

The background image is a composite of two photographs. The top photograph shows a white lighthouse with a red roof and a small white building with a red roof situated on a rocky cliff overlooking the ocean. The sky is dark and cloudy, and the lighthouse is illuminated. The bottom photograph shows a close-up of waves crashing against dark rocks, creating white foam. The text "2020 Storm Surge Report" is overlaid on the bottom photograph in white.

# 2020 Storm Surge Report

## Introduction

In the United States, the Atlantic Ocean and Gulf of Mexico coastlines stretch from Texas up to Maine. Residences are dotted along the coastlines from a birds-eye view. Although they have beautiful views and idyllic landscapes, these areas are vulnerable to hurricanes and their accompanying storm surge.

The National Oceanic and Atmospheric Administration (NOAA) released their official pre-season [forecast](#) on May 21, indicating an above-normal season with 13-19 named storms and 3-6 major hurricanes.

The annual CoreLogic® analysis identifies single-family and multifamily residences at risk of storm surge during the 2020 Atlantic hurricane season.

This year, even as the widespread coronavirus (COVID-19) continues to sweep the globe, the risk for natural disasters remains unchanged. This year's analysis will address the operational ramifications this may cause for catastrophe response.







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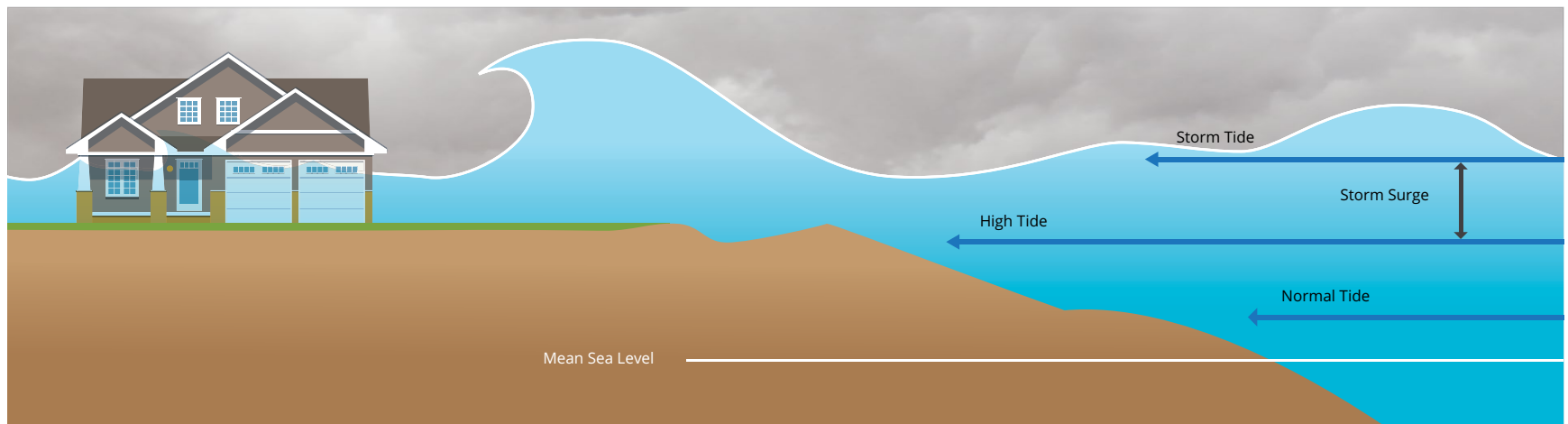
## What is Storm Surge?

Tropical cyclones are one of the most dangerous and costly natural disasters on Earth. In the Gulf and Atlantic basin, tropical cyclones are referred to as hurricanes, and these storms bring a mix of wind, flooding, severe thunderstorms and storm surge.

According to the [National Hurricane Center](#), storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. In short, storm surge occurs when seawater is pushed ashore by a storm through a combination of wind and pressure. Storm surge can be incredibly destructive, with a single cubic yard of seawater weighing nearly one ton. A mix of

high winds and low pressure traveling with the storm causes water to accumulate along the front of a hurricane and push the amassed water across the ocean as it moves – eventually onto land, and into residences and businesses.

