Rebasing of the Consumer Price Index for General Households (2019 as Base Year)

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Introduction

The Department of Statistics (DOS) has rebased the Consumer Price Index (CPI) for general households from the base year of 2014 to 2019. The rebasing exercise is conducted once every five years to reflect the latest consumption patterns of goods and services of resident households. It also provides an opportunity to review the coverage and methodology of the CPI, taking into account recommendations by the International Labour Organisation and the best practices of other countries.
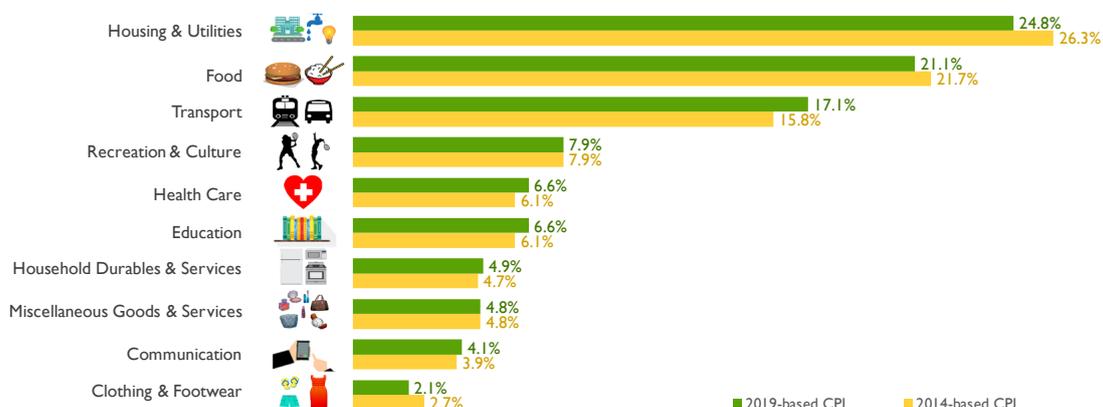
This article presents the latest CPI series for general households with 2019 as its base year, compares the weighting patterns[1] and price movements between the 2019-based and 2014-based CPIs, and highlights the key methodological improvements implemented for the 2019-based CPI.

The 2019-Based CPI Weighting Pattern

The weighting pattern for the 2019-based CPI is derived from the expenditure values obtained from the Household Expenditure Survey (HES) conducted between October 2017 and September 2018, and updated to 2019 values by taking into account price changes between 2017/18 and 2019.

The weighting pattern for the broad categories of goods and services in the 2019-based CPI remained largely similar to that for the 2014-based CPI. Housing & utilities, food and transport continued to be the top three expenditure categories for the 2019-based CPI (Figure 1). Collectively, they made up about 63.0 per cent of the total expenditure weight in the 2019-based CPI, slightly lower than the corresponding 63.8 per cent in the 2014-based CPI.

FIGURE 1 WEIGHTING PATTERN OF CPI, 2014-BASED AND 2019-BASED

1 The weighting pattern reflects the relative importance of an item in the basket of goods and services consumed by households (i.e., expenditure on the item as a share of total household expenditure). Changes in the prices of items with larger weights will have a relatively greater impact on the index than those with smaller weights.

Top Three Expenditure Divisions

The expenditure share for housing & utilities fell from 26.3 per cent in 2014 to 24.8 per cent in 2019, as a result of smaller shares on imputed rentals on owner-occupied accommodation and electricity.

Food accounted for 21.1 per cent of the total weight in 2019, slightly lower than the 21.7 per cent in 2014. This was due primarily to the slower rate of increase in the households' spending on food excluding food serving services compared to other expenditure items, resulting in a fall in its weight from 7.8 per cent in 2014 to 6.8 per cent in 2019.

In contrast, higher household spending at restaurants, cafes and pubs brought the weight for food serving services up from 13.9 per cent in 2014 to 14.3 per cent in 2019, thereby contributing to more than two-thirds of the total weight for food. Nonetheless, meals at hawker centres, food courts and coffee shops continued to remain the top expenditure group under food serving services.

Reflecting higher expenditures on cars, point-to-point transport services and passenger air travel, the weight for transport climbed to 17.1 per cent in 2019, up from 15.8 per cent in 2014. Expenditure shares on petrol, road tax as well as general car repairs and maintenance were, however, lower.

