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Article

The impact of postponing 2020 Tokyo Olympics on the happiness of O-MO-TE-NA-SHI workers in tourism: A consequence of COVID-19

Eiji Yamamura[1]*, Yoshiro Tsutsui [2],

[1] Department of Economics, Seinan Gakuin University—Fukuoka Sawaranku Nishijin 6-2-92, 814-8511, Japan; yamaei@seinan-gu.ac.jp
[2] Department of Sociology, Kyoto Bunkyo University—Kyoto, Japan; tsutsui@econ.osaka-u.ac.jp
* Correspondence: yamaei@seinan-gu.ac.jp;

Abstract: The 2020 Tokyo Olympics has been postponed due to the novel coronavirus (COVID-19) pandemic. The implications for industries related to the Olympics—tourism, hotels and restaurants, and others—are expected to be affected by reduced demand. Japanese workers in these industries were prepared to offer their hospitality to visitors from around the world. They would be satisfied from not only an increase in income but also in offering visitors a taste of Tokyo's great hospitality if the Olympics had been held in 2020. However, postponement of the sporting event is likely to have a significant impact on their happiness level. We independently collected individual-level panel data from March to April 2020. Based on this, we found that the happiness level of workers in the tourism and restaurant sectors declined drastically after the announcement of the postponement. Only two weeks later, their happiness level did not alter from the pre-announcement level. This tendency was strongly observed in Tokyo and the surrounding prefectures, but not in other prefectures. However, workers engaged in the tourism and restaurant sectors did not predict a decrease in their income even after the postponement. Combined, these findings indicate that loss of extending hospitality, rather than reduction in income, temporarily reduces the happiness level of workers.

Keywords: COVID-19; Tokyo Olympics 2020; Happiness; Subjective well-being; OMOTENASHI; JAPAN.

1. Introduction

The 2020 Tokyo Summer Olympics has been postponed due to the COVID-19 pandemic. The decision was made only four months before the Olympics was scheduled to start on July 24, 2020. The Olympic Games have never been canceled for any public health reasons in history (Vaishya[1]). The Olympics is a mega commercialized event to boost the economy with the inflow of a large number of visitors and tourists who visit the host country to enjoy the sporting event and tourist spots. The unexpected and unintended change in the schedule could have a detrimental shock on the economy in Tokyo and surrounding areas. In particular, tourism and restaurant businesses are experiencing a major setback due to the loss of a large amount of revenue. Meanwhile, in the Session of the International Olympic Committee in Buenos Aires on September 8, 2013, French-Japanese TV

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announcer Christel Takigawa drew great attention to her speech by using impressive words with a dazzling smile and graceful gestures. She spelled out O-MO-TE-NA-SHI as the core attribute of Japan's legendary hospitality. In this paper, workers in the tourism and restaurant sectors are called OMOTENASHI workers. OMOTENASHI is believed to have contributed to the selection of Tokyo as the host for the 2020 Olympic Games.

The Olympic Games have significant health and socioeconomic impact on the population of the host country (McCartney, Thomas, Thomson, et al., [2]). Mass gathering events such as the Olympics have been the source of infectious diseases that have spread worldwide (Memish et al. [3] Memish, Steffen, White, et al.[4]). Specifically, the Olympic Games increase the risk of transmission of infectious diseases such as COVID-19 (McCloskey, Endericks, Catchpole, et al., [5]). Therefore, it is convincing to postpone the Olympics for safeguarding athletes from such health consequences (Mann RH, Clift BC, Boykoff, et al. [6]).[1]

The impact of cancelling mega events on the future well-being of communities through economic recessions or job losses must also be considered (McCloskey, Brian., et al. [8]). Before the postponement, it was estimated that Tokyo would receive approximately 20 million visitors, to be attended by 70,000 volunteers of the games and 8000 for the city. About 11,090 Olympic athletes and 4400 Paralympic athletes were expected to participate in the games. During the games, 14 million food dishes were expected to be delivered to the participants (Gallego, Viviana., Nishiura, et al. [9]). An enormous increase in consumption was expected for the tourism and restaurant sectors. It was anticipated that the Tokyo Olympics would promote Japan's economic growth.

The larger the population, the larger the number of talented athletes. An athlete's physical condition is improved through scientific training using a modern sports facility. Therefore, athletes from countries with high GDP were able to win more medals. During the Cold War period, the Communist countries had a political motivation to win to display that their ideology was far superior to that of the Capitalist countries. Existing works tested these inferences and show that economic factors such as per capita GDP, population, status as communist, and status of current host are positively associated with the high performance, as captured by the total medal tally (Noland Stahler[12], Bernard and Busse [11]).[2] Therefore, the Olympics is considered not only as a sporting event but also an opportunity to enhance national prestige and extend the country's influence and power overseas. In fact, the Olympic Games had side effects on the host countries. The Olympics increased host countries' exports by 20 %, and this effect persist later also (Rose and Speigel [14]). Many research works analyzed the outcome of mega sporting events such as the Olympics and the soccer world cup in the labor market of the host countries (e.g., Miyoshi and Sasaki [15], Banumann et al. [16], Hagan and Maennig [17], Hagan and Maennig [18], and Hotochkiss et al. [19]). It is observed that the Olympics increase employment by 17 %.(Hotochkiss et al. [19]): There are arguments that mega sporting events ultimately have only minimal economic impact (Miyoshi and Sasaki [15], Hagan and Maennig [17], Hagan and Maennig [18], Jasmand and Maennig [20], and Baade and Matheson[21]). However, when we focus on specific industries, the hospitality industry, such as restaurants and hotels, benefitted from the Olympics. (Banumann et al. [16]). The tourism

[1] It is required for sports medicine communities to establish uniform and safe conditions to resume sports activities and call for "maximal caution" when making decisions about when to restart sports activities (Corsini A, Bisciotti, Eirale, et al.[7]).

