Disparities in COVID-19 Vaccine Booster Uptake in the USA: December 2021–February 2022

BACKGROUND
Disparities in initial COVID-19 vaccination have narrowed, although disparities in booster uptake among the vaccinated have received little study.

METHODS
We analyzed respondents aged ≥ 18 to the Household Pulse Survey (Phase 3.3), fielded December 1–13, 2021 (n = 60,826); December 29, 2021–January 10, 2022 (n = 74,995); and January 26–February 7, 2022 (n = 75,482). Respondents were contacted by text message and email and completed the survey online. Response rates were 5.8%, 7.2%, and 7.2% in our three samples, respectively. Each survey ascertained the number of vaccine doses and brand of initial dose. We limited our sample to “vaccinated” adults, defined as having received 1+ vaccine dose among initial recipients of the Janssen vaccine and 2+ doses among initial recipients of Pfizer-BioNTech or Moderna. We defined individuals as “boosted” if they received 2+ or 3+ doses, respectively.

We examined booster rates according to health insurance, four socio-demographic characteristics (gender, race/ethnicity, income, and education), and six health conditions (anxiety [positive GAD-2 screen], depression [positive PHQ-2 screen], and vision, hearing, mobility, and memory difficulties).

We performed separate logistic regressions examining the association between each characteristic and booster uptake, unadjusted and adjusted for age, given the known correlation between age and vaccine uptake.1

RESULTS
Among n = 182,779 vaccinated respondents, the proportion boosted rose from 42.2 to 62.8% from our first to final sample (data not shown).

Figure 1 displays odds ratios for booster receipt by insurance and socio-demographic characteristics. Relative to persons with non-VA coverage, the uninsured had lower booster uptake with (OR 0.45; 95% CI 0.40, 0.50) and without (OR 0.35; 95% CI 0.31, 0.39) age adjustment, while those with VA coverage showed mixed results. Compared to cisgender males, cisgender females had lower odds of booster receipt with (OR 0.91; 95% CI 0.88, 0.94) and without (OR 0.94; 95% CI 0.90, 0.97) age adjustment; the lower odds of transgender persons were non-significant after age adjustment.

Compared to White adults, Black (OR 0.52; 95% CI 0.49, 0.55), other/multiple race (0.64; 95% CI 0.58, 0.70), and Hispanic (OR 0.51, 95% CI 0.48, 0.54) individuals had lower booster uptake without age adjustment and Asian individuals had higher uptake; differences persisted after age adjustment. Less-educated and lower-income individuals had lower booster uptake.

Individuals with depression, anxiety, and visual or memory impairment had reduced booster uptake with and without age adjustment; those with hearing and mobility difficulties had higher booster uptake before age adjustment but lower age-adjusted uptake (Fig. 2).

CONCLUSIONS
Among vaccinated (presumably non-vaccine-hesitant) adults, uninsured, cisgender-female, Black, Hispanic, lower-socio-economic-status, depressed, and anxious individuals, and those with visual and memory impairment, were less likely to receive boosters.
Numerous studies have examined initial COVID-19 vaccination according to coverage, race/ethnicity, disability, and mental health, though few have examined disparities in boosters. CDC publishes administrative data on boosters by age, sex, and race/ethnicity, although race data is missing for ~one-third. The racial/ethnic disparities in boosters we found are consistent with that administrative data. Although vaccination rates may be overestimated in the Pulse survey, it uniquely permits timely assessment of insurance-, mental-health-, socioeconomic-, and disability-related disparities in booster uptake. Additionally, while our booster rates are higher than those suggested by CDC data, they are similar to those of the Kaiser Family Foundation COVID-19 Vaccine Monitor, which offers reassurance in light of the Pulse’s low response rate.

Lower uptake of both initial vaccination and boosters by the uninsured suggests that healthcare access affects use of preventive services, even when free. Lack of primary care may contribute; both county-level primary-care-physician density and receipt of a recommendation for vaccination from a healthcare provider have been associated with higher initial COVID-19 vaccine uptake rate. However, other factors may play a role. While we assumed that fully vaccinated individuals are less vaccine hesitant, it is plausible that hesitancy could develop among some after initial vaccination. Moreover, lack of paid time off and limited access to transportation could impede booster uptake for others. Low uptake among the visually impaired suggests that inadequate accessibility may reduce booster access for the disabled.
Ongoing medical responses, e.g., periodic revaccination, will be key to reducing morbidity and mortality from COVID-19. Outreach to socially and medically disadvantaged groups, including those with disabilities, together with reforms that improve access to care, may be needed to reduce the pandemic’s unequal toll.

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Declarations:
Disclosures: Adam Gaffney, David Himmelstein, Steffie Woolhandler, and Danny McCormick are, or have served as, leaders of Physicians for a National Health Program (PNHP), a non-profit organization that favors coverage expansion through a single-payer program; however, none of them receive any compensation from that group, although some of Dr. Gaffney’s travel on behalf of the organization was previously reimbursed by it. The spouse of Adam Gaffney is an employee of Treatment Action Group (TAG), a non-profit research and policy think tank focused on HIV, TB, and hepatitis C treatment.

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