In May, 1988, home visitation began in 21 of the 31 communities in the program area. These communities contained approximately two-thirds of the population for the entire program area. By 1991, home visitation was complete for the entire program area. Annual censuses were undertaken for the entire program area beginning in 1988. Age-specific death rates are based on these data, and infant mortality data are based on the number of live births recorded during the period.

The infant and child mortality rates reported in Table IX.17 have been calculated in several different ways. The rates for August, 1988 until January, 1989 (shown in column 1) and from November, 1989 until October, 1990 (shown in column 2) have been previously calculated and reported in the CSTII Final Evaluation report. The 1988-1989 rates are based on data from two-thirds of the program area and the 1989-1990 data are based on the data for the entire program area. These rates were all calculated by hand. Rates for 1990-1992 for the entire program area (shown in columns 3-5) have been calculated with the assistance of EPI INFO.

Several conclusions can be drawn from this preliminary analysis. First of all, at the time of the CSIII Final Evaluation at the end of 1990, it appeared that a notable decline in infant mortality (fMR) in carabuco had occurred, from 74 to 36 deaths per 1,000 live births. Results from 1991, however, demonstrated a marked increase in the infant mortality to 110. In 1992, the IMR declined to 88. Given the high coverage of Services during this period and no evidence that nutritional status of the children had deteriorated, one possible conclusion is that the program had not been registering all of the deaths before 1991. Another possibility is that, since the number of infants deaths is so small (fewer than 10 per year), the differences represent random fluctuations from year to year. The staff feel confident that in 1991 and 1992 more than 90% of all births and deaths have been registered.

Neonatal mortality rates have been consistently higher than postneonatal mortality rates. 12-23 month mortality rates have been low, in the 0-22 range, with no clear trend. Mortality rates for children 24-59 months of age also show no clear secular trend. Mortality rates among younger children, however, are consistently higher than among older children.

The numbers of infant deaths registered per year have ranged between 5 and 25. The numbers of deaths of children over one year of age have been consistently less than five per year. Thus, it is difficult to draw any clear conclusions regarding mortality impact. These rates are inherently unstable because of the small numbers involved and because of the apparent difficulty in capturing all of the deaths in the early years of the program.

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Table IX.17.

Neonatal, Postneonatal, Infant, and Age-Specific Childhood Mortality Rates in the Carabuco Health Area, 1988-1992*

		•	year		
	1988- 1989 (1)	1989- 1990 (2)	ີ່ 1990 ູ (3)	(4)	1992 (4)
neonatal mortality rate (per 1,000 live births) postneonatal mortality	n a	. 1000 . 1000 . 1000 . 1000 . 1000	36 (7)	66 (15),	46 (10)
rate (per 1,000 live births)	na na na	**************************************	31 40	;500 (10)	(4) (4) (4) (4)
rate (per 1,000 live births) 12-23 month mortality rate (per 1,000 population of this age)	74 (5) 22	.36 (9),4 (1 grave 1 grave	67 (13)	110 (25)	88 -4 (19) #1 #1
population of this age) 24-35 month mortality rate (per 1,000	12 (1)	10 (3)	(4)	**************************************	ska (3 best, detong skangered – Andrica skangered – Andrica skangered – Andrica skangered – Andrica
rate (per 1,000 population of this age) 36-47 month mortality rate (per 1,000 population of this age) 48-59 month mortality rate (per 1,000 population of this age) 48-59 month mortality rate (per 1,000 population of this population of this		roccio dell' Especialistica 1 201 3 i 12 1 224		ndo Osi Doyala Događa Oi D ogađ	teralesis) bed 100 e mil Jan 1 garliai eng t m ysti atens
population of this age) 48-59 month mortality rate (per 1,000	(1) (0	(1) (5 %) 4	wy *1 90) ∮≎E 11548 4	0 (1)	Seed box 1600 opensor

* numbers of deaths are in parentheses beneath the death rates

na not assessed (1) August, 1988 - January, 1989: based on two-thirds of the program area

(2) November, 1989- October, 1990: based on the entire program

(3) January-December, 1990: based on a reanaly for the entire the program area. (4) January-December: based on death data for area area source: Carabuco birth and death registries, annual censuses

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In the Spring of 1992, ARHC began field work in the Ancoraimes area in cooperation with the Bolivian Methodist Church and the MOH. Home visitation began in April in eight pilot communities with a total population of 2,008 persons. Births and deaths registered between April, 1992, and March, 1993, were tabulated. This information, combined with the population data for the childhood age groups in these communities, has made it possible to calculate infant and child mortality rates. The rates are compared to those observed in Carabuco in 1992 in Table IX.18. The infant mortality rate in Ancoraimes is 40% more than that in Carabuco, and the second year death rate is over four times that observed for Carabuco. If the data from Ancoraimes represent a less complete capturing of deaths than in Carabuco (which is quite probable), then the true differences between the two areas are even more striking.

The data from the Ancoraimes Health Area which were used to calculate these mortality rates are shown in IX.19.

Table IX.18.

Comparison of Neonatal, Postneonatal, Infant, and Age-specific Childhood Mortality Rates in the Carabuco and Ancoraimes Health Areas, 1992

	Carabuco 1/92-12/92)	Ancoraimes (4/92-3/93)
neonatal mortality rate (per 1,000 live births)	46 (10)	68, (5) 6, (5) 55
(per 1,000 live births) infant mortality rate	201 (38 201 (38) 182 203	123
(per 1,000 live births) 12-23 month mortality rate (per 1,000 population of this age group)	(19) 13 (3)	(9) 58 (3)
24-59 mortality rate (per 1,000 population of this age group)	o. (o)	11 (2)

note: numbers of deaths observed are in parentheses source: Carabuco birth and death registries and 1992 census;
Ancoraimes birth and death registries and 1992 census

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The leading cause of death was acute respiratory infection, associated with 22% (29/130) of the deaths. This category includes code 101 and 105. The second leading cause of death was asphyxia, associated with 15% (19/130) of the deaths. Asphyxia includes codes 103, 502, and 1604. Diarrhea and accidents/trauma were the third and fourth leading causes, almost as frequently encountered as asphyxia. The accidents/trauma category is composed of cases from codes 601, 603, 606, 607, 610, 611, 613, 616, and 806. Forty-eight percent of the deaths were due to other causes. These findings are shown in Table IX.21.

Table IX.20. Diagnoses Associated With Deaths of Infants and Children Under Five in the Carabuco Health Area, 1985-1992

code	cause of death	number of cases
101	acute respiratory infection	28
103	asphyxia	15
201	diarrhea	$\overline{f 17}$
2001	unknown	14
701	malnutrition	8
1401	"ajayu" (spirit loss)	8
1404	"susto" (spirit loss)	7
613	trauma	5
603	accident	
502	neonatal asphyxia	4
615	parental neglect	
510	neonatal sepsis	3
511	fetal distress due to prolonged	2
311		
905	labor	2 3. 3505
805	abdominal pain	2
105	whooping cough	1 many 1880 in the
301	measles	1
302	tetanus (neonatal)	1
303	omphalitis and made of the contract of the con	1
501	congenital defect	1
506	bremagurity	1 -1.3 Maia 375 3000
507	CIUD IUUL	1
508	intrauterine malnutrition	
	(including low birthweight)	1 33分数次 100 10
509	hydrocephaly	1 miles in the
601	drowning	1 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
606	motor vehicle accident	1862 C. 18 60 60 60 60 60 60 60 60 60 60 60 60 60
607	accident with animal	1
608	asphyxia in bed	1
610	poisoning accidental poisoning	the law company of A rcon property and property and the contract of the contr
611	accidental poisoning	
616	head trauma	1
806	internal bleeding	· 1
808	intestinal obstruction	1
902	cardiac insufficiency	ī
1102		
1104	paralysis	enii bereebiisee ar morrus, sii
1201	anemia	1
1203	puroura	1
1604	resultationy obstruction	ergun går oma manny
1605	la l	t space park sovet been likelis
1703	THE 20. POSES SHOW THE TRANSPORT OF THE	START OF OWOGE WAS RECOVED.
	<u>l'ord lorg paralons pandon legil</u>	boo <u>nës j</u> udasan diida dia -
	purpura respiratory obstruction chronic cough scables Total	and the Gran t transfer wit although
	Total	144

source: Carabuco death registry

The leading cause of death was acute respiratory infection, associated with 22% (29/130) of the deaths. This category includes code 101 and 105. The second leading cause of death was asphyxia, associated with 15% (19/130) of the deaths. Asphyxia includes codes 103, 502, and 1604. Diarrhea and accidents/trauma were the third and fourth leading causes, almost as frequently encountered as asphyxia. The accidents/trauma category is composed of cases from codes 601, 603, 606, 607, 610, 611, 613, 616, and 806. Forty-eight percent of the deaths were due to other causes. These findings are shown in Table IX.21.

Table IX.21.

Most Frequent Diagnoses Associated Deaths of Infants and Children Under Five in the Carabuco Health Area, 1985-1992

diagnosis of cause of death	fred (n=	aragno	ses (leaths (n=130)
acute rechilement	6004 188000 489 600 1801 6102 5559 2914 2014 6182	20%	**** **** ****	22%
asphyxia	Opening and the seasons	13%	State Contract	15%
diarrhea	AND COLO	12%	# 100 100 100 100 100 100 100 100 100 100	13%
accident/trauma	30 1 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11%	1.3%	12%
other causes	63 (A)	44%	100	48%
Total	144	100%		110%*

^{*} this sum is greater than 100% because 11% of the deaths (14/130) had more than one diagnosis source: Carabuco death registry

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Table IX.22 lists the diagnoses of death for the 39 neonatal deaths registered. Leading the list is asphyxia. There are a number of cases with a traditional diagnosis given ("ajayu," "susto,") or with an unknown cause of death. In addition, there are several other cases with a diagnosis compatable with neonatal tetanus, such as omphalitis and neonatal sepsis. Congenital anomaly, low birth weight, and prematurity caused several of the deaths.

