

Florida Tourism

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Tourism is one of the largest economic industries in Florida. In 2015, a record 106.3 million tourists visited Florida (about five visitors per resident), with an economic impact of about \$90 billion. Tourism also provides additional benefits for federal, state, and local governments in the form of taxes (e.g., excise, sales, income, and property taxes). In Florida, tourism accounts for over one million direct jobs and an additional 1.5 million indirect and supply chain jobs. The three industries or business sectors most impacted by tourism and currently experiencing substantial growth in the state, include: leisure and hospitality (e.g., hotels, restaurants, museums, amusement parks, entertainment), transportation (e.g., cruise ships, taxis, airports), and retail trade (e.g., gas stations, retail stores). The 106.3 million tourists comprise approximately 91.2 million out-of-state visitors, 3.9 million Canadian visitors, and 11.2 million overseas visitors. The domestic visitors are anticipated to grow by 20% in 2018. Tourism and the associated industries in Florida are highly vulnerable to climate change over time. The state population and real estate markets continue to grow in the coastal areas, with corresponding increases in property values at risk. In addition, there are losses associated with the properties used to mitigate the effects of climate change. In summary, indicators of climate change, such as higher sea levels and more frequent and powerful hurricanes and other extreme weather events, have the potential to severely impact the tourism industry in Florida.

Key Messages

- In 2015, a record 106.3 million tourists visited Florida, with an economic impact of ~\$90 billion. Over the last five years, tourism has averaged about 6% growth annually.
- The 106.3 million tourists are comprised of 91.2 million out-of-state (or domestic) visitors, 3.9 million Canadian visitors, and 11.2 million overseas visitors.
- Tourism accounts for more than one million direct jobs and an additional 1.5 million indirect jobs.
- The three business sectors most impacted by tourism in the state are leisure and hospitality, transportation, and retail trade.
- Climate change presents significant uncertainties in future Florida tourism and economics.
- The state's population and real estate markets continue to grow in the coastal areas, along with corresponding increases in property values at risk to sea level rise and inundation, storm surge, land subsidence, and wind damage among other things.
- The authors discuss the relationship between tourism's impacts of climate change, vulnerability and adaptation.
- The vulnerability of Florida tourism will decrease if we improve our adaptive capacity with respect to climate change.

Keywords

Tourism and economic impacts; Visitor spending; Climate change; Adaptation; Uncertainty; Vulnerability; Risk and sensitivity analysis; Big data analysis; Rare/extreme event simulation

Introduction

Globally, it is estimated that about 100 million people live within three feet of mean high tide, and another 100 million live within six feet of it. Florida's 1,350 miles of natural coastline, including 825 miles of sandy beaches, translates to a very large tourism-driven economy. For 2015, the number of visitors to Florida totaled 106.3 million people, making it the topmost travel destination in the world. According to Visit Florida, the goal for 2016 was for at least 115 million tourists to visit Florida, and 120 million by 2020. Over the last five years, tourism has averaged about 6% growth on an annual basis. However, when comparing 2014-15 and 2015-16, the number of tourists in Florida increased by more than 10%. In addition, according to a recent University of Florida study, it is estimated that another 14.9 million people will move to Florida by year 2070 (i.e., an additional 680 people will be moving to Florida daily).

Visitor Demographics in Florida

There were 106.3 million visitors to Florida in 2015. As shown in Fig. 10.1, 91.2 million of these visitors were domestic and 15.1 million were from overseas (including Canada). The overall annual growth in tourists to Florida (since 1927) has been about 4.4%.

