

*A planning guide for  
church-based health  
promotion interventions  
for Latinas*

The Tepeyac Project, a 6-year long church-based health promotion project for Latinas in Colorado ended in July 2005. Valuable lessons were learned about how to implement and sustain a health promotion project to reduce disparities in breast cancer screening among Latinas living in Colorado. The Colorado Foundation for Medical Care in partnership with La Clinica Tepeyac and the University of Colorado Division of Health Care Policy and Research conducted the project from 1999 to 2005 with funding from the Centers for Medicare and Medicaid Services. The Tepeyac Project was evaluated using objective outcomes (mammogram claims) from the most important health insurance groups (Medicare, Medicaid, HMOs). Because the experience of this long lasting project may assist other investigators trying to develop and evaluate similar types of programs, the National Cancer Institute funded the Principal Investigator, Dr. Angela Sauaia, to describe the history, implementation, and expand the evaluation of the Project. The process is summarized in this planning guide, made possible by Grant Number 5R03CA110820-2 from the National Cancer Institute. Its contents are solely the responsibility of the author and do not necessarily represent the official views of the National Cancer Institute.

## Introduction

Disparities in breast cancer screening have been relatively unchanged among Latinas for over a decade<sup>1-4</sup>. Access to care, low income and lack of a regular source of care have all been consistently reported as the major barriers for Latinas.<sup>5-12</sup> However, a study by Veil et al. suggested that even when free mammograms were offered to a group of Latinas 65 years and over, non-adherers were not likely to change their behavior.<sup>13</sup> Minority women are also more likely to be unaware of Medicare's mammography benefits than non minority women (29% vs. 17%) according to the data from a survey conducted by the Office of Cancer Communications (National Cancer Institute) and the Centers for Medicare and Medicaid Services (CMS).<sup>14</sup> Culturally specific barriers identified in previous studies include limited knowledge and misconceptions about screening and cancer ("*surgery causes cancer to spread*", fear of radiation), fatalistic views, fear of the diagnosis ("*better to not know*"), sense of being punished for some past action as well as modesty issues.<sup>5;15-30</sup> Mexican-Americans have been shown to be the most consistent in their negative and fatalistic view of cancer compared to Puerto-Ricans, Central Americans and Cubans.<sup>11</sup> Language barriers and level of acculturation have also been linked to breast screening behavior among Latinas.<sup>22;27;31;32</sup> Interestingly, a strong traditional Mexican attitude toward family has been reported as being positively correlated with increased likelihood of screening leading to recommendations that the Latino sense of familism be used in health related interventions.<sup>33;34</sup> Collectively, these findings suggest that education about breast cancer delivered in Spanish and in a culturally sensitive manner is necessary for less acculturated Latinas to change their behavior.<sup>21;35</sup>

Church-based and peer counselors interventions have been recognized as culturally sensitive ways to reach minorities, and shown more promising results in health promotion among Latinos.<sup>23;24;36-49</sup> This guide describes the Tepeyac Project, a six-year long community-based, church approach health promotion project, started in 1999, which aimed at increasing breast cancer awareness among Latinas in Colorado through church-based interventions. The Colorado Foundation for Medical Care (CFMC), the Medicare health care quality improvement organization for the state of Colorado, conducted the intervention with funding from the Centers for Medicare & Medicaid Services (CMS) and Dr. Angela Sauaia served as the Principal Investigator. The project interventions ended in July of 2005, after six years of generous funding from CMS. We are grateful for the National Cancer Institute grant **1R03 CA 110820-02** that funded additional analysis and the preparation of this guide.

A community –participatory approach was used and the involvement of the community was sought in all phases of the project. The project was named Tepeyac because of its importance to Latinos as the site in Mexico where Our Lady of Guadalupe appeared to Saint Juan Diego and was conducted through a evenhanded partnership with a community-based clinic also named after the episode (La Clinica Tepeyac). To avoid confusion, thereafter we will refer to our partner La Clinica Tepeyac as simply La Clinica. The interventions incorporated themes identified by the community, such as the

importance of family, and all interventions were delivered through the church, an integral part of the Latino social network. <sup>23;24;38;39;39-45;49</sup>

## Tepeyac Project, Phase I (1999-2002)

### Planning and Theoretical Frameworks

The PRECEDE component of the PRECEDE-PROCEED planning model served as a framework for defining the scope of the problem, understanding barriers and developing interventions in our program in a systematic and thorough manner. The PRECEDE acronym stands for Predisposing, Reinforcing, Enabling Constructs in Educational/ Environmental Diagnosis and Evaluation. Developed in the 1970s, this component of the model posits that an educational diagnosis is needed to design a health promotion intervention, just as a medical diagnosis is needed to design a treatment plan. <sup>50</sup> The first five phases of the PRECEDE-PROCEED model required extensive research in the target community and are:

- 1) social diagnosis (understand the community needs regarding the chosen topic, breast cancer);
- 2) epidemiological diagnosis (use epidemiological data to define the scope of the problem for the community and specific subgroups within the community);
- 3) behavioral and environmental diagnosis (identify factors that contribute to low utilization of breast cancer screening ;
- 4) educational and organizational diagnosis of the predisposing, enabling and reinforcing conditions that must be in place to initiate and affect change in breast cancer screening and
- 5) administrative and policy diagnosis: identifies policies, systems and resources that may help or hinder the intervention.

To make some of these assessments, we applied two theoretical models, specifically the Health Belief Model, and Stages of Change. <sup>16;51-53</sup> To understand the Colorado Latino community's perceived needs regarding health care and quality of life, we used key informant interviews (churches, community based clinics) and focus groups. An initial literature search addressed previous studies on the barriers experienced by Latinas in obtaining mammograms as well as potential interventions to address those barriers. The Principal Investigator, Dr. Angela Sauaia is a Latina immigrant herself, fluent in Spanish as Spanish language familiarity is crucial in this type of intervention. <sup>39</sup> A focus group of representatives of Colorado organizations serving Latinos was convened. Table 1 lists the organizations represented in this first focus group.

Table 1: First Focus Group Participating Organizations

- |  |
|--|
| <ul style="list-style-type: none"> <li>• Colorado Partners for Cancer Control in Underserved Populations</li> <li>• Servicios de La Raza</li> <li>• La Clinica Tepeyac</li> <li>• American Cancer Society</li> </ul> |
|--|

- Cancer Information Services (National Cancer Institute)
- Colorado Department of Public Health
- Pacificare of Colorado\*
- Rocky Mountain HMO-Colorado \*
- Kaiser Permanente of Colorado \*
- Colorado Community Health Network (CCHN)
- Department of Health & Human Services
- University of Colorado
- Colorado Foundation for Medical Care (CFMC)

\* Health Maintenance Organization

Participants were presented with epidemiological data on breast cancer screening disparities at the local level and asked to talk about the causes of breast cancer screening disparity in their communities. Table 2 below lists other probes utilized during the focus group to facilitate the discussion:

Table 2: Probes used during first focus group

- general ideas and concerns about breast cancer screening among Latinos
- what does work
- what does not work
- how to increase cultural sensitivity/ competence of projects focusing on mammograms
- how to go about it in a culturally sensitive manner
- existing community initiatives
- how to make effort sustainable
- how to forge partnerships

Major local barriers identified by this group were similar to the literature findings: access to care, modesty, primary role as family caretaker. A consistent and strong theme was the crucial importance of the strong Latino sense of family. The two major assets and resources identified were two existing initiatives: La Clinica Tepeyac “Promotora de Salud” outreach project; and the Colorado Women Cancer Control Initiative or CWCCI). The CWCCI (nested within the Colorado Department of Public Health and Environment) is a CDC funded effort that provides assistance in navigating the system, referrals to local mammography centers as well as free mammograms for eligible women.

Because of the strong role of the churches in the Latino community not only as a place of worship but fundamentally as places trusted by Latinos, churches were suggested as the chosen vehicle. An expansion of the existing church-based, Promotoras de Salud project at La Clinica Tepeyac, a community-based clinic linked to the Our Lady of Guadalupe church. The findings of this first focus group were then subsequently submitted to a second round of community representatives including members of the National Hispanic Council on Aging, the Denver Catholic Archdioceses Hispanic Ministry, Catholic newspapers editors and reporters, the Latino Research & Policy Center, and the Parish Nurse Association. This additional feedback confirmed the previous findings. Through La Clinica Tepeyac, the community appointed Sister Lydia

Peña, faculty with the local Regis University and an influential figure within the Latino community, as their champion.

Therefore, the initial plan was to launch a community-based, church-delivered intervention with three major components: 1) Promotoras; 2) Bilingual education addressing the family; and 3) local influential role model (Sister Lydia Pena).

This preparatory work took approximately four months to be completed.

