Insights for a moving world

AIRSAGE

MAY 2021

#TRAVEL & TOURISM

PENT-UP DEMAND FOR SUMMER 2021

Study of the Universal Studios, Florida

#TRANSPORTATION

REDESIGNING FOR THE COMMUNITY

BY KEVIN BROWN

Senior Business Development Manager at AirSage

#URBAN DESIGN

CYNTHIA ALBRIGHT

FAICP CUD, GISP
Senior Principal, Data Analytics Lead & Urban Design at Stantec

OPPORTUNITY OF A GENERATION FOR SMART CITIES

ISSUE NO 3

EDITOR'S NOTE

Photo of Atlanta by Kruck20

Dear Reader

There has never been a better time in our data industry.

Post-pandemic, opportunities emerge everywhere. And the perception of technology has changed: we now embrace it and recognize that data matters - not just to save lives, but to improve quality of life.

Our streets and cities were built based on a different reality. There are beliefs and discrimination built into the infrastructure. Lack of broadband access, public transportation, no connections are obvious examples of leaving people behind.

AirSage Location Data is a powerful tool that can be used to better lives and to reduce inequality. To make Smart Cities liveable, sustainable and equitable cities. We are seeing an opportunity of a generation, for generations to come. Join us in building a better future.

Yours,

Mark E. Forster,
CEO of AirSage

HARNESSING THE POWER OF LOCATION DATA

BY CYNTHIA ALBRIGHT

Cynthia Albright is the Senior Principal, Planning & Urban Design at Stantec. She has planned and designed award-winning projects, presented, authored, and served as an advisor to clients, community groups, and professional peers for over 35 years. Cynthia is an expert in spatial software, one of 53 certified urban designers in the U.S., and fellow in the American Institute of Certified Planners.

I started as the manager of a planning and landscape architecture team in the Reno office 23 years ago when Stantec's employees totaled 4,000—we're now a company of more than 23,000! I immediately enjoyed the freedom and opportunity to respond to various landforms and create meaningful design outcomes that we could look back on with pride. Prior to joining Stantec, I worked as a planner for local government, responding to land development proposals but not leading them.

I came to Stantec with a strong background in spatial analyses using Geographic Information Systems software. Over the past 30 years, I've harnessed the power of location to visualize data, create transportation and multimobility master plans, comprehensive municipal land use plans, downtown revitalization plans, growth management studies, and other assignments to reveal insights and provide data-driven recommendations. My goal is to improve the communities in which we work. To that end, I augmented my skillset by earning my certified urban designer credential from the American Institute of Certified Planners (AICP). Our collective work with big data—or data anonymized from smartphones and devices—coupled with my three decades of continuous community service resulted in my acceptance into the College of Fellows for the AICP. My career with Stantec has led me down many interesting paths with challenging problems to solve, and I have enjoyed every one of them.

Photo by Chris Holloman

BUILDING A NEW NORM, NEW AMERICA

The pandemic created an environment for generations of people who have never experienced anything like it. One thing is clear to me: the lack of human and social interaction as a result of this pandemic is harmful to our innate and intrinsic human needs. While I can't say all individuals require social contact for a healthy emotional state-of-being, the vast majority of us thrive on it. The media barrage of dire statistics booming into our isolated living rooms exacerbated our sense of despair and need for human interaction. Reports from the medical community indicate steep increases in depression, substance abuse, and anxiety as a result of the pandemic. This is what happens when individuals who thrive on social interaction are isolated without a sense of closure.

Studies have shown that our brains require stimulation every 5-6 seconds. This is one reason why pedestrians are drawn to streets with frequent door openings spaced 15-30 feet apart (the distance an average person walks in 5-6 seconds), encased in glass with visible, interesting displays. Picture in your mind a street with this built environment versus one that presents a long blank wall along the backside of a convention center, warehouse, or big-box retail. No one wants to walk along streets like that.

Lively streetscapes not only translate into strong commercial sales, they provide human connection. We yearn to be in restaurants, theatres, parks, and concerts among other people. Together, we create energy. It's worth mentioning that market research has proven people spend more money after 5:00 pm than during the daytime. Therefore, it makes good economic sense for cities to invest in streetscape lighting to foster a sense of safety and invite people to stroll, dine, and shop in the evening. Successful mixed-use developments add decorative wall-mounted lighting to storefronts and encourage businesses to keep internal lights on to augment the streetscape lighting and create street ambience.

Unfortunately, our streets remain mostly devoid of pedestrians and cyclists, and transit ridership is at an all-time low. Streets are one of the most important forms of public infrastructure. National traffic data indicates vehicle counts have rebounded to near pre-pandemic levels in many cities. Except now, the AM and PM peak travel patterns are spread throughout the day. Single occupancy vehicles currently proliferate many roadways, reversing decades of public and private sector efforts to encourage and reward carpooling, and promote the use of public transportation. Is it possible the pandemic and potential lingering fear of large crowds, particularly on public transportation, will contribute to the deployment of smaller autonomous shuttles? Will it encourage cities to widen sidewalks, expand the number of bicycle lanes, and address micro-mobility in a more holistic way? As an urban designer and multi-mobility professional, I truly hope so.

Maybe there is a small silver lining to be found. Cities should revisit their street network and identify those

Photo of Tokyo by wnmkm via iStock

which have the greatest potential to become destinations, even if all the essential pieces are not in place. In many cases, all it takes is one great street to trigger a revitalization of the surrounding neighborhood. Cities should take inventory in the built environment and assess what "bones" they have to work with; what is the land use mix between residential density, commercial, and office square footage? Studies have shown that one resident supports ten square feet of retail, whereas one office worker supports just one-half of a square foot of retail. The twenty-fold increase explains why retail uses prosper when residential uses are near or on the upper floors of commercial streets.

This is where the use of data from smartphones and mobile devices can really help cities evolve and flourish post-pandemic.

Since this data is available in hourly increments for every day going back to 2017, cities can study the population travel behaviors and identify those specific streets that offer the greatest possibilities. The accuracy levels of 10 meters or 30 feet enable data analysts like me to distinguish population concentrations and movements from one side of the street to another and to specific destinations along a street. With this robust information, planners and urban designers can guide cities to make necessary and inclusive improvements that foster an environment that brings people together again while allowing for social distancing, supporting transportation and mobility enhancements, and identifying opportunities in the market for new development.

TAKE ACTION, EMBRACE URBAN SUSTAINABILITY

What defines urban sustainability, and how can we achieve it?

The term urban sustainability can have many interpretations depending on who you ask and what their field of expertise may be. I support the doctrine that cities and towns need to minimize their environmental footprint and not sacrifice future generations to meet our needs of today. We must not only use our natural resources more efficiently but effectively manage growth and development, strive for economic viability and social equity. As a planner, we need data and information to develop an understanding of where we are in terms of sustainability in order to chart a path forward to achieve it. None of the ideas I'm sharing here are new, but I am often surprised working with municipalities how little value is placed on data collection, routine monitoring, and establishing goals based on tangible information.

With an understanding that achieving urban sustainability is challenging and requires dedicated investment, there are "low hanging fruit" approaches cities and towns can embrace to move forward with this important objective.

Cities and towns must adopt zoning that encourages a wide range of housing types and relies upon higher densities to satisfy demand rather than promoting suburban sprawl. Preserving land is an important step toward achieving sustainability. They should assume an active role in the land development process beyond establishing zoning. Create partnerships with developers by leveraging available resources and/or other financial incentives.

Promote a webpage that identifies available public parcels for redevelopment. Instead of waiting for developers to walk in the door, drive outcomes by taking action.

Cities and towns should keep a close watch on the President's American Jobs Plan with the potential for two trillion dollars to create jobs and rebuild our country's infrastructure, among other objectives. There is federal, state, and private grant funding available if you're willing to look for it. So many small investments inspire bigger ones. Case in point: the City of Reno, NV received a $25,000 Bloomberg Philanthropies Grant for a mural on a 300'x50' concrete space in Downtown, that led to a private donation of conceptual plaza design services by Stantec, that led to a $50,000 Main Street Grant using our illustrative plan, that led to the Downtown Reno Partnership, in partnership with the City of Reno, to provide the funding needed to spearhead the beautification of this public space as part of its placemaking vision.

The exciting aspect is the interest in this project, currently under construction, extends beyond the City: the New York Times interviewed the muralist, Brad Carney, to share his philosophy on the importance of art in public spaces and its ability to engage visitors and residents in meaningful ways, which is ever-more important now. Developers follow where cities and towns lead. How many times have we read about a streetscape investment to widen sidewalks and decorate them

Photo of Amsterdam by funky-data via iStock

with shade trees, lighting, and street furniture, and then new bars and restaurants emerge? Over time, new residential and other development replace underutilized property. The City of Reno is proof that it happens.