Table IX.22.

Diagnoses of Cause of Death for Neonatal Deaths in the Carabuco Health Area, 1985-1992*

code	cause of death	number of deaths with diagnosis (n=39)
103	ANTEST CONTRACTOR OF	seminala andi
701 1401 1404 2001	malnutrition "ajayo" (spirit loss) "susto" (spirit loss) unknown	•
502 511	neonatal asphyxia fetal distress associ with prolonged lab	ated.
302 303 501	tetanus omphalitis congenital anomaly	
506 507 508	prematurity club foot intrauterine malnutri	tion
509 **** 510** *****	(including low bir weight) hydrocephaly neonatal sepsis	en Besaus de <mark>1</mark> . Besaus Besaus de <mark>1</mark> . Besaus
603 606	accident motor vehicle acciden	t i
615 1604	asphyxia in bed parental neglect respiratory obstructi	March 1 and the service of the

^{*} age at death less than 30 days source: Carabuco death registry

Table IX.23 lists the assigned cause of death for those 50 infants dying between one and 12 months of age. Acute respiratory infection is the leading cause of death in this age group, followed by diarrhea, asphyxia, and death from unknown or traditional causes.

Table IX.23.

Diagnoses of Cause of Postneonatal Deaths in the Carabuco Health Área, 1985-1992*

	cause of death	deaths with diagnosis (n=50)
– Julius (P		
101	AKI	19
	diarrhea	7
103	asphyxla	5 4 3 0 6
613	L. I SCHEHING	4 2500
1401	"ajayu" (spirit lost)	4 7
2001 "	บทให้ก่อให้ก	
701	malnutrition was a	2 ****
105	who and had could be the second	1
301	- 「「「「「「」」」「「」」「「」」「「」」「「」」「「」」「「」」「「」」「	
510		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
615		1 * 15 .
805	abdominal pain	1 * 4 # C
808	intestinal obstruction	1
902	cardiac insufficiency	and the same of th
1203	cardiac insufficiency purpura	i-si izantazi da ana
1703	scables	son with their every

* age at death: 1 - 11 months source: Carabuco death registry

The causes attributed to the 16 deaths registered among children 12-23 months of age are shown in Table IX.24. Diarrhea and accidents are the leading identifiable causes of death in this age group.

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Diagnoses of Cause of Early Childhood Deaths in the Carabuco Health Area, 1985-1992*

ACCESS TO THE SECOND SECTION OF THE SECOND SECTION OF THE SECOND SECTION OF THE SECOND	THE STATE OF THE S	number o deaths.w diagnosi	<u>id</u> th
code	cause of death	(n=16)).
	美国新 国	3.320 10	
201		yongan is) ,}.
		1 1 4 1 1 A	
101	unknown artige)	70 X X X X X X X X X X X X X X X X X X X	
601	drowning no. 3 22		
	accident	acoustic 1 at	
607	accident with anima	1	
611	accidental poisonir	1	
701	malnutriction	recess 1 2 2	. 4 ²
1401	"ajayu" (spirit itos	S lock I do	36
£	cisal obstruction	30 00000000000000000000000000000000000	
	The second of th		
t death: 12-2 Carabuco dea	Andrea and a subject of the subject	As a second of the second of t	

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Among children dying between 24 and 60 months of age, the leading identifiable causes of death were diarrhea, acute respiratory infection, and accidents (see Table IX.25).

Table IX.25.

Diagnoses of Cause of Later Childhood Deaths in the Carabuco Health Area, 1985-1992*

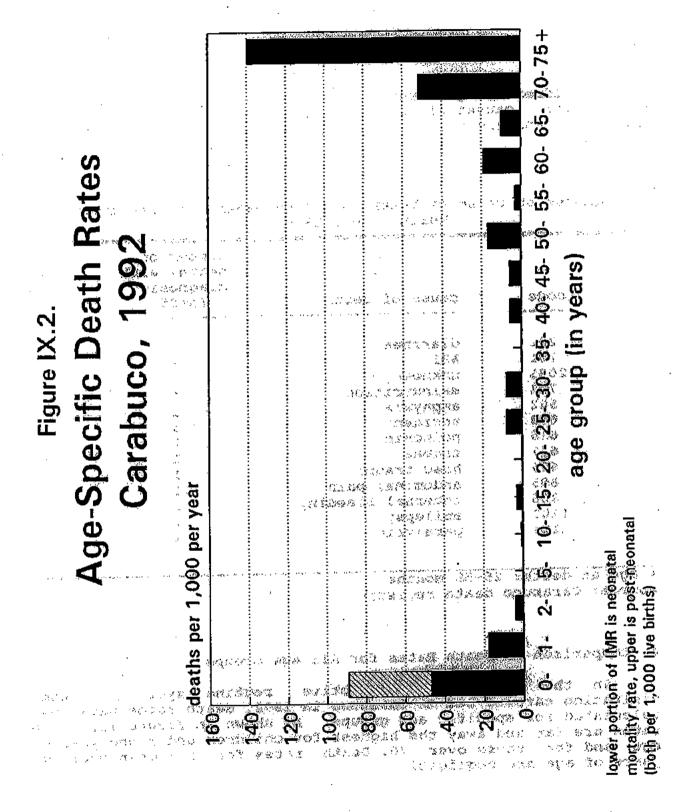
code	cause of death	number of deaths with diagnosis (n=25)	SA A SES VAN VAN VAN
201 101 2001 701 502 603 610 613 616 805 806 1102 1104	diarrhea ARI unknown malnutrition asphyxia accident poisoning trauma head trauma abdominal pain internal bleeding epilepsy paralysis	6 5 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The second of th

^{*} age at death: 25-59 months source: Carabuço death registry

4. Comparison of Death Rates for All Age Groups

On the basis of prespective routine systematic home visitation carried out in Carabuco in 1992, death rates have been calculated for specific age groups. As shown in Figure IX.2, the rates are far and away the highest for children under one year of age and for those over 70. Death rates for children over two years of age are negligible.

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5. Risk Factors for Infant Death

The family health folders for infants who died in the Carabuco Health Area in 1991 or 1992 before completing their first year of age were analyzed and compared to those of a similar set of children who did not die. Two control children were selected for each child who died. Data were collected for control children up until the age at which the case child died. The details of the methodology are described in Appendix IV. าวเคาะสาราเทา และหนึ่งได้แบบ ค.ศ. 18 มีเคาะสมารถใหม่ที่ได้สมารแผน

As Table IX.26 demonstrates, three characteristics out of a host of variables demonstrated a significant difference at the 0.05 level between the cases and the controls. The risk factors identified were evidence of weight loss prior to the last recorded weighing, having three or fewer siblings, and having an unmarried mother. Those variables which showed no significant differences between cases and controls are shown in Table IX.27.

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Results of Analysis of Case-Control Study of Infants Dying Before Completing Their First Birthday in the Carabuco Health Area, 1994 and 1992. Characteristics Which Differed Significantly Between Cases and Controls

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weight loss between hext to the last and last weighing (67%) of the cases compared to 0% of the controls had lost	
weight) by the solder of the second of the s	0.008
meanwof 2/5 slbWings compared to 3.8 for controls	0.012
three or fewer siblings (72% of cases compared to 88% of compared to 88% of controls had three or fewer	

siblings) The state of the stat marital status of the mother (28% of the cases had an unmarried mother compared to 8% of controls)

0.035

source: case-control study of infant deaths in Carabuco, 1993

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Table IX.27.

Results of Analysis of Case-Control Study of Infants Dying
Before Reaching Their First Birthday in the Carabuco
Health Area, 1991 and 1992:
Characteristics Which Did Not Differ Significantly
Between Cases and Controls

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energy to the care excepted both professor Attention (Contract to the contract to the contract

presence of growth chart
number of nutritional monitorings
low birthweight (defined as a weight less than 3.0
 kilograms during the first month of life)
height for age pencentiles, weight for age percentiles,
and weight for height percentiles at the first or
second weighing
percentage of children with weight for age percentile
less than 3% for any given weighing
percentage of children below the 25th percentile of
height for age, weight for age, or weight for height
at the time of the last weighing
loss of weight from the next to the last to the last
weighing

presence of BCC vaccination presence of OPVI, OPV2, or OPV3 vaccination presence of DPT1, DPT2, or DPT3 vaccination presence of measles vaccination number of vaccinations received maternal age percentage of children with mother under 18 a

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percentage of children with mother under 18 at the time of the child's death (or at the time of completion of the control child's review)

birth interval between the child and the next oldest sibling to gray wealths worked the child and the next oldest

percentage of children with a birth interval of less than 24 months

source: case-control study of infant deaths in Carabuco, 1993

COST ANALYSIS

Determination of Overall Costs

Financial data for the Carabuco Health Program have been gathered for the period from FY 1987 until FY 1992 which ended on February 28, 1993. These data are shown in detail in Appendix V.

From March 1, 1992, until February 28, 1993, total recurring program costs were calculated to be \$95,906. These costs include allowances for building, equipment and vehicle depreciation and all other identifiable expenses except for the operation of the ARHC offices in La Paz and at Lake Junaluska, North Carolina (USA) and the value of some donated medicines and supplies. Locally generated income and expenditures have been included. Identifiable expenditures borne by the Ministry of Health have been included as well.

