Chapter 6

Emergency Food Distribution and its Appropriateness

Frederick L. Bates, Daniel G. Rodeheaver

and

Robert E. Klein

Food Shortages

During the household interview conducted two years after the earthquake, household heads were asked a number of questions concerning emergency food programs. These questions were designed to elicit information concerning a wide range of topics associated with the post-disaster food problem. In particular, they were aimed towards determining (1)whether or not a food shortage existed, and for whom it existed, (2) how long the shortage lasted, (3) who received emergency food, (4) what kinds of food they received, and (5) what impact these emergency food programs had on food prices and on the production of food in subsequent years. The data obtained from these interview items will be analyzed in this report.

Critics of emergency food programs following the earthquake believed that there was no real shortage of food in Guatemala after the disaster in the sense that there was not enough food on hand somewhere in the country to feed disaster victims. They believed that the food problem lasted only a few days and was due primarily to a temporary disruption of the distribution system. Once people recovered from the initial shock of the disaster

and could dig out their food supplies and resume marketing, the food problem was over. Emergency food distributed after the first week or so therefore was seen as competing with the normal economic system of the market.

Perception of Food Shortage

In the first interview for the earthquake study, people were asked several questions about their perceptions of the food problem in an attempt to discover the extensiveness of the shortage. The answers to these questions shed some light on the controversy over the need for emergency food.

Household heads were asked the following question: "After the earthquake, was there a shortage of food here in this house?" Interviewers emphasized to the respondents that they were asking about a shortage caused by the earthquake and not about a shortage of food due to normal economic conditions. In other words, the question referred to a more than normal shortage, attributable to the disaster. Table 6-1 gives the results of this question.

TABLE 6-1

Food Shortages Reported in Individual Households Following the Earthquake

	Control*		Experimental		City		Total	
	#	%	#	%	#	%	#	%
Food Shortage								
No	424	74.00	175	21.79	73	22.81	673	39.66
Yes	149	26.00	628	78.21	247	77.19	1024	60.34
TOTAL	573	100.00	803	100.00	320	100.00	1697	100.00

* The control group sample has been reweighted throughout this and following chapters so that it includes the same number of department capitals, municipios and aldeas as the experimental group. This is why the Ns are higher than indicated in the sampling tables in Chapter 2.

These data show that in the experimental group (damaged communities in the earthquake zone) over 78 percent of the respondents reported an earthquake related food shortage in their homes. In contrast, in the control group (undamaged communities outside the earthquake zone) about 26 percent reported a food shortage. In both experimental and control communities a carefully selected random sample of households was interviewed. These results may be regarded as reasonably representative of these two areas. In the city, where a special sample of reconstruction housing neighborhoods was studied, the sample is not representative of the whole city. Instead it consists of a random sample of households from four large reconstruction project areas where the populations are entirely comprised of relatively low income people who moved into these areas following the earthquake and were believed to be people who lost their previous dwellings in the earthquake. In this city sample which is biased towards lower socio-economic status and towards people suffering heavy loss in the earthquake, around 77 percent reported earthquake related food shortages.

The question arises as to how to interpret experimental-control group differences in reported food shortages - especially how to interpret the 26 percent in the control group who reported a shortage when they would not be expected to do so since they were outside the heavy impact area of the earthquake. There are several possible interpretations of these data. First, there is the possibility that the earthquake caused disruptions in the food distribution system, not only inside but outside the area of high earthquake impact. If this occurred, then earthquake related shortages would be felt in the control group area which is on

the immediate fringes of the earthquake impacted zone. A second possibility is that respondents were unable to distinguish between earthquake related "acute" shortages, and normal poverty related "chronic" shortages. As a consequence, a certain portion of the respondents who are always short of food would report a chronic shortage as an earthquake related acute one. This would occur in both the control and experimental groups and make the earthquake related shortage look much larger than it really was. Using this interpretation, the 26 percent in the control group reporting a shortage may represent the proportion of people who are, at any given time, chronically short of food. If it is assumed that a similar proportion of people in the experimental group are making the same error, then the proportion in the earthquake area reporting earthquake related food shortages should be reduced by some factor related to this control group figure.

It is not immediately apparent, however, that the over estimate in the experimental group proportion is by 26 percent. For example, a family could suffer both chornic and acute earthquake related shortages. Thus, if a normal 26 percent suffer chronic shortages, and as many as half are affected by the earthquake and experience further earthquake related shortages, then the over estimate is more like 13 percent than 26. Using this sort of reasoning, it would appear that at the least, 65 percent of the households in the earthquake impacted area suffered earthquake related food shortages and perhaps as many as 78 percent did so. This compares to at most 26 percent in the control group and, considering the possibility that half of these were reporting chronic food shortages, as few as 13 percent. There is really no way to know how to correct these figures exactly, but it is apparent that many more

people in the earthquake zone reported food shortages than in the control group. This can be interpreted only one way. People there believed in greater numbers that food shortages caused by the earthquake existed.

There is a third possible interpretation. It is possible that informants were telling interviewers what they thought was a reasonable answer to this question regardless of what the facts actually were. In other words, a respondent might think, "It stands to reason that an earthquake would cause a food shortage. Therefore, the correct answer to this question is 'yes.'" A further extension of this idea for the control group might be that, "Since the earthquake didn't affect this town, then the correct answer is 'no.'" The trouble with this interpretation is that it may explain the yes answers in the experimental group and the no answers in the control group which are regarded as "correct" answers but it fails to explain those who gave the other answers - nearly a fourth of all respondents. Furthermore, there really is no justification for assuming that people in the control and experimental groups would think that different kinds of answers were appropriate for them to give to the same question. They didn't know that they were being treated as a control and experimental group.

The most reasonable interpretation of these data is that actual food shortages did exist as a result of the earthquake and affected around three-fourths of the people in the earthquake affected area to some degree. It is important to remember, however, that responses to this question only indicate a shortage and do not measure either its severity or duration. Furthermore, they do not touch on what foods were in short supply. These topics will be examined later. Meanwhile it will be useful to look at

how different areas of the country and different types of communities and ethnic groups were affected.

