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7 *Perspective*

10 # Upstream Policy Changes to Improve Population Health and Health Equity: A Priority Agenda

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Policy Points

- Upstream factors—social structures/systems, cultural factors, and public policy—are primary forces that drive downstream patterns and inequities in health that are observed across race and locations.
- A public policy agenda that aims to address inequities related to the well-being of children, creation and perpetuation of residential segregation, and racial segregation can address upstream factors.
- Past successes and failures provide a blueprint for addressing upstream health issues and inhibit health equity.

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21 **Keywords:** health equity, policy, population health, race, racism

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23 **Introduction**

24 The upstream/downstream metaphor for understanding the root causes or fundamental upstream
25 drivers of population health and how they produce downstream effects, consequences, and
26 inequities is well understood in research, teaching, and public health practice circles. The
27 upstream/downstream framework is visible in the World Health Organization's (WHO's) multilevel
28 conceptual model of the social determinants of health and health inequities that posits that health

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29 and well-being are primarily determined by *upstream social structural factors*. These factors include
30 socioeconomic, cultural, political, and public policy contexts that influence individuals'
31 socioeconomic position and experiences, as well as how racism and discrimination operate and
32 function within the social structures.[1] In turn, these macrostructural, or social structural, factors
33 influence a broad set of intermediary social determinants of health at the mesolevels and
34 microlevels (i.e., downstream levels), including what the WHO model refers to as the material
35 conditions of living (housing, food, safety, etc.), health-related behaviors, biological factors,
36 psychosocial processes, and personal health care services.

37 All of the factors in the WHO model work in multiple and sometimes bidirectional ways to
38 influence both the expression of social needs and health at the individual level. Nonetheless, it is the
39 upstream factors—social structures/systems, cultural factors, and public policy— that are the
40 primary driving forces behind the stark downstream patterns and inequities in health that we
41 observe across socioeconomic, racial, ethnic, gender, and place lines.[2] As Williams and Sternthal
42 have articulated: "[s]ocial structure refers to enduring patterns of social life that shape an
43 individual's attitudes and beliefs; behaviors and actions; and material and psychological resources."[3]

44 Hurricane Katrina in 2005, as just one example, was an environmental disaster that exposed
45 the fact that the effects of "natural" disasters are not random, nor do they impact populations
46 equally.[4] The upstream drivers of racial and socioeconomic inequality were the root causes of the
47 differential immediate and long-term effects of Katrina on people and communities. Predominately
48 Black neighborhoods in New Orleans were located in the "bottoms" and lacked the infrastructure
49 and public policy foundations for adequate housing, transportation, and income security, thus Black
50 people in New Orleans were more likely to die and be displaced.[5] Hurricane Katrina exposed the role

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51 of poverty, racial segregation, and racial discrimination in shaping long-term socioeconomic health
52 outcomes.[6]

53 The impact of Hurricane Katrina was less about the actual hurricane and more about
54 upstream social determinants of health that structure deleterious outcomes for people living in
55 marginalized communities. Stewart and Ray used Hurricane Katrina to conceptualize an allegory that
56 encompasses downstream and upstream social determinants of health.[7] They asked readers to
57 imagine swimming in a body of water and noticing someone drowning. You then swim over to save
58 this person. On reaching the shoreline, you see someone else drowning. You save that person. You
59 then look in the water and see other people drowning as well. The reader is asked to gaze upstream.
60 They see some people at the top of a waterfall in calmer, safer waters, whereas there are others at
61 the bottom of the waterfall having water dumped on them in trepid conditions. The reader is forced
62 to reckon with whether someone or something is actually pushing all of these people in the water to
63 drown, or at least being negligent enough to not stop it.[7.] This upstream metaphor speaks to public
64 policy reform regarding the structural drivers of health inequality, with the waterfall indeed
65 operating as those systemic drivers.

