Drivers of Racial Segregation in Physician Services: Implications for Health Outcomes Equity

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A large literature documents persistent racial disparities in both the delivery of health care services and health outcomes (Williams and Rucker 2000; Best et al 2021; Alsan et al 2019, 2021). However, there is less evidence on the pathways through which the healthcare system may contribute to these disparities. This is an important shortcoming for leveraging health systems reform to address health equity goals in the US.

In this project, we will examine whether segregation by patient race and other demographics occurs in the context of primary care and its implications for disparities in health care use and outcomes. Our proposed project builds on an emerging literature pointing to the importance of the allocation of patients to providers by race in explaining health disparities. Recent studies document that Black patients receive care at lower performing hospitals (Chandra, Kakani, Sacarny 2020) and that physician-patient racial concordance improves outcomes in primary care (Alsan, Garrick, Graziani, 2019). Very little research, however, has examined the nature of racial allocation of patients across providers for physician services, its drivers and its implications for health disparities.

In this pilot study, we will focus on documenting the allocation of Medicare beneficiaries and other patients by race across primary care providers and, if we find racial segregation exists, we will explore contributory factors. Our work will build directly on extensive literatures on racial segregation in domains such as neighborhoods, schools and workplaces, providing opportunities for this healthcare research agenda to learn from the metrics and methods developed in other economic domains (e.g., Duncan and Duncan 1955, Hellerstein and Neumark 2008, Hellerstein, McInerney and Neumark 2011, Reardon and Owens, 2014, and Ortega et al., 2022). Documenting segregation in the delivery of physician care will inform how changes to the organization of the health care system could improve health equity.

Our **pilot project** has the following **specific aims**:

1. Determine the extent to which the delivery of physician services is racially segregated.
    1. Determine whether the degree of segregation has changed over time, and
    2. Identify the extent to which racial segregation varies across geographic areas and the drivers of those geographic differences.
2. Determine whether racial segregation in the delivery of primary care is driven by the geographic location of physician practices and patient residences or whether patient selection across providers, conditional on geographic location, contributes to racial segregation.

The goal of our project is to develop preliminary evidence to support a larger grant application examining the role of patient allocation across physicians based on patient race (and other demographics) and its implications for disparities in health care use and outcomes. In particular, the larger project will examine 1) whether racial minority patients receive care at lower-quality ambulatory practice settings, using novel data on patient and provider satisfaction as well as traditional measures of CMS reported quality; 2) the role of social networks in health care seeking and 3) novel data on the race and ethnicity of providers from the AMA Masterfile. Overall, we anticipate that our subsequent project will delve into both the mechanisms by which racial segregation occurs and the implications for health disparities.

Data Sources: The primary data source for our project will be insurance claims for patients with traditional Medicare coverage. The Medicare data has information on race of the patient (Non-Hispanic white, Black, other, Asian/Pacific Islander, Hispanic, American Indian/Alaska Native), but not of the provider. Thus, our analyses in this pilot stage of the project will not consider the extent to which racial concordance influences racial segregation. The data are available for many years. We anticipate focusing on the most current year of claims available at NBER (2019) and then using earlier years to examine trends over time, focusing on 2009 to 2019 to limit to years with reliable provider identifiers. The key files for our analysis are the Master Beneficiary Summary File, which includes patient race, and the Carrier file, which includes provider ID (NPI). We will merge the claims with a variety of data sets on physician and geographic characteristics.

Our secondary data source includes all-payer and uninsured data from HealthJump, an electronic health records aggregator which we have used in prior research (Ziedan, Simon and Wing, 2020). These data cover over 70 Million individuals, and contain information on patient race, ethnicity, age and gender, as well as provider identifiers (NPI). These data represent an important addition to our analysis as it is plausible that trends and drivers of segregation differ by type of health care system, e.g., private employer-provided health insurance could lower observed segregation because reimbursements are higher than in Medicare or Medicaid.

Methods: A key component of our pilot work will be to review measures of segregation developed in residential, education and workplace literatures. This review will be important for the development of specific empirical approaches for each aim. Based on this review, we will identify a subset of measures and then test their implementation in the context of physician services (including different ways of allocating to which physician panel does someone belong when they visit different physicians, sometimes even for the same category of services). Individual level data on the race of the patient for each service provided by a physician will allow us to observe, for a patient of a given race, on average, the racial composition of the rest of the physician's panel. The 100% Medicare FFS data will allow us to examine not just White/Black/Hispanic categories, but all the racial groups measured in Medicare. In the HealthJump data, race is missing in approximately 40% of all cases (Ziedan, Simon and Wing 2020), but there is no reason to expect systematic patterns of missingness. We will construct the share of a doctor's Medicare panel who is also Asian/Pacific Islander and American Indian/Alaska Native (although we expect that in most geographical areas, cell sizes will be too small to compute this last share reliably). Throughout the analysis, we will proceed with caution as cell sizes allow. We will initially focus on the delivery of primary care services, carefully considering definitions of primary care that are robust to including the different sites of care patients use for primary care services (physician offices, emergency departments, federally qualified health centers) and incorporating that into our metrics. Tax identification numbers in Medicare data will allow us to consider the racial composition of physician groups as well as that of individual provider panels. We will also consider particular types of patients with special health care needs (e.g., patients with Alzheimer's disease and related dementias) and types of care (e.g., end of life care). We will also consider how these measures of racial segregation vary by urban/rural; Health Professional Shortage Areas (HPSAs); areas with a high Social Vulnerability Index; and by patient demographics such as Medicare/Medicaid dual status, gender, and age.

Budget: $2,000 for Medicare Data Re-use for one year, $1,500 fee for HealthJump (through IU existing DUA). $46,500 for RA costs (through NBER payroll) for Medicare and HealthJump data analysis.

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