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THE RISHI REVIEW

OF PROJECT RISHI
AT THE UNIVERSITY OF SOUTHERN CALIFORNIA

TABLE OF CONTENTS

Letter from the Editor

Dear reader,

This is the second annual *RISHI Review* published by the USC Chapter of Project RISHI. We are proud to present two proposals written by undergraduate students from the University of Southern California. This year's authors come from various undergraduate colleges.

Project RISHI fills a somewhat unique role in the advocacy and service sphere at USC. As a non-profit organization whose mission is to promote the sustainable development and growth of rural Indian communities, the organization prioritizes a search for practical solutions to social problems. In partnership with local community members and social enterprises, Project RISHI identifies issues central to our target communities and provides the resources to implement solutions through extensive field research and on-campus initiatives.

The *RISHI Review* was founded to encourage members to enact real progressive policy change at the rural, regional, state, and national levels in India. By addressing key developmental disparities that challenge target village populations, policy analysts of the *RISHI Review* research proven solutions developed by social enterprises and ideate frameworks for local policy change. In our second year of publication, our policy analysts hope to use the *RISHI Review* to catalyze positive change by effectively bringing these affordable solutions to our partnering village in Jamid, Jharkhand, and igniting sustainable change.

I am honored to have served as the Founder and Editor-in-Chief of the *RISHI Review* in the 2019-2020 academic year. In this publication, our authors address the most pressing and complex problems of our time in rural India. These solutions are innovative in their conception and elegant in their presentation. I hope that you will find them both informative and thought provoking.

To our policy analysts, editors, and executive board members, thank you for your hard work. It has culminated in the second successful issue of the *RISHI Review.*

Sincerely,

Manushri Desai
Founder and Editor-in-Chief of the *RISHI Review*

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Iron Deficiency Prevalence and Treatment in India:

Disseminating the Integration of the Lucky Shakti Leaf in Jamid, Jharkhand

By Mihir Kumar and Khounish Sharma

HEALTH CARE POLICY

Thesis

To effectively mitigate high rates of anemia in rural India, India's Ministry of Health and Family Welfare should reallocate funding from Anemia Mukt Bharat to Lucky Shakti Leaf, thereby integrating iron directly into the villagers' cooking. The Lucky Shakti Leaf will be Beta tested in Jamid, Jharkhand, to gain an understanding as to how to most effectively integrate it into the villagers' lifestyles.

Background & Analysis

Iron is an essential micronutrient for the body to help with cellular growth and differentiation, transport and storage, etc. Iron-deficient Anemia (IDA) is a common disease associated with a deficiency in iron, often due to lack of dietary intake or absorption and is characterized by a defect in hemoglobin synthesis. Anemia is a condition in which red blood cells' oxygen carrying capacity is compromised and cannot meet the body's physiological requirements. Common symptoms of anemia include fatigue, weakness, dizziness and, in some severe cases, impaired cognitive development of children[1].

The population most at risk of anemia is adolescent women in India. According to the World Health Organization (WHO), over 50% of India's population suffers from anemia[3] and about three-fourths of adolescent females do not meet their dietary requirements[2]. According to the National Family Health Survey-3 (NFHS-3), anemia prevalence in adolescent girls in India is 56% [2]. Additionally, 22.7% of men and 58.4% of children under two are anemic due to iron deficiency[4]. While earlier programs combating anemia existed for the past 30 years, the reduction of anemia had been only 1 percentage point per year and the coverage of the IFA tablets were only 20%[4].

Recognizing this major nutritional issue, India implemented the Anemia Mukt Bharat, a national program which focuses on 6 beneficiary target groups (see Table 1) to achieve the mission of the POSHAN Abhiyaan Program; the POSHAN Abhiyaan Program hopes to ensure holistic development and adequate nutrition for pregnant women, mothers and children[6]. Currently, the Anemia Mukt Bharat plan targets 498 million beneficiaries in India, suggesting that many, if not most, of these beneficiaries of iron may be iron-deficient[7]. In order to achieve 100% coverage of India's most affected states, the Anemia Mukt Bharat would require 20.87 billion INR in funding. Despite this required sum, the proposed sum of funding for Anemia Mukt Bharat was only 7.42 billion INR, of which only 5.74 billion INR was approved[7]. Due to this lack of funding and inability to integrate the medicines into villagers' lifestyles, Anemia Mukt Bharat has had great difficulty in implementing and ensuring the provision of iron tablets to citizens, especially villagers in rural areas. For example, as of the 2nd Quarter of 2019, Jharkhand has only been providing 2.4% of children between 6 and 59 months their required iron and folic acid syrups[7].

Due to the lack of total funding, Anemia Mukt Bharat has been unable to effectively reach as much of the population as originally planned, and anemia still costs India $22.64 billion (1.62 trillion INR) in GDP[4].

Part of the Anemia Mukt Bharat program, the National Iron Initiative, recommends one iron-folic acid (IFA) tablet containing 100 mg elemental iron and 0.5 mg folic acid for nonanemic women and two IFA tablets daily for anemic women for 100 days [5]. However, this initiative has shown to be ineffective due to the low compliance and has prolonged the high rates of anemia among pregnant women in India. According to the National Family Health Survey-4 (NFHS-4) conducted in 2016, only 30.3% of pregnant women took IFA tablets for more than 100 days of pregnancy[4]. Additionally, anemia rates for women of reproductive age in India have only declined by 2 percentage points in the last 10 years, indicating that the National Plus Iron Initiative has not been effective in reducing anemia rates in India (Table 1)[1]. In fact, progress has been slow throughout 2018-2019 with only 9.4% of children below five receiving IFA supplementation, along with only 17.9% children up to nine years and 27.4% adolescents[1].

We contend that India's Ministry of Health and Family Welfare should beta-test the Lucky Shakti Leaf in Jamid, a rural Indian village where Project RISHI at USC, a 501(c)(3) non-profit, and Ekal Vidyalaya are currently working to improve healthcare, agriculture, and business. By beta testing the Lucky Shakti Leaf here, Ekal Vidyalaya will be able to collect preliminary scheduled data that will be crucial for understanding the true effectiveness of our proposed program.

Table 1: Anemia Prevalence and Decline in India per Age Group from 2006-2016 based on National Family Health Survey 3 and 4

Age group	2006 (NFHS-3)	2016 (NFHS-4)	Decline in 10 years (2006–2016) in percent points
Children 6–59 months (Haemoglobin<11 g/dl), %	69	58	11
Adolescent girls 15–19 years (Haemoglobin<12 g/dl), %	56	54	2
Adolescent boys 15–19 years(Haemoglobin<13 g/dl), %	30	29	1
Women of reproductive age(Haemoglobin<12 g/dl), %	55	53	2
Pregnant women (Haemoglobin<11 g/dl), %	58	50	8
Lactating women(Haemoglobin<12 g/dl), %	63	58	5

Talking Points

- Anemia runs rampant in India, and due to poor compliance rates, the Ministry of Health and Family Welfare's Anemia Mukt Bharat Program has failed to improve overall iron deficiency rates.
- Incorporating the Lucky Shakti Leaf into rural Indians' daily cooking would facilitate the integration of iron into the average rural diet.
- Despite the short-term, increased initial cost, utilizing the Lucky Shakti Leaf in place of Anemia Mukt Bharat is more financially efficient while significantly more effective at reducing iron deficiency.

Key Facts

- Over three-fourths of adolescent females and over 50% of India's overall population suffers from anemia.
- India's most prominent measure against anemia, Anemia Mukt Bharat, has failed to significantly improve iron deficiency rates due to a lack of funding (Only 5.47 billion INR approved of a 20.87 billion INR requirement), resulting in a 2.4% compliance rate for children between 6 and 59 months of age[7].
- Lucky Iron Fish was used in rural regions of Guatemala, demonstrating that 80.3% of the initially tested anemic population were no longer anemic[8]
- Implementing the Lucky Iron Fish initiative and terminating the Anemia

Mukt Bharat would bring the cost down to $5697.45.

Policy Idea

India's Ministry of Health and Family Welfare, which manages health policy and family planning in India, should launch a private anemia-based sponsorship program in Jamid, Jharkhand, which currently has a population of approximately 5,000 people. Providing one iron cooking block in the form of a Lucky Shakti Leaf to every family in the village would increase the villagers' daily iron intake and assist them in overcoming their anemia by seamlessly integrating iron into their daily cooking.

Policy Analysis

While Anemia Mukt Bharat and it's National Iron Initiative rely on daily or weekly administration of iron tablets that many residents of rural India may not be familiar with, the Lucky Shakti Leaf doesn't require the ingestion of any medication. By instructing the villagers' to place the iron in their pan while cooking, iron is easily introduced into their daily lifestyles without significant additional education required regarding the consumption of pills, medicinal syrups, etc.

