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Attitudes towards the use of surveillance technologies in the fight against COVID-19

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1. INTRODUCTION

Various countries have attempted to come up with their own solutions to these conundrums, to various degrees of success. Some of these measures are mild, such as mandating temperature taking before entry into public buildings. Other measures such as banning of all forms of public gathering, ordering citizens to stay home, and, more controversially, using surveillance technologies for contact tracing or quarantine orders, are extraordinary. At other times, these measures would not have been considered acceptable.

The use of surveillance technologies can help in saving precious time and manpower in the control of the epidemic. Bypassing human labour and reducing chances for human error, these technologies can easily triangulate medical, travel and movement data (Huang, Sun & Sui, 2020) in a single device. It can also help public health officials track others who might have been exposed to the virus through the "handshake" that a mobile phone makes with the other phones in the vicinity, thus quickly reducing community transmissions.

While the use of surveillance technology in combatting diseases is necessary, these technologies have raised many ethical quandaries that have not been satisfactorily answered. At the core of this debate are questions revolving around issues of personal liberty: should citizens be compelled to agree to being tracked, albeit for the "greater good" (Huang, Sun & Sui, 2020)? What kinds of data should be collected (Bell, 2020)? Where should the data be stored, whether locally on a person's individual device, or in a central server (Abboud, Miller & Espinoza, 2020; Busvine & Rinke, 2020)? How should private organisations be involved, if at all (Palmer, 2020)? Further, other experts have also pointed out the potential for these surveillance technologies to regress into pseudo social credit systems (Bell, 2020), or even heavily dictate social behaviours for the worse (Jao, Cohen & Udemans, 2020).

Singapore's answer comes in the form of two separate government initiatives, namely, the TraceTogether app and the SafeEntry system. The former is voluntary, while the latter has been mandated by the government as part of the post-COVID-19 recovery process. Even as the TraceTogether app has been hailed as innovative and a gamechanger in the handling of the public health pandemic, response has been lacklustre and slow, caused in part by unfavourable responses towards its battery-draining functions on some phones. More importantly, not mandating the use of the

app has resulted in a 25% adoption rate that is far below the 75% required for it to be effective (Lee, 2020).

This paper presents Singaporeans' attitudes to the implementation of more surveillance techniques in the fight against COVID-19. We used data from an online survey of 1,537 Singaporean residents aged 21 years and older, broadly representative of the national population. These respondents were part of an ongoing panel of the marketing research firm, Toluna. As this is a consumer panel, there are lower proportions of older persons and those living in 1–2 room flats sampled. The results presented in this paper are based on findings from surveys conducted over three waves from 22 April 2020 till 19 May 2020.

In the survey, respondents were asked their extent of agreement or disagreement with a series of measures that the Singaporean government could possibly take to prevent the spread of COVID-19. These measures included stricter lockdowns with roadblocks, severe penalties for infringement of policies as well as the use of surveillance technology, i.e., unconsented use of cell phone data to track an individual's movements, and the use of CCTVs to monitor movement during the Circuit Breaker (CB) period. Respondents used a seven-point Likert scale to indicate their degree of agreement or disagreement to these items. For brevity, we have grouped similar answers together when reporting the results (e.g., "strongly disagree"/"disagree"/"somewhat disagree" are all taken to mean the respondent disagrees).

2. DISCUSSION OF FINDINGS

The majority (87%) of respondents were agreeable to imposing strict surveillance on people who need to be quarantined (see Table 1 below). However, when the question spelt out the use of cell phone and CCTVs to prevent the spread of COVID-19, support was rather muted. Only 49% reported that they were agreeable to have their cell phone data tracked without their consent, while 58% agree for CCTVs to be used to monitor people's movements during the CB period. Fewer respondents also chose the "strongly agree" option when the question included surveillance technologies. Less than 20% of the respondents strongly agreed to cell phone tracking (14%) or CCTV monitoring (16%), compared to 39% in the case of the more general question of the government imposing strict surveillance on those who need to be quarantined.

