Summary of Findings from the ALCANLink Project: Education Outcomes

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Introduction

The health, well-being, and familial context of the birthing parent during the prenatal period is influential to their child's early developmental success. High levels of stress are associated with suboptimal cognitive and socio-emotional outcomes for school-aged children, such as school readiness and academic achievement. Early developmental success and school readiness influence future skill development, occupational opportunities, and health. Therefore, we aimed to identify and address early determinants of school readiness by leveraging data from the Alaska Longitudinal Child Abuse and Neglect project (ALCANLink) to examine factors that support children's overall well-being and success.

The ALCANLink project began with a group of Alaskan children whose mothers responded to the Pregnancy Risk Assessment Monitoring System (PRAMS) survey shortly after the children were born. Every year, we update that base dataset with information about whether any of the children have been reported to child welfare or received services from other public programs. As the children age, additional information is added, such as their education and academic discipline records. ALCANLink now maintains longitudinal data for 10 years of births (birth years 2009-2018) across three PRAMS phases.

Using these data, we can explore how pre-birth factors affect the risk of a child not meeting early school readiness benchmarks or receiving disciplinary action, as well as the early childhood family context of Adverse Childhood Experiences (ACEs). This work is ongoing and has provided clear evidence for the need for early and continued efforts to address household challenges before birth and throughout childhood.

Core ALCANLink Sources
- **Alaska Pregnancy Risk Assessment Monitoring System (PRAMS)**: Ongoing survey of Alaskans who recently delivered a live birth given at 2-6 months post-partum. PRAMS collects state-specific, population-based data on birthing parents' pre-pregnancy, pregnancy, and post-birth attitudes and experiences.[1] All responses are weighted to the Alaska state population for analysis and interpretation at the population level. The survey is developed by the Centers for Disease Control and Prevention (CDC) and administered by the Alaska Division of Public Health, Section of Women's, Children's, and Family Health (WCFH). A new PRAMS phase begins when CDC updates the survey content. Birth years covered by current and past PRAMS phases are detailed on the Alaska PRAMS website linked above.
- **Childhood Understanding Behaviors Survey (CUBS)**: Ongoing 3-year follow-up survey to PRAMS. Collects data from PRAMS respondents still living in Alaska about their and their child's environmental, social, and other experiences. CUBS data are weighted to represent all three-year-old children born in Alaska during the time frame of the survey.
- **Office of Children's Services (OCS)**: Includes all alleged child (age < 18 years) maltreatment reports, investigations, findings, and out-of-home placements.

Includes data on physical abuse, sexual abuse, mental injury (psychological/emotional abuse), and neglect.

- **Alaska Permanent Fund Dividend (PFD)**: Contains information from all Alaskan residents who apply for a dividend from the state's oil earnings. Source used to prospectively follow the PRAMS cohort and interval censor respondents if they moved out of state.
- **Department of Education and Early Development (DEED)**: Includes children's Alaska Developmental Profile (ADP) scores, 3rd grade Performance Evaluation for Alaska's Schools (PEAKS) English language arts assessment scores, attendance records, and suspension histories.
  - ADP is an Alaskan developed evaluation tool given to students entering kindergarten or first grade. It identifies whether students are consistently demonstrating 13 goals and indicators in the five domains from Alaska's Early Learning Guidelines.
  - PEAKS English language arts evaluation assesses students' skills in reading complex texts, writing with clarity, and presenting and evaluating ideas.
- **Birth and Death Records**: Provided by the Section of Health Analytics & Vital Records (HAVRS), Department of Health. Parent and child demographic information from the birth certificate are used for descriptive purposes. Death certificates are used to identify deaths and interval censor outcomes when a child has died.

Pre-Birth Challenges

Birthing parents self-report on PRAMS household challenges that they experienced during the 12 months before pregnancy or birth of their child (timing varies by challenge). Pre-birth household challenges used as exposure variables in analyses differ depending on the PRAMS phase(s) being analyzed and the outcome variable(s) of interest. For example, if the outcome being predicted is level of ACEs for the child, then only pre-birth household challenges that closely align with the ACEs framework[2,3] will be chosen for analyses.

A non-exhaustive list of pre-birth household challenges collected on PRAMS includes:
- Having a lot of bills that could not be paid
- Experiencing a death of someone close to the birthing parent
- Someone close to the birthing parent having a problem with drugs or drinking
- Experiencing homelessness
- The birthing parent or partner being incarcerated
- Moving to a new address
- The birthing parent and/or partner losing their job
- Experiencing a divorce or separation
- Intimate partner violence before or during pregnancy
- The birthing parent being checked or treated for anxiety or depression by a medical professional

Pre-birth exposures are summed to calculate the total household challenges (missing responses were treated as a 0 or assumed to not have had the experience). Respondents who did not answer any of the exposure questions are excluded from the analyses.