Table 6-2 gives data on food shortages by different types of communities in the experimental group. This table shows that there was little difference between various kinds of communities in the proportion of people who reported food shortages in their homes. As a matter of fact there is no statistical difference among them. All show that between 77 to 79 percent of the households reported food shortages.

Table 6-2

Food Shortages in Households Classified by Political Status for City and Experimental Group

Political Status	Food Shortage				Total	
	No		Yes			
	#	%	#	%	#	%
City	73	22.81	247	77.19	320	100.00
Dept. Capitols	49	22.07	173	77.93	222	100.00
Municipios	86	21.18	320	78.83	406	100.00
Aldeas	41	23.30	135	76.70	176	100.00
TOTAL	247	22.01	875	77.99	1122	100.00

When Indians and Ladinos were compared, it was found that 80.6 percent of the Indians and 76.5 percent of the Ladinos reported food shortages in their houses. This difference, however, is not statistically significant. Similar non-significant differences occur when the experimental group is divided into regions. In the East 76.4 percent reported food shortages

as compared to 79.1 percent in the Highlands west of Guatemala City. Furthermore, when the contrast between Indians and Ladinos was done holding region constant, the same results were obtained. There were no significant differences between the ethnic groups in the number of households reporting food shortages.

In summary, the number of households in the experimental group reporting food shortages seems to be unaffected by the type of community they live in, or by the ethnic group or region of the country. The only significant statistical difference is between the experimental and control groups. A much higher percentage of people reported food shortages in the earthquake affected area than in the unaffected area. The conclusion that earthquake related food shortages existed in the earthquake area for about three-fourths of the households seems inescapable.

Duration of Food Shortage

While there seems to have been a definite food shortage throughout the earthquake affected area, the question arises as to how long it lasted. A shortage of a few days would have far different significance for earthquake food relief than one of several months, especially since many weeks were required before the bulk of Public Law-480 foods were delivered in Guatemala.

Table 6-3 shows the results of a question asking people how long the food shortage lasted in their individual households. In the experimental group 631 households reported food shortages. Of these, 18 percent reported they lasted less than 2 weeks. If the 26 percent that reported the shortage lasted two to four weeks are added to this, it is seen that around 44 percent said the shortage lasted less than a month and the

remainder (56 percent) said it lasted longer. Only 20 percent said it lasted longer than three months. Since much of the PL-480 food was distributed more than three months after the earthquake, it can not be regarded as meeting the emergency need for food caused by the disaster for around 80 percent of the disaster victims. It would have, at most, served the needs of around 20 percent of those who reported a food shortage, or around 16 percent of the population of the disaster area. It might also be regarded as serving other purposes associated with reconstruction since much of it was distributed in food for work programs.

TABLE 6-3

Length of Food Shortage for those Who Perceived a Food Shortage Only

All Communities	Total		City		Experimental		Control	
	#	%	#	%	#	%	#	%
Less than 2 weeks	195	19.02	59	23.89	116	18.38	20	13.65
Two to 4 weeks	294	28.63	74	29.96	165	26.15	55	36.91
One to 2 months	178	17.30	47	19.03	116	18.38	15	9.84
Two to 3 months	117	11.39	27	10.93	70	11.09	20	13.42
Three or more months	185	18.05	33	13.36	127	20.13	25	17.00
No information	58	5.62	7	2.83	37	5.86	14	9.17
Sub Total	1027	100.00	247	100.00	631	100.00	149	100.00
Missing (no food shortage)	670	-	73	-	173	-	424	-
TOTAL	1697		320		804		573	

This 16 percent however, is a rather large population consisting of as many as 240,000 people, assuming that the disaster area outside Guatemala

City contained one and a half million residents. Later in this report the amount of food delivered relative to the population in need will be examined in detail. For the moment, however, it appears that a large proportion of the food aid arrived after the most acute stage of the food shortage had passed. This seems to show that the shortage was solved in part by the distribution of what emergency food was available during the first three months following the earthquake and by the resumption of normal food distribution activities that were restored relatively quickly following the disaster.

Table 6-3 also shows that the reported shortages in the control group were on the whole of shorter duration than in the experimental group. There, slightly over half lasted less than a month and only 17 percent more than three months. Similarly in the city for the special sample there, the food shortage was of shorter duration. There 54 percent reported shortages of less than a month and only 13 percent reported shortages of more than three months. These facts seem to point to a quicker restoration of normal marketing in the city and in undamaged areas and to a quicker distribution of emergency food in the city through which virtually all international food relief flowed as it was dispersed into the countryside.

Results of Second Survey Regarding Food Shortages and Food Distribution

In order to help with the interpretation of results from the first interview, which was conducted about two years after the earthquake, questions were included in an interview conducted with a sub-sample of 256 households taken from the original 1472 households studied. This

interview was conducted approximately one year after the first one. The sample included only experimental group families, and because of problems there, included every experimental group and city community but Chimaltenango.

Respondents were asked, "Do you think that after the earthquake there was sufficient food here and it was not necessary to bring any in from outside the community?" If respondents thought there was sufficient food they answered by strongly agreeing or agreeing with the statement and the opposite if they did not. The results of this question are given in Table 6-4.

These data generally agree with those obtained from the earlier survey. About 88 percent of the interviewees disagreed with the statement that there was sufficient food in their communities after the earthquake and only about 12 percent agreed. Unlike the earlier question which asked about shortages in the respondent's particular household, this question asked whether there was enough food present in the town they lived in. In this case, however, there is no possibility of estimating the length of the shortage since no such question was asked in the second interview.

The same respondents were asked to agree or disagree with the statement, "More food was given away in this community than was needed." This question was not asked if no food was given away in the community. The results are given in Table 6-5. These data show that almost 86 percent disagreed with this statement, indicating that they did not feel too much food was given away in their particular communities. A substantial minority of around 13 percent, however, felt that too much food was distributed.

When these results were examined for the type of community, that is, departmental capitols, municipios, aldeas and city neighborhoods, no

TABLE 6-4

Perceptions of Food Shortages in a Sub-sample of Experimental Group Households Three Years After the Earthquake

There was enough food in this community. No outside aid was needed.

