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# Race, Ethnicity, and Insurance: the Association with Opioid Use in a Pediatric Hospital Setting

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## Abstract

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Dr. Candice D. Donaldson: This author conducted the statistical analysis, drafted the method and results, and reviewed and revised the article for intellectual content.

Dr. Zeev N. Kain: This author contributed to the interpretation of data and reviewed and revised the article for intellectual content.

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Dr. Brooke N. Jenkins: This author contributed to the conception and design of the study and acquisition of the data and reviewed and revised the article for intellectual content.

All figures were created on Microsoft Excel and reviewed by all authors.

**Conflict of Interest** Dr. Zeev N. Kain is a speaker for Covidien and a member of Edwards Life Sciences and Huron Consulting.

**Background—**This study examined the association between race/ethnicity and health insurance payer type with pediatric opioid and non-opioid ordering in an inpatient hospital setting.

**Methods—**Cross-sectional inpatient encounter data from June 2013 to June 2018 was retrieved from a pediatric children's hospital in Southern California ($N$ = 55,944), and statistical analyses were performed to determine associations with opioid ordering.

**Results—**There was a significant main effect of race/ethnicity on opioid and non-opioid orders. Physicians ordered significantly fewer opioid medications, but a greater number of non-opioid medications, for non-Hispanic African American children than non-Hispanic Asian, Hispanic/Latinx, and non-Hispanic White pediatric patients. There was also a main effect of health insurance payer type on non-opioid orders. Patients with government-sponsored plans (e.g., Medi-Cal, Medicare) received fewer non-opioid prescriptions compared with patients with both HMO and PPO coverage. Additionally, there was a significant race/ethnicity by insurance interaction on opioid orders. Non-Hispanic White patients with "other" insurance coverage received the greatest number of opioid orders. In non-Hispanic African American patients, children with PPO coverage received fewer opioids than those with government-sponsored and HMO insurance. For non-Hispanic Asian patients, children with PPO were prescribed more opioids than those with government-sponsored and HMO coverage.

**Conclusion—**Findings suggest that the relationship between race/ethnicity, insurance type, and physician decisions opioid prescribing is complex and multifaceted. Given that consistency in opioid prescribing should be seen regardless of patient background characteristics, future studies should continue to assess and monitor unequitable differences in care.

### Keywords

Opioids; Pediatric pain; Electronic medical record; Race and ethnicity; Disparities

## Introduction

The unprecedented rates of opioid misuse and related deaths in the USA have commanded the attention of public health professionals and governmental health agencies [1]. It was reported that the death rate from abuse of opioids quadrupled between 1999 and 2010, a rate which continues to increase and plague the nation [2, 3]. In 2016 alone, the USA reported over 42,000 fatal opioid overdoses, signifying a 27% increase in mortality rate from 2015 [4]. Also, in 2016, 11.8 million Americans aged 12 and older misused opioids, with approximately 97.5% of these Americans misusing prescription opioids specifically [4]. Although most studies and responses to this crisis are adult-focused, there is a direct impact on the health of children. In particular, pediatric opioid-related poisoning and deaths increased by 268% between 1999 and 2016, with the largest percent increase among children between ages 1 and 4 [5, 6]. In addition, 16.2% of US emergency department visits among patients aged 13 through 17 were associated with opioid use between 2006 and 2015 [7].

Although national prevalence estimates indicate that about 3.6% of youth between the ages of 12 and 17 begin misusing prescription opioids each year [8], research focused on assessing the predictors of legitimate opioid use in pediatric populations is scare. Markedly,

studies with adolescents support that opioid misuse is often preceded by a legitimate provider prescription [9] suggesting that receiving an opioid prescription at a young age might represent a risk factor for later misuse. In one nationally representative study, being prescribed an opioid analgesic during adolescence was associated with a 33% increase in risk for later non-medical opioid misuse in young adulthood [10]. Furthermore, a similar study of patients between the ages of 13 and 21 also showed that patients prescribed opioids for pediatric postoperative pain had an elevated risk of persistent opioid use 3 to 6 months after the surgical recovery period [11].

Given their high-risk potential for misuse and abuse, current Centers for Disease Control and Prevention (CDC) guidelines [12] highlight that opioids should not be considered the first-line therapy for treating pain and that non-pharmacologic therapy and non-opioid pharmacologic therapy are preferred over opioid therapy. Specifically, non-opioids are shown to effectively improve pain and patient outcomes while decreasing the risk of substance use and misuse in at-risk patients [13, 14]. If opioids are prescribed, it is recommended that patients receive a combination of opioids and non-opioid pharmacologic therapy, to synergistically improve the analgesic potential [15, 16]. Given this established link between legitimate opioid prescriptions with later misuse [9] and persistent use [17], and the effectiveness of non-opioid medications in treating pain [13, 14], research focused on identifying distinct relationships between sociodemographic factors with both opioid and non-opioid prescribing for pediatric patients is needed to understand prescribing inconsistencies and promote safe management for all patients, regardless of their background characteristics.

