

RESEARCH ARTICLE

Rural/urban differences in rates and predictors of intimate partner violence and abuse screening among pregnant and postpartum United States residents

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Abstract

Objective: To describe rates and predictors of perinatal intimate partner violence (IPV) and rates and predictors of not being screened for abuse among rural and urban IPV victims who gave birth.

Data Sources and Study Setting: This analysis utilized 2016–2020 Pregnancy Risk Assessment Monitoring System (PRAMS) data from 45 states and three jurisdictions.

Study Design: This is a retrospective, cross-sectional study using multistate survey data.

Data Collection/Extraction Methods: This analysis included 201,413 survey respondents who gave birth in 2016–2020 ($n = 42,193$ rural and 159,220 urban respondents). We used survey-weighted multivariable logistic regression models, stratified by rural/urban residence, to estimate adjusted predicted probabilities and 95% confidence intervals (CIs) for two outcomes: (1) self-reported experiences of IPV (physical violence by a current or former intimate partner) and (2) not receiving abuse screening at health care visits before, during, or after pregnancy.

Principal Findings: Rural residents had a higher prevalence of perinatal IPV (4.6%) than urban residents (3.2%). Rural respondents who were Medicaid beneficiaries, 18–35 years old, non-Hispanic white, Hispanic (English-speaking), or American Indian/Alaska Native had significantly higher predicted probabilities of experiencing perinatal IPV compared with their urban counterparts.

Among respondents who experienced perinatal IPV, predicted probabilities of not receiving abuse screening were 21.3% for rural and 16.5% for urban residents. Predicted probabilities of not being screened for abuse were elevated for rural IPV victims who were Medicaid beneficiaries, 18–24 years old, or unmarried, compared to urban IPV victims with those same characteristics.

Conclusions: IPV is more common among rural birthing people, and rural IPV victims are at higher risk of not being screened for abuse compared with their urban peers. IPV prevention and support interventions are needed in rural communities and

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should focus on universal abuse screening during health care visits and targeted support for those at greatest risk of perinatal IPV.

KEYWORDS

domestic violence, intimate partner violence, maternal health, pregnancy, rural health

What is known on this topic

- Intimate partner violence (IPV) is a leading nonobstetric cause of maternal morbidity and mortality, which is elevated for rural residents compared with urban residents.
- Health care-based screenings are critical for identifying IPV, but barriers to screening may be exacerbated given access challenges for pregnant and postpartum rural residents.

What this study adds

- IPV is more common among rural birthing people than urban birthing people.
- Rural residents who experience IPV are at higher risk of not being screened for abuse compared with their urban peers.

1 | INTRODUCTION

Domestic violence, including intimate partner violence (IPV), is a leading nonobstetric cause of maternal morbidity and mortality.¹⁻⁴ Violence during pregnancy is one of the most common health problems experienced by pregnant people, affecting a similar number of individuals each year as gestational diabetes.⁵⁻⁷ IPV is associated with an increased risk of antepartum hemorrhage,⁸ higher rates of perinatal and postpartum depression, suicidal ideation,⁹ as well as lower rates of breastfeeding.¹⁰ Infants born to those experiencing IPV are also affected, with higher rates of preterm birth, low birth weight or small for gestational age,^{3,11,12} neonatal intensive care unit admissions, and perinatal/neonatal death.^{3,8,11,12} Abuse-related chronic stress may increase the risk of severe maternal morbidity and mortality through the combined effects of the physiological impacts of stress, financial insecurity, increased risk of housing instability and being unhoused, emotional abuse and being controlled or stalked, and increased reliance on addictive coping behaviors, such as smoking and substance use.^{2,13-18} Risk of IPV during pregnancy differs by race, with Black and Indigenous/American Indian/Alaska Native people experiencing the highest rates in the United States (US).^{19,20}

Rural and urban US residents may experience different rates of IPV and consequences from IPV, and the likelihood of IPV being identified through screenings may differ between rural and urban residents as well.²¹ Prior research into urban-rural differences in overall IPV prevalence (not specific to pregnancy) has been mixed,²² though several studies have identified higher rates and severity of IPV among rural residents.²³⁻²⁵ In addition, rural residents who give birth face unique health risks—from declining access to obstetric services to elevated risks of substance use disorder and maternal morbidity and mortality.^{21,26,27} Rural communities have fewer physicians per capita than urban areas,^{28,29} and rural residents are significantly more likely to live over 30 miles from an obstetric unit than their urban counterparts.³⁰ Many rural residents face additional obstacles to accessing

health care services, including transportation and socioeconomic barriers.^{31,32} These factors may all contribute to the lower rates of preventive screenings faced by rural residents compared to their urban peers,³³⁻³⁵ which, in turn, may have implications for how well the health care systems are able to identify and care for rural residents experiencing IPV.

