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ORIGINAL ARTICLE

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When talk is not cheap: What factors predict political campaign messaging on social determinants of health issues?

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Abstract

Political candidates use campaign communication to signal to the public which policy issues they consider important. However, the factors that shape political discourse related to the social determinants of health have not been adequately studied. We examined the volume and predictors of attention to three issues—jobs, income inequality, and early childhood education—among campaign ads in 2011–2012 ($N = 10,467$ ads, aired 4,025,771 times) and in 2015–2016 ($N = 9926$ ads, aired 3,809,887 times). While attention to jobs was common in campaign ads (41% and 21% of ads in 2011–2012 and 2015–2016), attention to economic inequality (11% and 4%) and early childhood education (0.4% and 0.9%) was much less common. Campaign-related factors (especially partisanship) explain much of the variation, as compared to community demographic conditions, although campaign ads referenced jobs more often in areas with higher unemployment in 2015–2016. Future research should explore political responsiveness to the factors that shape health in communities.

KEYWORDS

advertising, communication, health policy, politics, social determinants of health

Key points

- Attention to employment in campaign ads aired in the 2012 and 2016 election cycles is high.
- Attention to economic inequality and early childhood education in campaign ads is much lower.
- Campaign-related factors, especially partisanship, explain much of the geographic variation in volume.
- Besides community unemployment rates, demographic conditions explain little of the variation in attention to social determinants of health.

INTRODUCTION

A large body of research confirms that media discourse can both reflect and shape public views about health and health policy. Scholars across multiple disciplines have demonstrated relationships between the media environment and the public's attitudes, beliefs, health behaviors, and their support for policy (Abroms & Maibach, 2008; Druckman, 2005; Gollust et al., 2019; Iyengar, 1991). These studies found that the volume and content of media coverage can influence various public health-relevant outcomes by providing educational information, setting the agenda for what issues the public perceives to be the important issues of the day, and framing issues to emphasize a particular set of causes, solutions, and key groups affected (Gollust et al., 2019). Most research in this space has focused on the relationship of news media (and, to a lesser extent, entertainment media) in shaping these outcomes and perceptions (Gollust et al., 2019), but advertising also affects the public's health and their understanding of health issues and priorities (Fowler et al., 2017; Harris et al., 2009).

While health communication campaigns that are explicitly designed to shape public health outcomes have been a major focus of research attention (Randolph & Viswanath, 2004), advertising that is not intentionally designed by public health stakeholders also has an important contribution to the media ecology. It is well established, for instance, that advertisements (ads) for unhealthy products (like soda, processed food, or alcohol) shape public norms and consumption of these products (Grier & Kumanyika, 2008; Niederdeppe et al., 2020; Tye et al., 1987). Less studied in the public health context, however, are political campaign ads: the strategic messaging efforts during elections by political campaigns for elected officials by candidates themselves, political parties, and powerful interest groups. These messages appear frequently—particularly on television—and often discuss public health-relevant topics (Fowler et al., 2019).

Campaign advertising and the factors that shape it

Political communication conducted through campaign advertising generates a sizeable source of health-relevant information in the media ecosystem. Candidates invest heavily in advertising; researchers estimate that one-third of political candidates' overall budgets are for advertising, and television is the largest expense within this budget category (and these figures do not even include additional money for TV advertising spent by political parties and interest groups) (Fowler et al., 2016). Campaign ads air frequently, and their volume has increased over time. The Wesleyan Media Project estimates a 60% increase in the volume of televised campaign ads between 2014 and 2018 (Fowler et al., 2020), and the 2020 cycle

featured more than twice the number of ads as the 2016 cycle (WMP, 2020). The biggest drivers of advertising volume are the competitiveness of the race, particularly those at the top of the ballot (Fowler et al., 2020). These ads are also expensive: the number of US House races with more than $3 million in televised-ad spending during the postlabor day cycle in 2014 and 2018 increased from 13 to 25 in Republican races and from 17 to 34 in Democratic races (Fowler et al., 2020). Given how expensive even a short communication is (i.e., most campaign ads are only 30 s long), candidates, parties, and interest groups are selective and strategic about which specific social and policy issues they choose to mention and emphasize. Candidates signal issues that they think will draw attention to their campaign, and downplay others (Budge & Farlie, 1983; Jacobs & Shapiro, 1994).

Political ads are targeted with a great deal of intentionality, but what factors shape ad sponsors' decisions to highlight certain issues? One possible explanation is that the topics featured in advertising reflect the real-world conditions in the locations where ads are aired. In other words, ad content reflects the problems and policy solutions that match the community's needs. In political terms, candidates may choose to emphasize issues that are those most salient for their constituencies (Sides, 2006). Surprisingly few studies have examined whether community conditions are reflected in campaign advertising. In a study of House and Senate campaigns in 1998, Sides (2006) examined just two community characteristics—the percentage of the population over 65 and the percentage enrolled in school—to assess whether candidates emphasized different issues for different populations. The study found no evidence that the proportion of students mattered, but some evidence that candidates emphasized Medicare more in districts with older populations. Kennedy-Hendricks et al. (2021) examined the relationship between mention of drugs in political ads and local drug overdose mortality. They found that campaign ads that referenced drugs were aired more often in markets with higher overdose mortality in 2015–2016, but they did not find a statistical relationship between drug overdose mortality and ad airings referencing drugs in 2011–2012 (Kennedy-Hendricks et al., 2021).

A larger literature examines the correspondence between community conditions and national media attention. Overall, this research finds that media coverage of social and health issues rarely directly reflects objective conditions. For instance, Armstrong et al. (2006) found that print news media attention to disease did not reflect differences in those diseases' mortality rates or illness burden; instead, news media provided lower attention to disease where the burden of disease was greater for Black people than for white people (Armstrong et al., 2006). Similarly, coverage of cancer in US newspapers tends to underreport certain cancers (e.g., thyroid cancer) and overreport others (e.g., breast cancer and leukemia) based on their incidence rates (Jensen et al., 2010). A study of TV news media attention to health found discrepancies between attention to disease and those diseases' population burden: in 1 month, half of infectious disease coverage focused on West Nile Virus, despite the low incidence of disease, whereas a disproportionate share of media attention went to breast cancer relative to the prevalence of other types of cancer (Pribble et al., 2006). Similarly, media attention to crime has historically not correlated with actual crime rates, as measured by local police statistics (Sheley & Ashkins, 1981).

If media attention is not reflective of material conditions, an alternative explanation is that the choice of issues to emphasize emerges from other factors, such as politics (e.g., partisanship, competitiveness of a particular race, ideology of the population). The content of political advertising could also be tied to the medium of the ad itself (such as its length) or characteristics of the individual candidate, such as their past record (Sides, 2006). These explanations derive from theories that problems that policymakers choose to address are a product of those problems' social construction and the nature of the competitive political contest (Hilgartner & Bosk, 1988), not (just) as a response to community needs. Research demonstrates, for instance, that political candidates discuss issues that their party is

perceived to be more competently or effectively handling (i.e., they "own" that issue) (Petrocik et al., 2003). The competitiveness of the race can also predict the types of issues candidates discuss, with opposing candidates and groups converging on the same issues in their campaign ads when the races are more competitive (Banda, 2015; Franz et al., 2016; Kaplan et al., 2006). However, none of these studies have examined the political factors that relate to emphasizing health issues in particular.

Campaign ads and population health

A recent comprehensive effort to catalog the public health and population health-relevant concepts included in political campaign communication for the 2012 and 2016 US political campaigns found that 26% of all advertisements referenced traditional public health topics such as medical care, health insurance, health behaviors, sanitation, and environmental contaminants (Fowler et al., 2019). Taking a more expansive and "upstream" conceptualization of the determinants of population health that encompassed issues like socioeconomic status, power, and marginalization, education, housing, and economic inequality (Braveman et al., 2011), the analysis revealed that 57% of all ads aired referenced at least one population health-related topic, including the traditional public health topics. While campaigns rarely connected the upstream set of issues to health explicitly (Fowler et al., 2019), the prevalence of references to these issues signals their importance to the public and conveys politicians' potential interest in addressing these issues through federal, state, and/or local policymaking.

The prevalence and frequency of references to population health-related topics varied widely across different geographic locations in the United States (Fowler et al., 2019). This variation in political messaging about population health-related topics could reflect actual differences in the underlying social conditions in communities, with more attention to poverty, for example, in areas with higher poverty. Variation could also reflect practical political calculations (e.g., identifying issues seen as advantageous to a particular political party) that are not directly linked to local conditions and policy priorities. Researchers have yet to examine the extent to which local conditions and or political factors predict coverage of these important population health-related topics. This paper fills this gap by estimating factors that predict political advertising that mentions three issues that have major implications for population health: jobs/employment, economic inequality, and early childhood education.

Employment, economic inequality, and early childhood education are important social determinants of health

Research supports each of these three issues as important determinants of health. A recent review of the relationship between work and health concludes that there is strong evidence that unemployment is linked to poor health outcomes, including both physical health (e.g., cardiovascular disease) and mental health outcomes (e.g., depression and anxiety) (Antonisse & Garfield, 2018). Work on the relationship between employment and health is more mixed. Employment provides financial resources that contribute to people's ability to afford health-promoting resources, and it also conveys benefits like health insurance (Harris et al., 2011; Klein & D'Aunno, 1986). However, the quality and type of job also matters (especially because of exposure to unhealthy workplaces and stress at work) and poor health is strongly associated with risk of losing one's job (Antonisse & Garfield, 2018).

The relationship between economic inequality and health is also well-established, with wider differences in household income and wealth associated with poor population health (Kawachi & Kennedy, 1999), although, as with employment, the research has some caveats (Smith, 1999). The link between economic inequality and poor health is driven in part by the negative association between chronic disease and income. As household income decreases, the prevalence of chronic conditions increases within a community (Woolf et al., 2015). Individual risk factors of smoking, obesity, and substance use that may be more common among individuals with fewer resources are also correlated with poor health outcomes, but do not fully explain the relationship between economic inequality and poor health (Bor et al., 2017). Structural factors associated with persistent and rising economic inequality, including geographic segregation by income and race, are also related to poorer health in communities (Bailey et al., 2017).

Last, several studies have found that early childhood education provides a pathway toward improved health in the near- and long-term for children. Evidence suggests that early childhood education programs benefit a child's physical and mental health in the near term by improving access to nutritious foods and necessary health screenings and services (Morrissey, 2019). Studies also provide evidence that participation in early childhood education programs was associated with reduced rates of asthma (Ball et al., 2000) as well as increased used of health care services, including vaccinations (DHHS, 2002). Early education programs may also cultivate social and emotional learning that present as positive outcomes in adolescence and adulthood (Friedman-Krauss et al., 2019). Researchers have identified longer term health benefits of early childhood education, including reductions in cardiovascular and metabolic disease (Campbell et al., 2014). Parents with children in early learning programs reported better scores on measures of their own emotional regulation, suggesting mental health impacts of early childhood education that extend beyond the children who participate (Love et al., 2005).

The current study

To advance our understanding of how social determinants of health-relevant messages appear on the political agenda, it is important to understand (1) the prevalence and geographic distribution of messages referencing these issues and (b) the factors that explain variation in these messages. The objectives of this study are thus twofold. First, we identify the prevalence and geographic variation of campaign advertising messaging about unemployment/jobs, economic inequality, and early childhood education. Second, we assess whether attention to these issues in political campaign discourse (i.e., advertisements) reflect objective health or social conditions in communities or, alternatively, political factors. Our analysis contributes new knowledge about the political dynamics of attention to key social determinants of health and reveals patterns of potential exposure to information about these factors among the public.

MATERIALS AND METHODS

Advertising data and content coding

The primary data for this study are all English-language campaign ads aired on national broadcast, national cable, and local broadcast TV across all levels of government for 2011–2012 (Jan 1, 2011–Nov 6, 2012) and 2015–2016 (Jan 1, 2015–Nov 8, 2016). This time period encompasses down-ballot races that occur in the off-years (i.e., 2011 and 2015)

as well as the primary races for President that begin in those off-years. The 2011–2012 data set includes 10,467 unique ads that were aired 4,025,771 times. The 2015–2016 data set includes 9926 unique ads that were aired 3,809,887 times. Through an agreement with the Wesleyan Media Project, the data provider (Kantar/CMAG) provided the study team with video files for each ad and data on the date, time, market, station, and program during which the ad aired.

The outcome measures for this study were derived from a large-scale content analysis carried out in two stages (Fowler et al., 2019). In Stage 1, the coding team identified population health relevant topics in advertisements, while in Stage 2 the team identified detailed policy mentions (coded as present or absent in each ad) based on an inductive process of identifying the scope of policy and health-relevant content in ads under each topic area. This inductive process meant that only those policy issues that actually appeared in the advertisements received codes in the codebook. Twenty-four student coders were trained on the instrument, and inter-rater reliability was calculated using Krippendorf's α. Krippendorf's α exceeded 0.85 for the three variables of focus of this study: binary measures indicating whether or not the ad mentioned jobs or employment (including references to candidate's plans to create or protect jobs and other actions related to employment or unemployment); economic inequality (including reference to income inequality, economic disparity, and the general wealth gap between groups in the population); and early childhood education (including reference to preschool, nursery school, prekindergarten, and kindergarten). These outcome variables were created by aggregating across the detailed policy mentions identified in Stage 2 of the coding. We choose these three issues to study not only because of their strong evidence supporting them as important to population health (as outlined in the Introduction), but also because of their availability in the comprehensive coded ad data. While other social determinants-related issues also appeared in ads, their references were either very infrequent or less cleanly identified in the coded data. For instance, housing mentions tended not to be about homelessness or housing conditions (issues well-linked to evidence about population health) but more about how existing policies affect homeowners; in addition, the inductive process identified very few references to hunger or food insecurity.

Secondary data sources

To examine sources of variation and predictors of advertising content, we linked the advertising data to several other datasets about key community demographic factors, health information, and political characteristics of ads and communities. Ad airings were measured at the level of the media market (a defined geographic area based on common content broadcast on TV for anyone within that geography), so we converted data on the community-level factors to the media market level. First, we compiled county-level data from the RWJF County Health Rankings (CHR) data set and linked it to a crosswalk file derived from public sources to aggregate counties into media markets. We linked the 2011–2012 and 2015–2016 advertising data sets to the 2014 and 2018 CHR data sets, respectively, because these versions of CHR include demographic data contemporaneous with the 2011–2012 and 2015–2016 election years. The CHR data are derived from public datasets, like the American Community Survey, that often garner media attention. The data in the 2014 and 2018 CHR would have been available to political candidates and elected officials to inform their media planning; in fact, the CHR program promotes their data for policymakers to use (CHR, 2021).

The CHR data sets contain two types of measures; those reported as numerator and denominator values and those reported directly as rates or proportions. For data with

numerators and denominators available (e.g., % unemployed), we summed numerators and denominators across counties contained in a media market to generate a new, market-level statistic for that rate or proportion. For variables that did not have numerators and denominators in CHR, we created a market-level variable by weighting the county-level data based on the population each county contributes to the market according to the 2012/2016 Census Population Estimates.

"Key community factors" included variables the research team deemed a priori to be measures of conditions that could be related to the three population health policy issues we investigated. Most of these variables were compiled by CHR, but we note the original data source in parentheses below. For jobs and employment, we deemed the key community factor to be the unemployment rate of the market (Bureau of Labor Statistics). For economic inequality, we deemed the key community factor to be the Gini coefficient, a measure of statistical dispersion commonly used to gauge the magnitude of income inequality in a geographic area. CHR did not include a consistent measure of income inequality across the 2014/2018 files so we downloaded the Gini coefficient data directly from the 2012/2016 5-year American Community Survey. For early childhood education, we deemed two key community factors to be relevant, both related to children's opportunities: the percent of children in poverty (Small Area Income and Poverty Estimates) and the percent of children eligible for free lunch (National Center for Education Statistics). Research suggests that early childhood education policy investment is critical to combat socioeconomic inequalities among children (Chaudry et al., 2021).

We included a consistent set of other market-level control variables in the analysis, including the population of the market, percent of the population under age 18, percent non-Hispanic African American, percent American Indian/Alaskan Native, percent Hispanic, percent Asian, percent Native Hawaiian/Pacific Islander, percent rural, and percent not proficient in English (Census Population Estimates). We also included the median household income in the market (Small Area Income and Poverty Estimates).

We also compiled data on political factors that could relate to advertising content, based on previous research (see, e.g., Kaplan et al., 2006; Sides, 2006). Ad-level political characteristics were available in the Kantar/CMAG data set or compiled by the Wesleyan Media Project. These included length of the ad (since longer ads can include more topics), partisanship of candidate favored in ad (Democrat, Republican, other), sponsor of ad (i.e., candidate, interest group, other), targeted office of the ad (President, Senate, House, Governor, Other), and whether the ad aired in an off-year (2011/2015) versus an election year (2012/2016). Market-level political characteristics included the Democratic share of the 2012/2016 presidential election vote in the market (Leip, 2018) and whether or not there was a competitive US Senate and/or US House race in the market, as markets with competitive races tend to have higher campaign ad volume (Fowler et al., 2016) and different patterns of issue emphasis (Kaplan et al., 2006).

Analysis

We examined the relationship between community level characteristics and the content of political campaign advertising using two different approaches. First, we described characteristics of the ads aired in 2011–2012 and 2015–2016 for each of our three topics of interest. Using the ad airings-level data, we calculated the percentage of airings for each topic that were run for different types of political races (President, US Senate, US House, Governor, Other), partisanship of favored candidate in ad (Republican, Democrat, Other), sponsor of ad (candidate, interest group, other), whether the ad aired during the election year or the off-cycle year, and length of ad. We also created maps that depict the relative

share of ads in each market that mentioned jobs/employment, economic inequality, and early childhood education in both 2011–2012 and 2015–2016. Our maps show all markets with at least one ad airing, but we restrict our interpretation of these results below to markets with at least 10,000 airings in 2011–2012/2015–2016. This restriction eliminated 92 (43.8%) markets in 2011–2012 and 102 (48.6%) markets in 2015–2016, but helps focus our qualitative discussion to markets with large enough volumes (and thus high enough exposure of ad content to citizens) to draw meaningful conclusions about the proportion of ads that mentioned jobs/employment, economic inequality, and early childhood education. While focusing on these higher volume markets was important to not over-interpret fluctuations in prevalence due to small volumes, we note that these higher volume markets had a greater concentration of Presidential ads and those from Democrats (in 2012) and more interest group-sponsored ads in both years.

Second (using all ads, not only those with the restriction described above), we estimated the correlation between the content of campaign advertising and ad-level and community-level characteristics using a two-stage regression model. The first stage used a logistic regression model with media market fixed effects to estimate the relationship between ad-level characteristics and whether the ads mentioned jobs and employment, economic inequality, or early childhood education. We stratified our analysis by election cycle (2011–2012 vs. 2015–2016) and estimated separate models for each of the three outcome variables. The independent variables in the first stage models were ad-level characteristics, including the length of the ad (less than 30 s/greater than 30 s vs 30 s), party affiliation of the favored candidate in the ad (Republican/other vs. Democrat), sponsor of the ad (interest group/other vs. candidate), level of the ad (US Senate/US House/Governor/other vs. President), an indicator for whether the ad occurred during the off-cycle period (i.e., 2011/2015 vs. 2012/2016), and the number of weeks before the election date that the ad aired. We clustered the standard errors for this model at the "ad sponsor" level to account for correlations in advertising content between ads from the same candidate, party, or interest group.

The first stage logistic regression produced two outputs for our analysis. First, it estimated the correlation between ad-level variables and advertising content while using market fixed effects to flexibly control for differences across media markets. We report the partial correlations between ad-level variables and binary outcome variables as marginal effects and express each effect as the expected percent change in the probability of the outcome, given a one-unit change in the independent variable. Second, we used the market-fixed effects estimated by the logistic model to calculate the predicted share of ads in each market that mention the three outcome topics after setting ad-level characteristics to their national averages. These predicted ad shares were the outcome variable for the second stage of our analysis and reflect the variation in the content of campaign advertising across media markets, controlling for the correlations with the independent variables from the first stage. Put another way, variation in the content of ads across markets in the second stage are related to factors outside of the specific political race, partisanship, sponsor, and length of the ads.

The second stage regression used a fractional logistic regression model to estimate the relationship between market-level characteristics and the share of ads mentioning each of the three health topics in both 2011–2012 and 2015–2016. Fractional logistic regression is a variant of logistic regression that allows the outcome variable to take a value on the [0,1] interval and is well-suited for modeling proportion data like the dependent variables for this stage (i.e., proportion of all ads aired in that market that mention the topic of interest). We estimated these models at the media market level and, as with the first stage, we stratified our analysis by election cycle. The outcome variable was the predicted share of ads in the market that mention jobs and employment, economic inequality, or early childhood education and the independent variables were the market-level factors described in the Secondary

Data Sources section above. We adjusted the standard errors in this model to account for the fact that the outcome variable is an estimated quantity with its own standard error using feasible generalized least squares approach suggested by Lewis and Linzer (2005). As with the first stage results, we present the results of the second stage regression as the change in the predicted share of ads mentioning the topic of interest associated with a one-unit change in independent variable.

One drawback of employing market fixed effects in the first stage model is that any market where all or no ads mentioned the outcome topic was not included in the estimation. This limitation has two important consequences for our analysis. First, it means that the ad-level effects we report are conditional on having variation in the outcome variable within the market during 2011–2012 or 2015–2016, respectively. Second, the first stage models do not produce an estimated share of ads that mention the outcome topic for markets dropped from the logistic model due to lack of within-market variation in the outcome. To include these markets in the second step of our regression analysis, we set the predicted share of ads in such markets equal to zero in markets where no ads mentioned the outcome topic and equal to one in markets where all ads mentioned the outcome topic. The share of markets that fell into these "all or none" groups varied across our two data sets and the three outcome topics. For jobs and employment, there were two markets in 2011–2012 and zero markets in 2015–2016 with no ads mentioning the topic, and two markets in 2011–2012 and zero markets in 2015–2016 where all ads mentioned the topic. For economic inequality, there were 64 markets in 2011–2012 and 44 markets in 2015–2016 with no ads mentioning the topic, and zero markets in 2011–2012 and one market in 2015–2016 where all ads mentioned the topic. Finally, for early childhood, there were 163 markets in 2011–2012 and 141 markets in 2011–2012 with no ads mentioning the topic, but no markets in either cycle where all ads mentioned early childhood education.

RESULTS

Descriptive summary of campaign ad references to jobs, economic inequality, and early childhood

Table 1 reports summary statistics for the ad airing data in 2011–2012 and 2015–2016, both across the entire data set and among ads with mentions of each of the three outcome topics. "Total Ads on Topic" and "Percent of Ads on Topic" report the number and share of ad airings in each data set that mentioned the outcome topic. The ad-level characteristics in Table 1 report the proportion of ads mentioning the outcome topic by race level, partisanship of the preferred candidate, sponsorship, off-cycle versus general election cycle, and length. Mentions of jobs and employment were most common, occurring in 41% and 21% of campaign ad airings in 2011–2012 and 2015–2016, respectively. Economic inequality was mentioned in 11% of airings in 2011–2012 and 4% of airings in 2015–2016. References to early childhood education were rare in both years, 0.4% of airings in 2011–2012 and 0.9% of airings in 2015–2016.

The share of airings mentioning these topics varied by the political office sought by the candidate. A substantial proportion of campaign ads mentioning jobs and employment, 44%, were from the Presidential race in 2011–2012. This share fell to 23% during the 2015–2016 Presidential election; US House, Governor, and other races saw increased mentions on this topic relative to 2011–2012. The Democrat-Republican split in advertising mentions jobs and employment narrowed from 37% to 62% in 2011–2012 to 42%–47% in 2015–2016 (many local races are nonpartisan, which accounts for the remainder). Most ads on this topic were

TABLE 1 Characteristics of Political Advertising, by topic, 2011-2012 and 2015-2016

Sample	2011–2012 All ads	2015–2016 All ads	2011–2012 Jobs and employment	2015–2016 Jobs and employment	2011–2012 Economic inequality	2015–2016 Economic inequality	2011–2012 Early childhood education	2015–2016 Early childhood education
Total Ads on Topic	4,025,771	3,809,887	1,653,739	804,439	429,777	166,555	14,286	33,477
Level of race								
President	0.35 (0.48)	0.26 (0.44)	0.44 (0.50)	0.23 (0.42)	0.53 (0.50)	0.44 (0.50)	0.35 (0.48)	0.08 (0.28)
US Senate	0.24 (0.43)	0.24 (0.43)	0.19 (0.39)	0.25 (0.43)	0.21 (0.41)	0.24 (0.43)	0.40 (0.49)	0.00 (0.07)
US House	0.18 (0.38)	0.16 (0.37)	0.16 (0.37)	0.15 (0.36)	0.18 (0.38)	0.13 (0.34)	0.13 (0.34)	0.07 (0.26)
Governor	0.08 (0.27)	0.12 (0.33)	0.10 (0.30)	0.18 (0.38)	0.03 (0.16)	0.13 (0.34)	0.03 (0.17)	0.38 (0.49)
Other race	0.16 (0.36)	0.21 (0.41)	0.11 (0.31)	0.19 (0.39)	0.06 (0.23)	0.06 (0.24)	0.08 (0.27)	0.46 (0.50)
Preferred party in Ad								
Democrat	0.45 (0.50)	0.46 (0.50)	0.37 (0.48)	0.42 (0.49)	0.97 (0.16)	0.94 (0.23)	0.96 (0.20)	0.47 (0.50)
Republican	0.52 (0.50)	0.41 (0.49)	0.62 (0.49)	0.47 (0.50)	0.02 (0.14)	0.03 (0.16)	0.04 (0.19)	0.15 (0.36)
Other & N/A	0.03 (0.17)	0.13 (0.34)	0.02 (0.13)	0.11 (0.31)	0.01 (0.08)	0.03 (0.17)	0.00 (0.05)	0.37 (0.48)
Sponsor of Ad								
Candidate	0.62 (0.49)	0.65 (0.48)	0.60 (0.49)	0.74 (0.44)	0.67 (0.47)	0.65 (0.48)	0.45 (0.50)	0.84 (0.37)
Interest group	0.27 (0.44)	0.25 (0.43)	0.29 (0.46)	0.21 (0.41)	0.18 (0.39)	0.25 (0.43)	0.46 (0.50)	0.11 (0.32)
Other sponsor	0.12 (0.32)	0.09 (0.29)	0.10 (0.30)	0.05 (0.21)	0.14 (0.35)	0.10 (0.30)	0.09 (0.28)	0.05 (0.22)
Timing of Ad								
Off-cycle Ad	0.11 (0.31)	0.12 (0.33)	0.11 (0.31)	0.13 (0.34)	0.06 (0.24)	0.07 (0.26)	0.01 (0.10)	0.48 (0.50)

(Continues)

TABLE 1 (Continued)

Sample	2011–2012 All ads	2015–2016 All ads	2011–2012 Jobs and employment	2015–2016 Jobs and employment	2011–2012 Economic inequality	2015–2016 Economic inequality	2011–2012 Early childhood education	2015–2016 Early childhood education
Length of Ad								
30 s	0.95 (0.23)	0.94 (0.24)	0.93 (0.26)	0.94 (0.24)	0.89 (0.32)	0.98 (0.15)	1.00 (0.05)	0.91 (0.29)
<30 s	0.02 (0.14)	0.03 (0.16)	0.01 (0.11)	0.01 (0.11)	0.00 (0.05)	0.00 (0.06)	0.00 (0.04)	0.00 (0.06)
>30 s	0.04 (0.19)	0.04 (0.19)	0.06 (0.24)	0.05 (0.22)	0.11 (0.31)	0.02 (0.14)	0.00 (0.02)	0.09 (0.28)

Note: Table values report the share of ads within each column. Categories may not sum to 1.0 due to rounding. *SD*s in parentheses.

sponsored by candidates themselves in both cycles, but the share of ads about jobs and employment funded by interest groups was higher in 2011–2012 than 2015–2016.

Ads mentioning economic inequality showed the largest partisan split of the three topic areas. Nearly all ads (97%) mentioning economic inequality in 2011–2012 were pro-Democratic ones, and this share remained high at 94% of ads in 2015–2016. Most ads mentioning economic inequality were targeted at the Presidential race in both 2011–2012 and 2015–2016. The role of interest groups in funding ads that mentioned economic inequality grew from 18% of airings in 2011–2012 to 39% of airings in 2015–2016.

The number of ads mentioning early childhood education was small—under 40,000 total—in both election cycles, but this topic also had a partisan valence. Nearly all (96%) of ads referencing early childhood education were pro-Democratic in 2011–2012. This share shrunk to 47% of ads in 2015–2016 because candidates from third parties or who were not affiliated with a party comprised a larger share of ads with references to early childhood education. Interest groups and candidates sponsored an equal share of such ads in 2011–2012, but early childhood ads were primarily from candidates in 2015–2016.

Geographic variation in campaign ad references

Figures 1–3 show substantial geographic variation in the share of ad airings mentioning jobs and employment, economic inequality, and early childhood education in 2011–2012 and 2015–2016, with shading corresponding to the proportion of each media market's airings that mentioned each topic. Among markets with at least 10,000 total airings, New York City (62.0%) had the highest share of ads that mentioned jobs or employment, followed by Roanoke (VA) (61.1%) (Figure 1). Salt Lake City (UT) had the lowest share of ads mentioning jobs or employment among high volume markets (15.7%) followed by Phoenix (AZ) (15.8%) and Tallahassee (FL) (17.5%). As Figure 1 makes clear in its much lighter shading in 2015–2016, the share of ads with references to jobs and employment fell across the United States in 2015–2016. The markets with at least 10,000 total airings and the highest

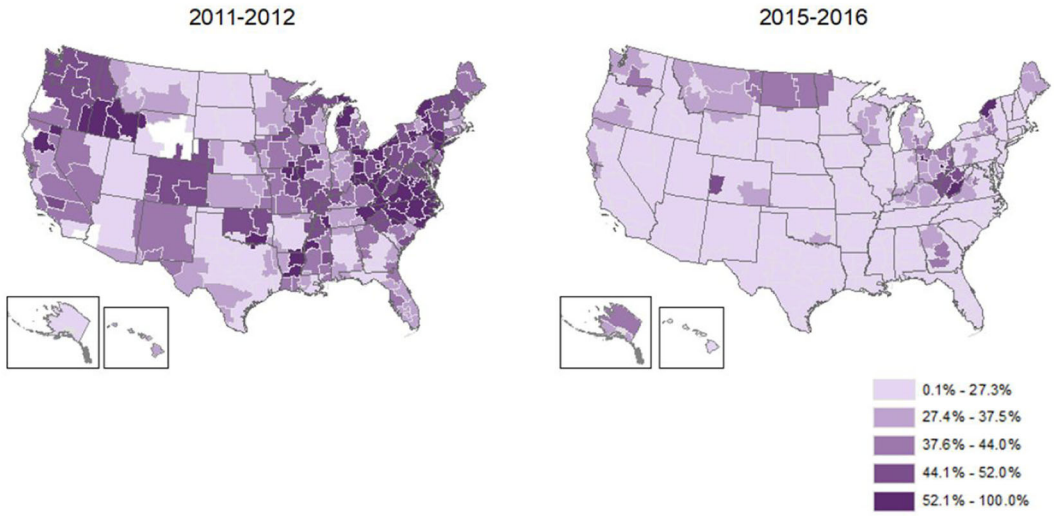

FIGURE 1 Share of ads mentioning jobs and employment by media market, 2011–2012 and 2015–2016. Shaded areas reflect the percentage of total ads aired in each media market that mentioned jobs and employment. White signifies media markets where no ads mentioning the topic were aired during the period

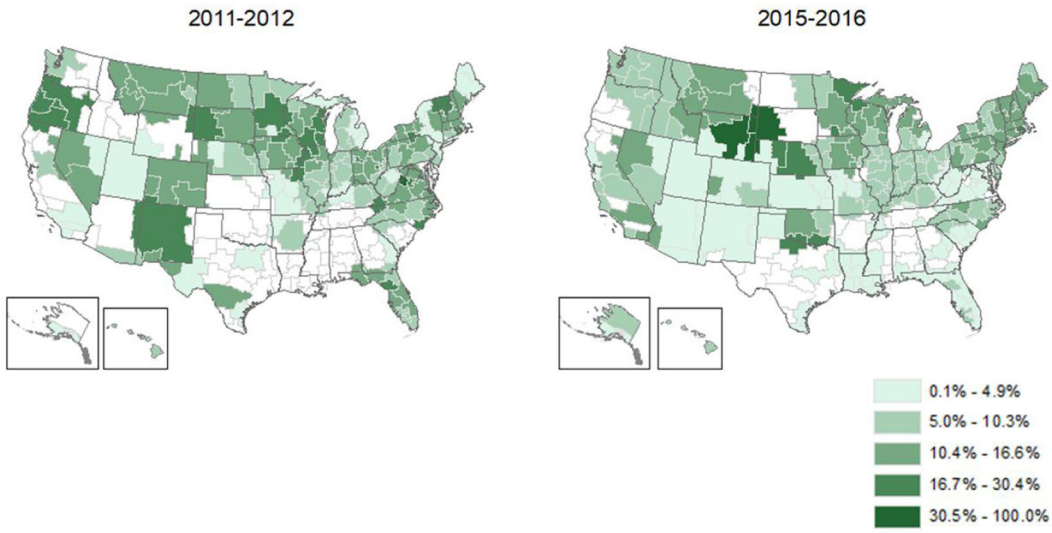

FIGURE 2 Share of ads mentioning economic inequality by media market, 2011–2012 and 2015–2016. Shaded areas reflect the percentage of total ads aired in each media market that mentioned economic inequality. White signifies media markets where no ads mentioning the topic were aired during the period

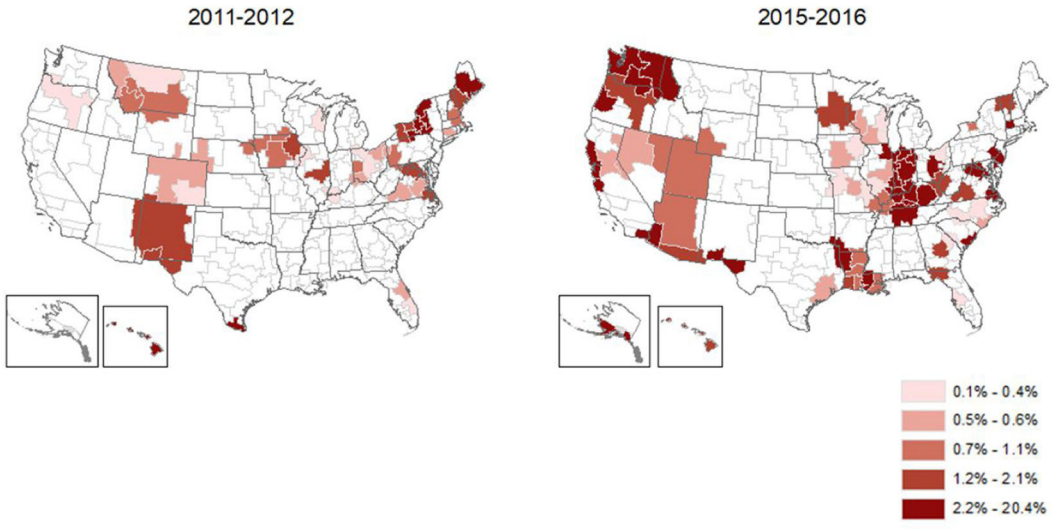

FIGURE 3 Share of ads mentioning early childhood education by media market, 2011–2012 and 2015–2016. Shaded areas reflect the percentage of total ads aired in each media market that mentioned early childhood education. White signifies media markets where no ads mentioning the topic were aired during the period. The maximum value in the data is 20.4%. We have adjusted the map legend to reflect this to improve readability

share of these ads in 2015–2016 were Bluefield-Beckley (WV) (52.3%) and Wheeling-Steubenville (WV/OH) (49.4%). Sacramento (CA) (5.7%) and Miami (FL) (7.5%) had the lowest shares among markets with >10,000 total ads.

Compared to ads mentioning jobs and employment, fewer markets had at least one ad airing mention economic inequality (Figure 2). In 2011–2012, Minneapolis (MN) (22.6%),

Burlington (VT) (21.5%), and Milwaukee (WI) (20.0%) were the three markets (with more than 10,000 total ad airings) with the highest share of ads with references to economic inequality. Ten of the 118 markets with at least 10,000 ad airings in 2011–2012 did not have any ads mentioning economic inequality. Minneapolis was also the top market for this topic in 2015–2016 (14.3%) followed by Albany (NY) (10.9%).

Only 41 of the 118 markets with >10,000 airings in 2011–2012 had any ads mentioning early childhood education (Figure 3). Syracuse (NY) and Honolulu (HI) had the highest shares in that cycle, albeit only at 2.4%. El Paso (TX) was the only other market where at least 2% of ad airings mentioned early childhood education in 2011–2012. References to early childhood education were more frequent in 2015–2016. Monterey (CA) (6.3%) and Seattle (WA) (5.4%) were notable for exceeding 5% of ads mentioning early childhood education. Fifty-three of 108 markets with >10,000 ad airings had zero mentions of early childhood education in 2015–2016.

Ad-Level and Community-Level factors associated with campaign ad references

The summary statistics in Table 1 and maps in Figures 1–3 show that mentions of these social determinants of health in campaign ads varied substantially across geographic media markets and between the 2011–2012 and 2015–2016 election cycles. The next stages of analyses sought to assess specific sources of that variation, using a two-step regression approach to examine the extent that differences in the content of advertising are correlated with differences in characteristics of campaigns and in the social determinants of health across communities. We present the results from this analysis in Tables 2 and 3. We conducted the first stage of our regression analysis (Table 2) at the ad-airing level and measured the correlation between ad-level factors and mentions of the three outcome topics in 2011–2012 and 2015–2016. Recall that the inclusion of market fixed effects in the stage one model means that the effects presented below are estimated using "within market" variation across different types of ads. The fixed effects also preclude the inclusion of observations for markets where all or zero ads mentioned the outcome. This restriction is reflected in the observations reported in Table 2 and means that all effects should be interpreted as the effect conditional in the market having variation in the outcome variable.

Pro-Republican ads were 44.0% more likely than pro-Democratic ads to mention jobs and employment in 2011–2012, and 32.7% more likely in 2015–2016. Ads for US Senate and US House races were significantly less likely to reference jobs and employment relative to Presidential ads in 2011–2012, but this relationship did not persist in 2015–2016. The sponsor type of the ad did not have a significant relationship with mentions of jobs and employment in 2011–2012, but interest group ads were 43.8% less likely to mention these topics in 2015–2016 when compared to ads sponsored by the candidate's campaign. There was no relationship between the timing of ads relative to Election Day and the probability of referencing jobs and employment.

Supporting the descriptive results, pro-Republican ads were more than four times less likely than pro-Democratic ads to mention economic inequality in 2011–2012 and 3.5 times less likely to do so in 2015–2016. The share of ads referencing inequality was lower for all levels of political races when compared with the Presidential election in 2011–2012. Ads targeted at Governors' races and other state/local contests were more than 1.5 times less likely to mention economic inequality than were Presidential ads. These associations were not evident in 2015–2016. References to this topic were more common during the off-year than election year, and ads closer to Election Day were less likely to mention economic inequality in both 2011–2012 and 2015–2016.

TABLE 2 Association of ad-level characteristics and the content of political ads, 2011/2012 and 2015/2016

	Jobs and employment		Economic inequality		Early childhood education	
	2011–2012	2015–2016	2011–2012	2015–2016	2011–2012	2015–2016
Baseline Probability	**0.41**	**0.21**	**0.11**	**0.04**	**0.004**	**0.01**
Level of Ad (ref = President)						
US Senate	−0.362*** (−0.579—−0.145)	0.221 (−0.163–0.605)	−0.803*** (−1.199 to −0.406)	−0.338 (−1.452–0.777)	0.333 (−1.538–2.205)	−2.466** (−4.917 to −0.0144)
US House	−0.269** (−0.482 to −0.0567)	0.0583 (−0.341–0.458)	−0.503*** (−0.776 to −0.229)	−0.483 (−1.653–0.687)	−1.075 (−3.591–1.441)	0.464 (−1.062–1.990)
Governor	0.169 (−0.109–0.447)	0.521** (0.0573–0.984)	−1.636*** (−2.308–−0.965)	0.260 (−1.077–1.596)	−0.188 (−2.789–2.414)	3.055*** (1.109–5.001)
Other/Down-Ballot	−0.505*** (−0.716 to −0.295)	0.179 (−0.295–0.652)	−1.536*** (−2.070 to −1.003)	−0.930 (−2.115–0.256)	−0.522 (−2.890–1.846)	1.860** (0.243–3.477)
Party favored candidate in Ad (ref = Democrat)						
Republican	0.440*** (0.309–0.570)	0.327*** (0.0811–0.572)	−4.027*** (−4.844 to −3.210)	−3.542*** (−4.468 to −2.615)	−3.666*** (−5.801 to −1.530)	−1.149** (−2.211 to −0.0866)
Other or N/A	−0.0740 (−0.342–0.194)	−0.0945 (−0.488–0.299)	−1.194** (−2.218 to −0.170)	−1.266** (−2.394 to −0.137)	−3.916*** (−6.291 to −1.541)	−0.599 (−1.876– 0.677)
Sponsor of Ad (ref = Candidate)						
Interest group	−0.0189 (−0.221–0.183)	−0.438*** (−0.711 to −0.166)	0.230 (−0.0517–0.512)	0.346 (−0.391–1.083)	1.798** (0.213–3.383)	−0.719* (−1.524–0.0860)
Other/missing	−0.0867 (−0.323–0.149)	−0.739*** (−1.054 to −0.423)	0.414** (0.0235–0.805)	0.425* (−0.0355–0.885)	0.340 (−0.927–1.606)	0.318 (−0.924–1.561)
Timing of Ad (ref = 2012/2016)						
Off-cycle (2011/2015)	0.131 (−0.417–0.679)	0.177 (−0.370–0.725)	1.779*** (0.528–3.030)	−1.033** (−1.919 to −0.147)	4.201** (0.0838–8.318)	−0.383 (−2.084–1.317)

TABLE 2 (Continued)

	Jobs and employment		Economic inequality		Early childhood education	
	2011–2012	2015–2016	2011–2012	2015–2016	2011–2012	2015–2016
Weeks from election (linear)	−0.00107 (−0.0117–0.00960)	−0.000767 (−0.0113–0.00974)	−0.0284** (−0.0506 to −0.00622)	0.0259** (0.00261–0.0493)	−0.121*** (−0.202 to −0.0402)	0.0280 (−0.00638–0.0625)
Length of Ad (ref = 30 s)						
Less than 30 s	−0.234 (−0.527–0.0595)	−0.812*** (−1.381 to −0.244)	−0.978* (−2.063–0.107)	−1.045 (−2.830–0.740)	−1.661 (−4.066–0.744)	−2.352*** (−3.942 to −0.762)
Greater than 30 s	0.600 (−0.244–1.443)	0.356 (−0.512–1.225)	1.139** (0.00196–2.276)	−1.385 (−3.164–0.394)	−4.874*** (−8.490 to −1.258)	0.980 (−0.843–2.804)
Observations	4,023,383	3,809,530	3,624,745	3,608,295	1,647,411	2,018,783

Note: All coefficients reported as semielasticities—the relative (percent) change in the predicted probability that an ad mentions the outcome topic associated with a one unit change in the independent variable. Ninty-five percent confidence interval reported in parentheses. Standard errors clustered at the ad sponsor level.

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

TABLE 3 Association of market-level characteristics and the content of political ads, 2011/2012 and 2015/2016

	Jobs and Employment		Economic Inequality		Early Childhood Education	
	2011 –2012	2015 –2016	2011 –2012	2015 –2016	2011 –2012	2015 –2016
Unemployment (%)	1.8 (–3.4 – 7.0)	12.8*** (5.6 –20.1)				
Gini Coefficient			–0.199 (–1.461 –1.062)	–2.424*** (–4.129 – –0.720)		
Children in poverty (%)					0.168 (–0.0851 –0.421)	0.0154 (–0.161 –0.192)
Children eligible for free lunch (%)					–0.139*** (–0.222 –0.0565)	0.00420 (–0.0838 –0.0922)
Competitive US Senate Race in Market	–0.0933 (–0.258 –0.0708)	–0.161** (–0.314 – –0.00816)	1.140** (0.119 –2.162)	0.203 (–0.132 –0.538)	–0.475 (–1.289 –0.339)	0.720** (0.0749 –1.365)
Competitive US House Race in Market	0.0312 (–0.106 –0.168)	–0.182 (–0.438 –0.0735)	–0.179 (–0.585 –0.227)	0.0854 (–0.290 –0.461)	0.669 (–0.359 –1.698)	–0.560 (–1.749 –0.628)
Democratic Vote Share in Presidential Election (%)	0.00782** (0.000401 –0.0152)	0.0136** (0.00279 –0.0244)	–0.00967 (–0.0686 –0.0492)	0.000288 (–0.0271 –0.0276)	0.0521* (–0.00368 –0.108)	0.0579*** (0.0212 –0.0946)
Median household income (/$1000)	–0.000935 (–0.0141 –0.0122)	0.00507 (–0.0116 –0.0217)	0.0179 (–0.0173 –0.0531)	0.0107 (–0.0257 –0.0471)	0.0427 (–0.121 –0.206)	–0.00769 (–0.120 –0.105)
Population (millions)	0.0154 (–0.0146 –0.0454)	–0.00986 (–0.0430 –0.0233)	0.00527 (–0.140 –0.150)	0.00859 (–0.0870 –0.104)	–0.127 (–0.396 –0.141)	–0.0716 (–0.256 –0.113)
Under 18 (%)	0.0133 (–0.0215 –0.0480)	0.00979 (–0.0379 –0.0574)	–0.238* (–0.503 –0.0268)	–0.0549 (–0.185 –0.0750)	–0.0102 (–0.231 –0.211)	0.260** (0.0496 –0.471)
Non–Hispanic African American (%)	–0.00428 (–0.00972 –0.00116)	–0.0210*** (–0.0303 – –0.0118)	–0.0307** (–0.0605 –-0.000958)	–0.0449*** (–0.0712 – –0.0186)	–0.0156 (–0.0703 –0.0392)	–0.0354 (–0.0894 –0.0186)
American Indian and Alaskan Native (%)	–0.0288** (–0.0563 – –0.00124)	–0.0570** (–0.101 – –0.0132)	–0.0659 (–0.209 –0.0768)	0.123*** (0.0543 –0.191)	–0.0984 (–0.309 –0.112)	–0.121 (–0.317 –0.0738)
Hispanic (%)	–0.00758 (–0.0181 –0.00293)	–0.00270 (–0.0247 –0.0193)	0.0102 (–0.0307 –0.0510)	–0.0390* (–0.0783 –0.000274)	0.0111 (–0.0866 –0.109)	–0.0969 (–0.265 –0.0715)

TABLE 3 (Continued)

	Jobs and Employment		Economic Inequality		Early Childhood Education	
	2011 –2012	**2015 –2016**	**2011 –2012**	**2015 –2016**	**2011 –2012**	**2015 –2016**
Asian (%)	0.0199 (–0.0129 –0.0527)	0.0226 (–0.0232 –0.0685)	–0.173*** (–0.290 – –0.0573)	–0.0372 (–0.120 –0.0454)	–0.0187 (–0.288 –0.251)	0.135 (–0.0667 –0.338)
Native Hawaiian/Other Pacific Islander (%)	–0.0827 (–0.200 –0.0343)	–0.183** (–0.351 – –0.0149)	0.544** (0.114 –0.975)	–0.0462 (–0.362 –0.270)	0.257 (–0.618 –1.131)	–0.403 (–1.003 –0.196)
Rural (%)	0.00476* (–0.000234 –0.00975)	0.00178 (–0.00597 –0.00953)	–0.0143* (–0.0293 –0.000829)	–0.0160* (–0.0328 –0.000813)	–0.00337 (–0.0464 –0.0396)	–0.0240 (–0.0572 –0.00917)
Not proficient in English (%)	0.00118 (–0.0440 –0.0464)	–0.0835 (–0.186 –0.0187)	–0.0205 (–0.321 –0.280)	0.112 (–0.0445 –0.269)	–0.205 (–0.568 –0.158)	0.155 (–0.600 –0.911)
Observations	**207**	**207**	**207**	**207**	**207**	**206**

Note: The outcome variables are the predicted share of ads mentioning the outcome topic from the first stage model (see Table 1), adjusted for differences in ad-level characteristics. All coefficents reported as semielasticities—the relative (percent) change in the predicted share of that an ads mentioning the outcome topic associated with a one unit change in the independent variable.

