



TOURISM
ECONOMICS

AN OXFORD ECONOMICS COMPANY

Booking.com

The Economic Impact of Online Travel Agencies in North America

Final Report

2019-2021



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OTA IMPACTS

SUMMARY IMPACTS IN NORTH AMERICA

OTAs generate benefits for the hospitality industry, consumers and society as a whole

Online travel agencies (OTAs) in North America play an important function in the accommodation market and for destinations.

OTAs increase choice and transparency within the market, making it easier for consumers to compare the costs and quality of the accommodation facilities and services offered by providers. They also make it easier for customers to search and book online. This is particularly important for booking travel in unfamiliar destinations.

By offering consumers more choice, OTAs also lower prices for consumers, making travel more affordable and increasing the value for money. This benefits particularly low income households, who might otherwise not be able to afford any travel at all. Offering more choice also spreads out tourism away from the urban centers of economic and touristic activity towards rural destinations. As a result, rural areas benefit from an increase in economic opportunities and job creation.

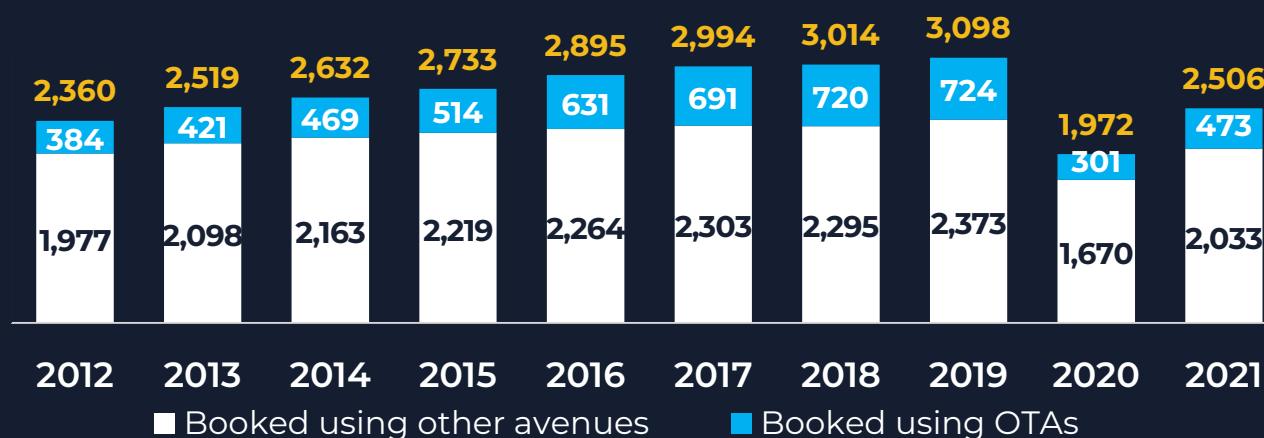
On an aggregate level, OTAs have generated large volumes of additional tourism nights and supported GDP growth and job creation across a wide range of destinations. If OTAs did not exist, there would be fewer overnight stays in North America and, as a result, the contribution of tourism to GDP and employment would also be lower.

This study conducted by Tourism Economics for Booking.com quantifies the incremental impact of online travel agencies on the tourism industries and broader economies of the United States and Canada (North America). The number of travelers organizing travel through OTAs increased steadily from 2012 to 2019 to 724 million nights, which represented almost 1 in 4 nights booked in North America - a proportion of these nights and associated economic benefits would not have happened without the trusted information, transparency and choice provided by OTAs.

All travel bookings fell sharply during the pandemic, including some shift in OTA use resulting in a lower impact on the tourism market and broader economy in 2020 and 2021. OTAs still play an important role in matching evolving consumer demand with available supply.

Nights in All Accommodation Types in North America, 2012-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates. Between 2014 and 2021, OTAs generated an average reduction in rates of US\$8.20 per room night (6.2 percent reduction) across North America.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across North America. OTAs added an incremental US\$19.9 billion to the economy, also referred to as GDP, in 2019.

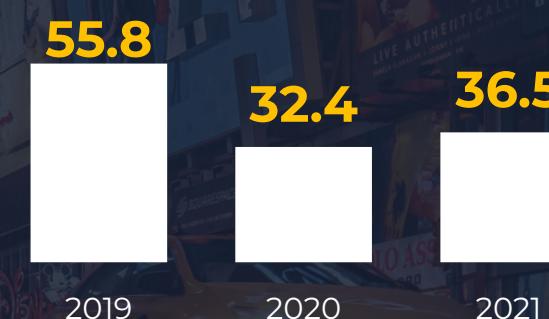
GDP Impacts (US\$ Billions) Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of North America's economy. In 2019, the economic impacts attributable to OTAs included 187,000 jobs. In 2021, OTAs were responsible for 113,000 jobs, representing a recovery relative to the 99,000 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



RESEARCH OBJECTIVES & METHODOLOGY

The aim of this study is to quantify the additional – i.e., incremental – impact of OTAs in the United States and Canada (North America) for 2019, 2020 and 2021.

This analysis addresses:

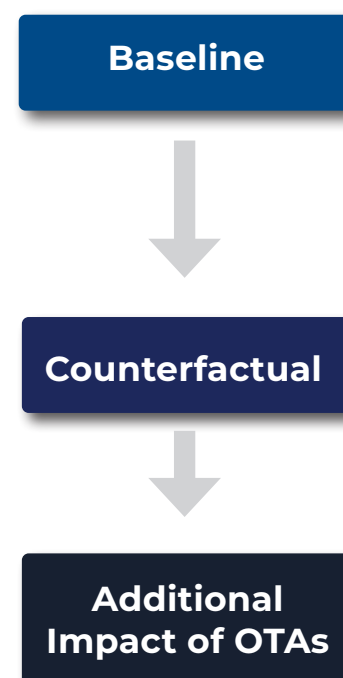
1. The overall impact on business by assessing what impact OTAs have had on total overnight stays in North America;
2. The impact OTAs have had on the hotel rates paid by consumers across North America; and
3. The additional economic activity that is supported by the presence of OTAs in North America.

Analysis has quantified how these impacts have varied across the market segments and the extent to which OTAs have supported changing consumer preferences during the pandemic. The following effects have been considered:

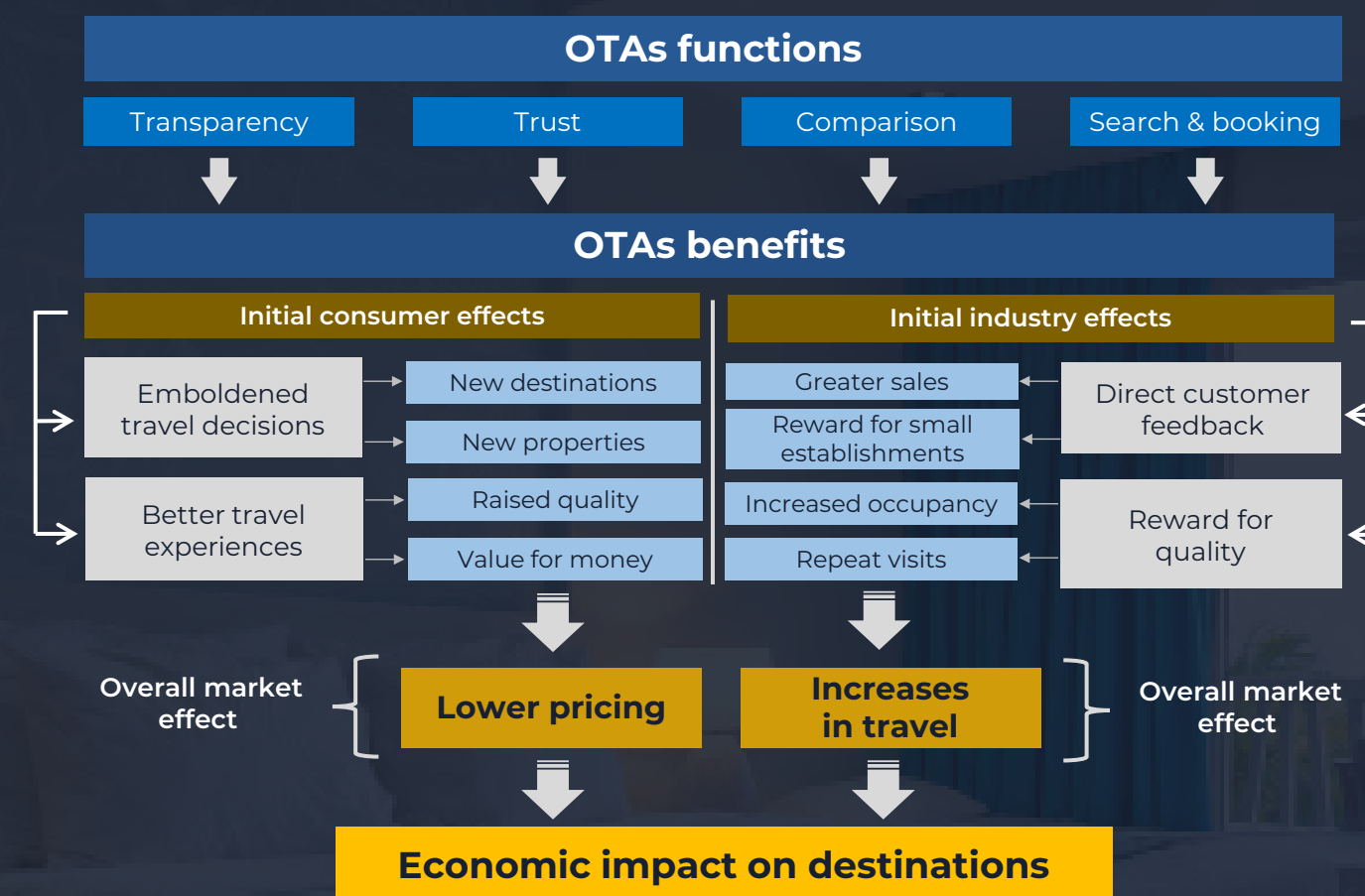
- Accommodation type - including the different impact of OTAs on chain and non-chain hotels as well as on alternative non-hotel accommodation.
- International and domestic visitors - different visitors have differing needs regarding information and booking and engagement with OTAs which have been estimated.
- Geographic dispersion - OTA impacts and booking patterns have been considered relative to those from the wider tourism industry, including the extent to which OTAs spread tourism to more rural areas compared to the market average
- Affordability - the additional number of households that can afford travel due to the impact of OTAs on accommodation prices.wider tourism industry, including the extent to which OTA impacts are concentrated in major hotspots.

OVERARCHING METHODOLOGY

- 1 The first step was to establish the actual number of overnight stays, average level of hotel daily rate and total economic impact of tourism in North America.
- 2 OTAs share of current travel within the baseline was calculated. An econometric model was developed to calculate the extent to which the presence of OTAs determines the metric in question.
- 3 Econometric model results were used to establish what would have happened to each of the above metrics if OTAs did not exist.
- 4 The difference between the baseline and counterfactual scenario is the net additional impact of OTAs.



FLOWCHART OF OTA BENEFITS



OTAS SUPPORT A RANGE OF BENEFITS TO CONSUMERS AND BUSINESS



ECONOMETRIC RESULTS

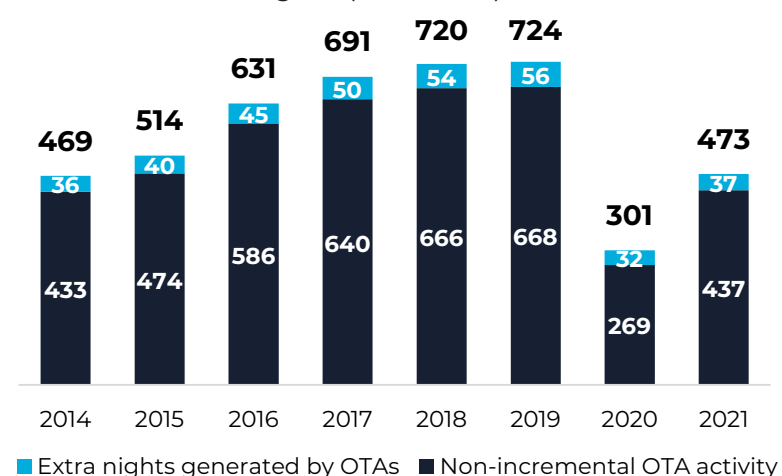
OTA ACTIVITY & INCREMENTAL IMPACT ON NIGHTS

This analysis estimates 56 million room nights were booked through OTAs in 2019 that would not have taken place without the benefits OTAs provide. This is equivalent to 8% of the 724 million total room nights booked on OTAs in 2019 for accommodations in North America. Other nights booked through OTAs would still have taken place through other booking avenues in the absence of these platforms. Panel econometric estimation considered how the OTA activity has changed relative to all other identified drivers of demand in order to identify the incremental impact in demand for all major markets.

Estimation takes into account the changes in domestic and international demand drivers, including changes in indicators of income and affordability in all source markets. This calculation relies upon previously identified relationships and drivers in Tourism Economics' global tourism forecast models. The inclusion of OTA metrics in these models has improved equation accuracy by better explaining observed growth. By including all other demand drivers, there is high confidence that the incremental impact of OTAs is being fully identified.

Additional Nights in All Accommodation in North America

Millions of Room Nights (2014-2021)



IMPACTS ON INTERNATIONAL AND DOMESTIC

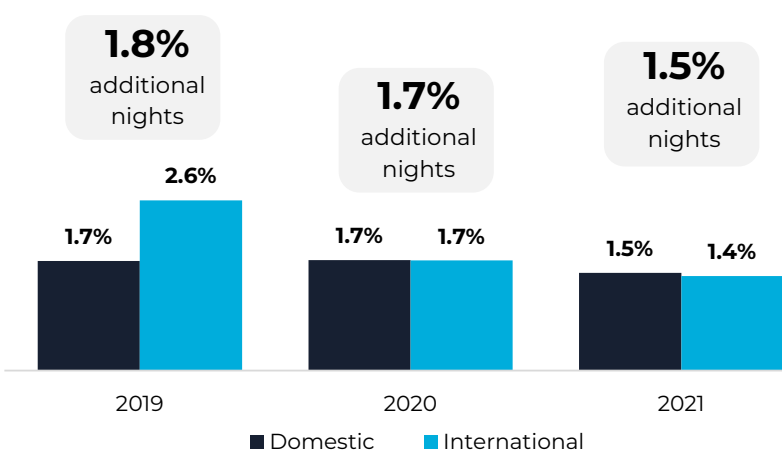
OTAs had a proportionately larger incremental impact on international than on domestic travel demand pre-pandemic. Estimation included OTA bookings as a share of all wider activity as an explanatory variable for equations of domestic and outbound travel demand. There is a higher estimated elasticity of domestic demand with respect to OTA intensity than for international demand.

This confirms the theory that OTAs drive incremental demand by providing trusted information and increased transparency by supporting travel to destinations.

Incremental outbound and domestic travel demand has been calculated for all major source markets and demand has been mapped to destinations according to relative OTA use and origin-destination bookings.

Uplift in Domestic and International Nights in North America

Increase in room nights, relative to counterfactual

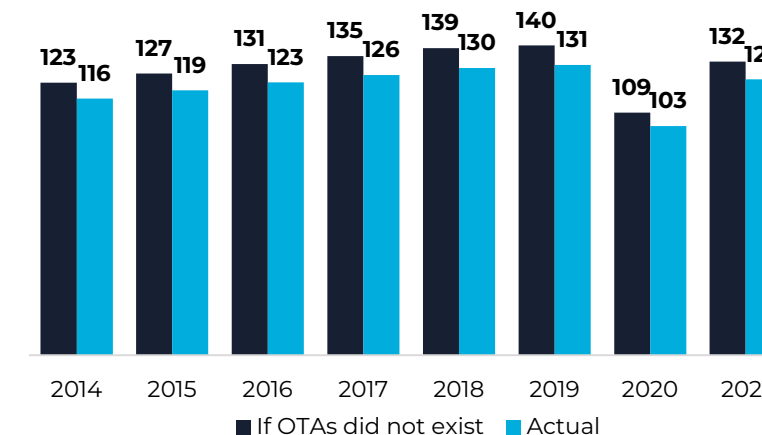


OTAS REDUCE ACCOMMODATION COSTS

OTAs reduce travellers' accommodation costs by increasing consumer choice and intensifying competition between accommodation providers. As a result, there is a clear inverse correlation between OTA share of accommodation nights sold and the average daily rate (ADR) paid. Markets with a higher OTA intensity have a lower ADR, while an increased intensity over time is correlated with lower ADR than would otherwise be the case.

