

## MEMORANDUM

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
PUBLIC HEALTH SERVICE  
CENTER FOR DISEASE CONTROL  
ATLANTA, GEORGIA 30333

TO : William H. Foege, M.D.  
Director, Center for Disease Control (CDC)  
Through: Philip S. Brachman, M.D.  
Director, Bureau of Epidemiology (BE) *PAB*

DATE: May 14, 1980

FROM : Mark W. Oberle, M.D., M.P.H.  
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SUBJECT: Update of Foreign Trip Report (AID/RSSA): Ministry of Health Colombia,  
October 28-November 1, 1979

## SUMMARY

- I. UPDATE OF STERILIZATION DATA
- II. HIGHLIGHTS OF THE 1978 COLOMBIAN CONTRACEPTIVE PREVALENCE SURVEY
  - A. Demographic Estimates
  - B. Prevalence of Contraceptive Use
  - C. Abortion
  - D. Unmet Need for Family Planning Services

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## SUMMARY

An analysis of data from Colombia's 1978 Contraceptive Prevalence Survey indicates that approximately 280,000 women of childbearing age or their spouses had been sterilized by 1978. Approximately 37,000-45,000 births would have occurred to these women, if they had not been sterilized and had experienced the marital or age-specific fertility rates of the general population. This implies a decrease of 5%-6% in the crude birth rate for 1978.

Colombia's recent decrease in fertility has been dramatic both in urban and rural areas. Between 1965 and 1978, the total fertility rate (TFR) in rural Colombia dropped from 7.7 to 5.4, a decrease of 30%. In urban areas the TFR dropped from 4.7 to 3.1, a decrease of 34% in the same period. The prevalence of use of contraception has increased from 31% of women age 15-49 currently in union in 1968 to 46% in 1978. However, the unmet need for contraceptive services continues to be large. In 1978 approximately 1,075,000 women desired no more children but were not using contraception. Compounding this need is the fact that the number of women of childbearing age will increase by 17% over the next 5 years. The unmet need for family planning services in Colombia may continue to be substantial unless program efforts improve availability of contraceptive services.

I. UPDATE OF STERILIZATION DATA

After a visit to Bogotá, Colombia in October 1979 to review the Ministry of Health's surgical contraception program, I attempted to evaluate the impact of sterilization on Colombia's population growth (see CDC Trip Report on Colombia, dated December 12, 1979). To estimate an upper and lower limit, it was assumed that sterilized women would have experienced the marital or age-specific fertility rates, respectively, of the general population. The number of births that would have occurred without sterilization was estimated at 42,000 to 65,000 births.

However, after the trip report was issued, data from the 1978 Colombia National Contraceptive Prevalence Survey (1978 CPS) became available. This survey offers more recent estimates of fertility, including age-specific data. Using these data, an estimated 37,000 to 45,000 births would have occurred in 1978 to sterilized couples if they had not been sterilized and had experienced the marital or age-specific fertility rates of the general population (Table 1). This estimate corresponds to a decrease of 5%-6% in the crude birth rate (1.4 to 1.7 births per 1,000 population).

If the maternal mortality ratio is assumed to be 200/100,000 live births in Colombia, between 74 and 90 maternal deaths would have been averted by sterilization programs in 1978. However, as stated in the previous trip report, caution must be used in interpreting these estimates. Colombian sterilization acceptors probably marry at younger ages than the general population (1,2) and have more surviving children than the general population (3). More sophisticated methodologies would probably arrive at a lower estimate (4,5). We will attempt to refine these observations by obtaining unpublished data on age- and parity-specific fertility for sterilization acceptors as well as the general population.

Demand for sterilization services will apparently remain high. According to the 1978 CPS, 15.5% of women of childbearing age (WCA) would choose sterilization as a method of contraception (Table 2). This translates into 1 million potential sterilization acceptors. In 1978 an estimated 280,000 WCA were protected by sterilization. Thus, at most, about one-quarter of potential demand has been met. Demand may be even greater if the proportion of women not wanting any more children is considered. When respondents were asked whether they would like to become pregnant and have another child sometime, 76% of exposed\* women said that they would not (6). This proportion represents 2.4 million women. Not all of these women would prefer a permanent method, but the potential demand exists.

\*Exposed women were defined as those living in union during the year prior to the survey, excluding those currently pregnant.

## II. HIGHLIGHTS OF THE 1978 COLOMBIAN CONTRACEPTIVE PREVALENCE SURVEY

### A. Demographic Estimates

The age structure of Colombia reflects the recent decline in that country's fertility (Figure 1). Although the population pyramid has a broad base, the 3 youngest age groups are proportionately smaller in Colombia than in the more typical population pyramid of a developing country with constant high fertility, e.g., Honduras (Figure 2). In Colombia the number of persons entering reproductive age will continue to increase for some years to come. During the 7 years between 1973 and 1980, the number of women age 15-49 increased by 26% (Table 3). During the next 5 years the population of reproductive age women will increase by 17%.

Some recent demographic estimates from Colombia are presented in Table 4. The crude rate of natural increase, which had been over 3.0% in the 1960's, is now estimated at 2.2%. However, the growth rate is 2.0%. The difference is due to a net international emigration of approximately 63,000 people per year, chiefly to Venezuela and the U.S.A.

The 1978 CPS estimated a total fertility rate (TFR) of 3.8 and a crude birth rate of 29. Colombia's fertility is lower than that of many Latin American countries. Recent contraceptive prevalence surveys in Guatemala, El Salvador, and Paraguay measured crude birth rates in excess of 40 per 1,000 (Table 5).

