Inequality, Intersectionality, and Medical Diagnoses:
How Recent Theories of Social Categories Improve Our Understanding of Behavioral
Health

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Abstract

The goal of this essay is to examine how social categories reflect inequality in the form of differential diagnoses in population behavioral health, a growing area of interest to scholars of race and ethnicity. The manifest problem is that racial/ethnic disparities are prevalent in healthcare because racial/ethnic groups have differential (and unequal) access to healthcare services; some groups receive little or no healthcare, or less timely care or lesser quality care than others. Diagnosis is a fundamental process fostering or hindering access to care. One theoretical problem is whether inequality vis-à-vis differential diagnoses is due to preconceptions and bias emerging at the level of interaction or whether there are features of the institution of medicine, health and healthcare, that sustain inequality, despite norms, policies and laws intended to ameliorate it. Self-administered, anonymous, population-level surveys presumably reduce the likelihood of inequalities in diagnosis, while introducing other dilemmas. This essay provides a framework to explore the manifest and theoretical problems associated with disparities in healthcare through a discussion of recent sociological studies in race/ethnicity focusing on structure/ interaction/ intersection and their application to population behavioral health. The usefulness of this framework is illustrated by several types of intergroup and intragroup analyses of differential diagnosis of alcohol use disorder. Implications for reducing disparities in healthcare resource access are discussed.

1. Introduction

Social inequality

The investigation of social inequality in the social sciences has a long and robust history. Its central focus on the origins and consequences of social categories (such as race, ethnicity, gender, class, sexual identity, occupation, education, age, nativity) for people's life chances depends on the systematic investigation of how social categories and the processes of categorization shape individual and group life. While the desire to classify the social and physical worlds is fundamental to human consciousness, examination of social, economic, and political systems resulting from this simple impulse uncovers consequences that are both predictable (e.g., social characteristics of groups differentiate members from nonmembers) and profound (e.g., social characteristics of groups create the conditions under which individuals and groups survive and flourish, or suffer).[1]

Sociology investigates social inequality and the processes of stratification -- who gets what and why-- in ways unique to its own disciplinary categories (and assumptions).[2] Primarily, this involves attempts to understand (and critically evaluate) inequality as it is shaped by social, economic and political institutions, and how inequality manifests in various aggregates of collective life: groups, organizations and societies. Within this sociological framework, scholars treat the dilemma of social inequality by asking how classification systems at the individual, group/ network/organizational, and institutional levels of societies, organize, allocate and distribute material and cultural resources to various groups and individuals based on historically varying salience of the characteristics of those groups, real and imagined. That is, how are social categories and inequality produced and reproduced, and what are the implications? A useful working definition, drawn from the literature on racism, yet applicable to other types of social inequality, argues that inequality [racism], embodies the social structures of dominance, power and privilege, based on social characteristics of groups:

> …rooted in the historical oppression of a group defined or perceived by dominant-group members as inferior, deviant, or undesirable; and occurring in circumstances where members of the dominant group create or accept their societal privilege by maintaining structures, ideology, values, and behavior that have the intent or effect of leaving non-

dominant-group members relatively excluded from power, esteem, status, and/or equal access to societal resources [3]

Theorizing social inequality

The two general frameworks for understanding social categories and social inequality have a number of designations and labels which vary across the history of the discipline. These include qualitative and quantitative approaches, micro and macro foci, relational/ interactional and structural theories. This essay borrows the contrasting terms relational/ interactional and structural.

The relational/ interactional approach of inequality is based on study of the lived experience of groups and individuals and how that experience manifests systematic patterns of phenomena of interest. It focuses on the details of cases of phenomena of interest, [4] and translates social experience into empirical concepts such as freedom, choice, agency (of individuals and groups), as well as their antithesis, oppression, coercion, powerlessness. The underlying assumption is that individuals create structure through action and relationships.[5] An approach using a relational framework analyzes social linkages, norms governing those relationships and people's descriptions and experience of the process to describe inequality and other inequalities such as racism, classism, discrimination, bias. The content of this narrative might include patterns of: individuals' experience of injustice, ostracism and otherness (or its reverse- fairness, solidarity, belongingness); how inequity is resisted and/ or endured; how individuals' interactions perpetuate these experiences and so on. Importantly, the institutional contexts relevant to the dynamics of interaction are key to the analyses. [6] For instance, Fadiman's account of diagnoses, mis-diagnoses and healthcare centers a Hmong family's struggles to save their child in a medical context (i.e., regional hospital system in the US in the 1990s) linked to other organizational and institutional systems (e.g., local law enforcement, state child welfare agencies, animistic religion, citizenship, Southeast Asian kinship networks). [7]

The structural approach, while not in conflict with the dynamics of relationships and interactions at the individual and group level, shifts analytic focus to examination of positions within a more abstract system of social entities, and their relative social, economic and cultural locations. Structural methodologies, familiar to most readers in the social sciences because of their prominent role in shaping modern social and public policy, initiate social inquiry

surrounding aggregate patterns of, for example, racism, classism, and discrimination. The focus shifts from individuals and their experiences, even single social settings, towards examination of broad patterns of behavior that are hypothesized to reflect the dynamics of socioeconomic, political and cultural institutions and structures. A structural framework describes general patterns of social life, not individual experiences of those patterns, and offers explanations that can be supported through quantitative analyses of these patterns. Transposing the relational framework above into one of structural analysis, the question about individuals' experience of injustice and ostracism becomes one of determining thresholds of injustice and ostracism (or the reverse) for aggregates of people; how inequity is patterned across human collectives like neighborhoods, regions, nation states; how racism persists as an embedded feature of decision-making systems and so on. [8] Institutional setting may be a factor in a structural framework, just as it is in relational-interactional studies.

I touch on these two sociological methodologies briefly here and more thoroughly throughout the essay in order to introduce several ways to investigate the processes by which racial and ethnic inequality can be comprehensively observed. Although each has its strengths and weaknesses, it is the goal of this essay to highlight critical flaws in the use of a structural approach to explain population health, with insights from the relational framework, under the auspices of the concept of intersectionality. [9] Primarily, this essay argues that inequality is a structural feature of healthcare access, which, despite extensive policy efforts to ameliorate, remains problematic for racial and ethnic groups in the US. Racial/ethnic disparities are prevalent in healthcare because racial/ethnic groups have differential (and unequal) access to healthcare services; some groups receive little or no healthcare, or less timely care or lesser quality care than others. [10] The general theoretical question is whether this is due to bias emerging at the level of interaction or whether there are features of the institution of medicine, health and healthcare, that sustain inequality, despite norms and policies directed towards ameliorating it.

By examining diagnosis, it becomes apparent that categorizing patients and illnesses is a structural issue of access which, although clearly impacted by relational biases, is shaped not only by the institution of medicine, health and healthcare, but also by other contiguous organizations and institutions, networks and social movements. Since contiguous organizations and institutions, networks and social movements have their own unique social-economic,

political and cultural purposes, their conjuncture can be perplexing, creating paradoxical values. Education, in modern polities based on liberal concepts of autonomy and self-determination, for example, provides individuals with the ideology (e.g., obligation of citizenship) and opportunity for interclass, upward mobility yet, because of the nature of free markets, reproduces race, class and gender stratification. [11] Healthcare, too, in modern polities based on autonomy and self-determination may provide individuals with an ideology (e.g., health-as-a-human-right) and opportunity for well-being yet, because of the structure of competitive free markets, must necessarily limit access to healthcare depending on individuals' social characteristics. Unsurprisingly, a key component of institutions is their capacity to render invisible the structural dynamics of inequality through norms, policies and narratives that perform that function.

A chief strength of structural frameworks for our analyses is that they provide generalizable, population-level estimates of relationships between race/ethnicity and inequality. Ascertaining societal-level patterns in relationships between race/ethnicity and inequality is essential for ameliorating societal norms, practices and laws that perpetuate inequity. The chief weakness of a structural approach is that generalizability is achieved by bracketing societal norms, practices and laws that perpetuate inequity, the institutional conditions under which inequality operates which often limits interpretability. Structural models are effective in so far as they aggregate individual-level phenomena for easier pattern recognition, yet, to do so, they collapse richly detailed meaningful social experience into course-grained categories (e.g., Blacks/Whites/ Hispanics/Asians; male/female; age categories; diagnostic groups such as dichotomous use disorders). This means that the interpretation of the patterns identified by structural analyses are often paradoxical, or at odds with the concrete reality of lived experience. For example, the so-called racial mental health paradox in which Blacks have fewer mental health issues (largely depressive symptoms) than other racial/ ethnic groups, has resulted in a number of less-than-successful attempts to understand the meaning of the patterns in those data.[12]

One line of argument germane to the discussion of racial/ethnic inequality urges researchers to pursue qualitative, micro-level methods, since only a relational/interactional approach explains inequality in all its complexity and in its appropriate institutional context. [13] A less methodologically partisan view however, might combine a relational/interactional framework with a structural model to correct for the latter's shortcomings vis-a-vis multiple

dimensions of lived experience. What is problematic with this mixed-methods approach is achieving a useful balance between the detail of the qualitative analyses, which can generate too much information to detect any patterns, and the generality of quantitative analyses, which can generate patterns of data that are not interpretable. Intersectionality provides one way to operationalize multiple dimensions of lived experience by disaggregating social positions based on race/ethnicity, gender, sexual identity, age, nativity, language, education, lifestyle, occupation, income and so on, and then combining these with what we know about the institutional functions these social positions.