Recent Analytic Results

All analytic results are based on weighted, representative data. School readiness and academic achievement outcomes were analyzed when ALCANLink only had 2009-2011 PRAMS data. Suspension data became available and was analyzed when ALCANLink had 2009-2018 PRAMS data.

Kindergarten Readiness[4]

- Overall, 69% of children born in Alaska between 2009-2011 fell below the Alaska Developmental Profile (ADP) gold standard – at least 11 out of 13 developmental goals met (Figure 1).
- Children born to birthing parents who experienced 4+ pre-birth household challenges had 1.16 times the risk of not meeting developmental profile standards than those who were born to birthing parents with 0-1 pre-birth household challenges.
- The birthing parent experiencing homelessness during the 12 months before the child was born was associated with the highest un-adjusted risk for the child of not meeting the ADP gold standard, followed by experiencing a divorce or separation prior to the birth.
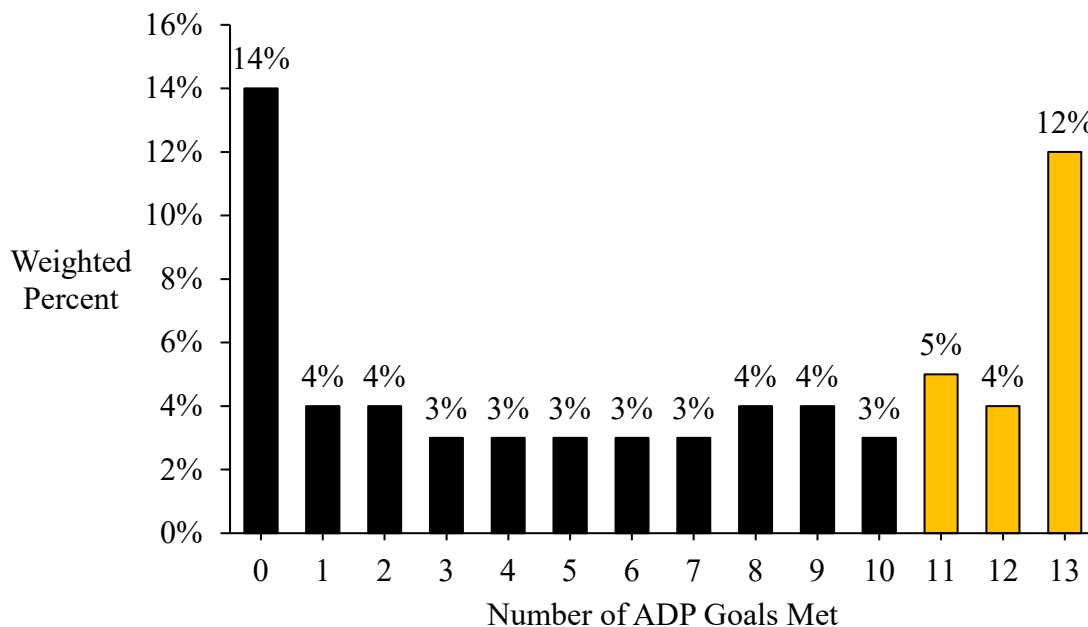

Figure 1. Weighted percent distribution of the number of Alaska Developmental Profile (ADP) goals met in the population. Meeting at least 11 out of 13 goals is the developmental gold standard (gold bars).

Third-Grade Reading Proficiency[4]

- 64% of children born in Alaska between 2009-2011 did not meet third grade reading proficiency, according to the Performance Evaluation for Alaska's Schools (PEAKS) English language arts assessment.
- Experiencing more than two pre-birth household challenges had a negative impact on children's third grade reading proficiency.
  - Children born to birthing parents who reported experiencing 2–3 and 4+ pre-birth household stressors had 1.36 and 1.27 times the risk of not meeting reading proficiency, respectively, than those who were born to birthing parents who reported experiencing 0–1 household stressors.
- The birthing parent experiencing intimate partner violence and homelessness during the 12 months before the child's birth was associated with the highest un-adjusted risk for children not meeting later reading proficiency.

School Attendance[4]

- 22% of children born in Alaska between 2009–2011 met the definition for chronic absenteeism (average attendance <90% of school days).
- Children born to households who experienced the highest levels of pre-birth household challenges (4+) had significantly higher risk of chronic absenteeism than those born to households with no pre-birth household challenges.
- Incarceration of the birthing parent or their partner during the 12 months before the child's birth was associated with the highest later risk of chronic absenteeism for the child.

