

Behavioral Assumptions for Hurricane Evacuation Planning in Monroe County

Earl J. Baker
Department of Geography
Florida State University

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Evacuation of Tourists

In June and July of 2009 accommodations and recreational vehicle park managers were sent printed questionnaires requesting information regarding certain characteristics of their business, their operations during a hurricane evacuation, and their judgments about the behavior of their guests during a hurricane evacuation. Questionnaires were sent to establishments initially by email and subsequently by a mix of fax, telephone, and mail either to increase response rate or to clarify responses to returned questionnaires. Questionnaires varied slightly depending on whether the business was an accommodation (hotel, motel, resort, bed and breakfast, seasonal housing rental) or a recreational vehicle park (Appendices A and B).

Completed questionnaires were returned by 36% of the accommodations to which they were sent. Response rate increased with size of the establishment. Among the larger accommodations (95 or more units), 56% returned completed questionnaire. A more detailed description of data collection procedures and response rates appears in Appendix C.

Respondents were invited to provide any comments they deemed useful. Those are included in Appendix E.

Accommodations

A total of 127 accommodations returned questionnaires. However, information was absent for one or more questions on a number of questionnaires. Table 1 provides a breakdown by location, type of accommodation, and number of rooms for businesses for which all three variables were

known. Almost half the responses came from Key West. There were fewer than 10 responses each from Key Largo the Lower Keys. *In subsequent tables and graphs Lower Keys responses are grouped with those from Marathon, rather than computing statistics for just four establishments.* There were nine responses from Key Largo.

In tables reporting average values for the Keys, the Keys average is computed across all responding establishments, unless indicated otherwise. Locations with larger numbers of establishments responding have greater influence on the average for the Keys.

Table 1. Number of responses by location, type of accommodation, and number of units

	1 -19 Units	20 – 94 Units	95+ Units	Total
Key Largo				
Hotel/Motel/Resort	4	1	1	6
Bed/Breakfast	1	0	0	1
Seasonal Housing	0	0	2	2
	5	1	3	9
Islamorada				
Hotel/Motel/Resort	8	9	1	18
Bed/Breakfast	0	0	0	0
Seasonal Housing	1	1	0	2
	9	10	1	20
Marathon				
Hotel/Motel/Resort	3	8	2	13
Bed/Breakfast	1	0	0	1
Seasonal Housing	4	5	1	10
	8	13	3	24
Lower Keys				
Hotel/Motel/Resort	0	2	0	2
Bed/Breakfast	1	0	0	1
Seasonal Housing	0	1	0	1
	1	3	0	4
Key West				
Hotel/Motel/Resort	4	11	12	27
Bed/Breakfast	14	8	0	22
Seasonal Housing	3	3	1	7
	21	22	13	56
Total	44	49	20	113

Number of Bedrooms

Respondents were asked to indicate the number of their rental units having one, two, and more than two bedrooms. On average (i.e., in the “average establishment”) there were 34 units with one bedroom, 12 with two, and 3 with more than two bedrooms. Key Largo establishments reported more 2+ bedroom units than other locations.

Table 2. Average number of units per establishment and location

	Keys Avg.	Key Largo	Islamorada	Marathon	Key West
No. of 1 Bedroom Units	34	34	28	16	45
No. of 2 Bedroom Units	12	13	4	21	10
No. of 2+ Bedroom Units	3	14	1	4	2

Numbers of Vehicles per Unit

Questionnaires asked managers to indicate the average number of vehicles associated with one, two, and more-than-two bedroom units. Numbers of vehicles increased with number of bedrooms, and Key West accommodations reported fewer vehicles per unit than other locations (Table 3). Some respondents indicated that they had no units with more than two bedrooms but specified a number of vehicles for that category of units. Table 3 displays data only for establishments saying they had at least one unit with more than two bedrooms.

Table 3. Average number of vehicles per unit

	Keys Avg.	Key Largo	Islamorada	Marathon	Key West
Vehicles per 1 BR Unit	.89	1.04	1.05	1.00	.77
Vehicles per 2 BR Unit	1.28	1.67	1.46	1.29	1.01
Vehicles per 2+ BR Unit	1.88	2.67	2.12	1.88	1.33

Occupancy Rates

Managers were asked to estimate their typical occupancy rate for three time periods during hurricane season: June 1 through mid-August, mid-August through mid-October, and mid-October through the end of November. The three time periods were used at the suggestion of Monroe County Tourist Development representatives to account for changes that normally occur in occupancy during those months. Key West establishments indicated the highest occupancy rates, and all locations stated that their occupancy rates were lowest during the middle time period, which is approximately the same as peak hurricane season (Table 4).

Table 4. Average occupancy rate by time period and location (percent)

Date	Keys Avg.	Key Largo	Islamorada	Marathon	Key West
6-1 thru 8-15	64	63	63	57	69
8-16 thru 10-15	49	46	39	37	58
10-16 thru 11-30	56	56	37	41	70

Evacuation Timing of Guests

Respondents were asked how their guests would respond in a hypothetical hurricane evacuation scenario. In the scenario a major hurricane was threatening the Keys, the National Hurricane Center had issued a hurricane watch, the weather was fair, the storm's forecast track was within 50 miles of the establishment's location, and Monroe County officials issued a mandatory evacuation order for all nonresidents and visitors at 11 AM.

Managers were asked how many of their guests would have already evacuated on their own by the time the evacuation order was issued, than how many would have left within 6, 12, 24, 36, and 48 hours of the order. Results are shown in Figures 1 and 2.

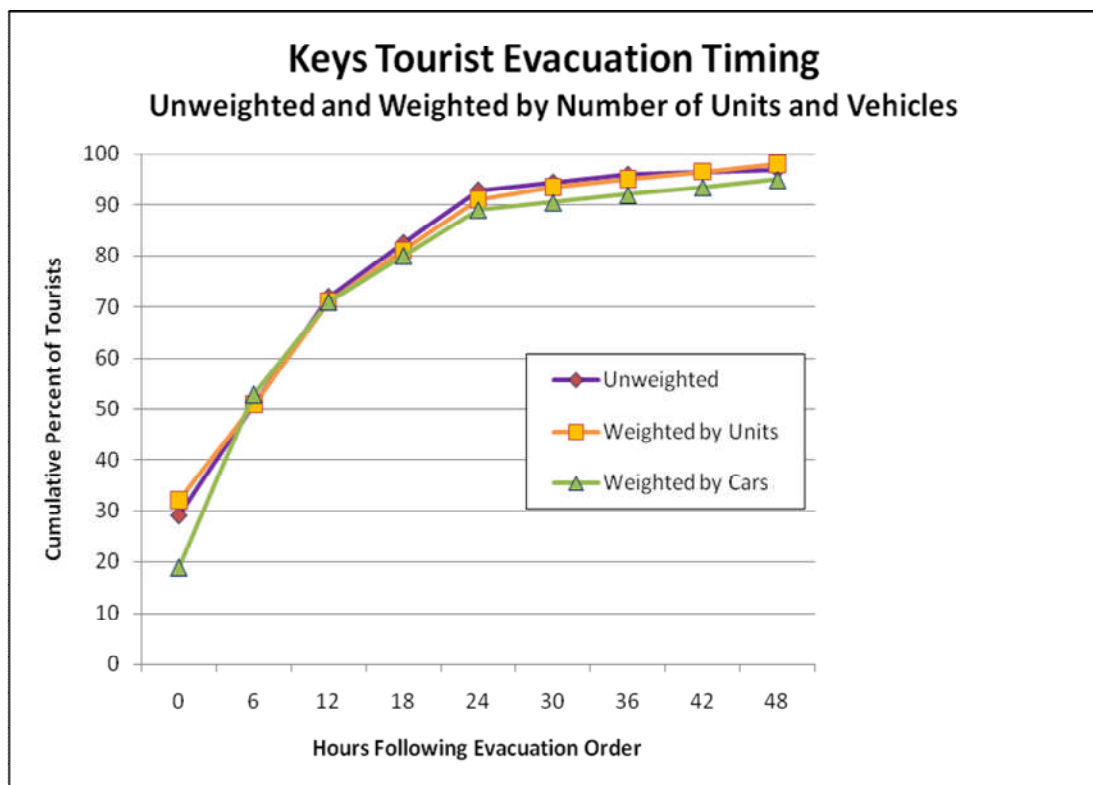


Fig. 1. Keys Tourist Evacuation Timing by Weighting by Number of Units and Vehicles

Overall managers estimated that 30% of their guests would leave prior to the evacuation order, due to awareness of the threat. Including those who had already departed on their own, 70% would be gone within 12 hours of the evacuation order and 93% within 24 hours. Weighting responses by number of rooms (giving proportionally greater influence to larger establishments) produced almost identical results. Weighting responses by number of vehicles (number of one, two, and two-plus bedroom units times the number of vehicles associated with each) produced a similar curve, but one that started with fewer departures prior to the evacuation order.

Data points for 18, 30 and 42 hours were interpolated to preserve the six-hour interval established at the beginning of the axis. In the evacuation specified in the hypothetical it is unlikely that guests would continue departing during the night of the first day of the evacuation unless it appeared that the arrival of the hurricane was imminent. The more important interpretation is that 24 hours following the evacuation notice, between 89% and 93% of the guests would have departed, depending on the weighting scheme employed.