Answer Category	No.	%
Strongly Disagree	52	20.5
Disagree	171	67.3
Agree	30	11.8
Strongly Agree	1	0.4
TOTAL*	254*	100.0

*Two persons did not answer this question.

TABLE 6-5

Perceptions of Whether Food Distribution was Excessive or not in a Sub-sample of Experimental Group Households Three Years after the Earthquake

More food was distributed in this community than was needed.

Answer Category	No.	%
Strongly Disagree	38	15.8
Disagree	170	70.8
Agree	32	13.3
Strongly Agree	0	0.0
TOTAL*	240	100.0

*Sixteen people were not asked this question because food was not given away in their community.

significant difference was found. In other words they seem to apply across areas of the country and types of communities.

These two questions and those from the first survey seem to indicate clearly that the people of the earthquake area, on a whole, perceived a definite food shortage, and that they did not feel free food distribution was inappropriate.

During the same survey with a sub-sample of the original respondents, a question related to peoples' opinions of free food distribution was also included. People were asked, "Do you think that such things as food, clothing and houses should not be given away to people affected by a disaster?" Table 6-6 shows the distribution of answers to this question.

TABLE 6-6

Answers to question: Do you think that such things as Food, Clothing and Houses should not be Given Away to People Affected by a Disaster?

	Number	Percent	Cumulative Percent
Strongly Disagree	87	34.1	34.1
Disagree	149	58.4	92.5
Agree	18	7.1	99.6
Strongly Agree	1	0.4	100.0
TOTAL	255	100.0	100.0

Over 92 percent of all respondents disagreed with this statement, indicating that they approved of giving disaster victims such things as food. Presumably if food distribution had a negative impact on their incomes, they would have responded in the opposite direction.

Self-Sufficiency in Food as a Measure of Need

A number of questions were asked during the course of the household survey that allow an estimate of the extent of self-sufficiency of households with respect to food. While Guatemala is a largely agricultural country, there is extensive specialization in agriculture on a regional basis and with respect to communities lying at different altitudes within a region. This means that most households are dependent on the well developed agricultural marketing system which has existed in the country for many centuries.

Table 6-7 shows the results obtained from a question which asked household heads what proportion of the food they consume is self-produced. This table reveals the extensive dependence of households, even in more rural areas outside Guatemala City, on the market. In the earthquake area (Experimental group) slightly over 75 percent of the families produced less than 25 percent of their own food and 97 percent reported producing half or less. Only 3.7 percent reported producing most (75%) or all of their food.

A detailed inventory was made of agricultural production and the sale of agricultural products. On the basis of this inventory it was possible to determine how many households produced and sold as much as $50 worth of agricultural products during the 1975 agricultural year, the one immediately preceding the earthquake. The results of this tabulation are shown in Table 6-8. In the experimental group only 14 percent of the households sold as much as $50 worth of Agricultural products of all kinds. The remainder either sold none or less than $50 worth. In the control group slightly more than 9 percent sold over $50 worth. In the city of course the percentage is less than one percent.

TABLE 6-7

Proportion of Food Produced by Household for Home Consumption, Classified by Control, Experimental Group and City

Proportion of Food Consumed Produced by Household	Sample Groups: Control #	Control %	Experimental #	Experimental %	City #	City %	Total #	Total %
None	288	50.3	341	42.3	313	97.8	942	55.5
Some - 25%	116	20.2	267	33.2	6	1.9	389	22.9
Half - 50%	154	26.9	166	20.7	0	0.0	320	18.9
Almost All - 75%	13	2.2	28	3.5	0	0.0	41	2.4
All - 100%	2	0.4	1	0.1	0	0.0	3	0.2
No Information	0	0.0	1	0.1	1	0.3	2	0.1
TOTAL	573	100.0	804	100.0	320	100.0	1696	100.0

TABLE 6-8

Production and Sale of More than $50 Worth of Agricultural Products in 1975 by Households in Control-Experimental Group and City

More than $50 Income from Sale of Agricultural Products 1975	Control #	Control %	Experimental #	Experimental %	City #	City %	Total #	Total %
No	518	90.4	691	86.0	317	99.1	1527	90.0
Yes	55	9.6	112	14.0	3	0.9	170	10.0
TOTAL	573	100.0	803	100.0	320	100.0	1697	100.0

These figures show clearly that the majority of people in Guatemala, even in largely agricultural regions, are dependent on the market for a substantial part of their food supply. As a consequence, a disruption of marketing activities such as occurred for a period following the earthquake would cause food shortages. Furthermore, the lack of food storage facilities in the home coupled with the practice of buying small quantities of food on an almost daily basis also meansthat at least temporary shortages would develop almost immediately if marketing facilities and procedures were disrupted.

There is still another perspective pointed to by the above facts. Dependency on the market means that money is needed for the assurance of a food supply. In a massive disaster such as the '76 earthquake, money is also needed to replace housing, household goods and for many other purposes not planned for. This means that there is an acute shortage of monetary resources, given the demand for money. The need for food therefore competes more than ever with other potential uses of scarce monetary resources. As a consequence, the receipt of food relief may free monetary resources for other uses. If, however, relief food drives prices down, those individuals with food to sell will be negatively affected. Table 6-8, however, shows that for 90 percent of the population, the monetary effect could only be a few dollars since this many people sell less than $50 worth of agricultural products a year. Assuming prices dropped 20 percent, the loss would be less than $10.00 per household per year. If food donations equaled this amount, the effect would be cancelled, although economic resources would be shifted from one household to another in the process.

Sources of Food

Since it was apparent that most families were not self-sufficient with respect to food, household heads were asked where they obtained their food during the first few weeks following the earthquake. The results shown in Table 6-9 were obtained from this question. It can be seen that more people in the experimental group reported receiving food from an agency (62%) than in the control group (3%) and from relatives or friends (15 percent as compared to 8 percent). More people also reported obtaining food from household storage and by purchase in Guatemala City or another town than their own in the experimental than in the control group.

In contrast, more members of the control group reported buying food at a store or in the market located in their own towns than in the experimental group. The city presents an entirely different picture. There, higher proportions depended on relatives and friends than in the other areas and fewer on food stored in the home. As would be expected, most bought food from stores in the city or obtained it from relief agencies.

