

April 8, 2021

US HOTEL OUTLOOK

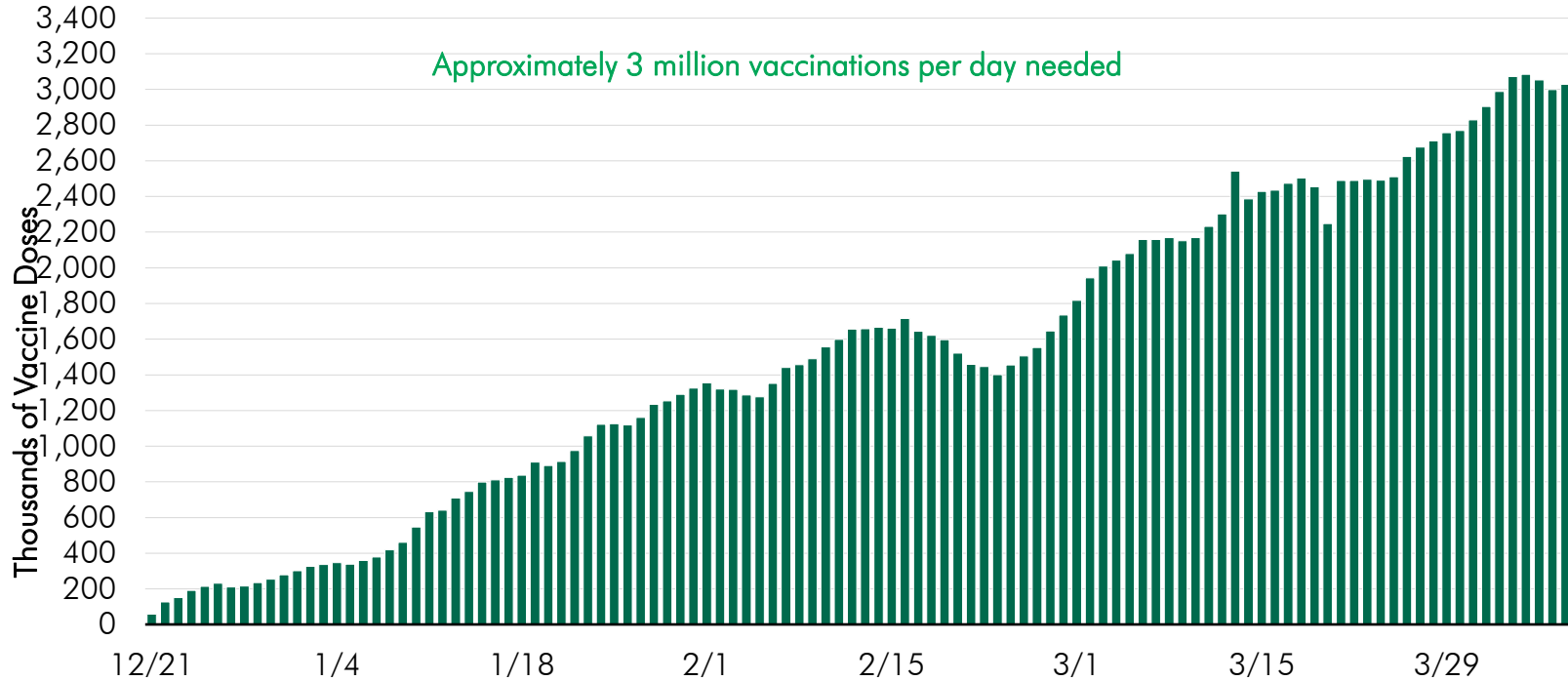
CBRE

COVID-19



VACCINATION PACE TARGET ACHIEVED

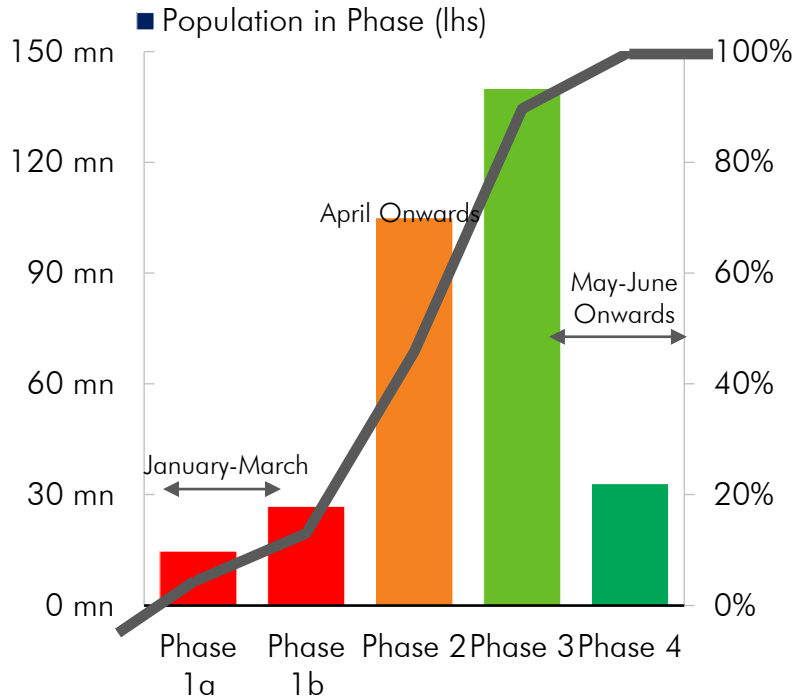
Daily U.S. COVID vaccine doses administered (thousands)



Source: Our World in Data, CBRE Research, 24 Mar 2021.

MASS IMMUNIZATION BY END OF 2021 IN THE UNITED STATES

U.S. National Association of Medicine COVID Vaccination Tiering System

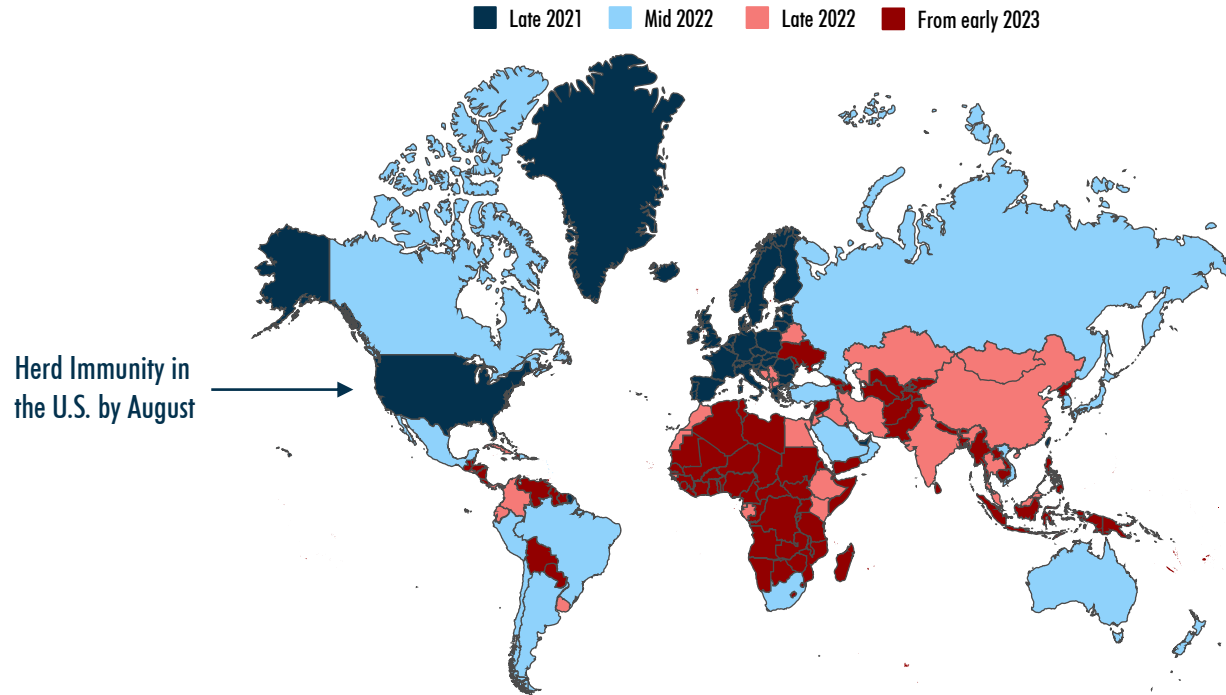


Source: National Association of Medicine, Goldman Sachs, 2020.

