Impact of COVID-19 on individual income in tourism and hospitality industry in India: A difference-in-differences approach

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Abstract
This paper investigates the impact of COVID-19 (or Novel Coronavirus) pandemic on the income and wage of individuals working in tourism and hospitality industry in India. As the tourism and hospitality industry is a labor-intensive industry, the impact of COVID-19 pandemic-induced economic downturn is expected to be particularly severe here. To estimate this impact, I use a large, representative panel survey from India, and employ difference-in-differences method in this study. The estimated decline in total income ranges between 3.12 and 6.39%, and wage fall ranges between 3.21 and 5.98%, for the sample with individuals who are still earning a non-zero income from this industry. Once I include the individuals who have completely lost their livelihood (zero income) due to COVID-19 pandemic in the sample, impact on income is estimated to be a fall of 58.69% and impact on wage is estimated to be a decline of 58.59%. I also discuss the recommendations made by UNWTO to mitigate the impact of COVID-19 on tourism and hospitality industry, and map Indian government’s policy measures to those recommendations.

Keywords
COVID-19, novel coronavirus, pandemic, travel and tourism, hotels and restaurants, income, wage, difference-in-differences

Introduction
According to research done by World Travel and Tourism Council and Oxford Economics, travel and tourism industry in India contributed 6.9% of GDP (191.3 billion USD) and 8.8% of total employment (more than 40 million jobs) in 2019 (WTTC, 2021). In many regions within India, where there is a lack of employment opportunities, people are directly and indirectly involved in the tourism and hospitality industry if those places possess scenic beauty or have religious significance.

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As the COVID-19 (or Novel Coronavirus) pandemic imposed severe restrictions on human movement, the tourism and hospitality industry has been amongst the worst affected industries. Tourism and hospitality industry faced both demand and supply shocks due to the COVID-19 pandemic (del Rio-Chanona et al., 2020). The recovery of this industry in India is questionable even after the pandemic is over (Dev et al., 2020). The large scale loss of employment in this industry due to sustained lack of demand is bound to have long-lasting impact even beyond the pandemic. In 2020, the share of travel and tourism industry in India’s GDP became 4.7%, and their share in total employment became 7.3% (WTTC, 2021). Hence, compared to 2019, travel and tourism industry’s share to India’s GDP fell by 36.3% (a decline of almost 70 billion USD), and its share to total employment declined by 20.8% (around 8.3 million job losses). This was a disproportionate loss of revenue in the Indian travel and tourism industry between 2019 and 2020, since the real GDP declined by a smaller margin of 7.1%.

COVID-19 has exacerbated the already vulnerable sections of workers in the tourism and hospitality industry like food-app delivery-persons, app-based taxi drivers, Airbnb owners (Sigala, 2020). Even before COVID-19, such workers suffered from low wages, and lack of job security, insurance, and other benefits. The economic distress of tourism and hospitality workforce is going to be even more pronounced following the pandemic-induced economic downturn. Hence, the impact of the pandemic on the income of individuals engaged in tourism and hospitality industry needs to be investigated so that policy measures can be taken to prevent any long term damage to the industry and its human capital.

It is important to investigate and measure the impact of COVID-19 on tourism industry in order to limit the ill-effects through government policies and business strategies (Sigala, 2020). Although there have been some attempts to assess the effect of COVID-19 pandemic on the income of individuals engaged in tourism and hospitality industry in India (e.g., NCAER (2021)), it generally involves indirect estimation using aggregate data. Commenting on micro-level impact using estimates from macro data may lead to incorrect estimates, limiting our ability to understand the impact of the pandemic on individual well-being of the stakeholders in this industry. This is a clear research gap in this literature.

In an important study, Baum et al. (2020) provide an in-depth conceptual analysis of the global impact of COVID-19 pandemic on tourism and hospitality industry workers, and highlight the lack of knowledge about how the pandemic has impacted the tourism and hospitality workforce in the global south. Unfortunately, very few attempts have been made to address this issue. The majority of the studies focus on travel behavior and business strategies in the context of the pandemic (Alshater et al., 2021). For example, very little is known about how the COVID-19 pandemic has impacted individual income and wage in the tourism and hospitality industry in India. In this paper, I address this particular gap in the literature. A key difference between my study and the earlier studies in this domain is that I estimate the actual effect of COVID-19 pandemic on the income and wage of individuals working in the tourism and hospitality industry, while paying close attention to the endogeneity issues.

In this study, I use a large representative panel survey from India to estimate the impact of COVID-19 pandemic-induced economic downturn on the income and wage of individuals engaged in the tourism and hospitality industry. I use difference-in-differences method for my analysis. My study design allows me to find the causal impact of COVID-19 on the economic well-being of individuals engaged in the tourism and hospitality industry in India.

As I find large and statistically significant impact of COVID-19 pandemic on the income and wage of individuals engaged in the tourism and hospitality industry in India, irrespective of the general protection measures implemented by the government, there is a clear need for a different
policy direction from both the government and industry to safeguard the livelihood of the stakeholders here. A loss of livelihood in tourism and hospitality would lead individuals to leave this industry and it will also discourage future entrepreneurial activities due to heightened uncertainty. In many tourist destinations, alternative employment opportunities may not exist, and once there is an out-migration due to lack of tourism activities, the skilled workforce may not return in future, and tourism recovery may not be possible in the regions where it is needed the most. Concerted effort is needed from both the government and the industry to ensure that quick recovery is achieved after the pandemic is over, and adequate safety measures are in place for any future crisis to safeguard the tourism and hospitality industry in India.

The remainder of the paper is organized as follows. In second section, I briefly discuss the background literature. Section three describes the econometric methodology and data used in this analysis. I discuss the results in section four. Section five concludes this paper.

Background

The COVID-19 pandemic has had a negative impact on economic growth (Apergis and Apergis, 2021), migration and remittances (Barker et al., 2020), income from travel and tourism (Škare et al., 2021), micro and small enterprises (Bartik et al., 2020), and informal business (Guo et al., 2022). It has also led to higher fiscal and monetary deficits, and increased macroeconomic instability (Brodeur et al., 2021). The likely outcomes of such economic downturn are higher poverty, unemployment, and food insecurity. This can exacerbate already existing inequalities, and potentially lead to social disharmony. The impact of COVID-19 pandemic is expected to be long-lasting in South Asia, if not addressed adequately through government policies in a timely manner (Rasul et al., 2021).