In addition to Lucky Shakti Leaf's simple integration into the villagers' lifestyle, many studies show its great promise. In a 52-week longitudinal study that assessed the efficacy of Lucky Iron Fish (LIF) in rural, impoverished regions of Guatemala, 80.3% of the tested anemic population were no longer anemic and had a mean improvement of 19.6% in hemoglobin levels[8]. Furthermore, in rural Cambodia, the use of the LIF ingot resulted in a 46% reduction in the prevalence of anemia in women and had a compliance of rate of 94% by the end of the clinical trial[9].

Although providing each family in Jamid, Jharkhand with one Lucky Shakti Leaf may seem expensive, this is not the case. Assuming an average family size of 5[10], full coverage of Jamid would require approximately 1,000 Lucky Shakti Leaf units, and after obtaining a per-unit cost of approximately 466.65 INR each from Lucky Shakti Leaf management, the total cost for funding this initiative would be 466,650 INR ($6500.21). This would partially be subsidized by terminating the Anemia Mukt Bharat program, which would save the Ministry approximately 57,630 INR ($802.77), bringing the total cost down to approximately $5697.45 (Table 2).

Overall, the relatively low additional cost and better overall outcomes as a treatment for iron-deficiency makes the integration of Lucky Shakti Leaf a significantly more appealing and effective initiative than the Ministry of Health and Family Welfare's current Anemia Mukt Bharat plan.

Table 2: Estimated Cost Analysis of Lucky Shakti Leaf integration into Jamid, Jharkhand.

Total Number of Anemic People in India	Total Units Needed (1 Lucky Shakti Leaf for Every 10 People)	Total Cost (Each Lucky Shakti Leaf: 466.65 INR)	Total Cost (USD)
498000000	49800000	23239170000	323710695.73

Village Population	Total Units Needed (1 Lucky Shakti Leaf for Every 5 People)	Total Cost (Each Lucky Shakti Leaf: 466.65 INR)	Total Cost (USD)
5000	1000	466650	6500.21

Total National Cost Made up by Cutting Anemia Mukt Bharat (INR)	Proportional Village Cost Made up by Cutting Anemia Mukt Bharat (INR)	Proportional Village Cost Made up by Cutting Anemia Mukt Bharat (USD)	Total Cost to Village
5740000000	57630.52209	802.7653167	5697.442652

Next Steps

To secure this funding in addition to the funding from the Ministry of Health, Ekal Vidyalaya, a non-profit that is already working in Jamid, should attempt to gain USAID funding as grants, or even as a partnership or loan, to focus on Jamid as a test-run with Lucky Shakti Leaf. USAID's involvement in Partnerships for Health in India has targeted Tuberculosis, infant mortality, HIV/AIDS, and the containment of infectious disease. Iron-deficiency and anemia would be ideal targets for this branch of USAID. Over time, the additional cost of implementing the Lucky Shakti Leaf initiative nationwide would easily be offset by the $22.64 billion recovered in GDP as anemia is properly treated in every state, which would even allow the Ministry of Health and Family Welfare to pay back any loans, if initially required.

Action Plan Snapshot

To set up the appropriate infrastructure for this initiative to be successful, it is imperative that we first communicate with Ekal Vidyalaya and debrief them on our proposal. Assuming Ekal Vidyalaya is interested in partnering with us and providing the Lucky Shakti Leaf to families in Jamid, we will then continue by discussing proper training and pricing with management at Lucky Iron Fish Enterprise. As of right now, they have offered to double our initial order for no additional charge as this would be a pro-bono venture, allowing us to find appropriate funding more easily. After obtaining instruction and training materials from Lucky Shakti Leaf, the next step would be to launch a beta-test for 20-30 families in Jamid in March of 2020. We hope to collect data from March through July of 2020, when we plan on going again and expanding Lucky Shakti Leaf to all of Jamid.

Optimistically, we will be able to send our data and proposal to the Ministry of Health and Family Welfare. Depending on the success of our beta test in Jamid, we hope to utilize our data to reassess the best options for anemia prevention and treatment in India, beginning as early as August of 2020. If our beta test is successful, incorporating the Lucky Shakti Leaf into the lives of every rural Indian family struggling from iron deficiency would be a crucial step in the right direction towards proper anemia treatment.

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Mental Health in Rural Indian Villages:
Integrating Art-based Therapies in Primary and Secondary Schooling

By Eshana Seshadri

Thesis

In order to improve the mental health of students in primary and secondary schooling in rural India, a curriculum change should be implemented to integrate art-based therapies during the school day. This can be implemented through reallocation of funding from the Department of Education in Arts and Aesthetics, under the National Council of Education Research and Training, to support the arts education programs of the India Foundation for the Arts. This will allow for the establishment of a partnership between rural primary and secondary schools and the IFA.

Background & Analysis

India is houses a population of over one billion people, yet due to stigmatization, lack of awareness, and limited healthcare access, only 10 to 12 percent of those who suffer from mental illnesses seek help. There are a disproportionate amount of mental health professionals in comparison to the demands of India's population. According to the Indian Union Ministry of Health and Family Welfare, to adequately aid the needs of the population, India requires 13,000 mental health professionals but currently has approximately 3,500. These gaps in accessibility affect rural populations heavily; there are great disparities that exist between rural and urban areas in access to ameliorating educational resources as the majority of funding to rural schools often is allocated to basic resources.This leaves a gap in accessibility to any mental health programs for students such as art-based therapies and counseling.

It is necessary to improve mental health and the importance of arts education in a sustainable fashion, targeting and educating youth. The focus on holistic and multidisciplinary studies is proven to aid the emotional and social development of students, specifically in primary and secondary schools. However, this holistic approach to education and prioritization of mental health therapies is absent from rural schools. Art-based therapies have been proven to most benefit students in rural areas, increasing education retention as well as cognitive and creative development. Arts education focuses on four primary therapies: music engagement, visual arts therapy, movement-based creative expression, and expressive writing.

The importance of arts education is demonstrated by its ameliorating effects on students, educators, and the development of a community. Specifically, music engagement and visual arts practice can be effectively implemented in rural primary and secondary schools. Music therapy has been proven to decrease anxiety and restore emotional balance. Visuals arts practice is proven to alleviate emotions of illness, as well as providing students with a creative venue for self-expression. These practices facilitate communication and allow for the release of sentiments that words cannot express. The lack of statistical evidence detailing the amount of art-based therapy program in Indian rural villages further reaffirms the urgency of the enhancement of education and prioritization of mental health in rural areas.

Talking Points

- There is a general lack of rural arts education and prioritization for mental health in India.
- The establishment of partnership between rural schools and the India Arts Program nonprofit will allow for integration of art therapies into the rural school curriculum.
- The proposed policy specifically focuses on the enhancement of education and prioritization of mental health in rural areas through the reallocation of funding from the Department of School Education and Literacy to rural primary and secondary schools. The disparities in accessibility to art programs is due to a lack of resources, leading to an overall lack of mental health recognition for a majority of the Indian population.

Key Facts

- 72.2 percent of the Indian population lives in rural areas with only 25 percent of the health infrastructure, manpower, and resources.
- According to the 2013–14 Education For All Global Monitoring Report (UNESCO 2014), only 37 percent of adolescents in low-income countries completed lower secondary education, and the rate is as low as 14 per cent for the poorest.
- 91 percent of participants in Fortis Healthcare's Department of Mental Health and Behavioral Sciences survey in Delhi/NCR and Mumbai believed that mental health is not given adequate importance in schools. 96 percent of participants admitted that they recognized the need to incorporate a mental health curriculum within schools.

Policy Idea

The implementation of art-based therapies into primary and secondary school curriculums, as well as an increase in funding allocation to non-profit organizations such as 'India Foundation for the Arts' allows for a greater prioritization of the mental well-being of growing children. An exposure to multidisciplinary learning in rural areas has been historically disregarded due to lack of basic resources, however the exposure to art-based education has been proven to be most useful in these areas. Arts education increases students' learning capacity in other subjects, as well as enhances creative and problem solving skills and increases educational retention levels. Students experience reduced emotional and behavioral problems as well as better levels of communication. Implementation of art-based therapies enables reflection and allows for inquisitive and creative thinking. Rural areas are community-centric and the implementation of arts education at the primary and secondary school level allows for the sustainable growth of creative development and the betterment of metal health. Students are better able to understand community and are better versed in their respective cultural backgrounds.