Phase 1 (45mn)	Phase 2 (105mn)
<p><i>Phase 1a</i></p> <ul style="list-style-type: none"> - High Risk Health Workers (12.6mn) - First Responders (2.1mn) 	<ul style="list-style-type: none"> - One Comorbid Condition (80mn) - Obesity (30mn) - Diabetes (10mn) - Remaining Over Age 65 (13.2mn) - K-12 Teachers (9.1mn) - Food Production/Cashiers - Construction/Utilities - Transportation/Delivery - Incarcerated + Staff (2.7mn) - Homeless + Shelter Staff (1mn)
<p><i>Phase 1b</i></p> <ul style="list-style-type: none"> - 2+ Comorbid Conditions (20mn) - Over Age 65 in Crowded Settings (6.8mn) 	
Phase 3 (140mn)	Phase 4 (33mn)
<ul style="list-style-type: none"> - Children (80mn) - Young Adults Ages 18-30 (46.5mn) - Workers in Important Industries (13mn) - University Staff - Factory Workers - Restaurant/Hotel Staff - Bank Tellers and Librarians - Barbers and Exercise Instructors 	<p>Remaining population of the US (33mn)</p>

PROGRESS IN VACCINATION: PARTICULARLY IN THE U.S. & U.K.

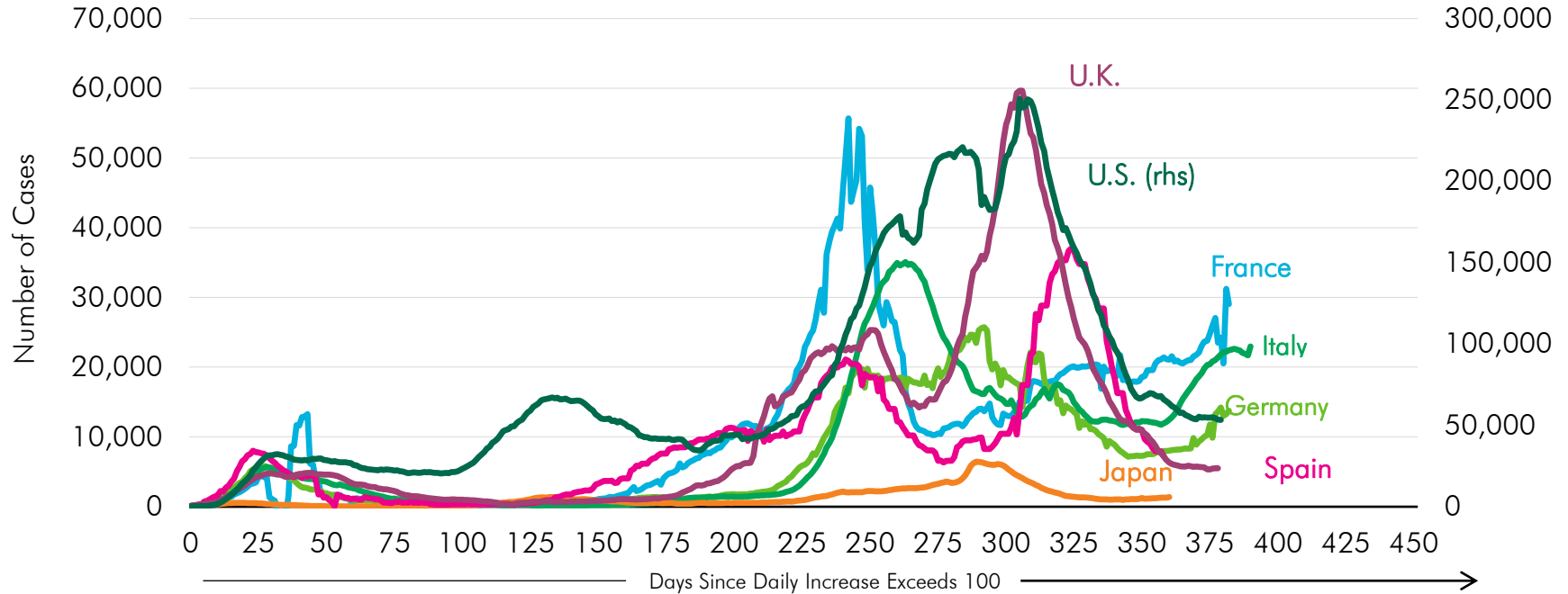
When will countries be fully covered?



Source: The Economist Intelligence Unit, NY Times, CBRE Research, 2021.

NEW VIRUS VARIANTS - DM

Daily new cases in 7-day moving averages

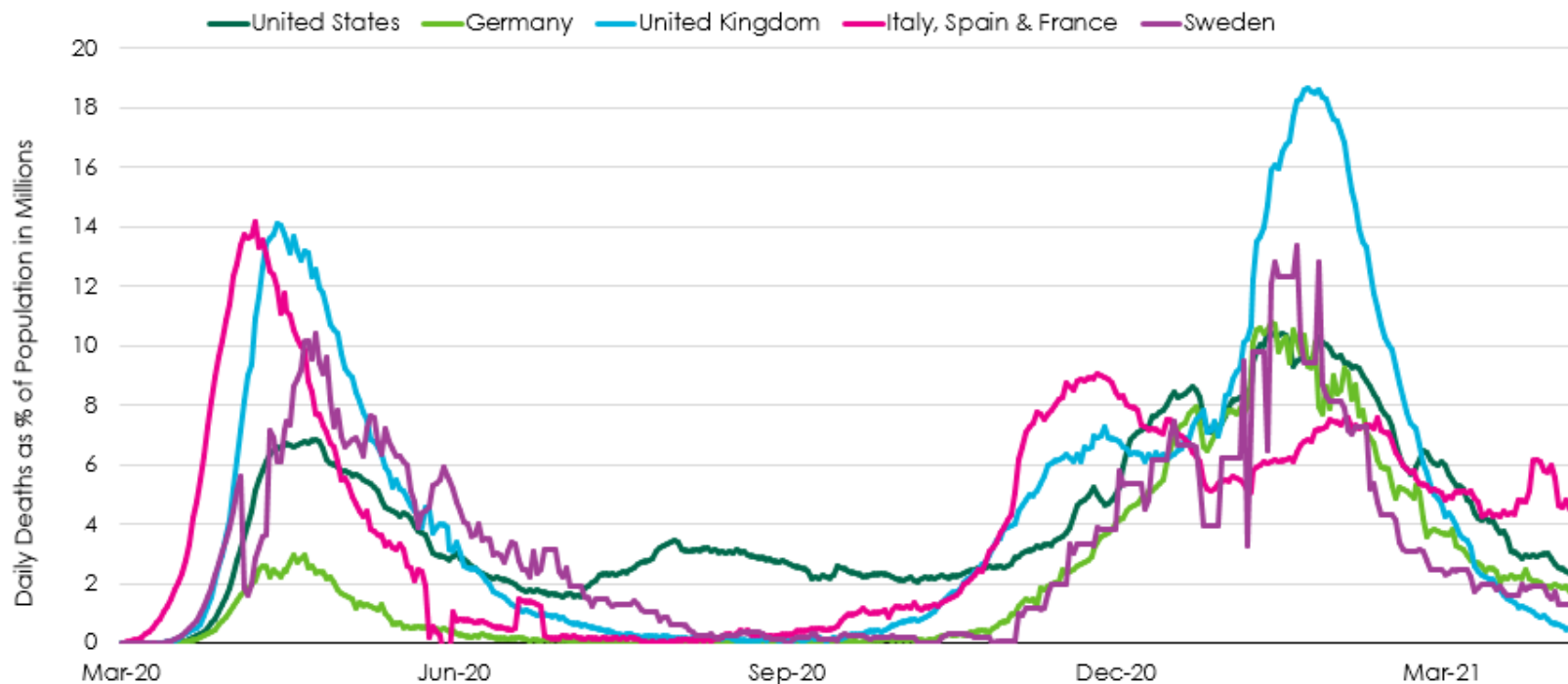


Source: CBRE Research, University of Oxford, COVID Tracking Project, Macrobond, 24 Mar 2021.

Note: Number reported as a 7-day moving average.

