



Disparities in Hospital Services Utilization Among Patients with Mental Health Issues: A Statewide Example Examining Insurance Status and Race Factors from 1999-2010

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# Disparities in Hospital Services Utilization Among Patients with Mental Health Issues: A Statewide Example Examining Insurance Status and Race Factors from 1999-2010

## Abstract

There exist many disconnects between the mental and general health care sectors. However, a goal of the Affordable Care Act (ACA) of 2010 is to change this by improving insurance access and the intersection of mental and general health care. As insurance status intersects with race, the present study examines how race, insurance status, and hospital mental health services utilization differ across groups within the state of New Jersey. The present study aims to determine trends in hospital mental health care utilization by insurance status and race from 1999 to 2010. The rate of self-pay for mental health disorders in the Black population was significantly higher than the rate for Whites and Asians during this period. However, though Asian mental health utilization increased the most over the 11-year period, the Asian population had the slowest growth in self-pay rates. ANOVA tests demonstrated significant differences in the rate of self-pay mental health cases between race groups (p

## Keywords

mental health; insurance; racial disparities

## Cover Page Footnote

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## **Disparities in Hospital Services Utilization Among Patients with Mental Health Issues: A Statewide Example Examining Insurance Status and Race Factors From 1999-2010**

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### **ABSTRACT**

There exist many disconnects between the mental and general health care sectors. However, a goal of the Affordable Care Act (ACA) of 2010 is to change this by improving insurance access and the intersection of mental and general health care. As insurance status intersects with race, the present study examines how race, insurance status, and hospital mental health services utilization differ across groups within the state of New Jersey. The present study aims to determine trends in hospital mental health care utilization by insurance status and race from 1999 to 2010. The rate of self-pay for mental health disorders in the Black population was significantly higher than the rate for Whites and Asians during this period. However, though Asian mental health utilization increased the most over the 11-year period, the Asian population had the slowest growth in self-pay rates. ANOVA tests demonstrated significant differences in the rate of self-pay mental health cases between race groups ( $p < .01$ ) and over time ( $p < .05$ ). The information presented here may serve as a baseline in examining how disparities continuously change over time as the ACA completes the enactment of all proposed phases and as it integrates mental health care into the realm of general medical care.

**Keywords:** Mental health; insurance; racial disparities

### **INTRODUCTION**

Mental illness is a large problem in the United States, as the lifetime prevalence of anxiety and mood disorders alone is approximately 17% (Kessler, Petukhova, Sampson, Zaslavsky, & Wittchen, 2012). Despite the high prevalence, mental health care still remains behind general health care in terms of insurance coverage; additionally, mental health problem severity is nonetheless related to the type of insurance that one has (see e.g., Rowan, McAlpine, & Blewett, 2013). For instance, 69% of those without a mental health illness have private

insurance, whereas this figure is at 40% among those with a moderate mental health problem and 26% among those with a serious mental health problem (Rowan et al., 2013). This discrepancy demonstrates one of many large disconnections between health care access of those with and without a mental illness. However, the Affordable Care Act (ACA) of 2010 hopes to change this gap between the mental and general health care sectors by improving insurance access and the intersection of these two sectors (DHHS, 2012). Yet, insurance access is also inextricably intertwined with socio-cultural factors such as race. Thus, the present study aims to determine trends in hospital services utilization among those with mental health diagnoses in New Jersey by insurance status and race. As the state is average on most health care measures, New Jersey serves as a special case example as the US transitions into a new health care system. Therefore, this study serves as a baseline for which to evaluate the ACA. Additionally and more specifically, this study explores how insurance versus self-pay status relates to mental health care utilization of different race groups and how that has changed over time, if at all.

The ACA has transitioned through various stages since going into effect in 2010 (DHHS, 2012). In summary, 2010 began with consumer protection laws, leading to Medicare and Medicaid changes in 2011. The integration of health systems to deliver better care began in 2012, with open enrollment into affordable health insurance options beginning in Fall 2013. Combined with Medicaid expansions and the Department of Labor's Mental Health Parity and Addiction Equity Act (MHPAEA) in 2008 that required parity in group health care coverage, the ACA aims to improve the financing and delivery of mental health and addiction care (Barry & Huskamp, 2011), especially as the ACA offers incentives to better coordinate these treatments with primary care (SAMHSA, 2010). Thus far, there appear to be positive changes regarding the number of uninsured adults, though racial disparity trends have not yet been examined alongside the insurance status changes. In 2010, 28% of US adults aged 19 to 64 were uninsured while 16% were underinsured (Schoen, Doty, Robertson, & Collins, 2011). However, the ACA has led to decreases in the number of uninsured non-elderly adults; 19% of non-elderly adults were uninsured in the second quarter of 2013, whereas 14% of non-elderly adults were uninsured 12 months later (Long et al., 2014). With all of the changes affecting the realm of health insurance, disparities related to utilization of mental health care services warrant exploration.

