Estimating Beach Visitation Using Cellphone-derived Locational Data

A Pilot Study of Ventura, Santa Barbara, and Los Angeles Counties

Technical report prepared by:

Kiki Patsch, Marc Beyeler, Dorothy Horn, Elena Eger, Mario Sandoval, Ari Eger-Beyeler, and Nate Merrill

Technical report prepared for:

Beach Erosion Authority for Clean Oceans and Nourishment (BEACON)

August 2024

Kiki.patsch@csuci.edu

Mobility Data Purchased from:

AIRSAGE [1]

With Funding From:

Beach Erosion Authority for Clean Oceans and Nourishment (BEACON),

Mountains Recreation & Conservation Authority (MRCA), and California Sea Grant

Suggested Citation

Patsch, K., Merrill, N., Beyeler, M., Eger, E., Eger-Beyeler, A., Sandoval, M., and Horn, D. 2024. Estimating beach visitation using cellphone-derived locational data: A pilot study of Ventura, Santa Barbara, and Los Angeles counties. Technical Report to Beach Erosion Authority for Clean Oceans and Nourishment (BEACON).

Table of Contents

(If viewing the pdf version of the report, simply click on the heading to be taken to that section)

Introduction 2
Background 3
Data 5
Methods 8
Results 13
Discussion 27
Conclusion 29
References 30
Appendix 35

[1] AirSage's Privacy & Consumer Rights: Airsage has maintained consumer data privacy as a top priority for more than a decade. Our data products and analytics depict the movement of people in aggregate - not the movement of specific individuals. AirSage's deliverables to third parties never contain any personally identifiable information (PII) and consist only of aggregated anonymous insights. https://airsage.com/about/privacy-policy/

Introduction

To develop more equitable beach access, including beach improvement projects and additional beach access locations and facilities, it is critical to better understand public beach users and patterns of beach use. While a significant amount of visitor data has been collected over the years in southern California, the extent, scope, and completeness of current public beach access and usage data remains incomplete and is insufficient to support more complete analysis and to adequately inform better management and stewardship.

The Beach Erosion Authority for Clean Oceans and Nourishment (BEACON), along with its project partners—the Mountains Recreation and Conservation Authority (MRCA), California State University Channel Islands (CSUCI), the USEPA Office of Research and Development (ORD), and The Bay Foundation (TBF)—formed the "Cellphone Data Working Group." This group developed a pilot project to address a data and research gap concerning beach visitation and use. The project specifically utilizes commercially available datasets of visitation based on cellphone locations, referred to as "cellphone-derived location data."

Recent studies on visitation to parks and beaches show that cellphone-derived location data can produce accurate estimates of daily and monthly visitation counts (Merrill et al., 2020; Monz et al., 2021; Monz et al., 2019). This pilot project aims to leverage cellphone-derived location data to estimate beach visitation, understand large-scale beach use patterns, and collect information on the origin and demographics of visitors. The Cellphone Data Working Group selected 50 discrete coastal access sites in southern California for evaluation, spanning from western Santa Barbara County to Santa Monica Bay and covering three counties: Santa Barbara, Ventura, and Los Angeles.

This technical methods memo outlines the research and analysis methods used in the pilot project for selected regional beaches. It addresses key topics such as the use and processing of private vendor mobility data, the integration of publicly available demographic data, and the incorporation of this data into GIS decision-support tools. The Cellphone Data Working Group's initial research and analysis suggest that cellphone location-derived mobility data is a valuable addition to current beach use and user information, under specific conditions. Obtaining this data requires a financial commitment, multidisciplinary trained personnel, and multiple technical data processing and integration steps to combine it with demographic data. Additionally, mobility data must be incorporated into an ongoing beach user monitoring program, supported by traditional on-the-ground beach count information, to ensure its representativeness and consistency.

Background

For more than 50 years, maximizing public beach access has been an important goal of integrated coastal zone management in California. This goal has become increasingly significant in the context of environmental and social justice in coastal policy and programs. Political contests over public beach access has remained a central feature of the deliberations and actions of the California Coastal Commission since its inception in the 1970s. Most recently, public beach access is emerging as a significant contemporary coastal management battleground, with Martin's Beach, Hollister Ranch, and Malibu being synonymous with inequitable access to the coast.

BEACON has utilized the best available social science, including data on beach use and beach users, as an essential component of advancing practice and addressing the many barriers to coastal access for the past several decades. Despite this, social science data collection efforts have been very limited, receiving only minimal attention and funding over the years (Christensen & King, 2017; Colgan et al., 2021; King, 1999, 2002; King & McGregor, 2012; King & McGregor, 2013; King & Symes, 2004; King, 2001, 2006; Lester et al., 2023; Nelson et al., 2007; Patsch et al., 2021; Pendleton & Kildow, 2006; Pendleton et al., 2011). BEACON and other public agencies use various methods to collect beach use information to improve beach management (Table 1).

In our region of interest, user surveys were conducted periodically across different coastal beach locations, but comprehensive regional and statewide data is still lacking. Recent efforts addressed some of this gap (Christensen & King, 2017; King, 2002; King & McGregor, 2012; King & McGregor, 2013). Christensen and King (2017) conducted over 1,000 intercept surveys at southern California beaches and collected data from a statewide voter poll. Currently, as of Fall 2024, CSUCI is completing a three-year long study, The Beach Sustainability Assessment (BSA) that involves collecting socioeconomic data from in-person surveys, latent demand surveys, and focus groups to identify barriers to coastal access in Santa Barbara and Ventura counties. Thus far, the BSA has collected over 1,200 intercept surveys, conducted six regional focus groups, and completed a regional latent demand survey on beach users and local community members to better understand beach visitation and access as part of a project funding jointly by the CSU Council on Ocean Affairs, Science, and Technology (COAST) and California Sea Grant as part of the State Science Information Needs Program (SSINP).

Table 1. Traditional Methods of Beach User Data Collection

Method	Regional Example	Visitor Use Dimensions
Observational studies	Lifeguard counts, Beach Sustainability Assessment (Patsch et al., 2021) Who's counting: An analysis of beach attendance estimates and methodologies in southern California (King & McGregor, 2012)	counts, transportation
Intercept Surveys	BEACON Intercept Beach Survey (King & McGregor, 2013) Beach Sustainability Assessment (BSA) Access for All (Christensen & King, 2017)	origins, demographics, spending, amenity preferences, transportation
Traffic and Parking		counts, transportation, operation revenue, origins
Latent Demand Studies	Access for All (Christensen & King, 2017)	origins, demographics, spending, amenity preferences, transportation

Notwithstanding these efforts, practitioners and researchers need additional beach use and beach user data and information. Each of these methods individually is limited in the visitor use dimensions collected (count of visitors, origin of visitors, demographics, etc.), geographically constrained, and/or limited in the time and type of visitors they represent. Additionally, these programs are resource-intensive and complicated to maintain for long-term or large-scale monitoring.

For these same reasons, common to other natural land visitor monitoring efforts, practitioners and researchers explored the use of alternative methods (Leggett, 2017; Liang et al., 2022; Mashhadi et al., 2020; Mazzotta et al., 2021; Merrill et al., 2020; Monz et al., 2021; Monz et al., 2019; Narragansett National Estuary Program, 2021; Wilkins et al., 2021; Yoo et al., 2020; Zandbergen, 2009). These methods include using social media, imagery from satellites and aircraft, and cellphone locational data (Table 2), and promise the ability to infer similar visitor use dimensions passively over a larger geography and time, potentially offsetting the considerable expenses of more traditional methods.

Table 2. Emerging Methods for Beach User Data Collection

Method	Example	Visitor use dimensions
Social Media	Woods et al. (2013)	Counts, origins, demographics, amenity preferences
Cellphone-derived location data	Merrill et al. (2020)	Counts, origins, demographics
Satellite and aerial imagery	Tourangeau et al. (2017)	Counts
Tech-Enabled Citizen Science	Lia et al. (2023)	Counts, origins, demographics, amenity preferences

Alternative methods show effectiveness in estimating visitation counts in a variety of settings including at beaches and parks (see Table 2); however, they are best paired with traditional methods to create estimates on a similar scale to on-the-ground observations and to ensure stability of relationships over time (Merrill et al., 2020; Wilkins et al., 2021). The utility and accuracy of other inferences based on these emerging data methods, such as estimating demographic makeup of visitors (Liang et al., 2022; Mashhadi et al., 2020; Monz et al., 2021; Monz et al., 2019) or economic value (Sinclair et al., 2020) are areas of active research.

Cellphone-derived locational data, or mobility data, the focus of this pilot project, comes in a variety of styles and formats and the industry is evolving quickly. Most of the currently available products are based on device locations of smartphones collected by applications installed on the phone. These device locations are sold by application software developers to data companies that aggregate this information across many sources, remove personally identifiable information, and process this data to visitation-relevant metrics, such as foot traffic and visitor origins. There are numerous private companies offering various levels of processing away from the raw device locations as well as different derived products to fit specific needs, like road traffic, density of human use across space, or visitor origins. It is in no way standardized or a consistent product space (Whitney et al., 2023). Visitation inferences based on one product are not likely to translate to others directly (Whitney et al., 2023). For this report, cellphone-derived locational data was purchased from AirSage (https://airsage.com/), a transportation data vendor.

Data

The promise of cellphone-derived location data for visitor use monitoring is in the ability to cover a large geographic scale at a range of temporal scales (e.g. hourly, daily, monthly, years). The Cellphone-data Working Group chose the beach sites to sample, referred to as "points of interest" or "POIs", based on many factors, including regional location of the beaches, from urban settings to more rural settings; a range of beach sizes, including smaller, medium, and larger beaches; beaches with a range of amenities and facilities; historical use; beach locations involving a range of beach management agencies; as well as beaches with ongoing complementary research. The beach sites represent popular and often, very well

used, public beaches in the three counties (Figure 1). The beach locations chosen (Figure 1) are managed by more than a dozen agencies and under a broad range of conditions. The pilot project sites are identified by county and management agency in Table 3.

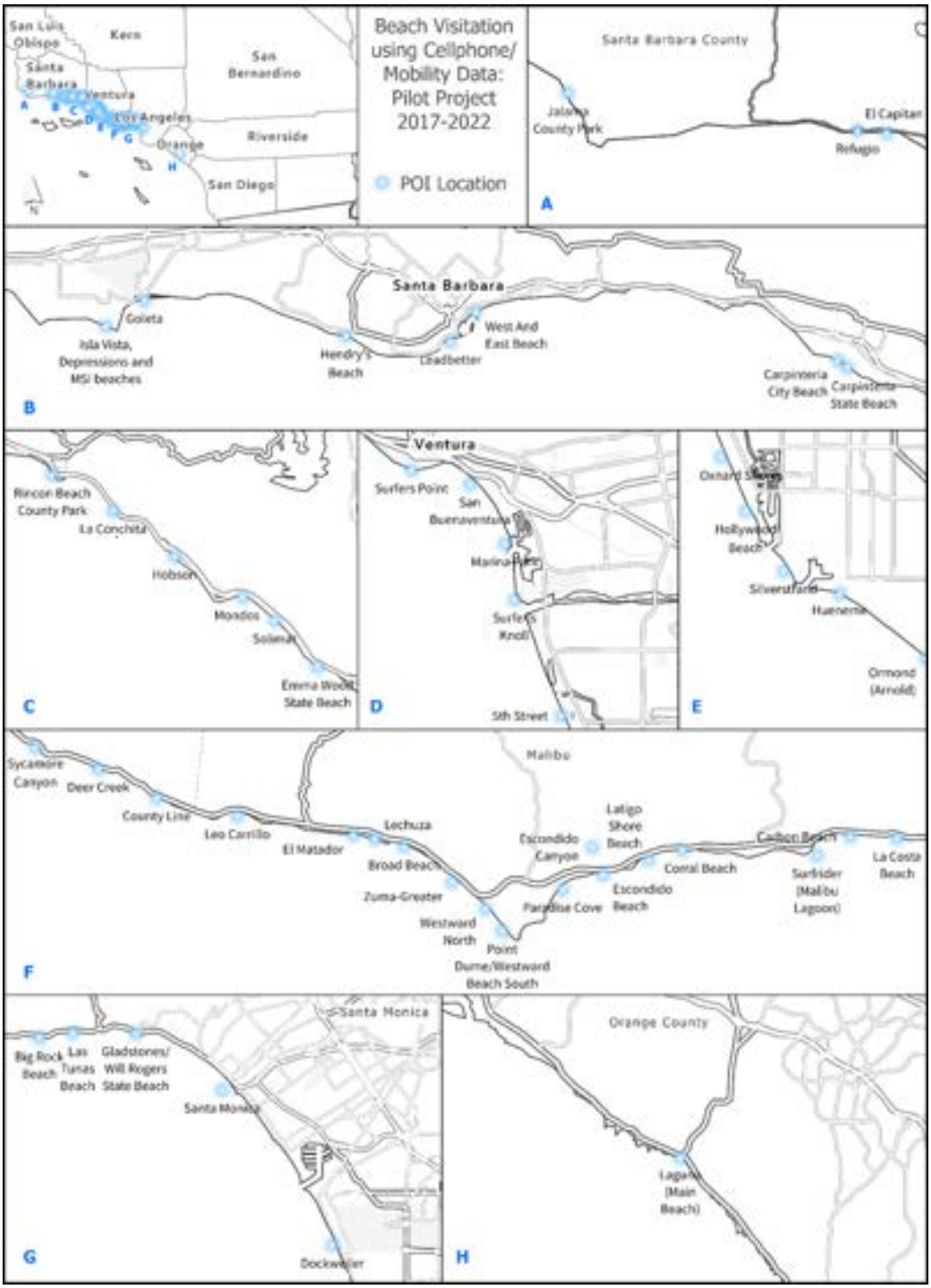


Figure 1. Location of Pilot Beach Sites (also known as Points of Interest (POIs)). H Laguna Beach, in Orange County, is part of the BSA and used for data validation.*

Table 3: Pilot Project POIs: Organized by Management Agency

BEACON Coast: Santa Barbara County						
Ca Dept of Parks and Recreation (CDPR-California State Parks)	**University of California Santa Barbara**	**Isla Vista Parks and Recreation District (IVPRD)**	**Santa Barbara County Parks and Recreation Department**	**City of Santa Barbara**	**City of Carpinteria**	
Refugio State Beach El Capitan State Beach Carpinteria State Beach	Marine Science Institute: Depression Beach	Isla Vista	Jalama County Beach Goleta County Beach Arroyo Burro County Beach (Hendry's) Rincon County Beach	Leadbetter West Beach/East Beach	Carpinteria City Beach	
BEACON Coast: Ventura County						
Ca Dept of Parks and Recreation (CDPR-California State Parks)	**Ventura County Parks and Recreation**	**City of Ventura**	**City of Oxnard**	**Ventura Port District**	**Channel Islands Harbor**	**City of Port Hueneme**
Emma Wood State Beach San Buenaventura State Beach Sycamore Canyon Beach County Line Beach	La Conchita Beach Hobson Beach Mondo's Beach Solimar Beach Deer Creek	Surfers' Point Marina Park	5th Street Beach Oxnard Shores Ormond Beach (Arnold Road)	Surfers Knoll Beach	Hollywood Beach Silverstrand Beach	Hueneme Beach
Santa Monica Bay Beaches: Los Angeles County					**Orange County**	
Mountains Recreation and Conservation Authority (MRCA)	**Ca Dept of Parks and Recreation (CDPR-California State Parks)**	**LA County Department of Beaches and Harbors**	**Private**	**City of Santa Monica**	**City of Laguna Beach**	
Lechuza Beach Escondido Beach Escondido Canyon Park Latigo Shores Carbon Beach La Costa Beach Big Rock Beach	Leo Carrillo State Beach El Matador State Beach Surfrider Beach/Malibu Lagoon	Broad Beach Zuma Beach Westward Beach North PD/Westward Beach South Corral Beach Will Rogers/Gladstones Dockweiler State Beach Las Tunas	Paradise Cove	Santa Monica Beach	Laguna Beach (Main)	

To delineate each beach, the Cellphone Data Working Group manually digitized geographic areas (polygons) representing site locations using ArcGIS Pro and a 2021 orthorectified basemap provided by esri. Boundary lines were extended oceanward into the nearshore environment to capture visitors recreating in the water and account for changes in seasonal beach width. Leveraging expert knowledge and collaborative reviews, the group included regions where beach-related recreation occurs, such as sandy areas, nearby boardwalks, and grassy areas. Built environments, such as restaurants and private homes, were intentionally excluded. Where appropriate, the parking resources for each beach within the polygons were digitized, as relating parking availability to beach attendance is of interest. These areas were similarly defined with expert input and team reviews. For this pilot project, the polygon areas were limited to day-use beach areas and day-use parking and excluded piers as well as overnight campgrounds. In some cases, only a portion of the beach, not the complete beach access area, was delineated. All digitized beach and parking polygons can be seen in the Appendix.

The vendor, AirSage, provided datasets inferring total hourly and daily visitation as well as visitor origins at a daily, census block group resolution for each POI during the study period from 2017 to 2022. Specifically, for every hour of every day from January 1, 2017, to December 31, 2022, the dataset includes a summary of the number of people on the beach within each POI polygon. Additionally, it provides daily unique visitor counts and a daily summary of how many visitors' home locations were in a particular census block group.

AirSage derives its aggregated visitation information from a panel of cellular device locations, built from data collected via multiple smartphone applications. The terms of use agreements of AirSage and similar companies do not disclose the specific applications providing these

locations. AirSage advertises a panel representing the movement of about one-third of all US citizens (over 100 million people) each month (AirSage, 2021).
AirSage processes this device-level locational data to produce the aggregate summaries provided. To estimate visitation to a given POI in a given timeframe, AirSage first defines the origin (census block group) of the device based on its location on weeknights throughout the month of interest. Work locations are similarly defined by the device locations during daytime hours on weekdays (AirSage, 2021). Using estimates of the number of devices in its location panel as a proportion of the total population of the census tract, AirSage assigns an extrapolation factor for each device, similar to commonly used survey-to-population estimation methods with other instruments.

In AirSage's panel, visits by devices are considered activity points, excluding where the POI is defined as a home or work location. AirSage then sums the activity points and creates unique device counts for the timeframe based on the set of devices observed (AirSage, 2021). The count of unique device visits in a day is conceptually the visitation metric typically desired for analysis, as that count proxies what would have been collected with a gate count. Instead of a physical gate, the "gate" is the geo-fence or the POI geography.

The Cellphone Data Working Group focused on inferring the demographics of beach visitors using cellphone-derived location data methods. This need is critical for beach managers, as it has significant implications for the equitable management of coastal resources. Research in this area is still developing (Liang et al., 2022; Mashhadi et al., 2020; Monz et al., 2021; Monz et al., 2019). AirSage's product includes demographic inferences based on the origin of visitors by linking the demographics of the census block group derived from the 2010 US Census to each visitor based on their home origin. This allows AirSage to create a panel-weighted demographic profile for each POI and timeframe.

Methods

Using the cellphone-derived location data purchased from AirSage for the 51 POIs in this pilot project, summaries of beach use were created by summing daily visitation estimates for each POI and timeframe of interest, including monthly and yearly totals. Visitation by origin was then disaggregated by "home" geography at the census block group level, organizing the data into tables for future analysis, plotting, and mapping.

Previous work with cellphone-derived location data and beach visitation found the data useful for estimating daily visitation but noted that it does not always align in scale with traditionally collected visitation series (Merrill et al., 2020; Tsai et al., 2023). Therefore, as a first step in this pilot project, the cellphone-derived visitation data was compared against existing ground-collected visitation data. For the BEACON region, the only contemporaneous series to the cellphone data timeframe that is both available and willingly shared are the visitation counts taken as part of a long-term beach monitoring protocol by the Environmental Science and Resource Management faculty at CSUCI since 2013 and is now part of the BSA (Patsch et al., 2021).

The BSA at CSUCI not only serves to assess the condition of California's sandy beach ecosystems but also acts as a valuable source of standardized environmental data collection. The BSA index is computed from three primary attribute scores: ecological functioning, geomorphology, and social utility. Each of these attribute scores is derived from an aggregation of various metric scores that measure specific aspects of beach health and usability.

In addition to providing detailed scores and grades for each component—geomorphological, ecological functioning, and social utility—the BSA also synthesizes these components into a single, overarching grade for each beach. This holistic approach to beach assessment ensures a comprehensive evaluation that supports the sustainable management and conservation of beach environments (Patsch et al., 2021).

Funded annually, when resources permit, the BSA conducts environmental assessments across approximately 60 beach sites during the peak summer months of June and July (Patsch et al., 2021). A crucial part of these assessments is the collection of visitation data through instantaneous counts of people present at the beach sites, following a standardized protocol to ensure consistency and reliability across all surveyed locations (Figure 2). This direct observation method complements other data collection strategies and provides immediate, empirical insights into beach usage patterns.

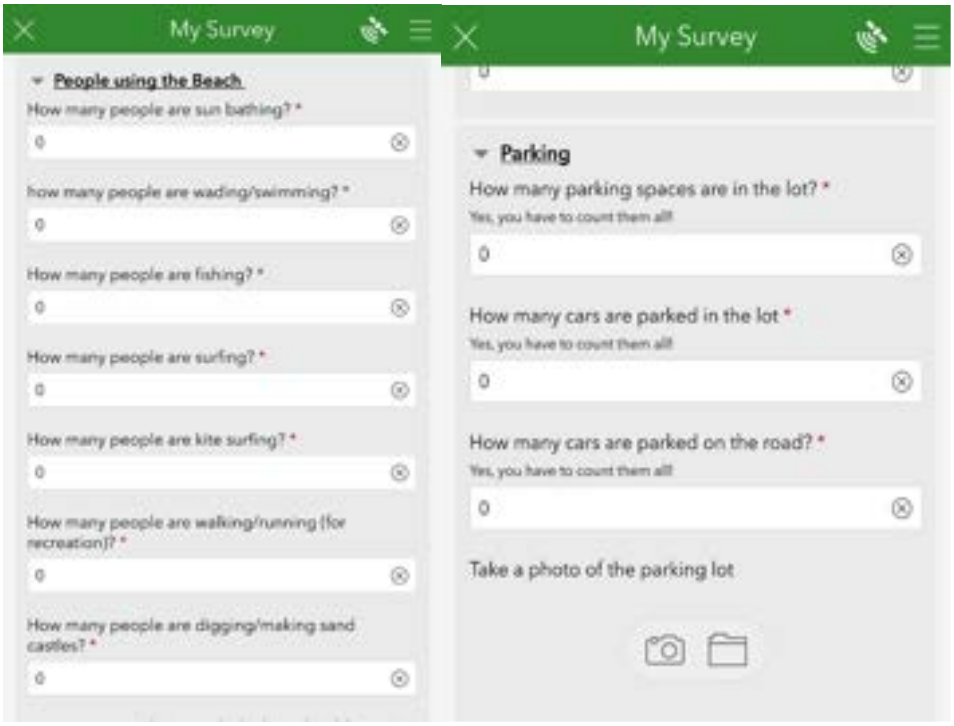


Figure 2: Example data collection survey instrument showing collection of social utility data at beaches as part of the Beach Sustainability Assessment (Patsch et al., 2021).

The integration of BSA on-the-ground counts with cellphone-derived location data offers a nuanced approach to understanding beach visitation patterns. While BSA counts provide instantaneous snapshots of visitor numbers, the counts differ from gate counts that track unique visitors throughout the day. Nonetheless, these counts offer valuable glimpses that can be effectively paired with the continuous, albeit indirect, data from cellphones.

To align these two data types—BSA instantaneous counts and cellphone-derived hourly visitation estimates—we employed a three-hour averaging technique for the cellphone data. This approach accounts for the variability in BSA survey times, which typically last 2-3 hours, and mitigates issues such as data censoring and small sample sizes that can lead to zero visitation estimates in certain hourly intervals. By averaging over a three-hour window, we smooth these fluctuations to better approximate the actual visitor presence during the broader time period.

This method also compensates for the inherent uncertainty in the exact timing of BSA counts, as the counting process can extend beyond a single hourly interval, potentially overlapping with periods before and after the actual count. By using a three-hour average for cellphone data, we create a more robust comparison framework that more accurately reflects the visitor dynamics captured in the BSA counts.

To analyze the relationship between the BSA visitation/people counts and cellphone-derived visitation data, we employed various statistical methods. Scatter plots visualize data distribution and assess alignment, scale relationships examine correspondence in magnitude, and Pearson correlation coefficients quantify the linear association between datasets across different times and locations.
Analyzing each beach, or point of interest (POI), separately allowed us to identify specific patterns and discrepancies, that aids in tailoring management strategies for beach visitation.

In addition to these analyses, we estimated the demographics of beach visitors using cellphone-derived home census block group location data. While individual visitors may not directly reflect the average demographics of their census block groups, aggregating these data can provide a reasonable approximation of visitor demographics (Liang et al., 2022; Mashhadi et al., 2020; Monz et al., 2021; Monz et al., 2019). Dissatisfied with the outdated 2010 Census information aggregated and offered with the AirSage data, we instead connected each visitor's origin, or home census block group, to the more recent 2020 Census data. This allowed us to create panel-weighted demographic profiles for each POI, focusing on demographic dimensions relevant to our research needs. This approach enhances our understanding of visitor demographics, supporting more equitable and informed management of beach resources. We cross walked the census race and ethnicity categories using the following logic outlined in Table 4 to better capture the difference between people who identified as white alone and/or Hispanic/Latino/a/x/e (US Census, 2010; US Census, 2020; US Census Bureau, 2023).

Table 4. Comparing Vendor Demographic Data with the Cellphone data Working Group's Demographic and Ethnic Categories based on the 2020 US Census.

AirSage Vendor Data from 2010 Census Data	Cellphone Data Working Group's 2020 Census Data Race and Ethnic Categories
--------	Hispanic or Latino/a/x/e
White	White alone, non-Hispanic
Black	Black or African American alone, non-Hispanic
Native American	American Indian or Alaskan Native alone, non-Hispanic
Asian	Asian alone, non-Hispanic
Hawaiian Pacific	Native Hawaiian or Other Pacific Islander Alone, Non-Hispanic
Other	Some other Race Alone, non-Hispanic
Two With Other	Multiracial (two or more races), non-Hispanic

Additionally, we sought to summarize visitation by origin geography, or home census block group, to understand the proportion of visitors coming from disadvantaged or vulnerable communities. Various metrics identify vulnerability and level of disadvantage, including (but not limited to):

- **Low-Income Communities**: Areas where resident incomes are below the federal poverty level or where many households experience financial hardship. Indicators include poverty rates and median household income.
- **Environmental Justice Communities**: Communities where minority and low-income populations disproportionately bear the burden of environmental pollution and hazards, leading to adverse health impacts.
- **Rural and Remote Communities**: Communities with limited access to essential services and resources, facing challenges related to geographic isolation and limited infrastructure.
- **Communities of Color**: Areas with a high proportion of racial and ethnic minority residents who face systemic discrimination and disparities in access to essential services.
- **Historically Underserved Communities**: Communities that have faced historical and systemic barriers to economic, social, and political opportunities, including Indigenous and Black/African American communities.
- **High-Risk or Vulnerable Populations**: Groups such as children, elderly individuals, individuals with disabilities, and those experiencing homelessness or housing insecurity, who are at increased risk of adverse outcomes.

These definitions guide policy, research, and programs to address disparities and promote equity and inclusion. Assessing metrics of vulnerability, their efficacy, and delineation is an active area of research (Birkman, 2013; Buckingham et al., 2021; Buckle et al., 2000; Chang et al., 2015; Dunning & Durden, 2013; Polsky et al., 2007; Schweikert et al., 2018; Spielman et al., 2020). For this pilot project, we aimed to use the best available data relevant to coastal resource visitation.

Senate Bill 535[2] mandates that California's disadvantaged communities are identified for state climate investments through criteria that include geographic, socioeconomic, public health, and environmental hazard factors. Specifically, these communities are characterized by a combination of high pollution burdens, low income, high unemployment rates, low home ownership levels, high rent burdens, and low educational attainment.

Several indices have been developed to identify disadvantaged, vulnerable, under-resourced, and/or underserved populations, typically at the census tract level. These include (but are not limited to):

- National Environmental Justice Screening and Mapping Tool (EJSCREEN) (US EPA, 2024)
- Social Vulnerability Index (SVI) (US Climate Resilience, 2024)
- California EnviroScreen 3.0 and 4.0 (OEHHA, 2024)
- Environmental Justice Index (EJI) (US. Department of Health and Human Services, 2024)
- US Department of Transportation's Climate and Economic Justice Screening Tool (CEJST) (US Department of Transportation, 2024)

After analyzing the variables and metrics used in these tools, we chose California EnviroScreen 4.0 (August et al., 2021; OEHHA, 2024) for our analysis, to provide the most comprehensive and relevant data for California coastal access and equity. California EnviroScreen 4.0 is recommended for use by the California Environmental Protection Agency (2022) pursuant to Senate Bill 535.

California EnviroScreen 4.0 is a tool developed by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) to identify communities disproportionately burdened by multiple sources of pollution and socioeconomic vulnerabilities (August et al., 2021). The tool uses various indicators to assess community vulnerability, including:

1. **Environmental Pollution Burden**: Exposure to pollutants like air and water pollution and hazardous waste facilities.
2. **Socioeconomic Vulnerability**: Factors such as income levels, unemployment rates, educational attainment, linguistic isolation, and housing status.
3. **Public Health Indicators**: Rates of health conditions like asthma and cardiovascular disease associated with environmental exposures.
4. **Cumulative Impact**: The combined effects of multiple pollution sources and socioeconomic vulnerabilities.

[2] SB 535 represents a significant effort to advance environmental justice and promote equitable development in California. By targeting investments in disadvantaged communities, the bill seeks to address longstanding environmental disparities and empower communities to build healthier, more sustainable futures.

California EnviroScreen 4.0 aims to identify communities most in need of targeted interventions and resources to address environmental disparities and promote environmental justice (August et al., 2021).
The data provided by AirSage, binned by census block group, can be joined to a Geographic Information System (GIS) to summarize census tract boundaries and to assess using other geospatial vulnerability indices.

Results

With the cellphone-derived visitation and location data products provided as a comma-separated values (CSV) file by AirSage, the data was aggregated and summarized by beach, hour, day, month, year, and census block group. The data was then joined to a Geographic Information System (GIS) to further analyze visitor origins and demographics using simple spatial joins and summarizing operations. This information was provided at a high spatial (beach-specific) and temporal resolution (up to hourly), matching the needs of beach managers and researchers. However, more research is needed to understand the alignment with ongoing traditional methods in terms of scale.

Case Study 1: Goleta Beach

Goleta Beach County Park, located in Santa Barbara County, is a popular coastal destination known for its recreational amenities. Situated just east of the University of California, Santa Barbara, this 29-acre park features a long sandy beach, grassy picnic areas, a fishing pier, and a boat launch (Figure 3). As a key recreational site, Goleta Beach County Park serves a diverse range of visitors from the local community and beyond, providing an ideal location for studying beach visitation patterns and understanding the dynamics of public access to coastal resources.

Figure 3: Goleta Beach County Park, Santa Barbara in 2023, Google Earth Image

As the goal of this study is to understand beach use, the POI polygon was drawn to include the beach and parking areas while excluding the fishing pier and restaurant (Figure 4).

General statistics about visitation within this polygon were then calculated. From 2017 to 2022, 2.9 million people visited Goleta Beach, with an average visitation of nearly 500,000 people per year (Figure 5). Most of the visitors' home origins are in Santa Barbara County, with a lesser percentage from Los Angeles, Ventura, Orange, and San Diego counties respectively (Figures 6 and 7).

For Goleta Beach, the most popular month for visitation is June, the most popular day of the week is Sunday, and the average visitor stay is 1.25 hours. The busiest hour at this beach is 4:00 pm. Additionally, nine percent of the visitors to this beach live in a census tract determined by California EnviroScreen 4.0 to be in the top 30% most vulnerable or disadvantaged in California (Figure 8). Using the breakdown of demographics by census block group, an estimated 48% of visitors to Goleta Beach identify as white, not Hispanic, 34% identify as Hispanic or Latino/a/e/x, and 18% as some other race or a combination of races, not Hispanic (Figure 9). Graphics and maps such as those generated for the Goleta Beach County Park delineated POI were created for each of the POIs in this pilot project (Appendix).

Figure 4: Goleta Beach polygon used for analysis.

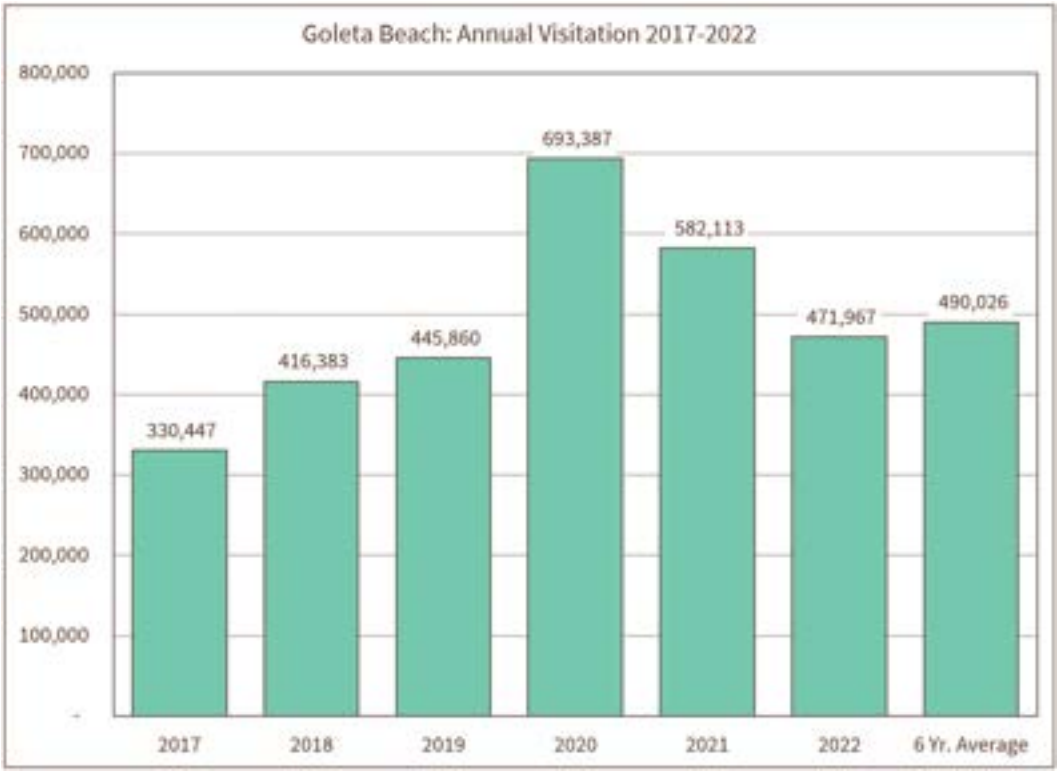


Figure 5: Visitation to Goleta Beach from 2017-2022.

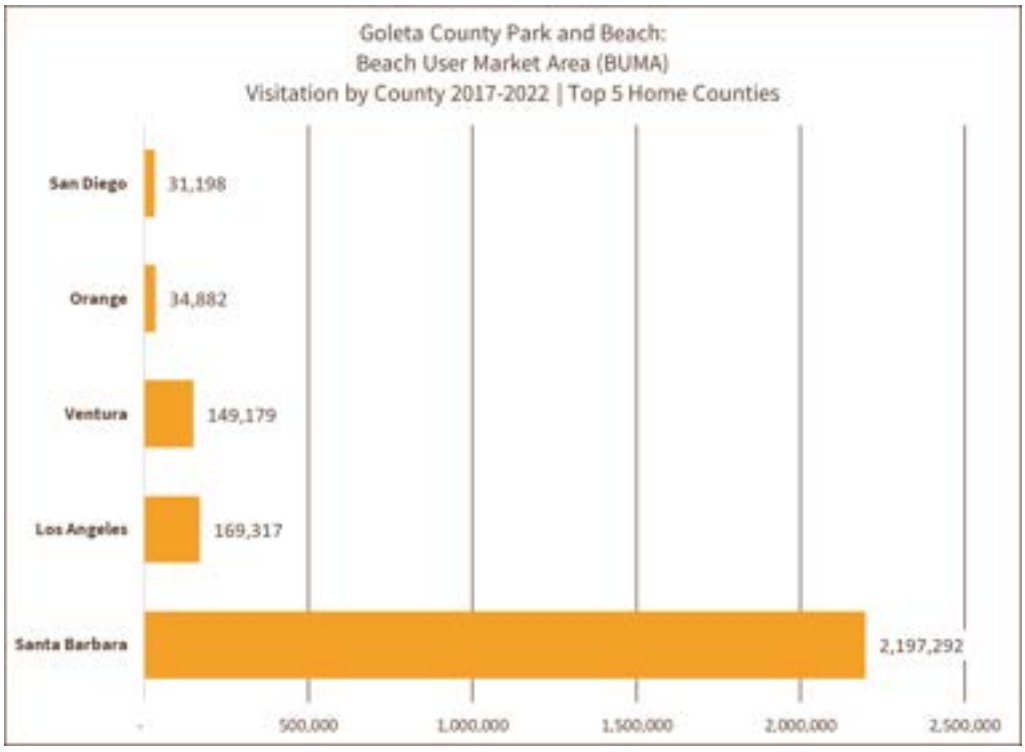


Figure 6: Graph of Total Visitation from 2017-2022 to Goleta Beach by home county.

Figure 7: Map of Goleta Beach Visitation by home county from 2017-2022. During this time period, Goleta Beach had a total of nearly 3 million visitors.

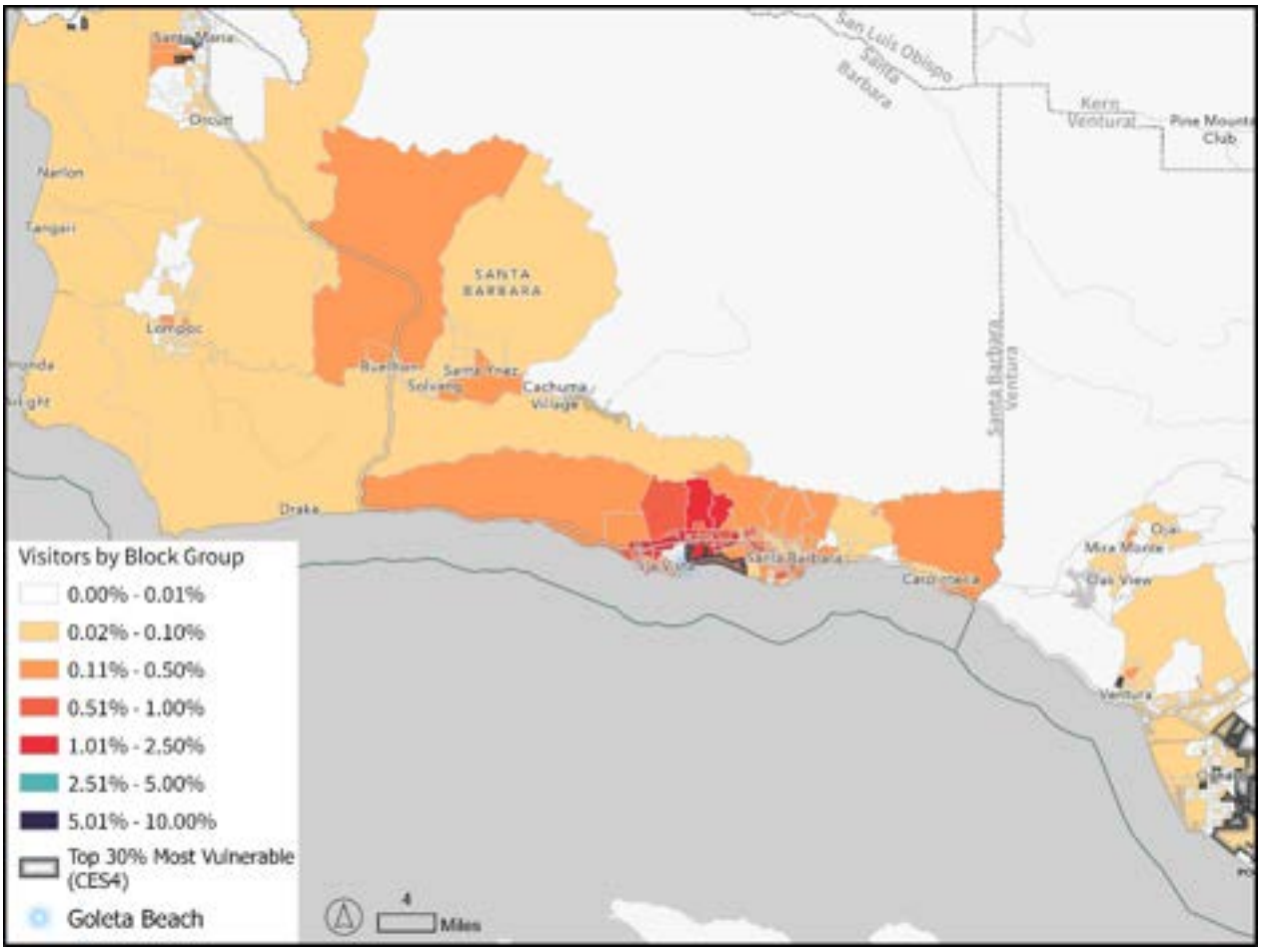


Figure 8: Map of Goleta Beach visitation by home census block group. During this time period, Goleta Beach had a total of nearly 3 million visitors.

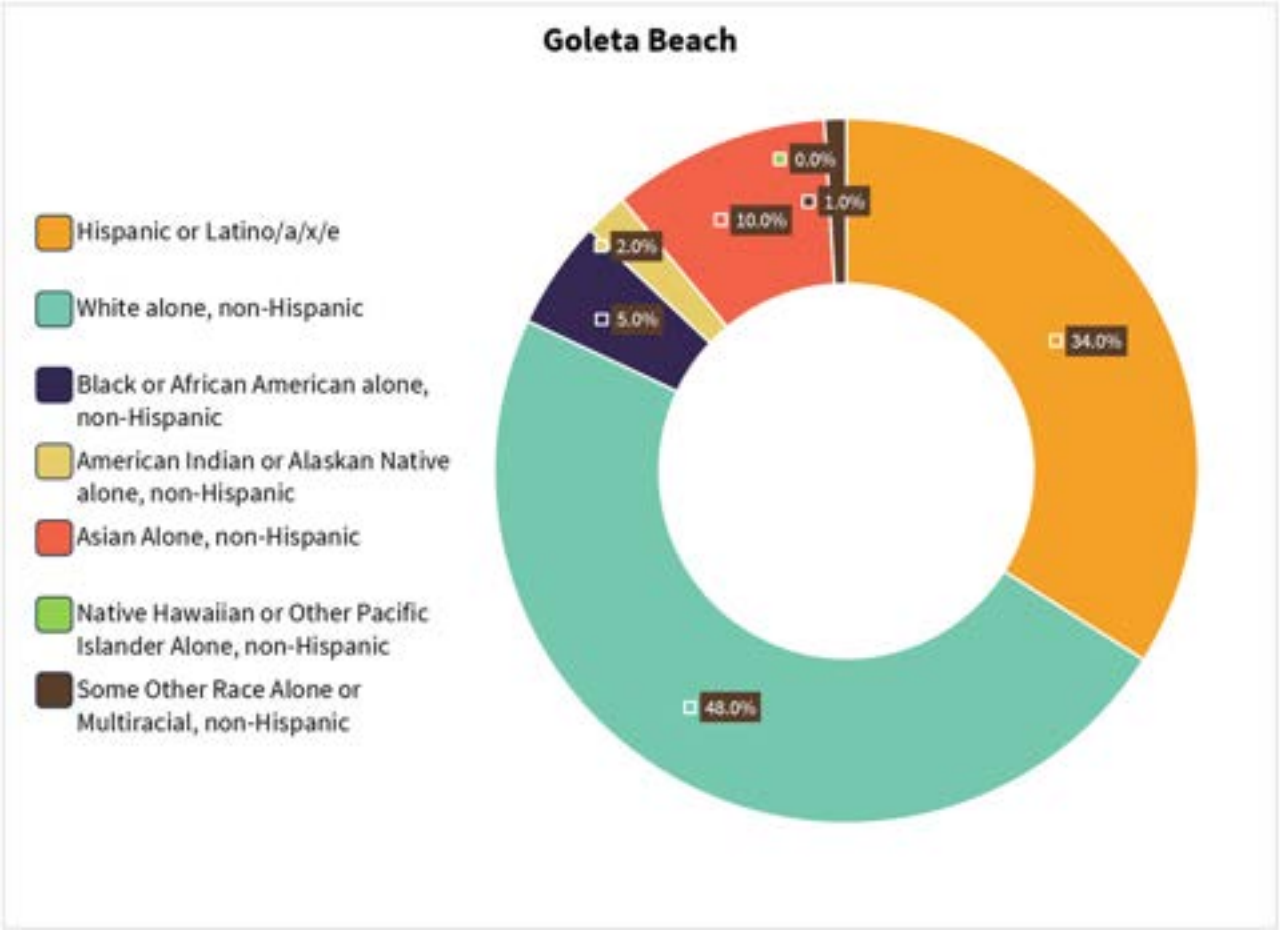


Figure 9: Goleta Beach visitation by home census block group demographics. During this time period, Goleta Beach had a total of nearly 3 million visitors.

Case Study 2: Lechuza Beach

Lechuza Beach (Figure 10), located in the coastal city of Malibu, California, is a small yet significant site within the region's coastal geography. Spanning approximately 4.5 acres, this beach is under the management of the MRCA. Despite the absence of amenities such as restrooms and lifeguards, Lechuza Beach remains a popular destination attracting a diverse array of visitors, many of whom come from outside the local region (Malibu Pacific Palisades Chamber of Commerce, 2024). Malibu, known for its stunning 21-mile coastline, attracts an average of 13 million visitors annually (Malibu Pacific Palisades Chamber of Commerce, 2024), with a substantial portion being non-residents of the immediate area (Niche, 2024). Los Angeles County, with a population exceeding 10 million people—about a quarter of California's total population—is thought to serve as a significant source of visitors to Malibu's beaches (Bureau, 2020; United States Census Bureau, 2020).

Figure 10: Lechuza Beach in Malibu, California spans 4.5 acres and is managed by Mountains Recreation and Conservation Authority (MRCA).

To understand beach usage patterns, the POI (Point of Interest) polygon was delineated to encompass the beach and the adjacent street parking areas that serve Lechuza Beach (Figure 11). Visitation statistics were calculated and analyzed for the period from January 1, 2017, to December 31, 2022. During this six-year span, approximately 2,055,475 people visited the beach, averaging about 940 visitors per day or ~340,000 people per year (Figure 12). The average duration of stay was 1.25 hours, with July identified as the peak month for visitation. The busiest day of the week was Sunday, and the busiest hour was 1:00PM.

Figure 11: The POI boundaries drawn around Lechuza Beach, Malibu, California includes parking along Broad Beach Road and the Pacific Coast Highway (PCH).

While the majority of visitors originate from Los Angeles County, accounting for 1.2 million visitors from 2017 to 2022, over 500,000 visitors come from Ventura County (Figures 13 and 14). Additionally, 15% of visitors to Lechuza Beach have their home origin in census tracts that rank in the top 30% most vulnerable according to California EnviroScreen 4.0, with significant visitation from several underserved communities in Ventura County (Figure 15). An interactive map of visitation patterns to Lechuza Beach can be found here (https://csucigis.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=6d4132db9f2348bcb115d5f6d8c6907d).

The racial and ethnic breakdown of visitors to this beach, based on their census block group distribution, is 48% white, 32% Hispanic or Latino/a/x/e, 11% Asian, 3.5% Black, and 5.5% other single race or multiple races (non-Hispanic; Figure 16). The appeal of Malibu's coastal areas, including Lechuza Beach, to visitors from underserved regions underscores the importance of accessible natural recreational spaces for diverse populations seeking respite from urban environments.

Figure 12: Annual visitation to Lechuza Beach in Malibu, California from 2017-2022.

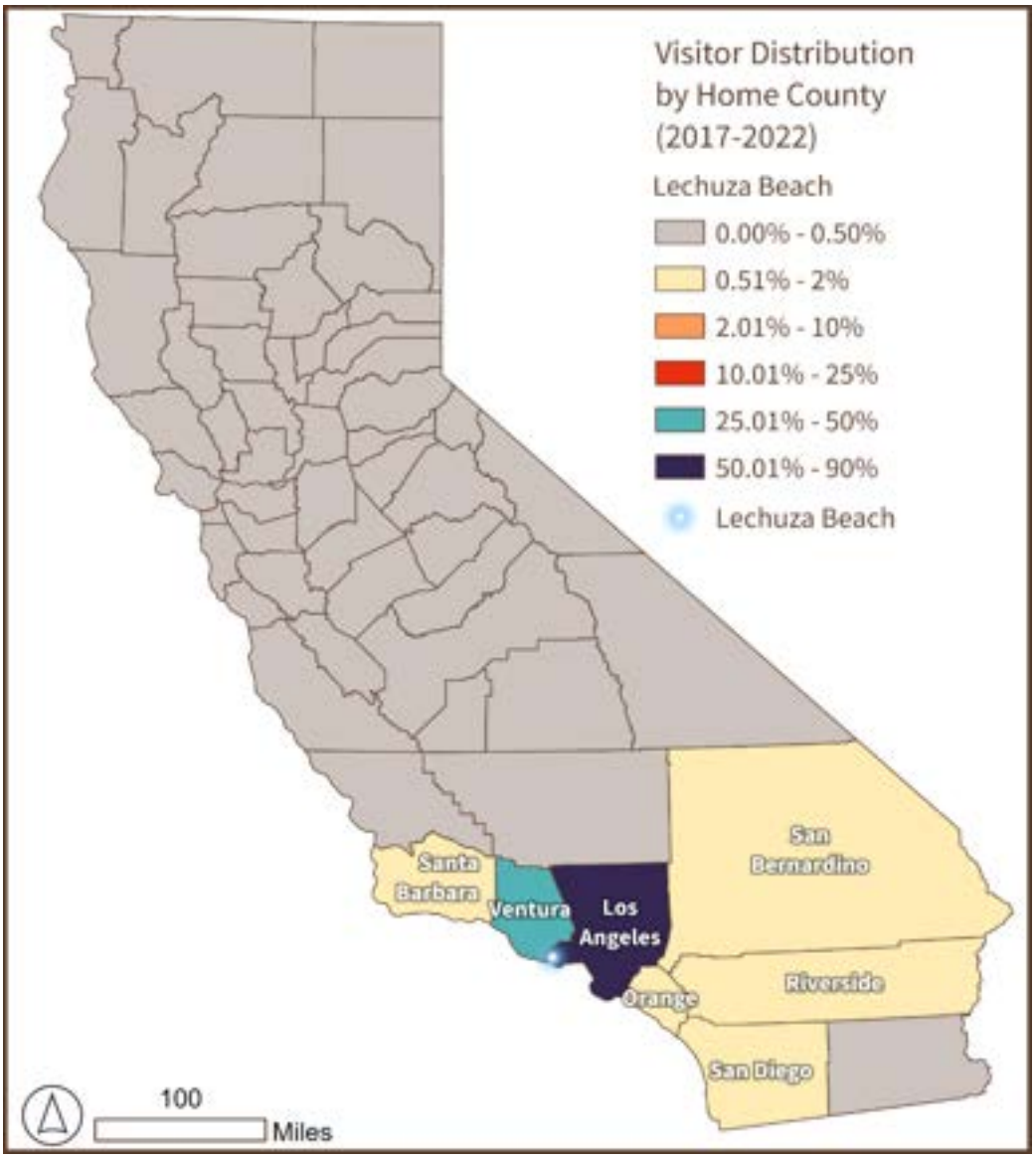


Figure 13: This map shows the county of origin for visitors to Lechuza Beach in Malibu, California.

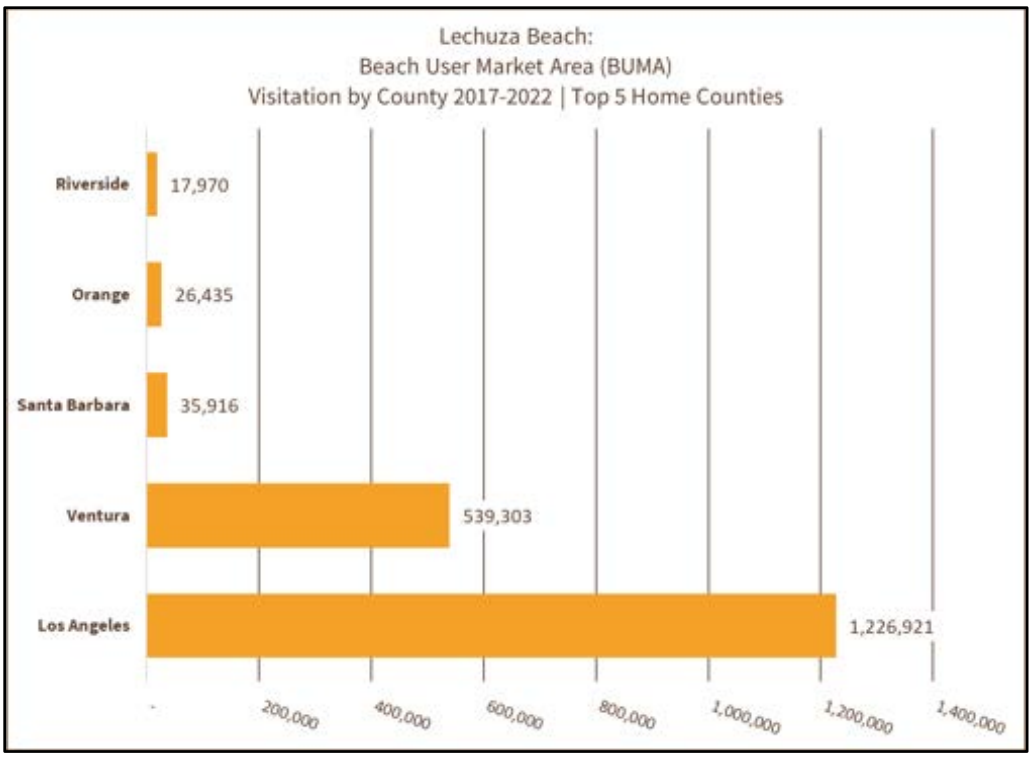


Figure 14: This table shows the county of origin for visitors to Lechuza Beach in Malibu, California.

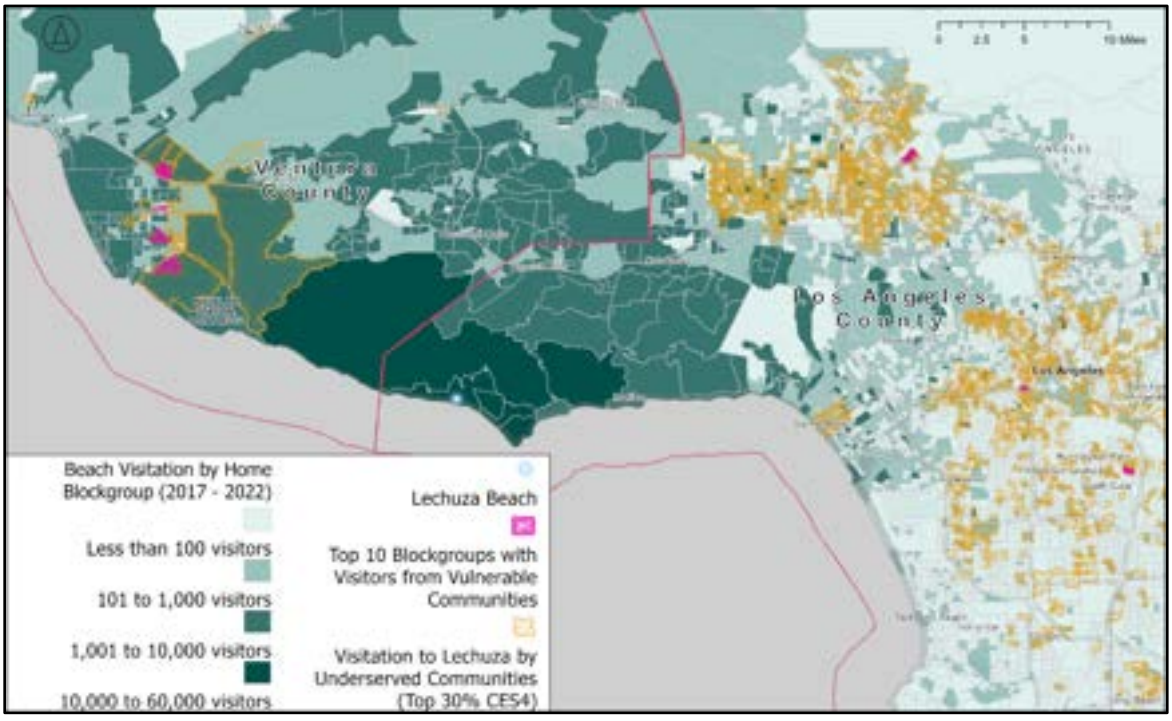


Figure 15: Home census block group locations of visitors to Lechuza from January 1, 2017 thru December 31, 2022. An interactive web map may be viewed HERE

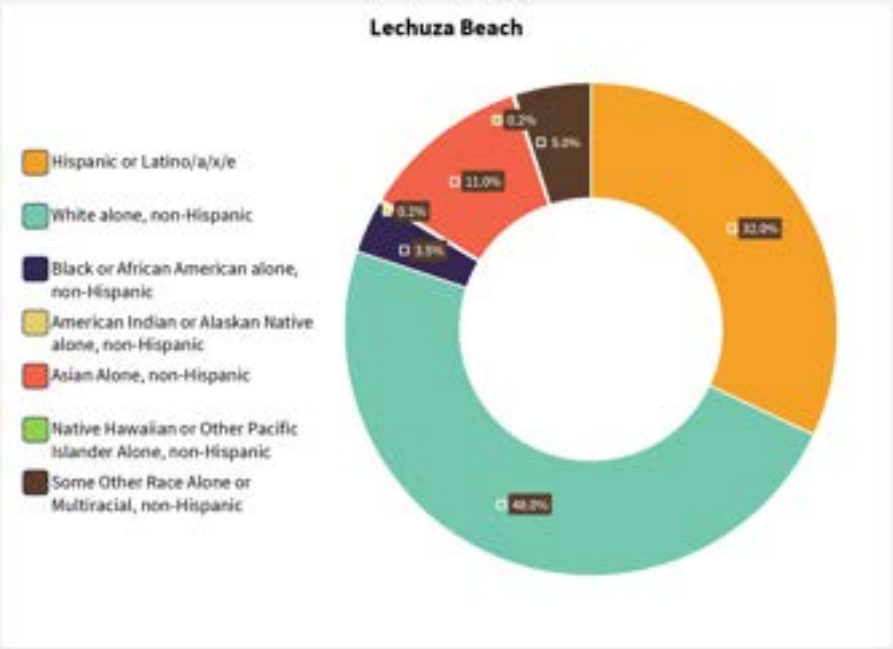


Figure 16: Race/Ethnicity of visitors to Lechuza Beach from 2017-2022 as represented by their census block group distribution.

Visitation Comparison of in-the-field counts and cellphone location generated visitation data.

Beach visitor counts estimated through the BSA from 2017 to 2022 were compared with visitation estimates derived from cellphone location data from 2017 to 2022 at the 32 overlapping beach polygons (Figure 17). The overall Pearson correlation coefficient was 0.34, indicating a moderate linear relationship between the two data sets. The scale relationship (BSA/cellphone-derived location data) was 0.29, meaning that the cellphone-derived data series counted approximately 3 visitors for every one person counted in the BSA on average. This relationship aligns well with the results of other studies (Merrill et al., 2020; Monz et al., 2019; Tsai et al., 2023), confirming the utility and limitations of cellphone-derived location data for estimating beach visitation.

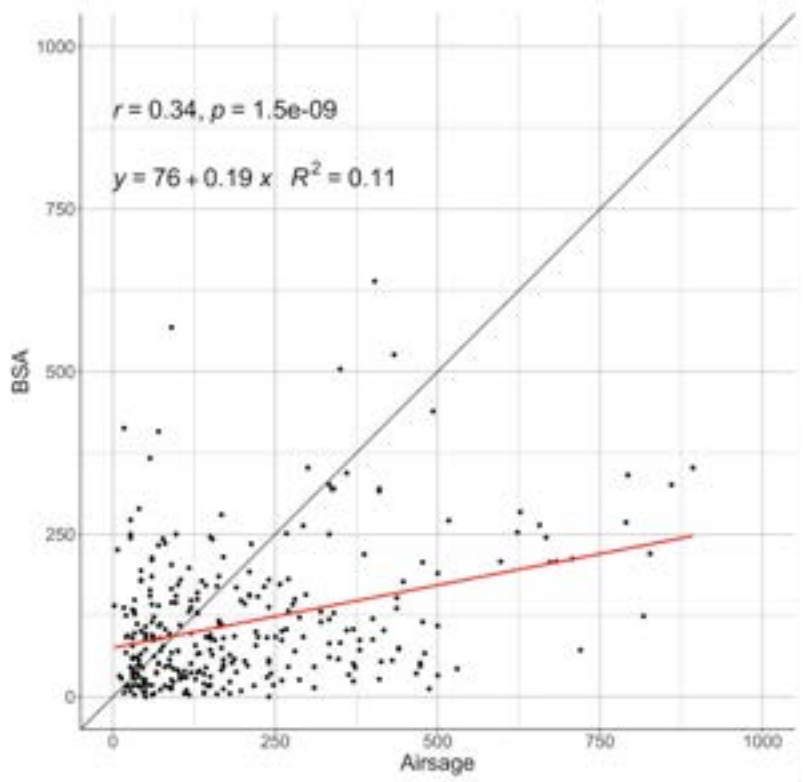


Figure 17: Cellphone location data visitation estimates vs in-the-field beach visitor counts completed as part of the Beach Sustainability Assessment (BSA). Each point represents an observation of BSA counts and a cellphone-derived location data estimate based on a 3-hour average window (1 hour before and after the recorded BSA survey time). The black line is 1:1 relationship and the red line a linear regression.

How well these sources of visitation related varied by beach. Figure 18 shows three delineated beach areas with the most observations overlapping the cellphone-derived location data. Table 5 shows the correlation coefficient for each beach in the sample.

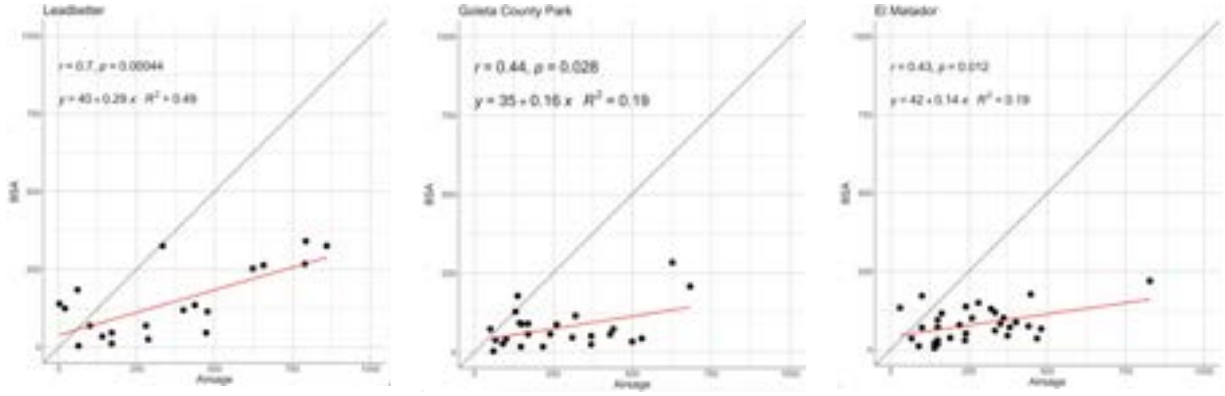


Figure 18: Graphical representation of the correlation between beach visitors estimated using in-the-field counts and cellphone derived visitation estimates.

Table 5: Correlation coefficient when comparing beach visitors estimated using in-the-field counts and cellphone derived visitation estimates.

Name	Correlation	N
El Capitan State Beach	0.86	4
San Buenaventura State Beach	0.79	5
Broad Beach	0.78	8
Emma Wood State Beach	0.74	3
Leadbetter Beach	0.70	21
Hueneme Beach	0.69	9
Carpinteria State Beach	0.63	8
Marina Park Beach	0.60	9
Deer Creek Beach	0.60	7
County Line Beach	0.56	9
Leo Carrillo Beach	0.54	7
West Beach and East Beach, Santa Barbara	0.51	9
Hollywood Beach	0.49	12
Rincon County Park Beach	0.47	10
Goleta County Park and Beach	0.44	25
Paradise Cove Beach	0.44	4
El Matador Beach	0.43	33
Hendry's Beach	0.33	18
Deer Creek Beach	0.30	5
Carpinteria City Beach	0.10	12
La Conchita Beach	0.07	5
Surfers Point and Ventura River Mouth Beach	0.06	3
Surfrider Beach (Malibu Lagoon)	-0.08	12
Solimar Beach	-0.09	6
Refugio Beach	-0.19	7
Sycamore Canyon Beach	-0.41	11
5th Street Beach	-0.47	5
Silver Strand Beach	-0.51	7
Gladstones/Will Rogers State Beach	-0.55	6
Leo Carrillo Beach	-0.65	5
Mondos Beach	-0.66	16
Isla Vista, Depressions, and MSI Beaches	-0.95	3

Discussion

This pilot project aimed to explore the potential of commercially available cellphone data sources to provide new insights into beach use (visitation) and users. Specifically, this project focused on understanding how these data could be integrated into a visitor use monitoring program, with an emphasis on identifying patterns among diverse and disadvantaged communities. The pilot project revealed both the promise and limitations of using cellphone data for beach use/user information, offering valuable lessons for future integration efforts. Below, we discuss the practical considerations and implications of our findings.

With considerable technical staff effort, including coding, data management, and GIS integration, summaries and maps about visitation and visitor profiles using this single source of information across many locations and times were generated (Appendix). The scale and granularity of this analysis, based on passively collected data, are not feasible using traditional methods such as on-the-ground spot counts or periodic lifeguard counts. Additionally, continuously collected data allows for opportunistic studies of changes in areas of interest, providing an advantage over bespoke on-the-ground information collections that are limited in their temporal and spatial representation.

For event studies, such as beach and coastal trail closures, COVID-19 impacts, and oil spills, the use of cellphone data provides a historic record to reference after the event. While this project only leveraged a few dimensions of the data, there is great promise in using the more granular hourly-based information to understand changes in inter-day use. This includes studying the relationship between changes in beach and coastal trail conditions and visitation related to beach erosion and sea-level rise impacts, water quality-related beach closure effects on visitation, and extreme heat refugia beach visitation from inland communities.

Visitor origin information revealed more detailed data about beach use, including identifying distinct Beach User Market Areas (BUMAS) for individual POIs. Many of these BUMAs extend across large regional geographies and are generally much larger than suggested by previous anecdotal evidence. Visitors traveled from great distances and from numerous disadvantaged areas to visit the beaches analyzed in this pilot project. Capturing this wide beneficiary geography in a scalable and passively collected manner opens many potentially fruitful avenues for research and management. This data can help improve visitor-serving amenities necessary to visitors that may not live near the coast such as restrooms, parking and daily tide information.

The Cellphone Data Working Group faced significant challenges in using cellular device location datasets for this pilot project. The first challenge was navigating an opaque and rapidly changing market for commercial vendors and products. The procurement stage was more time-consuming and frustrating than anticipated. Vendors offered varied products for niche needs like transportation volume or retail foot traffic, but none provided the on-the-ground validation evidence needed. Pricing and delivery structures were confusing, with options ranging from custom data deliveries to software-as-a-service (SaaS) self-operated portals. Future users should consider this step a substantial effort.

Additionally, the data represents a sample of people who visited the defined areas, generated by a proprietary vendor algorithm that translates cellphone location information into the number of users; it is not a one-to-one relationship. Like other social science surveys and observational methods, this approach may introduce biases and limitations in representing population-level behaviors. The device location data comes from smartphone apps, which may over- or underrepresent certain user types. Changes in user behavior and privacy settings can alter the sample over time, but users do not receive this raw data, and the specific apps providing information at any given time remain protected as commercial information. These factors make inferences based on cellular device location data prone to potential pitfalls without proper calibration and validation work. While evidence for the efficacy of cellphone-derived location data in estimating visitation at parks and beaches is growing, local information is crucial for understanding specific concerns or differences in data application.

Lastly, the demographic analysis of beach visitors in this pilot project revealed several challenges. Initially, the demographics inferred from the cellphone-derived location data relied on 2010 US Census Bureau information regarding the origin home census block group of the device. However, accurately representing individuals identifying as “Hispanic” posed challenges, as ethnicity was not distinguished from race in the original 2010 Census data provided by AirSage, the vendor. The introduction of 2020 Census Bureau demographic information improved this process by better delineating those identifying as Hispanic from other racial categories. Significant effort was invested in cross-walking census information into desired categories. It is important to note that no individual perfectly reflects the average demographics of their census block group. Additionally, variations in demographics within a block group may introduce errors when extrapolating these data to beach users. While the impact of these errors remains unclear, it warrants attention and comparison to other methods of estimating visitor demographics. The available definitions of disadvantaged communities for census geography were extensive, with each option addressing slightly different combinations of factors. The optimal choice depends on the specific needs of the use case, with some options explicitly linked to state or federal funding, while others consider additional environmental stressors.

This pilot project effort highlighted the need for additional and varied on-the-ground visitation counts and surveys. The variability observed in the relationship between the cellphone-derived location data and the BSA counts underscores the importance of understanding the factors influencing this relationship for successfully integrating cellphone-derived location data into monitoring protocols. Conducting more observational counts at beaches of interest, focusing on locations with optimal geographic settings for accurate data collection (such as controlled entrances and limited space), would help understand the utility and efficacy of each effort. Instead of solely relying on snapshot counts to determine the number of people at a place at a given time, as done with the BSA data collection, the plan is to conduct more comprehensive 'all-day' counts capturing observations of the most conceptualized visitation metric: unique daily visitors, akin to a gate count. With these data, the intention is to explore the development of models based on identified relationships,

complemented by other on-the-ground collections nationwide, to create more accurate and validated visitor use prediction models for these beaches.

The pilot project revealed the need to develop an integrated regional monitoring program that addresses data acquisition and data sharing protocols, as well as data hosting, accessibility, transparency, and usability. Currently, there are no formal long-term agreements involving multiple agency coordination and collaboration that detail information sharing, agency responsibilities, program funding, or institutional needs. Current data collection and analysis efforts are undertaken on an "opportunity" basis, supported by grant funding available for individual projects.

To improve the situation, it is essential to establish a structured framework for ongoing regional collaboration. This framework should include clear guidelines for data sharing and acquisition, ensuring that all participating agencies have access to necessary data while maintaining high standards of data security and privacy. Additionally, creating a centralized data hosting platform would facilitate easier access and analysis of shared data, promoting transparency and improving the usability of the information.

Moreover, securing stable and long-term funding is crucial for sustaining these efforts. This could involve seeking commitments from local, state, and federal agencies, as well as exploring partnerships with private organizations and non-profits interested in coastal management and conservation. By developing a robust, integrated monitoring program, agencies can better manage coastal resources and address the challenges identified during the pilot project.

Conclusion

This pilot project elucidates the methodologies employed and key challenges encountered in utilizing private vendor mobility data for beach visitation analysis. It underscores the considerable expense and complexity associated with accessing and leveraging such data, as well as the limitations inherent in current demographic information provided by the US Census Bureau. Moreover, it emphasizes the necessity of trained research and technical personnel to conduct robust data analysis in this domain.

Despite these challenges, the successful integration of vendor data records and updated census files within a Geographic Information System (GIS) interface signifies a promising advancement. Initial analyses of selected data outputs demonstrate the potential for producing various data analysis products, including GIS mapping and visualization, to enhance our comprehension of beach and coastal use dynamics. Such insights hold promise for informing policy, planning, and decision-making processes.

Researchers and managers involved in the pilot project advocate for increased investment by public agencies in acquiring and analyzing cellphone location data. This investment is crucial for further elucidating barriers and constraints to coastal beach access in southern California, particularly for those underrepresented and disadvantaged communities, thereby fostering a more inclusive approach to beach visitation and utilization. Additional data collection and

analysis is warranted as part of larger research efforts to assist in developing a better understanding of the range of ecosystem services provided by 'the beach' to society.

However, it is paramount to underscore that this data source must be complemented by and validated through expanded and improved on-the-ground beach counts and surveys. These efforts, including beach use counts and intercept surveys conducted at regular intervals, must be integrated into a comprehensive, multi-year data collection, research, and monitoring program.

Such a program, spearheaded by a consortium of public agencies and university partners, would facilitate the systematic collection and analysis of social science and socio-economic information pertaining to coastal public beach access and use, thus fostering a fuller and more nuanced understanding of beach use and beach user needs, preferences, and behavior.

References

AirSage. (2021). Insights for a moving world: Location insights for local governments.

August, L., Bangia, K., Plummer, L., Prasad, S., Ranjbar, K., Slocombe, A., & Wieland, W. (2021). California EnviroScreen 4.0. https://oehha.ca.gov/media/downloads/CalEnviroScreen/report/CalEnviroScreen 4.00reportf2021.pdf

Birkman, J. (2013). Data, indicators and criteria for measuring vulnerability: theoretical bases and requirements. In J. Birkman (Ed.), Measuring vulnerability to natural hazards: towards disaster resilient societies (2nd edition ed., pp. 80-160). United Nations University Press.

Buckingham, W. R., Bishop, L., Hooper-Lane, C., Anderson, B., Wolfson, J., Shelton, S., & Kind, A. J. H. (2021). A systematic review of geographic indices of disadvantage with implications for older adults. JCI Insight, 6(20). https://doi.org/10.1172/jci.insight.141664

Buckle, P., Mars, G., & Smale, S. (2000). New approaches to assessing vulnerability and resilience. Aust J Emerg Manag, 15(2), 8-14.

California EPA. (2022). Final Designation of Disadvantaged Communities Pursuant to Senate Bill 535. California Environmental Protection Agency. https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf

Chang, S., Yip, J., van Zijll de Jong, S., Chaster, R., & Lowcock, A. (2015). Using vulnerability indicators to develop resilience networks: a similarity approach. Natural Hazards, 78(3), 1827-1841.

Christensen, J., & King, P. (2017). Access for All: A New Generation's Challenges on the California Coast. UCLA. https://www.ioes.ucla.edu/wp-content/uploads/UCLA-Coastal-Access-Policy-Report.pdf

Colgan, C. S., King, P., & Jenkins, S. (2021). California Coastal Recreation: Beyond the Beach. https://cbe.miis.edu/publications/1/

Dunning, C. M., & Durden, S. E. (2013). Social vulnerability analysis: a comparison of tools. https://www.iwr.usace.army.mil/Portals/70/docs/iwrreports/Social_Vulnerability_Analysis_Tools.pdf

King, P. (1999). The Fiscal Impact of Beaches in California. The California Department of Boating and Waterways. http://online.sfsu.edu/pgking/handouts/thefiscalimpactofbeaches.pdf

King, P. (2002). Economic Analysis of Beach Spending and the Recreational Benefits of Beaches in the City of San Clemente. https://www.researchgate.net/publication/370287156_Economic_Analysis_of_Beach_Spending_and_the_Recreational_Benefits_of_Beaches_in_the_City_of_San_Clemente

King, P., & McGregor, A. (2012). Who's Counting: An Analysis of beach attendance and methodologies in southern California. Ocean & Coastal Management, 58, 17-25. https://doi.org/DOI: 10.1016/j.ocecoaman.2011.12.005

King, P., & McGregor, A. (2013). Managing Sandy Beaches (Prepared for Beach Erosion Authority for Clean Oceans and Nourishment (Beacon), Issue.

King, P., & Symes, D. (2004). The Potential Loss in Gross National Product and Gross State Product from a Failure to Maintain California's Beaches.

King, P. G. (2001). Overcrowding and the Demand for Public Beaches in California. Prepared for the Department of Boating and Waterways.

King, P. G. (2006). The Economics of Regional Sediment Management in Ventura and Santa Barbara Counties: A Pilot Study. Prepared for the California Department of Boating and Waterways.

Leggett, C. G. (2017). Sampling strategies for on-site recreation counts. Journal of Survey Statistics and Methodology, 5(3), 326-349.

Lester, C., Manley, C., Dinh, Y., Rozal, S., Cooper, A., Winters, L., Munster, K., Bok, T., & Wrubel, N. (2023). Planning for Sea Level Rise on California's Coast: Status, Trends, and Recommendations. M. S. I. Ocean and Coastal Policy Center, University of California, Santa Barbara, California.

Lia, E. H., Derrien, M. M., Winder, S. G., White, E. M., & Wood, S. A. (2023). A text-messaging chatbot to support outdoor recreation monitoring through community science. Digital Geography and Society, 5, 100059.

Liang, Y., Yin, J., Pan, B., Lin, M. S., Miller, L., Taff, B. D., & Chi, G. (2022). Assessing the validity of mobile device data for estimating visitor demographics and visitation patterns in Yellowstone National Park. Journal of Environmental Management, 317, 115410.

Malibu Pacific Palisades Chamber of Commerce. (2024). History of Malibu: Malibu Today. Malibu Pacific Palisades Chamber of Commerce. Retrieved August 2, 2024, from https://www.malibu.org/history-of-malibu

Malibu Pacific Palisades Chamber of Commerce. (2024). Malibu: Living Here & Demographics. Malibu Pacific Palisades Chamber of Commerse, Retrieved August 2, 2024 from https://www.malibu.org/demographics

Mashhadi, A., Winder, S. G., Lia, E. H., & Wood, S. A. (2020). Quantifying Biases in Social Media Analysis of Recreation in Urban Parks. 2020 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops),

Mazzotta, M., Merrill, N., Mulvaney, K., Atkinson, S., Sawyer, J., & Dalton, T. (2021). How to Quantify Coastal Recreation in an Estuary: Methods for estimating the number of participants and value of recreation for coastal access points. (EPA/600/R-20/325). Narragansett, Rhode Island: Center for Environmental Measurement and Modeling, Atlantic Coastal Environmental Services Division Retrieved from https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=351497&Lab=CEMM

Merrill, N. H., Atkinson, S. F., Mulvaney, K. K., Mazzotta, M. J., & Bousquin, J. (2020). Using data derived from cellular phone locations to estimate visitation to natural areas: An application to water recreation in New England, USA. PLoS One, 15(4), e0231863. https://doi.org/10.1371/journal.pone.0231863

Monz, C., Creany, N., Nesbitt, J., & Mitrovich, M. (2021). Mobile Device Data Analysis to Determine the Demographics of Park Visitors. Journal of Park and Recreation Administration, 39(1).

Monz, C., Mitrovich, M., D'Antonio, A., & Sisneros-Kidd, A. (2019). Using Mobile Device Data to Estimate Visitation in Parks and Protected Areas: An Example from the Nature Reserve of Orange County, California. Journal of Park and Recreation Administration. https://doi.org/10.18666/jpra-2019-9899

Narragansett National Estuary Program. (2021). How do we use our Coasts? https://storymaps.arcgis.com/stories/b994fadc18bb4f1bb82dea62956c3139

Nelson, C., Pendleton, L., & Vaughn, R. (2007). A socioeconomic study of surfers at Trestles Beach. Shore and Beach, 75(4), 32-37.

Niche. (2024). Find Places to Live: Malibu, California. Retrieved August 2, 2024 from https://www.niche.com/places-to-live/malibu-los-angeles-ca/residents/

OEHHA. (2024). California EnviroScreen. California Office of Environmental Health Hazard Assessment. https://oehha.ca.gov/California EnviroScreen

Patsch, K., King, P., Reineman, D. R., Jenkins, S., Steele, C., Gaston, E., & Anderson, S. (2021). Beach Sustainability Assessment: The Development and Utility of an Interdisciplinary

Approach to Sandy Beach Monitoring. Journal of Coastal Research, 37(6). https://doi.org/10.2112/jcoastres-d-20-00174.1

Pendleton, L., & Kildow, J. (2006). The Non-Market Value of Beach Recreation in California. Shore & Beach, 74(2), 34-37.

Pendleton, L., King, P., Mohn, C., Webster, D. G., Vaughn, R., & Adams, P. N. (2011). Estimating the potential economic impacts of climate change on Southern California beaches. Climatic Change, 109(S1), 277-298. https://doi.org/10.1007/s10584-011-0309-0

Polsky, C., Neff, R., & Yarnal, B. (2007). Building comparable global change vulnerability assessments: The vulnerability scoping diagram. Global Environmental Change, 17, 472-485.

Schweikert, A., Espinet, X., & Chinowsky, P. (2018). The triple bottom line: bringing a sustainability framework to prioritize climate change investments for infrastructure planning. Sustainability Science, 13(2), 377-391. https://doi.org/10.1007/s11625-017-0431-7

Sinclair, M., Mayer, M., Woltering, M., & Ghermandi, A. (2020). Valuing nature-based recreation using a crowdsourced travel cost method: A comparison to onsite survey data and value transfer. Ecosystem Services, 45, 101165.

Spielman, S. E., Tuccillo, J., Folch, D. C., Schweikert, A., Davies, R., Wood, N., & Tate, E. (2020). Evaluating social vulnerability indicators: criteria and their application to the Social Vulnerability Index. Natural Hazards, 100(1), 417-436. https://doi.org/10.1007/s11069-019-03820-z

Tourangeau, R., English, E., McConnell, K. E., Chapman, D. J., Cervantes, I. F., Horsch, E., Meade, N., Domanski, A., & Welsh, M. (2017). The Fulf recreation study: Assessing lost recreation trips from the 2010 Gulf Oil Spill. Journal of Survey Statistics and Methodology, 5(3), 281-309.

Tsai, W.-L., Merrill, N. H., Neale, A. C., & Grupper, M. (2023). Using cellular device location data to estimate visitation to public lands: Comparing device location data to U.S. National Park Service's visitor use statistics. PLoS One, 18(11), e0289922. https://doi.org/10.1371/journal.pone.0289922

United States Census Bureau (2020). California Profile: 2020 Decennial Census. US Census Bureau. Retrieved August 2, 2024 from https://data.census.gov/profile?q=California

United States Census Bureau. (2020). Los Angeles County, California. US Census Bureau. Retrieved August 2, 2024 from https://data.census.gov/profile/Los_Angeles_County,_California?g=050XX00US06037

US Climate Resilience. (2024). Climate Resilience Toolkit: Social Vulnerability Index. US Climate Resilience. https://toolkit.climate.gov/tool/social-vulnerability-index

US Department of Transportation. (2024). Equity and Justice40 Analysis Tools. US Department of Transportation. Retrieved May 20, 2024 from

https://www.transportation.gov/grants/dot-navigator/equity-and-justice40-analysis-tools

US EPA. (2024). EJScreen: Environmental Justice Screening and Mapping Tool. United States Environmental Protection Agency. Retrieved May 20, 2024 from https://www.epa.gov/ejscreen

US. Department of Health and Human Services. (2024). Environmental Justice Index. Office of Environmental Justice. https://www.hhs.gov/climate-change-health-equity-environmental-justice/environmental-justice/index/index.html

Whitney, P., Rice, W. L., Sage, J., Thomsen, J. M., Wheeler, I., Freimund, W. A., & Bigart, E. (2023). Developments in big data for park management: a review of mobile phone location data for visitor use management. Landscape Research, 48(6), 758-776. https://umimpact.umt.edu/en/publications/developments-in-big-data-for-park-management-a-review-of-mobile-p

Wilkins, E. J., Wood, S. A., & Smith, J. W. (2021). Uses and limitations of social media to inform visitor use management in parks and protected areas: A systematic review. Environmental Management, 67(1), 120-132.

Woods, S. A., Guerry, A. D., Silver, J. M., & Lacayo, M. (2013). Using social media to quantify nature-based tourism and recreation. Scientific Reports, 3(1), 2976.

Yoo, E. H., Roberts, J. E., Eum, Y., & Shi, Y. (2020). Quality of hybrid location data drawn from GPS-enabled mobile devices: Does it matter? Transactions in GIS, 24(2), 462-482. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9262051/

Zandbergen, P. A. (2009). Accuracy of iPhone Locations: A comparison of assisted GPS, WiFi, and Cellular Positioning. Transactions in GIS, 13(s1), 5-25.

Appendix

Page left blank intentionally.

Appendix
Estimating Beach Visitation
Using Cellphone-derived Locational Data
A Pilot Study of Ventura, Santa Barbara, and Los Angeles Counties

Appendix prepared by Kiki Patsch (California State University Channel Islands) with assistance from Dorothy Horn (CSUCI), Marc Beyeler (BEACON), Elena Eger (MRCA), Ari Eger-Beyeler, Mario Sandoval (MRCA), Nathaniel Merrill (EPA), Tom Ford (The Bay Foundation), and Nick Sadrpour (California Sea Grant).

Mobility Data Purchased from:
AIRSAGE [1]

Funded by BEACON, MRCA, and California Sea Grant
August 2024

[1] AirSage's Privacy & Consumer Rights: Airsage has maintained consumer data privacy as a top priority for more than a decade. Our data products and analytics depict the movement of people in aggregate - not the movement of specific individuals. AirSage's deliverables to third parties never contain any personally identifiable information (PII) and consist only of aggregated anonymous insights.

Table of Contents

Overview: Data Purchased 8

Overview: Pilot Project Points of Interest 8

Pilot Project POIs: Organized by Management Agency 8

Map of Location of Pilot Beach Sites, Points of Interest (POIs) 9

Summary Maps and Tables 10

California Enviro Screen 4.0 10

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022) 15

Total Annual Visits to all 51 POIs from 2017-2022 16

POIs Summarized by County (Excluding the BEACON Extent POI) 16

Table: Visitation to All POIs in the designated counties by year (NOT origin of visitor) 16

Graph: Visitation to All POIs in the designated counties by year (NOT origin of visitor) 17

Data Summaries, Graphs, and Tables for Each POI by Management Entity 18

BEACON Extent 18

BEACON: Gaviota to County Line 18

Annual Visitation (2017-2022) 24

Monthly Summary (2017-2022 Combined) 24

Day of the Week Summary (2017-2022 Combined) 24

Origin Demographic Breakdown (2017-2022 Combined) 24

Annual Visitation to All Beacon Beaches from 2017-2022 25

Santa Barbara County 26

California Department of Parks and Recreation (Santa Barbara County) 26

Annual Visitation (2017-2022) 26

Monthly Summary (2017-2022 Combined) 26

Day of the Week Summary (2017-2022 Combined) 26

Origin Demographic Breakdown (2017-2022 Combined) 26

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 26

Carpinteria State Beach 27

El Capitan State Beach 33

Refugio Beach 39

City of Carpinteria 45

Annual Visitation (2017-2022) 45

Monthly Summary (2017-2022 Combined) 45
Day of the Week Summary (2017-2022 Combined) 45
Origin Demographic Breakdown (2017-2022 Combined) 45
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) .. 45
Carpinteria City Beach 46
Isla Vista Parks and Recreation District (IVPRD) and UCSB 52
Annual Visitation (2017-2022) 52
Monthly Summary (2017-2022 Combined) 52
Day of the Week Summary (2017-2022 Combined) 52
Origin Demographic Breakdown (2017-2022 Combined) 52
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) .. 52
Isla Vista, Depressions & MSI Beaches 53
City of Santa Barbara 59
Annual Visitation (2017-2022) 59
Monthly Summary (2017-2022 Combined) 59
Day of the Week Summary (2017-2022 Combined) 59
Origin Demographic Breakdown (2017-2022 Combined) 59
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) .. 59
Leadbetter Beach 60
West Beach and East Beach, Santa Barbara 66
Santa Barbara County Parks and Recreation Department 72
Annual Visitation (2017-2022) 72
Monthly Summary (2017-2022 Combined) 72
Day of the Week Summary (2017-2022 Combined) 72
Origin Demographic Breakdown (2017-2022 Combined) 72
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) .. 72
Goleta Beach County Park 73
Hendry's Beach 79
Jalama County Park 85
Rincon County Beach 91
Ventura County 97
California Department of Parks and Recreation (Ventura County) 97
Annual Visitation (2017-2022) 97

Monthly Summary (2017-2022 Combined) 97
Day of the Week Summary (2017-2022 Combined) 97
Origin Demographic Breakdown (2017-2022 Combined) 97
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) .. 97
County Line Beach 98
Emma Wood State Beach 104
San Buenaventura State Beach Park 110
Sycamore Canyon Beach 116
Channel Islands Harbor 122
Annual Visitation (2017-2022) 122
Monthly Summary (2017-2022 Combined) 122
Day of the Week Summary (2017-2022 Combined) 122
Origin Demographic Breakdown (2017-2022 Combined) 122
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 122
Hollywood Beach 123
Silverstrand Beach 129
City of Oxnard 135
Annual Visitation (2017-2022) 135
Monthly Summary (2017-2022 Combined) 135
Day of the Week Summary (2017-2022 Combined) 135
Origin Demographic Breakdown (2017-2022 Combined) 135
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 135
5th Street Beach 136
Ormond (Arnold Road) Beach 142
Oxnard Shores Beach 148
City of Port Hueneme 154
Annual Visitation (2017-2022) 154
Monthly Summary (2017-2022 Combined) 154
Day of the Week Summary (2017-2022 Combined) 154
Origin Demographic Breakdown (2017-2022 Combined) 154
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 154
Hueneme Beach 155
City of Ventura 161

Annual Visitation (2017-2022) 161
Monthly Summary (2017-2022 Combined) 161
Day of the Week Summary (2017-2022 Combined) 161
Origin Demographic Breakdown (2017-2022 Combined) 161
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 161
Marina Park Beach 162
Surfers' Point and Ventura River Mouth 168
Ventura County Parks and Recreation 174
Annual Visitation (2017-2022) 174
Monthly Summary (2017-2022 Combined) 174
Day of the Week Summary (2017-2022 Combined) 174
Origin Demographic Breakdown (2017-2022 Combined) 174
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 174
Deer Creek Beach 175
Hobson County Park 181
La Conchita Beach 187
Mondos Beach 193
Solimar Beach 199
Ventura Port District 205
Annual Visitation (2017-2022) 205
Monthly Summary (2017-2022 Combined) 205
Day of the Week Summary (2017-2022 Combined) 205
Origin Demographic Breakdown (2017-2022 Combined) 205
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 205
Surfers' Knoll Beach 206
Los Angeles County 212
Mountains Recreation and Conservation Authority (MRCA) 212
Annual Visitation (2017-2022) 212
Monthly Summary (2017-2022 Combined) 212
Day of the Week Summary (2017-2022 Combined) 212
Origin Demographic Breakdown (2017-2022 Combined) 212
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 213
Big Rock Beach 214

Carbon Beach 220
Escondido Beach 226
Escondido Canyon 232
La Costa Beach 238
Latigo Shore Beach 244
Lechuza Beach 250
California Department of Parks and Recreation (Los Angeles County) 256
Annual Visitation (2017-2022) 256
Monthly Summary (2017-2022 Combined) 256
Day of the Week Summary (2017-2022 Combined) 256
Origin Demographic Breakdown (2017-2022 Combined) 256
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 256
El Matador Beach 257
Leo Carrillo Beach 263
Surfrider Beach (Malibu Lagoon) 269
City of Santa Monica 275
Annual Visitation (2017-2022) 275
Monthly Summary (2017-2022 Combined) 275
Day of the Week Summary (2017-2022 Combined) 275
Origin Demographic Breakdown (2017-2022 Combined) 275
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 275
Santa Monica Small Beach Segment 276
LA County Department of Beaches and Harbors 282
Annual Visitation (2017-2022) 282
Monthly Summary (2017-2022 Combined) 282
Day of the Week Summary (2017-2022 Combined) 282
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 282
Broad Beach 283
Corral Beach 289
Dockweiler Beach Segment 295
Gladstones/Will Rogers State Beach 301
Las Tunas Beach 307
Point Dume/Westward Beach 313

Westward Beach North 319
Zuma Beach 325
Private 331
Annual Visitation (2017-2022) 331
Monthly Summary (2017-2022 Combined) 331
Day of the Week Summary (2017-2022 Combined) 331
Origin Demographic Breakdown (2017-2022 Combined) 331
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 331
Paradise Cove Beach 332
Orange County 338
City of Laguna Beach 338
Annual Visitation (2017-2022) 338
Monthly Summary (2017-2022 Combined) 338
Day of the Week Summary (2017-2022 Combined) 338
Origin Demographic Breakdown (2017-2022 Combined) 338
Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined) 338
Laguna Beach Segment (Main Beach) 339

Overview: Data Purchased

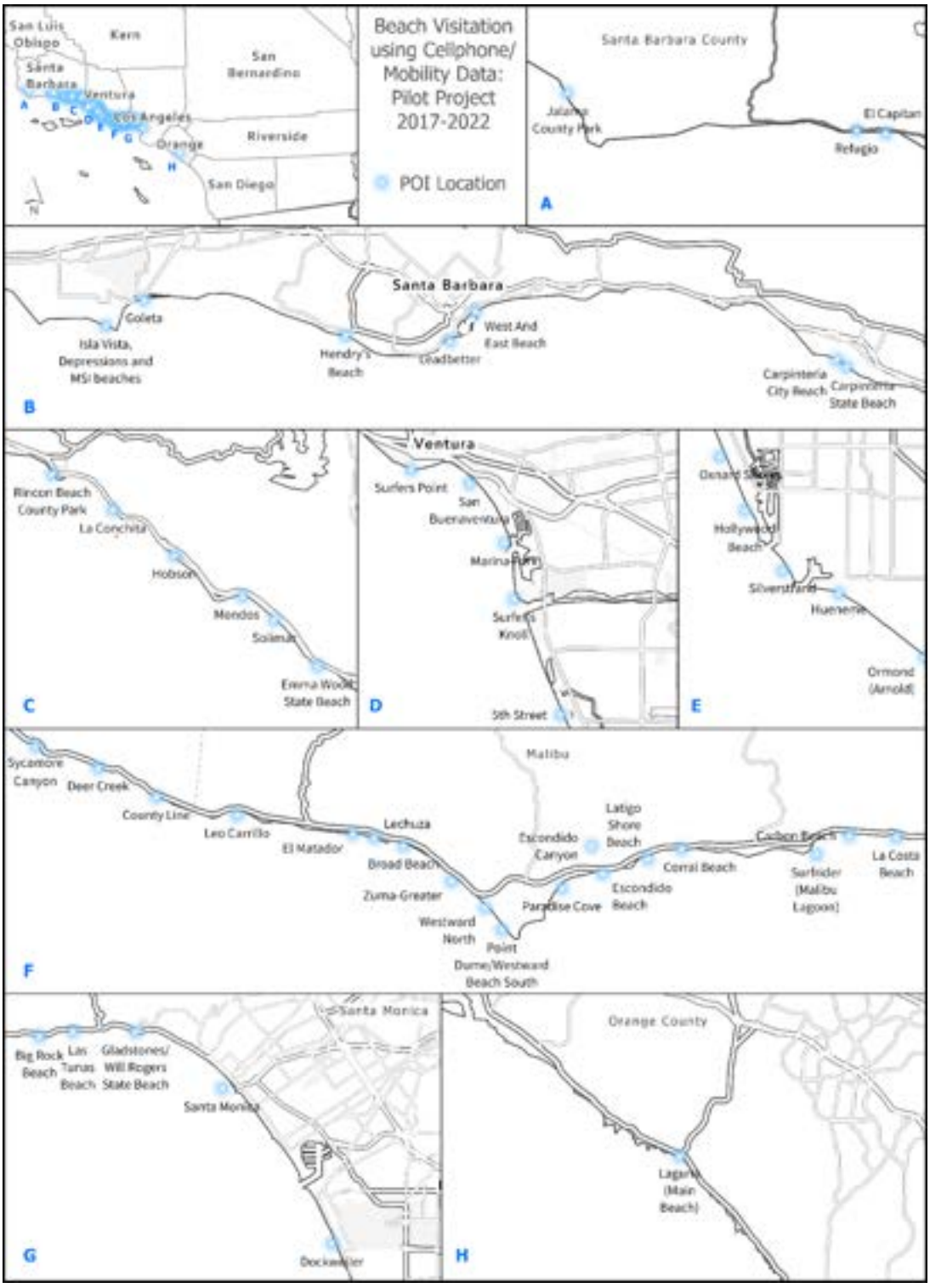
- Hourly Visits to 51 user delineated POIs from January 1, 2017 through December 31, 2022 aggregated by Census Block Group purchased through AirSage.
- Data Aggregated by Census Block group, Census Tract, County, Year, Month, Day of Week, Demographic Breakdown, Percentage of Visitation from the Top 30% most vulnerable Census Tracts according to CalEnviroScreen 4, and the Beach User Market Area (BUMA).

Overview: Pilot Project Points of Interest

Pilot Project POIs: Organized by Management Agency

BEACON Coast: Santa Barbara County						
Ca Dept of Parks and Recreation (CDPR-California State Parks)	**University of California Santa Barbara**	**Isla Vista Parks and Recreation District (IVPRD)**	**Santa Barbara County Parks and Recreation Department**	**City of Santa Barbara**	**City of Carpinteria**	
Refugio State Beach *El Capitan State Beach* *Carpinteria State Beach*	*Marine Science Institute: Depression Beach*	*Isla Vista*	*Jalama County Beach* *Goleta County Beach* *Arroyo Burro County Beach (Hendry's)* *Rincon County Beach*	*Leadbetter* *West Beach/East Beach*	*Carpinteria City Beach*	
BEACON Coast: Ventura County						
Ca Dept of Parks and Recreation (CDPR-California State Parks)	**Ventura County Parks and Recreation**	**City of Ventura**	**City of Oxnard**	**Ventura Port District**	**Channel Islands Harbor**	**City of Port Hueneme**
Emma Wood State Beach *San Buenaventura State Beach* *Sycamore Canyon Beach* *County Line Beach*	*La Conchita Beach* *Hobson Beach* *Mondo's Beach* *Solimar Beach* *Deer Creek*	*Surfers' Point* *Marina Park*	*5th Street Beach* *Oxnard Shores* *Ormond Beach (Arnold Road)*	*Surfers Knoll Beach*	*Hollywood Beach* *Silverstrand Beach*	*Hueneme Beach*
Santa Monica Bay Beaches: Los Angeles County					**Orange County**	
Mountains Recreation and Conservation Authority (MRCA)	**Ca Dept of Parks and Recreation (CDPR-California State Parks)**	**LA County Department of Beaches and Harbors**	**Private**	**City of Santa Monica**	**City of Laguna Beach**	
Lechuza Beach *Escondido Beach* *Escondido Canyon Park* *Latigo Shores* *Carbon Beach* *La Costa Beach* *Big Rock Beach*	*Leo Carrillo State Beach* *El Matador State Beach* *Surfrider Beach/Malibu Lagoon*	*Broad Beach* *Zuma Beach* *Westward Beach North* *PD/Westward Beach South* *Corral Beach* *Will Rogers/Gladstones* *Dockweiler State Beach* *Las Tunas*	*Paradise Cove*	*Santa Monica Beach*	*Laguna Beach (Main)*	

Map of Location of Pilot Beach Sites, Points of Interest (POIs).

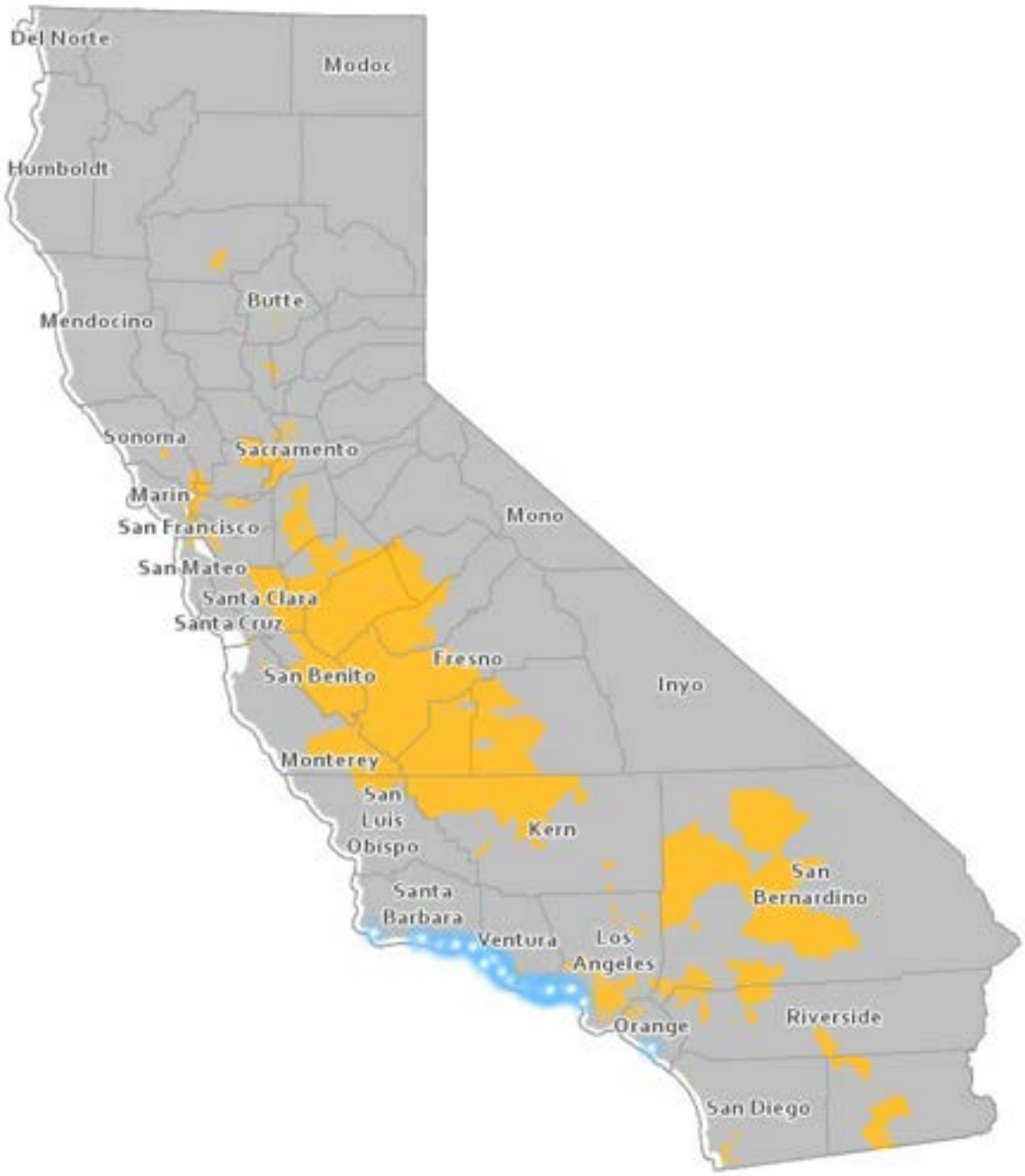


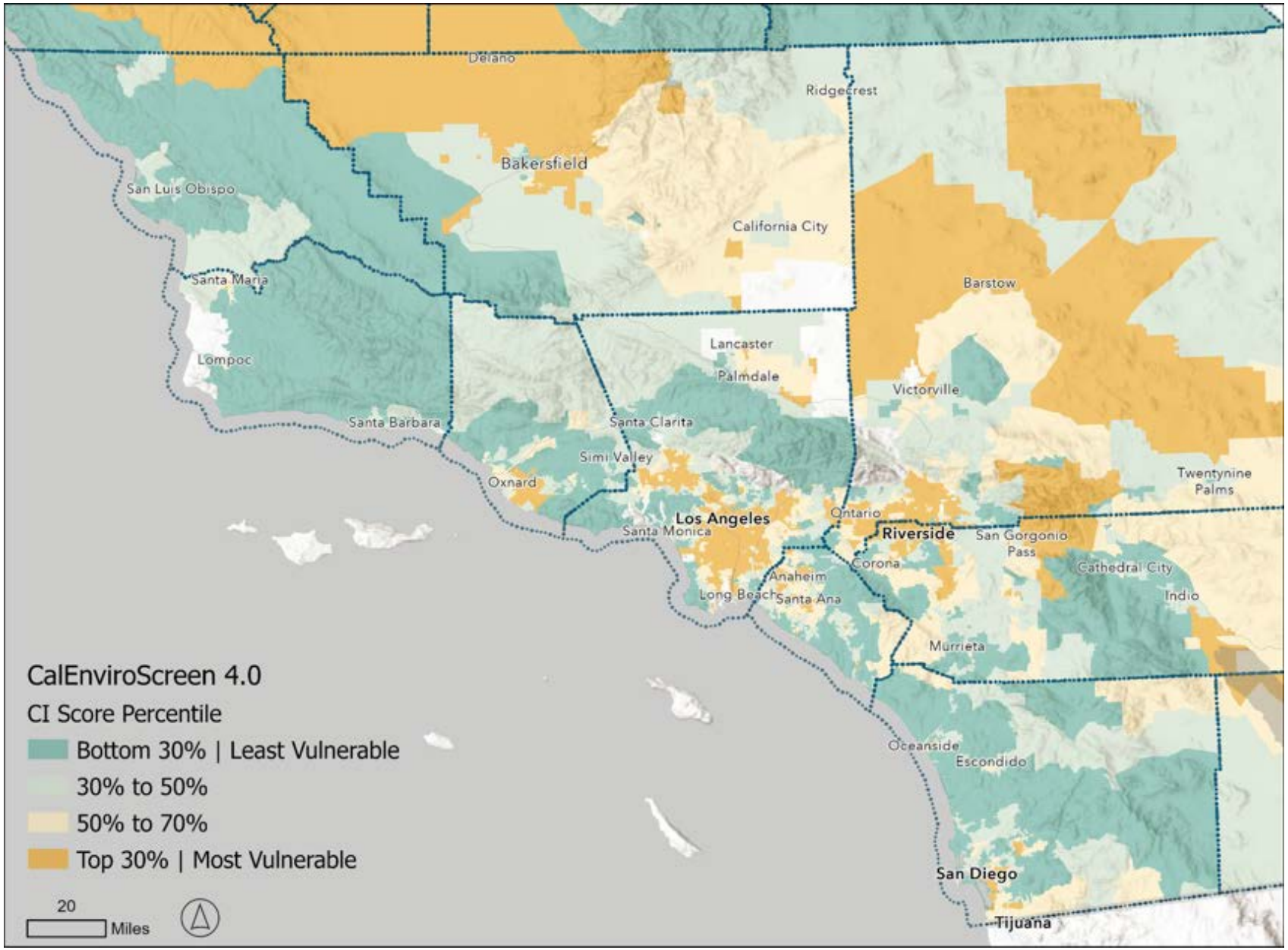
H Laguna Beach, in Orange County, is part of the BSA and used for data validation.*

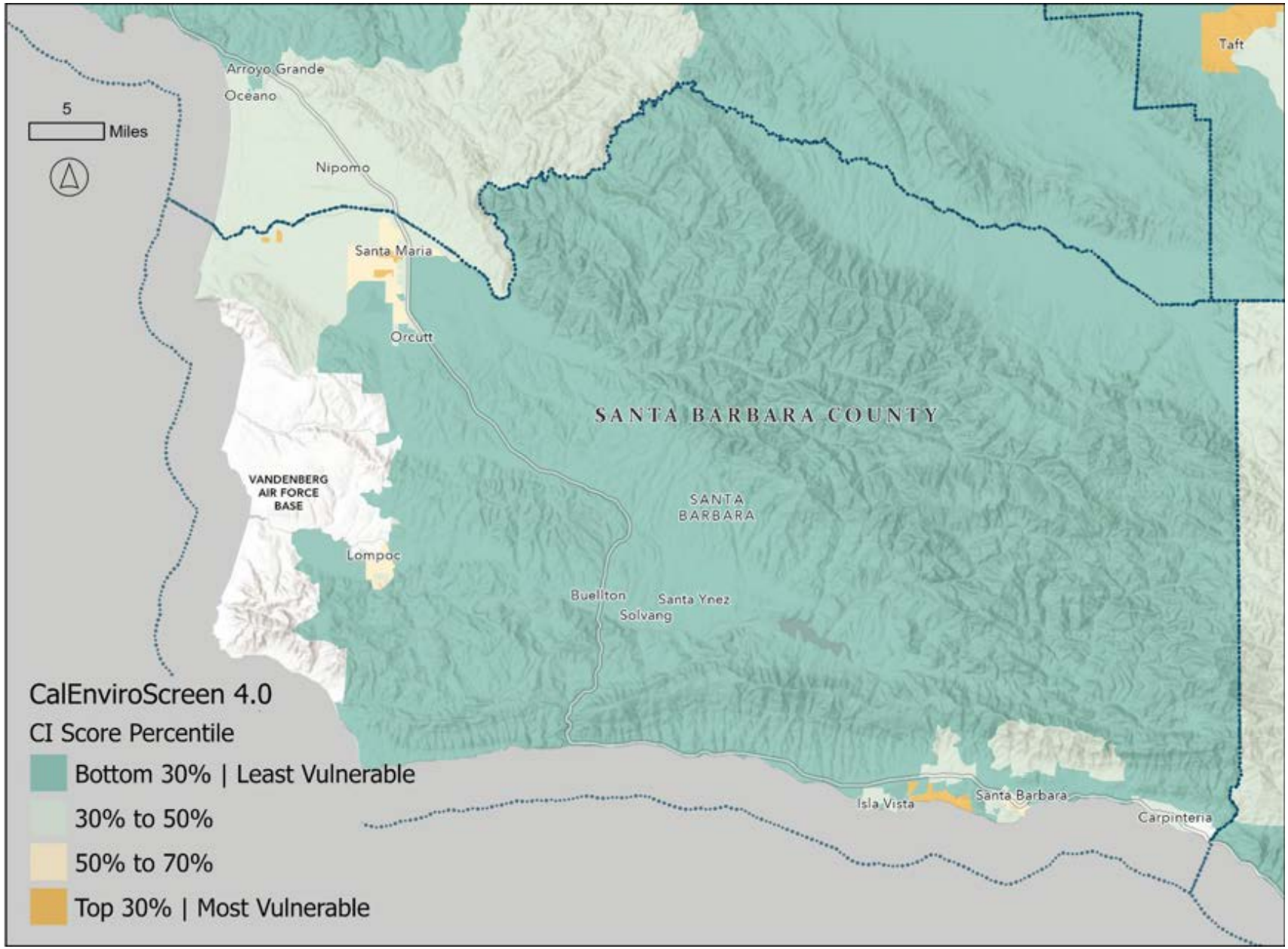
Summary Maps and Tables

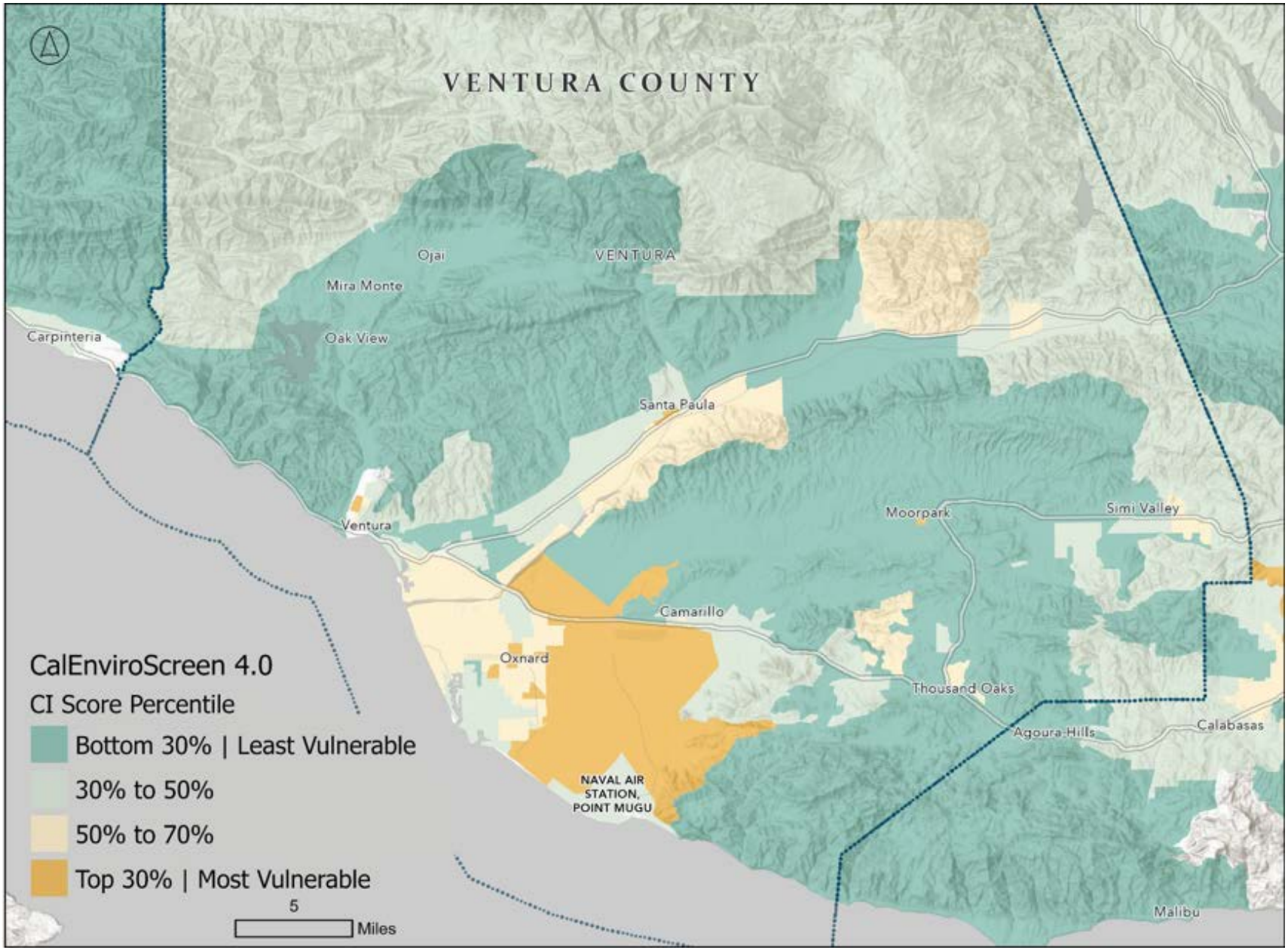
California Enviro Screen 4.0

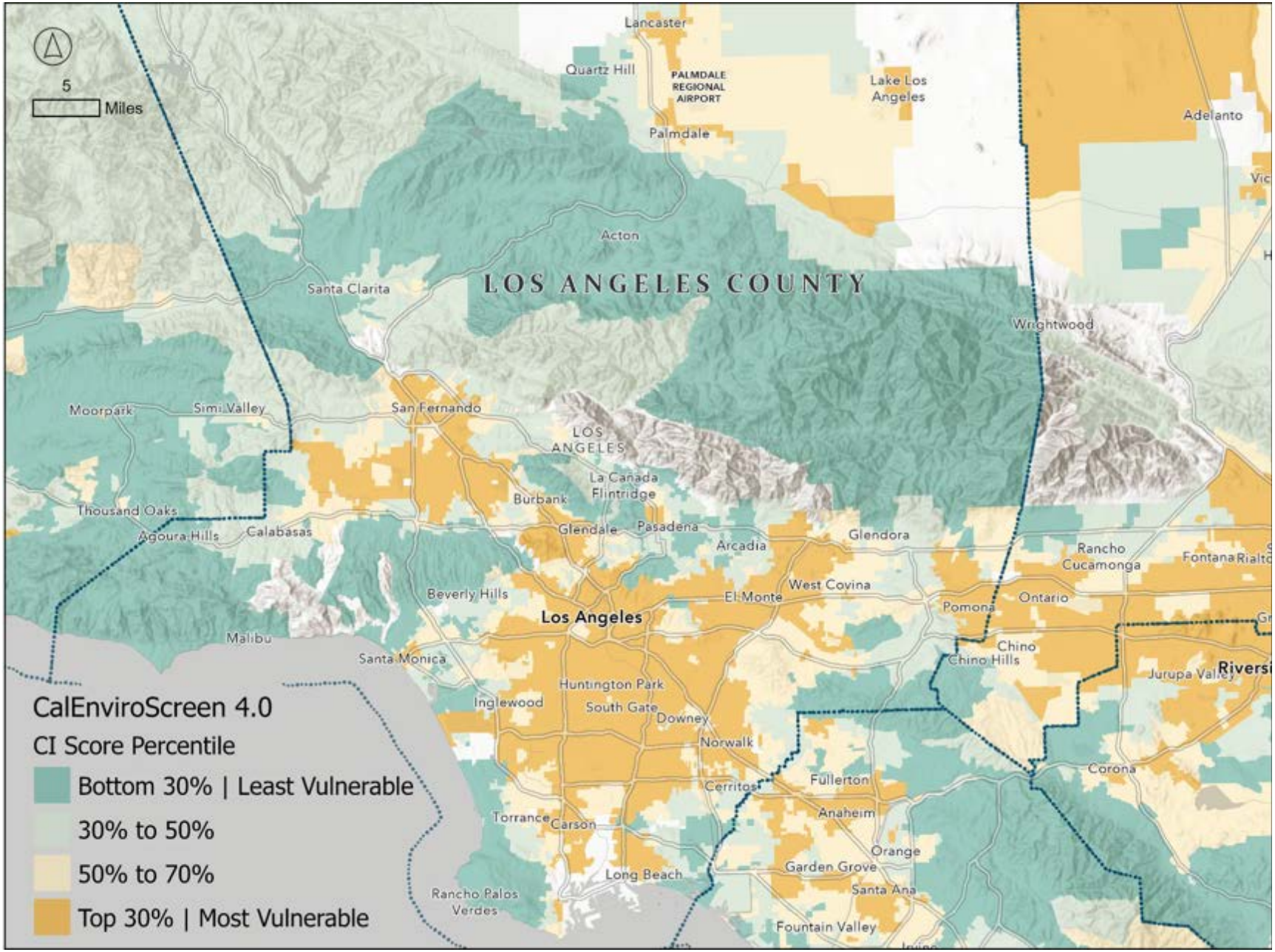
Areas in **Orange** show the Census Tracts falling into the Top 30% most vulnerable with the project POIs in Blue



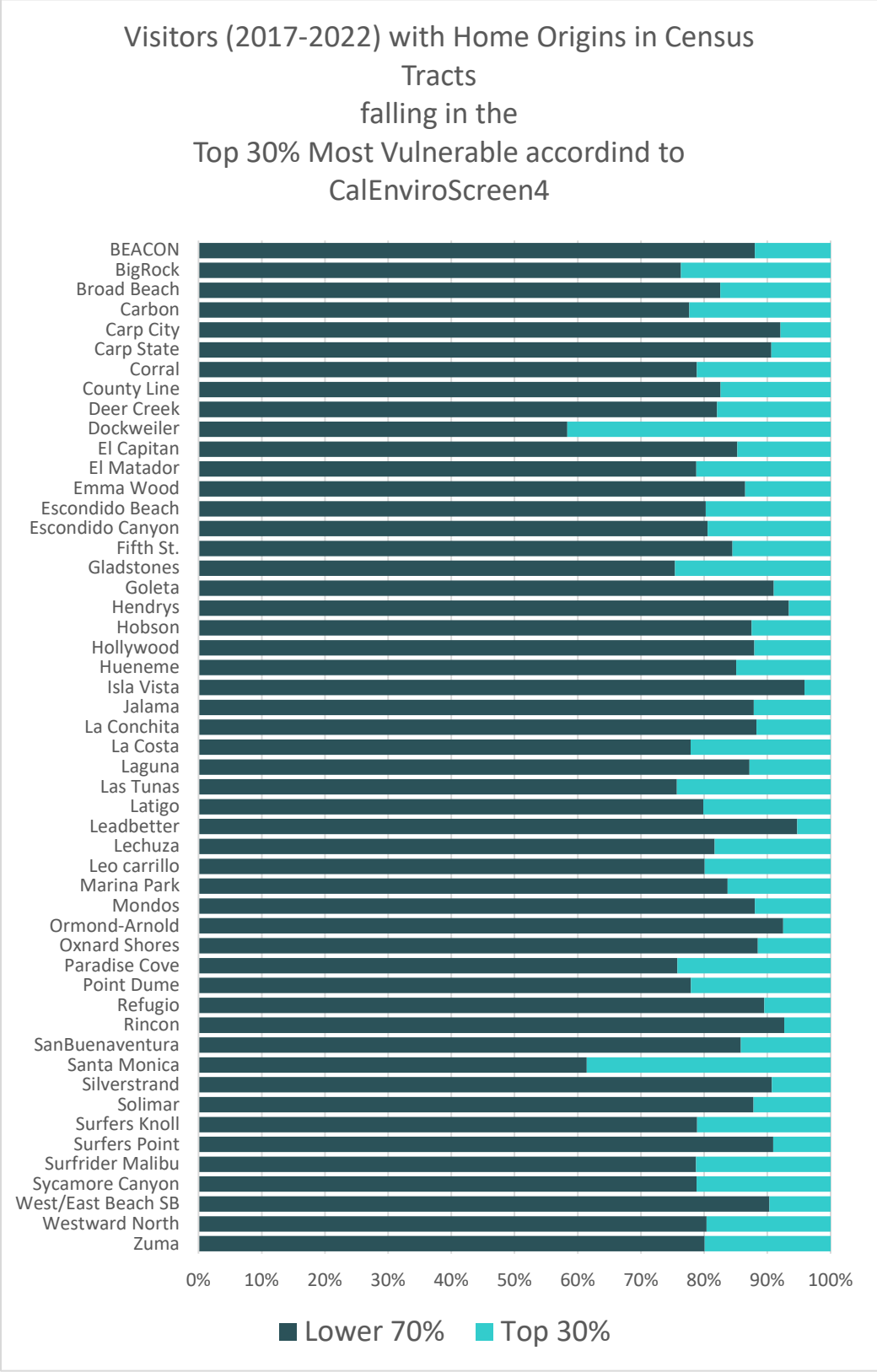

Delano
Ridgecrest
Bakersfield
San Luis Obispo
California City
Santa Maria
Barstow
Lompoc
Lancaster
Palmdale
Victorville
Santa Barbara
Santa Clarita
Simi Valley
Oxnard
Twentynine Palms
Los Angeles
Santa Monica
Ontario
Riverside
San Gorgonio Pass
Corona
Cathedral City
Anaheim
Long Beach
Santa Ana
Indio
Murrieta
Oceanside
Escondido
San Diego
Tijuana
CalEnviroScreen 4.0
CI Score Percentile
Bottom 30% | Least Vulnerable
30% to 50%
50% to 70%
Top 30% | Most Vulnerable
20
Miles


5
Miles
Arroyo Grande
Oceano
Nipomo
Santa Maria
Orcutt
Taft
SANTA BARBARA COUNTY
VANDENBERG AIR FORCE BASE
SANTA BARBARA
Lompoc
Buellton
Santa Ynez
Solvang
Isla Vista
Santa Barbara
Carpinteria
CalEnviroScreen 4.0
CI Score Percentile
Bottom 30% | Least Vulnerable
30% to 50%
50% to 70%
Top 30% | Most Vulnerable

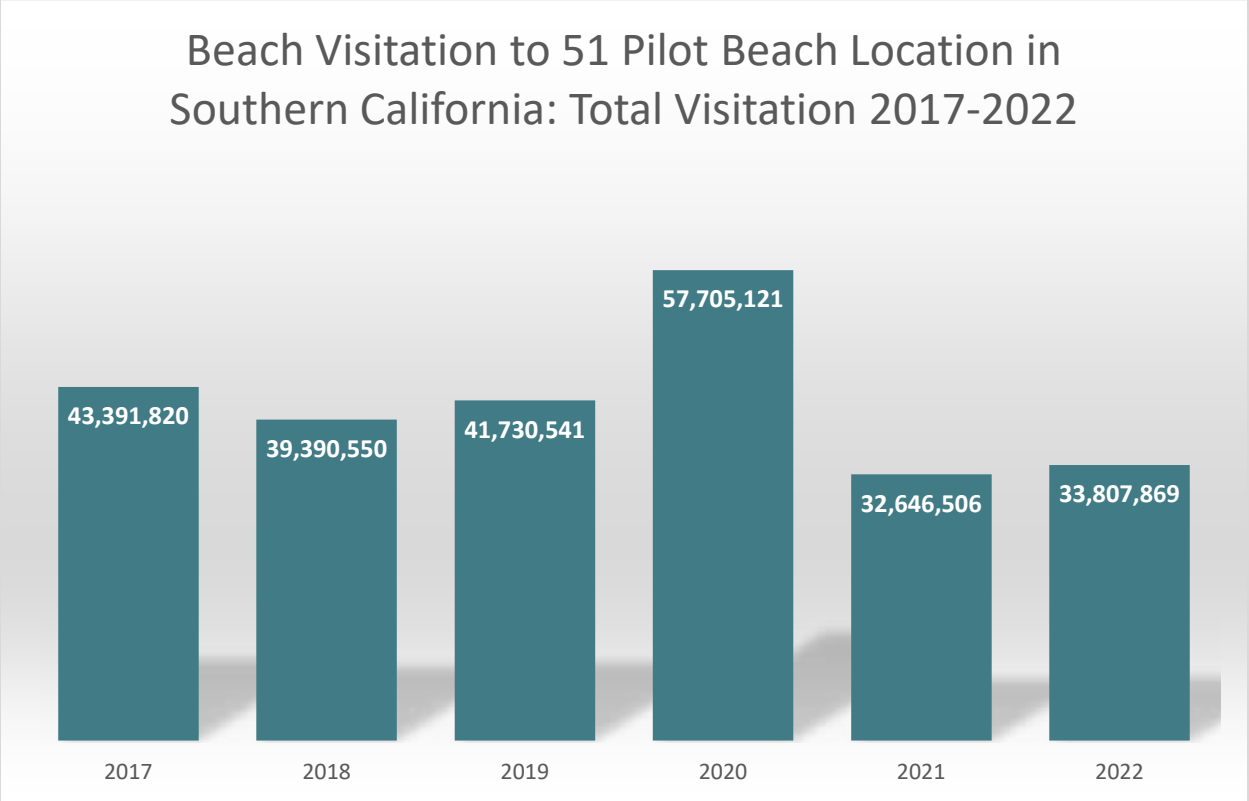

VENTURA COUNTY
Ojai
VENTURA
Mira Monte
Carpinteria
Oak View
Santa Paula
Ventura
Moorpark
Simi Valley
Camarillo
Oxnard
Thousand Oaks
Agoura Hills
Calabasas
NAVAL AIR STATION, POINT MUGU
Malibu
CalEnviroScreen 4.0
CI Score Percentile
Bottom 30% | Least Vulnerable
30% to 50%
50% to 70%
Top 30% | Most Vulnerable
5
Miles


5
Miles
LOS ANGELES COUNTY
Lancaster
Quartz Hill
PALMDALE REGIONAL AIRPORT
Lake Los Angeles
Palmdale
Adelanto
Acton
Santa Clarita
Wrightwood
Moorpark
Simi Valley
San Fernando
LOS ANGELES
La Cañada Flintridge
Burbank
Thousand Oaks
Agoura Hills
Calabasas
Glendale
Pasadena
Arcadia
Glendora
Rancho Cucamonga
Fontana
Rialto
Beverly Hills
El Monte
West Covina
Pomona
Ontario
Los Angeles
Malibu
Santa Monica
Chino
Chino Hills
Jurupa Valley
Huntington Park
Inglewood
South Gate
Downey
Norwalk
Corona
Cerritos
Fullerton
Anaheim
Torrance
Carson
Orange
Garden Grove
Long Beach
Santa Ana
Rancho Palos Verdes
Fountain Valley
CalEnviroScreen 4.0
CI Score Percentile
Bottom 30% | Least Vulnerable
30% to 50%
50% to 70%
Top 30% | Most Vulnerable

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022)



Total Annual Visits to all 51 POIs from 2017-2022



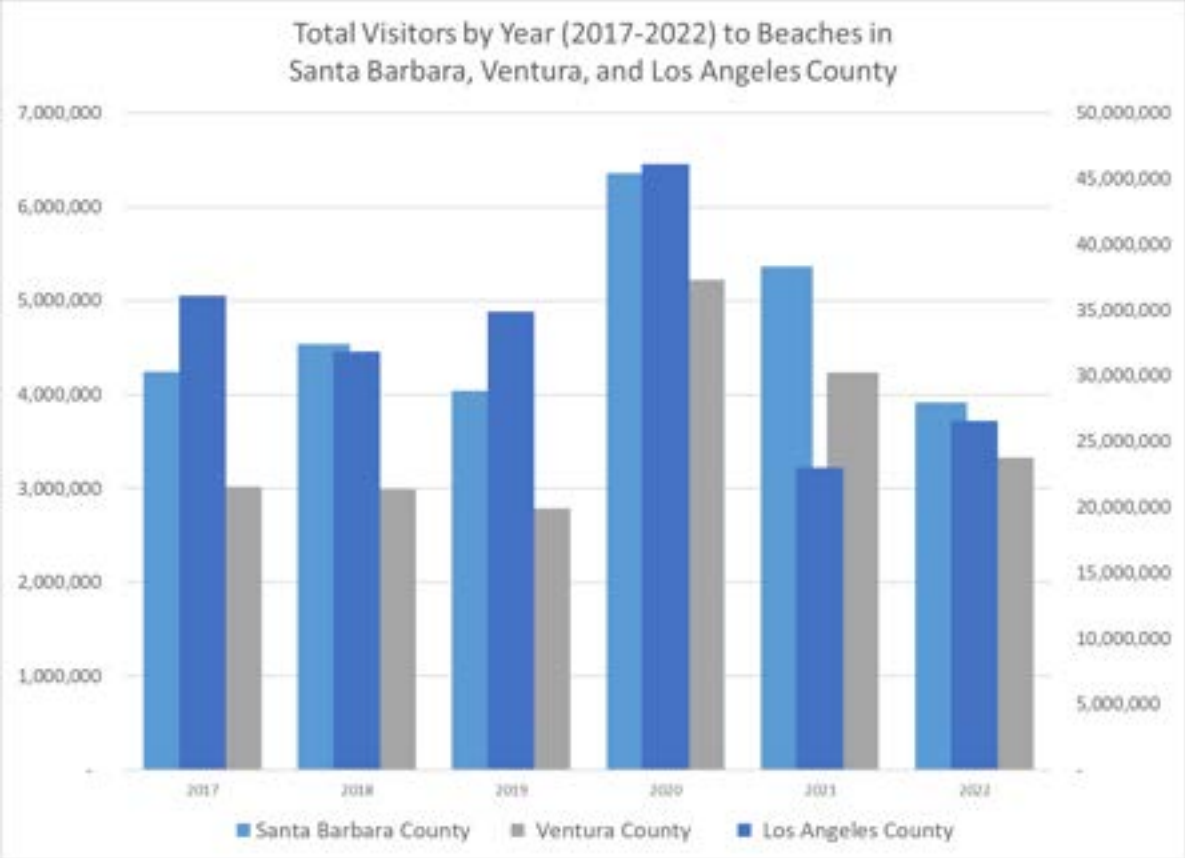
POIs Summarized by County (Excluding the BEACON Extent POI)

County	Number of Beach POIs	Area (SQ. Miles)	Area (Sq. KM)
Los Angeles County (POIs)	20	0.29	0.81
Santa Barbara County (POIs)	13	0.16	0.44
Ventura County (POIs)	17	0.72	1.87
All POIs	**50**	**1.17**	**3.12**

Table: Visitation to All POIs in the designated counties by year (NOT origin of visitor)

Year	Los Angeles County	Santa Barbara County	Ventura County
2017	36,126,868	4,241,920	3,023,032
2018	31,854,027	4,539,924	2,996,599
2019	34,901,037	4,037,684	2,791,820
2020	46,123,321	6,356,358	5,225,442
2021	23,042,234	5,366,706	4,237,566
2022	26,558,801	3,914,920	3,334,148

Graph: Visitation to All POIs in the designated counties by year (NOT origin of visitor)



Visitation to Santa Barbara County and Ventura County beaches use the y-axis on the left. Visitation to Los Angeles County beaches is show on the y-axis to the right.