COVID DEATHS ON THE RETREAT

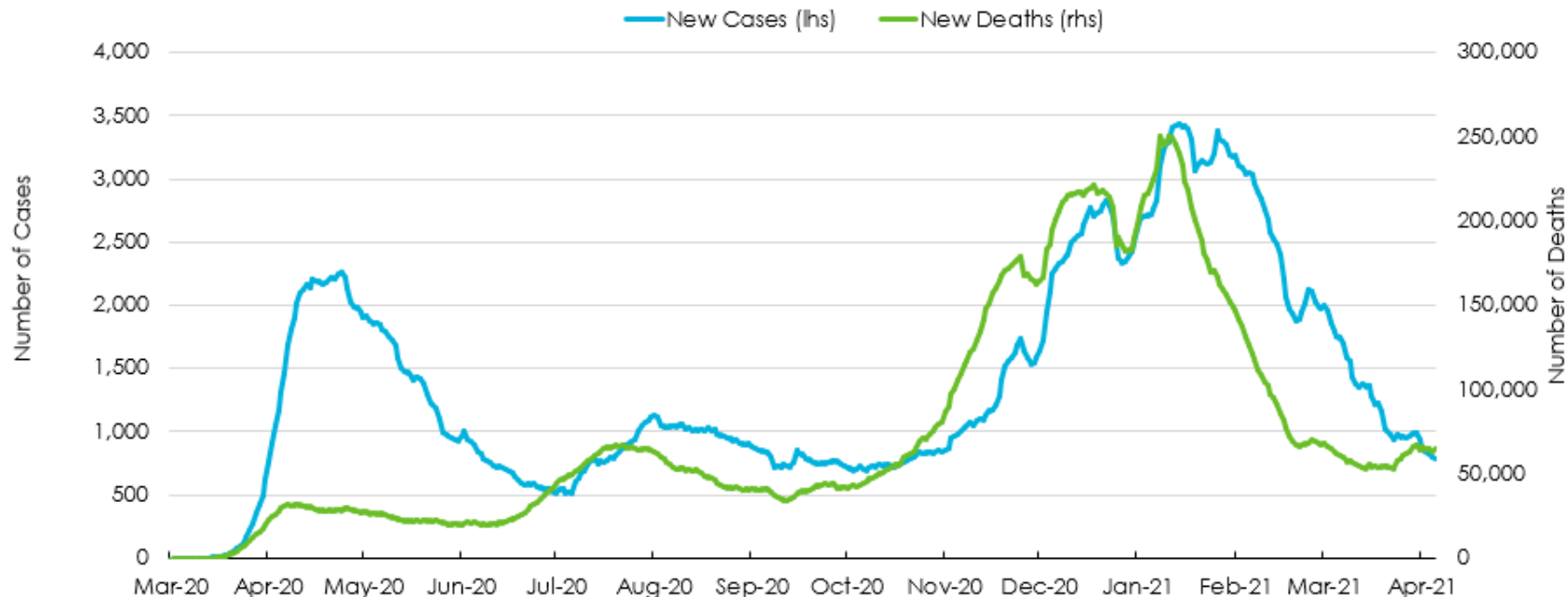
Daily fatalities as a percent of population in millions (7-day moving average)



Source: University of Oxford, Macrobond, CBRE Research, 6 Apr 2021.

SECOND WAVE INFECTION AND LOCAL SURGES – U.S.

Daily new cases in 7-day moving averages



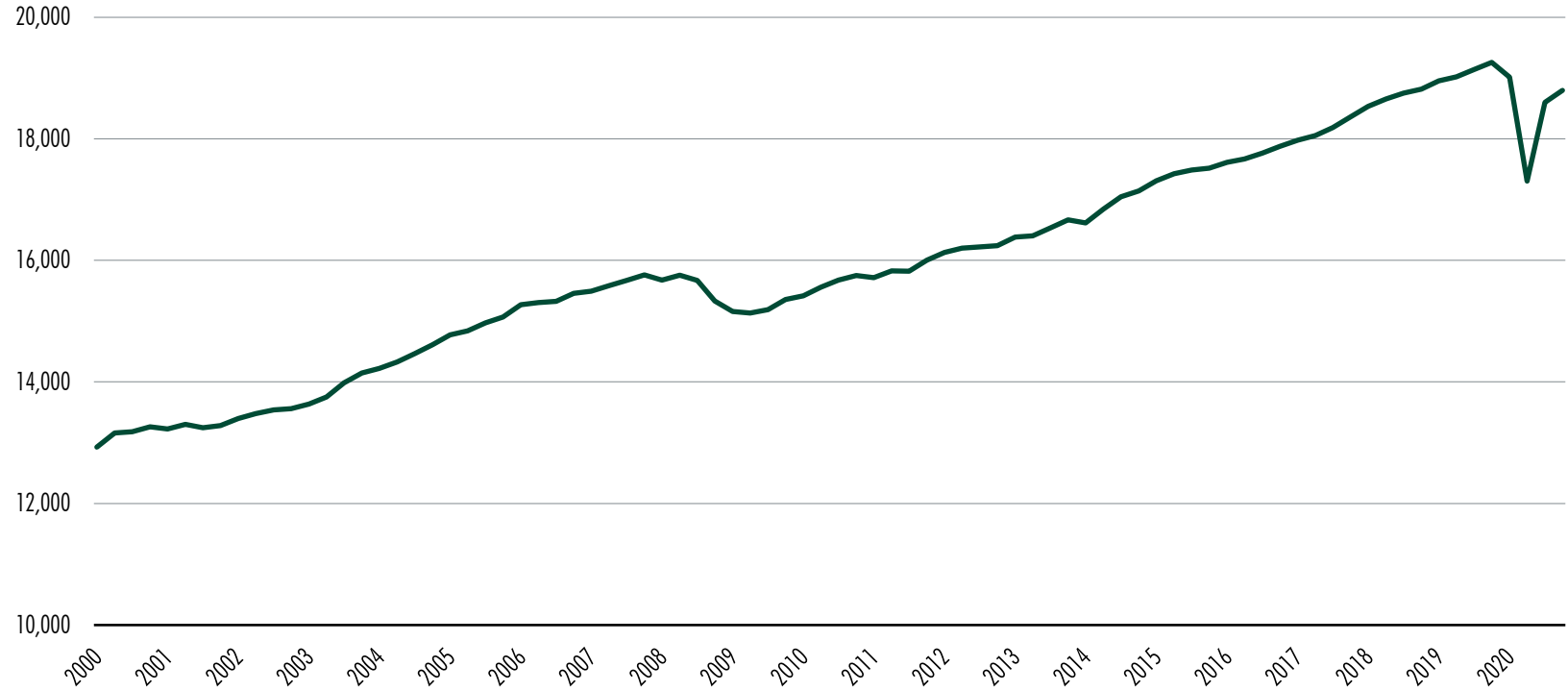
Source: World Health Organization, Macrobond, CBRE Research, 6 Apr 2021.
Note: Number reported as a 7-day moving average.

A blurred crowd of people walking on a city street, with the word "ECONOMY" overlaid in white text. The image captures a busy urban scene with many pedestrians in motion, their figures softened by a shallow depth of field and a slight camera blur. The word "ECONOMY" is centered in a clean, white, sans-serif font. The background shows a mix of clothing styles, including khaki pants, dark trousers, and a striped shirt, suggesting a diverse group of people. The ground is a dark asphalt with white crosswalk markings.

