Risky Shores: An Analysis of Southern Flood Insurance

Nicholas Blair

Supervisory Committee
Pamela Martin
Jacqueline Kurlowski

May 2016
TABLE OF CONTENTS

ABSTRACT ......................................................................................................................... 2
EXECUTIVE SUMMARY .................................................................................................. 3
INTRODUCTION ............................................................................................................... 4
PROBLEM DEFINITION ................................................................................................. 5
METHODOLOGY ............................................................................................................. 6
A LOOK AT PAWLEYS ISLAND, SOUTH CAROLINA .................................................... 7
RECOMMENDATION FOR FUTURE RESEARCH .......................................................... 12
OVERVIEW OF SURVEY TOOL ................................................................................... 13
CONCLUSION ................................................................................................................ 14
BIBLIOGRAPHY ............................................................................................................ 16
APPENDIX 1: FIGURES ................................................................................................. 20
APPENDIX 2: PRESS RELEASE .................................................................................. 28
APPENDIX 3: POLICY BRIEF ...................................................................................... 31
APPENDIX 4: SURVEY TOOL ....................................................................................... 36
ABSTRACT

The purpose of this study is to highlight the challenges the Federal Emergency Management Agency (FEMA) and their National Flood Insurance Program (NFIP) face as well as the efficiencies and inefficiencies of their tools and processes. This study focuses on Pawleys Island, South Carolina and how the above agencies and programs affect the town’s plans for flood mitigation, especially sea level rise. The problem definition underlines why it is important to address these issues now and why current plans are not effective for the long term. In order to address this problem and the players, tools, and circumstances that surround this issue, research was conducted in a predominantly qualitative manner and data was collected through other studies and research documents.

Pawleys Island is a small barrier island with only about 100 residents. However, due to the flood risk it faces and the higher than average property values, Pawleys Island presents a larger economic liability than many towns that are not on a floodplain, and a similar economic liability than towns many times its size. The studies that have been researched often focus on cities or towns with thousands of people in them. There are many towns on the southeastern coast of the U.S. that are closer to the size of Pawleys Island. It is important Pawleys Island’s resilience to flooding and economic impact on the region is studied.

This research is organized into six different chapters. This includes (1) an introduction of the research and case study; (2) the problem definition that supports the thesis statement in the introduction and clearly explains the problem; (3) the methodology that explains what type of methods were used to conduct this research; (4) a case study of Pawleys Island, including an analysis of the town and its policies and actions, supported by data and concluded with opinions on changes that could be made; (5) recommendations for future research, including an overview of a survey; (6) a final conclusion for actions that towns similar to Pawleys Island could take and how bigger towns could potentially benefit from this study. There are three appendices that are for distribution for further research and for outreach; (1) a Press Release that could be distributed by media outlets; (2) a Policy Brief to inform policy makers; (3) a survey to be conducted at a later date to collect more research on specific communities.
EXECUTIVE SUMMARY

This research has concluded that if Pawleys Island does not address the long-term challenges presented by sea level rise, the town may longer be able to exist as it does currently. Coastal retreat is the long term solution based on this study, and planning for this now rather than later is the best economical decision the town can make. Flood maps from the National Oceanic and Atmospheric Administration (NOAA) simulate sea level rise may make this barrier island unaccessible by the end of this century. This study provides analysis on aspects of the Federal Emergency Management Agency (FEMA); such as their National Flood Insurance Program (NFIP), Flood Insurance Rate Maps (FIRMs), and Special Flood Hazard Areas (SFHAs). It researches these aspects so the Biggert-Waters Act of 2012 (BWA) and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) can be analyzed for impact on communities. In this study, a case study of Pawleys Island, South Carolina is included to not only analyze how the above tools, policies, and agency affects the town for flood insurance risk. Results produce data that shows how unique and at risk the town is. The town is in danger of not existing in its current way of life when sea level rise is introduced into the equation. Rising sea levels threaten the town by increasing flood damage risk. The town is only three feet above sea level and NOAA’s research shows most communities face 3.3 feet of sea level rise by 2100. If the town does not plan for long term solutions, it faces massive economic decline from homes and infrastructure being destroyed by increased flooding frequency. Recommendations and a survey tool are included at the end of this study to expand future research and narrow down solutions.
INTRODUCTION

Flood insurance policy in the United States has, for a long time, been a device aimed at helping residents and business owners with flood mitigation but has not achieved that goal. The East Coast and the Gulf Coast of the USA annually face hurricanes and superstorms which can cause massive damage and fatalities up and down the coast. After the storms have passed, communities have to rebuild, yet the financial toll natural disasters take on people and towns seem to increase every year. The federal government helps people affected by these natural disasters to rebuild through disaster funds as well as provide insurance for more than 5.5 million homes as of 2010 (Holliday 2010). The National Flood Insurance Program (NFIP) is managed by the Mitigation Department of the Federal Emergency Management Agency (FEMA) and has worked with over 22,000 communities (FEMA 2015a). While it may seem that having such a massive entity to aid flood insurance rates and policies would be beneficial, it has failed to make a positive impact for more than a decade. It has failed because the program is in massive debt and cannot capture premiums that reflect true risk. While storms and occasional higher-than-average tides represent major flood concerns, the country faces a larger threat down the road. The National Oceanic and Atmospheric Administration (NOAA) has indicated that by the year 2100 sea levels are likely to rise 3.9 feet, with the upper limit as much as 6.6 feet (NOAA 2012).

This study presents an argument that there are communities in this country that have no choice but to start planning for retreat from the coast and from properties in these threatened areas. Beach renourishment, the act of dredging sand offshore and spreading it across threatened beaches to build up dunes, as well as installation of beach barrier walls, are tactics used to try to reduce the threat of erosion to save beaches and protect beach front properties, but it is often a waste of money that exacerbates the issues further. Beach walls and renourishment often increase coastal erosion because beaches are often not nourished to a depth of 40 feet (Figure 1), which is the necessary minimum depth to prevent sediment erosion from beginning again after the renourishing is done. Sea level rise highlights the necessity of property retreat from the coast in areas because beach renourishment is simply a short-term maintenance activity and does not provide an actual long-term solution. FEMA does not do enough to assess risk for properties as its Flood Insurance Rate Maps (FIRMs) do not account for sea level rise (FEMA 2015b.)

