mobile phone, tablet, or computer. The survey took between 20 to 30 minutes to complete.

We offered caregivers a gift card (\$20 to \$40) to complete the survey. Previous studies have noted that financial incentives increase the likelihood of receiving fraudulent responses (c.f., Lawor et al. 2021). To identify and remove fraudulent responses, we implemented a cybersecurity screening protocol to assess each respondent's authenticity. This protocol weighed multiple considerations and relied heavily on metadata information provided by the rIP package (Waggoner et al. 2019) and the IP Hub database (<https://iphub.info/>).

A recruitment and survey sampling strategy were developed with the goal of replicating the underlying population of Nebraska, based on race/ethnicity, level of parental education, parental income, and residence in a rural or urban area. We applied Tipton and Matlen's (2019) procedures to promote balance between our sample and population estimates provided by the ACS and NSCH. Using these data, we computed sampling weights to offset imbalance and maximize the generalizability of our finding to the Nebraska population of families with children age 6 and younger.

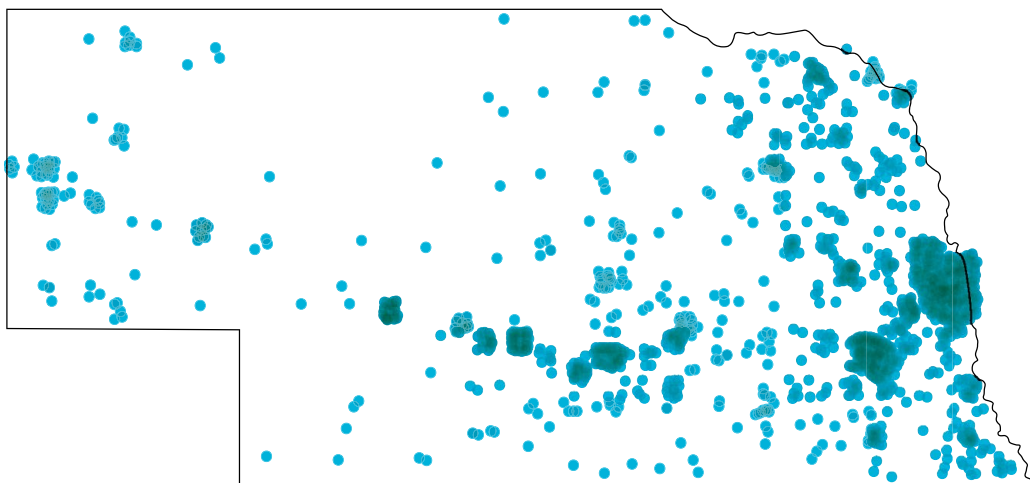
Although we were able to recruit a sample that can be generalized to the population of Nebraska, even with the help of trusted community liaisons, we were not able to recruit enough participants from different racial and ethnic groups to make comparisons across groups. While the representation of different ethnic and racial groups is greater in our sample than in the overall population, our samples are still too small to extrapolate to the underlying population. For that reason, we do not report on group differences based on race and ethnicity in this report. If the Kidsights study is repeated, we have learned many valuable lessons on initiating partnerships well in advance of a survey release with community groups who can help introduce the survey, explain the survey's purpose, share how the collected data will be used, recap questions asked by the community, answer why the data has value, and ultimately, after the wider framework around the survey is understood, encourage families to take part in the survey. The responsibility for maintaining these community relationships and understanding the best way to gain and

keep trust, understand how different communities may prefer to share feedback, and provide context for the survey's importance will be a focus going forward for the Kidsights Data team.

WHO PARTICIPATED IN OUR STUDY

A total of 2,572 responses were deemed valid and analyzed for this report. Respondents were identified as “parents” if they reported spending at least 40 hours a week caring for the child and were often or always responsible for the child’s care. Of the total sample, 97% identified themselves as biological or adoptive parents. An additional 3% consisted of stepparents, foster parents, and other relatives. As noted above, weights were created to approximate the underlying population. We use weighted data when reporting results. Within our sample, 87% of parents reported being married, 43% reported having a college degree or higher, and 75% of parents were female. Children were about 3 years or 1,078 days old on average, ranging from 5 days to 2,187 days (SD=622.6 days), and parents were 33 years on average, ranging from 18 years to 68 years. Respondents reported that 25% of children were Black, Hispanic, Asian or some other race, and 75% were white only. Seventy-two percent reported living in an urban area, and 27% reported living in a rural area. See Figure 1 for a geographical depiction of survey respondents.