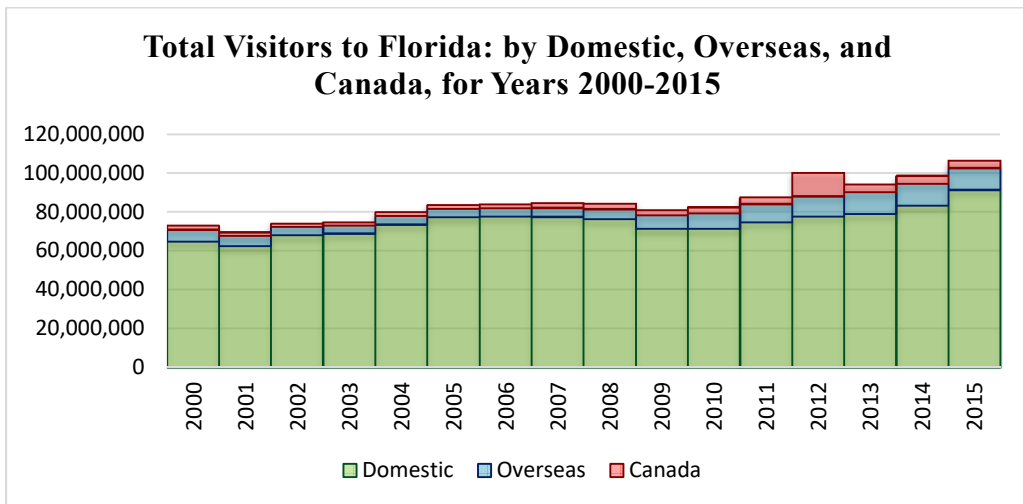


Figure 10.1. Visitors to Florida: Percentages by quarter from 2000 to 2015.

We have forecasted the number of total visitors to Florida to years 2035 and 2060 using three different estimations, ranging from pessimistic to optimistic, as depicted in Fig. 10.2. The figure shown reflects the expected visitor growth to year 2035, with projections ranging from 148 million to 191 million visitors, for pessimistic and optimistic forecasts, respectively.

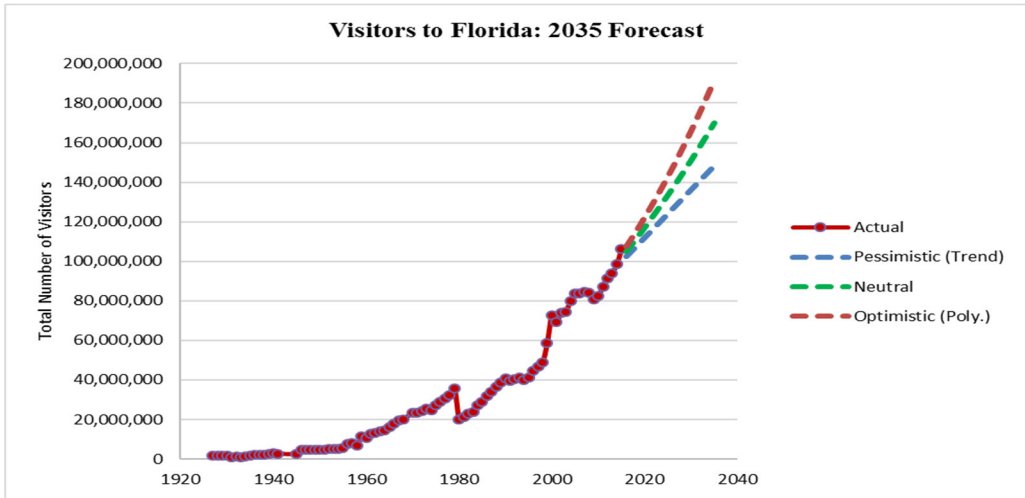


Figure 10.2. Visitors to Florida: Forecasted numbers to years, 2035.

The top five origin states for domestic visitors are expected to be: New York (10.3%), Georgia (8.2%), Texas (6.3%), New Jersey (5.3%), and Illinois (4.9%). The preferred travel seasons for domestic visitors are during summer and spring months, which is when about 56% of visitors to Florida came during 2014.

About one-fifth of all international visitors who come to the U.S visit Florida. In 2014, these visitors came from 190 countries; with the top five countries being Canada, the United Kingdom, Brazil, Argentina, and Columbia. In 2015, international tourists to Florida represented 14.2% of all tourists. Fig. 10.3 provides the quarterly numbers and percentages from years 2000 to 2015.