[2] The determinants of medals have also been analyzed by Johnson & Ali [12] and Lui & Suen [13].

industry was observed to thrive during the Olympics, whereas other industries did not benefit from these Games (Spilling[22]).[3] Overall, OMOTENASHI workers are reasonably anticipating an increase in income from the Tokyo Summer Olympics. Naturally, postponement of the Olympics has left them disappointed as they stand to lose the benefits and are unhappy.

In addition to the economic impact, postponement of the Olympics was expected to have a psychological impact. Dolan et al. [24] found that the London Olympics increased the subjective well-being of the London residents during the event. Several unpaid volunteer workers prepared to contribute to the Olympics. Even if there were no economic benefits, postponement of the Olympics possibly influenced the mental condition of OMOTENASHI workers to participate in the Olympics through an indirect role of introducing the Japanese culture to visitors from abroad. However, no researchers have considered this aspect.[4] Hence, this work examines the impact of the postponement of the 2020 Tokyo Summer Olympics on workers in the tourism and restaurant sectors in Tokyo and the surrounding areas. With respect to the analysis of COVID-19, Fetzer et al. [26] gathered data from 58 countries through internet surveys that were conducted between late March and early April 2020. They investigated how the COVID-19 pandemic influenced respondents' perceptions and mental conditions. However, they could not compare them before and after the COVID-19 pandemic because they did not construct panel data. Layard et al. [27] compared the costs and benefits of the lockdown to mitigate the spread of COVID-19 in the United Kingdom (UK). They considered not only traditional economic indices such as income and unemployment but also mental health. However, no study examined the impact of COVID-19 with the postponement of the Olympics on the well-being of workers in the host city where the event was scheduled to be held.

Under the setting of a natural experiment under the COVID19 pandemic, we independently conducted three surveys from March to April 2020 to construct individual-level panel data. The second wave was conducted directly after the announcement of the Tokyo Summer Olympic postponement. Using the data, we found that the happiness level of tourism workers and restaurants in Tokyo and surrounding areas had declined directly after the announcement of the postponement of the Games. However, their happiness level returned during the third wave to the level in the first wave. The contribution of this study is to show the negative impact of postponement on the happiness of OMOTENASHI workers, which, however, disappeared two weeks later.

The remainder of this article is organized as follows. Section 2 presents an overview of the influence of COVID-19 in Japan. The data and methods are described in Section 3. Section 4 presents the estimated results and the interpretation. Section 5 provide a discussion. The final section provides some reflections and conclusions.

2. Overview of the influence of COVID-19

In Figure 1, the 3-quadrant curve indicates the changes in the total number of people infected with COVID-19 during the period between Mach 10 and April 10, 2020. Just prior to March 2020, the Japanese government requested schools to start closing in March, although it is legally unenforceable. Accordingly, various schools—primary, junior high, and high schools—were closed from March 2,

[3] The Olympics did not bring economic benefits to the tourism industry as well as other industries (Teigland [23]).

[4] Postponement of the Olympics is expected to influence the mental condition of athletes who qualified to participate in the Olympics (Schinke[25]).

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even though the number of people infected with COVID-19 was only about 250, and the pace of its increase was very slow. The 2020 Tokyo Olympics was to be held in July 2020. This schedule suffered harsh criticism from the Japanese and other countries. Eventually, on March 24, it was announced by the Japanese government that the Olympics was postponed by one year.

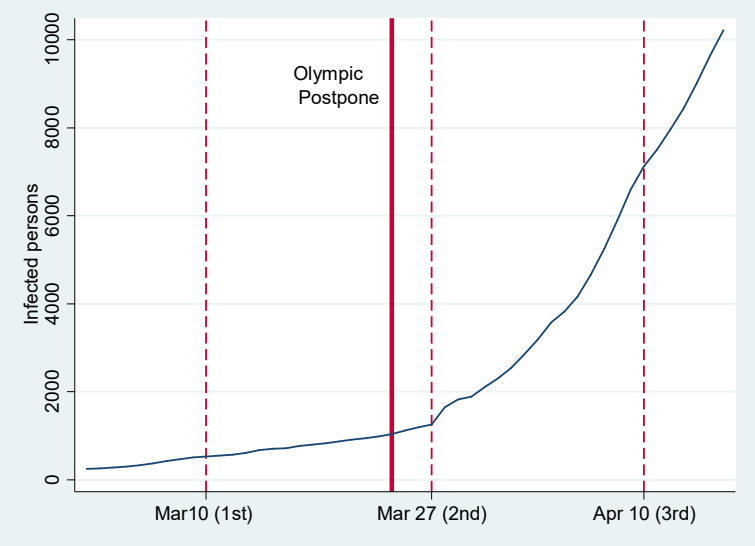

Figure 1. Timing of surveys and postponement of Olympic Games

Note: The curved line indicates the total number of infected persons. The thick solid line indicates the date of the announcement of postponing the Olympics. The dashed lines indicate the time points of Waves 1 (March 10), 2 (March 27), and 3 (April 10).