The unequal distribution of basic educational resources between rural and urban areas demonstrates the difference in prioritization of arts education between these geographical areas. Urban areas are better able to focus their efforts into the promotion of artistic education due to their established access to basic educational resources. Steps can be taken to reform

tackle obstacles faced by rural schools in the accessibility of ameliorating arts programs. The adjustment of the daily class schedule will allocate time within the school day to provide a class period focused on arts education. Through increased allocation of funding from the Department of Education in Arts and Aesthetics towards art-centric nonprofits such as the India Foundation for the Arts, as well as the development of a partnership between the rural school boards and non-profit sector, schools will maximize their funding and resources allocated to the arts.

Policy Analysis

India Foundation for the Arts (IFA) is a nonprofit organization that supports research, practice, and education in the arts and culture across India. The organization creates grants to build partnerships between the private and public sectors in order to better encourage education on arts and culture in India. IFA believes that this education is essential to developing and elevating a community from an individual level, promoting the exploration and practice of this knowledge under five programs: Arts Research, Arts Practice, Arts Education, Archives and Museums, and Project 560. The Arts Education program is specific to the focus of this policy as it creates a direct partnership with schools, emphasizing the importance of building from the community level. The program trains educators in arts educators and provides grants towards government schools.

IFA receives funding from national and international foundations, trusts, corporate houses, as well as individual donors. The nonprofit organizes fundraising activities as well and is recognized as an independent funding organization. Outreach and impact is a significant part of IFA's work and the organization has started several initiatives to make themselves more accessible to artists and organizations. Through increasing funding from the Department of Education in Arts and Aesthetics towards the IFA program on Arts Education, rural schools can establish a direct and large-scale partnership with the organization. This will significantly increase the accessibility and impact of IFA in areas with generally lower accessibility to initiatives such as these. Increasing funding allocation towards the organization incentivizes and allows for a greater distribution of resources towards rural schools.

There are organizations such as Piramal Foundation for Education Leadership (PFEL) that are actively achieving educational goals in rural areas in India as well. The foundation has spread its work to 29 districts across 15 states, its core focus on ensuring equitable and quality education to all remote villages in India. Its objective is to create behavioral change at the youth level, creating sustainable development. However, this policy opts to partner with IFA due to its focus on art-based education and therapies. The Arts Education initiative through IFA focuses on implementation through school teachers. This creates intrinsic promotion of the initiative from the educators, rather than solely the nonprofit initiative, rooting the policy in sustainability.

Next Steps

Mental health awareness is severely lacking in India, with over 7.5% of the country affected with mental illnesses and less than 4,000 experts available for aide. Thus, in order to create impact, the initiative taken to improve mental and physical well-being is targeted towards school children in hopes of enforcing a sustainable approach to increasing mental health awareness, specifically in rural India where wealth and resource disparities are great and basic healthcare access is limited.

The Department of Education in Arts and Aesthetics of the National Council of Education Research and Training will increase allocation of funding towards the non-profit, 'India Foundation for the Arts' in order to establish partnership with rural schools in India on a greater scale. Through expanding collaboration between the non-profit sector and rural Indian school boards, schools will be ensured to allocate time towards art-based therapies based on the new curriculum.

Action Plan Snapshot

At the community level, the India Foundation for the Arts will play vital roles in ensuring that primary and secondary school students are receptive to these new initiatives through promoting awareness of this new initiative throughout the villages. Furthermore, by following a two-fold integration method at the household and school level, these programs will gain larger-scale community acceptance.

The upcoming three months will be spent collaborating with the India Foundation for the Arts to develop effective partnerships with rural schools through increased government funding to the nonprofit organization. Community educators, such as teachers and school headmasters, will collaborate with the nonprofit organizations in order to garner support and increase awareness and education about the new initiative. Parents of school children will be taught of the reasons supporting the curriculum change, as well as reasons to support art-based practices within the household. Students will be taught the importance of these practices and how to become ambassadors within their respective villages. From March to August 2020, following these initial stages of education on the new initiative, the arts education program will be implemented in the primary and secondary schools within the villages. Long-term sustainability of the program will be ensured through outreach programs conducted by students and faculty within the villages. Arts instructors within schools will be encouraged to demonstrate the learning and participation of students through school-wide as well as community functions. These demonstrations will serve to showcase the multidisciplinary growth of students, as well as increase village-wide support for the initiative. The rural school board will oversee the execution of these showcases to make sure they are being properly exercised with effective funding and participation. The school board will be held accountable for these actions by the National Council of Education Research and Training, specifically the Department of Education in Arts and Aesthetics.

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Project RISHI fills a somewhat unique role in the advocacy and service sphere at USC. As a non-profit organization whose mission is to promote the sustainable development and growth of rural Indian communities, the organization prioritizes a search for practical solutions to social problems. In partnership with local community members and social enterprises, Project RISHI identifies issues central to our target communities and provides the resources to implement solutions through extensive field research and on-campus initiatives.

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We are honored to have served as the Editor-in-Chief and Managing Editor of the RISHI Review in the 2019-2020 academic year. In this publication, our authors address the most pressing and complex problems of our time in rural India. These solutions are innovative in their conception and elegant in their presentation. I hope that you will find them both informative and thought provoking.

To our policy analysts, editors, and executive board members, thank you for your hard work. It has culminated in the third successful issue of the RISHI Review.

Sincerely,

Manushri Desai   Suhas Peela
Founding Editor-in-Chief   *Managing Editor*

A Holisitic Approach to Housing India's Homeless During the COVID-19 Pandemic:

Utilizing Government-run Sublets of Abandoned Real Estate to Mitigate the Spread of COVID-19

By Mahima Chillakanti, Mihir Kumar, and Vishaal Jagannadhan

1. PROBLEM STATEMENT

1.1 Thesis

In order to effectively protect India's homeless population—which has grown significantly with the displacement of many migrant workers due to the SARS-CoV-2 pandemic—the Scheme of Shelter for Urban Homeless (SUH) (funded through the Ministry of Housing and Urban Affairs) should reallocate funding from constructing shelters to (1) identifying, (2) renting out, and (3) transforming abandoned real estate spaces into public shelters. Utilizing existing Ministry programs such as the Social Mobilisation and Institution Development program (SM&ID), the Capacity Building and Training Programme (CB&T), and the Employment Through Skills Training and Placement program (EST&P), these shelters should offer vocational training; secondly, the Ministry of Health and Family Welfare should ensure high safety and health standards in these shelters.

1.2 Background & Analysis

Rajni Devi, mother of three, cries herself to sleep every night on the floor of a crowded New Delhi tenement. "Last night we had roti with salt mixed in mustard oil," she said. "It's better to die than starve like this." Rajni is one of the approximately 400 million members of India's informal economy thrust into deeper levels of poverty during the SARS-CoV-2 crisis, also known as COVID-19. The International Labour Organization has reported that the world's biggest lockdown disproportionately affects India's homeless population—a demographic that comprises a significant portion of the informal economy.[1]

Currently, the COVID-19 pandemic has severely augmented the plights of India's homeless population. Firstly, many employers are reducing employment of individuals living in slums due to fears that poor living conditions exacerbate the risk of COVID-19 transmission.[1] This risk, in fact, is very much real: doctors and health experts have stated that due to poor living conditions and the presence of pre-existing health conditions like tuberculosis, those living without sustainable housing, especially in urban populations, exhibit a higher COVID-19 morbidity rate than the general population.[2]

Reduced employment among the homeless population, as a result, has led to increased fears of hunger and starvation. This fear of starvation has also sparked a mass exodus of migrant workers, many on foot, back to their villages. Previously, migrant workers would simply live wherever they worked. But now, the fear of eviction in the absence of work has resulted in hundreds of thousands trying to rush home to their families.[3] The Indian Supreme Court has required the transport of displaced workers back to their homes within a 15 day period—but in the meanwhile, shelters have often been unable to offer sufficient housing, food, and supplies.[4] Although at this point, many migrant workers have been able to return home safely, they bear a large risk in integrating themselves into their regular homelives due to fear of disease transmission among families.[5]

India's exceedingly large urban homeless population (9,36,000 people, according to the Global Homelessness Statistics' 2019 report) is particularly shocking when considering the amount of real estate remaining abandoned during the coronavirus pandemic.[6] Since the "Work From Home" model, which has become more prominent during this pandemic, has been found to reduce operating costs by 50-70% (while maintaining previous levels of quality and productivity), some companies are considering making the model a permanent feature—increasing the amount of abandoned real estate in urban areas.[7] In fact, office space leasing is expected to fall by 30% in 2020 due to COVID-19.[8]

Furthermore, approximately 500 million apartments have been left unfinished over the last decade as over-leveraged developers have lacked the funding to finish their projects. Despite the vast number of development & construction failures, real estate lending has increased substantially from approximately INR 1.3 billion in 2010 to over INR 5.2 billion in 2019, suggesting a large inefficiency with respect to funding allocation, as construction is left unfinished.[9] In addition to these 500 million unfinished apartments, there were an additional 11.1 million vacant homes in 2011. Half a million of these vacant homes were in Mumbai, where over 50% of the population lives in informal settlements.[10] Estimates from India Ratings & Research even predict that the pandemic will cause a 25% decrease in residential demand within the next year.[11]

Utilizing this issue of abandoned real estate to address the expanding homelessness crisis would effectively mitigate the issue of homelessness and inadequate living. This would functionally decrease COVID-19 transmission by providing sanitary living conditions for this demographic, resulting in a large-scale public health benefit.

