

# Census of Population 2020 - Modes of Submission and Reminders Amidst COVID-19

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## Introduction

The Singapore Department of Statistics (DOS) conducted the Census of Population 2020 (Census 2020) in 2020. While the main Census data collection period was from Feb to Oct 2020 when the Internet submission was open and outreach was done, returns from respondents continued to come in through the hotline and clarifications were made till end Dec 2020. Census 2020 adopted a register-based approach supplemented with a large-scale sample survey similar to the approach adopted in Census 2010. Under the register-based approach, the basic population count and characteristics<sup>1</sup> were obtained from administrative records from multiple sources. A sample survey of some 150,000 households was then conducted to obtain additional information<sup>2</sup> that was not available from administrative sources.

The Census 2020 sample survey was launched on 4 Feb 2020. A tri-modal data collection strategy comprising

Internet self-enumeration, telephone interviews, and face-to-face interviews was implemented to cater to the varied profile and needs of the population while balancing resource considerations. While the tri-modal data collection approach had been undertaken since Census 2000, the COVID-19 pandemic and the ensuing Circuit Breaker measures implemented nationwide to control its spread invariably impacted how respondents chose to provide their Census 2020 submissions.

This article presents a summary analysis of the response modes used by households to submit their returns for the Census 2020 survey. The Internet mode of data collection played an important role in Census 2020, as it was found to be the most popular response mode in 2020, exceeding reception levels in the Censuses of 2000 and 2010. The impact of reminder letters, which were used to address the challenges posed by the pandemic, including limitations of face-to-face visits are also examined.

## KEY FEATURES OF TRI-MODAL COLLECTION STRATEGY IN CENSUS 2020

**Internet** - Respondents submit their survey returns directly through the Internet. This provides flexibility and convenience to respondents as the online submission portal is available round-the-clock.

**Census Hotline** – Respondents complete the survey over the phone via the Census hotline. The daily operating hours for the Census hotline is from 9 am to 10.30 pm (including Saturdays, Sundays and Public Holidays).

**Face-to-Face Interviews** - For respondents who did not respond through the online survey and could not be contacted by phone, interviews are conducted. While it is labour-intensive, it is an essential mode to reach out to respondents, especially those who are not Internet-savvy or prefer an in-person validation before proceeding with the survey.

1 The basic population characteristics include age, sex, ethnic group, place of birth, type of dwelling, geographical distribution and other basic demographic statistics.

2 The additional data required for in-depth studies included marital status and fertility, education and language spoken, literacy, economic characteristics, housing and household characteristics, mode of transport, religion, and difficulty in performing basic activities.

## Submission Modes in Census 2020 Compared with Earlier Censuses

The proportion of respondents who submitted their survey returns over the Internet surged to 64 per cent in Census 2020 (Chart 1) compared to 15 per cent in Census 2000 and 38 per cent in Census 2010.

While respondents who submitted their responses over the telephone constituted the majority during the Censuses of 2000 and 2010, the proportion of such respondents declined from 62 per cent in Census 2000 to just 25 per cent in Census 2020.

### Profile of Responding Households

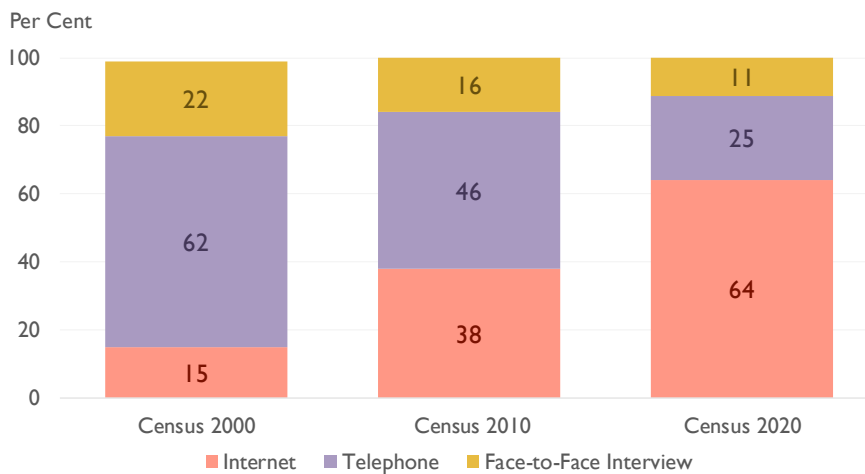
In Census 2020, households that submitted their returns over the Internet had a larger average

household size of 3.3 persons (Table 1) compared with households who opted for the other two modes (2.5 persons for Telephone and 2.3 persons for Face-to-Face interviews).

