

PNAAZ-534

55473

AN UNSETTLING EXPERIENCE:
WOMEN'S MIGRATION TO THE
SAN JULIAN COLONIZATION PROJECT

by

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and Natural Resource Systems Analysis
Institute for Development Anthropology
April 1986

ACKNOWLEDGMENTS

I am grateful to the Institute for Development Anthropology, and particularly to Dr. Thayer Scudder, for the funding on which this research depended. Logistical support in Bolivia was provided by the Fundación Integral de Desarrollo (FIDES); more importantly, FIDES staff in Santa Cruz and San Julián offered hospitality, advice, and friendship above and beyond the terms of a research contract. Fellow members of the evaluation team, Michael Painter, Carlos Pérez Crespo, Martha Llanos Albornoz, and William Partridge, helped make the fieldwork both professionally rewarding and fun. In particular, I wish to acknowledge Martha's assistance, for without her fluency in Quechua and easy rapport with the settlers, research for this report would have been greatly hampered. Michael Painter, William Partridge, and Dr. Scudder reviewed drafts of this report and made useful criticisms.

In my quest for comparative health data and demographics, I was aided and encouraged by a number of individuals, including Dr. Jorge Nacif, Dr. Rodríguez, and Dr. Octavia de Ferreira of the Unidad Sanitaria Santa Cruz; Dr. Isabel Saavedra of the Cruz Roja de Santa Cruz; Dr. Rodolfo Olmos of the Instituto Departamental de Estadística; Sr. Alejandro Arauz Sosa, Dr. Efraín Choque Ferufino, and Dr. Emilio Soto Robles of the Instituto Nacional de Colonización; Dr. Dardo Chávez of Salud Rural Montero; Jan and Calvin Miller, Sarah Burkholder, and Martin and Karen Miller of the Central Mennonite Committee; and Juan Salcedo T. of the Ministerio de Previsión Social y Salud Pública, División Nacional de Bioestadística, La Paz.

Finally, I wish to thank the women of San Julián who took time from their demanding work to respond to our questions and make us feel welcome in their communities. I hope that action will be taken following on our research that will ease these women's lives and offer a better future for their children.

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I. INTRODUCTION

A. THE SIGNIFICANCE OF SAN JULIAN

Throughout the subtropical lowlands of Latin America and particularly in the Amazon Basin, new-lands colonization has occurred at an increasing pace in the 20th century. In the densely settled altiplano and high valleys, land is increasingly fragmented and the growing season relatively short. Highland natives have left their home communities, often with government encouragement, to clear the forest and to farm in the interior of the South American continent, east of the Andes mountains. However, the majority of the new homesteads thus established have been unstable. For various reasons, including problems with health and lack of economic resources, many new settlement zones have been abandoned by as much as 60% of their original colonists (Chambers 1970:242-244). In other cases, large logging companies, cattle ranchers, and agribusiness have followed small-holder development, driving the peasants off the land in one way or another and consolidating their plots into larger holdings (Partridge 1984; Schmink 1982). The peasants then move deeper into the virgin forest, beginning the cycle again.

However, the colonization zone known as San Julián, located in northeastern Santa Cruz department, is an exception to this general pattern. (See Painter et al. 1984 for discussion of the social, economic, and geographic factors influencing this distinct outcome.) Some 17 years after the first spontaneous settlers moved into the area and 14 years after its semi-directed colonization project was designed, San Julián remains a zone of small farmers, mostly migrants from highland Bolivia. Because of this and because of innova-

tions in settlement pattern and program design, San Julián has been proclaimed a success by a number of evaluation teams (Solem et al. 1985).

B. EVALUATING SAN JULIAN'S SUCCESS

This colonization project has been the subject of numerous studies, including a doctoral dissertation (Hess 1980) and several official U.S. Agency for International Development (USAID) evaluations. (A summary and critique of these can be found in Painter et al. 1984:38-40.) Most of these evaluations, however, were based on minimal visits to the colonization settlements and were not informed by current knowledge of new-lands colonization experience worldwide.

The field research on San Julián undertaken in mid-1984 by the Institute for Development Anthropology (IDA) was designed as part of its ongoing, global evaluation of new-lands projects (Scudder 1981). This research sought to assess San Julián's success relative to other projects worldwide, to develop recommendations for its future growth, to better understand San Julian's role in the development of eastern Bolivia, and to determine how lessons learned from it might be applied to other new-lands settlement projects (Painter et al. 1984:1-2). Although some earlier evaluation teams included female researchers (e.g., Stearman 1978; 1983), little direct attention was paid to the role of women in San Julián. IDA's field research was designed to redress this lack of information, by including a specific research focus on women.

C. WOMEN AND DEVELOPMENT

The semi-directed San Julián colonization project was devised by the Comité de Iglesias Unidas (United Church Committee, or CIU)--an informal collection of persons representing Catholic, Mennonite, and Methodist

churches--to help highland migrants adapt to tropical life and agriculture. (For details on the origin of San Julián, see Hess 1980.) As such it is a development project; deep water wells, roads, and clearing of communal land were provided to settlers through a contract with USAID, and CIU recruited colonists and conducted a four-month orientation program for them. In 1979, a private voluntary organization, the Fundación Integral de Desarrollo (Integral Development Foundation, or FIDES) was formed by CIU personnel. It received USAID funds to operate a consolidation-of-colonization program, with emphasis on nutrition education and technical services in agriculture (Painter et al. 1984:36-37).

However, the assistance provided to San Julián settlers has been largely directed to the males: training in tropical-agriculture methods, house-building, cooperative marketing of the crops, diversified farming techniques. All the colonists trained as health extension workers are men. An earlier evaluation noted that "the (male-dominated) membership of CIU itself paid inadequate attention to the promotion of equality" (Crossley 1985:180).

This is not unusual in the context of development projects worldwide, where women's concerns are generally ignored or treated as an afterthought. Rogers (1980) notes:

Excluded then from the main stream of economic life with which development planning is primarily engaged, women enjoy only strictly marginal concern in the day-to-day preoccupations of planners. The solution, as with many other disadvantaged groups, is to categorize women as "social problems," requiring the establishment of special welfare-oriented projects that can sometimes be attached at the margin of an economic development project, and sometimes be set up as separate "women's projects" (Rogers 1980, cited in Hong 1984:8).

Indeed, only one of the five sections of the San Julián Multipurpose Cooperative is directed to women (to provide household goods and handicraft supplies

at cost). It came into existence in 1982--10 years after the first village was settled--and it is currently active in only one community.

The paradox of women's roles in relation to development is that because their work is largely unpaid, statistics and records usually fail to account for it, and thus planners do not recognize the need to support women's work in development projects. The consequence is too often an increase in the amount of labor women have to perform and a loss of their decision-making authority because that work is viewed as unskilled and marginal to the cash economy (Karl 1984).

The experience of migration or resettlement may only add to women's disadvantages. When the move involves a shift to a cash economy, women may lose control over former sources of responsibility and independence, such as flocks of animals or yearly stores of crops, while simultaneously having limited earning power in the cash economy (Bourque and Warren 1981:200).

In assessing the success of the San Julián new-lands colonization, which has primarily involved highland migrants to a new environment, we must consider not only whether the new communities have successfully reestablished a subsistence economy and a crop surplus that will enable them to participate fully in the market economy, but also whether the communities' women are benefiting equally. Do they control sources of capital and/or income? In their role as primary caretakers of children, do they have the nutritional and medical resources essential to guarding their families' health? Do women have access to needed training? Are women fully integrated into decision making on a community level? If women's potential contributions to household income and health maintenance are being frustrated by the colonization process, is their exclusion preventing the San Julián project from going beyond subsistence production?

II. SUMMARY OF FINDINGS AND RECOMMENDATIONS

A. SUMMARY OF FINDINGS

1. Land ownership is a resource available to very few women, either in their communities of origin or in San Julián. A small number do have land in their own name in the colonization zone, but their percentage in nearby spontaneous settlements is significantly higher than in the San Julián project.

2. About half the female colonists of San Julián are the original owners of their plot. Other women receive land through death or abandonment of their spouse or through inheritance.

3. A significantly higher proportion of migrants is found in the group of San Julián women who have sold their land parcels than among those of spontaneous settlements. This suggests that migrant women experience greater difficulty owning land in the San Julián colonization zone.

4. Domestic animals, which are a major source of capital for highland women, are owned in smaller quantities and less variety in the colonization zone. Moreover, some larger species (oxen, sheep, alpacas, llamas, goats) that provide milk, wool, and the capabilities for carrying burdens or plowing are nearly or totally absent in the new environment. The chickens and pigs raised by colonist women are subject to serious epidemics and stresses brought about by floods and droughts.

5. Production of handicrafts has ceased to be a source of income for migrant women, for want of materials and lack of a market for their production. However, most women are skilled in one or more types of handicrafts.

6. Commercial activities--marketing the family's crops and handicrafts at fairs or city markets and bringing consumer goods to their home villages--are not a significant source of employment for either men or women in the

colonization zone. Only a third of the few itinerant peddlers serving the area are female; a small number of women operate modest grocery stores or other businesses, sometimes in conjunction with their husbands.

7. Differences in environment between the highlands and San Julián mean that both food crops and wild plants available to colonists are unfamiliar. Without specific orientation, women have difficulty preparing nutritionally balanced meals for their families. Indirect evidence of malnutrition appears in the incidence of anemia and fevers.

8. Knowledge of medicinal plants that grow in the colonization zone is possessed by all nonmigrant women interviewed but by fewer migrants.

9. Without much recourse to these traditional healing materials, women are more dependent than ever on health professionals and pharmaceuticals. We found that few health posts are operating as planned in the colonization zone, and the difficulties and expense of travel to urban centers to visit private doctors make such trips prohibitive except for major illness episodes.

10. The primary illnesses reported by a sample of San Julián adult colonists are anemia; gastrointestinal diseases (including diarrhea); infections of the eye, ear, nose, or tissue; and skin infections. These and parasite infections are also the major illnesses of children, and they stem from environmental stresses such as scarcity of clean water, poor sanitation, and limited access to medical care.

11. Contrary to experiences of some Amazonian settlers, few people in the San Julián colonization zone report injuries or illness due to accident or attack by the local fauna (including insects, snakes, rats, and even jaguars).

12. Although an accurate infant-mortality rate is not presently available for the colonization zone, differential mortality patterns have been dis-

covered. Sex ratios among children up to age 15 are significantly skewed in favor of males for the zone as a whole. Approximately equal proportions of boys and girls are found in the age group of birth to 1 year, but among children aged 1-14, the sex ratio is 111.3 males for each 100 females.

13. Within the San Julián project, sex ratios of children are within the normal range (that which could be expected by chance). However, in the spontaneous settlements, there are 123.3 boys for each 100 girls aged 1-14, which is a very significant difference. Because the sex ratios are equal for spontaneous settlers' children from birth to age 1, cultural factors must be involved to account for female mortality after the age of 1 year.

14. These data and responses obtained from a small sample of women settlers suggest that the deep water wells, road system, and health posts of the San Julián project--imperfect though these may be--might be correlated with a lower incidence of childhood mortality than found in the nearby spontaneous settlements.

15. Women's level of participation in voluntary associations and short training courses is greater in San Julián than in the spontaneous colonies. Perhaps this is because part of the FIDES consolidation program was designed for women (though it was unevenly administered and not uniformly distributed), and it emphasized community effort and continuing education.

16. The women of San Julián hold very few political offices on a community or intercommunity level.

17. The voluntary associations to which women belong are almost invariably feminine (e.g., the Mothers' Club), so that even women active in them are effectively outside the mainstream of sociopolitical influence.

18. Lack of her own economic resources makes the woman of San Julián dependent on her husband and less active in community affairs than are women

in the highlands.

19. As members of colonist households, the women of San Julián may enjoy increased subsistence resources (relative to life in the highlands) and limited opportunities for participation in the market economy of this region. However, for many women, the experience of lowland colonization has so far largely resulted in a loss of independent economic resources and capital, reduced control over traditional means of health care, exposure to environmental health hazards due to scarcity of potable water and poor sanitation, isolation from urban centers, few educational opportunities for themselves and their children, and a loss of political power.

Lowland mestizo society does not value women's economic contributions as do highland Indian cultures. In the lowland world view, strongly influenced by Spanish aristocratic ideals, prestige lies in ownership of land and in white-collar occupations. Commercial trade, especially on a small scale, is regarded as demeaning. Women of elite and middle-class families do not work. Thus even those highland women who are relatively successful economically fail to gain the social respect of lowland mestizo society.

