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Census of Population 2010 - Increased Use of Internet in Census Submission

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Introduction

The Singapore Department of Statistics conducted the Census of Population 2010 (Census 2010) from mid March to August last year.

The Census 2010 adopted a register-based approach where basic population count and characteristics were compiled from administrative sources.

This was supplemented by a sample enumeration to obtain additional information on marriage and fertility, education and language usage, religion, income, household and housing, and transport that were not available from administrative sources.

This article presents a summary analysis of the response modes used by households when submitting their returns for the Census 2010 survey.

Modes of Submission

The Census 2010 adopted a tri-modal data collection approach comprising self-administered Internet submission and interviews over the telephone or face-to-face performed by census interviewers. All households selected for the census were given the option to respond through any of the modes that best suit their preference.

The tri-modal approach was first introduced in the previous round of census in 2000. In the 1990 and earlier censuses, face-to-face (fieldwork) interviews had been the only mode through which the public could provide their census responses.

Over time, the increasingly widespread use of the Internet and availability of integrated call-centre technologies provided opportunities for modes other than face-to-face interviews to be developed and offered.

Having multiple channels for census responses made it more convenient for the respondents to submit their responses.

Unlike in the past where respondents had to make prior appointments with the interviewers to visit them at their homes at specific dates and times, telephone interviews allowed respondents the flexibility to call and complete the survey within the operating hours of the hotline. The provision of the Internet submission option further enabled the submission process to be available round the clock.

Besides the benefits for respondents, the approach also improved the efficiency in data collection for the Department.

With more respondents submitting their responses over the Internet or phone, less manpower were needed for the resource-intensive field enumeration operations.

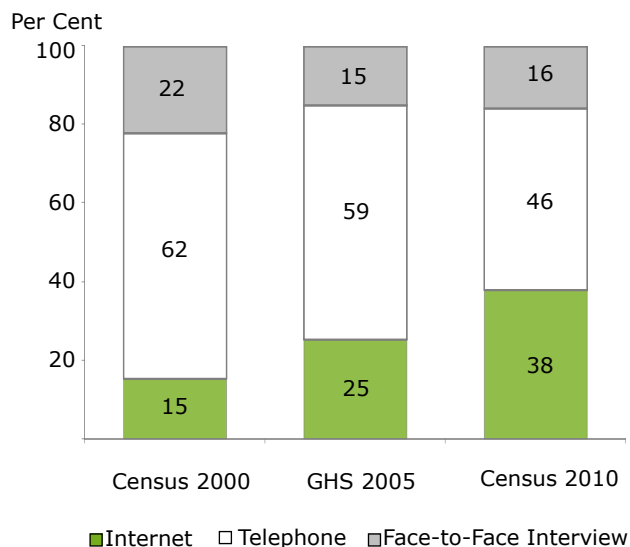
It also enabled the Department to reach households that were increasingly difficult to contact due to the absence of members who may be working and returning home later.

Shifts in Use of Submission Modes

In tandem with Singapore’s rapid growth in Internet usage over the past decade, the proportion of houses submitting their Census forms through the Internet increased significantly between 2000 and 2010.

From 15 per cent in Census 2000 and 25 per cent in the General Household Survey (GHS) 2005, the proportion who submitted their survey returns over the Internet grew to 38 per cent in Census 2010 (Chart 1).

CHART 1 SHIFTS IN USE OF SUBMISSION MODES, 2000-2010



Correspondingly, there was a decrease in the proportion of houses submitting their survey returns over the telephone.

While respondents who submitted their responses over the telephone continued to constitute the majority of the returns, the proportion doing so had declined over the years. This is despite the extension of the daily operating hours for the Census hotline from 9 am to 9 pm in 2000 to 9 am to 10.30 pm in 2010.

Profile of Responding Households

In 2010, households that submitted their returns over the Internet had an average household size of 3.7 persons (Table 1). This is larger than the average size of households who completed via the other two modes.