The relative percent changes in the predicted probabilities for mentioning early childhood education in Table 2 should be interpreted with caution. The baseline share of ads referencing this topic was just 0.4% in 2011–2012 and 1.0% in 2015–2016, so associations of a small absolute magnitude can produce large estimated relative percent changes due to the low frequency with which early childhood education mentions appear in the data set. Nevertheless, interest group sponsorship was associated with more frequent mentions of early childhood education in 2011–2012, but in 2015–2016 this relationship reversed, such that ads funded by interest groups were 71.9% less likely to reference early childhood education compared to ads funded by candidates. Relative to pro-Democratic ads, ads supporting Republican candidates were less likely to mention early childhood education in 2011–2012 and 2015–2016. There was no relationship between the level of the race and the probability of mentioning early childhood education in 2011–2012, but in 2015–2016 ads for US Senate races were less likely to mention this topic than were Presidential ads. Ads run closer to the election in 2011–2012 had a lower probability of referencing early childhood education, but this was not the case in 2015–2016.

Table 3 shows results of the second stage regression examining the relationship between community-level factors and the predicted shares of advertising estimated in stage one. The results in Table 3, like results from the first stage, are expressed as the percent change in the share of ads mentioning the outcome topic associated with a one-unit change in the independent variable.

Looking first at jobs and employment, there was a statistically significant relationship between the key hypothesized demographic characteristic (unemployment rate) and campaign ads referencing jobs and employment. Specifically, in 2015–2016, the share of ads mentioning jobs and employment rose 12.8% with each additional percentage point of unemployment in a media market. This relationship was also positive in 2011–2012 but was of smaller magnitude—just 1.8%—and not statistically significant. Table 3 also shows relationships between other political and demographic market characteristics and advertising content, with a few characteristics exhibiting consistent relationships across years. In both years, each additional percentage point of Democratic vote share in the Presidential election was associated with an increase (0.8% in 2012, 1.3% in 2015–2016) in the share of ads mentioning jobs. Markets with a higher share of rural residents had a larger proportion of ads mentioning jobs and employment in 2011–2012. Markets with higher proportions of residents who identified as African American, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander had relatively fewer ads referencing jobs and employment compared to markets with a higher share of white residents.

Turning now to market-level demographic characteristics predicting the share of ads mentioning economic inequality, Table 3 shows that the Gini coefficient (a metric of income inequality) was not significantly related to the share of campaign ads referencing economic inequality in 2011–2012 and negatively correlated with this topic in 2015–2016. Higher values of the Gini coefficient represent a more unequal distribution of income, so the relationship identified in the model suggests that more unequal markets had a lower share of ads mentioning economic inequality. In 2015–2016 an increase of 0.1 in the Gini coefficient was associated with a 242% relative decrease in the share of ads mentioning economic inequality. Markets with a competitive US Senate race had relatively higher shares of ads referencing inequality than ads without a competitive race in 2011–2012, but this relationship was not significantly different from zero in 2015–2016. The only demographic factors that were significantly related to the share of ads on this topic in both years was the share of African American residents and share of rural residents, both of which were negatively correlated with the share of ads mentioning economic inequality.

Finally, the low proportions of ads mentioning early childhood education in both 2011–2012 and 2015–2016 made it difficult to produce precise estimates of community-level

predictors of these topics. We included both the percentage of children living in poverty and the percentage of children eligible for free school lunch in this model, and only the share of children eligible for free lunch was a significant predictor of the share of ads referencing early childhood education, and only in 2011–2012. Markets with more children enrolled in this program had lower proportions of ads mentioning early childhood education, with each additional percentage point of free lunch receipt was associated with a 13.9% reduction in the share of ads referencing the outcome topic. Markets with higher Democratic vote shares in both 2011–2012 and 2015–2016 also had higher shares of ads mentioning early childhood education and markets with more children under the age of 18 also saw proportionally more campaign advertising with references to this topic in 2015–2016. Competitive US Senate races were the strongest predictor of mentions of early childhood education at the market level; having such a race increased the share of ads mentioning this topic by 72.0% relative to markets without such competitive races.

DISCUSSION

This study characterizes the political dynamics of issue attention by examining the volumes as well as the political, geographic, and demographic predictors of campaign advertising content on three important social issues. We also identify where Americans may have been more likely exposed to political discourse on these topics. Our findings reveal substantial references to jobs and employment in campaign ads, but much less attention to economic inequality or early childhood education in campaign advertising in 2011–2012 and 2015–2016. References to these topics were not equally distributed across sponsors; more pro-Republican ads compared to pro-Democratic ads referenced jobs in 2011–2012 and in 2015–2016. In contrast, economic inequality and early childhood education were mentioned almost entirely by pro-Democratic ads, suggesting that Democrats "owned" (Benoit, 2007; Petrocik, 1996; Petrocik et al., 2003) these issues. Further, ads were not equally dispersed across geography, with some media markets appearing as "hot spots" for attention to certain social issues in advertising: markets in rural Appalachia (West Virginia and Ohio) saw substantial attention in campaign advertising to jobs/employment and Democratic-leaning markets characterized by high racial inequality like Minneapolis and Milwaukee saw substantial attention to economic inequality among Democratic advertising sponsors.

Multivariate analyses showed that the Presidential race in 2011–2012 was notable for its higher attention to both jobs and inequality, relative to other federal or down-ballot races and to the 2015–2016 election cycle. This could have to do with the heightened salience of inequality related to the beginning of the Occupy movement in 2011, or to the fact that the Presidential race in 2015–2016 was unusual, due to the unconventional candidate (Trump) and the little substantive policy content in Clinton's advertisements (Fowler et al., 2016). Further, the results related to the timing of ads suggest that candidates talked more explicitly about economic inequality during the "off cycle" years when gubernatorial and primary races were occurring (possibly as a way for Democratic candidates to signal they find this issue important), but devoted significantly lower attention to economic inequality closer to Election Day. In other words, Democratic candidates did not highlight the issue of economic inequality in their competitive efforts to distinguish themselves from their Republican opposition. While we can only speculate, it may be that Democratic candidates did not emphasize this issue because they thought that doing so would provoke electoral consequences or stimulate aggressive counter-messaging from opponents. Regardless of the reason, it does raise an important finding about the conditions under which politicians choose to speak out (or not) against inequality.

In an effort to better understand whether candidates, parties and interest groups are responsive to the "objective" conditions of the social determinants in communities, we assessed whether there were correlations between community-level social determinants of health and attention to those social issues in campaign ads. Our findings did not provide evidence for robust political discourse responsiveness to objective social conditions, although there were some notable associations. Ads referenced jobs in 2015–2016 more often in communities with higher unemployment rates, suggesting that political candidates may have been responsive to community needs. In contrast, early childhood education in 2011–2012 was referenced fewer times in areas with more children eligible for free lunch, the latter a signal of social need among households with children. Given the overall extremely low volume of mentions of early childhood in general, though, and the fact that the relationship did not persist in 2015–2016, we do not put much stock in this finding. Other findings pose questions to explore in future research. For instance, communities with higher populations of African Americans saw fewer references to economic inequality in campaign ads, while areas with a higher vote share for Democrats saw more attention to both jobs and early childhood. Better understanding of how media attention correlates with demographic characteristics of audience is an important priority for future research. Such lines of inquiry can also contribute to a better understanding of whether and how politicians are responsive to their constituents' needs.

Implications for research and policy

These results contribute to previous research that suggests relatively limited media and political communication responsiveness to objective conditions in communities. A previous study demonstrating responsiveness to drug mortality in 2015–2016 might be explained by the dramatic increase in mortality from 2011 to 2012 and the severity of overdose mortality in the hardest hit markets over this time period (Kennedy-Hendricks et al., 2021). One might anticipate campaign ads to be more responsive to objective conditions for new and especially salient indicators of poor population health, in contrast to persistent and ongoing indicators, such as measures of chronic economic inequality (like the Gini coefficient, for which we saw no association in 2011–2012 and a negative association with political discourse on inequality in 2015–2016). This finding aligns with older research demonstrating relatively less attention to diseases characterized by greater racial inequality (Armstrong et al., 2006).

This study also generates hypotheses for future research related to the agenda-setting effect of advertising. Research on political advertising effects suggests that the topics candidates, parties and interest groups choose to include in their advertising have important effects on public impressions of those issues' importance, news media coverage of the same issues, and political candidates' agendas once they are in office (Bowers, 1973; Druckman, 2004; Hayes, 2008; Ridout & Mellen, 2007; Sulkin & Swigger, 2008). These choices of what topics to cover communicate candidates' policy priorities directly but also have indirect effects, because campaign ads also drive news media coverage of political campaigns and elections (Ridout & Mellen, 2007). Evidence suggests that these choices shape voter perceptions about what issues are important, as issues that are more frequently presented in political ads align with those on the public agenda (as measured through public opinion surveys or what is presented via news media) (Bowers, 1973; Hayes, 2008; Ridout & Mellen, 2007; Ridout & Smith, 2008). In 2016, according to Pew, voters' top issue was the economy, corresponding with robust attention to jobs and employment in campaign ads. In contrast, neither economic inequality nor early childhood were among the top 15 issues Pew reported (Pew, 2016). Similarly, Gallup noted that jobs and employment were

among the top 3 issues respondents cited in an open-ended probe, whereas fewer than 5% referenced education (Jones, 2016). When interpreted in the context of these public opinion data, our findings (while not designed to formally test agenda-setting hypotheses) suggest at least some correspondence between the importance politicians identify for these issues and that of the public.

Future research should pursue whether attention to population health topics in campaign advertisements shapes the public's priorities related to policy action on employment, economic inequality, early childhood education, or any of a number of policy investment that might improve population health, and whether explicitly linking health to these social issues affects the public's attitudes. Furthermore, since research documents a correspondence between the images and issues candidates feature in their advertising and their subsequent legislative behavior (Sulkin & Swigger, 2008), attention to population health issues in campaign ads is consequential not only for the public exposed to these issue references, but also for the entire population affected by future policy attention and implementation.

Study limitations and conclusions

This study has a few key limitations. First, as just mentioned, this study was not designed to examine the effects of political communication on the public's prioritization of issues, and as such we cannot determine the causal order of the relationships we observed. For instance, while it is possible that politicians may be responsive to demographic conditions in their communities (where, for instance, evidence of a social problem triggers campaign communication and potentially subsequent policy action), it is also possible that politicians who have implemented policy (and subsequently discuss these policy goals in their communication) may live in communities where those conditions reflect improvement as a result of policy attention.

Second, our analysis only included ads aired on broadcast TV, and not on local cable TV (which has a more limited reach) nor in digital or other platforms used for campaign advertising, such as print or radio. However, TV remains the largest share of campaign budgets; in the 2020 Presidential campaigns, for instance, candidate spending on advertising for television (including broadcast and cable) exceeded all other categories (WMP, 2020). Further, the news media frequently identify political advertising as newsworthy, which extends the potential agenda-setting influence of such ads since it expands public exposure to candidates' or interest groups' chosen messaging strategy (Fowler & Ridout, 2009; Ridout & Mellen, 2007; Ridout & Smith, 2008).

Third, while our study team identified the three focal issues given their relevance to population health, it is important to note that the ads themselves rarely, if ever, made the explicit connection between these three social issues and health outcomes or public health. These references were so infrequent that we could not assess them reliably (Fowler et al., 2019). We were also unable to assess politicians' intentions in their communication. So while attention to these issues in political campaign advertising could elevate the salience of these issues in the minds of the audience (an agenda-setting effect), these ads are unlikely to help viewers make connections between the importance of policy action around jobs/economic inequality/early childhood education and health improvement. Future research might assess whether making such links explicit can bolster support for policy action in these areas (Haselswerdt & Rigby, 2020).

Last, we acknowledge that this study only concerned advertising in two time periods—2011–2012 and 2015–2016. The latest Presidential election cycle in 2020, within the context of the COVID-19 pandemic, was very different than the previous cycles. First, the volumes and total spending on ads exceeded all past records—with 2.35 million Presidential ad

airings on broadcast TV in the 2019–2020 cycle, double that from 2015 to 2017 (Ridout et al., 2021). Second, there was a huge amount of attention to health—with COVID-19 and health care the two top issues mentioned in the Biden campaign's ads (Ridout et al., 2021). Further, the pandemic illuminated issues of racial inequality and the need for a more robust social safety net (including childcare, paid leave, health insurance, and other issues that have long been a priority of the political left). While we do not have precise description of the content of these references in campaign ads, the context is likely to have heightened the connection between these social policy issues and the public's health. Research should continue tracking these references in an effort to better understand the political agenda related to population health.

Overall, we found broad attention to jobs and employment in campaign ads in the election periods of 2012 and 2016, but much less attention to other factors that public health advocates have argued are important social determinants of health—economic inequality and early childhood education. Our findings suggest public health advocates could devote more attention to these issues in an effort to attract more attention in candidates' agendas, but also recognize that where political attention exists, it is dominated by Democratic candidates and Democratic-aligned groups. This suggests the potential for polarization in both political rhetoric and in public views of the importance of economic inequality and early childhood education. Future research should examine whether (potential) increased emphasis on social determinants of health in future election cycles has potential to translate into public interest in addressing these issues and to subsequent policy action to improve population health.

ETHICS STATEMENT

This research did not involve human subjects.

REFERENCES

Abroms, L. C., & Maibach, E. W. (2008). The effectiveness of mass communication to change public behavior. *Annual Review of Public Health*, *29*, 219–234.

Antonisse, L., & Garfield, R. (2018). The relationship between work and health: Findings from a literature review. KFF Issue Brief. https://www.kff.org/medicaid/issue-brief/the-relationship-between-work-and-health-findings-from-a-literature-review/

Armstrong, E. M., Carpenter, D. P., & Hojnacki, M. (2006). Whose deaths matter? Mortality, advocacy, and attention to disease in the mass media. *Journal of Health Politics, Policy and Law*, *31*(4), 729–772.

Bailey, Z. D., Krieger, N., Agénor, M., Graves, J., Linos, N., & Bassett, M. T. (2017). Structural racism and health inequities in the USA: Evidence and interventions. *The Lancet*, *389*(10077), 1453–1463.

Ball, T. M., Castro-Rodriguez, J. A., Griffith, K. A., Holberg, C. J., Martinez, F. D., & Wright, A. L. (2000). Siblings, day-care attendance, and the risk of asthma and wheezing during childhood. *New England Journal of Medicine*, *343*(8), 538–543.

Banda, K. K. (2015). Competition and the dynamics of issue convergence. *American Politics Research*, *43*(5), 821–845.

Benoit, W. L. (2007). Own party issue ownership emphasis in presidential television spots. *Communication Reports*, *20*(1), 42–50.

Bor, J., Cohen, G. H., & Galea, S. (2017). Population health in an era of rising income inequality: USA, 1980–2015. *The Lancet*, *389*(10077), 1475–1490.

Bowers, T. A. (1973). Newspaper political advertising and the agenda-setting function. *Journalism Quarterly*, *50*(3), 552–556.

Braveman, P., Egerter, S., & Williams, D. R. (2011). The social determinants of health: Coming of age. *Annual Review of Public Health*, *32*, 381–398. https://doi.org/10.1146/annurev-publhealth-031210-101218

Budge, I., & Farlie, D. (1983). *Explaining and predicting elections: Issue effects and party strategies in twenty-three democracies*. Allen & Unwin.

Campbell, F., Conti, G., Heckman, J. J., Hyeok Moon, S., Pinto, R., Pungello, E., & Pan, Y. (2014). Early childhood investments substantially boost adult health. *Science*, *343*(6178), 1478–1485.

Chaudry, A., Morrissey, T., Weiland, C., & Yoshikawa, H. (2021). *Cradle to kindergarten: A new plan to combat inequality*. Russell Sage Foundation.

CHR. (2021). County health rankings. Communities using the rankings data. https://www.countyhealthrankings.org/explore-health-rankings/use-data/communities-using-rankings-data

DHHS. (2002). *Office of planning, research and evaluation. 2002. "making a difference in the lives of infants and toddlers and their families: the impacts of early head start." Volume I: Final Technical Report*. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, USDHHS.

Druckman, J. N. (2004). Priming the vote: Campaign effects in a US Senate election. *Political Psychology*, *25*(4), 577–594.

Druckman, J. N. (2005). Media matter: How newspapers and television news cover campaigns and influence voters. *Political Communication*, *22*(4), 463–481.

Fowler, E. F., Baum, L. M., Barry, C. L., Niederdeppe, J., & Gollust., S. E. (2017). Media messages and perceptions of the affordable care act during the early phase of implementation. *Journal of Health Politics, Policy and Law*, *42*(1), 167–195.

Fowler, E. F., Baum, L. M., Jesch, E., Haddad, D., Reyes, C., Gollust, S. E., & Niederdeppe, J. (2019). Issues relevant to population health in political advertising in the United States, 2011–2012 and 2015–2016. *Milbank Quarterly*, *97*(4), 1062–1107.

Fowler, E. F., Franz, M. M., & Ridout, T. N. (2016). *Political advertising in the United States*. Westview Press.

Fowler, E. F., Franz, M. M., & Ridout, T. N. (2020). The blue wave: Assessing political advertising trends and democratic advantages in 2018. *PS: Political Science & Politics*, *53*(1), 57–63.

Fowler, E. F., & Ridout, T. N. (2009). Local television and newspaper coverage of political advertising. *Political Communication*, *26*(2), 119–136.

Fowler, E. F., Ridout, T. N., & Franz, M. M. (2016). Political advertising in 2016: The Presidential election as outlier? *The Forum*, *14*(4), 445–469.

Franz, M. M., Fowler, E. F., & Ridout, T. N. (2016). Loose cannons or loyal foot soldiers? Toward a more complex theory of interest group advertising strategies. *American Journal of Political Science*, *60*(3), 738-751.

Friedman-Krauss, A., Bernstein, S., & Barnett, W. S. (2019). Early childhood education: Three pathways to better health. Preschool policy update. National Institute for Early Education Research. https://nieer.org/policy-issue/early-childhood-education-three-pathways-to-better-health

Gollust, S. E., Fowler, E. F., & Niederdeppe, J. (2019). Television news coverage of public health issues and implications for public health policy and practice. *Annual Review of Public Health*, *40*, 167–185.

Grier, S. A., & Kumanyika, S. K. (2008). The context for choice: Health implications of targeted food and beverage marketing to African Americans. *American Journal of Public Health*, *98*(9), 1616–1629.

Harris, J. R., Huang, Y., Hannon, P. A., & Williams, B. (2011). Low-socioeconomic status workers: Their health risks and how to reach them. *Journal of Occupational and Environmental Medicine*, *53*(2), 132–138.

Harris, J. L., Pomeranz, J. L., Lobstein, T., & Brownell, K. D. (2009). A crisis in the marketplace: How food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, *30*, 211–225.

Haselswerdt, J., & Rigby, E. (2020). What do advocates want from policy research? Evidence from elite surveys. *Evidence & Policy: A Journal of Research, Debate and Practice*. (In press).

Hayes, D. (2008). Does the messenger matter? Candidate-media agenda convergence and its effects on voter issue salience. *Political Research Quarterly*, *61*(1), 134–146.

Hilgartner, S., & Bosk, C. L. (1988). The rise and fall of social problems: A public arenas model. *American Journal of Sociology*, *94*(1), 53–78.

Iyengar, S. (1991). *Is anyone responsible?* University of Chicago Press.

Jacobs, L. R., & Shapiro, R. Y. (1994). Issues, candidate image, and priming: The use of private polls in Kennedy's 1960 Presidential campaign. *American Political Science Review*, *88*(3), 527–540.

Jensen, J. D., Moriarty, C. M., Hurley, R. J., & Stryker, J. E. (2010). Making sense of cancer news coverage trends: A comparison of three comprehensive content analyses. *Journal of Health Communication*, *15*(2), 136–151.

Jones, J. M. (2016). Americans name economy, government as top problems: Gallup. https://news.gallup.com/poll/189869/americans-name-economy-government-top-problems.aspx

Kaplan, N., Park, D. K., & Ridout, T. N. (2006). Dialogue in American political campaigns? An examination of issue convergence in candidate television advertising. *American journal of Political Science*, *50*(3), 724–736.

Kawachi, I., & Kennedy, B. P. (1999). Income inequality and health: Pathways and mechanisms. *Health Services Research*, *34*(1 Pt 2), 215–227.

Kennedy-Hendricks, A., Fowler, E. F., Bandara, S., Baum, L., Gollust, S. E., Niederdeppe, J., & Barry, C. L. (2021). Relationship between drug overdose mortality and coverage of drug-related issues in U.S. television political campaign advertising in the 2012 and 2016 election cycles. *Journal of Health Politics, Policy and Law*, *46*(3), 381–407.

Klein, K. J., & D'Aunno, T. A. (1986). Psychological sense of community in the workplace. *Journal of Community Psychology*, *14*(4), 365–377.

Leip, D. (2018). Atlas of U.S. Presidential elections. http://uselectionatlas.org/

Lewis, J. B., & Linzer, D. A. (2005). Estimating regression models in which the dependent variable is based on estimates. *Political Analysis*, *13*(4), 345–364.
Love, J. M., Kisker, E. E., Ross, C., Raikes, H., Constantine, J., Boller, K., Brooks-Gunn, J., Chazan-Cohen, R., Tarullo, L. B., Brady-Smith, C., Fuligni, A. S., Schochet,P. Z., Paulsell, D., & Vogel, C. (2005). The effectiveness of early head start for 3-year-old children and their parents: Lessons for policy and programs. *Developmental Psychology*, *41*(6), 885–901. https://doi.org/10.1037/0012-1649.41.6.885
Morrissey, T. (2019). The effects of early care and education on children's health. *Health Affairs Health Policy Brief*, *94*, 534–541. https://doi.org/10.1377/hpb20190325.519221
Niederdeppe, J., Rosemary, J. A., Tabor, E., Lee, N. W., Welch, B., & Skurka, C. (2020). Estimated televised alcohol advertising exposure in the past year and associations with past 30-day drinking behavior among American adults: Results from a secondary analysis of large-scale advertising and survey data. *Addiction*, *116*, 280–289.
Petrocik, J. R. (1996). Issue ownership in Presidential elections, with a 1980 case study. *American journal of Political Science*, *40*, 825–850.
Petrocik, J. R., Benoit, W. L., & Hansen, G. J. (2003). Issue ownership and presidential campaigning, 1952–2000. *Political Science Quarterly*, *118*(4), 599–626.
Pew. (2016). 2016 campaign: Strong interest, widespread dissatisfaction. Pew Research Center. https://www.pewresearch.org/politics/2016/07/07/2016-campaign-strong-interest-widespread-dissatisfaction/
Pribble, J. M., Goldstein, K. M., Fowler, E. F., Greenberg, M. J., Noel, S. K., & Howell, J. D. (2006). Medical news for the public to use? What's on local TV news. *American Journal of Managed Care*, *12*(3), 170–176.
Randolph, W., & Viswanath, K. (2004). Lessons learned from public health mass media campaigns: Marketing health in a crowded media world. *Annual Review of Public Health*, *25*, 419–437.
Ridout, T. N., Fowler, E. F., & Franz, M. M. (2021). Spending fast and furious: Political advertising in 2020. *The Forum. 18*(4), 465–492.
Ridout, T. N., Mellen, R., Jr. (2007). Does the media agenda reflect the candidates' agenda? *Harvard International Journal of Press/Politics*, *12*(2), 44–62.
Ridout, T. N., & Smith, G. R. (2008). Free advertising: How the media amplify campaign messages. *Political Research Quarterly*, *61*(4), 598–608.
Sheley, J. F., & Ashkins, C. D. (1981). Crime, crime news, and crime views. *Public Opinion Quarterly*, *45*(4), 492–506.
Sides, J. (2006). The origins of campaign agendas. *British Journal of Political Science*, *36*(3), 407–436.
Smith, J. P. (1999). Healthy bodies and thick wallets: The dual relation between health and economic status. *Journal of Economic Perspectives*, *13*(2), 145–166.
Sulkin, T., & Swigger, N. (2008). Is there truth in advertising? Campaign ad images as signals about legislative behavior. *The Journal of Politics*, *70*(1), 232–244.
Tye, J. B., Warner, K. E., & Glantz, S. A. (1987). Tobacco advertising and consumption: Evidence of a causal relationship. *Journal of Public Health Policy*, *8*(4), 492–508.
WMP. (2020). Presidential general election ad spending tops $1.5 billion. Wesleyan Media Project news release. https://mediaproject.wesleyan.edu/releases-102920/
Woolf, S., Aron, L., Dubay, L., Simon, S., Zimmerman, E., & Lux, K. (2015). How are income and wealth linked to health and longevity?" The Urban Institute. https://www.urban.org/sites/default/files/publication/49116/2000178-How-are-Income-and-Wealth-Linked-to-Health-and-Longevity.pdf?TB_iframe=true%26width=921.6%26height=921.6

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How do you solve a problem like Maria? The politics of disaster response in Puerto Rico, Florida and Texas

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Abstract

COVID-19 is not the first, nor the last, public health challenge the US political system has faced. Understanding drivers of governmental responses to public health emergencies is important for policy decision-making, planning, health and social outcomes, and advocacy. We use federal political disaster-aid debates to examine political factors related to variations in outcomes for Puerto Rico, Texas, and Florida after the 2017 hurricane season. Despite the comparable need and unprecedented mortality, Puerto Rico received delayed and substantially less aid. We find bipartisan participation in floor debates over aid to Texas and Florida, but primarily Democrat participation for Puerto Rican aid. Yet, deliberation and participation in the debates were strongly influenced by whether a state or district was at risk of natural disasters. Nearly one-third of all states did not participate in any aid debate. States' local disaster risk levels and political parties' attachments to different racial and ethnic groups may help explain Congressional public health disaster response failures. These lessons are of increasing importance in the face of growing collective action problems around the climate crisis and subsequent emergent threats from natural disasters.

KEYWORDS
disaster response, health policy, health politics, race

This study was presented at the 2020 Southern Political Science Association and the 2019 American Political Science Association annual research meetings.

Key points

- Our results suggest that the deaths of thousands of Americans may not be enough to mobilize congressional participation in disaster aid deliberations, and that legislators may be more incentivized to participate in debates if they perceive disaster risk to their districts.
- Where some states have more advocacy for federal disaster aid than others, disparities in disaster aid relief and subsequent outcomes may be exacerbated.
- Institutional barriers may further exacerbate participatory inequality in disaster aid deliberations, such as no voting membership for U.S. territories. Institutional constraints and the strong relationship between disaster risk and legislative participation in aid debates compared to mortality may reduce accountability for federal disaster response failures.

INTRODUCTION

How the United States federal government responds to public health disasters became increasingly salient and important in 2020. While the COVID-19 pandemic is by magnitudes the most devastating and challenging public health crisis since the 1918 influenza pandemic, the United States is not new to responding and managing other types of public health emergencies. Learning from past events may help us understand why the federal government responds effectively or ineffectively to public health emergencies and offer opportunities to improve policymaking to mitigate future failures.

From August to September of 2017, the United States experienced three concurrent, highly destructive hurricanes. Hurricane Harvey made landfall in Texas, Hurricane Irma hit Florida, and Hurricane Maria struck Puerto Rico. In Texas, 69 lives were lost, 88 in Florida (Blake & Zelinsky, 2017; Cangialosi et al., 2018). In Puerto Rico, 2995 people were killed as a result of Hurricane Maria (Audi et al., 2018).

Puerto Rico, despite comparable damage estimates (Blake & Zelinsky, 2017; Pasch et al., 2018; United States Government Accountability Office, 2018) and incomparably worse mortality, received considerably less federal aid in measures of staffing and federal dollars within the first 6 months after landfall compared to Hurricanes Irma in Florida and Harvey in Texas (Willison et al., 2019). The disproportionate federal aid to Puerto Rico is even more troubling given Puerto Rico's fragile infrastructure before the hurricane compared to mainland states, which constrained Puerto Rico's ability to withstand and recover from such a disaster. Puerto Rico's response was further curtailed by the debt crisis the island faced in the years before Hurricane Maria. The government of Puerto Rico, constrained by $70 billion in debt obligations and the island's status as a territory, not a state, which would not allow it to declare bankruptcy, contributed to reductions in public spending and infrastructure (Peón, 2020). A stronger federal response to Hurricane Maria would have reduced deaths and prevented downstream harm to the Puerto Rican economy, population health, and social outcomes. The absence of a strong federal response increased existing inequities and contributed to substantial new outmigration (Cruz-Cano & Mead, 2019; Michaud & Kates, 2017; Orengo-Aguayo et al., 2019; Smith & Sow, 2019; Willison et al., 2019).

This paper analyzes federal, congressional aid deliberations as measured in congressional floor debates over funding and disaster aid relief for the 2017 hurricanes for 6 months after landfall. Congressional floor debate speeches are a unique method to begin to identify

factors that may have influenced why aid (speed, staffing, and federal dollars) was prioritized for Texas and Florida compared to Puerto Rico. In our paper we examine and identify: (1) how congressional representatives prioritized aid (as measured by frequency and content of speeches over aid, and Congressional members' own *participation* in aid debates) and (2) salient factors illuminated in congressional floor speeches related to aid prioritization. We analyze congressional legislative floor debate speeches as a part of federal disaster response deliberations, to identify political factors associated with the differences between the federal responses to Hurricane Maria in Puerto Rico compared to the hurricanes that struck mainland Texas and Florida.

Political determinants of disaster responses in the United States

There are several reasons why the federal government may have delivered less aid, and at a slower pace, to Puerto Rico compared to Texas and Florida. Paramount to those factors is geography. Puerto Rico is an island, which makes it harder to move aid and personnel. Yet, geography alone does not account for the *3-month* time lag before the numbers of federal responders in Puerto Rico were comparable to the numbers there were in Florida on Day 1 after Hurricane Irma (Willison et al., 2019). Similarly, in 2010, the US federal government moved more personnel to Haiti to respond to the earthquake than went to Puerto Rico in 2017, at a far faster rate, despite a more difficult operational environment in Haiti (Cecchine et al., 2013, XV).

This suggests that politics, not geography, is a likely explanatory factor. Politics have driven and shaped federal responses to disasters (Greer & Singer, 2017; Nachlis, 2018; Oliver & Reeves, 2015; Singer et al., 2020; Sledge & Thomas, 2019). US political decision-making also has a long history of leveraging social services policy as mechanisms to reinforce disparities between groups rather than improve equity (Einstein et al., 2019; Horowitz, 2020; Trounstine, 2019; Weaver, 2007). The effects of differential treatment for racial outgroup members (outgroup identity defined as negatively socially constructed or construed as "different" from the perceived or traditional "majority" or ingroup) (Pettigrew, 1998) is also particularly salient in state-level policy outcomes across a variety of social and health policy spaces (Michener, 2018; Soss et al., 2011).

We primarily think of the Federal Emergency Management Agency (FEMA) when thinking about federal disaster responses in the United States. Yet Congress, the focus of this study, matters a lot in federal disaster responses. Congress determines and closely tracks annual appropriations to the Disaster Relief Fund (DRF), the federal fund that allocates spending to FEMA to utilize in initial responses to major disaster events (Congressional Research Service, 2021). In addition, during active disaster events, Congress acts in an expedited manner to replenish the DRF as needed *and* to expediently deliver supplemental appropriations to affected communities. Supplemental negotiations for disaster events are different from typical congressional debates because bills do not go through complete committee processes (Congressional Research Service, 2021, p. 14). Thus, most of the debate over aid appropriations takes place on the floor of both chambers. In these ways, Congress is not only responsible for the base level of the DRF, but supplemental appropriations act as an important accountability mechanism to deliver essential aid, quickly, when initial responses are insufficient. Further, while bureaucratic agencies (here, FEMA) are intended to be insulated from politics, carrying out duties and promulgating rules according to their expertise, agencies are politically responsive and often reflective of Administrations' political priorities (Huber & Shipan, 2002; Kroll & Moynihan, 2020). This conditional discretion granted to agencies (Huber & Shipan, 2011) may make bureaucracies more cautious of pushing back against congressional appropriations and priorities. In disaster politics, this suggests that Congress may be more illustrative of broader disaster

response preferences and priorities than FEMA. For the 2017 Hurricanes, Congress allocated three supplemental appropriations bills during the first 6 months after landfall, granting 15.25 billion in aid to Harvey and Irma in September, and a 4.9 billion dollar loan to Puerto Rico in October (Willison et al., 2019).

There are two intertwined but analytically separate political explanations to the federal response to Hurricane Maria. One focuses on the explanatory power of racial resentment or racism among the US public and use of racialized rhetoric and actions by President Trump, which has been extensively studied in American political science (Abramowitz & McCoy, 2019; Craig et al., 2018; Groga et al., 2017; Jardina, 2019; Valentino et al., 2013). A large and growing body of research demonstrates that individual-level identity and attitudinal characteristics, including biases against outgroup members, shape support for public policies targeting marginalized, minority group populations. This literature finds that the past two decades have witnessed an increase in resentment or ethnic antagonism (Bartels, 2020) among White Americans towards people of color due to the perceived "outgroup threat" associated with racial minorities becoming more economically and socially mobile (Cramer, 2016; Jardina, 2019; Valentino et al., 2013). Here, racial resentment, or possibly outgroup threat perceptions against racial or ethnic minority group members (Bartels, 2020), may have directly or indirectly influenced federal debates about hurricane aid and subsequent disaster aid allocations. It is important to note that in positing the likely role of racial resentment or racism in influencing differential federal disaster responses, we are not likely to see outwardly negative racial perceptions of Puerto Rico displayed in disaster response deliberations. Elected officials will alternatively publicly display coded messaging in congressional debates as signals to appease racially resentful White voters while attempting to not violate the norms of racial equality (López, 2013; Mendelberg, 2001). This may take the form of silence or limited acknowledgment of humanitarian needs across types of social policy for ethnic minority groups (López, 2013; Mendelberg, 2001).

Additional empirical research examining intergroup relations demonstrates around 40% of US mainland citizens are unaware that Puerto Ricans are US citizens (Gonzalez-Sobrino, 2019; Newman et al., 2018). While this does not directly measure racialization, as notions of citizenship and race are separate although inevitably related, this supports notions that Puerto Ricans may be perceived, by mainland Americans, as outgroup members for reasons connected to hierarchies of race, culture, language, and a history of colonial relationship (Duany, 2003).

The other explanation focuses on partisanship and party strategy, with politicians providing benefits to certain voters, either swing voters or their base, in "disaster gerrymandering," (Platt, 1999; Reeves, 2011; Salkowe & Chakraborty, 2009). Disaster gerrymandering is empirically different from traditional definitions of partisan electoral gerrymandering. Instead, disaster gerrymandering argues that disaster politics is *not* driven by the need or likelihood of a jurisdiction being "overwhelmed" by a disaster event but instead by the political factors like partisanship and biased vote-seeking (Salkowe & Chakraborty, 2009). Here, US politics incentivizes attention not to a collective good but rather to groups that either are very loyal (and thus key parts of party coalitions) or groups that might defect to another party (and thereby attract political attention). This incentive structure or pattern of participation in distributive politics is well documented, especially in regard to "disaster gerrymandering" by at-risk states, competing with one another with negative consequences for less-well resourced, at-risk states (Maffioli et al., 2017; Platt, 1999; Salkowe & Chakraborty, 2009; Stramp, 2013; Sylves & Búzás, 2007).

Puerto Ricans are American citizens, but Puerto Rico lacks congressional representation and political clout. Puerto Rico is one of five US territories. The territories are granted Congressional Delegates—one per each territory, and only in the House—with no voting power on the floor of Congress. Previous scholarship demonstrates that delegate presence on the floor,

as opposed to voting membership, sufficiently obscures territorial interests in broader debates: they have no power and are ignored in congressional deliberations (Brown, 1950; Holtzman, 1986; Lewallen & Sparrow, 2018; Sparrow, 2006). Puerto Rico has been a US colony, without independent political status, or integrated representation and political power in the United States since 1898 (Peón, 2020). As a result of these institutional constraints and colonial status, Puerto Rico faces accessibility barriers to federal disaster aid debates. The lack of electoral incentives for engaging in Puerto Rican concerns by federal, congressional politicians (Lecours & Vézina, 2017) and restricted political protections for Puerto Rico are apparent in the ongoing bankruptcy debates which limits access to financing and governance, as well as representation in financial decisions by the territory. This has continued even as congress ignores six referendums in Puerto Rico supporting statehood for the island (Peón, 2020).

The politics of disaster responses are increasingly important as we face the ongoing COVID-19 pandemic and anthropogenic climate change that increases the likelihood of public health disasters. Previous research has measured how federal policymakers responded to the concurrent hurricanes in 2017. Here, we examine federal policymakers' public deliberations or political decision making that played a role in influencing aid distribution to Texas, Florida, and Puerto Rico after the 2017 hurricanes. Using public congressional deliberations gives insight into broader factors associated with how the federal government, or elected federal representatives, prioritize aid for different places and different disasters. The weight elected officials place on aid to different places and different disaster events matters, as it sets a public value judgment about perceived or implied deservedness for receiving emergency services during public health crises. By contrast, the absence of participatory bias (i.e., congressional members advocating equally for aid across all hurricanes) by congressional representatives in public deliberations over aid to the three hurricane-affected areas would implicate other factors, beyond political decision making, as a cause for the divergent federal responses to the 2017 storms.

METHODS

We conducted a retrospective analysis of political elites' discourse, comparing substantive content for 6 months after landfall for each hurricane. This allows us to examine discourse over time and any changes in political elites' perceptions of the populations affected by the hurricanes. Evaluating discourse during and after the disaster responses gives an indication of the influence of disaster response deliberations (perceptions of at-risk or affected groups and explanations of policymaking choices) may play in shaping or be reflective of decisions informing how the federal government responded to each hurricane.

To understand and identify factors directly or indirectly influencing disaster aid prioritization in disaster aid debates, we analyzed political elites' perceptions as shared publicly in federal congressional floor debates. Speech conducted on the floor of Congress acts as a signal of importance, either to attract attention with constituents, rally support of their colleagues in Congress, or to make electoral gains by highlighting policy successes or failures (Fenno, 1978). Floor debates are also a unique method to illuminate broader political factors that may influence aid distribution as signaled in congressional floor debate speech content and congressional members' *participation* in debates (Weiss & Zoorob, 2021). Congressional floor debates were collected from the publicly available Congressional Record for floor debates in both congressional chambers (House and Senate) (United States Congress, 2020). Search terms included terms specific to each hurricane: "hurricane, location (Texas, Florida, Puerto Rico), hurricane name (Harvey, Irma, Maria)." Although there was some overlap of documents that discuss one or more hurricanes (e.g., disaster relief bill debates), we identified discourse specific to each individual hurricane to parse deliberations over aid to the hurricanes

individually rather than hurricane aid, generally. Instances of overlap between hurricanes were primarily short references or comparisons to prior federal action in response to a disaster.

The research team analyzed over 800 congressional testimonies. In each case, we measured discourse frequency about each hurricane across partisan, geographic (e.g., state; state disaster-risk based on US National Oceanic and Atmospheric Administration [NOAA] categories), and demographic categories (% of the population identifying as Puerto Rican based on US census data (complete methodology in Appendix S1). Frequencies measuring participation in federal congressional debates were collected from landfall to six months after landfall. The frequencies include counts of substantive content (statement made in reference to or about, regardless of length (one sentence or longer), any of the 2017 hurricanes; does not include mentions as referenced in a list or without substantive context). Bill texts are omitted, and only congressional member deliberations are counted (total *N*). Counts are absolute mentions. In addition to discourse frequency, we conducted content analyses, coding across emergent themes including notions of citizenship and race, and disaster gerrymandering, in congressional deliberations for the three hurricanes from landfall to 6 months post-landfall. NVivo software was used to code the documents and conduct content analysis to identify emergent themes related to aid prioritization in congressional debates. Four coders were used in an iterative process for consensus and reliability. Coders conducted consensus coding on a sample subset before coding the entire sample to improve reliability and reduce measurement error.

RESULTS

There are three primary results from our analysis. First, we found that federal disaster aid debates were largely conducted by politicians representing states and districts at-risk of natural disasters, or in places with constituents with a direct interest in disaster-affected areas (in this case Puerto Rican Americans).

Second, participation in congressional debates over aid for Hurricanes Harvey and Irma was bipartisan, with aid debates marked by both Democratic and Republican members participating at similar frequencies and talking about the disasters in a similar manner. Qualitatively in substance, both Democrats and Republicans made compelling, public statements about the deservedness of Texans and Floridians for receiving federal disaster aid. For representatives from states not affected by the 2017 hurricanes, Congressional members of both parties additionally used their time to advocate for federal aid to their own jurisdiction for other unrelated, past or present disaster needs.

Third, Hurricane Maria was different. Participation in debates and the substantive discourse of those debates varied notably from debates over aid to Texas and Florida, and between political parties. Overall, Republicans participated at least 30% less in debates over aid to Puerto Rico. Qualitatively, in the majority of instances, Republicans did not make public statements about deservedness or need for Puerto Rican Americans compared to their participation in debates for aid to Florida and Texas.

Disaster aid debates were not national

Debates over hurricane aid to affected areas were not nationally representative. Rather, congressional participants in aid deliberations were almost entirely from districts and states that were at-risk of natural disasters. Puerto Rican constituencies were also related to debate participation. When viewed across all three hurricanes, over one-quarter of Congress did not participate in disaster relief debates (see Appendix S1). For congressional members that did participate in debates over disaster relief, about half represented areas

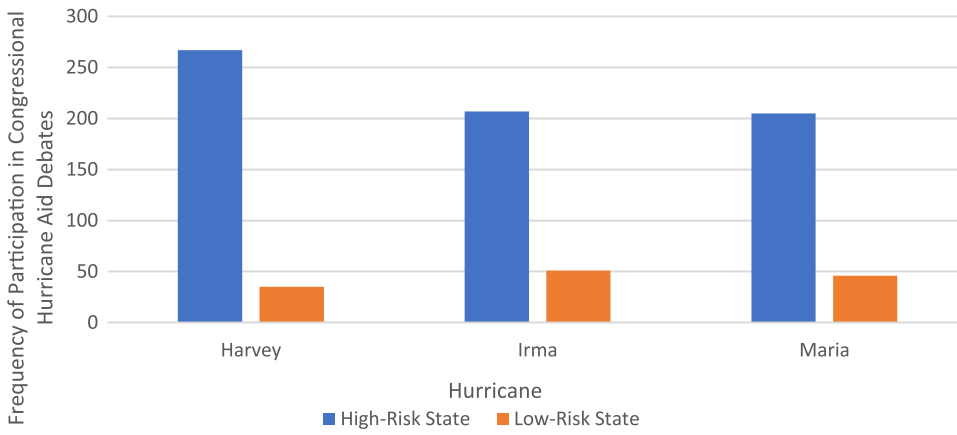

FIGURE 1 Congressional 2017 hurricane aid debate participation by state disaster risk

with high disaster risks and over one-third were states with large Puerto Rican constituencies across each hurricane (see Appendix S1 and Table S1). However, higher-risk disaster areas with higher Puerto Rican constituencies participated more in debates over aid for Maria than high-risk disaster areas with lower Puerto Rican constituencies (see Appendix S1 and Figure 1). When broken down by partisanship, this trend did not hold for Republican states: Republican states with higher-disaster risk and larger Puerto Rican constituencies participated less in debates over aid to Puerto Rico than high-risk disaster areas with lower Puerto Rican constituencies (see Appendix S1 and Figure 2).

Figure 1 shows the participation in congressional aid debates between states deemed at high risk of natural disasters and those with lower risk, according to the US NOAA (NOAA, National Centers for Environmental Information, 2020). NOAA measures risk by spending on disasters as well as disaster frequency. We utilized NOAA data from 1980 to 2019 to identify states with high/low disaster risk. We identified the cutoff for states at low risk of disasters as states with less than or equal to 35 disaster events between 1980 and 2019 that caused at least 1 billion dollars of damage to control for states experiencing increases in major disasters in recent years (California and New Jersey). State disaster risk can be viewed in the NOAA data (NOAA, National Centers for Environmental Information, 2020) and in Appendix S1. The majority of states participating in aid deliberations are located in high-risk disaster areas, with comparably limited representation from low-risk states. This trend holds across deliberations for all three 2017 hurricanes.

Figure 2 shows these divisions by political party. The trend of participation by disaster risk holds across partisan lines, with at least 60% of debates conducted by members in at-risk states. Democrats from lower-risk states participated more frequently than Republicans from low-risk states, though this may be partly due to Democrats from low-risk states with an interest in Puerto Rican affairs due to the presence of sizeable Puerto Rican communities (e.g., Illinois).

Our results demonstrate that the majority of congressional members deliberating over aid to the 2017 hurricanes had incentives related to disaster-risk or constituent interests in their own jurisdiction.

Participation in aid debates were partisan—over Puerto Rico

For our second main result, we find that congressional participation in the debate over the hurricane response was partisan, but only for Hurricane Maria. As shown in Figure 3,

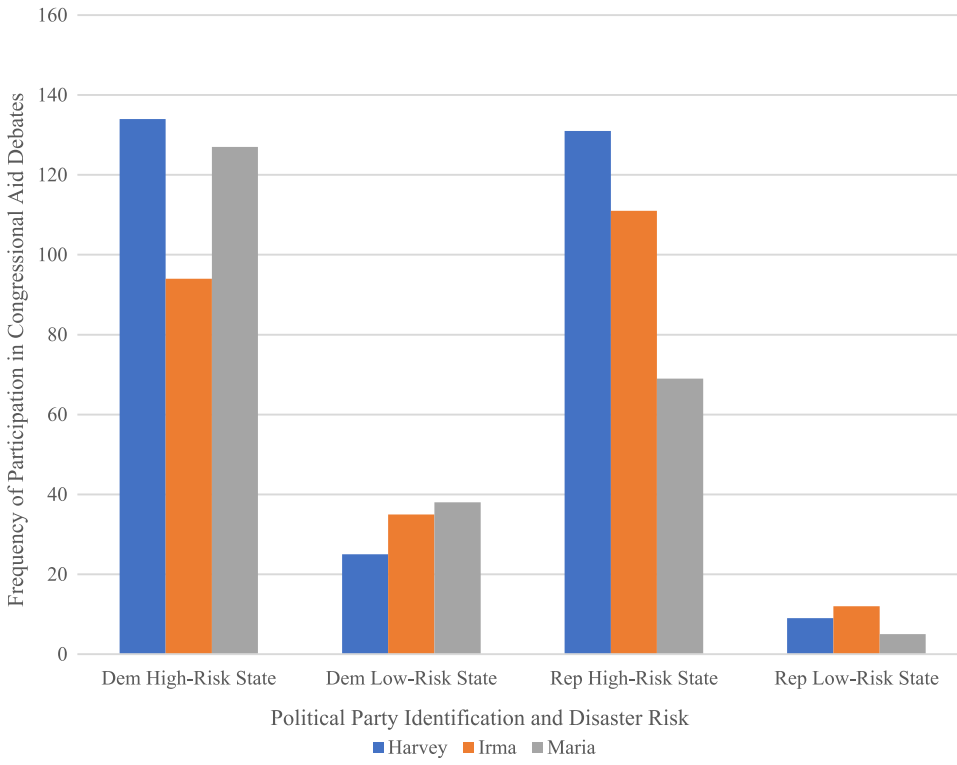

FIGURE 2 Congressional 2017 hurricane aid debate participation by state disaster risk and party ID

Hurricane	Total Mentions	Total Mentions by Republicans	Total Mentions by Democrats
Maria	252	76	166
Irma	259	122	131
Harvey	305	142	160
Total	816	340	457

FIGURE 3 Partisan federal congressional discourse of 2017 hurricanes

findings demonstrate that Democrats and Republicans participated at comparable rates in debates over federal aid to Texas and Florida. Participation by Democrats was slightly higher but comparable to Republican participation despite the fact that Texas and Florida are majority conservative states. More Democratic participation could also be explained by municipal ideologies. Urban areas trend less conservative; both Houston and Tampa, which

were hard-hit by hurricanes in 2017 are both represented by Democrats. The content of statements made in response to Hurricanes Harvey and Irma were also comparable between Democrats and Republicans.

