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# Mizuho Economic Outlook & Analysis

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June 18, 2021

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## *Economic effect of accelerated vaccinations* *One million shots per day will boost Japan's FY2021 GDP by 1%*

### < Summary >

- ◆ The pace of the COVID-19 vaccine rollout has been rapidly accelerating since May. As the working-age population begins to get vaccinated along with the elderly, the pace of vaccination could rise to 1 million shots per day on average going forward.
- ◆ If the pace of vaccination accelerates to 1 million doses a day, the timing of economic normalization in Japan will move up, lifting the nation's GDP by 1% in FY2021 (economic effect estimated to be around 6 trillion yen). This implies that the vaccine rollout is the most effective economic measure.
- ◆ After the summer, the slowdown in the pace of vaccination (anti-vaccination) will emerge as a new issue as the vaccination rate increases. It is necessary to introduce an economic incentive program to receive the COVID-19 vaccine in order to encourage those who remain uninoculated to participate in the vaccine rollout.

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## 1. Introduction

The pace of the COVID-19 vaccine rollout started to pick up in May 2021. Although the average number of shots administered per day since the latter half of April (7-day backward moving average in light of the drop in the number of shots on Saturday and Sunday) remained at around 160,000 centering on doses administered to medical workers, the full-fledged vaccine rollout for seniors after the long holiday in May (Golden Week) boosted the pace of vaccination, pushing up the average shots per day to 810,000 at its peak, with the actual number of shots per day before calculating the 7-day average reaching 910,000 (June 9).<sup>1</sup> (**Chart 1, left panel**, data as of June 17.)

In our report released in February 2021 (Onodera et al. [2021]), we assumed the pace of vaccination to be “3 to 4 million shots per week” (430,000 to 570,000 shots per day), but the actual level achieved recently has already surpassed this assumption. Prime Minister Yoshihide Suga declared in the May 7 press conference that Japan aimed to ramp up the COVID-19 vaccine rollout to 1 million shots administered per day, revealing the government’s policy to accelerate the pace of vaccination even more.

In this report, we discuss the possibility of accelerating the pace of vaccination after reviewing the current status of the vaccine rollout. Furthermore, we will conduct a simulation using the accelerated pace of vaccination based on an epidemiological model in order to estimate the impact of a faster vaccine rollout on the Japanese economy. Lastly, we will propose certain measures that the government should consider for the purpose of encouraging the unvaccinated to participate in the COVID-19 vaccine rollout, since vaccine hesitancy may pose a challenge in promoting the vaccine rollout throughout the nation to stamp out the spread of the coronavirus.

## 2. Why has the pace of vaccination accelerated? To what extent will the pace accelerate in the future?

### (1) Increased vaccine delivery, vaccination of the elderly by municipalities, and additional medical staff to administer the shots have contributed to a faster vaccine rollout

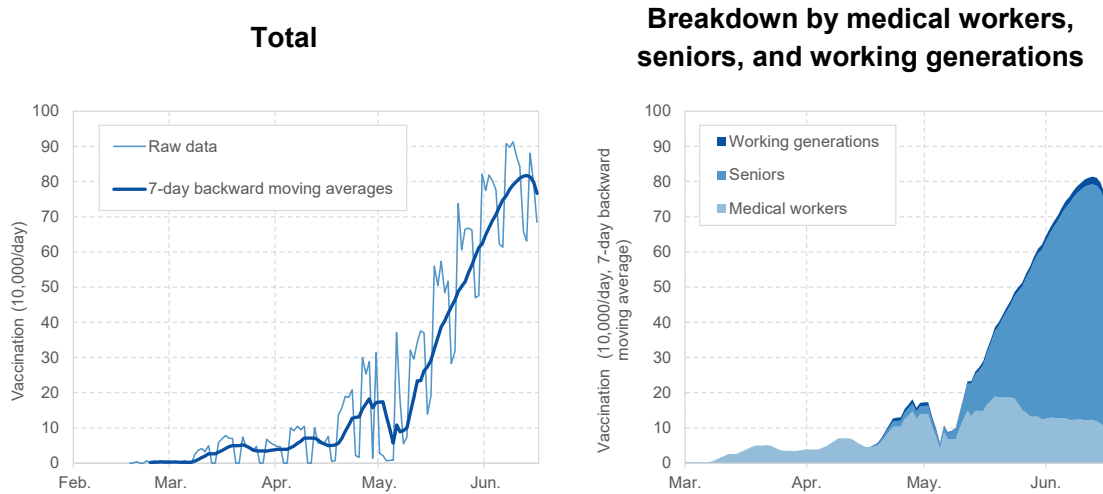
We want to begin with reviewing the background to the accelerated pace of vaccination after May. As depicted in **the right panel of Chart 1**, the primary reason behind this acceleration is the full-fledged rollout to vaccinate seniors. Although the inoculation of seniors started on April 12, municipalities faced a vaccine shortage at the outset, and the number of municipalities participating in the vaccine rollout was limited. But after the long

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<sup>1</sup> The delay in vaccination data input in the vaccine administration management system means that past vaccination data are often revised (upward) retroactively. Therefore, the peak level of vaccination records in this report (data collected as of June 17) may also be revised upward in the future.

Golden Week holidays in May, the situation vastly improved.

**Chart 1: Number of vaccine shots administered per day in Japan**



Note: Data compiled on June 17. The latest data as of June 16.  
 Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare, the Prime Minister's Office, and the Government CIO's Portal.