Following the unprecedented lockdown that had to be imposed to curb the spread of COVID-19 throughout the world, an economic downturn led to job losses and imposed economic hardships on the majority of the people. Tourism and hospitality industry was hit in particular not only because of the movement restrictions (administrative/political reason) but also due to shrinking travel budget of households (economic reason). The dual effects of loss in travel volume and loss in travel budget led to a severe fall in tourism revenue in almost every country. Even with easing of restrictions and countries opening up, the effects can persist for a long time depending on how severely they impact the structural elements in the tourism system (Bausch et al., 2021).

Due to the changed consumer behavior following the COVID-19 pandemic, the tourism and hospitality industry has faced an unprecedented fall in demand for their services. Baum et al. (2020) provide an overview of various potential effects of COVID-19 on the tourism and hospitality industry, and identify their early signs. These potential effects can be understood at three different levels-macro, meso, and micro. At the micro level, the pandemic has severely impacted the economic well-being of individuals engaged in the tourism and hospitality industry. The detrimental effect of the pandemic has also been unequal in the sense that it has impacted the disadvantaged section of the tourism and hospitality industry workers more than the rest of the stakeholders. With the breakdown of employee–organization psychological contracts during COVID-19 pandemic, the working condition is only going to worsen once the pandemic is over. The structural changes and downsizing in the tourism and hospitality industry may drive better equipped workers away from this industry. The disadvantaged communities in the global south might be more vulnerable as they often lack the resources to fall back upon or do not possess the skills to make the most of the new opportunities. Globally, women and youth working in the tourism industry are paid less, and face higher risk of losing jobs due to the pandemic. As the economically vulnerable groups may depend
relatively more on income from tourism and hospitality, a fall in tourism demand can lead to economic despair, inequality, and social unrest (Sun et al., 2022).

The potential impact of COVID-19 on the tourism and hospitality industry has been analyzed in the context of different countries across the world. For example, in case of Spain, Claudio-Quiroga et al. (2022) find that COVID-19 pandemic will have a permanent negative effect on employment in tourism and hospitality industry unless addressed by active government policies, and the impact will be stronger on female workers than their male counterparts. Sun et al. (2021) also find that, in Indonesia, employment vulnerability of women, youth, and low education workers defined in terms of job losses and unemployment is five times higher than the national average due to COVID-19 pandemic. In Portugal, there is heterogeneity in the impact of the COVID-19 pandemic as different geographical regions, sectors of activity, age groups, and labor groups got affected differently (Almeida and Santos, 2020). Regions which used to attract more international tourists earlier were severely affected, and unemployment increased by a higher magnitude for women and youth in temporary work arrangements. In many island economies (like Fiji, Vanuatu, Samoa) which were overwhelmingly dependent on tourism, large scale unemployment resulted as an outcome of COVID-19 pandemic related closures of hotel and tourism-related activities (Connell, 2021). It is estimated that the multiplier effect of a fall in tourism receipts for Greece would lead to a fall in GDP by 2–6%, decline in employment by 2.1–6.4%, and a rise in trade deficit by 2.4 billion–7.1 billion euros (Mariolis et al., 2021).

A decline in tourism affects employment and output not only in tourism and hospitality industry but other industries in the tourism value chain are also affected (Pham et al., 2021). These authors use computable general equilibrium (CGE) technique to find the economic effects of the pandemic on different industries and figure out the inter-industry effects. It is also found that, in the international tourism market, low-skilled and basic-skilled workers constitute 57% of the occupations which are being adversely affected by the pandemic. There is also significant heterogeneity in terms of pandemic’s impact within the tourism and hospitality industry as the segments with lower business-leisure traveler ratio are likely to face deeper and longer negative fallout due to COVID-19 (Sharma and Nicolau, 2020). Researchers hypothesize that COVID-19 pandemic-induced shock will lead to lower investor-hosted Airbnb listings, and the app-based rental listings will never recover to the pre-pandemic levels (Dolnicar and Zare, 2020).

Sigala and Utkarsh (2021) argue that given the time and data required to understand the impact of COVID-19 on tourism and hospitality stakeholders, it is not surprising that this particular area of research has attracted fewer articles, despite being highly important to understand the implications of COVID-19.

The Indian context

Researchers have predicted a loss of nine million jobs in India’s travel and tourism industry due to COVID-19 (Jaipuria et al., 2021). It has also been predicted that COVID-19 pandemic will lead to a significant reduction in foreign tourist arrivals and loss of foreign exchange earnings. As a large number of workers in the tourism and hospitality industry belong to the unorganized category, they are particularly vulnerable to the economic hardships due to the pandemic-induced job losses.

From a managerial perspective, it has been found that resilient owners and managers of small, budget Indian hotels would try to overcome the pandemic related difficulties, and would also try to make their employees understand the new realities (Pathak and Joshi, 2021). Kaushal and Srivastava (2021) find that following the pandemic, there is greater realization within the Indian tourism and hospitality industry for implementing better hygiene and sanitation practices, encouraging
multiskilling and professional development of workers, and preparing better for the next crisis. However, it might not be easy for the smaller entrepreneurs to implement these measures due to resource constraints, and hence such individuals and their employees may be more exposed to pandemic-induced economic downturns.

The impact of COVID-19 pandemic on the individuals working in the tourism and hospitality industry can be evaluated by using economic impact analysis and econometric methods (Yang et al., 2021). However, many of the studies in this domain either focus on small primary surveys and interviews to understand this effect, or use past data for predicting future outcomes. The literature has also been concentrated mostly on the developed economies (Pham et al., 2021). In this paper, I provide a developing economy perspective to the question of the economic impact of COVID-19 using econometric analysis and a large representative panel survey data from India.

**Methodology and data**

I use Difference-in-Differences estimation approach to estimate the impact of COVID-19 pandemic on tourism and hospitality industry workers’ income and wage. Difference-in-differences has been the workhorse method for evaluating impact of policy changes in economics literature (Imbens and Wooldridge, 2009). The fundamental idea behind the difference-in-differences estimation method is to utilize the variation in outcome between the treatment group (exposed to treatment) and the control group (unexposed to treatment), after and before the treatment takes place.

In this study, individuals working for the government are considered to be the control group, and the individuals working in the private sector (in tourism and hospitality industry) are considered to be the treatment group. In India, the salaries of government workers are fixed as per their respective pay-scales. Hence, the COVID-19 induced economic downturn would not have any impact on the income or wage of government employees. However, as the salaries of individuals engaged in the private sector are not legally protected like that of the government employees, the private sector salaries would likely be impacted due to the pandemic-induced economic downturn.

I use the CMIE Consumer Pyramids Household Survey (CPHS) for this analysis. This continuous panel survey is conducted by the Centre for Monitoring Indian Economy (CMIE) at regular intervals. This nationally representative household panel survey has earlier been used to evaluate economic policies in the Indian context (Chodorow-Reich et al., 2020). In CPHS, villages and towns are the primary sample units and households are the ultimate sample units (Vyas, 2020). In this paper, I use the Income Pyramids section of CPHS, where each member of a household is surveyed for their income and wage details.