The Washoe County Regional Transportation Commission invested $90M on the Virginia Street Project to create connectivity between Midtown Reno and the University of Nevada, Reno, to improve livability in the corridor, support economic development, and enhance safety. The street redesign effort infused new energy into this underutilized corridor even during this unprecedented environment. At least six new restaurants have opened, several bars received makeovers, and a five-story student housing development is nearing completion. Real estate values in the immediate area tripled per square foot, and this former arterial corridor became the walkable mixed-use domain designers knew it could be.

Cities and towns need to invest in their downtown areas to make them more livable in order to achieve a more financially sustainable future. Extending infrastructure and assuming lifetime maintenance for low-density residential is fiscally untenable. Consider adopting an urban growth boundary. Require independently-prepared fiscal impact reports to accompany all new development proposals. Thoroughly study the built environment in terms of the number of units and building square footage by type and compare that data with taxable revenues. How does your city fare? Where are your income-producing properties? What about properties that cost more in public services than is generated in taxes? How many residents live and work within the city boundary? Do you have more employment outflow than inflow? Answers to these questions will help cities be more strategic in achieving sustainability objectives. Data and information are critical to decision-making.

Cities and towns that value the importance of the natural environment protect existing trees and routinely plant new ones help reduce the urban heat island effect through a natural cooling of the built environment. Protecting the environment by establishing a tree preservation ordinance, an urban forestry commission, and having at least one certified urban forester on staff is essential. The City of Reno adopted a fee worksheet that quantifies the value of individual tree species by caliper. Anyone wishing to remove a mature tree on private property requesting discretionary permits for development must pay a fee to the ReLeaf Reno Program in the amount calculated by the Urban Forester based upon the adopted fee sheet. The same is true for tree removal in public rights of way.

Cities and towns that value public opinion and make cities pleasant places to live by actively protecting water bodies, mature trees, healthy air quality, and sustainable landforms are taking the necessary steps towards urban sustainability.

Photo of Buckhead, Atlanta by Marilyn Nieves

THE FUTURE OF EQUITY IN SMART CITIES

Equal access to transit is one of the most important indicators of a healthy society — how can every neighborhood have that access?

Access to transportation is an essential ingredient to a healthy community. Having studied land-use patterns and consulted with transit agencies to improve service and increase ridership, the cost to serve every neighborhood is fiscally unsupportable. In fact, there is no major transit service in the United States where the fares cover the operating costs. The closest is the New York City Subway, which brings roughly 75% of the service's ongoing costs. Cities and towns that can provide transit do. However, the extent of service is based on the extent of municipal resources dedicated to system operations.

Rather than asking how every neighborhood can have access, the appropriate question is how can professional planners help cities and transit agencies ensure a collaborative approach to understanding how people want to move within a city, where the employment centers are located, and what types of housing are needed in designated neighborhood areas so where residents live, and work are aligned with transit service.

Stantec's City of Winnipeg Transit Master Plan used four months of AirSage data to understand the seasonal variation in population travel patterns. Using data science, we created travel desire lines on the roadway network to compare with transit routes and ridership in ArcGIS. We were able to show our client how the services didn't align with how people traveled through the city.

The AllTransitTM website (https://alltransit.cnt.org/) provides interesting data on transit equity, quality, mobility, job access, and economic growth. In U.S. Metropolitan Regions with a population of 100,000 or greater:

- A total of 285 cities in the U.S. have a population of over 100,000. An average American city measures 355 square miles. However, only 15 square miles are accessible within a 30-minute transit commute, on average. Transit quality is measured by the length of wait times at stops, transit frequency, accessibility, and waiting area comfort. Long wait times between buses coupled with long transit commutes and weather are reasons for low ridership.

- Approximately 62% of jobs in U.S. cities (totaling over 85 million) are within ½ mile of a transit stop.

- 72% of households with no cars in U.S. cities are within ½ mile of transit; however, on average, just 9.7% of all workers who live within ½ mile of a transit stop take transit to work. Therefore, equal access to transit ridership is more about quality access that is conveniently located within a ten-minute walk, with frequent headways and direct services to employment centers. Residents who must rely on transit need housing options along transit routes designed to transport riders efficiently.

A really valuable application from the AirSage data in urban planning is exploring the equity of all public and municipal services, including transit, grocery, medical, schools, parks, libraries, recreation, and senior centers by studying how far and accessible these services are to underprivileged and marginalized communities. This is an extremely valuable application.

Cynthia Albright

Photo of Columbus Circle by Gagliardi

DATA IS THE KEY INGREDIENT TO SUCCESS

Several of my current and recent transportation projects incorporating location-based services data are in Canada. A project I'm extremely proud of was completed for the Tahoe Transportation District, where I managed the consulting team and analyzed AirSage data to deliver a national award-winning Comprehensive Multimobility Transportation Plan for Lake Tahoe.

Recognized by the American Planning Association with the Gold Award in Transportation Planning in 2019, our team used location-based services data to inform the Tahoe Transportation District that their visitor estimates were off by 250%. Fortunately, our traffic engineers used both Caltrans and NDOT traffic count data to corroborate the AirSage data results. Our transit master plan analysis estimated the number of cars that would be removed from the constrained network with each 5% increase in transit ridership. The Tahoe Transportation District Board unanimously voted to approve our plan recommendations and strive for a 20% mode share in 20 years.

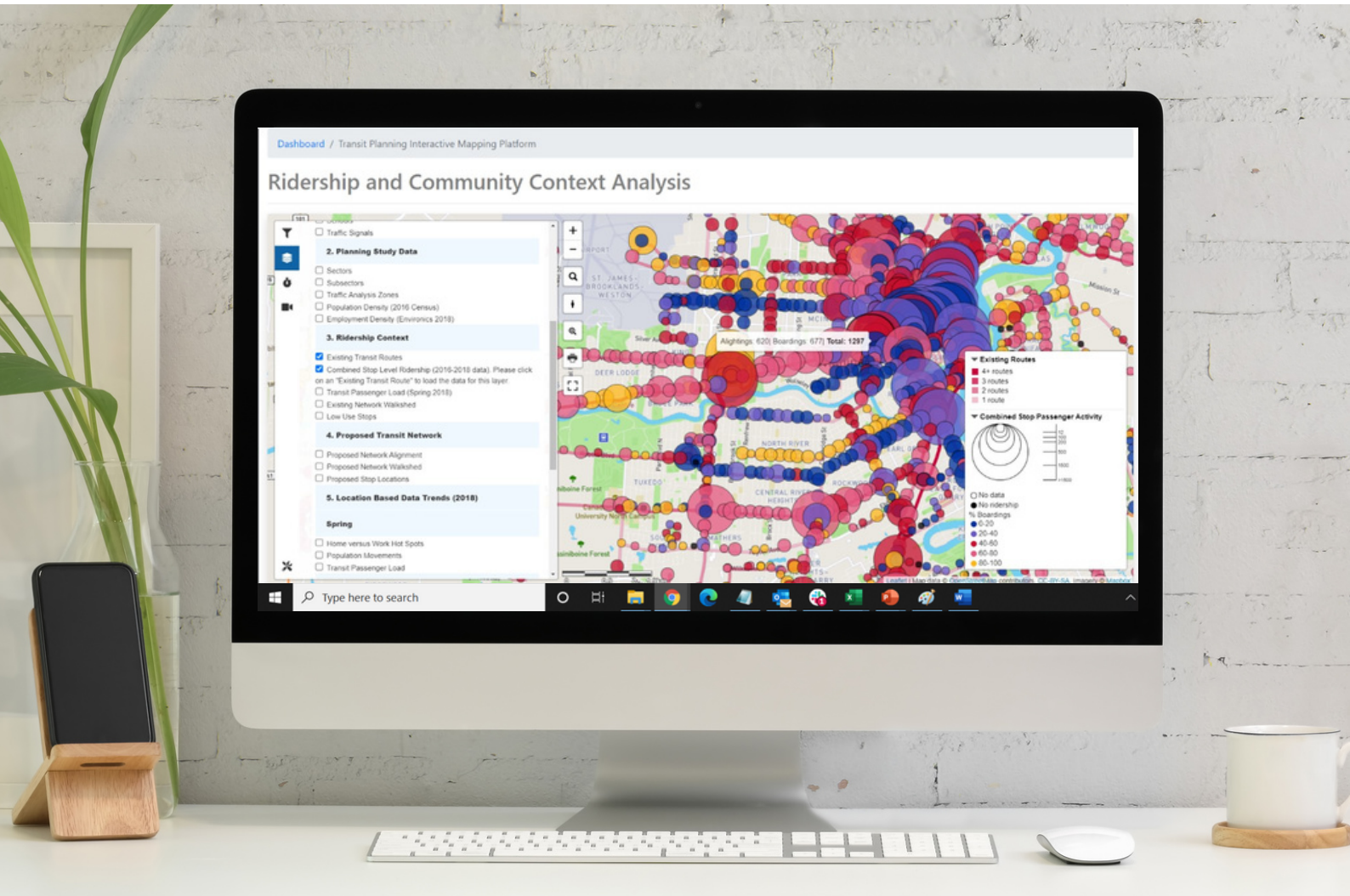
Another interesting project recently completed within Stantec relied on several sources of location-based data, including both historical and real-time information. We developed a congestion management monitoring dashboard for the Provinces of Alberta and British Columbia to audit the TransMountain Pipeline construction delays in real-time over the 750 km route between Edmonton and Vancouver.