ECONOMY

REAL GROSS DOMESTIC PRODUCT

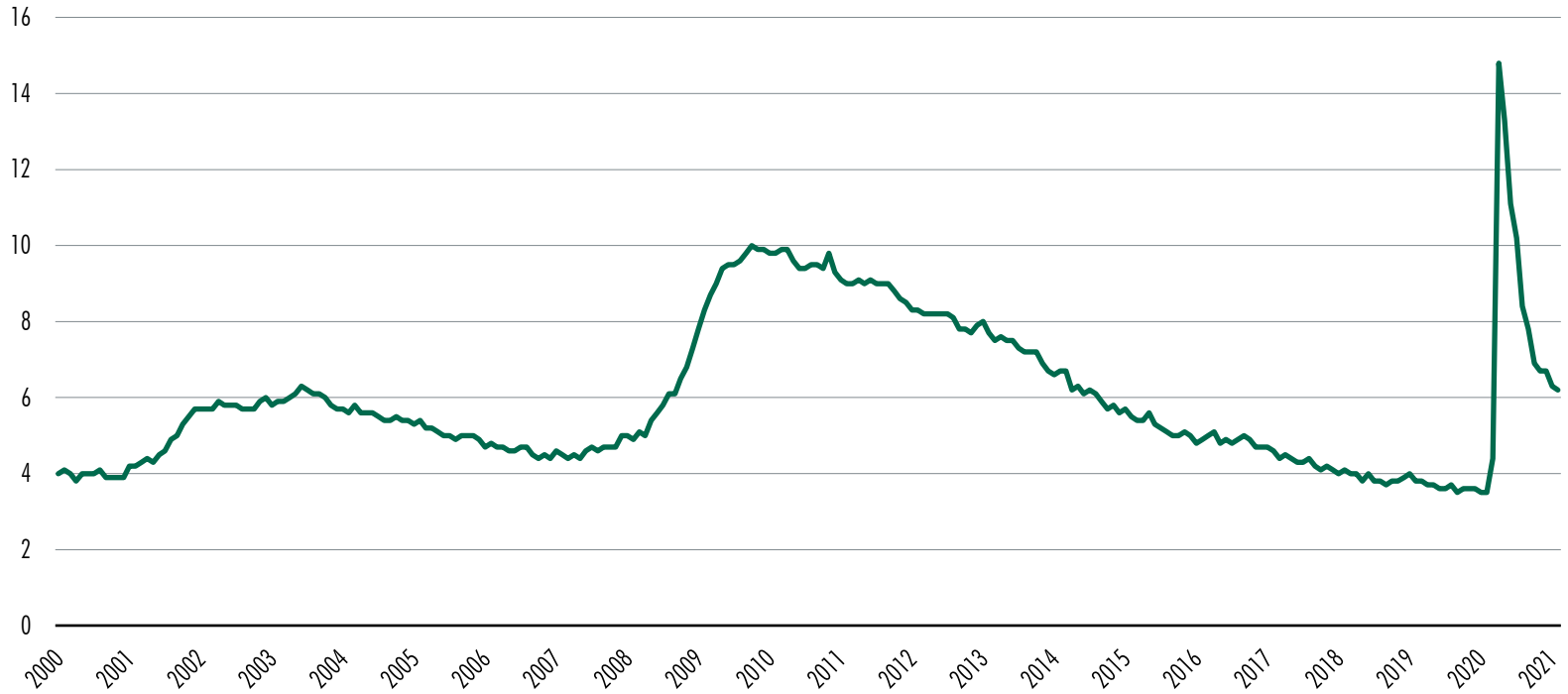
Value Billions



Source: CBRE Hotels Research, BLS

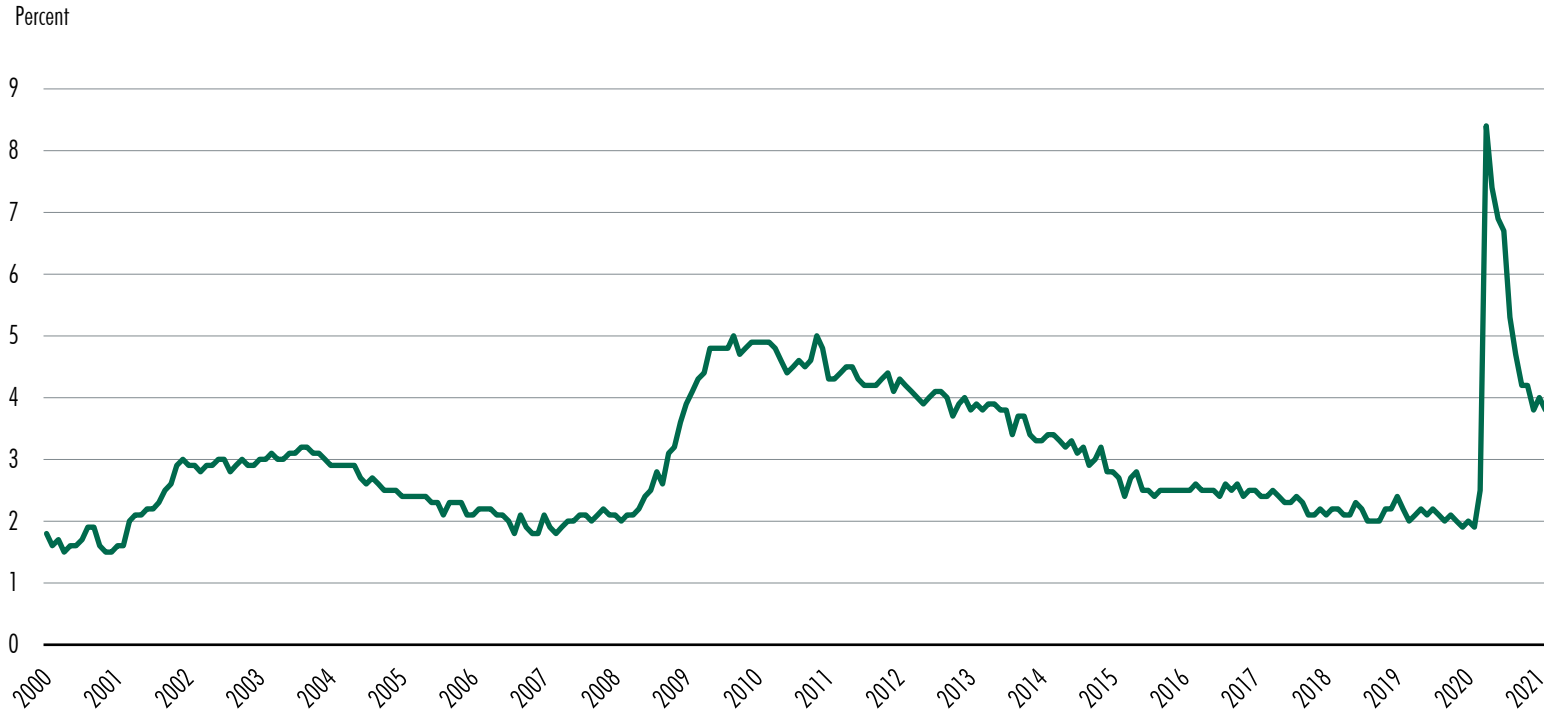
UNEMPLOYMENT RATE

Percent



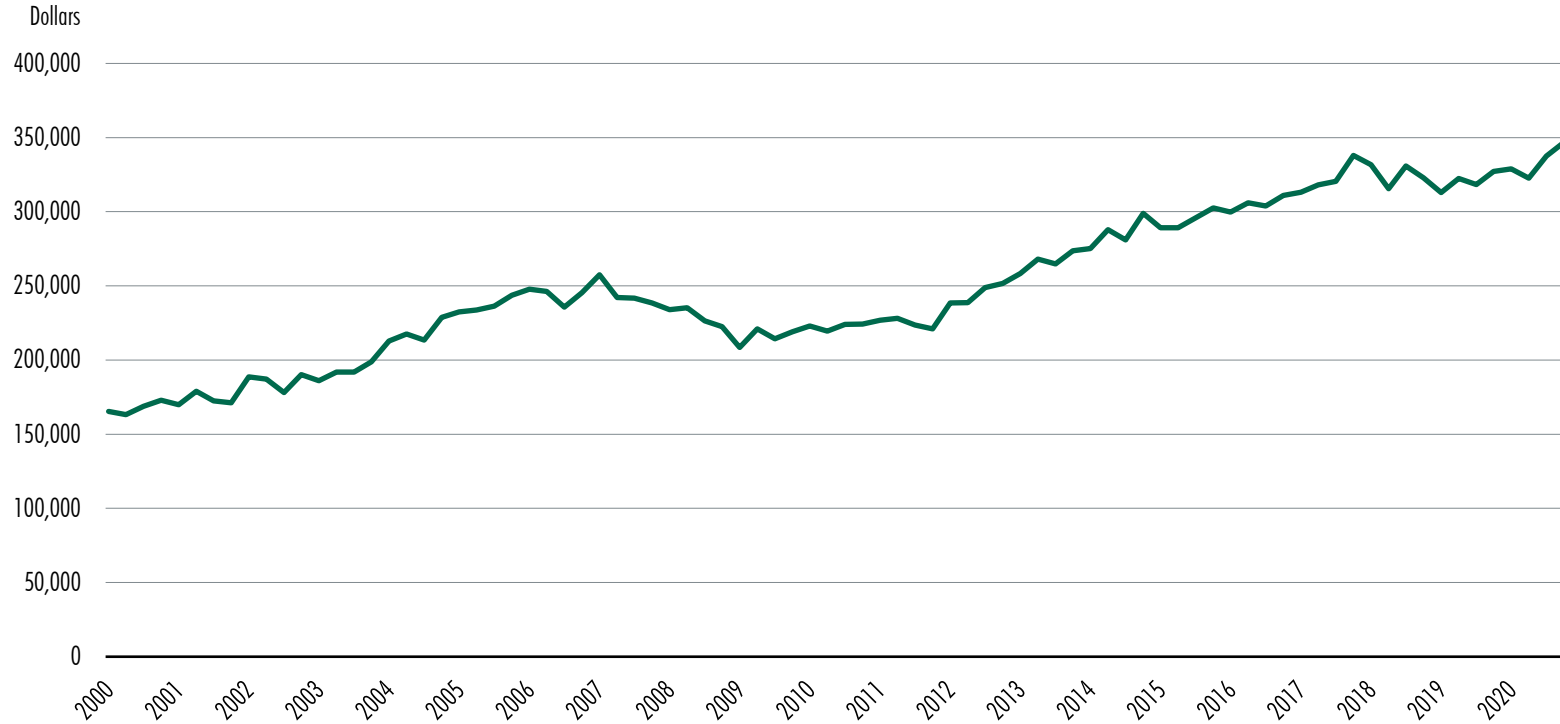