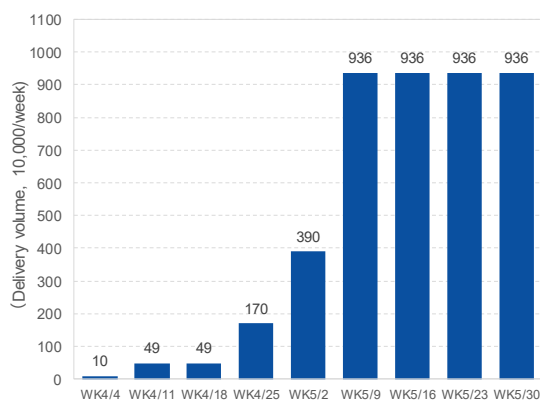
**Chart 2** shows the volume of vaccine deliveries to municipalities from the central government to be administered to ordinary residents (excluding medical workers). While the delivery volume at the end of April was 1.7 million doses per week (240,000 shots per day on average), thanks to the additional provision of vaccine supplies by Pfizer Inc., which produces a COVID-19 vaccine bound for Japan, the delivery volume jumped to over 9 million doses per week (1.3 million shots a day on average). The delivery volume has now reached a sufficient level to achieve the government's target of administering 1 million shots a day.

Along with a massive increase in the vaccine delivery volume, 412 municipalities newly started vaccinating seniors in the week of May 9 (**Chart 3**, data taken from rollout plans as of April 7). This accounted for about one-fourth of the 1,741 municipalities in Japan, instantly pushing up the ratio of municipalities participating in the vaccine rollout for seniors to 85%.

Also, concerning the shortage of medical staff to administer the shots, which has long been a bottleneck to enhancing the speed of vaccination, the situation has gradually improved thanks to contributions from medical and nursing associations, as well as the health ministry's special approval to allow dentists to administer the COVID-19 vaccines (official memorandum released on April 26). Furthermore, sharing the municipalities' vaccination efforts, such as their know-how on the efficient operation of vaccination

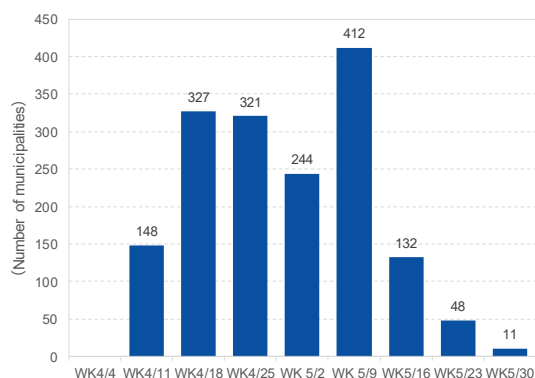
centers and reservation systems, on the website operated by the Prime Minister’s Office,<sup>2</sup> seems to have contributed to speeding up the vaccine rollout.

**Chart 2: Volume of vaccine deliveries for residents**



Note The delivery volume is calculated assuming 5 shots per vial before week 5/2 and 6 shots per vial after week 5/9.  
 Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare, *Outlook of COVID-19 vaccine supplies*.

**Chart 3: Number of municipalities starting to vaccinate seniors**



Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare, *Status of preparation of the vaccine rollout plans, etc.* (as of April 7).

**(2) Number of daily vaccine shots may jump to 1 million a day on average if vaccination of the working-age population begins**

Despite the current break in the pace of vaccination for the elderly, we expect the pace to pick up going forward as the working-age population begins to receive vaccination shots along with the elderly.

With a view to alleviating the vaccination-related burden on municipalities and ramping up the pace of vaccination even further, the government has allowed on-site vaccinations at workplaces and university campuses (so-called workplace vaccinations) from June 21. This assumes that large enterprises and universities will use their on-site clinics to vaccinate employees and students, as well as small to medium-sized firms collaborating with economic organizations, such as Chambers of Commerce and local medical associations, to carry out the vaccine rollout. According to information provided by the Prime Minister’s Office, applications for workplace vaccinations reached 3,123 on a cumulative basis on June 17, with the number of people to get vaccinated totaling about 12.8 million. This is expected to boost the pace of vaccination in the future.

Mass vaccination centers set up by the central government and municipalities may also

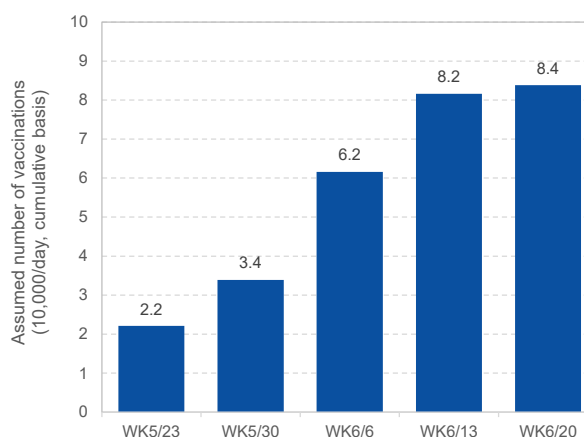
<sup>2</sup> Prime Minister’s Office, “List of vaccination rollout ideas by municipalities.” (<https://www.kantei.go.jp/jp/headline/kansensho/jirei.html>)

serve as an additional factor to accelerate the pace of vaccination during the phase of inoculating the working-age population. The inoculation capacity of mass vaccination centers will likely expand to around 80,000 shots per day toward the end of June (**Chart 4**). Initially, mass vaccination centers targeted the vaccination of seniors, but it soon became apparent that many vaccination slots remained unbooked and their capacity was underutilized. In the light of this situation, the government expanded the eligibility criteria for receiving the coronavirus vaccine at mass vaccination centers in Tokyo and Osaka to include people aged 18 to 64 (vaccinations to start from June 17). Since many municipal mass vaccination centers share the same tendency to underutilize their vaccination capacity, these centers are expected to follow suit and start vaccinating the working generations. Unlike workplace vaccinations mentioned earlier, receiving the vaccine at a mass vaccination center requires a vaccine voucher sent from the municipality, and as such, the dispatch of vaccine vouchers to the working-age population may become a temporary bottleneck. But we expect the mass vaccination centers to eventually be fully booked by the working-age population and the pace of vaccination to speed up.