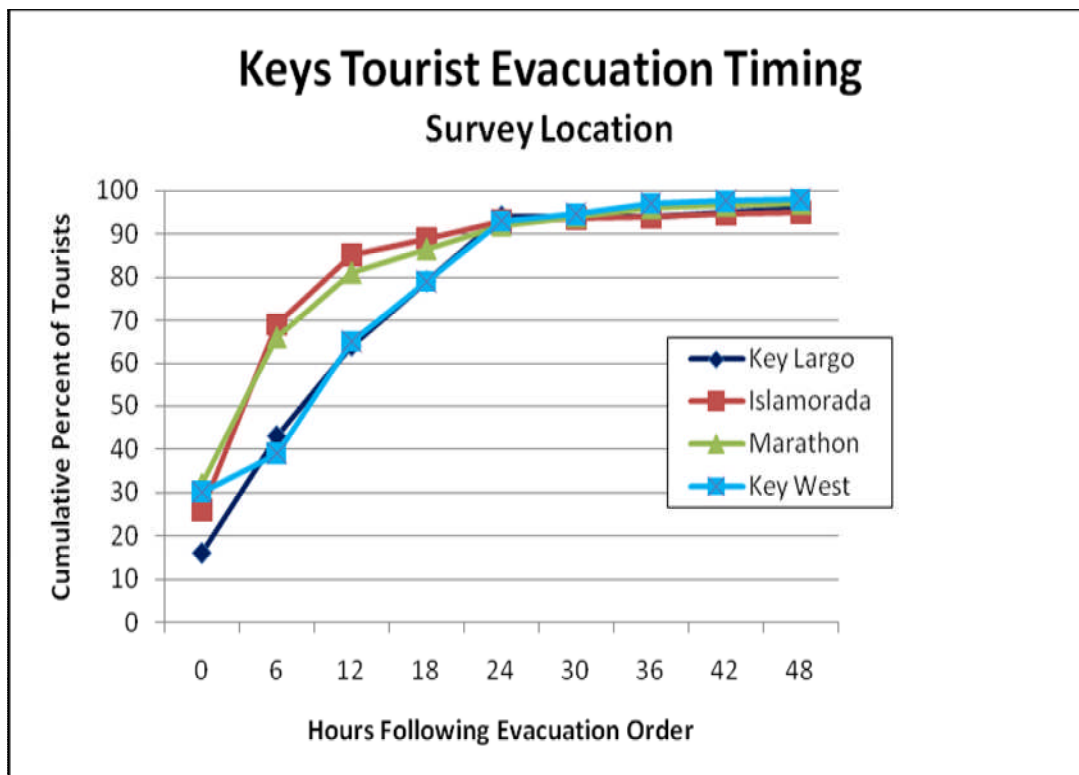


Fig. 2. Keys Tourist Evacuation Timing by Survey Location

Islamorada and Marathon timing curves were essentially the same. Key West departures started out the same, but lagged Islamorada and Marathon slightly until 24 hours following the evacuation order. Key Largo managers estimated that only 15% of their guests would leave prior to the order but then would depart at about the same rate as those in Key West. The location-specific curves are less reliable statistically than the overall curves due to the smaller number of responses upon which each is based.

Closing of Accommodations

Managers were asked how when they would close their establishments following an evacuation order. Overall 30% said they would close within 12 hours of the order and 66% within 24 hours. Three percent said they would not close at all, but 18% said they would not close until landfall was imminent.

Table 5. Hours until establishment would close following evacuation order (percent)

	Keys	Key Largo	Islamorada	Marathon	Key West
6 hours	15	0	29	21	10
12 hours	15	0	24	21	13
24 hours	36	50	29	24	43
36 hours	9	0	10	7	10
48 hours	4	10	0	3	5
When landfall imminent	18	30	5	24	18
Would not close	3	10	5	0	3

Instructions to Guests

Respondents were asked if they would tell their guests that they must leave the establishment and evacuate out of the Keys. Over 90% in all locations said they would provide that instruction to guests.

Table 6. Would tell guests they must evacuate out of the Keys (percent)

	Keys	Key Largo	Islamorada	Marathon	Key West
Would tell	94	90	91	93	97
Would not tell	6	10	9	7	3

Recreational Vehicle Parks

There were far fewer responses from RV parks. Twenty parks were contacted, but only seven returned questionnaires. Although the response rate (35%) was comparable to that from accommodations, the absolute number is statistically small. The addition of just one or two parks to the sample could potentially alter the data significantly.

Most of the parks responding to the survey were located in the Lower Keys. No RV parks were identified in Key West during sampling.

Table 7. Location of responding RV parks

Location	Number of Parks
Key Largo	1
Marathon	2
Lower Keys	4

All but one of the RV parks had very few if any permanent units (Table 8). The largest reported 100 permanent units. All six of the parks providing data for transient units said they had 100 or nearly 100 (Table 8).

Table 8. Number of units in responding RV parks

Number of Permanent Units In Park	Number of Parks
0	3
4	1
6	1
100	1
Number of Transient Units In Park	Number of Parks
94	1
96	1
100	4

Occupancy Rates

The reported occupancy rate for the permanent units was 100% for the large park, which dominated the data. It also makes sense that if the units are permanently occupied, the occupancy rate concept might not be applicable.

The occupancy rates for transient units were lower than those reported by accommodations. It did follow the same temporal pattern of mid-August to mid-October being the period of lowest occupancy.

Table 9. Occupancy rates of transient units in RV parks by time period

Date	Occupancy Rate
6-1 thru 8-15	47
8-16 thru 10-15	37
10-16 thru 11-30	44

Evacuation Timing of Guests

RV park managers estimated that guests would depart almost as quickly as guests in accommodations (Fig. 3). When the evacuation order was issued, 23% would already have departed. Then 67% would be gone within 12 hours, and 80% within 24 hours. The average at 48 hours was 87%, which was about 10 percentage point lower than accommodations guests.

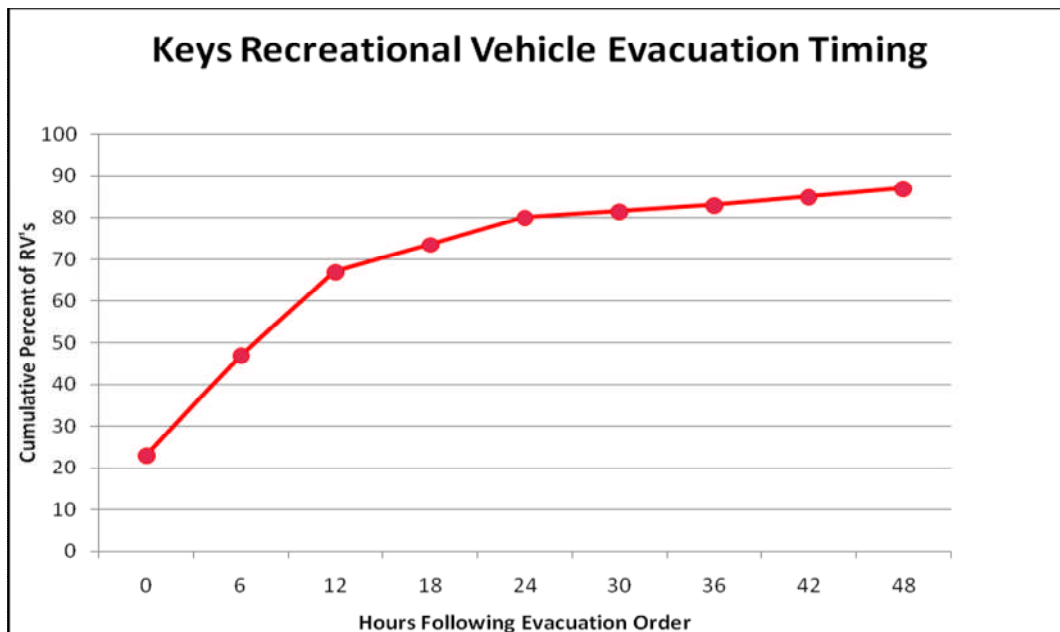


Fig. 3. Keys RV Evacuation Timing

Closing of RV Parks

All of the RV park managers said they would close following an evacuation order. In 24 hours 71% would close, and all would be closed within 48 hours.

Table 10. Hours until RV park would close following evacuation order (cumulative percent)

	Percent Closed
6 hours	29
12 hours	43
24 hours	71
36 hours	86
48 hours	100
When landfall imminent	0
Would not close	0

Instructions to Guests

All seven of the RV park managers said they would instruct guests that they must leave the park and evacuate out of the Keys.

Evacuation of Military Installations

At the suggestion of Monroe County Emergency Management, a representative of Key West Naval Air Station was interviewed with respect to the installation's evacuation procedures. Although there are other military installations in the Keys, the Naval Air Station is the largest, and procedures followed by others were thought to be similar. Jim Brooks, the Public Information Officer, was interviewed.

There are 1,676 uniformed military personnel in the Keys, including all installations, with 1,015 family members. There are up to 459 military training personnel *in addition* who would be flown out in an evacuation. Other personnel and their families would drive their own vehicles in and evacuation. Up to 100 would remain on base. Civilians assigned to the base number 848.

No one would evacuate prior to an evacuation order being issued by the County. (The exception presumably would be personnel removing equipment.) Salary and expenses would be paid

during an mandatory evacuation, and NAS reserves hotel rooms in Orlando for personnel and dependents. Mr. Brooks estimated that 90% of personnel and families would leave within 6 hours of the evacuation order and 98% would be gone within 12 hours.

His general impression was that vehicle ownership would be comparable to the general population. It is possible that a larger percentage of available vehicles would be taken in an evacuation because certain personnel would be required to return to the base within 24 hours of passage of a hurricane.

