In Maryland, the state’s Vaccine Equity Task Force (VETF), health systems, local health departments, and others have focused on improving Covid-19 vaccination access and uptake among Black and Hispanic/Latino residents. Specifically, the Maryland VETF has worked diligently to reach the state’s vulnerable communities by partnering with trusted community, faith-based, and nonprofit organizations. The success of these initiatives can be highlighted by the Vaccine Equity Index (VEI), which is the percentage of a racial/ethnic group that has received at least a first dose divided by the percentage of that racial/ethnic group in the total population. Over a 7-week period, among Maryland residents age 65 or older, increased vaccine access and equity-focused efforts helped boost the VEI of Black residents to 0.86 from 0.58, a 48% increase, and of Hispanic/Latino residents to 0.80 from 0.59, a 36% increase.

It’s no secret that Covid-19 has highlighted the pervasive health disparities that exist in the United States. Unsurprisingly, early publicly available Covid-19 vaccination data provided evidence of another emerging health disparity in Covid-19 vaccination rates. Initially, vaccine hesitancy in Black and Hispanic/Latino populations was painted as the culprit for these disparities. However, it has become increasingly clear that vaccine access is the real issue, with recent survey data from the Kaiser Family Foundation, Pew Research Center, and NPR all showing similar willingness of Black and Hispanic/Latino individuals to receive the vaccine when compared with white individuals. With these statistics in mind, it will be critical for states and other entities to focus on reaching these communities through novel and collaborative approaches, especially as eligibility criteria expand.
In early February, authors Maul and Joshi offered a new metric to assess equitable vaccinations called the Vaccine Equity Index (VEI). The VEI calculation is simple — it is the percentage of a racial/ethnic group vaccinated with at least a first dose (including the Pfizer, Moderna, and single-dose Johnson & Johnson vaccines) divided by the percentage that racial/ethnic group represents in the total population. The VEI was originally suggested as a way to track vaccine equity in individuals 65 and older across race and ethnicity, because this age demographic was prioritized in most states’ early vaccination phases. Calculations of the VEI can be used in real time to guide vaccination strategies to reach vulnerable communities. Limitations of this metric include its reliance on the accuracy of both the total population estimates across demographics and the non-compulsory, self-reported, site-collected patient racial and ethnic demographic information, a known issue.

Using Maryland Department of Health vaccination statistics shown in the state-designated Health Information Exchange, CRISP (Chesapeake Regional Information System for our Patients), we calculated the VEI across race and ethnicity for white, Black, and Hispanic/Latino individuals age 65 and older. To do this, we used data reported between December 16, 2020, the first date with documented age 65 and older vaccinations in CRISP, and February 17, 2021, and then performed the same calculation using data reported between December 16, 2020 and April 7, 2021. The vaccination data source is curated and updated independently by CRISP, a nonprofit organization. Race and ethnicity demographic information are collected by the individual sites of vaccination clinics and fed into CRISP. We were unable to assess the validity of this site-collected demographic data. To estimate total population age 65 and older, we used a Maryland Department of Planning resource from July 2019. The VEIs for these groups are summarized in Figure 1.
Covid-19 Vaccination Rates of Black and Hispanic Residents Age 65 and Older in Maryland

This figure highlights the change in the Vaccine Equity Index (VEI) for Black individuals and Hispanic individuals age 65 and older who received at least one dose of a Covid-19 vaccine. The VEI was measured using data reported between two sets of dates, 12/16/2020 to 2/17/2021 and 12/16/2020 to 4/7/2021. Over the seven weeks between the February and April measures, the VEI for Black individuals improved by 48% and the VEI for Hispanic individuals improved by 36%, which we believe to be a result of both increased access to vaccines through an expanded distribution network and targeted efforts to reach these groups by multiple providers and entities, including the Maryland Vaccine Equity Task Force.

Source: The authors, based on data from the Chesapeake Regional Information System for our Patients (CRISP).