There is a strong partisan disparity in participating in aid deliberations when it came to Puerto Rico and Hurricane Maria. Democrats participated in Puerto Rican aid deliberations at more than twice the rate of Republicans. Democrats and Republicans also spoke about aid to Puerto Rico in very different ways.

Bipartisan assumptions about federal disaster aid distribution in Texas and Florida

Similar to the dynamics in the frequency of participation, the content of aid deliberations diverged between the three hurricanes. Hurricanes Harvey and Irma shared two similarities in the content of speech. First, we find a shared bipartisan logic of federal responsibility for disaster aid relief. This logic was framed in the need for federal action, responsibility, and funding, as well as emphasizing the deservedness of citizens in Texas and Florida affected by the hurricanes to receive federal aid. "Nearly 2 months after the hurricane—the most extreme rain event in US history—many Texans are still waiting for normalcy to return to their debris-littered lawns and their torn-up living rooms, to their daily routines, their workplaces, their children's schools. The waters may have receded, but their troubles have not… These are just a few of the reasons the situation demands ongoing attention, as well as the full extent of government resources," Senator Cornyn (R-Texas).

Figure 4 shows the emphasis of discussions about federal responsibility over other levels of government in discourse across all three hurricane aid debates. Figure 4 shows what actor or jurisdiction was identified as responsible (e.g., the federal government), mood (were debates— positive or negative), and expressions of a need to do more.

Second, the majority of participants who were *not* from states affected by the 2017 hurricanes, regardless of party identification and across deliberations for all three hurricanes, were from states at high risk of natural disasters. These members used their platform to simultaneously advocate for present or past disaster aid for their own communities. For example, many members from California and Oregon took the opportunity to advocate for funding for aid to address wildfire damage. "Weeks after Maria made landfall, millions of American citizens in Puerto Rico are still in desperate need of help. Our neighbors to the south suffer with the aftermath of a massive earthquake. Tornados are a threat across much of the country. In our part of the world, these wildfires are our natural disasters… I hope my colleagues will support the Wildfire Disaster Funding Act," Senator Ron Wyden (D—Oregon). The logic of bipartisan congressional action from nonaffected states in deliberations for aid to Hurricanes Harvey and Irma was to advocate for federal disaster aid but conditioned upon their own constituents' needs.

Divergence did take place, however, across partisan lines in the deliberations over aid to Puerto Rico. Republicans and Democrats both made substantive contributions based on assumptions of federal responsibility to Texas and Florida, while also advocating for their own interests. This was not the case in debates over aid to Puerto Rico.

Partisan differences in advocating for federal aid to Puerto Rico

Democrats in Puerto Rico aid deliberations continued to make strong appeals to the need for federal aid, while also invoking criticism of the Trump administration for their

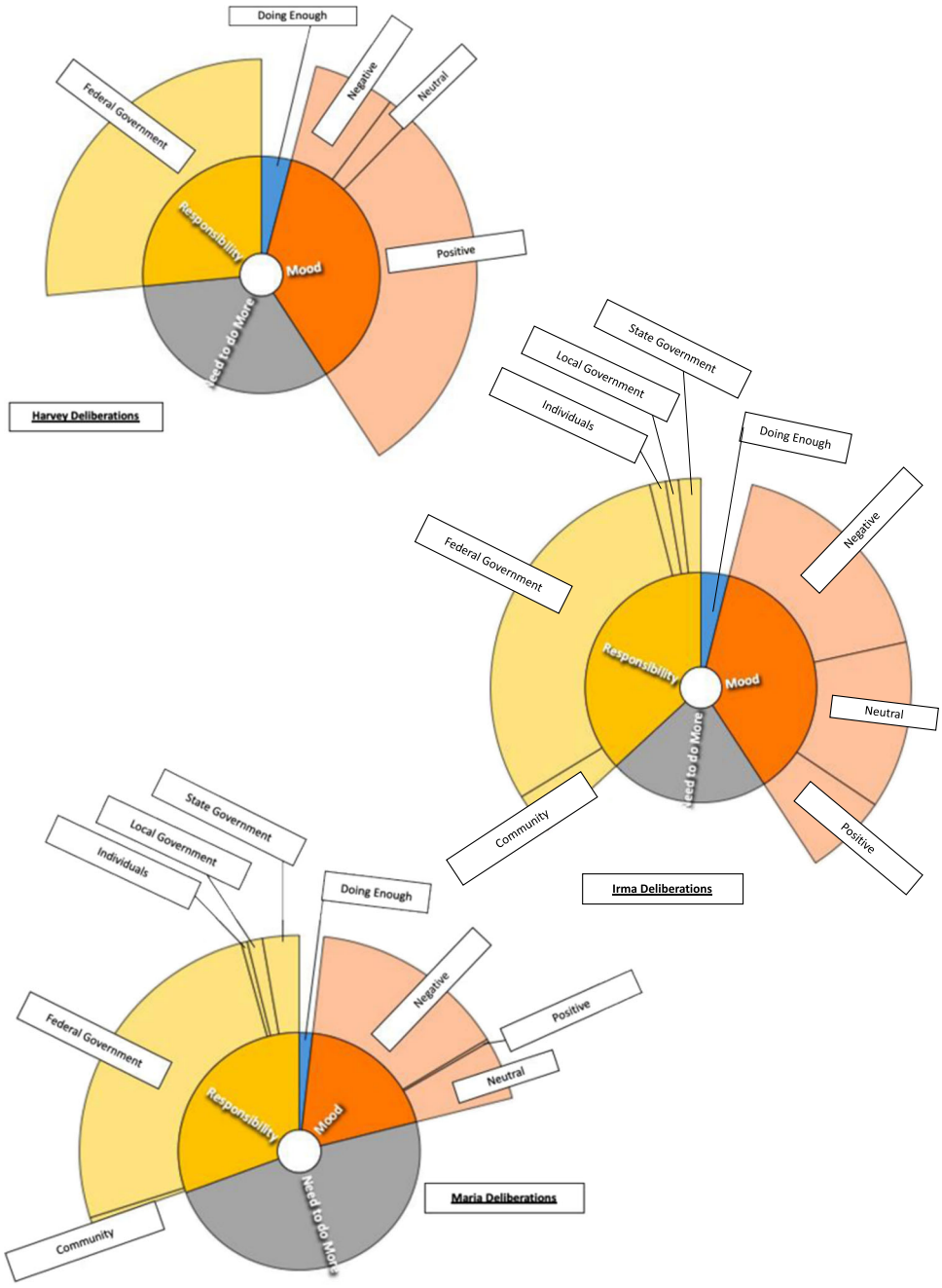

FIGURE 4 Hurricane aid deliberations: Perceptions of responsibility, need for aid, and mood towards response. The figure includes Parent and Child Qualitative Codes. The inner circle is Parent codes or the top-level codes. The outer circles are the Child Codes paired with the corresponding Parent Code. For example, for the code "Responsibility," "Responsibility" is the Parent Code and levels of government (Federal, State, Local) are child or subcodes. The figure displays the prevalence of these overlapping or co-occurring codes for each hurricane. For example, how often does the code for "Federal government" within "Responsibility" occur in a "Mood" that is coded as "Positive"? Perceptions of responsibility include debate discourse over what structures should be responsible for carrying out hurricane responses; Need for aid includes debate discourse over the sufficiency of the response to date in the debates and whether or not there is a need for more aid; Mood towards the response includes whether or not actors in the debates discuss the hurricane response to date as positive, negative, or neutral

response (see Figure 4). Senator Cory Booker (D-NJ) remarked on this discrepancy in response when he said that "Puerto Rico needs US military, disaster, and humanitarian assistance to maintain order and provide security, water, food, and fuel. Puerto Rico needs additional first responders, and they need generators, emergency vehicles, and fuel. Also, Puerto Rico needs to see that its government—the US Government—will respond the way we have for other disasters. There cannot be a double standard when it comes to Americans… Yet I have read so many heartbreaking stories. This shows the lack of urgency, the lack of being present, the lack of being there when we are needed."

When it came to Hurricane Maria, Republicans participated over 50% less than *Democrats*, and over 30% less than their own party in debates over Harvey and Irma. When Republicans did participate, they did so briefly, with limited substantive content. An example is Representative Joe Wilson (R-SC)'s: "In conclusion, God bless our troops, and we will never forget September the 11th in the global war on terrorism. Our prayers are with those in Mexico City, Puerto Rico, and all in the path of Hurricane Maria." Republican speech in response to Hurricane Maria overall echoed familiar "thoughts and prayers" content but lacked substantial narratives for aid. Compared to Texas and Florida, Republicans expressed limited direct statements about the need for federal aid and the deservedness of Puerto Rican Americans. Overall, the qualitative disparities in rhetoric by Congressional Republicans in Hurricane Maria debates compared to Harvey and Irma demonstrate highly partisan support for Puerto Rico disaster aid relief.

DISCUSSION AND CONCLUSIONS

Main findings of this study

We find three main outcomes about how aid debates were prioritized in the 2017 hurricane season. First, congressional debates about hurricane aid to affected areas were not national. Congressional participants in aid deliberations for *all* hurricanes were almost entirely from states that were either at-risk of natural disasters and/or states with large Puerto Rican constituencies (see Appendix S1). Second, congressional participation in the hurricane debates for the mainland states of Texas and Florida was bipartisan, both qualitatively in substance and in the frequency of participation.

The content of Democrats' and Republicans' deliberations over aid to Harvey and Irma are similar. Both congressional Democrats and Republicans shared an assumption of *federal* responsibility for disaster relief and aid. Regardless of party affiliation, we find that congressional members that were unaffected by any of the 2017 hurricanes used debate to advocate for present or past federal disaster aid for their own communities. In addition, in debates over aid to Texas and Florida, both Democrats and Republicans made compelling, public arguments about Texans' and Floridians' need and deservedness of federal disaster aid.

Yet, lastly, debates over aid to Puerto Rico were not bipartisan in either frequency of participation or in qualitative discourse content. Republicans participated over 30% less in disaster aid deliberations for Puerto Rico compared to debates over aid to Texas and Florida. Qualitatively, while Democratic representatives made lengthy statements about the deservedness and need of Puerto Ricans, and rights as American citizens, Republican representatives the majority of the time made comparably short statements that did not address or acknowledge need, deservedness, or citizenship status. This stands in stark comparison to lengthy statements made by Republicans regarding the deservedness and need of Americans in both Texas and Florida.

Main findings of our research in the context of what is already known

The participatory frequencies and the qualitative results together indicate the phenomenon of "disaster gerrymandering" (Maffioli et al., 2017; Platt, 1999; Salkowe & Chakraborty, 2009). Congressional members' participation, and *how* they participate or what they discuss, in disaster aid debates, is related to whether or not the aid deliberations align with electoral interests: their constituent base (who currently or historically experienced natural disasters and require aid) or potential swing voters (e.g., new voters who moved from Puerto Rico to the mainland). The diaspora of Puerto Rico should be considered when analyzing racial resentment and deliberation over aid. Puerto Rican islanders who move to the mainland historically tend to move to more liberal states and urban areas with a greater proportion of Democratic congressional representation, despite the fact that Puerto Ricans living off the mainland trend ideologically conservative (Lecours & Vézina, 2017). Politicians of both parties in states now experiencing high rates of Puerto Rican migration, notably Florida, compete for Puerto Rican votes once they are on the mainland (Gonzalez-Sobrino, 2019; Sutter & Hernandez, 2018).

What this study adds

Our results demonstrate that federal disaster aid debates may be relegated to states at-risk of natural disasters and/or with constituents with direct interest in disaster-affected areas (in this case Puerto Rican Americans) as opposed to a national forum. This localism is paired with partisanship. Compared to the hurricanes on the mainland, Congressional Republicans avoided the topic of Hurricane Maria and overwhelmingly did not make substantive appeals to the needs of constituents in their comments, despite the seemingly apparent mortality and need (Audi et al., 2018; Pasch et al., 2018). Republican constraint in Maria debates is starker when considering they held majorities in the House and Senate in 2017 and a Republican president. While Congressional Republicans' failure to advocate on behalf of Puerto Rican Americans in the frequency of participation and qualitative rhetoric compared to mainland Texas and Florida highlights a deep disparity in partisan logic of disaster aid-appropriations, there is another relevant finding. While failing to broadly participate in aid debates for Puerto Rico, Congressional Republicans by contrast did not publicly utilize racialized rhetoric or publicly display outwardly negative perceptions of Puerto Rican Americans. Here, Congressional Republicans may have been attempting to remain aligned with President Trump while not engaging in outward ethnic antagonism, regardless of potential internally held, not publicly shared perceptions of Puerto Rican Americans. This is consistent with previous research demonstrating that Congressional Republicans face increasing contradictory pressures of not wanting to violate norms of racial equality, while facing electoral incentives to mobilize racially resentful White voters (Mendelberg, 2001), and resolve it with "dog-whistle politics" that purport to be nonracist while actually containing coded racist messages (López, 2013). It might be good news that overt Trumpian racial appeals were seemingly not popular, but the evidence for dog-whistle politics and simple omission of people of color (as policy recipients or intended beneficiaries) from policy debates, Puerto Ricans in this case, is strong.

Limitations of this study

A limitation of our research is that we are constrained in our ability to measure the social construction of racial outgroup members or racial animus in congressional testimonies by

virtue of what is likely to be presented publicly by political elites. However, our findings of the disparity in both debate scope and content related specifically to Puerto Rico when partisan divides did not hold across both Texas and Florida calls such factors into question. Specifically, the notable difference in Republican debate participation for aid to Puerto Rico compared to Texas and Florida, and the comparably limited rhetoric on the deservedness and need of Puerto Rican Americans compared to such arguments for citizens in Texas and Florida illustrates how Republicans, by comparison, did not prioritize aid to Puerto Rico or *neglected* attention to the immense public health crisis and loss of life. Whether driven by partisanship, ethnic antagonism, or the intersection of partisanship and ethnic antagonism (Bartels, 2020; Jardina, 2020), Puerto Rico was treated as an outgroup compared to Texas and Florida in the way Republicans prioritized aid both quantitatively and qualitatively in Congressional aid deliberations. It is notable that mortality rates across the hurricanes are *negatively* related to Republican participation in aid debates—in debate substance and participation frequency. Or put another way, that mortality rates appear irrelevant to Congressional Republican mobilization for public health disasters as reflected in the 2017 hurricanes. Emerging literature on the response to the COVID-19 pandemic demonstrates the persistence of this trend by Republican elected officials to discount loss of life in the public reception of and response to public health emergencies (Singer et al., 2021). New literature on the opioid crisis—a public health emergency that has purported to be bipartisan—also demonstrates limited Republican participation in congressional deliberations over responses to the opioid epidemic, with an emphasis on punitive solutions when they did participate as opposed to evidence-based health policies (Weiss & Zoorob, 2021).

If the federal government cannot mobilize to prevent the deaths of *thousands* of Americans, as in the case of Hurricane Maria in Puerto Rico, and legislators may only be incentivized to participate in debates if they perceive disaster risk to their districts, we should not be surprised if politicians are not held accountable for federal disaster response failures, as we saw in the case of Hurricane Maria. While Puerto Rico faces unique substantive institutional barriers to participation in congressional deliberations, prior research demonstrates that communities of color are less likely to receive sufficient disaster aid (Howell & Elliott, 2019). Thus, the findings of this study may likely extend to low-income states or territories and those with larger populations of racial/ethnic minorities if congressional members perceive risk not to broader constituencies but to "outgroup members" and are, therefore, less likely to advocate for aid, which may be further compounded by partisan divides over aid to such areas (Adolph et al., 2020; Shukla et al., 2019). The logic of localism based on disaster gerrymandering, at least, managed to lead to bipartisan concern for vote-rich states such as Texas and Florida, while partisanship cued silence in frequency and substance by Republicans in legislative discussions of Puerto Rico. Leveraging social movements advocating against entrenched oppression of Black Americans to align with public health aid may further work to mitigate disparities; promote participatory equity in aid deliberations; and hold politicians accountable for failures to protect the health and prevent *widespread deaths* of Americans in public health emergencies (Horowitz, 2020; Nong et al., 2021; Singer et al., 2021).

The effects of resource constraints on disaster aid deliberations, paired with narrow participation by states overall, may be further inhibited by institutional arrangements. Here, Puerto Rico faces the greatest institutional constraints: no congressional voting power. This institutional constraint paired with narrow debate participation and a marginalized population may have exacerbated participatory challenges for Puerto Rico in the Congressional aid deliberations and thus influenced federal aid decision-making. We cannot rewrite the history of an island that is one of the world's longest-standing colonies, but if disaster gerrymandering is as powerful as we find, then according to Puerto Rico greater voting power would likely reduce future barriers to accessibility of requests for disaster aid (Greer et al., 2019; Peón, 2020).

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

Ethical approval was not required for this study because there were no human participants in the research design.

DATA AVAILABILITY STATEMENT

The data underlying this article are publicly available in the Congressional Record at https://www.congress.gov/congressional-record

REFERENCES

Abramowitz, A., & McCoy, J. (2019). United States: Racial resentment, negative partisanship, and polarization in Trump's America. *Annals of the American Academy of Political & Social Science*, *681*(1), 137–156.

Adolph, C., Amano, K., Bang-Jensen, B., Fullman, N., & Wilkerson, J. (2020). Pandemic politics: Timing state-level social distancing responses to COVID-19. *Journal of Health Politics, Policy and Law*, *46*(2), 211–233. https://pubmed.ncbi.nlm.nih.gov/32955556/

Audi, C. et al. (2018). Ascertainment of the estimated excess mortality from Hurricane María in Puerto Rico. Retrieved September 13, 2018, from https://publichealth.gwu.edu/sites/default/files/downloads/projects/PRstudy/Acertainment%20of%20the%20Estimated%20Excess%20Mortality%20from%20Hurricane%20Maria%20in%20Puerto%20Rico.pdf

Bartels, L. M. (2020). Ethnic antagonism erodes Republicans' commitment to democracy. *Proceedings of the National Academy of Sciences of the United States of America*, *117*(37), 22752–22759. https://www.pnas.org/content/117/37/22752

Blake, E. S., & Zelinsky, D. A. (2018). National Hurricane Center Tropical Cyclone Report: Hurricane Harvey. https://www.nhc.noaa.gov/data/tcr/AL092017_Harvey.pdf

Brown, E. S. (1950). *The territorial delegate to Congress: And other essays*. G. Wahr Publishing Company.

Cangialosi, J. P., Latto, A. S., & Berg, R. (2018). National Hurricane Center Tropical Cyclone Report: Hurricane Irma. Retrieved April 17, 2018, from https://www.nhc.noaa.gov/data/tcr/AL112017_Irma.pdf

Cecchine, G., Morgan, F. E., Wermuth, M. A., Jackson, T., Gereben Schaefer, A., & Stafford, M. (2013). The U.S. military response to the 2010 Haiti earthquake. Retrieved March 17, 2020, from https://www.rand.org/content/dam/rand/pubs/research_reports/RR300/RR304/RAND_RR304.pdf

Congressional Research Service. (2021). The disaster relief fund: Overview and issues. Retrieved June 28, 2021, from https://crsreports.congress.gov/product/pdf/R/R45484

Craig, M. A., Rucker, J. M., & Richeson, J. A. (2018). Racial and political dynamics of an approaching 'Majority-Minority' United States. *Annals of the American Academy of Political and Social Science*, *677*(1), 204–214 https://psycnet.apa.org/record/2018-22709-017

Cramer, K. J. (2016). The politics of resentment: Rural consciousness in Wisconsin and the rise of Scott Walker. University of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/P/bo22879533.html

Cruz-Cano, R., & Mead, E. L. (2019). Causes of excess deaths in Puerto Rico after Hurricane Maria: A time-series estimation. *American Journal of Public Health: e1–3*, *109*, 1050–1052. https://ajph.aphapublications.org/doi/10.2105/AJPH.2019.305015

Duany, J. (2003). Nation, migration, identity: The case of Puerto Ricans. *Latino Studies*, *1*(3), 424–444. https://link.springer.com/article/10.1057/palgrave.lst.8600026

Einstein, K. L., Glick, D. M., & Palmer, M. (2019). *Neighborhood defenders: Participatory politics and America's housing crisis*. Cambridge University Press. https://www.cambridge.org/core/books/neighborhood-defenders/0677F4F75667B490CBC7A98396DD527A

Fenno, R. F. (1978). *Home style: House members in their districts*. Harper Collins.

Gonzalez-Sobrino, B. (2019). Who's in conflict? Racialization of Puerto Ricans in relation to other Latinxs in the New York Times, 2010–2015. *Ethnic and Racial Studies*, *42*(9), 1419–1436. https://www.tandfonline.com/doi/abs/10.1080/01419870.2018.1501504

Greer, S. L., & Singer, P. M. (2017). The United States confronts Ebola: Suasion, executive action, and fragmentation. *Health Economics, Policy and Law*, *12*(1), 81–104.
Greer, S. L., Singer, P. M., Willison, C. E., & Creary, M. S. (2019, April 5). Democracy is a public health policy. Puerto Rico and the response to Hurricane Maria. The British Medical Journal [Blog]. https://blogs.bmj.com/bmj/2019/04/04/democracy-is-a-public-health-policy-puerto-rico-and-the-response-to-hurricane-maria/
Groga n, C. M., & Park, S. (2017). The racial divide in state Medicaid expansions. *Journal of Health Politics, Policy and Law*, *42*(3), 539–572
Holtzman, A. (1986). Empire and representation: The U.S. Congress. *Legislative Studies Quarterly*, *11*(2), 249.
Horowitz, A. (2020). *Katrina: A history,* 1915–2015. Harvard University Press. https://www.hup.harvard.edu/catalog.php?isbn=9780674971714
Howell, J., & Elliott, J. R. (2019). Damages done: The longitudinal impacts of natural hazards on wealth inequality in the United States. *Social Problems*, *66*(3), 448–467. https://academic.oup.com/socpro/article/66/3/448/5074453
Huber, J. D., & Shipan, C. R. (2002). *Deliberate discretion?: The institutional foundations of bureaucratic autonomy*. Cambridge University Press. https://www.cambridge.org/core/books/deliberate-discretion/F956D78FBE9D97375F3560458862F34E
Huber, J. D., & Shipan, C. R. (2011). Politics, delegation, and bureaucracy, In *The Oxford handbook of political science*. Oxford University Press. http://oxfordhandbooks.com/view/10.1093/oxfordhb/9780199604456.001.0001/oxfordhb-9780199604456-e-041
Jardina, A. (2019). *White identity politics*. Cambridge University Press. https://www.cambridge.org/core/books/white-identity-politics/5C330931FF4CF246FCA043AB14F5C626
Jardina, A. (2020). In-group love and out-group hate: White racial attitudes in contemporary U.S. elections. *Political Behavior*, 1–25. https://doi.org/10.1007/s11109-020-09600-x
Kroll, A., & Moynihan, D. P. (2020). Tools of control? Comparing Congressional and presidential performance management reforms. *Public Administration Review*, *81*(4), 599–609. https://onlinelibrary.wiley.com/doi/full/10.1111/puar.13312
Lecours, A., & Vézina, V. (2017). The politics of nationalism and status in Puerto Rico. *Canadian Journal of Political Science*, *50*(4), 1083–1101.
Lewallen, J., & Sparrow, B. H. (2018). Nothing on the floor: Congress, the territorial delegates, and political representation. *Political Science Quarterly*, *133*(4), 729–752. https://onlinelibrary.wiley.com/doi/full/10.1002/polq.12833
López, I. H. (2013). *Dog whistle politics: Strategic racism, fake populism, and the dividing of America*. Oxford University Press. https://global.oup.com/academic/product/dog-whistle-politics-9780190841805?cc=us%26lang=en%26
Maffioli, E. M. (2017). The political economy of health epidemics: Evidence from the Ebola outbreak. NEUDC APPAM. Retrieved April 27, 2018, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3383187
Mendelberg, T. (2001). *The race card: Campaign strategy, implicit messages, and the norm of equality*. Princeton University Press. https://press.princeton.edu/books/paperback/9780691070711/the-race-card
Michaud, J., & Kates, J. (2017). Public health in Puerto Rico after Hurricane Maria. Kaiser Family Foundation. Issue Brief. Retrieved May 6, 2018, from http://files.kff.org/attachment/Issue-Brief-Public-Health-in-Puerto-Rico-after-Hurricane-Maria
Michener, J. (2018). *Fragmented Democracy* Fragmented *Democracy*. Cambridge University Press. https://www.cambridge.org/core/books/fragmented-democracy/9A69DF1567190EF38883D4766EBC0AAC
Nachlis, H. (2018). Pockets of weakness in strong institutions: Post-marketing regulation, psychopharmaceutical drugs, and medical autonomy, 1938–1982. *Studies in American Political Development*, *32*(2), 257–291.
National Oceanographic and Atmospheric Administration, National Centers for Environmental Information. (2020, January 6). *Billion-dollar weather and climate disaster*. https://www.ncdc.noaa.gov/billions/mapping
Newman, B. J., Shah, S., & Collingwood, L. (2018). Race, place, and building a base. *Public Opinion Quarterly*, *82*(1), 122–134.
Nong, P., Lopez, W., Fleming, P., Anderson, R. E., & Creary, M. (2021, May 27). Structural racism is not an exemption from accountability. Health Affairs [Blog]. Retrieved June 15, 2021, from https://www.healthaffairs.org/do/10.1377/hblog20210526.665071/full/
Oliver, A. J., & Reeves, A. (2015). The Politics of Disaster Relief. In R. Scott, & S. Kosslyn (Eds.), *Emerging trends in the social behavior sciences*. John Wiley & Sons. https://andrewreeves.org/papers/disasters-review.pdf
Orengo-Aguayo, R., Stewart, R. W., de Arellano, M. A., Suárez-Kindy, J. L., & Young, J. (2019). Disaster exposure and mental health among Puerto Rican youths after Hurricane Maria. *JAMA Network Open*, *2*(4), e192619
Pasch, R. J., Penny, A. B., & Berg, R. (2018, April 16). National Hurricane Center tropical cyclone report: Hurricane Maria. https://www.nhc.noaa.gov/data/tcr/AL152017_Maria.pdf

Peón, H. (2020). It is 2020, and Puerto Rico is still a colony. Harvard Political Review. Retrieved June 8, 2021, from https://harvardpolitics.com/puerto-rico-colony/

Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology*, *49*, 65–85.

Platt, R. H. (1999). *Disasters and democracy: The politics of extreme natural events*. Island Press.

Reeves, A. (2011). Political disaster: Unilateral powers, electoral incentives, and presidential disaster declarations. *Journal of Politics*, *73*(4), 1142–1151.

Salkowe, R. S., & Chakraborty, J. (2009). Federal disaster relief in the U.S.: The role of political partisanship and preference in presidential disaster declarations and turndowns. *Journal of Homeland Security and Emergency Management*, *6*(1), 28. https://www.researchgate.net/publication/39731191_Federal_Disaster_Relief_in_the_US_The_Role_of_Political_Partisanship_and_Preference_in_Presidential_Disaster_Declarations_and_Turndowns

P. R. Shukla, J. Skea, R. Slade, R. van Diemen, E. Haughey, J. Malley, M. Pathak, & J. Portugal Pereira (Eds.). (2019). Technical Summary, 2019, *Climate change and land: An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. Intergovernmental Panel on Climate Change, United Nations. https://www.ipcc.ch/site/assets/uploads/sites/4/2019/11/03_Technical-Summary-TS.pdf

Singer, P. M., Willison, C. E., & Greer, S. L. (2020). Infectious disease, public health, and politics: United States response to Ebola and Zika. *Journal of Public Health Policy*, *41*, 1–11. https://doi.org/10.1057/s41271-020-00243-0

Singer, P. M., Willison, C. E., Moore-Petinak, N., & Greer, S. L. (2021). Anatomy of a failure: COVID-19 in the United States, *Coronavirus Politics: The Comparative Politics and Policy of COVID-19*. University of Michigan Press. https://www.press.umich.edu/pdf/9780472038626-toc.pdf

Sledge, D., & Thomas, H. F. (2019). From disaster response to community recovery: Nongovernmental entities, government, and public health. *American Journal of Public Health*, *109*(3), 437–444.

Smith, J. Y., & Sow, M. M. (2019). Access To e-prescriptions and related technologies before and after Hurricanes Harvey, Irma, And Maria. *Health Affairs 38(2)*, *38*, 205–211. http://www.healthaffairs.org/doi/10.1377/hlthaff.2018.05247

Soss, J., Fording, R. C., & Schram, S. (2011). *Disciplining the poor: Neoliberal paternalism and the persistent power of race*. University of Chicago Press. https://press.uchicago.edu/ucp/books/book/chicago/D/bo12120768.html

Sparrow, B. (2006). *The insular cases and the emergence of American empire*. University Press of Kansas. https://www.google.com/books/edition/The_Insular_Cases_and_the_Emergence_of_A/q9SQAAAAMAAJ?hl=en%26gbpv=0%26bsq=bartholomewsparrow

Stramp, N. R. (2013). The contemporary presidency: Presidents profiting from disasters: Evidence of presidential distributive politics. *Presidential Studies Quarterly*, *43*(4), 839–865. https://www.proquest.com/docview/1540956563

Sutter, J. D., & Hernandez, S. (2018, May 9). 'Exodus' from Puerto Rico: A visual guide. CNN. https://www.cnn.com/2018/02/21/us/puerto-rico-migration-data-invs/index.html

Sylves, R., & Búzás, Z. I. (2007). Presidential disaster declaration decisions, 1953–2003: What influences odds of approval? *State and Local Government Review*, *39*(1), 3–15.

Trounstine, J. (2019). *Segregation by design: Local politics and inequality in American cities*. Cambridge University Press. https://www.cambridge.org/core/books/segregation-by-design/9CEF629688C0C684EDC387407F5878F2

United States Congress. (2020, July 8). Congressional Record. https://www.congress.gov/congressional-record

United States Government Accountability Office. (2018, September 17). 2017 Hurricanes and wildfires initial observations on the federal response and key recovery challenges. *Report to Congressional addressees*. (Report No. GAO-18-472). https://www.gao.gov/assets/700/694231.pdf

Valentino, N. A., Brader, T., & Jardina, A. E. (2013). Immigration opposition among U.S. Whites: General ethnocentrism or media priming of attitudes about Latinos? *Political Psychology*, *34*(2), 149–166

Weaver, V. M. (2007). Frontlash: Race and the development of punitive crime policy. *Studies in American Political Development*. *21*(2), 230–265. https://www.cambridge.org/core/product/identifier/S0898588X07000211/type/journal_article

Weiss, M., & Zoorob, M. (2021). Political frames of public health crises: Discussing the opioid epidemic in the U.S. Congress. *Social Science & Medicine*, *281*, 114087. https://doi.org/10.1016/j.socscimed.2021.114087

Willison, C. E., Singer, P. M., Creary, M. S., & Greer, S. L. (2019). Quantifying inequities in US federal response to hurricane disaster in Texas and Florida compared with Puerto Rico. *BMJ Global Health*, *4*(1):e001191.

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Sweden's coronavirus strategy: The Public Health Agency and the sites of controversy

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Abstract

In contrast to the vast majority of Western countries, Sweden left large segments of the society open instead of imposing a lockdown to combat the spread of the coronavirus. As a result, the Swedish COVID-19 measures, largely devised by its expert agency on health, garnered widespread international attention. Despite the global interest in the corona strategy of the Public Health Agency of Sweden (PHAS), there are currently no systematic studies on their COVID-19 policy. The present investigation focuses on the controversies that have characterized PHAS' work with reference to risk assessments, facemasks, voluntarism, testing, and the protection of the elderly during the pandemic. Overall, this inquiry demonstrates that PHAS' risk assessments were initially overly optimistic and their facemask recommendations in conflict with large segments of the scientific community for an extensive period. Yet, their voluntary measures worked moderately well. In their testing, PHAS did not manage to deliver on their promises in time, whereas several measures implemented to protect the elderly were deemed inadequate and late.

Key Points

- The Public Health Agency of Sweden (PHAS) was initially overly optimistic in its risk assessments regarding the spread of COVID-19 within the country.
- The facemask recommendations of PHAS was in conflict with large segments of the scientific community for an extensive period.

[Article updated June 9, 2021 after first online publication: Four small typos were corrected.]

- PHAS did not manage to deliver 50,000–100,000 coronavirus tests per week as promised in a timely fashion.
- Several measures that the PHAS implemented to protect the elderly were deemed inadequate by the Corona Commission in Sweden.

KEYWORDS

controversy, COVID-19, facemasks, pandemic, public health agency, risk, Sweden, testing, the elderly, voluntarism

INTRODUCTION

Sweden pursued a rather unique strategy in tackling the coronavirus pandemic. It allowed bars, restaurants, schools, and shops to stay open when most Western countries opted for a lockdown. According to Oxford's Government Stringency Index, Sweden had the most lenient COVID-19 policy possible with a score of zero up until March 8, 2020 (Hale et al., 2020).[1] This approach received both international praise and criticism. Dr. Mike Ryan, director of the World Health Organization (WHO), stated that "if we are to reach a 'new normal', in many ways Sweden represents a future model" (Russell, 2020). Conversely, the former President of the United States, Donald Trump, tweeted that "despite reports to the contrary, Sweden is paying heavily for its decision not to lockdown. As of today (April 30, 2020), 2462 people have died there, a much higher number than the neighboring countries of Norway (207), Finland (206), or Denmark (443)" (Bowden, 2020).[2]

Although the merits of the Swedish coronavirus strategy have been hotly debated (Campos-Mercade et al., 2021; Drefahl et al., 2020; Irwin, 2020; Kavaliunas et al., 2020; Pierre, 2020; Yan et al., 2020), there are currently no comprehensive examinations of the policies of its public health agency. This is a major oversight as the Public Health Agency of Sweden (PHAS; Folkhälsomyndigheten in Swedish) has been central in devising the country's response to the COVID-19 pandemic. The present inquiry helps to fill this important gap in the literature by assessing some of the most controversial and debated issues concerning PHAS' corona efforts. These include PHAS' risk assessments, its policy on facemasks, voluntarism, testing, and the protection of the elderly.

This article, therefore, aims to address these topics through a careful in-depth analysis of primary sources by PHAS, WHO, European Centre for Disease Prevention and Control (ECDC) as well as scholarly publications and media reports, in which information regarding PHAS' COVID-19 policies has been disseminated. To ensure the timely completion of the article, material published after February 17, 2021 will not be considered here. An evaluation of the vast array of data up until this date reveals that PHAS' risk assessments were overly positive between January 31, 2020 and March 10, 2020. In addition, the scientific community increasingly challenged PHAS' stance against facemasks until the agency altered its decision and recommended the general use of facemasks under specific conditions. These new recommendations were introduced on January 7, 2021. Yet, the agency's voluntary approach has been moderately successful. Finally, PHAS failed to deliver sufficient and agreed quantities of tests on time and their policy concerning the elderly has been considered insufficient in several aspects.

These arguments are developed at length in the forthcoming sections. The first section takes a closer look at PHAS as an agency and its mandate during the COVID-19 pandemic. The ensuing five sections are devoted to the analysis of the controversies concerning PHAS' risk assessments, facemask policy, voluntarism, testing and the protection of the elderly.

The article's concluding section summarizes the main findings and examines the implications. It is, however, appropriate at this point to contextualize the forthcoming discussions by taking a closer look at PHAS and its role during the ongoing crisis.

PHAS AND ITS MANDATE

PHAS was established in 2014 through a merger between the Swedish Institute for Communicable Disease Control (Smittskyddsinstitutet in Swedish) and The Swedish National Institute of Public Health (Folkhälsoinstitutet in Swedish) (Folkhälsomyndigheten, 2018b). PHAS is an expert government agency with the overall responsibility for communicable disease control in Sweden. The agency describes itself as an "expert authority [that seeks to] promote health, prevent illness and protect against various forms of health threats" (Folkhälsomyndigheten, 2018a).

Although PHAS is accountable to the Ministry of Health and Social Affairs (Folkhälsomyndigheten, 2018b) and falls under the responsibility of its minister, Lena Hallengren, the Swedish constitution prohibits ministerial rule. In practice, this means that Hallengren is not allowed to interfere in the individual decisions and daily operations of PHAS. In turn, PHAS is obliged to follow the laws and regulations imposed by the government but may apply them autonomously. PHAS does not have the authority to pass laws and can only provide guidelines and recommendations on how various actors should behave within its area of expertise. As such, the Swedish government has no legal obligation to follow PHAS' instructions and may disregard their advice (IFFS, 2020).

Yet, the Swedish government has abided by PHAS' COVID-19 recommendations and the agency has been afforded a central role during the ongoing pandemic. Even compared to neighboring countries, such as Norway and Denmark, Sweden followed the suggestions of its Public Health Agency more closely. For instance, when the Public Health Agencies of the aforementioned Nordic nations advised against the closure of schools, the Norwegian and Danish governments decided to close them nevertheless (Edwards, 2020). In contrast, the Swedish government acted in line with PHAS recommendations.

The Swedish Prime Minister, Stefan Löfven, publicly declared that the government generally heeds the advice and guidelines of its expert agencies since they possess deep knowledge concerning these issues (Eriksson, 2020). Similarly, Hallengren stated that they relied on the assessments of expert agencies in general and, those of PHAS in particular, to combat the coronavirus pandemic (DN-TT, 2020). Johan Carlsson, Director General at PHAS, reiterated these sentiments, confirming the agency's directive and advisory responsibility for questions concerning COVID-19 (Örstadius et al., 2020). It is thus apparent that PHAS had a strong mandate during the pandemic. Yet, it is important to note the contention of many analysts that the Swedish government had lost some of its faith in the agency by November 2020, and PHAS' influence decreased as a result (Lönegård, 2020; Rayman, 2020). This was long after PHAS conducted its risk assessment regarding the potential spread of the coronavirus in Sweden, which is the subject of the next section.

PHAS AND RISK ASSESSMENT

Risk assessments seek to identify potential hazards, estimate the likelihood of potential effects on individuals and provide an indication of the degree of harm or damage likely to occur in case of exposure to the hazard (Health and Safety Executive, 2014). Should the risk of a public health concern be sufficiently high, appropriate measures would need to be identified to mitigate potential effects. This is because the main purpose of risk assessments

is to provide the most accurate analysis possible to enable an informed course of action that minimizes the threat to the population posed by the hazard (Asante-Duah, 2017, ch. 5). In the case of PHAS, its COVID-19 risk assessments have been a site of controversy and been deemed "inflexible," "extreme" (Jansson, 2020), and "wrong," (TT, 2020a) by critics (see also, Elgh, 2020; von Hall, 2020b; Rocklöv et al., 2020).

In this article, it is PHAS' risk assessments regarding the likelihood of the spread of the coronavirus in Sweden that will be evaluated. For the purposes of assessment, the agency has adopted a five-point scale that ranges from "very low," "low," "moderate'," "high," to "very high." Further elaboration of these scales are not provided in PHAS' COVID-19 risk assessment reports (Folkhälsomyndigheten, 2020j, 2020n). WHO (2020k) does however provide this information in their documents as illustrated in the table below.

Very low	Overall risk of transmission and further spread of COVID-19 is considered very low.
Low	Overall risk of transmission and further spread of COVID-19 is considered low.
Moderate	Overall risk of transmission and further spread of COVID-19 is considered moderate.
High	Overall risk of transmission and further spread of COVID-19 is considered high.
Very high	Overall risk of transmission and further spread of COVID-19 is considered very high.

To ensure a fair examination, the accuracy of PHAS' risk assessments will only be judged against information that was known at the time, as the expert agency lacked the benefit of hindsight when publishing their risk assessments. As PHAS states that their evaluations are based on information from WHO, ECDC, and the reported Swedish cases, their risk assessments will be appraised against this data (Folkhälsomyndigheten, 2020b).

On January 16, 2020, PHAS reported that a new coronavirus had been discovered. Though the agency assessed the risk of the infection spreading to Sweden as "very low," the lowest level on its five-point scale risk assessment evaluation (Folkhälsomyndigheten, 2020j, 2020n), this assessment later emerged as inaccurate. This is apparent as the first confirmed case of COVID-19 in Sweden was discovered on January 31, 2020, and a year later 566,957 people or approximately 5.5% of the Swedish population had been infected by the virus (Dahl, 2021; Folkhälsomyndigheten, 2020a).

Yet, the erroneous infection risk assessment of PHAS on January 16, 2020 is understandable. Four days before, the Chinese government had informed the WHO "that there is no clear evidence that the virus passes easily from person to person" and that COVID-19 had not been detected outside of Wuhan (WHO, 2020f). Hence, PHAS may simply have relied on this data and thereby deemed infection spread to Swedish nationals unlikely. It was not until January 20, 2020 that China confirmed that the coronavirus was contagious, after which an additional 10 days passed before the WHO declared a global emergency (Kuo, 2020). PHAS' infection spread assessment on January 16, 2020 was, therefore, not unreasonable in light of the information known at the time.

On January, 30, 2020, WHO released a statement suggesting that the coronavirus might spread across the world. "All countries should be prepared for containment, including active surveillance, early detection, isolation and case management, contact tracing and prevention of onward spread of 2019-nCoVinfection, and to share full data with WHO" (WHO, 2020h). The following day, Karin Tegmark Wisell, head of the microbiology department at PHAS, stated that they currently considered the risk of COVID-19 dissemination within the country to be "very low" based on the experiences of other countries (Folkhälsomyndigheten, 2020a).

The risk assessment was made despite WHO's statement the previous day, Chinese confirmation of human-to-human transmission of COVID-19 11 days earlier, and recent detection of the first case in Sweden (Lee & Kelland, 2020). Additionally, reports of limited human-to-human transmission of COVID-19 outside of China had appeared by that time. WHO announced that 20 countries had been infected by the coronavirus on January 31 2020, and set their COVID-19 risk assessment to "high" at the global level (WHO, 2020l, 2020a). The faulty infection risk assessment of PHAS by January 31 can, thus, no longer be explained by the absence of information.

Instead, it mirrors the most optimistic assessments of ECDC. On January 31, 2020, ECDC estimated that human-to-human transmission within the EU would be "very low" to "low," "if cases were detected early and appropriate infection prevention and control (IPC) practices were implemented." Yet, ECDC warned that late detection of the virus "without the application of appropriate infection prevention and control measures would result in the "high" likelihood of human-to-human transmission". They also considered the potential impact of a coronavirus outbreak to be "high" (ECDC, 2020c). It is, therefore, apparent that PHAS' COVID-19 risk assessment on January 31 only coincided with the best-case scenario envisaged by ECDC.

On February 25 2020, PHAS finally raised its infection risk assessment regarding the general dissemination of coronavirus within the country from "very low" to "low." They posited that their new appraisal was mainly based on data from WHO and ECDC regarding the global spread of the coronavirus (Folkhälsomyndigheten, 2020f). On the same day, WHO had reported 80,239 confirmed cases of corona infection around the world with 2700 casualties and 34 affected countries. Their global risk assessment for COVID-19 was set as "high" (WHO, 2020b). ECDC estimated the risk of COVID-19 infection for people in the EU as "low" to "moderate" on February 23, 2020 (ECDC, 2020d). Hence, even though PHAS' claims that they mainly base their assessment on information from WHO and ECDC regarding the global spread of the coronavirus, their risk assessment only coincides with the most optimistic appraisal of ECDC on this occasion as well.

On March 2, 2020, PHAS raised its general infection risk assessment of coronavirus within the country once again, this time, from "low" to "moderate" (Folkhälsomyndigheten, 2020n). The WHO report from that day identifies 88,948 confirmed cases of COVID-19 infections worldwide, with 3043 deaths and 64 infected countries. By that time, the WHO global risk assessment for the coronavirus had reached its peak—"very high" (WHO, 2020c). ECDC evaluated the risk associated with COVID-19 in the EU as "moderate" to "high" on the same day (ECDC, 2020b). Once again, PHAS' risk assessment corresponded with the most benign scenario predicted by ECDC.

At this point, one may wonder why PHAS consistently underestimated the risk of a general coronavirus spread in Sweden. Available evidence indicates that this may be because they operated under an erroneous assumption. In an interview published on March 7, 2020, the state epidemiologist of PHAS, Anders Tegnell, suggested that COVID-19 is not a classic pandemic causing widespread illness simultaneously across the world (Falkirk, 2020). On that day, 94 countries had reported cases of COVID-19 and the number of infected people globally had surpassed 100,000 (WHO, 2020d). Instead, Tegnell predicted that the virus would "jump" between different "hot spots" such as Wuhan and Northern Italy (Falkirk, 2020). This mistaken belief could explain why PHAS' assessment regarding the general spread of the coronavirus in Sweden was excessively optimistic during this period.

In contrast, Björn Olsen, professor of infectious medicine at Uppsala University in Sweden, had reportedly predicted a coronavirus pandemic as early as mid-January 2020 (Blume, 2020). On February 23, 2020, Olsen also criticized PHAS for toning down the risks of a general coronavirus spread in Sweden and a full-fledged global pandemic. Tegnell dismissed the criticism at the time (Israelsson, 2020). Yet on March 10, 2020, PHAS would essentially confirm Olsen's concerns as it immediately raised its risk assessment from

"moderate," to the highest level possible, "very high" (Folkhälsomyndigheten, 2020b). This coincided with WHO's global risk assessment for the day, whereas the ECDC risk assessment is "high," in their report closest to the date, published on March 12, 2020 (ECDC, 2020a; WHO, 2020e). It was, thus, not until March 10, 2020 that PHAS' risk assessment matched that of WHO. As has been demonstrated, their previous risk assessments, from January 31, 2020 and onwards, had been significantly lower than WHO's, aligned with the most optimistic evaluations of ECDC. Below is a summary of PHAS' risk assessment vis-à-vis WHO and ECDC.

	Risk assessment regarding the spread of COVID-19				
Actor	**(16-01-2020)**	**(31-01-2020)**	**(25-02-2020)**	**(02-03-2020)**	**(10-03-2020)**
PHAS (Sweden)	"Very low" (Inaccurate but understandable)	"Very low" (Inaccurate)	"Low" (Inaccurate)	"Moderate" (Inaccurate)	"Very high" (Accurate)
ECDC (EU)	Not available for this date	"Very low" to "low"	Not available for this date	"Moderate" to "high"	Not available for this date
WHO (World)	Not available for this date	"High"	"High"	"Very high"	"Very high"

Overall, this investigation reveals that PHAS' initial, inaccurate risk assessment on January 16, 2020 may be considered understandable due to the limited and erroneous information available at the time. Nevertheless, their subsequent underestimations regarding the risk of a general spread of coronavirus in Sweden up until March 10, 2020 cannot be explained by the lack of data. Other experts such as Olsen did, after all, produce more accurate risk assessments regarding Sweden in this period. Instead, PHAS' overly benign risk assessments seem to have been rooted in an erroneous assumption about the way in which COVID-19 spreads, as we have seen. The convictions that informed PHAS' facemask policy and its congruence with the available evidence are discussed in the next section.