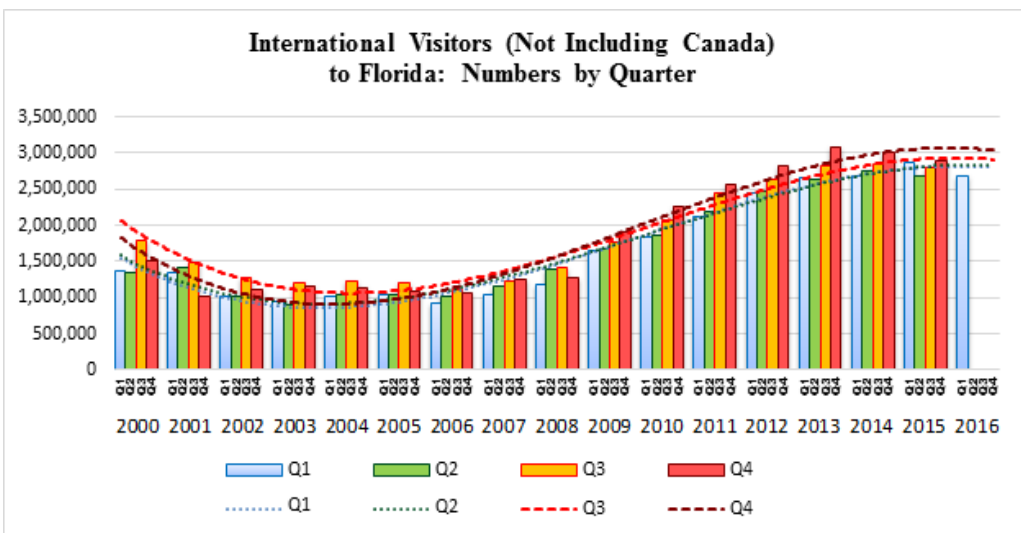


Figure 10.3. International visitors to Florida: Percentages by quarter, from 2000 to 2016.

It should be noted that visitors from Canada, as shown in Fig. 10.4, exhibit strong seasonal effects; their preference is to visit Florida primarily in the winter quarter (Q1) of each year.

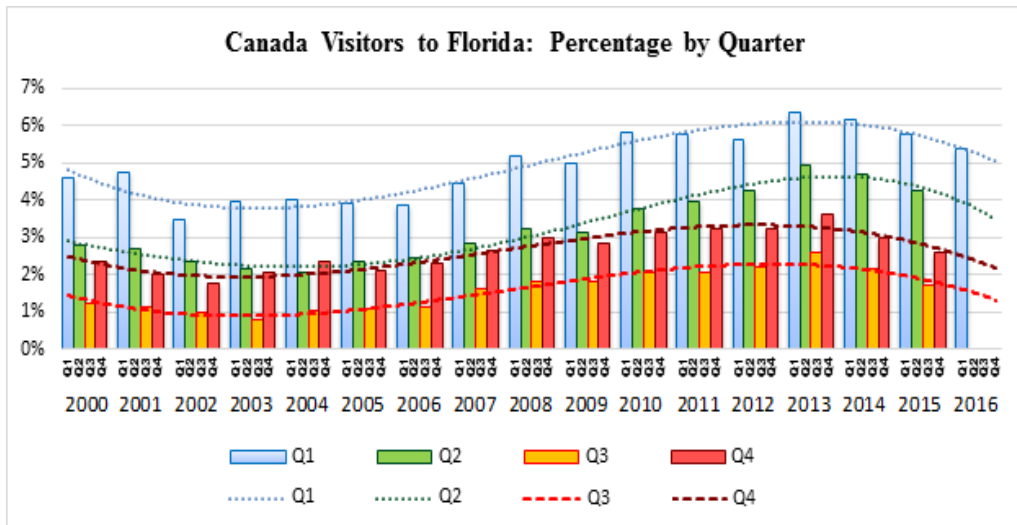


Figure 10.4. Canadian visitors to Florida: Percentages by quarter, from 2000 to 2016.