Since the focus of this paper is to estimate the impact of COVID-19 pandemic on the income of individuals engaged in tourism and hospitality industry, I include only such individuals in the treatment group. The “industry of occupation” variable in my data contains “Travel and Tourism” and “Hotels and Restaurants” categories which may be considered specific to tourism and hospitality industry. Hence, all such individuals whose industry of occupation is given as “Travel and Tourism” or “Hotels and Restaurants” belong to my treatment group.

In my control group, individuals whose industry of occupation is given as “Defence Services” or “Public Administrative Services” are included since the government employees in CPHS are identified under these two categories.

One caveat needs to be mentioned here. The tourism and hospitality workers working for the government, if present in the sample, would be included in the control group (in the public administrative services). However, there is no certain way to say if there are tourism and hospitality workers working for the government in this data-set or not, and how many of them are in it as that
information is not available. In any case, the results may be viewed as mainly the estimated impact of the COVID-19 pandemic on the income and wage of individuals engaged in the non-government segment of the tourism and hospitality industry in India.

In Table 1, I provide the descriptions of variables used in this study. Following (Wooldridge, 2010), my baseline model is given in equation (1)

\[ \text{ltotalinc}_{it} = \beta_0 + \beta_1 \text{nongovt}_i + \beta_2 \text{covid}_t + \delta (\text{nongovt}_i \times \text{covid}_t) + \epsilon_{it} \]  

where \( \text{ltotalinc} \) is the natural logarithm of total monthly income of an individual from all sources, \( \text{nongovt} \) is a binary indicator for whether an individual is engaged in the tourism and hospitality industry/private sector (\( \text{nongovt} = 1 \) if industry of occupation is “Travel and Tourism” or “Hotels and Restaurants,” 0 otherwise), \( \text{Covid} \) is a dummy indicating whether the time period is after February 2020 (\( \text{Covid} = 1 \) March 2020 onward, 0 before), \( i \) is individual identifier, \( t \) is time identifier, and \( \epsilon \) is the error term.

The coefficient of the interaction term \( \text{nongovt} \times \text{Covid} \) is our main quantity of interest. The coefficient for this interaction term, \( \delta \), is the difference-in-differences estimator. The parameter \( \delta \) provides us with the impact of COVID-19 on the tourism and hospitality industry workers’ income. Hence, in the context of this study, equation (1) depicts the difference-in-differences method in its simplest form.

A concern with the baseline model can be that it might suffer from endogeneity. Endogeneity in this case might be caused by omitted variable bias. For example, there are minimum educational requirements for various government jobs, and education also influences income/wage of an individual. If education is not controlled for in the model, then it is going to bias the estimated coefficients as it will influence both the income of an individual and her/his likelihood of obtaining a government job. Hence, I need to include education as a control.

In addition to including categories of education as controls, I also include several other controls to account for potential omitted variable bias. These additional controls can be classified into two main categories—demographic controls and region controls. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. In the full model, given in equation (2), all the controls are included

\[ \text{ltotalinc}_{it} = \beta_0 + \beta_1 \text{nongovt}_i + \beta_2 \text{covid}_t + \delta (\text{nongovt}_i \times \text{covid}_t) + \beta_3 \text{education}_i + \gamma \text{Demographic}_i + \phi \text{Region}_i + \epsilon_{it}, \]

where \( \text{Demographic} \) is a vector of demographic controls, and \( \text{Region} \) is a vector of region controls as described. Also, \( \gamma \) and \( \phi \) are vectors of coefficients.

To begin with, I estimate the models without any additional step to utilize the panel features of the data. However, there might still be some concerns about omitted variable bias in our analysis. For example, it might be possible, that the unobserved \textit{innate ability} might influence an individual’s income, educational attainment, and the likelihood of getting government job (Wooldridge, 2015). In order to address the endogeneity concerns due to the unobserved \textit{innate ability} (which should be time invariant), I include individual fixed effects in my model. The baseline model including fixed effects can be written as in equation (3)

\[ \text{ltotalinc}_{it} = \beta_0 + \beta_1 \text{nongovt}_i + \beta_2 \text{covid}_t + \delta (\text{nongovt}_i \times \text{covid}_t) + \theta_i + \nu_{it}, \]

where \( \theta \) is the time invariant individual fixed effects, and \( \nu \) is the idiosyncratic error term.
The full model with individual fixed effects can be written as in equation (4)

$$l_{\text{totalinc}}_{it} = \beta_0 + \beta_1 n_{\text{ngovt}} + \beta_2 \text{covid} + \delta(n_{\text{ngovt}} \ast \text{covid}) + \beta_3 \text{education} + \gamma \text{Demographic} + \phi \text{Region} + \theta_i + \nu_{it}, \quad (4)$$

As a robustness check, I also use natural logarithm of monthly wage instead of income as the dependent variable, and estimate the models again. The full model with log of wage as the dependent variable, including individual fixed effects can be written as in equation (5)

$$l_{\text{wage}}_{it} = \beta_0 + \beta_1 n_{\text{ngovt}} + \beta_2 \text{covid} + \delta(n_{\text{ngovt}} \ast \text{covid}) + \beta_3 \text{education} + \gamma \text{Demographic} + \phi \text{Region} + \xi_i + \omega_{it}, \quad (5)$$

where $\xi$ is the time invariant individual fixed effects, and $\omega$ is the idiosyncratic error term.

Data for this analysis starts on January 2019 and ends on October 2021 (latest available data). I restrict the main sample for this study to individuals who are between 18 and 65 years old, and earning more than rupees 4000 (approximately 52.7 USD) but less than rupees 300,000 (approximately 3951 USD) per month. The choice of this age range for the sample is to ensure that the individuals engaged in government versus non-government sector remain age-comparable as the age range for government jobs in India is 18–65 years. The minimum income/wage is set on the assumption of an individual earning at least rupees 200 (approximately 2.6 USD) per day for 20 days a month. Rupees 200 per day is very close to the minimum MGNREGA wage (Mahatma Gandhi National Rural Employment Guarantee Act, or MGNREGA, is a large scale public work program in India, designed to provide at least 100 days of employment to Indian households). The maximum income/wage is set close to the highest level of salary that an Indian government employee can earn. Although the main analysis for this study is conducted using this restricted sample, I also conduct robustness checks by estimating the models on the unrestricted sample without the age and income/wage cut-offs.