A breakdown of these expenses is shown in Table IX.28. Sixty-one percent of total recurring costs were for personnel, 13% for transportation, and 14% for administration. Infrastructure accounted for 10% of the costs and supplies only 4% (see also Figure IX.3).

Costs borne by the MOH were estimated to be \$6,045 for salary support for one physician, four auxiliary nurses, and the grounds keeper for the Carabuco Health Center. In addition, an estimated \$1,500 worth of vaccines and supplies were provided by the MOH to the Carabuco Health Program in 1992. Finally, the health center in Carabuco, constructed some 20 years ago by the MOH, has been given a depreciation value of \$3,000 per year. These costs borne by the MOH amount to a total of \$10,545 for FY 1992.

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The reference of the top the marker of the contraction and the contraction of the contraction of Table IX.28.

化化物工 ing and mining things of the contract of the c Total Estimated Recumring Costs for the Carabuco Health Program March 1, 1992 - February 28 11993*

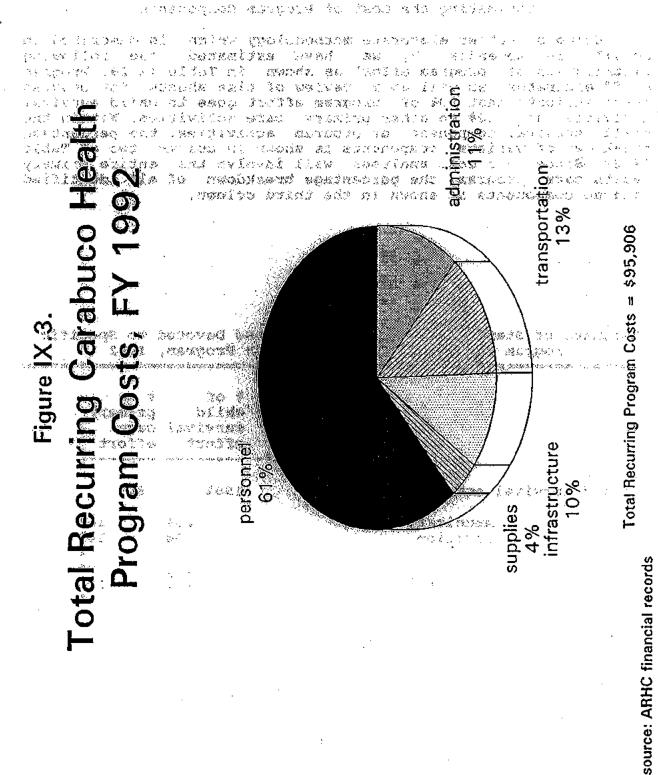
Last over the total and the second contraction of the theory of the second contraction. o de logro del escolo de la Sedensia espera lo cola esp<mark>ercentage</mark> d**e** Secologia de la lacado estad libragia de la competitoria la lacada de la lacada la lacada la lacada la lacada de la lacada la lacada de la lacada la lacada de la lacada lacada la lacada la lacada lacada la lacada lacada la lacada lacada lacada la lacada lacada lacada lacada lacada lacada la lacada lac 小女工作。"然为亲自体。""自己,自我看面,在这样。"要像说,要说:"我们,我们就是这个人的事情的最后的,这一数是是大力等美国主义教师

		,是我们的"我们是我的人的"的"我们的"。 (1986年) (1997年)
personnel	\$64,840	61%
o de la color endo ligado de la comp e	; \$.44m2121 30	purpres 4 %
administration.	ray indeal for	机碱性磷酸 网络比较色红色
(non-gersonnel)	\$ 1,943	11 8 (
transportation	e neil eerskuist.	ren i i hagerganta aktoriak (a.
(includes	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	With the Company of the Company
depreciation)	\$14,027	13%
equipment and	(20) (20) (20) (20) (20) (20) (20) (20)	San
infrastructure	rijak merilig (parc. Ne	\$P\$《西野山广西山山) 15、美国市场
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and the state of the section of the	\$95 4906	a 1554 1 99 % 12%

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source: program financial records

^{*} does not include some donated supplies and equipment nor the costs of the La Paz and Lake Junaluska, NC, offices



Estimating the Cost of Program Components

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Using a rather elaborate methodology which is described in detail in Appendix V, we have estimated the following distribution of program effort as shown in Table IX.29. Program staff estimates as well as a review of time sheets for program staff indicate that 80% of program effort goes to child survival activities and 20% to other primary care activities. Within the child survival component of program activities, the percentage breakdown of various components is shown in column two of Table IX.29. Since our cost analyses will involve the entire primary health care program, the percentage breakdown of all identified program components is shown in the third column.

Table IX.29.

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Estimate of Staff Time and Program Expense Devoted to Specific Program Functions, Carabuco Health Program, 1992

	% of total program of fort	% of child survival effort	% of primary care effort
child survival activities	80%	100%	8.0%
immunizations nutrition ARI diarrhea home visits		. 30% 11% 11% 21%	24% 9% 9% 17%
HIS other primary care activites	20%	7% 	5% 20%
	100%	100%	100%

source: staff estimates; see Appendix V for details

Assigning these percentages to the recurring program costs in Table IX.28 makes it possible to estimate the recurring cost for each program component. These estimates are shown in Table IX.30. These figures were obtained by applying the percentages of the program's primary care efforts to the various program functional categories shown in Table IX.28 except that the value of the vaccines and supplies provided by the MOH were all placed in the vaccination category. Further details of this calculation are shown in Appendix V.

With the distribution of staff time effort according to the various functional categories established, it then became possible to distribute program costs in these same categories. All of the costs shown in Table IX.28 were broken down into various components using the same percentage as calculated for distribution of staff time with the following minor exceptions. The \$1,500 in health supplies provided by the MOH was placed under the vaccination category and \$250 in this same category provided by ARHC was placed under other primary care. The \$700 for consultants was placed under nutrition since the consulting was primarily in the area of nutrition.

All of the specific functional categories involve a similar degree of administrative and logistical support, so dividing the overall programs costs according to the percentage of time spent by staff in each functional category appears to be a reasonable method to break down costs.

The distribution of program costs then becomes as shown in Table IX.30.

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TABLE IX.31.

Summary of Child Survival Costs for the Carabuco Health Program, FY 1992

Table IX.30.

Estimate of Recurring Cost of Functional Categories of Child Survival and Other Primary Health Care Activities for the Carabuco Health Program, FY 1992

•	functional category	recurring cost
	an a	(で) アンド・アンド ようしん 大き アンチャング (信義) アンドランド カーバー
	vaccinations	\$ 16,237
1. 1. 1.	diarrhea	\$ 8,340
in serie di si Li e e in conse	acute respiratory	\$ 22 243 \$ 8,340 \$ 15,754
	home visition	* ************************************
Section 3	health information system	e de l'Action de transcrip <mark>s et 4), 634</mark> l'étre d' Le réflice graphie
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7. 4. A. C.	other primary care	n mangotroj ourolistants och vistants j Pank sil ennista s id <u>yder 68</u> 66 km fra 1884 adt 60 <u>na Sil ennistants</u> a suorti
	o <u>ralos (88 88 886) estado e</u> Orango estado estad	g aa s aat gas <u>sut Taidhtoutoo</u> o sucada aadaa saata, khada libe motoonid waxaa
**************************************	Total	60 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
THE COMMENT THE COMMENT	one were entropy and the second of the secon	gropsino accididativity sen conti-

source: program financial records

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Estimation of Costs of Child Survival Activities

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The per capita cost for the overall child survival effort. when the beneficiaries are limited to children under five years of age, is \$66.35. This is based on a total child surival program cost for FY 1992 of \$75,638 which is taken from IX.30. When women of childbearing age are considered as beneficiaries along with the children under five, the cost per beneficiary drops to approximately half, or \$27.21 per person per year (see Table IX.31).

化水油等化物物层 医水杨醇 "我们还在我们,我在我们里想,你只要你妈 看我,你就你说,我这个事的,你们们也会说话的人。" 文学的现在分词 ""我们是自然的,我们是我们一种的的,我们是一个的。"这个说话,一样是一个是一个的话,这个人们是一种是什么。 The the formation at management and was properties and in the continue of the meadath of the same distance of the same of mode of same of AND SO THERE ARE MADE MADE AND ARES ALRESTED TO THE PARTY OF THE PARTY CONSTRUCTION OF THE RESPONDED WITCH SERVICE OF THE CONTRACT OF a parthrus, registrica in the transfer and the contract of the to police is each se stolks same sail ades son sout brick in the Summary of Child Survival Costs for the Carabuco Healich Program, FV:1992 THE THE PERSON BUILDED WHAT BURNER WAS BURNER ADDITION OF STREET STREET ,我是我想要看了她都在这种,这个话是想的好,我们都在这些人的女孩的女性的。这一年间,我们不是不会一致了 SHOUTH SHOW THOUSE WERE WELL HAVE A MAD BY BY BURER CHIEFER PRESENT OF THE total child sunvival cost THE SECRET SERVICE SERVICE SECRETARY SERVICES OF THE SECRETARY SEC number of children winder 5 The profess & cases greatered to be the course of the action of the course recost per child under 5 years of age 1000 105 105 166.35 a the Pockets to waiting to seemen in the color of the number of children under Scand womens 15-44 years of age (1,140 + 1,640) cost per child/woman beneficiary 27.21 there is all the construction to the last the construction of the construction and manufacture has a supply to the supply of the supply o source: program financial reports and annual census

Estimation of the Cost of Other Primary Health Care Services

The total cost in FY 1992 of the non-child survival primary care portion of the Carabuco Health Program is estimated to be \$20,268 as shown in Table IX.30. In Table IX.32, the numbers of non-child survival primary care services are shown by type. Overall, 5,848 specific services were provided.

