

## Adverse Childhood Experiences in Rural and Farm Families in Wisconsin



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**Background:** Adverse childhood experiences (ACEs) are seminal events that can occur in early life, including forms of neglect, physical, sexual, and emotional abuse. ACEs routinely result in negative health consequences, including increased risks of many chronic conditions in adulthood. While there are some established social determinants of ACEs (e.g., parental substance abuse, poverty), the degree to which residency impacts the risk of ACEs is not well understood. Nearly 20% children and adolescents in the U.S. live in rural areas, but evidence is mixed on how the burden of ACEs differ between rural and urban youth. Furthermore, no studies have examined the burden of ACEs in those who live on farms, a hazardous subset of rural

environments. The purpose of this study was to examine the association between ACEs and rural/farm residency in north-central Wisconsin youth. .

**Methods:** Cross-sectional analyses were conducted using medical records data from an existing cohort of children and adolescents (age 0-17 years) in a 20-county region of north-central Wisconsin. Medically attended ACEs were identified by screening for groups of diagnostic codes indicative of emotional, physical, or sexual abuse, as well as neglect, observed between 2017 and 2023. The ACE cases were further chart audited for validation and a multivariable logistic regression was used to examine associations between rural/farm residence and ACEs.

**Results:** The sample included 5,990 individuals who lived on a farm, 52,614 who lived in a rural area, and 42,788 who lived in a non-rural area. Overall, ACEs were observed in 2,677 participants (2.7%). In the final adjusted model, the risk of an ACE was significantly higher in (non-farm) rural youth as compared to both farm (adjusted odds ratio [aOR] [95% confidence interval; CI] = 0.72 [0.60, 0.89],  $p = 0.001$ ) and non-rural (aOR [CI] = 0.86 [0.78, 0.95],  $p < 0.001$ ) youth. Specifically, rural (non-farm) youth had the highest risk of an ACE at 169 (CI: 158, 182) per 10,000, whereas farm youth had the lowest risk of an ACE at 123 (CI: 102, 149) per 10,000.

**Conclusions:** Compared to their farm and non-rural counterparts, youth who lived in rural areas had a significantly higher risk of an ACE. Additional prospective studies are needed to identify causal elements within different child rearing environments that may promote or protect against ACEs.