PHAS AND FACEMASKS

The purpose of facemasks is to protect users against infections and limit the transmission of virus to others.[3] Yet, PHAS insisted that the scientific evidence supporting the effectiveness of facemasks is weak. As such, they claimed that facemask use was unnecessary in everyday life to protect oneself and others from COVID-19. Moreover, they asserted that the general use of facemasks may even be counterproductive as slip downs and facemask-induced itching may cause people to touch their mouths, eyes or noses more frequently, thereby increasing the risk of infection. Alternatively, it may encourage those with mild symptoms to go out in the public and potentially infect others (Folkhälsomyndigheten, 2020d).

PHAS' position on facemasks has been a major site of controversy, where critics have called PHAS' line "a serious mistake" (von Hall, 2020a), "inconsistent" (Pihl, 2020), and "very strange" (Expressen TV, 2020) (see also, Cederblad, 2020; Olsson, 2020; Westin, 2020). Hence, this section is devoted to the hotly debated topic of facemasks. As PHAS is supposed to base their recommendations on national and international expert knowledge, the present investigation will be conducted in line with this obligation (Folkhälsomyndigheten, 2020k).

An examination of this issue reveals that PHAS' initial position regarding facemasks stood in contrast to the updated guidance of WHO from June 5, 2020. On this date, its Director-General stated that "in light of evolving evidence, WHO advises that governments should encourage the

general public to wear masks where there is widespread transmission and physical distancing is difficult, such as on public transport, in shops or in other confined or crowded environments" (WHO, 2020i). In response, Tegnell asserted that the Swedish strategy posits that those who are ill should stay at home rather than going out with a facemask and that the prospects of maintaining physical distance in Sweden are good (TT, 2020e). In other words, WHO's recommendations were deemed unapplicable to the Swedish context.

Tegnell's two-fold argument needs scrutiny. First, as PHAS itself stated on its website, reports suggest that people without symptoms have infected other people (Folkhälsomyndigheten, 2020g). As early as April 8, 2020, Tegnell himself claimed that studies had repeatedly shown that a very large proportion of those infected with the coronavirus, potentially as many as nine out of ten, show few or no symptoms at all (Haddad, 2020). If these individuals are unaware that they have COVID-19 and may infect others, would it not be sensible for them to wear face masks when they are in public? Tegnell rejected this hypothesis, contending facemask use for this purpose to be an insignificant factor in the spread of the infection (Cederblad, 2020).

Tegnell's second argument regarding the Swedish context and its favorable conditions for maintaining physical distance may be true in theory. Certainly, Sweden is not a densely populated country. However, that does not mean there are no confined spaces in Sweden and that crowds never form. In fact, Tegnell himself has expressed concerns regarding crowd gatherings in Sweden in general and Stockholm in particular (Holmgren, 2020). Consequently, it is difficult to rationalize Tegnell's arguments against the Swedish population wearing facemasks in confined or crowded spaces.

PHAS' response to such criticism was to argue that there is a lack of empirical evidence to support claims of facemask efficacy. Tegnell initially maintained that only two older facemask studies from the SARS epidemic had been conducted and that these provided insufficient scientific support (Cederblad, 2020). Yet, the number of studies that support the use of facemasks have increased over time. For instance, on June 1, 2020, a "systematic review of 172 studies (44 comparative studies; $n = 25{,}697$ patients) on COVID-19, SARS, and MERS" found that facemasks offer protection against infection by COVID-19 (Chu et al., 2020, 1982). More recently, a literature review of 25 published articles conducted by Karolinska Institute in Sweden and McMaster University in Canada demonstrated that the protection afforded by facemasks is "more than sufficient to recommend their use, particularly given the difficulty in controlling the ongoing pandemic" (Karolinska Institutet, 2020). Tegnell labeled this article 'theoretical', emphasizing that such measures would not necessarily work in practice to mitigate societal spread of the coronavirus (Kerpner, 2020).

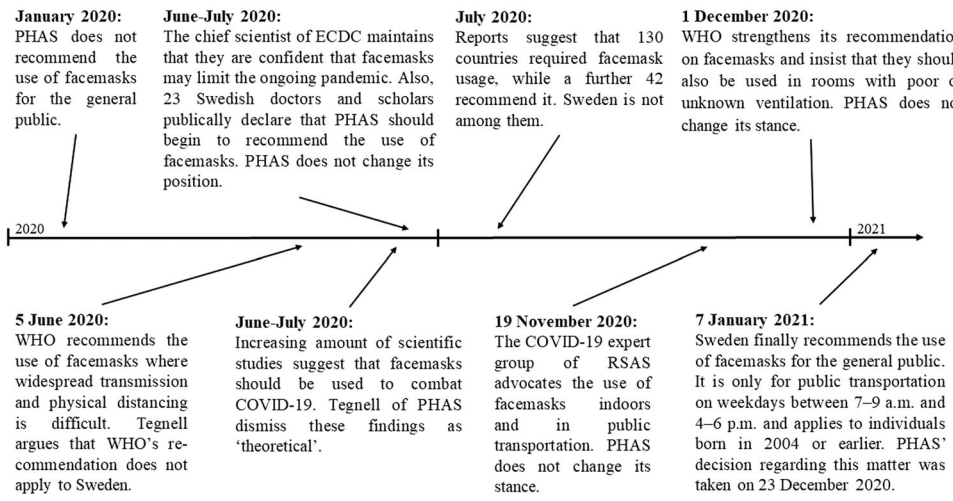
Nevertheless, investigations indicating that facemasks reduce the spread of COVID-19 have continued to accumulate (Eikenberry et al., 2020; Mitze et al., 2020; Stutt et al., 2020). The chief scientist of ECDC, Mike Catchpole, confirmed that the number of studies in support of facemasks have increased over time and that ECDC is now far more confident that the use of facemasks may limit the ongoing pandemic in an interview published on July 28, 2020 (Bengtsson, 2020). Moreover, when WHO (2020i) recommended the use of facemasks in confined and crowded environments, it explicitly did so after "a careful review of all available evidence, and extensive consultation with international experts and civil society groups". These developments prompted 23 Swedish doctors and scholars to publicly question PHAS' refusal to follow WHO's guidelines regarding the use of facemasks in crowded environments in a coauthored debate article published in Sweden's largest newspaper, *Aftonbladet*, on June 13, 2020 (Bjermer et al., 2020).

Despite the growing evidence in favor of facemasks, PHAS did not change its recommendation. In contrast, 130 countries required facemask usage, while a further 42 countries had recommended it by July 2020 (Sveriges Radio, 2020). PHAS claimed that they had reached a different conclusion after their assessment of 36 studies. When Melinda Mills and her colleagues reviewed these studies, they found that 26 of them actually support

or recommends the use of facemasks. The authors noted that the remaining 10 studies were often inconclusive or unrelated to the topic. They, therefore, conclude that the studies PHAS relied upon did not support their position. Rather, these publications suggest that facemasks should be used to mitigate the spread of COVID-19 (Mills et al., 2020).

The expert group of the Royal Swedish Academy of Sciences (RSAS), an independent organization that seeks to promote the sciences and strengthen their influence in society, published a report on this issue on November 19, 2020. In this publication, they advocated the use of facemasks indoors and in public transportation (Normark et al., 2020, p. 19). On December 1, 2020, WHO (2020m) strengthened its recommendation on the use of facemasks and insisted that they should also be used "in rooms with poor or unknown ventilation … if you have any doubts, it's safer to simply wear a mask."

Despite these developments, it was not until 23 December 2020 that PHAS finally decided to recommend the use of facemasks in public transport. Their recommendation was also far more restrictive than that of RSAS and WHO. This is apparent in their restriction of the new recommendation, starting from January 7, 2021, to individuals born in 2004 or older on public transportation on weekdays between 7–9 a.m. and 4–6 p.m. (Folkhälsomyndigheten, 2021a). A summary of key events up until this date is outlined below.



All in all, this overview illustrates that PHAS' initial recommendations regarding facemasks stood in sharp contrast to the perspectives of numerous national and international experts. That is remarkable as PHAS is supposed to base their recommendations on their expert knowledge (Folkhälsomyndigheten, 2020k). Only by December 23, 2020 did they make the decision to alter their position on facemasks and recommend their use to the general public, albeit in a far more restrictive fashion than advised by RSAS and WHO. The next section, examines whether PHAS' voluntarism fared any better.

PHAS AND VOLUNTARISM

As has been mentioned, PHAS does not have the mandate to pass law and legally enforce decisions (Folkhälsomyndigheten, 2020d, p. 19). It may only provide guidelines and recommendations. As such, Sweden relied extensively on voluntary cooperation and individual responsibility rather than enforced lockdowns to fight the COVID-19 (Grietje Franssen, 2020). The situation changed somewhat, at least formally, when the Swedish

government imposed a temporary pandemic law on 10 January 2021, to be in effect until the end of September 2021. The new law "makes it possible to limit visitor numbers and change opening hours to prevent crowding" and "enables the government to limit people's use of public spaces" (Krisinformation, 2021). As it is PHAS that is of interest in this article, the discussions are limited to the period before the formal introduction of the temporary pandemic law to enhance the validity of this study project.

It is this voluntary aspect of Sweden's strategy that has raised eyebrows and caused the most controversy globally (Grothe-Hammer & Roth, 2020; Irwin, 2020). Critics maintain that tougher restrictions might have saved more lives (Savage, 2020) and called the "lax" Swedish approach "a terrible mistake" (Baker, 2020), "a fatal error" (Pieper, 2020) and a "Russian roulette" (Henley, 2020b). The remainder of this section takes a closer look at this issue by examining how well the Swedish populace have followed PHAS' voluntary recommendations.

On March 16, 2020, PHAS recommended individuals over the age of 70 to limit close interpersonal contacts and avoid crowded places such as public transportation and stores (Folkhälsomyndigheten, 2020l). According to a survey, 87% of the respondents within this age group responded that they followed these recommendations (Novus, 2020). Likewise, a study revealed that the mobility amongst the elderly in Stockholm had decreased by roughly 50%, 8 days after the announcement of this recommendation (SSE, 2020; Wetter et al., 2020). At the same time, PHAS declared that employers should consider recommending their employees to work from home to prevent the spread of the coronavirus and help relieve the healthcare system, especially in the Stockholm region (Folkhälsomyndigheten, 2020l). Despite this very careful formulation, the response was overwhelming (Folkhälsomyndigheten, 2020l). Reports suggest that approximately half the Swedish workforce was working from home by the following month (Henley, 2020a). According to Google Mobility Report, this trend has been sustained over time, with a 29% decline reported in workplace mobility in Sweden on February 12, 2021, as compared to the baseline (Google, 2021, p. 2).

On March 17, 2020, PHAS recommended higher education institutions and upper secondary schools in Sweden to conduct distance learning to slow the spread of COVID-19 (Folkhälsomyndigheten, 2020h). The effected educational institutions obliged (Frejdeman, 2020). Moreover, after PHAS' recommendation to maintain social distancing, the number of people using public transportation reportedly decreased by about 50% and the streets of Stockholm were roughly 70% less populated than usual (Henley, 2020a).

On March 19, 2020, PHAS urged people to avoid unnecessary trips within the country (Folkhälsomyndigheten, 2020m). Data from the Swedish telecommunications company, Telia (2020), indicates that travels from the Stockholm region decreased by about 80%–90% during the Easter weekend and noted similar results in other parts of the country as well. Similarly, their data indicates that longer trips during Christmas time decreased by 40% whereas shorter trips, within the municipalities, declined by 17%, compared to the previous year (Wikén, 2020). According to the Google Mobility Report from January 8, 2021, the mobility in retail and recreation decreased by 35%, grocery and pharmacy by 15%, parks by 10%, transit stations by 53% and workplaces by 44%, compared to the baseline. Only visit to residential areas increased by 16%, on this date (Google, 2021, pp. 1–2). Despite the general decline in mobility, a comparative assessment by the OECD suggested that Sweden had fared worst of the 28 examined countries in reducing population mobility over the March-May 2020 period, compared to baseline. A 22.3% reduction in public transport and leisure activities was noted in Sweden, whereas Spain, ranked in first place, saw a decline of

65.6% (OECD/European Union, 2020). An assessment of how successful this recommendation and those preceding it have been is provided in the table below.

PHAS' Recommendation	Result
March 16, 2020: Individuals over the age of 70 should limit close interpersonal contacts and avoid crowded places such as public transportation and stores.	Study reports that the mobility amongst the elderly in Stockholm has decreased by roughly 50% after 8 days. Partial success.
March 17, 2020: PHAS recommends higher education institutions and upper secondary schools in Sweden to conduct distance learning instead.	Higher education institutions and upper secondary schools obliged. Success.
March 19, 2020: PHAS urges people to avoid unnecessary trips within Sweden.	OECD finds that Sweden was the country with the lowest population mobility reduction during the March–May, 2020 period, compared to baseline. Failure.
	Mobility data indicates decreased traveling within the country during Easter and Christmas in 2020. Partial success.
	Data from January 8, 2021 suggested decreased mobility in "retail & recreation," "grocery & pharmacy," "parks," "transit stations" and "workplaces." Visits to "residential areas" increased. Partial success.

Further inquiries into the effectiveness of Swedish voluntarism, have suggested that this approach has produced results similar to those seen in European countries that introduced strict measures at a later stage of the pandemic. However, the results also reflect a worse performance than in nations where tougher restrictions and measures were implemented at an earlier stage (Kamerlin & Kasson, 2020). Another study compared countries that implemented mandatory lockdown orders and business closures (England, France, Germany, Iran, Italy, Netherlands, Spain, and the United States) with South Korea and Sweden, who adopted less severe, voluntary responses. The study found "no clear, significant beneficial effect of [more restrictive measures] on case growth in any country" (Bendavid et al., 2021, p. 1).

On the whole, the available evidence indicates that a significant portion of the Swedish population has taken PHAS' voluntary recommendations to heart. This is the case even though OECD's report demonstrates that Sweden had the lowest population mobility reduction during the March–May 2020 period, compared to baseline. As such, the available evidence suggests that voluntarism has worked moderately well.

PHAS AND TESTING

Testing is one of the key measures in fighting the coronavirus. As Director-General of WHO, Tedros Adhanom Ghebreyesus stated: "You cannot fight a fire blindfolded. And we cannot stop this pandemic if we don't know who is infected. We have a simple message for all countries: Test, test, test. Test every suspected case. If they test positive, isolate them and find out who they have been in close contact with up to 2 days before they developed symptoms, and test those people too" (WHO, 2020j). Likewise, PHAS representatives have

maintained that testing is essential for detecting and stopping the spread of a potential infection (Folkhälsomyndigheten, 2020o; Thomsen, 2020). Due to the importance of testing, it is hardly surprising that PHAS' handling of this issue has been a major site of controversy and debate. As already mentioned, critics have labeled their approach "inefficient'," "inaccurate" (Malmström, 2020), and "insufficient" (TT, 2020d). Therefore, this section will examine PHAS' work on testing.

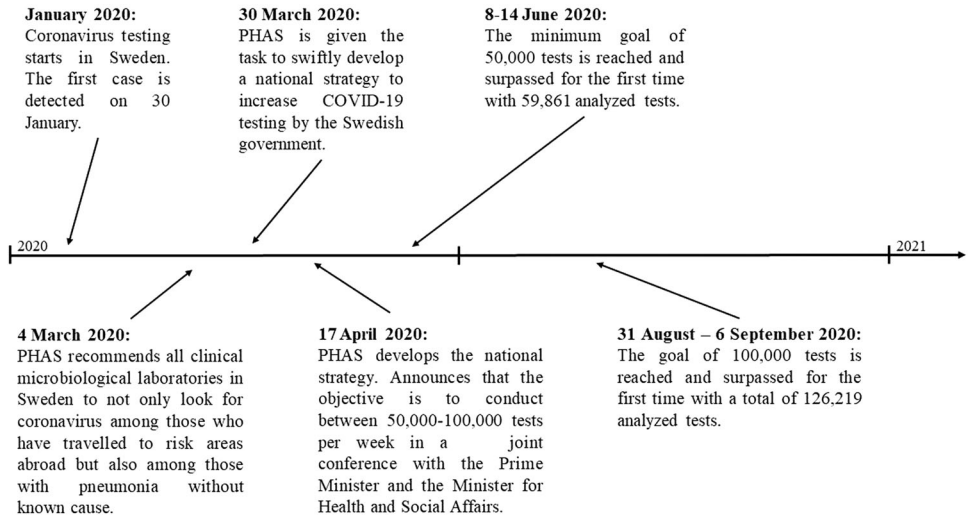
Presently, PHAS advises people with symptoms of COVID-19 to be tested and in cases of contact tracing, even those who do not display any symptoms. Special recommendations exist "for those traveling or who have traveled to Sweden from countries with new variants of the coronavirus". The testing itself is organized "in accordance with regional and local guidelines" (Folkhälsomyndigheten, 2021b). The regions are reimbursed by the state based on the number of tests they conduct. In addition, the clinical medical laboratories are obliged to inform PHAS of how many tests they have done and report their results (Folkhälsomyndigheten, 2020c).

According to PHAS, the COVID-19 testing in Sweden began in January 2020 and about 20 tests had been conducted before the first positive case within the country was identified on January 30 of that year (Folkhälsomyndigheten, 2020r). In February 2020, PHAS stated that eight additional clinical medical laboratories in the country would be equipped to analyze tests to enhance their capacity. According to reports, 150 tests had been analyzed by that time, one of which was discovered to be positive (TT, 2020b). On March 4, 2020, PHAS amped up these efforts by recommending all clinical microbiological laboratories in the country not only to look for coronavirus cases among those individuals who had traveled to risk areas abroad but also among persons with pneumonia without known cause (Folkhälsomyndigheten, 2020o; Thomsen, 2020). The analysis of COVID-19 tests in the country increased rapidly. During the first 5 weeks of testing, only 180 tests had been completed. During week 12 alone (March 16–22), 10,404 tests had been analyzed (Folkhälsomyndigheten, 2020p, p. 19).

Yet, even these numbers were deemed inadequate. As a result, the Swedish government tasked PHAS with swiftly developing a national strategy to increase COVID-19 testing on March 30, 2020 (Scherman, 2020). PHAS did so on April 17, 2020 (Folkhälsomyndigheten, 2020i). In a joint conference with the Prime Minister and the Minister for Health and Social Affairs, PHAS announced that the objective was to conduct between 50,000–100,000 tests per week (Di, 2020). The previous day, PHAS had reportedly promised the Ministry of Health and Social Affairs that 50,000–100,000 tests would be conducted per week and informed them that efforts to increase the number of tests by significant numbers would commence the following week (Granlund & Svensson, 2020). During the week when PHAS' assurances were made (April 13–19), 24,560 COVID-19 tests were conducted in Sweden. In the following week (Week 18), the number of tests had only increased marginally to 28,802, according to PHAS' own figures. The slow increase continued in week 19 with 29,129 tests and 33,003 tests during week 20. In week 21, the number of performed tests actually fell to 28,986 (Folkhälsomyndigheten, 2020p).

It was not until week 24 (June 8–14), that the minimum goal of 50,000 tests was achieved for the first time with a total of 59,861 analyzed tests, which was almost 2 months after the goal of 50,000–100,000 tests per week had been set. The 100,000 tests milestone was first passed on week 36 (August 31–September 6), with a total of 126,219 analyzed tests and over 4.5 months after the objective was established (Folkhälsomyndigheten, 2020q). This inability to meet testing targets rapidly was reportedly not because of a lack of funding. The government allocated deposited one billion Swedish Crowns (roughly 108 million USD) for the increased testing effort.

When PHAS responded that these efforts would cost 2.5 billion Swedish Crowns (roughly 270 million USD),[4] the government reportedly indicated that it would be willing to allocate the additional resources needed (Granlund & Svensson, 2020). A timeline of the major events pertaining to testing is provided below.



This inquiry finds it apparent that as coronavirus testing has been organized in accordance with regional and local guidelines and carried across different regions in Sweden, testing accountability lies with many different actors. PHAS is not the only relevant actor in this case. What can be established is that PHAS' estimation regarding the number of tests that could be delivered in a timely manner proved overly optimistic. Whether the same can be said of their efforts to protect the elderly is considered in the next section.

PHAS AND THE ELDERLY

Tegnell openly declared the protection of seniors central to PHAS' COVID-19 strategy (Grietje Franssen, 2020). This is understandable as they are a particularly vulnerable high-risk group. About 90% of coronavirus fatalities in Sweden have occurred among individuals over 70-years old (Socialstyrelsen, 2020). Critics have occasionally blamed PHAS for this tragic outcome. For instance, they have attributed these grim statistics to the agency's lack of strategic measures and preparedness in keeping the virus away from the elderly care (Juhlin, 2020). Others, have accused PHAS of the failure to provide all personal in elderly care with adequate protective equipment and the inability to protect the seniors themselves (Bäsén, 2020; see also, Lundahl, 2020). Before exploring this site of controversy in greater depth, it is important to clarify that PHAS is not generally responsible for elderly care in Sweden. “The municipality or county council is responsible for all health and social care of the elderly, including contact with doctors and emergency medical care” (Informationsverige.se, 2018). The way these procedures are carried out varies within the country (Informationsverige.se, 2018). These points must be kept in mind as PHAS' handling of the elderly during the pandemic is considered below.

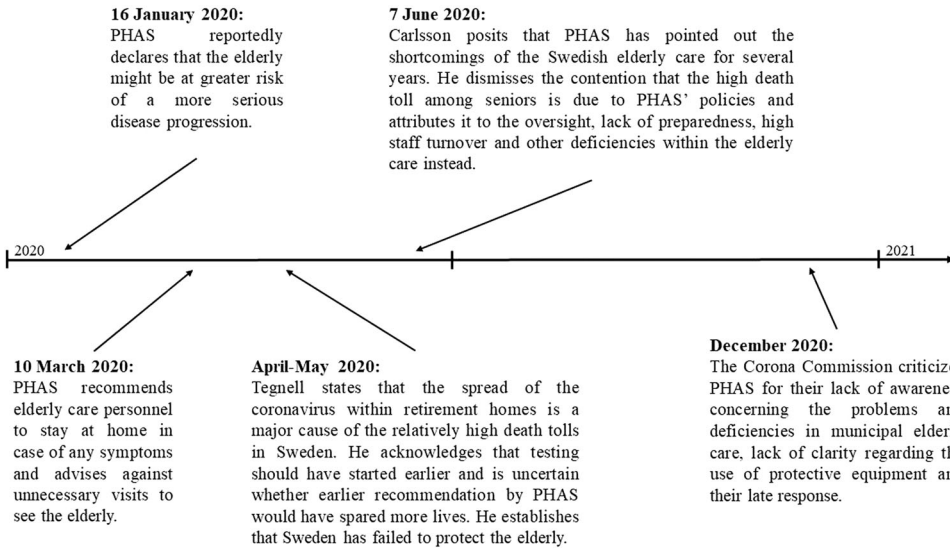
As early as January 16, 2020, PHAS had reportedly declared that the elderly might be at greater risk of a more serious disease progression on their website (Delin et al., 2020). Yet, it was not until March 10, 2020 that PHAS recommended that those who work in elderly care to remain at home in case of developing symptoms and advised against unnecessary visits to see the elderly (Folkhälsomyndigheten, 2020e). As we have seen, March 10, 2020 is also the date when PHAS raised its risk assessment concerning the general spread of the coronavirus in Sweden to "very high." Hence, PHAS' initial underestimation regarding the spread of COVID-19 within the country could explain why the agency took so long before issuing their recommendation for the elderly care sector.

Tegnell publicly stated that one of the major reasons behind the significantly higher death tolls in Sweden compared to neighboring Nordic countries was due to the spread of the coronavirus within retirement homes. Although Tegnell claimed that it is difficult to determine whether the death toll might have been reduced if PHAS' recommendations had arrived earlier, he also acknowledged simply that the agency should have initiated testing efforts sooner, as was the case in neighboring Nordic countries (Larsson, 2020). He also admitted that Sweden had failed to protect the elderly (Dahl, 2020).

As the elderly care in Sweden falls under the responsibility of the municipality or county council, this begs the question of how accountable PHAS are for the deficiencies noted by Tegnell. According to the agency's Director-General Carlsson, the answer to this is very little. In an interview published on June 7, 2020, Carlsson posited that PHAS and other agencies had pointed out the obvious shortcomings of the Swedish elderly care for several years. In his view, the high death toll among seniors is due to oversight, lack of preparedness, high staff turnover, and so forth, within the elderly care. The idea that PHAS should bear the blame for this was dismissed by Carlsson as "highly remarkable" (TT, 2020c).

An investigation by the Health and Social Care Inspectorate (HSCI; Inspektionen för vård och omsorg in Swedish) did indeed find serious shortcomings concerning medical care and treatment of the elderly in retirement homes during the pandemic across all regions of Sweden (IVO, 2020a). Moreover, they noted that of the 1700 retirement homes in Sweden, the conditions in 91 of them were particularly acute (IVO, 2020b). Finally, the National Board of Health and Welfare (NBHW; Socialstyrelsen in Swedish) reportedly suggested that only about 13% of patients that had died from the coronavirus in retirement homes had received health care at a hospital (Nilsson, 2020). These findings partially confirm Carlsson's remarks.

Yet, the Corona Commission appointed by the Swedish government to evaluate the merits of the country's COVID-19 measures challenged Carlsson's assertions on PHAS' responsibility with regard to elderly care. In a report, the Commission criticized PHAS for lacking awareness about the problems and deficiencies in municipal elderly care, which resulted in delayed guidance on measures that the elderly care should adopt. Moreover, the report argued that as PHAS had been well informed about this group's particular vulnerability to COVID-19, PHAS "should have immediately placed more emphasis on conditions in residential care for older persons" (Coronakommissionen, 2020, pp. 7–8). The commission also established that PHAS was partly accountable for the lack of clarity on the use of protective equipment in elderly care, which resulted in disputes and conflicts. Finally, the commission stated that further investigation was needed to establish why PHAS failed to swiftly produce a national strategy for expanded testing, a measure Tegnell deemed necessary to protect the elderly, as previously noted (Coronakommissionen, 2020, pp. 8–9). A recapitulation of these discussions is outlined below.



As these discussions illustrate, many elderly in Sweden seemingly lost their lives prematurely during the pandemic. It is impossible to the number of lives that could have been saved by earlier testing and implementing the recommendations issued by PHAS. Yet, PHAS' area of agency expertise does not encompass elderly care, its care routines, procedures, and services. That responsibility lies with the municipalities and county councils and the deficiencies noted by HSCI and NBHW cannot be ascribed to PHAS. The shortcomings noted by the Corona Commission, they however attribute directly to PHAS.

CONCLUSION

This article has assessed the efforts of PHAS, the expert government agency on public health issues, which has been afforded a strong mandate during the ongoing coronavirus pandemic. More specifically, this inquiry has focused on the debates and controversies that have characterized the agency's management of the COVID-19 response in Sweden with respect to risk assessments, facemasks, voluntarism, testing, and protection of the elderly. The investigation has revealed that PHAS' risk assessment regarding the general spread of coronavirus in Sweden was overly optimistic until 10 March, where it mirrored the best-case scenario envisioned by ECDC but was considerably more positive than WHO's global risk assessments and other expert prognoses for Sweden.

Moreover, this analysis has highlighted the continuous refusal of PHAS' to change its position on facemasks or recommend their use in confined and crowded places for the general public. This was despite burgeoning evidence in favor of this protective equipment. As such, PHAS' facemask policy diverged from the stance of WHO, ECDC, RSAS, and large segments of the scientific studies on this area. Remarkably, an investigation of the 36 studies that informed PHAS' perspective on facemasks reportedly revealed that the vast majority of these publications found that facemasks probably do help to stop the spread of the virus and should therefore be adopted. In spite of this, PHAS did not endorse facemasks for the public until December 23, 2020. As a result, a very limited facemask recommendation was implemented in Sweden on January 7, 2021, applying only to individuals born in 2004 or older on public transportation on weekdays between 7–9 a.m. and 4–6 p.m. This recommendation was still far more restrictive than that of WHO and RSAS.

In terms of the highly publicized issue of voluntarism, the present study has revealed that the "hands-off" approach of PHAS has worked moderately well. The data demonstrates that institutions and a significant proportion of the Swedish population have willingly followed the recommendations of the expert agency. Higher education institutions and upper secondary schools have conducted distance learning, while significant proportions of the elderly have avoided crowded places. Additionally, remote working has increased while traveling generally declined in line with PHAS' instructions. A cross-country comparison found that the voluntary Swedish approach has been roughly as effective as European countries that adopted restrictive measures late but worse than nations that did so early.

The section devoted to the issue of testing for COVID-19 has clarified the fact that this task involved various actors at the local and regional level, beyond the direct control of PHAS. Yet, the agency is responsible for its failure of delivering 50,000–100,000 tests per week in a timely fashion as it had reportedly promised and received adequate funding for. It took approximately 2 months before the minimum goal of 50,000 tests per week had been reached and more than 4.5 months before 100,000 tests per week were being conducted for the first time.

The discussions regarding PHAS' efforts to protect the elderly disclosed that it was not until March 10, 2020 that the agency urged elderly care staff to stay at home on experiencing any symptoms and proceeded to warn the public against making visits to see elderly people that are not absolutely necessary. As several reports contend, PHAS' late response in updating official recommendations to the Swedish population was despite the agency announcing seniors as a highly vulnerable group as early as January 16, 2020. It is as yet unclear how many lives might have been saved had testing programs and the agency's recommendations been implemented at an earlier stage. In addition, the Corona Commission in Sweden found that PHAS' lacked awareness of the systemic problems and deficiencies in municipal elderly care, failing to provide clear instructions regarding the use of protective equipment while also being slow to act.

Overall, these findings could at least partly explain why the corona pandemic has had such an adverse impact on Sweden compared to many other developed countries thus far. For instance, as on February 17, 2021, the death toll in Sweden amounted to 12,598 while the equivalent numbers in Norway were 607, 725 in Finland and 2319 in Denmark (Statista, 2021). Furthermore, Sweden was listed among the 11 European countries where the COVID-19 pandemic has been particularly acute (WHO, 2020g).[5] Finally, Sweden was ranked at the bottom of OECD's report on the COVID-19 crisis in three categories: (1) "Reduction in populations' mobility over the March–May 2020 period, compared to baseline," (2) "Number of days required to bring estimated Rt below one," and (3) "Weekly reduction in the number of new ICU admissions" (OECD/European Union, 2020). These grim outcomes resulted despite risk assessments provided by the expert agency on crisis management, the Swedish Civil Contingencies Agency, who had assessed the risk of Sweden being affected by a pandemic within 5–50 years as "high" in 2013 (MSB, 2013). Whereas Johns Hopkins Center for Health Security ranked Sweden as the seventh best-prepared country in the world in the event of a pandemic and on top among the Nordic countries, just before the global outbreak of COVID-19 (Cameron et al., 2019, p. 11).

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CONFLICT OF INTERESTS

The author declares that there is no conflict of interest.

ETHICS STATEMENT

None declared.

ENDNOTES

[1]The Oxford Government Stringency Index "is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest subregion." The highest Swedish score to date is 69.44. (Hale et al. 2020).

[2]As on February 17, 2021, the death toll in these countries amounted to Sweden (12,598), Norway (607), Finland (725), and Denmark (2319); see (Statista, 2021).

[3]Although the purpose is universal, cultural biases may exist against the use of facemasks, see for example (Wang et al., 2020).

[4]The figures in USD are based on the currency exchange rate on July 2, 2020.

[5]The other 10 countries listed by WHO's Regional Director for Europe, Dr. Hans Henri P. Kluge, were Armenia, Republic of Moldova, North Macedonia, Azerbaijan, Kazakhstan, Albania, Bosnia and Herzegovina, Kyrgyzstan, Ukraine, and Kosovo (WHO, 2020g).

REFERENCES

Asante-Duah, K. (2017). *Public health risk assessment for human exposure to chemicals*. Springer.

Baker, S. (2020). Skeptical experts in Sweden say its decision to have no lockdown is a terrible mistake that no other nation should copy. *Business Insider*. https://www.businessinsider.com/sweden-coronavirus-plan-is-a-cruel-mistake-skeptical-experts-say-2020-5

Bäsén, A. (2020). Folkhälsomyndigheten har gjort för lite och för sent. https://www.expressen.se/kronikorer/anna-basen/folkhalsomyndigheten-har-gjort-for-lite-och-for-sent/

Bendavid, E., Oh, C., Bhattacharya, J., & Ioannidis, J. P. A. (2021). Assessing mandatory stay-at-home and business closure effects on the spread of COVID-19. *European Journal of Clinical Investigation*, *51*(4), e13484.

Bengtsson, J. (2020). ECDC-forskare: Allt mer belägg för munskydd. *SVT Nyheter*. https://www.svt.se/nyheter/ecdc-forskare-fler-och-fler-bevis-for-munskydd

Bjermer, L., Carlsson, M., Einhorn, L., Einhorn, S., Elgh, F., Ewing, A., Felices, M., Frisén, J., Gustafsson, Å., Hanson, C., Hanson, S., Hedner, T., Isaksson, O., Jansson, A., Lundbäck, B., Lundkvist, Å., Lötvall, J., Olsen, B., Sandström, T., … Wahlin, A. (2020). Varför vägrar du införa munskydd, Tegnell? *Aftonbladet*. https://www.aftonbladet.se/a/dOyMXB

Blume, E. (2020). Björn Olsen: »Coronaviruset når sin kulmen i Sverige om några veckor. *Fokus*. https://www.fokus.se/2020/03/bjorn-olsen-coronaviruset-nar-sin-kulmen-i-sverige-om-nagra-veckor/

Bowden, J. (2020). Trump: Sweden paying 'heavily' for not locking down nation. *The Hill*. https://thehill.com/homenews/administration/495408-trump-sweden-paying-heavily-for-not-locking-down-nation

Cameron, E., Nuzzo, J. B., & Bell, J. A. (2019). *The Global Health Security Index: Building collective action and accountability*. Johns Hopkins Center for Health Security.

Campos-Mercade, P., Meier, A. N., Schneider, F. H., & Wengström, E. (2021). Prosociality Predicts Health Behaviors during the COVID-19 Pandemic. *Journal of Public Economics*, *195*, 1–23.

Cederblad, J. (2020). Munskydd eller inte?—frågan vägrar försvinna. *Ny Teknik*. https://www.nyteknik.se/samhalle/munskydd-eller-inte-fragan-vagrar-forsvinna-6996774

Chu, D. K., Akl, E.A., Duda, S., Solo, K., Yaacoub, S., Schünemann, H.J., on behalf of the COVID- Systematic Urgent Review Group Effort (SURGE) study authors. (2020). Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: A systematic review and meta-analysis. *The Lancet*, *395*(10242), 1973–1987.

Coronakommissionen. (2020). *The elderly care in the pandemic*. https://coronakommissionen.com/

Dagens industri. (2020). Antalet coronatester ska ökas kraftigt – upp till 100.000 i veckan. Dagens industri. https://www.di.se/nyheter/1110-stefan-lofven-och-folkhalsomyndigheten-haller-presskonferens/

Dahl, A. (2020). Anders Tegnell: Vi har misslyckats med att skydda våra äldre. *Dagens Nyheter*. https://www.dn.se/nyheter/sverige/anders-tegnell-vi-har-misslyckats-med-att-skydda-vara-aldre/

Dahl, A. (2021). Ett år med coronaviruset i Sverige. *Dagens Nyheter*. https://www.dn.se/sverige/ett-ar-med-coronaviruset-i-sverige/

Delin, M., Bouvin, E., & Rosén, H. (2020). Så spräckte coronapandemin Sveriges krisberedskap. *Dagens Nyheter*. https://www.dn.se/nyheter/sverige/sa-sprackte-coronapandemin-sveriges-krisberedskap/

DN-TT. (2020). Forskare i upprop till regeringen. *Dagens Nyheter*. https://www.dn.se/nyheter/sverige/forskare-i-upprop-till-regeringen/

Drefahl, S., Wallace, M., Mussino, E., Aradhya, S., Kolk, M., Brandén, M., Malmberg, B., & Andersson, G. (2020). A population-based cohort study of socio-demographic risk factors for COVID-19 deaths in Sweden. *Nature Communications*, *11*(1), 1–7.

Edwards, C. (2020). Who's actually responsible for Sweden's Coronavirus strategy? *The Local*. https://www.thelocal.se/20200330/whos-actually-in-charge-of-swedens-coronavirus-strategy

Eikenberry, S. E., Mancuso, M., Iboi, E., Phan, T., Eikenberry, K., Kuang, Y., Kostelich, E., & Gumel, A. B. (2020). To mask or not to mask: Modeling the potential for face mask use by the general public to curtail the COVID-19 pandemic. *Infectious Disease Modelling*, *5*, 293–308.

Elgh, F. (2020). Corona i Sverige: Kan få en fri spridning. *Aftonbladet*. https://www.aftonbladet.se/a/XgAqjg

Eriksson, G. (2020). Mycket höjd risk för regeringen Löfven. *Svenska Dagbladet*. https://www.svd.se/mycket-hojd-risk-for-regeringen-lofven

European Centre for Disease Prevention and Control (ECDC). (2020a). Rapid risk assessment: Novel Coronavirus Disease 2019 (COVID-19) pandemic: Increased transmission in the EU/EEA and the UK—Sixth update. https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-novel-coronavirus-disease-2019-covid-19-pandemic-increased

European Centre for Disease Prevention and Control (ECDC). (2020b). Rapid risk assessment: Outbreak of Novel Coronavirus Disease 2019 (COVID-19): Increased transmission globally—Fifth update. https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-outbreak-novel-coronavirus-disease-2019-covid-19-increased

European Centre for Disease Prevention and Control (ECDC). (2020c). Risk assessment: Outbreak of acute respiratory syndrome associated with a Novel Coronavirus, China: First local transmission in the EU/EEA—Third update. https://www.ecdc.europa.eu/en/publications-data/risk-assessment-outbreak-acute-respiratory-syndrome-associated-novel-1

European Centre for Disease Prevention and Control (ECDC). (2020d). Threat assessment brief: Outbreak of Novel Coronavirus Disease 2019 (COVID-19): Situation in Italy. https://www.ecdc.europa.eu/en/publications-data/outbreak-novel-coronavirus-disease-2019-covid-19-situation-italy

Expressen TV. (2020). Corona: Kritik mot Folkhälsomyndigheten om munskydd. https://www.expressen.se/tv/nyheter/munskyddskritiken-vill-de-ha-smittspridning/

Falkirk, J. (2020). Tegnell: Min bedömning om Kina visade sig inte vara rätt. Svenska Dagbladet. https://www.svd.se/min-bedomning-om-kina-visade-sig-inte-vara-ratt

Folkhälsomyndigheten. (2018a). About us. *The Public Health Agency of Sweden*. http://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/about-us/

Folkhälsomyndigheten. (2018b). Brief facts and organization. *The Public Health Agency of Sweden*. http://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/about-us/brief-facts-and-organization/

Folkhälsomyndigheten. (2020a). Bekräftat fall i Jönköping av nya coronaviruset (2019-nCoV). http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/januari/bekraftat-fall-av-nytt-coronavirus-i-sverige/

Folkhälsomyndigheten. (2020b). Beslut avseende risknivåer för covid-19. http://www.folkhalsomyndigheten.se/smittskydd-beredskap/utbrott/aktuella-utbrott/covid-19/riskbedomning/

Folkhälsomyndigheten. (2020c). Ersättning för testning. http://www.folkhalsomyndigheten.se/utokad-testning-for-covid-19/fragor–svar/ersattning-for-testning/

Folkhälsomyndigheten. (2020d). FAQ about COVID-19. The Public Health Agency of Sweden. http://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/communicable-disease-control/covid-19/

Folkhälsomyndigheten. (2020e). Flera tecken på samhällsspridning av covid-19 i Sverige. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/flera-tecken-pa-samhallsspridning-av-covid-19-i-sverige/

Folkhälsomyndigheten. (2020f). Förändrad riskbedömning för fall av covid-19 i Sverige. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/februari/forandrad-riskbedomning-for-fall-av-covid-19-i-sverige/

Folkhälsomyndigheten. (2020g). Frågor och svar om covid-19 (coronavirus). http://www.folkhalsomyndigheten.se/smittskydd-beredskap/utbrott/aktuella-utbrott/covid-19/fragor-och-svar/

Folkhälsomyndigheten. (2020h). Lärosäten och gymnasieskolor uppmanas nu att bedriva distansundervisning. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/larosaten-och-gymnasieskolor-uppmanas-nu-att-bedriva-distansundervisning/

Folkhälsomyndigheten. (2020i). Nationell strategi för att utöka provtagningen för covid-19. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/april/nationell-strategi-for-att-utoka-provtagningen-for-covid-19/

Folkhälsomyndigheten. (2020j). Nytt coronavirus upptäckt i Kina. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/januari/nytt-coronavirus-upptackt-i-kina/
Folkhälsomyndigheten. (2020k). Om lagar, förordningar och föreskrifter—Folkhälsomyndigheten. http://www.folkhalsomyndigheten.se/publicerat-material/foreskrifter-och-allmanna-rad/om-lagar-forordningar-och-foreskrifter/
Folkhälsomyndigheten. (2020l). Personer över 70 bör begränsa sociala kontakter tills vidare. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/personer-over-70-bor-begransa-sociala-kontakter-tills-vidare/
Folkhälsomyndigheten. (2020m). Tänk över om resan verkligen är nödvändig. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/tank-over-om-resan-verkligen-ar-nodvandig/
Folkhälsomyndigheten. (2020n). Uppdaterad riskbedömning för covid-19 i Sverige. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/uppdaterad-riskbedomning-for-covid-19-i-sverige/
Folkhälsomyndigheten. (2020o). Utökad provtagning för covid-19 i Sverige. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/mars/utokad-provtagning-for-covid-19-i-sverige/
Folkhälsomyndigheten. (2020p). Veckorapport om COVID-19, vecka 25. Solna. https://www.folkhalsomyndigheten.se/globalassets/statistik-uppfoljning/smittsamma-sjukdomar/veckorapporter-covid-19/2020/covid-19-veckorapport-vecka-25-final.pdf
Folkhälsomyndigheten. (2020q). Veckorapport om covid-19, vecka 36. Solna. https://www.folkhalsomyndigheten.se/globalassets/statistik-uppfoljning/smittsamma-sjukdomar/veckorapporter-covid-19/2020/covid-19-veckorapport-vecka-25-final.pdf
Folkhälsomyndigheten. (2020r). WHO klassar utbrottet av coronaviruset som ett internationellt hot mot människors hälsa. http://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2020/januari/utbrottet-av-nytt-coronavirus-kraver-samordnade-insatser-internationellt/
Folkhälsomyndigheten. (2021a). Ändring i Folkhälsomyndighetens föreskrifter och allmänna råd (HSLF-FS 2020:12) om allas ansvar att förhindra smitta av covid-19 m.m. https://www.folkhalsomyndigheten.se/contentassets/8a42da9e6ba744cb8ecac913684a7df0/hslf-fs-202092.pdf
Folkhälsomyndigheten. (2021b). Testing. http://www.folkhalsomyndigheten.se/the-public-health-agency-of-sweden/communicable-disease-control/covid-19/covid-19-faq/testing-and-treatment/
Frejdeman, H. (2020). Löfven: Gymnasier ska gå över till distansstudier. *Svenska Dagbladet*. https://www.svd.se/presstraff-i-dag-med-utbildningsministern
Google. (2021). *COVID-19 community mobility report*. https://www.gstatic.com/covid19/mobility/2020-07-03_SE_Mobility_Report_en.pdf
Granlund, J., & Svensson, O. (2020). Interna mejl visar löftet om masstestning—nu backar myndigheten. *Aftonbladet*. https://www.aftonbladet.se/a/Ado5yq
Grietje Franssen, A. (2020). Why is Sweden's coronavirus strategy so different from the rest of Europe? *The Local*. https://www.thelocal.se/20200425/why-is-swedens-corona-strategy-so-different-from-the-rest-of-europe
Grothe-Hammer, M., & Roth, S. (2020). Dying is normal, dying with the coronavirus is not: A sociological analysis of the implicit norms behind the criticism of Swedish 'exceptionalism'. *European Societies*, *23*, 1–16.
Haddad, P. (2020). "Tegnell: 'Stor andel är mer eller mindre symptomfria' ". *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/tegnell-9-av-10-kan-vara-symptomfria
Hale, T., Webster, S., Petherick, A., Phillips, T., & Kira, B. (2020). Oxford COVID-19 government response tracker. COVID-19: Government Stringency Index. https://www.bsg.ox.ac.uk/research/publications/variation-government-responses-covid-19
von Hall, G. (2020a). Sverige gör "allvarligt misstag" enligt experter. *Svenska Dagbladet*. https://www.svd.se/sverige-gor-allvarligt-misstag-enligt-experter
von Hall, G. (2020b). Vi vill inte invagga människor i falsk trygghet. Svenska Dagbladet. https://www.svd.se/vi-vill-inte-invagga-manniskor-i-falsk-trygghet
Health and Safety Executive (HSE). (2014). Risk assessment. https://www.hse.gov.uk/risk/controlling-risks.htm
Henley, J. (2020a). Critics question Swedish approach as coronavirus death toll reaches 1,000. *The Guardian*. https://www.theguardian.com/world/2020/apr/15/sweden-coronavirus-death-toll-reaches-1000
Henley, J. (2020b). Swedish PM warned over 'Russian Roulette-Style' Covid-19 strategy. *The Guardian*. https://www.theguardian.com/world/2020/mar/23/swedish-pm-warned-russian-roulette-covid-19-strategy-herd-immunity
Holmgren, M. (2020). Tegnell: Vi får oroande rapporter om trängsel i utelivet. *Dagens Nyheter*. https://www.dn.se/nyheter/sverige/tegnell-vi-far-oroande-rapporter-om-trangsel-i-utelivet/
Informationsverige.se. (2018). Care of the elderly. http://www.informationsverige.se/en/jag-har-fatt-uppehallstillstand/samhallsorientering/boken-om-sverige/att-aldras-i-sverige/aldreomsorg/
Institutet för framtidsstudier (IFFS). (2020). Repliker om det svenska undantaget. https://www.iffs.se/nyheter/repliker-om-det-svenska-undantaget/

Irwin, R. E. (2020). Misinformation and de-contextualization: international media reporting on Sweden and COVID-19. *Globalization and Health*, *16*(62), 1–12.
Israelsson, L. (2020). Folkhälsomyndigheten kritiseras för sin hantering av coronavirusets utbrott. *Expressen*. https://www.expressen.se/nyheter/folkhalsomyndigheten-far-kritik-for-hantering-av-virusutbrottet/
IVO. (2020a). Ingen region har tagit sitt fulla ansvar för individuell vård och behandling. *IVO.se*. https://www.ivo.se/publicerat-material/nyheter/2020/ingen-region-har-tagit-fullt-ansvar-for-individuell-vard/
IVO. (2020b). IVO Fördjupar Granskningen Av Vård Och Behandling På Särskilda Boenden För Äldre. *IVO.se*. https://www.ivo.se/publicerat-material/nyheter/2020/ivo-fordjupar-granskningen-av-vard-och-behandling-pa-sarskilda-boenden-for-aldre/
Jansson, A. (2020). Folkhälsomyndigheten tar onödiga risker. *Svenska Dagbladet*. https://www.svd.se/folkhalsomyndigheten-tar-onodiga-risker
Juhlin, J. (2020). Folkhälsomyndigheten står fast vid svenska coronastrategin. *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/myndigheterna-haller-presskoferens
Kamerlin, S. C. L., & Kasson, P. M. (2020). Managing COVID-19 spread with voluntary public-health measures: Sweden as a case study for pandemic control. *Clinical Infectious Diseases*, *71*, 3174–3181. https://academic.oup.com/cid/article/doi/10.1093/cid/ciaa864/5866094
Karolinska Institutet. (2020). Cloth face masks can reduce the spread of SARS-CoV-2. https://news.ki.se/cloth-face-masks-can-reduce-the-spread-of-sars-cov-2
Kavaliunas, A., Ocaya, P., Mumper, J., Lindfeldt, I., & Kyhlstedt, M. (2020). Swedish policy analysis for Covid-19. *Health Policy and Technology*, *9*, 598–612. http://www.sciencedirect.com/science/article/pii/S2211883720300812
Kerpner, J. (2020). Trots positiv studie om munskydd—Tegnell gör tummen ner. *Aftonbladet*. https://www.aftonbladet.se/a/jd6jdL
Krisinformation. (2021). Parliament says yes to new pandemic law. https://www.krisinformation.se/en/news/2021/january/parliament-says-yes-to-new-pandemic-law
Kuo, L. (2020). China withheld data on Coronavirus from WHO, recordings reveal. *The Guardian*. https://www.theguardian.com/world/2020/jun/02/china-withheld-data-coronavirus-world-health-organization-recordings-reveal
Larsson, S. (2020). Anders Tegnells svar på kritiken: "En bit papper". *Expressen*. https://www.expressen.se/nyheter/anders-tegnells-svar-pa-kritiken-en-bit-papper/
Lee, S. Y., & Kelland, K. (2020). China confirms human-to-human transmission of New Coronavirus: Xinhua. *Reuters*. *54*, pp. 1848–1856. https://www.reuters.com/article/us-china-health-pneumonia-commission-idUSKBN1ZJ1SB
Lönegård, C. (2020). Sprickan växer—så blev Tegnell av med sitt veto. *Svenska Dagbladet*. https://www.svd.se/sprickan-vaxer–sa-blev-tegnell-av-med-sitt-veto
Lundahl, M. (2020). Professor: Fel Av Folkhälsomyndigheten Att Göra 70-Åringar till Riskgrupp. https://www.altinget.se/artikel/professor-fel-av-folkhalsomyndigheten-att-gora-70-aaringar-till-riskgrupp
Malmström, M. N. (2020). Trots kritiken—FHM vidhåller masstester av antikroppar. https://sverigesradio.se/artikel/7520276
Mills, M., Akimova, E., Gieysztor, S., & Jonsson, J. (2020). *Follow "the Science"? Anders Tegnell's and Swedish Public Health Agency's evidence is in favour of recommending face coverings*. Leverhulme Centre for Demographic Science & Nuffield College, University of Oxford. https://osf.io/x972j/
Mitze, T., Kosfeld, R., Rode, J., & Wälde, K. (2020). *Face masks considerably reduce COVID-19 cases in Germany: A synthetic control method approach*. Institute of Labor Economics. https://www.iza.org/publications/dp/13319/face-masks-considerably-reduce-covid-19-cases-in-germany-a-synthetic-control-method-approach
Myndigheten för samhällsskydd och beredskap (MSB). (2013). *Risker Och Förmågor 2013—Redovisning Av Regeringsuppdrag Om Nationell Risk- Och Förmågebedömning*.
Nilsson, E. (2020). Få covidsjuka på äldreboende fick sjukhusvård. *Dagens Medicin*. https://www.dagensmedicin.se/artiklar/2020/08/07/fa-covidsjuka-pa-aldreboende-fick-sjukhusvard/
Normark, S., Hallberg, A., Helenius, A., Holmgren, J., Karlsson Hedestam, G., Linde, A., Masucci, M., & Nilsson, J. (2020). *Åtgärder För Att Minska Spridningen Av Covid-19*. Kungl. Vetenskapsakademien. https://s3.eu-de.cloud-object-storage.appdomain.cloud/kva-image-pdf/2021/02/Atgarder_for_att_minska_smittspridningen_av_Covid_19_NY.pdf
Novus. (2020). Coronastatus 0331. https://novus.se/coronastatus-0331/
OECD/European Union. (2020). *Health at a Glance: Europe 2020: State of Health in the EU Cycle*. OECD Publishing. https://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-europe-2020_82129230-en
Olsson, E. (2020). Forskare: Munskydd kan minska smittspridningen. *Svenska Dagbladet*. https://www.svd.se/forskare-munskydd-kan-minska-smittspridningen

Örstadius, K., Delin, M., & Eriksson, K. (2020). Så gick det till när regeringen gav taktpinnen till expertmyndigheten. *Dagens Nyheter*. https://www.dn.se/nyheter/sverige/sa-gick-det-till-nar-regeringen-gav-taktpinnen-till-expertmyndigheten/

Pieper, D. (2020). Approval wanes for Sweden's lax coronavirus policies. *Der Spiegel International*. https://www.spiegel.de/international/europe/sweden-public-approval-of-lax-coronavirus-policies-is-waning-a-9fada573-26da-4bfc-89b9-50062197cf99

Pierre, J. (2020). Nudges against pandemics: Sweden's COVID-19 containment strategy in perspective. *Policy and Society*, *39*(3), 478–493.