These factors make it highly likely that the pace of vaccination in Japan will accelerate to 1 million shots per day on average. While the current average number of vaccine shots administered a day is about 760,000 (**Chart 1, right panel**), the shots administered to medical workers are about 100,000. Since the vaccination of medical workers is almost complete, this portion is expected to slow down going forward. At the same time, as the vaccination of seniors (about 640,000 doses a day) begins to drop off, it is believed that vaccines administered to working generations (about 20,000 shots a day) will increase dramatically and push up the overall number of COVID-19 vaccinations. It should be noted that “1 million shots per day on average” in this report means a 7-day moving average. So the actual figure before calculating the 7-day average may significantly exceed 1 million shots at times during the peak period (particularly from the latter half of June to July when workplace vaccinations will likely be concentrated).

**Chart 5** presents our estimates on

**Chart 4: Vaccination capacity of mass vaccination centers run by the central government and municipalities**



Note: The above data are based on MHRT's original count and not based on official data compiled by public institutions.

Source: Made by MHRT based on municipality websites and various media coverage.

vaccination completion rates (rate of second-dose completion out of the total population subject to vaccination) for the elderly and working-age groups, assuming that the number of shots per day will increase to 1 million on average.<sup>3</sup> Although the vaccination completion rate for seniors remained at around 6% in early June, it is expected to rise sharply after mid-June, and reach 60% at the end of July and 70% in mid-August. For the working-age population starting to get vaccinated in the near future, the vaccination completion rate will start rising gradually in July and is forecast to achieve 60% in early November and 70% in late November. The Japanese government has declared two vaccination completion targets: the first “to complete administering the second dose of the COVID-19 vaccine to the elderly willing to get vaccinated by the end of July” (Prime Minister Suga’s press conference on April 23), and the second to “complete the vaccination of all people willing to be vaccinated from October to November” (debate between party leaders on June 9). Given that the proportion of the total population willing to get vaccinated is around 60%,<sup>4</sup> the government’s targets mentioned above will likely be attained should 1 million shots be administered per day.

It should be noted that 1 million doses per day is not an unrealistic figure when compared internationally. **Chart 6** shows the pace of vaccination of major developed countries by comparing the number of shots administered a day per 100 people, the number adjusted to reflect the differences in population size. If Japan achieves 1 million shots of vaccine a day on average, this would be equivalent to 0.79 shots a day per 100 people (the actual recent number is 0.68), which is a similar level with today’s United Kingdom, Germany, France, Italy, and Singapore (around 0.8 shots a day on average per 100 people).

### **(3) The pace of vaccination may accelerate beyond expectation driven by an expanded vaccination capacity**

The pace of vaccination may rise beyond expectation depending on the initiatives taken by the government.

For example, the vaccination capacity may grow larger than anticipated fueled by the establishment of more mass vaccination centers, further expansion of workplace inoculations, and an expansion of the range of people to be vaccinated. We actually hear there is a movement in metropolitan areas for firms to vaccinate not only their employees but also everyone working in the same building, and there are firms that even include

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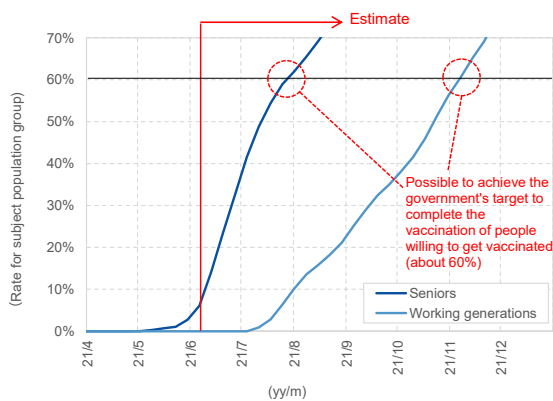
<sup>3</sup> We assumed the vaccination of working generations will start in mid-June and the share of working generations will gradually rise. We also assumed that each of the two shots will be administered three weeks apart uniformly. This is a simplified assumption since the actual interval of administration is three weeks for the Pfizer vaccine used for individual and group inoculation by municipalities, and four weeks for the Moderna vaccine used mainly at mass vaccination centers.

<sup>4</sup> In the study compiled by the Research Institute of Economy, Trade and Industry in late April (Sekizawa et al. [2021]), of the unvaccinated people (11,637 people), 60.9% said “I will get vaccinated,” 30.1% said “I haven’t decided yet,” and 9.0% said “I will not get vaccinated.”

family members of their employees and neighborhood residents as targets for vaccination. Schemes like the latter case where ordinary citizens become involved in spreading workplace vaccinations nationwide may significantly speed up the pace of inoculation as it complements the vaccination efforts of municipalities.

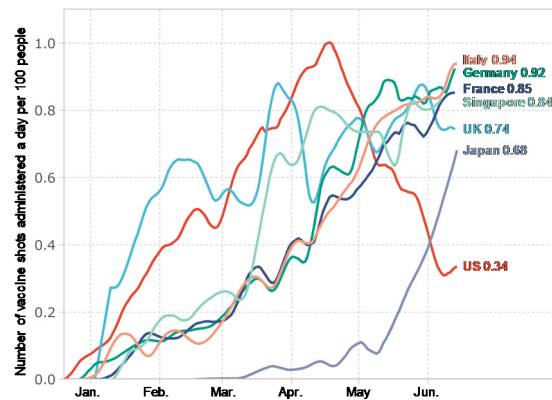
If we assume the upside case where the vaccination pace accelerates to 1.25 million shots per day, the timing to achieve a 60% vaccination completion rate is expected to be mid-July for the elderly and mid-October for working generations, a half to one month earlier than the base case that assumes 1 million shots per day.

**Chart 5: Vaccination completion rate of the elderly and working generations if the pace of vaccination accelerates to 1 million shots per day**



Note: Working-age population excludes medical workers and children.  
 Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare and the Prime Minister's Office.

