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Improving the timeliness of health expenditure tracking in OECD and low- and middle-income countries

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Acknowledgements

Abstract

The COVID-19 pandemic has highlighted that access to timely health spending data is crucial for informed policy-making. This Health Working Paper summarises and compares the methodologies applied in around half of OECD countries to estimate public and private health spending for the most recent year (i.e. *t-1)* as well as the approaches taken by the OECD Secretariat to fill existing data gaps for the remaining OECD countries. For the first time, the paper also explores the feasibility of nowcasting health spending for the current year (i.e. *t*) and examines data sources that could be potentially useful in such an exercise. While this review should help OECD countries that do not yet have experience in estimating health spending for year *t-1* to improve the timeliness in their data reporting, a special focus in this paper lies on testing the applicability of the methods in low- and middle-income countries (LMIC), using the WHO Western Pacific Region (WPRO) as an example. Generally, different data sources exist in many countries that would allow for a more timely estimation for health spending aggregates.

Résumé

La pandémie de COVID-19 a mis en évidence que l'accès aux données actualisées sur les dépenses de santé est crucial pour une prise de décision éclairée. Ce document de travail sur la santé résume et compare les méthodologies appliquées dans environ la moitié des pays de l'OCDE pour estimer les dépenses de santé publiques et privées pour l'année la plus récente (c'est-à-dire *t-1*), ainsi que les approches adoptées par le Secrétariat de l'OCDE pour combler le manque de données existant pour les autres pays de l'OCDE. Pour la première fois, le document explore également la faisabilité de la prévision immédiate des dépenses de santé pour l'année courante (c'est-à-dire *t*) et examine les sources de données qui pourraient être potentiellement utiles dans un tel exercice. Cette étude devrait aider les pays de l'OCDE qui n'ont pas encore d'expérience dans l'estimation des dépenses de santé pour l'année *t-1* à fournir des données plus actuelles. En outre, une attention particulière est accordée dans ce document à la vérification de l'applicabilité des méthodes dans les pays à revenu faible et moyen (PRFM), en utilisant la Région du Pacifique occidental de l'OMS comme exemple. En général, il existe différentes sources de données dans de nombreux pays qui permettraient une estimation plus rapide des agrégats de dépenses de santé.

Executive Summary

1.   Having timely, accurate and comprehensive data of how much a country spends on health care is a vital piece of information for evidence-based health policy-making. In many countries, such data is frequently lacking or not timely enough to be of optimal use for policy-making and planning purposes.

2.   This Health Working Paper summarises the experiences of OECD countries in estimating health expenditure for the most recent year, t-1 in the context of the System of Health Accounts (SHA) framework and explores how health spending for the current year, t, could be nowcast. Such information can help those countries not yet estimating t-1 data to improve the timeliness of their health spending estimates. A special focus lies in how these approaches can be applied to low and middle-income countries (LMIC), using the Western Pacific region (WPRO) as an example.

3.   Key findings of the analysis presented in this report include the following:

- ***OECD countries use a variety of methods to estimate health spending for year t-1 within the SHA framework.*** A common approach is to identify one or more suitable data sources that allow for an estimation of health spending growth for each of the key financing schemes. For public spending, actual spending data extracted from budget reports, financial records of social health insurance or general government expenditure for health (as recorded according to the classification of the functions of government [COFOG] in National Accounts) are the principal sources; for private spending, a common source is private household consumption expenditure for health (as recorded with the classification of individual consumption by purpose [COICOP] data in National Accounts), but simpler methods of extrapolation also exist. The resulting *t-1* estimates either reflect (adjusted) actual spending data included in these sources, or the sources are used to generate proxy growth rates which are then applied to the reported *t-2* SHA health spending components.

- For OECD countries not yet estimating health spending for year t-1, **the OECD Secretariat has developed a hierarchy of options using nationally or internationally accessible data with methods that mirror the approaches used by countries.** Preference is given to national data sources that measure overall health spending. If these are not available, the OECD Secretariat uses trends in either health-specific or overall public and private consumption expenditure. A final option is to resort to projections of public and private consumption expenditure included in international databases to establish proxy growth rates for health spending.

- ***Similar approaches could be adopted for many LMICs to estimate health spending for year t-1 where similar data sources are available***. For example, to estimate public health spending for year *t-1*, growth rates in the planned health budgets of key healthcare purchasers (either ministries of health or social health insurance funds) or the evolution of general government expenditure could be used if actual health spending data is unavailable. For private spending, in the absence of country-specific data sources, the development of private consumption expenditure (e.g., as estimated

by the World Bank) could be used. For an estimation of external funding of health – an important spending element in many LMIC - country-specific development aid tracking systems are the preferred option. Alternatively, estimations could be generated based on official development statistics, such as the Creditor Reporting System (CRS) of the OECD Development Aid Committee (DAC).

- ***OECD countries typically do not estimate or nowcast health spending for the current year t within the SHA framework. However, research suggests that data sources exist that would allow to make such estimates.*** Depending on when in the current period such an estimation is carried out, methods and data sources may vary. For public health spending, reference can be made to planned or forecasted spending data (e.g., voted budgets for year *t*) or to end-of-year projections which incorporate actual spending data for a part of the year *t* (e.g., included in existing budget monitoring processes). For private health spending, quarterly National Accounts data on private consumption could be of use. One feasible option could be to combine end of year projections based partly on actual outturn data for public health spending with an estimation of private health spending based on projected growth rates of private consumption.

- ***Alternatively, health spending estimates for year t or t-1 could also be generated from regression-based health spending projection models.*** However, these models typically focus on projecting health expenditure under different scenarios over a longer time horizon, e.g. a decade or longer. While the use of long-term projection models is widespread by countries and international organisations alike, model specifications differ depending on the drivers of health spending growth and the scope of analysis of these models. An analysis of these models, however, is outside of the scope of this paper.

4.   Efforts could be strengthened at an international level to systematically produce health spending estimates for year *t-1* for all countries, including LMIC using the approaches set out above. There is so far very little experience in nowcasting health spending for year *t* as part of the health accounts exercise but this stream of work could be further developed. Even if actual data can be partly used in these nowcasts, there is naturally a higher degree of inaccuracy associated with these projections. However, in times without structural disruptions of the health systems or the economy, this information could still be accurate enough to be of relevance for policy makers.

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1 Introduction

5.   Accurate and timely data on past health spending as well as short-term projections of future health spending are important instruments that contribute to informed and evidence-based health policy decision making. This information can put ministries of health in a better position for budget planning and negotiations with ministries of finance about future spending requirements. Yet, in many countries, including lower- and middle-income countries (LMIC), there appears to be scope for improvement when it comes to the generation of timely health spending data.

6.   This Health Working Paper should provide all countries with the necessary information to generate more timely health spending estimates based on internationally applied methodologies. Better estimates can provide greater clarity on the expected resource needs for health, thereby aiding discussions on how to sustainably increase fiscal space for health and build more resilient health systems.

7.   The **second chapter** reviews and discusses how OECD countries estimate health spending for the most recent year (*t-1)* and the methods applied by the OECD Secretariat to fill remaining data gaps also highlighting some potentially high-quality data sources that could be used by countries. The **third chapter** explores options how OECD countries could potentially estimate ("now-cast") health spending for the current year (*t*). The **fourth chapter** discusses data requirements and the applicability of the methods in LMIC, using the countries and territories of the Western Pacific region of the WHO (WPRO) as examples. The **conclusion** summarises the findings and provides recommendations how health spending for year *t-1* could be best estimated, discusses the trade-offs between timeliness and accuracy of data and highlights the importance of data quality of historic health spending data which serves as a basis for any estimations and projections.

2 Improving the reporting of health spending for *year t-1*

8.   The development of *A System of Health Accounts 2011* (SHA) by the Organisation for Economic Co-operation and Development (OECD), the World Health Organization (WHO) and the Statistical Office of the European Union (EUROSTAT) has been a milestone to facilitate the tracking of health expenditure in an international comparable way (OECD/WHO/Eurostat, 2011). At its centre, SHA 2011 proposes a tri-axial accounting approach to measure the final consumption of health care goods and services by the type of service (HC), the type of facility providing these services (HP), and the schemes financing them (HF) (Figure 2.1). There are various ways to extend the analysis beyond its core framework with a particular interest in the development of the financing interface which maps the types of revenues (FS) for each financing scheme. The full implementation of SHA 2011 has enhanced the transparency and accountability of health systems, for example, by comprehensively documenting the flow of funds in the health system or by clearly mapping who is paying for which services. It can also help assess the sustainability of health financing, contributes to measuring the level of financing protection and provides an important input to examine efficiency in the health system.

Figure 2.1 The basic SHA 2011 framework
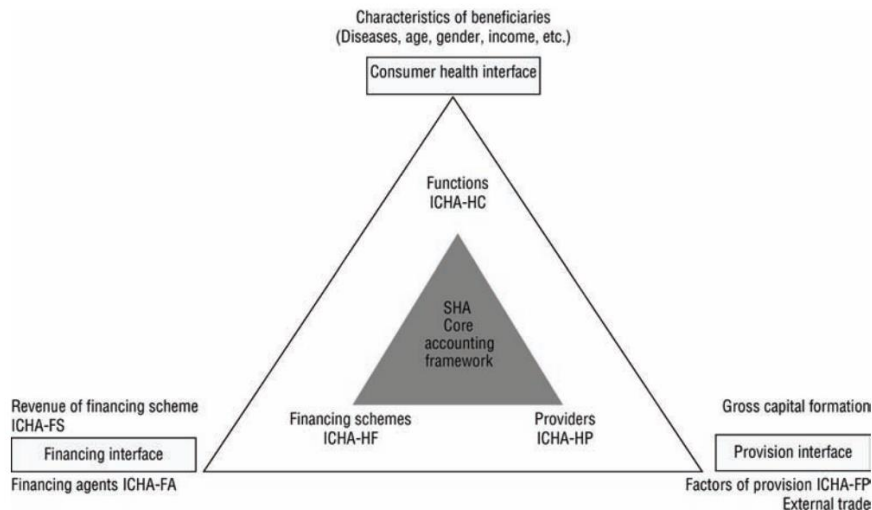
Source: (OECD/WHO/Eurostat, 2011)

9.   For analyses to be meaningful and inform future policy decisions but also to feed into discussions on future resource allocations, health spending data should be both accurate and timely. In the annual data collection on health spending carried out collectively by OECD, WHO and EUROSTAT – the Joint Health Accounts Questionnaire (JHAQ) – around 45 mainly high-

income countries regularly provide information on health spending by type of service, provider and financing scheme for year *t-2*. To respond to demands for more timely data, around half of OECD countries have also been able to provide estimates of health spending data for key financing schemes at an aggregate level for the most recent year, *t-1*. The OECD Secretariat has complemented this for the remaining OECD countries.

10.   This chapter documents the data sources and approaches used by OECD countries in producing these preliminary estimations as well as how the OECD Secretariat goes about filling existing data gaps for the remaining countries. Both provide valuable guidance to other countries, including lower- and middle-income countries (LMIC) looking to improve the timeliness of their health accounts data. However, there are differences in the range and financing of health spending in OECD countries compared with LMIC, shown by the example by the countries and territories of the WPRO region, which need to be understood in order to fully assess the applicability of OECD estimation techniques (Box 2.1).

Box 2.1.Comparing health spending in OECD and WPRO countries and territories

For the 38 member countries of the OECD, health spending as a proportion of GDP ranged from 4.3% in Turkey to 16.8% in the United States in 2019, with an average of 8.8%. On a per capita basis – and after adjusting for differences in purchasing power - health spending was between around USD 1 100 in Mexico and nearly USD 11 000 in the United States. Across OECD countries, around USD 4 100, on average, was spent on health per capita. Looking at the types of *financing* of health care, three-quarters of overall health spending was covered by government or compulsory insurance schemes, 5% by voluntary health insurance, 20% out-of-pocket and 1% by other schemes (Figure 2.2).

Figure 2.2. Health expenditure by financing scheme, OECD countries, 2019
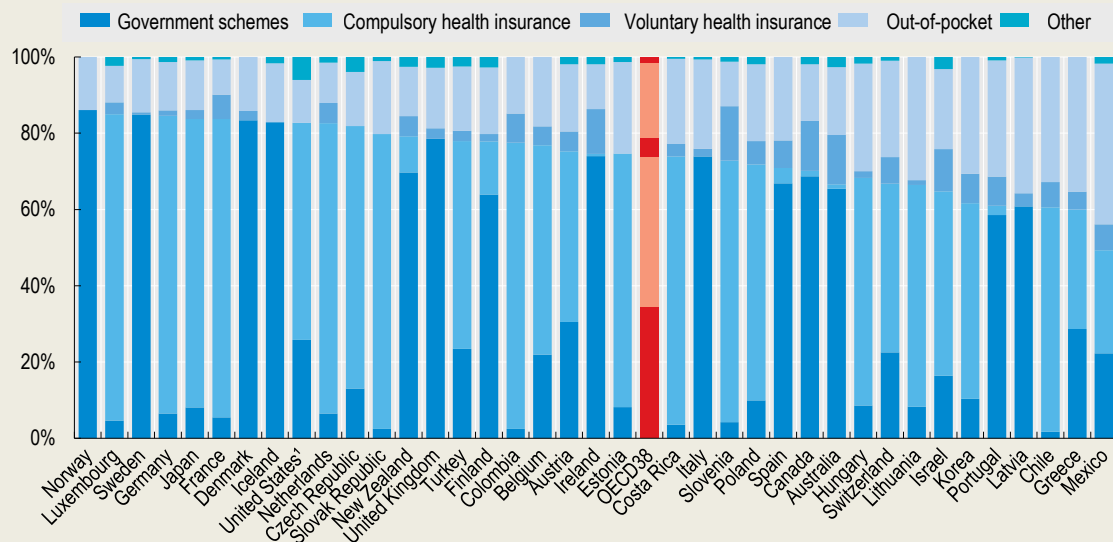
Note: 1. All spending by private health insurance companies reported under compulsory health insurance. Category "Other" refers to financing by NGOs, employers, non-resident schemes and unknown schemes.
Source: (OECD Health Statistics, 2021)

The WHO Global Health Expenditure Database (WHO, 2021) includes health spending data for 27 out of the 37 countries and territories of the WPRO region (of which four are also OECD member countries). Health spending in 2018 ranged from 2.4% of GDP in Brunei Darussalam to 19% in Tuvalu, with an average of 7.1% across the region. From the perspective of *financing schemes*, there are similarities with the OECD (Figure 2.3). On average, government schemes and compulsory insurance account for 72% of overall health spending and voluntary financing schemes (which includes voluntary health insurance and out-of-pocket payments) cover the remaining 28%– although the variation is greater than in OECD countries. Financing by schemes from abroad accounts for small amounts in only three countries (Samoa, Cambodia and Fiji).

Figure 2.3. Health expenditure by financing scheme, WPRO region, 2018
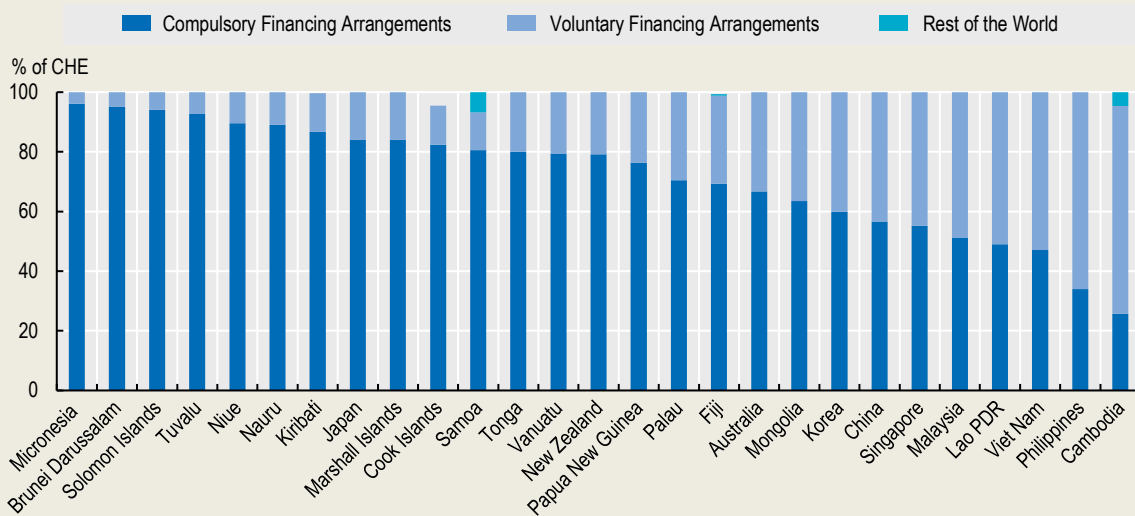
Source: (WHO, 2021)

There are notable differences when looking from the perspective of the ***revenues of financing schemes*** where external funding, primarily in the form of development aid – either channelled through governments or NGO schemes - is specifically identifiable (Figure 2.4). Generally, external financing does not play a role in OECD countries but accounts for at least 10% of health financing in 13 out of the 27 WPRO countries and territories, for the most part channelled through official development assistance or aid from other sources. This share represents more than 30% of health system financing in Niue (33%), the Marshall Islands (42%) and Micronesia (72%). High external financing in some countries means that financing by *domestic* government and compulsory insurance schemes is generally lower – at 62% on average.

Figure 2.4. Health expenditure by revenues of financing schemes, WPRO region, 2018
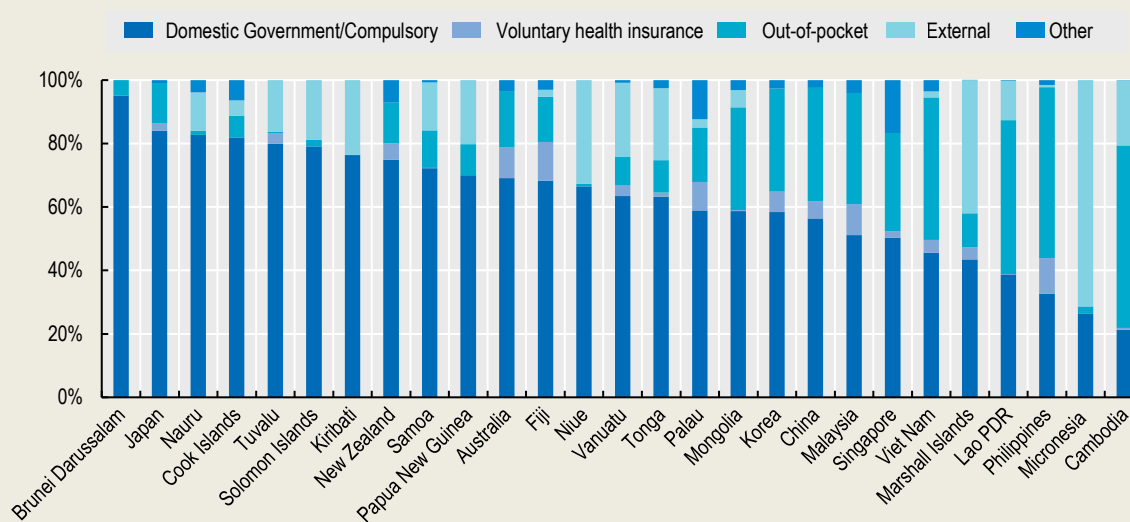
Source: (WHO, 2021)

2.1 Current reporting of health spending for year *t-1* in OECD countries

11.   For more than a decade, OECD member countries have been strongly encouraged to submit preliminary health spending estimates for year *t-1* as part of their regular data submissions for year *t-2* and prior years via the JHAQ[1]. Currently around half of OECD countries submit year *t-1* data. From 2016 onwards, the OECD Secretariat has also estimated year *t-1* health spending for those countries not submitting this data. These estimates cover "current health expenditure" and separated into "spending by government and compulsory insurance schemes" (HF.1) and the sum of "spending by private prepayment schemes" and "out-of-pocket spending" (HF.2+HF.3). Estimates are included in the annual release of the OECD Health Statistics database (around early July) and further updated in September/October for the revision of the database and the publication of the OECD "Health at a Glance" editions in November.[2]

12.   A survey was developed in 2021 and addressed to National Health Accounts experts in countries reporting t-1 data, or where the OECD Secretariat believed that they may be in a position to do so in the future. The survey enquired into the data sources used and methods applied to make estimates as well as what complementary data might be available. Questions referred to available estimates for financing schemes (HF), revenues of financing schemes (FS), health care functions (HC) and health care providers (HP), data sources and timeliness

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[1] The JHAQ data requests were introduced in 2006. In its current format countries are requested to provide health spending data for year *t-2* for six two-dimensional tables (HCxHF, HCxHP, HPxHF, HFxFS, FPxHP, HKxHP) and aggregate data for year *t-1* for HCxHF by end of March/April of year *t* (see Annex A for some key classifications).

[2] An exception was made in 2021 and 2022 (for reporting years 2020 and 2021) due to substantial uncertainties as a result of the COVID-19 pandemic, such that *t-1* health spending was only estimated for a limited number of countries.

of data, and methodologies applied to estimate health spending for year *t-1*. In total, health accounts experts from 21 countries responded to the survey. Responses either referred to accounting practices in 2020 (estimating spending for 2019) or 2021 (estimating spending for 2020).

2.1.1 Level of detail in reported data for t-1

13.   This section reports on the estimation practices in 16 countries for which responses were received[3]. Table 2.1 shows the reporting situation for *t-1* health spending for key *financing scheme categories* (HF), mainly based on the 2021 JHAQ submission.