Taken as a whole,Table 6-9 shows evidence of disruption of the food distribution system following the earthquake. In general, it would be expected that about the same proportion of people in the control and experimental groups would have obtained food from stores in town or bought food from friends or relatives. The fact that so many fewer in the experimental group bought in stores and markets and more bought from friends or relatives points to a disruption of the normal marketing procedure in the experimental group. This is more than balanced by the distribution of food by agencies who operated as a substitute distribution system.

TABLE 6-9

Sources of Food Following the Earthquake
Classified by Experimental, Control Group and City

Source from which Food was Obtained	Experimental Group		Control Group		City		Total	
	#	%	#	%	#	%	#	%
Undamaged Household Storage	200	25.3	114	21.1	32	10.1	346	21.0
Damaged Household Storage	21	2.7	0	0.0	0	0.0	21	1.3
Bought from or Given by Relatives or Friends	116	14.7	41	7.6	69	21.7	226	13.7
Bought from Store or Market in Town	365	46.3	412	76.3	**	**	777	46.5
Bought from Store or Market in Another Town	67	8.5	63	11.7	10	3.1	140	8.5
Bought in Guatemala City	74	9.4	7	1.3	223	70.2	304	18.4
Donated by Relief Agency from Outside Town	488	61.9	15	2.8	185	58.2	688	41.7
Total Responses	1331	-	652	-	519	-	2502	-
No. of Respondents	789	100.0	540	100.0	318	100.0	1650 *	100.0
AVERAGE NO. SOURCES	1.7	-	1.2	-	1.6	-	1.5	-

*47 missing cases (did not answer this question). 33 in Control, 13 in Experimental and 1 in City.

** "Bought in Guatemala City" is the same as this category for the city.

Another point which leads to the same conclusion involves the number of sources for food in the various groups. More different sources were used by the average person in the experimental group and city (1.7 and 1.6) than in the control group (1.2). This also points to a distribution disruption since several sources of food supply were necessary to many individuals in order to supply their food needs in areas which were hit by the earthquake.

Personal storage represented a minor source of food compared to commercial channels or to agency donations. Only 25 percent of the respondents in the experimental group reported drawing upon their own undamaged stored food supply and about three percent on damaged storage. This is only slightly higher than in the control group, 21 percent of whom reported the same food source.

These facts coincide with earlier figures presented on food production and on self-sufficiency. It is probably true that in the sample as a whole only about a fourth of the people actually had a supply of self-produced food on hand in storage in these areas. In the Highlands 28 percent reported such storage as compared to 16 percent in the East (Table 6-10). Storage was undoubtedly greater in aldeas and smaller more rural municipios than in the department capitols and Guatemala City where only ten percent depended on this source.

The most remarkable figures shown in Table 6-9 are related to food received from relief agencies. In the earthquake affected area (experimental group) nearly 62 percent reported receiving agency donated food. In the City the figure is 58 percent, but in the control group, on the fringes of the earthquake area, only about three percent reported receiving agency

TABLE 6-10
Sources from Which Food was Obtained,

Classified by Region
(Both Control and Experimental included)

Source from which Food was Obtained	East		Highlands		City		Total	
	#	%	#	%	#	%	#	%
Undamaged Household Storage	84	16.2	230	28.4	32	10.1	346	21.0
Damaged Household Storage	1	0.2	20	2.5	-	-	21	1.3
Bought from or Given by Relatives or Friends	62	11.9	95	11.7	69	21.7	226	13.7
Bought from Store or Market in Same Towm	321	61.7	456	56.3	219	68.9	996	60.4
Bought from Store or Market in Another Town	53	10.2	76	9.4	10	3.1	139	8.4
Bought in Guatemala City	20	3.9	61	7.5	4	1.3	85	5.2
Donated by Relief Agency from Outside Town	194	37.4	309	38.1	185	58.2	688	41.7
Total Cases	520	100.0	810	100.0	319	100.0	1649	100.0

food. These data were obtained from a question which asked, "Where did you obtain food right after the earthquake?" The respondent was allowed to give his own answer to this question and was not specifically asked about agency food. This means that the 62 percent in the experimental group who mentioned agency food gave this response without prompting. Later a direct question was asked about agency food: "Did you receive any food from an agency?" The results of this question are analyzed in the next section. However, it should be noted that in the experimental group 72 percent reported eventually receiving agency food. (See Table 6-11). In this question no qualification is put on the time when food was received. It could have been months after the earthquake.

TABLE 6-11

Number and Percentage of Families Receiving Food from Agencies in the Control, Experimental Group and City

Received Food from Agency	Control Group		Experimental Group		City		Total	
	#	%	#	%	#	%	#	%
No	538	94.3	225	28.1	121	37.8	882	52.1
Yes	33	5.7	577	71.9	199	62.2	811	47.9
TOTAL	571	100.0	802	100.0	320	100.0	1693	100.0

These data indicate the level of saturation achieved in food distribution programs in the earthquake area. The saturation is very high, considering the fact that some of the families in the area suffered relatively low damage in the earthquake. They show also that food programs had relatively little spillover into the control group area on the fringe of the earthquake zone and that the distribution programs were heaviest outside Guatemala City. In the next section the question of whether food distribution matched need will be considered by examining carefully the

experimental group sample.

Shortages and the Distribution of Specific Foods

Household heads who reported a food shortage were asked what particular foods were in short supply in their own households. A respondent could give as many as six different answers to this question by naming specific foods they lacked. Following this question, another was asked concerning particular foods the household received as emergency relief from an agency. Again, up to six different foods could be mentioned. Both of these questions required respondents to name foods either in short supply or received from an agency without prompting by the interviewer.

Table 6-12 shows the number of respondents who mentioned various numbers of foods in response to these questions. First, 673 respondents (or 39.7 percent) reported there was no food shortage, and therefore reported no particular foods being short. Similarly, 885 respondents (or 52.2 percent) said they did not receive any food from an agency. Next, it can be seen that only 65 (or 3.8 percent) reported six different foods as being in short supply in their households. This means that 96.2 percent could report all shortages by using only five answers. It is apparent therefore that answers to this question come close to exhausting the possibilities of answers from respondents. Had they been allowed to give as many as ten or fifteen answers, it is unlikely that many would have done so. Answers to this question can therefore be regarded as giving a fairly complete picture of what foods respondents remembered as being in short supply after the earthquake.