**Chart 6: Pace of vaccination in major developed countries**



Source: Made by MHRI based upon the World Bank, *Our World in Data*.

### 3. Impact of accelerated vaccinations on the Japanese economy—increasing the number of vaccinations is the most effective economic measure

We have thus far discussed the possibility of Japan making significant progress in accelerating the pace of vaccination thanks to the start of inoculating the working-age population. In this section, we want to study how the accelerated pace of vaccination will affect the Japanese economy.

Sakai and Yamamoto (2021) assume based on Onodera et al. (2021) that the number of vaccines administered per day will increase to 500,000 shots on average (3.5 million shots a week) after May, and conclude that the recovery of Japan's economy will be moderate due to continued restrictions placed on economic activities stemming from an insufficient level of vaccinations in FY2021 (the economic growth rate in FY2021 is estimated to be +2.7%, a modest recovery from the significant downfall recorded in FY2020). However,



should the pace of vaccination accelerate to a higher level than expected by Onodera et al. (2021), Japan's expected economic growth rate in FY2021 should be revised upward. This is because the spread of vaccines will allow for increased human mobility while curbing the spread of the pandemic, resulting in a faster recovery in the consumption of services that involve close personal contact.

In the below section, we use an epidemiological model to simulate newly confirmed COVID-19 cases reflecting the accelerated pace of vaccination, and based on human mobility defined in the simulation, we predict when the nation's economic activities will return to normal.<sup>5</sup> Using the outcomes of this analysis, we can estimate the impact on the Japanese economy through changes in the path of services that involve personal contact. For the pace of vaccination, we employed the 500,000 doses a day assumed by Sakai and Yamamoto (2021) as the baseline scenario and compared it with other scenarios of 1 million shots administered a day and 1.25 million shots a day on average, as discussed in the earlier section.

### **(1) Epidemiological model simulation reflecting growth in the pace of vaccination**

**Chart 7** presents our simulation results on the number of confirmed COVID-19 cases and human mobility calculated based on the government's measures in place for the three vaccination scenarios of 500,000 shots, 1 million shots, and 1.25 million shots administered a day on average.

First, retail and recreation mobility that represents mass volume human mobility revealed a more than -20% drop in human mobility from the pre-pandemic period after the third state of emergency was declared in April. But as the fourth wave of the pandemic ended, human mobility started to pick up nationwide from the latter half of May. The current level of human mobility is around -15% from the pre-pandemic period, but it is expected to increase again after the state of emergency is lifted on June 20. In this report, we assume the level of human mobility will recover to around -10% from the pre-pandemic period toward the end of June, considering that focused anti-infection measures will be imposed in seven prefectures, including Tokyo and Osaka, after the state of emergency is lifted. This is equivalent to the average level registered in the July to September period of 2020, a period when restaurants were asked to shorten their operation hours based on focused anti-infection measures and local restrictions imposed by respective prefectures.

Our simulation based on these assumptions suggests that the number of confirmed COVID-19 cases will rise as the summer approaches, along with an increase in human

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<sup>5</sup> The simulation was conducted using the epidemiological model (SIRD model) based on Fujii and Nakata (2021), just like Hattori and Sakai (2021). Refer to the Supplementary Discussion at the end of Hattori and Sakai (2021) for details of the model.

mobility, since the number of vaccine takers is insufficient at present, as we saw in **Chart 5**. The same outcome applies in the three vaccination scenarios of 500,000 shots, 1 million shots, and 1.25 million shots administered a day. If we analyze the results by generation, the center of newly confirmed cases is the working generations since the elderly were the first to get vaccinated.

As more of the working-age population is expected to be vaccinated after the summer, we forecast that newly confirmed cases will begin to fall naturally thanks to acquired immunity as a result of vaccinations. The scenario of 500,000 vaccine shots a day requires relatively more time until peaking out, and the declining trend is expected to be first detected after September. On the other hand, in the scenarios of 1 million and 1.25 million vaccine shots a day, the timing of the peak is anticipated in early August and late July, respectively, and the highest level of confirmed cases is also expected to be lower.<sup>6</sup>

Later on, as more people get vaccinated, the possibility of increased human mobility will emerge while preventing the spread of infection. For example, during the phase where the level of human mobility returns to -5% from -10% of the pre-pandemic period, requests to shorten the operation hours of restaurants may be lifted, while restrictions on large events and gatherings are expected to remain in place. If enough vaccines are supplied nationwide, these restrictions may be completely removed to normalize the nation's economic activities, realizing the stage where infections will no longer spread even with human mobility brought back to the pre-pandemic level (state of acquired immunity).

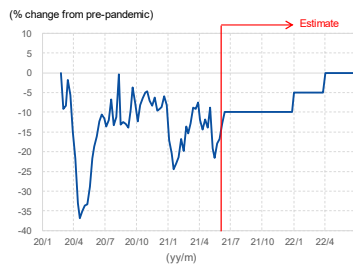
The recovery of human mobility and the timing of economic normalization will vary significantly depending on the three vaccination scenarios. In the baseline scenario of 500,000 vaccine doses a day, vaccination takes a longer time and the timing to revive human mobility to -5% from -10% of the pre-pandemic period is expected to be around January 2022 (**Chart 7**). On the other hand, in the 1 million vaccine shots scenario, it may be possible to boost human mobility to the -5% level in October 2021 (assuming that focused anti-infection measures and local restrictions by each prefecture are in place until the end of September). Furthermore, while the timing of economic normalization is projected to be around April 2022 in the 500,000 shots scenario, the timing moves up to around January 2022 in the 1 million shots scenario, moving up one quarter from the previous scenario. The timing will be even faster in the 1.25 million shots scenario, revealing that human mobility can return to pre-pandemic level in the October to December period of 2021. Hence we can conclude that an accelerated pace of vaccination can serve a powerful factor in bringing a faster end to the COVID-19 crisis.