Inequalities in access to healthcare are well-documented in adult patients, with research supporting race-/ethnicity-based difference in physician opioid prescribing [18, 19]. For example, Pletcher, Kertesz, Kohn, and Gonzales [20] found that non-Hispanic White patients were the most likely to receive opioid prescriptions, followed by Asian/other patients, Hispanic, and African American patients. This study, however, may be limited with respect to our current, ever-growing opioid epidemic, as it utilizes national data from 1993 to 2005 and a sample composed of only 11% Hispanic and 2% Asian/other patients. Still, other studies consistently show that non-Hispanic White adults receive significantly more opioid prescriptions than African American adult patients [21-23], and a growing body of research supports a similar trend in pediatric populations [19, 23-25]. For example, in a national study investigating pediatric emergency departments, White patients were prescribed opioid at an average rate of 8.11%, compared with a rate of 5.31% among non-White patients [7].

Similarly, research suggests that patient health insurance is related with opioid prescribing [7, 26]. Patients with government-sponsored health insurance are shown to be less likely to receive opioids compared with patients with commercial or private insurance coverage [7, 26]. Governmental insurance plans are often used by families of low socioeconomic status [27-30], whereas, commercial insurance plans are usually obtained through an employer, indicating that these families have a member employed with benefits. Further, these commercial plans, such as health maintenance organization (HMO) and preferred provider organization (PPO), are typically more costly but provide better access to care [31]. Given that patient healthcare insurance coverage represents a proxy of socioeconomic status

[28-30], differences in opioid prescribing based on insurance type might raise questions about the potential role of provider bias [7]. As such, research elucidating differences in pain management can initiate further work examining how to alleviate potential existing disparities.

Despite the established relationships between race/ethnicity and insurance payer type with opioid prescribing shown in prior studies, the complex interaction effect between these two sociodemographic variables and physician opioid prescription behaviors have not been assessed simultaneously in one multi-variable model. Given that research examining differences in pediatric inpatient opioid use based on patient race/ethnicity and health insurance payer type is crucial for promoting appropriate and safe pain management across diverse social and demographic sectors, this study focused on identifying the multifaceted association of race/ethnicity and health insurance payer type with both physician opioid and non-opioid ordering for pediatric patients. Leveraging a large hospital dataset of pediatric inpatients, insurance-based differences in physician opioid and non-opioid ordering were examined, for each racial/ethnic group, with hopes of understanding and helping to alleviate pain management disparities in the pediatric hospital inpatient setting.

## Materials and Methods

### Data Source

Cross-sectional inpatient encounter data from June 2013 to June 2018 were retrieved from a pediatric children's hospital in Southern California. Electronic medical record (EMR) data were extracted from pediatric patients less than 18 years old that were admitted as inpatients. Extracted EMR data include/d information on demographics (e.g., age, sex, race/ethnicity), length of stay, maximum pain ratings, diagnosis, health insurance payer type, and physician analgesic ordering. Records were de-identified, and patients were assigned a unique encounter identifier, allowing medical record information to be linked. Data were managed using Amazon Web Services [32], a tool that provides a protected cloud-based environment in which unlimited amounts of EMR data can be computed, at scale, with quick speed.

### Inclusion Criteria and Data Cleaning

The objective of this study was to assess differences in opioid ordering for children and adolescents in pain, excluding cancer-associated chronic pain (for a similar criteria, see Chung et al. [33] and Richardson et al. [34]). Specifically, information on neoplasms was extracted using International Classification of Diseases, Ninth/Tenth revision, Clinical Modification codes C00 through D49. Patients with neoplasms were identified using the diagnosis codes and excluded from the analyses. A final sample of pediatric patients with no history of neoplasm diagnoses were selected to be included in the current study ($N$ = 55,944).

### Variables

Demographic information on age, sex, and race/ethnicity (Hispanic/Latinx, non-Hispanic White, non-Hispanic African American, and non-Hispanic Asian) were extracted using

the EMR information for patients, excluding the oncology population. Patient insurance type was also obtained and included government-sponsored plans (i.e., CalOptima, Medi-Cal, Medicare), commercial HMO, commercial PPO, and "other" insurance types (e.g., CHAMPUS, self-pay, EPO). In addition, clinical information on length of stay and the maximum pain intensity scores of the patient during the encounter were retrieved and controlled for in all analyses (as done by Ehwerhemuepha, Schultz, and Feaster [35]). More specifically, pain was assessed by providers using several developmentally and situationally appropriate measurement tools (i.e., faces, legs, activity, cry, and consolability scale [36]; faces pain scale [37]; numeric rating scale [38]; and neonatal pain, agitation and sedation scale [39]).

