Experiences with the Use of Online Prices in Consumer Price Index

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Introduction

The Singapore Department of Statistics (DOS) compiles the Consumer Price Index (CPI), which is designed to measure average price changes in a fixed basket of goods and services commonly purchased by resident households over time.

Price data used in the compilation of the CPI are collected through various modes. Prices of most goods and services such as utility tariffs, petrol, school fees etc. are obtained through websites or postal and email enquiries. Prices of perishable food items sold at wet markets are collected by field interviewers.

Notably, internet purchase among households has been growing in prevalence and importance. This is due to the increasing number of traditional brick and mortar retail stores marketing their products online, coupled with greater access by households to computing and mobile equipment.

To tap into this source of price information, DOS embarked on pilot projects to integrate specific online prices into the compilation of the CPI.

This article discusses the pilot work undertaken to include the Internet as an alternative data source, specifically involving the use of web crawlers – both customized web extraction crawlers and web scraping tools – to extract online prices.

Use of Online Price Information Collected Through Web Scraping

Using price information from the Internet is an efficient way to collect data that might otherwise be costly to collect or result in response burden.

Hence, online prices for items commonly purchased via the Internet such as apparels and travel products have progressively been integrated into the CPI.

Online prices may be collected manually by combing through lists of items from websites, extracting and compiling the required information.

This approach is tedious, repetitive and labour-intensive. To collect online data more efficiently, DOS explored the use of web crawlers to capture relevant information from the Internet.

In technical terms, a web crawler is an "e-robot" programmed according to pre-defined criteria to browse through designated URLs and collect specific information from these webpages.

There are two broad groups of web crawlers, viz. customised web crawlers and the "point-and-click" types.

(a) Customised Web Crawlers

These are developed by IT programmers and specially programmed to collect data points from the exact position of each monitored website.

They are more suitable for websites with greater complexity as the required data may not be arranged in a structured manner across the pages.

DOS experimented with the use of customised web crawlers to extract information from specific websites with greater complexity. For example, collection of airfares offered by low cost carriers which accounted for a high share of online purchases in Singapore.

The web crawlers used have a simple interface with user editable selections on the destination, dates of departure and return.

The web crawlers will crawl specified websites to retrieve the required fare information based on the selections made.

As the data required are embedded within different webpages of the entire flight booking process, the web crawlers are encoded to input the necessary information in a logical sequence with appropriate time intervals between actions. Figure 1 provides a screenshot of such a customised web crawler.

Time is saved with the use of the customised web crawlers in extracting the prices information, as they automate the entry of the required parameters and transforms these data into a structured format.

(b) "Point-and-Click" Web Crawlers

This type of web crawlers does not require any programming activities and is mostly available free-of-charge.

DOS explored the use of the free services of *Import.IO* to web scrape data from websites retailing home electronics and appliances, personal effects and pharmaceutical products. These websites usually display a comprehensive list of their products with up-to-date prices.

FIGURE 1   CUSTOMISED WEB CRAWLER FOR EXTRACTION OF PRICES ON AIRFARES
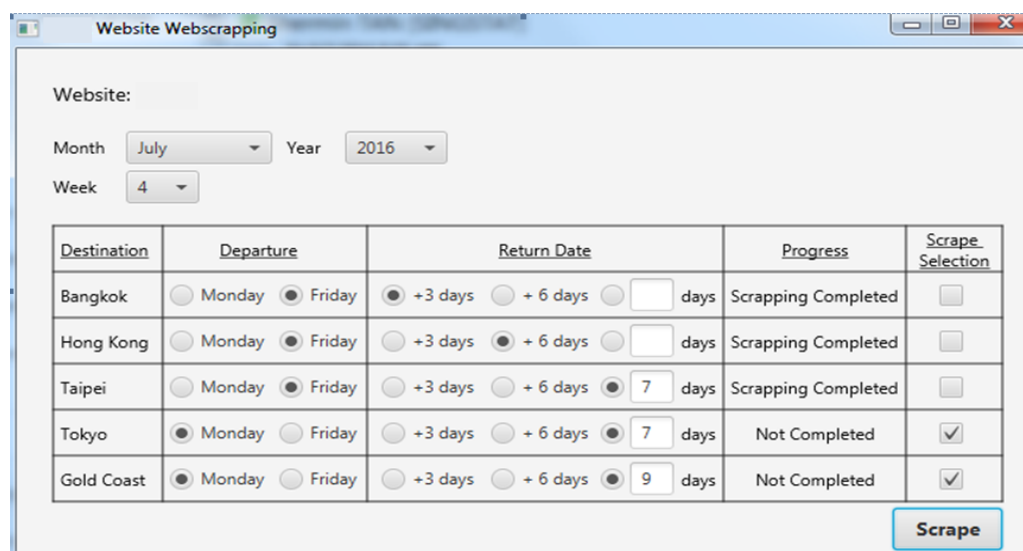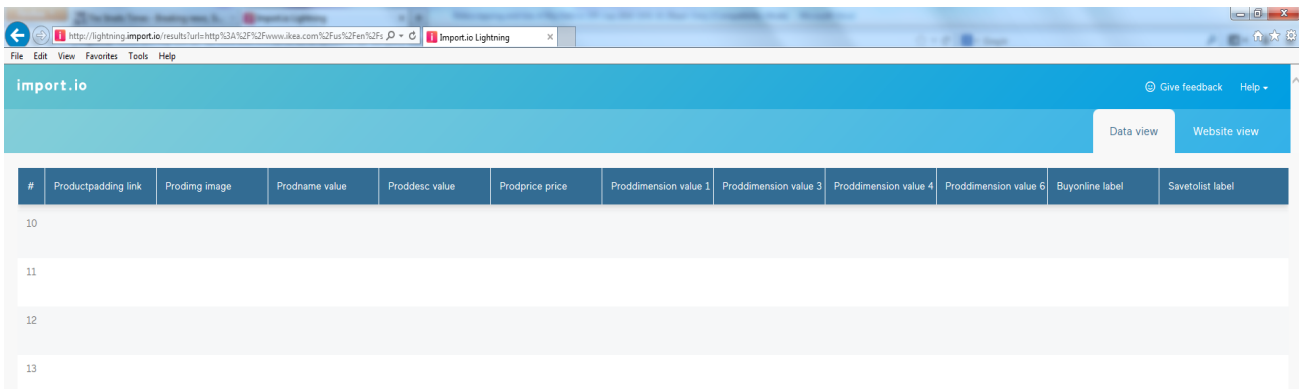
FIGURE 2   EXAMPLE OF A "POINT-AND-CLICK" WEB CRAWLER, *IMPORT.IO*