“Hurricane-driven storm surge is one component of land falling hurricanes that can cause extensive property damage,” says Dr. Thomas Jeffery, Principal, Science and Analytics at CoreLogic. “While most people associate hurricanes with wind, it is important to expect and prepare for the inevitable flooding since that is often responsible for considerable damage.”



## Why is Storm Surge Important?

Hurricanes and the associated storm surge frequently require mandatory evacuation, often leading to mass displacement of people and tragic loss of life. Additionally, the impact of storm surge from a single hurricane can cause billions of dollars in property damage. In 2005, Hurricane Katrina's storm surge famously breached 53 levees, causing catastrophic damage to New Orleans and its residents. It is now one of the costliest hurricanes on record – generating [\\$125 billion](#) worth of damage.

In exploring the risk associated with storm surge, insurers and homeowners can better prepare for hurricane season and accelerate their recovery if necessary.

Dr. Thomas Jeffery, Principal, Science and Analytics at CoreLogic notes,

*“Storm surge has historically been the deadliest and most destructive hazard we deal with. Now, potentially compounded by the pandemic, it has never been more important to pay attention to storm warnings and prepare for the possibility of hurricanes making landfall this year along the Gulf and Atlantic coasts.”*



# National Analysis

## National Analysis

In February this year, CoreLogic analyzed the national risk levels for single-family residences (SFR) and multifamily residences (MFR) at risk of storm surge in the United States.

In 2020, there are 7,110,779 SFRs and 252,657 MFRs at risk of storm surge. The reconstruction cost value (RCV), the cost to rebuild a house assuming complete destruction, for SFRs tops \$1.7 trillion, while MFRs tops \$95 billion. It is important to note that multifamily residences tend to be multiple stories, and these higher levels have less potential to be affected by storm surge.



Single-family homes are residential structures less than four stories, including mobile homes, duplexes, manufactured homes and cabins.



Multifamily homes are apartments, condominiums and multi-unit dwellings.

These figures represent the number of homes at potential risk, and not the actual number affected by hurricane activity. RCV is calculated using an assumption of the total (100%) destruction of the structure and is based on construction materials, equipment and labor – it does not include the value of the land or lot.

Storm Surge Risk Level (Storm Category)	Total Homes (SFR) Potentially Affected	Total Estimated RCV (U.S. Dollars in Billions)	Total Homes (MFR) Potentially Affected	Total Estimated RCV (U.S. Dollars in Billions)
Category 1	804,316	\$195.10	24,924	\$8.13
Category 2	2,546,714	\$631.48	87,139	\$31.71
Category 3	4,656,483	\$1,142.89	165,317	\$61.74
Category 4	6,198,017	\$1,520.88	236,221	\$90.83
Category 5	7,110,779	\$1,709.77	252,657	\$95.24

\*Data is cumulative (e.g. Category 3 will also include Categories 1 and 2. All Category 5 potential homes affected will also be susceptible to Category 1, so Category 5 encompasses all).