Tourism Spending in Florida

Visit Florida, a not-for-profit corporation formed in 1996 (as a public-private partnership), is the state’s official tourism marketing corporation. Visit Florida’s total tourism spending budget for fiscal year (FY) 2014-15 was \$212.5 million, with about \$74 million and \$138.5 million in public and private investment, respectively. In FY 2013-14, the total budget amount was \$183.6 million; thus FY 2014-15 represented about a 16% increase in tourism funding for Visit Florida over the previous year. In addition to fundraising to support matching funds, Visit Florida is involved in assisting more than 12,000 tourism industry businesses; participating in travel-related trade shows and missions; working with travel agents, tour operators, meeting and event planners; and operating the five state welcome centers. Florida tourism and travel-related direct and indirect spending reached \$90 billion in FY 2014-15, representing an increase of 8.3% over FY 2013-14 spending. In 2014, visitor direct and indirect spending was about 10% of Florida’s gross domestic product; approximately \$21 billion was generated in total lodging revenue, \$36 billion in restaurants/dining, \$14 billion in admissions, and \$11 billion in other visitor-related spending. The average spending by domestic visitors was \$162.40 per day¹, with the majority spent on lodging (\$55.30) and transportation (\$51.40), 30% and 28%, respectively (Fig. 10.5). As shown in Fig. 10.6, about 51% of total visitors came by air, and 49% by non-air travel.

¹ Representing a 4.2% increase from the previous year, 2013.

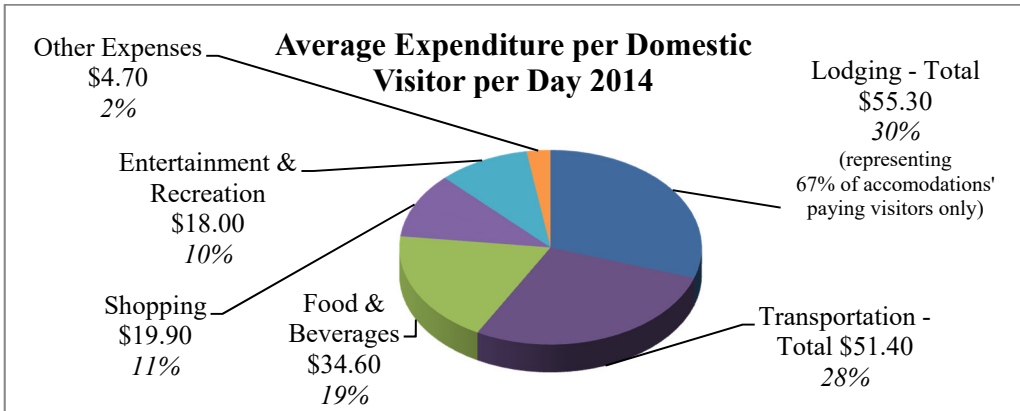


Figure 10.5. Domestic visitor average spending per day, 2014.

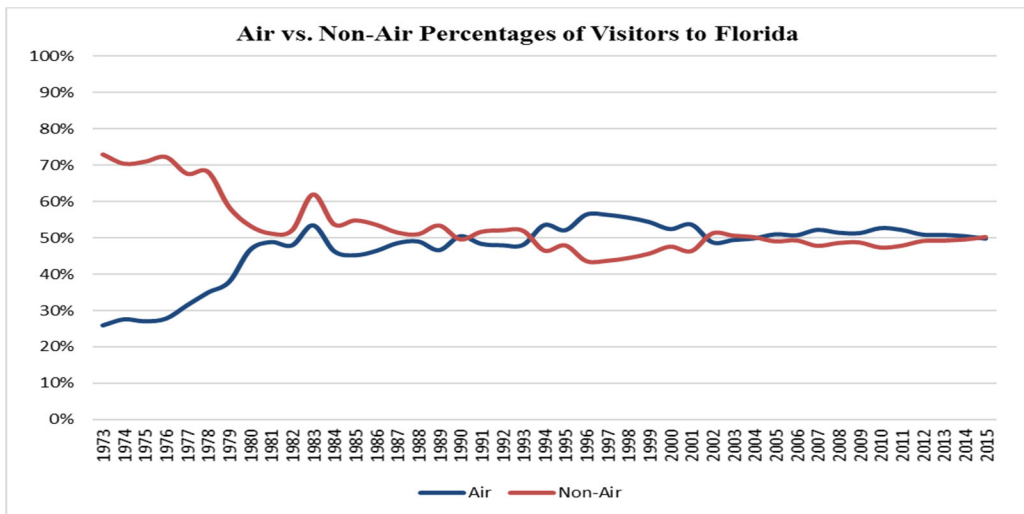


Figure 10.6. Air vs. non-air percentage of visitors to Florida from 1973 to 2015.