Research will be focused mainly on the Town of Pawleys Island in a case study format. Pawleys Island is unique because of its geography, demographics, and proportion of risk for such a small municipality. First, the problem will be defined, detailing the variables that explain the problem further. The method in which research and data analysis was conducted will be described, as well as a description of the qualitative methods, such as what interviews were held that lead to the conclusions of this study. A literature review will then be presented to place the case of Pawleys Island within the larger issues of flooding, insurance, and sea level rise impacts along the East Coast and beyond. Next, a case study of Pawleys Island will be presented and explained to highlight the background of the town and to explain both the opportunities and threats facing its future. Recommendations for the town, consistent with the supporting literature, are made, supported by original survey data. Finally, this study points to new areas of research and actions that need to be analyzed to abate the challenges of flooding along our coast within a context that is environmentally, socially, and economically feasible.
PROBLEM DEFINITION

The purpose of flood mitigation plans is to help communities and residents control the flow of floodwater to lessen the damage and other environmental impacts to properties in the community. However, current floodplain management does not adjust for sea level rise. Floodplain management addresses risks due to the history of the area, geography, structures, zoning regulation, and policies that localities have created; not sea level rise. In 2012, the NFIP received $3.6 billion in paid premiums but covered $527 billion in properties that lie in floodplains (FEMA 2013). It is not receiving enough funding to cover the assets it insures. The Biggert-Waters Act of 2012 (BWA) was meant to adjust properties to recognize true cost of property risk. Many of the new regulations which included sea level rise risk recognition were appealed when the Homeowner Flood Insurance Affordability Act of 2014 was adopted by congress; many felt the increases in rates by the BWA were inequitable for most residents.

This is a problem that needs to be solved. According to NOAA, U.S. coasts are facing a likelihood of at least a 3.3-foot sea level rise increase by the year 2100 (NOAA 2008). This effects $1.25 trillion in property values the NFIP covers and it could be disastrous to the economies of towns, cities, and the USA. Current methods, such as beach renourishment, have proved to be fairly successful for short and medium term solutions but it lacks the ability to solve long term challenges.

This is why some communities in the USA need to start looking into coastal retreats and coastal reorganization of homes that are in special flood hazard areas (SFHA). The federal government cannot dictate what homeowners should do with their properties except for very specific reasons, but through education and zoning at the local level, towns can make sure their economic ability is sustained for the future.
METHODOLOGY

As document analysis is the most cited method in this research, it was important to take steps to ensure accuracy and minimization of errors. Information obtained from articles and studies were compared against other relevant literature to ensure that the data and information were accurate. Multiple sources were used to check each piece of information presented and analyzed in this study. This methodology was crucial to maintaining the accuracy and success of the study.

This study employs a mixed methods approach, including qualitative and quantitative data. The quantitative data includes an examination of scientific data and a survey design for future research on these issues. The methods through which qualitative data was collected included interviews of government leadership and analysis of reports that answer the questions of this study.

Document analysis was the primary method of research in this study. Documents are triple referenced to verify accuracy to include case studies, news stories that reference credible sources, academic reports and government statements. Deviation in data is lessened through multiple reports and corroboration with interviewees, observation, field work, and government data. This literature review reflects the most recent research and writing in this area and is part of growing literature on sea level rise and insurance rates. The public official and supervisor of Pawleys Island’s emergency preparedness was interviewed in order to gain insight about government policies and planning. This interviewee was an expert in the field but caution was taken to ensure accuracy with any statements or figures obtained from the interview by later comparing statements from the interview with the relevant literature to ensure accuracy. There are three literatures that were chosen because they have conducted substantial quantitative research. These studies are explained in a literature review and were chosen to highlight this research above many others because of the information the studies included and the organizations they represented that have very strong credibility. Many of the sources used to write the case study are confined within these documents and that is why they were chosen, along with the arguments and positions that the authors of these works took.

A quantitative data tool in the form of a survey was added to give future researchers a tool to obtain quantitative data. The survey contains questions regarding demographics, geographic location and other regional information, and specific questions addressing relevant topics. All questions are selected answer so each question can be entered as a datum point in a spreadsheet for further statistical analysis. This method is most successful if the number of participants is high. Surveys are important data tools and this method would prove valuable for the future of this research.
A LOOK AT PAWLEYS ISLAND, SOUTH CAROLINA

In this case study, a profile of Pawleys Island is given to show the history and actions around flooding and flood insurance. Specific policies and ordinances are discussed so that a background of the town’s goals and plans are highlighted. Pawleys Island must start preparing for long term solutions for flood risk if it wants to continue its way of life. Pawleys Island is a small town on the northern half of South Carolina in Georgetown County. It is part of the Grand Strand which is located on South Carolina’s northern coast. Pawleys Island is unique because its full-time population is just over 100 but grows to nearly 5,000 during the summer months of high volume tourism including second homes and other businesses that offer lodging. The town stretches for only about 4 miles and lies mostly on a sandy barrier island separated from the mainland by a tidal creek behind the island (Pawleys Island 2016).

The town’s government is composed of Mayor William Otis, Town Administrator Ryan Fabbri, and a town council. The town council is small, comprising of only four members, and they conduct meetings open to the public every Monday. It cannot be stressed enough just how small this town is, as it only has two full-time employees; the town administrator and town clerk. The town had coordinated in the past with Georgetown County for assistance in zoning, but since 1985 when the town was incorporated, Pawleys Island took over those efforts. Since then, the town has grown to have a $6.7 million cash surplus for emergency funding, as the town is serious about reducing flood risk, and lowering the costs for its residents (Swenson 2015).