Table 1: Singaporeans' attitudes towards enhanced surveillance methods in the fight against COVID-19

% of respondents n=1,537	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
Impose strict surveillance on people who need to be quarantined	6.7 Disagree			6.7	86.6 Agree		
	1.2	2.3	3.2		15.2	32.7	38.7
Use cell phone data to track people's movements without their consent	32.6 Disagree			18.3	49.2 Agree		
	10.0	8.5	14.1		14.3	20.5	14.4
Use CCTV to monitor people leaving their houses during the Circuit Breaker period	24.6 Disagree			17.4	58.0 Agree		
	7.2	7.2	10.2		17.4	24.3	16.3

Given the marked reduction in support when respondents were asked about surveillance technologies to deal with the pandemic, the rest of this paper focuses on the findings related to this issue. Quantile regression analysis[1] was performed to determine the characteristics of those who were agreeable to the use of surveillance technologies (i.e., cell phone tracking and CCTV use) by the government in the fight against COVID-19. We examined a range of other items in the survey to find correlates. These included questions related to expected social norms during the pandemic, perceptions of government performance in tackling the pandemic, mental well-being, anxieties arising from economic and social reasons, and demographic differences.

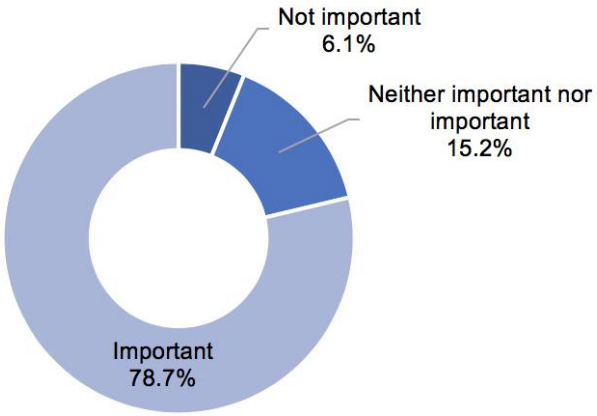
Using our regression model as a basis, we report several bivariate trends here and discuss how they may predict those who are more amenable to the use of unconsented cell phone tracking or CCTV monitoring.

[1] The regression model and the following cross tabs presented in this paper are statistically significant ($p<0.05$).

2.1. SOCIAL RESPONSIBILITY: Those who emphasise social policing are more open to surveillance technologies

A large majority of Singaporeans (79%) said it is important to report errant groups who do not practice social distancing measures during the CB period to the authorities, while only 6% believed it to be unimportant (see Figure 1 below).

Figure 1: Reporting errant groups flouting social distancing measures to the authorities



Among those who said that it is important, 55% supported unconsented cell phone tracking (see Table 2), while 64% were agreeable to CCTV monitoring (see Table 3) during the CB period. Those who disagreed to expanded surveillance among this group only account for 28% and 20% for cell phone tracking and CCTV monitoring, respectively.

Table 2: Support for unconsented cell phone tracking by support for reporting errant groups who flout social distancing measures

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Reporting to the authorities when you notice groups who are not practising social distancing measures	Disagree	Neither agree nor disagree	Agree
Not important	64.5	10.8	24.7
Neither unimportant nor important	45.1	24.0	30.9
Important	27.6	17.8	54.7

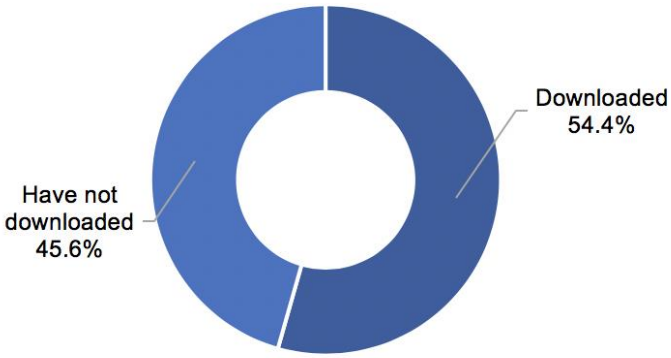
Table 3: Support for CCTV monitoring by support for reporting errant groups who flout social distancing measures