Table 2.1. Data reporting for health spending by financing schemes for t-1 estimates, 2019 or 2020, for selected countries participating in survey

	HF1	HF11	HF12	HF121	HF122	HF2	HF21	HF22	HF23	HF3	HF4
Austria	X					X				X	
Canada	X	X				X	X	X	X	X	
Germany	X					X				X	
Hungary (2019)	X									X	
Iceland	X	X				X		X		X	
Ireland (2019)	X	X	X	X		X	X		X	X	
Italy	X	X	X	X		X	X	X	X	X	
Korea	X	X	X	X	X	X	X	X	X	X	
Lithuania	X					X				X	X
Netherlands	X	X	X	X	X	X	X		X	X	
Norway	X	X				X				X	
Poland	X					X				X	
Portugal	X	X	X	X		X	X	X	X	X	
Slovenia	X	X	X			X	X	X	X	X	
Sweden	X	X				X	X	X	X	X	
United Kingdom	X	X				X	X	X	X	X	

Note: X means data is reported. HF1 refers to government and compulsory contributory health care financing schemes, HF11 to government schemes, HF12 to compulsory contributory health insurance schemes, HF121 to social health insurance schemes, HF122 to compulsory private insurance schemes, HF2 to voluntary health care payment schemes, HF21 to voluntary health insurance schemes, HF22 to NPISH financing schemes, HF23 to enterprise financing schemes, HF3 to household out-of-pocket payments, and HF4 to rest of the world financing schemes. Hungary includes spending for voluntary prepayment schemes (HF.2) under out-of-pocket spending (HF.3). Lithuania reports a minor amount under external financing (HF.4).
Source: OECD Health Statistics 2021, OECD Health Statistics 2020.

14.   All countries that report year *t-1* health spending include health spending by government and compulsory insurance schemes (HF.1) and out-of-pocket spending (HF.3). Fewer countries identify spending at a more detailed level. For government and compulsory insurance schemes, only Korea and the Netherlands report a further breakdown. For voluntary prepayment schemes, Canada, Italy, Korea, Portugal, Slovenia, Sweden and the United Kingdom report sub-categories (i.e., voluntary health insurance, and spending by non-profit institutions and by corporations). The non-reporting of a specific category does not necessarily

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[3] It does not include responses from Australia (as they refer to their estimation methods for t-2 rather than t-1), Belgium and Switzerland (because these countries currently do not report t-1), and France and the United States (because these countries report t-1 data mainly in a national context but do not submit this data a part of the JHAQ).

mean that the spending is excluded. It may be that a particular category does not exist in a country (e.g., social health insurance in the case of Sweden and Norway) or that data is only reported at a higher level of aggregation (e.g., spending by social health insurance is only included under HF.1 in the case of Austria and Germany). None of the 16 countries mentioned that a financing scheme category is explicitly missing from *t-1* estimates.[4] Whether identified separately or not, spending by all schemes are included in current health expenditure in all countries. This means that in all countries, the coverage of financing schemes for health spending for year *t-1* is as comprehensive as (and therefore consistent with) the reporting of year *t-2*.

15.　　While the key focus of *t-1* health spending data has been on the broad financing breakdown, a number of countries also report *t-1* estimates by function (HC), provider (HP) or revenues of financing schemes (FS). In the JHAQ 2020 and JHAQ 2021, eight countries (Canada, Finland, Iceland, Ireland, Italy, Korea, the Netherlands, Norway) reported a *functional* breakdown of health spending, seven countries (Canada, Iceland, Ireland, Italy, Korea, the Netherlands, Norway) a *provider* breakdown, and six countries (Canada, Chile, Iceland, Ireland, Korea, Norway) identified *revenues of financing schemes*. However, more countries could potentially report some of this data for international reporting purposes (see section 2.1.3).

2.1.2 How do countries estimate t-1 spending by type of financing scheme?

16.　　For all financing schemes the survey included questions on the data sources used and the methodology applied by countries to estimate health spending for year *t-1*. The following section summarises the methods applied for each key financing scheme category. The detailed country responses are presented in Annex B.

2.1.2.1 Government and compulsory insurance schemes (HF.1)

17.　　Government and compulsory insurance schemes finance around three-quarters of overall health spending. Hence, an accurate estimation of its spending trajectory for year *t-1* is particularly important.

Government financing schemes (HF.1.1)

18.　　Government financing schemes (HF.1.1) exist in all OECD countries but their importance as a payer for health services varies widely. They are the main purchasers of health care goods and services in many tax-based financing schemes with residence-based entitlement such as the United Kingdom, the Scandinavian countries, Spain, Italy, Australia and New Zealand. All 16 countries responding to the survey estimate health spending for HF.1.1 for year *t-1* (but some countries do not report HF.1.1 separately but only on a higher level of aggregation – HF.1).

19.　　Data sources to estimate *t-1* spending for HF.1.1 are mainly based on government spending aggregates in National Accounts as well as budget information collected from ministries of finance, health agencies or other authorities (Table B.1). However, in most countries more than one source tends to be used.

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[4] Some financing schemes that could potentially exist are not reported in Iceland and Norway. However, these are marginal and are also not reported for year t-2, so the non-inclusion of these schemes in estimations for year t-1 does not create any temporal comparability issues.

- Austria, Italy, Sweden and the United Kingdom use (adjusted) general government final consumption expenditure for COFOG 07[5] and use either the nominal value or apply the growth rate to HF.1.1 spending in *t-2*.
- Sweden uses total government final consumption expenditure from the Quarterly National Accounts available in February of year *t* (combining all quarters of *t-1*) and estimates a COFOG distribution based on previous years.
- Norway analyses the production side of the Quarterly National Accounts for ISIC 86-88.
- Budget information from central ministries, municipalities and other agencies are used in Austria, Canada, Iceland, Ireland, the Netherlands, Norway, Poland, Portugal and Slovenia. Other agencies include, for example, the Health Service Executive in Ireland or the Treasury Board in Canada (Canada also uses some forecasted data from data providers in their estimations). Instead of actual outturn data, Lithuania still uses the planned budget figures, and estimates the share that will be dispensed based on past trends.
- Extrapolation based on recent historical trends are used in Korea, Germany and Hungary to determine health spending for *t-1* for HF.1.1.

Social health insurance schemes (HF.1.2.1)

20.   Social health insurance (HF.1.2.1) is the key health financing scheme in many OECD countries including Belgium, Chile, the Czech Republic, France, Germany, Israel, Japan, Korea and Slovenia. It exists in 12 out of 16 countries that responded to the survey and all 12 countries estimate health spending for year *t-1* for this category (Table B.2).

- In countries where the share of SHI is significant, annual or quarterly results of the social health insurance funds are generally used to estimate *t-1* spending. In most cases, preliminary financial results for the full year *t-1* can already be observed in the first half of year *t*.
- In Korea, the preliminary results of social health insurance for the fourth quarter of year *t-1* are not available in time to estimate full *t-1* spending and hence fourth quarter growth is extrapolated.
- In Lithuania, *t-1* spending refers to planned spending rather than actual spending of the social health insurance, although an adjustment is made based on past observations that not all planned spending will be actually disbursed.
- One challenge in the case of social health insurance spending is that – depending on national circumstances – more than one scheme may need to be included. This is the case for example in Germany and Slovenia, where the results of six and two schemes, respectively, need to be combined to estimate overall spending for HF.1.2.1. In Germany, in addition to financial results of health insurance, long-term care insurance, pension insurance, miners' insurance, accident insurance and some minimal spending of the employment insurance need to be considered (for the latter two schemes, no preliminary data is available and historic growth rates are used to extrapolate *t-1* health spending).
- Only in Italy are National Accounts used to measure social health insurance spending (although the role of SHI in Italy is very small).

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[5] COFOG is the classification of functions of government used to classify government spending (see Annex C).

- Canada applies a different approach in the sense that for each functional and provider expenditure category of HF.1.2.1 an econometric model has been developed to estimate health spending for *t-1* (as well as *t-2*).

Private compulsory health insurance schemes (HF.1.2.2)

21.   Private compulsory health insurance schemes exist in only a few OECD countries but they can take different forms. In the Netherlands, Switzerland and the United States they provide access to health care goods and services for a large section of the population. In Chile and Germany they serve as a "substitute" scheme for people opting out of the social health insurance scheme. In France, it refers to complementary insurance which employers are legally obliged to offer to their employees (and who are also obliged to take up). In only four countries participating in the survey, these schemes are reported and, with the exception of the Netherlands, they only account for a small share of overall health spending (Table B.3).

- The Netherlands uses results and estimates from the agency responsible for the management and accounting of the individual funding implementing social health insurance (Wlz) and private compulsory health insurance (Zvw).
- Germany and Korea extrapolate spending using historical spending trends as recorded in previous health accounts.

2.1.2.2 Voluntary health care payment schemes (HF.2)

22.   Spending by voluntary health care payment schemes (HF.2) is relatively small on average, at around 6%, but can be substantially higher (due to the role of voluntary health insurance) in some countries. For four countries – Germany, Lithuania, Norway and Poland – *t-1* spending estimations for voluntary health care payment schemes occur at this level of aggregation without using distinct sources to estimate components on a 2nd digit level of HF.2 (Table B.4).

- Germany simply uses the historic growth rate of this category from year *t-3* to *t-2* as recorded in health accounts and applies this growth to the *t-2* values of HF.2. Lithuania assumes growth for HF.2 in *t-1* is similar to growth for HF.1.
- Norway uses the growth rate of private consumption expenditure for several COICOP 06[6] categories as recorded in the Quarterly National Accounts.
- Poland makes reference to a variety of sources with final estimates based on expert opinion.

Voluntary health insurance schemes (HF.2.1)

23.   Voluntary health insurance (HF.2.1) is an important financing scheme in some OECD countries, such as Australia, Canada, Ireland, Israel and Slovenia, where it accounts for more than 10% of all health spending but is negligible or non-existing in others such as the Czech Republic, Iceland and Norway. With the exception of Iceland and Norway, all 16 countries include voluntary health insurance in their *t-1* estimates (Table B.5).

- In Austria and Slovenia, the annual reports of the insurance association are already fully available when *t-1* estimations are generated, such that these countries can use the actual reported spending for this category.

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[6] COICOP refers to the Classification of Individual Consumption According to Purpose which is used to classify private consumption spending (see Annex C).

- Italy uses the growth rate of total premiums paid to estimate *t-1* spending, either based on data of the supervisory authority or the national association of insurers.
- The United Kingdom combines the growth rates of several COICOP categories.
- The Netherlands uses three sources of information (annual reports of private health insurers, a health interview survey and information from a business intelligence centre of health insurers) to estimate health spending of HF.2.1 based on a provider perspective.
- Portugal applies different methodologies to project *t-1* growth rates of voluntary health insurance schemes. For the voluntary *public* subsystem, it uses quarterly financial data of the entity belonging to general government sector. Voluntary *private* health insurance relies on quarterly statistics of health insurance from the supervisory body for the insurance and pension funds sector as data sources, and for the remaining voluntary *private* subsystems, t-1 spending growth is estimated from the perspective of health providers.
- Hungary, Korea and Sweden use historic growth rates recorded in previous SHA submissions to estimate *t-1* spending growth.

NPISH financing schemes (HF.2.2)

24.   Health spending by domestic charities or non-profit organisations (e.g., the Red Cross) generally accounts for 1% of current health expenditure or less in OECD countries. With the exception of Ireland and the Netherlands (where this category is reported elsewhere – under HF.2.3 and/or HF.3) and Norway (where this category is missing) all countries estimate *t-1* spending for this category (Table B.6).

- Austria, Iceland, Italy, Sweden and the United Kingdom use the National Accounts, either the growth of final consumption of non-profit institutions serving households (NPISH) or their non-market output.
- Korea extrapolates spending based on historic growth rates.
- Hungary uses *t-1* growth of out-of-pocket spending as a proxy.
- Slovenia extrapolates *t-2* spending using the Consumer Price Index (CPI) for health.

Enterprise financing schemes (HF.2.3)

25.   Enterprise financing schemes (e.g., financing occupational health care) is generally a negligible health financing category in OECD countries representing less than 1% of current health expenditure. With the exception of Iceland (where this category is missing) and the four countries not estimating at the 2nd digit level, all countries estimate *t-1* spending for this category (Table B.7) All countries determine a growth rate to apply to the year *t-2* value of HF.2.3 to estimate *t-1* spending. A variety of sources are used for this purpose.

- Various National Accounts aggregates are used in Austria and the United Kingdom.
- Historic trends from Health Accounts define *t-1* spending growth in Hungary, Sweden and Korea.
- The trajectory of price indices is used as a proxy growth rate in Ireland, Italy and Slovenia.
- The development of total wages per provider financed by HF.2.3 is used in the Netherlands.
- Canada combines a number of different sources using econometric analysis.

- Portugal applies a variety of sources from the provider side to determine *t-1* spending growth.

2.1.2.3 Out-of-pocket payments (HF.3)

26.   Out-of-pocket spending by households (HF.3) is an important financing scheme in OECD countries accounting for around one-fifth of total health spending on average. The share ranges from 9% in France to 42% in Mexico reflecting, in part, the comprehensiveness of publicly financed benefit packages. All 16 countries estimate out-of-pocket spending for *t-1* which can generally be separated into following methods (Table B.8).

- Around half of the countries use final household consumption data from National Accounts for COICOP 06 (health) and either use the total absolute value or the growth rates of this aggregate to estimate out-of-pocket health spending for year *t-1*. Austria and Italy explicitly mentioned that this value is net of private health insurance spending (to be captured under HF.2.1), since both are captured under COICOP 06. In other countries with voluntary health insurance, it is assumed that this adjustment is also applied since it would create double-counting problems (if the absolute value is used).
- Hungary and Ireland use different indicators to generate a proxy growth rate. Hungary combines two volume indices for health (one for pharmaceuticals, one for all other health services) and multiplies them with respective consumer price indices. Ireland adjusts all of HF.3 of *t-2* using population growth and the consumer prices index.
- Germany and Korea use historic growth measured in health accounts to estimate *t-1* spending. The United Kingdom does the same, but only for long-term care spending by households.
- Lithuania assumes out-pocket spending increases at the same rate as government/compulsory insurance spending in *t-1*.
- Portugal has a different approach incorporating data from the provider side. It distinguishes between OOP spending to private and public providers. For private providers, OOP spending in year *t-1* is estimated using a residual method relying on a number of provider specific surveys, as well as public and other private finance data. For public providers, information on co-payments is collected by the NHS. These two sources are combined to obtain total OOP spending. This approach shows some similarities with the one used in the Netherlands. Here, a reference growth of current health expenditure for *t-1* is derived using wage growth for all relevant health providers (based on the NACE industry classification on 4th or 5th digit used in National Accounts). HF.3 spending growth in *t-1* is treated as a residual after growth for all other financing schemes is defined.
- Canada uses an econometric model to predict out-of-pocket spending for *t-1*.

2.1.2.4 Non-resident financing schemes (HF.4)

27.   Only four OECD countries – Greece, Israel, Lithuania and Luxembourg - report any spending by non-resident financing schemes, and in each case the share of health spending is generally negligible. The highest value is recorded in Israel, accounting for 2.1% of current health expenditure. Among the 16 countries filling out the survey, only Lithuania separately estimates rest-of-the world financing (referring to charities to residential care facilities) for year *t-1* where the share in total spending is 0.02%. The country applies the estimate growth rate of spending for HF.1 for *t-1* as a proxy growth rate for HF.4.

2.1.2.5 Summary of methods applied to measure t-1 spending on financing level

28.　　In summary, OECD countries apply a variety of different methods to estimate health spending for year t-1 for the different financing schemes, that can be grouped as follows:

- **Prioritise main financing scheme**. Germany, Lithuania and Korea focus their attention on producing an accurate proxy rate for their key public financing scheme and rely on either historic growth rates or apply this same estimated growth rates for one scheme to the other minor financing schemes. In the case of Germany, for example, use is made of the financial reports of the various health insurance funds to reach a robust estimate of social health insurance funding.

- A fair number of countries follow, to varying degrees, a **"One scheme-one source"**. This involves identifying at least one data source to determine the best proxy growth or absolute value for each scheme. The United Kingdom, for example, estimates growth rates separately for each of its financing schemes. Sweden, Iceland, Ireland, Hungary and Slovenia apply a mixed approach whereas they use absolute spending values for some schemes and estimate growth rates for other. When identifying an appropriate data source to derive a proxy growth rate for health spending of a financing scheme, a close alignment to the SHA boundaries is desirable. However, depending on the nature of the data source, a complete alignment may not be feasible. Austria attempts to estimate - to the extent possible - *t-1* spending in *absolute* terms. This is possible because most of the (regular) data sources are already available six months after the end of the reporting year. However, focusing on absolute measures instead of growth proxies carries the risk of under- or over-reporting if the data sources do not properly align, for example, if preliminary financial SHI results do not allow for an exclusion of certain non-health spending items.

- **Integrated approach**. Here, estimations are made across dimensions simultaneously and not exclusively limited to the financing dimension. In such a way, this increases the potential for reporting more detailed t-1 estimates. In Norway, the method identifies the most adequate growth rate for each of the 79 financing-function-provider combinations. Portugal and the Netherlands use financing scheme-provider approaches where provider data is used to estimate certain financing categories as residual values. Portugal uses a number of data sources (e.g., the quarterly survey of non-financial corporations (for private providers), the quarterly financial data of the general government sector (public providers), etc.) to estimate health spending for *t-1* from the provider side. Health spending by the main financing schemes is determined by available administrative data sources (e.g., Central Administration of Health Systems, Ministry of Finance, quarterly financial data from social security, etc.) and by the reconciliation process between provider and financing information, in particular for HF.3. In the Netherlands, current health expenditure for year *t-1* is estimated using the growth of wages in the relevant health provider industries (using the National Accounts at the NACE 4th or 5th digit level) to determine spending growth on a provider level with out-of-pocket spending calculated as a residual, after taking into accounts spending by public and compulsory insurance schemes.

- In a related but more sophisticated way, Canada combines sources and uses *econometric modelling* of the various components to estimate *t-1* spending (as well as *t-2* spending).

2.1.3 Can the reporting for year t-1 be easily extended to cover the classification of revenues of financing schemes?

29.   The focus of the annual data collection of health spending for year *t-1* has been on current health spending at an aggregate level but also by main financing scheme (HF). However, a few countries also submit data for functions (HC), providers (HP) and revenues of financing schemes (FS). For information on the sustainability of health financing, timely information about revenues of financing schemes (FS) is vital.[7]

30.   At the moment six OECD countries report the FS dimension as part of their *t-1* data submissions under the JHAQ (Table 2.2) but since the relationship between financing schemes and revenues of financing schemes is straight-forward in many OECD countries (at least at the 1st digit level), an expansion in reporting should be feasible. Indeed, four countries (Ireland, Slovenia, Sweden and the United Kingdom) signalled in their survey responses that a full reporting of the HFxFS table for year *t-1* would be possible given the information available by data sources. In Hungary, it should be available for most.

Table 2.2. Countries reporting health spending by revenues of financing scheme for year t-1

	Transfers from government domestic revenue (FS.1)	Social insurance contributions (FS.3)	Compulsory prepayment (FS.4)	Voluntary prepayment (FS.5)	Other domestic revenues n.e.c. (FS.6)
Canada	X	X		X	X
Chile	X	X	X	X	X
Iceland	X				X
Ireland	X	X			X
Korea	X	X	X	X	X
Norway	X				X

Note: X indicates category reported.
Source: OECD Health Statistics 2021.

2.2 How does OECD complete the missing *t-1* data?

31.   In order to fill the gaps for OECD countries that do not provide their own preliminary estimates, the OECD Secretariat projects health spending for year *t-1*.[8] Currently, these estimates[9] cover total current health expenditure for year *t-1* as well as the main components by financing scheme, i.e., HF.1 (government/compulsory) and HF.2+HF.3 (private/voluntary).

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[7] Responses to the survey also inquired about the methodologies applied to identify HC and HP for t-1 estimates and some additional countries also signalled that they could report (some of) the key categories in the future but this analysis goes beyond the scope of this Working Paper.

[8] Due to the many structural breaks that occurred in economic activity and consumption patterns as a result of the COVID-19 pandemic, OECD refrained from producing estimates of health expenditure in 2020 and 2021 based solely on the development or forecasts of total final consumption expenditure. This resulted in only a few countries – for which information on health-specific consumption was available – being added to the list of countries providing their own preliminary t-1 data. OECD plans to restart the estimation of t-1 data for all OECD countries again with the 2023 data collection.

[9] Note that estimates made by the OECD Secretariat are flagged ('E') in the OECD Health Statistics and a distinction is made from the preliminary data submitted directly by the country ('P').

32.   To mirror the approaches taken by countries and supplemented by an analysis of potential national and international data sources, a range of suitable methods was established. Table 2.3 shows the hierarchy of options that the OECD Secretariat currently employs to estimate the growth in health spending for t-1 (and in some cases t-2[10]) for those countries not submitting their own preliminary estimates from a perceived best approach to a least preferred approach:

Table 2.3. Methods for OECD estimations of health expenditure

	Method	HF.1 source	HF.2+HF.3 source
Preferred	Option 1: Official national data sources	National data sources	National data sources
	Option 2: Final consumption expenditure – health	SNA: GGFCE (COFOG 7)	SNA: HHFCE (COICOP 6)
	Option 3: Final consumption expenditure – total	SNA: GGFCE (total)	SNA: HHFCE (total)
Least preferred	Option 4: Final consumption expenditure - OECD forecasts	OECD Economic Outlook	OECD Economic Outlook

Note: GGFCE=General Government Final Consumption Expenditure; HHFCE=Household Final Consumption Expenditure; COFOG=Classification of the Functions of Government; COICOP=Classification of the Individual Consumption by Purpose.
Source: OECD Secretariat.