**Fig. 1 Total Homes At-Risk of Storm Surge Damage by Core-Based Statistical Area**

**Single-Family Residential**

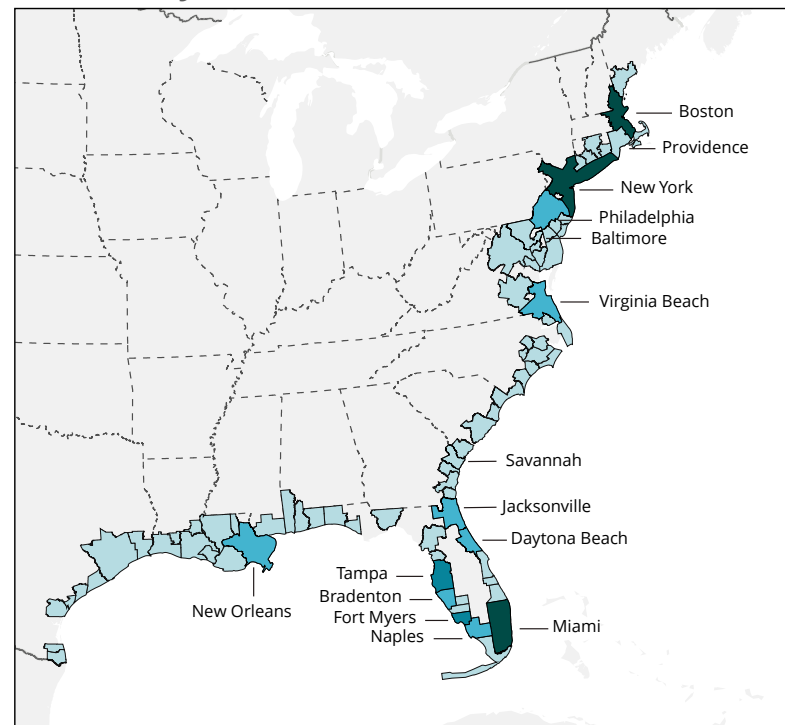


Home Totals (in thousands)



Source: CoreLogic 2020

**Multifamily Residential**



Home Totals (in thousands)

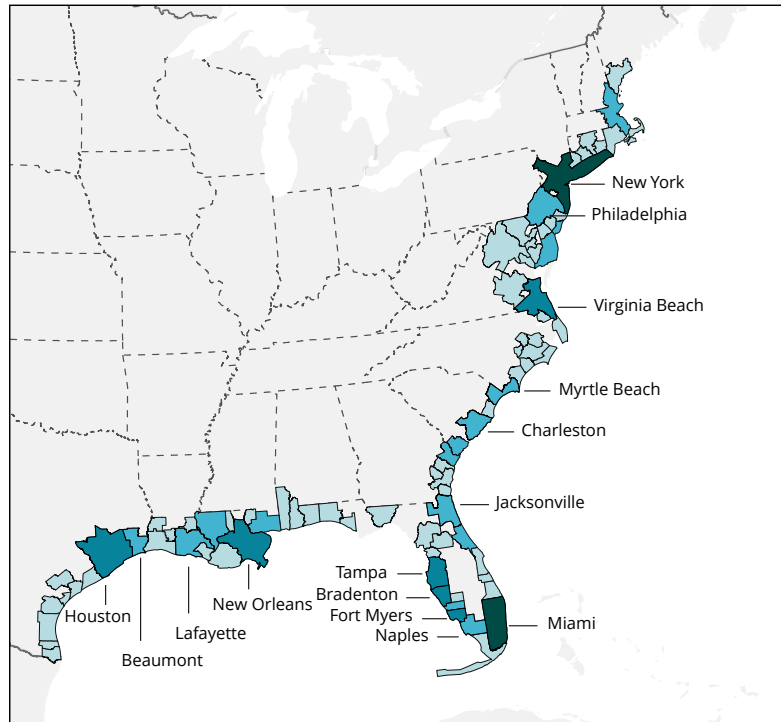


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**Fig. 2 Total RCV of Homes At-Risk of Storm Surge Damage by Core-Based Statistical Area**