In the empirical section of this essay, I use a structural variant of the intersectional framework to examine population-level inequalities in diagnoses in addiction medicine/ behavioral health to show how disaggregated social positions in race/ethnicity, gender and age improve our understanding of diagnosis by first, complicating overly simplified patterns found in bivariate relationships such as race/ethnicity or gender or age, and, then, second, using a theory racial/ethnic inequality (or sexism or ageism) to interpret these patterns. The theory of diagnostic inequalities, in brief, argues that diagnoses are not unambiguously beneficial or detrimental to access to healthcare. To interpret diagnoses, institutional setting must be taken into account along with social categories.

A single large-scale survey such as the NSDUH is only the first step in a more comprehensive analysis of behavioral health diagnoses. That is, a survey provides a self-reported diagnosis. NSDUH is exemplary in this regard. Next, self-reported diagnoses still need to be matched and validated with clinical diagnoses, addressing some of the questions posed above. And both must be linked with data on actual access to healthcare resources, post-diagnosis. Lastly, while institutional context is essential for understanding these patterns (e.g., Where do diagnostic process take place? Who controls the process? How is it understood in different contexts by different actors such as medical practitioner, patient/ subject, family, friends, others?) this component of the analysis largely speculative.

Structural and relational frameworks: SMI and ICMI
Depending on their training, social scientists typically adopt either a relational/interactional perspective (a qualitative or ethnographic, field approach, labelled the Infra-categorical Model of Inequality (ICMI), in Monk's schema) or a structural perspective (a quantitative, macro

approach, labelled the standard model (SMI)). [14] An essential function of structural frameworks (SMI) is to understand population-level dynamics of social phenomena. The standard model measures social differences such as race, age, ethnicity, citizenship, sexuality, gender, class, status, power, in terms of positionality (i.e., data points within socioeconomic and political system) for administrative purposes of the modern state. Through the Census and surveys like the University of Chicago's General Social Survey [15] the chief administrative function of SMI is categorization with the goal of efficient albeit fair allocation and distribution of resources.[16] SMI measures tend to be nominal (i.e., reductivist) and superordinate (i.e., exclusive and intensive). Importantly, the large-scale survey format of SMI can be organized to answer questions about intergroup differences in inequality at the societal-level such as discrimination and bias from housing to health, income inequality, education, occupational mobility, and so on. Through analyses of macro-patterns of aggregate data, they provide insight into otherwise unobservable social, economic and cultural processes. A chief weakness in large-scale observational studies comprising SMI is the requisite to aggregate diverse social characteristics, particularly social categories such as gender, race and ethnicity. The standard model simplifies complicated social differences such as gender in binary oppositions like male/ female (biological categories) or race as Black/White/Asian or ethnicity as Non Hispanic/ Hispanic. These course-grained indicators of lived experience become legal-institutional proxies for material and symbolic resource access, which may or may not correspond with an individuals' identities and actual resource allocation. Individuals check a box and "self-identify" as Black/White, rich/poor, male/female, young/old, on a legal document such as a census or on a survey, the meaning and implications of which become opaque.

The alternative ICMI model, as suggested by the contrasts above, aims to explain how: "ordinary actors have considerable room to maneuver in the ways in which they use… categories…the categories used by ordinary people in everyday interaction often differ substantially from official categories." [17] In the ICMI- alternative model, official categories which are nominal/reductivist and superordinate/ exclusive and intensive, become continuous, gradational and extensive. ICMI critiques the SMI model asserting that heterogeneity of social differences (and group identity as opposed to simple positionality) is arbitrarily limited to administratively sanctioned discontinuities in the interest of bureaucratic efficiency in SMI

which can be countered through a more self-consciously subtle, complicated (albeit meaning-inflected) schema offered by an ICMI framework.

Problems with the standard model of inequality

Ellis Monk's recent discussion of contemporary theories of categories revisits an older debate in sociology about the most reliable way to translate diverse, complicated, finely graduated social phenomena into systematic generalizations about human collectives. [18] The issue is how to conceptualize and translate group membership (and non-membership) in a manner that is true to the lived experience therein and the quotidian activity that individuals do by way of delineating boundaries, creating social hierarchies and statuses and allocating symbolic and material resources within those boundaries, yet, also provides neat, "crisp," analytical distinctions useful for the organization and management of modern societies [19] As noted, these categories serve as the basis for allocation and distribution of both symbolic and material resources, as well as the fundamental tools by which scientists, policy makers, administrators, social movements and others uncover disparities in the distribution of symbolic and material resources, and advocate for their reform. The concept of social inequality is therefore not simply an expression of an academic schema based on social categories such as race/ethnicity or gender or sexual identity or citizenship or age, but a rhetorical instrument that, depending on group membership, creates and deploys this schema for a range of purposes from maintaining the legitimacy of modern bureaucratic structures, firms, businesses, the state itself to the exercise of individual authority. Similarly, it can be used as a tool for challenging discrimination, racism, and other forms of socioeconomic, cultural and political inequity.

Solutions to problem of the standard model of inequality

As most social science research shows, despite legal (and normative) sanctions against discrimination based on standard model categories, especially those surrounding race and ethnicity, racial and ethnic inequality in all areas from wealth to health, persists. As the discussion above suggests, the persistence of inequality is embedded in socioeconomic and political systems, some of which, paradoxically, depend on the tools of social classification to ameliorate discrimination.

One solution is through intersectionality, a framework that dismantles so-called state classifications in order to show that [20]

social positions that exist in a hierarchy of social power are not independent, but rather […] shape human experience jointly. As social positions intersect at the individual level (e.g., race and gender), experiences at those intersections are influenced by larger interpersonal and structural systems of oppression such as racism and sexism

In Monk's version of intersectionality, the model proposed includes a finely-graduated analyses of social categories of race and ethnicity, their production and reproduction, through the following analytic processes: 1) disaggregate nominal differences (e.g., Black/White/Hispanic) to form more continuous categories based on "cues of categories, subcategories and perceived typicality;" 2) center the role of the body…; 3) elevate the role of within group inequalities…; 4) give equal analytic attention to routine boundary-making [everyday activities], not just politically salient processes. [21]

I borrow these suggestions to model quantitative health data. Large-scale quantitative health research is generally not designed to elicit finely-graduated distinctions between social categories; prevalence and incidence, pattern identification and hypothesis testing are its main objectives. Yet, the proliferation of digital data can be exploited to test a population-level version of an intersectional model. Patterns that are revealed there can then be interpreted through the theoretical lens of structural inequality.

In summary: we can disaggregate nominal differences (#1 above) and provide a range of subcategories that permit us to examine the intersections of a number of components of people's social, economic and cultural positions. For example, to address #1, in the analyses which follow, race/ethnicity are disaggregated using gender and age.[22] We can also design analyses to focus on "within group inequalities" (#3 above). For example, to address #3, in the analyses which follow, gender and age categories are examined *within* race/ethnicity. Moreover, I apply this schema to health diagnostic processes, addressing the question of the role of the body and the implications of diagnosing-- a method of categorizing health and disease-- as an example of "routine boundary-making" in which individuals are organized according to diagnostic categories (#2 and # 4 above). As such, institutional setting (private or public medical practice,

hospital system, legal system with medical contracts- e.g., mental health and drug courts, and so on) is also an essential component of the analyses. While this analytic strategy does not begin to uncover the full richness of lived experience, it does expand the framework for organizing social categories and allows us to consider how positional intersectionality operates to structure health. Furthermore, even though Monk does not actually argue for incorporating the two models I have proposed, studies of intersectionality combined with insights from ICMI should be used to correct for the weakness of nominal course-grained categories in structural accounts of racial/ethnic inequality. The combination of Monk's ICMI recommendations plus previous work in intersectionality provides a novel approach to disaggregating SMI's aggregate social characteristics, allowing for a more extensive characterization of how social categories (in this case, multiple social positions such as race/ethnicity, gender and age) impact inequality.