Pawleys Island demonstrates the importance of planning properly for potential flood damage. Many of the properties on the island are rental properties; an economic driver for the area. The town makes most of their revenues from rental fees and the county benefits from the many tourists each year. The town is just 3 feet above sea level, any further sea level rise poses a significant threat to the area (Topozone 2015). The town and county have flood mitigation plans that highlight ordinances created to help minimize the short-term community flood risk, like the Federal Emergency Management Agency’s (FEMA) current flood maps, there is no account for risk of rising sea levels. Although the Town of Pawleys Island has done a fine job up to this point, it lacks long-term solutions. Coastal areas like Pawleys Island are vulnerable to rising sea levels, storms, and king tides. This makes the town an excellent example of an area that has been affected by flooding before and faces increasing amount of flooding in the future.

A wider perspective is also important to consider for how national changes in addressing flooding from various sources and flood insurance policies impact the community. The Biggert-Waters Act of 2012 and the Homeowner Flood Insurance Affordability Act of 2014 have impacts on this community and many others. Pawleys Island is a participating member in the National Flood Insurance Program (NFIP) and, for that reason, residents are vulnerable to changes occurring in the program as the NFIP works towards a solvent budget.

Three reports have helped form thoughts and opinions in this case study. “Addressing Affordability and Long-Term Resiliency through the National Flood Insurance Program” written by Becky Hyatt and Robert More, “Overwhelming Risk” published by the Union of Concerned Scientists, and “Managed Coastal Retreat” by Anne Siders. Once the full picture of Pawleys Island and the risks it faces are brought forth, different and more in-depth, long term
recommendations are made so the town can make equitable and meaningful decisions about its future for evaluating flood risk.

Storm-related incidents are a low occurring flood risk for Pawleys Island. While major storms like Hugo and Joaquin have impacted the island, most flooding is caused by perigean spring tides also known as king tides. A major storm comes to mind, Hurricane Hugo in 1989 and the rainfall that Hurricane Joaquin brought when it stayed offshore in 2015. Hugo brought storm surges almost 20 feet high, destroyed the access bridge to the island, destroyed 14 homes, and flooding separated the island into two (Figure 2) (Armstrong 2014). However, most of Pawleys Island’s flooding comes from perigean spring tides, or it’s more colloquial term king tides. Perigee occurs every 29 days, and two spring tides happen per lunar cycle. If these two events occur at the same time, coastal regions can experience a king tide (National Oceanic and Atmospheric Administration 2008). In September 2015, flooding from Hurricane Joaquin saturated the local area making the king tide that occurred stronger than usual. Early estimates indicated that nearly $1 million in real estate was damaged (Hudson 2015).

Pawleys Island has, individually as a town and collectively with the Georgetown County and FEMA, coordinated throughout the years by developing new flood maps that allow the county and town the ability to address flood concerns of the citizens. Pawleys Island has worked throughout the years to obtain a rating of Class 6 in FEMA’s Community Rating System through the NFIP that gives up to a 20% discount on flood insurance premiums (FEMA 2015). This is a significant achievement for such a small town considering the rigorous qualifications a town must meet to reach levels that span from level 10 (which is the lowest level of qualification, to level 1, the highest) (Figure 8). Pawleys Island has a long-term goal of reaching class 4, however, doing so will require a significant investment in both infrastructure and in manpower to address the changes the town would have to undertake to reach that class. The town must account for flood regulations, such as zoning restrictions, and the effectiveness of informing citizens about flood mitigation and other coastal resiliency plans. What this means for the citizens of Pawleys Island is they can qualify for a significant reduction in their flood insurance premium (FEMA 2015).

Pawleys Island has created zoning regulations including the Unified Development Ordinance (UDO) that requires new construction to be 3 feet above FEMA’s Design Flood Elevation (Article II, Interpretations & Definitions [2-25] and [2-56]). Pawleys Island has also taken on beach renourishment action in attempt to keep the beaches accessible for residents and tourists. The last beach renourishment was in March 2016 when the town scraped sand from areas sand had built up to areas sand had been swept away. The goal was to move sand to areas experiencing faster erosion and to repair dunes from the October 2015 flooding. According to Mayor Otis, he hopes the construction would cost the town less than $150,000 (Swenson 2016). According to Town Administrator, Ryan Fabbri, the town submitted a form to FEMA looking for a 75% reimbursement, (Sokoloski 2016).

Although Pawleys Island exhibits strengths and identified and created ordinances to address some weaknesses, the town still has numerous opportunities and threats that have continuing and long-term implications. The entire town of Pawleys Island resides in a Special Flood Hazard
An Analysis of Southern Flood Insurance

Area (SFHA). According to FEMA, “[t]he SFHA is the area where the NFIP’s floodplain management regulations must be enforced and the area where homeowner participation in flood insurance is mandatory purchase of flood insurance applies. The SFHA includes Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/ AE, AR/ AO, AR/AH, AR/A, VO, V1-30, VE, and V” (FEMA 2015). This means that in SFHA areas, participation is mandatory for residents if the home lender did not make it mandatory already. Specifically, Pawleys Island consists of AE and VE zones. AE zones require limited to moderate action; VE zones are high-risk and are more restrictive in terms of ordinance regulations. Though this is a 2013 map (Figure 3), newer maps will be released soon. The AE area behind the barrier island of the town will actually become a VE zone on the shores of the tidal marsh. The southern end of Pawleys Island experiences even more risk as the area has experienced multiple repetitive loss properties (Figure 7). According to FEMA, a property is a repetitive loss property if the NFIP has paid two or more flood claims of $1,000 or more in ten years since 1978. As of 2003, there have been 45 respective loss properties meaning they each had to file a claim for at least $1,000 in damage that, in total, cost the town $6,956,276 (Town of Pawleys Island 2012). This has extraordinary implications if ratios like this were applied to larger coastal communities having similar geography, considering Pawleys Island is a town of only 528 households as of 2010, (U.S. Census Bureau 2012).