FIGURE 1 | GEOGRAPHICAL DEPICTION OF RESPONSES IN NEBRASKA



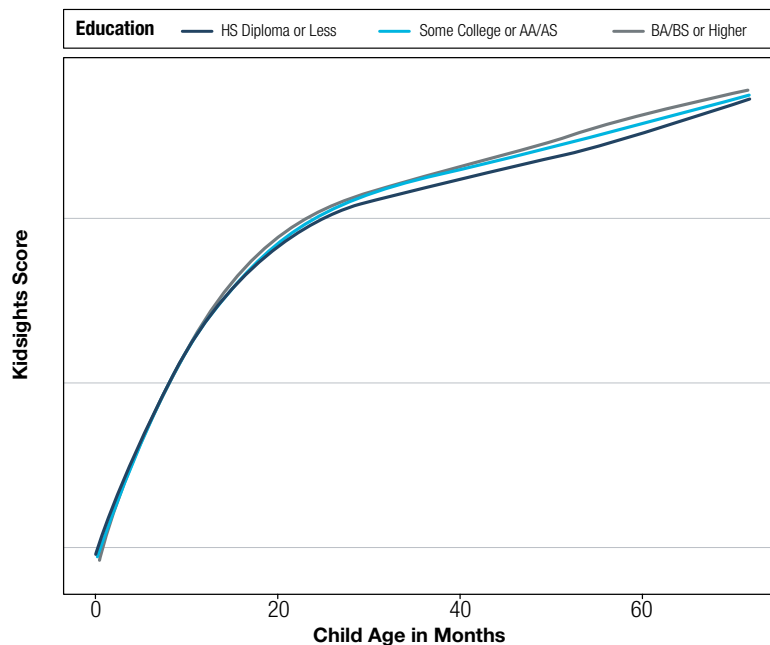
Initial bivariate analyses indicated that both child sex and age were strongly associated with child development scores. Girls scored higher than boys on child development and lower on psychosocial stress, and older children scored slightly lower on child development and higher on psychosocial stress than younger children. Girls in the sample were on average older than boys. We thus made the decision to include child sex and age in all analyses.

Findings

Below we outline key findings within this sample, focusing on contextual aspects of children's environments that may contribute to disparities in child development. These findings will be explored in greater detail in upcoming scientific publications. Each theme below has been selected as important for children's development, in terms of potential implications for long-term development and/or because it is a source of disparities in child development. In this report, we focus on two population-based comparisons that our sampling and weighting allow us to make: 1) urban versus rural; and 2) parents with a four-year college degree or more formal education versus those who do not have a four-year college degree. The urban-rural comparison will provide insight on the relationships between certain family characteristics and children's geography, and implications for child development. We are using the four-year college degree as a proxy for socio-economic status, and we also focus on parent education because of the strong relationship between parent education and child development (Davis-Kean et al., 2021). We have noted in the findings when any statistically significant differences were found between the groups.

As outlined in Figure 2, children of parents with college degrees scored higher on measures of child development than children of parents who do not have college degrees beginning when children reached age 1. After the first year, items in the Kidsights Measurement Tool move from reliance on motor items to gauge development toward reliance on items indexing language and cognition. In bivariate analyses, parents with college degrees or more also reported several characteristics associated with positive child development over time: more stimulating home environments, less economic and food insecurity, and less trouble finding child care. There were no significant differences in child development scores for children in rural vs. urban areas.

FIGURE 2 | PARENTS' EDUCATION IN RELATION TO KIDSIGHTS SCORES



For each theme, we begin by reporting on the overall prevalence within our sample, followed by any group differences based on rural/urban or parents' education levels. We then report on the associations with three key variables: children's development using the Kidsights score, children's psychosocial stress levels, and children's home learning environments.

