

Institute for Economic Studies, Keio University

Keio-IES Discussion Paper Series

コロナ禍での旅行と外食：
Go To トラベルキャンペーン、Go To Eat キャンペーンの経済分析

大久保敏弘

2021年8月21日

DP2021-016

<https://ies.keio.ac.jp/publications/14425/>

Keio University



Institute for Economic Studies, Keio University
2-15-45 Mita, Minato-ku, Tokyo 108-8345, Japan
ies-office@adst.keio.ac.jp
21 August, 2021

コロナ禍での旅行と外食：Go To トラベルキャンペーン、Go To Eat キャンペーンの経済分析

大久保敏弘

IES Keio DP2021-016

2021年8月21日

JEL Classification: H12, H20, H84

キーワード：新型コロナウィルス感染症；飲食宿泊業の需要喚起政策；Go To キャンペーン；リスク；ビッグファイブ；日本

【要旨】

コロナ禍で一部の飲食宿泊業の打撃が大きいことが就業者調査で分かった。そこで需要面から人々の旅行、外食行動、特にGo To トラベル、Go To Eat キャンペーンに関して就業者調査を基に分析した。これらの政策に反応する個人の特性や性格を多角的に分析した。結果、若い人やICTの得意な人ほど利用が多く、リスク愛好的で外交的な人が頻繁にキャンペーンを利用していることが分かった。Go To Eatに関しては東京圏や女性の利用が多い。政策の問題は特定の性格をもつ人々が政策の恩恵を受けがちなこと、キャンペーン利用者のPCR検査率が低いことがあげられる。

大久保敏弘

慶應義塾大学経済学部

〒108-8345

東京都港区三田2-15-45

okubo@econ.keio.ac.jp

Traveling and Eating Out during the COVID-19 Pandemic: The Go To Campaign Policies in Japan

Toshihiro Okubo¹

Keio University

Abstract

The coronavirus disease (COVID-19) pandemic plunged many sectors of the economy into contraction, particularly the travel, hotel accommodation, and eating/drinking industries. In Japan, some demand-inducing policies targeting such industries were implemented, known as the Go To Travel and Go To Eat campaigns. Using a unique individual-level survey, we investigate what factors make people respond to these campaign policies. We find that certain socioeconomic factors as well as noneconomic factors matter. In particular, risk attitudes, time preferences, and personal traits (e.g., extraversion) as measured by the Big 5 categories crucially affect whether people traveled or dined out in response to these campaigns despite the spread of COVID-19.

Keywords: COVID-19, demand inducing policies, Go-To Campaigns, risk, Big 5, Japan

¹ Faculty of Economics, Keio University. Mail: okubo@econ.keio.ac.jp

1 Introduction

Since February 2020, coronavirus disease (COVID-19) has spread with alarming speed all over the world. Governments have imposed lockdowns to restrict mobility and activities and contain the spread of the virus. However, the containment measures have plunged economies worldwide into significant contraction. The negative impact on gross domestic product growth is massive. Many countries have implemented economic support measures, such as cash handouts, subsidies, allowances, financial support, provisional reductions of value added taxes (VAT), and postponement of tax payments. One of the central issues has been whether to prioritize measures to limit the spread of infections or to focus on mitigating the large economic downturn. Countermeasures to COVID-19 in many countries have wavered between these two priorities.

Some specific industries, i.e., travel, accommodation services, entertainment, and hospitality (restaurants, cafés, eateries, etc.), suffered huge downturns. These industries have been required to shut down their businesses or shorten their working hours during periods of increased restrictions and lockdowns to combat the COVID-19 spread. They have also, therefore, been a key target for special government support, including subsidies, allowances, and postponement of rent payments. In various countries, demand-side policies have been implemented to stimulate the sectors of the economy hardest hit. One such policy has been vouchers for domestic travel. For instance, governments issued vouchers for domestic travel in Japan (“Go To Travel”), Italy (“Bonus Vacanze”), Iceland (“Travel Gift”), Thailand (“We Travel Together”), and Singapore (“The SingapoRediscover Vouchers”). In Hungary and Turkey, fiscal incentives involving the reduction of VAT on travel expenses were implemented. (For more details on such policies, see the World Tourism Organization (2020) and the Organisation for Economic Co-operation and Development (2020).)

However, the increased labor mobility driven by the domestic travel policies has resulted in greater spread of the virus. In the literature on epidemics, although they did not directly evaluate the impact of the policies, Kraemer et al. (2020) and Zhao et al. (2020) find a positive association between traveler volume from Wuhan City, China, and the confirmed COVID-19 cases in the other 10 major cities in China. Policy evaluations of the “Go To Travel” campaign in Japan find that it increased the number of new cases (Anzai and Nishiura, 2021; Miyawaki et al., 2021). Thus, the association between the “Go To Travel” campaign and

COVID-19 cases is unambiguous. In the literature on tourism management and economics, Farzanegan et al. (2021) find that countries exposed to high flows of international tourism tend to have more cases. Matsuura and Saito (2021) investigate the “Go To Travel” campaign and find that tourists shifted their travel destinations from distant to neighboring regions. Similarly, Funashima and Hiraga (2020) find that the “Go To Travel” campaign contributed to tourism demand.

Turning to policies stimulating demand for restaurants, cafés, and eateries, several support policies encouraging dining out have been implemented in various countries. In the United Kingdom, a total of GBP 500 million was spent on subsidizing dining-out expenses under the “Eat Out to Help Out” policy implemented for one month in August 2020, which provided discounts of up to 50% on dining out in restaurants and cafés. Likewise, the Japanese government introduced a “Go To Eat” campaign, which involved 25% discounts for dining out. These are large-scale demand-inducing measures. In addition, some countries such as Austria, Germany, Belgium, and the UK temporarily reduced VAT for restaurants, cafés, hospitality services, nonalcoholic beverages, and catering food services. Ferzer (2020) investigates the “Eat Out to Help Out” policy in the UK and finds that the policy contributed to a temporary rise of sales but was responsible for 8–17% of all confirmed COVID cases. In sum, such demand-inducing measures always involve huge risks of infections spreading, and the pandemic spiraling out of control. This implies that to exercise these policies, it is essential to implement an effective testing regime, with polymerase chain reaction (PCR) and antigen tests and an effective contact tracing system.

As noted, the existing studies have investigated how these demand-inducing measures spread infections and whether they successfully boosted demand. By contrast, in this paper, we use a unique individual survey to investigate what individual socioeconomic factors (e.g. income, gender, educational background, and age), personal behaviors (e.g., individual COVID countermeasures, such as handwashing and mask wearing), and noneconomic factors (e.g., risk attitudes, time preferences, and personality traits) lead people to respond to or refrain from using the demand-inducing measures. We investigate two Japanese voucher policies, the “Go To Travel” and “Go To Eat” campaigns, in detail from the aspect of individual behaviors.

The remainder of this paper is structured as follows. Section 2 describes the background context in Japan, and Section 3 provides data and stylized facts. Sections 4 and 5 provide estimation results. Finally, Section 6 concludes the

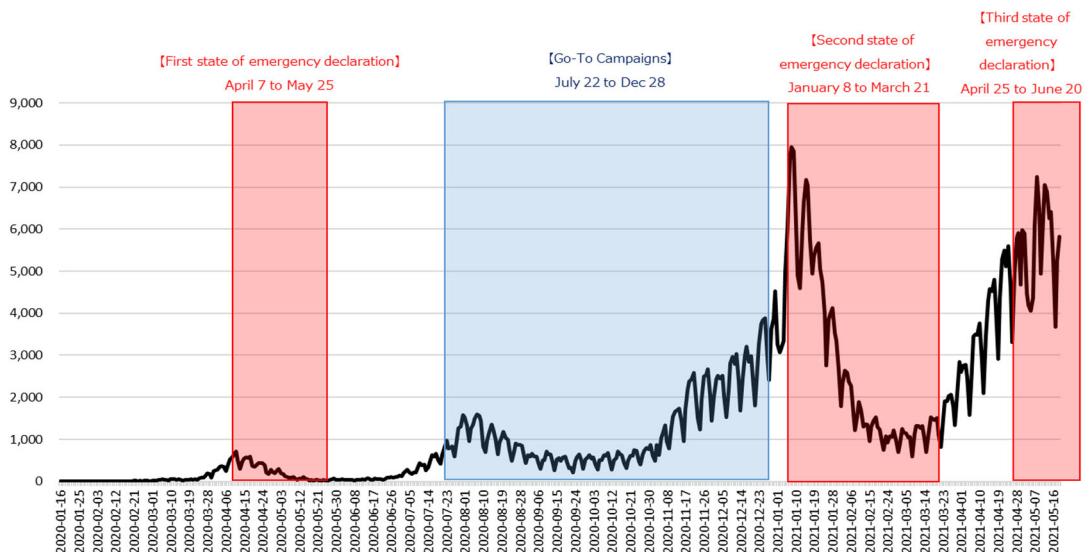
paper.

