

PERMANENT POST-DISASTER HOUSING AFTER TWELVE YEARS

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On September 18, 1974 hurricane Fifi swept across the north coast of Honduras killing several thousand residents and leaving more than 100,000 homeless. This was the fourth such storm this century, but the residents were not prepared and the loss was extensive. Most of the loss of life and housing destruction was in the small villages along rivers and on steep hillsides.

Many international relief organizations as well as governments responded to the disaster. After the immediate period of relief and clean up, the task of constructing permanent housing was undertaken. The authors of this article received a grant from one participating agency which enabled them to evaluate the housing over three years after the construction. In 1987 we returned to one of the three sites we had evaluated in the 70's and did an extensive follow up, again measuring resident satisfaction. This paper reports on changes in resident satisfaction at this one site after twelve years.

THE HOUSING AT SAN JOSE': The agency which funded our research built 350 houses in three separate sites. The one on which we are reporting is San Jose' de las Laureles and contains 121 houses. It is located near the city of Chaloma on the major highway between San Pedro Sula, the second largest city in Honduras, and the north coast. A few of the houses were built of steel reinforced concrete, but the majority were built of cement block and had concrete floors and tin (lamina or zinc) roofs. The houses contain approximately 25 square meters of floor space and cost \$658 (U.S.) for the material. They were constructed by volunteers and future residents. The latter receiving food for their work.

HOUSING RECIPIENTS: The families that received the San Jose' housing were from a small village of the same name which was devastated by the storm. Over 80% of them had lived in champas (houses constructed by the owners and made of indigenous materials such as thatch, bamboo, and mud plaster), only one in three had hard floors, less than two percent had electricity, four percent had baths, and ten percent had piped water into the houses. The average number of persons per household was 5.7, the average formal educational level of the household heads was less than two years, and most of them were employed in the primary sector (agriculture).¹

THE RESEARCH: We decided very early in this research that the housing recipients were the experts with reference to knowing how successful these housing projects were and subsequently we utilized

them as the evaluators. We employed local interviewers and for our 1987 survey we interviewed an adult in each house with either a short form of the questionnaire or with the longer form which included 22 housing satisfaction questions (these were also asked in 1976). An adult in 105 of the 121 houses was interviewed (84.6%), 55 with the long form and 50 with the short form.

GLOBAL QUESTIONS: We asked all respondents (105) in 1987 two global questions with reference to satisfaction and we begin our analysis with these two questions. Respondents are divided into "Original Residents" (those who have lived in the houses since they were built) and "New Residents" (those who have moved in later).

Table 1: "Is this a better place to live than when you first moved here?"

	Yes	Equal	No
Total 1987 Residents	86 (81.9%)	7 (6.7%)	12 (11.4%)
Original Residents	44 (80%)	4 (7.3%)	7 (12.7)
New Residents	42 (84%)	3 (6%)	5 (10%)

Chi-square (using Yates correction): 0.04523, d.f. 2, p = .90

Table 2: "Has your financial situation improved since you moved to this project?"

	Yes	Equal	No
Total 1987 Residents	79 (75.2%)	7 (6.7%)	19 (18.1%)
Original Residents	41 (74.6%)	4 (7.3%)	10 (18.2%)
New Residents	38 (76%)	3 (6%)	9 (18%)

Chi-square (using Yates correction): 0.05981, d.f. 2, p = .80.

Responses to these global questions are very positive. Over 80% of the respondents say 'yes' to the question, "Is this a better place to live than when you first moved here?" Another 6.7% say it has remained the same and 11.4% say it has not improved. To the question "Has your financial situation improved since you moved to

this project?" over 75% say yes. Again, 6.7% say it has remained the same and 18.1% say it has not improved. The differences between Original and New Residents is not statistically significant.

COMPARISON OF 1976 AND 1987 SURVEYS: As was mentioned above, 55 of the respondents in the 1987 sample completed the long interview which included 22 specific questions of satisfaction about the housing. These questions were divided into six categories: 1) Institutional Services, 2) Work, 3) Housing, 4) Housing Facilities, 5) Site Characteristics, and 6) Social Environment.