This is a heterogeneous grouping of activities. Treating a minor wound does not take the same effort as does attending a birth, for instance. In an attempt to develop reasonable estimates for the cost of specific services, a "relative value scale" was developed based on a value of "2" for a patient consultation. Other services were given values roughly equivalent to multiples or fractions of a patient consultation.

This relative value scale is shown in Table IX.32 and gives a value of "t" to each of the following services injections, IV fluid administration, minor wound nursing care, and prenatal visit. A relative value of "2" is given for a patient consultation, postpartum care, and a laboratory test. A value of "4" is assigned to a dental visit and to the suturing of a minor wound, and so forth. The total number of "units of service" were then added up and divided into the total cost of the primary care component of the overall program cost.

13,613 "units" of service were provided at an overall cost of \$20,268, yielding a cost per unit of service of \$1.49. Thus the estimated cost of a patient visit (2 values of service) is \$2.98, of an injection is \$1.49, and so forth as shown in Table IX.32.

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Numbers of Non-Child Survival Primary Care Services
Provided in Carabuco, January - December, 1992,
and Their Estimated Costs

type of service provided	numbers of services provided	relative value	units provided	estimated cost of service
	158.20	7.7-1.6 T		
patient consultation		10 (11 3 2000) 01 (11 (20) (20) 01 (11 (20) (20)	7,680	\$ 2.98
injection	\$864 877,6 88	an kanana na mpamana kanakanakanan sa sa Manana na mpamana sa sa sa	877 Royalanda (1919-1919)	\$ 1.49
IV fluid	153	1	153	\$ 1.49
minor wound care		****** i ******		,
prenatal visit	169	Alt r $\mathbf{r}_{\mathbf{r}}$ and	169	\$ 1.49
childbirth care	35	10 to	350	\$ 14.90
postpartum care	113	2-3068 Tajin		\$ 2.98
treatment of TB ca	se 3	100		\$ 149.00
dental visit	0	4	. 0	\$ 5.96
laboratory exam	50	2	100	\$ 2.98
er Miller er Street er	KONS SUNGAY N	o to or	C. 12 12 14 14 15 15 15 15 15 15 15 15 15 15 15 15 15	
Totals	5,848		13,613	,

\$20,268 estimation of cost of unit of service: = \$1.49 13,613

source: monthly program and financial reports

The estimated per capita cost of non-child survival primary care services is as follows. In 1992, there were 8,744 persons in the Carabuco Program Area over five years of age. Dividing the total cost of the primary health care component (\$20,268) by the number of persons over five (8,744), yields a per capita cost estimate of \$2.32 per person (see Table LX.33); Obviously, children under five also received non-child survival primary care services as well. To avoid arriving at an overly conservative per capita cost estimate, however, children were omitted from this calculation. 等的 位于市时常见在 Spart Follows (1984)

TABLE IX.33.

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Summary of Total Recurring Other Primary Health Care Costs (Not Including Child Survival Activities) for Carabuco, FY 1992

\$ 20,268 total primary health care program cost total number of persons over five 8,744 program cost per person over five 3.32 **2.32**

source: program financial reports and annual census 是要是有一种的 "这个人的"的

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Estimation of Total Per Capita Program Costs

recurring primary care program cost per beneficiary as shown in Table IX.34 is \$12.50 per person per

TABLE IX.34.

Summary of Total Recurring Primary Health Care Costs for Carabuco, FY 1992

total overall program cost	\$ 95,906	
number of persons covered by the program 9,887		,887
program cost per beneficiary	\$	9.70

source: Carabuco Health Program financial records and annual census

Locally Generated Funds

Through the provision of local health services, the program charges fees to the program beneficiaries according to the family's ability to pay but within the guidelines established by the Ministry of Health. The locally generated income for FYs 1985-1992 is shown in Table IX.35. The sale of medicines is the major source of local revenue. \$2,538 was generated locally during FY 1992, representing 3% (\$2,538/\$95,906) of the total recurring primary care program costs. As indicated earlier, MoH contributions to the primary care program costs in FY 1992 were estimated to be \$10,545, representing 11% (\$10,545/\$95,906) of the total recurring local primary care program costs. Thus, as presently constituted, only 14% of local primary health care annual recurring program costs are sustainable with local private or governmental sources.

Table IX.35.

Locally Generated Funds for the Carabuco Health Program, FYs 1985-1992

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fiscal year	sale of services medicines provided total
	CATEST STATES AND STATES OF THE STATES OF THE PROPERTY.
्र ्1985 1986	\$ 240 \$1,193 \$ 625 \$1,818
1987	\$1,317 \$ 400 \$1,717 \$1,349 \$1,349
1990 1991	\$ 821 \$ 197 \$1,018 \$1,962 \$ 315 \$2,276 \$1,215 \$ 551 \$1,767
1992	\$1,215 \$ 551 \$1,767 \$1,751 \$ 787 \$2,538

source: program financial reports

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The Carabuco Health Program is ARHC's most advanced in terms of progress in implementation of the CBTC approach. In spite of the initial difficulties, the program has now achieved extremely high levels of severage of child sucvival interventions high levels of coverage of child survival interventions. Currently, infant and child deaths are concentrated in the first three months of life and respiratory causes predominate. The overall recurring program cost was \$9.70 per person in 1992.

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CHAPTER X. THE MALLCO RANCHO HEALTH PROGRAM

DESCRIPTION OF THE PROGRAM AREA

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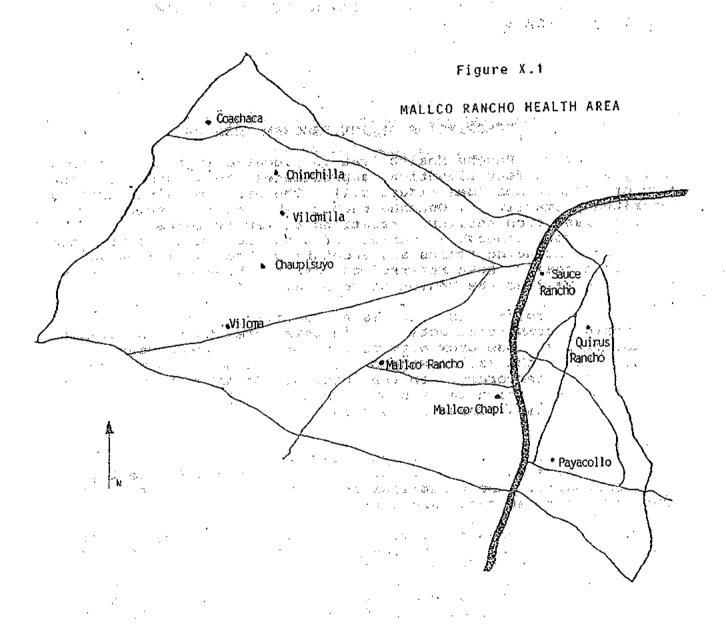
HARRING CHARLES WILLIAM

The Mallco Rancho Health Area is located in the Cochabamba valley at 8,000 feet elevation, approximately 30 minutes from the city of Cochabamba (see Figure X.1). The area contains farmland inhabited primarily by Quechua people who have inherited small plots of land from earlier generations of family members. Corn is the major crop although a variety of other agricultural products are grown, including fruits and vegetables. The Cochabamba valley has traditionally been referred to as the "breadbasket" of the country as well as the region of "eternal spring."

While farming is the main activity, there is more non-farming commercial activity in this area than in Carabuco because of its close proximity to a major urban area. Many of the inhabitants of the Mailco Rancho Health Area obtain some type of work, mostly temporary, in the city of Cochabamba. There are "trufis" (vans) which carry people between Mailco Rancho and the city of Cochabamba. These leave from the area every hour.

The population of the Mallco Rancho Health Area is composed of 5,829 people in 11 different communities as shown in Table X.1. The population is relatively stable, although frequently men and occasionally their families travel to lowland areas several hours away for seasonal farm work.

The MOH had previously maintained a health center in Mallco Rancho and a health post in Payacollo, one of the communities in the Mallco Rancho Health Area. Both of these were in poor repair at the time of initiation of program activities in 1987. The outer limits of the program area can be reached within 15-20 minutes from the program headquarters in Mallco Rancho by vehicle, bicycle, or foot over rough unpaved roads.



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Table X.1.

Populations of Communities in the Malico Rancho
Health Area community as and distant viscos population some services in the contract of th Chaupusuyo
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Coachaca Chico Payacollo Payacoulo 991 Ouirus Rancho Sauce Rancho Sauce Rancho Viloma vience il is a control of the Totales before the second was to the cold THE TOTAL WAR BUTTER MAINTENANCE ARREST MATERIAL TO THE TENTON OF THE SECOND

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source: 1992 census Section 200 March 1997 Control of the Control of th

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HISTORY OF THE MALLO RANCHO HEALTH PROGRAM

In 1985, ARHC established a collaboration with Dr. Orlando Taja while he was Dean of the National Technical School of Public Health in Cochabamba. This program was the first in Bolivia to train mid-level health professionals for rural areas. Their graduates were called "tecnicos de salud rural" (rural health technicians). ARHC provided some assistance to the school for the costs of providing its students with practical field training in rural communities.

In 1987, under Dr. Taja's leadership and with support from ARHC, a Bolivian NGO was created which is called APSAR (Asociación de Programas de Salud del Area Rural - Association of Rural Health Programs). At the same time, APSAR established a community health program based in the community of Mallco Rancho. This program provided primary health care as well as immunizations and growth monitoring at special group sessions in the communities. The MoH health center in the community of Mallco Rancho was rehabilitated and a five-bed hospital was added to it to improve patient care in the area. The MOH gave APSAR authorization to supervise MOH activities for this health area. Several MOH "Items" (salaried positions) were assigned to the Mallco Rancho Health Area. These staff received supplemental salary support from APSAR and were supervised by APSAR.

