

Health and demography of a native Amazonian population, 1964-2009

Warren M. Hern, M.D., M.P.H., Ph.D.  
Professor Adjunct, Department of Anthropology  
University of Colorado at Boulder

Presented at the XXVI IUSSP International Population Conference  
Palais des Congrès Marrakech, Morocco  
September 29, 2009 8:30-10:00 AM Karam 4 Ouzoud Area

Symposium: The demography of indigenous populations / La démographie  
des populations indigènes

Address correspondence to:  
Warren M. Hern, M.D., M.P.H., Ph.D.  
1130 Alpine Boulder, Colorado 80304  
303 447-1361 warren.hern@colorado.edu

### **ABSTRACT**

A study of the health effects of cultural change among the Shipibo of the Peruvian Amazon begun in 1964 and 1969 observed the highest fertility of any human group in the principal study village. The Total Fertility Rate and Gross Reproduction Rate was 9.935 and 4.933, respectively, with an intrinsic Rate of Natural Increase of 4.89% per year. A subsequent study of family patterns in 1983-84 showed that a cultural change resulting in a declining prevalence of polygyny and number of polygynous birth intervals had a strong effect on increasing individual and community fertility, with rapid population growth leading to an increased rate of cultural change. A positive feedback loop had been established with cultural change leading to higher rates of fertility and population growth and rapid growth contributing to urbanization and more rapid cultural change. Continuing demographic research indicates declining fertility rates, declining health, and emigration to urban centers.

The Shipibo Indians of the upper Peruvian Amazon have been in contact with Western culture for nearly 300 years, but they have successfully retained their cultural identity. During the past fifty years, there has been increasing pressure on the Shipibo from immigrant populations from other parts of Peru, growth of these populations in neighboring communities, and economic exploitation of their customary ecosystem, the Ucayali River and its tributaries. A study of the health effects of cultural change among the Shipibo begun in 1964 found in 1969 that the Shipibo of a principal village had the highest recorded fertility of any human group over the previous five-year period (Hern, 1977). The observed Total Fertility Rate was 9.935 and the Gross Reproduction Rate was 4.933. The intrinsic Rate of Natural Increase was 4.89 per cent per year with a population doubling time of just over 14 years. Under the circumstances that population growth rates of native Amazonian populations had been estimated at 0.1% per year during the previous 10,000 years, it appeared that some important factor had changed Shipibo fertility patterns in recent times. Several five-year censuses were done of the same village which confirmed the previous observation of high fertility and rapid population growth.

Ethnographic observations indicated that cultural changes concerning family structure could be contributing to this change. In particular, the Shipibo custom of sororal polygyny had been discouraged by missionaries beginning several decades before the current observations. The custom of sororal polygyny was linked strongly with the use of herbal contraceptives and postpartum sexual abstinence (Hern, 1976).

A hypothesis was posed, based on ethnographic and demographic literature, that polygyny associated with postpartum sexual abstinence dampened fertility by prolonging birth intervals for individual women, and

that a disruption of this pattern could contribute to higher individual and community fertility. In research conducted in 1983 and 1984, eight Shipibo villages in different states of cultural transition were studied to compare individual and community fertility rates and the prevalence of polygynous birth intervals in different communities. The communities were located on the Ucayali and Pisqui Rivers north of Pucallpa, Peru (Fig. 1).