Some 45 per cent of those who responded through the Internet had 4 or more members in their households compared to only 21 per cent for those responding through face-to-face interviews.

This trend in Census 2020 was generally consistent with that observed in Census 2010, where respondents from household of larger sizes were more likely to use the online submission mode. This could be due to the convenience the Internet option provided, since respondents could respond to the survey any time and over a number of sessions according to the availability of individual members.

**CHART 1**  
SHIFTS IN USE OF MODES OF SUBMISSION, 2000 - 2020



**TABLE 1**  
DISTRIBUTION OF HOUSEHOLD SIZE BY MODE OF SUBMISSION, 2010 AND 2020

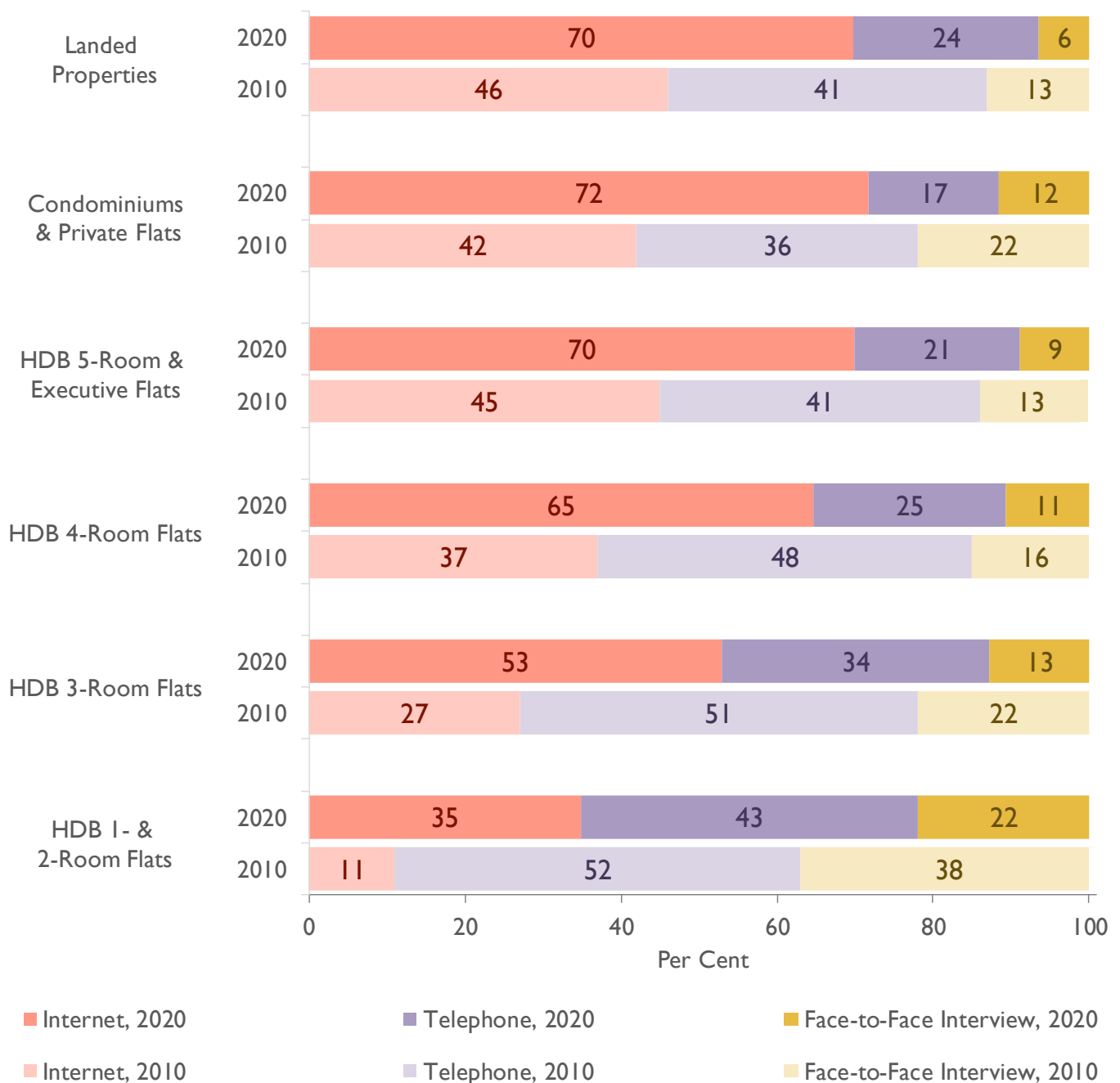
Household Size	Internet		Telephone		Face-to-Face Interview	
	C2010	C2020	C2010	C2020	C2010	C2020
1 Person	10.4	16.6	15.1	31.2	39.2	46.6
2 Persons	15.3	19.5	19.5	27.6	18.1	19.8
3 Persons	19.0	19.4	19.5	17.0	13.9	12.5
4 Persons	25.2	21.3	21.7	12.3	12.8	10.1
5 and More Persons	30.0	23.3	24.1	11.9	15.8	10.9
Average Household Size (Person)	3.7	3.3	3.4	2.5	2.6	2.3

