COVID-19 Inequities in India:
A Human Rights-Based Approach for Assessing Health Risk Factors

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Abstract

India's poor health outcomes and healthcare system relative to other developing countries have long been a cause for concern for public health experts. The COVID-19 pandemic has shown where some of the fissures in the Indian health system are; specifically, the pandemic has shown how human rights violations adversely impact health outcomes. Drawing from COVID-19 outcomes, I answer the question of what optimal public health policy – rooted within a human rights-based approach to health (HRBA) – looks like in India. I operationalize an HRBA by testing for relationships between human rights violations and COVID-19 outcomes in India as a means of measuring how human rights impact health writ large. I find that numerous human rights violations have significant associations with COVID-19 outcomes, including prison overcrowding, poor living conditions, and the inaccessibility of health care. Based on my findings, I recommend that the Government of India take several steps to address human rights violations, including the utilization of open jails, adoption of a retrospective payment model for public health insurance, and the election of community leaders to public health programs. Finally, these recommendations culminate in the proposal for a new Ministry in the Indian central government: the Ministry of Health and Human Rights (MHHR).

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Introduction

India has long underperformed other developing countries on several key health metrics. While India has made significant strides in recent decades in the betterment of health outcomes, the country continues to struggle with health metrics like infant and maternal mortality rates, life expectancy, and malnutrition rates. ("Improving Health in India," 2017)[1]. India has also struggled with promoting access to quality healthcare. Per the Global Burden of Disease's 2016 HAQ Index, India ranks 145th among 195 countries in healthcare access and quality (Yadavar, 2019). While India has shown improvement on the HAQ Index in the last two decades, it still ranks far below its fellow BRICS countries (Yadavar, 2019).[2]

Numerous factors can begin to explain India's poor performance on health and healthcare metrics, including high rates of out-of-pocket expenditure (OOPE), large urban-rural divides in the accessibility and quality of medical care, and minimal government expenditure on healthcare ("Improving Health in India," 2017). While these problems have long been discussed, the Government of India has been unable to create substantive and effective solutions, which has proven to be harmful to the lives of hundreds of millions across the country (Khanna et al., 2021).

The devastating impacts of the COVID-19 pandemic have particularly thrusted these issues into the spotlight. As of April 2022, India has reported over 43M cases and over 500K deaths attributable to the pandemic, with the true numbers likely to be significantly higher due to underreporting in rural areas ("Tracking Coronavirus in India," 2022). Many of these cases and

[1] Per guidance I was given, I utilize in-text citations throughout the paper.
[2] BRICS: Brazil, Russia, India, China, South Africa

deaths occurred during a deadly second wave during the first several months of 2021 when issues with healthcare delivery were especially pertinent (Kumar, 2021). From the inability to get access to critical medical infrastructure like life-saving oxygen and ventilators to the minimal vaccine penetration among rural populations for most of 2021, the COVID-19 pandemic has served to highlight the fissures in the Indian healthcare system (Kumar, 2021).

The story does not end there, however. In addition to highlighting factors related to healthcare delivery, I argue in this paper that the pandemic has shed light on an entire other range of issues that determine health: human rights violations. The Universal Declaration of Human Rights (UDHR) – a watershed human rights document put forth by the UN in 1948 to which India is a signatory – states that "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family" ("UDHR," 2022). Indian Prime Minister Narendra Modi's choice to hold large-scale political gatherings while knowing the COVID risks posed to vulnerable, rural populations, is a violation of this right (Das and Ahmed, 2021). India's prison occupancy rate standing at 118%, thereby turning prisons into COVID hotspots, is a violation of this right ("Prison Statistics," 2021). The lack of proper living conditions in rural India preventing safe quarantine is a violation of this right as well (Raju et al., 2021). The Government of India is not actively trying to harm its citizens; however, the government's failure to recognize the harms of its human rights violations is a major concern and must be remedied.

Thoroughly addressing human rights violations that impact health outcomes will require the utilization of a public health framework that can consider human rights risk factors. While useful, the traditional biomedical paradigm for understanding the causes and impacts of disease is unable to capture the impact of human rights violations on health. The biomedical paradigm

considers proximate causes of illness but fails to consider what role human rights violations play in influencing those proximate risk factors (Yamin, 2015, p. 171). For example, it can tell that a person died of complications arising from COVID, but it will not reveal the fact that this person may have contracted COVID because of being unable to stay at home due to the Government of India's systematic eviction of over 250,000 people in the first year of the pandemic (Chandran, 2021). Drafting effective public health policy that can address both proximate *and* root causes will require the use of an alternative public health framework, specifically a human rights-based approach to health (HRBA).

An HRBA involves consideration of risk factors that are determined by underlying structural factors, such as race, income, gender, etc. This framework recognizes that these structural factors play major roles in influencing the likelihood of an individual suffering poor health (London, 2008). For example, the impoverished family living in rural India is forced to see a family member die of COVID because 1) there was no readily available healthcare facility, and 2) they would not have been able to afford treatment anyway. Or the man imprisoned due to petty theft he committed to feed his family is left to suffer the consequences of the rapid spread of COVID in an overcrowded prison. Alternatively, the elderly woman in rural India suffering from chronic lung disease – a known comorbidity for COVID-19 – comes to terms with the fact that she will likely get infected due to limited vaccine access ("Underlying Medical Conditions," 2022). In the status quo, there is a general understanding that these structural inequities have impacts on health outcomes; however, they are taken as givens and treated as an inevitable state of the world as opposed to being viewed as injustices that demand correction (Yamin, 2015, p. 110).

Furthermore, an HRBA revolves around the principles of empowering marginalized groups/communities and holding governments accountable to actively ensure everyone's rights are being fulfilled (London, 2008). For accountability to be generated, however, there needs to be further research that identifies the relationship between human rights risk factors and health outcomes. This paper will add layers to traditional analyses of healthcare in India by providing quantitative evidence linking human rights factors to health outcomes. Doing so will generate considerable progress in the fight for equitable health outcomes by allowing for the formation of targeted policy solutions that can address human rights violations.

As such, I will be addressing the question of what optimal public health policy – rooted within a human rights-based approach to health – looks like in India. I plan on answering this question in two parts. The first part will be to identify which human rights factors have explanatory power in modeling trends in COVID cases/deaths in India. The Universal Declaration of Human Rights – along with the Constitution of India – will be used as the foundational doctrine for determining what constitutes human rights, given its international prominence as well as India's key contributions to its formation (which will be discussed shortly) (Kothari, 2018). Furthermore, as discussed earlier, COVID has highlighted pre-existing problems with the Indian healthcare system and has also shed light on how human rights violations impact health. As such, I plan on using COVID outcomes as a proxy for health outcomes writ large.

I will be identifying relationships between human rights fulfillment and COVID outcomes through quantitative research in the form of linear regression analysis. For measuring human rights violations/fulfillment, I plan on gathering data that could serve as proxies for various human rights. For instance, the number of hospital beds per capita is one of several variables that I plan on using as a proxy for measuring the extent of fulfillment of the right to

health as given by Article 25 of the UDHR ("UDHR," 2022). Subsequently, using this data, I would test for a relationship between hospital beds per capita and COVID deaths per capita.

Second, after identifying which variables have explanatory power, I plan on analyzing national, state, and regional capabilities to identify policy recommendations that can address those variables. Following the previous example, if hospital beds per capita proves to have explanatory power, I would attempt to provide recommendations for increasing the number of hospital beds. These recommendations will follow the core principles of an HRBA, such as community empowerment, accessibility of care, non-discrimination, accountability, etc. ("Health and human rights," 2017).

There is a long way to go in alleviating structural inequities and human rights violations in India. However, the formation of clear, quantitative evidence that charts the relationship between human rights and health will be a critical first step in holding leaders throughout India accountable for their actions and pressuring them to fulfill their obligations to the people of India.

Literature Review

The following is a review of the relationship between health and human rights, India's history of human rights advocacy and human rights violations during the COVID-19 pandemic, and the elements of a human rights-based approach to health.

Health and Human Rights

Overview

The late Johnathan Mann – a WHO administrator who spent much of his career working on AIDS research and treatment – was one of the pioneering voices of the health and human rights movement (Gostin, 1998). Mann argued that public health policy has generally focused more on proximate causes of health conditions as opposed to root causes. In particular, he stressed that while the traditional, biomedical framework could offer insights into individual risk factors, these insights were often divorced from their larger societal context (Mann et al., 1994, p. 3). For instance, in her book *Power, Suffering, and the Struggle for Dignity*, Alicia Yamin gives an example of her time working at a health center in the state of Haryana in India. She notes that several women were collecting water from a local pond where animals were bathing and defecating as opposed to going to the center of the city to collect fresh water from a well (Yamin, 2015, p. 163). Initially, she and other health workers had assumed these women simply were uneducated on the importance of clean water, but later they found out that these women were using the pond because they were primarily Muslims and Dalits – groups that are systematically discriminated against in India ("India: Events of 2020," 2021). Due to this status, they were prevented by locals from accessing the freshwater well (Yamin, 2015, p. 163).

In this example, individual behavior and risk factors (the choice to obtain dirty water) were analyzed without consideration of the broader social forces that led to that behavior in the

first place. Had one of these women died from complications arising from the consumption of dirty water, ie. cholera, the biomedical paradigm would identify the water consumption as the cause of death, and there would be no mention of the larger root cause: religious discrimination (Yamin, p. 165). Abstracting from examples such as the above, Mann ultimately argued that effective public health policy would have to recognize the unique ways in which 1) human rights violations impact health, 2) health affects human rights, and 3) health and human rights are co-dependent (Mann et al., 1994, p. 5).

To some degree, public health frameworks have begun recognizing the interplay between health and human rights. The World Health Organization (WHO) put forth a set of factors known as "social determinants of health," which are factors that influence both the likelihood of acquiring diseases/adverse health conditions as well as the likelihood of receiving proper care for those conditions ("Social determinants of health," 2022). The WHO formally defines social determinants of health as "the non-medical factors that influence health outcomes…the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life" ("Social determinants of health," 2022). Notable factors that are classified as social determinants of health include income, education, food security, and access to health services ("Social determinants of health," 2022). While social determinants have started entering the mainstream in public health practices, they must be more thoroughly utilized as a framework through which we evaluate the impact of health policies. Doing so will allow for the creation of more equitable health outcomes.

Case Study: HIV

The case of HIV infection is one of the most prominent instances of the recognition of the interplay between health and human rights. Early on during the HIV/AIDS pandemic, HIV was

primarily framed as a problem for marginalized groups – like men who have sex with men (MSM), the poor, injection drug users, etc. – as opposed to being a concern of the "general public" (Mann et al., 1994, p. 222). In the case of HIV, disease thus became a mechanism for discrimination and oppression against these groups of people. For instance, gay men in the US were prevented from getting access to insurance, and sex workers across the world were increasingly persecuted (Mann et al., 1994, p. 220). We can see similar occurrences with respect to the COVID-19 pandemic. At the height of the pandemic, COVID deaths in India were considered a problem for those in lower classes and rural settings. COVID cases and deaths within these populations were largely seen as inevitable due to the lack of health facilities, vaccine access, education levels, etc (Kansal, 2021). A human rights-based approach (HRBA) would challenge the underlying power structures that make such deaths "inevitable," with the goal of generating more equitable health outcomes.