Patient medical diagnoses were also retrieved using the International Classification of Diseases, Tenth Revision, and controlled for in the models (based on the procedures utilized in several past studies with pediatric patients [40-43]). Specifically, the presence or absence of the following conditions was included as covariates and controlled for in the study analyses: bacterial and viral infection (A00-A99); diseases of the blood and blood-forming organs and disorders involving immune mechanisms (D50-D89); endocrine, nutritional and metabolic diseases (E00-E89); diseases of the nervous system (G00-G99); diseases of the circulatory system (I00-I99); diseases of the respiratory system (J00-J99); diseases of the digestive system (K00-K95); diseases of the musculoskeletal system and connective tissue (M00-M99); diseases of the genitourinary system (N00-N99); congenital malformations, deformations and chromosomal abnormalities (Q00-Q99); injury, poisoning and certain other consequences of external causes (S00-T88); and other diagnoses (H00-H59, L00-L99, O00-O9, P00-P96, Z00-Z99).

Opioids considered include codeine, hydrocodone, hydromorphone, meperidine, sufentanil, fentanyl, morphine, oxycodone, remifentanil, nalbuphine, methadone, and tramadol. The outcome represented the total number of opioid medications across all opioid types that providers ordered during hospitalization. Specifically, a sum of the total number of opioid analgesic medications prescribed was computed as a sum score across all of the different possible opioid types. Providers could have ordered more than one opioid, the same opioid medication multiple times, multiple opioid orders, or a combination of the two. In addition, information on the number of non-opioid analgesics (e.g., ibuprofen, acetaminophen, naproxen, gabapentin, pregabalin, celecoxib, triptan) ordered was calculated in the same way.

## Statistical Analysis

SPSS version 25 was used for statistical analyses. Two separate 4 (race/ethnicity: Hispanic/Latinx; non-Hispanic White, non-Hispanic African American, non-Hispanic Asian) by 4 (insurance type: government-sponsored, commercial HMO, commercial PPO, other) between-subjects analysis of covariance (ANCOVA) evaluated differences in the number of ordered opioid and non-opioid analgesics based on race/ethnicity and insurance type. Age, sex, length of stay, pain rating, medical diagnoses, and non-opioid analgesic medication prescription were included as covariates. To investigate statistically significant interaction

effects of race/ethnicity and patient health insurance payer type, pair-wise comparisons using Fisher's least significant difference (LSD) *t* tests were performed [44].

## Results

Descriptive information on all study variables are presented in Table 1. Separate 4 × 4 ANCOVA were performed to assess differences in physician opioid and non-opioid ordering across patient race/ethnicity and health insurance groups.

### Opioid Analgesic Orders

Univariate main effects attained statistical significance for race/ethnicity (Fig. 1), $F(3, 55{,}911) = 4.72$, $p < 0.01$, but not insurance type, $F(3, 55{,}911) = 0.56$, $p = 0.64$. Specifically, non-Hispanic African American patients ($M = 1.58$, SE = 0.06, 95% CI [1.47, 1.70], $n = 1816$) received significantly fewer opioid orders than Hispanic/Latinx ($M = 1.72$, SE = 0.02, 95% C I[1.68, 1.75], $n = 32{,}242$), $p = 0.034$, and non-Hispanic White patients ($M = 1.78$, SE = 0.02, 95% CI [1.74, 1.81], $n = 16{,}214$), $p = 0.002$.

Analyses also revealed a significant race/ethnicity by patient health insurance payer type interaction, $F(9, 55{,}911) = 5.59$, $p < 0.001$. The significant interaction effect was decomposed by comparing insurance differences within each racial/ethnic group (Fig. 2). Findings disclosed significant omnibus insurance type differences for non-Hispanic White, $F(3, 16{,}193) = 6.83$, $p < 0.001$; non-Hispanic African American, $F(3, 1795) = 3.73$, $p = 0.011$; and non-Hispanic Asian patients, $F(3, 5651) = 7.36$, $p < 0.001$. Statistically significant insurance payer type differences were not found for Hispanic patients, $F(3, 32{,}221) = 1.28$, $p = 0.281$.

Among non-Hispanic White pediatric patients, children with "other" insurance plans ($M$= 1.98, SE = 0.05, 95% CI [1.88, 2.09], $n = 929$) received more opioid orders than patients with government-sponsored ($M = 1.73$, SE = 0.02, 95% CI [1.68, 1.77], $n = 5093$), $p <$ 0.001; HMO ($M = 1.79$, SE = 0.03, 95% CI [ 1.74, 1.84], $n = 3711$), $p = 0.002$; and PPO ($M = 1.81$, SE = 0.02, 95% CI [1.77, 1.85], $n = 6481$), $p = 0.003$, insurance coverage. There was also a significant difference between government-sponsored plans ($M = 1.73$, SE = 0.02, 95% CI [1.68, 1.77], $n = 5093$) and PPO insurance ($M = 1.81$, SE = 0.02, 95% CI [1.77, 1.85], $n = 6481$), $p = 0.009$, for non-Hispanic White children, with patients covered by PPO plans receiving a greater number of opioid orders.