Our web-based application and reporting system identified traffic congestion throughout the corridor and, if necessary, notified contractors that travel delays were approaching the 'not to exceed' milestone, and mitigation measures were necessary. Our application provided the necessary tools to ensure rapid identification and communication.

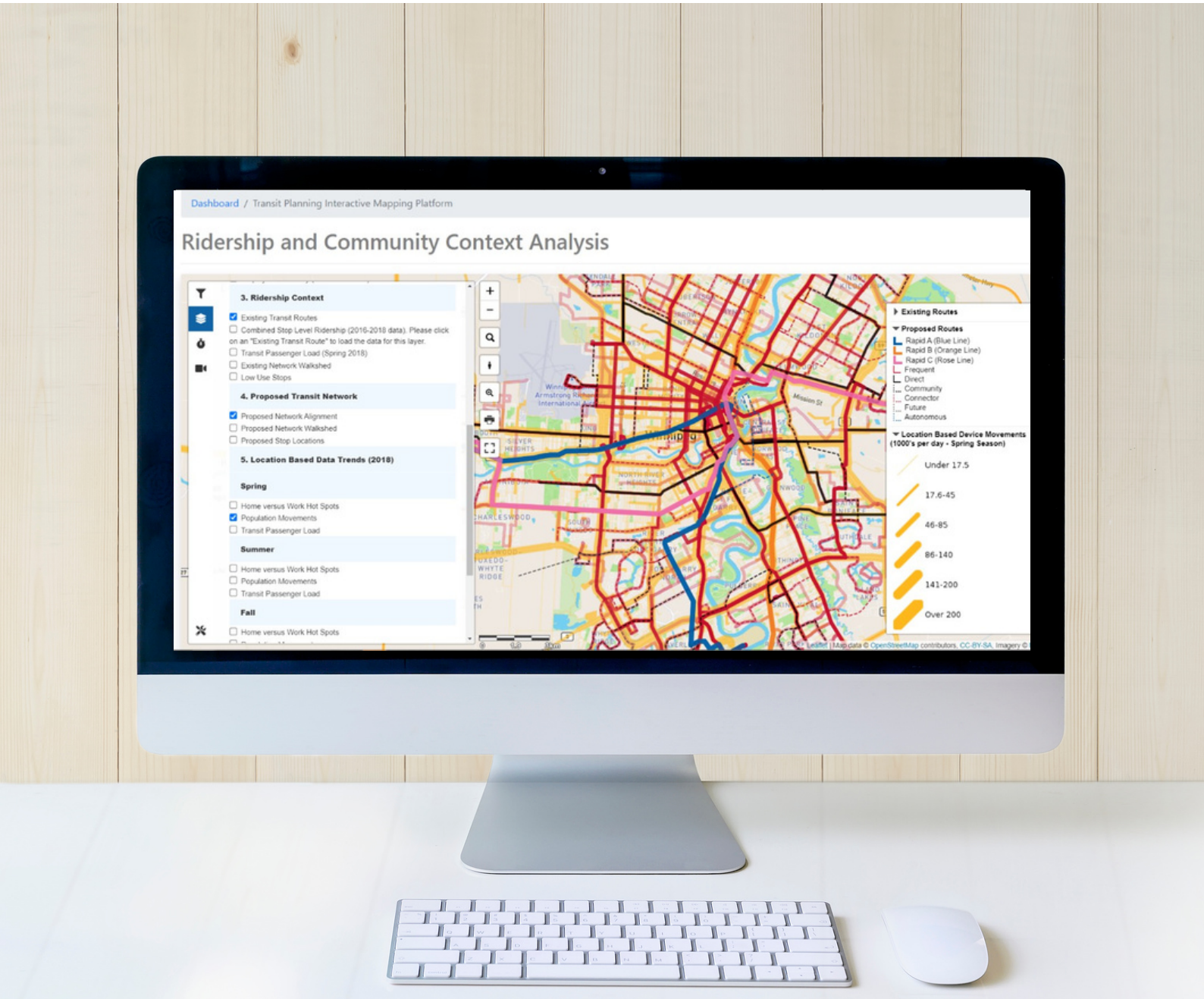
A travel demand project nearing completion is the Monmouth County, New Jersey, Tourism and Travel Demand Management Study. In partnership with New Jersey Transportation Planning Authority, Monmouth County retained Stantec to identify the population travel behaviors and recommend mitigation strategies to address congestion at specific locations. We leveraged AirSage data to discern where the most popular destinations were located and created animations using GIS and Adobe Premiere of the travel observations at each location in an hourly interval for weekdays and weekend days. By studying these patterns in conjunction with other data, we determined the popular routes, travel times and days, congestion areas by day and time, and the effectiveness of transit and rail to support these movements. Our collective team worked with the stakeholders from the National Park Service, the Monmouth County Fair, the City of Asbury Park, and others to identify existing travel demand management strategies before recommending a comprehensive list for each specific location to alleviate congestion during peak events and summer visitation.

TOWARDS THE PERFECTION OF LOCATION ANALYSIS

To analyze the efficacy of transit and transportation systems and operations, I use the custom code interface we developed to create desire travel lines from AirSage's aggregated location-based services data from the origin and destination counts. With this web-based tool, I can select any roadway segment within my study area, and a pop-up window identifies the number of people observed on that roadway which is filterable by hourly increments, days of the week, seasons, or an annual average. This is Stantec's custom transportation dashboard I helped create with Aaron Baxter, Graeme Masterton, and a few others. The online dashboard integrates transit information from automated passenger counter data and GTFS information in order to visualize transit ridership boardings and alightings throughout the network as well as provide detailed information for each transit stop along the system. We symbolized the transit network to illustrate the combined passenger activity for each stop not only to understand the volume of riders but also to clearly see where the low use or under-performing stops are located throughout the network.



The magnitude of population movements derived from the AirSage data is compared to the location of available mobility services such as transit, bikeway, and sidewalks to connect people with a variety of services to facilitate travel between work and home and from these locations to grocery stores, medical services and schools, among other destinations. With the data and dashboard, not only could we more easily understand where people are traveling and no services exist or are insufficient, we added the spatial layers of information for zoning, parks, employment destinations, medical services, shopping locations, and schools to the dashboard to be able to turn on or off this information. We also added the proposed network route alignments by transit service type (community, connector, autonomous) and the network walkshed to ensure maximum safe and convenient access. Our web-based dashboard can be applied to any project of any scale where there is a need to understand why people move in the ways they do and how we can most efficiently expand mobility options to reduce congestion and improve the quality of the experience.



Finally, I rely on AirSage's GPS aggregated point data of device sightings classified as home points, work points, endpoints, and in transient points to visualize these locations using our custom tools and to animate the population travel behaviors in hourly increments. This level of granularity enables me to differentiate between where people live and work and where all of the endpoints are throughout a city or study area.

These endpoints can be a university, a concert venue, restaurant, hotel, or any number of destinations that enable us to understand, for example, where people visited after seeing a concert, or how much population movement there is on one street vs. another or one park vs. another. The opportunities for analysis are endless. A screenshot of the animation for Downtown Winnipeg is shown below. Follow the link or scan the QR code to see the animation in action.