The Impact of Climate on Tourism, by Industry or Business Sector

Florida’s warmer climate translates to a mecca for spending on recreation and leisure activities. Out of the five Gulf of Mexico states, Florida had the highest rate (52 million people) participating in outdoor leisure activities. In addition, Florida beaches had approximately 810 million beach day visits in 2012, the most of any state or country in the world. Also in 2012, the beach-oriented visitors to Florida totaled 38.4 million or 42% of the total visitor population to Florida.

In 2014, about 90% of domestic visitors traveled to Florida for leisure activities; the primary reasons were for vacation, visiting family and friends, and for a weekend getaway. In Florida,

domestic visitors' top five preferences were beach/waterfront activities (41%), dining (34%), shopping (33%), visiting friends/relatives (31%), and theme/amusement parks (19%). Domestic visitors' average length of stay was 4.3 days.

As mentioned earlier, the three top industries or business sectors impacted by tourism in Florida are the leisure and hospitality, transportation, and retail sectors. In the last five years, leisure and hospitality has experienced growth four times that of the rest of Florida's economy, while the transportation and retail sectors have managed a doubling of growth for the same time period. Other secondary sectors highly impacted by tourism (based on non-resident spending) include state and local government (i.e., taxes), real estate (including commercial and vacation homes), transportation investment (in construction and manufacturing), and financial services.

Economic Impact of Tourism in Florida

Tourism is the top industry in Florida. However, the "tourism" sector is not measured as a separate sector, but rather as components of multiple sectors. Thus, it is more difficult to measure economic impacts on tourism with the same precision as other individual sectors. That said, it has been reported by Visit Florida that tourism is "the state's No. 1 industry, and generates 23% of the state's sales tax revenue and employs about 1.2 million Floridians." This corresponds to about one job per every 89 domestic or international visitors.

For 2015, the economic impacts associated with tourism were the highest on record, with an economic impact of about \$90 billion, and accounting for more than one million direct jobs and an additional 1.5 million indirect and supply chain jobs. Tourism also provides benefits for federal, state, and local governments in the form of taxes (e.g., excise, sales, income, and property taxes). In 2015, \$5.3 billion in state sales tax was collected, representing 23% of taxes collected in Florida that year.

Ecological Impacts on Florida Tourism

From an ecological perspective, Florida is highly vulnerable to the effects of tourism. As a peninsula, Florida is already experiencing an estimated 400 miles of critically eroded coastline. As mentioned earlier, a positive 2.3% annual population growth estimated to year 2060,² will place tremendous negative load on the ecosystem, particularly in the coastal areas. In addition, the effects of climate change will serve to further amplify the negative impacts associated with increasing population densities. Over time, it is expected that a warming climate (as a result of global climate change from increases in greenhouse gas concentrations) will manifest in greater

² Based on a forecast to years 2035, and 2060, conducted by the FSU Center for Economic Forecasting and Analysis, Sept. 2016

sea level rise³ and warming of the coastal oceans in the Gulf of Mexico that could increase the likelihood of the storm intensity of land falling tropical cyclones (Liu et al. 2012) and extreme weather events (e.g., tornados, flooding, droughts, and other unstable weather patterns; Wuebbles et al. 2014).

In addition, the real estate markets continue to expand in the coastal areas, along with corresponding increases in property values at risk for sea level rise and inundation, storm surge, land subsidence, and wind damage among other things. It is also unlikely, with the prospect of higher coastal property taxes, that coastal development will be reduced over time. In addition, there are losses associated with the properties used to mitigate the effects of climate change. One study conducted in 2008 examined the properties at risk based on varying sea level rise scenarios (for years 2030 and 2080) in six counties in Florida. The authors found that in Dade County the properties at risk ranged from \$1.1 billion to \$12.3 billion at sea level rise increments ranging from 0.16 feet to 2.13 feet, respectively. It should be noted that these can now be viewed as conservative estimates compared to the most recent Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report estimates.

State and local governments have or are developing their adaptation and mitigation planning processes addressing the climate change impacts on tourism. The planning efforts, especially in South Florida, range from moving and elevating infrastructure (e.g., commercial and residential buildings, roads, airports, schools, sidewalks) to making massive investments in water utilities, such as additional pumps, desalinization plants, and other technologies. There are also other adaptation-oriented, longer-term planning operations underway involving the development of “water” or floating cities.