In exploring differences for non-Hispanic African American patients, findings revealed that patients with PPO insurance ($M = 1.49$, SE = 0.08, 95% CI [1.34, 1.63], $n = 348$) received significantly more opioids than patients with government-sponsored ($M = 1.70$, SE = 0.04, 95% CI [1.62, 1.79], $n = 1135$), $p = 0.013$, and HMO ($M$ =1.82, SE = 0.09, 95% CI [1.65, 1.99], $n = 266$), $p = 0.004$, insurance types. For non-Hispanic Asian patients, those with PPO insurance ($M = 1.62$, SE = 0.03, 95% CI [1.55, 1.69], $n = 1992$) received significantly more opioids than patients with government-sponsored ($M = 1.44$, SE = 0.03, 95% CI [1.38, 1.50], $n = 2398$), $p < 0.001$, and HMO ($M = 1.39$, SE = 0.05, 95% CI [1.30, 1.66], $n = 990$), $p < 0.001$, insurance.

### Non-Opioid Analgesic Orders

Univariate main effects on the outcome of non-opioid orders attained statistical significance for race/ethnicity (Fig. 3), $F(3, 55{,}911) = 5.63$, $p = 0.01$, and insurance type, $F(3, 55{,}911) = 4.26$, $p = 0.005$ (Fig. 4). The race/ethnicity by patient insurance payer type interaction was not significant, $F(9, 55{,}911) = 1.62$, $p = 0.10$, on the outcome of non-opioid orders. Thus, simple effects were not explored.

An examination of the race/ethnicity main effect showed that non-Hispanic African American patients ($M = 2.18$, SE = 0.04, 95% CI [2.10, 2.26], $n = 1816$) received significantly more non-opioid orders than Hispanic/Latinx ($M = 2.07$, SE = 0.01, 95% CI [2.04, 2.09], $n = 32{,}242$), $p = 0.007$; non-Hispanic White ($M = 2.03$, SE = 0.01, 95% CI [2.01, 2.05], $n = 16{,}214$), $p < 0.001$; and non-Hispanic Asian patients ($M = 2.02$, SE = 0.02, 95% CI [1.98, 2.06], $n = 5672$), $p < 0.001$. In addition, Hispanic/Latinx patients received more non-opioids than non-Hispanic White patients, $p = 0.045$. Mean differences in patient insurance type were also examined. Findings showed that patients with government-sponsored plans ($M = 2.05$, SE = 0.01, 95% CI [2.03, 2.07], $n = 34{,}127$) received fewer non-opioid orders compared with patients with both commercial HMO coverage ($M = 2.12$, SE = 0.02, 95% CI [2.08, 2.16], $n = 7924$), $p = 0.004$, and PPO insurance ($M = 2.10$, SE = 0.02, 95% CI [2.07, 2.14], $n = 11{,}982$), $p = 0.012$.

## Discussion

Accumulating evidence supports a link between provider opioid prescribing and subsequent misuse and persistent use [9-11], fueling the current opioid epidemic in the USA [45, 46]. This observed trend has resulted in several discussions throughout the current healthcare system regarding the overall safety of prescribing opioid medications, with the CDC recommending that opioid use in pediatric patients is avoided when possible [12]. Given that the prescription of opioids to pediatric patients is of high concern due to this group's increased risk of long-term side effects (e.g., addiction, misuse) [47], research focused on examining and eliminating any potential prescribing differences based on patient characteristics is imperative. In response, the current investigation aimed to compliment a growing body of research supporting the existence of sociodemographic disparities in pediatric pain management, by testing possible interaction effects between patient race/ethnicity and patient payer insurance type on opioid and non-opioid physician ordering, with hopes of advancing pediatric health equity and encouraging safe pain management across diverse groups.

Under the conditions of this study, providers ordered fewer opioid medications, but a greater number of non-opioid analgesics, for non-Hispanic African American patients when compared with Hispanic/Latinx and non-Hispanic White patients. This finding is consistent with a growing body of research demonstrating that African American pediatric patients are less likely to be prescribed opioids compared with non-Hispanic White patients regardless of pain severity [19, 23, 25]. Findings might suggest that African American pediatric inpatients are at risk of suffering from pain disproportionally compared with patients with other background characteristics. However, measuring the amount of opioids prescribed does not directly reflect the quality of treatment a patient receives; likewise, this study is

limited to identifying the unequal use of opioids and cannot identify ethnic disparities in experienced pain. Still, it is well-documented that race and ethnicity play a substantial role in the experience of pain in the adult population, where African American and Hispanic patients report a lower tolerance for pain compared with non-Hispanic White patients [48, 49]. Although there is a lack of research examining this phenomenon in pediatric patients, providers should be cognizant of this potential difference and practice through pain assessments when managing a diverse pediatric population (e.g., utilizing observational methods in addition to self-report, using culturally validated measures for pain) so that they are fully equipped with information to make an appropriate treatment recommendation [50].