The new maps coming out this year means many Pawleys Island residents could have decreased flood insurance premiums while few, in the more vulnerable section, will experience tighter regulations. According to Ryan Fabbri, new construction will see base flood elevation raised by a foot (Figure 4), (Stairs 2016). Base flood elevation (BFE) are shown on Flood Insurance Rate Maps (FIRMs) and on flood profiles. Defined by FEMA, “[t]he BFE is the regulatory requirement for the elevation or flood proofing of structures. The relationship between the BFE and a structure's elevation determines the flood insurance premium” (FEMA 2015).

Many things go into determining the premium a home will pay for flood insurance including the flood risk area it is in, its BFE, design and age of the building, and value of the home. The NFIP covers homes up to $250,000 in value and up to $100,000 for contents of the home. Rates vary wildly from just a few hundred dollars a year to potentially thousands or even tens of thousands. The latter requires something beyond what the NFIP covers called excess flood insurance. The NFIP will cover the home up the $250,000 and the owner may be required by their mortgage company to purchase additional coverage if there is still an amount owed on home. Typically, it is done through an escrow account that is part of the mortgage payment. This will typically cover a home up to $1 million and, if more than that, the owner may be responsible for covering all costs over the limit of the flood policy. Businesses are similar only the NFIP will cover up to $500,000, anything above that excess insurance could be required depending on that properties’ lending company. Many homes in Pawleys Island are grandfathered into old rates and not required to pay for premiums reflecting current risk those homes have. However, new homes and homes that have to be rebuilt do, meaning that as time moves forward, and Pawleys Island’s risk does not decrease. The premiums on the island’s properties will continue to increase. According to research conducted by the town and FEMA, Pawleys Island homes have a 26 percent chance of being flooded during a 30-year mortgage (Town of Pawleys Island 2016). As of April 1st, 2016, as part of the Biggert-Waters Flood Insurance Reform Act of 2012 and the Homeowner Flood Insurance Affordability Act of 2014, rates will increase about 9% on average for residences (Brown 2016). Pawleys Island is just one example of a coastal
town in the country that has high home values, average value being $288,700, which lie in a risky geographical area (Zillow 2016).

As costs continue to increase due to increased flooding risk and higher premiums, there must be a point at which it is not equitable for Pawleys Island and its citizens. The stakes are very high for the people and the Town of Pawleys Island. It has a risky geographical area, all of which are part of the Special Flood Hazard Area. This means higher rates for their citizens, and a greater economic liability for the town. In 2012, the NFIP only received enough premiums to cover about 0.288 percent of the value of assets it had policies for (FEMA 2013). This would mean a catastrophic event or sea level rise could potentially indebt the NFIP and have crippling effects on the local economy. Though the Pawleys Island government has been effective in addressing some issues such as reaching Class 6 with FEMA, the high risk of the area still presents high costs. There are $239.3 billion worth of property value on the coast of South Carolina (Doggett 2015). Pawleys Island is way above average, representing 30 times more property value per person than average.

Residences save $279,000 a year with this discount, meaning total premiums paid each year accumulate to an estimated $1,395,000 (Swenson 2014). The total number of residences in the town multiplied by the average home value give a rough estimate of total residential property value of just over $152 million. That equates to the NFIP receiving about 0.9 percent in premiums per year of the total local value; money the citizens and town would receive during significant flooding events. Of course, there are many residences that have to pay excess flood insurance, which is not a part of these figures. There are also properties paying very little in premiums due to owners’ agreements with their lenders and owners who completely own their properties.

These factors are a major concern for Pawleys Island, especially when sea level rise is taken into account. NOAA research has indicated that a sea level rise of at least 3.3 feet is likely by the year 2100 and large amounts of the East Coast could see higher than average sea level rise compared to global projections (NOAA 2012). The South Carolina Department of Natural Resources (SCDNR) also highlights the impending threat of sea level rise to South Carolina Shores stating, “Rising sea level may amplify problems of coastal flooding, coastal erosion, and general disruptions to sensitive coastal and estuarine ecosystems” (SCDNR 2013). NOAA’s sea level coastal flood rise impact map simulator (Figure 5) shows Pawleys Island at current sea levels (Figure 6) at the likely future scenario of a 4-foot sea level increase. The latter image illustrates a potential scenario in which much, if not all, of the barrier island portion of the town is uninhabitable and inaccessible, as well as a large portion of the town that faces the tidal marsh. During king tides, and storm surges this would become worse. The consequences of this would not only lead too much of the town out of their homes, but likely a complete economic disaster for the town. This would lead to decreased economic ability of the county and state.

Rising sea levels threaten the barrier island by continuing to flood the town and increase damage and scale of floods in the area. The southern end experiences regular erosion, a financial drain on the town and the residents. Mayor Bill Otis stated, “This is not going to be a short-term fix, not just in Pawleys Island” (Sokoloski 2015). It is going to take many beach renourishment projects to keep the southern side accessible and habitable creating an unsustainable financial burden on
the town in the long run. As sea levels continue to rise, it will take investments at an increased consistency to keep the town the way it is, at least until ocean levels reach a level that is no longer possible to contend with. Sea level rise threatens the $152 million in property on Pawleys Island, and the town, the county, and the state governments would be adversely affected by the loss in those values if Pawleys Island does not find long term solutions.

It is time meaningful conversations are had in Pawleys Island with regard to a coastal retreat. These are difficult political, financial, and logistic challenges that will be polarizing to many, but it is important realistic plans are made for the long term viability of the town. Beach renourishment is a short term tactic to minimize damage to coastal homes and continue the quality of life of the area as well as continuing the economic impacts of the town such as town residency and tourism.