Health care-based screenings are critical for identifying IPV. Yet, in state- and county-specific studies, researchers have noted that for more than half of pregnant and postpartum people who were killed by an intimate partner, their obstetric care clinicians did not know that their patients were experiencing IPV.³⁵ Barriers to effective screening may be exacerbated in rural areas where access to care—especially for pregnant people—is impeded by longer travel distances and workforce shortages.^{36,37} In order to adequately address this health problem at both an individual and population level, it is critical that policymakers, payers, health care clinicians, social services providers, and other stakeholders have access to data that more fully elucidates the current state of IPV and abuse screening during the perinatal period. The goal of this analysis was to describe rates and predictors of IPV among rural and urban US residents who gave birth in 2016–2020. We also described rates and predictors of not being screened for abuse among rural and urban IPV victims, in order to identify those at risk for underdetection.

2 | METHODS

2.1 | Data

This analysis used 2016–2020 data from 45 states and three jurisdictions (New York City, Washington, D.C., and Puerto Rico) from the Pregnancy Risk Assessment Monitoring System (PRAMS), a survey of people who recently gave birth conducted by the federal Centers for Disease Control and Prevention in collaboration with state and local

health departments.²⁴ Response rates varied by survey site, but sites must have had a response rate of at least 50% for data to be released to researchers for the 2016–2020 data collection period; site-level response rates can be found elsewhere.³⁸ We analyzed data from 42,193 rural respondents and 159,220 urban respondents, representing a total unweighted *n* of 201,413.

2.2 | Measures

This analysis focused on two outcomes, which were measured with separate survey questions. The first outcome is perinatal IPV: whether respondents reported experiences of physical violence by a current or former intimate partner before or during pregnancy. The second outcome is abuse screening: whether respondents were not screened for abuse (being hurt physically or emotionally) at health care visits before, during, or after pregnancy.

To assess experiences of IPV, we used the only available PRAMS survey question about experiences of IPV, which focused on physical violence. The survey asked: “Did any of the following people push, hit, slap, kick, choke, or physically hurt you in any way?” The response options included a yes/no indication for both “my husband or partner” and “my ex-husband or ex-partner.” This question was asked for both the preconception period (12 months before pregnancy) and prenatal period (during pregnancy). We coded this outcome as a dichotomous variable indicating whether the respondent reported experiencing physical IPV, either during the preconception period or during pregnancy.

To assess abuse screening, we used PRAMS survey questions about health care visit attendance and abuse screening at health care visits. Respondents were asked whether they had any health care visits during the preconception period (12 months before pregnancy), any prenatal care visits (during pregnancy), or a postpartum check-up visit between childbirth and the time of the survey (survey timing range 2–6 months postpartum; median 4 months postpartum). If respondents reported having visits during these periods, they were then asked: “During any of your health care visits [in the 12 months prior to pregnancy, prenatal care visits, or postpartum check-up visits], did a doctor, nurse, or other health care worker ask you any of the things listed below?” The response options included a yes/no indication for “if someone was hurting me emotionally or physically.” We used a “no” response to this question to indicate whether abuse screening had not occurred at the visit. Respondents were asked about abuse screening generally, not whether they were specifically screened for abuse by an intimate partner; therefore, to accurately reflect the content of the PRAMS survey questions, we report on “abuse screening” rather than “IPV screening” in this analysis. Survey questions on screening during the preconception, prenatal, and postpartum periods were only asked to individuals when they reported having a visit during those periods, and we created a dichotomous indicator for not being screened for abuse for each period (preconception, pregnancy, and postpartum). Lack of screening was the focus of

this analysis given the importance of identifying people experiencing violence who are *not* receiving appropriate preventive care.