In Tables three through eight we make two comparison. First, we compare those who completed the long form in 1976 with those who completed the same survey in 1987. Secondly, using the 1987 data and again only those who completed the long form, we compare those who were original residents (identified themselves as having received the house from the sponsoring institution) with those who were more recent residents "New Residents," both renters and owners. There were 16 renters.

Chi-square is used to determine whether or not there are significant differences in the data for original and new residents in 1987. This statistic is not used with the comparisons between the 1976 and 1987 respondents since it is possible that the same people are in both sample (chi-square does not allow for this).

FINDINGS: With few exceptions our 1976 survey indicated very high satisfaction for the new residents. Satisfaction with the availability of Churches, Schools, and Transportation is above 90% and only for Markets is it low, 26%. (Table 3) In 1987 satisfaction has declined by ca. 18% for Churches, 29% for Schools, and 38% for Transportation. For Markets, however, satisfaction has improved by ca. 39%.

Comparing the Original Residents and New Residents in 1987 it is clear that a higher percentage of the Originals are satisfied with each of the four Institutional Services. The difference with reference to the Market is particularly clear (80% vs. 52.9%). In no case, however, are the differences statistically significant.

Table 4 contains comparative responses to the issues of whether or not there is Sufficient Work and the Nearness to Work. Between 1976 and 1987 the sense that there is sufficient work had diminished by ca. 25%, but the feeling that it is sufficiently near has increased by nearly 30%.

Table 3: Resident Satisfaction With Institutional Services

(1976 and 1987 Residents Compared)								
	a) Church		b) School		c) Market		d) Transport.	
	Sat.	No/Sat.	Sat.	No/Sat.	Sat.	No/Sat.	Sat.	No/Sat
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1976 Residents	48 (96%)	2 (4%)	50 (100%)	0 (0%)	13 (26%)	37 (74%)	47 (94%)	3 (6%)
1987 Total Residents	36 (78.3%)	10 (21.7%)	35 (71.3%)	14 (28.7%)	21 (65.6%)	11 (34.4%)	21 (56.8)	16 (43.2%)
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(1987 Original and New Residents Compared)								
	e) Church		f) School		g) Market		h) Transport.	
	Sat.	No/Sat.	Sat.	No/Sat.	Sat.	No/Sat.	Sat.	No/Sat.
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1987 Original Residents	20 (83.3%)	4 (16.7%)	20 (74.1%)	7 (25.9%)	12 (80%)	3 (20%)	11 (58%)	8 (42%)
1987 New Residents	16 (72.7%)	6 (27.3%)	15 (68.2%)	7 (31.8%)	9 (52.9%)	8 (47.1%)	10 (55.6%)	8 (44.4%)
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Chi-square:	e) 0.75892		f) 0.20623		g) 0.58640		h) 0.02061	
	d.f. 1, p=.50		d.f. 1, p=.20		d.f. 1, p=.20		d.f. 1, p=.90	

Among Original Residents in 1987 there is less work available than for the New Residents, but Nearness to Work is slightly less of a problem for the Originals. Differences between the two groups on these two dimensions are not statistically different.

Housing Characteristics received very high marks in 1976 as shown in Table 5. All were 96% or above. In 1987 satisfaction with House Material had dropped by ca. 9%, Floor Material by 15%, Roof Material by 40%, and Interior Space by 30%.

Differences between Original and New Residents in 1987 are less than the above differences. For Housing Material New Residents

(1976 and 1987 Residents Compared)

	a) Sufficient Work		b) Nearness to Work	
	Sat.	No/Sat.	Sat.	No/Sat.
1976 Residents	38 (76%)	12 (24%)	23 (46%)	27 (54%)
1987 Total Residents	19 (51.4%)	18 (48.6%)	25 (75.8%)	8 (24.2%)

(1987 Residents Compared)

	c) Sufficient Work		d) Nearness to Work	
	Sat.	No/Sat.	Sat.	No/Sat.
1987 Original Residents	10 (41.7%)	14 (58.3%)	12 (70.6%)	5 (29.4%)
1987 New Residents	9 (69.2%)	4 (30.8%)	13 (81.3%)	3 (18.7%)

Chi-squares: c) 2.56459, d.f. 1, p= .20; d) 0.51017, d.f. 1, p = .50

Table 5: Housing

(1976 and 1987 Residents Compared)								
	a) House Material		b) Floor Material		c) Roof Material		d) Interior Space	
	Sat./No	Sat.	Sat./No	Sat.	Sat./No	Sat.	Sat./No	Sat.
1976 Residents	49 (98%)	1 (2%)	49 (98%)	1 (2%)	49 (98%)	1 (2%)	48 (96%)	2 (4%)
1987 Total Residents	42 (89.4%)	5 (10.6%)	39 (83%)	8 (17%)	21 (58.3%)	15 (41.7%)	30 (66.7%)	15 (33.3%)

(Table 5: Housing con't.)