Mobile Homes

Beginning in August, an attempt was made to send a survey about evacuation procedure to thirty-two mobile home parks. The questionnaire is attached as Appendix D. The FSU Survey Research Laboratory attempted to find addresses and telephone numbers for mobile home parks located in Monroe County. Fax numbers were generally not available for the mobile home parks. A fax was sent to 5 units while the rest were mailed a copy of the survey. Four surveys were returned for bad or non-existent addresses; only one response were received by the August 24. A synopsis of responses from that single respondent follows.

- 25 unit park—Key West
- 75 permanent/25 seasonal
- 100% occupancy throughout the year
- q3— 0% would evacuate prior to an order
- q5— 20% would leave within 12 hours (only response provided)
- q6— Would tell residents must leave
- q7— Go someplace else in keys—15-20%
- q8— Most residents are domestic employees (hotel) and construction type of services. If any leave park they would go to local shelter for cat 1 and 2. If cat 3—who knows?

Evacuation of Residents

Evacuation Participation Rates

Surveys have been conducted with Keys residents following hurricanes Andrew, Georges, Irene, Michelle, Ivan, and Wilma to document response. In general evacuation rates, especially among residents of site-built homes, have been lower than desired by emergency management officials. Failure to evacuate has been related most strongly to

- beliefs by residents that their homes would be safe even if struck by a hurricane,
- beliefs that particular threatening hurricanes would miss, and
- not “hearing” evacuation notices issued by public officials.

Although the numbers of mobile homes in the samples have been relatively small, the evidence has been consistent that mobile home residents are much more likely to evacuate, compared to residents in site-built homes.

The planning assumptions for major hurricanes in tables 11 and 12 were developed for the Florida Statewide Regional Evacuation Study (SRES). They are based on surveys conducted over the past decade or more, in addition to 400 interviews done as part of the SRES. The assumptions for category 1 and 2 hurricanes are consistent with current evacuation policies in Monroe County, but are lower than planning assumptions used in the SRES.

Figures in Tables 11 and 12 assume that current Monroe County evacuation policies are employed:

- People living in structures in low-lying areas adjacent to water will be recommended to evacuate in category 1 and 2 hurricanes;
- People living in structures in any location will be ordered to evacuate in category 3, 4, and 5 storms;
- People living in mobile homes, travel trailers, and RV’s will be ordered to evacuate in all hurricanes.

Evacuation rates have also tended to be higher in one or more portions of the Keys than overall, corresponding to the forecast track of the threatening hurricane. The planning assumptions apply when threats are greatest in each region of the Keys. That is, when the forecast storm track is

closest to each region and the threatening storm makes landfall in that region. In that sense they overstate the aggregate evacuation throughout the County.

Table 11. Maximum probable evacuation participation rates by residents of site-built homes

Monroe Evacuation Rates (%)	Storm Threat Scenario				
Site Built Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	25	35	70	80	90
Middle Keys	30	35	75	85	90
Lower Keys	25	35	70	80	90
Key West	25	35	70	80	90

Table 12. Maximum probable evacuation participation rates by residents of mobile homes

Monroe Evacuation Rates (%)	Storm Threat Scenario				
Mobile Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	65	75	85	90	95
Middle Keys	65	75	85	90	95
Lower Keys	65	75	85	90	95
Key West	65	75	85	90	95

Vehicle Use

Not all vehicles available to households are used during evacuations. Surveys following Georges and Michelle asked how many vehicles evacuating households had available for use in evacuation and how many were actually used. The SRES survey asked residents how many vehicles they have available and how many they anticipate using in an evacuation.

Tables 13 and 14 indicate planning assumptions from the SRES with respect to the percentage of available vehicles that will be used in evacuations. They can be applied to Census or other statistically dependable inventories of numbers of vehicles in households. The Georges and Michelle usage was slightly lower than the intended usage rates indicated in the SRES hypothetical response scenario. The figures in Tables 12 and 13 are about five percentage points greater than those observed in Georges and Michelle to account for possible behavioral changes that might have occurred since those storms.

Usage rates are higher for mobile homes than for site-built homes and higher for Key West than other parts of the Keys. In households having fewer vehicles, taking a single vehicle (often the only one available) results in a greater overall vehicle usage rate. There is no empirical evidence that usage rate increases in stronger storms.

Table 13. Percent of available vehicles used by evacuating households by residents in site-built homes

Monroe Vehicle Use Rate (%)	Storm Threat Scenario				
Site-built Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	75	75	75	75	75
Middle Keys	75	75	75	75	75
Lower Keys	75	75	75	75	75
Key West	80	80	80	80	80

Table 14. Percent of available vehicles used by evacuating households by residents in mobile homes

Monroe Vehicle Use Rate (%)	Storm Threat Scenario				
Mobile Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	80	80	80	80	80
Middle Keys	80	80	80	80	80
Lower Keys	80	80	80	80	80
Key West	85	85	85	85	85

Tables 15 and 16 apply the usage rates in Tables 13 and 14 to the SRES survey data indicating numbers of vehicles available to households. However, the SRES surveyed just 100 residents in each of the four Keys locations. A better approach would be to apply the usage rates to more complete inventories of available vehicles.

Table 15. Number of vehicles used per evacuating household by residents of site-built homes

Vehicles Used per Household	Storm Threat Scenario				
Site-built Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	1.30	1.30	1.30	1.30	1.30
Middle Keys	1.29	1.29	1.29	1.29	1.29
Lower Keys	1.47	1.47	1.47	1.47	1.47
Key West	1.09	1.09	1.09	1.09	1.09

Table 16. Number of vehicles used per evacuating household by residents of mobile homes

Vehicles Available per Household	Storm Threat Scenario				
Mobile Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	1.13	1.13	1.13	1.13	1.13
Middle Keys	1.14	1.14	1.14	1.14	1.14
Lower Keys	1.30	1.30	1.30	1.30	1.30
Key West	.96	.96	.96	.96	.96

Pulling Trailers and Taking Motorhomes

In the SRES survey respondents were asked if they would pull a trailer, a boat, or take a motorhome when evacuating. In Key West 5%, the other Lower Keys 22%, in the Middle Keys

18%, and in the Upper Keys 19% said they would. Percentages actually taking trailers and motorhomes in Georges and Michelle were substantially lower except in Key West. The planning assumptions in Tables 17 and 18 are weighted toward actual response in Georges and Michelle but increased slightly to give some weight to the more recent SRES hypothetical responses. There is no data to indicate that the incidence of pulling trailers and taking motorhomes varies with storm intensity.

Table 17. Evacuees from site-built homes pulling trailers or taking motor homes (percent)

Vehicles Available per Household	Storm Threat Scenario				
Mobile Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	10	10	10	10	10
Middle Keys	10	10	10	10	10
Lower Keys	15	15	15	15	15
Key West	5	5	5	5	5

Table 18. Evacuees from mobile homes pulling trailers or taking motor homes (percent)

Vehicles Available per Household	Storm Threat Scenario				
Mobile Homes	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Upper Keys	7	7	7	7	7
Middle Keys	7	7	7	7	7
Lower Keys	15	15	15	15	15
Key West	3	3	3	3	3

Evacuation Timing

Most recent evacuation in Florida, including those in the Keys, have taken place over a period of two or more days. Figure 4 from Georges is an example. In computing the minimum time required for evacuation, however, timing needs to reflect how rapidly evacuees could reasonably be expected to depart, rather than the amount of time taken when it is available. The three curves in Figure 5 are used in the SRES, and the “quick” response curve depicts the fastest response recommended for planning. Opal in northwest Florida in 1995 is an example of a quick response. The normal and slow curves indicate departure rates when evacuation notices are issued approximately 24 hours prior to the onset of unsafe conditions.