Data Summaries, Graphs, and Tables for Each POI by Management Entity

BEACON Extent

BEACON: Gaviota to County Line

General Statistics (2022)

Total Visitation: 9.8 million

Average Visitation per Day: 26.9k

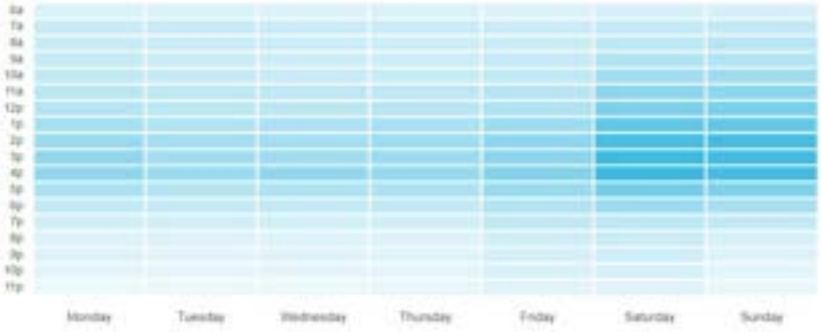
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 11%

Average Length of Stay: 2 hours

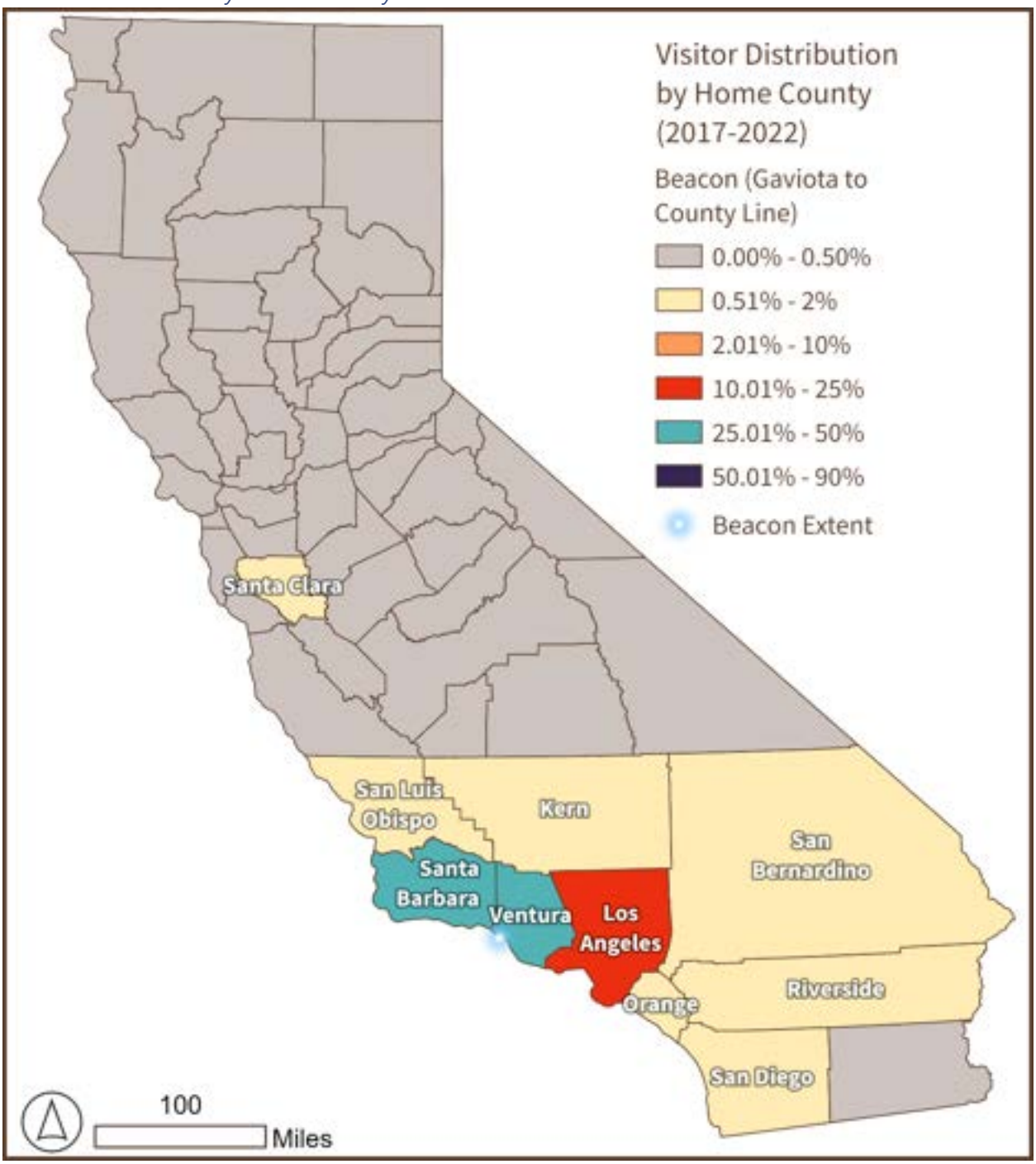
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

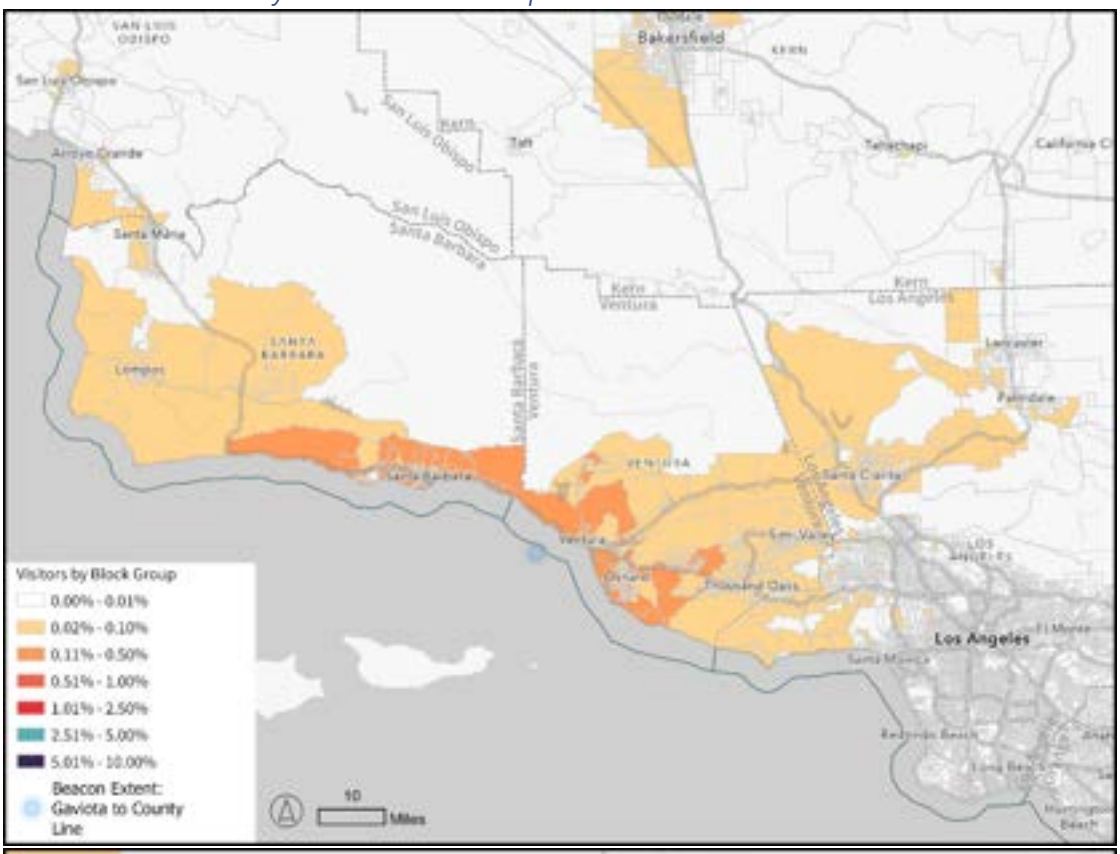
Heat Map of Hourly Visitation BEACON- Gaviota to County Line:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



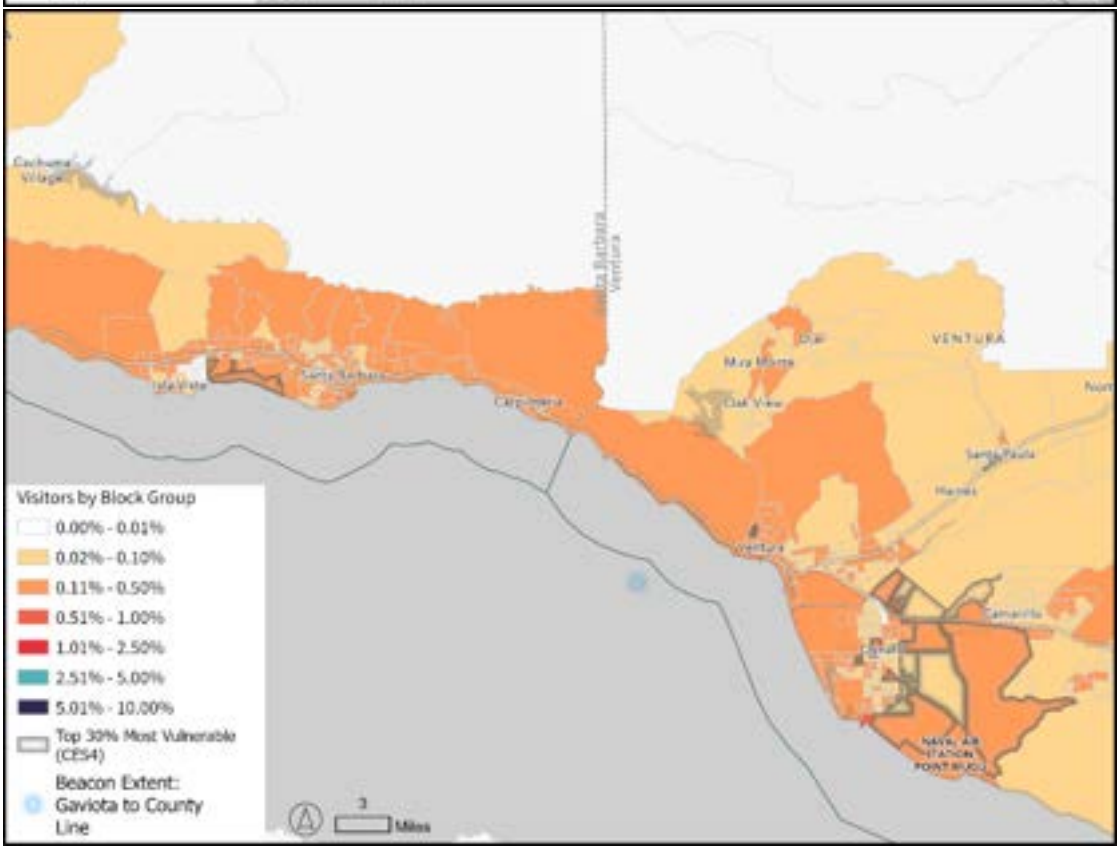


Chart of Visitation by Year

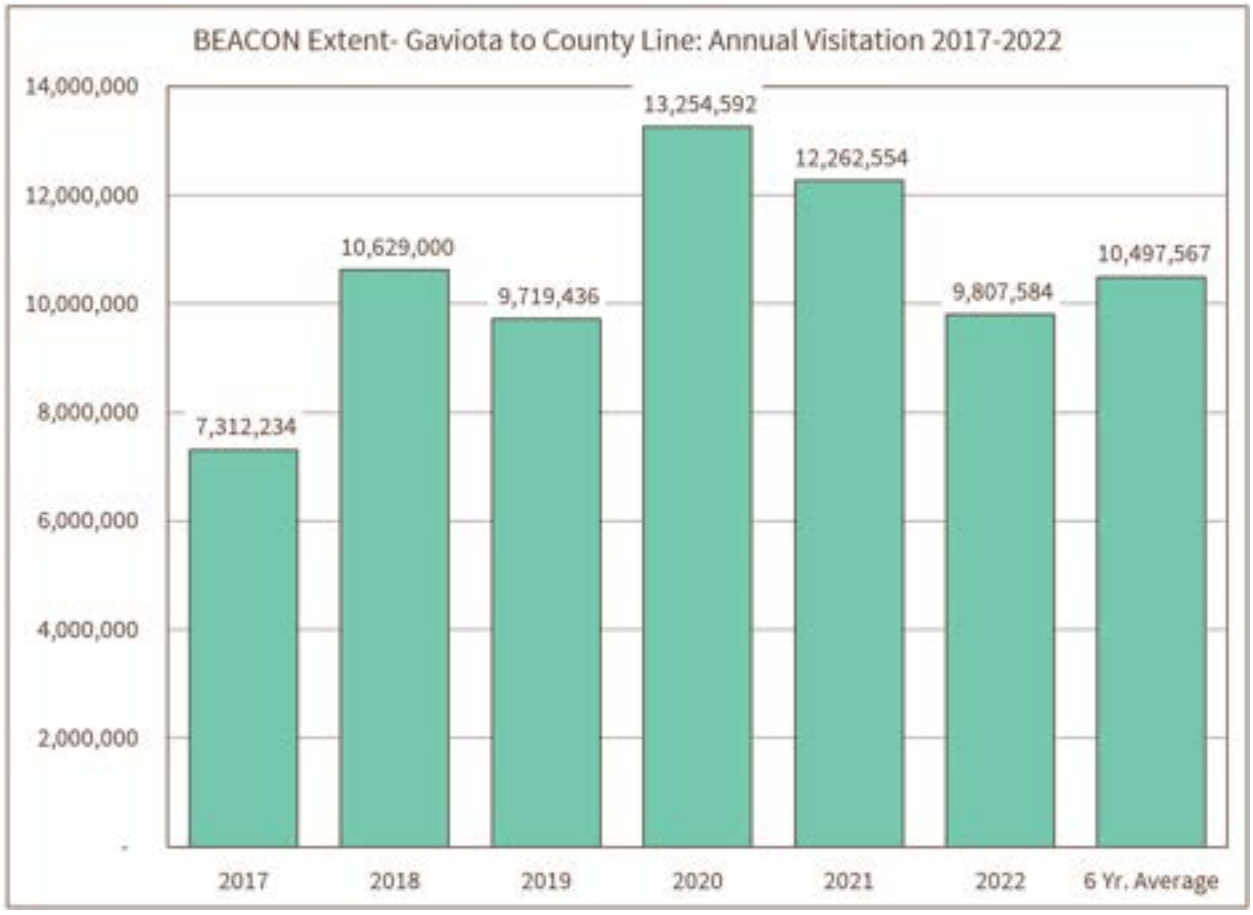
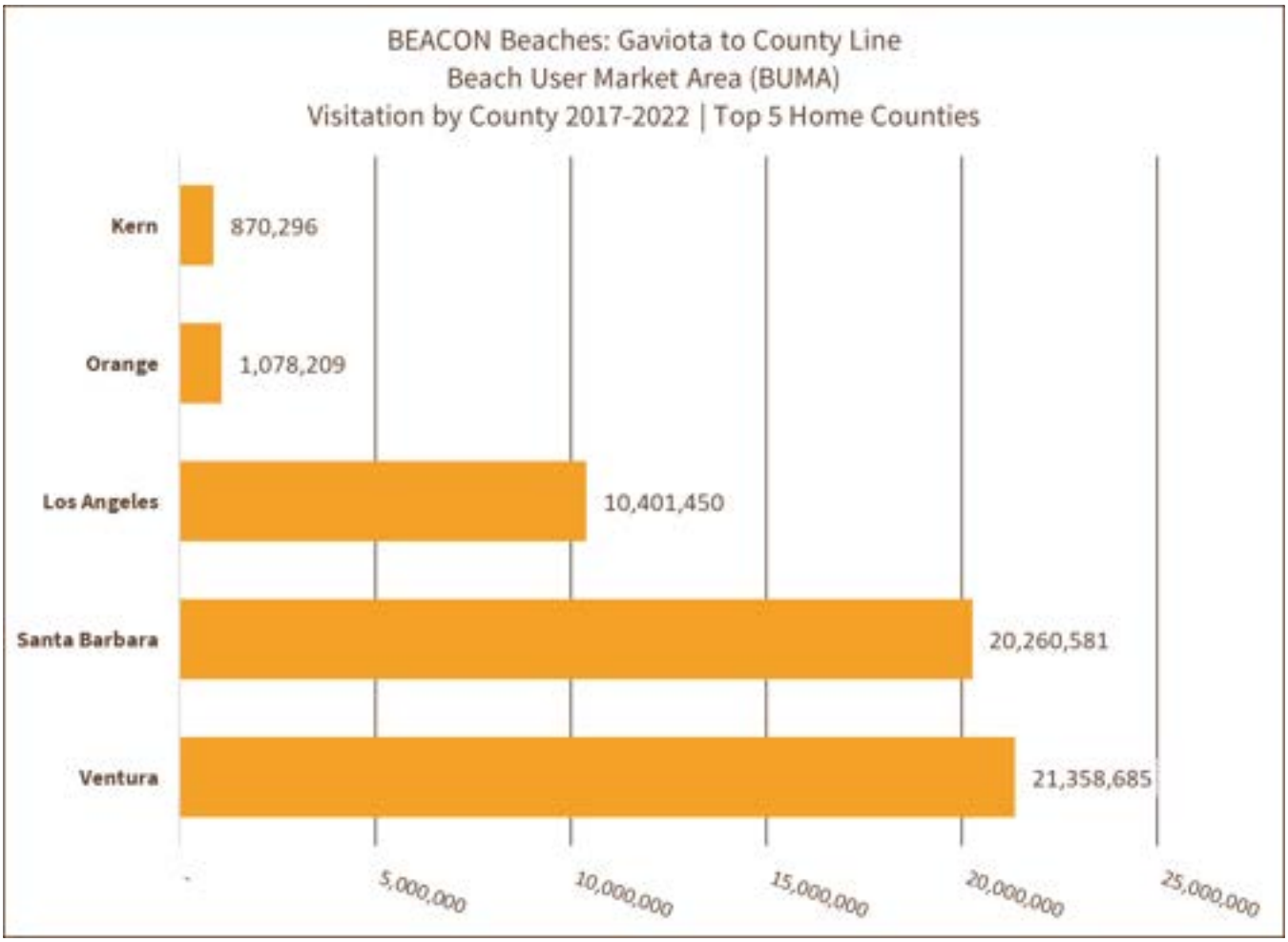
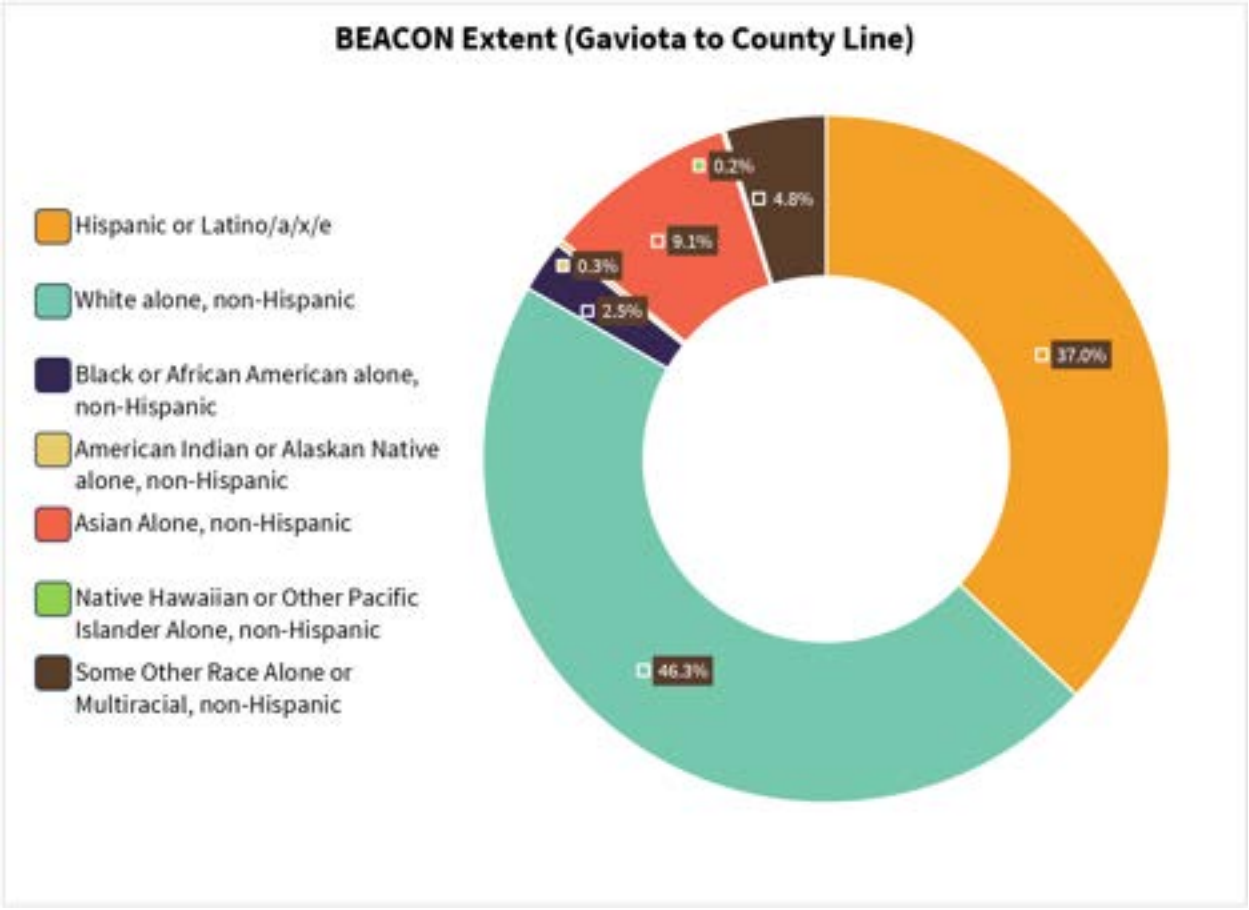


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
BEACON: Gaviota to County Line	7,312,234	10,629,000	9,719,436	13,254,592	12,262,554	9,807,584

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BEACON: Gaviota to County Line	4,092,343	4,677,414	4,339,854	4,921,376	5,884,896	6,442,994	7,687,641	6,895,017	5,534,601	4,795,517	4,162,706	3,551,041

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
BEACON: Gaviota to County	7,698,633	7,179,067	7,380,206	7,449,016	8,807,535	12,389,596	12,081,347

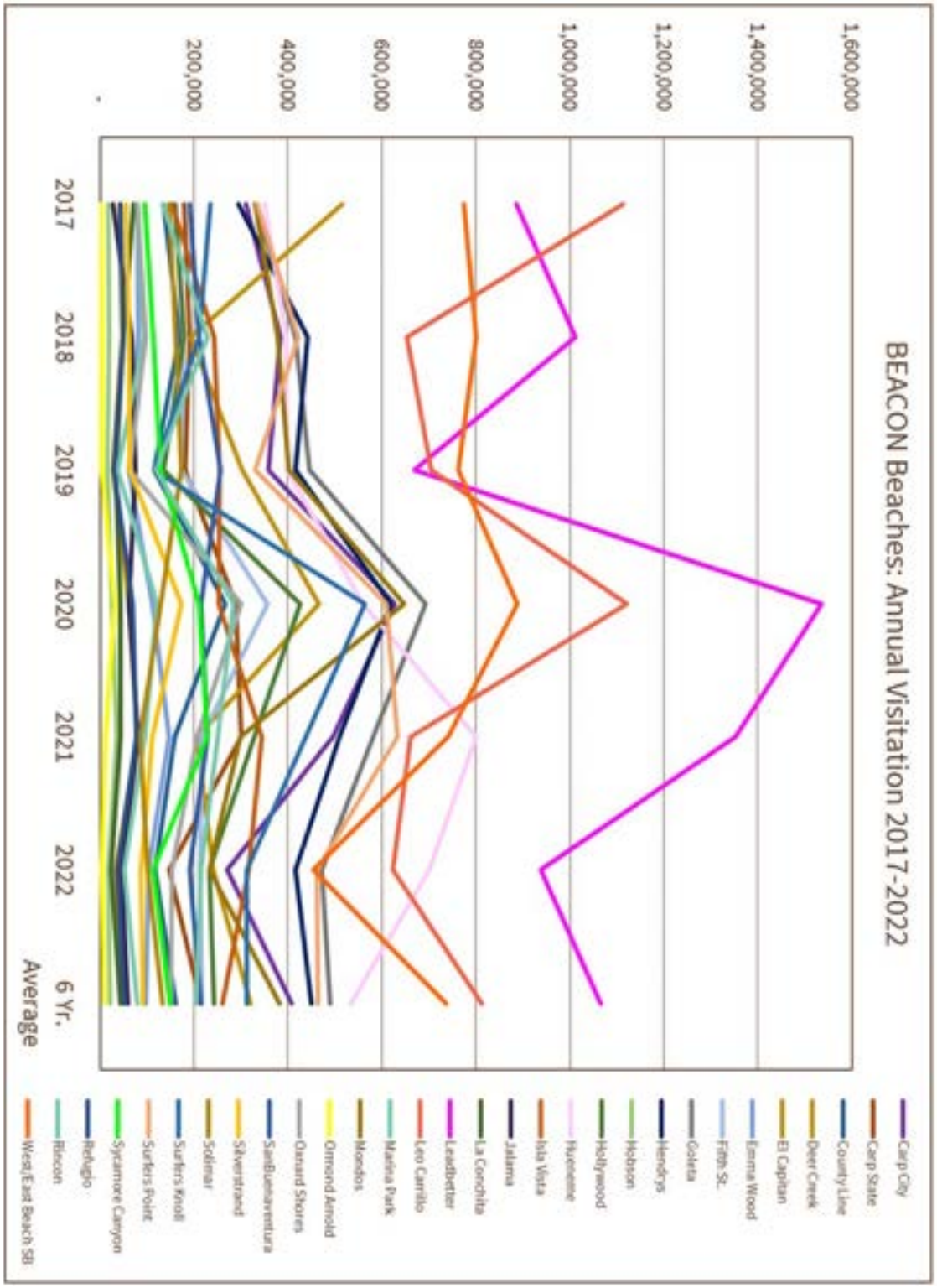
Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
BEACON: Gaviota to County Line	37%	46%	2%	0%	9%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
BEACON: Gaviota to County Line	88%	11%

Annual Visitation to All Beacon Beaches from 2017-2022



Santa Barbara County

California Department of Parks and Recreation (Santa Barbara County)

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Carpinteria State Beach	179,397	190,164	180,617	288,111	300,431	146,726
El Capitan Beach	42,181	48,066	27,730	62,112	79,859	34,201
Refugio Beach	43,729	48,589	29,080	69,453	77,376	38,003

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Carpinteria State Beach	74,848	82,185	91,861	96,596	109,731	160,227	195,510	161,137	97,556	81,688	75,572	58,535
El Capitan Beach	16,494	19,137	16,374	16,671	22,690	39,356	51,661	40,613	21,945	19,085	17,597	12,526
Refugio Beach	21,742	19,196	16,860	22,694	25,594	47,536	44,496	35,233	26,479	19,106	14,520	12,774

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Carpinteria State Beach	145,348	127,529	137,027	141,574	185,429	270,607	277,932
El Capitan Beach	33,648	27,083	27,015	31,164	39,139	77,475	58,625
Refugio Beach	33,948	29,430	33,836	36,131	41,479	63,552	67,854

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Carpinteria State Beach	33%	49%	3%	0%	10%	0%	5%
El Capitan Beach	32%	46%	4%	0%	12%	0%	6%
Refugio Beach	31%	53%	2%	4%	9%	2%	1%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Carpinteria State Beach	91%	9%
El Capitan Beach	85%	15%
Refugio Beach	89%	11%

Carpinteria State Beach

General Statistics (2022)

Total Visitation: 146.7k

Average Visitation per Day: 410

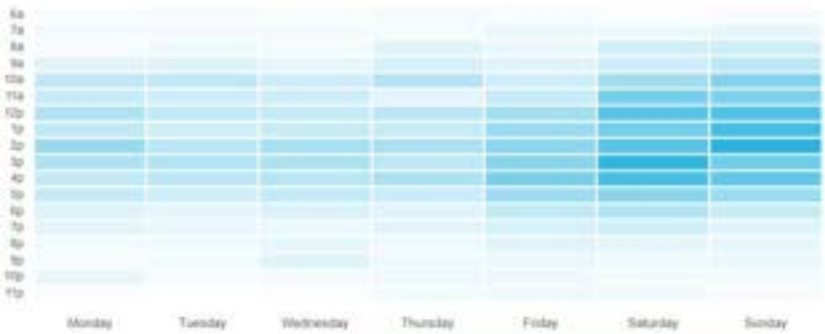
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 9%

Average Length of Stay: 1.75 hours

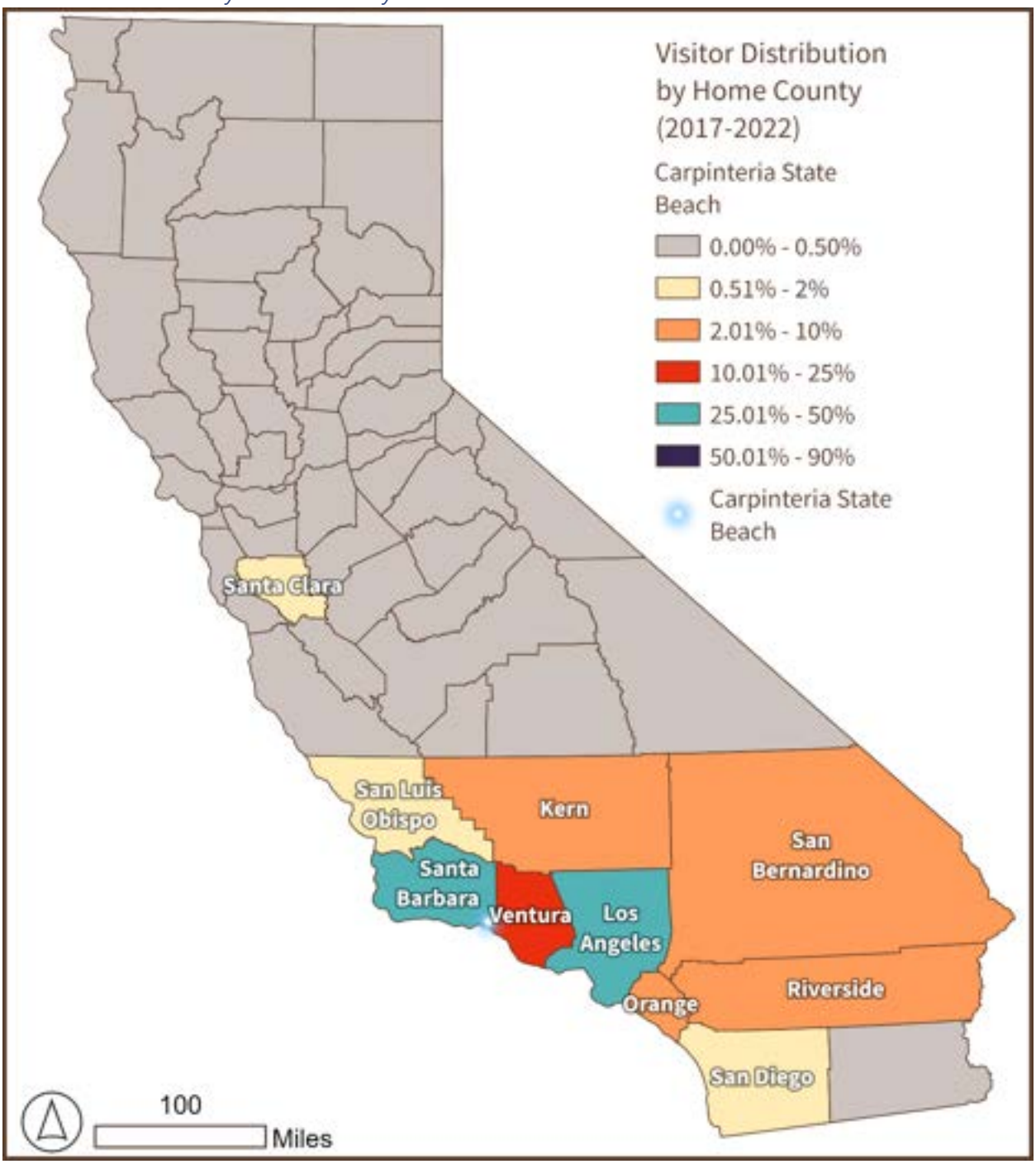
Busiest Day of the Week: Sunday

Busiest Hour: 2:00 pm

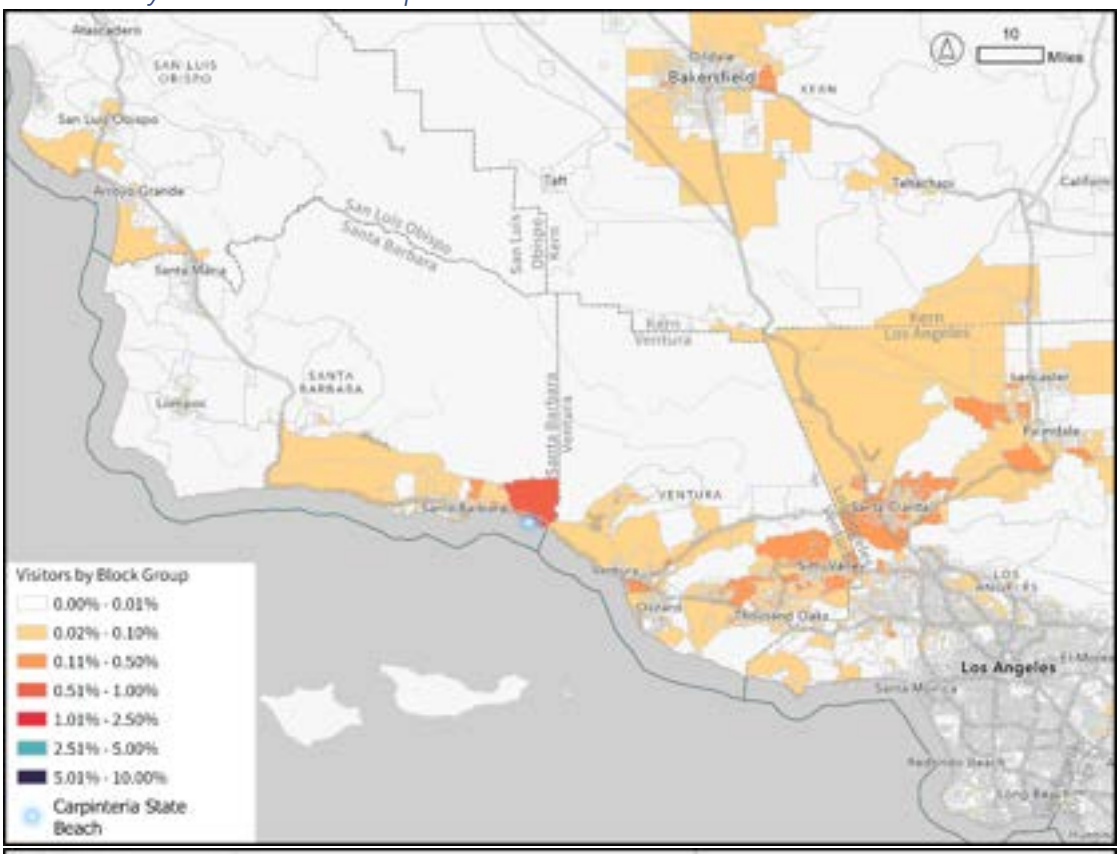
Heat Map of Hourly Visitation Carpinteria State Beach:



Visitor Distribution by Home County



Visitation by Home Block Group



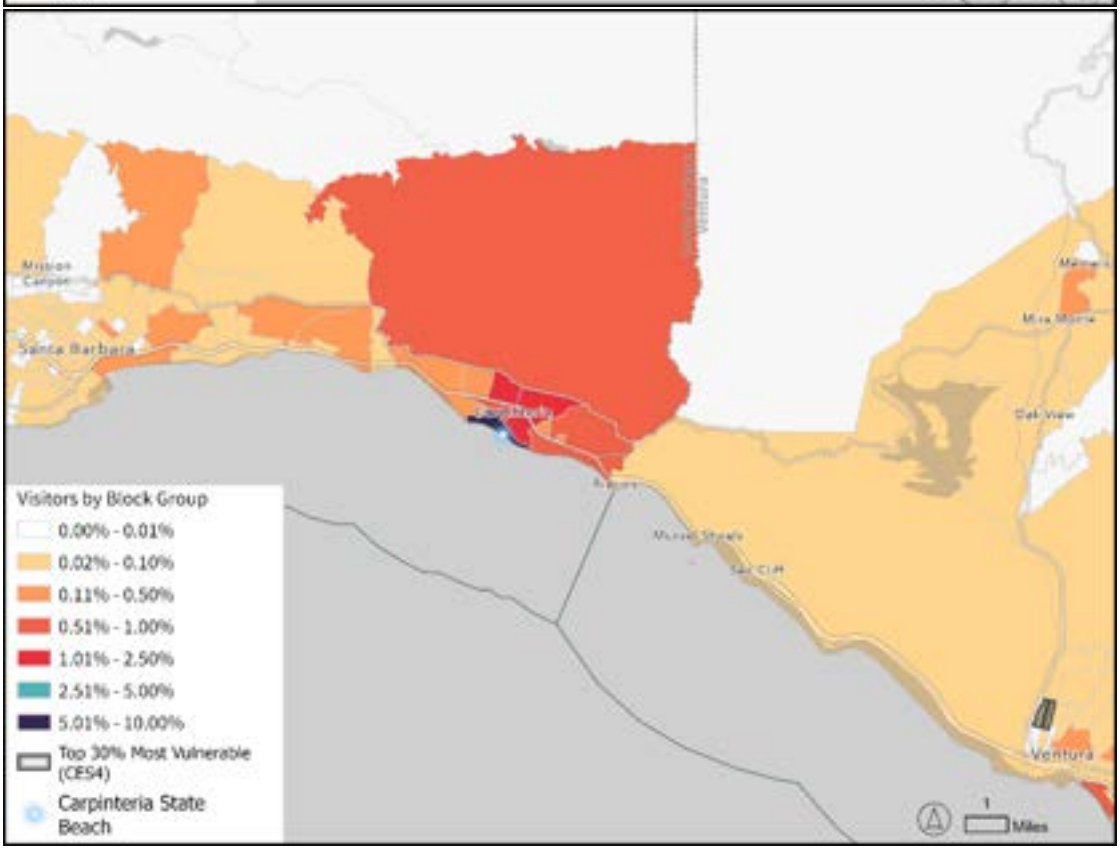
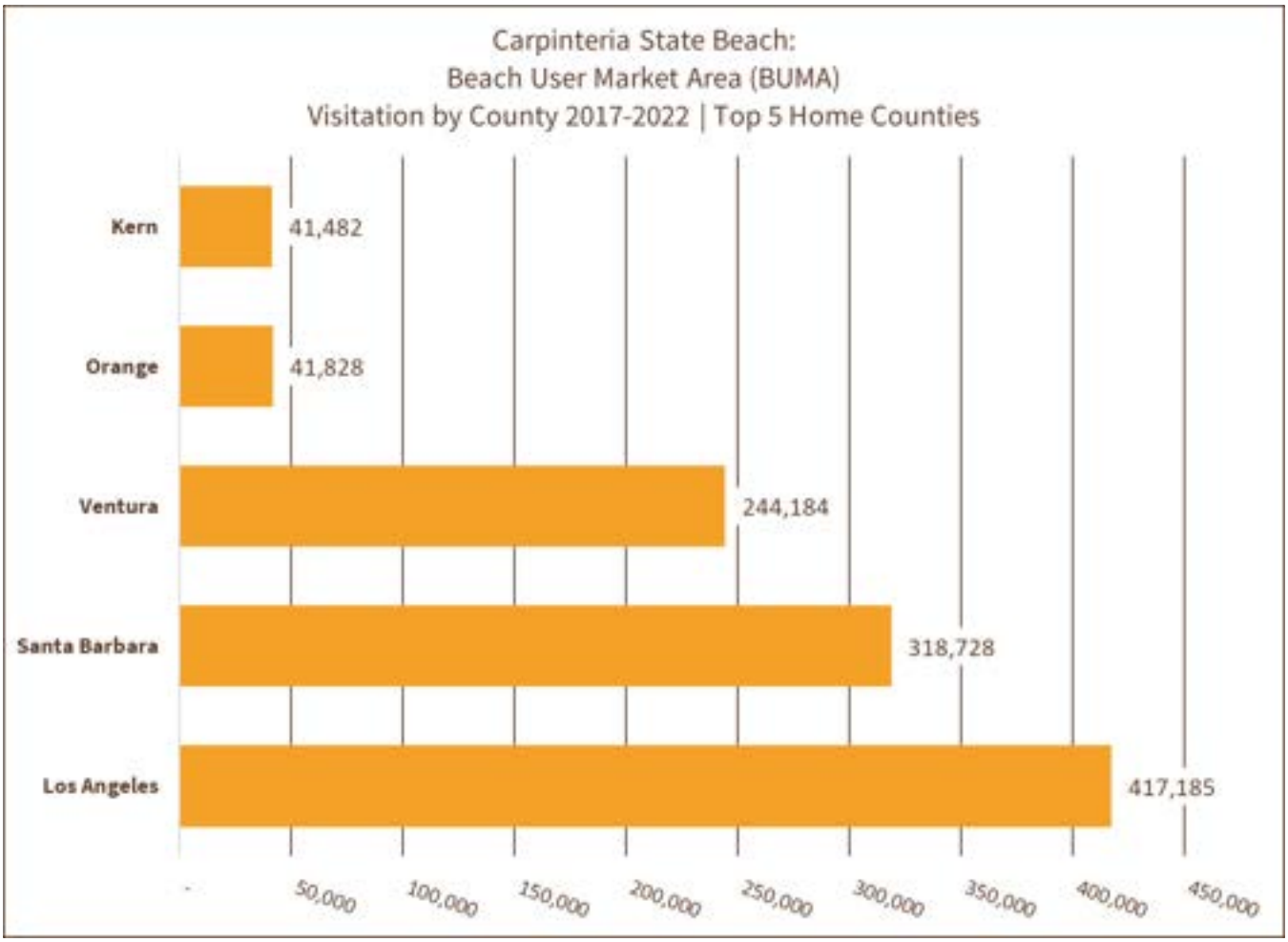
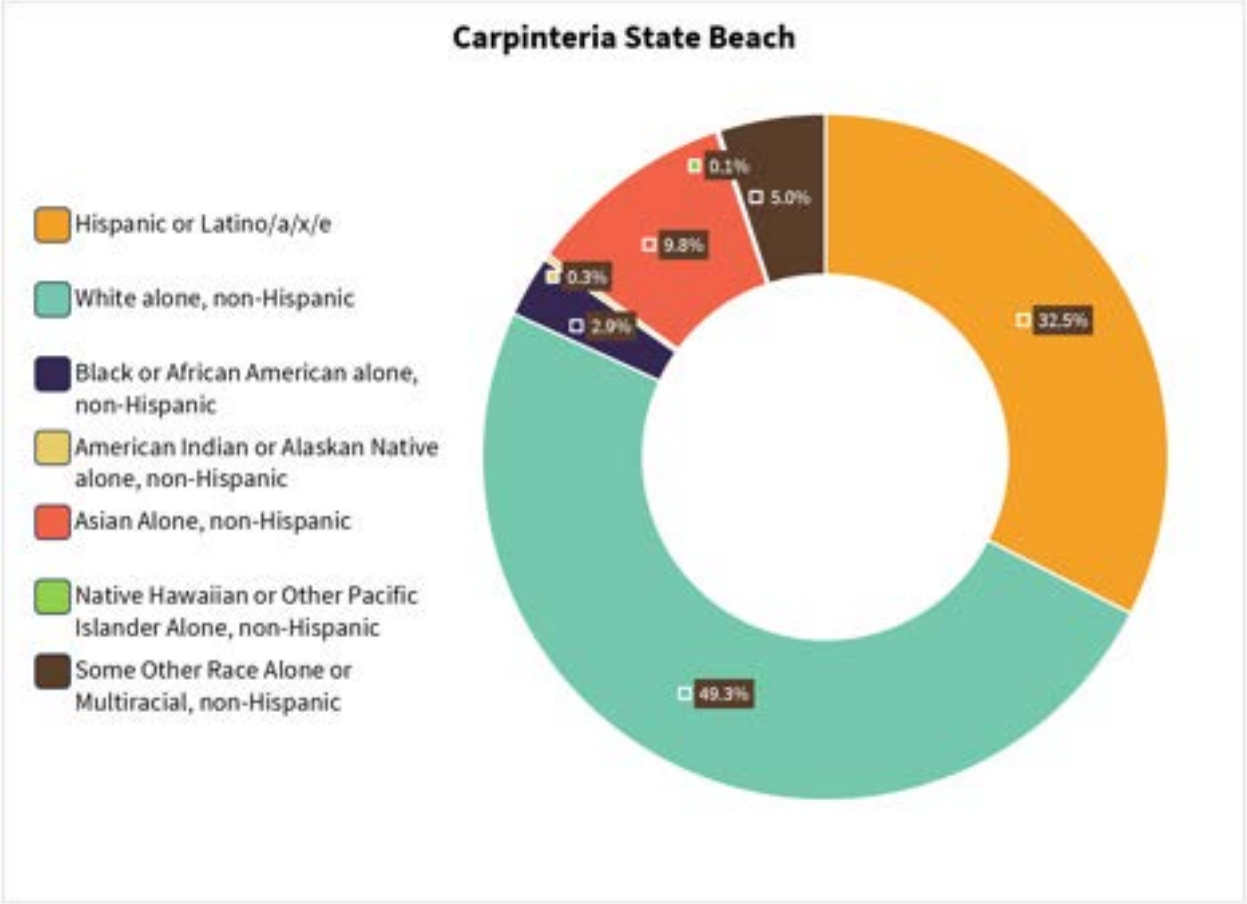


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



El Capitan State Beach

General Statistics (2022)

Total Visitation: 34.2k

Average Visitation per Day: 160

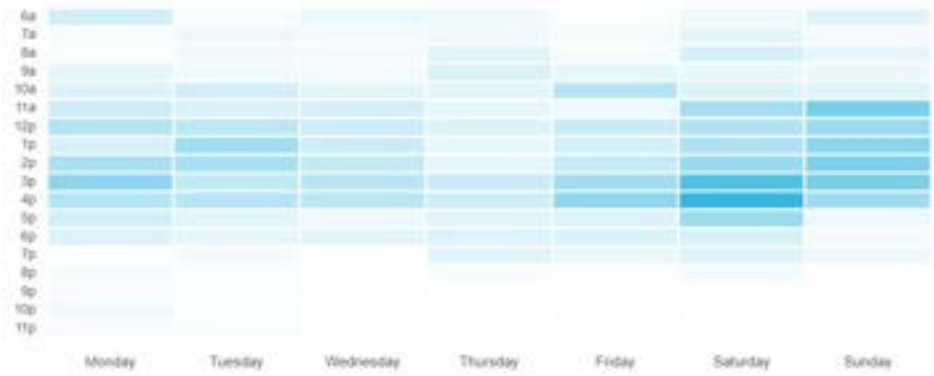
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 15%

Average Length of Stay: 1.5 hour

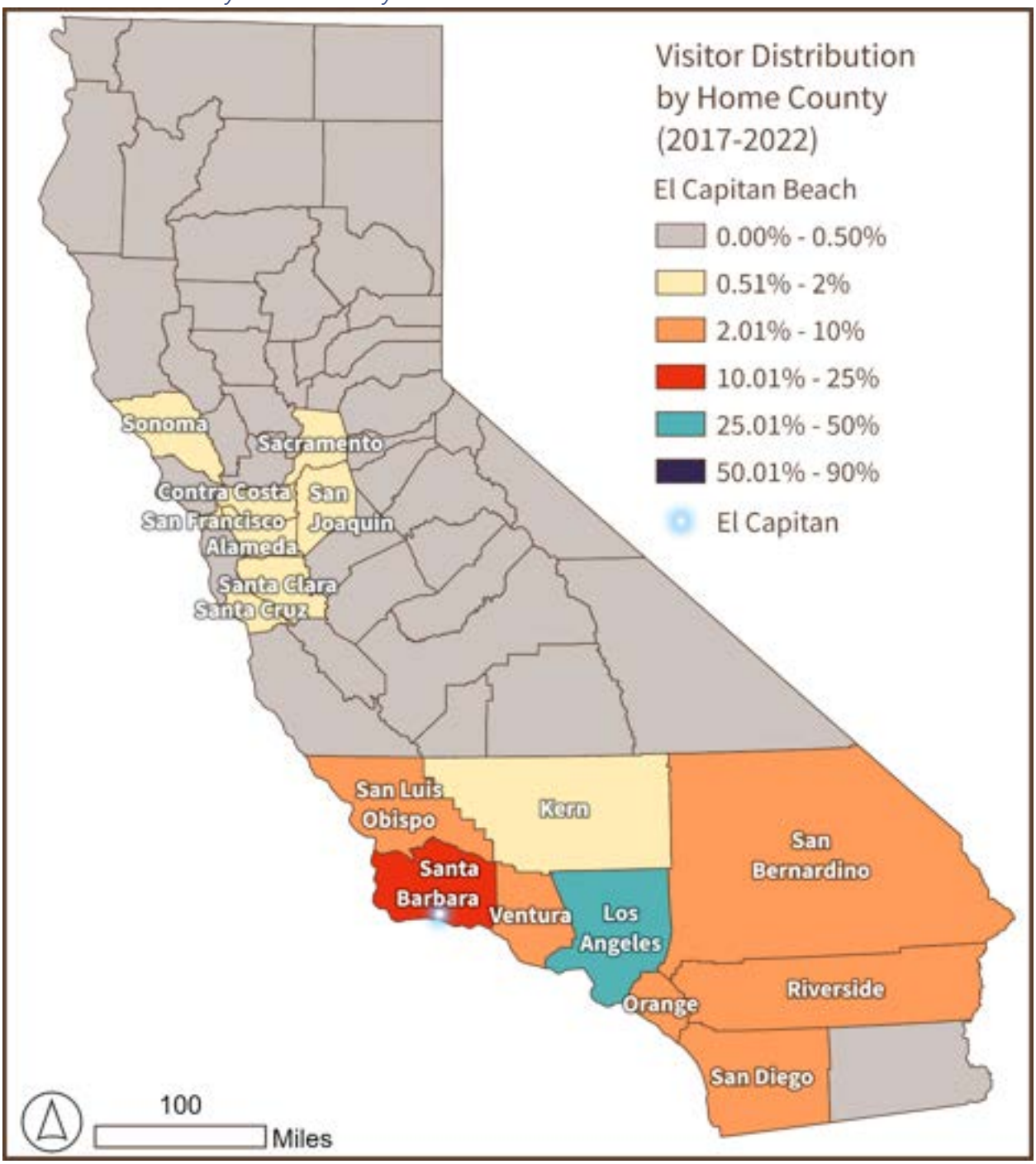
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

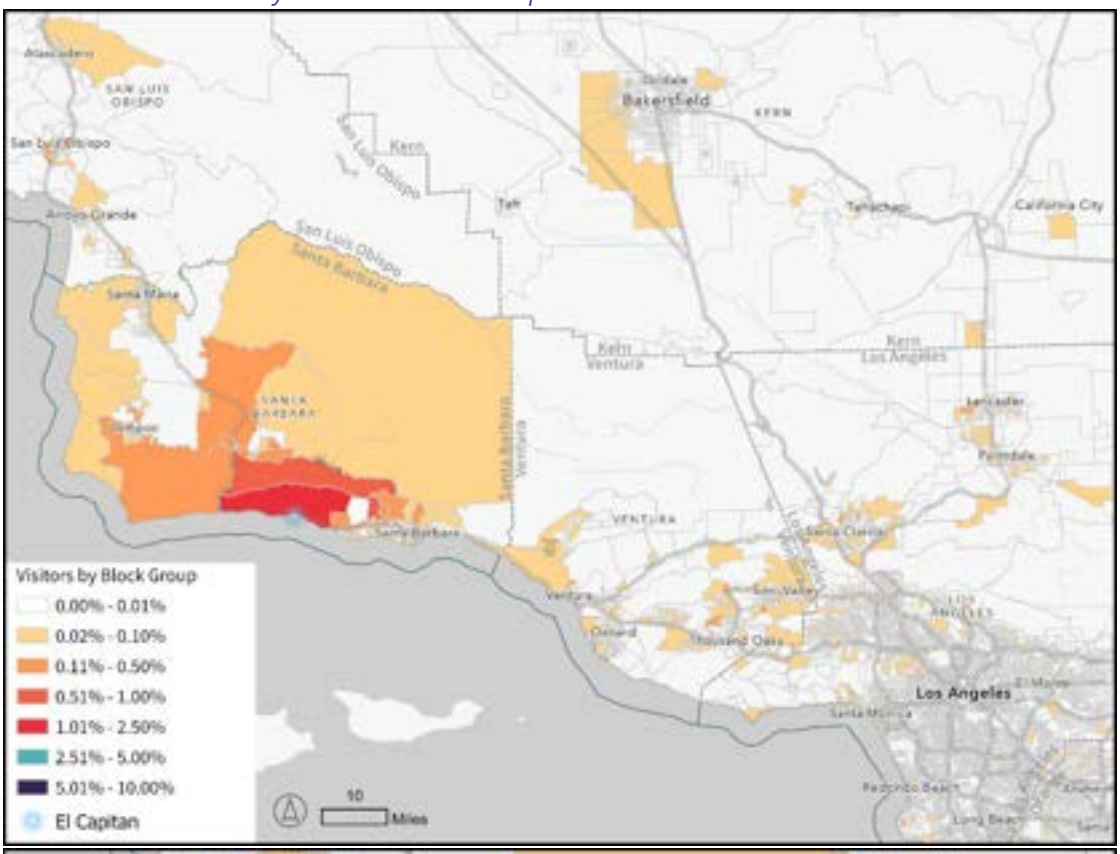
Heat Map of Hourly Visitation El Capitan State Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



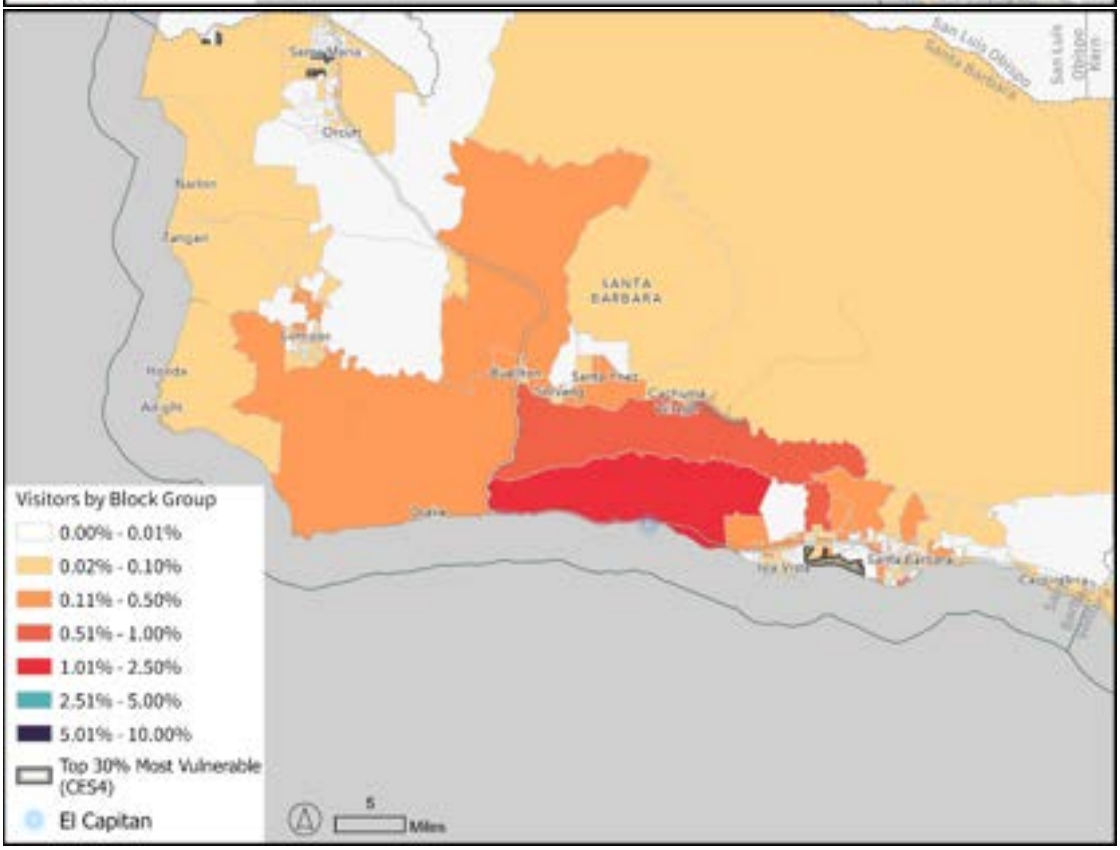
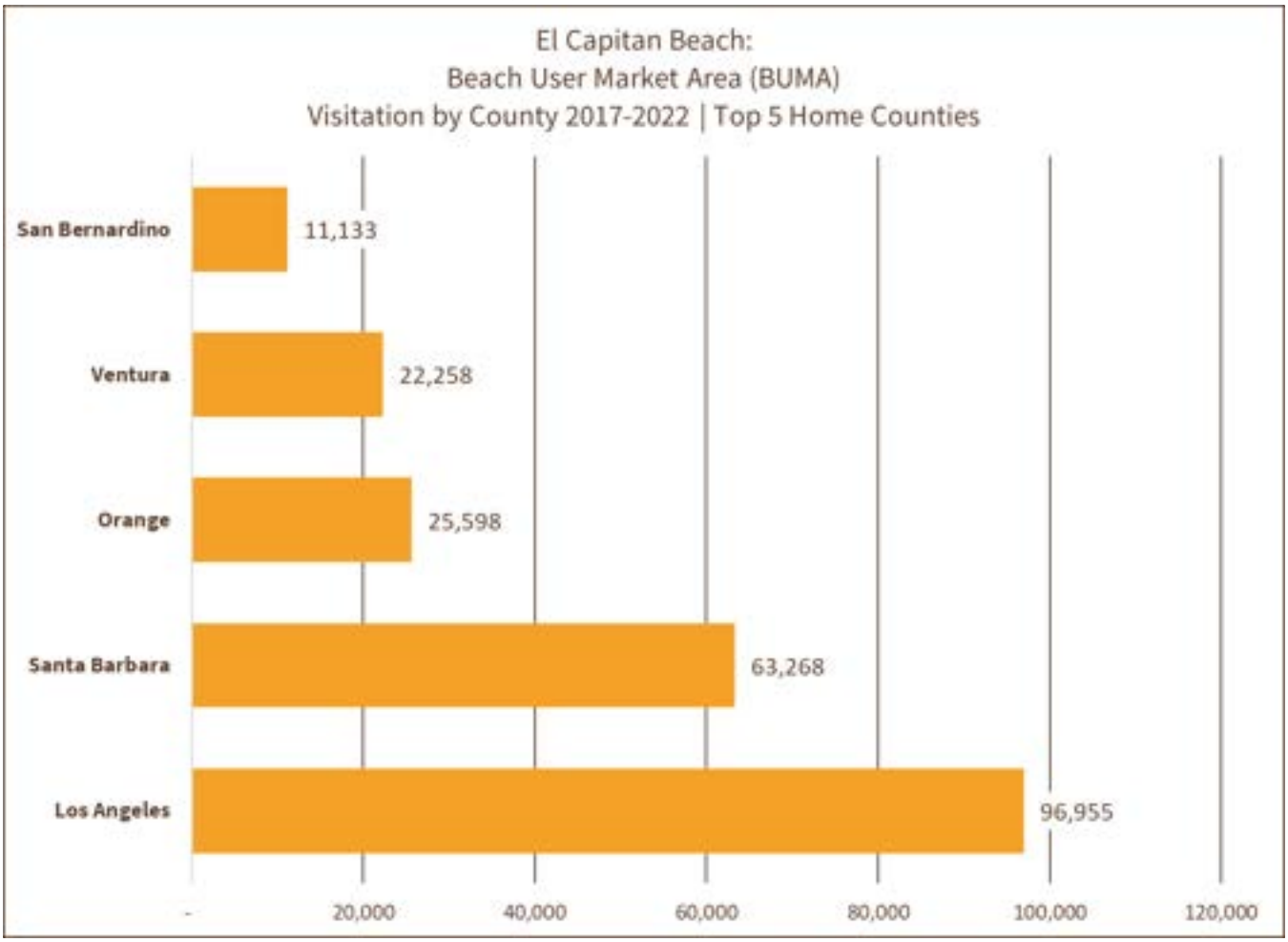
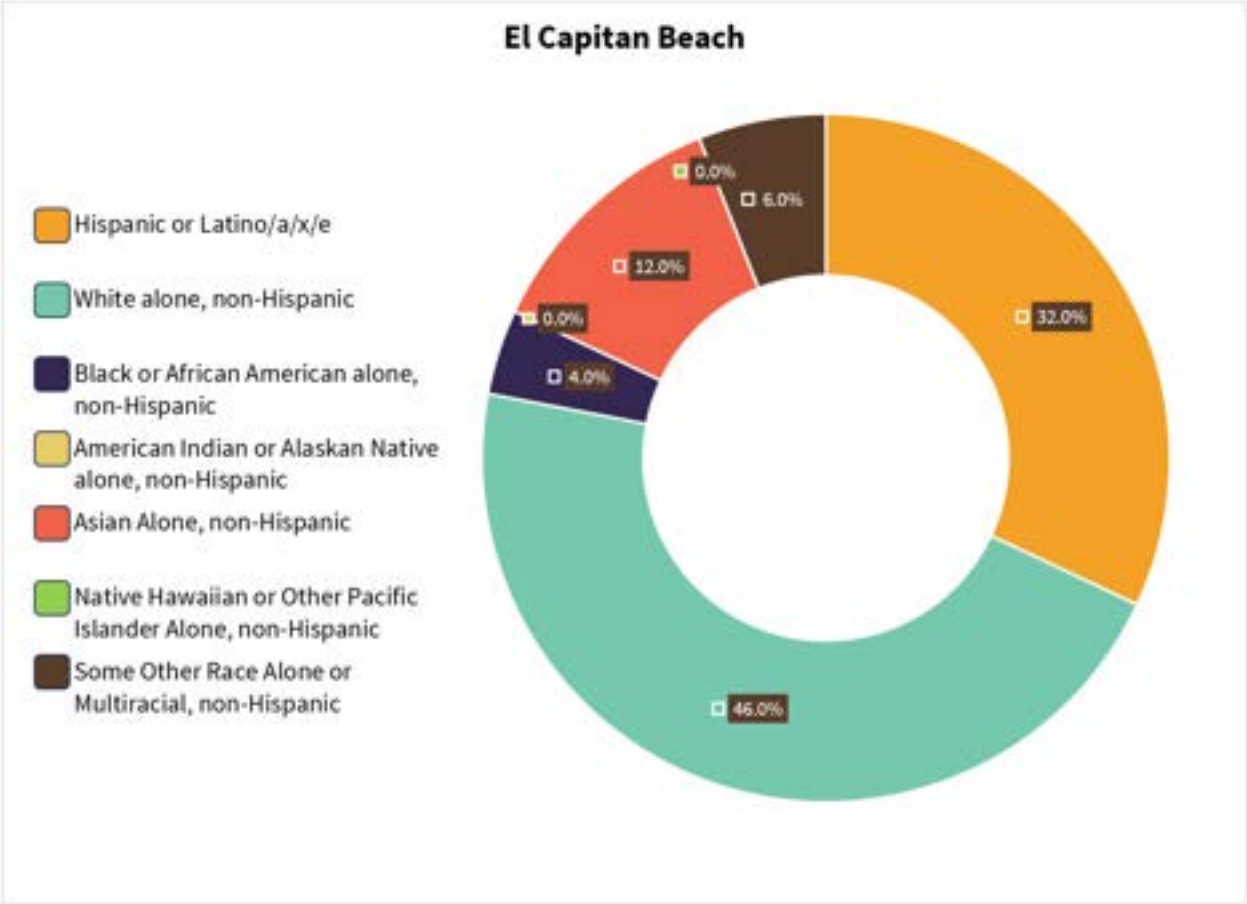


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Refugio Beach

General Statistics (2022)

Total Visitation: 38k

Average Visitation per Day: 150

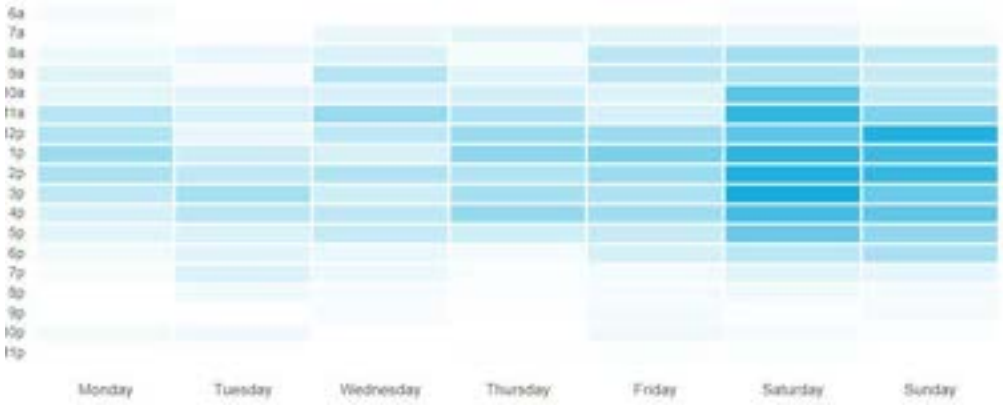
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 11%

Average Length of Stay: 1.75 hours

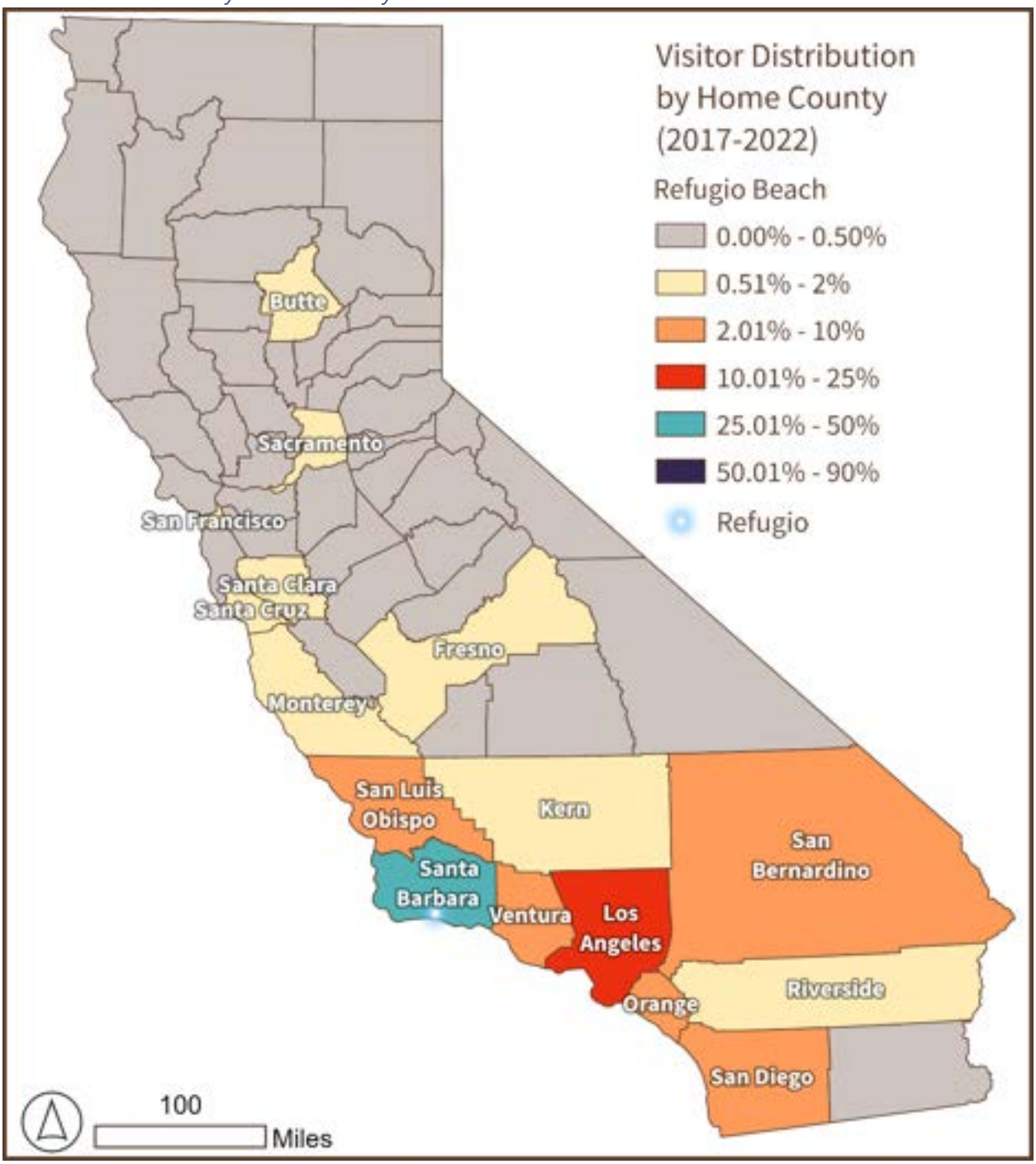
Busiest Day of the Week: Saturday

Busiest Hour: 1:00 pm

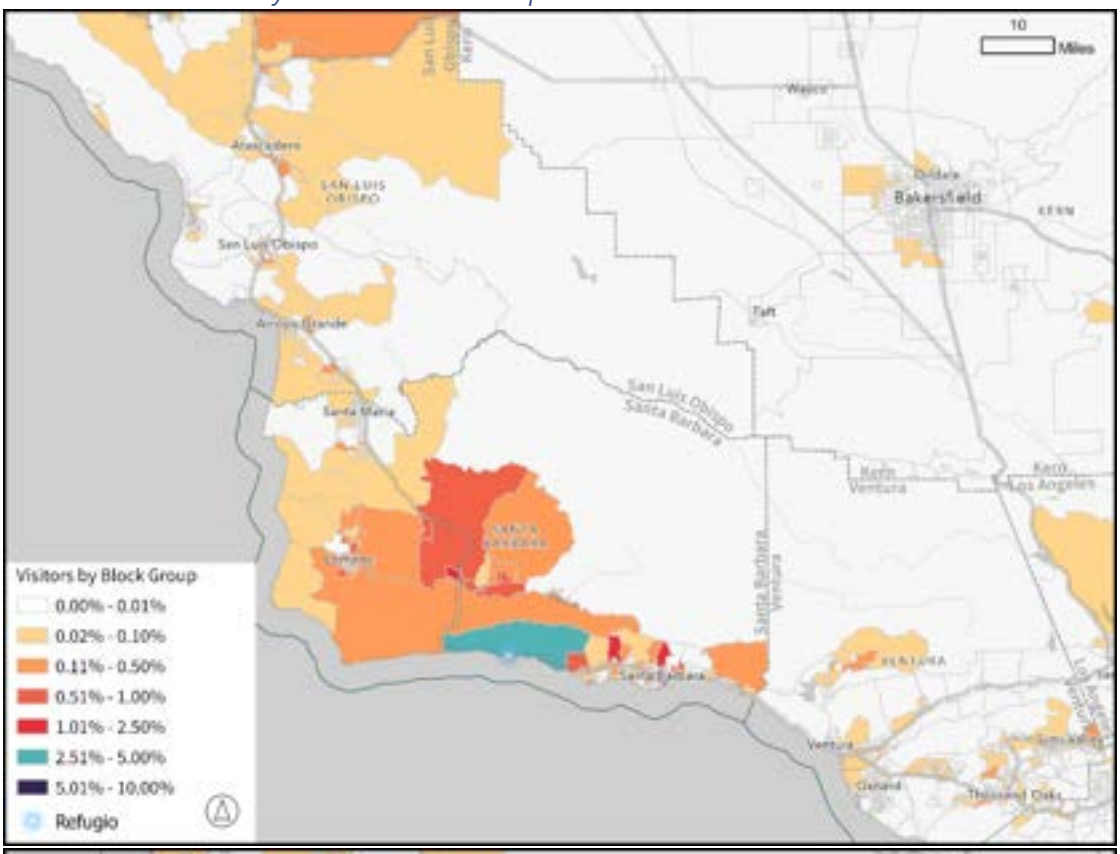
Heat Map of Hourly Visitation Refugio Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



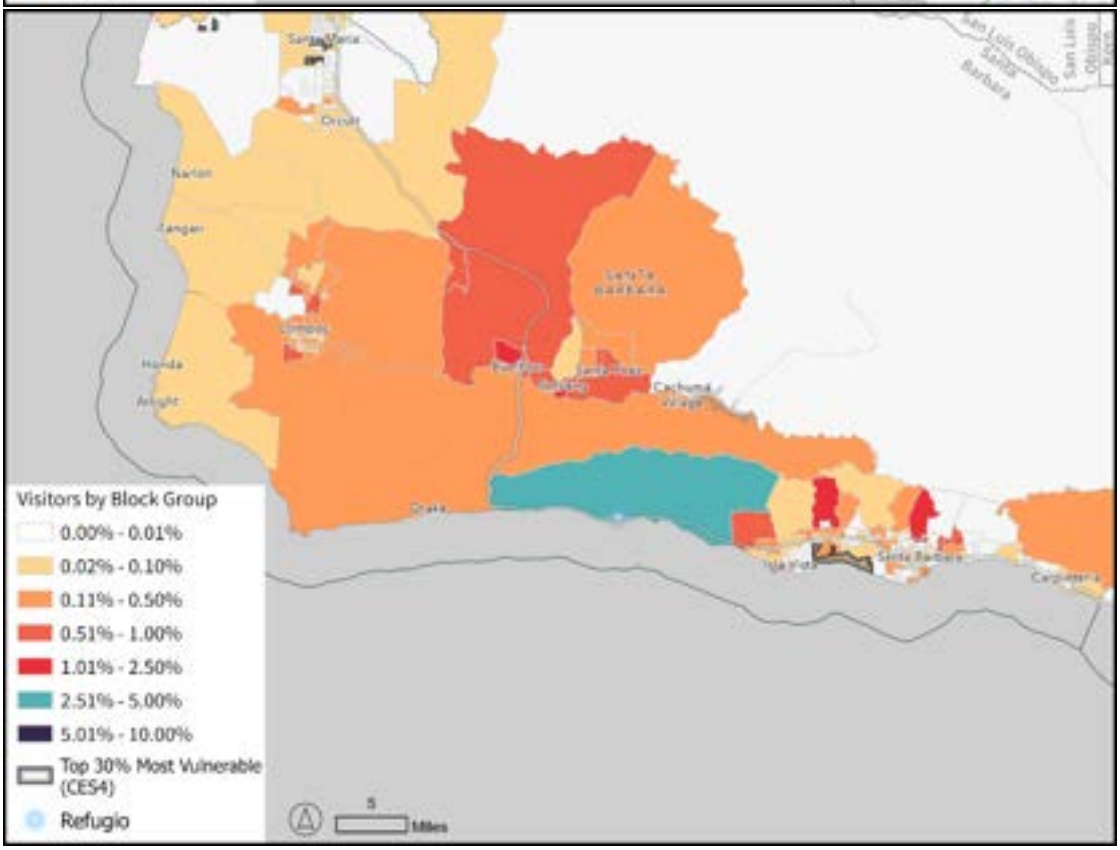


Chart of Visitation by Year

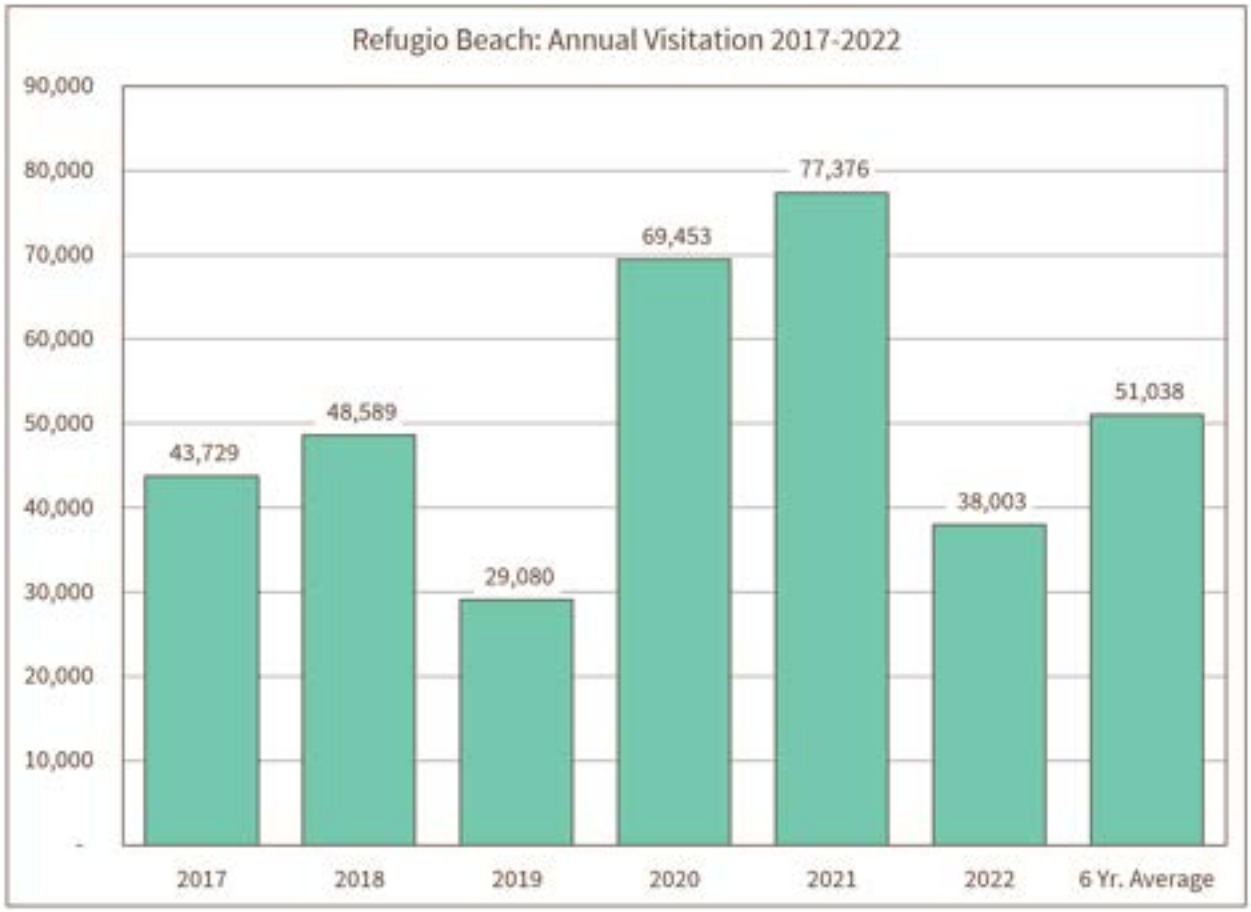
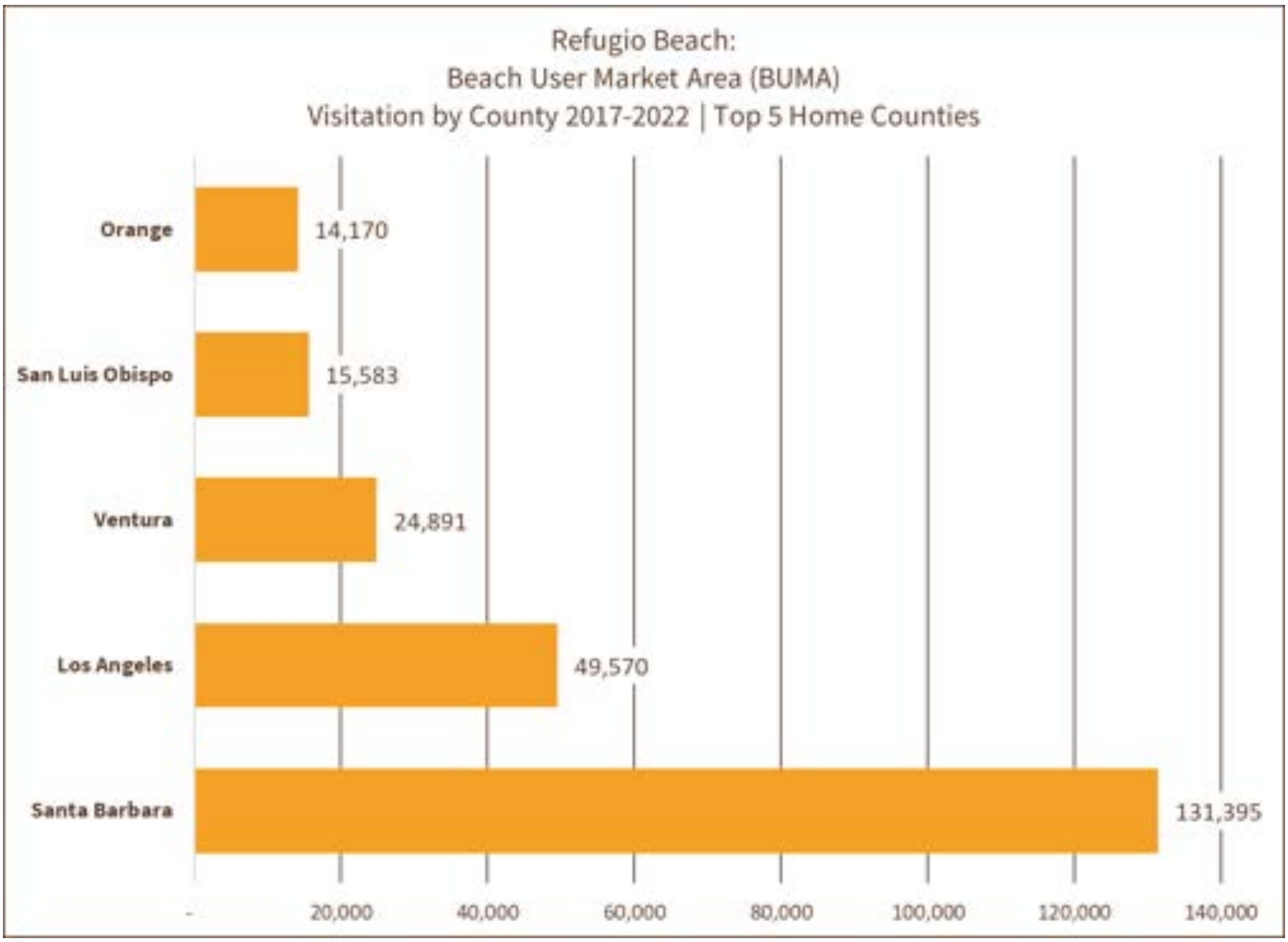
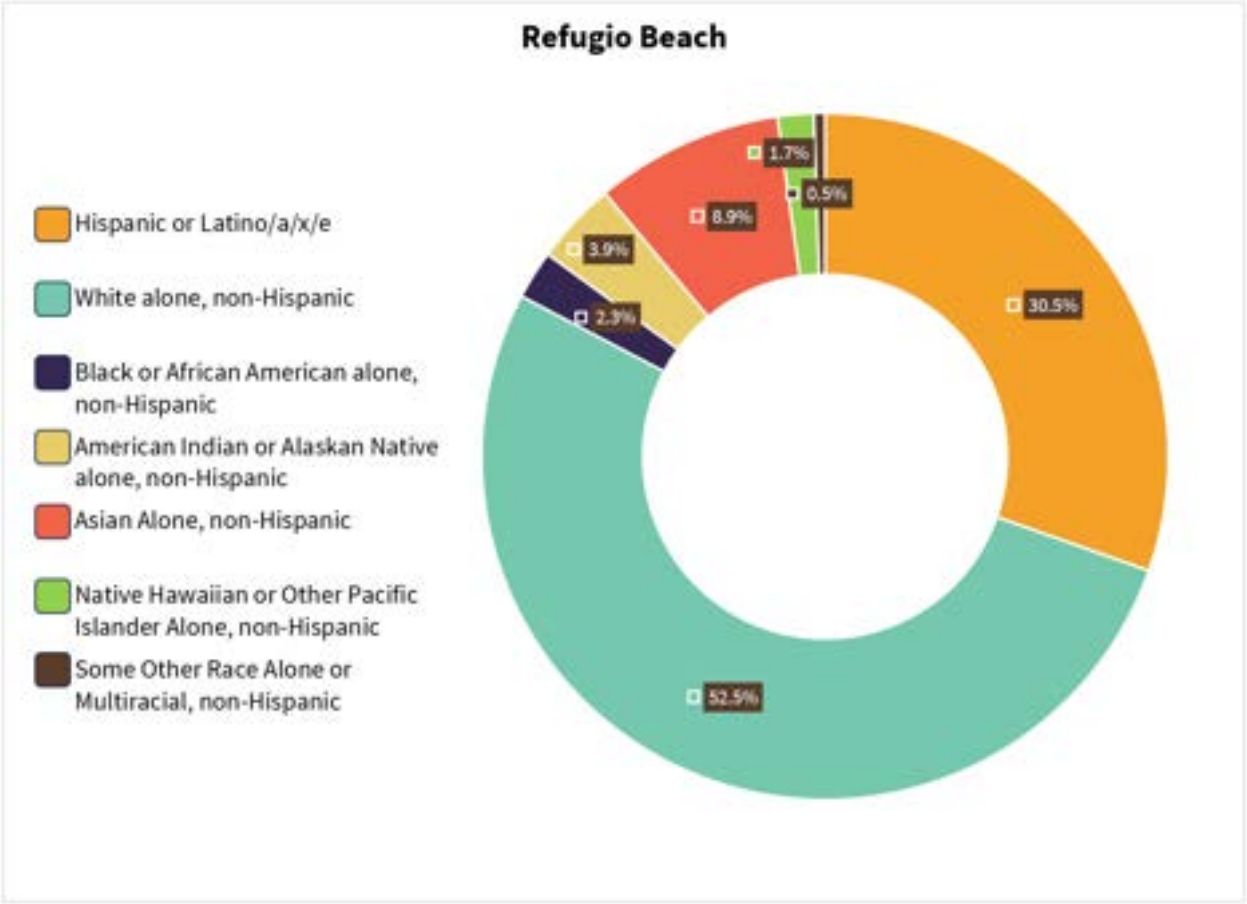


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Carpinteria

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Carpinteria City Beach	309,724	384,607	358,346	627,376	495,953	269,806

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Carpinteria City Beach	158,917	158,473	171,521	216,581	232,694	278,666	354,489	272,950	194,479	165,126	137,043	104,873

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Carpinteria City Beach	283,155	269,820	268,782	266,821	321,051	465,216	462,691

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Carpinteria City Beach	34%	52%	2%	0%	8%	0%	3%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Carpinteria City Beach	92%	8%

Carpinteria City Beach

General Statistics (2022)

Total Visitation: 269.8k

Average Visitation per Day: 750

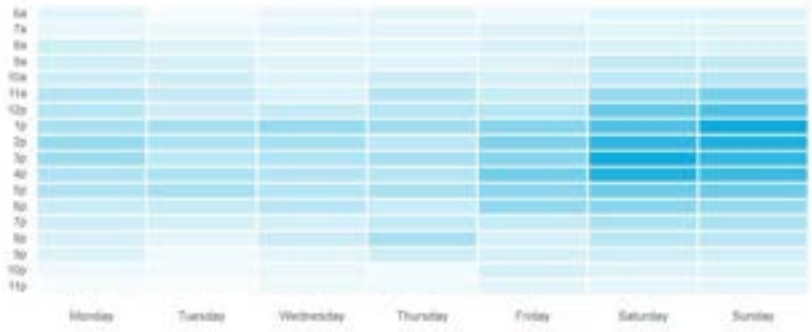
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 8%

Average Length of Stay: 1.75 hours

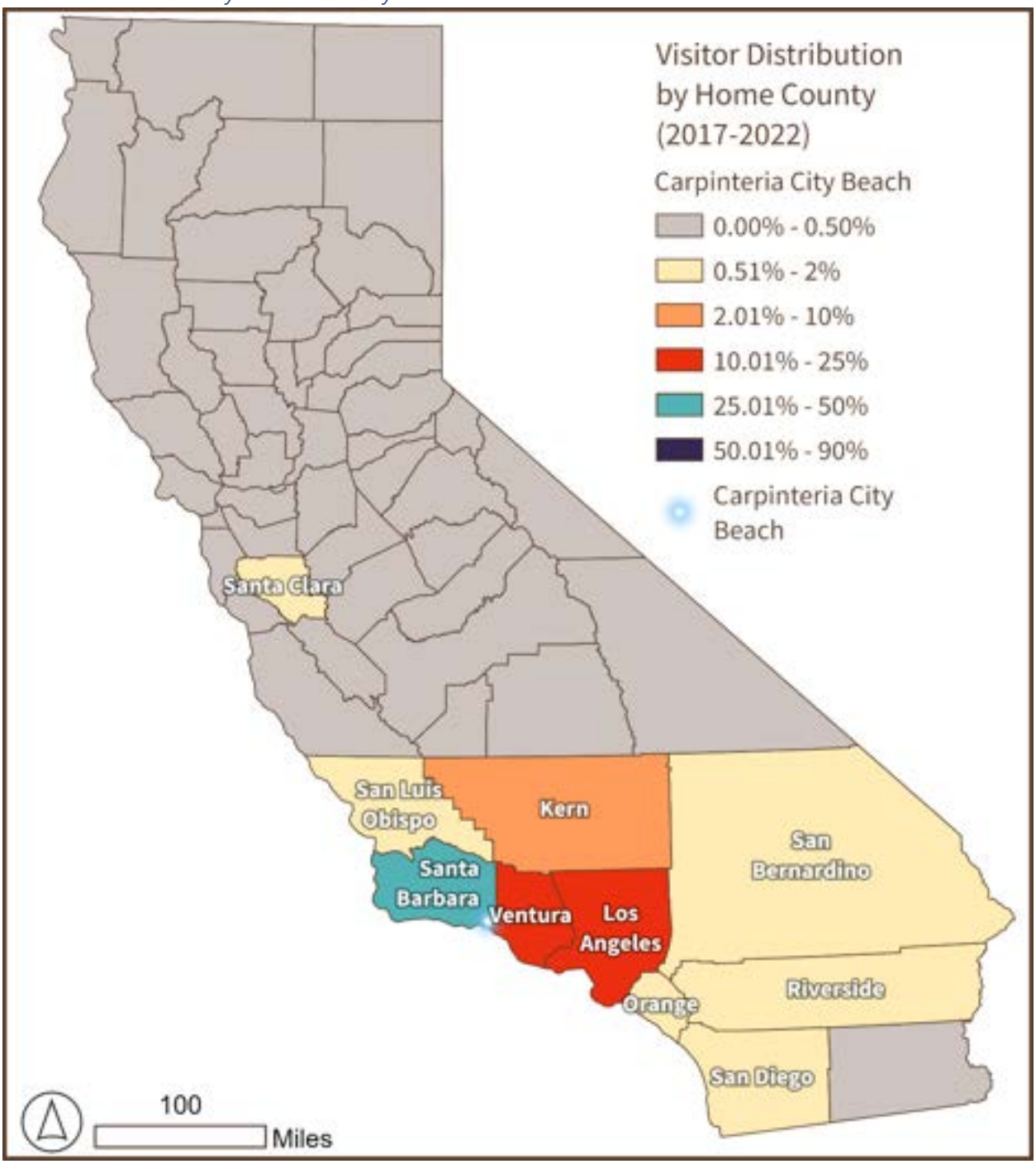
Busiest Day of the Week: Sunday

Busiest Hour: 1:00 pm

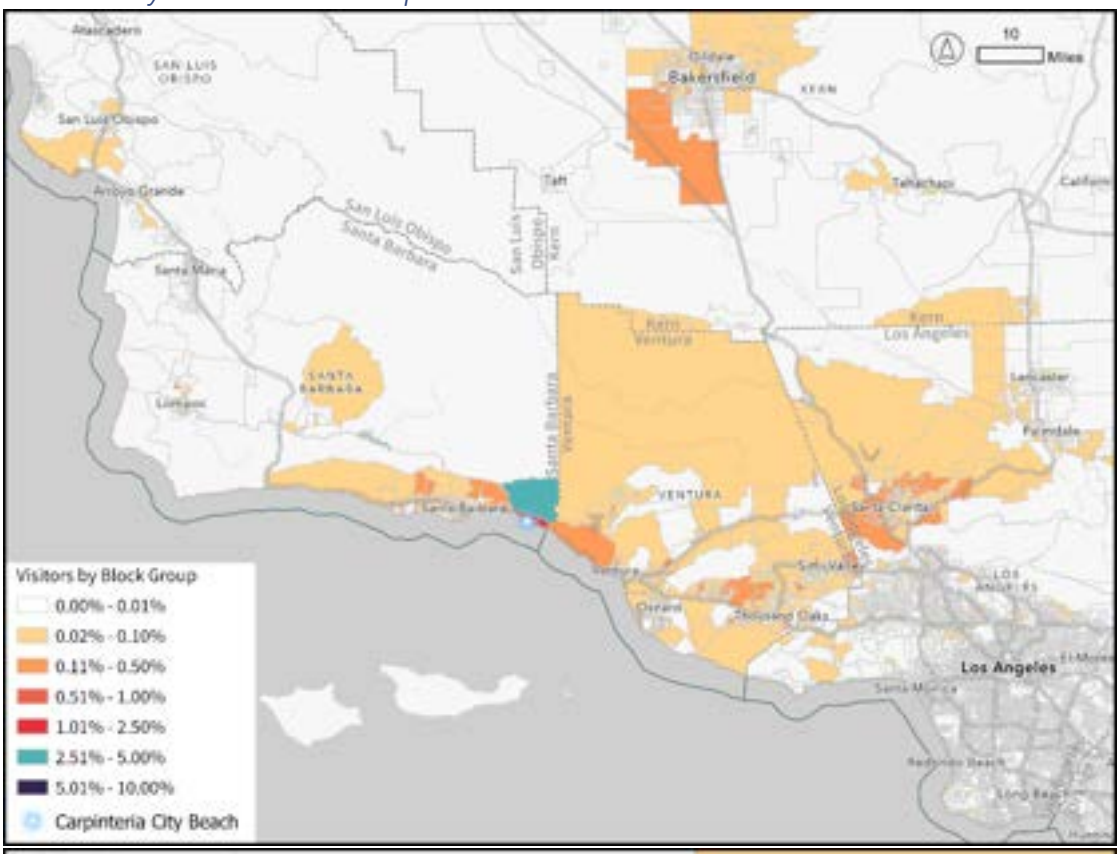
Heat Map of Hourly Visitation Carpinteria City Beach:



Visitor Distribution by Home County



Visitation by Home Block Group



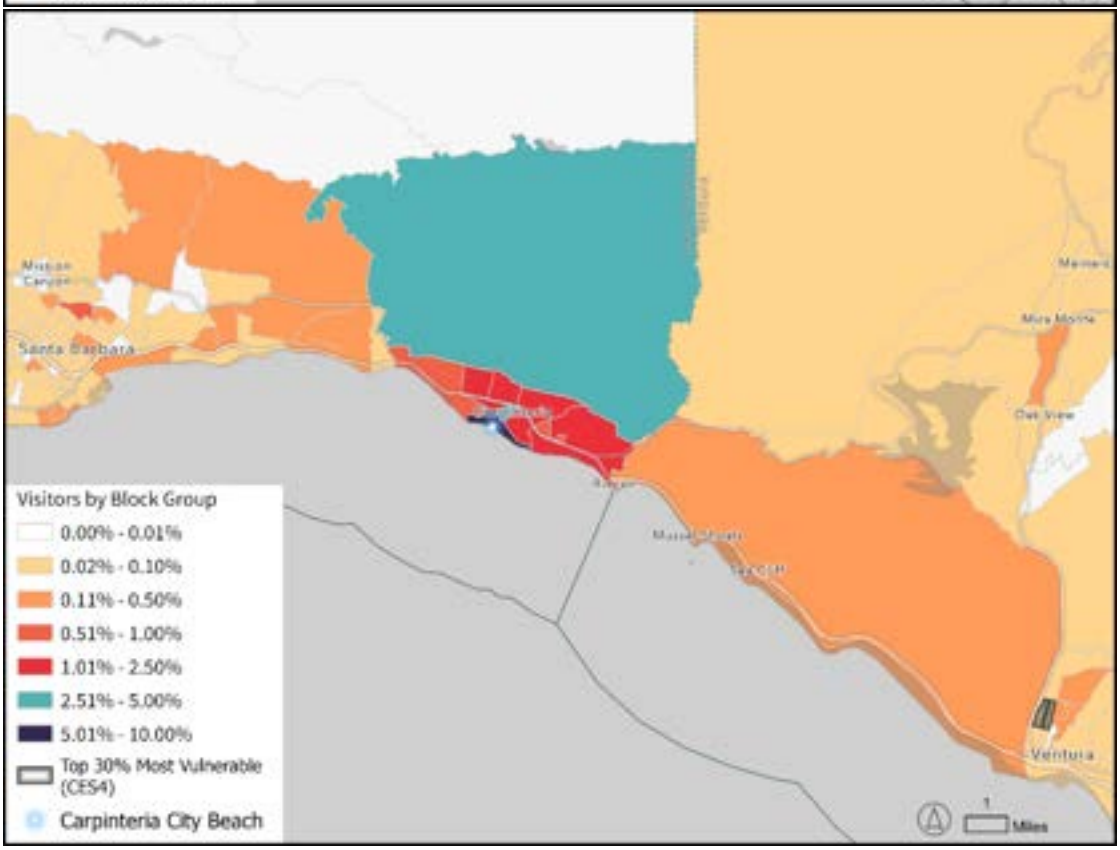
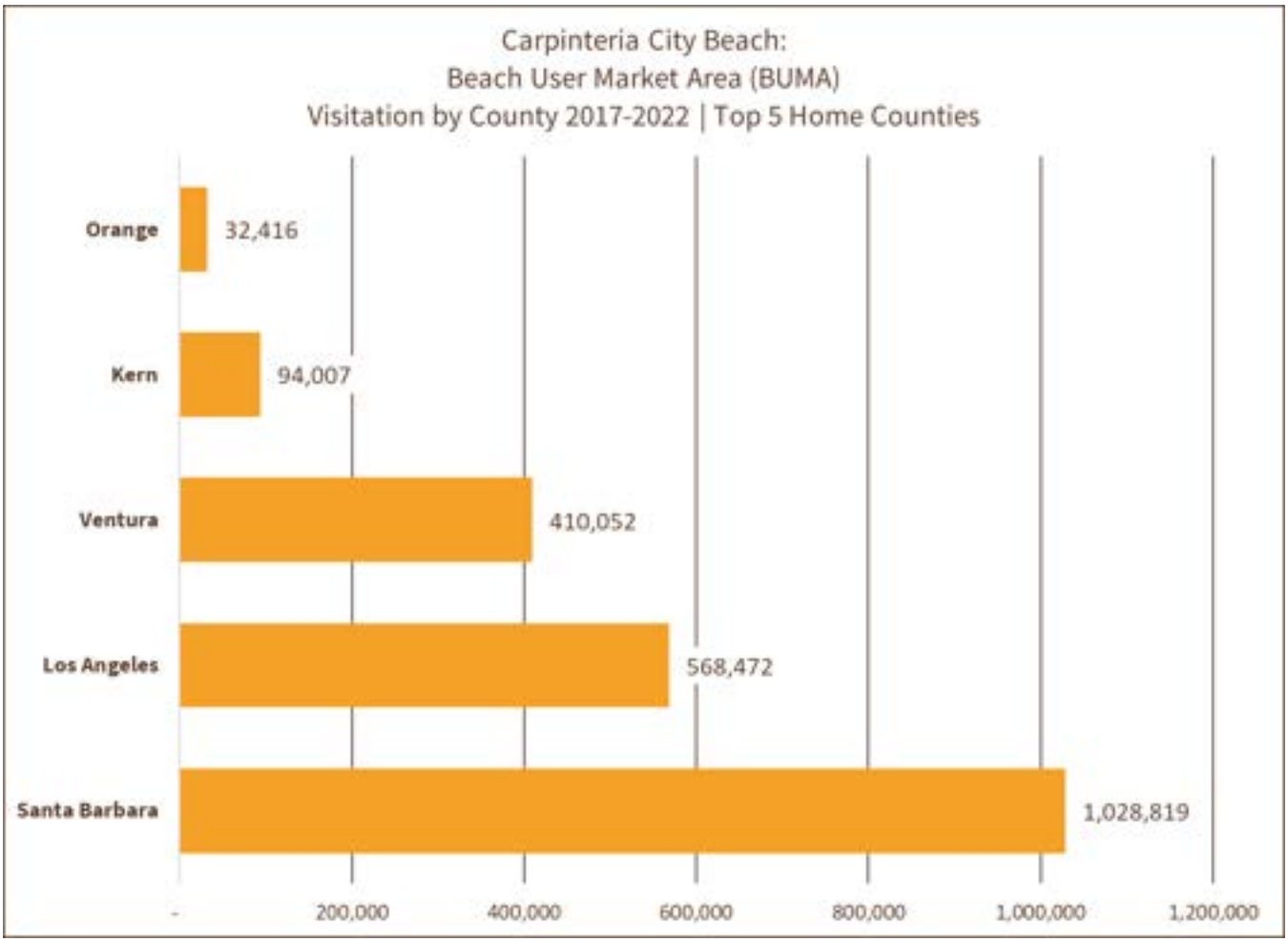
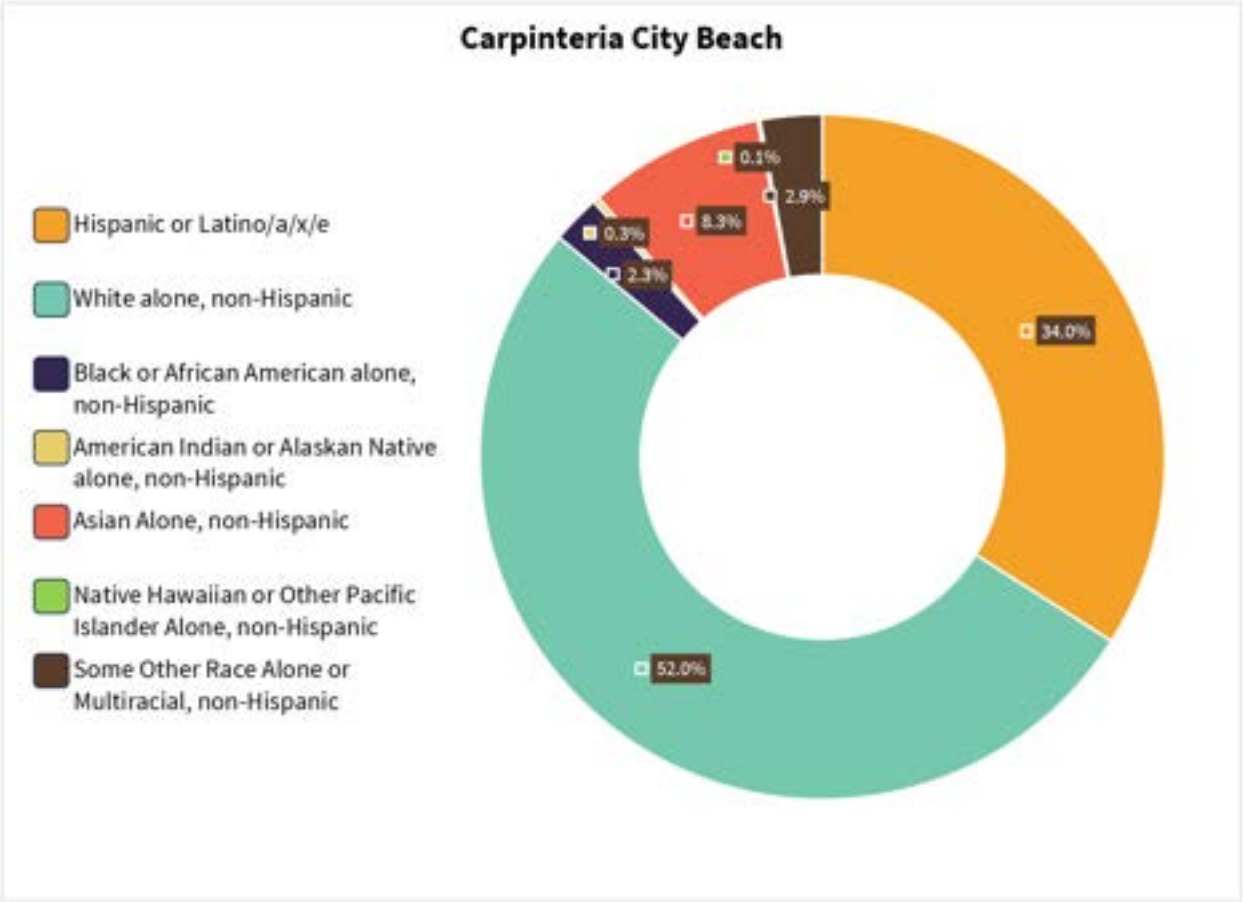


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Isla Vista Parks and Recreation District (IVPRD) and UCSB

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Isla Vista Beach & Campus	152,601	243,382	253,837	252,024	345,007	315,865

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Isla Vista Beach & Campus Beach	138,648	158,563	105,138	114,662	150,586	164,706	164,029	132,964	134,819	120,922	104,844	72,835

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Isla Vista Beach & Campus Beach	172,276	166,828	186,783	188,122	271,055	329,978	247,674

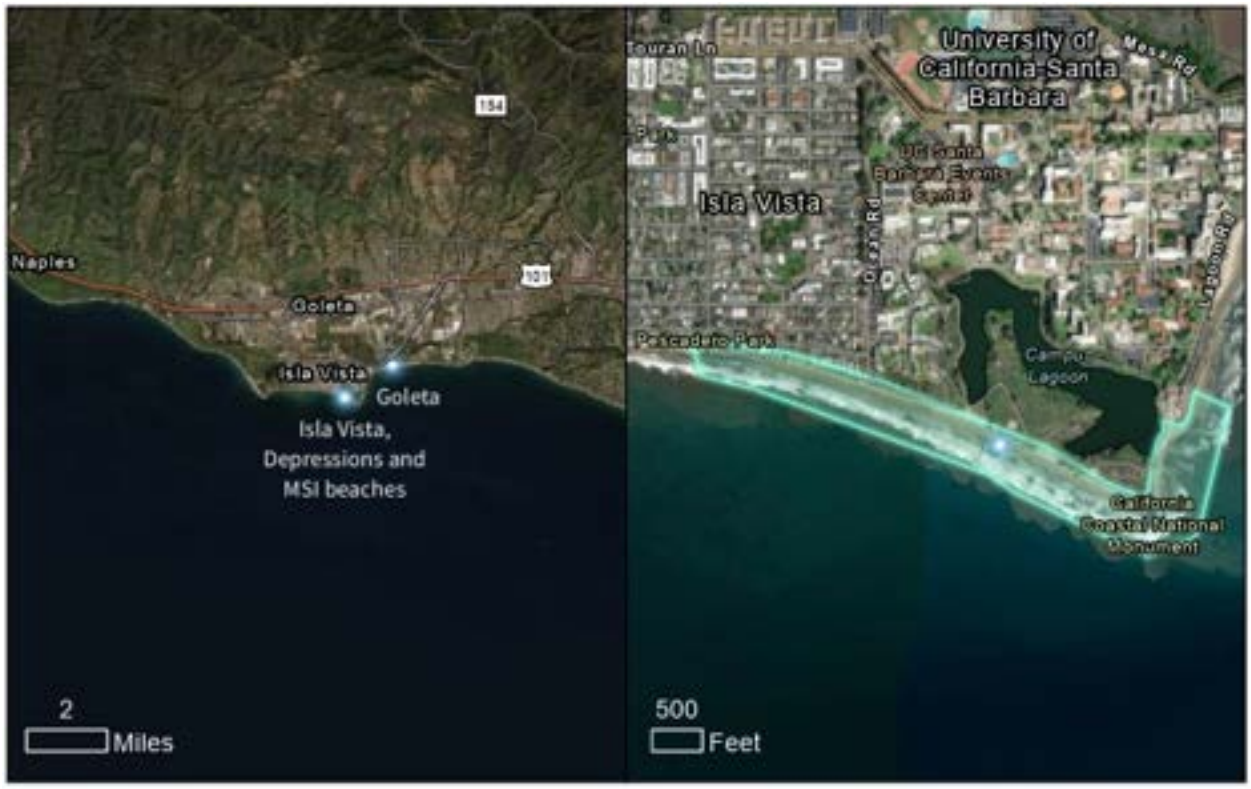
Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Isla Vista Beach & Campus Beach	25%	47%	2%	0%	18%	0%	8%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Isla Vista Beach & Campus Beach	96%	4%

Isla Vista, Depressions & MSI Beaches



General Statistics (2022)

Total Visitation: 315.9k

Average Visitation per Day: 900

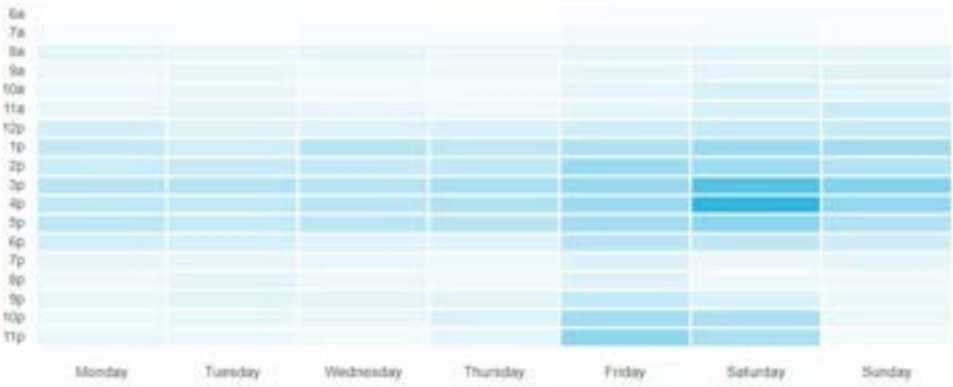
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 4%

Average Length of Stay: 1.75 hours

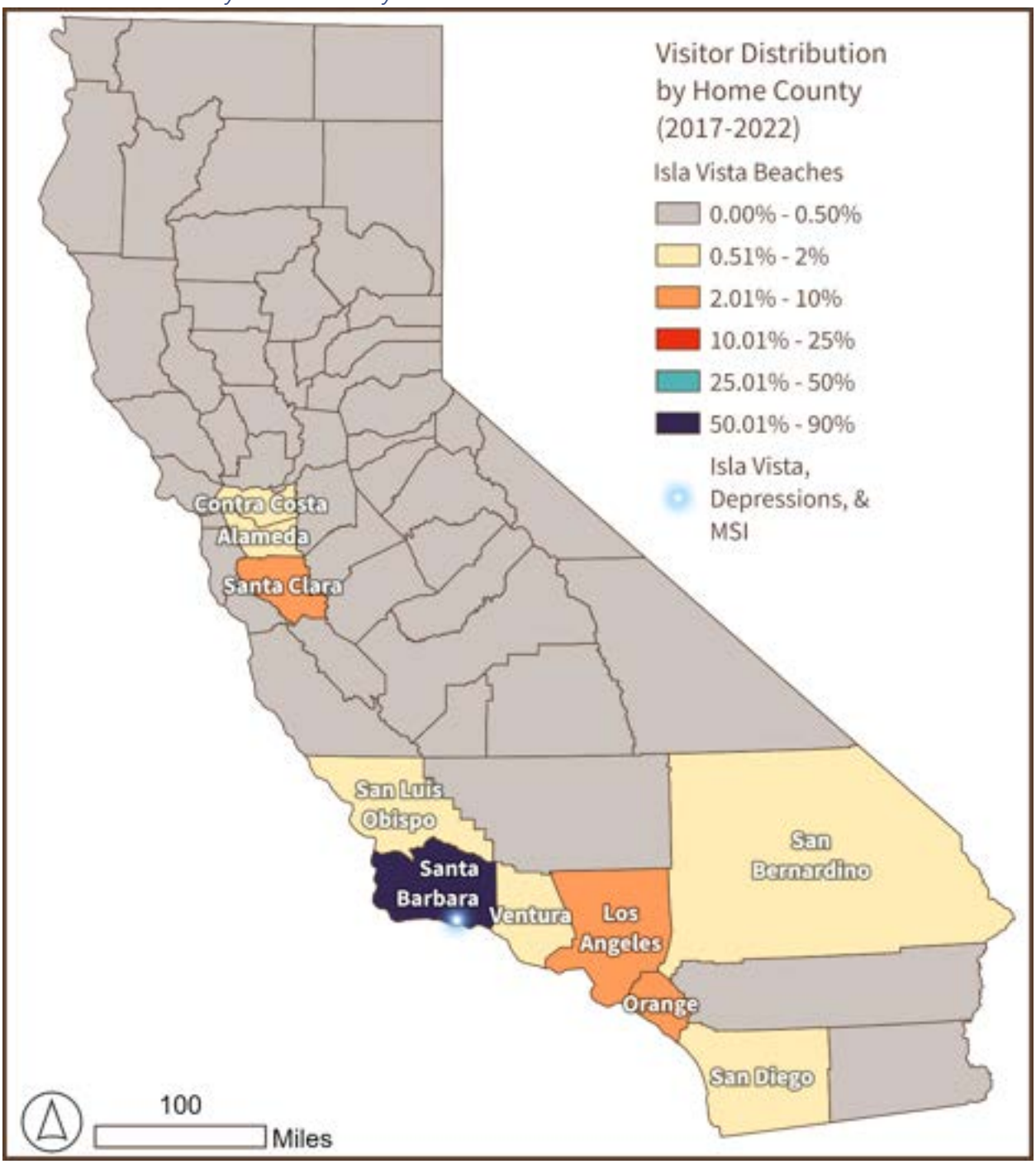
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

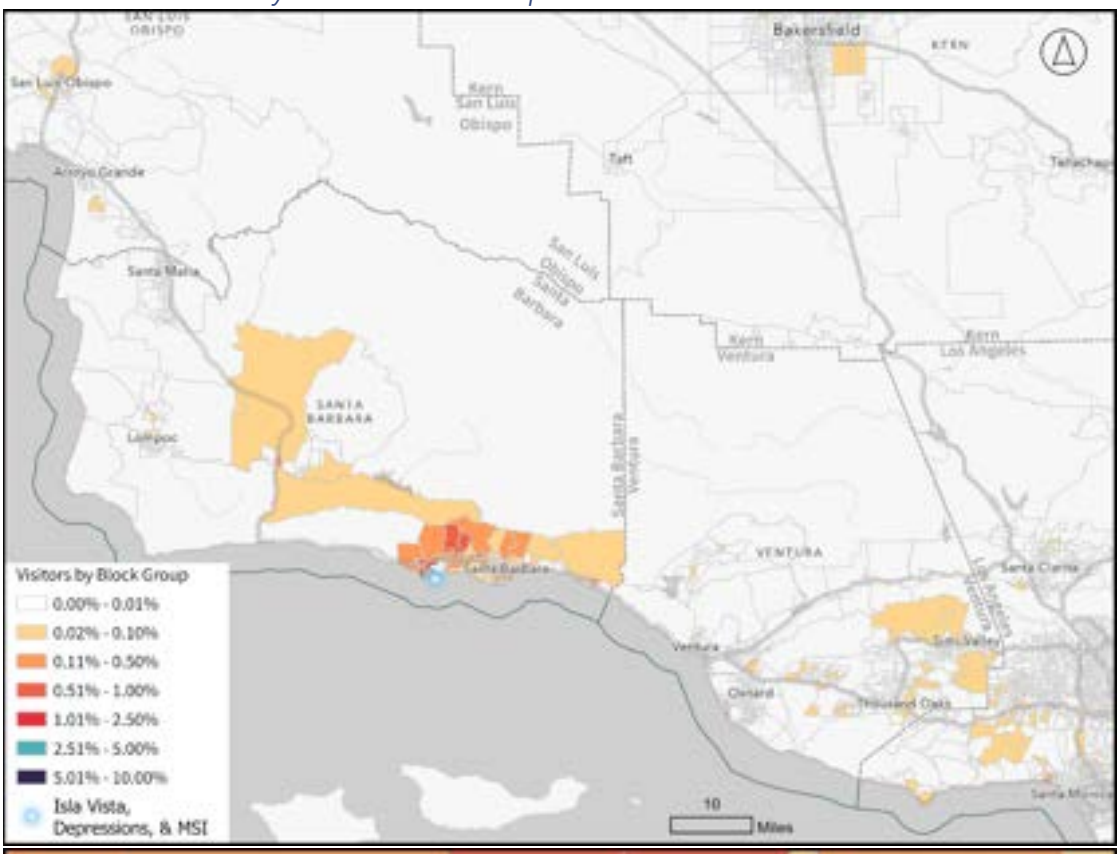
Heat Map of Hourly Visitation Isla Vista, Depressions, MSI:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



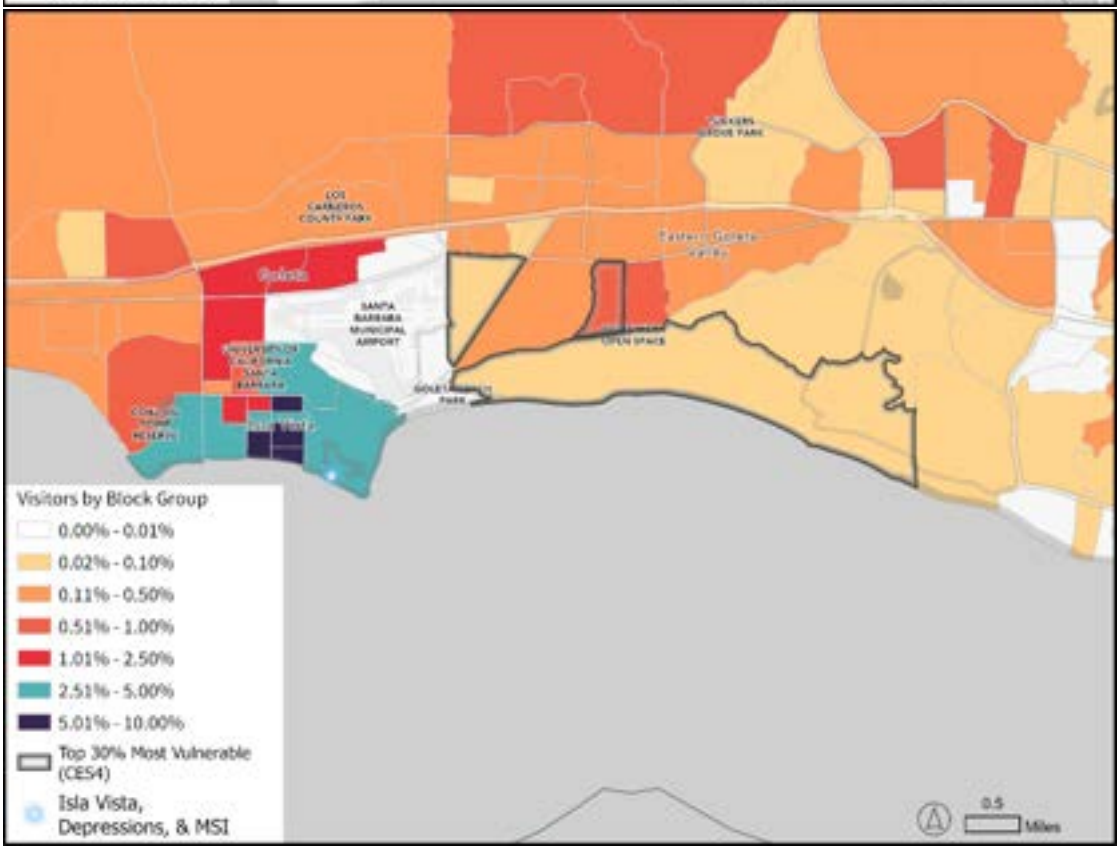


Chart of Visitation by Year

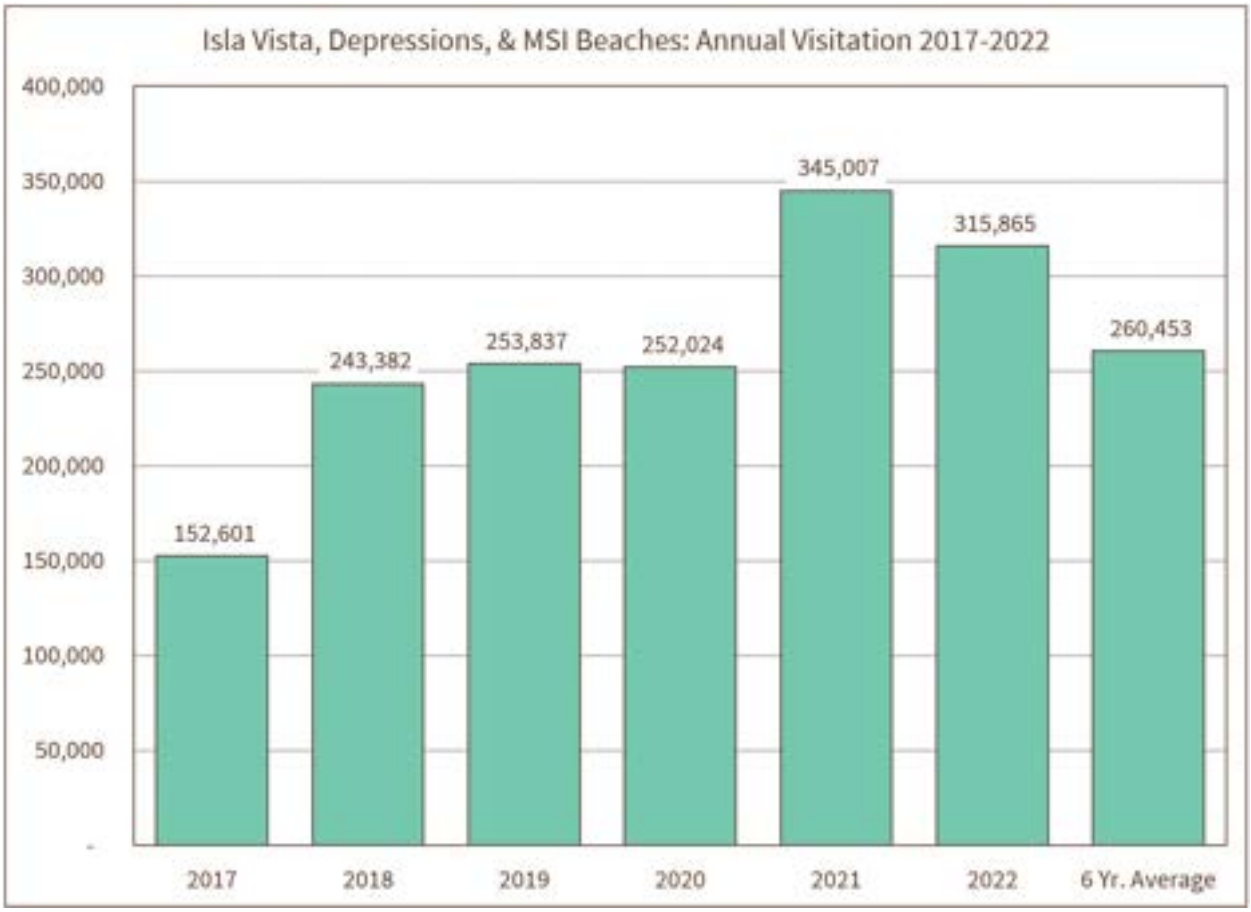
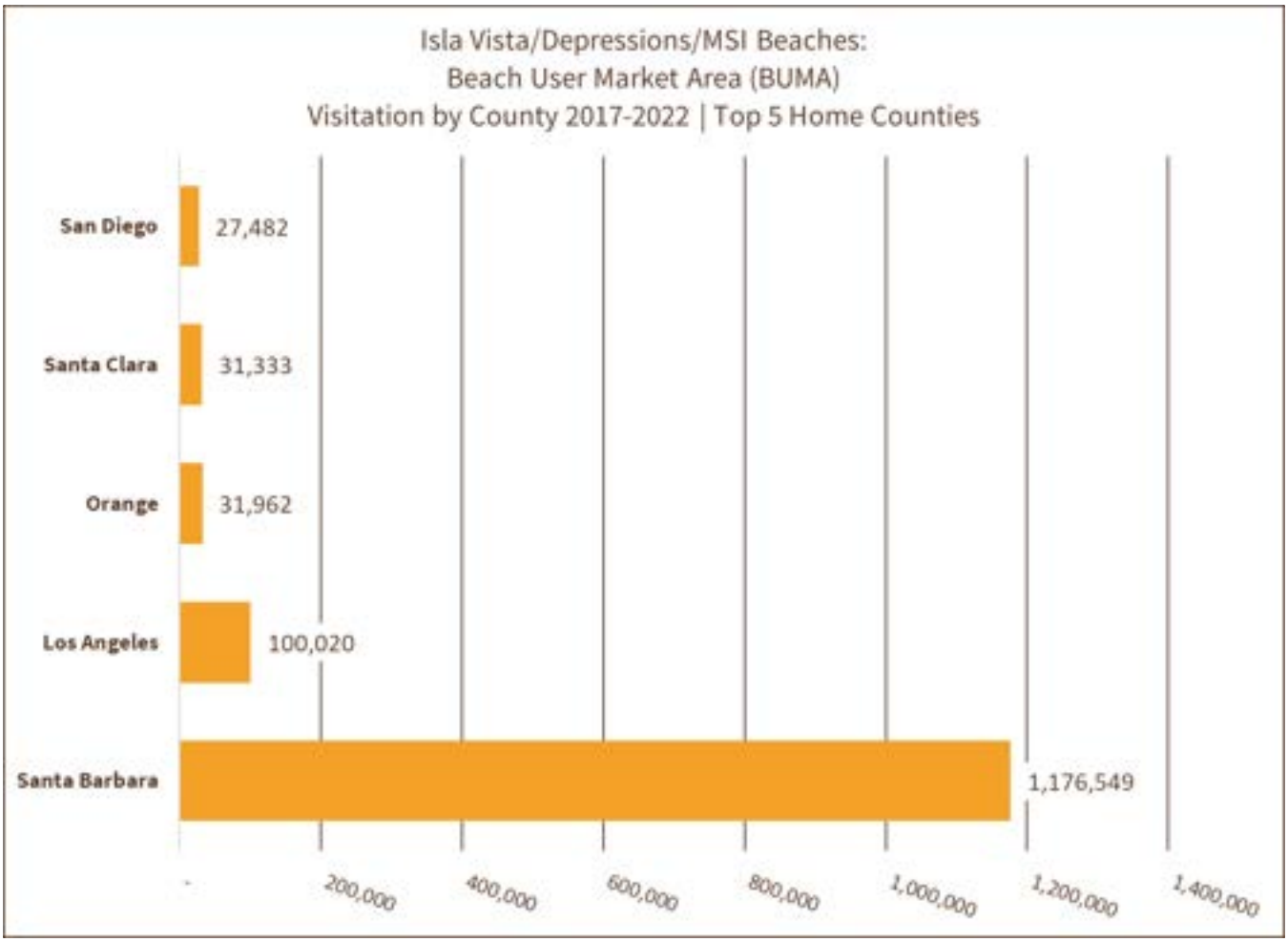
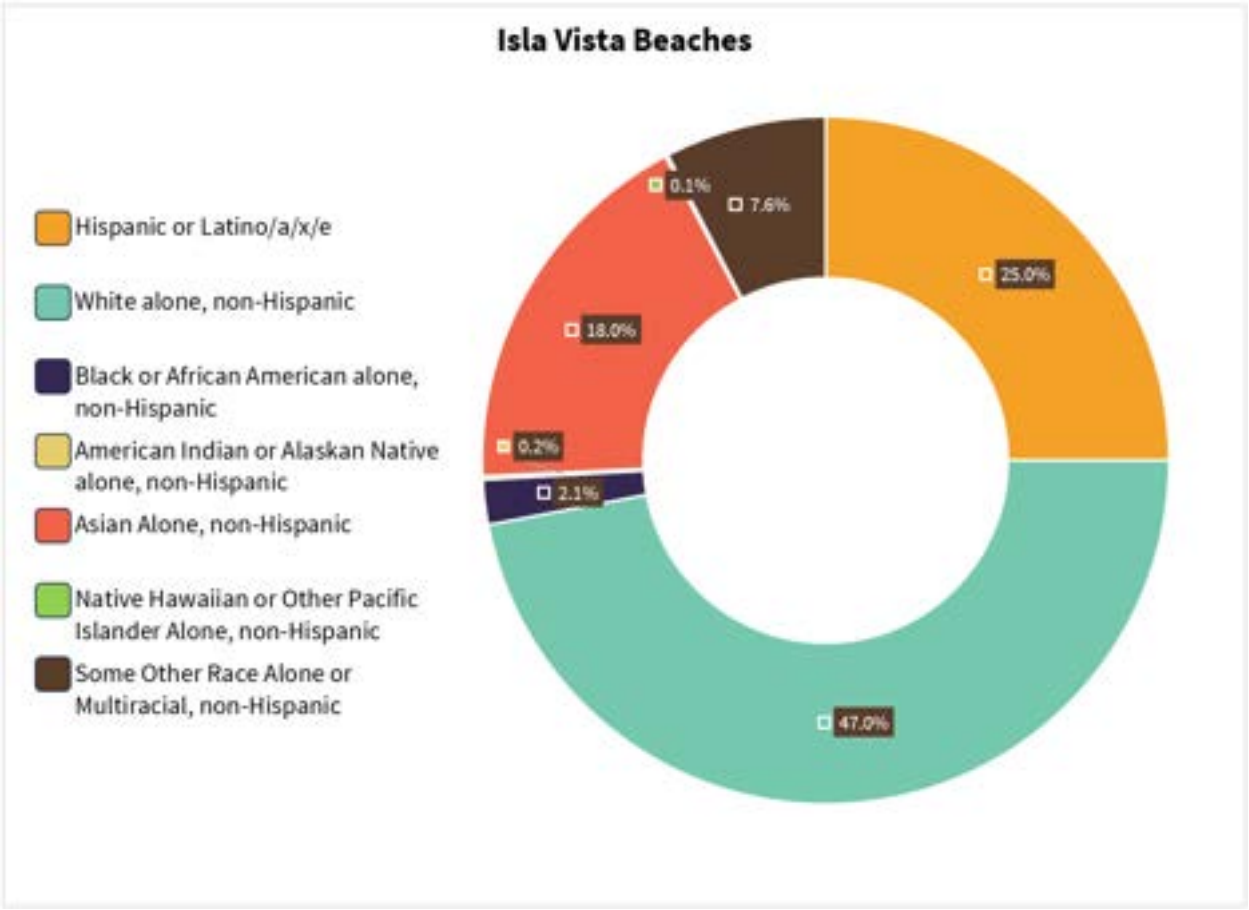


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Santa Barbara

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Leadbetter Beach	886,239	1,011,118	668,956	1,536,284	1,351,583	937,103
West/East Beach Santa Barbara	774,597	800,376	762,417	889,164	741,495	453,369

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Leadbetter Beach	429,666	545,934	514,141	497,173	580,728	636,683	726,632	621,153	554,797	476,151	421,198	387,027
West/East Beach Santa Barbara	264,808	321,469	319,681	330,842	432,461	476,640	592,260	486,466	401,645	297,288	262,372	235,486

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Leadbetter Beach	755,858	744,561	846,155	792,536	908,390	1,203,324	1,140,459
West/East Beach Santa Barbara	513,423	485,052	477,603	510,214	587,346	944,240	903,540

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Leadbetter Beach	31%	55%	2%	0%	7%	0%	5%
West/East Beach Santa Barbara	34%	49%	3%	3%	10%	1%	1%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Leadbetter Beach	95%	5%
West/East Beach Santa Barbara	90%	10%

Leadbetter Beach

General Statistics (2022)

Total Visitation: 937.1k

Average Visitation per Day: 2.6k

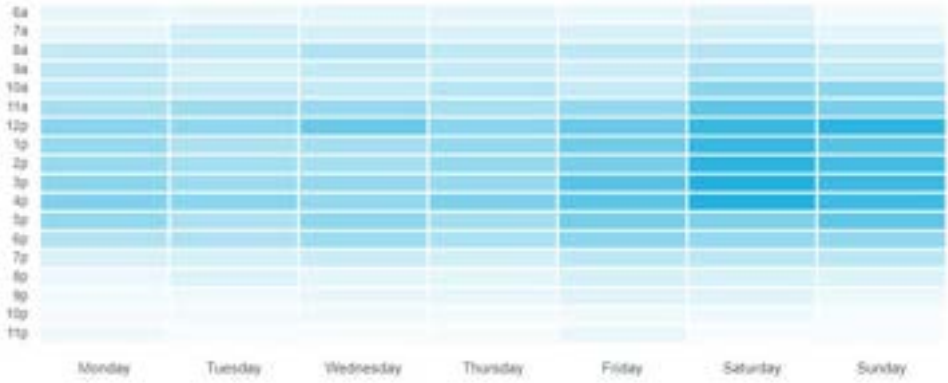
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 5%

Average Length of Stay: 1.5 hours

Busiest Day of the Week: Saturday

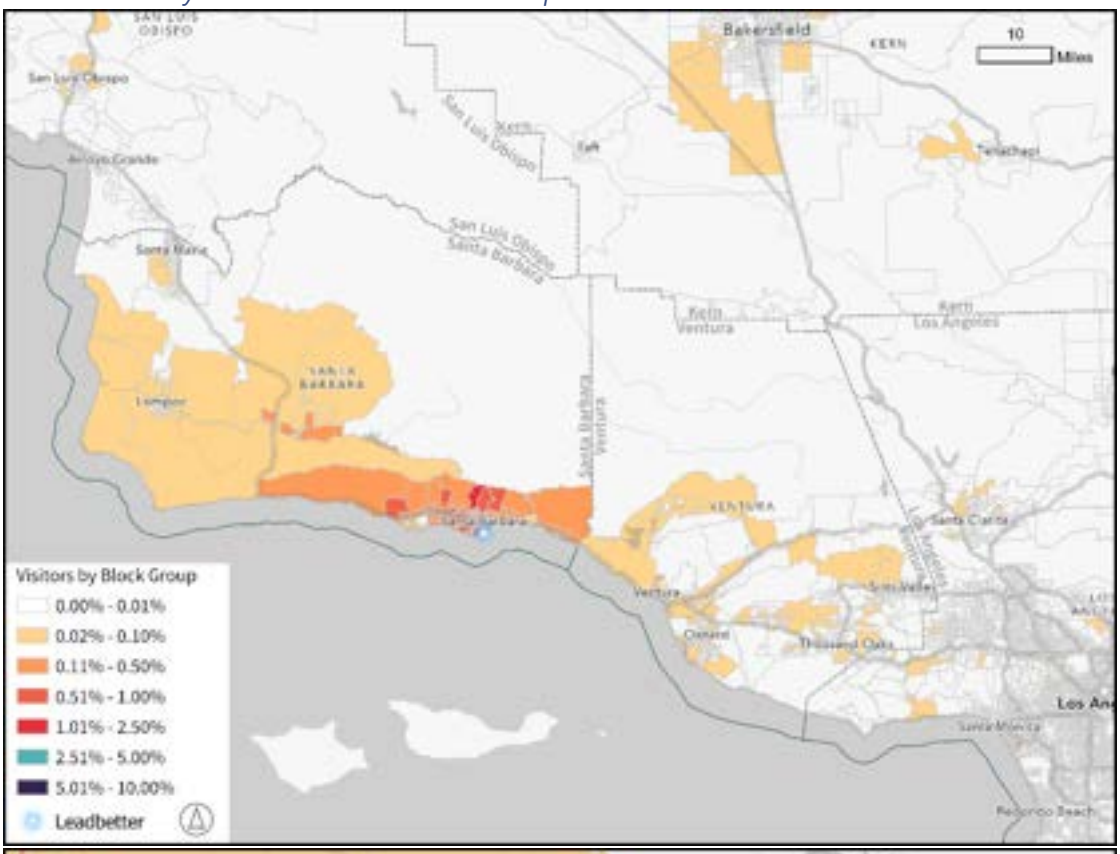
Busiest Hour: 12:00 pm

Heat Map of Hourly Visitation Leadbetter Beach:



Visitor Distribution by Home County

Distribution by Home Census Block Group



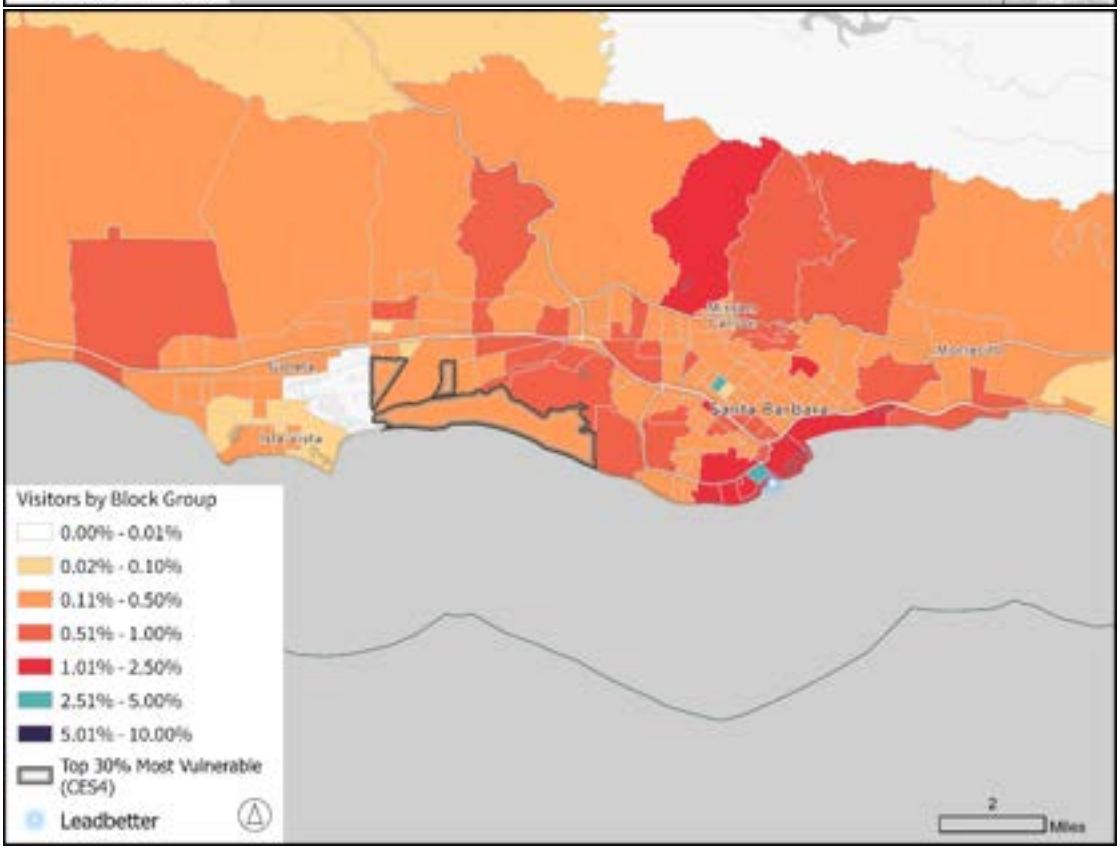
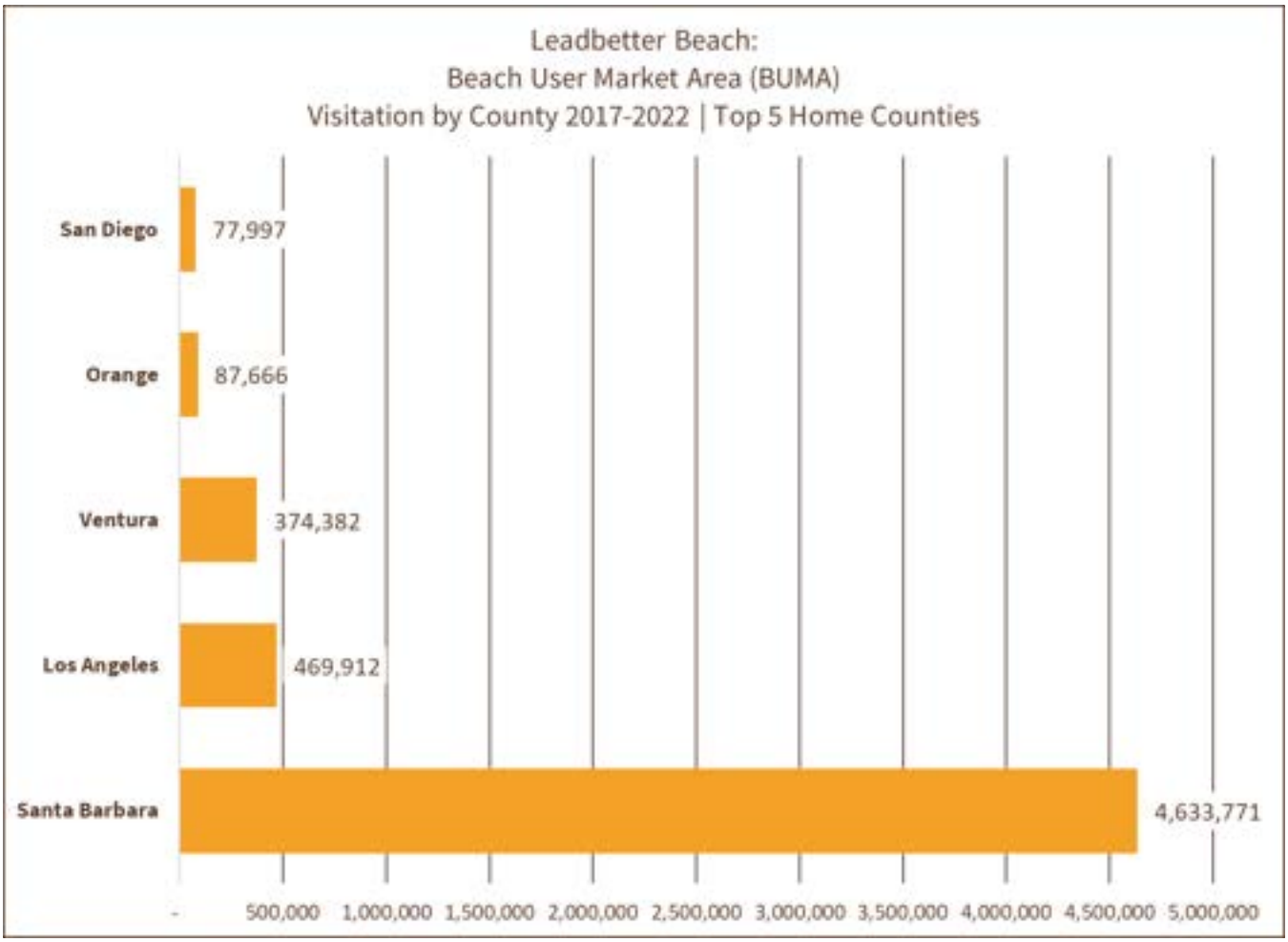
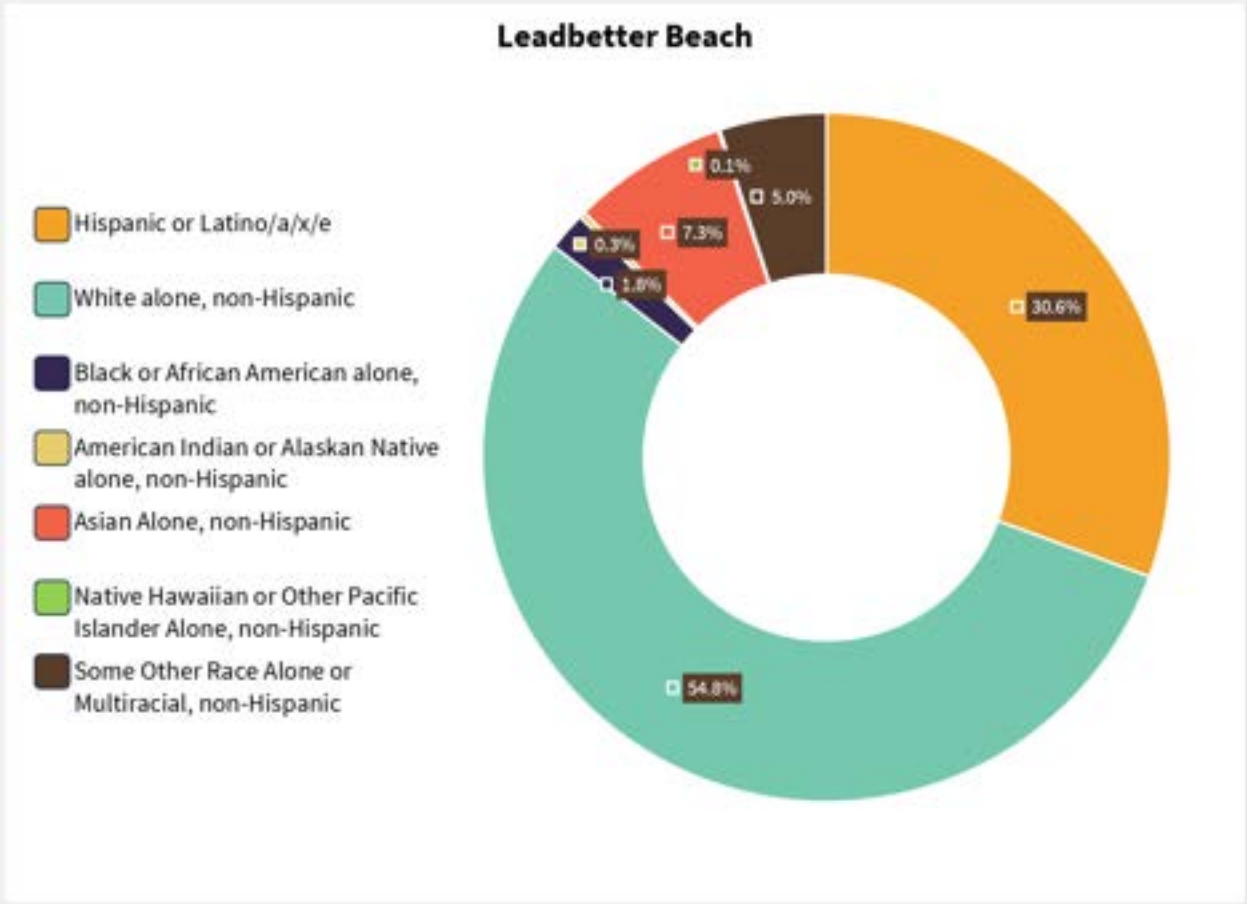


Chart of Visitation by Year

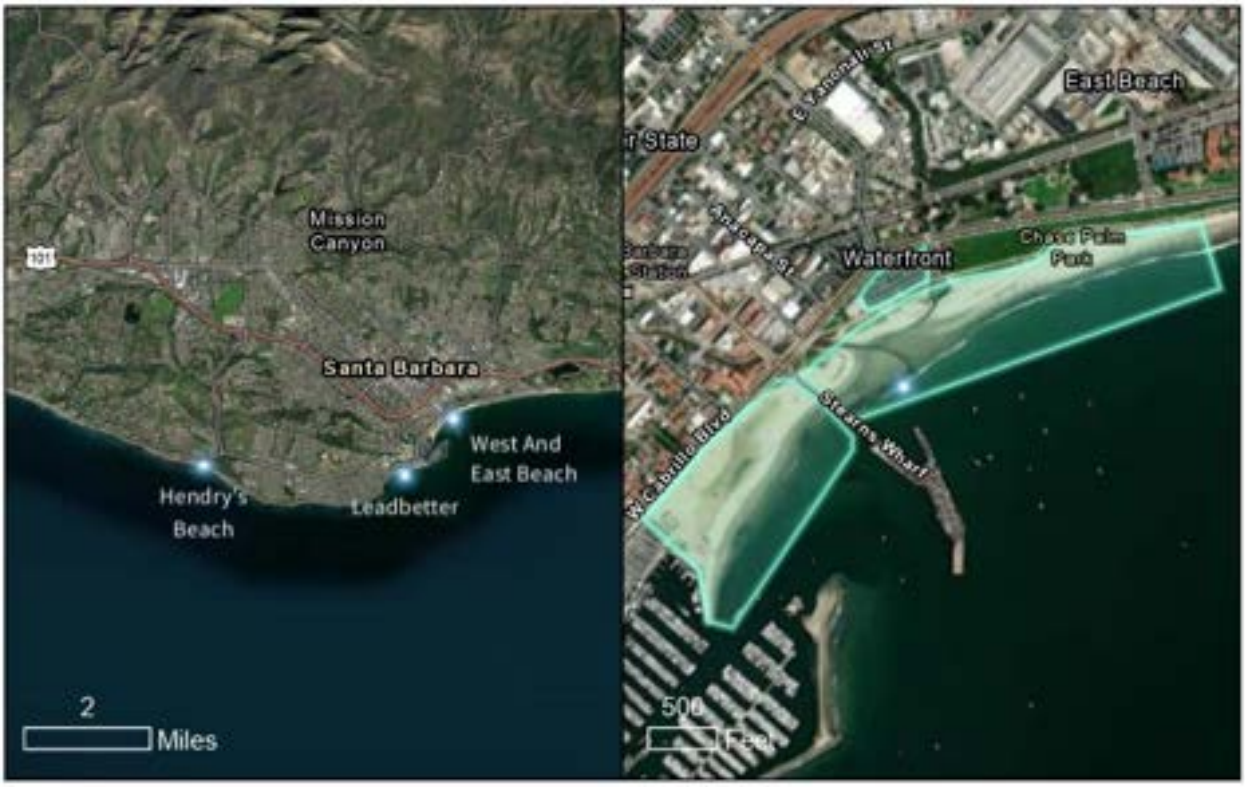
Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



West Beach and East Beach, Santa Barbara



General Statistics (2022)

Total Visitation: 452.4k

Average Visitation per Day: 1.2k

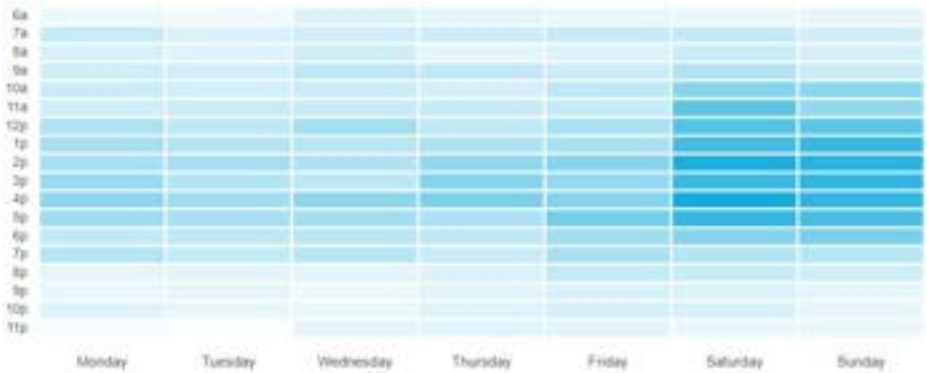
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 10%

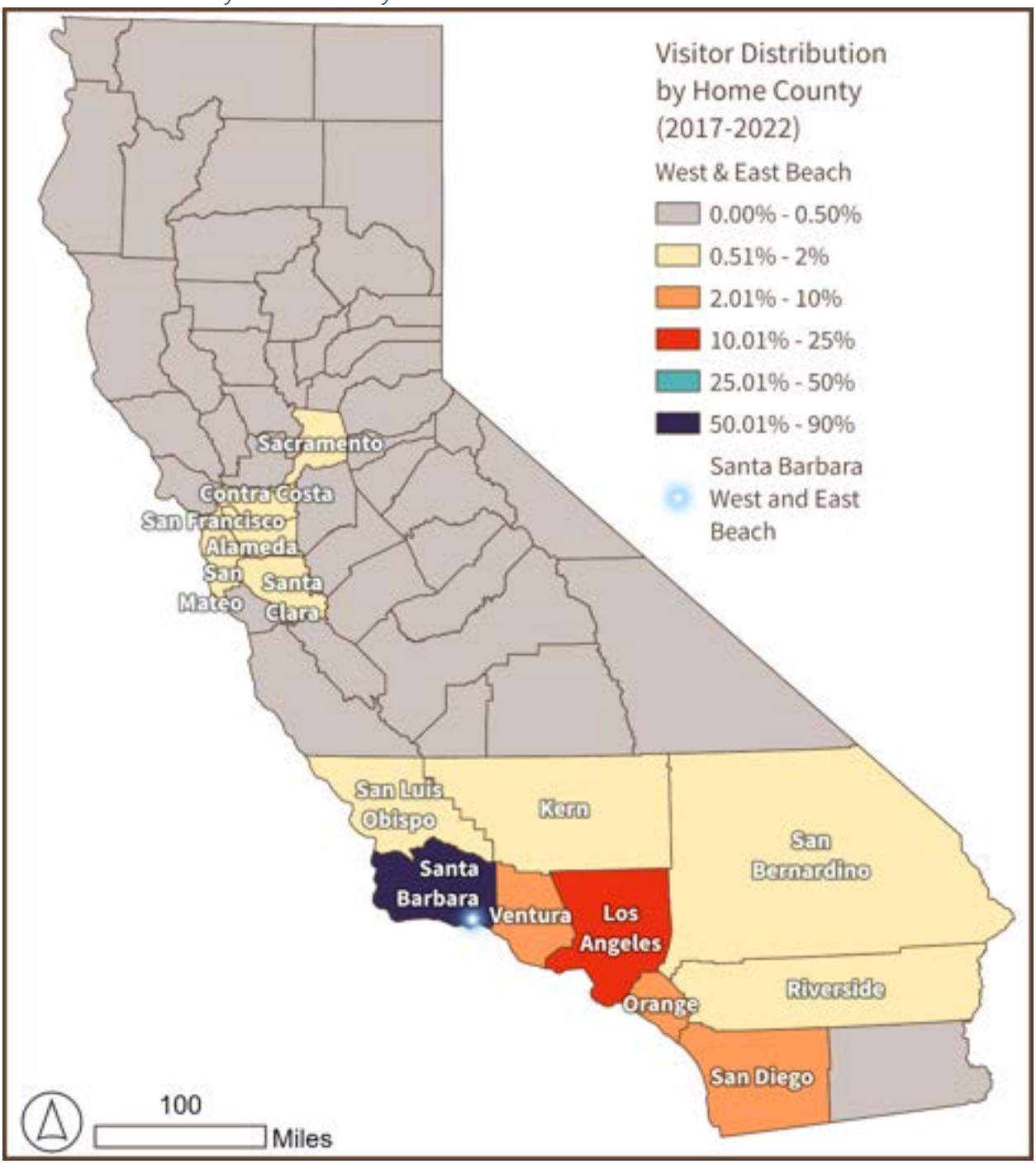
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

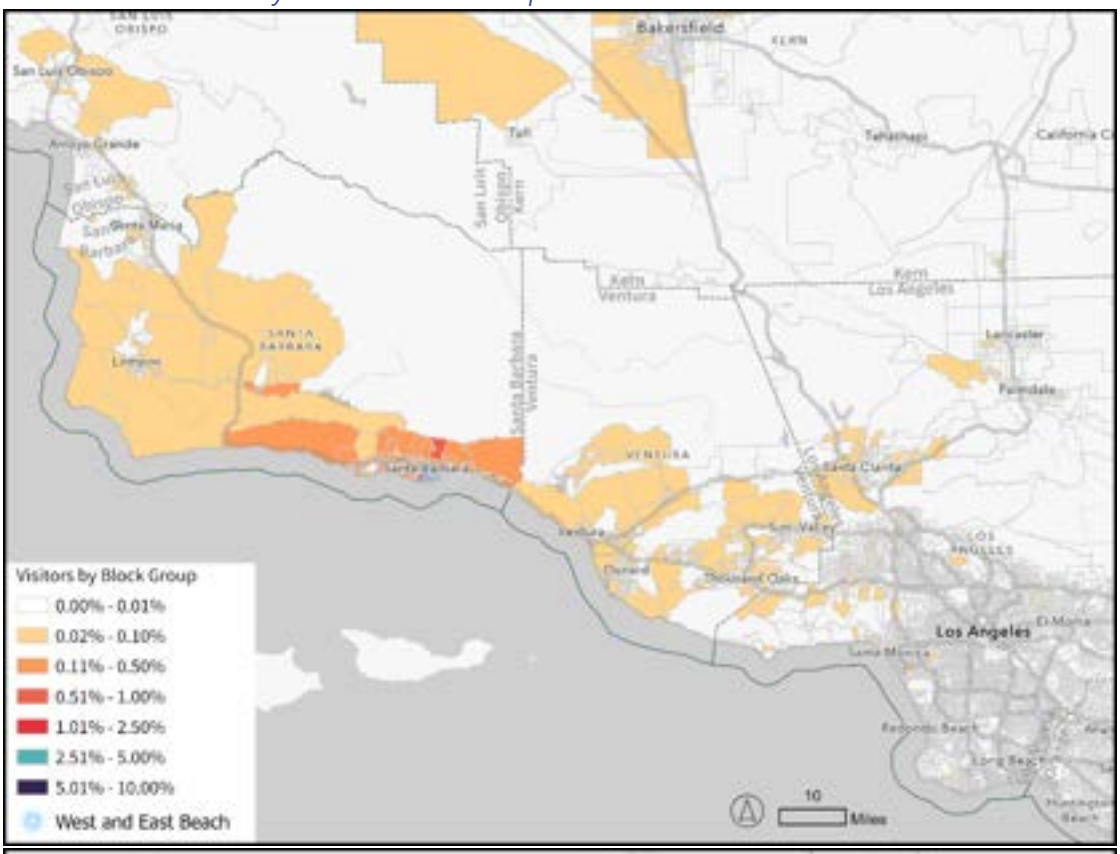
Heat Map of Hourly Visitation West and East Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



