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Regional Workshop for Policy Implementation Based on the Stay with Your Community Principles

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Abstract

A co-author of this paper had previously presented the principle of "Stay with Your Community" as a method of countermeasures against COVID-19 infection spread and have been working on its social implementation. This case study paper presents an example of activities to spread the Stay with Your Community principle to citizens and visitors in Shimoda City, Shizuoka Prefecture, in order to control the spread of COVID-19 infection. As a result, the infection cluster was successfully controlled. The authors discuss the effect of the regional workshop as a key to open the way to Organizational Citizenship Behavior of participants.

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1. Introduction

Stay with Your Community (abbreviated as SWYC) is a social code of conduct for infection control discovered by Ohsawa and Tsubokura in 2020, which simply states, "Do not increase unintended contacts beyond the number of people you intentionally meet" [1]. The project presented in the present paper was an activity to spread the behavior according to the SWYC principle among citizens and visitors in order to control the spread of COVID-19 infection in Shimoda City. Section 2 describes the meaning of the SWYC guideline and the difficulties in its dissemination, Section

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3 describes the workshop conducted to disseminate it in Shimoda City, Section 4 and 5 presents the phenomena that occurred afterwards as a result of this workshop, and Section 6 presents the conclusions and future directions.

2. Stay with Your Community: a core strategy for suppressing infection spread

In [1], the spread of virus infection was simulated using artificial human networks. Here, real-space urban life was modelled as a modified scale-free network with spatiotemporal constraints. To date, the scale-free network (SFN) had been adopted for modelling infection spread in the society in several studies [2,3], whereas in this paper SFN has been modified to represent social behaviours of people where the generated communities are restricted and reflect constraints on the number of people gather in a room and the number of people to meet per day/week in real life. Consequently, findings and policy proposals were obtained, among which Stay with Your Community (SWYC) has been discovered. SWYC means the peak height in the time series of the number of infected cases increases radically if the upper bound of the number of people each member unintentionally meets exceeds the number of people they choose to meet during the period of infection spread. This tendency is observed for two invented kinds of artificial networks and implies the impact of bridges between communities on the virus spreading. The release of this constraint tends also to trigger a second wave higher than the peak of the time series without introducing any constraint so far previously, if the release is introduced at a time close to the peak. Thus, overall, the author proposed that both the government and individuals should be careful in returning to society where people enjoy free inter-community contact. This is the strategy that should and can always be followed as a core policy for suppressing infection spread.

(Side A) Explanation of the Shimoda model card

Shimoda Model Card with Special Offer
The Corona measures by daily health care and behavior checks



The "Shimoda Community System" Tips

Consider the importance of community with family members, friends, and others whom you see frequently. Whenever possible, avoid contact with people in areas with many infected people, which increases the risk of infection, and keep as much distance as possible when in contact. (If you do have contact, try to keep as much distance as possible. (Distance rule of thumb: at least 3 meters away and no longer than 5 minutes.)


If you have contact with people outside the community, make sure to check their health condition for 2 weeks using the Shimoda Model Card.

Show this card at tourist facilities and other cooperating stores in the city to receive discounts and other benefits.

Issued by: Shimoda City HQ for Infectious Disease Control
Cooperation: Ohsawa Laboratory, The University of Tokyo

New Shimoda Model "Shimoda Community System: We appreciate your cooperation.

The "Shimoda Community System" is a collaborative effort with "Stay with Community" proposed by Professor Yukio Ohsawa of the University of Tokyo, which values community and avoids contact with the outside world.



If you have contact with people outside of your "community," people you see only occasionally, such as at a dinner party, you increase your risk of infection, so please be mindful of your community.

(Side B) The form to fill every day's condition

	Year		month								Name		Age		Vaccination (1 st : y m d , 2 nd : y m d)																				
	date	(e)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
① Body temperature (morning)		36.5																																	
② Body temperature (evening)		36.2																																	
③ Cough																																			
④ Hard to breathe		x																																	
⑤ Throatache																																			
⑥ Sluggishness																																			
⑦ Abnormal sense of smell or taste																																			
⑧ Out of community			1																																
Others																																			

(1) (2) Fill in the body temperature in the morning and evening. If you feel breathlessness, place an X in the appropriate box. If symptoms persist for about 3 days, consult a medical institution. (8) Contact with people outside the community (e.g., dining with people you do not normally meet, unmasked, etc.) for 5 minutes or more* at a distance of 3 meters or less, enter the number of people you had contact with that day.

Fig. 1. The new Shimoda-model card from July 2021.