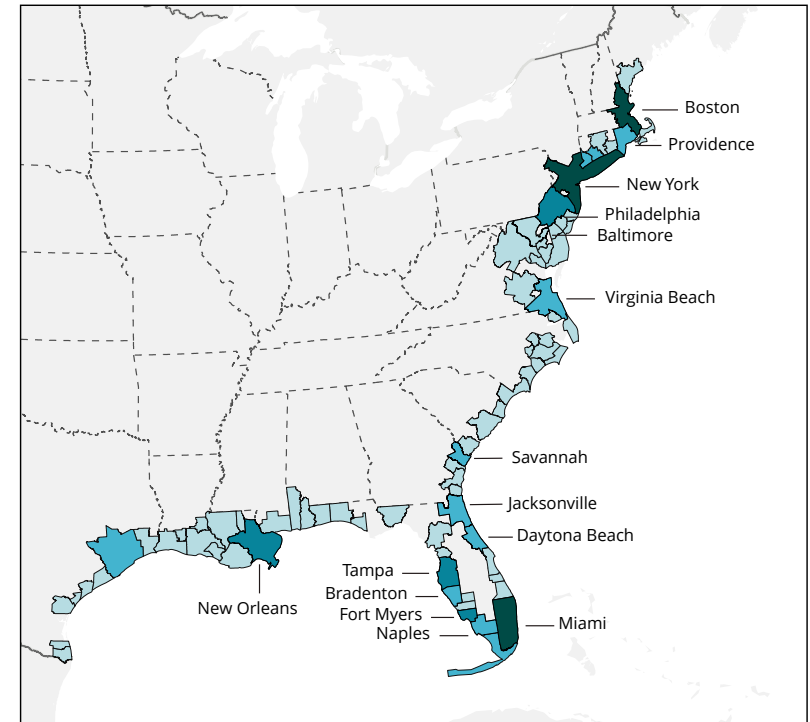
**Single-Family Residential**



Total Estimated RCV (\$USD in billions)



**Multifamily Residential**



Total Estimated RCV (\$USD in billions)



Source: CoreLogic 2020

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# Metro Analysis

## Metro Analysis

CoreLogic looked at the top 15 metropolitan areas with the greatest number of SFRs and MFRs at risk for storm surge. These areas account for 68.8% of the total RCV of storm surge risk in the United States in 2020.

When considering the impacts of storm surge, it is important to note that location is an extremely influential factor when assessing the severity of potential damage. For instance, a lower category storm in a densely populated metropolitan area can do more damage than a higher category storm in a lower-populated area. Likewise, certain metropolitan areas are more susceptible to storm surge damage due to proximity to the coast.

CoreLogic uses Core-Based Statistical Areas (CBSAs) to evaluate storm surge risk at the local level. Metropolitan areas are populated by >50,000 people, and micropolitan areas are populated by <50,000 people. The CBSA represents an urban center, like a city, and surrounding areas that are socioeconomically tied to that center.



## Top 15 Metros at Risk of Storm Surge

### Single-Family Residential

Rank	Metropolitan Area	State	Total (SFR) Homes at Risk of Storm Surge	Total Estimated RCV (U.S. Dollars in Billions)
1	Miami	FL	798,601	\$157.47
2	New York	NY	732,531	\$285.64
3	Tampa	FL	466,444	\$83.42
4	New Orleans	LA	400,252	\$101.47
5	Virginia Beach	VA	397,722	\$95.59
6	Fort Myers	FL	335,574	\$68.62
7	Houston	TX	298,511	\$64.57
8	Bradenton	FL	266,719	\$53.76
9	Naples	FL	190,865	\$42.28
10	Jacksonville	FL	175,919	\$41.31
11	Philadelphia	PA	165,941	\$43.93
12	Charleston	SC	158,280	\$41.58
13	Myrtle Beach	SC	132,738	\$24.93
14	Lafayette	LA	129,118	\$29.11
15	Beaumont	TX	120,918	\$22.13
	Total		4,770,133	\$1,155.82



## Top 15 Metros at Risk of Storm Surge

### Multifamily Residential

Rank	Metropolitan Area	State	Total (MFR) Homes at Risk of Storm Surge	Total Estimated RCV (U.S. Dollars in Billions)
1	New York	NY	102,076	\$48.73
2	Miami	FL	35,914	\$9.00
3	Boston	MA	24,474	\$8.97
4	Fort Myers	FL	13,693	\$3.34
5	Tampa	FL	12,068	\$3.29
6	Philadelphia	PA	6,300	\$2.49
7	New Orleans	LA	6,003	\$3.17
8	Virginia Beach	VA	4,124	\$1.38
9	Naples	FL	3,996	\$0.79
10	Jacksonville	FL	3,892	\$1.28
11	Bradenton	FL	3,248	\$0.87
12	Daytona Beach	FL	3,238	\$0.83
13	Savannah	GA	2,546	\$0.82
14	Providence	RI	2,018	\$1.14
15	Baltimore	MD	1,863	\$0.36
	Total		225,453	\$86.48