In contrast to prior studies supporting the association between patient insurance type and opioid analgesic prescribing [7, 26], no significant differences in opioid ordering were shown based on patient insurance type alone. Instead, there was a significant interaction of patient race/ethnicity and insurance payer type on the number of opioids ordered by clinicians. Among non-Hispanic White children, patients with “other’ (e.g., self-pay) insurance coverage received the greatest number of opioid orders. In contrast, for non-Hispanic African American patients, children with PPO coverage received fewer opioids than those with government-sponsored and HMO insurance payer types. For non-Hispanic Asian patients, children with PPO coverage were prescribed more opioids than those with government-sponsored and HMO coverage. Notably, these findings did not hold for non-opioid medications suggesting that there may be something specific about physician patterns of prescribing opioid medications.

Looking into the future of the opioid epidemic, the goal of the current work was to help improve the safety of pediatric pain management, by elucidating an existing prescribing disparity based on patient background characteristics. Findings support a complex and multifaceted relationship between race/ethnicity, insurance type, and physician decisions about whether to prescribe an opioid versus non-opioid medication to treat pain. Based on current standard of care for managing moderate to severe pain in pediatric patients, consistency in opioid prescribing across race/ethnicity should be seen. As such, additional studies may be required to fully understand new strategies that are needed to improve the quality and equity of pediatric pain management. Future efforts should continue to monitor quality care indicators associated with unequitable differences in care.

## Limitations

Findings should be considered in the context of several limitations. This investigation sought to assess differences in physician ordering decisions and followed the assumption that physicians ordered the appropriate dose for patients. Examining opioid orders as a proxy measure of opioid prescribing represents a potential limitation. Specifically, the number of opioids ordered might not have reflected the actual dosage administered to patients. Additional research is needed to examine whether these findings replicate when assessing opioid consumption as the outcome variable. Also, although legitimate opioid use has been identified as a risk factor of later misuse, the relationship between opioid ordering and abuse/misuse was not captured in this investigation. The relatively low effect sizes might also represent a limitation. Still, findings are practically and clinically significant, as they

suggest potential clinician bias that is likely outside of the prescriber's awareness. Also, similar effect sizes have been found in other secondary studies examining substance use outcome [51].

It is also worth noting that California consists of a uniquely large Hispanic population—39.3% of Californians identified as Hispanic in 2019 compared to 36.8% non-Hispanic White—making these results difficult to compare with national data [52]. Additional studies may be required to fully understand these results especially in relation to the proper management of pain in pediatrics. In other words, additional research is needed to understand whether pain is being managed properly using non-opioid alternatives in African Americans or if findings represent a general trend in the disparity of healthcare that seem favorable to patients of this ethnic/racial background. Still, this study represents an important starting point, and the results indicate that there is a need to consolidate evidence not only on the prescription of opioids but the misuse and corresponding consequences.

## Conclusion

Findings of the current investigation disclosed a unique interaction of race/ethnicity and insurance type on physician opioid and non-opioid ordering, supporting that differences in opioid prescribing are likely complex and multifaceted, and might be explained by several factors including clinician uncertainty and misjudgments of patient pain [53], implicit provider bias [54], and provider–patient communication and trust [55]. Still, additional studies are required to provide a full picture of the mechanisms driving both disparities and adverse opioid consequences in pediatric populations. This study further strengthens the need to take care in the development of interventions and health policies to tackle this epidemic. For example, such efforts might focus on implementing hospital policies or programs that encourage physicians to reflect on their own cultural beliefs and biases, and could also center on empowering patients to adequately report pain, while also educating parents about the importance of having an active voice involved in their child's pain management [56]. However, interventions that do not consider racial/ethnic and socioeconomic differences may be beneficial to one group while exacerbating the problem within another. In the meantime, pediatric healthcare providers should be cognizant of complex interplay between racial/ethnic and socioeconomic differences in the incidence and reporting of pain and in the prescription of opioids and should work together to set out clear plans for implementing evidence-based strategies for managing pain and reducing any existing health disparities.