After the announcement of postponing the Olympics, there was a surge in the number of people infected with COVID-19. This caused the government to declare a state of emergency on April 7. This was not legally enforceable, which was different from "lockdown" announced in other countries such as Italy, the UK, France, and the United States (US). However, similar to other countries (Baldwin and Mauro [28]), the request is substantially effective in closing art museums and amusement parks and cancelling various professional sports events such as baseball and football games. To reduce the spread of COVID-19, people were requested to maintain social distance and stay at home. Therefore, people avoided person-to-person contact and crowded gatherings in closed indoor spaces.

3. Data and Methods

3.1. Survey Design

Before the spread of the COVID-19 pandemic in Japan, we anticipated that the infectious disease to diffuse throughout Japan. The COVID-19 was considered an exogenous shock. Therefore, the setting was thought to be a natural experiment. Therefore, internet surveys were planned to pursue identical individuals to explore how COVID-19 influences their happiness and expectations about income in the following year. INTAGE, a research company, had ample experience in academic research and was so reliable for conducting the surveys. Hence, we commissioned INTAGE to conduct the surveys. The sampling method was designed to collect a representative sample of the Japanese population considering residential areas, age, educational background, gender, and job status. Our survey selected Japanese population aged 16–79 years across the entire country. Every

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two weeks, we conducted surveys in March and April. Figure 1 demonstrates the timing of the surveys. We conducted the first wave between March 13–16 and collected 4,359 observations. The response rate was 54.7%. On March 24, even though the total number of infected people increased modestly, it was announced that the 2020 Tokyo Olympics was postponed. Directly after the announcement, the second wave was conducted between March 27–30. In response to the rapid spread of the COVID-19 pandemic in Japan, the Japanese government declared a state of emergency on April 7, which led the Japanese people to significantly change their daily life routine (Ymamura and Tsutsui [29]). The third wave was conducted between April 10–13. The response rates were 80.2% (second wave) and 92.2% (third wave).

3.2. *Data*

This study examines how the postponement of the Olympics influenced the happiness level of residents in Japan, especially "OMOTENASHI" workers engaged in the tourism and restaurant sectors. Further, the impact of the postponement of the Olympics is believed to differ according to the respondents' expected probability of holding the Olympics in the summer of 2020. The gap between expectations and the real situation was wider as the expected probability was higher. As derived from prospect theory (Kahneman and Tversky [30]), respondents with higher expectations would become unhappier. In the first wave of the survey, we asked respondents about the probability of holding the Olympics as previously scheduled. Figure 2 illustrates the distribution. Clearly, responses were concentrated in 50%. Therefore, respondents with a neutral view were the largest group. The distribution was not skewed. That is, the number of respondents with an expected probability was higher than 50% is almost equivalent to those with a probability lower than 50%.

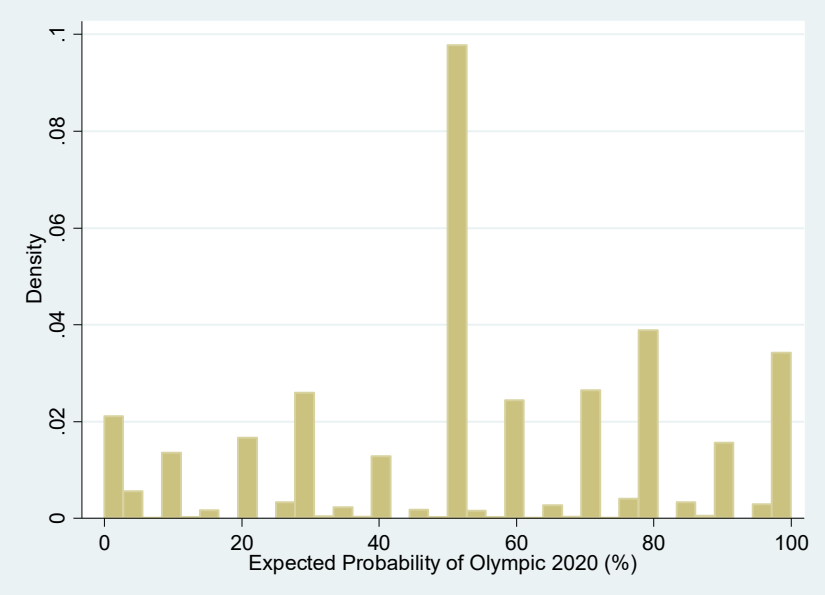

Figure 2. Distribution of expected probability that the Tokyo Olympics will be held in summer 2020.

Note: Entire sample of the first wave is used.

Based on this information, we divided the sample into high and low expected probability of holding the Olympics as scheduled. In this paper, the high expected group is defined to include

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respondents with an expected probability of being equal to or greater than 60%. The low expected group is defined to include respondents with an expected probability of being equal to or below 40%. We used the sub-sample of the high and low expected groups when regression estimations were conducted.