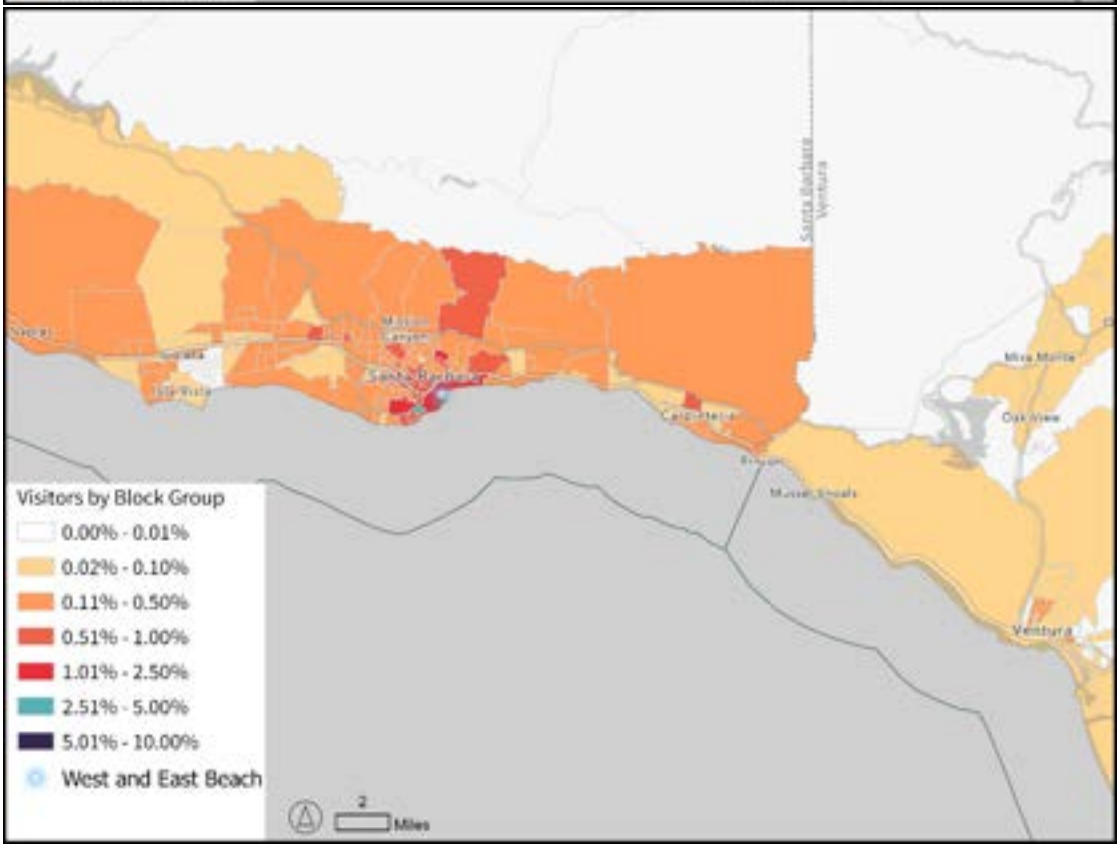


Chart of Visitation by Year

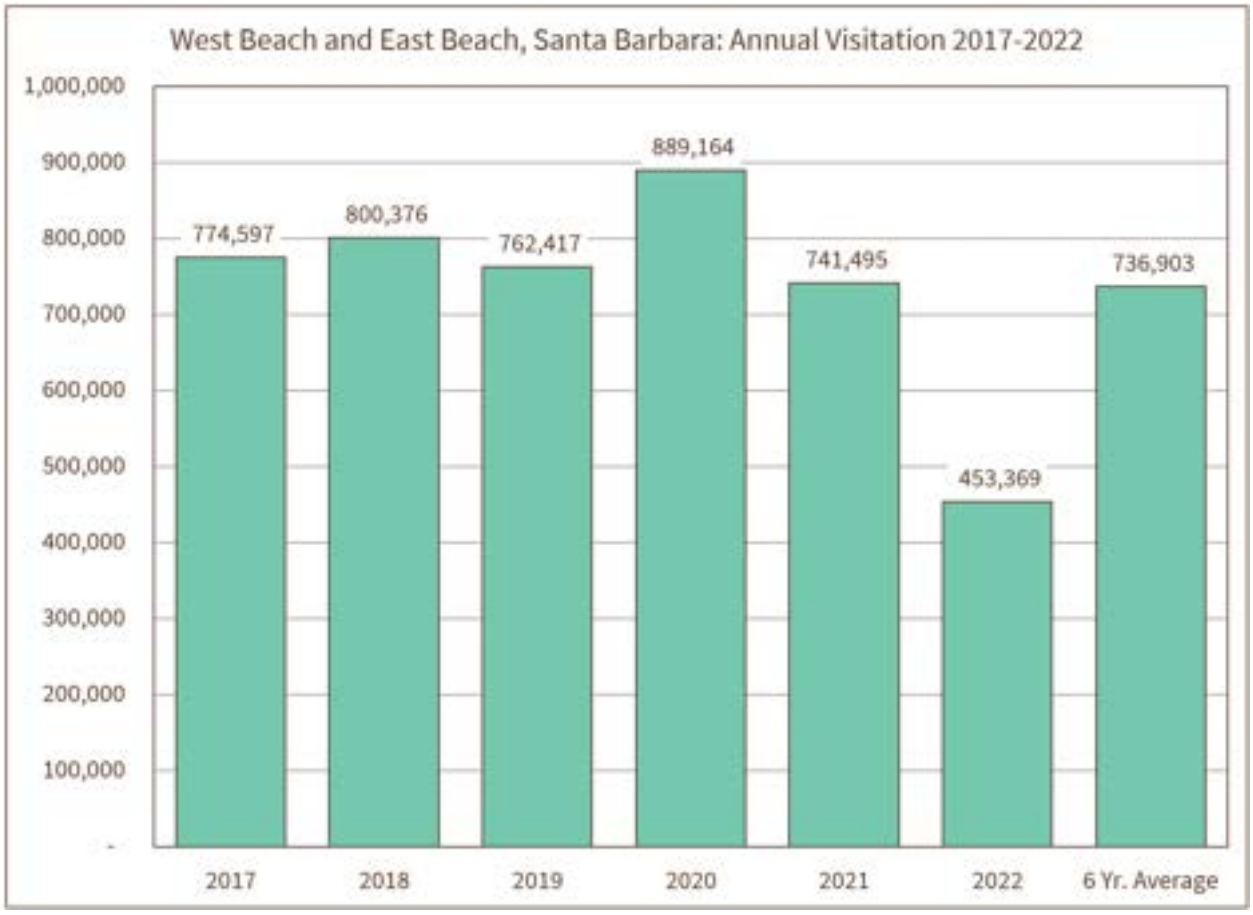
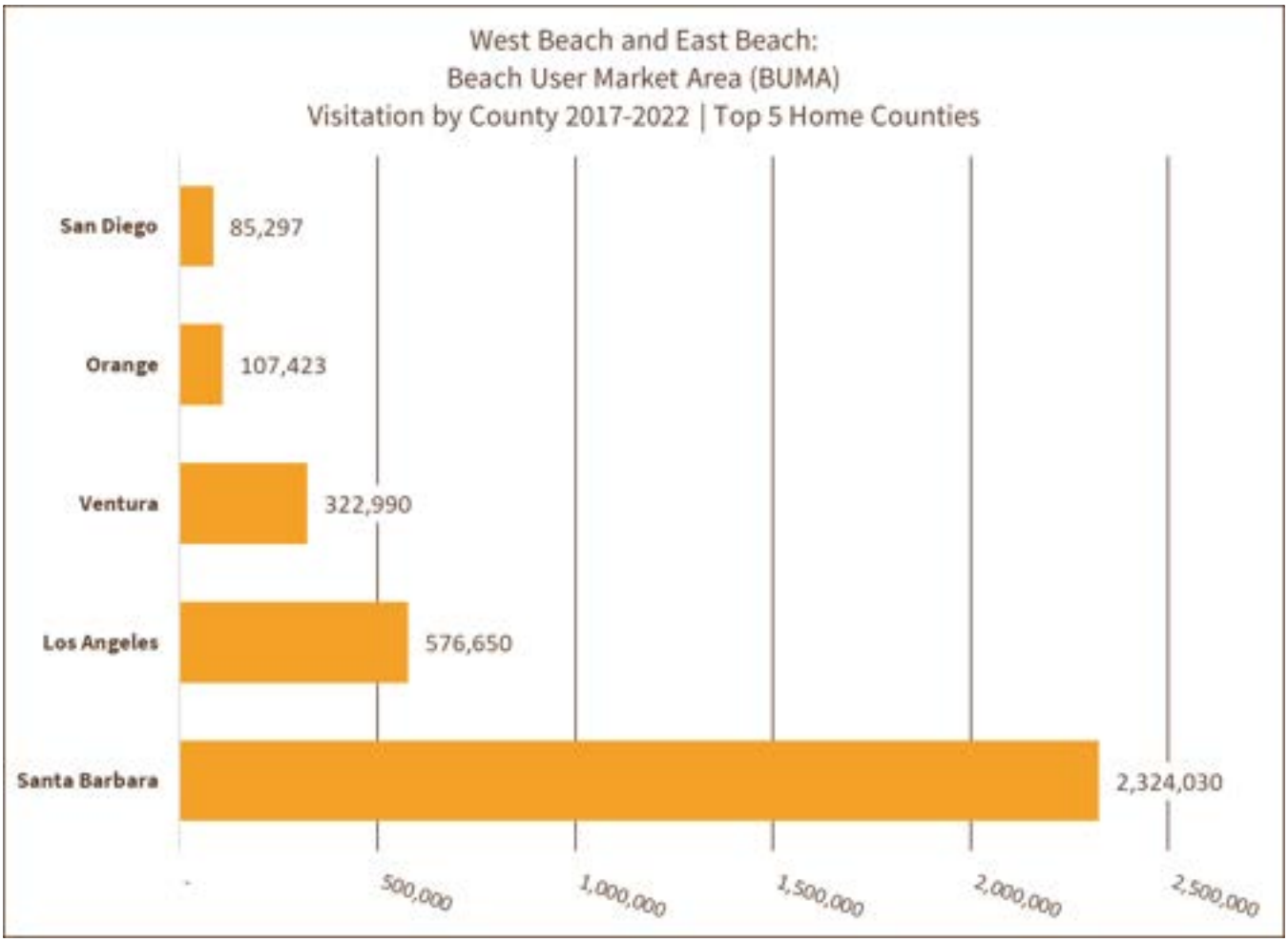
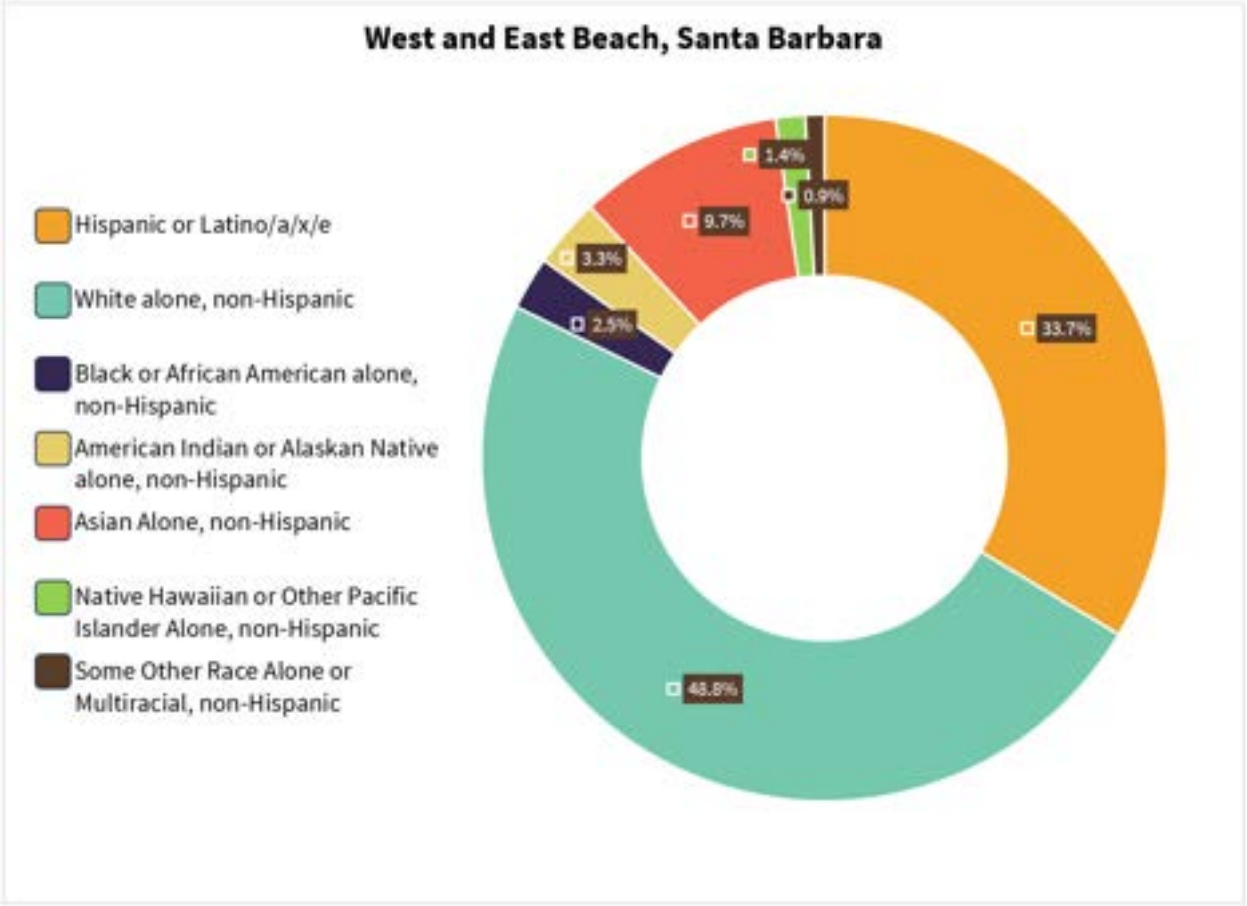


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Santa Barbara County Parks and Recreation Department

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Goleta Beach County Park	330,447	416,383	445,860	693,387	582,113	471,967
Hendrys Beach Segment (Arroyo Burro Beach)	295,023	441,587	415,252	619,103	510,118	415,046
Jalama Beach County Park	27,063	67,538	75,358	62,161	81,898	46,245
Rincon Beach County Park	133,336	229,472	119,089	284,394	251,051	214,499

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Goleta Beach County Park	220,534	223,170	206,389	225,861	281,012	311,764	339,602	298,910	250,174	222,971	188,812	170,958
Hendrys Beach Segment (Arroyo Burro Beach)	174,773	207,847	203,637	215,599	243,667	292,982	286,303	269,274	228,031	197,869	190,319	185,828
Jalama Beach County Park	14,497	21,846	29,213	23,964	36,659	36,112	45,555	41,825	35,860	33,063	25,061	16,608
Rincon Beach County Park	98,228	92,308	97,470	101,874	140,684	122,350	125,376	120,330	91,027	78,812	80,025	83,357

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Goleta Beach County Park	375,341	383,740	353,548	365,594	425,640	516,630	519,664
Hendrys Beach Segment (Arroyo Burro Beach)	335,335	297,070	318,512	329,766	379,137	520,706	515,603
Jalama Beach County Park	46,696	41,411	44,506	43,495	53,204	65,854	65,097
Rincon Beach County Park	161,798	144,772	153,370	150,648	172,412	229,592	219,249

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Goleta Beach County Park	34%	48%	5%	2%	10%	0%	1%
Hendrys Beach Segment (Arroyo Burro Beach)	30%	54%	2%	0%	9%	0%	5%
Jalama Beach County Park	33%	48%	3%	0%	9%	0%	5%
Rincon Beach County Park	34%	53%	2%	0%	7%	0%	4%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Goleta Beach County Park	91%	9%
Hendrys Beach Segment (Arroyo Burro Beach)	93%	7%
Jalama Beach County Park	88%	12%
Rincon Beach County Park	93%	7%

Goleta Beach County Park

General Statistics (2022)

Total Visitation: 472k

Average Visitation per Day: 1.3k

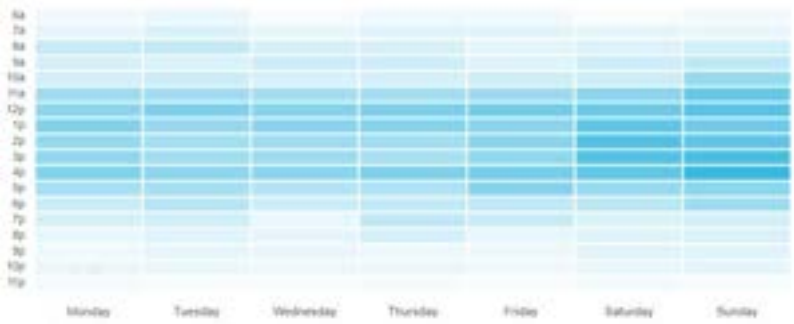
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 9%

Average Length of Stay: 1.25 hours

Busiest Day of the Week: Sunday

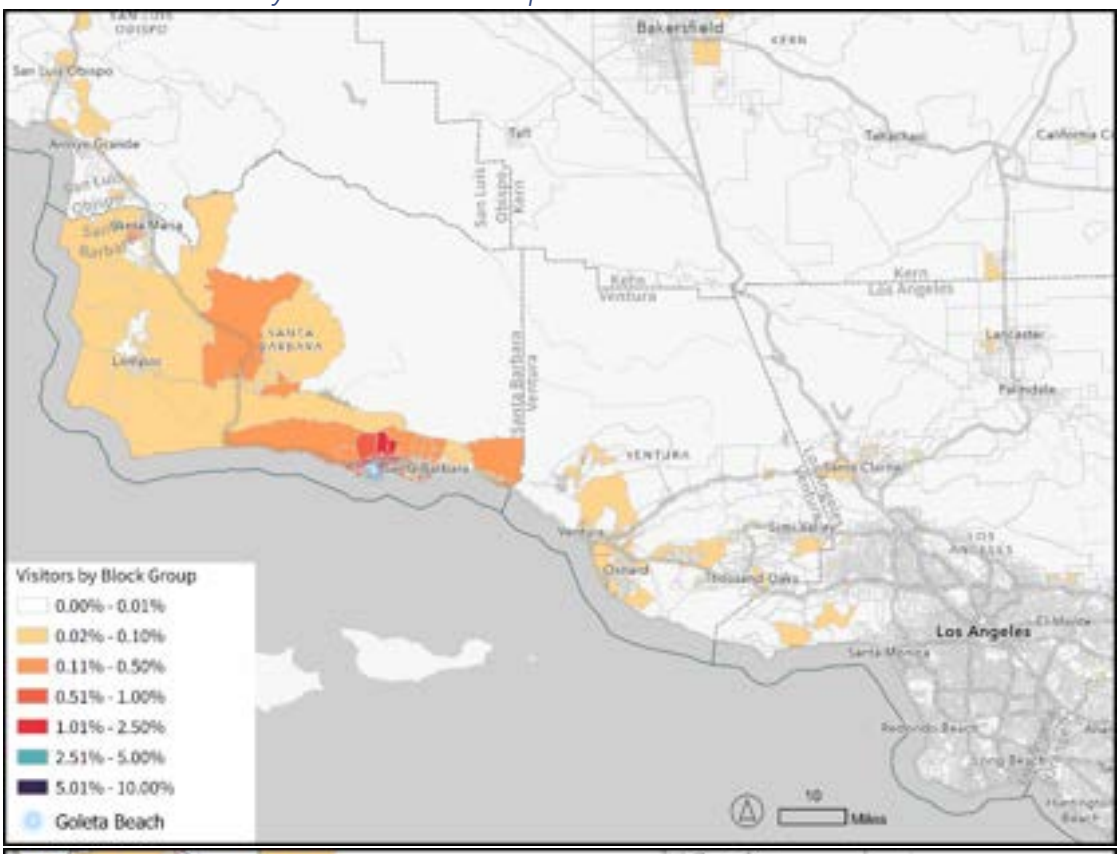
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Goleta Beach County Park:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group



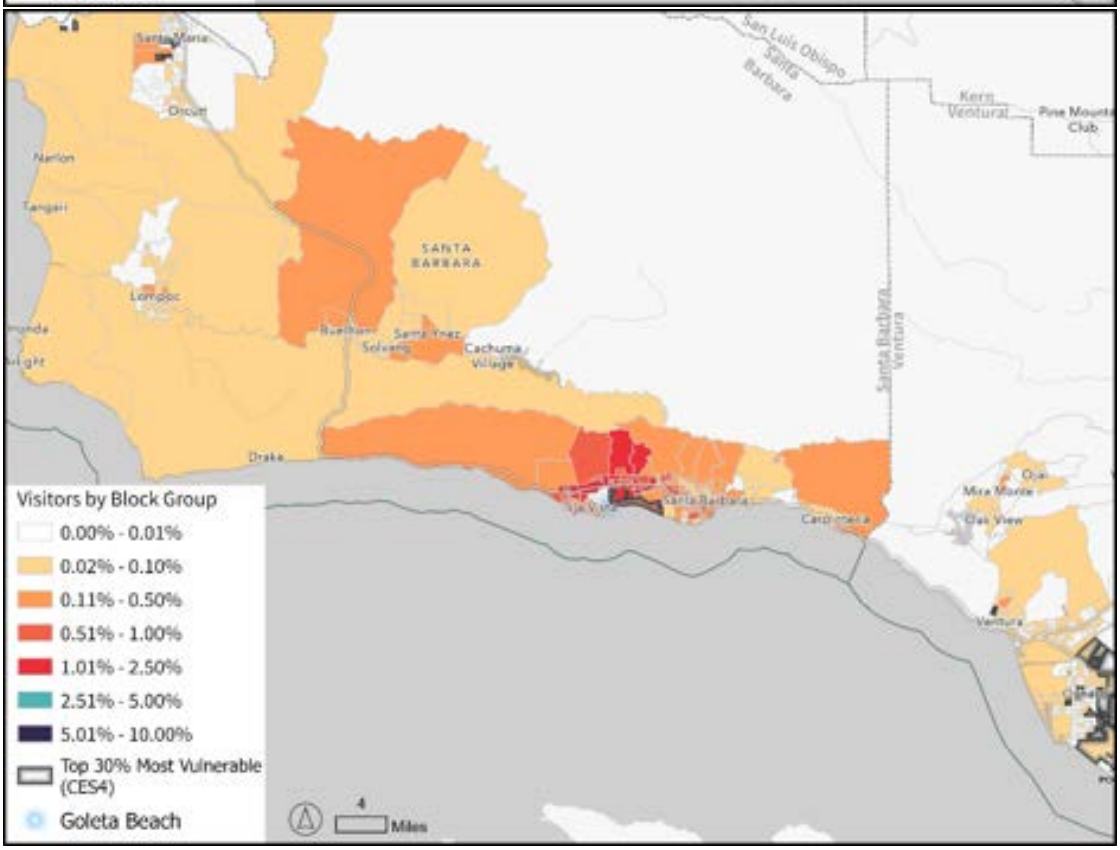


Chart of Visitation by Year

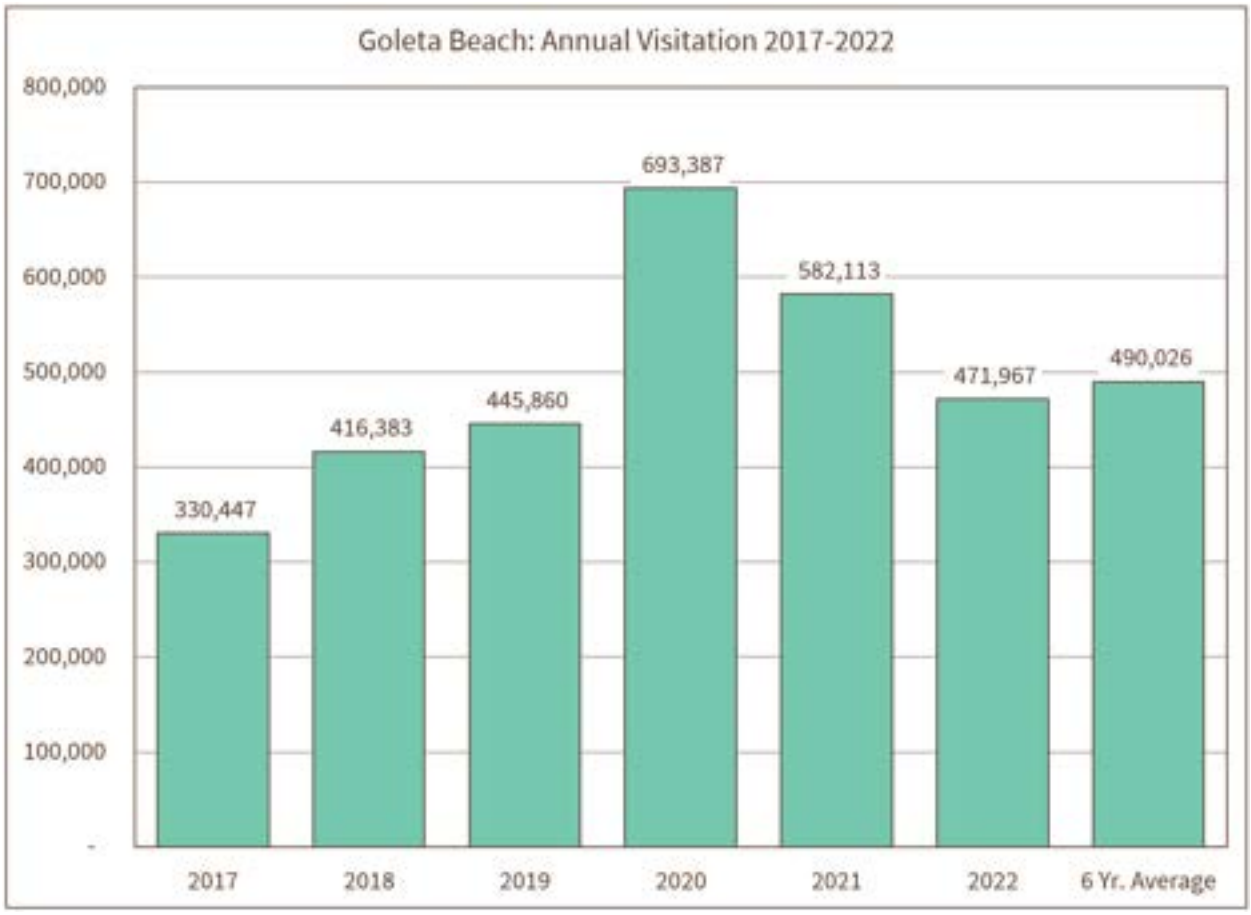
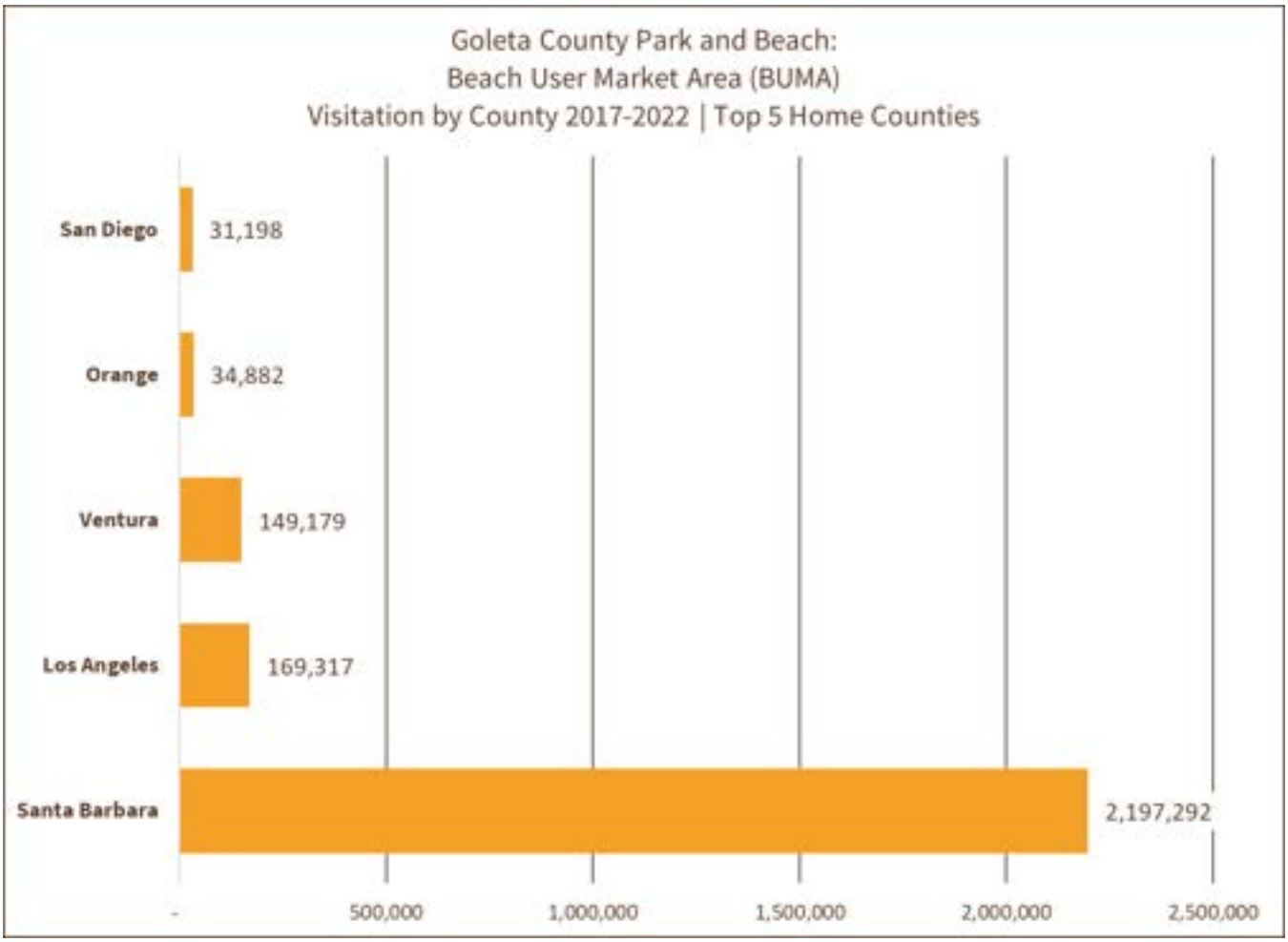
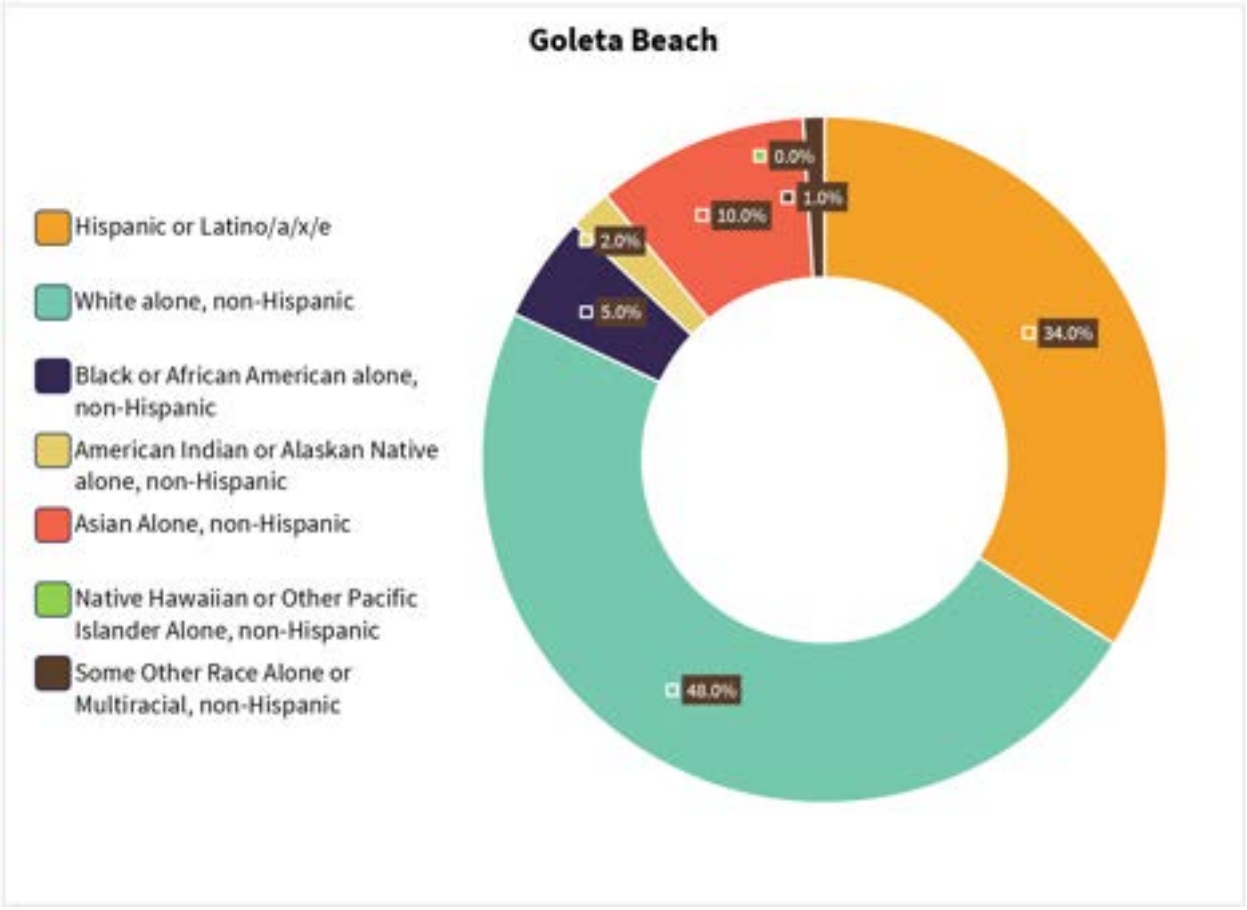


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Hendry's Beach

General Statistics (2022)

Total Visitation: 415k

Average Visitation per Day: 1.1k

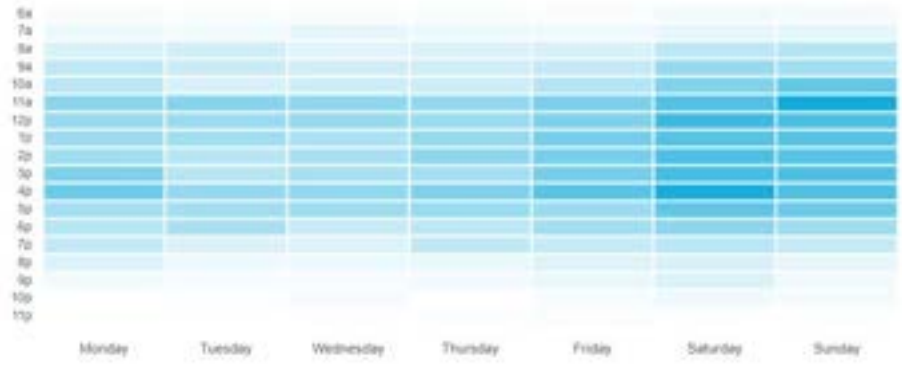
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 7%

Average Length of Stay: 1.5 hours

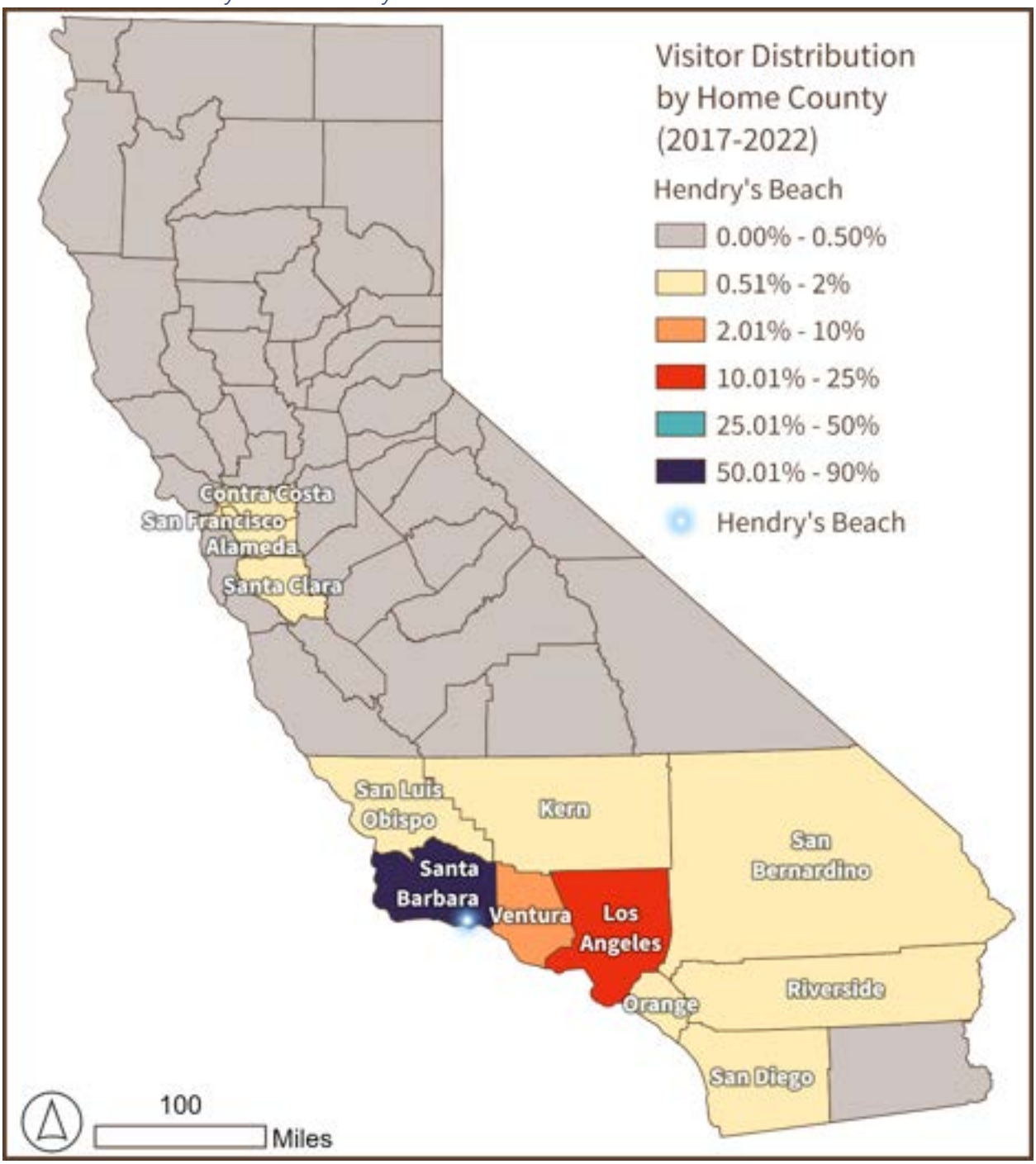
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

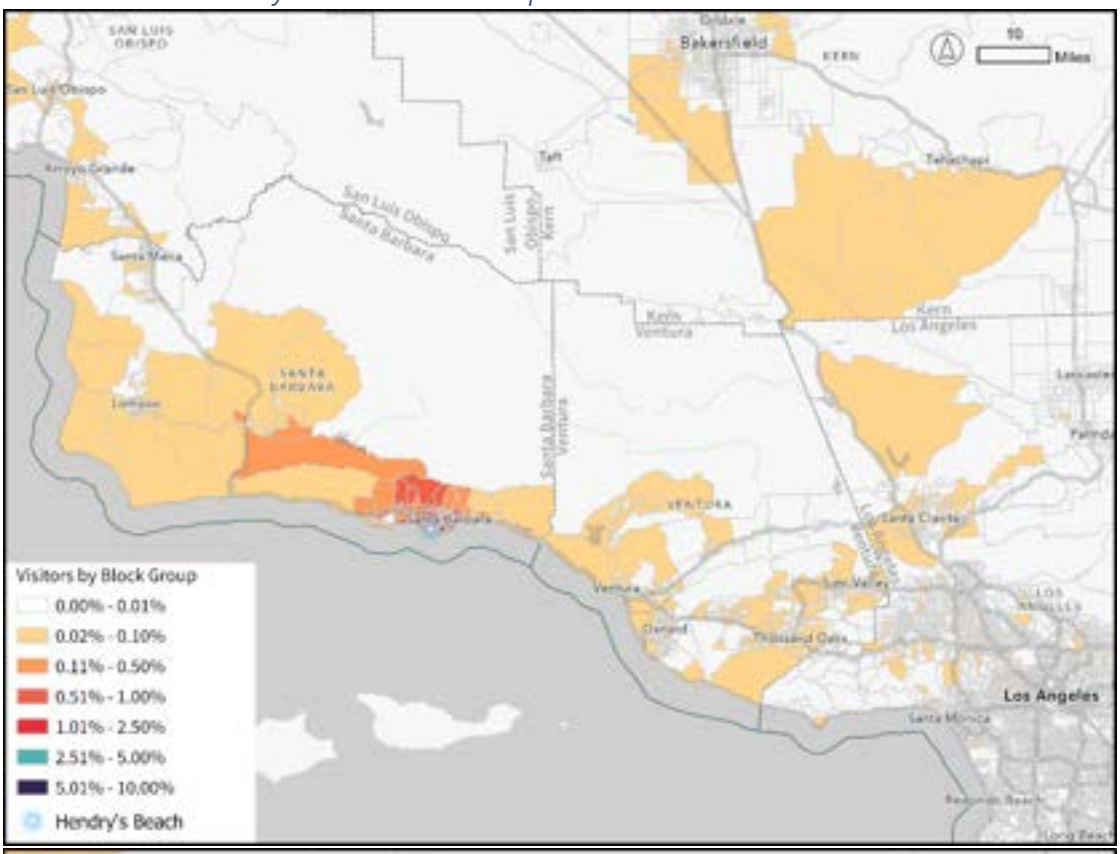
Heat Map of Hourly Visitation Hendry's Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



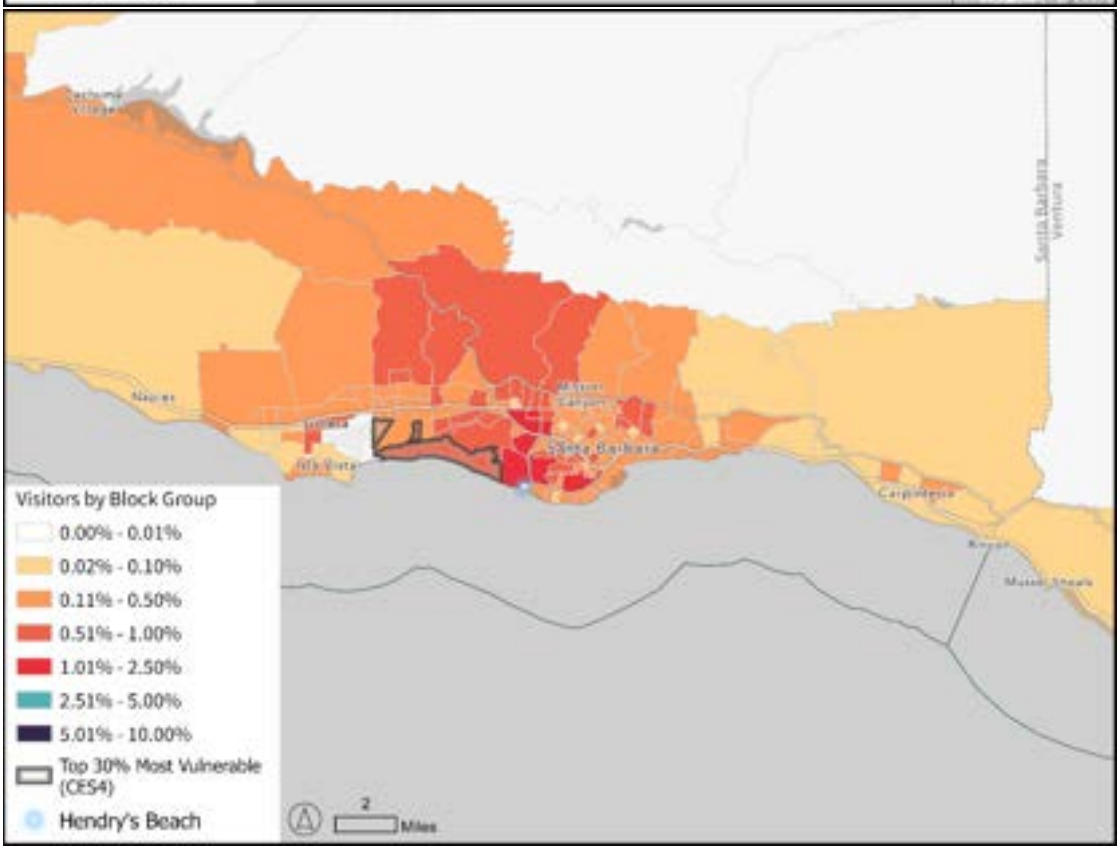
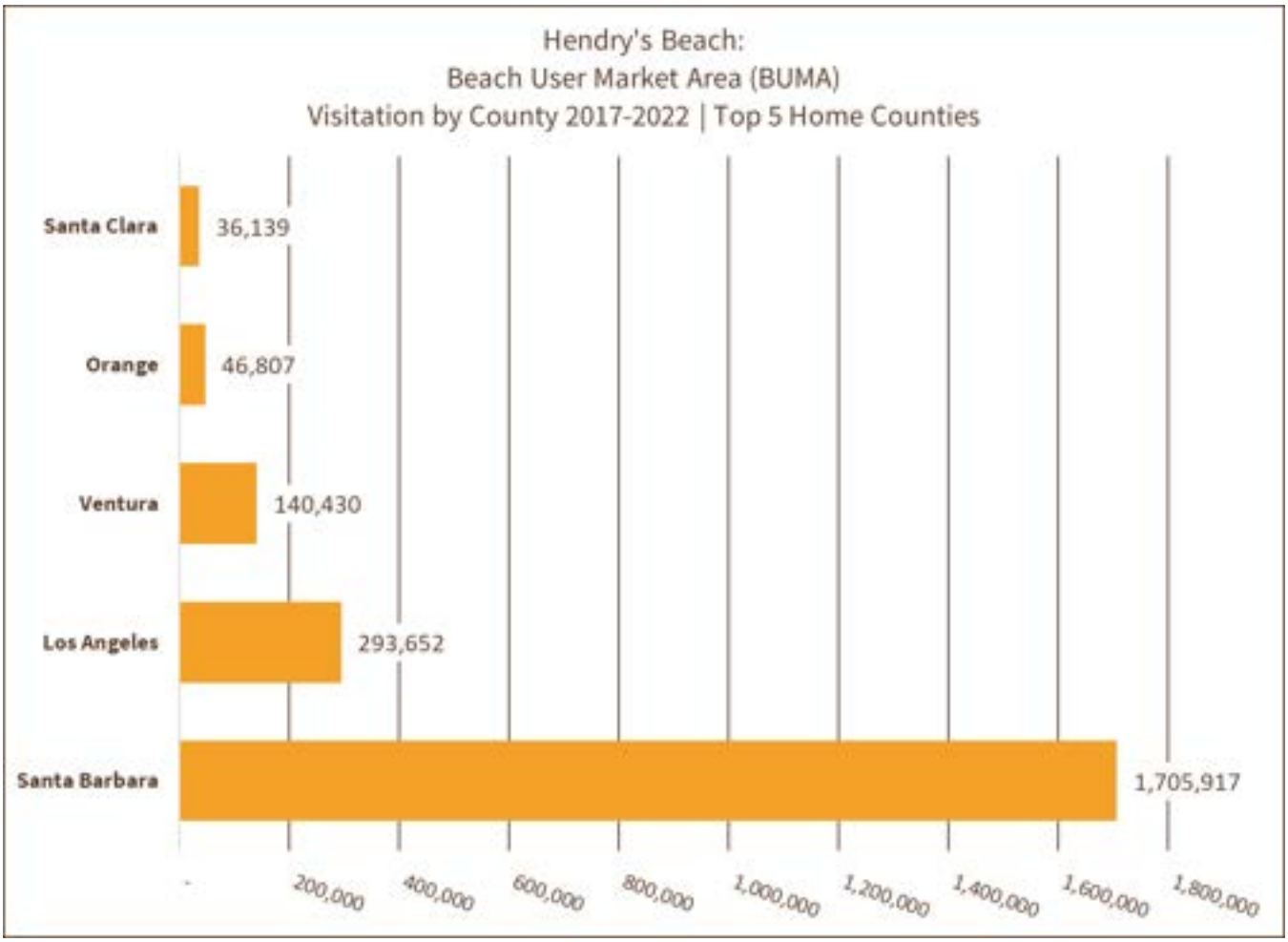
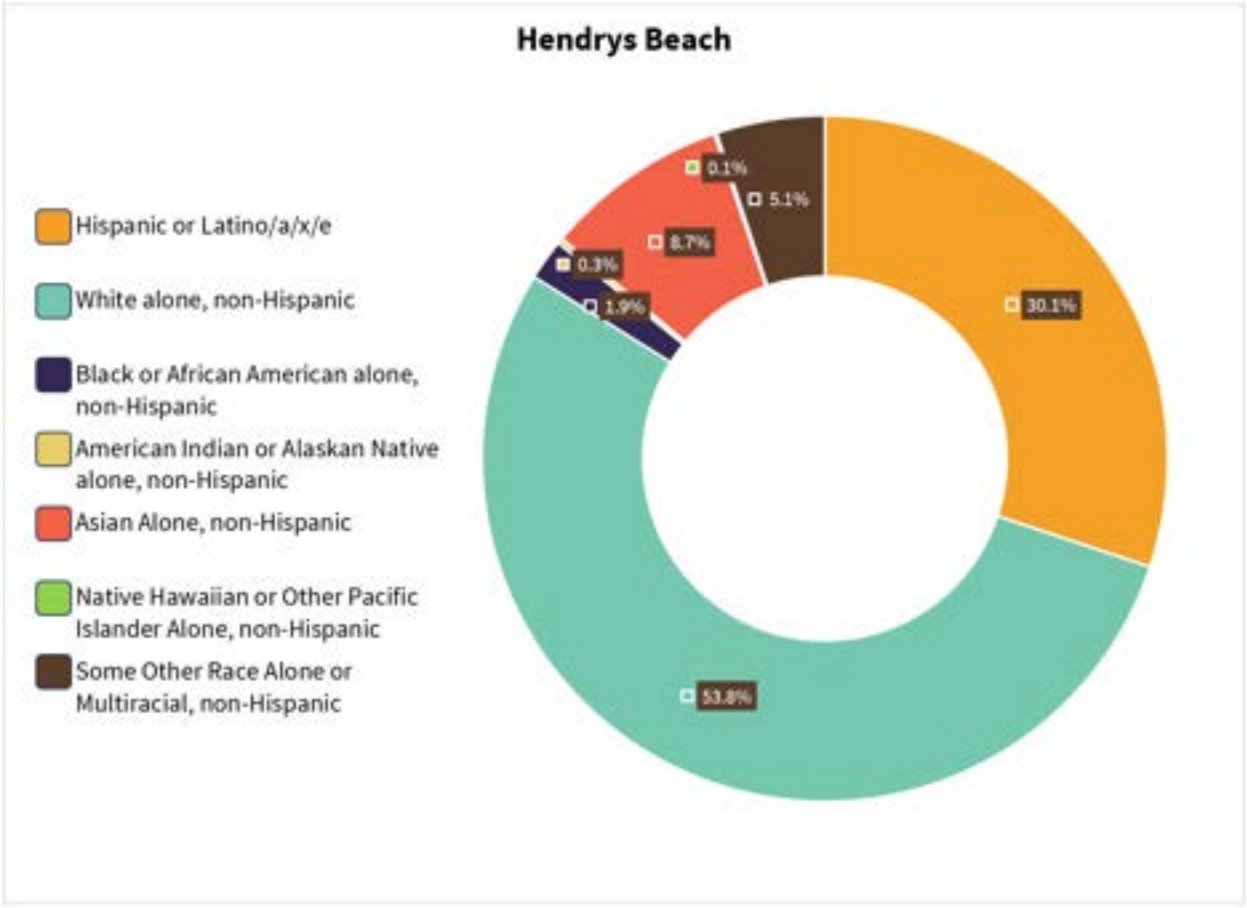


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Jalama County Park

General Statistics (2022)

Total Visitation: 46.2k

Average Visitation per Day: 150

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

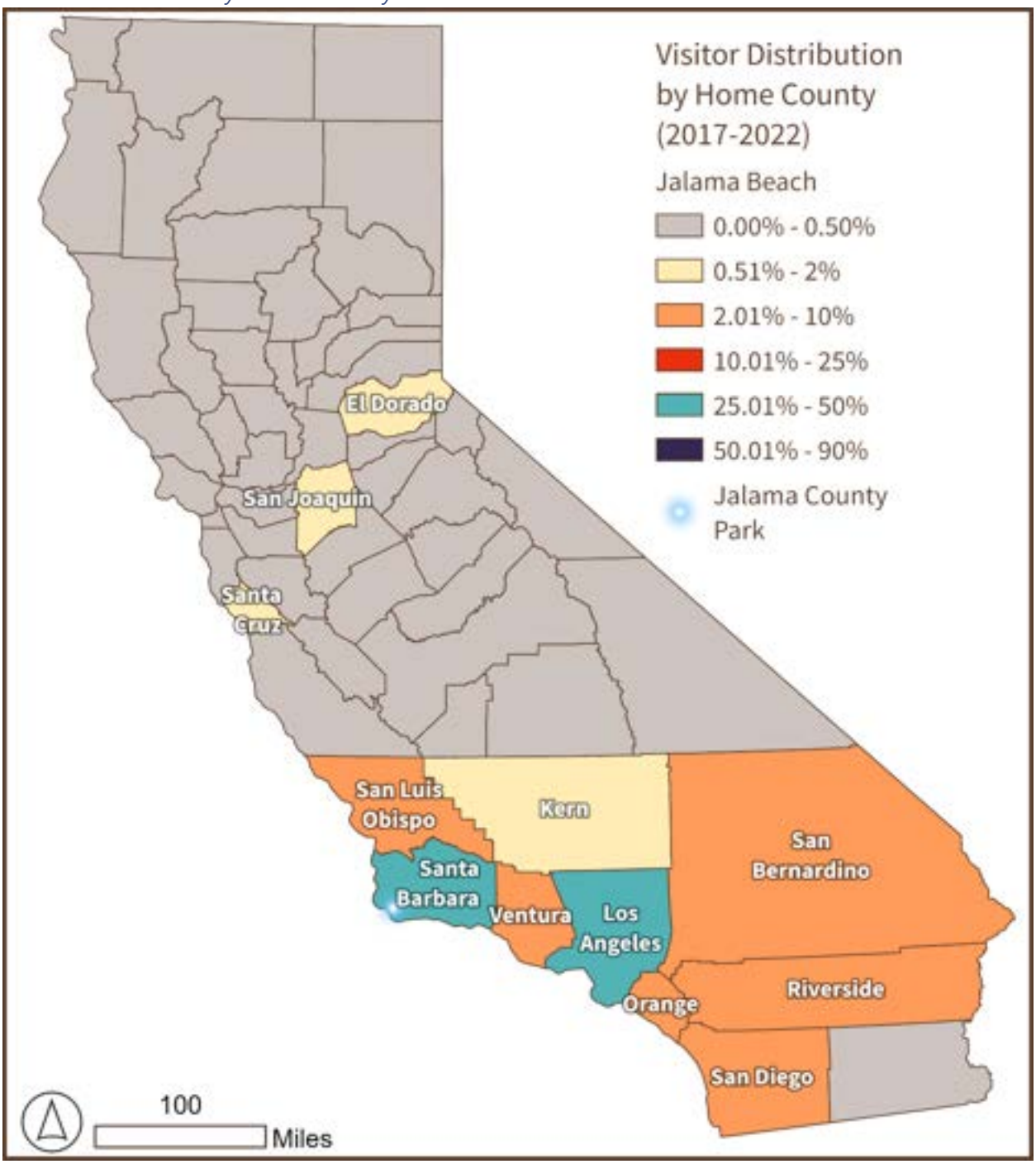
Average Length of Stay: 4.75 hours

Busiest Day of the Week: Saturday

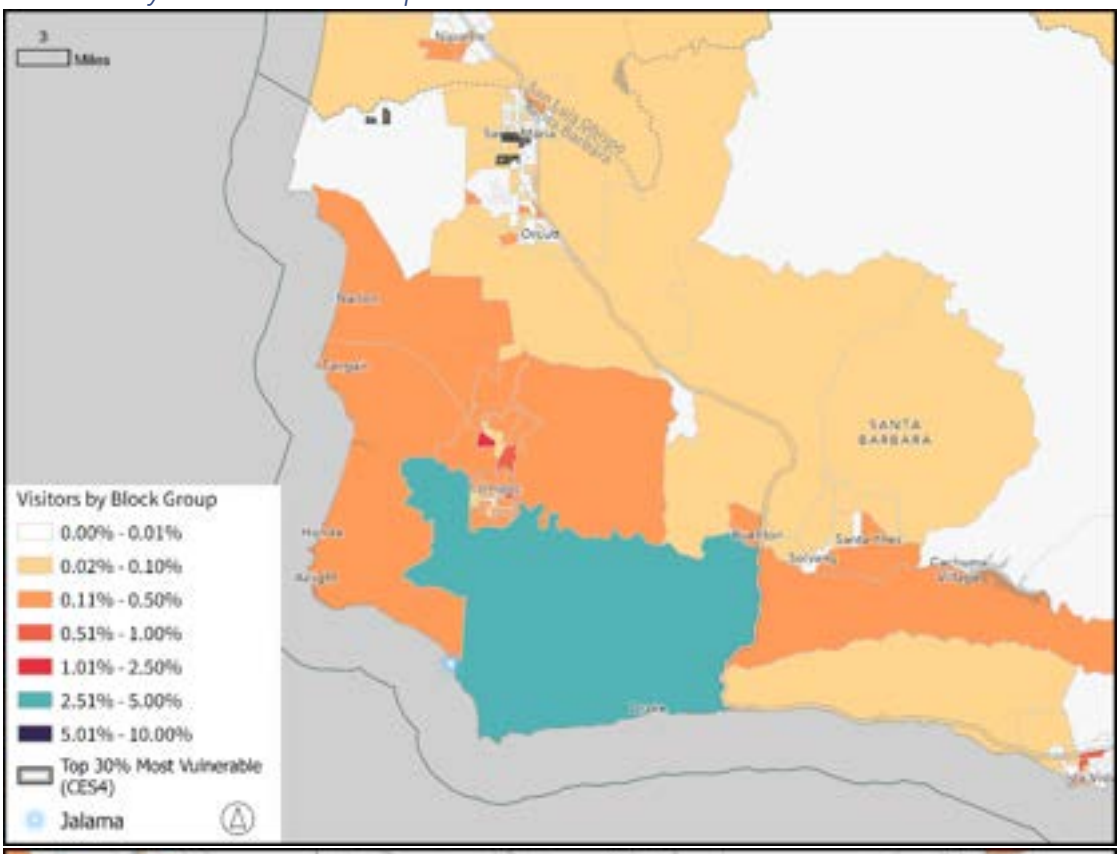
Busiest Hour: 6:00 pm

Heat Map of Hourly Visitation Jalama County Park:

Visitor Distribution by Home County



Visitation by Home Block Group



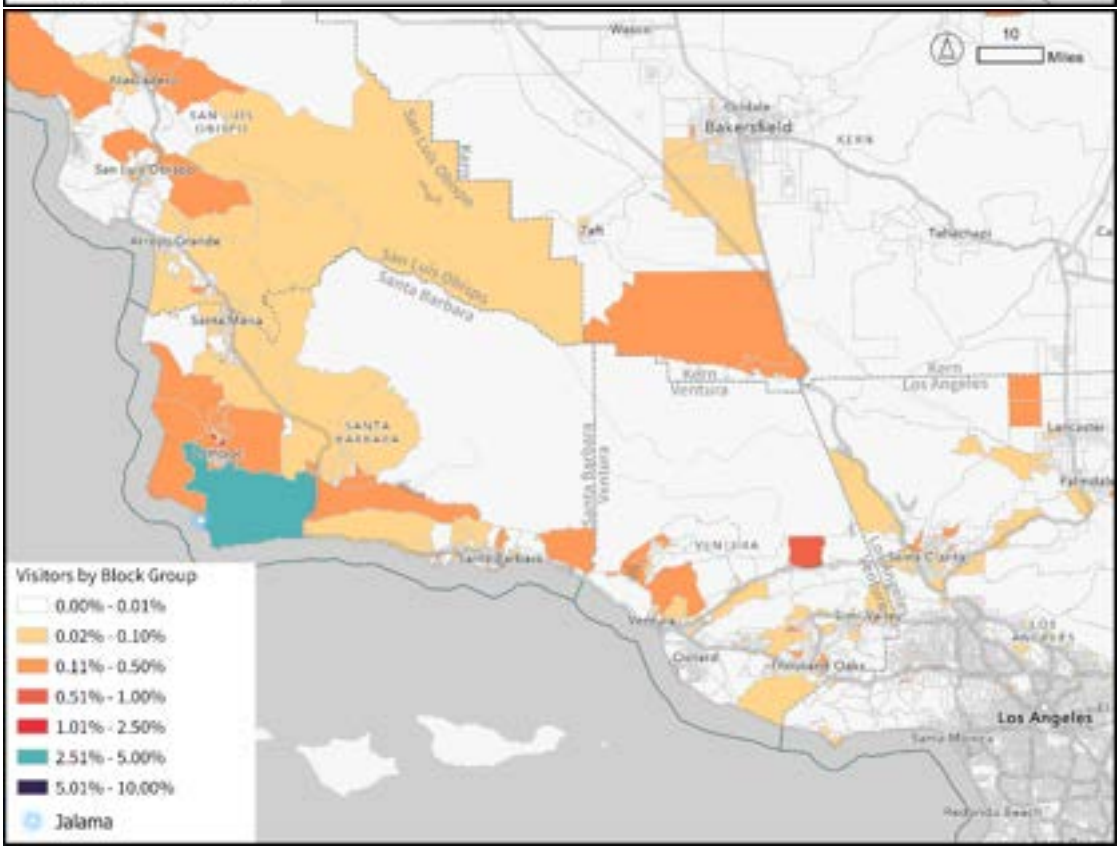


Chart of Visitation by Year

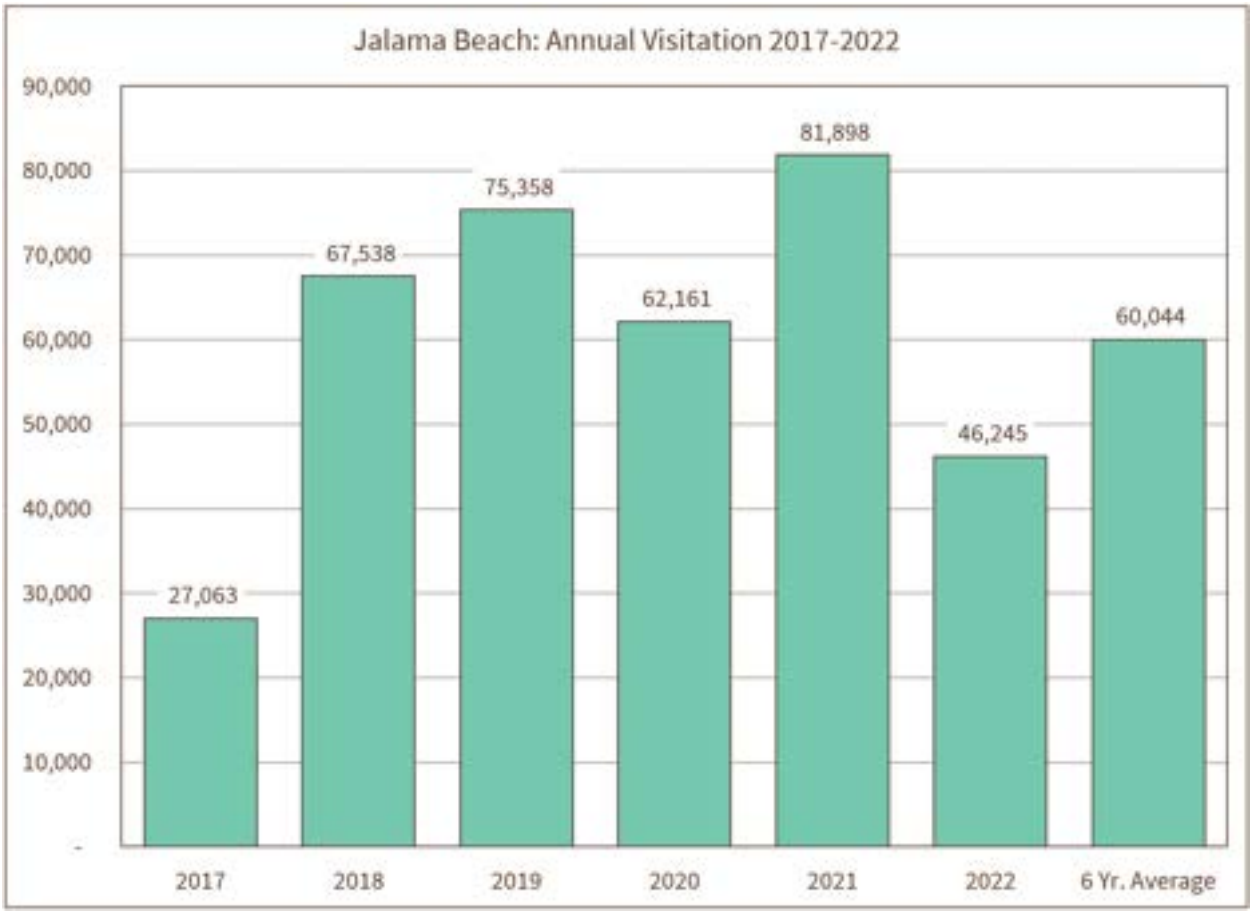
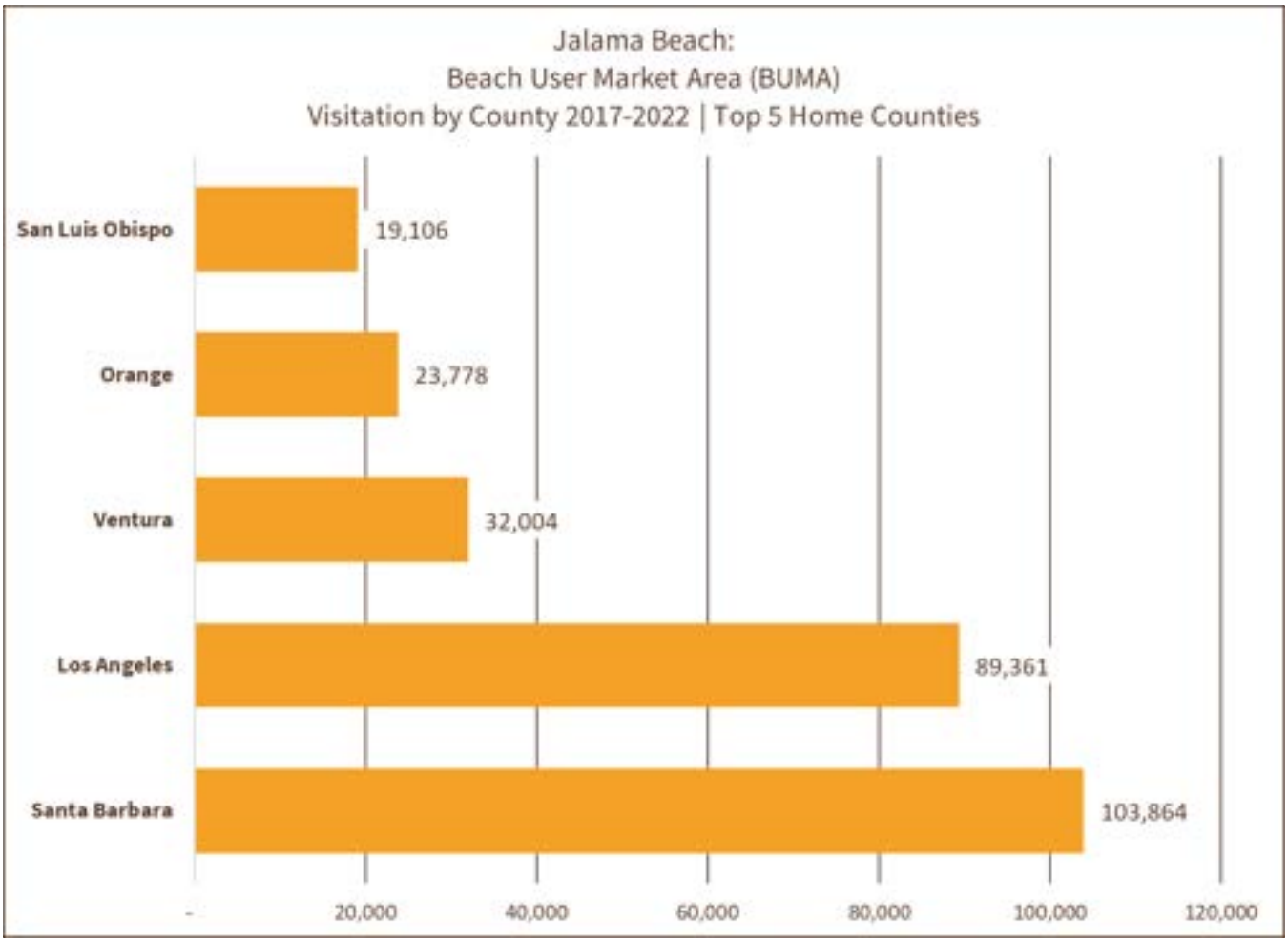
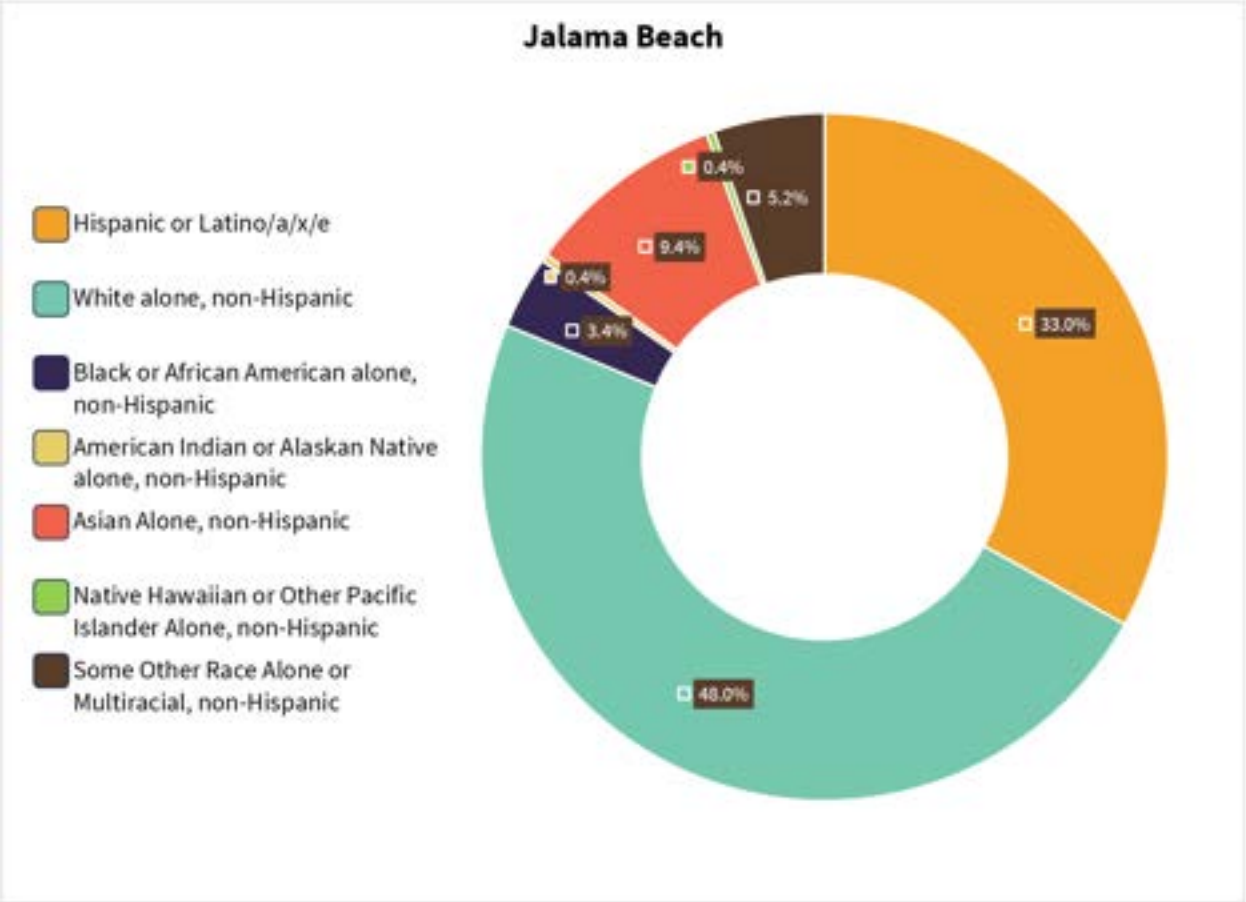


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Rincon County Beach

General Statistics (2022)

Total Visitation: 214.5k

Average Visitation per Day: 590

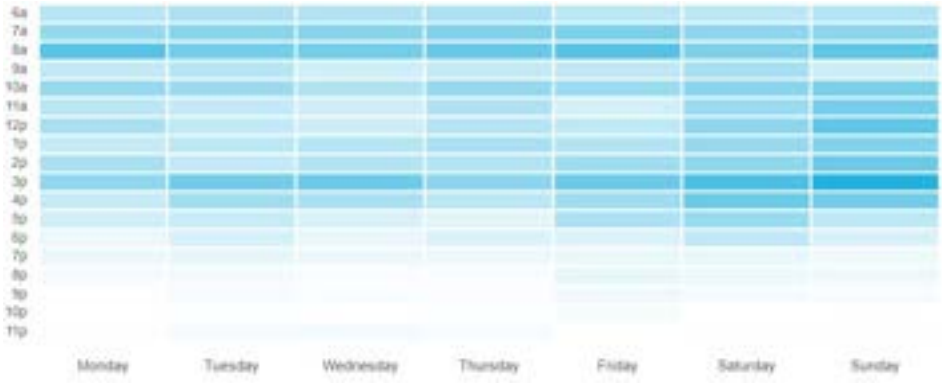
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 7%

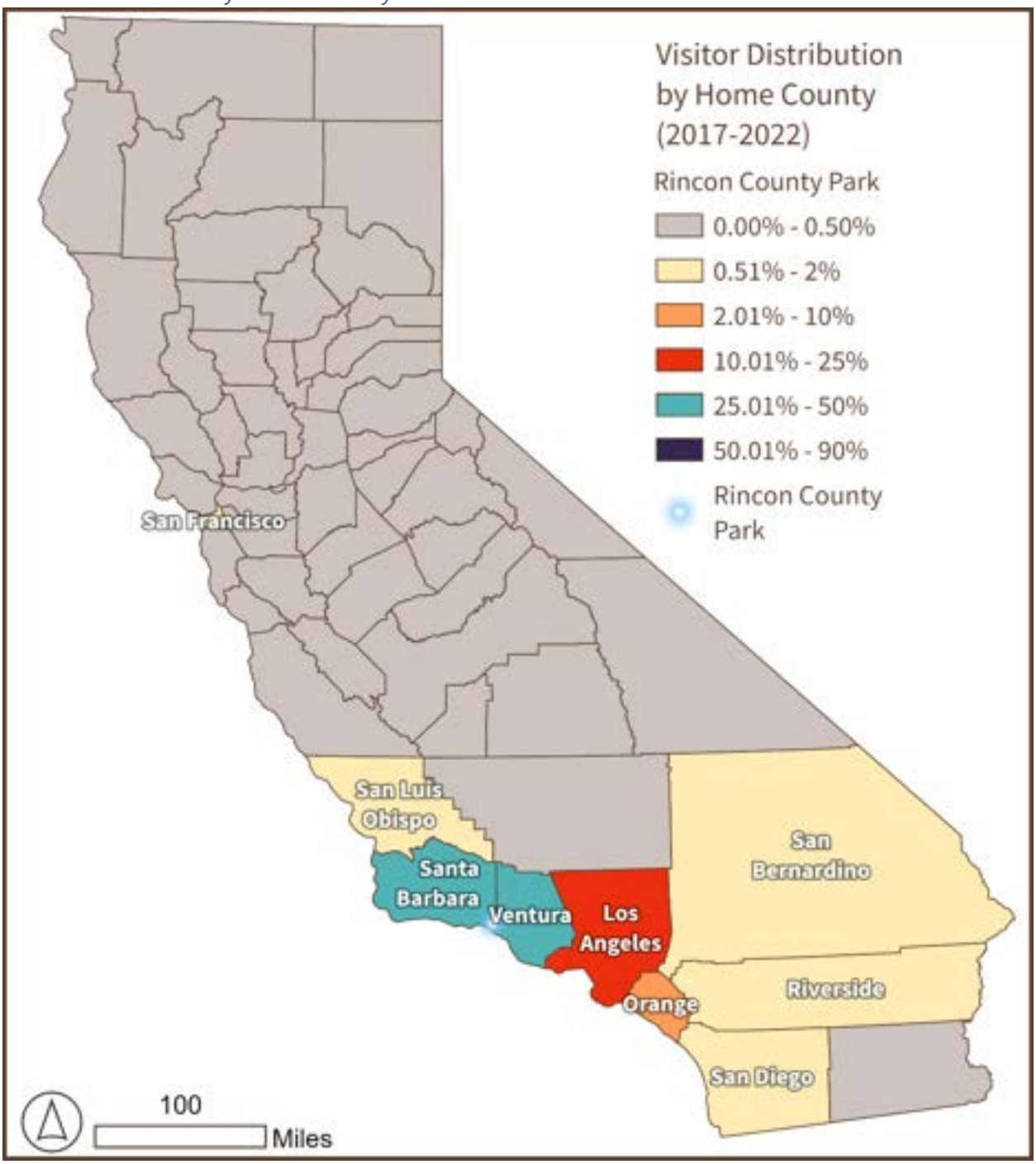
Busiest Day of the Week: Sunday

Busiest Hour: 3:00 pm

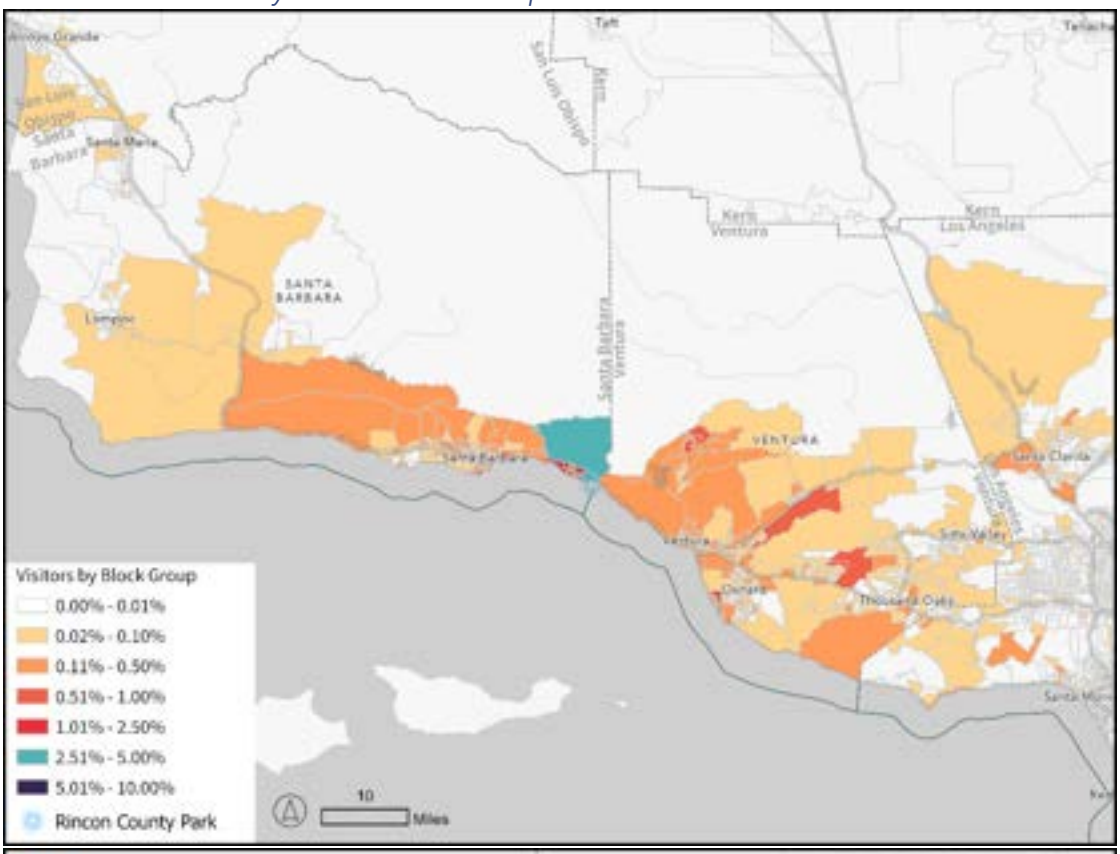
Heat Map of Hourly Visitation Rincon County Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



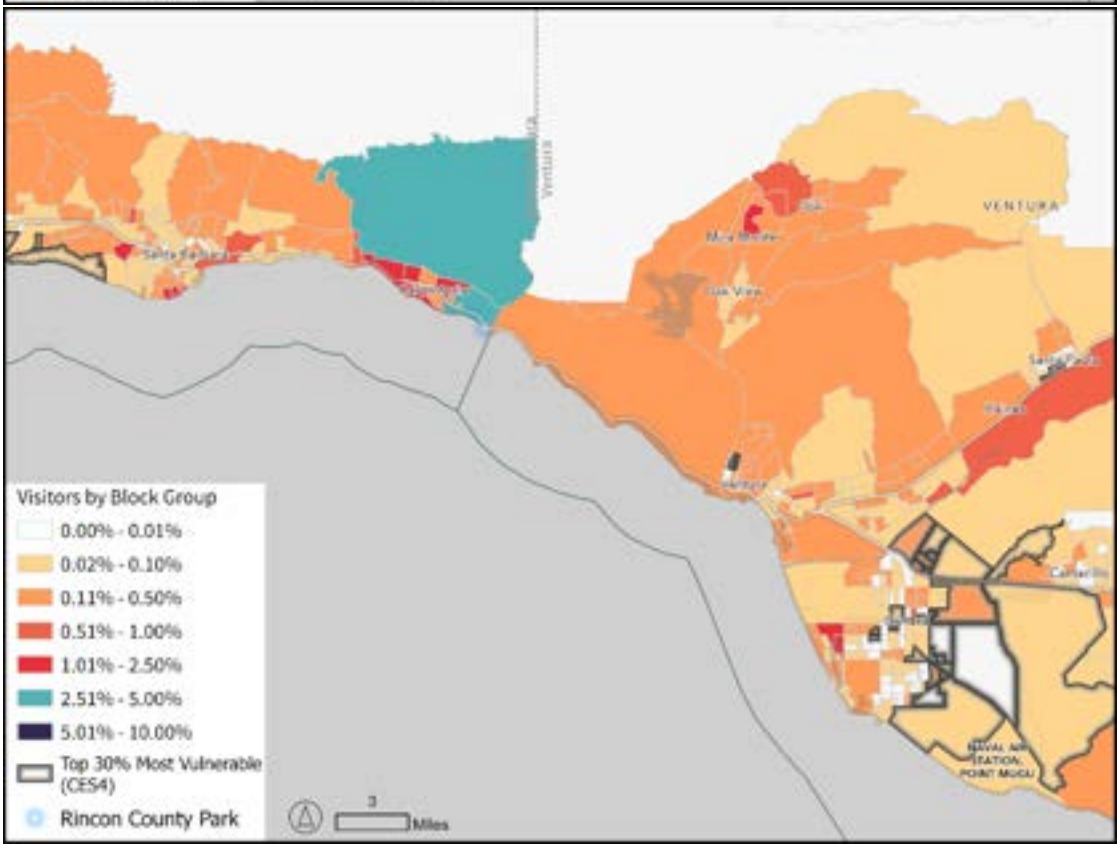


Chart of Visitation by Year

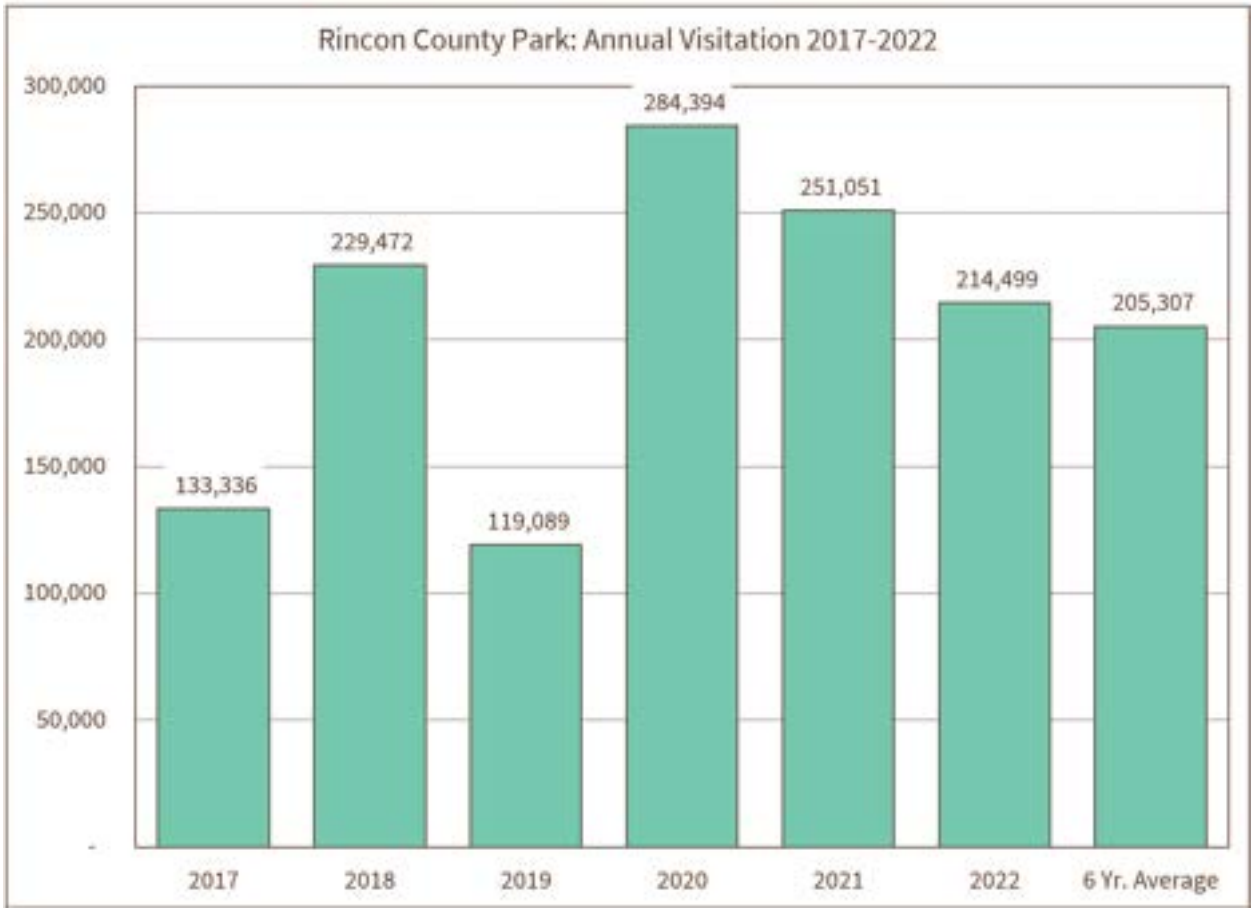
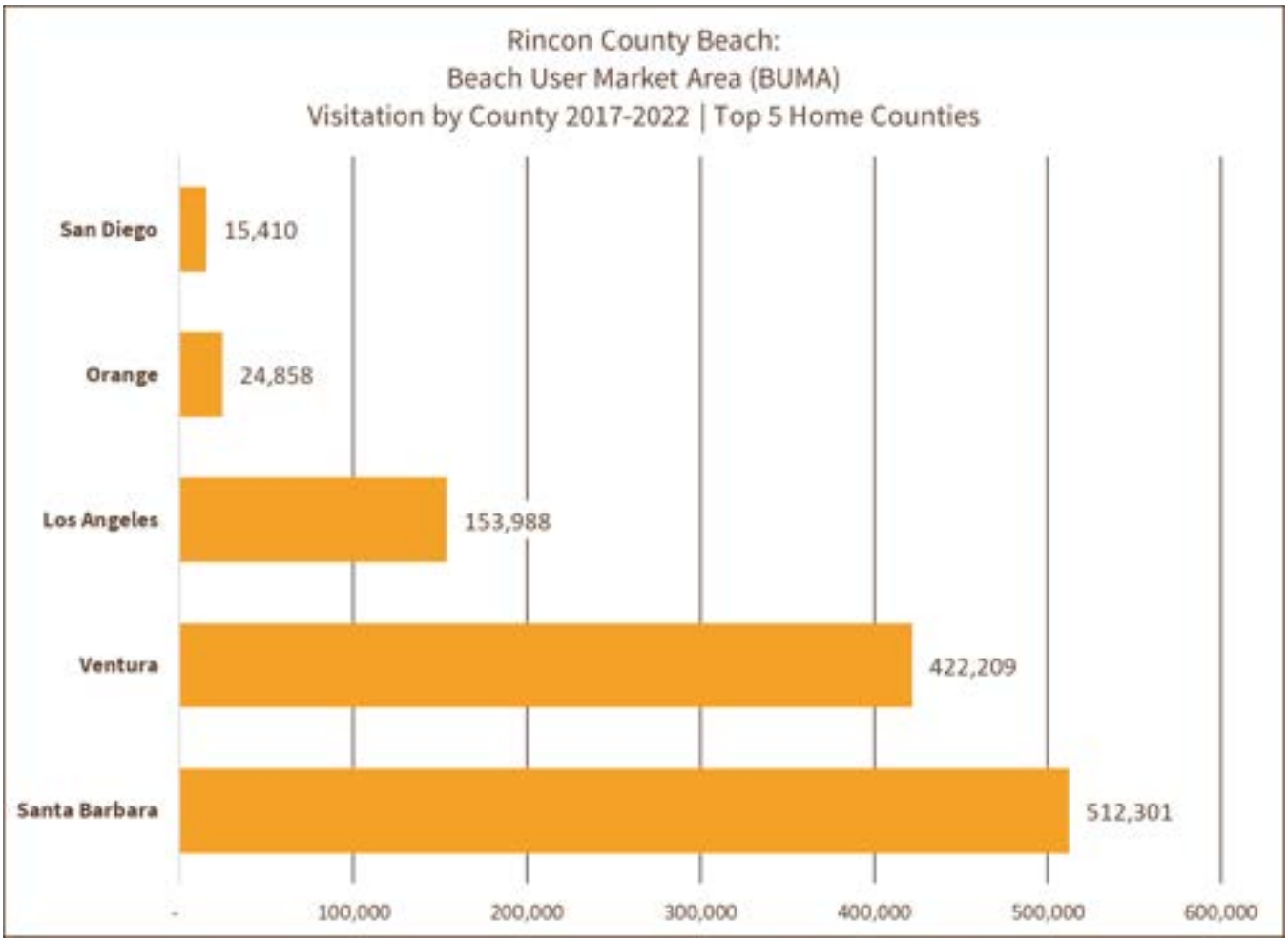
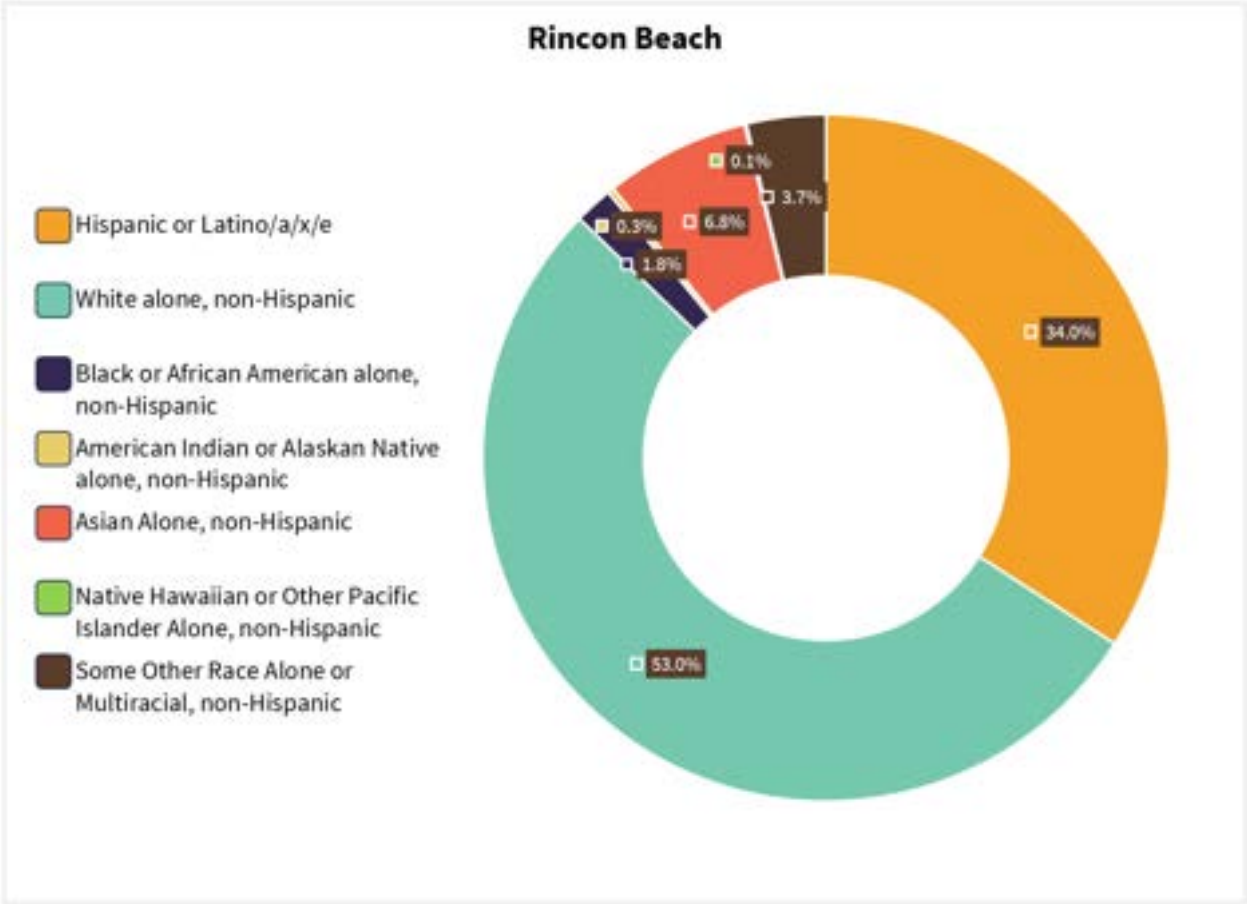


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Ventura County

California Department of Parks and Recreation (Ventura County)

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
County Line Beach	135,469	168,463	114,166	265,742	158,611	117,201
Emma Wood State Beach	79,310	80,879	61,579	110,811	146,677	102,447
San Buenaventura Beach	191,618	211,471	256,981	214,384	228,877	190,361
Sycamore Canyon Beach	95,527	112,287	128,896	211,427	228,249	112,760

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
County Line Beach	69,931	71,588	64,830	65,296	87,788	117,888	106,532	113,710	74,389	76,598	60,922	50,180
Emma Wood State Beach	32,975	44,818	42,341	51,534	47,541	60,367	85,954	63,160	49,292	39,154	33,721	30,846
San Buenaventura Beach	82,680	94,000	81,421	113,787	134,466	125,182	173,635	170,778	98,814	77,268	66,783	74,878
Sycamore Canyon Beach	49,593	58,371	66,826	55,714	75,706	109,944	119,069	99,313	74,839	72,189	56,047	51,535

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
County Line Beach	113,885	105,241	112,019	101,846	127,924	200,237	198,500
Emma Wood State Beach	76,659	64,567	63,392	71,928	86,091	115,339	103,727
San Buenaventura Beach	164,051	148,741	148,573	147,163	176,451	252,291	256,422
Sycamore Canyon Beach	99,676	93,490	90,014	98,554	127,335	196,735	183,342

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
County Line Beach	31%	49%	4%	0%	11%	0%	5%
Emma Wood State Beach	35%	48%	3%	0%	9%	0%	5%
San Buenaventura Beach	38%	47%	3%	0%	8%	0%	5%
Sycamore Canyon Beach	38%	42%	3%	0%	12%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
County Line Beach	83%	17%
Emma Wood State Beach	86%	14%
San Buenaventura Beach	86%	14%
Sycamore Canyon Beach	79%	21%

County Line Beach

General Statistics (2022)

Total Visitation: 117.2k

Average Visitation per Day: 340

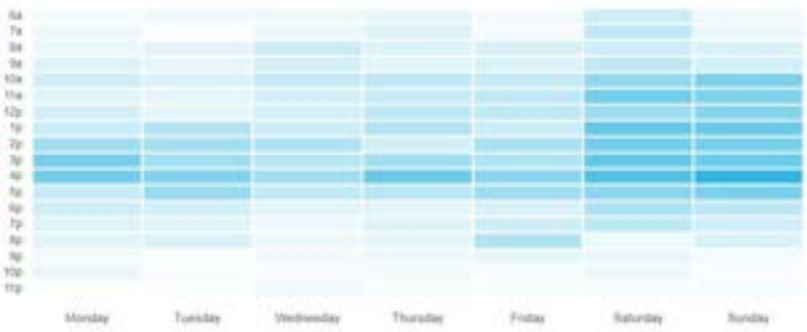
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 17%

Average Length of Stay: 1.25 hours

Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation County Line Beach:



Visitor Distribution by Home County

Visitation by Home Block Group

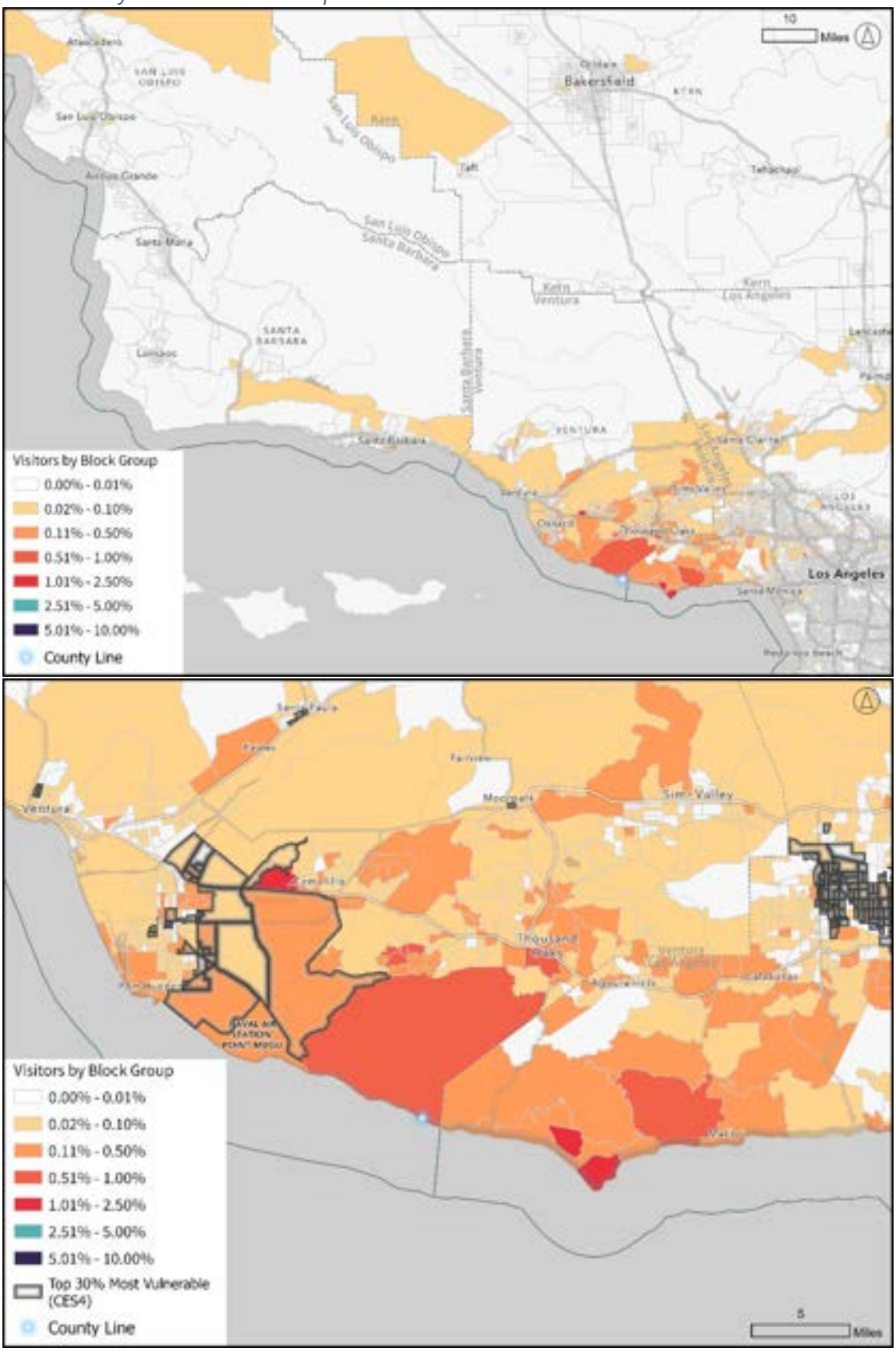


Chart of Visitation by Year

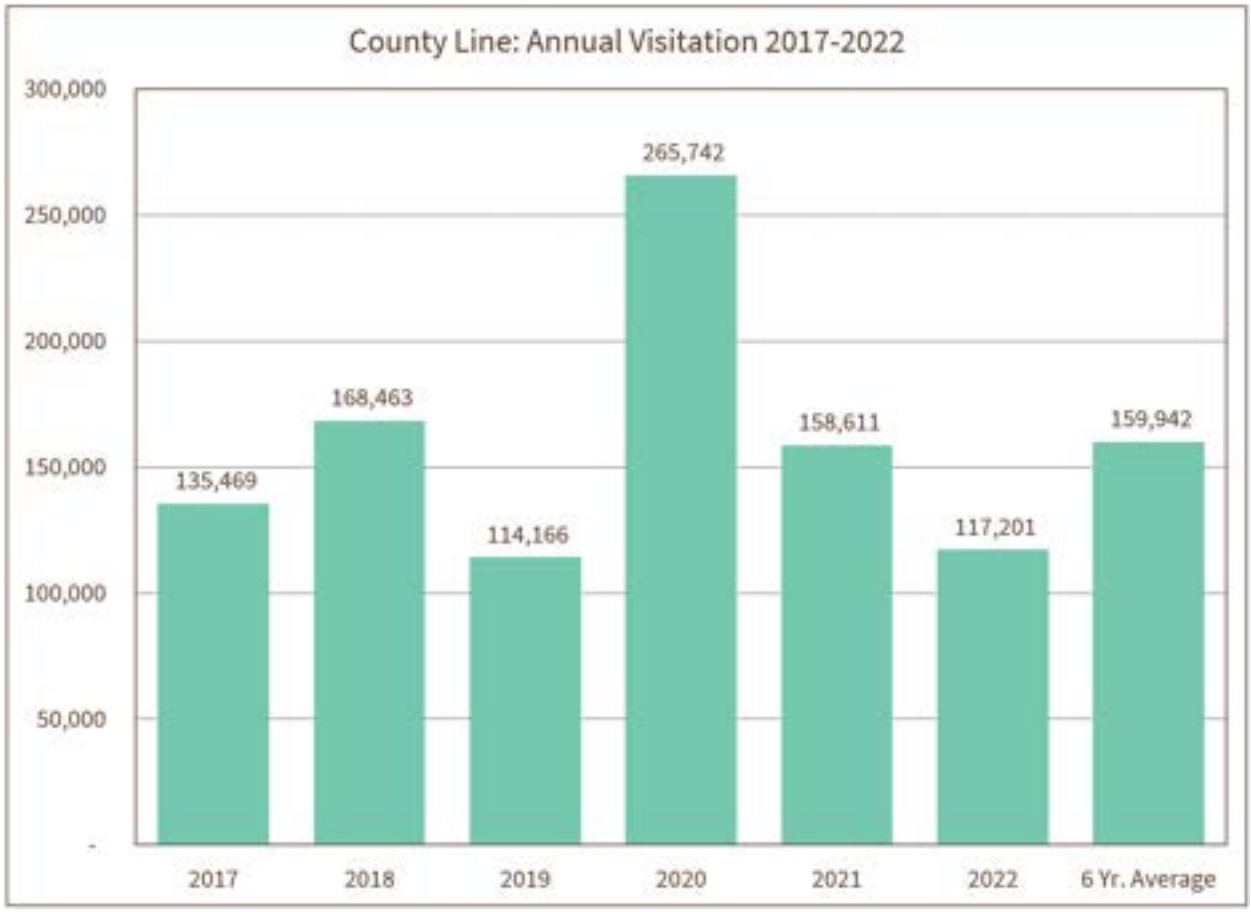
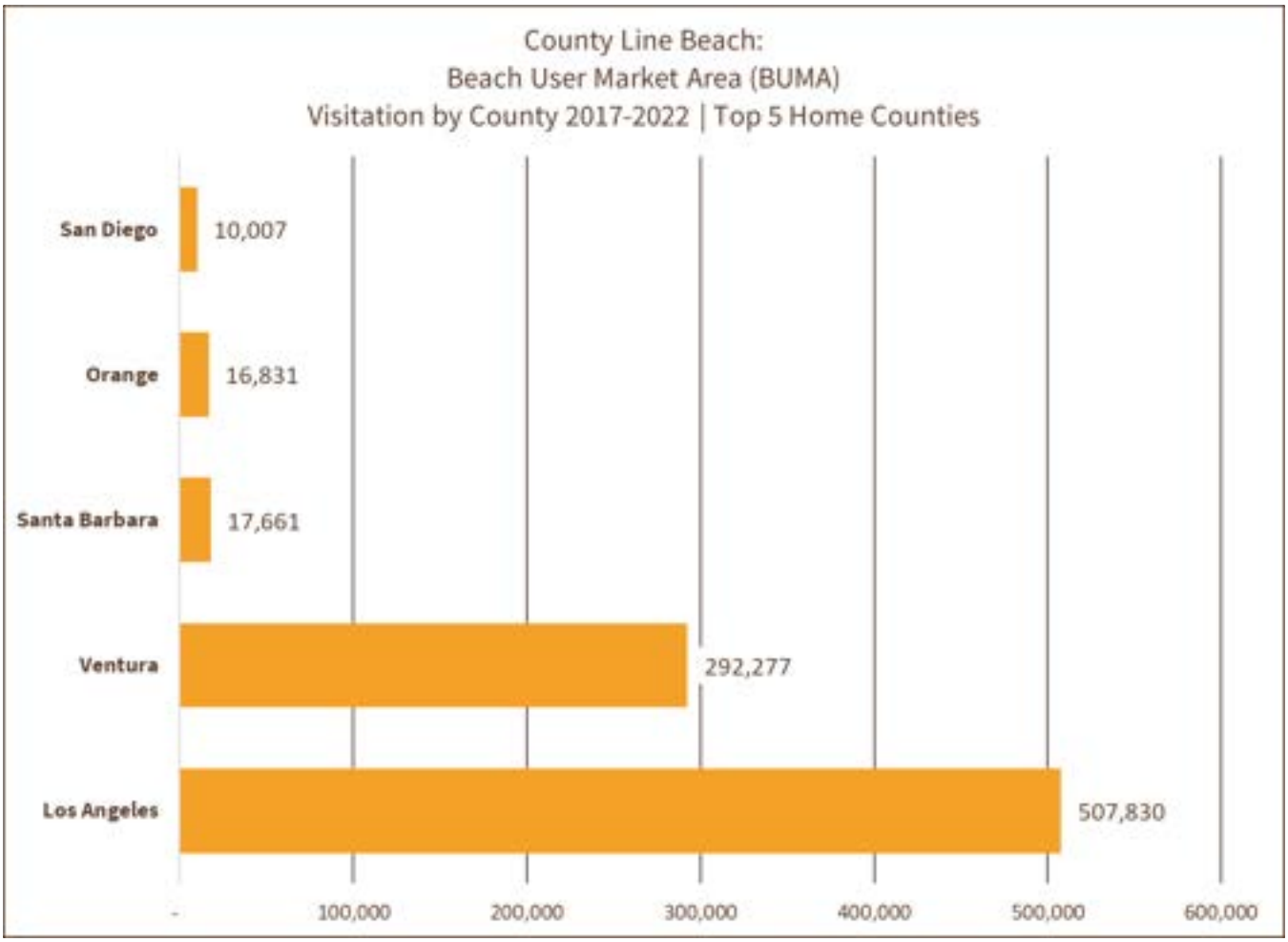
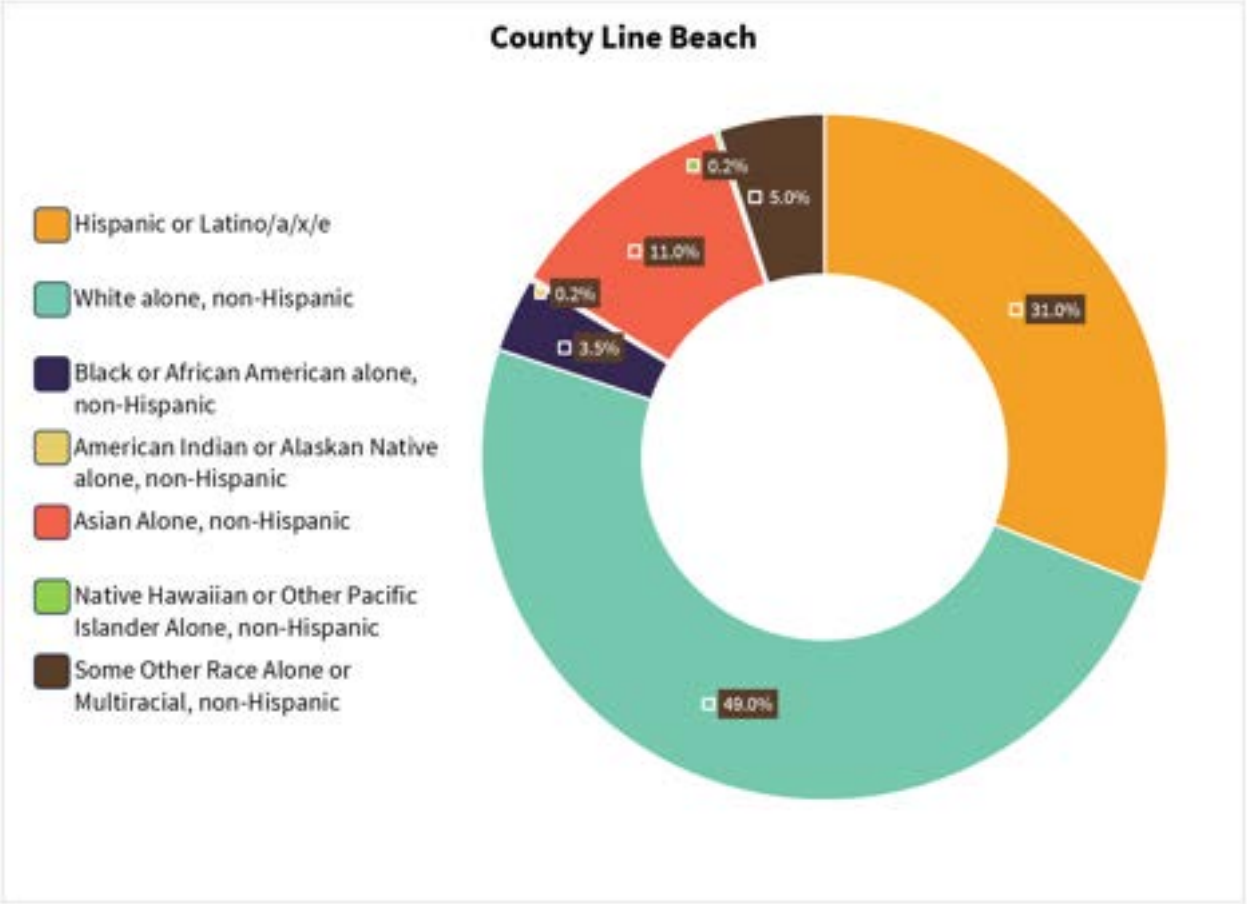


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Emma Wood State Beach

General Statistics (2022)

Total Visitation: 102.4k

Average Visitation per Day: 300

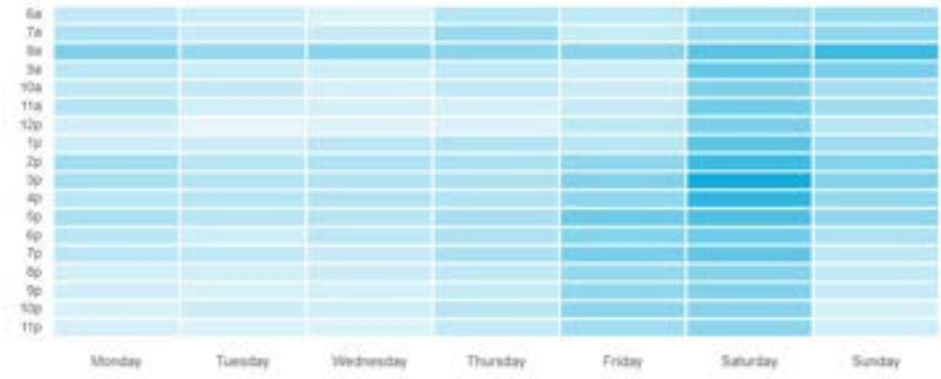
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 14%

Average Length of Stay: 4 hours

Busiest Day of the Week: Saturday

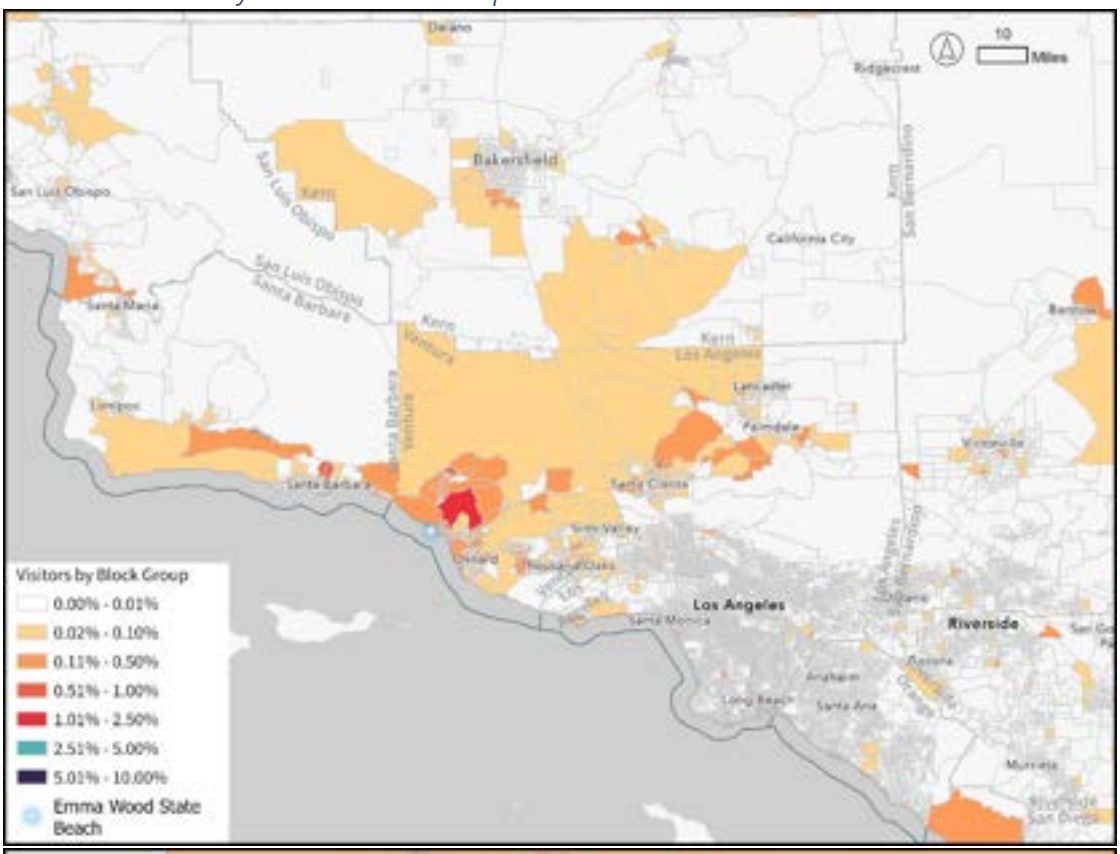
Busiest Hour: 8:00 am

Heat Map of Hourly Visitation Emma Wood State Beach:



Visitor Distribution by Home County

Beach Visitation by Home Block Group



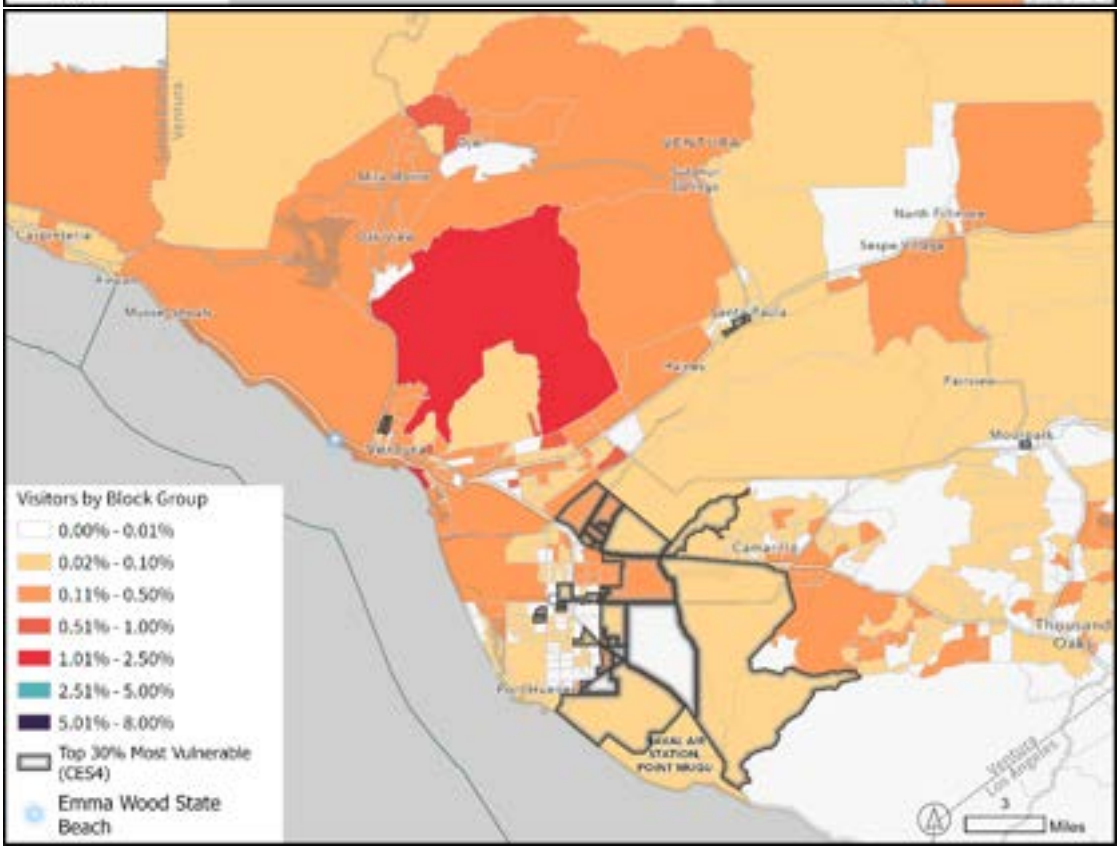


Chart of Visitation by Year

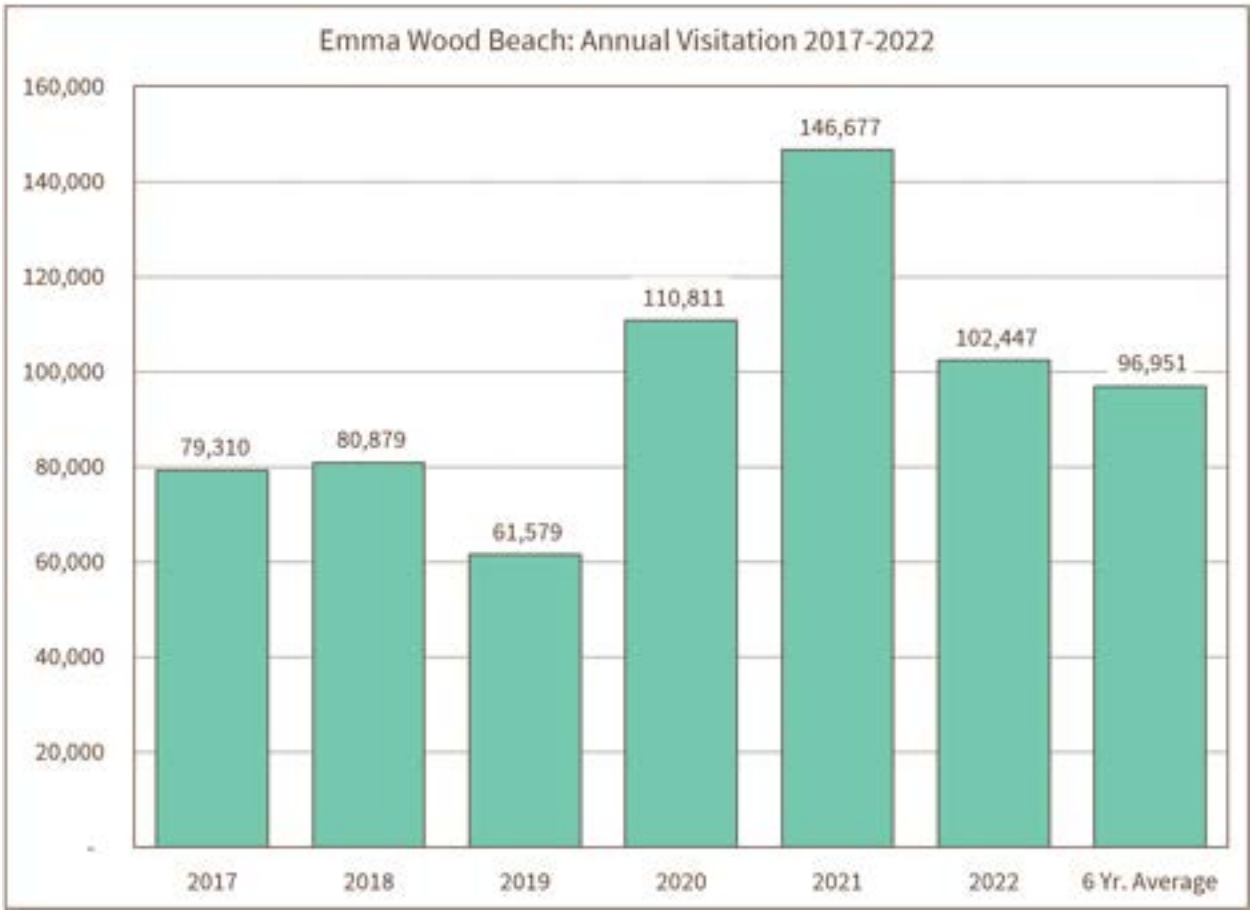
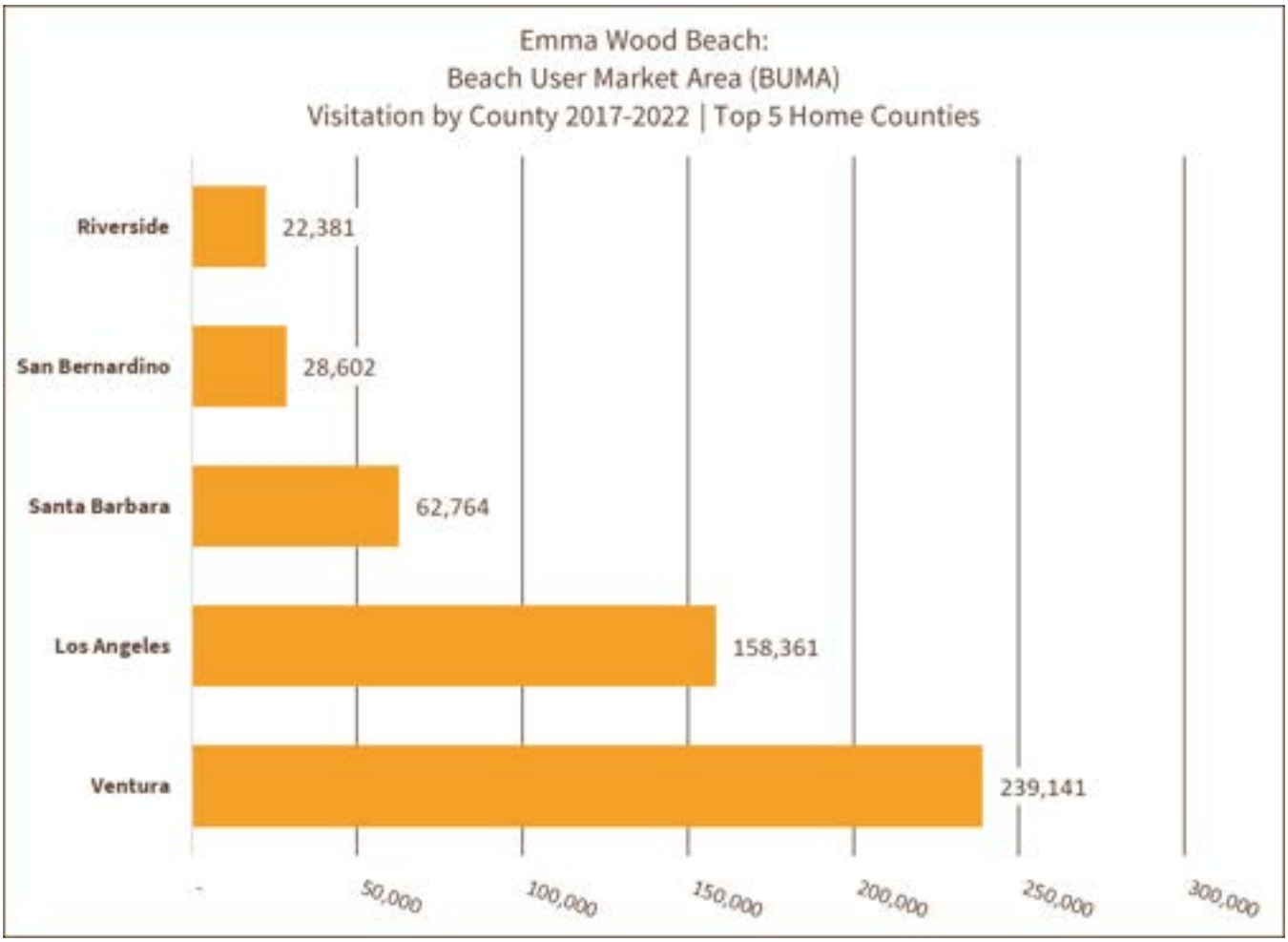
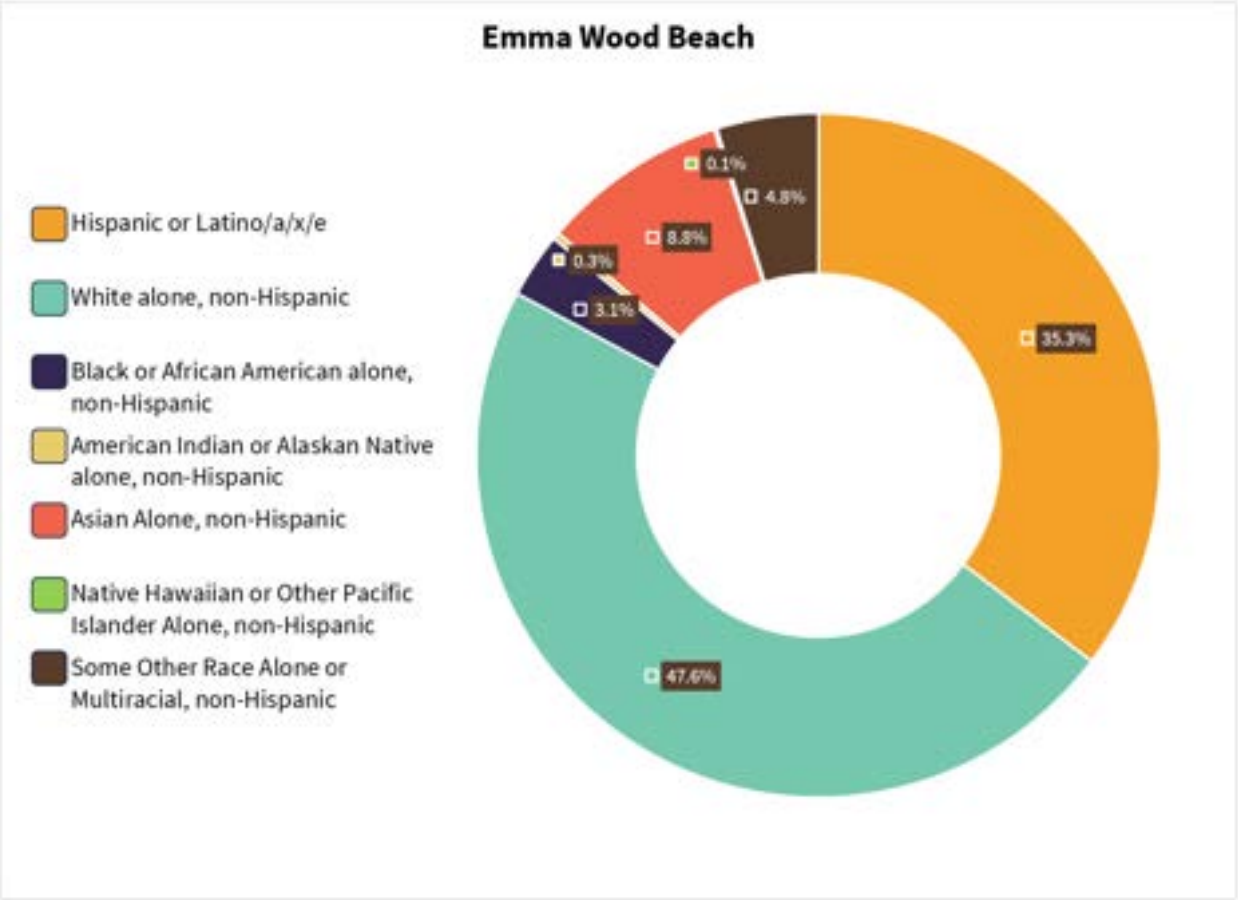


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



San Buenaventura State Beach Park

General Statistics (2022)

Total Visitation: 190.4k

Average Visitation per Day: 540

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 14%

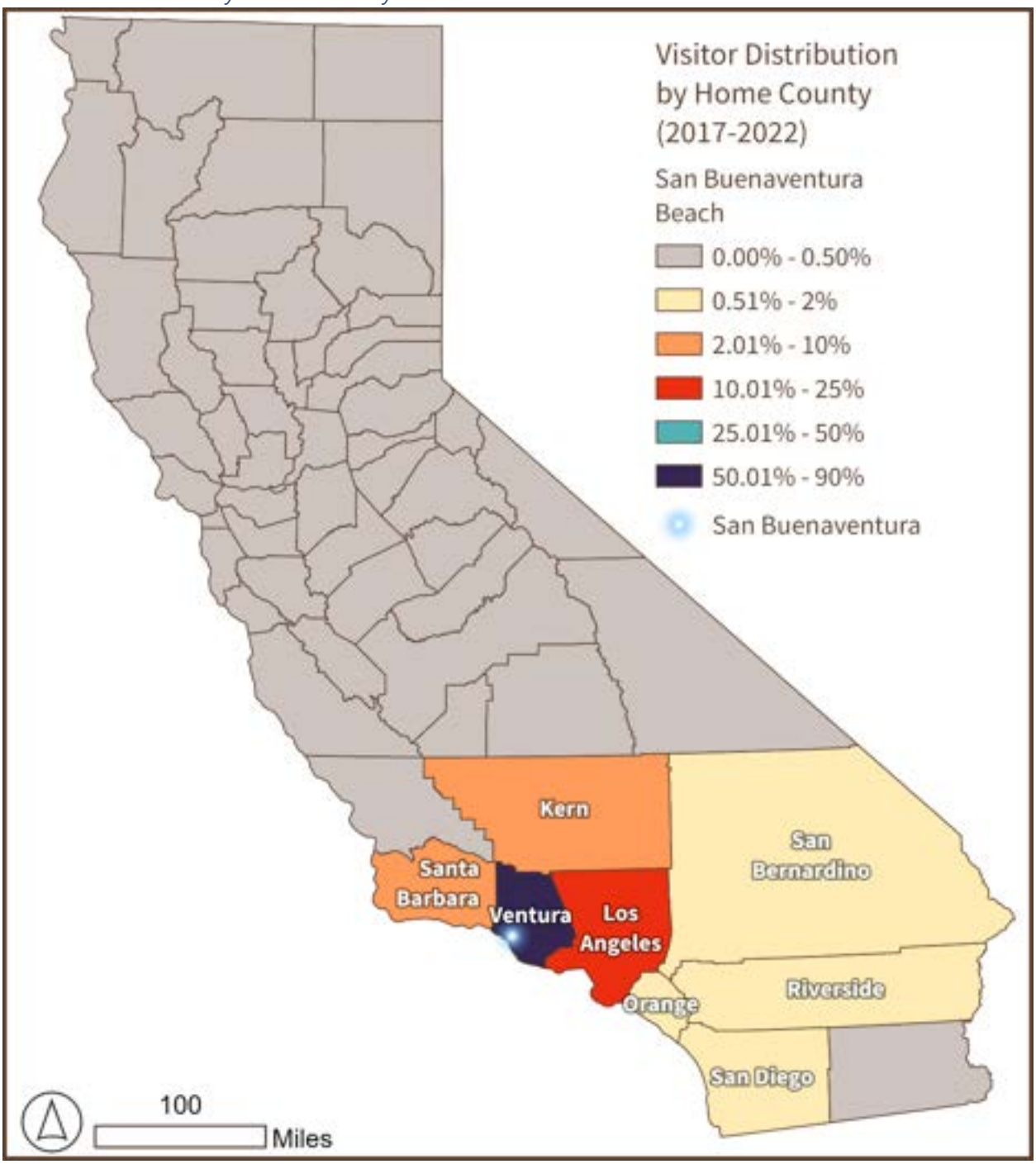
Average Length of Stay: 1.25 hours

Busiest Day of the Week: Sunday

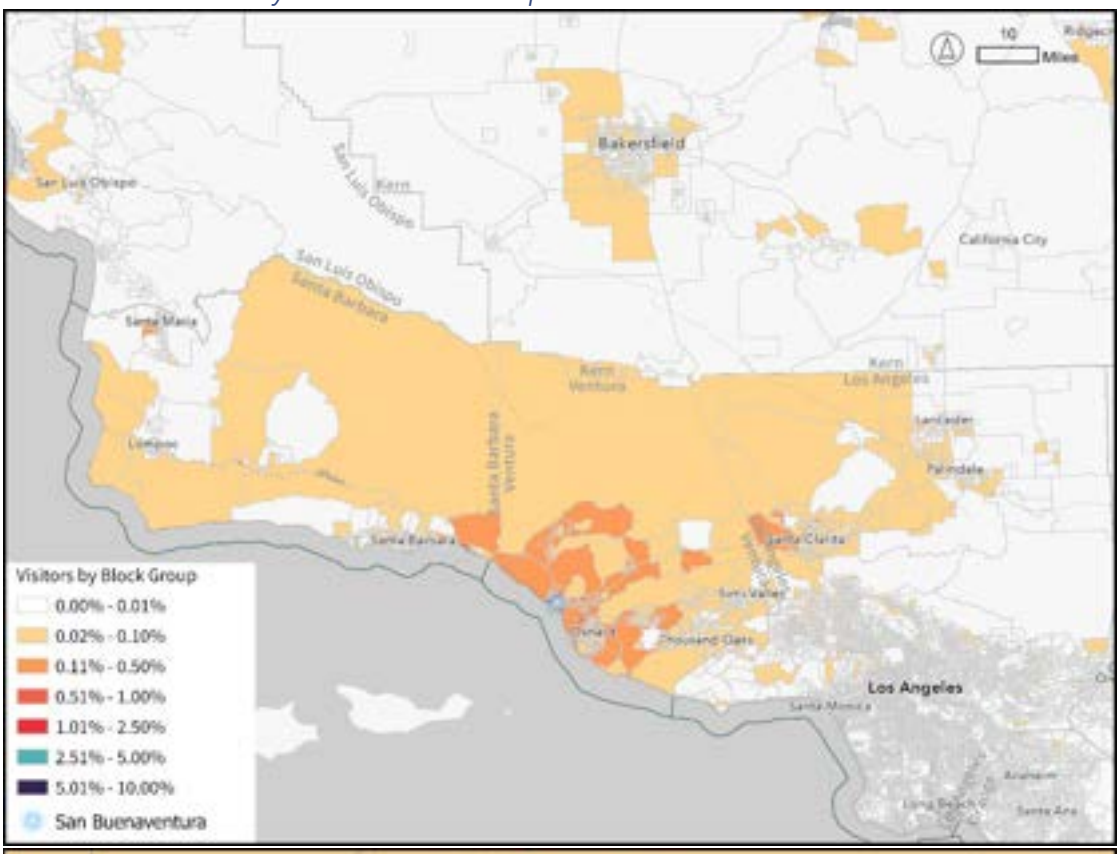
Busiest Hour: 11:00 am

Heat Map of Hourly Visitation San Buenaventura Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



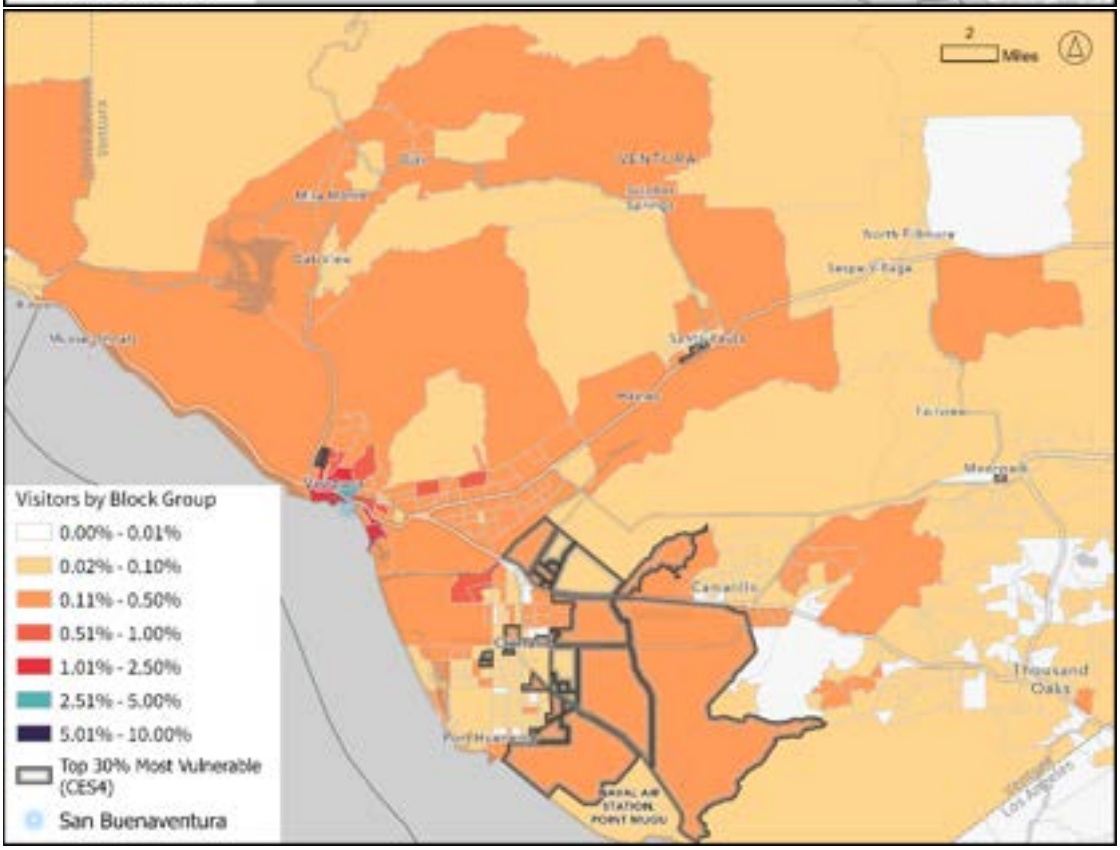
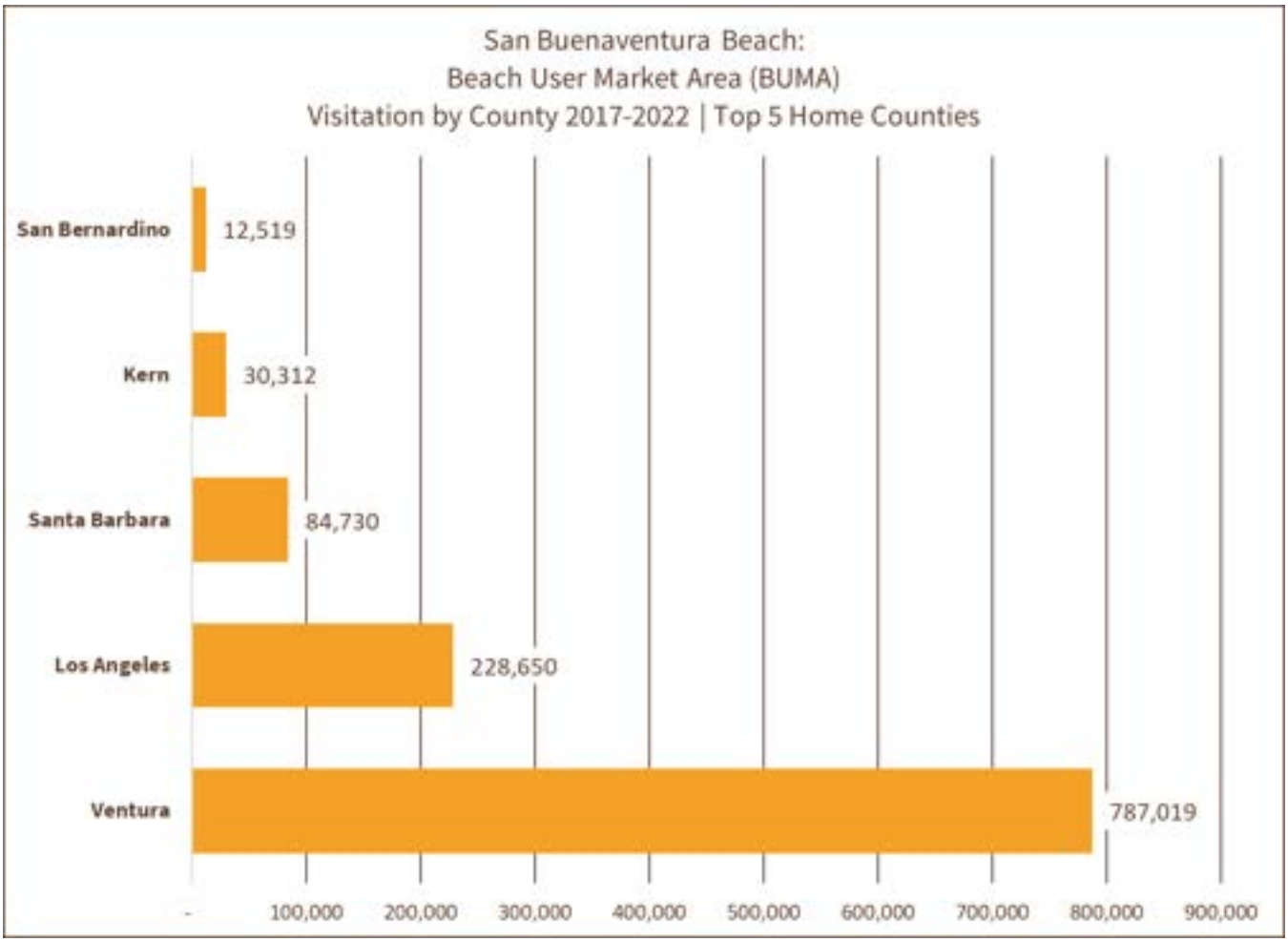
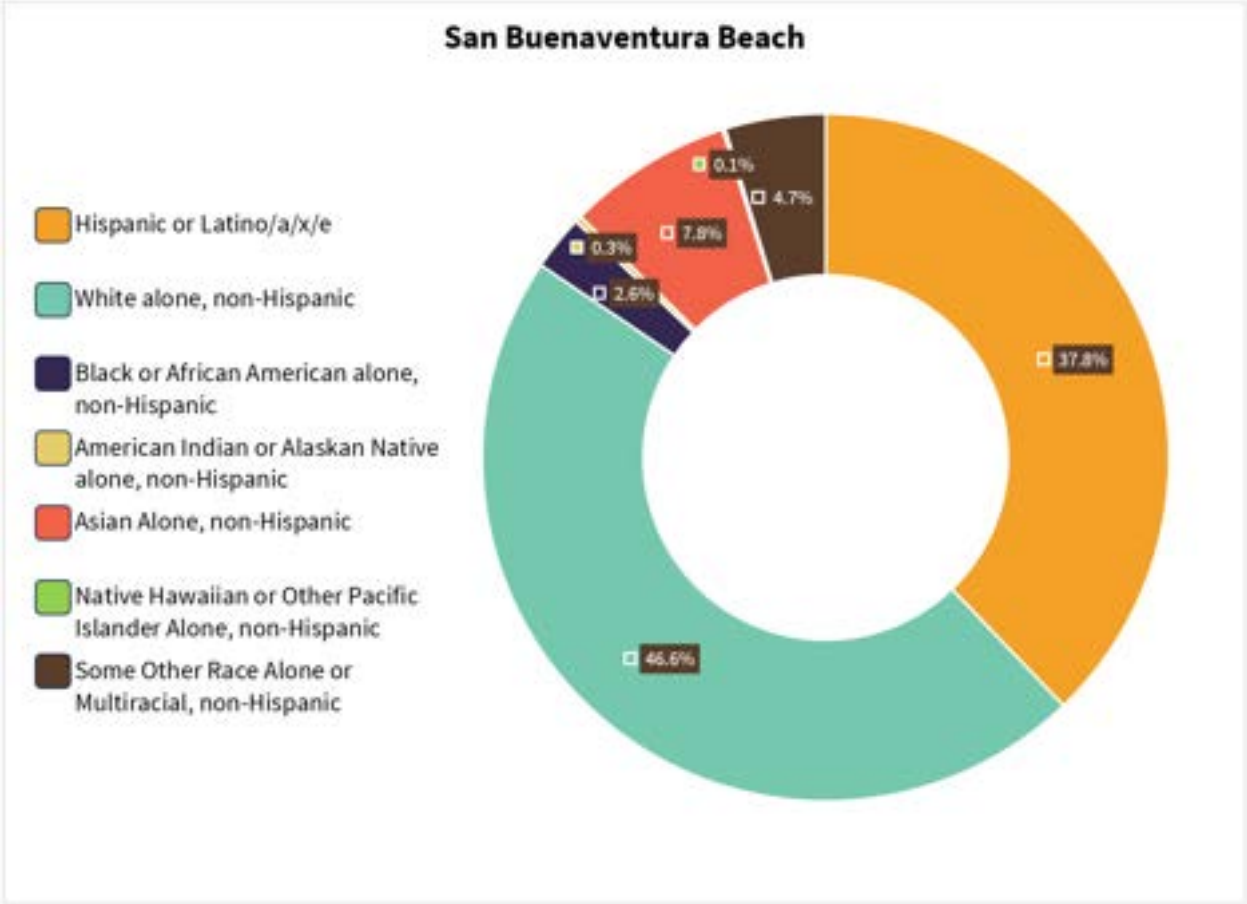