3. Workshop and activity content

3.1. Actions before the first workshop

As of 22nd July 2021, Shimoda City was distributing cards (Shimoda Model Card, figure 1) during the summer season at various places and facilities including restaurants and supermarkets in the city, as well as for tourists visiting Shimoda to record the "number of contacts with people outside the community". The measures and publicity such as distributing the cards at the Shimoda station produced the effects to stop the growth of clusters of infected individuals as shown in Section 5. However, it was not usual to see the widespread use of this card among the general public and tourists (A %), two separate SWYC workshops in Shimoda were held since in August 2021

3.2. First workshop

On August 23, the purpose of the first WS was set as to devise effective countermeasures against new corona infection to promote the use of the Shimoda Model Card. A web conference was used involving 13 participants including Shimoda City Hall staff members, both male and female, involved in planning, administration, finance, tourism exchange, construction, civic health, welfare, and school education, as well as the organizer. Participants in Shimoda City gathered in the main conference room and were divided into two groups for a group work.

Here, first, in order to understand the issues, participants were asked to describe the advantages and disadvantages of the Shimoda Model Card and reasons for not using it in a questionnaire in advance. Then, they exchanged opinions about the issues with the cards and understood why they were issues. In the preliminary questionnaire, the advantages of the card included "can manage health," "compact and easy to carry," "good design," "incentive," "can check community and manage behaviour," "increase awareness of infection prevention," and "good because it is paper," while the disadvantages were "cumbersome," "effectiveness is unclear," "smartphone application is good," "it is not easy to use," "it is not clear how effective it is," "it is not easy to use," "it is not easy to use," "it is not easy to use," "it is not clear how effective it is. More than two respondents said, "Smartphone app is better," "Hard to establish," "Difficult for elderly to use," and "No contact information for the consultation center in case of fever." The most common reasons given for why some family members do not use the card were "too much trouble," "do not know about the Shimoda Model Card," "weak incentives," and "other methods (e.g., physical condition management apps) are available," and in general, it turned out to be difficult to convey the sense of purpose to promote Stay with Your Community through the Shimoda Model Card. Some responses indicated a lack of "engagement with outside the community" specific to the region, "thinking it is for tourists," and strong consideration for the elderly, indicating circumstances deeply related to the characteristics of the region.

The participants then proposed direct and indirect educational methods to promote the use of the Shimoda Model Card that would be effective in a two-day (short-term) x two-week (medium-term) x two-month (long-term) period. Reflecting these results, the following implementation structure began to take off from the workshop implementation.

Two days later

The community section of the Shimoda Model Card on the website was changed to make it easier to understand.

Added information on the Shimoda Model Card to the Corona information sent by e-mail to citizens.

Request to extend the privilege period, which is currently set for the end of August, to March 31, 2022.

Two weeks later

The use of a form with a community law on the form used at schools was put on the agenda of the principals' meeting on 9/7.

Conducted a survey on the use of the Shimoda Model Card in early September.

Discussed whether there are any administrative services that could be included in the benefits (e.g., city garbage bags for those who cooperate).

Prepared to include an easy-to-understand catchphrase in the card concept

Two months later

Requests were made after the state of emergency was declared in order to increase the number of facilities cooperating with the benefits.

Discussed a system to study a new design, including the columns to be used for the card. Requests were made to vendors and business establishments regarding the use of the card.

After this WS, Shimoda City turned to be sensitive to affairs of the corona among its staff. The following items can be regarded as examples of this sensitivity.

- The Shimoda Community System's standard is to have a conversation for at least 5 minutes and not wear a mask.
- Many of the employees do not go out of their usual living area and rarely meet with people outside of their living area (e.g., for dinner), because people in the small area know who the city employees are to some extent.
- They use cars, etc., and are less likely to encounter situations where they would be crowded together, such as by crowded trains.

In considering corona countermeasures, the participants were again returning to the essential characteristics of the region. Subsequently, in a citizens' survey in early September (sent out to an unspecified number of people via e-mail, etc., and answered by 765 people), 18.3% said they use the system. Although at first glance this may seem small, according to the SWYC theory, it is important to control infections among those who satisfy " $W-m_0$ (number of people contacted unintentionally) $\approx m_0$ (number of people contacted intentionally)," where W stands for the upper-bound number of people on meets. Note here that SWYC meant to forbid the inequality $W-m_0 > m_0$.

In comparison with the ratio of people with $W-m_0 \approx m_0$, 18.3% cannot be considered too small. Still, it is certainly desirable to spread the disease, so the authors and the Disaster Prevention Division of Shimoda City agreed to execute the second round of the workshop, because of the author's prediction on October 11, saying, "COVID-19 is predicting a large sixth wave in January and February 2022 (this prediction turned out to be supported by fact in the corresponding periods). This led to the decision to hold a second workshop as follows.