Some 55 per cent of those who responded through the Internet had 4 or more members in their households compared to only 29 per cent for those responding through face-to-face interviews.

TABLE 1 DISTRIBUTION OF HOUSEHOLD SIZE OF RESPONDING HOUSEHOLDS ACCORDING TO MODE OF SUBMISSION

| Household Size | Per Cent | | |
|---------------------------------|----------|-----------|------------------------|
| | Internet | Telephone | Face-to-Face Interview |
| 1 Person | 10.4 | 15.1 | 39.2 |
| 2 Persons | 15.3 | 19.5 | 18.1 |
| 3 Persons | 19.0 | 19.5 | 13.9 |
| 4 Persons | 25.2 | 21.7 | 12.8 |
| 5 and More Persons | 30.0 | 24.1 | 15.8 |
| Average Household Size (Person) | 3.7 | 3.4 | 2.6 |

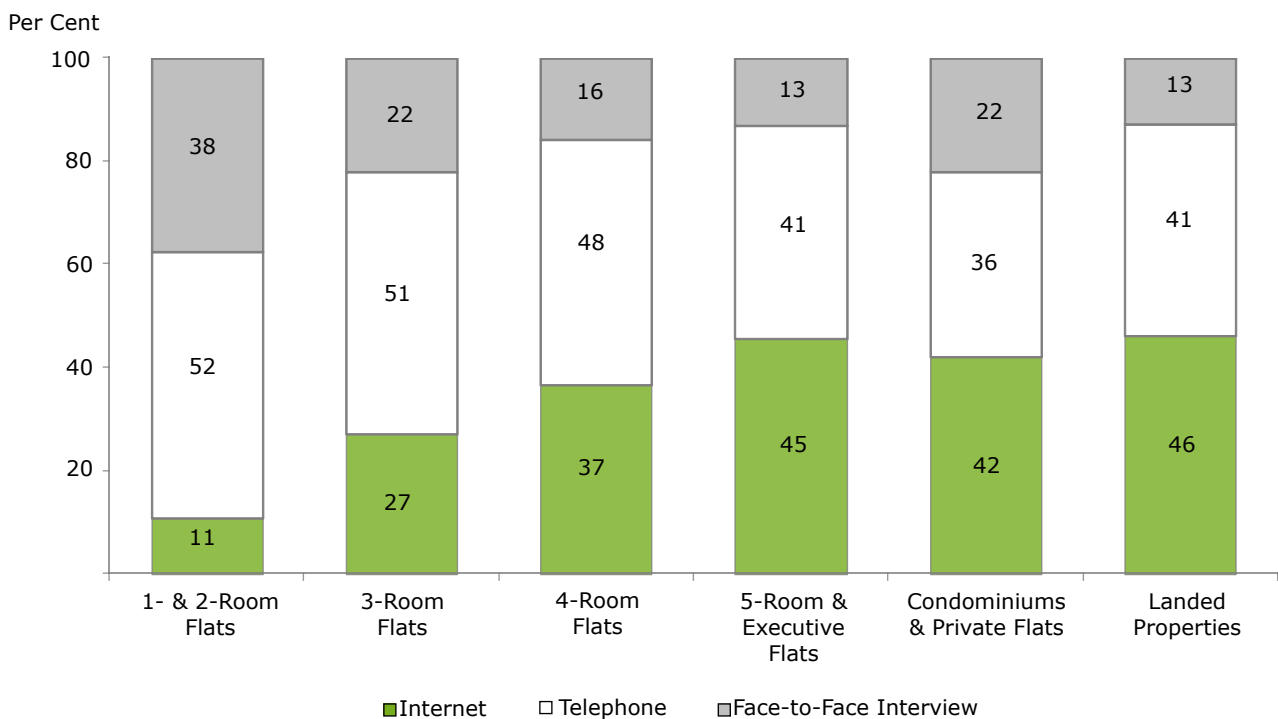
Higher Internet Submission Rate among 5-Room or Larger Flats and Private Housing

The proportion of households using the Internet to submit their returns was higher among those living in 5-room or larger flats and private housing compared to those in smaller HDB flat types (Chart 2).