Suspensions

- Of the children born between 2009-2018 who were pre-school age or older at the time of the analysis, 4% experienced at least one suspension.
  - Most instances of a first suspension occurred in 1st grade (Figure 2).
  - 2% experienced multiple suspensions
- In a sub-analysis focused on weapon and drug-related suspensions, among the children who experienced at least one suspension:
  - 4% had suspensions involving a non-deadly weapon (e.g., pellet gun, paintball gun, firecrackers)
  - 1% had suspensions involving deadly weapons (e.g., large knife, club/stick, martial arts weapon)
  - 3% had suspensions involving tobacco
  - None of the suspensions involved firearms, alcohol, or illicit drugs
- Using data from CUBS, we found:
  - Children who experienced at least 2 ACEs by the age of 3 had significantly higher odds (Odds Ratio $[OR]_{2\text{-}3 \text{ Challenges}}$ = 2.24, 95% CI = 1.32, 3.79; $OR_{4+ \text{ Challenges}}$ = 5.29, 95% CI = 3.19, 8.77) of being suspended than children who had experienced 1 or no ACEs.
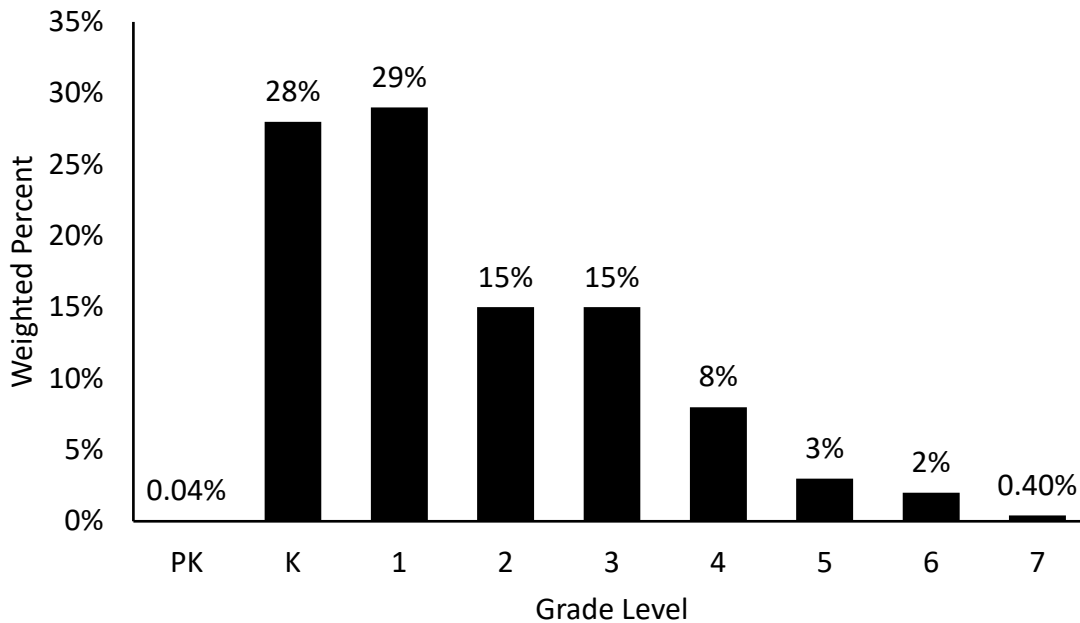
Figure 2. Weighted percent distribution of 2009 – 2018 PRAMS children pre-school age or older who experienced their first suspension by grade level.

Conclusions

Children born into households that experienced high levels of pre-birth household challenges are at an increased risk of not meeting future kindergarten developmental goals, experiencing chronic absenteeism in school, and being suspended from school compared to children born in households that experienced one or no pre-birth challenges. In addition, higher levels of pre-birth household challenges (2–3 and 4+ challenges) were associated with a stepwise increase in the risk of the child not meeting 3rd grade reading proficiency compared to children born in households who experienced one or no pre-birth challenges.

Early developmental success, school readiness, and involvement with school discipline influences future achievement. Therefore, the above results suggest that it is imperative that support systems for pregnant persons and their families be introduced as soon as possible in the normal prenatal care routine to address current household stressors and prevent future challenges. Ideally, these support systems will remain in place for families and adapt as families change and experience new or additional stressors during their child's early childhood. Such early prevention efforts are needed to ensure the best possible developmental start for children.

References

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