

OXFORD ECONOMICS

TRAVEL & TOURISM ECONOMIC IMPACT RESEARCH

Data sources and estimation techniques

WTTC / Oxford Economics

May 2024



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1 Introduction

1.1 Purpose of the research

The main objective of the WTTC/Oxford Economics Travel & Tourism economic impact research is to provide, on an annual basis - consistent, reliable, timely and comparable data and forecasts to assess Travel & Tourism's contribution to national economic activity. This includes the number of jobs and GDP created by the Travel & Tourism sector, both directly and in total, and measured as a percentage contribution of total economy employment and GDP.

An increasing number of economies are compiling elements/full Tourism Satellite Accounts (TSA) which can provide more detailed statistics than this research. The WTTC/Oxford Economics research is designed to complement economy TSA exercises by providing:

- Timely estimates up to the current year (in some cases the latest year for own economy TSAs is several years back);
- Direct comparability across all economies by employing the same methodology;
- A global and regional perspective of the contribution of Travel & Tourism;
- An aid to policy decisions in economies unable to fund elements of or a full TSA;
- Analysis to benchmark with the economic contribution of other industries;
- Help in understanding linkages to other industries in the economy;
- Ten-year forecasts ahead to 2034; and
- A modelling tool and basis for scenario and policy analysis.

1.2 Purpose of this document

This document is designed to provide a high-level summary of the data sources and data estimation techniques used in the WTTC/Oxford Economics economic impact research in a central and easily accessible format for users of the research. As such, this document should be viewed as a complementary resource and is not intended as a replacement or substitute for the main methodology report, which provides a much more comprehensive description of the methodology underpinning the research.

1.3 Report structure

This document is structured as follows:

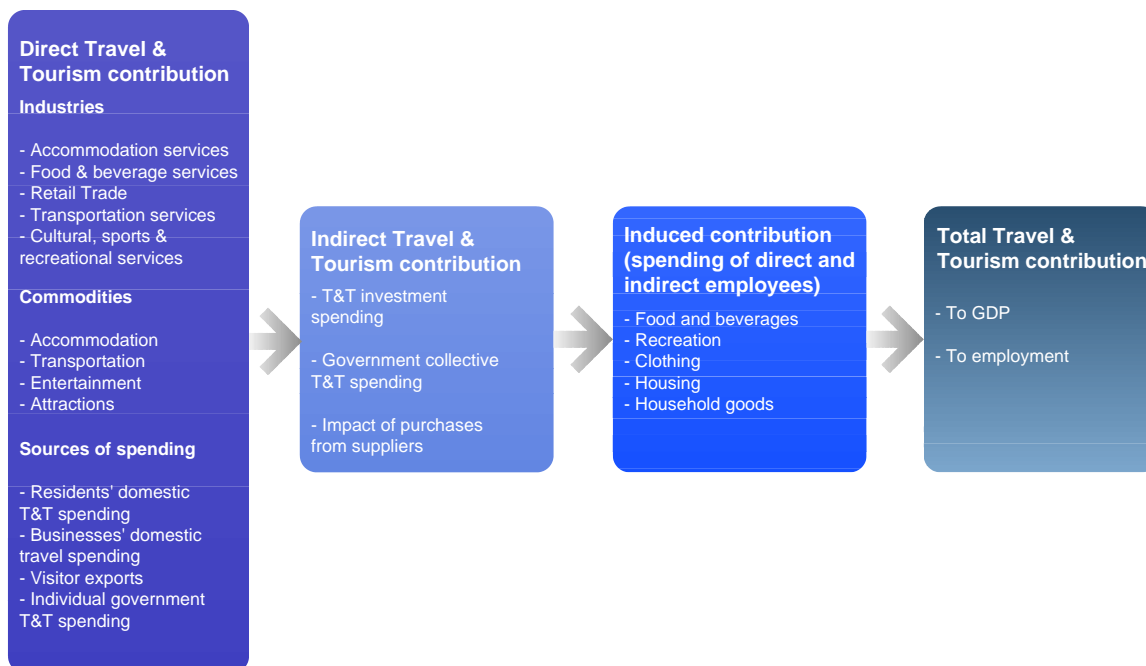
- Chapter 2 sets out the **conceptual overview** to measuring the contribution of Travel & Tourism;
- Chapter 3 provides an overview of the **TSA benchmarking** process used in the research and outlines the data used from individual economy TSAs within the research; and
- Chapter 4 outlines the **other data sources and data estimation techniques** used in the research in where economy-specific TSA data are not available.