In the case of HIV, utilization of an HRBA as opposed to the biomedical framework not only helped researchers understand the impact of HIV on human rights, but also the impact of human rights on HIV. Initially, HIV prevention strategies focused on altering individuals' behaviors, ie. recommendations on having fewer sexual partners, education about the importance of condoms, etc. (Mann et al., 1994, p. 217). Such strategies fell within the confines of the traditional, biomedical framework, however. The consideration of individualized risk factors was entirely divorced from the larger societal context under which behavior was being observed in the first place.

For instance, consider the case of gender inequalities. The lack of women's rights and agency in many parts of the world result in women being forced into marriages within which they may be forced to have unprotected sex ("Child and forced marriage," 2022). Researchers at

the Harvard School of Public Health found that women in India who experience physical and sexual abuse at the hands of their husbands are nearly four times more likely to be infected by HIV than women who are not abused (Silverman et al., 2008). More broadly, these gender dynamics highlight an instance where even if individuals are aware of the optimal means by which they can stay healthy, ie. using a condom, underlying power structures may make it such that they cannot behave in the safest fashion. Similarly, in the prior example, Muslim and Dalit women knew the water they were collecting was not healthy. However, their actions were constrained by religious discrimination; they lacked the agency and power to do what they knew was best for their health.

The case study of HIV/AIDS thus demonstrates that a human rights-based approach can be impactful in identifying and addressing social factors that contribute to poor health outcomes. However, the work is not finished. Such an approach needs to be expanded if we are to improve health outcomes across the world. The fast-moving and shared global nature of the COVID-19 pandemic offers a unique opportunity to better understand the effect of human rights violations on health outcomes and inequities while also allowing new opportunities to refine policies based on a human rights-based approach to health.

India and Human Rights

A History of Human Rights Development and India's Contributions

The end of World War II was a watershed moment in the history of global human rights development. To promote peaceful international development and mitigate the likelihood of future conflict, representatives of countries across the world came together and signed the UN Charter, which resulted in the formation of the United Nations (Fomerand et al., 2020). Human rights quickly became one of the major concerns of the UN. Having witnessed the horrific acts of

the war – including the murder of six million Jewish people in Nazi Germany – the member states of the UN recognized the importance of guaranteeing fundamental human rights that prevented systematic discrimination along the lines of race, ethnicity, gender, etc. (Formerand et al., 2020). With this aim, the Commission on Human Rights was created in 1946 one year after the formation of the UN (Formerand et al., 2020). The Commission shortly thereafter put together the Universal Declaration of Human Rights (UDHR), which consisted of an array of civil, political, economic, and social rights, including the right to health ("UDHR," 2022). In 1966, the UN went on to adopt the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), which were binding agreements that expanded on the rights put forth in the UDHR (Formerand et al., 2020).

Early on, India appeared to be one of the strongest advocates of human rights. India not only voted in favor of the UDHR but also played a critical role in its formation (Kothari, 2018). Drawing lessons from India's struggle for independence against the British, Indian leadership – with input from Mahatma Gandhi – was able to provide insight and recommendations for several of the codicil outlined within the UDHR pertaining to issues such as women's rights, non-discrimination, and the universality of all rights (Kothari, 2018). India's contributions to the UDHR and its reliance on the UDHR are apparent when examining the Constitution of India. Article 19 of the Constitution – which gives Indian citizens the right of speech and expression – mimics Article 19 of the UDHR, which states that everyone has the freedom of "opinion and expression" ("Article 19," 2018; "UDHR," 2022). In addition, Article 21 of the Constitution highlights the right to life, which has been expanded to include the right to health and proper living conditions, akin to Article 25 of the UDHR ("Right to Health," 2020; "UDHR," 2022). Given this interplay between India's constitutional ideals and the UDHR, one would expect India

to be a strong and continued voice in the fight for human rights. However, India's treatment of human rights in recent decades has been a far cry from what became expected of the country in the 20th century.

India's Human Rights Violations Amid the COVID-19 Pandemic

There have been several human rights violations in India that have exacerbated the extent of the COVID-19 pandemic. From a medical care standpoint, India sought to conceal the extent of the burden being faced by healthcare facilities at the height of the pandemic. Activists utilized social media as a tool to inform the world of the struggles being faced by India and the dire need for medical supplies; however, authorities frequently would arrest these activists for spreading "false information" (Ganguly, 2021). These instances of censorship are concerning not only on the basis that they are violations of the right to expression, but also because they have tangible health impacts amid the pandemic.

Furthermore, in January 2020, the Indian Supreme Court ruled access to the Internet to be a fundamental right of the Indian people. They justified this ruling under the broader umbrella of the Constitutional right to life by suggesting that Internet access was necessary for adequate living conditions (Dutta, 2020). Internet access quickly became one of the most important issues during the pandemic; the Internet was and continues to be the primary source for obtaining information regarding preventative measures, vaccines, etc (Qadri, 2020). One would subsequently conclude that this ruling came at an ideal time right at the onset of the pandemic. However, the follow-on from the ruling has been shoddy. In the union territory of Jammu and Kashmir, authorities only permitted the use of slow speed 2G Internet despite the Supreme Court ruling. Hospital workers across the state complained that these Internet speeds inhibited their COVID response (Qadri, 2020). Furthermore, vaccination appointments in 2021 were primarily

done on a centralized application called Cowin (Dore, 2021). Vaccination appointments were limited and could be reserved on a first-come, first-serve basis on the app. For people living in rural India with spotty mobile coverage and slow Internet speeds, this meant that obtaining an appointment was nearly impossible (Dore, 2021). Violation of the right to the Internet – and more broadly the right to life – thus contributed to inequities in COVID cases/deaths as well as distribution of resources to fight against the pandemic.

Lastly, the right to not be discriminated against – one of the foundational themes of the Constitution of India – has been violated throughout the pandemic, resulting in marginalized populations being placed at increased risk of COVID infection and death (Qadri, 2020). One of the major avenues through which this violation has occurred is the criminalization of minority groups in India, such as Muslims and Dalits. Muslims and Dalits are often the targets of discriminatory policies/practices as a part of an ongoing religious war within India (Qadri, 2020). This discrimination is evident when looking at the prison populations in India. As of August 2020, Muslims, Dalits, and tribal members had made up more than 50% of the total Indian jail population despite only accounting for 39% of the Indian population (Joy, 2020; Tiwari, 2016). This over-criminalization has contributed directly to the overall crowded status of Indian prisons, which had been noted as a major problem even before the pandemic began. The lack of proper sanitation services and the inability to physically distance due to overcrowding make prisons a critical vector for the spread of COVID ("Management of COVID-19," 2022).

These are just some examples of the numerous human rights violations occurring in India with impacts on the COVID-19 pandemic. Whether it be oxygen supplies, Internet access, or incarceration rates, it will be critical to evaluate the extent to which fulfillment (or the lack

thereof) of human rights is correlated with the risk of being infected or potentially dying from COVID.

Elements and Implications of a Human Rights-Based Approach to Health

The earlier discussion of the shortcomings of the traditional, biomedical framework underscores the need for a human rights-based approach to health. The failure of the biomedical framework to consider the societal context of individual risk factors means that large-scale, systemic root causes remain largely untouched in public health policy. The subsequent discussion will outline some of the core components of a human-rights-based approach and their implications for public health policy.

The Fight Against "Hidden Power"

In *Power, Suffering, and the Struggle for Dignity,* Alicia Yamin defines "hidden power" as the power that is used to dictate what discussions are had or what inequities are open to being challenged (Yamin, 2015, p. 327). Yamin uses the example of a family that is short on food and decides to feed their son over their daughter. Suppose the daughter internalizes that because she is a girl, she should not be fed first and therefore does not challenge the "rule." In this situation, according to Yamin, a form of hidden power has been exercised. The oppressed internalizing the state of the world as a given – as opposed to seeing it as an injustice to be corrected for – is the manifestation of hidden power (Yamin, 2015, p. 327). We have seen this hidden power at work in the context of COVID in India. Many people suffering from social, cultural, and economic inequality across India have resigned to believe as a fact that they will inevitably be afflicted with COVID (Qadri, 2020). They attribute this inevitability to their living conditions, religion, income, etc. Some worry they are not educated enough to protect themselves against the virus, while others ponder how they could ever access a healthcare facility from their rural village

(Qadri, 2020). Yamin's framework has offered us a way to think about the relationship between health and human rights. The key is to now identify solutions to fight against discrimination and hidden power to ensure that people feel hopeful, as opposed to hopeless about their health.

Participation

A lasting and important slogan emerged from health and human rights efforts to address the global HIV pandemic: nothing about us without us! (Lieven, 2010) Participation is one of the foundational principles of a human rights-based approach to health. Participation allows marginalized communities to internalize that they are fully human and are thus entitled to human rights. It helps these communities fight the "hidden power" of assuming that their state of the world is a misfortune that cannot be changed (Yamin, 2015, p. 314). Furthermore, increasing community participation via grassroots movements results in increased pressure placed on those in power, thereby increasing the likelihood of top-down change (Yamin, 2015, p. 314).

Participation also results in more effective change. The decentralization of decision-making associated with participation allows community members to make more effective decisions about how resources should be allocated, where funding should go, etc (Yamin, 2015, p. 324). Those at the community level are bound to know more about what their needs are; as such, a key component of HRBAs is to give as much power as possible to those at the community level to foster empowerment and better health outcomes (Yamin, 2015, p. 324).

Accountability

Yamin argues that a human rights-based approach to health requires coordination between government, development partners, and civil society (Yamin, 2015, p. 233). Such coordination is a necessity in the process of turning health systems into not just biomedical providers but rather into core social institutions that can address health ailments *and* provide

people with equal access to preconditions for health (Yamin, 2015, p. 220). However, such coordination can only occur with central and state governments taking responsibility for providing people with the right to health. Recognition of this responsibility would need to include elements such as funding/budgeting decisions that are geared towards more equitable access to healthcare, better implementation with oversight from government ministries, etc (Yamin, 2015, p. 220).

It should be noted that the Indian government has indeed taken some significant steps to improve access to care amid the pandemic. For instance, Mumbai has added 5500 new hospital beds and New Delhi is working to build 64 new oxygen plants (Anand, 2021). At the central level, Prime Minister Narendra Modi announced last June that the government would take on a larger role in purchasing and distributing vaccines as opposed to leaving that burden on the states (Bhattacharya and Roy, 2021).

