

The Opioid Prescribing Rate and Grandparents Raising Grandchildren: State and County Level  
Analysis

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ABSTRACT

Over the past twenty years, the United States has seen an increase in opioid use and the opioid overdose death rate, according to the Centers for Disease Control and Prevention (CDC). In 2017, the U.S. Department of Health and Human Services declared the opioid epidemic a public health emergency. Media outlets along with some nonprofit organizations have claimed that there is a relationship between grandparents living with grandchildren and the opioid epidemic. However, little quantitative research has examined this relationship. Federal data from the U.S. Census Bureau and the CDC, with detailed information for low levels of geography, can inform this pressing social issue. Leveraging 2012-2016 American Community Survey 5-year data on household structure and CDC 2016 Opioid Prescribing data, this study aims to provide a statistical analysis of the relationship between grandparents raising grandchildren and opioid prescriptions at the state and county level.

Note: This paper is released to inform interested parties of ongoing research and to encourage discussion of work in progress. The views expressed on statistical or methodological issues are those of the author and not necessarily those of the U.S. Census Bureau.

## INTRODUCTION/LITERATURE REVIEW

The opioid epidemic was declared a public health emergency in 2017 (U.S. Department of Health and Human Services 2017a), but signs of it began appearing nearly twenty years ago with the increase in overdose deaths involving opioids starting in at least 1999 (Centers for Disease Control and Prevention 2018a). Since then, the overdose death rate involving opioids has increased – in 2017 there were six times as many overdose deaths involving opioids as in 1999 (Centers for Disease Control and Prevention 2018a). Along with the increase in the overdose death rate involving opioids, prescription opioid sales increased nearly fourfold between 1999 and 2014 (Centers for Disease Control and Prevention 2017a).

In the wake of the opioid epidemic, there has been increasing public concern about what happens to the children of parents with substance abuse disorders. Parents with substance abuse disorders may be incarcerated, in treatment programs, or otherwise unable to care for their children. Media outlets, nonprofit organizations, and public policy centers have investigated this issue, finding that in many cases other relatives, mostly grandparents, assume care of the children (Generations United 2016; Hedges 2017; MacQuarrie 2017; Smith 2018; Whitaker 2018). Much of this research and reporting is based on in-person interviews with grandparents (or in some cases great-grandparents) who are the caregivers for their grandchildren (Generations United 2016; Hedges 2017; MacQuarrie 2017; Whitaker 2018). The U.S. Census Bureau, public policy centers and nonprofit organizations use American Community Survey data to provide information on the characteristics of grandparents raising grandchildren, such as age, employment status, poverty level, and disability status (Ellis and Simmons 2014; Generations United 2016; Smith 2018). Additionally, research and investigative reporting sometimes focus on increases in the number of children in foster care living with relatives and increases in the

number of children removed from homes due to parental drug abuse (Generations United 2016; Smith 2018).

In 2016, 34 percent of children who entered the formal foster care system were removed from their homes due to parental drug abuse (U.S. Department of Health and Human Services 2017b). Nearly one-third (139,017) of children in the formal foster care system in 2016 lived with relatives (U.S. Department of Health and Human Services 2017b). However, the majority of children living with relatives are not in the formal foster care system. Generations United (2016) estimates that there are twenty times more children living with relatives (including grandparents) outside of the formal foster care system than living with relatives in the formal foster care system.

According to the U.S. Census Bureau, the percentage of children living in grandparent-headed households went from three percent in 1970 to six percent in 2012 (Ellis and Simmons 2014). In 2016, there were over 7.2 million grandparents nationwide living with their grandchildren under the age of 18. Of that 7.2 million, over 2.5 million were responsible for most of the basic needs of their grandchildren (U.S. Census Bureau 2017a). In the majority of households with grandparents living with grandchildren, at least one parent is present (Ellis and Simmons 2014). In 2012, twenty percent of grandchildren under 18 living with their grandparents did not have either parent present (Ellis and Simmons 2014). Ellis and Simmons (2014) found that the percentage of children living with their grandparents increased after 2007, but that only 39 percent of grandparents who lived with their grandchildren were their primary caregiver in 2012, compared to 42 percent in 2000 (Simmons and Dye 2003). This suggests that while there was an increase in the percentage of children living with their grandparents after the

Great Recession, there was not a corresponding increase in grandparents who were responsible for their grandchildren.