2 Conceptual overview

2.1 Conceptual approach

Travel & Tourism is an important economic activity in most economies around the world. As well as its direct economic impact, the sector has significant indirect and induced impacts.

The UN Tourism (formerly UNWTO)-approved TSA methodology (TSA: RMF 2008) quantifies only the direct contribution of Travel & Tourism. WTTC recognises that Travel & Tourism's total contribution is wider and aims to capture its indirect and induced impacts through its annual research.



In practical terms, WTTC/Oxford Economics have implemented the TSA: RMF (2008) by:

- Applying the definition of Travel & Tourism to develop a method for computing the demand-side components of Travel & Tourism GDP: consumer spending, government consumption, investment and net exports; and
- Using input-output tables to translate demand-side expenditures into supply-side outputs, and to split total GDP and employment into direct and indirect components.

The objective is to be both as comprehensive as possible – to ensure the importance of Travel & Tourism is not under-estimated – and as consistent as possible – to allow cross-economy and cross-regional comparisons – so that global estimates of the contribution to GDP and employment from Travel & Tourism can be accurately derived. As discussed later, this has implications for some of the data sources used in the research, whereby in some cases, central data sources (such as the IMF Balance of Payments) are preferred to economy-specific data sources where data definitions and measurement methodologies may not be fully consistent across all economies.

3 TSA benchmarking

3.1 Overview

A core principle of the WTTC/Oxford Economics methodology for measuring the economic impact of Travel & Tourism across the world is that official data as published in individual economy TSAs is used as far as possible throughout the research, with other data sources and data estimation techniques used only where necessary as a substitute. **In total, 72 economies are included in the TSA Benchmarking exercise, representing around 90% of global direct Travel & Tourism activity.** This underscores the veracity of the estimates of the size of the global Travel & Tourism sector produced by this research.

3.2 Economies included in the TSA benchmarking exercise

The table below provides an overall summary of all economies that publish TSA data and the years for which published TSA data are available. Economies shaded grey are those for which new TSA data has become available since the previous research update and economies shaded blue are those which have been newly added to the TSA benchmarking process this year.