With respect to the question concerning foods received from agencies, the situation is somewhat less favorable. Here 183 respondents (or

Table 6-12

Distribution of Responses to Questions Asking About Specific Foods in Short Supply and Received from an Agency for the Control, Experimental Group and City

Number of Foods Named	Total				Experimental Group				Control Group				City			
	Reports of Food Shortage		Reports of Receiving Food		Reports of Food Shortage		Reports of Receiving Food		Reports of Food Shortage		Reports of Receiving Food		Reports of Food Shortage		Reports of Receiving Food	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0 (no shortage or no food received)	673	39.7	885	52.2	176	21.9	224	27.9	424	74.0	540	94.3	73	22.8	121	37.8
1	46	2.7	26	1.5	34	4.2	14	1.7	4	0.7	5	0.9	8	2.5	7	2.2
2	166	9.8	89	5.2	91	11.3	68	8.5	33	5.8	2	0.3	42	13.1	19	5.9
3	300	17.7	177	10.4	177	22.0	130	16.2	53	9.2	7	1.2	70	21.9	40	12.5
4	287	16.9	184	10.8	173	21.5	119	14.8	40	7.0	12	2.1	74	23.1	53	16.6
5	160	9.4	153	9.0	106	13.2	115	14.3	16	2.8	6	1.0	38	11.9	32	10.0
6	65	3.8	183	10.8	47	5.8	134	16.7	3	0.5	1	0.2	15	4.7	48	15.0
Base of Percent	1697	100.0	1697	100.0	804	100.0	804	100.0	573	100.0	573	100.0	320	100.0	320	100.0

10.8 percent) reported as many as six different foods. Had more answers been allowed, it is probable that some would have named additional foods. For 89.2 percent of the respondents, however, this question represents their memory of what foods they received from an agency.

If only those reporting food shortages are considered as a basis for computing percentages, then 79.3 percent reported shortages of three or more foods, and 85.8 percent reported receiving three or more foods from an agency. These figures seem to indicate substantial shortages of particular foods, especially when it is considered that very few respondents reported only one food in either case.

Table 6-12 gives a comparison of the control, experimental group and city on these two questions. It can be seen that in the experimental group 62.0 percent of the 804 respondents named three or more foods they lacked as compared to 19.5 percent in the control group. In the city the comparable figure was 61.6 percent. Furthermore, 19.0 percent of all respondents in the experimental group and 16.6 percent in the city named five or more foods as being in short supply. This compares to only 3.3 percent in the control group. These figures support the conclusion that there was a relatively severe food shortage in the earthquake damaged areas following the disaster, since only on this assumption can the experimental, city and control differences be reasonably explained.

Similar contrasts between sub-samples are obtained when figures on foods received from agencies are examined. In the experimental group 62.0 percent of the respondents reported receiving three or more different foods from an agency. In the city the comparable figure is 54.1 percent, but in the control group only 4.5 percent of the respondents received three or more foods. More dramatically, nearly 17 percent in the experimental

group and 15 percent in the city received six or more different types of food, while only one person (0.2 percent) in the control group made a similar report. These figures indicate that food distribution programs were highly concentrated in the disaster area with relatively little spillover outside it.

Table 6-13 presents the results of these two questions for persons living in the damaged area only and shows the specific foods mentioned. In other words,the control group is excluded from this table and figures are given for the experimental group and city sample only. These groups are broken down by regions of the country.

When the totals for all regions are examined it is seen that the most frequently mentioned shortages, in order of the percentage of respondents mentioning them, were: black beans 52.1 percent, corn 47.2 percent, sugar 42.5 percent, noodles or bread 28.2 percent, rice 27.8 percent, and coffee 19.4 percent. No other food was mentioned by as many as 20 percent of the respondents. There are differences between geographic areas observable in this table. For example, the shortage of corn was far less severe in the Highlands (36.0 percent) as compared to the East (53.6 percent) and the City (59.4 percent). This reflects the difference in production of these products in these areas. A similar variability exists for black beans: Highlands 45.2 percent, East 60.8 percent, and City 55.3 percent.

Careful examination of this table will reveal that the shortage of basic foods such as corn, beans, sugar, lard or oil, and coffee were generally reported by fewer people in the Highlands than in the East or City samples. Again, this problem reflects differences in agricultural

Table 6-13

Number and Percentage of Respondents Reporting Shortages and Reporting Receiving Various Foods from an Agency