Core sociodemographic covariates included in this analysis were rural/urban residence (counties categorized by National Center for Health Statistics Urban–Rural Classification Scheme as Metropolitan Statistical Areas were labeled as “urban” and counties that were not Metropolitan Statistical Areas were labeled as “rural”),²⁵ self-reported race and ethnicity and primary language (derived from four separate variables into the following mutually-exclusive categories for analysis: White, non-Hispanic; Black, non-Hispanic; Hispanic (English-speaking); Hispanic (Spanish-speaking); American Indian/Alaska Native; Asian/Pacific Islander; and Multiple/Other), and health insurance status at childbirth (private insurance, Medicaid, and no insurance).³⁹ Other sociodemographic variables included age in years at the time of childbirth (≤ 24 ; 25–34; ≥ 35), self-reported education at the time of childbirth (less than high school; high school; more than high school), and self-reported marital status at the time of childbirth (married; not married). Clinical variables included self-reported parity and self-reported prepregnancy comorbid conditions (diabetes, high blood pressure/hypertension, depression, and smoking); prepregnancy obesity was measured by body mass index, which was calculated based on PRAMS self-reported height and weight data.

2.3 | Analysis

We estimated adjusted predicted probabilities and 95% confidence intervals (CIs) of experiencing IPV using multivariable logistic regression models stratified by rural and urban residence that included demographic, clinical, and health care characteristics (race and ethnicity, age, education, marital status, parity, prepregnancy health conditions, and health insurance).

The PRAMS survey asked about experiences of IPV before and during pregnancy. There was no question that asked about IPV during the postpartum period. The survey question on abuse screening was assessed before, during, and after pregnancy. Because screening information in this survey covered time periods after the assessment of IPV, we did not include abuse screening as a predictor in the models in which IPV was the outcome.

To describe health care visit attendance and abuse screening at health care visits during the preconception, prenatal, and postpartum periods for rural and urban residents, we estimated survey-weighted proportions with 95% CIs, using PRAMS weights, which account for the complex stratified survey design, nonresponse, and noncoverage. We also estimated adjusted predicted probabilities and 95% CIs of not receiving abuse screening for rural and urban residents, focusing on those who experienced IPV during the preconception and/or prenatal period, using multivariable models that adjusted for the same demographic, clinical, and health care characteristics described above. Data were de-identified, and this study was designated exempt from review by the University of Minnesota Institutional Review Board.

