

Research: Florida Getting Better At Protecting Homes From Hurricanes

June 29 2005

New Florida homes withstood last year's four hurricanes better than their older counterparts -- thanks in large measure to continued improvements in the state's hurricane building code, say University of Florida engineers.

UF engineering researchers have completed one of the most extensive studies of how homes built before and after Florida's latest building code held up against Charley, Frances, Jeanne and Ivan.

Their conclusion: Homes built under the Florida Building Code that became effective in 2002 sustained less damage on average than those built between 1994 and 2001 under the Standard Building Code. Homes completed before 1994, meanwhile, fared worse.

"The iterations and changes over the years to the codes Florida uses have made a measurable difference," said Kurt Gurley, a UF associate professor of civil engineering and the lead investigator on the project.

The engineers, whose study of 200 homes was funded with a \$90,000 grant from the Florida Building Commission through the Florida Department of Community Affairs, present their report today at the FBC's meeting in St. Petersburg. A subcommittee will mull the study as well as other research and information to help steer recommendations for possible new code changes later this year.

The UF research is important because it demonstrates that quality codes

are a key part of the prescription against hurricane damage, said Jeff Burton, building code manager at the Tampa-based Institute for Business & Home Safety, a building safety advocacy group whose engineering experts participated in the study. That's especially true outside Florida, already considered the nation's leader in wind protection codes, Burton said.

"Comparatively speaking, there are other states that have no codes that have a high probability of a hurricane making landfall," he said. "In my line of work, I go to various states and try to educate them. Unless you have proof that they need codes, number one, and number two, that they actually work, it's a hard sell."

Gurley's team, which also included engineers from Florida International University and Florida A&M University, compared homes in the path of the highest wind zones generated by the hurricanes.

The study did not formally include homes built before 1994, when the Standard Building Code's high wind standard became widely used in coastal areas. However, the researchers got a good idea of damage to pre-1994 homes as a result of their visits to storm-damaged neighborhoods.

The engineers interviewed homeowners, examined photos and other records of damage and inspected homes for construction method -- noting, for example, the size and spacing of nails used to affix roofing plywood to rafters. Besides Gurley, the UF team included civil engineering graduate student Rob Davis, Jimmy Jesteadt, Sean-Paul Ferrera, Ryan Chancey, and Luis Aponte, as well as undergraduate students.

Among the group's findings: Shingle-roofed homes built under the 2002 code retained more asphalt shingles than homes built under the 1994

code. Retaining shingles is critical in hurricanes because loss of too many can compromise the roof, allowing rain to enter the attic and living space. The new code requires shingles rated to withstand higher winds than the previous code.

In Charlotte County, for example, nearly 30 percent of the surveyed homes built under the new code that faced Hurricane Charley's highest recorded wind gusts – as high as 150 mph – had no shingle damage. But every surveyed home built under the previous code experienced at least some shingle loss. Among those homes that did lose shingles, meanwhile, very few surveyed new homes experienced a loss of more than 10 percent. But 10 percent was the minimum for older homes, with many losing far higher percentages. The benefits of the more rugged roof are clear in the study, but it can be tricky to determine the relative effects of code improvements from other issues such as aging, Gurley added.

The team also found that a recent requirement for reinforced garage doors proved very effective. Most of the homes surveyed were built with this requirement, and none had significant garage door damage. However, researchers saw many pre-1994 homes whose weaker garage doors were blown off their tracks, a failure that often allowed wind to enter the house, damage the contents and attack the integrity of the roof from inside.

Despite the noticeable improvement in performance among new homes versus old homes, homes built under the newest code did not survive unscathed, Gurley said. Common failures among new homes include soffits, or vents located underneath roof overhangs to allow air to circulate through the attic. Wind sometimes damaged or blew out these soffits, allowing wind-driven rain to enter the attic, soaking insulation and even damaging ceilings and home contents in some cases, Gurley said.

Gurley said improving soffit performance is one area the Florida Building Commission will likely tackle in its next set of code revisions, among other issues. He said his research shows that although there will never be a perfect building code, Florida has a good track record of improving standards.

Source: University of Florida

Citation: Research: Florida Getting Better At Protecting Homes From Hurricanes (2005, June 29) retrieved 30 June 2024 from <https://phys.org/news/2005-06-florida-homes-hurricanes.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.