- ***Where national health spending estimates for t-1 are available*** (typically based on alternative measures of health spending), ***the estimated growth rates are applied to the reported t-2 SHA-based health spending figures submitted through the JHAQ***. Potential sources include estimates of health spending components that are closely aligned to health expenditure accounts and published nationally.

  o   In the United States, the Office of the Actuary in the Centers for Medicare & Medicaid Services (CMS) annually produces forecasts of health spending which are compatible with their historical time series of the National Health Expenditure Accounts (which form the basis of the health accounts submission to OECD).[11]

  o   France publishes their national health accounts report each September including preliminary detailed estimates for *t-1*.[12] This includes aggregates which are consistent with the SHA boundary such that absolute values can be used.

  o   Other available national data sources used might be the financial accounts or reporting linked to the principal public financing source. For example, prior to Ireland and the United Kingdom submitting their own *t-1* data, the OECD identified data published by the Health Services Executive (HSE) in the case of Ireland, and the Department of Health and Social Care (DHSC) in the case of the United Kingdom. In each case, the published growth rates in spending were assumed to be a good

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[10] For those countries not submitting *t-2* estimates, the same approach is used to estimate both *t-2* and *t-1* spending.

[11]   https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nationalhealthaccountsprojected.html

[12] Les dépenses de santé en 2019 > édition 2020 > DREES (solidarites-sante.gouv.fr)

precursor of the growth in government/compulsory (HF.1) spending for *t-1*. The identification and application of such sources can also be seen as encouragement to countries to build on this approach to develop their own preliminary estimates.

- In the absence of national health spending estimates, ***government final consumption expenditure on health (COFOG 07)*** and ***final consumption expenditure of households on health (COICOP 06)*** from National Accounts is considered as the next best option for estimating t-1 health spending components. The rationale for using final consumption estimates stems from the close conceptual connections between the two accounting frameworks, and that for a number of countries the underlying data sources for the compilation of the financing aggregates may be common. There remain differences, however, in the boundaries of the two measures (e.g., with regard to the inclusion of spending on long-term care services). Figure 2.5 shows the relationship between growth in the main aggregates of health spending and the corresponding growth in final consumption expenditure on health of government and households. A weaker relationship is observable between household final consumption expenditure and private spending on health (HF.2/3). It should also be noted that the timeliness of COFOG 07 estimates for *t-1* remains limited, and more limited than for COICOP 06. Where data is available, the *t-1* growth rates of these aggregates are applied to the *t-2* totals of HF.1 and HF.2+HF.3.

Figure 2.5. Final consumption expenditure on health by government and households are closely linked to health accounts aggregates
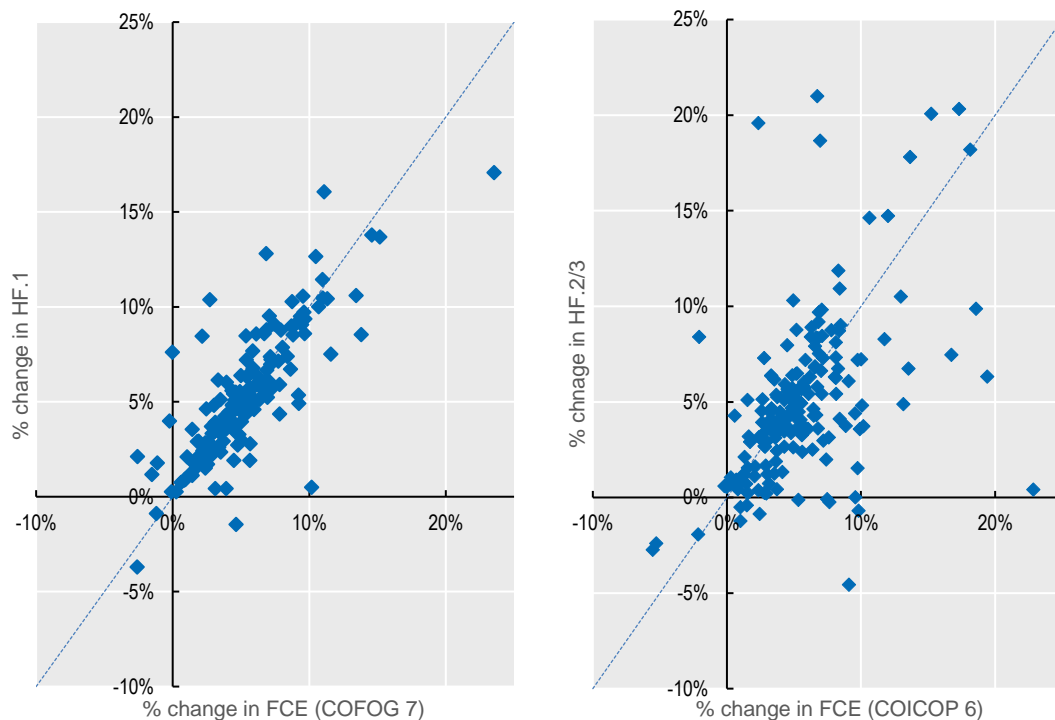
Note: Each marker refers to the annual growth in final consumption expenditure on health compared with growth in health spending as reported via the JHAQ for OECD countries between 2014 and 2019.
Source: OECD Health Statistics 2021 and OECD National Accounts.

- As noted, the availability of final consumption expenditures specific to the health sector for year *t-1* is limited to only a few countries, such that data on ***total final consumption expenditure of general government*** and on ***total final consumption expenditure of households*** are taken as proxies. Clearly, these refer to economy-wide boundaries of spending rather than only health. However, in the case of estimating government and compulsory insurance spending (which accounts for more than 75% of health spending in OECD countries), its use can be justified by the relative stability in the share of government spending attributed to health over time, even if the shares vary considerably across countries (Figure 2.6). This stability reflects to a great extent the budgetary processes and the mechanisms for the allocation of resources across government functions which limits volatility from year to year. The relationship between private expenditure on *health* and overall private consumption is not subject to such budgetary constraints and is therefore likely to show greater variability over time. In some cases, the better timeliness of household spending on health data (COICOP 06) means that a combination of overall government consumption expenditure and health-specific household consumption can be used (see Table D.1). In the same way as above, the *t-1* growth rates of these proxy measures are applied to the *t-2* SHA data submitted through the JHAQ.

- Finally, if actual *t-1* data on total final consumption expenditure of general government and households are not published, projections of government and private consumption (e.g., from the *OECD Economic Outlook* published every six months) are used and the growth rates applied in the same way. The growth rates for year *t-1* are estimated using a range of existing information and therefore are considered relatively robust.

Figure 2.6. The share of government expenditure on health is relatively stable from year to year

Government final consumption expenditure on health as a share of total government final consumption expenditure
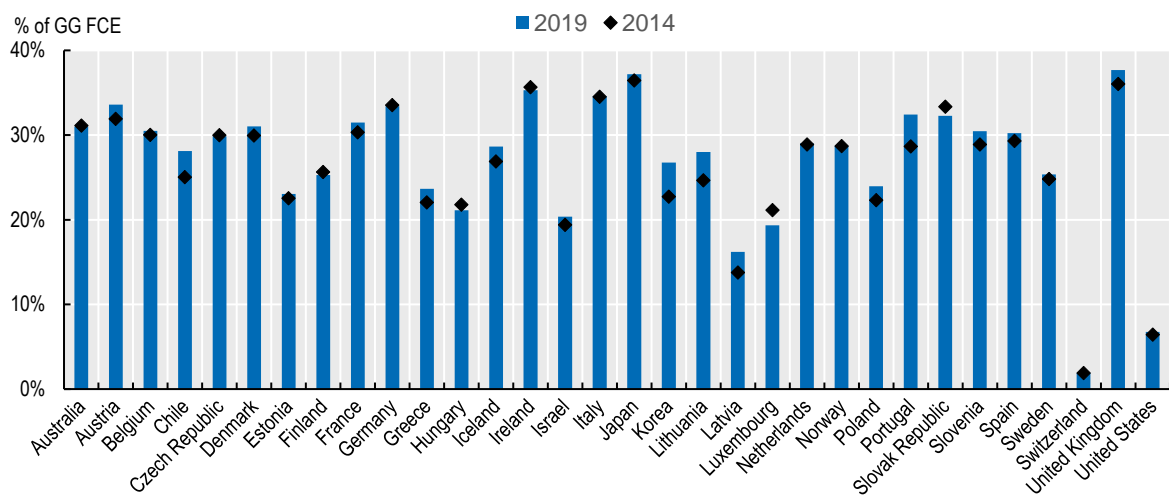
Note: Refers to General government final consumption expenditure on COFOG 07 as a share of total functions.
Source: OECD National Accounts.

33.   Annex D summarises the data sources used by the OECD for each country to fill the *t-1* reporting gaps in their estimations in recent years.

2.3 Assessing the accuracy of OECD estimates

34.   Figure 2.7 provides an overview of the OECD *t-1* spending estimates compared to data submitted for the same reference year as part of the subsequent health accounts data collection (i.e., at *t-2*). The chart shows the forecast and "actual" annual growth rate for total health expenditure covering the first five years of the exercise (i.e., for the reference years 2015 to 2019) according to the principal methodology applied.

35.   For each of the options, a dispersion of the measured 'accuracy' can be observed with a number of outliers in each of group. In some cases, the accuracy of any estimates can be linked to the economic situation in the country and the subsequent resource allocation. For example, the elevated growth rates in the figure refer specifically to Türkiye, where relatively high inflation means that health spending growth is closely pegged to projected increases in GDP and domestic consumption. At lower levels, it might also be expected that in countries with large public (government) financing of health, the budgeted growth in health spending with be closely linked to actual or projected economic indicators.

Figure 2.7. Assessing the accuracy of OECD estimates of health spending growth

Growth rates of total health spending in nominal terms for OECD estimates and subsequent country submissions
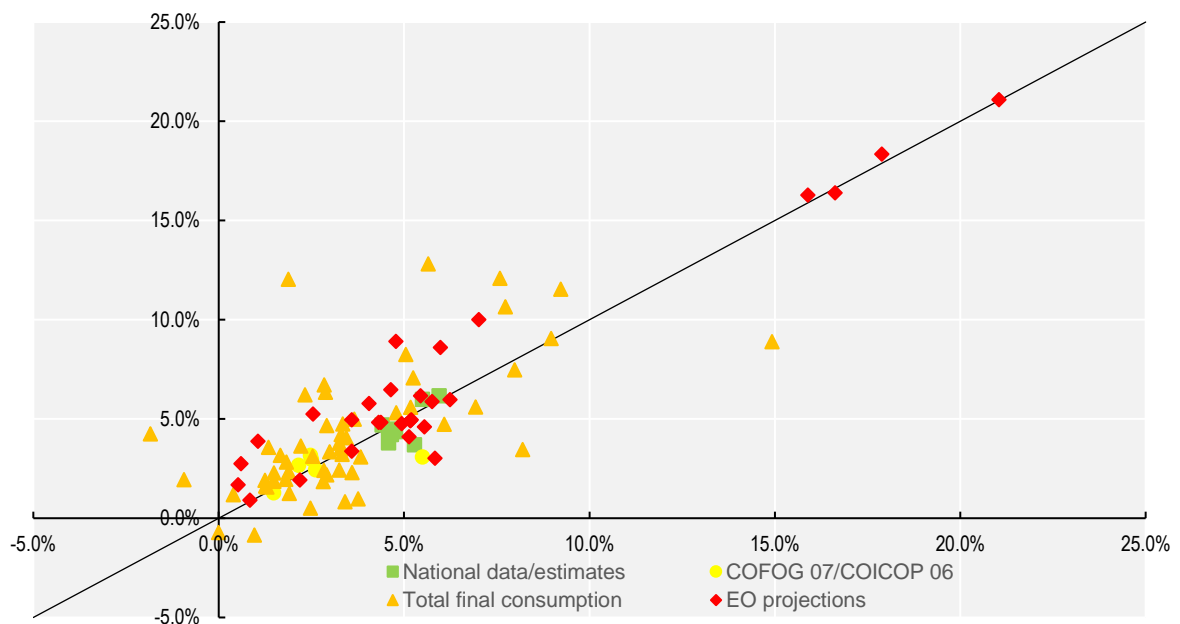
Note: Each marker shows (on the x-axis) the calculated growth rate using the OECD estimate (t-1) against (on the y-axis) the growth rate using the country submission (t-2) in the subsequent JHAQ.
Source: OECD Health Statistics 2016 to 2020.

36.   Table 2.4 shows the average error between the OECD estimated growth and subsequent actual reported growth as well as the degree of dispersion of errors for each of the four methodological groups.[13] There is a general progression in the size of the average error in

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[13] Separate (unpublished) analysis comparing the accuracy of OECD estimates and national estimates of t-1 indicate a similar overall measure of accuracy.

line with the hierarchy of options. National data and estimates, as might be expected, provide initial growth estimates with the lowest errors - on average within 0.5 percentage points of the subsequent measured growth rates. Estimates based primarily on COFOG 07 and COICOP 06 data are within 1 percentage point of the "actual" reported growth rate. In both cases, the number of observations is relatively small, such that the impact of individual country characteristics is strong.

37.   The largest comparison group using overall final consumption expenditure as the basis for estimating HF.1 and HF.2/3 health spending growth displays the highest average error (1.9 percentage points) and the greatest variation. For the final group, the estimates based on forecast government and private consumption variables from OECD Economic Outlook are very dependent on the country in question, with generally smaller errors for Türkiye but much larger differences for e.g., Mexico and Colombia. In general, because of the different country composition of each group, it is difficult to draw definitive conclusions about the relative accuracy.

Table 2.4. Average error and standard deviation of estimates of health spending growth by methodological approach

Principal methodology	Number of Observations	Average Error	Standard Deviation
1. National data/estimates	8	0.5 p.p.	0.5 p.p.
2. COFOG-7/COICOP-6	8	0.7 p.p.	0.8 p.p.
3. Govt./HH FCE	52	1.9 p.p.	2.0 p.p.
4. Economic Outlook projections	28	1.2 p.p.	1.1 p.p.

Source: OECD calculations based on OECD Health Statistics 2016-2020.

38.   An examination of the mean average error of estimates of HF.1 by country (Figure 2.8) helps reinforce the general pattern above and may also shed further light on the relative performance of the different methodologies. There would appear to be a clear pattern with national data and spending estimates producing lower errors, and a general increase in the mean average error as well a broadening of the error range for the other methods. For both Ireland and United Kingdom, the shift to available national data improves the accuracy of the estimates. However, the accuracy of the estimate for Türkiye using the Economic Outlook also suggests some improvement, although this is based on a single year.

39.   One notable feature when examining the accuracy of the OECD estimates using growth rates in overall government and household final consumption expenditure to estimate growth in government/compulsory and voluntary health expenditure is the observed variation. The average error and variation for countries such as Austria and France are comparable with countries using health specific proxies as a basis (average error<1 p.p.) while for some of the central and eastern European countries, the average error is significant (>3 p.p.) with wide variation from year to year.

40.   The underlying year-to-year volatility in actual (reported) health spending growth may help to explain some of the difficulties in estimating *t-1* growth for some countries. Figure 2.9 shows the correlation between the annual variation in reported growth rates of current health expenditure and the mean average error in OECD estimates for those countries using the final consumption expenditure estimates as proxies. Those countries with relatively stable growth in health spending from year to year also show a relatively low level of error in the OECD estimates while the opposite can be true for countries with much higher volatility in health spending. This

can have some implications on the likely accuracy of any estimates based on macroeconomic aggregates.

Figure 2.8. Mean average error in HF.1 growth rate between OECD t-1 estimate and latest estimates of actual health spending
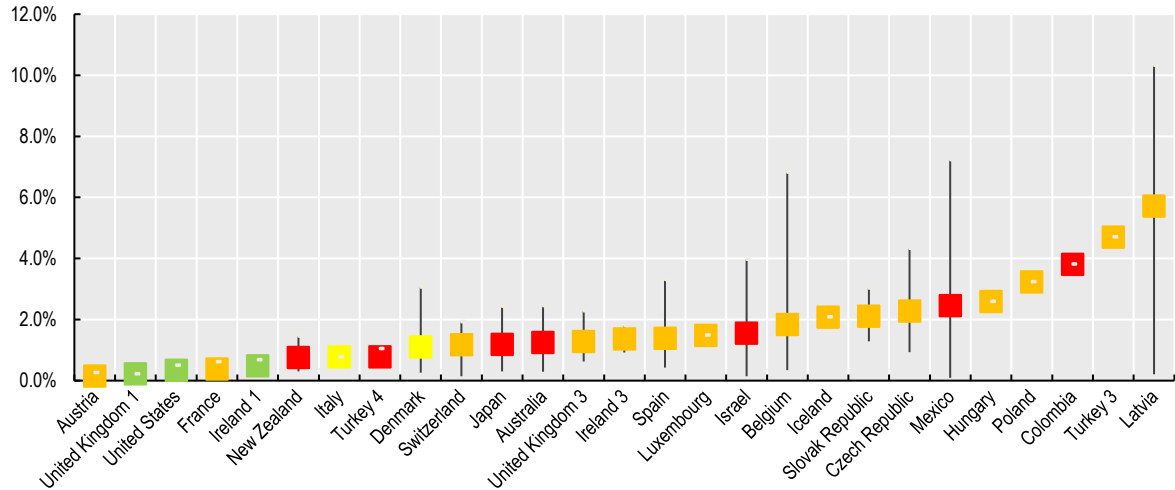
Note: The number after a country name indicates the methodology used for different years for the same country. The lines show the range of errors for each country. 1 (green) - national data/estimates; 2 (yellow) – COFOG 07/COICOP 06; 3 (orange) – Total final consumption; 4 (red) – EO projections.
Source: OECD calculations based of OECD Health Statistics 2016-20.

Figure 2.9. The volatility of health spending growth may impair the accuracy of t-1 estimates

Volatility of actual health spending growth and mean average error of OECD estimates for t-1
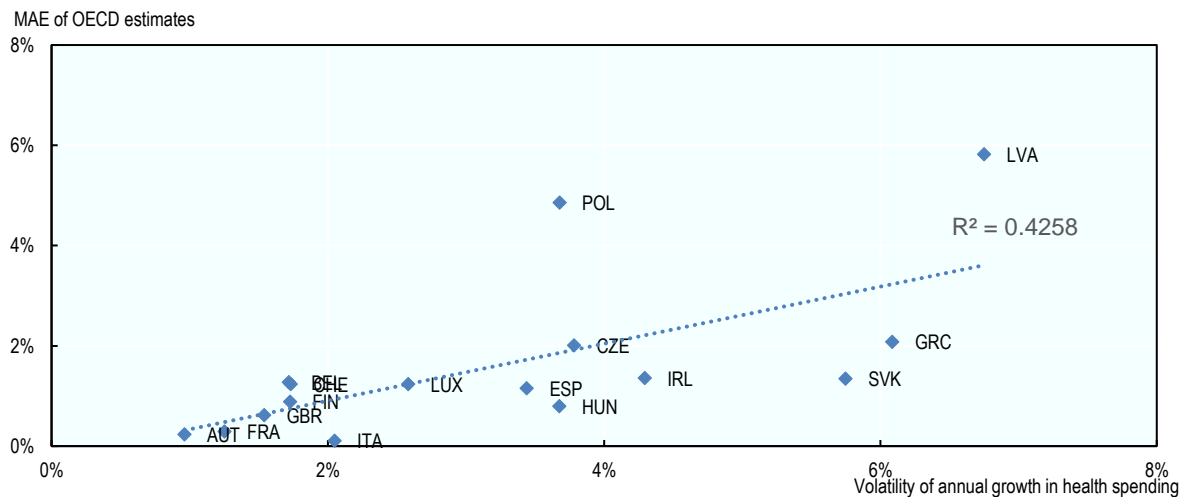
Note: Volatility refers to the standard deviation of health spending growth over the period 2004-18. MAE is the mean average error of OECD growth estimates compared to the subsequent reported health expenditure growth over the period 2015-2019.
Source: OECD Health Statistics.

2.4 Practical examples to improve accuracy of health spending estimates for year *t-1* for selected OECD countries

41.   The analysis above suggests that rather than relying on aggregate-level consumption data to estimate health spending for year *t-1*, ***efforts could be directed towards identifying national health-specific data to improve the accuracy of these estimations***. While this is already done in some countries, possibilities may exist to do this more systematically. The following examples from selected OECD countries currently not reporting *t-1* estimates suggest that such data may be generally available.

2.4.1 Public spending on health

42.   For ***public spending on health***, information on health expenditure from either governments' annual budget documents or reports of the social health insurance funds can be used to estimate year *t-1* growth rates. This information is usually publicly available, although the level of detail and the type of expenditure data published can vary considerably across countries. For example:

- In *Australia*, annual expenses for all health functions are budgeted at the Australian and jurisdictional government levels and can be summed up to calculate Australia's total health budget. At the Australian government level, the budget is structured by function, while at jurisdictional government level, the budget is structured by department. A possible approach to consolidate this information and potential data sources is shown in Box 2.2. [14]

- In *New Zealand*, the *Budget Economic and Fiscal Update* includes information on annual budget outturn (covering year *t-5* to *t-1*) and economic forecasts (year *t* to *t+4*) for all government functions, including health (Table 2.7).

Box 2.2. Possible approach for estimating *t-1* growth rates using national data sources: Australia

Estimation of public spending for 2020 (year t-1)

Data sources:

1.   Health spending data (including estimated actual spending for 2019 and planned budget for 2020) from Australian and jurisdictional governments 2020-21 budget papers

2.   Australia's 2019 public spending on health (HF.1), as estimated by OECD (the Australian health accounts data is submitted annually only for year *t-3* which means that the OECD Secretariat estimates spending for years *t-2* and *t-1* for this country).