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<sup>6</sup> Since the epidemiological model calculates the number of newly confirmed COVID-19 cases on an infection date basis, the actual data surface two weeks later.

**Chart 7: Outcome of the epidemiological model simulation in different vaccination scenarios**

**Case of 500,000 shots a day on average**  
Human mobility  
(retail/recreation mobility)



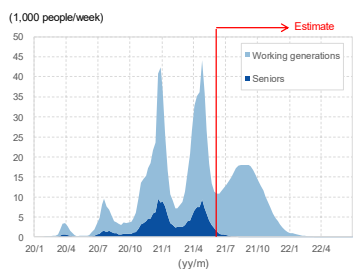
**Case of 1 million shots a day on average**  
Human mobility  
(retail/recreation mobility)



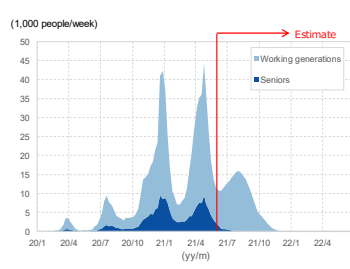
**Case of 1.25 million shots a day on average**  
Human mobility  
(retail/recreation mobility)



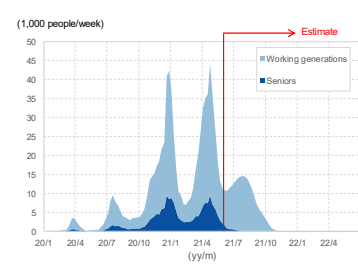
**Weekly confirmed COVID-19 cases**



**Weekly confirmed COVID-19 cases**



**Weekly confirmed COVID-19 cases**



Note: Human mobility is based on Google's retail and recreation mobility (change rate from the period from January 3 to February 6, 2020) covering restaurants, commercial and entertainment facilities.  
Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare and Google LLC.

**(2) If the pace of vaccination is accelerated to 1 million shots a day on average, GDP in FY2021 will increase by 1%**

Next we study how the outcomes of our epidemiological model simulation will impact the Japanese economy. The left graph in **Chart 8** depicts the simulation results through consumption of services that involve personal contact paths for two scenarios that accelerate the vaccination shots administered a day to 1 million and 1.25 million (compared with the path derived from the baseline scenario of 500,000 shots a day assumed in Sakai and Yamamoto [2021]).

As mentioned earlier, the timing of economic normalization is expected to be January to March in 2022 for the 1 million shots scenario. Since Sakai and Yamamoto (2021) concluded that the timing will arrive in April to June in 2022 with the 500,000 shots scenario, the accelerated pace of vaccination will move normalization up by one quarter.

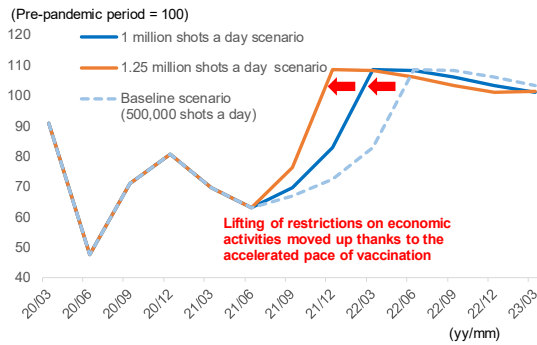
Moving up the timing of economic normalization by one quarter is greatly significant because it will generate the dual effects of raising personal consumption of services that

involve personal contact to the pre-pandemic level and pent-up demand (consumption recovery) within FY2021. Mizuho Research and Technologies (2021) had estimated the effect of consumption of services that involve personal contact reviving to the pre-pandemic period to be 12.7 trillion yen, and pent-up demand to be 3.0 trillion yen (accounting for about 10% of excessive savings accumulated by households, amounting to about 29 trillion yen) on the increase in personal consumption. As Shimanaka (2021) has pointed out, when the Go To Travel campaign (“Go To Campaign”) was launched in the latter half of 2020, eating out spending of high income groups recovered into positive territory, substantially buoying the consumption of services that involve personal contact centered on high priced services (**Chart 9**). After completion of the coronavirus vaccine rollout, we expect the government to reintroduce measures to stimulate demand, such as a full relaunch of the Go To Campaign. Given that more than half the respondents to the question, “What do you want to do after the pandemic ends?” said they want to travel domestically and eat out (**Chart 10**), it can be presumed that service consumption will rise to a greater extent compared with the latter half of 2020. As these push-up effects surface after the January to March period of 2022 (service consumption growth is expected to remain stronger than the pre-pandemic period even after the April to June period as demand disperses during Golden Week and the summer holidays), consumption of services that involve personal contact is projected to exceed the baseline scenario by approximately 14% and personal consumption by about 2% in FY2021. This is equivalent to an economic effect of around 6 trillion yen on a monetary basis, pushing up GDP by almost 1% (**Chart 8, right panel**). While Sakai and Yamamoto (2021) had predicted the economic growth rate in FY2021 to be +2.7%, if we calculate our estimation result, a GDP growth rate of over 3% can be envisaged.

In addition, we also showed in **Chart 8** our simulation results if the upside scenario of 1.25 vaccine shots per day is realized. If the pace of inoculation accelerates to 1.25 million shots a day, the timing to normalize economic activities will move up by about two quarters, suggesting that Japan’s economy will normalize within the current year. In this case, the upswing in consumption of services that involve personal contact (upswing of about 25%) is estimated to buoy the FY2021 GDP by about 2% (generating the economic effect of around 11 trillion yen on a monetary basis).

**Chart 8: Impact on the Japanese economy in different vaccination scenarios**

**Path of services involving personal contact**



Source: Made by MHRT based upon JCB and Nowcast, *JCB Consumption NOW*, among others.