Source: CBRE Hotels Research, BLS

UNEMPLOYMENT RATE – BACHELOR'S DEGREE AND HIGHER, 25 & OVER



Source: CBRE Hotels Research, BLS

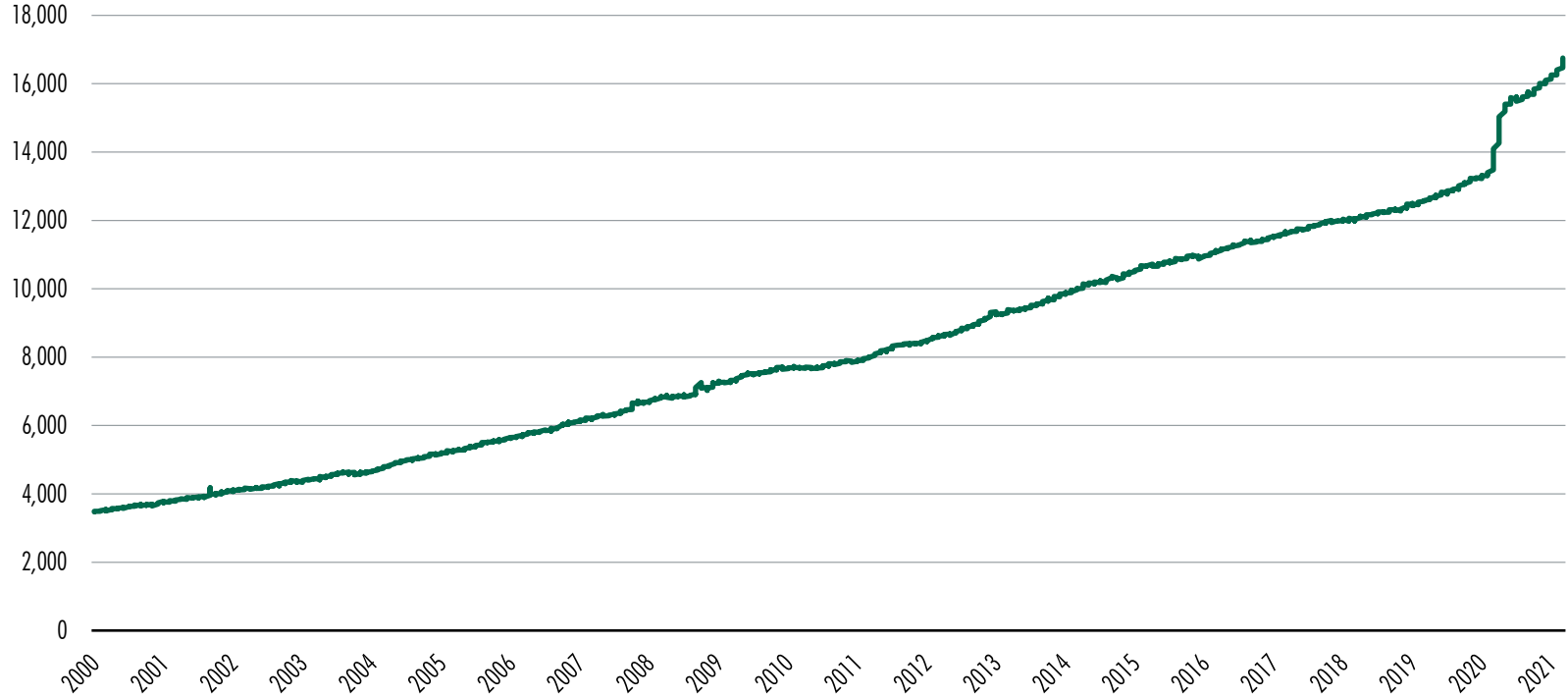
MEDIAN SALES PRICE OF HOUSES SOLD FOR THE UNITED STATES