The "point-and-click" web crawler can be set up and developed in minutes for a website. For *Import.IO*, users have to "train" the tool to navigate through a designated website to locate and scrape the required data.

This involves simple "point-and-click" techniques to identify the required data, such as product description, item code and selling price, etc. and to define them neatly into respective rows and columns. Figure 2 shows a screenshot of the *Import.IO* web crawler.

Once the web crawler has been "trained" to navigate through a specific page of a website, it can be used to locate and scrape price information from other similar webpages on the same website. The time taken to extract the relevant price information from selected websites reduces substantially with the use of *Import.IO*.

Switching to Using Web Scraped Data

Before data obtained through web scraping are used in the compilation of the CPI, they are cross-checked to ensure the robustness and stability of the online prices.

For example, the data may be compared against those collected by field interviewers from the retail stores. The prices of majority of the items online and in physical retail stores are comparable. For some establishments, the prices shown online are aligned with prices in stores.

Key Learning Points

The use of web crawling technology allows a more efficient use of online prices in the compilation of CPI. The required data are retrieved off webpages and arranged in the required format automatically.

Nevertheless, there are also several issues which need to be considered.

(a) Consistency in Product Type

At the onset, price statisticians have to study the web scraped data extensively to match each product monitored in the CPI with the new data set that has been extracted online.

This requires scrutinising the entire web scraped product descriptions. When this is completed, the products are matched over time, using the mapped product descriptions. When there are revisions to the products' online descriptions, further reviews have to be made to the mapping.

(b) Expertise in Web-Programming

The use of customised web crawlers requires extensive programming knowledge and skills, as well as maintenance effort. As the page layout for each website is unique, web crawlers have to be specially developed for each website and this may be costly. Any subsequent changes to the webpages, such as the layout or design, may render the web crawler ineffective.

Compared to the customised web crawlers, the main advantage of using "point-and-click" web crawlers such as *Import.IO* is that they are easy to develop. This eliminates the need for any in-depth programming knowledge and skills.

They can hence be developed and maintained in-house by the team responsible for price collection. Such "point-and-click" web crawlers are available at very low or no costs to users.

However, the use of such web crawlers is better suited for simple websites with data arranged in a structured manner across the webpages.

Users of such tools are also highly dependent on the service continuity by the program developers. For instance, the developers may terminate the program or amend the terms and conditions of use without prior notice.

(c) Legal and Design Restrictions on Websites

Before scraping a website, it is important to review the terms and conditions of use of the websites and check against any legal restrictions imposed. Some establishments may explicitly prohibit the use of web crawlers on their websites.

For the pilot studies conducted by DOS, prior approvals were sought from the relevant establishments on the use of the web crawlers on their websites.

It is also worth noting that not all websites can be web scraped. Price information on certain websites is embedded in images and not stored as text.

This information will then become undetectable by web crawlers. In some cases, the webmasters may also set up blocking mechanisms on the websites to deter the use of web crawlers.

Other Initiatives — Use of Electronic Prices from Supermarkets

Supermarkets electronically store the prices of commodities in their database. This becomes a potential data source for DOS to tap upon.

Previously, prices were collected weekly by field interviewers via personal visits to the supermarkets. The list of items monitored from supermarkets is wide-ranging — spanning from perishable items and groceries to household appliances.

To facilitate the provision of electronic prices by the supermarkets, DOS specified the barcodes and included them in the data file sent to the supermarkets each month for their identification of the products required. These data files are encrypted with passwords to ensure data security during transmission.

The shift from traditional price collection by personal visits to electronic price data has resulted in a more efficient use of manpower. The electronic prices derived based on actual transactions are also more reflective of the monthly average price paid by consumers due to the increased number of price quotations. This improves the quality of data used for the compilation of the CPI.

Conclusion

With the prevalence of e-commerce among households, the use of online prices in the compilation of CPI becomes increasingly viable and DOS will continue to review and refine our methods.