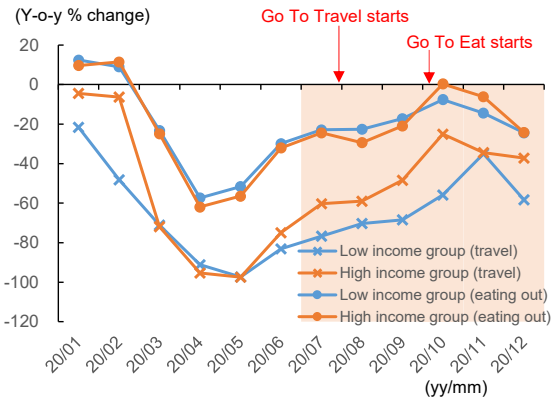
**Impact on FY2021 GDP, etc.**

(Rate of increase from the baseline, %)

	1 million shots a day	1.25 million shots a day
Consumption of services that involve personal contact (about 15% of personal consumption)	13.6	24.8
Personal consumption (about 53% of GDP)	2.1	3.8
GDP	<b>1.1</b>	<b>2.0</b>

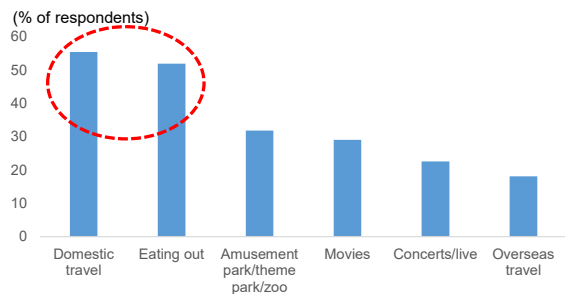
Source: Made by MHRT based upon the Cabinet Office, among others.

**Chart 9: Consumption of services involving personal contact during the 2020 Go To Campaign**



Note: Two or more person households  
 Source: Made by MHRT based upon the Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey* and *Survey of Household Economy*.

**Chart 10: “What do you want to do after the pandemic ends?” (Survey)**



Note: The above data are based on the survey in June 2020.  
 Source: Made by MHRT based upon VALUES, Inc. *Research on consumption trends under the COVID-19 crisis and the outlook of the post-pandemic period*.

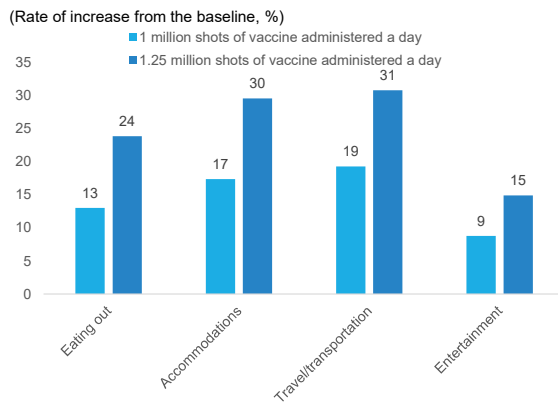
Accelerated vaccinations can bring great benefits to related industries as well. We presented how the two vaccination scenarios of 1 million and 1.25 million shots administered a day will affect the sales of service industries that involve personal contact in **Chart 11**. Compared with the baseline scenario in FY2021 (500,000 shots a day), sales grew by about 10% to 20% in the 1 million shots scenario and by roughly 20% to 30% in the 1.25 million shots scenario.

The ripple effect on employment can also be significant, particularly in the service

industry. If the pace of vaccination is accelerated to 1 million shots a day, employee income will rise by +2.4 trillion yen and employment will grow by +306,000 people in FY2021 compared with the baseline scenario (**Chart 12**). If the pace of vaccination expands to 1.25 million shots a day, employee income will increase by +4.0 trillion yen and employment will jump by +570,000 people.

We see now how a faster pace of vaccination can have a substantial economic impact. It is no exaggeration to say that “the vaccine rollout is the most effective economic measure.”

**Chart 11: Impact on the sales of service industries involving personal contact (FY2021, against the baseline scenario)**



Note: Calculated by adding personal consumption, corporate demand (business trips and parties), and inbound demand.  
Source: Made by MHRT based upon JCB and Nowcast, *JCB Consumption NOW*, among others.

**Chart 12: Impact on employee income (FY2021, against the baseline scenario)**

	1 million shots a day	1.25 million shots a day
Employee income inducement effect (trillion yen)	2.4	4.0
Employment inducement effect (10,000 people)	30.6	57.0
Secondary ripple effect from increased employee income (trillion yen)	0.6	1.0
Rate of GDP growth from the secondary ripple effect (%)	0.1	0.2

Note: The secondary ripple effect of increased employee income is calculated assuming a marginal propensity to consume of 0.25.  
Source: Made by MHRT based upon the Ministry of Internal Affairs and Communications, *Input-Output Tables*, among others.

**(3) Containing the infection rate driven by the vaccine rollout will not be enough this summer. The government should not be quick to lift restrictions on economic activities**

It should be noted, however, that the vaccination completion rate until the end of summer is expected to hover at a low level (the vaccination completion rate of working generations will be at around 10% as of the end of July) even if the pace of inoculation accelerates to 1 million shots a day on average, so we need to be aware that the effects of infection containment will be limited for a while.

The Japanese government set forth a policy to adopt focused anti-infection measures until July 11 after lifting its declaration of state of emergency covering seven prefectures,

including Tokyo, on June 20. Since preventing the further spread of coronavirus infections during the Tokyo Olympics is the government's top priority, the government is expected to carefully determine the best timing for removing the restriction measures. In view of the strong likelihood that the number of newly confirmed COVID-19 cases will rise going forward, along with the recent increase in human mobility, it is highly probable that the central government's focused anti-infection measures or the original restriction measures (such as requests for shortened operation hours at restaurants) of individual prefectures will be extended until around the end of September, as assumed in our simulation described in Section 3 (1).