Three recent surveys in Colombia have documented a consistent decrease in all fertility rates with declines of from 28% to 37% over a 10-year period (Table 6). The recent decrease in fertility has been just as impressive in rural as in urban areas (Table 7). Between 1965 and 1978 the TFR in rural areas dropped from 7.7 to 5.4, a decrease of 30%. In urban areas the TFR dropped from 4.7 to 3.1, a decrease of 34%. Over a 10-year period a clear decrease in fertility has occurred in all age groups, except possibly the 45-49-year age group (Figure 3, Tables 8 and 9).

In addition to fertility, many social factors have changed in Colombia in the last few decades. First, Colombia has become more urbanized. In 1951 60.4% of the population lived in rural areas and 39.6% in urban areas (Table 10). By 1973 this distribution has reversed, and 63.1% of Colombians lived in urban areas. Literacy among women has increased from 56.1% of women 7 years of age and older in 1951 to 77.5% in 1973. Literacy rates are vitually identical for both sexes. Approximately 22% of the adult female population was employed in the work force in 1973. Although this proportion has probably risen, the government's definition of employment changed for the 1973 census, so previous employment data are not comparable. Fifty-four percent of women of childbearing age (WCA) are currently living in union; the legal age at marriage (18 years) and the median age at marriage (22-23 years) for females have remained unchanged (Figure 4, Table 11).

B. Prevalence of Contraceptive Use

Contraceptive practice in Colombia has increased from 31% of women age 15-49 currently in union in 1968 to 46% in 1978 (Table 12). The increase has been confined to the more effective modern methods. Use of traditional methods such as withdrawal and rhythm have decreased from 16% of women in union in 1968 to 9% in 1978. Use of oral contraceptives, IUD's, and injection and vaginal methods has at least doubled in this time period. Prevalence of sterilization increased from 2% in 1968 to nearly 8% in 1978.

The mix of methods was comparable in rural and urban areas (Table 13). Approximately 80% of current users in both urban and rural areas used an effective modern method of contraception.

The source of contraception is depicted in Table 14. Drugstores provided contraceptives to the greatest proportion of women (35%), chiefly users of oral contraceptives. Profamilia served the majority of IUD users (60%), while the Ministry of Health (MOH) was said to be the largest provider of sterilization services (46%). However, for sterilization, survey respondents may define their source of contraception differently from service providers. For example, Profamilia's share of sterilizations is probably underestimated, because Profamilia provides sterilization services in some MOH facilities. Table 15 contains service statistics from Profamilia's sterilization program through 1978. Since over 90% of sterilization acceptors are under 40 years of age, the vast majority of acceptors are still in the reproductive ages (7). The overall prevalence of sterilization (Table 12) indicates a total of 280,000 Colombian couples protected by sterilization in 1978.

These service statistics would suggest that over 38% of sterilization acceptors received their surgery from Profamilia, as opposed to the survey's estimate of 32%. The 1978 CPS underestimated Profamilia's contribution either because of sampling error or perhaps misinformation on the part of respondents. Respondents may identify a Profamilia sterilization clinic as the MOH because procedures may be performed at MOH facilities by MOH physicians working after hours for Profamilia.

For the 1978 CPS, Colombia was divided into 5 regions, excluding the sparsely populated eastern area (Figure 5). The TFR was lowest in Bogotá and highest in the Atlantic region (3.1 and 4.4, respectively, Table 16). Contraceptive prevalence was highest in Bogotá and lowest in the Atlantic region (62% and 39%, respectively). However, the correspondence of low fertility with high contraceptive prevalence is not as clear for the other 3 regions. Colombia's regions have marked differences in ethnic composition, age at first marriage, and other socio-cultural factors that may act as indirect determinants of fertility.

Overall, the relationship between contraception and fertility in Colombia compares well with observations from other recent contraceptive prevalence

surveys conducted by CDC. The crude birth rate and contraceptive prevalence for urban and rural zones of Colombia have been plotted in Figure 6, along with data from other areas. The upper regression line in the figure was drawn from CDC survey data by Dr. John Anderson, and the lower line is from Nortman's analysis of data from 28 countries (8). In general, survey data predicts a higher CBR for a given contraceptive prevalence than does Nortman's analysis. The Colombian data are compatible with this interpretation.

### C. Abortion

In a preliminary draft Ochoa has estimated rates of induced abortion from the 1978 CPS. By analyzing pregnancy history, he estimated 0.4 induced abortions per woman aged 15-49 (TA<sub>3</sub> in Table 17). If the average number of abortions is divided by the average number of children per woman, a rough cumulative estimate of 150 abortions per 1,000 live births is obtained. This is not the usual abortion/live birth ratio in a single recent period, but rather a cumulative figure based on the entire reproductive history of the respondents. This estimated cumulative ratio for Colombia may be an underestimate because it is less than half the abortion/live birth ratio of the United States and other countries with relatively complete reporting.

The extent of possible underreporting of induced abortion can be estimated by examining the total abortion rate calculated from the 1978 CPS. The total abortion rate was calculated by adding the sum of the age-specific rates (TA<sub>1</sub> in Table 17). It is somewhat analogous to a TFR, and for this survey was 0.54 abortions per woman. Other information in the 1978 CPS can be used to estimate the maximum expected total abortion rate. Ochoa modeled the interaction of fertility, abortion, lactation, marriage, and contraception in Colombia, using the method of Bongaarts (9). If the abortion rate is treated as an unknown in the Bongaarts model, the survey's data on other determinants of fertility would predict a total abortion rate of between 0 and 0.84 abortions per woman. Thus, if the Bongaarts model holds true and women in the 1978 CPS responded accurately to questions about marriage, contraception, and lactation, the estimated number of induced abortions is fairly accurate. With the Bongaarts model, the total abortion rate estimated from this survey might be as much as 36% lower than the true rate  $((0.84 - 0.54) \div 0.84 = 0.36)$ .