There are various methods the town could explore to reach long term goals with coastal retreat. Some local, county, state, and federal governments are already using these methods to reach these goals of reaching a higher CRS and lowering costs of residents. Methods such as Conservation Easements, which are “a voluntary legal agreement between a landowner and an organization that restricts specific activities on a piece of property in order to protect conservation values such as ecosystems, wildlife habitat, biodiversity, or open space” (Siders 2013). There are Transfer Development Rights, TDRs (sometimes called Transferable Development Credits; TDCs) are a market based mechanism intended to guide dense development toward preferred, urban areas while preserving rural areas and open spaces. TDRs have not been used in a managed retreat context, but they have the potential to effectively address coastal hazards by shifting development away from vulnerable shores. As well as Buyout Programs; “Buyout programs are a specific type of acquisition program in which the government uses public funds to purchase title of privately held lands, demolishes existing structures on the land, and maintains the land in an undeveloped state for public use in perpetuity” (Siders 2013). Creating these plans now for the long term solution of minimizing flood costs is crucial to the towns and governments in this country. Living on the coast is part of the American Dream, but being realistic and prudent about our quality of life in a changing world is smartest, and the most American thing to do. We cannot continue to development vulnerable areas as the risk, and the expense, is far too great to bear. If Pawleys Island starts implementing plans now, it has an opportunity to keep intact its history and way of life. Waiting too long will only create unsustainable economic impacts for the town and drive residents away.
RECOMMENDATIONS FOR FUTURE RESEARCH

This study only begins to determine what localities should do when planning for flood mitigation and flood insurance policy adjustments. Further research should be conducted to work with other localities, such as, or again, Pawleys Island to lay out the specific plans for long term flood resiliency. More social data should be researched by conducting interviews of residents in the town. Actual plans should be laid out as a guideline for what a community should do with retreat options. The full explanation of conservation easements, tax credits, and payment reduction in exchange for a homeowner agreement to not rebuild after filing a major flood claim should be put forth in great detail.

Research that expands by comparing data of specific towns would help many communities along the coast make adjustments. It is also of the opinion that the BWA be reinstated so the NFIP can work towards becoming solvent and sea level rise adequately accounted for. This could be done by working with and informing the community and policy makers leading them. Jacksonville, Florida was originally planned to be a case study in this report but the sheer size of implications for such a large city was not possible within this research time frame. This, however, would be important because combined with Pawleys Island, policies and regulations can be compared and contrasted for towns of varying size to see what works best, as no locality is alike. A larger city like Jacksonville has advantages in that they have a much larger budget that can give them the ability to make changes that are financially feasible for Pawleys Island. They do, however, have disadvantages in efficiencies in logistic, political, social aspects because there are a lot more moving aspects in cities that small towns do not have.

A survey was included in this research but was not executed. Given time constraints data on how citizens of affected properties felt about different resiliency plans, and flood insurance policies was not collected. If this survey were conducted, or expanded on and conducted to relevant communities to this research, it would provide a key social aspect that was not researched in depth.

The initial findings of this study indicate that and a longer and more in depth view of communities and policies and regulations that affect them will contribute to clear change for these communities informed by their visions. It is important this research continues so quality of life in affected areas can be addressed with a well thought out plan instead of simply taking half measures and waiting for Mother Nature to force difficult conversations. We’ve seen what happens to our communities and economies when poor planning happens in instances such as Hurricane Katrina and Hurricane Sandy. Further research in these areas would be a key to providing communities with an actual long term plan.
OVERVIEW OF SURVEY TOOL

The survey (Appendix 4) was created to be executed for future research on the topic of flood insurance and flood risk. It is a brief 15 question survey that would be used to gain some basic demographic information, as well as some opinions and feelings of the people being surveyed. This is intended for residents only, and would not be conducted or sent out to commercial properties. The survey is organized into three parts to cover three different response types from people taking the survey. Conducted on coastal communities, the questions are developed to be relevant to these residents. Part 1 covers 5 basic demographic questions so quantitative data can be developed to give a picture of age, income, gender, size of home, and level of education survey takers have. This is important so that the answers of the questions in Part 2 and Part 3 can be divided into categories of demographics for research. Part 2 asks specifically about flood insurance and flood instances. It is a desired research outcome to know how many of these people have flood insurance, how they feel about their rates and provider of insurance, and if their home has experienced flood damage and what level. Part 3 are questions directed by the direction of the thesis paper by asking questions about sea level rise and resident’s questions about alternative methods of property sustainability that communities undertake. Qualtrics would be the tool in which the survey was formally made and conducted online because it is a great survey tool that provides many different data and customization options. Qualtrics would also be ideal for the survey question breadth is increased for future research. The survey would be distributed by collecting mailing address data of either the entire town or just parts of the community. Within the mailed envelope would be a paper version of the survey for if the respondent would prefer that method, as well as a website URL if they would feel more comfortable using that method. Mail surveys do not receive high rates of return in large communities but it is the hope that providing two methods of feedback could elicit enough responses to compile enough data. Together, the questions and methods should be used to conduct further meaningful research and specific studies about homeowner perspectives regarding these topics.
CONCLUSION

In 2012, $3.6 billion in premiums were collected by the NFIP before Hurricane Sandy. That storm generated $81.2 billion in policy claims against the FEMA run program. This means it is going to take decades to pay off this debt at that rate and that is only if there are no major disasters during that time (Dunn 2015). This alone makes it apparent that reform to policies are required for economic sustainability the federal program and the citizens that have flood insurance policies. Sea level rise further highlights the necessity of property retreat from the coast in areas because beach renourishment is a short-term maintenance activity and does not provide an actual long-term solution. FEMA does not do enough to assess risk for properties as its FIRMs do not account for sea level rise. As stated before, the BWA was a step in the right direction, however, congress felt otherwise as they were getting pressure from homeowners to slow the rise of flood insurance so that they can afford to live in their homes. Being able to afford a home on the coast is a part of the American Dream and is why this topic has been so hotly debated at times. However, part of the American Dream is living in a world with fairness and economic sustainability.