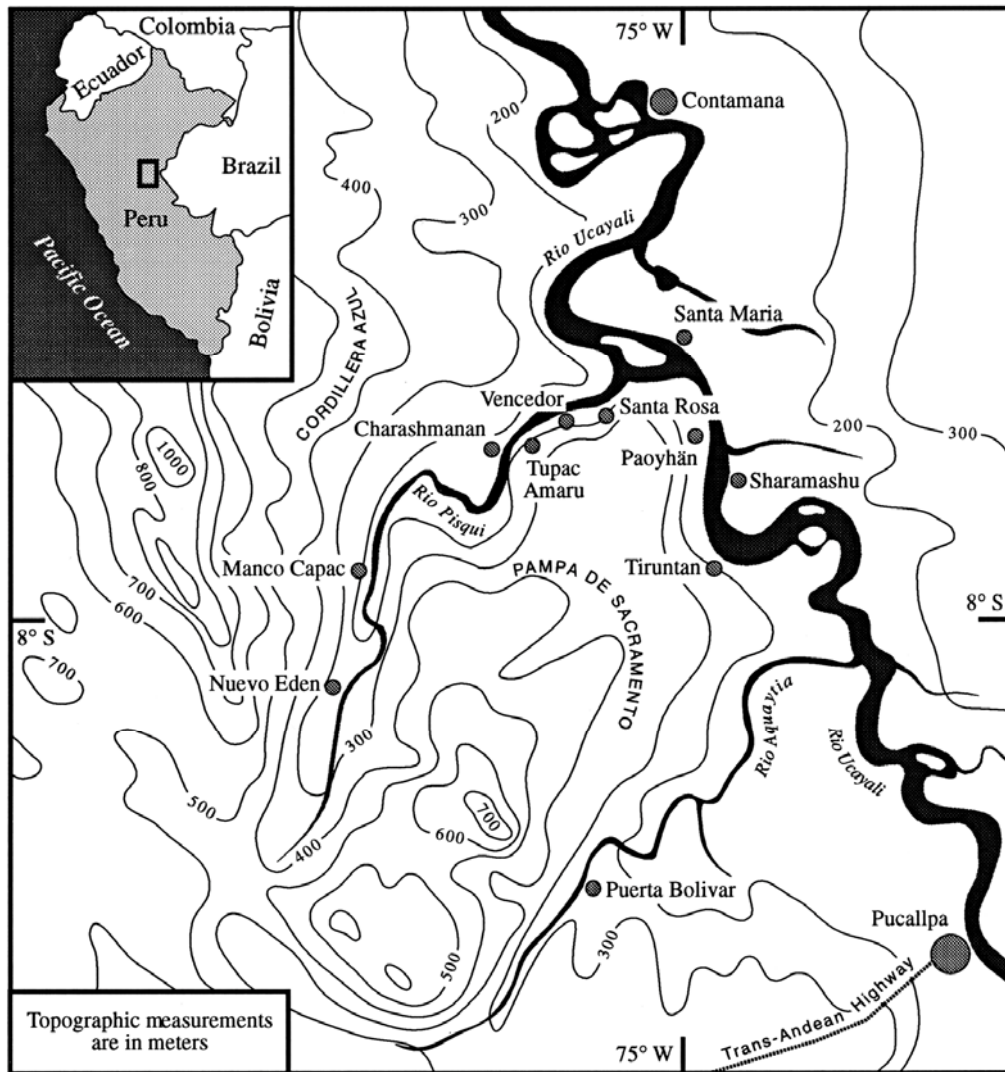


Figure 1. Research area in upper Peruvian Amazon

Basic demographic data indicated that more than 50% of the population was under the age of 15 (Fig. 2).