Cumulative Evacuation in Georges Key West and the Lower Keys

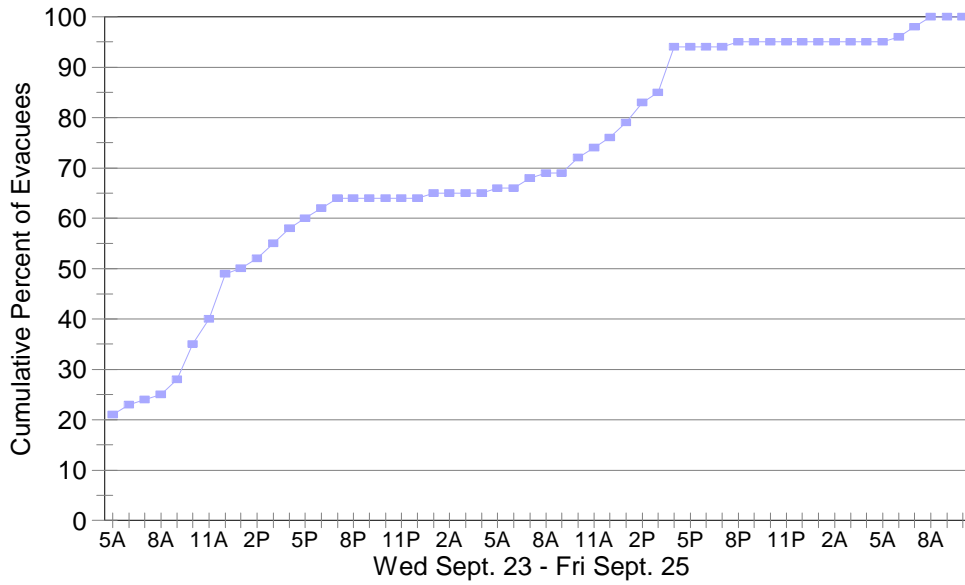


Fig. 4. Cumulative evacuation by residents in Georges

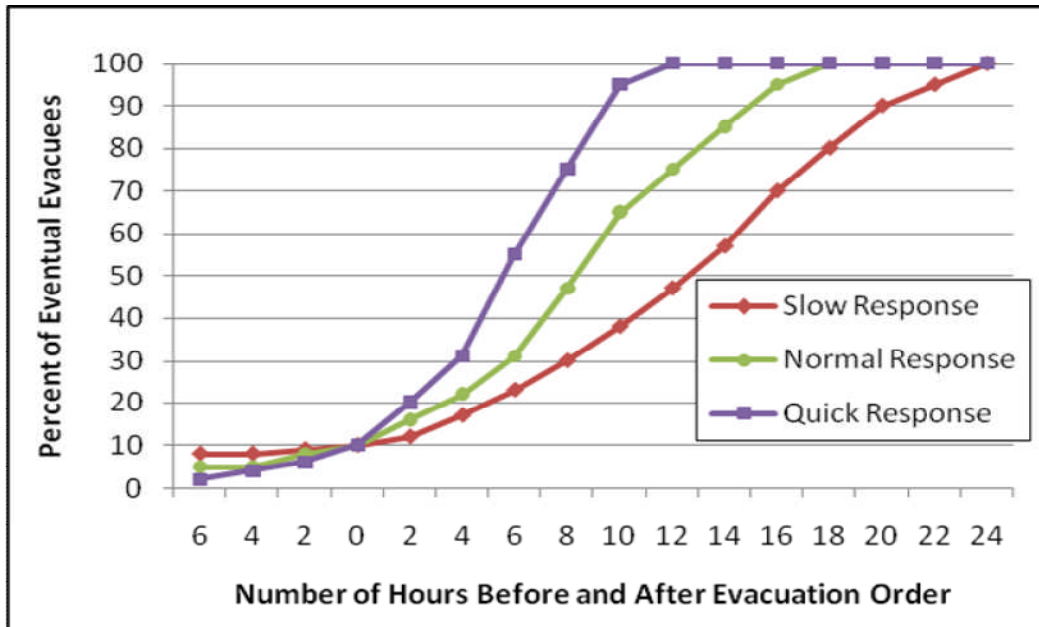


Fig. 5. Evacuation timing curves for residents

Comparison of Mobile Homes and Site-built Homes

Evacuation timing data for mobile home residents is not as statistically reliable in the Keys as for site-built home residents because fewer have been included in past evacuation surveys. In large-sample comparisons elsewhere, such as the four-state study conducted following hurricane Floyd, there was no difference in evacuation timing between evacuees from site-built homes vs. mobile homes.

In most evacuations, however, mobile home residents have not been told to evacuate earlier than people in site-built homes, as they sometimes are in Monroe County. In general few evacuees depart before evacuation notices are issued by officials. It would be reasonable to anticipate that if mobile homes are told to evacuate earlier than site-built homes, then departures from mobile homes would commence sooner. However, the sparse data from Monroe County is inconclusive with respect to that notion.

In Georges in 1998 Monroe County officials were very proactive with their evacuation notices. Mobile homes were advised to evacuate at 7 AM on Tuesday, Sept. 22, at the same time that non-residents were ordered to leave, prior to a hurricane watch being issued by the National Hurricane Center. Later at 4 PM on Tuesday mobile homes were ordered to leave. Other residents south of Seven-Mile Bridge were told at 7 AM the following day (Wednesday) that they must evacuate, followed at 11 AM in the Middle Keys and 4 PM in the Upper Keys. There were only 20 mobile home evacuees in the Key West and other Lower Keys sample shown in Table 17, so population estimates are tenuous. Using the sample data, more site-built evacuees left on Monday or Tuesday than mobile home residents. But by the end of the day on Wednesday more mobile home evacuees had left (70% vs. 60%). More of the site-built evacuees stretched their departures beyond Thursday.

Table 19. Evacuation timing by site-built homes and mobile homes in Georges (percent)

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Site-built	1	18	42	31	8	1
Mobile Homes	0	10	60	30	0	0

In Michelle in 2001, the evacuation of residents was phased within the Keys, but mobile home residents weren't told to leave earlier than other residents. At 4 AM on Saturday, Nov. 3rd a hurricane watch was issued that included the Keys, and at 6 PM that day emergency management officials issued a mandatory evacuation order for residents of the Lower Keys. A warning was issued at 4 AM on Sunday, Nov. 4th, and an evacuation order for the remainder of the Keys was issued two hours later. Only about 25% of surveyed residents said they evacuated in Michelle, but of those who did, a larger percentage of site-built residents said they left prior to the hurricane watch, which also preceded the evacuation order. Mobile home evacuees "caught up" with and passed site-built evacuees between watch and warning periods. As in Georges,

estimates based on the mobile home sample are relatively unreliable, with only 22 mobile home evacuees included in the sample.

Table 20. Evacuation timing by site-built homes and mobile homes in Michelle (percent)

	Before Watch	After Watch, Before Warning	After Warning
Site-built	52	25	23
Mobile Homes	38	48	14

Assumptions for Evacuation Transportation Model Runs

1. Tourist Occupancy

The survey-derived occupancy rates in Tables 4 (accommodations) and 9 (RV Parks) are appropriate for planning. They are recent, and managers seemed confident in the figures they provided. Since most hurricanes will occur during the 8-16 to 10-15 time period, that is most reasonable rate to use if only one rate is to be used.

Many managers were confident that numerous guests would cancel reservations in advance of Monroe County issuing a mandatory evacuation notice for visitors and RV parks if a hurricane were threatening the Keys. If they are correct, then the occupancy rates in Tables 4 and 9 would be higher than actual occupancy at the time of an order. However, managers were not asked to provide an estimate of cancellations, so the anticipated reduction can't be quantified. Managers were asked to estimate the number of guests who would leave on their own prior to an evacuation order, and the figures were 30% for accommodations and 22% for RV parks. In the absence of data to the contrary, those figures appear to be a reasonable and adequate reductions in number of guests prior to an evacuation order. Thus figures in Tables 4 and 9 should be multiplied by .70 for accommodations and .78 for RV parks to reflect the occupancy rates at the time when evacuation orders are issued to reflect guests who would have already departed on their own initiative.

Alternative Scenarios. Although hurricane evacuations are most likely between 8-16 and 10-15, it would be advisable to run the model with occupancy rates for the earlier and later time periods, since an evacuation could occur early or late in the season, and planners should be aware of the additional amount of time an evacuation at those times might require.

2. Participation Rates

Accommodations managers indicated that 97% of their guests would eventually depart the Keys, and all that would leave would be gone within 48 hours of the evacuation order. For RV parks the figure was only 88%. Three percent of the accommodations managers and none of the RV park managers said they would not close. However, 18% of the accommodations managers indicated that they would not close until a hurricane's landfall appeared imminent. Ninety-six percent of the accommodations managers and all of the RV park managers said they would tell their guests that they must evacuate out of the Keys.

It is reasonable that a small percentage of guests will not evacuate in a hurricane, especially if some establishments don't force guests to leave. The 97% figure provided by accommodations managers appears reasonable. There were only seven RV park managers who responded to the survey, so their responses are less reliable statistically. There was no explanation provided as to what the 12% not evacuating would do. A safer assumption is that at least 95% of the RV's would leave, a figure more consistent with the accommodations.

Tables 11 and 12 should be used for residents in site-built homes and mobile homes, respectively. They were derived for use in the Florida Statewide Regional Evacuation Study, and supporting data are provided in the South Florida SRES Behavioral Analysis.

Alternative Scenarios. It is common to conduct runs assuming that 100% of the population ordered to evacuate does evacuate, to compute the time necessary to clear the entire population at risk if all did participate in the evacuation. Although that scenario is highly unlikely, it is useful to know the upper bound on clearance times.

Note that participation rates will vary among category 3, 4, and 5 hurricanes, even if the same population is told to evacuate in all three categories of storm. Category threes are most likely, followed by category fours, but category fives will result in the highest participation rates and longest clearance times.

3. Evacuation Timing

For accommodations the curve in Figure 1 weighted by units should be used for accommodations and the curve in Figure 3 should be used for RV parks. Although there are differences among the curves for Key Largo and Key West, compared to Islamorada and Marathon, the relatively small sample sizes don't justify variations in the curves based on location, especially since the figures are judgments of managers rather than

objective measurements. When accommodations responses are weighted by number of vehicles at the establishments, fewer would leave prior to an evacuation order and slightly fewer would leave 24 to 48 hours following the order. However, managers didn't express confidence in estimating numbers of vehicles per unit, particularly for units with more than one bedroom. Given the fairly small difference in the vehicle-weighted response curves and the other response curves in Figure 1, the uncertainty in estimates of vehicle numbers doesn't warrant using that curve. Managers did, however, report numbers of units with confidence, so the unit-weighted curve is probably the best to use, although it is barely discernible from the unweighted curve.

For residents, three curves are provided in Figure 5. They correspond to how quickly residents (those that evacuate) will leave, and they vary depending on the warning scenarios describe earlier. The appropriate curve for modeling depends on the scenario one wishes to capture. The quick response curve is unlikely because Monroe County officials typically issue evacuation notices far enough in advance of the arrival of a storm that residents don't need to hasten their departures in a way that would generate a quick response. However, if the goal of the modeling is to compute the minimum time required to evacuate the Keys, if an urgent threat materialized unexpectedly, the quick response curve is the appropriate curve to model. The most common curve observed in recent years is similar to the one for hurricane Georges in Figure 4, in which orders were issued more than 24 hours in advance of possible landfall.

There is no empirical evidence that mobile home residents evacuate any more quickly than site-built residents, so the base model run should use the same response curves for both. However, in the Keys relatively few mobile home residents have been interviewed in post-storm surveys, so the failure to detect differences might change with more data.