Table 1. Description of variables.

| Variable name | Variable description |
|---------------|----------------------|
| Total income  | Total monthly income of an individual from all sources in Indian rupees |
| Wage          | Monthly wage of an individual in Indian rupees |
| ltotalinc     | Log of monthly total income of an individual from all sources |
| lwage         | Log of monthly wage of an individual |
| nongovt       | Non-govt tourism and hospitality industry (nongovt = 1 if industry of occupation is “Travel and Tourism” or “Hotels and Restaurants,” 0 otherwise) |
| Covid         | Whether the time period is after February 2020 (Covid = 1 March 2020 onward, 0 before) |
| Education     | Categories of education |
| Demographic   | Gender, caste, religion, and age |
| Region        | Urban, state, and district |
| nondef        | Whether an individual is a government employee in “Public Administrative Services” or in “Defence Services” (nondef = 1 if industry of occupation is “Public Administrative Services,” 0 if industry of occupation is “Defence Services”) |

Note: Demographic and Region include multiple variables.
After cleaning the data, I have 60,119 distinct individuals being surveyed over 34 months. Consumer Pyramids Household Survey is an inherently unbalanced panel as data are collected from households in a primary sample unit once in every 4 months on a rotation basis (Chodorow-Reich et al., 2020). That means we do not necessarily observe each individual in each time period.

Table 2 provides the summary statistics for individuals’ age (in years), monthly total income (from all sources), and monthly wage. Table 3 provides the year-wise and industry-wise summary statistics for the full sample. It can be seen that average income in government sector ("Defence Services" and "Public Administrative Services") is consistently higher than the average income in non-government sector ("Travel and Tourism" and "Hotels and Restaurants"). The average age is more or less comparable in the "Travel and Tourism," and "Hotels and Restaurants" industry, whereas in "Public Administrative Services" it is slightly higher. Average age is the lowest for individuals working in "Defence Services."

However, while estimating models given in equations (1) and (2), I obtain the heteroskedasticity-robust standard errors. Following the econometrics literature, I use clustered robust standard error in case of fixed effects estimation given in equations (3) and (4) (Bertrand et al., 2004).

I cluster at the Homogeneous Regions (HR) level. Homogeneous Regions are the broadest level of stratification in CPHS. One Homogeneous Region comprises of neighboring districts within a state with similar agro-climatic conditions, similar urbanization and female literacy levels, and similar household size according to 2011 Census (Vyas, 2020). There are 102 Homogeneous Regions in my sample (a total of 110 Homogeneous Regions are available in the CPHS data). In the econometrics literature, the “clustering problem” has been defined as the correlation between all the observations within a group being caused by a common unobserved random shock within the group (Hansen, 2007). The literature advises to use bigger and more aggregate clusters in order to avoid bias in a conservative manner (Cameron and Miller, 2015). However, more recent literature argues that clustering comes from assignment mechanism, and not from sampling mechanism, and that clustering adjustment might be unnecessarily conservative if assignment is not perfectly correlated (Abadie et al., 2017).

**Results and discussion**

The first set of results in this study is provided in Tables 4 and 5. The results in Table 4 are obtained by estimating models 1 and 2, while I sequentially add the controls. The first column in Table 4 gives the results from estimating the baseline model 1, and the last column gives the results from estimating the full model 2. These results come from the models without individual fixed effects. As can be seen from the coefficient of the interaction term nongovt*Covid, COVID-19 has had a

| Table 2. Summary statistics of full sample. |
|--------------------------------------------|
|                | Mean   | SD     | Min | Max     | N     |
| Total income   | 20441.50 | 17114.91 | 0.00 | 1020000.00 | 530275 |
| Wage           | 20409.88 | 17047.99 | 0.00 | 1020000.00 | 530275 |
| Age in years   | 40.76   | 10.56   | 8    | 90      | 530275 |

Data Source: CMIE Consumer Pyramid.
Note: Total income is average monthly income of an individual from all sources and Wage is average monthly wage over January, 2019 till October, 2021. Both are measured in Indian rupees.
statistically significant negative impact on the income of individuals working in the tourism and hospitality industry. As per the results from the full model, due to COVID-19, the income of individuals working in the tourism and hospitality industry falls by 3.12% on average, holding everything else fixed. Heteroskedasticity-robust standard errors are obtained during estimation.

Table 3. Year-wise and industry-wise mean of wage, income, and age.

| Year | Industry                        | Mean   | sd      | N    |
|------|---------------------------------|--------|---------|------|
| 2019 | Defence services                | 30545.93 | 24268.09  | 6098 |
|      | Wage                            | 30468.16 | 24196.78  | 6098 |
|      | Age in years                    | 37.30   | 10.96   | 6098 |
|      | Hotels and restaurants          | 10304.76 | 9565.71  | 31573 |
|      | Wage                            | 10285.83 | 9546.49  | 31573 |
|      | Age in years                    | 39.45   | 11.59   | 31573 |
|      | Public Administrative Services  | 35425.48 | 18764.54  | 67180 |
|      | Wage                            | 35323.11 | 18618.52  | 67180 |
|      | Age in years                    | 42.86   | 10.09   | 67180 |
|      | Travel and tourism              | 15051.83 | 9544.34  | 122760 |
|      | Wage                            | 15028.64 | 9458.17  | 122760 |
|      | Age in years                    | 39.01   | 10.50   | 122760 |
| 2020 | Defence services                | 32825.87 | 22210.91  | 4043 |
|      | Wage                            | 32817.56 | 22203.14  | 4043 |
|      | Age in years                    | 37.95   | 10.74   | 4043 |
|      | Hotels and restaurants          | 8497.89  | 8805.10   | 23445 |
|      | Wage                            | 8472.02   | 8298.10    | 23445 |
|      | Age in years                    | 40.89   | 11.34   | 23445 |
|      | Public Administrative Services  | 33915.39 | 21599.16  | 46154 |
|      | Wage                            | 33877.10 | 21589.38  | 46154 |
|      | Age in years                    | 43.75   | 9.61    | 46154 |
|      | Travel and tourism              | 13091.99 | 9592.40   | 85852 |
|      | Wage                            | 13083.10 | 9577.72  | 85852 |
|      | Age in years                    | 39.66   | 10.37   | 85852 |
| 2021 | Defence services                | 32958.84 | 21760.80  | 3980 |
|      | Wage                            | 32958.23 | 21760.30  | 3980 |
|      | Age in years                    | 39.40   | 11.08   | 3980 |
|      | Hotels and restaurants          | 10600.85 | 8788.22   | 18424 |
|      | Wage                            | 10596.24 | 8789.69   | 18424 |
|      | Age in years                    | 41.02   | 10.97   | 18424 |
|      | Public Administrative Services  | 35158.69 | 18318.89  | 46726 |
|      | Wage                            | 35121.64 | 18258.98  | 46726 |
|      | Age in years                    | 43.66   | 9.70    | 46726 |
|      | Travel and tourism              | 14988.97 | 10101.62  | 74040 |
|      | Wage                            | 14975.71 | 10083.01  | 74040 |
|      | Age in years                    | 40.28   | 10.35   | 74040 |