## More than 50 per cent of Households in HDB 3-Room and Larger Flats and Private Housing Used Internet Submission in Census 2020

More than 50 per cent of households residing in HDB 3-room or larger flats and private housing submitted their returns via the Internet in Census 2020 (Chart 2).

Submission of census returns over the Internet has also increased from Census 2010 among those residing in HDB 1- and 2-room flats. Within this group, 35 per cent of households had used the Internet for their Census 2020 submissions, more than three times the proportion in Census 2010. Nonetheless, households in this group remained more likely to use telephone and face-to-face survey submissions modes in Census 2020, at 43 per cent and 22 per cent respectively.

**CHART 2**  
MODES OF SUBMISSION BY DWELLING TYPES, 2010 AND 2020



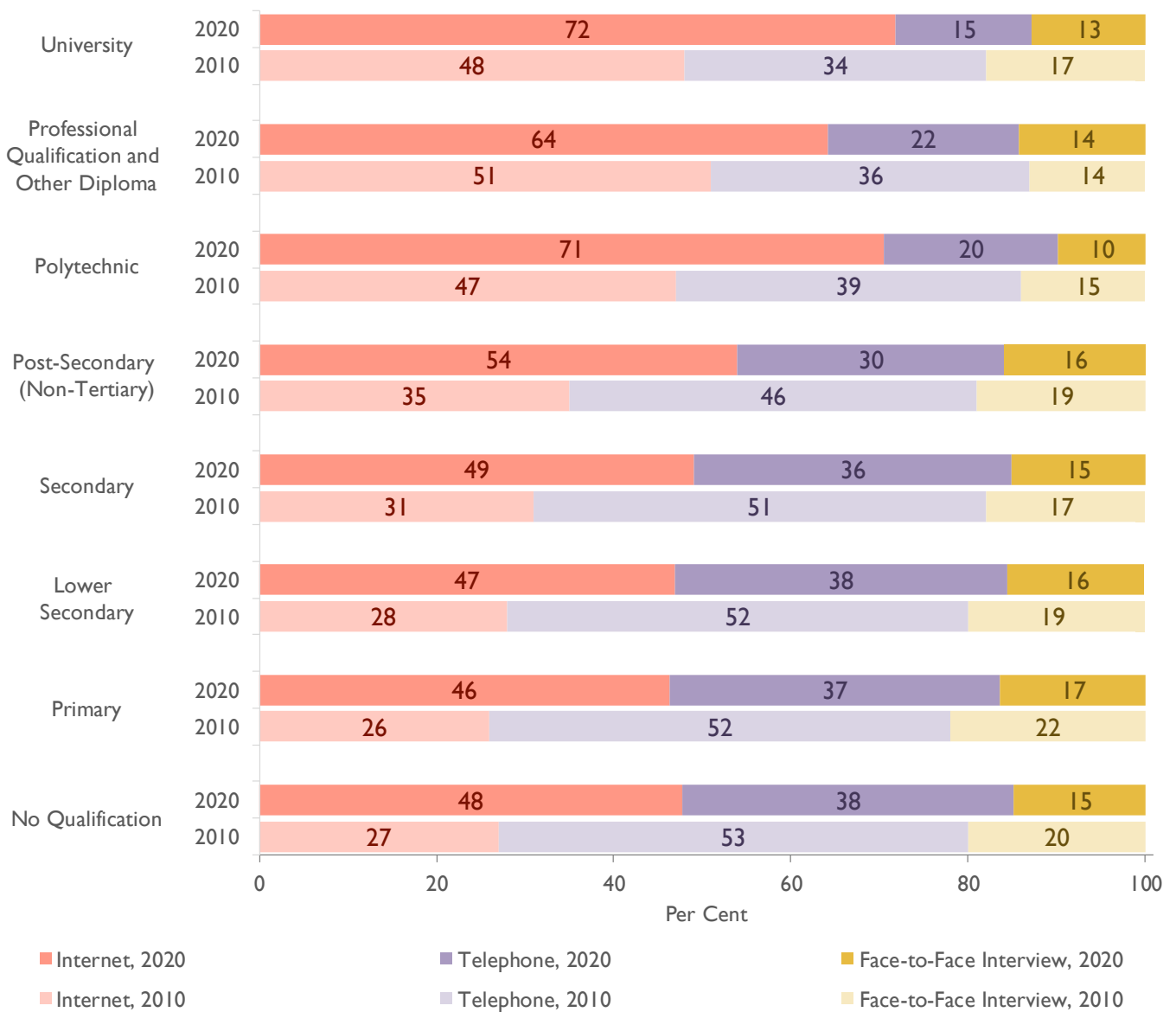
## Internet Submission Remained the Most Popular Choice among Better-Educated

Households with reference persons<sup>3</sup> holding higher educational qualifications had greater propensity to use the Internet to submit their Census 2020 returns. Among households whose reference persons had University qualifications, 72 per cent submitted their

returns through the Internet (Chart 3), an increase from 48 per cent in Census 2010.