Intersectionality and diagnosis

Intersectionality in population health is "a theoretical framework wherein consideration of heterogeneity across different intersections of social positions is integral to understanding health and social experiences." [23] Bauer et al., however, caution against incorporating a reductivist (i.e., merely additive) concept of intersectionality into structural analyses of health. One key to any intersectional analysis is the operationalization of multiple intersectional social categories (e.g., older /Black/ Hispanic/ working-class/ male), intended to more thoroughly characterize individuals' lives and therefore experience of social inequality (marginalization as well as privilege) than any single social characteristic itself (e.g., older individual, or Black or Hispanic, or working-class or male). Such intersections of social position, are not simple layers of positionality (e.g., older plus Black plus Hispanic plus working-class plus male) but unique locations (e.g., where position, identity, and processes converge) that determine access to resources, their quantity and quality, usefulness and meaning, sometimes in unexpected ways.[24] While researchers have argued that the concept is best deployed in fine-grained, micro-level ethnographic studies, [25] Bauer and others argue that quantitative studies, for instance, studies of population health, have much to gain from the concept. In addition, applied at a structural level, an intersectional framework has much to offer in the way of theoretical and methodological refinement to ethnographic studies. [26]

In this essay, I apply the notion of intersectionality to inequalities in health, specifically the process of diagnostic categorization in addiction medicine/ behavioral health. In brief, intersectional approaches help us model behavioral health, and specifically the diagnostic process at the population (rather than individual) level, because population health outcomes are driven by multi-level phenomena (i.e., social and economic context are critical) not just individual susceptibilities to disease. Intersectionality provides a disaggregated framework for social categorization which when applied to the study of population behavioral health yields valuable insights underpinning theory and social policy and practice. Diagnosis, similarly, is both an individual level process, and an aggregated framework (i.e., set of standard categories and nosologies), which when understood through an intersectional lens yields valuable insights useful to theory and practice. I discuss diagnosis as a system of categories and as a process in addiction medicine/ behavioral health in the following section.

Diagnosis

Diagnosis is a process of classification that, ideally, results in a concise technical account of the cause, nature, or manifestations of a physical or mental condition, situation, or problem. The classification of a disease, its cause and symptoms, and, course of treatment, is based on evidence drawn from a number of sources including results of a physical examination, laboratory tests, interviews with the patient and/or family, and medical history. [27]

Diagnostic processes are a fundamental aspect of professional practice. Their importance in identifying and classifying diseases or medically defined problems is unparalleled. In western biomedicine diagnosis validates what counts as a medically defined problem by bringing together explanations of disease symptomatology and its casual mechanisms. It legitimates illness, permits transition to the putative "sick role" [28] and provides access to resources such as referrals to specialists and follow up care, medicines and treatments, and, significantly, sustains the authority of medical professionals and the institution of medical science and care, generally. [29]

Like other social process which organize individuals into broad categories based on salient attributes, diagnosis is both an individual-, relational/interaction- level process, and a structural framework consisting of categories and nosologies which become standardized over time. Its structure consists of roles (e.g., doctor, subject/patient) and system of classification (i.e.,

disease categories) including normative and legal protocols for practice and treatment. Professional medicine depends on classification systems such as the International Classification of Disease (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM I-V) and Systematized Nomenclature of Medicine (SNOMED). Diagnostic categories are deployed to reduce the ambiguity and uncertainty surrounding decision-making (i.e., nature of illness, causal mechanisms, course of treatment, prognosis), and foster optimal outcomes (i.e., healthy bodies and minds).

As a process, at the level of individual interaction, the doctor-as-diagnostician examines the subject-as-patient, whose complaint may or may not fall within a medical purview. This practice involves foregrounding some characteristics and bracketing others, which is shaped by formal standards, protocols and procedures which create precise demarcation between diseases. Infections, for example, are the invasion of tissue by pathogens, their multiplication and the reaction of the host. Their cause may be bacterial, viral, parasitic, fungal, prions or another source. [30] Diagnostic practice involves identifying the infectious causal agent(s) through observation of symptomatology in a clinical setting, through a patient/ family health history, and/ or through the application of a medical technology which is ultimately deployed to confirm or disconfirm initial clinical hypotheses (e.g., symptoms of viral infection). Since symptoms for bacterial and viral infections are similar, even though the diseases are fundamentally different, using a medical technology to look for pathogens in the blood, mucus or sputum, urine, stool, skin, or cerebral spinal fluid (CSF) more precisely delineates the nature of the disease, confirms or disconfirms the hypothesis, labels the ailment sorting it into a diagnostic category (e.g., bacterial infection- streptococcus), with a corresponding prognosis (e.g., non-fatal) and treatment (e.g., antibiotics).

The logic of the diagnostic process is unmistakable in its attempts to eliminate extraneous, non-salient considerations from problem to solution. Importantly, diagnostic routines aim to reduce subjectivities and eliminate bias in medical decision-making. By constructing diagnostic schema in the form of diagnostic categories, partiality and implicit bias, that is, errors in reasoning and hypothesis testing can be circumscribed. [31]

Classification systems, such as diagnostic schema, standardize healthcare practices. Standardization occurs in most healthcare work and practice areas as a process for sorting patients according to health conditions, their treatments, and care. Standardization is a process

(as well as a benchmark - "the standard") by which modern professional practices and routines are formalized, in order to reduce or eliminate variability in decision-making. Standardized practices can be implemented in interactional settings (e.g., a doctor investigating patient symptoms) as well at the level of public health, through algorithmic/ self-administration (e.g., survey questions aimed at symptomatology). By adopting standards, schemas, protocols and other formal routines organizational actors create efficient work processes, encourage cooperation and create legitimacy. [32]

Disparities in healthcare, however, persist. In the US, racial and ethnic minorities, largely people of color including Blacks, Hispanic/Latinx, Native Americans, Pacific Islanders, persons of Asian descent, and others, despite improvement in some areas of healthcare, continue to experience marked disparities in access to healthcare, quality of care, and health outcomes.[33] Decades' worth of studies specify that implicit bias (unintended yet ubiquitous bias on the part of individuals) is an important factor in perpetuating disparities. Studies of clinical decision-making, and meta-analyses of those studies, reveals that so-called implicit bias is a contributing source of racial and ethnic healthcare disparities. Implicit bias shapes medical professionals' attitudes, behavior and practices in areas such as cardiology, pain medication and surgery (but not in areas such as treatment in the emergency department among others). [34]

In behavioral health, studies have found racial differences in diagnoses for schizophrenia and mood disorders, although recent analyses of racial disparities in psychiatric risk assessment in an emergency department showed no differences in admission rates. [35] Being attentive to bias by creating standardized diagnostic schema is especially important in behavioral health (i.e., mental illness and addiction) because of the social risk accompanying imposition of a stigmatizing identity. Moreover, because social groups have differential access to healthcare and treatment, impacting their health and well-being, diagnosis becomes an access problem limiting treatment and negatively shaping health and well-being.

For example, studies of bias in behavioral health along the dimensions of race/ethnicity, gender and age underscore the nature of that problem. Research has consistently shown that: first, with regard to race/ethnicity, Blacks and Hispanics (Puerto Rican- Hispanic) compared to whites are more often diagnosed with schizophrenia rather than bipolar affective disorder. For this reason, Black patients and Puerto Rican Hispanic patients are more likely than white patients to be overmedicated with neuroleptic medications, while their depressive symptoms remain

untreated. Second, differential diagnosis between genders occurs in a number of behavioral health areas. With respect to so-called axis II, personality disorder, diagnoses: women are more likely to be diagnosed with histrionic personality disorder and men with antisocial personality disorder. This reinforces disparities in prevention and treatment. Third, with regard to age differentials in mental health diagnoses, "the most widely replicated finding for age bias involves the differential diagnosis of organic impairment and depressive disorder. Compared to young and middle-aged patients, elderly patients are more likely to be diagnosed as having organic impairment and they are less likely to be diagnosed as having a depressive disorder," even patients described by the same case history. [36]

To examine these gaps more closely, we turn now to the National Survey of Drug Use and Health (2002- 2019), a nationally representative sample of behavioral health information, for data on intersectionality. We use these data to explore inequalities in the process of diagnostic categorization in addiction medicine/ behavioral health, specifically, alcoholism. The NSDUH gathers respondents' replies to questions about their alcohol use (among other behaviors and attitudes) which answers are then used as diagnostic criteria to determine whether symptoms of the disorder are present or absent and their impact on respondents' health and well-being. We explore the diagnostic process at the population (rather than individual) level, because (as noted above) population health outcomes are driven by multi-level phenomena (i.e., social and economic context are crucial) not just individual susceptibilities to disease. Since different groups have differential access to healthcare resources, it is expected that diagnoses will differ between groups and within groups as well, depending on the influence of different sets of social characteristics. Two questions motivate the analyses which follow: How does alcohol use disorder vary between three key social statuses: race/ethnicity, gender and age, and, how does it vary on within race and ethnicity, given the cross-cutting impact of gender and age?