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Sycamore Canyon Beach

General Statistics (2022)

Total Visitation: 112.8k

Average Visitation per Day: 330

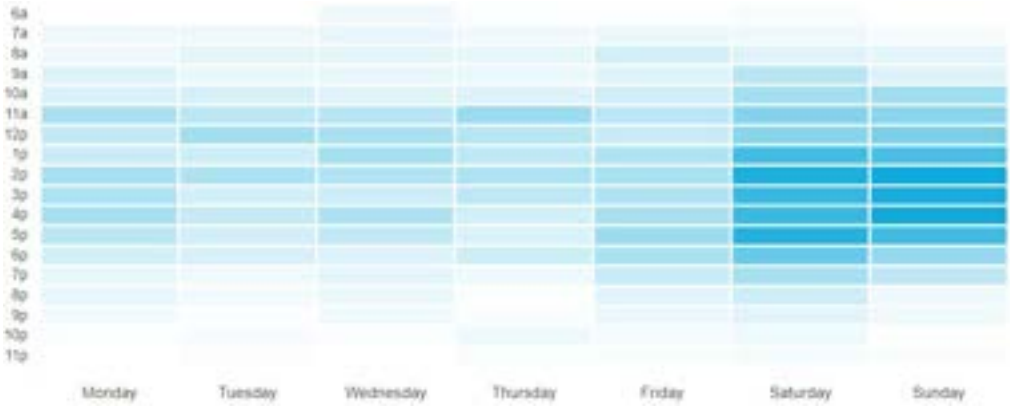
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 21%

Busiest Day of the Week: Saturday

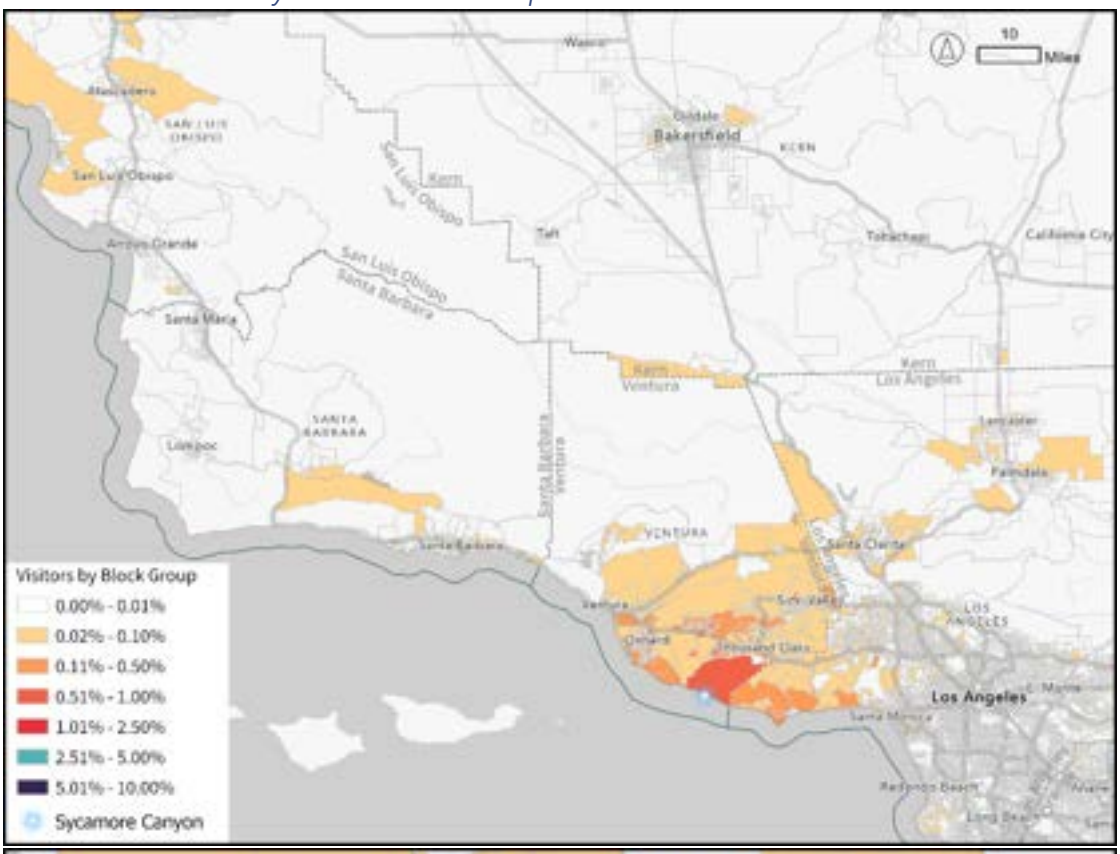
Busiest Hour: 2:00 pm

Heat Map of Hourly Visitation Sycamore Canyon Beach:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group



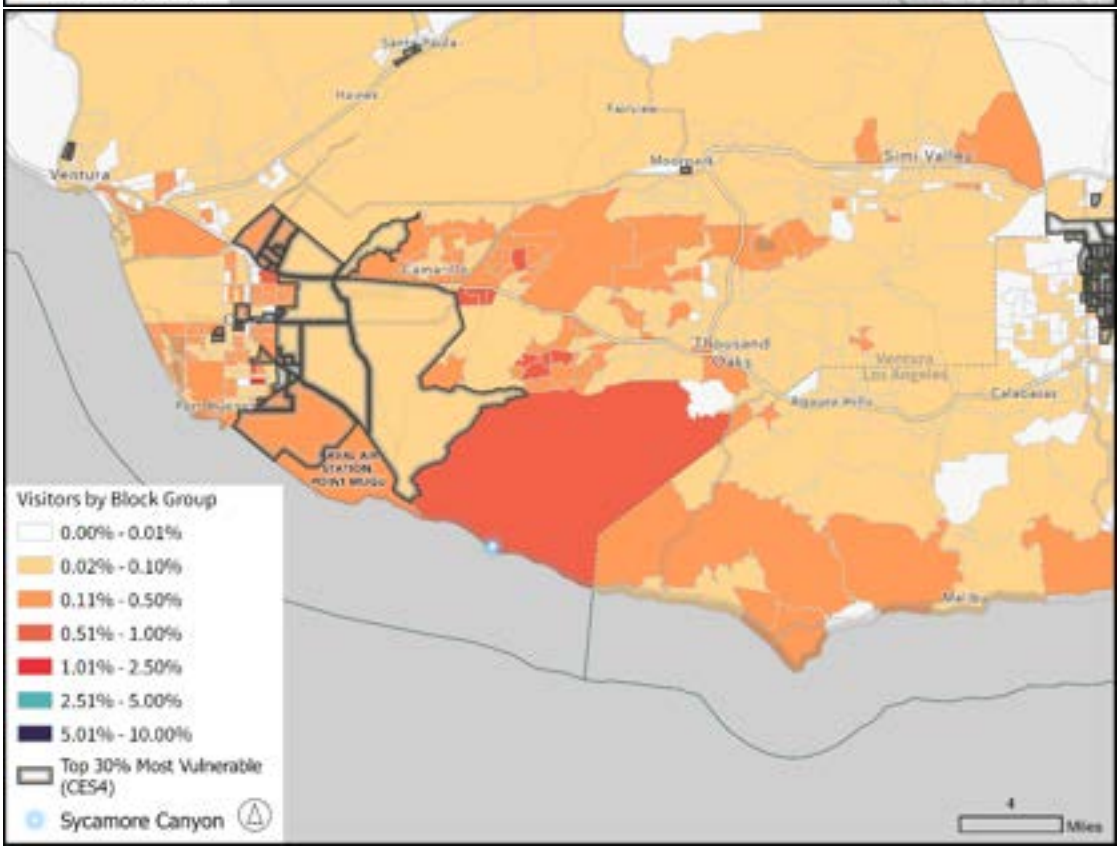


Chart of Visitation by Year

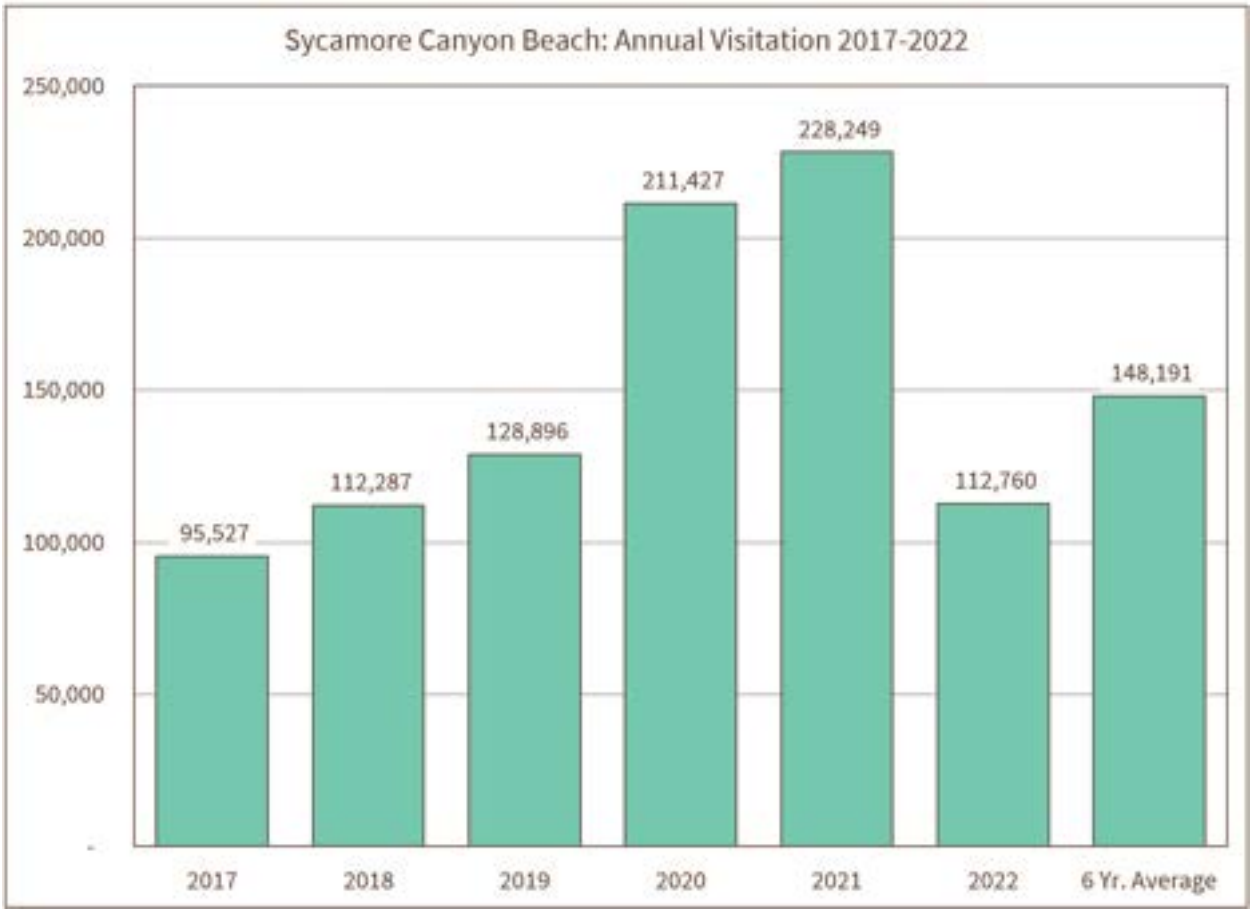
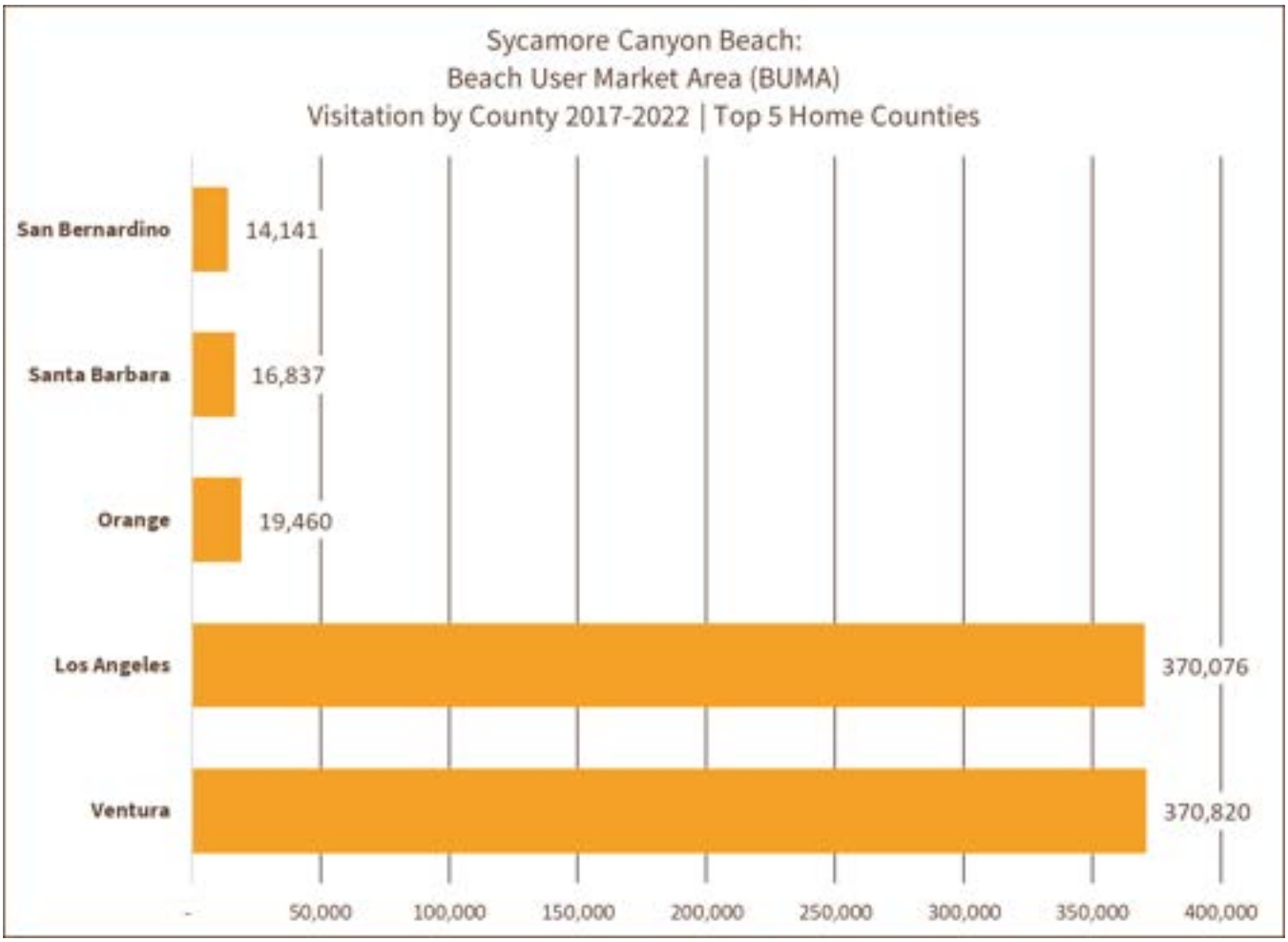
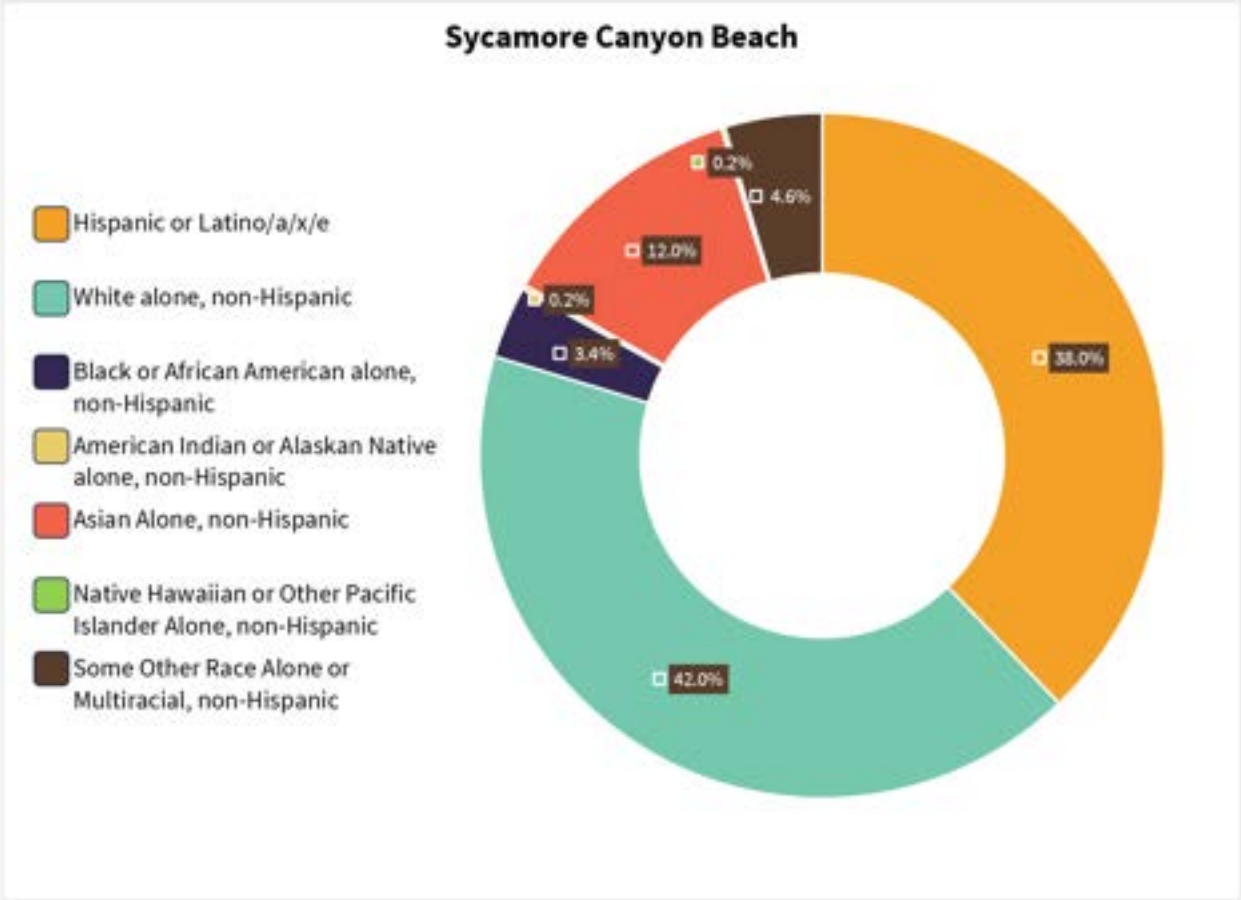


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Channel Islands Harbor

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Hollywood Beach	158,729	178,774	135,576	425,973	328,990	232,281
Silverstrand Beach	55,337	61,647	63,387	172,267	110,904	86,725

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hollywood Beach	84,616	87,302	92,893	124,960	150,689	154,021	211,327	176,818	129,648	97,472	82,435	68,142
Silverstrand Beach	36,895	35,361	28,743	34,648	52,432	53,052	80,998	56,923	42,307	44,777	40,243	43,888

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Hollywood Beach	163,218	145,412	148,630	146,586	191,981	336,281	328,215
Silverstrand Beach	56,419	56,794	63,427	62,125	74,138	120,940	116,424

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Hollywood Beach	33%	48%	3%	0%	10%	0%	5%
Silverstrand Beach	37%	47%	2%	0%	8%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Hollywood Beach	88%	12%
Silverstrand Beach	91%	9%

Hollywood Beach

General Statistics (2022)

Total Visitation: 232.3k

Average Visitation per Day: 640

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

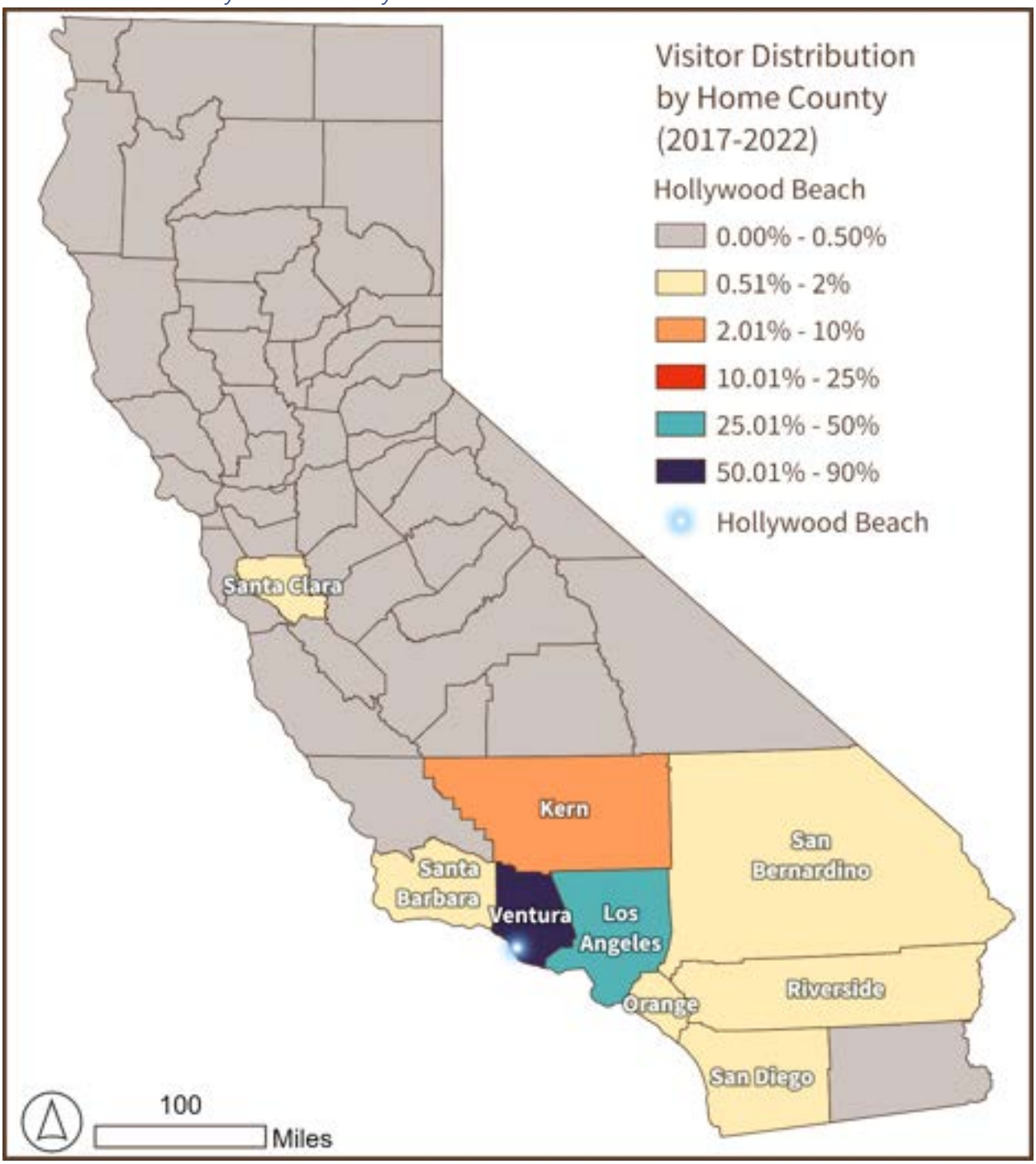
Average Length of Stay: 2.5 hours

Busiest Day of the Week: Saturday

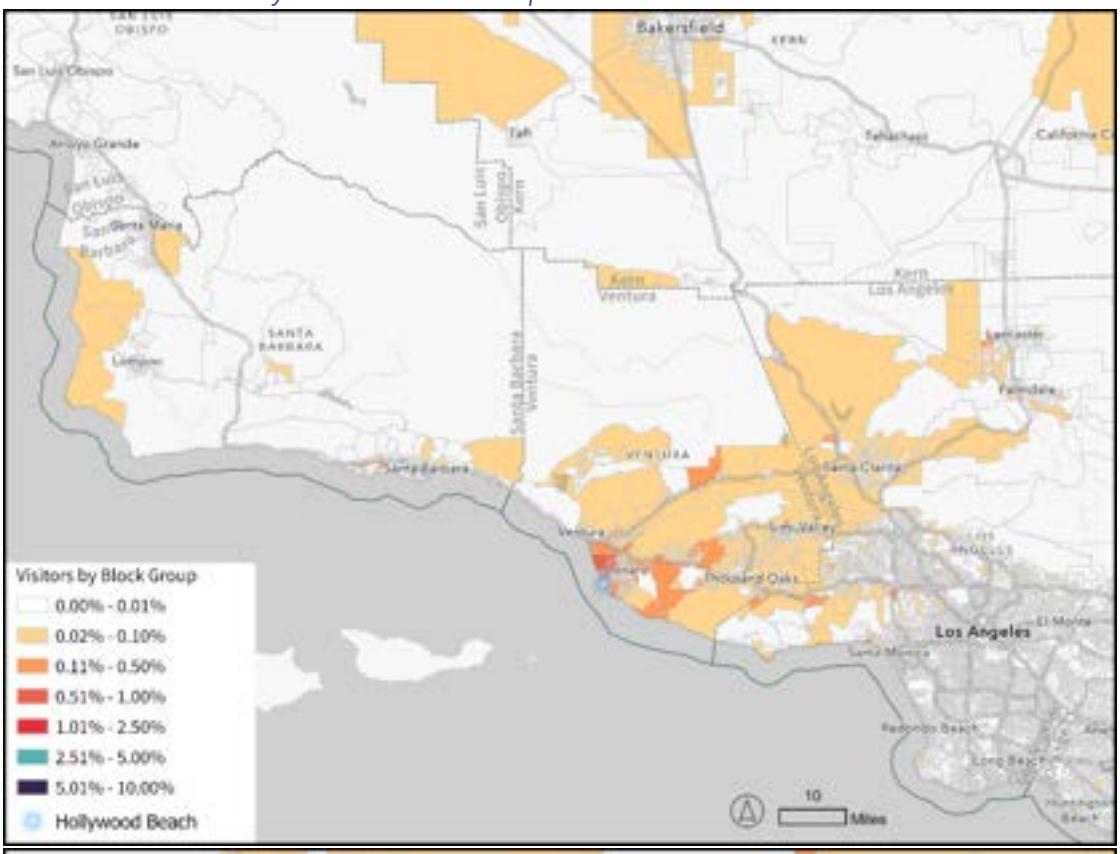
Busiest Hour: 3:00 pm

Heat Map of Hourly Visitation Hollywood Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



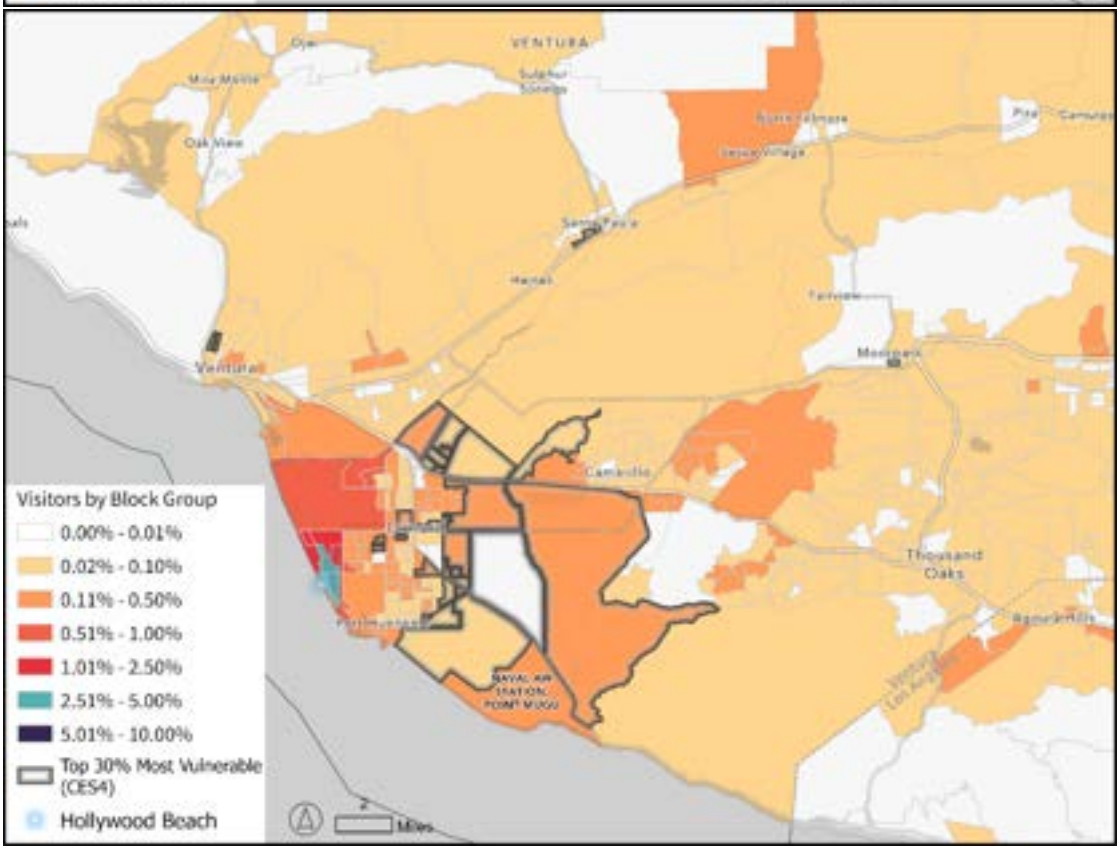


Chart of Visitation by Year

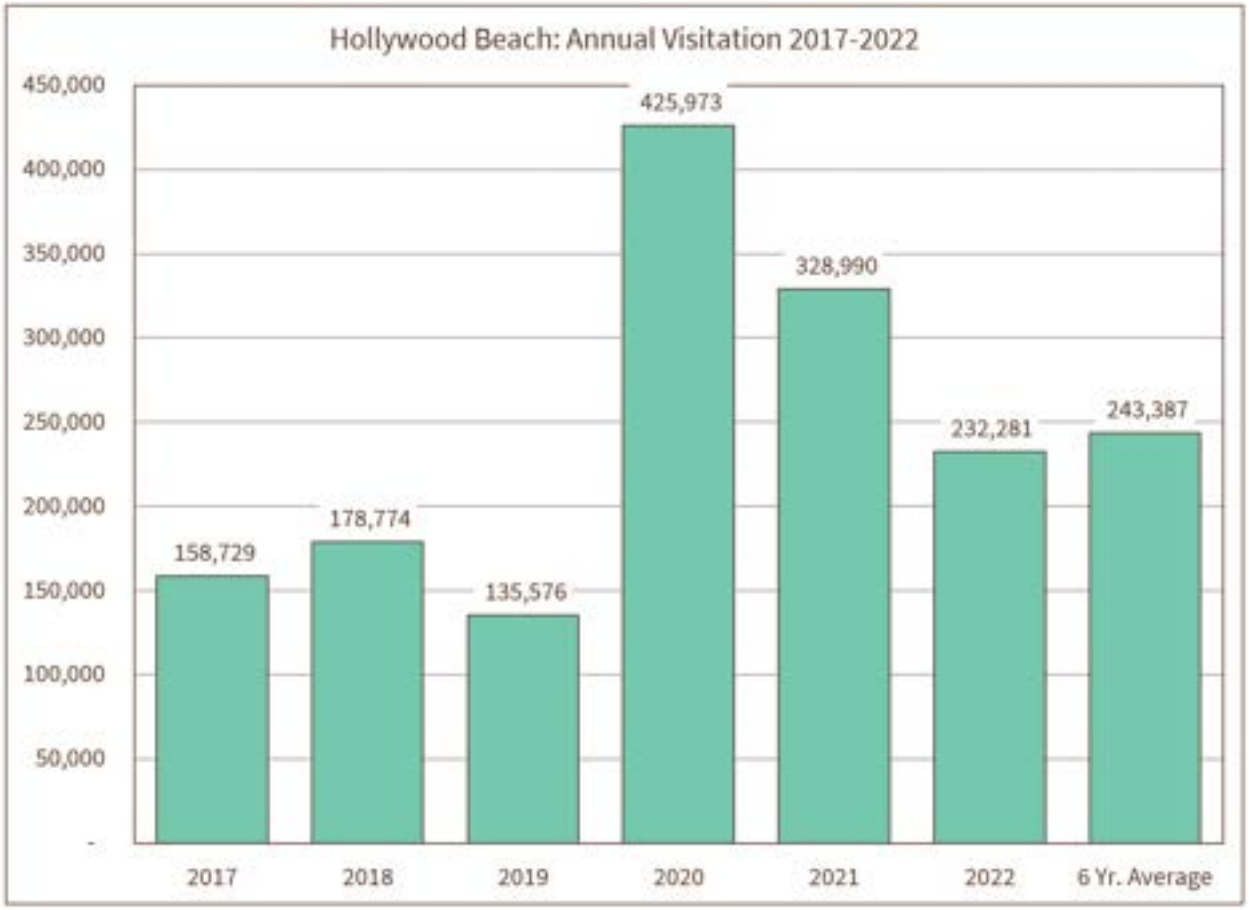
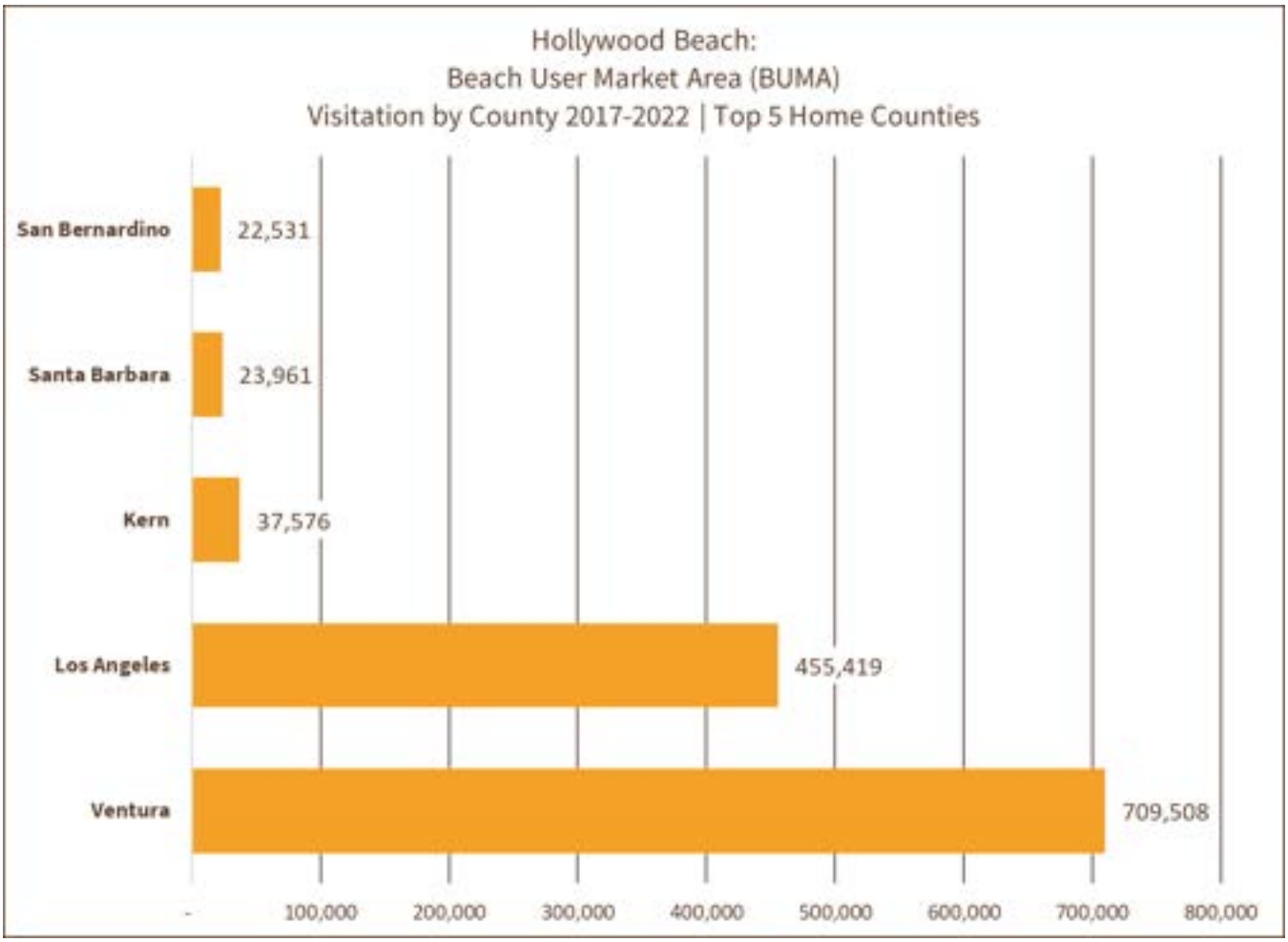
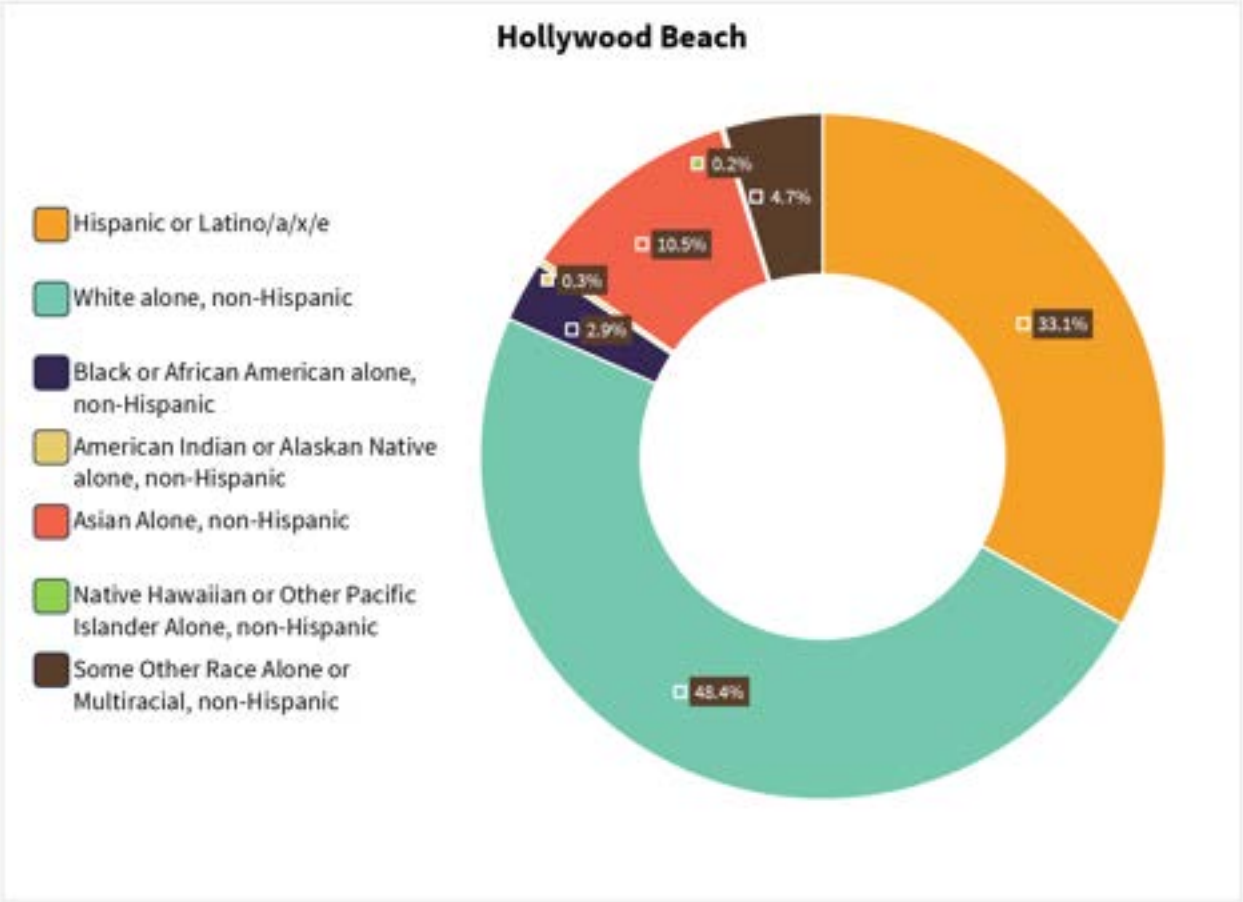


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Silverstrand Beach

General Statistics (2022)

Total Visitation: 86.7k

Average Visitation per Day: 270

Average Length of Stay: 2.5 hours

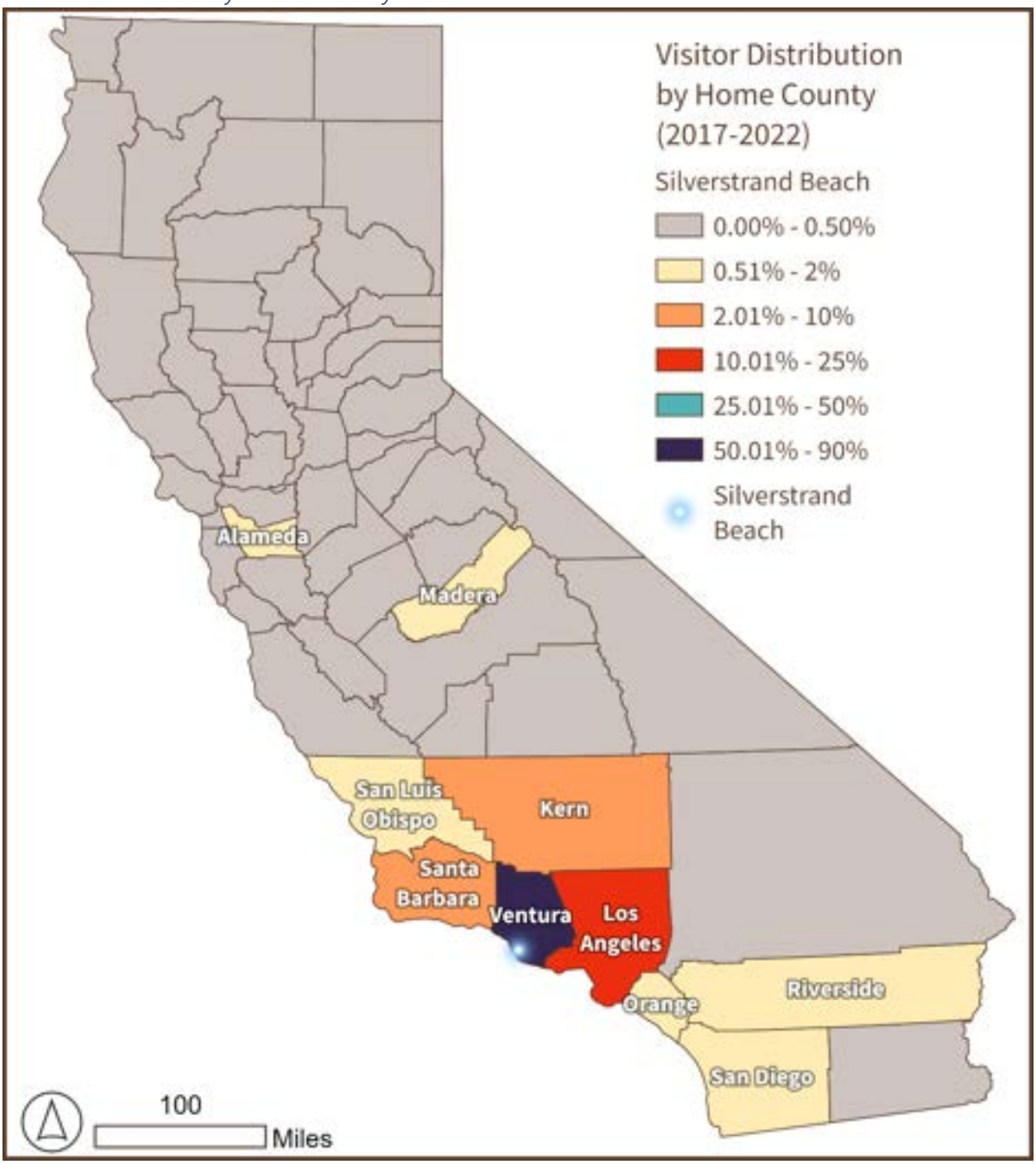
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 9%

Busiest Day of the Week: Saturday

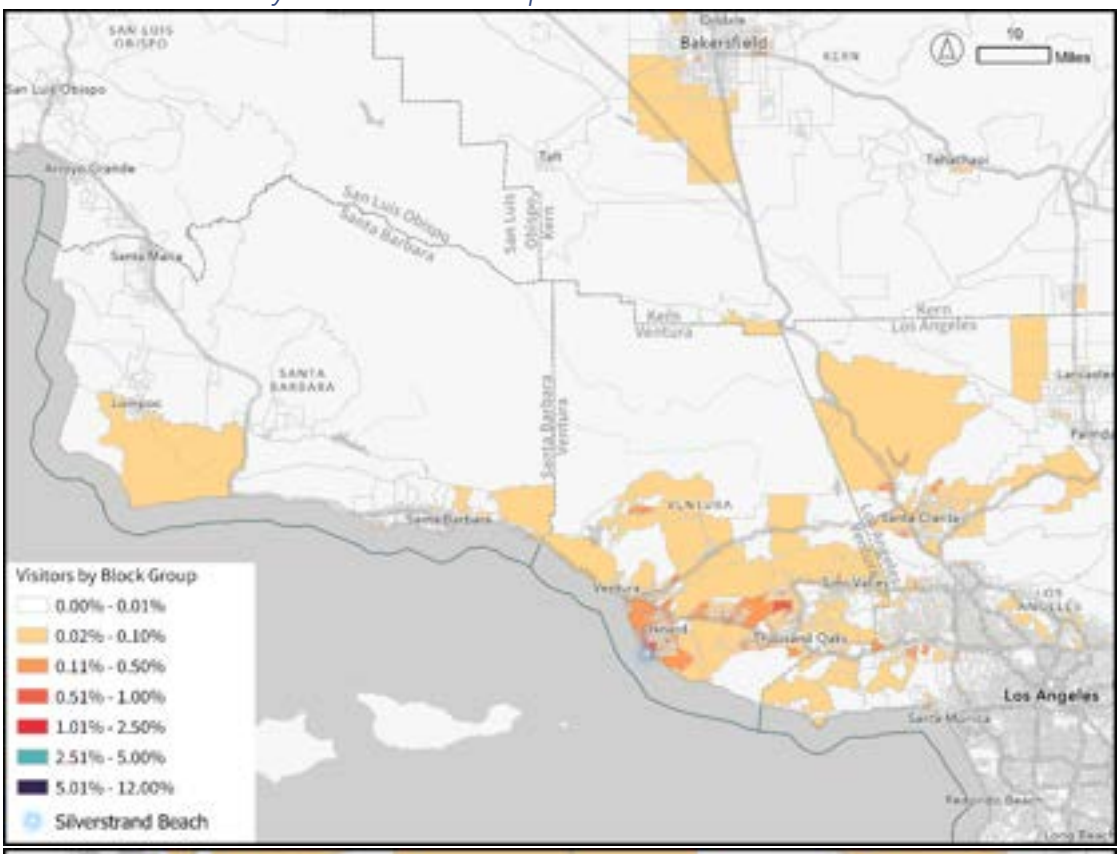
Busiest Hour: 2:00 pm

Heat Map of Hourly Visitation Silverstrand Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



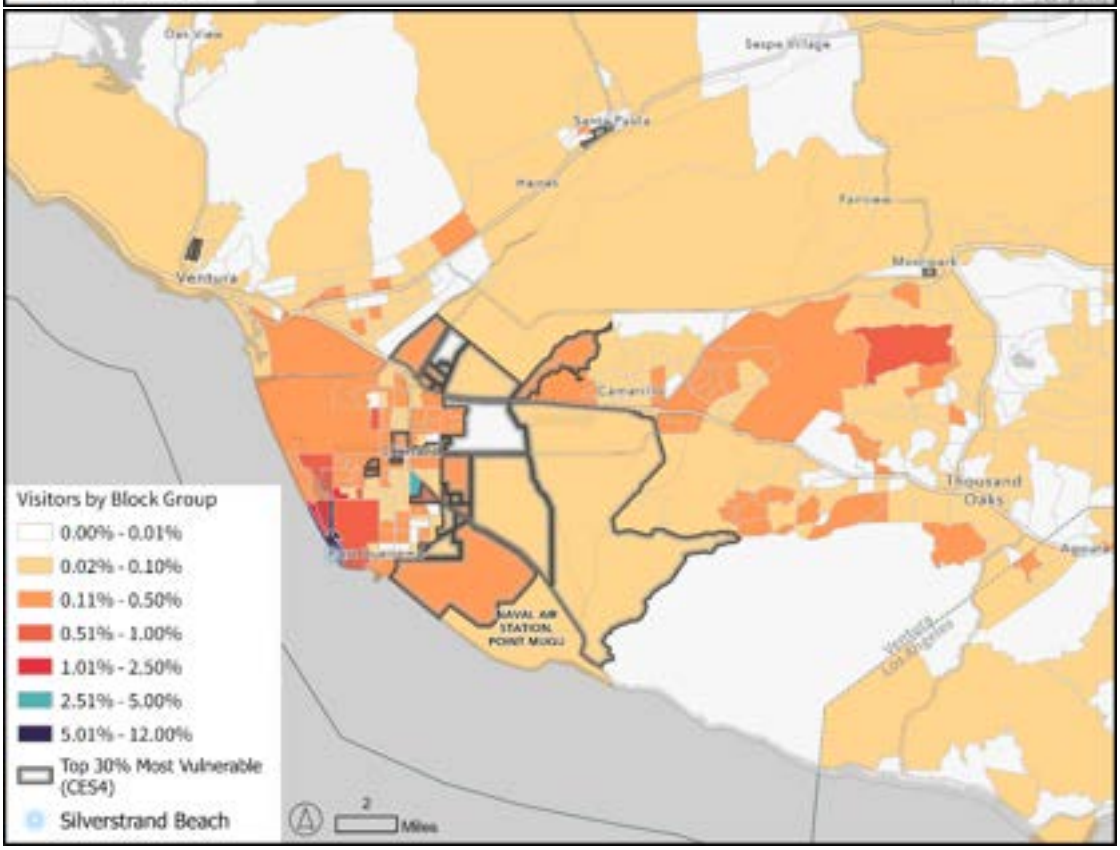
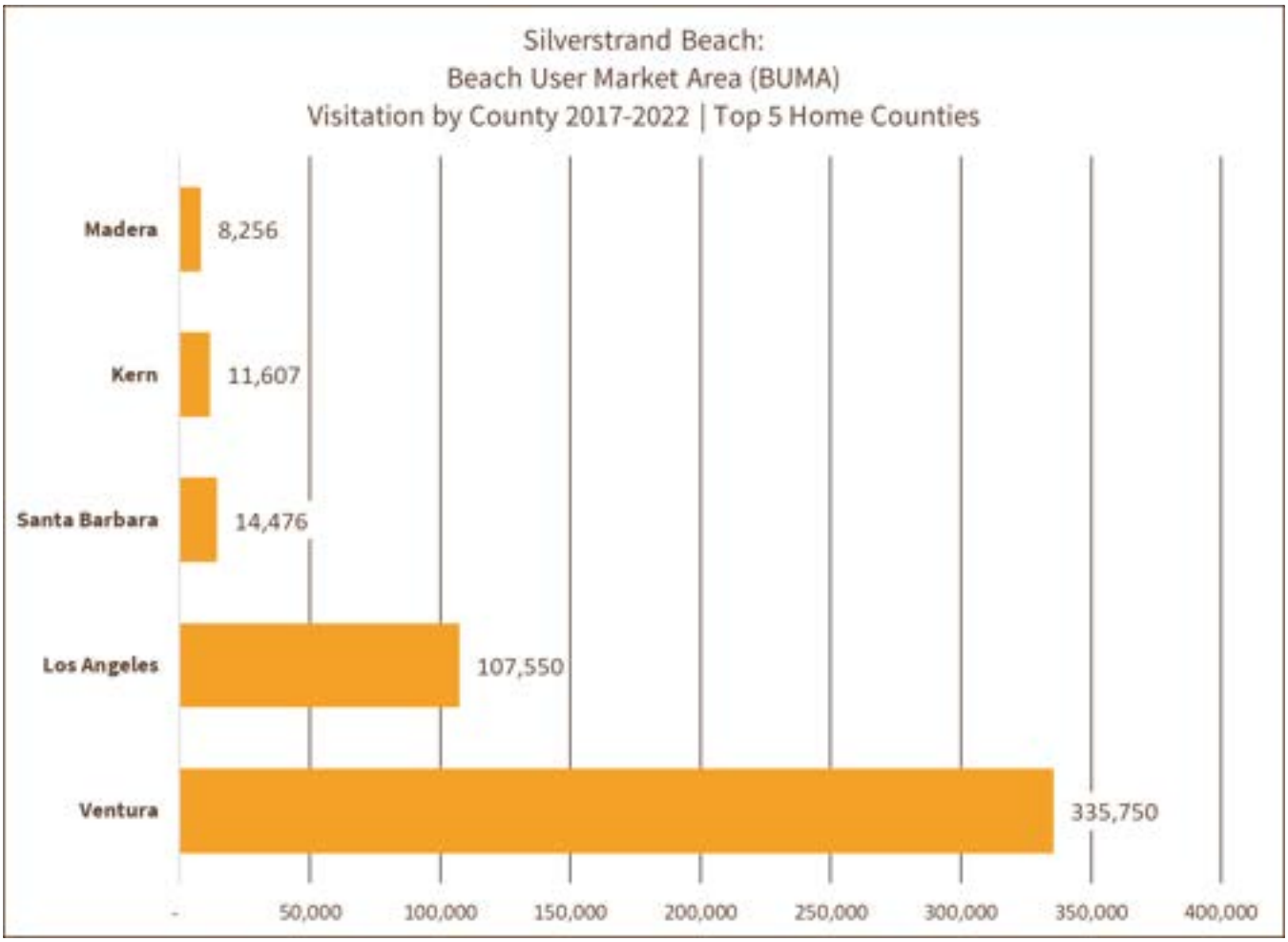
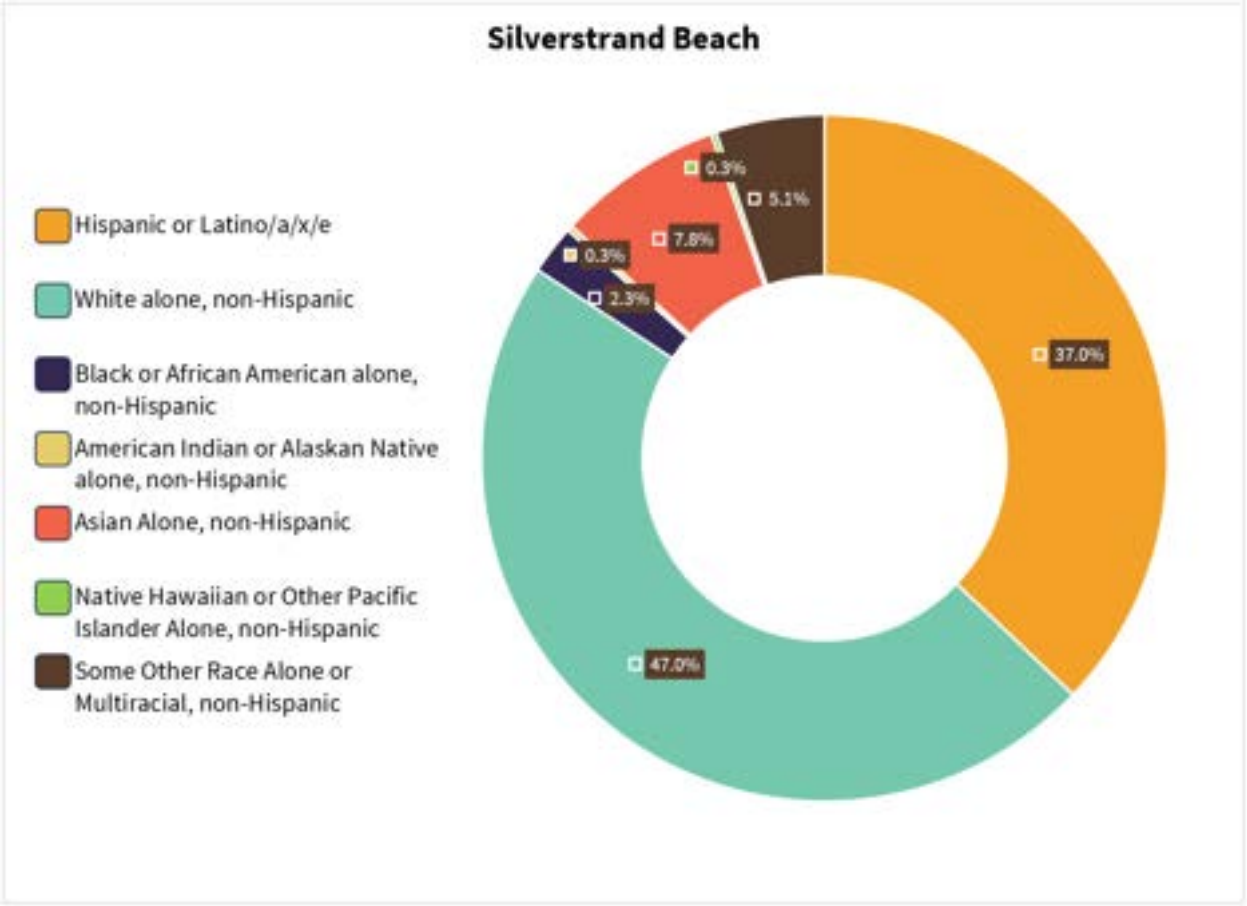


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Oxnard

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Fifth St. Beach	160,418	177,746	172,370	355,453	216,356	213,213
Ormond Beach Segment near Arnold Rd.	2,225	3,443	4,160	30,994	12,331	3,388
Oxnard Shores Beach	79,911	97,800	64,110	301,130	205,966	151,963

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fifth St. Beach	64,212	85,648	90,285	118,995	124,693	121,440	151,983	156,092	112,249	120,092	70,998	78,869
Ormond Beach Segment near Arnold Rd.	1,540	3,541	1,929	4,776	3,974	2,037	1,993	7,312	16,639	8,280	1,750	2,770
Oxnard Shores Beach	49,113	52,632	60,740	84,701	96,057	82,344	119,111	103,208	73,854	66,756	61,225	51,139

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Fifth St. Beach	164,468	169,697	157,998	159,518	187,192	231,242	225,441
Ormond Beach Segment near Arnold Rd.	6,969	9,437	9,365	6,858	7,716	9,533	6,663
Oxnard Shores Beach	105,564	95,015	93,337	101,440	123,293	204,426	177,805

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Fifth St. Beach	47%	39%	2%	0%	8%	0%	4%
Ormond Beach Segment near Arnold Rd.	61%	23%	2%	0%	11%	0%	3%
Oxnard Shores Beach	32%	52%	2%	0%	9%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Fifth St. Beach	84%	16%
Ormond Beach Segment near Arnold Rd.	93%	7%
Oxnard Shores Beach	89%	11%

5th Street Beach

General Statistics (2022)

Total Visitation: 213.2k

Average Visitation per Day: 590

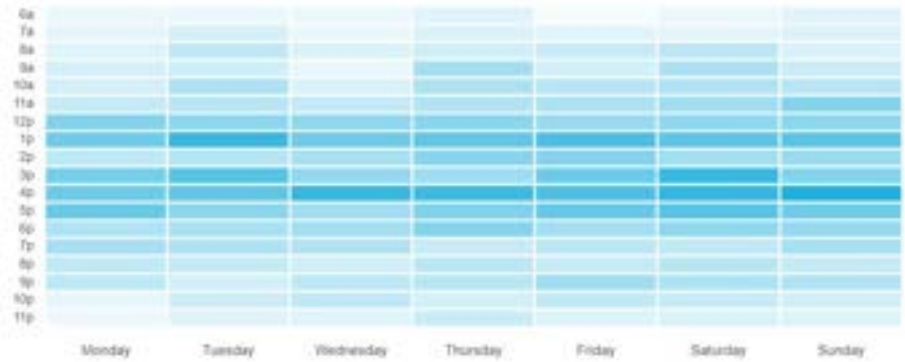
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 16%

Average Length of Stay: 1.25 hours

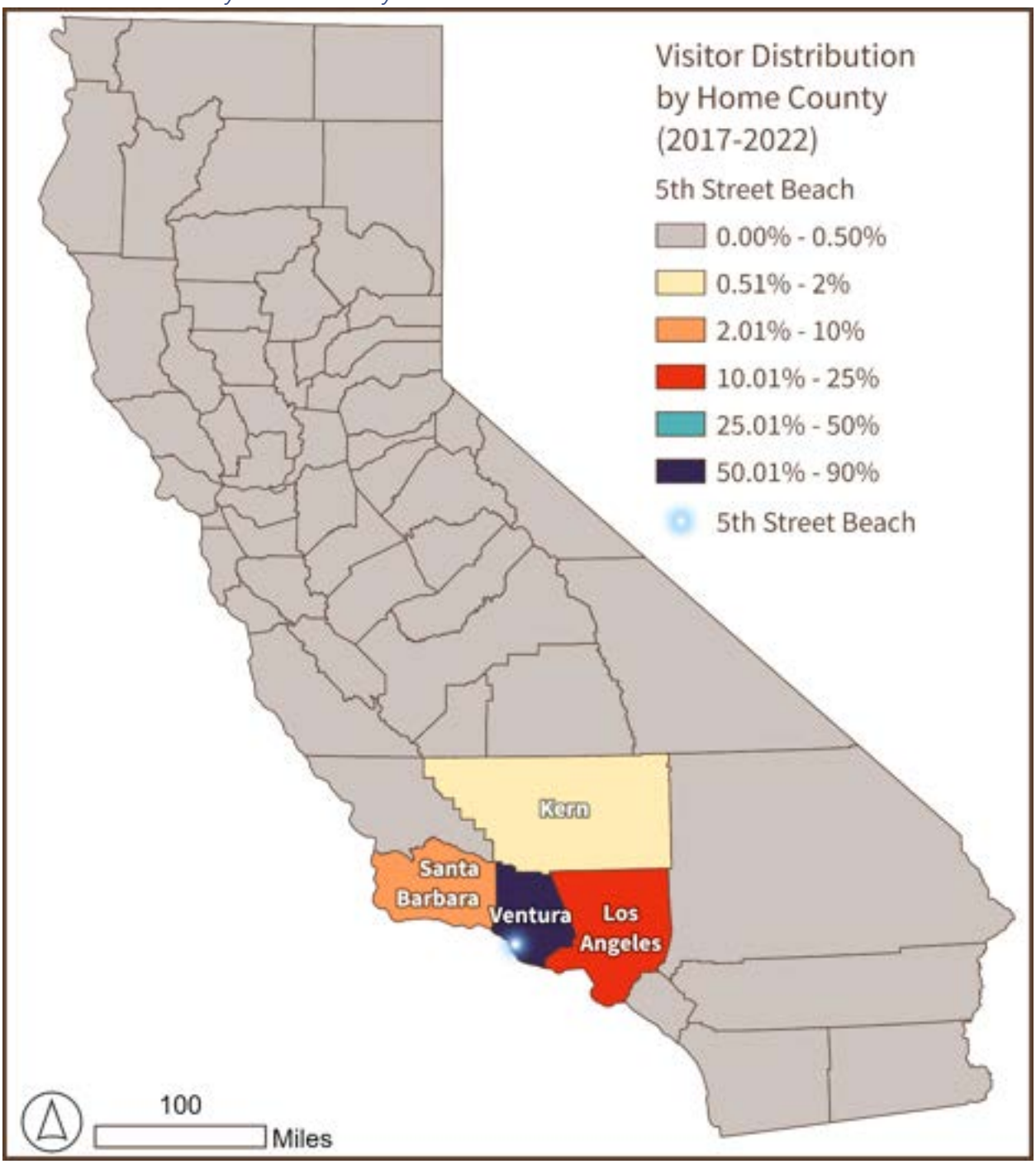
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

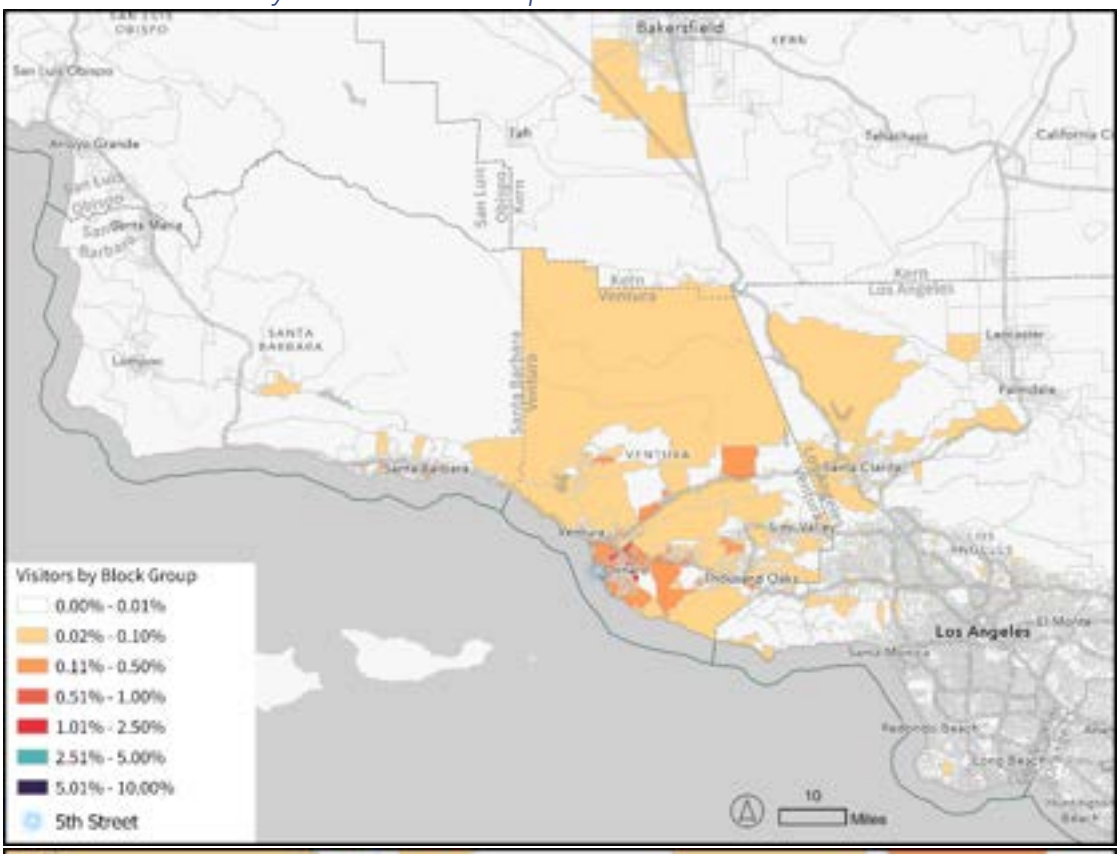
Heat Map of Hourly Visitation for 5th Street:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



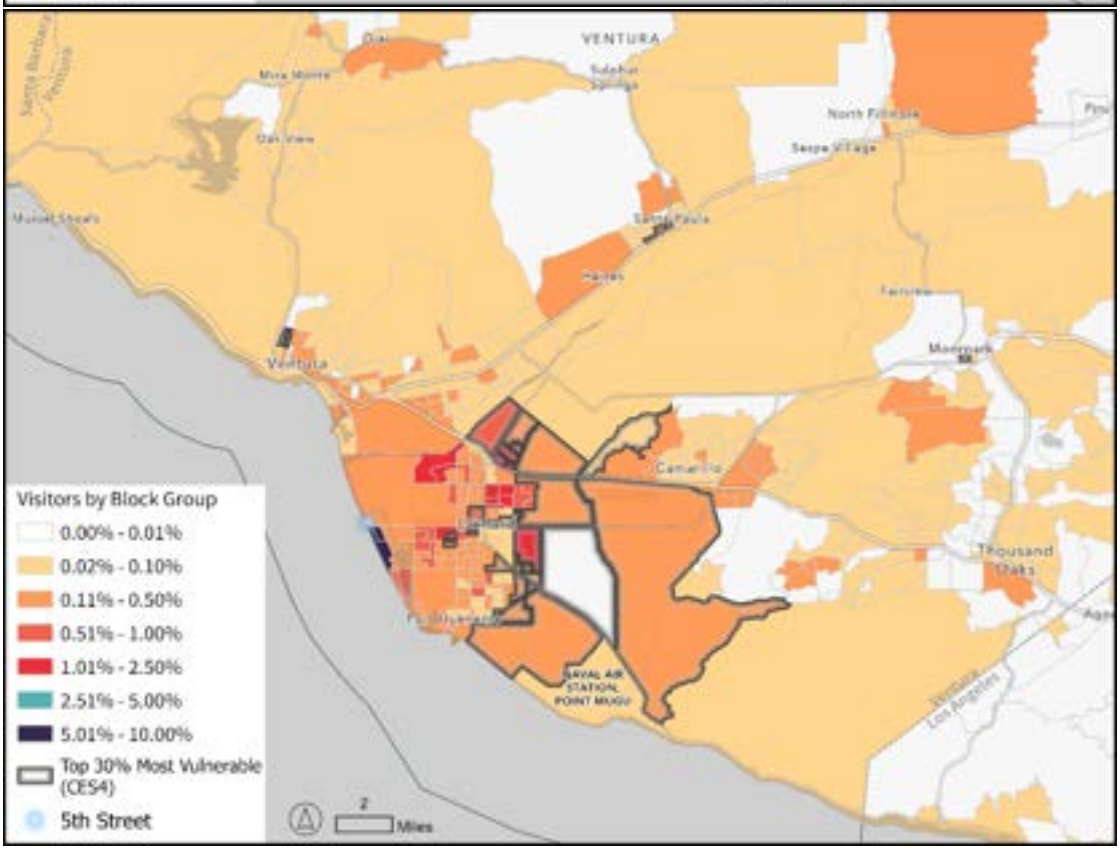
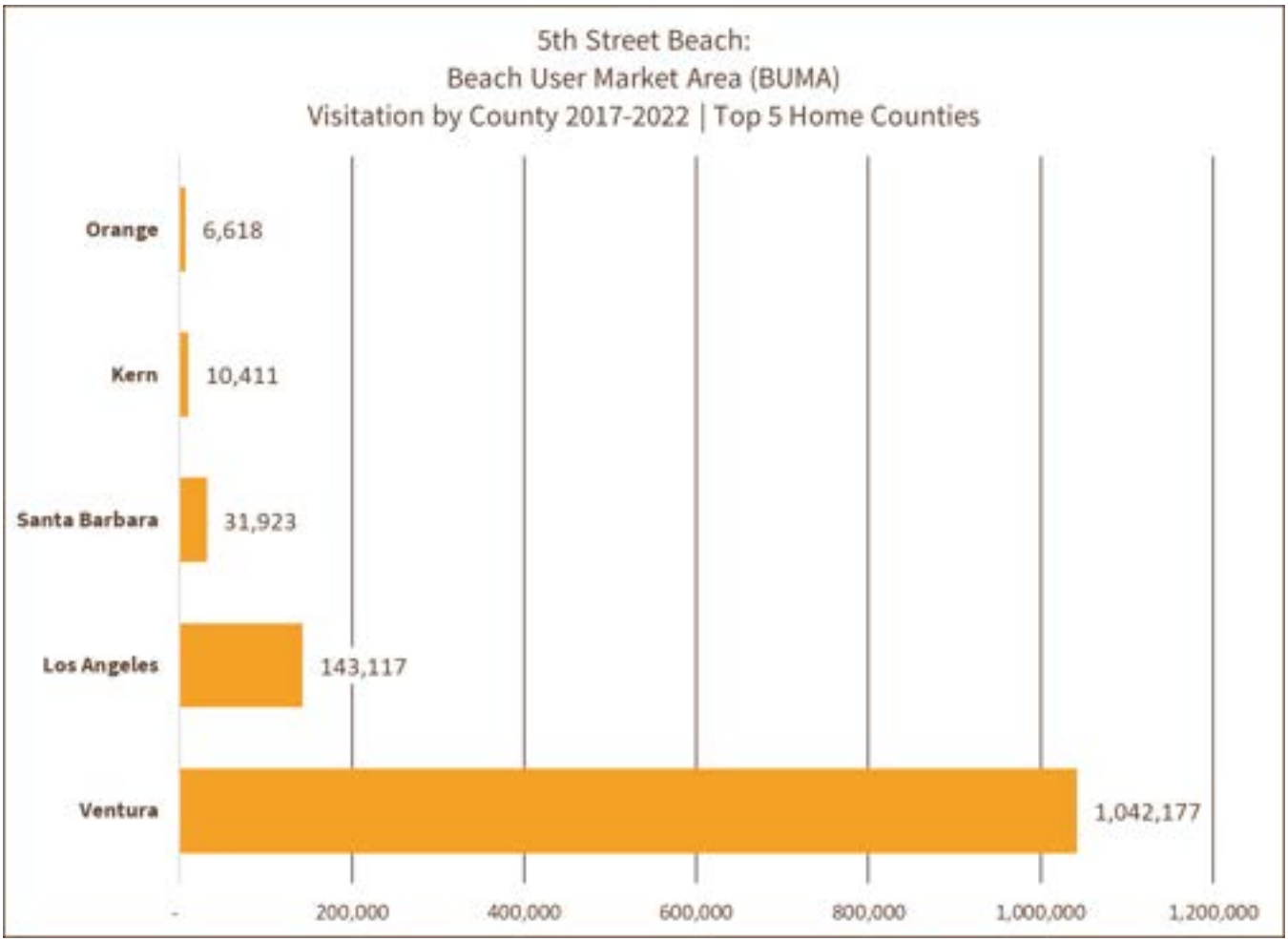
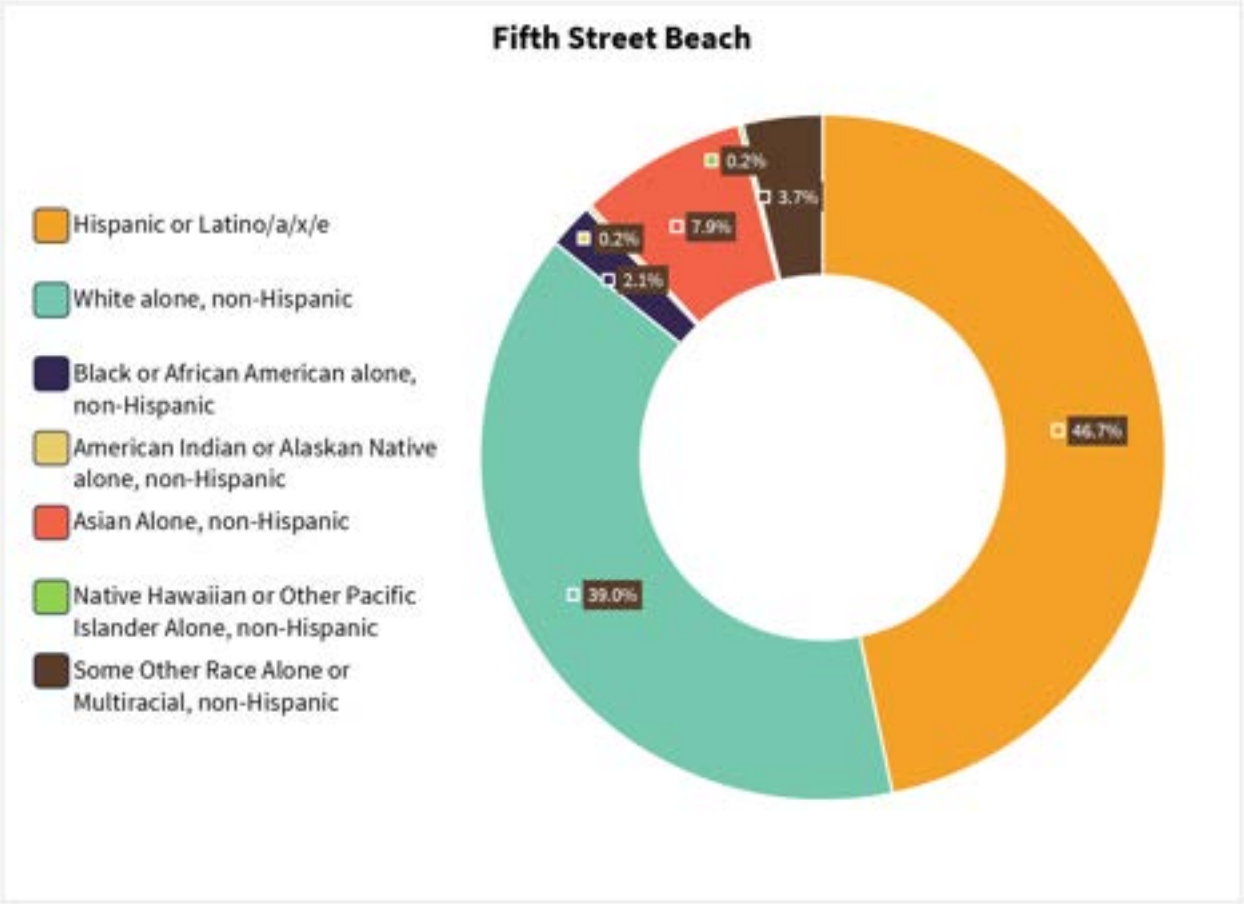


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Ormond (Arnold Road) Beach

General Statistics (2022)

Total Visitation: 3.4k

Average Visitation per Day: 80

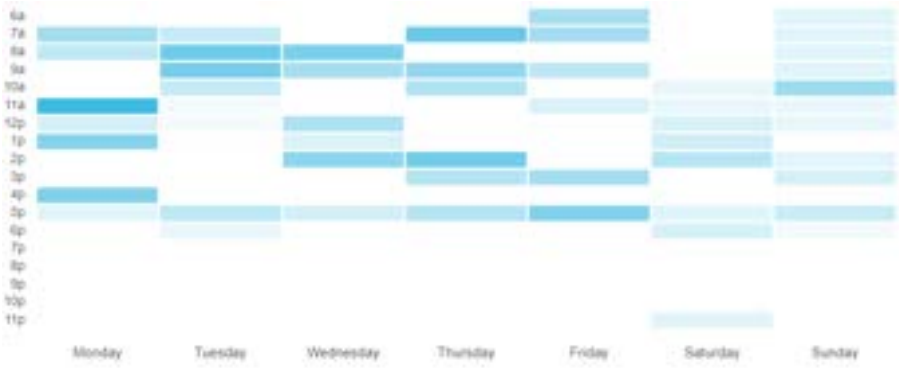
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 7%

Average Length of Stay: 1.25 hours

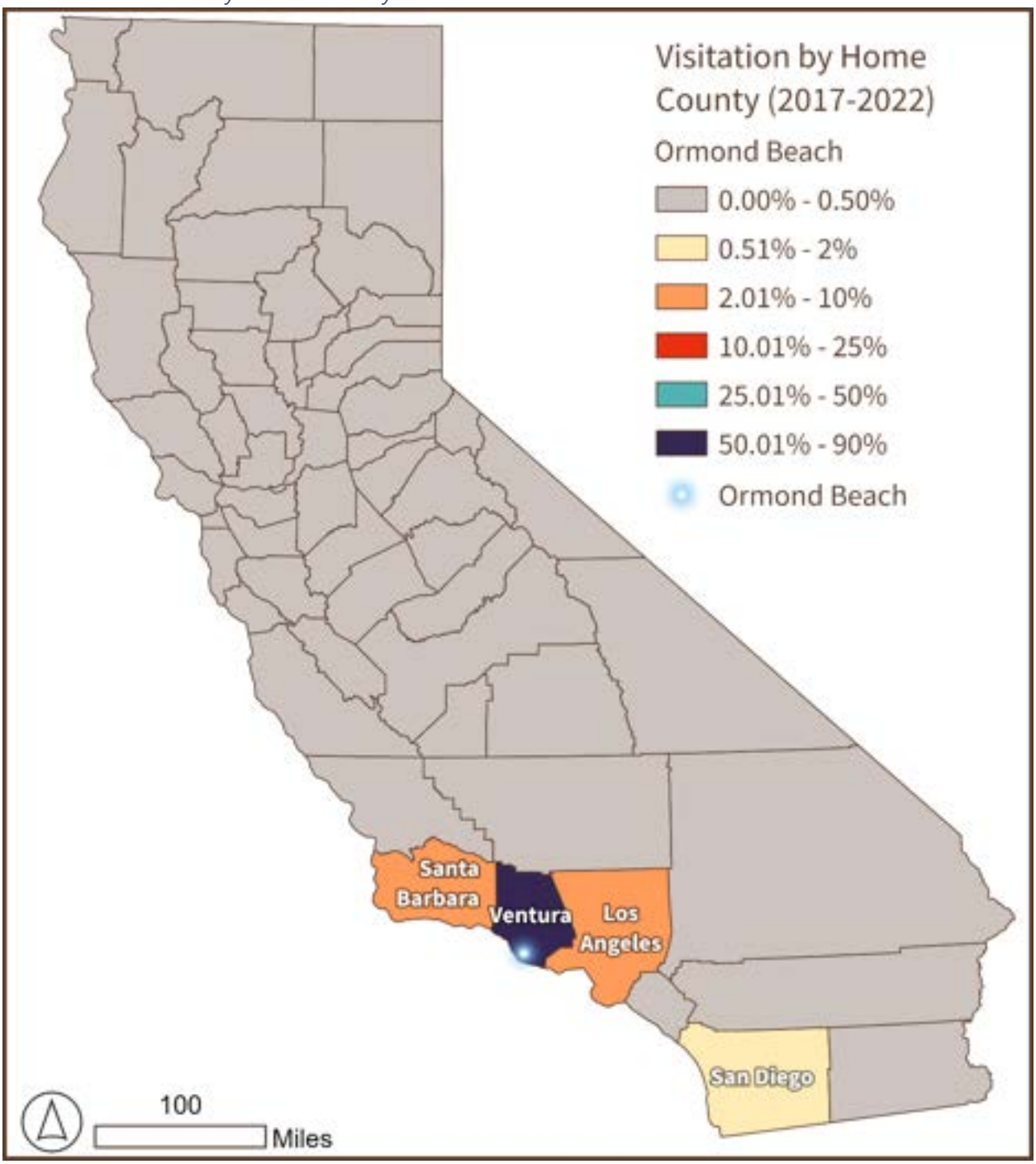
Busiest Day of the Week: Monday

Busiest Hour: 9:00 am

Heat Map of Hourly Visitation Ormond Beach (Arnold Road):



Visitor Distribution by Home County



Visitor Distribution by Home Block Group

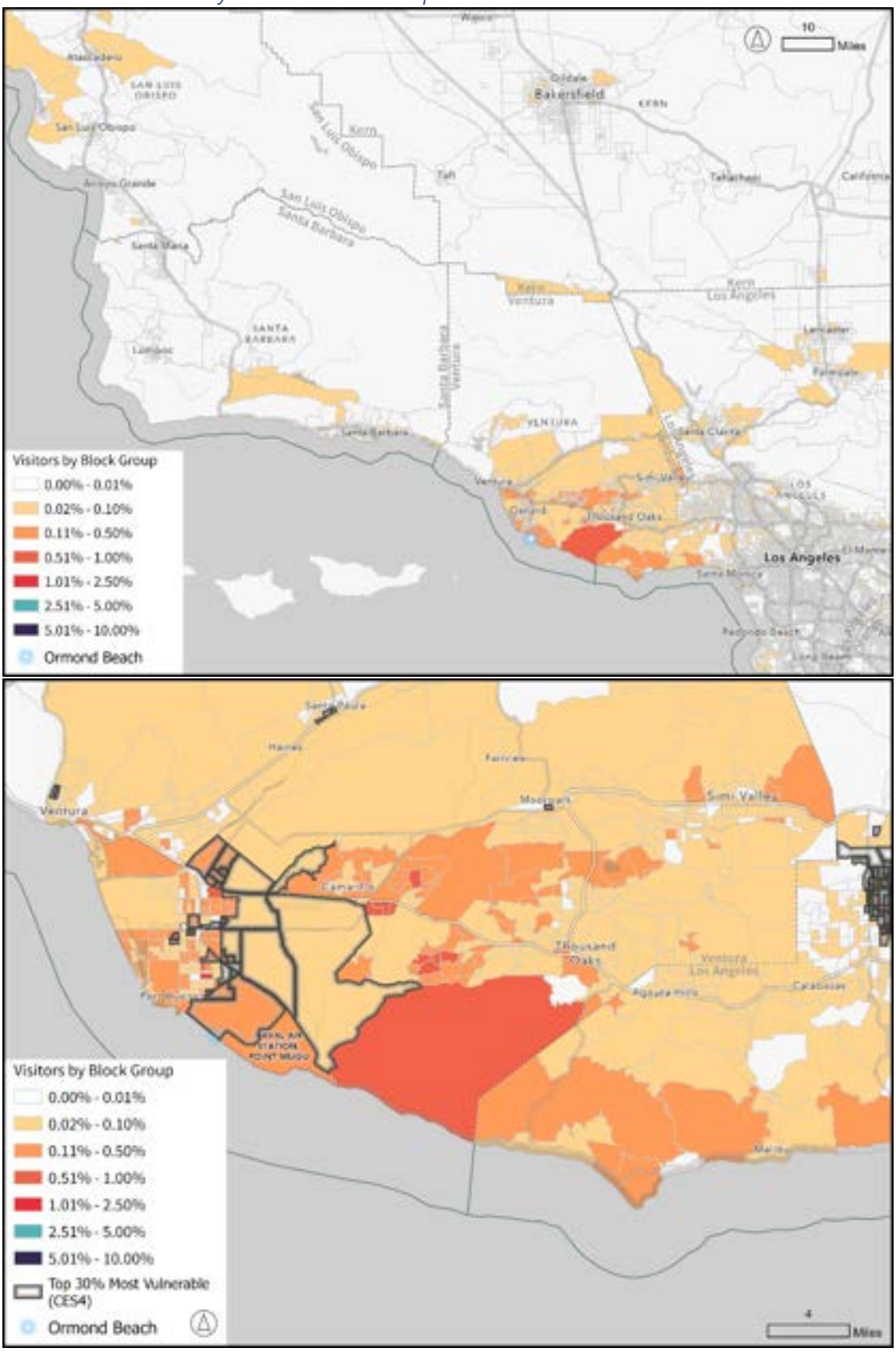


Chart of Visitation by Year

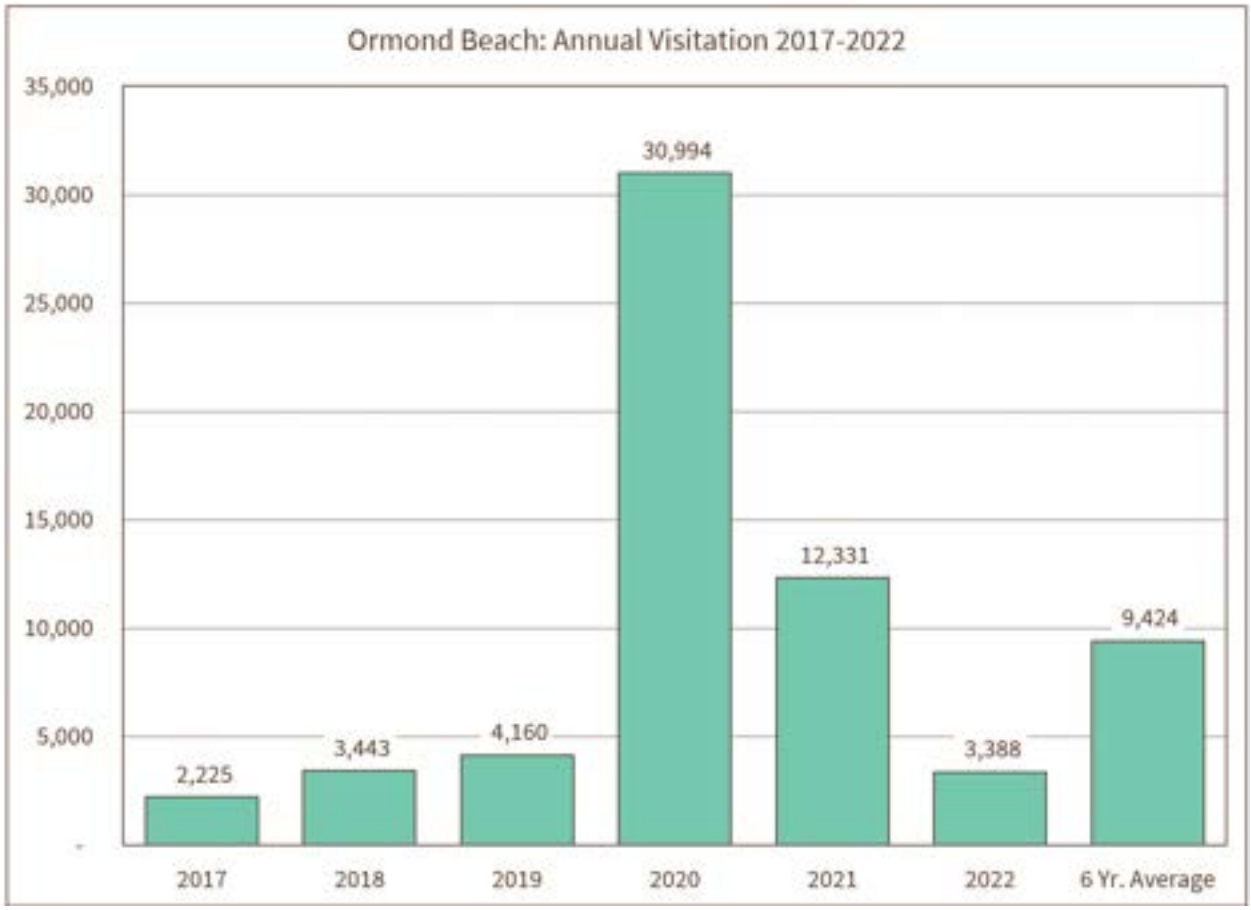
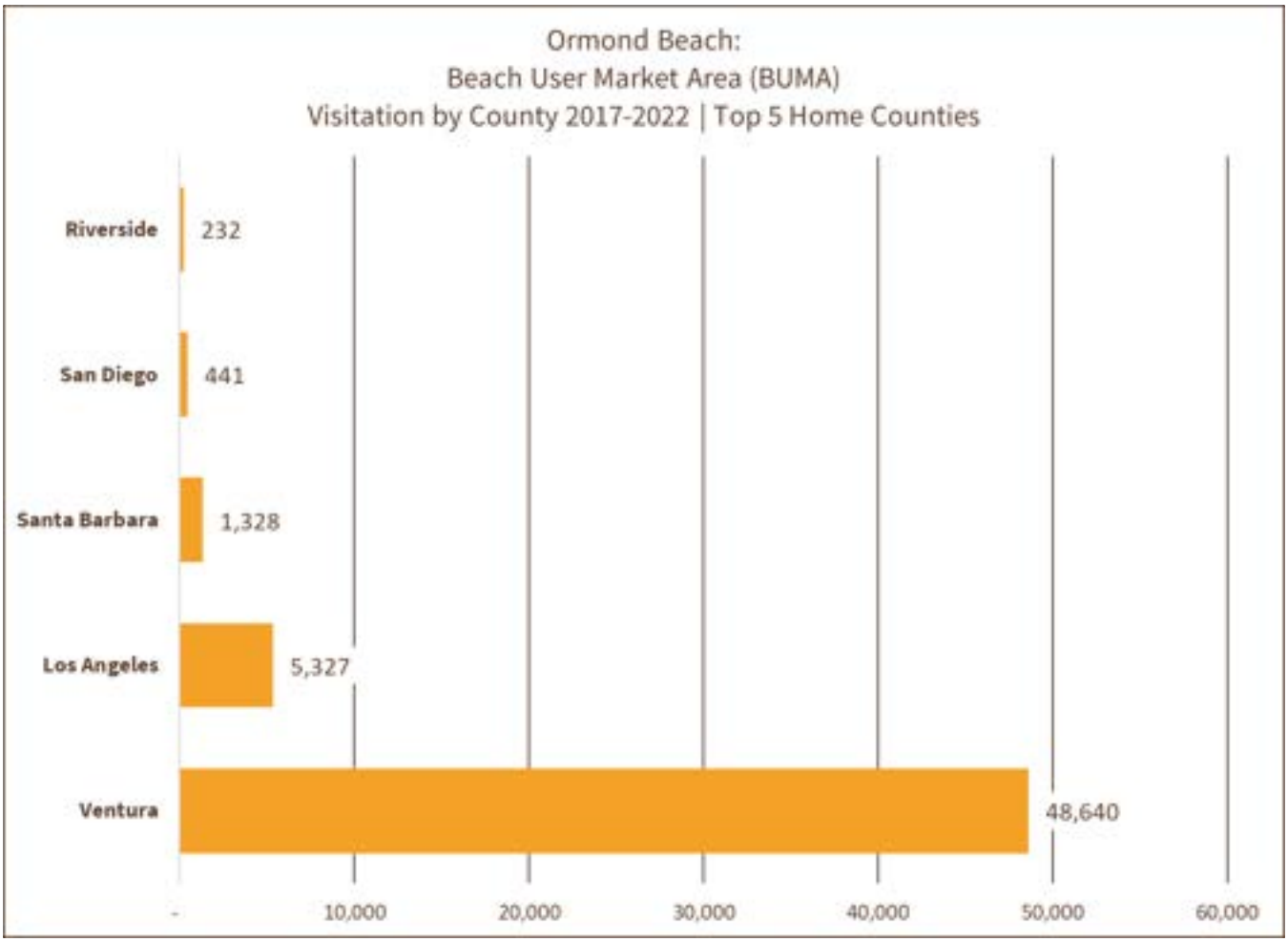
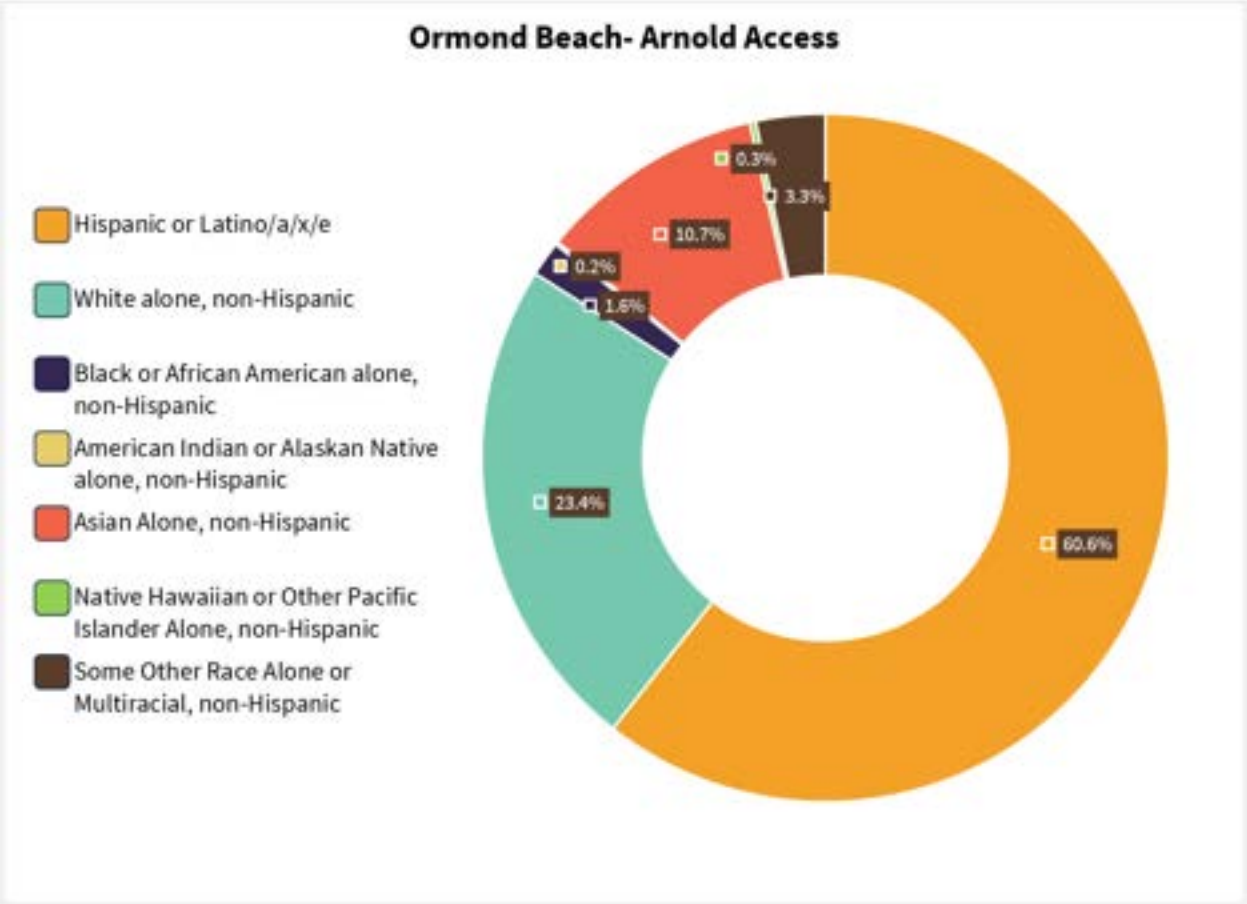


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Oxnard Shores Beach

General Statistics (2022)

Total Visitation: 152k

Average Visitation per Day: 430

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 11%

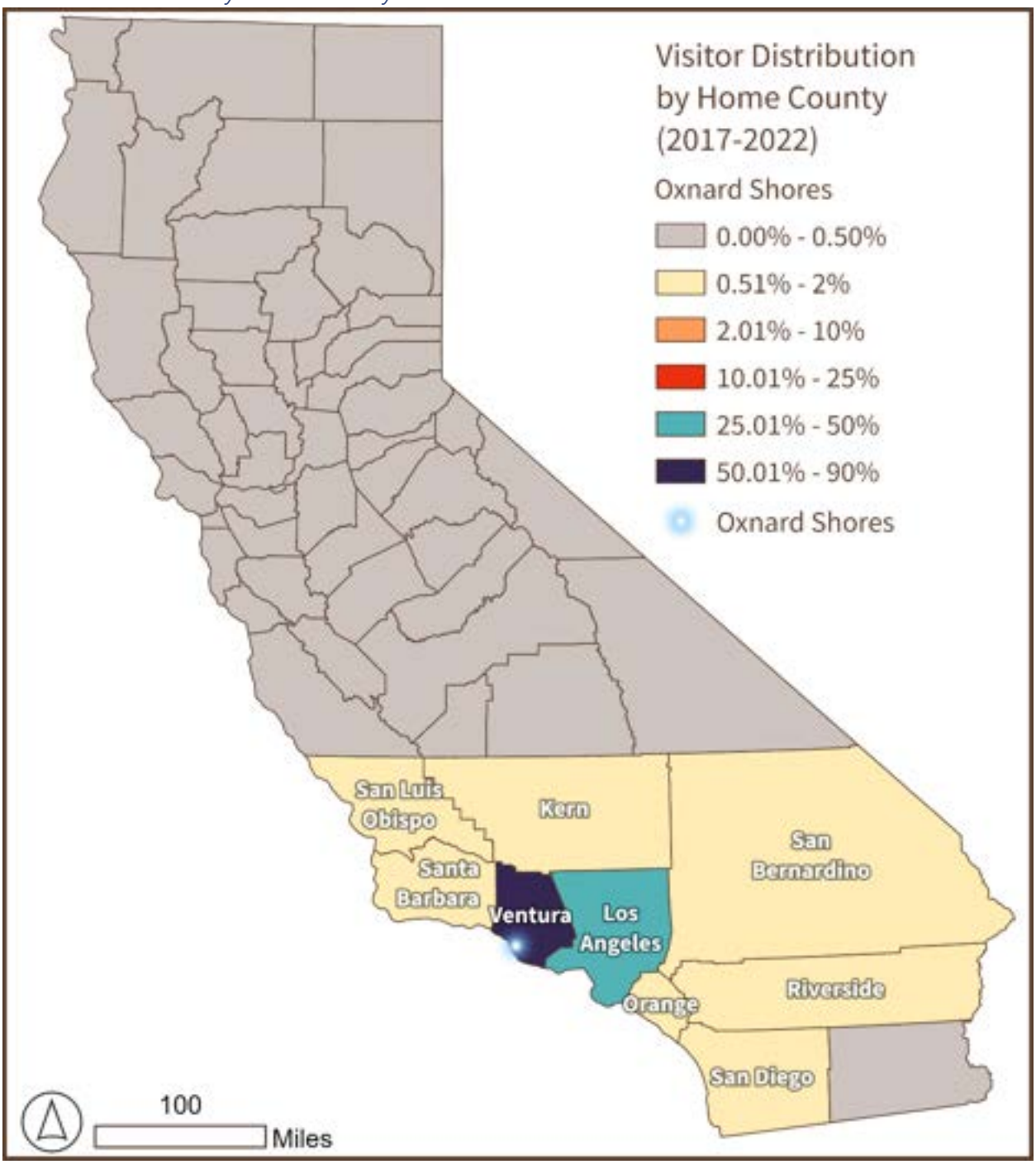
Average Length of Stay: 2 hours

Busiest Day of the Week: Saturday

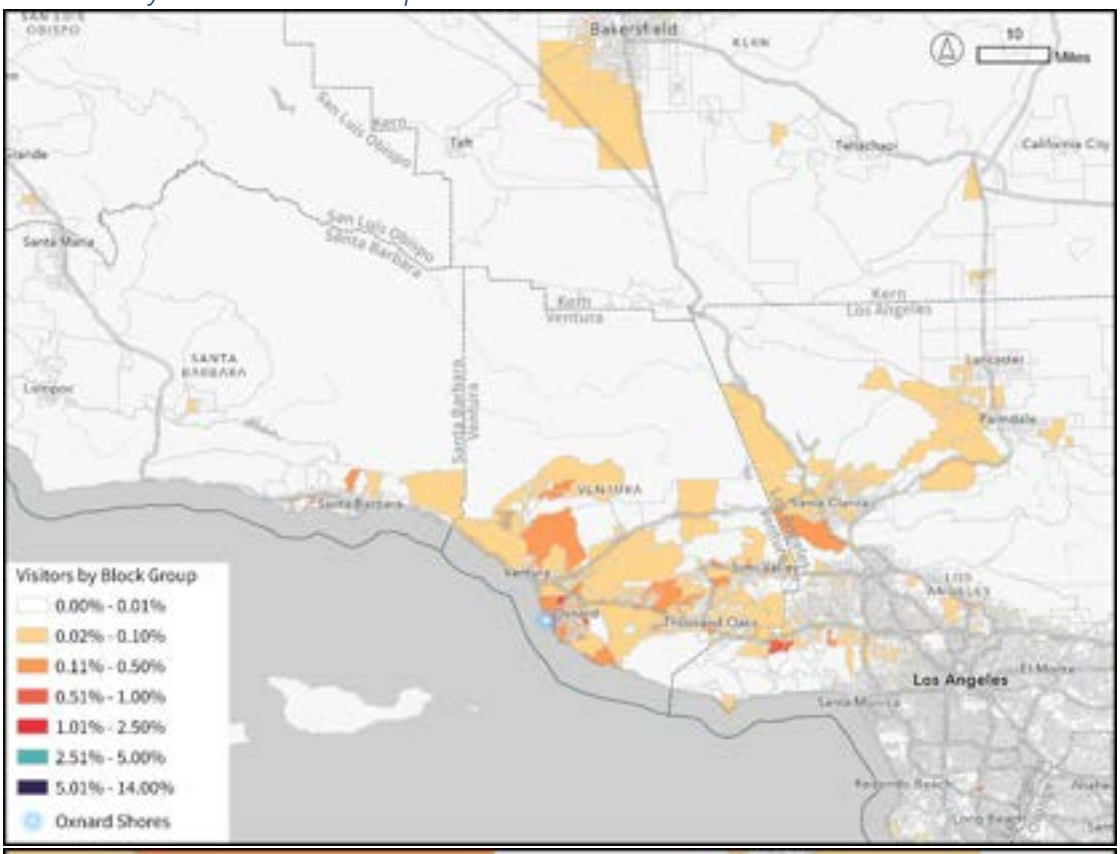
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Oxnard Shores Beach:

Visitor Distribution by Home County



Visitation by Home Block Group



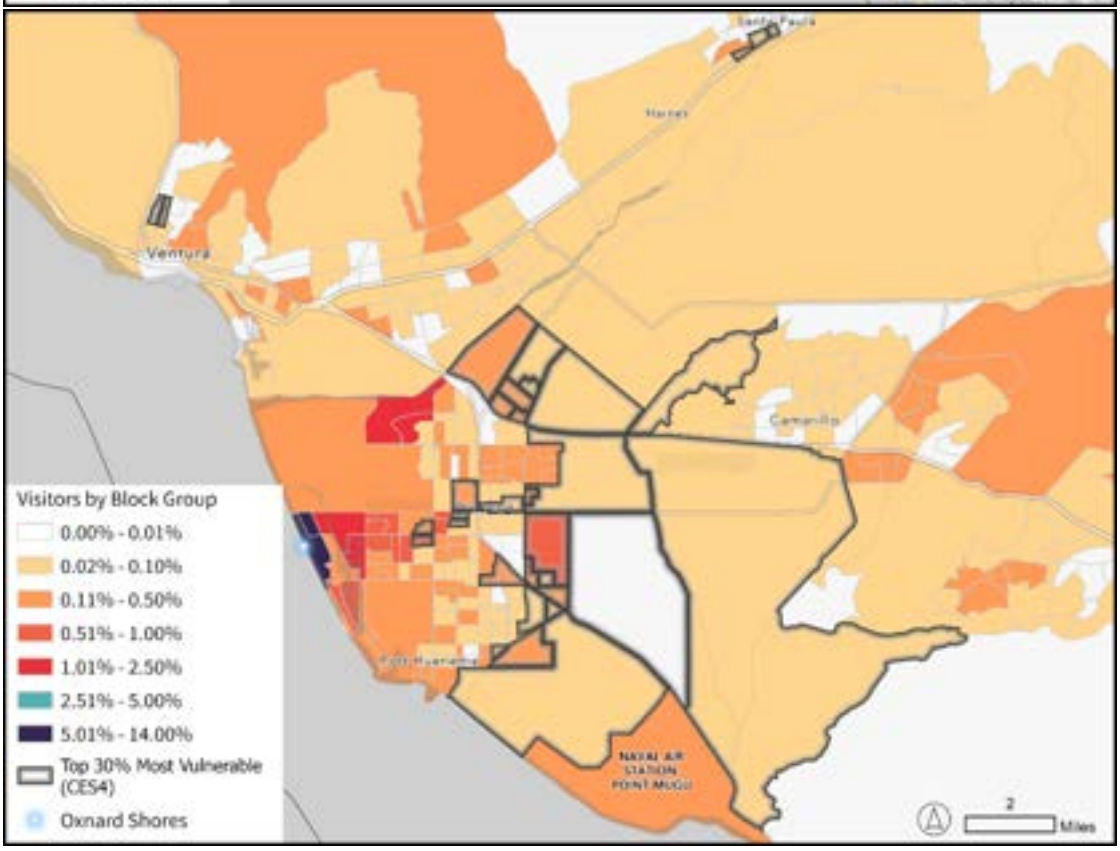


Chart of Visitation by Year

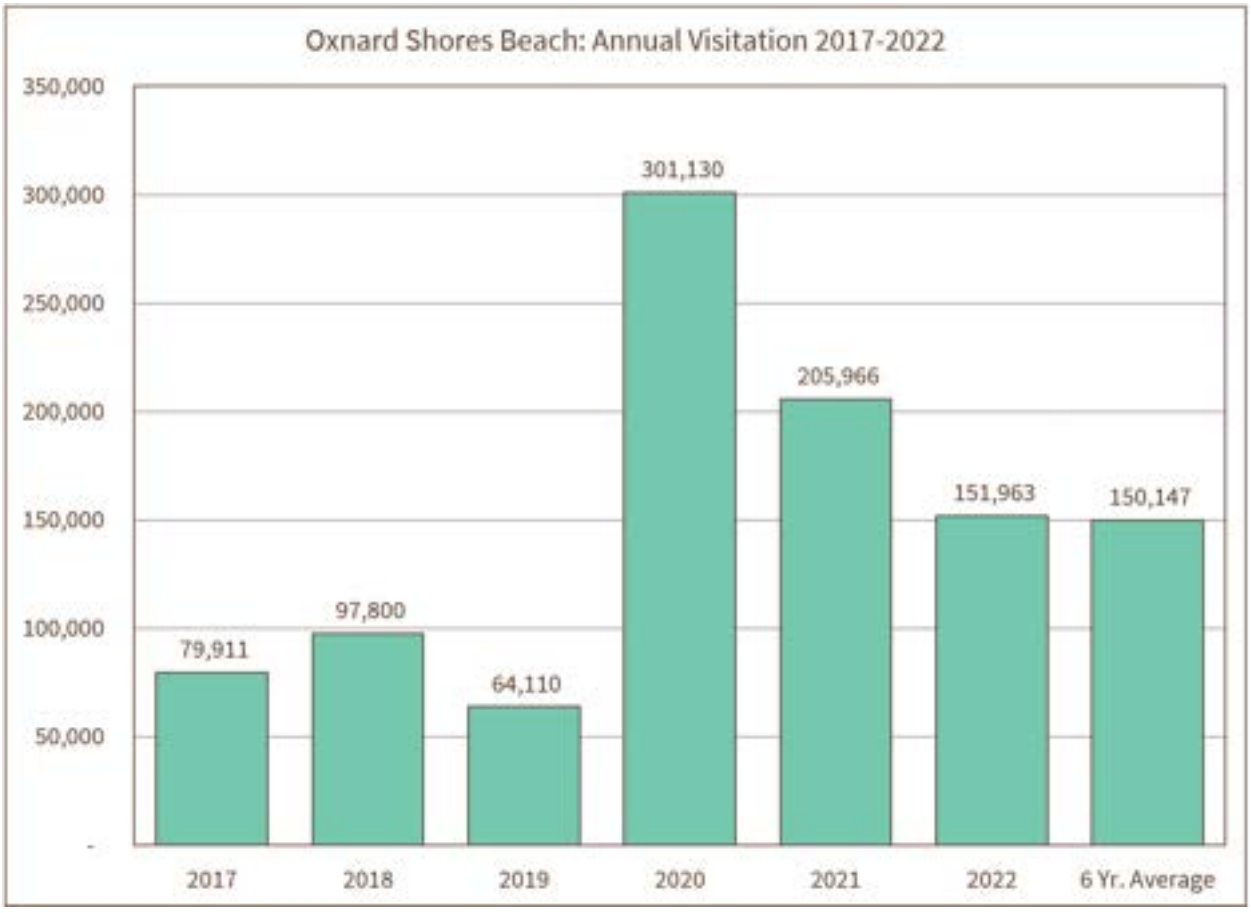
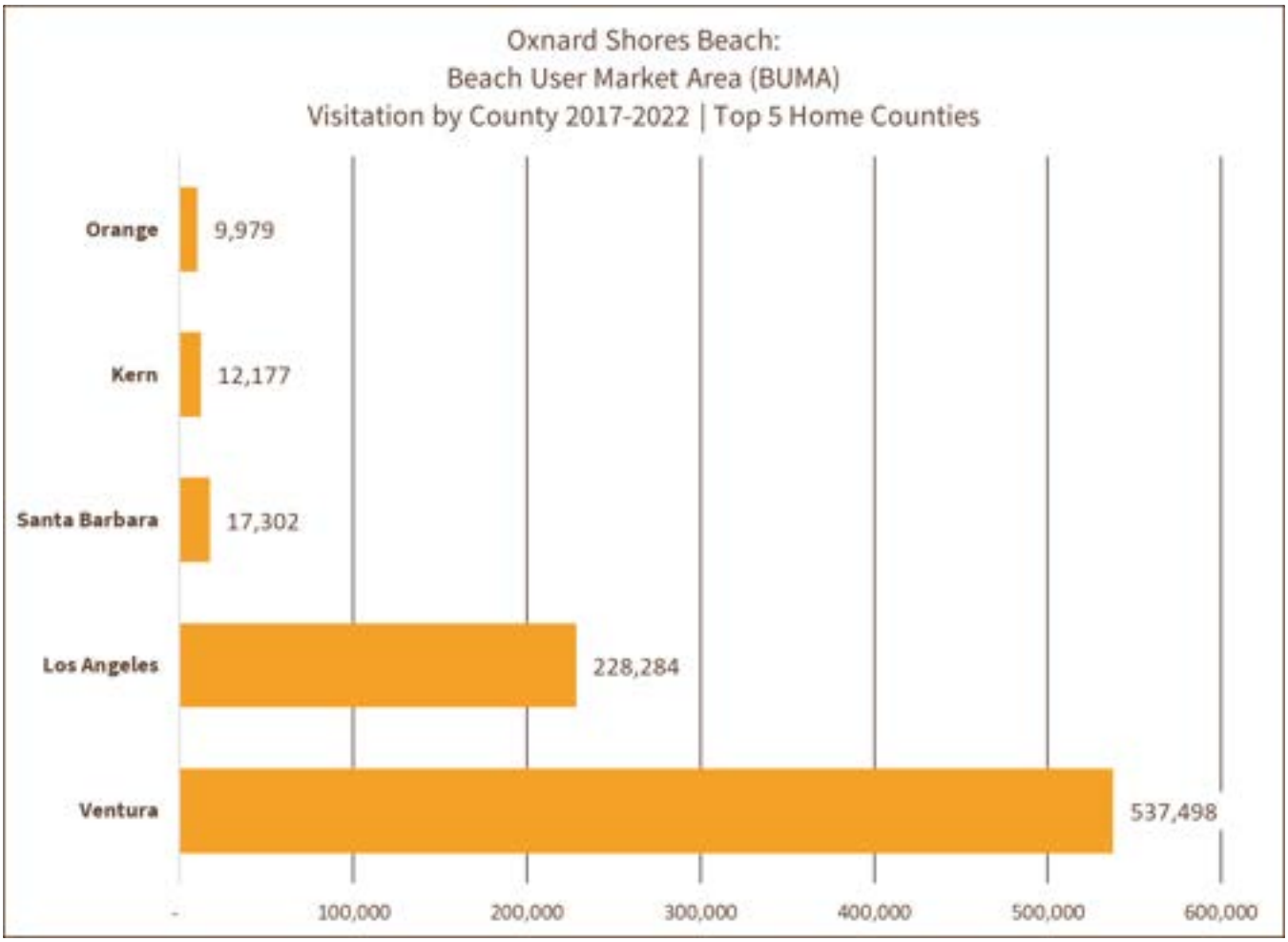
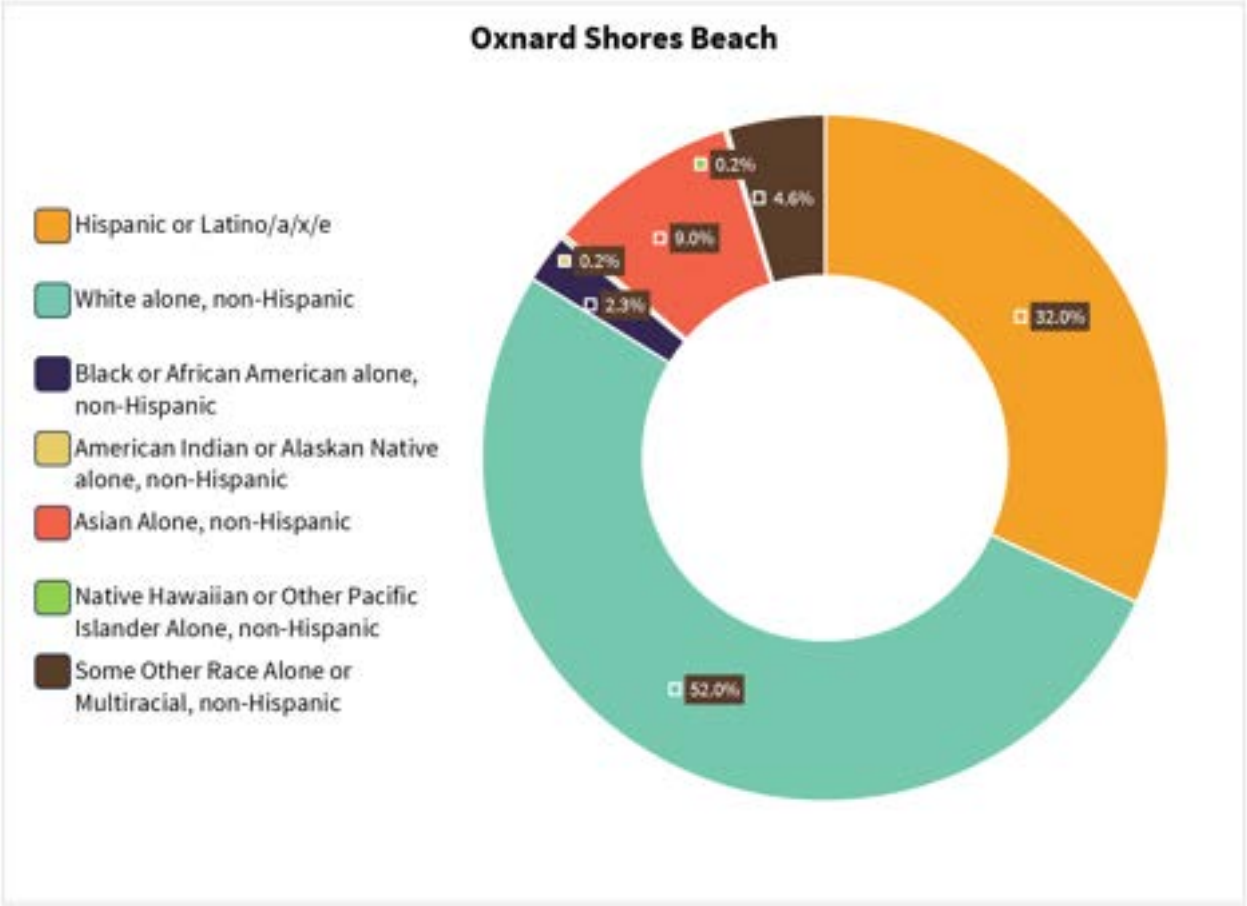


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Port Hueneme

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Hueneme Beach	350,937	395,336	397,463	559,675	800,354	700,793

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hueneme Beach	211,990	181,804	198,397	233,493	297,319	304,737	407,734	370,454	293,177	295,321	219,029	191,103

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Hueneme Beach	415,325	392,868	411,291	375,748	423,295	591,555	594,476

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Hueneme Beach	57%	28%	3%	0%	8%	0%	4%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Hueneme Beach	85%	15%

Hueneme Beach

General Statistics (2022)

Total Visitation: 700.8k

Average Visitation per Day: 1.9k

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 15%

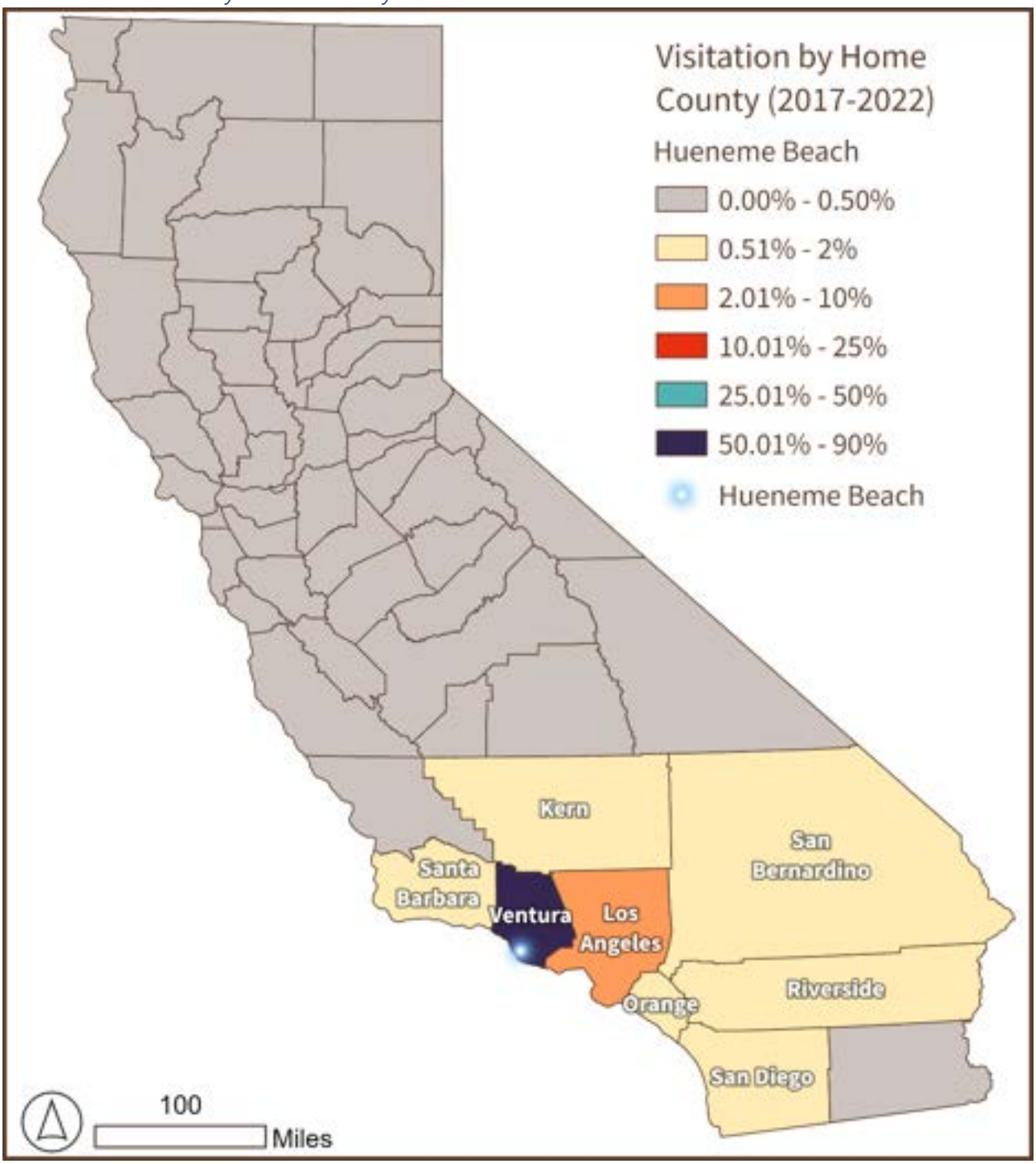
Average Length of Stay: 2.5 hours

Busiest Day of the Week: Sunday

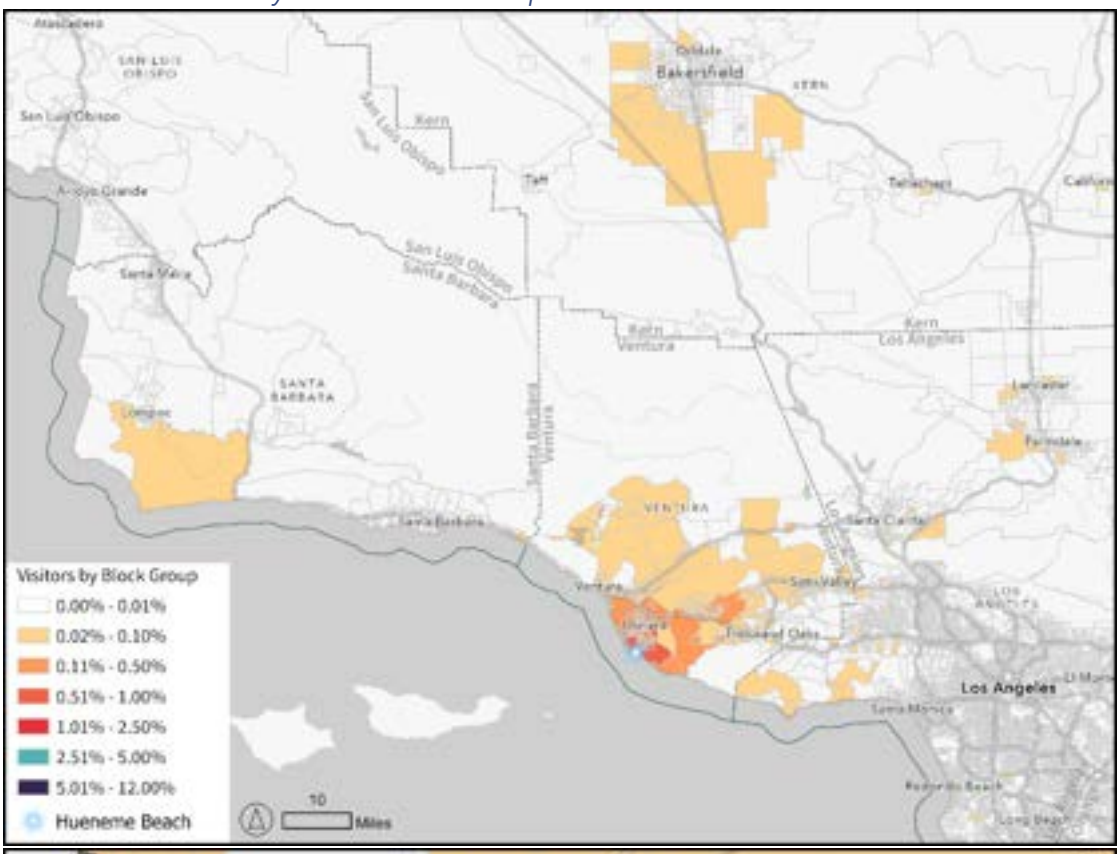
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Hueneme Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



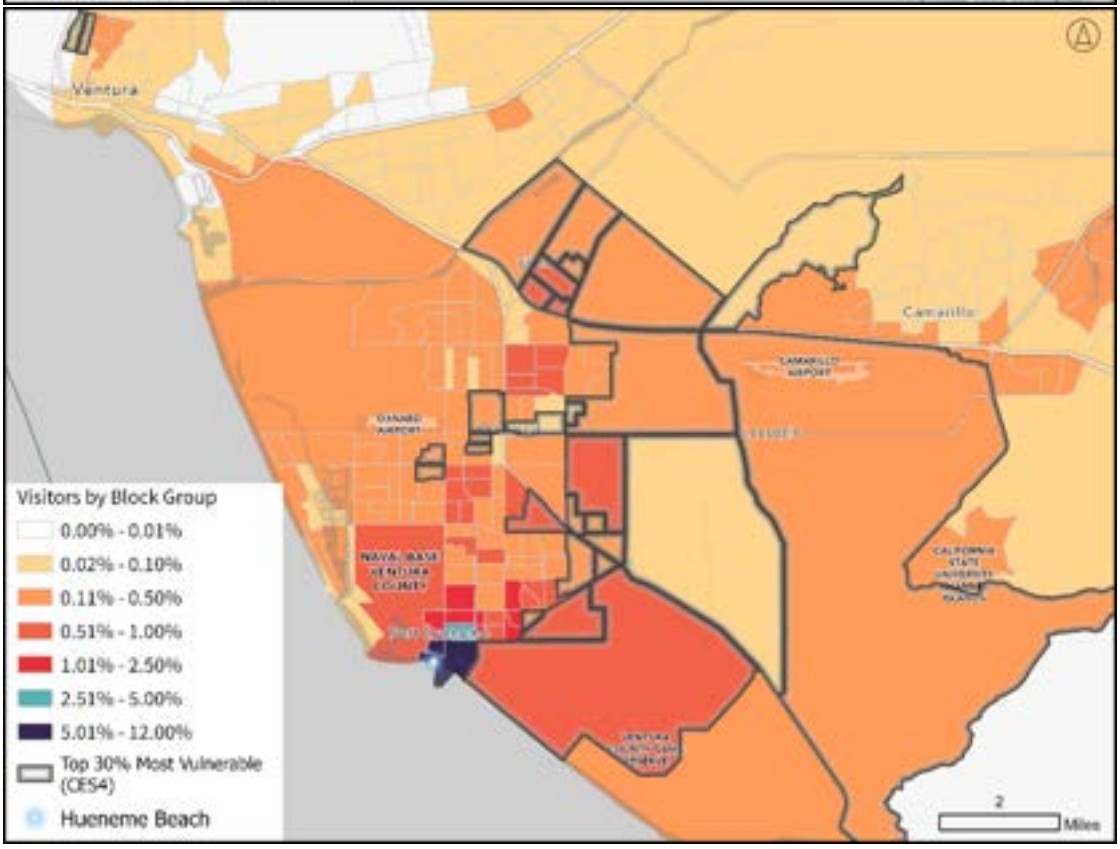


Chart of Visitation by Year

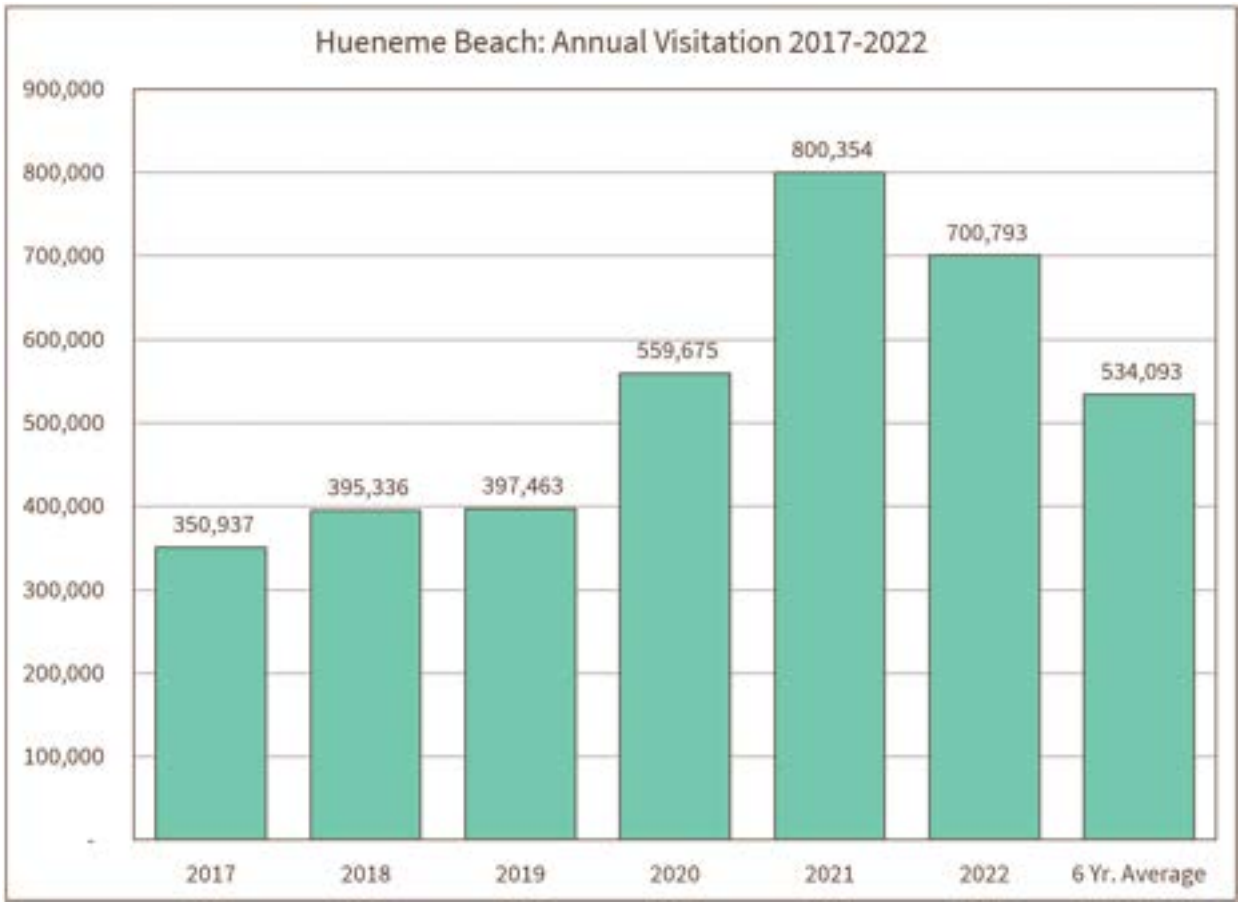
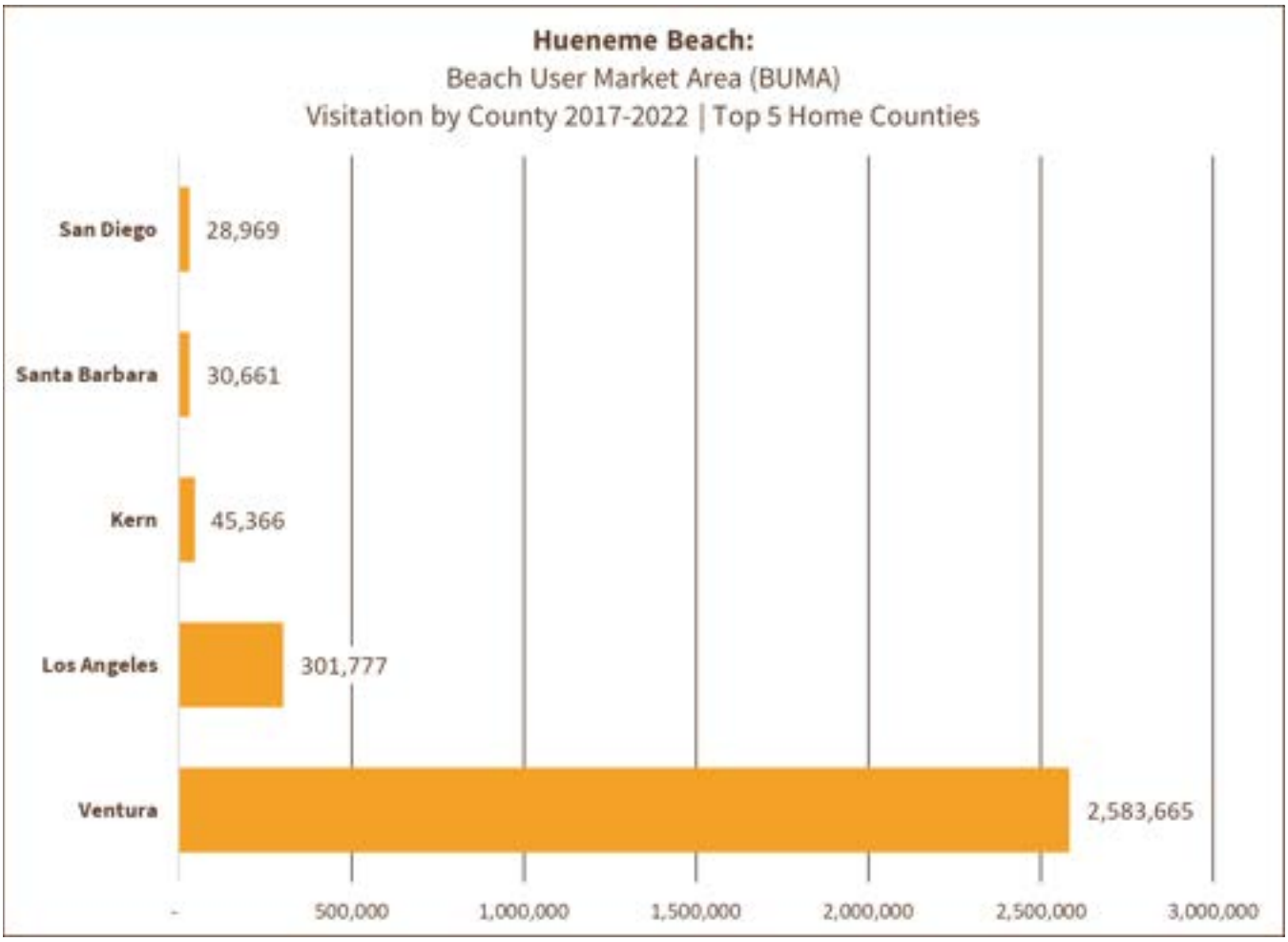
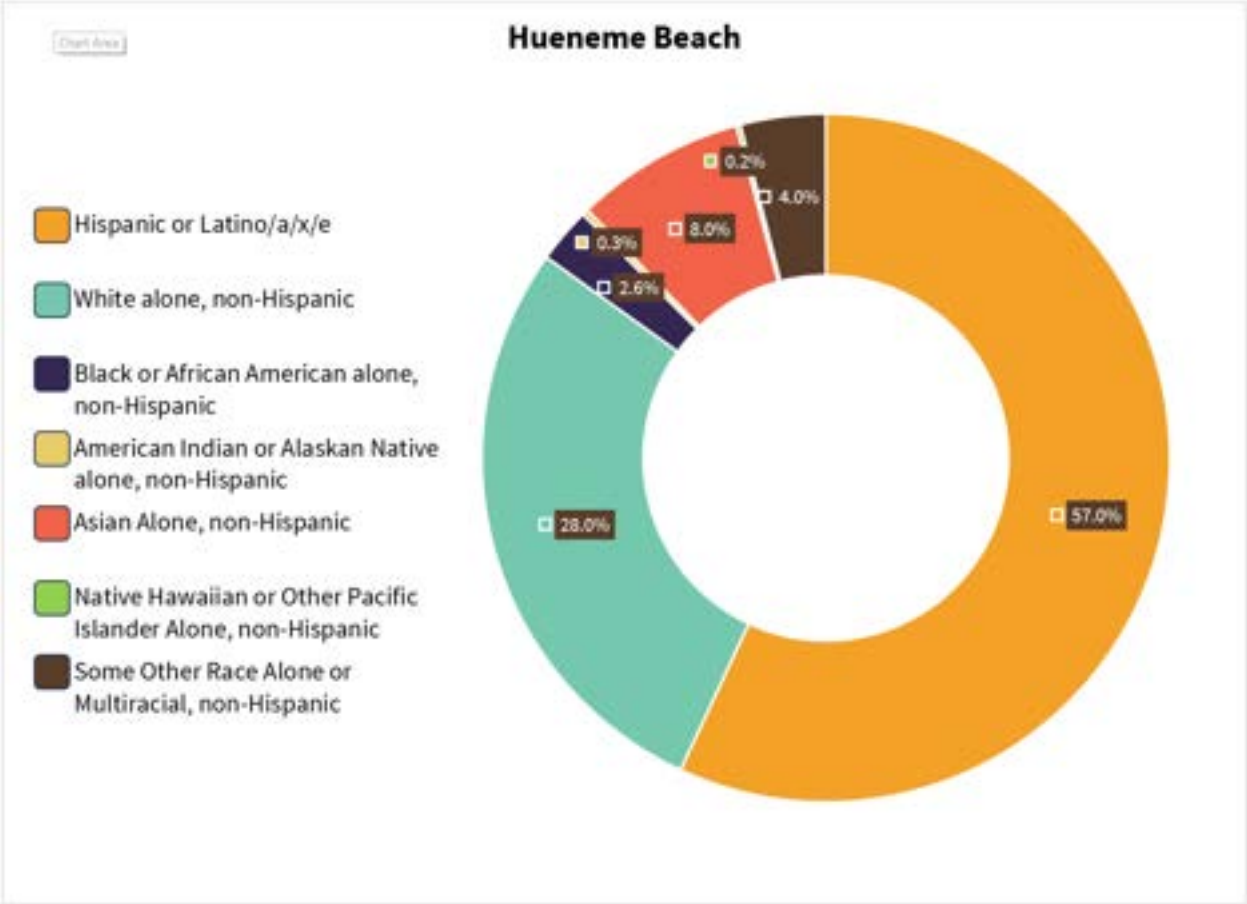


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Ventura

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Marina Park Beach	79,757	94,069	36,522	120,559	95,376	50,906
Surfers Point Beach	334,594	421,515	329,554	608,531	633,518	461,033

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Marina Park Beach	28,063	29,824	26,674	37,829	39,754	58,831	81,418	63,614	39,545	30,346	25,635	15,656
Surfers Point Beach	246,503	219,593	225,420	202,242	226,472	248,179	274,713	249,382	244,474	221,767	209,485	220,515

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Marina Park Beach	55,869	51,999	56,691	55,019	57,313	103,621	96,677
Surfers Point Beach	333,116	321,626	333,692	331,779	384,724	548,630	535,178

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Marina Park Beach	41%	44%	3%	0%	8%	0%	5%
Surfers Point Beach	38%	47%	2%	0%	7%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Marina Park Beach	84%	16%
Surfers Point Beach	91%	9%

Marina Park Beach

General Statistics (2022)

