POLICY BRIEF

DeVoe L. Moore Center
College of Social Sciences
Florida State University

ISSUE #23 DECEMBER 2006

Assessing the Effectiveness of Comprehensive Plans in Mitigating Exposure of Florida Coastal Communities to Hurricane Flooding

Tim Chapin, Robert Deyle, and Jay Baker

Threats to public safety from hurricane flooding were one of the Florida Legislature's primary concerns when it enacted the state's landmark 1985 Growth Management Act. Since 1990, coastal communities have been required to include policies in their comprehensive plans that limit development in and direct populations away from "coastal high hazard areas" (CHHAs). Local governments also are required to adopt policies to maintain or reduce hurricane evacuation clearance times. Florida is widely recognized as having the strongest state mandate for local governments to incorporate hazard mitigation policies in their comprehensive plans.

Because most local comprehensive plans adopted pursuant to the 1985 state act have been in place since about 1990, Florida offers an excellent setting in which to assess the effectiveness of such a mandate. In this study we evaluate the impact of local comprehensive plan content on residential development within designated coastal high hazard areas of Florida. We employ quality scores for specific maps, definitions, and policies within the coastal elements of local comprehensive plans and test these against measures of post-plan approval residential growth rates and growth densities. Our findings offer insight into the effectiveness of Florida's 1985 growth management planning mandate as measured by actual changes in land use.

The specific hypotheses tested in this study are:

(1) *Communities whose comprehensive plans include more extensive policies for limiting development and directing populations away from CHHAs will exhibit less residential growth within their CHHAs than those communities whose plans do not do so.*

(2) *Communities whose comprehensive plans include maps that depict the boundaries of the CHHA will exhibit less residential growth within their CHHAs than those communities whose plans do not do so.*

Data and Methods

Two dependent variables were of interest in this study, each measured at the jurisdiction level: (1) the within-CHHA post-plan residential unit growth rate (ICHPSTGR) and (2) the within-CHAA post-plan residential unit growth density (ICHPSTDN). The ICHPSTGR variable represents the proportional increase in the number of residential units within the CHHA between the year of initial comprehensive plan approval and 2002. The ICHPSTDN variable standardizes these growth rates by the available land supply in the plan approval year, or the amount of vacant land that could potentially have been developed as a residential land use.

Our experimental variables of interest revolve around two sets of plan quality variables: (1) plan policy quality and (2) hazard zone map quality. To acquire these data we conducted content analyses of the coastal elements of the comprehensive plans that were approved by the state Department of Community Affairs (DCA) in the late 1980s/early 1990s, as well as those of the plans as of 2002. We also developed a number of control variables with which to optimize our statistical models and to help identify alternative explanations for observed differences in the dependent variables.

For each of the two dependent variables we undertook two levels of analysis: (1) correlation analyses using *Kendall's tau-b* and (2) regression analyses of the experimental and control variables on each of the dependent variables.

Our sample included 89 jurisdictions (15 counties and 74 municipalities), providing good coverage of the range of geographic and socio-economic variation among Florida's coastal jurisdictions.

Comprehensive Plan Quality Over Time

At the time of plan approval, the quality of local comprehensive plans was decidedly mixed. One in four communities had no policy for maintaining or reducing evacuation clearance times, and one in three had no policy for directing populations away from the CHHA. Over half of the original comprehensive plans had no map of the CHHA boundary and only four of seventy-seven communities mapped their CHHA boundary on their future land use map (or FLUM).

By 2002, however, the quality of plans had improved dramatically, with the number of jurisdictions not meeting the state standards for plan quality falling precipitously. At this later time, roughly two in three jurisdictions surpassed the state minimums for each of the policy mandates. However, the evidence suggests that holdouts from the state mandate remained; one in six still did not have one or more of the required policies in place to meet the state mandate.

Plan Quality and Development Outcomes: Correlation Results

One unexpected finding from the correlation analysis was that none of the 2002 plan quality variables was significantly correlated with post-plan development patterns. In contrast, several measures of the quality of the policies and maps in communities' plans at the time they

were originally approved by DCA were associated with lower post-plan growth rates and/or growth densities.