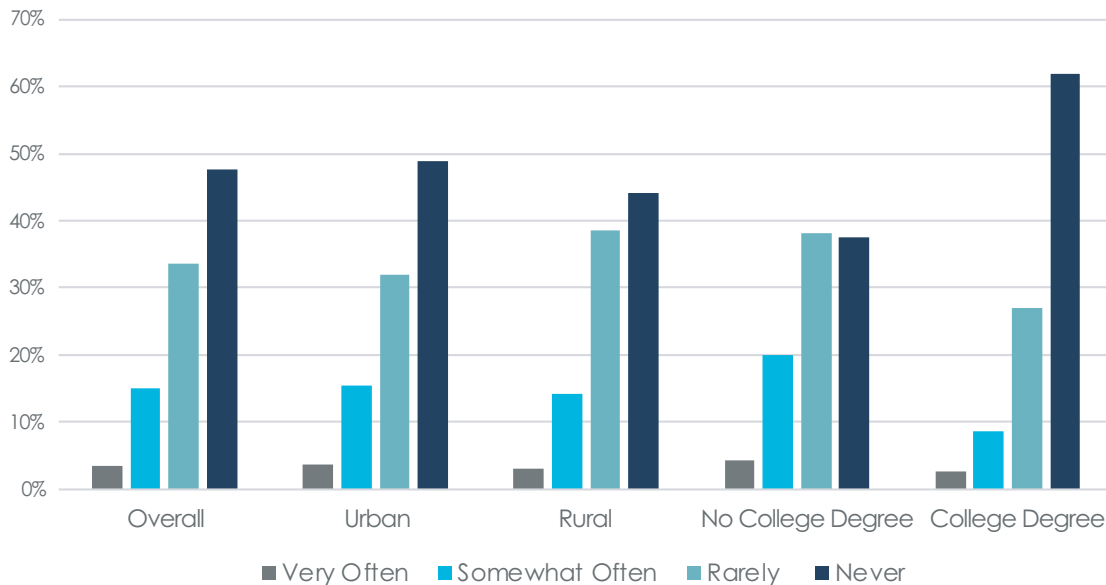
CHILDREN'S HOME LEARNING ENVIRONMENTS

Families who reported more home learning activities with children, such as playing, reading, telling stories, and going on outings reported significantly higher scores on child development and lower scores on psychosocial stress. Food insecurity economic strain, or trouble covering the basics like housing and food since the child's birth, were associated with less stimulating home learning environments. Parents reported more home learning activities with older children than younger children. Parents in rural areas reported fewer home learning activities and fewer materials than families in urban areas. Effects of home learning were especially large for child development scores, demonstrating that activities and engagement with children have a powerful effect on children's achievement of developmental milestones.

ECONOMIC SECURITY

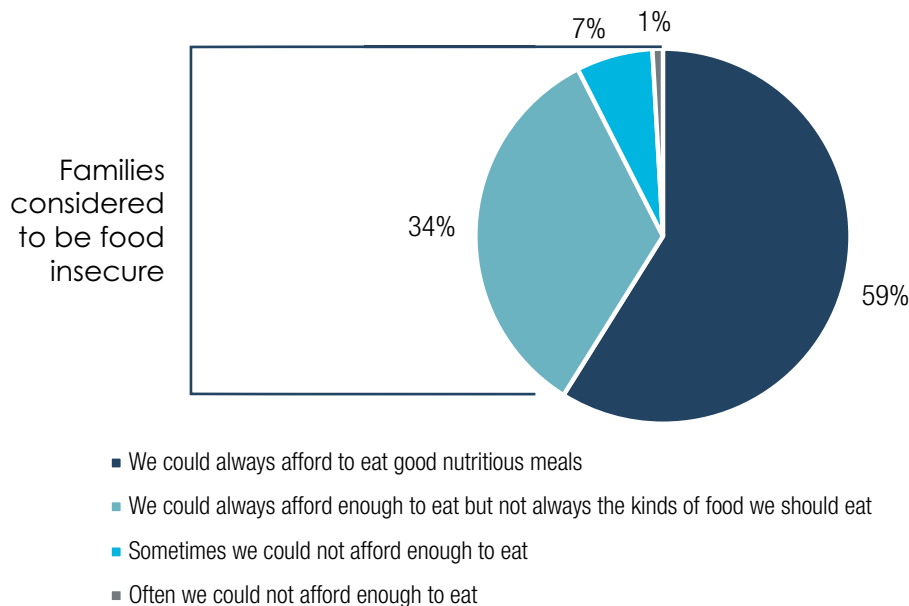
Within our sample, 52% of families noted that they have had at least some time when it was "difficult to cover the basics" like food or housing on their family's income since the child was born.