B. SUMMARY OF RECOMMENDATIONS

Female members' contributions are vitally important to the settler households of San Julián. Though women's bases of capital may be significantly reduced and their work unpaid, they have major responsibility for care of the household's animals, they help in the fields, raise vegetables and subsistence crops in their gardens, give birth to and tend the children, prepare and cook food, carry water, launder clothes (almost daily), nurse sick family members and animals, and produce knitted clothing for the family. In addition, many women supply a little much-needed cash to the household budget by operating a grocery store or pensión (an establishment that serves limited meals,

beer, and soft drinks), by selling an occasional chicken or pig, or by baking bread for sale in their village. Some men we interviewed are widowed or are living alone because their wives have left the colonization zone, and they remarked on how difficult it is for them to survive without a woman's help.

The San Julián project design was flawed by the assumption that colonists were mostly young, single males, and thus nearly all program components ignored women and children, who make up over 65% of the population of the colonization zone (Painter et al. 1984). The following recommendations, which are discussed in greater detail in later sections of this report, are intended to ensure that women's contributions are integrated into overall development and that they benefit equally from the colonization program. The recommendations for improvements in water supply and in transport facilities (Painter et al. 1984) are obviously also crucial from women's viewpoint.

1. Women's opportunities to control capital and income from traditional sources--ownership of land and animals, production of handicrafts, and commerce--should be supported and enhanced, while new income opportunities are created as part of the overall regional-development program.

2. Women should receive training as health paraprofessionals, with the simultaneous goals of (a) improving primary-health-care delivery on the village level, (b) providing modest cash or in-kind fees to the women who provide health services, and (c) enhancing the self-esteem and community recognition of women.

3. Other training should be offered to women as a short-term response to their unfamiliarity with the lowland environment. Basic education in literacy, Spanish language, and simple arithmetic would better enable settler women to participate in the functioning of the San Julián Multipurpose Coopera-

tive, in political affairs, and in operating their own businesses. As a long-term solution to the serious lack of teachers, a scholarship program for young women from the colonization zone might be instituted, whereby they could be trained as teachers and return to their home villages in San Julián.

4. Enabling women to have an equal role with men in decision making on a local level is a goal more difficult to achieve. Probably advances in earning power, education, and self-esteem will have to occur before women are gradually accorded access to positions of community leadership. One immediate measure that could be taken by the Instituto Nacional de Colonización (National Colonization Institute, or INC) is a policy statement declaring that widows and abandoned wives of colonists have legal right to their husband's plot, providing that they meet the usual obligations.

III. DETAILED FINDINGS OF THE RESEARCH

A. PROFILE OF WOMEN IN THE SAN JULIAN COLONIZATION ZONE

Contrary to some published reports, most settlers in both the San Julián project and the nearby spontaneous colonies arrived as mature adults with spouses and children. In the region as a whole, there are 73 women for every 100 adult males. Over 90% of the colonists are migrants from the highlands and Andean valleys of Bolivia (Painter et al. 1984:11).

Unlike many of the males who migrated seasonally to the Bolivian departments of Santa Cruz or Beni, and even to Argentina for agricultural wage labor before becoming colonists, most of the women had traveled little before coming to the San Julián colonization zone. Their average age on arrival was 24.3 years. A majority is bilingual in Spanish and Quechua--though there is considerable variation in fluency in the former language, and, especially in the more isolated villages, a number of monolingual Quechua speakers are found. About 10% of the San Julián colonists speak Aymara.

The history, settlement pattern, political framework, and production system of the San Julián project are described in some detail in Painter et al. (1984). Only enough will be presented here to show the context of women's lives and work.

Under the orientation program designed and carried out by the CIU, women would clearly benefit from the núcleo settlement pattern that groups together 40 settler households in a village cluster, thus promoting social interaction. Likewise the task of hauling water was somewhat eased by the provision of deep wells in each núcleo, though our inventory shows that by 1984, 79.5% of them had serious water problems (Painter et al. 1984:22). The roads provided under the CIU colonization project have been badly damaged by heavy logging trucks and are not well maintained by the INC, so travel within the zone may be very difficult, especially during the rainy season. Only three núcleos and their associated six lateral villages are located along the German Highway, an all-weather gravel road that connects the town of San Ramón to the urban centers of Montero and Santa Cruz. The rest of the San Julián villages are spaced along the Brecha Casarabe, a dirt road perpendicular to the German Highway, or at the end of short access roads on either side of these central villages (see map on page 41). The colectivo, an overcrowded bus, makes one daily trip along the German Highway from San Ramón to Santa Cruz; the Brecha has no bus service.

As mentioned earlier, another innovative feature of the San Julián project, the communal orientation program, was almost exclusively directed to men. The 40 settler families comprising each núcleo all lived for four months in a communal structure, and the women cooperated in preparing meals made from foods provided by the CIU. Under the Consolidation of Colonization program (1979-1983), FIDES, CIU's successor, provided some training for women

in hygiene, cooking, and handicrafts, but the quality and extent of instruction varied greatly

Training of health extension agents was limited to men, which posed at least two problems: (1) women have been reluctant to use male birth attendants and thus rely on husbands or deliver their babies alone, resulting in many cases of tetanus (Llanos Albornoz 1984a; 1984b); and (2) male extension workers, who are also colonists, are more likely to be absent from the village and thus unavailable to administer health services.

Imperfect though these components of the San Julián project might be, they are clearly an improvement over what has been available to spontaneous settlers in the zone. A few of the older spontaneous colonies located along the German Highway have been provided with wells by the INC, and they obviously enjoy relatively good transport opportunities. However, most spontaneous settlements are found in remote areas where colonists must build and maintain their own access roads if these exist at all, obtain water from pools and ditches (deep wells are prohibitively expensive), and begin to produce crops without food assistance or training in tropical agriculture. None of the spontaneous colonies has a health post, and because of the difficulty of travel to the remote settlements, they are less likely to be visited by vaccination teams or agricultural extension workers or to be able to keep a permanent teacher if they build a school. The spontaneous settlements provide a form of control group for evaluation of the San Julián project, allowing us to compare the relative success of the two groups of settlers. Differences between them are likely to be due to the effects of the CIU/FIDES program, although other factors must be considered.

B. WOMEN'S SOURCES OF CAPITAL AND INCOME

Highland women have four basic sources of wealth: ownership of land

in their own names, livestock of various sorts, production of handicrafts, and/or commercial activities. Migration to the lowland colonization zone is likely to affect all of these.

1. Land Ownership

Land is not currently providing a significant source of capital for the women of the colonization zone. In our family interviews (see Appendix B for the research design employed), we asked whether the wife now owns her own land in a highland community, and only 8 of 38 responses were affirmative (Exhibit 1). Wondering whether this might be due to sale of the wife's land to finance the move, we asked 44 women whether they used to own land. As shown in Exhibit 2, only 3 of the 44 said yes; of these, 2 had sold the land at the time of migration and 1 retains ownership. Two factors may partially explain this situation. One is that the settlers are generally young and more likely not to have inherited land yet. Second, ownership of land in the highlands, by either husband or wife, might provide a disincentive to migrate. Therefore the settlers in the San Julián¹ colonization zone may be comprised largely of families that had few prospects in their communities of origin.

To measure the extent to which women own land within the colonization zone itself, I was able to use the archives maintained by the National Colonization Institute that list the names of persons who have been awarded certificates of settlement. I counted the number of parcels assigned to women both in the San Julián¹ project and in the nearby spontaneous settlements. When members of the evaluation team copied (by hand) the archival data, we unfortunately did not note whether individual settlers were male or female, so for analysis I had to determine sex by the individuals' first names. (This results in a conservative count of females, as the few ambiguous names such

as Guadalupe were not included in my list of women colonists.) As shown in Exhibit 3, of the 1,251 individuals who currently have a certificate of settlement for a parcel in the San Julian project, only 23 (1.8%) are women; in the spontaneous settlements, 28 of the current colonists are females, and although this number is also small, it represents 7.4% of the sample of current colonists in spontaneous settlements. The difference in these proportions is significant statistically (.001 level of confidence, using the chi-square test corrected for continuity).

It is difficult to explain this finding; perhaps it is a statistical artifact. On the other hand, the CIU's recruitment program may have been biased (perhaps by U.S. missionaries' own prejudices) toward considering males as better potential colonists. Persons who apply to the INC to settle in spontaneous colonies are essentially self-selected; if a woman were determined to claim land and met resistance from CIU, she conceivably could turn to the INC directly and petition it for a parcel in a spontaneous colony, providing that she met the community's approval.

Another possible explanation for the greater proportion of female colonists in spontaneous settlements is based on qualitative information regarding the process through which women acquire land in the colonization zone. Official INC policy governing both project and spontaneous colonies stipulates that settlement certificates will be granted only to males unless extenuating circumstances can be demonstrated. These usually involve death or desertion of the spouse, or occasionally inheritance of land by a daughter. Therefore, if the infrastructure provided to San Julian settlers (roads, potable water, health posts) has improved the survival chances of colonists, less of them may die and leave land to their widows or daughters. Likewise, the social services and orientation provided by CIU/FIDES may alleviate various social

stresses so that fewer San Julián settlers abandon their wives. The extent to which such factors may be operating can be inferred by determining how many female colonists are the original owners of their parcels. As shown in Exhibit 4, almost 60% of the women colonists in San Julián and 47.6% of those in spontaneous settlements are the first persons to have a certificate for their parcel; the difference between the two areas is not statistically significant. The remaining 41 women are secondary owners (19 in San Julián and 22 in spontaneous settlements) who may have inherited their land or obtained it after being abandoned by their spouses.

A third consideration in accounting for the difference in female colonists in the two areas is the relative proportion of migrants. (In this report, I use the term "migrant" to refer to a person who was born in a department of Bolivia other than Santa Cruz.) Clearing the forest for planting is arduous work and requires training in the proper techniques; one factor that may affect a woman colonist's desire and ability to retain her agricultural plot is the amount of support she can mobilize from nearby kin and friends. If the woman has migrated to the San Julián area, she is less likely to have these potential sources of help. (Although the CIU recruitment program did attempt to enlist groups of colonists from the same highland community or work gang to settle together [Hess 1980:140-147], its focus was on corporate groups of men rather than of women.) Thus women who have migrated to the San Julián area from outside the department of Santa Cruz may have fewer human resources nearby and may find it necessary to leave their farms on occasion to attend to family business in distant hometowns. Migrant women may be more likely to sell their land, and therefore if there is a lower proportion of migrants among female colonists in the spontaneous settlements, it could partially explain why these settlements have a larger percentage

of women landowners than does San Julián. Exhibit 5 displays the percentage of migrant and nonmigrant women colonists by area. Among the total group of female colonists, current and former, the proportion of migrants is higher in San Julián than in spontaneous settlements. For current women colonists, the relatively higher number of migrants is not statistically significant, but for former colonists it is significant at the .05 level of confidence, using the Fisher test of exact probabilities. Therefore, the greater incidence of women colonists who have sold their parcels in San Julián may be related to the greater proportion of migrants within the group. However, considerable further research is needed to understand women's motivations to become colonists, their choice of area, the pressures they face in working the land and retaining rights to use, and the reasons for which women sell their parcels.

2. Livestock

Overall, settler families have fewer animals now than they did before moving to the San Julián colonization zone, representing a loss of capital for the women who raise them. Based on 35 family interviews in which data on animal ownership before and after the move were obtained, the mean numbers of all types of animals except fowl and cattle have declined (Exhibit 6). Diversity has also decreased, as no colonists in our sample report owning llamas, alpacas, rabbits, or guinea pigs. Few sheep or goats are raised in the hot Bolivian lowlands. The reduction in numbers of larger animals that can also provide wool, milk, and/or capabilities for plowing, pulling carts, or carrying loads represents a loss of capital and sometimes labor. The curtailed diversity of animal species also means that if an epidemic disease kills off most of a woman's chickens, she cannot fall back on guinea pigs for meat or sell a goat to invest in more poultry.

Despite a greater average number of cattle (in our small sample) since the move, raising large animals is a risky proposition in the San Julián colonization zone. Veterinary services are not readily available, and only small amounts of pasture land have been cleared by the colonists. Especially for larger animals dependent on pasture (oxen, horses, cattle), length of residence of an individual family may be a less important determinant of animal ownership than is the length of time that a parcel has been farmed. A new colonist family may buy a plot already containing pasture land and/or outbuildings in an older settlement, thus enabling that family to support one or more large animals right away.