In waves 1-3, the respondents were asked about their happiness levels by choosing 11 categories: 1(very unhappy) and 11(very happy). Figure 2 illustrates the distribution of the happiness level using a sample consisting of waves 1–5. The distribution was skewed toward the right. Even under the COVID-19 pandemic, respondents who experienced happiness higher than 5 were remarkably larger than those who felt happiness lower than 5.

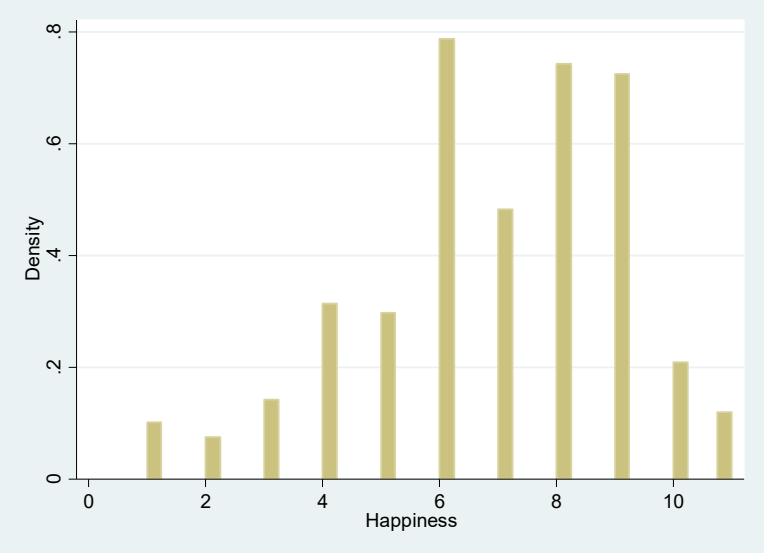

Figure 3. Distribution of happiness levels.

In waves 1–3, the respondents were asked about their expectations about the change in their household income from 2020 to 2021. There were six choices: (1) increase by 4% or more, (2) increase by 1-3.99%, (3) 0%, (4) decrease by 1-3.99%, (5) decrease by 4-9.9%, and (6) decrease by 10% or more. We converted each choice into its mid-point (1) 6%, (2) 2 %, (3) 0%, (4) %, (5) − 2%, (6) −15% or more. Figure 4 illustrates the distribution. The majority expected that their household income will remain the same or reduce. This may reflect the negative impact of the COVID-19 pandemic on economic activities.

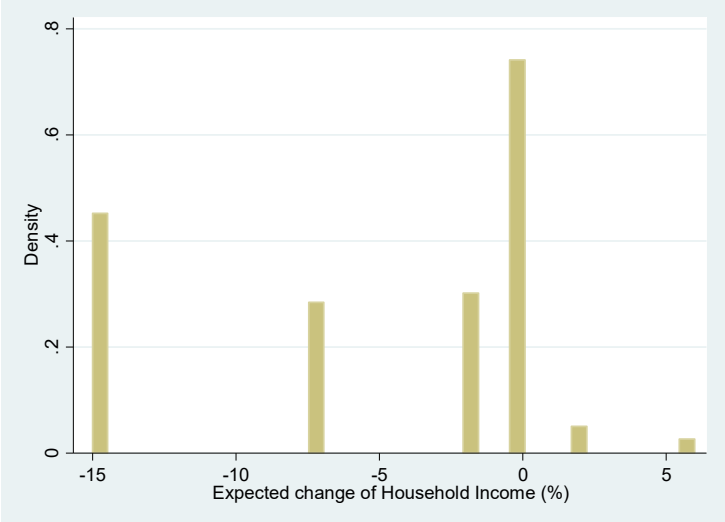

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Figure 4. Distribution of expected change in household income from 2020 to 2021:
Note: 0 indicates that household income would remain the same between 2020 and 2021.

Fig. 5 illustrates the change in happiness level from wave 1 to wave 3. It is clearly observed that the happiness level decreased from wave 1 to wave 3. This is considered to reflect the spread of COVID-19. The COVID-19 is thought to influence happiness through various channels: (1) recession caused by the COVID-19, (2) increasing the probability of death by infection, and (3) deteriorated mental health and depression in the unexperienced and unintended lifestyle.

Figure 5. Happiness in each period
Note: Error bar represents 95% confidence intervals.

In Figure 6, the mean value of the expected change in household income is illustrated in each wave. In all the waves, the value is below 0, indicating that, on average, the respondents expect their household income to decrease from 2020 to 2021. However, there was no difference between wave1 and wave 2. This was showed that economic activities did not suffer significant damage, even though the 2020 Tokyo Olympics was postponed. From wave 2 to wave 3, it reduced to show the significant difference between them, implying that the state of emergency has a direct and significant impact on economic activities.