2 Background

2.1 COVID-19 and countermeasures

Figure 1 presents an overview of the daily numbers of new COVID-19 cases in Japan during periods when states of emergency were declared and when the Go To campaigns were implemented. The World Health Organization declared the COVID-19 virus a pandemic on March 11, 2020. During the early days of its spread, the Japanese government declared a state of emergency on April 7, 2020. The government requested people to avoid nonessential trips and to work from home rather than commuting, and requested retail shops, department stores, and restaurants, eateries, and cafés to shut down or shorten their business hours. Public schools and facilities were all closed. However, the Japanese infection control measures were “soft” in the sense that they involved a request-based policy without legal sanctions or penalties.

Figure 1: Daily number of new infections in Japan



After the first state of emergency was lifted on May 25, 2020, economic activity resumed, and the government shifted its focus from containing COVID-19 infections to economic countermeasures. To aid recovery from the economic downturn, particularly for the hotel and accommodation industries, on July 22,

2020, the government initiated its Go To Travel campaign, covering 35% of domestic travel expenses. The campaign did not initially apply to Tokyo, but it was included in the scheme from October 1, 2020, when a 15% discount voucher was added to the 35% discount offered originally, bringing the total discount rate to 50%. The Go To Eat campaign was launched on this same day, covering some dining-out expenses in restaurants, cafés, and eateries. In August 2020, the second wave of COVID-19 hit Japan, but the number of new infections gradually decreased without the government declaring a state of emergency. Therefore, the government's Go To Travel campaign remained operative throughout the second wave of COVID-19.

However, Japan experienced a third wave with a surging number of infections in late November 2020. On November 23, 2020, Osaka and Sapporo (in Hokkaido prefecture) temporarily stopped accepting visitors under the Go To Travel scheme. On November 27, a total of 11 prefectures ceased selling coupons for the Go To Eat campaign. In December, as the third wave worsened, the government again shifted its focus, this time away from economic countermeasures and toward containing the spread of infections. The number of infections in the third wave was much larger than in the first and second waves (there were 7,880 new infections per day at the peak of the third wave, as shown in Figure 1). Finally, the government stopped the Go To Travel campaign on December 28, 2020, and a second state of emergency was declared on January 8, 2021.

2.2 Go To campaign policies

As noted above, the Go To Travel campaign involves a government subsidy to encourage domestic travel. The campaign provides people with subsidies of up to 50% on hotel accommodation, tourist attractions, and shopping at travel destinations. In more detail, domestic travelers received a 35% discount on travel expenses and, after October 1, 2020, an additional 15% discount in the form of vouchers that can be used at travel destinations. To take advantage of the discounts, domestic travelers must book hotel accommodation affiliated with the Go To campaigns on travel websites or through travel agencies.

The Go To Eat campaign aimed at encouraging people to dine out and involved two forms of incentives: discount vouchers and point-based rewards. Discount vouchers of up 25% were available after purchasing a voucher booklet from the website prepared by each prefectoral government. One voucher booklet covered

various dining-out locations, although it could only be used for the restaurants, cafés, and eateries affiliated with the Go To Eat campaign. The second incentive, point-based rewards, meant that when diners booked certain restaurants and eateries affiliated with the Go To campaign, they obtained points worth 500 yen for lunches and 1,000 yen for dinners, which could then be used next time they dined out in affiliated eateries.

3 Data and Stylized Facts

3.1 Data

In this paper, we use data from the COVID-19 survey on Japanese workers entitled “Questionnaire Survey on the Effects of the Spread of COVID-19 on Telework-based Work Styles, Lifestyle, and Awareness,” which was conducted by the Nippon Institute for Research Advancement (NIRA) and Keio University (see Okubo, 2020; Okubo and NIRA, 2021).² Our paper uses the survey conducted in April 2021 (the fourth wave of the survey), which asked respondents about their use of the Go To campaigns, as well as provisional subsidy and allowance programs. The sample size is 9,796 persons. The survey also asked questions about individuals’ characteristics, changes in life and work during the spread of COVID-19, and attitudes toward the government’s COVID-related policies.

3.2 Stylized facts

The survey asked whether respondents’ incomes had increased, decreased, or experienced no change during the COVID-19 pandemic. Respondents were asked this same question in each of the four waves of the NIRA–Keio survey, in March, June, and December 2020, and April 2021 (Okubo and NIRA, 2021). The survey involves a panel structure, and more than 5,000 respondents joined all four waves.³ Based on this sample that participated in all four waves, Table 1 shows the patterns of income changes from January to December 2020 and the share of respondents (ranked by percentage). It ranks top ten groups. The arrow in each cell indicates whether the group experienced increase, no change, or

² The survey was conducted on a website constructed by Nikkei Research Co. The survey takes a stratified random sampling strategy. Japan is stratified into five regions by regional classification and six age groups for each gender (12 age groups per region). The number of samples for 60 region–age groups is determined by population ratios. The Population Census (Ministry of Internal Affairs and Telecommunication) is employed as the sampling unit.

³ In the four waves of the survey, the sample sizes were 10,516, 12,138, 10,523, and 9,796, respectively.

decrease in income in the time period. 48% of respondents, the largest share group, experienced no change in income over the whole period, and 6%, the second largest share group, experienced a reduction in income in all periods. 5%, the third largest group, experienced a reduction only in the period of March to June 2020, which is under the first state of emergency. A possible reason why income remained unchanged for a half of people is partially from the policies implemented by the government providing support, allowances, cash handouts, and tax waivers. Although the government policies may not have prevented or aided recovery from COVID-induced economic downturns, they appear to have prevented a large decline in income and unemployment for many people. However, we cannot see any positive impact of Go To Campaign policies on income. As shown in Table 1, the third period, June to December 2020, is the campaign period, but there are no groups to increase income in the third and fourth periods.

Table 1: Patterns of Income Changes in the Pandemic (Total)

ranking	Jan to Mar 2020	Mar to June 2020	June to Dec 2020 (Go To)	Dec 2020 to Apr 2021	Share of respondents (%)
1	→	→	→	→	47.6
2	↓	↓	↓	↓	6.33
3	→	↓	→	→	5.5
4	→	→	↓	→	3.53
5	→	→	→	↓	3.47
6	↓	→	→	→	3.36
7	→	↓	↓	↓	3.06
8	↓	↓	→	→	2.08
9	→	→	↓	↓	1.99
10	→	↓	↓	→	1.97

↑ : Increase, →: No change, ↓ : Decrease

Table 2 lists the patterns of income changes in some representative sectors. Some specific industries experienced substantial declines in income during the pandemic. In the hotel accommodation and restaurant sectors, there is a polarization of the results in terms of income changes. 19% of respondents, the largest share group, experienced a decrease in income over the whole period, whereas 18% of respondents, the second largest share, reported no change over

all periods. 6% saw a continuous decrease since March 2020. 5% experienced a decline in the first state of emergency (March to June 2020). This is in a sharp contrast with Table 1.

As a comparison, Table 2 also shows the ranking of patterns of income changes in other major industries, i.e. manufacturing, finance, and insurance, and communication and information services. 46% in manufacturing as well as in finance, and 53% in communication and information services had no change in income, while only 4 to 5% of respondents experienced a decrease income over the whole period. These industries are similar to Table 1 but in a sharp contrast with accommodation and restaurant sector. Therefore, the negative shock to many specific workers in the accommodation and restaurant sector appears to have been too severe to be affected by the Go To campaign policies, government subsidies, and allowances. The polarization of income change happened in accommodation and restaurant sector.