Pigs may represent a sort of easily converted capital-on-the-hoof. A woman may obtain a young one for relatively little money (or perhaps by bartering a few chickens with a neighbor). It can be raised on scraps and whatever it can forage, or corn grown on the family plot can be fed to the pig. When cash is needed for agricultural expenses, family emergencies, or some other reason, the pig can be sold quickly. As a family moves out of the transition phase of resettlement and begins to diversify or intensify its subsistence activities and/or improve its house, send older offspring to the city for education, and so forth, such a source of ready cash becomes more important.

Data in Exhibit 6 were obtained from the family interviews (mostly with married males), but their accuracy can be checked by comparison with the responses of 39 women, as shown in Exhibit 7. There is a wide range within this group, the extremes represented by a woman who owns a single chicken and by another who has 5 goats, 5 pigs, and 63 chickens or ducks. The women report owning an average of over 22 chickens or ducks, over 2 pigs, a little less than 0.5 sheep or goats, and 0.23 cows; none report any oxen, horses,

llamas, alpacas, guinea pigs, or rabbits.

Both male and female respondents noted several reasons for not having more animals. The capital they represent sometimes has to be liquidated to provide for children's schooling in the city or for other expenses. Many animals die from epidemic diseases that colonists are unable to control, and a considerable number perished during past floods. During the drought that prevailed in July 1984, colonists commented that lack of food and water forced them to reduce the size of their flocks or herds.

3. Handicrafts

A visitor to the colonization zone would be immediately aware that most of the women there are migrants from highland regions, as they continue to wear their traditional clothing, often including hand-made items such as sweaters and knitted caps. Women spend free time crocheting or embroidering and are eager to learn new stitches from one another. But despite their pride and pleasure in creating handicrafts, the women can no longer rely on them as a source of income.

As part of our interviews with women, we asked what skills they have, where they learned them, and where they sell their handicraft products. As shown in Exhibit 8, the great majority of the women know how to embroider and knit or crochet; only one woman said she has no skills. Textile weaving is not as widely known, perhaps because it requires more extensive instruction that the young settler women did not receive before migrating. Apparently handicrafts using local materials such as palm are not widely known.

A significant percentage of the women interviewed learned handicraft skills at home when they were young; many more said they are self-taught from observing others (Exhibit 9). These women have received little formal instruction from extension workers or schools, but many showed an eagerness

to learn. (Some were disappointed that members of the evaluation team had not come for that purpose.)

The problems affecting loss of income from handicraft sales therefore do not lie with either lack of skills or lack of motivation. For some women, time to produce handicrafts for market may be a constraint, as women's duties in the colonization zone may involve much agricultural work. More serious problems are availability of materials (such as wool, alpaca hair, and embroidery thread) and markets for finished products. One section of the San Julián Multipurpose Cooperative is designed to provide handicraft supplies to members at cost, but that section is now functioning actively in only one community. (This appears related to women's lack of training in book-keeping skills and administration.) Even if the women of San Julián could obtain inexpensive materials, however, no provision has been made to market their handicraft production. Of 39 women asked where they sell their products, 31 answered that they do not sell them at all (see Exhibit 10).

4. Commercial Activities

In the highlands, women take an active role in commerce, traveling to urban centers and agricultural fairs to sell the family's surplus crops, livestock, and handicrafts. They also bring consumer goods from these markets to their home villages. Thus women play an important role in forming rural/urban linkages (Buechler and Beuchler 1971). We expected to find a similar phenomenon developing among the San Julián colonization zone, the town of San Ramón, and the cities of Montero and Santa Cruz, with women active in creating marketing networks. This does not turn out to be the case.

Marketing of even the modest agricultural surpluses achieved by San Julián settlers is severely constrained by transport problems and lack of an integrated regional marketing plan (Painter et al. 1984). Virtually all

of the settlers' buying and selling is done in the city of Montero, but trips there and back generally require at least three days and incur not just passenger fare in the colectivo or on a passing truck but stiff freight charges, overnight lodging, and the cost of meals as well. It is small wonder that few of the San Julián settlers--male or female--are engaged in commercial activities.

In the family interviews, we asked which household members take the agricultural produce to market, and few responses include the colonist's wife (see Exhibit 11). As part of an urbanization inventory conducted in 39 of the núcleos in the San Julián project and in 11 nearby spontaneous settlements (Painter et al. 1984:34), we collected information on shops and stores. Exhibits 12 and 13 display the types of businesses operated by women, sometimes in cooperation with their husbands. The most popular commercial activity for women is operating a small grocery store in their home village, selling cooking oil, salt, macaroni, matches, candles, cigarettes, a few canned goods, fruits and vegetables, coca, toilet paper, crackers, aspirin, alcohol, spices, and so on. Stock is almost invariably purchased in Montero. Some storekeepers grant credit to trusted customers, but few can obtain credit from their own suppliers. In addition, inflation and transportation costs cut deeply into profits. Nevertheless, having a little store is seen by many of the women we talked with as an attractive source of income that requires relatively little physical labor.

A few itinerant peddlers also serve the núcleos in San Julián. Our respondents do not know most of them personally and assume that they live outside the San Julián project. Apparently the number of peddlers fluctuates with changing road conditions and phases of the agricultural cycle; of the 17 described by colonists, all are migrants from highland Bolivia and about

a third are women (Exhibit 14). The peddlers ride into the zone on trucks and travel from one núcleo to the next by bicycle or on foot, carrying on their backs their limited stock of clothing, blankets, patent medicines, spices, plastic buckets, and other small items.

In sum, for women as well as for men, there are few opportunities to engage in commercial activities in the San Julián colonization zone. In our interviews with women who own a small store or operate a pensión, we asked whether they see such an occupation as desirable for their daughters, and the response was invariably yes. Thus an expansion of commercial opportunities for the next generation--females and males--may be necessary to ensure that they do not abandon the colonization zone seeking a life not totally dependent on slash-and-burn agriculture.

C. HEALTH AND MEDICAL RESOURCES

Our evaluation was not designed to examine the health impacts of colonization on San Julián settlers; such a study would require special personnel and equipment and more time. However, because feeding the family and guarding its health are main components of women's roles, we wished to learn whether the women of San Julián are facing difficulties with them. Also, incidences of malnutrition, disease, and infant mortality indicate problems with the settlement process. For example, in the Caquetá colonization zone in Colombia, infant-mortality rates are twice the national figure (Woodsong 1984).

1. Malnutrition

Because of environmental differences, many familiar foods are unavailable to settler families, and women must learn to choose, prepare, and combine new foods in a nutritionally balanced manner. Rice and yuca may be filling, but they lack essential vitamins and protein. The reduction in settlers' livestock referred to earlier may be offset by meat obtained through hunting,

at least while wildlife survives in the region.

We saw no cases of obvious malnutrition among children or adults in San Julián, and public health records on the provincial and departmental level show little reason for concern (Exhibits 15-17). However, public health records are likely to be a poor measure for the true incidence of malnutrition in San Julián; if a family is unable to afford an adequate diet for its children, it is unlikely to be able to afford the trip to an urban medical center where those cases would be recorded.

Iriarte (1982) states that there are 450,000 children in Bolivia who suffer from malnutrition. A factor in this may be that gastrointestinal diseases can modify nutritional needs by slowing down or limiting absorption of nutrients (Scrimshaw and Behar 1964). As shown later in this report, gastrointestinal diseases are a leading cause of illness in both children and adults throughout Bolivia.

A health survey was conducted in 51 communities northeast of Montero (across the Río Grande from San Julián) in late 1977. Many of the people surveyed are highland migrants. The study found intestinal parasites in the stools of over 60% of the children. A majority of the children were anemic according to World Health Organization criteria. Many children under 4 years of age were malnourished, and 17% had abnormally low weight for their age (Frerichs et al. 1980:353). Colonists' reports of parasite infestations and extension workers' concern that migrant women lack orientation in preparing balanced meals from local foods lead me to believe that a similar study on the health of San Julián settlers would reveal greater incidence of malnutrition and avitaminosis than is apparent from casual observation or public health records. These conditions can aggravate exposure to diseases and may contribute to increased childhood mortality.

2. Morbidity and Mortality

The women we interviewed in the colonization zone described the illnesses suffered by themselves and their families primarily in terms of the symptoms present, such as fever, diarrhea and vomiting, cough, or back pain. However, the responses we obtained are congruent with the result of a diagnostic study made in July 1982 by an 11-member medical team from North Carolina (FIDES 1982). During a brief visit to the San Julián project, those team members examined 1,329 settlers. (Because the medical team worked primarily in the health post of one village in a recently settled part of the project, this sample of settlers who were able to travel to the health post during the study may not be representative of the population as a whole. Also, the health problems of new settlers, still trying to establish homes and household routines, may be different from those of people who have been resident longer.)

Exhibits 18 and 19 display the findings of the North Carolina medical team compared with leading causes of illness as reported in the province, the department, rural Bolivia, and in the country as a whole. The caveat mentioned earlier about reporting problems in public health records applies here as well. However, some patterns do emerge. Various infections, gastrointestinal diseases, anemia, parasite infestations (especially in children), and "various pains" (in adults) are the predominant illnesses in San Julián, and all of them (except, perhaps, some of the "various pains") are types of illnesses associated with poverty, poor sanitary facilities, lack of clean water, and reduced access to primary health care. Improvements in settlers' standard of living thus should reduce their incidence of illness. The respiratory diseases and tuberculosis that are serious health threats in highland Bolivia are of lesser concern in San Julián, and even malaria is not frequently found. Few infectious diseases were reported by settlers, and nearly all

the women we interviewed said that their children have been vaccinated. Somewhat surprisingly, no cases of wounds, poisoning, or traumas (the leading cause of illness in the country as a whole) are reported for San Julián by the medical team. Attacks by local fauna (snakes, scorpions, even jaguars), the dangers of pesticides, and the physical rigors of forest clearing usually pose a considerable threat to settler families, as reported for Amazonian areas (Smith 1982:112; Moran 1983:190-202), and the San Julián colonists feel vulnerable to these dangers. During our weeks of fieldwork, we heard that one man had recently been injured by a falling tree, another was burned when fire destroyed four houses, and a young woman committed suicide by drinking pesticide. However, our interviews with women revealed no past incidence of traumas, snakebite, and so forth among members of their households.

Accurate data on infant-mortality rates throughout the colonization zone unfortunately are not available at this time. A FIDES-sponsored health study of the region was completed in mid-1984, and it is hoped that a current infant-mortality rate will be compiled and released by those researchers. Our interviews with women did not involve statistical sampling techniques, and thus we make no claim that the data on children's deaths obtained from our respondents are statistically representative of the population as a whole. However, we did formally interview over 40 women in 16 núcleos and 8 spontaneous settlements and we held informal conversations with many others. Although we are unable to state whether San Julián's infant-mortality rate is greater or less than the national figure of 157 per 1,000 births in Bolivia (U.S. Bureau of the Census 1978), we have learned something about the variation in death rates within the colonization zone.

Exhibit 20, based on 50 interviews, shows the mean number of total pregnancies, living children, and children who have died per woman. (Total

pregnancies refers to those terminating in live births or stillbirths. Only 2 stillbirths and no miscarriages were reported.)

Each of the women interviewed was asked not only how many pregnancies she had experienced and how many children are still living but also the name, date of death, age, and cause of death for each child who had died. That even stillborn infants who died many years ago could be named readily by their mothers gives us more confidence in the reported number of pregnancies and deceased children. Recall of the child's age at death and when the death occurred is undoubtedly less reliable, especially when few formal records are kept. The age-at-death data available (Exhibit 21) show that within the San Julián project nearly all the children's deaths occurred by the age of 18 months; in the spontaneous settlements, over 36% of the deaths occurred later. Larger samples and better data on age at death are certainly needed before any conclusions can be drawn about these findings. Again, results of the health study sponsored by FIDES should be very valuable, as those interviewers asked whether any members of the household had died during the preceding 12 months, an easier recall period.

No clear patterns emerge from comparisons of the age/sex data among children who have died (Exhibit 22). Samples are very small and the variations that occur may be due to chance rather than to cultural or biological factors.