Country	TSA / UN Tourism ¹	Years available	Country	TSA / UN Tourism ¹	Years available
Aruba	TSA	2013	Lithuania	TSA	2005-21
Australia	TSA	1997-2022	Macau, SAR, China	TSA	2010-2021
Austria	TSA	2000-21	Malaysia	TSA	2005-22
Albania	TSA	2009	Maldives	TSA	2017
Bahamas	TSA	2003-04, 2007, 2012	Malta	TSA	2010
Bangladesh	TSA	2011, 2018	Mauritius	TSA	2005-18
Belgium	TSA	2016	Mexico	TSA	2003-21
Bermuda	TSA	2007-21	Namibia	TSA	2009-2017
Botswana	TSA	2005, 2009, 2016	Netherlands	TSA	2001-06, 2010-22
Bulgaria	TSA	2010-20	New Zealand	TSA	1999-2021
Canada	TSA	1994-2022	Nicaragua	TSA	2005-22
Chile	TSA	2003-06	North Macedonia	TSA	2019
China	CNTA ²	1994-2023	Norway	TSA	2004-2020
Colombia	TSA	2001-05, 2017-22	Oman	TSA	2005-2021
Costa Rica	TSA	2012-20	Papua New Guinea	TSA	2019
Croatia	TSA	2000, 2016-17, 2019	Peru	TSA	2001-02, 2015-20
Czechia	TSA	2003-2021	Philippines	TSA	2000-22
Denmark	TSA	2008-21	Portugal	TSA	2000-08, 2014-20
Ecuador	TSA	2007-16	Puerto Rico	TSA	2012-20
Egypt	TSA	2011-17	Qatar	TSA	2013-20
Estonia	TSA	2000-17	Saudi Arabia	TSA	2002-11, 2013, 2018-19
Fiji	TSA	2002, 2008, 2011-2013	Slovenia	TSA	2009, 2012, 2014-17, 19-20
Finland	TSA	2011-21	South Africa	TSA	2005-2020
France	TSA	2005-21	South Korea	TSA	2014-2017
Germany	TSA	2010, 2015-19	Spain	TSA	2000-22
Hong Kong, SAR, China	TSA	2000-14, 2016, 2018	St Lucia	TSA	2008
Hungary	TSA	2004-21	Sweden	TSA	2000-21
Iceland	TSA	2001-22	Switzerland	TSA	2001-21
India	TSA	2009, 2015	Thailand	TSA	2010-21
Indonesia	TSA	2013-21	Uganda	TSA	2019
Israel	TSA	2006-12, 2015, 2017-21	United Arab Emirates	TSA	2012, 2015
Italy	TSA	2010, 2015, 2017, 2019-20	United Kingdom	TSA	2008-21
Jamaica	TSA	2007-12	United States	TSA	2000-2021
Japan	TSA	2004-21	Uruguay	TSA	2005-2019
Jordan	TSA	2010-2016	Vietnam	TSA	2013-19
Kenya	TSA	2019	Zimbabwe	TSA	2018

¹UN Tourism formerly known as UNWTO.

²CNTA (China National Tourism Administration).

3.3 Indicators used by economy from TSA reports

The table below outlines the specific indicators informed by TSA data for each of the 72 economies included in the TSA benchmarking exercise. Looking at each column in turn:

- Residents' leisure spending on domestic Travel & Tourism is the variable most widely available from existing TSAs, and we have used this data directly where possible.

- In a limited number of cases, we also or alternatively have obtained data for business travel spending (which includes spending both within the domestic economy and abroad), or total domestic expenditure on Travel & Tourism from the TSAs. Where we do not have separate residents' leisure spending on domestic Travel & Tourism data, we have used the total domestic expenditure data to estimate it. Where we have both, we have used them to estimate business travel spending.

- Where we only have total domestic expenditure on Travel & Tourism from the UN Tourism compilation, we have used this to estimate residents' leisure spending on domestic Travel & Tourism, while retaining our own estimates of business travel spending.

- Travel & Tourism investment is only available from a very limited number of TSAs.

- Direct productivity is estimated from TSAs where it is possible to calculate (this requires GDP and employment contributions) and is used to estimate Travel & Tourism direct employment from our Travel & Tourism direct GDP estimates. (Note that we use productivity rather than taking the TSA employment numbers directly since in some cases differences in other inputs such as visitor exports or implied supply chain estimates mean that we do not necessarily have exactly the same direct GDP estimates).

- The split of demand into direct and indirect GDP is used in a range of economies where this can be derived from the TSA data available.

- Generally, government spending on Travel & Tourism (both individual and collective) and induced Travel & Tourism GDP impacts are not commonly published in TSAs and so are estimated by Oxford Economics.