Table 2: Patterns of Income Changes (representative sectors)

Accommodation and restaurants						Manufacturing					
ranking	Jan to Mar 2020	Mar to June 2020	June to Dec 2020 (Go To)	Dec 2020 to Apr 2021	Share of respondents (%)	ranking	Jan to Mar 2020	Mar to June 2020	June to Dec 2020 (Go To)	Dec 2020 to Apr 2021	Share of respondents (%)
1	↓	↓	↓	↓	19.44	1	→	→	→	→	46.39
2	→	→	→	→	18.06	2	↓	↓	↓	↓	4.92
3	→	↓	↓	↓	6.25	3	→	↓	→	→	4.82
4	→	↓	→	→	5.56	4	→	→	↓	→	4.02
5	↓	↓	↓	→	4.86	5	→	→	↓	↓	3.92
6	↓	↓	↓	↑	4.17	6	→	↓	↓	↓	3.71
7	↓	→	→	→	4.17	7	↓	→	→	→	3.41
8	↓	↓	→	↓	3.47	8	→	↓	↓	→	3.21
9	→	↓	→	↓	3.47	9	→	↓	↓	↓	3.01
10	↓	↓	→	→	2.78	10	↓	↓	→	→	1.81
10	→	↓	↑	→	2.78						

↑ : Increase, → : No change, ↓ : Decrease

Finance, and insurance						Information and communication services					
ranking	Jan to Mar 2020	Mar to June 2020	June to Dec 2020 (Go To)	Dec 2020 to Apr 2021	Share of respondents (%)	ranking	Jan to Mar 2020	Mar to June 2020	June to Dec 2020 (Go To)	Dec 2020 to Apr 2021	Share of respondents (%)
1	→	→	→	→	46.19	1	→	→	→	→	52.91
2	↓	→	→	→	5.71	2	↓	→	→	→	6.58
3	→	↓	→	→	5.71	3	→	→	↓	↓	4.81
4	→	→	↓	→	5.24	4	↓	↓	↓	↓	4.3
5	↑	→	→	→	4.76	5	→	↓	→	→	3.29
6	↓	↓	↓	↓	4.29	6	↓	→	→	→	2.53
7	→	→	→	↑	4.29	7	↓	↓	→	→	2.28
8	↓	↓	→	→	3.81	8	→	↓	→	↓	1.77
9	→	→	↑	→	2.86	9	→	→	↑	↑	1.77
10	→	↓	↓	↓	2.38	10	↓	↓	↓	↓	1.52
10	→	→	→	↓	2.38	10	→	↑	→	→	1.52

↑ : Increase, → : No change, ↓ : Decrease

↑ : Increase, → : No change, ↓ : Decrease

Next, we turn to the response to the Go To campaign policies captured by the survey. The fourth wave of the survey asked respondents their frequency of 1) travels using Go To Travel, 2) travels without using Go To Travel (i.e., travel at their own expense), 3) dining out using Go To Eat, 4) dining with others (outside their family and cohabitants), 5) PCR tests, and 6) applications for government allowances and financial support.

Table 3 shows the share of those who used the Go To campaign policies. In total, 27% of respondents used Go To Travel and 25% used Go To Eat. Regarding frequency, 14% of respondents used Go To Travel once, 7% twice, 4% three to four times, and 2% more than five times. Go To Eat was used by 8% of respondents once, 6% twice, 5% three to four times, and 6% more than five times.

As a comparison, Table 3 shows the frequency of travels where Go To Travel was not used and the frequency of dining out with others outside the family/cohabitants in small parties. In total, 17% of people traveled without using Go To Travel, and 31% dined out with others.

Table 3: Frequencies in Each Behavior (%)

Freq	Travel			
	Go-To-Travel	without Go-To	Go-To-Eat	Dining-out together
0	72.96	82.68	74.69	68.63
1	14.39	9.62	8.07	8.6
2	6.68	4.28	5.85	7.4
3 to 4	4.29	2.22	5.4	7.52
more than 5	1.69	1.2	5.99	7.84

The upper panel of Table 4 shows the share of respondents who used or did not use Go To Travel. In total, 69% of respondents did not travel at all, 14% traveled only using Go To Travel, without undertaking any travel fully at their own expense, 13% traveled using Go To Travel as well as traveling at their own expense, and only 4% traveled without Go To Travel.

Table 4: Use of Go-To Campaigns (%)

		Travel without Go-To-Travel					Total
		0	1	2	3 to 4	≥ 5	
Go-To-Travel	0	68.86	2.77	0.84	0.28	0.21	72.96
	1	9.18	3.65	1.02	0.4	0.13	14.39
	2	2.74	1.96	1.36	0.46	0.16	6.68
	3 to 4	1.44	1.07	0.78	0.78	0.23	4.29
	≥ 5	0.47	0.17	0.28	0.29	0.47	1.69
	Total	82.68	9.62	4.28	2.22	1.2	100
		Dining-out with others					Total
		0	1	2	3 to 4	≥ 5	
Go-To-Eat	0	58.49	4.52	3.53	4.13	4.01	74.69
	1	3.16	2.09	1.26	0.78	0.77	8.07
	2	2.29	0.92	1.35	0.78	0.5	5.85
	3 to 4	2.06	0.54	0.71	1.36	0.74	5.4
	≥ 5	2.63	0.52	0.55	0.47	1.82	5.99
	Total	68.63	8.6	7.4	7.52	7.84	100
		Go-To-Eat					Total
		0	1	2	3 to 4	≥ 5	
Go-To-Travel	0	62.68	3.22	2.17	2.45	2.44	72.96
	1	7.11	3.2	1.47	1.29	1.32	14.39
	2	2.71	0.95	1.44	0.84	0.75	6.68
	3 to 4	1.67	0.53	0.65	0.62	0.82	4.29
	≥ 5	0.51	0.17	0.12	0.21	0.67	1.69
	Total	74.69	8.07	5.85	5.4	5.99	100

The middle panel of Table 4 shows the share of respondents using Go To Eat and dining out with others outside the family/cohabitants. We note that Go To Eat covers not only dining in such small parties but also solitary dining, and thus, the two groups partially overlap. A total of 58% of respondents did not use Go To Eat or have dining parties, 16% did not use Go To Eat but dined together with others outside their family/cohabitants, 10% used Go To Eat but did not dine out with others outside their family/cohabitants, and 16% of respondents used Go To Eat as well as dined with others outside the family/cohabitants.

The bottom panel of Table 4 shows the share of respondents using both programs, Go To Travel and Go To Eat: 63% did not use either programs, 10% used only Go To Eat, 12% used only Go To Travel, and 15% used both.

As a comparison, we show the outcome of the applications for government support. The survey asked whether respondents applied to at least one of 13

support funds and benefit programs (including Emergency Small Loans, Support fund and allowances for enforced leave during the pandemic, and deductions of fees on national pensions and insurance) other than the cash handouts (as all Japanese residents received cash handouts of 100,000 yen per person). We found that 9% of respondents applied to at least one program (see Appendix Table 1 for basic statistics).

The upper panel of Table 5 reports on PCR tests and indicates that 88% of respondents did not take PCR tests; of the 12% that did get tested, 7% were only tested once. The table also indicates that 20% of respondents used Go To Travel without taking PCR tests. Out of all Go To Travel users, 77% did not take PCR tests. Similar outcomes are observed for Go To Eat (the bottom panel of Table 5), as 76% of Go To Eat users did not take PCR tests. PCR tests involve a fee in Japan and they are not yet widely used, which is problematic in terms of infection control.

Table 5: Use of Go-To Campaigns and PCR tests (%)

		PCR tests					Total
		0	1	2	3 to 4	≥ 5	
Go-To-Travel	0	67.57	3.85	0.86	0.57	0.12	72.96
	1	11.61	1.8	0.7	0.23	0.04	14.39
	2	4.69	0.87	0.62	0.38	0.12	6.68
	3 to 4	3.03	0.51	0.34	0.22	0.2	4.29
	≥ 5	1.27	0.1	0.02	0.11	0.18	1.69
	Total	88.17	7.13	2.53	1.5	0.66	100

		PCR tests					Total
		0	1	2	3 to 4	≥ 5	
Go-To-Eat	0	68.76	4.25	0.96	0.54	0.17	74.69
	1	5.89	1.26	0.57	0.25	0.1	8.07
	2	4.03	0.73	0.74	0.23	0.12	5.85
	3 to 4	4.22	0.51	0.16	0.39	0.12	5.4
	≥ 5	5.26	0.38	0.11	0.09	0.15	5.99
	Total	88.17	7.13	2.53	1.5	0.66	100

4 Estimations and Results

4.1 Basic estimations

In this section, using the fourth wave of the survey, we conduct econometric

analyses of individuals' travel and dining-out preferences to investigate what factors influenced the uptake of the Go To Eat and Go To Travel programs (See Appendix Table 1 for the basic statistics). The basic estimation equation is given as follows:

$$B_i = \alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 R_{j(i)} + Job_{o(i)} + Ind_{in(i)} + Emp_{f(i)} + Size_{s(i)} + Pref_{j(i)} + \varepsilon_i, \quad (1)$$

where dependent variable B_i denotes respondent i's behaviors. Five behaviors are investigated: (B1) domestic travels using Go To Travel, (B2) domestic travels not using Go To Travel (respondents finance all expenses), (B3) dining out using Go To Eat, (B4) dining out with other people outside the family/cohabitants, and (B5) applying to at least one government financial support and allowance program. The variables from B1 to B4 are measured by frequencies (0 for none, 1 for once, 2 for twice, 3.5 for 3–4 times, and 5 for more than 5 times in our estimation). B5 is a binary variable, acting as a dummy for whether the respondent applied for support. We conduct tobit estimations for B1–B4 because they are expressed in frequencies (0–5) and a probit estimation for B5 because it is a binary variable (equal to 0 or 1).