Amid these actions towards operationalizing the right to health, however, there has been less emphasis on the fact that the right to health is not merely a *positive* right. A positive right is a right that governments must actively provide/fulfill (Yamin, 2015, p. 287). Yamin argues that the right to health should also be framed as a *negative* right in the sense that states must *refrain* from actions that negatively impact health (Yamin, 2015, p. 287). Therefore, holding the Indian government accountable is not mutually exclusive with recognition of the strides the government has made. It requires that we recognize that there is far more work to be done, particularly in the realm of highlighting the adverse health impacts of human rights violations. Highlighting these relationships will force accountability on the negative side of the right to health – a side that has systematically been papered over in India.

Methods and Data

Methods:

The analysis conducted in this paper revolves around identifying quantitative relationships between human rights violations and COVID-19 outcomes. Due to the extent to which COVID has exposed problems with healthcare and human rights in India, COVID outcomes will serve as a proxy for health writ large. As such, throughout the results and recommendations sections, "COVID outcomes" and "health outcomes" will be used interchangeably. To measure the relationship between human rights fulfillment and health outcomes, I collected data on variables that could theoretically serve as proxies for human rights violations/fulfillment. Such variables include, but are not limited to prison populations, public insurance coverage rates, hospital beds per capita, etc.

To get a quantitative estimate for the impact of these variables on COVID outcomes, I gathered data for all the chosen variables at a state level and ran regressions of these variables on COVID cases and deaths per 100k population. After controlling for appropriate variables, the p-values on the variables of interest were used to determine whether a given variable had a significant relationship with COVID outcomes. While certain control variables varied from regression to regression, two variables were used as controls in every regression: GDP per capita and urbanization rate.[3] These two variables were found to be strong predictors of COVID cases and deaths per capita; furthermore, their significance in predicting these outcomes has been extensively backed by research in the public health field (Johnson, 2021).

As such, the linear regression models I estimate in my analysis take on the following structure:

[3] Defined as the percentage of the population of the state that lives in an urban setting.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 GDPpc + \beta_3 UR + \beta_4 X_2 + \varepsilon_i$$

Here, Y refers to the health outcome of interest (either COVID cases or deaths per 100k population), X_1 refers to the human rights variable of interest, X_2 refers to any other pertinent control (if needed), and ε refers to the idiosyncratic error arising from the model.

	Y = COVID Cases/100k population		Y = COVID Deaths/100k population	
	GDP per capita (GDPpc) (Rs.)	Urbanization rate^ (UR)	GDP per capita (GDPpc) (Rs.)	Urbanization rate^ (UR)
Slope Coefficient	2493.4**	166.56***	35.722***	2.1136***
# Of Observations	29	28	29	28

Figure 1: Regression results from COVID outcomes ~ Controls (GDP per capita and urbanization rates)

- ^: Slope coefficients are measured as the increase in COVID cases/deaths per one percentage point increase in urbanization rate.
- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

Limitations:

There are a couple of limitations to this method of analysis. First is the issue of multicollinearity. The challenge of the analysis done in this paper is that human rights variables rarely exist in a vacuum. Human rights variables are typically deeply intertwined; fulfillment of one human right can often serve as a good predictor of the fulfillment of another human right, ie. the rate of clean water access in a certain state can help us determine the rate of access to adequate sanitation facilities in that same state ("What are human rights?" 2022).

From a statistical analysis standpoint, this correlation between human rights variables presents a challenge known as multicollinearity. In short, multicollinearity occurs when

independent variables included in a regression are correlated with one another, thereby influencing the estimated values of the regression coefficients, and often diminishing the statistical significance of the result. The solution to this problem may appear to be as simple as including fewer variables in the regression. However, while we want to avoid multicollinearity, we also want to be wary of ensuring that we are controlling for all variables that potentially influence the dependent variable.

As such, I was ultimately faced with the difficult task of including a minimal number of variables to avoid multicollinearity while also including *enough* variables to control for external effects. To achieve this balance, I utilized a correlation table, which details the correlations between all the independent variables in my data. When selecting control variables to include in regressions, I made sure to utilize variables that were not strongly correlated with my variable of interest. This process helped minimize the effects of multicollinearity, but it is important to recognize that the nature of human rights work makes avoiding multicollinearity altogether rather difficult.

The second main limitation is the small sample sizes for my variables of interest. Because I collected data at a state-level, for any given variable I only had as many data points as there are states/union territories in India. Furthermore, of the 36 states and union territories (UTs) in India, there were five I excluded from the analysis due to the unreliability of data.[4] In addition, for some variables, data from certain states was unavailable resulting in even smaller sample sizes for those regressions. Lastly, outliers had to be occasionally removed as well. Due to the limited sample size, my standard errors were large, thereby inflating the p-values of the variables in my

[4] These states/UTs are the Andaman and Nicobar Islands, Chandigarh, Dadra and Nagar Haveli/Daman and Diu, Ladakh, and Lakshadweep.

regressions. To increase the total number of observations, I attempted to find district-level data within each state, but such data was only sparsely available.

Finally, my analysis is limited as it may not describe fully causal relationships. To avoid multicollinearity, I could not include too many control variables; as a result, it is possible that variables with explanatory power were left out of my regressions. Nonetheless, any statistically significant relationships uncovered between risk factors and health outcomes are still valuable. First, controlling for major variables like urbanization rates and GDP – along with the inclusion of other controls where necessary – helps the regressions reflect causal relationships. Second, for all significant relationships uncovered, I went back and tested various combinations of controls to ensure that the sign of the coefficient and significance level were retained. Variables that could not meet this standard were not included in the findings. Third, even without causality, the existence of a relationship in and of itself suggests that there may be value in addressing the risk factor.

Data:

The data for this research comes from numerous sources. The most relevant and widely used sources are discussed here. With my goal ultimately being to highlight relationships between human rights violations and COVID outcomes, I began by obtaining COVID data from Johns Hopkins University. Particularly, I gathered data on total COVID cases and deaths by state (as of January 2022). Subsequently, I collected data on India's population estimates. Because the latest government census is from 2011, I utilized the Ministry of Health and Family Welfare's Population Projections report to find estimates for state populations for 2021. Combining the population and COVID data, I produced two variables that became my dependent variables for most of my analysis: COVID cases/100k population and COVID deaths/100k population.

I chose to use one of these variables over the other as the dependent (Y) variable based on which variable the human rights risk factor at hand was most likely to affect. For instance, access to quality medical care is more likely to influence COVID deaths given that people would be seeking care presumably only after being infected with COVID. Similarly, while prison overcrowding may influence COVID deaths, it is more likely to be a vector for the spread of the disease. Hence, in my discussion of prisons, I use COVID cases as the dependent variable.

The more difficult portion of the data collection process involved finding quantitative variables that could serve as proxies for human rights fulfillment. A significant portion of this data was derived from the 2019-2021 National Family Health Survey (NFHS-5). The NFHS-5 is a large-scale, multi-round survey conducted under the direction of the Ministry of Health and Family Welfare. It is the fifth NFHS survey and was funded by the Government of India and USAID (NFHS, 2021). The survey was conducted at representative households throughout India and collected data on 131 variables spanning the realm of household profiles, education, access to maternity care, childhood disease prevalence, nutritional status, hypertension, etc. (NFHS, 2021). Moreover, for each variable, researchers included rural and urban estimates in addition to the overall estimate, which allowed me to conduct analyses that looked at disparities between urban and rural regions of the country.

It should be noted that because the NFHS estimates were based on sampling, the estimates do not reflect the true value of any given variable (NFHS, 2021). While NFHS did not provide standard errors or confidence intervals, the process of running country-wide regressions on these variables produced overall regression standard errors, which ultimately should be sufficient in determining whether the effect of any variable on COVID outcomes is statistically significant.

Data	Source
Population Counts and Demographic Variables	Department of Health and Family Welfare
COVID Cases and Deaths	Johns Hopkins University
Prison Populations, Undertrial Populations, Occupancy Rates	National Crime Records Bureau
Health Infrastructure Variables – Hospitals, Hospital Beds	Reserve Bank of India; Central Bureau of Health Intelligence
Health Accessibility Variables – Insurance Coverage, Out-of-Pocket Expenses	National Family Health Survey
Living Conditions Variables – Clean Water Access, Internet Access	National Family Health Survey; Ministry of Communications

Figure 2: Summary of data sources.

Results and Discussion

The discussion of the findings is segmented by the human right each respective set of findings address. There are five categories of findings: health infrastructure, access to healthcare, prison populations, access to the Internet, and living conditions.

Health Infrastructure:

Per Article 25 of the Universal Declaration of Human Rights, all individuals have the right to a "standard of living adequate for the health and well-being of himself" ("UDHR," 2022). While the right to health does not necessarily imply the right to healthcare, the Indian government's National Health Bill states that all individuals have the right to healthcare without discrimination (Thomas, 2009). As such, access to health care is a key variable of interest when examining potential human rights violations. In particular, understanding the specifics of the relationship between the availability of medical care/infrastructure and health outcomes will be critical in informing appropriate policy solutions. I utilized two primary categories of metrics for assessing the relationship between the availability of medical infrastructure and health outcomes: hospitals/100k population and hospital beds/100k population. These variables were then further divided into total,[5] public/government, and private infrastructure for a more detailed analysis of how resource distribution across the public and private sectors influences health outcomes.

Hospitals and hospital beds per capita serve as decent proxies for the quantity of medical care available. While the quality of care is important, we would still theoretically expect that as the quantity of resources increases, ie. as medical care becomes more physically accessible, we would expect better health outcomes (after controlling for all pertinent variables).[6] At a hospital level, this relationship held, with COVID deaths/100k population decreasing as total

[5] Total simply equals the sum of private and public infrastructure in a given state.
[6] Co-morbidity prevalence and insurance coverage.

hospitals/100k population increased ($P \leq 0.05$). However, breaking down this relationship into public vs private hospitals reveals a more troubling trend. Particularly, COVID deaths/100k population decrease as private hospitals/100k population increase; however, no such relationship existed between public hospital prevalence and COVID deaths. In effect, these results suggest that hospital prevalence does influence COVID outcomes, but this relationship is almost entirely a function of the effect of private hospitals on COVID outcomes. This finding is troublesome given that most of the Indian population relies on public hospitals for medical care and it appears that these hospitals are unable to deliver quality care that can improve outcomes (Vitsupakorn et al., 2021).

	Total Hospitals/100k population	Public Hospitals/100k population	Private Hospitals/100k population
Slope Coefficient	-4.42*	-0.34	-6.30*
# Of Observations	27	26	27

Figure 3: Regression results from COVID deaths/100k population ~ Hospitals/100k population (total, public, and private)

- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

Analysis of hospital bed data reveals equally troublesome trends. There appear to be no significant relationships between either total or public hospital beds/100k population and COVID deaths/100k population. However, there is a negative relationship between private hospital beds/100k population and COVID deaths/100k population, suggesting that states with higher private hospital bed prevalence perform better with respect to health outcomes. The existence of this relationship coupled with the absence of similar relationships for the public or total variables emphasizes the concern that public hospitals are ineffective in providing quality care.