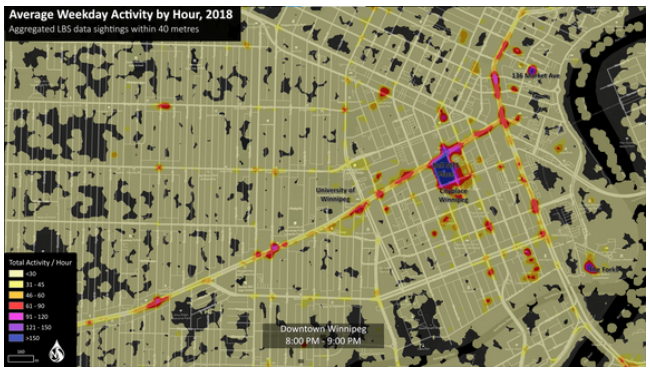
Average Weekday Activity in Downtown Winnipeg, 2018

8:00 AM - 9:00 AM

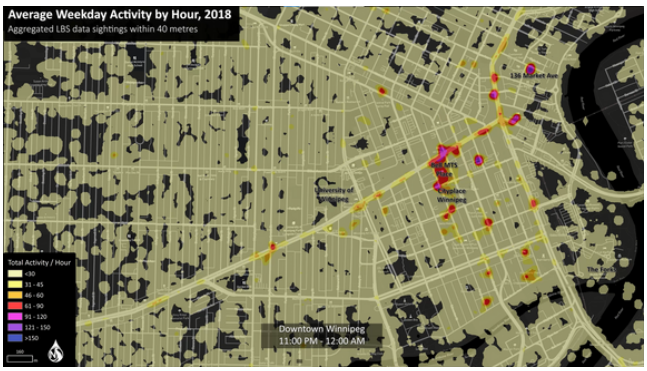
12:00 PM - 1:00 PM

3:00 PM - 4:00 PM

6:00 PM - 7:00 PM



8:00 PM - 9:00 PM



11:00 PM - 12:00 AM

ABOUT

Cynthia Albright, FAICP CUD, GISP
Senior Principal, Data Analytics Lead & Urban Design at Stantec

Cynthia Albright has planned and designed award-winning projects, presented, authored, and served as an advisor to clients, community groups, and professional peers for over 35 years. She has experience in large-scale master planning and project implementation focused on data from a variety of digital and big data sources for analysis and visualization using web-based dashboards for broad access. She's an expert in spatial software, one of 53 certified urban designers in the U.S., and fellow in the American Institute of Certified Planners.

Her primary focus and passion are on digital change, strategy development, project delivery and ensuring we use the right data, tools, and capabilities to deliver the ideal outcomes for our clients. She brings her knowledge in data and geo-analytics to help clients make smart decisions about where to invest, how to maintain their investments, and get the most from their assets. Cynthia keeps herself aware of new technologies across multiple sectors which allows her to bring innovation to projects to help cities create livable, equitable, and sustainable environments residents and visitors will enjoy and cherish.

#Equity Planning With Data #Urban Planning #Urban Design

Photo by Chris Holloman

Photo of Los Angeles by Melpomenem

REDESIGNING FOR THE COMMUNITY

BY KEVIN BROWN

Kevin Brown is a Senior Business Development Manager at AirSage. He is an expert in the Geospatial space with more than 10 years of work experience with leading GIS and GPS providers.

GIS has been an ever-evolving discipline since its inception. The biggest change I've seen since I began my GIS career almost 12 years ago is the democratization of GIS. A decade ago, the access key to GIS data and tools was only in the hands of the GIS trained experts, today tech companies empower non-GIS experts and consumers with easy-to-use GIS applications incorporated into all kinds of solutions across different industries.

These days, you see GIS in action everywhere, from navigation apps to real estate platforms helping homebuyers find their homes in the desired neighborhood to rideshare apps assisting people to find a ride to anywhere they would like to go. GIS is also imperative to the micro-mobility movement for the simple reason that people need to be able to find that scooter or bike in order to use it. The micro-mobility providers are able to track and charge their fleet and keep track of everything in a geographical sense. There is no shortage of applications and industries using GIS to enable and enhance what they are trying to do and often finding new, more innovative ways to achieve their goals.

Near Real-Time Location Data has been imperative to many of these applications. For example, rideshare companies use real-time GIS data to match travelers with companions, show the real-time location of drivers and estimate how long it will take them to arrive. Big data and AI (Artificial Intelligence) are increasingly more prevalent and will continue to be areas of growth, but those are topics for another article.

There have been many advancements in GIS, Big Data, Location Data, and AI over the last ten years, but how did these technologies impact the U.S. transportation system?

Some prominent transportation planning and urban design experts distinguish four critical initiatives in the transportation industry. One of the most recent and most extensive is the shared micro-mobility movement, where many urban and suburban locations have embraced the scooter and e-bike transformation.

The second one is the rise of transportation network companies (TNC), such as Uber and Lyft. They replaced most of our taxi, transit, and even private vehicle trips, impacting the car rental industry, local business delivery systems, and big destination trips.

The third movement started with the active use of Big Data and Location intelligence. Collecting connected vehicle data, cell phone data, or mobile GPS data allows planners to use nearly real-time information about the events, patterns, and trends of different parts of our country, analyze them, and provide meaningful insights.

Lastly, the industry has finally understood that new complex transportation systems and intersections will not solve congestions long-term. Urban and transportation planners should aim to manage and utilize our systems more efficiently and give more space to people by building safe pedestrian and micro-mobility infrastructure.

Photo of San Francisco by ibsky

FACING THE TRUTH ON THE WAY TO EQUITY

Unfortunately, it took some time to come to an understanding of the last point. Almost in every state and every MSA, we can find areas with built-in discrimination. Insufficient access to transit, poorly monitored intersections, low quality of roads, lack of crosswalks and pedestrian infrastructures, absence of micro-mobility paths, bridges in need of repair… you name it. Most of these issues can be identified in low-income areas and almost never in the middle- and high-income neighborhoods.

I believe that one of the biggest mistakes being made by some municipalities and transportation coalitions while developing the infrastructure strategy in suburban and low-income areas has been making decisions off on assumptions or, worse, inaccurate data.

A data-driven approach is crucial to making the best possible decisions that deliver the best possible outcome for the citizens of these particular regions. The needs of the people within a given region are really what should be considered first to roll out and implement a successful plan.

The decision-making bodies also need to consider all possible factors, forecasting the future demand and potential challenges while developing infrastructure strategies. A plan built on flawed logic without taking all aspects into account will, ultimately, be unsuccessful. This will result in many problems, including the most troublesome – insufficient access to transportation, traffic congestion, more personal vehicles on the road.

We should learn from our mistakes – short-term solutions might lead to long-term problems which impact the local economy and increase the gap between population segments. It is best to use a well-thought-out, data-driven approach WITH accurate data to best plan and develop the infrastructure plan for suburban and low-income areas, and I am ready to help!

With Presidents Biden's $2 Trillion Infrastructure Plan, we have been given a chance to Rebuild America Together. This is an opportunity of a generation for the private and public sectors to unite their forces and act in the best interests of the U.S. society.

When building long-term infrastructure plans, first and foremost, the planners should envision what they would like their particular region to look like in the next 20, 30, 50 years. Then, set manageable, achievable goals, for example, on the five-year timeframe, to plan and outline the path to successfully implement their vision. Planners also need to consider the changing climate and ever-increasing population and figure out the best way to achieve their ideal plan in their region. Utilizing good, accurate data and using cutting-edge tools to take many possible factors into account and model the ideal plan will help take the guesswork out of the planning and give the planners the highest possible chances of success.

PENT-UP DEMAND FOR SUMMER 2021

BY ANNA P. AND ELENI M., AIRSAGE

A year has passed since the beginning of the COVID-19 pandemic. We have been forced to adapt to an unexpected situation and change our routines in every aspect of our lives: work, social interactions, recreation, the way we shop, how and when we move and travel. During 2020, consumer behavior has changed and some new trends will remain post-pandemic.

What do people think about traveling? How did their daily or weekly movement patterns change? What trends can be highlighted? Since the new normal will undoubtedly continue to include social distancing and other restrictions for quite a while, consumers will be inclined to make different choices in regard to travel.

By analyzing data from a given point of interest, we can observe changes in population movements and provide a comparison between the present and past behavioral patterns.

This study observes the changes in the visitation flow and average time spent at Universal Studios in Orlando, FL and its neighboring area, including hotels, restaurants, and cafes. Despite the observed data fluctuations due to the wavering of infection rates, restrictions, and seasonal break times, we can see some anomalies in visitation that might positively impact the travel and hospitality industry.

AirSage Case Study: Point of Interest (POI) Analysis of Universal Studios, Orlando, FL.

Universal Studios in Florida is a popular theme park and production studio located in Orlando, Florida. The park is part of the larger Universal Orlando Resort. In 2017, the park hosted approximately 10.2 million visitors, ranking as the sixth most attended theme park in the United States and the ninth most attended theme park globally. It features eight theme areas all located around a large lagoon: Production Central, New York, San Francisco, Harry Potter Alley, World Expo, Springfield, Woody Woodpecker's KidZone, and Hollywood.

In each area, there are a variety of shows, attractions, rides, and special events hosted all year round. There are also a wide variety of dining options and merchandise stores.