Total Visitation: 50.9k

Average Visitation per Day: 180

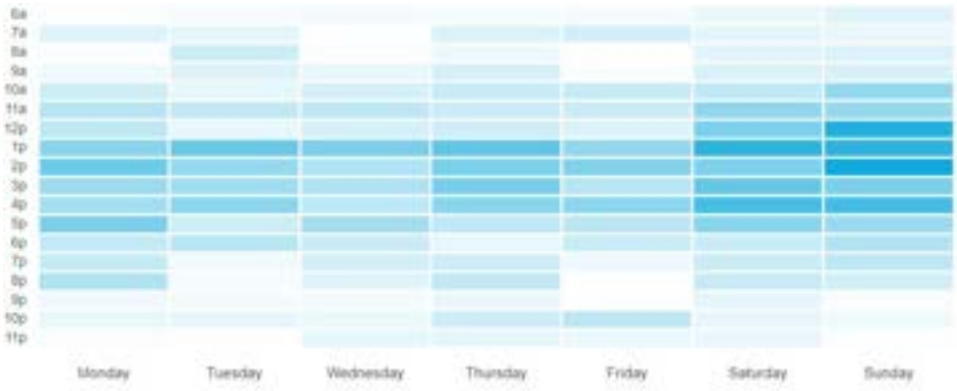
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 16%

Average Length of Stay: 1.25 hours

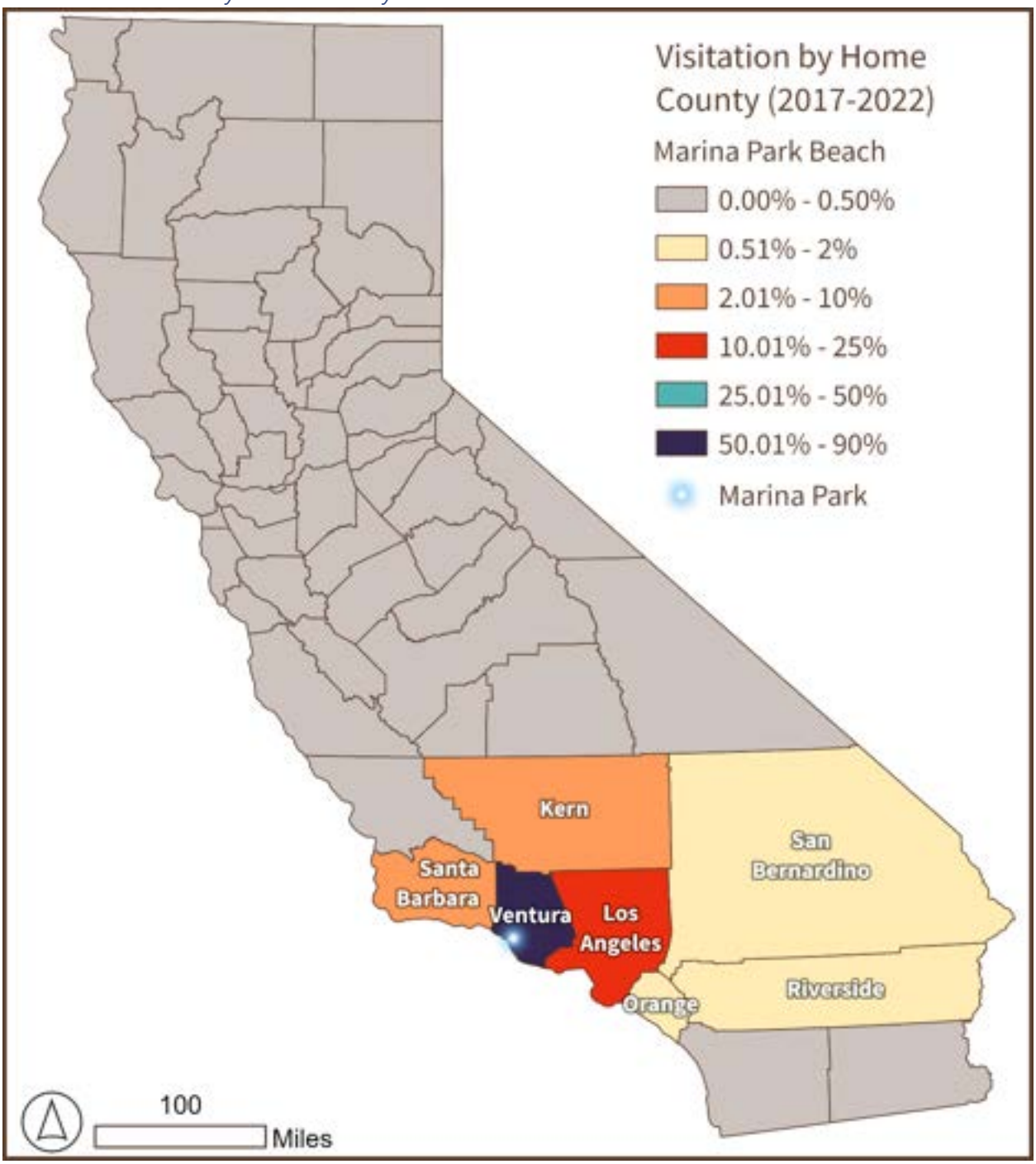
Busiest Day of the Week: Sunday

Busiest Hour: 1:00 pm

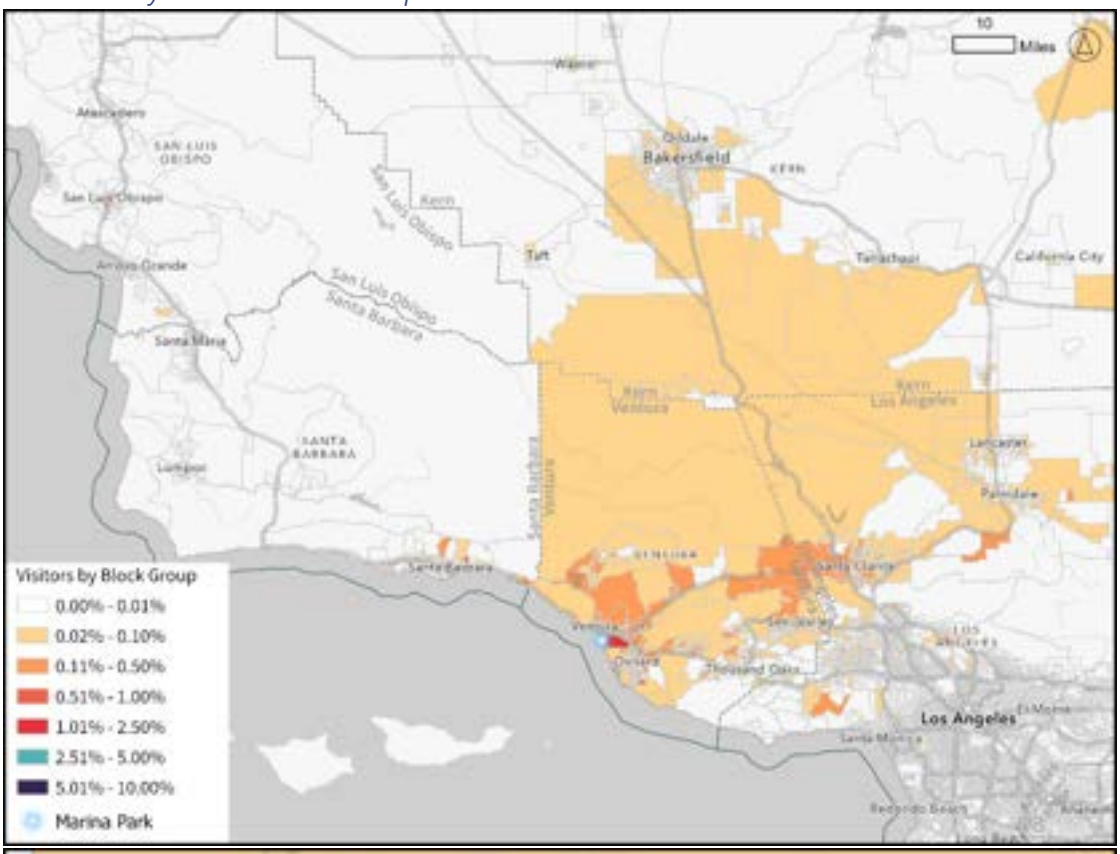
Heat Map of Hourly Visitation Marina Park Beach:



Visitor Distribution by Home County



Visitation by Home Block Group



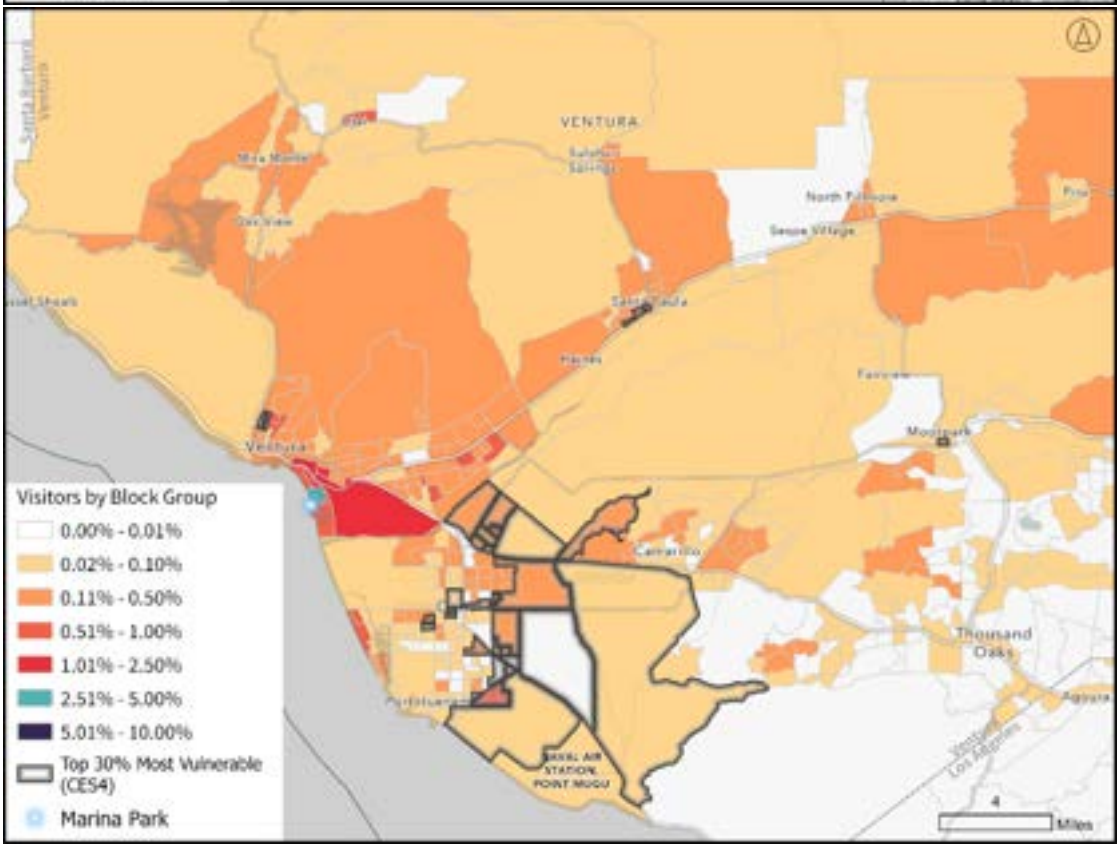


Chart of Visitation by Year

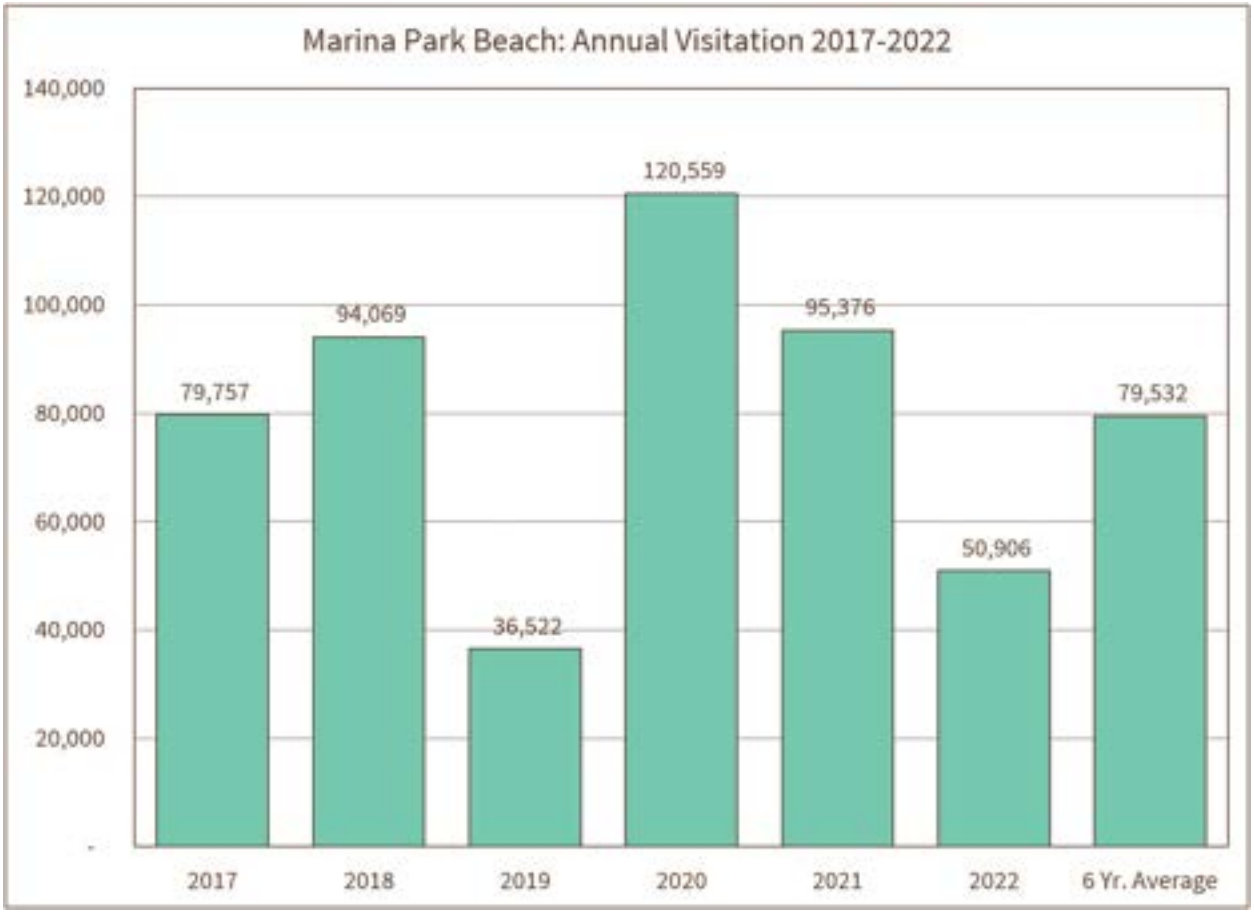
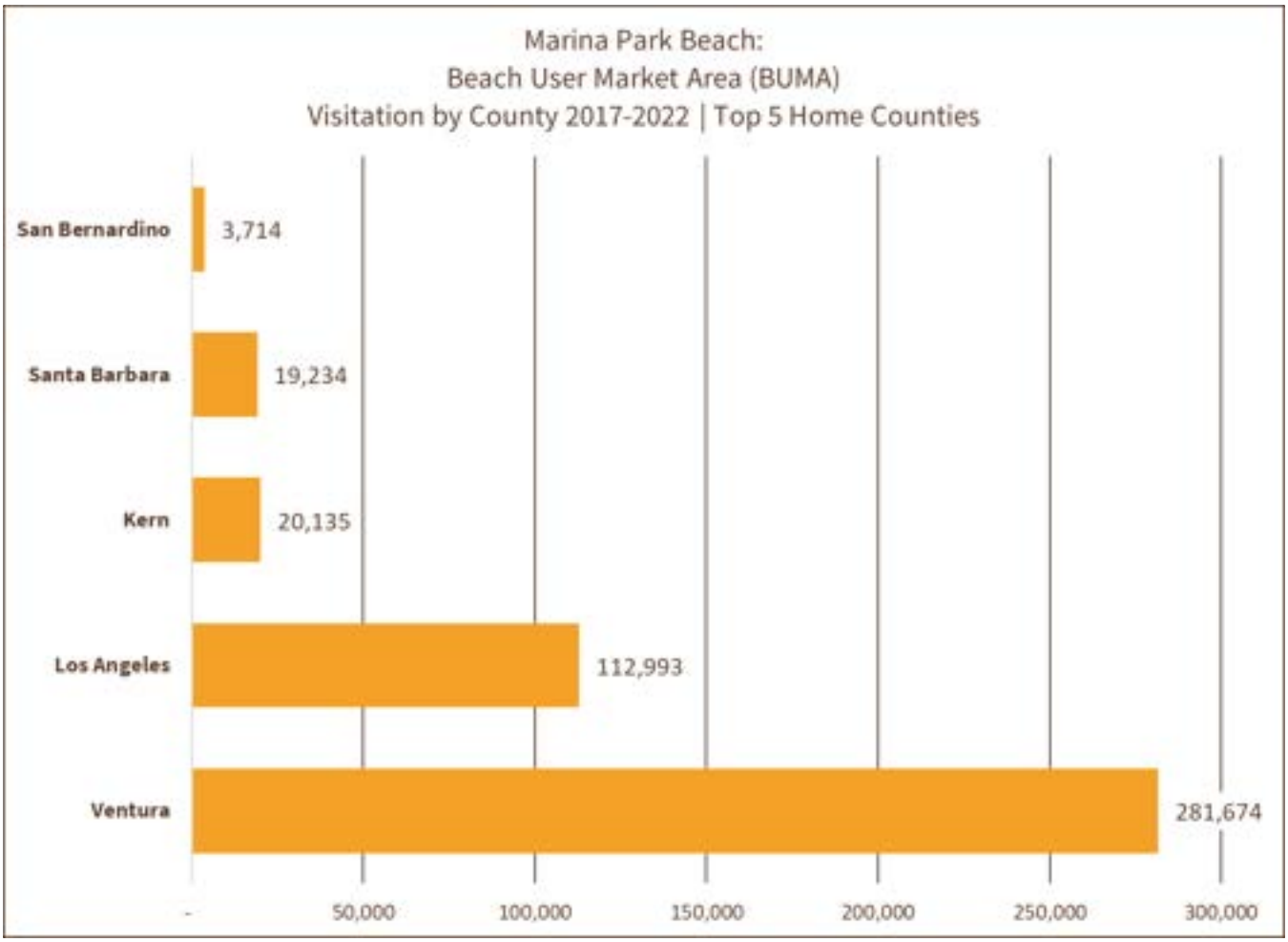
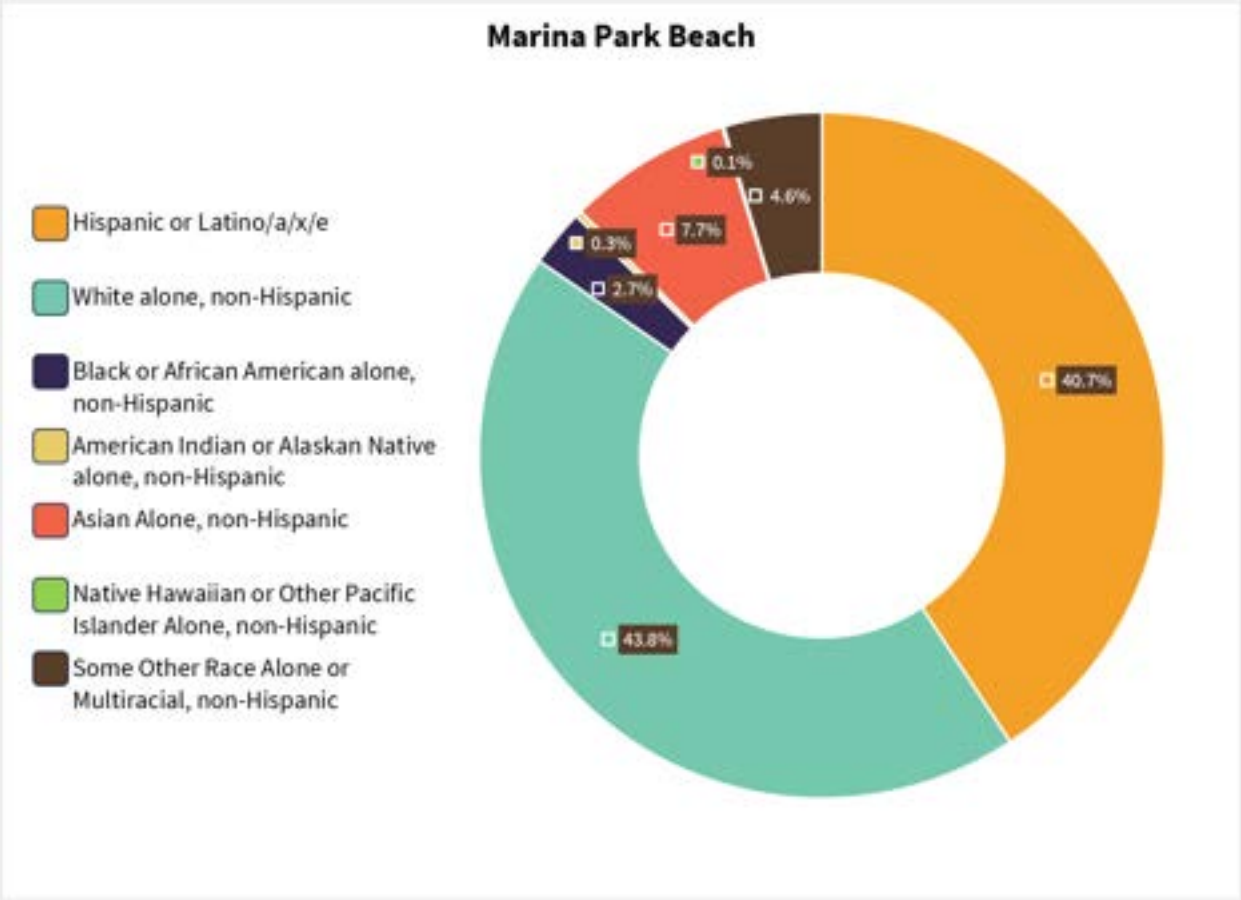


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Surfers' Point and Ventura River Mouth

General Statistics (2022)

Total Visitation: 461k

Average Visitation per Day: 1.3k

Average Length of Stay: 1.75 hours

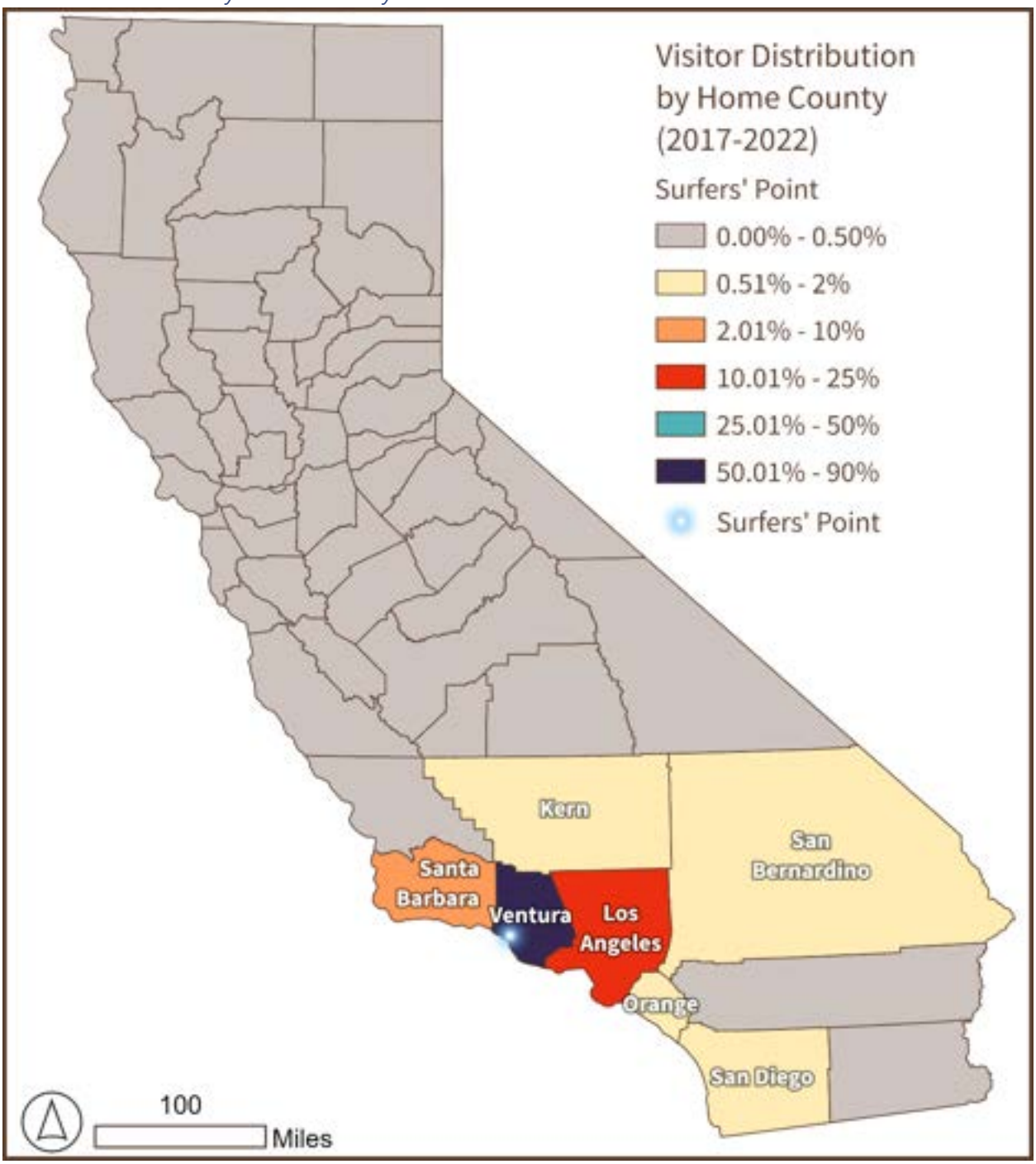
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 9%

Busiest Day of the Week: Saturday

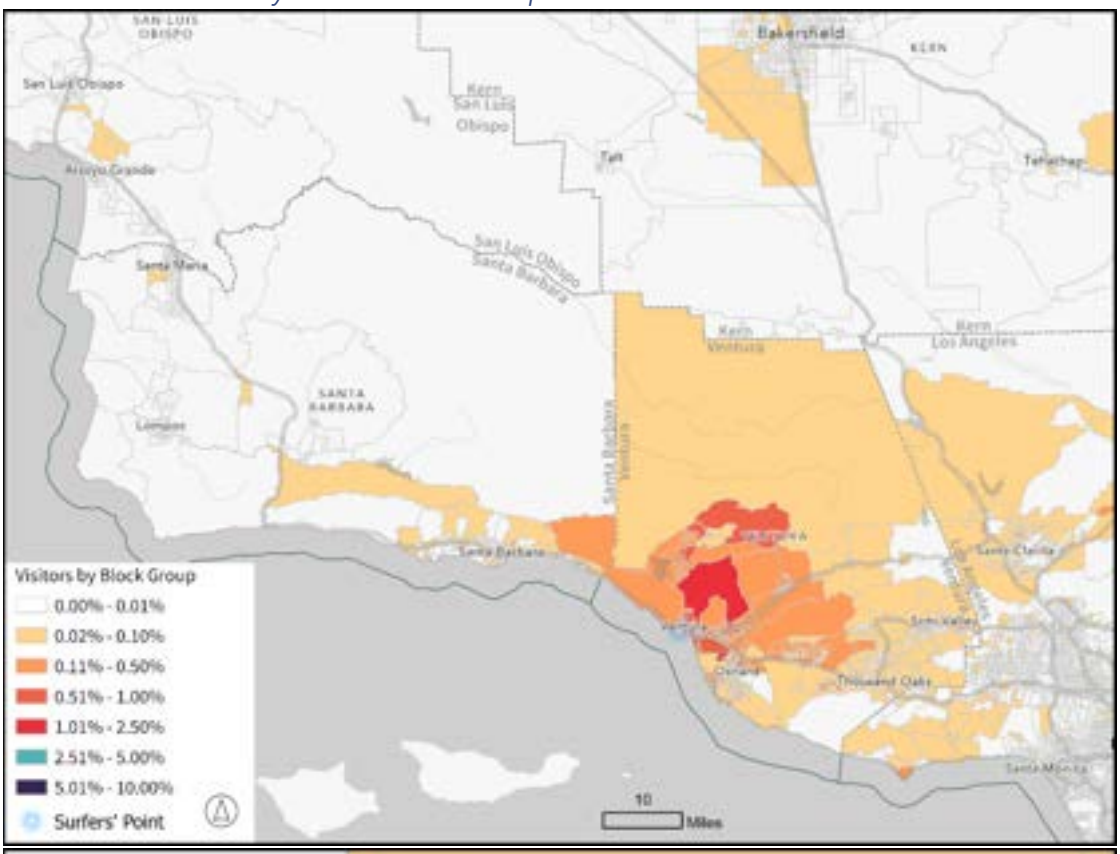
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Surfers' Point Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



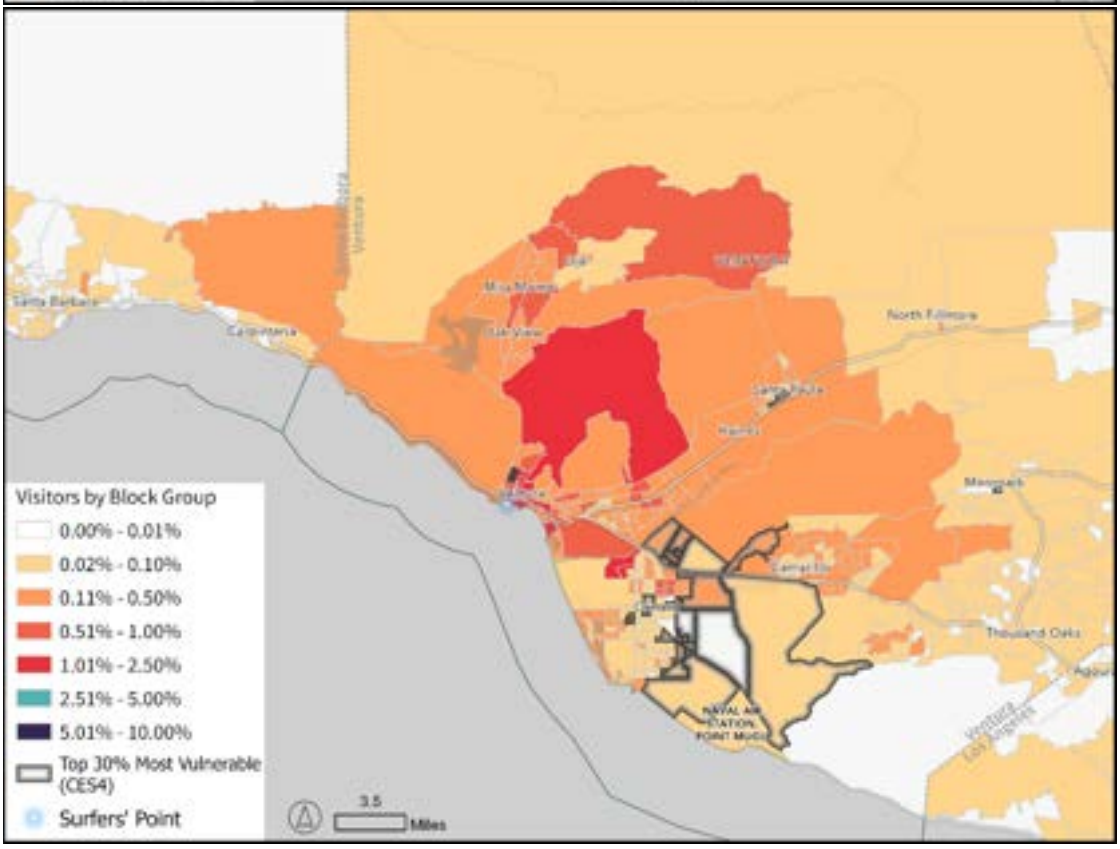


Chart of Visitation by Year

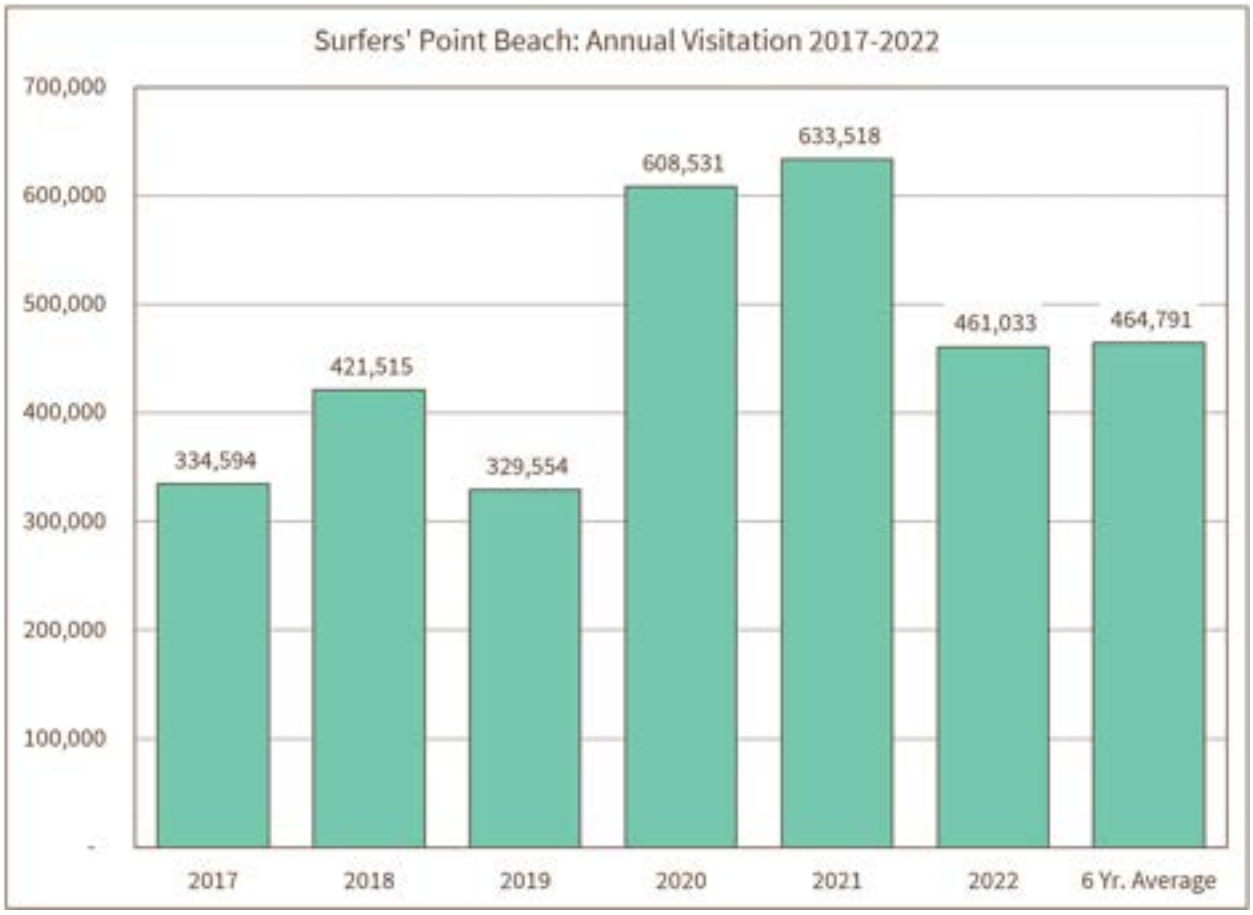
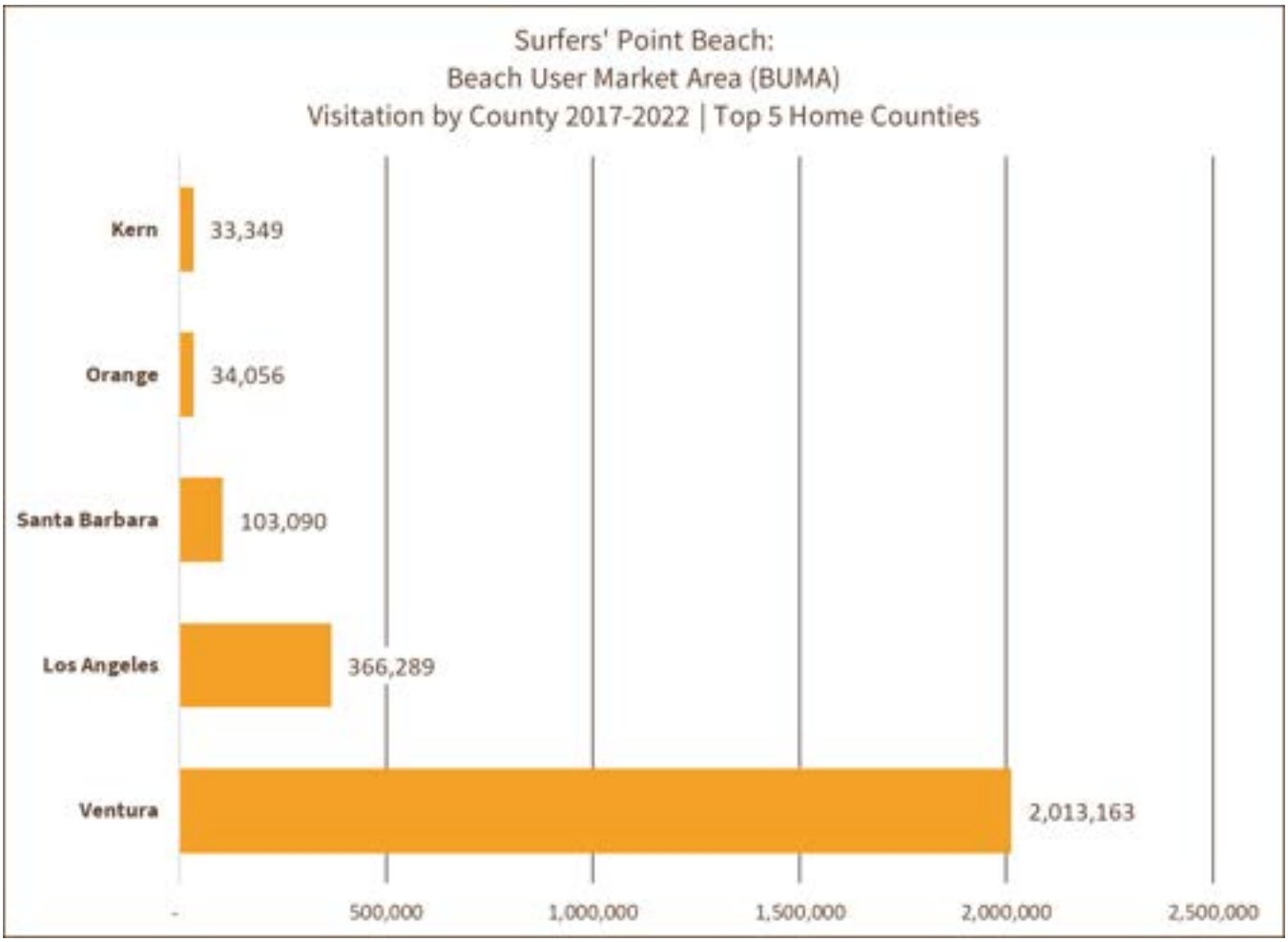
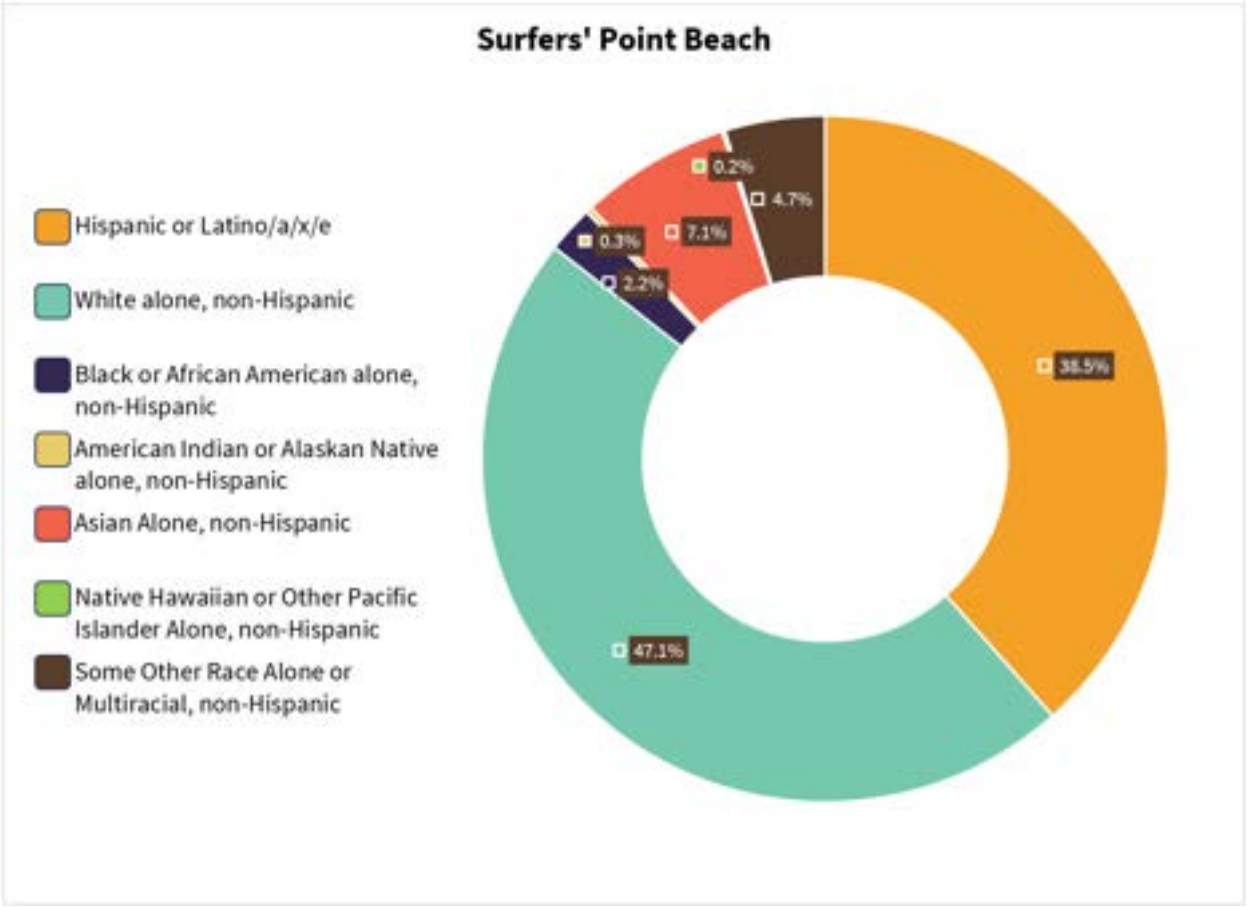


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Ventura County Parks and Recreation

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Deer Creek Beach	515,684	193,135	303,031	466,178	207,115	240,327
Hobson Beach	17,266	20,004	14,727	24,815	35,821	17,486
La Conchita Beach	70,472	49,695	33,654	42,777	43,384	24,257
Mondos Beach	330,382	378,256	401,533	646,938	297,698	232,676
Solimar Beach	147,456	161,389	173,036	129,188	84,341	102,001

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Deer Creek Beach	121,400	142,190	126,654	176,232	176,466	221,972	233,012	224,500	161,016	136,596	102,314	103,118
Hobson Beach	8,093	15,120	10,025	11,784	8,100	11,774	9,553	16,583	13,576	9,449	9,596	6,466
La Conchita Beach	14,844	20,123	17,980	19,212	23,739	31,069	34,373	34,153	25,510	18,344	12,607	12,285
Mondos Beach	144,879	141,523	141,423	148,735	174,946	273,049	298,862	260,836	227,999	186,924	152,239	136,068
Solimar Beach	41,422	67,356	50,526	55,816	70,338	93,063	114,771	97,026	64,671	58,428	45,467	38,527

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Deer Creek Beach	242,273	224,018	240,376	238,238	280,135	345,062	355,368
Hobson Beach	16,878	14,125	17,461	13,243	23,448	24,586	20,378
La Conchita Beach	32,416	35,638	26,996	33,930	39,438	47,190	48,631
Mondos Beach	288,212	267,363	286,362	280,540	318,680	421,099	425,227
Solimar Beach	101,481	93,958	103,562	104,392	106,212	144,579	143,227

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Deer Creek Beach	41%	40%	3%	0%	10%	0%	5%
Hobson Beach	35%	48%	2%	3%	10%	0%	2%
La Conchita Beach	36%	48%	2%	0%	9%	0%	5%
Mondos Beach	38%	46%	2%	0%	8%	0%	5%
Solimar Beach	43%	43%	2%	0%	7%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Deer Creek Beach	82%	18%
Hobson Beach	88%	12%
La Conchita Beach	88%	12%
Mondos Beach	88%	12%
Solimar Beach	88%	12%

Deer Creek Beach

General Statistics (2022)

Total Visitation: 240.3k

Average Visitation per Day: 670

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 18%

Average Length of Stay: 1 hour

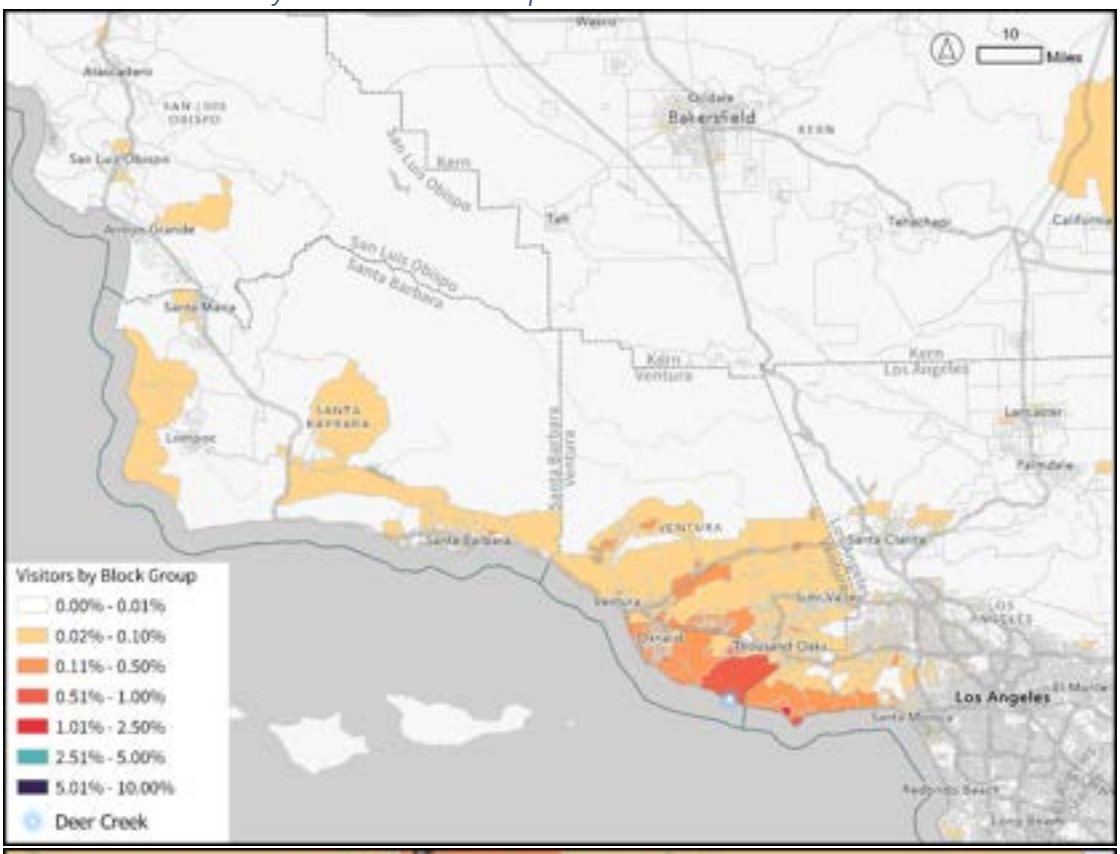
Busiest Day of the Week: Sunday

Busiest Hour: 3:00 pm

Heat Map of Hourly Visitation Deer Creek Beach:

Visitor Distribution by Home County

Visitor Distribution by Home Block Group



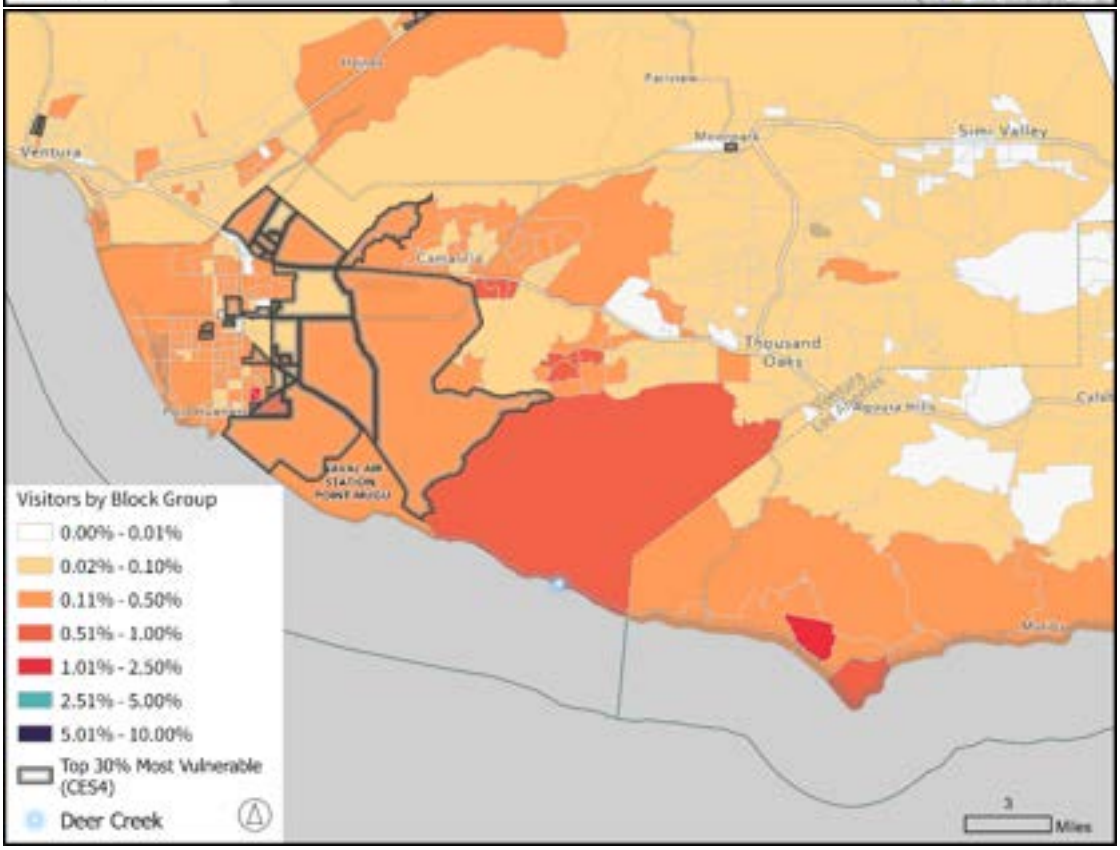


Chart of Visitation by Year

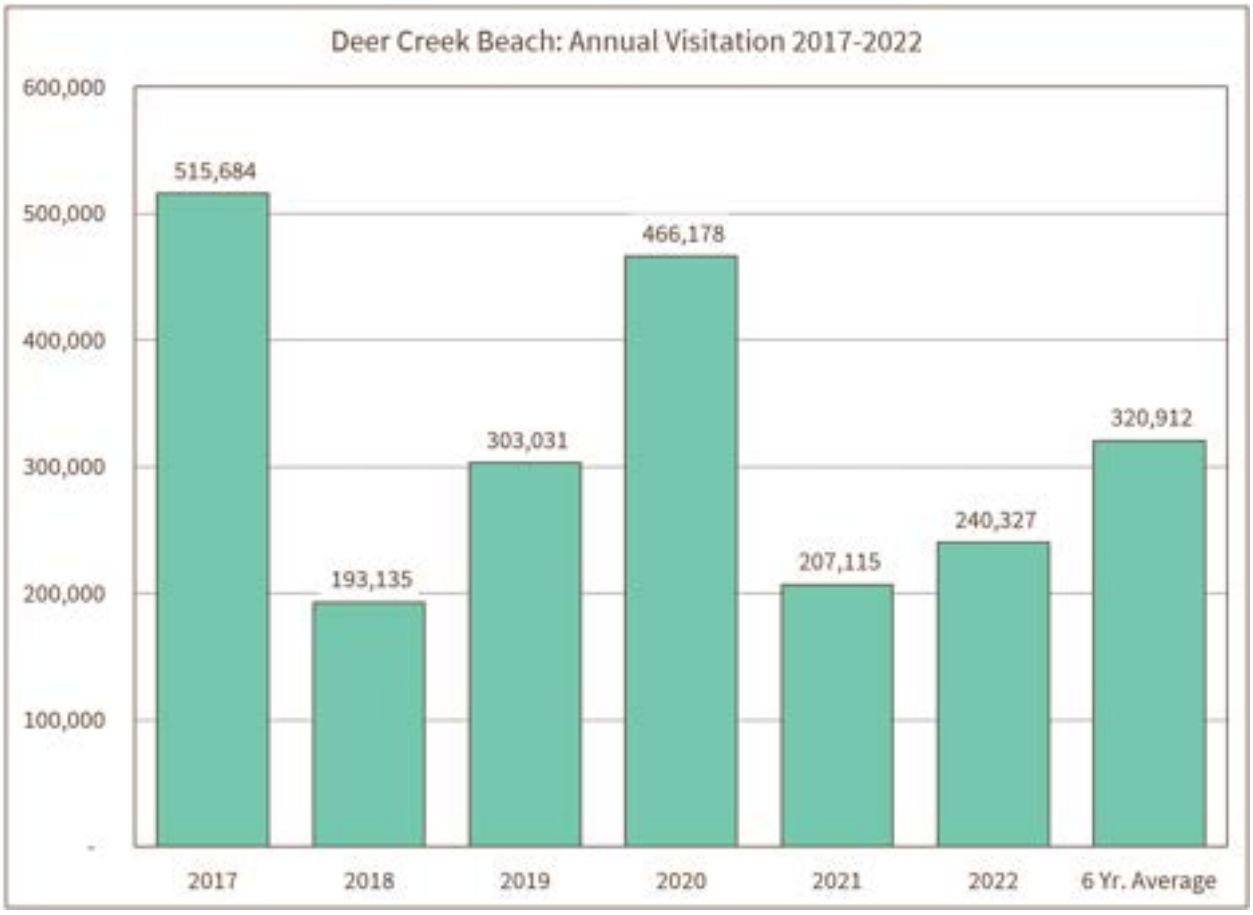
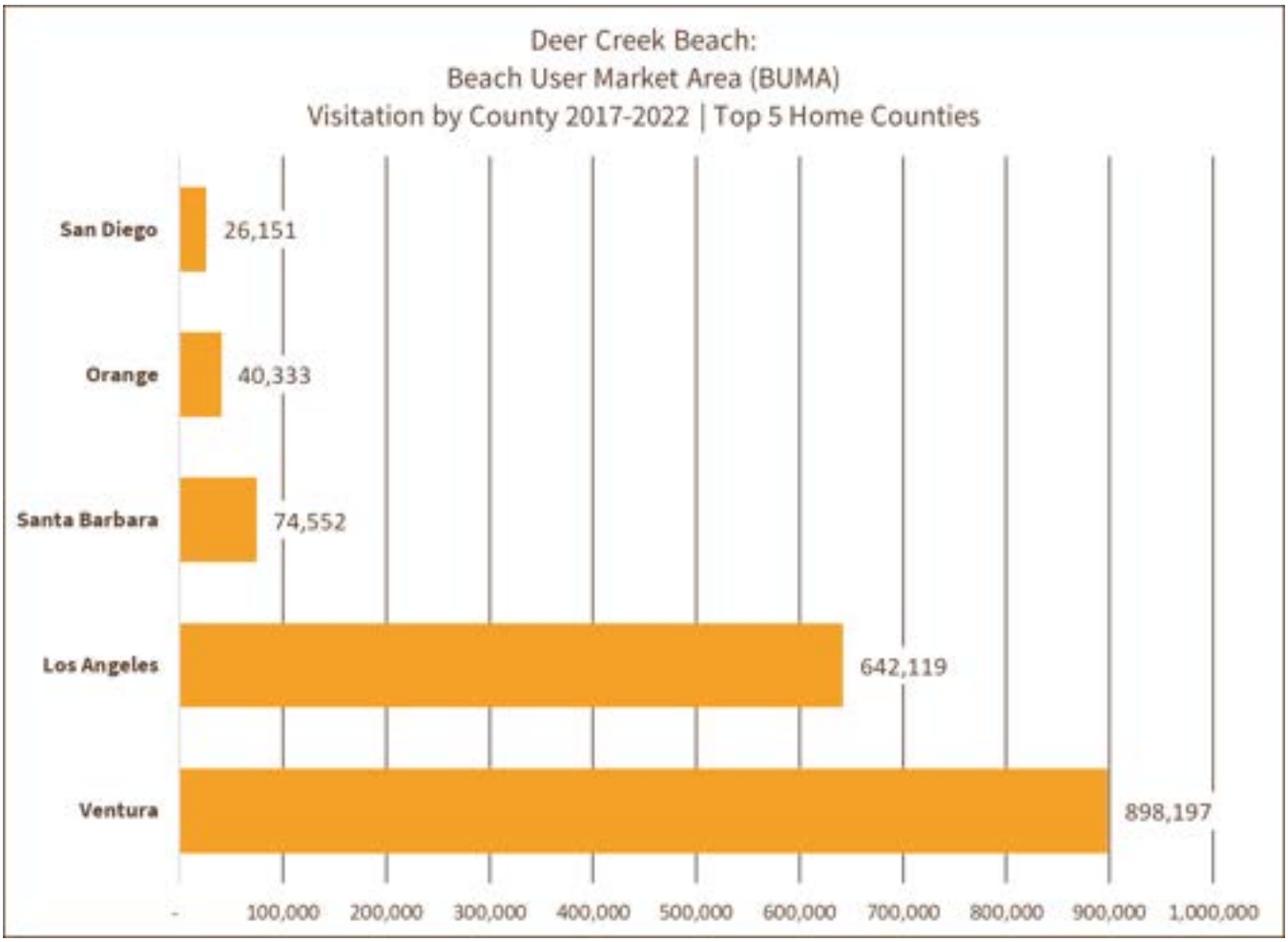
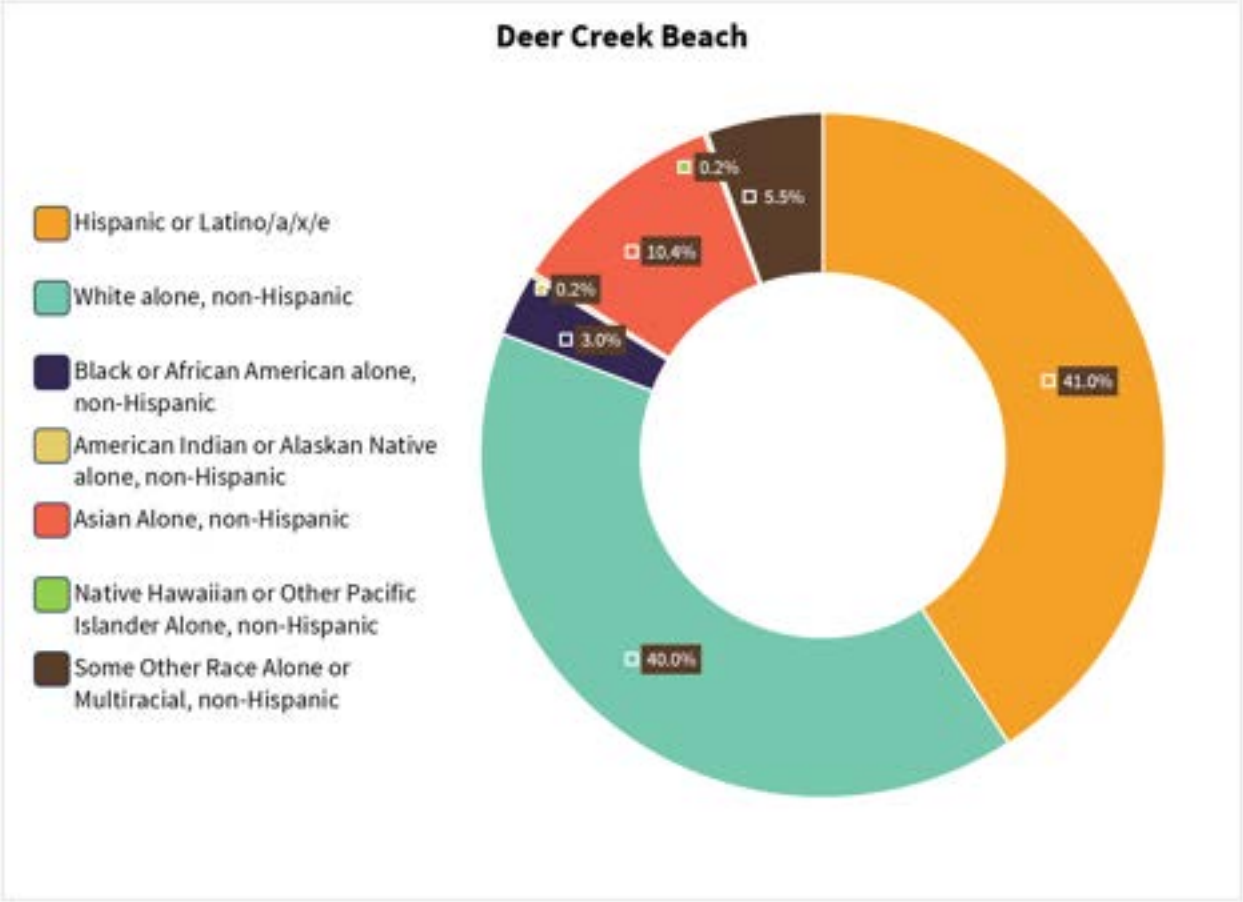


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Hobson County Park

General Statistics (2022)

Total Visitation: 17.5k

Average Visitation per Day: 90

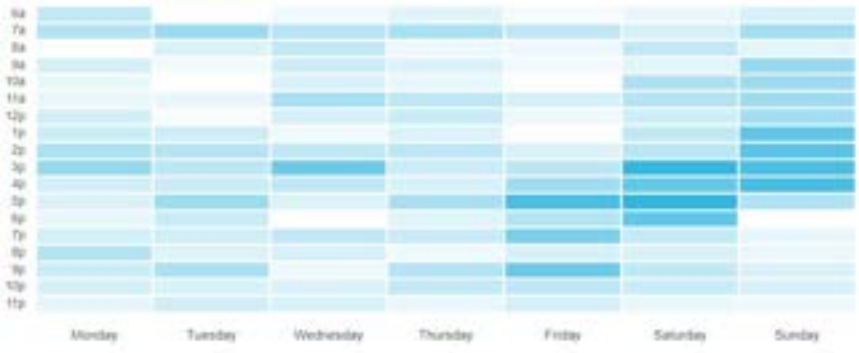
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

Average Length of Stay: 2.75 hours

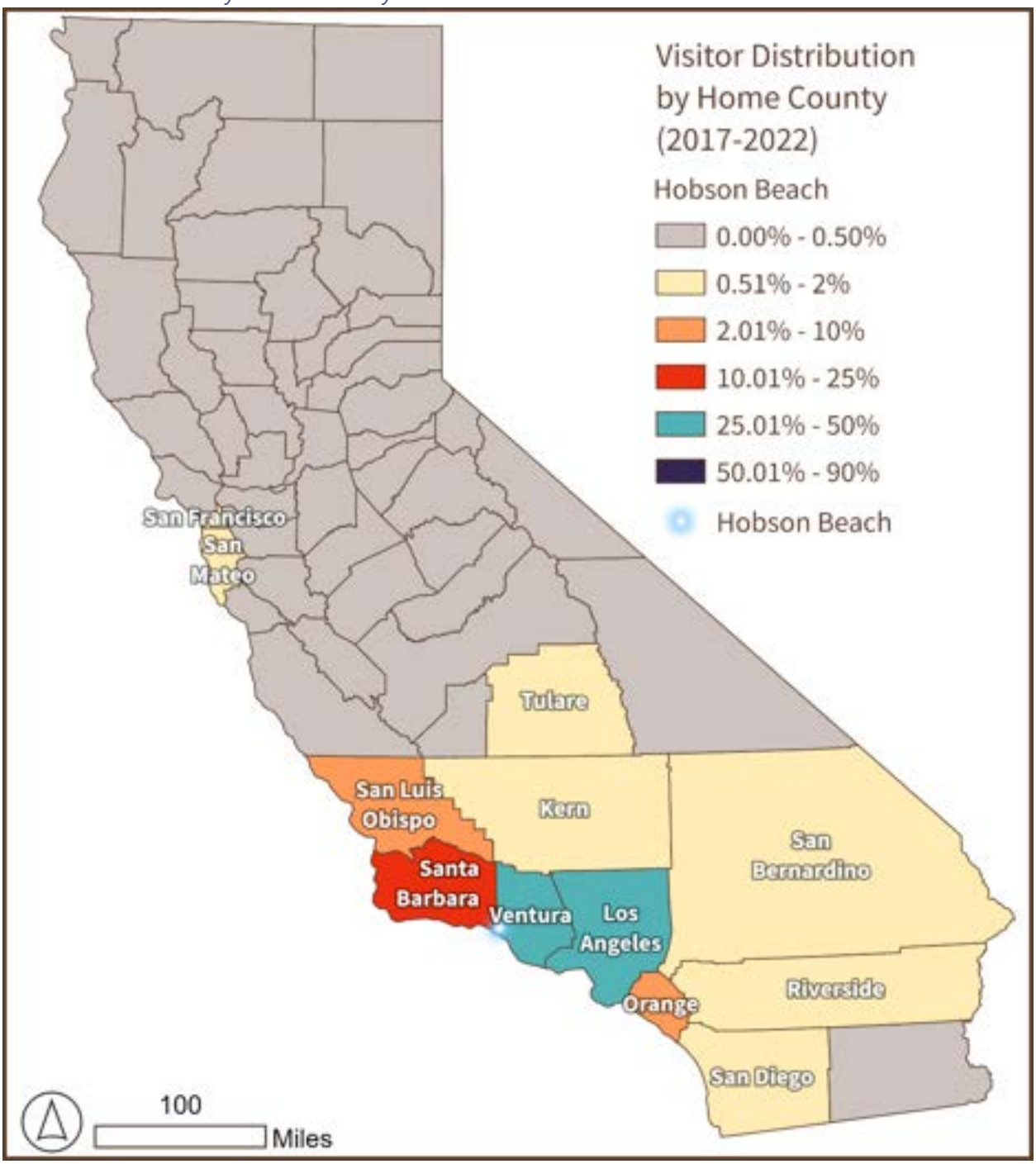
Busiest Day of the Week: Sunday

Busiest Hour: 3:00 pm

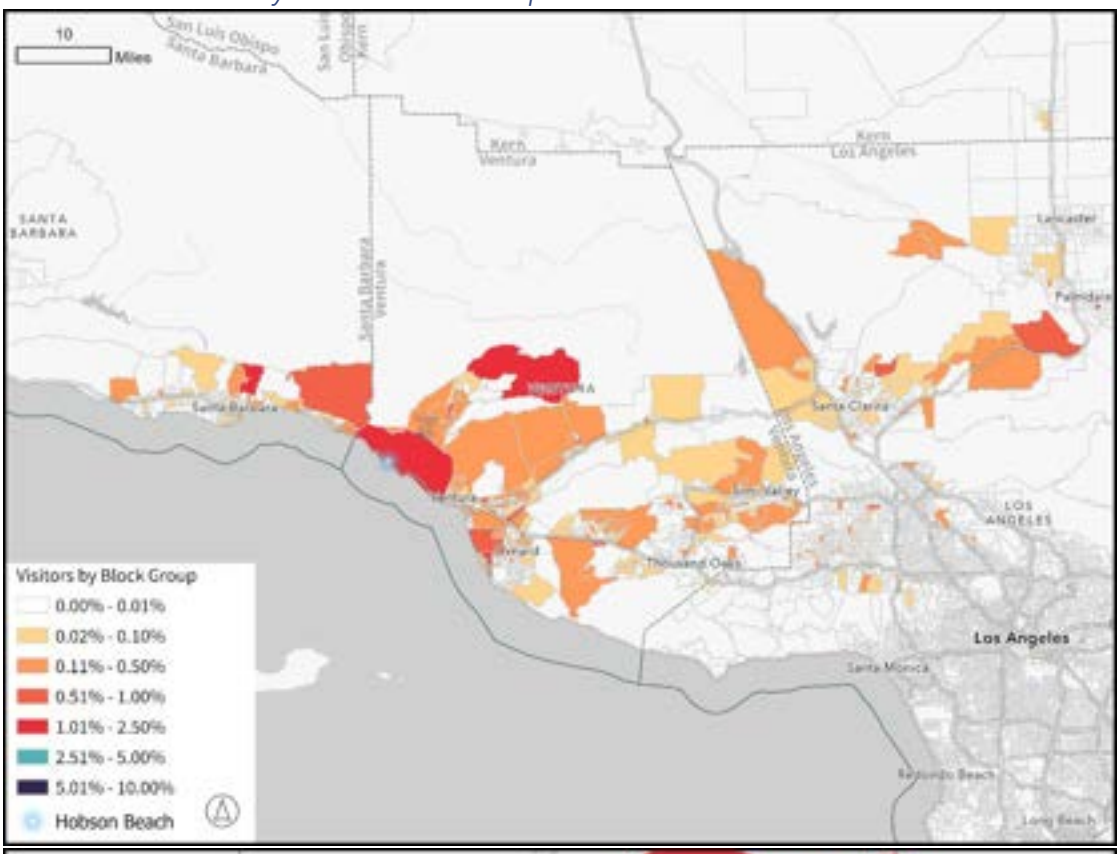
Heat Map of Hourly Visitation Hobson County Park:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



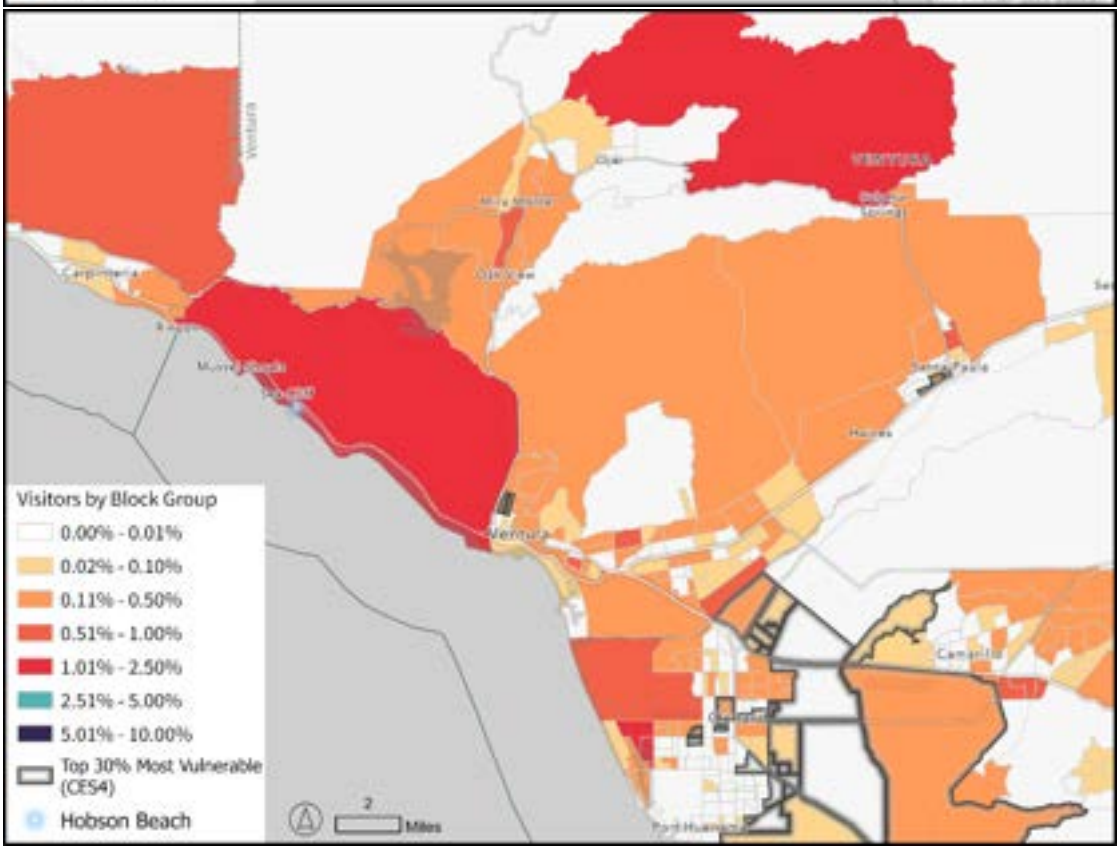


Chart of Visitation by Year

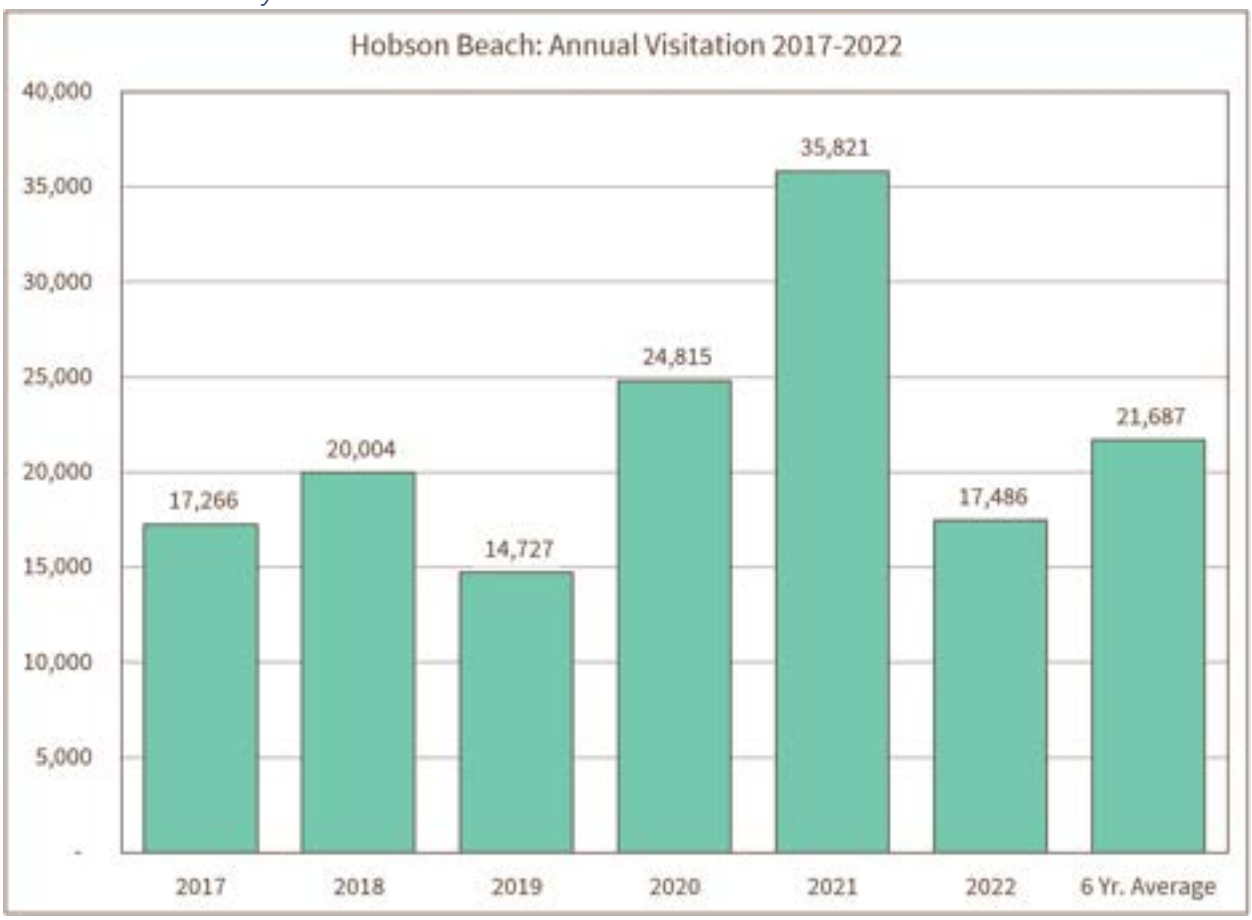
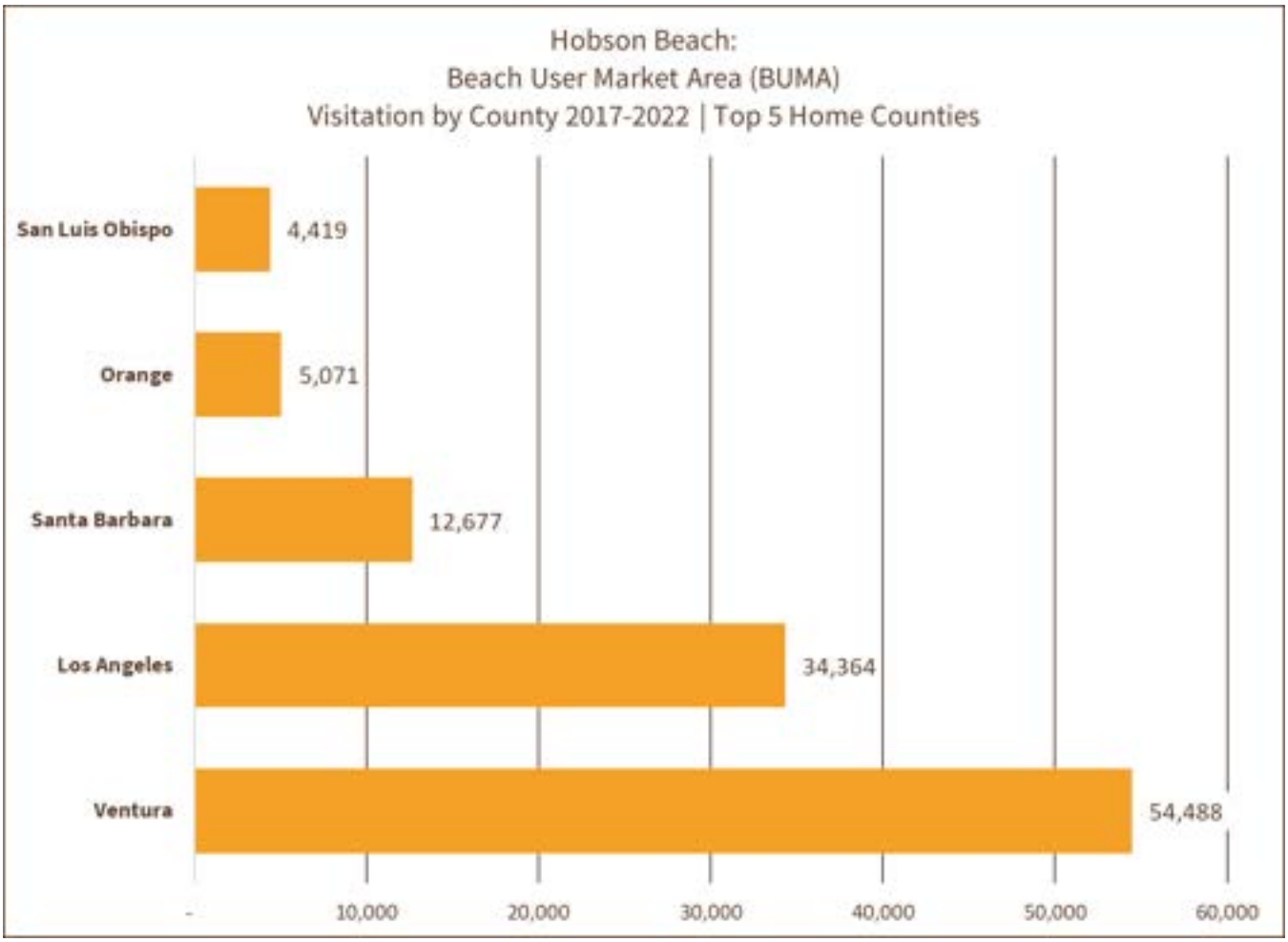
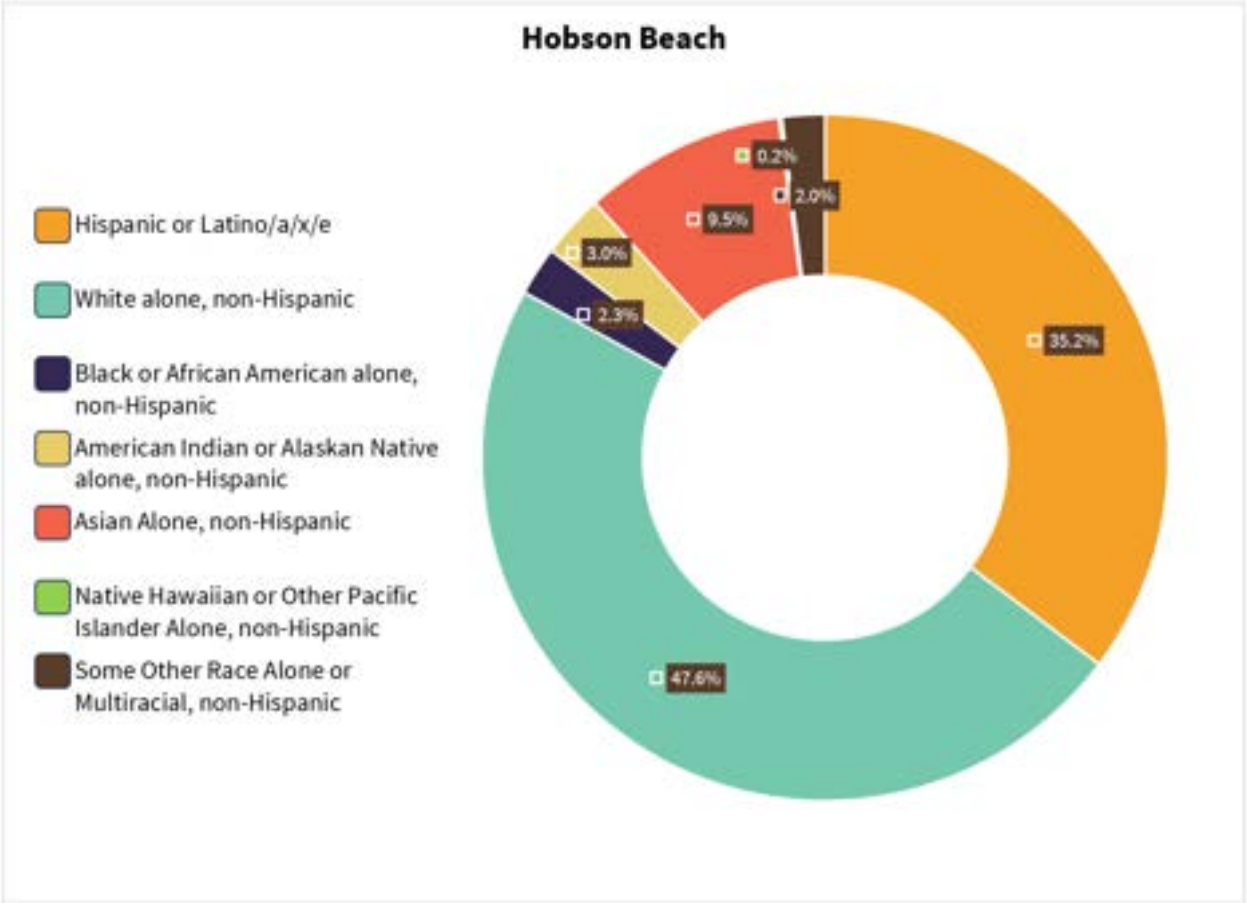


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



La Conchita Beach

General Statistics (2022)

Total Visitation: 24.3k

Average Visitation per Day: 100

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

Average Length of Stay: 1.5 hours

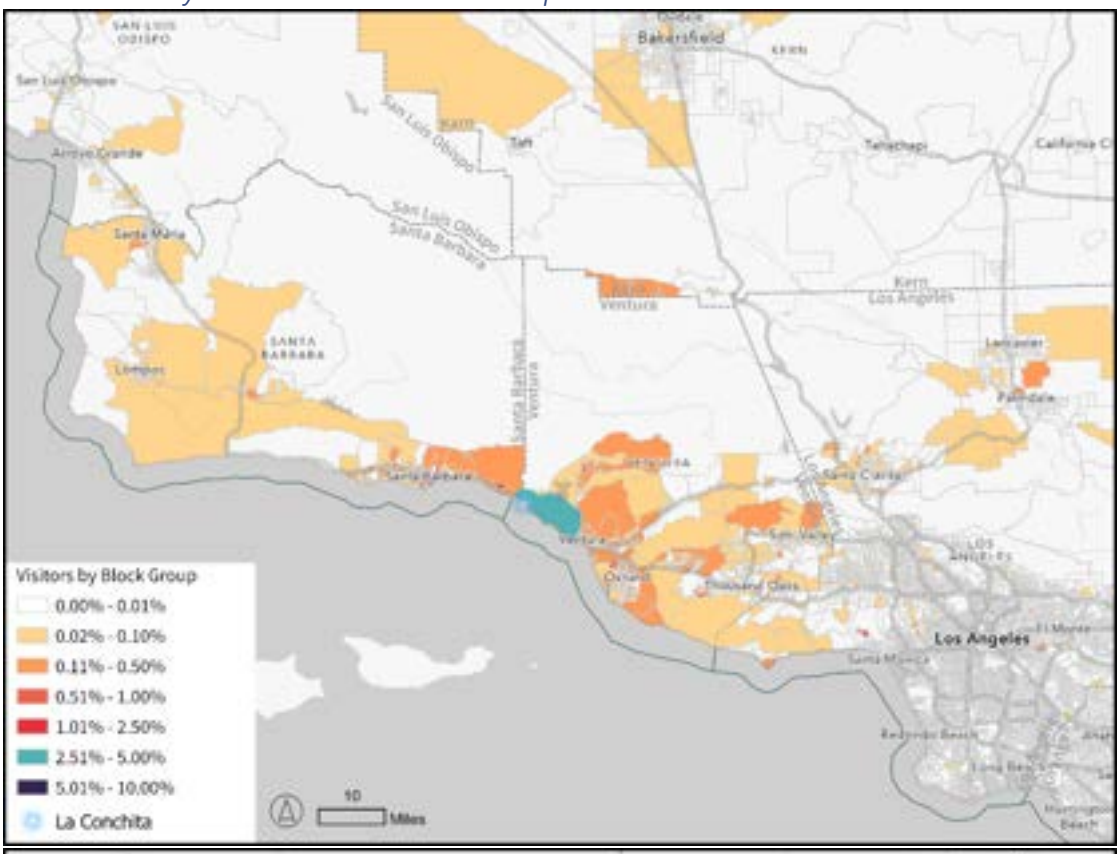
Busiest Day of the Week: Sunday

Busiest Hour: 10:00 am

Heat Map of Hourly Visitation La Conchita Beach:

Visitor Distribution by Home County

Distribution by Home Census Block Group



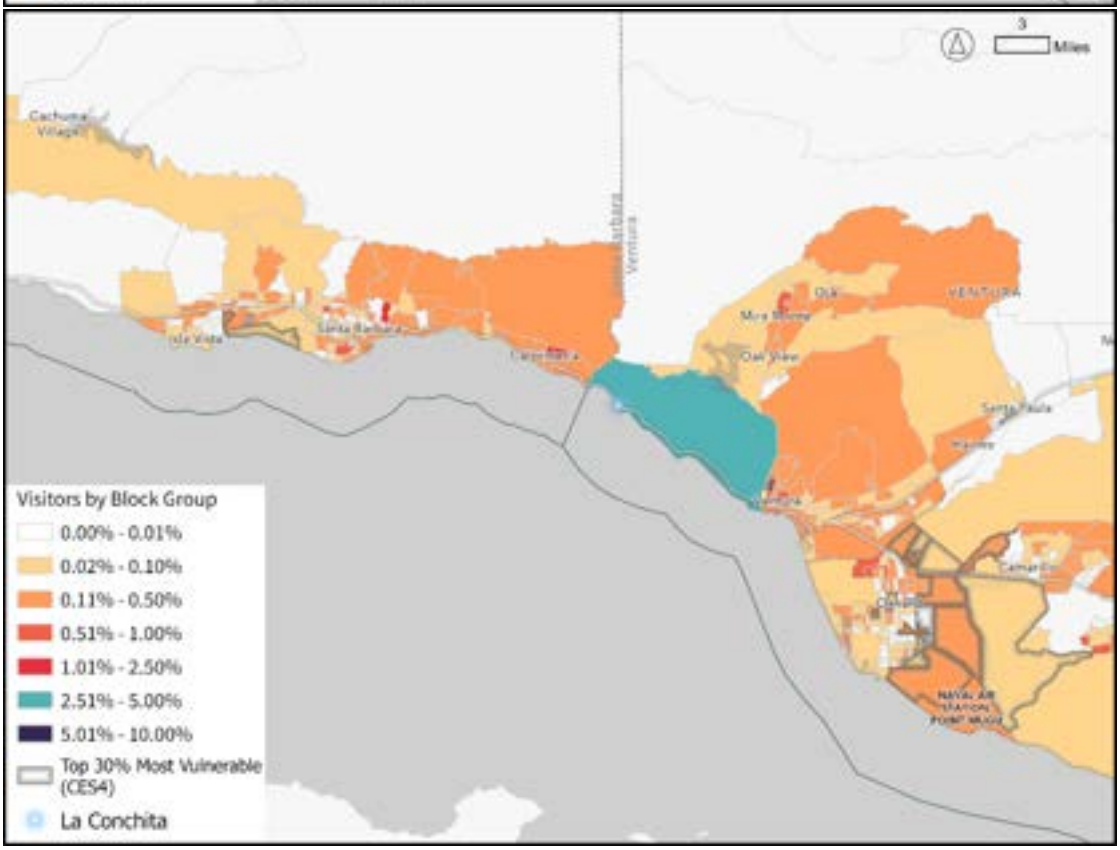


Chart of Visitation by Year

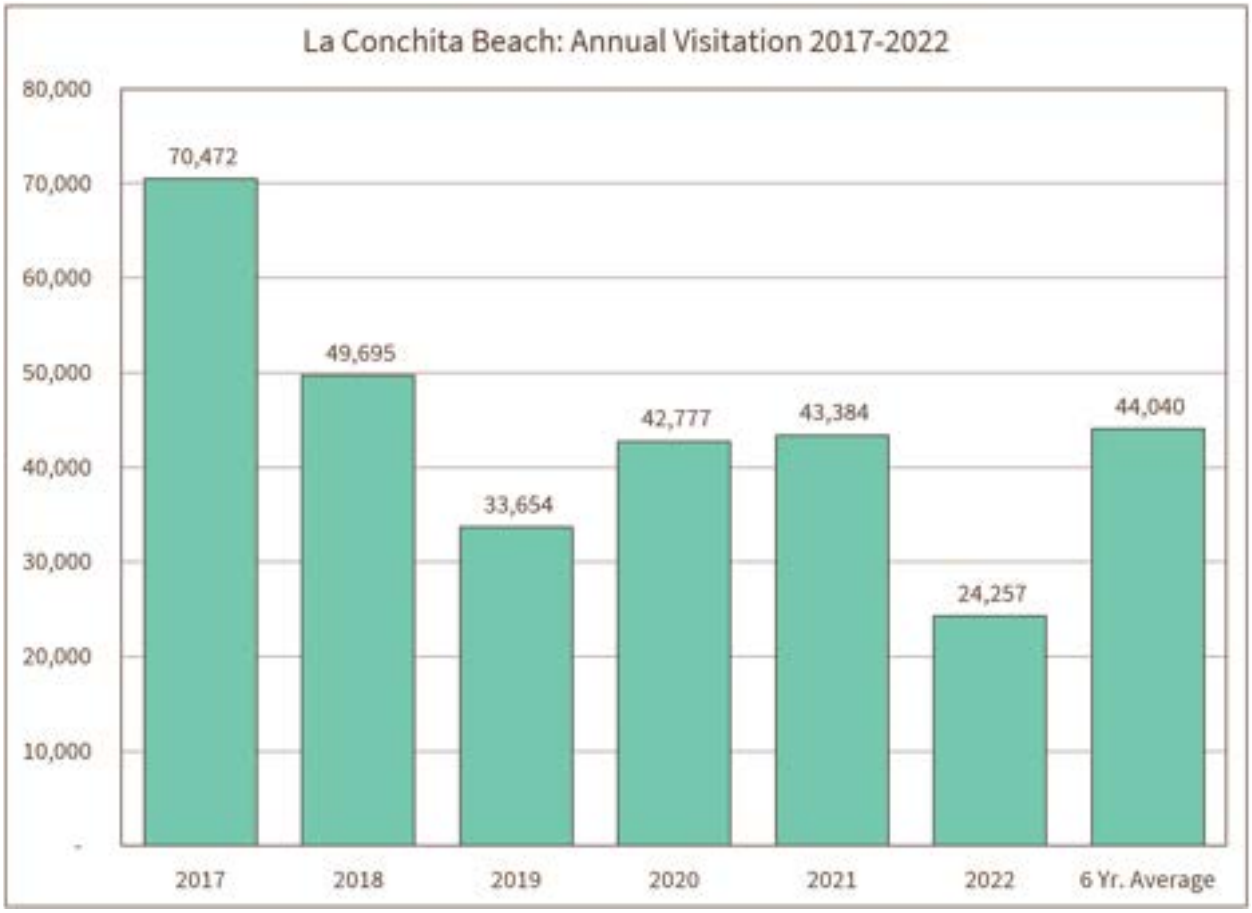
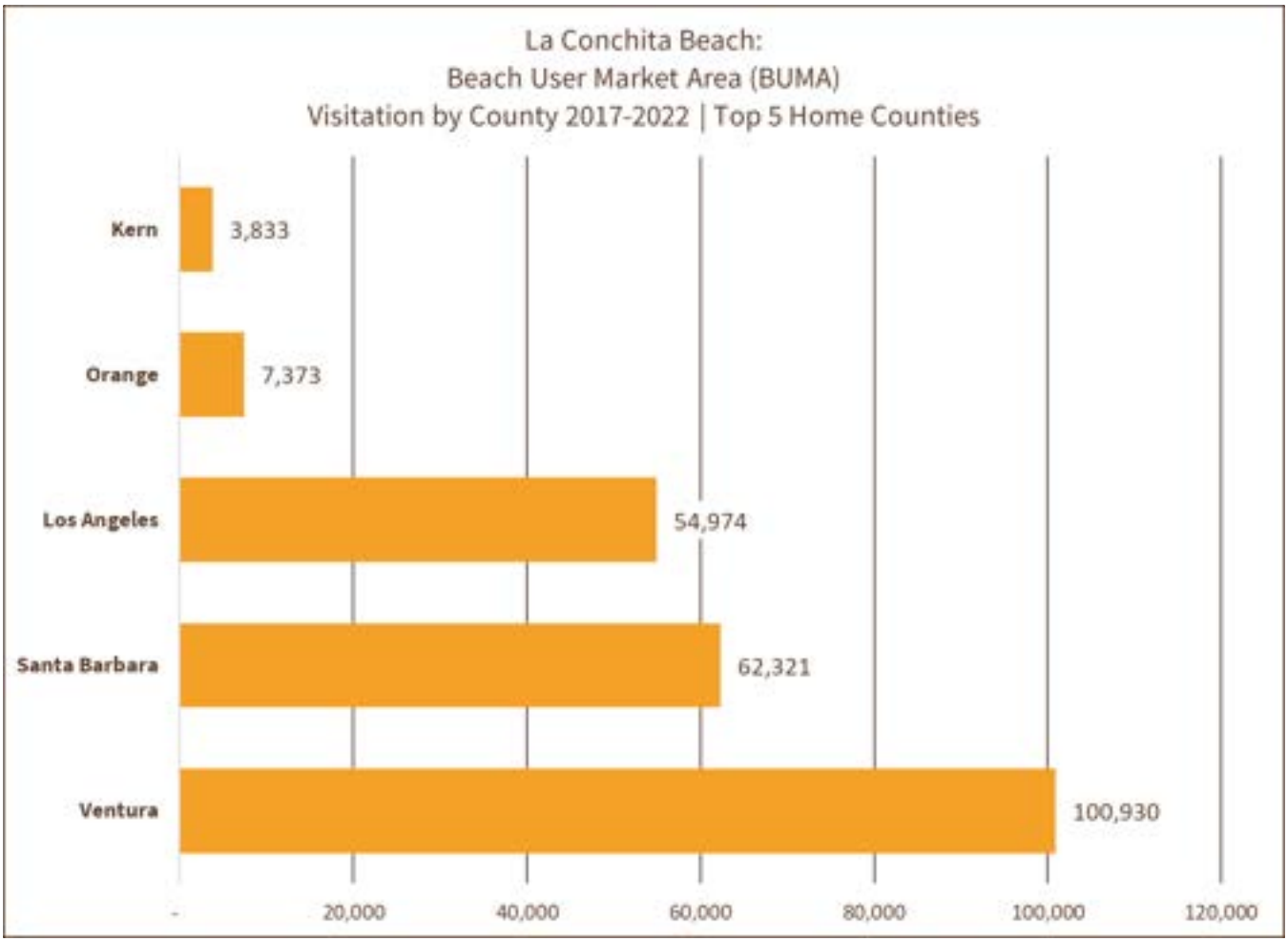
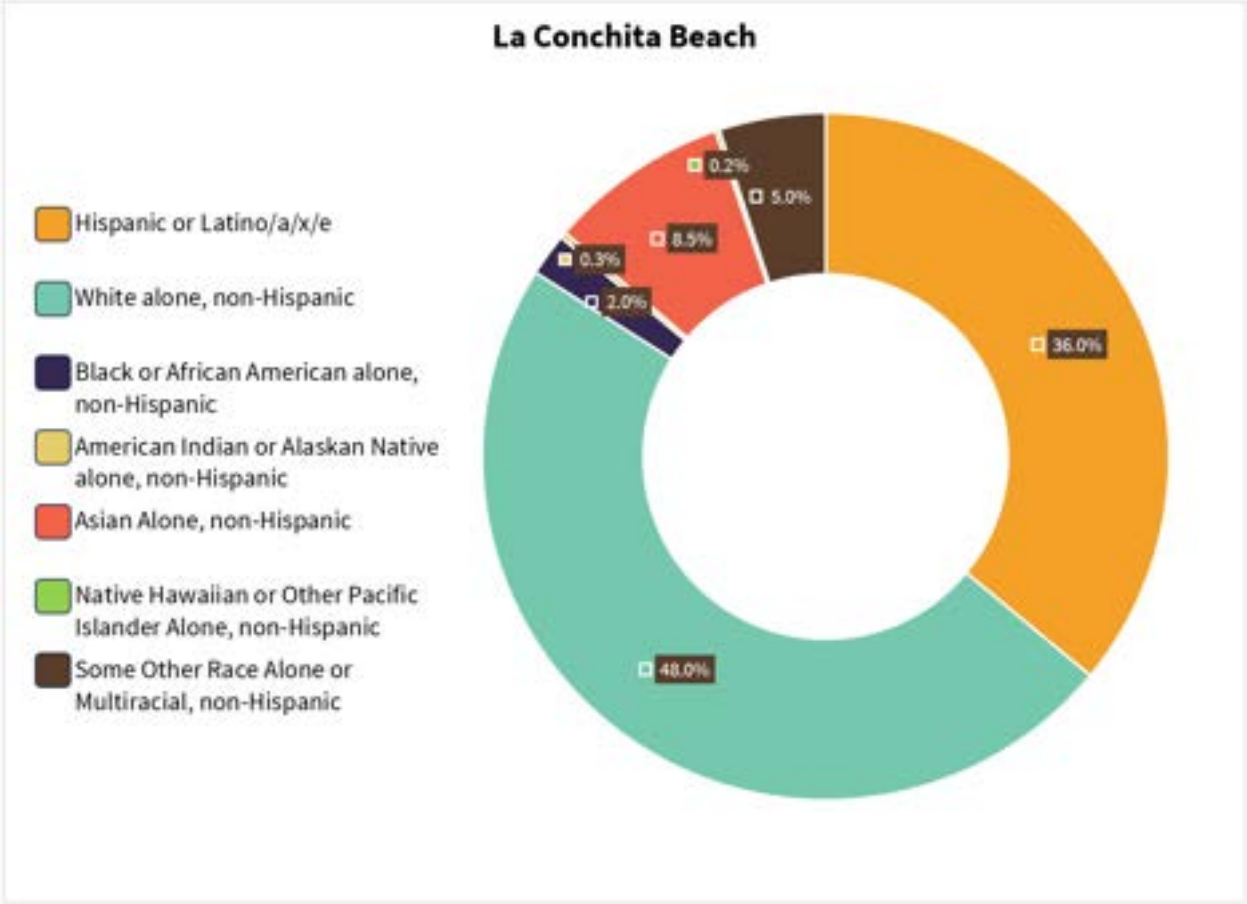


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Mondos Beach

General Statistics (2022)

Total Visitation: 232.7k

Average Visitation per Day: 650

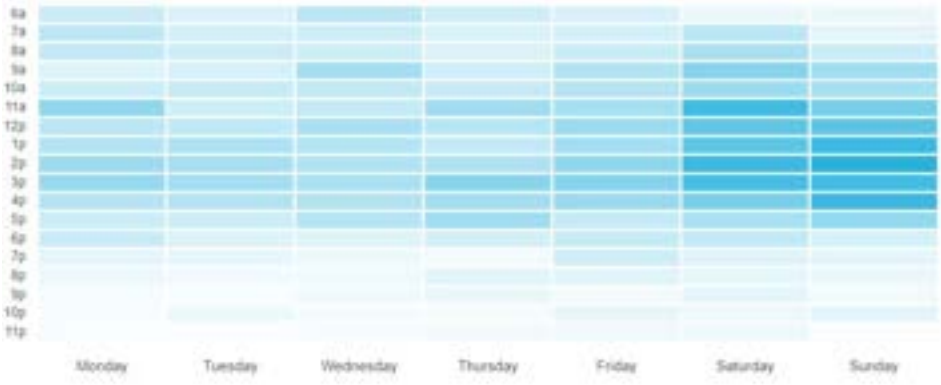
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

Average Length of Stay: 1.25 hours

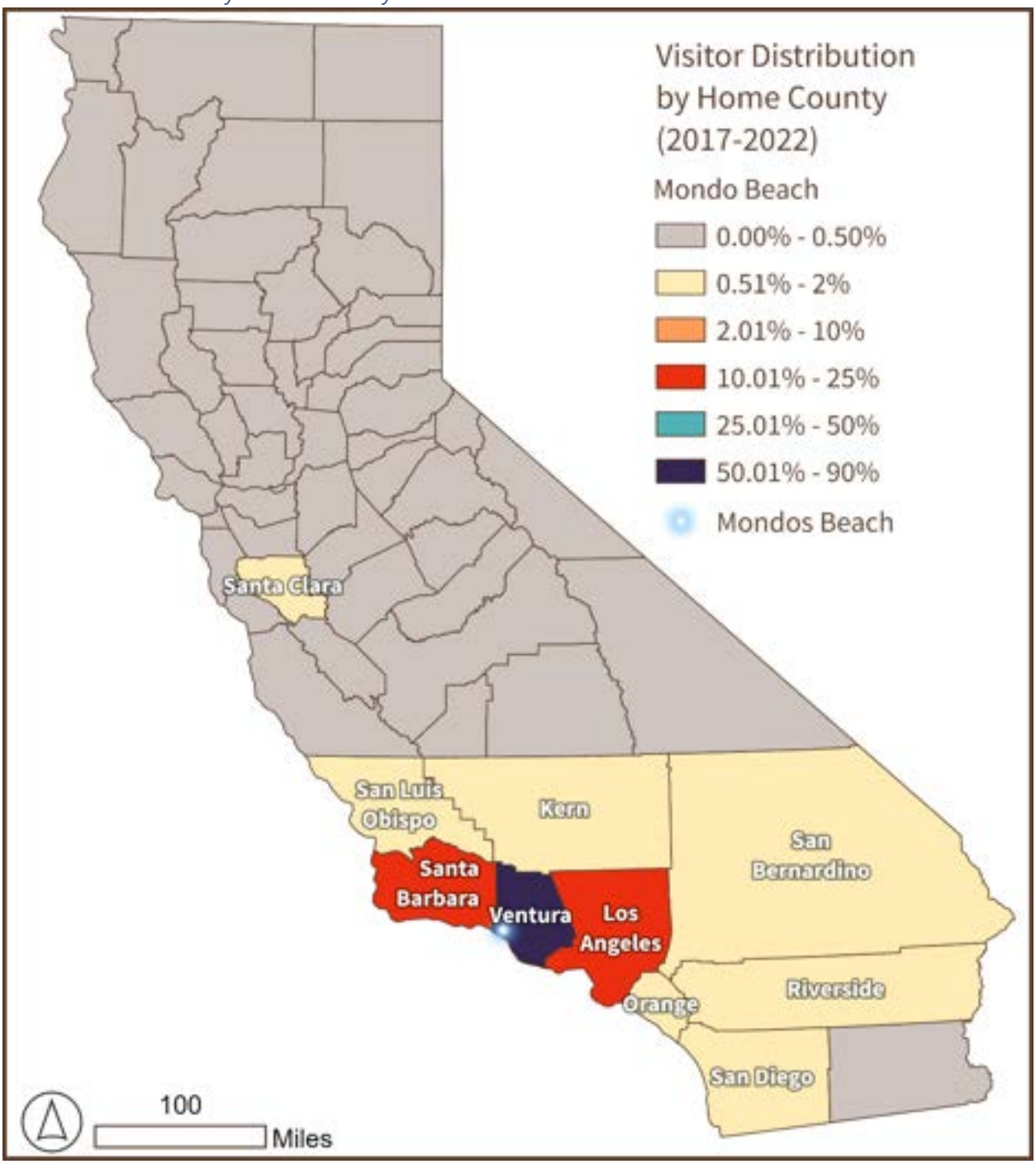
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

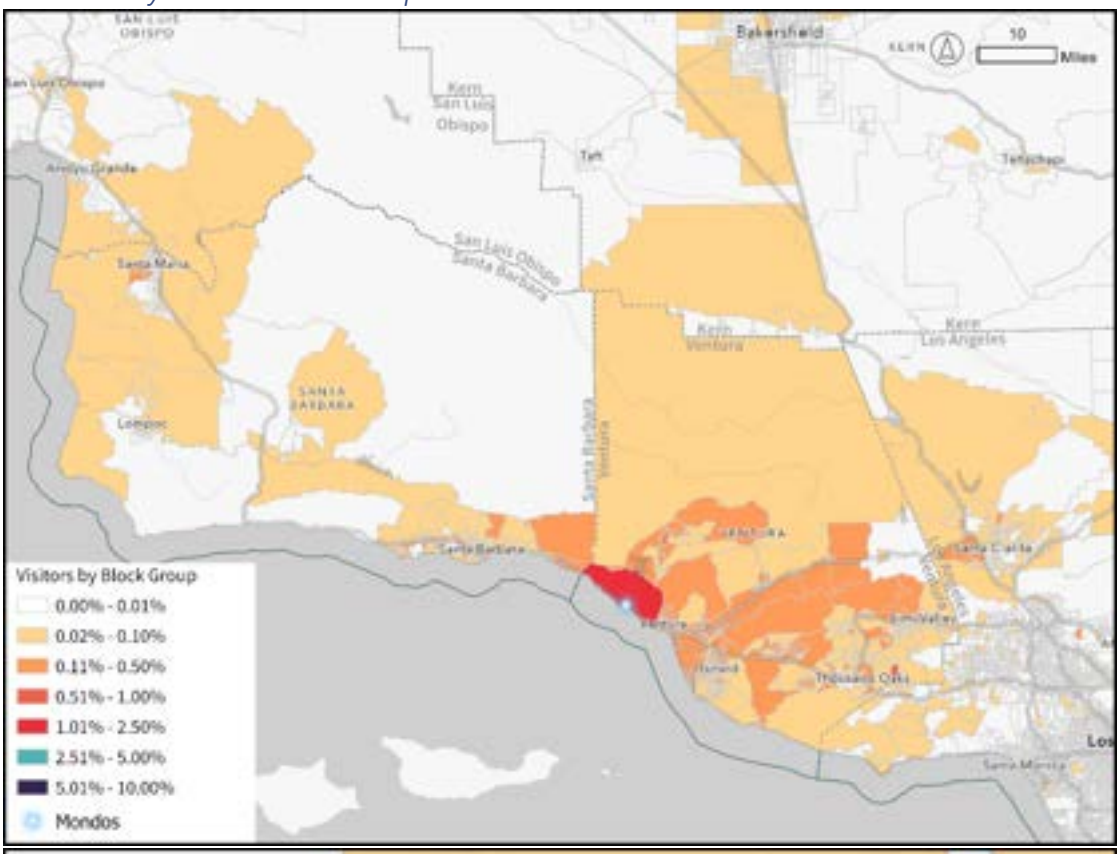
Heat Map of Hourly Visitation Mondos Beach:



Visitor Distribution by Home County



Visitation by Home Block Group



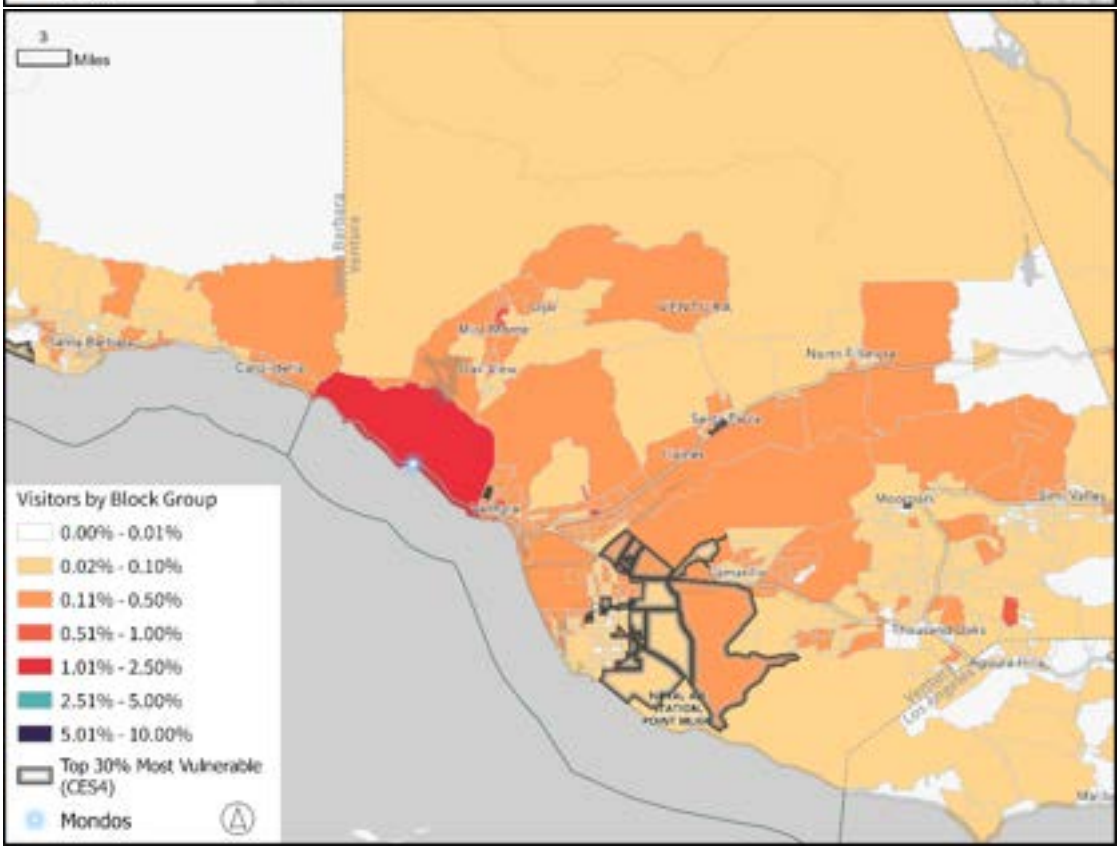
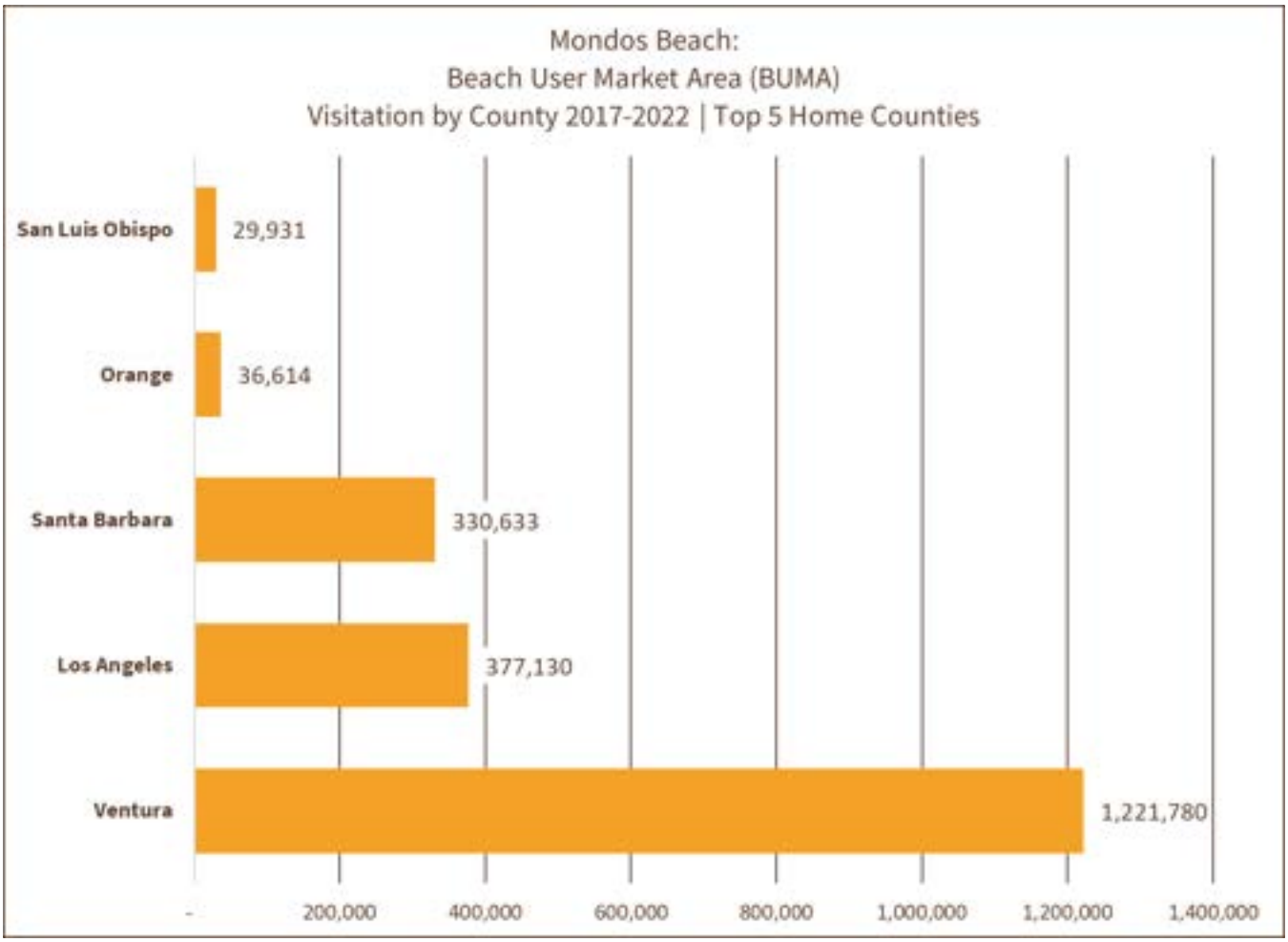
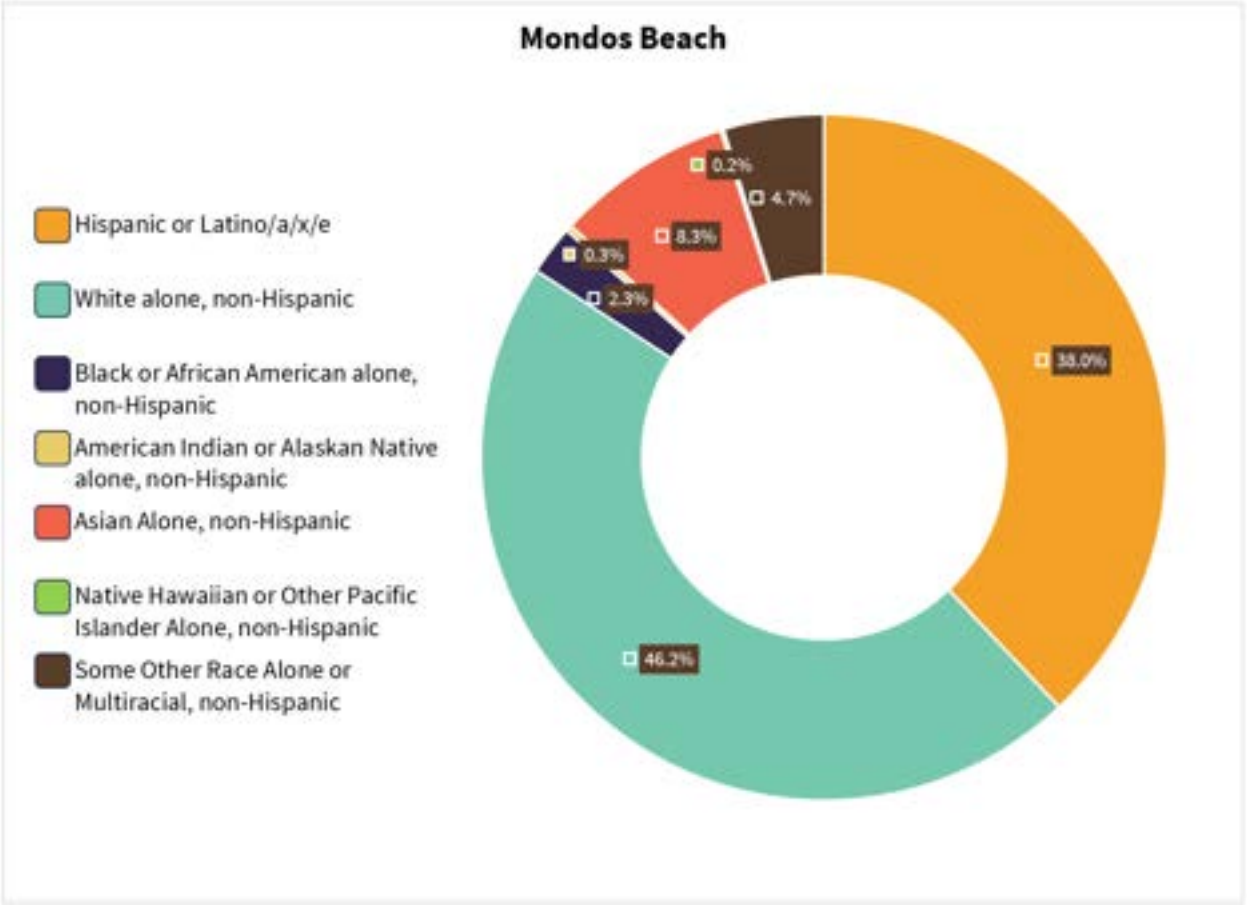


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Solimar Beach

General Statistics (2022)

Total Visitation: 102k

Average Visitation per Day: 300

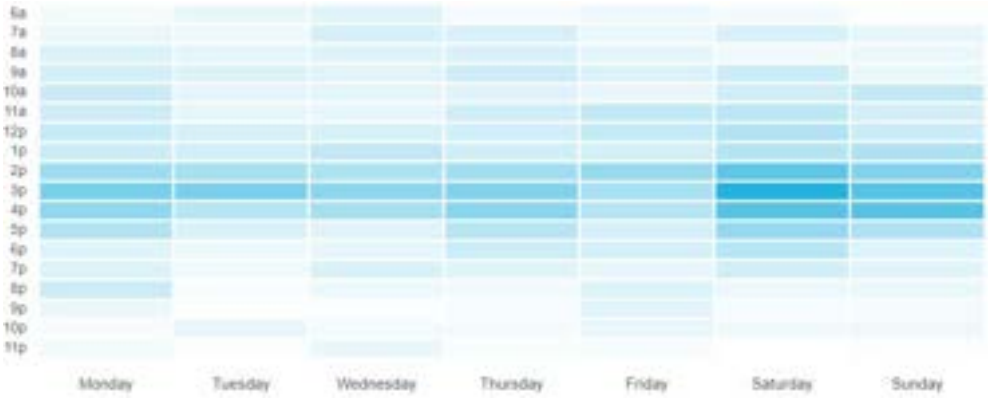
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 12%

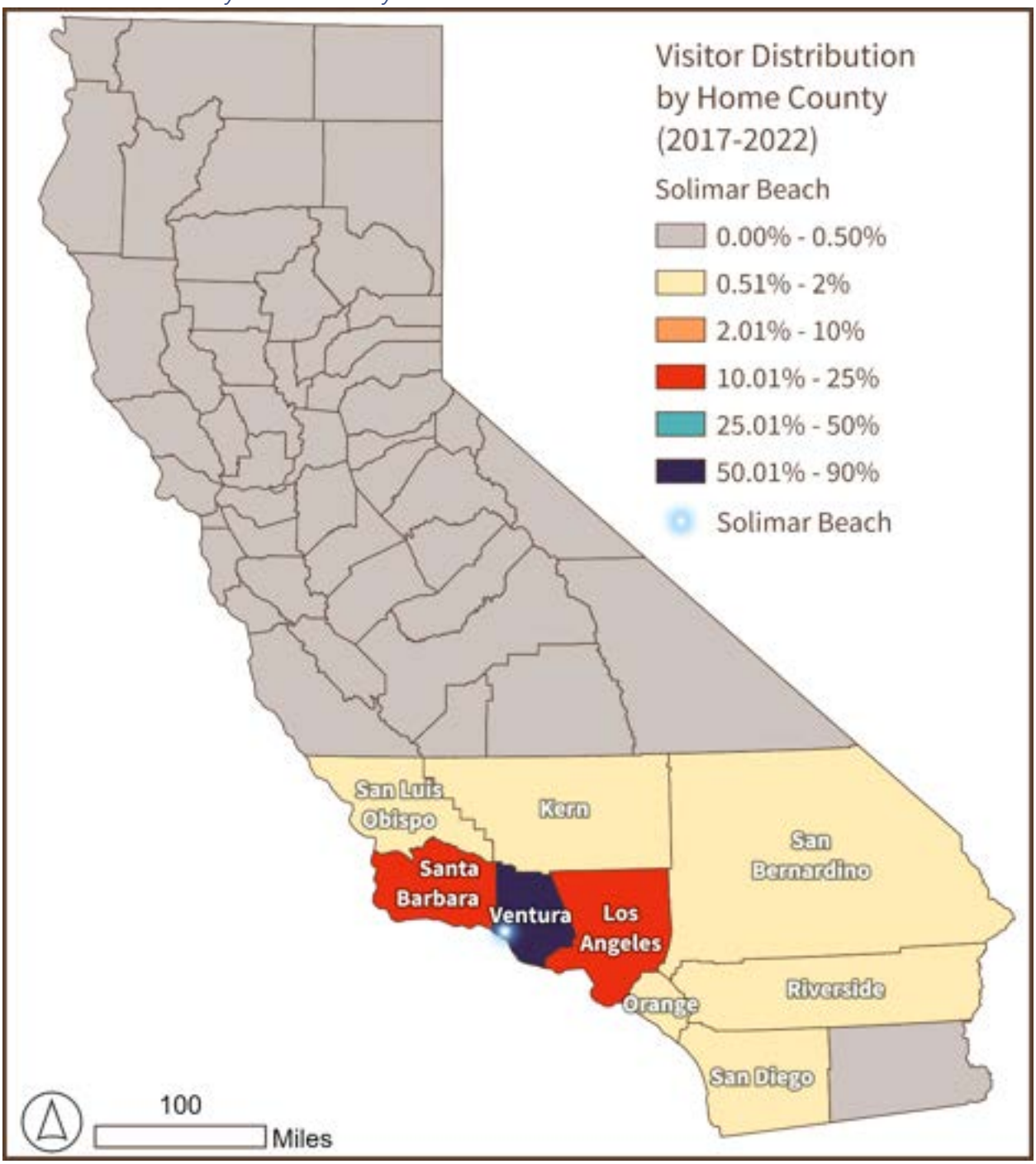
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

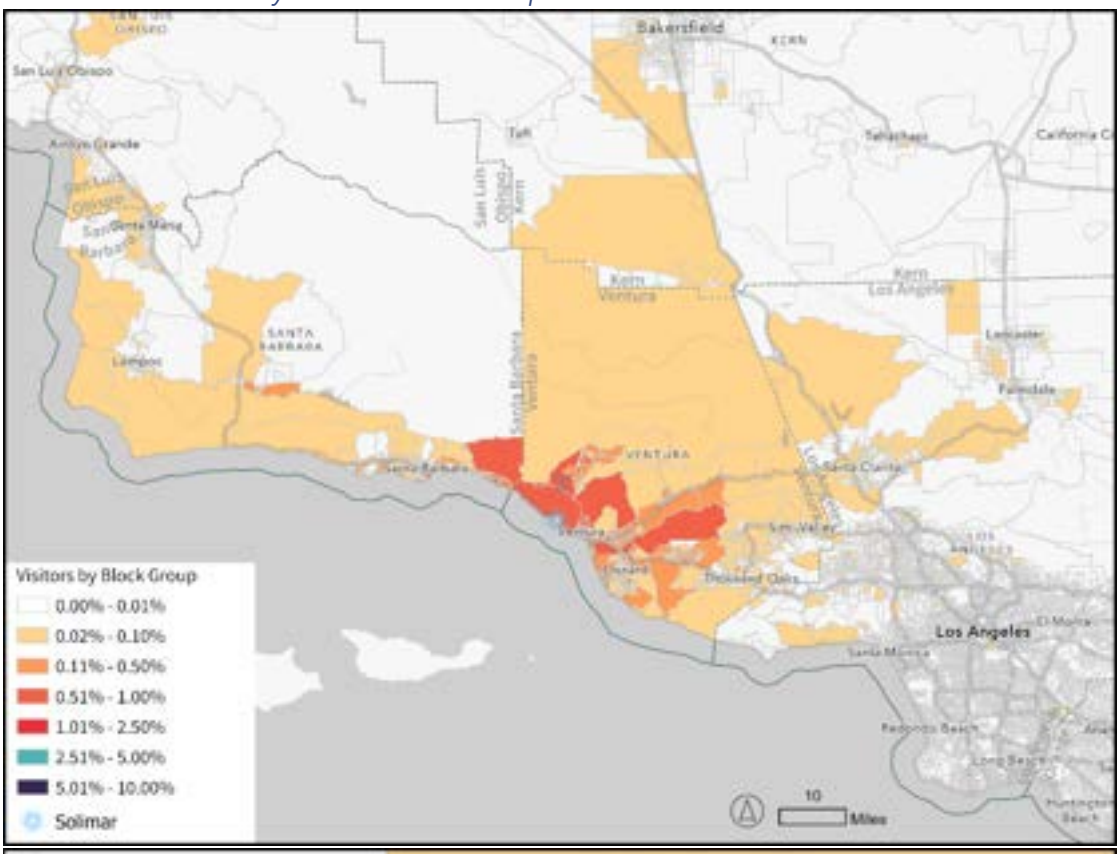
Heat Map of Hourly Visitation Solimar Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



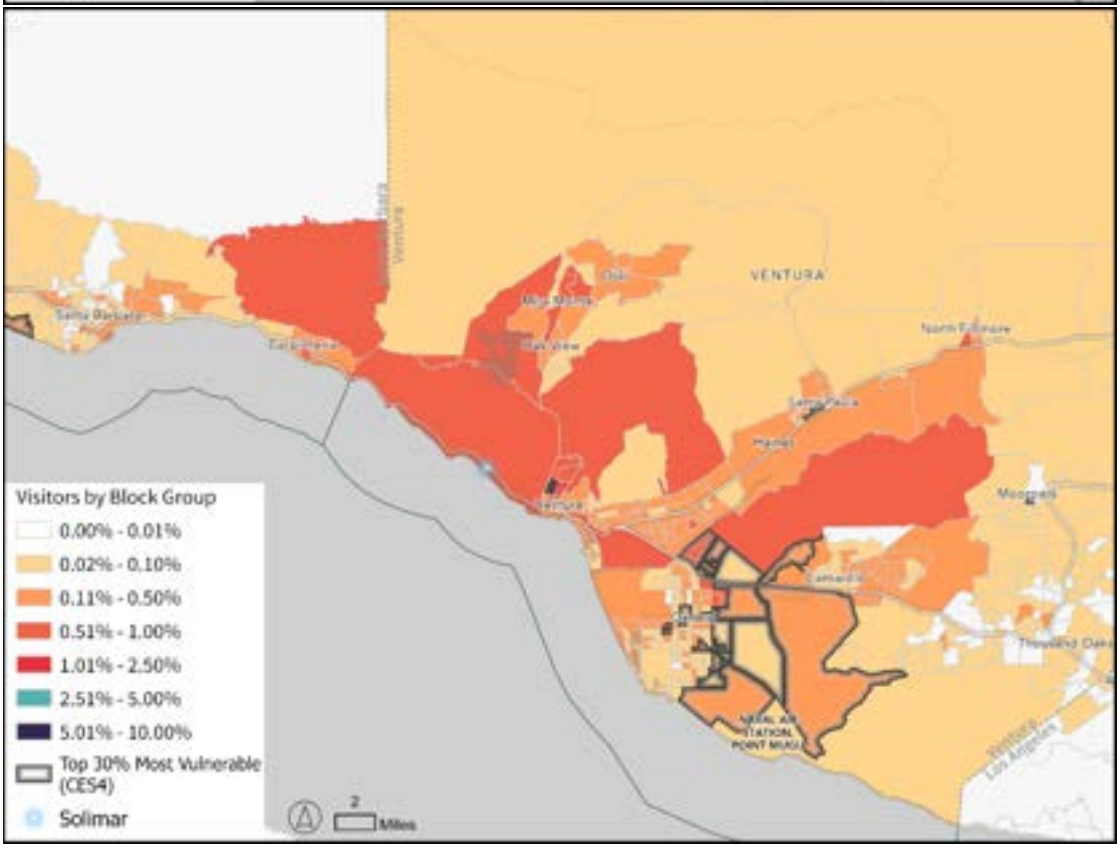


Chart of Visitation by Year

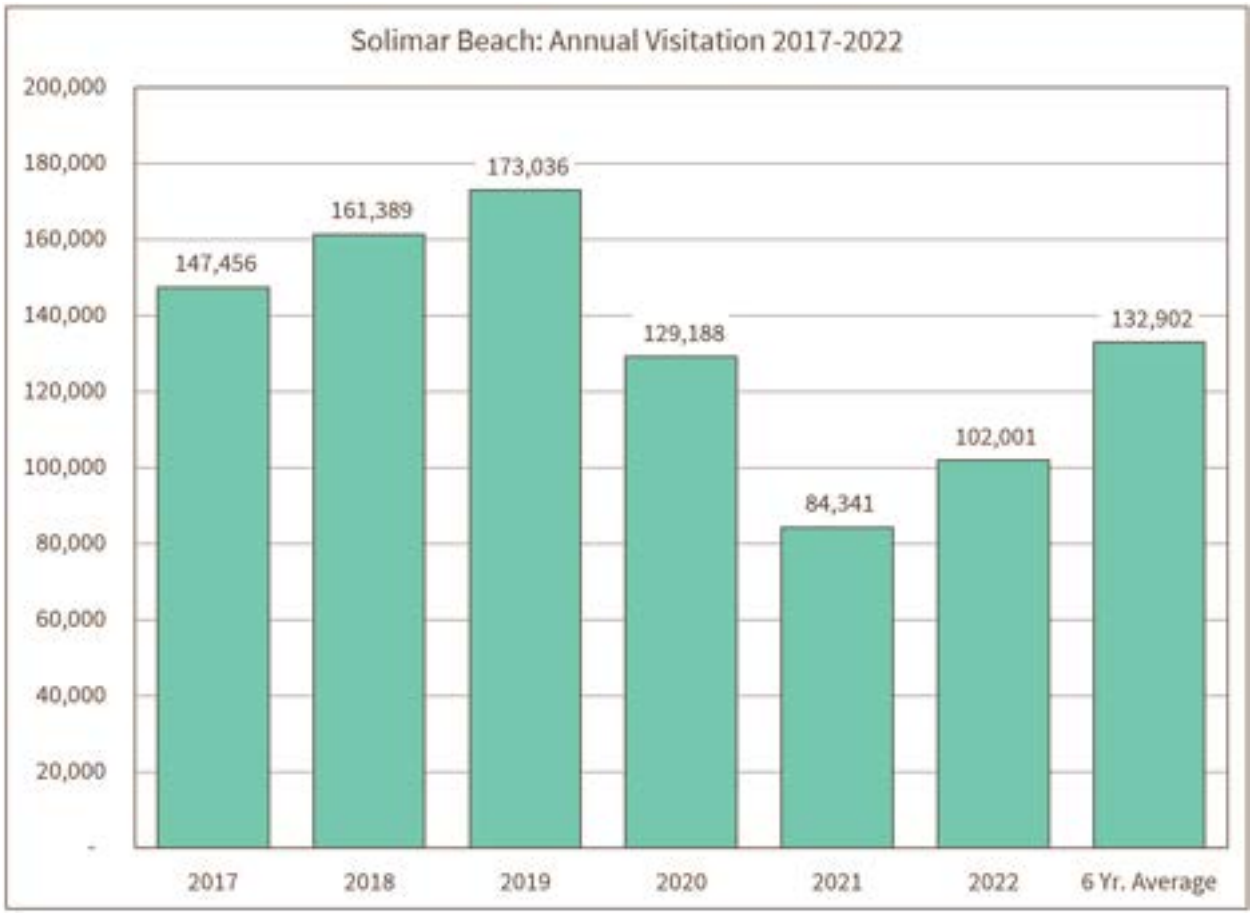
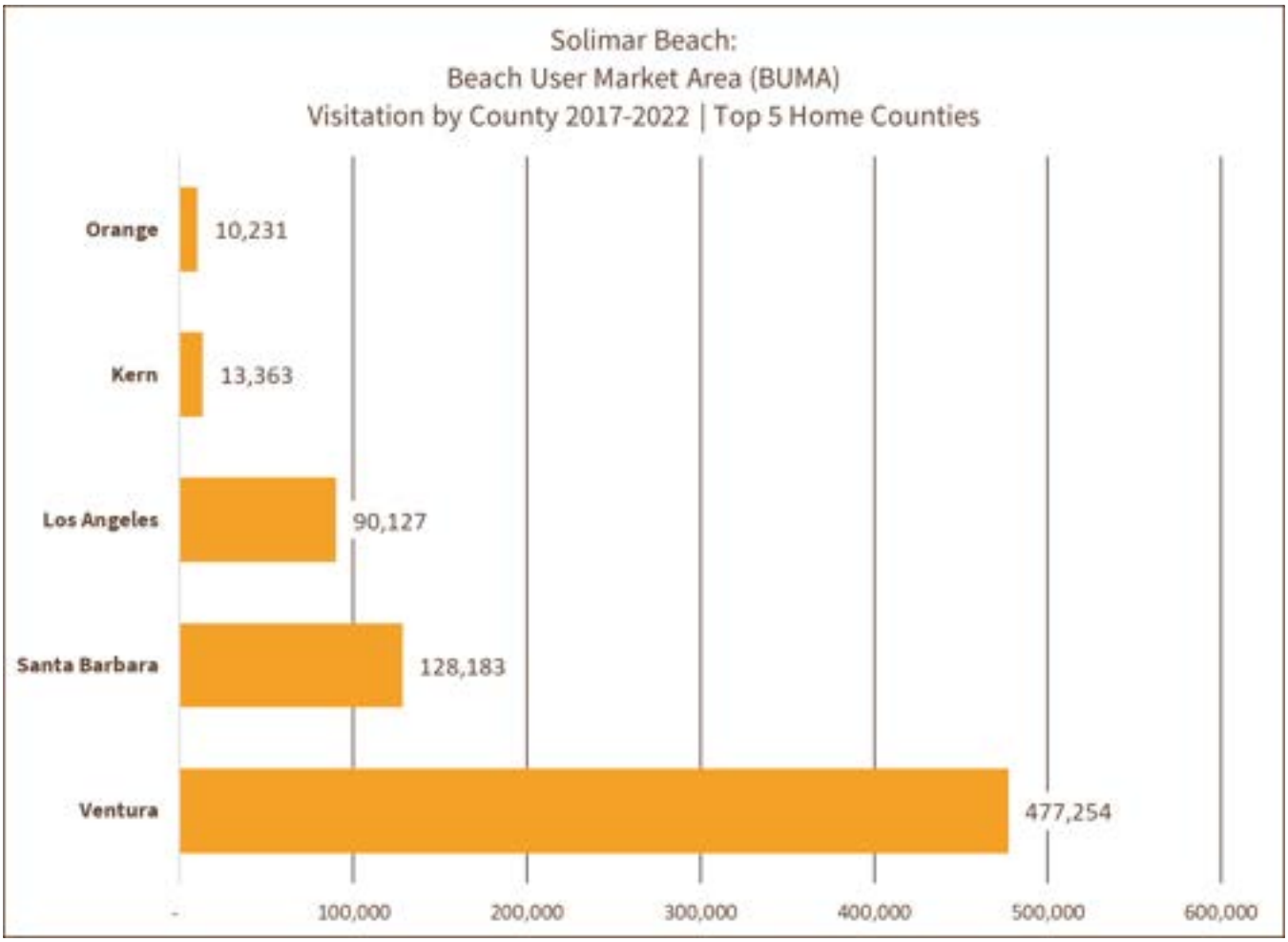
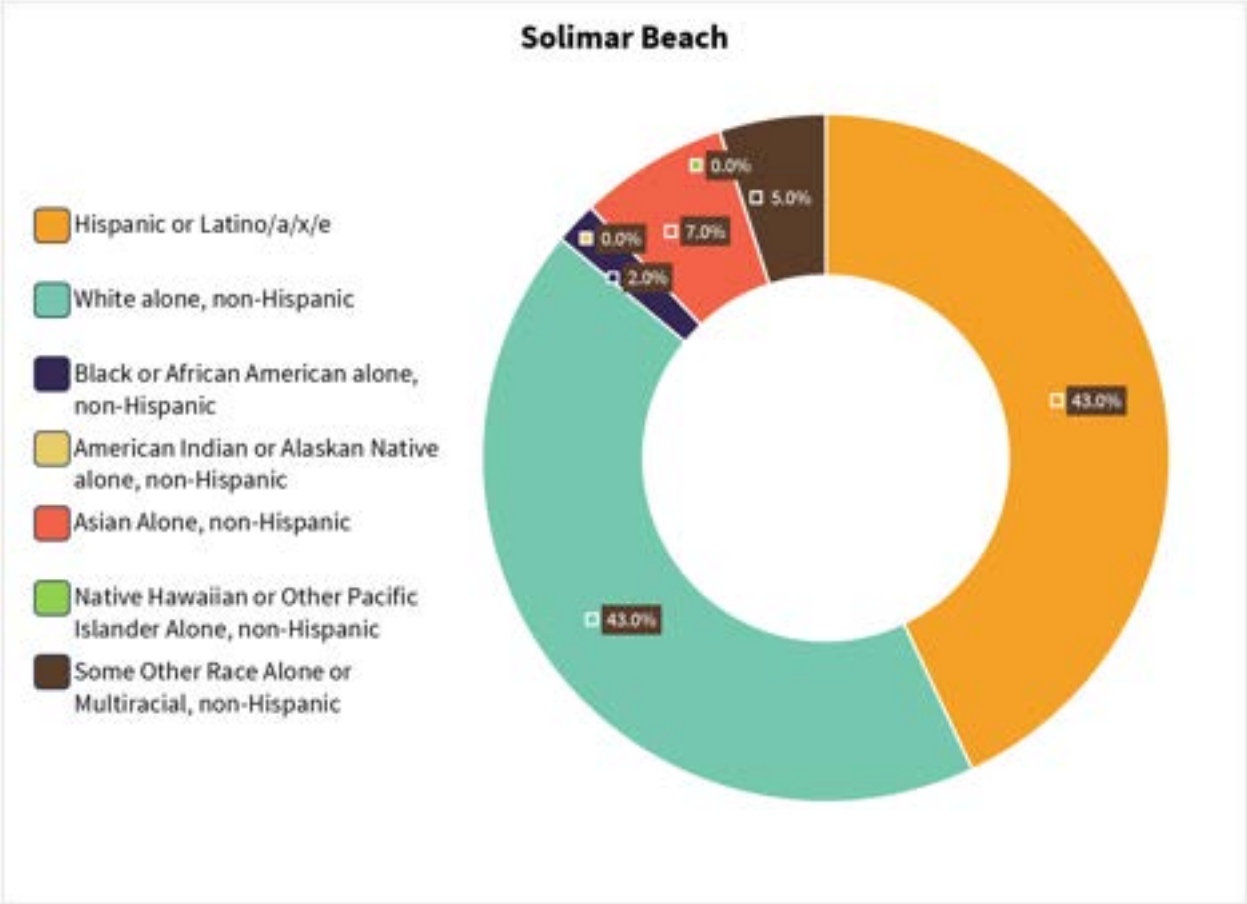


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Ventura Port District

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Surfers Knoll Beach	235,206	210,694	115,802	563,415	438,819	311,816

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Surfers Knoll Beach	104,259	127,709	125,843	144,449	184,392	215,496	233,561	217,713	169,384	135,554	107,909	109,483

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Surfers Knoll Beach	204,732	180,142	188,682	182,052	245,406	457,250	417,488

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Surfers Knoll Beach	43%	42%	1%	0%	13%	0%	1%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Surfers Knoll Beach	79%	21%

Surfers' Knoll Beach

General Statistics (2022)

Total Visitation: 311.8k

Average Visitation per Day: 860

Average Length of Stay: 1.25 hours

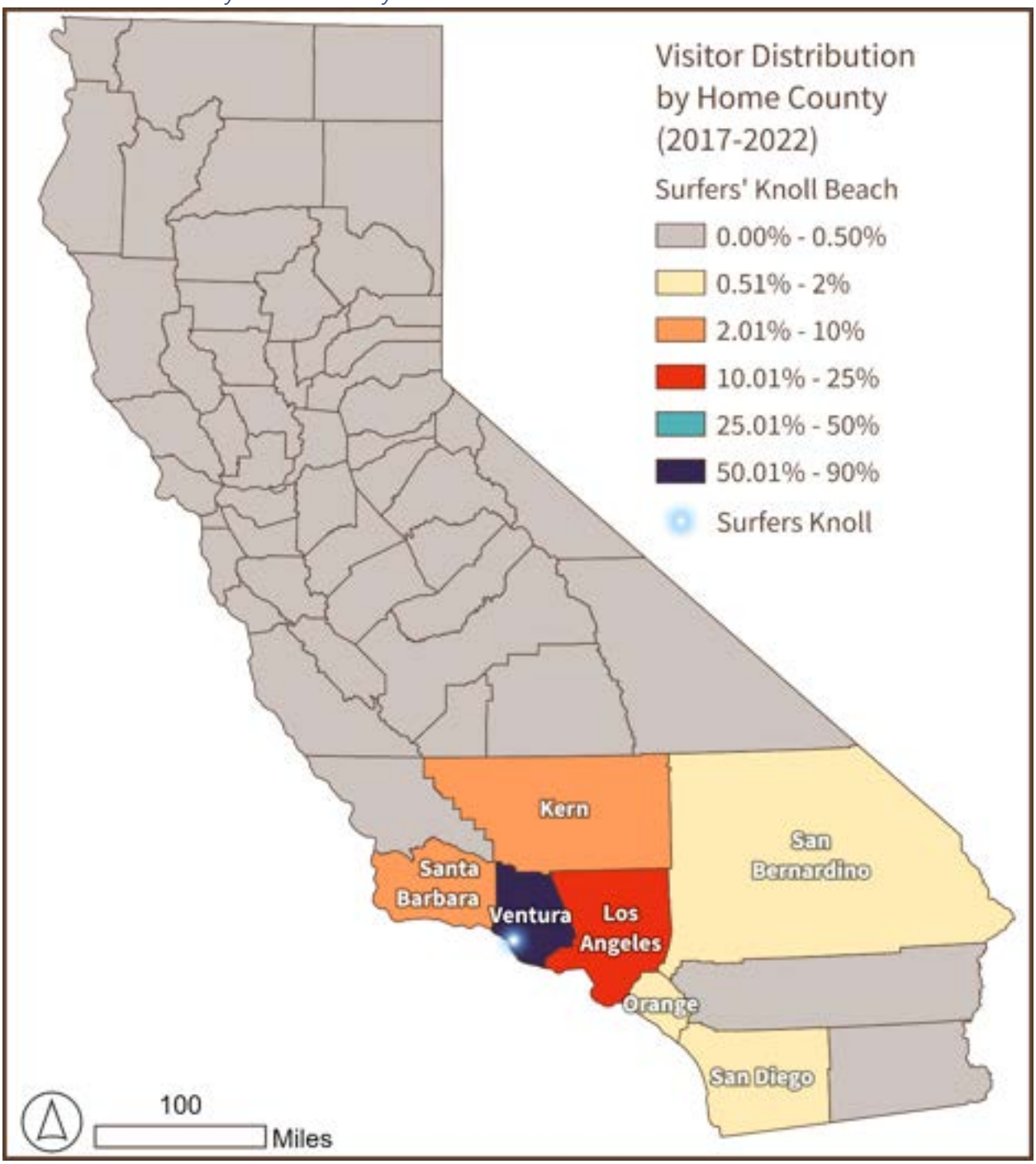
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 21%