### D. Unmet Need for Family Planning Services

Ochoa has also derived preliminary estimates of the population in need of family planning services. He defined a minimum estimate of unmet need as the number of exposed women who desire no more children but are not using contraception. The maximum estimate of unmet need was defined as exposed women who desire no more children, but who are not using a modern contraceptive method. Using a TABRAP/CONVERSE model (10), he obtained a minimum estimate of 797,000 women in need of family planning services (Table 18).

We applied the same definition of unmet need to data from the survey and U.S. Census Bureau population estimates and derived a higher minimum estimate: 1,075,000 women in need of family planning services. The unmet need ranged from 12% of women of childbearing age in Bogotá to 22% in the Oriental region (Table 19).

Given the increasing number of potential users of family planning services (Figure 1), the unmet need in Colombia may continue to be substantial unless program efforts improve availability and accessibility to contraception in all areas of the country.

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TABLE 1  
 Estimated "Births Averted"\* by Sterilizations  
 Colombia, 1978

<u>Age at Sterilization</u>	<u>Estimated "Births Averted" Assuming ASFR</u>	<u>Estimated "Births Averted" Assuming Marital ASFR</u>
15-19	17	98
20-24	2,579	4,373
25-29	9,899	12,773
30-34	13,207	15,625
35-39	9,717	10,898
40-44	1,269	1,551
45-49	<u>23</u>	<u>30</u>
Total	36,711	45,348

\* See text for definition

TABLE 2  
 Percent Distribution of Women Aged 15-49  
 By Contraceptive Method They Would Choose  
 Colombia, 1978

<u>Method</u>	<u>Rural Zone</u>	<u>Urban Zone</u>	<u>Total</u>
Pill	19.6	26.9	24.6
IUD	3.5	7.5	6.3
Sterilization	13.7	18.4	15.5
Injection	8.5	5.5	6.4
Other Modern	2.1	3.2	2.9
Traditional	5.0	8.4	7.3
Would not choose	36.7	29.1	31.4
Doesn't know	11.0	3.0	5.5

Source: Reference 3, p77

TABLE 3

Number of Women of Childbearing Age  
Colombia, 1973, 1980 and 1985  
(Midyear Population in Thousands)

	Age Group							
	Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1973 (estimated)	5,352	1,309	1,044	839	678	572	492	418
1980 (projected)	6,753	1,611	1,381	1,105	878	700	582	495
1985 (projected)	7,894	1,758	1,593	1,358	1,085	857	683	564

Source: Reference 2, p10

TABLE 4  
Colombia  
1979 Demographic Profile

Population	26.2 million
Crude Birth Rate	29 per 1,000 population
Crude Death Rate	8 per 1,000 population
Crude Rate of Natural Increase	2.2%
Growth Rate	2.0%
Total Fertility Rate	3.8 per woman
General Fertility Rate	123 per 1,000 women aged 15-49
Infant Mortality Rate	76 per 1,000 live births
Life Expectancy	64 years
% Urban	68%

Source: Reference 3, p30-38; reference 2, p7; and Population Reference Bureau 1979 World Population Data Sheet

TABLE 5

General Fertility Rate, Total Fertility Rate, and Crude Birth Rate  
Colombia CPS and Four Recent CPS's

	<u>GFR</u>	<u>TFR</u>	<u>CBR</u>
Colombia 1978	123	3.8	29
Sao Paulo 1978	96	2.8	24
Guatemala 1978	208	5.9	45
El Salvador 1978	208	6.3	43
Paraguay 1977	224	6.8	46

Source: Reference 3, p38; Reference 11; APROFAM - preliminary data

TABLE 6

Change in Fertility Rates  
Colombia, 1968-1978

	<u>1968</u>	<u>1976</u>	<u>1978</u>	<u>% Decline 1968-1978</u>
Marital Total Fertility Rate	9.0	7.2	6.5	27.7
Total Fertility Rate	6.0	4.2	3.8	36.7
General Fertility Rate	187	131	123	34.2
Crude Birth Rate	42.4	31.6	28.6	32.5

Source: Reference 3, p38, with corrections

TABLE 7

Change in Total Fertility Rates  
Colombia, 1965-1978

Year	Rural	Urban	Colombia
1965-66	7.7	4.7	6.0
1978	5.4	3.1	3.8
% Decline	29.9	34.0	36.7

Source: Reference 3, p40

TABLE 8

Age Specific Fertility Rates  
Colombia, 1965-66 and 1978

Age Group	Age Specific Fertility Rates, 1978			Age Specific Fertility Rate Colombia, 1965-66
	Rural	Urban	Colombia	
15-19	90	46	59	110
20-24	313	165	207	270
25-29	241	165	186	278
30-34	194	118	142	277
35-39	134	91	107	176
40-44	97	18	45	85
45-49	-	17	11	10
TFR	5.4	3.1	3.8	6.0

Source: Reference 3, p40

TABLE 9

Change in Fertility  
Colombia, 1968-1978

Age Groups	Marital Fertility		
	1968	1976	1978
15-19	428	359	359
20-24	427	346	351
25-29	354	277	240
30-34	263	205	168
35-39	200	155	120
40-44	116	78	55
45-49	21	26	15
Marital Total Fertility	9.0	7.2	6.5

