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APPENDIX B

We use this appendix to conduct more detailed analysis on several topics. First, we provide an in-depth examination of the relationship between structure age and losses. Second, we perform a balance test to see if our covariates are similar on both sides of our cut point. Third, we try an alternative specification to see if our results are similar, followed by regressions to examine the year-to-year consistency of our post-FBC result. Fourth, we run a regression on claims to verify the difference between our direct reduction result and our full reduction result. Next, we perform a regression on homes built to the SFBC, which had adopted enhanced building codes in advance of the FBC, to assess the effect of earlier adoption of enhanced construction. Finally, we run sensitivity analysis on our BCA, allowing the components of the BCA to vary.

Structure Age and Wind Losses

Our study is similar to recent studies on the effect of energy efficiency building codes adopted in the 1970s in response to the oil price shocks of that decade. The expectation was that better insulation, caulking, and more efficient HVAC systems would result in lower energy consumption. But the change in energy consumption has been less than engineering estimates projected. Jacobsen and Kotchen (2013) find a reduction of 4% for electricity and 6% for natural gas for homes in Gainesville, Florida. But Levinson (2015) points out that the Jacobsen and Kotchen study may be confounding age with vintage and found a decrease in energy use related to the home simply being new rather than the change in building code. Indeed, Kotchen (2015) revisited the question with data 10 years older and found the effect on electricity had disappeared, while the reduction in natural gas use increased. Something is occurring in energy use, unrelated to the code, and could be explained by residents changing their use of energy as they adapt to their new home.

Residents of an energy efficient home can undermine the intent of lower energy use by using the efficient design to heat and cool their homes with a motivation toward increased comfort at the same energy cost rather than energy savings. Our study does not have the behavioral component found in the case of energy efficiency. In our application, the construction elements that make the structure able to withstand high winds are installed when the home is built and lie "behind the walls," making it unlikely for individual preferences to alter the home's performance against the threat of wind storms.[1] Our primary question becomes: Is the improved performance of post-FBC homes due to the code or simply an artifact of new versus old construction, when confronted with a windstorm?

To first address our analysis of age versus the FBC, we rerun our base regression but limit our observations to homes built in the 1990s and post-2000. No home in this analysis is more than 20 years old at the end of our analysis period of 2001–2010, and no home is older than 14 years during the highest-loss year of 2004. To illustrate the stability

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[1] Risk averse individuals who buy a pre-FBC home can, at great expense, retrofit the home to approach the FBC standard.

of our post-FBC variable, we show first a model with limited covariates and then a model with the full set of covariates. This is then compared to the result of our post-FBC variable; we include all observations in our study, along with the age variables. Since this is a comparison between two adjacent decades on either side of our cut point of year 2000, we remove age and age squared. Results are shown in Table B1.

Table B1

	1990-2010						Full Model		
Parameter	Estimate	Std Err	Pr>|t|	Estimate	Std Err	Pr>|t|	Estimate	Std Err	Pr>|t|
Intercept	-3.9236	0.2270	***	-8.7417	0.5339	***	-9.6255	0.2663	***
EHY	0.0284	0.0010	***	0.0260	0.0010	***	0.0366	0.0007	***
Premiums	0.6350	0.0204	***	0.6071	0.0219	***	0.7182	0.0100	***
Brick/Masonry				0.3451	0.1583	**	0.3100	0.0775	***
Income				0.2074	0.0977	**	-0.2291	0.0436	***
Unit Density				7.5296E-05	0.0002		-0.0000	0.0001	
CCCL				-0.025	0.1001		0.0993	0.0484	**
Distance				0.1479	0.0202	***	0.1680	0.0096	***
Citizens				-1.9196	0.1659	***	-1.4939	0.0804	***
Max Wind				0.2543	0.0185	***	0.2567	0.0087	***
Wind Duration				0.2124	0.0424	***	0.1667	0.0196	***
pre_1950							0.9600	0.0475	***
d_1950							1.3192	0.0508	***
d_1960							1.4336	0.0489	***
d_1970							1.6845	0.0482	***
d_1980							1.6828	0.048	***
d_1990							1.0721	0.0483	***
Post FBC	-1.1843	0.0526	***	-1.2263	0.0520	***			
Obs	17906			17906			69442		
Adj R Squared	.4475			0.4675			0.4655		