Busiest Day of the Week: Saturday

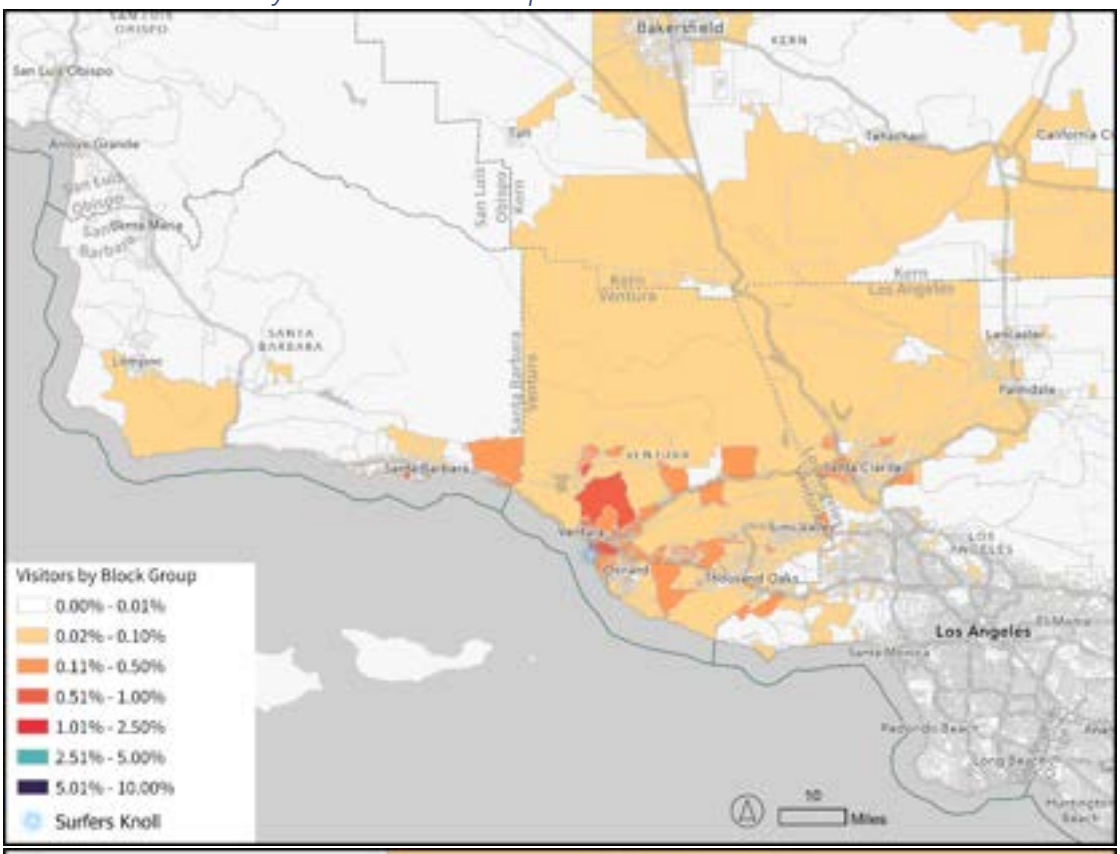
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Surfer's Knoll Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



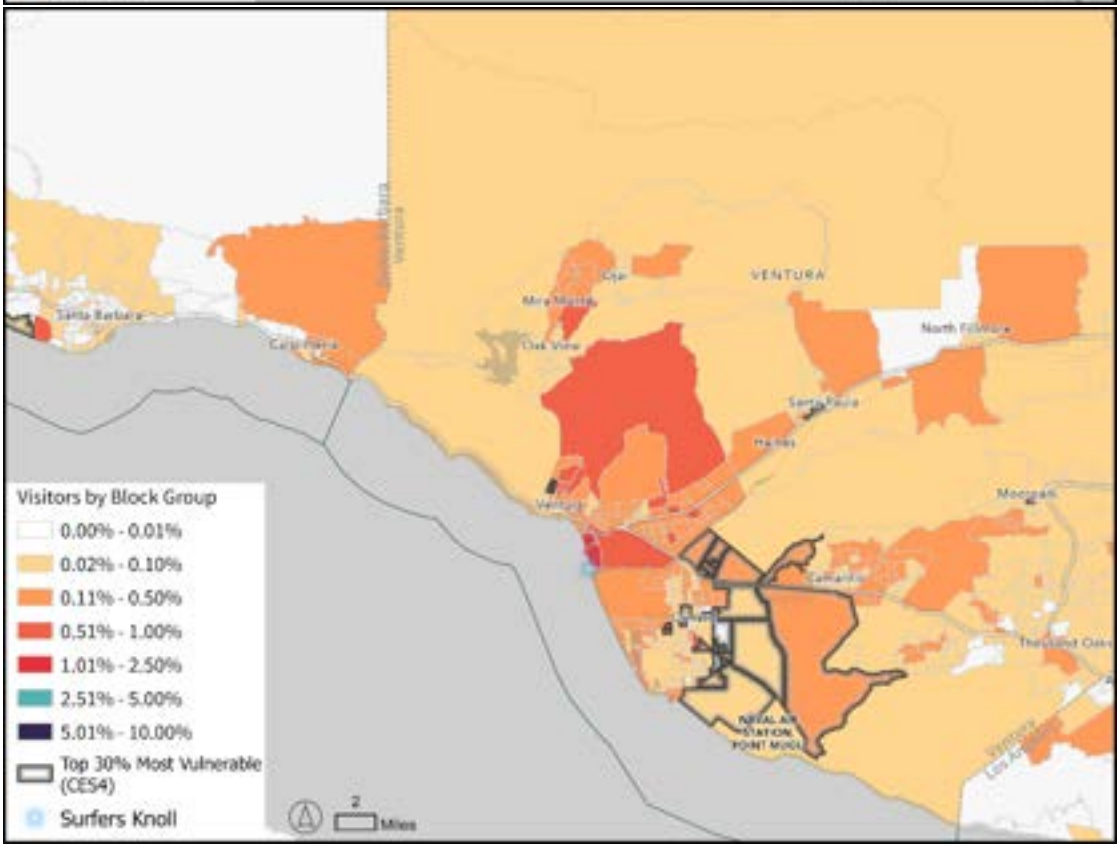


Chart of Visitation by Year

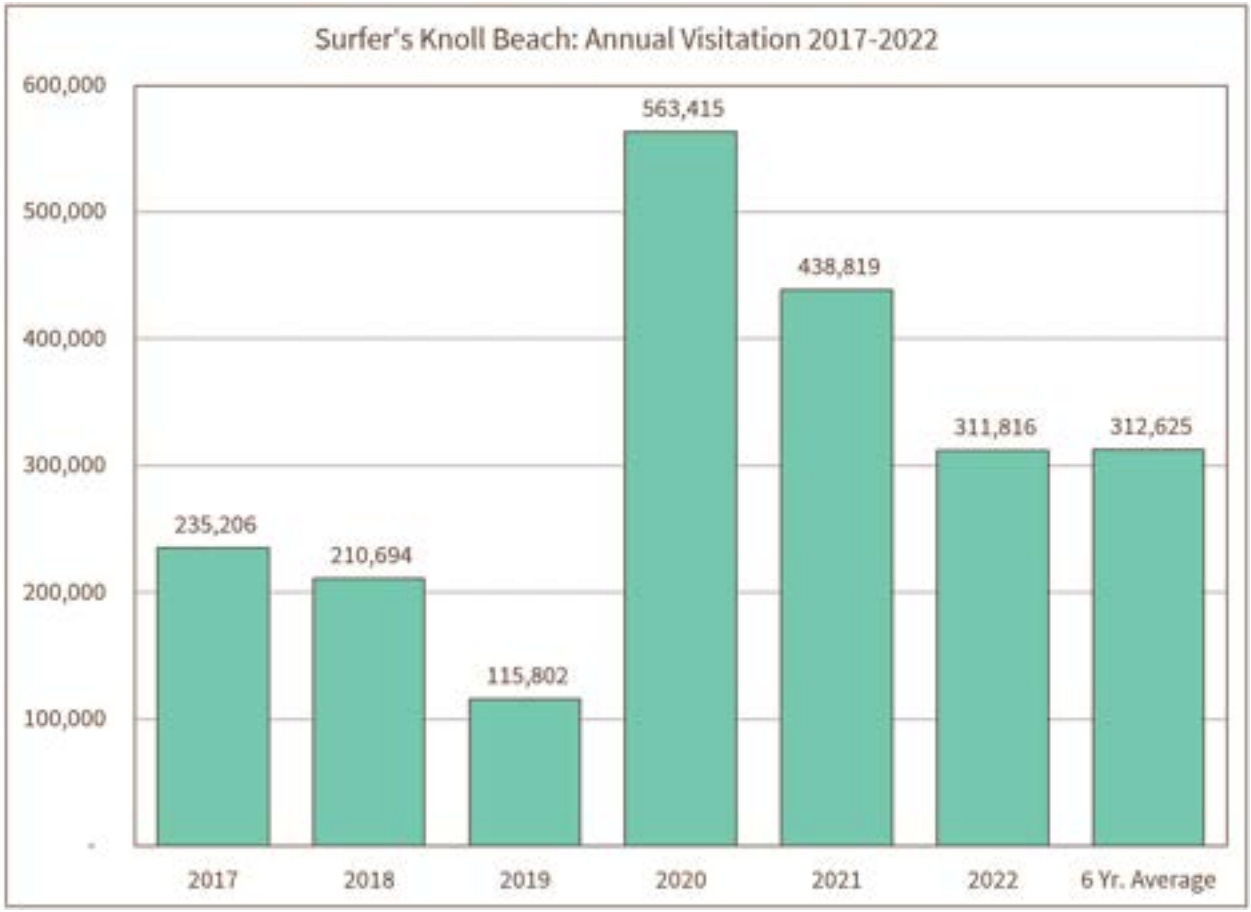
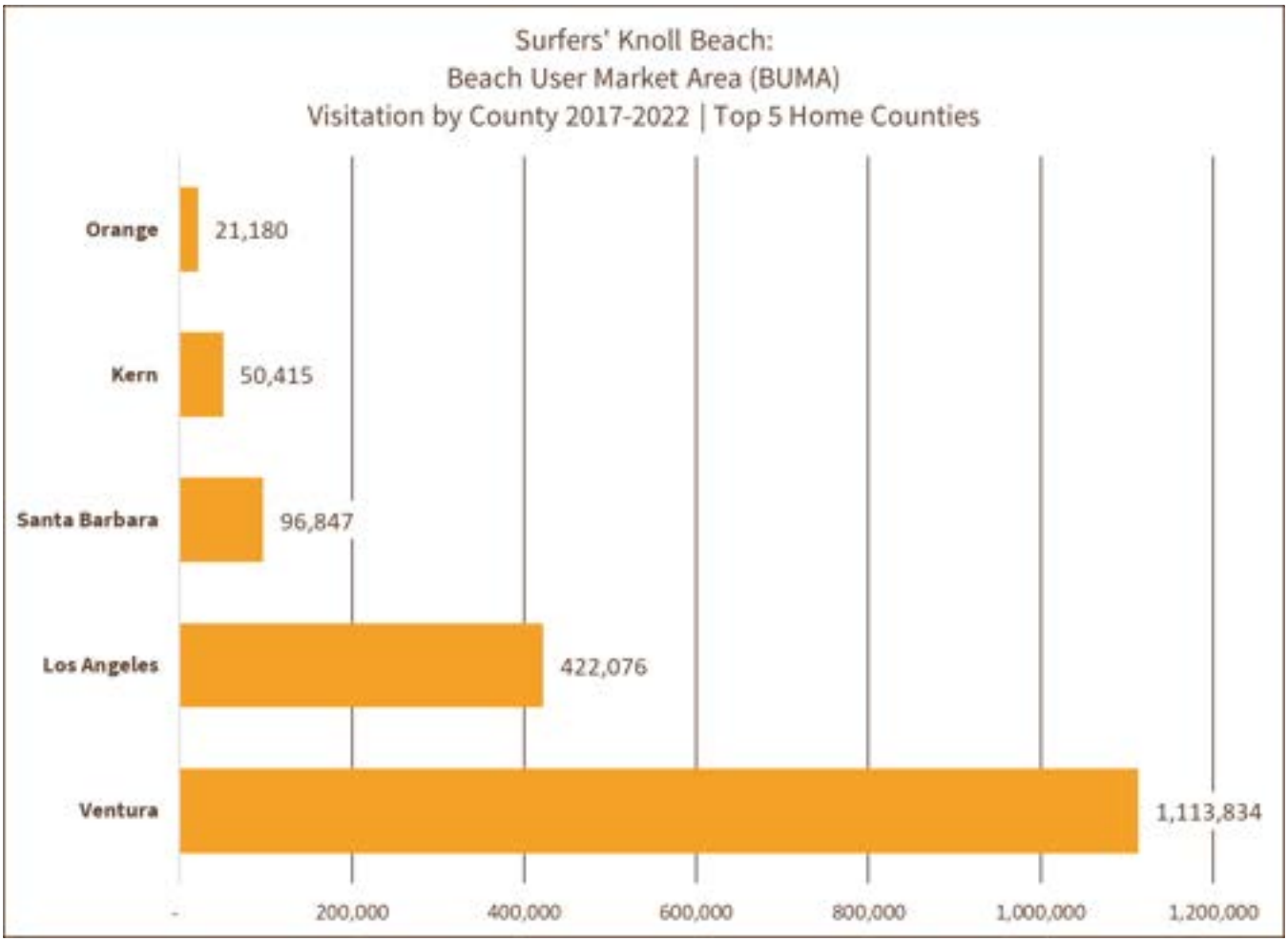
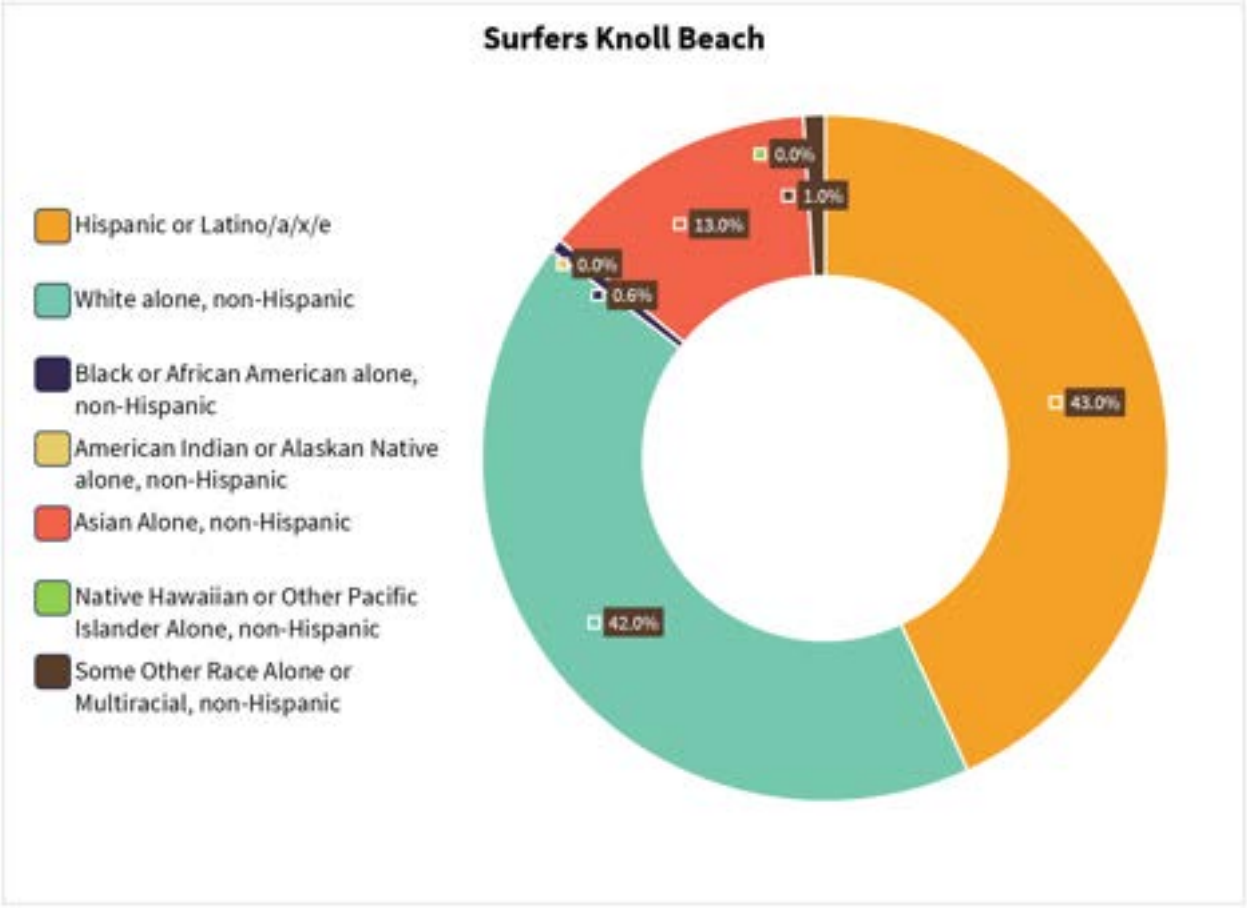


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Los Angeles County

Mountains Recreation and Conservation Authority (MRCA)

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Big Rock Beach	4,177,052	3,980,074	4,569,289	5,925,799	2,474,901	3,067,048
Carbon Beach	4,358,244	4,585,391	5,225,264	6,530,335	2,941,218	3,830,474
Escondido Beach	2,511,335	1,957,165	2,398,744	3,160,720	1,375,434	1,758,213
Escondido Canyon	2,185,972	1,395,549	1,871,822	2,701,045	1,059,090	1,200,267
La Costa Beach	3,469,837	2,450,888	3,092,052	4,149,787	1,717,340	2,460,040
Latigo Beach & Dan Blocker County Beach	2,370,154	1,475,608	1,695,560	2,610,003	1,131,485	1,374,076
Lechuza Beach	407,964	283,793	357,360	505,003	248,442	252,913

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Big Rock Beach	1,795,936	1,910,086	1,683,656	1,689,642	2,246,671	2,150,481	2,781,570	2,788,763	2,258,789	1,890,065	1,542,130	1,456,374
Carbon Beach	1,992,532	2,120,528	1,862,822	1,868,806	2,464,286	2,808,902	3,161,058	3,129,734	2,481,427	2,137,248	1,795,776	1,647,807
Escondido Beach	943,009	994,531	906,722	925,574	1,155,120	1,443,142	1,493,693	1,494,857	1,189,357	1,028,576	820,508	766,522
Escondido Canyon	736,138	754,308	710,179	721,479	906,073	1,147,842	1,193,437	1,166,997	1,024,971	823,420	630,005	598,896
La Costa Beach	1,251,453	1,390,253	1,149,982	1,189,178	1,540,555	1,832,417	1,999,364	1,989,187	1,577,569	1,340,050	1,097,545	982,391
Latigo Beach & Dan Blocker County Beach	717,855	785,767	737,895	738,121	995,795	1,212,543	1,262,081	1,216,179	952,997	821,068	635,799	580,786
Lechuza Beach	138,790	163,054	133,020	156,306	197,849	228,187	250,423	245,549	172,472	143,803	122,134	103,888

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Big Rock Beach	3,025,991	3,070,452	3,104,821	3,180,509	3,604,583	4,206,497	4,001,310
Carbon Beach	3,507,338	3,422,242	3,560,687	3,598,824	4,168,899	4,752,708	4,460,228
Escondido Beach	1,688,125	1,654,555	1,673,368	1,717,622	1,910,718	2,308,013	2,209,210
Escondido Canyon	1,344,891	1,306,914	1,329,519	1,321,620	1,489,306	1,842,883	1,778,612
La Costa Beach	2,149,361	2,145,961	2,211,875	2,234,045	2,606,096	3,078,306	2,914,300
Latigo Beach & Dan Blocker	1,345,368	1,309,392	1,331,922	1,345,439	1,532,703	1,923,287	1,868,775
Lechuza Beach	258,657	234,070	256,012	266,905	283,157	385,202	371,472

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Big Rock Beach	30%	49%	1%	0%	20%	0%	1%
Carbon Beach	29%	47%	5%	0%	11%	0%	8%
Escondido Beach	30%	50%	4%	0%	11%	0%	5%
Escondido Canyon	30%	50%	4%	0%	11%	0%	5%
La Costa Beach	38%	37%	5%	0%	14%	0%	5%
Latigo Beach & Dan Blocker County Beach	30%	50%	4%	0%	11%	0%	5%
Lechuza Beach	32%	48%	4%	0%	11%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Big Rock Beach	76%	24%
Carbon Beach	78%	22%
Escondido Beach	80%	20%
Escondido Canyon	81%	19%
La Costa Beach	78%	22%
Latigo Beach & Dan Blocker County Beach	80%	20%
Lechuza Beach	82%	18%

Big Rock Beach

General Statistics (2022)

Total Visitation: 3.5k

Average Visitation per Day: 9.5k

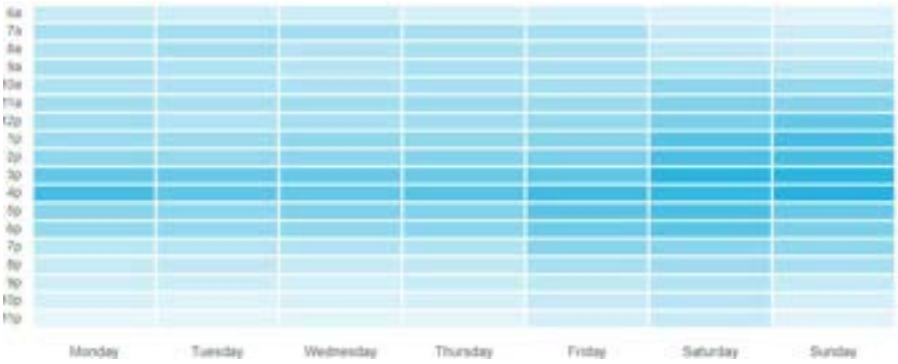
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 24%

Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Big Rock Beach:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group

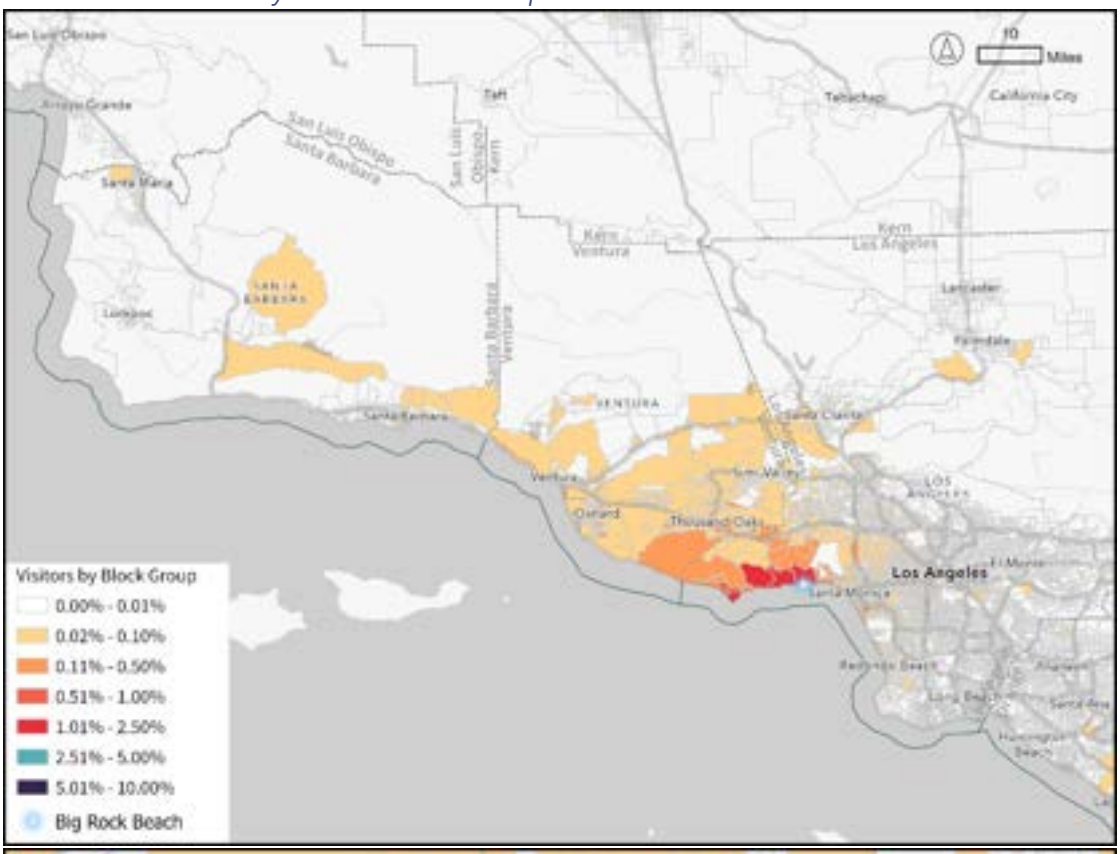


Chart of Visitation by Year

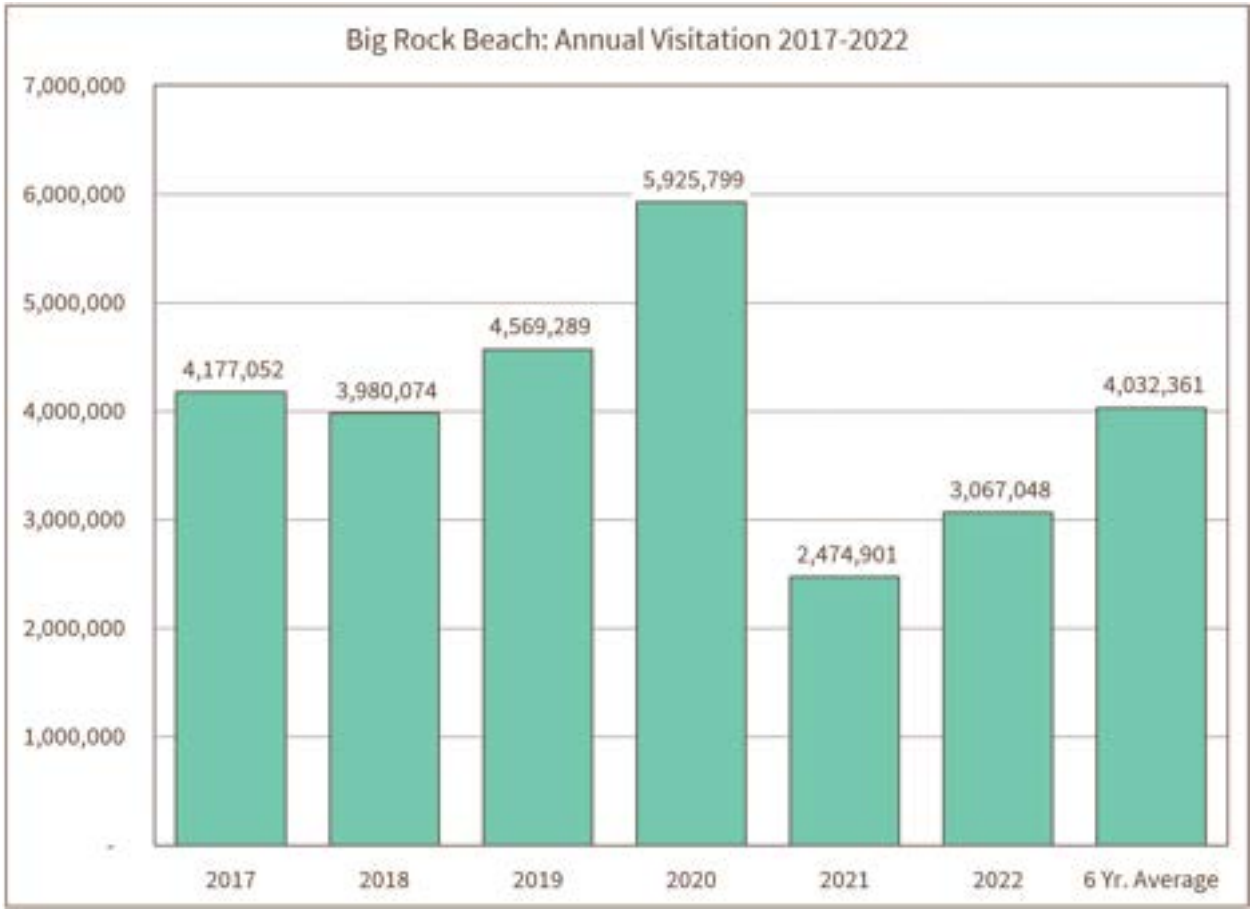
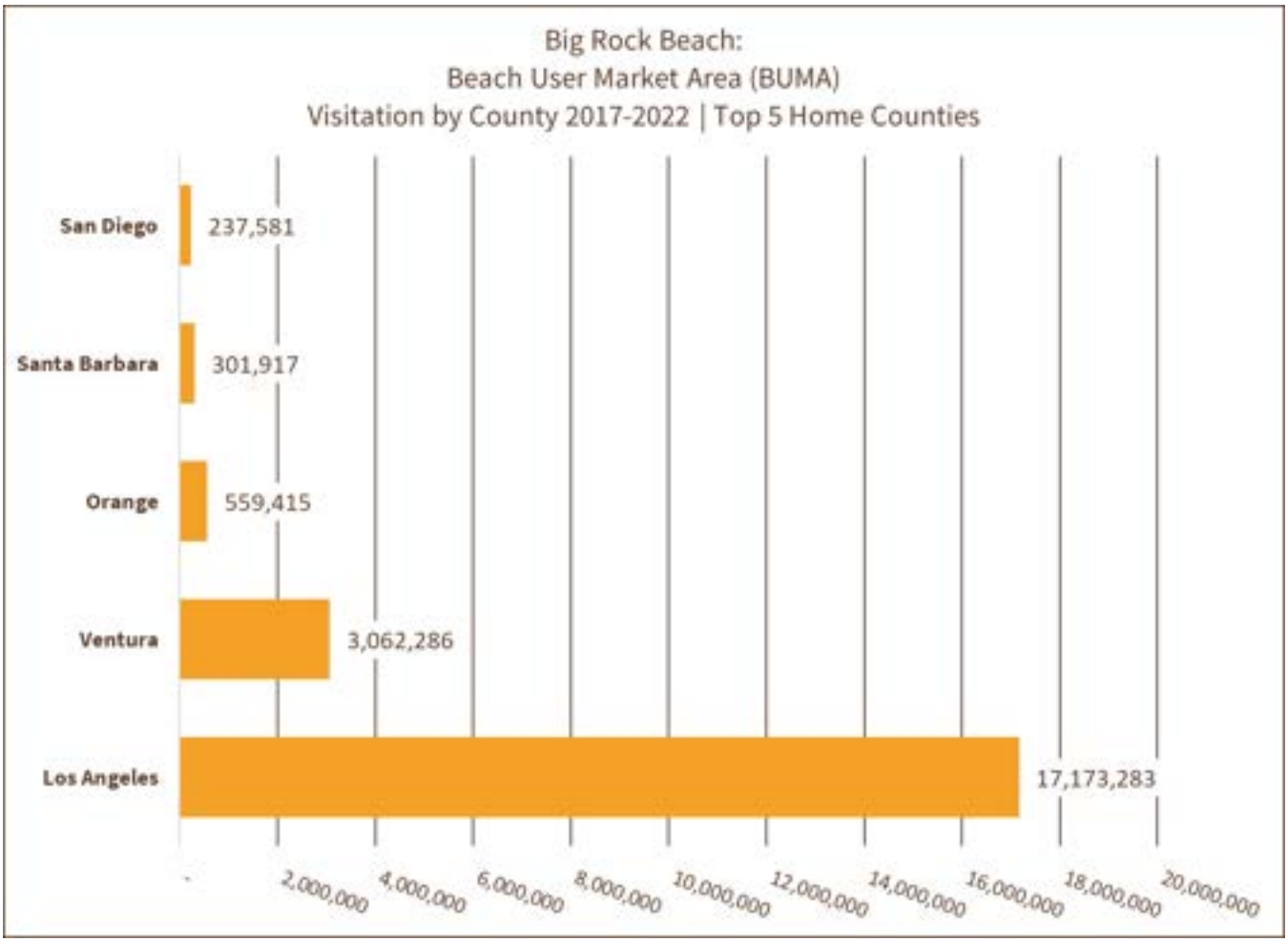
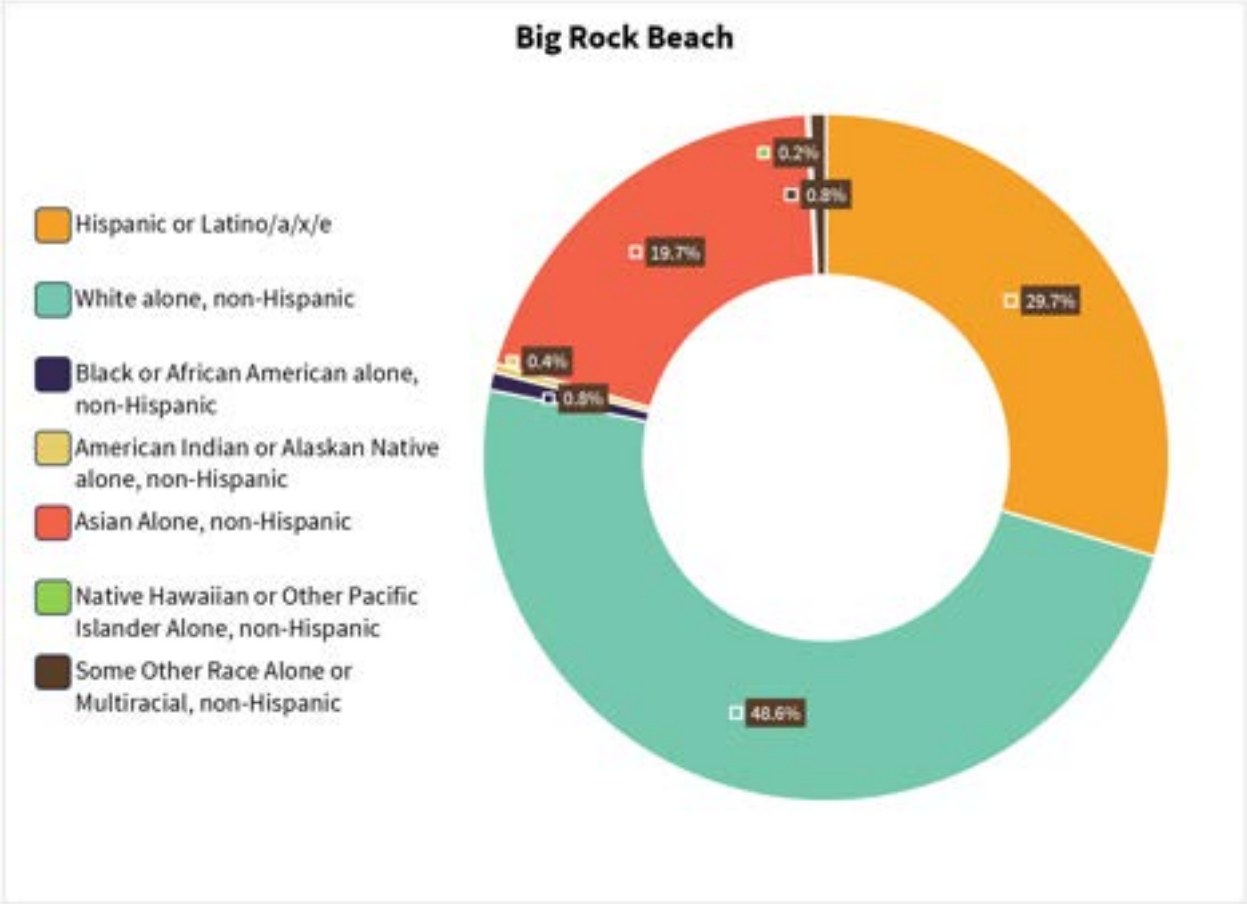


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Carbon Beach

General Statistics (2022)

Total Visitation: 3.8k

Average Visitation per Day: 10.5k

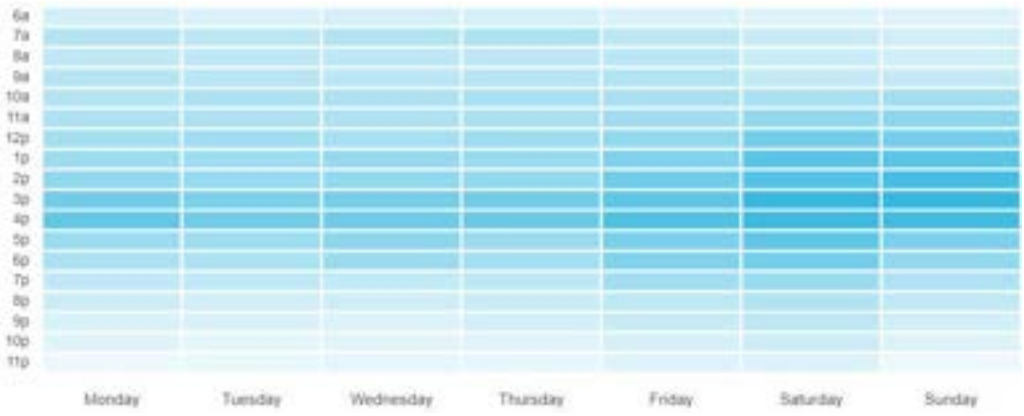
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 22%

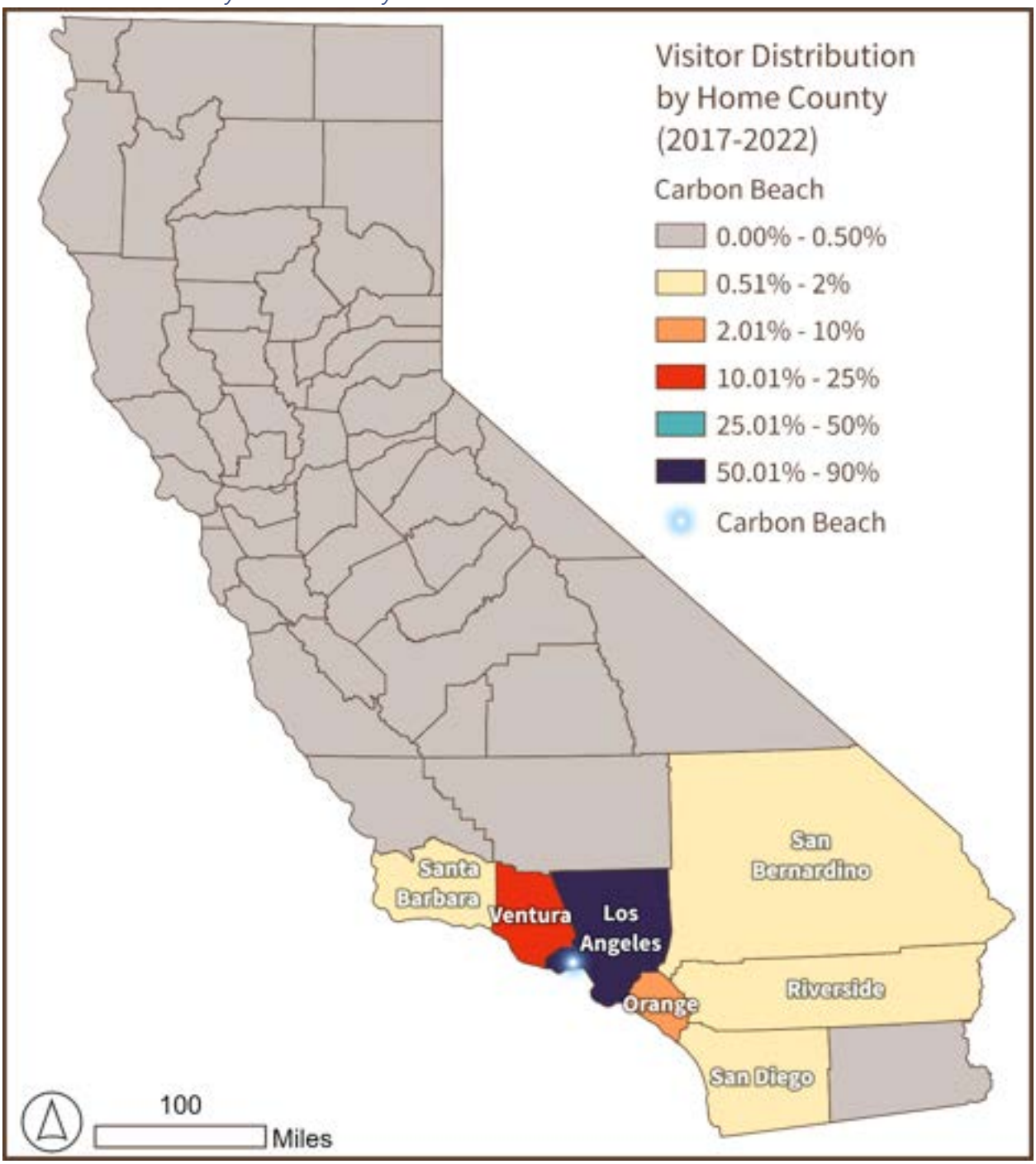
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

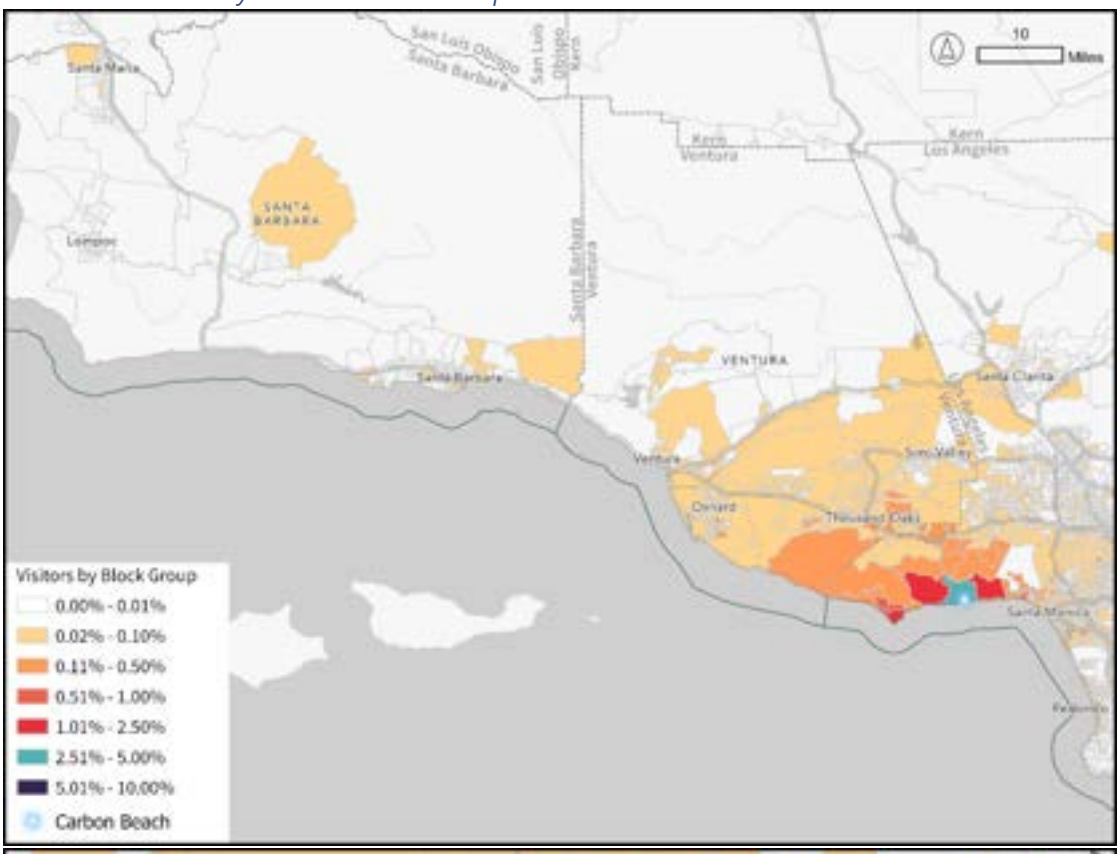
Heat Map of Hourly Visitation Carbon Beach:



Visitor Distribution by Home County



Beach Visitation by Home Block Group



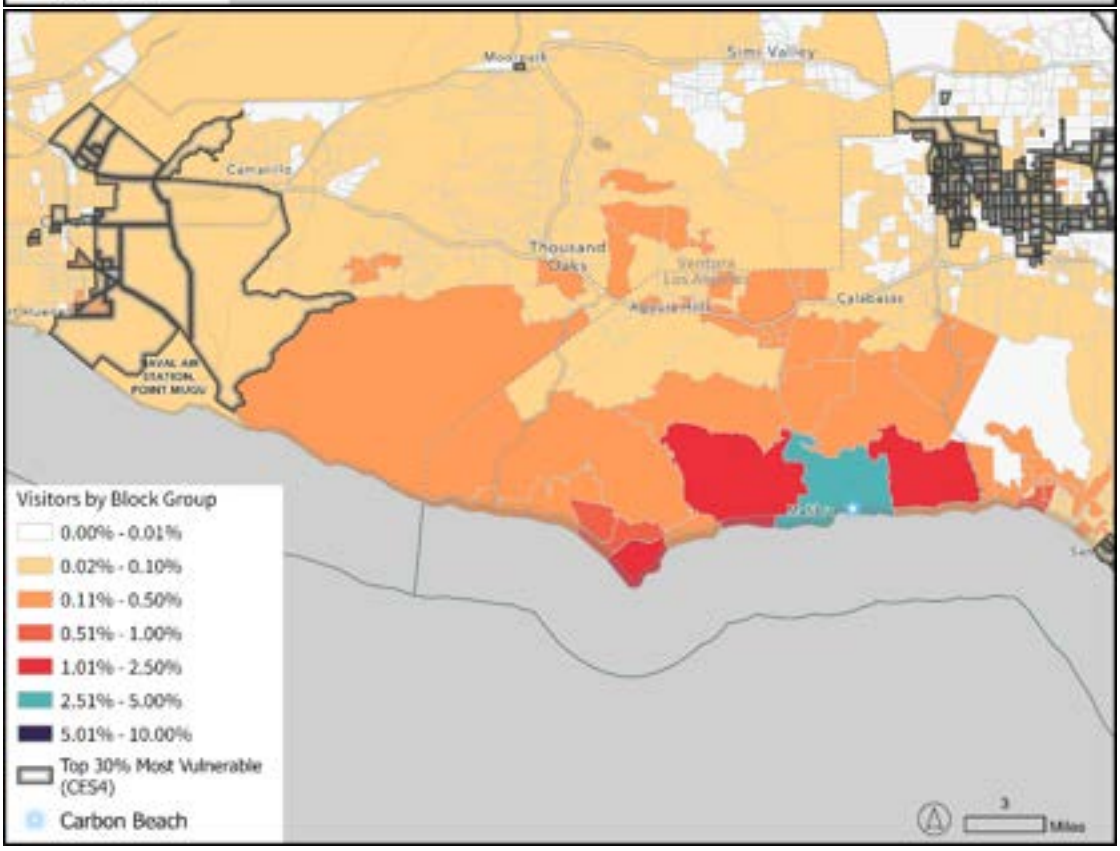


Chart of Visitation by Year

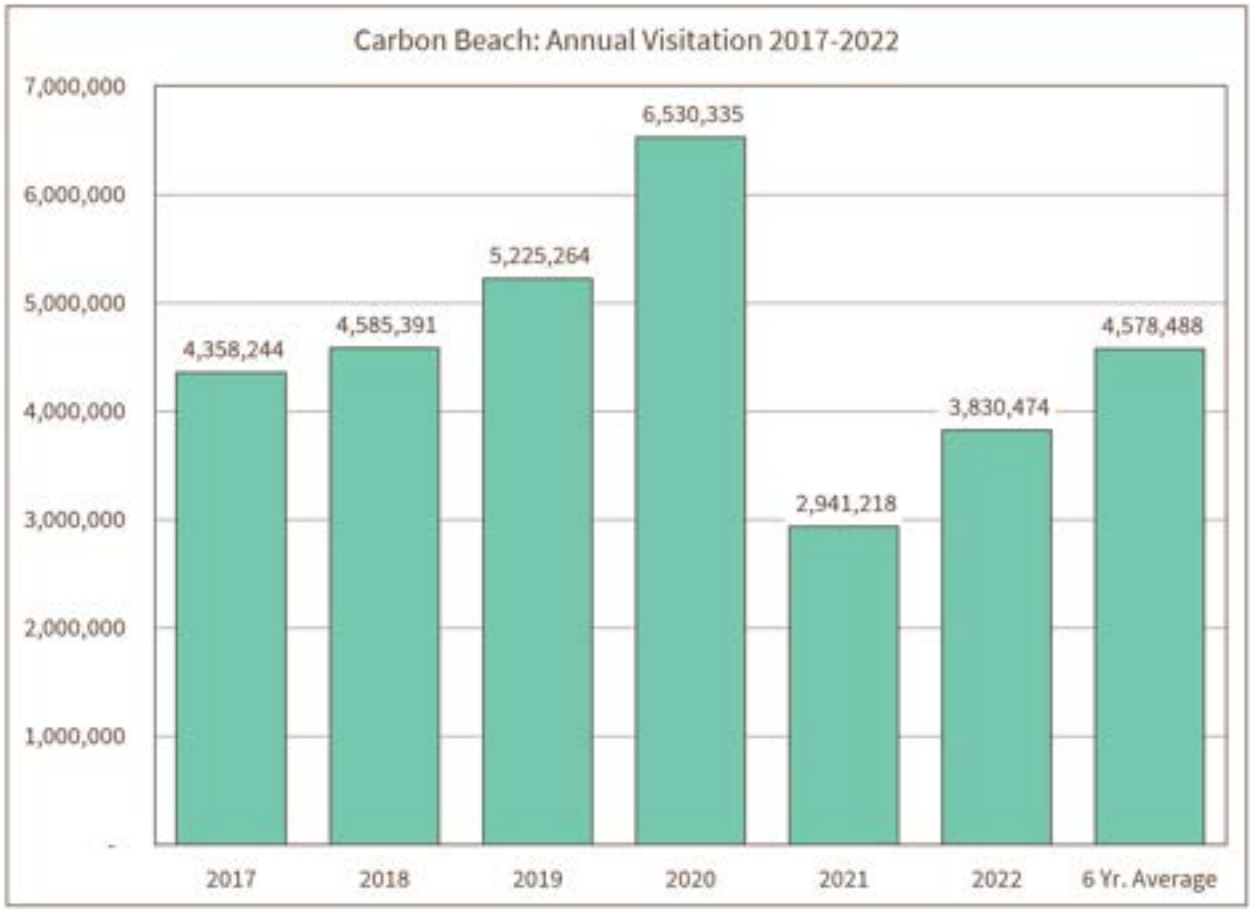
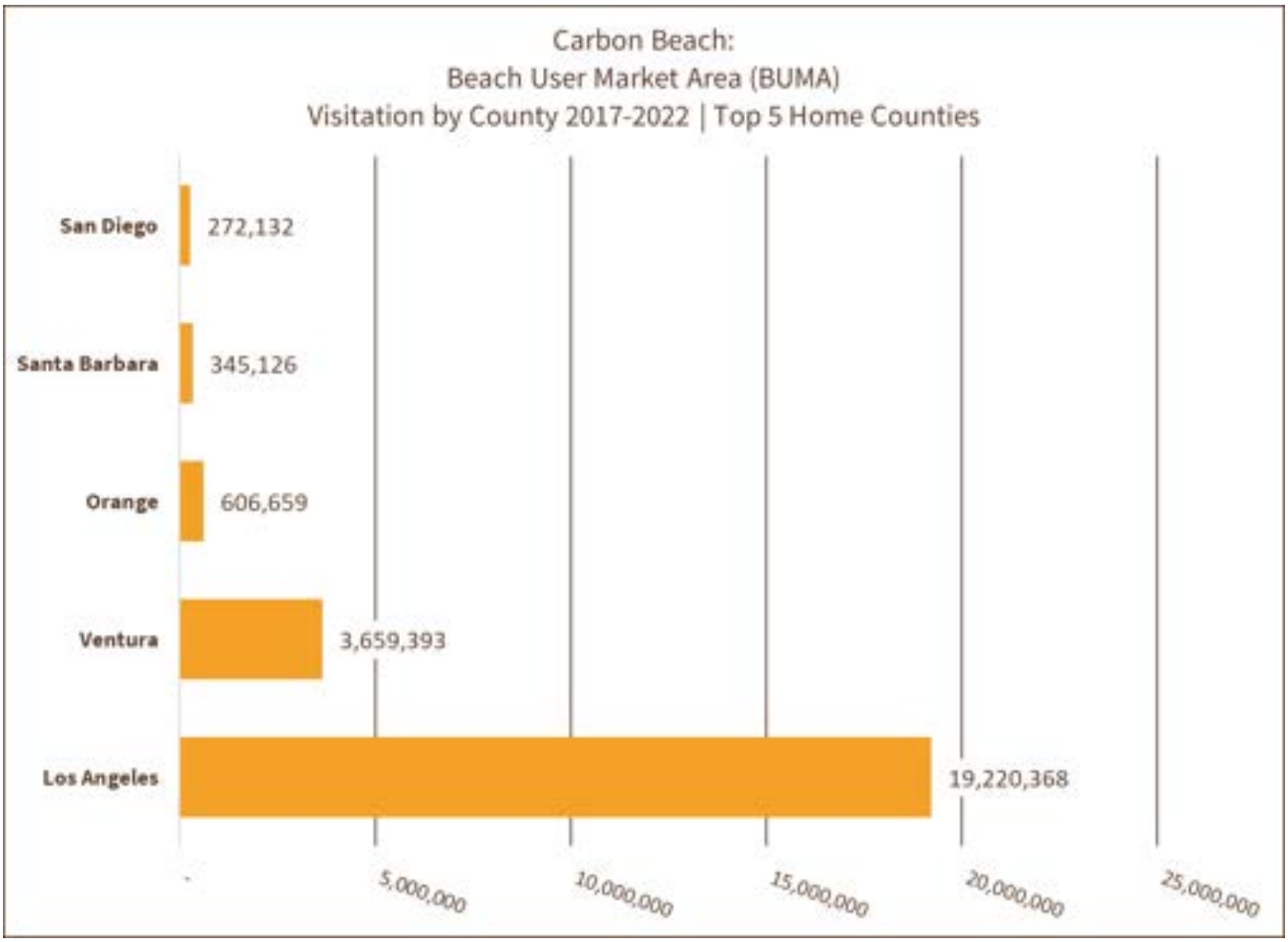
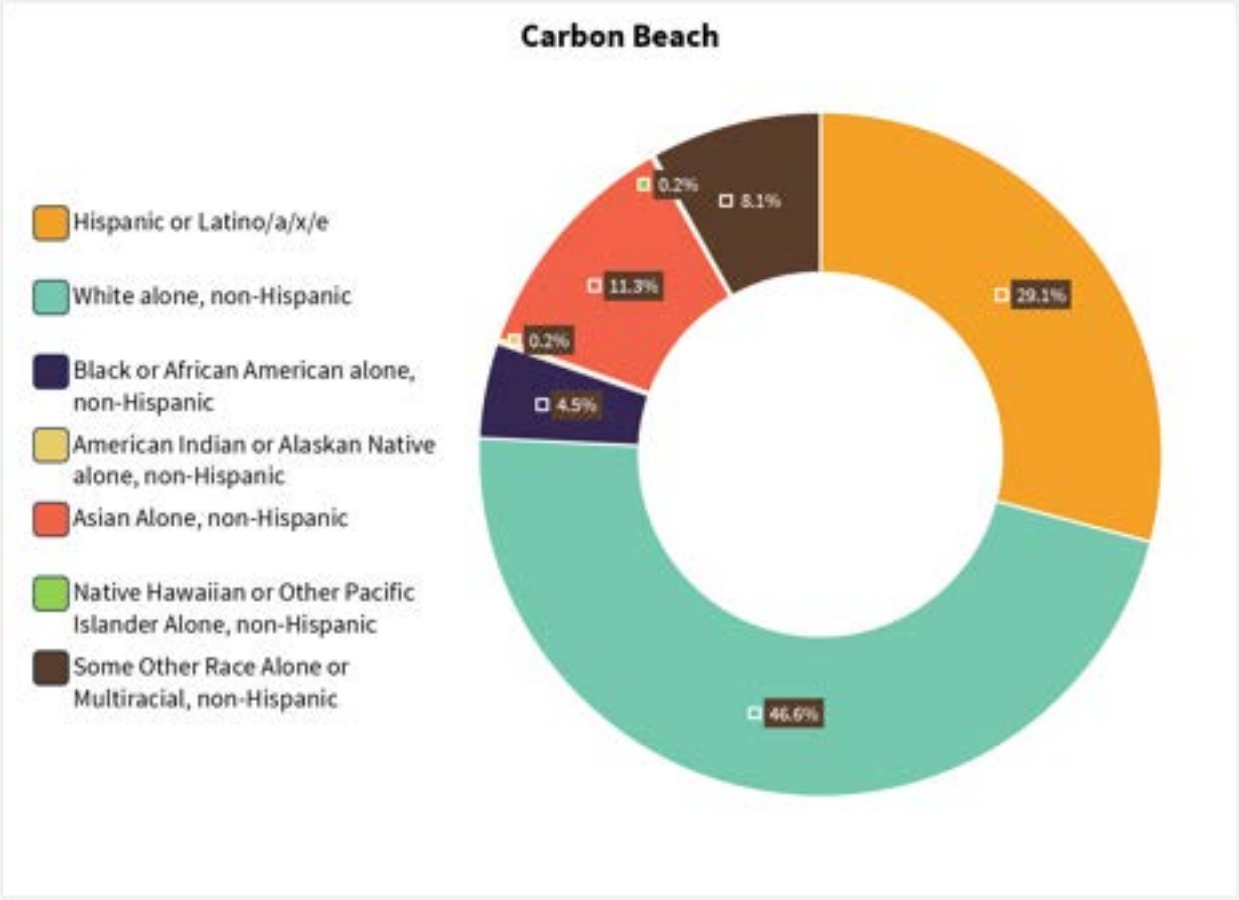


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Escondido Beach

General Statistics (2022)

Total Visitation: 1.8M

Average Visitation per Day: 4.8k

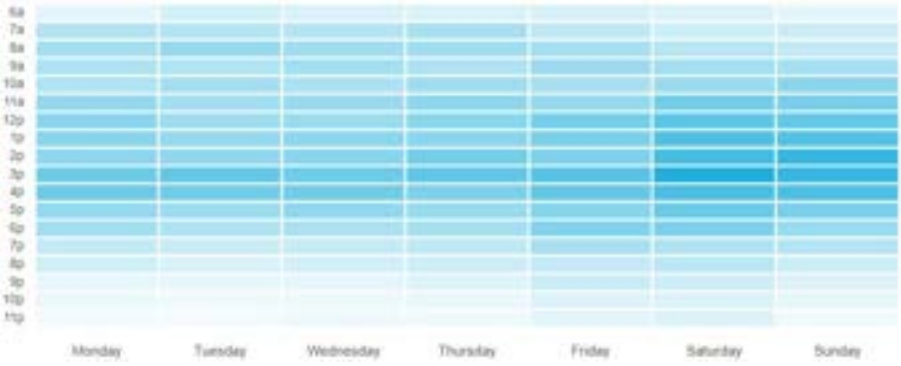
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 20%

Busiest Day of the Week: Saturday

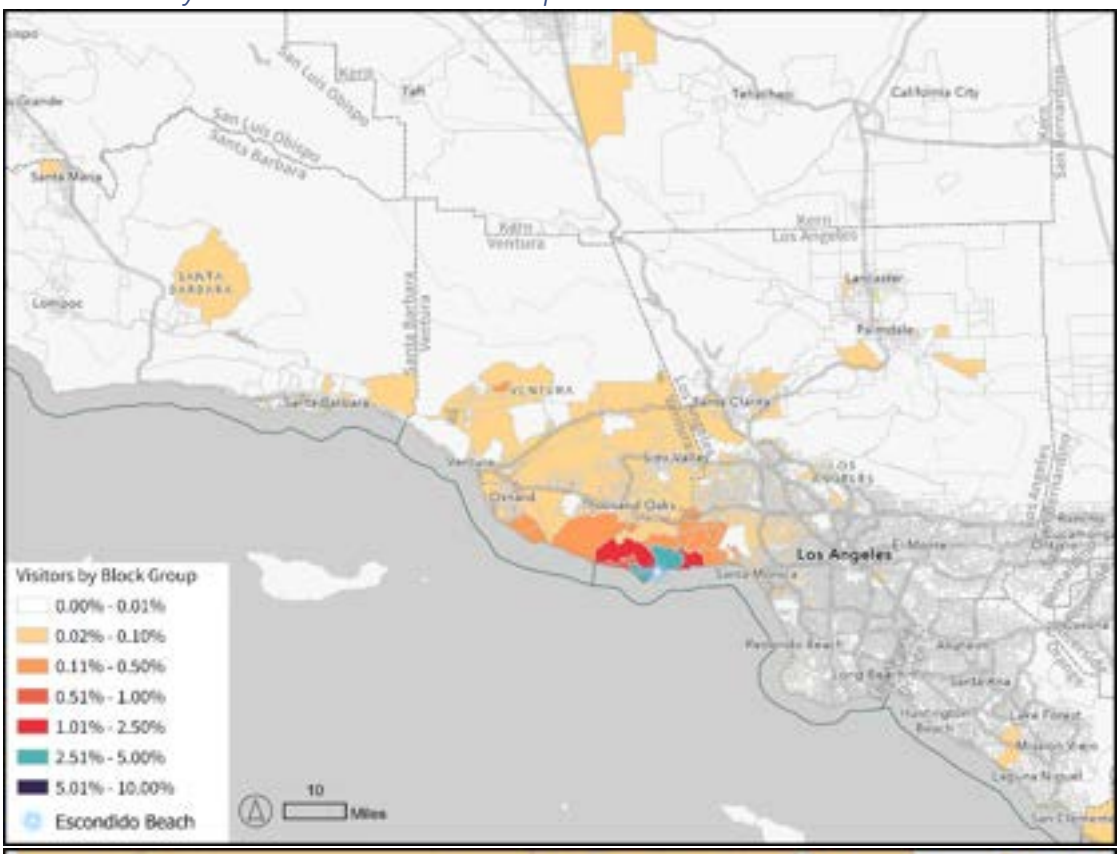
Busiest Hour: 3:00 pm

Heat Map of Hourly Visitation Escondido Beach:



Visitor Distribution by Home County

Distribution by Home Census Block Group



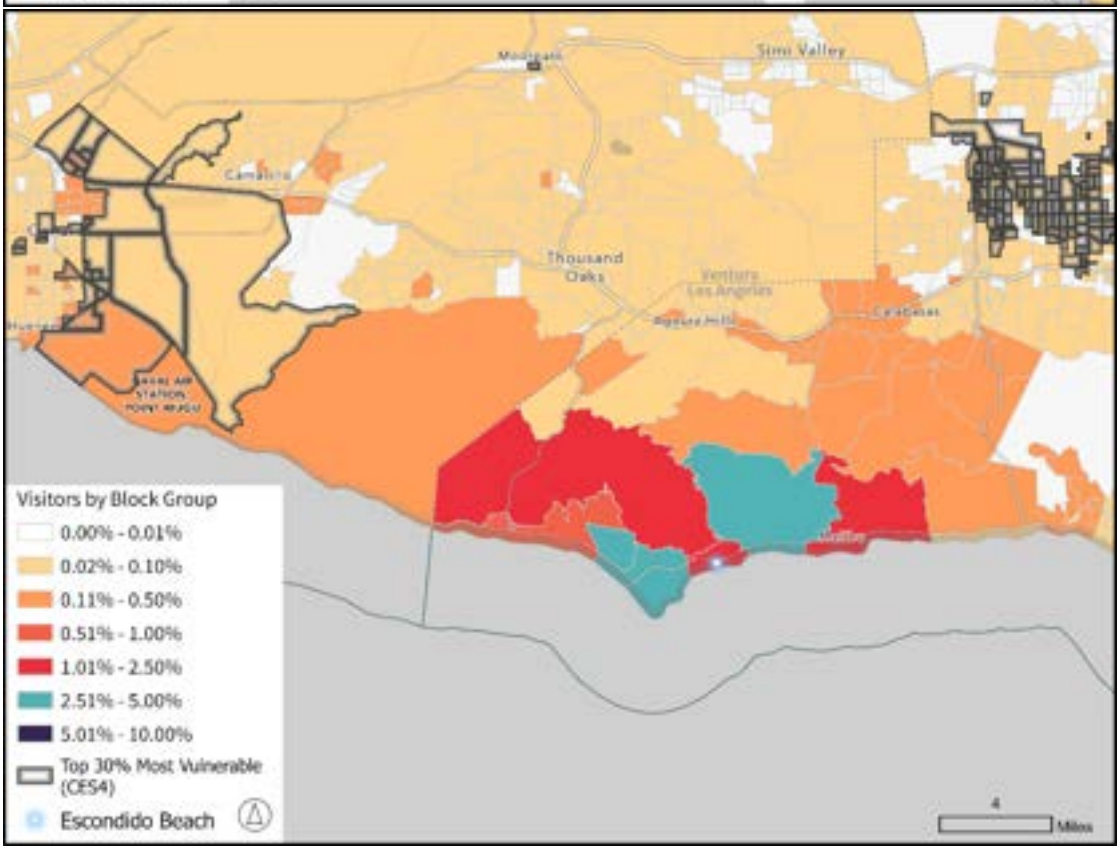


Chart of Visitation by Year

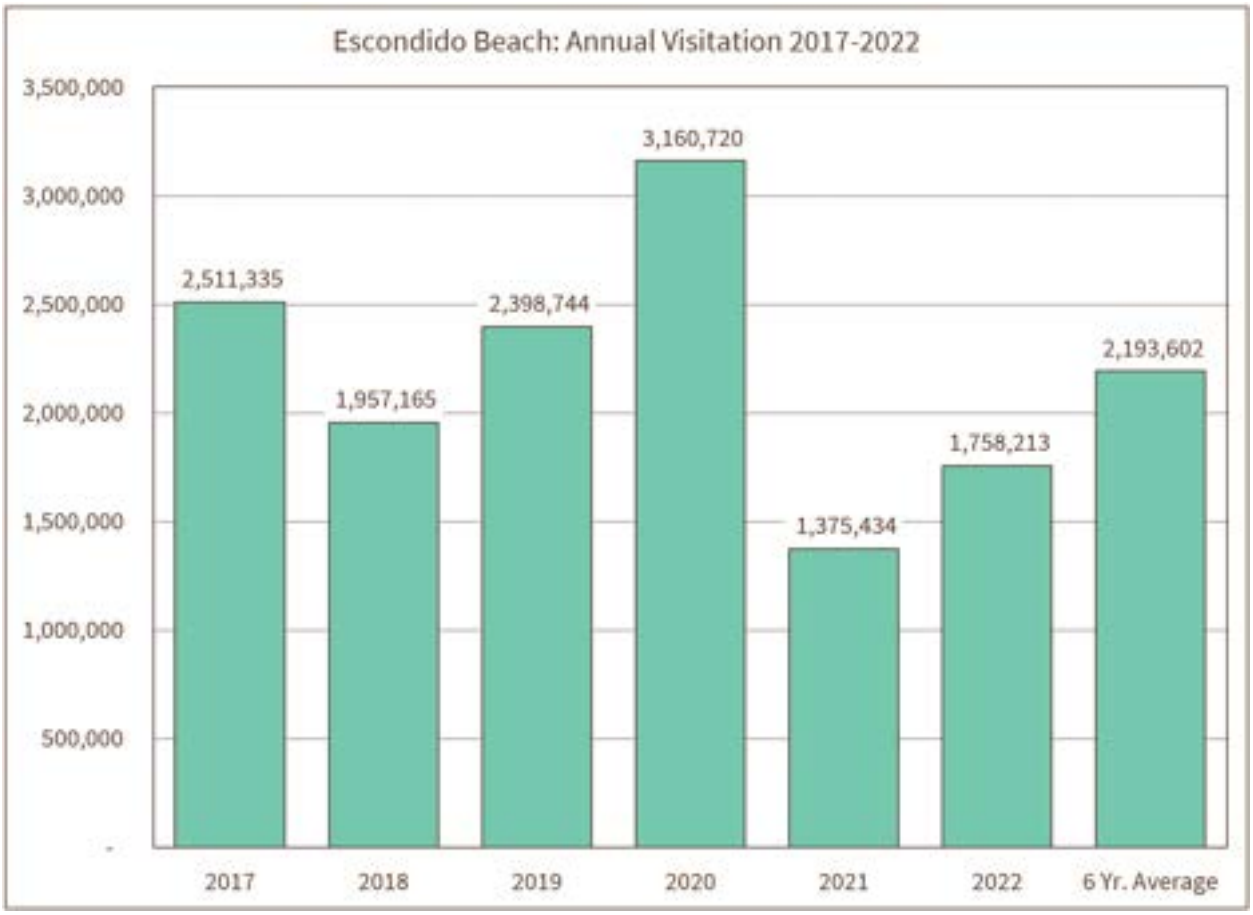
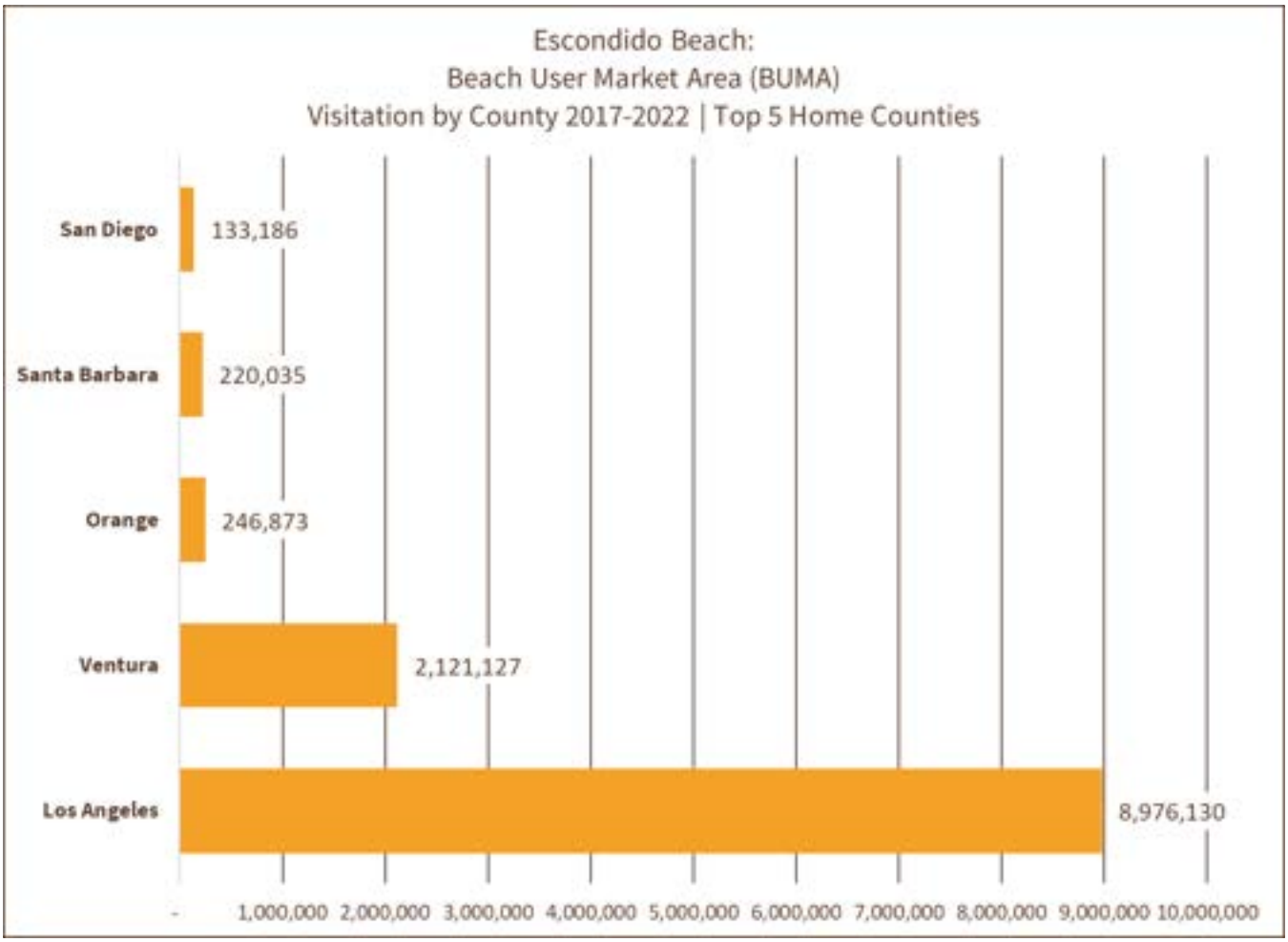
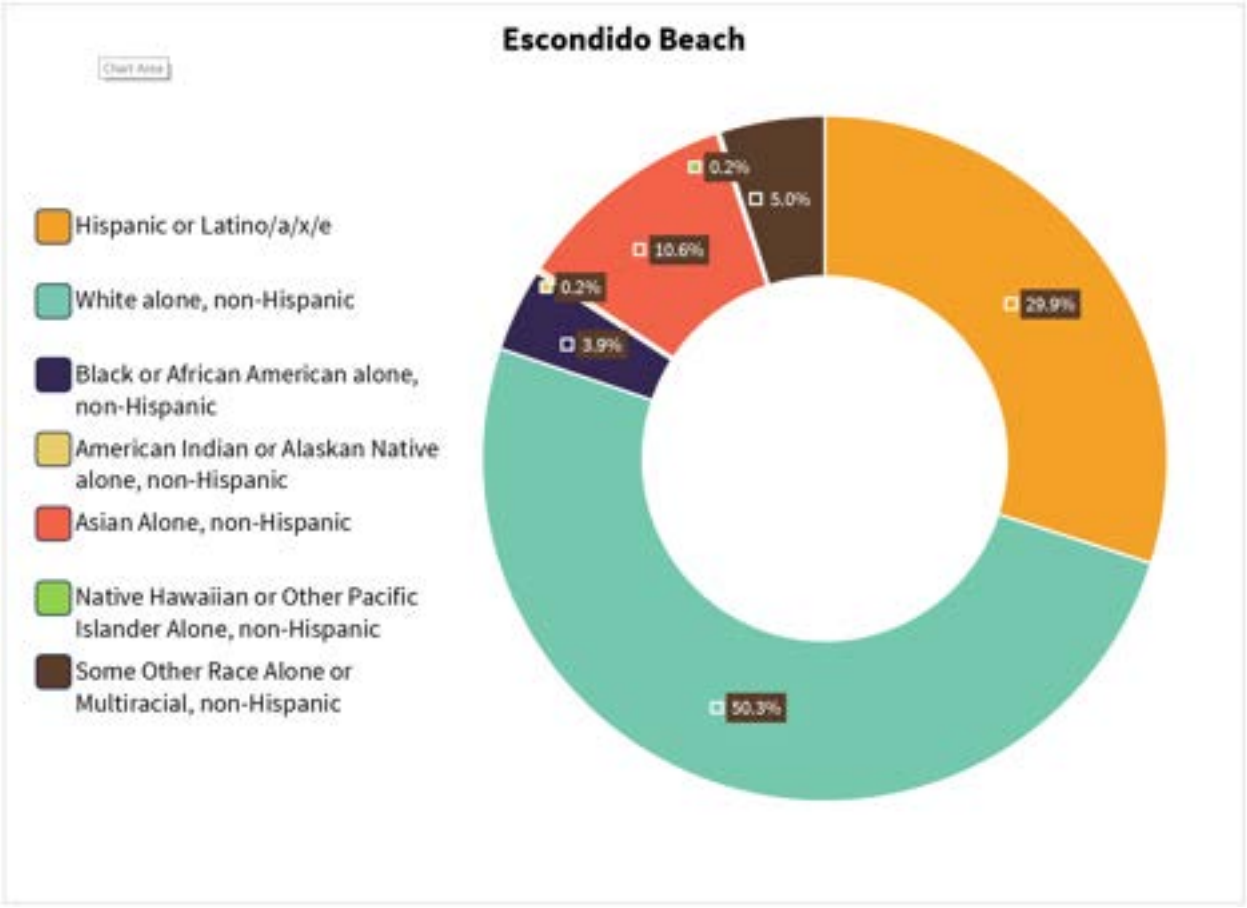


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Escondido Canyon

General Statistics (2022)

Total Visitation: 1.3M

Average Visitation per Day: 3.7k

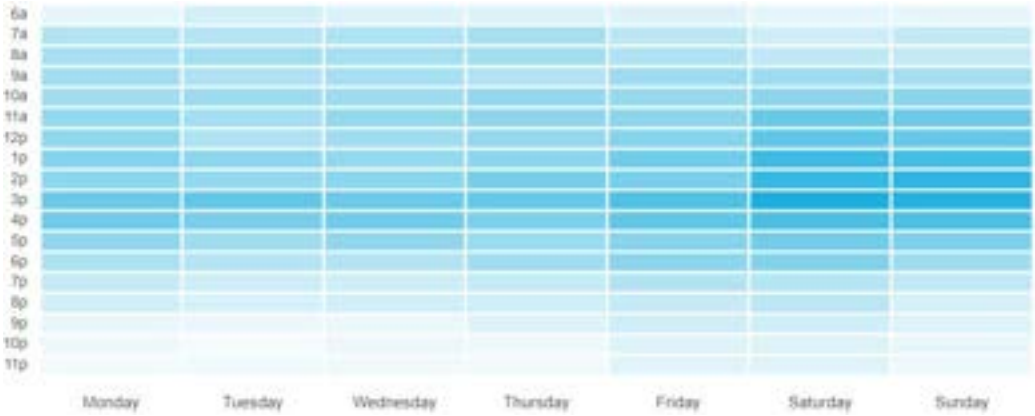
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 19%

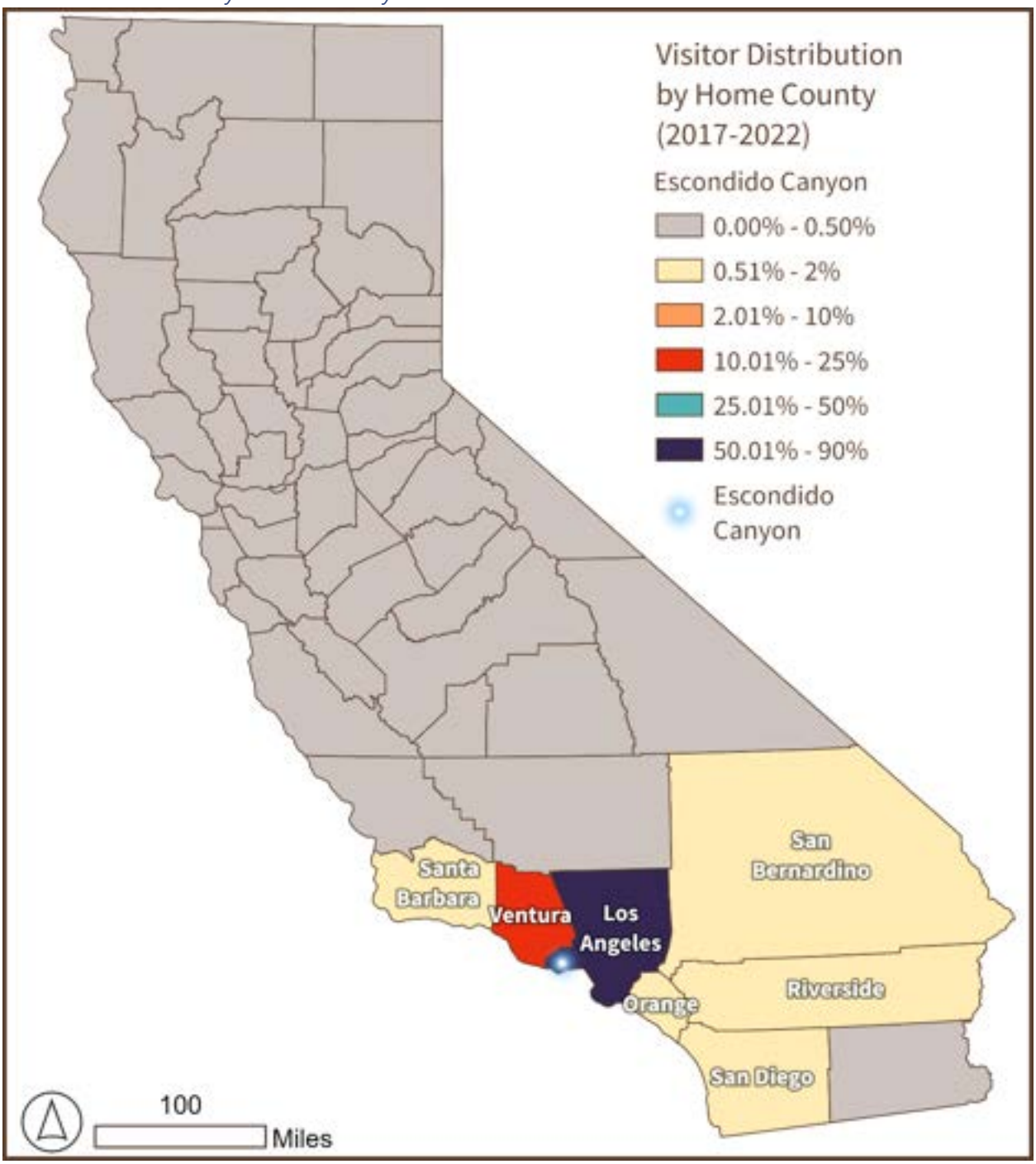
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

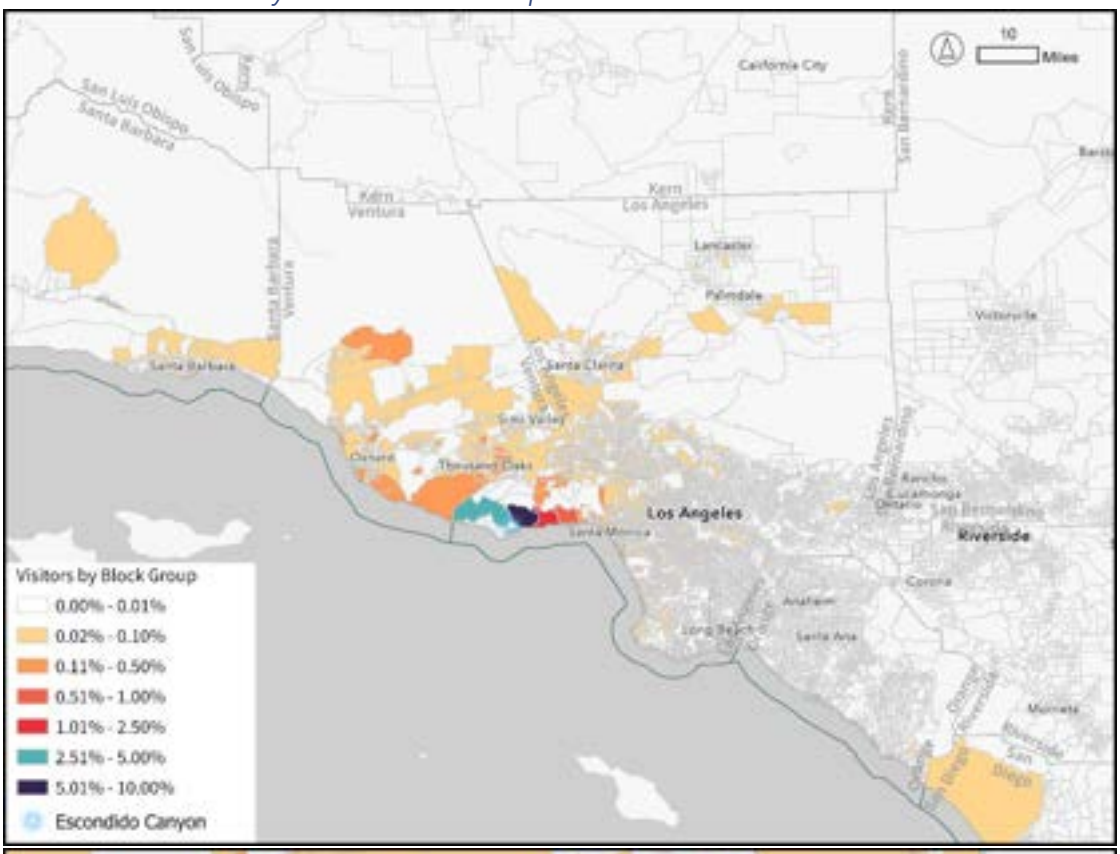
Heat Map of Hourly Visitation Escondido Canyon:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



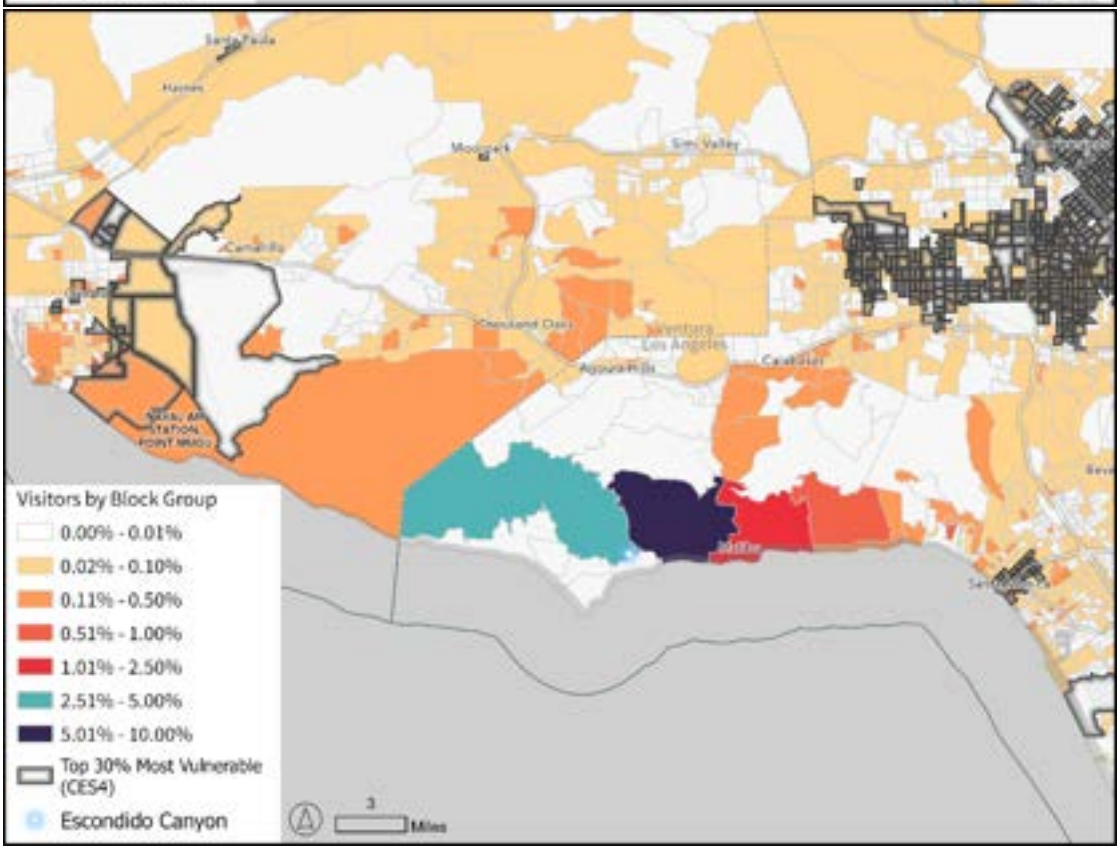


Chart of Visitation by Year

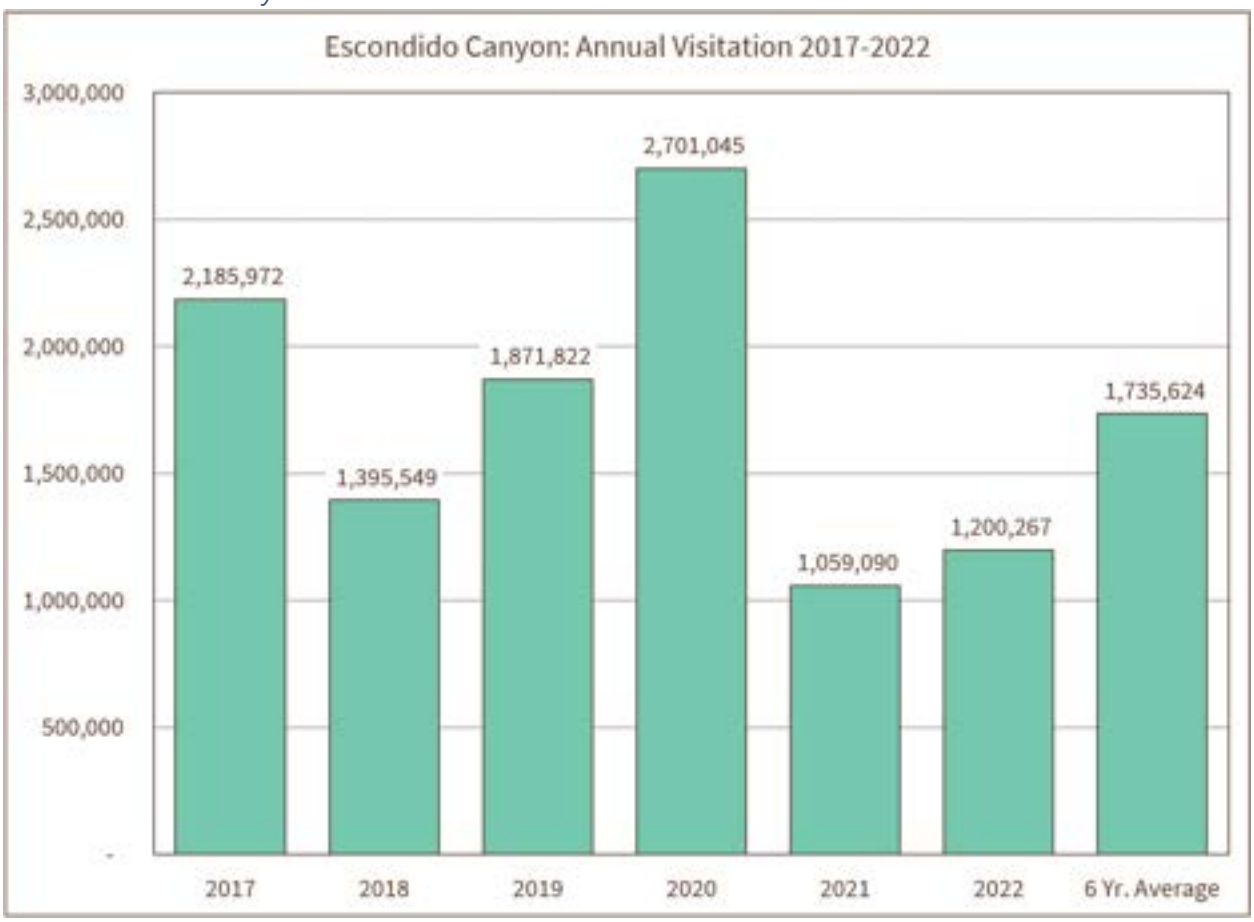
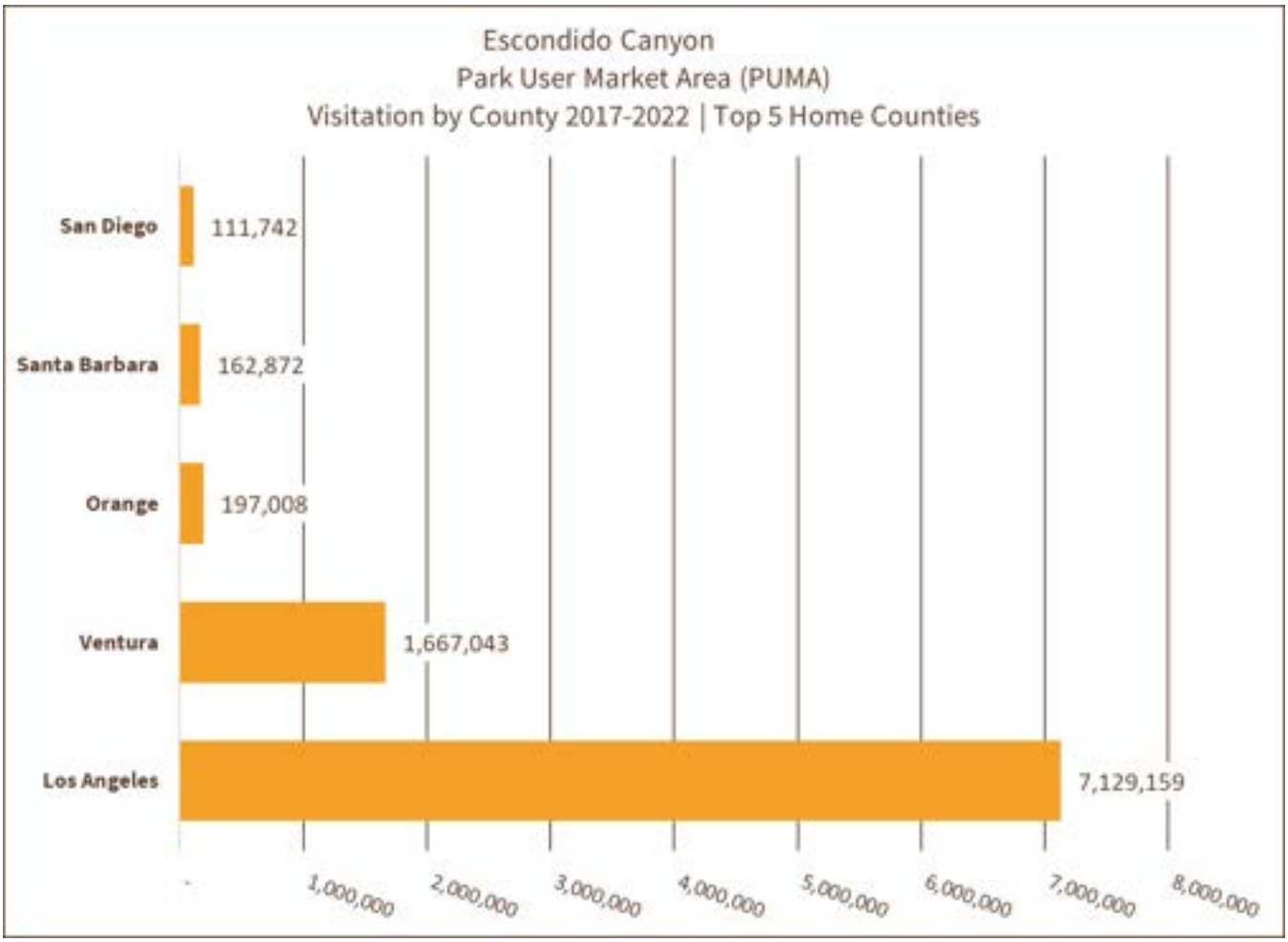
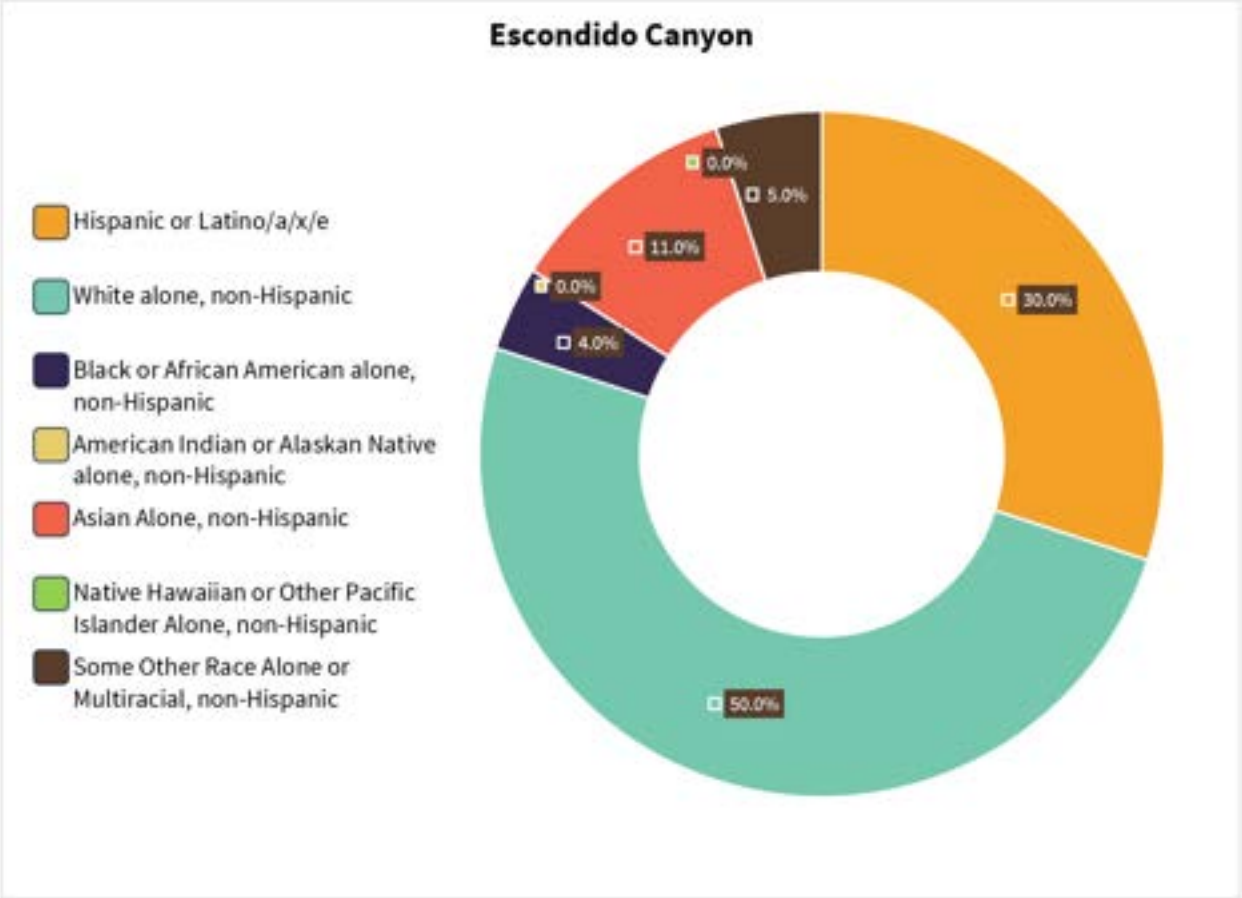


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



La Costa Beach

General Statistics (2022)

Total Visitation: 2.5M

Average Visitation per Day: 6.7k

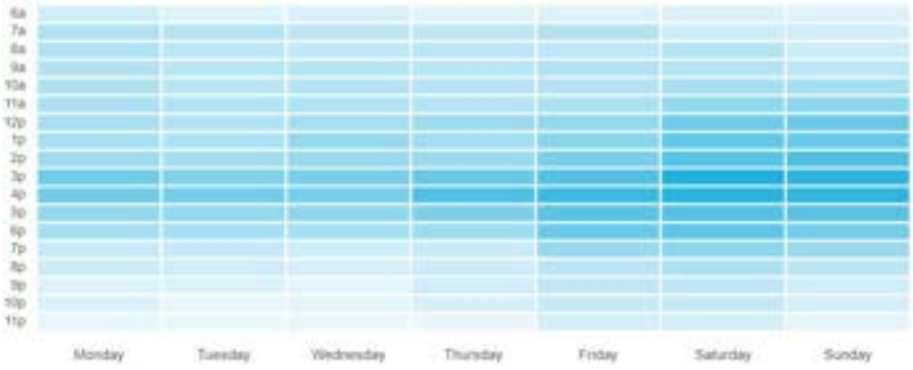
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 22%

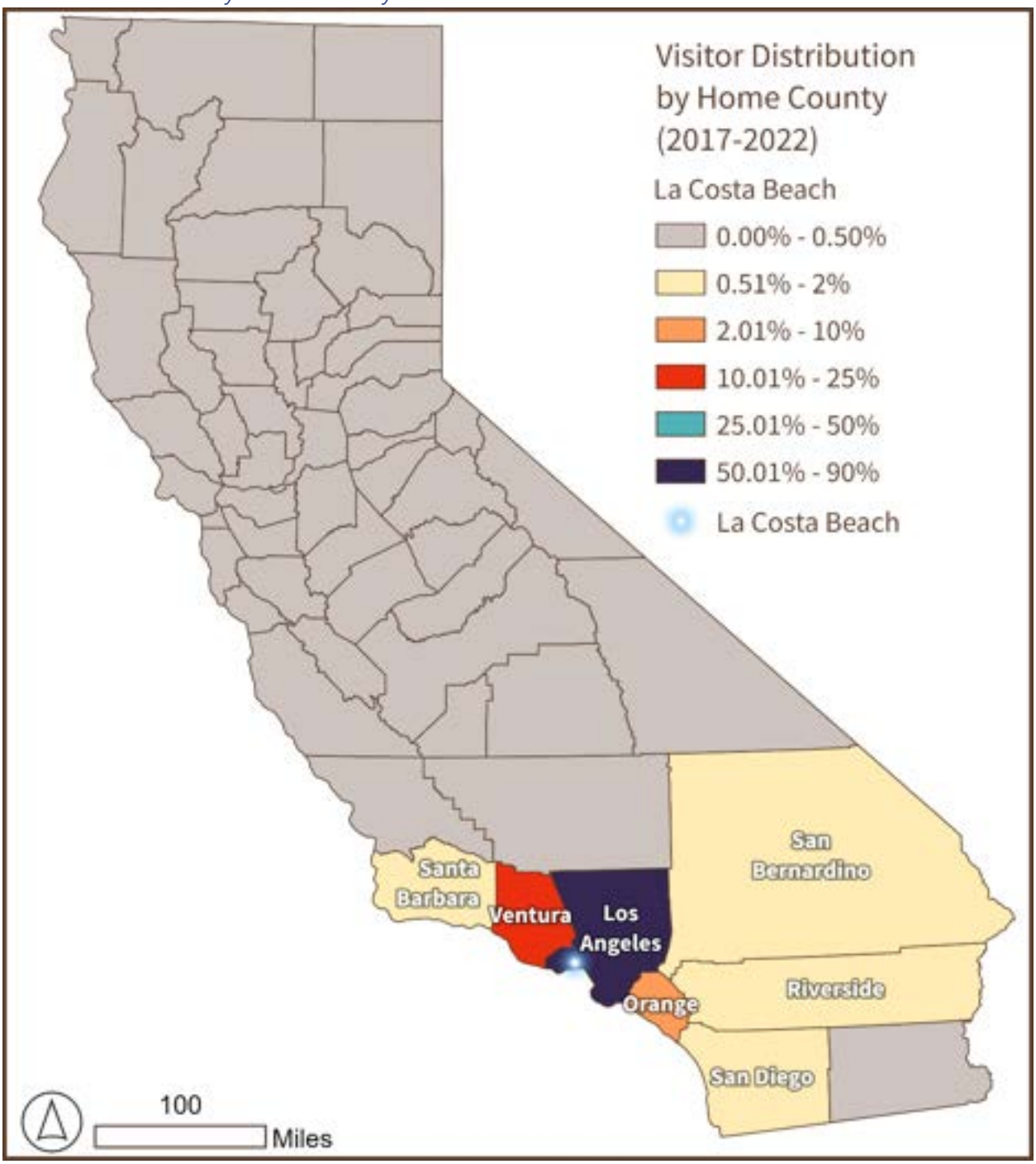
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

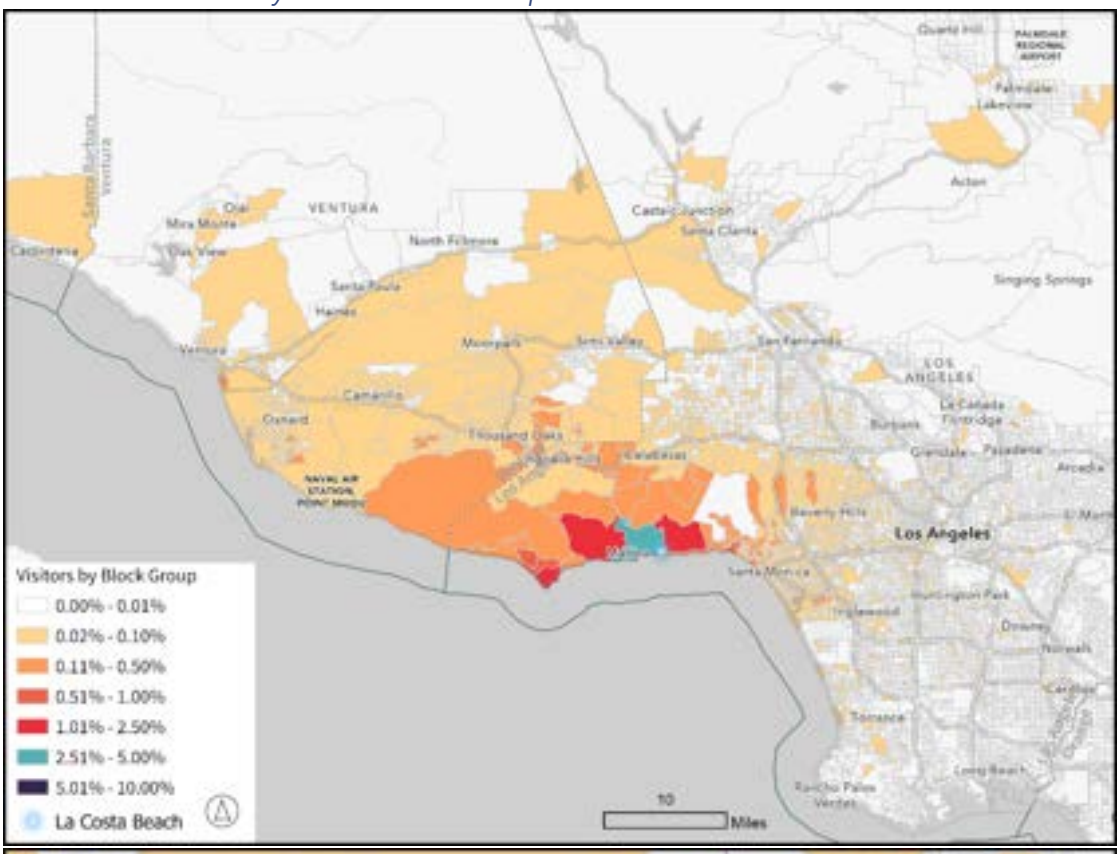
Heat Map of Hourly Visitation La Costa Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



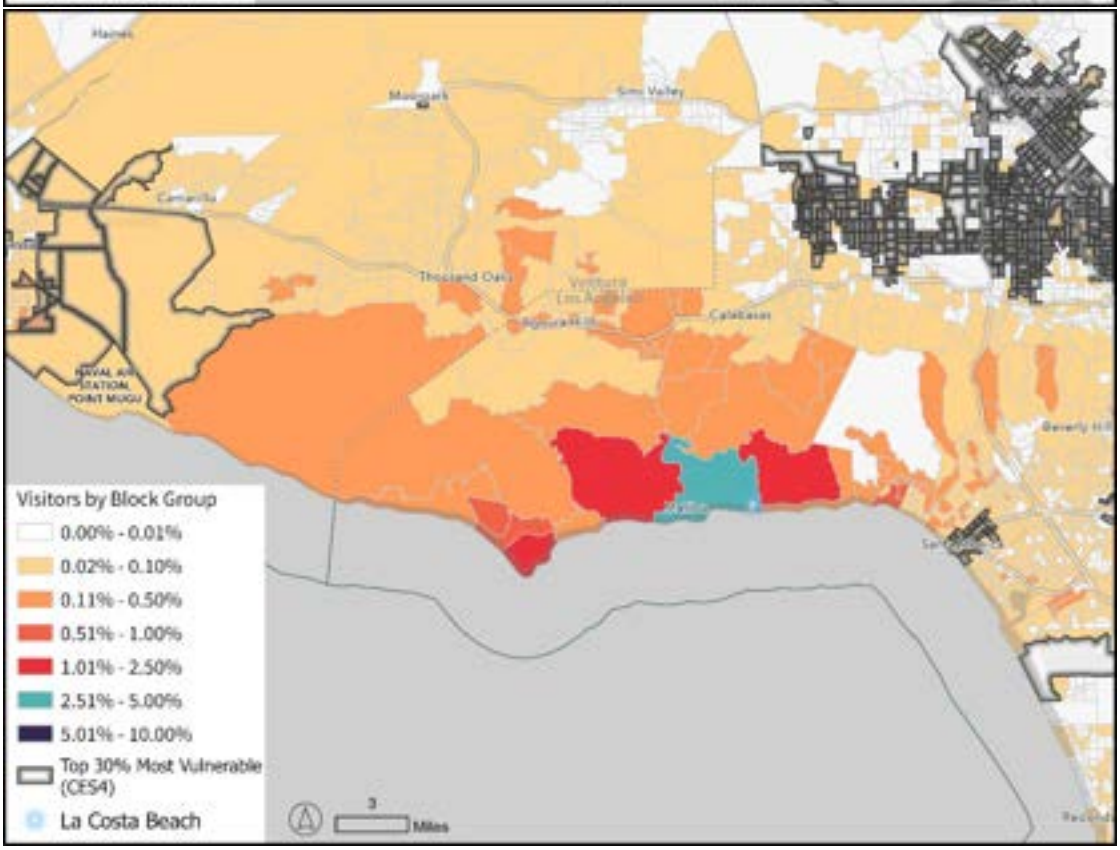


Chart of Visitation by Year

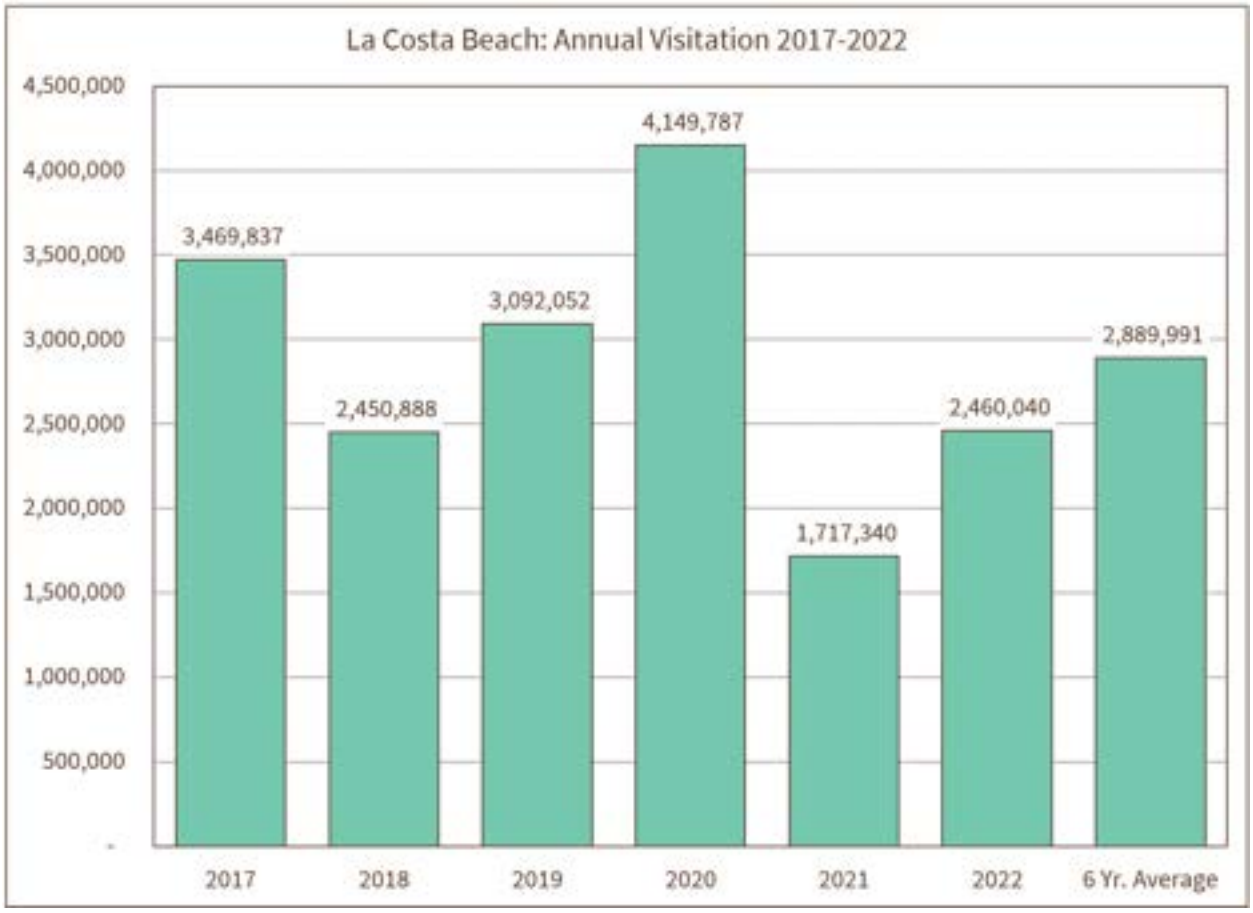
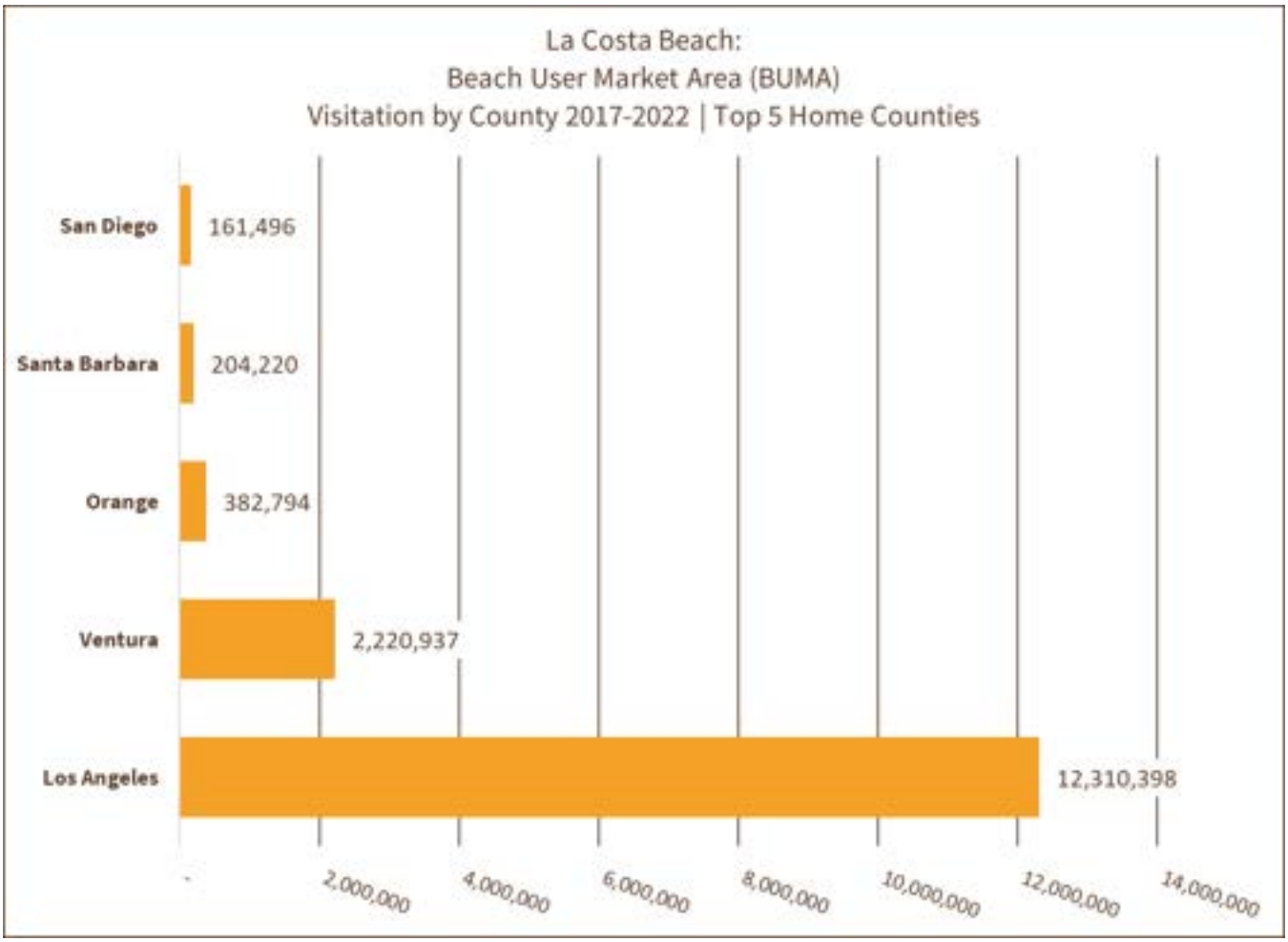
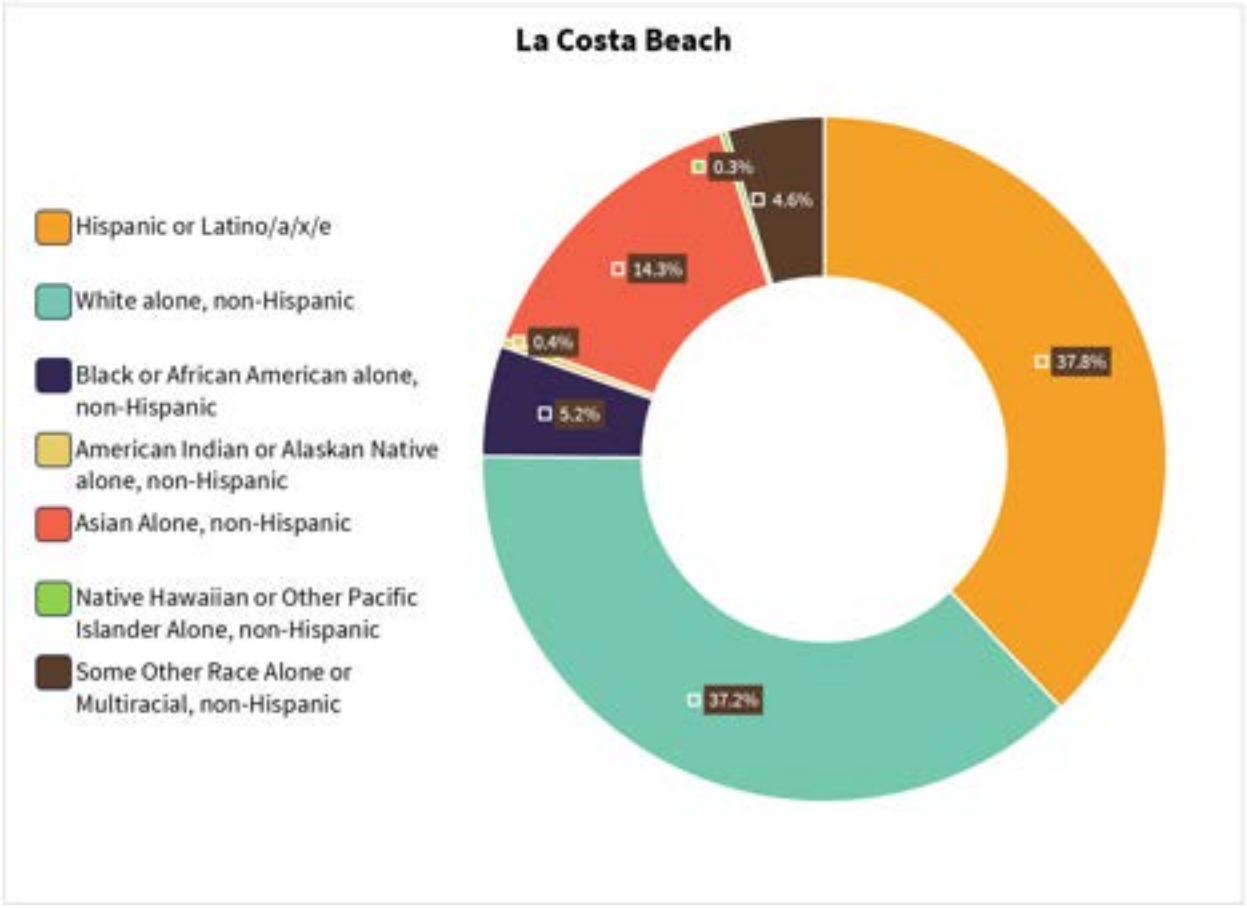


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Latigo Shore Beach

General Statistics (2022)

Total Visitation: 1.4M

Average Visitation per Day: 3.8k

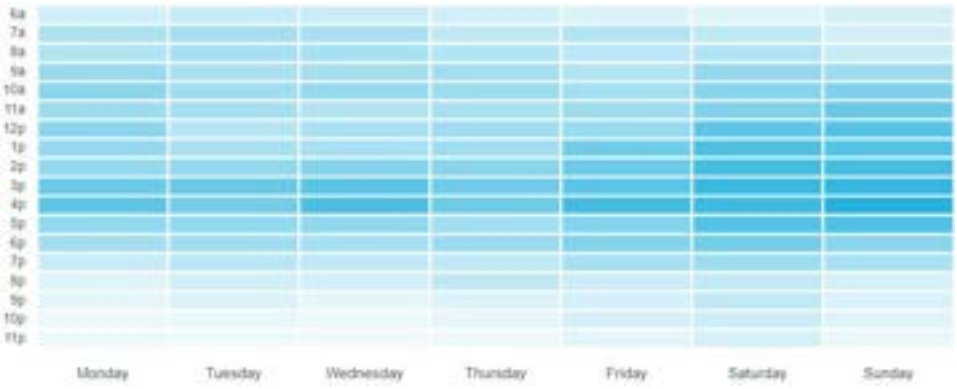
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 20%

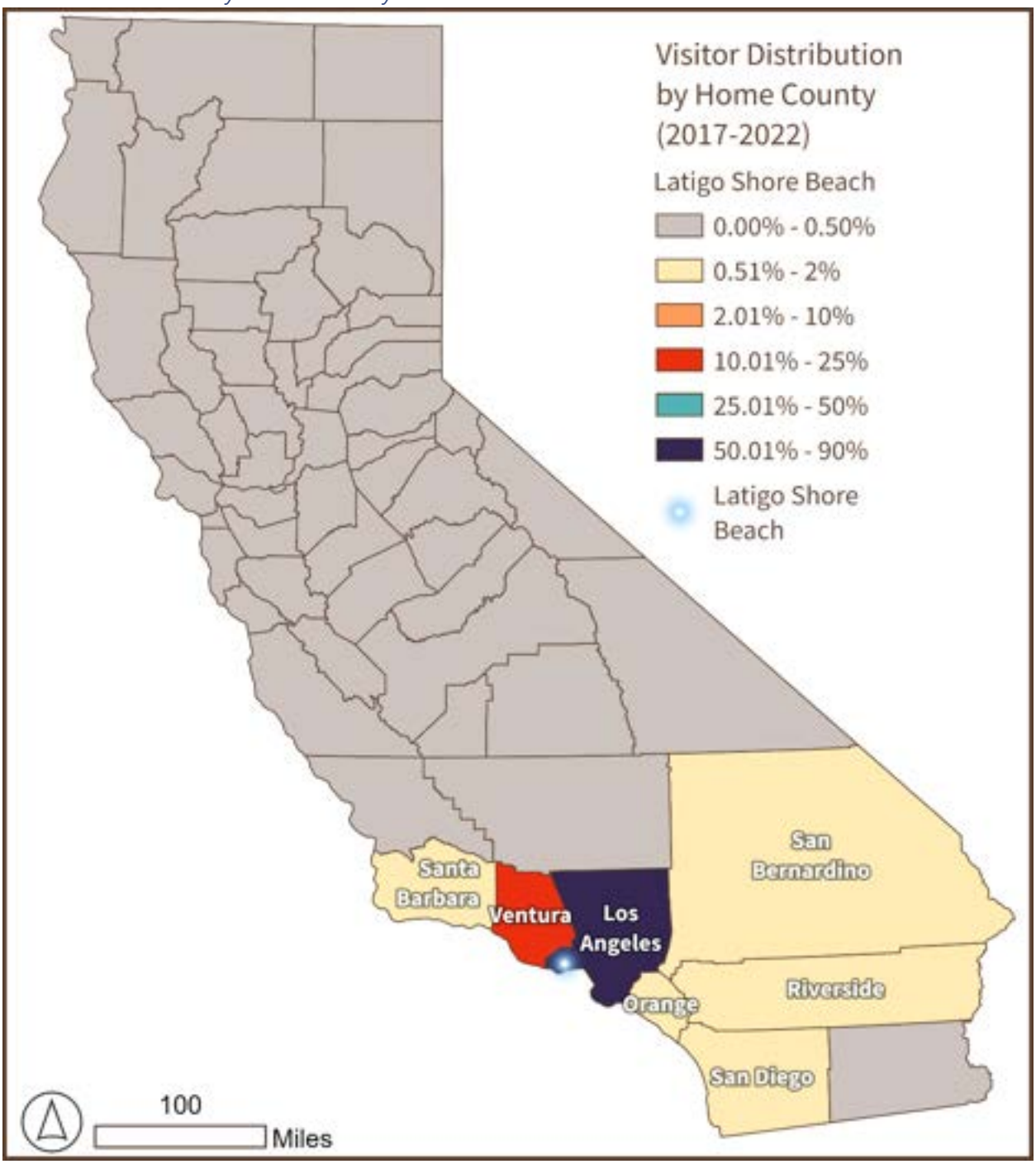
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

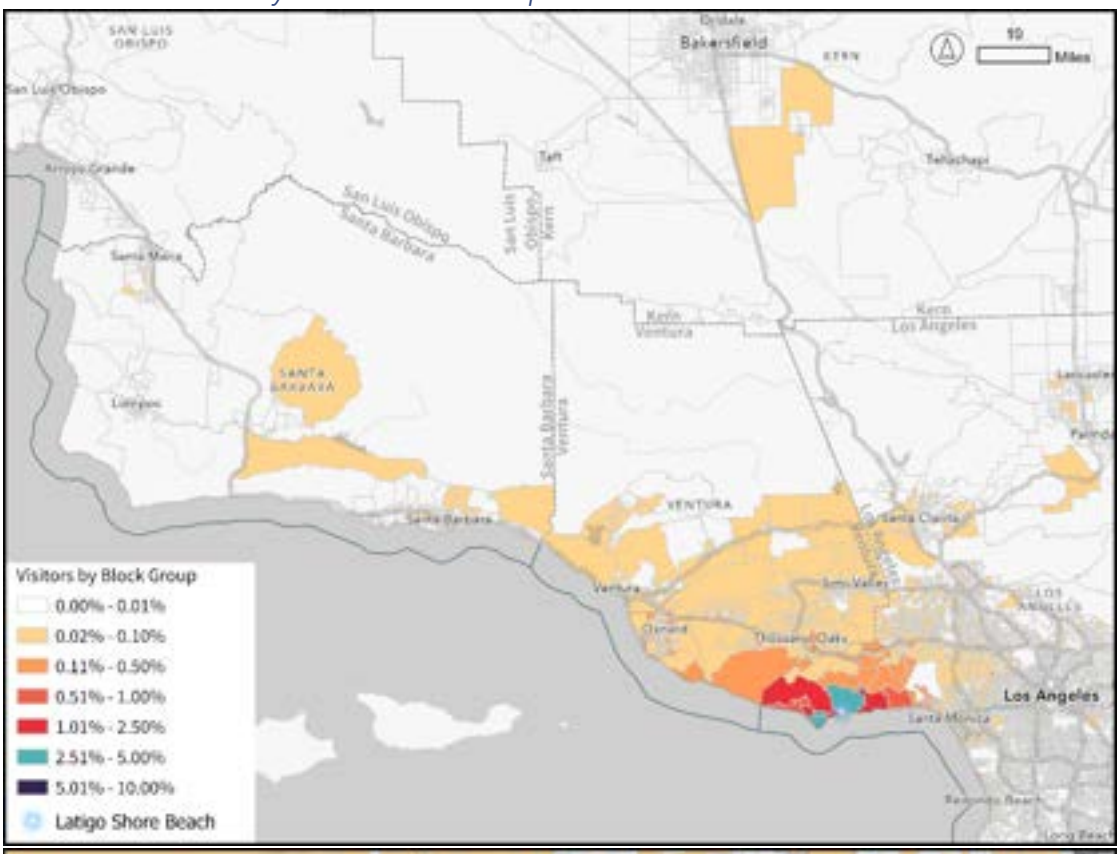
Heat Map of Hourly Visitation Latigo Shore Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



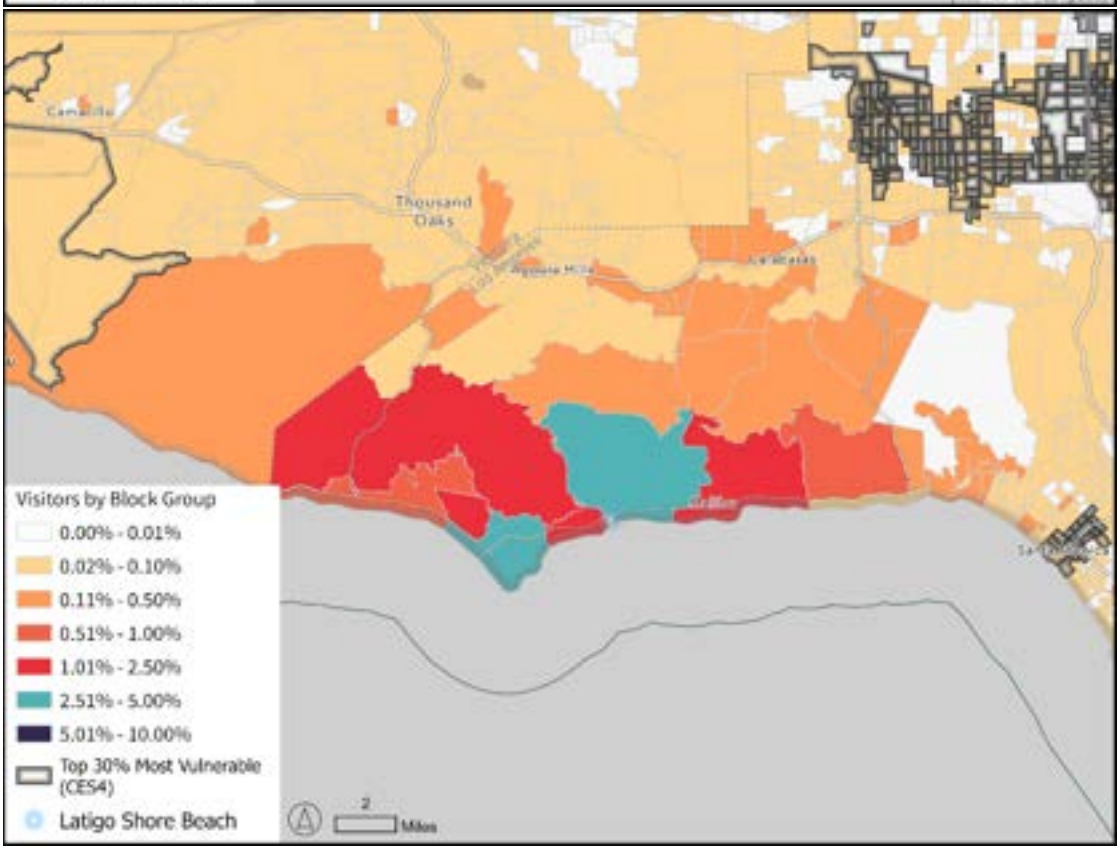
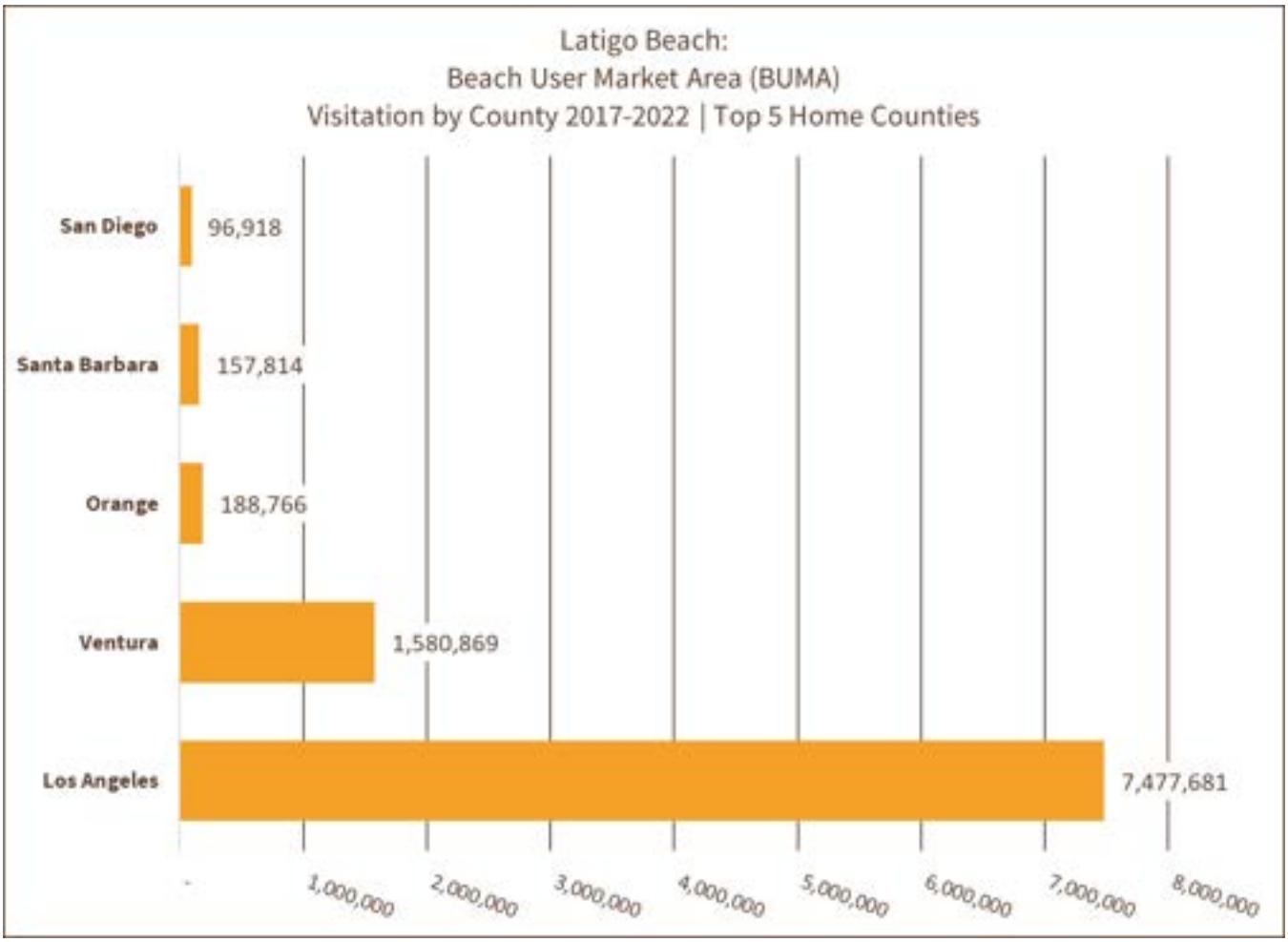
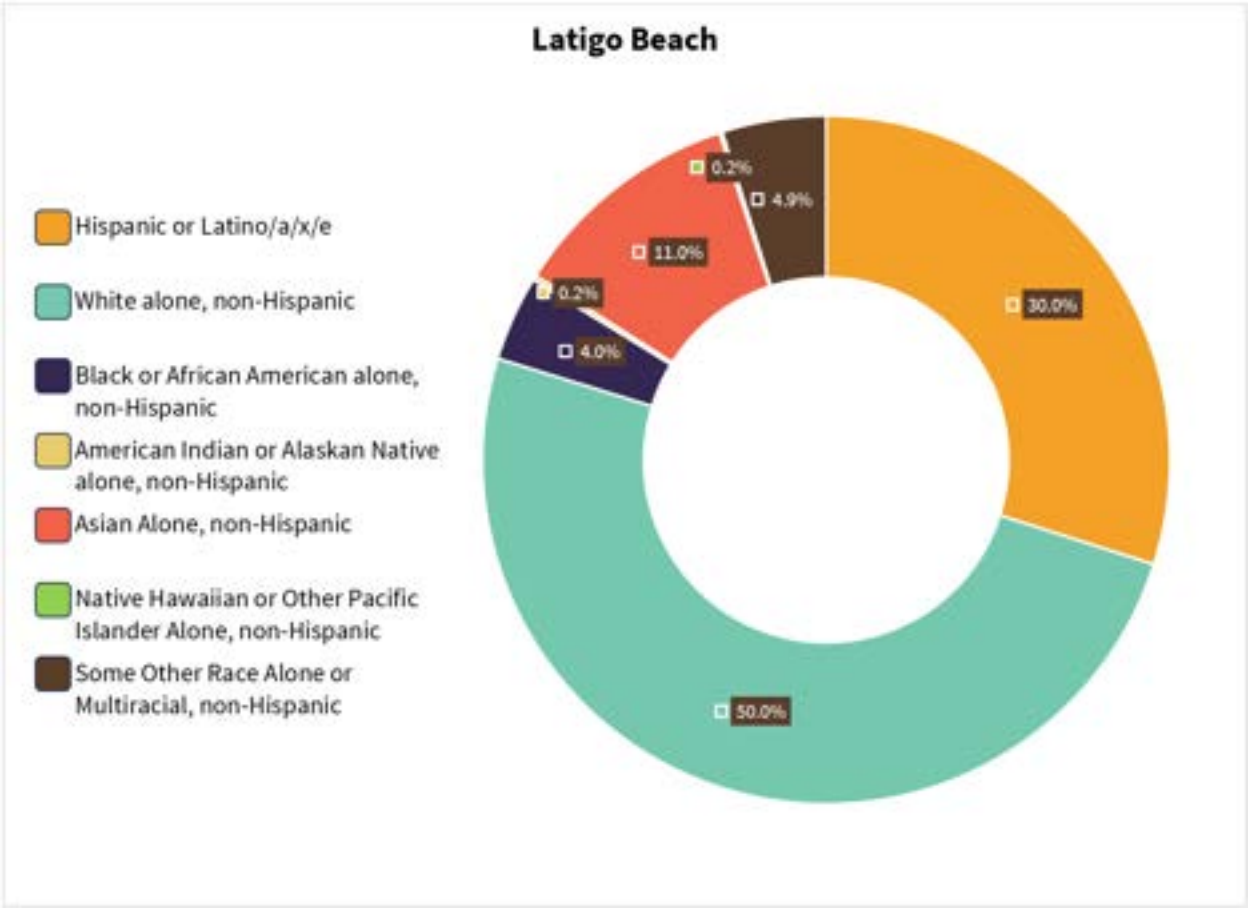


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Lechuza Beach

General Statistics (2022)

Total Visitation: 252.9k

Average Visitation per Day: 700

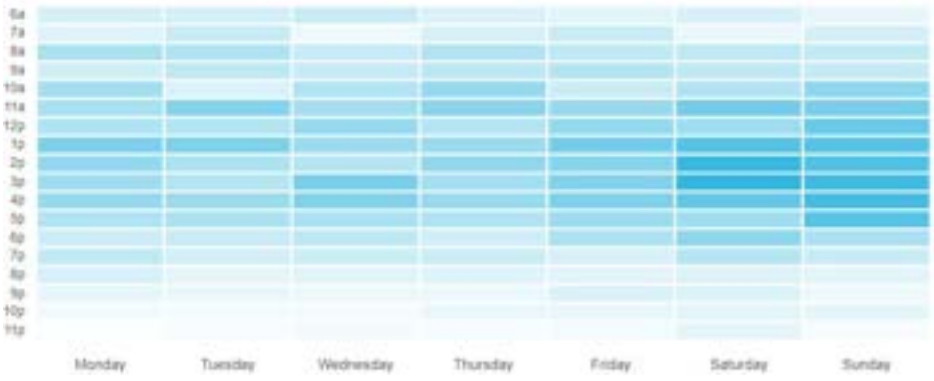
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 18%