2. PROPOSED INTERVENTION

2.1 Introduction to Policy Idea

One current government initiative, the Pradhan Mantri Awas Yojana (PMAY) initiative, aims to provide housing for all Indian citizens by 2022. This would necessitate the creation of 20 million new urban housing units and 30 million rural homes—even without accounting for the displacement of individuals and families during the COVID-19 crisis. However, if the aforementioned 11.1 million vacant homes were relisted in the market, the number of new urban housing units that would have to be created would be halved, according to current data. This proposed idea has been supported in the past—in fact, a 2014 policy proposal by the Office of Policy Development and Research in Washington, DC suggests potential economic advantages to turning abandoned properties into assets.[12] Some of these benefits cited by the policy proposal suggest reduced homelessness, poverty, and crime. It also simultaneously benefits landlords, who are paying taxes on land they are not renting during the COVID-19 crisis, and renters, who may be otherwise unable to afford high rents during the pandemic. Furthermore, the relocation of individuals currently living in unsanitary conditions in slums to sanitary areas would mitigate the spread of COVID-19 and allow their reintegration into the workforce, resulting in large-scale public health and economic benefits.

Moreover, to address the displacement of migrant workers due to COVID-19, states have attempted to use public spaces such as schools and parks as government-run homeless shelters.[2] In doing so, the government hoped to curb the spread of the pandemic by offering migrant workers an alternative to returning to their villages. However, according to Shivani Chaudhry, the executive director of Housing and Land Rights Network, a non-profit focusing on providing shelter for the homeless, these shelters have failed to fulfill their intended purpose, as many lack necessary physical distancing precautions, adequate food, medical supplies, clean water, and hygiene products.[2] For example, in Delhi, although 100 schools are being used for shelters for over 25,000 people, many of them have reported feeling like prisoners due to the shelters' unsafe conditions and poor living standards. In some cases, the authorities running these shelters have used physical violence and emotional abuse to discipline the people housed there.[13,14] These conditions have actually exacerbated the spread of COVID-19: for instance, an outbreak in an Uttar Pradesh shelter has led to the infection of 57 girls, 5 of whom were pregnant.[15] Integrating current policies with our following policy proposal, centering around the SUH and its affiliate initiatives under the Ministry of Housing and Urban Affairs, would significantly help alleviate such issues.

2.2 Policy Idea

Given the lack of previous success with building real estate within India's urban cities, we propose India's Ministry of Housing and Urban Affairs allocate a portion of their funding for the Scheme of Shelter for Urban Homeless (SUH) program towards renting out existing real estate that has been abandoned. Accordingly, the SUH will take on and pay for existing leases. This would assist landlords in paying their mortgages, renters in avoiding hefty lease payments for real estate they are not using, and the homeless population by providing them with a place to live. Most importantly, landlords that were once uncertain about renting to migrant workers and/or the homeless population would be incentivized to join the program because the central government itself would be both paying for and insuring the lease. To do this, we suggest a government-run online portal on which renters and landlords can list abandoned workspaces, allowing for the SUH to efficiently locate, track, and re-lease vacant real estate. This would systematically provide shelter for the urban homeless while covering renters' and landlords' debts.

We propose supplementing the aforementioned initiative with the already existing Social Mobilisation And Institution Development (SM&ID) program, Capacity Building and Training Programme (CB&T), and the Employment through Skills Training and Placement (EST&P) program under the Ministry of Housing and Urban Affairs. These programs, which will be described in detail later in section "3. Novelty in Light of Existing Knowledge," will ensure the proposed SUH-centric initiative will run significantly more efficiently, smoothly, and safely, as compared to existing shelters. We further suggest that the Ministry of Health and Family Welfare act as an oversight agency to monitor the progress and effectiveness of these supplementary programs, ensuring that incidents such as the Uttar Pradesh breakout do not reoccur.[16]

Overall, this simple reallocation of funding will efficiently and effectively alleviate the plights of the urban homeless, while simultaneously supporting renters and landlords during the COVID-19 pandemic. Moreover, this would save a significant portion of the budget that was previously used for construction, allowing for its reallocation towards maintenance of adequate health, sanitation, safety, and hygiene standards within shelters. Ultimately, this would reduce the transmission of COVID-19.

3. NOVELTY IN LIGHT OF EXISTING KNOWLEDGE

This analysis delineates why the programs highlighted in subsection "2.2 Policy Idea" will be essential to the effective implementation of our proposed intervention. The incorporation of the following programs into the shelters we are proposing will ensure that these shelters promote more efficient turnaround and are more sustainable than the current system.

First, the Scheme of Shelter for Urban Homelessness program (SUH) aims to provide shelter and other essential services to the poor in urban areas. According to the SUH mission statement, their shelters ensure the provision of basic facilities like water, sanitation, electricity, a kitchen/cooking space, and a common recreational space. Linkage with Anganwadi Centres (AWCs), Primary Health Centres (PHCs), childcare facilities, and other social assistance programs may also be provided. The SUH mission statement also states that when renting out and using abandoned real estate, as proposed in the policy idea, suitable refurbishment and renovation will be conducted to meet prerequisite criteria, set by both SUH and its partner programs. Thus, SUH will be specifically utilized to ensure that the proposed policy upholds the safety and improved living conditions

of the poor during this pandemic and beyond.[17]

Secondly, the Social Mobilisation and Institution Development (SM&ID) program of the Deendayal Antyodaya Yojana-National Urban Livelihoods Mission (DAY-NULM) focuses on ensuring the sustainability of poverty alleviation programs. This is done by organizing vulnerable urban populations—including minorities, migrant workers, persons with disabilities, etc.—into Self-Help Groups (SHGs). The program allocates INR 10,000 for the formation of each SHG. Within these groups, the program promotes financial literacy, as it assists members in opening up a savings account and receiving loans. Each group also creates its own rules of membership, ensuring that members are held accountable to taking full advantage of the benefits offered. The program also entails development of City Livelihood Centers (CLCs), which are marketplaces where the urban poor can promote and sell their products and services.[18]

By incorporating this program into the shelters, as our policy proposes, the shelters would not only serve as temporary sources of housing but also offer a long-term path towards reducing poverty and homelessness. The formation of SHGs would provide a sense of support and unity within the shelters, as well as maintain organization as each SHG would enforce membership rules. Through this, the shelters can implement better hygiene practices to curb the spread of COVID-19.

Thirdly, the Capacity Building and Training Programme (CB&T) aims to provide technical assistance in urban livelihood promotion and alleviation at the Central, State, and City Levels. Through National Mission Management Units (NMMUs), the Capacity Building and Training Programme's (CB&T) vocational training services already provide the support system that will be necessary for our proposal. Our proposal would augment the benefits of these NMMUs as the homeless will be able to transfer their attention to developing employable skills, rather than searching for reliable housing.[19]

Lastly, the Employment through Skills Training and Placement (EST&P) program seeks to enhance the urban poor's capacity for self-employment and salaried employment. Specifically working to improve marketable skills for vulnerable and low-income populations such as beggars, construction workers, etc., this program will greatly complement our proposed intervention. When the homeless population is transitioned to long-term, sustainable housing, they will be better able to participate in programs such as SM&ID, CB&T and EST&P without having to worry about hygiene, shelter, etc.[20]

To ensure that each of these programs meets adequate health standards and does not act as a catalyst for more shelter-related COVID-19 outbreaks, we suggest that the Ministry of Health and Family Welfare oversee the administration and execution of each of these programs. To do this, we propose that the Ministry of Health employ 3 primary programs under the Ministry of Health & Family of Welfare: (1) the Bureau of Planning, (2) the Central Design Bureau, and (3) the National Vector-Borne Disease Control Program.[21]

Firstly, the Bureau of Planning and the Central Design Bureau will be essential in the initial planning of these shelters and vocational programs. Since these bureaus approach design and planning from a public-health perspective, they will be imperative in establishing the maximum number of individuals that shelters can provide support for, the amount of sanitary resources each individual will need, etc. Most importantly, these bureaus will be instrumental in suggesting and approving budgets for the health-based aspects of the shelters and vocational programs.[22, 23]

The primary purpose of the National Vector-Borne Disease Control Program will be to periodically (we suggest weekly) assess shelters and vocational training programs to ensure they are remaining compliant with national social distancing, hygiene, and situation-based guidelines. This will likely reduce future outbreaks, like the one that took place in Uttar Pradesh.[24]

Overall, we propose that SUH rent & renovate shelters and work with existing programs such as SM&ID, CB&T and EST&P to create vocational training programs that will help individuals in these shelters return to the workforce. By also working with the Ministry of Health and Family Welfare, the operations of these shelters and vocational training programs will properly meet health guidelines and expectations and reduce the risk of further outbreaks due to COVID-19.