# Collision of COVID-19 and Hurricane Season

## The Economic Risk of Hurricane Season

Nationwide, the economy is struggling due to COVID-19, with an unemployment rate that has already exceeded 14% in April 2020. Recent [CoreLogic analysis](#) shows the serious delinquency rate for home mortgages could rise four- to ten-fold from February's 1.2% in 18 to 24 months depending on the severity and length of the current recession.<sup>1</sup> That's about 3 to 7 million homeowners who may be seriously delinquent during the second half of 2021.

Natural catastrophes are known to have an impact on mortgage delinquencies. "If a hurricane causes significant storm surge damage during a time when mortgage delinquencies are already high, this could result in additional losses for homeowners, lenders and insurers – and ultimately, delay economic recovery for

impacted communities," said Dr. Frank Nothaft, chief economist at CoreLogic. "For example, [our analysis shows](#) that three months after 2018's Hurricane Florence made landfall, serious delinquency rates had doubled in major metros affected by the storm."

Cities at high risk of storm surge damage also face heightened risk of mortgage delinquencies. Miami (5.1%), New York (4.7%) and New Orleans (6%) had elevated mortgage delinquency rates in February, well above the U.S. rate (3.6%) and two months ahead of the spike in U.S. unemployment. Miami, New York and New Orleans are also near the top of the list for storm surge risk, ranking first, second and fourth, respectively, for risk to single-family homes.

Metropolitan Area	30 Days or More Delinquency Rate (Feb. 2020)	Rank for Storm Surge Risk among Top 15 Metros	Total (SFR) Homes at Risk	Total (SFR) RCV of Homes at Risk (U.S. Dollars in Billions)
Miami	5.1%	1	798,601	\$157.47
New York	4.7%	2	732,531	\$285.64
New Orleans	6%	4	400,252	\$101.47

[1] Seriously delinquent rate is the percent of loans that are at least 90 days delinquent or in foreclosure proceedings. The February 2020 data is from CoreLogic TrueStandings Servicing.

## How has COVID-19 Impacted Preparation and Recovery of Storm Surge and Natural Catastrophes?

The start of the new decade brought a new type of global disaster on a scale which has not been seen for more than a hundred years. While currently not as deadly as the Spanish flu (1918-1920), the full consequences of the COVID-19 pandemic are still unknown. However, one thing is certain: COVID-19 has upended the day-to-day life for people around the world. Add a wide scale catastrophe event to this equation, and a community can suddenly become engulfed in logistical challenges as it responds to evacuation or shelter needs from people displaced from their homes.

Given NOAA has forecast an above-normal hurricane season, preparation, evacuation, response and recovery for natural catastrophe events must factor in this emerging reality.





**Preparation:** A shortage of contractors for installation of hurricane shutters and other active protection devices could leave some less protected in their homes. Many essential grocery store items are unavailable. These resources would likely remain unavailable during a demand for similar items for hurricane preparation.

*"Homeowners need to update their storm preparedness and home protection measures now. Don't wait until the middle of hurricane season to hire the labor or materials necessary to best protect your house. Reconstruction materials and labor cost more due to shortage during high demand, and we typically see a demand surge of 15-30% after a disaster which typically lasts 6-12 months," says Maiclaire Bolton Smith, Senior Leader, Research and Content.*

**Evacuation:** Practicing safe social distancing may hinder evacuation centers' ability to fill their buildings to capacity, as well as hinder family and friends who live in separate areas to shelter together.

*FEMA has reported they are working with partners to determine shelter-in-place scenarios that support social distancing guidelines. Additionally, the American Red Cross recommends putting people in hotels as a first option.*

**Immediate Response:** Without fully operating hotels and restaurants, claims and recovery activities face difficult challenges; displaced people may struggle to get back on their feet without a full breadth of resources and various hospitals and first responders are stretched thin in some areas which could delay response.