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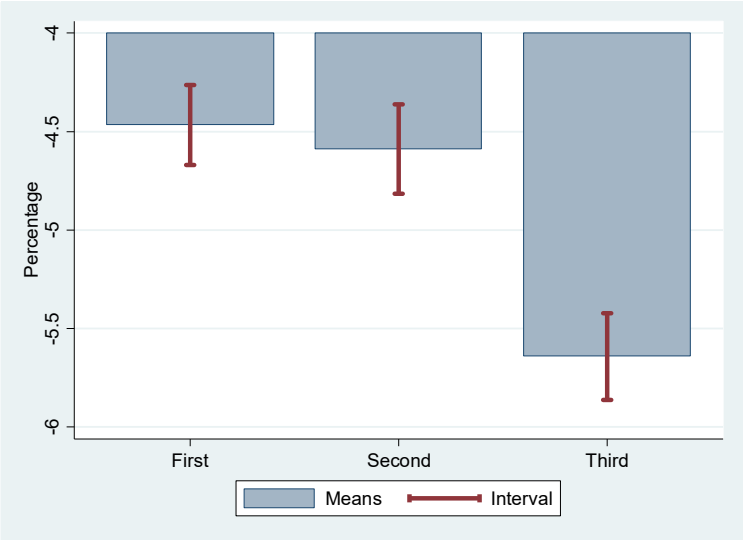

Figure 6. Expected change in income during each period
Note: Error bar represents 95% confidence intervals.

3.3 *Method*

The estimated function takes the following form, and the fixed effects model is used for the estimation:

$$Happiness_{it}\ (or\ expected\ income\ change)_{it} = \alpha_0 + \alpha_1\ Wave2\ dummy_t \times Tourism_i + \alpha_2\ Wave3\ dummy_t \times Tourism_i + \alpha_3\ Wave2\ dummy_t + \alpha_4\ Wave3\ dummy_t + \alpha_5\ Infected\ persons_{it} + k_i + u_{it},$$

where $Happiness_{it}$ represents the dependent variable in individual i and period t. In this specification, we examine the impact of the postponement of the Olympics on happiness level. $Expected\ income\ change_{it}$ is the dependent variable when we examine the impact of the postponement of the Olympics on the expected income change. k_i represents time-invariant individual-specific fixed effects, which capture unmeasured variables including age, educational background, income level, and gender. The regression parameters are denoted as α. The error term is denoted as u.

The *Wave2 dummy* and *Wave3 dummy* are included to capture the impact of the spread of the COVID-19 pandemic because economic and social conditions drastically changed during the study period, as illustrated in Figure 1. More specifically, the *Wave 2 dummy* captured the effect of the postponement of the Olympics, while *Wave 3 dummy* captured the effect of the state of emergency. The reference group was the first wave (wave 1). The coefficient of *Wave2 dummy* was considered to show how the happiness level in wave2 is different from that in wave1. Similarly, the coefficient of *Wave3 dummy* was considered to show how the happiness level in wave3 is different from that in wave1. Also, respondents who encountered the huge risk of being infected by COVID-19 were predicted to be unhappy. In order to control it, the total number of infected persons in prefectures where individuals i resided in wave t, ($Infected\ persons_{it,}$), was included.

Tourism was a dummy variable that had 1 if respondents worked in either the tourism or restaurant sectors, and otherwise 0. In order to consider the difference in the impact of the postponement of Olympics between workers in the tourism and restaurant sectors, and other people because tourism and restaurants are thought to greatly depend on the demand from visitors from

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other countries during the Olympic Games. Therefore, the cross terms between *Tourism* and wave dummies were included. Workers in the tourism and restaurant sectors suffered greater damage due to the postponement than others. Naturally, the coefficient of *Wave2 dummy* × *Tourism* was expected to have a negative sign when *happiness* is a dependent variable. In order to investigate if the impact of the postponement was caused by income loss, we checked *Wave2 dummy* × *Tourism* when *expected income change* was a dependent variable. The postponement has an impact on happiness through the channel of loss of income if the sign of *Wave2 dummy* × *Tourism* is a negative sign.

4. Results

In Tables 1–6, we report the estimates obtained from the fixed effects estimation. Tables 1, 2, and 3 report results when happiness level is the dependent variable. Tables 4, 5, and 6 report the results when expected income change is the dependent variable. Tables 1 and 4 indicate the results using a sub-sample throughout Japan. Tables 2 and 5 indicate the results using a sub-sample covering Tokyo and its surrounding three prefectures.[5] Tables 3 and 6 indicate the results using a sub-sample excluding Tokyo and its surrounding three prefectures. Each table reports results based on a sub-sample according to the extent to which respondents subjectively expected the probability of holding the Olympics as scheduled. The group with a high expected probability was equal to or greater than 80% and 60 % in columns (1) and (2), respectively. The probabilities were equal to or below 40% and 20 % in columns (3) and (4), respectively.

Table 1. Estimation results of the baseline model (dependent variable is "Happiness"):
Sample: All regions of Japan.

	High expected probability of holding 2020 Tokyo Olympics			Low expected probability of holding 2020 Tokyo Olympics
	(1) Prob>=80	(2) Prob>=60	(3) Prob<=40	(4) Prob<=20
Wave 2	−0.89**	−0.74**	0.35	0.28
*Tourism	(0.39)	(0.30)	(0.24)	(0.33)
Wave 3 dummy	−0.56	−0.32	0.52*	0.54
*Tourism	(0.47)	(0.36)	(0.30)	(0.47)
Wave 1	Reference		Reference	
Wave 2	−0.10**	−0.14***	−0.16**	−0.11**
	(0.05)	(0.04)	(0.04)	(0.06)
Wave 3 dummy	−0.20***	−0.28***	−0.40***	−0.37***
	(0.06)	(0.05)	(0.05)	(0.07)
Infected persons	−0.20	−0.14	−0.27***	−0.22
	(0.20)	(0.10)	(0.10)	(0.15)
Groups	1,154	1,863	1,264	715
Within R-squared	0.02	0.02	0.06	0.05
Observations	3,159	5,093	3,412	1,937

Note: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of infected persons was multiplied by 1000. *** $p < 0.01$, ** $p < 0.05$,* and $p < 0.1$.