Pihl, K. (2020). Vad tror Folkhälsomyndigheten om oss egentligen? *gp.se*. http://www.gp.se/1.33159154

Rayman, S. (2020). Regeringen Tar Taktpinnen Från Folkhälsomyndigheten. *Altinget.se*. https://www.altinget.se/artikel/regeringen-tar-taktpinnen-fraan-folkhalsomyndigheten

Rocklöv, J., Lundbäck, B., Larsson, E., Elgh, F., Sjödin, H., & Olsen, B. (2020). Sverige bör byta strategi för att bromsa spridning av coronaviruset. *Läkartidningen*. https://lakartidningen.se/opinion/debatt/2020/03/sverige-bor-byta-strategi-for-att-bromsa-spridning-av-coronaviruset/

Russell, D. (2020). WHO says Sweden's corona strategy could be 'a future model' post lockdowns. *Sveriges Radio*. https://sverigesradio.se/sida/artikel.aspx?programid=2054%26artikel=7463561

Savage, M. (2020). Did Sweden's coronavirus strategy succeed or fail? *BBC News*. https://www.bbc.com/news/world-europe-53498133

Scherman, K. G. (2020). Det är statsministern som måste ta ansvaret. *Svenska Dagbladet*. https://www.svd.se/det-ar-statsministern-som-maste-ta-ansvaret

Socialstyrelsen. (2020). *Statistik över antal avlidna i covid-19*. https://www.socialstyrelsen.se/statistik-och-data/statistik/statistik-om-covid-19/statistik-over-antal-avlidna-i-covid-19/

Statista. (2021). Cumulative number of coronavirus (COVID-19) deaths in the Nordic Countries. https://www.statista.com/statistics/1113834/cumulative-coronavirus-deaths-in-the-nordics/

Stockholm School of Economics (SSE). (2020). New research reveals how Swedes react to government guidelines. https://www.hhs.se/en/about-us/news/sse/2020/research-reveals-public-reactions-to-government-guidelines/

Stutt, R. O. J. H., Retkute, R., Bradley, M., Gilligan, C. A., & Colvin, J. (2020). A modelling framework to assess the Likely effectiveness of facemasks in combination with 'lock-down' in managing the COVID-19 pandemic. *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, *476*(2238), 1–21.

Sveriges Radio. (2020). Swedish health authorities say weak evidence underlies face-mask advocacy. https://sverigesradio.se/artikel/7522842

Telia. (2020). Svenskarna stannar hemma under påsklovet. http://press.telia.se/pressreleases/svenskarna-stannar-hemma-under-paasklovet-2990179

Thomsen, D. (2020). Nu ska fler svenskar testas för coronavirus. *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/nu-ska-fler-svenskar-testas-for-coronavirus

TT. (2020a). Expert: Fel strategi att tona ner viruslarmet. *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/expert-fel-strategi-att-tona-ner-viruslarmet

TT. (2020b). Fler svenska labb får analysera coronavirus. *Ny Teknik*. https://www.nyteknik.se/samhalle/fler-svenska-labb-far-analysera-coronavirus-6987812

TT. (2020c). Folkhälsomyndighetens gd till motattack mot Åkesson. *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/carlson-till-motattack-mot-akesson

TT. (2020d). Forskare kritiska till FHM:s strategi att möta coronaviruset. *Ny Teknik*. https://www.nyteknik.se/samhalle/forskare-kritiska-till-fhm-s-strategi-att-mota-coronaviruset-6991882

TT. (2020e). Tegnell: munskydd passar inte i coronastrategi. *Aftonbladet*. https://www.aftonbladet.se/a/Jojow6

Wang, C., Chudzicka-Czupała, A., Grabowski, D., Pan, R., Adamus, K., Wan, X., Hetnał, M., Tan, Y., Olszewska-Guizzo, A., Xu, L., McIntyre, R.S., Quek, J., Ho, R., & Ho, C. (2020). The association between physical and mental health and face mask use during the COVID-19 pandemic: A comparison of two countries with different views and practices. *Frontiers in Psychiatry*, *11*, 1–13.

Westin, A. (2020, November 4). Björn Olsen: I Sverige har munskydd blivit ett skällsord. *Aftonbladet*. https://www.aftonbladet.se/a/qLGGkE

Wetter, E., Rosengren, S., & Törn, F. (2020, February 25). *Private sector data for understanding public behaviors in crisis: The case of COVID-19 in Sweden* (SSE Working Paper Series in Business Administration No. 2020:1). Stockholm: Stockholm School of Economics. https://swoba.hhs.se/hastma/abs/hastma2020_001.htm

Wikén, J. (2020). Data visar: Så reste svenskarna under julen. *SVT Nyheter*. https://www.svt.se/nyheter/inrikes/data-visar-sa-reste-svenskarna-under-julen

World Health Organization (WHO). (2020a). *Coronavirus disease 2019 (COVID-19) Situation Report—11*. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200131-sitrep-11-ncov.pdf?sfvrsn=de7c0f7_4

World Health Organization (WHO). (2020b). *Coronavirus Disease 2019 (COVID-19) Situation Report—36*. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200225-sitrep-36-covid-19.pdf?sfvrsn=2791b4e0_2

World Health Organization (WHO). (2020c). *Coronavirus Disease 2019 (COVID-19) Situation Report—42*. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200302-sitrep-42-covid-19.pdf?sfvrsn=224c1add_2
World Health Organization (WHO). (2020d). *Coronavirus Disease 2019 (COVID-19) Situation Report—47*. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200307-sitrep-47-covid-19.pdf?sfvrsn=27c364a4_2
World Health Organization (WHO). (2020e). *Coronavirus Disease 2019 (COVID-19) Situation Report—50*. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200310-sitrep-50-covid-19.pdf?sfvrsn=55e904fb_2
World Health Organization (WHO). (2020f). *Novel Coronavirus—China*. http://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/
World Health Organization (WHO). (2020g). *Statement—Digital health is about empowering people*. https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/statements/statement-digital-health-is-about-empowering-people
World Health Organization (WHO). (2020h). *Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of Novel Coronavirus (2019-NCoV)*. https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)
World Health Organization (WHO). (2020i, June 5). WHO Director-General's opening remarks at the media briefing on COVID-19. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—5-june-2020
World Health Organization (WHO). (2020j, March 16). WHO Director-General's Opening Remarks at the Media Briefing on COVID-19. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—16-march-2020
World Health Organization (WHO). (2020k). WHO mass gathering COVID-19 risk assessment tool—Generic events. https://apps.who.int/iris/handle/10665/333185
World Health Organization (WHO). (2020l). *WHO timeline—COVID-19*. https://www.who.int/news-room/detail/27-04-2020-who-timeline—covid-19
World Health Organization (WHO). (2020m). Coronavirus disease (COVID-19): Masks. https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-masks
Yan, B., Zhang, X., Wu, L., Zhu, H., & Chen, B. (2020). Why do countries respond differently to COVID-19? A comparative study of Sweden, China, France, and Japan. *The American Review of Public Administration*, *50*(6–7), 762–769.

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Handwashing stations in Nepal: Role of wealth status in establishing handwashing stations at home

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Abstract

Handwashing has been proven to be effective at preventing several infectious diseases. This study aims to find out the role of wealth status in establishing handwashing stations in the households of Nepal. This study used secondary data from Nepal Demographic Health Survey in 2016 to assess the association between households' wealth status and handwashing stations. The findings displayed a significant association between the age of the household head, residence place, ecological zone, province, wealth status, having a mosquito net, having a radio and TV in the respondent's household, and fixed handwashing stations at their households at $p < 0.001$ level. Wealth status has significant effect on fixed handwashing stations (adjusted odds ratio [aOR] = 12.699; 95% confidence interval [CI] = 10.120–15.935; $p < 0.001$) in the households. The households with the poorest wealth status (aOR = 9.718; 95% CI = 7.387–12.785; $p < 0.001$), mountain ecological zone (aOR = 1.325; 95% CI = 1.098–1.599; $p < 0.01$), Madhesh province (aOR = 2.967; 95% CI = 2.405–3.658; $p < 0.001$) were significant predictors for not having fixed handwashing stations even after inclusion of socio-covariates. Correspondingly, the presence of mosquito net (aOR = 0.795; 95% CI = 0.692–0.913; $p < 0.01$), presence of a radio (aOR = 0.758; 95% CI = 0.671–0.857; $p < 0.001$), and presence of a TV (aOR = 0.762; 95% CI = 0.667–0.871; $p < 0.001$) had a significant effect on fixed handwashing stations at their households even after inclusion of socio-covariates. The study found households with the poorest wealth quintiles, mountain ecological zone, and Madhesh and Karnali provinces had low fixed handwashing

stations. The study suggests more leading interventions to improve public health in this region.

KEYWORDS

handwashing station, household, Nepal, wealth status

Key Points

- Handwashing effectively reduces the spread of several infectious diseases, including COVID-19.
- This paper uses secondary data from Nepal's Demographic Health Survey in 2016 to assess the association between households' wealth status and having handwashing stations.
- There exists a significant association between the age of the household head, place of residence, ecological zone, province, wealth status, and having a mosquito net/radio/TV in the house, and the likelihood of having fixed handwashing stations.
- The lowest proportions of fixed handwashing stations were found in the poorest households, in the mountains, among the Madheshi ethnicity, and based in Karnali province.
- Promoting handwashing stations may need additional public health interventions to overcome underlying inequalities at a population level.

INTRODUCTION

Handwashing refers to the act or process of cleaning one's hands to remove soil, grease, microorganisms, or other unwanted substances (Public Health Agency of Canada, 2012). It further asserts washing hands with water and ash or water and soap (antimicrobial or nonantimicrobial) or applying an alcohol-based hand sanitizer to the hands (Sharma et al., 2021). It has also been recognized as one of the most cost-effective health interventions to reduce the burden of disease (Bartram & Cairncross, 2010). It is one of the most effective processes that consider the key measure to trim down the potential transmission of infection through contact with persons and things.

With the COVID-19 pandemic, the importance of handwashing is strongly advocated by health promoters across the globe because COVID-19 mainly transmits among people through direct (close contact with infected people) and indirect (contaminated objects or surfaces) via mouth and nose secretions. Thus, washing hands with soap and running water is of critical importance. To stop the spread of ongoing pandemics and encourage appropriate hygiene, the practice of handwashing at regular intervals is beneficial, after coughing or sneezing, when caring for the sick, after using the toilet, before eating, while preparing food, and after handling animals or animal waste. Furthermore, handwashing after touching common surfaces such as doorknobs or handles or after visiting a public place will help keep ourselves and others around us safe.

COVID-19, a respiratory infectious disease caused by SARS-CoV-2, is now a major global health crisis (Walker et al., 2020). The world faces acute public health emergencies and economic crises globally caused by the COVID-19 pandemic. Hand hygiene is a critical public health control mechanism to prevent the spread of infectious pathogens, as the most

common way many communicable diseases are transmitted is via hands (Herbart et al., 2020). Handwashing with soap often and throughout the day prevents the spread of many diseases; for instance, diarrhea (Cairncross et al., 2010), cholera (Hulland et al., 2013), and soil-transmitted helminthiases (Strunz et al., 2014).

It has also been recognized as one of the most cost-effective health interventions to reduce the disease burden (Bartram & Cairncross, 2010). Handwashing may refer to either washing hands with water and soap (antimicrobial or nonantimicrobial) or applying an alcohol-based hand sanitizer to the hands. Handwashing with soap is considered the most effective method for reducing the spread of viral or bacterial infections; however, hands can be cleaned with ash too (Paludan-Müller et al., 2020).

Currently, hand hygiene is recognized as one of the cornerstones of COVID-19 prevention and has become an integral part of daily routines. A handwashing station is commonly defined as a device that may be fixed or mobile and includes a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designed for handwashing (Joint Monitoring Program [JMP], 2019). Analysis suggests that improved hand hygiene practices may reduce rates of gastrointestinal illness by 31% and respiratory disease by 21% (Aiello et al., 2008). Although hand hygiene interventions are cost-effective, they are often not sufficiently practiced.

Access to handwashing stations with soap and water on-premises is a global indicator of hygiene in a household setting (United Nations International Children's Fund, 2020). The handwashing station can be temporary or permanent installations, which impacts the selection of materials used for construction as well as the cost and durability of the station. Temporary solutions can usually be constructed with low-cost materials such as a bucket or a bottle with a tap and are quick and usually simple to build. Permanent handwashing stations may consist of a wood or steel frame or concrete work, depending on materials and skills. In some cases, mobile handwashing stations might be preferable over permanent infrastructure as they can be stored in a secure location when not in use, like at night or during school vacations.

Only around half of all households in Nepal have access to a handwashing facility with water and soap, that is, 46% in Nepal Demographic Health Surveys (NDHS, 2016) and 52.2% in a more recent study (JMP, 2019). Consequently, the risk of infection associated with a lack of handwashing has long been recognized. To better health outcomes for the people beyond the pandemic, handwashing with soap must be a priority now and in the future. This study provides an overview of handwashing stations in households in Nepal and whether wealth status is associated with the availability of handwashing stations.

METHODS

The study followed a survey research design. The 2016 NDHS survey data set was used to analyze whether having a handwashing station at home was associated with the household's wealth status. The NDHS is a nationally representative survey that provides current data on basic demographic and health indicators related to access to health services, selected health behaviors, and health outcomes (Ministry of Health and Population, 2019).

Sample and sampling procedure

The 2016 NDHS sample was stratified; all seven provinces (province 1, province 2, province 3, province 4, province 5, province 6, and province 7) were stratified into

urban and rural areas, yielding 14 sampling strata. The demarcation of the provinces involves the inclusion of selected districts within their boundaries. Furthermore, the districts are divided into urban and rural locations, which are in turn divided into wards. In rural areas, wards are selected as Primary Sampling Units (PSUs), which consider an average sample size of 104 households. In urban areas, wards were selected as PSUs, regarded as the average sample size of 800 households (NDHS, 2016).

The sample of wards was selected independently in each stratum. Implicit stratification and proportional allocation were achieved at each of the lower administrative levels by sorting the sampling frame within each sampling stratum before sample selection, according to administrative units at different levels, and by using a probability proportional to size selection during the first stage of sampling (NDHS, 2016).

A total of 11,473 households from seven provinces were selected for the sample, of which 11,203 were occupied. Of the occupied households, 11,040 were successfully interviewed. Of the total, 7581 of the interviews conducted were with men and 3459 were with women, who were the household head and could respond to the survey questionnaire. The response rate was 99% (NDHS, 2016).

Questionnaires

Although six questionnaires were administrated in the 2016 NDHS, researchers adapted only the Household Questionnaire (HHQ) to reflect the handwashing station issues in Nepal. The NDHS used HHQ to list all household members in selected 11,040 households. Basic demographic information was obtained on the characteristics of each person listed, including their age, sex, marital status, education, and relationship to the household head. The HHQ collected further information on the household dwelling units, such as the source of water, type of toilet facilities, materials used for the floor of the dwelling unit, and ownership of various durable goods, migration, and food security.

Data analysis methods

The analysis was confined to the 11,040 households. Data were weighted to represent the structure of the Nepali population using weighting factors provided by the 2016 NDHS. The study performed three different types of analysis: univariate, bivariate, and multivariate. Initially, univariate or descriptive analysis was used to describe the percent and frequency of respondents according to background characteristics. The bivariate (χ^2 test) analysis was conducted to show the association between variables and multivariate (logistic regression) among variables to examine the determination of the handwashing station. Furthermore, a χ^2 test (bivariate analysis) was carried out to evaluate the association between independent and dependent variables (Sharma & Adhikari, 2022). After the bivariate analysis, multicollinearity was tested for the independent variables. In the bivariate analysis, a statistically significant association was considered ($p < 0.05$) (cross-tabulation) (Arkkelin, 2014). Those that were not multicollinear were then considered for the multivariate analysis. All analysis in this study was conducted with Statistical Package for Social Science software pro 20.0 version (Landau & Crc, 2004). The variables with a statistically significant *p-value* ($p < 0.05$) in the bivariate and multivariate analyses (adjusted odds ratio [aOR]) are discussed in this study.

RESULTS

This section outlines the key results including background characteristics of household, handwashing station, presence of water/soap, factors associated with handwashing stations, and predictors for not having fixed handwashing stations in homes in Nepal.

Background characteristics of household

Table 1 presents the background characteristics of households' handwashing stations using 2016 NDHS data. It includes sex of the household head, age of household, place of residence, ecological zone, province, wealth status, migrated household members in the past 10 years, presence of a mosquito net, presence of radio, and presence of a TV in households.

More than twice as many men (68.7%) were household heads as women (31.3%). Of those surveyed, the highest proportion had a household head that was in the highest age range (age 35–44 years) compared to 5.7% who had a household head in the lowest age range (15–24 years). Concerning the residence groups, the majority of (61.4%) households had urban residences, whereas 38.6% represented rural. The analysis showed almost the same proportion of respondents in Hill (46.5%) and Terai (46.4%) and very few (7.1%) in the mountain ecological zone. Concerning the province, Bagmati province had the highest proportion (22.8%) of respondents, whereas Karnali province had the least proportion, with only 5.6% of respondents in this study. Province 1 and Madhesh province had a similar proportion (18.2%) of respondents, Lumbini province had 16.2% respondents, and the Sudur-Paschip province had the least (8.3%) respondents for this study.

Wealth status was categorized as richest, richer, poor, and poorest, and they had an approximately equal number of survey respondents. More than half (53.5%) of the total respondents had not migrated within the last 10 years. In addition, three-quarter (75.9%) of households had mosquito nets, 70.7% had a radio, and 51.6% had a TV in their household (see Table 1).

Handwashing station, presence of water/soap

Table 2 details the availability of handwashing stations in the household categorized into four subsections. First, a place where household members wash their hands, second, the presence of water at the handwashing place, third, the presence of soap or detergent, and last, the presence of ash, mud, and sand. Our analysis revealed that handwashing places were fixed for 80.9% of households and were mobile for 18%. Likewise, very few households have a handwashing place.

In total, 77.3% of the respondents' handwashing stations in their households had water available. Interestingly, slightly more than half (51.8%) of households were found to have no soap or detergent at their handwashing station (see Table 2).

Factors associated with handwashing stations

Table 3 further explores the correlations between the background characteristics of households and the presence of fixed handwashing stations. Furthermore, this table displays the associations between age of the household head, place of residence, ecological zone, province, wealth status, migrated household members in the past 10 years,

TABLE 1 Background characteristics of households

Characteristics of head of household	Total	
	N	%
Gender		
Male	7581	68.7
Female	3459	31.3
Age		
15–24	625	5.7
25–34	2240	20.3
35–44	2562	23.2
45–54	2358	21.4
55–64	1810	16.4
65 and above	1445	13.1
Place of residence		
Urban	6781	61.4
Rural	4259	38.6
Ecological zone		
Hill	5134	46.5
Mountain	781	7.1
Terai	5125	46.4
Province		
Bagmati Province	2521	22.8
Province 1	2004	18.2
Madhesh Province	2014	18.2
Gandaki Province	1173	10.6
Lumbini Province	1793	16.2
Karnali Province	619	5.6
Sudur Paschim Province	915	8.3
Wealth status		
Poorest	2234	20.2
Poorer	2225	20.2
Middle	2065	18.7
Richer	2240	20.3
Richest	2276	20.6
Any household member migrated in the past 10 years		
No	5911	53.5
Yes	5129	46.5

(Continues)

TABLE 1 (Continued)

Characteristics of head of household	Total	
	N	%
Have a mosquito net		
No	2750	24.9
Yes	8290	75.1
Has a radio in the household		
No	7811	70.7
Yes	3229	29.3
Has a TV in the household		
No	5346	48.4
Yes	5694	51.6
Total	11,040	100.0

TABLE 2 Availability of handwashing station, presence of water and soap in the station

Handwashing station in household	*N*	%
Place where household members wash their hands		
Observed, fixed place	8936	80.9
Observed, mobile place	2075	18.8
Not observed: not in dwelling	22	.2
Not observed: no permission to see	3	.0
Not observed: other reason	4	.0
Presence of water at a handwashing place		
Water not available	2503	22.7
Water is available	8508	77.3
Items present: soap or detergent		
No	5707	51.8
Yes	5304	48.2
Items present: ash, mud, sand		
No	9296	84.4
Yes	1715	15.6
Total	11,011	100.0

presence of a mosquito net, presence of a radio, and presence of a TV at their households to fixed place handwashing stations at their households. In contrast, the sex of the household heads and household members who migrated in the past 10 years had no association with fixed handwashing stations in their households.

TABLE 3 Background characteristics of households by handwashing station

	Fixed place where household members wash their hands		
	Fixed place	Not fixed place	Total, *N*
Sex of the head of households			
Male	81.2	18.8	7581
Female	80.5	19.5	3459
Age of household***			
15–24	80.7	19.3	625
25–34	82.2	17.8	2240
35–44	81.2	18.8	2562
45–54	82.0	18.0	2358
55–64	81.3	18.7	1810
65 and above	76.6	23.4	1445
Place of residence***			
Urban	84.9	15.1	6781
Rural	74.7	25.3	4259
Ecological zone***			
Hill	83.9	16.1	5134
Mountain	70.4	29.6	781
Terai	79.6	20.4	5125
Province***			
Bagmati Province	86.5	13.5	2521
Province 1	82.3	17.7	2004
Madhesh Province	67.6	32.4	2014
Gandaki Province	91.5	8.5	1173
Lumbini Province	83.1	16.9	1793
Karnali Province	69.8	30.2	619
Sudur Paschim Province	82.1	17.9	915
Wealth status***			
Poorest	65.4	34.6	2234
Poorer	78.9	21.1	2225
Middle	77.7	22.3	2065
Richer	86.2	13.8	2240
Richest	96.0	4.0	2276
Any household member migrated in the past 10 years			
No	81.1	18.9	5911
Yes	80.8	19.2	5129

(Continues)

TABLE 3 (Continued)

	Fixed place where household members wash their hands		
	Fixed place	Not fixed place	Total, *N*
Have a mosquito net***			
No	75.4	24.6	2750
Yes	82.8	17.2	8290
Has a radio in the household***			
No	79.1	20.9	7811
Yes	85.5	14.5	3229
Has a TV in the household***			
No	72.7	27.3	5346
Yes	88.7	11.3	5694
Total	80.9	19.1	11,040

***χ^2 test significant at $p < 0.001$.

From the data analysis, we found that the age of household head, place of residence, province, wealth status of the household, availability of misquoting net, and availability of a radio in their household were significant to fixed handwashing stations where household members wash their hands. There was a significantly higher proportion (82.2%) of those who had a fixed handwashing place where household members had a household head who was 25–34 years of age. In addition, the urban residents had a higher proportion (84.9%) of fixed handwashing locations compared to rural residences (74.7%). Among the ecological zones, the hill was associated with the highest likelihood (83.9%) of fixed handwashing stations in the respondents' households. In addition, 79.6% of Terai ecological zones and 70.4% of mountain ecological zones had fixed handwashing stations in their households.

Gandaki province had the highest proportion (91.5%) of fixed handwashing stations. Following this, Bagmati province had the second highest (86.5%) proportion. Madhesh province had the lowest likelihood of fixed handwashing stations (67.6%). The analysis also showed that the richest wealth status households were most likely to have fixed handwashing stations (96.0%) ($p < 0.001$).

A higher proportion of households (82.8%) with fixed handwashing stations had mosquito nets than those who did not have mosquito nets (75.4%). The proportion of households with a fixed handwashing station was slightly higher (85.5%) in households with radio than those who had not (79.1%). More households who had a TV (88.7%) had fixed handwashing stations in comparison to those who did not have a TV (72.7%) (see Table 3).

Predictors for not having a fixed handwashing station in households in Nepal

Table 4 presents the results of the bivariate and multivariate logistic regressions, which illustrate the odds of not having a fixed handwashing station in a household in Nepal. After an initial bivariate logistic regression, multivariate logistic regression was used to adjust the effects of covariates.

TABLE 4 aOR and 95% CI for not having a fixed handwashing station in households in Nepal

	Model I			Model II		
		95% CI			95% CI	
Predicators	**aOR**	**Lower**	**Upper**	**aOR**	**Lower**	**Upper**
Wealth status						
Poorest	12.699***	10.120	15.935	9.718***	7.387	12.785
Poorer	6.416***	5.082	8.099	4.540***	3.505	5.879
Middle	6.882***	5.447	8.695	4.581***	3.563	5.889
Richer	3.856***	3.028	4.909	3.099***	2.416	3.976
Richest (ref.)	1.00			1.00		
Sex of the head of household						
Male (ref.)				1.00		
Female				1.046	0.931	1.174
Age of household head						
15–24 (ref.)				1.00		
25–34				0.872	0.684	1.110
35–44				0.934	0.735	1.187
45–54				0.936	0.731	1.198
55–64				0.864	0.671	1.113
65 and above				1.114	0.864	1.436
Place of residence						
Urban (ref.)				1.00		
Rural				1.061	0.953	1.182
Ecological zone						
Hill (ref.)				1.00		
Mountain				1.325**	1.098	1.599
Terai				1.014	0.858	1.198
Province						
Bagmati Province (ref.)				1.00		
Province 1				1.032	0.861	1.236
Madhesh Province				2.967***	2.405	3.658
Gandaki Province				0.470***	0.367	0.602
Lumbini Province				1.140	0.938	1.386
Karnali Province				1.056	0.844	1.322
Sudur Paschim Province				0.730	0.583	0.914

(Continues)

TABLE 4 (Continued)

Predicators	Model I aOR	95% CI Lower	Upper	Model II aOR	95% CI Lower	Upper
Any household member migrated in the past 10 years						
No (ref.)				1.00		
Yes				0.904	0.812	1.006
Has a mosquito net						
No (ref.)				1.00		
Yes				0.795**	0.692	0.913
Has a radio in the household						
No (ref.)				1.00		
Yes				0.758***	0.671	0.857
Has a TV in the household						
No (ref.)				1.00		
Yes				0.762***	0.667	0.871
Constant	0.042***			0.067***.		
Cox and Snell R^2	0.072			0.112		
–2 Log likelihood	9931.7			9441.5		

Abbreviations: aOR, adjusted odds ratio; CI, confidence interval.
**$p < 0.01$; ***$p < 0.001$.

In Model I, the poorest wealth status was two times more likely (aOR = 12.699; 95% confidence interval [CI] = 10.120–15.935; $p < 0.001$) to the poorer (aOR = 6.416; 95% CI = 5.082-8.009; $p < 0.001$) and middle (aOR = 6.882; 95% CI = 5.447–8.695; $p < 0.001$) not having fixed handwashing stations at their households. Similarly, the poorest wealth status was four times more likely (aOR = 12.699; 95% CI = 10.120–15.935; $p < 0.001$) not having fixed hand washing stations at their households than those who belonged to richer (aOR = 3.856; 95% CI = 3.028–4.909; $p < 0.001$) wealth status. In Model II, the poorest wealth status was two times more likely (aOR = 9.718; 95% CI = 7.387–12.785; $p < 0.001$) than poorer (aOR = 4.540; 95% CI = 3.505–5.879; $p < 0.001$) and middle (aOR = 4.581; 95% CI = 3.563–5.889; $p < 0.001$) wealth status of not having fixed handwashing stations at their households. Similarly, the poorest wealth status was three times more likely (aOR = 9.718; 95% CI = 7.387–12.785; $p < 0.001$) than richer wealth status (aOR = 3.099; 95% CI = 2.416–3.976; $p < 0.001$) of not having a fixed handwashing station at their households, including all socio-covariates.

In addition, Mountain ecological zones had higher odds (aOR = 1.325; 95% CI = 1.098–1.599; $p < 0.001$) of not having fixed handwashing stations than those in Hill and Terai ecological zones. Respondents from Madhesh province had higher odds (aOR = 2.967; 95% CI = 2.405–3.658; $p < 0.001$) of not having a fixed handwashing station at their households compared to Gandaki province (aOR = 0.470; 95% CI = 0.367–0.602; $p < 0.001$). Respondents who had mosquito nets (aOR = 0.795; 95% CI =0.692–0.913; $p \leq 0.01$), had a radio (aOR = 0.758; CI = 0.671–0.857; $p < 0.001$), and had a TV (aOR = 0.762; CI = 0.667–0.871; $p < 0.001$) had a significant effect on fixed handwashing station at their household (see Table 4).

DISCUSSION

The presence of a handwashing station in a household impacts the health of the household. In addition, a fixed handwashing station with soap and water represents the wealthy status of the households. In Nepal, especially in rural areas, most people washed their hands near their houses, not inside the house, and some of them had fixed handwashing stations whilst some had not. This study aims to find out the wealth status role in establishing handwashing stations in households. This study intends to inform the policymakers, health experts, and concerned authorities about the significant variables affecting handwashing status in Nepal and potentially lead to more targeted handwashing interventions in Nepal in the future. Thus, it is imperative to explore the role of wealth status in establishing handwashing stations within Nepalese communities.

The present study from Nepal shows that almost all households had a fixed handwashing station and water available at handwashing places, which is consistent with a recent study in Vietnam: findings show that nearly all households had fixed handwashing stations (Kien et al., 2016). Another study in Vietnam presents most homes equipped with hand cleaning items: water and soap at the household's handwashing stations (Kumar et al., 2017). Similarly, another study from Indonesia also showed that most households had fixed handwashing stations at their households (Hirai et al., 2016). In the same line with the present findings, a study in Bangladesh also showed a higher proportion of fixed handwashing stations, and about half had both water and soap (Luby et al., 2009).

Our handwashing findings observed more fixed handwashing places are contrary to those in Ethiopia and Rwanda because people think that the researcher can expose their unhygienic practices within the households. Ethiopia had a higher proportion of not having handwashing stations and Rwanda had about half (Kumar et al., 2017). However, some of these differences may be due to cultural norms where researchers were not allowed to observe handwashing practices as often in those countries. The proportion of water availability at handwashing stations in Nepal with soap and water is observed similar to other several low-income countries (LIC); the water availability range was very low to nearly half in 42 LIC countries (JMP, 2019).

The present study's findings showed the associations between age of household, place of residence, ecological zone, province, wealth status, presence of a mosquito net, presence of radio, and presence of a TV in their households to fixed handwashing stations at $p \leq 0.001$ level. The present study showed that household heads who were 25–34 years of age were more likely to have fixed handwashing stations, which is consistent with a recent study in Ghana (Martin et al., 2018). The study revealed that the household heads at least 30 years of age were more likely to have the economic and financial capability to provide necessary and enough hand hygiene infrastructures than their counterparts (Martin et al., 2018). The study further found the age of the household head is a significant predictor of a household's access to hand hygiene resources. In the present study, although the household head's age had a significant association with fixed handwashing stations, it is not a significant predictor for the fixed handwashing stations in their households.

The study in Ghana by Martin et al. (2018) further stated that wealthier households were more likely to have handwashing resources. It is consistent with the present findings that wealth quintile households were more likely to have fixed handwashing stations, including running water and soap. Similarly, another study from Ghana showed households' wealth as a key variable for establishing handwashing stations with necessary materials: soap, water, and other cleaning agents (Agbadi et al., 2019). Providing handwashing stations with appropriate cleaning materials comes with some cost implications that may be a barrier to experiencing poverty. The data presented in this study is inconsistent with the study by Martin et al. (2018) in the multivariable model because that study found that urban residency

negatively affected households' access to handwashing resources. This is an interesting contrast. The Ghana study noted that many households in Ghana lack access to basic social amenities such as pipe-borne water at their dwelling. Still, urban areas are more likely to have access to water. Adams et al. (2016) stated it could massively hinder households' access to handwashing resources.

The present study's findings showed that not having a fixed handwashing station in the poorest household was two times more likely for poorer and middle and three times more likely for richer wealth status households after inclusion of all sociodemographic covariates. This is consistent with a study in Indonesia (Hirai et al., 2016), which showed that wealth status was significantly associated with handwashing behavior and the availability of a handwashing station with soap and water. Another study from Bangladesh also showed, in line with present findings, that a fixed handwashing station with soap was more likely higher in the top two quintiles than those with the poorest quintile wealth status (Luby et al., 2009). Evidence from Western Kenya also showed that fixed handwashing stations with water and soap in lower wealth quintiles were less likely to be compared to higher wealth quintiles households (Kamm et al., 2014). The poorest households, and those in rural areas, may have not fixed handwashing stations with water and soap for various reasons: difficulty affording required material's cost, poor access to materials in local markets, inadequate knowledge, negligence to handwashing behavior (in some cases), and dynamic family requirements.

The current study showed that having mosquito nets, radio, and television at home had a significant association with fixed handwashing stations. This finding is supported by previous literature (White et al., 2020). This is plausible, and interesting findings in that radio and television are a foundation for effective and efficient means to undertake a coordinated nationwide hygiene awareness program. Furthermore, these means are the foundation for information that weighs the advantages and disadvantages of washing hands in fixed places and develops a behavior toward the practice. Moreover, these are the significant variables to predict/influence future behavioral change interventions.

CONCLUSION & IMPLICATIONS

This study shows that the age of the households, place of residence, ecological zone, province, wealth status, presence of a mosquito net, having a radio, and a TV in respondents' households were significantly associated with a fixed handwashing station in households. In contrast, the sex of the households' heads, and household members migrated in the past 10 years had no association with fixed handwashing stations in the households. The study further concluded that wealth status, province, ecological zone, and having mosquito nets, a radio, and a TV were significant predictors for establishing a fixed handwashing station in their households in Nepal.

This study informs handwashing experts in Nepal on the correlations between a fixed handwashing station at a household and other sociological variables, such as the gender of the head of the household. This can improve public health in this region by leading to more targeted interventions in the future. The study highlights the necessity for interventions in handwashing materials and placement at handwashing locations in the dwelling, particularly in rural areas, Madhesh and Karnali provinces, mountain zone, and the poorer and poorest wealth quintile groups. Additional research is necessary to explore these issues entirely.

LIMITATIONS

This study used the secondary data of the NDHS 2016 survey of Nepal concerning the head of the households, age, and presence of mosquito nets, presence of a radio, and presence of a TV in the households. Of the total households of Nepal, only 11,203 were utilized for the sample size from all seven provinces of Nepal. Only HHQ reflects the handwashing station issues as a research tool.

STRENGTHS

The study included 11,040 households from all seven provinces, where 7581 were men and 3459 were women, yielding a response rate of 99% (MoHP, 2016). The sampling procedure was stratified, in which each province was stratified into urban and rural areas, yielding 14 sampling strata. The study adopted HHQ to reflect the handwashing station issues, including basic demographic information: age, sex, marital status, education, and relationships. Furthermore, the study applied three sorts of analysis: univariate, bivariate, and multivariate. Initially, univariate was used to describe the percentage and number of respondents according to background characteristics. Both bivariate (χ^2 test) and multivariate (logistic regression) analyses were performed to show the determination of the handwashing station.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data sets generated and/or analyzed during the current study are available in the (NDHS PROGRAM) repository, https://dhsprogram.com/data/Using-DataSets-for-Analysis.cfm.

ETHICS STATEMENT

This study used secondary data; the survey protocol was reviewed and approved by the Nepal Health Research Council (NHRC).

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REFERENCES

Adams, E. A., Boateng, G. O., & Amoyaw, J. A. (2016). Socioeconomic and demographic predictors of potable water and sanitation access in Ghana. *Social Indicators Research*, *126*, 673–687. https://doi.org/10.1007/s11205-015-0912-y

Agbadi, P., Darkwah, E., & Kenney, P. L. (2019). A multilevel analysis of regressors of access to improved drinking water and sanitation facilities in Ghana. *Journal of Environmental and Public Health*, *2019*, 3983869.

Aiello, A. E., Larson, E. L., & Sedlak, R. (2008). Personal health: Bringing good hygiene home. *American Journal of Infection Control*, *36*(10 Suppl), S152–S165. https://doi.org/10.1016/j.ajic.2008.09.009

Arkkelin, D. (2014). *Using SPSS to understand research and data analysis*. Valparaiso University Library.

Bartram, J., & Cairncross, S. (2010). Hygiene, sanitation, and water: Forgotten foundations of health. *PLoS Medicine*, *7*(11):1000367. https://doi.org/10.1371/journal.pmed.1000367

Cairncross, S., Hunt, Ã. C., Boisson, S., Bostoen, K., Curtis, V., & Fung, I. C. H. (2010). Water, sanitation, and hygiene for the prevention of diarrhea. *International Journal of Epidemiology*, *39*(Suppl_1), i193–i205. https://doi.org/10.1093/ije/dyq035

Herbert, C., Meixner, F., Wiebking, C., & Gilg, V. (2020). Regular physical activity, short-term exercise, mental health, and well-being among university students: The results of an online and a laboratory study. *Frontiers in psychology*, *11*, 509. https://doi.org/10.3389/fpsyg.2020.00509

Hirai, M., Graham, J. P., Mattson, K. D., Kelsey, A., Mukherji, S., & Cronin, A. A. (2016). Exploring Determinants of handwashing with soap in Indonesia: A quantitative analysis. *International Journal of Environmental Research and Public Health*, *13*(9):868. https://doi.org/10.3390/ijerph13090868

Hulland, K. R. S., Leontsini, E., Dreibelbis, R., Unicomb, L., Afroz, A., Dutta, N. C., & Winch, P. J. (2013). Designing a handwashing station for infrastructure-restricted communities in Bangladesh using the integrated behavioral model for water, sanitation, and hygiene interventions (IBM-WASH). *BMC Public Health*, *13*, 877.

Joint Monitoring Program (JMP). (2019). *JMP_2019_NPL_Nepal*. https://washdata.org/data/household#!/npl

Kamm, K. B., Feikin, D. R., Bigogo, G. M., Aol, G., Audi, A., Cohen, A. L., Shah, M. M., Yu, J., Breiman, R. F., & Ram, P. K. (2014). Associations between presence of handwashing stations and soap in the home and diarrhoea and respiratory illness, in children less than five years old in rural western Kenya. *Tropical Medicine and International Health*, *19*(4), 398–406. https://doi.org/10.1111/tmi.12263

Kumar, S., Loughnan, L., Luyendijk, R., Hernandez, O., Weinger, M., Arnold, F., & Ram, P. K. (2017). Handwashing in 51 countries: Analysis of proxy measures of handwashing behavior in multiple indicator cluster surveys and demographic and health surveys, 2010–2013. *The American Journal of Tropical Medicine and Hygiene*, *97*(2), 447–459. https://doi.org/10.4269/ajtmh.16-0445

Landau, S., & Everitt, B. S. (2004). *A handbook of statistical analyses using SPSS*. Chapman & Hall/CRC.

Luby, S. P., Halder, A. K., Tronchet, C., Akhter, S., Bhuiya, A., & Johnston, R. B. (2009). Household characteristics associated with handwashing with soap in rural Bangladesh. *The American Journal of Tropical Medicine and Hygiene*, *81*(5), 882–887. https://doi.org/10.4269/ajtmh.2009.09-0031

Martin, N. A., Hulland, K. R. S., Dreibelbis, R., Sultana, F., & Winch, P. J. (2018). Sustained adoption of water, sanitation and hygiene interventions: Systematic review. *Tropical Medicine and International Health*, *23*(2), 122–135. https://doi.org/10.1111/tmi.13011

Ministry of Health and Population. (2019). *Maternal health care in Nepal: Trends and determinants*.

MoHP. (2016). Nepal Demographic and Health Survey. Retrived from https://dhsprogram.com/pubs/pdf/FR336/FR336.pdf

Paludan–Müller, A. S., Boesen, K., Klerings, I., Jørgens, K. J., & Munkhom, K. (2020). Hand cleaning with ash for reducing the spread of viral and bacterial infections: A rapid review. *The Cochrane Database of Systematic Reviews*, *4*(4), CD013597. https://doi.org/10.1002/14651858.CD013597

Public Health Agency of Canada. (2012). Hand hygiene practices in healthcare settings. Retrived from

Sharma, M. K., & Adhikari, R. (2022). Effect of school water, sanitation, and hygiene on health status among basic level students' in Nepal. *Environmental Health Insights*. https://doi.org/10.1177/11786302221095030

Sharma, M. K., Khanal, S. P., Acharya, D., & Acharya, J. (2021, May). Association between handwashing knowledge and practices among the students in Nepal. *Prithvi Academic Journal*, *4*, 7–17. https://doi.org/10.3126/paj.v4i0.37005

Strunz, E. C., Addiss, D. G., Stocks, M. E., Ogden, S., & Freeman, M. C. (2014). Helminth infection: A systematic review and meta-analysis. *PLoS Medicine*, *11*(3), 1001620. https://doi.org/10.1371/journal.pmed.1001620

To, K. G., Lee, J. K., Nam, Y. S., Trinh, O. T., & Do, D. V. (2016). Hand washing behavior and associated factors in Vietnam based on the Multiple Indicator Cluster Survey, 2010–2011. *Global Health Action*, *9*, 29207.

United Nations International Children's Fund. (2020, May). *Handwashing stations and supplies for the COVID-19 response*.

Walker, P., Whittaker, C., Watson, O. J., Baguelin, M., Winskill, P., Hamlet, A., Djafaara, B. A., Cucunubá, Z., Olivera Mesa, D., Green, W., Thompson, H., Nayagam, S., Ainslie, K., Bhatia, S., Bhatt, S., Boonyasiri, A., Boyd, O., Brazeau, N. F., Cattarino, L., … Ghani, A. C. (2020). The impact of COVID-19 and strategies for mitigation and suppression in low- and middle-income countries. *Science (New York, N.Y.)*, *369*(6502), 413–422. https://doi.org/10.1126/science.abc0035

White, S., Thorseth, A. H., Dreibelbis, R., & Curtis, V. (2020). The determinants of handwashing behaviour in demiostic settings. An integrative systematic review. *International Journal of Hygiene and Environmental Health*, *227*, 113512.

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Medicaid expansion and adolescents' readiness for transition to adult health insurance

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Abstract

In participating states, Medicaid expansion under the Affordable Care Act (ACA) increased availability of health insurance to low-income young adults. We examined the impact of Medicaid expansion on low-income families' knowledge of how adolescents ages 12–17 would obtain insurance coverage upon transitioning to adulthood, compared to families in states that did not expand Medicaid. Based on 2016–2019 data from the National Survey of Children's Health, caregivers in Medicaid-expansion states were more likely to report knowing how their adolescents would have continued coverage, compared to caregivers in states that opted out of Medicaid expansion (odds ratio [OR]: 1.34; 95% confidence interval [CI]: 1.06, 1.70; $p = 0.016$). The association was strongest for adolescents currently covered by public insurance (OR: 1.50; 95% CI: 1.10, 2.05; $p = 0.011$), indicating that expansion of public insurance eligibility among adults can help with planning the transition to adult health care for publicly-insured adolescents.