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Reporting to the authorities when you notice groups who are not practising social distancing measures	Disagree	Neither agree nor disagree	Agree
Not important	62.4	10.8	26.9
Neither unimportant nor important	33.5	24.9	41.6
Important	20.0	16.4	63.6

Support for compulsory download of contact-tracing application

Slightly more than half (54%) of the respondents say that they have TraceTogether, downloaded on their phones (see Figure 2)[2]. This number is higher than the 25% of the island who have downloaded the app based on figures from the TraceTogether website (Lee, 2020). This is probably because the survey only includes Singapore Citizens and Permanent Residents, those under 21 years old and senior citizens who may not use the internet (given this is an online survey) were not included.

Figure 2: Proportion of respondents who have downloaded the TraceTogether application



Part of the reason for the slow adoption of TraceTogether was because of the heavy technical toll that it imposed on the users' phone battery. Respondents were asked if, in the instance TraceTogether or a new application that is fine-tuned or developed with better technical performance were made available, they would want it to be made compulsory for entrance into public places (see Table 4 below). Here, 59% of respondents agreed that this application should be made compulsory for all Singaporeans to install on their phones.

[2] Questions related to Trace Together and making the app or something similar compulsory were asked to 520 respondents between 14-18 May 2020.

Table 4: Support for making contact-tracing applications compulsory to download

% of respondents (n=520)	Disagree	Neither disagree nor agree	Agree
If TraceTogether or a new application can be fine-tuned/developed (e.g., does not drain battery power), to what extent do you agree that it should be made compulsory for everyone to install and run that application on their phones before they can enter public places, like shopping centres and wet markets?	17.5	23.5	59.0

Among respondents who agreed to unconsented cell phone tracking, 77% agreed that downloading contact-tracing applications should be made mandatory while only 9% disagree (see Table 5). Similarly, for those who approve of CCTV monitoring during the CB period, 72% supported mandatory downloads and only 13% were against it (see Table 6).

Moreover, among people who did not agree with the use of cell phone data and CCTV for surveillance and monitoring, Tables 5 and 6 also show that 14% and 8% more respondents still believed that contact-tracing application downloads should be made compulsory, respectively.

At this juncture, there is much anticipation surrounding whether the economy can be re-opened to allow for businesses and workers to resume activities safely, without a resurgence of infections that required a circuit breaker in the first place.

The findings here suggest that many Singaporeans feel that if contact tracing is going to effective in managing the Covid-19 situation post-CB, not only must the technology be robust but the rollout of the initiative also has to be resolute — do it well and go all the way or not do it at all.

Even for those who were not be comfortable with the ethics of government surveillance and loss of privacy, more still believed that compulsory download and adoption of a fine-tuned TraceTogether or new application is practical — and necessary for contact tracing to work and the economy to re-open safely. The SafeEntry system that has been widely imposed at public places during the CB period may have helped to prime Singaporeans in this respect and allayed fears.

In short, mandatory use of contact-tracing application has considerable support from Singaporeans; utility and efficiency may triumph over personal privacy concerns for most.

Table 5: Support for unconsented cell phone tracking by support for mandatory downloading of contact-tracing applications

% of respondents n=520	**Using cell phone data to track people's movements without their consent**		
If TraceTogether or a new application can be fine-tuned/developed…to what extent do you agree that it should be made compulsory?	Disagree	Neither agree nor disagree	Agree
Disagree	32.3	10.0	8.7
Neither agree nor disagree	21.7	47.0	14.7
Agree	46.0	43.0	76.6

Table 6: Support for CCTV monitoring by support for support for mandatory downloading of contact-tracing applications

% of respondents n=520	**Use CCTV to monitor people leaving their houses during the Circuit Breaker period**		
If TraceTogether or a new application can be fine-tuned/developed…to what extent do you agree that it should be made compulsory?	Disagree	Neither agree nor disagree	Agree
Disagree	30.9	13.6	12.5
Neither agree nor disagree	30.2	40.9	15.2
Agree	39.0	45.5	72.3