[5] Kanagawa, Chiba, and Saitama prefectures.

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We begin by discussing Table 1. Signs of *Wave2 dummy* and *Wave 3 dummy* were negative and statistically significant at the 1 % level in all the columns. In addition, the absolute values of the coefficient of *Wave3 dummy* were larger than those of *Wave2 dummy* in all the columns. This indicates that the happiness levels declined as the COVID-19 had spread, which is consistent with Fig 4. This tendency was observed regardless of the individual's expectation of holding the Olympics in 2020. Turning to the key variable, the coefficients for *Wave2 dummy* × *Tourism* showed a negative sign and were statistically significant in columns (1) and (2). Meanwhile, it showed a positive sign despite being statistically insignificant in columns (3) and (4). OMOTENASHI workers with high expectations were more disappointed by the postponement than other people. However, this tendency was not observed for those with low expectations. *Wave3 dummy* × *Tourism* did not show statistical significance. In our interpretation, the impact of postponement on OMOTENASHI workers did not persist for only two weeks.

Table 2. Estimation results of the baseline model (dependent variable is "Happiness"):
Sample: Tokyo and its surrounding prefectures.

	High expected probability of 2020 Tokyo Olympics		Low expected probability of 2020 Tokyo Olympics	
	(1) Prob>=80	(2) Prob>=60	(3) Prob<=40	(4) Prob<=20
Wave 2 dummy	−1.94***	−1.58***	0.47	0.28
*Tourism	(0.71)	(0.53)	(0.31)	(0.46)
Wave 3 dummy	−1.19	−0.89	0.12	0.03
*Tourism	(0.86)	(0.59)	(0.40)	(0.53)
Wave 1	Reference		Reference	
Wave 2 dummy	−0.05	−0.12	−0.27***	−0.15
	(0.10)	(0.08)	(0.08)	(0.10)
Wave 3 dummy	−0.06	−0.11	−0.38***	−0.39**
	(0.15)	(0.11)	(0.14)	(0.15)
Infected persons	−0.30	−0.27*	−0.32**	−0.18
	(0.21)	(0.15)	(0.16)	(0.19)
Groups	327	553	391	201
Within R-squared	0.03	0.03	0.09	0.08
Observations	900	1,511	1,057	543

Notes: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of *Infected persons* was multiplied by 1000. The sample consists of residents in Tokyo, Kanagawa, Chiba, and Saitama prefectures. *** $p < 0.01$, ** $p < 0.05$,* and $p < 0.1$.

We see from Table 2 that *Wave2 dummy* × *Tourism* yielded a negative sign and was statistically significant at the 1 % level in columns (1) and (2). The absolute values of the coefficients were 1.94 and 1.58 in columns (1) and (2), respectively, approximately two times larger than those in Table 1. We interpret this as implying that the happiness levels of OMOTENASHI workers were a 1.95 points lower life satisfaction on the 11 point scale than others when the sample was limited to residents in Tokyo and surrounding prefectures with an expectation of 80% or more that the Olympics would be held in 2020. In the case of respondents with expectation of 60% or more, the happiness levels of

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OMOTENASHI workers were a 1.58 point lower life satisfaction on the 11 point scale. Meanwhile, the statistical significance of *Wave2 dummy* × *Tourism* disappeared in columns (3) and (4). From this, we argue that the negative impact of the postponement of the 2020 Olympics became smaller as the expected probability declined. Similar to the results of Table 1, *Wave3 dummy* × *Tourism* was not statistically significant in any column. That is, the announcement of the postponement of the Olympics has a sizable negative impact on the happiness level of OMOTENASHI workers in Tokyo and surrounding areas if they had a high expectation of the 2020 Olympics being held. However, the gap in the happiness level between OMOTENASHI workers and others disappeared after two weeks, suggesting that the negative impact was temporary.[6]

In Table 3, neither *Wave2 dummy* × *Tourism* indicated statistical significance in any columns. The postponement of Olympic Games did not cause a difference in the happiness level of workers in tourism and others. In our interpretation, apart from Tokyo and surrounding areas, workers in the tourism and restaurant sectors did not expect the Tokyo Olympics to increase demand for their services and their revenue. Therefore, they did not consider the Tokyo Olympics in relation to their business even though they worked in the tourism and restaurant sectors.

Table 3. Estimation results of the baseline model (dependent variable is "Happiness"):
Sample: excluding Tokyo and its surrounding prefectures.