Method:

3.   Calculating the estimated Australian total health spending for 2019 and 2020, by adding up actual and planned spending by Australian and jurisdictional governments

4.   Calculating the growth rate (Table 2.5)

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[14] Of note is that the officially submitted health spending data for Australian refers to financial years (July to June) and not calendar years - hence any estimation for more recent years based on the official submission would also refer to financial years.

$$Growth\ rate\quad = \frac{Total\ health_{2020} - Total\ health_{2019}}{Total\ health_{2019}} = 7.6\%$$

5. Applying growth rate to the OECD-estimated 2019 public spending for health.

Table 2.5. Calculation of Australia's public health spending growth rate for 2020

	2019[1] ($m)	2020 ($m)	Source	Budget structure
Australian government	87,023	93,771	Table 8, Statement 6 from bp1_w.pdf (budget.gov.au)	By function
New South Wales	24,885	26,456	Page 1 from https://www.budget.nsw.gov.au/sites/default/files/2020-11/3. Health cluster-BP4 Budget 2020-21.pdf	By department
Victoria	27,537	31,008	Page 214 from 2020-21+State+Budget+-+Service+Delivery.pdf	By department
Queensland	19,490	20,269	Table 5.4 and 5.5 from BP2_5_Expenses (budget.qld.gov.au)	By department
Western Australia	10,371	10,662	Page 311 (WA Health) and 339 (Mental Health Commission) from 2020-21 Budget Statements. Budget Paper No. 2 - Volume 1 (ourstatebudget.wa.gov.au)	By department
South Australia	6,130	6,187	Page 28 from _2020-21-Agency-Statements-Volume-3-non-laid-Web.pdf (treasury.sa.gov.au) https://www.treasury.sa.gov.au/__data/assets/pdf_file/0004/518620/_2020-21-Agency-Statements-Volume-3-non-laid-Web.pdf	By department
Tasmania	1,929	2,472	Table 5.2 from 2020-21-Budget-Paper-No-2-Volume-1.pdf (treasury.tas.gov.au)	By department
Australian Capital Territory	267	404	Table 23 from 2020-21-Budget-Statements-C.pdf (act.gov.au)	By department
Northern Territory	1,610	1,704	Page 85 from Budget 2020-21: Budget Paper No. 3 – Agency budget statements	By department
Total	**179,242**	**192,932**		
Growth rate		**7.60%**		

1. Estimated actual or revised budget (except for Tasmania and Northern Territory, for which such information is not available so 2019-20 budget is used)

Note: Due to the misalignment between OECD year (i.e. calendar year) and Australia's financial year (i.e. 1 July to 30 June), OECD year 2019 is Australia 2019-20 financial year, and OECD 2020 is Australia 2020-21 financial year.

Source: Australian and jurisdictional 2020-21 budget papers.

Estimation of private spending for 2020 (year t-1)

Data sources:

1. Household spending data on health for 2019/20 and 2020/21 from most recent Australian National Accounts (ANA), published by the Australian Bureau of Statistics

2. Australia's 2019 private spending on health, estimated by OECD.

Method:

3. Calculating household Final Consumption Expenditure (FCE) on health for 2019/20 and 2020/21 by adding up spending of four subsequent quarters (from Q3 in year t-1 to Q2 in year t), respectively (reflecting the fact that public spending is referring to financial years).

4. Calculating the growth rate (Table 2.6)

$$Growth\ rate\quad = \frac{Health_{2020} - Health_{2019}}{Health_{2019}} = 10.4\%$$

5. Applying growth rate to the OECD-estimated 2019 private spending for health (referring to FY 2019/20).

Table 2.6. Calculation of Australia's private health spending growth rate for 2020

	Household FCE on health ($m)	Total
Q3, 2019	18,544	
Q4, 2019	18,797	
Q1, 2020	18,312	
Q2, 2020	14,730	2019 total (2019/20) Financial Year: 70,383
Q3, 2020	18,413	
Q4, 2020	19,601	
Q1, 2021	19,649	
Q2, 2021	20,019	2020 total (2020/21) Financial Year: 77,682
Growth rate		**10.4%**

Source: Table 8, Australian National Accounts: National Income, Expenditure and Product, June 2021 | Australian Bureau of Statistics (abs.gov.au) (Current price, seasonally adjusted).

Table 2.7. New Zealand Budget Economic and Fiscal Update 2021, Health expenses

	2016[1]	2017[1]	2018[1]	2019[1]	2020[1]	2021[2]	2022[2]	2023[2]	2024[2]	2025[2]
Departmental outputs	188	192	200	210	236	328	392	346	347	339
Health services purchasing	14,361	14,855	15,449	16,311	18,176	19,723	20,330	20,201	20,143	20,145
Other non-departmental outputs	356	365	816	937	634	627	652	682	694	708
Health payments to ACC	694	697	682	782	812	1,032	1,148	1,258	1,374	1,499
COVID-19 Vaccine	..	..	..	..	..	668	715	..	..	..
National health response to COVID-19	..	..	..	..	..	714	894	4	4	4
Isolation and Quarantine Management	..	..	..	..	..	718	855	..	..	..
Other expenses	27	114	12	28	33	27	62	47	47	45
Health expenses	**15,626**	**16,223**	**17,159**	**18,268**	**19,891**	**23,837**	**25,048**	**22,538**	**22,609**	**22,740**

Note: 1. Actual, $millions. 2. Forecast, $millions
Source: Table 5.3, Core Crown Expense Tables, New Zealand Budget Economic and Fiscal Update 2021, published 20 May 2021

43.   Australia and New Zealand are both examples of countries with predominantly tax-financed health systems; for countries with a social health insurance (SHI) system, it is possible that the central government budget includes government transfers to the SHI scheme (such as in the case of Germany) or includes government contributions and part of the employees and employers' contribution (such as for Japan). For countries where social health insurance is the key health purchaser, it is important to identify the social health insurance budget instead of any eventual contribution by different government entities to estimate overall public spending growth for year *t-1*. This information is usually publicly available. In *Luxembourg,* for example, the CNS is the only social health insurance fund in the country implementing two separate social security schemes – health insurance and LTC insurance. Social security spending (HF.1.2.1) accounts for roughly 80% of total health spending and 95% of all public health spending (HF.1). Financial results of year *t-1* of both schemes are published around July in year *t* with a good level of detail that could be used to estimate health spending for *t-1* for HF.1.1.

44.   When using actual spending data or planned budgets from different levels of government or social health insurance, it is important to identify the key spending aggregates

that should determine the appropriate year-on-year growth and which needs to be applied to *t-2* public health spending data within the SHA framework. Ideally –in line with the general accounting principle of SHA- such an aggregate would only include spending that qualifies as current health expenditure and hence exclude any investments. In addition, it may be the case that available health budgets do not include budgets for all health portfolio departments and/functions in the sense of international boundaries of health - the most common case is when mental health and long-term care/aged care do not directly fall under the department of health's responsibilities.

45.   Depending on the availability, the countries' final budget outturn (usually available 4-6 months after the financial year is finished) is generally considered more suitable to calculate year *t-1* growth rate than the planned budget, as it reflects the actual spending level.

2.4.2 Private spending on health

46.   As discussed in section 2.3, household final consumption expenditure for COICOP 06 (health) from the national accounts would be one of the most reliable national data sources to estimate the *t-1* growth in **private health spending**. Desk research suggests that for some countries - while not necessarily available in international databases- it can be accessible from national sources. For Australia (Box 2.2) and the United States, information about household final consumption expenditure is published quarterly, with a 3-6 month delay. Similar information is also available for some other OECD countries such as Slovak Republic and Luxembourg. However, for countries like New Zealand and Japan, final household consumption expenditure on health does not appear to be available from national accounts data, and total final consumption expenditure may need to be used as a proxy. Possible national data sources for estimating year *t-1* growth rates from selected countries are summarised in Table 2.8.

Table 2.8. Summary of national data sources for estimating 2020 (year t-1) growth rates, selected countries

Country /Sector	Year t-1 growth rate	Data source	Notes
AUS – public	Yes	Australian and jurisdictional annual budget papers	2019 data are 'estimated' actual spending except for Tasmania and the Northern Territory
AUS – private	Yes	Table 8 from Australian National Accounts: National Income, Expenditure and Product, June 2021 | Australian Bureau of Statistics (abs.gov.au)	Most recent available data are for Q2 2021
NZL – public	Yes	Core Crown Expense Tables from Budget Economic & Fiscal Update 2021 - Budget 2021 - 20 May 2021	In the 2021 release (May 2021), 2019 and 2020 data are actual
NZL – private	Maybe	Institutional sector accounts table from National accounts (income and expenditure): Year ended March 2020 | Stats NZ	FCE on health is not available, but total FCE may be used for the estimation
JPN - public	Yes	Page 3 (2019: 119,974; 2020: 122.674) from 我が国社会保障制度の構成と概況 (mhlw.go.jp) (in Japanese)	Detailed information is not available in English
JPN - private	Maybe	Apr.-Jun. 2021 (The 2nd preliminary) - National Accounts (cao.go.jp)	FCE on health is not reported separately, but total FCE may be used for the estimation
USA – public	Yes	'Gross Output by Industry' from https://apps.bea.gov/iTable/iTable.cfm?reqid=150&step=2&isuri=1&categories=gdpxind	2019 and 2020 data are actual spending; Non-government funding might be included in total health

USA - private	Yes	Table 2.3.5U - Personal Consumption Expenditure by Major Type of Product and Major Type of Function from [BEA Interactive Data Application](#)	Most recent available data are for Q3 2021
SVK – public	Yes	Annual data are from: [Draft Budgetary Plan	Ministry of Finance of the Slovak Republic (mfsr.sk)](#)	Draft budgetary plan 2021 was published in October 2020
SVK - private	Yes	[Final consumption of households by Classification COICOP at current prices [nu2020qs] - DATAcube. (statistics.sk)](#)	Most recent available data are for Q3 2021
LUX – public	Yes	[Annual report of Health Insurance Schemes of CNS](#) [Annual report of LTC Insurance Scheme of CNS](#)	Published in July 2021 for 2020
LUX – private	Yes	[Table view - Household Final Consumption Expenditure by function (current prices) (in millions EUR)](#)	Published in September 2021 for 2020

Note: Availability of included data sources were assessed in November 2021.
Source: Desktop research and assessment by OECD Secretariat.

3 Projecting and now-casting health spending for year t

47.   In 2020, the COVID-19 pandemic led to unplanned health spending on an unprecedented scale in many countries in order to finance public health measures, new health infrastructure and capacity, and treatment costs of COVID-19 patients. For this purpose, emergency budgets were often approved by parliaments providing additional funds to public health financing schemes. As a result, there was growing interest in obtaining timely comparable data on the overall impact of COVID-19 on current health spending in 2020. To respond to this need, the OECD conducted some early scoping work into identifying potential data sources.[15]

48.   Building on this initial exploratory work, this chapter reviews the possible options that countries could adopt to estimate or now-cast health spending for year *t*. Generally, two very different approaches seem feasible, very much depending on the expected timing of releasing estimates.

- The first option could be to ***monitor health spending in quasi "real-time" throughout the current period*** and "nowcast" or extrapolate health spending for the whole year based on the availability of actual spending information up to the time of estimation. The accuracy of such an estimation would be expected to increase through the year since more data is likely to feed into the estimation by Quarter 3 rather than at the beginning of the year. Therefore, timeliness of data availability is key to the applicability of such an approach.

- The second option could be to ***project health spending for year t based on planned (or forecasted) expenditure*** instead of actual reported spending for year *t*. This would seem to be the only viable option to estimate spending for year *t* in the early part of year *t* when any actual spending data is not yet available (apart from potentially relying on results from long-term projections).

49.   To further explore these options, SHA experts and health budget officials in OECD countries were consulted, to assess data availability and timeliness in international and national databases.

50.   Figure 3.1 illustrates the available options to project health spending for year *t* for the key financing categories depending on data availability over the course of year *t*. Data sources represented by an arrow are dynamic in the sense that availability should improve as the year progresses. For example, for spending data from public sources only "planned data" is available at the beginning of the year while actual spending (or budget outturn) will become available only in later months. On the other hand, "static" data sources will generally not change throughout

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[15] With the exception of Canada, which, for the first time, published a health spending projection for 2021 in November 2021, OECD countries are not systematically estimating health spending for year t in line with the SHA framework.

the year referring, for example, to economic forecasts of total government spending already available in January.

Figure 3.1. Overview of options how health spending could be projected throughout year *t*
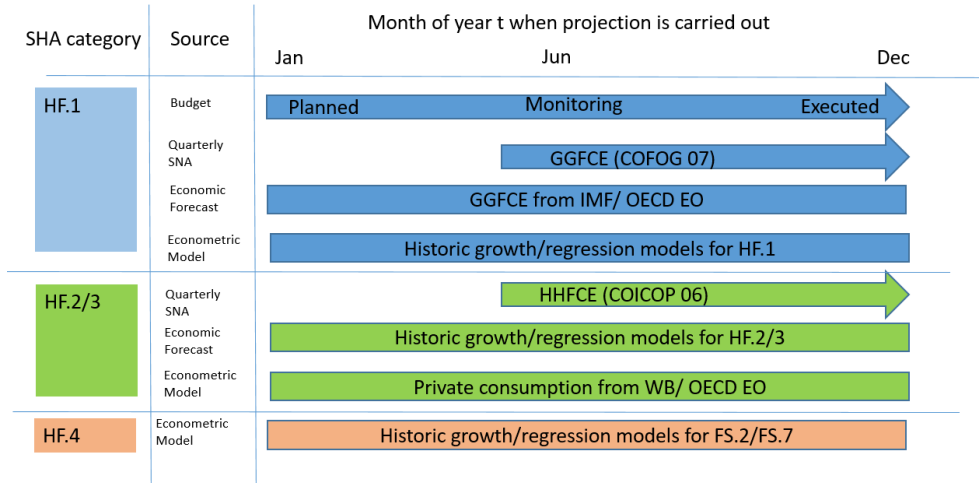
Note: Arrow refers to dynamic data, i.e. data availability changes over course of year. Rectangle refers to static data, i.e. no change in data availability over course of year. For most OECD countries, rest of the world financing (HF.4) can be ignored.
Source: OECD Secretariat.

3.1 Nowcasting with actual data for year *t*

51.   This section describes potential data sources available to nowcast health spending for year *t* using actual spending data. It draws on experience with monitoring budget execution in health ministries as inquired in a survey sent to Senior Budget Officials in OECD countries but also explores other potential data sources as identified by SHA experts in OECD countries, and as a result of additional desk research by the OECD Secretariat.

3.1.1 Monitoring budget execution

52.   Effective control and monitoring of the health budget is a key element of the budget cycle. Active monitoring of budget execution ensures the full implementation of budget allocations as approved in budget law. Prudent control and oversight prevent the misuse of budgeted funds and identifies significant deviations from planned expenditure to avoid overspending.

53.   Nowcasting health expenditure provides estimates of health spending for the current budget year *t*. Timely and reliable forecasts at the very short-term form part of budget monitoring activity. The results inform immediate and pre-emptive budgeting decisions during the budget year to control health expenditure growth. Across the OECD, the majority of countries nowcast health expenditure as part of budget monitoring. Table 3.1 summarises nowcasting methods across selected OECD countries. For countries with health systems organised around government schemes, nowcasts of health expenditure for the ongoing year are the responsibility of the Ministry of Health, the Ministry of Finance, or a shared responsibility between the two. While for countries with insurance-based health systems, nowcasting typically is the responsibility of the individual health insurance institutions.

54.   Generally, updated nowcasts of health expenditure are produced multiple times a year. A first estimation often takes place at least halfway into the budget year, to include data on actual budget execution observed. To nowcast health expenditure, selected OECD countries use most recent data on health budget execution. For example, estimates in Belgium are based on the expenditure data from the first five months of current budget year *t*. Data is collected through the so-called 'Doc N' database containing monthly records of reimbursements of the health insurance funds. Other indicators used to nowcast health expenditure include those adjusting for changes in cost and demand of health services. Macro-economic indicators, as well as the impact of any new policy decisions made since the budget, are also reflected in nowcasts of health expenditure. Estimates in Greece, for example, take into consideration the seasonality of spending based on historical data, changes in major macro-economic indicators, and any new policies or initiatives.

55.   Often nowcasting forms part of a mid-year budget review process, as stipulated in country budget monitoring requirements. The Treasury in New Zealand for example, is required to publish Economic and Fiscal Updates twice a year. These provide a detailed statement of the Government's financial position including updated economic and fiscal forecasts, analysis of the fiscal position and a summary of specific fiscal risks.

Table 3.1. Summary of nowcasting of health expenditure for budget year t

Country	Responsibility	Frequency	Overview of methods and indicators	Purpose
Australia	The Treasury and the Department for Health	Once a year (at least 6 months after the previous budget)	Comparing estimated expenditure to actual expenditure, the relationship between cost and demand variables associated with each spending program, and any government decisions since the budget	Reporting in the Mid-Year Economic and Fiscal Outlook
Belgium	Institut National d'assurance Maladie-invalidité (INAMI)	September in year t	A re-estimation of year t based on health expenditure data from the first 5 months of year t.	To respect the budgetary target (Objectif Budgétaire Globale) for the health insurance system
France	Caisse Nationale de l'Assurance Maladie (CNAM), Agence Technique de l'Information sur l'Hospitalisation (ATIH)	First estimation in August year t, and then monthly	Using time series analysis, a forecast is made on the 6 remaining months of the year. This forecasting is made using expenditure up till June year t, deflated by the variation of factor prices	To respect the L'objectif national des dépenses d'assurance maladie (ONDAM). Reporting by the Comité d'alerte.
Greece	The Ministry of Finance and the Ministry of Health	2-4 times a year	Based on actual monthly execution data, the seasonality of spending based on historical data, possible changes in major macro-economic indicators, and new policies or initiatives.	Included in the annual report and the Medium Term Fiscal Strategy (MTFS)
Italy	The Ministry of Economy and Finance	Twice a year estimation. Quarterly monitoring	Trend rate of health expenditure compared to available economic information (above all, in the regions), financial effects of the regulatory interventions and time series evaluations.	Prepared for cost assessment and/or coverage correction. Published in the 'Economic and Financial Document' and its update
Latvia	The Ministry of Health and the National Health Service	Daily	Based on internal evaluations of health expenditures incurred	Budget monitoring
Luxembourg	Caisse nationale de santé (CNS) for the expenditures and Inspection Générale	At least twice a year (spring/autumn)	A new forecast of health expenditure is made until the end of the year. The forecast is based on time series model including expenditures already incurred in year t, and	Budget monitoring

	de la Sécurité Sociale (IGSS) for the contributions		macro-economic indicators	
The Netherlands	Bureau for Economic Policy Analysis (CPB) and the Ministry of Finance	Twice a year	Based on policy changes, transfers with the national budget, and adjustments due to wage and price changes	Reporting in spring and fall budget updates
New Zealand	Ministry of Health and the Treasury	Twice a year	Updates of the baseline. Common baseline changes include changes to price or volume of entitlements, exch*ange rate movements, changes in expected revenue, and changes in price set by external bodies*	Reporting in the Budget and Fiscal Update

Source: OECD Survey on 'Macro-level management of health expenditure, with a special focus on multi-annual financial planning for health', (2021).

56.　　In case countries are interested in projecting health spending using the SHA framework for the ongoing year, incorporating these nowcasted figures drawn from the agencies responsible for budget monitoring would appear to be straight-forward for public health spending, although differences in the boundaries of health spending used in national budgets and SHA frequently exist and would need adjustments. However, it is unclear whether SHA experts in countries are aware and would be able gain access to these nowcasted figures and incorporate them in their national health accounts estimates.

3.1.2 Other data sources outside dedicated budget execution monitoring

57.　　In addition to nowcasted data generated from budget execution monitoring, other data sources exist in countries reflecting actual spending for the ongoing year. This data may be more accessible for SHA data compilers.

3.1.2.1 Actual budget spending in year t

58.　　The **United Kingdom** publishes in-year public spending data from the Online System for Central Accounting and Reporting (OSCAR) II. The OSCAR II dataset provides quarterly updates to monthly outturn data, 3 months after the reporting period finishes – for example, September 2021 release covers data to June 2021. The main type of information published in OSCAR II includes: organisation, function/cost centre, economic category (e.g. pay, procurement or grants), control budget (i.e. Department Expenditure Limits, Annual Managed Expenditure, or non-budget). So, spending by the Department of Health and Social Affairs would be identifiable.

59.　　In **Lithuania**, budget implementation reports need to be published every quarter and are publicly available around 3 months after the end of the reporting period. The same is true for financial reports by public health care establishments which includes revenues by all financing sources.

3.1.2.2 Financial Accounts of social health insurers

60.　　Countries with social health insurance or private compulsory health insurance frequently publish quarterly financial results for all SHI funds on an aggregate level with a short time lag. This is the case in **Germany**, for example. In this country, the Ministry of Health publishes with a time-lag of around 2-3 months the quarterly revenues and expenditure of all social health insurance funds on a very detailed level, for more than 100 types of services. By

late August 2021, preliminary results for the first and second quarter of 2021 were already available (Bundesministerium für Gesundheit, 2021).

61.   The situation is similar in *Korea* where quarterly financial accounts of social health insurance are published in some detail with a time-lag of around 6 months by the Health Insurance Review and Assessment Service (HIRA).

62.   In the *Netherlands*, spending by both the compulsory private health insurance scheme (Zvw) as well as by the social health insurance scheme (Wlz) is published quarterly with a time lag of around 3 months by the "Zorginstituut", an agency responsible for overseeing and monitoring health insurance. Interestingly, the quarterly reports also include updates on expected spending for the full calendar year (Zorginstituut Nederland, 2021).