In general, mental health care services utilization differs among various race groups. Asian Americans and Pacific Islanders have been cited to have lower rates of utilization compared to Whites and all ethnic groups (Sue, Cheng, Saad, & Chu, 2012). African Americans use mental health care services at almost as low a rate as Asian Americans, with 10% of African Americans using mental health services in the past year (Snowden, 2012). However, disparities in health care services utilization exist not only by race or ethnicity, but also by insurance status, and thus both need to be considered in tandem. Though there seems to be an association between disadvantaged racial or ethnic groups and reduced general health status (i.e., the general level of health of an individual or group), changes in health status in and of itself is not associated with health insurance status (see e.g., Long, Stockley, & Dahlen, 2012). Instead, this may be mediated by lower socioeconomic status (Barr, 2008); secondly and more relevantly, Barr suggests that socioeconomic status is associated with health status as mediated by access to health care, which influences utilization. Research has indeed demonstrated that having health insurance increases odds of being a high use consumer (>3 acute care episodes in a year) versus

a non-high use consumer of health care services by 19% (Lindamer et al., 2012). The gaps in health status, service utilization, and health care access seem to be stark between Whites and minority groups, and there seems to be a clear intersection of health insurance access and race. Lack of health insurance was the most important factor in White—Hispanic and White—African American differences in reporting unmet medical needs, not having a regular health care provider, and not visiting a physician within the past year (Hargraves & Hadley, 2003). Notably, 21% of African Americans lack any sort of health insurance coverage as opposed to 16% of Whites lacking coverage (Snowden, 2012). Primm et al. (2010) state that treatment disparities between Whites and African Americans have increased since the 1990s. Though Primm et al. did not explore this trend themselves, they proposed a model of how social determinants, interventions, and outcomes interact to promote mental health care. Primm et al. theorized factors to include, most relevantly, comorbidity of mental illness and chronic disease, cultural understanding of health care services (perhaps for which race serves as a proxy), and lack of insurance.

Thus, the present study aims to jointly examine insurance status, race, and hospital mental health services utilization across all individuals within the state of New Jersey. Despite the importance of health insurance status and race as factors in receiving and utilizing mental health care services, the interaction of the two have not yet been examined over time. However, this examination is of notable importance as the ACA and other health insurance measures begin to be phased in. Past trends in utilization are important to understand in order to analyze future possibilities. Additionally, baseline levels of such disparities are necessary to compare and contrast the effectiveness of these large-scale policy changes and to examine how disparities have unfolded over time. We hypothesized that the data from New Jersey will reflect the intent of the various stages of the ACA enactment. On a descriptive level, we predicted that Whites will demonstrate more hospital mental health care utilization than minority groups for each given year. However, most importantly and relevantly to add to the literature, we predicted changes in the mental health care access gap. With changes including the enactment of the MHPAEA in 2008, we hypothesized mental health disparities, which are defined as a function of race and insurance status, will have a slight decrease over time from 1999 to 2010.

## **METHODS**

### **Sample**

The sample was drawn from Uniform Billing data maintained by the New Jersey Department of Health and Senior Services (NJDHSS). This data set contains information on every hospital discharge and emergency department visit within the state of New Jersey throughout an entire year. These data have been recorded since 1981 for all hospital discharges (including those within the emergency department) and separately for emergency department visits since 2008. The present study used data from 1999 to 2010, combining across all departments since the data prior to 2008 were received in this format. These data contained approximately 4.8 million records over the 11-year period covered by this study. Each individual record represented one hospital discharge or emergency department visit.