Alternative Scenarios. For accommodation it would be advisable to model the vehicle weighted response curve, to see how much it impacts clearance time. If it changes clearance time significantly, that would suggest that more effort would be worthwhile to determine the number of vehicles at establishments in order to generate a more reliable vehicle-weighted curve.

Although there is no data showing that mobile home residents leave earlier than site-built home residents, Monroe County is one of the few places that plans to order mobile homes to evacuate earlier than site-built homes. There is ample evidence that few residents in any type of housing leave prior to evacuation notices (15% to 20%), but there is also ample evidence that once evacuation notices are issued, people begin evacuating. If Monroe County orders mobile homes to evacuate before they order site-built homes to evacuate, it is likely that SOME mobile home residents will begin evacuating at that time,

although most will not leave promptly. A reasonable scenario for mobile homes would be to have their response curve begin its upward slope earlier than the corresponding curve for site-built homes, but to end at the same time.

4. Vehicle Use

It should be assumed that visitors take all of their vehicles when they evacuate. Although the manager estimates of numbers of vehicles per unit in Table 3 are of unknown accuracy and some managers seemed unsure of their estimates, the numbers are reasonable to use for planning unless more dependable numbers can be located from other sources.

Tables 13 and 14 indicate the percentage of vehicles available to residents that will be used in evacuations. They should be applied to the most reliable available data indicating the number of vehicles available per household. Presumably the Florida SRES will provide that data from Census sources.

Tables 17 and 18 provide planning assumptions for the percentage of evacuating households that will take motorhomes or pull trailers.

Alternative Scenarios. If better sources are can't be found to indicate numbers of vehicles available per household, then the figures in Tables 15 and 16 should be used for planning. Multipliers from Tables 13 and 14 have already been applied to SRES survey data about available vehicles to yield the vehicle use figures in Tables 15 and 16.

The percent-of-available vehicle assumptions in Tables 13 and 14 are slightly higher than observed in past evacuations in the Keys and elsewhere. But they are lower than the numbers which residents in the SRES survey said they intended to use. It would be prudent to model an upper bound on the percentage of available vehicles that might be used at 85% for both site-built and mobile home evacuees.

Acknowledgement

Mr. Andy Newman, acting on behalf of the Monroe County Tourist Development Council, provided valuable assistance in providing contact information and data about characteristics of lodging and RV park establishments in Monroe County, reviewing and offering suggestions regarding the questionnaire, and distributing copies of the questionnaire to establishments in the study area.



MONROE COUNTY ACCOMMODATIONS EVACUATION SURVEY



For hurricane planning Florida uses computer models. The models require data about how many nonresidents and visitors will evacuate, when they will leave, and how many vehicles they will use, among other things. To ensure that the models use the most accurate data that is possible, we are asking you to indicate what you believe your guests would do and what you would do in certain situations. We realize that no one can say with certainty what would happen, but please provide your best estimate, based on your experience in past evacuations, your knowledge of your guests, and your own operating policies. **Your answers will be used only for evacuation modeling** and will be confidential to the extent allowed by law. The contact information is for follow-up only and will be deleted from the data.

This information will be used to better understand and develop the assumptions for the hurricane planning models used by Florida. If you have any questions, please contact the Department of Community Affairs at (850) 922-1766.

Thank you for your help.

Lodging Characteristics

To better understand the number of people who may be visiting the Keys during Hurricane Season, we would like some information about the number of units you have, the number of vehicles associated with the units, and the "typical occupancy".

1. How many of each of the following types of units do you have at your establishment?

- Number of 1-bedroom units _____
- Number of 2-bedroom units _____
- Number of units with more than 2 bedrooms _____

2. What is the average number of vehicles driven by your guests for each type of unit?

- Vehicles per 1-bedroom unit _____
- Vehicles per 2-bedroom units _____
- Vehicles per units with more than 2 bedrooms _____

3. Approximately, what are your typical occupancy rates during hurricane season?

- June 1 to mid-August _____ %
- Mid-August to mid-October _____ %
- Mid-October to November 30 _____ %

EVACUATION SITUATION
Major Hurricane, 11 AM Evacuation Order, Fair Weather

For the following questions, please assume the following situation.

- There is a **major hurricane** threatening the Keys – a category 3, 4, or 5 storm.
- The National Hurricane Center has issued a **hurricane watch** for the Keys, but not a hurricane warning.
- The weather is **fair** (not overcast, no rain, no strong winds).
- The forecast **track** of the storm is close to your location in the Keys (within 50 miles).
- The County has issued a mandatory **evacuation order** for nonresidents and visitors for all of the Keys.
- The order was issued at 11 AM.

4. What percentage of your guests would **have already evacuated** on their own, before the order was issued?

- 0% 20% 40% 60% 80% 100%

5. What percentage of your guests would **eventually evacuate** on their own, after the order was issued?

- 0% 20% 40% 60% 80% 100%

6. **How soon** following the time the county issues a mandatory evacuation order would **your guests depart?**

- Listed below are periods of time following the time the evacuation order is issued.
- What total (cumulative) percentage of your guests would have left by **each** of those times, including those who had left on their own before the order.

[For example, if 20% of your guests would be gone within 6 hours after the time of the evacuation order, check 20% to the right of "6 hours." If an additional 10% to 20% would leave in the next 3 hours check 40% to the right of "12 hours" in addition to the previous box to the right of "6 hours."]

Hours After Evacuation Order By . . .	Cumulative Percentage of Guests Who Have Left					
	The percentage of guests who left is . . .					
6 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
12 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
24 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
36 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
48 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%

7. **How soon** following the time the county issues a mandatory evacuation order would **you close your business?** *[Please check one response]*

- 6 hours 12 hours 24 hours 36 hours 48 hours More than 48 hours
 Would not close Would close only if storm arrival was imminent

8. Would you tell your guests that they **must leave** your establishment and evacuate out of the Keys?

- Yes NO

9. Is there anything else you would like to add?

--

Contact Information

Please give us information for contacting you if we have a question.

Name of Your Business :
Address:

Phone:

Fax:

E-mail:

Contact Name:

Position:

Thank you for taking the time to help us with the study.

Please return in the business reply envelope or fax to:

Fax FSU Survey Research Laboratory 850.644.0792 Use Business Reply Envelope or Mail to: FSU Survey Research Laboratory Florida State University MC 2221 Tallahassee FL 32306-2221
--



MONROE COUNTY RV PARK EVACUATION SURVEY



For hurricane planning Florida uses computer models. The models require data about how many nonresidents and visitors will evacuate, when they will leave, and how many vehicles they will use, among other things. To ensure that the models use the most accurate data that is possible, we are asking you to indicate what you believe your guests would do and what you would do in certain situations. We realize that no one can say with certainty what would happen, but please provide your best estimate, based on your experience in past evacuations, your knowledge of your guests, and your own operating policies. **Your answers will be used only for evacuation modeling** and will be confidential to the extent allowed by law. The contact information is for follow-up only and will be deleted from the data.

This information will be used to better understand and develop the assumptions for the hurricane planning models used by Florida. If you have any questions, please contact the Department of Community Affairs at (850) 922-1766.

Thank you for your help.

RV Park Characteristics

Before we start with the questions about hurricane evacuations we have just a few background questions about your establishment.

1. What percentage of the recreational vehicles/ units in your park are permanent as opposed to transient residences?

Permanent Recreational Vehicles/ Units _____ %

Transient Recreational Vehicles/ Units _____ %

2. Approximately, what are your typical occupancy rates during hurricane season?

Permanent Recreational Vehicles/ Units – Typical Occupancy Rate

June1 to mid-August _____ %

Mid August to mid-October _____ %

Mid-October to November 30 _____ %

Transient Recreational Vehicles/ Units – Typical Occupancy Rate

June1 to mid-August _____ %

Mid August to mid-October _____ %

Mid-October to November 30 _____ %

EVACUATION SITUATION
Major Hurricane, 11 AM Evacuation Order, Fair Weather

For the following questions, please assume the following situation.

- There is a **major hurricane** threatening the Keys – a category 3, 4, or 5 storm.
- The National Hurricane Center has issued a **hurricane watch** for the Keys, but not a hurricane warning.
- The weather is **fair** (not overcast, no rain, no strong winds).
- The forecast **track** of the storm is close to your location in the Keys (within 50 miles).
- The County has issued a mandatory **evacuation order** for nonresidents and visitors for all of the Keys.
- The order was issued at 11 AM.

3. What percentage of your guests would **have already evacuated** on their own, before the order was issued?

- 0% 20% 40% 60% 80% 100%

4. What percentage of your guests would **eventually evacuate** on their own, after the order was issued?

- 0% 20% 40% 60% 80% 100%

5. **How soon** following the time the county issues a mandatory evacuation order would **your guests depart?**

- Listed below are periods of time following the time the evacuation order is issued.
- What total (cumulative) percentage of your guests would have left by **each** of those times, including those who had left on their own before the order.

[For example, if 20% of your guests would be gone within 6 hours after the time of the evacuation order, check 20% to the right of "6 hours." If an additional 10% to 20% would leave in the next 3 hours check 40% to the right of "12 hours" in addition to the previous box to the right of "6 hours."]

Hours After Evacuation Order By . . .	Cumulative Percentage of Guests Who Have Left					
	The percentage of guests who left is . . .					
6 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
12 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
24 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
36 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
48 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%

6. **How soon** following the time the county issues a mandatory evacuation order would **you close your business?** *[Please check one response]*

- 6 hours 12 hours 24 hours 36 hours 48 hours More than 48 hours
 Would not close Would close only if storm arrival was imminent

7. Would you tell your guests that they **must leave** your establishment and evacuate out of the Keys?

- Yes NO

8. Is there anything else you would like to add?

--

Contact Information

Please give us information for contacting you if we have a question.