## Study Design

This study has a quasi-experimental design comprised of three groups: 1) Printed Intervention: 209 Catholic churches that received a traditional printed statewide intervention (Printed), and 2) Promotora intervention: a subgroup of four churches in the Denver area that receive, in addition to printed materials, a *Promotora*, or peer counselor, intervention. The Printed intervention entailed the display of National Cancer Institute developed, bilingual printed materials about breast cancer screening in the churches with suggestion for additional bilingual short messages to be delivered to parishioners through the pulpit, church bulletin, or both. All 209 churches that received this intervention were included in the Printed group in an intent-to-treat analysis. In the *Promotora* intervention, the education about breast cancer screening was delivered in person by *promotoras*, women recruited and trained by a community based clinic, Clinica Tepeyac. These very devoted women were trusted by the other Latinas in the communities and used a number of venues to reach their peers: masses, church events, women's health groups (held at a community member's house). In addition, they identified a champion, an influential community leader, who delivered compelling messages from the pulpit. The study was approved by the Colorado Multiple Institutional Board (Protocol number 02-973).

### Implementation of Interventions

- **Printed intervention.** To develop materials, focus groups were held with organizations serving Latinas to review published information about barriers in obtaining mammograms and identified the following topics: modesty, fatalism, primary role as a family caretaker, misconceptions about personal risk and about mammography associated risks. Bilingual materials, printed by the National Cancer Institute (NCI), reflected the pre-identified theme of a sense of family with the chosen message, "Do it for you. Do it for your family." The materials were enhanced by adding contact information for the local Colorado Women's Cancer Control Initiative (CWCCI), a program administered by the Colorado Department of Public Health and Environment and funded by the Centers for Disease Control and Prevention (CDC), which provides referrals and free mammograms to eligible women. After an initial contact by the Archdioceses, the churches were mailed an intervention package containing: a letter describing the Tepeyac Project; the NCI educational materials about breast cancer screening; a display unit; short "camera-ready" bilingual messages to be delivered from the pulpit and/or published in the church bulletins; and a fax –back form asking at which level they would agree to participate (display materials; publish messages; deliver messages from pulpit). The first mailing to all churches in the state (Printed intervention) occurred in March 2000, a second in October 2000 and the third mailing of material in February 2001. The second and third mailings included issues of the Tepeyac Project newsletter (all issues of the newsletter can be downloaded for free in the project website at <http://www.cfmc.org/professionals/protepeyac.htm>).

Information about the level of church participation, evaluated by personal phone calls and fax-back forms, was available for 154 (74%) of the 209 churches in the Printed

intervention. Of these churches, 61 (40%) displayed the printed materials, 8 (5%) published messages in the bulletin, and 85 (55%) did both. In addition to these activities, 18 (12%) made pulpit announcements. The level of participation was undetermined at 47 churches, and 12 churches declined to participate.

- **Promotora intervention.** The four churches that received the Promotora intervention are all in the Denver area. The promotoras coordinated by Clinica Tepeyac, were trained by both Clinica and project staff, and used the same printed materials used for the Printed intervention. The churches, located in largely Hispanic areas, are central reference points to Latinos in Colorado. One or two promotoras visited each church at least bimonthly after mass. They held a variable number of women health groups (groups of women only who got together at the house of one of them to have a “platica”, a breast cancer education session facilitated by a Promotora). An influential leader chosen by the Promotoras, Sister Lydia Pena, was not a celebrity, but a respected woman in the Latino community, faculty with the Regis University, who delivered compelling short messages from the pulpit, at least twice during the intervention period, in English and/or Spanish depending on the language of the mass. The intervention started in 2000 and it was ongoing during the followup period.

## Quantitative Evaluation

We chose an objective outcome to evaluate the project: mammography claims from the major groups providing health insurance coverage in Colorado.

### Study population and insurance plans

Data from the following insurance plans provided data on women ages 50 to 69 years regarding biennial mammogram status during the two years period 1998-1999 (Baseline) and 2000-2001 (Followup): Medicare fee-for-service (FFS), Medicaid FFS, and the following health maintenance organizations (HMOs): Access (the largest provider of Medicaid HMO in Colorado), Kaiser Permanente of Colorado, Anthem Blue Cross & Blue Shield. The HMO plan datasets included their Medicare and Medicaid enrollees. Medicaid FFS subjects enrolled in a primary care case management (PCCM) program, which is reimbursed by fee-for-service, were included in the Medicaid FFS database for analysis.

Latinas were identified using a combination of the Passel –Word Hispanic Surname list<sup>54</sup> and the race/ethnicity field of a the insurance groups for which these data were available (Medicaid FFS, Medicare FFS). Medicaid and Medicare FFS datasets were cross-checked to identify dually eligible individuals and obtain unique information on them. Inclusion criteria included: a) ages 50 to 69 years (the group for which there is the strongest evidence of benefit from screening mammograms<sup>55</sup>); b) continuously enrolled in the plan for at least 23 months with a gap no longer than 30 days in coverage; and c) survived the entire baseline or followup period (not required to have survived both periods).

The Medicare FFS dataset included a large proportion (49%) of Latinas 50 to 64 years old with disability and/or end-stage renal disease (ESRD). Given that the interventions did not specifically target the needs of the disabled and/or ESRD populations, the analyses were repeated after exclusion of these women and the results compared to the analysis including them.

Exposure to the Promotora and Printed interventions was determined by zip codes: study subjects living in the zip codes of the four churches visited by the *promotoras* were considered to be exposed to the Promotora Intervention, whereas subjects living in remaining zip codes were considered to be exposed to the Printed Intervention.

### **Mammogram rates**

Mammogram claims obtained from the above described insurance plans administrative data were used for the analysis. We compared the rates obtained during the baseline period before the intervention (January 1998–December 1999) with those obtained during a follow-up period (January 2000–December 2001) for Latinas living in each of the intervention areas.

Mammogram use was determined by having claims with any of the following codes: *International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9CM)* procedure codes 87.36, 87.37, or diagnostic code V76.1X; Healthcare Common Procedure Coding System (HCPCS) codes GO202, GO203, GO204, GO205, GO206, or GO207; *Current Procedural Terminology (CPT)* codes 76085, 76090, 76091, or 76092; and revenue center codes 0401, 0403, 0320, or 0400 in conjunction with breast-related *ICD-9-CM* diagnostic codes of 174.x, 198.81, 217, 233.0, 238.3, 239.3, 610.0, 610.1, 611.72, 793.8, V10.3, V76.1x.

The outcome variable was biennial mammography screening status as determined by the above codes and defined in each study period. The covariates were age, zip code median family income (as determined by the Census 2000) and Medicare–Medicaid dual eligibility status. Reasons for enrollment in Medicaid were: 1) old age pension, for persons aged 60 to 64; 2) disabled or blind, representing those with disabilities, along with a small number of refugees combined into this group because of similar mammogram screening rates; and 3) those receiving Aid to Families with Dependent Children (AFDC). Reasons for enrollment in Medicare were age over 64 years, ESRD and disability. In Colorado in 2000, approximately 70% of the Medicare enrollees were enrolled in FFS plans with the remainder 30% in Medicare HMO plans while 88% of the Medicaid enrollees were enrolled in managed care plans.<sup>56-59</sup>

### **Statistical analysis**

The chi-square test or Fisher exact test (for cells with expected values <5) was used for comparisons of categorical variables, and ANOVA testing was used for continuous variables with the Welch modification when the assumption of similar variances did not

hold.

Generalized estimating equations (GEE) analysis was used for the multivariate modeling. This is a statistical technique appropriate for binary variables (such as mammogram status) that allows for testing several covariance structures, accounting for correlations between the baseline and followup samples due to having subjects present in both time periods.<sup>60</sup> GEE models were used to directly compare the mammogram rates in the two intervention areas among Latinas, while adjusting for differences in demographic characteristics, median zip code family income, and insurance type. The hypothesis for this model was that “Among Latinas, the Promotora intervention was associated with a larger increase in mammogram rates over time than the Printed intervention irrespective of insurance group”. To test this hypothesis, the following GEE statistical model was used:

$$\text{Logit } P = \alpha + \beta_1 \text{time (follow-up vs baseline)} + \beta_2 \text{intervention (PI vs PSI)} + \beta_3 \text{(time*intervention)} + \beta_4 \dots n(\text{covariates}),$$

where “P” is the probability of having a mammogram, “ $\alpha$ ” is the intercept, “ $\beta_1$ ” is the parameter estimate for time, “ $\beta_2$ ” is the parameter estimate for the intervention (Promotora vs. Printed), “ $\beta_3$ ” is the parameter estimate for the interaction between time and intervention and “ $\beta_4$ ” is the parameter estimate (s) for the covariates (age, insurance type, income). A positive significant interaction term suggests that the Promotora intervention had a greater impact on mammogram screening over time than the Printed intervention.

The second hypothesis, also tested using a similar GEE model, was that “The effect of the interventions was modified by insurance type”. This was done by testing a three – way interaction (time\*intervention\*insurance type).

## Results

### Study subjects

Table 3 shows the distribution of the eligible Latinas and non-Latinas through the insurance plans and followup periods.