*"The immediate response is a key element in the resiliency of a community. The recovery will need to address the real and visible problem of damaged property while simultaneously battling the invisible but equally daunting risk of sudden health problems from COVID-19 infections. Leveraging technology to deploy recovery resources only when and where they are needed can help responders manage this multi-faceted challenge," says Tom Larsen, Principal, Content Strategy, Insurance Solutions at CoreLogic.*

**Aftermath:** The full impact of COVID-19 is still unknown, but there may be disruptions to the supply chain for raw materials, manufacturing and transportation, causing repair and rebuild efforts post-disaster to be especially challenging. Additionally, insurers may be challenged with an influx of claims and fewer adjusters to review damages.

*"Insurance companies can be the source that connects many of these solutions providers, such as construction companies and hotels, that can assist people impacted by hurricanes," James R. Swayze, Executive, Insurance Claims at CoreLogic says. "The key to ensuring a speedy recovery in the face of new COVID-19-created challenges is insurance companies' use of virtual assessment and claims tools. Creating a faster and more efficient claims process can help alleviate other community-wide disruptions."*

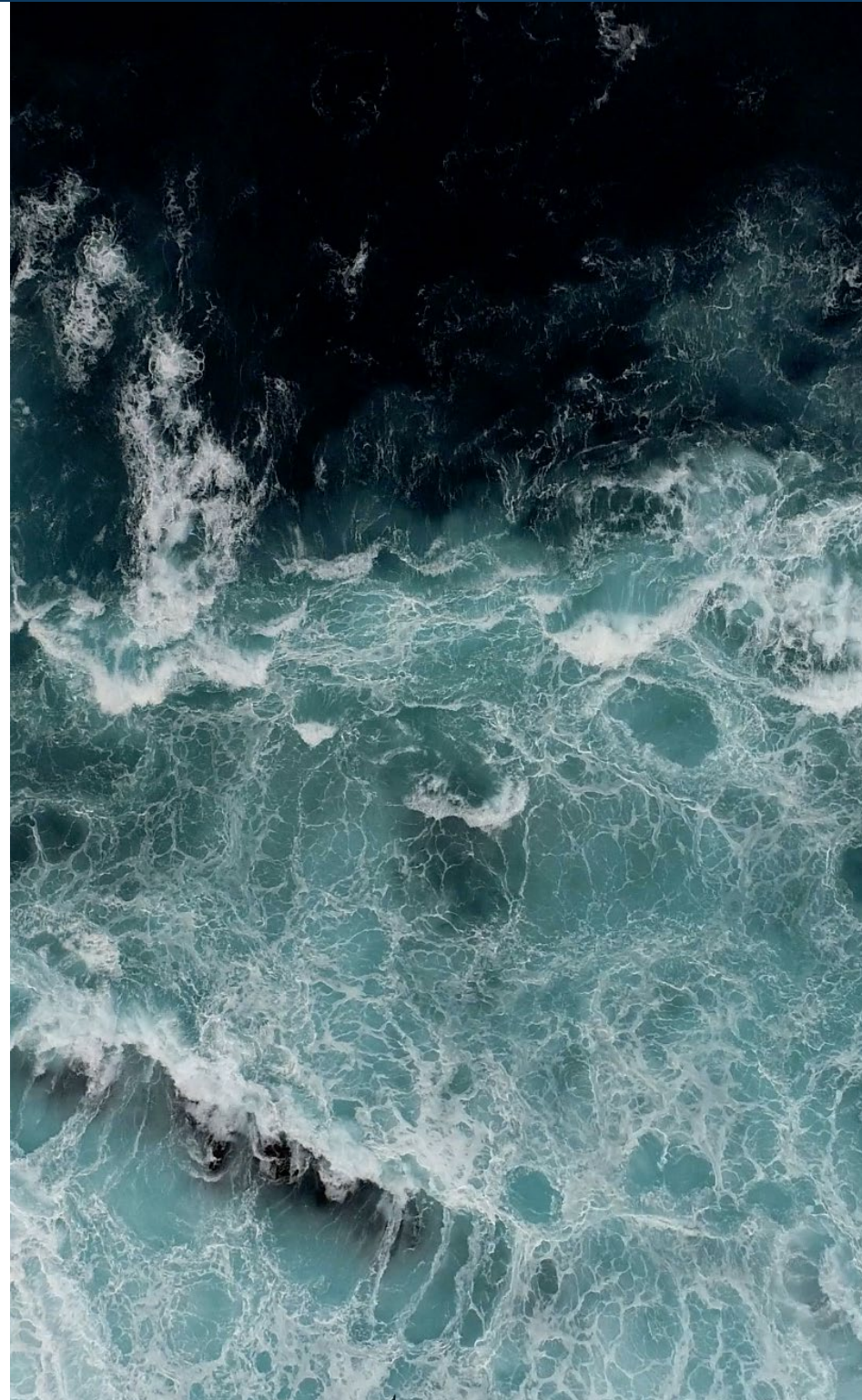
## Key Takeaways for Risk and Recovery

Know Your Risk. Accelerate Your Recovery.™

Hurricane season begins on June 1 and continues through the end of November, unfortunately giving storms and other catastrophes ample time to adversely impact homes and their residents. Storm surge, along with other natural hazards, play an important part in determining risk and coverage for homeowner's insurance.

For insurers, it is important to understand this risk on a granular, structure-by-structure basis to ensure policyholders are adequately covered and portfolios remain healthy, even in the midst of uncertainty.

For homeowners, while it is impossible to stop natural disasters, understanding personal risk, and ensuring the right financial protections are in place, is critical for swift recovery. Homeowners should work with their insurance provider to evaluate their home's susceptibility to natural disasters and storm surge risk – doing so is paramount to keeping homes protected.



## Methodology

The analysis in the 2020 Storm Surge Report encompasses single-family residential structures less than four stories, including mobile homes, duplexes, manufactured homes and cabins (among other non-traditional home types). It also encompasses multifamily structures, which include apartments, condominiums and multi-unit dwellings. It is important to note that the inclusion of high-rise residential units such as those listed above may skew both the numbers associated with storm surge risk. This is because lower-level units are most likely to be affected, whereas the units above the second floor will rarely, if ever, experience storm surge flood damage.