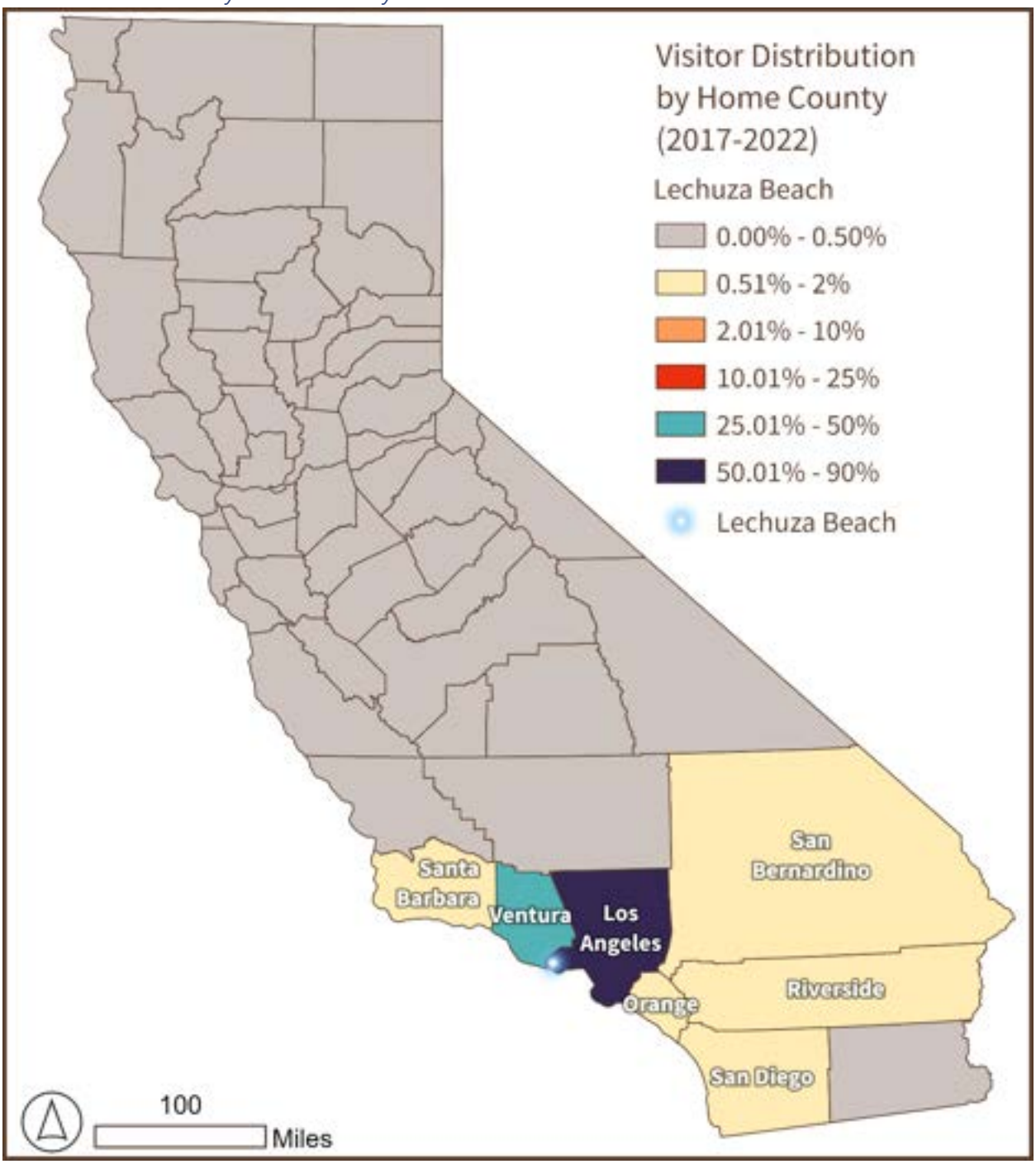
Busiest Day of the Week: Sunday

Busiest Hour: 1:00 pm

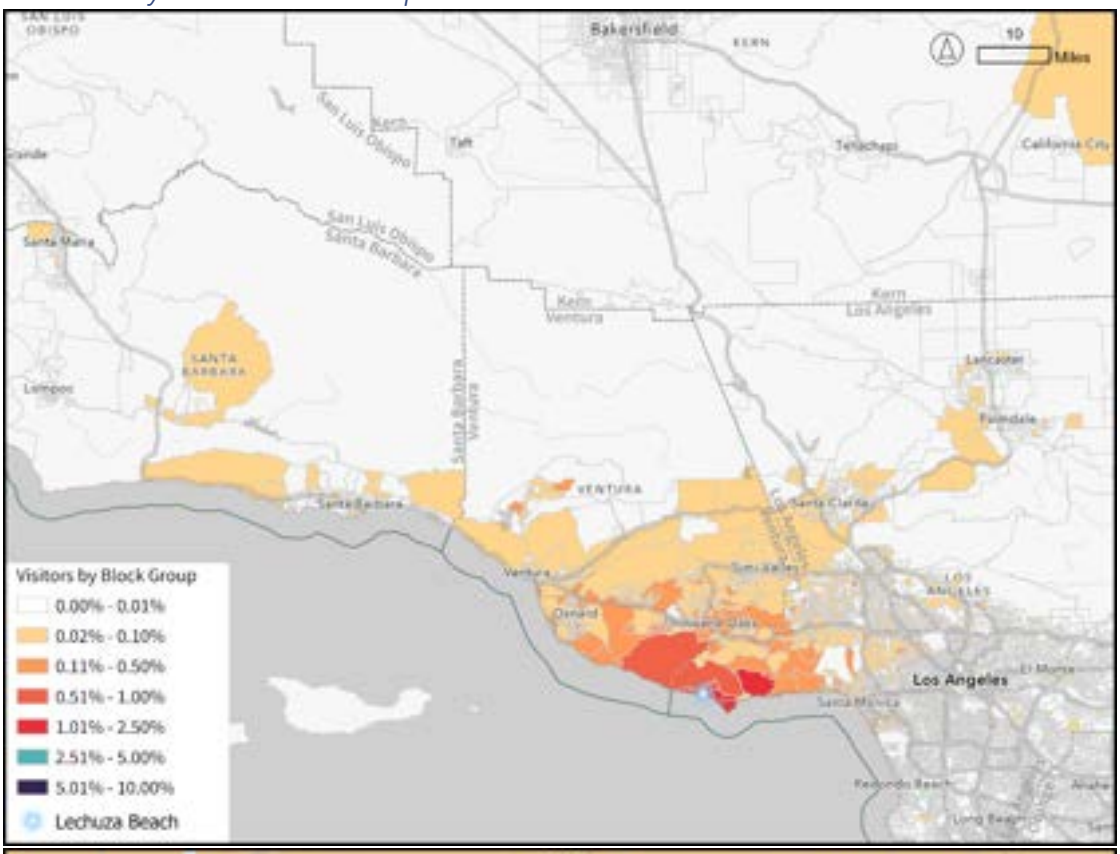
Heat Map of Hourly Visitation Lechuza Beach:



Visitor Distribution by Home County



Visitation by Home Block Group



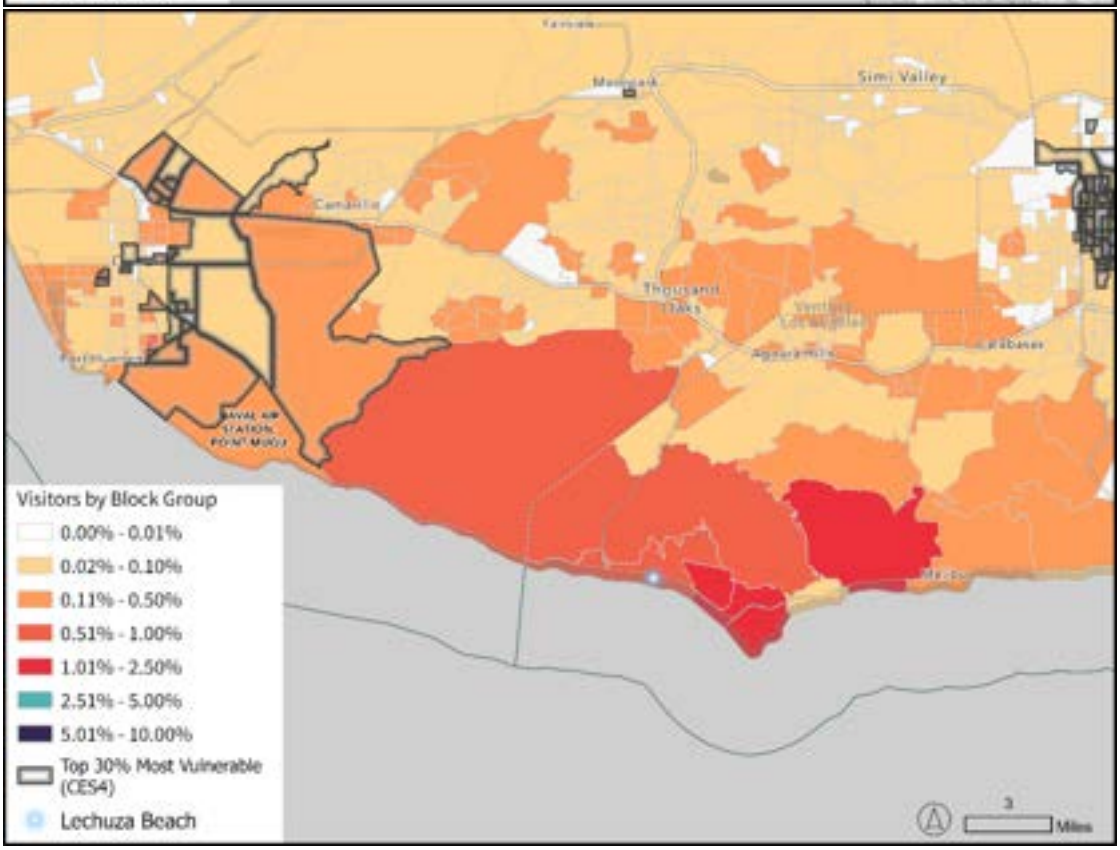
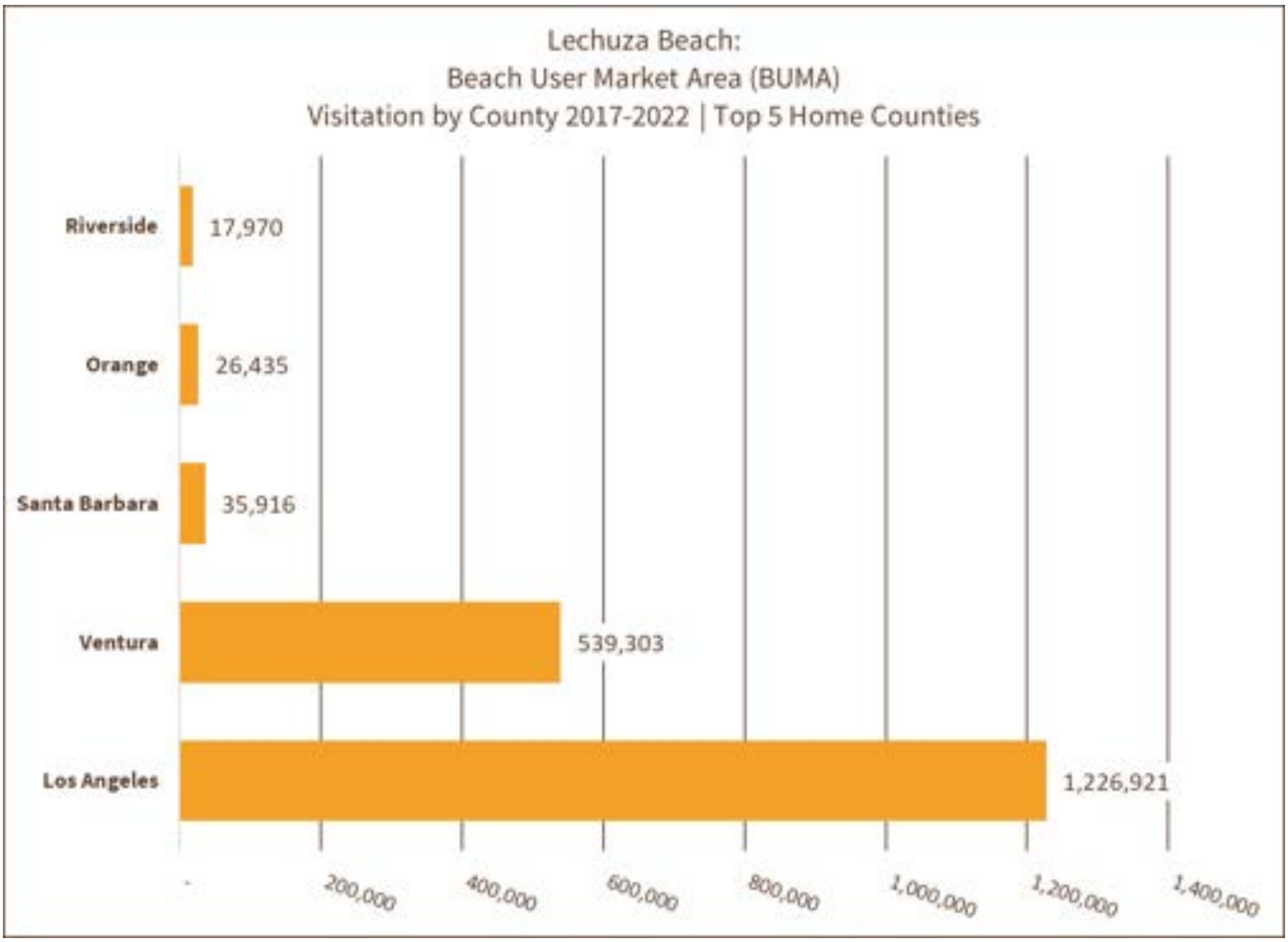
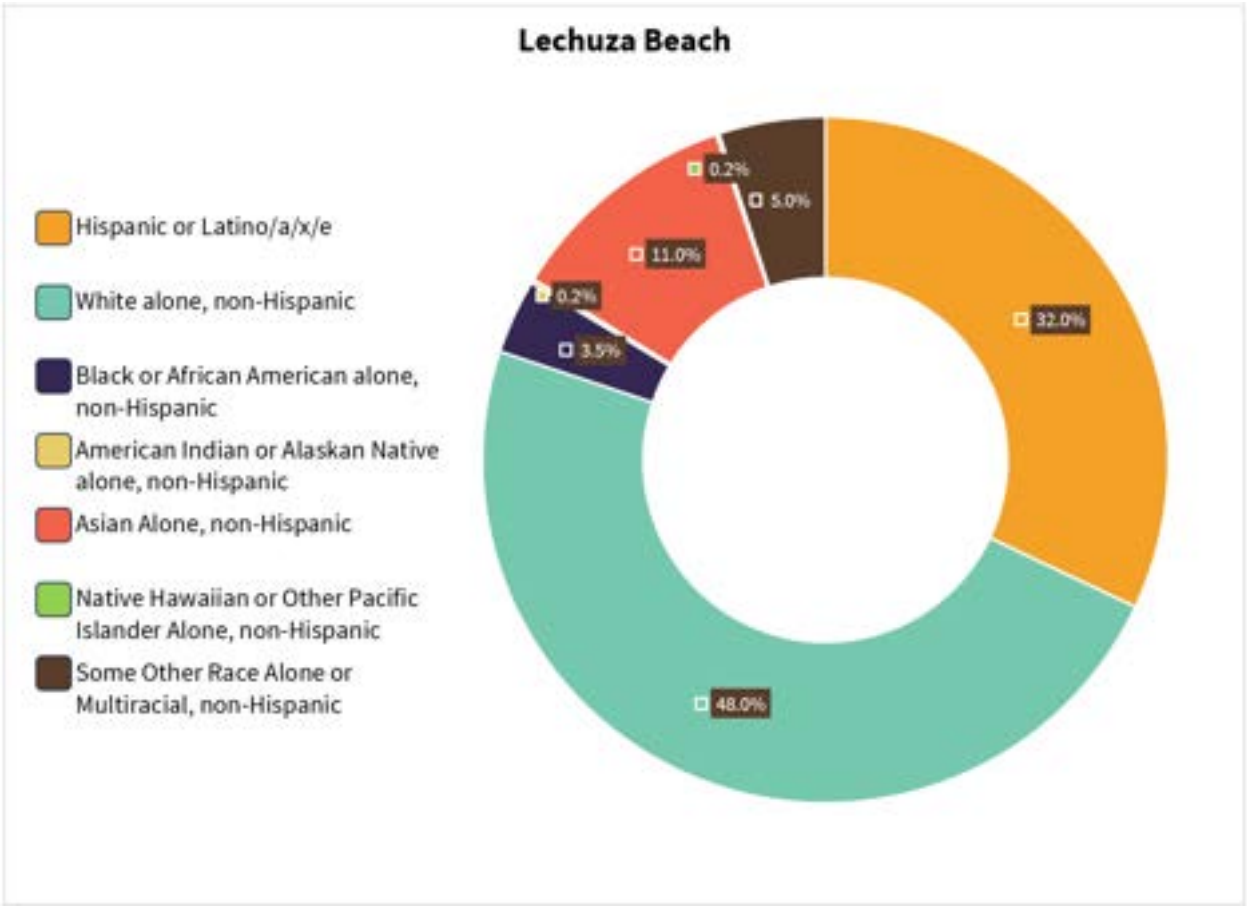


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



California Department of Parks and Recreation (Los Angeles County)

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
El Matador Beach	1,050,317	638,638	686,415	947,974	514,001	554,604
Leo Carrillo Beach	1,113,168	653,517	705,331	1,121,066	661,824	622,945
Surfrider Beach	3,298,480	2,588,695	3,251,110	3,999,842	1,867,697	2,236,994

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
El Matador Beach	279,062	327,391	297,056	333,439	407,236	510,117	551,412	514,027	393,685	308,915	237,381	232,228
Leo Carrillo Beach	307,177	362,678	318,043	377,805	470,016	571,485	598,988	557,682	439,348	349,811	274,215	250,603
Surfrider Beach	1,168,299	1,282,135	1,111,270	1,137,266	1,516,058	1,919,909	2,101,927	2,014,869	1,612,720	1,348,319	1,073,693	956,353

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
El Matador Beach	525,310	490,103	508,463	558,737	611,454	844,687	853,195
Leo Carrillo Beach	602,705	561,862	582,091	605,607	691,457	898,552	935,577
Surfrider Beach	2,155,814	2,056,148	2,096,728	2,168,586	2,517,606	3,163,892	3,084,044

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
El Matador Beach	36%	43%	4%	0%	11%	0%	6%
Leo Carrillo Beach	37%	43%	4%	0%	11%	0%	5%
Surfrider Beach	28%	51%	4%	0%	12%	2%	3%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
El Matador Beach	79%	21%
Leo Carrillo Beach	80%	20%
Surfrider Beach	79%	21%

El Matador Beach

General Statistics (2022)

Total Visitation: 554.6k

Average Visitation per Day: 1.5k

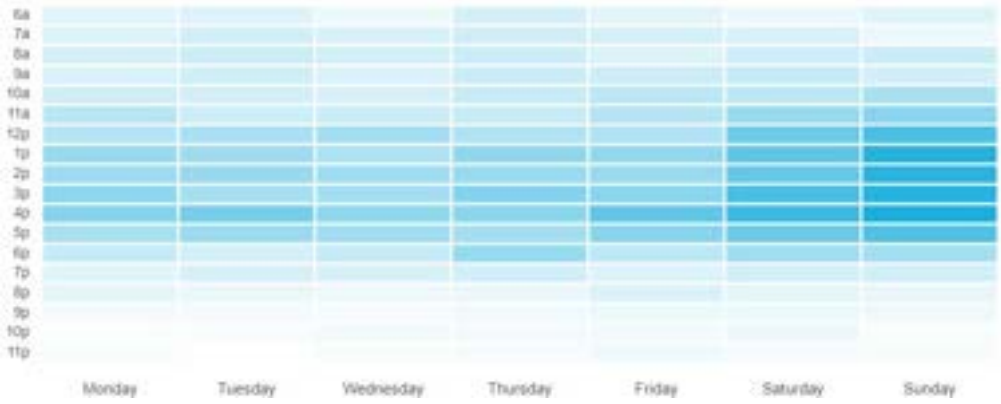
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 21%

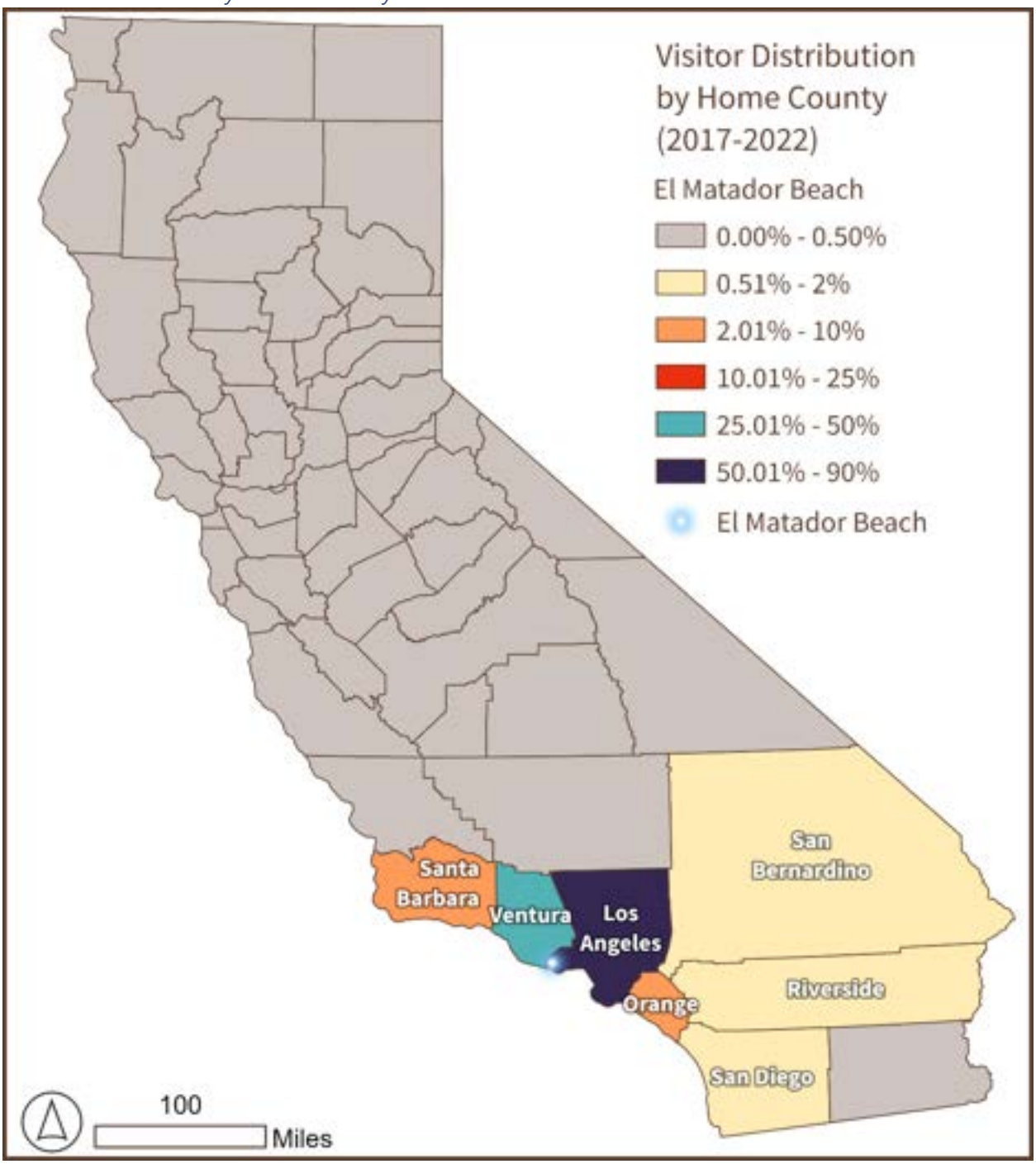
Busiest Day of the Week: Sunday

Busiest Hour: 4:00 pm

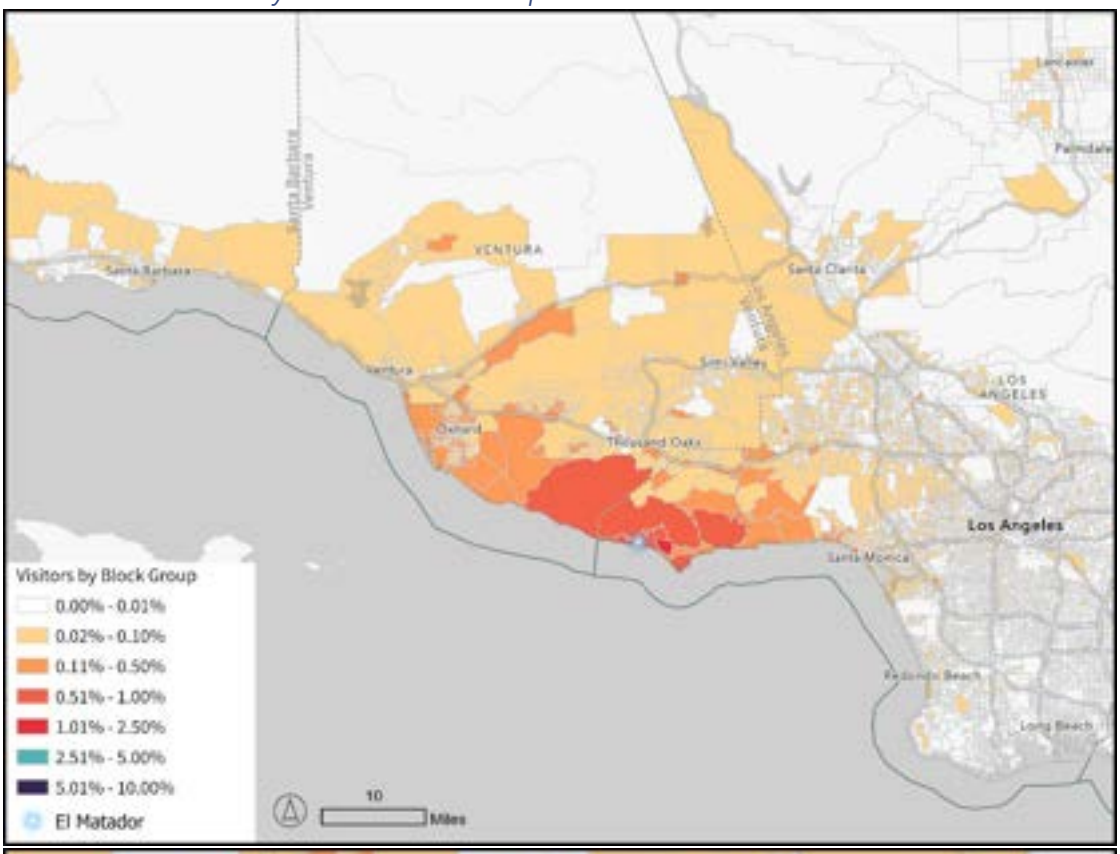
Heat Map of Hourly Visitation El Matador Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



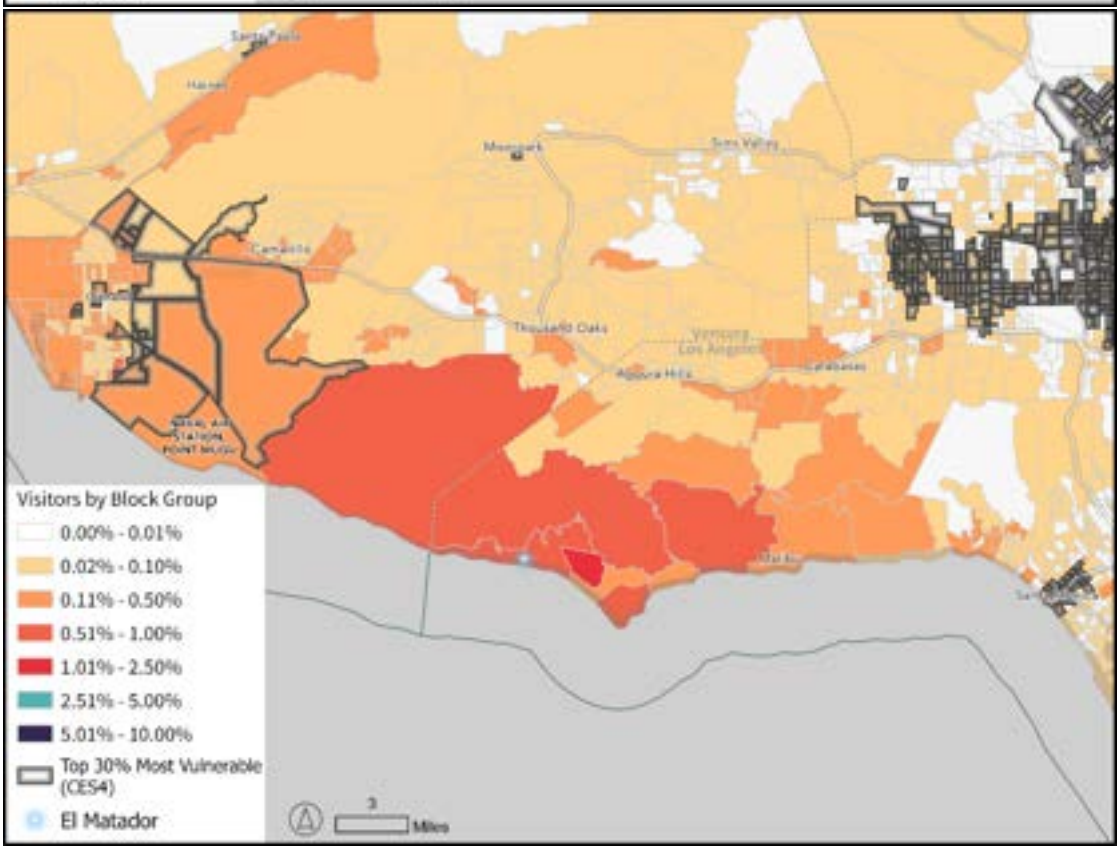


Chart of Visitation by Year

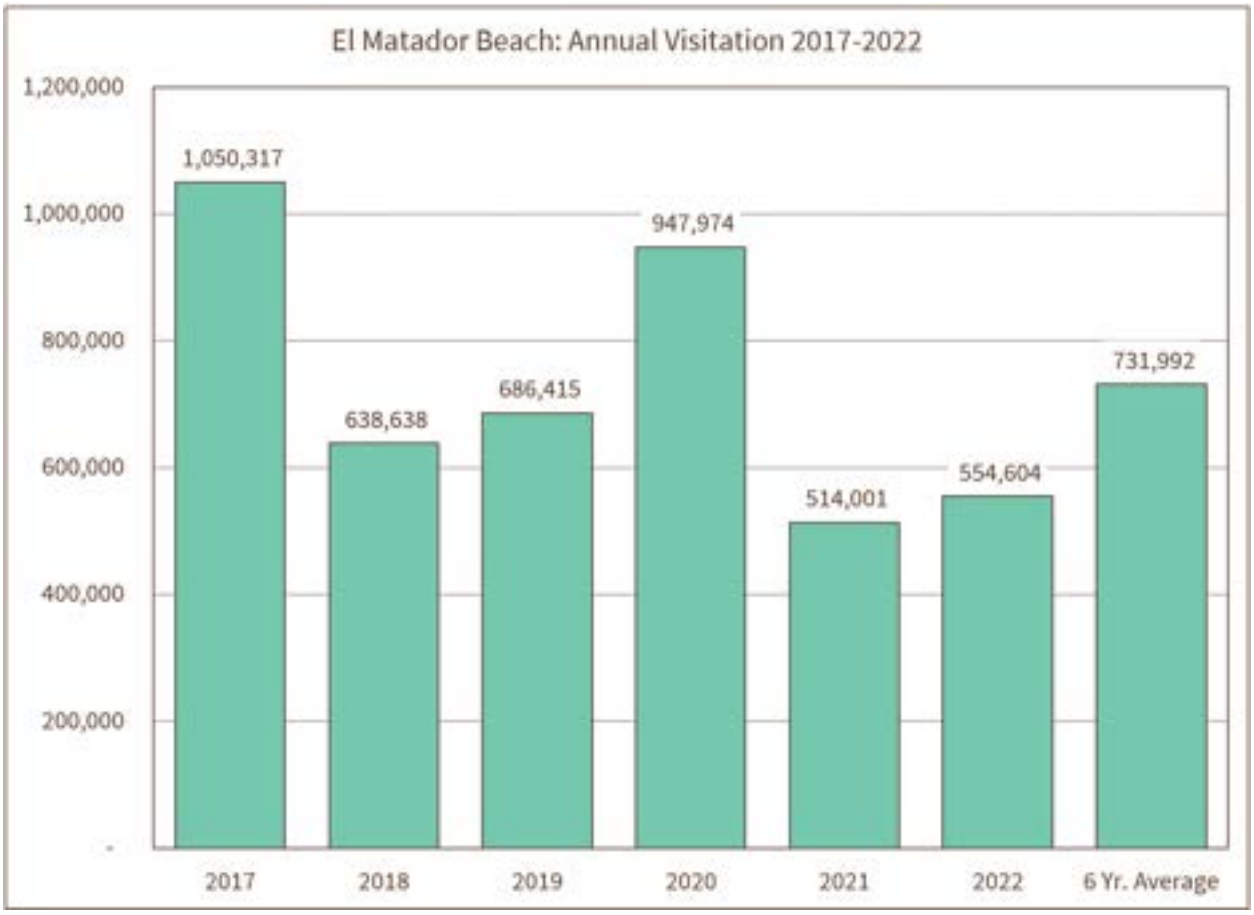
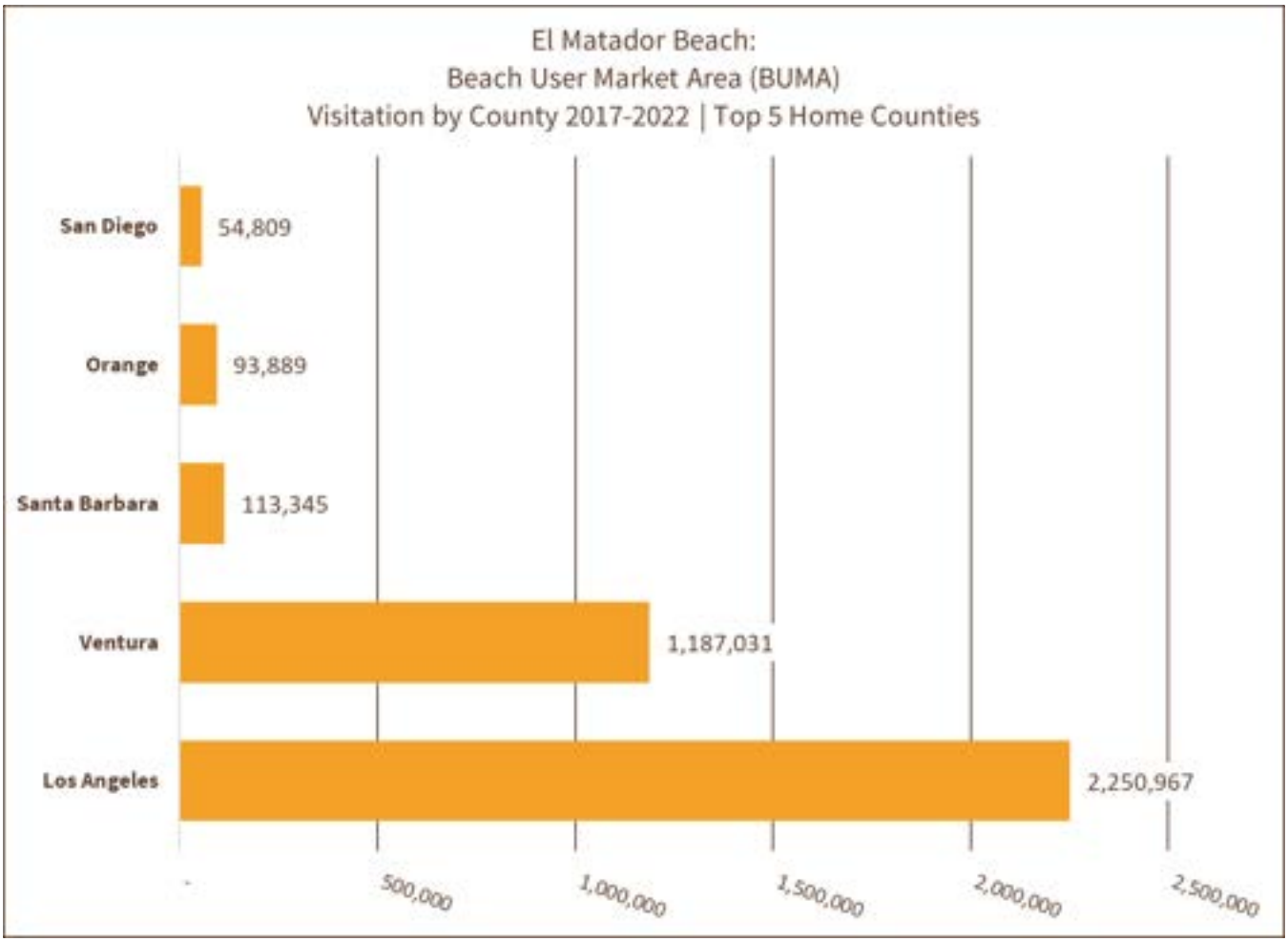
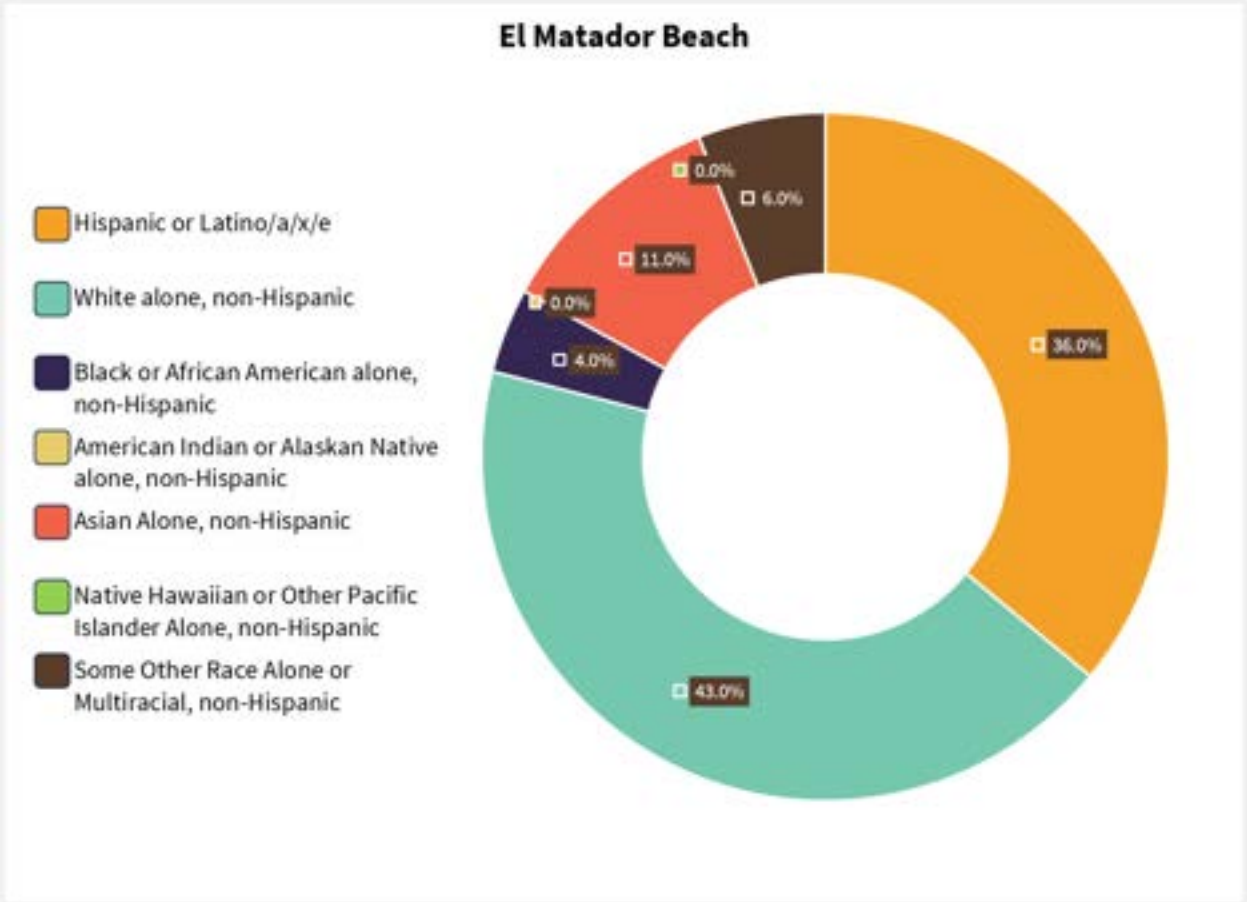


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Leo Carrillo Beach

General Statistics (2022)

Total Visitation: 622.9k

Average Visitation per Day: 1.7k

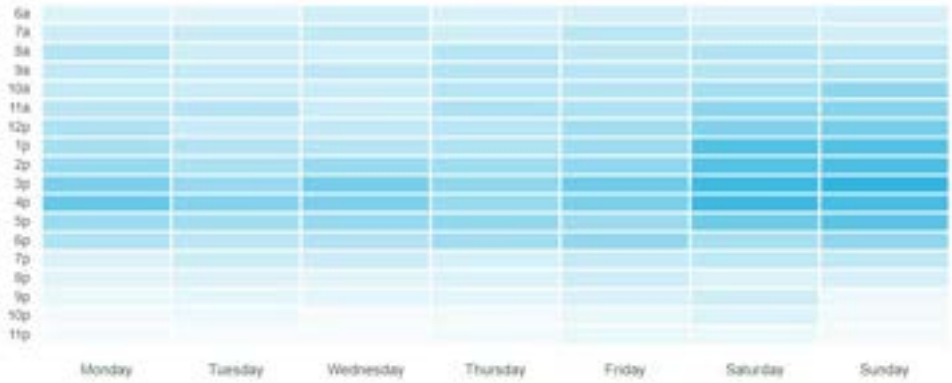
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 20%

Busiest Day of the Week: Sunday

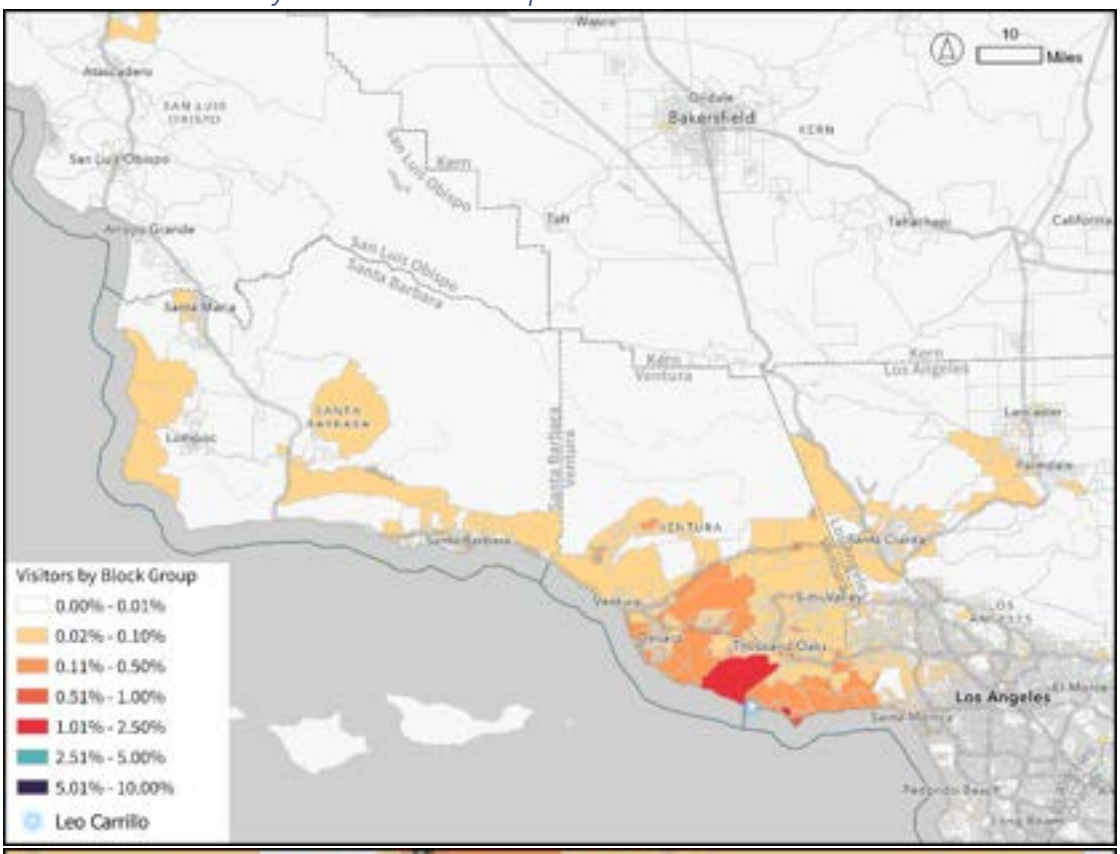
Busiest Hour: 3:00 pm

Heat Map of Hourly Visitation Leo Carrillo Beach:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group



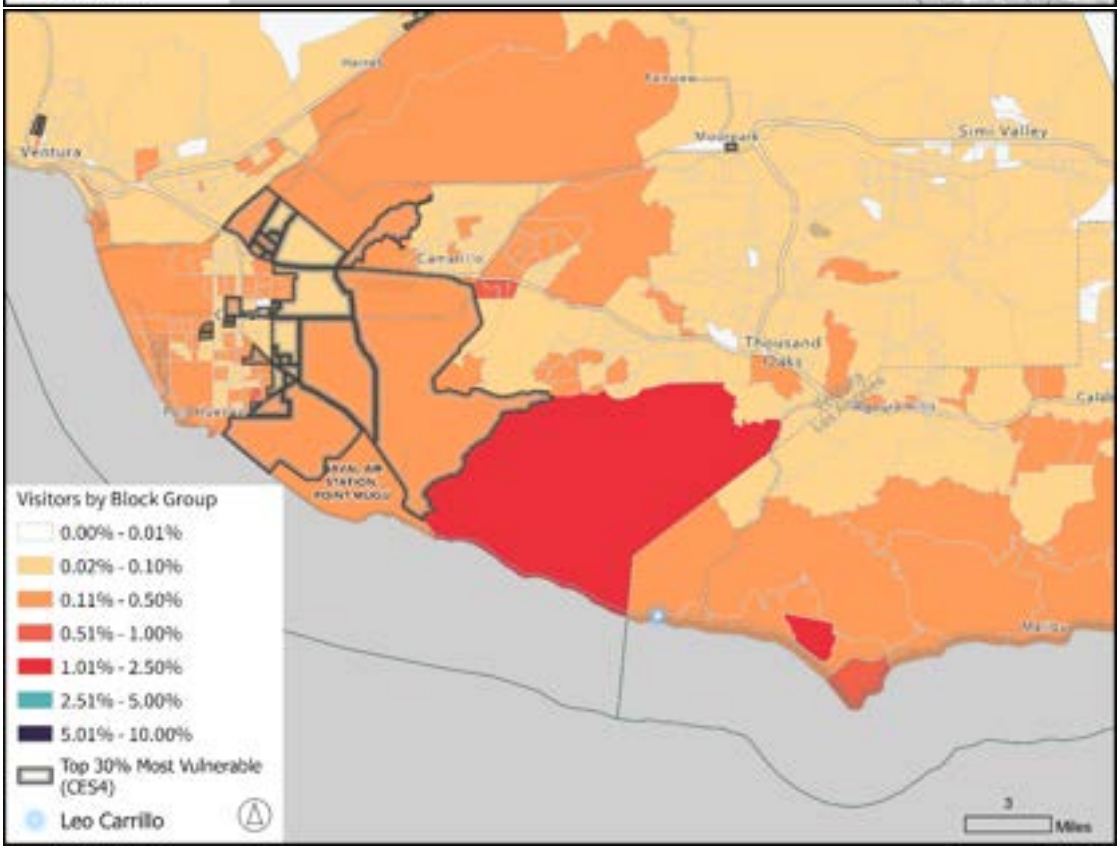


Chart of Visitation by Year

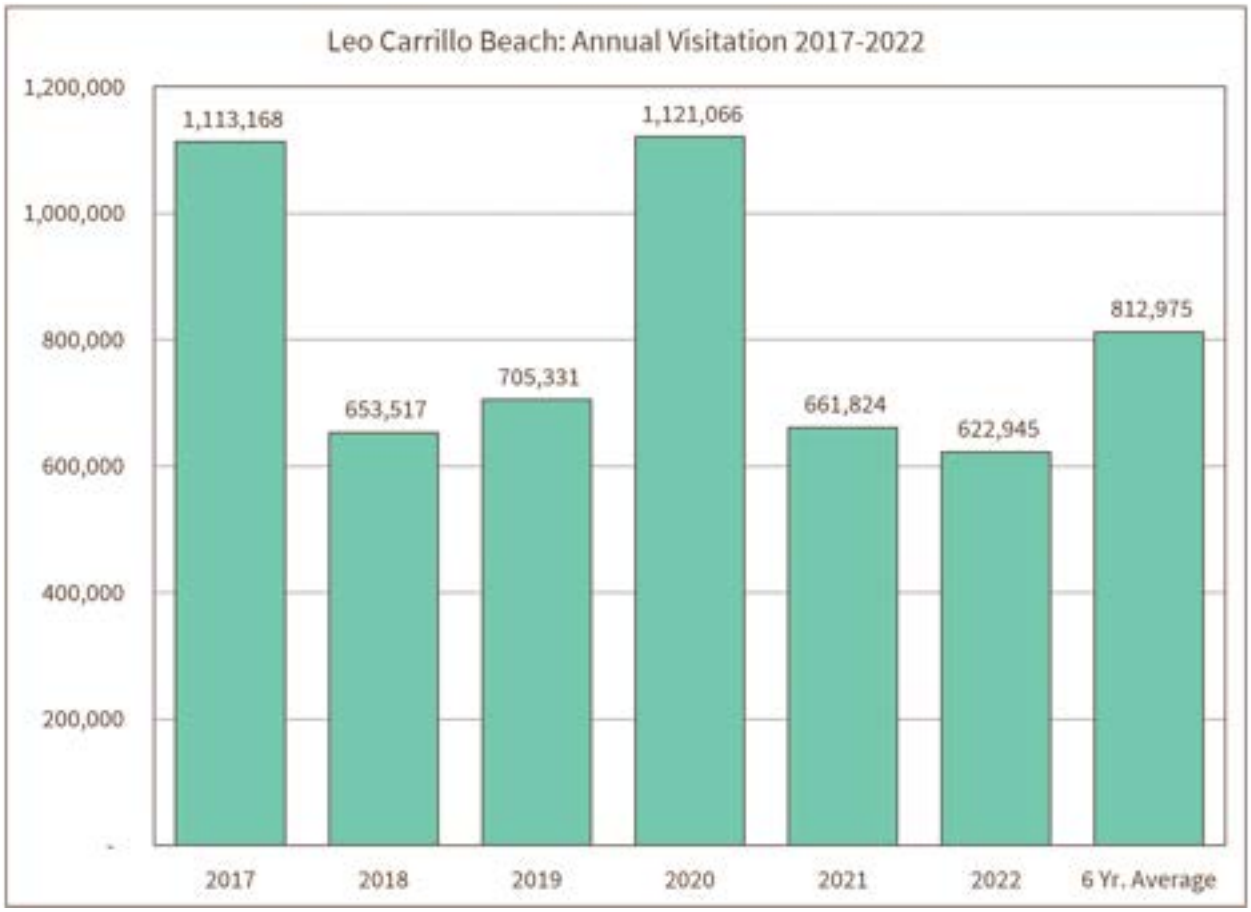
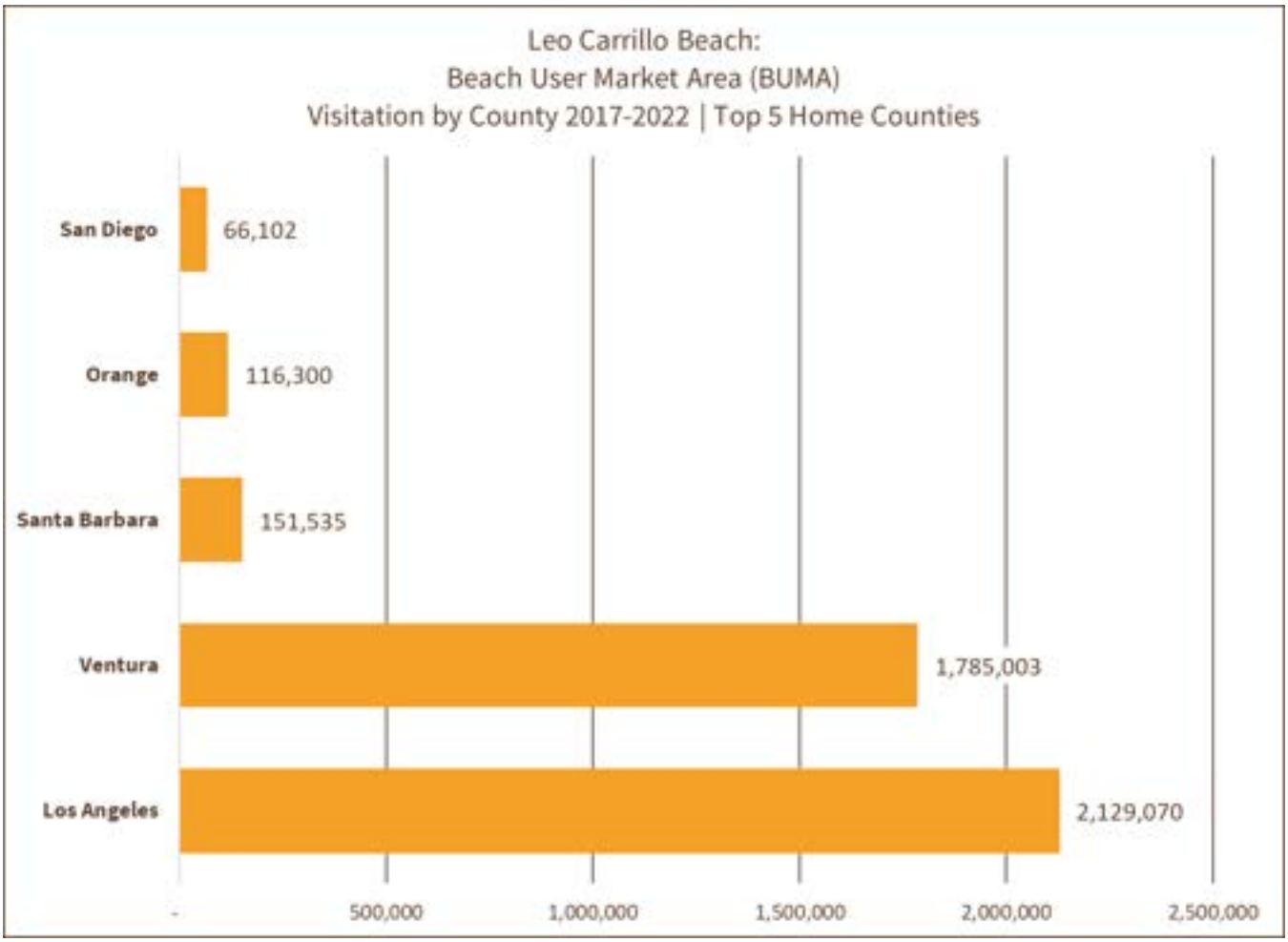
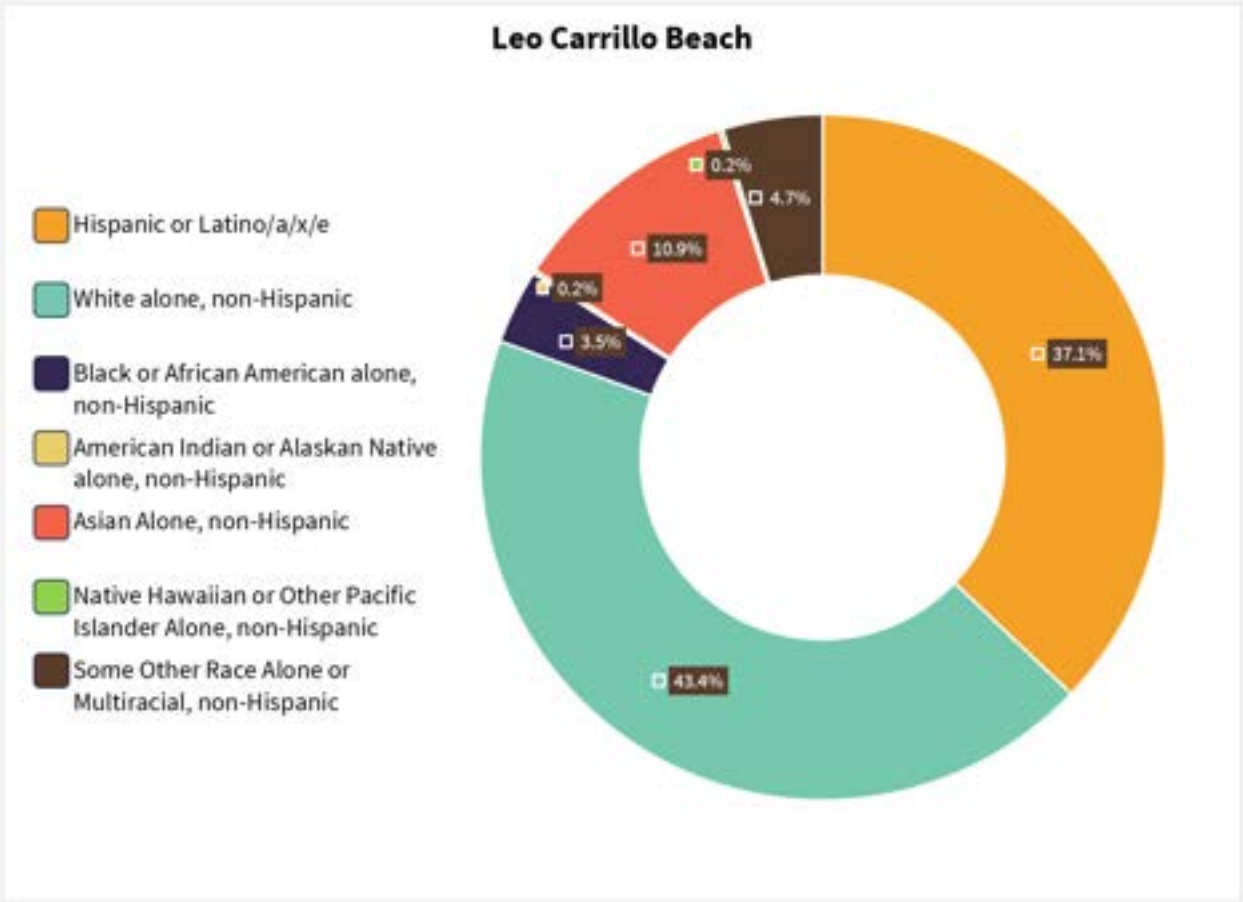


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Surfrider Beach (Malibu Lagoon)

General Statistics (2022)

Total Visitation: 2.2M

Average Visitation per Day: 6.1k

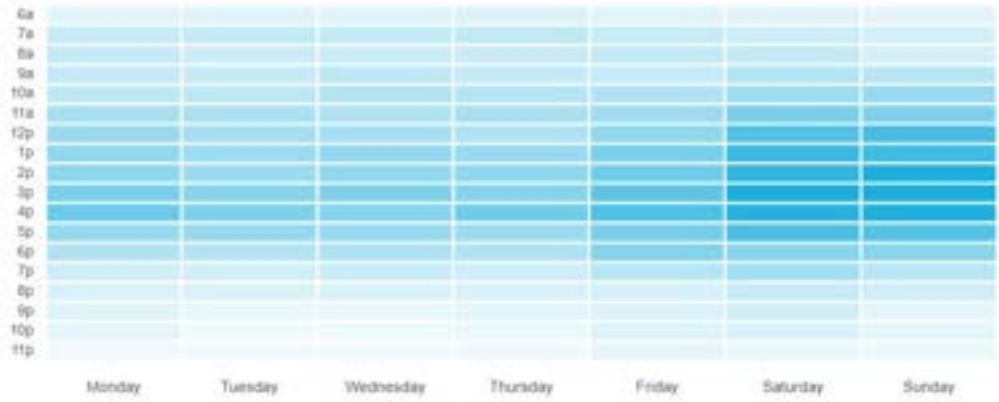
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 21%

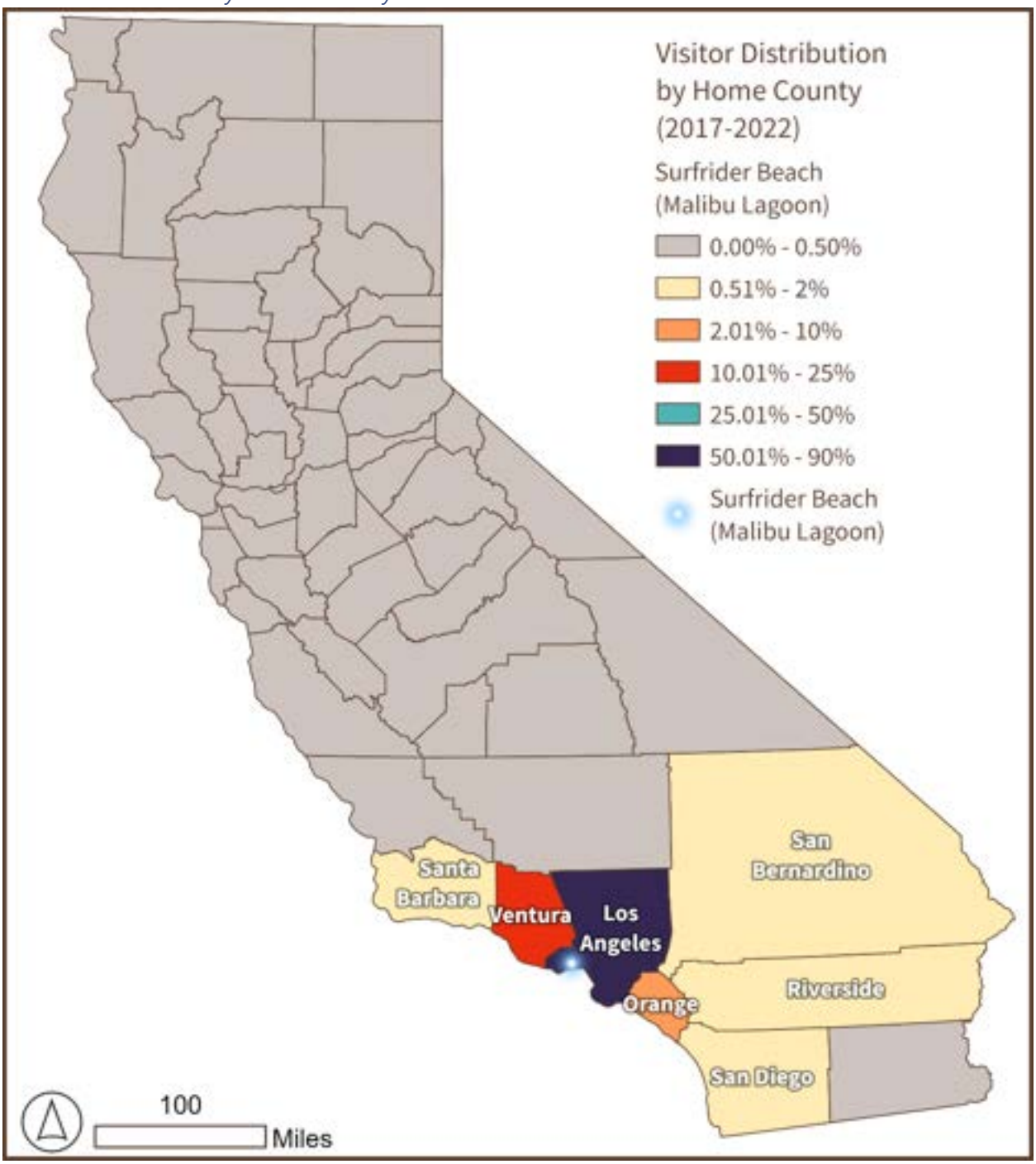
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

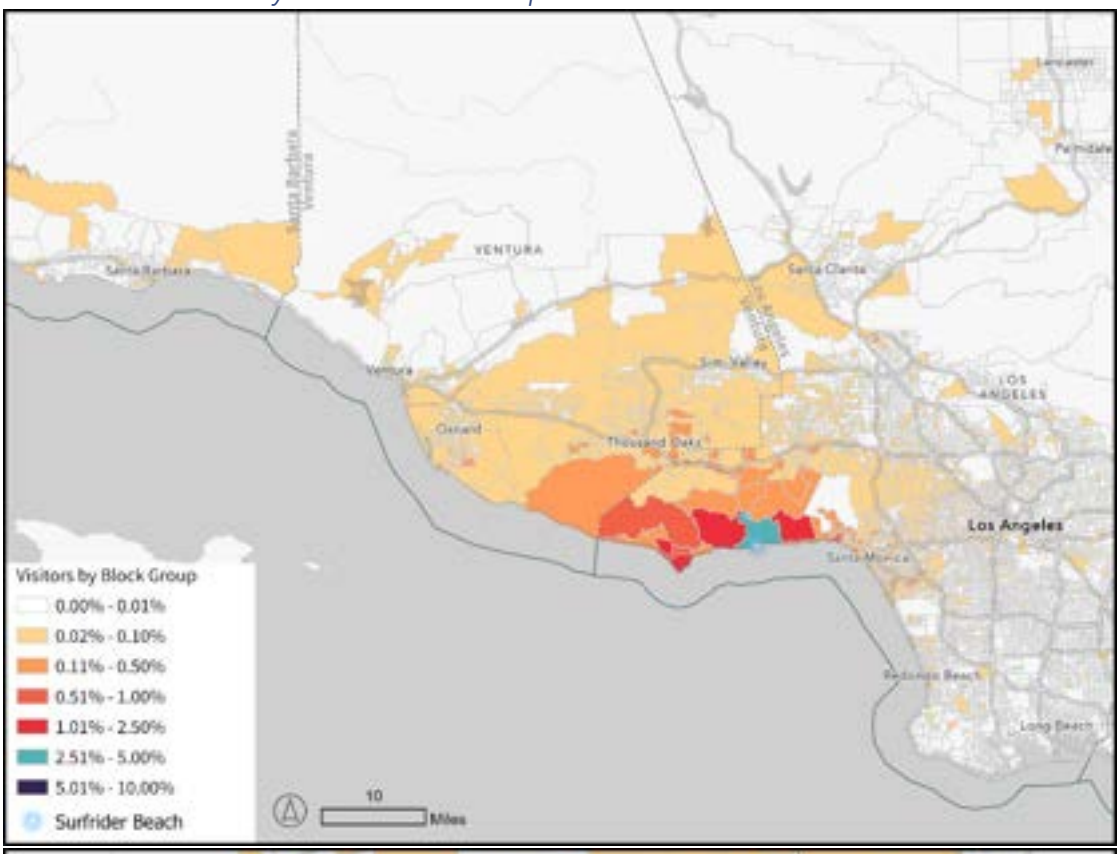
Heat Map of Hourly Visitation Surfrider Beach/ Malibu Lagoon:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



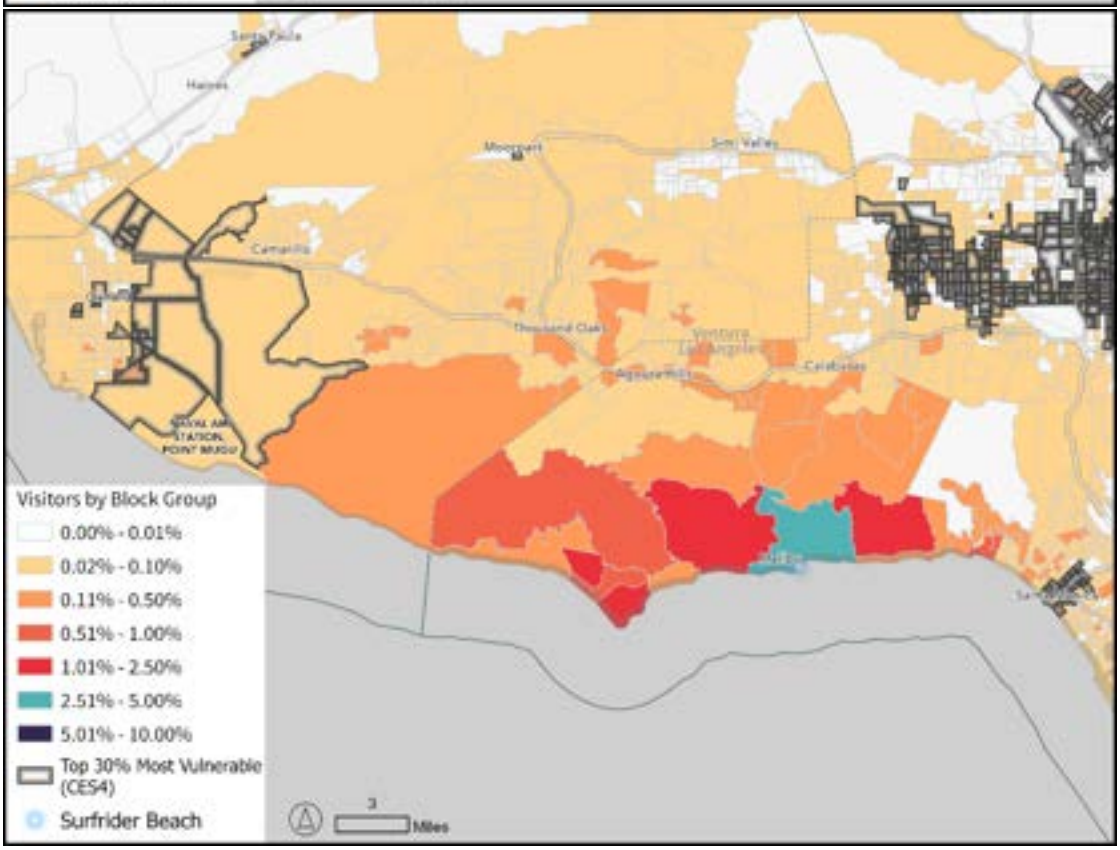
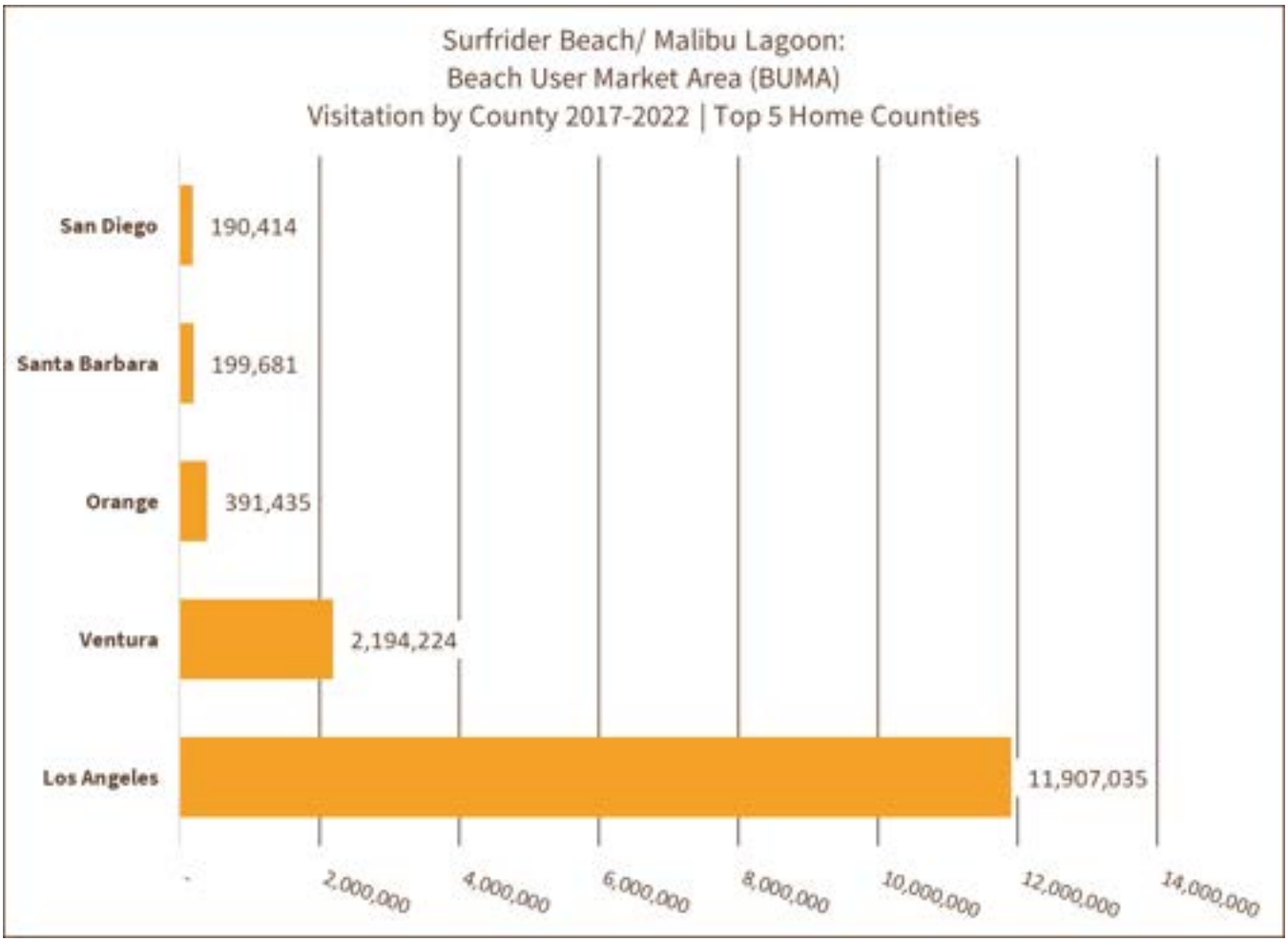
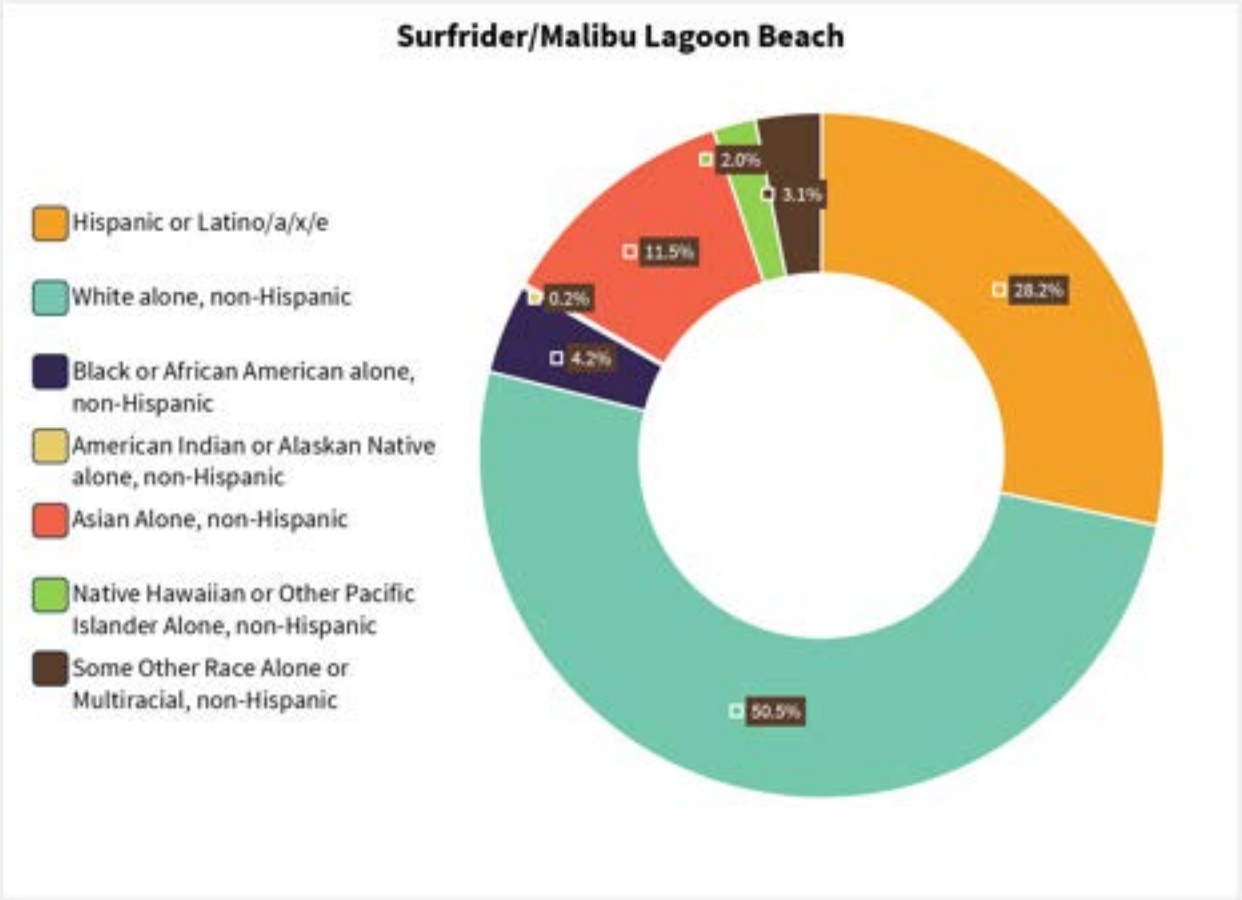


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



City of Santa Monica

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Santa Monica Beach Segment	3,033,569	4,080,784	3,400,553	1,841,493	2,108,095	2,556,424

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Santa Monica Beach Segment	1,251,165	1,344,269	1,263,318	1,241,616	1,370,411	1,865,790	2,210,012	1,851,002	1,440,551	1,174,521	1,032,081	976,182

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Santa Monica Beach Segment	2,030,497	1,773,865	1,796,189	1,885,630	2,397,183	3,612,060	3,525,494

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Santa Monica Beach Segment	39%	39%	2%	0%	5%	0%	15%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Santa Monica Beach Segment	61%	39%

Santa Monica Small Beach Segment

General Statistics (2022)

Total Visitation: 2.6M

Average Visitation per Day: 7k

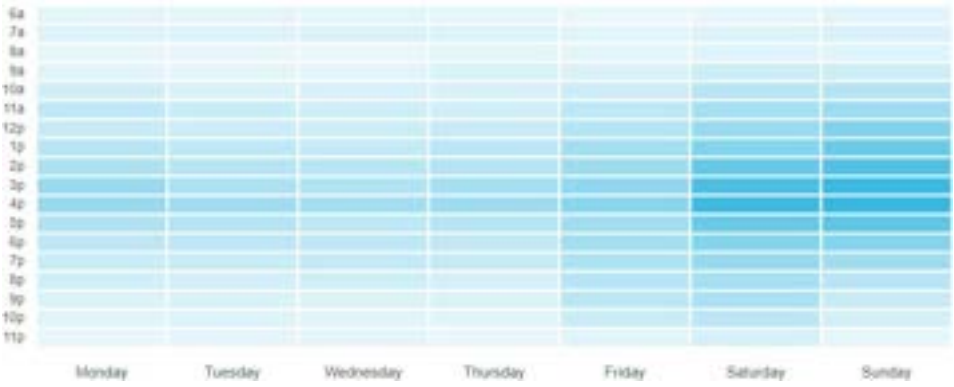
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 39%

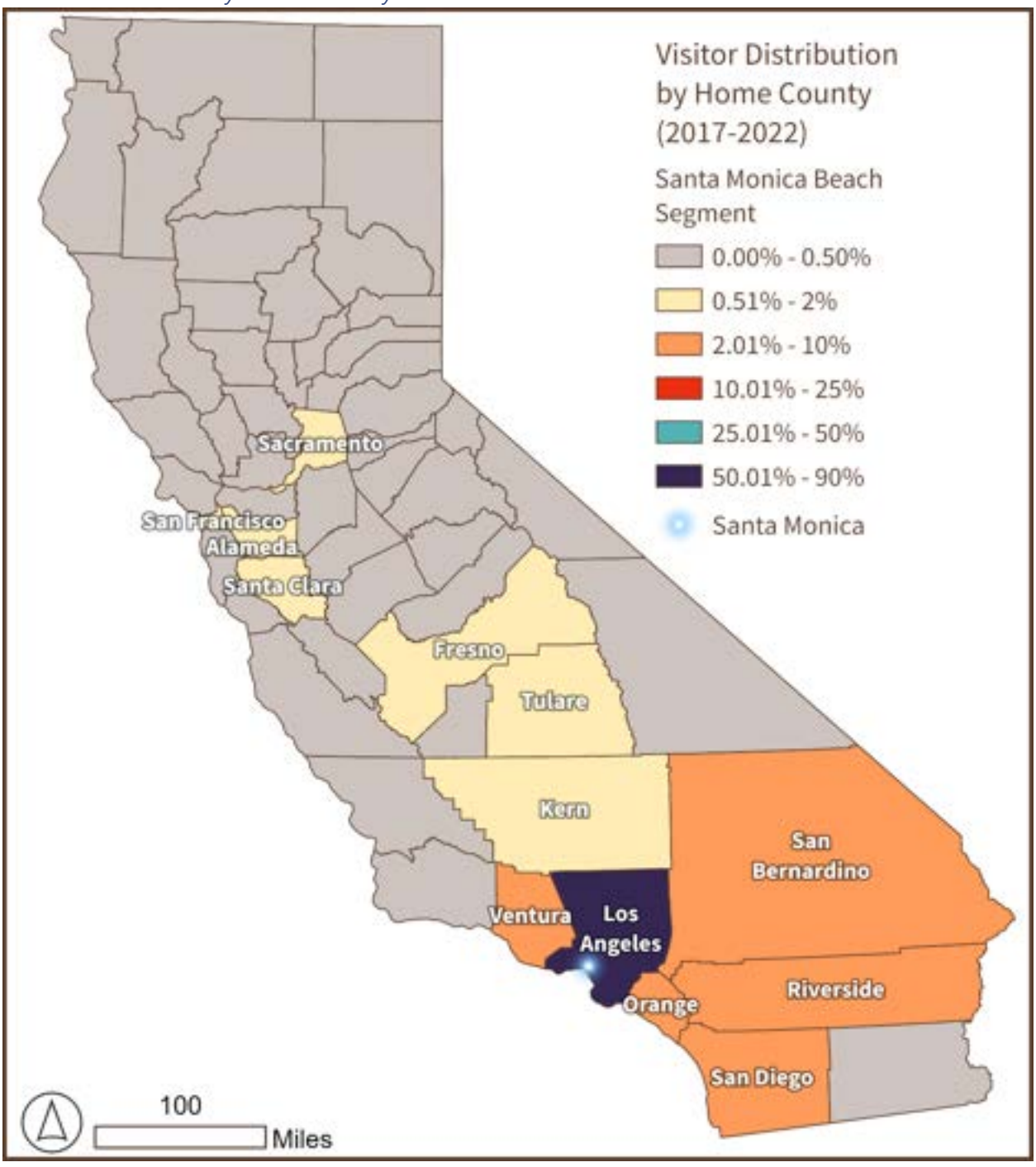
Busiest Day of the Week: Sunday

Busiest Hour: 4:00 pm

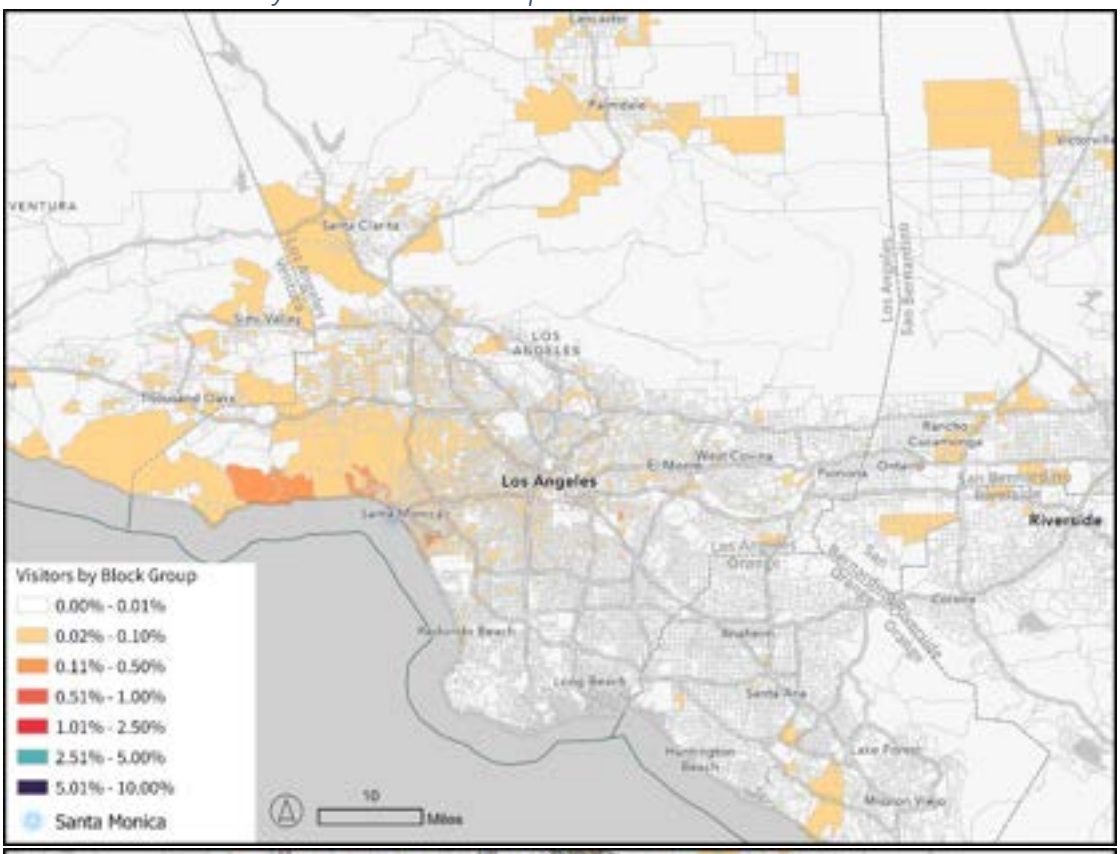
Heat Map of Hourly Visitation Santa Monica Beach Segment:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



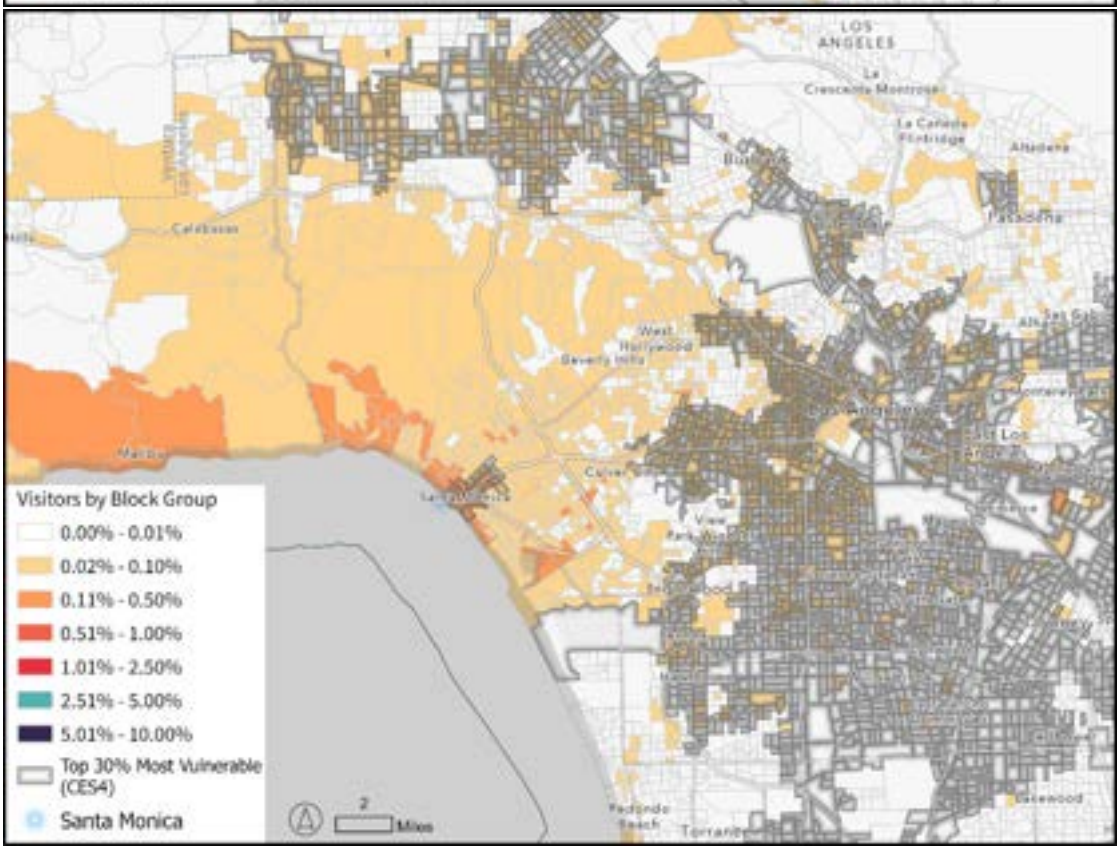
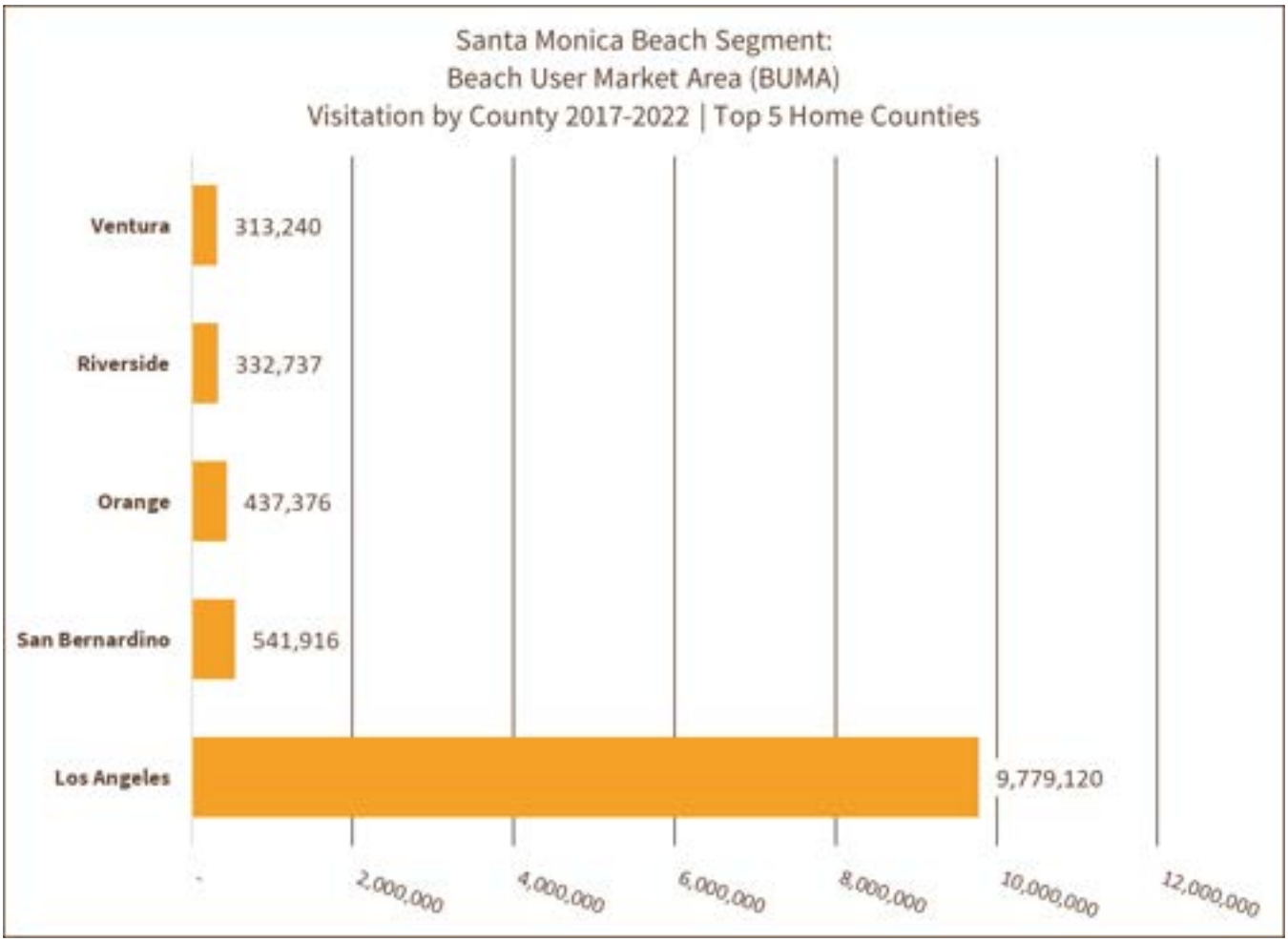
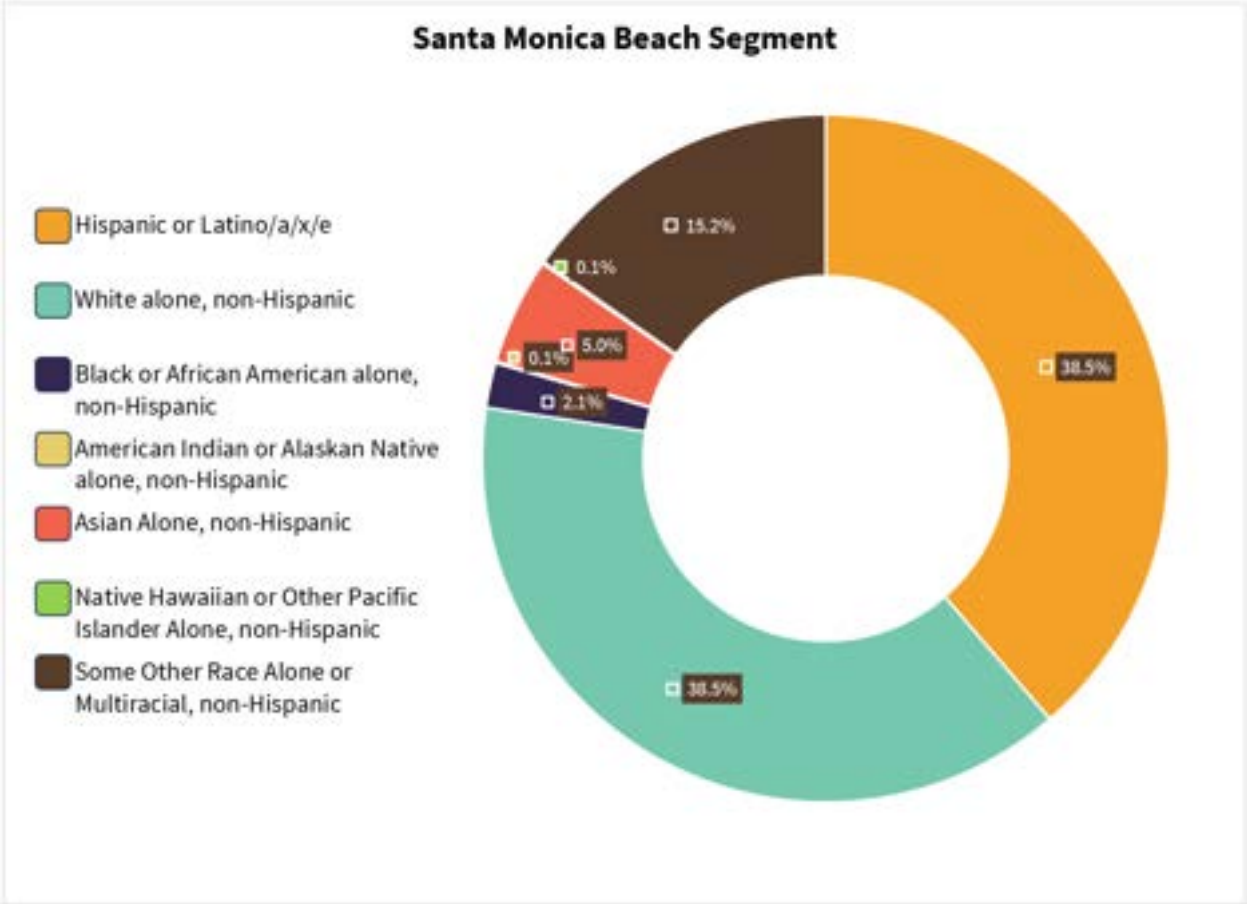


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



LA County Department of Beaches and Harbors

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Broad Beach	151,927	281,207	304,633	606,203	351,079	278,200
Corral Beach	2,588,304	1,750,343	2,063,484	3,616,629	1,588,285	1,786,362
Dockweiler Beach Segment	412,355	509,811	347,939	469,287	518,099	398,403
Gladstones Beach	174,402	272,657	210,656	225,481	175,864	121,052
Las Tunas Beach	3,773,545	3,086,592	3,639,713	4,831,927	1,973,118	2,667,358
Point Dume | Westward Beach	164,286	237,875	151,018	450,097	368,468	218,417
Westward Beach North	347,872	372,769	212,681	792,234	537,018	382,276
Zuma County Beach	1,059,889	1,178,330	882,346	2,017,670	1,385,543	959,103

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Broad Beach	116,005	141,177	127,402	125,716	182,876	231,187	232,482	241,036	178,172	153,001	136,588	107,607
Corral Beach	903,018	959,842	923,603	923,945	1,274,302	1,532,958	1,601,314	1,538,793	1,168,099	1,021,257	810,359	735,917
Dockweiler Beach Segment	151,322	189,357	181,813	155,439	213,491	360,320	368,966	332,704	251,561	173,358	148,386	129,177
Gladstones Beach	77,925	87,315	77,365	72,894	103,128	127,851	148,652	155,092	127,159	85,789	63,042	53,900
Las Tunas Beach	1,377,206	1,585,263	1,338,948	1,391,215	1,889,021	2,091,011	2,303,024	2,282,210	1,849,476	1,550,175	1,207,508	1,107,196
Point Dume | Westward Beach	113,584	133,211	141,695	108,373	121,119	191,475	202,511	175,323	113,451	108,936	81,773	98,710
Westward Beach North	154,706	188,241	210,739	180,752	287,735	331,219	325,224	303,339	220,901	176,392	130,064	135,538
Zuma County Beach	390,945	448,509	466,029	497,800	682,922	972,996	1,122,228	1,035,941	651,061	506,983	377,508	329,959

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Broad Beach	250,790	235,107	257,095	250,795	278,458	355,743	345,261
Corral Beach	1,670,350	1,587,830	1,647,801	1,655,897	1,908,299	2,472,378	2,450,852
Dockweiler Beach Segment	270,189	246,305	244,611	267,001	379,872	649,964	597,952
Gladstones Beach	135,027	125,070	124,829	127,874	163,605	246,929	256,778
Las Tunas Beach	2,469,084	2,528,064	2,579,615	2,602,825	2,821,918	3,544,846	3,425,901
Point Dume | Westward Beach	179,896	158,840	167,398	158,851	209,143	337,049	378,984
Westward Beach North	318,025	284,139	288,872	287,854	360,449	542,894	562,617
Zuma County Beach	923,295	860,780	874,826	870,659	998,229	1,462,795	1,492,297

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Broad Beach	83%	17%
Corral Beach	79%	21%
Dockweiler Beach Segment	58%	42%
Gladstones Beach	75%	25%
Las Tunas Beach	76%	24%
Point Dume | Westward Beach	78%	22%
Westward Beach North	80%	20%
Zuma County Beach	80%	20%

Broad Beach

General Statistics (2022)

Total Visitation: 278.2k

Average Visitation per Day: 780

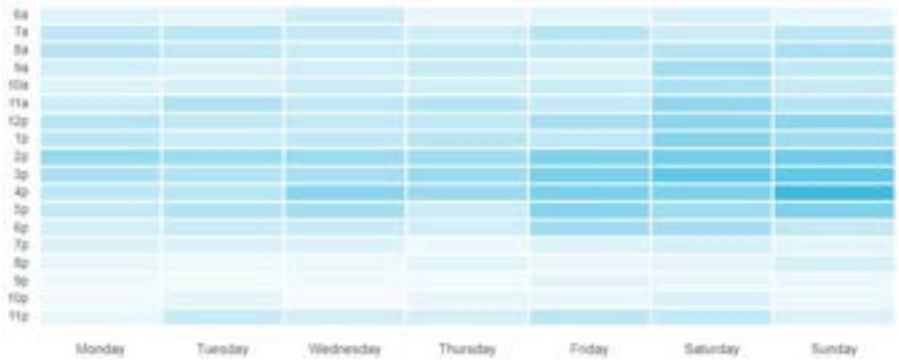
Average Length of Stay: 2.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 17%

Busiest Day of the Week: Saturday

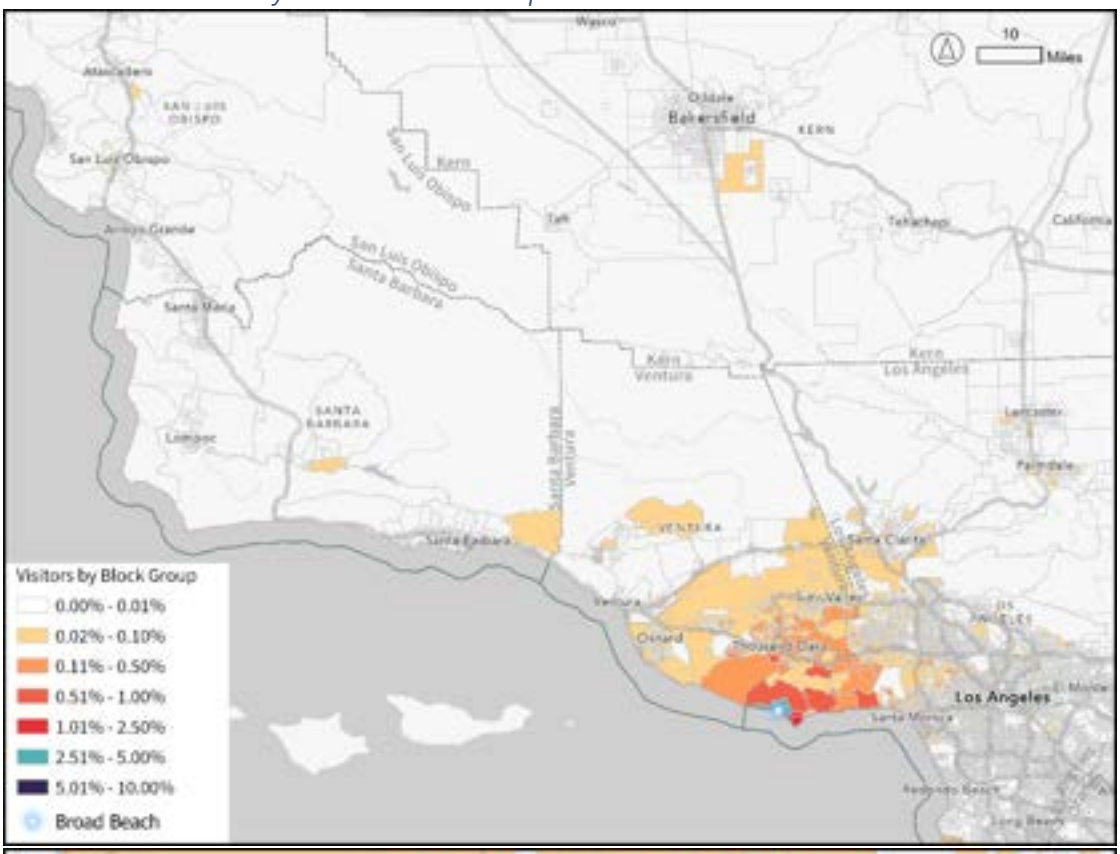
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Broad Beach:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group



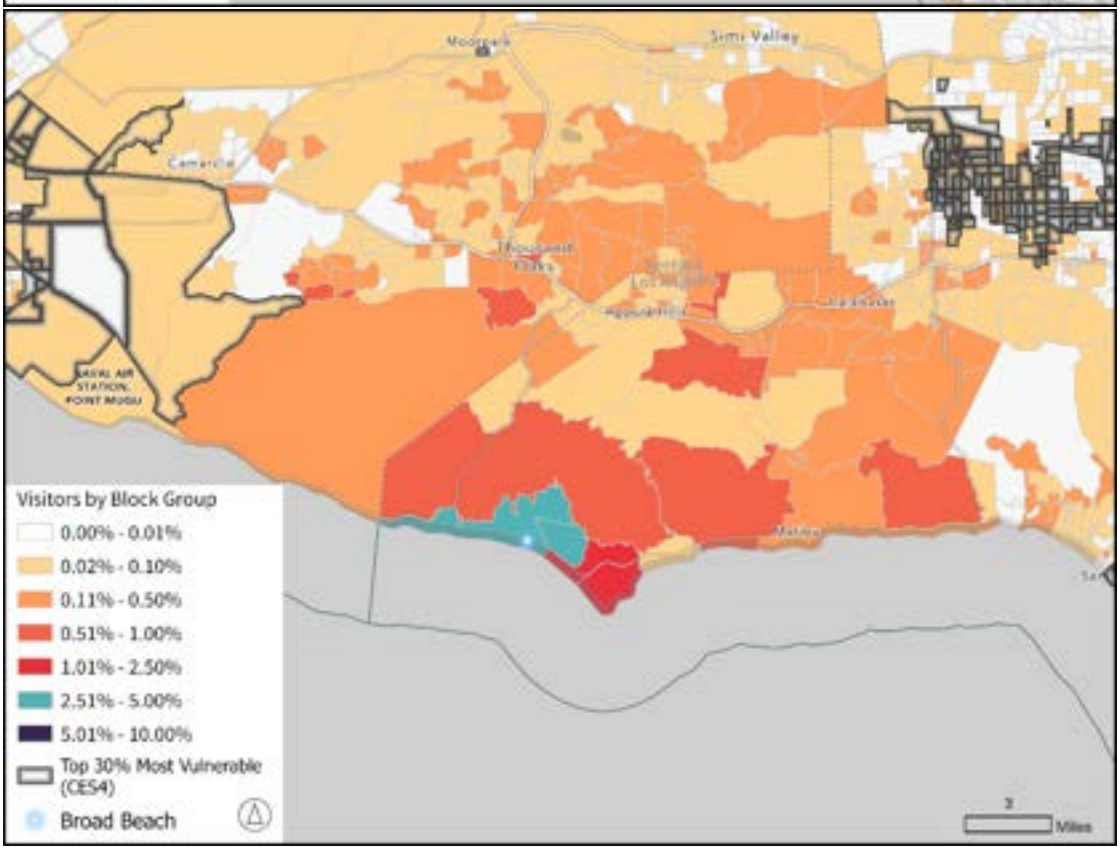
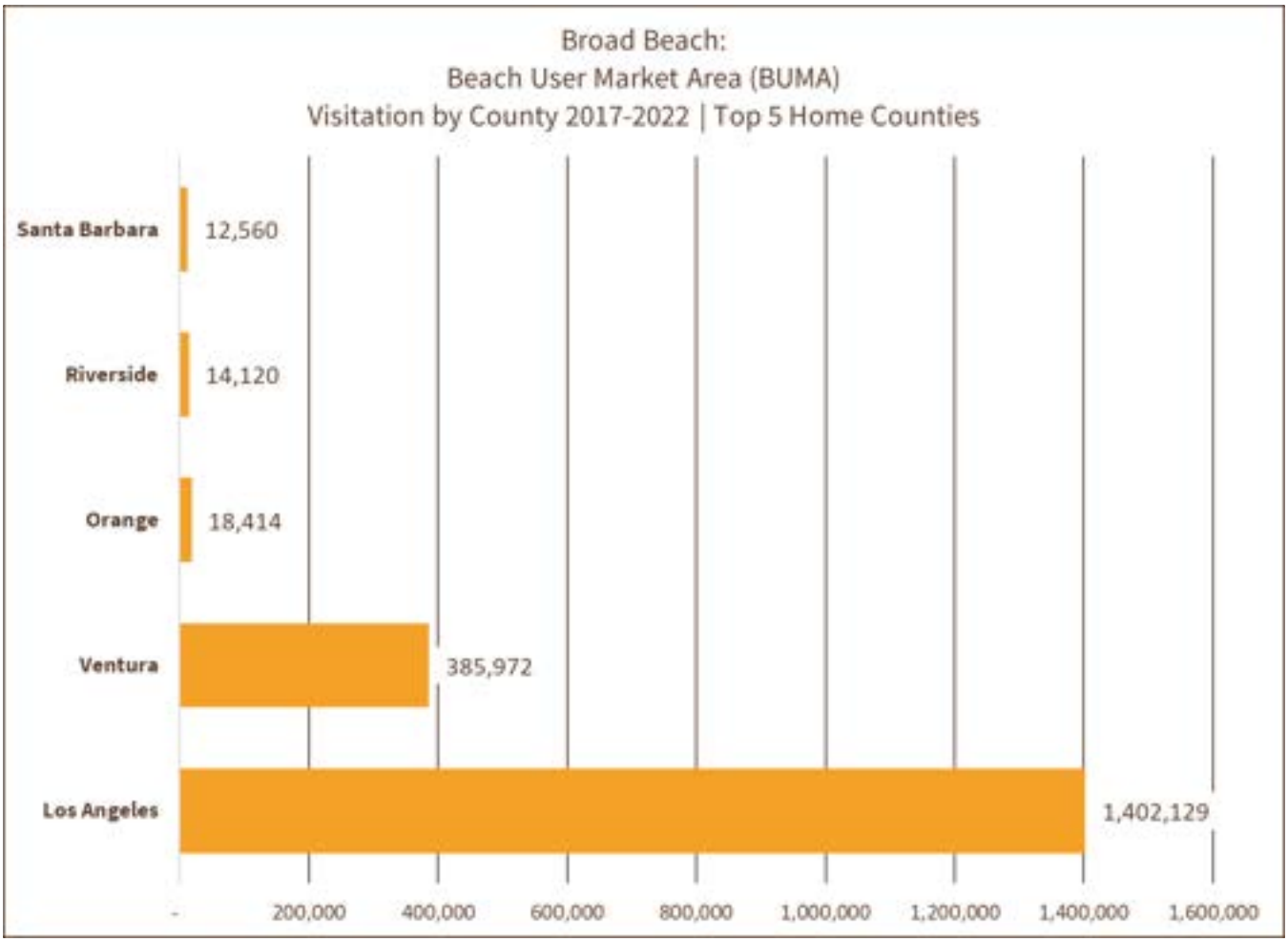
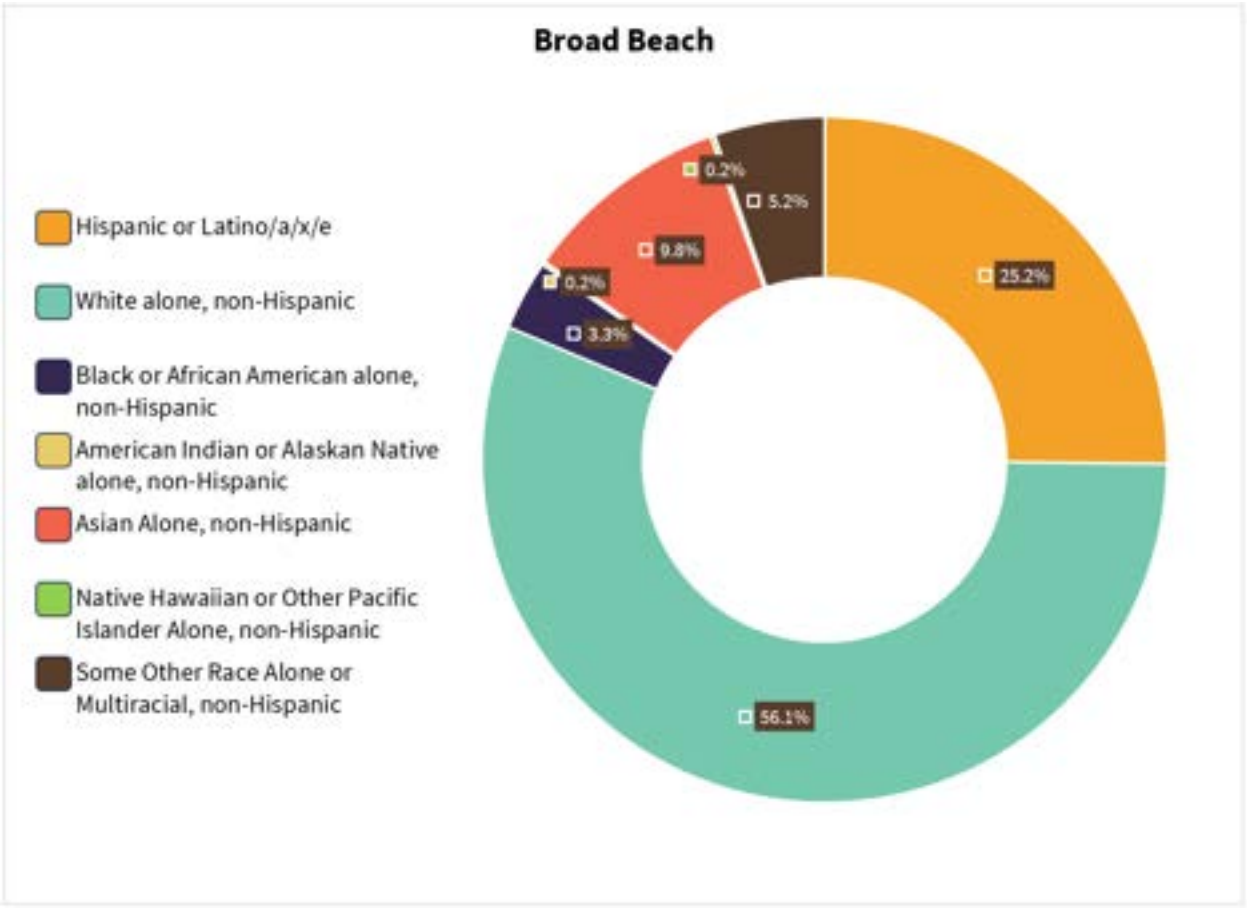


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Corral Beach

General Statistics (2022)

Total Visitation: 1.8M

Average Visitation per Day: 4.9k

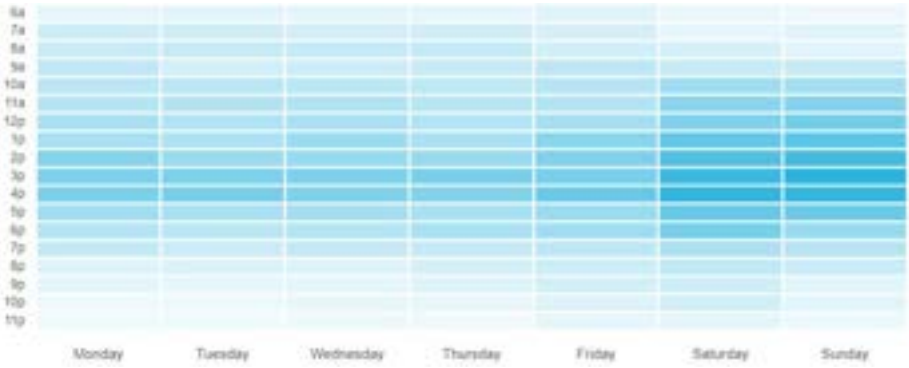
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 21%

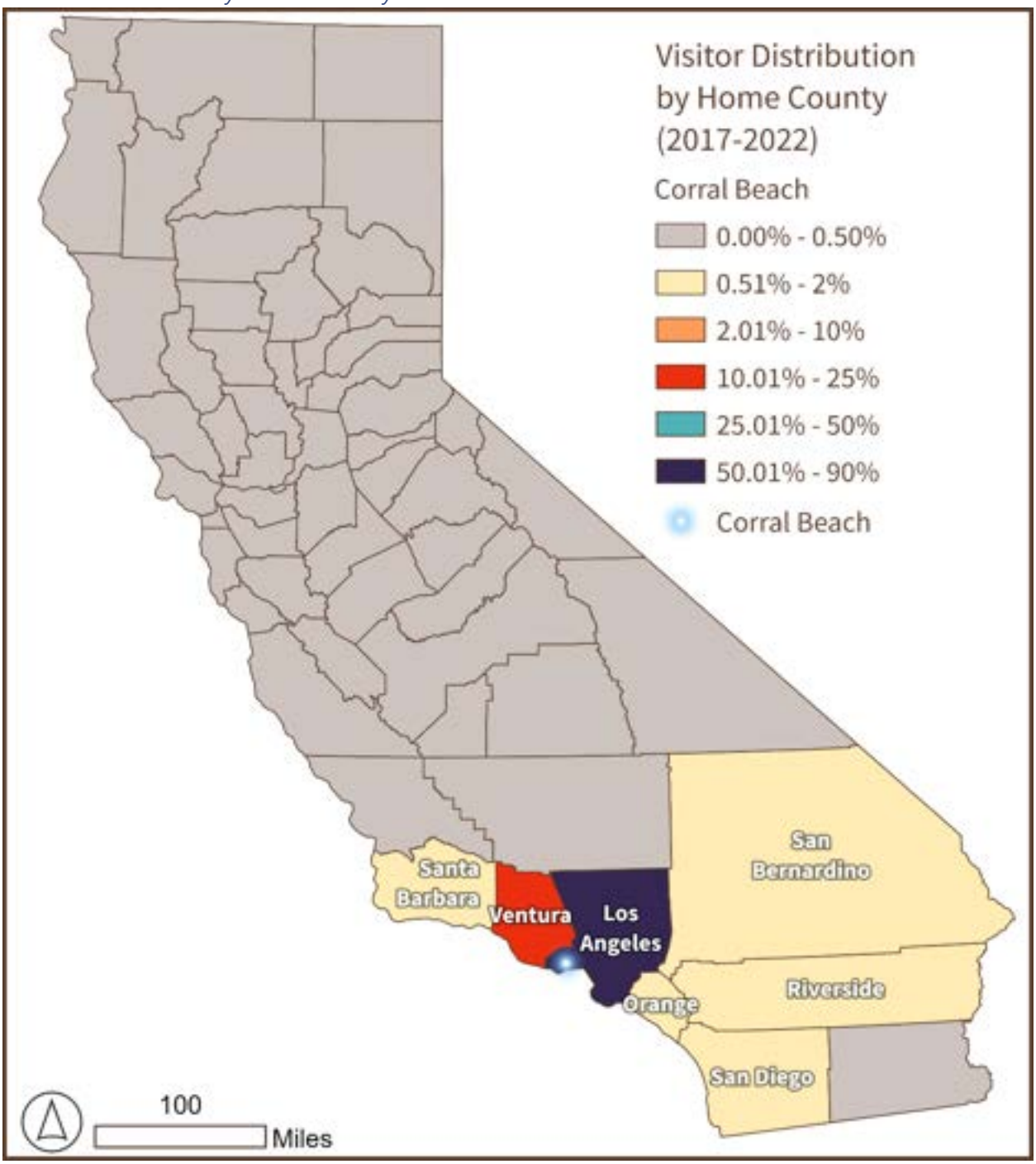
Busiest Day of the Week: Saturday

Busiest Hour: 4:00 pm

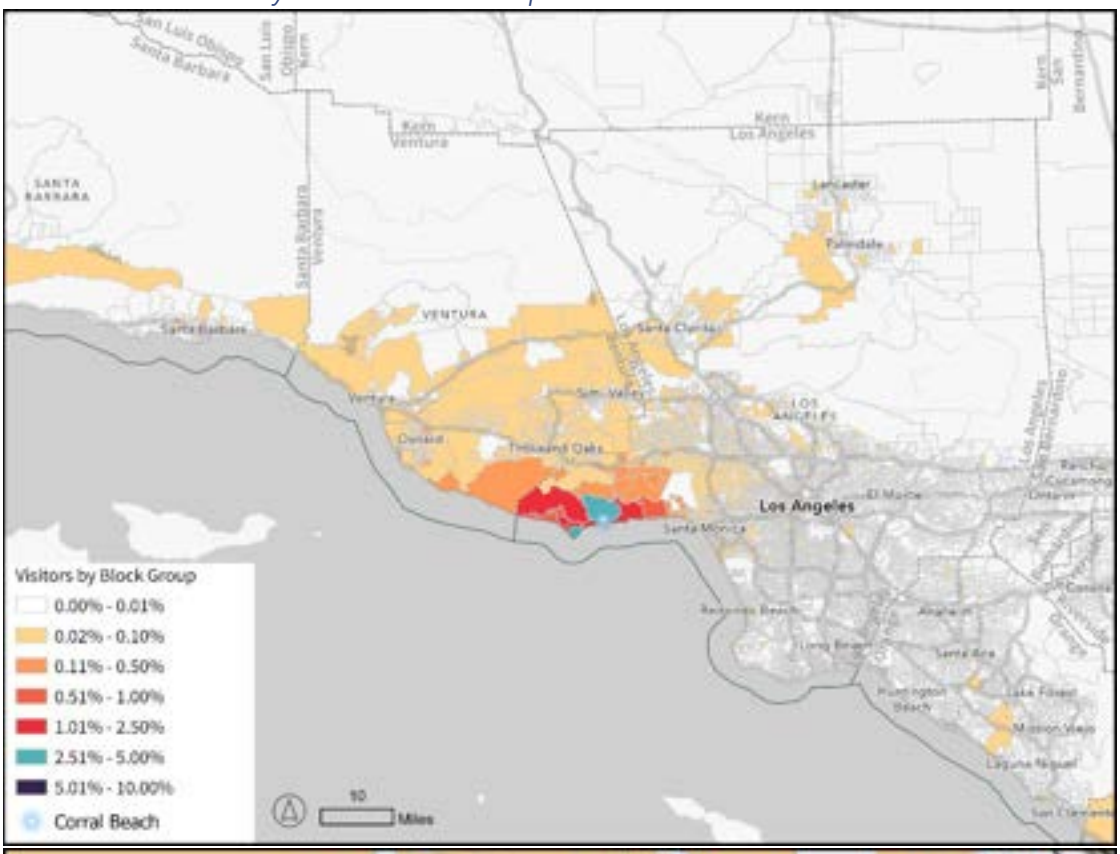
Heat Map of Hourly Visitation Corral Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



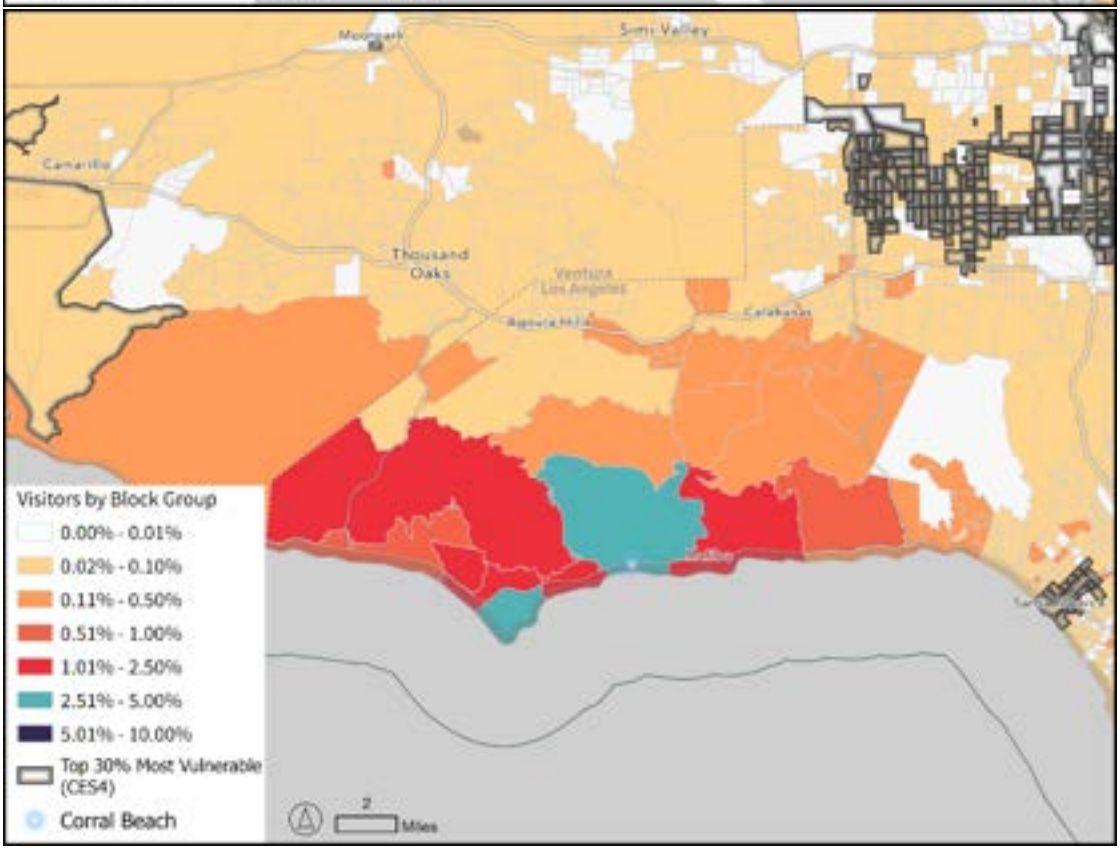


Chart of Visitation by Year

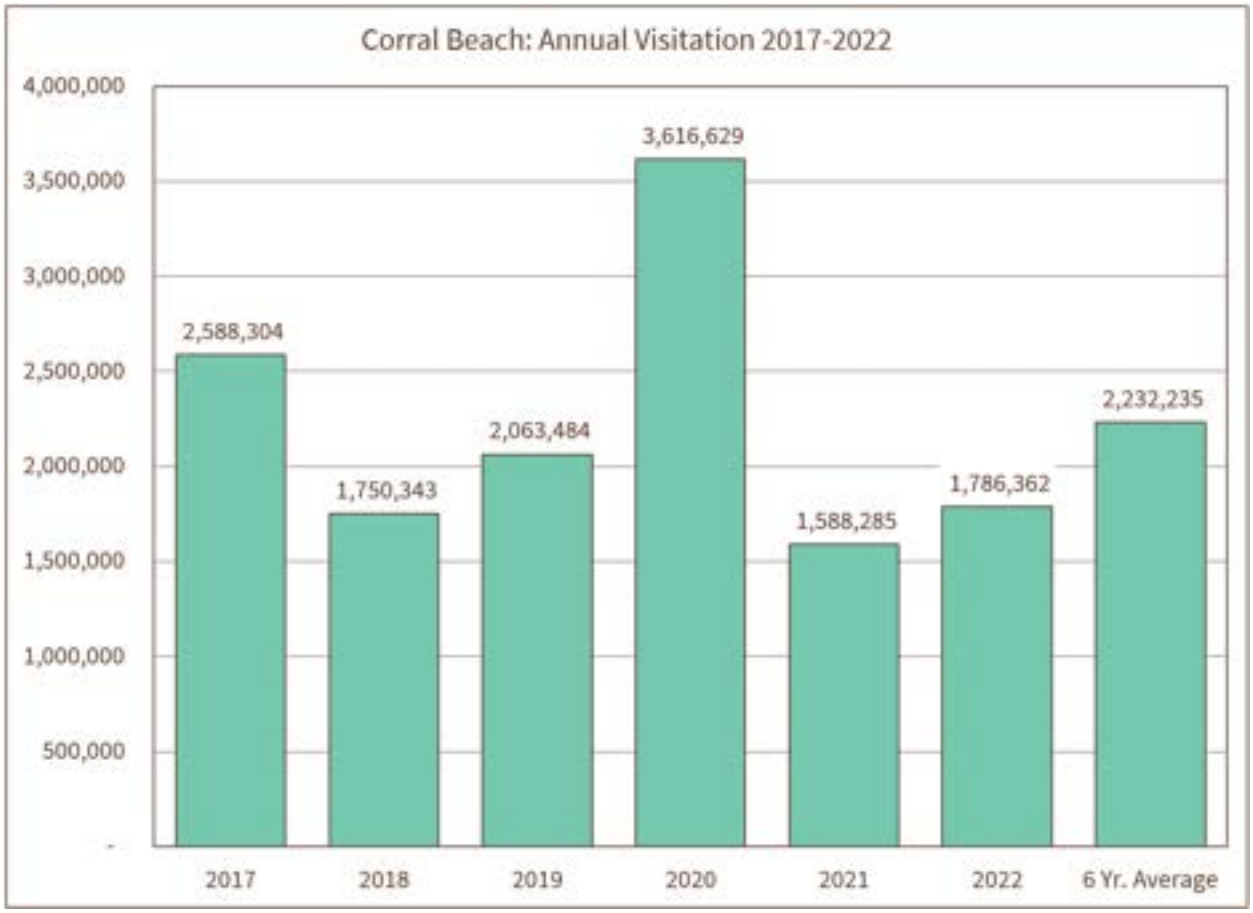
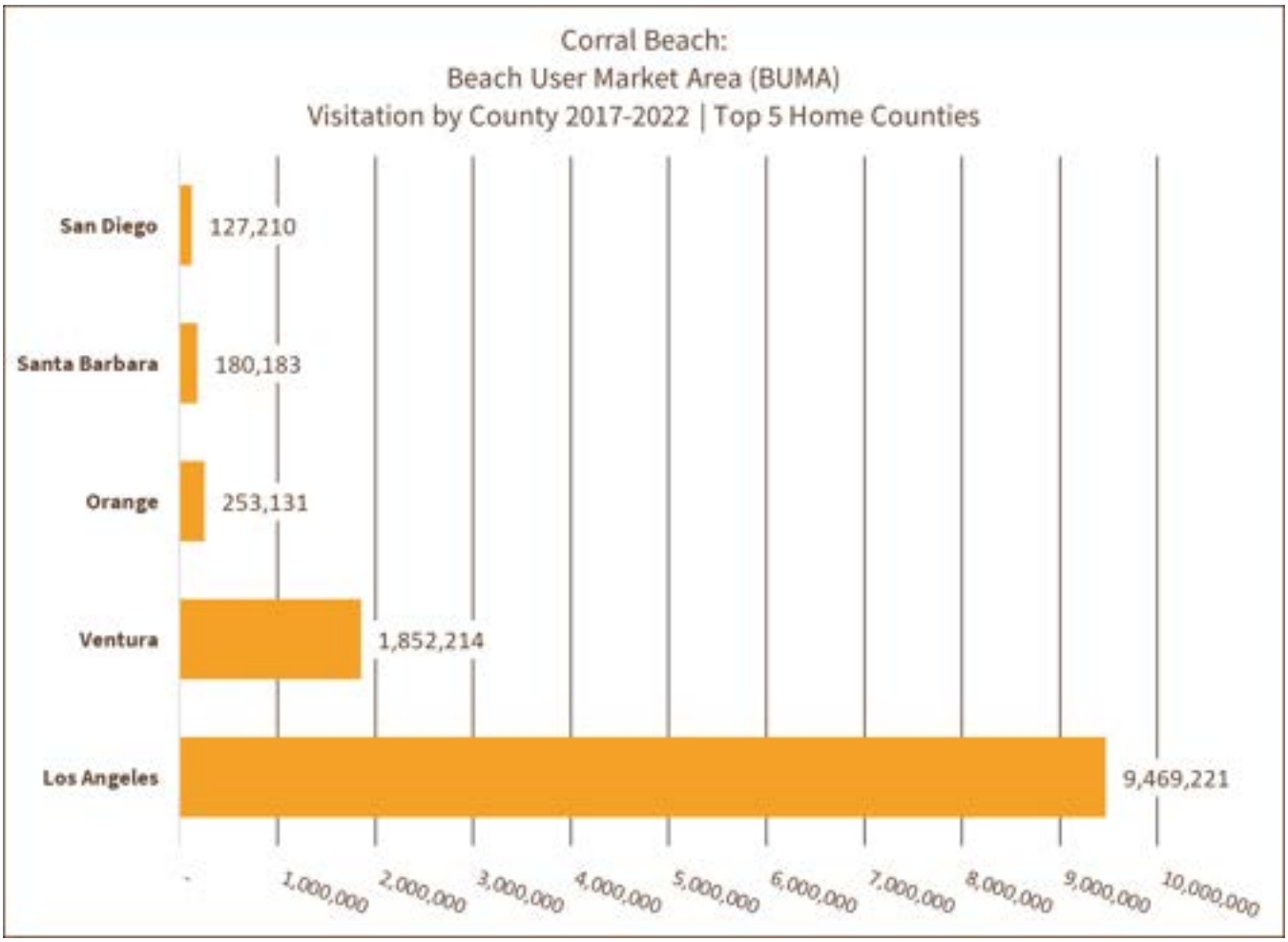
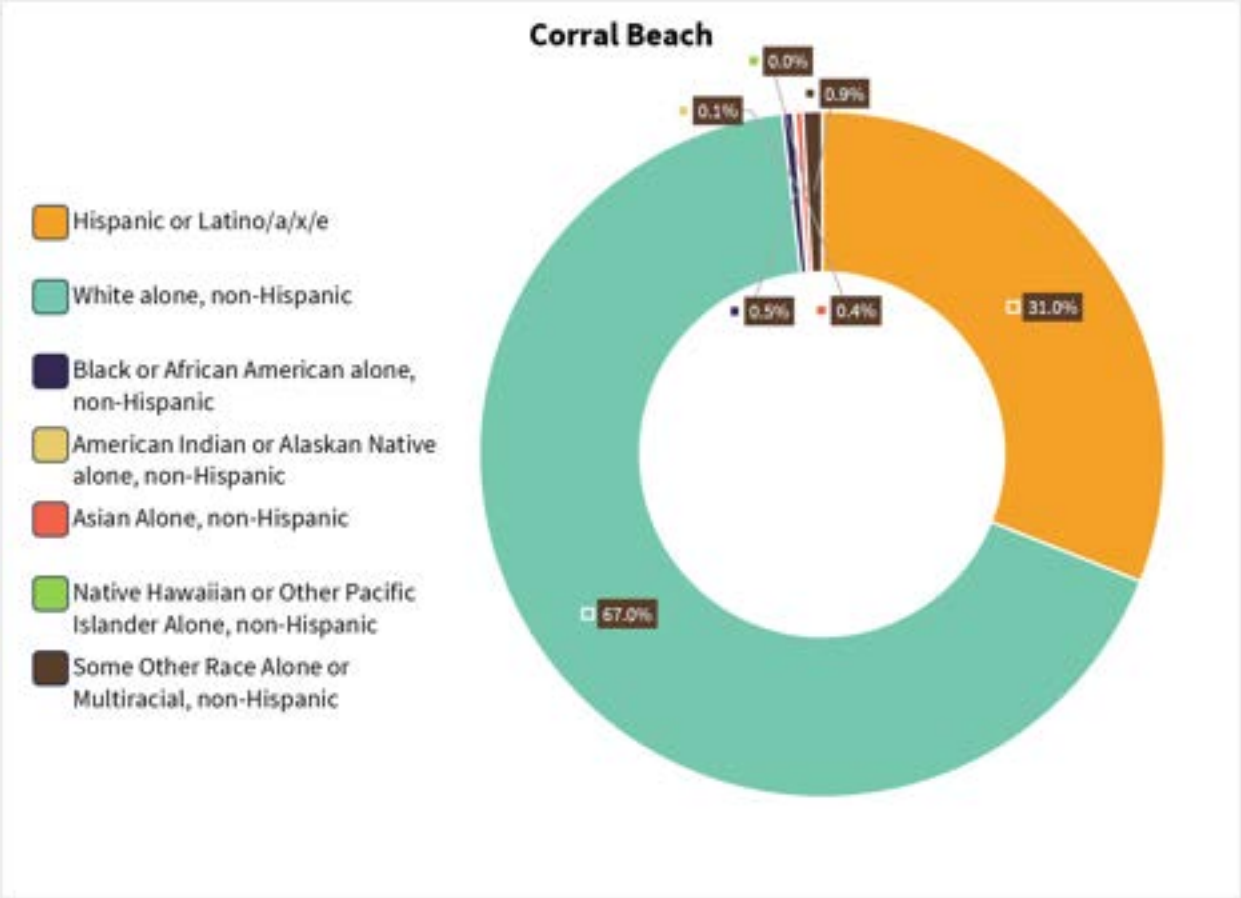


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Dockweiler Beach Segment

General Statistics (2022)

Total Visitation: 398.4k

Average Visitation per Day: 1.1k

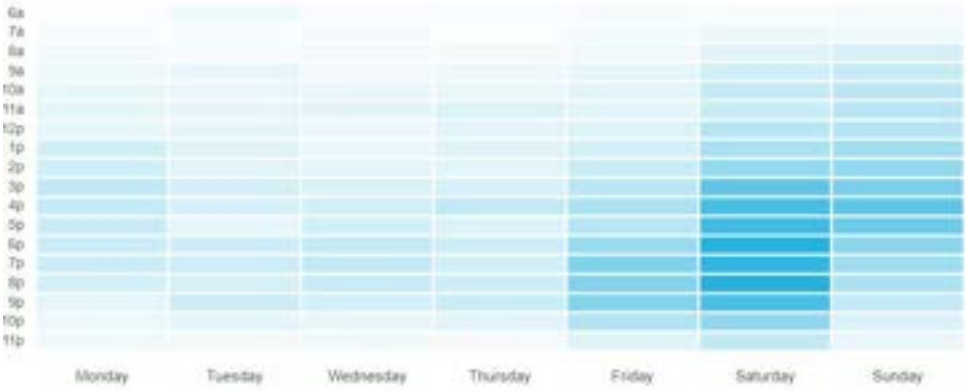
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 42%

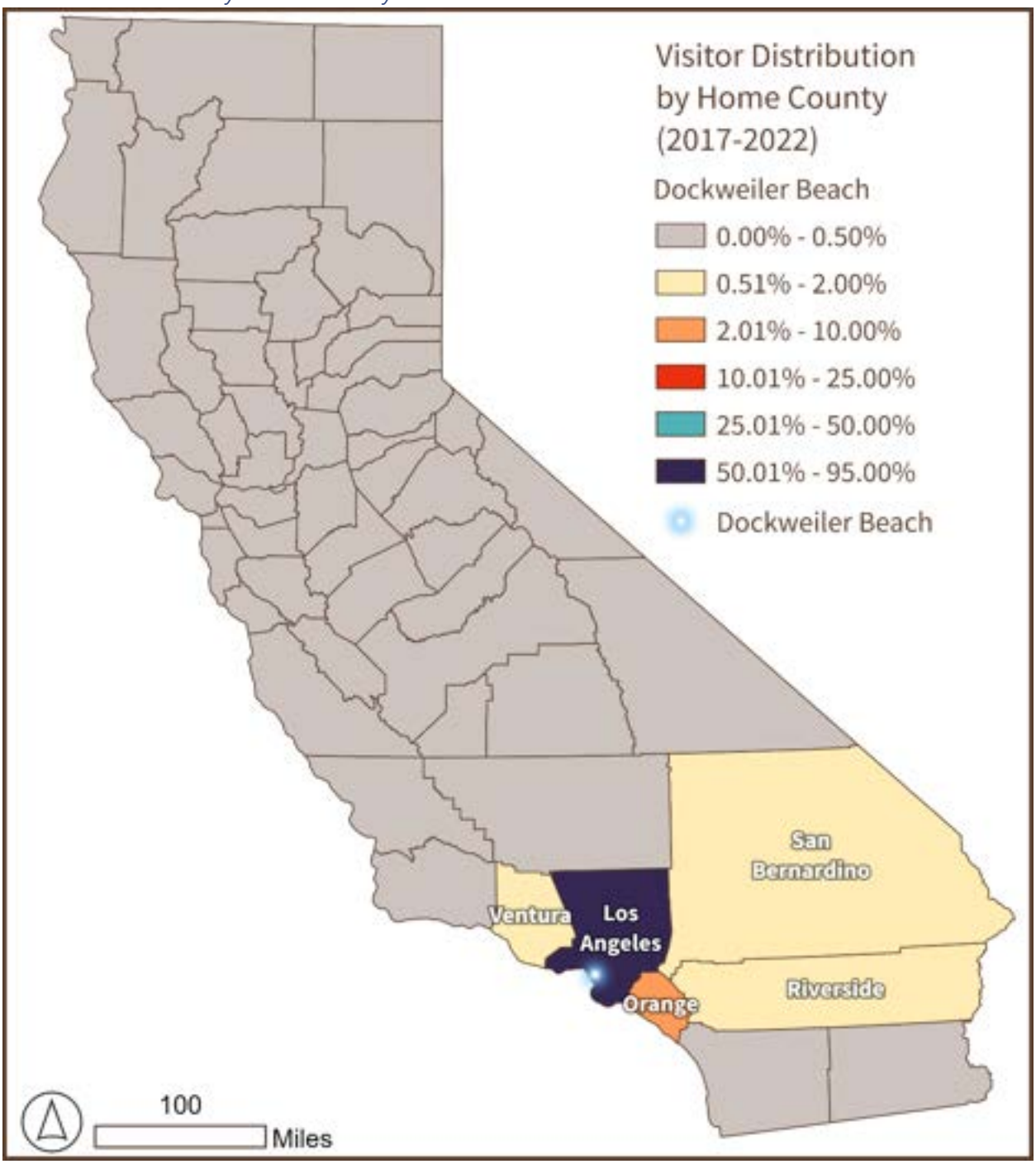
Busiest Day of the Week: Saturday

Busiest Hour: 6:00 pm

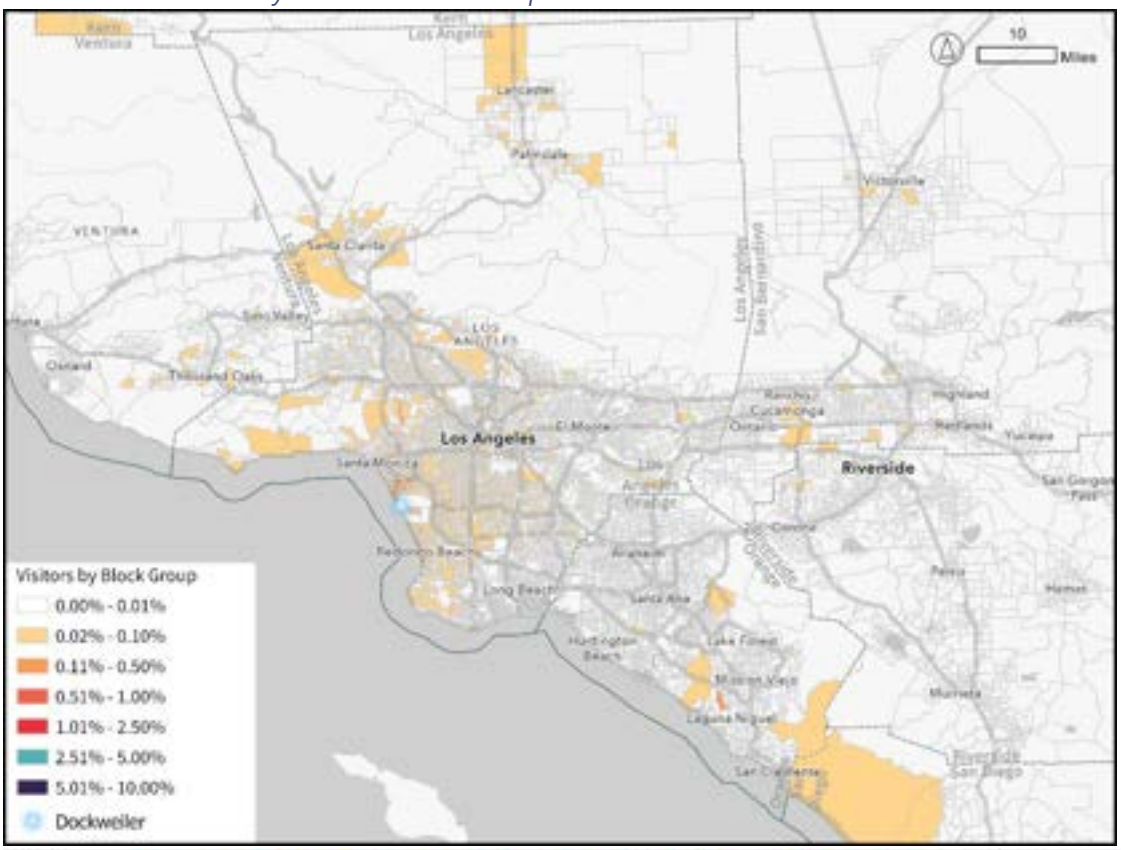
Heat Map of Hourly Visitation Dockweiler Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