2.2. SATISFACTION WITH GOVERNMENT PERFORMANCE: Those who are satisfied with government handling of the pandemic are more open to surveillance technologies

Closing schools temporarily

Of the respondents who were satisfied with the government's decision to temporarily close schools and implement home-based learning (HBL), 52% of them supported unconsented cell phone tracking (see Table 7), while 63% supported CCTV monitoring during the CB period (see Table 8). Around 31% and 23% of respondents who expressed satisfaction did not agree with having unconsented cell phone tracking and CCTV monitoring, respectively.

Table 7: Support for unconsented cell phone tracking by level of satisfaction over school closures and implementation of HBL

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Closing all schools temporarily and moving all lessons online	Disagree	Neither agree nor disagree	Agree
Dissatisfied	47.4	13.4	39.2
Neither dissatisfied nor satisfied	33.5	32.3	34.2
Satisfied	31.2	16.9	51.9

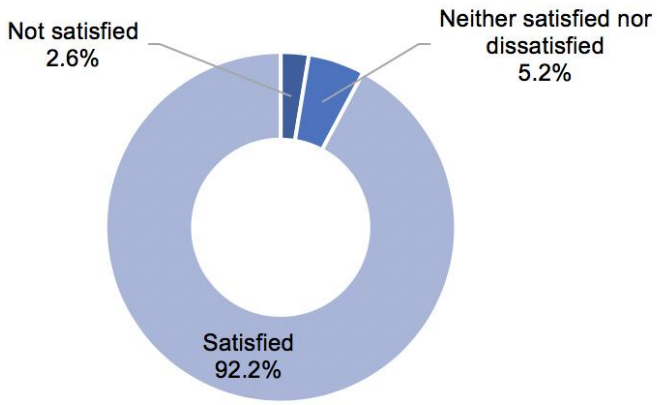
Table 8: Support for CCTV monitoring by level of satisfaction over school closures and implementation of HBL

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Closing all schools temporarily and moving all lessons online	Disagree	Neither agree nor disagree	Agree
Dissatisfied	45.4	21.6	33.0
Neither dissatisfied nor satisfied	28.5	38.6	32.9
Satisfied	22.5	14.4	63.0

Keeping the healthcare system running

Almost all Singaporeans (92%) were satisfied with how the government was keeping the healthcare system running (see Figure 3). It is perceived to be treating the Covid-19 crisis as a public health issue and doing its best to prevent the healthcare system from being overwhelmed. This basic trust in government to uphold its public health responsibility helps people see the merits of — and therefore be more open to supporting the use of — cell phone data for tracking whereabouts and CCTV recordings for monitoring movement out of homes, despite obvious concerns about invasion of privacy.

Figure 3: Satisfaction towards how the government is keeping the healthcare running



Currently, approximately half (50%) of the respondents who were satisfied with the way the government was keeping the healthcare system running said that they agreed to unconsented cell phone tracking (see Table 9), while 60% supported CCTV monitoring during the CB period (see Table 10). Those who disagreed with cell phone tracking and CCTV monitoring were at 33% and 24%, respectively.

Table 9: Support for unconsented cell phone tracking by level of satisfaction with how the healthcare system is being run during the COVID-19 pandemic

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Keeping the healthcare system running	Disagree	Neither agree nor disagree	Agree
Dissatisfied	35.0	17.5	47.5
Neither dissatisfied nor satisfied	27.5	35.0	37.5
Satisfied	32.7	17.4	50.0

Table 10: Support for CCTV monitoring by level of satisfaction with how the healthcare system is being run during the COVID-19 pandemic

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Keeping the healthcare system running	Disagree	Neither agree nor disagree	Agree
Dissatisfied	35.0	32.5	32.5
Neither dissatisfied nor satisfied	25.0	45.0	30.0
Satisfied	24.3	15.4	60.3

Ensuring information transparency

Among those that were satisfied with the government's transparency on the COVID-19 outbreak, 52% said that they supported unconsented cell phone tracking (see Table 11), while 63% supported CCTV monitoring (see Table 12). Around 30% and 22% of those who were satisfied said that they do not support cell phone tracking and CCTV monitoring, respectively.