4. SCOPE TO SCALE

Currently, the central government's Ministry of Housing and Urban Affairs provides the Shelter for Urban Homeless (SUH) program with funding for, on average, 75% of the cost of building new shelters, while the state contributes 25%.[17] For the construction of each shelter, the national Ministry currently allocates INR 6,00,000 per annum. Generally, the rest of the funding is provided by the state. Instead, our policy proposal entails allocating all of this funding towards purchasing the lease of abandoned spaces and turning them into shelters. To accomplish this, the SUH should create an online portal through which landlords can list their vacant real estate.

For the shelters that it constructs, the SUH ensures that the following facilities are available: ventilation, drinking water, washrooms, lighting, fire protection, cleaning services for bedspaces, common cooking area(s), and first aid kit(s). Therefore, after purchasing the lease of an abandoned space, the SUH should work to refurbish them with these facilities. The SUH will also collaborate with the aforementioned SM&ID, CB&T, and EST&P programs to provide their respective vocational training services to the residents of these spaces.

We propose that the government targets Delhi and Uttar Pradesh with this proposed intervention first, due to the numerous reports of unsafe conditions in their current homeless shelters. Beginning in mid-September*, the SUH should have created and launched the online portal, calling for landlords to submit information about their empty real estate. By October 1, the SUH should rent out one space in Delhi and one space in Uttar Pradesh. From October 1 to November 1, the SUH, along with the dual oversight of the Ministry of Health and Family Welfare's Bureau of Planning and Central Design Bureau, will turn these spaces into shelters, while ensuring that health and safety standards are being met.

On November 1, the online portal should indicate that these two shelters are open, as the shelters begin accepting residents. The representatives of the National Vector-Borne Disease Control Program will visit these shelters on a weekly basis and ensure that health guidelines are being followed. During their time in these shelters, the residents will be grouped into SHGs through the SM&ID and receive vocational training through CB&T and EST&P.

While these two initial shelters are being filled, the SUH should now rent out and transform more spaces throughout Delhi and Uttar Pradesh. As the proposed intervention progresses, the portal should continue to update which spaces have been rented out, which spaces are currently accepting people, and which shelters have reached capacity. Over time, this model should allow for sustainable development of abandoned real estate into sanitary, productive shelters for both the homeless and migrant workers who may have been displaced due to COVID-19. With the success of these initial shelters, the government can expand this model, beginning in January 2021, to other regions experiencing high rates of homelessness and rampant COVID-19 transmission.

The timeline for this proposed intervention has been estimated assuming the review of this proposal occurs immediately after its publishing (August 10th). The timeline can be adjusted based on when this proposed intervention is reviewed.

5. IMPACT
Our proposition generates positive benefits in the short-term and long-term:

In the short term, relocating India's homeless population to our proposed shelters would mitigate the immediate threats of hunger and starvation that have increased due to the COVID-19 pandemic. Because the conditions in slums are so poor, many who did possess jobs while still living there were unable to do so because of the increased fear of virus transmission. As a result, they lacked the money and time needed to buy food. Immediate relocation into the proposed shelters, when coupled with the aforementioned supplementary programs, would ensure the better care of this demographic. Fears of both starvation and of contracting COVID-19 would be reduced.

The long-term benefits are concrete and are manifold. Given that the homeless population comprises approximately 9,36,000 people, according to the Global Homelessness Statistics' 2019 report, it is clear to see that the exacerbation of COVID-19 transmission amidst this demographic is currently a significant problem.6 Poor conditions have been proven to significantly increase the spread of COVID-19, so the relocation of a significant portion of this population into shelters will stimulate a large-scale public health benefit by improving sanitation and regulation amongst the population most susceptible to transmitting the disease. Assuming each individual in a shelter is given approximately 75 to 125 square feet of space, and assuming the average office space transformed into a shelter is approximately 5000 square feet, around 40 to 70 people can be accommodated in each shelter.* The ideal amount of shelter units needed to house the homeless population is given in subsection "2.1 Intwroduction to the Policy Idea" of this proposal, but we currently do not know exactly how many office and abandoned real estate spaces will be available to turn into shelters. However, even repurposing solely 1000 out of the 11.1 million abandoned spaces into shelters would not only drastically help renters and landlords, but also quickly and efficiently relocate 40,000 to 70,000 of the 9,36,000 homeless individuals into better conditions—(1) potentially severely reducing further spread of COVID-19 and (2) effectively reintroducing these individuals into the workforce through the implementation of the proposed vocational training programs.

In pre-COVID-19 conditions, shelters allocated approximately 50 square feet per individual.16 This amount was increased accordingly to account for adequate social distancing.

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A Transportation Solution for India's Migrant Workers during the COVID-19 Pandemic:

Funding Private Bus Companies to Increase Interstate Labor Portability and Stiumlate Business

By Arushi Agrawal, Eshana Seshadri, Khounish Sharma

1. PROBLEM STATEMENT

1.1 Thesis

In order to restore the livelihoods of migrant workers and alleviate the economic downturn in light of the COVID-19 crisis, the Ministry of Labor and Employment should increase funding to private charter buses via staged loans to allow for inter-state portability of migrant workers that fulfills pandemic regulations. The bus routes and transport of migrant workers will be mapped and visualized through a mobile application platform which integrates an identification system developed by the Ministry of Health Affairs of India; this application has contact tracing and gives businesses the ability to request the support of migrant workers. This will increase migrant workers' accessibility to transportation and help them acquire labor, thereby stimulating businesses that have been negatively impacted by the pandemic crisis.

1.2 Background & Analysis

Every year, tens of thousands of migrant workers leave their home districts and travel hundreds to thousands of kilometers in search of better work opportunities in urban areas[1], usually constituting daily labor jobs such as manufacturing and construction. With 139 million (1390 lakh) migrant workers in India, over 90% of the population works in the informal economy[3], many of which are involved in contract labor and are vital to nearly every economic sector, contributing to about 50% of India's GDP. In fact, the manufacturing sector normally employs more than 6 million (60 lakh) migrant workers (migrant dependency ratio of 12.9) and the textile industry in Surat employs around 12-14 lakh migrant workers, highlighting their importance.[5,6] Despite this, the nature of their contract labor renders migrant workers non-existent and thus politically neglected, often denied adequate healthcare, housing, and nutrition.

On March 24, 2020, the Indian government imposed a 21-day lockdown in response to the COVID-19 outbreak, forcing nearly 40 million (400 lakh) migrant workers on a mass exodus back to their homes in rural districts without any form of income or immediate relief.[7] As a result, the International Labour Organization (ILO) estimated that about 400 million workers (an immense portion constituted by the migrant population) will fall deeper into poverty as a result of the pandemic.[3] Several industries have not been spared either with the sudden lockdown and labor shortage, especially those dependent on migrant workers. India's index of industrial production exhibited a 55.5% contraction between January and April of 2020 and urban unemployment skyrocketed to nearly 30%.[8] In more specific cases, the textile industry in Surat was facing up to Rs. 11,500 in losses and the daily turnover lost in the auto manufacturing sector was as high as $300 million (INR 2,245.6 crore) a day[6,8], most of which can be attributed to the absence of migrant workers.

The ongoing pandemic has also crippled the transportation sector, forcing 98% of bus services to pause operations. About 84-85% of State Transport Undertaking (STU) bus services' revenues are collected from fares and used to cover operating costs.[9] With low demand for tickets, bus operators have been unable to generate revenue for the past 2 months. The World Bank estimated that the financial losses in the public bus sector could lead up to INR 1.5 lakh crore. Furthermore, this extends into the private sector as 81% of bus operators have reported having no ridership[10], suggesting serious financial losses. Both public and private bus services have expressed immense concern for being unable to return back to

functionality due to financial and legal issues (expired permits for private buses).[11] With the lack of bus transportation, several people, including migrant workers, were stranded and had no means of transportation.