Divisions with Larger Expenditure Shares

Other than transport, the weights for health care and education went up marginally from 6.1 per cent each in 2014 to 6.6 per cent each in 2019. The increases were attributed to higher expenditure on outpatient medical and dental treatment and health insurance, as well as overseas university education respectively.

With higher expenditure shares on mobile & broadband services, the weight for communication edged up from 3.9 per cent in 2014 to 4.1 per cent in 2019.

Similarly, the expenditure shares for household durables & services rose from 4.7 per cent in 2014 to 4.9 per cent in 2019.

Divisions with Smaller or No Change in Expenditure Shares

Similar to housing & utilities and food, the expenditure share on clothing & footwear continued to be the smallest among other divisions, declining to 2.1 per cent in 2019 from 2.7 per cent five years ago.

Meanwhile, the weight for recreation & culture as well as miscellaneous goods & services was unchanged at 7.9 per cent and 4.8 per cent respectively.

Comparison of 2014-Based and 2019-Based CPI-All Items

January to December 2019 was the overlapping period between the two base years. Trends in the 2014-based and 2019-based CPI-All Items over this period were generally similar (Charts 1 to 3).

The differences in magnitudes of change between the two series were due mainly to differences in the weighting pattern, the basket of goods and services, and their associated price changes.
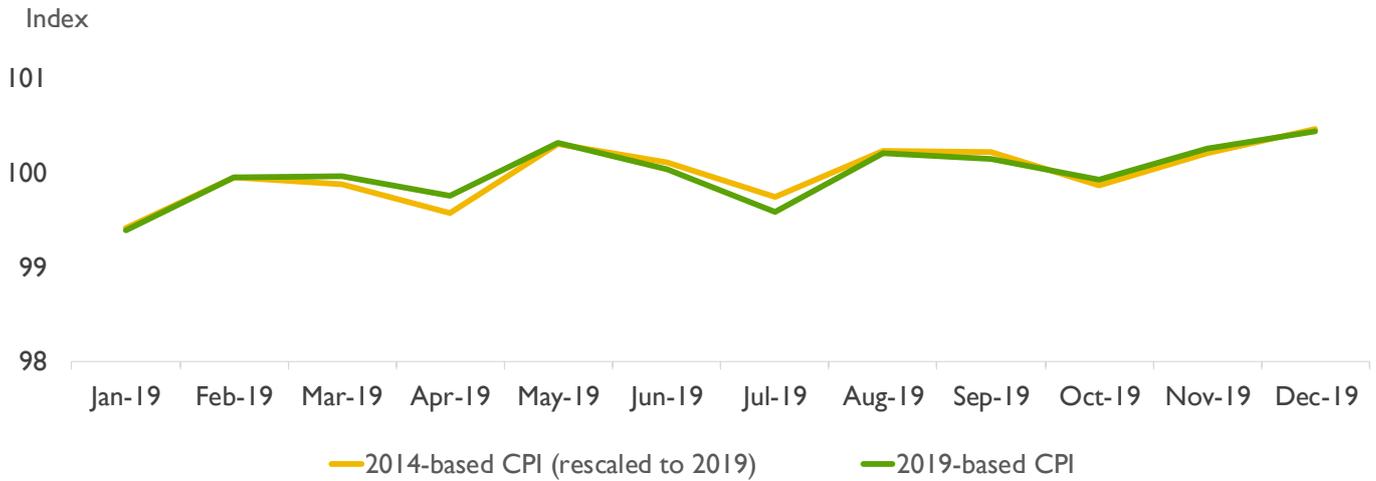
Key Improvements in the 2019-Based CPI