X denotes a set of individual variables, where *Male* is a male dummy, *Age* denotes the age variable (scaled by age 10), *Income* is the annual income in 2019 (scaled by 500,000 yen), *Univ* is a dummy for a university degree, and *ICT_skill* denotes the individual's information and community technology (ICT) skills, measured by four levels (none, introductory, intermediate, and advanced).⁴ *House_own* is a dummy for owning a house, which is a proxy for assets. In addition, there are variables for family structure. *Marry* is a dummy for having a spouse with whom one lives, *Child* is a dummy for having children under the age 20 years living in the respondent's household, and *Single* is a dummy for a single person without cohabitants.

Y denotes a set of variables concerning the individual's lifestyle change from June 2020 to December 2020, derived from the third wave of our survey. The

⁴ In terms of ICT skills, the following apply to each skill level: (1) personal computer (PC) not used for work (= 0 for our calculation), (2) introductory level (e-mail and data input by PC) (= 1), (3) intermediate level (data processing, calculations, and documentation) (= 2), and (4) advanced level (development of software, programming, and network management) (= 3). The item of this question follows the questionnaire in PIAAC and De la Rica and Gortazar (2016). G_Q06 in PIAAC

https://www.oecd.org/skills/piaac/BQ_MASTER.HTM#G_Q06

variables are *Life_1*) working hours, *Life_2*) housekeeping time (including childcare and nursing), *Life_3*) sleeping hours, *Life_4*) leisure and spare time, and *Life_5*) monthly income. The answer to each item is either a large decrease (= -2), a small decrease (= -1), no change (= 0), a small increase (= 1), or a large increase (= 2).

R denotes a set of regional variables, *NCovid* denotes the number of daily new infections in the population at respondent *i*'s residential place *j* (at the municipality level),⁵ and *GTokyo* is a dummy for the Greater Tokyo area (Tokyo, Kanagawa, Chiba, and Saitama prefectures). If respondent *i* lives in the Greater Tokyo area, then the dummy takes a value of one, otherwise zero.

Several fixed effects are added. *Job* is the occupational fixed effect, *Ind* is the sector fixed effect, *Emp* is the employment-type fixed effect, *Size* is the firm-size fixed effect, and *Pref* is the prefectural fixed effect.⁶

The first column of Table 6 reports the results for Go To Travel (B1). *Age* is significantly negative, whereas *ICT_skill*, *Univ*, *Income*, and *House_own* are significantly positive. Thus, younger, richer, educated people with high ICT skills tend to use Go To Travel more frequently. *Marry* and *Single* are significantly positive, indicating that singles or married couples without children tend use Go To Travel more frequently than others. In addition, as *Life_2* is significantly negative, whereas *Life_4* is significantly positive, this indicates that people with fewer hours of housekeeping responsibilities and more leisure and spare time during the pandemic tend to use Go To Travel more. *NCovid* and *GTokyo* are not significant.

⁵ In the rural areas (villages), the number of new infections is not available at the municipality level. However, it is available from health centers jointly handled by multiple municipalities. Thus, the number of municipality-level patients in the rural areas is derived from the number of new infections at the health center weighted by the population of each municipality.

⁶ *Job* is based on 38 occupation categories. *Ind* denotes two-digit-level industries. *Emp* is regular employees, nonregular employees, executive management, self-employed business owners (with employees), self-employed business owners (no employees), helping with in-house sales, housekeepers, students, and others. Firm size is categorized as 5–29 employees, 30–99 employees, 100–499 employees, more than 500 employees, and public offices. We note that there are 47 prefectures in Japan.

Table 6: Basic Estimations

	1		2		3		4		5	
	B1		B2		B3		B4		B5	
	coeff	t	coeff	t	coeff	t	coeff	t	coeff	z
Male	-0.1384	-1.55	-0.0328	-0.29	-0.6504	-5.09 ***	-0.3367	-2.84 ***	-0.0137	-0.29
Age	-0.0915	-5.21 ***	-0.1041	-4.66 ***	-0.171	-6.86 ***	-0.1046	-4.56 ***	-0.0673	-6.91 ***
Marry	0.78602	7.77 ***	0.6933	5.4 ***	1.46035	10.09 ***	0.2784	2.14 **	0.05108	0.95
Child	-0.0602	-0.51	0.0227	0.16	0.17385	1.06	0.1947	1.26	0.03258	0.51
Single	0.40426	3.24 ***	0.6101	3.93 ***	0.26192	1.45	0.6482	4.12 ***	-0.1042	-1.62 *
Univ	0.44528	5.29 ***	0.5195	4.87 ***	0.54618	4.52 ***	0.4616	4.15 ***	0.01137	0.26
Income	0.02304	1.74 *	0.0291	1.82 *	0.04016	2.13 **	0.0251	1.41	-0.0054	-0.76
ict_skill	0.32324	6.24 ***	0.4182	6.5 ***	0.45078	6.18 ***	0.4267	6.45 ***	0.1462	5.32 ***
House_own	0.17927	2.03 **	0.2318	2.07 **	0.38424	3 ***	0.0289	0.25	-0.1523	-3.21 ***
Life 1	-0.0555	-0.82	-0.1581	-1.82 *	-0.0663	-0.7	0.0617	0.71	-0.1215	-3.06 ***
Life 2	-0.167	-1.94 **	-0.2149	-1.96 **	-0.1334	-1.19	0.0297	0.29	-0.0579	-1.22
Life 3	0.0338	0.38	-0.0421	-0.38	0.13625	1.11	0.1013	0.92	0.02423	0.48
Life 4	0.14283	1.97 **	0.2506	2.68 ***	0.22389	2.17 **	0.2714	2.93 ***	0.03805	0.95
Life 5	0.07057	1.03	0.1547	1.75 *	-0.0415	-0.43	0.0054	0.06	-0.1142	-2.95 ***
GTokyo	0.17524	0.82	-0.3122	-1.2	1.36916	4.16 ***	0.356	1.27	0.01233	0.11
RCOVID	21.096	1.09	27.674	1.18	63.8544	2.35 **	45.611	1.8 *	14.3336	1.46
NoB	9197		9197		9197		9197		9197	
Log likelihood	-8968		-6458.6		-9272.8		-11027		-2432.4	
R2	0.0303		0.0374		0.0382		0.0236		0.1245	
Tobit		Tobit		Tobit		Tobit		Tobit		Probit

NOTE: All fixed effects (Job, Ind, Emp, Size, Prefw) are included, but omitted to report from the table.

***: p<0.01, ** p<0.05, * p<0.1

As a comparison, the second column of Table 6 reports the results for travels by individuals who did not use Go To Travel (B2). Similar to column 1 (the Go To Travel estimation), *Age* is significantly negative and *ICT skills*, *Univ*, *Income*, and *House_own* are significantly positive. Younger, richer, educated persons with higher ICT skills tend to travel more without using Go To Travel compared with other individuals. In addition, *Life_1* and *Life_2* are significantly negative, whereas *Life_4* and *Life_5* are significantly positive. That is, persons with reduced working hours but increased monthly incomes tend to travel during the pandemic without using Go To Travel. Overall, those who travel with and without using Go To Travel have similar socioeconomic characteristics. The magnitudes of almost all significant variables (except *Marry*) in B2 are larger than in B1. The Go To Travel campaign benefits are available only from affiliated accommodation services, and it includes some luxurious services and different coupons across destinations. This requires greater information-seeking or search costs, which might be burdensome for some individuals. By contrast, there are no restrictions on destinations or what accommodation is used in the case of travels without Go To Travel. Therefore, the elasticities of the variables in B2 may tend to be larger than those in B1.