Dr. Taja was at that time employed full-time at the San Simon University in Cochabamba, directing this community health work on a part-time basis. The initial field staff consisted of a graduate nurse, Ms. Adela Asbûn, who served as Coordinator of Field Work. Working with her was a rural health technician, Mr. Sabino Gabriel. The primary health care, child survival, and hospital activities grew slowly. It eventually became possible to vaccinate children through house-to-house campaigns in 1988. In 1989, the first census was carried out in the community of Mallco Rancho. In addition to the actual census, a map was created locating each house by number. This number was placed on the front of the house. A family health folder was made for each household. Home visitation was begun to all the homes in the community. During this same year, Dr. Taja left his post in the university to work with ARHC/APSAR on a full-time basis, dividing his time between the Mallco Rancho Health Program and the Carabuco Health Program on the Northern Altiplano.

By 1990, the Mallco Rancho Health Program staff included a physician in his "año de provincia" (obligatory year of rural service), a graduate nurse, and a rural health technician in addition to Ms. Asbún as Field Coordinator and Dr. Taja as

part-time Director. With this staff it was then possible to carry out censuses in seven additional communities in the Mallco Rancho Health Area. The same method was carried out: houses were numbered, a community map was created, and all family health information was placed in a "ficha familiar" (family file) with a number corresponding to the household number. Routine systematic home visitation also was begun in the these seven additional communities during 1990.

By 1991, another rural health technician was added to the staff along with two auxiliary health nurses. The census methodology and routine systematic home visitation were extended to the remaining three communities in the Mallco Rancho Health Area. This field work continued without any significant changes during 1992. Dr. Taja became full-time director of the program in early 1991, when his responsibilities in Carabuco were handed over to Dr. Carolina Hilari.

Throughout this time, APSAR has existed as a Bolivian NGO whose only financial support has been through ARHC except for one grant from PROCOSI* directly to APSAR. Since 1990, APSAR has maintained an administrative office in Quillacollo, a town about 15 minutes from the field area. Prior to that time, APSAR had an administrative support office in the city of Cochabamba.

Throughout the history of the Mallco Rancho Health Program, there has been involvement of "work teams" from the United States: From 1987 to 1992, 14 groups of short-term volunteers from the U.S. assisted in Various specific projects, such as the from the U.S. assisted in Various specific projects, such as the construction of the small hospital, remodeling of the health post in Payacollo, remodeling of village schools, and construction of latrines and wells. The Malloo Rancho Health Program assisted the community in a number of development projects during this period such as providing small loans for the construction of irrigation wells. water material base safeting a \$256.5000 高级 图像中的图像

The numbers of health staff from 1987 until 1992 and the number of population per staff member are shown in Table X.2. Appendix II contains the names of the Mallco Rancho staff employed during this period.

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and analysisses adjust force * PROCOSI (Programa de Coordinación en Supervivencia Infantil) is an AID-sponsored consortium of PVOs working to promote child survival in Bolivia.

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CURRENT PROGRAM ACTIVITIES

At the present time the health program in Mallco Rancho consists of child survival interventions, other primary health development activities (including water and community improvements). The acceptable control of the survival improvements of the acceptable control of the survival of the s development activities (including water and sanitation improvements). The hospital serves as a clinic and an impatient facility with five beds but it usually has only one or two inpatients. Most of these are obstetrical cases. The primary health care program consists of attention provided to outpatients of home visits. There are dental facilities at the local hospital clinic, and a dentist is usually present several days a week.

The Quillacollo District Hospital, only fifteen minutes The Quillacollo District Hospital, only lifteen minutes away, the children's hospital in Cochabamba (Hospital Alberto Patino), the maternity hospital in Cochabamba, and the Gastroenterology Hospital in Cochabamba all receive patients referred from the area by the program. Since Dr. Taja is a well-known and well-respected physician in the Cochabamba area, he has been able to arrange for highly satisfactory referral care for patients from the Mallco Rancho Health Area at modest prices.

The child survival activities are now concentrated in the homes, although, of course, sick children are referred to the local hospital in Malico Rancho for further treatment and referral from there to the city of Cochabamba if indicated.

The health staff currently working in the field include Ms. Adela Asbun as field Coordinator and an MOH "ano de provincia" two rural health technicians and three auxiliary nurses who work field program and helps with program planning, community field program and helps with program planning, community relationships, evaluation, and the supervision of patients who need referral for hospital care. Ms. Asbun supervises the clinic/hospital work and provides care for most of the women who come to the hospital for childbirth. The staff currently meet monthly to review previous work and to plan the next month's

Each of the 11 communities in the Mallco Rancho Health Area under the responsibility of one of the auxiliary nurses or rural health technicians working in the field. Each of the three auxiliary health nurses has two communities for which she One of the rural health technicians has two communities and the other, three.

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Table X. 2 Company of the second of the seco Staffing of the Malico Rancho Health Program, 1987-1993

Number of Paid Staff by Staff Category (with program population per staff member category shown in parenthesis*) the contraction of the state of the same by the state of the terms of the same of the same

THE COLUMN TO THE STATE OF STATES STA the same the same that the prevention of distribute and account of physicians 200322 3130000003 000115 228 28002100 12020 5 (19,423) (4,482) (4,480) (2,914) (2,914) (2,914) midlevelshealth staff (graduate nurses, stural (2,914); (2,914); (2,914) (1,942); (4,457) (1,942); health technician) same and the same and the

lowerdevel bealth staff to the state of the (auxiliary nurses etc.) (2,914) (2,914) (1,942) are roted the readly bearen stiden in brought along at the case ancillary support formula at Orottono on the first and the (driver, groundskeeper) a to 1200 (2000) (5,827) (5,827) (5,827) (5,827) (5,827) in the verticalism, then the the vertical set of the City of administrative support to 2, and the cold to the state of the cold to the cold staff (administrator, (2,5)14). (1,457)% (1,457)% (1,465). (974) (974) (1,942) other toffice staffer) 1 Tracket tracket accuracy to areas of the staffer controlled the sale small transform of the sale of the TOTAL: OF PRESENTE EXTREMENTAL . 1915 SERVICE OF VIS SERVIZIONE OF THE an average population of 5,827 over this time period is assumed.

** includes a driver based outside of the program area

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The current policy is to visit homes with children under 24 months of age every two months and to visit homes with children 24-59 months of age every three months. Women of childbearing age are visited every three or four months depending on their age. Those who are 15-19 or 35-49 years of age are visited every three months. Women 20-34 years of age are visited every four months. All other homes are visited every six months.

At the time of a routine home visit, the census form is updated. All persons living in the household, their relationship within the family, their age (and birthdate if known) and sex are listed on this form. Vital events (births, deaths, or migrations) which have occurred since the last visit are noted as well. Family members with a chronic cough or other symptoms of TB are noted on the visit form, and arrangements are made for sputum examinations.

Health education messages relevant to the family's situation are provided at the home visit. Since cholera has come to the area, messages regarding the prevention of diarrheal diseases have been emphasized. These messages include the boiling of drinking water, cooking of fruits and vegetables, and handwashing before eating. ORT packets are left in the home or mearby with instructions for their use. The need for early referral to the hospital is also emphasized if severe diarrhea occurs.

At the time of a visit to a home with a child under five years of age, the child's height, weight and vaccination status are noted. The family health folder is brought along at the time home visit. If a vaccination is needed, the child is referred to the hospital where vaccinations are waiven twice a week. If the child had been previously referred but did not go for the vaccination, then the child is vaccinated at the time of the home visit. If the child has diarrhea, appropriate health education is given and ORT packets are left with the mother. If the child is found to have an acute respiratory infection then he or she is usually referred to the local hospital for evaluation and treatment by a physician. A basic bealth message is chosen by the health team leach month, depending on the season of the year sicknesses and deaths which have been and the nature of the encountered during the previous month. This message is given at the time of the home visite a broad above and a constant and a con

When women of childbearing age are visited by the health staff, they are given information about family planning. Any pregnancies which are encountered are noted as well as any symptoms suspicious for TB.

Persons who fall into the high risk category in need of more frequent home visitation are the following:

a. malnourished children;

b. children with diarrhea, acute respiratory infection, or other significant acute illness; c. orphans and children who appear to be neglected by

their parents or guardians;

d. patients enrolled in the TB program; and

e. pregnant women.

Malmourished children are those who fall more than one standard deviation below the NCHS median, who are not gaining weight, or who have lost weight since the previous weighing. weight, or who have lost weight since the previous weighing. These children are visited in their homes on a weekly basis until they have become nutritionally rehabilitated. The mothers of these children are given nutrition education. Sometimes, packets of "api nutricional" are left with the mother. These packets are produced locally. They contain barley, wheat, quinoa (a local grain), and other nutritious foodstuffs. Cooking oil, sugar, milk, and flavoring are frequently added to this if available.

Children with diarrhea or acute respiratory infection are Children with diarrhea or acute respiratory infection are usually seen on a daily basis until their illness has resolved. Orphans and children whose parents or guardians show little interest in their well-being are visited on a monthly basis so that the health staff may see how they are faring and so that they may receive nutritional monitoring. Children enrolled in the TB program are visited in their homes on a monthly basis to monitor their nutritional status and to leave medicines for the following month. The parents of these children usually administer the TB medicines to them. The home visit in these cases provides an opportunity to see how the treatment is progressing.