Over the course of 7 weeks, the overall state of Maryland VEI improved by 48% for Black individuals 65 and older, to 0.86 from 0.58, and by 36% for Hispanic/Latino individuals 65 and older, to 0.80 from 0.59. At the same time, the Maryland VEI for white individuals 65 and older decreased by 11% to 0.98 from 1.10, which signifies a vaccination rate that is nearly proportional to their representation in the population in this age demographic. The pace of this change is remarkable and warrants further investigation into how these results were achieved, especially when considering both the volume of vaccinations that occurred during this time and the short time period itself — 49 days or 7 weeks. As summarized in Table 1, the number of Black individuals age 65 and older and Hispanic/Latino individuals age 65 and older each more than tripled during this time, with 110,966 Black individuals and 14,032 Hispanic/Latino individuals 65 years and older receiving a first-dose vaccine.
The positive change in the Maryland VEI for Black and Hispanic/Latino individuals 65 and older provides further evidence to suggest that limited vaccine access is the major issue at play, not vaccine hesitancy. Since our initial measurement of the VEI in February, the overall U.S. vaccine supply has increased thanks to expanded production and distribution of Moderna and Pfizer vaccines and the emergency use authorization of the Johnson & Johnson vaccine. While this increased supply has certainly helped, attributing the improvement in vaccination rates of Black and Brown populations solely to having more vaccines available overlooks the intentional and targeted approach the Maryland Department of Health has coordinated alongside local county health departments, pharmacies, and health systems throughout the state.

One specific example of the state’s approach to reach Black and Brown populations is highlighted by the Maryland Vaccine Equity Task Force (VETF). In early February, under the leadership of Maryland National Guard Brigadier General Janeen Birckhead, the VETF began developing an equity plan to improve vaccine access in Maryland’s vulnerable communities. (The authors are not directly involved with VETF planning or deployment efforts.) To do this, they partnered with trusted community, faith-based, and nonprofit organizations that have relationships with individuals who live in these areas. As of early April 2021, the VETF’s work has included the establishment of mobile vaccination clinics for those who live in remote or otherwise underserved areas and the coordination of more than 54 vaccination events across Maryland. To complement the VETF’s work, there have also been numerous other initiatives pursued across Maryland counties by health systems and local health departments, including continuing educational outreach, deploying pop-up and mobile vaccine clinics, and establishing partnerships with community-based organizations. Altogether, these efforts have contributed to the significant disparity reduction evidenced by the changes in the VEI.

Still, the state’s VEIs for these groups are less than 1.00, which is the index measure that would represent proportional representation of a group vaccinated compared to its representation in the total population. Additionally, less progress has been made with the VEI for Hispanic/Latino individuals than the VEI for Black individuals, which presents an opportunity for even more targeted efforts to reach this group moving forward.

Further communication events should be planned to engage with communities, dispel myths about the vaccines, and overcome any vaccine hesitancy. Vaccine education campaigns should provide a boost to these efforts, but the involvement of local leaders and frontline providers will be vital in making this work successful. By regularly updating the VEI, leaders can use a numerical score as one way to assess if this progress can be sustained.

| Race/Ethnicity               | First-Dose Vaccinations reported 12/16/2020 to 2/17/2021 | First-Dose Vaccinations reported 12/16/2020 to 4/7/2021 | First-Dose Increase |
|------------------------------|----------------------------------------------------------|--------------------------------------------------------|--------------------|
| Black, Age 65+               | 41,879                                                   | 152,845                                               | 3.65x              |
| Hispanic/Latino, Age 65+    | 5,960                                                    | 19,992                                                | 3.35x              |
| White, Age 65+              | 214,556                                                  | 472,869                                               | 2.20x              |
| Total, Age 65+              | 286,302                                                  | 708,819                                               | 2.48x              |

Note: Totals in bottom row reflect all race/ethnicity data, including categories not included here. First-dose vaccination counts include the Pfizer, Moderna, and single-dose Johnson & Johnson Covid-19 vaccines. Source: The authors, based on data from the Chesapeake Regional Information System for our Patients (CRISP).
This observational evidence shows significant improvement in the Maryland VEI for Black and Hispanic/Latino individuals in less than 50 days and demonstrates the utility of a measure like the VEI in continuing to track vaccine equity. Multiple targeted, intentional strategies have yielded tremendous results in reducing vaccine inequity in Maryland in a matter of weeks, though there remains work to be done. In an era where health disparities are more apparent, strategies and tactics that have achieved broad, positive results to reduce health inequity should be highlighted and studied. Likewise, the tools that will help us measure and track that progress are also essential.

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