Expanded and Updated Coverage of Items

The number of brands and varieties selected expanded to 6,800 for the 2019-based CPI, up from the 6,600 in the 2014-based CPI.
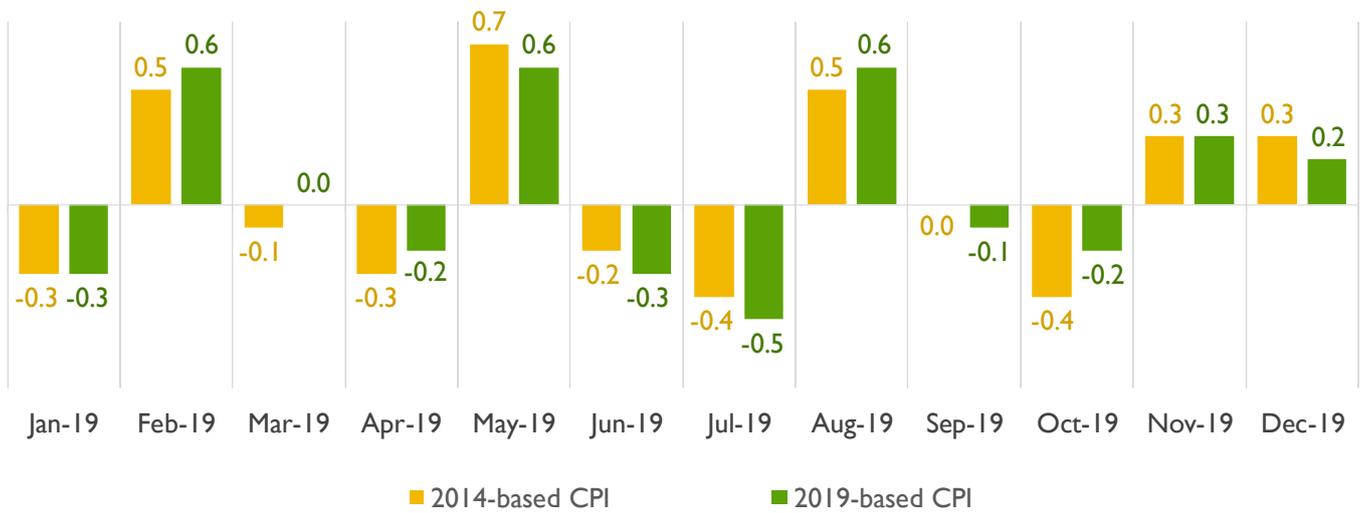
A number of new and emerging items were introduced in the 2019-based CPI basket. These include food items like avocados and organic vegetables, hiring/rental of clothing, online video streaming, SIM-only mobile plans, private hire car services, home therapy services, and dementia day care services.

Correspondingly, items with expenditure shares that declined over the five-year period (between 2014 and 2019), or were no longer available, were removed from the 2019-based CPI basket. These items include prepaid international calling card, cable broadband services, pre-recorded CDs/DVDs, cordials/squashes, and salted fish.
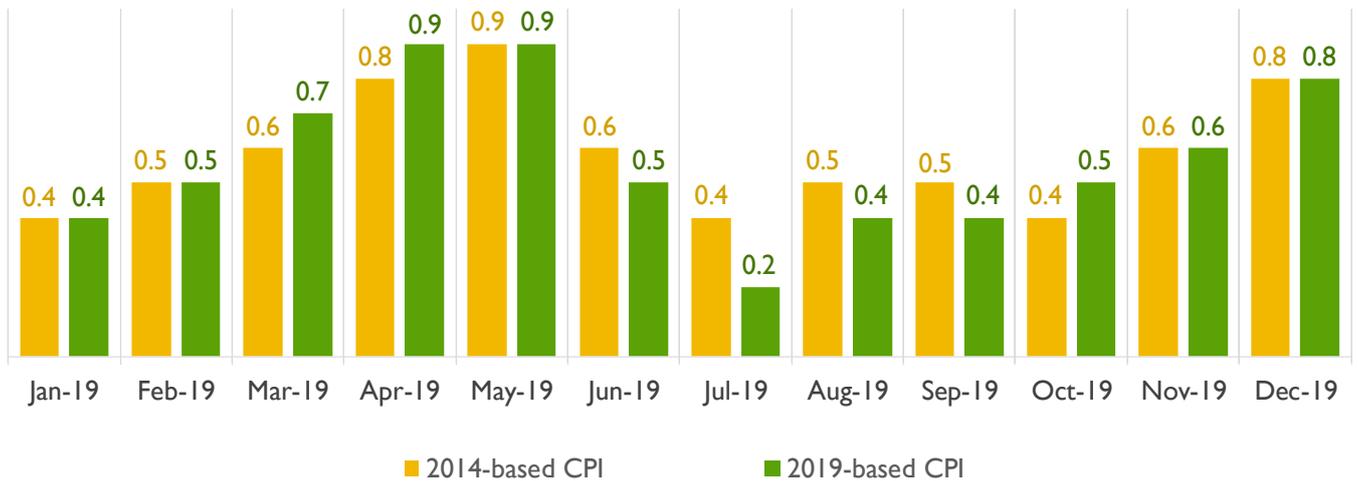
CHART 1   CPI-ALL ITEMS (2019 AS BASE YEAR)