In response to the sudden lockdown, the Government of India enforced multiple transportation directives, a notable one being the "Shramik Special" trains. On May 1st, the government permitted the Indian Railways to run the "Shramik Special" trains to help aid stranded people on their travel to their hometowns. However, the intent of the service did not match up to it's impact. The Ministry of Home Affairs pushed back on state governments that prioritized the transportation of migrant workers, stating these trains were mainly for stranded individuals and not migrants.[12] Furthermore, such services were not free and would charge migrant workers a fare, essentially limiting their access. In response, the Railways agreed to offer an 85% subsidy on the train fares while the other 15% was to be funded by the state governments.[13] However, migrant workers were still forced to pay undisclosed fares and it was revealed such subsidies were not going towards the train fares.[14]

The difficulties experienced by migrant workers in terms of transportation did not end there. Many have reported poor sanitation and no food on these trains along with extremely long wait times due to route congestion. Additionally, proper safety measures were not taken and approximately 80 travelers died between May 9th-27th on the Shramik trains.[15] Although around 4,277 Shramik Special trains had transported an approximate total of 60 lakh people as of June 12[16], the migrant worker population was consistently marginalized. One migrant worker stated, *"Hum keede makode hain, humein marne ke liye chhod diya*

hai (We are seen as vermin and have been left to die)".[17] The pandemic has exacerbated an already prominent rift between the migrant workers, their employers, and the government, resulting in 13% of the 17,000 migrants in contact with the Stranded Workers Action Network to claim that they will seek work in their home districts and not return[18], and such a decision can be expected to be reflected in many more. This shift in mindset within the migrant worker population can spell disaster to the urban-based industries heavily dependent on migrant workers and, ultimately, a large portion of India's economy.

It is evident that a new and more efficient transportation system with elevated health and safety measures is becoming increasingly imperative to support migrant workers during this pandemic and, indirectly, the economic survival of India. Addressing this issue with transportation will not only mitigate the transmission of COVID-19 within transportation systems and evade further economic downfall, but can serve to revitalize the government's humanitarian efforts to support its migrant worker demographics.

2. PROPOSED INTERVENTION

2.1 Policy Introduction

On May 16th, the government announced their plans of implementing the National Migrant Information System (NMIS), a centralized online database focused on maintaining migrant worker information and identification to facilitate coordinated transportation between states. Information regarding the recent mass movement of migrant workers was mostly collected based on the Shramik Special trains. Ajay Bhalla, the current Home Secretary of India, outlined that the collected information was standardized to name, age, mobile number, originating and destination district, etc, all of which are used to generate a unique ID for each migrant.[19] Bhalla also stated that the mobile number will serve as a form of contact tracing, which demonstrates potential public health benefits as well in terms of monitoring migrant traffic to avoid transmission of the diseases.

Furthermore, the portal can integrate other databases of migrant information that individual States have implemented in the past through an Application Programming Interface (API). Additional features indicate that migrant workers can receive alerts of various transportation services and, in the future, job alerts from employers. With such a centralized and national form of migrant worker database, streamlined communication between states and the migrant workers is well under way.

Furthermore, the National Informatics Centre under the Ministry of Electronics and Information Technology has developed Aarogya Setu, an open-source COVID-19 contact tracing application, as one of many efforts to circumvent further transmission of the virus. The application has the following 4 main features: (1) user status (indicates the risk of contracting the virus within a given radii ranging from 500m to 10km; (2) self-assessment (informs users of COVID-19 symptoms and their risk profile); (3) COVID-19 updates; (4) E-pass for those who still need to travel.[20] On April 29, the central government enforced an order[21] making this app mandatory for employees and later the Union of Home Ministry enforced this regulation for anyone living in COVID-19 containment zones.[22] Within 40 days of its launch, Aarogya Setu reported 100 million installations across India.

Although these initiatives have taken a step in mitigating COVID-19 transmission and facilitating public transportation of migrant workers, they do not address the distrust that has formed between public transportation and the migrant worker population. Our policy builds upon the NMIS database, the Arogya Setu application, and turns to the private buses in the transportation sector to synergistically provide a streamlined and safe form of transportation for migrant workers.

2.2 Policy Idea

With the lack of success in providing safe transportation for migrant workers and the public/private bus sector at risk of immense financial deficits, we propose that

India's Ministry of Labor and Employment should allocate funding to launch a private bus transport program in light of COVID-19. The government would be responsible for providing staged loans to private bus companies, mainly those at risk of bankruptcy, as a means of transportation for migrant workers aside from the public sector. With this funding, not only would it support migrant workers in returning back to urban areas, but will also keep private bus services afloat in hopes to meet the impending spike in demand for transportation when the pandemic subsides. Additionally, this provides the government the chance to restimulate the private transportation sector and maintain employment instead of having to cover the expected increase in unemployment benefits and company bailouts that would otherwise come with bus companies facing bankruptcy.

We also propose that the private bus transport program will utilize a mobile application platform that will be made accessible to businesses in need of migrant workers, allowing business owners to publicize their locations and need for labor support. This information will be populated on the application base that is integrated with the NMIS database to create a dynamic network of efficient transport routes through the government-funded charter bus systems. At the user-end, local transit stations will serve as a hub for bus transportation of migrant workers in order to route migrant workers to their jobs. Migrant workers will travel to local transit stations in which government workers and bus drivers at given stations will reroute migrant workers in search of train transit to the bus transit system, demonstrating and explaining the accessibility to the new transportation system to migrant workers. Social distancing measures and mask protocol will be implemented at both stations and within buses, as a maximum number of migrant workers per bus will be previously determined by the Ministry of Road Transport and Highways, as well as the Ministry of Health Affairs, with the help of the Arogya Setu application.

To improve upon the poor treatment experienced on public transit, food will be provided to workers traveling over a length of 4 hours and water will be provided on routes over a length of 2 hours. Furthermore, to optimally cater service to migrants, workers will be asked to provide authorized identification-signifying status as a migrant worker per the NMIS. Bus passes will be printed and distributed by government workers at the stations at the start of the implementation of this program based upon enrollment in the NMIS database and will be scanned upon boarding, serving to identify migrant travelers. This will mitigate the usage of bus systems by non-migrant workers and incentivize migrant workers to seek identification, as well as the government to provide identification to ensure successful bus transit and economic stimulation. Furthermore, these identifying bus passes will allow for tracking of migrant workers' transit routes on the buses and will thus allow for optimization of bus routes based upon usage and need.

Rajasthan, with a population of 68 million, will be used as the primary location for beta testing the transport system as the state has demonstrated a collection of businesses in need of the economic support of migrant workers.[23] Alongside the involvement of businesses and migrant workers across the state, the testing process will require the involvement of a chosen private bus system in the location of beta testing. Chandigarh Transport Undertaking offers inter-state bus travel through Rajasthan, Uttar Pradesh, and various adjoining states. With the influx of government funding into this company and others, circuits of travel can expand to be accessible in every state as local private bus systems are notified, simultaneously boosting the private bus economy. In order to implement this program in light of the COVID-19 crisis, bus owners, migrant workers, and business owners must comply with pandemic regulations. All stakeholders will comply with mask policies and bus drivers will ensure density of travel does not saturate the capacity of socially distanced travel. Additionally, temperature checks will be implemented before boarding the

bus to ensure the safety of all. This will require compliance across individual, state, and national levels and will be tested in Rajasthan to ensure its pragmatism.

Ultimately, through this bus transit program migrant workers would be able to access transport and workplaces that are compliant with the social distancing and mandatory mask wearing measures. This will allow for migrant workers to safely integrate back into the economy, thereby stimulating the businesses that are receiving workers. The program would ensure efficiency in transportation, creating a circuit of round-trip bus transportation at interstate and intrastate levels, allowing for migrant workers to access work opportunities across and within state borders due to the privatization of transport. The integration of a mobile application within the business sector would ensure contact tracing of migrant workers and efficient routing of the charter bus system, increasing accessibility of transport and instilling trust into urban transport.

3. NOVELTY IN LIGHT OF EXISTING KNOWLEDGE

This section builds upon the policy described in the previous section and details how the NMIS, Arogya Setu, and the government-funded private bus companies can be integrated efficiently into our proposed novel mobile application. Given that nearly a third of the migrant worker population has returned to rural areas from the cities, our policy focuses on facilitating the return of these workers back to urban areas while following social distancing measures. 30% of the migrant workers who have returned are unwilling to return to the cities in the current environment, posing a significant threat to several sectors that are dependent on migrant workers. The integration of all these programs will support the return of migrant workers into the labor force, allowing for not only economic restimulation across multiple sectors, but will also serve in increasing the visibility of migrant workers.

The two major facets of the policy are the following: (1) the mobile application platform generating streamlined routes

based on the NMIS database and input from businesses (2) government staged loans to private bus companies across the country to provide free transportation for migrant workers.