In the concluding section, we return to the notion of institutional contexts to interpret our results. The NSDUH diagnosis of alcohol use disorder takes place outside of a clinical setting. Its institutional context is ambiguous (e.g., members of modern polities impact policy by taking surveys). Therefore, we can only speculate on how a theoretical framework of structural inequality helps us understand how the seemingly impartial processes of diagnosis can function as both a privilege, providing access to healthcare and fostering well-being, while also creating barriers to healthcare because of social stigma attached to a disorder.

2. Cases: National Survey of Drug Use and Health.

2.1 Data and study population

To explore the concept of intersectionality and its application in health, generally, and behavior health diagnoses specifically, I use data from the National Survey of Drug Use and Health (2002- 2019).[37] NSDUH data serve as a preeminent source of yearly incidence and prevalence estimates of illicit drug and alcohol use disorders, clinical and treatment features of those with substance use disorders, and socioeconomic correlates of those with substance use disorder in the U.S. I build on previous iterations of these data to create a sample that consists of respondents with valid responses to questions about alcohol use during the past year, matched along several basic social categories: race/ethnicity, gender and age.

2.2 Measures

Alcohol dependence. The NSDUH instrument includes questions designed to measure illicit drug or alcohol dependence or abuse (i.e., substance use disorders [SUDs]). The SUD questions were based on the criteria in the American Psychiatric Association (APA) Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM IV [38]). The DSM V (2015) changed the terminology and definition of alcoholism/ addiction. It collapsed abuse and dependence into a syndrome labelled Alcohol Use Disorder, which represents a continuum of alcohol problems ranging from mild to severe.[39] I chose to combine the terminology from DSM V with the distinction between abuse and dependence in the DSM IV. Thus the diagnostic outcome I operationalize here is called: alcohol use disorder diagnosis for dependence (i.e., labeled AUD-D or dependence in my analyses to distinguish it from AUD-A or abuse) because: 1) unlike illicit substances it does not entail criminal activity; 2) most American adults are familiar with its uses and abuses; 3) there is less of a social stigma in the admission of alcohol problems than illegal drug problems, and; 4) AUD-D is more stringent than abuse in its diagnosis in that it includes the physiological components of tolerance and withdrawal in its assessment of problematic drinking.

NSDUH follows the DSM-IV to distinguish various types of alcohol misuse. Like bacterial and viral infections, alcohol abuse and alcohol dependence have similar presentations. To distinguish them, the DSM-IV, like other standardized schema for diagnosing alcohol

problems (e.g., the Alcohol Use Disorder Inventory Test [40]) depends on the identification of salient behaviors such as frequency and volume of alcohol consumption and its social impact. Alcohol abuse is distinguished from dependence in that while both include as symptoms of disorder the social impact of drinking, dependence was delineated by physical tolerance and withdrawal. [41]

A respondent was defined as having alcohol dependence if the respondent reported a positive response to three or more of the seven dependence criteria (including the six standard criteria listed above plus a seventh withdrawal symptom criteria):

1. Spent a great deal of time over a period of a month getting, using, or getting over the effects of the substance.
2. Unable to keep set limits on substance use or used more often than intended.
3. Needed to use substance more than before to get desired effects or noticed that using the same amount had less effect than before.
4. Unable to cut down or stop using the substance every time he or she tried or wanted to.
5. Continued to use substance even though it was causing problems with emotions, nerves, mental health, or physical problems.
6. Reduced or gave up participation in important activities due to substance use.

On the other hand, a respondent could be diagnosed with an abuse disorder if she/he/they reported:

1. Having serious problems due to substance use at home, work or school.
2. Using substance regularly and then did something where substance use might have put them in physical danger.
3. Use causing actions that repeatedly got them in trouble with the law.
4. Having problems caused by substance use with family or friends and continued to use substance even though it was thought to be causing problems with family and friends.

Race and ethnicity. Following previous studies, I operationalize racial and ethnic group membership based on self-identified race and ethnicity using the course-grained categories Monk and others object to: Latino/Hispanic, non-Latino/ non-Hispanic, and Black (non-Latino/ Non-Hispanic), Asian, Pacific Island, Native American, and mixed racial/ethnic groups. Similarly, despite recent changes in western conceptions of sexual identity, survey categories in the NSDUH remain male/ female.

Gender and age. Research in social stratification as well as prior studies using NSDUH data provide a range of social and economic factors that interact to explain racial/ethnic differences in diagnosis of alcohol use. However, while any number of socioeconomic and cultural factors may structure the relationship between race/ethnicity and a behavioral disorder like alcohol use dependence, gender and age remain particularly salient, if not convenient for analyses meant to illustrate the possibilities of a macro-intersectional approach, rather than definitively test the parameters of the impact of all (or even most) social factors on diagnostic processes. The NSDUH itself reports crosstabulations of a number of intersections of socioeconomic characteristics and substance use disorders as well as treatment for those disorders.

I therefore follow NSDUH's use of, and coding for, gender and age. Since NSDUH during the years 2002-2019 still reported two sexes, male/ female, I dichotomize gender according to that convention. NSDUH reports various age ranges. Since alcohol use is legally restricted to adults (although youth drink, of course), I follow one strategy and collapse age into categories: 18-25 yrs old; 26-34 yrs old ; 35-49 yrs old; 50 plus yrs old.

2.3 Analysis

The primary goal of this essay is to explore the extent to which race and ethnicity, gender, and age create different configurations of alcohol use disorder dependence. Generally, expectations point to differences between the overlaps of these three social characteristics, race/ethnicity, gender and age, although theory (and descriptive studies of intersectionality) is not developed enough to permit any kind of formal hypothesis testing. Naturally we expect that there will be some unique intersections with greater and lesser probability of an AUD diagnosis.

Initially, I replicated the data structure of prior studies and NSDUH reports in order to demonstrate that pooled NSDUH data for 2002-2019, did not vary appreciably from other studies This took place in several steps. First, I re-created and analyzed the same NSDUH data from prior studies and NSDUH reports using appropriate sample weights and design-adjusted measures (not shown).[42] Second, I applied those techniques to the 2002-2019 data and conducted descriptive analyses with our population. The results of those descriptive analyses are contained in Tables 1-4 and Figures 1 and 2.

[Table 1 goes about here]

3. Results

3.1 Sample characteristics: Table 1

Table 1 provides basic descriptive information about the sample. In this table I examine alcohol use disorder- dependence (AUD-D) and its components for the entire pooled NSDUH population, 2002-2019. Then I describe each of the three social categories, race/ethnicity, gender and age, discussed above.

As a pooled estimate, 3.4 percent of the US population has an alcohol use disorder based on dependence (e.g., three of the seven components listed in the table and described in the measures' section above). This is consistent with NSDUH longitudinal trends as well as other national estimates that locate prevalence of heavy or problematic drinking at 3-4 percent. [43] The components of the AUD-D measure range from the 1 percent of the population who had at least two withdrawal symptoms to 8 percent, who admitted spending more time than usual getting and/or using alcohol or getting over its negative effects. About 4 percent had developed a physical tolerance to alcohol, defined as the need to use more alcohol to produce pleasurable effects or the recognition that usual amounts were not having the same pleasurable effects as they once had.