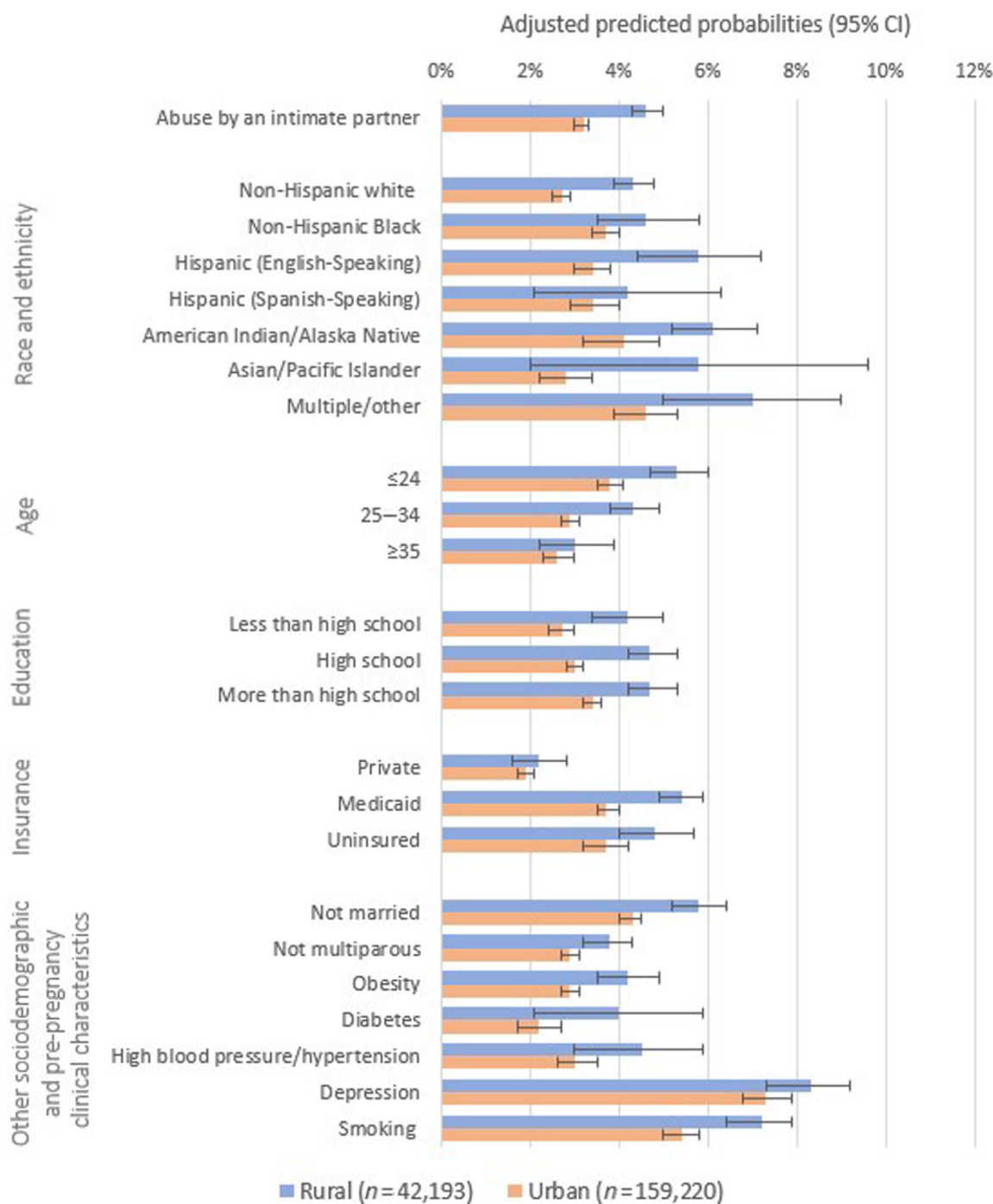


FIGURE 1 Adjusted predicted probabilities of intimate partner violence by patient characteristics among rural and urban United States residents, Pregnancy Risk Assessment Monitoring System, 2016–2020 ($n = 201,413$). N's are unweighted. Predicted probabilities are weighted to account for sample design, nonresponse, and noncoverage. The predicted probability values are multiplied by 100 to be reported as percentages. Data are adjusted for demographic, clinical, and health care variable characteristics (race and ethnicity; maternal age; education; marital status; parity; insurance at childbirth; and pre-pregnancy conditions [obesity, diabetes, high blood pressure/hypertension, depression, smoking]). More information on this figure can be found in Table S1. CI, confidence interval. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.com)]

3 | RESULTS

In adjusted weighted analyses, 4.6% of rural and 3.2% of urban residents reported experiencing IPV (Table S1), defined in this study as experiencing physical violence from a current or former intimate

partner. After adjustment for demographic characteristics (race and ethnicity, age, education, marital status, and parity), clinical characteristics (pre-pregnancy health conditions), and health care characteristics (insurance at childbirth), Figure 1 presents adjusted predicted probabilities of experiencing IPV for rural and urban