The use of web crawling technology will also be further fine-tuned and expanded to reduce the overall workload for data collection. Evaluation of new IT developments and Smart Nation initiatives will also be carried out to ensure that DOS' data collection methods tap on the best possible approaches for efficiency and productivity.

Health Status and Health-Related Behaviours in Adults with Self-Reported Diabetes

By
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Introduction

Diabetes is a chronic disease in which blood sugar levels are above normal. Over time, if uncontrolled, the high blood sugar damages nerves and blood vessels, leading to complications such as heart disease, stroke, blindness and amputations.

One of the ways to control diabetes is through lifestyle modification such as eating healthily, maintaining a healthy weight and engaging in physical activity.

The National Health Surveillance Survey (NHSS) series collects nationally representative data on the health of adult Singaporeans.

The NHSS 2013 is the third survey in the series. It was conducted between November 2012 and October 2013. A wide range of data was collected, including self-reported health status and health behaviors such as dietary practices, physical activity, dental care, smoking and alcohol consumption.

In this article, we examine the health status and health behaviours of respondents who reported having doctor-diagnosed diabetes, along comparisons with the general population. These respondents were also asked about their practices in managing their diabetes.

Adults with Self-Reported Diabetes

Trends in the Prevalence of Self-Reported Diabetes

Respondents who answered "yes" to both questions, "Have you ever been told by a doctor (western-trained) that you have diabetes?" and "Are you currently on any medications prescribed by your doctor for diabetes?" were classified as having diabetes.

In 2013, 6.0% adults aged 18 and above reported having diabetes (Chart 1). From 2001 to 2013, the prevalence of self-reported diabetes increased from 4.7% to 6.0%. Increased screening efforts such as Screen for Life[1] and the public's improved knowledge about symptoms of diabetes could lead to earlier and more detection of persons with diabetes

CHART 1   PREVALENCE OF SELF-REPORTED DIABETES, 2001-2013

4.7%	5.5%	6.0%
2001	2007	2013

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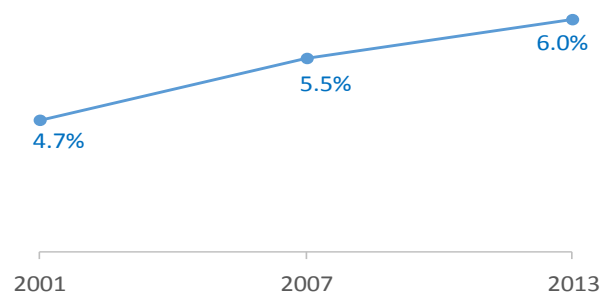
1   Screen for Life is a new branding which consolidates the Health Promotion Board's (HPB) existing screening programmes. These include the previously known Integrated Screening Programme. Under this programme, diabetes is one of the conditions recommended for screening for persons aged 40 and above.

over time. Hence the observed upward trend in the prevalence of known diabetes should be interpreted with caution.

Profile

The majority of adults with self-reported diabetes were men (53.3%) and almost two-thirds (65.2%) were Chinese (Table 1). More than three-quarters (81.2%) had an educational level of secondary/GCE 'O'/'N' level and below. Slightly more than half (54.8%) were not working. One-quarter (26.3%) of these self-reported diabetic adults resided in HDB 1-3 room flats.

The mean age of onset of diabetes reported by these diabetic adults was 50 years old. The mean duration of diabetes reported was 11 years. Four in five (80.9%) were currently on oral hypoglycemic agents.

TABLE 1   SOCIO-DEMOGRAPHIC AND
              SOCIO-ECONOMIC STATUS OF ADULTS
              WITH SELF-REPORTED DIABETES, 2013

| Characteristics	%
Age (years)	
18-39	4.4
40-59	40.4
60+	55.2
Gender	
Male	53.3
Female	46.7
Ethnicity	
Chinese	65.2
Malay	18.5
Indian	14.9
Others	1.4
Education	
No formal education/primary/PSLE	43.0
Secondary/GCE 'O'/'N' level	38.2
GCE 'A' level, polytechnic & other diploma, degree & professional qualification	18.6
Refused to answer	0.2
Main work status	
Working	44.9
Non-working	54.8
Refused to answer	0.3
Dwelling type	
HDB 1-3 room	26.3
HDB 4-5 room, executive & other public flats	60.1
Private flats & condominium, landed property & others	13.6

Health Status

Obesity

In overweight or obese individuals with diabetes, studies have shown that modest and sustained weight loss can improve glycemic control and reduce the need for glucose-lowering medications.

However, long-term weight loss is still a challenge for many of these diabetic individuals. One in five (19.3%) of the adults with self-reported diabetes were obese[2] (Chart 2). This was significantly higher than the prevalence of obesity (8.4%) in the general population.