Name of Your Business :
Address:
Phone:
Fax:
E-mail:
Contact Name:
Position:

Thank you for taking the time to help us with the study.

Please return in the business reply envelope or fax to:

Fax FSU Survey Research Laboratory 850.644.0792 Use Business Reply Envelope or Mail to: FSU Survey Research Laboratory Florida State University MC 2221 Tallahassee FL 32306-2221
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Methodology of Hurricane Evacuation Study in the Monroe County

The Florida Department of Community Affairs, through Florida State University, conducted a study to gather data on hurricane visitor evacuations in the Florida Keys. A list of lodging accommodations and RV parks provided by the Monroe County Tourist Development council served as the sampling frame for this effort. A total of 368 establishments located in Monroe County were contacted for the study (see Table 1).

Table 1
Tourist Accommodations in Monroe County

Type of Establishment	Monroe County					Monroe County
	Largo	Islamorada	Marathon	Lower Keys	Key West	
Hotel-Motel	36	39	41	9	56	181
B&B	2	2	5	2	71	82
Seasonal rental- Realtor	6	18	33	11	17	85
Campground/RV Park	4	2	5	9	0	20
Total Surveys Sent	48	61	84	31	144	368

Fieldwork. The study of 368 lodging establishments located in Monroe county began in June 2009 and continued through July 2009. The establishments were contacted by fax, phone and mail in an effort to gather information about evacuation of tourists in Monroe County. The Monroe Tourist County emailed or faxed its members to solicit their cooperation with the study effort. The FSU Survey Research Laboratory then attempted to reach the general manager of the establishment by telephone and fax a copy of the survey to them. For those wanting to receive the survey by mail, a copy was sent. Those establishments not faxing back their surveys within a week were mailed a copy of the survey instrument. From these efforts, 36 percent (n=132) of the lodging establishments responded. Sixty-one percent returned the survey by fax while 39 percent mailed it back.

Location. From these efforts, 36 percent of the 368 establishments returned a survey. Nearly half (39%) of the establishments sent a survey were located in Key West (see Table 2). Only 8 percent of the establishments targeted in the survey effort were located in the Lower Keys. The establishments in the Key West had the highest response rate—nearly half (44%) of those receiving a survey completed it. In contrast, only 23 percent of the establishments in Largo completed the survey.

**Table 2
Completions by Location**

Key	Total Establishments	% of Establishments	# of Returned Survey	% Returned by Key
Largo	48	13%	11	23%
Islamorada	61	17%	22	36%
Marathon	84	23%	27	32%
Lower Keys	31	8%	9	29%
Key West	144	39%	63	44%
Monroe County	368	100%	132	36%

Type. Table 3 displays; the completions by the type of establishment: Hotel-Motel, Bed and Breakfast (B&B), Seasonal Rental-Realtor, and Campground/ RV park. Here, Hotels/Motels account for the largest proportion (41%) of the establishments surveyed while Campgrounds and RV parks account for only 5 percent of the establishments located in Monroe County. Managers of Hotels/Motels responded the most (41%) compared to those managing other types of establishments.

**Table 3
Completions by Type of Establishment**

Type of Establishment	Total # of Establishments	% of Returned Surveys	# of Returned Surveys	% Returned by Type
Hotel-Motel	181	57%	75	41%
B&B	82	20%	27	33%
Seasonal Rental-Realtor	85	17%	23	27%
Campground/RV Park	20	5%	7	35%
Monroe County	368	100%	132	36%

Size of Establishments. A majority (51%) of the lodging establishments located in Monroe County consist of less than 20 units. Table 4 breaks the lodging establishments into three size categories. Information about the number of units was missing for 10 of the establishments. Establishments with 95 or more lodging units account for only 14 percent of the 358 establishments while those under 20 units account for about half (51%). More than half (56%) of the managers of the large units returned the survey. Only 31 percent of the small and 37% of the medium-sized establishments returned a survey.

**Table 4
Completions by the Size of Establishment**

Size	Total Establishments	% of Establishments	Returned Survey	% Returned by Size
Small--<20	183	51%	57	31%
Medium--	125	35%	46	37%
Large--95 +	50	14%	28	56%
Total	358	100%	131	

Number of Units. The 358 establishments included in the study represent 14,751 lodging units. (Information about the number of units was missing for 10 of the establishments). Overall, the establishments returning a survey represent 46 percent of all the lodging units (6,738) located in Monroe County. Table 5 depicts the number of lodging units located in each Key and the proportion of units represented by completed surveys. Key West has the most lodging units (3,526) while the Lower Keys has the fewest units (1,748). Key West also has the highest response rate—59 percent of the managers returned the survey.

**Table 5
Completions by Number of Lodging Units**

Key	Total # Units	Total Sum of Units	Sum of Units Returning Survey	% of Units Represented in Study
Largo	46	2,092	605	29%
Islamorada	59	2,180	700	32%
Marathon	82	2,736	1,019	37%
Lower Keys	30	1,748	888	51%
Key West	141	5,995	3,526	59%
Monroe County	358	14,751	6,738	46%



MONROE COUNTY MOBILE HOME PARK EVACUATION SURVEY



For hurricane planning Florida uses computer models. The models require data about how many nonresidents and visitors will evacuate, when they will leave, and how many vehicles they will use, among other things. To ensure that the models use the most accurate data that is possible, we are asking you to indicate what you believe your residents would do and what you would do in certain situations. We realize that no one can say with certainty what would happen, but please provide your best estimate, based on your experience in past evacuations, your knowledge of your residents, and your own operating policies. **Your answers will be used only for evacuation modeling** and will be confidential to the extent allowed by law. The contact information is for follow-up only and will be deleted from the data.

This information will be used to better understand and develop the assumptions for the hurricane planning models used by Florida. If you have any questions, please contact the Department of Community Affairs at (850) 922-1766.

Thank you for your help.

Mobile Home Park Characteristics

Before we start with the questions about hurricane evacuations we have just a few background questions about your establishment.

1. What percentage of the mobile home units in your park are permanent as opposed to seasonal residences?

Permanently Occupied Units _____%

Seasonally Occupied Units _____%

2. Approximately, what are your typical occupancy rates during hurricane season?

Permanent Units – Typical Occupancy Rate	June 1 to mid-August	_____ %
	Mid-August to mid-October	_____ %
	Mid-October to November 30	_____ %

Seasonal Units – Typical Occupancy Rate	June 1 to mid-August	_____ %
	Mid-August to mid-October	_____ %
	Mid-October to November 30	_____ %

EVACUATION SITUATION
Major Hurricane, 11 AM Evacuation Order, Fair Weather

For the following questions, please assume the following situation.

- There is a **major hurricane** threatening the Keys – a category 3, 4, or 5 storm.
- The National Hurricane Center has issued a **hurricane watch** for the Keys, but not a hurricane warning.
- The weather is **fair** (not overcast, no rain, no strong winds).
- The forecast **track** of the storm is close to your location in the Keys (within 50 miles).
- The County has issued a mandatory **evacuation order** for nonresidents, visitors, RV's and mobile homes for all of the Keys.
- The order was issued at 11 AM.

3. What percentage of your residents would **have already evacuated** on their own, before the order was issued?

0% 20% 40% 60% 80% 100%

4. What percentage of your residents would **eventually evacuate**, after the order was issued?

0% 20% 40% 60% 80% 100%

5. **How soon** following the time the county issues a mandatory evacuation order would **your residents depart**?

- Listed below are periods of time following the time the evacuation order is issued.
- What total (cumulative) percentage of your residents would have left by **each** of those times, including those who had left on their own before the order.

[For example, if 20% of your residents would be gone within 6 hours after the time of the evacuation order, check 20% to the right of "6 hours." If an additional 10% to 20% would leave in the next 3 hours check 40% to the right of "12 hours" in addition to the previous box to the right of "6 hours."]

Hours After Evacuation Order	Cumulative Percentage of Residents Who Have Left					
By . . .	The percentage of residents who left is . . .					
6 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
12 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
24 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
36 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%
48 hours	<input type="checkbox"/> 0%	<input type="checkbox"/> 20%	<input type="checkbox"/> 40%	<input type="checkbox"/> 60%	<input type="checkbox"/> 80%	<input type="checkbox"/> 100%

6. Would you tell your residents that they must leave your park and evacuate their homes?

Yes No

7. Approximately what percentage of your residents who evacuate would go someplace else in the Keys, such as a motel or the home of a friend or relative, instead of leaving the Keys entirely?

none Less than 5% 5% to 10% 10% to 15% 15% to 20% 20% to 25% More than 25%

8. Is there anything else you would like to add?

--

Contact Information

Please give us information for contacting you if we have a question.

Name of Your Business :
Address:

Phone:

Fax:

E-mail:

Contact Name:

Position:

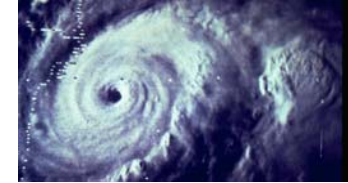
Thank you for taking the time to help us with the study.

Please return in the business reply envelope or fax to:

Fax FSU Survey Research Laboratory 850.644.0792 Use Business Reply Envelope or Mail to: FSU Survey Research Laboratory Florida State University MC 2221 Tallahassee FL 32306-2221
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MONROE COUNTY ACCOMMODATIONS EVACUATION SURVEY



Appdendix E

Open Ended Comments

August 13, 2009



FLORIDA STATE UNIVERSITY

Key Largo

KEY	TYPE	SIZE	COMMENT
*****	*****	*****	*****
Key Largo	Hotel/ Motel/ Resort	Small--Under 20 Units	WE URGE GUESTS TO EVACUATE DURING DAYTIME HOURS AS EARLY AS POSSIBLE DUE TO TRAFFIC. EACH GUEST'S TIME TABLE IS INDIVIDUAL AND HARD TO ESTIMATE. WE EVACUATE IF WE HEAR JIM CANTORE IS COMING. WE CALCULATE MONTHLY OCCUPANCY NOT HALF-MONTH.