Index

— 2014-based CPI (rescaled to 2019)   — 2019-based CPI

CHART 2   MONTH-ON-MONTH PERCENT CHANGE (%) IN CPI-ALL ITEMS

■ 2014-based CPI   ■ 2019-based CPI

CHART 3   YEAR-ON-YEAR PERCENT CHANGE (%) IN CPI-ALL ITEMS

■ 2014-based CPI   ■ 2019-based CPI

Use of Hedonics for Quality Adjustment

Methodological changes were introduced in the 2019-based CPI, taking into account recommendations by the International Labour Organisation and best practices of other countries.

One example is the adoption of hedonic regression in the compilation of the CPI for used cars, in order to achieve a more robust quality adjustment between the obsolete and replacement models that may differ in technical specifications, make, age, mileage etc.

The hedonic quality adjustment method is suitable for rapidly changing high-technology products with substantial changes in quality within relatively short periods, and products with inherent qualities that seldom remain constant over time. Used cars in the Singapore CPI basket is a typical example, given their high heterogeneity of attributes.

Greater Use of Online and Electronic Prices

With growing prevalence of internet purchases among households, online price collection for goods and services such as apparels, travel expenses (e.g. air tickets, accommodation), and cinema tickets is increasingly being adopted. Specifically, web crawlers are used to web scrape data from the internet where feasible.

Apart from greater use of online prices, electronic prices of goods and services sold at supermarkets are obtained from major supermarket chains where available. These electronic prices are derived based on actual transactions. Due to the greater number of price quotations, the prices tend to be more reflective of the average monthly prices paid by consumers, thereby improving data quality for the compilation of the CPI.
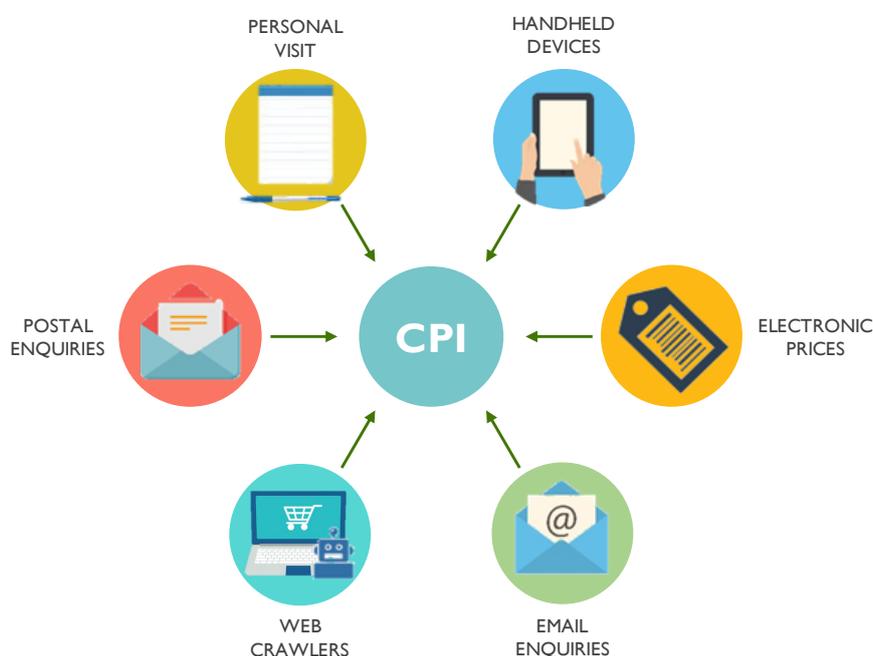
This shift away from the traditional approach of price collection by personal visits (fieldwork) to the use of electronic price data has improved manpower efficiency, as manpower no longer required for fieldwork can be redeployed to support other areas of work, such as data checking and verification.

Use of Handheld Devices for Price Collection

As part of DOS' continual effort to leverage the latest digital tools for the improvement of data collection processes, handheld devices are used to collect prices of hawker food items at cooked food centres, coffee shops and food courts.