Meanwhile, sales of companies engaged in services that involve personal contact are falling significantly stemming from repeated state of emergency declarations, and this has given rise to the expectation of the early lifting of measures restricting economic activities, mainly among the most severely affected industries. In this section, we study the possible impact on the economy under the risk scenario where restriction measures on economic activities (including focused anti-infection measures) will be lifted in July.

In this case, lifting restriction measures is expected to have an "announcement" effect, that "you can go out now," and with the feeling of openness (carelessness) driven by the Tokyo Olympics, human mobility is expected to skyrocket.<sup>7</sup> We showed the simulation outcomes that assumed an increase in human mobility after July in **Chart 13**. Although the temporary increase in human mobility will generate a certain positive impact on the economy (we assumed the increase in human mobility to be on the same level observed during last year's Go To Campaign), infections will spread quickly mainly among the working-age population who have not been fully vaccinated, squeezing medical service operators and raising the immediate need to bolster anti-infection restrictions, such as declaring another state of emergency. As a result, human mobility will fall once again, and if we average the two out, there will be almost no positive economic impact with the lifting of restrictions on economic activities. (If we average out the temporary growth in human mobility and the subsequent drop in human mobility after the reintroduction of restriction measures, there is almost no change in the level of human mobility in the case where restrictions are not lifted.)

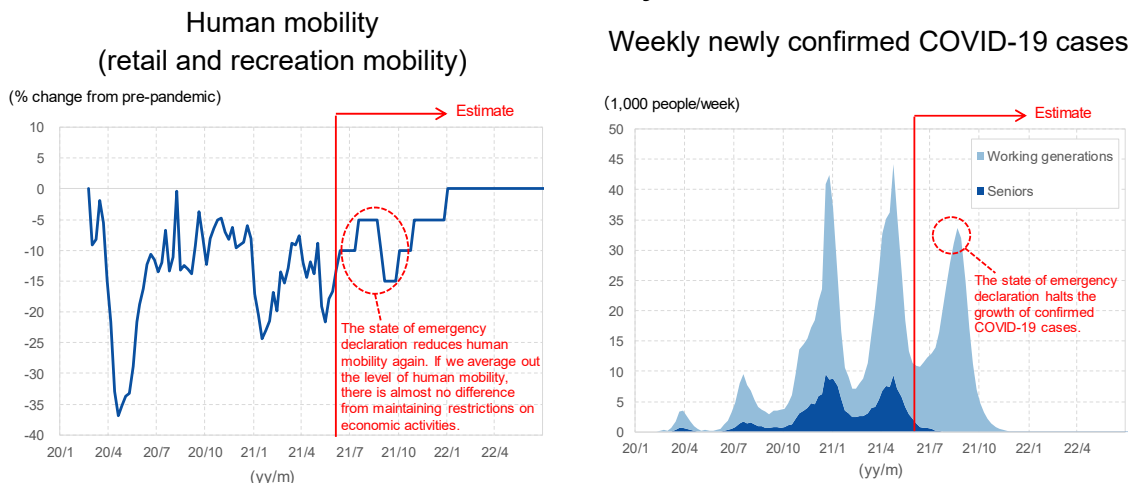
It becomes apparent in our simulation that full rollout of the vaccination program is essential during the COVID-19 crisis, and the government must avoid loosening the restrictions currently in place, at least during the summer. If the government wants to advance the timing to resume full economic activities before herd immunity is acquired, it

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<sup>7</sup> For example, a Tokyo University research team released an estimate that the risk of infection will rise if human mobility increases as a result of staging the Tokyo Olympics.  
([https://covid19outputjapan.github.io/JP/files/FujiiNakata\\_Olympics\\_Slides\\_20210616\\_Summary.pdf](https://covid19outputjapan.github.io/JP/files/FujiiNakata_Olympics_Slides_20210616_Summary.pdf))

will be necessary to build a new system where the increase in human mobility will not automatically spread infections, such as limiting the targets of the Go To Campaign to only fully vaccinated people, as we will discuss in the next section.

**Chart 13: Simulation results in the case where restrictions on economic activities are lifted in July**



Note: Human mobility is based on Google's retail and recreation mobility (change rate from the period from January 3 to February 6, 2020) covering restaurants, commercial and entertainment facilities.  
 Source: Made by MHRT based upon the Ministry of Health, Labour and Welfare and Google LLC

#### 4. Raising the willingness to get vaccinated will be the greatest challenge in the future

As we have seen thus far, a full vaccine rollout will have a substantial impact on the Japanese economy. However, since it is up to each person whether or not to get vaccinated, it is important to encourage people to get vaccinated with a view to acquiring herd immunity through the accelerated pace of vaccination.

If we observe the countries that are ahead of Japan in terms of vaccination rate, in the United States, for example, the vaccination rate clearly began to slow when the percent of the population who had received at least one dose of a COVID-19 vaccine (the first vaccination rate) surpassed 40% in mid-April 2021 (**Chart 14**). **Chart 6** also reveals that the pace of vaccination has recently slowed to 0.34 shots a day per 100 population, which is only one-third of the peak level. If we compare this situation with the United Kingdom where the pace of vaccination remains stable even after the first vaccination rate exceeded 60%, the slowdown in the US vaccination rate stands out.

**Chart 15** shows the investigation results of people's willingness to get vaccinated in Japan, the US, and the UK in April to May, broken down by age group.<sup>8</sup> In the United

<sup>8</sup> **Chart 15** shows the rate of response of respondents aged 16 and older and 18 and older. Please note that the parameter is different from the first vaccination rate in **Chart 14** (the percent of the entire population that has received at least one dose of a COVID-19



States, the percent of people unwilling to get vaccinated was higher than in the United Kingdom in all age brackets, and this may be the reason why the pace of vaccination in the United States started to slow down. With a view to solving this problem, some US states started providing such incentives as cash or lotteries to people getting the vaccine.