Panel econometric estimation has identified the relationship between OTA intensity and ADR across all major markets, also taking into account hotel occupancy and prices and costs. Markets with a higher OTA intensity experience lower ADR, all other things being equal.

Hotel Average Daily Room Rates (ADR) US\$ per room



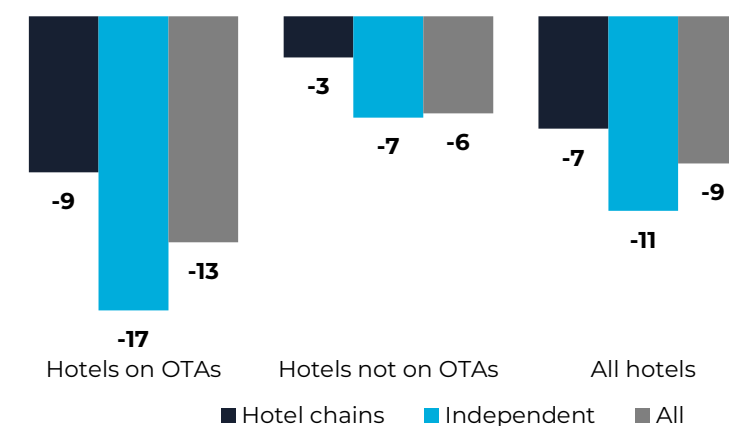
ADR IMPACTS VARY BY PROPERTY

OTAs save consumers more depending on property type. There is a stronger observed relationship between OTA intensity and ADR for independent hotels than for chain properties.

This is partly due to a greater proportion of independent hotels selling rooms on OTAs to take advantage of the increased exposure and sales opportunities. These relationships have been separately identified for all global destinations.

Estimation has also considered ADR for sales through OTAs as well as through all other channels. There is a notable, albeit lesser, impact on ADR for non-OTA room sales (-\$6) due to the increased exposure and competitiveness than for OTA room sales (-\$13).

OTA Impact on Hotel ADR by Segment US\$, difference from counterfactual



ADDITIONAL ECONOMIC IMPACTS

The net effect of additional nights and lower ADR is an increase in overall destination spending, taking into account all other trip spending. Net direct gain in GDP and employment is calculated from an analysis of structural statistics including GDP to output ratios and productivity rates for relevant sectors of the economy. Total impacts include calculation of indirect effects through the supply chain and induced effects of spending of wages – estimated from supply-use table relationships.

INCREMENTAL ECONOMIC IMPACT (2019)



INCREMENTAL ECONOMIC IMPACT (2020)



INCREMENTAL ECONOMIC IMPACT (2021)



OTA DETAILS NORTH AMERICA

NORTH AMERICA

OTA DETAILS

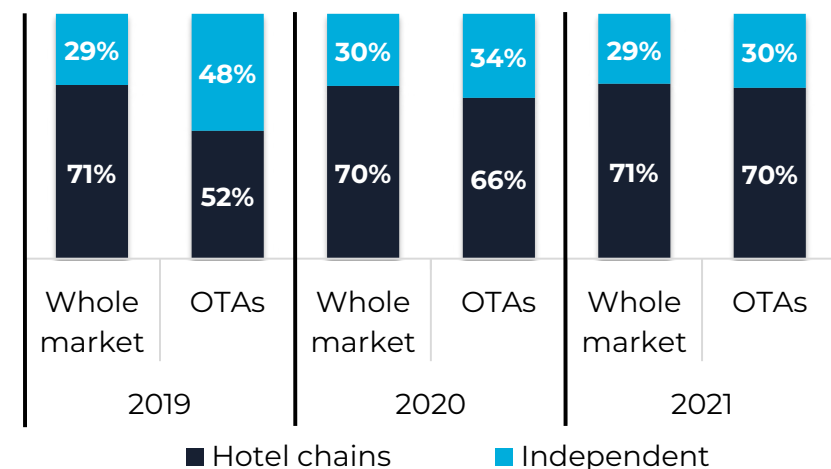
MARKET CHARACTERISTICS

OTAs support independent accommodations

OTAs have traditionally been particularly important for independent hotels. Pre-pandemic, 48% of OTA guests stayed at independent hotels (2019), compared to 29% for hotel guests overall. Since the pandemic, this appears to have shifted at least temporarily, with OTA guests tending to favor branded hotels at a similar rate as the market overall, resulting in an independent property share among OTA guests that fell to 30% in 2021.

Market Characteristics of OTAs Compared to Whole Market in North America

Share of Total Sales (Branded Chains & Independent)



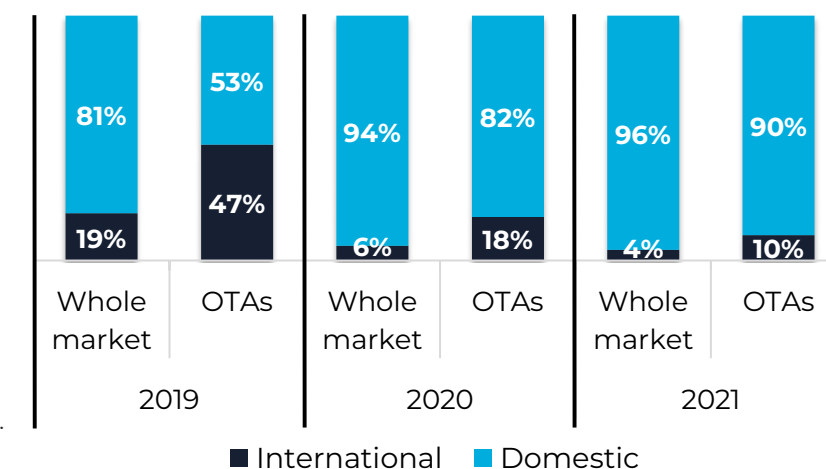
Source: Tourism Economics & Booking.com

OTAs have traditionally been important for international travelers, with international travelers representing a greater than average share of OTA room nights

Pre-pandemic, a substantial 47% of OTA room nights were accounted for by international travelers (2019), compared to 19% in the North American accommodations market overall. In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 10%.

Market Characteristics of OTAs Compared to Whole Market in North America

Share of Nights (International & Domestic)



Source: Tourism Economics & Booking.com

Summary Impacts of OTAs in North America, 2019-2021

Amounts as Indicated

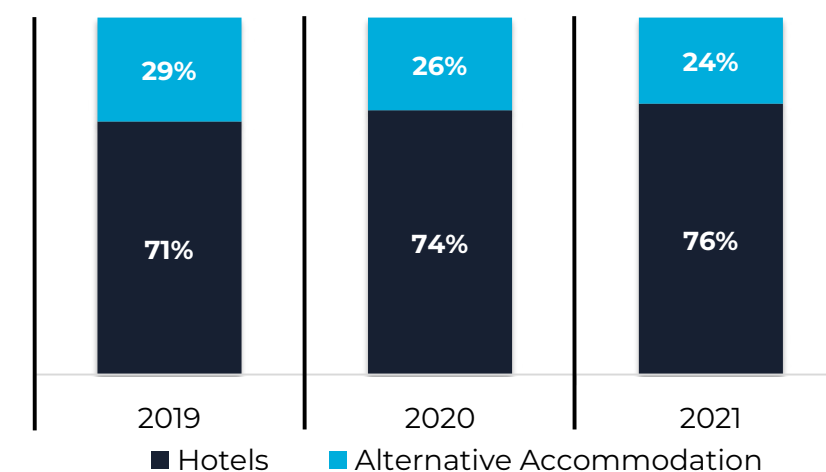


OTAs are important for alternative accommodation providers

In 2021, 24% of OTA sales were alternative accommodations, down from 29% in 2019.

Market Characteristics of OTAs in North America

Share of Total Sales (Hotels & Alternative Accommodations)

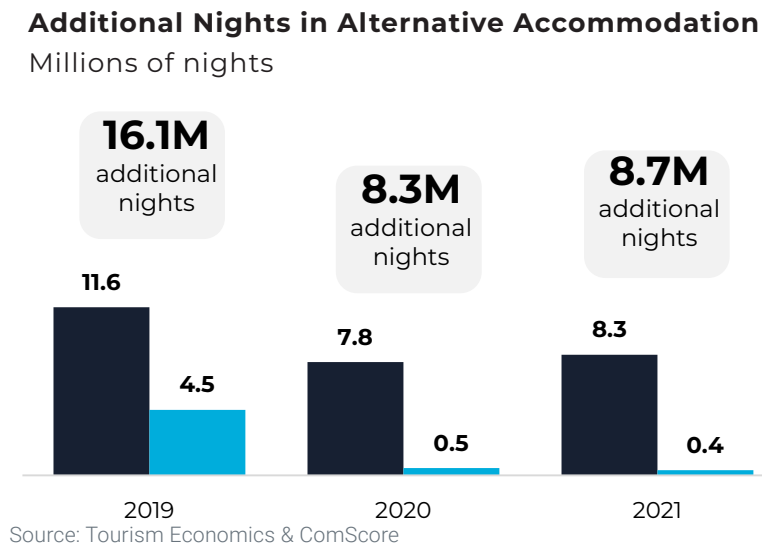


Source: Tourism Economics & ComScore

MARKET EXPANSION EFFECT ON ALTERNATIVE ACCOMMODATIONS

OTAs support impacts in alternative lodgings as well as hotels

In each year from 2019 to 2021, OTAs increased the number of overnight stays in alternative accommodations in the United States. In 2021, bookings of alternative accommodations via OTAs generated an additional 8.7 million nights.

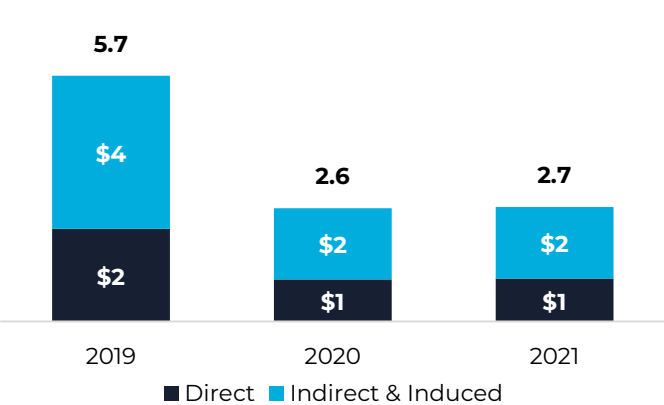


ECONOMIC IMPACTS OF OTA MARKET EXPANSION EFFECT
ALTERNATIVE ACCOMMODATIONS

OTAs generate incremental economic impacts in the form of GDP and jobs supported by alternative lodging stays

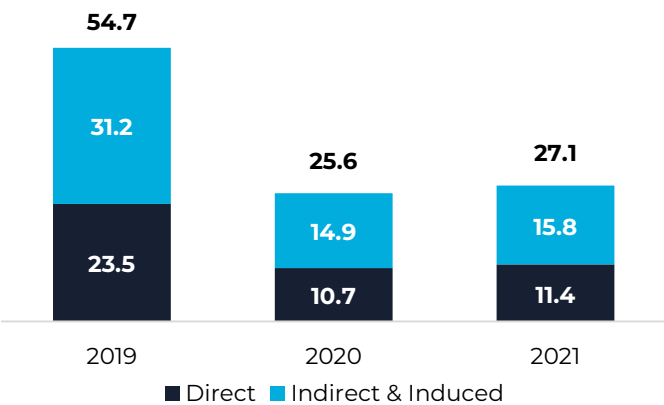
Additional room nights at alternative accommodations supported by OTAs generated US\$2.7 billion in additional GDP and 27,000 total jobs in 2021, although both impacts were significantly higher in 2019.

Incremental GDP Impact for Alternative Accommodations
Billions of US Dollars



Source: Tourism Economics & ComScore

Incremental Employment Impact for Alternative Accommodations
Thousands of Jobs



Source: Tourism Economics & ComScore



OTA DETAILS

NORTH AMERICA

COUNTRY RESULTS

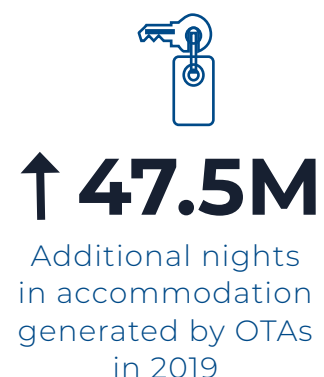
UNITED STATES KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in the United States through downward effects on rates and by expanding the number of room nights available to consumers

Over time the number of travelers organizing travel in the United States through OTAs steadily increased, before the effects of the pandemic led to a sharp decline in all travel bookings.

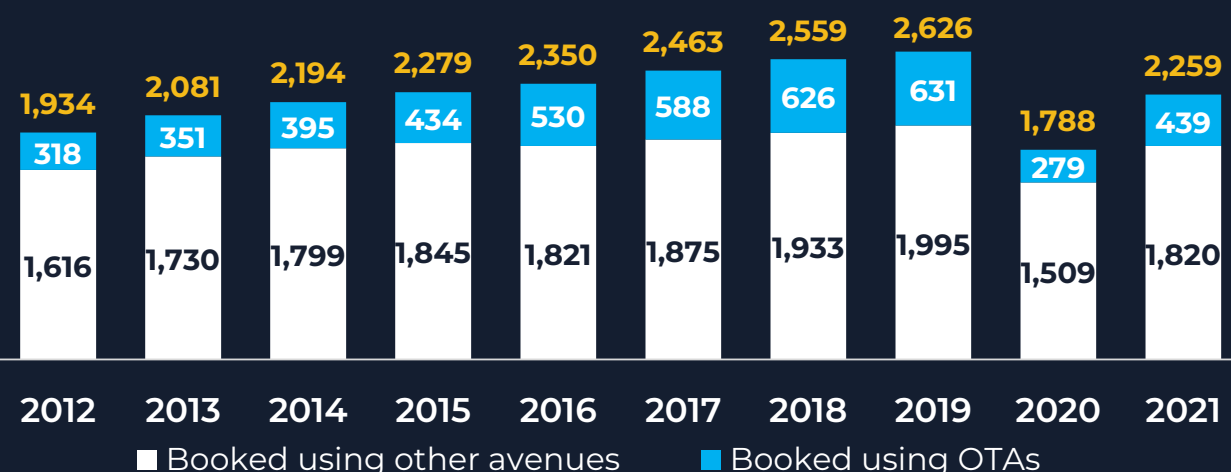
As shown in the accompanying chart, travelers booked approximately 631 million room nights through OTAs in 2019, representing 24% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 439 million room nights, representing 19% of the total United States accommodations market.

Key Impacts of OTAs in the United States in 2019



Nights in All Accommodation Types in the United States, 2012-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates. Between 2014 and 2021, OTAs generated an average reduction in rates of \$7.40 per room night (5.8 percent reduction) across the United States.

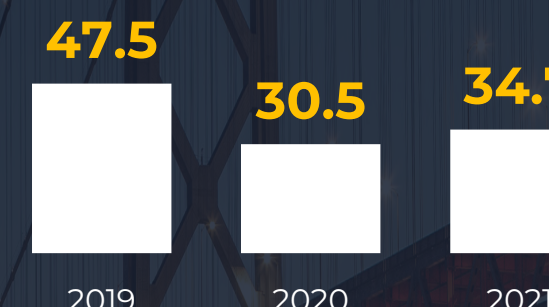
Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across the United States. OTAs added an incremental \$18.6 billion to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Billions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of the United States economy. In 2019, the economic impacts attributable to OTAs included 167,000 jobs. In 2021, OTAs were responsible for 106,000 jobs, representing a recovery relative to the 93,000 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



UNITED STATES

OTA DETAILS

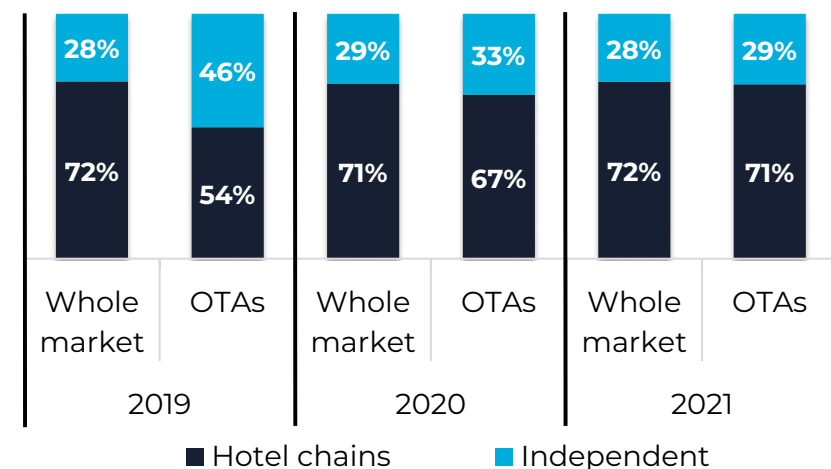
MARKET CHARACTERISTICS

OTAs support independent accommodations

OTAs have traditionally been particularly important for independent hotels. Pre-pandemic, 46% of OTA guests stayed at independent hotels (2019), compared to 28% for hotel guests overall. Since the pandemic, this appears to have shifted at least temporarily, with OTA guests tending to favor branded hotels at a similar rate as the market overall, resulting in an independent property share among OTA guests that fell to 29% in 2021.