	High expected probability of 2020 Tokyo Olympics		Low expected probability of 2020 Tokyo Olympics	
	(1) Prob>=80	(2) Prob>=60	(3) Prob<=40	(4) Prob<=20
Wave 2 dummy	−0.34	−0.22	0.28	0.30
*Tourism	(0.39)	(0.29)	(0.33)	(0.43)
Wave 3 dummy	−0.26	−0.03	0.85**	1.10
*Tourism	(0.55)	(0.44)	(0.42)	(0.75)
Wave 1	Reference		Reference	
Wave 2 dummy	−0.12**	−0.14***	−0.12**	−0.10
	(0.06)	(0.05)	(0.05)	(0.07)
Wave 3 dummy	−0.22***	−0.29***	−0.42***	−0.37***
	(0.07)	(0.06)	(0.07)	(0.08)
Infected persons	−0.37	−0.40	−0.03	−0.24
	(0.40)	(0.33)	(0.04)	(0.52)
Groups	827	1,311	873	514
Within R-squared	0.02	0.03	0.05	0.05
Observations	2,259	3,582	2,355	1,394

Notes: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of *Infected persons* was multiplied by 1000. The sample does not include residents in Tokyo, Kanagawa, Chiba, and Saitama prefectures. *** $p < 0.01$, ** $p < 0.05$,* and $p < 0.1$.

Now, we shift attention to the estimation results for the expected income change from 2020 to 2021. In Table 4, except for *Wave2 dummy* in column (4), *Wave2 dummy* and *Wave3 dummy* showed

[6] Impact of various variables on the happiness level did not persist in the long term (Tsutsui & Ohtake[]30), Kinari et al. [31]]

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negative signs. The *Wave3 dummy* is statistically significant at the 1% level in all the columns, which is consistent with Figure 5. In our interpretation, people changed their expectations about income not because of the postponement of the Olympics but due to the state of emergency. They considered that the postponement of Olympics hardly had an impact on income generation. People considered that the if the impact of the state of emergency persists, it could reduce income growth from 2020 to 2021. *Wave2 dummy* × *Tourism* and *Wave3 dummy* × *Tourism* did not present statistical significance in any of the columns. Similar to Table 4, these cross terms did not show statistical significance in most of the results.

Table 4. Estimation results of the baseline model (dependent variable is "Expected income change from 2020 to 2021"): Sample: all regions of Japan.

	High expected probability of 2020 Tokyo Olympics		Low expected probability of Tokyo 2020 Olympics	
	(1) Prob>=80	(2) Prob>=60	(3) Prob<=40	(4) Prob<=20
Wave 2 dummy	0.20	0.37	0.15	0.09
**Tourism*	(1.05)	(0.83)	(0.24)	(0.75)
Wave 3 dummy	−1.82	−1.14	−1.05	−1.03
**Tourism*	(1.56)	(1.42)	(1.10)	(1.53)
Wave 1	Reference		Reference	
Wave 2 dummy	−0.29	−0.32*	−0.06	0.12
	(0.24)	(0.17)	(0.19)	(0.25)
Wave 3 dummy	−1.13***	−0.94***	−0.90***	−0.85***
	(0.26)	(0.20)	(0.23)	(0.30)
Infected persons	0.46	−0.01	−0.66	−0.67
	(0.57)	(0.40)	(0.43)	(0.57)
Groups	1,091	1,745	1,164	653
Within R-squared	0.02	0.01	0.03	0.03
Observations	2,642	4,229	2,783	1,565

Notes: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of *Infected persons* was multiplied by 1000. *** p < 0.01, ** p < 0.05,* and p < 0.1.

Table 5. Estimation results of the baseline model (dependent variable is "Expected income change from 2020 to 2021"): Sample: Tokyo and its surrounding prefectures.

	High expected probability of 2020 Tokyo Olympics		Low expected probability of Tokyo 2020 Olympics	
	(1) Prob>=80	(2) Prob>=60	(3) Prob<=40	(4) Prob<=20
Wave 2 dummy	2.04*	1.34	− 0.35	0.41
**Tourism*	(1.18)	(1.06)	(0.79)	(0.62)
Wave 3 dummy	0.41	−1.01	0.05	0.60
**Tourism*	(2.49)	(2.17)	(0.80)	(0.93)
Wave 1	Reference		Reference	
Wave 2 dummy	−0.35	−0.66*	0.12	0.20
	(0.51)	(0.37)	(0.35)	(0.47)
Wave 3 dummy	−1.35*	−1.08**	−0.56	−0.76
	(0.75)	(0.54)	(0.63)	(0.80)
Infected persons	0.69	0.03	−0.93	−0.85
	(0.86)	(0.60)	(0.67)	(0.86)

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Groups	309	514		366	188
Within R-squared	0.01	0.01		0.03	0.05
Observations	754	1,250		876	448

Notes: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of *Infected persons* was multiplied by 1000. The sample consists of residents in Tokyo, Kanagawa, Chiba, and Saitama prefectures. *** p < 0.01, ** p < 0.05,* and p < 0.1.

Table 6. Estimation results of the baseline model (dependent variable is "Expected income change from 2020 to 2021"): Sample: excluding Tokyo and its surrounding prefectures.

	High expected probability of 2020 Tokyo Olympics			Low expected probability of Tokyo 2020 Olympics	
	(1) Prob>=80	(2) Prob>=60		(3) Prob<=40	(4) Prob<=20
Wave 2 dummy *Tourism	− 1.14 (1.55)	−0.29 (1.23)		0.58 (1.24)	−0.07 (1.18)
Wave 3 dummy *Tourism	−3.40* (1.84)	−1.22 (1.88)		−1.95 (1.81)	−2.23 (2.53)
Wave 1	Reference			Reference	
Wave 2 dummy	−0.26 (0.26)	−0.18 (0.20)		−0.12 (0.24)	0.09 (0.30)
Wave 3 dummy	−0.98*** (0.32)	−0.87*** (0.25)		−0.89*** (0.29)	−0.89** (0.38)
Infected persons	−0.58 (1.85)	−0.19 (0.14)		−1.45 (1.42)	−0.28 (1.76)
Groups	782	1,231		798	465
Within R-squared	0.02	0.01		0.03	0.03
Observations	1,888	2,979		1,907	1,117

Notes: Numbers within parentheses are robust standard errors, clustered by individuals. For convenience of interpretation, the coefficient of *Infected persons* was multiplied by 1000. The sample does not include residents in Tokyo, Kanagawa, Chiba, and Saitama prefectures. *** p < 0.01, ** p < 0.05,* and p < 0.1.