Key Largo	Sesonal Rental/ Realtor	Large--95 Plus Units	WE ARE A VACATION RENTAL BUSINESS SO SOME OF THE QUESTIONS WERE HARD TO APPLY.

Islamorada

KEY	TYPE	SIZE	COMMENT
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	WE THINK 5 DAYS MAY BE TOO EARLY OF A WARNING TO ISSUE EVACUATIONS. TWICE LAST YEAR OUR RESORT SAT EMPTY WHILE THE STORMS WEAKENED AND/OR CHANGED TRACK. WE LOST A LOT OF REVENUE.
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	ONCE AN EVACUATION ORDER HAS BEEN ISSUED, WE CALL ALL INCOMING GUESTS AND TELL THEM NOT TO COME. WE ALSO CLOSE OUR DOORS TO ALL ROAD WALKINS. SO TO SAY THAT WE ARE OPEN FOR 12 HOURS FOLLOWING EVACUATION ORDERS IS NOT ENTIRELY TRUE.
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	ISLAMORADA ISSUES FINES TO HOTELS THAT DO NOT EVACUATE GUESTS. WE DO ALLOW A FEW TRAILER PARK RESIDENTS SHELTER IF NEEDED PER THE OWNER.
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	WE HAVE FOUND DURING MANDATORY EVACUATIONS SOME HOTELS REMAIN OPEN. IT IS OUR OPINION THAT ALL VISITORS SHOULD BE MADE TO LEAVE THE KEYS.
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	Q.4 IS CONFUSING. IF A BIG STORM IS HEADING OUR WAY MOST PEOPLE LEAVE TO TAKE CARE OF BUSINESS (THEIR HOMES). MOST GUESTS DURING HURRICANE SEASON ARE FROM FLORIDA, SO THEY WANT TO PUT UP SHUTTERS, ETC... THEY ARE AHEAD OF THE EVECAUATION ORDER.
Islamorada	Hotel/ Motel/ Resort	Medium--20 - 94 Units	ONCE AN EVACUATION ORDER HAS BEEN ISSUED WE CALL ALL INCOMING GUESTS AND TELL THEM NOT TO COME. WE ALSO CLOSE OUR DOORS TO ALL ROAD WALK-INS. SO TO SAY THAT WE ARE OPEN FOR 12 HRS IS NOT EXACTLY TRUE.

Islamorada Hotel/ Motel/ Resort Small--Under 20 Units I DON'T TRUST D.C.A., THEY ARE GOVERNMENT AT ITS BEST.

Islamorada Hotel/ Motel/ Resort Small--Under 20 Units FULL REFUND IS GIVEN WHEN MANDATORY EVACUATION FOR ALL VISITORS TO LEAVE ON REMAINDER OF THEIR STAY.

Islamorada Seasonal Rental/ Realtor Medium--20 - 94 Units I REPRESENT 20 INDIVIDUALLY OWNED PROPERTIES. 7 CONDO UNITS, 13 SINGLE FAMILY HOMES. I HAVE NOT HAD ANYONE STAYING IN ANY OF THESE PROPERTIES WHEN AN EVACUATION ORDER HAS BEEN ISSUED. MY ANSWERS ARE BASED ON WHAT I THINK THEY WOULD DO.

Marathon

KEY	TYPE	SIZE	COMMENT
*****	*****	*****	*****
Marathon	Hotel/ Motel/ Resort	Large--95 Plus Units	IT IS IMPORTANT TO PREPARE THE POOL AREA AND SAFEGUARD ALL OF THE BOATS IN THE MARINA.
Marathon	Hotel/ Motel/ Resort	Large--95 Plus Units	THIS HOTEL WILL BE CLOSED FOR REDEVELOPMENT. WILL RE-OPEN IN SUMMER 2010 AS HOLIDAY INN EXPRESS.
Marathon	Hotel/ Motel/ Resort	Medium--20 - 94 Units	THANK YOU FOR THE INFORMATION FAXESON STORM UPDATES YOU SEND TO KEEP US CURRENT ON THE STORM AND RELATIVE INFORMATION.
Marathon	Hotel/ Motel/ Resort	Medium--20 - 94 Units	WE TAKE HURRICANE EVACUATION AND PREPERATION AS A VERY SERIOUS ISSUE. WE DON'T WANT TO PUT OUR EMPLOYEES OR EMERGENCY WORKERS IN HARMS WAY. 4 HOUR EVACUATION POLICY.
Marathon	Hotel/ Motel/ Resort	Medium--20 - 94 Units	LETS NOT PUT IT ON THE INFO HWY UNTIL WE NEED FOR THE SAFETY OF OUR PEOPLE.
Marathon	Hotel/ Motel/ Resort	Medium--20 - 94 Units	BEING A TRANSIENT PROPERTY, WE FOCUS ON ORDERLY EVACUATIONS. THE EARLIER THE EVACUATION IS GIVEN, THE MORE ORDERLY WE CAN ASSIST OUR GUESTS. IF THERE WAS A WAY TO SET UP EMAIL AND TEXT MESSAGE NOTIFICATIONS THIS MAY ALLOW GREATER EFFICIENCY WITH FUTURE EVACUATIONS.
Marathon	Hotel/ Motel/ Resort	Small--Under 20 Units	WHEN IT BECOMES MANDITORY TO CLOSE OUR BUSINESS ALL INCOMING TRAFFIC SHOULD BE STOPPED IN FLORIDA CITY. I HAVE LEFT MY BUSINESS CLOSED UP AND TAKEN MY INVALID MOTHER HAVING TO SIT IN TRAFFIC WHEN THERE WAS ALMOST AS MANY INCOMING VEHICLES AS THERE WAS LEAVING. IT MAY NOT BE SAFE TO STAY, BUT IS IT SAFE TO LEAVE.

Marathon	Hotel/ Motel/ Resort	Small--Under 20 Units	100 PERCENT OF GUESTS WOULD EVACUATE AFTER 30 HOURS. 100 PERCENT AFTER 24 HOURS IF WEATHER WAS BAD.
Marathon	Hotel/ Motel/ Resort	Small--Under 20 Units	WE ARE STRONG, FORTIFIED CBS BUILDINGS. MANY LOCALS COME HERE TO STAY DURING A STORM.
Marathon	B&B	Small--Under 20 Units	WE ASK OUR GUESTS TO LEAVE SO THAT WE CAN BOARD UP THE WINDOWS. WE USE PLYWOOD SHUTTERS ON THE MOTEL, MAKING THE ROOMS UNSAFE PER INSURANCE. PLUS, WE NEED TO HAVE TIME TO GET OURSELVES READY FOR A STORM AND NOT WORRY ABOUT OTHERS.
Marathon	Sesonal Rental/ Realtor	Large--95 Plus Units	DESPITE THE LOST REVENUES, LIFE OF TOURISTS AND EMPLOYEES MORE IMPORTANT TO US AND VACATION RENTAL HOME OWNERS. THEY WANT THEIR HOMES SHUTTERED AND PROTECTED.
Marathon	Campground/ RV Park	Large--95 Plus Units	WHEN AN EVACUATION IS ORDERED WE GO TO ALL OUR GUESTS AND GIVE THEM AMOUNT OF TIME WITHIN THEY NEED TO LEAVE.

Lower Keys

KEY	TYPE	SIZE	COMMENT

Lower Keys	Campground/ RV Park	Large--95 Plus Units	COMMUNICATION IS KEY. IN THE PAST IF A HURRICANE IS PLANNING TO ARRIVE ON THE WEEKEND COMMUNICATION IS VERY SLOW. ONE YEAR THE COUNTY ISSUED EVACUATION FOR TOURISTS AND WE DID NOT RECEIVE A FAX UNTIL THREE HOURS LATER.

Lower Keys	Campground/ RV Park	Medium--20 - 94 Units	OUR RV PARK CLOSES DOWN AS SOON AS THE LAST GUEST LEAVES. OUR REST STAY OPEN AS LONG AS POSSIBLE AND RE-OPENS AS SOON AS POSSIBLE AFTER.

Key West

KEY	TYPE	SIZE	COMMENT
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	WHENEVER THERE IS A HURRICANE IN THE CARIBBEAN, PEOPLE START CANCELLING RESERVATIONS AND CHECK OUT OF THE HOTEL.
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	WE ARE ON THE ATLANTIC OCEAN AND DO NOT WANT THE RESPONSIBILITY.
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	THIS SURVEY IS FILLED OUT TO COVER BOTH CASA MARINA AND THE BEACH RESORTS.
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	THE CROWNE PLAZA LA CONCHA IS CONSIDERED A REFUGE OF LAST RESORT. WE STAY OPEN AND NEVER CLOSE. THE BUILDING HAS BEEN HERE SINCE 1926. THE NEWS MEDIA AND LOCALS USUALLY STAY AT THE HOTEL.
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	WE HOUSE EMERGENCY PERSONEL AND LOCALS.
Key West	Hotel/ Motel/ Resort	Large--95 Plus Units	SO MANY PEOPLE ARE WIRED IN WITH COMPUTERS OR PHONES OR TUNED IN TO THE WEATHER CHANNEL, NEWS, AND SPORTS THAT A MAJORITY OF OUR GUESTS DO NOT WANT TO BE HERE IN ANY TYPE OF HURRICANE FROM 1-5 AND THE MAJORITY CHECK OUT BEFORE WE CAN ASK THEM.
Key West	Hotel/ Motel/ Resort	Medium--20 - 94 Units	MANAGE 42 VACATION RENTALS OWNED BY 42 DIFFERENT PEOPLE. NOT 1 OWNER LIKE HOTEL SCENARIO.
Key West	Hotel/ Motel/ Resort	Medium--20 - 94 Units	CERTAIN MANAGEMENT CONTINUE WORK FOR THE BUSINESS ALTHOUGH WE ARE CONSIDERED CLOSED.