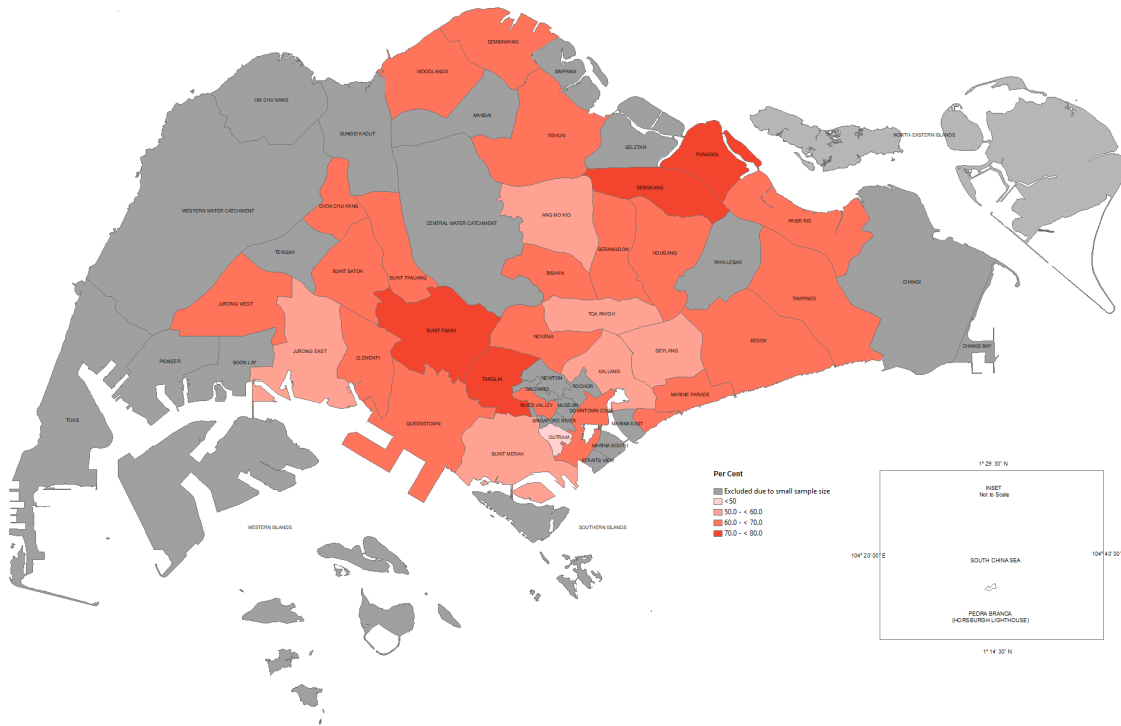
The corresponding proportion was lower at slightly below 50 per cent among households with reference persons whose educational qualification is at Secondary level or lower, albeit a significant increase from 31 per cent in Census 2010.

**CHART 3**  
SUBMISSION MODES BY HIGHEST QUALIFICATION ATTAINED OF REFERENCE PERSON, 2010 AND 2020



<sup>3</sup> Introduced in Census 2020, the term 'Household Reference Person' may refer to the oldest member, the main income earner, the owner-occupier of the house, the person who manages the affairs of the household, or the person who supplied the information pertaining to other members. Prior to Census 2020, survey respondents were asked to identify the 'head of household'. The identified person is used as the reference person to determine relationships between household members. In Census 2020, the term 'head of household' was replaced with 'household reference person'.

**CHART 4**  
INTERNET SUBMISSION RATE BY PLANNING AREA, 2020