FIGURE 3 | PERCENT OF FAMILIES REPORTING DIFFICULTY COVERING THE BASICS



Additionally, 41% of participants reported some level of food insecurity. The number of families reporting difficulty covering the basics was significantly higher for families in rural areas (56% in rural areas vs. 49% in urban areas) and for families where parents did not have a four-year college degree (42% for those with a college degree vs. 58% for those without). Fifty-one percent of parents without a college degree reported some level of food insecurity compared to 27% of those with a college degree. See Figure 3.

FIGURE 4 | PERCENT OF FAMILIES REPORTING FOOD INSECURITY

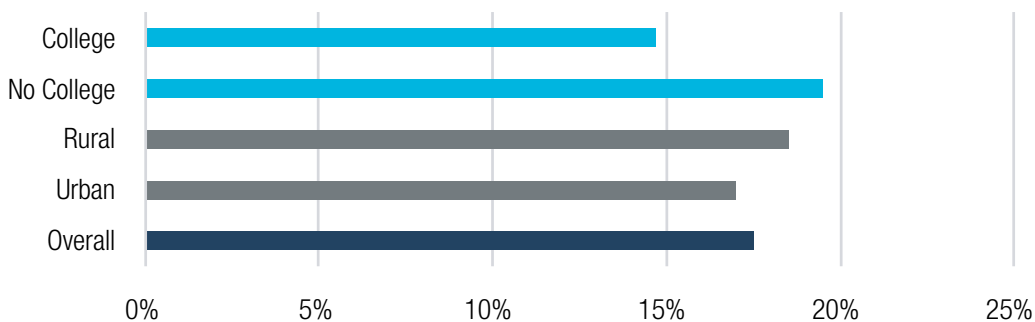


Both difficulty covering the basics and food insecurity were associated with lower scores on Kidsights score of child development and higher scores on psychosocial stress.

TROUBLE FINDING CHILD CARE THAT AFFECTS EMPLOYMENT

Eighteen percent of the total sample reported having to change employment or quit a job due to problems with child care. There were no significant differences between rural and urban families in trouble finding child care. Only 14.7% of parents with college degrees reported trouble finding child care, whereas 19.5% of caregivers with no college degree noted trouble with child care. “Trouble finding child care” was associated with lower child development scores and higher child psychosocial stress, after statistically controlling for parents’ education, home learning environments, child age, and sex. See Figure 5.

FIGURE 5 | PERCENT OF PARENTS REPORTING CHANGE IN EMPLOYMENT DUE TO PROBLEMS WITH CHILD CARE



CHILDREN WITH SPECIAL HEALTH CARE NEEDS

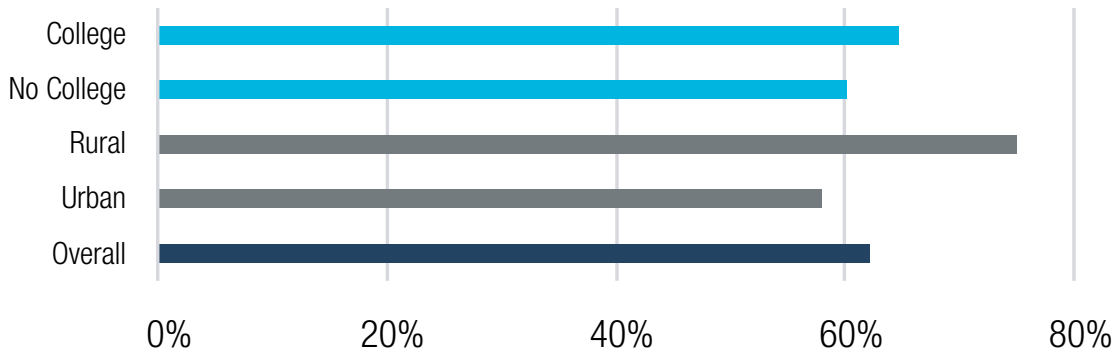
Within the sample, 16% of parents overall reported their child having one or more special health care needs, such as requiring additional medical care, educational services, therapy, and/or behavioral counseling. Parents with less than a four-year college degree were more likely to report that their child had special health care needs (19%) compared to parents with a four-year college degree (12%). Having any special health care needs was associated with a lower child development scores, and having more than one special health care need was associated with even lower scores. Having a child with special health care needs was also associated with fewer home learning activities, and parents of children with special needs also reported greater economic insecurity.