Some 46 per cent of households living in landed properties submitted their census returns using the Internet.

In contrast, 11 per cent of households staying in 1- and 2-room flats and 27 per cent of those in 3-room flats had used the Internet for their census submissions.

CHART 2 SUBMISSION MODES BY DWELLING TYPES, 2010



Among households living in 1- and 2-room flats, some 38 per cent opted for face-to-face interviews – the highest proportion across all house types.

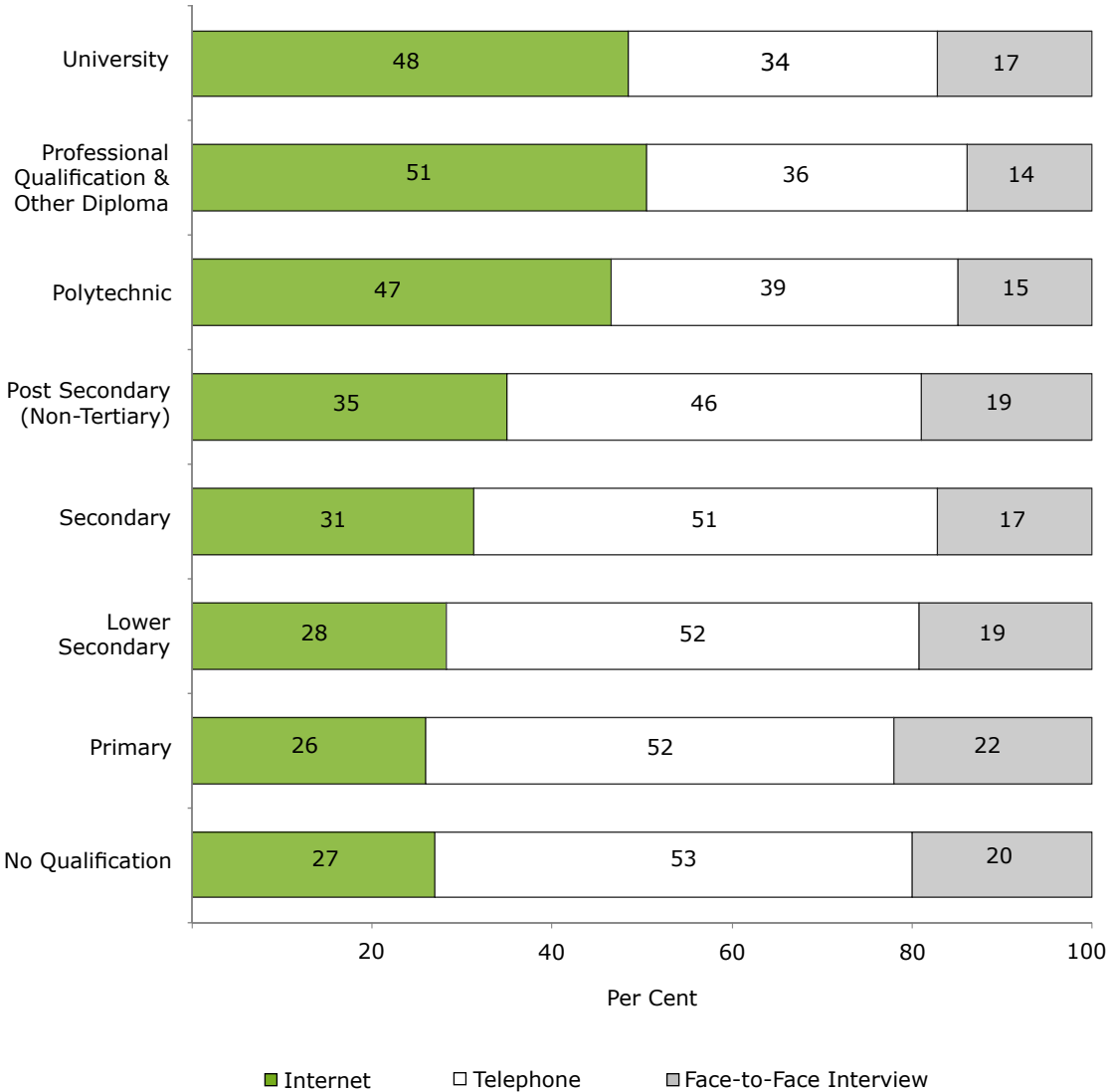
Higher Propensity for Internet Submission among Better-Educated