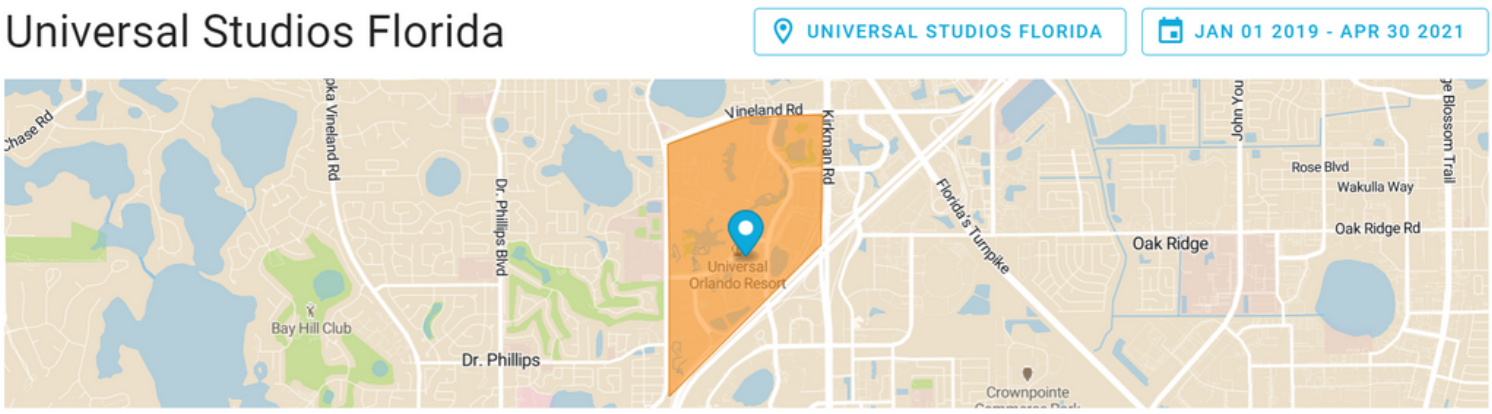
Using the AirSage location intelligence dashboard, one can track human movements across the United States and gain valuable insights about the number of visits, their average duration, travel patterns, and more on a given Point of Interest (PoI) in a specific time frame.

In this study, we compare three time periods (Jan 1, 2019 - April 30, 2021):

1) the pre-pandemic period in 2019,

2) 2020, the year when the virus began rapidly spreading across the U.S. and

3) the visitation flow through January - April of 2021.



AirSage: POI Polygon, Universal Studios, Orlando, FL

Visit Origin Map Analysis

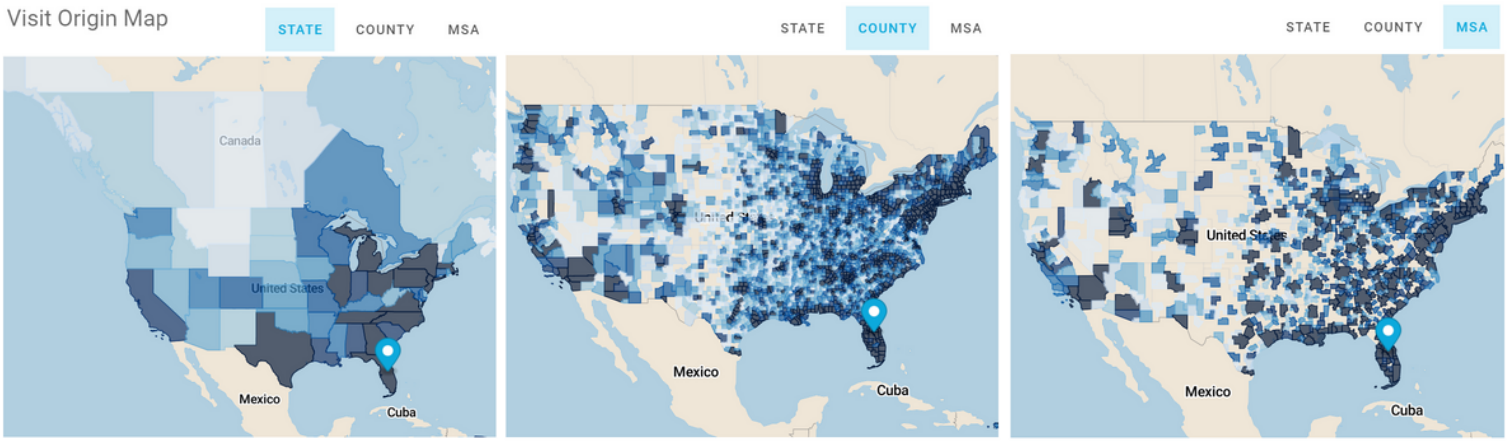
The Visit Origin Map presents the number of visitors based on their origin (states, counties, or MSAs) over a certain period of time. The different shades of colors, from the darkest to the lightest, indicate the volume of visitors.

Following are the top 10 states from which tourists came to the park and surrounding area throughout the study period:

1) Florida 142.3 M;
2) New York 14.1 M;
3) Texas 11.8 M;
4) Georgia 11.6 M;
5) Pennsylvania 9.7 M;
6) Illinois 8.6 M;
7) New Jersey 8 M;
8) Michigan 7.2 M;
9) Ohio 7.1 M;
10) North Carolina 7 M.

An interesting highlight is more than 3 million visitors came from Canada in the pre-pandemic period.

Despite the proximity to Florida, lower visitation volume was observed from Louisiana with 4.3M, Mississippi with 2.5 M, Alabama with 4.8 M, and South Carolina with 4.2 M visitors. Looking at the U.S. overall, the fewest number of visitors came from Montana (196.7K), Wyoming (254.1K), and Alaska (247.1K).



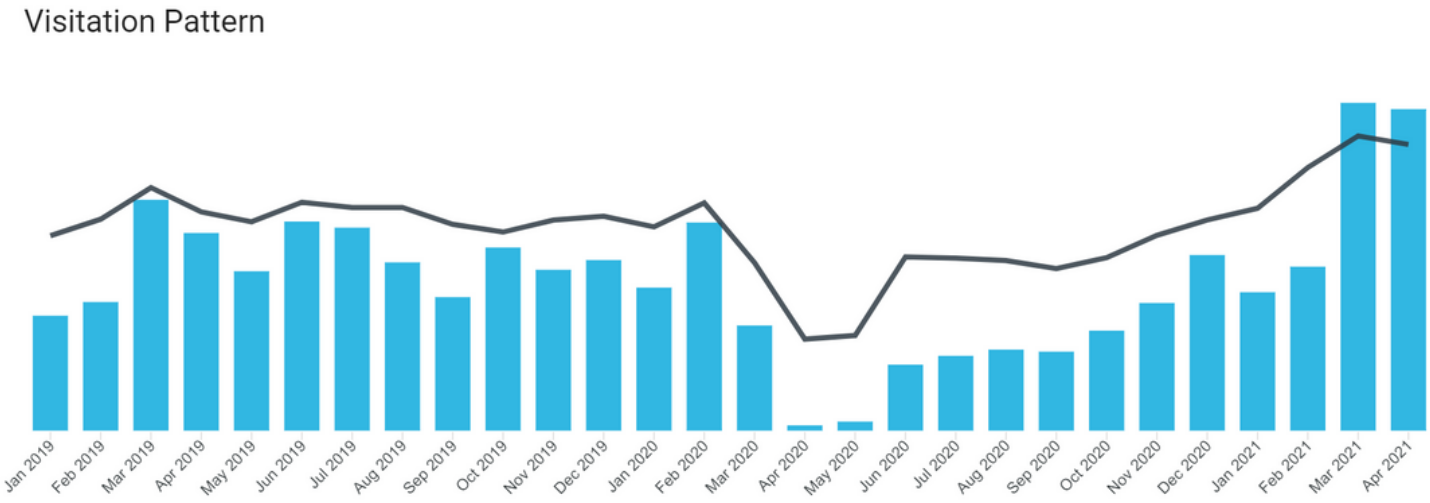
AirSage: Visit Origin Map, Universal Studios, Orlando, FL
1) State level; 2) County level; 3) MSA level
(January 01, 2019 - April 30, 2021)

Visitation Pattern Analysis

The Visitation Patterns chart shows monthly or daily visitation flow. Surprisingly, despite ongoing restrictions, we can observe that March 2021 indicated the highest visitation volume with 25.1 million visitors and the highest average duration of stay inside the theme park – 10.75 hours. For comparison, in March 2019, the park had 17.6 million visitors with an average stay of 9 hours. While in March 2020, the COVID-19 virus began rapidly spreading across the country, which led to the drop in visitation to only 8 million people – a 54.54% drop compared to the previous year with an average stay of 6.25 hours.

April 2021 continued the trend indicating 24.6 million visitors with an average stay of 10.5 hours. Comparing to 2019, the visitation in April 2021 increased to 63%.

Based on this unexpected data we can conclude that people are eager for leisure and travel as never before. The record-breaking numbers in March and April 2021 confirm this trend, which can also be partly explained by the rapid pace of the vaccination campaign and the coincidence of spring breaks.