Patients were identified as cases based on three inclusion criteria. First, they had to be admitted to a New Jersey hospital between January 1, 1999 and December 31, 2010 or seen

within a New Jersey emergency department from January 1, 2004 through December 31, 2010. Secondly, identified cases had to have a primary Diagnostic-Related Group (DRG) code for any mental health condition, which included the following codes (i.e., all Psychiatry DRG codes): Operating Room procedure with principal diagnoses of mental illness (424), Acute adjustment reaction and psychosocial dysfunction (425), Depressive neuroses (426), Neuroses except depressive (427), Disorders of personality and impulse control (428), Organic disturbances and mental retardation (429), Psychoses (430), Childhood mental disorders (431), and Other mental disorder diagnoses (432). Mental health conditions that were secondary, tertiary, etc., to a general health concern were excluded; cases were only included if a mental health problem was listed as their primary presenting issue.

Lastly, cases were selected from three of the Race options given by the NJDHSS, which followed the coding by the US Census Bureau: White, Black or African American, and Asian. The Asian subcategory consisted of individuals who self-identified as Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or Other Asian. In these data, race groups aside from the aforementioned did not have their own categorization, and Hispanic or Latino was labeled as an ethnic identifier instead of a race. However, an Other race group included individuals who identified as more than one race or a race not previously listed (e.g., American Indian or Alaska, Native Hawaiian and Other Pacific Islander, or Some Other Race). These individuals were subsequently excluded from the primary analyses due to high potential for misclassification bias and low sample sizes; thus, only three main groups (White, Black or African American, and Asian) were analyzed. However, the cases identified in the Other race group were analyzed separately in order to assess differences within this population with the aforementioned limits in mind and are not intended to be compared between other race groups.

Individuals were also excluded if they were missing a primary DRG code, a race group, or a primary payer method; all three of these fields had to be complete in order for the patient to be considered a case. Only approximately 1.5% of cases that had a mental health condition primary DRG code were excluded from analysis due to incomplete data. In total, 759,581 cases were included in the analysis. Individuals self-identified as follows: 560,903 as White, 186,104 as Black or African American (hereby collectively referenced to as Black), and 12,574 as Asian. Individuals were not excluded based on age, contributing diagnoses, or any other factor not mentioned above.

### Measures

The NJDHSS Uniform Billing database contained 66 variable fields for years prior to 2008 and 132 fields for the years 2008 forward. Patient identifiers were excluded from the data set to protect patient confidentiality. Data collected included information on the patient, such as demographics and DRG codes for the primary diagnosis resulting in an admission to the hospital or an emergency department visit and up to 12 contributing diagnoses. However, only the primary diagnosis was of interest in the present study when selecting cases. This database contained a wide range of additional information including insurance, financial data, length of stay, procedures performed on the patient, and costs charged by the hospital to the patient and their insurance company. Of the given fields, Primary DRG Code and Race were used to determine cases that met the inclusion criteria. Additionally, Primary Payer Status defined cases as either Self-Pay or Insurance Pay. Insurance Pay included cases paid by private insurance

companies, workers' compensation, Medicare, and Medicaid; these groups were not examined separately in order to maintain sufficient power for analysis. There were 153 different insurance companies, government plans, or subsets of companies that were defined as Insurance Pay. Self-Pay defined cases that were unable to seek payment help from another source and had to pay out of pocket for treatment. If participants used various methods of payment, then the primary method was considered. In the present study, disparities were defined as any inequalities or dissimilarities between race groups in Self-Pay status, which was considered less advantageous than Insurance Pay.

Denominator data, or population count data, were also from the NJDHSS, with the exception of the year 2010. Year 2010 denominator data were from the New Jersey State Data Center in conjunction with the US Census Bureau. These data also provided denominator counts separated by the aforementioned race categories.

#### Procedures

Institutional Review Board approval was obtained from Eastern Virginia Medical School and Old Dominion University. Data were gathered from the NJDHSS. Since more fields were included from 2008 and onward as emergency department and hospital discharge data were combined in 2008 into one data file, the statistical coding was modified appropriately. Upon selection of patient cases that met the inclusion criteria (e.g., primary DRG-defined mental health condition), analyses of both the emergency department and hospital discharge data were conducted, separating the cases into either Self-Pay or Insurance Pay. After these two groups were created, descriptive statistics such as raw frequency counts were performed to examine the frequency distribution per year without taking the total population of New Jersey into account. All patients whose primary method of payment was Self-Pay were culled and then furthered divided by race group; this step followed for those whose primary method of payment was Insurance Pay. Self-Pay in totality was used as an indicator to demonstrate a lack of another paying method such as health insurance. The data were then analyzed using Statistical Analysis Software (SAS), version 9.2.