Next, the third column of Table 6 reports the results for the Go To Eat campaign

(B3). *UNIV*, *Income*, *Marry*, *ICT_skill*, and *House_own* are significantly positive, and *Male* and *Age* are significantly negative. *Life_4* is significantly positive. Thus, younger, richer, highly educated females with high ICT skills, who are married without children and have more spare time, tend to use Go To Eat more than others. *NCOVID* and *GTokyo* are significantly positive. The Greater Tokyo area has more available restaurants and eateries, enabling more frequent use of Go To Eat.

As a comparison, the fourth column of Table 6 reports the result on dining with small groups outside the family or cohabitants (B4). The significant variables are similar to those for the Go To Eat estimation. However, *Single* is now significantly positive, whereas *Income* and *House_own* are not significant. Because the Go To Eat campaign covers many small inexpensive eateries for single persons, it enables frequent use by singles and those who are not wealthy. *NCOVID* is now weakly significant, but *GTokyo* is not significant. Thus, the frequency of dining together outside the family/cohabitants is less biased toward the Great Tokyo and urban areas. The Go To Eat campaign operates only with affiliated restaurants and eateries. Because urban areas have a concentration of such places, residents have a relative advantage in terms of the availability of affiliated venues and use of the program.

The fifth column of Table 6 reports on whether respondents applied for a government financial support and allowance program (B5). *Age* is significantly negative, whereas *ICT_skill* is significantly positive. Although *Income* is negative but not significant, *House_own* is significantly negative. Younger, less asset-rich people with high ICT skills tend to apply for government support. Furthermore, *Life_1* and *Life_5* are significantly negative, in contrast with the other estimations. The workers who experienced significantly reduced working hours and reductions in income in the pandemic tend to apply for financial support and allowances.

In essence, the government policies, i.e., the Go To campaigns and government subsidy programs, appear to work to some extent. Those whose income declined significantly during the COVID pandemic tend to apply to the government financial support and allowances program, whereas those with higher incomes and assets tend to use the Go To programs. This indicates that the government policies worked well to some extent in the sense that they assisted people whose income declined sharply and encouraged spending by wealthier people to stimulate the economy.

4.2 Noneconomic factors (behavioral bias, attitude toward COVID, and personality traits)

Now, we add a set of noneconomic factor variables, Z , to eq (1), as follows:

$$B_i = \alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 R_{j(i)} + \beta_4 Z_i + Job_{o(i)} + Ind_{in(i)} + Emp_{f(i)} + Size_{s(i)} + Pref_{j(i)} + \varepsilon_i, \quad (2)$$

where Z is composed of 1) behavioral biases, 2) attitudes toward COVID-19-related government policies and individuals' behaviors in terms of countermeasures (using masks and social distancing), and 3) personality traits, as categorized by the Big 5.

The first set of variables concerns behavioral biases, i.e., time preferences (*Time_pref*) and risk measures (*Risk*). The question on time preference is the following: "Instead of receiving 10,000 yen one month later, at least how much would you like to receive 13 months later?" There is then a choice of eight options: 1 = 9,500 yen, 2 = 10,000 yen, 3 = 10,200 yen, 4 = 10,400 yen, 5 = 10,600 yen, 6 = 11,000 yen, 7 = 12,000 yen, or 8 = 14,000 yen. Selecting a higher value infers that the respondent has higher time preferences. Risk attitude is measured from 0 (not willing to take risk at all) to 10 (willing to take risk) in daily life. Higher values indicate that the respondents prefer higher risk and higher returns, and vice versa.

Second, respondents' attitudes toward COVID-19 are added to the estimation using two questions. In the first question, respondents were asked whether the government should place more emphasis on economic countermeasures than on containing COVID-19. Respondents could choose agree (= 1), or disagree (= 0), with the variable for the estimations, *Policy*, being a binary variable based on the respondents' preferences concerning economic countermeasures. We find that 26% of respondents would prefer the government to put more emphasis on economic countermeasures (see the variable "Policy" in Appendix Table 1). The other question concerned the respondents' own countermeasures against COVID-19 in their daily life. The survey asked respondents about the frequency with which they (1) washed their hands and used a face mask and (2) avoided mass gatherings and followed social distancing. In the survey, the respondents were asked to choose one of five options, "always," "frequently," "sometimes," "seldom," and "never," for both types of behaviors. The results are shown in Appendix Table 2. Around 60% of respondents answered that they always or

frequently washed their hands and used a mask, whereas only around 38% responded that they always or frequently maintained social distancing. Our variable for estimation, *Mask_distance*, takes the mean of the answers to (1) and (2), where “always” = 4 for the calculation, “frequently” = 3, “sometimes” = 2, “seldom” = 1, and “never” = 0.

Third, personality traits measured by the Big 5 are added. In the field of psychology, the Big 5 personality traits refer to five basic dimensions of personality: extraversion (*E*), agreeableness (*A*), openness (*O*), conscientiousness (*C*), and neuroticism (*N*) (see Nettle (2009) for more details). It is well known that one’s Big 5 personality trait remains stable over time (Soldz and Vaillant, 1999) and is influenced by genes and growing environments in childhood. The genetic influence makes up 40–60% of the Big 5 personality (Jang et al., 1996). Thus, it is unlikely that the COVID-19 pandemic would alter a respondent’s Big 5 personality.

Extraversion (*E*) features sociability, talkativeness, and social interest. Thus, higher extraversion means a person is more outgoing, whereas lower extraversion means a person is more reserved. In the literature, extraversion is positively associated with spending more time in some social contexts (Diener et al., 1984). Higher extraversion can predict more alcohol consumption, popularity, parties attended, dating variety, and exercise (Paunonen, 2003). Extraversion is negatively associated with being alone but positively associated with spending time with friends and colleagues (Wrzus et al., 2016). Agreeableness (*A*) indicates attributes such as trust, altruism, and being kind and considerate to others. Agreeableness is positively associated with higher team performance (Bell, 2007; Bradley et al., 2013). Openness (*O*) features characteristics such as creativity, imagination, and insight. Higher openness indicates a broad range of interests. This is positively associated with interacting with strangers but negatively associated with doing nothing and being with family (Wrzus et al., 2016). Conscientiousness (*C*) features thoughtfulness and goal-directed behaviors. It is associated with behaving responsibly, carefully, and with self-discipline. It is positively associated with engaging in working (Wrzus et al., 2016). Persons with higher conscientiousness are likely to perform fastest in most information-seeking tasks (Al-Samarraie et al., 2017). In the case of school students, it has been found that the more conscientious students were, the more time they spent in class and public places other than restaurants, bars, and cafés (Mehl et al., 2006). Neuroticism (*N*) is characterized by frequent worries, sadness,

and emotional instability. People with higher neuroticism tend to prefer more strongly to be alone (Mehl et al., 2006).

Table 7 reports the results. In all columns, *Policy* and *Risk* are significantly positive, while *Time_pref* is significantly negative. Thus, people who would prefer the government to focus more on economic countermeasures rather than strict epidemic controls, have lower time preferences, and prefer high risk and high returns are likely to travel and dine out more even during periods when the spread of infections is higher. Both traveling and eating out involve a higher risk of infection, and, therefore, those who enjoy engaging in these activities during the pandemic tend to be risk takers. By contrast, travel and eating out during the pandemic require careful planning, with hedging against high infection periods and places, which requires patience and, thus, lower time preferences.