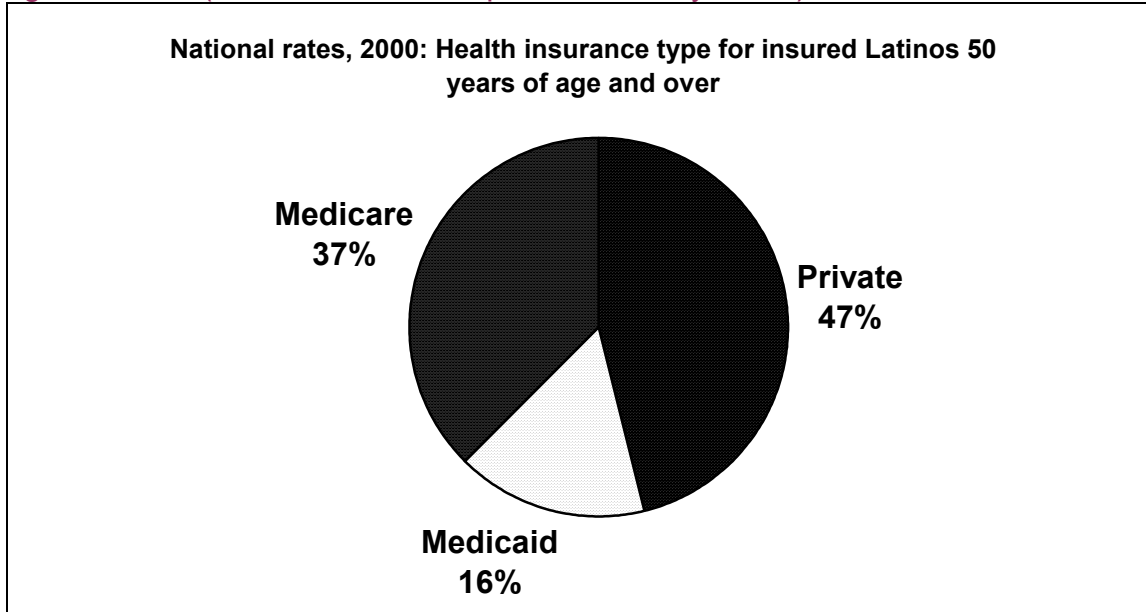
Table 3: Distribution of Latinas and Non-Latinas by insurance type and study period

Insurance	Baseline **				Followup **			
	Latinas		Non Latinas		Latinas		Non Latinas	
	N	%	N	%	N	%	N	%
All	6655	100	59192	100	6523	100	51283	100
HMO-group-1	542	8	976	2	776	12	1398	3
HMO-group-2	148	2	2268	2	174	3	2426	5
HMO-staff	2218	25	26130	44	2502	38	27665	9
Medicaid FFS*	1934	29	5826	10	2943	26	5733	11
Medicare FFS*	1813	27	23992	41	1357	21	14071	27

\*FFS: fee-for-service; \*\*  $p < 0.0001$  for differences between Latinas and non-Latinas

This distribution is similar to the national distribution of insurance types among Latinas reported by the Current Population Survey for the year 2000 (Figure 1).<sup>4</sup>

Figure 1: US, 2000: Health insurance type distribution for insured women 50 years of age and over (Source: Current Population Survey, 2004)



Latinas represented approximately 11% of the total population of eligible women both in the baseline and followup periods<sup>1</sup>, but this percentage varied widely across insurance types, from 6% of one of the HMO-group plan and 8% of the Medicare FFS plan to 24% of the Medicaid FFS plan and 36% of another HMO-group plan (which provided Medicaid HMO coverage). This variability was anticipated because Latinas carry a disproportionate burden of poverty and are more likely to be eligible for plans that target low-income populations (Medicaid FFS and Medicaid HMO).<sup>4</sup>

The baseline demographic characteristics of the study population by intervention are shown in Table 4.

Table 4: Selected characteristics of Latinas and non-Latinas exposed to the Promotora and Printed Interventions during Baseline (1998-1999)

	Latinas					Non-Latinas				
	Promotora (n=547)		Printed (n=6108)		P	Promotora (n=547)		Printed (n=6108)		P
	N <sup>+</sup>	%	N <sup>+</sup>	%		N <sup>+</sup>	%	N <sup>+</sup>	%	
Insurance					0.00					0.00
HMO-Group	80	15	610	10	1	164	9	3080	5	01
HMO-Staff	275	50	1943	32		1014	55	25116	44	

<sup>1</sup> Latinas can be of any race; about 90% of them were White.

	Latinas					Non-Latinas				
	Promotora (n=547)		Printed (n=6108)		P	Promotora (n=547)		Printed (n=6108)		P
	N <sup>+</sup>	%	N <sup>+</sup>	%		N <sup>+</sup>	%	N <sup>+</sup>	%	
Medicaid FFS*	125	23	1809	30		296	16	5530	10	
Medicare FFS*	67	12	1746	29		373	20	23619	41	
<b>Income</b>					0.00					0.00
<=\$38317	111	20	2414	40	1	491	27	7464	13	01
\$38317-\$45581	399	73	1376	23		696	38	10840	19	
\$45582-\$58937	37	7	1380	23		660	36	16447	29	
>\$58937	0	0	938	15		0	0	22594	39	
<b>DE **</b>	117	21	1574	26	0.02	253	14	4725	8	0.00
										01
<b>Age</b>					0.06					0.00
50-54	129	24	1275	21		376	20	10265	18	01
55-59	144	26	1459	24		464	25	11152	19	
60-64	152	28	1717	28		482	26	15371	27	
65-69	122	22	1657	27		525	28	20557	36	

Medicaid FFS includes DE; \* FFS: fee-for-service; \*\* Dually eligible for Medicare FFS and Medicaid FFS; + number without missing values

Latinas and non-Latinas in the Promotora area were younger and significantly poorer (as measured by both the median zip code family income levels and the proportion of dually eligible for Medicare and Medicaid) than their counterparts in the Printed intervention area ( $P < .05$ ). In the follow-up time period, similar observations were made (data not shown).

**Mammogram rates**

A little over half of our Latinas received breast cancer screening through biennial mammograms (58%). The proportion of non-Latinas who received mammograms was significantly higher by approximately 10 percent points (Chi-square,  $p < 0.0001$ ). Crude mammogram rates among Latinas varied across age, income, and dual eligibility for Medicare and Medicaid status as well as intervention groups, as shown in Table 3.

Table 5: Crude biennial mammogram rates for Latinas by selected characteristics and intervention group in the baseline and followup periods

Promotora (n=1136) % (non-missing n)		Printed (n=12042) % (non-missing n)	
Baseline (n=547)	Follow-up (n=589)	Baseline (n=6108)	Follow-up (n=5934)
58	58	68	68

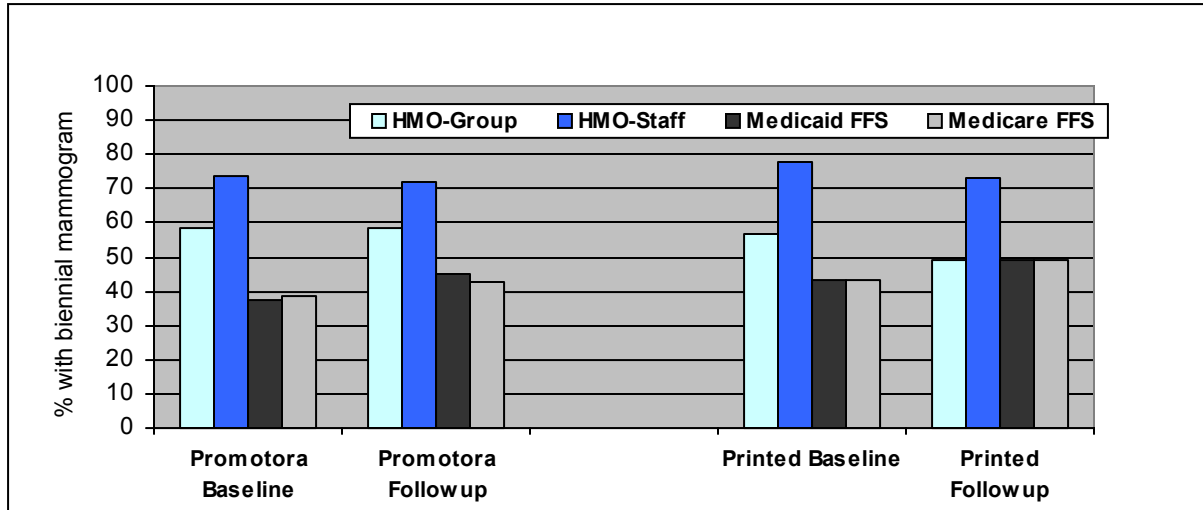
	Promotora (n=1136) % (non-missing n)		Printed (n=12042) % (non-missing n)	
	Baseline (n=547)	Follow-up (n=589)	Baseline (n=6108)	Follow-up (n=5934)
<b>Income*</b>				
<=\$38317	56.31 (103)	60.98 (123)	50.89 (1904)	52.34 (2075)
\$38317-\$45581	61.60 (362)	60.95 (420)	58.00 (1131)	56.75 (1251)
\$45582-\$58937	66.67 (33)	63.64 (44)	62.03 (1201)	61.15 (1310)
>\$58937	0	0	69.74 (823)	70.67 (958)
<b>DE **</b>				
Yes	37.50 (96)	45.10 (102)	44.09 (1354)	50.59 (1277)
No	66.42 (402)	64.54 (485)	62.79 (3814)	60.71 (4434)
<b>Age</b>				
50-54	60.48 (124)	61.15 (139)	62.48 (1202)	60.16 (1373)
55-59	65.22 (138)	61.45 (166)	60.00 (1365)	60.09 (1476)
60-64	62.41 (133)	67.76 (152)	59.49 (1291)	58.59 (1391)
65-69	53.40 (103)	53.08 (130)	49.92 (1310)	55.06 (1471)