Market Characteristics of OTAs Compared to Whole Market in the United States

Share of Total Sales (Branded Chains & Independent)



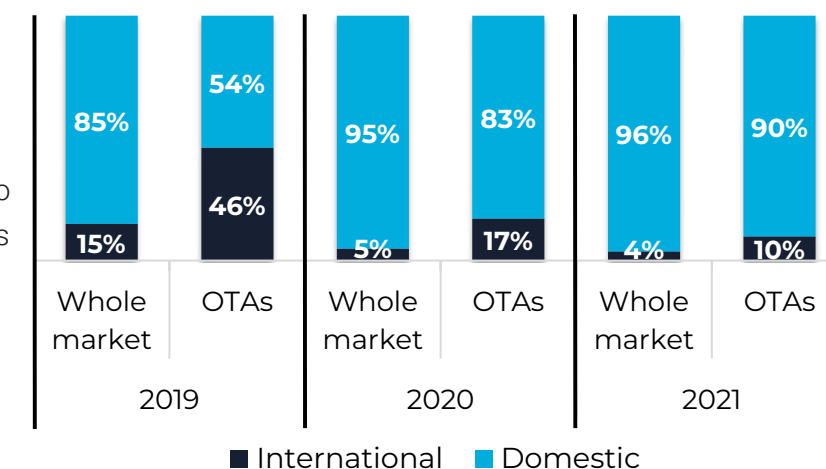
Source: Tourism Economics & Booking.com

OTAs have traditionally been important for international travelers, with international travelers representing a greater than average share of OTA room nights

Pre-pandemic, a substantial 46% of OTA room nights were accounted for by international travelers (2019), compared to 15% in the United States accommodations market overall. In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 10%.

Market Characteristics of OTAs Compared to Whole Market in the United States

Share of Nights (International & Domestic)



Source: Tourism Economics & Booking.com

Summary Impacts of OTAs in the United States, 2019-2021

Amounts as Indicated

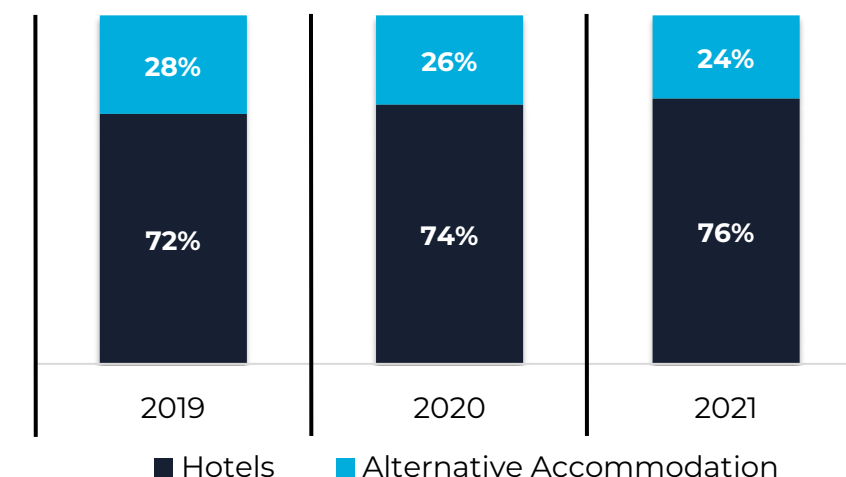
	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$8 reduced daily rates	+47.5M room nights	\$18.6B incremental GDP	167,000 jobs
2020	-\$6 reduced daily rates	+30.5M room nights	\$9.9B incremental GDP	93,000 jobs
2021	-\$8 reduced daily rates	+34.7M room nights	\$10.7B incremental GDP	106,000 jobs

OTAs are important for alternative accommodation providers

In 2021, 24% of OTA sales were alternative accommodations, down from 28% in 2019.

Market Characteristics of OTAs in the United States

Share of Total Sales (Hotels & Alternative Accommodations)



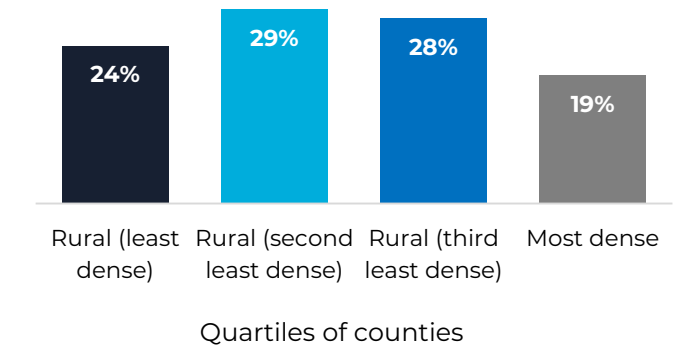
Source: Tourism Economics & ComScore

OTAs support travel to rural areas, spreading out tourism

Over time, OTA activity in rural counties has grown more quickly than in urban counties, and this trend has been reinforced by the pandemic. While in 2012, 9.7% of OTA nights occurred in rural counties, by 2021 this share had increased to 16.0%. This represents a disproportionate share of activity, as only 15.3% of total United States jobs are at businesses in these least dense counties.

Growth in OTA Room Nights by County Density

Annualized Growth, 2012 - 2021

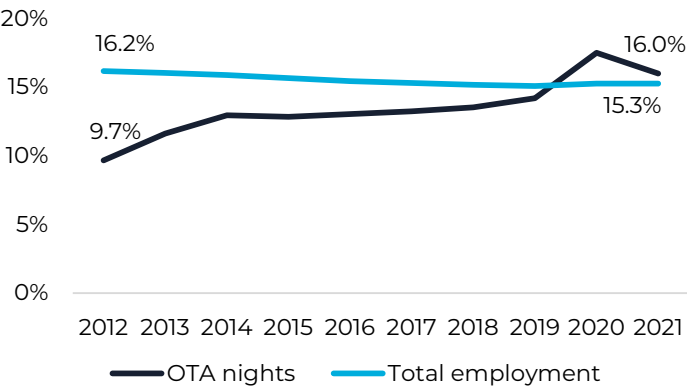


Note: Refers to counties categorized by quartile based on jobs per square mile. In other words, the least dense category in the graph reflects counties that are categorized among the 25% of US counties with the fewest jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Activity in Rural Counties

Share of OTA nights and jobs accounted for by rural counties



Note: Rural refers to the least dense counties, those that are in the bottom 75% of US counties by jobs per square mile.

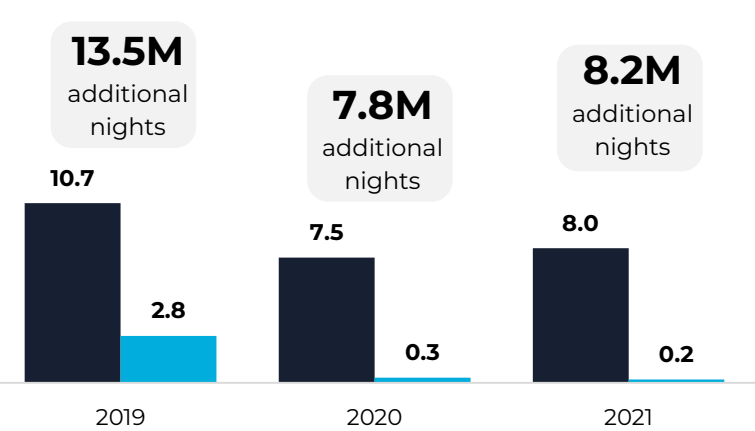
Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

MARKET EXPANSION EFFECT ON ALTERNATIVE ACCOMMODATIONS

OTAs support impacts in alternative lodgings as well as hotels

In each year from 2019 to 2021, OTAs increased the number of overnight stays in alternative accommodations in the United States. In 2021, bookings of alternative accommodations via OTAs generated an additional 8.2 million nights.

Additional Nights in Alternative Accommodation



Source: Tourism Economics & ComScore

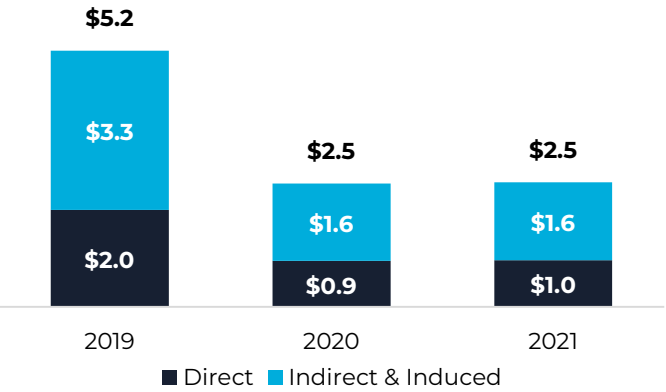
ECONOMIC IMPACTS OF OTA MARKET EXPANSION EFFECT ALTERNATIVE ACCOMMODATIONS

OTAs generate incremental economic impacts in the form of GDP and jobs supported by alternative lodging stays

Additional room nights at alternative accommodations supported by OTAs generated \$2.5 billion in additional GDP and 25,000 total jobs in 2021, although both impacts were significantly higher in 2019.

Incremental GDP Impact for Alternative Accommodations

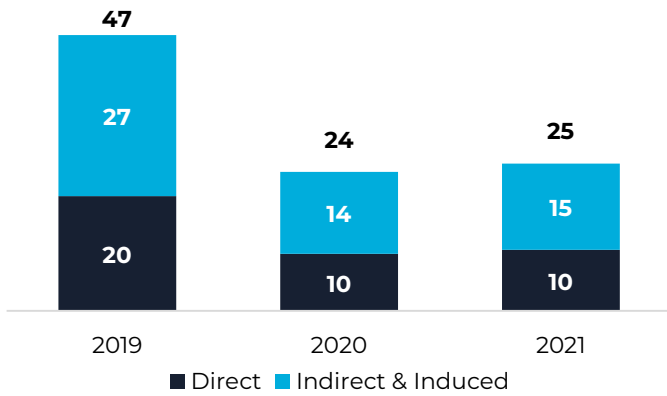
Billions of \$



Source: Tourism Economics & ComScore

Incremental Employment Impact for Alternative Accommodations

Thousands of Jobs



Source: Tourism Economics & ComScore



CANADA

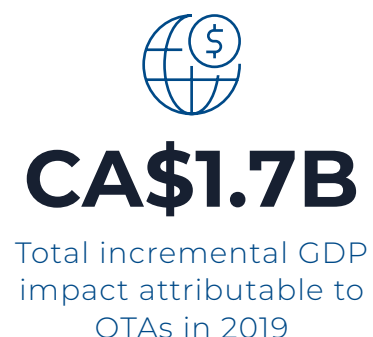
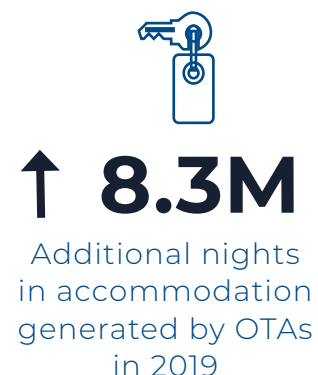
KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Canada through downward effects on rates and by expanding the number of room nights available to consumers

Over time the number of travelers organizing travel in Canada through OTAs trended upward, before the effects of the pandemic led to a sharp decline in all travel bookings.

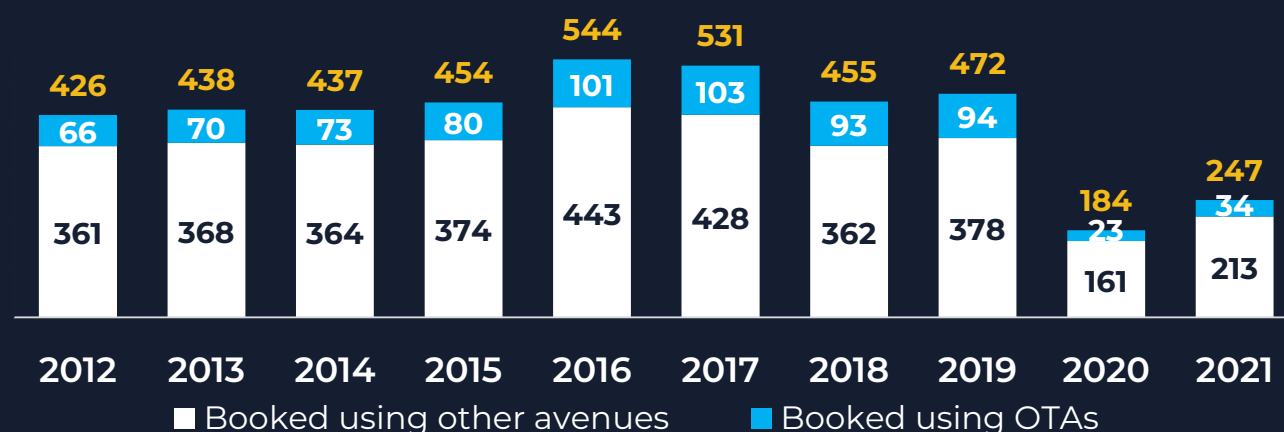
As shown in the accompanying chart, travelers booked approximately 94 million room nights through OTAs in 2019, representing 20% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 34 million room nights, representing 14% of the total Canadian accommodations market.

Key Impacts of OTAs in Canada in 2019



Nights in All Accommodation Types in Canada, 2012-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates. Between 2014 and 2021, OTAs generated an average reduction in rates of CA\$10.30 per room night (6.1 percent reduction) across Canada.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

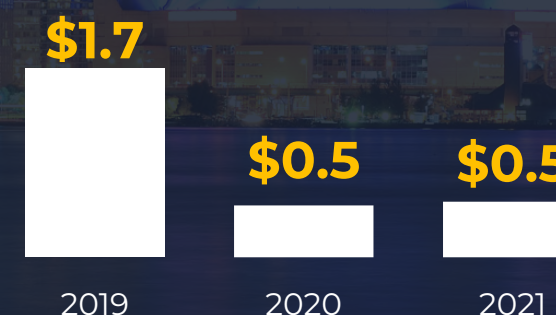
Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Canada. OTAs added an incremental CA\$1.7 billion to the value of the economy, also referred to as GDP, in 2019.

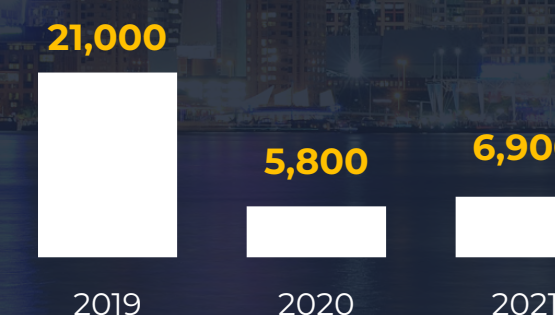
GDP Impacts (CA\$ Billions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Canada's economy. In 2019, the economic impacts attributable to OTAs included 21,000 jobs. In 2021, OTAs were responsible for 6,900 jobs, representing a recovery relative to the 5,800 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



CANADA

OTA DETAILS

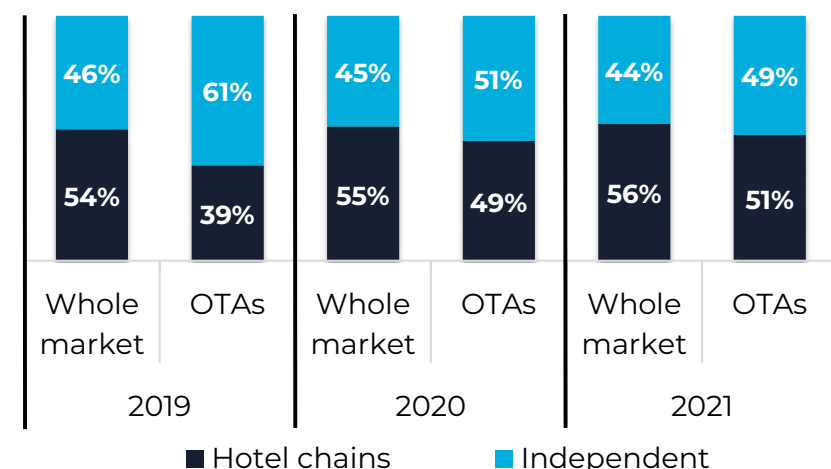
MARKET CHARACTERISTICS

OTAs support independent accommodations

OTAs have traditionally been particularly important for independent hotels. Pre-pandemic, 61% of OTA guests stayed at independent hotels (2019), compared to 46% for hotel guests overall. Since the pandemic, this appears to have shifted at least temporarily, with OTA guests tending to favor branded hotels at a closer rate to the market overall, resulting in an independent property share among OTA guests that fell to 49% in 2021.