Source: Reference 3, p38, with corrections

TABLE 10

Colombia  
Socio-Economic Indicators

Percent Distribution of the Population  
by Zone of Residence

	<u>1951</u>	<u>1964</u>	<u>1973</u>
Urban	39.6	52.1	63.1
Rural	60.4	47.9	36.9

Percentage of Population, 7+ Years of Age  
Claiming Literacy

	<u>1951</u>	<u>1964</u>	<u>1973</u>
Male	58.9	70.3	77.8
Female	56.1	68.6	77.5

Percentage of Population, 15+ Years in  
Work Force

	<u>1973</u>
Male	69
Female	22

Source: Reference 2, p15,17; Reference 12, p32

TABLE 11

Legal Age at Marriage and Age at Which Specified Percent of the Population  
Is Ever Married, by Sex: Colombia, 1964, 1973, and 1976

Item	1964		1973		1976	
	Male	Female	Male	Female	Male	Female
Minimum legal age at marriage . . .	21	18	21	18	18	18
Age at which 25 percent of the population is ever married . . . .	23	19	23	19	23	19
Age at which 50 percent of the population is ever married . . . .	26	22	26	23	26	22
Age at which 75 percent of the population is ever married . . . .	33	29	32	29	30	28

Source: Reference 2, p13

TABLE 12  
 Percentage of Women in Union  
 Currently Using Contraception  
 By Year and Method\*  
 Colombia

	<u>1968</u>	<u>1976</u>	<u>1978</u>
Pill	6	15	17
Condom	2	2	1
IUD	3	9	8
Sterilization	2	6	8
Injection & Vaginal	2	4	4
Rhythm	5	6	4
Withdrawal	9	5	4
Other	<u>2</u>	<u>1</u>	<u>1</u>
Total	31	46	46

\* Columns may not add to total because of rounding.

Source: Reference 3, p65

TABLE 13  
 Percent Distribution  
 Of Women in Union Using Contraception  
 By Method and Residence  
 Colombia, 1978

Method	Rural Zone	Urban Zone
Modern	80.1	81.2
Pill	39.6	36.6
Condom	3.1	3.0
IUD	14.1	17.4
Sterilization	17.6	15.9
Injection & Vaginal	5.7	8.3
Traditional	19.8	18.7
Rhythm	5.7	9.7
Withdrawal & Others	14.1	9.0
Total	100.0	100.0

Source: Reference 3, p64

TABLE 14

Percent Distribution of Current Users of Contraception  
By Method and Source of Contraception  
Colombia, 1978

Source	All Methods	Oral Contraceptives	IUD	Sterilization	Other Modern Methods
Profamilia	31.9	25.3	59.9	31.8	11.3
MOH	22.9	14.1	32.4	45.7	1.9
Drugstore	34.7	54.7	-	-	74.5
Social Security	4.5	2.7	4.8	9.8	1.9
Private Physician	3.3	0.5	1.8	11.6	1.9
Other	2.6	2.4	1.2	1.2	8.5

Source: Reference 6, p12

TABLE 15

Female Sterilizations - Profamilia  
Colombia, 1972-1978

	1972	1973	1974	1975	1976	1977	1978	Total Accumu.
Laparoscopy	-	338	1,922	5,090	9,455	15,499	17,158	49,462
Minilaparotomy	31	84	549	3,097	8,292	21,296	21,656	55,005
Post-partum	-	-	23	74	93	148	1,538	1,876
Other	-	60	134	136	204	174	-	581
Total	31	482	2,628	8,397	18,044	37,090	40,352	107,024

Source: Reference 1, Vol. 1, p10

TABLE 16

Percentage of Women in Union  
Currently Using Contraception  
By Region and Zone of Residence  
Colombia, 1978

Residence	Atlantic Region	Oriental Region	Central Region	Pacific Region	Bogotá	Total
Rural	31	34	29	24	-	30
Urban	47	53	57	58	62	55
Total	39	45	46	45	62	46
TFR	4.4	3.8	3.4	4.3	3.1	3.8

Source: Reference 3, p40, 62

TABLE 17

Colombia 1978  
Indices of Induced Abortion

Births Averted per Abortion	0.58
Total Abortion Rate ( $TA_1$ )	0.54
Average Number of Abortions women age 45-49 ( $TA_2$ )	0.78
Average Number of Abortions women age 15-49 ( $TA_3$ )	0.40

$TA_1$  - Total abortion rate was calculated as the sum of the age specific rates for women in union.

$TA_2$  - Average number of abortions ever performed for women age 45-49.

$TA_3$  - Average number of abortions ever performed for women age 15-49.

Source: Reference 6, p37

TABLE 18  
Colombia  
Women In Need of Family Planning Services  
(In Thousands)

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Minimum Estimate *	797	825	853	881
Maximum Estimate	962	996	1030	1064