The remainder of the table provides estimates of the distribution of racial/ ethnic group membership, gender and age. Note that the estimates are weighted by design in order to more accurately approximate the distribution over the 18 year time period. For example, the non

weighted percentages for race/ethnicity are similar to the weighted percentages, and range from 63.2 for Non Hispanic whites (compared with 67.1 percent in the table) to 2.8 percent with multiple identities (compared with 1.3 percent in the table) to 15.7 percent for Hispanic (compared with 14.4 percent), while the non weighted percentages for age are remarkable skewed at the upper and lower ends of the distribution and need to be appropriately weighted. [44]

[Table 2 goes about here]

3.2 AUD-D between groups: Table 2, Table 3; Figure 1

We know from previous research that there are differences in rates of alcohol disorders among racial and ethnic groups. For example, in a single year, 2013, alcohol dependence and/or abuse was estimated among racial and ethnic groups on the order of: Native American and Alaska Native: 14.9 percent; Native Hawaiian and Other Pacific Islander: 11.3 percent; Hispanic: 8.6 percent; Caucasian: 8.4 percent; African American: 7.4 percent; Asian: 4.6 percent. Across dimensions of gender, males were estimated to have an alcohol use disorder (either dependence and/or abuse) around 9- 10 percent and females around 4.5 percent. [45]

Percentages in Table 2 differ from these figures in that the focus is on alcohol dependence which unlike alcohol abuse, AUD-D is more stringent in its diagnosis because it includes the physiological components of tolerance and withdrawal. Estimates are lower but trends similar: Native American and Alaska Native: 8.1 percent; Native Hawaiian and Other Pacific Islander: 4.3 percent; Hispanic: 3.6 percent; Caucasian: 3.4 percent; African American: 3.5 percent; Asian: 1.7 percent. Across dimensions of gender, males were estimated to have an AUD-D around 4.4 percent and females around 2.4 percent. Comparing AUD-D across age, dependence declines with age. Six percent for the 18-25 year olds had an AUD-D dropping to 5.1 percent for 26-34 years, 3.6 percent for 35-49 year olds and 1.6 percent for those in middle age.

[Table 3 goes about here]

In Table 3, I disaggregate these categories even further. In this table, I compare AUD-D between racial and ethnic group at the intersection of gender and then age. As we saw in Table 1, males are more likely than females to have an AUD-D, and Native American/Alaska Native males (10.3 percent) and females (6.1 percent) had the highest rates of AUD-D. However, for females, Pacific Islanders and then multiracial respondents had the next highest rates (4.0 percent and 3.6 percent, respectively), while for males multiracial respondents then Hispanics had the next highest rates (5.4 percent and 5.2 percent, respectively). Intersectional trends were also identified between race/ethnic and age. While Table 3 provides the actual numbers, Figure 1 depicts these relationships visually.

[Figure 1 goes about here]

In Figure 1, I combine age and race/ethnicity to depict the pattern of AUD-D diagnosis at the intersection of these two characteristics. Figure 1 shows that AUD-D declines with age, and, that there are racial/ethnic differences within each age category which decline, as expected. The question is whether differences between racial and ethnic groups are stable across age or whether these vary by age. For example, Native American/ Alaska Native tend to have the highest AUD-D, regardless of age. Yet, young (18-25) Pacific Islanders have the second highest rate followed by whites and multiracial respondents. By 26-34, and then into older age ranges, especially 50 plus, the percent of AUD-D among Pacific Islanders falls below these two groups. In another curious intersectional trend, the percent of Asian 18-25 year olds with an AUD-D is comparable to Blacks, both are at the bottom of the distribution, yet for each subsequent age cohort, the percent of Asians with an AUD-D is the lowest of any group.

[Table 4 goes about here]

3.3 AUD-D within groups: Table 4; Figure 2

In Table 4, I continue to disaggregate the three categories with respect to AUD-D. However, in this table and in Figure 2, I now compare AUD-D within racial and ethnic groups at the

intersection of gender and then age. I do so in order to understand the extent to which there are intragroup group differences. [46]

As we saw in Table 1, males are more likely than females to have an AUD-D, and Native American/Alaska Native males (10.3 percent) and females (6.1 percent) had the highest rates of AUD-D. Does this relationship hold across other groups, that is, are the within group differences the same when we examine, for example, AUD-D for male/females who identify as non Hispanic whites and compare these rates of AUD-D for male/females who identify as Black? It appears as if there is considerable within group variation. The percentage of differences are noticeable, and their patterns are quite varied. The percentage difference for female/male AUD-D for Native Americans/Alaska Natives (who both have the highest rates of AUD-D) is 51.9 percent [47] which is equal to the female/male AUD-D ratio for Asian groups members 51.6 percent (who have the lowest AUD-D). The greatest within group variation is between female/male AUD-D for Hispanics, 87.3 percent while the lowest within group variation is between female/ male Pacific Islanders 12.7 percent.

[Figure 2 goes about here]

Similarly, we can calculate AUD-D within-group variation for age and then examine the patterns within/ across different groups to determine similarities and differences. Table 4 provides the numbers for doing so, and Figure 2 depicts these patterns. While intergroup analyses showed AUD-D variation between racial/ethnic groups, this analysis allows us to examine AUD-D variation between ages within those racial/ethnic groups. Are the patterns the same or different? It is most noticeable that there is a consistent decline in AUD-D between ages 18-25 and 26-34 and 35-49 and 50 plus for most racial and ethnic groups, except for Native American/ Alaska Natives and for Blacks. In those groups AUD-D increases in the 26-34 age group before declining in later years. Additionally, the decline in AUD-D for Pacific Islanders and Asians between 18-25 and 26-34 and 35-49 and 50 plus, relative to the other groups, is considerable. This is borne out when comparing percentage differences (not shown). Within all groups, the decline in AUD-D by 50 plus years of age is readily apparent, however, for some groups the decline is abrupt (Pacific Islanders and Asians) while in others it is gradual.

4. Discussion

How do social categories reflect inequalities in access to healthcare resources in the form of differential diagnoses in behavioral health, specifically alcohol use disorder? In the US, racial and ethnic minorities, largely people of color including Blacks, Latinx, Native Americans, Pacific Islanders, persons of Asian descent, and others, despite improvement in some areas of healthcare, continue to experience disparities in access to healthcare which impacts negatively on their health and well-being. [48] Studies of access to behavioral health treatment cover a broad range of potential mechanisms facilitating or constraining healthcare utilization. These include discrimination and bias, inequalities in payment sources and policies, firm programming and practices, as well as, temporal and spatial availably of services. [49] Despite a variety of factors that impact access to healthcare, nonexistent or inadequate insurance coverage and inability to afford care are most often cited as barriers to services. We know from prior studies that discrimination and implicit bias shape racial and ethnic healthcare diagnostic inequalities in cardiology, pain medication and surgery as well as behavioral health. Yet, the larger question remains to what extent diagnostic inequalities are the outcome of individual relationships and interactions or reflect the ways in which social, economic and cultural hierarchies shape inequality at the institutional and societal levels. This essay was designed to address the latter through exploration of so-called big data; large-scale survey data depicting population health and healthcare trends.

Large-scale survey data have the capacity for uncovering how social, economic and cultural hierarchies shape inequality at the institutional and societal levels, and although many administrative apparatuses generate cross tabulated/ intersectional-seeming reports using multiple social categories (e.g., race, ethnicity, gender, age, and often including education, income, occupation, region and so on), the theoretical (as opposed to organizational/firm/agency) underpinnings for gathering these data are rarely explored. To show what a theoretically-informed intersectional approach might look like, this study applied recent theorizing in social categorization as well as recent developments in the critical study of diagnosis to population healthcare. Diagnosis is organized around routinized systems, which standardizes processes by bracketing and removing inessential characteristics from consideration of a medical problem while aggregating salient ones to create a clear demarcation between diagnostic groups, resulting

in better health outcomes. Like other rationalizing processes, diagnosis should reduce racial/ethnic, gender and other biases that intrude on decision-making, to create more equitable access to healthcare resources.[50]

Using these frameworks, we learned that diagnosis for alcohol use disorder- dependence varies marked across racial/ethnic groups, genders and age. This is hardly surprising when we consider that social groups have varying access to healthcare resources. Access is determined by their groups' socioeconomic resources, the availably of healthcare, and culture norms and policies that shape how a political economy allocates those resources. These frameworks highlight structural issues in that they recognize inequalities (and potential inequity) that arise from socioeconomic and cultural systems rather than simply from individuals' biases.

One of the main contributions of this research to the study of inequalities in population health is to de-emphasize biomedical/ risk factors and individual relational biases in order to underscore social structure/ institutions and racial/ethnic/ intersectional hierarchical inequalities. Another contribution is to theoretically consider the implications of the extent to which health and healthcare research at the population level depends on self-reported behavior in a nonclinical, mostly anonymous setting. Although the diagnostic checklist can be, and is often, conducted in a clinical setting and depends on a similar classification system (e.g., DSM-5, ICD-11), the anonymous context is essential for removing interactional biases from the diagnostic process. And yet doing so does not necessarily render the diagnostic outcomes equitable. Inequality may be built into the structures of the questions themselves. [51] For example, a substance use disorder question in the DSM-IV about legal troubles resulting from substance abuse was dropped in the DSM-5 because racial and ethnic minorities were more likely to have had that experience, regardless of their use patterns. [52] A third contribution is to suggest that diagnosis may vary across different populations because of variation in institutional contexts. That is, despite the reliance large-scale surveys place on self-reported measures of substance dependence, respondents may have institutional experiences that structure diagnoses (self-reported or not) in two ways: 1) by shaping their answers given previous experiences in that setting (e.g., on probation, in drug court, after an OD in an ER), and/or; 2) by an agency's use of a particular tool and its fit within the goals and mission of the agency (e.g., a urine screen for drug us in a drug court). While the structural analyses in this study are far from comprehensive (e.g. we explored race/ethnicity and behavioral health diagnosis within age but not within gender

nor within age-within-gender; we cannot vary institutional settings or detail institutional experiences very well for a comparative diagnoses; we cannot ask respondents if their experience of a particular setting influenced their answers), our analyses do provide a heuristic for the kinds of intersectional research that explores racial/ethnic differences in access to healthcare.