Data Source: CMIE Consumer Pyramid; January, 2019–October, 2021.
Note: Total income is average monthly income of an individual from all sources and Wage is average monthly wage for the years 2019, 2020, and 2021. The data for year ends at October, 2021. Both are measured in Indian rupees.
Table 4. DiD estimates without individual fixed effects.

| Model | (1)     | (2)     | (3)     | (4)     |
|-------|---------|---------|---------|---------|
| Variables |         |         |         |         |
| nongovt | $-0.8274^{***}$ | $-0.5775^{***}$ | $-0.5237^{***}$ | $-0.4750^{***}$ |
| Covid   | $-0.0078^{***}$ | $-0.0171^{***}$ | $-0.0382^{***}$ | $-0.0246^{***}$ |
| nongovt × Covid | $-0.0073^{**}$ | $-0.0254^{***}$ | $-0.0208^{***}$ | $-0.0312^{***}$ |
| Controls: Education | Yes | Yes | Yes | Yes |
| Controls: Demographic | Yes | Yes | Yes | Yes |
| Controls: Region | Yes | Yes | Yes | Yes |

Fit statistics
- Observations: 477,158
- $R^2$: 0.40123
- Adjusted $R^2$: 0.40123
- Heteroskedasticity-robust standard-errors in parentheses.
- Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.
- Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Income and age cut-offs are applied. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.

Table 5. DiD estimates with individual fixed effects.

| Model | (1)     | (2)     | (3)     | (4)     |
|-------|---------|---------|---------|---------|
| Variables |         |         |         |         |
| nongovt | $-0.3307^{***}$ | $-0.2945^{***}$ | $-0.2929^{***}$ | $-0.2917^{***}$ |
| Covid   | $-0.0035 (0.0175)$ | $-0.0098 (0.0177)$ | $-0.0156 (0.0176)$ | $-0.0133 (0.0165)$ |
| nongovt × Covid | $-0.0420^{**}$ | $-0.0410^{**}$ | $-0.0425^{**}$ | $-0.0447^{***}$ |
| Controls: Education | Yes | Yes | Yes | Yes |
| Controls: Demographic | Yes | Yes | Yes | Yes |
| Controls: Region | Yes | Yes | Yes | Yes |
| Fixed-effects Individual | Yes | Yes | Yes | Yes |

Fit statistics
- Observations: 477,158
- $R^2$: 0.89259
- Adjusted $R^2$: 0.89259
- Clustered (HR) standard-errors in parentheses.
- Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.
- Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Income and age cut-offs are applied. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
Similar results are provided in Table 5, where results obtained from estimating models 3 and 4 are given. These models include individual fixed effects. In column 1 of Table 5, the results from estimating the baseline model in equation (3) are given. According to the baseline model with individual fixed effects, due to COVID-19, the income of individuals working in the tourism and hospitality industry falls on average by 4.20%, holding everything else fixed. The results from the full model, given in column 4, shows this impact to be a decline of 4.47%. In case of the models with individual fixed effects, I obtain clustered-robust standard errors, using Homogeneous Regions (HR) as clusters. Since the Homogeneous Regions in CPHS data form the highest level of stratification, and the neighboring districts within a Homogeneous Region share similar characteristics, it can be possible that the unobserved shock due to COVID-19 impacts individuals within a Homogeneous Region in similar manner. Hence, the choice of Homogeneous Regions as the clustering unit can be justified in this context.

The results obtained so far constitute the initial set of main results of this study. We can see that across models, there is a consistent and statistically significant negative impact of COVID-19 on the income of individuals engaged in the tourism and hospitality industry.

In order to check for the robustness of the results, I estimate these models again with logarithm of wage as the dependent variable instead of logarithm of total income from all sources. These results are provided in Tables 6 and 7. We find very similar results even after changing the dependent variable. As can be seen from the last column of Table 6, due to COVID-19, the wage of individuals working in the tourism and hospitality industry falls by 3.21% on average holding everything else fixed, in case of the full model without individual fixed effects. In case of the full model with individual fixed effects, this decline becomes 4.55% (column 4 in Table 7). These results are very

### Table 6. DiD estimates without individual fixed effects.

| Dependent variable: Log wage | Model: | (1) | (2) | (3) | (4) |
|-------------------------------|--------|-----|-----|-----|-----|
| Variables                    |        |     |     |     |     |
| nongovt                      |        |     |     |     |     |
| Covid                        |        |     |     |     |     |
| nongovt × Covid              |        |     |     |     |     |
| Controls: Education          |        |     |     |     |     |
| Controls: Demographic        |        | Yes | Yes | Yes |     |
| Controls: Region             |        | Yes |     |     |     |
| Fit statistics               |        |     |     |     |     |
| Observations                 | 477,069|     |     |     |     |
| $R^2$                        | 0.40146| 0.5016 | 0.5685 | 0.6607 | 0.6604 |
| Adjusted $R^2$               | 0.40146| 0.5016 | 0.5685 | 0.6607 | 0.6604 |

Heteroskedasticity-robust standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.

Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Wage and age cut-offs are applied. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
Table 7. DiD estimates with individual fixed effects.

| Model: | Log wage |
|--------|----------|
|        | (1)      | (2)      | (3)      | (4)      |
| Variables |          |          |          |          |
| nongovt  | $-0.3300^{***}$ | $-0.2940^{***}$ | $-0.2924^{***}$ | $-0.2912^{***}$ |
|          | (0.0292)  | (0.0250)  | (0.0251)  | (0.0252)  |
| Covid    | $-0.0024$ (0.0175) | $-0.0087$ (0.0177) | $-0.0145$ (0.0175) | $-0.0123$ (0.0165) |
| nongovt $\times$ Covid | $-0.0429^{**}$ | $-0.0419^{**}$ | $-0.0432^{**}$ | $-0.0455^{***}$ |
|          | (0.0173)  | (0.0171)  | (0.0173)  | (0.0168)  |
| Controls: Education | Yes | Yes | Yes | Yes |
| Controls: Demographic | Yes | Yes | Yes | Yes |
| Controls: Region | Yes |

Fixed-effects Individual: Yes Yes Yes Yes

Fit statistics

| Observations | 477,069 | 477,069 | 477,069 | 477,069 |
|-------------|---------|---------|---------|---------|
| $R^2$       | 0.89279 | 0.89512 | 0.89528 | 0.89537 |
| Within $R^2$| 0.05652 | 0.07700 | 0.07839 | 0.07919 |

Clustered (HR) standard-errors in parentheses.
Signif. Codes: $^{***}$: 0.01, $^{**}$: 0.05, $^*$: 0.1.
Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.