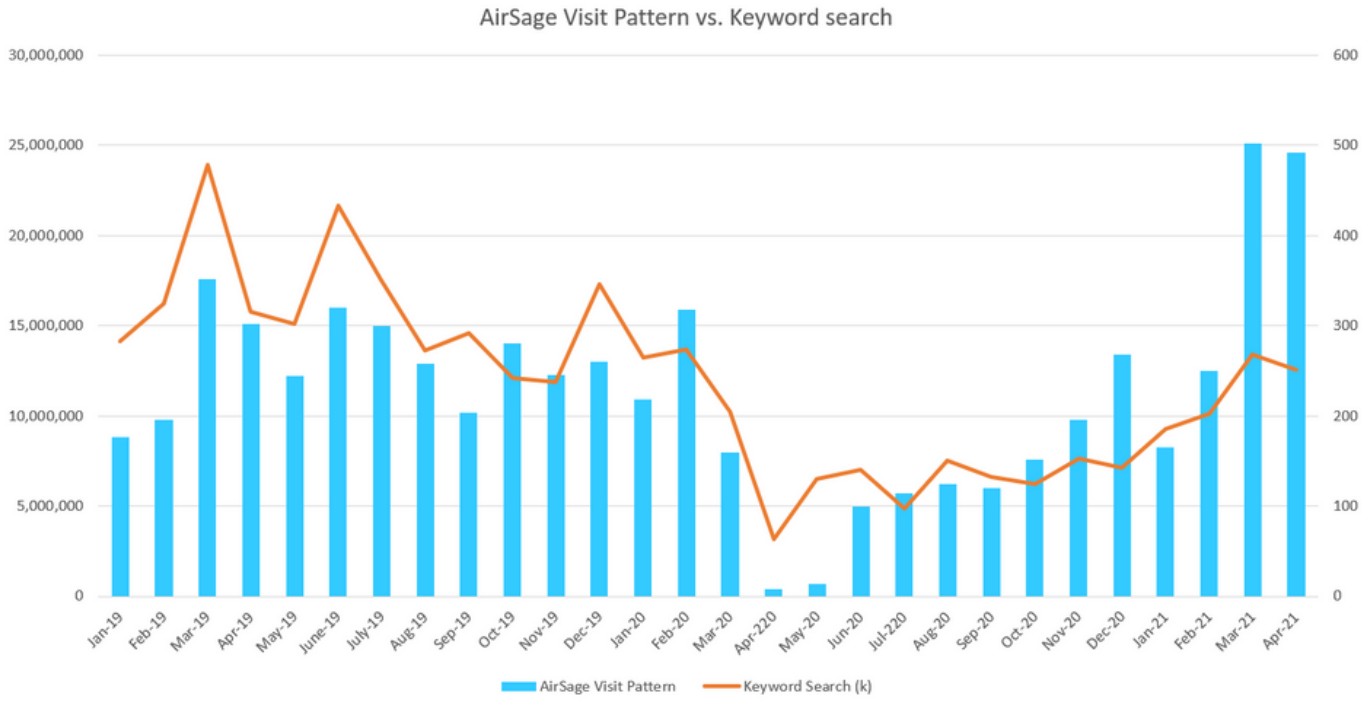


AirSage: Visit Pattern chart, Universal Studios, Orlando, FL (January 01, 2019 - April 30, 2021)

Dreaming VS. Doing

The following graph illustrates the comparison of the monthly visitation pattern and the "Universal Studios Florida" keyword search volume on Google. It is interesting to observe that in 2019, during the peak visitation periods correlated to the school holiday season – spring and summer breaks, Halloween, Thanksgiving, and Christmas holidays – more people searched for the keyword than visited the park and surrounding area.

During the first quarter of 2021, we observe the opposite behavior: February 2021 has seen the first increase in visits with a boom in March and April, which saw the highest recorded numbers of visitors for a long time. However, the search volume on Google was minor compared to the actual visits. Considering these insights, one can assume that people have a strong desire to travel and tend to organize trips spontaneously.



AirSage Visit Pattern vs. Keyword search
(January 01, 2019 - April 30, 2021)

MONTHLY VISITATION AND OUTLOOK INTO 2021

The following table compares AirSage visitation patterns month by month. The main focus is assessing the travel potential in 2021 compared to the pre-pandemic period in 2019.

Based on this data, we built three visitation scenarios for the upcoming months.

MONTH	2019	2021	GROWTH
January	8,800,000	8,250,000	-6%
February	9,800,000	12,500,000	+28%
March	17,600,000	25,100,000	+43%
April	15,100,000	24,600,000	+63%

AirSage Visit Pattern
(January - April, 2019 vs. 2021)

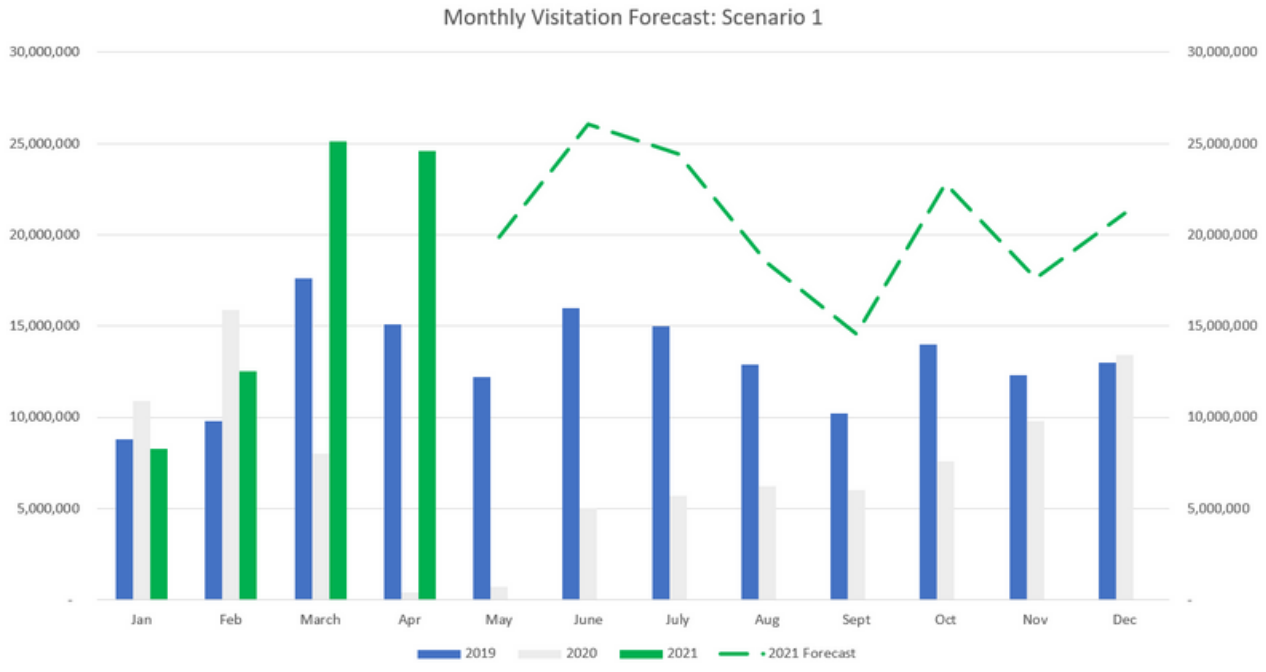
Scenario 1 - Seasonal growth

Scenario 1 is based on the assumption that the visitation continues to grow in a different path. Let's assume that during the major holidays in June, July, October, and December the visitation growth will continue the April trend (+63%).

For historically less busy months, we apply the growth rate registered in March (+43%). This way, in August and September 2021, the area should register 18.4 M and 14.5 M visits. In November it will be around 17.6 M visitors.

MONTH	2019	2021 (ASSUMPTION)	GROWTH (ASSUMPTION)
May	12,200,000	19,886,000	+63%
June	16,000,000	26,080,000	+63%
July	15,000,000	24,450,000	+63%
August	12,900,000	18,447,000	+43%
September	10,200,000	14,586,000	+43%
October	14,000,000	22,820,000	+63%
November	12,300,000	17,589,000	+43%
December	13,000,000	21,190,000	+63%