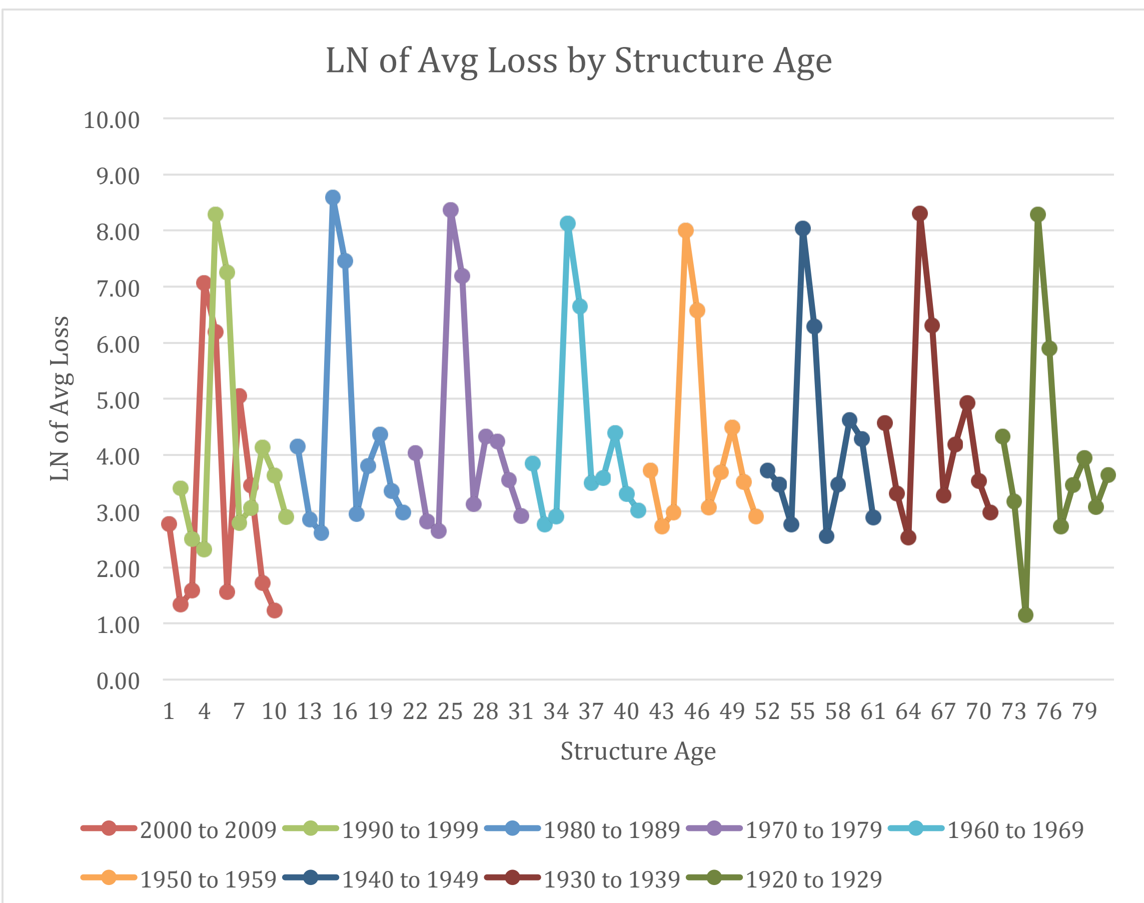
The coefficient on Post-FBC is still negative, highly significant, with a magnitude –1.18 with few covariates and –1.23 with the full set of covariates, which is very close to what we see, –1.26, with the entire database and the age variables (see Table 4). This result suggests that the code change did have an impact, at least compared to homes built in the 1990s.

Next, we run a model that tests for vintage effects. This model has dummy variables for each decade, omitting the post-FBC dummy to examine how changing construction practices and materials across time have impacted loss compared to post-FBC homes. Pre-1950 decades are collapsed into one category. Results are also shown in

Table B1. Compared to the post-FBC construction, the decades of the 1970s and 1980s show the worst performance.