Firstly, the NMIS database will be utilized to continue collecting demographic data and identification of migrant workers, all of which will be integrated into the proposed mobile application. Since the collected data in the NMIS is based on the migrant workers that traveled via Shramik Special trains, it is expected that 60 lakh migrant workers are already enlisted in the database and have an unique ID. Furthermore, the NMIS has the capability to integrate the information of existing databases into its platform via an API, ensuring its efficient and continual growth of standardized migrant worker information. The NMIS has also collected data on the origin state and destination state upon which each migrant took the Shramik special trains. Pairing this collected information with the request for laborers from various businesses of the mobile application will initially serve as the basis of route information on the mobile application.

Secondly, using the collected demographic and route information, the Ministry of Labor and Employment should provide a staged loan paired with an established contract to a selection of private bus companies across the country to facilitate the safe transportation of migrant workers back to urban areas. The contract will specify the interstate and intrastate routes that the buses must follow in order to continue receiving funding, which will be checked via GPS tracking on the mobile application for which the buses will be required to utilize. The loan will be enough to cover the operational costs for running the bus services, providing wages for the employees, and food/water services to the migrant workers, essentially substituting for the consistent farebox revenue buses received before the pandemic. Additionally, with these buses operating more frequently and with improved ridership, non-farebox revenues (i.e advertisements) can resume and serve as another form of income for private bus companies, futher

minimizing their losses to the pandemic. Private bus companies will be incentivized to follow the contract regulations as the loan not only allows for bus services to run without incurring operational costs, but also provides the opportunity to receive alternative forms of revenue in profit and essentially evade bankruptcy in the short term.

Thirdly, the Arogya Setu application will also be integrated into the proposed mobile application to work in tandem to ensure the following: (1) Efficient transportation with minimal wait times and route congestion for migrant workers and (2) Safety measures to minimize any potential COVID-19 transmission risks. To circumvent route congestion and wait times, only migrant workers will have access to these services as the unique IDs generated by the NMIS database will serve as a point of access to these buses. In addition, further route data on traffic, travel, wait times, and congestion can be collected over time on the mobile application platform using the IDs and GPS tracking to continuously improve the routes. This will allow for continuous regeneration and adjustment of routes according to usage, as well as the addition of new information on migrant workers and/or businesses unlike public transport.

Elevated safety measures will be implemented in bus systems based on the contact tracing feature in the proposed mobile application, integrating the Arogya Setu app. Based on the information provided from contact tracing, each company will have to have a plan for spacing and rules on the buses and be approved by the Ministry of Health Affairs. Private buses must adhere to these strict public health guidelines enforcing mask-wearing, installing hand sanitizers, keeping passengers 6 feet apart, temperature checks prior to boarding, as well as providing water and food as needed. The application will allow for contact tracing and alert all passengers of user status and risk of transmission of the disease. Furthermore, this contact tracing feature will notify the drivers/passengers in the event that there are individuals who have

tested positive or are detected to have high temperatures to mitigate transmission.

Given that these services are intended to be free for migrant workers, the costs the government bears in the short term with the loans will be returned via economic growth as a result of the labor force returning to work. By investing in private bus companies and utilizing the proposed mobile application platform, the government is essentially preventing multi-sector failures, resulting in losses far greater than the loans, expected with the absence of migrant workers in urban areas. Furthermore, by keeping private bus companies afloat, the government has the opportunity to avoid time-consuming permits in generating more public buses and can instead quickly add private buses to public bus systems as a way to increase fleet size to meet large impending demands of transportation.

Overall, the integration of the mentioned programs in conjunction with the staged loans to private bus services constructs a centralized program that encompasses safe and efficient transportation for migrant workers and restimulation of several economic sectors. This program is needed in addition to the current public transportation as the bus routes are designed to match not only the specific needs of migrant workers, but also mitigate the spread of COVID-19. By providing a safe and efficient form of transportation, we can reconstruct the trust between the government and the migrant workers, which will facilitate their return to urban areas, increase their visibility to the nation, and ultimately restimulate India's economy.

4. SCOPE TO SCALE

This program should be first implemented in Rajasthan, a state that has already begun collecting information on businesses in need of labor. During this initial phase, the Chandigarh Transport Undertaking company which provides both intrastate and interstate travel between Rajasthan and neighboring states should be funded. The first step is to ensure that migrant workers are enrolled in the NMIS with help from representatives from the Ministry of Health Affairs and to

reach out to businesses in need of labor in order to formulate the routes. By October, a contract should be established with the private busing company and tentative routes should be drafted. Additionally, the government should hire employees for the main stations where information about the new busing system can be provided along with bus pass distribution for migrant workers as well as enrollment into the NMIS as needed. The distribution of these bus passes will be based upon enrollment into the NMIS and should be largely available for the first 4 months of implementation after which the number of employees can be reduced and the passes will be available at fewer stations. The bus passes should be valid for two years so that migrant workers will not have to print a ticket every time they take a bus.

During October, these buses will begin to run on the predetermined routes and usage will be tracked on the application to adjust routes. During October and November, representatives from the Ministry of Health Affairs should check on the buses to evaluate adherence to health guidelines. Additionally, representatives from the Ministry of Labor and Employment will guide migrant workers at the station and visit some villages or businesses with large migrant worker populations to help explain the new bus system and distribute the identifying bus passes.

Once this system is successfully implemented in Rajasthan, it should begin to expand to other states with funding going to other private busing businesses based in those states. It is necessary to diversify funding for bus companies so that the other companies do not fail. This should occur in December.

Eventually, in Summer 2021, the ministry representatives and station employees can be phased out and replaced with interactive tablets which will be safely secured and supervised at the stations. These tablets will serve to update migrant workers on available routes while also providing information from the company portal detailing job opportunities and skill requirements, allowing

for job-matching. The application will include accessibility features such as animations and text-to-speech abilities to account for the migrant workers who are unable to read. This addition to the application would allow business to satisfy a skill-based need while simultaneously supporting migrant workers with qualified experience in need of income. This feature addition fulfills a market need to acquire laborers with specific skill-sets, allowing for a potential increase in the wages of migrant workers that meet this niche.

With the current policy application, bus transit systems will be centralized at previously existing transport stations, routing passengers to and from accessible and known locations. As the system is tested and implemented to scale, frequency of drop-off and pick-up locations can be increased through the development of bus stops for migrant workers. This process will require education on new locations with the aid of the interactive tablets which share route features and updates at the main stations. Thus, this phase should begin in the Fall of 2021 once the tablets have been successfully installed. The development of these new stops will allow for decentralization of transport that is increasingly accessible in rural areas, and result in less transport by foot for workers. The development of such a system will also require compliance from the private bus systems, providing greater incentive with increased government pay as well as potentially low ticket prices required from migrant workers for access to new localized transit stations.

As a result of decentralization, fewer workers will be going to the stations where bus passes are printed. Furthermore, use of the buses will likely increase causing a greater need for the bus passes. Therefore, a new form of distribution of these bus passes should be implemented. In the future, bus drivers will be able to access the NMIS database through the mobile application in order to check migrant worker status. Drivers will then be able to print bus passes for migrant workers as they board, making the transit system increasingly accessible.

5. IMPACT

The curation of a bus transportation mobile application for migrant workers and loans for private bus companies across the country will allow for economic stimulus through the return of migrant workers, as well as mitigating deaths of workers through guaranteeing greater safety precautions on bus systems. Small scale policy implementation will ensure regional economic and safety benefits for local businesses and migrant workers. Once expanded to scale, there will be increased stops, accessibility to route information via tablets, and more widespread distribution of bus passes to increase the ease of usage. The integration of the identification database from the Ministry of Health Affairs will allow for increasing benefits for migrant workers, allowing the bus system to be solely accessible to travelers, as well as the maintenance of an accessible database for contact tracing and identification of migrant workers. As the identification system is continually updated, this poses long-term benefits in the scope of voting, housing, rations, and other strides towards accessing universal rights for migrant workers.

Combined with the economic benefits, bus systems will enact increased levels of transportation in comparison to train transit, which will guarantee lower levels of mortality and morbidity in light of the current COVID-19 pandemic. Migrant workers have been largely traveling by foot and without protection from the heat, increasing chances of contracting COVID-19 and/or heat strokes. Creating a bus transport system will prevent these public health failures, ensuring better safety for travelers. As the mobile application is beta-tested and exapnded to scale, long term enactments suggest the addition of a skill-based feature integration that outlines migrant worker qualifications and benefits necessitated and provided by businesses in need of migrant workers. This poses long-term benefits for migrant workers in the scope of employment benefits and identifying niches for labor. Businesses may simultaneously benefit from the acquisition of specific skill sets for labor, incentivizing

salary increases and benefits for workers.