Year-over-year changes between the number of homes at risk and the RCV can be the result of several variables, including new home construction, improved public records, enhanced modeling techniques, fluctuation in labor, equipment and material costs and even a potential rise in sea level. Indeed, this year's addition of new data in the form of multifamily structures has increased the total number of structures at risk. For that reason, direct year-over-year comparisons should be warily considered. To estimate the value of property exposure of single-family residences, CoreLogic uses its RCV methodology, which estimates the cost to rebuild the home in the event of a total loss and is not to be confused with property market values or new construction cost estimation. Reconstruction cost estimates more accurately reflect the actual cost of damage or

destruction of residential buildings that would occur from hurricane-driven storm surge, since they include the cost of materials, equipment and labor needed to rebuild. These estimates also factor in geographical pricing differences (although actual land values are not included in the estimates). The values in this report are based on 100% percent (or "total"), destruction of the residential structure. Depending on the amount of surge water from a given storm, there may be less than 100% damage to the residence, which would result in a lower realized RCV.

To evaluate storm surge risk at the local level, CoreLogic uses the designation of CBSAs, which are often referred to as metropolitan areas (>50,000 people), or micropolitan areas (<50,000 people). The CBSA represents an urban center and the adjacent regions that are socioeconomically tied to that center. The specific areas identified in this report are named by primary urban center, though each may contain additional urban areas.

The high-resolution, granular modeling for underwriting individual risk allows enhanced understanding of the risk landscape and damage potentials. CoreLogic offers high-resolution solutions with a view of hazard and vulnerability consistent with the latest science for more realistic risk differentiation. The high-resolution storm surge modeling using 10m digital elevation model (DEM) and parcel-based geocoding precision from PxPoint™ facilitates a realistic view of the risk.



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