3.3. The Second workshop

The 2nd meeting was executed on 9th November 2022. The aim here was to create, correctly use, and disseminate the "Shimoda Model Card" incorporating the SWYC concept, so that both corona countermeasures and tourist reception could continue to be sustained. While the infection spread has been settled down, the aim was to devise specific measures including the Shimoda Model Card (of Winter 2021) considering the effects of vaccination, as corona countermeasures in the city during the winter of 2021, out of concern for the sixth wave predicted by the author (we broadcasted our results in the HP of Cabinet Secretariat [4] in major TV programs in Japan [5]). Again, from first holding discussions to uncover issues related to the Shimoda Model Card, the following issues were addressed.

- (1) Layout and description of the Shimoda Model Card (Winter 2021)
- (2) Improvement of the benefits by the special offer, of Shimoda Model Card (Winter 2021), for citizens
- (3) Contents of the Shimoda Model Card (Winter 2021)

In the problem identification process, we asked respondents to write down "reasons for using (the card)", "reasons for not using", "reasons for promoting to others", "reasons for not recommending (the card) to others", and miscellaneous reasons for improvement, and used these to categorize and understand the overall structure of the card using the KJ method (Kawakita Jiro, that is similar to the method globally called Affinity Graph).

As a result, negative comments such as "easy to lose the card," "cumbersome to carry around," "wish it were a smartphone app," "easy to forget to write," "can't stay motivated," "small font and hard to read," and "forget to measure temperature, fill in, and carry around," as well as positive comments such as "easy to make it a habit," "can do it with other people I can do it" and other positive comments. One of the features of this WS was that (1), (2), and (3) above were not proposed separately, but as an integrated proposal, by including an explanation of the significance of the Shimoda Model Card referring to the basic principle of SWYC to be included in (1). As a result, policies were obtained to achieve a way to motivate people not only focusing on the benefits of special offer in (2). Based on these results, a video message from the mayor of Shimoda city explaining the significance of the Shimoda Model Card has been distributed from the Shimoda City Hall website as follows. The contributions of the authors and others are also introduced [6].

About the details of the new design reflecting this workshop, the card was made smaller and the font size came to be larger. The fields for symptoms should be simplified in order to convey the significance of the above features, and the benefits should be limited to those that convey a message. The design was desired to include various photos of Shimoda to increase effectiveness with limited information, and a proposal was made to recruit students who design of the website showing various photos of sights in/from Shimoda city.

In addition, a brief explanation of SWYC in the center of the card is included with the illustration. The design of the card was discussed by the mayor, section chief, and staff, and the card size was first changed to a size equivalent to a business card or the like, making it easier to carry around in a wallet or the like. The body temperature measurement was reduced from twice a day to once a day, as it has become a daily routine. Furthermore, a QR code for take-out information, including tourist information such as the "Shimoda 100 Scenic Spots," is shown on the card, and a contact number is provided in case of health problems. However, although the city had been cooperating with businesses in the city to provide the privilege linked to special offers in (2) above until 31st March 2022, it was finally determined that additional subsidies would be difficult to provide due to the burden placed on the businesses. However, the city promoted the idea of having businesses conduct community checks using the Shimoda Model Card and presenting them with garbage bags, disinfectant, and masks for the number of cards they submit. In a subsequent survey, the following comments were obtained from citizens.

- (1) Shimoda Model Card, of the basic version and the elementary and junior high school version, and the concept of "outside the community" have raised awareness of the importance of avoiding contact with people outside the community as much as possible and of wearing a mask or taking other measures against infectious diseases when meeting people outside the community.
- (2) It was an opportunity to learn about how children spend their holidays, etc.
- (3) It led to behavioral restrictions and made it easier to understand the range of activities in the home.
- (4) Children learned about countermeasures against infectious diseases.
- (5) Parents were cooperative with the school's infection control measures in daily life and at school.

In addition to positive comments such as

- (6) It is hard work to see whether the card is filled out or not every day.
- (7) There is a difference in awareness among families, and in some cases, the program has become a mere formality.
- (8) It took a lot of time to get people to understand the concept of "outside the community."
- (9) The interpreted sense of "outside the community" differs slightly from person to person. Even after explanation, the understanding and perception of "outside the community" is different, and varies from family to family.
- (10) There is a question as to whether caution of contacts with people outside the community is necessary outside of the period of priority measures of emergency.

Consequently, we are stilling facing the necessity of improvement. In order to spread the concept of SWYC in an easy-to-understand manner, actions from the persistent viewpoint of citizens will be necessary.

4. Result

As shown in Figure 3, the surges of infection were suppressed at the time of the initial introduction of the Shimoda card (July 22, 2021) and at the time of the introduction of the revised card as a result of the WS (February 25, 2022), as in the following details.