\*Median Family Income by Zipcode (population quartiles);\*\* Dually eligible for Medicare FFS and Medicaid FFS

Mammogram rates among these insured women were positively associated with low income, as indicated by both median zip code family income and dual eligibility for Medicare and Medicaid. Age older than 60 years, both for Latinas and non-Latinas, was negatively associated with mammogram rates. Figures 2 and 3 show the mammogram rates by insurance group, in the baseline and followup periods for Latinas and non-Latinas, respectively.

Unadjusted disparities between Latinas and non-Latinas were significant for the HMO-staff, HMO-group and Medicare FFS both at baseline and followup periods, with disparities varying between 5 and 15 percent points (Chi square,  $p < 0.0015$ ). No crude disparities were observed for Medicaid FFS enrollees in either period.

Figure 2: Baseline (1998-99) and followup (2000-01) crude mammogram rates for Colorado Latinas enrolled by type of insurance plan and intervention group



The GEE model was used to adjust the effect of the intervention on mammogram rates among Latinas for insurance group, age and income. There was a significant positive interaction term between time and intervention (adjusted GEE,  $P = .039$ ). This suggests that the Promotora intervention was more effective in increasing mammogram screening among Latinas than the Printed intervention, and that this effect was independent of age, income, and insurance group. Among non-Latinas, the Promotora intervention was also associated with larger increases in mammogram screening over time than the Printed intervention area (adjusted GEE,  $P = 0.0075$ ).

GEE were also used to determine whether the effect of the Promotora intervention among Latinas was modified by the insurance type. The 3-way interaction term (intervention\*time\*insurance) that tested this hypothesis was non-significant (adjusted GEE,  $p=0.59$  for HMO-group,  $p=0.81$  for Medicaid FFS, and  $p=0.65$  for HMO-staff, with Medicare FFS being the reference group), suggesting that the effect of the Promotora intervention was confounded by insurance type (as seen in the model above) but not modified by the insurance plan.

Additional analyses including only enrollees that were present in both period of time, and excluding Latinas eligible for Medicare FFS due to disability and ESRD, produced similar results.

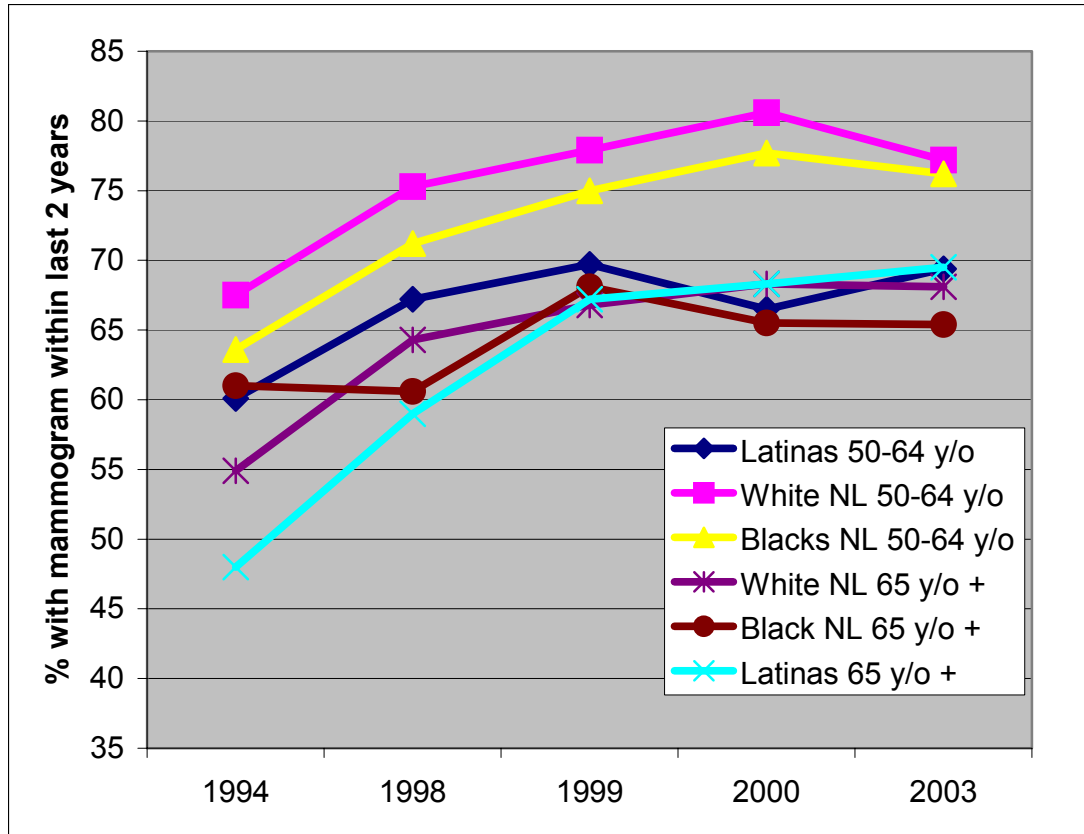
### Discussion

Latinas are at increased risk for not obtaining mammograms and receiving routine screening when compared to non-Latinas, and this disparity seems to persist regardless of the insurance type<sup>4;18;61-63</sup>. This has been consistent with evidence that Latinas are diagnosed with later stages of breast cancer<sup>62;64;65</sup>. Cultural competent education that attends the needs and barriers specific to Latino communities are necessary if we are to reach the women. The Tepeyac Project was developed based on the needs and barriers reported by Latinas in Colorado. This report is the third in a series that

examines the effects of this community-participatory, church-based educational initiative to increase breast cancer screening awareness among Latinas 50 years and above. The education, developed based on extensive input from the community utilized four main themes that emerged from discussions with the community and review of literature and that must be addressed in Latina-directed health promotion interventions: family, fatalism, trust, and personal delivery.<sup>23</sup> The churches, a place trusted by Latinos and an integral part of their social network<sup>39</sup>, were the chosen vehicle to deliver the message. Specially for Latinas, the churches represent a safe and convenient place for gathering. The churches have been often utilized as a vehicle for health promotion among minorities, Latinos in particular.<sup>23;39-45;49</sup> The Printed intervention delivered through churches addressed family, fatalism and trust issues. However, our hypothesis was that the personal connection was necessary to move women into action. The Promotoras, who were well known, trusted women in their communities, addressed this personal component by engaging women on a one-on-one basis and naturally tailoring the education to the needs and learning styles of each woman. The previous work on Medicare FFS and Medicaid FFS confirmed that the effects were indeed more intense when the Promotora component was added to the intervention.<sup>23;45</sup> This analysis expanded the evaluation of the effect of the interventions to the most important insurance types in Colorado and one more time confirmed the higher impact of the Promotora intervention, an effect that was independent of insurance type, age and income. This effect was confounded but not modified by insurance plan. While modest, the effect was consistent across insurance and income groups suggesting it is indeed valid.

We observed that ethnic disparities remained at the same levels as they have been for the past decade (Figure 4).

**Figure 3: National mammogram rates for Latinas and non-Latinas (NL) women 50-64 years and 65 years old and over, according to race/ethnicity**



SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey

This was, however, variable across insurance groups, with larger disparities being observed among Medicare FFS beneficiaries than in other plans, and being small or null in plans directed at low income women, such as the HMO which covered Medicaid HMO individuals and the Medicaid FFS plan. This observation has also been made in other studies with low-income populations in Colorado.<sup>66</sup> In a more recent study, researchers using data from the National Health Interview Survey (NHIS) analyzed the contribution of socio-demographic factors on screening practices between Latinas and non-Latinas covered by private health insurance. Latina mammogram screening rates were initially lower than non-Latina rates; however, after controlling for age, education, and family income, disparities in mammogram screening were no longer significant.

<sup>66</sup>Similarly, trends in breast cancer and breast cancer survival observed in Latinas residing in Colorado were largely associated with poverty<sup>64</sup>. Of course, since minorities are more likely to be overly represented among low SES groups<sup>64</sup>, these two variables are largely (and sadly) serving as proxies, rather than confounders, for each other. Thus, the essence of ethnic and racial health disparities remains the same, regardless of how much of them is explained by low SES.