The BWA had many regulations within the policy that would help bring the NFIP to a level that would not continue to increase its indebtedness. The authorization of the HFIAA put a hold on most of these regulations. While this has given homeowners more time to adjust for rate hikes in the future, it has given the rest of taxpayers in this country an undue burden. Rates in SFHAs are specifically subsidized to decrease the cost to these property owners through FEMA’s CRS, but in doing so has spread the costs to all homeowners to balance the payments. With much of the U.S population living on the coast, it is easy to understand pricing many people out of their homes is an adverse action. However, until rates finally rise to accurately represent risk, all Americans suffer.

That leads to FIRMs not taking sea level rise into account when making insurance policies for properties. This is a disservice to property owners as NOAA research concludes, sea level rise is going to be major problem in the coming decades. It signals to property owners who are not educated on the subject that they are at lower risk than they actually are. While they are paying low rates and having a positive outlook on their risk potential, they are not prepared financially to deal with the consequences when flooding occurs. This ultimately leads to due increased debt for the NFIP and communities negatively affected economically and ill-prepared to move forward after a flooding disaster.

Communities must plan for long term solutions as it has been proven that most beach renourishment projects do not last longer than 10 years. This timeline potentially has a consistently decreasing interval as sea level rise begins to increasingly flood these communities. Though it is very important towns do all they can to work towards CRS goals so zoning regulations and other policies prepare the town for the future, it is only worthwhile if they are aggressive in addressing challenges for long term solutions.

With over $1.25 trillion in policy holdings, it is easy to see what is at stake for FEMA. The NFIP may never be able to pay off its debt without substantial expense to taxpayers which is why the BWA was made. Some felt the costs were too high and wrote their congressmen to get the HFIAA in place. Short term solutions are not solutions and serves Americans severe economic
risk. How can we complain about costs being too high, if the alternative, for instance, is that by the year 2050, ports in cities have to spend $1 trillion a year to combat sea level rise? (Waddell 2015). Plans must be implemented by localities in the near future, not far, to combat and react to these risks to try to secure their economic future. If they do not, there will be many communities in this country that go bankrupt and become uninhabitable. These are tough conversations to have but we can either start having them now or Mother Nature will have them for us. The latter means losing our quality of life and well-being. Without it, we have no American Dream.
BIBLIOGRAPHY


An Analysis of Southern Flood Insurance


An Analysis of Southern Flood Insurance


APPENDIX 1- FIGURES

Figure 1

(An illustration of how beach renourishment works, and the sharp decline that increases off shore from tides)
An Analysis of Southern Flood Insurance

Figure 2

(Picture of Pawleys Island after Hurricane Hugo showing island cut in two)
Figure 3

(A 2013 Flood Map of Pawleys Island. Notice Various AE and VE Zones)
Figure 4

(An Illustration of what Base Flood Elevation [BFE] is)
Figure 5

(2015 Satellite Image of Pawleys Island)
Figure 6

(Projected geographic impacts of 4 feet of sea level rise)
Figure 7

(A look at Pawleys Island southern end)
An Analysis of Southern Flood Insurance

Figure 8

<table>
<thead>
<tr>
<th>CRS Class</th>
<th>Credit Points (cT)</th>
<th>Premium Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In SFHA</td>
</tr>
<tr>
<td>1</td>
<td>4,500+</td>
<td>45%</td>
</tr>
<tr>
<td>2</td>
<td>4,000–4,499</td>
<td>40%</td>
</tr>
<tr>
<td>3</td>
<td>3,500–3,999</td>
<td>35%</td>
</tr>
<tr>
<td>4</td>
<td>3,000–3,499</td>
<td>30%</td>
</tr>
<tr>
<td>5</td>
<td>2,500–2,999</td>
<td>25%</td>
</tr>
<tr>
<td>6</td>
<td>2,000–2,499</td>
<td>20%</td>
</tr>
<tr>
<td>7</td>
<td>1,500–1,999</td>
<td>15%</td>
</tr>
<tr>
<td>8</td>
<td>1,000–1,499</td>
<td>10%</td>
</tr>
<tr>
<td>9</td>
<td>500–999</td>
<td>5%</td>
</tr>
<tr>
<td>10</td>
<td>0–499</td>
<td>0</td>
</tr>
</tbody>
</table>


Outside the SFHA: Zones X, B, C, A99, AR, and D

Preferred Risk Policies are not eligible for CRS premium discounts because they already have premiums lower than other policies. Preferred Risk Policies are available only in B, C, and X Zones for properties that are shown to have a minimal risk of flood damage.

Some minus-rated policies may not be eligible for CRS premium discounts.

Premium discounts are subject to change.

(A Table showing the difference in CRS class insurance reductions)
APPENDIX 2 – PRESS RELEASE

For Immediate Release: April 6, 2016

Nicholas Blair
Coastal Carolina University
Edgar Dyer Institute for Leadership and Public Policy
nwblair@g.coastal.edu

Beach Renourishment Just a Stopgap to a Larger Financial Cliff
Sea-Level Rise Threatens Almost $3 Trillion in Real Estate

Conway, S.C.: The state of Florida pledged to allocate $105 million on beach renourishment to try to keep Florida beaches, its biggest tourism asset, above water. The National Oceanic and Atmospheric Administration (NOAA) completed a computer simulation of the impact of 4,000 storms on Florida’s Atlantic coast and concluded that Santa Rosa Island’s beach would erode 97 to 100 percent by year 2100.

“Everyone knows that when you nourish a beach, it doesn’t last forever. It gets washed away. With mean sea level rising, a storm that may not have done as much damage 20 to 40 years ago can do more damage today. As engineers, we said, “Okay, what can we do about it?” says Greg Kiker, associate professor of agricultural and biological engineering at the University of Florida.