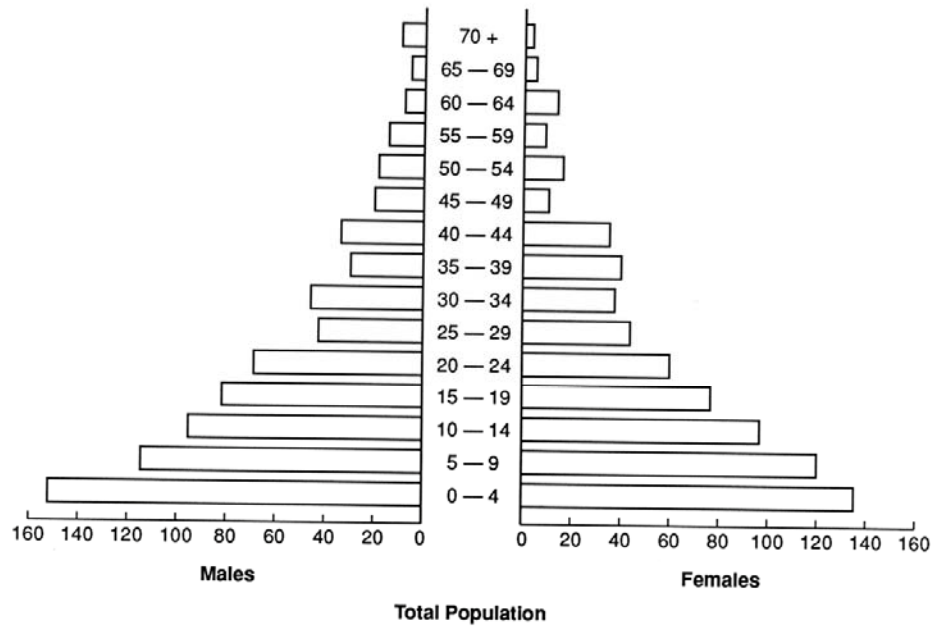


Figure 2. Total Population

Analysis of the data collected by survey of 100% of the households and reproductive histories of all females age 12+ revealed that community fertility was inversely related to the prevalence of polygynous birth intervals (Hern, 1992a; 1992b; Fig. 3). The complex dynamics of this positive feedback loop of rapid cultural change, disruption of traditional controls on fertility, rapid population growth leading to more rapid cultural change are shown in Figure 4 (Hern, 1992c; 1993; 1994).