3.1.2.3 Quarterly National Accounts

63.   Quarterly National Accounts provide an overview of the economic activity of a country on a quarterly basis. Generally, they are less detailed than Annual National Accounts but are typically published 2-3 months after the end of the quarter. This means that by September of year *t* the expenditure or output aggregates of the first six months of the year are already available giving an indication of how they might develop over the full year. The level of detail included in Quarterly National Accounts varies across countries and there typically is also a difference between publicly available data and those at the disposal of statistical offices.

64.   The databases of OECD and Eurostat publish some key expenditure and output aggregates with a time-lag of around 2-3 months. For example, for Spain, data on "Final consumption expenditure of general government" and "Final consumption expenditure of households" for the first three quarters 2021 have been made available in November 2021. The same applies for Gross Value Added for industry "Public administration, defence, education, human health and social work activities" (which could be used as a proxy growth rate for overall health expenditure).

65.   On a country level, much more detailed data is available. In *Norway*, preliminary data from Quarterly National Accounts is available six weeks after the end of the quarter. Hence by mid-November 2021, the consumption and production accounts from January to September 2021 are published (Table 3.2). This includes, for example, the output in current prices for industry health and social work. This aggregate is also a component of the estimation of *t-1* health spending in the country. For the *United States*, the U.S. Bureau of Economic Analysis (BEA) publishes the same aggregate in their quarterly national accounts but provides a further breakdown into 'Ambulatory health care services', 'Hospitals', 'Nursing and residential care facilities' and 'Social assistance'.

Table 3.2. Output of the industry health and social work in Norway, Quarterly National Accounts

Output at basic values. Current prices (NOK million)

	2020Q1	**2020Q2**	**2020Q3**	**2020Q4**	**2021Q1**	**2021Q2**	**2021Q3**
Health and social work	115 719	117 759	116 668	119 183	123 762	131 826	127 068

Note: Health and social work activities include all SHA health providers except retailers, administration and the rest of the economy. It also includes some social care providers that are outside of the SHA provider universe.
Source: (Statistics Norway, 2021)

66.	For the ***United Kingdom***, the Office of National Statistics publishes its quarterly results for final consumption expenditure of the general government and for private households at a similar speed. These results include detailed information on health spending (Table 3.3). By November 2021, the first three quarters of public health spending was available as well as the first two quarters of private health spending.

Table 3.3. Quarterly National Accounts of the United Kingdom, General Government Final Consumption Expenditure and Household Final Consumption Expenditure

Expenditure in current prices, not seasonally adjusted (in million GBP)

		2020Q1	2020Q2	2020Q3	2020Q4	2021Q1	2021Q2	2021Q3
GGFCE Health (COFOG 07)		40,633	52,782	51,921	53,411	55,648	54,376	53,253
Household final consumption expenditure (by COICOP)								
06	Health	5,905	4,196	5,425	6,234	5,484	5,790	
06.1	Medical products, appliances & equipment	3,519	3,330	4,079	4,550	3,849	4,039	
06.1.1	Pharmaceutical products	2,609	2,984	3,040	3,374	2,891	2,933	
06.1.2	Other medical products	232	136	150	235	232	195	
06.1.3	Therapeutic appliances and equipment	678	210	889	941	726	911	
06.2	Out-patient services	1,476	424	658	894	826	1,010	
06.2.1	Medical services	143	27	103	129	100	166	
06.2.2	Dental services	988	117	237	459	436	524	
06.2.3	Paramedical services	345	280	318	306	290	320	
06.3	Hospital services	910	442	688	790	809	741	

Source: (Office of National Statistics, 2021); (Office of National Statistics, 2021)

3.2 Projecting spending for year *t* with planned or forecasted data

67.	In case actual "real-time" spending data is not accessible as a basis for 'nowcasting' health spending for year *t*, or if projections for year *t* are to be made early in the year before any actual data is available, countries may want to turn to available *planned* or *forecasted* health spending estimates. In this context, *planned* spending mainly refers to voted or approved budgets for health ministries and agencies at the central, regional or municipality level, or for social health insurance funds. *Forecasted* data in this section refers to forecasted data (typically as an output from a model) for private household consumption or general government consumption that could be used as a proxy measure to estimate health spending for year *t* (with the procedure being analogous to the estimates for year *t-1*).

68.	In OECD countries, parliaments typically vote on and approve the budget before the beginning of the fiscal year defining the amount of spending available for the executive to carry out its functions. The level of detail included in the budget documents and the flexibility to change allocated spending between functions can differ between countries and levels of government but typically the budget allocated either to the "function" health or the responsible

ministry (e.g. the Ministry of Health) should be identifiable. The procedure for setting the spending of social health insurance can differ since it normally sits outside of the budget of the central government. That said, either the Ministry of Health or a special oversight agency typically has to approve the budgets of the individual social health insurers to make sure that expected revenues balance expected spending.

3.2.1 Using information from voted budgets

69.   Similar to year *t-1* growth rate estimations, information from countries' annual budget reports can be used to project year *t* growth rates for public health spending. Using this approach, the year-on-year growth should best be calculated using voted budgets for year *t* compared to voted budgets for year *t-1*. Similar to the challenges in identifying the appropriate actual spending included in budget reports for year *t-1* (see Chapter 2), the same issues exist to find the correct budget "headline" figure for both years on which the comparison should be based on. That said, this method could be applicable in some countries, with slight variations depending on the government/budget structures:

* ***Australia's*** 2021-22 budget papers include the revised/estimated spending for 2020-21 (year *t-1*) and planned budget for 2021-22 (year *t*), which could be used to estimate year t growth rate (with the estimation methodology similar to the one outlined in Box 2.2 for t-1). The Australian government's 2021-22 budget was released in May 2021, followed by the release of jurisdictional budgets. For example, the Australian Capital Territory's budget only became available in October 2021.

* ***New Zealand's*** *Budget Economic and Fiscal Update 2021*, published in May 2021, includes actual spending for 2020 (year *t-1*) and forecast spending for 2021 (year *t*) for health and its sub functions (see Table 2.7).

* In the ***United Kingdom,*** the Public Expenditure Statistical Analyses (PESA) is the yearly publication of information on government spending. It brings together recent outturn data, estimates for the latest year, and spending plans for the rest of the current spending review period. PESA provides information about public spending, using two spending frameworks – budgeting and expenditure in services. PESA 2021 (published in July 2021) covers public sector expenditure (outturn and planned) for the financial years 2016-17 to 2021-22 (Table 3.4).

Table 3.4. United Kingdom public sector expenditure on health, 2016-17 to 2021-22[1] (£ million)

	2016-17 outturn	2017-18 outturn	2018-19 outturn	2019-20 outturn	2020-21 outturn	2021-22 plan
Resource DEL by department group (Health and Social Care)	117,031	120,650	125,278	134,183	181,653	177,815
Resource departmental AME by departmental group (Health and Social Care)	27,782	39,657	40,645	30,384	30,498	43,708
Total	**144,813**	**160,307**	**165,923**	**164,567**	**211,151**	**221,523**

Note: 1. The United Kingdom's financial year is from 6 April to 5 April
Source: United Kingdom National statistics Public Expenditure Statistical Analyses 2021, Table 1.3.

* In ***Canada's*** *National Health Expenditure Trends, 2021*, preliminary estimates for 2020 (year *t-1*) and 2021 (year *t*) using the SHA framework were produced based on budgets and main estimates for the public sector (see Box 3.1 for detailed description of the methodology).

Box 3.1. Country example of year t growth rate estimation - Canada

The Canadian Institute for Health Information (CIHI) published the *National Health Expenditure Trends, 2021* in November 2021, which is the 25th edition of the annual publication on health expenditure trends and provides detailed information on health spending in Canada using the National Health Expenditure Database (NHEX).

This edition includes preliminary estimates for 2020 (year *t-1*) and 2021 (year *t*). The 2020 and 2021 projections include government-budgeted funding for health-related activities as a time-limited emergency response to the COVID-19 pandemic. National Health Expenditure Trends forecasts are based on main estimates and budgets for the public sector.

Forecasts methodology

As stated in the *Methodology Notes*, the forecasts methodology can be summarised as follows:

Provincial/territorial government health spending forecasts are based on the main estimates and budgets that are published earlier in the year; the forecasts are reviewed by the jurisdictions prior to publication. Depending on the jurisdiction,

- The numbers reported in the main estimates or budgets are used as the amounts for provincial/territorial government health spending for the forecast years; or
- Growth rates that are derived based on the main estimates or budgets are applied to the last year that has actual numbers to get the forecast numbers for the latest 2 years.

When deciding whether to use the numbers reported in the budgets or the derived growth rates, the NHEX team evaluates how close budget numbers have been to actual numbers in that jurisdiction in the past.

Forecasts for federal direct health care spending are based on information from the national public accounts and the Treasury Board of Canada's main estimates.

Forecasts for workers' compensation boards, municipal governments and the private sector are made based entirely on econometric analysis of time series trends.

Quality assurance assessment

In order to monitor and improve the accuracy of the forecasts, and to ensure transparency, an assessment of forecast accuracy is conducted annually.

The assessment is conducted by sector: total health expenditure, provincial/territorial government health expenditure, public health expenditure and private health expenditure. Comparisons of accuracy between the provinces and territories and comparisons of accuracy between the uses of funds are performed.

One component of this analysis is a comparison of preliminary estimates with actuals when the data becomes available. To do the comparison, the forecast errors are calculated as follows:

$$Forecast\ error = ([Forecast - Actual] \div Actual) \times 100\%$$

$$1\ year\ error = ([last\ year's\ forecast - Actual] \div Actual) \times 100\%$$

Source: (Canadian Institute for Health Information, 2021)

70.   Again, there are differences in countries where public spending is predominantly financed for social health insurance. The approved SHI budgets for year *t* are in many instances not part of the central government budget reporting, so they need to be identified separately. While SHI funds generally have to establish their budget in the months before year *t* (and frequently they need to be approved by the ministry of health or a separate oversight agency) it is unclear whether these documents are always publicly available.

- For ***Luxembourg*** this is the case, where the budget papers for 2021 including expected spending and revenues for year 2021 were published in November 2020.
- Due to the high number of social health insurance funds in ***Germany***, consolidated budgets covering all social health insurance funds do not seem to be publicly available. However, the Federal Agency of Social Security (BAS) is legally required to project annually in October the expected end of year revenues and spending for year t and for year *t+1*. This estimation for *t+1* spending could hence be used as an appropriate proxy to project health spending for *t* in the following January.

71.   National data sources that could be of use for estimating year t growth rates from selective countries are summarised in Table 3.5.

Table 3.5. Summary of national data sources for estimating 2021 (year t) growth rates, selected countries

Country/Sector	Year t growth rate	Data source	Notes
AUS – public	Yes	Australian and jurisdictional annual budget papers	2020 data are 'estimated' actual spending except for Tasmania
AUS – private	Yes	Table 8 from Australian National Accounts: National Income, Expenditure and Product, June 2021	Australian Bureau of Statistics (abs.gov.au)	Most recent available data are for Q2 2021; year t growth rate can be estimated based on Q1 and Q2 data
NZL – public	Yes	Core Crown Expense Tables from Budget Economic & Fiscal Update 2021 - Budget 2021 - 20 May 2021	2020 data are actual spending
NZL – private	Maybe	Institutional sector accounts table from National accounts (income and expenditure): Year ended March 2020	Stats NZ	FCE on health is not available, but total FCE may be used for the estimation
JPN – public	Yes	Page 3 (2020: 122.674; 2021: 120.799) from the budget paper (in Japanese)	Detailed information is not available in English
JPN – private	Maybe	Apr.-Jun. 2021 (The 2nd preliminary) - National Accounts (cao.go.jp)	FCE on health is not reported separately, but total FCE may be used for the estimation
USA – public	Yes	'Gross Output by Industry' from https://apps.bea.gov/iTable/iTable.cfm?reqid=150&step=2&isuri=1&categories=gdpxind	2020 and 2021 Q1, Q2 data are actual spending; Non-government funding might be included in total health. Most recent available data are for Q2 2021
USA – private	Yes	Table 2.3.5U - Personal Consumption Expenditure by Major Type of Product and Major Type of Function from BEA Interactive Data Application	Most recent available data are for Q3 2021; year t growth rate can be estimated based on Q1-Q3 data
SVK – public	Yes	Annual data are from: Draft Budgetary Plan	Ministry of Finance of the Slovak Republic (mfsr.sk)	Draft budgetary plan 2021 was published in October 2020
SVK – private	Yes	Final consumption of households by Classification COICOP at current prices [nu2020qs] - DATAcube. (statistics.sk)	Most recent available data are for Q2 2021; year t growth rate can be estimated based on Q1 and Q2 data
LUX – public	Yes	Sickness and maternity insurance budget - Financial year 2021 — CNS - Luxembourg (public.lu)	Detailed information is not available in English

NLD – public	Yes	Information from Zorginstituut Nederland https://www.zorgcijfersdatabank.nl/	Available quarterly with time lag of 2-3 months
DEU – public	No	Quarterly Financial Results of all social health insurance funds Finanzergebnisse der GKV - Bundesgesundheitsministerium	Available quarterly with time lag of 2-3 months
DEU – public	Yes	Federal Agency of Social Security. End of year estimates of spending of all social health insurance funds 20211025SKT_2022.pdf (bundesamtsozialesicherung.de)	Annual end of year estimation conducted in October for year t and t+1
GBR – public	Yes	PESA National statistics Public Expenditure Statistical Analyses 2021, Table 1.3	Published annually in July
GBR – private	No	Quarterly National Accounts Consumer trends: current price, not seasonally adjusted - Office for National Statistics	Published quarterly
LTU - public	No	Budget implementation reports Example - budget implementation report of the Ministry of Health	Published quarterly

Note: Availability of included data sources were assessed in November 2021.

Source: Desktop research is focused on countries where budget documents are publicly available in English and information provided by OECD SHA experts.

3.3 Alternative models to project health spending for year *t*

72.   Additional models exist to project health spending for year *t* if data for methods elaborated above are not available. One option would be to base health spending projections for year *t* on proxy growth rates for public health spending and private health spending at a highly aggregated level as published in international databases. Such proxy growth rates could be generated, for example, from projections of total government final consumption expenditure and total private final consumption expenditure included in the OECD Economic Outlook. In the November publication of the Economic Outlook, data on these two aggregates are projected for all OECD countries for year *t* up until year *t+2*.

73.   An alternative approach to project health spending for year t are models that estimate the evolution of health expenditure based on historical trends, a set of assumptions and current policy settings. While the time horizon of such projections is typically much longer i.e., measured in decades, models could also be used to generate health spending estimates for the current period (*t-1* and *t*) prior to the full set of actual information being available. Different types of projection models exist to forecast health spending over a short to long-term time horizon. They are developed by countries but also international organisations such as the World Bank (Kurowski, Evans, Tandon, & Eozenou, 2021) or OECD (Marino, Morgan, Lorenzoni, & James, 2017) and can therefore differ in their specifications. Macro-level projection models might be seen as the most appropriate for short-term health spending projections and are typically the least demanding in terms of data requirements, as very often they include only a few explanatory variables. However, the time series required in order to calculate the coefficients of the drivers through panel regression analyses need to be relatively long and consistent. Since these type of projection models are generally built on changes in key long-term drivers to project future health spending (e.g. income, demographic factors, prices) a year-on-year evolution of budgets are not reflected in these estimates – making them potentially less accurate for nowcasting of health spending.

3.4 The value of now-casting health spending for year *t*

74.   Obviously, using as much possible information on actual spending occurring in the period itself would be desirable to estimate health spending in year *t*. However, this approach

can only be reasonably applied during the latter part of the year when at least two quarters of actual public spending data should be available. The remaining months of the year can then be estimated with some degree of confidence. Even here, achieving increased accuracy may also have to take into account any seasonal patterns in health spending. Notwithstanding, the feasibility of such an approach heavily depends on the timeliness and availability of quarterly or monthly statistics, which can vary widely across countries. One potential avenue that could be further investigated is whether end of year projections from already established budget monitoring exercises at Ministries of Health or other agencies could made available to health accountants to incorporate into a nowcast of health spending for year t consistent with the historical time series.

75.   At the moment, among OECD countries only Canada appears to publish annually nowcasts of current health spending around November of the ongoing year using the SHA framework. This could signal that OECD member countries have not seen the need to engage in such an exercise, or that the costs to engage in such an exercise outweigh the benefits, or that now-casts are too imprecise to be of any use. That said, despite the inherent uncertainty of nowcasted health spending, countries may see benefits in this exercise, in particular those that do not already engage in nowcasting as part of budget monitoring.

- If carried out early in the year, any forecast of health spending for year t that rely on trends in planned budgets and projected private health spending give an indication how much will be spent on health in a year if everything goes as expected. The main value of such an exercise would be to have a comprehensive picture of spending by all financing schemes. For year t, these types of (very) short-term projections would be expected to be more accurate than projections relying on long-term health spending drivers such as demographic changes, income or prices.

- If carried out in the second half of the year and partly relying on actual spending data for both public and private spending, nowcasts can provide an early indication how health spending is likely to develop – which could be useful for governments that want to react quickly in assessing or adjusting health financing decisions (including how revenues to fund health financing schemes are generated).

76.   From the perspective of an international organisation, there is an interest in analysing and comparing differences and similarities in the nowcasted health spending figures in an international context to discern certain trends across countries.

4 Application of estimation approaches in low-and middle-income countries

77.   Whereas Chapters 2 and 3 have highlighted possible options to generate more timely health spending data in OECD countries, this chapter analyses to what extent the approaches discussed can also be applicable in low- and middle-income countries (LMIC) – using the countries and territories of the WPRO region as an example.

78.   In this context, many LMIC –unlike OECD countries- rely heavily on external funding from donors to finance health services (see Box 2.1). Since the magnitude of donor support is only visible in the classification of *revenues of financing scheme* (FS) there are arguments to be made that LMIC should estimate key aggregates for year *t-1* for both financing classifications - the *financing schemes* classification (HF) and the *revenues of financing schemes* classification (FS)- the latter being currently not frequently reported for year *t-1* by OECD countries.

4.1 Estimating health spending for year t-1

79.   For an estimation of public and private health spending from the perspective of financing schemes, the hierarchy of options developed by the OECD Secretariat to fill data gaps for OECD countries that do not report health spending data for year *t-1* (see Table 2.3) should generally also be applicable to LMIC.

4.1.1 Public spending

80.   When estimating public health spending for year *t-1* OECD countries mainly use actual spending from public records/budget documents and final consumption expenditure (COFOG 07). Where health specific spending aggregates are not available, the OECD Secretariat estimates recent health spending growth using final consumption expenditure of general government. Section 2.4 demonstrated that information on actual spending may also be publicly available in a number of OECD countries that do not submit *t-1* estimates. This should also be the case in countries outside of the OECD including some WPRO countries and territories. Although a high-income country, in **Singapore**, for example, the *Revenue and Expenditure Estimates 2020-21* (published in February 2021) include detailed expenses of the Ministry of Health available for 2019 (actual), 2020 (estimated and revised) and 2021 (estimated), which could be used to estimate *t-1* growth rate (as well a growth rates for *t*) (Ministry of Finance of Singapore, 2021). As is the case in at least one OECD country, information on voted budgets may also be used to estimate public spending for year *t-1*.

81.   When it comes to the statistical reporting of overall economic transactions and public spending, both at national and international level, this is typically less detailed and timely for LMIC compared with OECD countries. That said, several international databases include data that could potentially be useful to estimate public health spending for LMIC. In an attempt to identify macro-economic data for the WHO Global Health Expenditure Database, Brindley et al. have assessed the appropriateness of several international database (Brindley, Indikadahena, Xu, & Roubal , 2018). Building on this work, an attempt

was made to see what kind of macro-economic data could be available in this case for the countries and territories of the WHO WPRO region (Table 4.1).[16]

- The **_IMF World Economic Outlook (WEO)_** is published twice a year (April and September/October) and a database accompanies the publication of the report. The database published in October 2021 included historical data and estimates until year 2026 for key macro-economic figures such as Gross Domestic Product (GDP) in current and constant prices, a GDP deflator and general government total expenditure for 25 WPRO countries and territories.

- The **_IMF International Finance Statistics (IFS)_** is based on various IMF data collections and includes data on government finance and national accounts. By early November 2021, year *t-1* data (2020) for the indicators GDP, GDP deflator and total government final consumption expenditure was available for Australia, Japan, Korea, New Zealand and Vietnam.

- **_IMFs Government Finance Statistics (GFS)_** contains detailed annual data on expenses of general governments and their subsectors. Whenever possible the GFS also splits government expenditure by its functions using the COFOG classification. By early November 2021, spending for "health" (COFOG 07) for year *t-1* (2020) by the sector "budgetary central government" was reported for five WPRO countries and areas: Australia, Macao (China), Kiribati, Samoa and Solomon Islands[17].

- The **_World Development Indicators (WDI)_** is the World Bank's key data collection on development and includes a great number of economic indicators. By early November 2021, data on general government final consumption expenditure was available for 12 WPRO countries and territories.

- The World Bank **_Macro Poverty Outlook (MPO)_** includes estimates for total government consumption for year *t-1* up to year *t+2*.

4.1.2 Private spending

82.   For the estimation of private spending for year *t-1*, in particular out-of-pocket spending, OECD countries use a wider variety of sources. Often, estimates are based on the growth of household final consumption expenditure for health (COICOP 06). This is also the preferred option of the OECD Secretariat to fill the gaps for non-reporting countries. This approach should also be feasible in some countries outside of the OECD with advanced statistical capacity. In **Singapore**, for example, private consumption expenditure on health is available for year *t-1* in the first quarter of year *t* (Department of Statistics Singapore, 2022).

83.   If private consumption expenditure for health is not available, the aggregate of total household final consumption is used as a default option. For LMIC, timely data for private consumptions appears to be less frequently available in international data sources than for government expenditure. Total household final consumption expenditure is included for year *t-1* in the **_IMF International Finance Statistics_** for the same five WPRO countries and territories as total government final consumption. Elsewhere, private consumption expenditure was included for 13 countries and territories of the WPRO region in the World Bank **_Macro Poverty Outlook_** for years 2020 as well as forecasted until 2023.