In Figure B1, our final test on age compares loss by structure age. For this graph, we show how loss for similar-aged homes varies by decade of construction, where the post-FBC era is shown in red and the 1990s in other colors. To get a sequential age between post- and pre-FBC, we calculate age at the end of the decade instead of the beginning, as we have done until now. Instead of average loss, we use the natural log of average loss in order to fit the graph. Post-FBC and the 1990s overlay, but the post-FBC lies below, indicating that for homes of similar ages, losses are lower for post-FBC construction. In this way, we illustrate how the loss performance for homes with similar vintage and age compare, with the only change being the code. Consider the high point of the nonred lines, which is homes with an age of 5 years facing the hurricanes of 2004, and the high point on the red line, which is post-FBC homes with an age of 4 years facing the same threat. The nonred lines hit a high of 8.29, or an average loss of $3,983, compared to post-FBC homes with a high of 7.07, or an average loss of $1,176.

Figure B1



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Balance Test

To further test the reliability of our FBC result, we perform a balance test on either side of our cut point, year 2000. First, we do a simple test of two means on demographic features by ZIP code before and after the year 2000 for several periods to see how time has altered the differences. Results are shown in Table B2.

Table B2
Balance Test

	1990-2010	1980-2010	1970-2010	1960-2010	1950-2010	1900-2010
Brick/Masonry						***
Mobile				**	*	***
Income				*	***	***
Home Value				**	***	***
Unit Density			*		***	*
CCCL				*	*	*
Distance			*		**	***
Citizens			*	**		***

Rejection of the Hypothesis that the means are equal.
*α=.1, **α=.05, ***α=.01

The table shows that there is little difference between the demographic characteristics of the ZIP codes until you get to data prior to 1970. We then test the impact those differences may have on our results by running a series of regressions using categorical dummy variables for decades rather than including age as a separate variable. Here, there are three regressions, the full data, 1900–2010, then 1970–2010, and 1980–2010. In each regression, the 1990s is omitted to see how the FBC performance changes relative to the most recent decade between our full model and recent time frames. Those results are in Table B3. This analysis shows that differences in observations across time have little effect on our treatment variable.

Table B3
Balance Test – Decade Dummies

	1900-2010			1970-2010			1980-2010		
Parameter	Estimate	Std Err	Pr>|t|	Estimate	Std Err	Pr>|t|	Estimate	Std Err	Pr>|t|
Intercept	-8.5534	0.2672	***	-9.9014	0.3965	***	-9.6554	0.4511	***
EHY	0.0366	0.0007	***	0.0300	0.0009	***	0.0291	0.0009	***
Premiums	0.7182	0.0100	***	0.7851	0.0165	***	0.7161	0.0190	***
Brick/Masonry	0.3100	0.0775	***	0.0589	0.1173		0.1996	0.1342	
Income	-0.2291	0.0436	***	-0.0949	0.0684		0.0454	0.0809	
Unit Density	-0.0000	0.0001		0.0002	0.0001		0.0001	0.0001	
CCCL	0.0993	0.0484	**	0.1312	0.0733	*	0.0582	0.0842	
Distance	0.1680	0.0096	***	0.2019	0.0148	***	0.1851	0.0170	***
Citizens	-1.4939	0.0804	***	-1.7907	0.1211	***	-1.8389	0.1391	***
Max Wind	0.2567	0.0087	***	0.2901	0.0136	***	0.2816	0.0155	***
Wind Duration	0.1667	0.0196	***	0.1421	0.0310	***	0.1615	0.0356	***
pre_1950	-0.1120	0.0506	**						
d_1950	0.2471	0.0526	***						
d_1960	0.3615	0.0500	***						
d_1970	0.6124	0.0488	***	0.5756	0.0533	***			
d_1980	0.61075	0.0484	***	0.5940	0.0527	***	0.5840	0.0524	***
d_1990									
Post FBC	-1.0721	0.0483	***	-1.0630	0.0530	***	-1.1213	0.0530	***
Obs	69442			35507			26729		
Adj R Squared	0.4654			0.4778			0.48		

Alternative Specification

Our reported models in Table 4 use structure age as an added variable in a specification based on a discontinuity between age and our treatment variable. Another way to approach this would be to run a regression for the full model using decade dummies with the 1990s omitted to examine the effect of the FBC against the most recent decade. Then run the same regression but use our hurdle model to get the direct effect of the FBC. Table B4 shows those results.