NEIGHBORHOODS AND COMMUNITIES

Strong neighborhoods and communities have a positive impact on child development. Parents were asked several questions about their neighborhood and/or community, such as if they help each other, watch out for each other’s children, and know where to go for

help in the community when they encounter difficulties. Based on the responses to these items, 62% of participants reported living in a supportive neighborhood.

FIGURE 6 | PERCENT OF PARENTS REPORTING LIVING IN A SUPPORTIVE NEIGHBORHOOD



There was a significant difference between those living in rural areas and those living in urban areas, with 75% of parents from rural areas reporting a supportive neighborhood compared to only 58% of urban parents. Living in a supportive neighborhood was positively associated with higher child development scores.

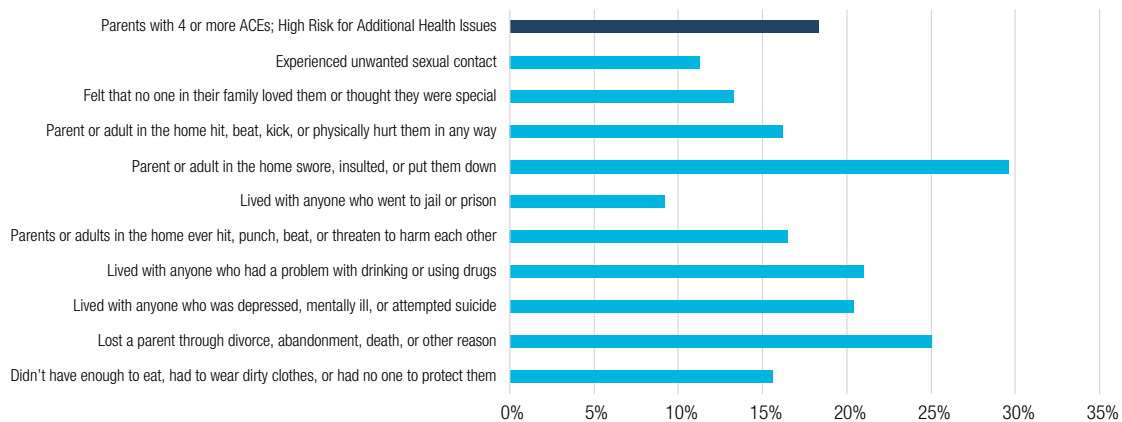
PARENT MENTAL HEALTH

At least 30% of parents in the sample reported some level of distress based on a depression and anxiety screener. Parents living in urban areas were more likely to endorse some level of depression or anxiety symptoms. However, parents in rural areas were more likely to report symptoms meeting the cutoff for a major depressive episode. A higher proportion of parents with a college degree reported some symptoms of distress, both depression and anxiety. However, those without a college degree were more likely to report more persistent symptoms. Parental distress symptoms were associated with lower child development scores and higher number of psychosocial problem behaviors.

PARENT AND CHILD ADVERSE EXPERIENCES

Overall, Nebraska parents reported high rates of adverse childhood experiences in their own lives. Over 60% of parents reported at least one adverse childhood experience, and 18% reported four or more ACEs, which is associated with significantly higher risk for many physical, mental and behavioral health issues (Felitti et al., 1998). Frequencies of specific ACEs appear below in Table 5. Children in our sample have also experienced ACEs, but less frequently: 90% of children had not experienced any ACEs and less than 1% had experienced four or more ACEs.

FIGURE 7 | PERCENT OF PARENTS REPORTING ADVERSE CHILDHOOD EXPERIENCES IN THEIR OWN LIVES



Parents in rural areas reported fewer ACEs in their own childhoods than parents in urban areas, specifically fewer reports of growing up with a parent who struggled with mental illness, not having enough to eat, or having violence in the home. For parents reporting four or more ACEs as a child, about twice as many were in urban areas than in rural areas. There were no differences in children's ACEs in rural versus urban areas.

Parents with a college degree reported significantly fewer ACEs than parents without a college degree, for all ACEs except exposure to violent discipline and being sworn at or insulted as a child. Parents with a college degree also reported that their children had been exposed to fewer ACEs.