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[16] Whether the data displayed in the different sources reflect nationally produced data or other data differs by source. Data displayed in the IFS and GFS by IMF are reported by member countries while data and projections included in the IMF WEO appear to be gathered by IMF country desk officers. Data displayed in WB WDI are compiled from officially recognised international sources. Data and projections used in the WB MPO stem from a variety of sources, including the WB macroeconomic and fiscal model, the Global Economic Monitor and the WDI.

[17] This data is available for year *t-2* (2019) for five additional countries and areas: Malaysia, Micronesia, Papua New Guinea, Philippines and Singapore.

84.	Table 4.1 summarises the available data sources that could potentially be used to estimate public and private health spending for *t-1* in WPRO countries and territories included in the WHO Global Health Expenditure Database (GHED).

Table 4.1. Selection of international databases that include spending aggregates for year t-1, WPRO countries and territories that are included in WHO GHED

	Public spending (HF.1)					Private spending (HF.2+HF.3)	
	IMF WEO Gen Govt tot exp	IMF IFS Tot govt FCE	IMF GFS Govt exp for health	WB WDI Gen Govt FCE	WB MPO Govt Cons	IMF IFS HHFCE	WB MPO Priv Cons
Brunei Darussalam	X			X	X		X
Cambodia	X			X	X		X
China	X				X		X
Cook Islands							
Fiji	X			X			
Kiribati	X		X				
Lao PDR	X						
Malaysia	X			X	X		X
Marshall Islands	X						
Micronesia	X						
Mongolia	X			X	X		X
Nauru	X						
Niue							
Palau	X						
Papua New Guinea	X				X		
Philippines	X			X	X		X
Samoa	X		X				
Singapore	X			X	X		X
Solomon Islands	X		X				
Tonga	X						
Tuvalu	X						
Vanuatu	X				X		
Viet Nam	X	X		X	X	X	X

Note: Analysis limited to WPRO countries and territories that are included in the WHO GHED. Australia, Japan, Korea and New Zealand not included in the table as already analysed with OECD countries. X indicates data for t-1 available. Analysis based on data availability in November 2021.
Source: IMF World Economic Outlook, IMF International Finance Statistics, IMF Government Finance Statistics, World Bank World Development Indicators, World Bank Macro Poverty Outlook.

4.1.3 Estimating external financing

85.	Contrary to OECD countries, many LMIC including some of those in the WPRO region are heavily dependent on external funding flowing into the health system. Of the 27 WPRO countries and territories reported in the WHO GHED, just under half reported that external sources funded 10% or more of health expenditure in 2018 (Figure 2.3). Three Pacific Island countries reported that a third or more of all health care spending is financed externally. Therefore, preliminary estimates of health spending aggregates need to take into account any changes in external sources to more accurately estimate overall health spending.

86.	Under the SHA framework, external financing sources are comprised of two flows within the classification of revenues of financing schemes (FS):

- FS.2 Transfers distributed by government from foreign origin; and
- FS.7 Direct foreign transfers

87.   Both of these flows can include bilateral and multilateral sources and can either be earmarked for health or provided for general budget support (although this is more likely in the case of FS.2). The potential flows between these two financing revenue sources and the health financing schemes of a country are shown in Figure 4.1 meaning that estimates of spending by financing scheme need to take into account the role of external financing. For example, the size of rest of world financing schemes (HF.4) will be much smaller than the direct foreign flows (FS.7) since most foreign financing will be distributed and managed through domestic schemes (i.e. within HF.1 and HF.2).

88.   Concerning potential data sources to identify external funding, priority should be given to national databases such as the recipient country's budget, in the case of funds allocated through the government. Estimates of foreign aid should be accessible from the Ministry of Finance and/or the Ministry of Health (offices of budget or planning). To track other aid-funded expenditure, private NGO and donor agencies in the country are also typically consulted to report both expenditures and received disbursements.

Figure 4.1. Relationship between external financing and financing schemes
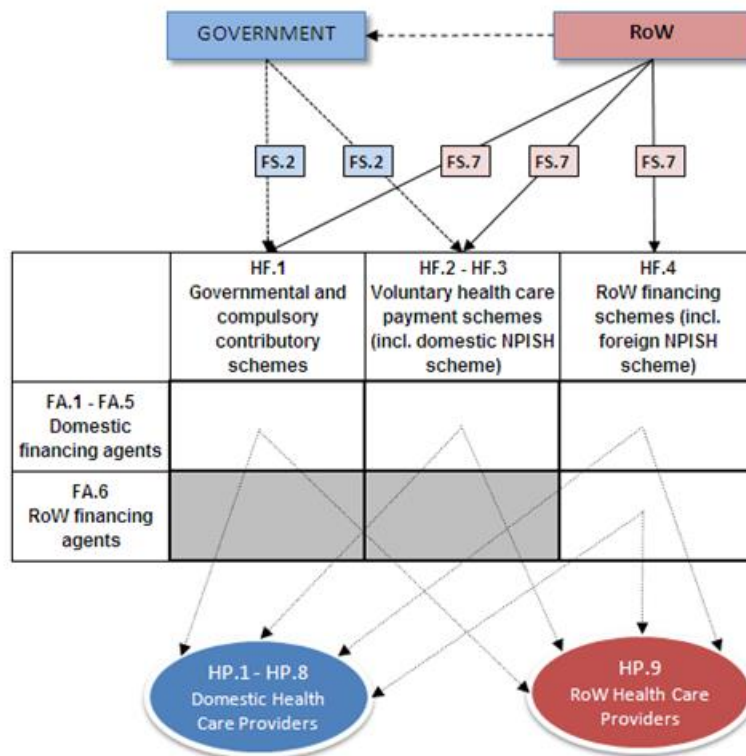
Source: Guidelines for the Implementation of the SHA 2011 Framework for Accounting Health Care Financing - January 2014 version

89.   Previous work undertaken by OECD examining external resource tracking highlighted the use of 'shadow budgets' whereby development partners and the ministry of health together develop and implement the process of collecting budget data on an annual basis from all partners active in the health sector (OECD, 2014). As discussed below, resources received (or disbursements) do not typically match the expenditures during the same accounting period, but can be useful as an indicator of the level or at least trends in spending in the subsequent period(s).

90.   While national data is the preferred route, international databases can help international comparability. Ideally, it would be of value to use both national and international sources and triangulate the results. The OECD DAC (Development Assistance Committee) Creditor Reporting System (CRS) database for tracking official development assistance has served as the backbone for estimates of external health financing for LMIC (Box 4.1).[18] The CRS captures activity-level information[19] on development assistance from DAC member (donor) countries, a range of other donors outside the DAC, several multilateral agencies and some large private foundations. These data are regularly cited as the single most important source of information for most international health resource tracking efforts (Powell-Jackson, 2007). However, coverage of CRS with reference to overall aid flows for health is limited to those countries and organisations which agree to report their data, with the absence of some large donors who are not DAC members, e.g. China. In addition, as the CRS is primarily focussed on donor effort, it tracks donor countries' contributions to trust funds managed by multilateral organisations (e.g., the United Nations multi-partner trust fund to catalyse country action for non-communicable diseases and mental health) but not the outflows from those trust funds. The Total Official Support for Sustainable Development (TOSSD) tracking system, which provides data from 2019 onwards, has been developed to address these issues (Box 4.2). The first pillar of TOSSD is focussed on the recipient perspective and tracks external flows to developing countries, including from provider countries which do not report to the CRS (e.g., Brazil, Chile, Indonesia, Nigeria, etc.) and from trust funds managed by international organisations.

91.   The CRS tracks official development assistance, which includes both grants and loans given on concessional terms. For each "activity" – a project or a programme – the amount of funding *committed* by the donor at the start of the activity and actual funds *disbursed* each year is tracked, along with a variety of descriptive information including the recipient country, type of aid (budget support, projects, technical co-operation, etc.), type of finance (grant, loan etc.), and purpose of the project. The purpose codes that have a link to health activities as well as more general purpose funding are listed in Annex E.

92.   Aid flows are measured on a calendar year basis; the CRS publishes detailed activity-level data on both disbursements and commitments by December for the previous calendar year. Importantly, disbursements in any given year usually represent part of an earlier commitment depending on the donor's planning cycle (which can be up to 10 years). The relationship between commitments, disbursements in year *t-1* (or even *t-2*) and then expenditures in *t* may provide some indication of the trend in total external resources available for health. The links between the various concepts and the overall external financing for health can be subject to particular country-specific factors and organisation. However, Box 4.3 provides examples on how international data on disbursements may be used to provide an insight and be used to estimate external financing for *t-1*.

93.   For some small countries, including some of the Pacific Island states, external funding of healthcare can rely on just a few large donors each year, therefore the financial information published by the donor countries can be considered as another potential and timely data source. For example, the United States Department of State publishes multi-dimensional data on U.S. foreign assistance by country, sector, financial flow (i.e. obligations and disbursements), and activity (e.g. project, program, cash transfer, delivery of goods) (see ForeignAssistance.gov- Dashboard). Australia and Japan, which are major donors in the Pacific region, also have similar information available, published by their Department of Foreign Affairs and Trades (see Australia's Official Development Assistance: Statistical Summary 2019-20 |

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[18] Other institutions such as Institute of Health Metrics Evaluation (IHME) or the William & Mary's Global Research Institute (see https://www.aiddata.org/datasets) have developed databases on aid statistics complemented the OECD DAC data (Ravishankar, et al., 2009).

[19] The CRS project sector codes related to health can be mapped at an aggregate level to the SHA 2011 HC functional classification. The link to the functional classification is important to determine the different boundaries of what may be included under development assistance for health (according to CRS) and what is considered healthcare expenditure under SHA-based health accounts.

Australian Government Department of Foreign Affairs and Trade (dfat.gov.au)), and the Japan International Cooperation Agency (JICA) (see Annual Report 2020 | Publications | JICA) respectively.

Box 4.1. Tracking external aid flows through the OECD DAC

The OECD DAC (Development Assistance Committee) databases distinguish between:

Commitments: refers to financially-backed written agreements in which donors undertake to provide financial assistance to recipient countries directly or through multilateral organizations. Most of the time, commitments are pledged for multiple years.

Disbursements: refers to the placement of resources at the disposal of the recipient. Disbursements record the actual international transfer of financial resources, or of goods or services valued at the cost to the donor. Funds are considered spent from the point of view of the donor, regardless of whether the recipient has spent them in the year in which they are disbursed.

DAC statistics are categorised by type of finance; sector/purpose; and type of aid. The DAC sector classification contains health (health general and basic health); and aid to health is sub-divided in 2 sectors and 17 sub-sectors.

The categories of the type of finance in DAC statistics are:

Official Development Assistance (ODA): Grants or loans from public funds to promote the economic development and welfare of developing countries. To qualify as ODA, loans must be concessional in character;[20]

Other official flows (OOF), comprising (i) loans from the government sector which are for development and welfare but not sufficiently concessional to qualify as ODA; and (ii) grants and loans from the government sector not specifically directed to development or welfare purposes (e.g., official and officially supported export credits);

Private flows at market terms (e.g., foreign direct investment, bank loans); and

Private grants from NGOs and foundations.

DAC statistics also make a distinction between:

Outflows of resources from donor countries to recipient countries and multilateral agencies; and

Receipts of developing countries. These comprise donors' bilateral transactions with the recipients (ODA, OOF and private) and outflows from multilateral agencies (concessional and non-concessional).

Source: OECD-DAC Development finance data - OECD

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94.   However, it may be challenging to compare and reconcile data released by donor countries with those from other international data sources, due to different methodologies and reporting periods. For example, CRS data are reported on a calendar year basis while the U.S. foreign assistance data are reported on a financial year basis (1st October - 30th September) for all recipient countries. In addition, as the timeliness of reporting varies by funding agency and program, there can be up to a two-year lag for

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[20]   For more information on the ODA definition, see https://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/officialdevelopmentassistancedefinitionandcoverage.htm

most recent complete year data. That said, the timeliness of national data sources may still give an indication of likely trends for t-1 and t ahead of the availability of international databases.

Box 4.2. Tracking external flows to developing countries through TOSSD

Total Official Support for Sustainable Development (TOSSD) is a recent international statistical measure that aims to provide a complete picture of all official resources and private finance mobilised by official interventions to promote sustainable development in developing countries. In 2022, data were reported by more than 100 countries (OECD countries and a growing number of emerging economies) and organisations (such as the UN or Multilateral Development Banks). The measure on health financing to developing countries was reported for the first time in 2020 and is based on the latest available data from 2019. Data collection for 2021 data is currently being finalised and will be available at the end of January 2023.

TOSSD complements the Official Development Assistance (ODA) measure by also capturing other types of support, including non-concessional flows, South-South cooperation, Triangular cooperation, activities to address global challenges that impact developing countries and private finance mobilised by official interventions. TOSSD data are presented in two categories: cross-border resources (Pillar I) and global and regional expenditures, notably in support to international public goods and global challenges (Pillar II).

Cross-border flows to developing countries are captured in TOSSD pillar I. The measure's coverage goes beyond data captured in ODA and the OECD Creditor Reporting System (CRS) for two reasons:

• TOSSD includes bilateral flows from provider countries that do not report to the CRS (e.g., Brazil, Costa Rica, Indonesia, Nigeria, etc.).

• Trust funds managed by international organisations are collected based on outflows to developing countries rather than inflows from provider countries (as is the case in the CRS).

According to the 2020 data collected, the provider countries and organisations that report to TOSSD disbursed a total of USD 38 billion to health. Of this, 78% (USD 30 billion) were provided as cross-border support to developing countries, and 22% (USD 8 billion) as global and regional expenditures for international public goods, for example global health research or the development of global health norms.

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95.   ***In summary, national tracking and reporting of external financing is the preferred option***, typically via the ministry of finance for external resources received by the government, and surveying or regular monitoring of NGOs for direct transfers. Where these are not available or incomplete, international databases such as OECD CRS and TOSSD provide a rich source of data on concessional flows (and some other financial flows) including indications of channel (i.e. whether funds are distributed through the public sector as a proxy for FS.2). However, an assessment of the country-specific relationship between historic reporting of external funding and aid statistics should help determine the accuracy and applicability of the disbursement data. In each case, the apparent lag between disbursements/receipt of funds and eventual expenditure on health projects can provide an indicator of more recent spending.

Box 4.3. Estimating external financing for health using international data on aid flows

Internationally reported statistics on Official Development Assistance (ODA) provide an important indicator to estimate external financing for health, although there can be pitfalls which require careful analysis of past trends on a country-by-country basis to assess suitability. The three figures below show recent trends in external financing of health as recorded in health accounts (solid line) and ODA gross disbursements for health and population policy sectors (dashed line) on a two-year lag for three WPRO countries in which external financing accounts for at least 10% of current health expenditure. The dotted lines show the trend lines for the ten-year period.
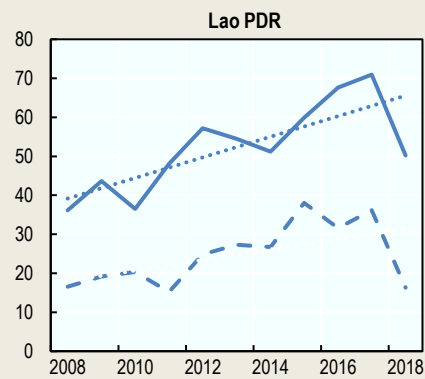
Lao PDR

The first example for Lao PDR shows a close following of both the year-to-year changes as well as the broad longer-term trend, even if there is a difference in the overall magnitude of the two measures. The timely publication of estimates of gross disbursement data could potentially provide a source for t-1 (and t) estimates and allow triangulation with national sources.
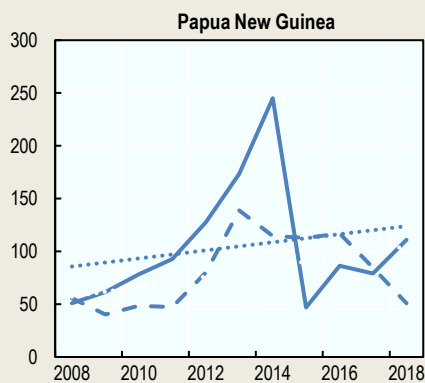
Papua New Guinea

In the case of Papua New Guinea, the overall magnitude of external financing and gross disbursements are closer than in the previous example, and the changes during the first half of the period are generally aligned. However, the second half of the period is more variable. Caution should therefore be taken in using year to year changes in ODA estimates alone to forecast external financing for health, whereas longer term trends in ODA levels may help provide a broader indicator of developments.
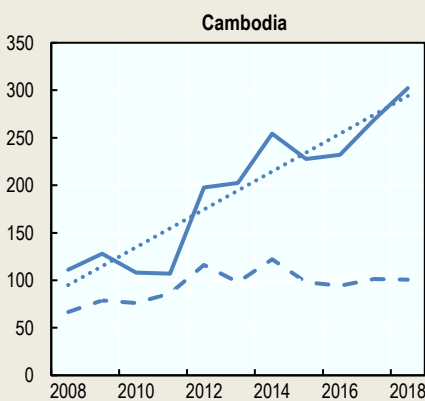
Cambodia

Finally, for Cambodia, the trends in ODA for health and in external financing over the last ten years can be seen to be diverging, even if there is some similarity in the short-term variation. This may reflect gaps in coverage of ODA, with respect to Cambodia, where total health financing flows from external donors may not be fully captured in ODA figures (e.g., flows from China). In this case, national or supplementary data sources are required to properly capture the full extent of external financing for Cambodia.

Note: The solid line refers to external financing of health (million USD) and the dashed line refers to total ODA (Health and Population policies) for t-2. The dotted lines are the series trend lines. Source: WHO GHED, OECD CRS Database.

4.1.4 Adjusting t-1 financing estimates in the case of low- and middle-income countries - the relationship between financing schemes and revenues

96.   Many OECD countries submit tables cross-classifying spending by financing schemes and their revenues (HFxFS) on a regular basis. At an aggregate level, the relationship between a financing scheme (HF) and its revenue source (FS) is, in many cases, straight-forward. Hence, using previous HFxFS tables and applying the same structure would in some cases be a good approximation for the *t-1* values of FS. For LMIC this is more challenging for two reasons: (i) an existing HFxFS matrix is not necessarily available and (ii) external funding cannot be automatically mapped to a single financing scheme.

97.   In this case, the only feasible way to estimate the key aggregates of revenues of financing schemes "domestic government and compulsory spending" (FS1+FS3+FS4), "voluntary health insurance" (FS.5), "Out-of-pocket spending" (FS6.3) "external funding (FS2+FS7)" and "other" (FS62+FS63) seems to be a combination of estimations from the side of the financing scheme and external funding. A simplified relationship between the classification of the financing schemes (HF) and of the revenues of financing scheme classification (FS) can be seen in Table 4.2.

Table 4.2. Simplified relationship between financing schemes and types of revenues

	Domestic govt. and compulsory spending (FS.1+FS.3+FS.4)	Revenues of VHI (FS.5)	OOP (FS.6.1)	External funding (FS.2+FS.7)	Other (FS.6.2+FS.6.3)
Govt. schemes and compulsory insurance (HF.1)	X			X	
Voluntary schemes (including VHI, NGO and OOP) (HF.2+HF.3)		X	X	X	X
Rest of the world (HF.4)				X	

Note: X means combination exists in many countries. Other combinations may also exist in exceptional circumstances.
Source: OECD Secretariat.

98.   Deriving *t-1* values for all revenue categories (as well as the outstanding value of HF.4) requires *t-1* estimates for three items: (i) HF.1, (ii) HF.2+H.F3, and (iii) FS.2+FS.7; and country-specific knowledge about the interaction between FS and HF. **External funding** (FS.2+FS.7) is best estimated based on national reporting of disbursements through government and NGOs. Otherwise, international databases on aid for health can provide an indication of annual growth rates and historical trends of disbursements by channel that can be applied to reported external financing estimates.

99.   To populate all missing FS variables, country-specific information about the "vector" of external funding is needed. Examining the National Health Accounts reports from selected WPRO countries and territories, there would appear to exist substantial differences related to the allocation of external funding to financing schemes (Table 4.3).

Table 4.3. Allocation of external funding (FS2+FS7) by financing scheme, selected WPRO countries

	Cambodia (2016)	Fiji (2017/18)	Samoa (2014/15)	Papua New Guinea (2012)
Share of external funding in CHE	17%	7%	8%	30%
Allocation of FS2/FS7 to…				
HF.1	31%	18%	35%	37%

HF.2	69%	12%	8%	63%
HF.3				
HF.4		70%	57%	

Note: Among schemes receiving external funding is mainly HF.1.1 and HF.2.2.
Source: (WPRO, 2018); (Fiji Ministry of Health and Services); (Ministry of Health of Papua New Guinea); (Ministry of Health of Samoa)

4.1.5 Feasibility of estimating health spending for year t-1

100.   In line with the approaches carried out in OECD countries and by the OECD Secretariat, LMIC could establish a hierarchy of options to estimate health spending for year *t-1*. First priority should be country-specific data sources before looking at the development of (health-specific) consumption aggregates such as total government expenditure (for health) and private consumption (for health). Due to the important role of external funding in many LMIC, there can be additional needs to track donor spending.

101.   Analysing data available in WPRO countries and territories suggest that reporting *t-1* health spending estimates should be feasible for a number of LMIC -following the approach outlined. Should country-specific data not be available, data sources from the World Bank and IMF include aggregates on public and private consumption for year *t-1*. In addition, the country-specific relationship between commitments and disbursement of external funds could be used to estimate external funding based on the OECD DAC database. Information of the three key funding elements should be sufficient to estimate health spending for year *t-1* by key financing schemes and revenue sources.