Table 8. Placebo tests.

| Model: | Log of total income | Log wage |
|--------|---------------------|---------|
|        | (1) | (2) | (3) | (4) |
| Variables |          |          |          |          |
| nondef  | $-0.0147$ (0.0356) | $-0.0167$ (0.0360) | $-0.0195$ (0.0357) | $-0.0215$ (0.0360) |
| Covid   | 0.0254 (0.0412) | 0.0248 (0.0405) | 0.0215 (0.0412) | 0.0208 (0.0405) |
| nondef $\times$ Covid | $-0.0345$ (0.0373) | $-0.0356$ (0.0373) | $-0.0299$ (0.0372) | $-0.0309$ (0.0372) |
| Controls: Education | Yes | Yes | Yes | Yes |
| Controls: Demographic | Yes | Yes | Yes | Yes |
| Controls: Region | Yes |

Fixed-effects Individual: Yes Yes Yes Yes

Fit statistics

| Observations | 167,868 | 167,868 | 167,798 | 167,798 |
|-------------|---------|---------|---------|---------|
| $R^2$       | 0.87097 | 0.87147 | 0.87169 | 0.87220 |
| Within $R^2$| 0.01668 | 0.02055 | 0.01682 | 0.02072 |

Clustered (HR) standard-errors in parentheses.
Signif. Codes: $^{***}$: 0.01, $^{**}$: 0.05, $^*$: 0.1.
Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
close to the results obtained by estimating the models where logarithm of total income is the dependent variable.

There might still be some concerns whether our difference-in-differences estimator is picking up the effect of COVID-19 on the income/wage of individuals working in the tourism and hospitality industry, or whether it is something else. To check this, I construct a placebo test (Bertrand et al., 2004). I restrict my sample for placebo test to only the individuals working in the government sector as the income of such individuals are not supposed to change due to COVID-19 pandemic-induced recession. I test whether there is any change in income between the government employees in the “Defence Services” and the government employees in the “Public Administrative Services.” The idea behind this placebo test set-up is straightforward. Since the individuals working in the government sector are not supposed to experience any drop in income due to COVID-19, we should not find any statistically significant difference between income of individuals engaged in “Defence Services” and “Public Administrative Services” following COVID-19. I create a dummy variable nondef which becomes 1 if an individual is a government employee in “Public Administrative Services” and 0 if the individual works in “Defence Services.” I then estimate a model using difference-in-differences where the difference-in-differences estimator gives the effect of COVID-19 on income/wage of the government employees in “Public Administrative Services.”” Hence, in this placebo test, individuals in “Public Administrative Services” comprise of the treatment group, and individuals in “Defence Services” form the control group. If the main results of this analysis should hold, then the difference-in-differences estimator in this placebo test should be statistically insignificant. The results of

| Table 9. Robustness check without income, wage, age cut-offs. |
|---------------------------------------------------------------|
| Dependent variables:                                        |
| Model:                                                      |
| (1) | (2) | (3) | (4) |
|---|---|---|---|
| **Variables**                                               | **Variables**                                               |
| nongovt | -0.3084*** (0.0251) | -0.3056*** (0.0254) | -0.2899*** (0.0251) | -0.2870*** (0.0254) |
| nongovt × Covid | -0.0054 (0.0185) | -0.0092 (0.0173) | -0.0079 (0.0179) | -0.0120 (0.0168) |
| Controls: Education Yes Yes Yes Yes |
| Controls: Demographic Yes Yes Yes Yes |
| Controls: Region Yes Yes Yes Yes |
| Fixed-effects Individual Yes Yes Yes Yes |
| **Fit statistics**                                          | **Fit statistics**                                          |
| Observations | 483,030 | 483,030 | 482,127 | 482,127 |
| $R^2$ | 0.87958 | 0.87982 | 0.88297 | 0.88323 |
| Within $R^2$ | 0.06673 | 0.06854 | 0.06782 | 0.06987 |

Clustered (HR) standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.
Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
the placebo test are given in Table 8. We can see that all the difference-in-differences estimates are indeed statistically insignificant. Hence, we can have some confidence in the main results of this study.

Another concern can be regarding the construction of the restricted sample for this study. It may be argued that the results are driven by the income, wage, and age thresholds chosen while creating the sample. In order to address this concern, I again estimate models 4 and 5 using the unrestricted sample, without using these thresholds. The results from estimation using the unrestricted sample is given in Table 9. Even with this unrestricted sample, I get results similar to the results obtained earlier. In fact, if anything, the impact of COVID-19 becomes even stronger in this set of results. In the analysis with unrestricted sample, the effect of COVID-19 on individual income in the tourism and hospitality industry is a decline of 6.39%, and the effect on wage is a fall of 5.98%, on average holding everything else fixed.

There can also be a concern here that as our dependent variables are in log terms, hence all the zero income/wage observations will get dropped from our analysis. To address this concern, I apply a limited number of cut-offs on the unrestricted sample and estimate the models once again. In this robustness check, my sample contains all the individuals with at least rupees 100 (approximately 1.3 USD) monthly income/wage. This sample hence considers almost all the individuals with non-zero income/wage in the unrestricted sample. The lower bound of income/wage in this sample is also extremely low, and pretty close to earning zero income/wage. Even with this sample, my estimates from models 4 and 5 (provided in Table 10) show a statistically significant negative impact of COVID-19 on the income and wage of individuals working in the tourism and hospitality

### Table 10. Robustness check with very low income sample.

| Dependent variables: | Log of total income | Log wage |
|----------------------|--------------------|---------|
|                      | (1)                | (2)     | (3)    | (4)    |
| Variables            |                    |         |        |        |
| nongovt              | -0.3051***         | -0.3022*** | -0.2897*** | -0.2868*** |
|                      | (0.0250)           | (0.0253) | (0.0251) | (0.0254) |
| Covid                | -0.0053 (0.0184)   | -0.0092 (0.0173) | -0.0080 (0.0179) | -0.0120 (0.0168) |
| nongovt × Covid      | -0.0575***         | -0.0613*** | -0.0561*** | -0.0598*** |
|                      | (0.0184)           | (0.0180) | (0.0182) | (0.0179) |
| Controls: Education  | Yes                | Yes     | Yes    | Yes    |
| Controls: Demographic| Yes                |         |        |        |
| Controls: Region     | Yes                |         |        |        |
| Fixed-effects        |                    |         |        |        |
| Individual           | Yes                | Yes     | Yes    | Yes    |
| Fit statistics       |                    |         |        |        |
| Observations         | 482,186            | 482,186 | 481,612 | 481,612 |
| $R^2$                | 0.87911            | 0.87936 | 0.88327 | 0.88353 |
| Within $R^2$         | 0.06902            | 0.07096 | 0.06846 | 0.07053 |

Clustered (HR) standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.
Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
industry. In the full model, I find this effect to be an average income decline of 6.13% and an average wage decline of 5.98%.