Elderly Latinas are at particular risk for not having mammograms. Our results reproduce the findings of a recent report on elderly women living in 11 Surveillance, Epidemiology, and End Results (SEER) areas from 1991 to 2001 linked to Medicare data that showed

that the biennial screening rate in 2000–2001 was 51% for white non-Latinas and 36% for Latinas. After controlling for age, site, physician access, comorbidities, education, and income, elderly Latinas (OR=0.70, CI=0.67–0.74) were still less likely than White non-Latinas to undergo screening.<sup>67</sup> Age was negatively and independently associated with mammograms and this effect was not modified by the Tepeyac Project among Colorado insured Latinas.

While using administrative claim data has the advantage of representing an objective outcome, the use of data collected for billing purposes presents some limitations. The most widely cited self-reported data by the Behavioral Risk Factor Surveillance System (BRFSS) and the National Health Interview Study (NHIS) suggest relatively high levels of screening among the American elderly, with as many as 70% to 80% of women aged 65 to 69 years receiving at least biennial (once every 2 years) screening. However, self-reported data may overstate screening rates.<sup>67</sup> Specifically in Colorado, the sensitivity of the Medicare FFS billing data for screening mammography (as recorded in the Colorado Mammography Project (CMAP), a National Cancer Institute–supported mammography surveillance program in Colorado) was 85 percent and varied substantially by age, race, and socioeconomic status.<sup>68</sup> A further complicating factor affecting particularly Asian-American and Latino women in billing data studies is the low sensitivity of billing data in identifying these ethnic groups.<sup>67;69</sup> Using linked data from the Medicare Current Beneficiary Survey (MCBS), Arday et al. assessed the accuracy of racial/ethnic classifications in the Centers for Medicare and Medicaid Services (CMS) enrollment data base (EDB) before and after the 1997 effort to update the EDB. After the update, the sensitivity of the EDB was 97 percent for white persons and 95 percent for black persons, but less than 60 percent for all other categories. The positive predictive value was above 96 percent for white, black, and Latinos, but below 80 percent for all others.<sup>69</sup>

Using zip codes to determine exposure to the interventions admittedly makes the study vulnerable to ecological fallacy, however most churches do not release individual-level parish membership data, as it is potentially damaging to the trusting relationship required to implement this intervention. Indeed, the Promotoras were adamantly against the suggestion of asking the zip codes of parishioners, as any information request could result in distrust. In addition, parish register data are unreliable, as Latinos are less likely to register than Whites.<sup>70</sup> According to the Archdiocese of Denver's Hispanic Ministry, however, a large proportion of Latinos now attend their neighborhood church (i.e., in the zip code where they live) because of a recent increase in the number of churches offering masses in Spanish. Finally, one of the project's purpose was to test the churches as focal points and vehicles to diffuse the education to Latinas within certain geographic areas.

This study has demonstrated provocative results that should be discussed and that should generate hypotheses and new research in public health. To substantially increase preventive care screening, this type of intervention may need to be combined with other strategies to overcome significant barriers faced by these women. Successful cancer screening initiatives targeting Latinas must address not only culturally specific

barriers but also access and broader institutional and societal factors. Finally, while a randomized controlled trial may pose ethical and logistical dilemmas quite difficult to overcome, it may be the necessary next step to evaluate this type of intervention and to address some of the limitations experienced in this study.

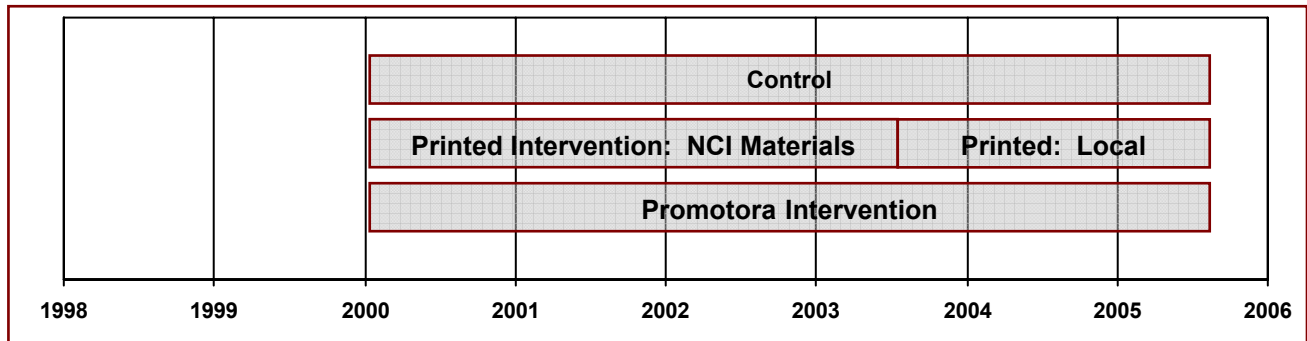
## Tepeyac Project, Phase II (2002-2005)

The overall expansion of Phase II was based on the feedback and objective results seen in Phase I and resulted in three study groups (Figure 4):

- Printed Intervention: This was a modification of the Printed Intervention in Phase I. Given the lack of success of this intervention, community feedback indicated that locally developed materials addressing local concerns and using Latino persons who were known to the community could increase the impact of this intervention.<sup>71</sup> New educational materials were developed using feedback from the local Latino community. The Catholic churches in the state of Colorado were contacted to continue participation in the project and 179 (of the 228 now existing Catholic churches in Colorado) confirmed their participation. The new printed materials were developed with intense feedback from the community on content, language, colors and themes. We avoided literal translation from English and used local Spanish language terms and a literacy level with which our community was comfortable (4<sup>th</sup> to 6<sup>th</sup> grade). The booklet included a typical Latino media: a “*fotonovela*,” (a story in pictures) featuring one of our Promotoras going through the screening mammogram process. The main message encouraged all women 40 and above to obtain annual mammograms addressing the Latino family sense (“Do it for yourself, do it for your family”).<sup>33;72</sup> They addressed local barriers and included information about benefits and the toll-free phone number of the CWCCI. The educational materials and newsletters can be downloaded for free from the Project Tepeyac website (<http://www.cfmc.org/professionals/protepeyac.htm>).
- Promotora Intervention: This intervention remained essentially unchanged and, based on feedback from the Promotoras and community, was expanded to include 2 additional parishes located in the same zip codes as the 4 original parishes, for a total of 6 churches.
- Control group: three surrounding states (Wyoming, Kansas and Utah), where, to our knowledge, no similar interventions were taking place, agreed to provide their Medicare FFS data for comparison.

In 2003, a fourth study group was piloted in Colorado. This group, which included five churches (in five geographically distant zip codes) was part of the Printed Intervention in Phase I. The churches volunteered to undergo an intervention named Teach the Model, in which we attempted to reproduce the Promotora effect. The volunteers of the five churches were trained in how to become Promotoras and how to initiate interventions in their communities. This intervention was conducted from mid 2003 throughout 2005 and claims data were not available to perform a valid evaluation by the publication of this guide. Therefore, we excluded the five Colorado zip codes where the Teach the Model was implemented from the entire analysis to avoid biasing the results in any direction.

Figure 4: Temporal evolution of the Tepeyac Project interventions:



## Quantitative Evaluation

Similar to Phase I, we used claims data to evaluate all six years of the project. This time, however, temporal trends of annual mammogram rates of Medicare FFS Latinas (ages 50 to 69 years) were followed using claims from 1998 through 2004. Adjusted rates were computed using generalized estimating equations (GEE).

To deal with the variations on zip code of residence resulting in intervention crossover during the study time, we performed two types of analyses, as follows:

- Intent-to treat (ITT) approach: patients were assigned to the intervention area where they resided during the years of 2000 or 2001, when the interventions started;
- As-treated (AT) approach: patients were assigned to the Promotora intervention if they resided in the Promotora intervention area (and therefore were exposed to it) during any year from 2000 to 2004; the remaining individuals were assigned to the Printed intervention if they resided in the Printed intervention area during any year between 2000 and 2004; and those remaining were assigned to the Control group.<sup>73</sup>

Of the 3905 Latinas ages 50 to 69 years who were followed over time in this study, 3564 (91%) had the same intervention assignment by the two approaches; 341 (9%) were not captured by the ITT analysis because they were not present in the datasets during 2000 or 2001 (in the AT assignment, these were: Promotora intervention=6%, Printed intervention=70%, Control=6%); 22 (1%) patients classified as Printed intervention by the ITT were re-classified as Promotora intervention in the AT analysis because they resided at least one year in the Promotora intervention areas after 2001; while the classification was the same for the Printed intervention and Control groups.

To deal with temporal variations in dual eligibility for Medicare and Medicaid status, one of our measures of low income, we decided to classify patients as “dual” if they were ever eligible for that status during the study period. It is unlikely that dramatic changes in income took place during the study period. To improve the adjustment for low income, a second measure was used: zip code median family income.