KEYWORDS

adolescent, health insurance, insurance coverage, medicaid, poverty

Key points

- Medicaid expansion under the Affordable Care Act increased health insurance availability to low income young adults in participating states.
- In participating states, caregivers were more likely to know how their adolescents would be covered in

adulthood than caregivers in states that opted out of Medicaid expansion.
- The strongest association was in adolescents with current public insurance coverage.

INTRODUCTION

A successful transition from pediatric to adult health care is defined as a transition without a gap in receipt of care between pediatric and adult providers (Mahan et al., 2017). Other markers of successful transition include pediatrician-mediated conversations about changes in managing health as the patient ages, starting transition planning in early adolescence, and identifying adult health care providers (Got Transition, [n.d.]; Lebrun-Harris et al., 2018). While academic societies and groups such as "Got Transition," a national resource center that has identified six core elements of a high-quality transition, have increased patient-provider communication around transitioning to adult care, maintaining insurance coverage throughout the transition remains a significant problem. Many adolescents and young adults (AYA) age out of eligibility for public programs or parents' insurance, lack employer-sponsored insurance access, cannot afford their own insurance coverage or fail to enroll in public insurance where eligible (Spencer et al., 2018). In 2017, 13% of young adults in the United States aged 18–24 years were uninsured, increasing to 16% among adults ages 25–34 (United States Census Bureau, 2017). Lack of health insurance is especially problematic for youth with special health care needs (SHCN), of whom only 17% participate in planning for health care transition, contributing to the difficulty for AYA with chronic conditions to receive continuous care (Betz et al., 2015; Lebrun-Harris et al., 2018).

The Affordable Care Act (ACA) expanded young adults' eligibility to remain on their parent's insurance until age 26 (in 2010) and increased income eligibility thresholds for Medicaid (in 2014). By the end of 2019, 35 states had expanded Medicaid eligibility for adults ages 19 to 64 with an income below 138% of the Federal poverty line (FPL) (Henry J. Kaiser Family Foundation, [n.d.]). This expansion increased Medicaid participation among young adults and improved the proportion of young adults receiving preventive care (Hudson & Moriya, 2017; Kominski et al., 2017; United States Census Bureau, 2017). The significant publicity around ACA Medicaid expansion led to increased awareness of public insurance programs, including increased enrollment of children in Medicaid and increased receipt of pediatric preventive care (Hudson & Moriya, 2017). Beyond these immediate effects of Medicaid expansion, we hypothesized that state Medicaid expansion would help low-income families plan for adolescents' transition to adult care, by providing certainty around whether their child would maintain insurance coverage after they turn 18. To test our hypothesis, we compared caregiver survey responses about adolescents' plan for health insurance coverage after age 18 according to state participation in Medicaid expansion. We also hypothesized that the perceived quality of transition preparation would not otherwise be impacted by state Medicaid expansion due to its dependence on healthcare practitioners providing appropriate transition education and planning, rather than state-level policy.

METHODS

Data were obtained from the 2016–2019 waves of the National Survey of Children's Health (NSCH), conducted on behalf of the Maternal and Child Health Bureau (MCHB). The Institutional Review Board at East Carolina University determined that analysis of these data was not considered human subjects research. The NSCH randomly selected US

TABLE 1 Question wording for study outcomes

Question topic	Question wording	Answer choices[a]
Making positive choices	Have this child's doctors worked with you and this child to make positive choices about his or her health?	Yes, no, don't know
Developing self-management skills	Have this child's doctors worked with you and this child to gain skills to manage his or her health and health care?	Yes, no, don't know
Understanding health care changes	Have this child's doctors worked with you and this child to understand the changes in health care that happen at age 18?	Yes, no, don't know
Creating a written transition plan	Have this child's doctors or other health care providers worked with you and this child to create a written plan to meet his or her health goals and needs?	Yes, no

[a]"Don't know" grouped with "no" for analysis.

households using a sample of addresses, with eligible households invited to complete a detailed survey on one randomly selected child via an online or mailed paper survey (National Survey of Children's Health). We limited our sample to surveys completed about adolescents age 12–17 years, living in families with a reported income no greater than 138% of the FPL, since adolescents in those families would be most likely to be affected by the expansion of Medicaid eligibility as they aged into adulthood (Healthcare.gov, [n.d.]; McKenzie et al., 2019). Adolescents with unknown family income and adolescents with missing data for our study outcomes or covariates were excluded from our analysis.

The primary outcome, plan for transition of insurance coverage, was defined using the caregiver response to the question, "Do you know how this child will be insured as he or she becomes an adult?" with answer choices of yes or no. Secondary outcomes were related to discussion of transition with the child's doctors and were measured using the questions shown in Table 1. Where applicable, responses of "don't know" were grouped with "no," and compared to "yes" responses. Data were summarized using weighted means or proportions, and Wald tests were used to compare study outcomes per state participation in ACA Medicaid expansion during the year of survey administration (state had expanded Medicaid eligibility as of January 1 of that year, vs. state without expanded Medicaid eligibility) (Henry J. Kaiser Family Foundation, [n.d.]).

In multivariable logistic regression, we aimed to control for current stressors limiting children's access to health care, including needing but not receiving health care for their child; lacking a usual source of preventive care; and experiencing a lack of insurance coverage at any time during the past 12 months. We also controlled for children's demographic characteristics (age, sex, race/ethnicity), household structure, current use of public health insurance, continuous family income (% FPL), caregiver-rated health status, and SHCN status. Children's general health at the time of the survey was assessed on a 5-point scale ranging from poor to excellent and reported by the caregiver completing the survey (poor and fair responses were combined for analysis, due to the low response rate in these categories). In a supplemental analysis, we also re-fit the multivariable model of the primary study outcome for subsamples of adolescents who had only public insurance, and those who had only private insurance. Data analysis was performed in Stata/SE 16.1 (StataCorp, LP), and all analyses incorporated the survey weights and variance adjustment required by the complex survey design. $p < 0.05$ was deemed statistically significant.

RESULTS

The 2016–2019 NSCH included 54,434 adolescents ages 12–17 years, of whom 5,835 had a reported family income equal or less than 138% of FPL. After excluding 366 cases with missing data, we retained a sample of 5,469 adolescents (weighted mean age, 14 years; weighted percent female = 49%) for further analysis. Based on this sample, we estimated that 57% of adolescents in low-income households lived in states that participated in the ACA Medicaid expansion. Adolescent and family characteristics are summarized by state participation in Medicaid expansion in Table 2. Only 36% of caregivers (95% confidence interval [CI]: 33%, 38%) reported knowing how adolescents will be covered by health insurance in adulthood. Among our other measures of transition readiness, 67% of adolescents had discussions with their doctor on how to make positive health choices, 56% discussed self-management skills, 38% discussed changes in health care associated with the transition to adulthood, and only 22% had a written transition plan.

Comparing measures of transition readiness by Medicaid expansion status (Table 3), we found that caregivers knew how adolescents would be insured in adulthood for 38% of adolescents in participating states (95% CI: 35%, 42%), compared to 32% of adolescents in nonparticipating states (95% CI: 28%, 36%; $p = 0.018$). On multivariable analysis of this primary outcome (Table 4), state Medicaid expansion remained associated with a greater likelihood that caregivers would report knowing how their adolescent children would obtain insurance coverage in adulthood (odds ratio [OR]: 1.34; 95% CI: 1.06, 1.70; $p = 0.016$). Within our sample, there was no difference in readiness for the transition to adult coverage by family income, and no difference by the presence of special health care needs ($p = 0.371$ and $p = 0.575$, respectively). Caregivers of African American adolescents and caregivers in a household with 2 parents were more likely to report knowing how their child would get health coverage in adulthood; while unmet health care needs, current public insurance coverage, and health insurance gaps in the past 12 months were associated with a lower likelihood of knowing how the child would be covered.

In a supplemental analysis, we repeated the multivariable logistic regression analysis for subsamples of low-income adolescents who had only public insurance ($N = 3383$) and adolescents who only had private insurance ($N = 1141$). State participation in Medicaid expansion was favorably associated with knowing how adolescents would be covered by insurance in adulthood among caregivers of adolescents who currently had only public insurance (OR: 1.50; 95% CI: 1.10, 2.05; $p = 0.011$), but not among caregivers of adolescents who currently had only private insurance (OR: 0.98; 95% CI: 0.62, 1.55; $p = 0.939$). No secondary outcome measures varied by state participation in Medicaid expansion on bivariate comparisons (p-values ranging from 0.261 for having a written plan to 0.990 for understanding changes in health care that happen at age 18). Bivariate and multivariable comparison of these outcomes are summarized in Table 3. Therefore, state Medicaid expansion was specifically associated with improved planning for adolescents' health insurance coverage after they reach adulthood, and not with overall improvement in measures used to characterize transition readiness.

DISCUSSION

Adolescents' readiness for transition to adult health care presents a significant concern for families and health care providers (Reiss et al., 2005). Although there are currently no nationally representative data which track how family expectations of children's future coverage are correlated with actual coverage status in young adulthood, analyzing these expectations is an important counterpart to assessing other metrics of transition readiness.

TABLE 2 Characteristics of adolescents in low-income families according to state participation in Medicaid expansion

Variable	Weighted mean or percent (95% CI)		p[a]
	State did not expand Medicaid	State expanded Medicaid	
Age (year)	14 (14, 15)	14 (14, 15)	0.612
Sex			
Male	52% (48%, 56%)	51% (47%, 55%)	0.707
Female	48% (44%, 52%)	49% (45%, 53%)	0.707
Race/ethnicity			
Non-Hispanic White	29% (26%, 33%)	32% (29%, 35%)	0.223
Non-Hispanic African American	29% (25%, 33%)	18% (15%, 21%)	<0.001
Hispanic	35% (31%, 40%)	39% (35%, 43%)	0.189
Other	6% (5%, 8%)	11% (9%, 13%)	<0.001
Household structure			
Two parents	52% (48%, 57%)	52% (48%, 55%)	0.860
Single mother	35% (31%, 39%)	34% (31%, 37%)	0.730
Other	13% (11%, 16%)	14% (10%, 16%)	0.402
Family income (% FPL)	83 (80, 86)	83 (81, 85)	0.848
General health status			
Fair or poor	4% (3%, 7%)	4% (3%, 6%)	0.710
Good	18% (15%, 22%)	17% (15%, 21%)	0.798
Very good	35% (31%, 39%)	30% (27%, 33%)	0.076
Excellent	43% (38%, 47%)	49% (45%, 52%)	0.042
SHCN	26% (23%, 30%)	28% (25%, 32%)	0.387
Currently covered by public insurance	70% (66%, 73%)	75% (72%, 78%)	0.032
Unmet health care needs, past 12 months	6% (5%, 8%)	7% (6%, 10%)	0.377
No usual place to go for preventive care	17% (14%, 20%)	14% (12%, 17%)	0.186
Insurance coverage gap in past 12 months	19% (16%, 23%)	11% (9%, 14%)	<0.001

Abbreviations: CI, confidence interval; FPL, Federal poverty level; SHCN, special health care needs.

[a]p values comparing weighted means or proportions by Wald test.

Data from the 2016–19 NSCH confirm that preparedness for transition to adult health insurance is low among a population-based sample of adolescents, with only 36% of low-income families knowing how the adolescent would be covered by health insurance in adulthood. However, our study demonstrates that ACA Medicaid expansion may have positively influenced readiness for health care transition in this population. Specifically, in states that participated in Medicaid expansion, low-income families were more knowledgeable of how their adolescent child would be covered by health insurance as an adult.

TABLE 3 Readiness for transition to adult health care among adolescents in low-income families, according to state participation in Medicaid expansion

Transition readiness question	Weighted percent (95% CI)		p[a]	Adjusted OR (95% CI) of state Medicaid expansion[b]
	State did not expand Medicaid	State expanded Medicaid		
Caregiver knows how adolescent will be covered by health insurance as an adult	32% (28%, 36%)	38% (35%, 42%)	0.018	1.34 (1.06, 1.70)
Adolescents' doctor or health care provider worked with the child and family to…				
…make positive choices about his or her health?	66% (61%, 70%)	67% (64%, 71%)	0.575	1.05 (0.81, 1.36)
…gain skills to manage his or her health and health care?	57% (53%, 62%)	55% (51%, 59%)	0.408	0.87 (0.69, 1.10)
…understand the changes in health care that happen at age 18?	38% (34%, 42%)	38% (35%, 42%)	0.990	1.01 (0.80, 1.28)
…create a written plan to meet his or her health goals and needs?	20% (17%, 23%)	23% (20%, 26%)	0.261	1.19 (0.92, 1.55)

Abbreviations: CI, confidence interval; OR, odds ratio.

[a]P-values comparing weighted proportions by Wald test.

[b]Multivariable logistic regression model adjusted for adolescent and family characteristics shown in Table 1.

TABLE 4 Multivariable logistic regression model of knowing how the caregiver's child will be covered by health insurance once they reach adulthood

Variable	OR	95% CI	*p*
State participated in Medicaid expansion	1.34	1.06, 1.70	0.016
Age (year)	1.06	0.99, 1.14	0.075
Sex			
Male	Ref.		
Female	0.90	0.72, 1.13	0.377
Race/ethnicity			
Non-Hispanic White	Ref.		
Non-Hispanic African American	1.83	1.37, 2.50	<0.001
Hispanic	0.97	0.73, 1.28	0.830
Other	1.32	0.93, 1.86	0.117
Household structure			
Two parents	Ref.		
Single mother	0.68	0.54, 0.88	0.003
Other	0.87	0.61, 1.24	0.446
Family income (% FPL)	1.00	0.99, 1.00	0.371
General health status			
Fair or poor	Ref.		
Good	1.43	0.70, 2.93	0.331
Very good	1.44	0.72, 2.87	0.306
Excellent	2.48	1.24, 4.96	0.010
SHCN	0.93	0.71, 1.21	0.575
Currently covered by public insurance	0.44	0.34, 0.58	<0.001
Unmet health care needs, past 12 months	0.57	0.34, 0.94	0.029
No usual place to go for preventive care	0.90	0.63, 1.25	0.547
Insurance coverage gap in past 12 months	0.39	0.27, 0.57	<0.001

Abbreviations: CI, confidence interval; FPL, Federal poverty level; OR, odds ratio; SHCN, special health care needs.

No such association was found between state Medicaid expansion and measures of transition readiness related to health care provider communication (e.g., having a written transition plan), suggesting that Medicaid expansion may have been associated with transition readiness through families' knowledge of expanded eligibility for public insurance.

Despite the favorable association between Medicaid expansion and knowing how adolescents will be insured once they reach adulthood, we found that most caregivers of adolescents were unsure of how their child would obtain health insurance coverage once they reach that point. We speculate that the low rate of expected insurance coverage for adolescents once they transition to adulthood is related to the overall limited planning and guidance in healthcare transition experienced by this age group (Lebrun-Harris et al., 2018).

A lack of contact with the healthcare system for adolescents exacerbates uncertainty of coverage and increases the risk of not having health insurance coverage in adulthood (McMorrow et al., 2015; Spencer et al., 2018). Therefore, structured planning for adult health insurance coverage should be a required part of the transition process for adolescents and include both health care workers and caregivers (Gabriel et al., 2017; Lebrun-Harris et al., 2018). We recommend building upon proven models of care transition, such as those reviewed by Gabriel et al. (2017), by integrating discussions of future health insurance coverage into preventive visits and supporting consistent adolescent access to the healthcare system during this critical period.

While transitioning to adult health care, AYA are susceptible to both disruptions in continuity of care and loss of health insurance. The ACA achieved multiple reforms that helped low-income AYA retain health insurance in early adulthood. Reforms included eliminating annual and lifetime limits on health insurance coverage, extending Medicaid eligibility for former foster care youth, discontinuing preventive care cost-sharing, mandatory coverage of pre-existing conditions, and enabling individuals with employer-sponsored insurance continuity of coverage to dependent children until the age of 26 (Spencer et al., 2018). In participating states, expansion of Medicaid coverage to adults has particularly improved AYA health care coverage, access to care, and continuity of health care (Spencer et al., 2018). The association between Medicaid expansion and readiness for transition found in our study increases evidence that expansion of adult Medicaid eligibility indirectly benefits children by helping families plan for their health insurance coverage, in addition to other indirect effects such as facilitating the enrollment of children who were already eligible for public coverage (Hudson & Moriya, 2017; Venkataramani et al., 2017).

Prevention of gaps in health insurance coverage is possible through early planning and communication between the adolescent and their health care providers. Numerous groups provide guidelines for supporting a successful health care transition for AYA (Got Transition, [n.d.]; Lebrun-Harris et al., 2018; Mahan et al., 2017). The six core elements of transition, per the Got Transition initiative, are: creating a policy for transition, tracking transition, supporting transition readiness, planning for transition, initiating transfer of care, and completing care transfer to adult health care providers (Got Transition, [n.d.]). Ideally, this process would begin in early adolescence, when pediatricians can initiate discussions of health care transition with both the adolescent and their caregivers (Mahan et al., 2017). However, poverty and socioeconomic disadvantage may pose barriers to implementing recommended transition plans, whether due to inadequate access to pediatric health care preceding the transition process, or due to loss of insurance coverage after aging out of children's public health insurance programs.

Importantly, social determinants of health and health care disparities may still hinder AYA health care access even when covered by health insurance. After Medicaid expansion, Latinos experienced the greatest increase in insurance coverage for youth but remained significantly less likely to have coverage and access to care as compared to non-Latino youth (Ortega et al., 2018). Mexican and Central or South American youth, in particular, continued to experience disparities in number of well visits attended as compared to white youth (Kemmick Pintor et al., 2018). The most vulnerable youth, such as those who are non-citizens, may be excluded from coverage options altogether, increasing their risk of lacking access to health care (Alcalá et al., 2017).

In states expanding Medicaid eligibility under ACA, this policy created opportunities for low-income adolescents to maintain insurance coverage upon reaching adulthood. Medicaid expansion allowed for increased opportunities for minorities such as African American and Latino youth to access healthcare and coverage but did not close the gap completely between these groups and white youth healthcare access and coverage (Buchmueller & Levy, 2020, Sommers et al., 2017). Additional studies are needed to capture exactly how

Medicaid expansion has factored into providers' conversations with adolescents and families preparing for health care transition, and whether opportunities exist to expand the share of families confident in their adolescent children's future coverage. Further studies are necessary to elucidate correlations between family expectation of adolescent healthcare coverage and actual insurance coverage once the adolescent transitions to adult healthcare.

LIMITATIONS

Our conclusions are limited by some aspects of the source data and study design. We were unable to apply a difference-in-difference analysis to study the impact of Medicaid expansion, as earlier (pre-2016) rounds of the NSCH could not be combined with the latest data. Furthermore, our secondary outcomes used the NSCH bank of questions about preparing for transition to adult care, although some of these questions (e.g., the question about making positive health choices) could have been interpreted by respondents as asking about families' overall satisfaction with provider communication. One of these questions, about planning for the future, was dropped for the 2018 round and excluded from our analysis. Additionally, family income during adolescence does not entirely determine young adults' income, so not all adolescents captured in our study might have become eligible for Medicaid after reaching adulthood. Also, a longer transition period with dual coverage is an option to some youth with SHCN under Title V and may have confounded our analysis of the association between SHCN and expected insurance coverage. Lastly, due to the cross-sectional design of the NSCH, we could not evaluate whether caregivers' expectations for future health care coverage proved accurate, or if this future coverage involved participation in state Medicaid plans.

CONCLUSION

The impact of the ACA Medicaid expansion has primarily been characterized in relation to adults' health insurance coverage, and spillover effects increasing children's enrollment in public health insurance programs. However, expanded Medicaid eligibility may also factor into transition planning for adolescents in low-income families, aiding them in maintaining health insurance coverage as adults, and supporting completion of the health care transition process. With caregivers' knowledge of how adolescents from low-income families will be covered by health insurance remaining low (e.g., 38% in Medicaid expansion states), it is important for future initiatives to consider how information about adult eligibility for public insurance programs can be best shared during the transition process, and whether opportunities exist to work with community partners to assure that adolescents reaching adulthood complete program enrollment in a timely fashion, to avoid gaps in coverage. In turn, future studies may consider how continuity of public insurance participation can support improved clinical outcomes of health care transition for low-income adolescents and young adults.

ETHICS STATEMENT

The study was not considered human subjects research by the Institutional Review Board at East Carolina University.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

DATA AVAILABILITY STATEMENT

Source data for this study are publicly available from the Maternal and Child Health Bureau. Analysis code is available from the authors upon request.

REFERENCES

Alcalá, H. E., Chen, J., Langellier, B. A., Roby, D. H., & Ortega, A. N. (2017). Impact of the affordable care act on health care access and utilization among Latinos. *Journal of the American Board of Family Medicine*, *30*(1), 52–62.

Betz, C. L., Nehring, W. M., & Lobo, M. L. (2015). Transition needs of parents of adolescents and emerging adults with special health care needs and disabilities. *Journal of Family Nursing*, *21*, 362–412.

Buchmueller, T. C., & Levy, H. G. (2020). The ACA's impact on racial and ethnic disparities in health insurance coverage and access to care. *Health Affairs (Project Hope)*, *39*(3), 395–402.

Gabriel, P., McManus, M., Rogers, K., & White, P. (2017). Outcome evidence for structured pediatric to adult health care transition interventions: A systematic review. *The Journal of Pediatrics*, *188*, 263–269.e15.

Got Transition. (n.d.). Retrieved September 13, 2018, from https://www.gottransition.org

HealthCare.gov: Federal Poverty Level (FPL). (n.d.). https://www.healthcare.gov/glossary/federalpoverty-level-fpl/19

Henry J. Kaiser Family Foundation. (n.d.). Status of state Medicaid expansion decisions: Interactive map. Retrieved May 11, 2019, from https://www.kff.org/medicaid/issue-brief/statusof-state-medicaid-expansion-decisions-interactive-map/

Hudson, J. L., & Moriya, A. S. (2017). Medicaid expansion for adults had measurable 'welcome mat' effects on their children. *Health Affairs (Project Hope)*, *36*(9), 1643–1651.

Kemmick Pintor, J., Chen, J., Alcalá, H. E., Langellier, B. A., McKenna, R. M., Roby, D. H., & Ortega, A. N. (2018). Insurance coverage and utilization improve for Latino youth but disparities by Heritage Group persist following the ACA. *Medical Care*, *56*(11), 927–933.

Kominski, G. F., Nonzee, N. J., & Sorensen, A. (2017). The affordable care Act's impacts on access to insurance and health care for low-income populations. *Annual Review of Public Health*, *38*, 489–505.

Lebrun-Harris, L. A., McManus, M. A., Llango, S. M., Cyr, M., McLellan, S. B., Mann, M. Y., & White, P. H. (2018). Transition planning among US youth with and without special health care needs. *Pediatrics*, *142*, e20180194.

Mahan, J. D., Betz, C. L., Okumura, M. J., & Ferris, M. E. (2017). Self-management and transition to adult health care in adolescents and young adults: A team process. *Pediatrics in Review*, *38*(7), 305–319.

McKenzie, R. B., Sanders, L., Bhattcharya, J., & Bundorf, M. K. (2019). Health care systems factors associated with transition preparation in youth with special healthcare needs. *Population Health Management*, *22*(1), 63–73.

Ortega, N. A., McKenna, R. M., Chen, J., Alcalá, H. E., Langellier, B. A., & Roby, D. H. (2018). Insurance coverage and well-child visits improved for youth under the affordable care act, but Latino youth still lag behind. *Academic Pediatrics*, *18*(1), 35–42.

Reiss, J. G., Gibson, R. W., & Walker, L. R. (2005). Health care transition: Youth, family, and provider perspectives. *Pediatrics*, *115*(1), 112–120.

Sommers, B. D., McMurtry, C. L., Blendon, R. J., Benson, J. M., & Sayde, J. M. (2017). Beyond health insurance: Remaining disparities in US Health Care in the post-ACA era. *The Milbank Quarterly*, *95*(1), 43–69.

Spencer, D. L., McManus, M., Call, K. T., Turner, J., Harwood, C., White, P., & Alarcon, G. (2018). Health care coverage and access among children, adolescents, and young adults, 2010-2016: Implications for future health reforms. *Journal of Adolescent Health*, *62*(6), 667–673.

The National Survey of Children's Health. Retrieved September 13, 2018, from https://www.childhealthdata.org/learn-about-the-nsch/NSCH

United States Census Bureau. (2017). Health insurance coverage in the United States: 2017. Retrieved September 13, 2018 from https://www.census.gov/library/publications/2018/demo/p60-264.html

Venkataramani, M., Pollack, C. E., & Roberts, E. T. (2017). Spillover effects of adult Medicaid expansions on children's use of preventative services. *Pediatrics*, *140*(6), e20170953.

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The relationship between state Medicaid and CHIP options and child health outcomes

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Abstract

Medicaid and the Children's Health Insurance Program (CHIP) both combine federal mandates to cover certain services and groups with state options in providing that coverage and in covering other services and groups. Using state-level panel data, we investigated the relationships of 83 state Medicaid and CHIP options with six child health outcomes from 2001 to 2018 using structural equation modeling, controlling for 10 possible demographic and economic variables, state fixed effects, and a quadratic year count variable. Our results suggest that reducing copayments and providing express eligibility may be especially important in improving child health outcomes; eliminating or reducing waiting periods, eliminating face-to-face interview requirements, and eliminating documentation requirements may also be helpful. Other state options that have been found to be important in improving child insurance outcomes, such as eliminating asset tests and providing continuous eligibility, were not as helpful for improving child health outcomes in our results.

KEYWORDS

child health outcomes, Children's Health Insurance Program, Medicaid, state options

Key points

- Reducing copayments and providing express eligibility for coverage under Medicaid and the Children's Health Insurance Program may have been especially important in improving child health outcomes in the United States from 2008 to 2018.
- Eliminating or reducing waiting periods, eliminating face-to-face interview requirements, and eliminating documentation requirements for coverage may also have helped to improve child health outcomes.

- Other state options that have been found to be important in improving child insurance outcomes, such as eliminating asset tests and providing continuous eligibility, may have been less important for child health outcomes.

BACKGROUND

When the U.S. Congress created Medicaid in 1965, it required states that elected to participate to cover a core set of basic health services for public assistance recipients. However, it also gave states significant flexibility in designing their programs, both to cover additional services for public assistance recipients and to cover medically needy people who did not receive public assistance. The program has expanded far beyond public assistance recipients to include low-income families, pregnant women, people with disabilities, and people needing long-term care. But it continues to combine federal mandates to cover certain services for certain groups with state options in providing that coverage and in covering other services or groups. The federal government pays an average of about 57% of Medicaid coverage costs, but the federal share for most services and groups ranges from a minimum of 50% in high-income states to 74% in states with the lowest per-capita incomes (Centers for Medicare & Medicaid Services (CMS), n.d.a; Kaiser Family Foundation (KFF), 2012; Smith et al., 2005).

In 1997, Congress created the Children's Health Insurance Program (CHIP) to allow states to cover uninsured children in working families with incomes just above Medicaid eligibility levels. To encourage states to participate in CHIP, Congress provided states with enhanced federal financing and even greater flexibility in designing their programs as compared with Medicaid. States even have the option to provide CHIP coverage through Medicaid, a separate CHIP program, or a combination of the two. The federal government pays an average of 70% of CHIP coverage costs, which varies from a minimum of 65% to a high of 82% based on state per-capita income. Because CHIP is not an entitlement program like Medicaid, federal CHIP payments are subject to both national and state-specific funding limits (KFF, 2012; Lambrew, 2007; Medicaid and CHIP Payment and Access Commission, 2019).

In 2010, Congress passed the Affordable Care Act (ACA), which was primarily intended to reduce uninsurance rates among low-income adults, but also affected children's coverage. It required states to transition coverage to Medicaid for all children in families earning up to 138% of the Federal poverty level (FPL); previously, states were required to cover children under Medicaid up to that level only through age 5 and were required to cover older children only up to 100% of the FPL. The ACA also required that states maintain their income eligibility limits for children at least equal to the pre-ACA levels through 2019. The ACA limited the length of waiting periods for CHIP coverage to a maximum of 90 days; previously, states required children to be uninsured for as long as 12 months before receiving coverage. Finally, the ACA provided subsidies for children in families below 400% of the FPL who were not eligible for Medicaid or CHIP and did not have access to employer-sponsored health insurance to purchase insurance in the new marketplaces; it also allowed children in families above 400% of the FPL to purchase unsubsidized insurance in those marketplaces (Rudowitz et al., 2014).

Almost all of the existing research on different state options under Medicaid and CHIP has considered their effect on child insurance outcomes, rather than child health outcomes. That research has generally concluded that certain state options such as eliminating asset tests for children's or parents' coverage, eliminating or reducing waiting periods for children's

coverage, providing express and continuous eligibility for children's coverage, and eliminating face-to-face interview requirements for children's coverage have been particularly important in reducing the percentage of uninsured children and increasing the percentage of children covered by means-tested public insurance (Abdus et al., 2014; Bansak & Raphael, 2007; Blavin et al., 2014; Kronebusch & Elbel, 2004; Ku et al., 2013; Reinbold, 2021; Sommers, 2005; Wolfe & Scrivner, 2005; Yu & Dick, 2009). Many of those studies have taken advantage of a particularly valuable source of data on state options: surveys of state Medicaid and CHIP program officials regarding eligibility, enrollment, renewal, and cost-sharing policies that have been conducted by the KFF annually since 2000 (Brooks et al., 2015, 2016, 2017, 2018, 2019, 2020; Cohen Ross & Cox, 2000, 2002, 2003, 2004, 2005; Cohen Ross & Marks, 2009; Cohen Ross et al., 2007, 2008, 2009; Heberlein et al., 2011, 2012; Heberlein, Brooks, Alker, et al., 2013; Heberlein, Brooks, Artiga, et al., 2013). Also, many of those studies considered relationships of child insurance outcomes with several different state options simultaneously. Doing so is important, because if state options omitted from the study are correlated with options included in the study, the results may overstate the importance of the included options. Finally, most of those studies were multilevel studies that combined individual-level outcome data with state-level state options data. That approach allowed the authors to have greater confidence in the validity of any relationships that were found, but it also limited the number of years of state option data that could be included and, as a result, the number of different state options that could be simultaneously considered.

In this paper, we used data from the KFF surveys to analyze the relationships between state options and child health outcomes. We used only state-level data in this study, so that we could use state options data from all available KFF surveys to analyze the relationships of our child health outcomes with 83 different state options. Our six child health outcomes were the preterm birth rate, the low birthweight rate, the very low birthweight rate, the infant mortality rate, the percentage of 2-year-olds who received the full Hib immunization series, and the percentage of children in excellent or very good health. We sought to identify state options that may be related to each child health outcome.

MATERIALS AND METHODS

Data

We used three different types of variables in our analyses. Our independent variables were derived from the state options data in the annual KFF surveys and represented either an individual state option, a variable combining data on the same state option for Medicaid and for CHIP, or an index representing two or more closely related and highly correlated state option variables. Our control variables were state-level demographic and economic variables from the annual American Community Survey. Our dependent variables were the six child health outcomes described above, using state-level data from the Annie E. Casey Kids Count Data Center (Kids Count) for all outcomes, except the percentage of children in excellent or very good health, for which we used state-level data from the Current Population Survey.

For the independent variables, we first prepared a database from the annual KFF surveys for 83 state options that had multiple years of data available and that seemed most likely to be related to our child health outcomes. Next, we combined data for the same state option reported separately for Medicaid and for CHIP in the same year into a single variable by averaging the Medicaid and CHIP data. Thus, for example, we combined separate data on whether the state required a face-to-face interview at Medicaid enrollment

(coded as 0 or 1) and whether the state required a face-to-face interview at CHIP enrollment (coded as 0 or 1) into a single variable, with possible values of 0, 0.5, or 1. (We considered averaging this variable differently to weigh the Medicaid value more because that program is much larger than CHIP, but there were relatively few cases in which the Medicaid and CHIP values were different for a given state in a given year.) This process reduced the number of state option variables to 62. Finally, we combined closely related and highly correlated variables into indices; we used structural equation modeling (SEM) to construct these indices because we were also using SEM for our analyses. This process reduced the number of state option variables to 33. From those 33 state option variables and 10 possible demographic and economic control variables, we selected variables using both backward and forward stepwise selection, retaining only variables that were at least 80% likely to be related to the relevant outcome variable. Table 1 presents descriptive data for the variables included in any of our final structural equation models; for the independent variables, it includes both the indices included in the final models and the individual variables included in each index. Table 2 lists the additional variables that we considered, but that were not included in any of our final structural equation models because they were not at least 80% likely to be related to any of our child health outcomes.

Data analysis

As shown in Table 1, the annual KFF surveys include data on different state options for different years. Because of these temporal differences in data, it is difficult to estimate the relationships with many state options simultaneously using regression techniques. One would need to impute many years of data for some variables and, in some cases, those data may not even be applicable. For example, recent surveys include data on the type of health insurance marketplace used by the state, but that concept was created by the ACA.

To make maximum use of our data in light of these temporal differences, we used SEM with full information maximum likelihood estimation, which is implemented in Stata through its maximum likelihood missing values (*mlmv*) option. The *mlmv* option assumes that missing values are missing at random. Because this assumption may not be appropriate for some variables, we conducted robustness checks using standard maximum likelihood estimation, as discussed below. The *mlmv* option also assumes joint normality of the variables when used with the observed information matrix, but we used state-clustered standard errors in all of our analyses, which assume only that the clusters are independent of each other (Stata Press, 2019).

We considered several different estimation approaches to make use of the panel structure of our data and take into account the fact that child health outcomes in the current year may be affected not only by state policies in the current year but also by policies in prior years, depending on the particular health outcome. To estimate relationships with four of our child's health outcomes (preterm birth rate, low birthweight rate, very low birthweight rate, and infant mortality rate) in year t, we averaged the independent and control variables over years t and $t-1$. For the percentage of 2-year-olds who received the full Hib series, we averaged the independent and control variables over 3 years—years t, $t-1$, and $t-2$. For the percentage of children in excellent or very good health, we averaged the independent and control variables over all available years from 2000 until year t. We considered different averaging approaches and determined to use time-weighted averages, with the earliest year receiving a relative weighting of 1, the next year receiving a relative weighting of 2, and so on. We also estimated models with unweighted averages of the independent and control variables as a robustness check, as discussed below.

TABLE 1 Descriptive statistics for variables included in final structural equation models

Variable	Number of state-years	Years covered	Mean	SD	Min.	Max.
Independent variables						
Income eligibility limit for children for Medicaid or CHIP as % of FPL	969	2000–2018	236.0	53.8	133	405
Asset test for children for Medicaid and/or CHIP	886	2000–2018	0.05	0.20	0	1
Waiting period (in months) for children for CHIP	890	2001–2018	2.3	2.4	0	12
5-year waiting period for legal immigrant children for Medicaid and/or CHIP	966	2000–2018	0.73	0.45	0	1
Presumed eligibility for children for Medicaid and/or CHIP	963	2000–2018	0.24	0.41	0	1
Express eligibility for children for Medicaid and/or CHIP	863	2000–2016	0.06	0.21	0	1
Continuous eligibility for children for Medicaid and/or CHIP	964	2000–2018	0.49	0.45	0	1
Buy-in program for children	404	2009–2018	0.19	0.39	0	1
Child copay index	797	2003–2018	–0.00	4.64	–1.79	40.50
Copay for doctor visit at 151% of FPL	792	2003–2018	2.63	5.23	0	40
Copay for ER visit at 151% of FPL	794	2003–2018	8.14	32.26	0	300
Copay for nonemergency ER visit at 151% of FPL	794	2003–2018	10.97	32.79	0	300
Copay for hospital visit at 151% of FPL	794	2003–2018	30.04	114.04	0	800
Copay for generic prescriptions at 151% of FPL	793	2003–2018	1.31	2.43	0	15
Copay for brand name prescriptions at 151% of FPL	791	2003–2018	5.68	12.95	0	67.5
Copay for doctor visit at 201% of FPL	730	2003–2018	3.76	6.18	0	40
Copay for ER visit at 201% of FPL	732	2003–2018	12.08	36.87	0	300
Copay for nonemergency ER visit at 201% of FPL	731	2003–2018	16.00	37.37	0	300
Copay for hospital visit at 201% of FPL	732	2003–2018	36.36	120.49	0	800

(Continues)

TABLE 1 (Continued)

Variable	Number of state-years	Years covered	Mean	SD	Min.	Max.
Copay for generic prescriptions at 201% of FPL	734	2003–2018	1.88	3.25	0	25
Copay for brand name prescriptions at 201% of FPL	730	2003–2018	7.39	15.64	0	100
12-month renewal period for children for Medicaid and/or CHIP	904	2000–2018	0.92	0.24	0	1
Face-to-face interview requirement for children index	887	2000–2018	0.00	0.20	–0.05	0.95
Face-to-face interview is required for child enrollment in Medicaid and/or CHIP	885	2000–2018	0.05	0.20	0	1
Face-to-face interview is required for child renewal in Medicaid and/or CHIP	886	2000–2018	0.03	0.15	0	1
No income documentation index	339	2000–2018	0.00	0.33	–0.13	0.87
No income documentation is required at enrollment for Medicaid and/or CHIP	961	2000–2018	0.13	0.33	0	1
No income documentation is required at renewal for Medicaid and/or CHIP	347	2006–2012	0.32	0.45	0	1
No other documentation index	339	2002-2005, 2013–2015	0.00	0.13	–0.40	0.07
No documentation of child's age is required for Medicaid and/or CHIP	339	2002–2005, 2013–2015	0.73	0.44	0	1
No documentation of state residency is required for Medicaid and/or CHIP	339	2002–2005, 2013–2015	0.83	0.37	0	1
No documentation of household composition is required	137	2013–2015	0.86	0.35	0	1
Income eligibility limit for pregnant women for Medicaid or CHIP as % of FPL	816	2003–2018	198.3	44.65	133	380
Asset test for pregnant women for Medicaid and/or CHIP	717	2003–2018	0.09	0.28	0	1

TABLE 1 (Continued)

Variable	Number of state-years	Years covered	Mean	SD	Min.	Max.
5-year waiting period for legal immigrant pregnant women for Medicaid and/or CHIP	966	2000–2018	0.79	0.41	0	1
Income eligibility limit for parents as % of FPL	866	2002–2018	94.3	56.6	16	275
Asset test for parents	765	2002–2018	0.40	0.49	0	1
Parent copay index	814	2003–2018	0.0	0.99	−1.35	4.96
Copay for doctor visit	452	2010–2018	1.35	1.81	0	10
Copay for ER visit	691	2003–2018	1.44	7.30	0	100
Copay for nonemergency ER visit	805	2003–2018	9.24	78.8	0	1000
Copay for hospital visit	810	2003–2018	25.5	51.6	0	400
Copay for generic prescriptions	810	2003–2018	1.22	1.12	0	5
Copay for brand name prescriptions	809	2003–2018	1.91	1.44	0	10
12-month renewal period for parents	860	2002–2018	0.88	0.33	0	1
Face-to-face interview requirement for parents index	802	2002–2018	0.01	0.36	−0.15	0.85
Face-to-face interview is required for parent enrollment	800	2002–2018	0.15	0.36	0	1
Face-to-face interview is required for parent renewal	802	2002–2018	0.09	0.28	0	1
Telephone accessibility index	491	2009–2018	−0.01	0.33	−0.79	0.21
Telephone application for Medicaid and/or CHIP	325	2012–2018	0.84	0.37	0	1
Telephone renewal for Medicaid and/or CHIP	460	2009–2018	0.57	0.48	0	1
Same eligibility system for Medicaid and nonhealth programs	434	2010–2018	0.60	0.49	0	1
Family application for Medicaid	555	2002–2012	0.54	0.50	0	1
Control variables						

(Continues)

TABLE 1 (Continued)

Variable	Number of state-years	Years covered	Mean	SD	Min.	Max.
Median household income (000s)	714	2005–2018	53.1	9.9	32.9	85.2
Child poverty rate	714	2005–2018	19.0	5.2	7.9	34.7
Unemployment rate	714	2005–2018	7.0	2.3	2.6	15.1
% of children who are Black	714	2005–2018	13.0	12.8	0.2	70.9
% of children who are Hispanic	714	2005–2018	15.4	12.8	0.9	60.5
% of children who were born in the United States	714	2005–2018	97.2	1.5	92.7	99.8
% of children who live with a parent	714	2005–2018	88.8	3.0	75.5	94.5
% of children whose families receive public assistance	714	2005–2018	24.1	6.9	9.7	42.2
% of adults with less than a high school degree	714	2005–2018	12.2	3.5	6.1	22.1
% of adults with a bachelor's degree or higher	714	2005–2018	28.9	6.1	16.5	60.4
Dependent variables						
Preterm birth rate	969	2000–2018	12.0	1.8	8.0	18.8
Low birthweight rate	969	2000–2018	8.0	1.3	5.5	12.4
Very low birthweight rate	969	2000–2018	1.4	0.3	0.8	2.8
Infant mortality rate	969	2000–2018	6.6	1.4	3.6	14.1
% of 2-year-olds who received full Hib series	866	2002–2018	71.0	9.5	25.3	91.3
% of children in excellent or very good health	867	2002–2018	82.7	3.8	66.4	93.0

Abbreviations: CHIP, Children's Health Insurance Program; ER, emergency room; FPL, Federal poverty level; Min., minimum; Max., maximum.

TABLE 2 State option variables not included in final structural equation models

Child premium index
Child premium at 101% of FPL
Child premium at 151% of FPL
Child premium at 201% of FPL
Presumed eligibility for pregnant women for Medicaid and/or CHIP
Presumed eligibility for parents
Automatic renewals for Medicaid
Online accessibility index
Online application for Medicaid and/or CHIP
Online renewal for Medicaid and/or CHIP
Online account for Medicaid and/or CHIP
Mobile accessibility index
Mobile application
Mobile account
Integration of Medicaid and CHIP index
Joint application for Medicaid and CHIP
Joint renewal for Medicaid and CHIP
Same eligibility system for Medicaid and CHIP
Type of ACA marketplace
Expanded Medicaid under the ACA

Abbreviations: ACA, Affordable Care Act; CHIP, Children's Health Insurance Program; ER, emergency room; FPL, Federal poverty level.

Finally, we included state fixed effects and a quadratic year count variable to control for individual state effects and time trends. We considered models with year fixed effects instead of the quadratic year count variable, but it was difficult to get many of the models with year fixed effects to converge and the results with the quadratic year count variable were very similar to the results with year fixed effects for the models that did converge with year fixed effects.

RESULTS

Main results

The results of our main structural equation models are presented in Tables 3–5; we separated the results into three tables because of the different time periods over which the independent and control variables were averaged. In Table 3, six state option variables were related to the preterm birth rate, with three variables related to a lower preterm birth rate and three variables related to a higher rate; six state option variables were related to the low birthweight rate, with four variables related to a lower low birthweight rate and two variables related to a higher rate; eight state option variables were related to the very low birthweight

TABLE 3 Structural equation model estimates of relationships with child health outcomes from 2008 to 2018, Part I

Model includes time-weighted averages from year *t* −1 to year *t* of the following variables	Dependent variable in year *t*			
	Preterm birth rate	**Low birthweight rate**	**Very low birthweight rate**	**Infant mortality rate**
Independent variables				
Asset test for children for Medicaid and/or CHIP	0.251 (0.161)			
Waiting period (in months) for children for CHIP		−0.012 (0.007)†		
5-year waiting period for legal immigrant children for Medicaid and/or CHIP			0.049 (0.014)***	−0.285 (0.091)**
Presumed eligibility for children for Medicaid and/or CHIP				−0.121 (0.069)†
Express eligibility for children for Medicaid and/or CHIP	−0.485 (0.118)***	−0.180 (0.047)***	−0.035 (0.018)†	−0.231 (0.141)
Continuous eligibility for children for Medicaid and/or CHIP		0.122 (0.070)†	0.072 (0.022)**	
Buy-in program for children			0.042 (0.023)†	−0.173 (0.125)
Child copay index	0.018 (0.011)†	0.007 (0.002)**	0.002 (0.0006)***	0.021 (0.008)**
12-month renewal period for children for Medicaid and/or CHIP				−0.525 (0.174)**
Face-to-face interview requirement for children index	0.889 (0.179)***			
No income documentation index	−0.468 (0.094)***	−0.066 (0.051)		
No other documentation index	1.546 (0.432)***		−0.098 (0.049)*	
Asset test for pregnant women for Medicaid and/or CHIP	−0.336 (0.163)*			
5-year waiting period for legal immigrant pregnant women for Medicaid and/or CHIP				0.269 (0.105)*
Income eligibility limit for parents as % of FPL		−0.0006 (0.0004)	−0.0003 (0.0001)*	
Asset test for parents		−0.101 (0.039)*	−0.027 (0.011)*	−0.270 (0.095)**
Parent copay index				0.069 (0.043)

TABLE 3 (Continued)

Model includes time-weighted averages from year *t* −1 to year *t* of the following variables	Dependent variable in year *t*			
	Preterm birth rate	Low birthweight rate	Very low birthweight rate	Infant mortality rate
12-month renewal period for parents				0.220 (0.099)*
Face-to-face interview requirement for parents index		0.161 (0.060)**		
Family application for Medicaid				−0.214 (0.128)†
Control variables				
Median household income (000s)	−0.061 (0.025)*	−0.021 (0.011)†		
Unemployment rate				−0.074 (0.022)**
% of children who are Black	0.126 (0.039)**	0.026 (0.015)†	0.018 (0.004)***	0.122 (0.026)***
% of children who are Hispanic		−0.033 (0.018)†		
% of children who were born in the United States		0.159 (0.027)***	0.035 (0.009)***	0.155 (0.069)*
% of children who live with a parent			−0.019 (0.008)*	
% of children whose families receive public assistance	−0.073 (0.014)***	−0.029 (0.010)**		
% of adults with less than a high school degree		0.083 (0.024)**		0.099 (0.063)
% of adults with a bachelor's degree or higher				−0.199 (0.071)**
Number of state-years	918	918	918	918

Note: Models use full information maximum likelihood estimation and include state fixed effects, a quadratic year count variable, and state-clustered standard errors, which are included within parentheses.

Abbreviations: CHIP, Children's Health Insurance Program; FPL, Federal poverty level.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

†$p < 0.10$.

TABLE 4 Structural equation model estimates of relationships with child health outcomes from 2008 to 2018, Part II

Model includes time-weighted averages from year $t-2$ to year t of the following variables	Dependent variable in year t % of 2-year-olds who received full Hib series
Independent variables	
Income eligibility limit for children for Medicaid or CHIP as % of FPL	−0.040 (0.017)*
5-year waiting period for legal immigrant children for Medicaid and/or CHIP	3.572 (1.926)†
12-month renewal period for children for Medicaid and/or CHIP	−8.438 (4.016)*
Face-to-face interview requirement for children's index	8.443 (2.819)**
No income documentation index	−3.907 (2.407)
Asset test for pregnant women for Medicaid and/or CHIP	−3.412 (1.672)*
Parent copay index	−1.389 (0.675)*
Face-to-face interview requirement for parents index	−5.061 (2.060)*
Telephone accessibility index	5.308 (3.948)
Same eligibility system for Medicaid and nonhealth programs	8.475 (2.274)***
Control variables	
Child poverty rate	2.321 (0.517)***
Unemployment rate	−2.868 (0.508)***
% of children who are Black	1.380 (0.617)*
% of adults with a bachelor's degree or higher	3.876 (1.084)***
Number of state-years	918

Note: Models use full information maximum likelihood estimation and include state fixed effects, a quadratic year count variable, and state-clustered standard errors, which are included within parentheses.