#### Statistical Analyses

After descriptive statistical analyses were completed, mental health care services self-pay rates were calculated per 10,000 as the proportion of mental health care consumers who had a self-pay primary payer over the total number of mental health care hospital visits. This rate was calculated for each race group. These figures were calculated as a rate, in which all new and pre-existing cases within a time period were divided over the population during the given time period. With this method, all cases within the specific years were taken into account. Within-race trend lines were generated for insurance versus self-pay. Trend tests were used to assess overall patterns and to analyze whether or not a statistically significant change in one of the culled variables had occurred over time among race groups. These time series analyses were performed using the TIMESERIES procedure in SAS. Analysis of variance (ANOVA) tests were used to analyze differences among race groups in the number of total mental health cases per year as well as the number of self-pay cases per year. Additionally, ANOVA tests were run to test the time and race interaction in terms of the total number of mental health cases and the number of self-pay cases.

**RESULTS**

From 1999 to 2010, Whites had the highest number of hospital admissions in the state of New Jersey. During this time period, 560,903 Whites sought mental healthcare for the specific DRGs described earlier, as compared to 186,104 Blacks, 12,574 Asians, and 97,182 individuals who identified themselves as another race (Table 1). Over the 11-year time period, the self-pay rates for each race group remained significantly different from each other (Table 2); the rate of self-pay for mental health disorders in the Black population (1999: 14.32 per 10,000, 95% CI: 14.26-14.38; 2010: 46.19 per 10,000, 95% CI: 46.10-46.28) was significantly higher than the rate for Whites (1999: 5.95 per 10,000, 95% CI: 5.93-5.97; 2010: 22.50 per 10,000, 95% CI: 22.47-22.53) and Asians (1999: 2.07 per 10,000, 95% CI: 2.03-2.11; 2010: 5.55 per 10,000, 95% CI: 5.50-5.60).

Table 1. Total number of mental health hospital discharge and emergency department visits in the state of New Jersey, by race and per 10,000 persons within each race group, 1999-2010

	White	Black	Asian
1999	24,828 (38.5)	8,008 (66.9)	318 (6.8)
2000	26,273 (39.6)	8,324 (67.0)	329 (6.4)
2001	26,741 (40.1)	8,665 (68.6)	354 (6.5)
2002	26,774 (39.9)	8,510 (66.4)	374 (6.6)
2003	26,634 (47.4)	8,579 (72.8)	344 (6.0)
2004	43,390 (78.2)	11,697 (101.4)	625 (10.4)
2005	44,217 (79.9)	14,809 (125.4)	1,048 (16.4)
2006	46,111 (69.3)	13,911 (108.5)	862 (13.2)
2007	47,088 (70.9)	15,755 (122.5)	1,049 (15.6)
2008	77,174 (116.1)	27,680 (214.4)	2,746 (39.7)
2009	83,591 (125.5)	29,426 (226.1)	2,197 (30.9)
2010	88,082 (146.1)	30,740 (255.1)	2,328 (32.1)
Total	560,903	186,104	12,574



Table 2. Total number of self-pay mental health hospital discharge and emergency department visits in the state of New Jersey by race and per 10,000 persons in each race group, 1999-2010