## Results

Overall, 3905 Medicare FFS Latinas in four states with ages 50 to 69 years were followed over time in this study. These unique patients generated 12,168 mammogram status observations over the 7 years that were used to calculate the annual rates.

Overall, 1280 Latinas (33%) had no mammograms at all over this seven-year period. The distribution of number of mammograms per person over the seven-year period for the 2673 women who lived at least five years in the same zip code is shown in Table SA2.1. This proportion was not highly related to permanence in the same zip code, since 27% of the women who lived in the same zip code for at least 5 years had no mammograms during the 7-year period, varying slightly by intervention group. The proportion of these Latinas who had 5 or more annual mammograms during the study period was 21% and this finding did not vary by intervention.

Table 6: Number of mammograms per patient by intervention group for Medicare FFS Latinas 50-69 years of age who stayed in the same zip code for at least 5 years

No. mammograms 1998-2004	Control		Printed Intervention		Promotora Intervention		Totals	
	N	%	N	%	N	%	N	%
0	224	25	481	29	22	24	727	27
1	155	17	245	15	18	20	418	16
2	118	13	235	14	8	9	361	14
3	104	12	186	11	12	13	302	11
4	92	10	187	11	16	18	295	11
5	85	9	152	9	10	11	247	9
6	83	9	142	8	2	2	227	8
7	37	4	56	3	3	3	96	4

Figures 5 and 6 show the time distribution of the mammogram rates for Medicare Latinas through the years by intervention, using the ITT and AT approaches, respectively.

Figure 5: Time distribution of annual mammogram rates for Medicare Latinas by intervention using the ITT approach

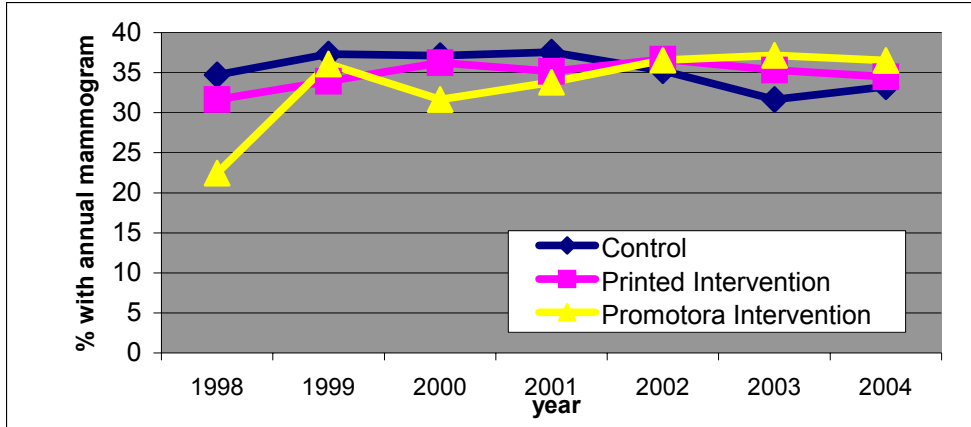
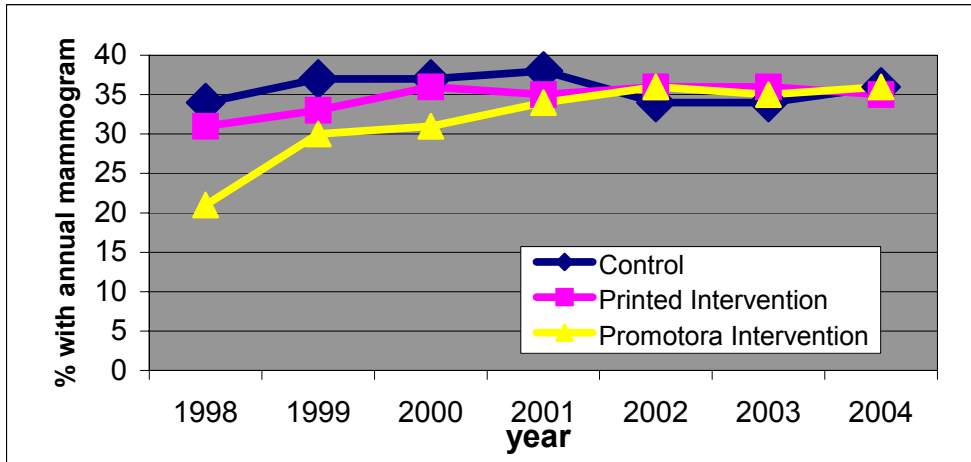


Figure 6: Time distribution of annual mammogram rates for Medicare Latinas by intervention using the AT approach



The trend for Latinas was upward until approximately 2001 or 2002, after when, the rates seemed to stabilize. The initial upward trend seemed more dramatic for the Promotora intervention, which started lower than the other groups and reached similar rates as the other intervention groups in 2001. After 2001, all groups had similarly stable rates.

Because this analysis showed high levels of variation, another analysis was performed grouping years in periods as follows: period 1= 1998-1999; period 2=2000-2002; period 3=2003-2004. Figures 7 and 8 show the annual mammogram rates by period and intervention. Very similar trends were noted, but with less “background noise”.

Figure 7: Annual mammogram rates of Medicare Latinas by period (period 1= 1998-1999; period 2=2000-2002; period 3=2003-2004) using the ITT approach

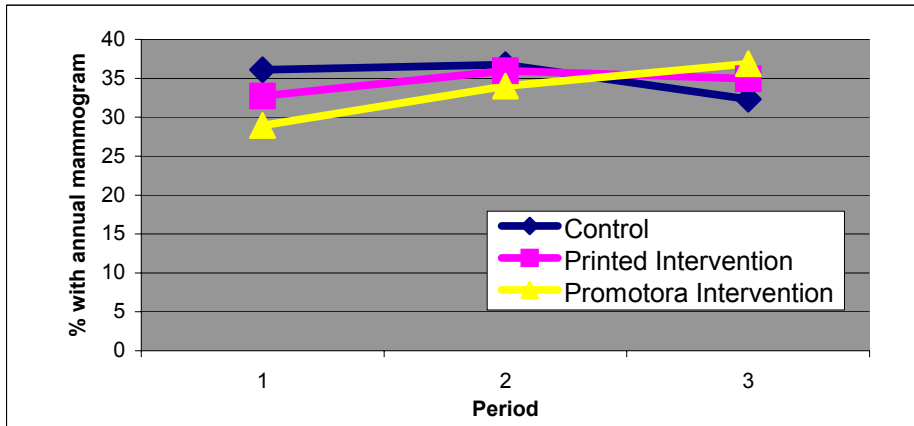
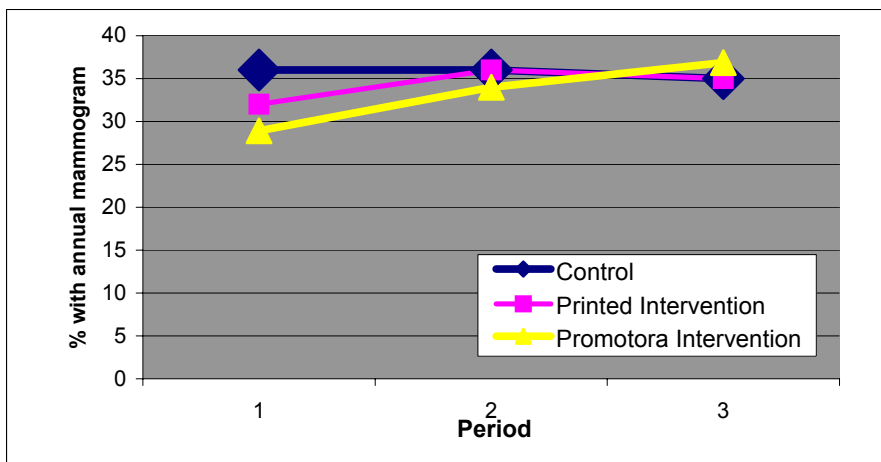


Figure 8: Annual mammogram rates of Medicare Latinas by period (period 1= 1998-1999; period 2=2000-2002; period 3=2003-2004) using the AT approach



Figures 9 and 10 showed the results of the above analysis performed for White non-Latinas (NLW). As the figures clearly show, among NLW, annual mammogram rates had a modest increase from 1998 to 1999, were relatively stable until 2001 (with slight differences between intervention groups), and had a marked downward trend after 2002.