Market Characteristics of OTAs Compared to Whole Market in Canada

Share of Total Sales (Branded Chains & Independent)



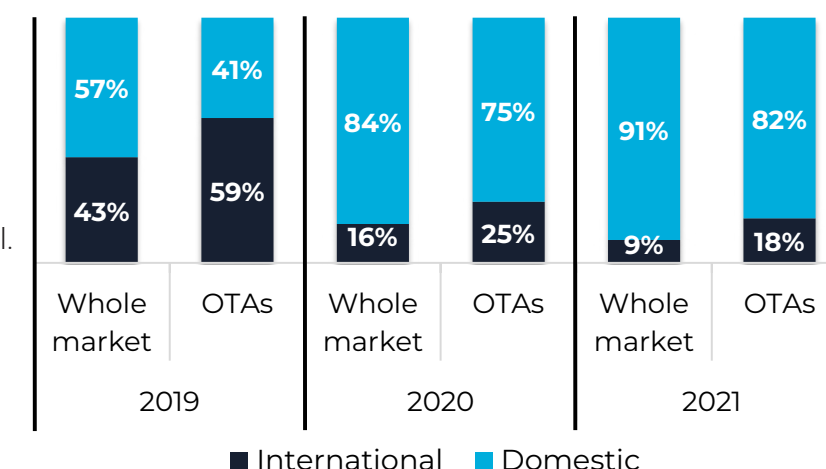
Source: Tourism Economics & Booking.com

OTAs have traditionally been important for international travelers, with international travelers representing a greater than average share of OTA room nights

Pre-pandemic, 59% of OTA room nights were accounted for by international travelers (2019), compared to 43% in the Canadian accommodations market overall. In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 18%.

Market Characteristics of OTAs Compared to Whole Market in Canada

Share of Nights (International & Domestic)



Source: Tourism Economics & Booking.com

Summary Impacts of OTAs in Canada, 2019-2021

Amounts as Indicated

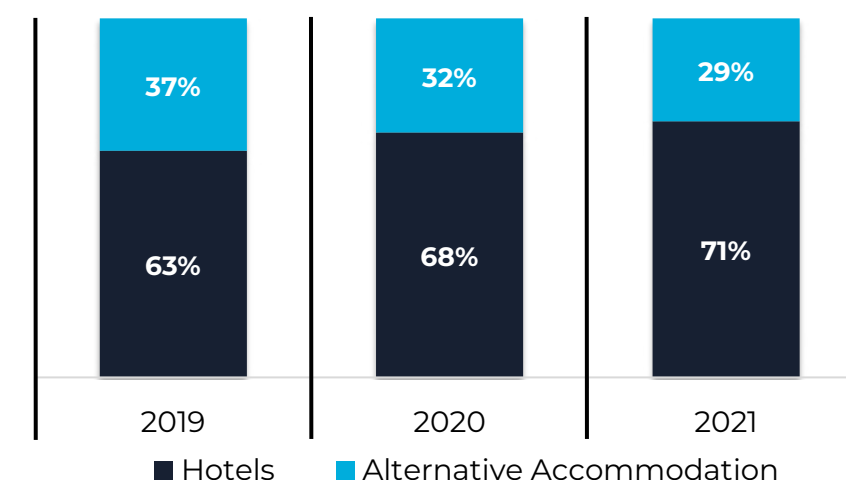
	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-CA\$11 reduced daily rates	+8.3M room nights	CA\$1.7B incremental GDP	21,000 jobs
2020	-CA\$8 reduced daily rates	+1.9M room nights	CA\$474M incremental GDP	5,8000 jobs
2021	-CA\$9 reduced daily rates	+1.9M room nights	CA\$506M incremental GDP	6,900 jobs

OTAs are important for alternative accommodation providers

In 2021, 29% of OTA sales were alternative accommodations, down from 37% in 2019.

Market Characteristics of OTAs in Canada

Share of Total Sales (Hotels & Alternative Accommodations)

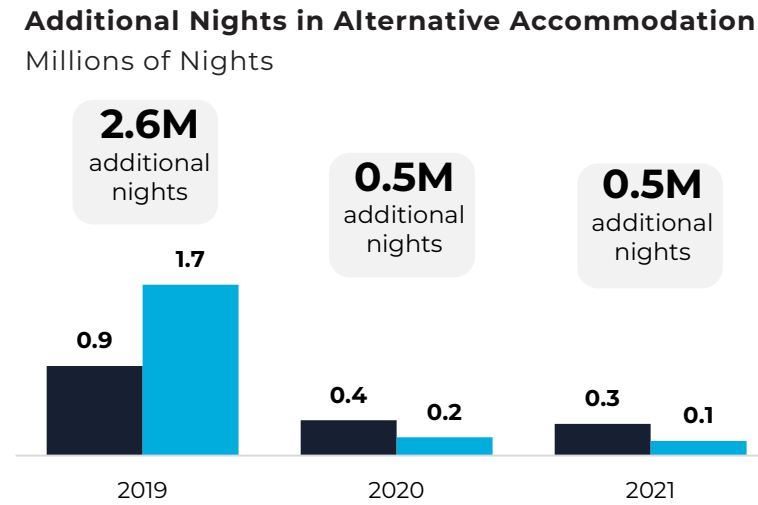


Source: Tourism Economics & ComScore

MARKET EXPANSION EFFECT ON ALTERNATIVE ACCOMMODATIONS

OTAs support impacts in alternative lodgings as well as hotels

In each year from 2019 to 2021, OTAs increased the number of nights in alternative accommodations in Canada. In 2021, bookings of alternative accommodations via OTAs generated an additional half a million nights.



Source: Tourism Economics & ComScore

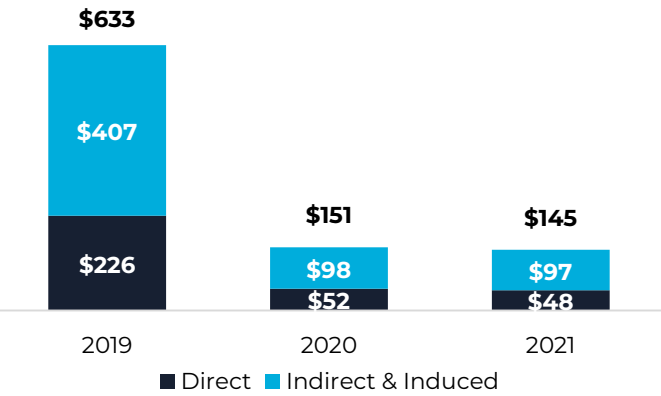
ECONOMIC IMPACTS OF OTA MARKET EXPANSION EFFECT ALTERNATIVE ACCOMMODATIONS

OTAs generate incremental economic impacts in the form of GDP and jobs supported by alternative lodging stays

Additional room nights at alternative accommodations supported by OTAs generated CA\$145 million in additional GDP and 2,000 total jobs in 2021, although both impacts were significantly higher in 2019.

Incremental GDP Impact for Alternative Accommodations

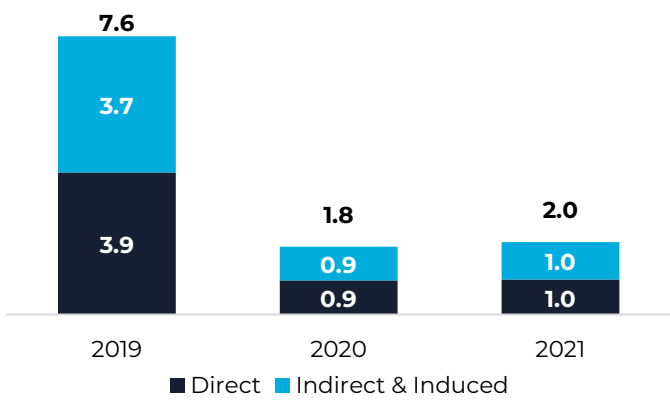
Millions of CA Dollars



Source: Tourism Economics & ComScore

Incremental Employment Impact for Alternative Accommodations

Thousands of Jobs



Source: Tourism Economics & ComScore



OTA DETAILS STATE RESULTS

CONNECTICUT KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Connecticut through downward effects on rates and by expanding the number of room nights available to consumers

Room nights booked through OTAs represent an important share of overall bookings in Connecticut.

As shown in the accompanying chart, travelers booked approximately 3.1 million room nights in Connecticut through OTAs in 2019, representing 20% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 2.2 million room nights, representing 16% of the total Connecticut accommodations market.

Key Impacts of OTAs in Connecticut in 2019


↑218,000

Additional nights
in accommodation
generated by OTAs
in 2019


\$130M

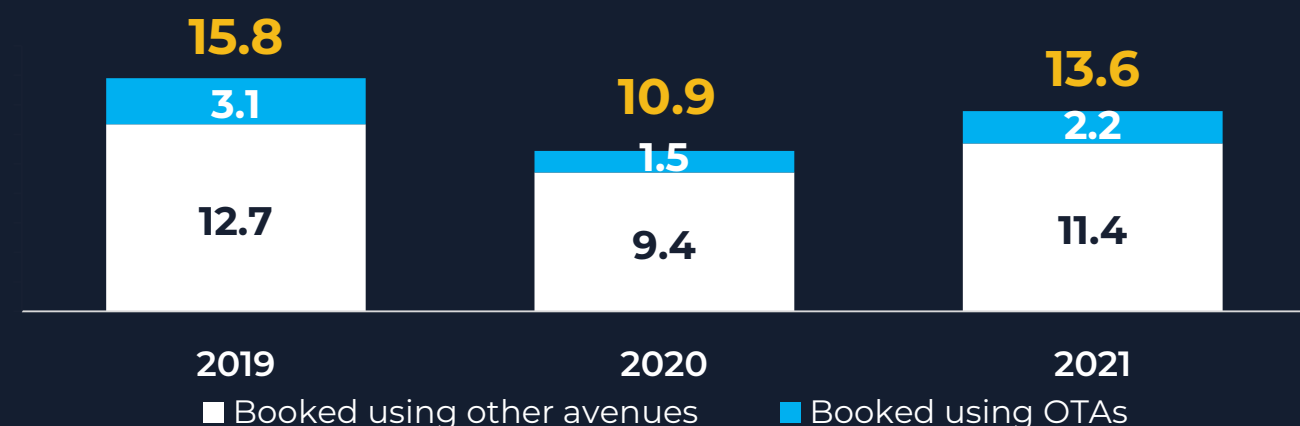
Total incremental GDP
impact attributable to
OTAs in 2019


1,000

Total incremental jobs
impact attributable to
OTAs in 2019

Nights in All Accommodation Types in Connecticut, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the state level, OTAs generated an average reduction in rates of \$6 across Connecticut in 2019 (4.8% reduction), compared to \$5 in 2021.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Thousands) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Connecticut. OTAs added an incremental \$130.1 million to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Millions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Connecticut's economy. In 2019, the economic impacts attributable to OTAs included 1,000 jobs. In 2021, OTAs were responsible for 700 jobs, representing a recovery relative to the 600 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



CONNECTICUT OTA DETAILS

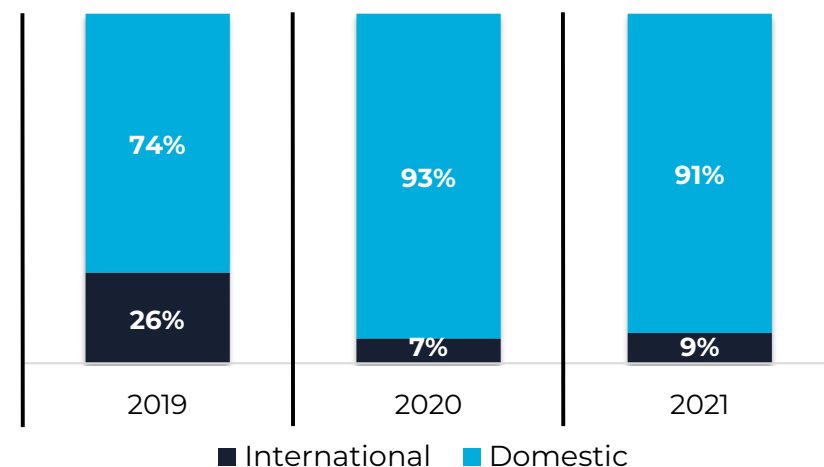
MARKET CHARACTERISTICS

OTAs have traditionally been important for international travelers, with international travelers representing an important share of OTA room nights

Pre-pandemic, 26% of OTA room nights were accounted for by international travelers (2019). In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 9%.

Market Characteristics of OTAs in Connecticut

Share of Nights (International & Domestic)



Source: Tourism Economics & Booking.com



Summary Impacts of OTAs in Connecticut, 2019-2021

Amounts as Indicated

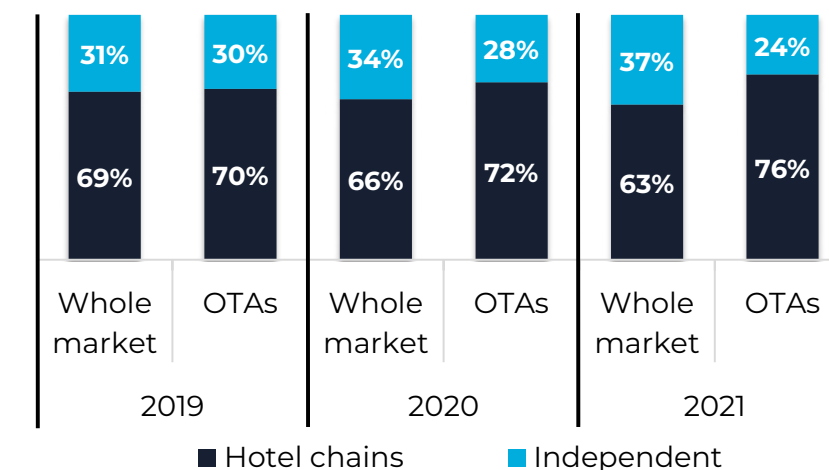
	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$6 reduced daily rates	+218,000 room nights	\$130M incremental GDP	1,000 jobs
2020	-\$4 reduced daily rates	+156,000 room nights	\$75M incremental GDP	600 jobs
2021	-\$5 reduced daily rates	+171,000 room nights	\$78M incremental GDP	700 jobs

OTAs support independent accommodations

Nationally, OTA guests tend to favor independent hotels. However, in Connecticut, a similar share of OTA guests stayed at branded hotels as hotel guests overall in 2019 (70% and 69%, respectively). Recently, OTA guests have shifted a bit more toward branded hotels, with 76% of OTA guests staying at branded hotels in 2021.

Market Characteristics of OTAs Compared to Whole Market in Connecticut

Share of Total Sales (Branded Chains & Independent)



Source: Tourism Economics & Booking.com

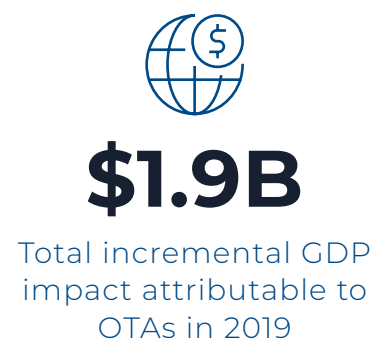
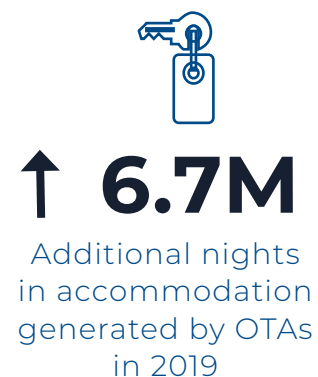
FLORIDA KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Florida through downward effects on rates and by expanding the number of room nights available to consumers

Room nights booked through OTAs represent an important share of overall bookings in Florida.