Variable description	Residents' spending domestically (TSA)	Business travel spending / Total domestic T&T spending (TSA)	Total domestic T&T spending (UN Tourism*)	T&T investment (TSA)	Productivity (TSA)	Split of demand into direct and indirect GDP (TSA)	Split of demand into direct and indirect GDP (UN Tourism*)
Mnemonic	RSD (TSA)	COMPTRAV / DOMTT (TSA)	DOMTT (UN Tourism*)	IFTT (TSA)	PROD (TSA)	IDIR%SH (TSA)	IDIR%SH (UN Tourism*)
Australia	Y	Y			Y	Y	
Austria	Y	Y				Y	
Albania	Y	Y				Y	
Aruba	Y	Y			Y	Y	
Bahamas	Y			Y		Y	
Bangladesh	Y	Y			Y	Y	
Belgium	Y	Y			Y	Y	
Bermuda	Y			Y	Y	Y	
Botswana	Y	Y				Y	
Bulgaria	Y	Y					
Canada	Y	Y			Y	Y	
Chile	Y	Y					Y
China			Y				Y
Colombia	Y				Y		Y
Costa Rica			Y		Y	Y	
Croatia	Y	Y				Y	
Cyprus		Y	Y				Y
Czechia	Y	Y		Y	Y	Y	
Denmark	Y	Y			Y	Y	
Ecuador	Y	Y			Y	Y	
Egypt	Y	Y				Y	
Estonia	Y	Y		Y	Y	Y	
Fiji	Y	Y			Y	Y	
Finland	Y	Y				Y	
France	Y	Y					
Germany	Y	Y			Y	Y	
Honduras		Y	Y				
Hong Kong, SAR, China						Y	
Hungary		Y			Y	Y	
Iceland	Y	Y			Y	Y	
India	Y	Y			Y	Y	
Indonesia	Y	Y					
Ireland			Y				Y
Israel	Y						Y
Italy	Y	Y					
Jamaica	Y	Y				Y	
Japan	Y	Y			Y	Y	
Jordan	Y	Y			Y	Y	
Kazakhstan			Y				Y
Kenya	Y	Y			Y	Y	
Latvia			Y				Y
Lithuania			Y			Y	
Macau, SAR, China				Y	Y	Y	
Malaysia	Y	Y				Y	
Malta	Y	Y			Y	Y	
Maldives	Y	Y			Y	Y	
Mauritius	Y	Y				Y	
Mexico	Y	Y		Y		Y	
Morocco			Y				
Namibia	Y	Y			Y	Y	
Netherlands	Y	Y			Y	Y	
New Zealand	Y	Y			Y	Y	
Nicaragua	Y					Y	
North Macedonia	Y	Y				Y	
Norway	Y	Y			Y	Y	
Oman	Y	Y				Y	
Papua New Guinea	Y	Y				Y	
Peru	Y				Y	Y	
Philippines	Y	Y		Y	Y	Y	
Poland			Y				Y
Portugal	Y	Y			Y	Y	
Puerto Rico	Y	Y			Y	Y	
Qatar	Y	Y		Y	Y	Y	
Romania			Y				Y
Saudi Arabia	Y	Y		Y	Y	Y	
Slovakia			Y				Y
Slovenia			Y			Y	
South Africa	Y	Y			Y	Y	
South Korea	Y	Y			Y		
Spain	Y	Y			Y		Y
St Lucia	Y				Y	Y	
Sweden	Y	Y			Y	Y	
Switzerland	Y	Y			Y	Y	
Thailand	Y	Y		Y	Y	Y	
Vietnam	Y	Y				Y	
UAE	Y	Y		Y	Y	Y	
Uganda	Y	Y			Y	Y	
UK	Y	Y			Y	Y	
Uruguay	Y	Y				Y	
US	Y	Y			Y	Y	
Zimbabwe	Y				Y	Y	

*UN Tourism formerly known as UNWTO.

4 Other data sources where TSA data is not available or used

4.1 Alternative data sources and data estimation

Where official TSA data are not available for particular economies, or where a uniform data source (such as the Balance of Payments) is more suitable for cross-economy comparison and analysis, a range of other data sources and data estimation techniques are used. These are summarised by Travel & Tourism spending category in the table below. For full details of data sources and estimation techniques, please refer to the full methodology document.