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A Widespread Approach to Tackling Misinformation in India during the COVID-19 Pandemic:

Promoting Youth Engagement Through a State-wide Video-based Competition

By Hrishikesh Jadhav, Sanika Sahasrabudhe, Ravi Trivedi

1. PROBLEM STATEMENT

1.1 Thesis

Implementing a state-sponsored video contest would be an effective way to curb the spread of misinformation. It has already been proven that creative videos about SARS-CoV-2 pandemic, also known as COVID-19, prevention can capture public attention and be used to spread important information.1 Using the current virality and popular appeal of these videos, a state-sponsored video contest,where students create their own videos, would be both (1) engaging and (2) effective in the age of social distancing. By providing links to approved and scientifically-backed sources, students and their families will be encouraged and encouraged to use and spread correct information about the disease through informational videos that will be fun for others to watch.

1.2 Background & Analysis

India is facing an informational crisis that is impeding the effectiveness of established COVID-19 prevention techniques. While studies have shown that much of the population is aware of the disease and the danger it poses[1], false claims about remedies and transmission vectors are still rampant in many communities. According to a recent study in June, 88% of a surveyed South Indian population believed cold water kills the virus, 63% believed it was transmitted through a hot and humid climate, 73% said that hand dryers are effective in killing the virus, and 72.5% said that antibiotics would be effective in treating the disease.[2] Debunking these false claims, as well as promoting scientifically-backed information about the virus, is crucial for the continued health and safety of the Indian population during th COVID-19 pandemic.

During a pandemic, the compliance of every member of society is crucial to curb the spread of disease. However, both misinformation and a lack of information can cause individuals to undermine the effectiveness of country-wide efforts to address the pandemic and place themselves and others in danger. Misinformation, such as unorthodox methods to prevent the disease and inaccurate data on the number of positive cases, creates confusion and panic. With 451 million internet users in India, and 16% of them being young adults, this demographic is subject to widespread misinformation and uncertainty. In an effort to curb misinformation, WhatsApp created a chatbot through the International Fact-Checking Network allowing users to fact check any forwarded information. WhatsApp's immediate solution demonstrates the urgency with which misinformation needs to be addressed in India and the need for a prioritization of people's awareness of the pandemic for their own safety.

2. PROPOSED INTERVENTION

The idea we are proposing is a state-wide video contest that encourages young citizens (ages 18-24) to learn the basics of COVID-19 symptoms, prevention techniques, and the reasoning behind masks and social distancing. With this proposal, we hope to promote awareness about epidemiology and encourage young students to learn healthy living practices and disease prevention techniques that will be useful in this and future outbreaks. Additionally, by promoting certain sources of information and including a section where students can debunk common misconceptions about the disease, this contest will educate participants to use scientifically-based resources.

Pandemic-related informational videos have already been effectively used by law enforcement[3], and with the explosive growth of internet[4] and smartphone[5] usage in India, a video contest has the capacity to educate and captivate a large audience. To effectively reach India's diverse population, the competition should be run by local state governments and require the users to make the video in the state's official language. Each contest should be open to anyone in the state ages 18-24. This age group is the largest user of many social media platforms in India[6], and therefore are the most susceptible to exposure to fake information. However, this age group is also the most adept at navigating social media, which presents an opportunity for a video from this contest to gain massive popularity through already-established media channels. The contest will adhere to the following guidelines[7], adapted from UNESCO (United Nations Educational, Scientific and Cultural Organization):

2.1 Theme

'Fighting Misinformation During the COVID-19 Pandemic': What is COVID-19? What have duty-bearers (governments, the media, and international organizations) said about how to limit the spread of the virus? What are common misconceptions about COVID-19? What should the average citizen be doing during this time? We want to know your perspective and invite you to send a short video message in which you describe your ideas, including your own observations and experiences. We encourage participants to be creative and make their video both informational and entertaining.

Please use the following sources as a reference:

- India Health and Welfare Guidelines
- International Guidelines for Schools
- Video on Proper COVID-19 Behavior
- Video on Mental Health During a Pandemic

2.2 Guidelines

- Your video should be no longer than 3:00 minutes
- Spoken language in the video must be [state's language]
- Participants must be between the ages of 18-24
- Videos must be original and unpublished, plagiarized entries will be rejected
- Any video promoting misinformation will automatically be rejected
- Videos promoting brands or private enterprises will be rejected
- Any sources used for information found in the video must be cited
- Videos must be made by a team of no more than 3 participants
- Videos must be submitted by email to mos-mhrd@gov.in

2.3 Deadline
Suggested timeframe: 3 weeks

2.4 Evaluation
After submission, videos will be judged by a committee of health professionals appointed by the state government. Each video will be evaluated on its accuracy of information related to COVID-19 and creativity. 3 finalists will be chosen by the end of November 2020.

2.5 Awards
Suggested awards: certificate of government recognition, scholarship awards.

3. NOVELTY IN LIGHT OF EXISTING KNOWLEDGE

Scholastic contests have seen major success in India, with many spelling bees and math competitions garnering national attention[8,9], and encouraging students to take learning into their own hands. However, as technology use increases and smartphones become more accessible to all populations, these competitions can now be extended to include newer media platforms, including video. Video has become a major platform for the spread of information and accounts for over 60% of all internet traffic.[10] By tapping into the mass appeal of information presented in a video format, an important message can be presented to a wide and engaged audience.

The concept of video contests has been proven to be effective to engage students. In 2017, UNESCO ran a global video contest for students to showcase how they think the importance of access to information will shape the future of journalism.[11] This event was met with hundreds of enthusiastic responses that captivated audiences and showcased the creativity and knowledge of the participants. Additionally, video contests run by the Indian government in the past have demonstrated massive success. To showcase the various tourist destinations within India, the Indian government set up the Paryatan Parv video contest, which received over 900 submissions before the deadline closed.[12]

4. SCOPE TO SCALE

Implementing the proposal will require a coalition of several key stakeholders in the Indian government and higher education system, on a state and national level. The driver behind this initiative will be the Department of Higher Education within the national Ministry of Education. The video contest will first be beta-tested in one metropolitan city where access to technology is high but misinformation is still widespread. As a result, the contest will first be open to students ages 18-24 in Mumbai and its surrounding areas beginning October 1st.

The first stage of the implementation process includes establishing a group consisting of one educator from IIT Mumbai and one representative from the Department of Higher Education. Once formed, this group will be critical in overseeing the contest, ensuring guidelines outlined are followed, and selecting a panel of 5 judges with relevant backgrounds and areas of expertise. The contest will be heavily advertised through higher education institutions in Maharashtra (junior colleges, colleges, and universities) to ensure maximum reach within the given area. Participants will have a month to submit their entries. All entries will then be judged with two weeks.

As the contest reaches a close on November 1st, the engagement and participation will be evaluated. Challenges that arose as a result will be addressed. We anticipate this stage of the process to take 2 weeks by the coalition after the winners are announced. The final stage will be considering prior feedback and improvements to then implement the contest in 3 other states; Delhi, Tamil Nadu, Andhra Pradesh, with AIIMS Delhi, IIT Chennai, and IIT Tirupati joining the state's coalitions respectively.

Upon successful completion of the contest in the four pre-selected states, we would recommend the ministry to offer this opportunity in rural areas where educational initiatives are fewer, as well as in more states overall. This will allow us to reach a larger population and achieve our goal of stopping the spread of misinformation while also promoting proper disease prevention techniques.

Finally, to promote the use of the Aarogya Setu platform, the winning videos will be available for viewing on the app. After winners have been announced in each state, the Department of Higher Education will work closely with the platform's developers to upload videos on the app and encourage usage of Aarogya Setu's contact-tracing and risk potential capabilities.

*The timeline for this proposed intervention has been estimated assuming the review of this proposal occurs immediately after its submission (August 10th). The timeline can be adjusted based on when this proposed intervention is reviewed.

5. IMPACT

The main benefit from having state-wide video contests across India is to grow awareness about misinformation and good health practices during the COVID-19 pandemic. With the exponentially growing number of internet users in the country, access to online materials is more accessible than ever before. Because of this, it is important to put out accurate and verified content that people can learn from. One benefit from this plan is that younger aged individuals are more likely to learn how to access

reliable information and use their own creative skills to make videos. Additionally, since state governments will be reviewing these videos, they can also ensure the content produced is accurate and viable to be aired to the public. Another benefit is that individuals are making videos in the state's primary language which capitalizes on the diversity of India and allows for everyone to be involved.

If this plan is implemented, states could see millions of people watching videos related to prevention practices and misinformation. By working with state governments, they could effectively market the winner's submission to their constituents. In the short term, awareness and prevention knowledge would be dispersed to many especially at a critical time in India. Engagement will also be fostered with younger individuals which will lead to innovative ideas and creativity in content. In the long run, this plan will act as a strong framework for future contests to engage and educate the public. It will also encourage the public to validate information they come across and become more aware online.

The impact is multipronged because it teaches younger individuals to get credible information on the COVID-19 pandemic, informs the public on accurate practices, and allows the government to increase engagement and awareness.

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