This not only minimises data entry and validation efforts, but also improves data quality as erroneous data entries can be detected early via "on the fly" validation checks during price collection. Figure 2 shows the various data collection modes used in the 2019-based CPI.

FIGURE 2   COMBINATION OF DATA COLLECTION MODES IN THE 2019-BASED CPI

Release of More Detailed Information and Visualisations

New and more detailed 2019-based CPI data are published on the SingStat Website (www.singstat.gov.sg/tablebuilder), to better support the research and analytical needs of citizens and businesses. Specifically, a total of 91 CPI categories at class (3-digit) level are published for the 2019-based CPI, compared to 8 categories for the 2014-based CPI. This enables the tracking of price changes at a more detailed level to gain deeper insights to the main drivers of inflation.

To cater to growing interest in hawker food prices, average retail prices for 10 popular hawker food items have been released on the SingStat Website. These food items are carefully selected to ensure that they are fairly homogeneous (e.g. in terms of their serving sizes), with reasonably large number of price quotations to facilitate the computation and comparison of meaningful and robust average retail prices over time.

The Information Paper "Rebasing of the Consumer Price Index (2019 as Base Year)" provides more details on the compilation of the rebased CPI.

Accompanying the Information Paper are new content such as a glossary which explains common CPI terminology used, detailed tables which provide useful comparisons of the weighting patterns between the 2019-based and 2014-based CPIs, as well as an infographic which explains the CPI concept.

Conclusion

The CPI has been rebased from the base year of 2014 to 2019 to reflect the latest consumption patterns of goods and services of resident households.

In addition to improvements in methodologies and price collection, coverage of items and outlets from which prices are obtained are expanded and updated. More detailed data and visualisations are also available to better support research and analyses.

RESOURCES ON THE SINGAPORE CONSUMER PRICE INDEX

Infographic on the concept of CPI

Animated infographic on latest CPI data

Interactive dashboard on CPI time series data

The monthly CPI press release for the latest reference month, as well as historical data series on the CPI are available on the SingStat Website: www.singstat.gov.sg/cpi & www.singstat.gov.sg/tablebuilder.

Do look out for more data visualisations on the CPI!

Towards Paperless Surveys:
Digitisation of Producer Price Surveys

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Introduction

The Singapore Department of Statistics (DOS) compiles the producer and international trade price indices[1]. The indices are used to deflate national accounts for estimating real growth and productivity of the economy, and to provide trends in prices for various industries.

In line with the government's push towards being a Smart Nation, the data collection process has been digitised through the use of the Producer Price Indices Online E-Survey System (POES)[2]. The high adoption rate among respondents of paperless modes in their survey submissions contribute to significant streamlining of work processes.

Improving the Data Collection Process

Before the POES was implemented, data on prices were collected from establishments via monthly surveys, conducted primarily through postal survey. The survey questionnaires were mailed to respondents, who would then mail or fax the completed forms to DOS for verification and manual data entry. This entailed substantial resources. As respondents become more tech-savvy, there is a concomitant rise in demand for digital submission modes, such as through electronic mail (e-mail) or internet submission, which provide convenience and flexibility.

Recognising this demand, DOS undertook a review to digitise the data collection process for producer and international trade prices which culminated in the launch of the POES in 2016 (see Image 1).

The POES allows survey respondents to make their survey submissions online using any internet-enabled device. Over at DOS's end, the POES also supports the data collection process. The survey returns submitted by respondents over the internet are directly transm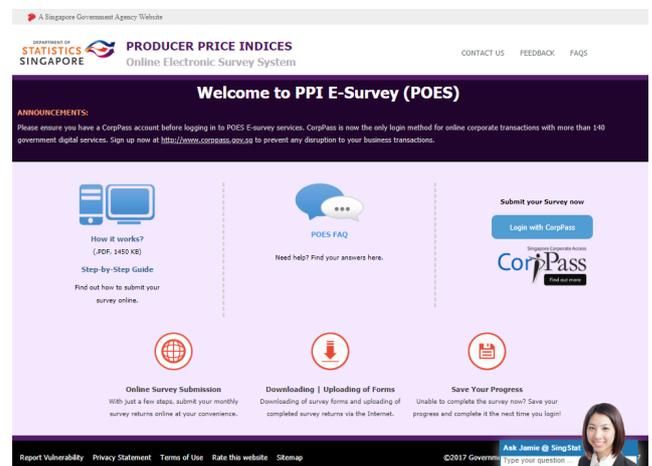itted into the database. For a small number of softcopy survey returns received from respondents via email, the POES is also able to automatically capture data in specific cells of the completed survey returns uploaded by DOS's staff backend. The POES further automates operational processes by allowing the generation and despatch of survey forms, tracking of responses, and validation of returns for possible errors.