Table 7: Non-economic Factors

	1		2		3		4		5				
	B1	coeff	B2	coeff	t	B3	coeff	t	B4	coeff	t	B5	z
Male	-0.1346	-1.48	-0.0908	-0.79		-0.5931	-4.57 ***		-0.2409	-2.02 **		-0.0249	-0.51
Age	-0.0853	-4.83 ***	-0.089	-3.98 ***		-0.1686	-6.69 ***		-0.1211	-5.24 ***		-0.0601	-6.1 ***
Marry	0.7153	7.15 ***	0.64048	5.06 ***		1.39538	9.67 ***		0.20207	1.57		0.04065	0.74
Child	-0.0908	-0.79	-0.0143	-0.1		0.1413	0.86		0.15278	1		0.02793	0.43
Single	0.3529	2.88 ***	0.57104	3.72 ***		0.22122	1.24		0.62253	4.01 ***		-0.113	-1.75 *
Univ	0.41709	4.98 ***	0.49237	4.63 ***		0.48841	4.05 ***		0.40004	3.62 ***		-0.0043	-0.1
Income	0.01255	0.96	0.01711	1.08		0.02965	1.58		0.01724	0.97		-0.0098	-1.37
ict_skill	0.27033	5.27 ***	0.34352	5.4 ***		0.38271	5.26 ***		0.36853	5.59 ***		0.12516	4.55 ***
House_own	0.14193	1.63 *	0.18134	1.65 *		0.33748	2.65 ***		-0.0059	-0.05		-0.1629	-3.43 ***
Life 1	-0.0373	-0.56	-0.1318	-1.58		-0.0435	-0.47		0.06957	0.83		-0.117	-3.02 ***
Life 2	-0.1812	-2.17 **	-0.2261	-2.14 **		-0.1723	-1.58		-0.03	-0.3		-0.0564	-1.22
Life 3	0.02399	0.28	-0.0401	-0.37		0.14563	1.21		0.12605	1.16		0.0261	0.52
Life 4	0.11483	1.64 *	0.20945	2.33 **		0.18577	1.85 *		0.21605	2.39 **		0.03585	0.91
Life 5	0.06082	0.91	0.14319	1.65 *		-0.0246	-0.25		0.03956	0.45		-0.1155	-2.98 ***
GTokyo	0.14669	0.69	-0.3651	-1.41		1.34211	4.09 ***		0.32211	1.16		0.01583	0.14
RCOVID	15.1059	0.78	16.5893	0.72		56.3685	2.1 **		41.7739	1.66 *		11.8892	1.2
Risk	0.08398	4.75 ***	0.11424	5.11 ***		0.06012	2.38 **		0.08739	3.83 ***		0.04808	5.12 ***
Time_pref	-0.0883	-5.06 ***	-0.077	-3.5 ***		-0.107	-4.2 ***		-0.0471	-1.98 *		-0.044	-4.91 ***
Policy	0.61269	7.63 ***	0.69824	7.12 ***		0.86258	7.65 ***		0.60962	5.79 ***		0.17977	4.09 ***
Mask_distance	0.04727	1.62	0.07983	2.18 **		0.15659	3.69 ***		0.15243	3.97 ***		0.05546	3.6 ***
E	0.19294	5.23 ***	0.19246	4.11 ***		0.23145	4.32 ***		0.3359	6.82 ***		0.04574	2.29 **
A	0.08305	1.95 **	-0.0263	-0.48		0.14527	2.34 **		0.46683	8.42 ***		-0.0521	-2.24 **
C	-0.069	-1.65	-0.2092	-3.95 ***		-0.0796	-1.32		-0.2962	-5.47 ***		-0.0169	-0.76
N	-0.0125	-0.3	-0.1089	-2 **		0.03455	0.55		0.01913	0.34		0.00097	0.04
O	0.01434	0.34		0.15	2.78 ***	0.02072	0.34		-0.0542	-0.97		0.03209	1.45
NoB	9197		9197			9197			9197			9197	
Log likelihood	-8885.3		-6375.9			-9208.4			-10923			-2382.7	
R2	0.0393		0.0497			0.0449			0.0328			0.1424	
Tobit		Tobit		Tobit		Tobit		Tobit		Tobit		Probit	

NOTE: All fixed effects (Job, Ind, Emp, Size, Prefw) are included, but omitted to report from ***: p<0.01, ** p<0.05, * p<0.1

Regarding the Big 5, all behavior columns have significantly positive results for E. A is significantly positive in B1, B3, and B4, but significantly negative in B5. C is significantly negative in B2 and B4. Thus, extraversion is positively correlated with traveling and dining out with people outside the family and cohabitants. This

is consistent with the psychology literature, as more extraverted people tend to attend more parties (Paunonen, 2003) and spend more time with friends and colleagues (Wrzus et al., 2016). Furthermore, as higher extraversion means a person is more outgoing, rather than reserved, such people tend to be frank and unhesitant about asking for help, such as financial support from the government. Agreeableness means people are considerate of others, which could lead them to enjoy organizing trips and dining-out experiences for others using the Go To programs. This is consistent with previous psychology studies on agreeableness (Bell, 2007; Bradley et al., 2013). Conversely, those who apply for government support tend to protect their own livelihoods and themselves and, thus, tend to be more selfish or less altruistic, which is why they are less agreeable in our result. Conscientiousness (C) is associated with behaving responsibly, carefully, and with self-discipline. Because those who travel using Go To Travel have to seek information or register with this government program, they are more conscientious. This is consistent with the existing psychology literature on conscientiousness and information-seeking behaviors (e.g., Al-Samarraie et al., 2017).

5 Further Investigations

5.1 Travelers who use Go To Travel and other travelers

Now, we focus only on those who traveled during the pandemic. Although the Go To Travel campaign offered benefits to travelers, accessing them imposed some burdens. As mentioned above, the program was available only at affiliated hotels and accommodation. Moreover, some cities suddenly stopped accepting Go To Travel visitors, for example, Osaka and Sapporo ceased participating in the program on November 23, 2020. Thus, to use the program, travelers needed to carefully seek information on the Internet about eligibility and consider whether the affiliated tour packages matched to their preferences. Here, we investigate what factors led people to choose participation in Go To Travel or to travel at their own expense. Based on all respondents who traveled, we conduct the following probit estimation:

$$\begin{aligned}
 \text{Prob}(\text{Use}_i) = \Phi(\alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 R_{j(i)} + \beta_4 Z_i + \text{Job}_{o(i)} + \text{Ind}_{in(i)} + \text{Emp}_{f(i)} \\
 + \text{Size}_{s(i)} + \text{Pref}_{j(i)} + \varepsilon_i),
 \end{aligned} \tag{3}$$

where *Use* is a dummy for a traveler using Go To Travel. If the traveler uses Go To Travel at least once, then the dummy takes a value of one, and zero otherwise. All independent variables are the same as in eq (2). The first column of Table 8 reports the results. Many variables are not significant. However, conscientiousness (C) is significantly positive and time preference is significantly negative. Thus, travelers who are more conscientious and more patient tend to use Go To Travel. As discussed before, because using Go To Travel involves some information-seeking tasks, it requires more conscientious traits and more patience. As mentioned above, the applicability and benefits of the Go To Travel program vary across accommodations as well as destinations and services, and are not applicable to all accommodations. Owing to considerations of infection control, the program covered many small-scale tours and luxurious hotel accommodation, rather than group and package tours. Thus, those who are more conscientious tend to participate in the program and partake in smaller scale but luxurious trips.