	Total Hospital Beds/100k population	Public Hospital Beds/100k population	Private Hospital Beds/100k population
Slope Coefficient	-0.026	0.1967	-0.1397*
# Of Observations	21	21	20

Figure 4: Regression results from COVID deaths ~ Hospital beds/100k population

- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

The concerns regarding the public hospital system do not stop there though. The analysis performed up until now treats public hospitals as monolithic entities. However, public hospitals can be categorized based on several different variables, and these categories of hospitals may perform at different levels with respect to health outcomes. One such variable of interest is the effectiveness of public hospitals based on location, particularly whether they are in an urban or rural setting. To test whether location influences health outcomes, I gathered data at a state-by-state level on the average number of hospital beds per urban public hospital and rural public hospital. Subsequently, I defined a variable that describes the difference between these two numbers, ie. the urban-rural divide in average hospital beds per public hospital. I then tested for a relationship between this variable and COVID deaths. The findings were conclusive, as COVID deaths/100k population were found to be positively associated with the urban-rural divide in average hospital beds per public hospital (slope = 0.4018) ($P \leq 0.05$).

This finding is not mutually exclusive with the previous findings. The previous results suggest that public hospitals/hospital beds do not significantly influence health outcomes writ large. This new finding implies that there may be room for improvement in the performance of public hospitals depending on how resources are allocated within those hospitals. This two-pronged approach will be reflected in the recommendations for Indian health infrastructure. On the one hand, we need to think carefully about how we can improve the quality of care at public

hospitals, and simultaneously, on the other hand, there must be a focus on reducing the urban-rural divide in the quantity and availability of public health resources. Ultimately, these results demonstrate that equitable distribution of high-quality resources will be a major factor in ensuring better health outcomes.

Lastly, it should be noted that improvements in medical care offered at public health facilities and the redistribution of resources are predicted to reduce mortality across the *entire state* not just in rural areas. This result further emphasizes the previous arguments as it demonstrates that improving healthcare facilities in rural India does not have to be considered an act of charity or moral righteousness on behalf of policy leaders; rather, improving rural access has tangible benefits for the entire state population.

Access to Healthcare:

The previous discussion of health infrastructure demonstrates that the quality of care at hospitals may be more of a determining factor than the accessibility of care. However, this discussion assumed that the quantity of hospitals/hospital beds was the only measure of access. In this portion of my analysis, I expand the notion of access to include non-infrastructure-related variables that may influence an individual's ability to seek out medical care. Specifically, I look at health insurance coverage, given that insurance plays a major role in making medical care affordable. If healthcare is indeed a human right per the Government of India, health insurance should be effective in lowering medical expenses and subsequently improving health outcomes.

To measure the relationship between this potential human rights violation and health outcomes, I began by examining the relationship between insurance coverage and COVID outcomes.[7] The insurance variable was defined as the percentage of households with at least one

[7] I controlled for all health infrastructure variables that were found to be related to health outcomes, ie. private hospital beds per capita, for all the regressions performed in this section.

member covered by some type of health insurance scheme. Insurance serves as a proxy for healthcare access; thus, if insurance is functioning as it should, we would expect to see a negative relationship between rates of insurance coverage and COVID deaths. Analysis of the data revealed no statistically significant relationship between these two variables, however. The lack of a relationship between insurance coverage and COVID deaths suggests that insurance overall in India may be ineffective in improving health outcomes.

The question then becomes: why is insurance ineffective in improving health outcomes? To answer this question, I examined the mechanisms by which insurance improves health. The primary mechanism by which insurance operates is through the reduction in the cost of medical care. As such, to measure insurance effectiveness, I looked at the relationship between insurance coverage and medical expenses. I utilized average out-of-pocket expenditure (OOPE) for birth as a proxy for medical expenses. If insurance were working effectively, we would expect to see a negative relationship between insurance coverage and birth OOPE. While the data revealed a negative relationship between the two variables, this relationship was not statistically significant. The lack of significance indicates that insurance overall in India may be ineffective in lowering costs.

	Dependent Variable (Y)	
	Deaths/100k Population	Birth OOPE (Rs.)
Slope Coefficient on Insurance Coverage^	-0.2590	-21.487
# of Observations	26	27

Figure 5: Insurance coverage's lack of influence on health outcomes and OOPE.

- ^: The values reflect changes for every one percentage point increase in insurance coverage.
- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

Lastly, I measured the relationship between medical expenses and health outcomes. If health outcomes worsen with expenses, we can conclude that the inability of insurance to lower expenses does indeed prevent better health outcomes. Again, I utilized birth OOPE as a proxy for medical expenses and tested for a correlation with COVID deaths/100k population. As expected, birth OOPE and COVID deaths were positively related, implying that as medical expenses increase, health outcomes worsen (slope = 0.0035) ($P \leq 0.05$). Thus, via testing the direct relationship between insurance and health as well as examining mechanisms by which insurance operates, we can conclude that insurance overall is not effective in improving health in India. The lack of effective insurance constitutes a human rights violation given that it prevents health and medical care from being universally attainable. These relationships thus highlight another instance of a human rights violation that has an adverse impact on health.

It is important to note that these findings are limited because they describe the relationship between health outcomes and insurance overall, as opposed to a specific type of insurance, like public insurance, employer-sponsored insurance, etc. Because of this limitation, we cannot claim that all insurance in India is ineffective. We are limited to utilizing existing research to figure out which segments of insurance in India are likely to be ineffective. However, the value of these findings stems from the fact that we now have concrete evidence that proves insurance overall does not influence health outcomes. Therefore, at least *some part* of insurance in India needs to be fundamentally changed if we are to improve health in India.

Prison Populations:

Article five of the UDHR states that "no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment" ("UDHR," 2022). Per this definition, prisoners in India experience ongoing human rights violations because of overcrowded and confined

spaces, poor medical services, and inadequate sanitation facilities. Moreover, during the onset of the COVID-19 pandemic, public health experts warned that these exact conditions would result in prisons turning into COVID hotspots ("Management of COVID-19," 2022). Analysis of prison data reveals that this prediction held true for India in a major way.

As of December 31st, 2020, India's nationwide prison occupancy rate stands at 118% (NCRB, 2020). Indian prisons were not built to ensure substantial spacing between prisoners to begin with; as such, an occupancy rate of 118% suggests an extreme level of overcrowding, leaving prisoners susceptible to the rapid spread of COVID ("Prison Statistics," 2020). To measure the impact of human rights violations in prisons on health outcomes, I examined the relationship between prisoners per capita and COVID cases per capita. If overcrowding does exacerbate the spread of disease, we would expect to see an increase in cases per capita with prisoners per capita after holding prison capacity constant.

Indeed, the relationship between these variables is positive ($P \leq 0.01$), suggesting that health outcomes worsen with increases in prison populations. Note that this analysis does not describe the relationship between prison populations and *prisoner* health outcomes; rather, the results speak toward a spillover effect in which COVID cases per capita across the *entire state population* are impacted. The harsh prison conditions seen in India and elsewhere throughout the world are generally a reflection of the lack of care by those in power for prisoners; as such, the spread of disease in prisons may not be a high priority issue for policymakers. Many, including myself, would argue that prison conditions ought to be improved, regardless of the existence of any spillover effect. However, especially when such an effect does exist, policymakers should be taking heed of the poor conditions within Indian prisons.

Reducing prison populations in India will likely be important in alleviating disease spread; however, this reduction effort should be crafted with attention paid to a specific class of prisoners: undertrials. Undertrials are defined as prisoners who are actively on trial and have not yet been convicted ("Prison Statistics," 2020). Per the Indian Ministry of Home Affairs' National Crime Records Bureau (NCRB), over 75% of all prisoners in India are not convicts, but rather are undertrials ("Prison Statistics," 2020). As such, it makes sense that efforts to reduce prison populations should be centered around reducing undertrial populations. From a human rights standpoint, the incarceration of prisoners before conviction is a violation of Article 11 of the UDHR, which states that "everyone charged with a penal offence has the right to be presumed innocent until proved guilty according to law in a public trial…" ("UDHR," 2022). The high prevalence of undertrials in Indian prisons is especially problematic given that approximately 25% of all undertrials eventually get acquitted (Gupta, 2020). Undertrial incarceration is thus an instance of a human rights violation that – via increasing overall prison populations – has a significant impact on health outcomes.

The relationship between human rights violations and health outcomes in prisons does not end there, however. Breaking down prison populations – specifically undertrial populations – from the standpoint of religion reveals trends that are demonstrative of additional human rights violations. Particularly, there exists a positive relationship between Muslim overrepresentation in prisons and COVID cases. Before examining the regression results, it is important to establish context from a human rights perspective that could explain this trend.

From the days of British rule over colonial India, there has been longstanding religious conflict between Hinduism and Islam in India. The views articulated by the two religions are often fundamentally in opposition to one another, resulting in tension between those who

practice those respective religions (Pillalamarri, 2019). Geopolitics and political leadership have accentuated this religious conflict as well. Conflict first became exacerbated after the partition of colonial India into modern-day India and Muslim-majority Pakistan. In present times, the BJP's unilateral decision to strip the hotly contested region of Kashmir of its autonomy in creating laws has further fueled tensions between Hindus and Muslims ("Article 370," 2019).[8] This history of religious tension and conflict has continued to manifest itself in numerous ways in India today, despite India's secular foundations in its Constitution (Qadir, 2020). Particularly, as discussed earlier, Muslims living in India have faced numerous forms of oppression, including being targeted by discriminatory policies/laws and subjected to over-policing (Qadir, 2020). Per Article seven of the UDHR, "all are equal before the law and are entitled without any discrimination to equal protection of the law" ("UDHR," 2022). Therefore, should this religious discrimination prove to worsen COVID outcomes, it would be yet another instance of a human rights violation being related to worsened health outcomes.

A close analysis of prison data provides strong evidence for the relationship between religious discrimination and health outcomes. To measure Muslim overrepresentation in the undertrial population, I defined the following variable: $\frac{\%\ of\ undertrials\ that\ are\ Muslim}{\%\ of\ the\ entire\ state\ population\ that\ is\ Muslim}$. A ratio greater than one thus implies an overrepresentation of Muslims in the undertrial population of the state in question. I ran a regression that examines the relationship between this variable and state-wide COVID cases per capita. The coefficient returned positive ($P \leq 0.05$), implying that states with more Muslim overrepresentation experience more COVID cases per capita relative to states with less overrepresentation.

[8] The BJP is a Hindu nationalist party with current control of the government.