Before making the POES mode of submission available for all respondents, a pilot run was conducted to reach out to a select group of respondents of each price survey. Feedback received on the POES system such as suggestions to enhance the processes of submitting the survey returns online, was used to finetune and improve system usability and user experience before making it available to the rest of the respondents from the next survey period.

Benefits of POES

The POES offers respondents a secure and convenient mode of prices survey submission. Survey returns can be submitted online seamlessly using CorpPass, which is also used to transact with other e-services provided by the government. This reduces the need for respondents to maintain multiple user identities

IMAGE 1
SCREENSHOT OF POES LANDING PAGE

1   Namely the Singapore Manufactured Products Price Index; Domestic Supply Price Index; Import Price Index; and the Export Price Index. The latest monthly reports and historical data are available on the SingStat Website at www.singstat.gov.sg/ppi and www.singstat.gov.sg/tablebuilder respectively.

2   Respondents of the price surveys provide their returns online through POES at www.esurvey.singstat.gov.sg/poes.

and passwords. A secure protocol for communication over the internet is in place for the POES, which uses both password and file transfer encryption to protect the privacy and integrity of the exchanged information.

The POES allows survey returns to be saved even if they are partially completed, so that respondents could finish it up at a later time. It also allows downloading of the completed survey forms. Interactive elements are enabled in the online forms, with buttons to toggle between products that require prices to be entered. Verification checks are also in place to prompt respondents on missing fields and highlight possible incorrect entries. In addition to submitting survey returns, respondents can view their past survey submissions and manage their contact information.

Respondents can also choose to provide their survey returns through e-mail submissions. The password-protected survey forms are sent to respondents for completion and return to DOS.

Paperless submission modes, either through internet or e-mail, provide greater convenience for respondents and improves operational efficiency for DOS. Consequently, the survey returns are timelier, and the quality of the compiled indices are improved (see Chart 1).