- (1) As of 22nd July 2021, in addition to distribution at supermarkets in the city during the summer period, Shimoda City has introduced a card for both habitants and tourists visiting Shimoda that records "the number of contacts with people outside the community" (Figure 1). As shown in Figure 3, the number of newly infected people in Shimoda City decreased within about 4 to 5 days (approximately the incubation period of the virus) after the introduction of the new Shimoda model card.
- (2) The new cards were used from February 25, and the sixth wave was suppressed four days later, as shown in Figure 2. This effect is noteworthy because the sixth wave was larger than previous waves nationwide and was also larger in Shizuoka Prefecture, including Shimoda City.

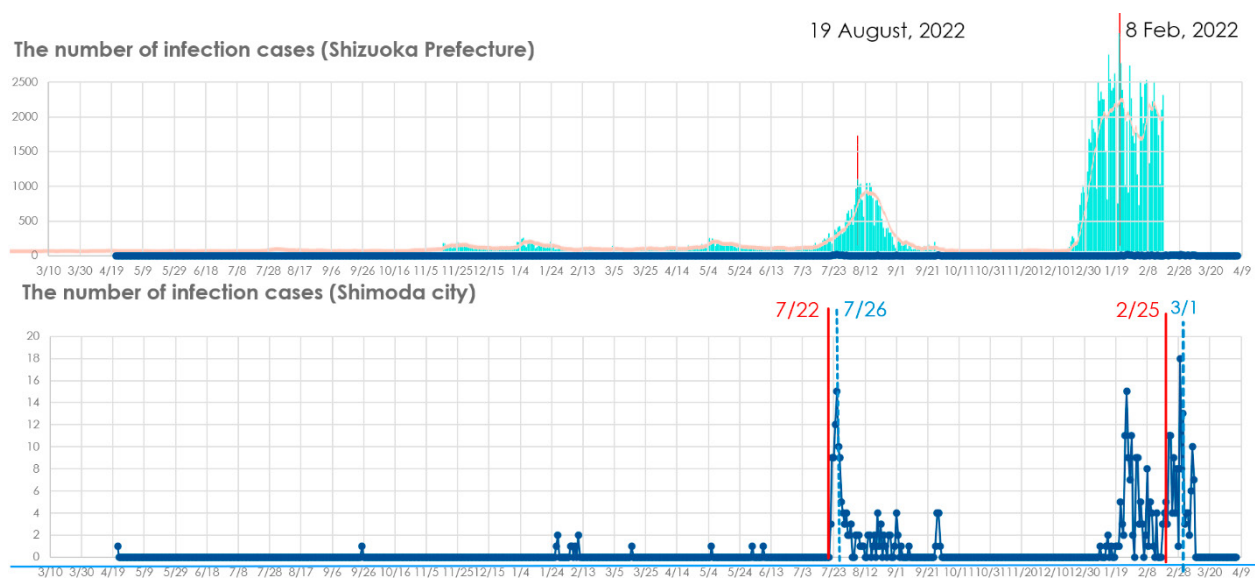


Fig. 3. The number of infection cases in (a) Shizuoka prefecture; (b) Shimoda city: The peak in Shimoda City is off the peak in Shizuoka Prefecture, and it is clear that it is moving up and down due to other factors. The peak tends to pass when the effect of the introduction of the new card can be observed (the day after the incubation period from the date of introduction and the day after).

6. Conclusions and Future Work

SWYC is a strategy that the national and regional governments should always follow as the backbone of infection control measures and that can be active easily compared with overly strong constraints such as Stay Home. The case of Shimoda City, shown in this paper, is a good example.

However, SWYC is not the all countermeasure against the spread of infection. For example, travel across prefectural borders has been often considered dangerous, and variously verified in studies of the impact of travel on infection [12,13]. On the other hand, however, the authors have also shown that fast and uniform distribution of vaccines reduces the spread of infection and that cross-border travel has rather the effect of promoting this effect [13]. Indeed, there are data from the U.S. in which transmission was rather suppressed as traffic increased: we obtain a surprising tendency by combining recent data in [14] and [15]. That is, the number of travelers and the number of new infection cases increase together until close to the end of the year 2020, but their trends then changed into a negative correlation with each other when people in the United States started to travel frequently since the beginning of 2021 (2 weeks after the start of vaccination) that is when the effect of vaccination to reduce new cases came to overwhelm the uptrend due to travel. Thus, in regions of tourist destinations such as Shimoda city, the options are to (1) increase the speed of vaccination which would allow for more visitors and (2) reduce the number of visitors which means that the basic strategy depends on the speed of vaccination. Vaccine dissemination has progressed from the first to the third (i.e., booster) dose, and we are already at the stage of anticipating the fourth dose worldwide. With each such development, the vaccination rate will change.

Thus, all in all, in addition to a strategy that should always be adhered to as a framework, it is necessary to devise a strategy that dynamically adapts to the situation and to be agile enough to switch from one strategy to another as it is put into practice.

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