Table B4

	Full Model			Heckman Model			
Parameter	**Estimate**	**Std Err**	**Pr>|t|**	**Estimate**	**Robust Std Err**	**Pr>|t|**	
Intercept				-2.61083	0.035118	***	**First Stage**
Max_Wind				0.155341	0.00267	***	
Wind Duration				0.042039	0.008065	***	
Population Density				-0.00529	0.00225	**	
Post FBC				-0.18478	0.016173	***	
Obs				69442			
AIC				149210			
Intercept	-8.5534	0.2672	***	-4.77991	1.392659	***	**Second Stage**
EHY	0.0366	0.0007	***	0.003029	0.000536	***	
Premiums	0.7182	0.0100	***	0.397257	0.014018	***	
Brick/Masonry	0.3100	0.0775	***	0.944952	0.081506	***	
Income	-0.2291	0.0436	***	0.086453	0.04621	*	
Unit Density	-0.0000	0.0001		-0.00054	0.000158	***	
CCCL	0.0993	0.0484	**	0.179001	0.050701	***	
Distance	0.1680	0.0096	***	0.077835	0.01014	***	
Citizens	-1.4939	0.0804	***	-0.80997	0.089341	***	
Max Wind	0.2567	0.0087	***	0.350503	0.055886	***	
Wind Duration	0.1667	0.0196	***	0.100069	0.013861	***	
Pre 1950	-0.1120	0.0506	**	-0.03788	0.062201		
d_1950	0.2471	0.0526	***	0.075983	0.05081		
d_1960	0.3615	0.0500	***	0.165168	0.043561	***	
d_1970	0.6124	0.0488	***	0.246894	0.039381	***	
d_1980	0.6107	0.0484	***	0.288163	0.037575	***	
d_1990							
Post FBC	-1.0721	0.0483	***	-0.74289	0.082513	***	
IMR				1.996344	0.522979	***	
Obs	69442			19107			
Adj. R Squared	0.4654						

Using this specification to examine the effect of the FBC we get a 66% reduction in the full model and a 52% reduction in the Heckman model. Given that this result is only compared to the 1990s and not earlier decades with lower performance, these results compare well to our results in the models using structure age reported in Table 4.

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Year to Year Consistency of our Post-FBC Result

As a final examination of our model we run regressions on each year separately to see how the post-FBC variable changes from year to year. While we do not have loss data prior to the implementation of the FBC necessary to do a falsification test, we can examine if the code lost its significance or changed signs across the years of our study. Also, we approached this from the reverse of a post-FBC effect, by replacing the post-FBC dummy with the dummy variable associated with the decade experiencing some of the worst results from wind storms, the 1980s. (See Tables B5 and B6.)

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Table B5

	2001		2002		2003		2004		2005	
Parameter	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**
Intercept	-6.3549	***	-8.4056	***	-3.5391	***	-17.1104	***	-22.3230	***
EHY	0.0468	***	0.0497	***	0.0460	***	-0.0050	**	0.0140	***
Premiums	0.9022	***	0.5207	***	0.5412	***	1.7780	***	1.3722	***
Brick/Masonry	0.0912		0.3300		0.1337		4.2663	***	5.2989	***
Income	-0.5563	***	0.0767		-0.3335	***	-1.3973	***	-0.0145	
Unit Density	-0.0027	***	0.0000		-0.0003		-0.0062	***	0.0022	***
CCCL	0.7334	***	-0.1065		-0.0026		-0.4079	**	-0.0384	
Distance	-0.0061		0.1466	***	0.0740	***	0.01597		0.2764	***
Citizens	-1.9512	***	-1.2030	***	-0.8540	***	-6.9386	***	1.1860	***
Max Wind	0.1892	***	0.2218	***	-0.0285		0.6279	***	0.3367	***
Wind Duration	-1.4279		0.1462		-0.0518		-0.1854	***	0.1944	**
Post FBC	-1.3304	***	-1.0471	***	-1.0436	***	-0.7534	***	-1.7420	***
Age	0.0244	***	0.0076		0.0181	***	0.0590	***	0.0237	***
Age Sq	-0.0029	***	-0.0006		-0.0015	***	-0.0068	***	-0.0025	***
Obs	7404		7315		7172		7138		7011	
Adj. R Squared	0.4659		0.3911		0.3599		0.6072		0.4469	