Abbreviations: CHIP, Children's Health Insurance Program; FPL, Federal poverty level.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

†$p < 0.10$.

rate, with four variables related to a lower very low birthweight rate and four variables related to a higher rate; and eight state option variables were related to the infant mortality rate, with five variables related to a lower infant mortality rate and three variables related to a higher rate. In Table 4, eight state option variables were related to the Hib immunization rate, with three variables related to a higher immunization rate and five variables related to a lower rate. In Table 5, eight state option variables were related to the percentage of children in excellent or very good health, with four variables related to a higher percentage of children in excellent or very good health and four variables related to a lower percentage.

Robustness checks

We conducted two robustness checks of our main structural equation models. First, we used unweighted averages of the independent and control variables instead of the time-weighted averages described above. Second, we considered different estimation methods for the

TABLE 5 Structural equation model estimates of relationships with child insurance outcomes from 2008 to 2018, Part III

Model includes time-weighted averages from year 2000 to year *t* of the following variables	Dependent variable in year *t* % of children in excellent or very good health
Independent variables	
Income eligibility limit for children for Medicaid or CHIP as % of FPL	0.016 (0.006)*
5-year waiting period for legal immigrant children for Medicaid and/or CHIP	−2.499 (0.937)**
Continuous eligibility for children for Medicaid and/or CHIP	1.593 (1.149)
Buy-in program for children	1.874 (1.326)
Child copay index	0.391 (0.108)***
12-month renewal period for children for Medicaid and/or CHIP	−2.978 (0.962)**
Face-to-face interview requirement for children's index	3.393 (2.629)
Income eligibility limit for pregnant women for Medicaid or CHIP as % of FPL	−0.015 (0.008)†
Asset test for pregnant women for Medicaid and/or CHIP	5.078 (1.353)***
Asset test for parents	−2.696 (0.965)**
Face-to-face interview requirement for parents index	1.673 (0.948)†
Control variables	
Unemployment rate	−0.704 (0.184)***
% of children who are Black	−0.789 (0.346)*
% of adults with less than a high school degree	−1.233 (0.512)*
% of adults with a bachelor's degree or higher	−1.425 (0.619)*
Number of state-years	918

Notes: Models use full information maximum likelihood estimation and include state fixed effects, a quadratic year count variable, and state-clustered standard errors, which are included within parentheses.

Abbreviations: CHIP, Children's Health Insurance Program; FPL, Federal poverty level.

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

†$p < 0.10$.

structural equation models. We used the full information maximum likelihood (*mlmv*) method for our main analyses, but as discussed above, that method assumes that missing values are missing at random, which may not be appropriate for some variables. We discuss here the results from models that used standard maximum likelihood estimation, which omits observations with missing values.

The results from the models that used unweighted averages of the independent and control variables were fully consistent with our main results. There were no cases in which a state option variable had a significant relationship with a dependent variable in our main analyses and was not at least 80% likely to be related to that variable in the models with unweighted averages. Moreover, all of the coefficients in the models with unweighted averages were within 20% of the corresponding coefficients in our main analyses.

The results from the models that used standard maximum likelihood estimation (using Stata's *ml* option) were also consistent with our main results. There were no cases in which a state option variable had a significant relationship with a dependent variable in the *mlmv* model and did not have a significant relationship with that variable in the *ml* model. For the relationships that were significant in the *mlmv* models, all of the coefficients in the *ml* models were within 20% of the corresponding coefficients in the *mlmv* models. We should note that, for the comparison of *mlmv* and *ml* models, the time periods included often differed from our main models, because of missing data for some years for some independent variables.

DISCUSSION

First, our results suggest that reducing copayments may be especially important for improving child health outcomes. Lower copayments for children's coverage were related to a lower preterm birth rate, a lower low birthweight rate, a lower very low birthweight rate, and a lower infant mortality rate. Also, lower copayments for parents' coverage were related to a higher percentage of 2-year-olds receiving the full Hib immunization series. There was only one case when lower copayments were related to a worse child health outcome: lower copayments for children's coverage were related to a lower percentage of children in excellent or very good health. The prior studies that have considered relationships between state options and child insurance outcomes have not generally identified copayment amounts as being important factors. However, one prior study (Reinbold, 2021) did find that higher copayments for parents' coverage were related to a lower percentage of children covered by means-tested public insurance.

Second, our results suggest that providing express eligibility may also be helpful to improve child health outcomes. The CHIP Reauthorization Act of 2009 created express eligibility by providing options for states to simplify and speed up the eligibility determination process. State use of expressed eligibility increased gradually from 2010 to 2012, but has decreased since then, with only eight states offering it in 2016; KFF has not even been tracking that option in its recent surveys. In our results, having express eligibility was related to a 0.49% decrease in the preterm birth rate, a 0.18% decrease in the low birthweight rate, and a 0.04% decrease in the very low birthweight rate. Both prior studies that considered the relationship between express eligibility and child insurance outcomes found that express eligibility was related to improved child insurance outcomes (Blavin et al., 2014; Reinbold, 2021), so our results are consistent with those studies.

Eliminating waiting periods for coverage, eliminating face-to-face interview requirements for coverage or renewal, and eliminating documentation requirements may also be helpful in improving child health outcomes, although the relationships were less consistent in our results. Waiting periods were related to worse outcomes in four cases, but to better outcomes in two cases. Face-to-face interview requirements were related to worse outcomes in three cases, but to better outcomes in two cases. However, not requiring documentation for income or other eligibility criteria was related to better outcomes in two cases, but to a worse outcome in one case. All of those state options have been found to be important for improving child insurance outcomes in prior studies (Bansak & Raphael, 2007; Blavin et al., 2014; Kronebusch & Elbel, 2004; Reinbold, 2021; Wolfe & Scrivner, 2005; Yu & Dick, 2009).

Other state options that have been found to be important in improving child insurance outcomes, such as eliminating asset tests and providing continuous eligibility, were not as helpful for improving child health outcomes in our results. In fact, both of those state options were related to worse child health outcomes more often than they were related to better child health outcomes.

CONCLUSIONS AND POLICY IMPLICATIONS

We would expect there to be a positive relationship between health insurance coverage and health outcomes for both adults and children and most prior research has supported that expectation. Hadley's (2003) review found that 80% of prior studies had found a significant positive relationship between health insurance or medical care use and health outcomes, including 75% of studies on children. However, as Hadley explained, empirical analysis of the relationship between insurance and health outcomes is complicated by potential reverse causation and potential omitted variable bias. Nevertheless, Hadley found a substantial body of evidence to support the hypothesis that health insurance generally improves health.

Of course, the fact that health insurance generally improves health at the population level does not imply that the relationship will hold for all groups of people. That is especially true for public health insurance programs such as Medicaid and CHIP because of crowd-out: some individuals covered by expansions in Medicaid or CHIP might otherwise have been covered by private insurance. Therefore, it is important to understand not only how individual state options under Medicaid and CHIP affect children's health insurance coverage but also how they affect children's health outcomes. State options that increase insurance coverage may not necessarily improve health outcomes and options that do not increase overall insurance coverage may nevertheless improve health outcomes by affecting the groups of people covered and not covered by insurance.

In particular, our results suggest that states seeking to improve child health outcomes should consider reducing or eliminating copayments and providing express eligibility for children's coverage. As of January 2020, 21 of the 35 states with separate CHIP programs charged copayments; Tennessee was the only state that charged copayments for children in Medicaid (Brooks et al., 2020). As of 2016 (the last year the option was included in the KFF surveys), 43 states did not have express eligibility; the situation does not seem to have changed much since 2016 as the Medicaid website currently lists only 14 states that use express eligibility for either Medicaid or CHIP, including only four states that use it for both programs (CMS, n.d.a). So, that option remains available for most states.

LIMITATIONS AND BIAS

The principal limitations of this study relate to the fact that it uses state-level data for the health outcomes, instead of combining state-level state options data with individual-level health data. We discussed our reasons for adopting this approach above and believe that the advantages of this approach, which include allowing us to consider many more state options simultaneously, offset the disadvantages. Studies using individual data have their own limitations, of course, and there is certainly a place in health research for studies using aggregate data, particularly where the independent variables can be measured only at the group level, as in this study (Hart, 2011; Saunders & Abel, 2014). Nevertheless, as an ecological study, this study may be less reliable for drawing causal implications than a study using individual data would be. Therefore, our results that identified unexpected relationships between state options and our health outcomes, in particular, would require further investigation before reaching any conclusions about those relationships. Also, because this study used only state-level data with state fixed effects, it had less statistical power than most studies using individual data would have, which may have prevented it from detecting relationships that exist between some state options and our health outcomes.

CONFLICT OF INTEREST

The author declares no conflict of interest.

DATA AVAILABILITY STATEMENT

The data used in this study are available from the author upon request.

ETHICS STATEMENT

The data, models, and methods used in this study are not proprietary. Because this study used publicly available, nonidentifiable data, no human subjects approval was required.

REFERENCES

Abdus, S., Hudson, J., Hill, S. C., & Selden, T. M. (2014). Children's Health Insurance Program premiums adversely affect enrollment, especially among lower-income children. *Health Affairs*, *33*(8), 1353–1360. https://doi.org/10.1377/hlthaff.2014.0182

Bansak, C., & Raphael, S. (2007). The effects of state policy design features on take-up and crowd-out rates for the state Children's Health Insurance Program. *Journal of Policy Analysis and Management*, *26*(1), 149–175. https://doi.org/10.1002/pam.20231

Blavin, F., Kenney, G. M., & Huntress, M. (2014). The effects of express lane eligibility on Medicaid and CHIP enrollment among children. *Health Services Research*, *49*(4), 1268–1289. https://doi.org/10.1111/1475-6773.12157

Brooks, T., Miskell, S., Artiga, S., Cornachione, E., & Gates, A. (2016). *Medicaid and CHIP eligibility, enrollment, renewal, and cost-sharing policies as of January 2016: Findings from a 50-state survey*. KFF. http://files.kff.org/attachment/report-medicaid-and-chip-eligibility-enrollment-renewal-and-cost-sharing-policies-as-of-january-2016-findings-from-a-50-state-survey

Brooks, T., Roygardner, L., & Artiga, S. (2019). *Medicaid and CHIP eligibility, enrollment, and cost-sharing policies as of January 2019: Findings from a 50-state survey report*. KFF. http://files.kff.org/attachment/Report-Medicaid-and-CHIP-Eligibility-Enrollment-Renewal-and-Cost-Sharing-Policies-as-of-January-2019

Brooks, T., Roygardner, L., Artiga, S., Pham, O., & Dolan, R. (2020). *Medicaid and CHIP eligibility, enrollment, and cost sharing policies as of January 2020: Findings from a 50-state survey*. KFF. https://files.kff.org/attachment/Report-Medicaid-and-CHIP-Eligibility,-Enrollment-and-Cost-Sharing-Policies-as-of-January-2020.pdf

Brooks, T., Touschner, J., Artiga, S., Stephens, J., & Gates, A. (2015). *Modern era Medicaid: Findings from a 50-state survey of eligibility, enrollment, renewal, and cost-sharing policies in Medicaid and CHIP as of January 2015*. KFF. http://files.kff.org/attachment/report-modern-era-medicaid-findings-from-a-50-state-survey-of-eligibility-enrollment-renewal-and-cost-sharing-policies-in-medicaid-and-chip-as-of-january-2015

Brooks, T., Wagnerman, K., Artiga, S., & Cornachione, E. (2018). *Medicaid and CHIP eligibility, enrollment, renewal, and cost sharing policies as of January 2018: Findings from a 50-state survey*. KFF. http://files.kff.org/attachment/Report-Medicaid-and-CHIP-Eligibility-Enrollment-Renewal-and-Cost-Sharing-Policies-as-of-January-2018

Brooks, T., Wagnerman, K., Artiga, S., Cornachione, E., & Ubri, P. (2017). *Medicaid and CHIP eligibility, enrollment, renewal, and cost-sharing policies as of January 2017: Findings from a 50-state survey*. KFF. http://files.kff.org/attachment/Report-Medicaid-and-CHIP-Eligibility-as-of-Jan-2017

Centers for Medicare & Medicaid Services (CMS). (n.d.a). *Express lane eligibility for Medicaid and CHIP coverage*. CMS. https://www.medicaid.gov/medicaid/enrollment-strategies/express-lane-eligibility-medicaid-and-chip-coverage/index.html

CMS. (n.d.b). *History: CMS' program history*. CMS. https://www.cms.gov/About-CMS/Agency-information/History/

Cohen Ross, D., & Cox, L. (2000). *Making it simple: Medicaid for children and CHIP income eligibility guidelines and enrollment procedures: Findings from a 50-state survey*. KFF. https://www.kff.org/wp-content/uploads/2000/09/2166.pdf

Cohen Ross, D., & Cox, L. (2002). *Enrolling children and families in health coverage: The promise of doing more*. KFF. https://www.kff.org/wp-content/uploads/2002/05/4046.pdf

Cohen Ross, D., & Cox, L. (2003). *Preserving recent progress on health coverage for children and families: New tensions emerge: A 50 state update on eligibility, enrollment, renewal and cost-sharing practices in Medicaid and SCHIP*. KFF. https://www.kff.org/wp-content/uploads/2003/07/4125-preserving-recent-progress.pdf

Cohen Ross, D., & Cox, L. (2004). *Beneath the surface: Barriers threaten to slow progress on expanding health coverage of children and families: A 50 state update on eligibility, enrollment, renewal and cost-sharing practices in Medicaid and SCHIP*. KFF. https://www.kff.org/wp-content/uploads/2013/01/beneath-the-surface-barriers-threaten-to-slow-progress-on-expanding-health-coverage-of-children-and-families-pdf.pdf

Cohen Ross, D., & Cox, L. (2005). *In a time of growing need: State choices influence health coverage access for children and families: A 50 state update on eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and SCHIP for children and families*. KFF. https://www.kff.org/wp-content/uploads/2013/01/in-a-time-of-growing-need-state-choices-influence-health-coverage-access-for-children-and-families-report.pdf

Cohen Ross, D., Cox, L., & Marks, C. (2007). *Resuming the path to health coverage for children and parents: A 50 state update on eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and SCHIP in 2006*. KFF. https://www.kff.org/wp-content/uploads/2013/01/7608.pdf

Cohen Ross, D., Horn, A., & Marks, C. (2008). *Health coverage for children and families in Medicaid and SCHIP: State efforts face new hurdles: A 50-state update on eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and SCHIP in 2008*. KFF. https://www.kff.org/wp-content/uploads/2013/01/7740.pdf

Cohen Ross, D., Jarlenski, M., Artiga, S., & Marks, C. (2009). *A foundation for health reform: Findings of a 50 state survey of eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and CHIP for children and parents during 2009*. KFF. https://www.kff.org/wp-content/uploads/2013/01/8028.pdf

Cohen Ross, D., & Marks, C. (2009). *Challenges of providing health coverage for children and parents in a recession: A 50 state update on eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and SCHIP in 2009*. KFF. https://www.kff.org/wp-content/uploads/2013/01/7855.pdf

Hadley, J. (2003). Sicker and poorer—The consequences of being uninsured: A review of the research on the relationship between health insurance, medical care use, health, work, and income. *Medical Care Research and Review*, *60*(2), 3S. https://doi.org/10.1177/1077558703254101

Hart, J. (2011). On ecological studies: A short communication. *Dose-Response*, *9*(4), 497–501. https://doi.org/10.2203/dose-response.10-046.Hart

Heberlein, M., Brooks, T., Alker, J., Artiga, S., & Stephens, J. (2013). *Getting into gear for 2014: Findings from a 50-state survey of eligibility, enrollment, renewal, and cost-sharing policies in Medicaid and CHIP, 2012-2013*. KFF. https://www.kff.org/wp-content/uploads/2013/05/8401.pdf

Heberlein, M., Brooks, T., Artiga, S., & Stephens, J. (2013). *Getting into gear for 2014: Shifting new Medicaid eligibility and enrollment policies into drive*. KFF. https://www.kff.org/wp-content/uploads/2013/11/8516-getting-into-gear-for-2014-shifting-new-medicaid-eligibility1.pdf

Heberlein, M., Brooks, T., Guyer, J., Artiga, S., & Stephens, J. (2011). *Holding steady, looking ahead: Annual findings of a 50-state survey of eligibility rules, enrollment and renewal procedures, and cost-sharing practices in Medicaid and CHIP, 2010–2011*. KFF. https://www.kff.org/wp-content/uploads/2013/01/8130.pdf

Heberlein, M., Brooks, T., Guyer, J., Artiga, S., & Stephens, J. (2012). *Performing under pressure: Annual findings of a 50-State Survey of eligibility, enrollment, renewal, and cost-sharing policies in Medicaid and CHIP, 2011–2012*. KFF. https://www.kff.org/wp-content/uploads/2013/01/8272.pdf

Kaiser Family Foundation (KFF). (2012). *Medicaid financing: An overview of the Federal Medicaid Matching Rate (FMAP)*. https://www.kff.org/wp-content/uploads/2013/01/8352.pdf

Kronebusch, K., & Elbel, B. (2004). Enrolling children in public insurance: SCHIP, Medicaid, and State Implementation. *Journal of Health Politics, Policy and Law*, *29*(3), 451–489. https://doi.org/10.1215/03616878-29-3-451

Ku, L., Steinmetz, E., & Bruen, B. K. (2013). Continuous-eligibility policies stabilize Medicaid coverage for children and could be extended to adults with similar results. *Health Affairs*, *32*(9), 1576–1582. https://doi.org/10.1377/hlthaff.2013.0362

Lambrew, J. M. (2007). *The State Children's Health Insurance Program: Past, present, and future*. Commonwealth Fund. https://www.commonwealthfund.org/sites/default/files/documents/___media_files_publications_fund_report_2007_feb_the_state_childrens_health_insurance_program__past__present__and_future_991_lambrew_schip_past_present_future_pdf.pdf

Medicaid and CHIP Payment and Access Commission (MACPAC). (2019). *History and impact of CHIP*. https://www.macpac.gov/subtopic/history-and-impact-of-chip/

Reinbold, G. W. (2021). State Medicaid and CHIP options and child insurance outcomes: An investigation of 83 state options with state-level panel data. *World Medical & Health Policy*, *13*(3), 436–450. https://doi.org/10.1002/wmh3.465

Rudowitz, R., Artiga, S., & Arguello, R. (2014). *Children's health coverage: Medicaid, CHIP and the ACA*. KFF. https://www.kff.org/wp-content/uploads/2014/03/8570-children_s-health-coverage-medicaid-chip-and-the-aca1.pdf

Saunders, C., & Abel, G. (2014). Ecological studies: Use with caution. *British Journal of General Practice*, *64*(619), 65–66. https://doi.org/10.3399/bjgp14X676979

Smith, G., Kennedy, C., Knipper, S., O'Brien, J., & O'Keeffe, J. (2005). *Using Medicaid to support working age adults with serious mental illnesses in the community: A handbook. A brief history of Medicaid*. US Department of Health and Human Services. https://aspe.hhs.gov/reports/using-medicaid-support-working-age-adults-serious-mental-illnesses-community-handbook-0

Sommers, B. D. (2005). The impact of program structure on children's disenrollment from Medicaid and SCHIP. *Health Affairs*, *24*(6), 1611–1618. https://doi.org/10.1377/hlthaff.24.6.1611

Stata Press. (2019). *Stata Structural Equation Modeling Reference Manual Release 16*. Stata. https://www.stata.com/manuals/sem.pdf

Wolfe, B., & Scrivner, S. (2005). The devil may be in the details: How the characteristics of SCHIP programs affect take-up. *Journal of Policy Analysis and Management*, *24*(3), 499–522. https://doi.org/10.1002/pam.20112

Yu, H., & Dick, A. W. (2009). Recent trends in State Children's Health Insurance Program eligibility and coverage for CSHCN. *Pediatrics*, *124*(S4), S337–S342. https://doi.org/10.1542/peds.2009-1255c

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COMMENTARY

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Telemedicine practice guidelines in India: Global implications in the wake of the COVID-19 pandemic

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Abstract

Telemedicine is the delivery of healthcare services from a distance, by use of information and communication technology. There have been no statutory regulations or official guidelines in India specific for telemedicine practice and allied matters so far. For the first time, the government of India released telemedicine practice guidelines for Registered Medical Practitioners on March 25, 2020, amid the COVID-19 outbreak. This review would initiate the discussion on the features of the guidelines, their limitations, and their significance in times of the COVID-19 pandemic. The guidelines are with a restricted scope for providing medical consultation to patients, excluding other aspects of telemedicine such as research and evaluation and the continuing education of healthcare workers. The guidelines have elaborated on the eligibility for practicing Telemedicine in India, the modes and types of teleconsultations, delved into the doctor-patient relationship, consent, and management protocols, and touched upon the data security and privacy aspects of Teleconsultation. After releasing the guidelines, the telescreening of the public for COVID-19 symptoms is being advocated by the government of India. COVID-19 National Teleconsultation Centre (CoNTeC) has been initiated, which connects the doctors across India to All India Institute of Medical Sciences (AIIMS) in real-time for accessing expert guidance on the treatment of the COVID-19 patients.

KEYWORDS

India, practice guidelines, teleconsultation, telemedicine

[Correction added on 25 February 2022, after first online publication: The first author's name has been updated from Uthirapathy Venkatesh to U Venkatesh]

Highlights

- The government of India released telemedicine practice guidelines for Registered Medical Practitioners.
- Eligibility to deliver Telemedicine, types and channels through which Telemedicine are to be delivered have been elaborated.
- Restricted scope, lack of training material on telemedicine principles, lack of a dedicated governance mechanism, and the haziness over the jurisdictional authority of state medical councils are the limitations.

INTRODUCTION

Telemedicine uses electronic communication and information technology (IT) to support the delivery of healthcare services and medical education to people at a distant site, i.e., to those who are not able to reach the healthcare provider in person (Sood et al., 2007). It is a means to improve the health outcome in patients by providing them access to healthcare and healthcare information. The term "Telemedicine" coined in the 1970s means "Healing at a distance" literally (Strehle & Shabde, 2006). Telemedicine, in its current form, has a history from the later parts of the 19th century. A physiologist in the Netherlands, Willem Einthoven, made recordings of electrical cardiac signals of a patient more than a kilometer away with a string galvanometer by using the telephonic transmission (Barold, 2003).

Over the years, telemedicine has been providing a myriad of services during natural calamities: remote monitoring of patients, educating the healthcare professions, establishing collaboration with the experts by linking the physicians and reducing the unnecessary cost incurred on transport and time for in-person consultation for conditions that do not warrant it (Chellaiyan et al., 2019; Ryu, 2012) Telemedicine was introduced to India as a pilot project of Indian Space Research Organization (ISRO) in 2001 by linking a well-developed hospital (Apollo Hospital) in Chennai to a peripheral rural hospital in Andhra Pradesh (Indian Space Research Organisation, 2021). ISRO has been spearheading telemedicine in India and has paved the way for its operationalization from just being a technology demonstration. It brought the specialty healthcare services to the doorsteps of rural and remote areas using technology. Apollo Telemedicine Networking Foundation (ATNF) is one among the pioneers of telemedicine globally. Apollo TeleHealth is one of the largest telemedicine networks in south Asia.

There were no official telemedicine guidelines in India till 2019. Coronavirus disease 2019 (COVID-19) has boosted telemedicine in India in a huge way. The need for risk-free contactless communications between physician and patient has also paved the way for the flourishment of several electronic applications (e-applications) related to healthcare consultations worldwide like Amwell, Doctor on demand, MDlive and Babylon. In India, e-applications like Practo, 1 mg and Lybrate have flourished. The government of India has also launched its telemedicine service, eSanjeevani (National TeleConsultation Service, Ministry of Health and Family Welfare, 2020). eSanjeevani is the government of India's flagship web-based national teleconsultation portal. During the first lockdown, eSanjeevaniOPD was rolled out by the government on April 13, 2020 (Press Information Bureau, Government of India, 2021).

As specified by World Health Organization (WHO), the scope of telemedicine includes patient consultation, diagnosis, prevention and treatment as well as research and continuing education of healthcare workers (HCWs), provided the objective of such activities is advancing the health of individuals as well as the communities (Ryu, 2012). The services

include but are not limited to teleradiology, teleophthalmology, telecardiology, telestroke, telepediatrics, teleconferencing, and teleclassroom. Specialized projects such as National rural telemedicine network, National medical college network, among the medical colleges across the country, and National Cancer Network (ONCONET) are being implemented in India (Chellaiyan et al., 2019). Individual medical institutes and hospitals also conduct telemedicine services for patients, link primary care centers or physicians (Chellaiyan et al., 2019). The principles and procedures for practicing telemedicine in India are taken from the international telemedicine guidelines and the statutes of India, like the Indian Medical Council (IMC) Act 1956, Information Technology (IT) Act 2000, Clinical Establishment Act 2010, Drugs & Cosmetics Act 1940, and so forth (Ateriya et al., 2018). However, there have been no dedicated statutory regulations or guidelines of any sort, specific for telemedicine practice and allied matters, in India. The issue came to the forefront when the Bombay High Court delivered a verdict against a doctor couple in a case of criminal negligence, wherein the physician made a prescription without a diagnosis over the telephone (Deepa Sanjeev Pawaskar And Anr vs. The State of Maharashtra on 25 July 2018, 2018). The telemedicine practice guidelines for Registered Medical Practitioners (RMPs), Ayurveda, Siddha, Unani (ASU) practitioners and Registered Homeopathy Practitioners (RHPs) were issued by the Government of India on March 25, 2020, April 7 and April 10, 2020, respectively (Board of Governors in supersession of the Medical Council of India, 2020b). The elements and principles of ASUs and RHPs guidelines are almost the same as that of RMP guidelines, with the only difference being adherence to homeopathy and ASU regulations while practicing it. The timing is of particular interest, as it was immediately a day after the nationwide lockdown to contain COVID-19 was announced. Through this paper, we describe the guideline creation process as a matter of historical record, the scope of the newly released Indian telemedicine practice guidelines for RMPs and their significance during this pandemic as well as the framework for understanding modes and types of consultations. It will also offer a thorough analyses of medico-legal aspects relevant to telemedicine under the guidelines.

GUIDELINE CREATION PROCESS

Guidelines have been prepared by the Board of Governors, created in a supersession to the Medical Council of India, in collaboration with NITI Aayog, the government think tank for planning and policymaking (Board of Governors in supersession of the Medical Council of India, 2020b). The Indian Medical Council code (Professional Conduct, Etiquette and Ethics Regulation, 2002) was amended by introducing clause 3.8 in 2020 by permitting telemedicine consultations by RMPs under the telemedicine practice 2020 guidelines in Appendix 5. The "Telemedicine Practice Guidelines" are added as "Appendix 5" to the 2002 regulations, as there are already four appendices. Following these guidelines, the Board of Governors, CCH also amended and adopted the "Telemedicine Practice Guidelines" for homeopathic practitioners on April 10, 2020 (The Board of Governors, Central Council of Homeopathy, 2021).

Though the rationality for the guidelines is explicitly mentioned at the beginning of the document, it does not talk about the process and the experts involved in making it. The crucial aspect of stakeholder consultation with the RMPs, patients, technical platforms, and the medical institutes that already provide telemedicine services remains unanswered. Later a set of Frequently Asked Questions and their answers were released by the council (Board of Governors in supersession of the Medical Council of India, 2020a). The Technical groups worked, and the process involved in developing telemedicine guidelines has been a part of the guidelines in other countries (Intan Sabrina &

Defi, 2021; Ministry of Health Singapore, 2015; National Initiative for Telehealth Guidelines, 2003; Province of BC Health Authorities, 2014) National initiative for telehealth guidelines was established in Canada to have a more comprehensive consultation and participative process to arrive on the recommendations for telehealth (National Initiative for Telehealth Guidelines, 2003).

SCOPE OF THE GUIDELINES

The areas and the context where it can be used have been spelled out (Ryu, 2012). The guidelines are with a restricted scope for providing medical consultation to patients, excluding other aspects of telemedicine such as research and evaluation, the continuing education of HCWs, and complex teleinterventions like robotic surgeries. Hence, the guidelines' title could have been "Teleconsultation Practice Guidelines" as it aptly reflects the scope of the guideline rather than the "Telemedicine Practice Guideline." It also specifies the jurisdiction of the guidelines as applicable only for services provided in India. It outlays the broad principles and the seven elements essential to have teleconsultation (Board of Governors in supersession of the Medical Council of India, 2020b). The commitment and flexibility to update the guidelines as and when required has been provided, similar to other countries (Ministry of Health Singapore, 2015).

Singapore has comprehensive guidelines encompassing the details of organizational structure and equipment required to provide telemedicine, including instruments like the stethoscope, and technological support required while providing telemedicine services, which has not been included in Indian guidelines (Ministry of Health Singapore, 2015). The guidelines developed by the American Telemedicine Association (ATA) is also of comprehensive nature, and is regularly updated based on critical evaluation and feedback. ATA is a non-profit organization with complete focus only on advancing telehealth and has been in action since 1999. WHO has acknowledged 15 Cross-border legalities involved in the Telemedicine service provisions (Ryu, 2012). On June 11, 2020, the Insurance Regulatory and Development Authority of India (IRDAI) issued guidelines advising insurers to allow telemedicine wherever consultation with a medical practitioner is allowed in the conditions of the policy contract. With these critical inclusions, the practice of telemedicine became legitimized and moved out of the regulatory gray space. Later, in May 2020, telepsychiatry operational guidelines were released jointly by the Indian Psychiatric Society (IPS), Telemedicine Society of India (TSI), and National Institute of Mental Health and Neurosciences (NIMHANS) (Indian Psychiatric Society & Telemedicine Society of India In collaboration with National Institute of Mental Health and Neuro Sciences, 2020). In the telepsychiatry versus Mental healthcare act 2017, areas of concern or conflict such as maintenance of records, informed consent, advance directive, and person's rights with mental illness have been addressed (Duffy & Kelly, 2019). This guideline gives practical advice to psychiatrists for incorporating telepsychiatry services as a part of regular day-to-day clinical practice.

The prescription of psychiatric medicines is also an area of concern. List O and A drugs can be prescribed during the first consultation through video consultation only. However, drugs such as Zolpidem and Lorazepam fall under the Narcotic Drugs and Psychotropic Substances (NDPS) Act ambit and hence not to be prescribed online (Indian Psychiatric Society & Telemedicine Society of India In collaboration with National Institute of Mental Health and Neuro Sciences, 2020). The psychiatrist can convey an online Prescription to an RMP or a HCW via collaborative teleconsultation. List B drugs can be prescribed in telefollow-up consultation only, while a prohibited list of drugs cannot be prescribed online.

MODES AND TYPES OF CONSULTATION

The modes of communication, such as audio, video, and text, are permitted to be utilized in the teleconsultation process. The consultation can be between the patient and RMP, RMP and RMP, and health worker and RMP, thus providing space for assistance, expert opinions, and real-time linkages for referral during the teleconsultation. It also allows for asynchronous consultation, wherein the availability of patients and RMPs for a real-time teleconsultation may not coincide. The consultation has also been categorized as the first consult and follow up consult. In case the patient is consulting for the first time with an RMP for a current condition or the patient has consulted for the same health condition more than six months ago or the patient has consulted for a different health condition earlier, then the consultation is called as first consultation (Board of Governors in supersession of the Medical Council of India, 2020a, 2020b; Dinakaran et al., 2020)

On the other hand, follow up consultation is defined as the patient's consultation with RMP within six months of the previous in-person consultation for the same health condition. In case of the presence of new symptoms which are not in the same health condition, it is not considered a follow-up. Similarly, in case of failure of RMP to recall the previous consultation context and treatment, it is not considered a follow-up consultation (Board of Governors in supersession of the Medical Council of India, 2020a, 2020b; Dinakaran et al., 2020).

The guideline also paves the way for the caregiver or HCWs to interact with RMPs or facilitate the patient consultation and consultation between two RMPs when an expert opinion or referral is deliberated. According to the guidelines, every consult, whether first or follow-up, shall be undertaken only after confirming the absence of any condition requiring emergency care (Board of Governors in supersession of the Medical Council of India, 2020b). South Africa's telemedicine guidelines have minimal scope allowing only a video consult and the presence of a consulting health provider in person with the patient for examination, while expert assistance or opinion is provided by service consultant remotely (Health Professions Council of South Africa, 2020). It is similar to that of telecollaboration (Ministry of Health Singapore, 2015). Prescription of list A drugs for the new consultation requires a video consultation. Also, there is a lack of knowledge about current technology platforms among people, including HCWs, which might hinder effective communication.

MEDICO-LEGAL ASPECTS

The identification details of the patient and the RMP must be established and verified before initiating the medical consultation. The possible mechanism to ensure and verify each other's identity has been spelled out in the guidelines (Board of Governors in supersession of the Medical Council of India, 2021).

Physician–patient relationship

The decision to manage the specific condition in teleconsultation or otherwise is left to the professional judgment of the RMP. Conversely, if a patient prefers in-person consultation over teleconsultation, the same cannot be forced upon him (Board of Governors in supersession of the Medical Council of India, 2020b). The guidelines take a balanced approach in managing the patient preferences and professional caliber of the RMP. Thus, it provides for shared decision making between the patient and the healthcare provider in terms of utilizing the services. All records of the patient consultation shall be maintained similar to the in-person consultation. This is in line with the practices outlined in the recommendations of

other countries (Ministry of Health Singapore, 2015; Province of BC Health Authorities, 2014). The third party (applications or platforms) could have access to the audio and video recordings of the teleconsultation between the doctor and patient. There needs to be a way to address the issues arising out of private data leaks in public.

Consent, professional ethics and data security

The concept of informed consent has been included as an essential element in teleconsultation. Implicit or implied consent is taken if the patient initiates the teleconsultation. An explicit consent in words understood by the patient must be obtained if the RMP initiates the consultation, and the same must be mentioned in patient records (Board of Governors in supersession of the Medical Council of India, 2021). Countries around the world have an informed consent obligation to conduct telemedicine services (Ministry of Health Singapore, 2015; National Initiative for Telehealth Guidelines, 2003; Province of BC Health Authorities, 2014; Telemedicine laws and developments: A state-by-state analysis, 2014). The RMP shall adhere to all the professionals' ethics and conduct established under the Indian Medical Council (IMC) Act and regulations (Board of Governors in supersession of the Medical Council of India, 2021; The Board of Governors, Central Council of Homeopathy, 2021). Data security shall be maintained in accordance with the Information Technology (IT) Act of India (Board of Governors in supersession of the Medical Council of India, 2021). According to the IT Act, the patient's consent must be taken before collecting data from him/her (Ateriya et al., 2018). However, the specific clauses, obligations, and penalties pertaining to the informed consent for data and security breaches have not been provided in the guidelines. This, along with the lack of an accredited course to understand the nuances of telemedicine, may alienate a common RMP from exploring the teleconsultation services. Though the right to privacy has been held as a fundamental right and an integral part of the right to life by the apex court of India (Province of BC Health Authorities, 2014), the lack of specific data protection laws or rules as in the United States of America (USA) must also be acknowledged (Ateriya et al., 2018). The Personal Protection Bill, 2018, is yet to be made an Act, thus having gaps in privacy safeguards (Ministry of Health Singapore, 2015). The Consumer Protection Act (CPA) will be applicable for teleconsultation, as long as the consultation is charged by the RMP or the Institute (Board of Governors in supersession of the Medical Council of India, 2021). Explicit mention about CPA is missing in the guidelines.

Diagnosis, treatment, and payments

The RMPs can provide health promotion and prevention messages to the patient. The RMP must mention a diagnosis before the prescription in the teleconsultation (Ryu, 2012). The RMP enjoys the same discretion and accountability in diagnosing and prescribing medicines in teleconsultation as he does in the conventional in-person consultation. However, there is a restriction or prohibition on the type of drugs prescribed through various modes of teleconsultation (Table 1) (Board of Governors in supersession of the Medical Council of India, 2021). Flexibility to alter the list by the competent authority is provided within the document. The RMP can charge fees for the teleconsultation similar to that of an in-person consultation. Most of the states in the USA, such as Arkansas, Alabama, Arizona, etc., have their insurance system, Medicaid, reimburse the cost paid for all telemedicine by the patients, while states like Idaho pay for certain services like telepsychiatry (Telemedicine laws and developments: A state-by-state analysis, 2014). Even though the guidelines prohibit the advertisement of RMP's about their telemedicine services, the telemedicine platforms

TABLE 1 Matrix of the permissible drug lists based on the type and mode of consultation

List of medicines and its mode of teleconsultation	Prescription mode (video/ audio/text)	Nature of consultation (first-consultation/ follow-up)	Medicines included
List O: It will comprise those medicines which are safe to be prescribed through any mode of teleconsultation	Any	Any	Over-the counter medications • Antipyretics: Paracetamol • Cough Supplements: Lozenges • Cough/Common-cold medications (such as combinations of acetylcysteine, ammonium chloride, guaifensen, ambroxol, bromhexene, dextromethorphan) • ORS Packets • Syrup zinc supplements: Iron and folic acid tablets, vitamin D, calcium supplements Medication given on emergency basis (notified by government of India) Example Chloroquine for Malaria
List A: These medications are those which can be prescribed during the first consult which is a video consultation and are being re-prescribed for re-fill, in case of follow-up.	Video	First consultation	First consult medications • Ointments/lotion for skin ailments: ointments clotrimazole, mupirocin, calamine lotion, benzyl benzoate lotion, etc. • Local ophthalmological drops such as: ciprofloxacillin for conjunctivitis, etc. • Local ear drops such as: clotrimazole ear drops, drops for ear wax, etc. • Follow-up consult for above medications Follow-up medications ("re-fill") • Hypertension: enalapril, atenolol, etc. • Diabetes: metformin, glibenclamide, etc. • Asthma: salmetrol inhaler, etc.
List B: Is a list of medication which RMP can prescribe in a patient who is undergoing follow-up consultation in addition to those which have been prescribed during in-person consult for the same medical condition	Any	Follow up	Follow-up, medications prescribed as "Add-on" Example: • hypertension: e.g., add-on of Thiazide diuretic with atenolol • Diabetes: addition of sitagliptin to metformin
Prohibited list: An RMP providing consultation via telemedicine cannot prescribe medicines in this list.	Not to be prescribed	Not to be prescribed	Drugs listed under Narcotic Drugs and Psychotropic Substances (NDPS), Act, 1985 and schedule X drugs Example: anticancer drugs, morphine, etc.

invariably tend to advertise or promote them indirectly about their consulting hours, fees, mode of payment etc.

Training and registration of RMPs in telemedicine

The person eligible to do the teleconsultation has been mentioned as RMPs, as defined under the IMC Act (Board of Governors in supersession of the Medical Council of India, 2020b; The National Medical Commission Act 2019, 2019; The Indian Medical Council, 2002). They should have also qualified in an online course on telemedicine within 3 years of the notification of the guidelines for legally practicing telemedicine. However, during the interim period, any RMP can practice teleconsultation by adhering to the principles and norms mentioned in the guidelines (Board of Governors in supersession of the Medical Council of India, 2021). This may be seen as a way to fast-track the adoption of telemedicine by RMPs in India during the COVID-19 emergency situation. However, the non-release of even a short course on telemedicine, along with the guidelines, is a point of contention. While it can be taken as a start, giving such a leeway to practice without an appropriate channel for instilling the principles of telemedicine, especially when issues of data security and personal data protection are there, may raise legal questions in a court of law. The state of Alabama in the USA mandates special licenses for telemedicine from physicians (Telemedicine laws and developments: A state-by-state analysis, 2021). Similar training and qualification are expected in Singapore to practice telemedicine (Ministry of Health Singapore, 2015).

TELEMEDICINE PLATFORMS

The guideline spells the responsibility of the platforms that facilitate telemedicine to ensure the authenticity and credentials of the RMP enlisted to provide the teleconsultation in their platform. Any violation of the norms by the firms may lead to their blacklisting (entities to be avoided or distrusted as being deemed unacceptable by the Medical Council of India or its successors (Board of Governors in supersession of the Medical Council of India, 2021). The technology platforms are supposed to appoint a grievance officer, as mentioned under the IT Act (Ateriya et al., 2018). But the current telemedicine guidelines leave it vague with a mention of "proper mechanism" to address the grievance or queries (Board of Governors in supersession of the Medical Council of India, 2021).

LEGAL STATUS OF THE GUIDELINE

Telemedicine has been given legal status in India (The gazette of india: extraordinary, 2020). On May 12, 2020, the government published the guidelines in the gazette (The Gazette of India: Extraordinary, 2020). The "Telemedicine Practice Guidelines" are included as "Appendix 5" to the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002'. However, it is also clearly stated that these guidelines are not applicable for using digital technology to conduct surgical or invasive procedures remotely. Countries have issued telemedicine practice as guidelines (Ministry of Health Singapore, 2015), as well as statutory rules (Ateriya et al., 2018). European Union has taken multiple initiatives and directives to promote telemedicine, yet a common legal framework or a law still evades them (Raposo, 2016). A statute, Telehealth Advancement Act, 2012, is available for telemedicine in the USA (Ateriya et al., 2018).

NATIONAL PORTABILITY AND THE JURISDICTIONAL ISSUES

The guideline allows an RMP to practice teleconsultation all over India, that is, national portability (Board of Governors in supersession of the Medical Council of India, 2021). This breaks the boundaries by enabling doctors to provide services and patients to avail themselves of services in states other than their residential ones. However, there is no clarity on whether a medical council registration of the patient's state is required for the doctor to do the teleconsultation since all regulations and rules of in-person consultation under IMC apply to teleconsultation. Also, the jurisdiction of state medical council on matters of professional misconduct and disciplinary action against the RMP in cases of inter-state teleconsultation needs detailed clarifications. Health is a state subject in India. Hence the regulations of the state governments might be a potential hindrance in the practice of telemedicine.

TELEMEDICINE IN RELATION TO COVID-19 SCENARIO

COVID-19 pandemic is the catalyst for the release of guidelines on teleconsultation in India. Telescreening for COVID-19 symptoms, based on which patients can be referred to COVID-19 designated hospitals or other hospitals, is being recommended (Enabling Delivery of Essential Health Services during the COVID 19 Outbreak: Guidance note Background, 2021). The project COVID-19 National Teleconsultation Centre (CoNTeC) has been conceptualized by the Indian Ministry of Health and Family Welfare and has been implemented by the All India Institute of Medical Sciences (AIIMS), New Delhi (COVID-19 National Teleconsultation Center & AIIMS New Delhi, 2021). CoNTeC connects the doctors across the country to AIIMS in real-time for the treatment of the COVID-19 patients, and doctors would be available in the facility 24×7 and to keep it functioning 24 h. Worldwide, there is a thrust towards telemedicine in this COVID-19 times. In the USA's response to coronavirus, due importance has been given for telehealth.(Koonin et al., 2020; Kichloo et al., 2020) Most insurance companies across the US are reimbursing teleconsultation for COVID-19 infection (The Henry J. Kaiser Family Foundation, 2021).

CONCLUSION

Though the present guidelines released in India for telemedicine are not comprehensive, they could be taken as a starting point. They have initiated the attempt to legitimize the existing teleconsultation services provided in India appropriately. However, the limitations in terms of the restricted scope, lack of training material on telemedicine principles for RMPs, lack of a dedicated governance mechanism such as the National telemedicine agency, and the haziness over the jurisdictional authority of state medical councils over professional misconduct remain to be worked out. Further revisions and fine-tuning of the guidelines addressing the above concerns should be taken up as the next step in the telemedicine governance of India.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

The article is a review paper on the guidelines available in the public domain. Hence, ethical review was not necessary.

REFERENCES

Ateriya, N., Saraf, A., Meshram, V. P., & Setia, P. (2018). Telemedicine and virtual consultation: The Indian perspective. *The National Medical Journal of India*, *31*(4), 215–218. https://doi.org/10.4103/0970-258X.258220

Barold, S. S. (2003). Willem Einthoven and the birth of clinical electrocardiography a hundred years ago. *Cardiac Electrophysiology Review*, *7*(1), 99–104. https://doi.org/10.1023/a:1023667812925; PMID: 1276 6530

Board of Governors in supersession of the Medical Council of India. (2020a). *Frequently Asked Questions [FAQs] on Telemedicine Practice Guidelines*. Retrieved May 3, 2021, from https://medicaldialogues.in/pdf_upload/pdf_upload-126339.pdf

Board of Governors in supersession of the Medical Council of India. (2020b). *Telemedicine Practice Guidelines*. Retrieved May 3, 2021, from https://www.mohfw.gov.in/pdf/Telemedicine.pdf

Chellaiyan, V. G., Nirupama, A. Y., & Taneja, N. (2019). Telemedicine in India: Where do we stand? *Journal of Family Medicine and Primary Care*, *8*(6), 1872–1876. https://doi.org/10.4103/jfmpc.jfmpc_264_19

COVID-19 National Teleconsultation Center & AIIMS New Delhi. (2021). Retrieved May 28, 2021, from https://www.aiims.edu/en/2015-01-23-06-34-59/covid-19-national-teleconsultation-centre.html

Deepa Sanjeev Pawaskar And Anr vs. The State of Maharashtra on 25 July, 2018. (2018). Retrieved May 3, 2021, from https://indiankanoon.org/doc/160266477/

Dinakaran, D., Basavarajappa, C., Manjunatha, N., Kumar, C. N., & Math, S. B. (2020). Telemedicine practice guidelines and telepsychiatry operational guidelines, india—A commentary. *Indian Journal of Psychological Medicine*, *42*(Suppl 5), 1S–3S. https://doi.org/10.1177/0253717620958382

Duffy, R. M., & Kelly, B. D. (2019). India's Mental Healthcare Act, 2017: Content, context, controversy. *International Journal of Law and Psychiatry*, *62*, 169–178. https://doi.org/10.1016/j.ijlp.2018.08.002

Enabling Delivery of Essential Health Services during the COVID 19 Outbreak: Guidance note Background. (2021). Retrieved May 28, 2021, from https://www.mohfw.gov.in/pdf/EssentialservicesduringCOVID19updated0411201.pdf

Health Professions Council of South Africa. (2020). *Guidelines for good practice in the healthcare professions general ethical guidelines for good practice in telemedicine developed by the human rights, ethics and professional practice committee booklet no: 10 Pretoria Aug 2014 [approved by council]*. Retrieved April 8, 2020, from http://www.hpcsa.co.za

Indian Psychiatric Society & Telemedicine Society of India, In collaboration with National Institute of Mental Health and Neuro Sciences. (2020). *Telepsychiatry Operational Guidelines-2020*. NIMHANS. Retrieved May 23, 2021, from https://nimhans.ac.in/wp-content/uploads/2020/12/Telepsychiatry-Operational-Guidelines-2020.pdf

Indian Space Research Organisation. (2021). *ISRO Telemedicine Initiative*. Retrieved May 3, 2021, from http://www.televital.com/downloads/ISRO-Telemedicine-Initiative.pdf

Intan Sabrina, M., & Defi, I. R. (2021). Telemedicine guidelines in South East Asia—A scoping review. *Frontiers in Neurology*, *11*, 581649. https://doi.org/10.3389/fneur.2020.581649

Kichloo, A., Albosta, M., Dettloff, K., Wani, F., El-Amir, Z., Singh, J., Aljadah, M., Chakinala, R. C., Kanugula, A. K., Solanki, S., & Chugh, S. (2020). Telemedicine, the current COVID-19 pandemic and the future: A narrative review and perspectives moving forward in the USA. *Family Medicine and Community Health*, *8*(3), e000530. https://doi.org/10.1136/fmch-2020-000530

Koonin, L. M., Hoots, B., Tsang, C. A., Leroy, Z., Farris, K., Jolly, T., Antall, P., McCabe, B., Zelis, C. B. R., Tong, I., & Harris, A. M. (2020). Trends in the Use of Telehealth During the Emergence of the COVID-19 Pandemic—United States, January-March 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*(43), 1595–1599. https://doi.org/10.15585/mmwr.mm6943a3

Ministry of Health, Singapore. (2015). *National telemedicine guidelines for Singapore*. Retrieved May 3, 2021, from https://www.moh.gov.sg/docs/librariesprovider5/licensing-terms-and-conditions/national-telemedicine-guidelines-for-singapore-(dated-30-jan-2015).pdf

National Initiative for Telehealth Guidelines. (2003). *National Initiative for Telehealth (NIFTE) Framework of Guidelines*. NIFTE. Retrieved May 3, 2021, from https://dspace.ucalgary.ca/bitstream/handle/1880/42967/NIFTEguidelines2003eng.pdf;jsessionid=E1086B79F48927AD5D7EB64C585B0B83?sequence=3

National TeleConsultation Service, Ministry of Health and Family Welfare. (2020). eSanjeevaniOPD. Retrieved May 29, 2021, from https://esanjeevaniopd.in/Home

Press Information Bureau, Government of India. (2021). *Government of India's telemedicine service completes 3 million consultations*. Ministry of Health and Family Welfare. Retrieved May 29, 2021, from https://www.pib.gov.in/PressReleseDetailm.aspx?PRID=1705358

Province of BC Health Authorities. (2014). Telehealth Clinical Guidelines. Retrieved April 28, 2020, from http://www.phsa.ca/Documents/Telehealth/TH_Clinical_Guidelines_Sept2015.pdf

Raposo, V. L. (2016). Telemedicine: The legal framework (or the lack of it) in Europe. *GMS Health Technology Assessment*, *12*, Doc03. https://doi.org/10.3205/hta000126

Ryu, S. (2012). Telemedicine: Opportunities and developments in member states: Report on the Second Global Survey on eHealth 2009 (Global Observatory for e-Health Series, Volume 2). *Healthcare Informatics Research*, *18*(2), 153–155. https://doi.org/10.4258/hir.2012.18.2.153

Sood, S., Mbarika, V., Jugoo, S., Dookhy, R., Doarn, C. R., Prakash, N., & Merrell, R. C. (2007). What is telemedicine? A collection of 104 peer-reviewed perspectives and theoretical underpinnings. *Telemedicine Journal and e-Health*, *13*(5), 573–590. https://doi.org/10.1089/tmj.2006.0073

Strehle, E. M., & Shabde, N. (2006). One hundred years of telemedicine: Does this new technology have a place in paediatrics? *Archives of Disease in Childhood*, *91*(12), 956–959. https://doi.org/10.1136/adc.2006.099622

Telemedicine laws and developments: A state-by-state analysis. (2014). Retrieved May 28, 2021, from https://www.beckershospitalreview.com/healthcare-information-technology/telemedicine-laws-and-developments-a-state-by-state-analysis.html

The Board of Governors, Central Council of Homeopathy. (2020). *Telemedicine Practice Guidelines*. Retrieved May 3, 2021, from https://www.ayush.gov.in/docs/126.pdf

The Gazette of India: Extraordinary. (2020, May 12). *Board of governors in super session of medical council of india, notification, New Delhi*. Retrieved May 29, from https://egazette.nic.in/WriteReadData/2020/219374.pdf

The Henry J. Kaiser Family Foundation. (2020). *Private health coverage of COVID-19: Key facts and issues*. Retrieved May 28, 2021, from https://www.kff.org/private-insurance/issue-brief/private-health-coverage-of-covid-19-key-facts-and-issues/

The Indian Medical Council. (2002). (Professional conduct, etiquette and ethics regulations), 2002. *Issues in Medical Ethics*, *10*(3), 66–70.