\* See text for definition

Source: Ref 6, p 27

TABLE 19

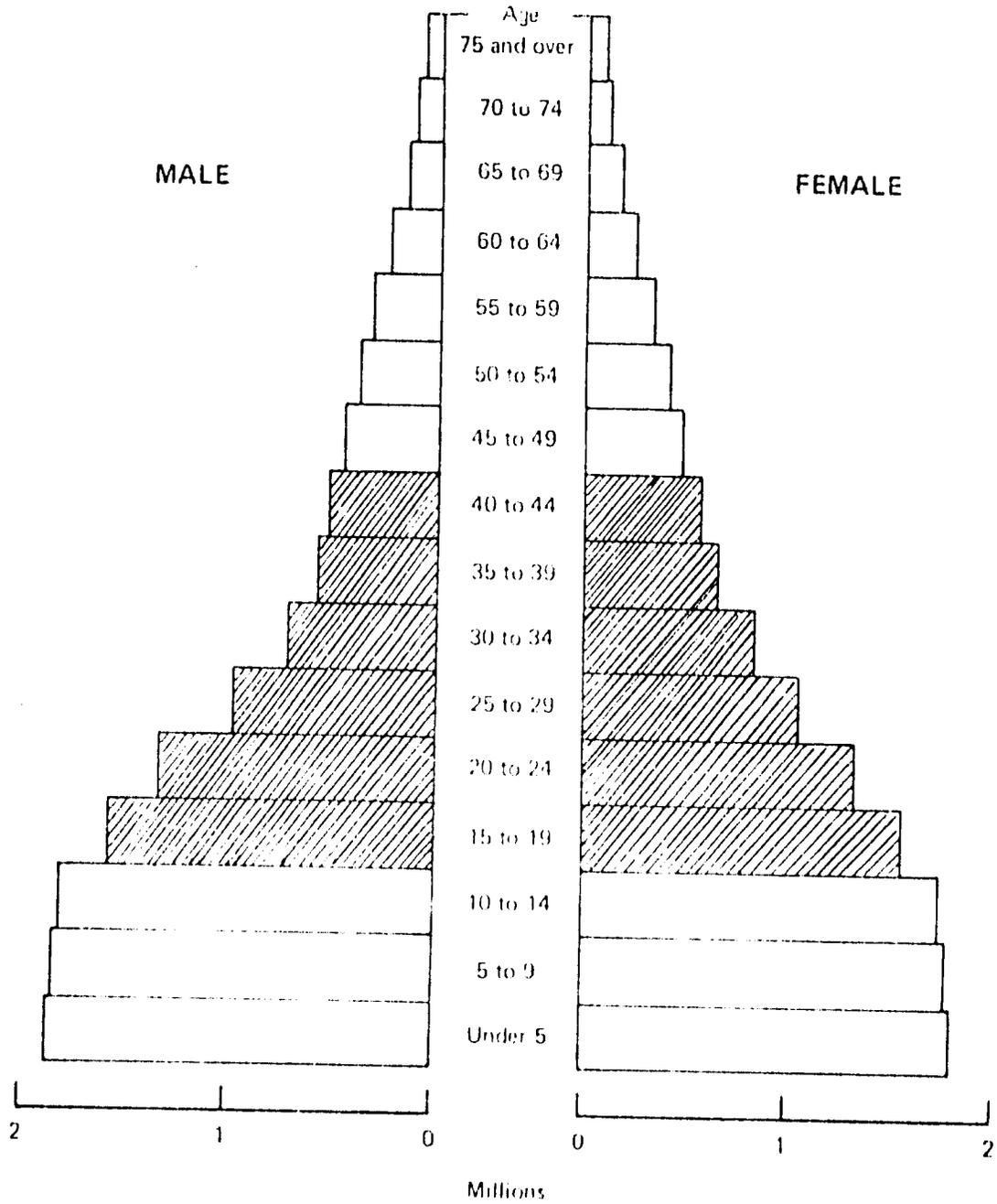
Colombia 1978  
Women In Need of Family Planning Services  
By Region

	<u>Atlantic</u>	<u>Oriental</u>	<u>Central</u>	<u>Pacific</u>	<u>Bogota</u>	<u>Total</u>
Proportion WCA exposed, not using contraception, and desiring no more children	.177	.215	.159	.169	.120	.170
WCA 1978 (1,000's)	1,160	1,083	1,907	1,183	988	6,321
Population in need (1,000's)	205	233	303	200	119	1,075

Source: Ref 6, Table 1.1; Ref 2 and 5.