Table 8: Further investigations

	1		2		3		4		5	
	Travellers(B1, B2)		Dining-out (B3, B4)		GoTo (B1, B3)		PCR in B1		PCR in B3	
	coeff	z	coeff	z	coeff	z	coeff	z	coeff	z
Male	0.1367	1.63	-0.1053	-1.9 *	0.14633	2.33 **	0.1713	2.17 **	0.227	2.7 ***
Age	-0.0266	-1.78 *	-0.0487	-4.56 ***	-0.0154	-1.31	-0.1056	-6.94 ***	-0.134	-7.77 ***
Marry	0.0157	0.18	0.42429	7.11 ***	0.03173	0.48	0.0703	0.8	-0.095	-1.05
Child	-0.0928	-1.02	0.05766	0.84	-0.0521	-0.72	0.0229	0.23	0.0919	0.87
Single	-0.0695	-0.66	-0.0374	-0.52	0.14264	1.69 *	0.0229	0.22	0.0093	0.08
Univ	0.1104	1.56	0.07258	1.45	0.03609	0.66	-0.0043	-0.06	-0.021	-0.27
Income	-0.0025	-0.21	0.00544	0.69	-0.0121	-1.32	0.0068	0.62	0.0145	1.19
ict_skill	-0.0674	-1.52	0.05224	1.67 *	0.02894	0.85	0.0743	1.69 *	0.1289	2.78 ***
House_own	0.0581	0.77	0.15854	3.04 ***	-0.0901	-1.53	0.0241	0.32	0.0234	0.29
Life 1	-0.0038	-0.07	-0.0626	-1.75 *	0.00382	0.09	-0.2024	-3.98 ***	-0.215	-4.03 ***
Life 2	-0.0797	-1.26	-0.0647	-1.47	-0.0698	-1.45	-0.2592	-4.08 ***	-0.235	-3.76 ***
Life 3	-0.0152	-0.24	0.00193	0.04	-0.0051	-0.1	-0.0585	-0.93	-0.05	-0.76
Life 4	-0.0571	-1.02	0.01319	0.33	-0.0191	-0.45	0.0389	0.71	0.0408	0.7
Life 5	-0.07	-1.34	0.00338	0.09	0.03013	0.75	0.1263	2.42 **	0.1429	2.49 **
GTokyo	0.0088	0.05	0.33276	2.52 **	-0.2643	-1.7 *	-0.1623	-0.91	-0.455	-2.23 **
RCOVID	11.398	0.68	9.40134	0.82	-7.5539	-0.58	23.831	1.53	15.583	0.96
Risk	0.012	0.85	0.0059	0.57	0.03613	3.2	0.0546	3.69 ***	0.0416	2.62 ***
Time_pref	-0.0598	-3.64 ***	-0.0472	-4.17 ***	-0.0338	-2.72 ***	-0.1037	-7.01 ***	-0.106	-6.54 ***
Policy	-0.103	-1.57	0.10456	2.22 **	-0.0113	-0.22	-0.0735	-1.1	-0.045	-0.65
Mask_distance	-0.0221	-0.87	-0.0041	-0.22	-0.0405	-2.01 **	-0.0036	-0.14	-0.027	-0.99
E	0.0464	1.52	0.01895	0.91	0.04792	2.06 **	0.0833	2.59 **	0.0722	2.12 **
A	-0.0287	-0.84	-0.0881	-3.63 ***	-0.0121	-0.45	-0.1683	-4.7 ***	-0.169	-4.3 ***
C	0.077	2.3 **	0.05536	2.4 **	-0.0101	-0.39	-0.0007	-0.02	0.0065	0.17
N	0.0262	0.76	-0.0004	-0.02	-0.0194	-0.73	-0.0289	-0.79	-0.006	-0.16
O	-0.0544	-1.57	0.02706	1.12	0.00617	0.23	0.0264	0.72	0.0345	0.88
NoB	2,809		3,803		3428		2,451		2,297	
Log likelihood	-1021.9		-2345.4		-1867.1		-1097.9		-973.3	
R2	0.0774		0.0789		0.075		0.1877		0.2245	
Probit			Probit		Probit		Probit		Probit	

NOTE: All fixed effects (Job, Ind, Emp, Size, Prefw) are included, but omitted to report from the ***: p<0.01, ** p<0.05, * p<0.1

5.2 Go To Eat campaign for eating out

Next, we focus on eating out. As discussed above, Go To Eat, similar to Go To Travel, was available only at affiliated restaurants and eateries. We investigate those who chose to eat out using Go To Eat. Our sample includes only those who dined out and is composed of two groups: respondents who used Go To Eat and those who chose to dine out with other people outside their family and/or cohabitants.⁷ We conduct a probit estimation using eq (3). The dependent variable, *Use*, is now a dummy for Go To Eat users.

The second column of Table 8 reports the results. *GTokyo* is significantly positive, as are *Marry*, *House_own*, *ICT_skill*, *Policy*, and *C*. Then, *Male*, *Age*, *Time_pref*, *A*, and *Life_1* are significantly negative. Younger females with higher ICT skills and lower time preferences, who are more conscientious and less agreeable, tend to use Go To Eat. The Go To Eat campaign requires information-seeking tasks to determine which restaurants are affiliated with the campaign and offer reward points, and, thus, it requires conscientiousness. Reward points are provided only to the person who booked even if others dine out with them, and, thus, the program might attract less altruistic, i.e., less agreeable, people. Younger persons with high ICT skills are advantaged by such a booking system. The Greater Tokyo area has a higher concentration of eating places, and, thus, its residents tend to use Go To Eat more than those living elsewhere.

5.3 Comparison of Go To Travel and Go To Eat users

Now, we compare the users of Go To Travel with those using Go To Eat, using the estimation sample of all Go To participants. We conduct a probit estimation using eq (3). The dependent variable, *Use*, is now a dummy for using Go To Travel. The third column of Table 8 reports the results. *GTokyo*, *Time_pref*, and *Mask_distance* are significantly negative, whereas *Male*, *Single*, and *E* are significantly positive. Thus, compared with Go To Eat users, the users of Go To Travel are more likely to be male, be single, have lower time preferences, be more extraverted, and live outside the Greater Tokyo area. This confirms the results presented in Table 7.

⁷ Unlike the travelers in the previous subsection, the two groups are not independent. Some of those who dine out with others outside their family/cohabitants use the Go To Eat program.

5.4 Go To campaigns and PCR tests

As the Go To campaigns promote labor mobility, they also contribute to the spread of COVID-19 infections (Anzai and Nishiura, 2021). If PCR tests were mandatory for use of the programs, they could function as countermeasures against COVID to some extent and mitigate the spread of infections. However, in Japan, there is a charge for PCR tests. As shown in Section 2, only a small share of Go To program users took PCR tests. We investigate which individuals took PCR tests among the Go To program users. Our survey asked respondents about their frequency of PCR testing, although it did not ask whether the tests were conducted because they were traveling and dining out, and they may have had other motivations for taking the tests.

We use the following probit estimation:

$$\begin{aligned} \text{Prob}(\text{PCR}_i) = \Phi(\alpha + \beta_1 X_i + \beta_2 Y_i + \beta_3 R_{j(i)} + \beta_4 Z_i + \text{Job}_{o(i)} + \text{Ind}_{in(i)} + \text{Emp}_{f(i)} \\ + \text{Size}_{s(i)} + \text{Pref}_{j(i)} + \varepsilon_i), \end{aligned} \quad (4)$$

where PCR is a dummy for taking PCR tests, which takes a value of one if respondent i took a PCR test. The fourth (fifth) column of Table 8 reports the results for Go To Travel (Go To Eat) users. For Go To Travel, Age is significantly negative, whereas Male and ICT skills are significantly positive. Risk and E are significantly positive, while Time_Pref and A are significantly negative. Life_1 and Life_2 are negative and Life_5 is positive. Thus, among the Go To Travel users, younger males with high ICT skills tend to take PCR tests. People with lower working or housekeeping hours but increasing incomes in the pandemic tend to take PCR tests. This indicates that those who took PCR tests tend to have spare time and money. In addition, people with higher risk attitudes and lower time preferences tended to take tests. As shown in the previous estimation, risk-taking Go To Travelers with lower time preferences tended to travel more frequently. Thus, they might tend to take PCR tests more. More extraverted and less agreeable people also tend to take tests. Extraversion involves high social interest, which triggers people to take PCR tests.

Next, the fifth column of Table 8 reports the results for Go To Eat users. GTokyo and Age are significantly negative, whereas Male and ICT skills are significantly positive. Risk and E are significantly positive, whereas Time_pref and A are significantly negative. Life_1 and Life_2 are significantly negative and Life_5 is

positive. Again, those who have more spare time and money in the pandemic tend to take PCR tests. The results are similar to those for Go To Travel. One slight difference is the regional factor, *GTokyo*. People living in the Greater Tokyo area tend to take tests more because they frequently use Go To Eat and because they live in closer proximity to neighbors, given the density of living, which exposes them to larger numbers of new infections.

Although our survey cannot directly identify reasons for taking PCR tests and cannot fully identify causality, it seems that the government cannot strategically combine the Go To campaign policies and infection controls such as PCR tests. However, there is scope to implement some infection controls in the Go To campaigns. For instance, the government could provide some incentives or regulations encouraging PCR tests and/or vaccinations when using Go To campaigns for some specific people (e.g., the elderly and lower-income people) and/or for specific regions (e.g., urban areas with large populations and islands with fewer hospitals). It is problematic that there is a charge to undertake the tests, which reduces incentives for lower-income people to take them.