Fortunately, better data are available on the ratios of male and female children in the San Julián colonization zone. In 1982 the INC conducted a census of children between birth and 14 years (by age groups) throughout the zone (Exhibit 23). Details on how this census was carried out are not available at present, as a copy of the counts of children was obtained by mail after the period of fieldwork. However, individual tallies for 41 núcleos and 9 spontaneous communities are included, with nine age groupings for chil-

dren under 15 years. Of the total of 3,113 children in the zone, 1,616 are males and 1,497 are females; the difference in these numbers is statistically significant at the .05 level of confidence, using the chi-square one-sample test. Moreover, the preponderance of males is not due to more of them being born. Between the ages of birth and 1 year, females actually outnumber males, though not to an extent that is statistically significant (at the .05 level of confidence, using the chi-square one-sample test). The situation is reversed for children aged 1-14 years, with 111.3 males to each 100 females, and the difference for this age group is statistically significant at the .01 level of confidence, using the chi-square one-sample test.

When these same data on sex and age groups of children are analyzed by area (Exhibit 24), the sex ratios for the núcleos in the San Julián project fall within the normal range. In the spontaneous settlements, although sex ratios are equal from birth to 1 year, the difference in number of boys over girls aged 1-14 years is highly significant (.02 level of confidence, using the chi-square one-sample test), with 123.3 males to every 100 females.

Because the differences in numbers of children of each sex do not appear in the age group below 1 year, we must conclude that more female than male offspring of spontaneous settlers are dying after their first year of life. The sociocultural factors involved require more study, but I would suggest that differential female mortality reflects a subtle choice in the household economy of colonists. Sons may be more highly valued for their work potential in the fields and because parents expect to be able to rely more on them in old age than on daughters (who will marry and join other households). Consequently, male children might be breastfed longer and given more or higher quality food. When a girl becomes ill, parents with several other children may be less inclined to make an expensive and arduous trip to a distant health

post or to the city for medical care. (As noted earlier, many spontaneous colonists live in remote areas where virtually the only access is by bicycle or by foot.)

Such hypotheses accord with those advanced by McKee (1977; 1984b). She suggests that preferential treatment of male children at least in part results from parents' awareness that boys are biologically more vulnerable (from conception throughout childhood) and have higher death rates. Infant mortality, especially of males, responds to economic conditions (UN 1982), and thus "the SMD [sex mortality differential] increases in the presence of high levels of pathogens, parasites, dietary inadequacies and high altitude hypoxia" (McKee 1984b:93; emphasis in original). To counteract the biological tendency toward a predominance of females in these conditions, human societies employ a number of cultural practices that contribute, usually indirectly, to greater mortality of female children (McKee 1984a).

Data on sex ratios at small age intervals are not plentiful, especially in the literature on colonization or resettlement. Stinson (1982) reports a sex ratio at birth of 106 males per 100 females for a high-altitude Bolivian Aymara population, and Bolton (1980) calculates a ratio of 109 males to 100 females for a Peruvian population he studied. Some very high sex ratios (an excess of males) have been reported for Andean populations, but Bolton has shown that these are based on suspect birth registrations and probably also due to female infanticide (Bolton 1980). At Nuñoa, Peru, Baker reports that the sex ratio is not only high at birth, but "there was a higher mortality of females than of males throughout the period of growth" (Baker 1969:1151). For another highland Peruvian community, Hoff (1968) noted that female mortality (438/1,000 population) was significantly greater than male mortality (273/1,000 population) for a sample of 207 offspring of 31 women over the

age of 45. Thus there is at least ethnographic evidence of differential mortality for female children in Andean populations.

The mechanisms through which such female mortality occur do not necessarily include deliberate infanticide, although that has been documented in various societies--for example, China (Fei 1939) and India (Benedict 1972:81). Gallegos (1968) discusses extensive evidence for infanticide in Andean communities, not only for reasons of incest, illegitimacy, beliefs about bad luck (multiple births), and deformity, but also of children born into large families. Female infanticide is reported for an Aymara community in Peru (Brown 1979) and for the Colta region of Ecuador (Maynard et al. 1965). Informants in Peru told Bolton (1980) that neglecting sick female children is a technique of infanticide. In families where food is short, sons may be better fed; even if the girls do not actually starve, epidemics are more likely to kill them than their better-nourished brothers (Lang 1946). Vázquez (1974) shows that discrimination against female infants in Ecuador is expressed through length of breastfeeding, among other things: males are nursed for three or more years, females for only a year and a half. For a northern Andean community, a similar differential in length of breastfeeding was found (Beyda 1977). In the Montero health study cited earlier, girls had greater prevalence of low weight for age among all age groups, higher reported illness rates (except in the 0-5 age range), and yet roughly equal expenditures for medical care (Frerichs et al. 1980:348-350), suggesting less expenditure per illness episode for girls.

That sex ratios in the núcleos of San Julián are within the normal range suggests that no deliberate selection for male children is being made by colonists; given even minimal access by roads to distant medical facilities (and to the few local health posts established by CIU/FIDES), San Julián

settlers apparently seek health care for sons and daughters to roughly the same extent.

In summary, although evidence is circumstantial, it points to a lower incidence of child mortality in San Julián than in the nearby spontaneous settlements. It might be noted that in the Montero health study, the infant-mortality rate was significantly higher among Quechua-speaking migrants than among Spanish-speaking nonmigrants (Foxman et al. 1984:137). Unfortunately, insufficient data are available on the San Julián colonization zone to permit such a comparison.

Determining cause of death from settlers' own reports is as difficult as diagnosing illnesses, for the same reason: in the absence of a professional opinion, colonists may give ambiguous symptoms as a cause of death. Exhibit 25 shows the reported cause of death for interviewees' children who died after the move to the colonization zone. The causes correspond to reported illnesses in the area. For purposes of comparison, Exhibits 26 and 27 show the leading causes of death in children and adults in Santa Cruz, in several departments of Bolivia from which San Julián migrants have come, in rural Bolivia, and in the country as a whole. Although the data in Exhibits 26 and 27 are for deaths that occurred in hospitals (and thus surely omit many deaths in areas with limited access to medical care), they correspond fairly well with the limited data on San Julián.

3. Health Resources

In traditional highland society, women play a major role as healers of members of their household, drawing on extensive knowledge of herbal remedies. We asked our sample of colonist women whether they use medicinal plants when family members fall sick. As shown in Exhibit 28, over two thirds of them do know how to obtain and use at least one local medicinal plant; however,

many of the migrant women complained that their knowledge of the zone's herbs and plants is limited. Over 85% of spontaneous women settlers but only 68% of the women interviewed in San Julián are familiar with at least one medicinal plant; this might be attributable to the larger proportion of nonmigrant women living in the spontaneous settlements. Of the 7 women we interviewed who had been born in the department of Santa Cruz, all are familiar with local herbal remedies. Knowledge and use of wild plants are reported to persist among natives of Santa Cruz as a relic of their Indian heritage (Heath 1969:301).

Having less recourse to inexpensive herbal remedies, migrant women of the colonization zone must rely more on medical professionals and pharmaceuticals supplied by health posts. A few simple medicines such as aspirin are sold at local grocery stores and by some itinerant peddlers, and in a handful of the núcleos of San Julián a limited pharmaceutical supply is maintained by a colonist trained as a paraprofessional health promoter. Only 5 (14%) of the communities we inventoried in San Julián have functioning health posts (Painter et al. 1984:17-18), and because these are not always open when services are needed, a woman with a sick child often must choose between doing nothing or making a difficult journey to Montero by truck. Some patients do not survive the journey.

D. SOCIAL STATUS AND POLITICAL POWER

With land registered in their husbands' names, having access to few sources of income, lacking orientation in the culinary and medicinal uses of local plants and thereby the means to assure their families' health, and often uneducated in the language and commercial skills needed in the lowland cash economy, migrant women also have less prestige and authority than do males. The governing body of each village consists of the colonists and

their elected representatives, and as was shown earlier, landowning colonists are overwhelmingly male. Women did not speak out at the community assemblies we attended, although some came to observe and listen. Wives undoubtedly influence their husbands' decisions in private, and all of the ones we interviewed said that the woman keeps the household purse, thus controlling the budget to some extent. In the event she is widowed or abandoned by her husband, a woman must rely on the goodwill of the other male colonists who have the authority to decide whether she may retain use of the land. Even if she is granted colonist status, for lack of training and experience she may be incapable of assuming the responsibilities this implies (Llanos Albornoz 1984a; 1984b).

Under the FIDES consolidation program, some training courses in hygiene, home economics, nutrition, handicrafts, and even simple bookkeeping were offered to the women in some núcleos of San Julián. The program was poorly administered, however, so that the quality of the training was largely determined by the motivation and abilities of individual extension workers who themselves received little preparation or logistical support. Nor were they assigned to all areas of the colonization zone. Reaction to these extension courses seems to have been uniformly positive. Two thirds of the women we interviewed in San Julián and half of those in spontaneous settlements had participated in one or more courses (Exhibit 29). The difference in participation rates by area is not great and is likely due to greater availability of the courses in the project area. Women also sometimes attend agricultural extension courses with the men; for example, a three-day workshop on cattle management was held in a central núcleo during our fieldwork, and three women were among the participants.

Some voluntary organizations in the colonization zone provide women

with forums for socialization, self-expression, and development of leadership skills. The San Julián Multipurpose Cooperative has one section specifically designed to address women's needs, and some churches have women's auxiliaries. However, these apparently account for relatively small numbers of females active in voluntary associations. Most significant in terms of membership are the dozens of Mothers' Clubs operating in San Julián núcleos and spontaneous colonies alike. An important impetus to their proliferation is that the charitable agency Caritas distributes food supplies to communities in which Mothers' Clubs are functioning. We asked the women we interviewed to which, if any, voluntary associations they belong and found that nearly all of those women who are active are members of the Mothers' Club. Our sample is biased toward greater inclusion of these women because when we entered a village and expressed our interest in interviewing one or more adult females, community leaders tended to refer us to the local president of the Mothers' Club. Participation rates in voluntary associations in San Julián and in the spontaneous settlements--96.0% and 57.1% respectively--are shown in Exhibit 30. I suggest that San Julián women's greater participation is due to the emphasis on cooperation instilled by the CIU and FIDES during the orientation and consolidation phases of the project. Such a willingness and ability to work together could be a prime asset enabling the women of San Julián to take a more active role in decision making on a community level, providing that they receive the necessary training and support to establish themselves as equal partners with men.

IV. ESTABLISHING WOMEN'S EQUITY IN THE CONTEXT OF COLONIZATION

A. SOURCES OF INCOME

Of highland women's four traditional economic bases--land, livestock,

handicrafts, and commercial activities--land probably has the least potential as a source of income for wives of San Julián settlers. In the colonization zone labor rather than land is in short supply. However, women who wish to acquire their own parcels or have the role of colonist thrust upon them through death or desertion of their spouses should not face discrimination from agency officials. The special problems these women and their children face deserve further study to determine how support can best be offered to them.

Several measures could be taken to improve women's success with raising livestock. There is a vaccine for avian cholera, which decimates the settlers' poultry flocks every few weeks. FIDES' attempts to promote use of the vaccine have seen very little success. Because such diseases are of epidemic proportions, any vaccination or treatment program will have to be village-wide. Penning chickens is in itself expensive and also requires that the animals be fed corn that could otherwise be used for human consumption. But if the women can agree to buy cooperatively vaccines or medicine to go in drinking water, the whole village's flocks can be allowed to forage and still receive protection. Also, the Central Mennonite Committee could inaugurate a program modeled on its successful Heifer Project to supply guinea pigs and rabbits to families in the colonization zone, thus increasing the variety of small animals available. Despite the very warm climate, a few colonists are successfully raising sheep and goats, and attention should be paid to their experiences to see whether more of these animals would be feasible.

Expansion of women's handicraft production is constrained by several factors. FIDES tried to correct the problems of supply for raw materials by establishing a women's section of the San Julián Multipurpose Cooperative, but as noted earlier, it is currently functioning in only one community.

As part of a larger campaign of training and orientation, FIDES should hire female extension agents to encourage active functioning of this section of the Cooperative throughout the colonization zone. (As discussed in a later section of this report, one goal of furthering women's education is to encourage them to take a more active role in administering their own section of the Cooperative and in participating in other sections, such as savings and credit or rice marketing.)