In these analyses, we found that, based on self-reports (compared to individual medical practice- or firm-level data, insurance and administrative data) less that 5 percent of the US population had a AUD-D diagnosis during the past two decades, and, this diagnosis varied across gender (males were more likely than females to have an AUD-D diagnosis), age (the likelihood of an AUD-D diagnosis diminishes with age) and race/ethnicity (Native Americans/ Alaska Natives had the highest rates, 8.1 percent, and Asians the lowest, 1.7 percent).

How do we account for these differences?

First, as structure (i.e., diagnostic protocol and subject), rather than individual interaction (i.e., doctor- diagnostician, and patient), diagnostic categories and processes are deployed to reduce ambiguity and uncertainty in decision-making, and foster equality by bracketing characteristics of people and things inessential to the diagnostic process. Hence, we find that there are racial and ethnic/ gender and age differences in AUD-D diagnoses. Some groups have a greater dependence than others. Or is there bias in the questions that highlights use in some groups over others. As Garb notes: [53]

> … even when clinicians attend to diagnostic criteria and apply them the same way for different groups of patients (e.g., for African-American and White patients), diagnoses can be biased. For example, diagnoses can be biased because diagnostic criteria, not the cognitive processes of clinicians, are biased…In general, *little is known about whether diagnostic criteria are biased* [my emphasis]

That is to say, even though NSDUH self-reports of behavioral health symptomology eliminate the relational-interactional bias inherent in patient-physician clinical encounter, it may be embedded in the process by which diagnostic criteria are developed and applied.

Second, this study suggests that behavioral health diagnosis-as-access is similar to other kinds of healthcare regimens in that it depicts clear racial/ethnic/gender/age dimensions. As a number of scholars have argued, racial/ethnic status markers result in differential allocation of

societal opportunities and resources; race/ethnicity and other social categories linked to resource disadvantage inhibits access to healthcare. [54] Disadvantage not only inhibits but channels access to different sources of healthcare. Importantly, treatment for behavioral health problems, particularly substance use disorders is markedly different from that for cancer or diabetes or cardiovascular disease. The pathology remains bio medically undefined and while the behavioral components are well-known, there is no consensus regarding course of treatment. As a result, the degree to which institutional spheres other than clinical medicine, such as religion, public health, and the legal system, maintain authority to create and control social identities and resources related to the disorder exert a powerful force in determining the social conditions and settings, including salient populations and their socioeconomic characteristics, relevant to healthcare in this area.

Yet, research has failed to pursue the dynamics of institutional context in the dynamics of diagnoses and healthcare. Because different institutional spheres create and control different populations' access to resources, stratification theory, including critical race theories and theories of intersectionality, produce the expectation that resource-advantaged populations will benefit from treatment under the auspices of medical authority and resource-disadvantaged populations will not only not have access, generally, to treatment in these settings but will experience treatment in facilities not primarily designed for medical treatment, such as the criminal justice system. Importantly, this suggests that impact and meaning of diagnosis varies between groups in such a way as to preclude a simple treatment solution.

Although the results of our study depicted only the first step in the process, the pattern of racial/ethnic inequalities in diagnosis was apparent. This leads to the question whether the process is impartial or not, and whether an important component of diagnostic inequality is a consequence of the institutional experiences shaping it. Access to healthcare is a process that begins with having resources (i.e., cultural, social and material) for a transactional exchange with medical institutions groups lacking those resources are denied healthcare. While this includes individuals' ability to pay for healthcare which for resource-disadvantaged populations modern welfare states have intervened, understanding the dynamics of institutional experiences has implications for evaluating the quality of healthcare under diverse organization and institutional regimes, and will help determine the likelihood of their success in equitable health promotion between racial/ethnic groups. This suggest that researchers collect other kinds of social,

economic and cultural data that are predicted to shape diagnoses and might be expected to lead to improved treatment access itself. While examining broad policy effects such as the implementation (and limitations) of the Affordable Care Act, [55] or The Mental Health Parity Act, for instance, is important for improving treatment access, intensive institutional analyses will reveal ongoing gaps in systems where policy changes might make interventions most effective.

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Endnotes

[1] Consider, for example, the spread of disease through society. Social characteristics of groups, based on racial and ethnic group membership (as well as age, gender, nativity, etc.), differentially impact rates of infection, hospitalization and death. The recent Covid-19 pandemic illustrates this fact. In the U.S., compared to Whites, hospitalizations were three times as great for Indigenous groups and more than twice as great for Blacks and Hispanics while death rates were twice as great for Indigenous groups and more than one and a half times as great for Blacks and Hispanics. CDC, "Cases, Data, and Surveillance," Centers for Disease Control and Prevention, February 11, 2020, https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html.

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[6] Institutions are the building blocks of social life. They are resilient social structures of formal and informal systems of rules, guidelines, norms, expectations, scripts and constituent layers of positions and roles. See William Richard Scott. *Institutions and Organizations, V. 14*. 2014. Sage Publications. NY.

37

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[22] We might also have added income, occupation and education, neighborhood SES, birth cohort and other intersections, if not for the loss of cases which occurs as distinctions get more granular. This is a problem with creating too granular an analysis: cases become too unique.

[23] Greta R. Bauer, Siobhan M. Churchill, Mayuri Mahendran, Chantel Walwyn, Daniel Lizotte, & Alma A. Villa-Rueda. Intersectionality in quantitative research: A systematic review of its emergence and applications of theory and methods. SSM - population health 2021, 14, 100798. https://doi.org/10.1016/j.ssmph.2021.100798

[24] Consider how context might structure the above example. In a White majority neighborhood, the older Black Hispanic working-class male may have considerable disadvantage relative to others in the majority. In a neighborhood of immigrant working class males, the older Black Hispanic working-class male who is naturalized or native born might be expected to have greater access to resources, and therefore greater social and economic status than non-native Hispanic working-class males (Black or White), yet less access to resources than White non-Hispanic neighbors.

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[26] Greta R. Bauer, Siobhan M. Churchill, Mayuri Mahendran, Chantel Walwyn, Daniel Lizotte, & Alma A. Villa-Rueda. Intersectionality in quantitative research: A systematic review of its emergence and applications of theory and methods. SSM - population health 2021, 14, 100798. https://doi.org/10.1016/j.ssmph.2021.100798. See also, Bowleg, Lisa. 2012: The Problem With the Phrase Women and Minorities: Intersectionality—an Important Theoretical Framework for Public Health American Journal of Public Health 102, 1267_1273, https://doi.org/10.2105/AJPH.2012.300750

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[37] In 2015, the RTI modified NSDUH alcohol and drug use/abuse/dependence survey questions, in effect, severing the longitudinal design. However, ongoing analysis of post- 2015 NSDUH data show that overtime differences in latent constructs, such as alcohol and or drug abuse and or dependence, especially in pooled samples, may be negligible. I draw on a single pooled sample 2002- 2019 because the process of disaggregating subgroups yields smaller and smaller cell sizes, and therefore less reliable estimates of differential diagnoses.

[38] While the APA updated the DSM-IV, now the DSM-5, such that SUDs are not categorized as abuse versus dependence but as a continuum, the NSDUH survey retained questions allowing for ongoing analyses of substance abuse as well as substance dependence (and not just a single continuum).

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[42] Because the NSDUH employs a multistage (stratified cluster) sample design, analyses using design- and weight- adjusted estimates were run. Design estimates are based on Rao-Scott (1984). See http://samhda-faqs.blogspot.com/ retrieved July 2020.

[43] The NIAAA 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) estimate is 3.81%

[44] Dropping out the 12-17 year olds yields an unweighted population percent for 18-25 year olds much greater than 14.5 percent.