Food Product	East				Highlands				City				Total			
	Short		Received		Short		Received		Short		Received		Short		Received	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Corn	157	53.6	158	53.9	184	36.0	146	28.6	190	59.4	113	35.3	531	47.2	417	37.1
Black Beans	178	60.8	203	69.3	231	45.2	230	45.0	177	55.3	167	52.2	586	52.1	600	53.4
Sugar	119	40.6	66	22.5	234	45.8	146	28.6	125	39.1	59	18.4	478	42.5	271	24.1
Lard/Oil	25	8.5	25	8.5	14	2.7	54	10.6	12	3.8	17	5.3	51	4.5	96	8.5
Coffee	80	27.3	29	9.9	106	20.7	41	8.0	32	10.0	13	4.1	218	19.4	83	7.4
Salt	34	11.6	25	8.5	84	16.4	52	10.2	10	3.1	10	3.1	120	10.7	87	7.7
Vegetables(chile, onions,garlic)	4	1.4	2	0.7	38	7.4	1	0.2	1	0.3	0	0.0	43	3.8	3	0.3
Cruel	7	2.4	17	5.8	0	0.0	2	0.4	1	0.3	4	1.3	8	0.7	23	2.0
Rice	103	35.2	154	52.6	134	26.2	190	37.2	76	23.8	115	35.9	313	27.8	459	40.8
Meat	17	5.8	9	3.1	112	21.9	15	2.9	41	12.8	28	8.8	170	15.1	52	4.6
Milk	26	8.9	61	20.8	40	7.8	76	14.9	51	15.9	54	16.9	117	10.4	191	17.0
Eggs	14	4.8	5	1.7	18	3.5	5	1.0	11	3.4	7	2.2	43	3.8	17	1.5
Juice,Soft Drink	0	0.0	25	8.5	1	0.2	20	3.9	0	0.0	9	2.8	1	0.1	54	4.8
Millet, Wheat	0	0.0	5	1.7	2	0.4	10	2.0	0	0.0	1	0.3	2	0.2	16	1.4
Other Vegetables	2	0.7	6	2.0	41	8.0	17	3.3	11	3.4	8	2.5	54	4.8	31	2.8
Fruit	3	1.0	15	5.1	5	1.0	18	3.5	2	0.6	11	3.4	10	0.9	44	3.9
Flour,Incaparina	7	2.4	52	17.7	39	7.6	140	27.4	8	2.5	62	19.4	54	4.8	254	22.6
Noodles,Bread	54	18.4	35	11.9	133	26.0	86	16.8	130	40.6	50	15.6	317	28.2	171	15.2
Beans (non-black)	0	0.0	10	3.4	0	0.0	19	3.7	0	0.0	8	2.5	0	0.0	37	3.3
Canned Meat	1	0.3	75	25.6	0	0.0	81	15.9	0	0.0	53	16.6	1	0.1	209	18.6
Canned Veg.or Fruit	0	0.0	21	7.2	0	0.0	25	4.9	0	0.0	23	7.2	0	0.0	69	6.1
Fruit Preserves	1	0.3	4	1.4	0	0.0	1	0.2	0	0.0	7	2.2	1	0.1	12	1.1
Seasonings	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Canned Sauces	0	0.0	3	1.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	4	0.4
Dried Soup	0	0.0	1	0.3	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	2	0.2
Other	0	0.0	6	2.0	0	0.0	6	1.2	0	0.0	4	1.3	0	0.0	16	1.4
Base of Percentage (No.of Respondents)	293	-	293	-	511	-	511	-	320	-	320	-	1124	-	1124	-

production in these areas. In general, the City and East samples show about the same pattern of shortages.

One use of this table is to confirm the reports of food shortages reported in the general question discussed earlier which merely asked whether there "was a food shortage in this house?" These data show that respondents who answered yes to this question could and did name particular shortages that conform closely to the dietary patterns and agricultural production patterns of the country. It further shows that there was a shortage, of undetermined magnitude, of the two basic foods in the Guatemalan diet, corn and beans. These shortages were reported despite the fact that these are also the two most commonly grown agricultural products.

The figures on food distribution shown in Table 6-13 correspond rather closely to those on food shortage. The most commonly received food products were: black beans,* 53.4 percent, rice 40.8 percent, corn 37.1 percent, sugar 24.1 percent, flour, soy, wheat, Incaparina 22.6 percent. More people reported receiving beans, rice and flour than reported shortages of these products, but fewer people received corn and sugar than reported shortages.

The list of foods received shows that many foods relatively rare in the diets of average Guatemalans outside the city were distributed. For example, 18.6 percent report receiving canned meat, and 6.1 percent canned vegetables or fruits. These products were not part of the food relief provided by Public Law-480 but distributed by agencies who collected food from private donors to be delivered in Guatemala. Much of this more exotic food was not used by people in the countryside because of its

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*Actually most beans distributed in Guatemala as food relief were other kinds of beans, pinto, for example.

unfamiliar nature, according to many observers who were on the scene at the time.

There are certain cautions that should be exercised in interpreting this material. While it appears that the distribution of particular products came fairly close to corresponding to needs, especially where primary food products are concerned, there is no information in this table on whether it corresponded (a) to the person who needed it and (b) whether it was received on time to relieve the shortage or after the shortage had subsided for other reasons. There is information available to examine the first question but none to settle the second.

One way of examining a food distribution program is to look at it in terms of whether the people reporting a particular kind of food shortage, say a shortage of corn, received that product as food relief. It is possible to define success and failure in food distribution using the following type of table.

TABLE 6-14

Definition of Success and Failure in Food Distribution

	Received Food to Alleviate Shortage	
Food Shortage	No	Yes
No	Type I Success	Type I Failure
Yes	Type II Failure	Type II Success

If a person is not short of a particular food, corn for example, and does not receive corn, this is counted as a Type I success. If a person is short of corn and receives it, this is an example of a Type II success.

In contrast, if a person is not short of corn and does receive it, this is a Type I failure, and finally, if a person is short of corn but does not receive it, this is a Type II failure. Thus Total Successes = Type I + Type II, and Total Failure = Type I + Type II.

Appropriateness of Food Distribution

As noted above, one way to measure the appropriateness of food distribution programs is to compare those who reported shortages and those who did not in terms of whether or not they received food during the emergency food distribution. In this study the best sample to use for this purpose is the experimental group since it is within this group that the food shortage produced by the earthquake should have existed and it was within this area that food distributions were carried on. A similar condition existed in the city but the sample is such that it can reveal little of general value to measuring the appropriateness of distribution.

Table 6-15 shows figures for those who reported food shortages cross classified by whether they received food from an agency or not. This table can be used to compare successes and failures in the food distribution program at the gross level. There are two kinds of successes shown in the table. The most important (Type II) is shown in the lower right hand cell representing people who had a shortage and received food. The second is in the upper left hand cell (Type I) where people are shown who did not have a shortage and did not receive food. Similarly there are two types of failures. The most serious is shown in the lower left hand cell (Type II Failure) where people reported shortage and did not receive food. The other is in the upper right where people who did not have a shortage received food nevertheless (Type I Failure). It is this cell

TABLE 6-15

Experimental Group Households Reporting Food Shortages Classified by Whether They Received Food or Not

Food Shortage	Received Food from Agency				TOTAL	
	No		Yes			
	No.	%	No.	%	No.	%
	Success		Failure			
No	81	10.1	93	11.6	174	21.7
	Failure		Success			
Yes	143	17.8	485	60.5	628	78.3
TOTAL	224	27.9	578	72.1	802	100.0

of the table that food program critics were most concerned about.