A more serious constraint on handicraft sales is the lack of a market. There are already stores in the city of Santa Cruz that sell highland-type handicrafts, mostly to tourists. Representatives of the Mothers' Clubs could work with FIDES officials (who have offices in Santa Cruz) to arrange marketing outlets through local shops. There is also a highland handicraft cooperative with a store in La Paz that might set up an agreement with the women of San Julián to sell their products and supply them with materials. The director of the shop has already expressed interest in such an agreement. Because highland-type products from San Julián would be competing with similar handicrafts in both Santa Cruz and in La Paz, and because wool and alpaca hair must be imported to the lowland region, it might make sense to teach the migrant women to create new handicraft items (such as embroidered cotton clothing and tablecloths, baskets, palm hats, or hammocks) using locally available materials. Handicraft projects for women have been criticized for their emphasis on production of luxury items directed toward a limited and unreliable tourist market rather than on supply of essential items for local consumption (Hong 1984). I feel that migrant women should not be encouraged to abandon production of their traditional items such as sweaters, knitted caps, and woven bags, but by incorporating new products for which there might be greater demand in the lowland climate, these women are likely to increase

their income potential.

Projects such as handicraft production to generate income for women must proceed from careful design. Khan (1984:40) outlines some basic principles that were derived from two projects in Pakistan but could apply equally well in San Julián:

1. The project must be introduced in an appropriate socioeconomic milieu. Some women are so heavily involved in agricultural work that they do not have time for handicrafts. This suggests that handicraft projects might be most successful in those villages of San Julián that have been settled longest and/or among those women who have teenage daughters to help with household chores.

2. Any project, no matter how loosely organized, must be planned so that it can progress from one stage to the next. For this reason, involvement of extension personnel on a zone-wide board of directors would be advisable.

3. "The closer the market, the more likely the women will be able to run their own project; the greater the distance, the greater the dependence of the women on intermediaries."

4. A centralized work center gives a sense of collective participation and allows for social interaction. However, the center should be in neutral territory and preferably not in any individual's home. Many núcleos of San Julián already have a communal building or open-sided shed in the center of the village that women might use for handicraft production. For spontaneous colonies in which houses are widely scattered, the neutral site might have to be where land is set aside for a school or soccer field. A common gathering place, though perhaps not centrally located, would be all the more important for the women in these isolated communities.

5. Effort must be made to avoid dependence on a single individual and

to involve as many women as possible in decision making. Though extension workers would be useful in organizing a handicraft project, they should follow the admirable example set by CIU/FIDES in the overall colonization scheme and allow the participants to run their own organizations with a minimum of interference.

Recommended improvements in transportation facilities, availability of credit, and regional planning would improve women's as well as men's opportunities to engage in commercial activities, provided that equal access is given them. Nonfarm employment opportunities that arise through development of regional linkages should not be limited to men. For example, if a bus can be put into service along the Brecha, the jobs of driver and conductor could be filled by women, perhaps on a rotating basis. Other employment might be generated in food-processing plants in the zone.

B. HEALTH CARE

Training local people as paraprofessionals to provide primary health care for their fellow villagers is a sound idea. However, some problems with the actual functioning of this program could be eliminated by also training some female settlers for this role. Women birth attendants could avoid the problems of patients' embarrassment and perhaps bring greater empathy to the role than men could have. Also, because women are less often absent from the village, they could provide more readily available care. The current situation, in which health-care providers are unpaid, should be changed. Ideally, some external funding should be found for modest salaries, and the patients' families should be asked to give a nominal fee or in-kind payment in return for the service. This would not only provide a little income for the health-care provider but also reinforce her status in the community.

Medicinal plants should be emphasized as much as possible in the village

pharmacy in order to minimize costs and supply problems.

C. EDUCATION

If the women of San Julián are to participate fully in community life and the regional economy, they will need some systematic training. The short-term emphasis should be on orientation to the lowland environment; extension workers could develop a curriculum of lessons on nutritional values and preparation of local foods, on home and personal hygiene, medicinal plants, warning signs for common diseases, and so forth, using some of the better teaching materials developed by former FIDES extension personnel. More specialized workshops could be offered on animal care, vegetable gardening, and new handicraft skills. To better enable women to handle bookkeeping and administrative responsibilities within their own organizations and businesses, simple mathematics, reading and writing skills, and conversational Spanish should be taught. Not all women will want to attend the more advanced classes, but they should be made available in at least some of the more central villages. Because many migrant women still are not very fluent in Spanish, it is strongly recommended that extension workers be bilingual in Quechua and Spanish.

A major problem reported by settlers in the colonization zone is lack of teachers (Painter et al. 1984). Even those villages that build a school and successfully petition the government to assign a teacher often have difficulty keeping him or her because of the rustic life-style and isolation caused by bad roads. A long-range solution could be sending young migrant women, preferably unmarried or childless, away to school to be trained as teachers for their own villages. The program would need to be well coordinated, with the young women enrolled together in one school (perhaps in Cochabamba) to reduce their sense of isolation. The project ideally would be funded and

administered by a religious group or groups, which could oversee housing arrangements and thus relieve parents' concerns about their daughters. Once certified as teachers, these women would be more likely to remain in their villages because of kinship and affective ties. They might also take on responsibility for adult-education classes and/or some orientation for newly arriving migrant women.

D. DECISION MAKING ON A COMMUNITY LEVEL

Enhancing women's social and political status within their communities and on a regional level is a process that will take time. Women will have to develop confidence in their ability to cope with the demands of colonization, to contribute significantly to a diversified household economy, to safeguard the health of their families, and to participate in the administration of their own organizations. Clearly some women will do this more successfully than others, and some should be able to take entrepreneurial roles in the expanding regional economy. As women's education and fluency in Spanish increase, they should take a more active role in the political affairs of their village and ultimately on an intervillage level.

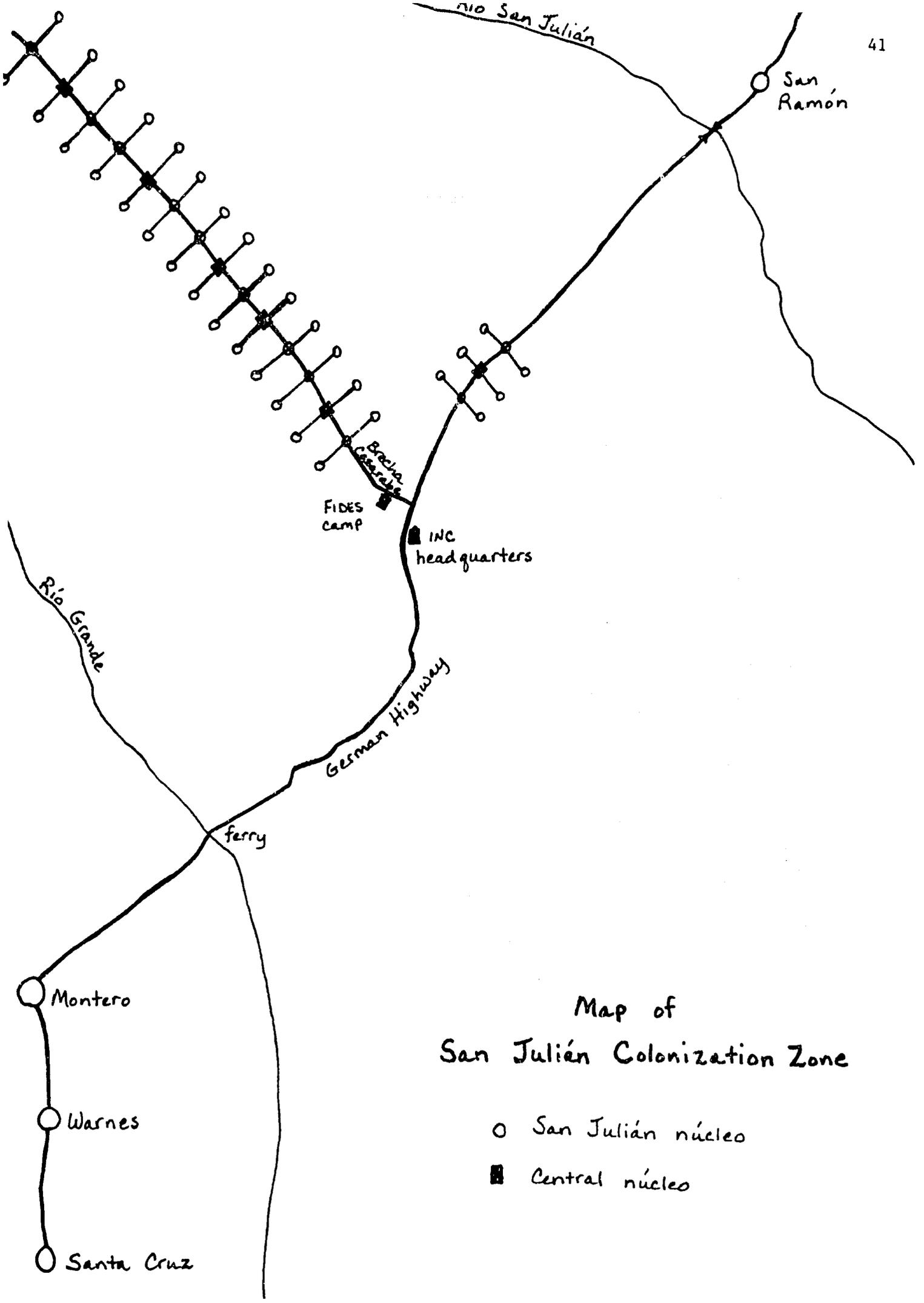
As the formal decision-making body for each community consists of the landowning colonists, it is important that women retain their rights to land for sociopolitical as well as economic reasons. Forcing a change in INC policy to require that land titling (when it is accomplished) be done in the name of both man and woman may not be feasible, but the INC could at least declare that widows and abandoned wives have the right to their husbands' land without community interference, as long as such women are able to fulfill the responsibilities of a colonist.

The traditional highland Indian respect for women's social equality and economic roles is not shared by lowland mestizo society. Migrant women who wish to operate in commercial or educational activities within the region

may face individual and institutional discrimination. On the other hand, by demonstrating the vital contribution that women (migrants and nonmigrants alike) do make to subsistence agriculture and livestock raising, to maintenance of family health and good nutrition, and to nonfarm income of their families, they can be an example for other colonization projects.

Stearman (1985) describes multiple-resource migration as a strategy allowing some highland families to diversify their sources of income, access to markets, and choice of residence. Over the course of many years, a family may acquire and hold simultaneously a farm plot in a colonization zone, some cleared land suitable for cattle raising, and an urban home (with or without rental units) in a town or city such as Montero. Usually the wife lives in town, where she can sell agricultural products in the marketplace, and the children attend school. The husband and other adult males tend the farm property, rejoining the family on weekends. If regional development succeeds in linking San Julián more efficiently with the rest of the lowlands, fewer families may feel compelled to divide themselves by sending some members to the city. The design of San Julián allows for growth of its own service nodes in the central núcleos, and some are beginning to expand. However, if the development of towns within the colonization zone stagnates for lack of road maintenance, adequate water supplies, and/or other infrastructure, women may migrate out of the zone to help increase their families' economic opportunities in the city. In an extreme scenario, this could leave San Julián to resemble what CIU planners first thought it would be: a colony of solitary male farmers--and even those would be absent on weekends. Such an extreme is unlikely to occur, but it is clear that developers and planners must consider women's roles in both the economic and the social life of the zone. They ignore women's roles at the peril of the colonization project itself.

APPENDIX A: MAP AND EXHIBITS



Map of
San Julián Colonization Zone

- San Julián núcleo
- Central núcleo

 Exhibit 1: Families Who Report That the Wife Owns Her Own Land in the Highlands

<u>San Julián (n=25)</u>		<u>Spontaneous Settlements (n=13)</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
6	24.0%	2	15.4%

 Exhibit 2: Women Who Report Having Owned Land in Their Community of Origin

<u>San Julián (n=25)</u>		<u>Spontaneous Settlements (n=15)</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
-	-	3	20.0%

 Exhibit 3: Sex of Current Colonists, by Area

<u>San Julián (n=1,251)</u>				<u>Spontaneous Settlements (n=377)</u>			
<u>Males</u>		<u>Females</u>		<u>Males</u>		<u>Females</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
1,228	98.2%	23	1.8%	349	92.6%	28	7.4%

Differences are statistically significant at the .001 confidence level, using the chi-square test corrected for continuity.