2021 Monthly Visitation Forecast, Scenario 1



2021 Monthly Visitation Forecast, Scenario 1

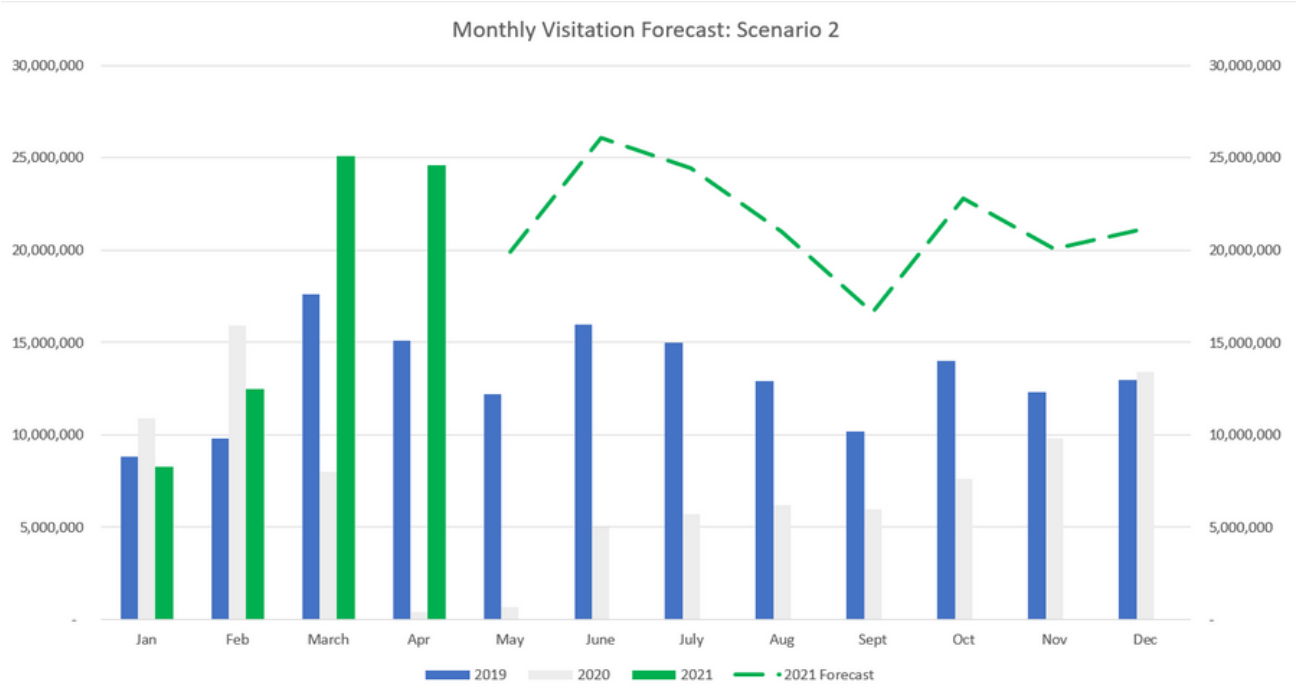
Scenario 2 - Maximum growth

Scenario 2 presents the most positive plot of the travel and entertainment industries. Here we assume that the visitation will continue growing like it was registered in April (+63%).

This way the highest visitation in 2021 will be June reaching 26 M people, following by July with 24.4 M and October with 22.8 M visitors.

MONTH	2019	2021 (ASSUMPTION)	GROWTH (ASSUMPTION)
May	12,200,000	19,886,000	+63%
June	16,000,000	26,080,000	+63%
July	15,000,000	24,450,000	+63%
August	12,900,000	21,027,000	+63%
September	10,200,000	16,626,000	+63%
October	14,000,000	22,820,000	+63%
November	12,300,000	20,049,000	+63%
December	13,000,000	21,190,000	+63%

2021 Monthly Visitation Forecast, Scenario 2



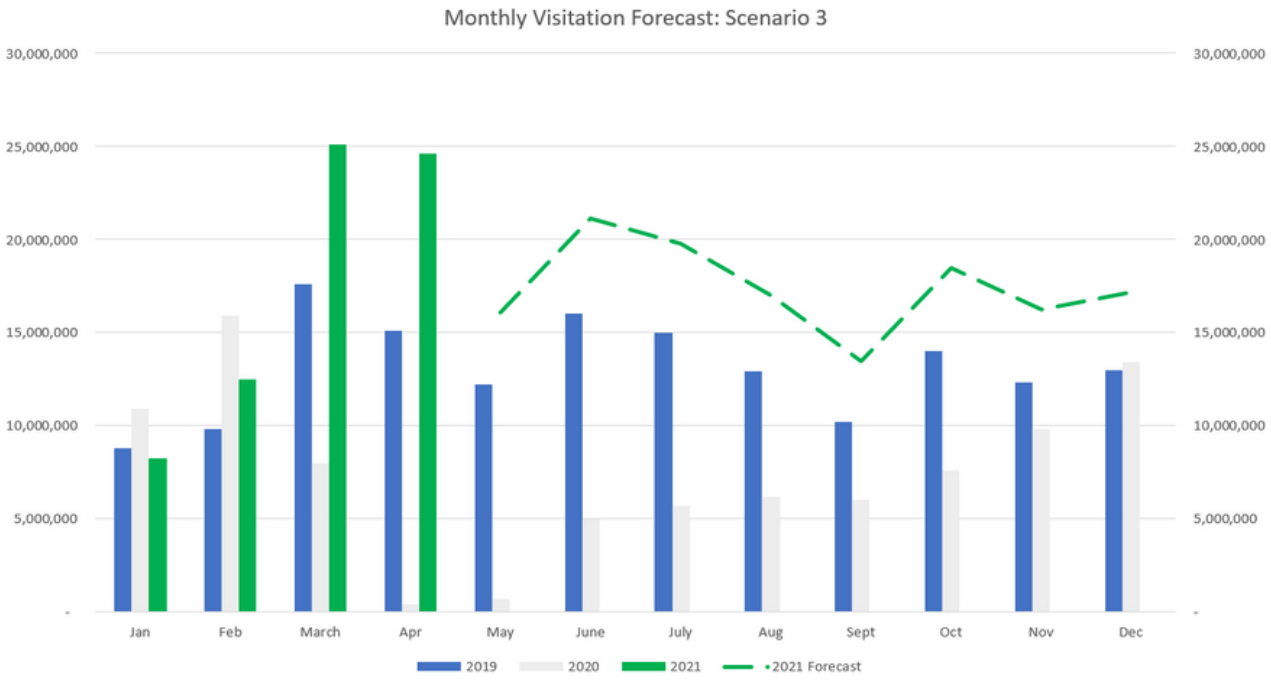
2021 Monthly Visitation Forecast, Scenario 2

Scenario 3 - Average growth

Scenario 3 is based on the average visitation growth – 32%. Thus, in the summer peak time, in June and July, the park should expect about 21.1 million and 19.8 million visitors, correspondingly. During the last quarter of the year, the visitation might reach 18.5 million, 16.2 million, and 17.1 million visitors in October, November, and December, respectively.

MONTH	2019	2021 (ASSUMPTION)	GROWTH (ASSUMPTION)
May	12,200,000	16,104,000	+32%
June	16,000,000	21,120,000	+32%
July	15,000,000	19,800,000	+32%
August	12,900,000	17,028,000	+32%
September	10,200,000	13,464,000	+32%
October	14,000,000	18,480,000	+32%
November	12,300,000	16,236,000	+32%
December	13,000,000	17,160,000	+32%

2021 Monthly Visitation Forecast, Scenario 3

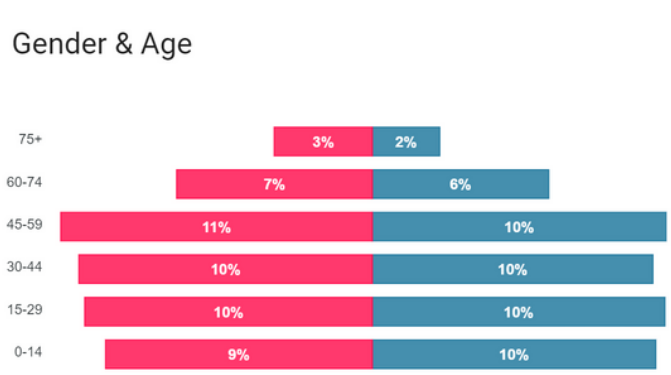


2021 Monthly Visitation Forecast, Scenario 3

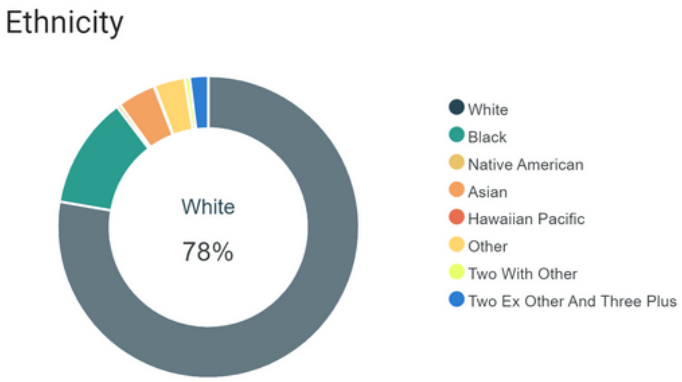
DEMOGRAPHICS & ETHNICITY

The bar chart below shows the percentage of visits based on their gender and age group. More visitors are female and the age group is distributed between young and middle-aged. This data is easily explained considering that it is an amusement park with many activities, and a popular destination for families with kids or teenagers.

The pie chart below illustrates the distribution of ethnic groups visiting Universal Studios Florida. The data analyzed shows that the majority of area visitors are White (78%), followed by 12% Black and 4% Asian.