[45] From NSDUH 2013: https://alcohol.org/alcoholism-and-race/; Also, see NSDUH detailed tables for 2013: https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs2013/NSDUH-DetTabs2013.htm retrieved 3/7/2022. Because of various definitional changes in addiction, alcoholism, alcohol dependence and alcohol abuse these estimates vary, especially for smaller groups.

[46] Analysis of variance is a typical strategy for examining between-group and within-group variation. However, our study is interested in describing the different types of variation. It does not argue that one type of variation (e.g., intergroup) is more pronounced than another type (e.g., intragroup) because theory is not developed enough to suggest under what conditions that might occur nor why it might occur.

[47] I calculate the percentage difference as an indicator of variation between groups. It is the absolute value of the ratio of the difference between genders divided by their average: (female-male)/ (female + male)/2 e.g., abs (6.1-10.3)/(16.4/2).

[48] National Healthcare Disparities Reports, 2018- 2021. Rockville, MD. Agency for Healthcare Research and Quality.

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[52] From NSDUH 2013: https://alcohol.org/alcoholism-and-race/; Also, see NSDUH detailed tables for 2013: https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs2013/NSDUH-DetTabs2013.htm retrieved 3/7/2022.

[53] Howard N. Garb. Clinical Psychology: Validity of Judgment, in Eds: Neil J. Smelser, Paul B. Baltes, International Encyclopedia of the Social & Behavioral Sciences 2001, Pergamon, Pp. 2040-2043, ISBN 9780080430768

[54] See David Williams and Selina A. Mohammed, Racism and health: pathways and scientific evidence, Am. Behav. Sci., 2013. August 1; 57(8): 1-19. David Williams Socioeconomic differentials in health: A review and redirection. Social Psych. Sci. Q. 1990. 53, no. 2: 81–99.

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Table 1: Alcohol use disorder diagnosis, race, ethnicity, gender, age and income. National Survey of Drug Use and Health, adult respondents 2002-2019, N=706, 891 [a]

Alcohol Use Disorder Diagnosis and Components	Population estimates N= unweighted 706, 891/ N= weighted 231,113,514			
	Weighted Percent [b]	SE	Lower CI	Upper CI
Alcohol use disorder – past year dependence diagnosis (three or more of seven components below) [c]	3.4	0.0	3.0	3.0
		0.0	0.0	0.0
Spent time over a period of a month getting, using, or getting over effects	8.2	0.0	8.1	8.3
Unable to keep set limits on substance use or used more often than intended.	2.6	0.0	2.5	2.6
Needed to use more or noticed that using the same amount had less effect	4.1	0.0	4.0	4.2
Unable to cut down or stop using or tried or wanted to.	2.6	0.0	2.5	2.6
Continued to use substance even though it was causing emotional, nerves, mental health, or physical problems.	3.0	0.0	3.0	3.1
Reduced or gave up participation in important activities due to substance use.	2.4	0.0	2.4	2.5
Had two or more withdrawal symptoms past twelve months	1.4	0.0	1.4	1.4
Race/ Ethnicity				
Non Hispanic White	67.1	0.1	66.8	67.3
Black	11.6	0.1	11.4	11.8
Native American	0.5	0.0	0.5	0.6
Pacific Islander	0.3	0.0	0.3	0.4
Asian	4.8	0.1	4.7	5.0
Multiple	1.3	0.0	1.3	1.4
Hispanic	14.3	0.1	14.1	14.5
Gender				
Female	51.8	0.1	51.6	52.0
Male	48.2	0.1	48.0	48.4
Age				
18-25	14.5	0.1	14.4	14.6
26-34	16.0	0.1	15.8	16.1
35-49	27.1	0.1	27.0	27.3
50 plus	42.4	0.1	42.1	42.6

[a] Samples weight- and design- adjusted: see series NSDUH releases 2002-2013, 2014, 2015, 2016, 2017, 2018, 2019: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health
[b] Weighted estimates based on design weights N=231,113,514. [c] Original dependence variable and components from NSDUH

Table 2: Percent of those with an alcohol use disorder – past year dependence diagnosis – within each category of race, ethnicity, gender, age and income. National Survey of Drug Use and Health, adult respondents 2002-2019, N=706, 891 [a]

	Alcohol Use Disorder- Past Year Dependence				
Socioeconomic categories	Weighted Percent [b]	SE	Lower CI	Upper CI	Unweighted N
Race/ Ethnicity					
Non Hispanic White	3.4	0.0	3.0	3.0	446937
Black	3.5	0.1	3.0	4.0	86970
Native American	8.1	0.5	7.0	9.0	10132
Pacific Islander	4.3	0.6	3.0	5.0	3514
Asian	1.7	0.1	2.0	2.0	28535
Multiple	4.5	0.3	4.0	5.0	19664
Hispanic	3.6	0.1	3.0	4.0	111139
Gender					
Female	2.4	0.0	2.0	2.0	377543
Male	4.4	0.0	4.0	5.0	329348
Age					
18-25	6.2	0.1	6.0	6.0	304739
26-34	5.1	0.1	5.0	5.0	119567
35-49	3.6	0.1	3.0	4.0	162629
50 plus	1.6	0.0	2.0	2.0	119956

[a] Samples weight- and design- adjusted: see series NSDUH releases 2002-2013, 2014, 2015, 2016, 2017, 2018, 2019: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health. [b] Weighted estimates based on design weights N=231,113,514.

Table 3: Percent of those with an alcohol use disorder – past-year dependence diagnosis – between race, ethnicity, within gender and age. National Survey of Drug Use and Health, adult respondents 2002-2019, N=706, 891 [a]

Alcohol Use Disorder- Past Year Dependence

Between Race/ethnicity and Gender	Weighted Percent	SE	Lower CI	Upper CI	Unweighted N
Female					
Non Hispanic White	2.5	0.0	2.0	3.0	236562
Black	2.2	0.1	2.0	2.0	49375
Native American	6.1	0.5	5.0	7.0	5405
Pacific Islander	4	1.1	2.0	6.0	1801
Asian	1.3	0.1	1.0	2.0	14856
Multiple	3.6	0.3	3.0	4.0	10469
Hispanic	2.0	0.1	2.0	2.0	59075
Male					
Non Hispanic White	4.2	0.1	4.0	4.0	210375
Black	5.0	0.2	5.0	5.0	37595
Native American	10.3	0.8	9.0	12.0	4727
Pacific Islander	4.5	0.6	3.0	6.0	1713
Asian	2.2	0.2	2.0	2.0	13679
Multiple	5.4	0.4	5.0	6.0	9195
Hispanic	5.2	0.2	5.0	5.0	52064
18-25					
Non Hispanic White	6.8	0.1	7.0	7.0	179344
Black	4.2	0.1	4.0	4.0	41086
Native American	10.8	0.9	9.0	12.0	4661
Pacific Islander	9	1.0	7.0	11.0	1717
Asian	4.1	0.2	4.0	5.0	12478
Multiple	7.2	0.5	6.0	8.0	10171
Hispanic	5.8	0.1	6.0	6.0	55282
26-34					
Non Hispanic White	5.4	0.1	5.0	6.0	71322
Black	4.7	0.2	4.0	5.0	14691
Native American	11.1	1.4	8.0	14.0	1772
Pacific Islander	5.7	1.4	3.0	9.0	657
Asian	2.6	0.2	2.0	3.0	5989
Multiple	6.3	0.7	5.0	8.0	3318
Hispanic	4.9	0.2	4.0	5.0	21818
35-49					
Non Hispanic White	3.8	0.1	4.0	4.0	106064
Black	4.0	0.2	4.0	4.0	19051
Native American	8.7	0.8	7.0	10.0	2360
Pacific Islander	3.9	1.6	1.0	7.0	766
Asian	1.3	0.2	1.0	2.0	6874
Multiple	4.9	0.6	4.0	6.0	3731
Hispanic	3.0	0.1	3.0	3.0	23783
50 plus					
Non Hispanic White	1.6	0.1	1.0	2.0	90207
Black	2.2	0.2	2.0	3.0	12142
Native American	5.0	1.0	3.0	7.0	1339
Pacific Islander	0.8	0.4	0.0	2.0	374
Asian	0.3	0.1	0.0	1.0	3194
Multiple	2.2	0.4	1.0	3.0	2444
Hispanic	1.6	0.2	1.0	2.0	10256

[a] Samples weight- and design- adjusted: see series NSDUH releases 2002-2013, 2014, 2015, 2016, 2017, 2018, 2019: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health. [b] The top 2 categories 50-64 and 65 plus are collapsed for ease of presentation.