 Exhibit 4: Order of Land Ownership for Women Colonists, by Area

San Julián (n=47)				Spontaneous Settlements (n=42)			
Original Owner		Secondary Owner		Original Owner		Secondary Owner	
Number	%	Number	%	Number	%	Number	%
28	59.6%	19	40.4%	20	47.6%	22	52.4%

Difference is not significant at .05 confidence level, using chi-square test corrected for continuity.

 Exhibit 5: Migrant and Nonmigrant Women Colonists, by Area

<u>Total Group (Current and Former)</u>							
<u>San Julián (n=36)</u>				<u>Spontaneous Settlements (n=39)</u>			
<u>Migrants</u>		<u>Nonmigrants</u>		<u>Migrants</u>		<u>Nonmigrants</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
29	80.6%	7	19.4%	19	48.7%	20	51.3%

Statistically significant differences (.01 confidence level), using the chi-square test corrected for continuity.

<u>Current Colonists</u>							
<u>San Julián (n=17)</u>				<u>Spontaneous Settlements (n=28)</u>			
<u>Migrants</u>		<u>Nonmigrants</u>		<u>Migrants</u>		<u>Nonmigrants</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
13	76.5%	4	23.5%	13	46.4%	15	53.6%

Differences not statistically significant at the .05 level, using the chi-square test corrected for continuity.

<u>Former Colonists</u>							
<u>San Julián (n=18)</u>				<u>Spontaneous Settlements (n=12)</u>			
<u>Migrants</u>		<u>Nonmigrants</u>		<u>Migrants</u>		<u>Nonmigrants</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
15	83.3%	3	16.7%	7	58.3%	5	41.7%

Differences statistically significant at .05 level of confidence, using the Fisher test of exact probabilities.

Note: "Migrant" refers to an individual born in a department of Bolivia other than Santa Cruz. Data on birthplace are missing from the INC archives for 14 women colonists.

Exhibit 5: Animals Owned by Colonist Families Before and After Settlement in San Julián Area (n=35 families)

Type of Animal	Animals Currently Owned			Animals Owned Before Move		
	Range	Mean No.	SD	Range	Mean No.	SD
Oxen	0-7	0.34	2.03	0-6	0.89	1.55
Horses, burros	0-4	0.22	0.77	0-12	1.63	2.51
Cattle	0-12	1.40	2.73	0-16	1.23	3.21
Llamas, alpacas	-	-	-	0-25	0.71	4.23
Goats, sheep	0-1	0.02	0.17	0-230	22.27	41.02
Pigs	0-12	2.45	2.97	0-20	2.96	4.80
Rabbits, guinea pigs	-	-	-	0-100	5.61	18.20
Fowl	0-60	19.04	13.91	0-90	14.34	23.94

Note: "SD" refers to standard deviation.

Exhibit 7: Animals Owned by Women Interviewed in San Julián Area (n=39)

Type of Animal	Range	Mean No.	SD
Cattle	0-5	0.23	0.90
Sheep, goats	0-13	0.46	2.21
Pigs	0-10	2.23	2.45
Fowl	1-85	22.40	19.39

 Exhibit 8: Women's Skills in Handicrafts (n=39 women)

Skill	Number	Percentage
Knitting or crocheting	31	79.5%
Embroidery	30	76.9%
Textile weaving	5	12.8%
Palm weaving	2	5.1%
None	1	2.6%

Note: Percentages do not total 100% because categories are overlapping.

 Exhibit 9: Where Women Learned Handicraft Skills (n=39)

Where Learned	Number	Percentage
As a girl, at home	17	43.6%
Self-taught	13	33.3%
In school	3	7.7%
From extension worker	3	7.7%
In the Mothers' Club	2	5.1%
From the husband	<u>1</u>	<u>2.6%</u>
Total	39	100.0%

 Exhibit 10: Where Women Sell Their Handicrafts (n=39)

Where Sold	Number	Percentage
No sales	31	79.5%
In the same village	6	15.4%
Montero	2	5.1%
Santa Cruz	1	2.6%

Note: Percentages do not total 100% because categories are overlapping.

 Exhibit 11: Who Takes the Family's Agricultural Produce to Market (n=30)

Who Markets	Number	Percentage
Husband	17	56.7%
Couple	5	16.7%
Family	3	10.0%
Several colonists rent truck	2	6.7%
Husband and sons	1	3.3%
Wife	1	3.3%
Independent trucker comes to village to buy crop	1	3.3%
Total	30	100.0%

 Exhibit 12: Commercial Activities of Women in San Julián (n=39 villages)

Type of Business	Operated by Woman	Operated by Couple
Sales of soft drinks	1	-
Tailoring	1	-
Sale of fruit, vegetables	1	-
Merchant in San Ramón	1	-
Hairstylist	1	-
Rents billiard table	-	1
Grocery store	5	22
Kiosk of San Julián Multipurpose Cooperative	1	-
Sale of alcohol	1	-
General store	-	6
Clothing store	-	6
Restaurant (pensión)	-	2
Corn-beer stands	<u>2</u>	<u>-</u>
Total	14	37

Exhibit 13: Commercial Activities of Women in Spontaneous Settlements (n=11 villages)

Type of Business	Operated by Woman	Operated by Couple
Sale of soft drinks	1	-
Sale of fruit, vegetables	1	-
Grocery store	<u>2</u>	<u>11</u>
Total	4	11

Exhibit 14: Itinerant Peddlers in San Julián Area, by Sex (n=17)

Males		Females	
Number	Percentage	Number	Percentage
11	64.7%	6	35.3%

Exhibit 15: Malnutrition and Vitamin Deficiency Cases in Outpatients in the Province of Ñuflo de Chávez, Santa Cruz.

Age	1982		1983	
	Number	Percentage of Total Outpatient Cases	Number	Percentage of Total Outpatient Cases
Up to 1 year	1	0.95	-	-
1-4 years	1	0.53	-	-
5-14 years	-	-	1	1.40
15-44 years	1	0.30	1	0.48
45-64 years	-	-	-	-
65+ years	=	=	=	=
Total	3	0.36	2	0.43

Note: Ñuflo de Chávez is the province in which San Julián is located.

Source: Unidad Sanitaria Santa Cruz.

Exhibit 16: Hospitalizations for Malnutrition and Vitamin Deficiency in the Province of Ñuflo de Chávez, 1982

Age	Discharged	Deaths	Days of Hospitalization
Up to 1 year	3	-	
1-4 years	6	-	
5-14 years	4	1	
15-44 years	-	-	
45-64 years	-	-	
65+ years	-	-	
Total	13	1	200

Note: Ñuflo de Chávez is the province in which San Julián is located.

Source: Unidad Sanitaria Santa Cruz.

Exhibit 17: Malnutrition/Vitamin Deficiency as One of Ten Leading Causes of Deaths in Hospitals, 1979

Age	Bolivia	Rural Bolivia	Santa Cruz	Potosí
Up to 1 year	28	6	13	2
1-4 years	49	13	19	1
5-14 years	<u>5</u>	<u>2</u>	<u>1</u>	<u>1</u>
Subtotal	82 (68.9%)	21 (77.8%)	33 (84.6%)	4 (100.0%)
15-44 years	14	2	2	-
45-64 years	12	3	2	-
65+ years	6	1	2	-
Lacking data	<u>5</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total	119	27	39	4
Rank as cause of death	7th	5th	9th	10th

Source: Ministerio de Previsión Social y Salud Pública, División de Bioestadística, La Paz.

Exhibit 18: Leading Causes of Illness in Adults (Age 15 Years and Older), by Area (some categories combined for purposes of comparison)

Cause	Total Bolivia ^a	Rural Bolivia ^b	Santa Cruz ^b	Ñuño de Chávez ^c	San Julián ^d
Wounds, poisoning, and trauma	19,909	939	673	10	-
Bronchitis, asthma, respiratory infection	13,912	623	1,006	56	32
Influenzas	9,885	-	-	1	-
Gastrointestinal diseases, including diarrhea	9,608	1,577	1,277	27	161
Tuberculosis	9,527	801	-	11	-
Genitourinary diseases	9,501	-	646	13	-
Infections of eye, ear, nose, tissue	6,412	-	-	25	110
Pregnancy complications	-	1,176	2,771	1	-
Gallbladder problems	-	1,154	1,066	-	-
Miscarriages	-	994	1,495	-	-
Malaria	-	887	-	7	-
Appendicitis	-	-	794	-	-
Parasitic infection	-	-	-	9	52
Anemia, blood disorder	-	-	-	6	184
Various pains	-	-	-	-	210
Skin infections	-	-	-	-	68
Dental caries	-	-	-	-	63
Subtotal	78,754	8,151	9,728	166	880
Undiagnosed	15,344	631	759	2	-
Other causes	-	17,046	20,167	71	57
Total	94,098	25,828	30,654	239	937

^aFrom Ministerio de Previsión Social y Salud Pública, Informe Anual Estadístico de la Salud, La Paz, 1970. Lists 10 major illnesses.

^bFrom Ministerio de Previsión Social y Salud Pública, Diez Principales Grupos de Causas de Egresos Hospitalarios Según Grupos de Edades, La Paz, 1979. Data on persons treated at hospitals. "Other causes" includes normal childbirth.

^cFrom Unidad Sanitaria Santa Cruz, Oficina Regional de Estadística, outpatient records on causes of disease, by age groups, for province of Ñuño de Chávez (in which San Julián is located), 1983.

^dFIDES, Consolidación de Colonización, Informe Anual, 1982 (Santa Cruz, Bolivia: Fundación Integral de Desarrollo). Data collected in July 1982 by 11-member medical team from North Carolina that examined 1,329 settlers in San Julián.

Exhibit 19: Leading Causes of Illness in Children (Age Birth to 14 Years), by Area (some categories combined for purposes of comparison)

Cause	Total Bolivia ^a	Rural Bolivia ^b	Santa Cruz ^b	Ñuño de Chávez ^c	San Julián ^d
Bronchitis, asthma, respiratory infection	28,427	648	270	73	25
Gastrointestinal diseases, including diarrhea	24,739	1,398	2,004	34	73
Influenzas	11,502	-	-	8	-
Wounds, poisoning, trauma	7,911	117	122	3	-
Infections of eye, ear, nose, tissue	4,697	-	-	21	89
Tuberculosis	1,870	118	-	-	-
Genitourinary diseases	936	-	92	-	-
Malaria	-	236	-	1	-
Gallbladder disorder	-	20	15	-	-
Appendicitis	-	-	206	-	-
Parasite infection	-	-	-	44	296
Anemia, blood disorders	-	-	-	5	69
Skin infections	-	-	-	-	88
Dental caries	-	-	-	-	19
Subtotal	80,082	2,537	2,709	189	659
Undiagnosed	6,861	716	721	3	-
Other causes	-	3,636	3,908	27	14
Total	86,943	6,889	7,338	219	673

^aFrom Ministerio de Previsión Social y Salud Pública, Informe Anual Estadístico de la Salud, La Paz, 1970.

^bFrom Ministerio de Previsión Social y Salud Pública, Diez Principales Grupos de Causas de Egresos Hospitalarios Según Grupos de Edades, La Paz, 1979. Data on persons treated at hospitals. "Other causes" includes normal childbirth.

^cFrom Unidad Sanitaria Santa Cruz, Oficina Regional de Estadística, outpatient records on causes of disease, by age groups, for province of Ñuño de Chávez (in which San Julián is located), 1983.

^dFIDES, Consolidación de Colonización, Informe Anual, 1982 (Santa Cruz, Bolivia: Fundación Integral de Desarrollo). Data collected in July 1982 by 11-member medical team from North Carolina that examined 1,329 settlers in San Julián.