Table 11: Support for unconsented cell phone tracking by level of satisfaction towards the government's information transparency on the COVID-19 pandemic

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Being transparent on information related to the COVID-19 outbreak	Disagree	Neither agree nor disagree	Agree
Dissatisfied	52.5	11.9	35.6
Neither dissatisfied nor satisfied	33.8	33.1	33.1
Satisfied	30.5	17.3	52.2

Table 12: Support for CCTV monitoring by level of satisfaction towards the government's information transparency on the COVID-19 pandemic

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Being transparent on information related to the COVID-19 outbreak	Disagree	Neither agree nor disagree	Agree
Dissatisfied	45.8	17.8	36.4
Neither dissatisfied nor satisfied	27.2	36.8	36.0
Satisfied	22.4	15.3	62.4

Preventing spread of infections outside of foreign worker dormitories

Since a partial lockdown was imposed in Singapore on 7 April, the average number of daily new COVID-19 cases in the community has gone down drastically.

The situation in the foreign worker dormitories has also been stabilising, dipping from an average of more than 1,000 new cases per day in late-April to an average of about less than 500 per day now.

A majority of Singaporeans (76%) are supportive of the Government's strong efforts to prevent the spread of infections outside of foreign worker (FW) dormitories even amidst over 30,000 cases found thus far.

Accordingly, 54% of those who were satisfied with how the government was preventing the spread of the virus from the foreign workers to the broader community were agreeable to unconsented cell phone tracking (see Table 13), while 64% said they support CCTV monitoring (see Table 14). Of those who were satisfied, 29% said that they do not agree to unconsented cell phone tracking. Only 20% said they disagree with CCTV monitoring during the CB period.

Table 13: Support for unconsented cell phone tracking by level of satisfaction over how government is keeping FW infections from spreading to broader community

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Keeping the infections from foreign workers from spreading into the broader community	Disagree	Neither agree nor disagree	Agree
Dissatisfied	46.9	16.4	36.7
Neither dissatisfied nor satisfied	39.6	25.5	34.9
Satisfied	29.1	17.4	53.5

Table 14: Support for CCTV monitoring by level of satisfaction over how government is keeping FW infections from spreading to broader community

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Keeping the infections from foreign workers from spreading into the broader community	Disagree	Neither agree nor disagree	Agree
Dissatisfied	45.2	15.8	39.0
Neither dissatisfied nor satisfied	30.2	31.3	38.5
Satisfied	20.5	15.3	64.1

2.3. MENTAL WELL-BEING: Those who are experiencing more stress and worried about losing friendships because of the pandemic are more open to surveillance technologies

Difficulty in concentrating

Although a small number of respondents said that their mental and emotional states have been affected (23% had difficulty concentrating, 22% showed irritable behaviour/anger outbursts, see Table 15), support for surveillance technologies amongst this group of respondents is high. This is because their current mental and emotional states were caused by the stress arising from issues surrounding the COVID-19 pandemic. These respondents possibly hoped that by expanding surveillance, the pandemic could be quickly tackled and their worries would be resolved.

Table 15: Perception of Singaporeans' mental and emotional condition during COVID-19 outbreak

% of respondents (n=1,537)	Not at all/A little affected	Moderately	Quite a bit/Very much affected
Having difficulty concentrating	56.5	20.8	22.8
Feeling irritable or having anger outbursts	58.5	20.0	21.5

Of those who said that they found it quite or very much difficult to concentrate as a result of the stress arising from issues surrounding the COVID-19 pandemic, 67% agreed to unconsented cell phone tracking (see Table 16), while 69% agreed to CCTV monitoring during the CB period (see Table 17). Among those who had difficulty concentrating, 22% did not support unconsented cell phone tracking, while only 19% said they disagree with CCTV monitoring.