Coupled with rising sea levels, $2.9 trillion in coastal real estate in Florida is potentially vulnerable to flooding. The FEMA-run National Flood Insurance Program (NFIP) and a private insurance company, Citizens Property Insurance Company, have policies that have grown to cover approximately $500 million each in real estate in Florida, but the premium rates collect on an extremely small portion of that. The NFIP, currently operating at a $24 billion deficit that is expected to rise to $31 billion when the effects of Hurricane Sandy are fully known, has only collected $1.03 billion in premiums. The NFIP stands to be one of the U.S. government’s biggest financial obligations, and it will continue to be a burden as climate change effects increasing in magnitude and frequency.

It’s time for meaningful discussions about moving properties out of the immediate threatened areas along coastlines for the sake of the taxpayers in the state, not just people living on the coast. With climate change potentially contributing to increasingly powerful and frequent hurricanes and projected rising sea levels, Florida is a ground zero for a coastal real estate property collapse. Miami, for instance, is two to five feet above sea level; if sea levels rise the NOAA-estimated 6.6 feet by 2100, where will that leave the property owners in the city? Where will it leave the rest of Floridians? Citizens should get involved now with their state and local governments and have positive conversations regarding mitigation and resiliency plans.
About Edgar Dyer Institute for Leadership and Public Policy: The mission of the Edgar Dyer Institute for Leadership and Public Policy is to create public value by connecting a variety of stakeholders through the production and dissemination of quality, non-partisan survey and policy research and leadership studies and training. We aim to equip students with research and analysis skills, provide scholars with an outlet for investigating important questions about governance and policy, and communicate with both public servants and citizens about policy issues, alternatives, and preferences. These goals reflect our belief that individuals across our community, state, and nation can improve governance and solve big problems by working together on a basis of mutual knowledge and understanding.
Introduction

There are two major pieces of legislations that have been created to address the budget deficit of the NFIP, which is run by the Federal Emergency Management Agency (FEMA), and inefficiencies of residential and commercial flood insurance premiums: The Biggert-Waters Act of 2012 (BWA) and the Homeowner Flood Insurance Affordability Act (HFIAA) of 2014. Both of these specifically address insurance rates; however, the HFIAA was created to delay the increases of insurance rates that the BWA legislation imposed. Though past policies that were too long to represent the risk of properties was one factor in incurring the budget deficit that the NFIP has, it was claims that were filed after Super Storm Sandy, and Hurricane Katrina that were for far more damage than the premiums those properties have paid. The NFIP has more than 5.6 million policies which combine for a total $1.25 trillion in assets as of 2011 (King 2011).
Flood Insurance Rate Maps (FIRMs)

FIRMs are the official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community (FEMA 2015). Special Hazard Risk Areas (SFHAs) are areas of communities that are recognized as higher flood risk zones, and are separated further into insurance risk zones. These maps then become the basis for insurance rates as they highlight the risk of the properties in each flood zone. With new maps, the NFIP can more accurately assess risk and can adjust rates accordingly for new properties, which in turn creates more economically sustainable premium collections. However, FEMA’s flood risk maps do not currently reflect projections of sea level rise and are thus an inadequate basis for long-lived decisions, such as where to build homes (Union of Concerned Scientists 2013).

National Atmospheric and Oceanic Administration

In 2012, the National Oceanic and Atmospheric Administration (NOAA) reported that a 3.3-foot sea level rise by year 2100 is likely, and that it will effect hundreds of thousands of homes (NOAA 2012). It is with extreme importance that the policy decisions that are made with flood insurance and the risk that is the basis for it takes sea level rise seriously for the sake of the people and the economy of this country. The figure to the right highlights just how much risk there is to residences because of flooding due to sea level rise.

Biggert-Waters Act

The BWA was created specifically for reauthorizing the NFIP to adjust rates to and other flood insurance risk shortcomings over five years through September 30th, 2017 (Robben 2016). To increase older rates to more risk-accurate figures, the bill proposed an annual increase capped to no more than 20% annually until the 5 years was over or until the rates reflected the flood risk (FEMA 2013). “One of the most important provisions of the act is the establishment of a Technical Mapping Advisory Council that will provide recommendations to FEMA about how to consider the impacts of sea level rise and coastal development in FIRMs.” However, FEMA has yet to account for sea level rise.
rise in their FIRMs. These factors, as well as phasing out some subsidies to repetitive-loss homes, grandfathered properties, and second homes were big steps towards making the NFIP fiscally solvent and addressing long-term risks such as a sea level rise. The urgency that surrounds this bill comes after the financial toll of Super Storm Sandy in 2012, and Hurricane Katrina in 2005, combined with the increasing deficit of the NFIP. If new legislation that gave the NFIP the ability to impose more regulations, the U.S. economy would continue to suffer. Though the proposed increased and phasing out of some subsidies sounds like a large increase for taxpayers, a study by FEMA indicated that only about 19% of its 5.6 million policies, leaving the majority of customers unaffected (Koba 2014).

“The Biggert-Waters Flood Insurance Reform Act of 2012 is taking some important first steps to remedy some of these shortcomings in the National Flood Insurance Program. It should be implemented as scheduled...to further minimize our coastal risks in a world of rising seas” (Orb Staff 2013).

Homeowner Flood Insurance Affordability Act

The HFIAA was passed in 2014 in response to negative NFIP policy holder feedback about the changes to their insurance rate when the BWA was implemented. The act sought to delay some provisions of the BWA, and to make some changes with grandfathered subsidies. The HFIAA legislation includes many sections that address the BWA regulations directly. For instance, “Section 4 repeals the provision of the BWA that phased out grandfathered rates. Grandfathering allows certain property owners to be protected from a future rate increase that results from a property being remapped into a higher-risk zone.” Another key section that repeals BWA regulations is section 5, which “limits rate increases to 18 percent per year for individual policies, except for non-primary residences, business properties, properties experiencing severe repetitive or cumulative loss, or properties that are substantially damaged or improved. For the exceptions, rate increases are limited to 25 percent per year until full-risk rates are achieved” (Federal Reserve System [FRS] 2014). Parts of the BWA that weren’t changed by the HFIAA
will start to go into effect in 2016 (FRS 2015). The concern that opponents of the bill had were the increasing debt obligation to federal government from the NFIP (Ferraro 2014). The $1.25 trillion in policy assets that was mentioned before highlights and incredible risk to the U.S economy. The debt has been increasing overtime, and has seen dramatic increases mostly due to historic hurricanes (Walsh 2013).