CHART 2   HEALTH STATUS OF ADULTS WITH
                 SELF-REPORTED DIABETES, 2013
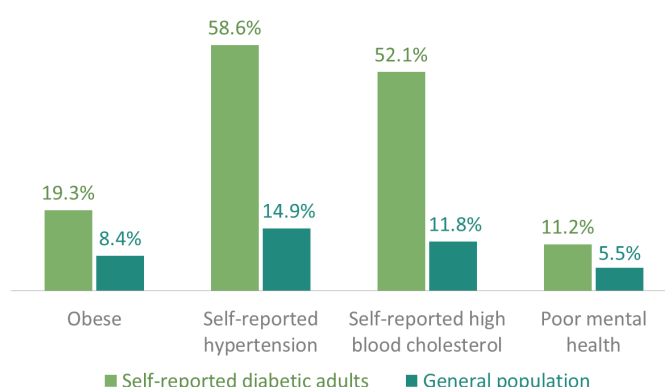
Self-Reported Chronic Diseases

Hypertension is more common in people with diabetes. Diabetes and hypertension together can lead to and aggravate many complications of diabetes, including kidney disease. Most people with diabetes would develop high blood pressure during their life.

People with diabetes have an increased risk of cardiovascular diseases such as heart attack and stroke if their "bad" cholesterol is elevated. Adults with diabetes should aim to lower their "bad" cholesterol level so as to reduce their risk of developing cardiovascular diseases.

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2   Obese is defined as having a body mass index (BMI) ≥ 30 kg/m^2, where $BMI = \dfrac{Weight\ (kg)}{Height\ \times Height\ (m^2)}$

In 2013, 58.6% of the adults with self-reported diabetes reported having hypertension[3] and slightly more than half (52.1%) reported having high blood cholesterol[4]. Close to three-quarters (71.9%) reported having either hypertension or high blood cholesterol or both.

Mental Health

Diabetes is one of the most psychologically-demanding chronic diseases because it requires strict daily management of the blood sugar level by the patients themselves.

Lack of active involvement can lead to poorer outcomes and increased risk of complications. The daily routine of monitoring the blood sugar level can be challenging and stressful to them.

The 12-Item General Health Questionnaire (GHQ-12) is a screening instrument used to measure the psychological well-being of an individual. A cut-off point of 3 and above is classified as having poor mental health.

Using this instrument, 11.2% of the self-reported diabetic adults was assessed to have poor mental health compared with 5.5% among the general population.

Health Behaviours

Smoking

Smokers with diabetes have higher risks for serious complications, including neuropathy, nephropathy and retinopathy. Avoidance of tobacco is an important component in the management of diabetes. 11.6% of self-reported diabetic adults smoked daily (Chart 3). The prevalence of smoking was higher in men (21.2%) than in women (0.6%).

CHART 3   SMOKING AND LEISURE-TIME PHYSICAL INACTIVITY IN ADULTS WITH SELF-REPORTED DIABETES, 2013
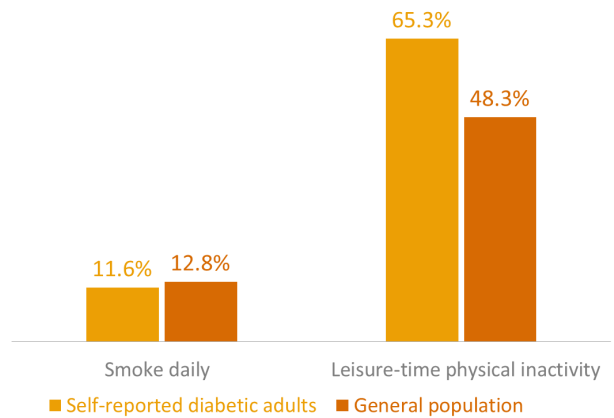
Physical Activity

Regular physical activity is a key part of managing diabetes along with maintaining a healthy diet, taking medications as prescribed, and having good stress management. Regular exercise helps to lower blood sugar, blood pressure and cholesterol levels.

It also improves the cardiovascular system and encourages weight loss, which brings about big benefits for people with diabetes such as reducing the risk of heart disease.

Almost two-thirds (65.3%) of the adults with self-reported diabetes did not participate in any physical activity[5] during leisure time, compared with 48.3% of the general population.

The top reasons for not doing any physical activities during leisure time were:

1. No time due to work or family commitment (36.3%)
2. Too old (19.6%)
3. Poor health (18.4%)

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3   Ever told by a doctor (western trained) to have hypertension and is currently on medication for hypertension.
4   Ever told by a doctor (western trained) to have high blood cholesterol and is currently on medication for high blood cholesterol.
5   Did not participate in any sport or exercise or walking during leisure time in the past 3 months.

Healthy Eating

People with diabetes have to be extra cautious in ensuring that their food is balanced with insulin or oral medications or both, in conjunction with regular exercise to help manage their blood sugar levels.

The consumption of sweetened drinks such as soft drinks and juices should be reduced. The type of carbohydrates consumed and the serving size are also important.

Diabetic individuals should focus on whole grain carbohydrates since they are high in fiber and get digested slowly, keeping blood sugar levels more even. Fruits and vegetables are also good sources of carbohydrates and fiber.

Studies have shown that a higher intake of fat from monounsaturated fat sources improves the glycemic and cholesterol profiles of diabetic individuals. Sources of monounsaturated fats include olive oil and canola oil. Diabetic individuals with hypertension should also cut down on their sodium intake.

In 2013, almost a quarter (22.7%) of the adults with self-reported diabetes met the '2+2' recommended daily intake for fruit and vegetables[6] (Chart 4). About one in five (21.6%) consumed brown or red rice[7] in their diet.