Table 4: Percent of those with an alcohol use disorder – past year dependence diagnosis – within race, ethnicity, within gender and age. National Survey of Drug Use and Health, adult respondents 2002-2019, N=706, 891 [a]

	Alcohol Use Disorder- Past Year Dependence				
Gender Within Race/ethnicity	Weighted Percent	SE	Lower CI	Upper CI	Unweighted N
White					
Female	2.5	0.0	2.0	3.0	236562
Male	4.2	0.1	4.0	4.0	210375
Black					
Female	2.2	0.1	2.0	2.0	49375
Male	5.0	0.2	5.0	5.0	37595
Native American					
Female	6.1	0.5	5.0	7.0	5405
Male	10.3	0.8	9.0	12.0	4727
Pacific Islander					
Female	4.0	1.1	2.0	6.0	1801
Male	4.5	0.6	3.0	6.0	1713
Asian					
Female	1.3	0.1	1.0	2.0	14856
Male	2.2	0.2	2.0	2.0	13679
Multiple race/ethnicity					
Female	3.6	0.3	3.0	4.0	10469
Male	5.4	0.4	5.0	6.0	9195
Hispanic					
Female	2.0	0.1	2.0	2.0	59075
Male	5.2	0.2	5.0	5.0	52064
Age Within Race/ethnicity					
White					
18-25	6.8	0.1	7.0	7.0	179344
26-34	5.4	0.1	5.0	6.0	71322
35-49	3.8	0.1	4.0	4.0	106064
50 plus	1.6	0.1	1.0	2.0	90207
Black					
18-25	4.2	0.1	4.0	4.0	41086
26-34	4.7	0.2	4.0	5.0	14691
35-49	4.0	0.2	4.0	4.0	19051
50 plus	2.2	0.2	2.0	3.0	12142
Native American					
18-25	10.8	0.9	9.0	12.0	4661
26-34	11.1	1.4	8.0	14.0	1772
35-49	8.7	0.8	7.0	10.0	2360
50 plus	5.0	1.0	3.0	7.0	1339
Pacific Islander					
18-25	9.0	1.0	7.0	11.0	1717
26-34	5.7	1.4	3.0	9.0	657
35-49	3.9	1.6	1.0	7.0	766
50 plus	0.8	0.4	0.0	2.0	374
Asian					
18-25	4.1	0.2	4.0	5.0	12478
26-34	2.6	0.2	2.0	3.0	5989
35-49	1.3	0.2	1.0	2.0	6874
50 plus	0.3	0.1	0.0	1.0	3194
Multiple					
18-25	7.2	0.5	6.0	8.0	10171
26-34	6.3	0.7	5.0	8.0	3318
35-49	4.9	0.6	4.0	6.0	3731
50 plus	2.2	0.4	1.0	3.0	2444

Hispanic – next page

18-25	5.8	0.1	6.0	6.0	55282
26-34	4.9	0.2	4.0	5.0	21818
35-49	3.0	0.1	3.0	3.0	23783
50 plus	1.6	0.2	1.0	2.0	10256

[a] Samples weight- and design- adjusted: see series NSDUH releases 2002-2013, 2014, 2015, 2016, 2017, 2018, 2019: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health. [b] The top 2 categories 50-64 and 65 plus are collapsed for ease of presentation.
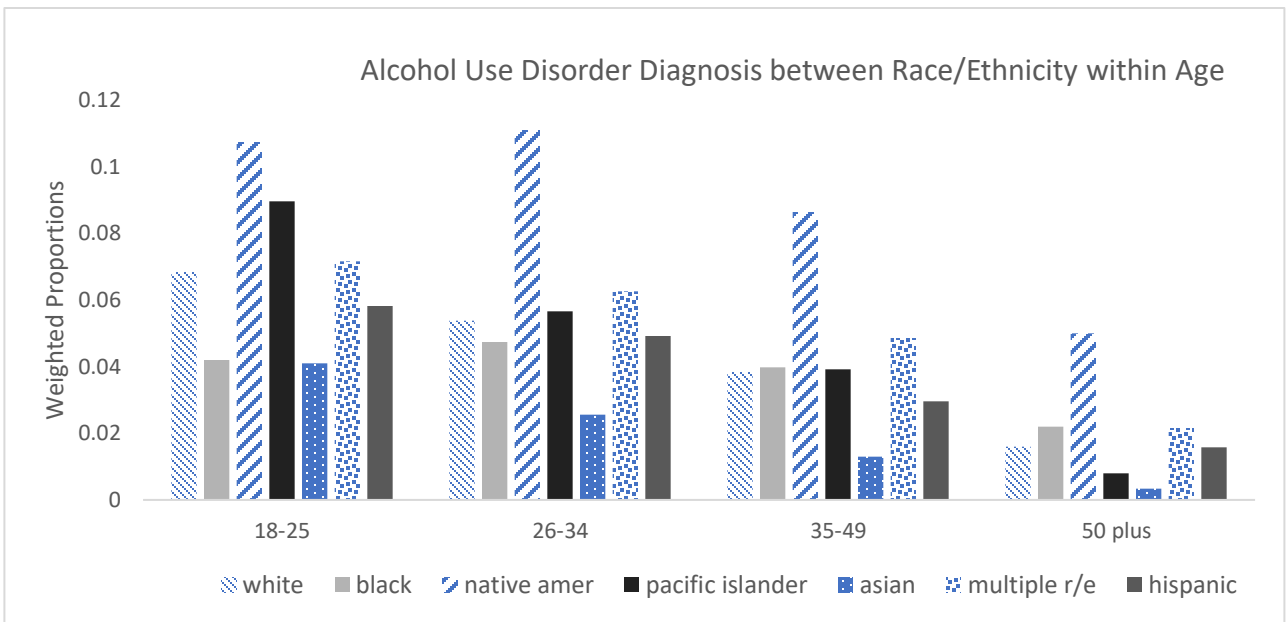
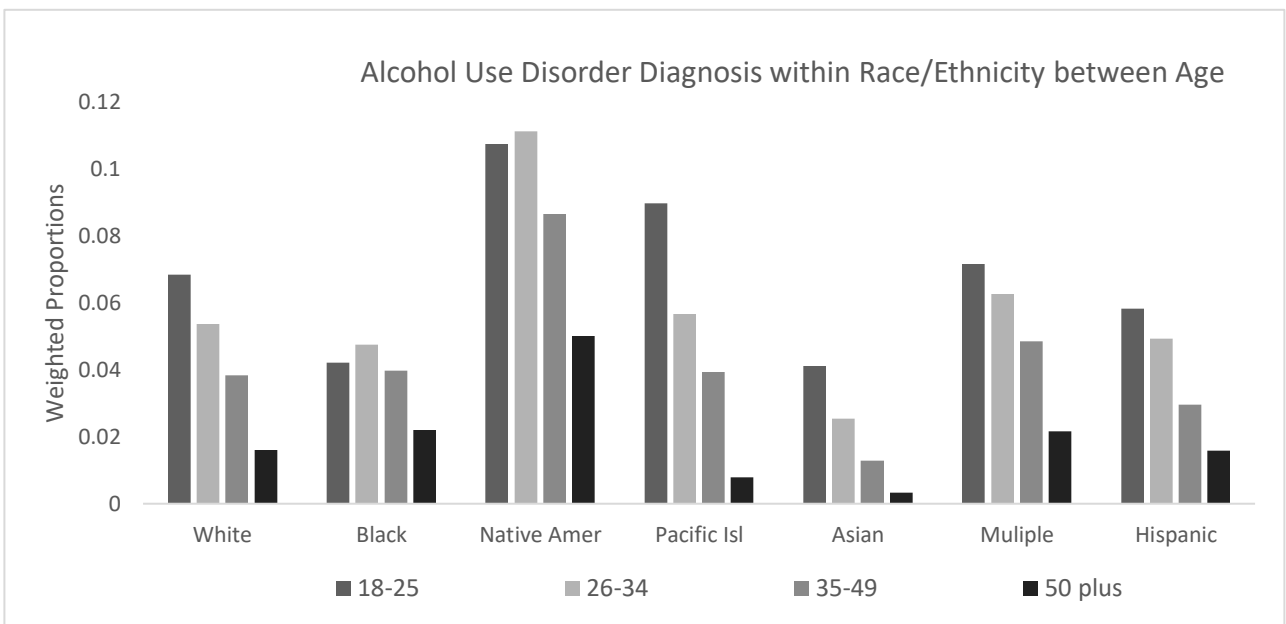Figure 1: Alcohol Use Disorder Mean Levels of Dependence- Race/Ethnicity within Age

Figure 2: Alcohol Use Disorder Mean Levels of Dependence- Race/Ethnicity between Age