FIGURE 1

Population of Colombia, by age and sex: July 1, 1979

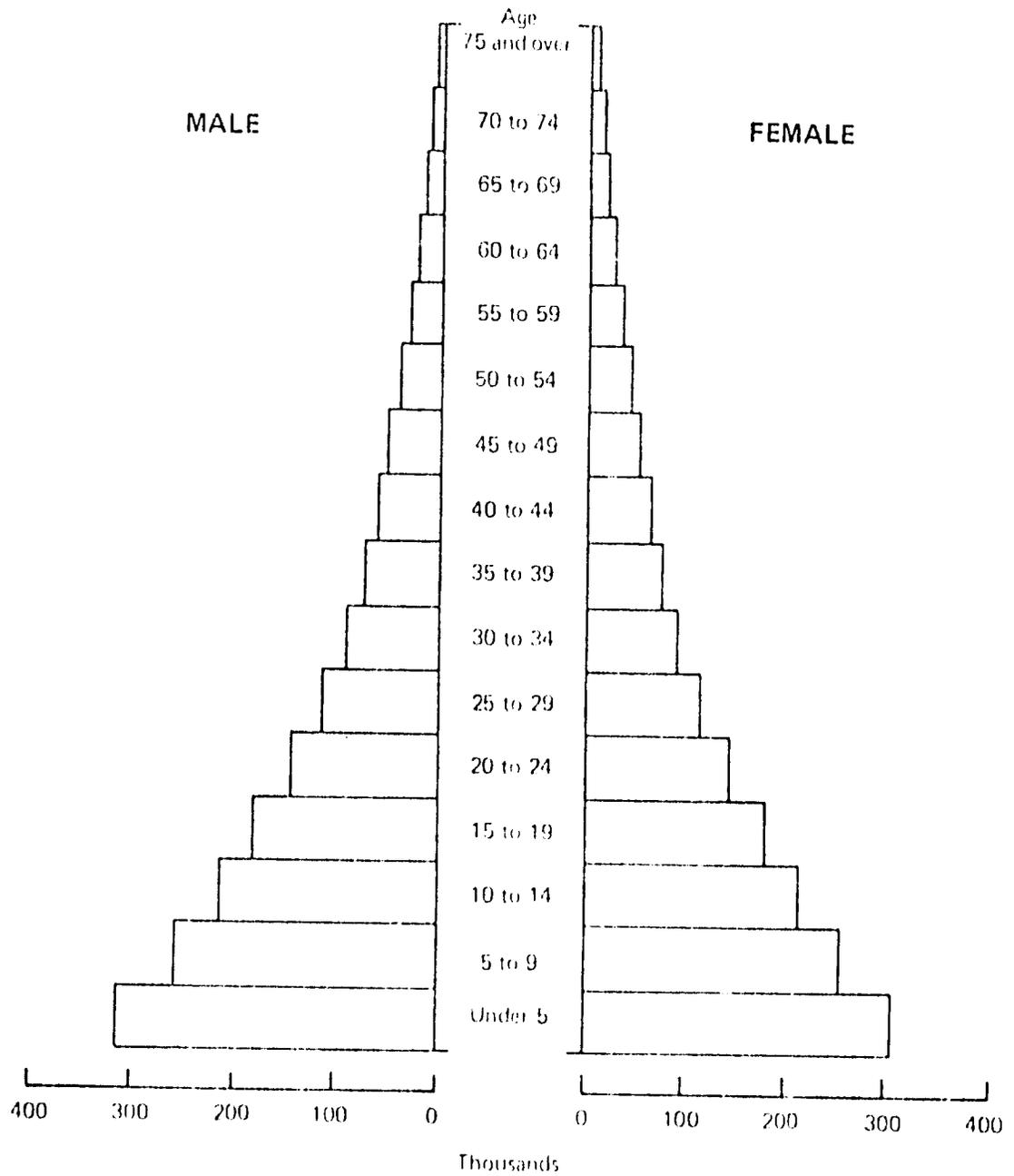


Projection based on Colombia's 1973 census of population as adjusted by the U.S. Bureau of the Census, table 2, this report.

Source: Reference 2

FIGURE 2

Population of Honduras, by age and sex: July 1, 1976



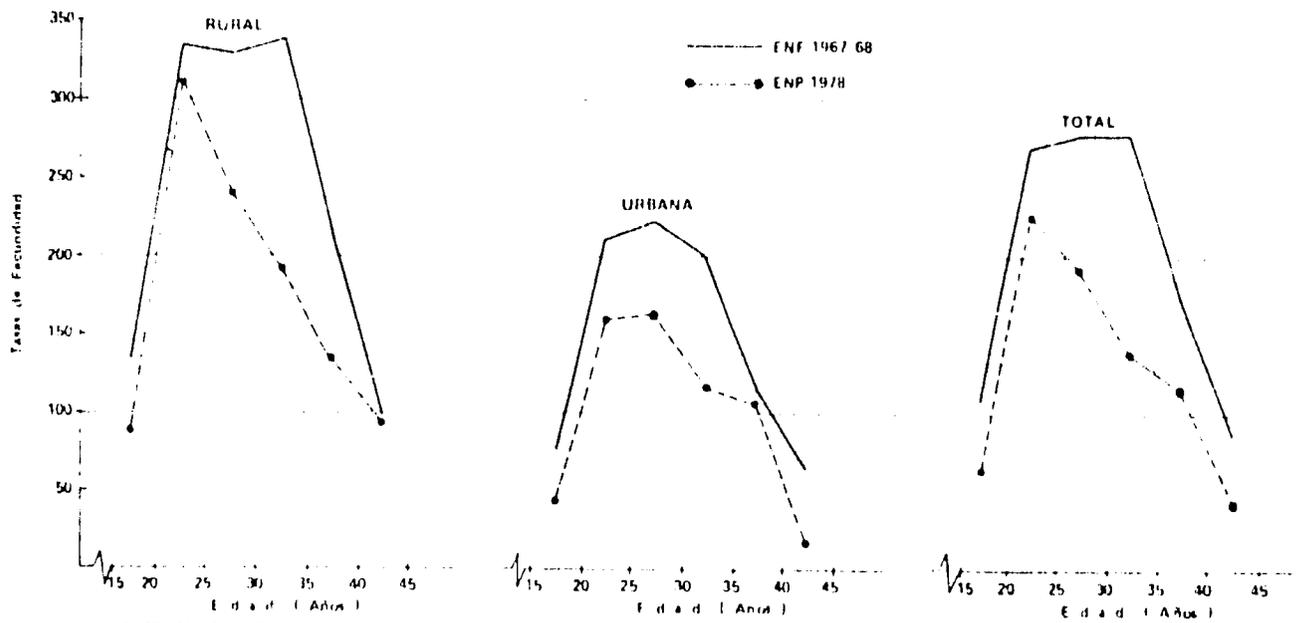
Projection based on the 1974 census of population of Honduras, as adjusted by the U.S. Bureau of the Census, table 7, this report.