Challenges and Future Plans

DOS envisions a fully paperless data collection process for producer price surveys, with all survey respondents using POES as the primary survey submission mode. In the push towards digitising the data collection processes, DOS proactively takes action to address several challenges.
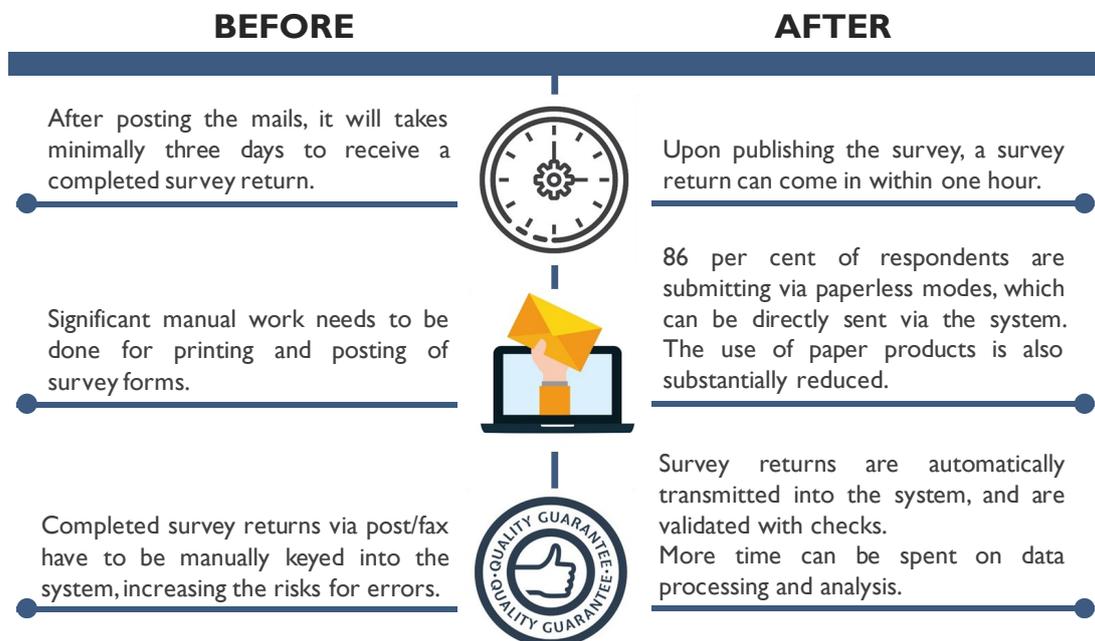
A calibrated approach has to be taken to reach out to respondents through e-mails or phone calls, to get them onboard and to facilitate their transition from paper to paperless modes. There remains a number of respondents who prefer receiving and submitting their survey returns via hardcopy or cite that they need more time before switching over to using paperless modes. DOS has been providing assistance to help them with the transition.
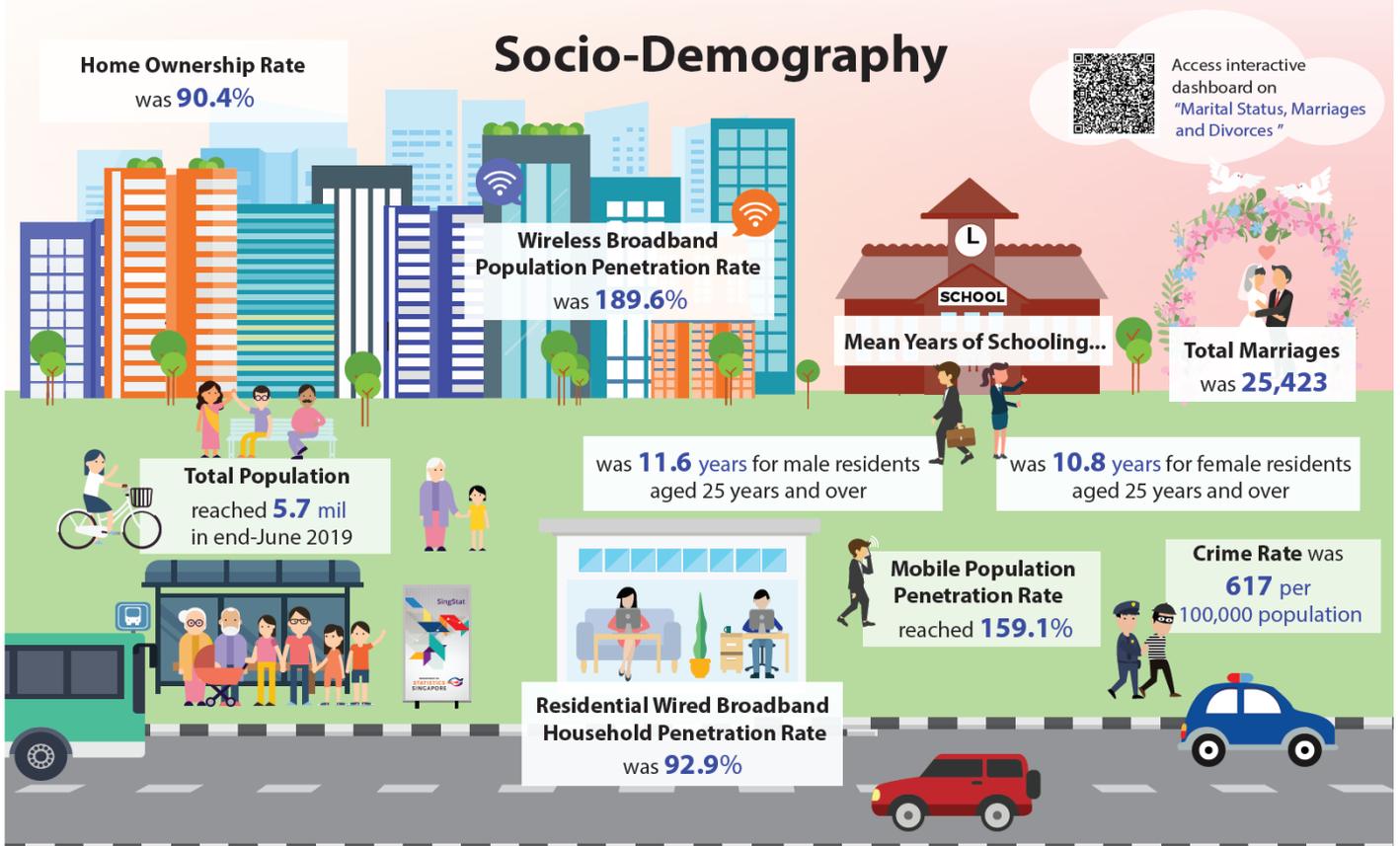
For respondents who have transited to paperless modes, some of them opted for e-mail submissions, citing issues with obtaining CorpPass accounts, or the inconvenience of submitting surveys for multiple establishments. DOS actively assists respondents to obtain their CorpPass accounts and encourages the use of internet submission, which will bring greater convenience to the respondents in the long run.