Indicator	Variable description	Data sources	Further details
Direct Travel & Tourism spending components			
Domestic expenditure on Travel & Tourism	Spending within an economy by that economy's residents for both business and leisure trips. Multi-use consumer durables are not included since they are not purchased solely for tourism purposes. This is consistent with total domestic tourism expenditure in table 2 of the TSA: RMF 2008. Outbound spending by residents abroad is not included here, but is separate.	Identity variable (See sources below relating to each of the components)	Domestic expenditure on Travel & Tourism = Residents' leisure spending on domestic Travel & Tourism + Residents' business spending on domestic Travel & Tourism + Government individual spending on Travel & Tourism
Residents' leisure spending on domestic Travel & Tourism	Spending by domestic residents on leisure-related Travel & Tourism within their own economy. It also includes spending in the domestic economy in preparation for a trip abroad.	Economy-specific national accounts Economy-specific household expenditure surveys IMF: Balance of Payments Multi-economy TSA analysis Oxford Economics estimation	For OECD economies, historic data on consumer expenditure by purpose (COICOP) is used, in combination with Travel & Tourism share assumptions (based on the regional and income classification of economies), to estimate the total (domestic and outbound) level of residents' personal Travel & Tourism spending. Residents' leisure spending on domestic Travel & Tourism is then equal to total residents' personal Travel & Tourism spending minus residents' spending abroad on Travel & Tourism from the IMF Balance of Payments. For non-OECD economies, we have used evidence from existing TSAs to estimate a historic relationship between residents' leisure spending on domestic Travel & Tourism and GDP per capita and residents' spending abroad on Travel & Tourism.
Residents' business spending on domestic Travel & Tourism	Spending by domestic businesses on Travel & Tourism within their own economy.	CoStar (STR) OAG UN Tourism IMF: Balance of Payments Multi-economy TSA analysis Oxford Economics estimation	Business spending on domestic Travel & Tourism is divided into air travel, lodging and other spending (which includes, for example, rental cars, food, entertainment etc.) Estimates against each of these categories are derived using a range of data sources including CoStar (STR), OAG, UN Tourism and the IMF Balance of Payments. In most cases, the data that are used includes spending by both business and leisure visitors. To refine these estimates, ratios are derived from TSAs which specifically report domestic business travel.

Government individual spending on Travel & Tourism	Spending by government on Travel & Tourism services directly linked to visitors, such as cultural services (e.g. museums) or recreational services (e.g. national parks).	Economy-specific national accounts Economy-specific fiscal accounts Multi-economy TSA analysis Oxford Economics estimation	For OECD economies, total government Travel & Tourism spending is based on economy-specific fiscal accounts, detailed government Travel & Tourism spending data for the US and UK economies and economy specific Travel & Tourism intensity factors relative to the US or UK economies. The split between individual and collective spending is then based on data relating to the US economy. For non-OECD economies, we have used evidence from existing TSAs to estimate a historic relationship between total government Travel & Tourism spending and total economy-wide government consumption and visitor exports. The split between individual and collective spending is then based on data relating to the US economy.
Visitor exports	Spending within the economy by international tourists for both business and leisure trips, including spending on transport, but excluding international spending on education. This is consistent with total inbound tourism expenditure in table 1 of the TSA: RMF 2008.	Identity variable (See sources below relating to each of the components)	Visitor exports = Foreign visitors' spending on Travel & Tourism + Foreign passenger transportation spending
Foreign visitors' spending on Travel & Tourism	Spending which covers goods and services for own use or to give away acquired from an economy by non-residents during visits to that economy.	IMF: Balance of Payments (informed by individual economy statistical bodies) UNESCO Oxford Economics estimation	Data for this indicator is sourced directly from the Balance of Payments. To comply with the United Nations TSA: RMF (2008), education-related travel spending is then subtracted. Education-related travel spending is also sourced from the Balance of Payments and where unavailable is estimated based on inbound international student flows from UNESCO and average spending per student assumptions derived from UNESCO student flow numbers and education travel spending data from the Balance of Payments.
Foreign visitors' business spending on Travel & Tourism	A sub-component of foreign visitors spending on Travel & Tourism, this relates to spending which covers goods and services acquired for personal use by persons whose primary purpose of travel is for business.	IMF: Balance of Payments (informed by individual economy statistical bodies) UN Tourism Oxford Economics estimation	Data for this indicator is sourced directly from the Balance of Payments. In cases where particular economies do not publish this information, the data are estimated by Oxford Economics as a share of total foreign visitors' spending on Travel & Tourism, where the share is estimated based on the business share of international tourist arrivals and average spend per business visitor assumptions, which in turn are based on economy-specific overall average inbound spend and regional average relativity factors for average business spending. For economies which do not publish international arrivals by purpose, the share is estimated based on a regional average share, adjusted using economy-specific GDP per capita, whereby wealthier economies are expected to have a higher business spending share and vice-versa. Foreign visitors' leisure spending on Travel & Tourism is equal to foreign visitors' spending on Travel & Tourism less foreign visitors' business spending on Travel & Tourism.
Foreign passenger transportation spending	Spending which covers all services provided in the international transport of non-residents by resident carriers. Also included are passenger services performed within a territory by non-resident carriers. Passenger services provided within a territory by residents to non-residents and provided or purchased separately from international transport are excluded from passenger transport.	IMF: Balance of Payments (informed by individual economy statistical bodies)	Data for this indicator is sourced directly from the Balance of Payments.