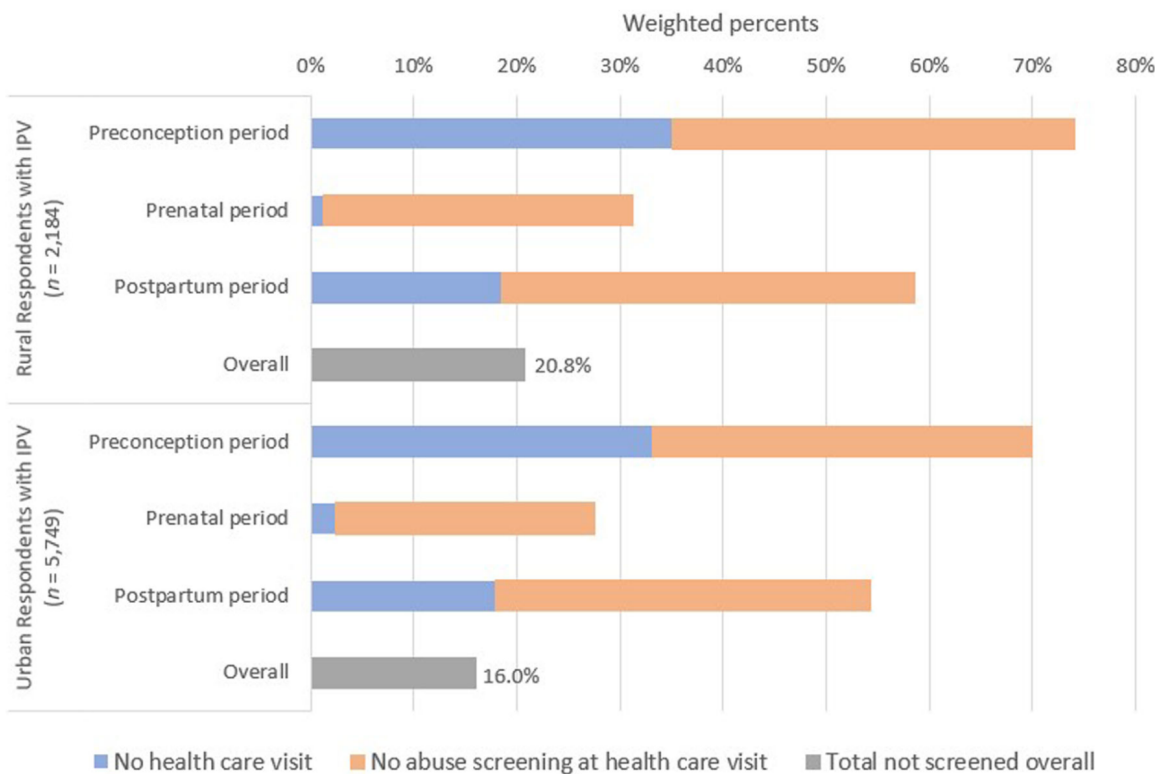


FIGURE 2 Proportions of health care visit attendance and abuse screening by perinatal period, among rural and urban United States residents who experienced intimate partner violence, Pregnancy Risk Assessment Monitoring System, 2016–2020 (n = 7933). Data are unweighted sample sizes (n) and weighted proportions. The categories for “no health care visit” and “no abuse screening at health care visit” are mutually exclusive. More information on this figure can be found in Table S2. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.com)]

residents. Across all measured characteristics, rural residents reported higher rates of IPV than their urban counterparts, with some notable rural/urban differences. For example, rural respondents who were non-Hispanic white, Hispanic (English-speaking), or American Indian/Alaska Native had significantly higher predicted probabilities of IPV during the preconception or prenatal periods compared to their urban counterparts. Rural respondents who were 18–24 years old or 25–34 years old also had significantly higher predicted probabilities of IPV compared to urban respondents in those age groups. Rural Medicaid beneficiaries had a significantly higher predicted probability of IPV compared to their urban counterparts. The estimates for Figure 1 can be found in Table S1.

To understand the receipt of abuse screening, we described patterns of health care visits and whether or not screening occurred at these visits. There are two reasons that people may lack abuse screening: they did not attend a health care visit (where screening could occur), or they were not screened by a health care worker at the visits they attended. Focusing on respondents who experienced IPV, Figure 2 presents unweighted sample sizes and weighted proportions of rural and urban respondents by health care visit attendance and receipt of abuse screening, by stage of pregnancy. The estimates for Figure 2 can be found in Table S2. Overall, screening rates were low. Before pregnancy, 60.4% of rural and 57.8% of urban residents who experienced IPV were not screened for abuse. Many IPV victims lacked health care visits before pregnancy; approximately 35.0% of

rural residents and 33.1% of urban residents who experienced IPV did not attend a visit in the year prior to pregnancy. During pregnancy, 30.9% of rural and 27.0% of urban residents who experienced IPV were not screened for abuse. In the postpartum period, more than half of rural IPV victims (51.0%) and nearly half of urban IPV victims (47.7%) were not asked about abuse. Approximately 18% of both rural and urban IPV victims in this study did not attend a postpartum visit, and 40.0% of rural and 36.3% of urban victims were not screened at the visits they did attend. Across the entire perinatal period (before, during, and after pregnancy), more than 1 in 5 rural IPV victims (n = 366) were never screened for abuse, compared with approximately 16% of urban IPV victims (n = 749).