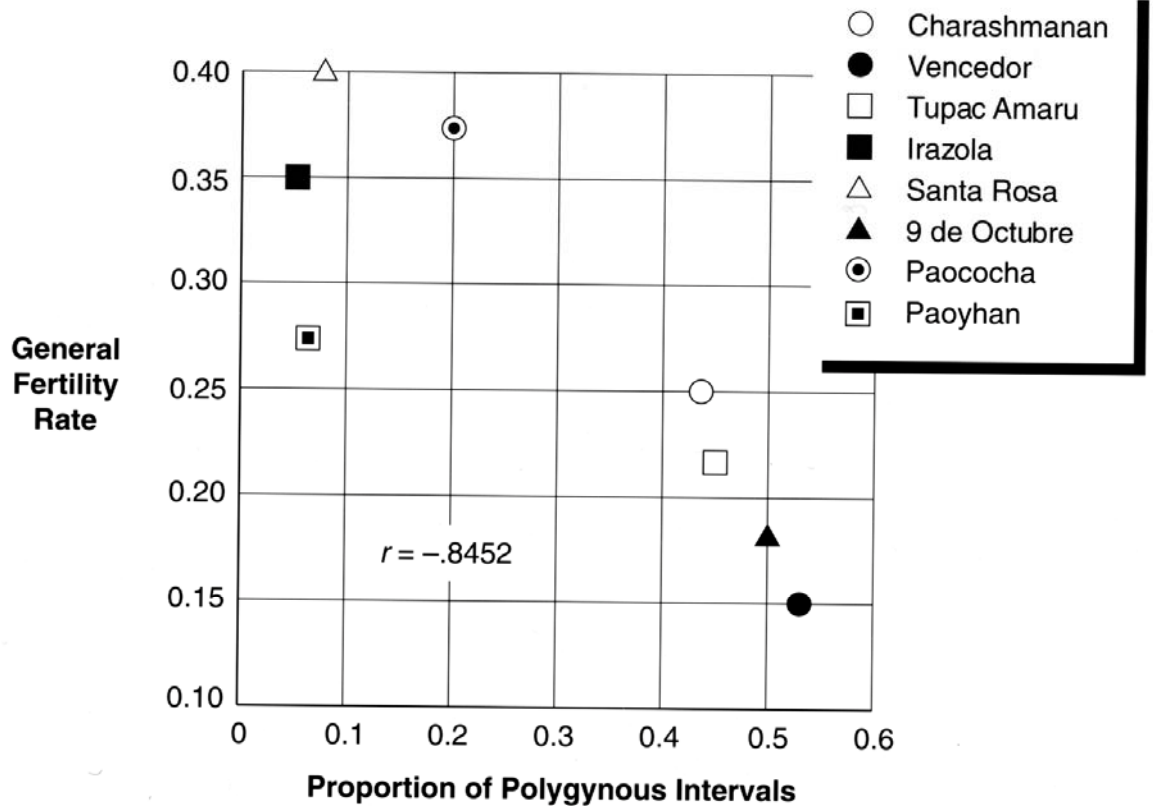


Fig. 3. Relationship between General Fertility Rate and proportion of polygynous birth intervals, by community