Almost three-quarters (71.2%) did not consume sweetened drinks[8] daily. One-quarter (25.8%) of the self-reported diabetic adults indicated the use of monounsaturated oils for cooking at home. 70.2% of them did not add salt or sauces to food at the table.

CHART 4　　　　DIETARY PRACTICES IN ADULTS WITH SELF-REPORTED DIABETES, 2013

■ Self-reported diabetic adults　　■ General population
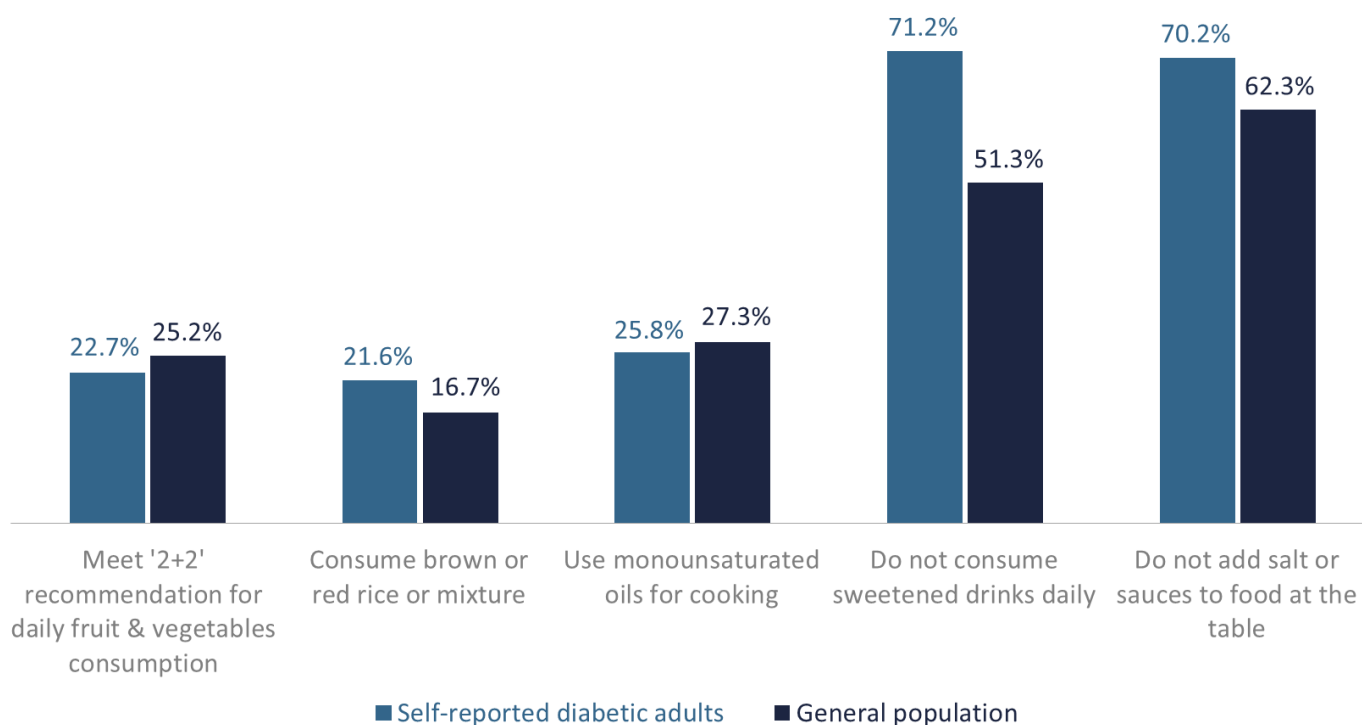
6　　The Health Promotion Board encourages everyone to eat 2 servings of fruits and 2 servings of vegetables daily.

7　　Usually eat brown/red rice only or a mixture of white and brown/red rice.

8　　Sweetened drinks include soft drinks, fruit drinks, packet drinks, cordial, yoghurt-based drinks and cultured milk drinks.

Attitudes and Practices Towards Diabetes Management

Lifestyle Modification

Almost all (93.9%) of the adults with self-reported diabetes were reported to have modified their lifestyle to control their diabetes.

The top lifestyle modifications adopted were "reduce intake of sugar, rice, bread" (91.5%), "increase intake of wholemeal bread, brown rice, vegetables and high fibre food" (43.5%), "reduce fat intake" (31.5%) and "exercise" (28.8%).

Monitoring of Blood Sugar Level

Regular self-monitoring of blood sugar levels gives a quick snapshot of where the blood sugar levels are at any time. It enables tracking of how certain foods and activities affect the blood sugar.

15.8% of the adults with self-reported diabetes indicated that they checked their blood sugar levels at least once a day. About half (49.0%) checked their blood sugar levels less than 4 times a month. However, 14.7% did not check at all.

The hemoglobin A1c (HbA1c) test is an important blood test that measures how well diabetes is being controlled. Performed by a health professional, the test measures the average level of blood sugar over the past 3 months.

Slightly more than half (53.5%) of the self-reported diabetic adults had done the test 4 times or less over the past 12 months prior to the NHSS 2013. However, 12.1% of them had never heard of this test.