This ratio was greater than one for every state except Puducherry, indicating that Muslims are overrepresented in the undertrial population across the country. However, these results suggest that the extent to which overrepresentation is occurring is a key determinant of health outcomes. Even if the exact mechanisms for this relationship are unknown, the existence of the relationship itself is enough to suggest that there may be value – from a health standpoint – in addressing the overrepresentation of Muslims in the Indian undertrial population. Ultimately, even if health outcomes are not guaranteed to improve, the government of India should take steps to reduce the overrepresentation of Muslims in prisons not as a means for other benefits, but as an end goal in and of itself.

	Prisoners/100k population	Muslim Overrepresentation^
Slope Coefficient	93.28**	14.281*
# Of Observations	22	23

Figure 6: Regression results from COVID cases/100k population ~ Prison Populations/100k population (Total and Muslim overrepresentation in undertrial populations)

- ^The slope coefficient reflects the increase in COVID cases/100k population for every 0.01 increase in the overrepresentation ratio.
- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

Internet:

As discussed in the literature review, Internet access – particularly in rural parts of India – became a major concern during the height of the COVID-19 pandemic. In India, the Internet was and continues to be the primary source for information regarding the pandemic, preventative measures, vaccinations, etc (Qadir, 2020). Given the importance of the Internet for health and well-being, one could argue that access to the Internet is an essential service per Article 25 of the UDHR, which states that "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food…and *necessary social services*."

This line of reasoning especially holds true following the Indian Supreme Court's declaration in 2020 that access to the Internet is a fundamental right (Dutta, 2020). Furthermore, Article 19 of the UDHR says that "everyone has the right to freedom of opinion and expression; this right includes freedom to…*receive and impart information*" ("UDHR," 2022).

Clearly, there exist several legal and human-rights-oriented frameworks that back the claim that Internet access is a human right, yet access remains an issue in many parts of India (Sharma, 2020). Often, this issue arises due to the lack of infrastructure in remote parts of the country, but sometimes access is purposefully limited by those in power for the sake of political gain, as seen in the discussion of Jammu and Kashmir earlier (Qadir, 2020). Regardless of the reason, operationalizing a human rights-based approach to health requires that we search for any potential relationships between these human rights violations and health outcomes.

As such, to test for the relationship between Internet access and COVID outcomes, I gathered data on state-by-state Internet penetration, which was defined as the percentage of all villages with Internet or mobile connectivity.[9] I then compared penetration rates with COVID cases per capita. The regression results indicated the existence of a negative relationship between these two variables; specifically, the model predicts that for every one percentage point increase in Internet penetration, COVID cases/100k population would decline by 142.29 ($P \leq 0.05$).

These results speak to the potential health benefits of ensuring adequate Internet access for all. Leaving COVID aside, the Internet is also crucial for the dissemination of information regarding general health and well-being practices, geopolitical turmoil, and potentially future pandemics. As such, building out a robust Internet infrastructure – particularly in rural parts of India – will be critical for ensuring the health of all Indian citizens.

[9] Based on 2020 data.

Clean Water:

Article 25 of the UDHR states that "everyone has the right to a standard of living adequate for the health and well-being himself and of his family, *including food, clothing, housing, etc*," ("UDHR," 2022). Adequate living conditions are thus a fundamental human right. Consequently, I was interested in exploring the relationship between the fulfillment of this human right and COVID outcomes to see whether India could improve living conditions to improve health outcomes writ large.

While no one variable can be used to measure the quality of living conditions, certain variables serve as effective proxies. For my analysis, I utilized access to clean drinking water as a proxy for living conditions. The variable was defined as the percentage of those living in households with access to clean water. Access to clean drinking water is one of the most important metrics for evaluating living conditions given that it is an absolute necessity without which we often cannot survive. As such – even though "water" is not explicitly listed in Article 25 of the UDHR – it says a lot about the quality of living conditions in a place where there is no easy access to clean drinking water.

As expected, there is a negative relationship between the percentage of people living in households with access to clean water and COVID cases/100k population ($P \leq 0.05$). In effect, as clean water access improves, COVID outcomes get better. The implication of this finding is that concrete efforts made to improve living conditions may benefit health outcomes writ large.

In addition, there is a positive relationship between the urban-rural divide in access to clean drinking water and COVID cases/100k population ($P \leq 0.05$). A positive relationship here implies that states with larger disparities between urban and rural access tend to have worse health outcomes. Management of technology, resources, etc. in the effort to improve living

conditions should thus be framed through the lens of equity, with the goal being reducing the urban-rural divide across India. In addition, like with other variables, note that this relationship describes health outcomes in terms of the *entire state,* not just rural areas. Therefore, there is value in eliminating urban-rural disparities not just for the disadvantaged and those living in rural areas, but for the health status of the entire state cumulatively.

	Clean Water Access – Total	Clean Water Access – Urban-Rural Divide
Slope Coefficient^	-110.912*	118.615*
# Of Observations	23	23

Figure 7: Regression results from COVID cases/100k population ~ Clean drinking water access/100k population (Total and urban-rural divide)

- ^: The values reflect increases in COVID cases/100k population for every one percentage point increase in total access/urban-rural difference.
- Significance key: $P \leq 0.05$*; $P \leq 0.01$**; $P \leq 0.001$***
- Each column represents a separate regression.

Recommendations

Overview and Limitations:

The following sets of recommendations utilize principles of human rights-based approaches to health to address the human rights variables that were found to influence health outcomes. In particular, the recommendations emphasize the principles of equity/non-discrimination, accessibility, and accountability. The recommendations are segmented by the same categories as the discussion of the findings. There are a few limitations to these recommendations which I will address here.

First, the recommendations do not directly flow from the results. By this, I mean that the results are useful insofar as they identify *which* human rights factors are key predictors of health outcomes and *what* might need to be done to address those factors; however, the data analysis does not thoroughly allow us to come to conclusions about *how* to best address these risk factors. The value of knowing which variables are influential cannot be overstated as this knowledge allows us to allocate limited funds and resources to exactly where they need to be. As such, while the recommendations may not directly flow from the results, they will still hold value especially given the utilization of HRBA principles.

In addition, the recommendations may appear to have an element of disjointedness given that they cover numerous seemingly unrelated risk factors. Furthermore, each of the factors is a vast and complex issue in and of itself, thereby resulting in the recommendations suffering from what appears to be a breadth-over-depth problem. There are a couple of points to be made in response to these claims.

First, human rights-based approaches require that we push the bounds of what policymakers assume to be a cohesive set of policies. As part of an HRBA, we must recognize

that these seemingly unrelated factors are very much related; work on one human rights risk factor will have positive effects on the other risk factors ("What are human rights?" 2022). Therefore, a policy package rooted within HRBA principles must be a multi-faceted effort aimed at addressing several types of human rights violations. Inevitably, such a package will consist of policies spanning a wide array of topic areas. On the contrary, narrowly defined health policy consisting of just biomedical logic – which is typically what one will find in the public health field – will neglect a wide array of fundamental determinants of health.

Second, an HRBA demands that we highlight and challenge all instances of human rights violations influencing health outcomes; otherwise, structures of oppression will ensure that the violations will continue indefinitely (Yamin, 2015, p. 34). This idea goes back to the notion of negative rights, wherein the government engages in practices that are actively harming human rights and health in the process. Without pointing out those violations and providing concrete ways to address them, those rights violations will continue given that they are embedded within the status quo. Therefore, I will be providing recommendations for each of the statistically significant variables from the results, even at the risk of the recommendations appearing unrelated to one another.

Third, the spirit of an HRBA is not necessarily to provide an array of solutions that would completely solve each human rights violation. Doing so is far beyond the scope of this paper. Rather, via the provision of recommendations for each issue, I aim to provide an in-depth structure for how to utilize HRBAs in public policy. Hence, each recommendation will consist of precise policy solutions, with suggestions on how to provide funding (wherever necessary), how to operationalize the policy, how to implement and enforce the policy, etc. This paper is thus

meant to serve as a blueprint in the sense that these recommendations should be built upon with a thorough investigation of the scholarship on each human rights variable.

Fourth, one of the key principles of an HRBA is the idea of "progressive realization" (Fukuda-Parr et al., 2008). Addressing human rights violations is a daunting task, and these issues cannot be fixed overnight. However, HRBAs demand governments to use the framing of progressive realization wherein governments take small steps wherever possible with whatever resources are available to fulfill human rights (Fukuda-Parr et al., 2008). The value of separate recommendations for each risk factor lies in the fulfillment of progressive realization. By providing recommendations for a wide array of topics, we force those in power to implement beneficial changes concerning each human rights variable, thereby laying the groundwork for future progress. Moreover, due to the interrelated nature of human rights factors, progress on one factor can positively influence progress on another factor. As such, aspiring towards the progressive realization of several human rights factors creates a multiplier effect in terms of overall human rights fulfillment and subsequently health outcomes (Fukuda-parr et al., 2008).

Health Infrastructure:

A human rights-based approach to healthcare revolves around the AAAQ framework. Per this framework, healthcare must be available, accessible, acceptable, and of high quality (Gloppen et al., 2016). The analysis of medical infrastructure performed earlier revealed the need for focusing on the availability and quality components of this framework. Policy strategies should focus on 1) improving the quality of care at public hospitals and 2) minimizing the gap between urban and rural public health resources. The following are a set of short and long-term recommendations that can help India address these issues and ultimately improve the health of its population.

1. Short-term strategies to improve quality of medical services at public and rural hospitals

a. The central government should work with state-level medical health departments to mandate that public doctors cannot simultaneously work in private practices.

Per existing law, government doctors are allowed to work in private practices on the side as long as they complete their commitment to the public hospital, which usually consists of a required number of days and hours of work per week (Didyala, 2022). Doctors tend to take advantage of this opportunity, given that working in private practices can be far more lucrative than working at public hospitals. Hospital administrators claim that doctors often leave as early as noon to go work elsewhere and do not return for several days (Didyala, 2022).

This is a major problem for public hospitals in rural areas that are already struggling due to a lack of resources. The unavailability of doctors can leave patients – often poor and suffering from significant ailments – waiting days for treatment (Didyala, 2022). A central government mandate that forces doctors employed at public hospitals to work full-time at those hospitals will mitigate the extent to which these hospitals suffer resource scarcity, thereby allowing them to provide better treatment to their patients. Policies banning public doctors from working in private practices have recently been introduced at the state level in both Telangana and Punjab (Didyala, 2022). These policies are just a few weeks old, so there is no evidence to suggest whether they have improved health outcomes in rural, public hospitals. Introducing a central government version of this policy would increase the legitimacy of similar state-level policies and result in more equitable distribution of resources (Didyala, 2022).