66 The COVID-19 pandemic provides another powerful example for how upstream policies, or
67 lack thereof, impact population health. Shortly before the COVID-19 pandemic, the Global Health
68 Security Index released its inaugural report about pandemic preparedness. Although the United
69 States received the highest overall score (83.5 out of 100), some indicators were concerning and are
70 related to upstream structural issues. The United States scored low on emergency response
71 operations, health capacity, and health care access. A few months later, these low scores were on
72 full display, as the United States was one of the countries hit the hardest by COVID-19.[8]
73 Furthermore, in the third year of the pandemic, little has changed. Although the United States still

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74 had the highest overall country score (79.4), it ranked 183rd in health care access, 46th in risk
75 communication, and 9th in socioeconomic resistance out of 195 countries.[9] As Alberti, Lantz, and
76 Wilkins have stated, “The reality is that the United States is ill equipped to realize health equity in
77 prevention and control efforts for any type of health outcome, including an infectious disease
78 pandemic.”[10] This is important considering research found that health care expenditures and the
79 health care workforce did little to impact the COVID-19 mortality rate across countries.[11]

80 The COVID-19 pandemic further revealed the deep cracks and weaknesses in the United
81 States public health system.[12] A plethora of studies reveal the differential effects of COVID-19 on
82 health and mortality across social class and race lines, including that frontline services workers—
83 with increased exposure, no sick leave, and no health insurance—were disproportionately more
84 likely to experience sickness and death during the pandemic.[13] As with every other type of
85 population health shock, the most socially-marginalized communities are the most vulnerable.[14]

86 **The Role of Public Policy**

87 Public policy plays a quintessential role in shaping the myriad of upstream macro and structural
88 forces that cascade downstream to create both social and health inequities in the communities that
89 comprise populations. In turn, this means that addressing the fundamental root causes of
90 population health problems and inequities must involve significant redirection and reform of the
91 public policies that shape our social structures, systems, and institutions.

92 Although the list of public policies (both individual policies and bundled or linked policy
93 systems) that are in need of significant reform to improve population health is long and complex, in
94 this paper, we present our top priority areas for serious attention and change. We assert that three
95 primary upstream public policy drivers of social and health inequality must be addressed to improve
96 overall population health and to reduce health inequities in the United States:

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97 1) Public policy related to the well-being of children (e.g., reducing poverty, establishing
98 income security, and creating high-quality pre-K).

99 2) Public policy related to the creation, perpetuation, and legacies of residential segregation
100 with a particular focus on housing affordability and addressing the devaluation of property
101 of predominately Black neighborhoods that helps drive the racial wealth gap.

102 3) Public policy related to reducing racial discrimination (both structural and interpersonal)
103 related to key social determinants of health.

104 We acknowledge that some recent upstream gains (before the COVID-19 pandemic) deserve
105 note, an overwhelming majority of which were driven by public policy initiatives and reforms at the
106 national and state levels. First, in regard to some key socioeconomic indicators, rates of high school
107 graduation and college enrollment have been trending upward in the United States across all racial
108 and ethnic groups, although higher education degree completion trajectories and educational debt
109 burdens remain significantly different.[15]

110 Second, for the purposes of discussing upstream drivers of health, the Affordable Care Act
111 (ACA) actually broadened the civil rights landscape in which the health care system and insurance
112 industry operate.[16] The ACA also increased health insurance coverage for the most marginalized
113 Americans and helped to increase the use of clinical preventive services, improve access to care for
114 acute and chronic conditions, and expand the number and reach of federally qualified health
115 centers.[17,18] Buchmueller and colleagues found that the ACA significantly decreased uninsurance
116 rates among Black, Latino, and White populations; among Black people, the uninsured population
117 decreased roughly 20% in the first six years.[19] Improvements in insurance coverage and overall
118 health were especially pronounced in states that expanded Medicaid, including evidence of reduced
119 mortality in these states.[20]

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Third, it should be acknowledged that life expectancy in the United States was steadily increasing until the impact of the drug overdose epidemic, and then the COVID-19 pandemic hit with great force. From 1990 to 2018, life expectancy increased nearly 6 years for Black people. Nonetheless, life expectancy for Black and Indigenous populations still lag far behind that of White and Latino populations.[21] Even beyond health care coverage and gaps in care, upstream problems contribute substantially to racial gaps in life expectancy. As noted above, upstream problems have been on full display during COVID-19. Although life expectancy decreased for all groups, Black Americans and Indigenous populations faced the most severe decreases during the COVID-19 pandemic.