**Internet Submission Remained as the More Popular Submission Mode among Households in Younger Estates**

Among the planning areas<sup>4</sup> covered in Census 2020, Punggol and Sengkang remained the top two estates (Chart 4) with the highest Internet submission rates<sup>5</sup> of 73 – 74 per cent. In contrast, more mature estates such as Outram, Geylang, Kallang and Bukit Merah registered lower Internet submission rates of 48 – 55 per cent.

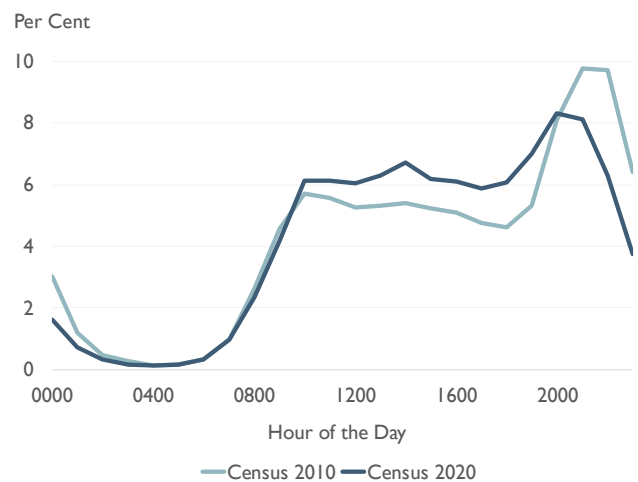
**Usage Patterns of Respondents**

**Internet Responses were More Evenly Distributed Throughout the Day with Short Peak at Night**

In both Census 2010 and Census 2020, most of the respondents who provided their Census submissions through the online submission platform logged in between 8 pm and 10 pm each day (Chart 5). In Census 2020, the distribution of logins was more

evenly spread out from 9 am to 5 pm. In comparison, Census 2010 saw the peak period spread over shorter hours in the evenings from 8 pm to midnight and a lower proportion of logins during the day. This could be due to the increased accessibility of mobile devices to complete the Census Internet submission form for Census 2020.