(1987 Original and New Residents Compared)

	e) House Materials		f) Floor Materials		g) Roof Materials		h) Interior Space	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.		Sat/No Sat.	
1987 Original Residents	23 (92%)	2 (8%)	20 (83.3%)	4 (16.7%)	7 (41.2%)	10 (58.8%)	14 (60.9%)	9 (39.1%)
1987 New Residents	19 (86.4%)	3 (13.6%)	19 (82.6%)	4 (17.4%)	14 (73.7%)	5 (26.3%)	16 (73.7%)	6 (26.3%)

Chi-square: e) 0.39106, d.f. 1, p= .70; f) 0.00437, d.f. 1, p= .96;
g) 3.90093, d.f. 1, p= .05; h) 0.71146, d.f. 1, p= .10.

are more satisfied by only ca. 6%, less than one percent separates the two on Floor Material, Roof Material is less satisfying to the Original Residents by more than 30%, and New Residents express greater satisfaction with Interior Space by 13%. Differences are statistically significant only for Roof Material.

Housing Facilities (Table 6), with the exception of Bath, were also very high in 1976. For all of the residents in 1987 satisfaction has diminished by ca. 15% for Fresh Air, nearly 60% for Toilets, and 4% for Cooking Space. Satisfaction for Baths has increased by over 50%.

Table 6: Housing Facilities

(1976 and 1987 Residents Compared)

	a) Fresh Air		b) Toilets		c) Bath		d) Cooking Space	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.		Sat/No Sat.	
1976 New Residents	40 (85.7%)	9 (14.3%)	49 (98%)	1 (2%)	18 (38%)	31 (62%)	42 (86%)	7 (14%)
1987 Total Residents	29 (70.7%)	12 (29.3%)	10 (37.3%)	17 (62.7%)	29 (90.6%)	3 (9.4%)	34 (82.9%)	7 (17.1%)

(Table 6: Housing Facilities con't.)

(1987 Residents Compared)

	e) Fresh Air		f) Toilets		g) Bath		h) Cooking Space	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.		Sat/No Sat	
1987 Original Residents	14 (63.6%)	8 (36.4%)	3 (20%)	12 (80%)	14 (87.5%)	2 (12.5%)	20 (90.9%)	2 (9.1%)
1987 New Residents	15 (79%)	4 (21%)	7 (58.3%)	5 (41.7%)	15 (93.8%)	1 (6.2%)	14 (73.7%)	5 (26.3%)
Chi-squares: e) 1.15449, d.f. 1, p= .30; f) 4.20088, d.f. 1, p= .05; g) 0.13204, d.f. 1, p= .70; h) 2.13646, d.f. 1, p= .20								

Dividing the 1987 respondents into Original and New Residents we again find greater convergence than when 1976 and 1987 respondents are compared. With reference to Fresh Air new residents are more satisfied by ca. 16%, much more satisfied with Toilets (nearly 40%), and ca. 6% more satisfied with Baths. They are less satisfied with Cooking Space by 17%. Differences are statistically significant only for Toilets.

Like most 1976 attitudes, satisfaction with Site Characteristics (Table 7) is very high, all over 90%. By 1987 satisfaction with Garden Space had diminished by ca. 11%, with Space between Houses by 12%, but satisfaction with Personal Security had dropped by over 50%.

Table 7: Site Characteristics

	(1976 and 1987 Residents Compared)					
	a) Garden Space		b) Space between Houses		c) Personal Security	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.	
1976 Residents	46 (92%)	4 (8%)	47 (95.9%)	2 (4.1%)	48 (96%)	2 (4%)
1987 Total Residents	30 (81.1%)	7 (18.9%)	30 (83.3%)	6 (16.7%)	20 (44.4%)	15 (55.6%)

(Table 8: Social Environment con't.)