Health-Care Utilisation

In the past 12 months, self-reported diabetic adults saw a doctor for their diabetes 4 times on average. Most of the time, they sought treatment at government polyclinics (60.0%), followed by private general practitioner clinics (21.4%).

Diabetic patients are able to use Medisave to pay for the outpatient treatment of diabetes[9]. However, almost three-quarters (71.5%) of the self-reported diabetic adults did not do so.

Conclusion

Survey findings from the NHSS 2013 showed that many adults with self-reported diabetes were obese and had other chronic diseases.

Although these self-reported diabetic adults had been adopting certain healthy lifestyle habits such as including brown or red rice in their diet, abstaining from sweetened drinks and trying to reduce sodium intake, they could do more to lead a healthier lifestyle.

These include consuming more fruits and vegetables, increasing physical activity and maintaining a healthy weight.

Modifiable lifestyle characteristics, such as increased physical activity, positive changes in diet, and good management of stress are key factors that influence the outcome of diabetes management.

People with diabetes are encouraged to adopt and maintain these habits in order to effectively control the disease.

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9   The Chronic Disease Management Programme (CDMP) was first introduced by the Ministry of Health in Oct 2006 for diabetes mellitus, hypertension, hyperlipidemia (lipid disorders) and stroke. It was later expanded to include other chronic diseases such as asthma, chronic obstructive pulmonary disease (COPD) and major depression. Under this programme, patients are able to use their own or family member's Medisave to pay their outpatient bills.

Households' Spending by Age Group

By
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Introduction

In 2012/13, resident households in Singapore spent an average $4,724[1] per month on consumer goods and services. This includes day-to-day expenses on items such as food, dining out, bus/MRT fares and clothing; regular expenditure like utilities, phone bills and school fees; as well as ad-hoc spending on big ticket items such as purchase of consumer durables, overseas holidays and hospitalisation bills etc.

This article examines households' expenditure by the age group of the head of household[2] and provide insights on the expenditure patterns of households at different life stages. Data were based on the Household Expenditure Survey (HES) 2012/13[3].

Household Expenditure by Age Group

Household expenditure patterns differed across households by age group of the heads of households,

reflecting the changes in household size and composition over different life stages.

Heads Aged Below 30 Years

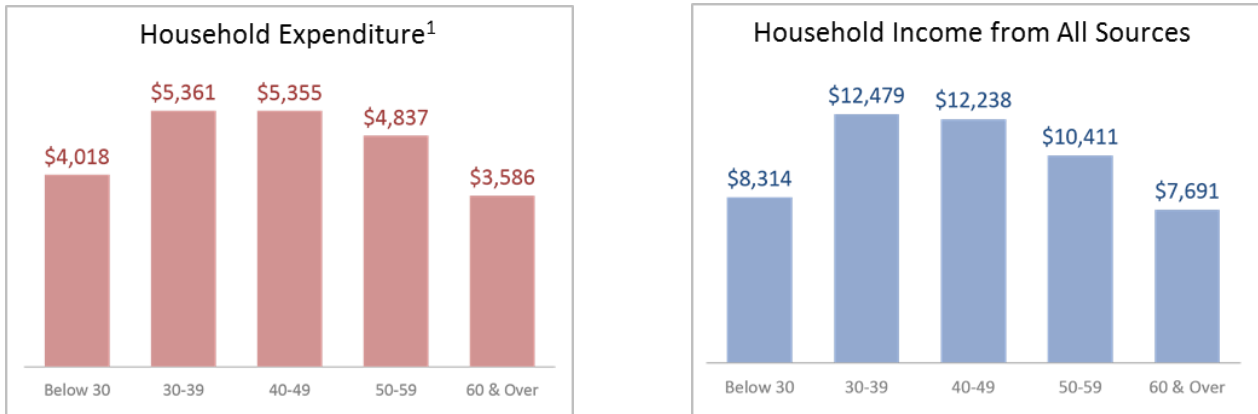Households whose heads were aged below 30 years spent a monthly average of $4,018 in 2012/13. Their household expenditure were lower than households headed by persons in their thirties, forties and fifties (Chart 1). This could partly be due to them having a smaller household size on average (Chart 2).

With relatively lower car ownership and lower proportion among them having school-going persons, households with heads aged below 30 years spent less on transport and educational services than those in their thirties, forties and fifties (Chart 3).

In dollar terms, households with heads aged below 30 years spent an average of $573 and $166 per month on transport and educational services respectively.

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1   Exclude imputed rental of owner-occupied accommodation, which have no impact on cash expenditure of households. In the HES, consumption expenditure on owner-occupied accommodation is estimated using the rental equivalence method, which measures the shelter costs in terms of expected rental the owner would have to pay if he were a tenant of the premises.

2   The head of a household is the person generally acknowledged as such by other members of the household. The person acknowledged as the head by other members of the household is normally the oldest member, the main income earner, the owner-occupier of the house or the person who manages the affairs of the household.

3   The HES is conducted once in every five years to collect information on households' consumption expenditure, income and socio-economic characteristics as well as ownership of consumer durables. The latest HES was conducted from October 2012 to September 2013. Key findings were released in the "Report on the HES 2012/13" in September 2014.