**CHART 5**  
SESSIONS LOGGED IN TO THE CENSUS ONLINE SUBMISSION PORTAL, 2010 AND 2020

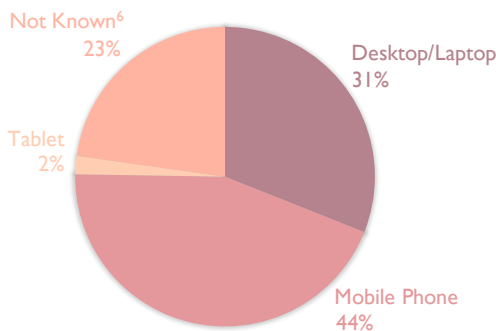


4 Refers to the planning areas for the physical development of Singapore as demarcated in the Urban Redevelopment Authority’s Master Plan 2019.  
5 Based on sample counts and refers to the proportion of households who submitted their returns through the Internet vis-à-vis the total submissions in the stated planning area.

## Devices Used to Submit Census Returns

The Census online submission portal for Census 2020 was designed to be mobile-responsive, where the online questionnaires were optimized for better viewing on various screen sizes of devices, and according to the type of mobile device used by the respondent. Mobile phones were the most commonly used device at 44 per cent, with Desktop/Laptop at a close second in popularity at 31 per cent (Chart 6).

**CHART 6**  
TYPE OF DEVICES USED TO SUBMIT CENSUS RETURNS, 2020



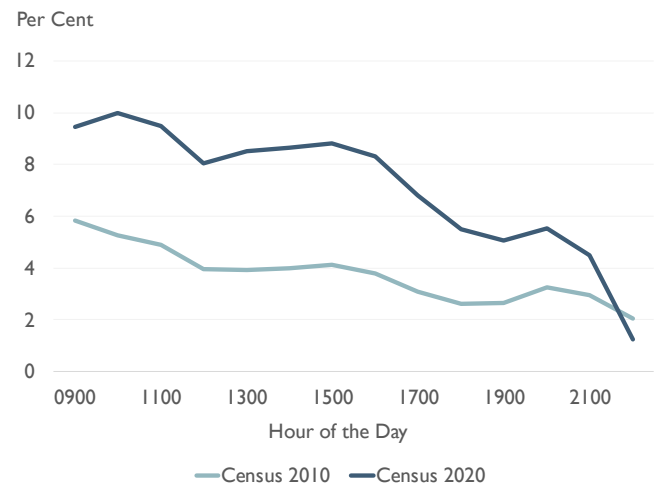
## More Calls to Census Hotline in the Day

Some 25,300 calls were made to the Census 2020 hotline between Feb and Oct 2020<sup>7</sup>. These included calls from respondents who submitted their Census returns over the phone, respondents who required assistance while completing their survey over the Internet, and calls from the public who had general enquiries relating to the Census 2020. In contrast to the late-night peak period for respondents using the Internet, the Census hotline received the highest number of calls in the morning from 9 am and the call volume remained high throughout the day, until 4 pm (Chart 7). The trend in Census 2020 is similar to that registered for Census 2010.

## Effectiveness of Reminder Letters

The sample of 150,000 households were divided into 21 batches and respondents were progressively notified by batch. Respondents first received

**CHART 7**  
PROPORTION OF TOTAL CALLS RECEIVED BY THE CENSUS HOTLINE BY HOUR OF THE DAY, 2010 AND 2020



a notification letter, informing them that they had been selected to participate in the Census 2020, and that they were given two weeks to provide their survey returns. Thereafter, reminder letters to encourage participation were sent to respondents who had not completed their returns by the end of the second week and by the end of the fourth week. Reminder letters are necessary to prompt respondents to continue with uncompleted survey submissions.

In contrast to Census 2010 where two reminder letters were sent, a total of four reminders were sent in Census 2020 to encourage submissions through Internet and telephone, as face-to-face interviews were delayed due to the COVID-19 pandemic (Chart 8).