In addition to a mandate, state governments should work to improve work conditions for doctors working at public hospitals. Doing so would decrease the likelihood of public doctors breaking the rules and working in private practices; furthermore, better work conditions can

incentive more doctors to work at public hospitals in the first place (Bajpai, 2014). This can be done by increasing salaries, providing better employee benefits, maintaining adequate facilities, and improving living conditions for doctors in rural areas, ie. better housing for doctors who are not from the area (Bajpai, 2014). Strategies for acquiring the funding necessary for these initiatives will be discussed in the long-term strategies.

b. The central government should work with state-level medical health departments to mandate that all doctors working at private hospitals and urban, public hospitals must spend a minimum percentage of their working hours in rural, public hospitals.

There are two benefits to such a policy. First, requiring doctors to work in public, rural hospitals will allow them to impart their knowledge to doctors and health workers in those institutions, thereby improving the quality of care (Bajpai, 2014). Second, such a policy could potentially create a pipeline for doctors to work for rural, public hospitals permanently. Removing doctors from the bubble of private and urban institutions may allow them to truly see and understand the struggles of health institutions in rural parts of India, thereby igniting a desire to help. Given that these individuals are doctors, they likely have some innate desire to help people who are suffering; this policy could tap into that desire to boost the quality of care offered at rural, public hospitals. At the minimum, even if doctors do not move to rural, public hospitals full-time, the policy could foster some degree of relationship-building between urban and rural institutions. The groundwork could be set for a more collaborative partnership moving forward, involving the sharing of technology, funds, etc (Bajpai, 2014).

2. Long-term strategies to improve quality of medical services at public and rural hospitals

a. The central government should make medical school more financially accessible by offering conditional loans for students that commit to working for rural, public health hospitals for at least five years after school.

Conditional loans may be structured in numerous manners, including reduced interest rates or portions of the principal waived altogether. Conditional loans solve two problems at once. First, offering such loans would increase the affordability of medical school, thereby increasing the number of medical students and eventually the number of practicing doctors. This should prove to increase the quality of medical care across the board in India, given that affordability of medical school is a major, limiting factor for prospective medical students (Gupta and Kanoria, 2020). Second, given that these loans are conditional upon students working at rural, public hospitals, they should prove to improve the quality of care particularly in rural parts of India. Over the long term, this initiative should prove to reduce urban-rural disparities in the quality of medical care. A nationwide conditional loans model has been utilized in Singapore with promising results (Gupta and Kanoria 2020).

Conditional loans can be funded through various mechanisms. For instance, the government can convince financial institutions to take on such loans with the right incentives. Financial institutions in India have expressed their willingness to structure conditional loans if they receive government support (Gupta and Kanoria, 2020). The central government can offer this support in numerous ways, such as risk guarantees, which effectively serve as insurance for banks (Gupta and Kanoria, 2020). Regardless of the specific mechanism, if the government can offer the right incentives, we will make significant headway in increasing the accessibility of medical schools.

b. The central government should mandate that a minimum percentage of all healthcare investments made by financial institutions must go towards rural healthcare institutions.

Profit-maximizing financial institutions look to invest in institutions where they could expect the highest rates of return. In the context of healthcare, these institutions will inevitably be the ones that are already backed with capital, have steady income streams through patients on private insurance, etc. Due to these investing practices, over time, the gap between the best and worst healthcare institutions grows tremendously (Kodali, 2020). This phenomenon can partially explain why India is the home to world-class medical facilities and medical tourism in urban areas, while patients are unable to gain access to simple treatments in rural areas (Kodali, 2020). The government can end this vicious cycle by setting a minimum requirement for investing in rural healthcare institutions. The exact percentage requirement would be determined by an in-depth analysis of the investing patterns of financial institutions as well as an examination of the profit margins they are posting. In addition, the government can provide other incentives, like risk guarantees, for financial institutions that do invest in rural areas. Thus, implementing this policy should increase the funds available for rural healthcare institutions; a part of these funds may go towards implementing some of the previous strategies, such as increased salaries for doctors working at rural, public hospitals.

Some may argue that such a policy could disincentive investment in healthcare altogether. However, this is unlikely to happen because the Indian healthcare market is currently one of the most attractive markets for financial institutions due to its rapid growth as well as upcoming infusions of government capital ("Healthcare Industry in India," 2022). If any small decreases in investment occur, they should likely be offset by the increase in rural investment. As demonstrated in the data analysis, reducing urban-rural divides in healthcare resources

matters more for health than increasing total resources. This finding supports the idea that we should be willing to sacrifice some level of total investment if it implies an increase in rural investment.

Access to Healthcare:

The insurance findings demonstrated that existing public health insurance coverage is not correlated with health outcomes or medical expenses. This finding is particularly important for public health policy because most insurance-related initiatives have been centered around increasing insurance penetration, as opposed to increasing the effectiveness of insurance itself (Roy, 2022). While getting more people insured is critical, health outcomes will only improve if insurance is functioning effectively. Per the AAAQ framework, the Government of India should take significant steps to increase the quality of insurance such that medical care becomes more accessible.

The following are a set of recommendations that can improve the quality of insurance in India. These recommendations focus mostly on public insurance given that it is the primary lever that can be controlled by government policy. Furthermore, there have been several well-documented problems with public insurance that may be at the root of the inability of insurance to improve health outcomes in India (Vitsupakorn et al., 2021).

1. The Government of India must increase public spending on healthcare to three percent of GDP.

Admittedly, this is a recommendation that is far easier said than done; nonetheless, it will be necessary for increasing the effectiveness of India's public insurance scheme. India's 2021/2022 budget increased healthcare spending by 135%, thus serving as a significant step in the right direction (Kumar and Ahmed, 2021). However, far more work needs to be done.

Currently, India's public spending on health amounts to just 1.35% of GDP, which places it among the countries with the lowest shares in the world (Khullar, 2021). Other countries with public health spending shares this small tend to be poor countries, such as Myanmar, the Democratic Republic of Congo, and South Sudan ("Lowest share of government health expenditure," 2021). Per a report released by the Federation of Indian Chambers of Commerce and Industry (FICCI), India must raise its public spending to 2.5-3.5% of GDP to support a revitalized healthcare system (Bhattacharya, 2022). The increased funds would serve many purposes, but one particularly important destination for the funds would be India's flagship public health insurance scheme: PM-JAY.

PM-JAY was launched in 2018 and covers Rs. 500,000 ($6553) per family per year in medical expenses for free for the poorest 40% of the country (Nandan, 2021; Jain, 2022). The launch of PM-JAY was supposed to drive forward India's goal of achieving universal healthcare; however, India's limited public spending on healthcare has prevented PM-JAY from reaching its full potential. The lack of funding available for PM-JAY has prevented the program from making its full extent of resources available to poor families in India (Khanna et al., 2021).

Furthermore, expanding funding for PM-JAY will allow the government to expand the percentage of the population that is eligible to enroll in the program. This should prove to improve health outcomes as one of the major issues plaguing the Indian healthcare system is the lack of insurance coverage for the "missing middle" (Sarwal and Kumar, 2021). The "missing middle" is the portion of the population that is not poor enough to be eligible for PM-JAY but cannot afford to pay for private insurance. The "missing middle" accounts for roughly 30% of the Indian population (Sarwal and Kumar, 2021). Expansion of PM-JAY will allow for increased

penetration of insurance within this segment of the population, which should increase the accessibility of medical care by reducing out-of-pocket expenses for these individuals.

Public insurance schemes like PM-JAY will only be able to make medical care accessible for the poor if they are given sufficient levels of funding. India has not hit the critical level of funding in the status quo, and the only way it will be able to do so is by re-allocating its budget with a much larger focus on healthcare. To achieve the 3% target, the government of India should aim to increase its spending on healthcare by 0.5-1% every year.

Furthermore, increasing public spending on healthcare would have tremendous benefits outside of insurance as well. These funds could go towards several of the recommendations brought up in the health infrastructure section, such as improving salaries for doctors, financing student loans, and improving the quality of resources in public hospitals.

2. The government should make two substantive changes to PM-JAY: a) PM-JAY should cover medical expenses based on a retrospective payment system, not prospective. b) PM-JAY should cover health conditions that require exclusively outpatient services.

a) PM-JAY should cover medical expenses based on a retrospective payment system, not prospective.

As PM-JAY currently stands, it utilizes a prospective payment system wherein the maximum allotment for the cost of a given treatment is predetermined (Singh, 2020). This structure has caused problems for beneficiaries of PM-JAY because the pre-determined limits often do not reflect the reality of treatment costs. For instance, researchers spoke with a man who underwent a septoplasty for which PM-JAY had allocated Rs. 5000; however, the actual cost of treatment ended up being Rs. 13,000. As a result, the man had to pay the remaining Rs. 8000 out of pocket (Singh, 2020). In cases like these, the prospective payment system causes significant

confusion for beneficiaries of PM-JAY, given that PM-JAY is advertised throughout the country as providing free care up to Rs. 500,000 (Singh. 2020). Furthermore, large discrepancies between the actual and expected treatment costs threaten to leave patients under financial duress as they often cannot afford to pay the difference out of pocket (Singh, 2020).

The differences between expected costs and actual costs are not necessarily the fault of bad planning by the government. There is typically a high degree of variance in treatment costs across the country; moreover, unforeseen events like surgical complications may arise, leading to higher costs (Singh, 2020). These factors make it difficult to accurately set a universal allotment for a given treatment. Alternatively, a retrospective payment system would involve PM-JAY covering costs based on what the treatment actually costs, thereby solving the problem of individuals paying out of pocket (Watne, 2017). Increasing the funding of PM-JAY by devoting more public funds to healthcare will be a necessity for the government to be able to support retrospective payment.

Those involved with health economics and public health may argue that retrospective payment incentivizes doctors to provide costly and unnecessary care to make more money (Blank, 2022). While this is a valid concern, there are two reasons why retrospective payment remains the best option for PM-JAY. First, the benefits of increased accessibility of care outweigh the increased costs incurred by the government. The government has long established its desire to achieve universal healthcare; if it truly aspires to reach this goal and improve the health of hundreds of millions across India, it should be willing to take on higher costs (Vitsupakorn et al., 2017). Second, the profit incentive to provide extra care already exists in the status quo under the prospective payment structure of PM-JAY. As discussed in the example earlier, doctors do not stop treatment once the pre-determined upper limit is reached; rather, they

continue treatment with the expectation that the patient covers all extra charges. Under this expectation, doctors have an incentive to provide more care than necessary on the margin because they know the patient will be forced to cover it. Thus, if doctors do indeed provide extra, unnecessary care, changing from a prospective to retrospective system merely shifts the burden of covering this extra care from the patient to the government. This is the preferred outcome given that the government can afford to cover the extra costs more so than the patients who were poor enough to end up as PM-JAY beneficiaries in the first place.

b) PM-JAY should cover health conditions that require exclusively outpatient services.