Households with heads having higher educational qualifications had greater

propensity to use the Internet to submit their census returns. Among households whose heads had university qualification, 48 per cent submitted their returns through the Internet (Chart 3).

The corresponding proportion was lower at below 30 per cent among households whose heads had below Secondary education.

CHART 3 SUBMISSION MODES BY HIGHEST QUALIFICATION ATTAINED BY HEAD, 2010

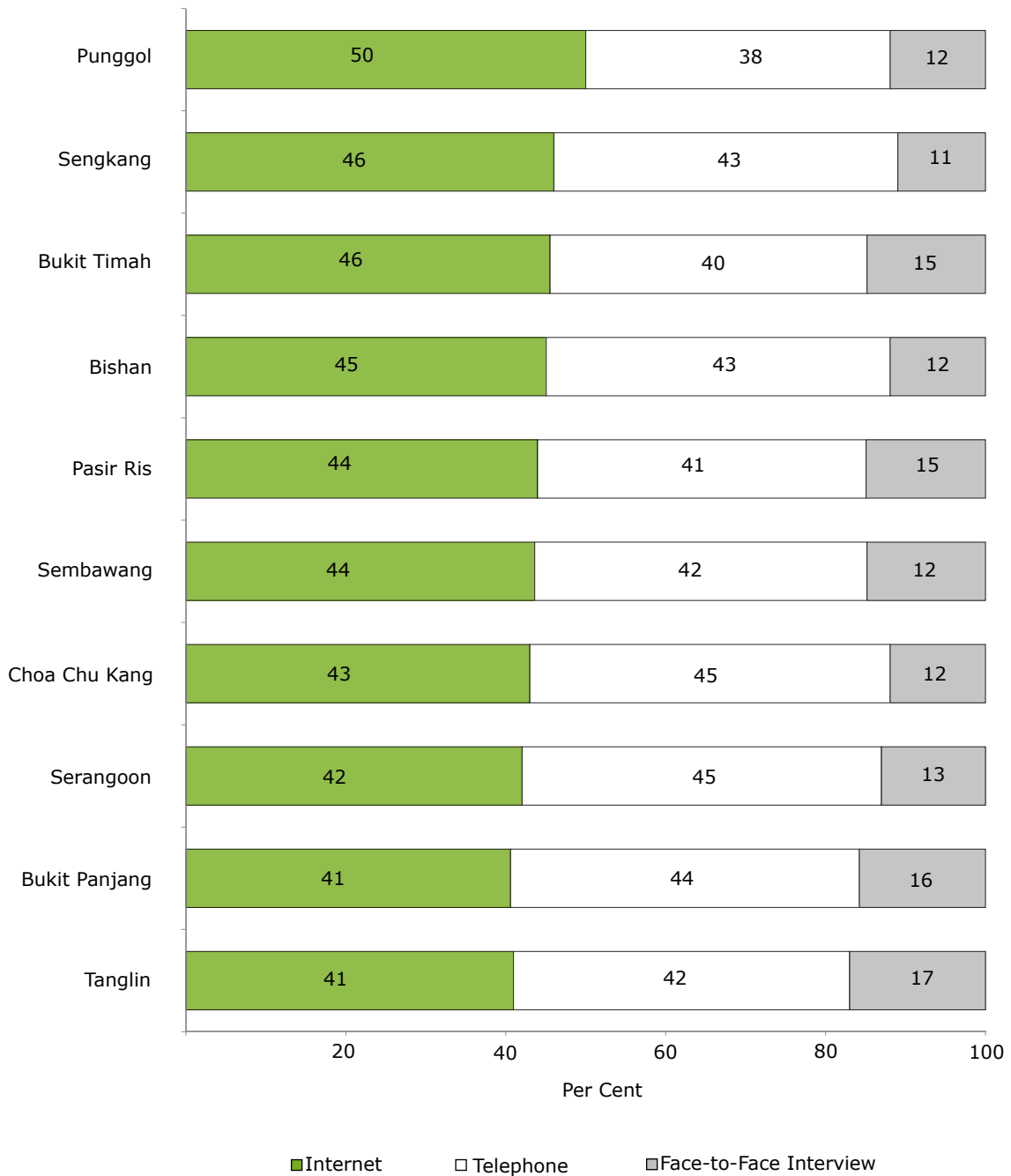


Internet Submission More Popular among Households in Younger Estates

Punggol had the highest proportion of Internet submissions (50 per cent)

made by households among all planning areas¹ covered for Census 2010 (Chart 4). This was followed by Sengkang and Bukit Timah at 46 per cent each.

CHART 4 TOP 10 PLANNING AREAS RANKED BY USE OF INTERNET FOR SUBMISSION, 2010



¹ The geographical areas presented in this article refer to the planning areas for the physical development of Singapore as demarcated in the Urban Redevelopment Authority's Master Plan 2008.

Usage Patterns of Respondents

Internet Responses Peak at Night

The peak period where respondents logged in to submit their census returns was between 8 pm to 12 midnight (Chart 5). One-third of the Internet sessions registered for Census 2010 occurred within this period while the rest were spread mainly between 9 am to 8 pm.

More Calls to Hotline in the Day

Some 52,100 calls were made to the Census 2010 hotline between March to

August 2010. These included calls from respondents to submit their census returns over the phone, as well as respondents who needed assistance while completing their returns over the Internet.

They also included calls from the public who have general enquiries relating to the Census 2010.

In contrast to the late night peak for respondents using the Internet, the hotline received the highest number of calls in the morning (Chart 6).