Throughout the analysis for this study, we see that the income and wage of individuals working in the tourism and hospitality industry have declined due to COVID-19. The estimated decline in total income ranges between 3.12 and 6.39%, and wage fall ranges between 3.21 and 5.98%, for the full model with individual fixed effects using samples with different cut-offs for income/wage and age.

The robustness of this result provides an initial guide to how the COVID-19 pandemic has influenced the income of individuals who continue to be working in the tourism and hospitality industry. Although the data used in this study span till October 2021, by when India has mostly opened up without much restriction in place, I still find a persistence negative impact of COVID-19 on income and wage of individuals engaged in this industry.

One limitation of the analysis so far is that it concentrates only on those individuals who are still receiving some amount of income from the tourism and hospitality industry. However, if an individual stops receiving any income due to complete loss of employment, that impact is not being captured in the analysis so far. Logically, if we consider the individuals who became jobless in tourism and hospitality industry due to COVID-19, the estimate of the pandemic-induced decline in income is going to be much larger.

In order to address this issue, I next estimate models 4 and 5 again with the full sample, including zero income/wage observations. The results are provided in Table 11. I add 1 to total income/wage,

| Table 11. Zero income sample. |
|--------------------------------|
| Dependent variables: | Log of total income | Log wage |
| Model: | (1) | (2) | (3) | (4) |
| Variables | | | | |
| nongovt | $-0.9867^{***}$ | $-0.9781^{***}$ | $-1.007^{***} (0.1573)$ | $-0.9982^{***}$ |
| | $(0.1504)$ | $(0.1506)$ | | $(0.1576)$ |
| Covid | $-0.0639^{*} (0.0356)$ | $-0.0936^{**} (0.0376)$ | $-0.0603^{*} (0.0363)$ | $-0.0895^{**} (0.0384)$ |
| nongovt × Covid | $-0.5787^{***} (0.0665)$ | $-0.5869^{***} (0.0674)$ | $-0.5778^{***} (0.0660)$ | $-0.5859^{***} (0.0669)$ |
| Controls: Education | Yes | Yes | Yes | Yes |
| Controls: Demographic | Yes | Yes | Yes | Yes |
| Controls: Region | Yes | Yes |
| Fixed-effects | Individual | Yes | Yes | Yes | Yes |
| Fit statistics | | | | |
| Observations | 529,689 | 529,689 | 529,689 | 529,689 |
| $R^2$ | 0.73163 | 0.73189 | 0.73657 | 0.73682 |
| Within $R^2$ | 0.03071 | 0.03164 | 0.03119 | 0.03209 |

Clustered (HR) standard-errors in parentheses.
Signif. Codes: ***: 0.01, **: 0.05, *: 0.1.
Notes: Education includes dummies for education categories. Demographic controls include gender dummy, caste dummies, religion dummies, and age. Region controls include urban dummy, state dummies, and district dummies. Results are obtained using fixest package in R version 4.1.2, and xtreg in Stata version 16.
Table 12. UNWTO recommendations and government policies in India.

| Key theme | Recommendations | Indian Govt. response |
|-----------|-----------------|-----------------------|
| 1) Managing the crisis and mitigating the impact | 1. Incentivize job retention, sustain the self-employed and protect the most vulnerable groups | 1. Loan Guarantee Scheme for COVID Affected Tourism Sector (LGSCATSS) |
| | 2. Support companies’ liquidity | 2. LGSCATSS |
| | 3. Review taxes, charges, levies and regulations impacting transport and tourism | |
| | 4. Ensure consumer protection and confidence | 4. COVID-19 cell; “Stranded in India” portal; 24 × 7 Tourist Info-Helpline |
| | 5. Promote skills development, especially digital skills | 5. NIDHI Scheme; System for Awareness, Assessment and Training for Hospitality industry (SAATHI) initiative |
| | 6. Include tourism in national, regional, and global economic emergency packages | |
| | 7. Create crisis management mechanisms and strategies | |
| 2) Providing stimulus and accelerating recovery | 8. Provide financial stimulus for tourism investment and operations | 8. Champion Services Sector Scheme (CSSS); LGSCATSS |
| | 9. Review taxes, charges, and regulations impacting travel and tourism | 9. Operational Recommendations for Tourism Service Providers; e-Tourist Visa/Tourist Visa restored |
| | 10. Advance travel facilitation | 10. 5,00,000 free visa |
| | 11. Promote new jobs and skills development, particularly digital ones | 11. NIDHI Scheme; SAATHI initiative |
| | 12. Mainstream environmental sustainability in stimulus and recovery packages | 12. Draft Strategy for promoting Medical Tourism |
| | 13. Understand the market and act quickly to restore confidence and stimulate demand | 13. CSS Scheme; Market development Assistance (MDA) Scheme; Incredible India campaign |
| | 14. Boost marketing, events, and meetings | |
| | 15. Invest in partnerships | |
| | 16. Mainstream tourism in national, regional and international recovery programmes and in development Assistance | |
| 3) Preparing for the future | 17. Diversify markets, products, and services | 13. NIDHI Scheme |
| | 18. Invest in market intelligence systems and digital transformation | |
| | 19. Reinforce tourism governance at all levels | |

(continued)
before converting them to log values, so that the zero income/wage observations do not drop out from our analysis.

As has been hypothesized, the effect of COVID-19 on the income and wage of individuals engaged in the tourism and hospitality industry has been much larger once we include the individuals who have completely lost employment due to the pandemic. The results show that, in the full model with all the controls included, the income of individuals engaged in tourism and hospitality industry following COVID-19 declined by 58.69% on average. Similar result is also obtained in case of wage. The important observation in case of this result is that once I include the individuals with zero income in the analysis, the impact of COVID-19 on income becomes more than 10 times larger.

This last set of results provides us with the most severe impact of the COVID-19 pandemic-induced economic downturn on the income of individuals engaged in the tourism and hospitality industry. As this is a labor-intensive industry (Pham et al., 2021), the decline in individual income is hence more pronounced compared to the decline in the industry’s revenue share of GDP. This is highly alarming as without adequate support and policy measures, the tourism and hospitality industry in India will see an exodus of human capital and investment, and may never recover completely in the near future.