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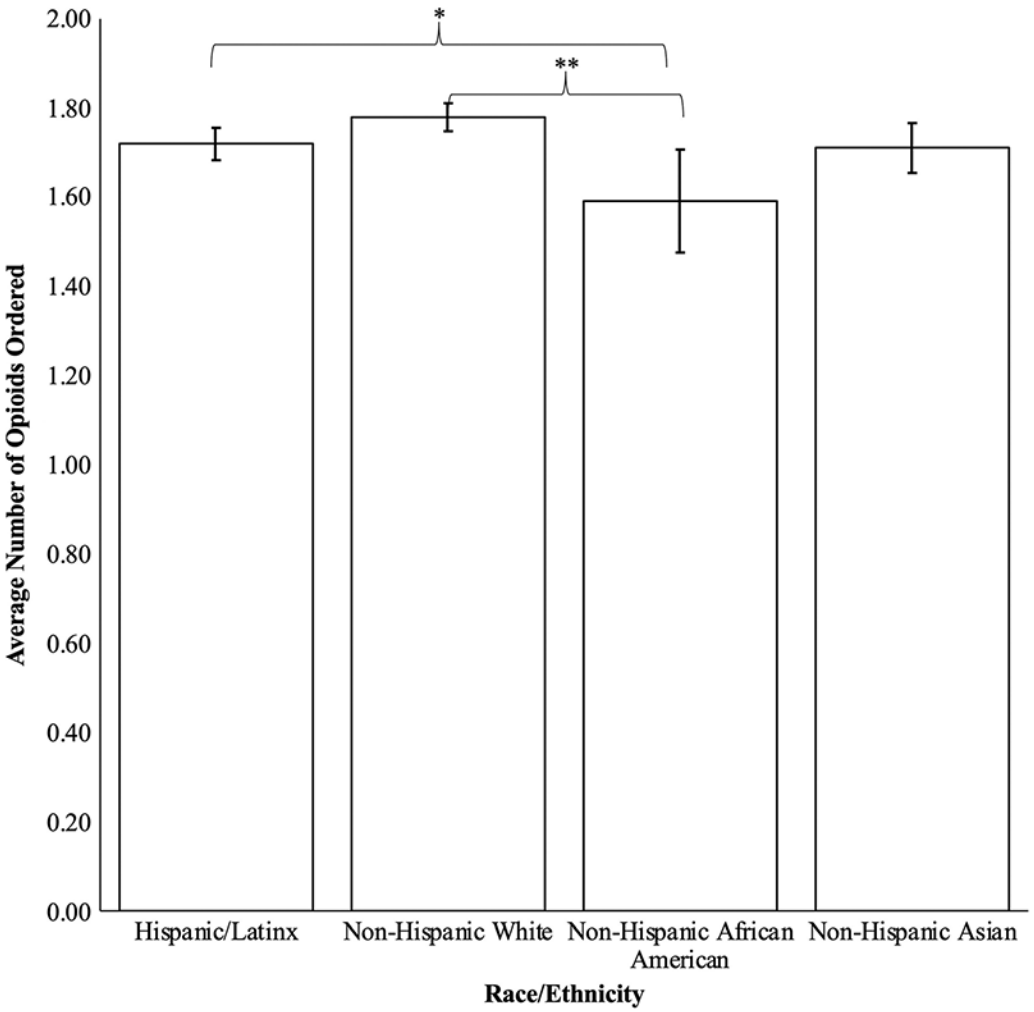


**Fig. 1.**

Significant main effect of patient race/ethnicity on the number of opioids prescribed per patient visit. Values represented estimated marginal means controlling for all model covariates. Error bars represent 95% confidence intervals. Brackets denote significant differences between groups. *$p < .05$. **$p < .01$. ***$p < .001$

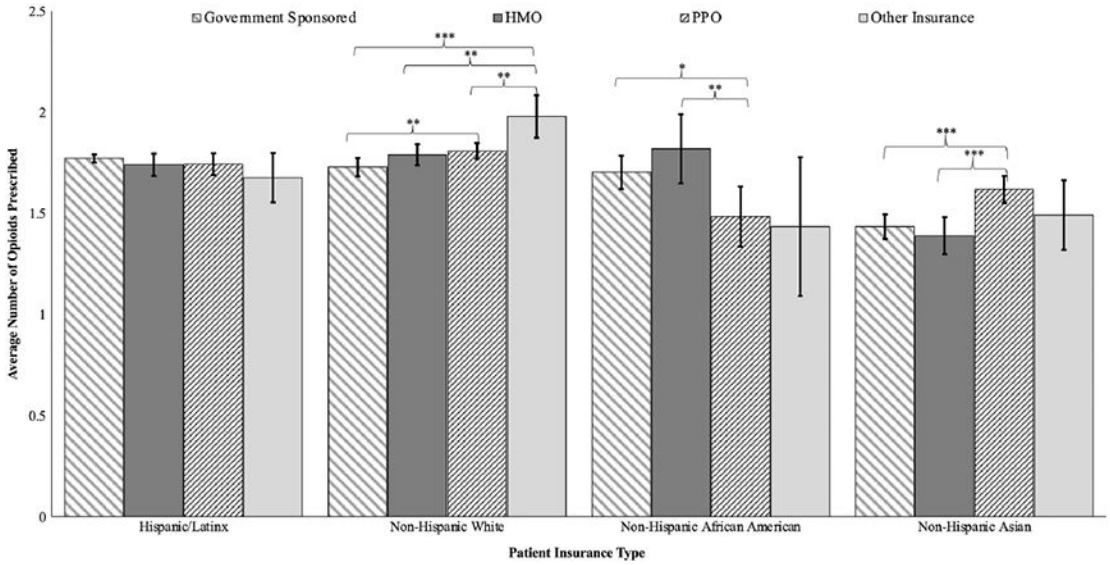


**Fig. 2.**

Significant interaction of patient race/ethnicity and insurance payer type on the number of opioids prescribed per patient visit. Values represented estimated marginal means controlling for all model covariates. Error bars represent 95% confidence intervals. Brackets denote significant differences between groups. *$p < .05$. **$p < .01$. ***$p < .001$