## THE CURRENT STUDY

While news stories and reports from nonprofit organizations, think tanks, and public policy centers have investigated the relationship between the opioid epidemic and grandparents raising grandchildren (Generations United 2016; Hedges 2017; MacQuarrie 2017; Smith 2018; Whitaker 2018), previous research has not examined this relationship using statistical models. Additionally, all of this research has either used national or state level data. The American Community Survey is uniquely able to inform this pressing issue, since it is the only nationally representative survey with information on grandparents who are responsible for their grandchildren at detailed levels of geography. The purpose of this research is to examine the relationship between the state and county level opioid prescription rates and the percentage of grandparents responsible for their coresident grandchildren under the age of 18.

This research aims to answer three research questions. First, “Is the prescription opioid rate associated with the percentage of grandparents raising grandchildren at the state level?” Second, “Is the prescription opioid rate associated with the percentage of grandparents raising grandchildren at the county level?” Third, “Is the prescription opioid rate associated with the percentage of grandparents raising grandchildren at the state and county level, net of demographic and socioeconomic characteristics of the area?” Previous research has focused on the national or state level, but levels of opioid prescriptions vary widely within states, and county level data allow for a more localized analysis.

## DATA AND METHODS

Data for grandparents responsible for their grandchildren and all control variables for the demographic and socioeconomic characteristics of areas come from the 2012-2016 American Community Survey 5-year estimates. The grandparents responsible measure comes from an American Community Survey (ACS) question that asks respondents living with any grandchildren under the age of 18 if they are “responsible for most of the basic needs” of their grandchildren. The ACS is a nationally representative survey conducted annually by the U.S. Census Bureau to collect data on the nation’s people, housing, and economy. The ACS 5-year files contain detailed information for all counties in the United States.

Data for the state and county opioid prescription rate come from the Centers for Disease Control and Prevention (CDC). The numerator comes from the QuintilesIMS Transactional Data Warehouse, which contains information from 59,000 retail pharmacies in the United States. The CDC (2018b) estimates that retail pharmacies dispense around 90 percent of all prescriptions in the U.S. The denominator for the CDC’s opioid prescription rates come from the U.S. Census Bureau’s 2016 Postcensal Estimates of the Resident Population. State level opioid prescription rates are available for all 50 states and the District of Columbia for 2016. County level opioid prescription rates are available for 94.3 percent of U.S. counties for 2016. Only counties with available 2016 opioid prescription rate data are included in the analysis. Additionally, only counties with at least 100 grandparents living with at least one grandchild (in the weighted data) are included in the analysis (N = 2,633).

Analyses include OLS regression models. The first model is a zero order model containing only the prescribing rate. The second model adds in demographic and socioeconomic controls for characteristics of the geographic area. The models are run separately for state and county data. The results also include four maps: two of the opioid prescription rate and two of

the percentage of grandparents responsible for grandchildren under 18 at the state and county level.

#### *Dependent Variable*

The dependent variable is the percentage of the population aged 30 and older responsible for at least one coresident grandchild under the age of 18 at either the state or county level. The age group, 30 and older, is consistent with who is asked about coresidence with a grandchild in the American Community Survey. Additionally, previous research has shown that grandparents who are responsible for their own grandchildren tend to be younger than grandparents who are not responsible for their own grandchildren, with the majority of the former group under the age of 60 (Ellis and Simmons 2014; Generations United 2016; Wu 2018a).

#### *Independent Variable*

The independent variable to measure the opioid epidemic is the opioid prescription rate per 100 people at the state or county level. The opioid prescription may be either a new prescription or a refill of an existing prescription (Centers for Disease Control and Prevention 2018b). While prescription opioids only represent part of the opioid epidemic, which also includes heroin and synthetic opioids (such as fentanyl), overdose deaths caused by prescription opioids have been increasing since 1999 and the increase in prescription opioid overdose deaths is considered to be the first wave of the opioid epidemic (CDC 2018a). Data on heroin and synthetic opioid deaths are not available for all states and are not available at the county level, making the opioid prescription rate the best measure of the opioid epidemic for state and county level analyses. Though initially prescription opioids drove the opioid crisis, opioid prescriptions have decreased since 2012, while overdose deaths caused by heroin and synthetic opioids have increased since 2010 and 2013, respectively (CDC 2018a). Currently, prescription opioids,

heroin, and synthetic opioids other than methadone are equally driving the crisis, according to the CDC (2017c). Using only the opioid prescription rate to measure opioid use in states and counties is a limitation, as it is a conservative measure of opioid use in the area. Additionally, this measure does not capture opioid use in areas that might have lower levels of prescription opioid use, but high levels of heroin and synthetic opioid use.