The staff are beginning to find an increasing number of children with tuberculosis. Six children are currently enrolled in TB treatment. Efforts have been intensified to identify additional cases. Technical assistance in this effort is being provided by a Belgian-supported TB program for the Quillacollo Health District in which the Mallco Rancho Health Area is located. 11. 74.00 **海蒙珠** of harmonian

大东省 、是城市等于 22.43.15 children who are malnourished who have chronic diarrhea, who live in families with TB patients or who have chronic coughs all receive tuberculin skin tests. Those with positive results (>5mm if the child has not had BCG and >10mm if the child has had BCG) receive a chest x-ray from which a diagnosis is made.

Pregnant women are seen at home twice a month if they are not coming regularly to the hospital clinic for prenatal checkups. A program element which has been added in recent months is family planning: As a result of growing local interest, a

gynecologist was hired to come to the hospital clinic on Saturday mornings for consultations with women interested in family planning. Prior to that time, women had been referred to family planning clinics in the city of Cochabamba. esund , and distributed acute to

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The Role of Health Volunteers

As in Carabuco, the experience with volunteers in Mallco Rancho has been disappointing. The first formal course to train "educadores" was in 1990, although before then there volunteers in the communities who assisted with the health work. In 1990, a course was established in which once for twice a week In 1990, a course was established in warra once or twice a week for three months, 25 volunteers chosen, by the communities would come for several hours of training. By 1991, the number of volunteers had dwindled to 14. At that time, five new "educadores" were recruited into training but by the end of 1991 only nine were still active. By the end of 1992, these nine had terminated their involvement as volunteers, although two still terminated their involvement as volunteers, although two still help out occasionally. manighter and chies survey hite

The Health Information Systems

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The health information system (HES) in Malico Rancho shares The health information system (HLS) in Mallco Rancho shares many similarities with the HIS in Carabuco. A family folder ("ficha familiar") is kept at the hospital and is numbered according to the household number in the community. Unfortunately, hospital records for both inpatients and outpatients are kept separately by the name of the patient apart from the family health folders which are also kept at the hospital according to the houshold number. Efforts are underway to put the hospital clinic records in the family health folders. The family health folder contains all the growth charts, vaccination data, census and vital events data, as well as vaccination data, census and vital events data, as well as information about childhood illnesses.

The staff member who is responsible for a particular community completes a report which indicates the updated population, births, deaths, and detected pregnancies as well as illnesses during the previous month for that community. The first two days of the month are dedicated to this effort. This information is then passed on to the Field Coordinator who consolidates the information and sends it on to the MOH and also to the APSAR and ARHC offices. The Field Coordinator used to take up to two weeks to complete her report. Since the forms have been streamlined and simplified, she is now able to complete this report in two days.

The community field staff have two notebooks for each community in addition to the "fichas familiares" (family health folders). Both notebooks contain a list of all children under

five in that particular community. In one notebook, all the births and deaths are kept as well as the date of vaccinations for each child. In the other book, information about home visits, heights and weights, and childhood illnesses are recorded. All of this information is recorded as well in the "fichas familiares." A summary of each home visit is recorded in this notebook along with an indication when the home should be visited next. Since these notebooks list the house number, the staff member knows where to go to carry out a follow up home visit.

Health staff members plan their work and complete monthly report forms from the information in these notebooks. The reports are reviewed carefully by the Field Coordinator before being incorporated into one consolidated monthly program report.

The Field Coordinator, Ms. Asbun, feels that the data being collected at present are of high quality and that an extremely high percentage of the vital events in the area are being "captured" by the HIS.

The HIS data are used to plan home visits according to the policies described above. Obviously, the mapping and home numbering scheme united to the numbering of the "fichas familiares" is of considerable help in getting needed services to those in high-risk categories. In addition, an analysis of the illnesses treated during recent months as well as an analysis of recent death data are used to guide upcoming community educational efforts. Results of household surveys carried out in 1990 and 1992 regarding maternal knowledge of child survival topics has also been used to guide educational efforts. The prioritization of home visits for children under two arese from an analysis of the local mortality experience.

Feedback of health information to the communities has been possible in the Mallco Rancho Health Area. There is a local radio station whose range of coverage corresponds roughly to that of the Mallco Rancho Health Area. Statistical information derived from the health work is shared with the local population over the radio. A written message based on this information is prepared several times a week and shared with the local population over the radio. The station is a popular one and has a high local listener coverage in the early mernings.

At community-wide meetings, a member of the health staff is usually present and shares with the community some of the findings relevant to the community, including census data and information about the numbers of patients treated. During the next few months the staff is planning to prepare a brochure unique to each community which gives basic statistical information about the population and the health conductions in that community.

CARRY CONTRACTOR

Health Education of the

A number of issues pentaining to health education have already been mentioned above: The Freld Coordinator has noted that educational efforts during a home visit seem to be more effective than giving health talks to groups of mothers who have come for immunization/growth monitoring sessions.

-Supervision radions that disco-

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Day-to-day supervision of community health staff is the responsibility of the Field Coordinator. She keeps very close watch on the patient care activities which are provided in the hospital and in the hospital clinic. Because hospital activities have grown, she does not now have time to go out to the communities with the other health staff as she did in years past. She does, however, maintain close contact with all the health staff working in the communities.

Specific Tespes Related to Home Wishtation

as analysis belook helden at 1300 of 1300 belong to at "earst the The Mallco Ranche staff have moound that at times wit is difficult to locate families in their homes. Occasionally, families leave the area for indefinite periods of time to carry out work in another geographic area. Starf have had success in encouraging families to leave word with their reighbors regarding where they have gone and when they expect to be back. This helps the health staff member to plan return visits. Staff have found that it is usually best to carry out home visits during the mornings from around nine o'clock in the morning until noon. The mother is usually at home during this time cooking and completing other household chores During the planting mand harvesting seasons, families are frequently in the fields, often some distance from the house, from sunrise to sunset. At these times, the home visit does not take place in the home but out in the field. Home visits are not planned for Mondays since that is market day in nearby Quillacollo

The staff of the Malico Rancho Health Program are enthusiastic supporters of the home visitation concept. They feel that the interest in the welfare of the children which is demonstrated by the home visit fosters additional concern on the part of the parents for the welfare of their own children. Home visitation enables the program staff to maintain close contact with all the people in the program area; to achieve high levels of coverage of child survival services and to provide follow up for sick children.

The costs involved, however, are significant in terms of the

time and energy of the staff and the financial cost to the program. There also seems to be a growing tendency on the part of some families to await a home visit rather than seek out a needed service from the health program, be it treatment of an illness or a vaccination. For this reason, the program has decided not to offer prenatal visits in the home but rather have pregnant women come to the clinic at the hospital.

Specific Issues Related to Community Relationships

The health staff feel that the communities in the Mallco Rancho Health Area now have a high level of trust in the program because of the commitment the staff have shown to help the families with their health problems. Villagers have a particularly high regard for the particular staff member who is responsible for their community.

The communities have been cooperative with the community health work including the home visitation activities, vaccinations, and nutritional monitorings. The program staff have been careful to coordinate their work with the community authorities. Beyond this, however, the community has not played a strong role in helping to shape program policies or to influence program activities. Unfortunately, the communities do not appear to have a strong interest in providing ongoing financial support for the work.

Community field staff report that they hear comments from the local people indicating that there seem to be fewer infant deaths than before. In addition, the staff have noted that parents of children who die communicate a sense of guilt and shame that previously other parents in similar situations did not express. The Field Coordinator feels that parents are now coming to realize that it is not inevitable, as they once thought, that so many of their children should die.

Family pride in healthy children is now being promoted by the program. At the end of the year, those families whose children are all appropriately vaccinated and well-nourished receive a prize which is a basket of food including rice, noodles, sugar, quinoa, and cookies for the children.

Issues Regarding the Coordination of Child Survival Work With Related Activities

The Mallco Rancho Health Program staff consider child survival activities and curative health services to be indispensible, one to the other. The availability of primary health care services and hospital services has given trust and confidence in the preventive child survival work and has enhanced

child survival through the effective treatment of seriously ill children. The program staff see no disadvantages in combining these services.

The integration of MOH work into the Malico Rancho Health Program is seen as a strong asset. Some staff salary support is provided as a result of this relationship. This relationship also facilitates receiving vaccines, growth charts, TB medicines, and other supplies from the MOH. Technical support from the "Undidad Sanitaria" (the health department for the "Department," i.e. State, of Cochabamba) is often helpful. However, when the MOH has assigned a physician in his or her "año de provincia" who the Malico Rancho staff feels should be transferred, they find the MOH unable or unwilling to cooperate with the recommended change. On balance, however, the relationship is a beneficial one for the Malico Rancho Health Program.

The Malico Rancho Health Program plays a strong role in the activities of the Quillacollo Health District. Also located in the Quillacollo Health District is a child survival program of Project Concern (a US-based private voluntary international health organization). Relationships between ARHC/APSAR and Project Concern are highly supportive, and the physician directors of both programs are devoting considerable effort to improving the MOH Quillacollo District health activities.

The Mallco Rancho Health Program also has an organizational relationship with World Vision World Vision has a program to provide nutritious foods to certain children in the program area on Saturday mornings. The Mallco Rancho Health Program staff assist with nutritional monitoring of these children. In addition, the World Vision program provides assistance with materials and the Mallco Rancho Health Program provides a dental at no charge.

The Mallco Rancho Health Program has worked with the regional water and sanitation cooperative in the installation of water and sanitation systems in several of the communities. ARHC has facilitated the assistance of a recognized water and sanitation expert. Dr. Kazayoshi Kawata. Dr. Kawata came to Mallco Rancho on several different occasions and introduced a type of latrine new to Bolivia which had been used with success in India. A modification of this design is now being installed in helping the Cochabamba water/sanitation cooperative in this effort.