102.   For a discussion about the accuracy of these methods a key difference to be noted between OECD and LMIC is the generally more important role of out-of-pocket spending in LMIC. If timely private consumption data on health spending is not availble, relying on overall private consumption aggregates may have a bigger impact on the quality of the *t-1* estimates compared to OECD countries.

4.2 Nowcasting health spending for *t*

103.   As seen in Chapter 3, the data challenges to project health spending for the current year *t* with sufficient accuracy are much higher than for estimations for year *t-1*. The possible methods to nowcast health spending also depend on the time of such an exercise within the calendar year, relating to the question on whether actual spending can be partly used in these estimates. Given the generally more limited capacity to collect and process data in a timely manner in LMIC, it is reasonable to assume that accurate nowcasting of health spending for year *t* is even more challenging in LMIC than in OECD countries.

104.   That said, similar to the situation for year *t-1*, some international organisations also provide projections for spending aggregates that could be used to estimate health spending for year *t* by applying the same methodology as for generating estimates for year *t-1*. However, data availability is generally more limited for year *t* than for year *t-1*.

105.   For ***general government expenditure***, projections are available for year *t* (until year *t+5*) as part of the IMF World Economic Outlook for a good number of countries and territories of LMIC. The World Bank's Macro Poverty Outlook includes government and ***private consumption*** estimates for year *t* (until year *t+2*) for 12 countries and territories of the WPRO region. Annex F provides an overview of which spending aggregates for year *t* are available for countries and territories of the WPRO region in those databases.

106.   The previous section in Chapter 2 on estimating ***external financing*** for *t-1* explored the relationships between the concepts of commitments, disbursements and expenditures. Given that there is often a lag of one or two years between disbursements and actual spending, information on disbursements

received in the previous year(s), either gathered at a national level or reported internationally, on external financing and channelled through government or received directly by NGOs and charities operating in the health sector, should provide an indicator of the likely trends in external financing in year *t*.

107.   Data availability in many LMIC is more limited than in OECD countries and this will most likely extend to the availability of quarterly statistics, which makes the nowcasting of health spending on the basis of actual spending much more difficult. For this reason, and in the absence of any information regarding budget monitoring and related end-of-year projections, the most feasible approach initially would seem to be to identify proxy growth rates from *voted budgets or forecast total government spending* for HF.1 and *forecast private consumption* for HF2+HF3. Estimated trends in external funding (FS.2+FS.7) for year *t* should be derived from either nationally or internationally reported changes in disbursements in year *t-1*. The process how to populate the missing aggregates on the side of the financing schemes (HF.4) and on the side of the revenues of financing schemes (FS1+FS3+FS4), (FS.5), (FS61) and (FS62+FS63) would be the same as for the estimates of year *t-1* – that is, mainly relying on the country-specific mapping of external funding.

5 Conclusion

108.   This Health Working Paper aims to support countries to improve the timeliness of their reporting of health expenditure data within the SHA framework. For this purpose, it analyses current practice in OECD countries and methods developed at OECD Secretariat to estimate health spending for the most recent year *(t-1),* and discusses how health spending for the current year (*t*) could be nowcasted or projected.

5.1 What does the analysis show?

109.   The analysis shows that a variety of methods are (or could be) applied by OECD countries to both estimate and nowcast health spending for key health financing blocks. Some of these methods would also seem applicable in LMIC, although there is often an additional need to estimate or project external funding, which generally plays no role in OECD countries.

- For ***public spending estimates for year t-1,*** OECD countries typically use government final consumption expenditure for health (COFOG 07) or information on actual spending from government budget reports or social health insurance financial accounts. If this information is not available, the OECD Secretariat has used the growth of overall government expenditure as a proxy for public health spending growth for year *t-1*. For ***projections of public spending for year t***, four different options seem generally feasible, driven mainly by the timing of any projection exercise: (i) using projected end-of-year spending based on actual spending data as calculated as part of budget monitoring exercises, (ii) using forecasts of government final consumption expenditure (on an aggregate level); (iii) comparing growth rates between voted (planned) budgets; or (iv) using results from regression models. The first option would generally lead to the most accurate projections and in many cases would require health accountants to liaise with e.g. budget departments of Ministries of Health that are responsible for budget monitoring. Using quarterly national accounts information could also be a feasible option for some selected OECD countries but more likely in the second half of year *t* together with assumptions about seasonal trends in the last two quarters.

- Estimates for ***private spending for year t-1*** are predominantly based on growth of final household consumption expenditure for health (COICOP 06); some OECD countries use historic growth rates of health spending aggregates while a few apply price, volume and population indices to past SHA data to estimate *t-1* growth. A few OECD countries also include information from the side of health providers to validate and improve private health spending estimates. The OECD Secretariat has used the growth of overall private consumption expenditure as a proxy for private health spending growth for year *t-1* in case health-specific consumption data is not available for year *t-1*. For the ***nowcasting of private spending in year t*** and short-term forecasting there only seem to be two viable options that could be applied to a wide number of countries. Using the forecasts for the spending aggregate of private household consumption or resorting to regression models that incorporate past spending trends. In a few OECD countries some actual household consumption data for health may be available via the quarterly national accounts with a short delay that could be used in estimations.

- Since there is no experience from the health accounts production of OECD countries regarding **external funding**, more relevant insights can be gained from a review of existing expenditure tracking activities. Any national aid monitoring and reporting system (e.g., in the Ministry of Finance) would be the first choice. This should track foreign aid through government budgets as well as domestic NGOs with historical information on disbursements and expenditures providing a base for both *t-1* and *t* estimates. Alternatively, established international databases such as OECD CRS provide a stable and detailed source of data on both commitments and disbursements through the various channels. However, an assessment of the trends of aid relative to historical external financing figures on a country-specific level is needed to determine the accuracy and applicability of the published data.

5.2 What can be learnt from this analysis?

110.   A key lesson to be drawn from this study is that in some cases ***the methods applied by OECD countries to estimate health spending aggregates for year t-1 are relatively simple and do not necessarily require a sophisticated data infrastructure.*** Moreover, a review of the international databases has shown that the default option that the OECD Secretariat applies to fill data gaps could also be used in many other countries, including LMIC.

111.   ***Any exercise of projecting health spending for t should have a clearly defined purpose***. Generally, this stream of work has not been systematically conducted within the scope of health accounts activities in OECD countries. By contrast, in many OECD countries, the use of more frequent and timely spending data to make end-of-year projections is already part of the budget monitoring practice in ministries of health and other agencies. The added value that health accounts could provide would be to combine existing nowcast estimates of public spending with corresponding spending data from the private sector to produce up-to-date indicators of current health spending. However, in that area, real-time data availability seems to be much more limited. So, the question is whether the cost of an independent attempt by health accountants to nowcast real-time health spending has sufficient additional benefit in the case whereby a similar exercise is already being carried out in the budget department of a country. However, in countries where budget monitoring does not generate end-of-year projections, engaging in such work from a health accounts perspective could be very beneficial. The alternative approach of health spending projections for year *t* is to rely entirely on "planned" and forecasted data. This can provide useful information to policy makers as it projects how health spending will evolve if things go as expected. In emergency situations, such as a global pandemic or an unexpected recession, this type of projection for health spending in year *t* could, however, be wildly inaccurate.

112.   There is a clear ***trade-off between timeliness of health accounts data and accuracy***. Health spending estimates for year *t-1* are generally based on preliminary data which are subject to revision. In some cases, instead of using preliminary *actual* data, *t-1* estimates are based on planned budgets or spending aggregates that are not specific to health such as general government final consumption expenditure. This will have an impact on the accuracy of the *t-1* estimates and will be even more true for health spending projections for year *t*.

113.   An important factor in all different streams of work for the estimation or projection of health spending is the ***quality of the historic health accounts data*** which serves as the basis. For OECD countries, OECD, WHO and Eurostat have a joint process in place to validate health accounts data submitted for year *t-2* and earlier years. This is to ensure that health transactions are accounted for in a similar way across countries improving the international comparability of health spending data. Only if historic data is comparable can estimations or projections be compared in a meaningful way.

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Annex A. International Classifications of Health Accounts (ICHA) as used in the JHAQ related to health financing

Table A.1. Classification of financing schemes (HF)

Category	Type of scheme
HF.1	**Government schemes and compulsory contributory health care financing schemes**
HF.1.1	Government schemes
HF.1.2/1.3	Compulsory contributory health insurance schemes/CMSA
HF.1.2.1	Social health insurance schemes
HF.1.2.2	Compulsory private insurance schemes
HF.1.3	Compulsory Medical Savings Accounts (CMSA)
HF.2	**Voluntary health care payment schemes**
HF.2.1	Voluntary health insurance schemes
HF.2.2	NPISH financing schemes
HF.2.3	Enterprise financing schemes
HF.3	**Household out-of-pocket payment**
HF.3.1	Out-of-pocket excluding cost-sharing
HF.3.2	Cost-sharing with third-party payers
HF.4	**Rest of the world financing schemes (non-resident)**
HF.0	**Financing schemes *unknown***
All HF	**All financing schemes**

Table A.2. Classification of revenues of financing schemes (FS)

Category	Type of revenue
FS.1	**Transfers from government domestic revenue**
FS.1.1	Internal transfers and grants
FS.1.2	Transfers by government on behalf of specific groups
FS.1.3	Subsidies
FS.1.4	Other transfers from government domestic revenue
FS.2	**Transfers distributed by government from foreign origin**
FS.3	**Social insurance contributions**
FS.3.1	Social insurance contributions from employees
FS.3.2	Social insurance contributions from employers
FS.3.3	Social insurance contributions from self-employed
FS.3.4	Other social insurance contributions
FS.4	**Compulsory prepayment (other than FS.3)**
FS.4.1	Compulsory prepayment from individuals/households
FS.4.2	Compulsory prepayment from employers
FS.4.3	Other compulsory prepaid revenues
FS.5	**Voluntary prepayment**
FS.5.1	Voluntary prepayment from individuals/households
FS.5.2	Voluntary prepayment from employers
FS.5.3	Other voluntary prepaid revenues
FS.6	**Other domestic revenues n.e.c.**
FS.6.1	Other revenues from households n.e.c.
FS.6.2	Other revenues from corporations n.e.c.
FS.6.3	Other revenues from NPISH n.e.c.
FS.7	**Direct foreign transfers**
All FS	**All revenues of financing schemes**

Annex B. Sources and methods applied by OECD countries to estimate t-1 health spending per financing scheme

Table B.1. Sources and methods used to estimate health spending for year t-1 for government schemes (HF.1.1)

	Share of HF.1.1 in CHE t-2	source(s) used	How adjusted/methodology?	direct or indirect estimation
Austria	30.5	Final consumption expenditure of governments/(non-market) public corporations in National Accounts classified by COFOG (07 Health);	As for t-2 data	direct
		Annual accounts of central, provincial and local governments	As for t-2 data	direct
		Financial monitoring report/statistic of state health funds	As for t-2 data	direct
Canada	68.7	Forecasts for the federal government are based on National public accounts and the Treasury Board of Canada's main estimates.		direct
		Provincial/territorial government health spending forecasts, are based on the main estimates and budgets that are published earlier in the year and special tabulations.		direct or indirect
		Forecasts for municipal governments are based entirely on econometric analysis of time series trends.		econometric analysis of time series trends.
Germany	6.5	Health Accounts	Historical trend on HF11 in SHA: growth rate of t-3 to t-2 applied to value t-2	indirect
Hungary	8.6	Health Accounts	Growth rate for t-1 of HF121 applied to t-2 value of HF11	indirect
Iceland	82.9	Preliminary data on central government spending from the financial management authority	For some health spending categories of HF.1.1 preliminary data are very accurate (and actual preliminary data can be directly used)	direct
		Preliminary data on central government spending from the financial management authority	For health spending categories oh HF.1.1. where preliminary data is historically of poor quality, proxy growth rates are derived using similar categories or institutions.	indirect
Ireland	74.0	Provisional t-1 estimate of Health Service Executive (HSE)	HSE estimate includes some spending of HF2 and HF3 which are excluded based on proportions as recorded for t-2	direct
		Revised Estimates Volume (for Public Services) - referring to executed expenditure by governmental departments	Identification of SHA relevant spending items	direct
Italy	73.8	National Accounts, Final consumption expenditure of General Government	Figures on final consumption expenditure of General Government by sub-sector according to ESA2010 and by COFOG. Division 7	direct

Country	CHE	Source	Method	direct/indirect
			"health" is used but expenditure relating to COFOG 7.5 (R&D health) is excluded.	
Korea	10.3	Health Accounts	Moving average of historic growth rate of HF11 applied to t-2 value of HF11	indirect
Lithuania	8.2	Planned structure of appropriations of consolidated budgets by state functions (including health) for the year t-1 is produced and published by the Ministry of Finance.	The proportion of the final amount of expenditure for year t-2 compared to the appropriation for Health function in consolidated budgets for the year t-2 is calculated and applied to approved t-1 spending	direct
Netherlands	6.5	Annual report Ministry of Public Health, Welfare and Sports	Identification of SHA relevant spending items	direct
		Data on budgets and accounts of municipalities (IV 3)	Identification of SHA relevant spending items	direct
Norway	85.8	Quarterly National Accounts (Production Account of ISIC 86-88)	Yearly production growth rates from private, government and municipalities providers. Used for different combinations of HF/HC/HP. Hospital services are based on quarterly hospital accounts and municipal services are based on quarterly municipal accounts data. Private providers are mostly based on growth rates from labour accounts based on latest final year.	indirect
		National Budgets	Used to estimate growth for some categories such as HC13, HC4 and HC5. There are typically private providers for many of these services and we use this source to see how much the government plan to pay.	indirect
Poland	9.9	Budgets of National Health Fund, Ministry of Health, Social Insurance Institution, Agricultural Social Insurance Fund, Ministry of Interior, Ministry of National Defence, Ministry of Justice, State Fund for Rehabilitation of Disabled People, Ministry of Justice, Ministry of Finance	Identification of SHA relevant spending items	direct
Portugal	58.6	Central Administration of Health Systems (ACSS, I.P.)	Financial information: transfers, funding of NHS providers, costs of production of NHS providers, subcontracts/conventions, reimbursements and payments under international conventions	indirect
		Quarterly financial data of entities belonging to general government sector (compulsory public health subsystems)	Total value of financing	indirect
		Quarterly financial data of entities belonging to general government sector (Ministry of health and other public health care providers outside National Health Service)	Financing of their own production	indirect
		Ministry of Finance	Income tax deductions related to health care services and retirement homes.	direct
Slovenia	4.2	Public finance budgetary accounts (municipal and state budget) from MoH and MoF	Growth rate is obtained from actual spending data obtained from MoH for t-1/t-2 (for state budget) and MoF (municipal budget) for t-1/t-2. This growth rate is than applied to last SHA final data t-2.	indirect
Sweden	84.9	Quarterly National Account GGFCE	Distribution over COFOG from t-2 (2019) is used to estimate consumption expenditures by COFOG	direct
United Kingdom	78.5	Quarterly National Accounts GGFCE	The growth in GGFCE of COFOG 07 in t-1/t-2 is applied to t-2 of HF11 in SHA	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.2. Sources and methods used to estimate health spending for year t-1 for social health insurance schemes (HF.1.2.1)

	Share of HF121 in CHE t-2	source(s) used	How adjusted/methodology?	estimation
Austria	44.7	Annual records on spending financed by social security funds	Identification of SHA relevant spending items	direct
		Financial monitoring report/statistic of state health funds	Same methodology as for t-2 data	direct
Canada	1.4	Data for years before t-2 and t-1 are from: Special tabulations on medical aid spending provided by the provincial/territorial workers' compensation boards, Annual reports of provincial/territorial workers' compensation boards, Special tabulations from the Quebec MSSS. Forecasts for years t-2 and t-1 are based on econometric analysis of time series trends.	For each specific category of expenditure two econometric methods are used: • Method 1 is to use a tool for econometrics and time series analysis, known as ETS, from SAS Institute. With SAS/ETS, the historical data of each category is tested for the best fit among a wide family of forecasting functional forms, and the predictions generated by a model that are justified by a certain criterion (in this case, least root mean square error) are selected as the forecasts. • Method 2, a locally weighted smoothing technique known as LOESS, is assumed to capture erratic behaviour of some data series and generates better results than ETS. 3 steps are involved in the forecasting process: 1. Both ETS and LOESS are applied to the same data series to generate 2 sets of forecasts for each series. 2. A preliminary choice is made based on these 2 numbers, the average of the 2 numbers, and the last few years of actual data. This choice reflects the CIHI team's subjective judgments supported by their knowledge of the health industry and their perspective of the future. 3. Based on the assumption that the higher the aggregation of the data, the better the performance of the forecasts, the chosen numbers for the series of all categories plus the totals are reconciled with the forecasted totals for Canada and then for each province and territory.	Econometric model
Germany	70.9	Statutory health insurance - preliminary accounting results (Quarterly KV45-Statistics)	only SHA-related expenditures are selected	direct
		Statutory LTC insurance - preliminary accounting results (Quarterly PV45-Statistics)	only SHA-related expenditures are selected	direct
		Preliminary annual accounting results of the statutory pension insurance (RV) - General	only SHA-related expenditures are selected	direct
		Preliminary annual accounting results of the statutory pension insurance (RV) - Miner's	only SHA-related expenditures are selected	direct
		Statutory Accident Insurance	apply growth rate t-2/t-3 to t-2 values recorded in SHA	indirect
		Federal Employment Insurance	apply growth rate t-2/t-3 to t-2 values recorded in SHA	indirect
Hungary	59.8	Statistical Pocketbook of National Institute of Health Insurance Fund	Adjustments applied in accordance with SHA methodology (exports, correction of pharmaceuticals rebates)	direct
Ireland	0.6	Revised Estimates Volume (for Public Services) – referring to executed expenditure by governmental departments	Identification of SHA relevant spending items	direct
Italy	0.2	ISTAT- National Accounts, Final consumption expenditure of General Government	Final consumption expenditure related to Social Security Funds – COFOG 7.2.	direct

Korea	49.3	Major Quarterly Statistics of Health Insurance Expenditure by HIRA	By the time of reporting t-1 estimates only data for 3 Quarters t-1 are available. T-1 spending for HF121 is estimated by applying the growth rate of the first 3 quarters to the full year	indirect
Lithuania	58.2	Budget Law of the Parliament of the Republic of Lithuania which covers the main indicators of the Compulsory Heath Insurance Fund budget for the next year (income, expenditure and balance of funds)	The proportion of the final amount of expenditure for year t-2 compared to the approved in the Law for the year t-2 is calculated and applied to approved t-1 spending	direct
Netherlands	21.6	ZiNL (Zorginstituut Nederland) quarterly report to Statistics Netherlands	Data refer to claim year: 1. claims can extend over more years, but in the report of ZiNL refer to the starting year 2. Not all claims for t-1 are submitted, but ZiNL has estimates for t-1	direct
Poland	61.4	Data from National Health Fund		direct
Portugal	2.4	Quarterly financial data from social security		indirect
Slovenia	68.6	Health Insurance Institute of Slovenia (HIIS)/ Yearly business reports	Selection of SHA-relevant expenditure items	direct
		Pension and Disability Insurance Institute (PDII)/Yearly business reports	Selection of SHA-relevant expenditure items	direct

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.3. Sources and methods used to estimate health spending for year t-1 for compulsory private insurance schemes (HF.1.2.2)

	Share of HF122 in CHE t-2	source(s) used	How adjusted/methodology?	estimation
Germany	7.2	Health Accounts	Historic growth rate (t-3 to t-2) is applied to t-2 value of HF122	indirect
Korea	1.5	Health Accounts	Moving average of historic growth rate of HF122 applied to t-2 value of HF122	indirect
Netherlands	54.5	ZiNL (Zorginstituut Nederland) quarterly report to Statistics Netherlands	Data refer to claim year: 1. claims can extend over more years, but in the report of ZiNL refer to the starting year 2. Not all claims for t-1 are submitted, but ZiNL has estimates for t-1	direct
Poland	0.4	Information not available	Information not available	Information not available

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.4. Sources and methods used to estimate health spending for t-1 for voluntary health care payment schemes (HF.2)

	Share of HF2 in CHE t-2	source(s) used	Methodology applied	estimation
Germany	2.7	Health Accounts	Historic growth rate (t-3 to t-2) is applied to t-2 value of HF2	indirect
Lithuania	1.3	Health Accounts	Growth rate (t-2 to t-1) of HF1 is applied to t-2 value of HF2	indirect
Norway	0.3	Quarterly National Accounts	Growth rate (t-2 to t-1) in household consumption of medicines, glasses and orthopaedic equipment is applied to t-2 value of HF2	indirect
Poland	8.1	Various surveys and estimates	expert estimation	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.5. Sources and methods used to estimate health spending for t-1 for voluntary health insurance schemes (HF.2.1)