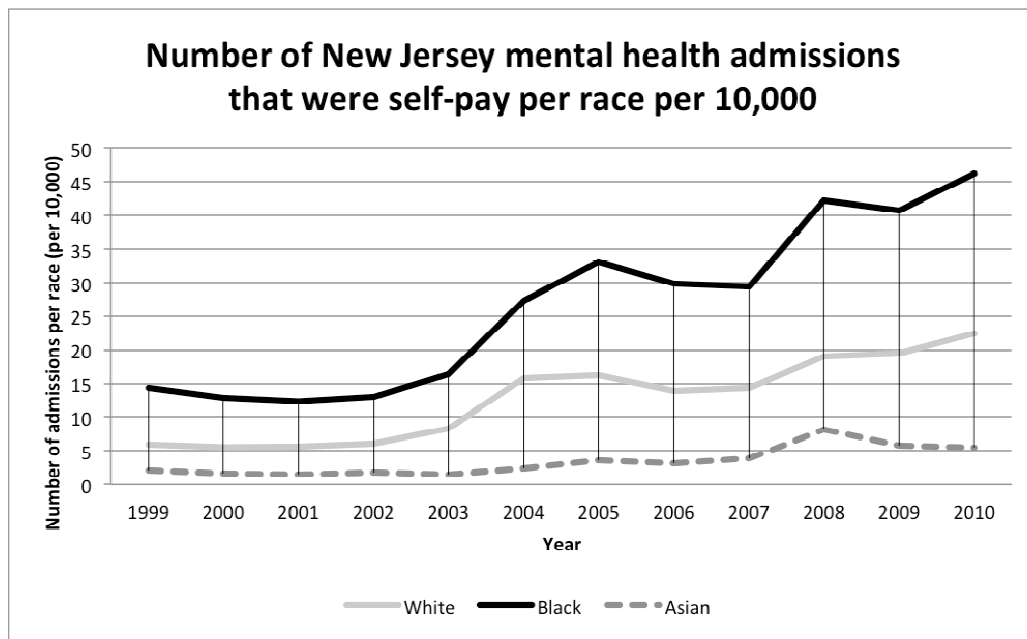
Year	White	Black	Asian
1999	3,842 (6.0)	1,715 (14.3)	97 (2.1)
2000	3,686 (6.0)	1,600 (12.9)	84 (1.6)
2001	3,739 (5.6)	1,559 (12.3)	84 (1.6)
2002	4,100 (6.1)	1,673 (13.1)	100 (1.8)
2003	4,655 (8.3)	1,940 (16.5)	85 (1.5)
2004	8,752 (15.8)	3,155 (27.4)	144 (2.4)
2005	8,972 (16.2)	3,906 (33.1)	229 (3.6)
2006	9,209 (13.8)	3,830 (29.9)	204 (3.1)
2007	9,565 (14.4)	3,775 (29.4)	257 (3.8)
2008	12,686 (19.1)	5,456 (42.3)	566 (8.2)
2009	12,964 (19.5)	5,302 (40.7)	411 (5.8)
2010	13,567 (22.5)	5,565 (46.2)	403 (5.6)

As shown in Table 1, hospital mental health care utilization rates significantly increased during the time period by a factor of 3.4 to 4.7 times. Asians showed the highest growth increase from 6.8 per 10,000 cases in 1999 to 32.1 per 10,000 cases in 2010, equating to a 4.7-fold increase; while Blacks and Whites showed the slowest growth, equating to a 3.8-fold increase (Blacks: increase from 66.9 per 10,000 cases in 1999 to 255.1 per 10,000 cases in 2010; Whites: increase from 38.5 per 10,000 in 1999 to 146.1 per 10,000 in 2010). With a few exceptions, each subsequent year displayed an increased rate as compared to the prior year. The most notable exception was 2006, when the rate decreased for all race groups. ANOVA tests showed that a significant difference ( $p < .01$ ) existed among the different race groups in the number of total mental health cases as a proportion of the population. ANOVA tests were also run taking into account the interaction of year and race since these two variables showed significant trend test results. When these analyses were performed, a statistically significant difference ( $p < .05$ ) existed among the years and race groups by the number of mental health cases.

As shown in Table 2, these trends followed for the frequency of self-pay mental health cases. However, the growth rate of self-pay cases was slower than the growth rate of all mental health cases. In terms of self-pay cases, Whites displayed the greatest level of growth with an approximate 3.8-fold increase from 6.0 self-pay cases per 10,000 mental health cases in 1999 to 22.5 self-pay cases per 10,000 mental health cases in 2010. Individuals identified as Black race were second, with a 3.2-fold increase (14.3 per 10,000 in 1999 to 46.2 per 10,000 in 2010). On the other hand, Asians had the slowest rate of increase (2.7 times) with 2.1 self-pay cases per 10,000 mental health cases in 1999 and 5.6 self-pay cases per 10,000 mental health cases in 2010. ANOVA tests demonstrated significant differences ( $p < .01$ ) in the rate of self-pay mental health cases between race groups. ANOVA tests also demonstrated that significant changes ( $p < .05$ ) occurred over time among the different race groups in the rate of total self-pay mental health cases.