Exhibit 20: San Julián Women's Total Pregnancies, Number of Living Children, and Number of Children Who Have Died, by Area

Pregnancies

Total	San Julián (n=30)		Total	Spontaneous Settlements (n=20)	
	Mean No.	SD		Mean No.	SD
132	4.40	2.31	101	5.05	2.66

Living Children

Total	San Julián (n=30)		Total	Spontaneous Settlements (n=20)	
	Mean No.	SD		Mean No.	SD
98	3.27	1.85	69	3.45	1.88

Children Who Have Died

Total	San Julián (n=30)		Total	Spontaneous Settlements (n=20)	
	Mean No.	SD		Mean No.	SD
32	1.07	1.31	32	1.60	.79

Exhibit 21: Age at Death for Settlers' Children Who Died After the Move to San Julián Colonization Zone, by Area

San Julián (n=11)

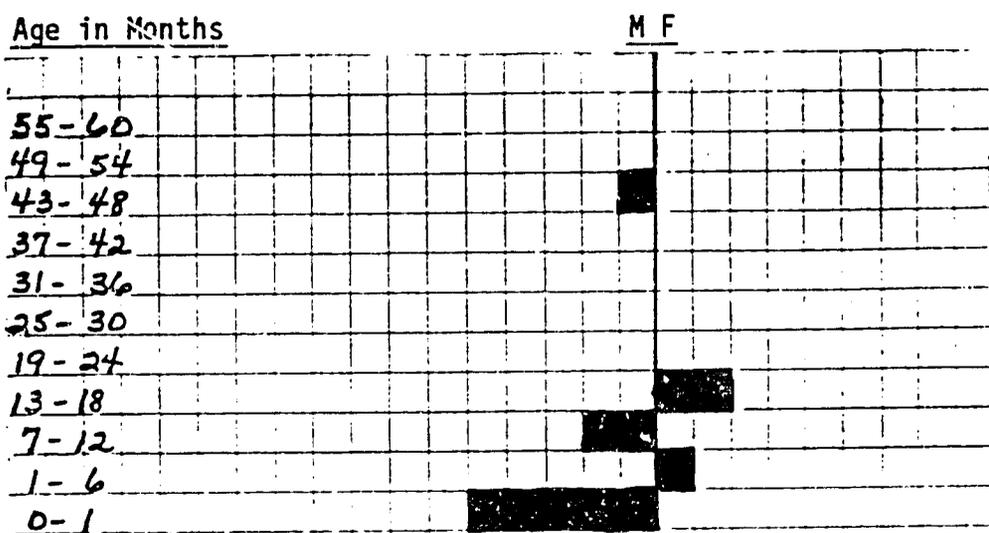
<u>Age in Months</u>	<u>Number</u>	<u>Percentage</u>
Less than 1	5	45.5%
1-6	1	9.1%
7-12	2	18.2%
13-18	<u>2</u>	<u>18.2%</u>
Subtotal	10	90.9%
19-24	-	-
25-30	-	-
31-36	-	-
37-42	-	-
43-48	1	9.1%
49-54	-	-
55-60	-	-

Spontaneous Settlements (n=11)

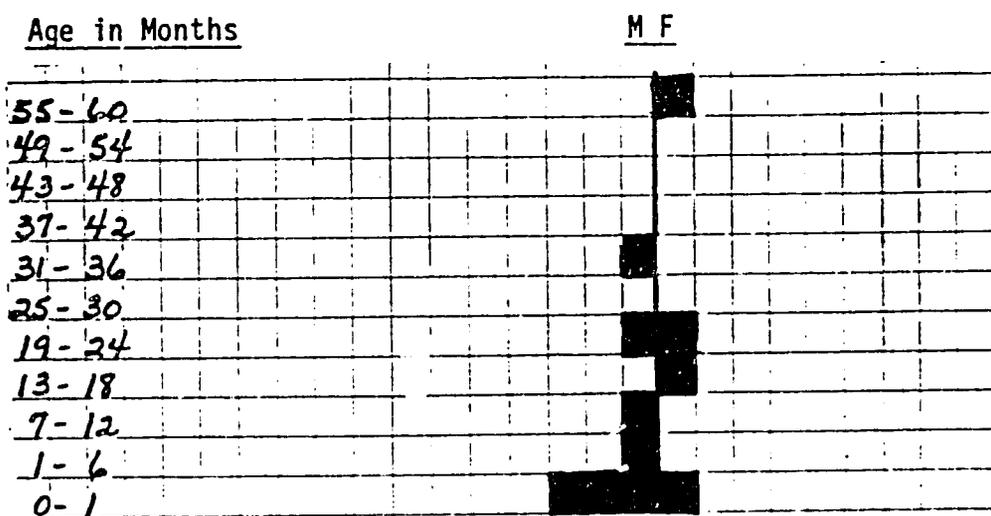
<u>Age in Months</u>	<u>Number</u>	<u>Percentage</u>
Less than 1	4	36.4%
1-6	1	9.1%
7-12	1	9.1%
13-18	<u>1</u>	<u>9.1%</u>
Subtotal	7	63.6%
19-24	2	18.2%
25-30	-	-
31-36	1	9.1%
37-42	-	-
43-48	-	-
49-54	-	-
55-60	1	9.1%

Exhibit 22: Sex/Age Comparisons for Settlers' Children Who Died After Mother Moved to San Julián Colonization Zone, by Area

San Julián (n=11)



Spontaneous Settlements (n=11)



Entire Colonization Zone (n=22)

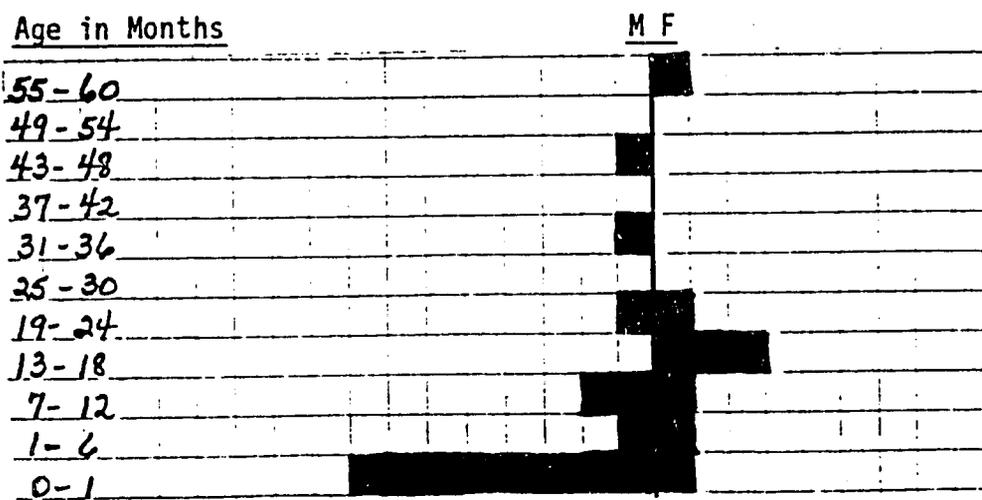


Exhibit 23: Child Population of Entire San Julián Colonization Zone, by Age and Sex

Age	Males	Females	Total	Sex Ratio	
				M	F
Up to 1 month	46	54	100		
1-6 months	88	85	173		
6 months to 1 year	<u>131</u>	<u>144</u>	<u>275</u>		
Subtotal	265	283	548	100:106.8 (not significant at .05)	
1-2 years	267	227	494		
3-4 years	274	279	553		
5-6 years	243	220	463		
7-9 years	262	252	514		
10-11 years	129	106	235		
12-14 years	<u>176</u>	<u>130</u>	<u>306</u>		
Subtotal	1,351	1,214	2,565	111.3:100 (significant at .01 level)	
Total	1,616	1,497	3,113	107.9:100 (significant at .05 level)	

Source: Instituto Nacional de Colonización, Departamento Médico, Proyecto San Julián, September 1982.

Exhibit 24: Child Population of San Julián Colonization Zone, by Age, Sex, and Area

Age	San Julián			Sex Ratio	
	Males	Females	Total	M	F
Up to 1 month	37	44	81		
1-6 months	71	74	145		
6 months to 1 year	<u>102</u>	<u>110</u>	<u>212</u>		
Subtotal	210	228	438	100:108.6 (not significant at .05)	
1-2 years	225	197	422		
3-4 years	219	221	440		
5-6 years	188	176	364		
7-9 years	201	203	404		
10-11 years	97	84	181		
12-14 years	<u>135</u>	<u>101</u>	<u>236</u>		
Subtotal	1,065	982	2,047	108.5:100 (not significant at .05)	
Total	1,275	1,210	2,485	105.4:100 (not significant at .05)	

Exhibit 24: Child Population of San Julián Colonization Zone, by Age, Sex, and Area (continued)

<u>Spontaneous Settlements</u>					
Age	Males	Females	Total	Sex Ratio	
				M	F
Up to 1 month	9	10	19		
1-6 months	17	11	28		
6 months to 1 year	<u>29</u>	<u>34</u>	<u>63</u>		
Subtotal	55	55	110	100:100 (no difference)	
1-2 years	42	30	72		
3-4 years	55	58	113		
5-6 years	55	44	99		
7-9 years	61	49	110		
10-11 years	32	22	54		
12-14 years	<u>41</u>	<u>29</u>	<u>70</u>		
Subtotal	286	232	518	123.3:100 (significant at .02 level)	
Total	341	287	628	118.8:100 (significant at .05 level)	

Source: Instituto Nacional de Colonización, Departamento Médico, Proyecto San Julián, September 1982.

Exhibit 25: Cause of Death for Children of Settlers in San Julián Colonization Zone

Cause	San Julián	Spontaneous Settlements
Diarrhea and vomiting	3	-
Intestinal parasites	-	3
Premature birth	2	-
Measles	2	-
Fever	1	1
Anemia	-	1
Stillborn (maternal anemia)	-	1
Cough	1	-
Jaundice	-	1
Constipation	1	-
Chicken pox	-	1
Infantile paralysis	<u>-</u>	<u>1</u>
Subtotal	10	9
Unknown cause	<u>1</u>	<u>2</u>
Total	11	11

Source: Interviews with mothers of deceased children, 1984.

Exhibit 26: Leading Causes of Deaths in Children (up to 14 Years) in Hospitals, by Area, 1979

Causes	Total Bolivia	Rural Bolivia	Santa Cruz	Chuquisaca	Cochabamba	Potosi
Enteritis	259	51	82	-	19	7
Pneumonia	187	49	60	3	12	10
Bacterial infections	136	14	62	5	26	2
Malnutrition and vitamin deficiency	82	21	33	-	8	4
Meningitis	70	21	43	-	-	-
Heart disease	40	9	23	3	6	1
Tuberculosis	27	4	9	2	2	-
Intracranial traumas (except skull fracture)	16	4	3	-	3	-
Miscellaneous diseases of the digestive tract	12	2	-	-	-	-
Tetanus	-	21	40	-	-	-
Other perinatal causes	-	-	-	7	-	4
Subtotal	829	196	355	20	76	28
Undiagnosed	86	42	33	2	1	5
Other causes	438	71	140	9	45	9
Total	1,353	309	528	31	122	42

Source: Ministerio de Prevision Social y Salud Publica, Division de Bioestadistica, La Paz, Diez principales Grupos de Causas de Mortalidad Institucional Segun Grupos de Edades, 1979.

Note: Several tables have been combined for comparison purposes, and the set is ranked by order of importance of each cause in Bolivia as a whole.

Exhibit 27: Leading Causes of Adult (15+ Years) Deaths in Hospitals, by Area, 1979

Causes	Total Bolivia	Rural Bolivia	Santa Cruz	Chuquisaca	Cochabamba	Potosi
Heart disease	214	55	53	4	34	15
Tuberculosis	213	37	51	16	27	8
Intracranial trauma (except skull fracture)	115	22	38	-	20	-
Miscellaneous diseases of digestive tract	86	24	-	-	20	-
Liver cirrhosis	85	-	-	-	21	-
Pneumonia	58	10	8	1	20	-
Enteritis	37	10	15	-	13	-
Malnutrition and vitamin deficiency	32	6	6	-	12	-
Bacterial infection	31	6	5	-	8	1
Meningitis	26	5	7	-	-	-
Intestinal obstruction	-	-	-	5	22	8
Tetanus	-	4	5	-	-	-
External causes	-	-	22	-	-	-
Subtotal	897	179	210	26	197	32
Undiagnosed	89	11	36	-	25	3
Other causes	861	134	190	28	127	34
Total	1,847	324	436	54	349	69

Source: Ministerio de Prevision Social y Salud Publica, Division of Bioestadistica, La Paz, Diez Principales Grupos de Causas de Mortalidad Institucional Segun Grupos de Edades, 1979.

Note: Several tables have been combined for comparison purposes, and the set is ranked by order of importance of each cause in Bolivia as a whole.