Beach restoration is a mitigation operation shown to have significant benefits with regards to tourism revenue generation and property value protection. It is estimated that each state dollar spent on the protection of Florida’s public access beaches prevents the loss of \$8 in state taxes paid by out-of-state tourists and resident users of those beaches. For example, in the mid-1970s Miami Beach’s sandy beach was almost non-existent and its surrounding infrastructure was deteriorating. Following one year of beach nourishment⁴, tourism earnings increased 56% and the project demonstrated a greater than 5 to 1 ratio, benefit (tourism income) to cost (of nourishment). As of 2015, visitor spending had increased to \$24.4 billion in the Greater Miami economy, with beaches being the top draw for visitors to Miami Beach. In another study completed following the 2004 and 2005 hurricane seasons, of 28,000 properties in eight Florida counties, the findings showed that restored beaches prevented a loss of \$1.8 billion in property values.

³ See <http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2015/10/2015-Compact-Unified-Sea-Level-Rise-Projection.pdf>

⁴ According to James Houston (2013), the Army Corps of Engineers Miami Beach estimated \$51 million spent on beach nourishment cost, and \$1.6 million annual costs.

Climate Change Adaptations and Uncertainties on Tourism in Florida

Climate change presents significant uncertainties in future Florida tourism and economics. For example, the uncertainty of climate projections associated with different greenhouse gas emission scenarios call for different likelihoods of extreme events (USGCRP 2014). How to minimize those uncertainties and build capacity for climate change adaptation are challenging tasks. Those small-probability (rare or extreme) events could have big impacts for tourism on a global scale.

Tourism is highly susceptible to small-probability events, including terrorism, war, epidemics, and natural disasters. For instance, as shown in Fig. 10.7, global tourism was adversely impacted immediately after the September 11, 2001 terrorist attacks and during the financial crisis during the years 2007–2009. But standard statistical models used to predict future outcomes have their weaknesses (McDowell et al. 2016). Major weaknesses of the current models include predictability power associated with travel flows (Gössling and Hall 2006) as a result of the following uncertainties: (1) the role of weather extremes is unknown; (2) the existence of fuzzy-variables (terrorism, war, epidemics, natural disasters) is problematic; (3) the future costs of transportation is unpredictable; and; (4) a global financial crisis is intermittent.

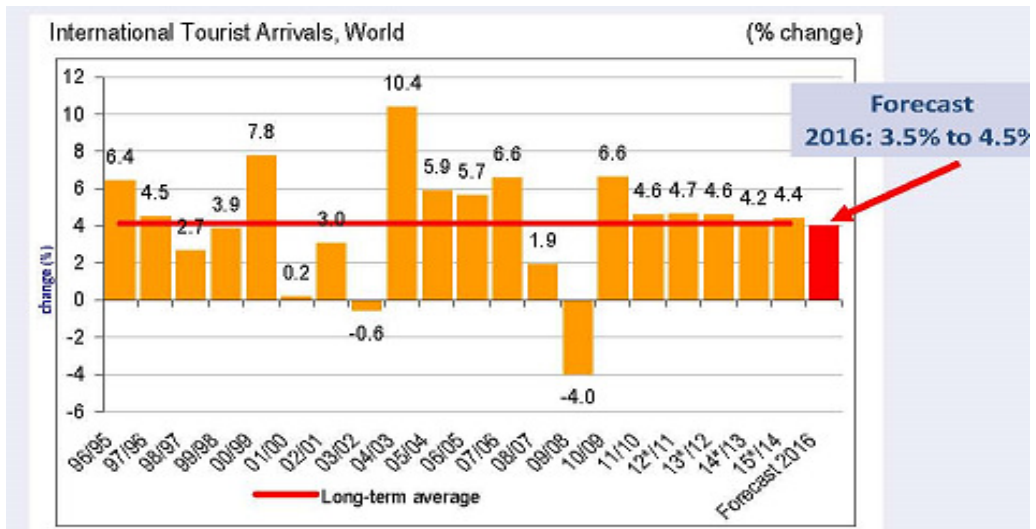


Figure 10.7. Tourism change each year (Source: World Tourism Organization (UNWTO))