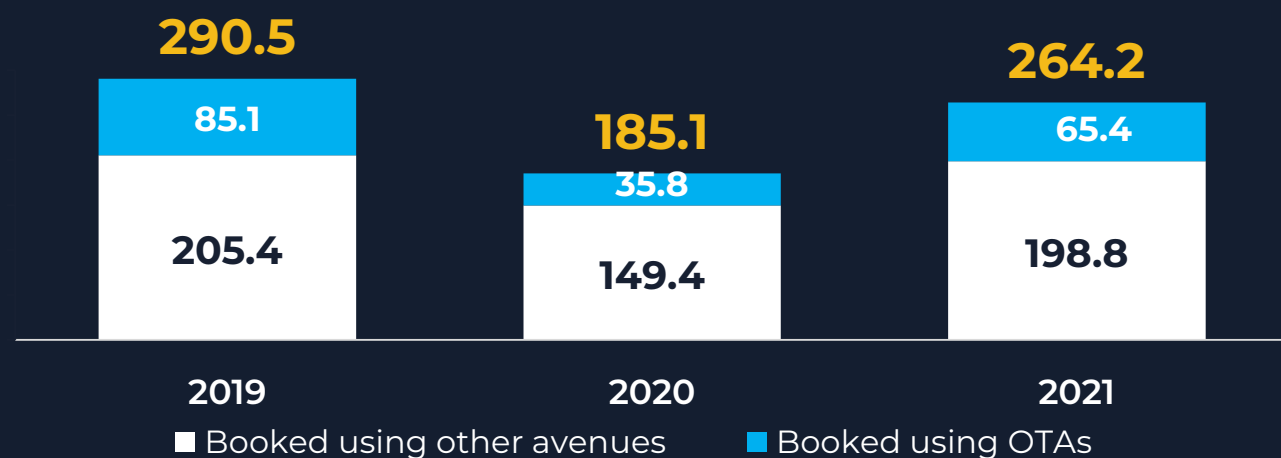
As shown in the accompanying chart, travelers booked approximately 85.1 million room nights in Florida through OTAs in 2019, representing 29% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 65.4 million room nights, representing 25% of the total Florida accommodations market.

Key Impacts of OTAs in Florida in 2019



Nights in All Accommodation Types in Florida, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the state level, OTAs generated an average reduction in rates of \$11 across Florida in 2019 (7.3% reduction), compared to \$12 in 2021.

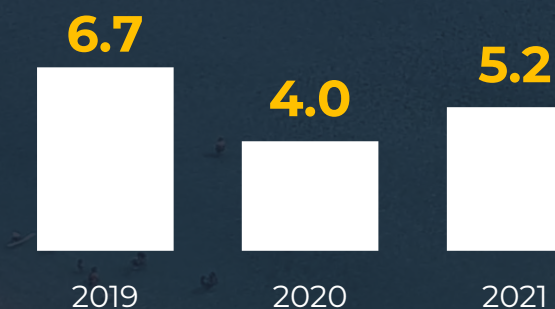
Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Florida. OTAs added an incremental \$1.9 billion to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Billions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Florida's economy. In 2019, the economic impacts attributable to OTAs included 22,000 jobs. In 2021, OTAs were responsible for 12,000 jobs, representing a recovery relative to the 15,000 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



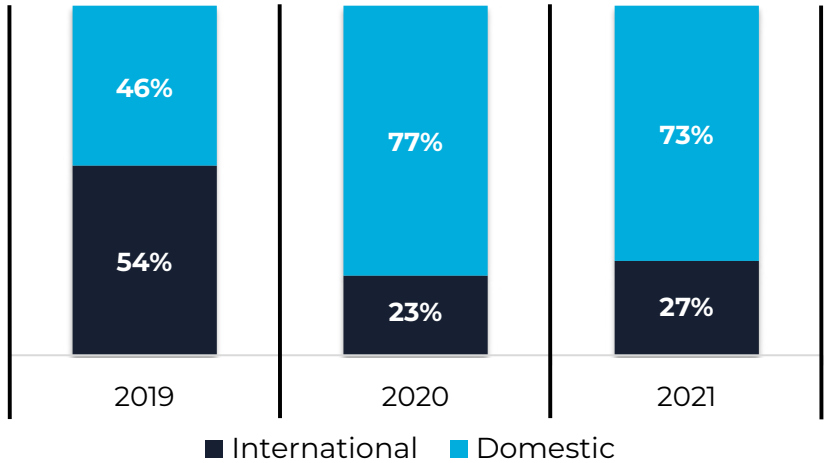
FLORIDA OTA DETAILS

MARKET CHARACTERISTICS

OTAs have traditionally been important for international travelers, with international travelers representing an important share of OTA room nights

Pre-pandemic, 54% of OTA room nights were accounted for by international travelers (2019). In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 27%.

Market Characteristics of OTAs in Florida
Share of Nights (International & Domestic)

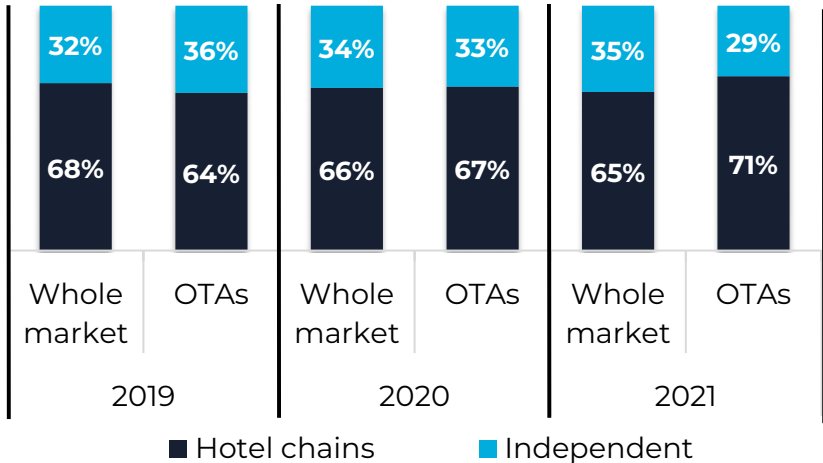


Source: Tourism Economics & Booking.com

OTAs support independent accommodations

In Florida, a smaller share of OTA guests stayed at branded hotels (64%) than hotel guests overall (68%) in 2019. Recently, OTA guests have shifted more toward branded hotels, with 71% of OTA guests staying at branded hotels in 2021.

Market Characteristics of OTAs Compared to Whole Market in Florida
Share of Total Sales (Branded Chains & Independent)

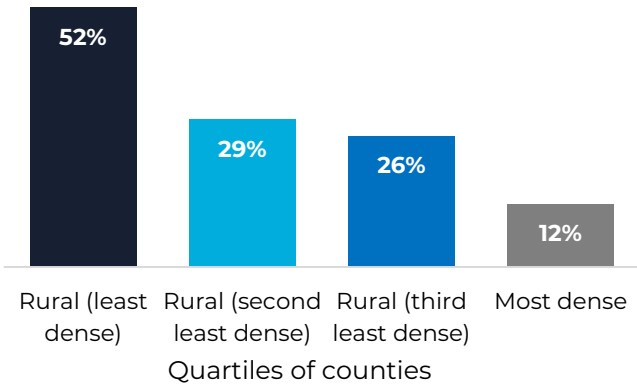


Source: Tourism Economics & Booking.com

OTAs support travel to rural areas, spreading out tourism

Over time, OTA activity in rural counties has grown more quickly than in urban counties, and this trend has been reinforced by the pandemic. While in 2014, 0.6% of OTA nights occurred in rural counties, by 2021 this share had increased to 1.4%.

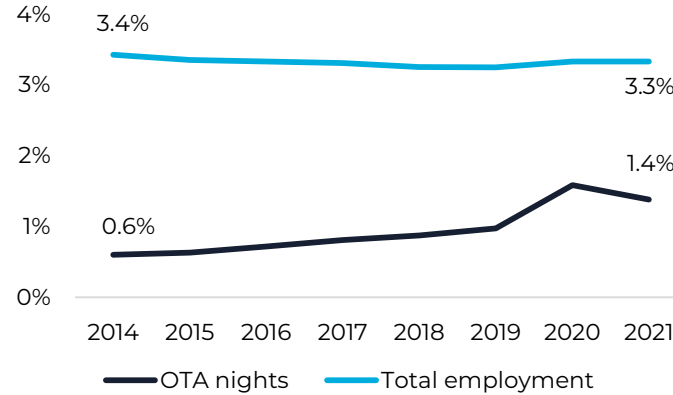
Growth in OTA Room Nights by County Density
Annualized Growth, 2014 - 2021



Note: Refers to counties categorized by quartile based on jobs per square mile. In other words, the least dense category in the graph reflects counties that are categorized among the 25% of US counties with the fewest jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Activity in Rural Counties
Share of OTA nights and jobs accounted for by rural counties



Note: Rural refers to the least dense counties, those that are in the bottom 75% of US counties by jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Summary Impacts of OTAs in Florida, 2019-2021

Amounts as Indicated

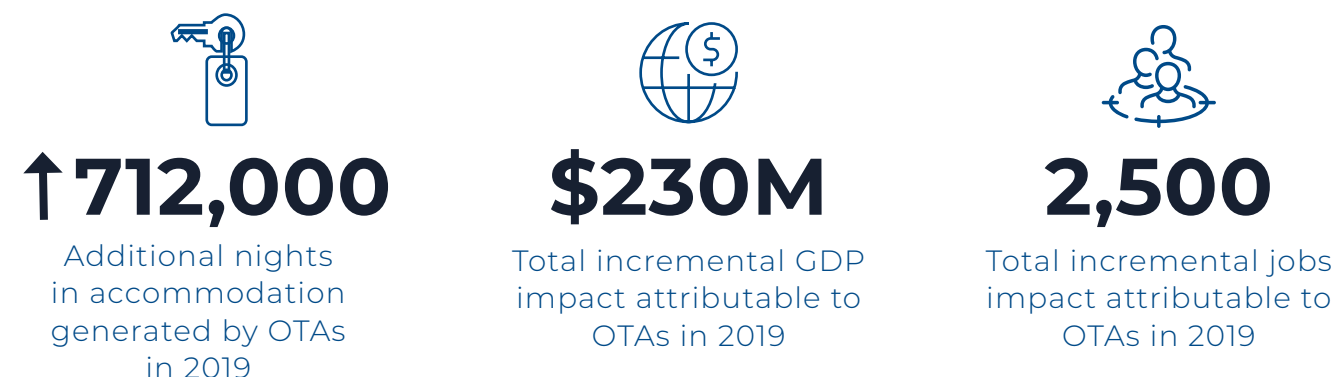
	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$11 reduced daily rates	+6.7M room nights	\$1.9B incremental GDP	22,000 jobs
2020	-\$9 reduced daily rates	+4.0M room nights	\$1.1B incremental GDP	12,000 jobs
2021	-\$12 reduced daily rates	+5.2M room nights	\$1.3B incremental GDP	15,000 jobs

TAMPA BAY KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Tampa Bay through downward effects on rates and by expanding the number of room nights available to consumers

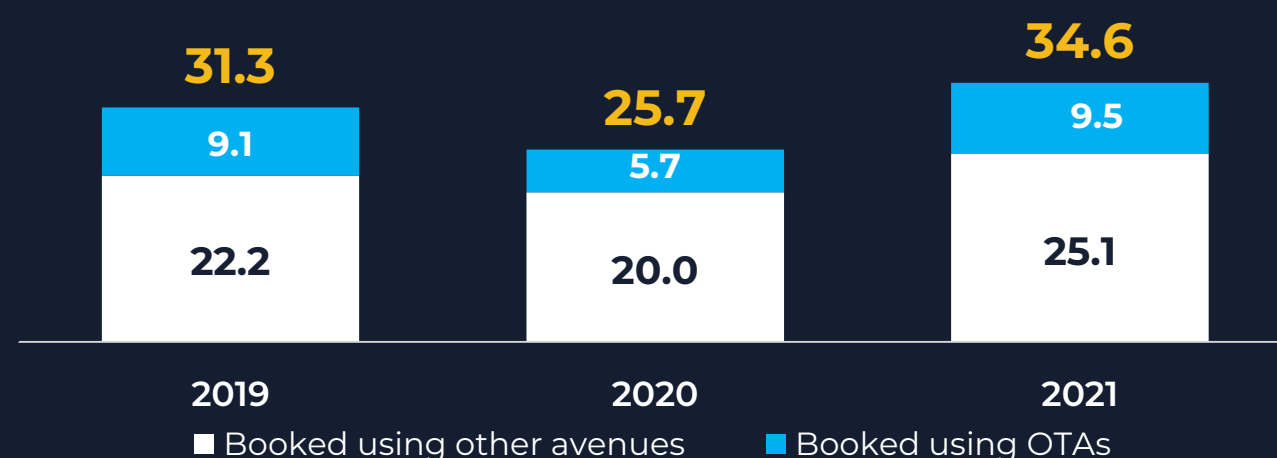
Room nights booked through OTAs represent an important share of overall bookings in Tampa Bay. As shown in the accompanying chart, travelers booked approximately 9.1 million room nights in Tampa Bay through OTAs in 2019, representing 29% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020 to levels above 2019, reaching 9.5 million room nights, representing 28% of the total Tampa Bay accommodations market.

Key Impacts of OTAs in Tampa Bay in 2019



Nights in All Accommodation Types in Tampa Bay, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the metro level, OTAs generated an average reduction in rates of \$10 across Tampa Bay in 2019 (7.3% reduction), compared to \$11 in 2021.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Thousands) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Tampa Bay. OTAs added an incremental \$230 million to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Millions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Tampa Bay's economy. In 2019, the economic impacts attributable to OTAs included 2,500 jobs. In 2021, OTAs were responsible for 2,200 jobs, representing a recovery relative to the 1,800 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



TAMPA BAY OTA DETAILS

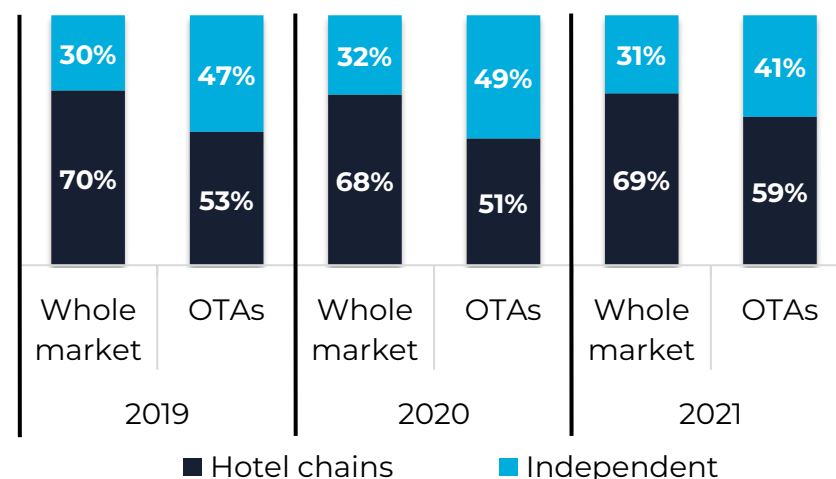
MARKET CHARACTERISTICS

OTAs support independent accommodations

OTAs have traditionally been particularly important for independent hotels. Pre-pandemic, 47% of OTA guests stayed at independent hotels (2019), compared to 30% for hotel guests overall. Since the pandemic, guests favor branded hotels more when booking through OTAs (59%).

Market Characteristics of OTAs Compared to Whole Market in Tampa Bay

Share of Total Sales (Branded Chains & Independent)



Source: Tourism Economics & Booking.com

Summary Impacts of OTAs in Tampa Bay, 2019-2021

Amounts as Indicated

	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$10 reduced daily rates	+712,000 room nights	\$230M incremental GDP	2,500 jobs
2020	-\$8 reduced daily rates	+636,000 room nights	\$167M incremental GDP	1,800 jobs
2021	-\$11 reduced daily rates	+761,000 room nights	\$189M incremental GDP	2,200 jobs



MINNESOTA KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Minnesota through downward effects on rates and by expanding the number of room nights available to consumers

Room nights booked through OTAs represent an important share of overall bookings in Minnesota.

As shown in the accompanying chart, travelers booked approximately 5.8 million room nights in Minnesota through OTAs in 2019, representing 18% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 4.1 million room nights, representing 16% of the total Minnesota accommodations market.