PM-JAY currently covers outpatient services insofar as they are follow-ups to inpatient treatment, ie. receiving checkups following surgery. It does not cover conditions that require a patient to utilize just outpatient services (Vitsupakorn et al., 2021). Studies have shown that roughly 60% of all out-of-pocket health expenditure in India goes towards outpatient services (Vituspakorn et al., 2021). Therefore, if the goal of PM-JAY is to provide free medical care, it should also cover outpatient services.

Understandably, there are concerns about the government's ability to fund this increased coverage. Like with the case of retrospective payment, an increased budget for PM-JAY would be a significant step forward in the effort to cover outpatient services. Furthermore, coverage of outpatient services may lead to reduced government spending in the long run. In the status quo, the lack of coverage of outpatient services may disincentivize individuals from seeking preventative, outpatient care; rather, they may prefer to seek inpatient care reactively after reaching a point of severe illness. However, inpatient care is far more expensive than outpatient care, particularly for severe conditions (Richter and Diduch, 2017). As such, the current structure of PM-JAY is likely not optimal from a cost-minimization standpoint given that it pushes

individuals to seek more expensive care. Covering outpatient care under PM-JAY could reduce the utilization of inpatient care, thereby generating net cost savings in the long run (Richter and Diduch, 2017).

Prisons:

Prison Populations

The findings from earlier showed that prison populations per capita are significantly associated with COVID mortality. Moreover, over 75% of those in Indian prisons have not yet been convicted ("Prison Statistics," 2020). There are several steps the Government of India can and should take to solve the problem of overcrowding in prisons.

1. The Government of India should legally set the limit for prisoner occupancy rates at 100% of prison capacity. Doing so would reduce overcrowding in prisons, which should, in turn, reduce the spread of disease and promote a healthier prison environment writ large.

There are a couple of steps the Government of India can take to reduce occupancy rates. First, the central government should require that states provide updated capacity information for all prisons based on adequate physical distancing standards. Then, based on the extent of overcrowding and the availability of alternative resources (i.e. funds to build new prisons, empty capacity in open jails, etc.), the central government should provide states with target rates at which they need to reduce occupancy rates. For instance, it may be determined that a specific state would realistically be able to reduce occupancy by 20% every year; thus, they would be held to that standard.

Second, the central government should work with state governments to invest in the construction of open jails. Open jails are minimum-security facilities wherein inmates are given the freedom to take on employment at market wages, spend time with family, educate

themselves, etc (Goyal and Vedula, 2021). Open jails are a powerful tool for reducing overcrowding in prisons for numerous reasons. First, open jails are far more cost-effective than traditional prisons due to their limited security requirements. A study conducted in Rajasthan found that the cost per prisoner at a central prison was Rs. 7094/month compared to just Rs. 500/month at an open jail (Goyal and Vedula, 2021). Raising funds for constructing and maintaining open jails will therefore be a far easier task than increasing capacity at prisons. Second, open jails are likely to have lower rates of recidivism than prisons. Because open jails encourage inmates to take up outside employment, these inmates may be more likely to develop the skills, connections, and confidence to make it into the workforce following their release relative to prison inmates (Goyal and Vedula, 2021). As such, open jails may help address overcrowding both in the short term by alleviating capacity stress on prisons, as well as in the long term by reducing rates of criminal offenses.

Some may argue that open jails increase the risk of dangerous criminals escaping. In response, I would make three arguments. First, under the open jail model, state and local governments should place criminals into tiers based on the severity of the crime committed. This process would ensure that criminals who have committed major crimes end up in prisons, while those who have committed trivial crimes go to open jails (as opposed to the current model wherein murderers and those convicted of petty theft end up in the same institution). Therefore, even if inmates escape, they are unlikely to pose danger to themselves or the people around them.

Second, the rehabilitative nature of open jails means that the opportunity cost of escaping is far too high for escaping to be a sensible option. While escaping itself may be straightforward, there must be careful planning to avoid getting caught afterward. Furthermore, getting caught

risks worse punishment, such as a prison sentence. On the other hand, serving time in open jails can help inmates become fully integrated members of society again, and the quality of life within these jails is superior to that of prisons (Goyal and Vedula, 2021). This theory is empirically backed as data demonstrate that escape attempts from open jails in India are rare (Goyal and Vedula, 2021).

Lastly, the benefits of open jails outweigh the small risk of inmates escaping. Open jails promote better human rights fulfillment for prisoners, cost savings relative to standard prisons, and better health outcomes via reductions in overcrowding.

2. The Government of India should ban the incarceration of undertrials. Specifically, the Government of India should impose a central mandate that requires states and localities to fully convict all suspects in a court of law before their imprisonment. The incarceration of individuals who have yet to be convicted is a direct violation of Article 11 UDHR which states that everyone has the right to be "presumed innocent until proved guilty according to law in a public trial" ("UDHR," 2022). Furthermore, given that undertrials account for 75% of the Indian prison population, banning their incarceration would go a long way in addressing issues of overcrowding in prisons ("Prison Statistics," 2020).

As of 2021, India has over 350,000 undertrials in prison; banning the incarceration of undertrials would thus imply suddenly either convicting or acquitting/removing all of these people from prisons ("Prison Statistics," 2021). This is not a realistic expectation in the short term; however, there are numerous strategies the government can pursue to begin the process of ending undertrial incarceration.

First, like with the case of prison overcrowding, the central government should work with state governments to set targets for the rate at which undertrial populations need to be reduced.

In addition, the central government should provide guidelines for how states should go about this reduction. These guidelines should articulate that state governments should resolve undertrial cases beginning with those who have been undertrial the longest and those with the most trivial charges so that those cases can quickly be resolved.

Second, the central government should set up a standardized, streamlined conviction process to minimize the time between arrest and conviction/acquittal. As part of this effort, the government should require that states begin the transition towards fully digitized arrest, conviction, and inmate records to reduce inefficiencies in legal proceedings. In addition, the government should urge states to move towards video conferencing as a means of conducting trials, particularly for petty offenses. Doing so would eliminate the problem of inefficiencies in transporting undertrials from prisons to courthouses, thereby allowing court decisions to be made at a faster rate (Rattan and Rattan, 2021).

Third, the lack of judges has been highlighted as a major factor that can explain the massive backlog of cases in the Indian judicial system (Datta and Rai, 2021). To address this shortage, the government should provide incentives for individuals to pursue careers in the judiciary system, including higher pay, the creation of programs in public schools that funnel students into legal programs and law school, etc.

Lastly, while the undertrial population is being reduced, remaining undertrials should be housed in open jails as opposed to prisons (Gupta, 2020). As discussed earlier, open jails provide a healthier and safer environment relative to traditional prisons. If an undertrial does eventually get convicted, they can then be moved to a proper prison depending on the severity of the crime committed.

Muslim Overrepresentation

The previous recommendations will go far in reducing undertrial populations. However, the analysis done earlier demonstrated that there is health value not just in reducing undertrial populations writ large, but specifically in the reduction of Muslim overrepresentation within undertrial populations. Moreover, a human rights-based approach requires us to fight all instances of discrimination. As such, outside of any potential health impacts, we should do all that we can to reduce Muslim overrepresentation. The following are a few strategies aimed at accomplishing this goal.

1. Evidence-based arrests: the central government should mandate that all police officers provide justification and evidence for arrests as per Section 41 of the Code of Criminal Procedure (CrPC).

Section 41 was designed in response to the Parliament's concern over arbitrary and excessive arrests (Chandra and Medarmetla, 2017). Section 41 iterates that arrests should be the exception, not the rule. In particular, it details that officers should only arrest under the following five conditions: 1) to prevent the person from committing further offenses, 2) for proper investigation of the offense, 3) to prevent the person from tampering with evidence, 4) to prevent the person from coercing witnesses into withholding testimony, and 5) to guarantee the person will make a court appearance (Chandra and Medarmetla 2017).

The government mandate should require all police officers to write a thorough report immediately following an arrest that explains the rationale for the arrest as given by at least one of the above conditions. In addition, there should be an added requirement for police officers to describe with utmost detail the violation that occurred that led to the arrest. This description would include the nature of the offense, the specific law the offense breaks, etc. The case of excessive arrests is perhaps one of the rare situations where bureaucratic red tape is a solution to

the problem. By increasing the amount of work officers need to do following an arrest, the officers' implicit cost of an arrest goes up. This should in turn reduce the number of arrests, particularly for Muslims because of the extent of arbitrary and unlawful arrests perpetrated against them (Chandra and Medarmetla, 2017).

This arrest procedure is already largely required by Section 41 of the CrPC; however, there have been insufficient enforcement mechanisms, thereby allowing police officers to circumvent the process and make arbitrary arrests (Chandra and Medarmetla, 2017). As such, the government should focus on implementing clear and significant enforcement mechanisms to deter the circumvention of the procedure and/or unnecessary arrests. These enforcement mechanisms may include but are not limited to, fines, suspension, and termination. Furthermore, the central government should task state governments with monitoring police departments to ensure that these protocols are being thoroughly followed.

2. The government should mandate and enforce that legal consultation be available to all undertrials.

Per Article 22 of the Constitution of India, undertrials have the right to be consulted and defended by a legal practitioner of their choice (Gupta, 2020). However, per the text of the Constitution, this is a *negative* right in the sense that the government cannot strip an individual of the opportunity to obtain legal counsel. The government should issue a mandate that turns this right into a *positive* right, wherein all undertrials are actively offered the option to obtain legal counsel. This change is significant because a large portion of undertrials come from socioeconomically disadvantaged communities, ie. Muslims, and are not educated enough to be familiar with their rights; therefore, undertrials rarely seek out legal counsel (Gupta, 2020). The government should require that all undertrials be clearly asked whether they would like legal

assistance; furthermore, the implications of their decision should be communicated to them. Doing so should theoretically increase the rate at which legal assistance is obtained, thereby allowing undertrials – particularly Muslim undertrials – to fight back against arbitrary arrest.

Note that both recommendations given to address Muslim overrepresentation are based on the utilization of existing legal statutes and mandates, as opposed to the creation of new laws altogether. HRBAs often follow this trend wherein the legal framework for the solution already exists; the effectiveness of the solution then primarily becomes an issue of operationalizing the framework ("Human rights and health," 2017). Moreover, as part of the principle of participation/empowerment, HRBAs demand that we work to ensure the rights of those who are not in the position to fight for themselves, such as with the case of prisoners (Rogan, 2018). As such, operationalizing an HRBA implies that we have an increased responsibility to ensure that we do not leave behind prisoners and undertrials, and this is especially true for those who face discrimination within the prison system, ie. Muslims. The HRBA framework thus only emphasizes the importance of allocating resources toward implementing these recommendations.

Internet Access:

Earlier, I found that Internet penetration in India is negatively correlated with COVID cases/100k population, thereby implying that better Internet access is associated with better health outcomes. The following are two recommendations that aim to increase Internet accessibility in India, both from an infrastructure and affordability standpoint.