Indicator	Variable description	Data sources	Further details
Indirect Travel & Tourism spending components			
Capital investment spending on Travel & Tourism	Capital investment spending by all industries directly involved in Travel & Tourism. This also constitutes investment spending by other industries on specific tourism assets such as new visitor accommodation and passenger transport equipment, as well as restaurants and leisure facilities for specific tourism use. This is consistent with total tourism gross fixed capital formation in table 8 of the TSA: RMF 2008	Airbus Boeing CoStar (STR) UN COMTRADE Economy-specific fiscal accounts Multi-economy TSA analysis Oxford Economics estimation	For OECD economies, government Travel & Tourism capital spending is estimated using the same shares attributed to Travel & Tourism in current government spending (as described earlier) but instead applied to total government capital expenditure from fiscal accounts. Private sector capital spending on Travel & Tourism is estimated using data inputs from sources including Airbus, Boeing and CoStar (STR) which help identify and quantify expenditure on key Travel & Tourism assets such as aircraft and hotels. For non-OECD economies, the estimation of capital spending on Travel & Tourism follows a similar approach but relies more heavily on imports data (such as aircraft imports) and investment ratios derived from TSAs.
Government collective spending on Travel & Tourism	Government spending in support of general tourism activity. This can include national as well as regional and local government spending. For example, it includes tourism promotion, visitor information services, administrative services and other public services. This is consistent with total collective tourism consumption in table 9 of TSA: RMF 2008.	Economy-specific national accounts Economy-specific fiscal accounts Multi-economy TSA analysis Oxford Economics estimation	For OECD economies, total government Travel & Tourism spending is based on economy-specific fiscal accounts, detailed government Travel & Tourism spending data for the US and UK economies and economy specific Travel & Tourism intensity factors relative to the US or UK economies. The split between individual and collective spending is then based on data relating to the US economy. For non-OECD economies, we have used evidence from existing TSAs to estimate a historic relationship between total government Travel & Tourism spending and total economy-wide government consumption and visitor exports. The split between individual and collective spending is then based on data relating to the US economy.
Travel & Tourism domestic supply chain	Purchases of domestic goods and services directly by different industries within Travel & Tourism as inputs to their final Travel & Tourism output.	Multi-economy input-output analysis UN COMTRADE Oxford Economics estimation	The domestic supply chain is computed as the difference between the sum of direct Travel & Tourism spending components less their associated imports less direct Travel & Tourism GDP. As such the domestic supply chain can be seen as the portion of Travel & Tourism demand within an economy which is not supported by imported goods. Rather, it is the portion of Travel & Tourism spending supported by domestic suppliers and is a component of indirect Travel & Tourism GDP. Direct Travel & Tourism GDP is calculated using an input-output methodology. Specifically, input-output analysis enables us to determine which industries are generating the value added required to meet Travel & Tourism consumption and overall Travel & Tourism demand. This enables us to compute a Travel & Tourism value added to output ratio. This ratio is applied to Travel & Tourism spending by component (less associated imports) to arrive at direct Travel & Tourism GDP. (Note: this aspect of the methodology was updated and enhanced as part of the 2020 EIR. For full details, please see main methodology document).