Key Impacts of OTAs in Minnesota in 2019



↑397,000

Additional nights in accommodation generated by OTAs in 2019



\$187M

Total incremental GDP impact attributable to OTAs in 2019

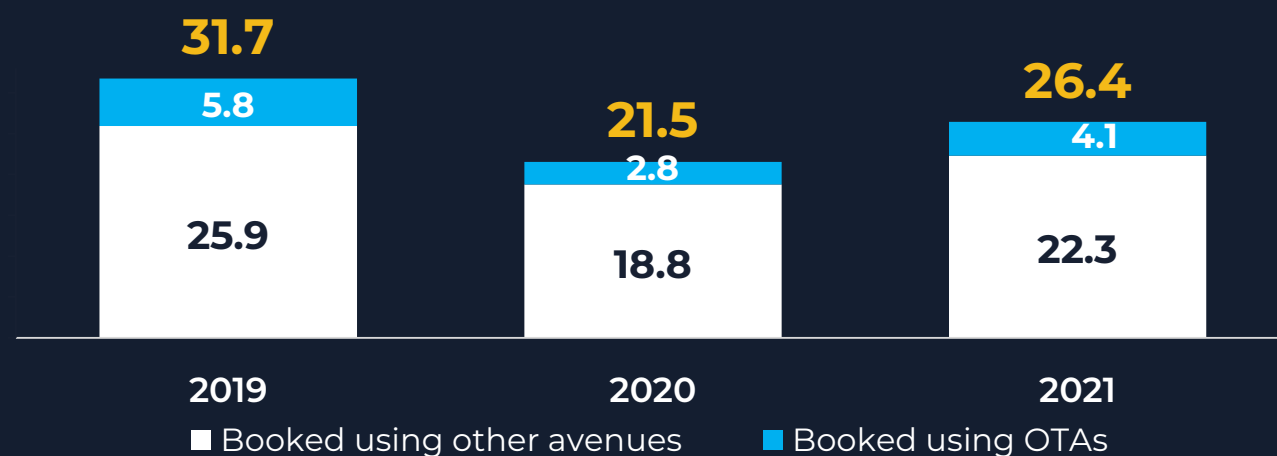


1,800

Total incremental jobs impact attributable to OTAs in 2019

Nights in All Accommodation Types in Minnesota, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the state level, OTAs generated an average reduction in rates of \$5 across Minnesota in 2019 (4.4% reduction), compared to \$4 in 2021.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Thousands) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Minnesota. OTAs added an incremental \$187 million to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Millions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Minnesota's economy. In 2019, the economic impacts attributable to OTAs included 1,800 jobs. In 2021, OTAs were responsible for 1,200 jobs, representing a recovery relative to the 1,100 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



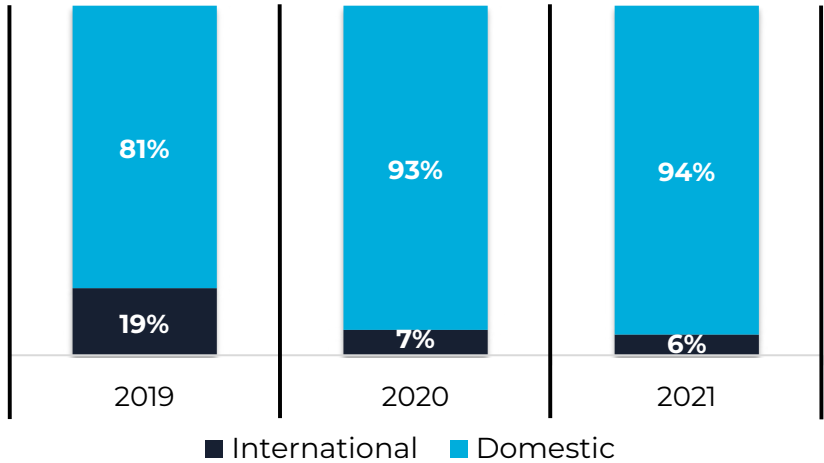
MINNESOTA OTA DETAILS

MARKET CHARACTERISTICS

OTAs have traditionally been important for international travelers, with international travelers representing an important share of OTA room nights

Pre-pandemic, 19% of OTA room nights were accounted for by international travelers (2019). In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 6%.

Market Characteristics of OTAs in Minnesota
Share of Nights (International & Domestic)

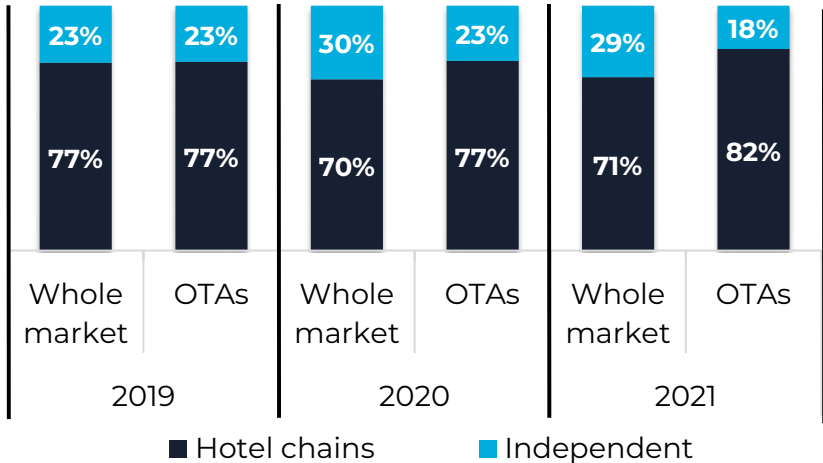


Source: Tourism Economics & Booking.com

OTAs support independent accommodations

Nationally, OTA guests tend to favor independent hotels. However, in Minnesota, a similar share of OTA guests stayed at branded hotels as hotel guests overall in 2019 (77%). Recently, OTA guests have shifted a bit more toward branded hotels, with 82% of OTA guests staying at branded hotels in 2021.

Market Characteristics of OTAs Compared to Whole Market in Minnesota
Share of Total Sales (Branded Chains & Independent)

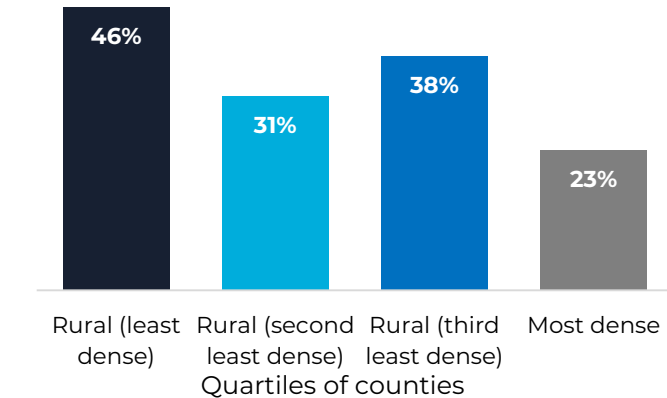


Source: Tourism Economics & Booking.com

OTAs support travel to rural areas, spreading out tourism

Over time, OTA activity in rural counties has grown more quickly than in urban counties, and this trend has been reinforced by the pandemic. While in 2012, 10.9% of OTA nights occurred in rural counties, by 2021 this share had increased to 24.2%.

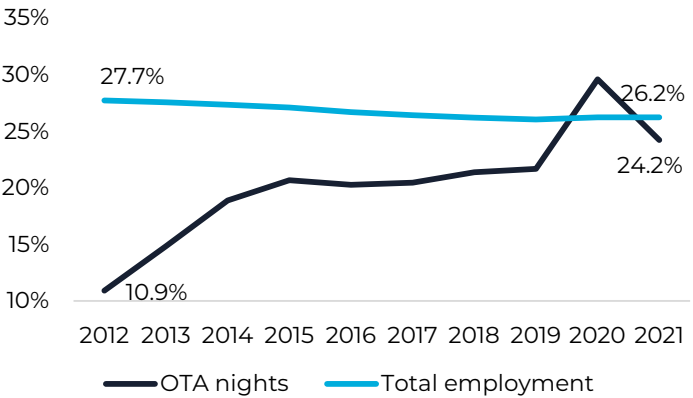
Growth in OTA Room Nights by County Density
Annualized Growth, 2012 - 2021



Note: Refers to counties categorized by quartile based on jobs per square mile. In other words, the least dense category in the graph reflects counties that are categorized among the 25% of US counties with the fewest jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Activity in Rural Counties
Share of OTA nights and jobs accounted for by rural counties



Note: Rural refers to the least dense counties, those that are in the bottom 75% of US counties by jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Summary Impacts of OTAs in Minnesota, 2019-2021

Amounts as Indicated

	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$5 reduced daily rates	+397,000 room nights	\$187M incremental GDP	1,800 jobs
2020	-\$3 reduced daily rates	+298,000 room nights	\$113M incremental GDP	1,100 jobs
2021	-\$4 reduced daily rates	+322,000 room nights	\$118M incremental GDP	1,200 jobs

NEVADA

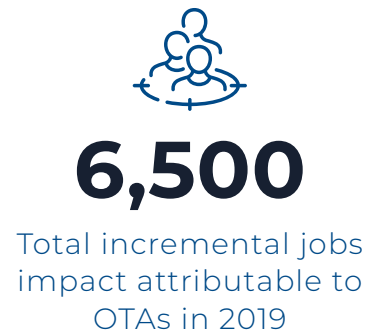
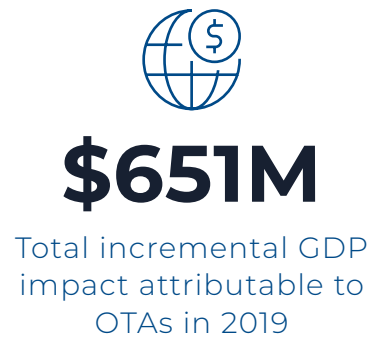
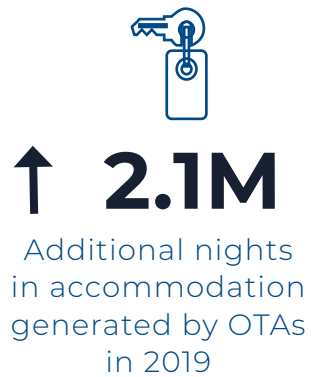
KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in Nevada through downward effects on rates and by expanding the number of room nights available to consumers

Room nights booked through OTAs represent an important share of overall bookings in Nevada.

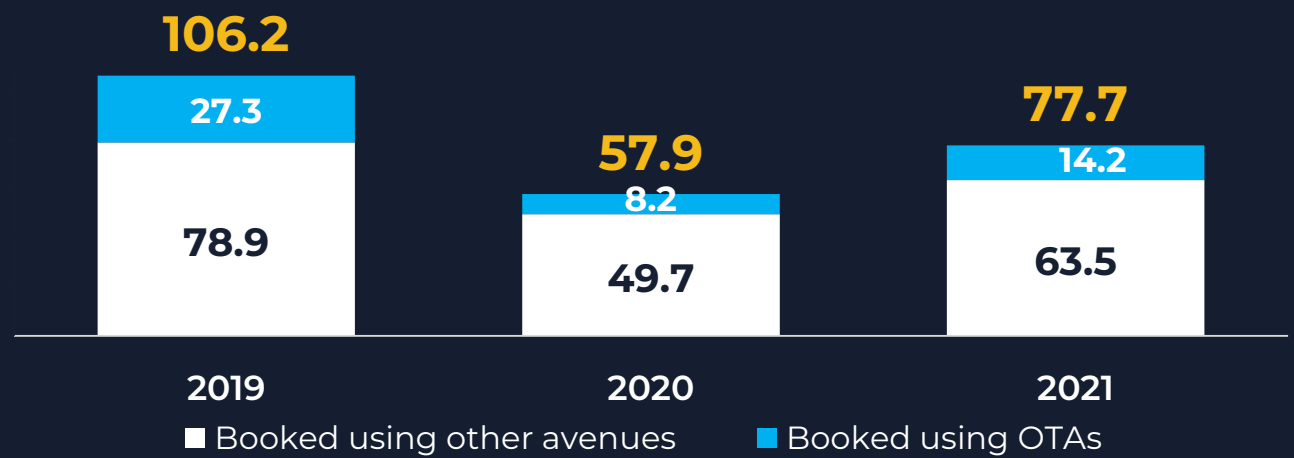
As shown in the accompanying chart, travelers booked approximately 27.3 million room nights in Nevada through OTAs in 2019, representing 26% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 14.2 million room nights, representing 18% of the total Nevada accommodations market.

Key Impacts of OTAs in Nevada in 2019



Nights in All Accommodation Types in Nevada, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the state level, OTAs generated an average reduction in rates of \$9 across Nevada in 2019 (6.9% reduction), compared to \$6 in 2021.

Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across Nevada. OTAs added an incremental \$651 million to the economy, also referred to as GDP, in 2019.

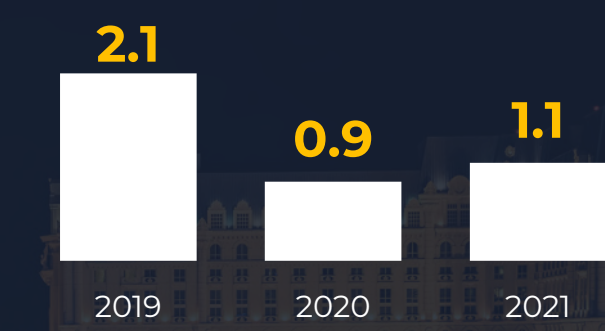
GDP Impacts (\$ Millions) Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of Nevada's economy. In 2019, the economic impacts attributable to OTAs included 6,500 jobs. In 2021, OTAs were responsible for 3,200 jobs, representing a recovery relative to the 2,600 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



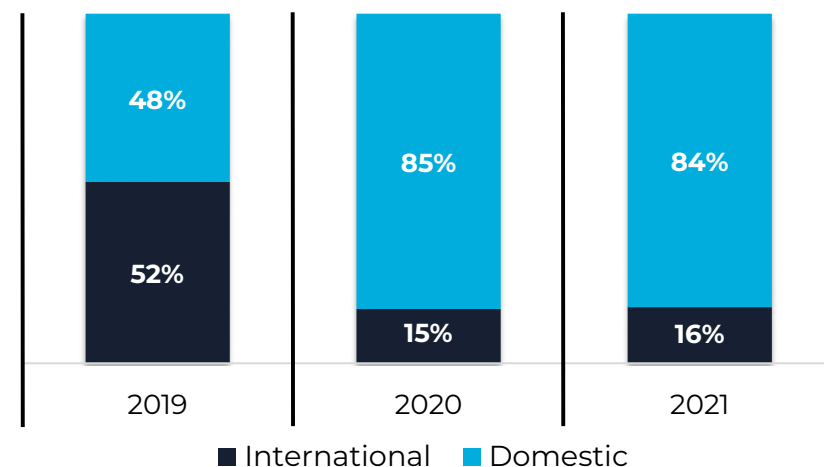
NEVADA OTA DETAILS

MARKET CHARACTERISTICS

OTAs have traditionally been important for international travelers, with international travelers representing an important share of OTA room nights

Pre-pandemic, 52% of OTA room nights were accounted for by international travelers (2019). In 2021, with low levels of international visitors, the international traveler share of OTA bookings remains suppressed at just 16%.

Market Characteristics of OTAs in Nevada
Share of Nights (International & Domestic)

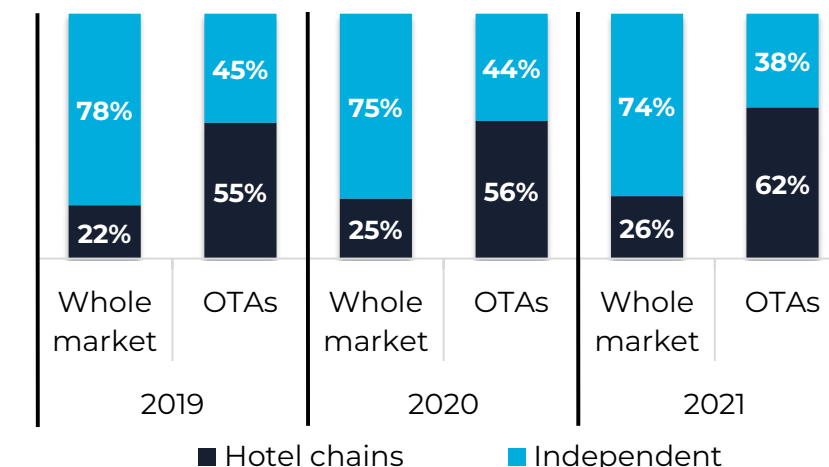


Source: Tourism Economics & Booking.com

OTAs support independent accommodations

Nationally, OTA guests tend to favor independent hotels. However, in Nevada, a larger share of OTA guests stayed at branded hotels (55%) than hotel guests overall (22%) in 2019. Recently, OTA guests have shifted a more toward branded hotels, with 62% of OTA guests staying at branded hotels in 2021.