**Chart 15** reveals that people unwilling to get vaccinated in Japan is 8.9% overall in age groups over 18, which is lower than 12.3% recorded in the United States but higher than 3.7% in the United Kingdom. If we focus on young age groups, the rate jumps to 17.0% in Japan, almost the same level in the United States (16.3%). Also, since the vaccine rollout has not been fully conducted throughout Japan, the rate of “undecided” for age groups over 18 was 29.5%, a fairly high figure. These “undecided” people seem to include those who have not been sufficiently informed about the COVID-19 vaccine as well as people who cannot decide whether the benefits of the vaccine outweigh the risks. We cannot rule out the possibility of a slowdown in the pace of vaccination in Japan, like we are seeing in the United States, unless the “undecided” group and those unwilling to get vaccinated from the very start become positive about receiving the vaccine. If the pace of vaccination starts to slow down when the first vaccination rate hits 50% (relatively higher than the US experience), the government will be urged to take some measures in around September. In this case, the government not only needs to provide correct information on the effects and safety of vaccines, but also offer incentives to encourage unvaccinated people centering on the “undecided” group to get vaccinated.

A group of economists that included Fumio Otake, professor at Osaka University, and Keiichiro Kobayashi, professor at Keio University, who are also members of the government’s Subcommittee on Novel Coronavirus Disease Control, released a policy proposal on how to raise the demand for vaccinations on June 11 and introduced various measures to tackle this situation. The proposal requests the government to consider offering economic incentives to people who get vaccinated. Specific examples include travel and meal vouchers that can be used in the next round of the Go To Campaign, in addition to offering cash or lotteries as was done overseas.

Making vaccination a condition to join the Go To Campaign can generate three benefits at the same time: it will not only increase demand for the vaccine by stimulating people’s willingness to get vaccinated, but it will also contribute to containing the further spread of infection during the campaign period and reinvigorate the tourism and restaurant industries (or reduce the infection prevention costs shouldered by the tourism and restaurant industries) that have long suffered under the COVID-19 crisis. The government should immediately begin restructuring the Go To Campaign to target those people already

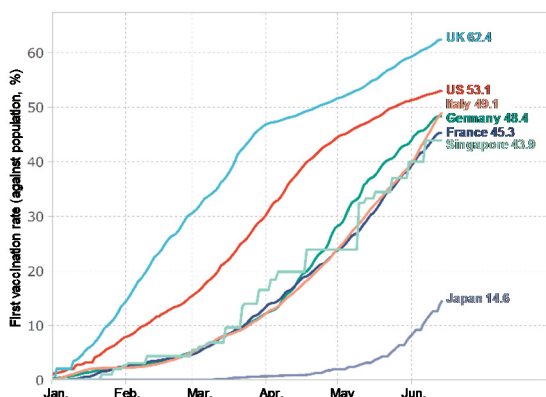
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vaccine).

vaccinated before the pace of vaccination starts to show signs of slowing down.

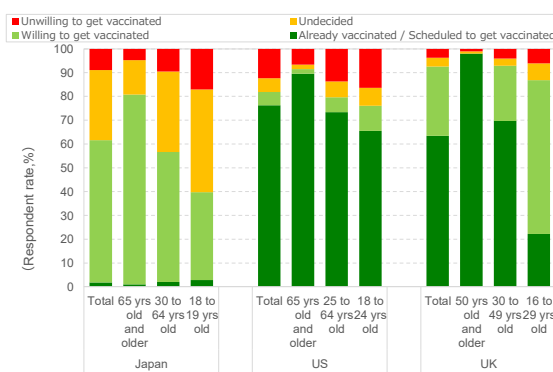
As stated in the proposal above, when offering an incentive package to people getting a vaccine, the government must make it clear that the package also targets those people already vaccinated. Otherwise, people who expect additional incentives to be offered by the government in the future may adopt a wait-and-see approach and hinder the vaccination efforts.

**Chart 14: First vaccination rate of major developed countries**



Note: The graph shows the percent of the population who have received at least one dose of a COVID-19 vaccine.  
 Source: Made by MHRT based upon the World Bank, *Our World in Data*.

**Chart 15: Investigation results of people's willingness to get vaccinated in Japan, the US, and the UK**



Note: Survey period of Japan is April 23 to May 6, the US is May 12 to 24, and the UK is April 28 to May 23. Age groups differ depending on country due to differences in survey methodology.  
 Source: Made by MHRT based on Sekizawa et al. (2021), the Census Bureau of the US Department of Commerce, and the UK Office for National Statistics.

## 5. Conclusion

In this report we showed that further accelerating the pace of vaccination can significantly buoy the Japanese economy. Furthermore, since the pace of vaccination may gradually slow as the vaccination rate rises, we proposed that the government immediately establish a system to grant economic incentives to unvaccinated people.

As the risk of a pandemic resurgence continues, making it difficult to realize the effects of conventional measures to increase demand, the vaccine rollout has become the most powerful economic measure. The Japanese economy has suffered since last spring from the difficulty of achieving economic recovery and containing coronavirus infections at the same time. It is no exaggeration to say that the vaccine rollout is the only solution able to solve this dilemma. As confirmed cases of the more infectious Delta variant (Indian variant) increase in Japan, it is necessary to continue making full efforts to increase the vaccination rate.

If Japan can make better progress in its vaccination efforts (if the upside case in this

report is realized), it may be able to end the pandemic and put the nation's economic activities back on track by the end of the year. We have finally begun to see light at the end of the dark tunnel that has continued since last spring.

## Reference

Refer to the original Japanese report by clicking the URL below for the reference material.

<https://www.mizuho-ir.co.jp/publication/report/2021/pdf/insight-jp210618.pdf>