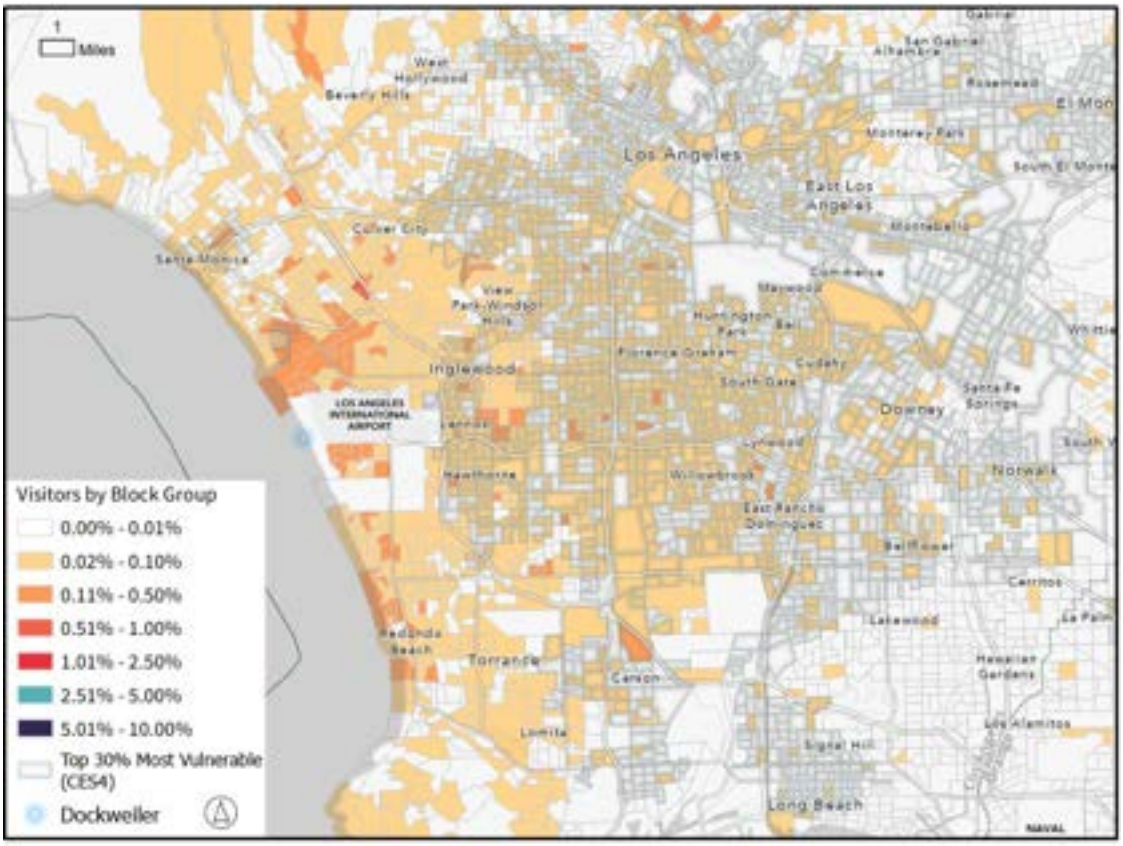


Chart of Visitation by Year

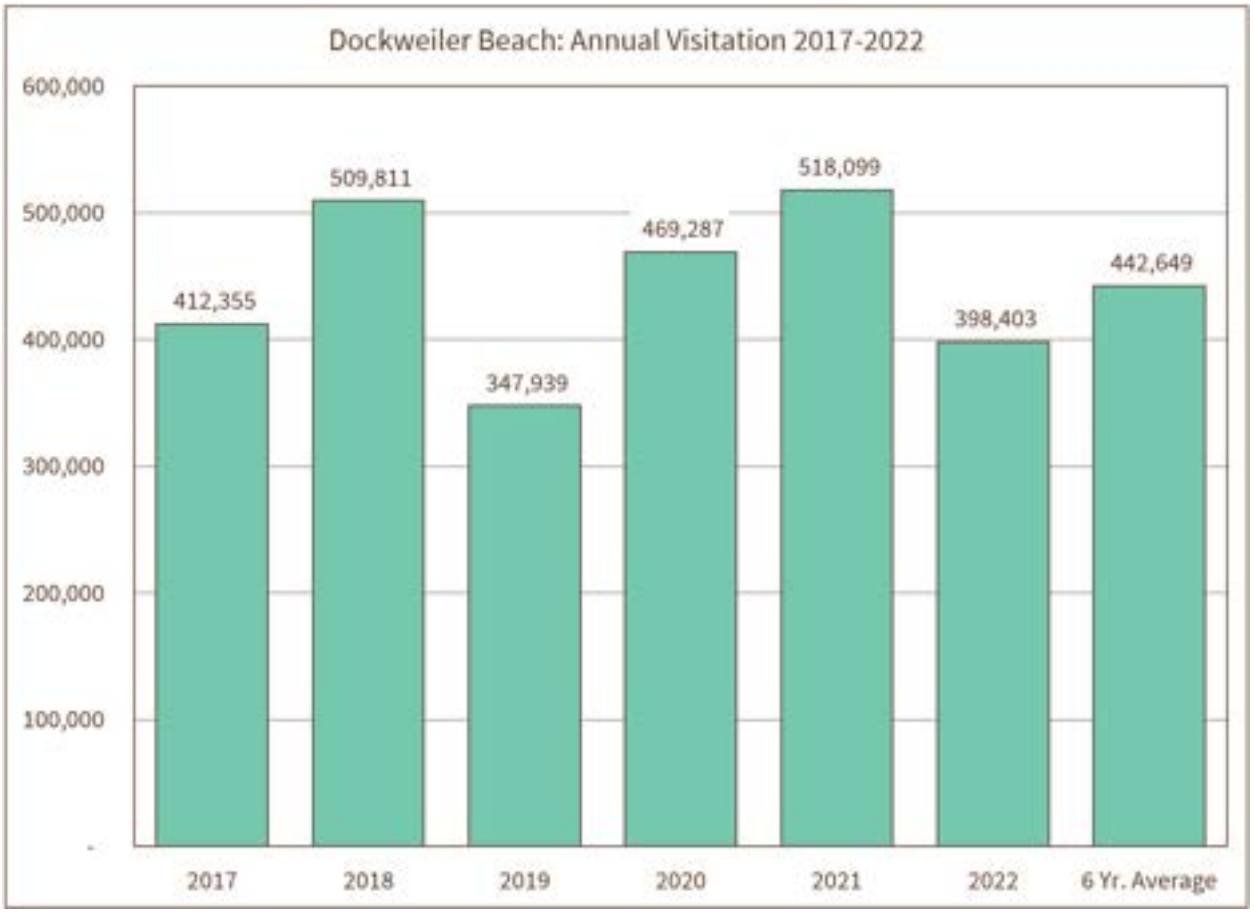
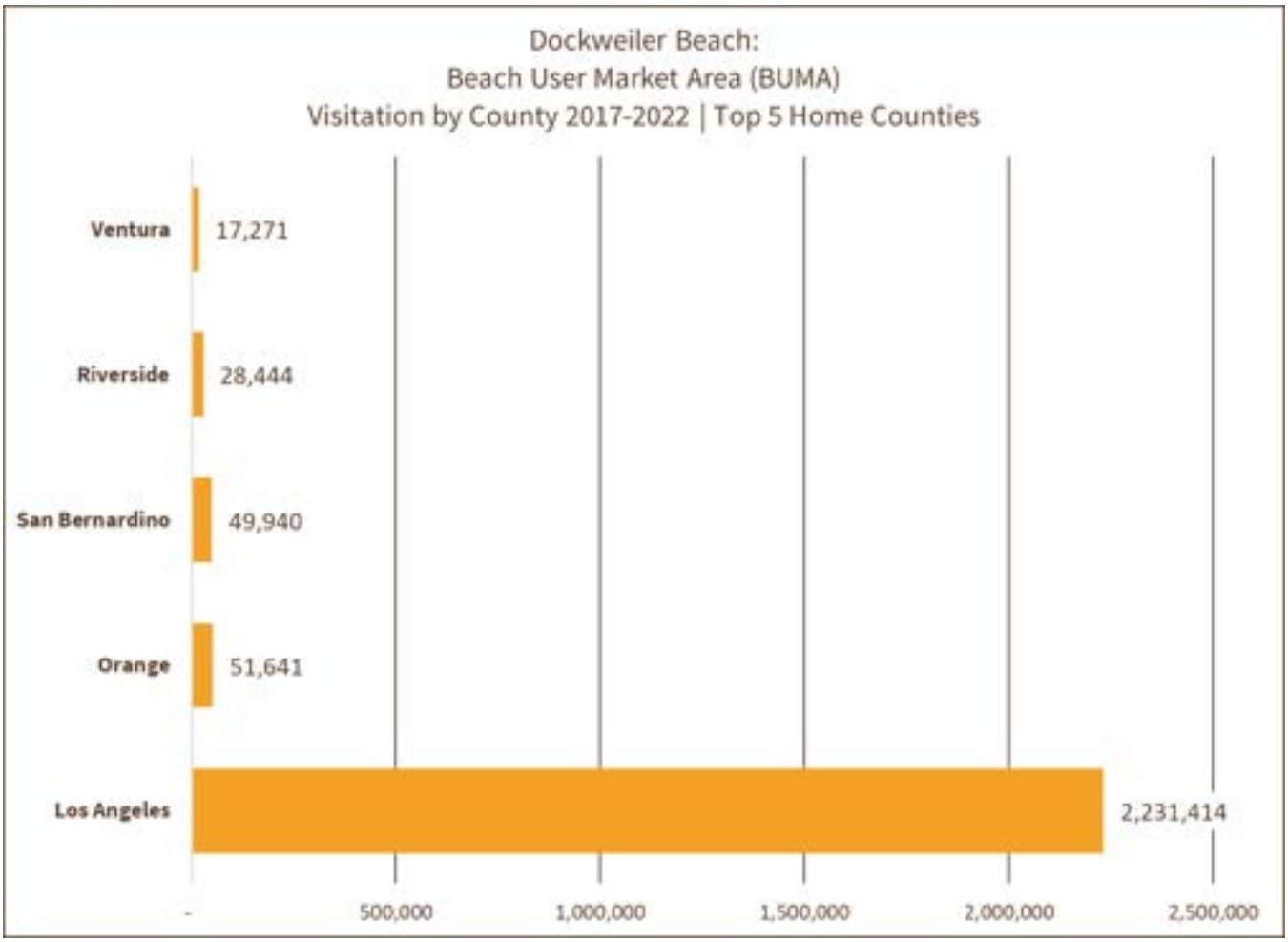
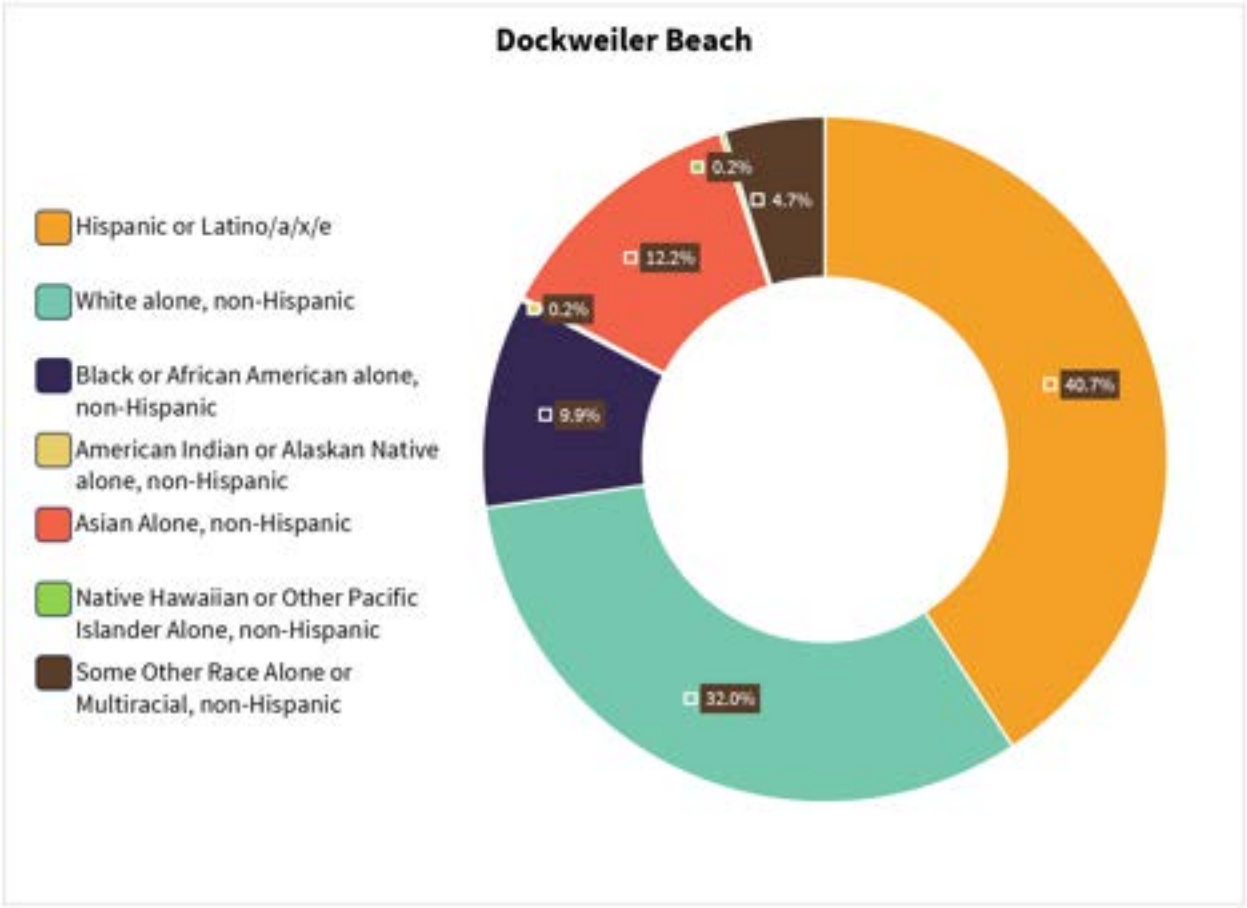


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Gladstones/Will Rogers State Beach

General Statistics (2022)

Total Visitation: 121.1k

Average Visitation per Day: 380

Average Length of Stay: 1 hour

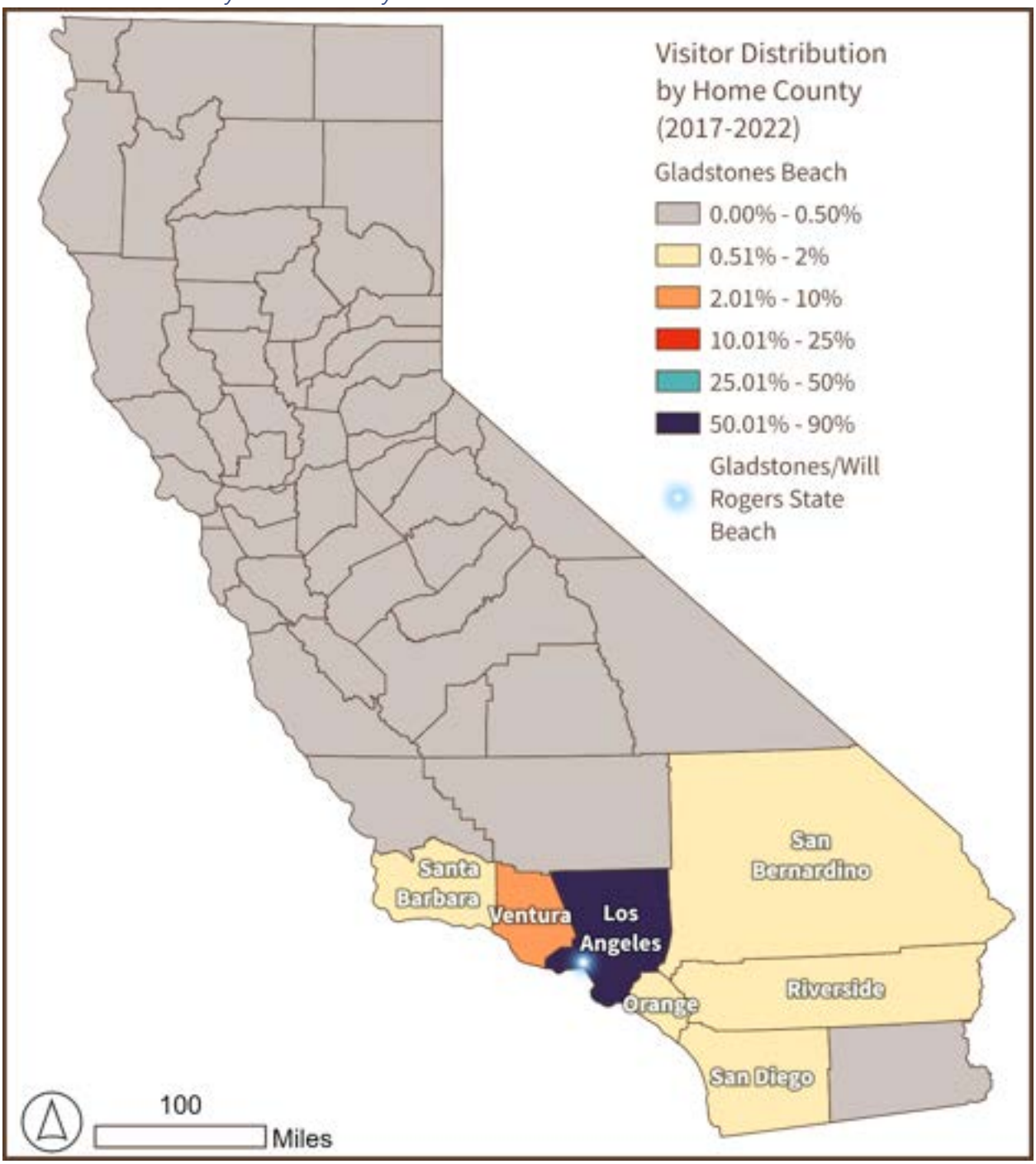
Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 25%

Busiest Day of the Week: Sunday

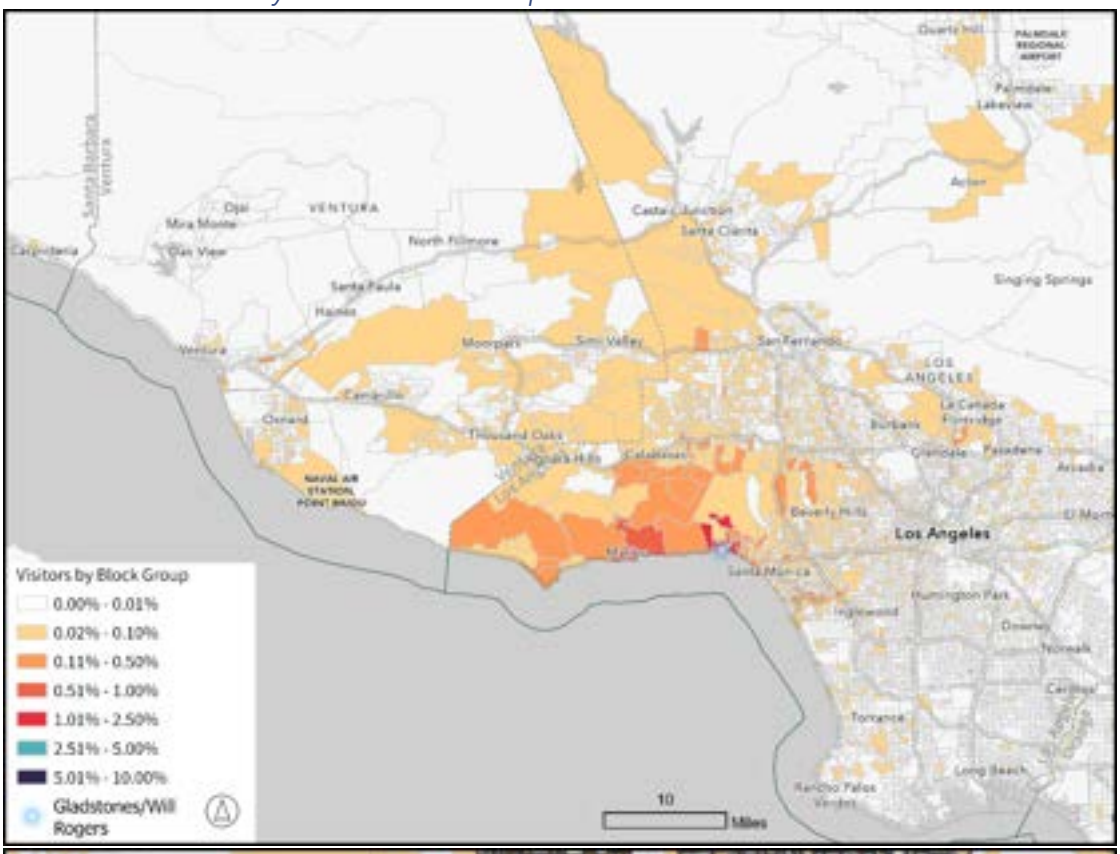
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Gladstones/Will Rogers State Beach:

Visitor Distribution by Home County



Visitor Distribution by Home Block Group



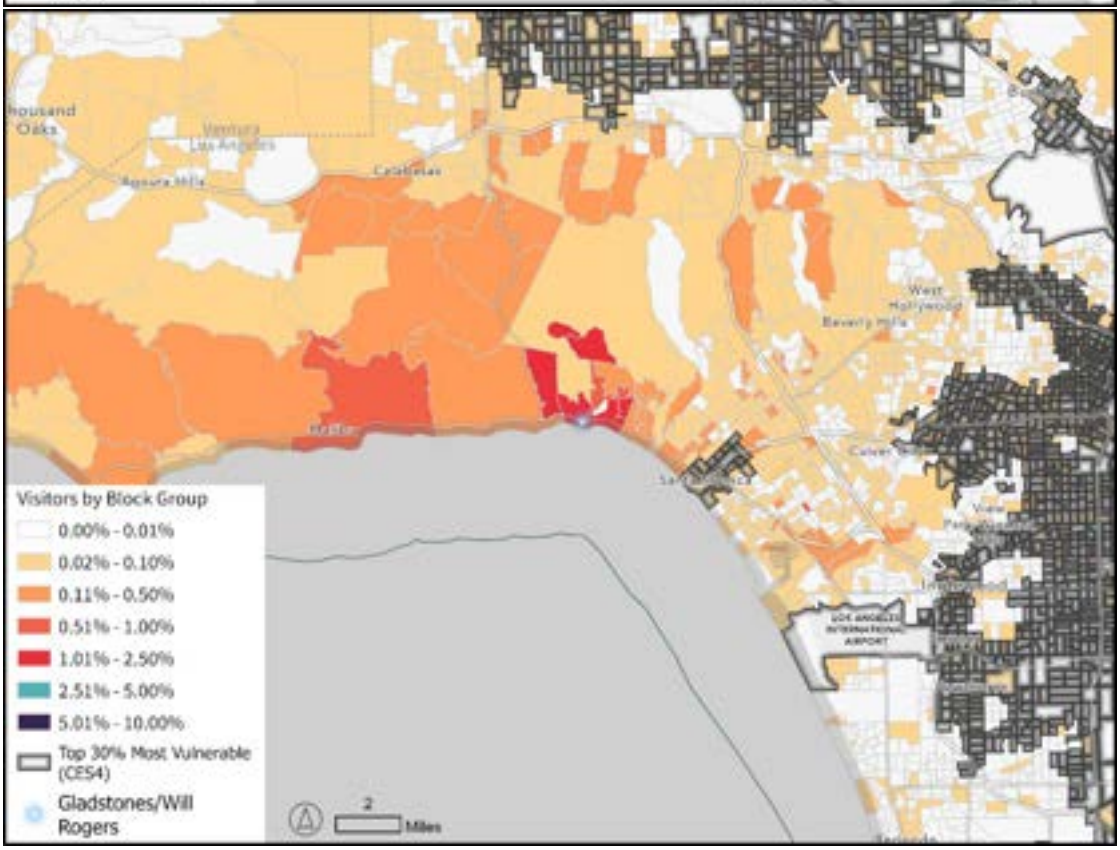


Chart of Visitation by Year

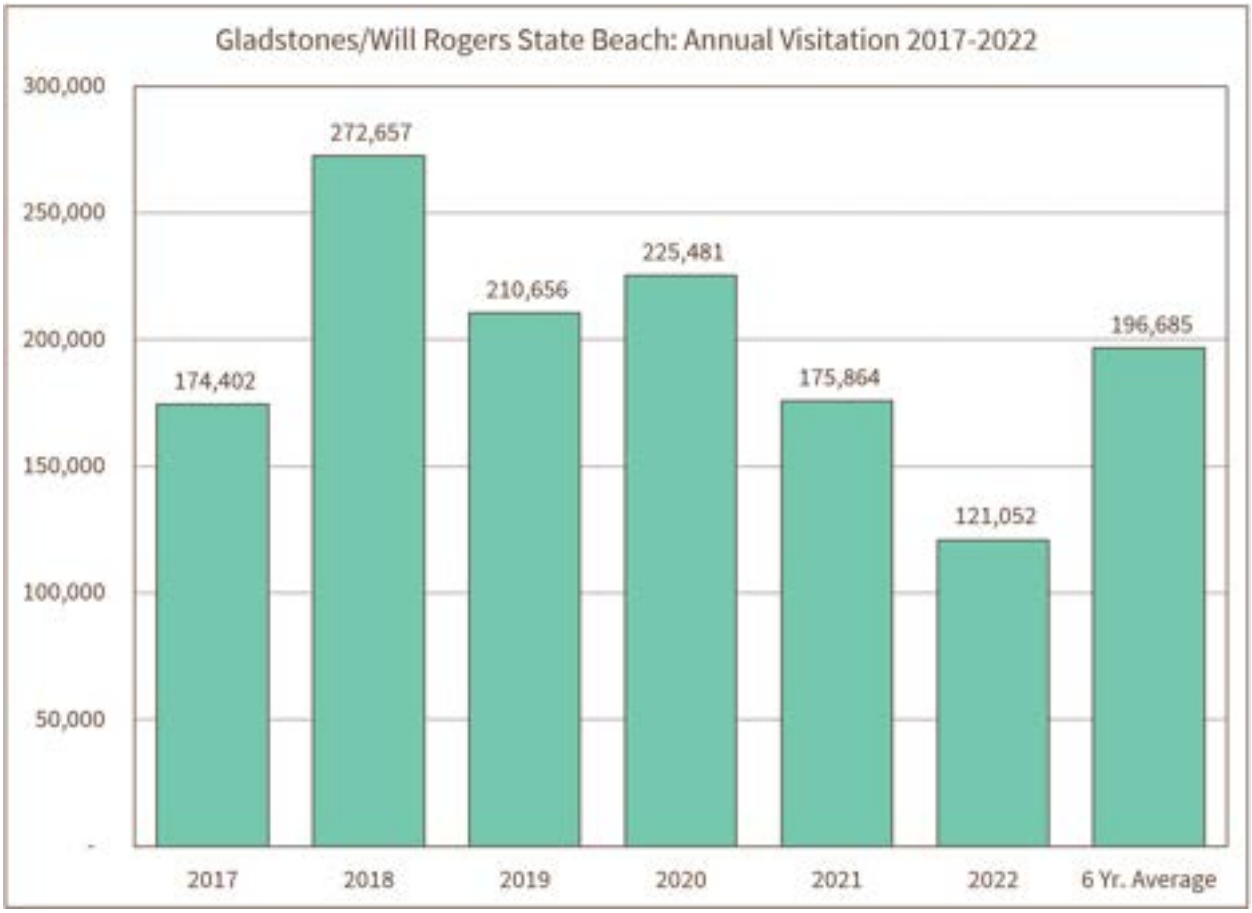
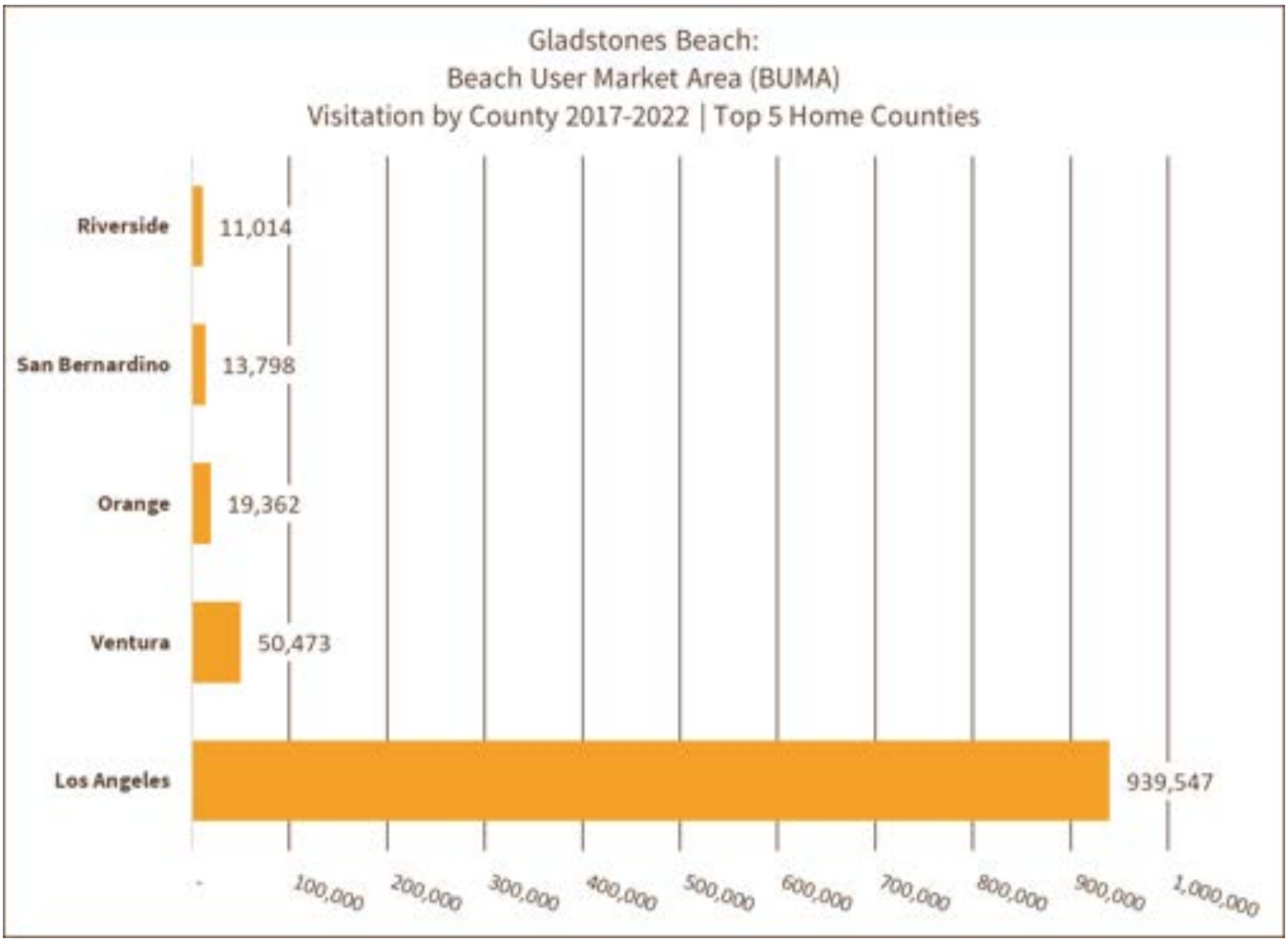
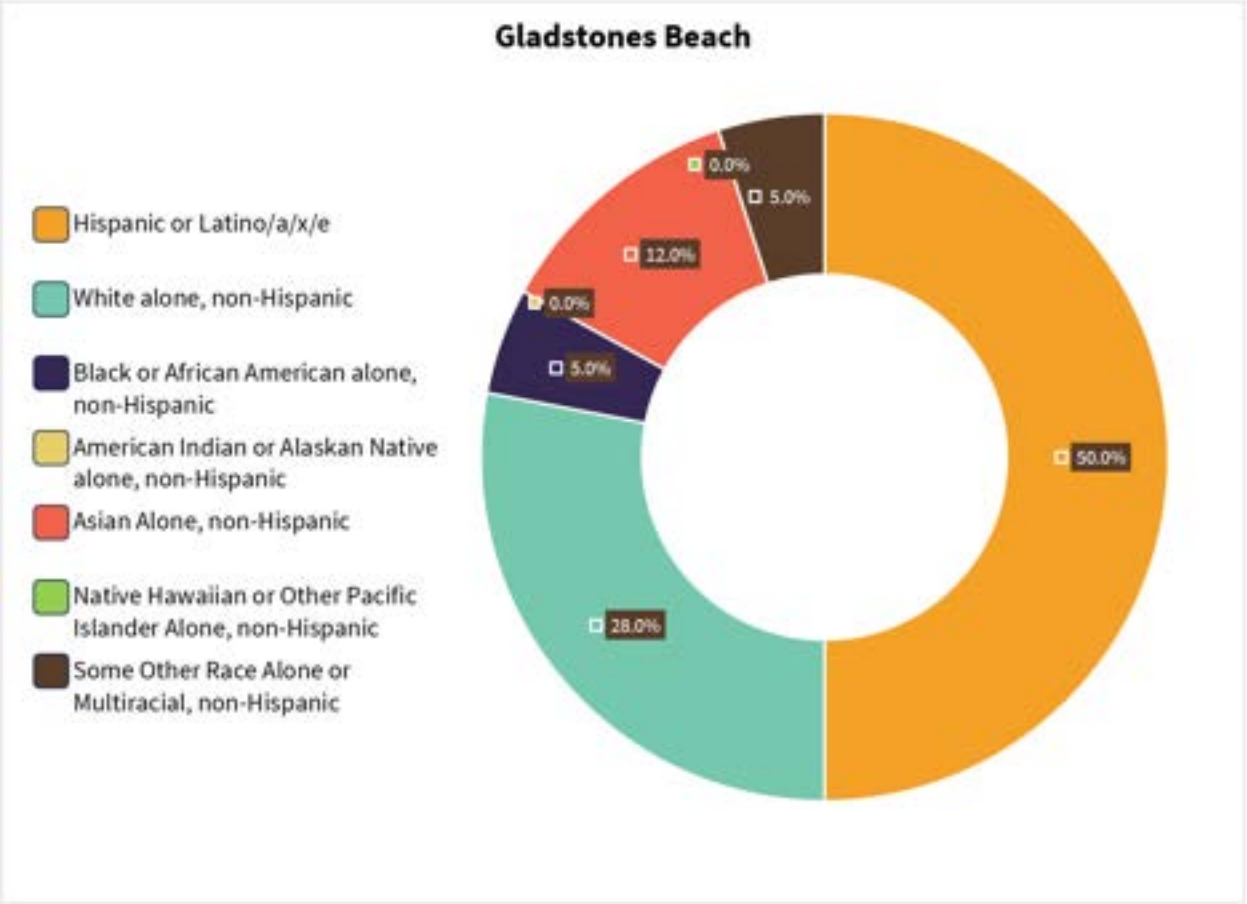


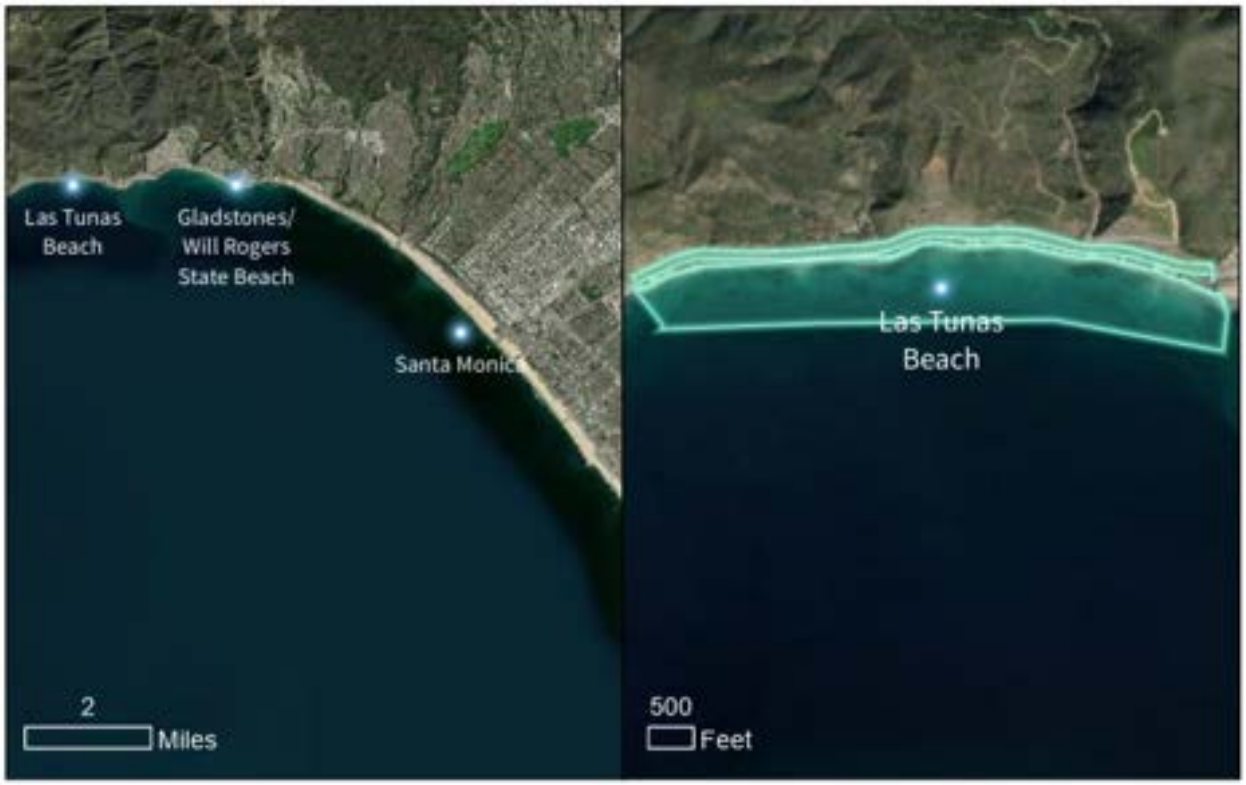
Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Las Tunas Beach



General Statistics (2022)

Total Visitation: 2.7M

Average Visitation per Day: 7.3k

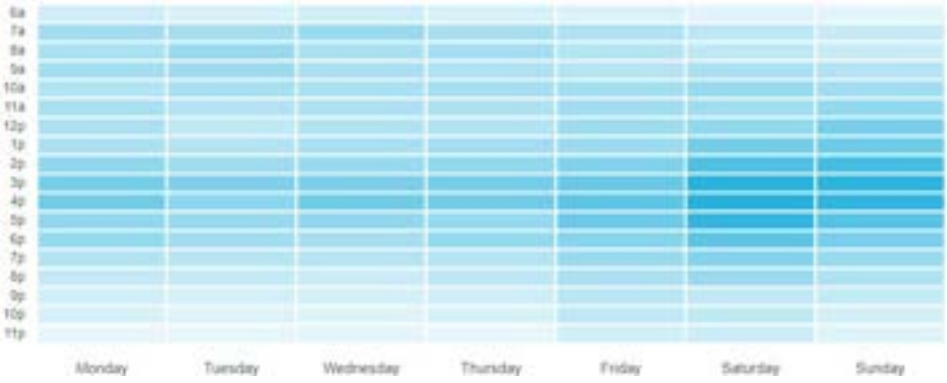
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 24%

Busiest Day of the Week: Saturday

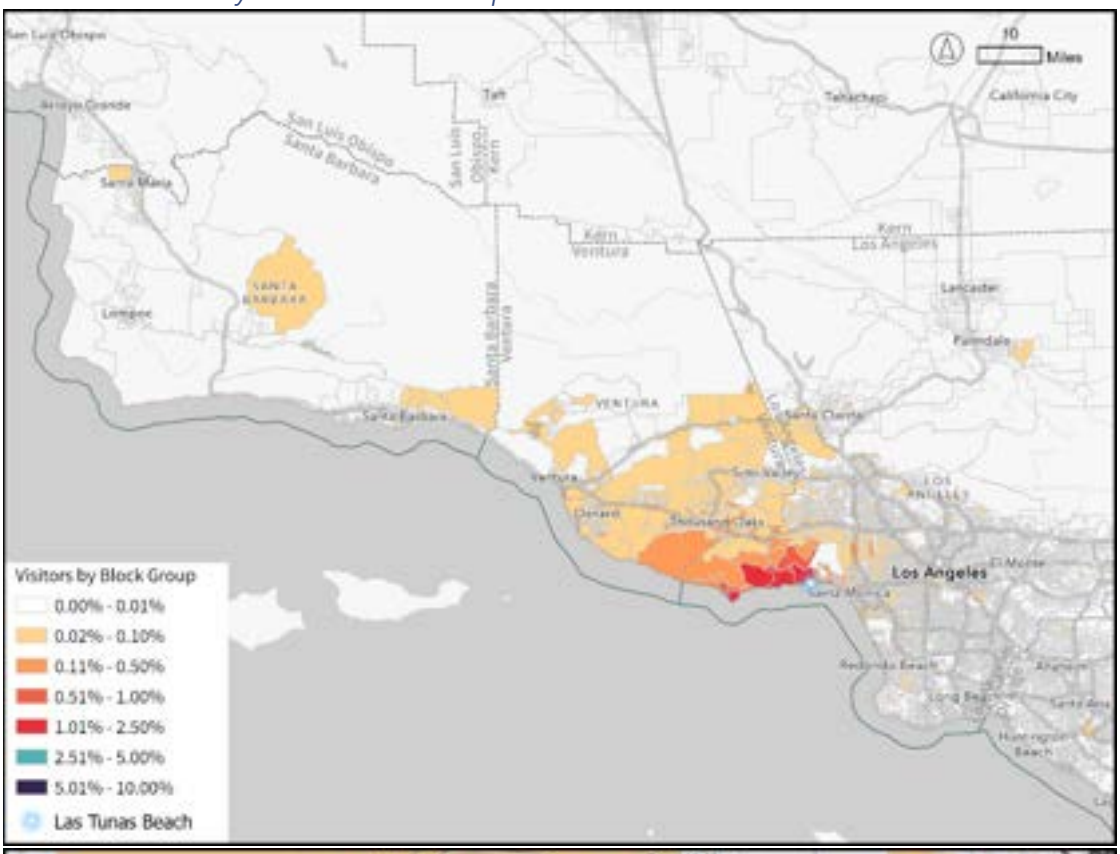
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Las Tunas Beach:



Visitor Distribution by Home County

Home Visitation by Home Block Group



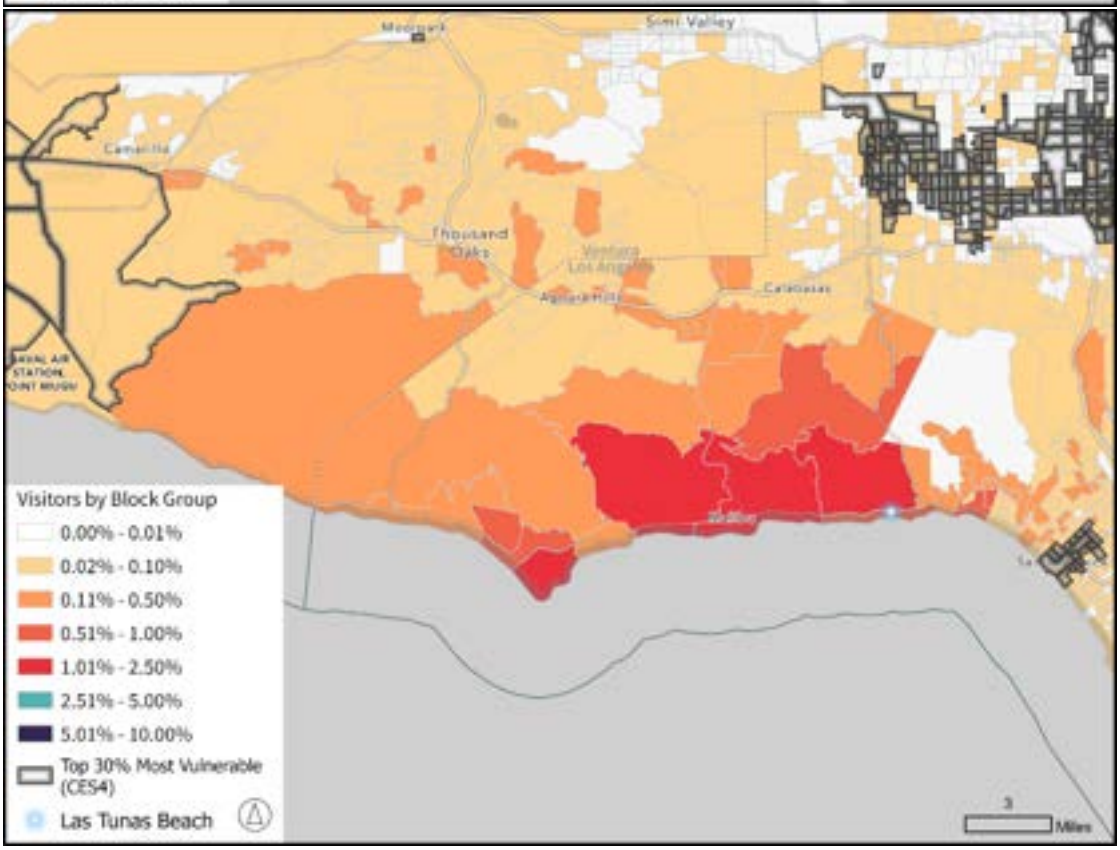


Chart of Visitation by Year

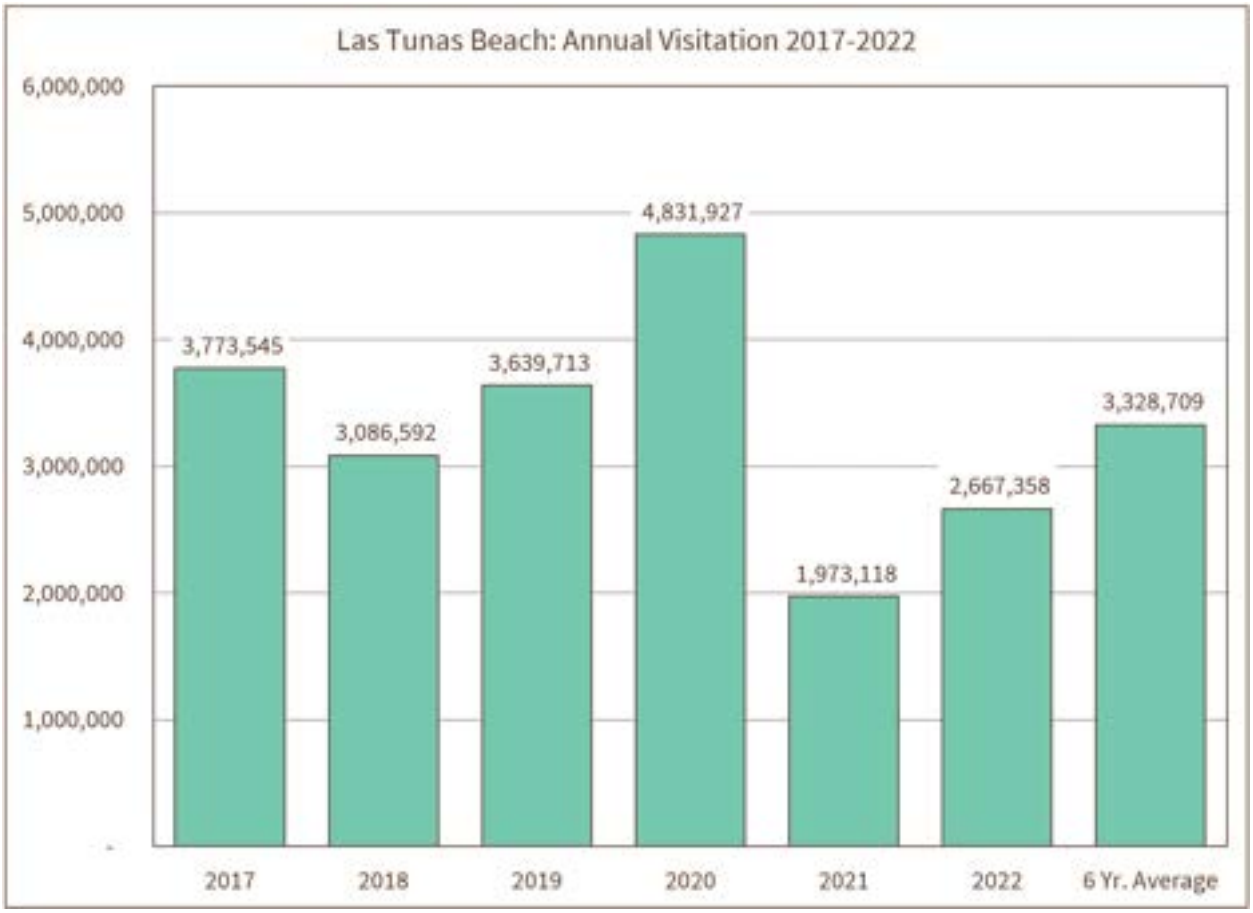
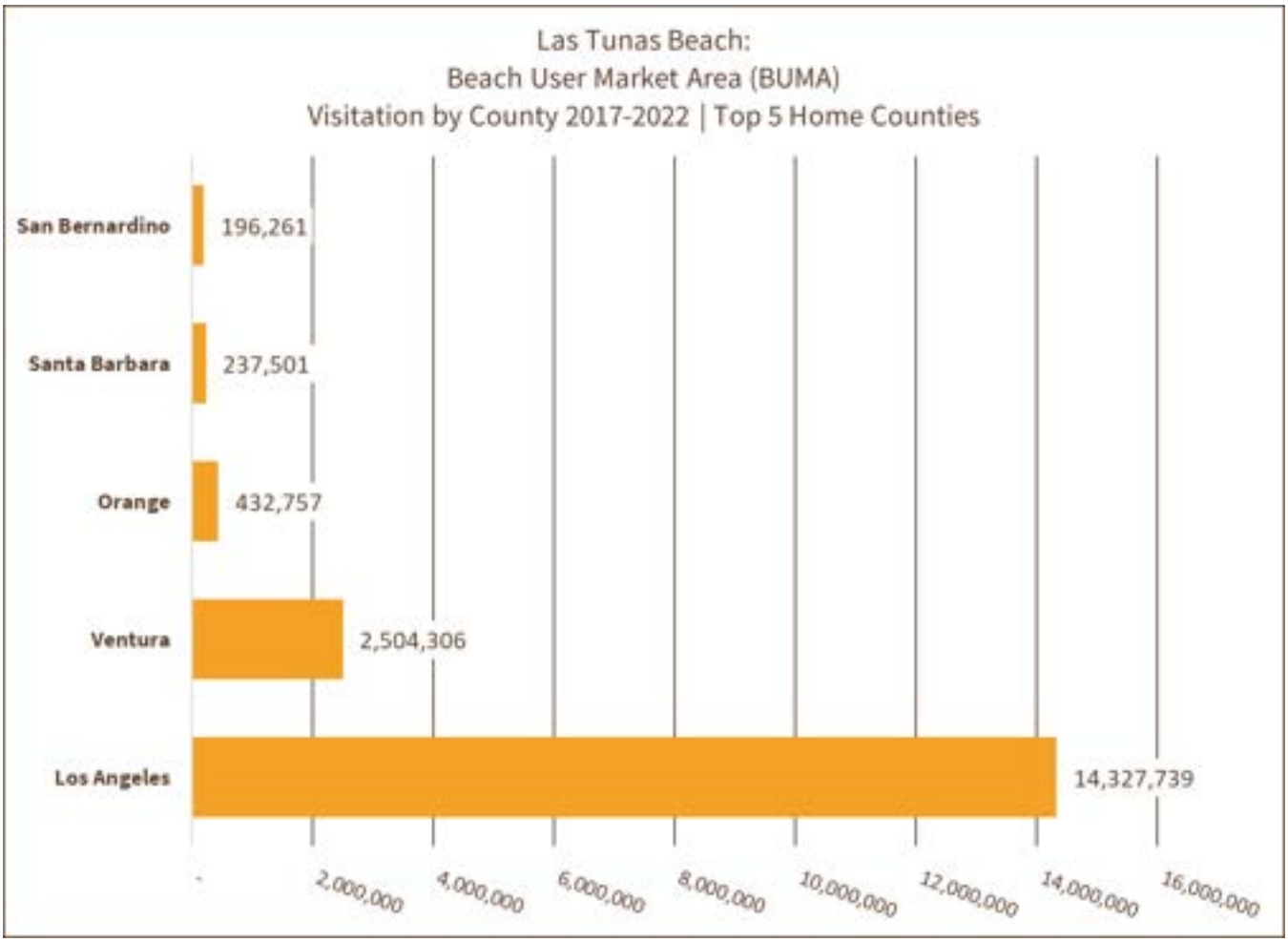
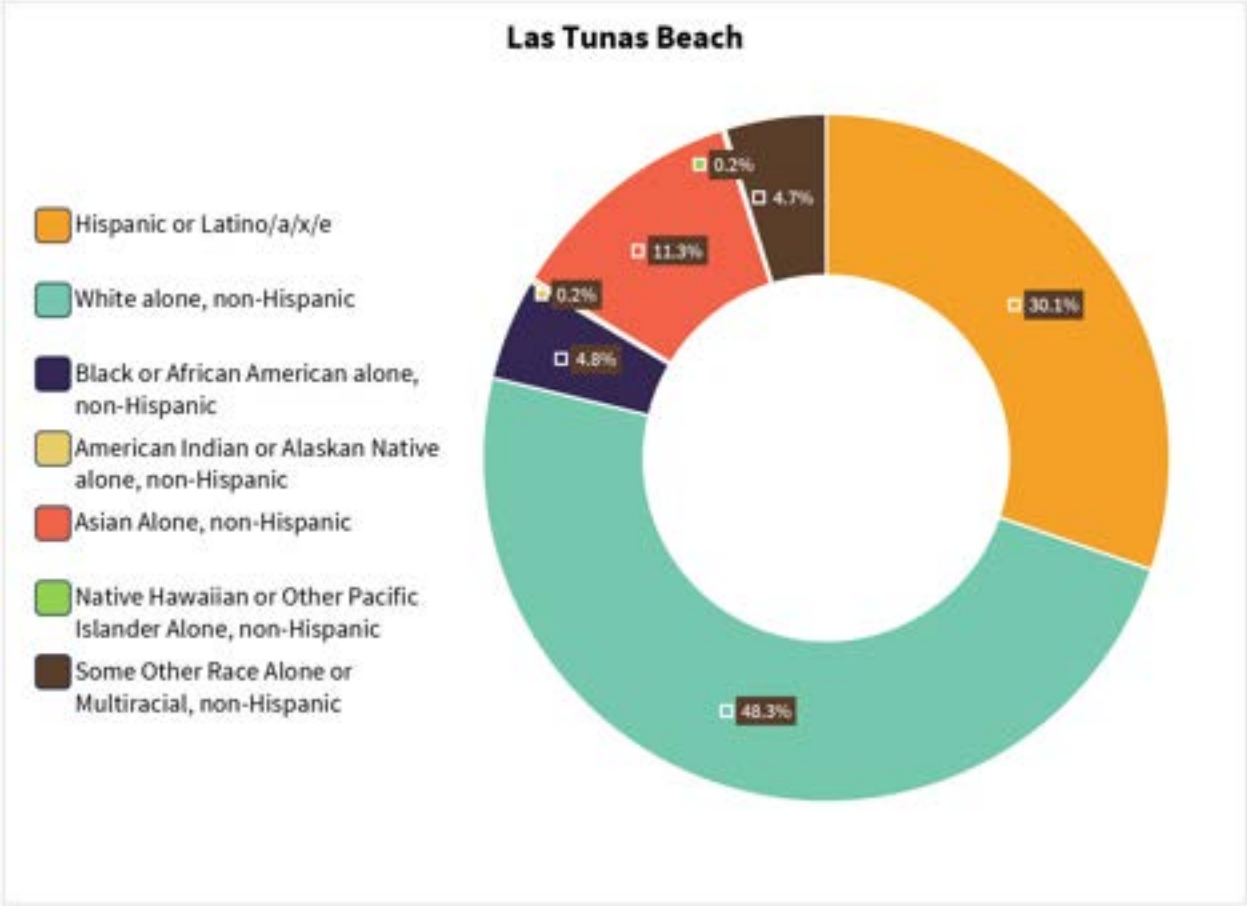


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Point Dume/Westward Beach

General Statistics (2022)

Total Visitation: 218.4k

Average Visitation per Day: 620

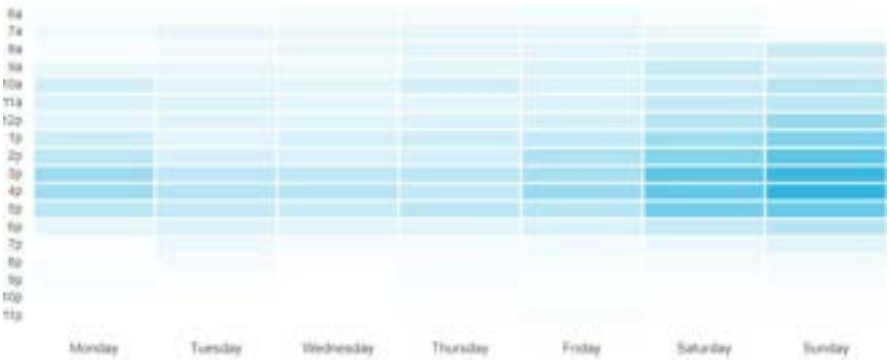
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 22%

Busiest Day of the Week: Sunday

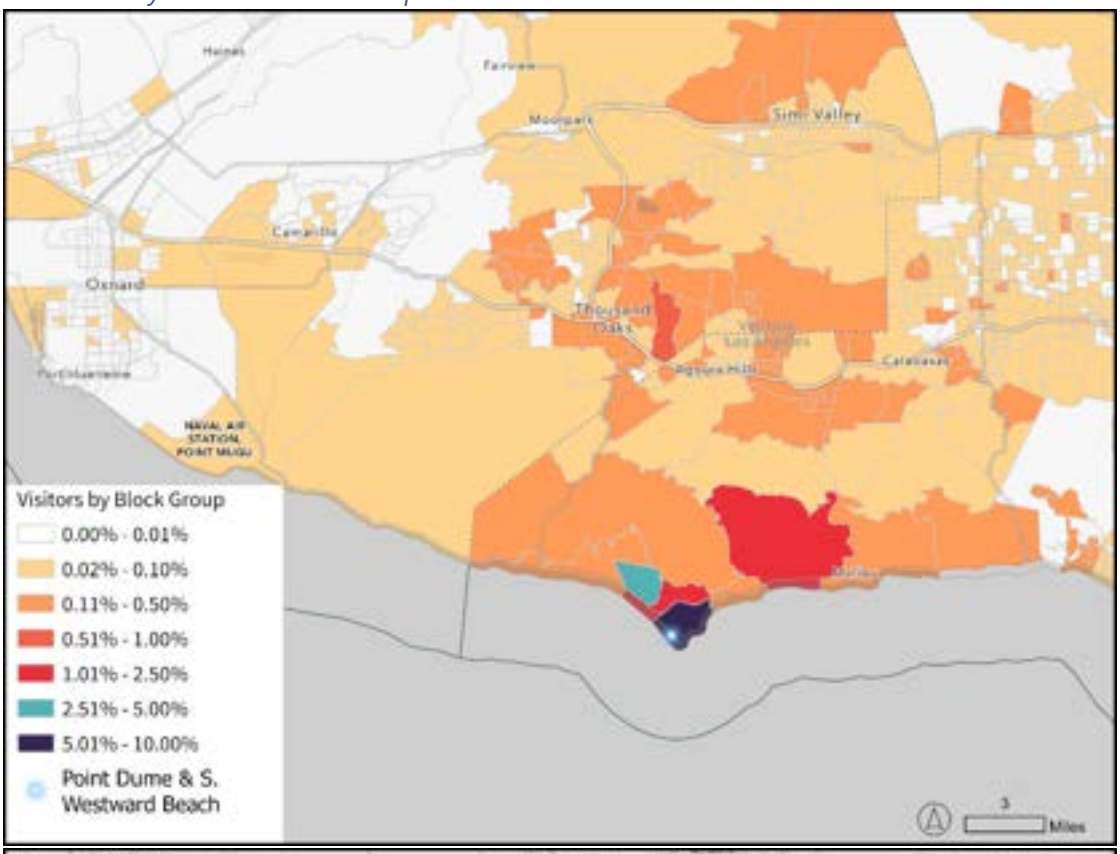
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Point Dume/Westward Beach:



Visitor Distribution by Home County

Visitation by Home Block Group



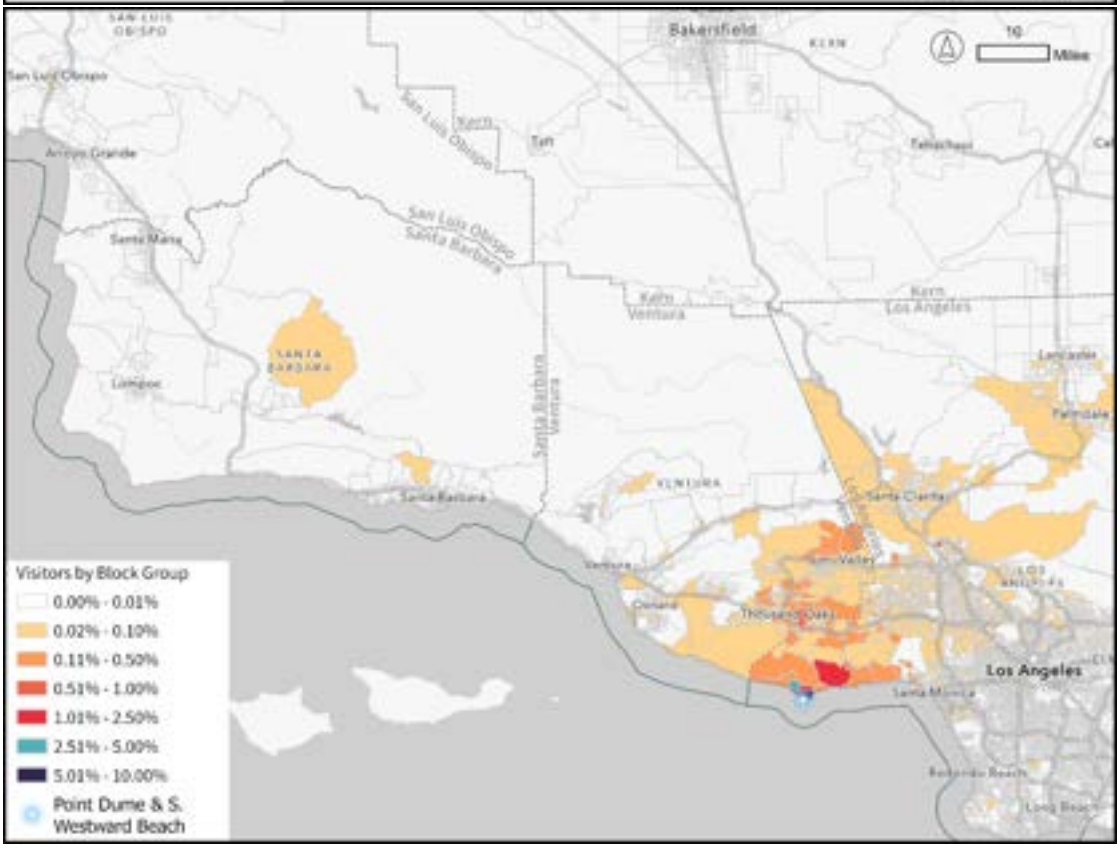


Chart of Visitation by Year

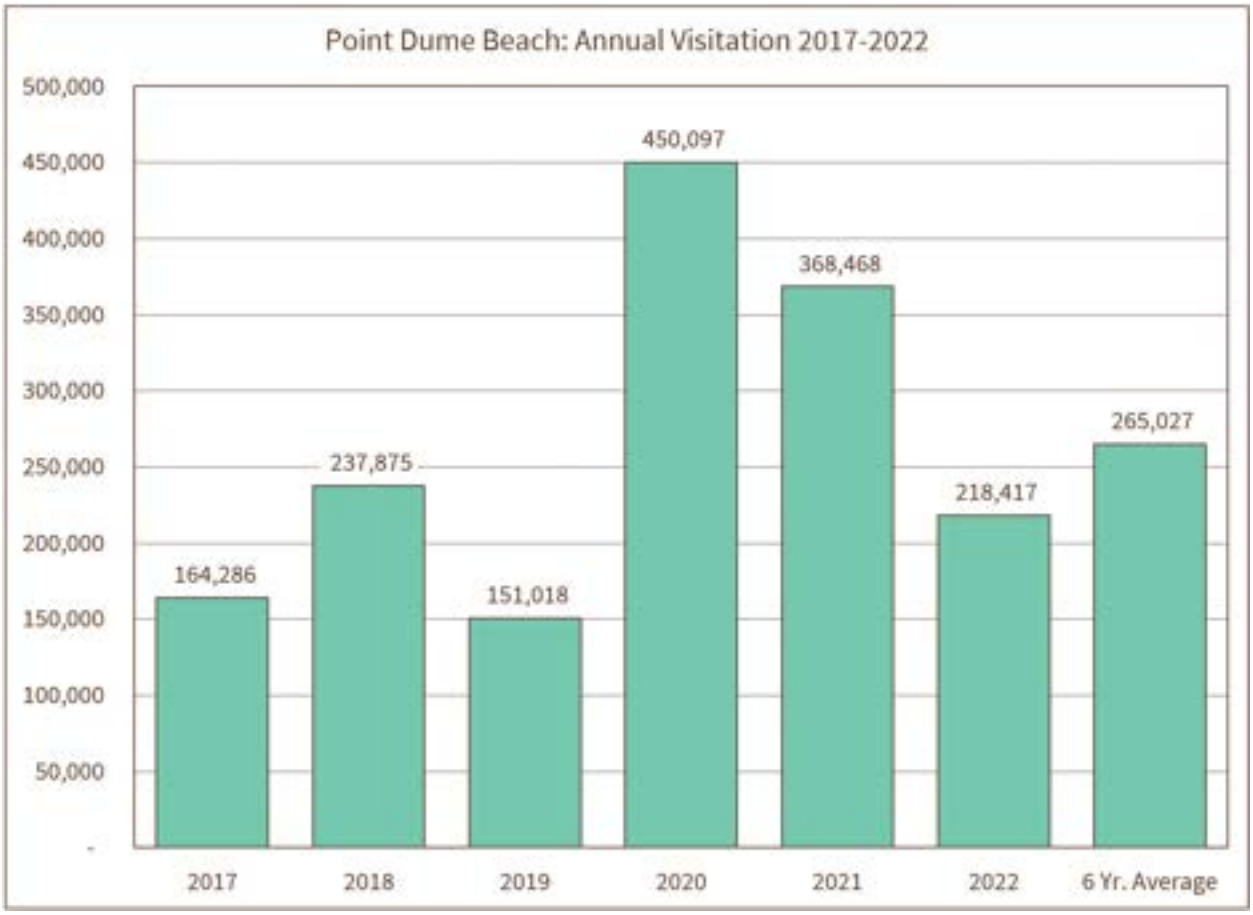
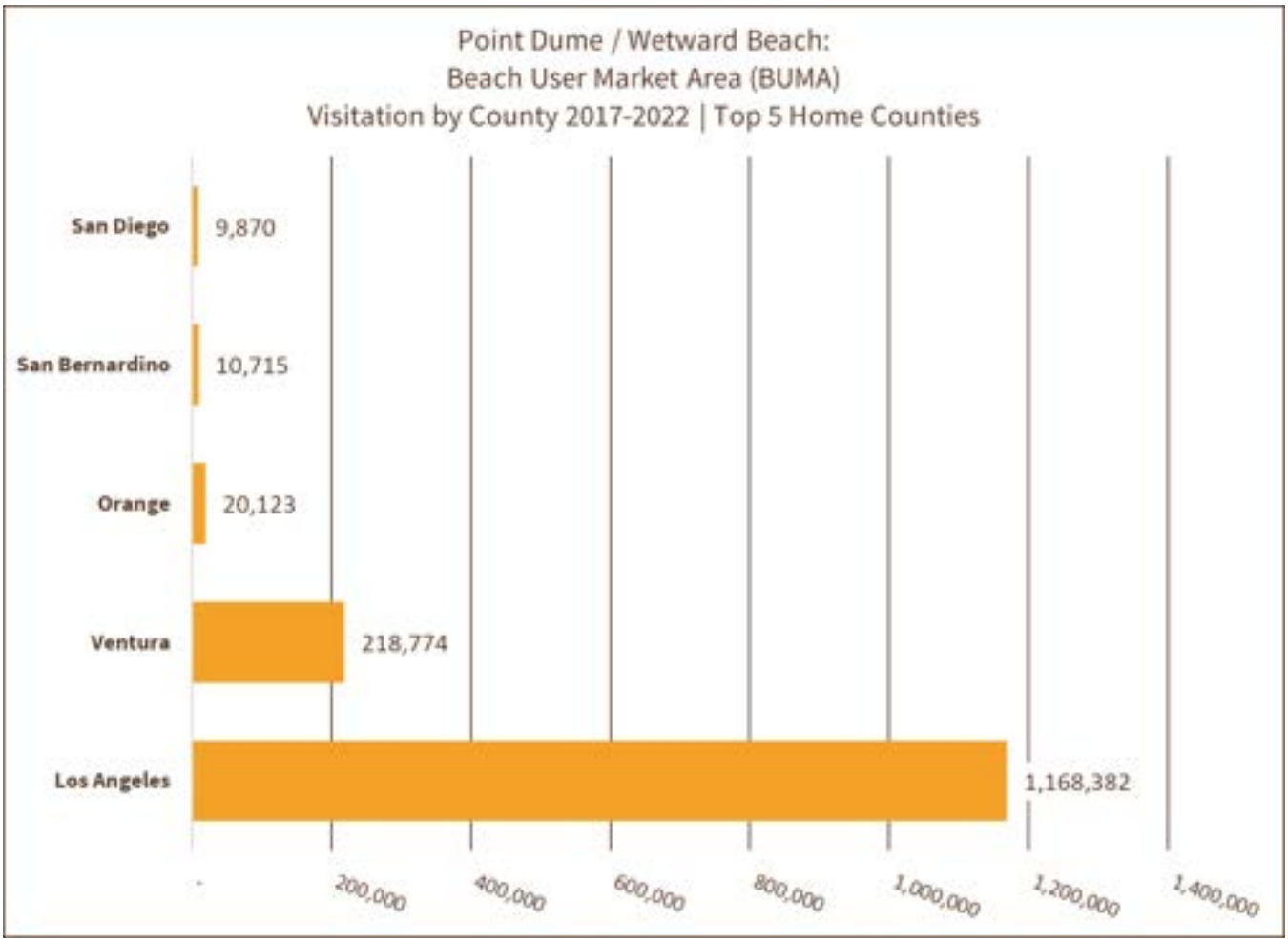
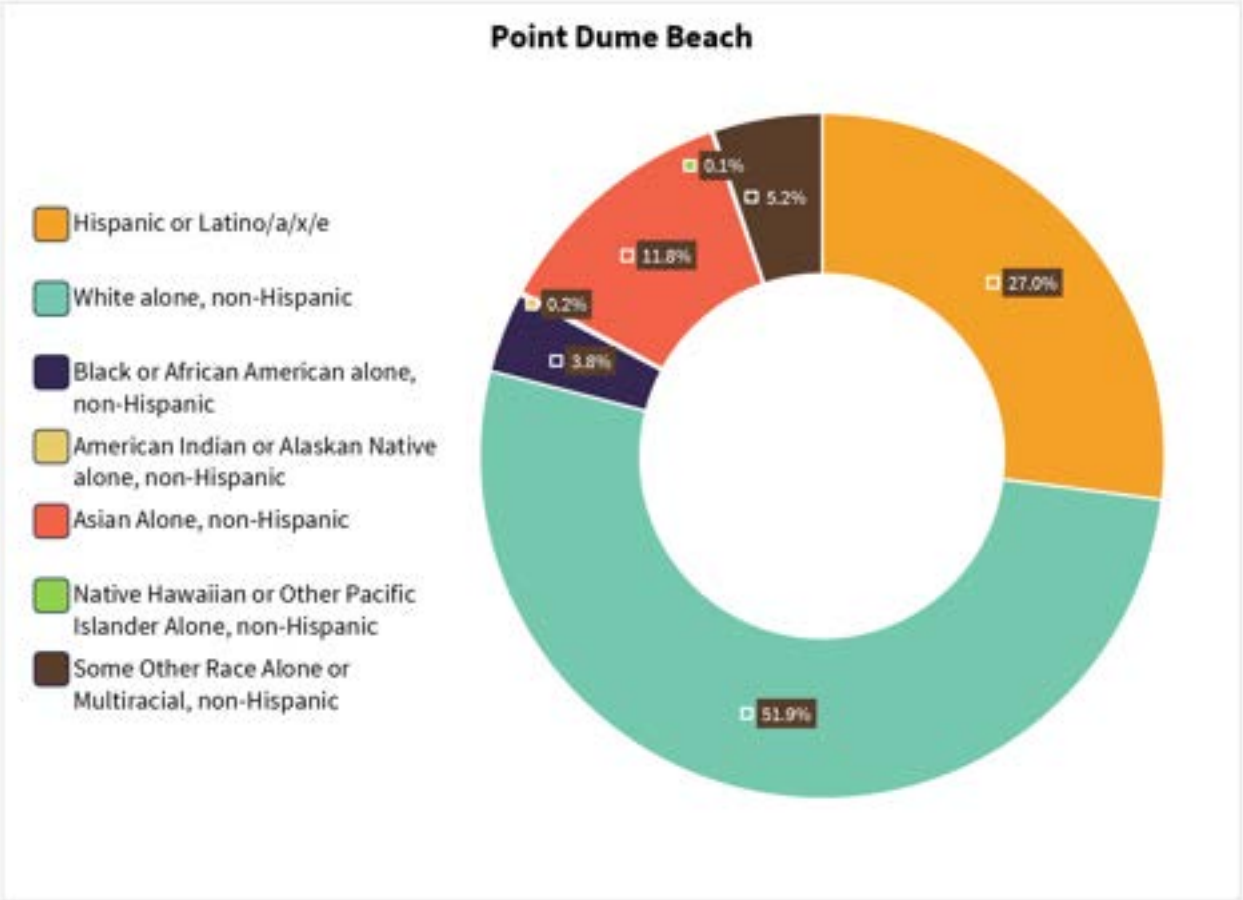


Chart of Beach User Marker Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Westward Beach North

General Statistics (2022)

Total Visitation: 382.3k

Average Visitation per Day: 1.1k

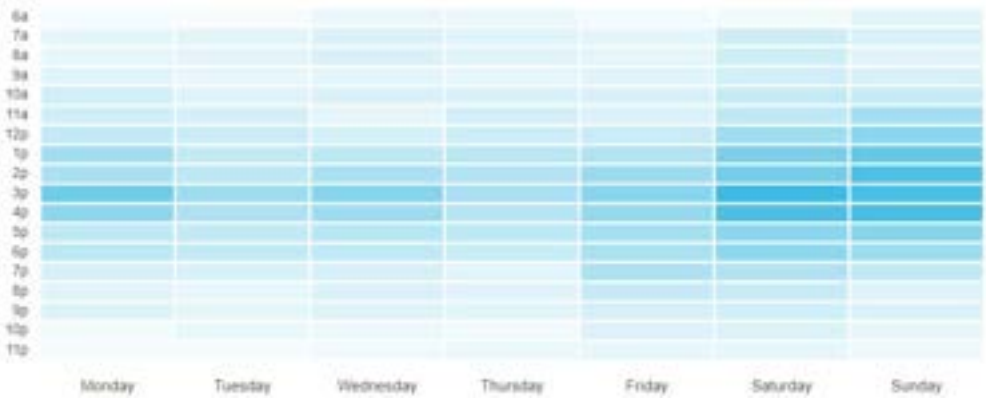
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 20%

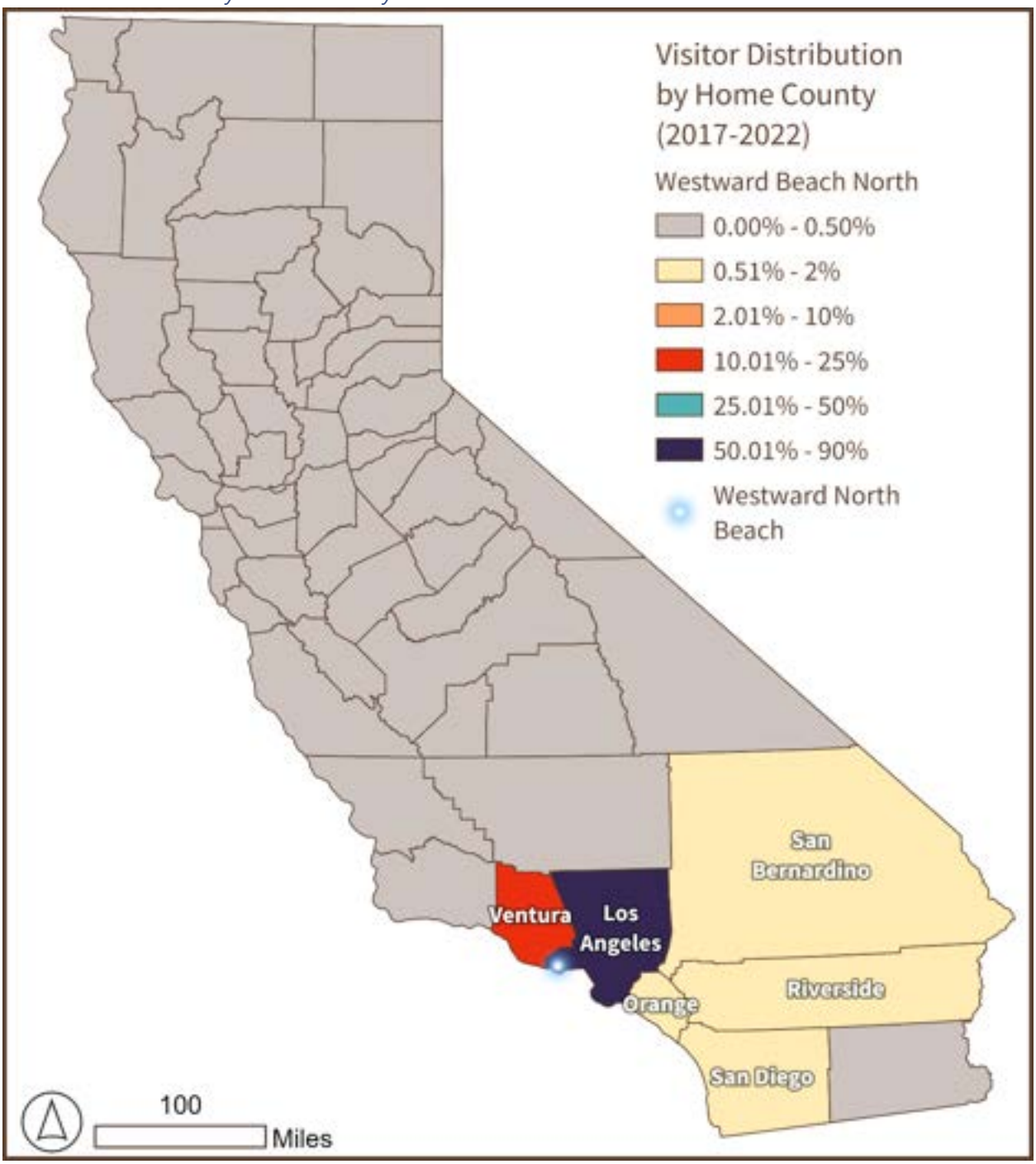
Busiest Day of the Week: Saturday

Busiest Hour: 3:00 pm

Heat Map of Hourly Visitation Westward Beach North:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group

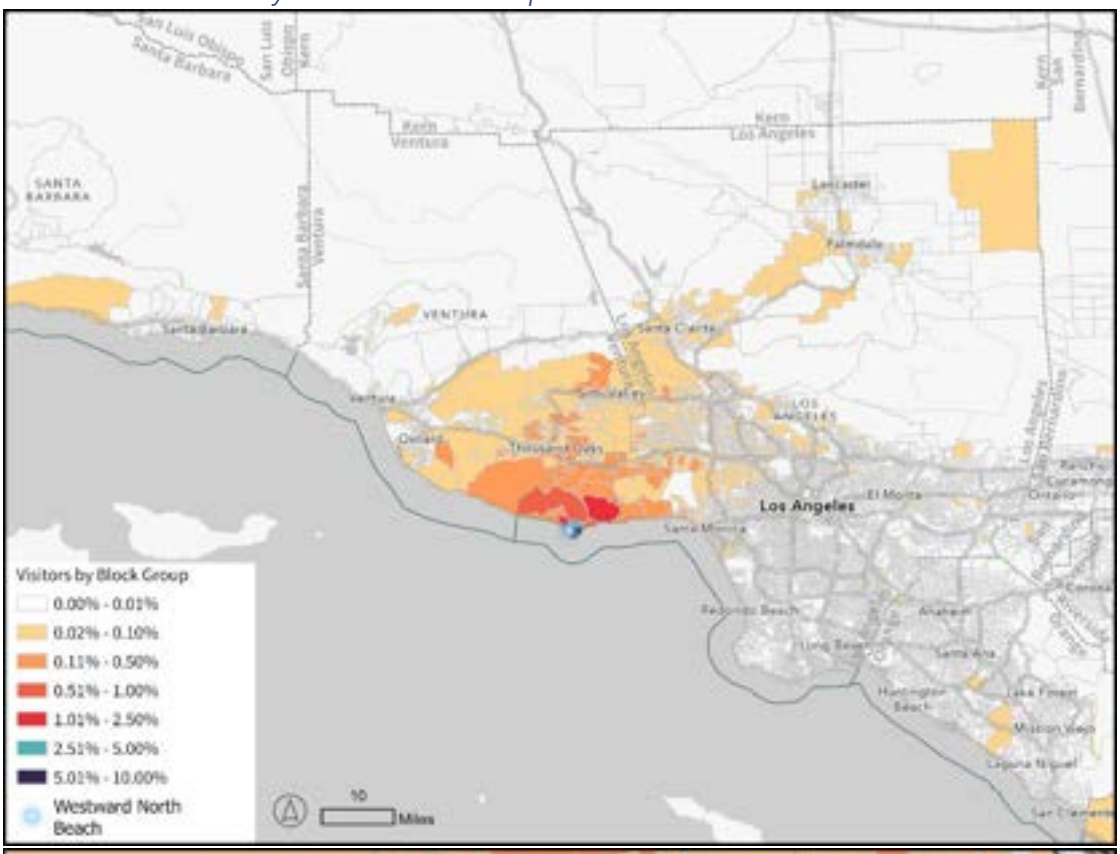


Chart of Visitation by Year

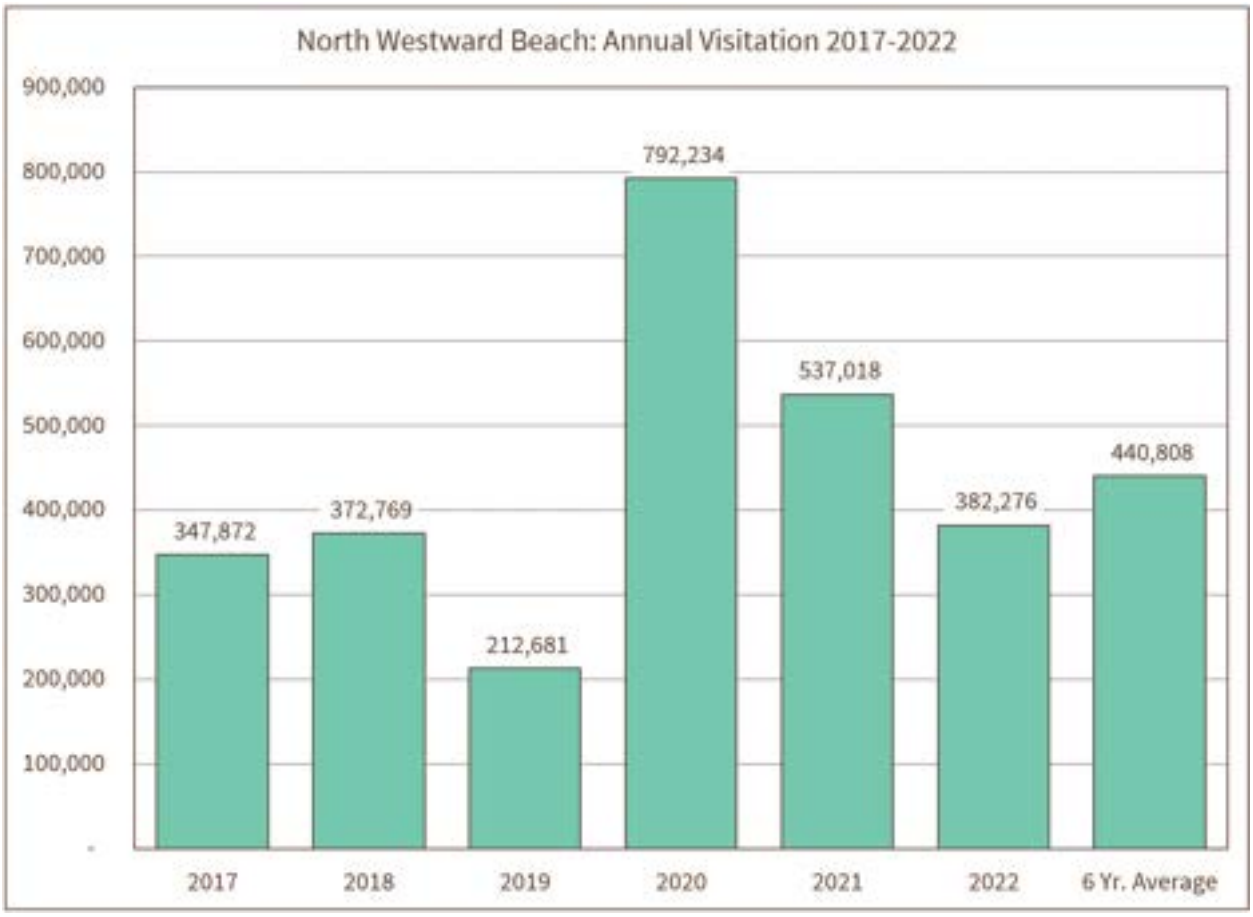
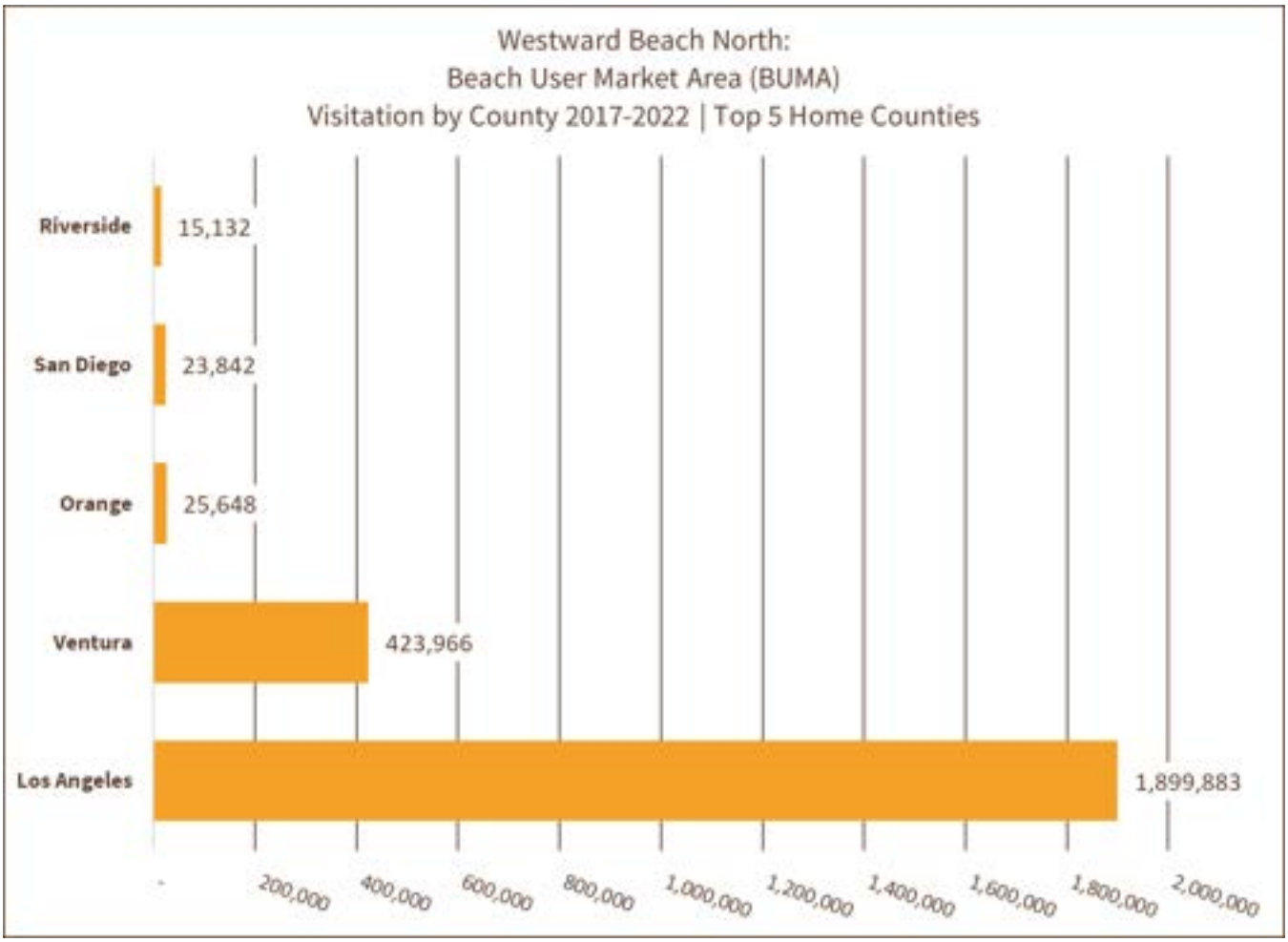
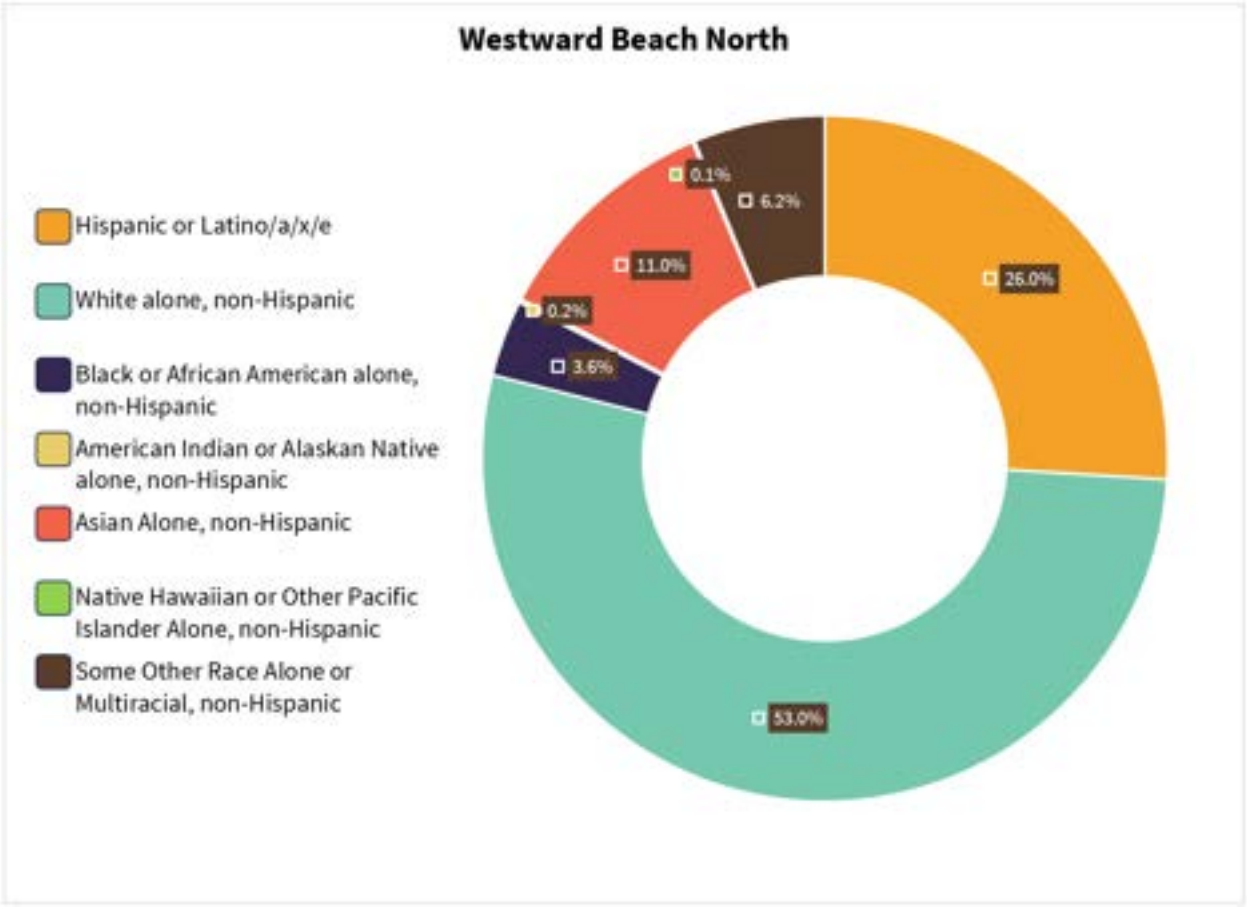


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Zuma Beach

General Statistics (2022)

Total Visitation: 959.1k

Average Visitation per Day: 2.6k

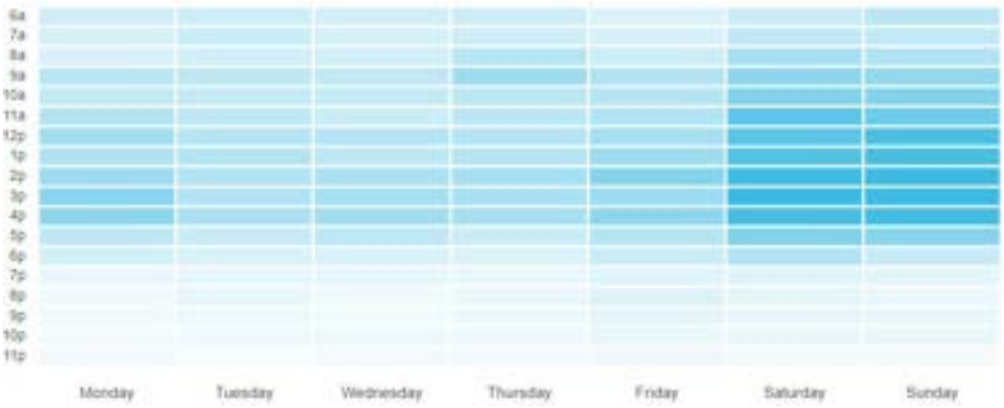
Average Length of Stay: 1.5 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 20%

Busiest Day of the Week: Saturday

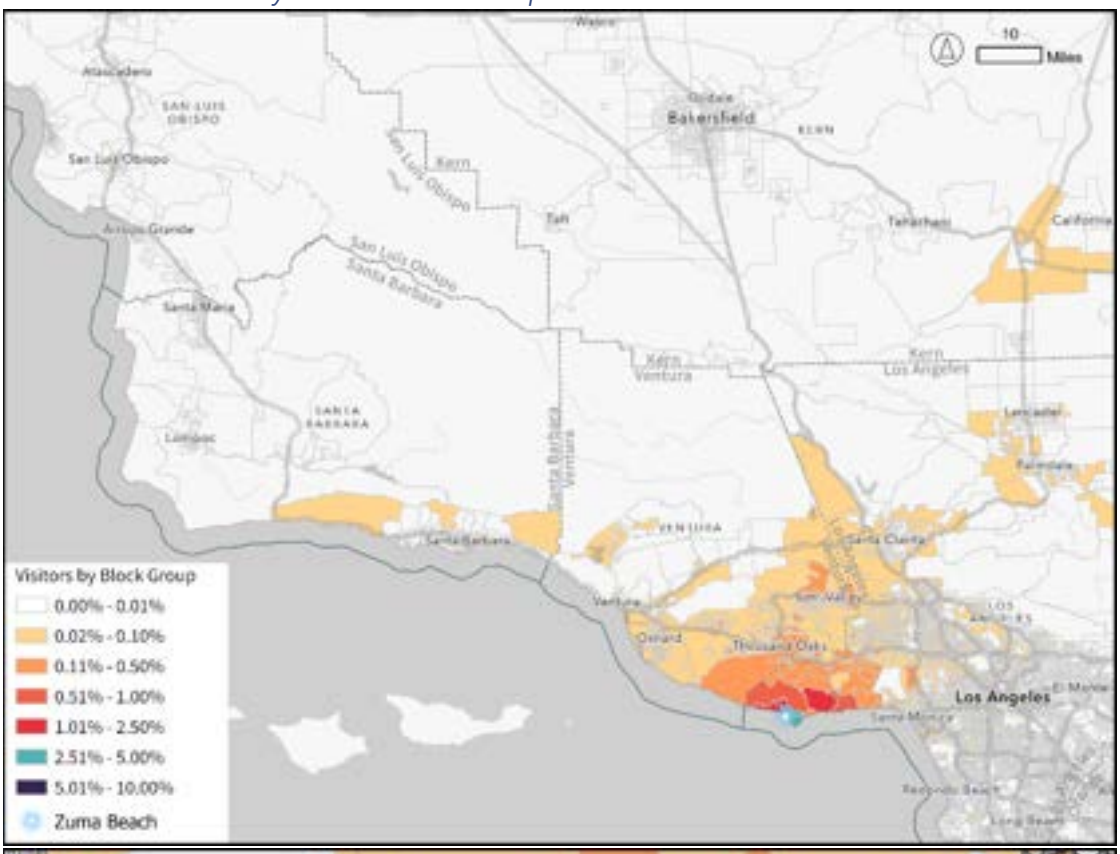
Busiest Hour: 4:00 pm

Heat Map of Hourly Visitation Zuma Beach:



Visitor Distribution by Home County

Visitor Distribution by Home Block Group



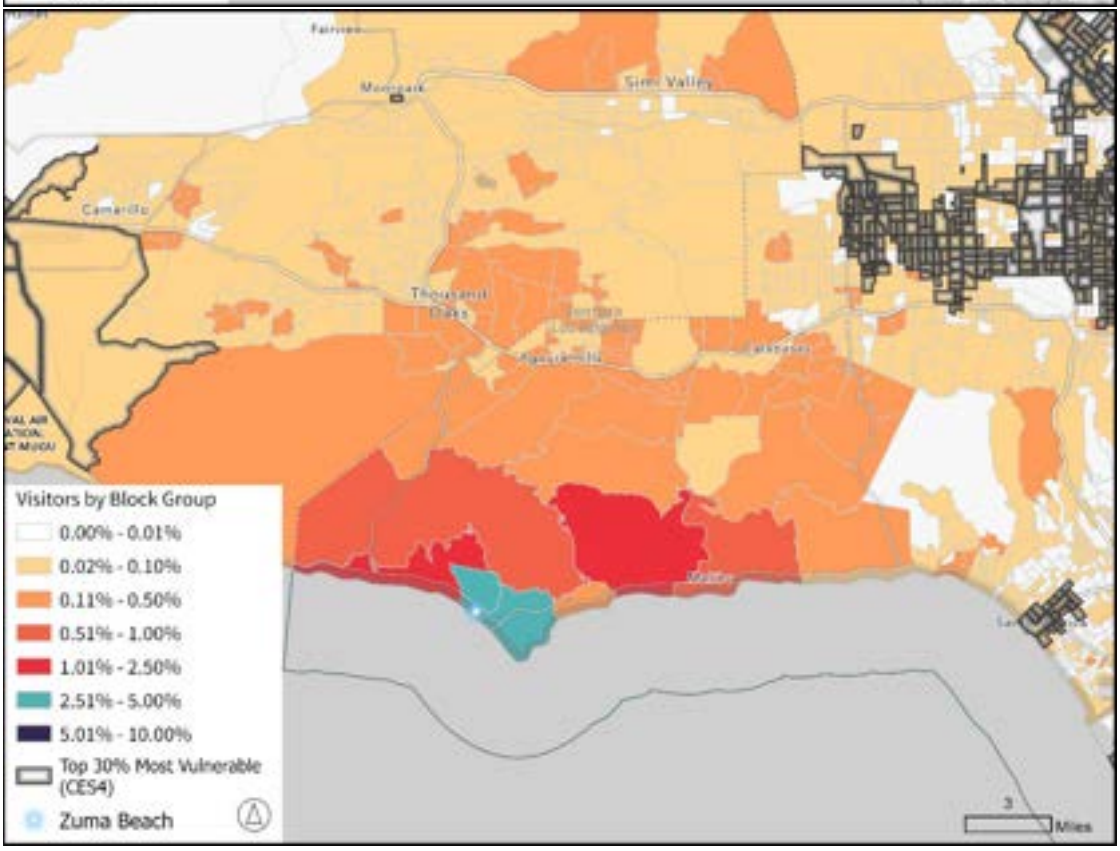


Chart of Visitation by Year

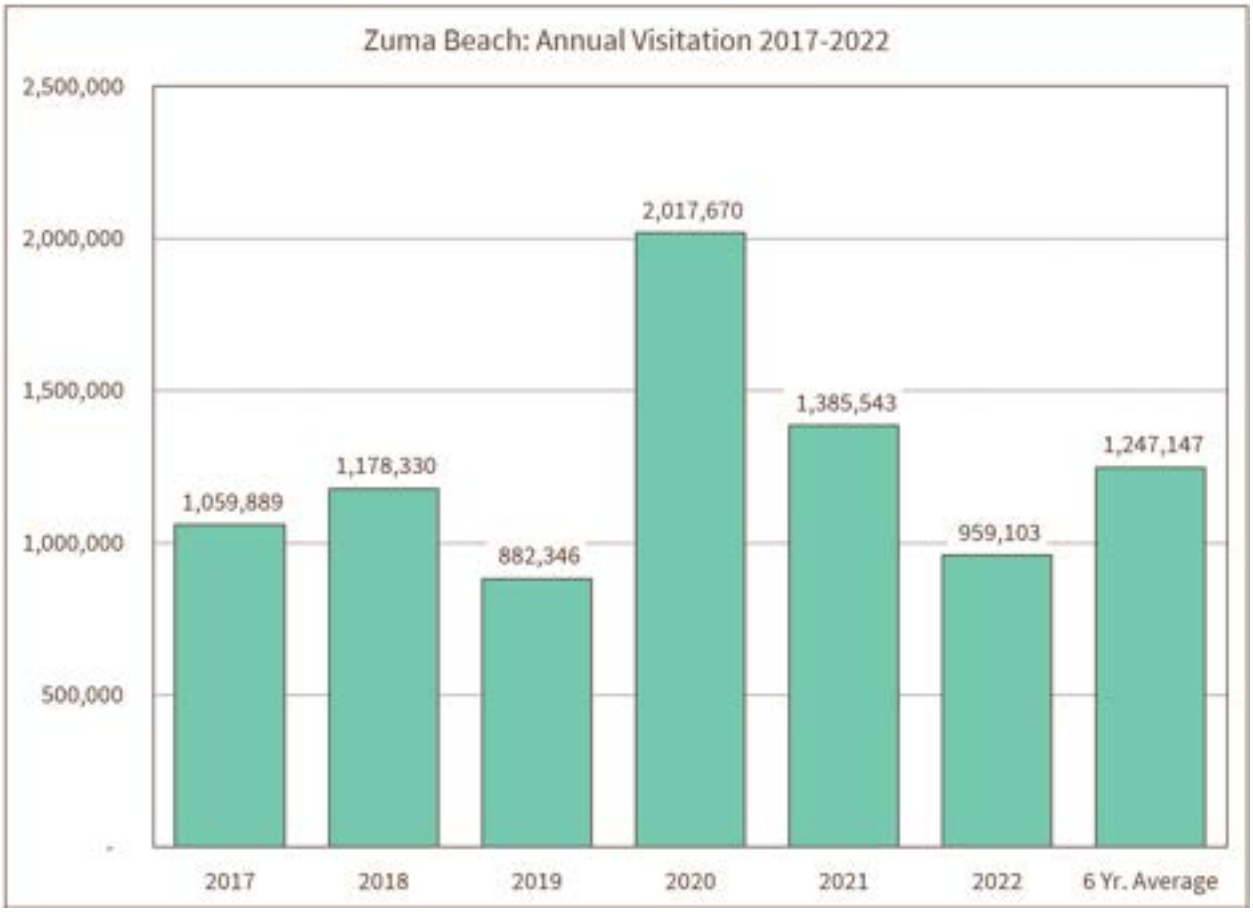
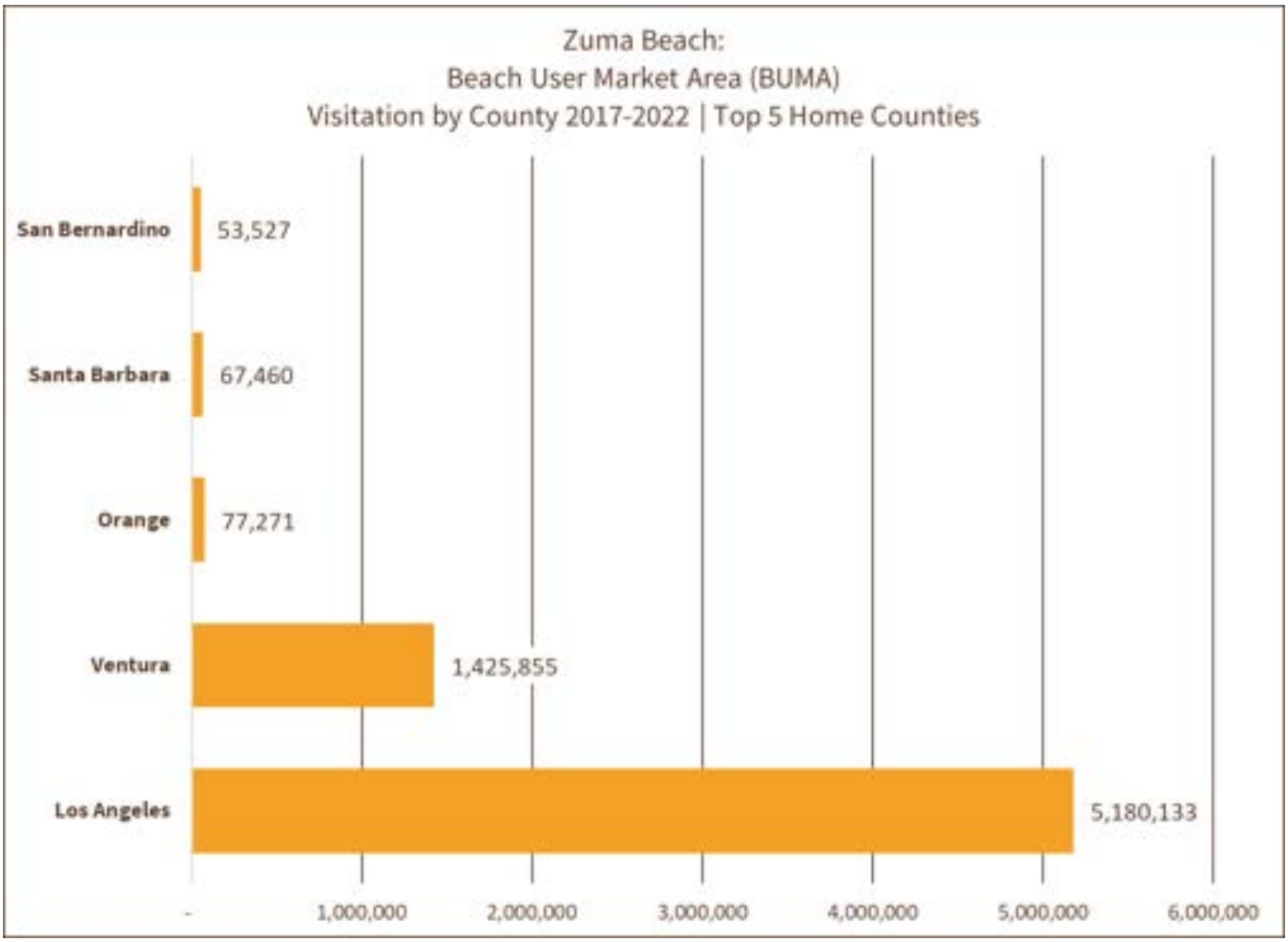
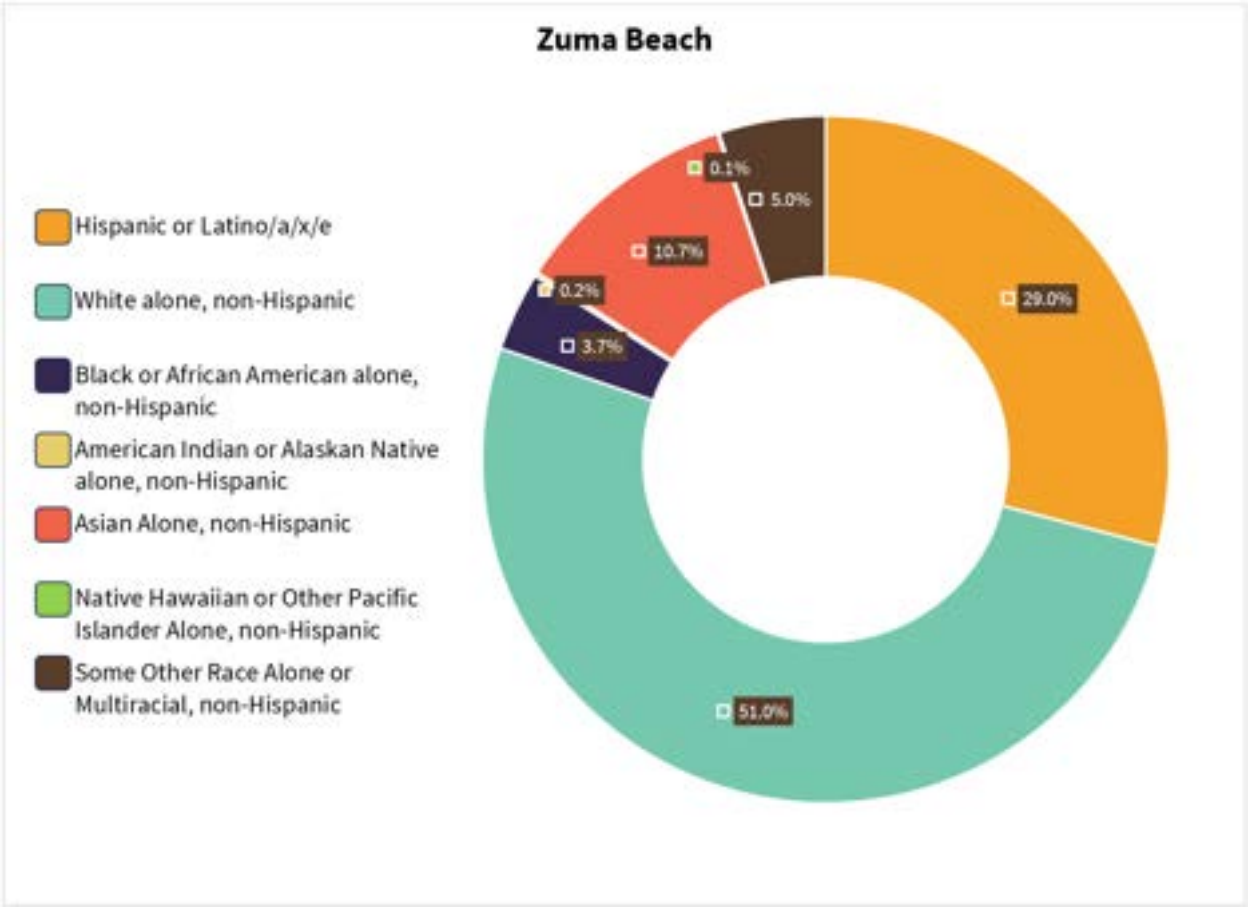


Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Private

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Paradise Cove Beach	197,358	280,454	188,178	300,876	273,447	189,465

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Paradise Cove Beach	70,437	94,852	94,240	88,849	113,634	184,005	226,822	177,864	137,948	104,298	81,750	55,079

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Paradise Cove Beach	172,942	130,332	143,449	142,982	186,883	320,603	332,587

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Paradise Cove Beach	29%	48%	5%	0%	13%	0%	5%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Paradise Cove Beach	76%	24%

Paradise Cove Beach

General Statistics (2022)

Total Visitation: 189.5k

Average Visitation per Day: 540

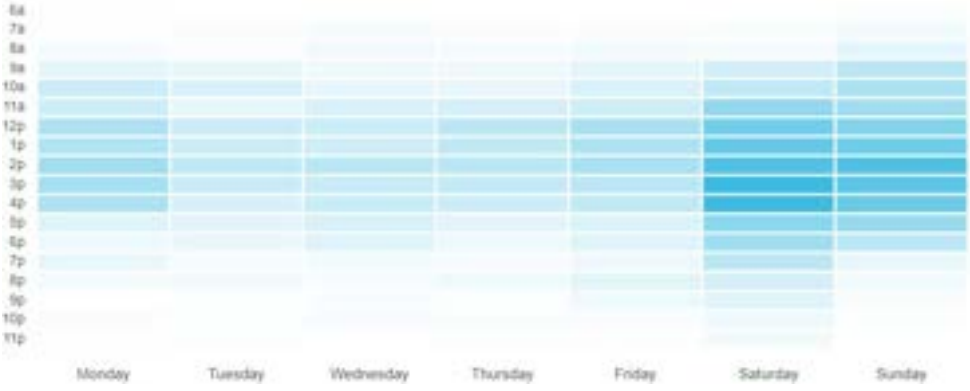
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 24%

Busiest Day of the Week: Saturday

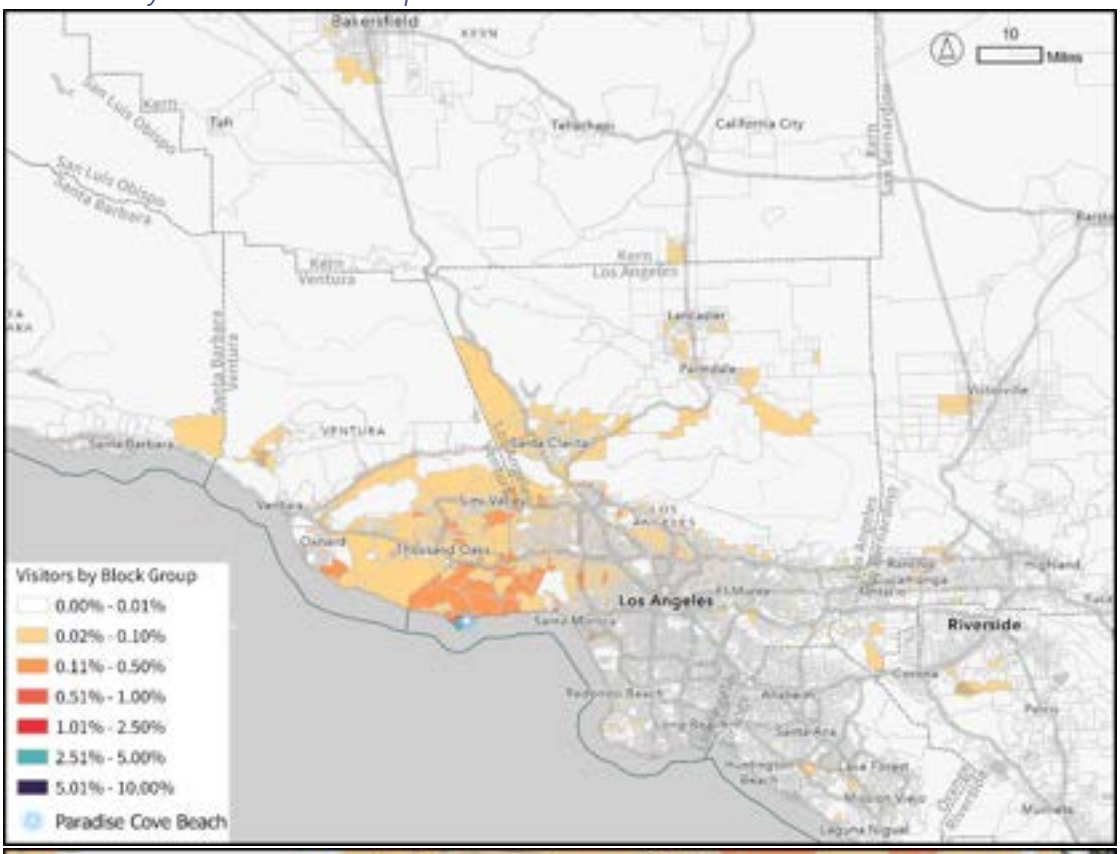
Busiest Hour: 2:00 pm

Heat Map of Hourly Visitation Paradise Cove:



Visitor Distribution by Home County

Visitation by Home Block Group



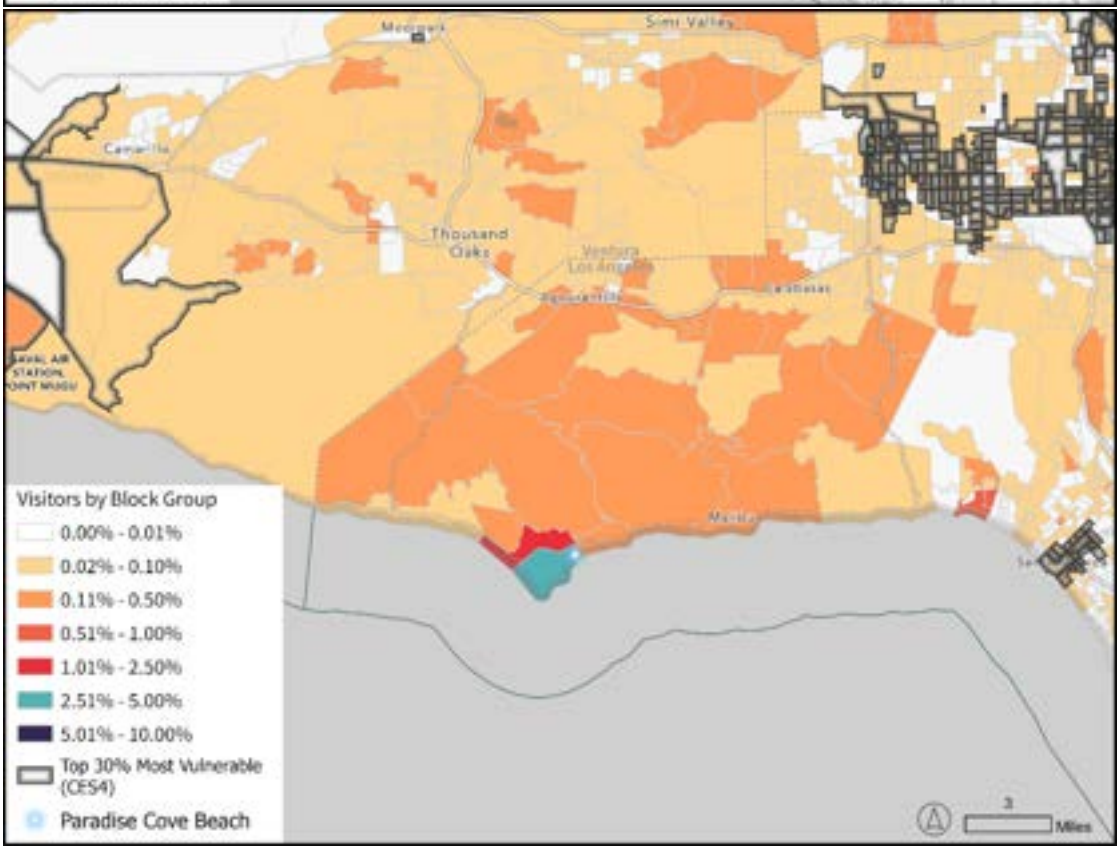
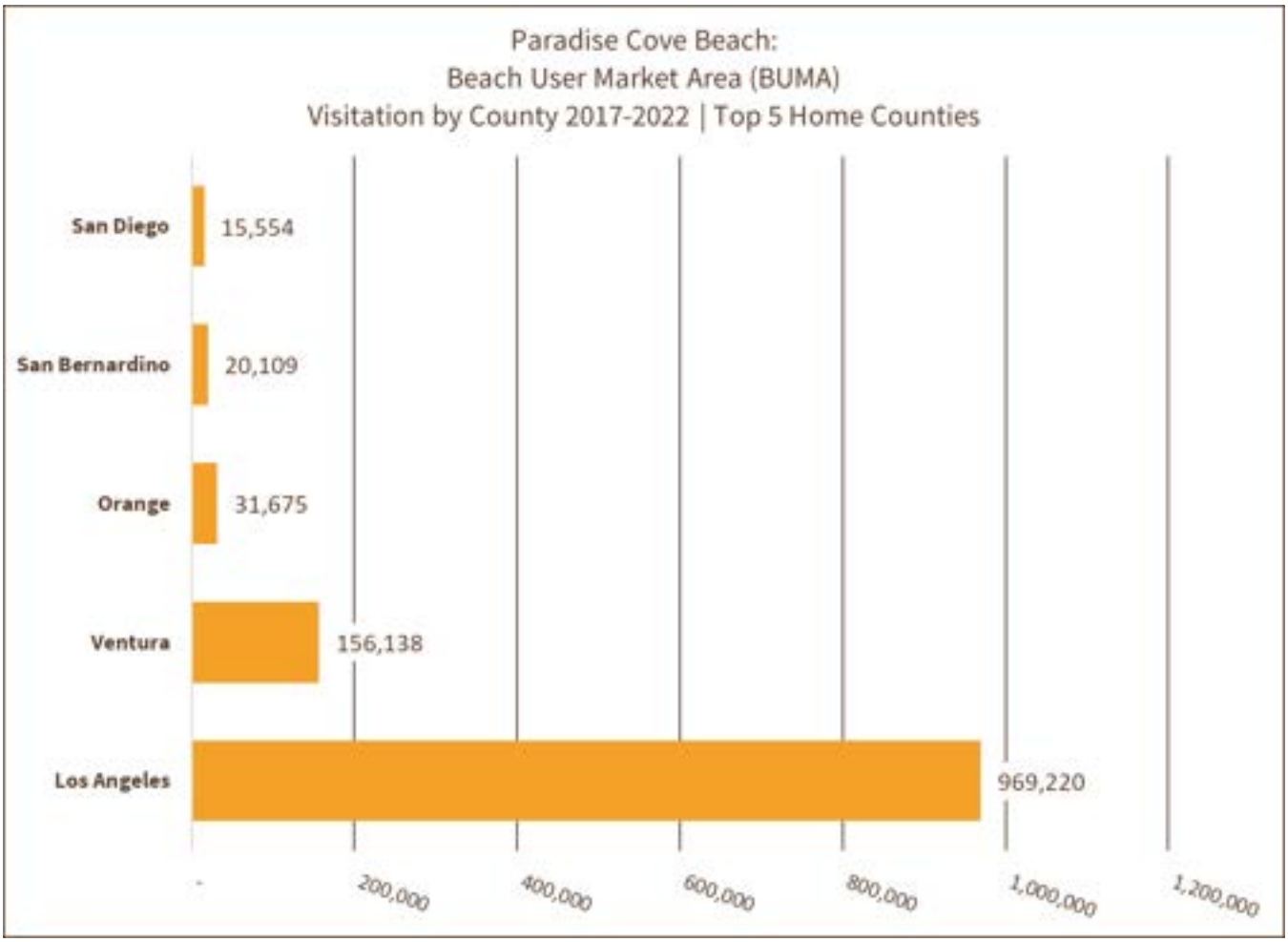
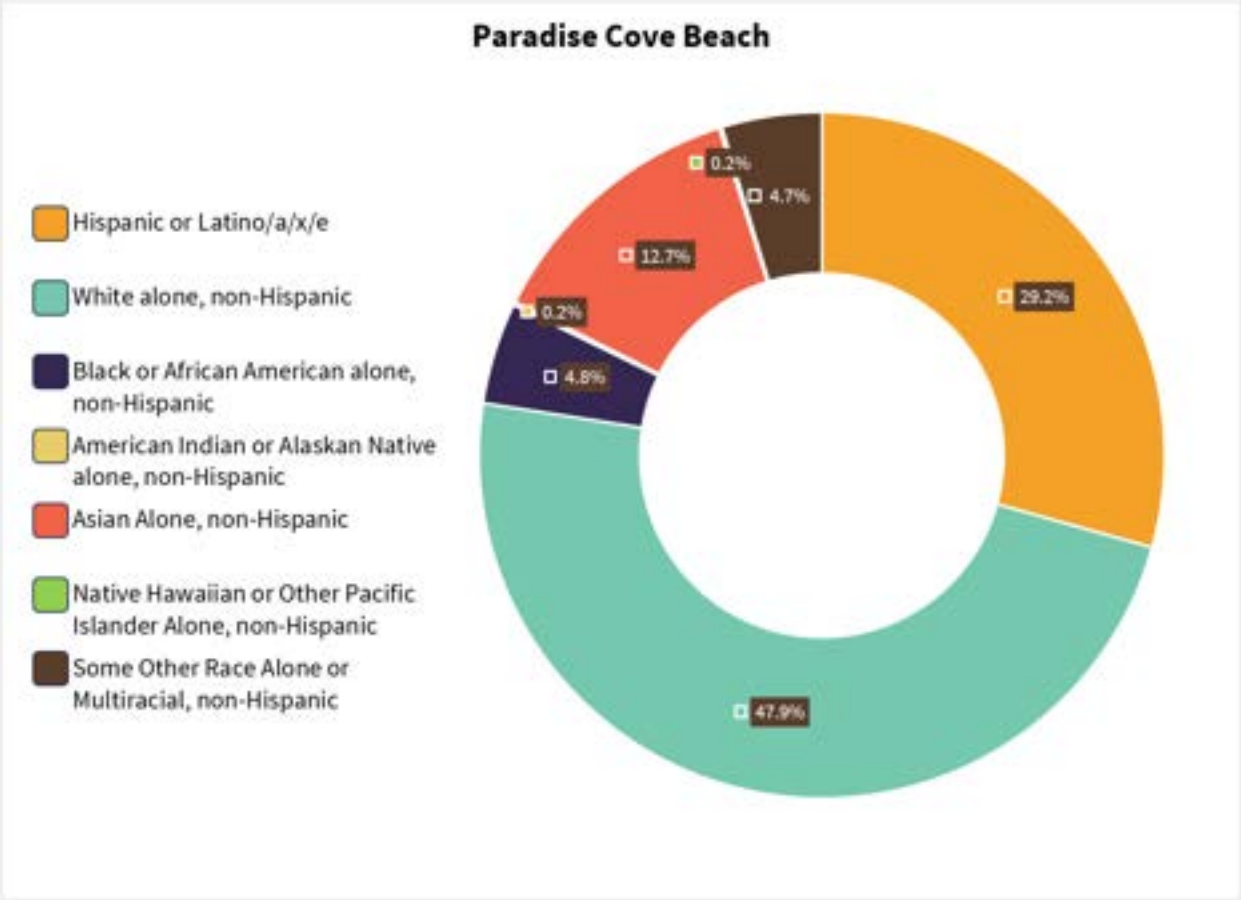


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)



Orange County

City of Laguna Beach

Annual Visitation (2017-2022)

POI Name	2017	2018	2019	2020	2021	2022
Laguna Beach (Main Beach Segment)	331,155	432,525	333,304	267,824	285,787	198,771

Monthly Summary (2017-2022 Combined)

POI Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Laguna Beach (Main Beach Segment)	110,928	113,240	129,343	121,530	149,493	226,571	281,956	236,920	183,211	122,167	95,837	78,170

Day of the Week Summary (2017-2022 Combined)

POI Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Laguna Beach (Main Beach Segment)	214,601	190,012	190,374	197,460	241,968	395,874	419,077

Origin Demographic Breakdown (2017-2022 Combined)

POI Name	Percent Hispanic or Latino/a/e/x	Percent White (Not Hispanic)	Percent Black (Not Hispanic)	Percent American Indian or Alaskan Native (Not Hispanic)	Percent Asian (Not Hispanic)	Percent Hawaiian or other Pacific Islander (Not Hispanic)	Percent Other or 2+ Races (Not Hispanic)
Laguna Beach (Main Beach Segment)	26%	45%	3%	0%	21%	0%	4%

Visitation from the Top 30% Most Vulnerable Census Tracts (2017-2022 Combined)

POI Name	CES4: Lower 70% (Less Vulnerable)	CES4: Top 30% (More Vulnerable)
Laguna Beach (Main Beach Segment)	87%	13%

Laguna Beach Segment (Main Beach)

General Statistics (2022)

Total Visitation: 198.8k

Average Visitation per Day: 550

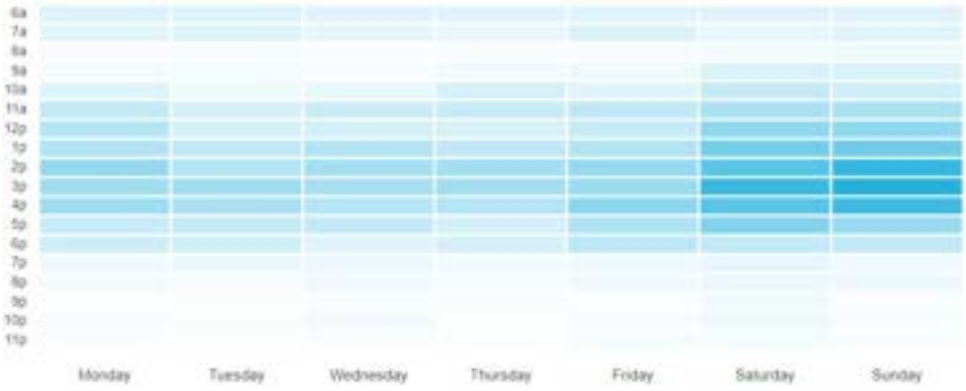
Average Length of Stay: 1.25 hours

Percent of Visitors from the Top 30% Most Vulnerable Census Tracts (CES4): 13%

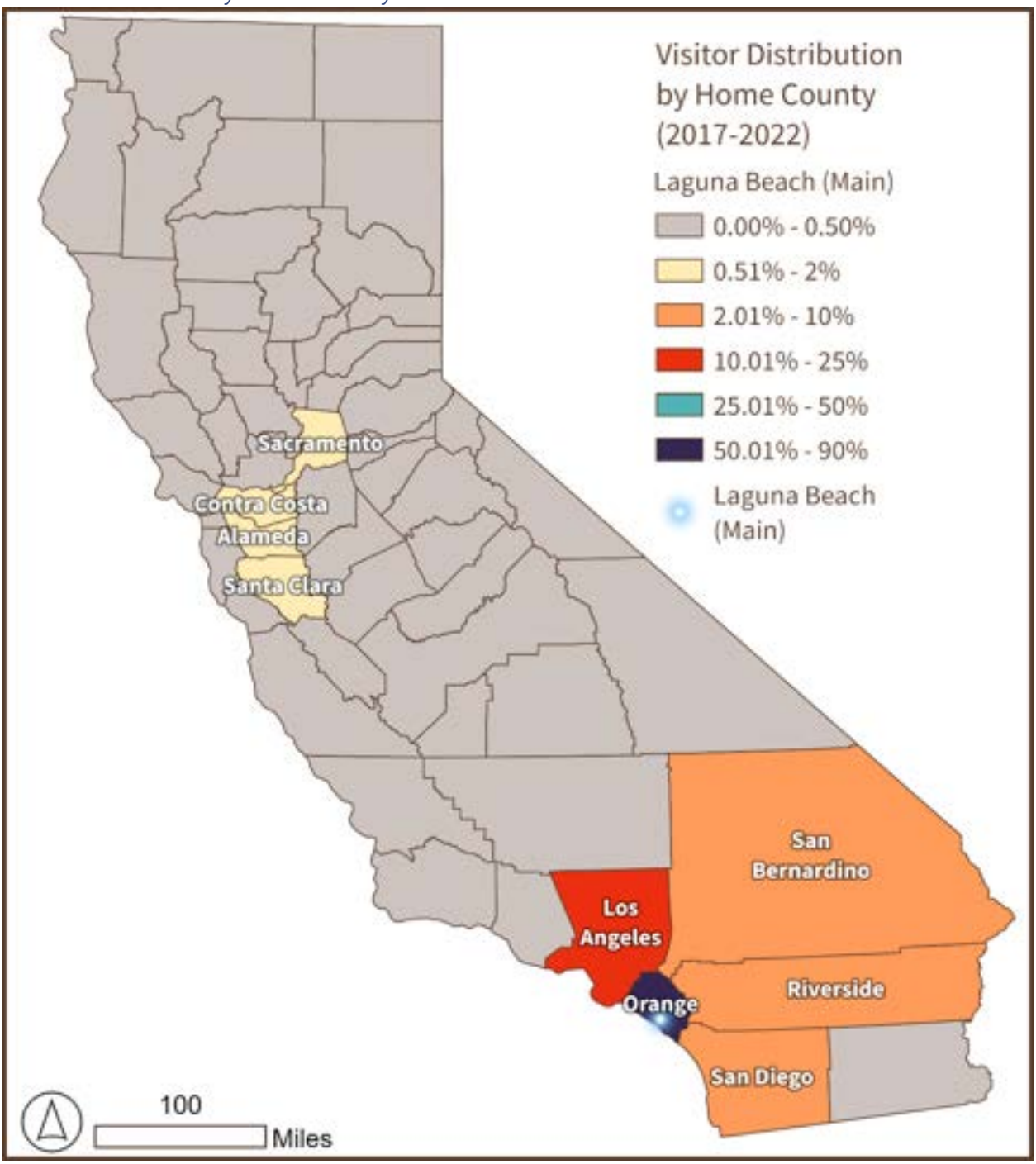
Busiest Day of the Week: Sunday

Busiest Hour: 3:00 pm

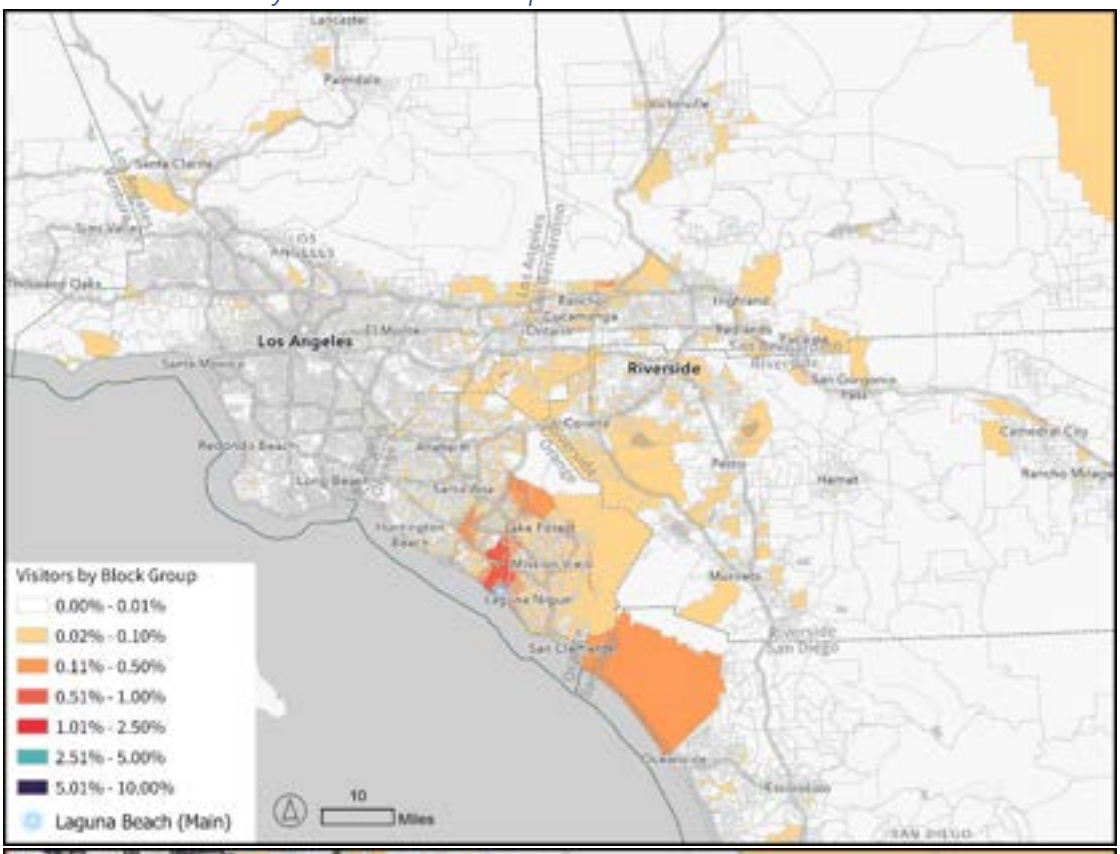
Heat Map of Hourly Visitation Laguna (Main) Beach:



Visitor Distribution by Home County



Visitor Distribution by Home Block Group



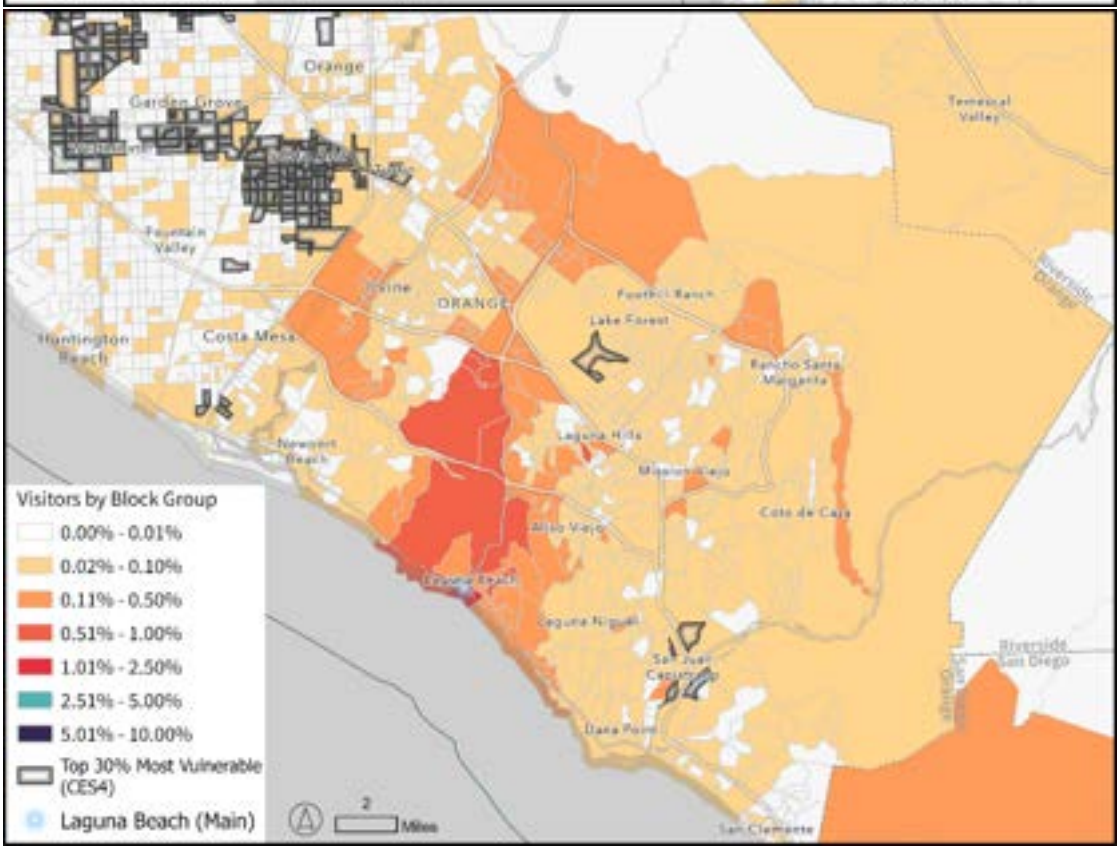
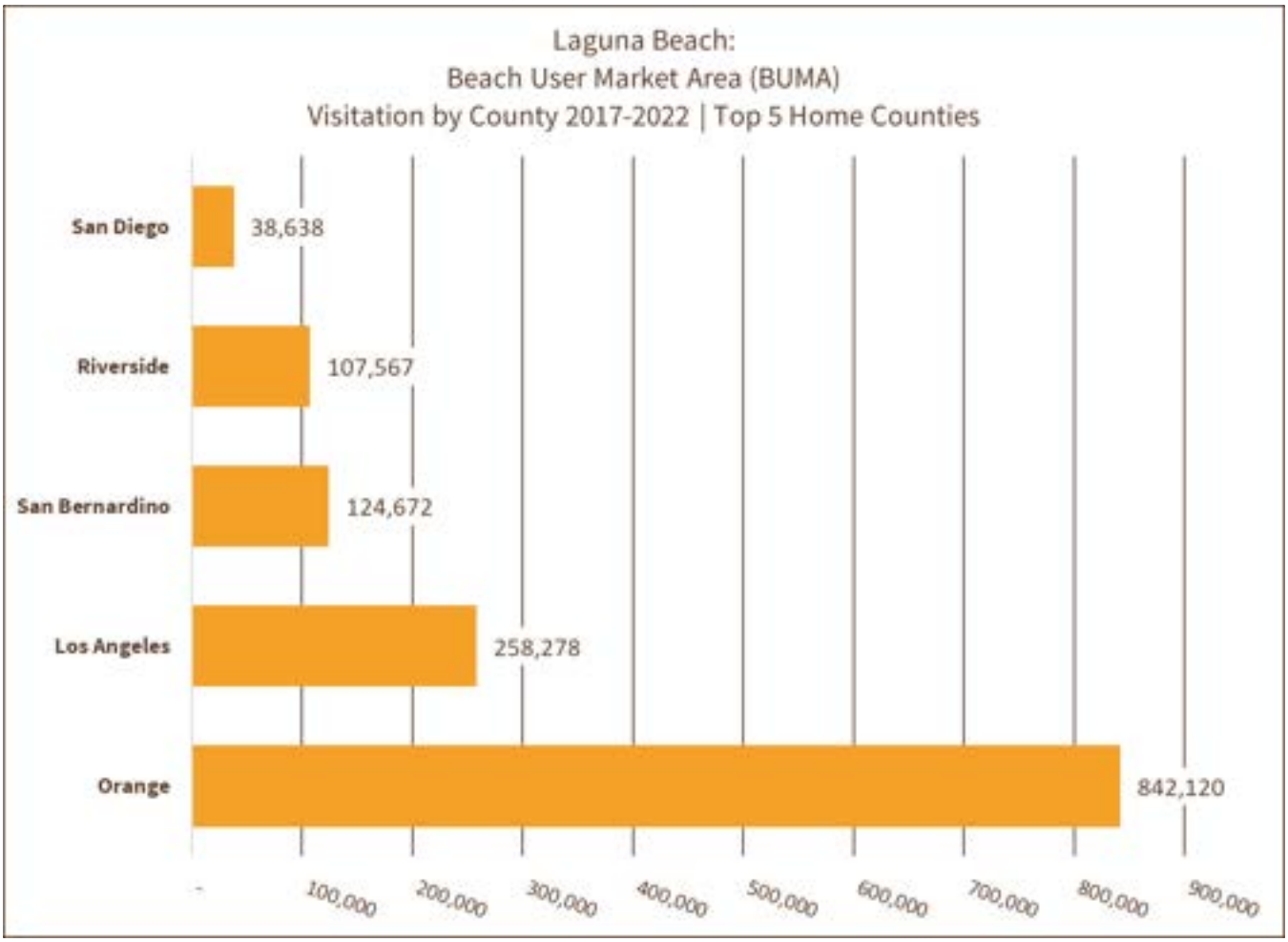
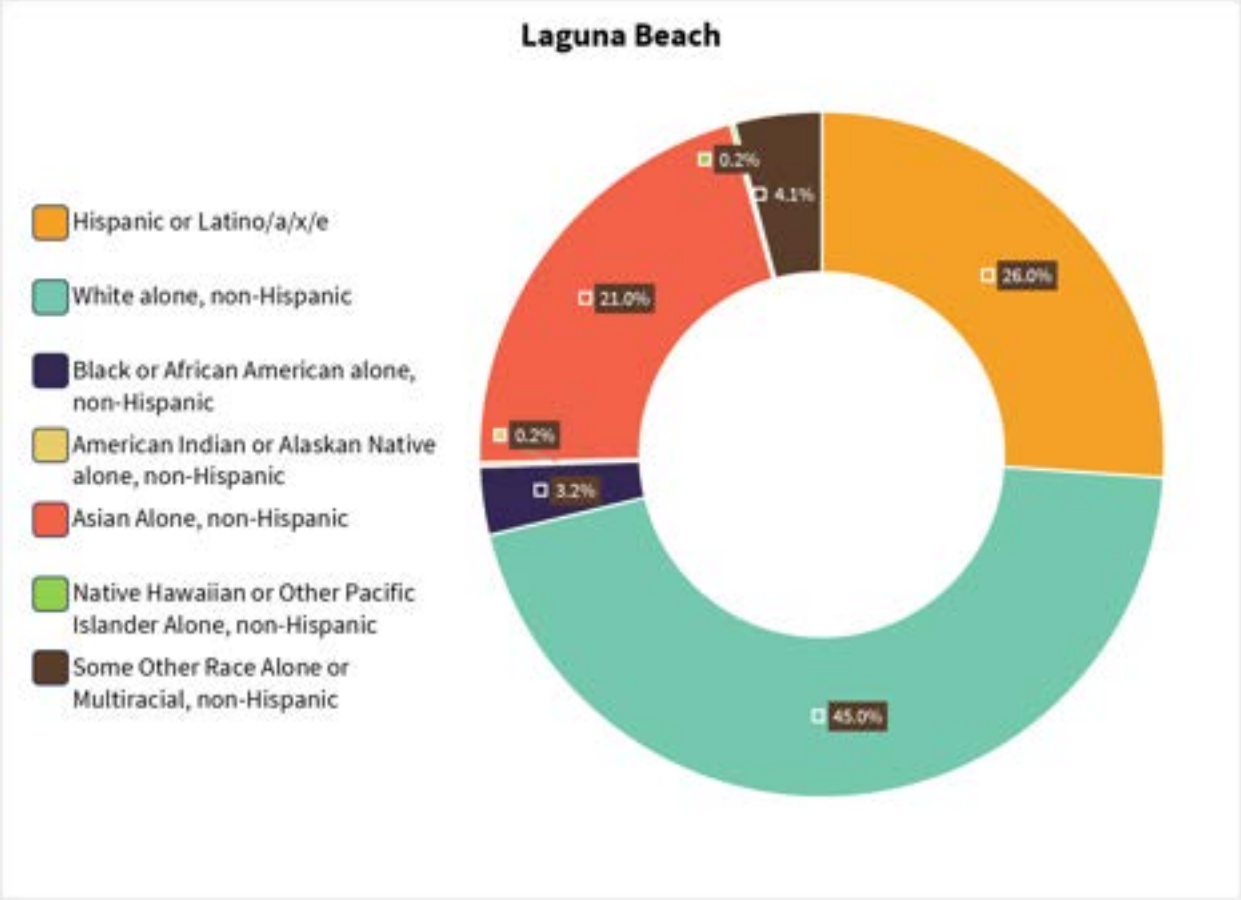


Chart of Visitation by Year

Chart of Beach User Market Area (BUMA)



Visitor Demographics (As represented by their census block group distribution)