	2006		2007		2008		2009		2010	
Parameter	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**
Intercept	-3.4875	***	-5.5156	***	-11.4432	***	-8.1752	***	-2.8376	***
EHY	0.0293	***	0.0385	***	0.0403	***	0.0409	***	0.0380	***
Premiums	0.4106	***	0.3559	***	0.8716	***	0.5264	***	0.2894	***
Brick/Masonry	-1.0413	***	-1.0724	***	-2.2638	***	-1.7449	***	-0.9088	***
Income	-0.0988		-0.2438	**	0.2928	**	0.4440	***	0.2237	**
Unit Density	0.0003		0.0007	**	0.0011	***	0.0015	***	0.0005	**
CCCL	-0.2718	**	0.3060	**	0.6309	***	0.0382		-0.0268	
Distance	0.0815	***	0.1953	***	0.3549	***	0.2193	***	0.1635	***
Citizens	-0.7520	***	-0.6752	***	-3.1149	***	-0.2984		-0.5953	***
Max Wind	0.0557	*	0.2010	***	0.1452	***	0.1749	***	-0.0168	
Wind Duration	-0.1363		-0.2628	*	-0.1675		-0.4849	***	0.0784	
Post FBC	-1.1768	***	-1.2105	***	-0.9278	***	-1.9531	***	-1.3593	***
Age	0.0061		0.0101		0.0163	*	-0.0159	**	-0.0218	***
Age Sq	-0.0006		-0.0011	**	-0.0015	**	0.0009		0.0011	**
Obs	6719		6643		6575		6570		6895	
Adj. R Squared	0.197		0.2293		0.3667		0.2803		0.2262	

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Table B6

	2001		2002		2003		2004		2005	
Parameter	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**
Intercept	-7.5397	***	-9.3593	***	-4.5403	***	-17.8548	***	-24.1030	***
EHY	0.0479	***	0.0505	***	0.0467	***	-0.0051	**	0.0147	***
Premiums	0.9334	***	0.5407	***	0.5543	***	1.7877	***	1.3982	***
Brick/Masonry	0.0626		0.3118		0.1266		4.2590	***	5.2805	***
Income	-0.5920	***	0.0522		-0.3451	***	-1.4025	***	-0.0253	
Unit Density	-0.0027	***	-0.0000		-0.0004		-0.0062	***	0.0022	***
CCCL	0.7432	***	-0.0959		0.0076		-0.4003	**	-0.0234	
Distance	-0.0040		0.1482	***	0.0762	***	0.0171		0.2809	***
Citizens	-1.9070	***	-1.1720	***	-0.8224	***	-6.9199	***	1.2397	***
Max Wind	0.1863	***	0.2199	***	-0.0295		0.6278	***	0.3369	***
Wind Duration	-1.4322	***	0.1479		-0.0513		-0.1865	***	0.1929	**
d_1980	0.8825	***	0.7339	***	0.8202	***	0.4881	***	0.7246	***
Age	0.05656	***	0.0339	***	0.0453	***	0.0791	***	0.0725	***
Age Sq	-0.00509	***	-0.0024	***	-0.0034	***	-0.0082	***	-0.0060	***
Obs	7404		7315		7172		7138		7011	
Adj. R Squared	0.4663		0.3917		0.3615		0.6072		0.4438	

	2006		2007		2008		2009		2010	
Parameter	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**	**Estimate**	**Pr > |t|**
Intercept	-4.7212	***	-6.8496	***	-12.5112	***	-10.4832	***	-4.7131	***
EHY	0.0292	***	0.0381	***	0.0398	***	0.0393	***	0.0366	***
Premiums	0.4308	***	0.3730	***	0.8911	***	0.5725	***	0.3389	***
Brick/Masonry	-1.0726	***	-1.0948	***	-2.2831	***	-1.7751	***	-0.9560	***
Income	-0.1124		-0.2468	**	0.2880	**	0.4300	***	0.1985	**
Unit Density	0.0003		0.0007	***	0.0011	***	0.0014	***	0.0005	*
CCCL	-0.2700	**	0.3103	**	0.6391	***	0.0571		-0.0117	
Distance	0.0847	***	0.1984	***	0.3573	***	0.2247	***	0.1687	***
Citizens	-0.7322	***	-0.6540	***	-3.0950	***	-0.2594		-0.5347	**
Max Wind	0.0555	*	0.2015	***	0.1445	***	0.1717	***	-0.0201	
Wind Duration	-0.1403		-0.2670		-0.1669		-0.4886	***	0.0799	
d_1980	0.4836	***	0.5996	***	0.2852	**	0.4508	***	0.4310	***
Age	0.0418	***	0.0470	***	0.0456	***	0.0469	***	0.0248	***
Age Sq	-0.0033	***	-0.0038	***	-0.0036	***	-0.0036	***	-0.0021	***
Obs	6719		6643		6575		6570		6895	
Adj. R Squared	0.1923		0.2258		0.3648		0.2663		0.2178	