All the aforementioned events are rare and unpredictable events, and standard statistical models are based on predictable patterns. In a probabilistic model, a rare event is an event with a very small probability of occurrence. The forecasting of rare events is important in the area of tourism prediction. Monte Carlo simulation (a computerized mathematical technique), as well as

other methods, can be used to estimate probability of rare events. Also, in Fig. 10.7, one can easily see how tourism flows were adversely impacted by the terrorist attacks of 9/11 and subsequent global spillover events. Compared with the year 2000, tourism flows are increasing at a negative rate. Meanwhile, the global financial and economic downturn that affected tourism from years 2007 through 2010, and beyond, has cast substantial attention on the role that crisis events play in tourism (Ritchie et al. 2010). In Fig. 10.8 we see how Florida demonstrated corresponding impacts to global crisis events. However, local or statewide events may also have significant impacts on tourism. An oppressive, long-term drought from late March 2006 until late August 2008 impacted the entire state of Florida, as shown in Fig. 10.8; the increasing rate of tourism approached zero for those years.

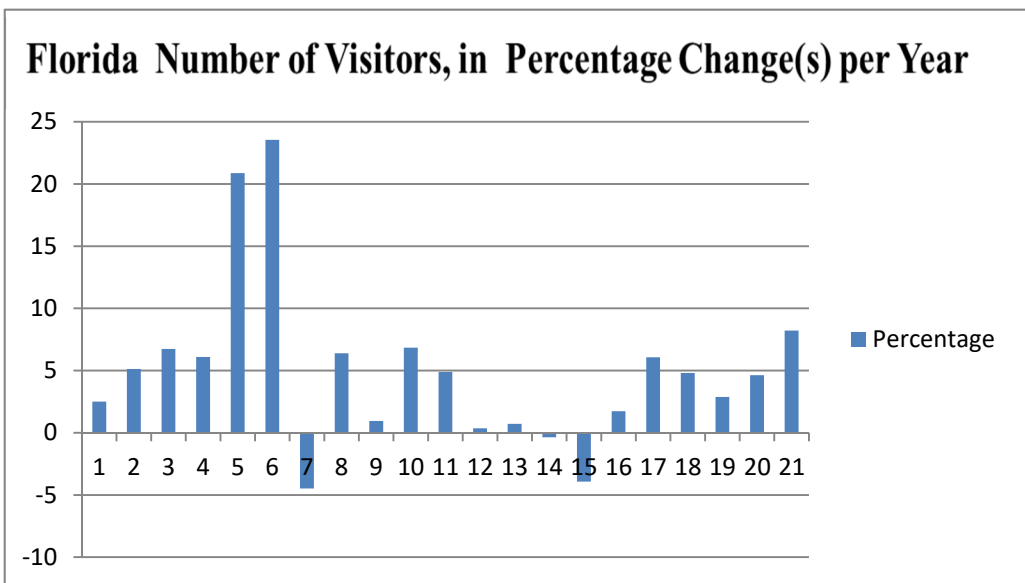


Figure 10.8. Florida tourism annual change(s) (percentage) from years 1995 to 2015.

Strategies for Adapting to Climate Change

Perspectives from stakeholders concerning land use planning, extreme weather events, and sea level rise scenarios provide valuable information to tourism planners who balance short-term growth with longer term sustainability. Stakeholder perspectives can identify competing opportunities and constraints to mitigation and adaptation to current and future planning for hazards. Their perspectives assist community planners in balancing decision-making processes and better equating sustainability regarding resource use, as well as building resiliency in terms of natural hazards.

Understanding different adaptive capacities is a prerequisite for targeting interventions to reduce the adverse impacts of climate change. Fig. 10.9 (Binita, et. al. 2015) provides a broader

perspective on vulnerability from a historical examination of climate change, as well as a determination of risk based on the potential of future climate change in Florida. The results also help planning agencies to develop strategies for adaptation to climate change in vulnerable counties or areas in Florida. According to a Chinese Proverb: “One prospers in worries and hardship, and perishes in ease and comfort. We will have to be mindful of possible adversities and be prepared for the worst.” With the assistance of big data, it is possible to organize experts and collect more readily available information in order to make more accurate predictions of the effects of climate changes. Fig. 10.9 presents a framework for further understanding the relationship between tourism’s impacts of climate change, vulnerability, and adaptation. When we have greater adaptation ability, vulnerability will decrease. Therefore, prediction models and simulations help us to reduce vulnerability and develop a better ability to prepare uncertainty in the future.