In adjusted weighted analyses, 21.3% of rural and 16.5% of urban residents who experienced IPV reported not receiving abuse screening (Table S3). Figure 3 presents predicted probabilities of not receiving abuse screening among rural and urban IPV victims, after adjustment for race and ethnicity, age, education, marital status, parity, health insurance, and prepregnancy health conditions. Rural IPV victims with Medicaid coverage at childbirth had a higher chance of not being screened, compared with urban IPV victims who were Medicaid beneficiaries. Rural IPV victims who were 18–24 years old and rural IPV victims who were unmarried were also more likely than their urban counterparts to lack abuse screening during the perinatal period. We also analyzed screening among all rural and urban respondents (not limiting the analysis to those with IPV) and found that

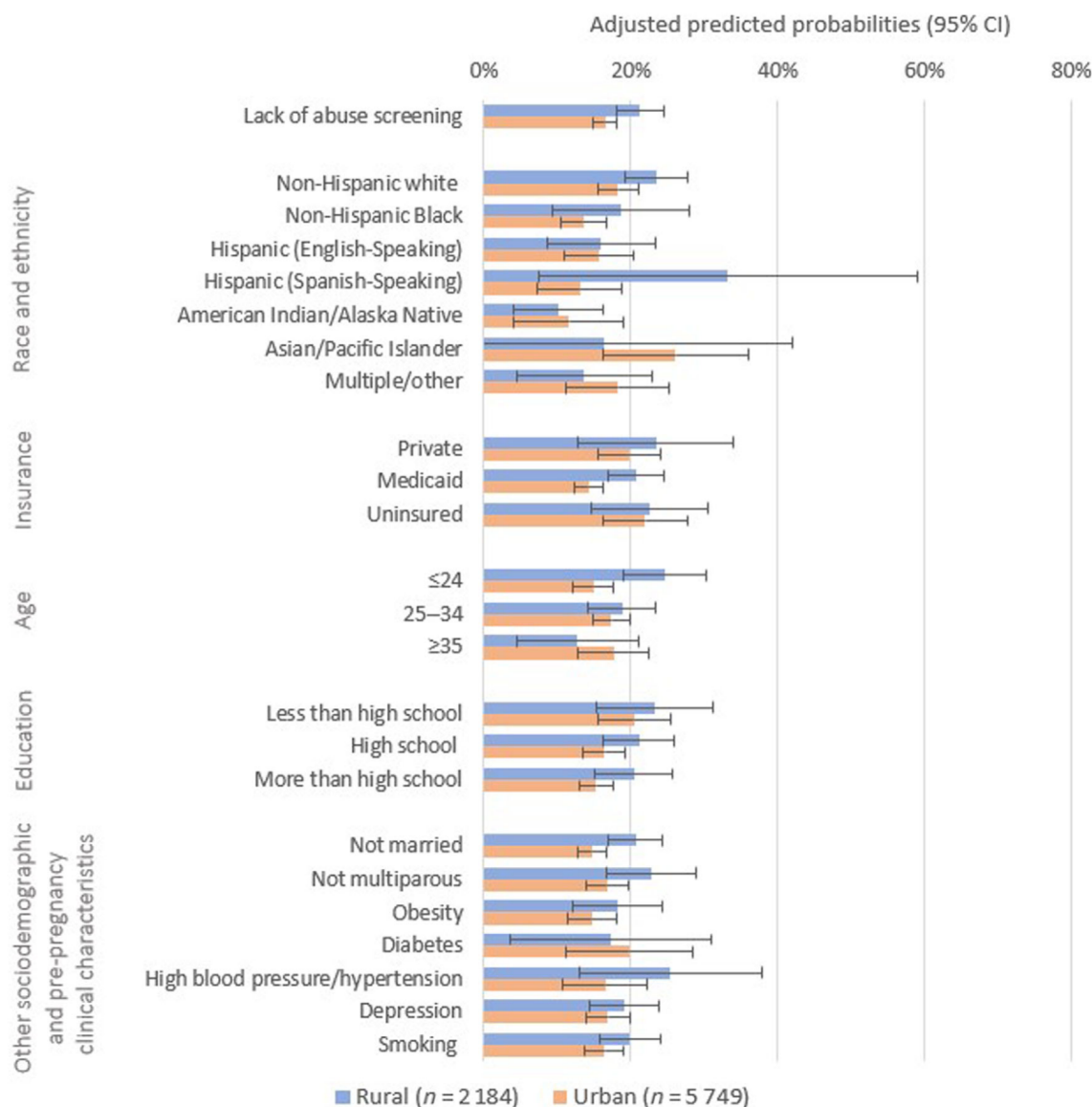


FIGURE 3 Adjusted predicted probabilities of no abuse screening among rural and urban United States residents who experienced intimate partner violence by patient characteristics, Pregnancy Risk Assessment Monitoring System, 2016–2020 ($n = 7933$). N's are unweighted. Predicted probabilities are weighted to account for sample design, nonresponse, and noncoverage. The predicted probability values are multiplied by 100 to be reported as percentages. Data are adjusted for demographic, clinical, and health care variable characteristics (race and ethnicity; maternal age; education; marital status; parity; insurance at childbirth; and pre-pregnancy conditions [obesity, diabetes, high blood pressure/hypertension, depression, smoking]). More information on this figure can be found in Table S3. CI, confidence interval. [Color figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]

screening prevalence did not differ significantly; 22.8% of rural and 22.2% of urban residents were not screened for abuse before, during, or after pregnancy.

4 | DISCUSSION

This analysis showed that rural residents were more likely than urban residents to experience physical violence from an intimate partner around the time of pregnancy and childbirth across all sociodemographic and clinical characteristics examined. All groups of rural

respondents by racial and ethnic identity, age, education, marital status, parity, pre-pregnancy conditions, and insurance status had elevated predicted probability of IPV compared to their urban peers. Higher prevalence of IPV among rural residents, including those with multiple marginalized identities, may be shaped by gender inequity and cultural norms around aggression, firearm possession, and gender roles, as well as limited geographic, financial, or cultural access to resources and support for those who experience or perpetrate IPV in rural communities.^{23,40,41}