“With interest payments alone on the debt to the U.S. Treasury being very high, it is looking increasingly unlikely that NFIP will ever be able to pay off its debt entirely, let alone build up a reserve in anticipation of future damaging floods (Union of Concerned Scientists 2013).”

The debt has been increasing overtime, and has seen dramatic increases mostly due to historic hurricanes (Walsh 2013). Currently at $24 billion debt, the NFIP may never be able to repay its debt, and instead would pass that debt onto the taxpayers. Its debt may rise to $30.4 billion when taking into account Hurricane Sandy. This is what must be addressed directly for financial survivability of the program.

Conclusion

Both Policies are steps in the right direction of the goal of making the NFIP a financially sustainable program, but they both have inadequacies. While the BWA does take the most direct and aggressive approach to making the program solvent, and to make sure it does not run at a deficit in the future, it does so at high costs to hundreds of thousands of Americans. It’s an economic challenge because on one hand the NFIP deficit is a tax burden on all Americans, not just people who take out flood
insurance policies. And on the other, quick changes to flood insurance premiums on residents have direct impacts on home values, which also hurts the economy. However, the single greatest threat to economic sustainability when addressing flood risk and insurance rates is sea level rise. In 2012, the National Oceanic and Atmospheric Administration reported that a 3.3-foot sea level rise by year 2100 is likely, and that it will effect hundreds of thousands of homes (NOAA 2012). It is with extreme importance that the policy decisions that are made with flood insurance and the risk that is the basis for it takes sea level rise seriously for the sake of the people and the economy of this country. The figure below highlights just how much risk there is to residences because of flooding due to sea level rise.

References


Nicholas Blair
The Edgar Dyer Institute for Leadership and Public Policy believes that individuals across the community, state and nation can improve governance and solve problems by working together on a basis of mutual knowledge and understanding. Our mission is to engage Coastal Carolina University students in active learning opportunities while creating public value, untangling public problems, and finding public solutions that have positive and measurable impacts. For more information please contact ilpp@coastal.edu or 843-349-6952.
APPENDIX 4 – SURVEY TOOL

Survey for Flood Risk Research
--To Understand Citizen’s Thoughts and Concerns

Complete the following questions and submit survey to:

Nicholas Blair
Edgar Dyer Institute for Leadership and Public Policy
Brittain Hall
Coastal Carolina University
100 Chanticleer Drive East,
Conway S.C, 29528

Or Electronically to:
nwblair@g.coastal.edu
Thank you for taking the time to complete this survey. Your input and information are very valuable, and collectively this information will serve to provide data on how citizens near the coast feel about this topic. This data is completely anonymous, and will not be released to the public and will only be used as data for research.

**Part 1.**

1. **In what age bracket do you fall?**
   a. 18 – 25
   b. 26 – 45
   c. 46 – 65
   d. 65 or older
   e. Would rather not say

2. **What gender do you identify as?**
   a. Male
   b. Female
   c. Would rather not say

3. **What is your annual income level?**
   a. Below $35,000
   b. $35,001 - $60,000
   c. $60,001 - $90,000
   d. $90,001 - $150,000
   e. Above $150,000
   f. Would rather not say

4. **How many bedrooms does your home have?**
   a. 1-3
   b. 4-5
   c. 6-7
   d. 8-9
   e. 10 or greater

5. **What is your highest level of formal education?**
   a. High School
   b. Associates / Technical
   c. Bachelors
   d. Masters
   e. Doctorate
   f. Not Specified

6. **Where is your home located in relation to the ocean?**
   a. Beachfront
   b. 1-3 Blocks Away
   c. On Marsh / Creek
   d. Within 2 Miles
   e. Greater than 2 miles
Part 2. *(Circle yes or no)*

1. Do you pay for any type of flood insurance policy?
   - Yes
   - No

2. If yes to the question above, do you feel that your rates should be lower?
   - Yes
   - No

3. Many homes have an insurance policy provided by a program from the federal government, do you believe the federal government should be in this business?
   - Yes
   - No

4. Has your home experienced flood damage in the last 30 years?
   - Yes
   - No

5. If yes, what was the extent of the flood damage?
   - Minor
   - Moderate
   - Significant
   - Had to Rebuild

6. How concerned are you about future flood damage?
   - Not at all
   - A little
   - Moderate
   - Very Worried

Part 3. *(Pick the closest answer that describes your opinion)*

1. I am concerned about rising sea levels.
   - Strongly Agree
   - Agree
   - No opinion
   - Disagree
   - Strongly Disagree

2. I believe that in some coastal areas, properties should retreat from the beach.
   - Strongly Agree
   - Agree
   - No Opinion
   - Disagree
   - Strongly Disagree

3. How do you feel about beach renourishment (importing more sand to protect beaches and dunes), in regard to protecting homes?
   - Very Adequate
b. Adequate

c. No Opinion

d. Inadequate

e. Very inadequate

4. I believe that other barriers (such as walls) would be more effective in protecting properties on the beach.

a. Strongly Agree

b. Agree

c. No Opinion

d. Disagree

e. Strongly Disagree

Please use the box below to write any other comments on the topic you would like to discuss, or any other comments you have on the survey itself. Alternatively, you can write down your contact information if you would like to contact the author of this survey. Thank you.

Please Send to:

Nicholas Blair
Edgar Dyer Institute for Leadership and Public Policy
Brittain Hall
Coastal Carolina University
100 Chanticleer Drive East,
Conway S.C. 29528

Or Electronically to:
nwblair@g.coastal.edu