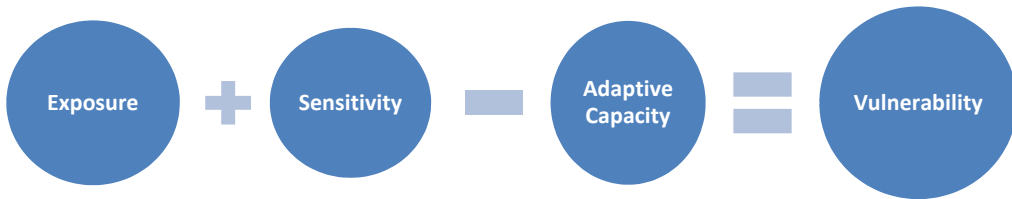


Figure 10.9. Relationship between climate change impacts, vulnerability, and adaptation.

Exposure specifies the projected change of climate that is affecting the system, such as temperature change and climate extremes. **Sensitivity** describes the degree to which a system is affected, either adversely or beneficially. The impacts of climate change may be direct or indirect. **Adaptive capacity** describes the ability of a system to adapt to changes in climate. **Vulnerability** can be defined as the degree to which a system is susceptible to being affected by adverse effects of climate change (Lindner et al. 2008).

The vulnerability of Florida’s tourism sector will decrease if we improve our adaptive capacity with respect to climate change. As adaptive capacity improvements are made throughout communities in Florida, the impacts should be monitored and measured, and decisions reached among stakeholders concerning effective planning strategies: e.g., adopting more stringent carrying capacity at the beaches, investing in marketing programs that educate tourists on their impacts, increasing funding to make the experience exclusive (with a corresponding reduction in numbers), or developing programs that focus on boosting tourism numbers, among others. Big data analysis can be integrated into rare-event simulations since all extreme climate change will be categorized as rare-events. With the assistance of big data tools, such as the R programming language or Hadoop technology, Monte Carlo methods can carry out extensive stochastic simulations. Although these types of randomly determined simulations bear immense computational costs, the ability to effectively compute the probability of a rare event will help us

to prepare for extreme climate changes, thereby increasing our adaptive capacities. These results will further assist in shaping future long-term state policies on building capacity and more effectively integrate climate change issues into the state strategic planning processes.

Conclusion

In 2015, a record 106.3 million tourists visited Florida (about five visitors per resident), with an economic impact of about \$90 billion, including more than one million direct jobs, and an additional 1.5 million indirect and supply chain jobs. The three industries most impacted by tourism, and currently experiencing substantial growth in the state, include: leisure and hospitality (e.g., hotels, restaurants, museums, amusement parks, entertainment), transportation (e.g., cruise ships, taxis, airports), and retail trade (e.g., gas stations, retail stores). In 2015, there were approximately 91.2 million out-of-state visitors, 3.9 million Canadian visitors, and 11.2 million overseas visitors. Tourism and the associated industries in Florida are highly vulnerable to climate changes over time.

The state's population and real estate markets continue to grow in the coastal areas, with corresponding increases in property values at risk. In addition, there are losses associated with the properties used to mitigate the effects of climate change. Indicators of climate change, such as higher sea levels more frequent and powerful hurricanes, and other extreme weather events, have the potential to severely impact the tourism industry in Florida. These climate change indicators, can significantly impact travel decision-making by tourists.

In short, to ensure that Florida remains one of the top tourist attractions and destinations in the U.S. and worldwide, the state should continue making improvements in building capacity towards adaptation, specifically in the tourism industry, and better model the uncertainty associated with a changing climate and its associated impacts concerning the tourism economy. With more accurate predictions and effective communication and collaboration with research professionals, Florida will be well-positioned to continue improvements in building adaptive capacity and increasing economic opportunities. Although it is difficult to reverse the impacts of climate change, building better adaptive capacity will slow the effects of climate change in the tourism industry in Florida.

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