There are many ways to read and interpret this simple table in terms of its meaning for food program success or failure. One is in terms of success rate or its opposite failure rate. It can be seen that 70.6% of the cases represent success in that food distribution matched reported need.

Of this 70.6%, most cases (60.5%) are of the most important type, giving food to people reporting need, and only 10.1% not giving food to people who didn't need it. On the failure side, most failures fall in the cell which represents the most important type of failure from the perspective of wanting to get food to those in need. Approximately 17.8% of the cases are cases where people said they needed food and did not receive any. This

leaves only 11.6% of the cases representing people who did not need food but nevertheless received it. In other words, measured in terms of numbers of households with shortages, under-distribution outweighs over-distribution.

It must be remembered that this table does not show the amount of shortage in terms of the volume or types of food needed, but only in terms of the numbers of households reporting shortages and the numbers receiving food. Individual households could have received more or less food than was needed and this table would not show it. Furthermore, they could have received the food after the worse part of the shortage was over rather than when it was most needed and it would not show in this table. One defect in the data is that we do not know when the food was actually delivered to individual households.

There is a way, however, to examine the question of whether specific shortages were matched by specific food distribution. We can tell from other data, for example, whether a household was short of corn, and whether it received corn. These data are given in Table 6-16.

This table is arranged so that foods are listed in order according to the percentage of respondents reporting a shortage of that particular product. (This percentage is shown in Column 1.) In the left hand half of the table are shown cases in which people did not report a shortage of the various foods. On the right are those who did report shortages. Each half of the table is broken down by whether they received that particular food from an agency or not. The table therefore can be used to examine the matching of particular food needs against particular food distributions for the ten baskc foods comprising the bulk of the average Guatemalan's diet.

Success and failure in the distribution program can be examined

Table 6-16

Success and Failure in the Distribution of Ten Basic Foods: Food Need Cross Classified by Food Receipt

Food Product	Percent Reporting Shortage	Did Not Lack Food Product in Household						Lacked Food Product in Household						Success Rate
		Success: Did Not Receive Food Product		Failure: Received Food Product		Total		Failure: Did Not Receive Food Product		Success: Received Food Product		Total		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Beans	50.9	223	56.5	172	43.5	395	100.0	148	36.2	261	63.8	409	100.0	60.2
Sugar	43.9	347	76.9	104	23.1	451	100.0	246	69.7	107	30.3	353	100.0	56.5
Corn	42.4	327	70.6	136	29.4	463	100.0	173	50.7	168	49.3	341	100.0	61.6
Rice	29.5	360	63.5	207	36.5	567	100.0	101	42.6	136	57.4	237	100.0	61.7
Coffee	23.0	573	92.6	46	7.4	619	100.0	161	87.0	24	13.0	185	100.0	74.2
Meat	16.0	655	97.0	20	3.0	675	100.0	125	96.9	4	3.1	129	100.0	82.0
Salt	14.7	631	92.0	55	8.0	686	100.0	96	81.4	22	18.6	118	100.0	81.3
Vegetables	6.5	759	99.6	3	0.4	762	100.0	42	100.0	0	0.0	42	100.0	94.4
Flour	5.7	592	78.1	166	21.9	758	100.0	20	43.5	26	56.5	46	100.0	76.9
Lard/Oil	4.9	700	91.5	65	8.5	765	100.0	25	64.1	14	35.9	39	100.0	88.8
TOTAL	23.6	5167	84.1	974	15.9	6141	100.0	1137	59.9	762	40.1	1899	100.0	73.7

separately for those lacking particular foods and for those not lacking them. For example, with respect to beans, 395 people out of 804 reported no shortage of beans. Nevertheless 172, or 43.5 percent, of them received beans from an agency. This represents a success rate of 56.5 percent achieved by not giving beans to people who didn't need them. On the other hand 409 households reported a shortage of beans and 261 received them, representing a success rate of 63.8 percent with respect to bean distribution.

When the two types of success are added together with respect to beans, not giving them to people who did not need them, and giving them to people who did need them, the success rate for beans shown in the last column of the table is obtained (60.2 percent). Similar figures are offered for each of the ten basic foods.

When the success rates in the final column are examined it will be seen that success rates are highest with respect to those foods which occur at the bottom of the table. Those foods at the bottom are those where there was not a very great shortage. Take the example of vegetables (Chili, onions, tomatoes and garlic). Only 6.5 percent of the respondents reported a shortage of these items. Also only three people reported receiving them. Therefore by <u>not</u> giving people vegetables the agencies achieved a 94 percent success rate on this food product. In contrast, beans were reported as being in short supply or lacking in their households by 50.9 percent of the respondents in the experimental group. Here, however, only a 60.2 percent success rate was reported. In general, the largest number of successes are a result of <u>not giving</u> food to people who didn't need it rather than by giving food to people in need.

This can be most clearly seen by examining the bottom row in the table showing the totals for all foods taken together. There are 5167 instances

of not giving food to people who didn't need it and only 762 instances of giving food to people in need. Taken together, this results in a 73.7 percent success rate. Only 9.5 percent of this success rate represents positive successes and the remaining 64.2 percent represent negative successes.

On the failure side more failures (1137 cases) represent not giving food to people in need than giving people food who didn't need it (974 cases). In other words, of the 26.3 percent failures 14.1 percent are of the positive sort and 12.2 percent of the negative sort.

What interpretation can be given to these results as far as their meaning in terms of the criticisms made of food programs is concerned? First, it is apparent that agencies did not, for the most part, indiscriminantly give food to people who did not need it. Most of the cases in the above table represent non-distribution to people not in need. Only a relatively few cases exist in which people not needing food received it (12.1 percent).

On the other hand, of the people in need, only 40.1 percent received the kind of food they needed and 59.9 percent did not. This seems to indicate that food programs, while not giving food to people not in need, also missed giving food to a great many who needed it. The success rate of 73.7 percent is a result primarily of leaving out those not in need of food instead of getting food distributed to people in need. Furthermore, it appears that the 974 mistakes made of the negative sort representing over-distribution come very close to balancing those of a positive sort (1137 cases) indicating that about the right number of families received emergency food but that the distribution left something to be desired.