Considering Tables 1–6 jointly leads us to argue that the postponement of 2020 Tokyo Olympics reduced the happiness level of OMOTENASHI workers in Tokyo and surrounding areas, even though the postponement did not change expectations about their income. [7] That is, OMOTENASHI workers felt unhappy not due to loss of their expected income, but due to other psychological reasons.

5. Discussion

In comparison with expectations prior to the COVID-19 spread, tourists and visitors to Tokyo and surrounding areas will reduce drastically, which could lead to a reduction in revenue for the tourism and restaurant sectors in Tokyo and surrounding areas. According to prospect theory, people consider lower outcomes as losses and greater ones as gains（Kahneman and Tversky[31]). However, they became directly unhappy only after the announcement of the postponement. Economic damage

[7] We obtained results similar to those in Tables 2 and 5 by dividing the sample of Tokyo and surrounding prefectures into two separate samples: Tokyo and prefectures. The results are available upon request from the corresponding author.

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following the postponement due to loss of expected revenue in 2020 did not change within a few weeks. According to our estimated results, OMOTENASHI workers did not consider the impact serious, at least during March–April, 2020. Overall, OMOTENASHI workers were disappointed because they could not contribute to the Olympics through O-MO-TE-NA-SHI hospitality.

Apart from revenues and economic benefits, OMOTENASHI workers feel happy to provide their hospitality to tourists during the 2020 Tokyo Olympics. In this regard, the values of the Olympics should be reconsidered. It is widely acknowledged that the modern Olympics has been commercialized to stimulate host countries to pursue economic benefits. However, the gigantic shock of the COVID-19 pandemic is postponement of the 2020 Tokyo Olympics, as the Games were expected to generate large economic benefits. Moreover, the motivation to host the Olympics would reduce among countries if unexpected and unintended shocks such as the COVID-19 pandemic are considered. As prospect theory states, people are likely to give more importance to losses than to pursue gains (Kahneman and Tversky[30]). In the future, it seems plausible that no city will be a candidate to host the Olympics. Inevitably, a critical problem arises: are the modern Olympics sustainable? A possible approach to sustain the Olympics is to make it more compact and less commercialized. That is, it is time to return to the philosophy of the Olympics and give more importance to sporting amateurism in the new world after the COVID-19 pandemic.

6. Conclusions

The COVID-19 pandemic had an unprecedented impact on various sporting events. Above all, postponement of the 2020 Tokyo Olympics was unexpected. The Olympic Games are mega-events, which are expected to promote economic growth and increase the presence of countries in the globalized world. In 2020, tourists and visitors were expected to increase to Japan, especially Tokyo and the surrounding prefectures. Workers engaged in the OMOTENASHI industry lost the expected increase in income and the opportunities to extend hospitality to tourists enjoying the Olympics. Naturally, these workers were expected to be disappointed.

We conducted three internet-surveys in March 13 (before the announcement of postponement), March 27 (after the announcement postponement), and April 10 (after the state of emergency was declared). In these surveys, we pursued identical individuals to investigate how the postponement of the 2020 Tokyo Olympics influenced the happiness level of workers in the OMOTENASHI industries. The major findings were: OMOTENASHI workers' happiness levels declined abnormally after the announcement of the postponement decision. Two weeks later, under the state of emergency, their happiness returned to the level before the announcement of postponement. Meanwhile, OMOTENASHI workers did not predict a decrease in their income immediately after the postponement. From these findings, we argue that postponement of the 2020 Tokyo Olympics lowers the happiness level because of the loss of hospitality rather than loss of income. However, most of the workers recovered from the loss of the Tokyo Olympics within two weeks, although the economic recession worsened.

Postponement of mega sporting events such as the Olympics is expected to fundamentally change the way the sports industry operates in the future. We must examine the impact of these changes from a socio-cultural, economic, and political perspective (Parnell et al.[32]). Dolan et al. [24] provided evidence of an aggregate willingness-to-pay (WTP) for hosting the Olympics below the actual costs of hosting, although the Olympics increase the subjective well-being of residents in the

hosting cities. Human history shows that the devastating pandemic played a critical role in the revival of human society. The bubonic plague (Black Death) was the deadliest pandemic that ravaged Europe and led to the economic recession in the Middle Ages. The Black Death was the reason the Middle Ages came to an end. The Black Death caused social evolution, giving rise to the Renaissance. In the 21st century, detaching from the philosophy of the Olympic Games, the modern Olympics has been immoderately commercialized and politicized. The COVID-19 shock is regarded as a catalyst that led to the Olympic Games to return to the philosophy. If so, the Olympics would be sustainable because of the COVID-19 pandemic.

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