

Racial and Geographic Disparities in Maternal Outcomes During Covid-19

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What is Known on This Topic?

At the national level, substantial disparities in maternal mortality and morbidity are known to exist with Black women and women living in rural areas at higher risk of a collection of poor outcomes^[1,2,3]. Kentucky has one of the highest rates of maternal mortality in the U.S.^[4]

What Did This Project Do?

Medicaid claims data from 2012 to 2021 was used to investigate racial and geographic disparities among the population of pregnant women enrolled in Kentucky Medicaid. Rates of maternal mortality (MM), postpartum hemorrhage (PPH), and ICU admission were estimated and disparities by race and geography investigated. Increased MM was associated with advanced maternal age, cesarean delivery, and residing in rural Appalachia. Black women were found to have higher rates of PPH and ICU admission than White women.

What could Medicaid do with these findings?

Due to the timeframe of this project, we were unable to identify those mechanisms associated with the poorer outcomes among Black women and those in rural Appalachia that may be targeted by policy. Further investigation in this area should continue to be a focus of Kentucky's Medicaid program, university partners, and other stakeholders.

Introduction

Nationally, the rate of maternal mortality has increased over the past decade peaking during the height of the COVID-19 pandemic^[5,6]. There are significant disparities in maternal death across sociodemographic and economic factors. Black women, especially those of advanced maternal age, are at increased risk relative to White women^[6]. It has also been established that women living in rural areas have approximately double the rate of maternal mortality as women residing in urban areas^[7]. Kentucky has one of the highest maternal mortality rates in the US at approximately double the

national average^[4]. One important contributor is access to maternal health care, but 46% of Kentucky counties are maternal care deserts compared to 33% nationally^[8].

While maternal mortality rates in the U.S. are high, rates of maternal morbidity are even more staggering and have been increasing^[9]. As with maternal mortality, substantial disparities also occur in many maternal health outcomes with Black women^[10] and women living in rural areas^[11] more likely to experience negative outcomes.

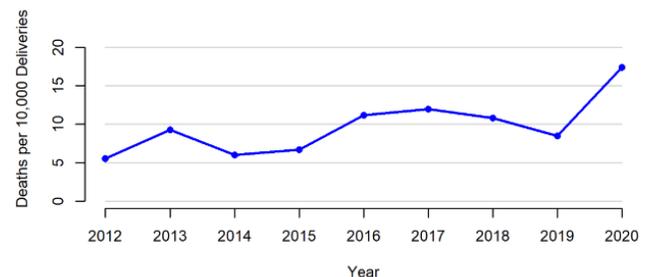
Methods

Medicaid claims data from 2012 to 2021 was utilized. A set of diagnosis-related group (DRG) codes identifying a delivery was used to indicate unique pregnancy events. Women with age at delivery less than 12 and greater than 55 were excluded. Maternal mortality (MM) was defined by death from any cause within 365 days of the delivery, and adverse pregnancy outcomes (APOs) were defined using ICD and revenue codes. Statistical analysis was performed to assess relationship between MM and each APO to the beneficiary's race, geography, age, and other available characteristics.

Results

These claims data include information on 249,364 pregnancies between 2012 and 2021. Most women were White (74%; 13% Black). Adolescent mother comprised 13% of deliveries, and women of advanced maternal age (age 35 and older) 8%. A majority lived in metro counties (54%) and delivered via vaginal birth (70%).

Maternal Mortality



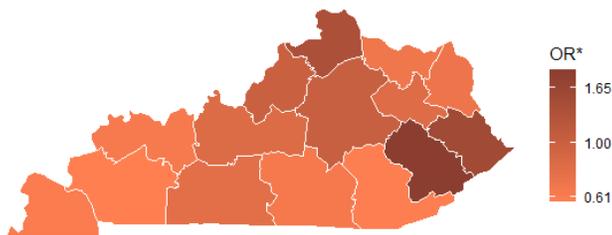
All-cause, one-year maternal mortality averaged 9.9 deaths per 10,000 deliveries. This rate increased from 2012 to 2019

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with a large increase in 2020 during COVID-19. Our analysis did not identify a significant difference in age-adjusted mortality between Black and White beneficiaries. Women in rural counties of Appalachia were at higher risk of mortality, and maternal age and caesarean delivery were associated with increased MM.

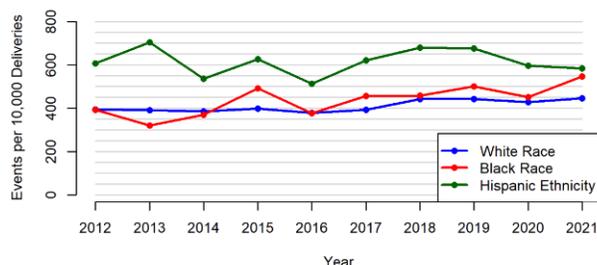
Maternal Mortality by Region



*age-adjusted odds ratio

Approximately 4% of women experienced a postpartum hemorrhage, and this rate increased by approximately 25% between 2016 and 2021. Increased rates of PPH were seen among Hispanic women, Black women, those living in metro counties and rural Appalachia, adolescent mothers, and those of advanced maternal age.

Postpartum Hemorrhage by Race



For every 10,000 deliveries, an average of 23 women were admitted to an ICU during pregnancy, 34 admitted to ICU around the time of delivery, and 17 within 2 months of delivery. Increased rates of ICU admission were associated with Black race, residing in a metro county or rural Appalachia, and caesarean delivery.

Policy Implications

In terms of data infrastructure, Medicaid claims data lacks the demographic and socioeconomic variables needed to identify

root causes of maternal mortality. Linking Medicaid claims data to maternal death certificates would allow for a clear indication of death and more information to assess root causes, which can support the development of more robust prevention strategies. Additionally, we recommend further research to understand factors contributing to the increasing trends of poor maternal outcomes. Further work incorporating the role of chronic and gestational health conditions and maternal care access will support more targeted policy and practice recommendations.

Conclusion

Medicaid claims data were used to investigate disparities in maternal mortality and other adverse pregnancy outcomes from 2012 to 2021. We found increases in one-year, all-cause maternal mortality with a sharp jump during COVID-19. We found disparities in mortality due to maternal age, residence in rural Appalachia, and cesarean delivery. Around 4% of women experienced postpartum hemorrhage after delivery, and Hispanic ethnicity, Black race, advanced maternal age, and geography (metro and rural Appalachia) were associated with increased rates. The rates of admission to an intensive care unit around the time of delivery have tripled from 2017 to 2021, and Black women, women with advanced maternal age, and women who deliver via a cesarean section are at increased risk of ICU admission. Due to the single-year nature of this SUP, we were unable to further investigate the factors that may be driving these disparities. Further research is needed to extend this work to incorporate the impact of chronic and gestational health conditions and measures of prenatal health care access and utilization.

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