Indicator	Variable description	Data sources	Further details
Other Travel & Tourism spending components			
Expenditure on outbound Travel & Tourism	Spending outside the economy by residents on all trips abroad. This is fully aligned with total outbound tourism expenditure in table 3 of the TSA: RMF 2008.	Identity variable (See sources below relating to each of the components)	Expenditure on outbound Travel & Tourism = Residents' spending abroad on Travel & Tourism + Outbound passenger transportation spending
Residents' spending abroad on Travel & Tourism	Spending which covers goods and services for own use or to give away acquired from foreign economies by residents during visits to these foreign economies.	IMF: Balance of Payments (informed by individual economy statistical bodies) UNESCO Oxford Economics estimation	Data for this indicator is sourced directly from the Balance of Payments. To comply with the United Nations TSA: RMF (2008), education-related travel spending is then subtracted. Education-related travel spending is also sourced from the Balance of Payments and where unavailable is estimated based on outbound international student flows from UNESCO and average spending per student assumptions derived from UNESCO student flow numbers and education travel spending data from the Balance of Payments.
Residents' business spending abroad on Travel & Tourism	A sub-component of residents' spending abroad on Travel & Tourism, this relates to spending which covers goods and services acquired for personal use by persons whose primary purpose of travel is for business.	IMF: Balance of Payments (informed by individual economy statistical bodies) Oxford Economics estimation	Data for this indicator is sourced directly from the Balance of Payments. In cases where particular economies do not publish this information, the data point is estimated by Oxford Economics as a share of total residents' spending abroad on Travel & Tourism, where the share is equal to the total Travel & Tourism business spending share of total domestic Travel & Tourism spending plus residents' spending abroad on Travel & Tourism. Total Travel & Tourism business spending includes private sector and government business Travel & Tourism expenditure both domestically and abroad. Residents' leisure spending abroad on Travel & Tourism is equal to residents' spending abroad on Travel & Tourism less residents' business spending abroad on Travel & Tourism.
Outbound passenger transportation spending	Spending which covers all services provided in the international transport of residents by non-resident carriers. Also included are passenger services performed within a territory by non-resident carriers. Passenger services provided within a territory by non-residents to residents and provided or purchased separately from international transport are excluded from passenger transport.	IMF: Balance of Payments (informed by individual economy statistical bodies)	Data for this indicator is sourced directly from the Balance of Payments.

4.2 Induced Travel & Tourism GDP

Induced Travel & Tourism GDP relates to the GDP and jobs supported by the spending of those who are directly and indirectly employed by the Travel & Tourism sector. It is estimated based on information derived from economy-specific input output tables as far as possible, for which notable methodology improvements were made in the 2020 EIR. Specifically, induced GDP multipliers are calculated from input-output tables and are applied to the sum of Travel & Tourism direct and indirect GDP, thus providing an estimate of Travel & Tourism induced GDP for each economy. In cases where we do not hold an input output table for a particular economy, an equation is used to provide an estimate – for full details, please see main methodology document.

4.3 Travel & Tourism employment

As with the various Travel & Tourism spending components, where possible Travel & Tourism employment estimates are benchmarked to the data reported in economy TSAs. However, as noted earlier, it is Travel & Tourism productivity, rather than the employment levels, which is benchmarked.

For economies without a TSA, economy-specific input output tables are used in conjunction with sector employment data to derive estimates of Travel & Tourism productivity relative to economy-wide productivity (these estimates were updated in the 2020 EIR making use of the expanded number of economy input output tables available). And in cases where an economy does not have a TSA or an input-output table, equations are used to provide estimates. This approach is used across direct, indirect and induced employment in order to arrive at estimates of total Travel & Tourism employment for each economy. Full details are provided in the main methodology document. It should be noted that special adjustments were made to the Travel & Tourism employment methodology for 2020 and 2021 due to the pandemic and associated job protection schemes. These adjustments are discussed in detail in the main methodology document.

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