Feedback from respondents are regularly reviewed to implement enhancements for improving the user experience of respondents in using the POES.

To further digitise the data collection process, plans are underway to integrate the data processing and compilation functions with the data collection function for a seamless process. Stay tuned for an improved POES!

CHART 1 IMPROVEMENTS FROM USAGE OF POES

BEFORE

After posting the mails, it will takes minimally three days to receive a completed survey return.

Significant manual work needs to be done for printing and posting of survey forms.

Completed survey returns via post/fax have to be manually keyed into the system, increasing the risks for errors.

AFTER

Upon publishing the survey, a survey return can come in within one hour.

86 per cent of respondents are submitting via paperless modes, which can be directly sent via the system. The use of paper products is also substantially reduced.

Survey returns are automatically transmitted into the system, and are validated with checks.
More time can be spent on data processing and analysis.

Singapore 2019

Economy

Air Cargo Handled was **2.01** mil tonnes

Singapore's Economy grew **0.7**%

View video on "Introduction to Chain-Linking of Real GDP"

Investment Commitments in Manufacturing and Services (Fixed Assets Investments) amounted to S$**15.2** bil

International Visitor Arrivals reached **19.1** mil

Arrivals

Per Capita Gross National Income was S$**80,778**

Labour Force Participation Rate was **68.0**%

Value Added for the Manufacturing Sector was S$**97.2** bil

Total Merchandise Trade was S$**1,022.2** bil

STORE

BAKERY SHOP

BANK

Resident Unemployment Rate (Seasonally adjusted) was **3.1**%

Gross National Savings reached S$**212.3** bil

Inflation Rate was **0.6**%

Sea Cargo Handled reached **626** mil tonnes

Socio-Demography

Home Ownership Rate was **90.4**%

Access interactive dashboard on "Marital Status, Marriages and Divorces"

Wireless Broadband Population Penetration Rate was **189.6**%

SCHOOL

Mean Years of Schooling...

Total Marriages was **25,423**

Total Population reached **5.7** mil in end-June 2019

was **11.6** years for male residents aged 25 years and over

was **10.8** years for female residents aged 25 years and over

SingStat

STATISTICS SINGAPORE

Mobile Population Penetration Rate reached **159.1**%

Crime Rate was **617** per 100,000 population

Residential Wired Broadband Household Penetration Rate was **92.9**%

Find out more Singapore Economy Infographic

Find out more Singapore Population Infographic

Access on-the-go with SingStat Mobile App !

DEPARTMENT OF STATISTICS SINGAPORE

What are Supply and Use Tables?

To accompany the latest Singapore Supply, Use and Input-Output Tables (SU-IOTs) 2016, the Department of Statistics has released a video to explain how Supply and Use Tables organise transactions between producers and consumers in an economy.

Watch the video to understand the SU-IOTs better:
www.singstat.gov.sg/find-data/search-by-theme/economy/national-accounts/visualising-data/what-are-supply-and-use-tables

Singapore Standard Statistical Classifications 2020

After comprehensive reviews, three major national standard statistical classifications were released in Mar 2020!

Relevant stakeholders were consulted during the reviews and their inputs incorporated to better reflect changes and developments in the economy, labour market, education and training in the latest classifications.

These classifications are used for data collection (e.g. administrative records, censuses, surveys), compilation, presentation and analyses of a wide range of statistics, such as national income, production, demographic, social, labour and education statistics.

For more information, visit:
www.singstat.gov.sg/standards/standards-and-classifications

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