Figure 9: Time distribution of annual mammogram rates for Medicare White non-Latinas by intervention using the ITT approach

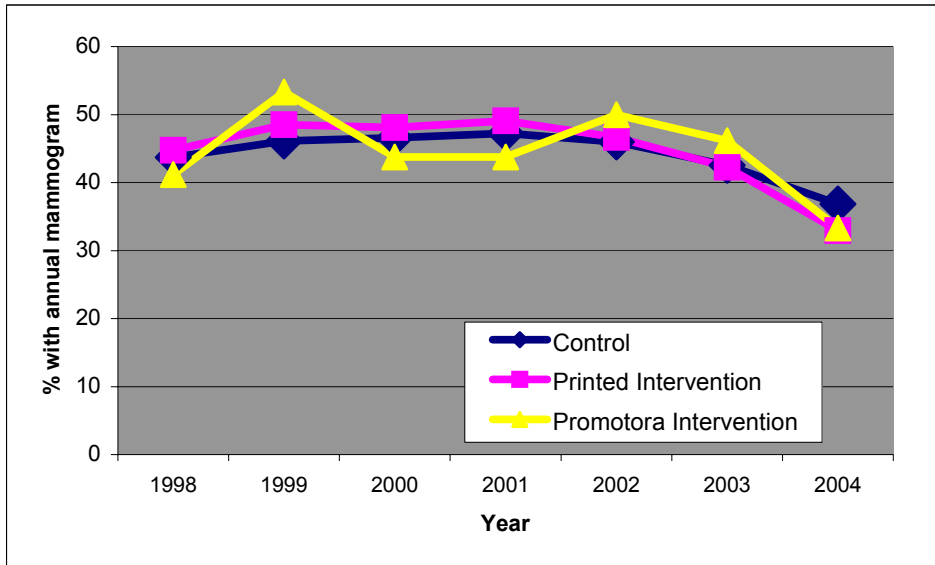
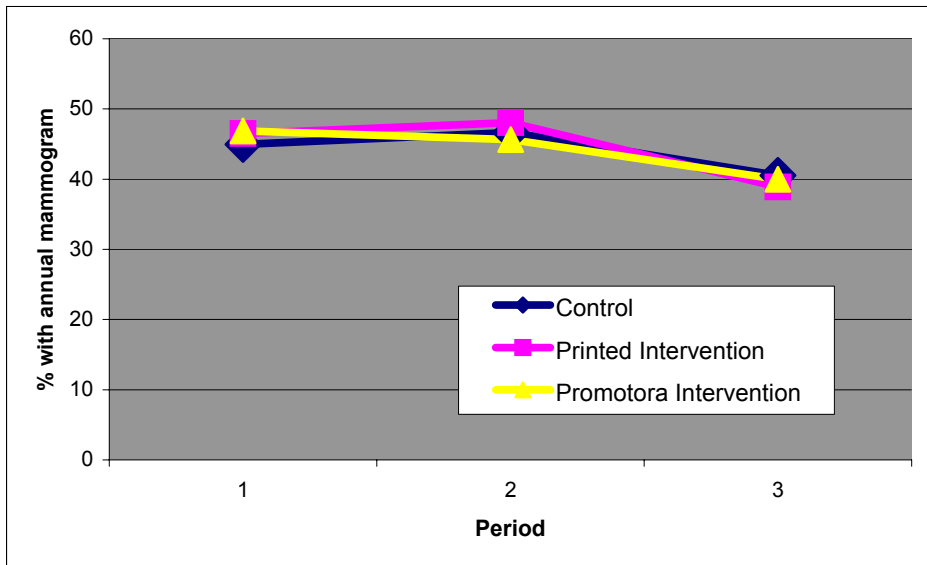
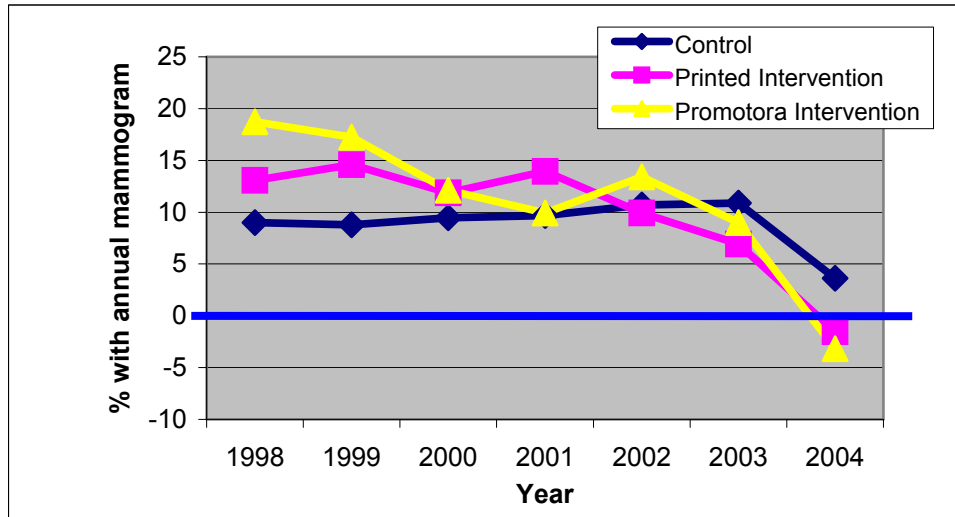


Figure 10: Time distribution of annual mammogram rates for Medicare White non-Latinas by intervention using the AT approach



This downward trend combined with the stability in the rates among Latinas reduced the disparity between the two ethnic groups (Figure 11). The changes in disparities were minor between intervention groups.

Figure 11: Disparities between Latinas and White non-Latinas enrolled in Medicare by intervention over time



Using the AT approach provided more power to the statistical analysis. Tables 7 and 8 show the GEE models that evaluated the effect of the Promotora intervention compared to the Statewide intervention and to the Control group on time trends adjusting for confounders, using the as-treated approach. Table 9 depicts the comparison between the Printed intervention and the Control group.

Table 7: Generalized estimated equation model, comparing the effects of the Promotora and Printed interventions on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence Limits		Z	P-value
Intercept	-1.8765	0.2269	-2.3211	-1.4318	-8.27	<.0001
Period +	0.0870	0.0197	0.0484	0.1257	4.41	<.0001
Promotora vs. Printed Interaction Period*	-0.3905	0.1710	-0.7256	-0.0554	-2.28	0.0224
(Promotora vs. Printed interventions)	0.1419	0.0724	0.0001	0.2838	1.96	0.0498
Age	0.0162	0.0034	0.0095	0.0229	4.77	<.0001
DE* Medicare-Medicaid	-0.0786	0.0384	-0.1539	-0.0032	-2.04	0.0410
Income**	0.0426	0.0209	0.0015	0.0836	2.03	0.0420

+: period 1=1998-1999, period 2=2000-2002, period 3= 2003-2004; \*: dually eligible; \*\* <100%, 100-150%, 150-200% or >200% of federal poverty level for 2000 for a family of four (\$17,050)

Table 8: Generalized estimated equation model, comparing the effects of the Promotora intervention and Control group on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence		Z	P-value
			Limits			
Intercept	-2.0907	0.3408	-2.7587	-1.4228	-6.13	<.0001
Period +	0.0360	0.0303	-0.0234	0.0954	1.19	0.2346
Promotora vs. Control	-0.4287	0.1789	-0.7793	-0.0781	-2.40	0.0166
Interaction Period*(Promotora Intervention vs Control)	0.1828	0.0756	0.0347	0.3310	2.42	0.0155
Age	0.0226	0.0050	0.0128	0.0323	4.54	<.0001
DE* Medicare-Medicaid	-0.3146	0.0551	-0.4226	-0.2065	-5.71	<.0001
Income**	0.0512	0.0287	-0.0051	0.1075	1.78	0.0747

+: period 1=1998-1999, period 2=2000-2002, period 3= 2003-2004; \*: dually eligible; \*\* <100%, 100-150%, 150-200% or >200% of federal poverty level for 2000 for a family of four (\$17,050)

Table 9: Generalized estimated equation model, comparing the effects of the Printed intervention and Control group on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence		Z	P-value
			Limits			
Intercept	-1.9143	0.2094	-2.3246	-1.5039	-9.14	<.0001
Period +	0.0369	0.0285	-0.0190	0.0928	1.29	0.1961
Printed vs. Control	-0.1176	0.0795	-0.2734	0.0382	-1.48	0.1392
Interaction Period*(Printed Intervention vs Control)	0.0494	0.0339	-0.0170	0.1158	1.46	0.1445
Age	0.0190	0.0030	0.0132	0.0248	6.41	<.0001
Dual	-0.1631	0.0332	-0.2281	-0.0981	-4.92	<.0001
Poverty	0.0536	0.0177	0.0188	0.0883	3.02	0.0025

+: period 1=1998-1999, period 2=2000-2002, period 3= 2003-2004; \*: dually eligible; \*\* <100%, 100-150%, 150-200% or >200% of federal poverty level for 2000 for a family of four (\$17,050)

Using the ITT approach, the difference between the Promotora and Printed interventions did not reach significance (estimate of interaction between period and intervention  $0.1112+0.0916$ ,  $p=0.2250$ ), after adjustment for the same variables as above. However, both the Promotora and Printed interventions showed a significant higher impact compared to the Control group (estimate of interaction between period and Promotora intervention vs. Control  $0.2009+0.0954$ ,  $p=0.0352$ ; estimate of interaction between period and Printed intervention vs. Control  $0.0978+0.0412$ ,  $p=0.0176$ ), adjusted for the same covariates as above).