As evident in Figure 1, the rate of self-pay cases increased in the 11-year period for all race groups, though there were some years (2005, 2006, 2007) in which certain or all race groups experienced a decreased rate. In general, the Asian population demonstrated the lowest mental health care utilization rate as well as the lowest self-pay rate. However, the Asian population had the highest growth rate for mental health care utilization and the lowest growth rate for self-pay cases.

Figure 1. Percentage of New Jersey mental health hospital and emergency department visits that were self-pay, by race and year



Rates were also calculated for the Other race group; however, due to inconsistencies within both the Uniform Billing and the population (denominator) data, the figures had a wide range. For the total number of mental health cases, rates ranged from 9.6 to 890.2 per 10,000 at various points over the 11-year time period. For the total number of self-pay mental health cases, rates ranged from 37.1 to 3,577.2 per 10,000 at various points over the 11-year time period. The rates of the Other race group are not intended to be compared with the three other race groups.

## DISCUSSION

Our hypothesis was only partially confirmed in that Whites demonstrated more health care utilization than Asians for each given year, but less than Blacks. Consistent with our hypothesis, there were vast changes in the mental health care gap; however, the gap in health disparities did not significantly decrease at the end of the 11-year period (i.e., differences were still significant at the  $\alpha = .05$  level). The enactment of the MHPAEA might not have yet translated into visible differences at the time the data were gathered, especially as the MHPAEA

is defined for group health care plans. This study comes at an important turn in mental health care as insurance policies and health care laws are changing. The present study establishes a baseline for the ACA, which indicated an increased gap between the Non-Whites (Asians, Blacks) and Whites groups in terms of likelihood of being a self-pay case from 1999 to 2010, as demonstrated in Figure 1. This increase is evident by the drastic rise in self-pay rates among the Non-White groups though the White group increased as well; most notably, the Black population had the highest growth rate of self-pay mental health cases. Though Asians had a slower rate than Whites, the hospital mental health care utilization in the Asian population was significantly less, which may suggest that the racial disparities in mental health have not drastically improved over time, if at all. Asians had the greatest percentage of change over time in terms of the total number of cases and overall hospital mental health care utilization, though Asians accounted for the smallest percent of the total sample size.

There seems to be a racial factor in who utilizes mental healthcare, but these race labels may be serving as a proxy for psychological, societal, and cultural factors that may more readily answer the question of why there are differences in mental health care utilization among race groups. For instance, ethno-cultural variations determined from narrative accounts may play a major role in how certain groups view help seeking for mental illness. Albeit European-American narrative accounts sync with the dominant perspective on mental illness, African-American narratives of mental illness tend to have other interpretations (Carpenter-Song et al., 2010). Likewise, though the groups in the Carpenter-Song et al. study cited psychiatric stigma as some sort of a barrier to seeking care, it was a core focus only among African-American narratives. This notion of stigma is also prevalent among Asian cultures, in that mental illness may interfere with one's moral obligations to work and provide (Yang et al., 2014). Living in poverty (Alegria, Vallas, & Pumariega, 2010) and mental health literacy (López, Barrio, Kopelowicz, & Vega, 2012) also influence help seeking. Additionally, there are immigration status differences with help seeking in that US-born Asian Americans have higher rates of mental health care (specifically not general health care) utilization than their immigrant counterparts (6.2% versus 2.2%, respectively; Abe-Kim et al., 2007); this also relates to the development of psychopathology that leads to the question of help seeking in the first place, as acculturative stress serves as one of many mediators to assess in the social context (Becker & Kleinman, 2014). In relation to the present study, the authors theorize that the increase in the number of Asians who sought mental health care may demonstrate changes in the Asian population in New Jersey as a function of immigration and other socio-cultural factors influencing why non-immigrant Asian Americans seek mental health care (see Abe-Kim, et al., 2007).

The present study had many strengths and limitations, with the selection of New Jersey as the case example serving as both a strength and a limitation. Primarily, New Jersey serves as a close representative of US averages on several accounts. For instance, New Jersey somewhat matches the average race distribution of the US as a whole for the categories listed in the 2010 Census: White (68.6% vs. 72.4%, respectively), Black or African American (13.7% vs. 12.6%), American Indian or Alaska Native (0.3% vs. 0.9%), Asian (8.3% vs. 4.8%), Native Hawaiian and Other Pacific Islander (<0.05% vs. 0.2%), Some other race (6.4% vs. 6.2%), and Two or more races (2.7% vs. 2.9%; US Census Bureau, 2012). New Jersey also spent 13.1% of its gross state