Table 16: Support for unconsented cell phone tracking amongst those who found it difficult to concentrate during COVID-19 pandemic

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Having difficulty concentrating	Disagree	Neither agree nor disagree	Agree
Not at all/A little	40.0	20.2	39.9
Moderately	23.2	21.3	55.5
Quite a bit/Very much	22.3	10.9	66.9

Table 17: Support for CCTV monitoring by level of satisfaction amongst those who found it difficult to concentrate during COVID-19 pandemic

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Having difficulty concentrating	Disagree	Neither agree nor disagree	Agree
Not at all/A little	30.3	17.3	52.4
Moderately	15.7	23.2	61.1
Quite a bit/Very much	18.6	12.3	69.1

Feeling restive

Among those who frequently experienced feelings of irritability or had anger outbursts, 65% said they agree to unconsented cell phone tracking (see Table 18), while 66% aid they agree to CCTV monitoring (see Table 19). Of those who were feeling irritable or had frequent anger outbursts, 22% said that they disagree to cell phone tracking, while 20% said they do not agree to CCTV monitoring.

Table 18: Support for unconsented cell phone tracking amongst those who felt irritable or had anger outbursts during COVID-19 pandemic

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Feeling irritable or having anger outbursts	Disagree	Neither agree nor disagree	Agree
Not at all/A little	38.2	20.2	41.6
Moderately	27.0	18.6	54.4
Quite a bit/Very much	22.1	12.7	65.3

Table 19: Support for CCTV monitoring by level of satisfaction amongst those who felt irritable or had anger outbursts during COVID-19 pandemic

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Feeling irritable or having anger outbursts	Disagree	Neither agree nor disagree	Agree
Not at all/A little	27.8	18.2	53.9
Moderately	20.2	18.6	61.2
Quite a bit/Very much	19.9	13.9	66.2

Worried about friendships suffering a strain

Only 20% of respondents were worried that their friendships would be strained because of the pandemic (see Figure 4). Among those who were worried, 67% of them said they are agreeable to unconsented cell phone tracking (Table 20), while 69% agree to CCTV monitoring during the CB period (Table 21). Of those worried about strained friendships, 22% did not agree to cell phone tracking, while only 17% did not agree to CCTV monitoring.

Figure 4: Worry over strained friendships because of the COVID-19 pandemic

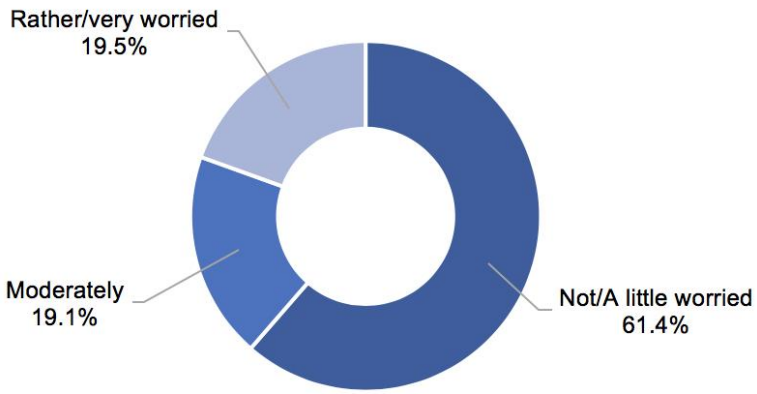


Table 20: Support for unconsented cell phone tracking by those worried about strained friendships

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Your friendships will be strained	Disagree	Neither agree nor disagree	Agree
Not at all/A little worried	38.4	20.8	40.8
Moderately	23.8	18.0	58.2
Rather/Very worried	22.3	10.7	67.0

Table 21: Support for CCTV monitoring by those worried about strained friendships

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Your friendships will be strained	Disagree	Neither agree nor disagree	Agree
Not at all/A little worried	28.6	17.5	53.9
Moderately	18.7	21.4	59.9
Rather/Very worried	17.7	13.0	69.3

Given that these respondents valued their friendships and worried that their relationships might deteriorate as a result of the COVID-19 pandemic, respondents perhaps believed that supporting expanded surveillance would hasten the return of pre-pandemic measures, like meeting and socialising with friends.