Source: U.S. Bureau of Census: Country Demographic Profiles - Honduras, ISP-DP-10, 1977

FIGURE 3

Gráfico 4.3

COLOMBIA CAMBIOS EN LAS TASAS ESPECIFICAS DE FECUNDIDAD  
POR EDAD Y ZONA DE RESIDENCIA

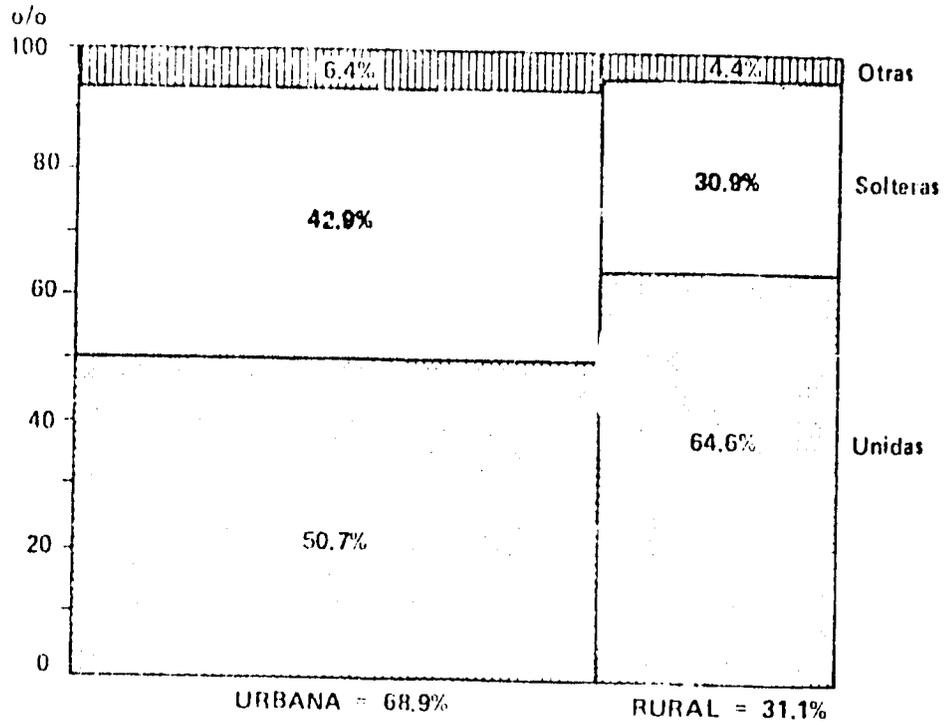


Fuente: CCRP - MINSALUD. Encuesta Nacional de Prevalencia del Uso de Anticonceptivos. Colombia, 1978

Source: Reference 3, p41

FIGURE 4

Gráfico 3.5  
PORCENTAJE DE M.E.F. POR ESTADO CIVIL SEGUN  
ZONA DE RESIDENCIA



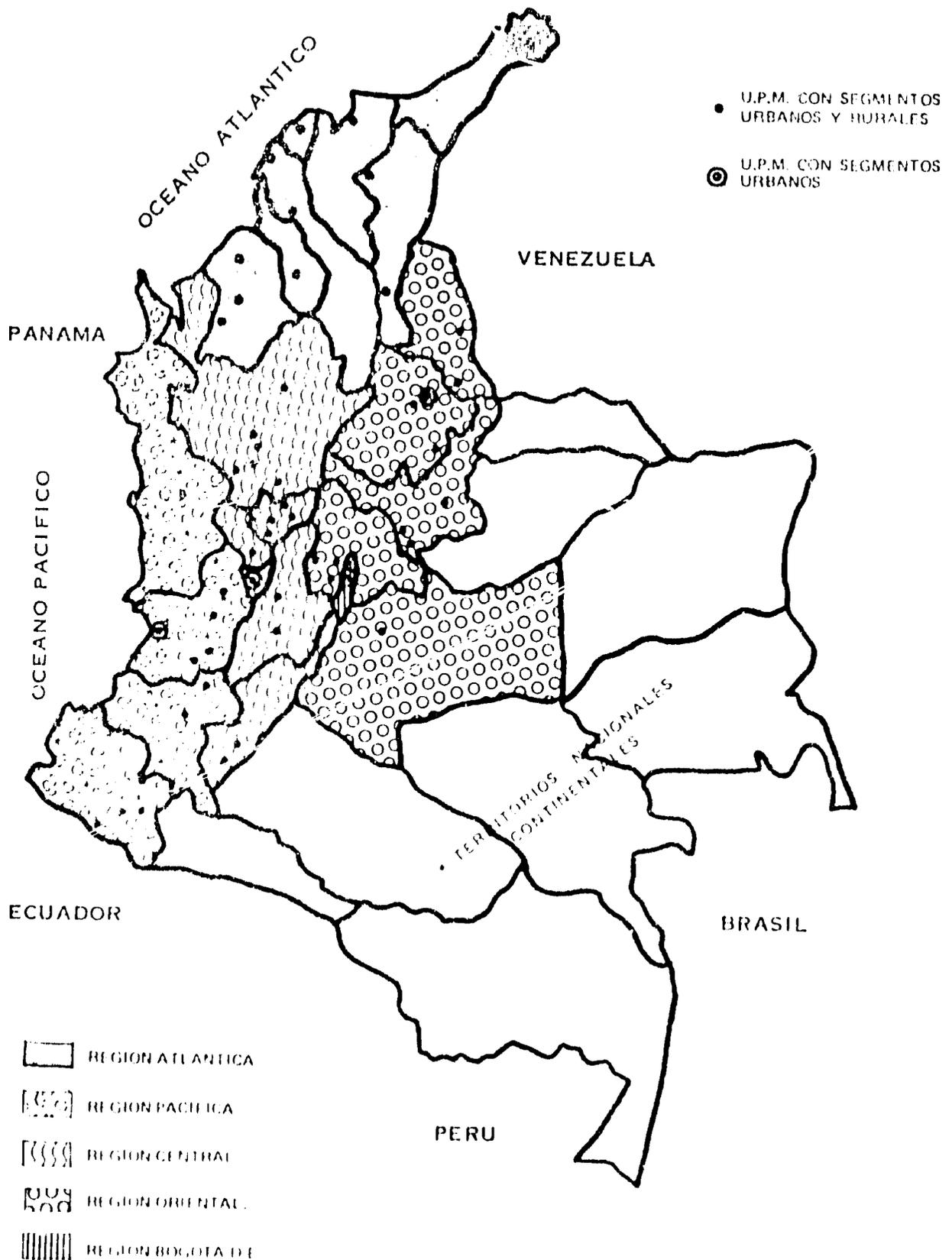
Fuente: CCRP. MINSALUD. Encuesta Nacional de Prevalencia de Uso de Anticonceptivos. Colombia, 1978.