CHART 1   Average Monthly Household Expenditure[1] and Income from All Sources by
Age Group of Head of Household

Household Expenditure[1]

$4,018 $5,361 $5,355 $4,837 $3,586
Below 30   30-39   40-49   50-59   60 & Over

Household Income from All Sources

$8,314 $12,479 $12,238 $10,411 $7,691
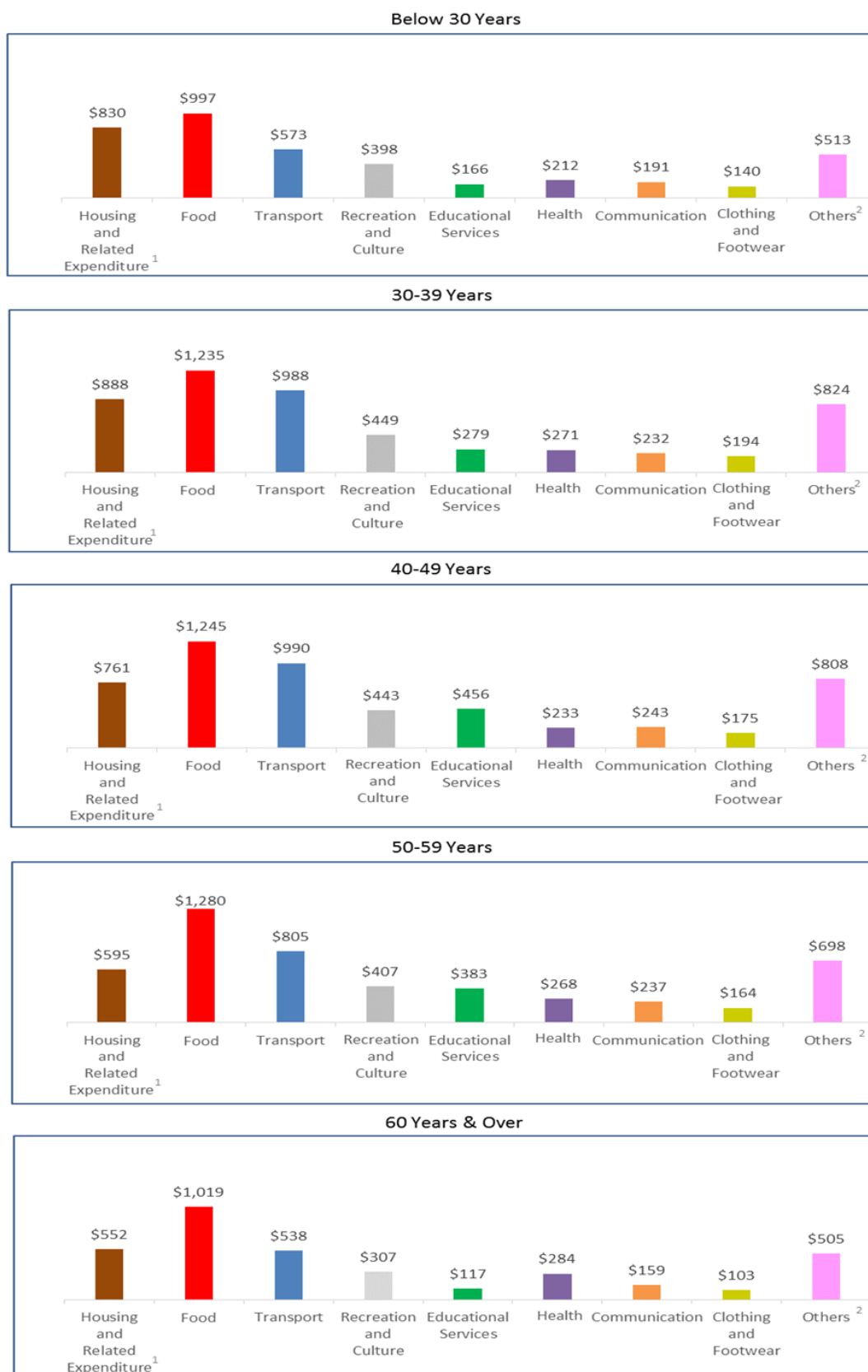Below 30   30-39   40-49   50-59   60 & Over

1   Exclude imputed rental of owner-occupied accommodation,
which have no impact on cash expenditure of households.

CHART 2   Selected Household Characteristics by Age Group of Head of Households, HES 2012/13

Chart 2a: Average Household Size   Number

2.7   3.6   3.8   3.6   2.9
Below 30   30-39   40-49   50-59   60 & Over

Chart 2b: Average Number of Working   Number
Person(s)

1.7   1.8   1.7   2.1   1.3
Below 30   30-39   40-49   50-59   60 & Over

Chart 2c: Proportion with at least 1 Child
below 5 Years Old   Per Cent

28.6   44.2   13.1   1.3   0.1
Below 30   30-39   40-49   50-59   60 & Over

Chart 2d: Proportion with at least 1 Person
Schooling   Per Cent

19.6   42.1   68.9   45.8   11.3
Below 30   30-39   40-49   50-59   60 & Over

Chart 2e: Proportion of Households with
Car(s)   Per Cent

23.3   50.4   51.0   41.1   30.8
Below 30   30-39   40-49   50-59   60 & Over

Chart 2f: Proportion of Households with
Maid(s)   Per Cent

5.4   21.4   18.0   12.4   13.7
Below 30   30-39   40-49   50-59   60 & Over

CHART 3 Household Expenditure by Goods and Services and Age Group of Head of Household, HES 2012/13