Source: CBRE Hotels Research, BLS

DEPOSITS, ALL COMMERCIAL BANKS US

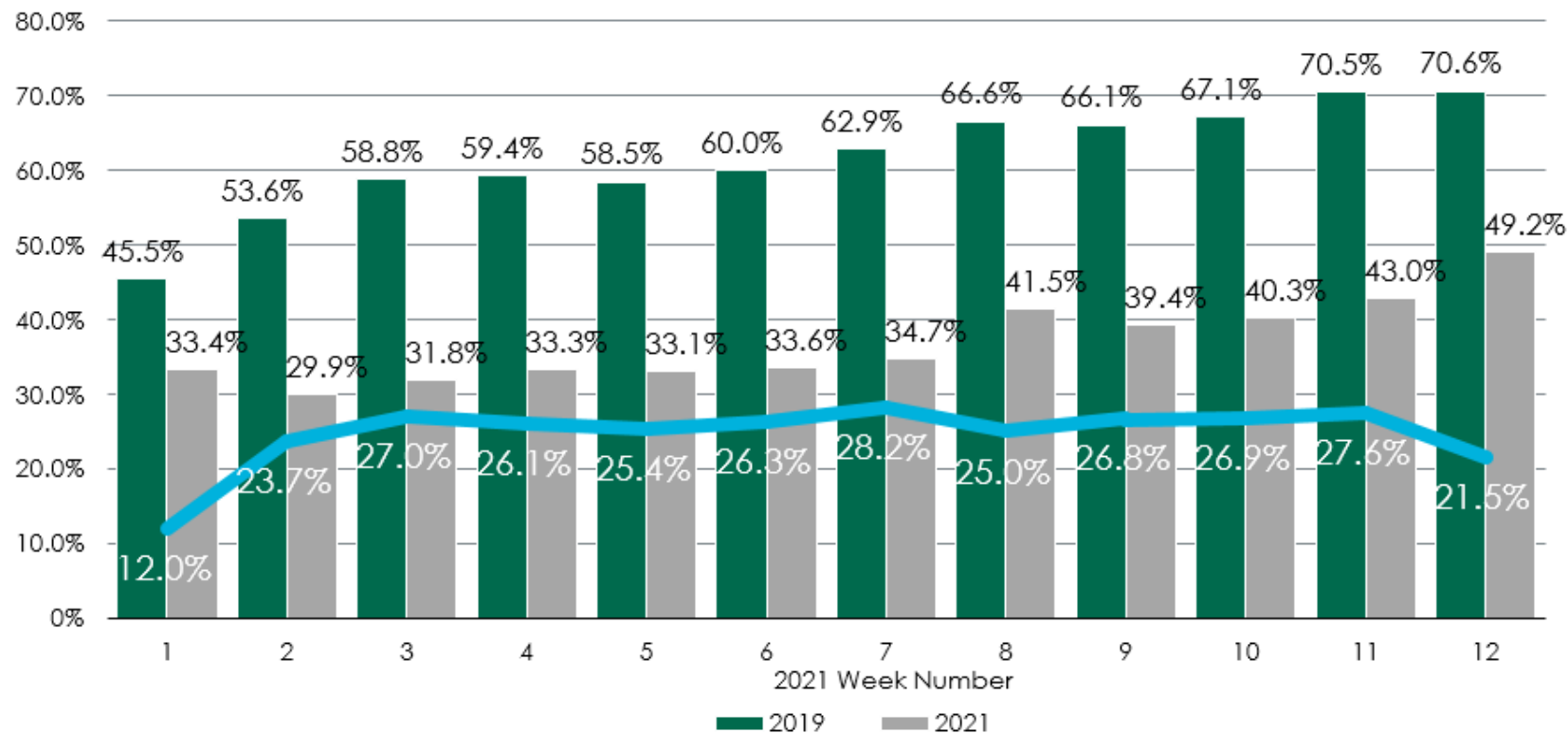
Billions of Dollars



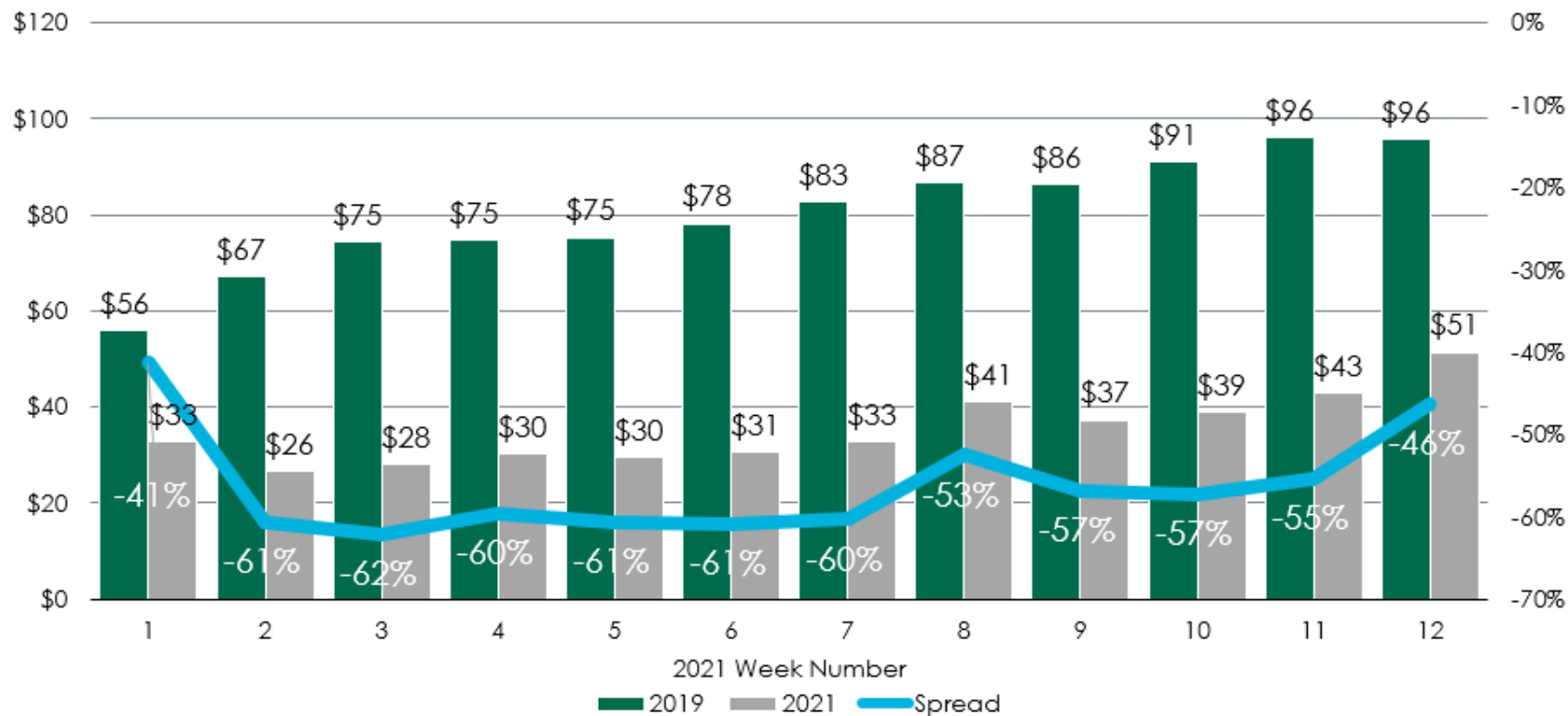
Source: CBRE Hotels Research, BLS

WEEKLY OCCUPANCY

Occupancy



WEEKLY REVPAR

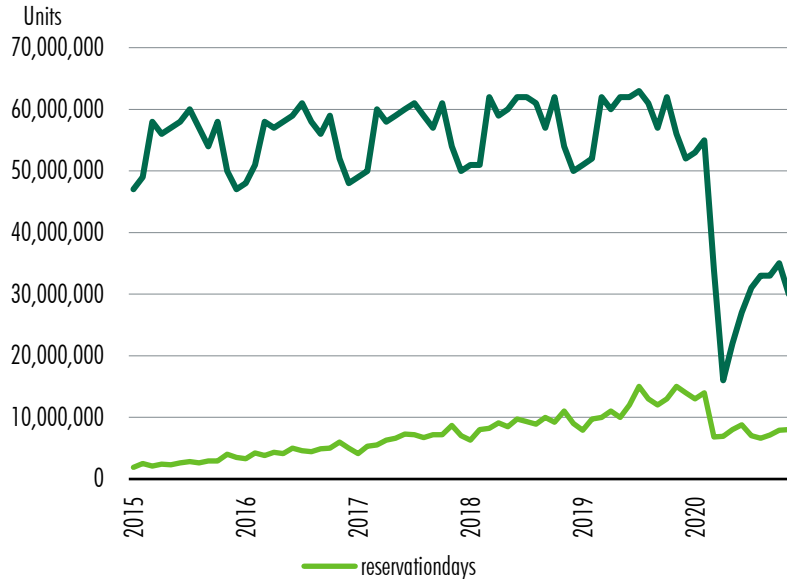




SPECIAL PRESENTATION

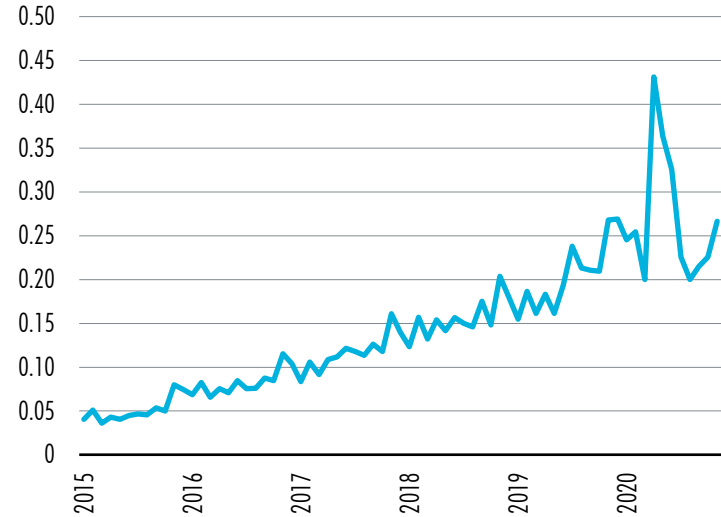
Short-Term Rentals: Increasingly a major component of lodging stock

AirDNA, Hotel Monthly Demand, Sum of 65



Sources: AirDNA, CBRE Hotels, Kalibri Q1 2020.

Ratio of AirDNA to Hotel Demand, Sum of 65



Sources: AirDNA, CBRE Hotels, Kalibri Q1 2020.



Adding Short Term Rental Data to Hotel Models

Potential Effects on Compression Pricing Power, Occupancy

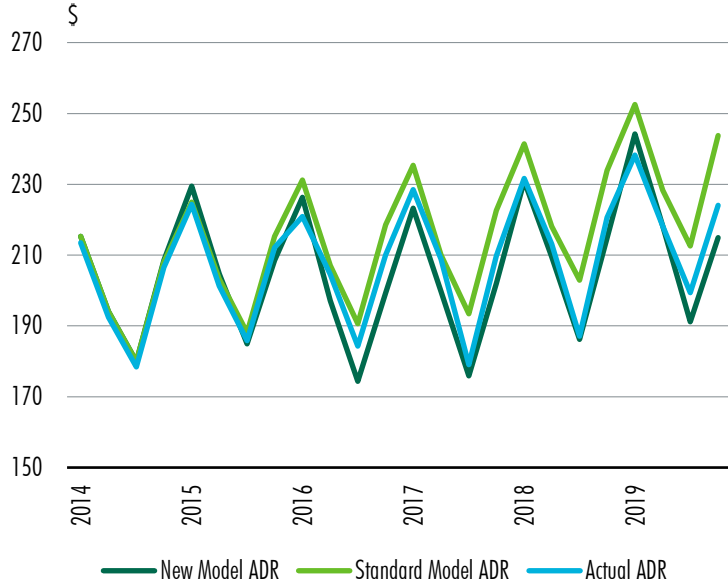
- Models observed to over-predict ADR in many upper- and middle-tier models, occupancy in lower-tiers
- Could this be the result of unobserved competition from the short-term rentals?
 - Units could undercut pricing, driving down ADR; or provide more attractive lodging, decreasing occupancy