	Share of HF21 in CHE t-2	source(s) used	Methodology applied	estimation
Austria	5.2	Annual report of the Austrian Insurance Association	Annual records on spending of all (supplementary) voluntary health insurance corporation; coverage ~100% of all activity	direct
Canada	13.0	Data for years before t-2 and t-1 are from: Special tabulations provided by the not-for-profit insurance companies; A special tabulation provided by the Canadian Life and Health Insurance Association (for for-profit companies). Forecasts for years t-2 and t-1 are based on econometric analysis of time series trends.	Health insurance claims by category and premiums are collected from not-for-profit insurance companies and the Canadian Life and Health Insurance Association, which surveys its member companies. Health care spending by casualty insurance companies with corporate affiliations to life insurance companies is included in the estimates.	Econometric model
Hungary	1.7	Health Accounts	Growth rate t-2/t-3 applied to t-2 value of HF21	indirect
Ireland	11.8	Data from Health Service Executive	Growth rate in PHI spending recorded in HSE data t-1 to t-2 is applied to t-2 data for HF21 sourced from PHI survey	indirect
Italy	2.1	Report from the Insurance supervisory authority (IVASS) or from the National Association of Insurers (ANIA) - depending on which becomes available first	Growth rate of total premiums paid for health insurance (based on IVASS or ANIA source) is applied to t-2 spending for HF2 (provided by IVASS)	indirect
Korea	7.6	Health Accounts	Moving average of historic growth rate of HF21 applied to t-2 value of HF21	indirect
Netherlands	5.3	Use of provider-specific sources: Combining information from Annual reports of big health insurance companies, health interview services and additional information from a business intelligence centre of health insurers	In general the growth rate of t-1 for HF21 is estimated per HP depending on information from the three sources	indirect
Portugal	7.7	Quarterly financial data of entities belonging to general government sector (voluntary public health insurance)	Growth rate of the total value of financing	indirect
		Multiple data sources from the provider side for the private voluntary health insurance and the quarterly health insurance statistics from ASF (Insurance and Pension Funds Industry Supervisory Body)	Provider-side growth rates are used to estimate growth of financing of HF21 (private) based on the HPxHF structure of t-2	indirect
Slovenia	14.3	Slovenian Insurance Association / Annual Statistical Insurance Bulletin	Total value of insurance premiums are used to estimate t-1 spending (as the difference between premiums earned and claims paid are operating costs considered as HC.7)	direct
Sweden	0.7	Health Accounts	Historical growth rate (t-2 to t-3) of HF21 applied to t-2 value	indirect
United Kingdom	2.8	Quarterly National Accounts	t-1 growth rates of COICOP categories 6.2, 6.3 and 12.5 are weighted based on the t-2 share of the component it relates to. E.g. COICOP 12.5.3 is weighted by HC7 as a share of CHE.	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.6. Sources and methods used to estimate health spending for t-1 for NPISH schemes (HF.2.2)

	Share of HF21 in CHE t-2	source(s) used	Methodology applied	estimation

		source(s) used	method / adjustments	estimation
Austria	1.7	Non-profit institutions (S.15) register	SHA-relevant non-profit institutions are chosen (activity partly estimated by other data sources) and final consumption is calculated for SHA-relevant units out of information on expenditure and revenues of these units included in this registry	direct
Canada	1.2	Data for years before t-2 and t-1 are from: The Canadian MIS Database at CIHI; Forecasts for years t-2 and t-1 are based on econometric analysis of time series trends.	The Canadian MIS Database includes detailed financial data reported by Canadian hospitals. Donations and grants received by hospitals are mapped to HF.2.2. Same forecasting methods as for HF.1.2.1, but applied to non-patient revenues of hospitals, such as revenues from ancillary operations, donations and grants and investment income.	Econometric analysis of time series trends
Hungary	1.2	Health Accounts	Growth rate (t-1 to t-2) of HF3 is applied to t-2 value of HF22	indirect
Iceland	1.6	National Accounts	Private consumption, same methodology as for final data, but based on preliminary data from national accounts	direct
Italy	0.2	National Accounts	Final consumption expenditure of non-profit Institutions serving households (NPISH) by economic activity.	direct
Korea	1.0	Health Accounts	Moving average of historic growth rate of HF22 applied to t-2 value of HF22	indirect
Portugal	0.1	Multiple data sources from the provider side	provider-side growth rates are used to estimate growth of financing of each scheme based on the HPxHF structure of t-2 (For HF22, mainly growth of HP6 is used)	indirect
Slovenia	0.1	Consumer price indices	Data from Health Accounts for t-2 is extrapolated with consumer price indices according to COICOP Group 6 -Health.	indirect
Sweden	0.1	Quarterly National Accounts	Spending for HF.2.2 based on multistep process in QNA, estimating value added of ISIC 86 and then applying t-2 final consumption structure	direct
United Kingdom	2.4	Quarterly National Accounts	NPISH non-market output in current prices by Industry (Industries 86,87,88), NPISH P132; A proportion of Industry 86, 87 and 88 that is related to SHA is taken and combined for overall HF22 growth rate. These proportions are based on historic analysis and also used for the back series.	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.7. Sources and methods used to estimate health spending for t-1 for enterprise financing schemes (HF.2.3)

	Share of HF23 in CHE t-2	source(s) used	method / adjustments	estimation
Austria	0.2	National Accounts	Growth rate (t-1 to t-2) of the production value P.1 from NACE 86.2 applied to t-2 value of HF23	indirect
Canada	0.7	Data for years before t-2 and t-1 are from: The Canadian MIS Database (CMDB) at CIHI; Statistics Canada's Residential Care Facilities (RCF) survey until 2010; Long-term Care Facilities (LTCF) survey from 2011 to 2013 and Nursing and Residential Care Facilities (NRCF) survey thereafter. Forecasts for years t-2 and t-1 are based on econometric analysis of time series trends.	Hospital revenues from ancillary operations such as gift shops, parking garages, cafeterias, etc., as well as sundry earnings of residential long-term care facilities are mapped to HF.2.3. Sundry earnings are earnings not attributable to basic accommodation, such as hairdressing and barber services, vending machines, etc.	Econometric analysis of time series trends

			Growth rate (t-1 to t-2) of HF3 is applied to t-2 value of HF23	indirect
Hungary	0.5	Health Accounts	Growth rate (t-1 to t-2) of HF3 is applied to t-2 value of HF23	indirect
Ireland	1.9	Price index and population data	Growth rate (t-1 to t-2) of CPI Index "health" and population are applied to t-2 value of HF23	indirect
Italy	0.5	Italian Revenue Agency -Business Sector Studies and ISTAT-Integrated statistical system of administrative and survey data for SBS estimations (Frame-SBS) are used for the year T-3	In year T-1 and T-2, the source is not yet available, in order to update the occupational health output estimate an extrapolating method (price and volume) is used. The output of occupational health of the year T-3 is updated using the change of the price index of medical services (in particular ECOICOP 062) and the change of numbers of employees.	indirect
Korea	0.1	Health Accounts	Moving average of historic growth rate of HF23 applied to t-2 value of HF23	indirect
Netherlands	1.5	Social Statistical Datasets of Statistics Netherlands	Growth rates t-1/t-2 sum of wages -> per actor (HP, or part of HP) is applied to t-2 value of HF23 per HP	indirect
Portugal	0.8	Multiple data sources from the provider side	provider-side growth rates are used to estimate growth of financing of each scheme based on the HPxHF structure of t-2 (For HF23, growth of HP34 and HP82 are used)	indirect
Slovenia	1.2	Price index	Growth in consumer price indices according to COICOP classification, Group 6 Health is applied to t-2 value of HF23	indirect
Sweden	0.5	Health Accounts	For the t-1, a historical growth rate for this financing scheme is used	indirect
United Kingdom	0.4	National Accounts	Growth rate (t-1 to t-2) of Gross Value Added in current prices applied to t-2 value of HF23	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Table B.8. Sources and methods used to estimate health spending for t-1 for out-of-pocket payments (HF.3)

	Share of HF3 in CHE t-2	source(s) used	method / adjustments	direct or indirect estimation
Austria	17.7	National Accounts	Final consumption expenditure of households COICOP (06 Health). Spending of HF21 is deducted	direct
		National Accounts	Final consumption expenditure of long-term care facilities (CPA 87-88),	direct
Canada	14.9	Data for years before t-2 and t-1 are from: Statistics Canada's Survey of Household Spending (SHS); The Canadian MIS Database (CMDB) at CIHI; Statistics Canada's Residential Care Facilities (RCF) survey until 2010, Long-term Care Facilities (LTCF) survey from 2011 to 2013 and Nursing and Residential Care Facilities (NRCF) survey thereafter; Special tabulation from Nielsen Company Canada.	Same forecasting methods as for HF.1.2.1, but applied to household out-of-pocket payment.	Econometric model
Germany	12.7	Health Accounts	Historic growth rate (t-2 to t-3) is applied to t-2 value of HF3	indirect
Hungary	28.2	Volume indices on retail sales by type of shop (pharmaceuticals); Consumer price index by COICOP	Volume and price index for t-1 is multiplied with t-2 value of HF3 (pharmaceuticals)	indirect

		(pharmaceuticals)		
		Volume indices of the production of GDP (human health and social work activities); Consumer price index by COICOP (06 health)	Volume and price index for t-1 is multiplied with t-2 value of HF3 (total minus pharmaceuticals)	indirect
Iceland	15.5	National Accounts	Private consumption COICOP 06	direct
Ireland	11.7	Consumer price index and population inflator	t-2 value for HF3 is multiplied with growth of CPI "health" and population index of t-1	indirect
Italy	23.3	National Accounts	Final consumption expenditure of households COICOP (06 Health). Spending of HF21 is deducted	direct
Korea	30.2	Health Accounts	Moving average of historic growth rate of HF3 applied to t-2 value of HF3	indirect
Lithuania	32.3	Health Accounts	Growth rate (t-1 to t-2) of HF1 is applied to t-2 value of HF3	indirect
Netherlands	10.6	National Accounts	Growth in sum of wages for all providers on NACE 4th or 5th included in SHA-HP in t-1 defines reference growth of t-1 for current health expenditure (which is applied to CHE in t-2). HF3 spending for t-1 is residual value after all other HF spending is determined	indirect
Norway	13.9	Quarterly National Accounts	Growth in final household consumption of medicines, glasses and orthopaedic equipment and hospital services applied to HF3xHC/HP values in t-2	indirect
		National Budget	Price increases for OOP payment for medical services applied to certain HF3xHC/HP categories	indirect
Poland	20.1	Household Budget Survey	No information available	No information available
Portugal	30.5	Multiple data sources from the provider side and financing side	HF3 is estimated based on reconciliation process between expenditure and financing in the case of private providers	direct
		Central Administration of Health Systems (ACSS, IP),	Co-payments by household for public providers	direct
Slovenia	11.7	National Accounts	Using value of final consumption of household by COICOP classification (Health), adding import and deducting export data from balance of payments.	direct
Sweden	13.9	Quarterly National Accounts	Final household consumption COICOP 06. Spending of HF21 is deducted	direct
United Kingdom	15.9	Quarterly National Accounts	Growth in final household consumption COICOP 06 is applied to t-2 value of HF3 (without LTC)	indirect
		Health Accounts	Historic growth rates of LTC is applied to t-2 value of HF3 (LTC)	indirect

Note: CHE refers to Current Health Expenditure.
Source: OECD Survey on preliminary estimates for Health Accounts Experts 2021 and interpretation by the Secretariat.

Annex C. Additional Classifications

Table C.1. Structure of Classification of the Functions of Government (COFOG)

COFOG category	Function
01	General public services
02	Defence
03	Public order and safety
04	Economic affairs
05	Environmental protection
06	Housing and community amenities
07	**Health**
07.1	*Medical products, appliances and equipment*
07.2	*Outpatient services*
07.3	*Hospital services*
07.4	*Public health service*
07.5	*R&D Health*
07.6	*Health n.e.c.*
08	Recreation, culture and religion
09	Education
10	Social protection

Table C.2. Structure of Classification of Individual Consumption According to Purpose (COICOP)

COICOP category	Description
01	Food and non-alcoholic beverages
02	Alcoholic beverages, tobacco and narcotics
03	Clothing and footwear
04	Housing, water, electricity, gas and other fuels
05	Furnishings, household equipment and routine household maintenance
06	**Health**
06.1	*Medicines and health products*
06.2	*Outpatient care services*
06.3	*Inpatient care services*
06.4	*Other health services*
07	Transport
08	Information and communication
09	Recreation, sport and culture
10	Education services
11	Restaurants and accommodation services
12	Insurance and financial services
13	Personal care, social protection and miscellaneous goods and services

Annex D. Preliminary estimates of health spending for year t-1 generated by the OECD

Table D.1. Data sources used for *t-1* preliminary estimates of health spending by OECD

Country	2015		2016		2017		2018		2019	
	HF.1	**HF.2/HF.3**	**HF.1**	**HF.2/HF.3**	**HF.1**	**HF.2/HF.3**	**HF.1**	**HF.2/HF.3**	**HF.1**	**HF.2/HF.3**
Australia	E.O. 99	E.O. 99	E.O. 101	E.O. 101	E.O. 103	E.O. 103	E.O. 105	E.O. 105	E.O. 106	E.O. 106
Austria	GG FCE	COICOP 6	GG FCE	HH FCE						
Belgium	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE
Colombia									E.O. 106	E.O. 106
Czech Republic	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6
Denmark	COFOG 7	COICOP 6	COFOG 7	COICOP 6	COFOG 7	COICOP 6	COFOG 7	COICOP 6	COFOG 7	COICOP 6
Finland					GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	HH FCE
France	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6
Greece	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE
Hungary	GG FCE	HH FCE								
Ireland	HSE	HH FCE	HSE	HH FCE	GG FCE	COICOP 6	GG FCE	COICOP 6		
Israel	E.O. 99	E.O. 99	E.O. 101	E.O. 101	E.O. 103	E.O. 103	E.O. 105	E.O. 105	E.O. 106	E.O. 106
Italy	COFOG 7	COICOP 6								
Japan	E.O. 99	E.O. 99	E.O. 101	E.O. 101	E.O. 103	E.O. 103	E.O. 105	E.O. 105	E.O. 106	E.O. 106
Latvia	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE
Luxembourg									GG FCE	HH FCE
Mexico	E.O. 99	E.O. 99	E.O. 101	E.O. 101	E.O. 103	E.O. 103	E.O. 105	E.O. 105	E.O. 106	E.O. 106
New Zealand	E.O. 99	E.O. 99	E.O. 101	E.O. 101					E.O. 106	E.O. 106
Poland	GG FCE	HH FCE								
Portugal									GG FCE	HH FCE
Slovak Republic	GG FCE	COICOP 6	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	COICOP 6
Spain	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE
Switzerland					GG FCE	HH FCE	GG FCE	HH FCE	GG FCE	HH FCE
Türkiye	GG FCE	COICOP 6	E.O. 101	E.O. 101	E.O. 103	E.O. 103	E.O. 105	E.O. 105	E.O. 106	E.O. 106
United Kingdom	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	GG FCE	COICOP 6	ONS	COICOP 6
United States	CMS	CMS	CMS	CMS	CMS	CMS	CMS	CMS	CMS	CMS

Note: E.O.xx = OECD Economic Outlook No. xx; COFOG 7 = General Government Final Consumption Expenditure on Health; COICOP 6 = Household Final Consumption Expenditure on Health; GG FCE = General Government Final Consumption Expenditure; HH FCE = Household Final Consumption Expenditure; HSE = Health Service Executive (Ireland); CMS = Centers for Medicare and Medicaid Services (United States). Source: Compilation by OECD Secretariat.

Annex E. Reporting of external health funding in the OECD DAC database

Table E.1. Health purpose codes in the Creditor Reporting System (CRS)

DAC 5 CODE	CRS CODE	DESCRIPTION	Clarifications / Additional notes on coverage
120		HEALTH	
121		Health, general	
	12110	Health policy and administrative management	Health sector policy, planning and programmes; aid to health ministries, public health administration; institution capacity building and advice; medical insurance programmes; unspecified health activities.
	12181	Medical education/training	Medical education and training for tertiary level services.
	12182	Medical research	General medical research (excluding basic health research).
	12191	Medical services	Laboratories, specialised clinics and hospitals (including equipment and supplies); ambulances; dental services; mental health care; medical rehabilitation; control of non-infectious diseases; drug and substance abuse control [excluding narcotics traffic control (16063)].
122		Basic health	
	12220	Basic health care	Basic and primary health care programmes; paramedical and nursing care programmes; supply of drugs, medicines and vaccines related to basic health care.
	12230	Basic health infrastructure	District-level hospitals, clinics and dispensaries and related medical equipment; excluding specialised hospitals and clinics (12191).
	12240	Basic nutrition	Direct feeding programmes (maternal feeding, breastfeeding and weaning foods, child feeding, school feeding); determination of micro-nutrient deficiencies; provision of vitamin A, iodine, iron etc.; monitoring of nutritional status; nutrition and food hygiene education; household food security.
	12250	Infectious disease control	Immunisation; prevention and control of infectious and parasite diseases, except malaria (12262), tuberculosis (12263), HIV/AIDS and other STDs (13040). It includes diarrheal diseases, vector-borne diseases (e.g. river blindness and guinea worm), viral diseases, mycosis, helminthiasis, zoonosis, diseases by other bacteria and viruses, pediculosis, etc.
	12261	Health education	Information, education and training of the population for improving health knowledge and practices; public health and awareness campaigns; promotion of improved personal hygiene practices, including use of sanitation facilities and handwashing with soap.
	12262	Malaria control	Prevention and control of malaria.
	12263	Tuberculosis control	Immunisation, prevention and control of tuberculosis.
	12281	Health personnel development	Training of health staff for basic health care services.
130		POPULATION POLICIES/PROGRAMMES AND REPRODUCTIVE HEALTH	
	13010	Population policy and administrative management	Population/development policies; census work, vital registration; migration data; demographic research/analysis; reproductive health research; unspecified population activities.
	13020	Reproductive health care	Promotion of reproductive health; prenatal and postnatal care including delivery; prevention and treatment of infertility; prevention and management of consequences of

DAC 5 CODE	CRS CODE	DESCRIPTION	Clarifications / Additional notes on coverage
			abortion; safe motherhood activities.
	13030	Family planning	Family planning services including counselling; information, education and communication (IEC) activities; delivery of contraceptives; capacity building and training.
	13040	STD control including HIV/AIDS	All activities related to sexually transmitted diseases and HIV/AIDS control e.g. information, education and communication; testing; prevention; treatment, care.
	13081	Personnel development for population and reproductive health	Education and training of health staff for population and reproductive health care services.
500		COMMODITY AID AND GENERAL PROGRAMME ASSISTANCE	Note: Sector specific programme assistance is to be included in the respective sectors, using the sector programme flag if appropriate.
510		General budget support	Budget support in the form of sector-wide approaches (SWAps) should be included in the respective sectors.
	51010	General budget support	Unearmarked contributions to the government budget; support for the implementation of macroeconomic reforms (structural adjustment programmes, poverty reduction strategies); general programme assistance (when not allocable by sector).
600		ACTION RELATING TO DEBT	
	60010	Action relating to debt	Actions falling outside the code headings below.
	60020	Debt forgiveness	
	60030	Relief of multilateral debt	Grants or credits to cover debt owed to multilateral financial institutions; including contributions to Heavily Indebted Poor Countries (HIPC) Trust Fund.
	60040	Rescheduling and refinancing	
	60061	Debt for development swap	Allocation of debt claims to use for development (e.g., debt for education, debt for environment).
	60062	Other debt swap	Where the debt swap benefits an external agent i.e. is not specifically for development purposes.
	60063	Debt buy-back	Purchase of debt for the purpose of cancellation.
700		HUMANITARIAN AID	Within the overall definition of ODA, humanitarian aid is assistance designed to save lives, alleviate suffering and maintain and protect human dignity during and in the aftermath of emergencies. To be classified as humanitarian, aid should be consistent with the humanitarian principles of humanity, impartiality, neutrality and independence.
720		Emergency Response	An emergency is a situation which results from manmade crises and/or natural disasters.
	72010	Material relief assistance and services	Shelter, water, sanitation and health services, supply of medicines and other non-food relief items; assistance to refugees and internally displaced people in developing countries other than for food (72040) or protection (72050).
730		Reconstruction relief and rehabilitation	This relates to activities during and in the aftermath of an emergency situation. Longer-term activities to improve the level of infrastructure or social services should be reported under the relevant economic and social sector codes. See also guideline on distinguishing humanitarian from sector-allocable aid.
	73010	Reconstruction relief and rehabilitation	Short-term reconstruction work after emergency or conflict limited to restoring pre-existing infrastructure (e.g. repair or construction of roads, bridges and ports, restoration of essential facilities, such as water and sanitation, shelter, health care services); social and economic rehabilitation in the aftermath of emergencies to facilitate transition and enable populations to return to their previous livelihood or develop a new livelihood in the wake of an emergency situation (e.g. trauma counselling and treatment, employment programmes).
740		Disaster prevention and preparedness	See codes 41050 and 15220 for prevention of floods and conflicts.
	74010	Disaster prevention and preparedness	Disaster risk reduction activities (e.g. developing knowledge, natural risks cartography, legal norms for construction); early warning systems; emergency contingency stocks and contingency planning including preparations for forced displacement.

Source: http://www.oecd.org/dac/stats/dacandcrscodelists.htm

Annex F. International databases with spending aggregates for year t that can be of relevance for LMIC

Table F.1. International databases with spending aggregates for year t, all WPRO countries and territories that are included in WHO GHED

	Public spending (HF.1)		Private spending (HF.2+HF.3)
	IMF WEO General Govt total expenditure	WB MPO Government Consumption	WB MPO Private Consumption
Brunei Darussalam	X	X	X
Cambodia	X	X	X
China	X	X	X
Cook Islands			
Fiji	X		
Kiribati	X		
Lao PDR	X		
Malaysia	X	X	X
Marshall Islands	X		
Micronesia	X		
Mongolia	X	X	X
Nauru	X		
Niue			
Palau	X		
Papua New Guinea	X		
Philippines	X	X	X
Samoa	X		
Singapore	X	X	X
Solomon Islands	X		
Tonga	X		
Tuvalu	X		
Vanuatu	X		
Viet Nam	X	X	X

Note: Analysis limited to countries and economies that are included in WHO GHED. Australia, Japan, Korea and New Zealand not included in chart, as already analysed with OECD countries. X indicates data for year t available. Analysis based on data availability in November 2021.
Source: IMF World Economic Outlook, World Bank Macro Poverty Outlook.

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