Market Characteristics of OTAs Compared to Whole Market in Nevada
Share of Total Sales (Branded Chains & Independent)



Source: Tourism Economics & Booking.com

Summary Impacts of OTAs in Nevada, 2019-2021

Amounts as Indicated

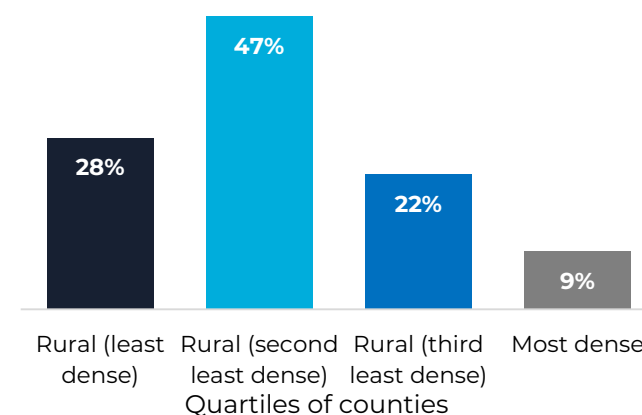
	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$9 reduced daily rates	+2.1M room nights	\$651M incremental GDP	6,500 jobs
2020	-\$5 reduced daily rates	+904,000 room nights	\$258M incremental GDP	2,600 jobs
2021	-\$6 reduced daily rates	+1.1M room nights	\$299M incremental GDP	3,200 jobs

OTAs support travel to rural areas, spreading out tourism

Over time, OTA activity in rural counties has grown more quickly than in urban counties, and this trend has been reinforced by the pandemic. While in 2012, 6.2% of OTA nights occurred in rural counties, by 2021 this share had increased to 16.5%.

Growth in OTA Room Nights by County Density

Annualized Growth, 2014 - 2021

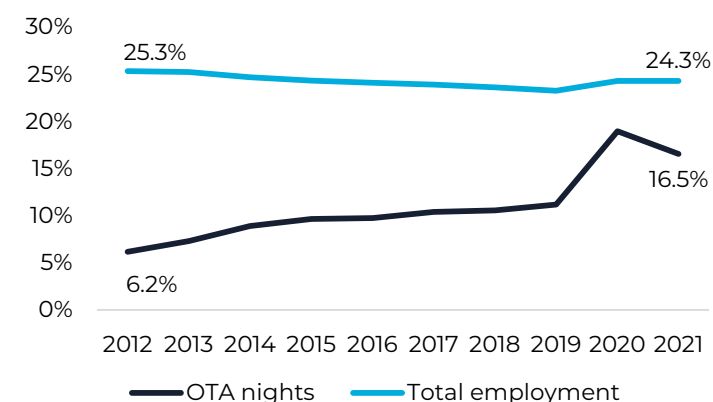


Note: Refers to counties categorized by quartile based on jobs per square mile. In other words, the least dense category in the graph reflects counties that are categorized among the 25% of US counties with the fewest jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Activity in Rural Counties

Share of OTA nights and jobs accounted for by rural counties



Note: Rural refers to the least dense counties, those that are in the bottom 75% of US counties by jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis,

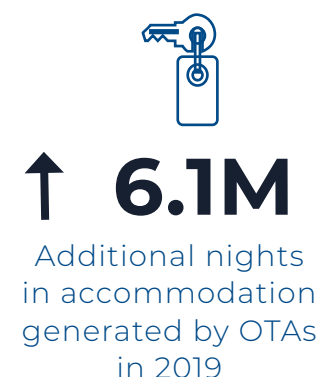
NEW YORK KEY INSIGHTS

In addition to generating significant economic impacts in terms of GDP and jobs, OTAs benefit the accommodations market in New York through downward effects on rates and by expanding the number of room nights available to consumers

Room nights booked through OTAs represent an important share of overall bookings in New York.

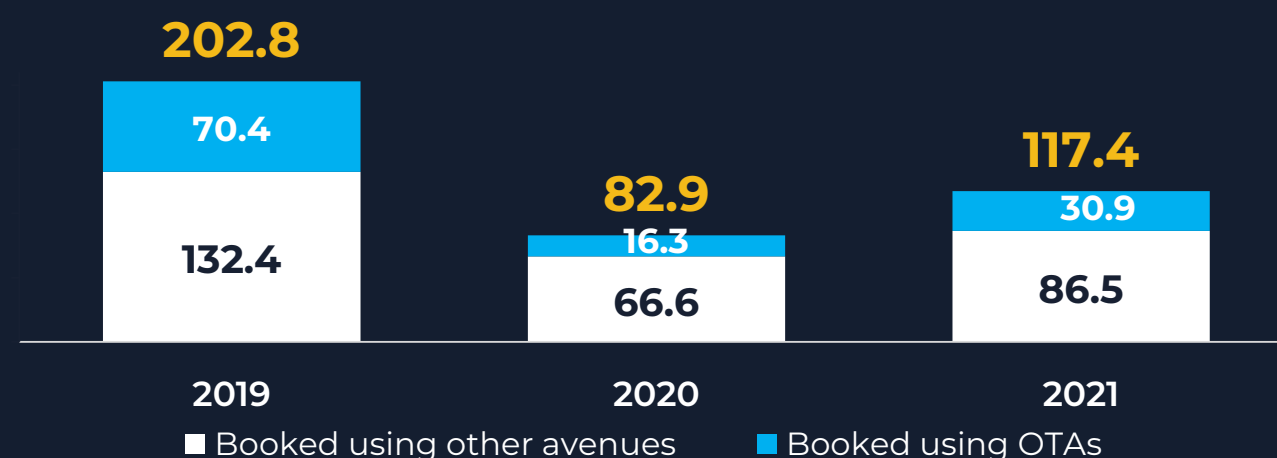
As shown in the accompanying chart, travelers booked approximately 70.4 million room nights in New York through OTAs in 2019, representing 35% of the total. In 2021, OTA bookings recovered steeply from low levels of activity in 2020, reaching 30.9 million room nights, representing 26% of the total New York accommodations market.

Key Impacts of OTAs in New York in 2019



Nights in All Accommodation Types in New York, 2019-2021

Millions of Room Nights



OTAS MAKE TRAVEL MORE AFFORDABLE

OTAs provide consumers with greater choices and transparency which helps to lower rates in the United States. Extending this effect to the state level, OTAs generated an average reduction in rates of \$16 across New York in 2019 (7.4% reduction), compared to \$13 in 2021.

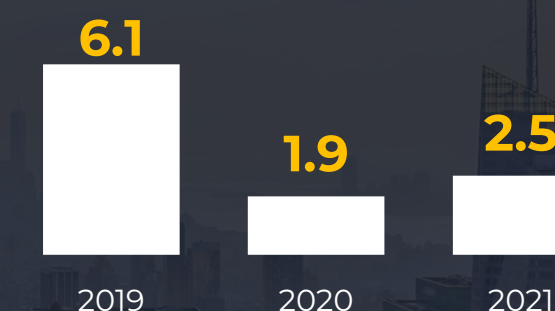
Reduction in Average Daily Hotel Rates Attributable to OTAs, 2019-2021



OTAS INCREASE BOOKINGS & EXPAND THE MARKET

OTAs provide businesses with an online platform to advertise their accommodation offer and expand their consumer base. OTAs also improve trust in providers, and reward quality.

Additional Nights (Millions) in All Accommodation Attributable to OTAs, 2019-2021



OTAS CREATE ADDITIONAL GDP GROWTH

OTAs generate economic growth across New York. OTAs added an incremental \$2.8 billion to the economy, also referred to as GDP, in 2019.

GDP Impacts (\$ Billions) Attributable to OTAs, 2019-2021



OTAS GENERATE JOBS AND ECONOMIC OPPORTUNITIES

OTAs also generate significant job impacts across various sectors of New York's economy. In 2019, the economic impacts attributable to OTAs included 19,300 jobs. In 2021, OTAs were responsible for 7,900 jobs, representing a recovery relative to the 6,200 jobs supported in 2020.

Job Impacts Attributable to OTAs, 2019-2021



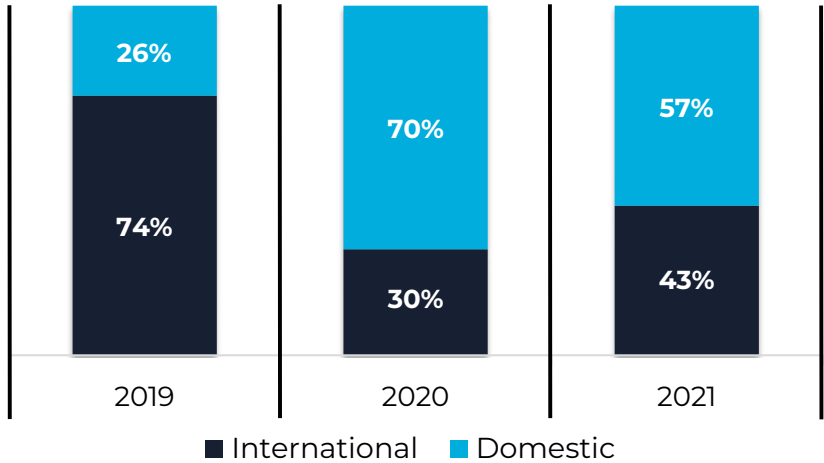
NEW YORK OTA DETAILS

MARKET CHARACTERISTICS

OTAs have traditionally been important for international travelers, with international travelers representing an important share of OTA room nights

Pre-pandemic, 74% of OTA room nights were accounted for by international travelers (2019). In 2021, despite low levels of international visitors, the international traveler share of OTA had recovered to 43%.

Market Characteristics of OTAs in New York
Share of Nights (International & Domestic)

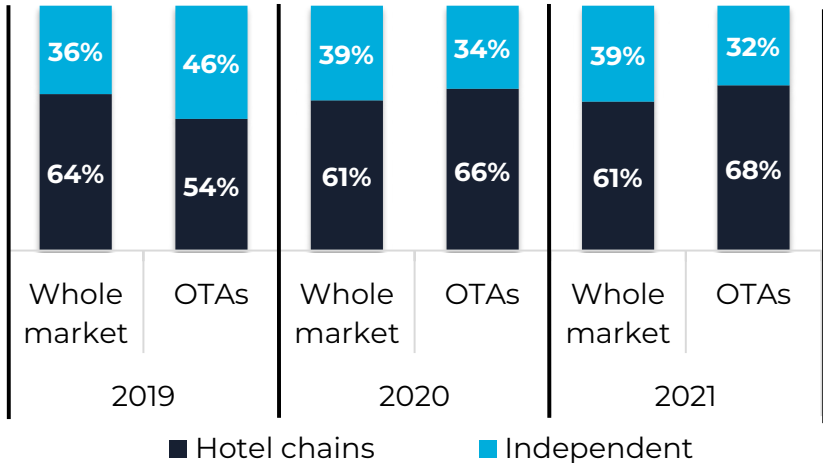


Source: Tourism Economics & Booking.com

OTAs support independent accommodations

OTAs have traditionally been particularly important for independent hotels. Pre-pandemic, 46% of OTA guests stayed at independent hotels (2019), compared to 36% for hotel guests overall. Since the pandemic, this appears to have shifted at least temporarily, with OTA guests tending to favor branded hotels more than the market overall, resulting in an independent property share among OTA guests that fell to 32% in 2021.

Market Characteristics of OTAs Compared to Whole Market in New York
Share of Total Sales (Branded Chains & Independent)

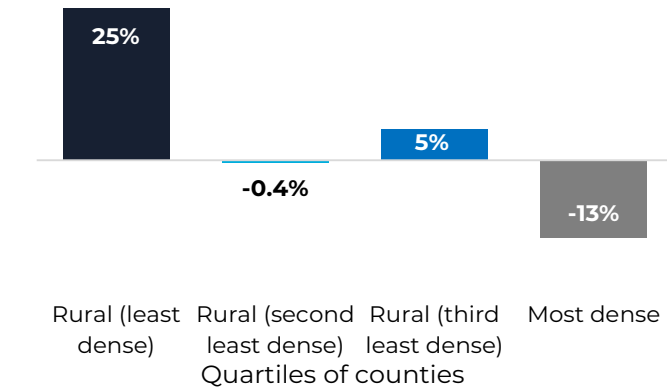


Source: Tourism Economics & Booking.com

OTAs support travel to rural areas, spreading out tourism

Over time, OTA activity in rural counties has grown more quickly than in urban counties, and this trend has been reinforced by the pandemic. While in 2017, 3.5% of OTA nights occurred in rural counties, by 2021 this share had increased to 6.9%.

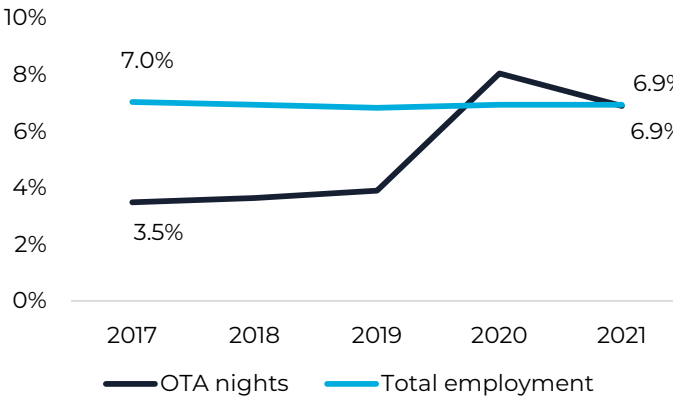
Growth in OTA Room Nights by County Density
Annualized Growth, 2017 - 2021



Note: Refers to counties categorized by quartile based on jobs per square mile. In other words, the least dense category in the graph reflects counties that are categorized among the 25% of US counties with the fewest jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis, Census Bureau, Booking.com.

Activity in Rural Counties
Share of OTA nights and jobs accounted for by rural counties



Note: Rural refers to the least dense counties, those that are in the bottom 75% of US counties by jobs per square mile.

Source: Tourism Economics, Bureau of Economic Analysis,

Summary Impacts of OTAs in New York, 2019-2021

Amounts as Indicated

	More Affordable	Increases in Travel	GDP Impacts	Job Impacts
2019	-\$16 reduced daily rates	+6.1M room nights	\$2.8B incremental GDP	19,300 jobs
2020	-\$9 reduced daily rates	+1.9M room nights	\$0.9B incremental GDP	6,200 jobs
2021	-\$13 reduced daily rates	+2.5M room nights	\$1.1B incremental GDP	7,900 jobs

APPENDICES

INTRODUCTION

In these appendices we explain how OTA influence, the key explanatory variable used in the analysis, was constructed (Appendix 1). We also describe the econometric equations used to estimate OTA impact on nights and average daily rates (Appendix 2).

This study assessed the impact of OTAs in three global regions: North America, Europe, and APAC. We produced estimates for individual countries within these regions as well as for the regions as a whole. This report presents the results for Europe and 17 selected markets.

Estimates for the key explanatory variable were developed for each of the markets examined in the study. Econometric equations were developed using a panel dataset which included all countries considered in the study (across the three regions) and covered the period 2012 to 2021, where data was available.

GEOGRAPHICAL COVERAGE

The key markets considered in this study are:

1. Asia Pacific (8 markets)

- Australia
- India
- Japan
- New Zealand
- Singapore
- South Korea
- Thailand
- Vietnam

2. North America (2 markets)

- Canada
- USA

Note: findings for key states and metro areas in the US are also reported.

3. Europe (17 markets)

- | | |
|------------|---------------|
| • Austria | • Greece |
| • Bulgaria | • Malta |
| • Croatia | • Netherlands |
| • Czechia | • Portugal |
| • Denmark | • Spain |
| • Estonia | • Sweden |
| • France | • Switzerland |
| • Italy | • UK |
| • Germany | |

APPENDIX 1 DEVELOPMENT OF THE OTA INFLUENCE VARIABLE

OTA influence is a measure of OTA's share of online travel research, in each country for each year in the survey. By using this as the explanatory variable in the analysis, it is possible to assess how changes in the use of OTAs (as distinct from changes in online usage) affect the key outcomes variables.

The measure of OTA influence in the online travel market was constructed using two different methodologies: i) the “top-down” approach; and ii) the “bottom up” approach. By using two different methods to measure OTA influence, the estimated impact of OTAs can be validated by comparing the results of each method.