**CHART 8**  
VOLUME OF REMINDER LETTERS AS A PROPORTION OF SURVEYED SAMPLE, 2020



<sup>6</sup> Refers to device types that are not distinguishable from "Desktop/Laptop", "Mobile Phone" and "Tablet".

<sup>7</sup> Includes calls received from Feb up till 31 Oct 2020 and excludes the Circuit Breaker period and up till the Phase 2 Re-opening from 7 Apr – 20 Jun 2020 when the call operation was managed by a team working from home.

### Impact of First Reminder (R1)

Similar to the dispatch of notification letters, reminder letters were sent to respondents in batches. In order to manage the call volume arising from inbound traffic at the Census 2020 call centre during the Circuit Breaker period from Apr to Jun 2020 where only a small number of officers were managing the calls from the Census hotline, the dispatch of R1 for the last five Batches was delayed. The effect of the delayed R1 is distinct (Chart 9).

For a more in-depth view, a comparison between two Groups was made, with Groups 1 and 2 comprising the average completion rate of batches 1-16 and batches 17-21 respectively. A difference of 56 days in the average number of elapsed days between the date of notification letter and R1 of Group 1 (16 days) and Group 2 (72 days) was observed. From Chart 10, R1 is shown to be more effective in helping Group 1 to increase the survey completion rate by 36 per cent compared to Group 2 where R1 was delayed by 56 days.

### Concluding Remarks

Amidst an uncertain pandemic environment, DOS responded swiftly to facilitate data collection for

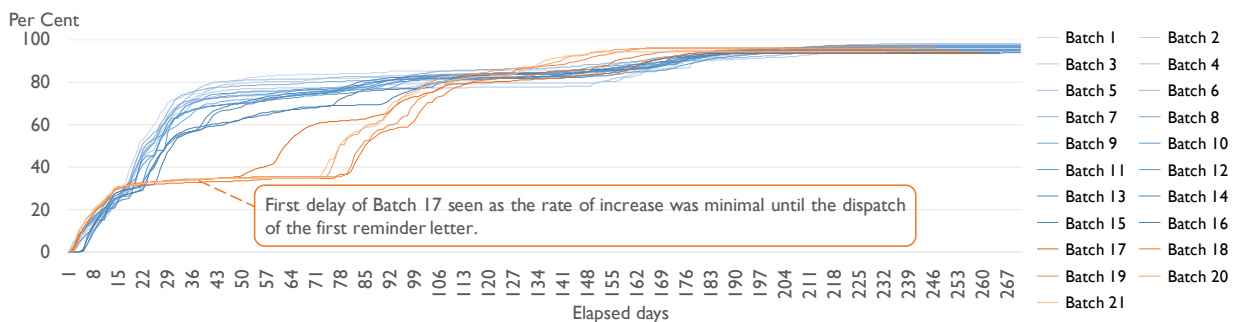
the Census 2020 under challenging conditions through adaptation or by delaying some of the survey operations. The continued support and co-operation of respondents who provided their survey responses was a key success factor for the completion of the Census 2020.

The Internet appeared to be the pivotal mode of data collection in the tri-modal survey strategy that allowed Census 2020 to be successfully completed. Nonetheless, all three modes of data collection remain relevant in Singapore’s context. Reminder letters were also effective in nudging respondents into completing their survey submissions.

Moving forward, DOS will continue to review the most appropriate mode(s) to administer household surveys, while taking into consideration the nature of the survey and the changing lifestyle of the population.

The COVID-19 pandemic has underscored the importance of operational adaptability in a rapidly changing environment. While it invariably increased the challenges for the data collection process, it also provided opportunities to leverage technology to encourage self-help and self-enumeration through digital means.

**CHART 9**  
OVERALL COMPLETION RATE BY BATCHES, 2020



**CHART 10**  
AVERAGE COMPLETION RATE OF GROUP 1 (BATCHES 1-16) AND GROUP 2 (BATCHES 17-21), 2020