More specifically, depiction of the CHHA boundary on the future land use map was correlated with lower post-plan growth rates and growth densities within CHHAs (variable name: CHHMAPLU). We also found that more stringent policies for directing population concentrations away from CHHAs were associated with lower post-plan growth rates and growth densities (variable name: POPDEVAP). Taken as a whole, these results offer some evidence that better plan quality is associated with lower post-plan growth rates and growth densities within the CHHA.

Plan Quality and Development Outcomes: Regression Results

Regression analysis indicates that post-plan growth rates (ICHPSTGR) were in part a function of the amount of constrained lands (amount of within-CHHA vacant land in wetlands), evacuation clearance times at the time of plan adoption, CHHAMAPLU, and POPDEVAP. However, the POPDEVAP variable was found to be *positively* related to the growth rate dependent variable. This finding can be interpreted in at least two ways. It could indicate that plan policy quality did not affect growth rates in any meaningful way. Alternatively, it could reflect the fact that those jurisdictions that had experienced high within-CHHA growth rates in the pre-plan period wrote higher quality POPDEVAP policies, but struggled to implement them in the post-plan period.

Simple linear regressions of the two policy variables, CHHMAPLU and POPDEVAP, on post-plan growth density provided some support for our hypotheses. Each of these plan quality variables had a significant, negative impact upon this dependent variable. These findings indicate that those local governments with better hazard zone maps and stronger policies for directing populations away from the CHHA had lower post-plan growth densities, which is the desired planning outcome.

However, when a control for pre-plan growth density was included in the regressions, the influence of most of the other independent variables was substantially diminished. These results suggest that pre-plan growth densities were the major factor in determining post-plan growth densities, more important than land development constraints, hurricane history, and plan policy quality. The only other variable to remain statistically significant was the map quality variable, CHHMAPLU.

Plan Development and Plan Quality

We also undertook a set of case studies of twelve of our sample jurisdictions to help interpret our statistical results. Taken as a whole, these case studies reinforce the findings of the statistical work; comprehensive plan policies can matter, but largely as a means of reinforcing and supporting the land use policies and regulations that existed at the time of the preparation of these plans.

The case studies reveal that while a few communities utilized their comprehensive plans to reshape local policies on development densities, or used the plan as a springboard to other initiatives (such as land purchases within their CHHAs), the more common story was that local jurisdictions fit their comprehensive plans to their existing zoning regulations. In almost all of our case study communities, the post-plan future land use map in effect mirrored the zoning map of the pre-plan period.

Conclusions

This research began with two hypotheses, each testing whether comprehensive plan quality has contributed to better planning outcomes in a sample of Florida coastal communities, in this case lower development growth rates and growth densities within the CHHA. Overall our findings indicate that plan quality has had only marginal impacts upon these development outcomes. Our analyses indicate that development outcomes were largely a function of the land planning environment that existed at the time of plan adoption, expressed most clearly in allowable development densities.

Unlike other work that has pointed to the relationship between plan quality and development outcomes, this work yields a much less sanguine conclusion. While Florida's planning process was intended to generate comprehensive plans that shape land development regulations, and by extension development outcomes, in practice it appears that the reverse has occurred.

Tim Chapin is an Associate Professor and ***Robert Deyle*** is a Professor in the Department of Urban and Regional Planning at Florida State University. ***Jay Baker*** is Associate Professor in the Department of Geography. This Policy Brief is based upon a larger research project, the Coastal Land Analysis and Management Project (or CLAMP), that received funding from the Florida Sea Grant program, the Florida Department of Community Affairs, and the DeVoe L. Moore Center.

DEVOE L. MOORE CENTER
150 BELLAMY BUILDING
THE FLORIDA STATE UNIVERSITY
Tallahassee, FL 32306-2220
Telephone: (850) 644-3848 • Fax: (850) 644-0581
www.fsu.edu/~policy