Source: Reference 3, p.30

FIGURE 5

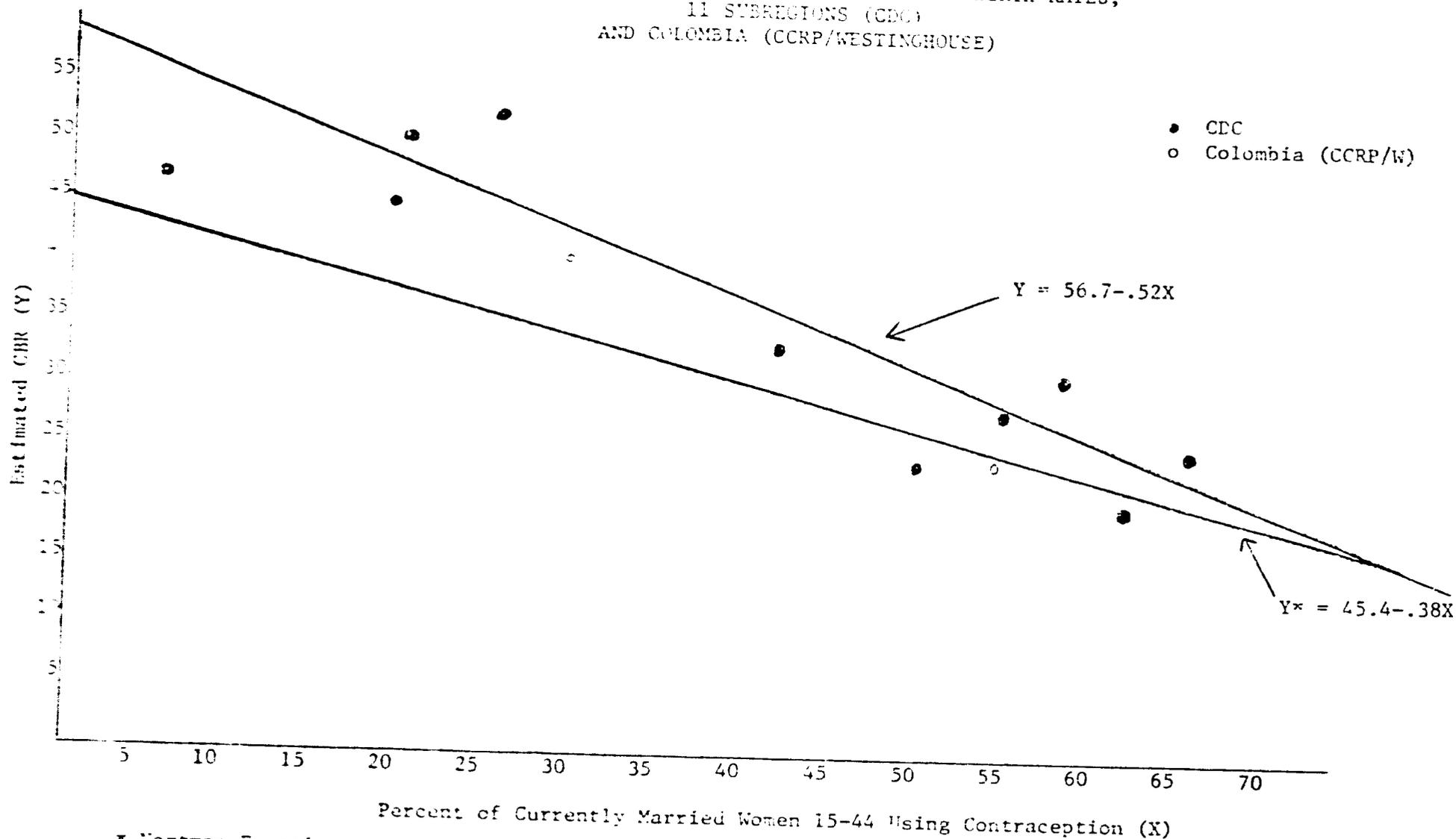
Gráfico 2.1

DISTRIBUCION DE PUNTOS MUESTRA POR REGION  
ENCUESTA NACIONAL DE PREVALENCIA DEL USO DE ANTICONCEPTIVOS



Source: Reference 3, p18

FIGURE 6. CONTRACEPTIVE USE AND CRUDE BIRTH RATES,  
 11 SUBREGIONS (CDC)  
 AND COLOMBIA (CCRP/WESTINGHOUSE)



\* Nortman Equation

Source: John Anderson, FPED/CDC, unpublished data