**Study limitations**

This study is somewhat limited in the sense that it considers only those individuals who are still engaged in the tourism and hospitality industry, either earning non-zero income or earning no income at all. However, this analysis does not take into account the individuals who change their industry of occupation as a result of COVID-19. The question concerned with the effect of COVID-19 on the income of individuals who lose employment as a result of it, and hence need to change industry of occupation is an interesting question itself, and can be taken up in a future study. A more detailed analysis is required to understand how the income and career trajectory of individuals who used to be engaged in the tourism and hospitality industry before COVID-19 evolved following the pandemic-induced change in occupation.
Conclusion

In this study, I estimate the impact of COVID-19 on income and wage of individuals engaged in the tourism and hospitality industry in India. This study finds a statistically significant negative impact of COVID-19 on the income and wage of such individuals.

As a significant number of people in India are engaged in this industry, a clear policy intervention is necessary to help the recovery process to protect the livelihood of such individuals from any permanent loss. At the beginning of the COVID-19 pandemic, several governments across the world adapted specific policies to safeguard the tourism and hospitality industry (Collins-Kreiner and Ram, 2020). International agencies like the United Nations World Tourism Organization (UNWTO) also specified specific policy measures that governments can implement to help the tourism and hospitality industry survive the pandemic induced economic hardships (UNWTO, 2020). The recommendations made by UNWTO cover three key areas: (i) managing the crisis and mitigating the impact, (ii) providing stimulus and accelerating recovery, and (iii) preparing for the future. In Tables 12, I map the recommendations made by UNWTO to the policy measures implemented by the government of India. However, Collins-Kreiner and Ram (2020) suggest a “bottom-up” approach instead of a “top-down” approach in policy-making to better handle the crisis at the local level. As each country and region is different with different socio-cultural forces at play, different countries have adapted different policy measures instead of blindly following UNWTO recommendations. Although researchers have discussed policy responses of different countries in the context of tourism and hospitality industry in the aftermath of COVID-19 pandemic (Barkas et al., 2020), a discussion about Indian policy measures have largely been absent in this literature. In the following table, I highlight the policy initiatives undertaken by the Indian government to support tourism and hospitality industry during COVID-19 pandemic.

The Indian government has taken several initiatives by either modifying already launched schemes or by launching new schemes to help the tourism and hospitality industry. Loan Guarantee scheme for COVID Affected Tourism Sector (LGSCATSS) has been launched by the Ministry of Tourism (Govt. of India) in the second half of 2021, and will remain valid till March 31, 2023. Under this scheme, collateral-free loans up to rupees 1 million (approximately 13,000 USD) will be extended to each Tour Operators/Travel Agents/Tourist Transport Operators approved/recognized by the Ministry of Tourism, and loans up to rupees 100,000 (approximately 1300 USD) will be extended to each Regional Tourist Guide/Incredible India Tourist Guide approved/recognized by the Ministry of Tourism and Tourist Guides approved/recognized by the state governments and union territory Administration (Ministry of Tourism, 2022). However, in the absence of travel/tourism demand due to spread of COVID-19 and related travel restrictions, not many stakeholders will want to opt for a loan, even if it is a collateral-free one, as the future ability to repay the loan will be uncertain. Also, the scheme is limited to a maximum total amount of rupees 250 crores (approximately 32.8 million USD), whereas the fall in travel and tourism output in India between 2019 and 2020 has been close to 70 billion USD (WTTC, 2021).

The tourism and hospitality industry could potentially benefit by retaining the workforce during the downturn, and utilize the various government schemes to retrain the workers for the new opportunities emerging post-pandemic. Post-pandemic, tourists may want to visit more nature-based destinations to lower the infection risk. Hence, all such destinations need to develop human resource capacity in a sustainable manner (Miao et al., 2021), and various government initiatives may be useful for this purpose of re-skilling the workforce. Post-pandemic, as tourists may be more inclined to travel in order to search for meanings and personal growth, tourist experience-design needs to bring that into account as well, for which a re-trained workforce is again needed in this
industry. Mooney et al. (2022) point out that the issue of sustainability of workforce in tourism has largely been neglected in the literature. This is a noteworthy omission given that tourism workforce is important to keep the industry vibrant and growing, and the tourism and hospitality industry is often viewed as a support system for the economically disadvantaged locations and individuals. The authors highlight that sustainability in tourism and hospitality industry needs to be understood not only in the environmental context but it should also be viewed from the workforce perspective.

Noel (2022) shows that in the US lodging industry, the risk of failure during the pandemic depends on the businesses’ native ability to adapt to the evolving safety needs. There are also somewhat surprising findings that many of the simpler hotels which were more likely to remain open increased their prices, and area infection rates did not influence the likelihood of a hotel remaining open. Hence, the Indian tourism and hospitality industry also needs to be proactive in alleviating tourists’ fears and apprehensions and utilize the government initiatives, so that the industry can recover from the pandemic-induced economic downturn.

Using Lombardy, Italy as a case study, Provenzano and Volo (2022) predict that even when domestic tourism is expected to pick up relatively quickly, international tourism may need an external stimulus for a speedy recovery. This finding holds lesson for Indian government as well, since building the confidence of international tourists might take longer and significantly more focused approach in the near future.

The crisis-management literature has extensively discussed the potential avenues for the tourism and hospitality industry to recover from the COVID-19 pandemic-induced economic downturn (see Wut et al. (2021) for a review). As perceived risk is central in tourist decision-making, schemes focused on making tourism and hospitality industry more hygienic and health-focused can make the recovery faster, and also contribute to long run structural improvement.

As more health-related crises are expected to take place in the future, four areas need to be addressed in government action plan to make the industry prepared for the next pandemic: crisis prevention, crisis preparation, crisis response, and crisis recovery (Coombs, 2021). As I have documented the severe impact of COVID-19 pandemic on income and wage of individuals engaged in the tourism and hospitality industry in this paper, an effort needs to be made to protect the individual income and wage at least to some extent in the event of a future crisis, so that the industry doesn’t lose human capital, thereby making the recovery even more difficult.

COVID-19 pandemic has exacerbated the already existing inequalities in our society (Blundell et al., 2020). Researchers have found that the impact of COVID-19 pandemic is expected to hit lower income households more severely, and active government intervention can cushion against the impact of the pandemic (Almeida et al., 2021). Although general government support was in place and in some cases was extended in India following COVID-19 pandemic (Gentilini et al., 2020), as our discussion of the tourism and hospitality sector-specific government initiative shows, this protection is somewhat lacking for the individuals engaged in this industry in India.

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