Description of Data Source

- Millions of Data Points from AirDNA at the listing level
- Observations aggregated at the market level
- Variables added :
 - to occupancy model: proportion of rented short-term units to total hotel supply
 - To ADR model: ADR of short-term rental units

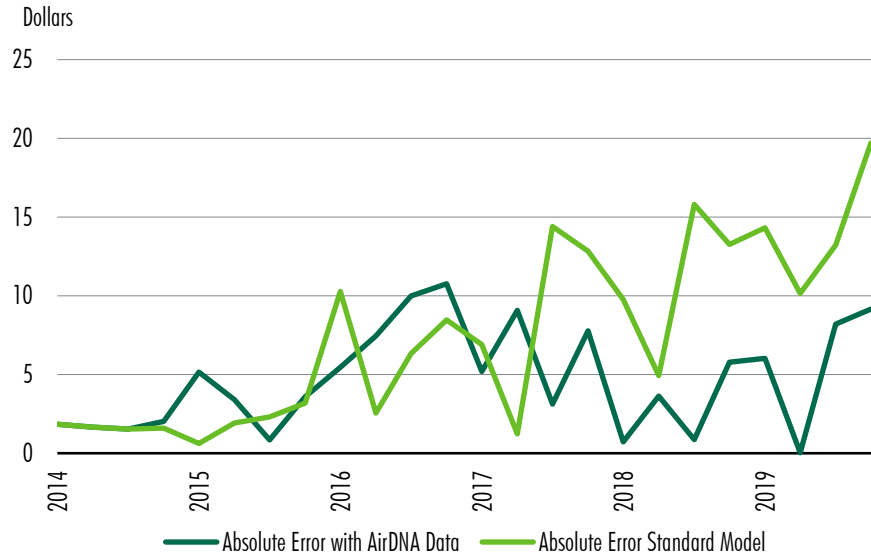
Experimental Results: Austin ADR, Upper Priced

Austin Upper-Price ADR: Actual and Predicted



Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

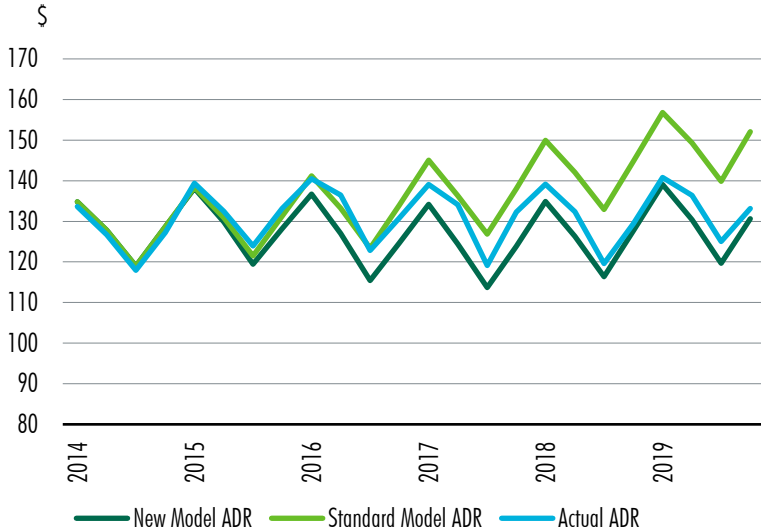
Austin Upper-Price: Error Comparison



Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

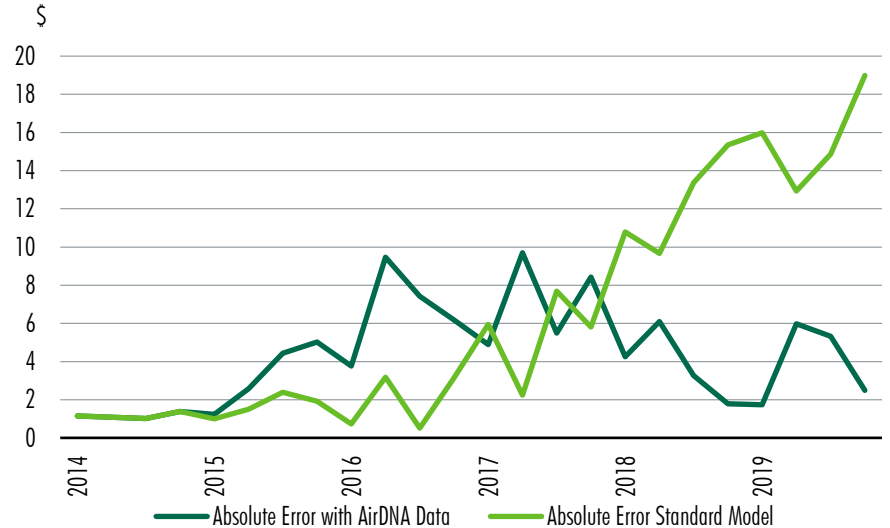
Experimental Results: ADR in Austin, Middle-Price

Austin Middle ADR: Actual and Predicted



Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

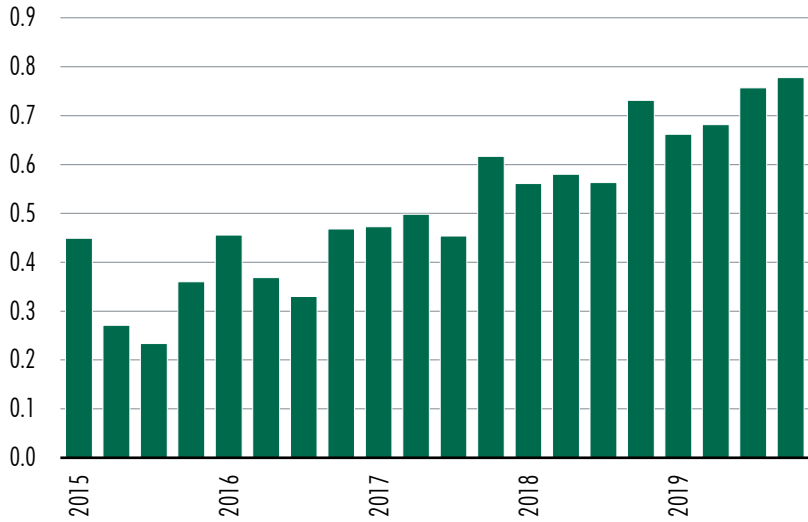
Austin Middle-Price: Error Comparison



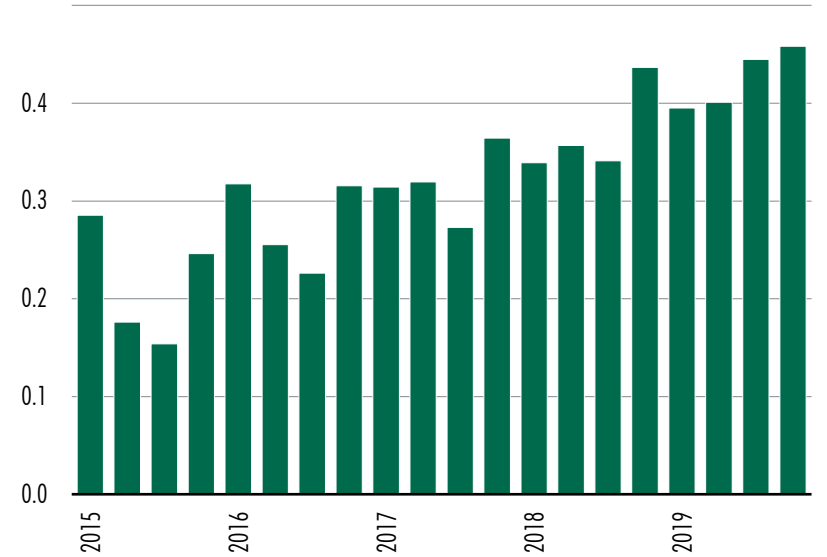
Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

Critical Level of Market Share?