(1987 Original and New Residents)

	f) Class of People		g) Neighbor Interaction		h) Outsiders' Impressions		i) Nearness/ Friends		j) Nearness/ Relatives	
	Sat/No	Sat.	Sat/No	Sat.	Sat/No	Sat.	Sat/No	Sat.	Sat/No	Sat.

1987										
Orig.										
Res.	25	3	23	3	18	7	23	3	11	4
	(89.3%)	(10.7%)	(88.5%)	(11.5%)	(72%)	(18%)	(88.5%)	(11.5%)	(73.3%)	(26.7%)
1987										
New										
Res.	20	3	19	3	14	6	19	3	9	6
	(87%)	(13%)	(86.4%)	(13.6%)	(70%)	(30%)	(86.4%)	(13.6%)	(60%)	(40%)

Chi-square: f) 0.06599, d.f. 1, p = .80; g) 0.04795, d.f. 1, p = .80; h) 0.02163, d.f. 1, p = .80; i) 0.04795, d.f. 1, p = .90; j) 0.60000 d.f., p = .50.

With the exception of Nearness to Relatives the 1976 survey again found extremely high satisfaction among the residents. (Table 8) Total residents satisfaction diminished by between 10% and 15% in Class of People, Neighbor Interaction, Nearness to Friends, and Nearness to Relatives. Outsider's Impressions dropped by nearly 30%.

In 1987 none of the differences between Original and New Residents were significant. All were ca. 2% apart with the exception of Nearness to Relatives which was less satisfying by ca. 13% for the New Residents.

DISCUSSION: In the 1976 survey of housing satisfaction at San Jose' 18 of the 22 questions evoked a higher than 85% satisfaction rate. Only in reference to the Market (26%), Nearness to Work (46%), Bath (38%) and Sufficient Work (76%) were responses less than the 85%. Eleven years later (1987), when the cross sectional survey of respondents is analyzed, there are only three items that evoke a positive response of 85% or more.

Clearly, the positive feeling has not been maintained. We do not, however, consider this level of satisfaction sustainable and, in fact, see it as a type of "honeymoon" or "utopian mood" similar to that which victims of disasters often experience soon after impact when massive amounts of aid and assistance are provided.² In this case, we speculate, the elation lasted longer since the relief was not simply from a temporary threat, the hurricane accompanied by high water, but also from a marginal existence. Moving from houses made of indigenous materials and without the amenities of modern life to modern houses made of manufactured materials with cement

(Table 7: Site Characteristics con't.)

(1987 Original and New Residents Compared)

	d) Garden Space		e) Space between Houses		f) Personal Security	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.	
1987 Original Residents	15 (75%)	5 (25%)	18 (81.8%)	4 (18.2%)	12 (50%)	12 (50%)
1987 New Residents	15 (88.2%)	2 (17.8%)	12 (85.7%)	2 (14.3%)	8 (38.1%)	13 (61.9%)

Chi-squares: d) 1.04937, d.f. 1, p= .30; e) 0.09351, d.f. 1, p= .80;
f) 0.64286, d.f. 1, p= .50.

Differences between Original and New Residents is not statistically significant with any of the three Site Characteristics and the percentage differences are all less than 14%.

Table 8: Social Environment

(1976 and 1987 Residents Compared)

	a) Class of People		b) Neighbor Interaction		c) Outsiders' Impressions		d) Nearness/ Friends		e) Nearness/ Relatives	
	Sat/No Sat.		Sat/No Sat.		Sat/No Sat.		Sat/No Sat.		Sat/No Sat.	
1976 Res.	50 (100%)	0 (0%)	50 (100%)	0 (0%)	50 (100%)	0 (0%)	49 (98%)	1 (2%)	40 (100%)	10 (0%)
1987 Total Res.	45 (88.2%)	6 (11.8%)	42 (87.5%)	6 (12.5%)	32 (71.1%)	13 (28.9%)	42 (87.5%)	6 (12.5%)	20 (66.7%)	10 (33.3%)

floors, a better location that afforded better employment, transportation, and facilities. In general, they were afforded the possibility of upward mobility.

To take the passage of time into consideration, we considered a doubling of the 1976 negative percentage (15) to 30% to be a legitimate level when measuring satisfaction in 1987. (We can also refer to the global expressions of satisfaction in 1987.)