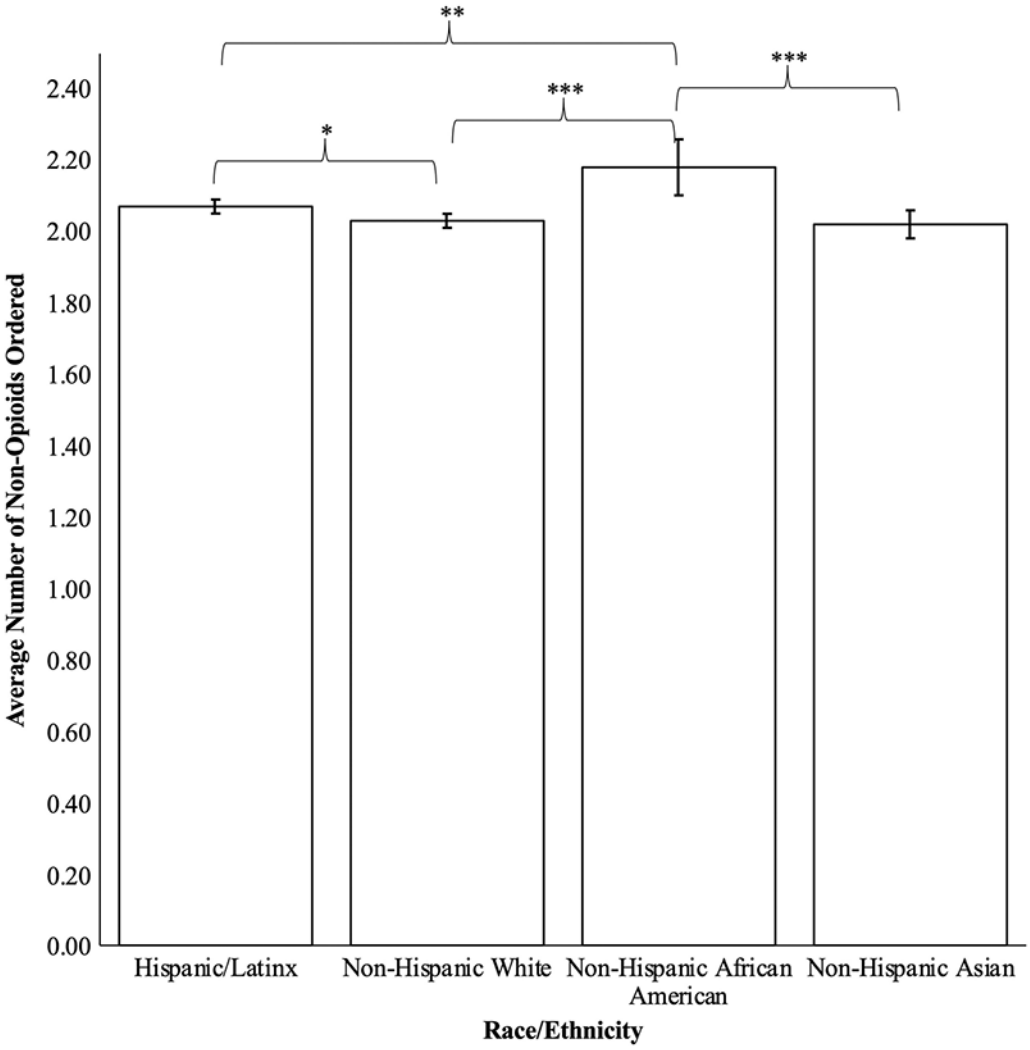


**Fig. 3.**

Significant main effect of patient race/ethnicity on the number of non-opioids prescribed per patient visit. Values represented estimated marginal means controlling for all model covariates. Error bars represent 95% confidence intervals. Brackets denote significant differences between groups. *$p < .05$. **$p < .01$. ***$p < .001$