### *Control Variables*

Control variables are included in the analyses to determine whether the relationship between the percentage of grandparents responsible for their resident grandchildren under 18 and the prescription opioid rate is significant net of demographic and socioeconomic characteristics. Race and origin controls for the population aged 30 and over (percent non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, non-Hispanic some other race,<sup>1</sup> and Hispanic—regardless of race) are included, since previous research has shown that there is variation by race and origin in who lives with their grandchildren (Baker, Silverstein, and Putney 2008; Ellis and Simmons 2014; Wu 2018b). There are also racial differences in who uses prescription opioids: both non-Hispanic Whites and non-Hispanic Blacks are more likely to use prescription opioids than Hispanics. Non-Hispanic Whites and non-Hispanic Blacks are equally likely to use prescription opioids (Frenk, Porter, and Paulozzi 2015).

The model also controls for median age of the total population, since there is a relationship between age and likelihood of receiving prescription opioids. Adults over the age of 40 are more likely to use prescription opioids than younger adults aged 20 to 39 (Frenk et al.

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<sup>1</sup> Despite having high levels of grandparent coresidence, American Indian and Alaska Natives are included in the Some Other Race category and are not controlled for as a separate racial category due to their concentration in a relatively small number of counties and high margins of error in many counties.

2015). Women are more likely to use prescription opioids than men (Frenk et al. 2015), so the model also includes controls for percent female for the population aged 30 and over.

It is also possible that the relationship between the opioid prescription rate and the percentage of grandparents responsible for their own grandchildren is explained by economic factors. There is a poverty gradient to prescription opioid use, with prescription opioid use decreasing as the family income to poverty ratio increases (CDC 2015). There is also a relationship between poverty and grandparents raising their grandchildren. In 2016, 19 percent of grandparents who were responsible for their grandchildren lived in poverty, compared to 11 percent of grandparents who lived with grandchildren, but were not responsible for them (U.S. Census Bureau 2017b). Wu (2018a) also found that in 2015, 47 percent of grandparents who were responsible for their grandchildren were in poverty or low-income households, compared to 36 percent of grandparents who lived with their grandchildren, but were not responsible for them. To control for local economic conditions, the model includes controls for the household poverty rate. The CDC (2017b) also found a positive relationship between the opioid prescription rate and percent disabled at the county level, so the models control for the percent of the total population with a disability.

Finally, in 2015 the drug overdose death rate was higher in nonmetropolitan areas than in metropolitan areas. This is a reversal from the start of the opioid epidemic in 1999, when the drug overdose death rate was higher in metropolitan areas than nonmetropolitan areas (Mack, Jones, and Ballesteros 2017). There is also a rural-urban divide in grandparents responsible for grandchildren: in 2016, 32 percent of grandparents living with grandchildren in urban areas were responsible for them, compared to 46 percent of grandparents in rural areas (U.S. Census Bureau 2017c). To control for rural-urban differences, the models are run separately for metropolitan



and nonmetropolitan counties, as classified by the United States Department of Agriculture 2013 Rural-Urban Continuum Codes.

## DISCUSSION

This research adds to the literature on the opioid epidemic and grandparents raising children by examining the relationship using statistical modeling, determining whether the relationship can be explained by the demographic and socioeconomic characteristics of geographic areas, and examining the relationship at the county level. Previous research has focused at the national or state level, but federal statistics from the U.S. Census Bureau and Centers for Disease Control and Prevention allow for analysis at a more detailed level of geography. To learn more about the results of this study, please see the poster presented at the Population Association of America 2019 Annual Meeting at [\(insert hyperlink here\)](#).

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