Table 6-16 includes the ten basic food products consumed by the average Guatemalan and the totals shown at the bottom of this table show the number

of cases in which the two types of success and failure were reported. A case amounts to a respondent reporting a particular food shortage, and either reporting or not reporting receiving that food. Since a respondent may have reported several shortages he will appear several times in the total. In all, each respondent will show up ten different times in this tabulation since he will be recorded as giving an answer on each food product. Given any particular food product, the frequencies represent the number of households falling into that category. For the totals at the bottom of the table, however, this is not the case. These totals represent the number of instances in which a shortage or non-shortage, distribution or non-distribution, took place.

Since corn and beans are the basis of the average Guatemalan diet, it will be instructive to look at success and failure rates using these two products combined. When this is done the following four celled table is obtained.

TABLE 6-17

Success and Failure of the Distribution of Beans and Corn

Shortage of Corn and/or Beans	Received Corn and/or Beans: No		Yes		Total	
	No.	%	No.	%	No.	%
	Successes		Failures			
No	550	34.2	321	20.0	871	54.2
	Failures		Successes			
Yes	308	19.1	429	26.7	737	45.8
TOTAL	858	53.3	750	46.7	1608	100.0

Successes = 34.2 + 26.7 = 60.9, Failures = 19.1 + 20.0 = 39.1

It can be seen that the success rate considering only corn and beans is 60.9 percent as compared to the rate obtained from considering all ten food products (73.7). This lower success rate, however, is due to the fact that many more people reported a shortage of these products than of other products on the list of ten. As a consequence, fewer successes of the negative sort, not giving these products to people not needing them, were recorded. When only people needing corn and beans are considered, 429 cases out of 737 represent successes, or 58.2 percent. This contrasts with 762 cases out of 1899 for all ten foods taken together, or 40.1 percent success. In other words, proportionately more people needing corn and beans received them than received the other products. This is offset by the fact that proportionately more people not needing these products also received them (36.9%) than in the case of the ten food products taken together (15.9%). It appears therefore that in order to increase the success rate of getting a given product to people in need it was necessary to increase the risk of giving food to people who did not need it.

This is a reasonable outcome, given the conditions prevailing after a disaster. In order to avoid giving food to people who do not need it and at the same time to give it only to people in need, it would be necessary to engage in social case work screening activities to determine need. Such activities require setting up a bureaucracy and conducting field investigations as a basis for distributing aid. This would result in delays in delivery under conditions where immediate delivery is regarded as critical. The alternative is to use crude assessments of need and to risk over-distribution in order to insure a greater success rate. The solution most often used in Guatemala was to employ local committees or local leaders or officials believed to be familiar with the situations in individual households.

Such a system risks a certain amount of maldistribution since it is open to local politics and to the desire of local leaders to avoid criticisms for inequity.

The figures given in Table 6-16 match particular food needs with particular food distributions. The interpretation of success and failure obtained from this table is rather strict in that a success is defined as giving the exact food which was said to be in short supply, or refraining from giving a particular food to a household that did not lack that food. This method tends to accentuate failures in food distribution since it does not allow the substitution of one food for another. For example, if a family reported being short of corn and was given rice instead, this is counted as a failure. In terms of meeting the temporary need for calories during an emergency, however, it could be counted as a success. Given this fact, these data seem to give strong support to the conclusion that food distribution programs did not indiscriminately distribute food regardless of need. Unfortunately, however, these data do not measure the quantity of food distributed in relation to the amount of maldistribution.

Political Status and the Success of Food Distribution Programs

The sample for this study included communities varying in size, isolation and political status. Political status refers to the community's location in the centralized administrative system of the country. There are four types of units considered in this research: City neighborhoods, Department Capitols, Municipios and Aldeas. In Guatemala a department capitol is comparable to a state capitol in the United States and a municipio to a county seat, while an aldea is usually a rural small town or village. Thus political status roughly corresponds both to the size

of a place and its relative degree of isolation from the administrative center.

It will be useful to examine success rates in the emergency food distribution in different types of places. Table 6-18 gives data showing the number of households that reported or did not report general food shortages, cross classified by whether they received food from an agency.

This table shows clearly that the smaller and more remote the place, the higher the general success rate in distributing food. Not only is this true of the total success rate, but the successes in getting food to people in need, in contrast to not giving food to people not needing it increases as the community becomes smaller and more isolated. Positive successes go from 49.7 percent in the city up to 69.3 percent in aldeas. Furthermore, failures to get food to people in need decreases as the place gets smaller (27.5% in the city as opposed to 7.4% in aldeas).

This finding is particularly important since many people believed that the opposite took place. That is, that the larger places, close to the main highway and to Guatemala City got most of the aid. Actually, with respect to food, the opposite is the case. This represents an unusually significant finding with respect to evaluating agency programs since it appears that they succeeded in overcoming the factors associated with isolation in conducting the distribution.

There is one negative note of caution that needs to be stated along with this finding. In general, the smaller the place,the more agricultural the population, and therefore under normal circumstances, the more likely food would be available. If we take at face value reports of shortage in individual households, then we still must ask whether others in the community had food to sell and could not sell it because of competition from free

Table 6-18

Success and Failure in Emergency Food Distribution in Different Size Communities in the Experimental Group (Food Shortage Cross Classified by Food Distribution and Political Status of Communities)

	No Food Shortage Reported				Reported Food Shortage					
	(Success) Did Not Receive Food		(Failure) Received Food		(Failure) Did Not Receive Food		(Success) Received Food		Success Rate	Total Cases
	No.	%	No.	%	No.	%	No.	%		
City	33	10.3	40	12.5	88	27.5	159	49.7	60.0	320
Departmental Capitols	25	11.3	24	10.8	54	24.3	119	53.6	64.9	222
Municipios	45	11.1	39	9.6	76	18.8	244	60.4	71.5	404
Aldeas	11	6.2	30	17.0	13	7.4	122	69.3	75.6	176
TOTAL	114	10.2	133	11.9	231	20.6	644	57.4	67.6	1,122

food. Furthermore, these figures do not measure either the quantity of food needed or the quantity distributed. It is possible that too much food or too little food was distributed in individual cases.