product on personal health care, which closely matches the US average of 14.8% in 2009 (CMS, 2011). Yet, there are also several unique features of New Jersey that may limit its external generalizability in terms of mental health care. Firstly, New Jersey is ranked eighth among the US states for the most per capita spending on mental health (NRI, 2010). Additionally, though New Jersey was comparable to the national rate across nearly all behavioral health indicators measured by the Substance Abuse and Mental Health Services Administration, there were three measures that were significantly different: the rate of severe mental illness and percentage of youths reporting improved functioning through treatment were lower than the national rate, and the rate of treatment for illicit drug use was higher than the national rate (SAMHSA, 2013).

Nonetheless, a major strength of the study was the sample size. Because of the large data set, there was nearly 100% statistical power. Approximately 98.5% of mental health cases had complete data for all of the variables culled, so we feel confident that the results are representative of the New Jersey state population or at least of the individuals who have sought mental health care services at a hospital in New Jersey. Changes in New Jersey's overall population were also taken into account by using denominator data of each race group per year. Validity and reliability were enhanced by the fact that clinicians recorded data at the point of care. However, misclassification bias may occur due to inaccuracies in coding. Because patient-level data were easily obtained by individual cases, the ecological fallacy was avoided though it remains unknown how carefully clinicians listed the appropriate DRG codes.

In addition to the issues regarding statewide to nationwide generalizability, there are some inherent limitations within the study characteristics. Factors such as gender, socioeconomic status, and secondary diagnoses were not taken into account in order to focus mainly on the race and insurance status interaction among patients with primary mental health issues. The race and insurance status foci may result in an overstatement of disparities due to racial factors when in reality other factors may have played an important role. Undoubtedly, there exist many mediating factors that link race group, insurance status, and mental health care utilization. Though the present study made note of psychological and societal factors that affect the links among these three factors, the statistical analysis focused on these three factors from a public health, epidemiological perspective. However, we acknowledge the methodological challenges of assessing the mediating factors of such a relationship (Helms, Jernigan, & Mascher, 2005).

There are also inherent issues of using racial categories as an independent variable, albeit tested as an interaction effect. Creating such group boundaries may be problematic in research as it averages an entire group of diverse individuals into one label (Schwartz et al., 2014). Population data may also not be entirely representative as there are various subsamples within the population that may not match another subsample under the same race label (Knight, Roose, & Umaña-Taylor, 2009). This misrepresentation was furthered complicated by "Hispanic or Latino" not being labeled as a race group in either the hospital Uniform Billing or the population (denominator) data, but instead as a separate dichotomous variable called ethnicity; because of these two separate variables for race and ethnicity, it was impossible to cull a mutually exclusive group of participants who identified as Hispanic or Latino independent of another race group. The authors attempted to analyze the Other race group with the intention of potentially culling

those who solely identified as Hispanic or Latino, but the misclassification bias became clear as there seemed to be marked inconsistencies in each year of data for the Other race group.

Further research should explore psychological, societal, and cultural mediators while being cognizant that such group averages do not apply to all individual persons within a labeled group. Additionally, the statistical procedures of future studies could benefit from formally incorporating forecasting methods into the time series analysis to build a better prediction model. Nevertheless, the present study was able to determine baseline levels of health disparities by insurance status and race for a relatively lengthy period, from 1999 to 2010. This period allowed for descriptive trend analysis, which may aid in determining future disparity changes and future possibilities. The data are nearly representative of the New Jersey population or mental health care hospital users as a whole, and thus may be helpful to the state's governing body and other agencies.

To the authors' knowledge, this was the first study to examine trends in insurance status in regards to mental health care by race group over an 11-year period. Though the ACA was enacted in 2010, at the end of our study period, significant changes may not be reflected in our data; however, we hope that the data will allow us to understand past trends in order to predict and compare post-ACA efforts. Understanding baseline gaps has implications to allow policy makers to project changes in health care utilization disparities beyond 2010, which is important in assessing the changes brought on by the various health care legislative changes. Though individuals are classified into certain race labels, we hope that the study highlights important differences among minority groups. This study comes at a critical time in mental health care as insurance policies and health care laws are changing. We hope that the information presented here may serve as a guideline in examining how disparities continuously change over time as the ACA completes the enactment of all proposed phases and as it integrates mental health care into the realm of general medical care.

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