Below 30 Years

Category	Amount
Housing and Related Expenditure [1]	$830
Food	$997
Transport	$573
Recreation and Culture	$398
Educational Services	$166
Health	$212
Communication	$191
Clothing and Footwear	$140
Others [2]	$513

30-39 Years

Category	Amount
Housing and Related Expenditure [1]	$888
Food	$1,235
Transport	$988
Recreation and Culture	$449
Educational Services	$279
Health	$271
Communication	$232
Clothing and Footwear	$194
Others [2]	$824

40-49 Years

Category	Amount
Housing and Related Expenditure [1]	$761
Food	$1,245
Transport	$990
Recreation and Culture	$443
Educational Services	$456
Health	$233
Communication	$243
Clothing and Footwear	$175
Others [2]	$808

50-59 Years

Category	Amount
Housing and Related Expenditure [1]	$595
Food	$1,280
Transport	$805
Recreation and Culture	$407
Educational Services	$383
Health	$268
Communication	$237
Clothing and Footwear	$164
Others [2]	$698

60 Years & Over

Category	Amount
Housing and Related Expenditure [1]	$552
Food	$1,019
Transport	$538
Recreation and Culture	$307
Educational Services	$117
Health	$284
Communication	$159
Clothing and Footwear	$103
Others [2]	$505

1   Exclude imputed rental of owner-occupied accommodation, which have no impact on cash expenditure of households.

2   Others include expenditure on miscellaneous goods and services, e.g. personal care services such as hairdressing, expenditure on alcoholic beverages and tobacco etc.

Heads Aged 30—39 Years

Average household expenditure was highest among households with heads in their thirties and forties. Among households with heads aged 30-39 years, the average monthly household expenditure was $5,361 in 2012/13.

Compared to other age groups, the proportion with children aged below 5 years (44.2 per cent) and with maids (21.4 per cent) was higher among households with heads aged 30-39 years.

The proportion with cars (50.4 per cent) among households with heads aged 30-39 years was also higher than most age groups.

As a result, households with heads aged 30-39 years spent more than other age groups on housing and related expenditure (which include hiring of domestic maids), with an average monthly spending of $888.

They also spent more on transport, compared to most age groups, with an average monthly spending of $988.

Heads Aged 40—49 Years

Households with heads aged 40-49 years had average monthly household expenditure of $5,355 in 2012/13. Some 68.9 per cent had school-going persons, higher than the percentages between 11.3 per cent and 45.8 per cent among households with heads in other age groups.

Consequently, compared to other age groups, they spent the most on education. In 2012/13, they spent an average of $456 per month on education.

The proportion with cars among households with heads aged 40-49 years was also higher than other age groups, at 51.0 per cent in 2012/13.

In terms of average monthly expenditure, they spent $990 on transport, higher than the other age groups.

Heads Aged 50—59 Years

Compared to households headed by persons in their thirties and forties, average monthly household expenditure was lower for households headed by persons aged 50-59 years, at $4,837 in 2012/13. Some 45.8 per cent had school-going persons, which was second highest after households with heads in their forties.

Consequently, their expenditure on education was next highest after households with heads in their forties, spending an average of $383 per month.

Heads Aged 60 Years and Over

Compared to younger households, average household expenditure among households headed by persons aged 60 years and over was lower at $3,586 per month in 2012/13. There were fewer number of working persons in such households on average. The proportion with children aged below 5 years or school-going persons was also lower than the younger households.

On average, they spent less on most broad expenditure groups, including transport, clothing and footwear, recreation and culture, communication and education, than younger households.

However, households with heads aged 60 years and over spent more on health related expenses than younger households, at $284 per month on average.

Concluding Remarks

Households in different life stages have different consumption patterns. These are reflected in the shift of expenditure patterns across households with heads in different age groups. Detailed data on average monthly household expenditure and expenditure patterns by the size of household, income group, house type and other characteristics from the HES 2012/13 are available in the *Household Expenditure Survey* publication.

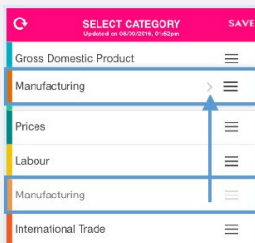# Introducing New Features in SingStat Mobile App!

Organise Categories

Personalise the order of the Data Categories according to your preference and save the changes for future launches
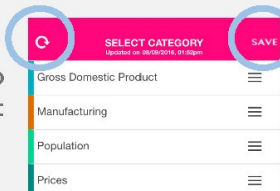

1. Tap here to edit the order of categories

2. Use the Drag and Drop buttons to re-arrange

3. Tap here to revert to the default order

4. Tap here to save the changes made

Download Data

Download data tables to share via social media or to undertake analysis

When in data table view mode, tap here to download the data in CSV format

Download the enhanced SingStat Mobile App today!

Contents

Overseas Visitors

The Singapore Department of Statistics (DOS) welcomed a 22-member delegation from the Guizhou Provincial Bureau of Statistics over the past six months. Topics discussed included the Singapore's Composite Leading Indicator, Data Collection and Management of Household Surveys and Business Statistics.

Released!

Population Trends 2016