The Mallco Rancho Health Program staff, and particularly its Director, Dr. Taja, have devoted considerable effort to local issues of wells and water supplies for agricultural and personal use. It has helped to obtain assistance from CORDECO (the

Cochabamba Department development corporation) in drilling new wells in the area. The Mailco Rancho Health Program is also coordinating its work with a new program in the area which is promoting the raising of rabblets as a source of protein for the family diet.

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ren	12892

The number of consultations for illness in the Mallco Rancho Health Area has grown steadily lower the past five years (see Table X.3). The number of vaccinations given (shown in Table X.3) was greatest in 1989 when a major effort was made to reach all the unvaccinated children. The following year, there were fewer children overall in need of vaccination and there was difficulty in obtaining needed vaccines from the MCH. The numbers of vaccinations during the past two years appears to be stabilizing at around 3,000 doses per year.

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Table X.3. Descriptor, specialization (administration in November 1200)

Number of Patient Consultations in Health Facilities and in Homes in the Mallico Rancho Health Area, 1988-1992

Year	Number of Pattents Ti		
1988	889	}	4.50
1989	1,019		36 . 7 . 6
1990	2,361		
1991	2,718		
1992	3,047	,	
·_~_	<u></u>	<u> </u>	ند تند مد
Total	10,034		

source: review of monthly program reports.

ALLEGER OF A COMMENT

taling the control of the second second Table X.4. Second the second second Total Number of Vaccination Doses Given Per Wear in the Mailco Rancho Health Area, 1989-1992

Year	Number of Vaccinations Given
1989 1990	4,281 691
1991 1992	75 C. 1893 73 29 C. 1891

parante politica esta all'administra dell'administra dell'administra dell'administra Total 1 1092 were merry care to the sound THE OLDER OF THE THEORY OF VACCINATIONS SIVER (ADDRESS IN TUBLE 2007) the construction of the contract of the contract was applied to the contract of source: monthly program reportes TO THE THE PARTY THOULDON THE HEAR HOW, THE OLIMBER'S OF THE THE THE PARTY OF THE PARTY The latter of the state of the state of the

The number of nutritional monitorings has remained modest in 1991 and 1992, being around 1,000 (see Table X.5). The number of home visits almost doubled between 1991 and 1992 from 1,890 to 3,219 as shown in Table X.6.

Table X.5.

LAZ BAGGET Total Number of Nutritional Monitorings (Weight and Height Measurement) Among Children Under Tive Years of Age in the Malico Rancho Health Area, (1988-1992

	Number of Nut Monitorings	ritional
1988	185	<u>.</u> -
1989	610	
1990	1,789	
1991	864	
1992	1,079	
Total	4,527	

source: monthly program reports

medica Acas with Completed theolisations, 1990-1992 er noncomentar que en comprese apparat a manda que a manda que de la comprese del la comprese de la comprese del la comprese de la comprese del la comprese de la comprese del la comprese de la comprese del la comprese del la comprese del la compr

Number of Home Visits Carried Out in the Mallco Rancho Health Area, 1988-1992

Year	Number of V Carried Out	Visite to rector of the second
1000		Eng (Dealinger
1989	500 (est	A Company of
1990	1.000 (est	i Š
1991	1,890	t production to estimate
1992	3,219	TOWARD ACTUAL OF MESO
	*************************************	<u>. Popřime (12 varolomi)</u> Povristod ty 12 semin
Total	5,109	A STATE OF THE STA
	PART	The state of the s

source: mentaly pregram reports

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Coverage of Basic Child Survival Services

During the fall of 1990, a baseline household survey was carried out in Malico Rancho as part of the AID Child Survival (CS) VI grant. A follow up survey was undertaken during the Spring of 1992 as part of the grant's Mid-Term Evaluation. The coverage data shown below are from these two surveys. These household surveys included all the homes in the area rather than a cluster sample because of the small population. Both surveys were of households in which there were children under two years of age.

1. Immunizations

Between 1990 and 1992, the percentage of children 12-23 months of age with a complete set of vaccinations rose from 23 percent to 73 percent. Fifty-four percent of the children 12-23 months of age in 1992 had completed their entire set of vaccinations by their first birthday (see Table X.7). A CONTRACTOR OF THE STATE OF TH

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Table X.7.

Percentage of Children 12-23 Months of Age in the Mallco Rancho Health Area with Completed Vaccinations, 1990-1992

type of assessment		of asses	sment 1992	এন আছিল গ্রন্থ
	Humber of Corried d	(88)		
vaccinations	23%	\$ \$94	73%	
(hs*)	ag ood	1.080	•	
percentage of children	1,000 (a	orre		
12-23 months of age	000,1	1880		
with all vaccinations	多大程。C	2.65.7		
completed by 12 months	erica successiva de decima escripció en el como de decima escripció de la como de decima escripció de la como d La como de decima de la como de decima escripció de la como de decima de la como de la como de la como de la c	LEGICE.		
of age	801.8	在機構特別		
(hs*)	na		54%	
-				

source: AND child survival chant belaved evaluations

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hs: household survey

na: not assessed

Collect the test test is a part of the arm and an income and collect and continued con

2. Nutritional Monitoring

The coverage of the nutritional monitoring program improved substantially between 1990 and 1992 (see Table X.8). In 1992, children under two years of age were being weighed an average of 4.3 times per year, and the level of coverage appears to have increased by over 50 percent during the previous two years.

Marillan (2002)

Table X.8

Coverage of Nutritional Monitoring Among Children Under Two Years of Age in the Malico Rancho Health Area.

	deside	data of asso	244 - 00000 2004 (2004)
type of measure of coverage	HOLE MAN MAN AND AND AND AND AND AND AND AND AND A	date of asse 1990	ssment 1992*
		ni di	一个一个一个一个全国的 No. 100 100 100 100 100 100 100 100 100 10
average number o monitorings du the past 12 mo	e i ng	ña	way gen dest was the day of the day was to day the day
% with at least monitorings du the past 12 mo	ring	がけ 54% 株成	TO CLARGE TO LOSSER 888
% with at least monitorings d past 12 month	uring	21* ^{8%)}	5.888

children 3-23 months of age

CONTROL OF THE SERVICE SERVICES OF THE SERVICE SERVICES SERVICES SERVICES SERVICES SERVICES SERVICES SERVICES a served and the goldens was not employed by their difference and the temporal confidence in the management and their field of the first of the confidence of

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the sale of extraction of the basis of the sale of the sale of the 3. Knowledge and Use of ORT

The 1990 baseline survey unfortunately did not assess the current knowledge and use of ORT. The Mid-Term Evaluation did, however, and found high levels of ORT knowledge and use (see Table X.9).

na: not assessed

source: ATD child survival grant-related evaluations

Table X.9.

Mothers! Knowledge About and Use of Oral Rehydration Therapy For Diarrhea in the Mailco Rancho Health Area, 1990-1992

percentage of	date of assessment			
mothers who:	4601	1992 ******** 10 **************************		
had heard of ORT	, na	72.8		
knew that ORT was used to treat dehydration caused	198	esterado medidas of população dinguestas tra pert 12 mantas		
by diarrhea	na	67% deans to date		
know how to prepare	na st * ë	padayê eştetetê dawa 598		
actually had used Por	na 🚜 📜	nemi inspire iina i 958 alimpo in 1864 1		

na: not assessed source: AID child survival grant-related evaluations

The Mark Transfer of the Contract of the Contr

In 1992, ARHC/APSAR expanded into a geographic area adjacent to Mallco Rancho called Sipe Sipe. In the Spring of 1992, before significant field work had gotten underway, a baseline household survey was undertaken there. The health program in Sipe Sipe previously had been operated by the MOH without outside assistance.

Table X.10 compares the coverage of selected child survival services in the Malico Rancho Health Area with coverage in the Sipe Health Area. There are striking differences in the coverage rates of vaccination and nutritional monitoring. The knowledge and use of ORT by mothers in the Malico Rancho Health Area is also greater than in Sipe Sipe, but the differences are not as striking.

Table X.10.

Comparison of Child Survival Coverage in 1992 in the Mallco Rancho and Sipe Sipe Health Areas

	Malico Rancho	Sipe Sipe
percentage of children 12-23 months with complete 10 miles vaccinations		
vaccinations percentage of children 12-23 ******* months with all vaccinations	MAR TOTAL ALLS	ing the state of t
Completed by 12 months of	#1548## 1218	odi appril salidi.
monitorings in past 12 months percentage of children with at least two monitorings in the previous 12 months percentage of children with at	lining conversed to the converse of the conver	ya sana ana ana
**	angalan de a langadhar aga nasababhar	※222年間か 1 3 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
in the previous 12 months percentage of mothers who had	26 6 Canada Dar	28 180
heard of ORT percentage of mothers who knew ORT was used to treat	72%	59%
dehydration caused by diarrhea percentage of mothers who knew	67%	53%
how to prepare ORT percentage of mothers who	59%	45%
had actually used orr percentage of cases of diamenda ***	.55 %	46%
in past two weeks treated with form the same first	tha Deve go gne co Ranollo Ba	A SIE NOTE

source: AID child survival grant-related evaluations

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Progress in the Application of the CBIO Approach

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1. Development of the CBTO Approach Constitute to approach to approach to approach the constitution of the

As described previously, the census work first began in the Mallco Rancho Health Area in 1989 when the community of Mallco Rancho became a pilot area. Routine systematic home visitation (RSHV) began in this community at that time. In 1990, censuses were completed in seven more communities and RSHV was undertaken at that time. By 1991, the final three communities in the area had been included in the census process and were receiving RSHV (see Table X.11). The household surveys carried out in Mallco Rancho did not assess the number of home visits or whether or not there was a visible number on the front of the house.