Using 70% as a threshold for high satisfaction, we find 14 of the 22 items above that level. Then the most problematic issues are, listed in the sequence they are dealt with in the body of the paper: 1) Markets (65.6%), 2) Transportation (56.8%), 3) Sufficient Work (51.4%), 4) Roof (58.3%), 5) Internal Space (66.7%), 6) Toilets (37.3%), 7) Security (44.4%), and 8) Nearness to Relatives (66.7%). It must be mentioned, however, that much of this discussion will be suggestive rather than definitive since the purpose of our research was to document levels of satisfaction and not the reason for that satisfaction or dissatisfaction.

Two issues, Markets (#1) and Nearness to Relatives (#8), are below the 70% level only for the New Residents. We reason that since Markets have always been a problem, the Originals are quite content with the solutions that have emerged (many residents have turned parts of their homes into small stores and vendors come regularly to the project). The New Residents, however, either brought expectations with them that are not being met or they were unaware of this problem. Nearness to Relatives, also an issue only for the New Residents, we presume is simply a function of moving to a new location and away from their relatives.

We find it quite difficult to explain why satisfaction with the Transportation system (#2) has diminished. We can only speculate that transportation has suffered because of the economic decline that all of Central American has experienced in the past decade. The differences between Original and New Residents is slight.

On three items, Sufficient Work (#3), Roofing (#4), and Internal Space (#5), it is the Original Residents who are below the 70% (except for Sufficient Work which is 69.2%). Sufficient Work for the Original Residents could be due to the fact that they are concentrated in the agricultural sector which has been particularly depressed in the last decade. A very large percent of the New Residents are unskilled which would allow them to take advantage of the new employment opportunities available in the immediate areas. (It is very possible that this is why they moved to this area.) Thus, those continuing in agriculture are experiencing greater dissatisfaction while those in industries are more content.

Dissatisfaction with Roofing and Internal Space is also below the 70% level for the Original Residents and not the New ones. We can only assume that expectations for the Originals have changed and the New Residents understood what they were going to receive. Size

of family is not different between the two and cannot account for the difference.

Dissatisfaction with the Toilets (#6) is understandable from a cursory inspection over the years. Initially they were well built (according to U.N. specifications) and served the residents very well, but over the years they have completely collapsed. No sewer system has replaced them and the residents solve this in any way possible and there are few adequate alternatives. The greater dissatisfaction among the Originals, we presume, is because they knew a time when they were quite adequate. The differences between Original and New Residents is statistically significant.

Finally, Security (8) is a problem for both Original Residents and New Residents. Since answers to other questions do not indicate any conflict among residents we can only assume that the threat is from the outside. This could very well be due to the fact that this area is being crowded by the expansion of Chaloma and changes the area is experiencing in general. The corridor between San Pedro Sula and the north coast is developing rapidly. The change brings some disorganization and change in the population patterns, land use, etc. Security in this small project is probably a victim of this general change.

CONCLUSION: We have looked at resident satisfaction among persons living in housing built after hurricane Fifi in 1974. We first looked at responses to two global questions in 1987 by 105 of the 121 residents. We found high satisfaction with little differences between Original and New Residents.

We then compared responses by a sample of 1976 and 1987 residents to 22 specific items related to housing satisfaction. Since the 1987 sample contained both Original and New Residents, we also compared these two groups. We found that resident satisfaction on these 22 items had diminished considerably. We reasoned that the high satisfaction that was recorded in 1976 was unsustainable and we commented on the items that had dropped below 70% satisfaction. Differences that were statistically different between Original and New Residents in 1987 were very few.

Although there are emerging problems in San Jose' after twelve years as expressed by the residents, this project must be considered very successful. The sponsors did not fall into the trap of providing "temporary housing" which then becomes permanent and inadequate. Rather, they built appropriate and desirable housing. In addition, it was strategically sited. San Jose' de los Laureles is post disaster housing that not only provides secure housing for marginal people, but after twelve years it is a vital community of people who are generally content with their situation, provide for their families, and are integrated into the society. Though it has been greatly modified during its twelve years of existence the modifications have for the most part

transformed it from a sterile housing project to a very livable habitat.

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