Public Policy Reforms Focused on the Well-Being of Children

A large and growing body of evidence demonstrates the importance of addressing issues linked to childhood poverty for health and well-being across the life course.[22] Research reveals that poor children, compared with children of a higher socioeconomic status, are exposed to more family turmoil, violence, separation, instability, and chaotic households. They also experience less social support and have parents that are less responsive and more authoritarian. Research shows that children from lower socioeconomic statuses read less frequently, watch more TV, have less access to books and computers, and are less likely to have parents involved in their school activities. In addition, poor children are more likely to consume air and water that is polluted; reside in homes that are more crowded, noisier, and of lower quality; live in neighborhoods that are more dangerous; have poorer city services; and have greater physical deterioration. They are also more likely than their economically advantaged peers to attend schools and day care that are of an inferior quality.[23]

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143 Childhood poverty rates—although still shamefully high in the United States—have been falling
144 since a peak rate of 23% in 2012 and reach a record low in 2019.[24] A report by Child Trends shows
145 that the past three decades experienced the most significant drop in child poverty rates.[25] In fact,
146 child poverty fell 59% from 1993 to 2019. This decrease is attributed to key public policies, such as
147 the Earned Income Tax Credit and higher minimum wages in states as well as low unemployment
148 rates among single mothers. Although child poverty decreased, racial gaps persist among low-
149 income families. President Biden's Infrastructure Investment and Jobs Act (2021) and Inflation
150 Reduction Act (2022) have the potential to contribute greatly to addressing the well-being of
151 children. In this issue, Pilkauskas goes into further detail about how income support can serve as a
152 policy solution to address upstream health challenges.[26]

153 Research also reveals that intensive, high-quality early childhood intervention programs can
154 have large, positive, long-term, educational, and physical and mental health impacts on children
155 from disadvantaged backgrounds. The Perry Preschool Program was a 2-year intervention in which
156 Black children ages 3 to 4 years, living in poverty, were randomized to participate in a preschool
157 program or to be in a control group. The program consisted of daily morning classes at school, and
158 weekly afternoon home visits from the teacher.[27] At age 40, compared with the control group, those
159 who received the program were more likely to have graduated from high school and college. They
160 also had higher levels of employment, income, health insurance, savings, and home ownership, and
161 lower rates of arrests (for violent, property, and drug crimes), out-of-wedlock births, and welfare
162 assistance.[28] Moreover, positive effects were also evident for siblings (especially male siblings) of
163 participants in the program.

164 Striking additional evidence for the long-term benefits of early childhood interventions comes
165 from the Abecedarian program, an experimental study of early child education that randomized

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166 poor children (80% of whom were Black) at birth and provided an intensive program from birth to 5
167 years old and has followed them into adulthood. The program offered a safe and nurturing
168 environment, good nutrition, intellectual stimulation, and pediatric care. At age 21, individuals in the
169 intervention condition had fewer depressive symptoms, lower marijuana use, a more active lifestyle,
170 better academic performance, and better vocational success than those in the control group.[29,30] By
171 their mid-30s, the intervention group members had lower levels of risk factors for cardiovascular
172 and metabolic disease (such as high blood pressure and obesity), with the positive effects being
173 stronger for males than for females.[31]

174 There is growing evidence that addressing childhood poverty by providing additional income
175 to parents then enhances family economic security and is causally linked to improvements in a broad
176 and diverse range of child and youth outcome topics.[32] Studies using a range of research designs
177 document the benefits to parents and children of interventions that enhance economic security for
178 expectant parents and parents with children. The income enhancement policies studied have ranged
179 from minimum wage laws to Federal Earned Income Tax Credit and other reforms to tax policy.[31] A
180 report from the National Academy of Sciences in 2019 outlined an ambitious agenda that indicates
181 multiple options for the United States to reduce child poverty by 50% within a decade. These policy
182 options include combinations of Earned Income Tax Credits, the expansion of housing vouchers, the
183 Supplemental Nutrition Assistance Program, child allowances, child and dependent care tax credits,
184 work-based programs, government and tax transfers, and public health insurance.

185 An innovative program called Baby Bonds, championed by economist Darrick Hamilton, is
186 receiving considerable policy interest at the state and local levels in recent years.[33] For example, the
187 state of Connecticut and the District of Columbia have implemented a plan that would give each
188 poor (Medicaid-eligible) baby a trust fund of $3,200 that would be established and guaranteed by

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189 the government, which should grow to >$10,000 by the time the child turns 18 years old. The state
190 of Connecticut estimates that this bond program will enroll about 16,000 children annually, so that
191 disadvantaged 18-year-olds will have resources to narrow the gap between themselves and their
192 wealthier peers. This money could be used for education, purchasing a home, or other needs. The
193 policy is officially race-neutral but would give a major, new source of financial assistance to racial
194 and ethnic, low-income groups.