2.4. LIVELIHOODS: Those who are worried about potential loss of livelihood as a result of the pandemic are LESS open to surveillance technologies

38% are worried about themselves and/or family members' losing their jobs

Among those who did not support unconsented cell phone tracking (see Table 22), 44% were worried that they or their family members would lose their jobs during this pandemic. For those who did not support CCTV monitoring (see Table 23), 50% reported similar concerns. Compared to those who were not worried, significantly fewer respondents did not support CCTV monitoring (16% fewer) and to lesser extent, unconsented cell phone tracking (6% fewer).

For those who were agreeable to unconsented cell phone data usage, 41% were worried about potential job loss versus 39% who were not worried. For those who said they support CCTV monitoring, 40% were worried while 37% were not worried.

In addition to privacy concerns, we can distinguish two groups of workers; people who either supported or did not support the government's use of technology surveillance and monitoring because both groups are worried about losing their jobs, but for different reasons. The next section sheds more light by looking at their current employment statuses.

Table 22: Support for unconsented cell phone tracking amongst those who are worried about losing jobs during COVID-19 pandemic

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
You or your family members will lose their jobs	Disagree	Neither agree nor disagree	Agree
Not at all/A little worried	37.5	38.8	38.9
Moderately	18.7	27.6	19.9
Rather/Very worried	43.8	33.6	41.2

Table 23: Support for CCTV monitoring by level of satisfaction amongst those who are worried about losing jobs during COVID-19 pandemic

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
You or your family members will lose their jobs	Disagree	Neither agree nor disagree	Agree
Not at all/A little	33.5	41.9	36.7
Moderately	16.3	25.4	23.4
Quite a bit/Very much	50.2	32.7	39.9

Employment Status differences

The survey sample consisted of 70% full-time employed persons versus 14% part-time or self-employed workers and 1% who are unemployed and looking for a job
Only 29% of respondents who were employed full-time did not agree to unconsented cell phone data tracking, versus 43% who were part-timers/self-employed and 48% who were unemployed but looking for a job (see Table 24). Similarly, for those who did not agree to CCTV monitoring (see Table 25), only 23% of respondents were

employed full-time versus 31% who were part-timers/self-employed workers and 33% who were searching for a job.

On the other hand, 54% of workers in full-time employment supported the use of cell phone data tracking compared to a smaller 35% of part-time/self-employed workers and 34% of people looking for a job (see Table 24). Also, 62% of full-timers supported CCTV monitoring compared to 49% of both part-timers/self-employed and people looking for a job (see Table 25).

Taken together with the analysis above, there is at least some indication that for the majority of part-time or self-employed workers as well as those who were unemployed and looking for a job, arguably they may be worried that additional surveillance and monitoring, especially cell phone data tracking could jeopardise their livelihoods.

However, for those in full-time employment, the reverse may be true. We suggest that most were worried that a prolonged period of circuit breaker restrictions and the inability to return to former work routines would threaten businesses and their jobs. They therefore supported the use of surveillance technologies that could help in the opening up of businesses and getting people back to work.

Table 24: Support for unconsented cell phone tracking by employment status

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
You or your family members will lose their jobs	Disagree	Neither agree nor disagree	Agree
Full-time	28.9	17.4	53.7
Part-time/Self-employed	43.1	21.6	35.3
Unemployed	35.0	19.8	45.2
Unemployed but searching for a job	47.8	17.9	34.3

Table 25: Support for CCTV monitoring by employment status

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
You or your family members will lose their jobs	Disagree	Neither agree nor disagree	Agree
Full-time	22.5	15.6	61.9
Part-time/Self-employed	30.7	20.6	48.6
Unemployed	26.6	23.7	49.7
Unemployed but searching for a job	32.8	17.9	49.3

2.5. GENDER: *Males are more open to surveillance technologies than females*

Slightly more than half of male respondents (54%) agreed to the use of unconsented cell phone data, as compared to only 29% of male respondents who disagreed (see Table 26). Among male respondents, 63% agreed to CCTV monitoring during the CB period, as opposed to 22% who did not (see Table 27).