Screening for abuse at health care visits was inadequately performed among all birthing people in this study; more than 22% of both

rural and urban residents were not screened during the perinatal period. In addition to being more likely to experience physical violence around the time of pregnancy, rural residents in this study who experienced violence had lower screening rates than their urban peers before, during, and after pregnancy. Some of this rural/urban discrepancy is driven by lower proportions of rural residents attending health care visits prior to pregnancy and during the postpartum period. Rural residents have reduced access to maternal health care,³⁷ owing to direct lack of access (e.g., long distances to care,³⁰ clinical workforce shortages⁴²) and indirect factors (e.g., lack of paid sick leave,⁴³ health insurance,^{44,45} and other community- or employer-based supportive policies that support health care use⁴⁶). It is likely that the health care access challenges rural residents face during pregnancy also create barriers to abuse screening, and for perinatal IPV victims to access support during this critical time of heightened IPV risk.

Pregnant people in rural areas who experience IPV are at increased risk for poor maternal and infant birth outcomes.^{1-4,8-12} These risks are heightened for IPV victims who are not screened for abuse and do not receive access to services or supports, as they may experience escalated violence.⁴⁷ Along with more limited access to health care and greater distances to care, lack of access to IPV-related services and support may contribute to greater risks among rural residents. For example, prior studies found higher numbers of IPV-related Emergency Department visits⁴⁷ and higher numbers of IPV-related homicides⁴⁸⁻⁵⁰ among rural residents in areas with few IPV-related services compared to urban areas. A qualitative study of reproductive-aged women in Iowa who were experiencing IPV found that 88% of rural residents (vs. 47% of urban residents) reported experiencing stress or depression as a result of the abuse, and 63% of rural residents (vs. 13% of urban residents) reported direct health consequences of the abuse, including both physical and mental health concerns.⁵¹ These issues are further compounded by the obstacles facing rural residents in accessing mental health care, including long-standing workforce shortages.⁵² While younger age at childbirth (ages 18–24) is not an independent risk factor for maternal morbidity and mortality, this study indicated elevated prevalence of IPV among rural residents in this age group, where health care access barriers are higher and economic security is lower; additionally, rural residents have a lower average age of childbirth, highlighting the importance of addressing IPV among younger birthing people in rural areas.⁵³