195

196 **Public Policy Reforms that Address the Ongoing Legacies of Residential Segregation**

197 The built and natural environments are evaluated based on their accessibility and quality of public
198 space coupled with existing or changing social environments (e.g., segregation and gentrification).[33]
199 The structural components of the built and natural environments that are used for physical activity
200 and public transportation are often less available to communities of color. Collectively, these
201 challenges provide a clearer understanding of why people living in communities are more likely to be
202 obese and diagnosed with high blood pressure and be exposed to gun and police violence.[34]
203 Accordingly, the physical design of communities can exacerbate race-based health disparities,[35] and
204 the constraints of these structural components further expose communities of color to gun and
205 police violence through mechanisms of hypervisibility and racial profiling.

206 Black neighborhoods are more likely to be situated near toxic waste sites and pollution-
207 producing facilities. Consequently, Black communities are much less likely to have clean water and
208 air. In turn, Black children are more likely to be diagnosed with asthma and other health disorders.
209 We simply have to look at the Flint, Michigan crisis that started in 2014 when a governmental
210 decision to switch the city's municipal water source dramatically increased the leeching of lead from
211 older water pipes and in turn dramatically increased both lead poisoning in children and

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Legionnaires' disease. These deleterious health outcomes, however, are not just in Flint. In Baltimore (where the Black population over 60%), lead levels in children are over double the recommended rate. Lead exposure not only causes physical health issues, but it harms cognitive development, rational decision-making, and academic test scores. The United States pays about $15 billion annually to deal with lead poisoning cases. Jackson, Mississippi is the most recent predominately Black city to experience a catastrophe related to the basic public good of water. Jackson's water crisis is so severe that schools were forced to close. Imagine if lead problems did not exist in places like Baltimore, Flint, Jackson, and hundreds of other communities nationwide and instead, those funds could be used to improve schools, neighborhood infrastructure, and health resources.[36]

Inefficiencies in the social service infrastructure frequently compounds health issues for low-income Americans. The focus on acute social service needs downstream detracts attention and funding from the upstream root causes of people drowning at the bottom of the waterfall. For example, places that lack an efficient social service infrastructure also have serious problems with housing affordability and instability. Housing and social services are fundamentally important because they are supposed to protect the most vulnerable population: children.[37] In this special issue, Medipanah notes that affordable housing as well as homeownership rates are key upstream drivers of health inequality.[38]

Collectively, these issues speak to environmental challenges driven by racial residential segregation. Policies that ensure cleaner energy, air, and water will lead to healthier communities, particularly for communities of color. We mentioned President Biden's recent legislation above. Creating cleaner air, on one hand, and addressing the historical legacies of highways in Black

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234 community, on the other hand, actually go hand-in-hand and serve as upstream drivers of health

235 inequality.

236 Once affordable housing is addressed, the racial gap in homeownership and the devaluing of

237 predominately Black neighborhoods must be rectified. In an analysis of cities across the United

238 States, Perry found that, on average, homes in predominately Black neighborhoods are valued at

239 $48,000 less than homes in predominately White neighborhoods.[39] Bank of America's new program

240 to close the housing and racial wealth gaps uses on-time payments for utilities and does not require

241 a down payment for new homeowners who live in select, historically redlined cities. This is a policy

242 idea that policy experts have recommended. Instead of using a flawed credit system that has racism

243 baked within it, we suggest using actual utility bills to showcase credit worthiness.[40] In addition to

244 the banking industry, which has a long and torrid history of discriminating against Black people in

245 gaining access to home loans, state and federal governments could also build on this program to

246 provide more equitable access to homeownership.

247

248 **Public Policy Reforms to Reduce Interpersonal and Structural Racism in Key Social**

249 **Systems/Institutions**

250 Research shows the diminishing returns that racial/ethnic populations receive from their

251 socioeconomic status.[41,42] This research illuminates the ways that inequities in health care operate

252 across and within socioeconomic status and social contexts. As Brown and Hohman as well as

253 Michener and Ford highlight in this special issue, addressing systemic oppression is paramount to

254 improving health outcomes.[43,44]

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Accordingly, downstream policies that do not address how structural racism contributions to upstream health inequities will fail to have the impacts they should.[45] It is important to discuss how gun violence, policing, and the criminal justice system contribute to upstream health problems. For young males, particularly Black males, gun violence is a leading cause of death.