The post-FBC variable maintains its sign and significance in each of the 10 years, ranging from a low during the high hurricane year of 2004 to a high in 2009, a low windstorm year. When we replace the post-FBC variable with the decade dummy for the 1980s, we see the expected reverse effect, posting positive and significant results across all 10 years.

Effect of the FBC on Claims

The main difference between the effect of the FBC between our full and hurdle model is the full model includes all observations regardless of whether a claim has been filed and the second stage of the hurdle model includes only observations that had a claim. So, we should be able to test the difference in the coefficient on the FBC by running an analysis on claims. To do this, we use the same equation as equation [1] except that the dependent variable is not the natural log of loss but claims. Claims is an integer with the lowest possible value of zero and thus constitutes count data. Therefore, we use a regression model appropriate for count data. Further, there is evidence of overdispersion, so rather than use a Poisson regression we employ a negative binomial model with the form

$$\textit{Claims} = \beta_0 + \beta_1 \times \textit{EHY} + \beta_2 \times \textit{Premium} + \beta_3 \times \textit{Brick/Masonry} + \beta_4 \times \textit{Income} + \beta_5 \times \textit{Value} + \beta_6 \times \textit{Unit Density} + \beta_7 \times \textit{CCCL} + \beta_8 \times \textit{Distance} + \beta_9 \times \textit{Citizens} + \beta_{10} \times \textit{Max Wind} + \beta_{11} \times \textit{Wind Dur} + \beta_{12} \times \textit{Post FBC} + \beta_{13} \times \textit{Age} + \beta_{14} \times \textit{Age Squared} + \textit{Vector of dummy variables for year} + \textit{Vector of dummy variables for ZIP code.} \qquad [3]$$

Table B7 reports the results.

Table B7
Claims Regression

Parameter	Estimate	Std Err	Pr > ChiSq
Intercept	-12.5027	0.189	***
EHY	0.0031	0.0004	***
Premiums	0.9238	0.0091	***
Brick/Masonry	0.4034	0.0589	***
Income	-0.4719	0.0319	***
Unit Density	-0.0007	0.0001	***
CCCL	0.049	0.0343	
Distance	0.1448	0.0068	***
Citizens	-1.0523	0.0567	***
Max Wind	0.1721	0.0056	***
Wind Duration	-0.0017	0.0101	
Post FBC	-0.4247	0.0366	***
Age	0.0375	0.0018	***
Age Sq	-0.0043	0.0002	***
Obs	69442		
Pseudo R Squared	0.29		

Our treatment variable is negative, is highly significant, and shows a reduction of 35% in claims due to the FBC. Assuming the average loss from an avoided claim would have been equal to average losses from reported claims, this result infers a full loss reduction of 81% from the direct loss reduction of 53%. The result does suggest that most of the difference between our direct loss reduction estimate of the FBC and our full loss reduction of the FBC can be explained by a reduction in claims for homes built to the FBC.

SFBC Regressions

Three counties, Dade, Broward, and Monroe, adopted the SFBC as early as the 1950s, with all three counties under the 1988 SFBC. In 1994, the SFBC was upgraded to include most of the provisions of the future 2001 FBC. This would imply that ZIP codes in those counties would have a more homogeneous stock of resilient housing providing a muted effect of the FBC and a smaller difference between the direct and full effect of the FBC. To test this, we ran our full regression and hurdle regression on observations that are in those counties alone. This reduces our observations from 69,442 to 10,001. Results are shown in Table B8.