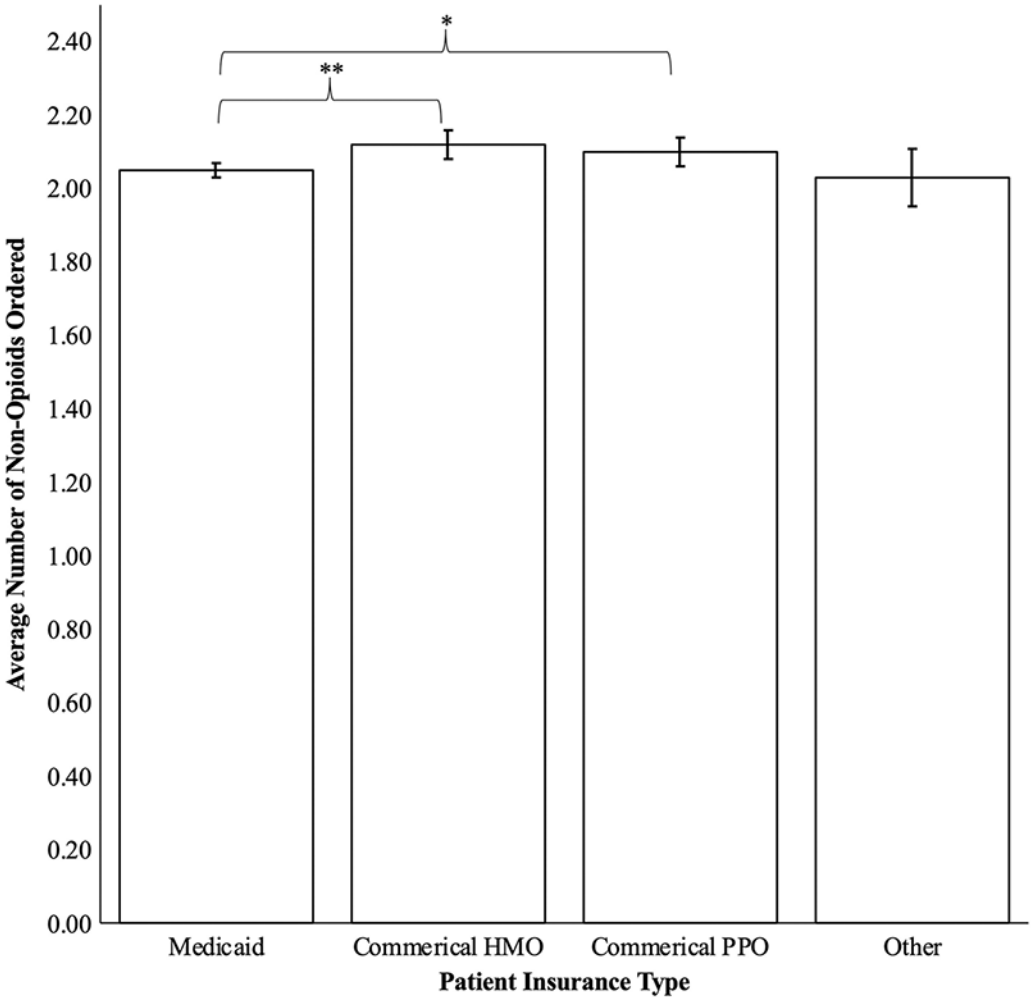


**Fig. 4.**

Significant main effect of patient insurance payer type on the number of non-opioids prescribed per patient visit. Values represented estimated marginal means controlling for all model covariates. Error bars represent 95% confidence intervals. Brackets denote significant differences between groups. *$p < .05$. **$p < .01$. ***$p < .001$

**Table 1**

Descriptive statistics and measure summary information ($N$ = 55,944)

| | | |
|---|---|---|
| Age | Range | 0–18 years |
| | $M$(SD) | 7.67 (5.60) |
| Sex | Male | 54.70% |
| | Female | 45.30% |
| Length of stay | Range | 0–30 days |
| | $M$(SD) | 3.61 (4.52) |
| Maximum pain score | Range | 0–10 |
| | $M$(SD) | 4.19 (3.10) |
| Race/ethnicity | Hispanic/Latinx | 57.60% |
| | Non-Hispanic White | 29.00% |
| | Non-Hispanic African American | 3.20% |
| | Non-Hispanic Asian | 10.10% |
| Patient insurance type | Medicare/Medicaid/Medi-cal | 61.00% |
| | Commercial HMO | 14.20% |
| | Commercial PPO | 21.40% |
| | Other | 3.40% |
| Medical diagnosis[a] | Bacterial and viral infection (A00-A99) | 9.30% |
| | Diseases of the blood and blood-forming organs and disorders involving immune mechanisms (D50-D89) | 12.20% |
| | Endocrine, nutritional and metabolic diseases (E00-E89) | 14.10% |
| | Diseases of the nervous system (G00-G99) | 18.30% |
| | Diseases of the circulatory system (I00-I99) | 8.40% |
| | Diseases of the respiratory system (J00-J99) | 21.90% |
| | Diseases of the digestive system (K00-K95) | 26.2% |
| | Diseases of the musculoskeletal system and connective tissue (M00-M99) | 8.40% |
| | Diseases of the genitourinary system (N00-N99) | 8.2% |
| | Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99) | 18.6% |
| | Injury, poisoning and certain other consequences of external causes (S00-T88) | 10.4% |
| | Other diagnoses (H00-H59, L00-L99, O00-O9, P00-P96, Z00-Z99) | 28.5% |
| Non-opioid analgesic orders | Range | 0–9 |

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| | | |
|---|---|---|
| | *M*(SD) | 2.05 (1.25) |
| | Range | 0–11 |
| Opioid analgesic orders | *M*(SD) | 1.74 (2.04) |

[a]Medical diagnosis frequencies represent the percentage of patients diagnosed with each medical condition