These early experiences now affect their own children: parents who reported more ACEs in their own childhoods also reported greater psychosocial stress among their children. Parent ACEs were a more powerful predictor of child development scores than children's ACEs were, but both parent and child ACEs made independent contributions to children's psychosocial stress.

PARENTING DEMANDS AND SUPPORTS

About half of Nebraska parents feel they are doing very well with the day-to-day demands of raising a child. An additional 47% reported that they are doing somewhat well, and the remaining 2% reported they are not doing well at all. There was a difference between those living in urban and rural areas, with 42% of rural parents feeling they are doing very well versus 54% of urban parents. Parents' feelings they were doing better at parenting was related to higher child development scores and more stimulating home learning environments.

Although parents are facing many challenges, most parents, 82%, reported having at least one person they could turn to for day-to-day support with raising children. Parents with a college degree and those living in rural areas were more likely to report having this support. Parent support was positively associated with higher child development scores and fewer psychosocial problem behaviors.

Discussion and Conclusions

Nebraska families have many strengths: the high percentage of families engaging with children in home learning activities; the many families who report that they have support for parenting and live in communities that help them raise healthy children; and the families who may have experienced difficult childhoods themselves or may have high levels of stress but are effectively parenting their own children. At the same time, the Kidsights results also highlight ways that we can collectively support parents better.

Our results indicate that many families are struggling economically, and that economic challenges and food insecurity are associated with negative impacts on child development. Our work reveals the emotional challenges that parents struggle with now, both due to high levels of stress and also because of their own experiences in childhood. These factors in turn were associated with negative impacts on child development, both on Kidsights scores and higher levels of psychosocial stress in children. Some populations of children and families are especially vulnerable, such as children with special health care needs. Investing in support for parents can lead to positive outcomes for parents and their children. Parents with college degrees or more may be better equipped to provide their children with supportive early environments through higher incomes and less food insecurity, the ability to find child care, and the ability to provide stimulating home learning environments.

We also found some ways in which rural and urban families differ from each other. Families in rural areas reported strong communities and neighborhoods and were more likely to report they are handling the demands of parenting very well, but they also reported more trouble finding child care and more frequent reports of trouble covering the basics since the child's birth. Parents of children in urban areas were more likely to report high levels of ACEs in their own childhoods.

For example, and for further discussion among the many partners focused on ensuring healthy environments for young children, three possible areas of emphasis emerge from our findings:

- Home learning environments are powerful influences on young children. Nebraska has many effective programs to promote strong home learning environments, including home visiting and building connections between families, schools, and child care professionals. These programs – and the many community organizations that deliver them – provide a highly impactful service in preparing children for school.

- Addressing economic insecurity among families with young children in Nebraska is critical for child development. Rural and urban families alike are struggling to make ends meet. Supporting families to make sure they have enough to eat, good housing in strong neighborhoods, and the ability to afford child care is essential for raising young Nebraskans.
- Parents' mental health is also important. We found evidence that many parents feel the stress of raising children today, and particularly in rural areas, symptoms of depression and anxiety may linger over time. Ensuring mental health services for parents can help alleviate stress and help parents do the best they can for their children.

Looking across our results, disparities in early development may arise from several factors: economic insecurity, parents' own adverse early experiences, difficulty finding child care, and high levels of parenting stress, in addition to living in neighborhoods and communities that are perceived as not supportive. Providing additional economic and emotional support to parents, neighborhoods, and communities will translate into better outcomes for Nebraska's young children.

Kidsights results can be used in several ways. First, the results provide a baseline for measuring child development and summarizing characteristics of Nebraska families statewide. Fielding the survey at regular intervals will provide data to track trends in child development and the experiences of families with young children over time. Additionally, these data can point to promising areas for interventions, specifically around home learning environments and parent exposure to ACEs, especially for parents with lower levels of formal education.

Young children in Nebraska are being raised in families with many strengths, and that is much to celebrate. Yet the importance of supporting families has never been greater. To make sure all young children start school ready to thrive, we need to do more to ensure families have the resources, strong communities, and emotional support they need. Inequities that arise due to parents' socio-economic status, backgrounds, or geographical area must be addressed from children's earliest days.

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