The direction of the interaction between time and intervention was the same in all models, regardless of the ITT or AT approach, which suggests the interaction results are indeed valid. The AT approach increases the statistical power; therefore, we were able to detect the statistical difference between the Promotora and Printed intervention, (Promotora group's small sample size diminishes the ability to show a difference).

The next models included time spline variables that allowed us to look at changes

occurring in the intervention at distinct time periods. Specifically, we tested two hypotheses: 1) The change in printed materials that started in 2003 resulted in a higher impact of the Printed intervention compared to the control group; and 2) The Promotora intervention sustained its effect in the second phase starting in 2003 compared to the Printed intervention. The tables 10, 11 and 12 show the results of these models. In sum, we observed that the Promotora and Printed interventions were associated with a higher impact compared to the Control group in the annual mammogram rates of Medicare Latinas in the initial period of 2000 to 2002. This effect seemed to fade in the subsequent period.

Table 10: Generalized estimated equation model, comparing the effects of the Promotora and Printed interventions on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence		Z	P-value
			Limits			
Intercept	-1.8049	0.2240	-2.2439	-1.3659	-8.06	<.0001
Period 2000-2002 +	0.1797	0.0361	0.1089	0.2505	4.97	<.0001
Period 2003-2004 +	0.0064	0.0319	-0.0562	0.0690	0.20	0.8407
Promotora vs Printed	-0.2903	0.1289	-0.5430	-0.0376	-2.25	0.0244
Interaction Period 2000-2002*Promotora vs Printed	0.2222	0.1450	-0.0619	0.5064	1.53	0.1253
Interaction Period 2003-2004*Promotora vs Printed	0.0878	0.1129	-0.1333	0.3090	0.78	0.4363
Age	0.0160	0.0034	0.0094	0.0227	4.71	<.0001
DEMedicare Medicaid*	-0.0771	0.0385	-0.1525	-0.0017	-2.00	0.0451
Poverty **	0.0356	0.0211	-0.0057	0.0768	1.69	0.0913

+: period 1998-1999=reference period, period 2000-2002=2000-2002, period 2003-2004=2003-2004;

\* dually eligible; \*\* <100%, 100-150%, 150-200%, >200% of 2000 federal poverty level for family of four

The ITT models revealed no significant differences in the interactions between time periods and the Promotora intervention, neither in comparison to the Printed intervention nor the Control group and (GEE p-value,  $p \geq 0.1289$ ). This is quite likely due to lack of statistical power, which is larger in the AT models. The ITT model comparing the effect of the Printed intervention to Control group confirmed the result of the AT model, showing a significant effect on the period 2000-2002 (interaction GEE estimate  $0.1316 \pm 0.0637$ ,  $p=0.0388$ ).

Table 11: Generalized estimated equation model, comparing the effects of the Promotora intervention and Control on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence		Z	P-value
			Limits			
Intercept	-2.0511	0.3340	-2.7057	-1.3965	-6.14	<.0001
Period 2000-2002 +	0.0455	0.0504	-0.0534	0.1444	0.90	0.3670
Period 2003-2004 +	0.0256	0.0477	-0.0679	0.1191	0.54	0.5909
Promotora vs Control	-0.3297	0.1340	-0.5924	-0.0670	-2.46	0.0139
Interaction Period 2000-2002*Promotora						

vs Control	0.3554	0.1501	0.0612	0.6495	2.37	0.0179
Interaction Period 2003-2004*Promotora						
vs Control	0.0540	0.1184	-0.1782	0.2861	0.46	0.6486
Age	0.0225	0.0050	0.0128	0.0323	4.53	<.0001
DE Medicare Medicaid*	-0.3152	0.0552	-0.4233	-0.2071	-5.71	<.0001
Poverty **	0.0490	0.0288	-0.0074	0.1055	1.70	0.0888

+: period 1998-1999=reference period, period 2000-2002=2000-2002, period 2003-2004=2003-2004;  
\* dually eligible; \*\* <100%, 100-150%, 150-200%, >200% of 2000 federal poverty level for family of four

Table 12: Generalized estimated equation model, comparing the effects of the Printed intervention and Control on annual mammogram rates of Medicare Latinas over time (As treated approach, see text for explanation)

Variable	Estimate	Standard Error	95% Confidence		Z	P-value
			Limits			
Intercept	-1.8628	0.2019	-2.2586	-1.4671	-9.23	<.0001
Period 2000-2002 +	0.0456	0.0497	-0.0518	0.1429	0.92	0.3586
Period 2003-2004 +	0.0246	0.0460	-0.0655	0.1147	0.54	0.5921
Promotora vs Control	-0.1063	0.0554	-0.2149	0.0022	-1.92	0.054
Interaction Period 2000-2002*Printed						
vs Control	0.1312	0.0614	0.0109	0.2515	2.14	0.0326
Interaction Period 2003-2004*Printed						
vs Control	-0.0159	0.0549	-0.1235	0.0917	-0.29	0.7724
Age	0.0188	0.0030	0.0131	0.0246	6.38	<.0001
DE Medicare Medicaid*	-0.1619	0.0332	-0.2269	-0.0969	-4.88	<.0001
Poverty **	0.0489	0.0178	0.0139	0.0838	2.74	0.0061

+: period 1998-1999=reference period, period 2000-2002=2000-2002, period 2003-2004=2003-2004;  
\* dually eligible; \*\* <100%, 100-150%, 150-200%, >200% of 2000 federal poverty level for family of four

Of note, similar models were developed for White non-Latinas and low income (both by zip code median family income and dual eligibility for Medicare and Medicaid) and advanced age were, similar to Latinas, highly associated with lower likelihood of having a mammogram, after adjustment for the same confounders as above.

## Discussion

Collectively, these results seem to confirm that the Promotora intervention had a larger impact compared to the Printed intervention and to the Control group. This effect, however, did not seem to sustain itself once the mammogram rates reached a certain plateau. Further increases in mammogram rates may require interventions directly related to the barriers faced by this specific group of Latinas.

The decrease in disparities between Latinas and White non-Latinas enrolled in Medicare decreased largely due to decreases in the rates of the White non-Latinas. Low income and older age plague both ethnic groups and were consistently associated with lower likelihood of having mammograms. These findings suggest these are the issues that need to be assertively addressed even among insured Latinas and on-Latinas alike

if the rates are to be higher.

Our study is limited to the information that could be obtained from census variables (zip code median family income) or from claims (age, dual eligibility for Medicare and Medicaid). Yet, a recently published study by Rodrigues et al, using 1998 survey data on California Latinas, showed similar findings regarding income and related variables (employment, health insurance), as well as being foreign born.<sup>7</sup> It is possible, and likely that other variables not captured by our data might influence the likelihood of having mammograms. However, given the strength of the independent association of low income and older age with lower likelihood of having mammograms, seen both in Latinas and their White non-Latinas counterparts, it seems more logical to allocate resources on addressing these barriers than on more studies to investigating other variables not captured by our study as well as other recently published studies.<sup>6,7</sup>

## Qualitative Evaluation

Frequent meetings with Promotoras, La Clinica Tepeyac and church staff, constituted a natural, continuous focus group. Based on the Action Research Model, the knowledge gained during these meetings was immediately used to adapt and improve the intervention as shown in the table below.

Table 13: Community feedback and action taken during the project

Category	Finding	Action taken
Cultural	Family comes first, care of self comes after	Educational messages focused on family
	Privacy/ Modesty issues = barrier	Education, Women Health Groups
	Word of priest is crucial	Encourage priests both statewide and locally to personally recommend mammograms
	Mammograms cause cancer	Education by Promotoras and Women Health Groups
	Older Latinas are much more resistant to education	Emphasize outreach to older women with Promotoras, materials emphasize increased risk of breast cancer with older age, older women pictures in materials
	Fear of diagnoses: " <i>better to not know</i> "	Education about increased survival with early diagnosis
Catholic Church issues	Archdiocese's support is good but can not interfere with churches high autonomy	Respect churches high autonomy, engage priests during developmental phase
	Personal, constant contact with Priests is crucial	Frequent meetings with Priests
	Sensitivity to modesty issues in the church	Shower card glued inside brochure
	Priests complained they were often invited for projects but did not learn the results	Newsletter created to keep all informed about the results, annual meeting with the priests and church staff to share quantitative and qualitative results
Project Logistics	Promotoras need badge and uniform to be identified as health educators	Provided by project staff
	Women-only health forum	Women Health Groups
	Keep church personnel informed of project status to keep motivation	Project Newsletter
	Retaining Promotoras strategies: increase their sense of value within the community	Graduation ceremony attended by project staff and community, certificate and gifts

A more formal qualitative evaluation, conducted by Dr. Evelinn Borrayo, Assistant Professor of Psychology at the Colorado State University, is in the Appendix.

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