CHART 5 PROPORTION OF TOTAL SESSIONS LOGGED IN AT CENSUS INTERNET SUBMISSION WEBSITE BY HOUR OF THE DAY

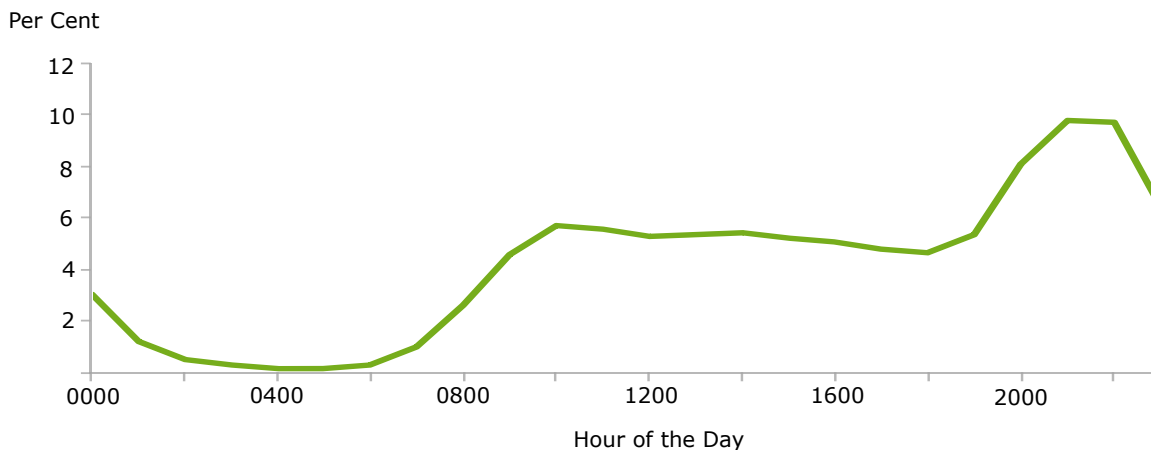
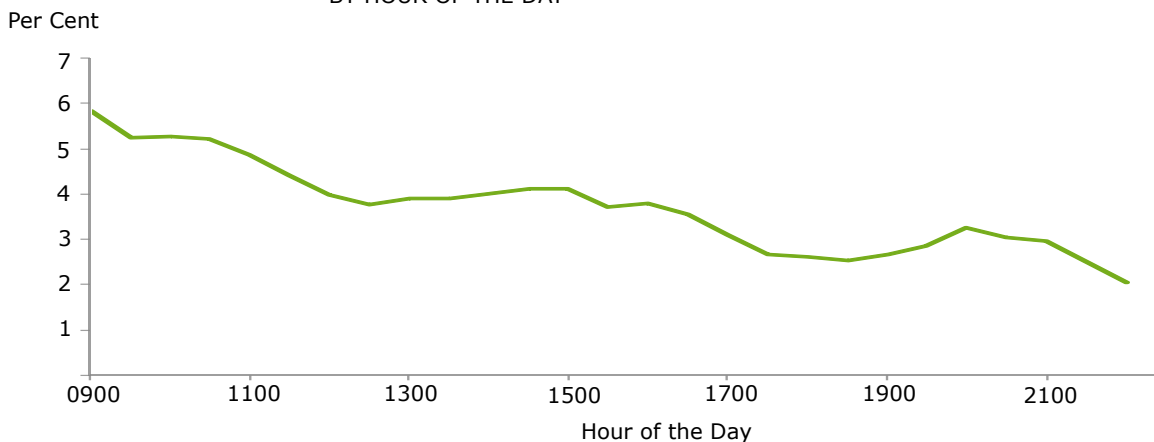


CHART 6 PROPORTION OF TOTAL CALLS RECEIVED BY CENSUS HOTLINE BY HOUR OF THE DAY



Concluding Remarks

The successful completion of the Census 2010 relied upon the support from the participating households.

With high Internet penetration rate and computer literacy in Singapore, households' acceptance of using the Internet as a mode to submit their census returns has grown over the years.

It is important nonetheless to note that respondents submitting their returns through telephone or face-to-face interviews still formed the majority of the Census 2010 returns.

The Department will continue to review the most appropriate mode(s) to administer household surveys taking into consideration the nature of the survey as well as the changing lifestyle of the population.

2010 in Brief

Singapore's population

... reached 5.08 million in June 2010.

Singapore's economy

... grew 14.5 per cent.

Mean years of schooling

... was 10.6 years for male resident non-students aged 25 years and over and
9.7 years for female resident non-students aged 25 years and over.

Home ownership rate

... was 87.2 per cent.

Per capital gross national income

... increased to S\$57,603.

Gross national saving

... was S\$139.8 billion.

Official foreign reserves

... increased to S\$289.0 billion.

Labour force participation rate

... reached 76.5 per cent among males and
56.5 per cent among females.

Resident unemployment rate (seasonally adjusted)

... was 3.2 per cent.

Inflation rate

... was 2.8 per cent.

Value added for the manufacturing sector

... amounted to S\$56.9 billion.

Investment commitments in manufacturing and services

... reached S\$12.9 billion.

Total trade

... reached S\$902.1 billion.

Visitor arrivals

... was 11,639 thousand.

Sea cargo handled

... reached 503 million tonnes.

Air cargo handled

... was 1,816 thousand tonnes.

Mobile phone subscribers

... reached 1,436 per 1,000 population.

Residential broadband subscribers

... increased to 440 per 1,000 population.

Crime rate

... declined to 650 per 100,000 population.