Lack of a social services and health infrastructure expose people to community risks, such as gun violence.[46] Homicide, mostly due to gun violence, is one of the top causes of death for Black men.[47] For Black men under 45 years of age, homicide is the number one cause of death. However, often not framed in a similar way, homicide is also a top five cause of death for White men under the age of 45. The same goes for Latino men too. It is clear that gun violence, and violence more broadly among young males, is a substantial problem. Gun violence also has upstream consequences that impact the response of first responders and treatment once in medical facilities. Gun violence also exposes the community to a higher prevalence of mental health issues.[48]

In addition to the traditional ways we think about gun violence, police violence plays a prominent role in community health. Data from the Surveillance for Violent Deaths National Violent Death Reporting System suggest that police killings are the third leading cause of violence-related deaths accounting for nearly 25% of the >16,000 violence-related deaths in 16 states.[49] In fact, research states that police officers are just as likely to kill Black people with a high income as they are to kill Black people with a low income. Police officers are 3.5 times more likely to kill Black people who are unarmed and not attacking compared to White people who are unarmed and not attacking. Police officers are 21 times more likely to kill Black teenagers than they are to kill White teenagers.[49]

In addition to the obvious health impacts (e.g., death, injury) of overpolicing, police killings influence the health profiles of local communities. Research shows that aggressive policing leads to

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278 worse mental and physical health for people living in overpoliced communities.[50,51] For example,
279 aggressive and excessive police tactics debilitate health, increase symptoms of trauma and anxiety,
280 worsen self-rated health, and provoke clinical levels of psychological distress.[52] Moreover, people
281 living in communities that are more exposed to police violence report a whole host of health
282 conditions, including poorer self-rated health, higher levels of diabetes, higher blood pressure,
283 asthma episodes, obesity, and psychological distress.[53,54]

284 A series of policy changes has been advanced to address gun violence and police violence.
285 However, they are actually different social processes. An analysis by Mapping Police Violence
286 documents that cities with the highest levels of police violence are often not the same cities with the
287 highest level of violent crime. Accordingly, it is important to decouple police violence from violent
288 crime and realize they are two distinct social problems that need to be addressed separately.
289 Accordingly, addressing gun violence will require policies that not only regulate guns, but deal with
290 the ghost guns that run rapid in predominately Black, low-income communities. It also means
291 creating a better social service infrastructure that helps provide educational and work opportunities
292 for marginalized youth. To address police violence, policies must increase the accountability of law
293 enforcement. Ray has advanced the importance of creating police department and police officer
294 liability insurance to shift financial liability from taxpayers to police.[55] Colorado has advanced this
295 policy and other cities and states are considering various configurations.

296

297 **Conclusion**

298 “Of all the forms of inequality, injustice in health care is the most shocking and inhumane.” Dr
299 Martin Luther King Jr made this comment in 1966 at the Chicago Press Conference in connection
300 with the Medical Committee for Human Rights meeting. King lamented that despite pursuits to

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301 address racial segregation and poverty, health and health care inequality seemed to materialize in
302 ways that manifest across race, gender, and social class lines. Well over 50 years later, his comments
303 continue to ring true. The research is clear on the advancement of both health care and social policy
304 reforms that will bend the arc of justice toward a more equitable and healthier society.

305 In this article, we have aimed to layout a series of policy-focused strategies and practices to
306 address upstream determinants of health to establish humanity for everyone. Our article highlights
307 past gains and successes as well as failures and continuing problems that contribute to upstream
308 health issues and inhibit health equity. Granted, what we unpacked here is not an exhaustive list.
309 Rather, we aimed to highlight the most persistent and impact upstream factors that can be
310 addressed through public and social policy reform and innovation.

311 Given the extremely divisive nature of the current political landscape in the United States,
312 one might ask what, if anything, in this agenda is politically feasible? This question reflects a
313 conservative, reservist, and reactionary perspective. It is clear that civil and human rights are being
314 rolled back in certain states and also at the federal level, including the June 2022 Supreme Court
315 ruling that overturned Roe v. Wade.[56] In addition, the growing efforts to prohibit the teaching of
316 critical race theory, structural racism, and other “divisive constructs” at the local and state levels
317 represent intense pushback against the recognition that institutions, systems, and social
318 structures—including public policy—can embody and perpetuate racism.[57]

319 If the goal is improved health of the communities and all people in the United States, then the
320 actual policy agenda needed to achieve that goal has to be clear, bold, and well-reasoned. Although
321 we understand the enormous challenges of progressive policy reform at the present time, we
322 remain committed to the use of valid and reliable evidence and high-quality research to provide a

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323 pathway forward that is beneficial to Americans at the aggregate level rather than engaging in

324 political fissures.

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