The National Medical Commission Act, 2019. (2019). Retrieved May 28, 2021, from https://www.nmc.org.in/nmc-act

AUTHOR BIOGRAPHIES

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COMMENTARY

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Total joint replacement surgeries: Making the case for a public–private partnership in Hong Kong

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Abstract

With the increased demand for health services given the growing ageing population and the reduced volume of elective operations performed due to the COVID-19 pandemic, a public–private partnership for total joint replacement surgeries in Hong Kong may be a solution to these challenges. By contracting out a proportion of operations to the private sector, this can relieve pressure on the public system and allow for progression towards allocative efficiency. The public sector would benefit from a reduced case load while the private sector may enjoy increased profits from a larger volume of operations. This reform may also reduce long waiting times for surgeries, thus benefitting patients and health outcomes. The inclusion of price controls and government subsidies ensures that the reform remains equitable. As Hong Kong has had success with similar initiatives, this partnership would be a practical approach to address some of the city's most pressing health issues today.

KEYWORDS

arthroplasty, Hong Kong, public–private sector partnerships, resource allocation, replacement

Key points

- Ageing and COVID-19 have increased demand for joint replacement operations in Hong Kong.
- A public-private partnership for such surgeries may help to address this challenge.
- This reform would support progression towards allocative efficiency.
- Implementation will require strong governance to ensure optimal service quality and equity.
- There is a high level of public and political acceptability for such a partnership.

INTRODUCTION

The COVID-19 pandemic has greatly impacted health systems worldwide, and Hong Kong is no exception. It has exacerbated the city's existing challenge of private–public imbalances: the public sector manages ~90% of inpatient care despite only employing ~60% of total doctors, while the private sector oversees ~70% of outpatient care (Hong Kong Food and Health Bureau, 2010; Our Hong Kong Foundation, 2018). This has resulted in major allocative inefficiencies in healthcare delivery. The rapidly ageing population only aggravates this shortage: the proportion of population aged 65+ is expected to reach 30% by 2039 (Hong Kong Census and Statistics Department, 2017). In trauma and orthopaedics, where many cases involve addressing the needs of the elderly, reforms in the current system may be needed to better manage growing population health needs.

Age is a risk factor for many degenerative diseases, including osteoarthritis (OA) of the knees and hips which is a major cause of disability for the elderly (Doherty & Abhishek, 2020). Although statistics specific to Hong Kong are unavailable, a study of a Chinese sample of elderly people aged 60 or above living in Beijing, China showed high prevalence rates of symptomatic knee OA to be 15% for women and 5.6% in men; these figures are comparable to those in Hong Kong (Zhang et al., 2001). Elective surgery for total joint replacement (TJR) of the knee or hip may be indicated for individuals with advanced OA and failed conservative management (Gademan et al., 2016). OA is the most common reason for TJR; it aims to stabilise joints, minimise pain and maintain mobility for function and quality of life (QoL) (Gademan et al., 2016; Wood et al., 2013).

While the demand for TJR has been increasing in Hong Kong and globally (Kurtz et al., 2007), the COVID-19 pandemic has presented major challenges in this area as priority shifted away from elective procedures to emergency or "urgent-elective" services (J. S. H. Wong & Cheung, 2020). This saw more than a 40% reduction in surgical volume in orthopaedics and trauma services. Additionally, there were decreases of nearly 60% in elective hospital admissions and 30% in outpatient clinics (Sh Wong & Mc Cheung, 2020).

The city already faces long waiting times for TJR surgeries in the public sector (Table 1) (Elective Total Joint Replacement Surgery, 2020). In considering the two most common types of TJR—knees and hips, there are over 2000 total knee replacement (TKR) operations performed annually in public hospitals; the ratio of TKR to total hip replacements (THR) is 3:1 (Division of Joint Replacement Surgery, 2020; Lee et al., 2016). There is an existing demand–supply imbalance with excess demand leading to a major shortage of TJR surgeries in public care; the current pandemic only augments this.

In a study examining 15 Organisation for Economic Co-operation and Development (OECD) countries, mean waiting times were ~1.7 months for general elective surgeries and ~2.9 months for THR (Viberg et al., 2013). Furthermore, evidence suggests that a waiting time of 9–12 months for TKR resulted in a significant worsening of function and pain as measured on the Western Ontario and McMaster Universities OA Index (WOMAC) scale, and a significant decline in health-related QoL as measured on the 36-Item Short Form Health Survey (Desmeules et al., 2010); this has been echoed in both local (Ho et al., 2021) and international (Ackerman et al., 2011; McHugh et al., 2008) studies. Waiting patients with critical functional impairment may incur socioeconomic costs such as those of hiring caretakers.

DISCUSSION

To address this urgent challenge, a public–private partnership (PPP) to contract out TJR surgeries to private hospitals may be a viable solution.

TABLE 1 Total number of operations performed, waiting times, and length of waitlists for elective TJR surgery in public hospitals in Hong Kong (2020)[a]

Cluster[b]	Number of operations performed (Jan 1, 2020–Dec 31, 2020)	Median waiting time (months)	90th percentile waiting time (months)	Number of patients on waitlist
Hong Kong East	148	16	66	1930
Hong Kong West	518	22	52	3912
Kowloon Central	509	22	33	4634
Kowloon East	384	17	49	2436
Kowloon West	569	32	48	4877
New Territories East	651	26	58	5448
New Territories West	220	26	6267	7105

Abbreviation: TJR, total joint replacement surgery.

[a]As of December 30, 2020.

[b]Public care in Hong Kong is organised into seven geographical clusters; patients are encouraged to seek care in the cluster where they live for convenience and continuity of care.

Such a reform would aim to improve efficiency in Hong Kong's health system, to reduce TJR waiting times and to fulfil population health needs. The following goals may arise: to improve allocative efficiency by better utilising resources in the private sector; to relieve pressure on the public system by sharing backlog of cases with the private system; and to maintain high quality of care for TJR surgeries.

In evaluating the stakeholders in this principal–agent relationship, the Hospital Authority as the government agency for public care assumes the role of the principal and may be driven to reduce waiting times to meet population health demands. Private hospitals, serving as agents, may be incentivised by the increased potential volume of TJR operations to boost profits. As they largely operate on free market principles: growing demand will likely drive up prices, risking exorbitant fees being charged. Therefore, it is recommended that price ceilings of HKD 140,000 for a unilateral TKR and of HKD 150,000 for a THR be set for this scheme; these prices reflect current average TJR costs in private care (Hong Kong Canossa Hospital, 2020a, 2020b; Hong Kong Gleneagles Hospital, 2020; Hong Kong Union Hospital, 2020).

However, even at these maximum prices, there are still remarkable public–private costs differences for patients which could lead to significant out-of-pocket (OOP) payments. With the local public system which is funded by general tax revenue, ~95% of public care costs are subsidised by the government with small patient co-payments incurred. For TJR operations specifically, procedures are entirely subsidised and patients only pay for medication and hospital stay.

In response to this challenge, a fixed consumer subsidy of 60% from the government could be allotted for each procedure; patient co-payments would thus be no more than HKD 56,000 (TKR) or HKD 60,000 (THR). The purpose of this subsidy would be twofold: (1) to increase demand for participation in the scheme due to the significant price difference between public and private care; (2) to reduce the risk of financial catastrophe, given that current OOP spending is high and that most patients receiving these surgeries are elderly and are more likely to be financially vulnerable. These bill sizes would cover preoperative assessments, the operation including hospital stay, and postoperative check-ups. It would also cover any postoperative complications, such as dislocation, bleeding, or major technical

errors, occurring within 7 days of the surgery. This would ensure that a high standard of care is maintained, that immediate revision operations would not incur unexpected financial burden on patients, and that the need for patient transfer is limited.

Initially, private hospitals may be recruited by invitation. Participating hospitals would need to currently offer TJR surgeries performed by qualified orthopaedic surgeons registered with the Hong Kong Medical Council. They would also be required to agree on the aforementioned price ceilings and accept all referred patients on the scheme to avoid "cream-skimming" patients with less intensive needs. Although TJR prices would be capped, private hospitals may choose to charge at lower prices so as to allow for flexibility. This could maintain an element of competition between participating hospitals with incentive to improve technical and economic efficiency as well as service quality. By participating in this partnership, private hospitals would receive more patient cases for TJR, increasing overall profits.

Eligible patients would include those on the hospital authority (HA) waiting list for TJR during the active contract period. Currently, the HA has cluster-specific waiting lists (Hong Kong Hospital Authority, 2020); these could be pooled into a central waiting list, with patient being invited in batches on a needs-basis to participate in the programme. There are multiple reasons for this. First, it would address the challenge of limited contractibility of TJR: although it is a single service with clear practice guidelines associated with distinct outcomes, there may be unclear levels of need as certain indications such as pain and function may be subjectively measured (Gademan et al., 2016; Liu et al., 2007). Given that hospitals may be motivated to increase profits and that private surgeons are usually reimbursed fee-for-service, there is incentive for them to expand service intensity which may risk overdiagnosis and overtreatment. This is important given the likely information asymmetry between patients and providers: it may be challenging for patients to make well-informed decisions on the medical care they need without guidance from providers. By only including patients who are already on the waiting list, this prevents supplier-induced demand and minimises opportunism. Second, patients seek to maximise benefit; having this process would prevent them from engaging in morally hazardous behaviour to take unfair advantage of the subsidised costs for this scheme. Should patients choose to participate, they would be free to choose their preferred private provider from a published list of participating hospitals; this would preserve patient choice and maintain competition between hospitals. Regardless of their participation status, patients in need would still remain eligible for existing financial assistance programmes such as the Community Care Fund; likewise, their financial status would not affect their eligibility for enrolling in this scheme.

To ensure that a high quality of TJR surgeries is maintained, performance specifications would need to be outlined and mutually agreed upon by the HA and participating agents. This could include evidence-based medical practice guidelines and protocols for special situations such as surgical site infections (Gademan et al., 2016). This is especially relevant, as many patients receiving TJR surgeries may be elderly with complex comorbidities and thus may have higher medical complication and mortality rates (Fang et al., 2015; Gademan et al., 2016). Outcomes criteria for each operation would be set for quality assurance, allowing for streamlined monitoring.

Comprehensive performance monitoring would be essential to maintain transparency and accountability between the principal and agents. Hong Kong's Electronic Health Records Sharing System (eHRSS) is the optimal platform for secure sharing of patient records between public and private providers (Kin Lok et al., 2018). The latter would be able to seamlessly access the medical records of participating patients, allowing for smooth transitions of care. They could document logistical particulars such as prices charged for operations and the types of implants used as well as operation details including any complications. Using the performance specification criteria, the HA could then review the quality

of each operation, ensure that operation charges remain below the price ceiling, and attend to any concerns, effectively exercising meta-regulation. This may lower transaction costs, as it would reduce the need for in-person monitoring. It could also promote a high degree of information continuity between the HA and private hospitals as well as between patients and providers (Reid et al., 2002). Additionally, both the public and private sector parties should communicate the risks associated with such operations to participating patients and document such events in the eHRSS system. To disseminate details of this programme to patients, information on the features of each participating private hospital may be made available on official HA websites, existing HA patient-centred smartphone applications, public broadcasts, and printed leaflets, so that they can be better informed for their decision-making processes.

Hong Kong's external environment makes it ideal for this partnership, given its strong legal and financial systems with low corruption levels (i.e., ranked 16 out of 180 countries in the 2019 Corruptions Perceptions Index (Transparency International, 2020) allowing for high accountability and transparency. It also has experience with such programmes, having already launched seven PPP initiatives in various fields to contract out health services.

From an economic standpoint, this solution would improve allocative efficiency. Transferring some demand, including the backlog of cases accumulated during the COVID-19 pandemic, from public to private care would allow for underutilised resources in the private sector to be used more efficiently and for the TJR shortage to be reduced in the public system. This would optimise the combination of public and private supply to meet current demands, which would ideally move the market towards a point where marginal benefit is equal to marginal cost and community surplus is maximised.

In the long run, this reform would be advantageous for all patients. The most urgent patients would be unaffected since they would still receive priority in the public system. Less urgent patients who are willing and able to participate in the programme would enjoy benefits of decreased waiting. Finally, since these patients would leave the public queues, this would reduce waiting times for patients who are unwilling or unable to participate. All patients would benefit from shorter waiting times for TJR surgeries, ideally improving their QoL.

This scheme would also help promote equitable access to TJR surgeries. The government subsidy could reduce economic barriers for some waiting patients who cannot afford private costs. Also, the scheme could pool all eligible patients into a central waiting list, regardless of the cluster to which they belong, to ensure horizontal equity in access to health services.

This solution is likely to have high public acceptability. There is a precedent for this type of partnership: the Cataract Surgery Programme (CSP) is a scheme launched in 2008 by the HA to contract out cataract surgeries to private ophthalmologists (Hong Kong Hospital Authority, 2018). A 2015 study found that despite initial challenges regarding low patient participation due to lack of affordability with high co-payments and complicated administrative processes, CSP enjoyed great success: 92% of 4414 surveyed patients in 2014 expressed satisfaction with the programme (E. L. Wong et al., 2015). Five years after its implementation, which is the same duration as this reform's proposed contract, waiting times were reduced from 44 months (2009) to 15 months (2013) (The Government of the Hong Kong Special Administrative Region, 2013). This proposed reform for TJR has taken measures to avoid challenges faced by CSP: CSP provided a subsidy of 38%; the TJR scheme proposes a greater subsidy (i.e., 60%) to attract patient uptake (Hong Kong Hospital Authority, 2018). Regarding issues with limited registration, multiple means of outreach could be offered, including via telephone and the online eHRSS platform. Given CSP's overall success, this lends weight to this reform's potential effectiveness.

Certainly, there may be some potential challenges. Fiscal sustainability is a concern for the HA. First, the 60% subsidy financed by the government for each TJR surgery is

TABLE 2 Potential transaction costs

Type	Description	Expected magnitude (high/low)
Ex ante	Search/information costs • Create guidelines/protocols for standardised practice • Produce performance specification criteria	High
	Negotiation costs • Discuss contract requirements with agents	Low
Ex post	Administration costs • Verify patients' eligibility • Invite and register patients	High
	Monitoring costs • Train health professionals in eHRSS use • Appoint a team to ensure agents' adherence to contracts	High
	Reinforcement costs • Administer penalties (e.g., financial)	Low

Abbreviation: eHRSS, Electronic Health Records Sharing System.

extremely high; this would incur substantial costs given the high volume of waiting patients. Second, the HA would need to bear major transaction costs (Table 2). There would be sizeable opportunity costs, not only possibly detracting from spending within the health sector, such as in preventive care on reducing risk of developing OA to lessen demand for TJR in the long run, but also across sectors in the government as this reform may increase total health expenditure.

However, this reform is only a short-term solution to address backlog of cases. These waiting patients will eventually need to receive TJR surgeries whether it be in private or public care—the latter of which is still subsidised. If they are not resolved promptly, there may be greater costs incurred to the HA: waiting patients may use health services more frequently and intensely. The immediate provision of TJR with this reform would also generate positive externalities, such as boosting labour productivity as patients would be able to return to work sooner. In the meantime, the government should also seek long-term sustainable solutions such as expanding specialist joint replacement centres.

There may be challenges with contracting. TJR surgeries have relatively high asset specificity, for example, human asset specificity with specialised surgeons and physical asset specificity with joint implants. However, these resources would not need to be sourced specifically for this reform, since they are already in operation at private hospitals. When the contract concludes, private hospitals would be able to continue operating privately. By limiting eligible participants to those already waiting, this increases certainty regarding the number of TJR surgeries that would be contracted out. Opportunism is minimised with price ceilings and performance specifications which restricts adverse selection by agents.

Given that information on the programme would be made freely available with emphasis on the flexibilities of participation, this would support patients in making well-informed choices. For example, any differences or exclusions in the scope of service provided by private hospitals would need to be brought to both the attention of patients as well as the public governing body, so that the former can choose whether or not to participate and the latter can be made aware of any changes. As such, the challenges associated with bounded rationality, where individuals tend to satisfice in decision-making due to limitations such as cognitive constraints, may be mitigated as patients will be encouraged to examine and

select the setting in which they would like to receive their joint replacement operation to maximise benefit.

Another issue is the possibility of revision surgeries after the initial TJR; such operations can be complex with highly variable costs. They may also involve specialist care from other fields which may not be readily available at all private hospitals. As revision procedures may take place long after the index procedure (i.e., it is uncommon for them to be required in the initial postoperative period), it is recommended that they are treated as separate entities. Depending on their preferences, patients can opt for public or private care, with the costs managed accordingly.

Contracting out health services could unexpectedly lead to crowding out or over-burdening of the private sector, however, the reform avoids this. Using rationing by selection with the invitation process, the policy would restrict the number of participating patients to acceptable levels. Regarding apprehensions on whether efficiency in the public sector would be compromised due to decreased public demand, this would not be an issue. The reform's objective is to resolve the backlog of cases; there will still be increasing demand for TJR. It is anticipated that not all patients will partake in the scheme anyways due to co-payments.

Another consequence may be that private providers would treat patients in this reform differently from purely private patients, since the former would be paying less. However, performance specifications and stringent monitoring would ensure high quality of contracted surgeries. In particular, clear discharge criteria would be established and agreed upon by both the public and private sectors to maintain consistency. Also, private providers would still receive the full amounts charged, so there would be no financial incentive for them to differ in terms of the level of care quality provided.

CONCLUSIONS

Based on the evidence in this analysis and Hong Kong's positive experiences with similar PPPs, contracting out TJR surgeries to the private sector is a highly feasible approach to address Hong Kong's challenge of long queues in the overburdened public sector. Aside from improving efficiency and directly correcting imbalances in public and private care, it may also promote equitable access to high-quality health services. This solution is especially relevant today, given the unavoidable delays in the completion of TJR operations from the COVID-19 pandemic.

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CONFLICT OF INTERESTS

The author declares that there are no conflict of interests.

ETHICS STATEMENT

The data, models, and methodology used in this research are not proprietary.

REFERENCES

Ackerman, I. N., Bennell, K. L., & Osborne, R. H. (2011). Decline in health-related quality of life reported by more than half of those waiting for joint replacement surgery: A prospective cohort study. *BMC Musculoskeletal Disorders*, *12*(1), 108.

Desmeules, F., Dionne, C. E., Belzile, E., Bourbonnais, R., & Frémont, P. (2010). The burden of wait for knee replacement surgery: Effects on pain, function and health-related quality of life at the time of surgery. *Rheumatology (Oxford, England)*, *49*(5), 945–954.

Division of Joint Replacement Surgery. (2020). Department of Orthopaedics and Traumatology, The University of Hong Kong. https://www.ortho.hku.hk/services/joint-replacement-surgery/

Doherty, M., & Abhishek, A. (2020). Knee. In D. Hunter & M. R. Curtis (Eds.), *Clinical manifestations and diagnosis of osteoarthritis*. UpToDate.

Elective Total Joint Replacement Surgery. (2020). Hong Kong Hospital Authority. https://www.ha.org.hk/visitor/ha_visitor_text_index.asp?Content_ID=221223%26Lang=ENG%26Dimension=100%26Parent_ID=214172

Fang, M., Noiseux, N., Linson, E., & Cram, P. (2015). The effect of advancing age on total joint replacement outcomes. *Geriatric Orthopaedic Surgery & Rehabilitation*, *6*(3), 173–179.

Gademan, M. G. J., Hofstede, S. N., Vliet Vlieland, T. P. M., Nelissen, R. G. H. H., & Marang-van de Mheen, P. J. (2016). Indication criteria for total hip or knee arthroplasty in osteoarthritis: A state-of-the-science overview. *BMC Musculoskeletal Disorders*, *17*(1), 463.

Ho, K. W., Pong, G., Poon, W. C., Chung, K. Y., Kwok, Y. Y., & Chiu, K. H. (2021). Progression of health-related quality of life of patients waiting for total knee arthroplasty. *Journal of Evaluation in Clinical Practice*, *27*(1), 69–74.

Hong Kong Canossa Hospital. (2020a). Total hip replacement. https://www.canossahospital.org.hk/en/service/other_specialist_services/joint_replacement_centre/total_knee_replacement

Hong Kong Canossa Hospital. (2020b). Total knee replacement. https://www.canossahospital.org.hk/en/service/other_specialist_services/joint_replacement_centre/total_knee_replacement

Hong Kong Census and Statistics Department. (2017). Hong Kong population projections 2017–2066.

Hong Kong Food and Health Bureau. (2010). Primary care development in Hong Kong: Strategy document.

Hong Kong Gleneagles Hospital. (2020). Orthopaedic procedures: All-inclusive fixed price medical packages web site. https://gleneagles.hk/user_uploads/GHK-Standard-Package-Price-List-PROMO_ORT02.pdf

Hong Kong Hospital Authority. (2018). *The cataract surgeries programme and its terms and conditions*.

Hong Kong Hospital Authority. (2020). Supplementary information on waiting time. https://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=214186%26Lang=ENG%26Dimension=1

Hong Kong Union Hospital. (2020). Charges of common surgery of January 2020 to June 2020 in Union Hospital. http://www.union.org/new/english/charges/files/CCSUH_eng.pdf

Kin Lok, K., Carman, L., Ng, K. K. H., Sing Sum, L., & Choy, K. L. (2018). An empirical study on patients' acceptance and resistance towards electronic health record sharing system: A case study of Hong Kong. *International Journal of Knowledge and Systems Science (IJKSS)*, *9*(2), 1–27.

Kurtz, S., Ong, K., Lau, E., Mowat, F., & Halpern, M. (2007). Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030. *The Journal of Bone and Joint Surgery*, *89*(4), 780–785.

Lee, Q. J., Mak, W. P., & Wong, Y. C. (2016). Mortality following primary total knee replacement in public hospitals in Hong Kong. *Hong Kong Medical Journal*, *22*(3), 237–241.

Liu, X., Hotchkiss, D. R., & Bose, S. (2007). The impact of contracting-out on health system performance: A conceptual framework. *Health Policy*, *82*(2), 200–211.

McHugh, G. A., Luker, K. A., Campbell, M., Kay, P. R., & Silman, A. J. P. (2008). Pain, physical functioning and quality of life of individuals awaiting total joint replacement: A longitudinal study. *Journal of Evaluation in Clinical Practice*, *14*(1), 19–26.

Our Hong Kong Foundation. (2018). Fit for purpose: A health system for the 21st century.

Reid, R., Haggerty, J., & McKendry, R. (2020). *Defusing the confusion: Concepts and measures of continuity of health care*. 2002.

Sh Wong, J., & Mc Cheung, K. (2020). Orthopaedic surgeons and orthopaedic surgery in the era of COVID-19. *Acta Orthopaedica et Traumatologica Turcica*, *54*(3), 221–222.

The Government of the Hong Kong Special Administrative Region. (2013). LCQ12: Cataract surgery services [press release].

Transparency International. (2020). Corruption perceptions index: Hong Kong. https://www.transparency.org/en/countries/hong-kong

Viberg, N., Forsberg, B. C., Borowitz, M., & Molin, R. (2013). International comparisons of waiting times in health care—Limitations and prospects. *Health Policy*, *112*(1–2), 53–61.

Wong, E. L., Yeoh, E. K., Chau, P. Y., Yam, C. H., Cheung, A. W., & Fung, H. (2015). How shall we examine and learn about public-private partnerships (PPPs) in the health sector? Realist evaluation of PPPs in Hong Kong. *Social Science and Medicine*, *147*, 261–269.

Wong, J. S. H., & Cheung, K. M. C. (2020). Impact of COVID-19 on orthopaedic and trauma service: An epidemiological study. *The Journal of Bone and Joint Surgery*, *102*(14), e80.

Wood, A. M., Brock, T. M., Heil, K., Holmes, R., & Weusten, A. (2013). A review on the management of hip and knee osteoarthritis. *International Journal of Chronic Diseases*, *2013*, 845015.

Zhang, Y., Xu, L., Nevitt, M. C., Aliabadi, P., Yu, W., Qin, M., Lui, L. Y., & Felson, D. T. (2001). Comparison of the prevalence of knee osteoarthritis between the elderly Chinese population in Beijing and whites in the United States: The Beijing Osteoarthritis Study. *Arthtitis and Rheumatism*, *44*(9), 2065–2071.

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BOOK REVIEW

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The love surgeon: A story of trust, harm, and the limits of medical regulation

Sarah B. Rodriguez

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During an era in which consumerism remains prevelant, accompanied by growing societal interest in autonomy and an increasing media presence, *The Love Surgeon: A Story of Trust, Harm, and the Limits of Medical Regulation* demonstrates what happens when an industry is left to police itself. Dr. James Burt started performing his "love surgery" procedure in the 1950s, which situates it in a historical context within which the predominant ideology held that the traditional marriage's success relied on women sexually satisfying their male partners.

Burt not only believed this to be true, as medical historian Sarah Rodriguez eloquently displays in the book, but Burt's belief in women's sexual inadequacies resulted in him creating his own "surgery of love" that he proclaimed was a "modification of episiotomy repair." Burt offered this "surgery of love" as an elective to women after giving birth by the mid-1970s and continued to perform it routinely on his obstetric patients. This book sheds light on the perfect storm of circumstances—environmental, legal, social, and more–that allowed Burt to practice medicine and perform his surgeries for decades, up until the mid-1980s.

As it is now, during the 30 years in which Burt practiced, medicine was a highly regarded profession. Further, patient and physician power dynamics were not well understood, as Rodriguez explains. The practice of surgery within medicine was also not well understood by the general public, and largely remains this way today. The lack of oversight and "confusion about when a surgery was a variation, an innovation with predictable outcomes, [or] an innovation with unknown outcomes" (p. 61) allowed Burt to practice a love surgery on patients for decades. And, due to the gray area that exists in the field, surgery may be decided upon and conducted largely without checks and balances. Notably, "there were no federal or formal regulations that applied to or oversaw surgical innovations in the 1970s, and there continues to be no such regulation or oversight" (p. 64). This book explains that "love surgery" was allowed to exist precisely because the system often operates to keep physicians—rather than patients—safe and secure.

As Rodriguez explains, physicians in Ohio and in the Dayton area did not necessarily know what to do with Burt. While some were outraged and determined to do something about regarding what Burt was doing, others relied on the system to support Burt and not always naively so. This system, by design, operates on the premise that physicians will not want to tarnish one another's reputation or livelihood. Not only that, but the Burt story also "illustrates the problems with the structure of medical regulation and where it fails: the understandable fears doctors have about reporting the actions of another physician, including the worry that they could be wrong; that they do not have enough information; that, even when correct in their concern, finding patterns showing a particular therapy or

intervention has a pattern of poor outcomes is time-consuming; that, even if their concerns are justified, the offending physical could still sue them; that it is difficult to stop an elective surgery wanted by a patient" (p. 184). The author did well in offering considerations regarding who should or should not have acted and why, including the historical context associated with the field of medicine, societal norms, and informed consent.

Rodriguez masterfully shows how the rise in scientific literature, and the biomedical community's quest for knowledge, contributed to awareness of Burt's procedure. This included issues arising around the issue of informed consent. As the book highlights, consent was just beginning to be developed within the medical community, and was little understood by patients, who rarely understood the forms that were presented to them. The documents rarely communicated the full spectrum of risks and benefits associated with surgery and other procedures. Rodriguez shows the dangers when a hospital values protecting itself more than its patients, as St. Elizabeth, the hospital where Burt worked, did for decades.

The Love Surgeon is a thought provoking read that raises critical and sensitive issues in medicine. It allows readers to see themselves in Burt's surgeries, but also provides readers with critical historical insight into the intersections of health care, the law, and society.

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BOOK REVIEW

WMHP WORLD MEDICAL & HEALTH POLICY WILEY

Foundations of global health & human rights

Edited by Lawrence O. Gostin and Benjamin Mason Meier

Oxford University Press, 2020, 504 pp. ISBN: 9780197528297.

As a scholar and medical doctor who teaches global health, including human rights, I opened *Foundations of Global Health & Human Rights* with curiosity, hoping to find an educational resource relevant to my own work, and that of students, researchers, advocates, policymakers, and other global health practitioners. The edited volume offers a convincing and in-depth analysis of the interconnected and synergistic relationships between global health and human rights.

"Health is a human right" is a noble and increasingly popular slogan (Ghebreyesus, 2018). But what does this mean in practice? Lawrence O. Gostin and Benjamin Mason Meier's book answers this question.

The book outlines norms and principles underlying human rights (Section 1) and how the right to health can be operationalized and implemented through international law (Section 2). Transcending jargon and theory alone, descriptions of contemporary applications (Section 3) and challenges and threats to human rights (Section 4) show what realizing the right to health entails. In casting health as a human right, the authors leverage how international human rights are means to promote legal accountability and define what governments must do to fulfill the right to health.

This is a timely, interdisciplinary, and forward-looking edited volume, which provides a historic backdrop to the field. Contemporary scholars and practitioners address issues ranging from sexual and reproductive health and rights to global health and human rights in the age of populism. With a clear and repeated call for global justice through human rights, the text encourages student engagement and advocacy. The field of global health and human rights has advanced considerably within the past few decades (Gostin et al., 2019), but this is one of the first books to provide a foundational introduction to students. Unlike some of the other books on human rights and health that I have come across, the content is easy to understand. Each chapter builds upon the previous one and the text is supported by interesting examples and engaging questions. The logically structured 18 chapters make complex concepts and applications associated with different actors and organizations involved with human rights in global health apprehensible. Further, the well-written case studies and theoretical analysis are excellent points of reference to academics and practitioners within the field of global health and human rights alike.

The foundational volume draws upon insights and expertise from 36 leading global health and human rights scholars, which are primarily based in high-income settings. How similar—or different—are their perspectives from views of human rights scholars and frontline human rights defenders in other contexts? The overrepresentation of contributors

from high-income countries is not unique for a book such as this nor the field of health and human rights more generally. The power asymmetries in global health governance and knowledge production, such as educational programs or scientific publications, are well known (Abimbola, 2019; Svadzian et al., 2020). Critiques have questioned the universality of human rights and argued they may reflect Western values (Shaheed & Richter, 2018). Therefore, I hope revisions of the textbook will include a more diverse range of scholars, which reflect the multitude of human rights defenders and scholars, and through a decolonial lens toward global health and human rights.

The COVID-19 pandemic is a reminder that realizing the right to health—and in particular, for groups or individuals that are marginalized—is not at the top of health or other sociopolitical agendas (Orcutt et al., 2020; Philip, 2020). Politicized and populist narratives, geopolitics, and concerns other than human rights will continue to shape global health agendas, governance, and power dynamics (Huang, 2021; Moon, 2019; Williams et al., 2020). Against this context, Gostin and Meier's call to action puts students, scholars, and advocates in a better position to ensure that the right to health is more than a noble slogan.

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REFERENCES

Abimbola, S. (2019). The foreign gaze: authorship in academic global health. *BMJ Global Health*, *4*(5), e002068. https://doi.org/10.1136/bmjgh-2019-002068

Ghebreyesus, T. A. (2018). *The right to health*. Speech to the European Parliament, Brussels, Belgium, November 20, 2018. https://www.who.int/dg/speeches/2018/right-to-health/en/

Gostin, L. O., Meier, B. M., Thomas, R., Magar, V., & Ghebreyesus, T. A. (2019). 70 years of human rights in global health: Drawing on a contentious past to secure a hopeful future, *Lancet*, *392*(10165), 2731–2735. https://doi.org/10.1016/S0140-6736(18)32997-0

Huang, Y. (2021, March 11). *Vaccine diplomacy is paying off for China*. Foreign Affairs. https://www.foreignaffairs.com/articles/china/2021-03-11/vaccine-diplomacy-paying-china

Moon, S. (2019). Power in global governance: An expanded typology from global health. *Globalization and Health*, *15*(Suppl 1), 74. https://doi.org/10.1186/s12992-019-0515-5

Orcutt, M., Patel, P., Burns, R., Hiam, L., Aldridge, R., Devakumar, D., Kumar, B., Spiegel, P., & Abubakar, I. (2020). Global call to action for inclusion of migrants and refugees in the COVID-19 response. *Lancet*, *395*(10235), 1482–1483. https://doi.org/10.1016/S0140-6736(20)30971-5

Philip, A. (2020). *The parlous state of poverty eradication*. Report of the Special Rapporteur on extreme poverty and human rights. OHCHR: Human Rights Council.

Shaheed, A., & Richter, R. P. (2018). *Is "Human Rights" a western concept?* IPI Global Observatory. https://theglobalobservatory.org/2018/10/are-human-rights-a-western-concept/

Svadzian, A., Vasquez, N. A., Abimbola, S., & Pai, M. (2020). Global health degrees: At what cost? *BMJ Global Health*, *5*(8), e003310. https://doi.org/10.1136/bmjgh-2020-003310

Williams, C. R., Kestenbaum, J. G., & Meier, B. M. (2020). Populist nationalism threatens health and human rights in the COVID-19 response. *American Journal of Public Health*, *110*(12), 1766–1768. https://doi.org/10.2105/ajph.2020.305952

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BOOK REVIEW

WMHP WORLD MEDICAL & HEALTH POLICY WILEY

Coming out to the streets: LGBTQ youth experiencing homelessness

Brandon A. Robinson

California: University of California Press, 2020, 249 pp. PDF. eBook $29.95. ISBN 9780520971073.

This book is an introspective look into the lives of the often-overlooked queer youth of the San Antonio and Austin homeless population. Through the process of interviewing 40 LGBTQ youth experiencing homelessness, Robinson explores the systemic institutions and policies that perpetuate harm against queer youth and lead to their experiences with little to no stable housing. Compared to similar anthologies, *Coming Out to the Streets*' focus on Texan youths provides insight into different racial and ethnic populations as well as the landscape of the conservative Deep South. The project, and the near year and a half worth of fieldwork, involved in these pages is the culmination of Robinson's work as a PhD candidate at the University of Texas at Austin. Using his background in sociology and gender and sexuality studies, Robinson brings Queer Theory and Queer Politics into his interviewing, field observations, and analysis to find the underlying threads tying the homeless LGBTQ youth narratives together in this engaging and thought-provoking work.

Coming Out to the Streets begins with the story of Zoe, a Hispanic heterosexual transgender woman, and the complexities that resulted in her stay at, and subsequent suspension from, an LGBTQ shelter in San Antonio. From negative family reactions, apathetic school staff, and police profiling, Zoe's story starts this book because it highlights the central theme Robinson discusses in its pages: The disparities experienced by queer youth, and sustained by the US society, force these youth into situations that perpetuate homelessness.

Robinson argues that we need to move away from the standard family rejection narrative as the singular explanation for queer youth homelessness, and instead understand how the intersection and policing of different identities impact queer youths' living situations. A core notion of this book is to emphasize "how gender expression and its intersections with other social categories shape the lives of LGBTQ youth experiencing homelessness both before and during their experiences of homelessness" (p. 8). Through his interviews with these youth, Robinson proposes a new rationale to explain the complexities surrounding queer youth's homelessness. He proposes that the intersection of identity, specifically among black and brown and gender-nonconforming youth, impacts the way society views and interacts with the individual. "…Certain LGBTQ youth experiencing homelessness—mostly poor Black and Brown LGBTQ youth—negotiate their gender and sexuality within their families of origin" (p. 49). His first three chapters detail his main arguments on the root of queer youth homelessness. First, how growing up with stressors such as prejudice affects the likelihood of family rejection and the outcomes of it. One youth described her mother's reaction after finding out she was transgender, "[She] was so pissed off… she called me an embarrassment—because she grew up in a different lifestyle" (p. 38). Second, how the policing of queer identity, specifically gender nonconformity, in public institutions force

youths to properly perform heteronormativity or be punished. "I'd walk in class with a little bit too much makeup on. And I've literally had a teacher say, 'Go wipe that shit off your face.'" (p. 58). Lastly, how the criminalization of queer homeless youth, primarily black and brown youth and trans women, continues the cycle of homelessness. "Sleeping on the streets, going to jail, coming out, sleeping on the streets, going to jail, coming out, sleeping on the streets" (p. 82) as one youth put it.

The last two chapters continue the narratives of LGBTQ youth once they are on the streets. They discuss how the youth learn to navigate homelessness while queer and how even LGBTQ shelters will regulate and police the youth's identity. The violence and disparities experienced by LGBTQ youth do not stop whether they are actively living on the streets, in shelters, or in traditional housing. Robinson even explains his ethical quandaries in his role as a researcher, advocate, and volunteer at the LGBTQ shelters. This delves into Robinson's choice of compassionate detachment—"that is, having empathy but also enough emotional distance to know that researchers cannot (and should not try to) control or save the people they work within their studies" (p. 182)—in his role as a writer and volunteer researcher.

Through capturing the words of LGBTQ youth, Robinson not only addresses the problems at hand, but gives voice to a group of underrepresented and systemically oppressed individuals. Robinson provides a frank discussion of the realities of life as an LGBTQ youth experiencing homelessness. There are no feel-good happy endings to neatly wrap up this book, but a radical call-to-action against the current methods of addressing homelessness. No longer should solving homelessness be up to an individual—to get a job, to work hard, to be strait-laced—when the system is stacked against an individual. Though Robinson does not offer concrete solutions or future work in his conclusion, he writes about the changes proposed by the youth themselves; solutions and insights to help themselves and others like them. In true tradition of following Queer Theory, this book not only documents the lives and experiences of these youth but empowers and uplifts the group by giving them control of the presented narrative.

This book is an important basis for both public health professionals and policymakers. The rise in anti-LGBTQ bills, such as those prohibiting healthcare for transgender youth, single-sex facility restrictions, and restrictions on identification documents, increases the burden placed on queer youth, especially those experiencing homelessness. With the emphasis throughout this book on the systemic perpetuation of homelessness among queer youth, future research should focus on macro-level solutions to support these youth without policing their identity or expression.

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BOOK REVIEW

WMHP WORLD MEDICAL & HEALTH POLICY WILEY

Epidemic Illusions: On the Coloniality of Global Public Health

Eugene T. Richardson

Cambridge MA: The MIT Press. 2020. Xxv+193pp. Price $25.00 ISBN 9780262045605

Epidemic Illusions is an anthropological study of global policies on epidemics and attendant medical practices. As an anthropologist, physician, and faculty member of Harvard Medical School, Eugene Richardson is well placed to analyze medical practice in complex historical and social environments. As a story line, the book points out that epidemics—as health threats to humankind that defy political or physical boundaries—provoke global public health policies and interventions whose outcomes are mediated by an intersection of historical, structural, and political dynamics.

Richardson argues that global epidemic management is biased in a number of ways. Bias in dealing with epidemics is informed by and follows the contours of, among other things, colonial history; race as a marker of alterity and belittlement; gender; manipulated statistics; and medicalization. A key pillar and instrument in this biased public health policy is the discipline of epidemiology with its pretence to expert knowledge and precision based on the use of unreliable big data (p. 67ff). The outcome of this bias in epidemic control is a "coloniality of global public health," which can be described as the reproduction, reinforcement and normalization of a global pathology of racism, uneven coverage of the world by pandemics, and blame-the-victim analyses by a subservient rent seeking intelligentsia. Richardson concludes his analysis with a call for social inquiry with a broader focus to include history, politics, and science.

Coloniality, for Richardson, is the legacy of colonial practices in states that, at face value, are considered sovereign. Colonial legacy is manifest in, among others, racial, political, gender, ideological, economic and modes of thinking that still reflect the priorities of global capital. More specifically, the thesis is that the suffering caused by infectious diseases in the Global South is unnecessary because the world is replete with the resources to prevent and cure the diseases. However, official analyses of the situation use science to promote a vocabulary of coloniality. According to Richardson, examples of this pathology include institutionalized racism, economic exploitation, and control over identity and knowledge (p. 4). Promoters of coloniality, for example, the World Health Organisation (WHO), global health research and humanitarian agencies and international nongovernmental organisations, instrumentally employ public health policy that manages and perpetuates global health inequality (p. 43ff). In Richardson's view, epidemiology as an academic discipline is the handmaiden of global health inequality through applying statistical models to avoid a holistic analysis of health problems. The key problem is that its assumptions tend to be ahistorical and apolitical and provide findings that pander to privileged class interests, such as the view that "human victims are the agents of spread" of infectious diseases, brushing aside the critical fact that prolonged "predatory accumulation by foreign elites became embodied as

haemorrhagic fever" (p. 70). According to Richardson, the distribution, interpretation of infectious disease is deliberately distorted into an illusion.

Three key parts comprise *On the Coloniality of Global Public Health*; a foreword by Harvard professor Paul Farmer; Part 1 entitled "Carnivalization"; and lastly Part 2, "Use Your Illusion." Farmer's foreword summarises and beautifully comments on the themes of the book. Farmer also introduces Richardson via a "nano" biography emphasizing the latter's passion for global health equity. Farmer's introduction helpfully contextualizes Richardson's convictions in subsequent sections.

Part 1, "Carnivalization," comprises eight sections. In this section, epidemiology is presented as an occasional accomplice to coloniality or contemporary imperialism. The discipline of epidemiology in some instances conceals the violence wrought upon the weak especially those domiciled in developing countries or the global south, as part of facilitating comforts for those privileged classes in the global north. An example of the unjust role epidemiology plays is where it affirms unfair global relations. Yet, it is important to note that Richardson is not completely dismissive of epidemiology as a discipline, as he also acknowledges that some studies assist organisations like the WHO to correct errors.

"Points of departure" (p. 8) is an excellent, concise and up-to-date literature review on the coloniality of global health, followed by a contextualization of methods and concepts. Unfamiliar concepts to non-social scientists are explained, albeit concisely, in text boxes. The rest of part 1 is a demonstration of why "something is rotten in the state of global health" through a critique of, first, particularly unwitting scientists who make neo-liberal tenets appear normal, and second, truth as a reflection of the locus of power in knowledge making in the world. Key players in global health policy are critiqued for framing their interventions via a racist and class based lens. Experiences with Ebola and HIV in Sub Saharan Africa are used as illustrations. Part 1 shows that global public health policy and practice can masquerade as humanitarianism yet it is an arena for symbolic, structural and epistemic violence.

Part 2 features a short discussion of the way forward. The discussion regards the COVID-19 pandemic as an opportunity for conscious descendants of colonialists to campaign for a more just global order that is conscious of history. The basis for this argument is that the COVID-19 era should be a soul-searching moment for privileged societies to reflexively imagine life in the global south, with large numbers of people dying on an almost daily basis.

The key issues raised in *Epidemic Illusions: On the Coloniality of Global Public Health* are not new. As Young (2012) argues, the postcolonial persists, but is transformed into new social and political configurations. For instance, Richardson shows that through grants and career pathways certain enslaving ideas and world views are perpetuated. The book is a welcome tool for keeping pace with how these forms of coloniality persist in the area of global health policy; for example attributing pandemics to certain cultural practices, isolating patients merely to get data without providing the health care the patients need;. Richardson calls for a new vocabulary—hence a new paradigm--because the extant paradigms embedded in privilege preservation are out of sync with reality. A new democratic and inclusive vocabulary is urgent to show that what appears normal may be considered abnormal in some cultures and from some global and ethical positions.

The strength of the book is that each level of criticism is accompanied by factual evidence from the field, or history such as the West African experiences with the Ebola virus disease, and the WHO's bureaucratic culture at its headquarters. Also, after showing the weaknesses of the current challenges in global health equity practice, the author suggests remedial action, for instance de-linking from biased research practices. The actors to shoulder such a project are identified as conscious people that value a different world order.

The book demonstrates anomalies in global health policies and processes through a Carnivalization lens—an approach that confronts dominant ways of thinking (p. 1). While carnivalization is appropriate for its putative subversive connotations, carnivals at times can

actually be employed by the privileged classes as a pressure valve for the poor to make the latter more malleable. As an anthropologist, the author will be aware of such rituals of rebellion that are used to reinforce unequal gender relationships in small scale communities. After the carnival, it is back to the *status quo,* with alterity recreated. Richardson's anchoring of his transformative project on the basis of a concept like carnivalization, which can be emancipating or constraining vis-à-vis unequal relationships, might have benefitted from further analytical qualification.

Overall, *Epidemic Illusions: On the Coloniality of Global Public Health* is a useful book for students of sociology and anthropology of medicine and health, social policy analysis, social research methods, and critical theory. This book is also a valuable source for activists because of its intersection of policy, grassroots experiences and public health. Its rich narrative, grounded case studies, sound analysis, potent illustrations, and defined impact pathways are among its most notable strengths.

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REFERENCE

Young, R. J. (2012). Postcolonial remains. *New Literary History*, *43*(1), 19–42.