Ratio of AirDNA Rented Rooms to Austin Upper-Price Rooms



Ratio of AirDNA Rented Rooms to Austin Middle-Price Rooms

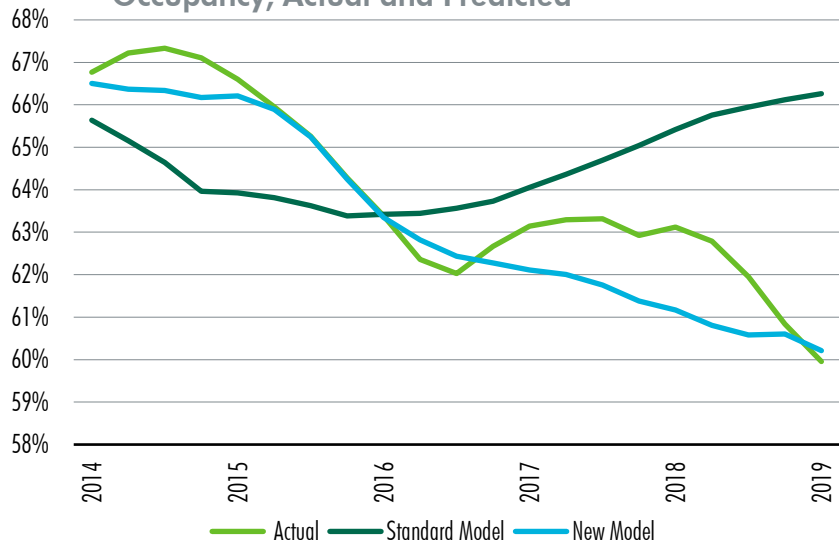


Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

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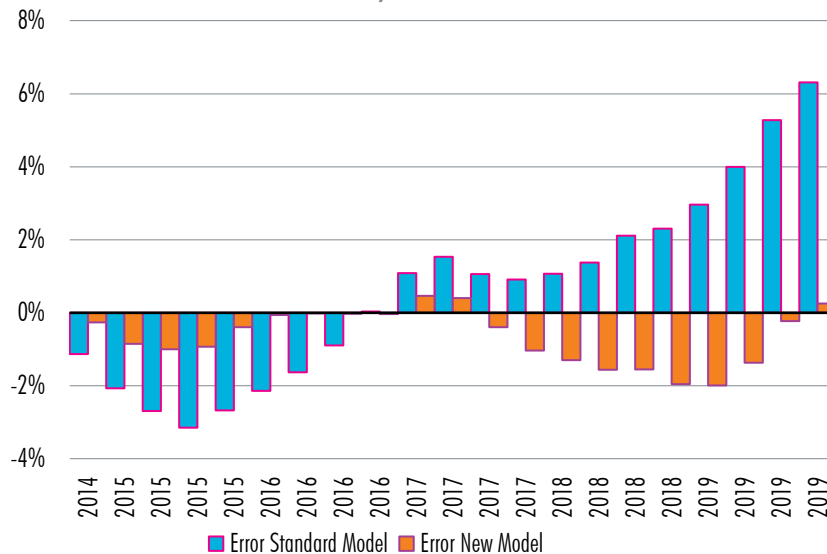
Atlanta Lower-Price Occupancy

Atlanta Lower-Price: 4-Quarter Moving Average Occupancy, Actual and Predicted



Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

Atlanta Lower-Price: Errors, Prediction-Actual



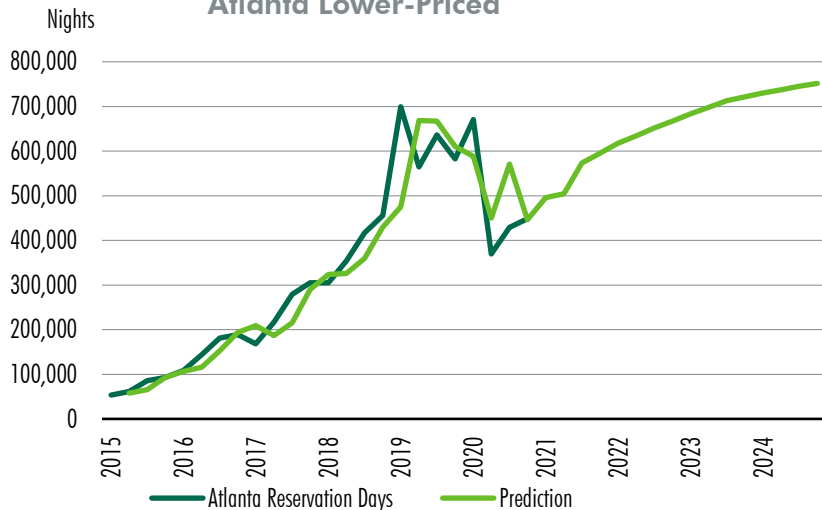
Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

Implications for COVID-19 Recovery from Short Term Rentals?

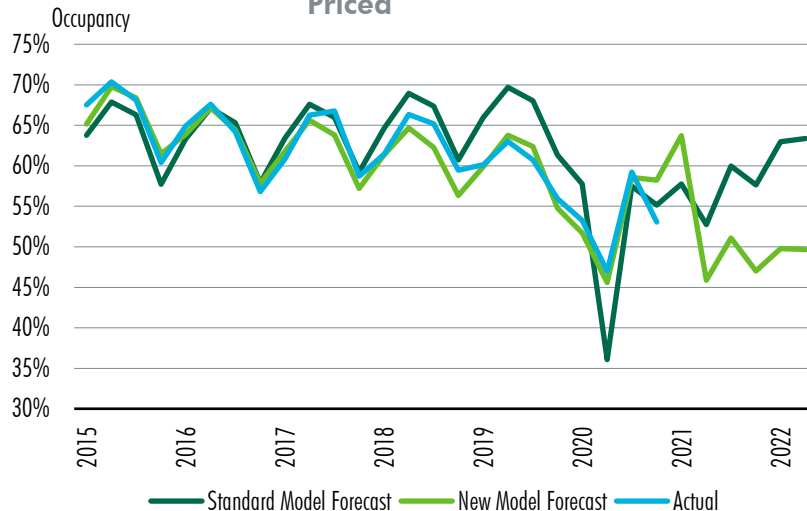
Endogenous growth models might be considered

Further Testing needed for Viability

Actual and Predicted Short-Term Rental Nights, Atlanta Lower-Priced



Actual and Forecast Occupancy, Atlanta Lower-Priced



Sources: AirDNA, CBRE Hotels Q1 2021.

Sources: AirDNA, CBRE Hotels, Kalibri Labs Q1 2021.

Model Modernization Allows for Greater Flexibility

Future Work For Short Term Rental Data

- Predictions for future growth in the short-term rental market
- Full integration of data into predictions for occupancy, ADR and supply growth in traditional hotels
- Further refinement of short-term rentals into competitive tiers

Future Work For New Model

- Additional Variables to be tested:
 - Business Investment
 - College Educated Employment
 - Disposable Income
 - Corporate Earnings and Activity Metrics
- Greater Inter-dependence of tiers, potentially of markets
- More frequent updating of forecasts using monthly data
- Quicker turn-around of forecasts from data providers
- Options for forecasting submarkets

HOW WE CAN HELP

CBRE Hotels Advisory

We understand the impact the current pandemic crisis is taking on your day-to-day operations and business models. As you evaluate the implications on your assets, CBRE Hotels stands ready to assist with the most up-to-date information, data, and customized services. The US CBRE Hotels Advisory team covers all territories and is backed by the #1 US Hotel Research group in the nation, enabling us to be the best equipped professionals for this situation.

We have identified the following services that can be offered in expedited fashion. They are largely customizable and incorporate real-time data that can be applied to your specific property or portfolio. Given the scale and experience of our professional team, together with the unparalleled strength of the world's leading hospitality group, CBRE Hotels Advisory is prepared to offer these services on a weekly, bi-weekly, monthly or one-time basis. CBRE Hotels Advisory is prepared to immediately help you navigate through the current environment with confidence.

Our Suite of Services:

- Market Demand & Financial Feasibility Analysis *(Both New & Existing)*
- Appraisals for:
 - + *Financing*
 - + *Property Tax Appeal/Assessment*
 - + *Estate Purposes*
- Stress Tests
- Impairment Testing
- Liquidity Assessment
- Receivership Services
- Asset Management
- Financial Benchmarking
- Operational Reviews
- Occupancy Forecasting
- Litigation Support
- Debt Advisory
- Operator/Brand Selection
- Branding, Re-Branding & Marketing
- Development Advisory
- Management Company Selection
- Acquisition Due Diligence:
 - + *Buy Side*
 - + *Sell Side*
 - + *Technical*



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THANK YOU!

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