AirSage: Visitors Demographics, Universal Studios, Orlando, FL (January 01, 2019 - April 30, 2021)

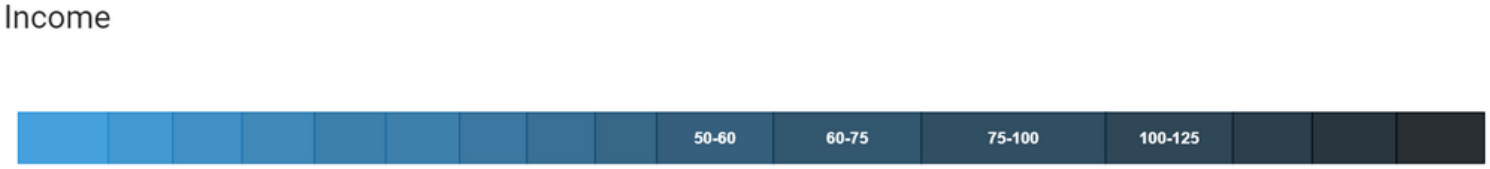


AirSage: Visitors Ethnicity, Universal Studios, Orlando, FL (January 01, 2019 - April 30, 2021)

INCOME

The last graph shows the income distribution of Universal Studios visitors.

- 13% of visitors belong to the group with an annual income range of $75-100K,
- 10% is within a range of $60-75K,
- 9% have an income between $100-125K, while
- 8% of visitors are within the $50-60K range.



AirSage: Visitors Income Groups, Universal Studios, Orlando, FL (January 01, 2019 - April 30, 2021)

9 TIPS ON HOW TO WIN MORE TRAVELERS

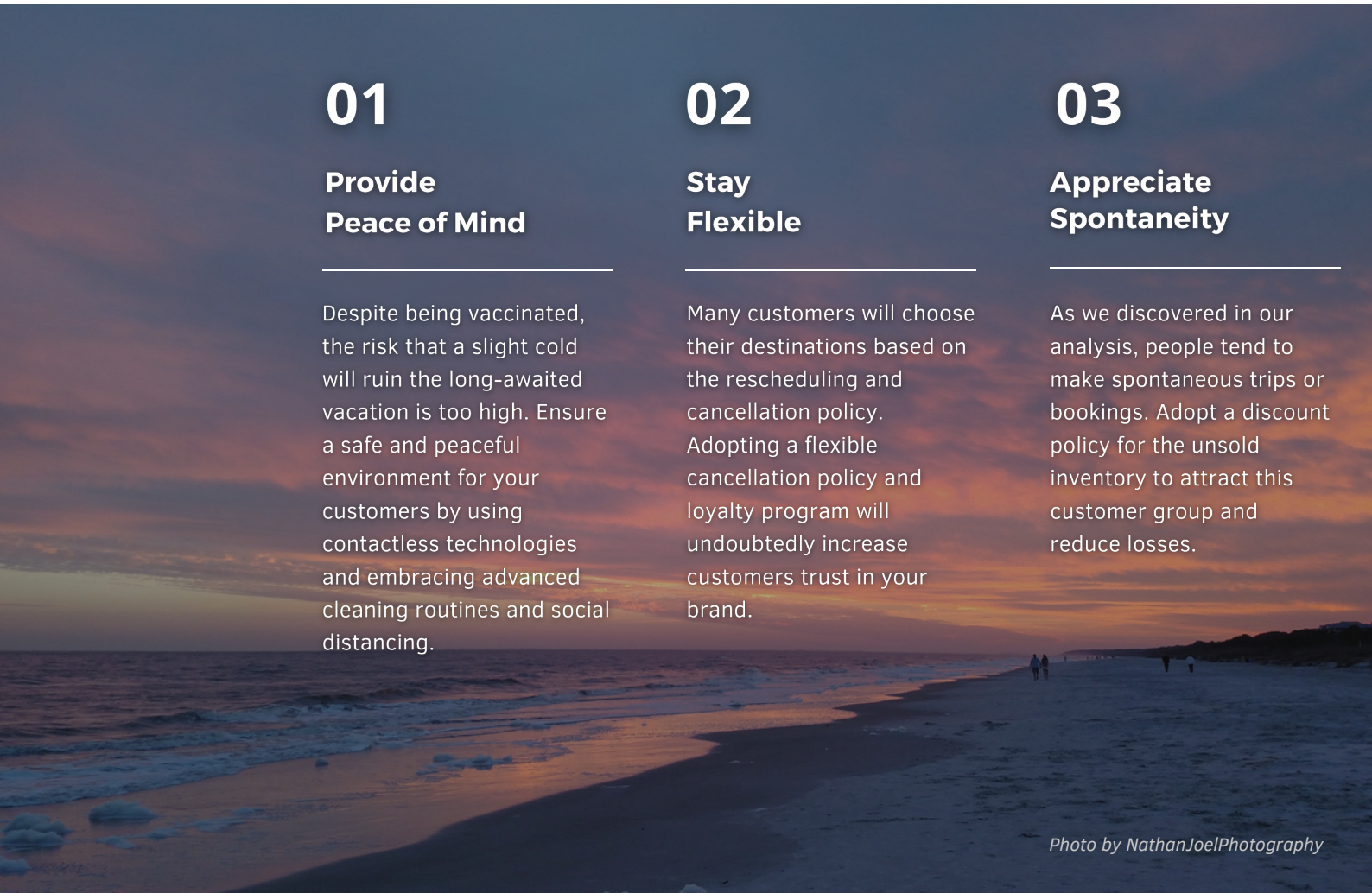
Today it is vital more than ever before to identify new opportunities for business recovery and growth in the travel and hospitality industries. After more than 14 months of travel restrictions, which forced everyone to change habits and routines, people are increasingly eager for leisure activities and are ready to start traveling again.

May and June are historically the time of the year when people organize and plan their summer vacations. One difference this year - they are choosing flexibility and favoring last-minute plans, short road trips and day trips.

The AirSage insights from March and April 2021 confirm these trends. Our forecast for the upcoming months is optimistic, and we expect a consistent growth of visits in tourist destinations across the nation.

What does it mean for businesses? Resorts, hotels, spas, restaurants, casinos, parks… no matter what type of business you run, this summer will be a race for returning and new customers. After a long waiting time, people have higher expectations, especially in terms of hygiene and cancelation policies, but are still ready to visit new places or try new things that were for years in their bucket lists.

So how to attract more travelers?



01

Provide Peace of Mind

Despite being vaccinated, the risk that a slight cold will ruin the long-awaited vacation is too high. Ensure a safe and peaceful environment for your customers by using contactless technologies and embracing advanced cleaning routines and social distancing.

02

Stay Flexible

Many customers will choose their destinations based on the rescheduling and cancellation policy. Adopting a flexible cancellation policy and loyalty program will undoubtedly increase customers trust in your brand.

03

Appreciate Spontaneity

As we discovered in our analysis, people tend to make spontaneous trips or bookings. Adopt a discount policy for the unsold inventory to attract this customer group and reduce losses.

Photo by NathanJoelPhotography

04

Keep Attention on Locals

2020 made local tourism popular as never before. This still may the number one choice for those who do not feel comfortable with air travel. Focusing on local travelers might open a door for new revenue streams, in some cases prepaid. For example, introduce monthly or summer subscriptions, give family discounts, or create a partnership with other attractions upselling each other's products.

05

Stimulate Travel Desire

This year travelers want everything. Now!

When planning a vacation, people will focus on creating the most memorable experience. Therefore, you have a higher chance of winning a client if you also showcase attractions around your property. Exclusive dining, shopping, or parks around your hotel – this is what helps making the booking decision.

06

Be Digital

Advertising, SEO, content – everything matters to increase the visibility of your brand. Do not forget, though, the quality of your content matters. Do not flush your budget without a strategy and creative thinking. Analyze your ideal customers to personalize offers and make messaging more relevant.

07

Embrace Creativity

When people choose their next destination, they are dreaming of it. Help them dive into the bliss of rest even before they hit the *Book Now* button. The latest trends in the travel and hospitality world are Virtual Reality (VR) and Augmented Reality (AR). From VR tour of Presidential suites to AR filters on Instagram to interactive media advertising, the possibilities are endless.

08

Go Viral

The first thing many people do when they hit their vacation destination is share their photos on social media. Use it! Create stunning photo spaces with sophisticated decorations, luxury lounges, or workspaces. Anything out of the box will be on Facebook.

09

Adopt Location Intelligence

Your business and marketing strategy should constantly be challenged and improved. Human movement analysis will certainly help you identify hidden business potential, analyze always-evolving audience and customer behavior, and keep track of changes in the competitive landscape.

Indeed, it is a new situation in the travel and hospitality landscape, and whoever becomes "the loudest" now will set the tone for the year. Be one of the first in your area to set the new standard of high-quality service for your eager customers!

Contact us for any support needed at marketing@airsage.com
Have a profitable summer!
Yours,
AirSage team

sales@airsage.com
(404) 809-2499
2146 Roswell Rd, Suite 108, PMB 862,
Marietta, GA 30062
https://www.airsage.com/