1. The Government of India should expand Bharatnet by establishing a public-private partnership (PPP) model with adequate private sector incentives. In addition, the Government of India should utilize the Universal Service Obligation Fund (USOF) to increase public investment in Bharatnet.

Bharatnet, formerly known as the National Optical Fibre Network, is a central government-sponsored project aimed at increasing rural Internet connectivity. The project was initially launched in 2011 to provide Internet access for nearly 625,000 rural villages by 2014 (Chauhan, 2021). However, the project has encountered numerous delays, with less than 50% of villages now having access to optic fiber cable lines (Chauhan, 2021). Last year, the government appeared to give life to the stalled project by announcing that Bharatnet would be open to private sector involvement via a public-private partnership model (PPP). Under this new scheme, the government set a deadline to get all target villages Internet-ready by 2023 (Taneja, 2021). Experts applauded the government's decision to get private sector players involved given the bureaucratic and operational inefficiencies associated with large-scale, public sector infrastructure projects (Taneja, 2021). However, in yet another setback for Bharatnet, no private sector firms were willing to bid for contracts after the government rolled out the PPP model. Many firms cited the lack of adequate revenue-sharing and burdensome contract terms in their rationale for not bidding (Rathee, 2022).

There are two steps the Government of India should take to address this problem. First, the government should propose an amended PPP model with sufficient levels of revenue-sharing. Attractive levels of revenue-sharing should result in more firms bidding, thereby pushing up the bid price and potentially allowing the government to recuperate losses from revenue-sharing. Second, the government should increase public funding for Bharatnet via the Universal Service Obligation Fund (USOF). USOF currently has Rs. 550M ($7.2M) in funds not being utilized for any other purpose (Rathee, 2022). The government should tap into these funds to improve the quality of Internet infrastructure and ensure proper maintenance of pre-existing infrastructure built under Bharatnet.

2. The Telecom Regulatory Authority of India (TRAI) should consider overturning its ban on zero-rating services.

In 2016, the TRAI banned most differential pricing agreements for Internet access, including zero-rating services (Stallman, 2016). Zero-rating services are schemes wherein individuals can use specific applications without being charged for the data required for the usage of those apps (West, 2015). Zero-rating services help the poor access helpful apps and websites without being charged, thereby increasing the affordability of Internet access. Zero-rating schemes have empirically proven to drive Internet usage. The implementation of such programs in rural parts of Paraguay and Kenya has resulted in a 50% increase in usage rates in each country (West, 2015).

In addition to improving Internet access for rural inhabitants, zero-rating services are advantageous for private firms offering such contracts because they tap into what is known in the digital world as the "network effect" (West, 2015). The network effect is the principle that the value of a network increases with the number of users using the network (Banton, 2021). As more people join the Internet and utilize web-based applications, more connections are formed, more business is conducted, etc., which in turn drives revenues for tech firms (Banton, 2021). Reversing the ban on zero-rating services may also increase the success of Bharatnet given that more firms will be willing to place bids on developing Internet infrastructure if they believe networks effects will drive higher profits.

All in all, by concentrating funding on rural Internet connectivity and engaging in creative schemes like zero-rating services, the Government of India can operationalize an HRBA and ensure that all Indians, regardless of location, class, etc. have access to quality information sources.

Living Conditions:

The analysis of living conditions demonstrated the existence of a negative relationship between clean drinking water access and COVID cases/100k population. In addition, there was a positive association between the urban-rural divide in clean drinking water access and COVID cases/100k population. I argued that these relationships suggest health outcomes improve with living conditions and health outcomes improve with decreases in urban-rural disparities in living conditions, respectively. As such, the following are recommendations aimed at improving living conditions with a targeted focus on rural living conditions.

1. The Government of India should allocate a minimum percentage of its budget under SBM towards education campaigns centered around the importance of sanitation and drinking clean water.

SBM is the Government of India's flagship program aimed at improving sanitation across the country, with an emphasis on rural areas. SBM celebrated India being open defecation free in 2019, following the construction of 100M toilets in rural India ("SBM," 2022). Surveys of rural populations reveal that, in reality, India is far from being open defecation free; not all households have toilets and even usage of toilets remains low for the households that do have them (Behera et al., 2021). Nonetheless, the government says open defecation is eliminated and has subsequently launched Phase II of SBM, which focuses largely on safe waste management and the elimination of single-use plastics (Mehrotra, 2021).

While open defecation may not be eliminated, there is no denying that SBM has made significant headway toward this goal (Behera et al., 2021). A large portion of the success of SBM can be attributed to the large budget assigned to the program, which allowed toilets to be built rapidly at scale (Mehta, 2018). However, the government appears to be making a mistake

by quickly moving on to Phase II and assuming that open defecation is a solved problem. To focus on making sure open defecation is truly eradicated, the government must focus on community-level implementation and education efforts. As such, a designated portion of SBM's extensive budget for Phase II should be re-allocated towards grassroots education programs that teach people about the harms of open defecation. Individuals should be taught about the risk of disease transmission via fecal matter and the harm those diseases pose, especially to young children (Khurana and Sen, 2021). In addition, while clean water access has expanded greatly in recent years, individuals often choose to continue consuming water from contaminated sources due to a lack of awareness (Khurana and Sen, 2021). As such, education on the importance of consuming clean drinking water should also be prioritized.

2. State governments should work with local governments to prevent discriminatory access to living necessities.

While education and awareness campaigns are important, one of the central principles of an HRBA is the consideration of how individual behavior is influenced by larger socioeconomic structures. Think back to the example given by Alicia Yamin about the women she saw in India drinking contaminated drinking water. The women were aware of the harms of drinking contaminated water, yet they were forced into drinking that water because they were prevented from accessing the clean water well on account of being Muslim/Dalit (Yamin, 2015, p. 163).

Following this reasoning, state governments should work with local governments to increase enforcement against discriminatory practices that prevent individuals from attaining living necessities. State governments can do this by specifically outlawing discriminatory access to necessities. Furthermore, state governments should provide funding incentives to local governments whose police departments act on reports of discrimination. Lastly, state

governments should work with local governments to encourage marginalized communities to come forward with reports of discrimination.

3. The Government of India should elect community-based leaders to hold decision-making capacity within SBM and PMAY.

While the previous recommendation may promote some degree of equitable treatment, it is hard to imagine enforcement against discrimination spilling down to the community level. In line with the principles of an HRBA, we cannot expect governments on their own to effectively protect marginalized communities; rather, promoting substantive change will require empowering communities and amplifying their voices (Yamin, 2015, p. 314). Communities know best what their needs are, where funding can be helpful, how aware their members are regarding health issues, etc (Mehta, 2018). In India, villages are governed by democratic institutions known as Gram Panchayats (GPs) ("What is a Panchayat," 2022). GPs are elected bodies and essentially serve as a cabinet for clusters of villages ("What is a Panchayat," 2022). Members of GPs from every state should be selected to be advisors for SBM and PMAY (India's premier public housing program) ("PMAY," 2022). Both SBM and PMAY have proven to be largely successful in their respective missions; introducing community-level leaders to these efforts will only increase program effectiveness while simultaneously uplifting voices and communities throughout India.

<u>Recommendations – Concluding Thoughts:</u>

As discussed initially, these recommendations may not be what one would expect from a traditional, artificially constrained policy recommendation package. However, the nature of human rights work necessitates a shift away from what we understand to be a typical approach toward policy proposals.

Altogether, these recommendations provide a comprehensive assessment of various policy strategies that can be taken to improve public health by addressing human rights violations in India. To condense these recommendations into a substantive human rights fulfillment effort, Prime Minister Narendra Modi should advise President Ram Nath Kovind to create a new Indian ministry under Article 77 of the Constitution of India: the Health and Human Rights Ministry (HHRM) (Krishnan, 2021). While this may seem outlandish, there is precedent for creating new ministries. For instance, the Government of India created the Ministry of Cooperation just last year (Biswas, 2021). HHRM would be responsible for working with other departments and ministries to create and implement policies that address human rights violations related to health outcomes.

HHRM should begin by creating a policy package consisting of several, if not all, of the policy recommendations given earlier. This package would be funded by the funding mechanisms previously suggested. In addition, HHRM's designation as a ministry would result in funds being re-allocated towards HHRM from other ministries' surpluses. Nearly half of all central government ministries only spent 80% of their funds in 2020-21, which follows a several-year trend of ministries having unused funds (Gaur, 2021). The Government of India should reduce budgetary allocations by 10% of the requested amount for ministries that have historically under-spent. Those funds should then be pooled and set as the initial basis for the HHRM budget.

Moreover, HHRM should treat the previous recommendations as just an initial policy package. Moving forward, HHRM should 1) build on the existing recommendations by refining the underlying assumptions, 2) identify concrete policy solutions for other human rights violations occurring in India, 3) create rigorous and specific goals for accountability and 4) invest in ongoing participation from affected communities.

Conclusion

Traditional analyses of healthcare and determinants of health often fail to take human rights fulfillment into consideration. To promote visibility and hold the Government of India accountable for human rights violations, I operationalized a human rights-based approach to health wherein I tested for the relationships between several human rights variables and health impacts, using COVID-19 as a test case. The findings suggest that public and rural health infrastructure in India must be expanded, and the quality of care delivered in those facilities must increase. Moreover, health insurance coverage as it stands does not influence health outcomes, suggesting the need to increase the effectiveness and affordability of public insurance. Outside of healthcare, prison overcrowding was found to be positively associated with COVID cases, indicating that the government should engage in efforts to reduce prison populations with an emphasis placed on undertrial populations. Lastly, access to the Internet and improved living conditions were found to be positively associated with health outcomes as well.

I provided policy recommendations for each of these categories of rights violations based on the core principles of a human rights-based approach to health. As such, these recommendations emphasized the need for grassroots participation, substantive enforcement mechanisms, and a framework that prioritized the rights of underserved, marginalized communities. Moreover, the findings and recommendations emphasized the notion that we must think about human rights fulfillment in relative terms as much as absolute terms. Particularly, urban-rural divides matter greatly when measuring the effect of human rights fulfillment on health outcomes.

Ultimately, these recommendations culminated with the proposal for the creation of a Health and Human Rights Ministry (HHRM), which would be tasked with the creation and

implementation of the recommendations under a cohesive policy package. The creation of this ministry will help establish a lasting government presence that can advocate for human rights and health fulfillment through interaction with all other branches of the central government.

The relationship between health and human rights is a complicated one and does not give rise to straightforward approaches or solutions. For effective policy strategies to come about, there needs to be significant deliberation over which human rights risk factors matter the most, how those factors interact with one another, and what the best approaches for mitigating those risk factors are. For instance, future work may investigate human rights risk factors such as access to education, gender-based inequities, etc. All in all, with this paper, I hope to have started what will be an ongoing conversation about health and human rights in India. Far more work needs to be done if we are to truly achieve equitable health outcomes in India and elsewhere in the world, but with the right frameworks and priorities, it can be done.

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