For female respondents, 45% supported unconsented cell phone tracking (see Table 25), while 54% supported CCTV monitoring during the CB period (see Table 26);, 36% and 29% of female respondents did not agree to unconsented cell phone tracking and CCTV monitoring, respectively.

Table 26: Support for unconsented cell phone tracking by gender

% of respondents n=1,537	**Using cell phone data to track people's movements without their consent**		
Gender	Disagree	Neither agree nor disagree	Agree
Female	36.1	19.2	44.7
Male	28.8	17.3	53.9

Table 27: Support for CCTV monitoring by gender

% of respondents n=1,537	**Using CCTVs to monitor people leaving their houses during the CB period**		
Gender	Disagree	Neither agree nor disagree	Agree
Female	27.4	18.9	53.6
Male	21.7	15.8	62.5

3. CONCLUSION

Our broader analysis of the survey data indicates that Singaporeans by and large are supportive of the government's efforts to "flatten the curve" and prevent our healthcare system from being overwhelmed. Moreover, even as Covid-19 community cases are reported to be falling, Singaporeans may still be concerned about the infections spreading outside of the foreign worker dormitories, where there has been over 30,000 confirmed cases.

When the circuit breaker ends on June 1, tight restrictions will not be lifted all at once, and will only be eased gradually in phases. In fact, keeping close tabs on the health and location data of the population may be the key to an effective containment strategy that can still allow people to go back to work and their lives.

The analysis found several statistically significant relationships between those who were more amenable to surveillance technologies and a range of variables. Fundamentally those who were satisfied with how the government is handling this pandemic, were then more open to the government's use of more surveillance technology. Implicit in this is a certain level of trust between government and citizenry. Based on this logic, since the government is perceived as effective in dealing with the pandemic, it only makes sense to allow more powers to the government especially if this can result in better outcomes, particularly the resumption of "normal" social and work routines.

Those who were experiencing the toll relating to CB measures and worried about the loss of jobs and/or friendships if restrictions were not lifted soon, were more open to surveillance technologies. It is likely that for this group, their openness to extraordinary governmental measures is premised on their interest to get back to some normalcy of routines and be able to open "business as usual" soonest — since this has been taking a toll on them both economically and socially. In fact, most Singaporeans (78%) are hoping to return to former work routines (e.g. company lunch meetings, no requirement for social distancing etc) that were common before the pandemic in less than 12 months. However, among the small groups of part-time and self-employed workers, there is at least mild indication that they might be hesitant about additional technology surveillance and monitoring for fear it may impact their current modes of livelihood.

Respondents find CCTV monitoring more acceptable, compared to the use of unconsented cell phone tracking. Perhaps this is because CCTV use has become a norm over the years. Its use is more widespread, with CCTVs now located in many places including at the lift lobbies of apartments. This technology has also been associated with general safety such as the reduction of crime in neighbourhoods. This is compared to cell phone tracking, which is relatively unheard of and may more easily conjure concerns of an intrusion of personal privacy. We can safely conclude that the type of technology matters in determining public acceptability for its use in dealing with this pandemic. Besides this, how technology is used — whether with permission given or not, may impact on how the public accepts a measure.

Naturally, any type of sweeping government-sanctioned surveillance programme, however well intentioned, will continue to raise serious questions: How is our sensitive data being used? Who has access to it? How vulnerable is our data to leaks and

hacks? Could it be exploited by private companies in the future? And, of course, is there a way to mitigate the risk of privacy breaches?

We expect that if more among the population are to be supportive of such measures in the effort to deal with the pandemic, greater clarity on these questions is essential.

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