Key West	Hotel/ Motel/ Resort	Medium--20 - 94 Units	WE TELL OUR GUESTS THAT WE RECOMMEND LEAVING THE KEYS AND THOUGH WE CAN'T MAKE THEM LEAVE, THE ISLAND RESORT WILL CLOSE.
Key West	Hotel/ Motel/ Resort	Medium--20 - 94 Units	I BELIEVE THERE IS A NEED FOR CONSISTENCY WITH REGARD TO EVACUATION ENFORCEMENT. IT IS DIFFICULT TO TELL MY GUESTS THEY NEED TO EVACUATE WHEN A FACILITY DOWN THE ROAD OS ACCEPTING THEM FOR CHECK-IN.
Key West	Hotel/ Motel/ Resort	Medium--20 - 94 Units	SSK IS ONE OF THE FIRST PROPERTIES TO CLOSE IN THIS SITUATION BECAUSE COAST GUARD WILL SHUT DOWN OUR CHANNEL, ESSENTIALLY CUTTING ALL TRANSPORTATION TO AND FROM OUR ESTABLISHMENT.
Key West	Hotel/ Motel/ Resort	Small--Under 20 Units	WE HAVE BEEN MANAGING THE COTTAGES FOR ONLY SIX MONTHS. WE HAVE NO EXPERIENCE WITH A HURRICANE SEASON.
Key West	B&B	Medium--20 - 94 Units	IT ALL REALLY DEPENDS ON THE STORM. WE WILL ALWAYS TELL GUESTS THEY MUST LEAVE IF A VISITOR EVACUATION IS ORDERED. WE GIVE THEM A DEADLINE, OTHERWISE THEY ARE NOT MOTIVATED. ROUGHLY ONE-THIRD OF OUR GUESTS TRAVEL BY CAR.
Key West	B&B	Small--Under 20 Units	A MANDATORY EVACUATION FOR KW IS THE ONLY TIME WE WOULD OFFER GUESTS ANY TYPE OF CREDIT.

Key West	B&B	Small--Under 20 Units	PLEASE TAKE INTO CONSIDERATION THAT THE AVERAGE LENGTH OF STAY FOR TOURISTS VISITING KEY WEST IS ONLY 2-3 NIGHTS, SO ONCE THERE IS A RUMOR OF A STORM COMING GUESTS CANCEL THEIR RESERVATIONS. THEY DO NOT WANT TO BE HERE FOR BAD WEATHER. BY THE TIME AN EVACUATION IS ORDERED OCCUPANCY IS ALREADY DOWN TO 30%. THIS SHOULD BE CONSIDERED WHEN CALCULATING THE NUMBER BEING EVACUATED. YOU CANNOT BASE THE NUMBER ON THE TYPICAL OCCUPANCY FOR THE MONTH IN QUESTION. THIS IS WITH 20 YEARS OF EXPERIENCE LIVING AND MANAGING HOTELS OF ALL SIZES IN KEY WEST. I FIRMLY BELIEVE THAT ONCE AN EVACUATION ORDER IS ISSUED IT SHOULD BE MANDATORY. I DO NOT BELIEVE, HOWEVER, THAT AN EVACUATION ORDER SHOULD PREEMPT THE NATIONAL HURRICANE CENTER ISSUING A WATCH OR WARNING.
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Key West	B&B	Small--Under 20 Units	WHEN A HURRICANE IS ANYWHERE IN THE AREA THEY GET OUT OF TOWN ON THEIR OWN. THEY DO NOT WANT TO GET STUCK.
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Key West	B&B	Small--Under 20 Units	CATEGORY 1 OR 2 WOULD NOT BE CLOSE AND WOULD GIVE GUESTS THE OPTION OF STAYING OR LEAVING. IT IS VERY IMPORTANT NOT TO HYPE HURRICANES. OUR BUSINESS IS GREATLY AFFECTED BY MEDIA HYPE.
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Key West	B&B	Small--Under 20 Units	I THINK YOUR EXAMPLE IS TERRIBLE. IF THE FORECAST TRACK MEANS THE CENTER OF THE CONE, 50 MILES IS WAY TOO CLOSE TO BE WAITING UNTIL 36 HOURS. IF YOU MEAN ONE EDGE OF THE CONE, WHICH DIRECTION IS THE CLOSENESS TRENDING. IF IT WAS 10 MILES AND NOW ITS 50 MILES I MIGHT NOT SUGGEST EVACUATION. BY 24 HOURS IT COULD BE 150 MILES. WHAT DIRECTION IS THE STORM COMING FROM? ARE WE 50 MILES RIGHT OF THE EYE OR 50 MILES LEFT OF THE EYE?
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Key West	B&B	Small--Under 20 Units	THIS IS OUR FIRST HURRICAN SEASON, WE OPENED IN NOVEMBER 2008. WE DO NOT OFFER PARKING.
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Key West	B&B	Small--Under 20 Units	EVACUATIONS FOR TROPICAL STORMS NEED TO BE SERIOUSLY RECONSIDERED. UNNECESSARY EVACUATIONS HAVE DEVASTATING CONSEQUENCES TO BUSINESSES.
Key West	B&B	Small--Under 20 Units	EVACUATION TIMES DEPEND SOLELY ON HOW QUICKLY MY GUESTS CAN SECURE FUTURE ACCOMODATIONS OUTSIDE OF THE KEYS.
Key West	Sesonal Rental/ Realtor	Small--Under 20 Units	WE RETURNED THE DEPOSIT OR NIGHTS NOT OCCUPIED IF THERE IS A HURRICANE EVACUATION ORDER. MORE LENIENT THAN MOST.

Key West
Medium--20-94 units
Hotel, Bed and Breakfast

Comments on the Evacuation Order Survey:

I believe that storm events do not unfold as you have portrayed them in your Evacuation Situation. As a result, the survey responses you receive may not be predictive of evacuation actions during actual storm events. Let me explain what I mean.

You describe a situation where a Monroe County non-resident evacuation order has just been called (as of 11am). You also indicate that at this same time we know the track and intensity of the storm (cat 3 or higher, tracking within 50 miles of our location), and that a hurricane watch is in effect from the National Hurricane Center. It has been my experience that this amount of clarity is rarely evident at the time a non-resident evacuation is called. More likely, when Monroe County calls for a non-resident evacuation - a decision made 72 or more hours in advance of storm arrival - all we know is that there is a tropical storm developing and we are "in the cone". The storm is probably 500 miles away at this 72 hour time-point. The National Hurricane Center will not have issued a watch or warning for the Keys. The ultimate track and strength of the storm will still be developing. And while the Keys may be "in the cone", so might Cuba and the entire state of Florida. At the early timeframe that the County issues a non-resident evacuation order it is usually still unclear whether the storm presents a danger to us, or, where a safe evacuation location would be.

The scenario you give, where a major storm is predicted to track within 50 miles of us, would make any prudent person skedaddle in a hurry! But we usually don't have that clarity until about 24 to 36 hours in advance of an approaching storm. That leaves 36 hours+ of time during which many will second-guess the necessity of the evacuation, but visitors will be required to bear it. The financial cost and emotional anxiety of it is high. Compliance with the first evacuation each year is usually pretty good. But, when evacuations are ordered so early, there will be many "false alarms". Be prepared for diminishing compliance with each subsequent event due to fatigue, skepticism, and the heavy financial burden caused by evacuations.

With those concerns expressed, here is my experience of how a storm scenario plays out with respect to the evacuation of hotel guests.

Landfall minus 6 Days – A Tropical Storm develops in the Atlantic.

Reaction: – The National Hurricane Center will name the storm, and it will be widely reported and tracked by the news media.

Effect: – Hotels throughout the Florida Keys will begin receiving cancellations of existing reservations for arrivals throughout the next two week period as future guests anticipate poor weather (or worse) during their planned vacation. Business suffers dramatically with news coverage of any tropical storm, regardless of the location of the storm. Normal occupancy levels drop by 20%+.

Landfall minus 3 Days – The storm continues its movement westerly into the Caribbean. The Florida Keys are “in the cone”.

Reaction – Monroe County Emergency Management issues a non-resident evacuation order. Media coverage intensifies. Weathermen in rain slickers begin checking in at La Concha Hotel.

Effect – Our guest census will be down by 50% from normal occupancy at this point, from news coverage of the developing storm. With the issuance of a non-resident evacuation order, the hotel staff will call all remaining arrivals due in over the next three to five days, to reschedule or cancel reservations. We inform all in-house guests that an evacuation order is in effect. At my hotels, we normally allow guests to stay as long as the next morning, if they need that time to finalize their departure plans. Guests are generally not happy, and they feel pressed to find flights or rental cars and make alternate hotel reservations on the mainland. About half will leave within a few hours of the evac order. The rest will leave the following morning. At that point we officially close the hotel to guests until the storm passes.

During Storm passage: We permit employees to stay at the hotel as a refuge (only those properties located in flood zone X) while the storm passes through, if they wish.