Exhibit 28: Women Who Report Knowledge of at Least One Medicinal Plant, by Area

<u>San Julián (n=25)</u>		<u>Spontaneous Settlements (n=14)</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
17	68.0%	12	85.7%

 Exhibit 29: Women's Participation in Extension Courses, by Area

<u>San Julián (n=25)</u>		<u>Spontaneous Settlements (n=14)</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
16	64.0%	7	50.0%

 Exhibit 30: Women's Membership in Voluntary Organizations, by Area

<u>San Julián (n=25)</u>		<u>Spontaneous Settlements (n=14)</u>	
<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
24	96.0%	8	57.1%

APPENDIX B: RESEARCH DESIGN EMPLOYED

This report follows two others on evaluation of settlement at San Julián. The first (Pérez Crespo and Llanos Albornoz 1984) summarizes the evaluation team's findings immediately following field research and before systematic data analysis. The second report (Painter et al. 1984) presents fuller analysis of the data in accordance with the research design. This report focuses on the condition of women in the San Julián colonization zone.

The research team consisted of five people, three from the United States and two from Bolivia. The one who worked most closely with me in interviewing female settlers had worked for more than a year as a FIDES extension agent in San Julián. Thus she has many ties to the settler households and knows the history of the colonization zone's settlement by highland peoples. She is also fluent in Quechua. All team members speak Spanish.

The research was conducted in an eight-week period from late June to late August 1984. Six weeks were spent in the colonization zone, and the other two weeks in the cities of Santa Cruz and La Paz talking with representatives of agencies that have worked in San Julián and collecting some comparative data on health.

Several techniques were used to assemble the data reported here. First, the research team reviewed the archives of the Instituto Nacional de Colonización (National Colonization Institute, or INC). All settlers in the zone must register with the INC, and the archives preserve the history of each land parcel since the early 1970s. INC budget cuts left the agency without adequate staff to maintain the archive properly after about 1980, but the earlier records are complete and give a comprehensive history of settlement in the zone until 1980.

Second, an urbanization inventory was made in 39 núcleos of the San

Julián project and in 11 nearby spontaneous settlements. The inventories chart geographic distribution of nonagricultural economic activities and social services and measure their growth over time.

Third, a series of formal and informal interviews was carried out with settlers and people knowledgeable about the colonization zone. The interview schedule developed in the Institute for Development Anthropology's global evaluation of new-lands settlement (Scudder 1981) was used (with minor modifications) to collect information on economic activities and the experiences of families in colonization. Mostly males were interviewed using this long instrument (referred to in this report as "family interviews"); the few female respondents found some of the questions difficult. A separate interview schedule was therefore designed specifically for women to obtain information on their economic activities, reproductive histories, family health problems, and participation in voluntary associations and training courses. A third questionnaire was administered to a sample of women who operate small stores or other businesses.

Finally, once the field research was concluded, health data on provincial, departmental, and national levels were sought from various agencies in Santa Cruz and La Paz. This information proved to be the most difficult to obtain, for several reasons. Because of economic constraints, vital statistics are hand-tabulated rather than computerized, resulting in delays in availability. A series of strikes among public employees during August 1984 closed many of the offices where records are kept and curtailed the service hours of others. Few systematic health data on San Julián and other colonization zones in Bolivia have been collected to date. In spite of these limitations, representatives of the agencies contacted were very generous with their time and resources in helping me find whatever information was available.

The tests used to determine statistical significance follow procedures described in Siegel (1956). The confidence level for all tests was set at .05, such that differences in observed data would not be reported as significant if their probability of occurrence due to chance were greater than 5%; however, if a more significant level (e.g., .02) was found, it is reported instead of the .05 level.

APPENDIX C: SURVEY INSTRUMENTS

SAN JULIAN, SANTA CRUZ, BOLIVIA

ENCUESTA DE NEGOCIANTES

Nombre del (de la) encuestador(a) _____

Fecha _____ Día de la semana _____

1) Nombre de la persona entrevistada _____

2) Lugar de nacimiento: Lugar _____ Provincia _____ Dpto. _____

3) Edad _____ 4) Sexo _____ 5) Religión _____

6) Lengua materna: Castellano _____ Quechua _____ Aymara _____

Otro _____ (¿Que?) Bilingüe _____ Monolingüe _____

2do. idioma _____

7) ¿Tiene Ud. esposo(a)? Sí _____ No _____
(Si dice que sí) ¿Qué ocupación tiene? _____

8) ¿Cuántos hijos tiene Ud.? _____

Nombre	Edad	Sexo	Años de escuela	Ocupación	Residencia
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

9) ¿Cuándo se unió con su esposo(a)? _____

10) ¿Su esposo(a) ha muerto o viven aparte? _____

11) ¿Actualmente dónde vive Ud? _____

¿Hace cuánto que vive ahí? _____

¿Dónde vivía antes? _____

- 12) ¿Dónde tiene Ud. casas? _____
- 13) ¿Dónde tiene Ud. terrenos? _____
¿Cuántas hectáreas tiene? _____
- 14) ¿Tiene Ud. terrenos en la colonización de San Julián? Sí ___ No ___
(Si dice que sí) ¿En qué núcleo? _____
¿Cuántas hectáreas? _____
- 15) ¿Su esposo(a) tiene terrenos? Sí ___ No ___
(Si dice que sí) ¿Dónde los tiene? _____
¿Cuántas hectáreas? _____
- 16) ¿Su esposo(a) tiene terrenos en San Julián? Sí ___ No ___
(Si dice que sí) ¿En qué núcleo? _____
¿Cuántas hectáreas? _____
- 17) ¿Qué productos vende Ud.? _____
- 18) ¿Por qué vende estos productos? _____

- 19) ¿Anteriormente vendía otros productos? Sí ___ No ___
(Si dice que sí) ¿Qué productos vendía antes? _____

¿Por qué no los vende ahora? _____

- 20) ¿Dónde consigue Ud. los productos que vende? _____
(si los compra y no es autoproducción)
¿Con qué frecuencia? _____
¿Cuánto le cuesta la compra de sus productos? _____

21) ¿Generalmente a qué mercados va Ud. a vender?

Lugar	Día de la semana
a) _____	_____
b) _____	_____
c) _____	_____
d) _____	_____
e) _____	_____

22) ¿Va Ud. a éstos todo el año o según la época? _____

23) ¿Ud. también se dedica a labores agrícolas? Sí___ No___

(Si dice que sí) En épocas cuando hay mucho trabajo--en la cosecha, por ejemplo-- ¿puede Ud. seguir yendo a los mercados o tiene que dedicarse a la agricultura? _____

(Si dice que sigue yendo a los mercados) ¿Ud. y su esposo(a) emplean a peones para trabajar en la agricultura? Sí___ No___

(Si dice que sí) ¿Cuántos? _____

Número de permanentes/efectivos _____

Número de eventuales/concertados _____

24) (Referente al 1º mercado mencionado en el 21 anteriormente)

a) ¿Cuánto cuesta el viaje? _____

b) ¿Cuánto se puede ganar en un día? _____

25) (Referente al 2do mercado mencionado en el 21 anteriormente)

a) ¿Cuánto cuesta el viaje? _____

b) ¿Cuánto se puede ganar en un día? _____

26) (Referente al 3r mercado mencionado en el 21 anteriormente)

a) ¿Cuánto cuesta el viaje? _____

b) ¿Cuánto se puede ganar en un día? _____

27) (Referente al 4to. mercado mencionado en el 21 anteriormente)

a) ¿Cuánto cuesta el viaje? _____

b) ¿Cuánto se puede ganar en un día? _____

28) (Referente al 5to mercado mencionado en el 21 anteriormente)

a) ¿Cuánto cuesta el viaje? _____

b) ¿Cuánto se puede ganar en un día? _____

29) ¿Por semana cuánto gasta Ud. por comida en los mercados? _____

30) ¿Qué otros gastos tiene Ud. que pagar en su negocio? _____

31) ¿ Afuera de vender en los mercados, tiene Ud. algún otro negocio?

Sí___ No___

(Si dice que sí) ¿Qué es? _____

¿Cuándo trabaja Ud. en este negocio? _____

¿Gana Ud. más en los mercados o en el otro negocio?

¿Más o menos cuánto gana en el otro negocio?

¿Qué gastos tiene en el otro negocio? _____

32) ¿ Su esposo(a) tiene algún negocio? Sí___ No___

(Si dice que sí) ¿Qué es? _____

¿Más o menos cuánto gana? _____

¿Qué gastos tiene? _____

33) ¿ El dinero que ganan Ud. y su esposo(a) se pone en un fondo común o se mantiene aparte? _____

34) ¿ Cuándo empezó a dedicarse al comercio? _____

35) ¿ Qué hacía antes? _____

36) ¿ Cómo es la vida para los negociantes? ¿ Se puede vivir bien o es difícil? _____

37) ¿ Desea Ud. que sus niñas sigan esta carrera de negociante? ¿ Aquí o en otro lugar? _____

Núcleo No. _____

Nombre _____

ENCUESTA PARA MUJERES

- 1) Nombre de la persona entrevistada _____ Fecha _____
- 2) Lugar de nacimiento _____ ¿Cuándo vino aquí? _____
- 3) Edad _____ 4) Religión _____
- 5) Lengua materna _____ 6) Segundo idioma _____
- 7) ¿Qué ocupación tiene su esposo? _____
- 8) ¿Tuvo usted misma tierras donde vivía antes de venir a San Julián?

- 9) ¿Todavía las tiene? _____
- 10) ¿Por qué no? _____
- 11) ¿Cuántas veces ha sido usted embarazada? _____
- 12) ¿Cuántos niños nacieron que ya viven? _____
- 13)

<u>Nombre del muerto</u>	<u>Edad a la muerte</u>	<u>Fecha de muerte</u>	<u>Causa de la muerte</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- 14) ¿Cuáles años de la niñez son más peligrosos (en que más guaguas mueren)?

- 15) ¿De cuáles enfermedades han sufrido usted y la familia desde llegar aquí?

- 16) ¿Sus hijos han sido vacunados? _____
- 17) ¿Por qué no? _____

18) ¿Cuántas veces al año viene un médico o una enfermera para vacunar?

19) Cuando alguien de la familia se enferma, ¿se usan plantas medicinales del monte? _____

20) ¿Se lleva a la persona a la posta médica? _____

21) ¿En cuál núcleo? _____

22) ¿Se lleva a la persona a un doctor particular? _____

23) ¿Adónde? _____

24) ¿Es usted socia de un club de madres? _____

25) ¿Dónde está ubicado? _____

26) ¿Es usted socia de otra cooperativa, directiva, o sociedad religiosa?

27) ¿Por qué no? _____

28) Nombre del grupo Localidad No. de socios ¿Es sólo para mujeres?

29) ¿Tiene usted un cargo? _____

30) ¿Cuál? _____

31) ¿Ha venido una extencionista a su núcleo a dar cursillos en salud, mejoramiento del hogar, cocina, etc.? _____

32) ¿Ha participado usted en tales cursillos aquí o en otros lugares?

33) ¿Dónde? _____

34) ¿Le gustaría que ellos continúan? _____

35) ¿Usted cría animales? _____

36) Tipo de animal Número ¿ Se venden? ¿ Dónde se venden?

37. ¿ Sabe usted telar, hacer canastos, bordar, o hacer otros trabajos manuales?

38) ¿ Dónde lo aprendió? _____

39) ¿ Vende sus propios trabajos manuales? _____

40) ¿ Dónde? _____

41) ¿ Cada cuándo se va usted a Montero a comprar? _____

42) ¿ Cada cuándo se va a San Ramón a comprar? _____

43) ¿ Tiene usted una tienda o un negocio? _____

¿ De dónde gana plata la familia? (Pon "H" o "M" según si es hombre o mujer que tiene el negocio)

Venta de cosecha _____ Venta de comidas _____

Venta de animales _____ Venta de pan casero _____

Venta de leche o huevos _____ Mesa de billar _____

Trabajo de peón _____ Venta de chompas, bolsas, etc. _____

Tienda _____ Taller de bicicletas, motosierras, etc. _____

Otra actividad económica _____ ¿ Qué? _____

¿ Quién guarda la plata de la familia? _____

COMERCIANTES AMBULANTES

Nombre	¿ De dónde viene?	¿ Cada cuándo viene?	¿ Da consejos?		¿ En qué viene?
			Sí	No ¿Qué clase?	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

¿Qué otras cosas vende?	¿Tiene parientes en San Julián?	¿Compra o cambia cosas para llevarse?	¿Qué compra o cambia?
-------------------------	---------------------------------	---------------------------------------	-----------------------

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

¿Qué otras cosas vende?	¿Tiene parientes en San Julián?	¿Compra o cambia cosas para llevarse?	¿Qué compra o cambia?
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1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

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