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	ports of mothers who know
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#12 E	deightration canacod by diarrecas orx
	parables of mathers who knew
泰男多	ter to propate out
	percenting of modifical wind
#30	pag our valley awar extravrus had
	Table X.11. Is nower to apacitorist

Progress in the Development of the CBIO Approach in the Malico Rancho Health Area, 1988 - 1992

	1988	1989	1990	1992
percentage of communities with census	0%	98	73%	100%
percentage of project population enrolled in census	90	14%	67%	100%

source: AID child survival grant-related evaluations

In the 1992 household survey, mothers were asked what their suggestions were to improve health in their community. The major priorities identified were expanded primary health care services, education about health, improved nutrition, and improved sanitation. All of these are areas of current active involvement of the Malico Rancho Health Program.

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2. Analysis of Death and Population Data for Mallco Rancho

Death registration began in 1991. As Table X.12 shows, the number of deaths registered in each year was 46.

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Table X.12

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Number of Deaths Registered in the Malloo Rancho Health Area, 1991-1992

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source: Mallco Rancho death registry

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The age distribution of these deaths reveals that 42 percent were among children under five years of age. No other age group had more than eight percent of the deaths except the 75 and over age group which had 13% (see Table X.13).

In the 1992 household survey, mothers were asked what their suggestions were to improve health in their community. The major priorities identified were expanded primary health care services, education about health, improved nutrition, and improved sanitation. All of these are areas of current active involvement of the Mallco Rancho Health Program.

2. Analysis of Death and Population Data for Malico Rancho

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Death registration began in 1991. As Table X.12 shows, the number of deaths registered in each year was 46.

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Table X.12

Number of Deaths Registered in the Mallco Rancho Health Area, 1991-1992

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source: Mallco Rancho death requisity

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The age distribution of these deaths reveals that 42 percent were among children under five years of age. No other age group had more than eight percent of the deaths except the 75 and over age group which had 13% (see Table X.13).

in the the last household mervey, wethers vere cared their interpretations were to londer health in their community. The reject principles is interpretation of longitudes expensed primary bealth ours nervices. See improved accepted and improved accepted accive and improved accepted accive involvement.

Table X.13.

Number of Deaths Registered in the Mallco Rancho Health Area by Age Group, 1991-1992

age group (in years)	numbers of deaths reco	orded percent	e Park
00 - 04 05 - 09 10 - 14 15 - 19	38 3 0	428 38 08 28	
20 - 24 25 - 29 30 - 34 35 - 39	多有极关一工模模型	28 78 78 78 78 78 78 78 78 78 78 78 78 78	
40 - 44 45 - 49 50 - 54 55 - 59 60 - 64	Ten reschensen (1) (100 reschensen (2) (100 resch	00000000000000000000000000000000000000	61-18L -
65 - 69 70 - 74 75 +	5 4 12	5% 5% 5% 13%	
Total	ranamin on an incident of the period of the second of the	1008	

-source: Mal-leo-Rancho-death registry 73500 (4372)

Among the deaths of children under five, 87 percent are in the first two years of life. One-quarter are in the first month of life, one-third are in the remainder of the first year of life, and one-quarter are in the second year of life (see Table X.14). When these same data are spread out on a month by month basis in Table X.15, there does not appear to be any clustering of deaths observable around any particular age group except during the first month of life and within the first 24 months of life compared to the next three years of life.

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\$	toxaco
Table X.14.	1 100-50
	274.475 St. 34.45

Numbers of Deaths Recorded Among Children Under Five Years in the Mallco Rancho Health Area, 1991-1992, by Age at Death

age at death	number of children dy	ing percent	######################################
00 - 30 days 01 - 11 months 12 - 23 months 24 - 35 months 36 - 47 months 48 - 59 months	10 13 10 44 1	268 348 4268 118 338	·
Total	38	1008 1008	
ource: Malloo Rancho d	eath registry	1322-02	
•	;; ()	1 ななシャまの3 もなメラなな	
	8,	\$80.58	_
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	5 - A - A - A - A - A - A - A - A - A -	10 to 200 to	

Table X.15.

Number of Deaths Recorded Among Children Under Five in the Malloo Rancho Health Area, 1991-1992, by Age at Death

	age in months	number deaths	of		
-	∞% 1 06-≥07 1	idis primar Tes primar	wax ten	Saathe Bass so Beacha B	time only at
dronbe gde wougury	07-208 08-409 09-10 10-<11		(1894) Generalismentus	i en	ette etanda antanana eta egit eta eta eta eta eta eta eta eta eta et
	##11-<12 ##12-<13 ##13-<14 ##14-<15	13 12 2	Amendment in the second section of the second sections.	a y s d Maria Seca dins Constan	基本 40 25 東本 40 42 現金 40 52
	% 15-<16 % 16-<17 17-<18 % 18-<19	#0 \$1 ***********************************	in was so	215100 205102 	-
Aber worden fansk strate oan it it in de wetske maagearje	19-<20 20-<21 21-<22 22-<23 23-<24	0 0 2	od i dan i transferija	M STORES C	
six month age groups	24-<30 30-<36 36-<42 42-<48 48-<59	3 1 1 0 0			
*	54-<60 Total	- 38			·

source: Mallco Rancho death registry

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The neonatal, postneonatal, infant, 12-23 month, and 24-59 month mortality rates are shown for 1991 and 1992 in Table X.16. Although the numbers of deaths upon which these rates are based are small, they do suggest that both neonatal and postneonatal mortality rates have fallen between 1991 and 1992. The overall infant mortality rate fell from 78 to 46. The denominators for these rates are shown in Table X.17.

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Table X.16.

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Neonatal, Postineonatal, Infant, and Age-Specific Childhood Mortality Rates in Malico Rancho, 1991-1992

year

neonatal mortality

postneonatal mortality

rate (per 1,000
live births)

fate (per 1,000
rate (per 1,000)
live births)

12-23 month mortality

rate (per 1,000
children of this
age group)

24-59 month mortality

rate (per 1,000
children of this
age group)

24-69 month mortality

rate (per 1,000
children of this
age group)

24-59 month mortality

rate (per 1,000
children of this
age group)

note: the number of deaths upon which each rate is based is shown in parenthesis.
source: Mallco Rancho birth and death registries and annual census

Table X.17.

Denominator Data for Calculating Mortality Rates for the Malloo Rancho Health Area y 732 657 08 157

4 va. 1 (2011) 11 (4 19	25 25 7	1 of 1800	year	Vone 4	1 1 English	3 1 1 -
			year	and the second	1. 19.00 30.00	

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ber of live births	3	164	194	
23 month of age		212	127	

12-23 month of age population

number of live births

24-59 month of age

population

Mallco Rancho birth registry and annual census

at in alast

Since ARHC/APSAR initiated child survival and primary health care activities in Sipe Sipe in early 1992, home visitation has been underway in a section of the new program area containing eight small communities. Vital events have been registered in these communities at the time of home visitation. Data are available for the 12 months of home visitation from April, 1992, until March, 1993.

Table X.18 demonstrates that infant and child mortality rates for all age groups are substantially higher in Sipe Sipe than in Mallco Rancho. The differences between the two areas are particularly striking for both the postneonatal and the 12-23 month mortality rates. able that high

These data should be interpreted with caution since they arise from small populations, especially in the case of Sipe Sipe. If deaths are more likely to be under-reported in Sipe Sipe than in Malico Rancho (a distinct possiblikity), the "true" mortality rates for Sipe Sipe are even greater than shown here, making the differences between Mallco Rancho and Sipe Sipe even more striking.

Table X.19 contains the numerator and denominator data from Sipe Sipe which were used in mortality rate calculations.

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Table & 18.

Comparison of Neonatal, Postneonatal, Infant, and Age-Specific
Childhood Mortality Rates in the Malico Rancho and Sipe Sipe Health Areas, 1992 Malleo Rancho no Sipe Sipe (1/92+12/93) _(4/92-3/93) WILLIAM CENTE 20 neonatal mortality rate (per 1,060 live births) (3) Carren Park (1) postneonatal mortality rate (per 1,000 live births) 98 (6) (5) 118 118 DOWNSON infant mortality rate (per 1,000 live births) 4786 CC~3(6) (9) 35000000 1130 12-23 month mortality rate 是超速激发度 人名德 65 (per 1,000 population of 33 this age group) (17)24-59 mortality rate

note: numbers of deaths observed are in parentheses source: Mallco Rancho birth and death registries and annual census; Sipe Sipe birth and death registries and annual census.

(1)

(1.5)

(per 1,000 population of

this age group)

Table X.19.

Numerator and Denominator Data for Calculation Mortality Rates for Eight Communitions Sine Sine Health Area, April, 1992	ng Infant and Child
Mortality Rates for Eight Communiti	es in the
Sipe Sipe Health Area, April, 1992 -	March, 1993

	group number of liv		population 47
:	0-11 months	(1/92-12/97	51
	12-23 months	* \$	69 arms prication larmount
adė	#8 (2) at death	点 \$2 秦锋 \$	number of deaths observed
	1-11 months	**************************************	See wellers with one a see
 	12-23 months 24-59 months	£\$	te mod talusmy vvv. (124) Agamus vvo addo
sou	rce: Sipe Sipe ((*) Distriction	ath registries and 1992 census

poler remiers of deales classed at a paranthesis source source; Mailes March pirth and death regionsies and around remies of the Hips birth and death regions on and accurate conservations.