The bottom-up approach aggregates and scales Booking.com activity data (e.g. number of transactions) to estimate the overall level of OTA activity, while the top-down approach calculates OTA influence by identifying the OTA share of online travel activity. OTA influence calculated in this way includes travel booked through OTAs as well as travel activity researched through these platforms but booked in other ways.

The Bottom-Up Approach

The bottom-up approach to estimating OTA influence combines information from Booking.com on the overall number of bookings and the number of room nights booked on its own website, and an estimate of the share of OTA activity accounted for by Booking.com. Essentially the bottom-up measure is an estimate of the total bookings, guests, and room nights booked through OTAs, in each of the countries examined in this study. (The measure can be presented both as an absolute value, or as a share of online travel research – see further discussion in the next section, below.)

Booking.com provided the data on the total number and value of transactions and the length of stay booked on Booking.com, on a yearly basis for 2012-2021 (inclusive), for all geographies it currently operates within. Information that allowed chain and non-chain (independents) accommodation bookings to be identified as well as the country of origin of each transaction was also provided.

Information on the number of guests per booking was not available to Booking.com, so total guests were instead calculated using an assumption that the average number of guests per booking is 1.5, which is in line with previous work by Oxford Economics on average room occupancy.

To estimate the Booking.com share of the online sector, Oxford Economics used data from ComScore which tracks unique visitors to an exhaustive list of online travel sites. This was used to calculate the Booking.com share of unique visitors to all OTAs, as well as the share of all travel research accounted for by OTAs.

To obtain the volume of transactions, guests and room nights influenced across all OTAs, activity for Booking.com was divided by Booking.com's estimated share of OTA visits by geography. This implicitly assumes that unique visitors to Booking.com do not have a higher propensity to book (for example) than consumers on other OTAs, and that the average length of stay for bookings on Booking.com is representative of the average length of stay for other OTAs.

The final stage of the analysis was to convert our results from a source market basis (i.e. country of consumer origin) to a destination basis (i.e. by geography in which the accommodations are based). To do

this, booking.com data was used to create a matrix of source-destination flows for all geographies within the regions of the study, of which a simplified version is shown in the table below (note, numbers are for illustrative purposes only).

In this table, the source countries are shown in the columns and the destination countries in the rows. The resulting diagonal elements show domestic travel, while the off-diagonal elements refer to foreign or outbound travel. This matrix can then be applied to the number of OTA influenced trips and room nights for each source market to determine the destination size of OTA influence.

The levels of OTA activity, thus obtained, were compared to the total travel demand by destination market to obtain a share of guests, room nights, and transaction value accounted for by OTAs. The estimates of total travel demand by source market were taken from the Oxford Economics’ Global Travel Service (GTS) model. This model includes historic data and forecasts for visits, room nights and spend for 185 countries as both source markets and destinations, including bilateral country-to-country flows. It provides a comprehensive view of the total travel market for comparison with the estimated OTA impacts.

Source-Destination Matrix

	Germany	France	United Kingdom
Germany	0.80	0.10	0.10
France	0.15	0.60	0.25
United Kingdom	0.05	0.30	0.65

The Top-Down Approach

The top-down approach to estimating OTA influence instead starts by identifying the share of a country’s population that are internet users, and estimates the proportion of those users that relied on OTAs for their travel and research decisions.

The total population and rate of internet penetration in each country, for 2012-2021 (inclusive), were based on data provided by the World Bank. Rates of internet penetration were corroborated with other sources such as Internet Live Stats to ensure measurement was consistent across countries – this was used for validation purposes only, and was not used for any further calculations.

To identify the proportion of the online population that used the internet to research travel decisions specifically, ComScore data was used. The results from this analysis were checked against results from previous studies.

To identify the size of the OTA segment, ComScore data was again used to calculate OTAs’ share of unique visits to all online travel sites. Combining these data with previous estimates for the total online population researching travel provides the top-down measure of OTA influence.

This share is then applied to data on trips (from our GTS model) to determine the proportion of trips that were influenced by OTAs. Data on average length of stay is then used to convert influenced trips to influenced room nights. Average length of stay data is also included within Tourism Economics’ GTS model.

As with the bottom-up estimation, these data were converted from a source country basis to a destinations basis, using data on origin/destination travel patterns based on the GTS model.

Top-Down Methodology

Group	Number of individuals (millions)	Proportion of prior group	Data Source
Online Population	67		World Bank
Researching Travel	52	0.785	ComScore
Using OTAs	27	0.515	ComScore

By way of example, the table above shows the steps to calculate the level of OTA influence for UK in 2019. Using the figures presented above, the proportion of the UK’s online population using OTAs is 40% (27M/67M).

APPENDIX 2
ECONOMETRIC ANALYSIS

Equations to estimate OTA impact on additional nights

OTAs impact on additional room nights was estimated using the measure of OTA influence as an explanatory variable in an econometric specification.

The basic econometric specification employed is a reduced form version of Oxford Economics’ global tourism model, which regresses the number of hotel nights stayed by country of consumer origin on key economic indicators in each country, including GDP, unemployment and exchange rates. The estimation is given by the equation below

Nights - Equation 1

logNIGHTS_{it} =β₀+β₁ trend_t+1·logGDP_{it}-0.1·logUP_{it}+0.1·logRXTOUR_{it}+α_i+u_{it}

NIGHTS – nights spent by residents of country *i* on trips abroad and within the country

GDP – Gross Domestic Product for country *i*

UP – unemployment rate

RXTOUR – weighted average exchange rate index; weights are derived according to bilateral travel flows.

Coefficients have been imposed on GDP, unemployment and exchange rates, according to prior estimation results, to avoid excess explanatory power attributed to any new indicators; additional indicators of online and OTA influence therefore only help to explain current equation errors and time trends.

These panel data equations have been estimated using generalised least squares (GLS) with cross-section weights, for the entire set of countries examined in the study between 2012 and 2021. Cross-section weights were applied to place greater weight on the more reliable country flows and relationships. Weights were derived from the inverse of the equation standard deviation for each country in an initial unweighted calculation.

To determine whether the OTA influence has an incremental impact on nights, OTA influence was added as an explanatory variable to the basic specification, see equations below.

As these equations show, indicators of online research and OTA influence were initially included individually to confirm that these do help to improve estimates and explain a proportion of the error and exogenous trends in the prior specification. This also clarifies that using OTA influence alone would overstate the impact by providing a similar impact to the inclusion of online research as they follow a similar trend over time.

As a result, the size of the online population was added as a further explanatory variable to ensure that OTA influence – which can be expected to be strongly correlated with the use of the internet – isolates increased OTA usage from online usage altogether. Including both variables therefore ensures the additional impact of OTAs on room nights accounts for wider economic fluctuations and the broader impact of the internet on travel.

Nights - Equation 2

logNIGHTS_{it} =β₀+β₁ trend_t+logGDP_{it} - 0.1·logUP_{it} +0.1·logRXTOUR_{it} +β₂ logONLINE_{it} +α_i+u_{it}

logNIGHTS_{it} =β₀+β₁ trend_t+logGDP_{it} -0.1·logUP_{it} +0.1·logRXTOUR_{it} +β₃ logOTA_(it-1)+α_i+u_{it}

NIGHTS – nights spent by residents of country *i* on trips abroad and within the country

GDP – Gross Domestic Product for country *i*

UP – unemployment rate

RXTOUR – weighted average exchange rate index; weights are derived according to bilateral travel flows.

ONLINE – number of internet users by country

OTA – number of trips influenced by OTAs

The final specification includes both online access (ONLINE) and the ratio of OTA transactions to online travel research (RESEARCH). This ratio is the propensity for travel research to involve an OTA, which has increased power to explain the OTA impact.

In this equation (shown on the following page), OTA influence as a proportion of research is included as a lagged variable; i.e. the prior period’s OTA influence is used in the equation. If contemporaneous OTA influence was used instead, this would result in a high degree of collinearity between the OTA effect and the wider online effect. This would make it harder to identify the effect of each factor. The final specifications estimated dropped the trend term as it is statistically insignificant.

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Nights - Equation 3

$$\log \text{NIGHTS}_{it} = \beta_0 + \beta_1 \text{trend}_t + \log \text{GDP}_{it} - 0.1 \cdot \log \text{UP}_{it} + 0.1 \cdot \log \text{RXTOUR}_{it} + \beta_2 \log \text{ONLINE}_{it} + \beta_3 \log (\text{OTA}_{(it-1)} / (\text{RESEARCH}_{(it-1)})) + \alpha_i + u_{it}$$

NIGHTS – nights spent by residents of country i on trips abroad and within the country

GDP – Gross Domestic Product for country i

UP – unemployment rate

RXTOUR – weighted average exchange rate index; weights are derived according to bilateral travel flows.

ONLINE – number of internet users by country

OTA – number of trips influenced by OTAs

RESEARCH – number of people using the internet for tourism research

This model was used to estimate the impact on total and foreign nights separately. The domestic impact can be derived from the difference between the two.

The estimation was calculated on a demand by origin (domestic and outbound) basis. So the final step was to convert these results to destination effects, taking into account overall demand uplift (i.e. estimation) as well as market share changes (from origin to destination flows in Booking.com data).

Equations to estimate OTA impact on average daily rates

One of the key beneficial effects of OTAs is the downward pressure they exert on average daily rates (ADR). As with room nights, an econometric model can be used to quantify the impact OTAs have on ADR.

The econometric model is based on several key drivers identified by Tourism Economics:

- Inflation (measured by the CPI index). ADR follows prices in the wider economy, reflecting increased costs and consumer purchasing power and;
- Cyclical hotel room occupancy, which ADR typically follows with a 6 month lag.

These drivers, combined with country-specific fixed effects and a time trend are the components for a reduced form model of ADR. Although ADR and room occupancy are jointly determined, this does not occur contemporaneously. Therefore, as the cycles of ADR and occupancy are linked, lagged occupancy can be used to predict current ADR.

The equations have all been estimated using OLS over a panel dataset of the countries in the study between 2012 and 2021. STR provides data on the rates of hotel occupancy and ADR for the whole hotel market in each country. Monthly data (and daily data for some large markets) are collected by STR from a representative sample of properties in each country and are summed to an annual level to provide the total census of hotel rooms.

Average Daily Rates - Equation 1

$$\log \text{ADR}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC}_{(it-1)} + \alpha_i + u_{it}$$

ADR – Average Daily Rate charged by hotels for rooms in USD

CPIE – Consumer Price Index converted to USD terms from local currency

OCC – average room occupancy rate for hotels

As with the estimation procedure used for nights, an additional variable capturing the effect of online presence as a whole was used to isolate the specific effect of OTAs, see equation below.

Average Daily Rates - Equation 2

$$\log \text{ADR}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC}_{(it-1)} + \beta_4 \log (\text{OTA_NIGHTS}_{it} / \text{DNIGHTS}_{it}) + \beta_5 \text{TRAV_RESEARCH}_{it} + \alpha_i + u_{it}$$

ADR – Average Daily Rate charged by hotels for rooms in USD
CPIE – Consumer Price Index converted to USD terms from local currency
OCC – average room occupancy rate for hotels
OTA_NIGHTS – nights spent in hotels booked influenced by OTAs. This corresponds to the OTA indicator used in the additional nights equation, although OTA_NIGHTS relates to influenced nights whereas OTA relates to trips.
DNIGHTS – nights spent by on trips within country i by residents and foreign visitors
TRAV_RESEARCH – propensity to research tourism online in travel to country i relative to the regional average.
It is defined as: (DRESEARCHi / DNIGHTSi) / (DRESEARCH EU / DNIGHTSEU)
DRESEARCH - number of people using the internet for tourism research for country i as a destination

OTA_NIGHTS/DNIGHTS is the OTA-influenced share of room sales by nights. TRAV_RESEARCH is a relative measure of propensity to research travel online for a country compared to the specific regional average. This is a better indicator of prices over time and across countries and helps to explain some of the cross-country fixed effects and time trend. A greater propensity to research travel online is related to a lower ADR. Using both of these measures improved model fit and ensured that the OTA effect was not overstated. Again, t-tests were run on the coefficients of interest to determine their statistical significance.

In total, four final equations were estimated for ADR (chain OTA sales, non-chain OTA sales, chain non-OTA sales, non-chain non-OTA sales) and the impacts were then combined to give the total final impact. These equations are given overleaf: the ADR impact was calculated separately for chain and non-chain hotels, and separately for OTA sales and non-OTA sales to improve model fit and to estimate more accurately the impact of OTA influence on these different sub-segments.

Average Daily Rates - Equation 3

$$\log \text{ADR_CH_OTA}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC_CH}_{(it-1)} + \beta_4 \log (\text{OTA_NIGHTS}_{it} / \text{DNIGHTS}_{it}) + \beta_5 \text{TRAV_RESEARCH}_{it} + \alpha_i + u_{it}$$

$$\log \text{ADR_CH_NOTA}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC_CH}_{(it-1)} + \beta_4 \log (\text{OTA_NIGHTS}_{it} / \text{DNIGHTS}_{it}) + \beta_5 \text{TRAV_RESEARCH}_{it} + \alpha_i + u_{it}$$

$$\log \text{ADR_IN_OTA}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC_IN}_{(it-1)} + \beta_4 \log (\text{OTA_NIGHTS}_{it} / \text{DNIGHTS}_{it}) + \beta_5 \text{TRAV_RESEARCH}_{it} + \alpha_i + u_{it}$$

$$\log \text{ADR_IN_NOTA}_{it} = \beta_0 + \beta_1 \text{trend}_t + \beta_2 (\text{CPIE}_{it}) + \beta_3 \log \text{OCC_IN}_{(it-1)} + \beta_4 \log (\text{OTA_NIGHTS}_{it} / \text{DNIGHTS}_{it}) + \beta_5 \text{TRAV_RESEARCH}_{it} + \alpha_i + u_{it}$$

ADR – Average Daily Rate charged by hotels for rooms in USD, by type of property
_CH_OTA – chain hotel sales through OTAs
_CH_NOTA – chain hotels sales not through OTAs
_IN_OTA – independent hotel sales through OTAs
_IN_NOTA – independent hotel sales not through OTAs
OCC – average room occupancy rate for hotels, by type of property
CPIE – Consumer Price Index converted to USD terms from local currency
OTA_NIGHTS – nights spent in hotels booked influenced by OTAs. This corresponds to the OTA indicator used in the additional nights equation, although OTA_NIGHTS relates to influenced nights whereas OTA relates to trips.
NIGHTS – nights spent by residents of country i on trips abroad and within the country
TRAV_RESEARCH – propensity to research tourism online in travel to country i relative to the regional average.

Key Adjustment

To account for changes in price parity regulation, additional dummy variables (for relevant years and countries) were included in the panel estimation to assess the OTA impact on additional room nights and average daily rates. In some instances, there are apparent step changes in data in the years that policy changes came into force. The inclusion of these dummy variables allows quantification of the apparent policy effect distinct from all other underlying indicators. Different dummy indicators have been included by type of policy change. The inclusion of these policy dummies improves the equation fit and adds greater confidence to the estimated coefficients, as well as highlighting some of the apparent risks.

Dummy had the strongest effect on ADR, consistent with theory as some of the benefits of comparison, and increased competition, are eroded.

ABOUT THE RESEARCH TEAM



Oxford Economics was founded in 1981 as a commercial venture with Oxford University's business college to provide economic forecasting and modelling to UK companies and financial institutions expanding abroad. Since then, we have become one of the world's foremost independent global advisory firms, providing reports, forecasts and analytical tools on 200 countries, 100 industrial sectors and over 3,000 cities. Our best-of-class global economic and industry models and analytical tools give us an unparalleled ability to forecast external market trends and assess their economic, social and business impact.

Oxford Economics is an adviser to corporate, financial and government decision-makers and thought leaders. Our worldwide client base comprises over 2,000 international organizations, including leading multinational companies and financial institutions; key government bodies and trade associations; and top universities, consultancies, and think tanks.

This study was conducted by the Tourism Economics group within Oxford Economics. Tourism Economics combines an understanding of traveler dynamics with rigorous economics in order to answer the most important questions facing destinations, investors, and strategic planners. By combining quantitative methods with industry knowledge, Tourism Economics designs custom market strategies, destination recovery plans, forecasting models, policy analysis, and economic impact studies.

Oxford Economics employs 400 full-time staff, including 250 professional economists and analysts. Headquartered in Oxford, England, with regional centers in London, New York, and Singapore, Oxford Economics has offices across the globe in Belfast, Chicago, Dubai, Miami, Milan, Paris, Philadelphia, San Francisco, and Washington DC.