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"Economic Effectiveness of Implementing a Statewide Building Code: The Case of Florida," by Kevin M. Simmons, Jeffrey Czajkowski, and James M. Done

Table B8
SFBC Hurdle Regression

	Full Model			Hurdle Model			
Parameter	**Estimate**	**Std Err**	**Pr>|t|**	**Estimate**	**Std Err**	**Pr>|t|**	
Intercept				-3.8419	0.1106	***	**First**
Max Wind				0.2490	0.0085	***	**Stage**
Wind Duration				-0.1730	0.0342	***	
Pop Density				-0.0021	0.0040		
Post FBC				-0.2685	0.0455	***	
Obs				2201			
AIC				17362			
Intercept	-6.4241	0.7694	***	-1.7350	1.6121		**Second**
EHY	0.0377	0.0018	***	-0.0019	0.0012		**Stage**
Premiums	0.5852	0.0206	***	0.6517	0.0312	***	
Brick/Masonry	0.5170	0.3228		-0.8406	0.5215		
Income	-0.2479	0.0885	***	-0.2454	0.1194	**	
Unit Density	-0.0002	0.0001		-0.0010	0.0003	***	
CCCL	0.0418	0.1058		0.0832	0.1474		
Distance	0.1391	0.0256	***	0.0718	0.0356	**	
Citizens	-1.0579	0.1382	***	-0.8733	0.1926	***	
Max Wind	0.0925	0.0352	***	0.2074	0.0752	***	
Wind Duration	-0.0569	0.0853		-0.2007	0.0830	**	
Post FBC	-0.3308	0.1292	**	-0.2288	0.1667		
Age	0.0265	0.0055	***	0.0447	0.0076	***	
Age Sq	-0.0028	0.0005	***	-0.0052	0.0008	***	
Obs	10001			10001			
Adj. R Squared	0.5309						

On the full regression, the effect of the FBC is reduced from 72% statewide to 28% for these three counties. On the second stage of the hurdle model, we find that the effect of the FBC is reduced from 47% statewide to 20%, and this result does not attain significance.[2] These results suggest that homes in Dade, Broward, and Monroe Counties perform as expected if stronger construction had been adopted prior to the FBC.

[2] Our test of error correlation between the two stages did not indicate the presence of correlation, so we compare the results from the simple hurdle models.

Sensitivity Analysis of the BCA

There are four components of our BCA that could vary. Here, we examine what happens to the BCA when we allow each of the four components, construction cost, reduction in loss, time, and the discount rate, to vary.

To conduct the sensitivity of construction cost on our BCA we provide the full range of estimated costs from the Applied Research Associates (2002) study on our full reduction model. We see that the BCA range is 4.66 using the high cost estimate to 8.75 using the low cost estimate. (See Table B9.)

Table B9
Construction Cost Sensitivity

Sensitivity Analysis Construction Cost	Construction Cost Estimate	Cost Per SF	BCA
Statewide	Low	1.15	8.75
	Average	1.66	6.06
	High	2.16	4.66

To test the sensitivity of the loss reduction from the FBC we use the lower and upper limit of the 1 standard deviation confidence interval found from the standard error associated with the post-FBC variable. Using the lower bound of loss reduction, the BCA changes from 6.06 to 5.64. Using the upper limit, the BCA changes from 6.06 to 6.31. (See Table B10.)

Table B10
Loss Reduction

Sensitivity Analysis Reduced Loss	Confidence Interval	Full % Loss Reduction	BCA
Statewide	CI-LB	67%	5.64
	Mean	72%	6.06
	CI-UB	75%	6.31

We chose 50 years as the age of the home, as it exceeded the typical mortgage time frame. Testing this assumption, we provide a BCA assuming that the life of the home is 25 then 75 years. For the shorter life of the home, our BCA changes from 6.06 to 3.12. Using the longer life of the home, our BCA changes from 6.06 to 8.81. (See Table B11.)

Table B11
Change in Years for BCA

Sensitivity Analysis Years	Years Used to Calculate BCA	BCA
Statewide	25 Years	3.12
	50 Years	6.06
	75 Years	8.81

Discount rates change as the demand for money evolves, so here we test how our BCA varies with higher levels of discount rates. First, we increase the discount rate to 3%, which decreases the BCA from 6.06 to 5.06. When a discount rate of 4% is used, the BCA falls further to 4.05, and finally, when the discount rate rises to 5.00%, the BCA falls to 3.32. (See Table B12.)

Table B12
Change in Discount Rate

Sensitivity Analysis Years	Discount Rate	BCA
Statewide	2.25%	6.06
	3.00%	5.06
	4.00%	4.05
	5.00%	3.32