Both the U.S. Preventive Services Task Force and the American College of Obstetricians and Gynecologists recommend universal screening for IPV at health care visits before, during, and after pregnancy.^{54,55} In this study, 22.8% of rural residents were not screened for abuse at all during the perinatal period, including more than one in five rural residents who were IPV victims. Low rates of screening are concerning, particularly in rural settings. For clinicians, barriers to abuse screening may include a lack of knowledge about how to screen for IPV, discomfort in screening for and discussing IPV with patients, little time to screen for IPV during health care visits, and a lack of accessible referral resources for people experiencing IPV, which may deter clinicians from assessing IPV among patients.^{56,57} These barriers may be amplified for patient-clinician interactions in rural

communities, given access challenges such as distance to care and workforce shortages,^{30,42} and especially among rural IPV victims at greatest risk of not being screened—including unmarried birthing people, younger birthing people (18–24 years old), and lower-income birthing people (those with Medicaid coverage at childbirth). Policy-makers and health system leaders should consider strategies that address these barriers to achieve universal IPV screening.

Health insurance coverage has included abuse screening (without cost sharing) since the implementation of the Affordable Care Act of 2010.⁵⁸ Ensuring access to health insurance coverage and access to care in the preconception and postpartum periods will help facilitate financial access to health care—and thus the opportunity for screening—during these time periods. Independent access to health insurance coverage may be especially important in the context of IPV; financial control by an abuser may extend to health insurance coverage, and the person experiencing abuse may depend on the abuser for access to health insurance. Finally, rural residents are disproportionately likely to experience uninsurance or interruptions in health insurance coverage during the perinatal period,⁵⁹ and so would benefit from continuous access to health insurance coverage. Current efforts to extend postpartum Medicaid coverage may help address this potential barrier to accessing abuse screening, especially among rural residents.

There are several important limitations to consider with this analysis. First, the measures of IPV and abuse screening that are available in these data are incomplete. IPV includes three types of violence (physical, emotional, and/or sexual); however, the measures available in PRAMS only assess some components of this type of abuse. PRAMS survey questions on IPV and abuse screening are specific to this survey, and no information is provided on psychometric properties of these measures. The PRAMS survey question on IPV only asks about physical violence, not emotional or sexual violence. It asks about violence perpetrated by a “husband/partner” or “ex-husband/ex-partner,” and therefore our analysis may not detect IPV that occurs in more casual intimate relationships (e.g., a boyfriend). Also, the question about physical IPV was not asked for the postpartum period. Additionally, the abuse screening questions include only physical and emotional harm and are not specific to IPV. Data included in this analysis go through the year 2020, and thus include people who gave birth during the early part of the COVID-19 pandemic; we do not know how the pandemic may have affected IPV incidence, visit attendance, or abuse screening. Finally, rural and urban areas are diverse, and these complex metrics are dichotomized in this analysis based on county of residence.

5 | CONCLUSION

IPV before or during pregnancy is more common among rural US residents, compared to those living in urban areas. Additionally, more than 1 in 5 rural IPV victims were never screened for abuse before, during, or after pregnancy, a higher proportion than among urban birthing people who experienced IPV. Policy efforts for addressing

IPV among rural residents could focus on universal abuse screening during health care visits and continuous health insurance coverage, as well as targeted support for at-risk people in rural communities, before, during, and after pregnancy. Future research on identifying IPV-related consequences, including cases at particularly high risk for mortality, should also assess differences for rural and urban residents,⁶⁰ and efforts to improve prevention, detection, support services, and harm reduction for IPV should attend to rural/urban differences in prevalence and risks.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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