Or it might be costly to implement Go To campaign policies. Only certain people with specific socioeconomic characteristics and personal traits tend to use the tax-funded Go To campaign policies. On the other hand, these demand-inducing policies do not contribute greatly to boosting income for the accommodation and restaurant sectors. Some people in these sectors experienced continuously declining incomes during the spread of COVID. We cannot see any large groups of increasing income during and after the period of campaigns (i.e., June to December 2020 and December 2020 to April 2021) in Table 2. Therefore, it appears to be difficult or costly to combine economic countermeasures to boost these industry sectors with policies to contain infections. It might be better to concentrate on controlling infections and spend on PCR tests and a contact tracing system rather than focusing on economic countermeasures. This is similar to Acemoglu et al. (2020), who suggests that early targeted interventions supported by an effective testing and tracing system could be the most effective and least-cost interventions.

Overall, users of the Go To campaigns belong to specific groups. As shown above, those with specific characteristics, particularly personal traits such as higher extraversion, tend to travel and eat out despite the spread of COVID infections and benefit from the Go To campaign policies. These policies are financed by all tax payers; however, as their impact is inequitable, they may be

perceived as unfair if they persist beyond provisional or short-run policies.

6 Conclusions

This paper studies demand-inducing policies, the Go To campaigns, for traveling and eating out during the COVID-19 pandemic in Japan. Using a unique individual survey, we find that rich, educated persons, with high ICT skills, tend to use these programs and, in the case of Go To Eat, those who live in the Greater Tokyo area. In addition to these factors, personality traits matter. More risk-taking individuals with lower time preferences and higher extraversion tend to use the Go To programs. Most users did not take PCR tests, and, thus, these demand-inducing policies increase the difficulty of infection control.

Reference

Acemoglu, D., V. Chernozhukov, I. Werning, and M. D. Whinston (2020). Optimal Targeted Lockdowns in a Multi-Group SIR Model

Anzai, A., Nishiura, H. (2021). “Go To Travel” Campaign and Travel-Associated Coronavirus Disease 2019 Cases: A Descriptive Analysis, July–August 2020. *Journal of Clinical Medicine*, 10, 398

Al-Samarraie, H., Eldenfria, A., & Dawoud, H. (2017). The impact of personality traits on users’ information-seeking behavior. *Information Processing & Management*, 53(1), 237-247.

Bell, S. T. (2007). Deep-level composition variables as predictors of team performance: A meta-analysis. *Journal of Applied Psychology*, 92, 595-615

Bradley, B. H., Baur, J. E., Banford, C. G., & Postlethwaite, B. E. (2013). Team players and collective performance: How agreeableness affects team performance over time. *Small Group Research*, 44(6), 680-711.

De La Rica, S., & Gortazar, L. (2016). *Differences in job de-routinization in OECD countries: Evidence from PIAAC* (No. 9736). *IZA Discussion Papers*.

Diener, E., Larsen, R. J., & Emmons, R. A. (1984). Person× Situation interactions: Choice of situations and congruence response models. *Journal of personality and social psychology*, 47(3), 580.

Farzanegan M., Gholipour, H., Feizi, M, Nunkoo, R., and A. Andargoli (2020), ‘International tourism and outbreak of Coronavirus (COVID-19): A cross-country analysis’, *Journal of Travel Research*.

Fetzer, T. (2020). *Subsidizing the Spread of Covid19: Evidence from the UK's Eat-out To-help-out Scheme*. CAGE working paper 517, University of Warwick, Department of Economics.

Funashima, Y., & Hiraga, K. (2020). Where to Go: The Japanese Government's Travel Subsidy during COVID-19. *Available at SSRN 3746114*.

Jang, K. L., Livesley, W. J., & Vemon, P. A. (1996). Heritability of the big five personality dimensions and their facets: A twin study. *Journal of personality*, 64(3), 577-592.

Kraemer MUG, Yang C-H, Gutierrez B, et al. (2020) The effect of human mobility and control measures on the COVID-19 epidemic in China. *Science*;368:493–7.

Matsuura, T., Saito, H. (2021). Designing a tourism stimulus during the COVID-19 pandemic in Japan. *RIETI Discussion Paper Series 21-E-012*

Mehl, M. R., Gosling, S. D., & Pennebaker, J. W. (2006). Personality in its natural habitat: manifestations and implicit folk theories of personality in daily life. *Journal of personality and social psychology*, 90(5), 862.

Miyawaki, A., Tabuchi, T., Tomata, Y., & Tsugawa, Y. (2021). Association between participation in the government subsidy programme for domestic travel and symptoms indicative of COVID-19 infection in Japan: cross-sectional study. *BMJ open*, 11(4), e049069.

Nettle, D. (2009). *Personality: What makes you the way you are*. Oxford University Press.

OECD (2020), 'Mitigating the impact of COVID-19 on tourism and supporting recovery' , *OECD Tourism Papers*, 2020/03, OECD Publishing, Paris.

Okubo, T. (2020). Spread of COVID-19 and Telework: Evidence from Japan. *Covid Economics*, 32, 1-25.

Okubo, T. & Nippon Institute for Research Advancement. (2021). *Report on the results of a questionnaire survey concerning the impact of the use of telework to respond to the spread of the COVID-19 on working styles, lifestyles, and awareness*. Nippon Institute for Research Advancement.

Paunonen, S. V. (2003). Big Five factors of personality and replicated predictions of behavior. *Journal of personality and social psychology*, 84(2), 411.

Soldz, S., & Vaillant, G. E. (1999). The Big Five personality traits and the life course: A 45-year longitudinal study. *Journal of Research in Personality*, 33(2), 208-232.

Wrzus, C., Wagner, G. G., & Riediger, M. (2016). Personality-situation

transactions from adolescence to old age. *Journal of personality and social psychology*, 110(5), 782.

World Tourism Organization. Understanding Domestic Tourism and Seizing Its Opportunities.: <https://hrturizam.hr/wp-content/uploads/2020/09/unwto-3.pdf>

Zhao S, Zhuang Z, Cao P, et al. (2020) Quantifying the association between domestic travel and the exportation of novel coronavirus (2019-nCoV) cases from Wuhan, China in 2020: a correlational analysis. *Journal of Travel Medicine*; 27:taaa022.

Appendix Table 1: Basic Statistics

Variable name	definition	Mean	Min	Max	Sd	Num
PCR	Freq of PCR tests	0.207676	0	5	0.692252	9197
B1	Freq of Go-To-Travel	0.51196	0	5	1.047075	9197
B2	Freq of travels without Go-To	0.319343	0	5	0.858147	9197
B3	Freq of Go-To-Eat	0.686365	0	5	1.415465	9197
B4	Freq of dining-out	0.889421	0	5	1.572572	9197
B5	Application to government subsi	0.089812	0	1	0.285928	9197
GTokyo	Greater Tokyo Area dummy	0.334239	0	1	0.47175	9197
RCOVID	Case of covid per capita	0.004275	0	0.021	0.003078	9197
Male	Male dummy	0.562357	0	1	0.496123	9197
Age	Age	8.048168	2	12	2.693323	9197
Marry	Spouse living together	0.52017	0	1	0.49962	9197
Child	Child living together	0.222681	0	1	0.416069	9197
Single	Single and living alone	0.142764	0	1	0.349851	9197
House_own	House own dummy	0.643579	0	1	0.478968	9197
Univ	University degree dummy	0.515168	0	1	0.499797	9197
Income	Income	4.126645	0.25	21.25	3.443632	9197
ict_skill	ICT skill	1.388605	0	3	0.912382	9197
Life 1	Change of working hours	-0.09808	-2	2	0.662283	9197
Life 2	Change of housekeeping hours	0.081548	-2	2	0.475914	9197
Life 3	Change of sleeping hours	-0.03882	-2	2	0.511199	9197
Life 4	Change of leisure and spare tim	0.022942	-2	2	0.622208	9197
Life 5	Change of monthly income	-0.21768	-2	2	0.654077	9197
Risk	Risk attitude	3.813744	0	10	2.232368	9197
Time_pref	Time preference	6.163749	1	8	2.063567	9197
Policy	More economic countermeasure	0.264543	0	1	0.441113	9197
Mask_distance	Covid countermeasure	2.191639	0	4	1.331642	9197
E	Extraversion	3.738882	1	7	1.159298	9197
A	Agreeableness	4.593509	1	7	1.002774	9197
C	Conscientiousness	4.076384	1	7	1.068046	9197
N	Neuroticism	3.945906	1	7	1.053012	9197
O	Openness	3.833098	1	7	1.018068	9197

Appendix Table 2: People's COVID countermeasures (%)

	washing hands	social distance
always	35.28	15.62
frequently	26.28	23.42
sometimes	12.44	19.11
seldom	8.62	15.29
not at all	17.38	26.56