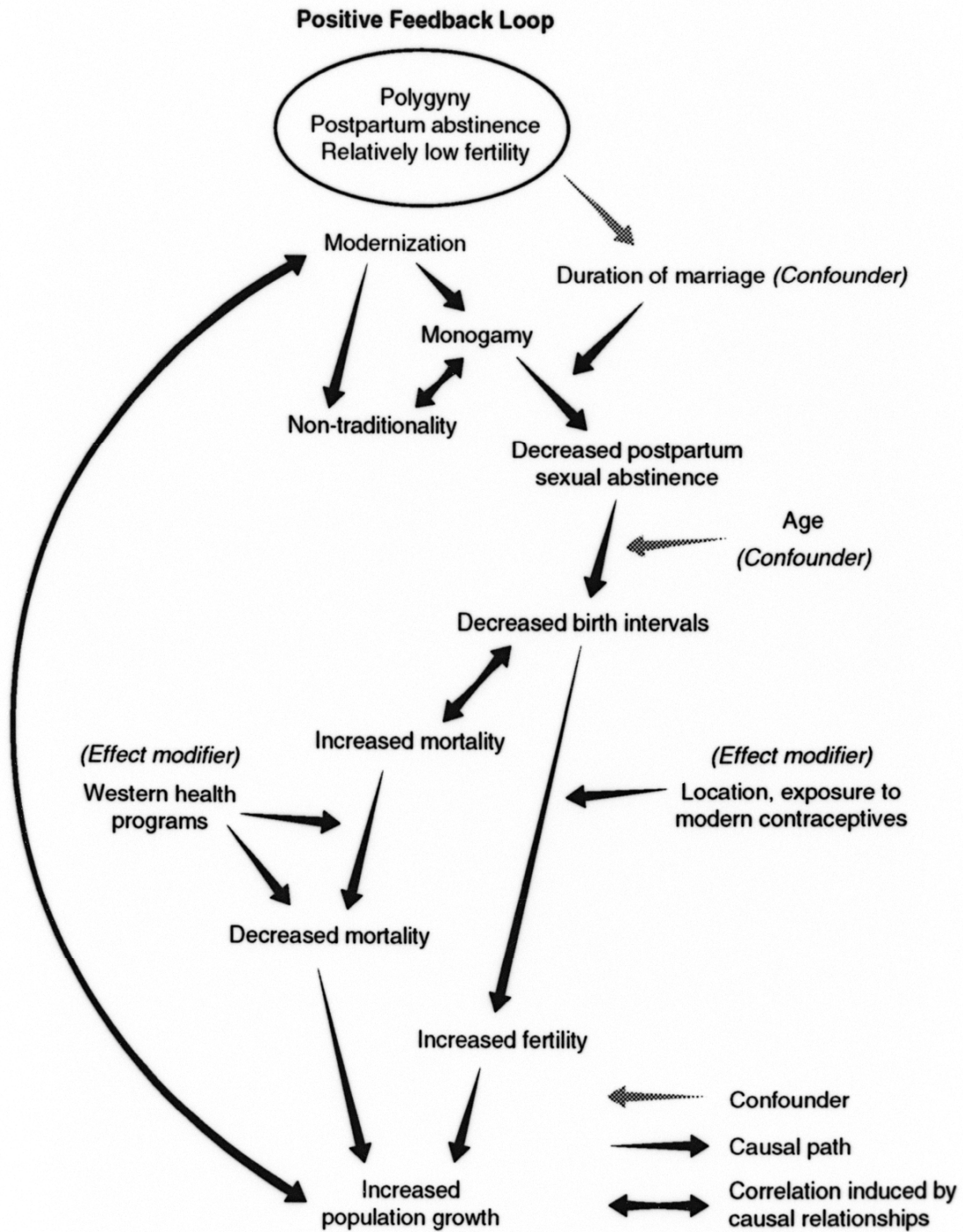


Figure 4. Positive feedback loop.

Devoted as the Shipibo are to their children (Fig. 5), they are increasingly conscious that their traditional way of life is threatened and disappearing as the result of the changes that they have seen happening over the past several decades. They cannot expand their school quickly enough to accommodate the growing numbers of children. They don't know everyone in the community, which was previously a small village of several extended families. Young people leave for Pucallpa to find work. Most ominously, the ecosystem which has sustained them for hundreds if not thousands of years is changing. The dry season is dryer, and the wet season brings greater and more prolonged floods that kill their cultivated crops and makes finding food – particularly fish – much more difficult (Fig. 6). Whereas men would return at mid-morning from a fishing trip in the old days with a canoe full of fish, enough to feed several extended families, they now return with a small basin of fish which is just enough to feed one nuclear family. People complain of hunger, which was unknown before, and more children seem to die in the dry season when water is stagnant.

Some of these changes are the result of deforestation and urbanization upstream in the town of Pucallpa and other increasingly large settlements. Deforestation results during the dry season in higher ambient temperatures, higher soil temperatures, drying of the forest, forest fires raging out of control following traditional slash-and-burn cultivation strategies, rapid runoff when there are rains that occur less frequently than before, and a more pronounced hydrograph of the Ucayali River. The lows are lower during the dry season, and the floods are higher and more prolonged in the rainy season. A more recent threat is the decision by the Peruvian



government to sell native community lands to international oil companies for petroleum extraction, which leads to rapid deforestation, water pollution, and depleted stocks of fish in the river and game animals in the forest. This is accompanied by an elimination of access to forest resources that have provided the basis for indigenous subsistence economies.



Figure 5. A Shipibo mother with her infant





Figure 6. Shipibo family surviving season flooding of Ucayali River

## CONCLUSION

Research conducted in recent years in the previously studied villages, including the principal village in which it was begun in 1964, indicates that fertility rates are falling, but the population base is much larger and resources are increasingly scarce. Increasing numbers of young people are emigrating to Pucallpa and other parts of Peru, and the integrity of the community as well as the sense of community seems threatened. The old people who speak only Shipibo, who know the tribal traditions, crafts, and resources of the jungle, are dying. It is bewildering to those who remain.

**REFERENCES**

- 1976 Hern, W.M. Knowledge and use of herbal contraceptives in a Peruvian Amazon village. *Human Organization* **35**:9-19.
- 1977 Hern, W.M. High fertility in a Peruvian Amazon Indian village. *Human Ecology* **5**:355-368.
- 1992a Hern, W.M. Polygyny and fertility among the Shipibo of the Peruvian Amazon. *Population Studies* **46**:53-64.
- 1992b Hern, W.M. Shipibo polygyny and patrilocality. *American Ethnologist* **19**(3):501-522.
- 1992c Hern, W.M. The impact of cultural change and population growth on the Shipibo of the Peruvian Amazon. *Latin American Anthropology Review* **4**(1):3-8, 1992. (published in 1994)
- 1993 Hern, W.M. Family planning, Amazon style. *Natural History*, December.
- 1994 Hern, W.M. Cultural change, polygyny, and fertility among the Shipibo of the Peruvian Amazon. In *The Demography of Small-Scale Societies: Case Studies from Lowland South America*, Kathleen Adams and David Price, eds. South American Indian Studies No.4.