INTERNATIONAL COMMUNICATIONS RESEARCH

REPORT FOR THE
Center for Health Promotion
Minnesota Department of Health

THE STATE OF MASS MEDIA USE IN CVD REDUCTION CAMPAIGNS

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Table of Contents

Introduction

The Center for Health Promotion at the Minnesota Department of Health is poised to enact a campaign on Cardiovascular Disease (CVD) designed to increase awareness and knowledge of as well as reduce the prevalence of CVD risk factors. Traditionally, such campaigns include both mass mediated and direct intervention. Indeed, research indicates that the combination of these two intervention styles is crucial to reaching overall campaign goals. This report is designed to provide a broad canvas of the role of the mass media in CVD campaigns, and ultimately to make recommendations toward the mass media portion of the upcoming Minnesota campaign.

The use of mass media in CVD campaigns is a complex endeavor. As I will show, the state of mass media use in such campaigns is entering a third wave, built upon the lessons learned and experiences of the first two chapters of CVD campaign history. The phase in which we are entering is concerned with highly-focused roles and expectations of effects, rather than general community-wide effects, produced from CVD intervention.

A recommendation of mass media use in future CVD campaigns must provide insight into four main areas of inquiry. First, CVD campaigners must have an understanding of what mass media can and should do in a CVD campaign. Second, campaigners then must be informed as to whom should be targeted by mass media messages. Knowing who should be targeted naturally leads to a third concern, regarding what specific messages the mass media should put forward. Finally, campaigners must make informed decisions as to the type of medium used for each message.

In order to provide effective insight and recommendations, a number of research-based reviews must occur to shed light on what is known regarding each of these four areas of inquiry. A review of past CVD campaigns allows for the avoidance of their pitfalls and capitalization of their

successes. Only by understanding CVD campaign history can we possibly understand how we should proceed into the future. Second, it is important to have a broad understanding of the theory of health promotion via the mass media. This includes both health communication theories and the principles of social marketing. Such theories have been used time and again to produce effective campaigns on a broad range of topics and, as such, it is vital to use them as a platform for any future CVD campaign. Following the principles of social marketing, it is vital to gain an understanding of how the overall at-risk population can be subdivided into segments. Each segment must then be understood in terms of its awareness, knowledge, attitudes, and behavior regarding cardiovascular health. Finally, one must have an understanding of the relative strengths and weaknesses of various mass medium, plus an understanding of broad trends of media use by the audience segmentation mentioned above.

Thus, this report will review each of these literatures, and in turn use them to build a recommendation for future CVD campaigns in lieu of the areas of inquiry detailed above. As I will show, the state of CVD research provides a wealth of insight and knowledge from which to build highly targeted and successful future campaigns.

Cardiovascular Health Campaigns

There have been a number of divergent campaigns designed to reduce the risk of cardiovascular disease. This report will focus specifically on those that include as part of their overall strategy mass media interventions. Furthermore, this report will concentrate on campaigns that include an evaluation phase, since such campaigns have been afforded the most coverage in peer-reviewed journals, and make some attempt to empirically measure the impact of their interventions.

This history of mass media CVD health campaigns can be broken into three rather distinct phases. The first phase is comprised of one study and the initial years of a second round of studies in which significant positive effects were detected across a number of campaigns, strategies and locations. These initial reports of success, however, were followed by more detailed and long-term analyses of the second phase of CVD campaigns, which found null or at best minimal effects, regardless of the size, duration, or location of the study. The third phase consists of the last ten years, in which researchers have focused on learning lessons from the past, reformulating and reevaluating theory, and taking a more audience-selective perspective on CVD health campaigns.

The First CVD Evaluation Campaign

The Stanford Three-Community Project

In 1972, researchers at Stanford University set out to test whether the mass media alone or coupled with community interventions could impact the knowledge and practices of community members with regard to cardiovascular health (Maccoby, Farquhar, Wood, & Alexender, 1977). Two communities in California, Watsonville and Gilroy, received a significant multimedia campaign that included three television programs, the development and airing of some 50 radio and 100 television spots, newspaper stories and ads, direct mail, plus bus, worksite, and store posters. In each city, high risk subjects were identified for specific comparisons. In addition, an instructional program with a subset of recruited high risk subjects was instituted in Watsonville. This intervention included weekly and monthly sessions both at home and in small group settings, and focused on first analyzing each participant's behavior, modeling of new behaviors, and implementing the new behaviors, as well as sessions aimed at reinforcement and maintenance.

The evaluation consisted of baseline and yearly follow-up surveys of a randomly selected sample of adults in each town. To control for the effect of prior contact in later surveys, an "after-only" sample of adults was also surveyed at the end of the first year of the study. The study ran approximately two years. The surveys included knowledge and behavioral measures as well as a medical examination.

The study found that while knowledge of CVD risk factors increased approximately two percent in the first year and six percent during the second year in the control city (Tracy), the same time interval increases in Gilroy were 18 and 27 percent and 36 and 41 percent in Watsonville. Similar effects were noted across high risk groups. The Watsonville intervention group exhibited a 54 percent increase in knowledge after the first year of intervention.

With regard to behavioral change, similarly strong effects were detected. Rates of change for egg consumption and cigarette smoking cessation were two times and three times greater in Gilroy and Watsonville, respectively, as compared to Tracy. The Watsonville intervention group change rates were four times greater than Tracy.

The Stanford Three-Community Project is not often given the credit it is due in terms of its impact on the cardiovascular practices community. The study showed first that community wide evaluations with regard to CVD were possible, and that such evaluation designs could capture effects of the campaigns they were measuring. And of course, most importantly, the Three-Community project showed that a community-wide intervention could make significant improvements in not only citizen's knowledge of CVD but also their behavior and subsequent health. The project, in short, was an inspiration and model to the next wave of campaigns to be conducted over the next decade and a half.

The Second Wave of CVD Campaigns

Beginning in the late 1970's and especially in the 1980's, a two-fold change began in the nature of CVD campaigns, in their number and in their scope. CVD community campaigns began to appear literally by the dozens. Additionally, this time period was witness to the largest evaluations regarding CVD to date. Given the impressive success of the Three-Community Project, hypotheses in such evaluations were aggressive and optimistic: Significant increases in knowledge, attitudes, and especially in behaviors regarding CVD, in communities numbering in the tens of thousands of residents. Unfortunately, the results of each study seemed to be a mirror of the others, regardless of size, scope, and location. While initial results would likely pattern the results of the Three-Community project, long-term measures curiously indicated null or at best minimal effects regarding CVD best practices.

The Stanford Five-City Project

Beginning in 1978, the Stanford Five-City Multifactor Risk Reduction Project was an extensive campaign designed to improve knowledge of and behaviors influencing CVD, as well as CVD outcomes such as fatal and nonfatal heart disease and stroke rates. Certainly the most ambitious project of its kind in the U.S., the project spanned over six years and millions of dollars. The campaign was divided into waves roughly one year in length. While the first two years were designed to increase awareness and knowledge of CVD best practices, later years specifically targeted various populations and specific health practices. In the final year, efforts were made to institutionalize the many programs developed during the campaign (Farquhar, Fortman, Maccoby, et al., 1985; Flora, 1989).

Five cities in California were chosen based on their demographic similarities yet distinct media markets. Two cities received exposure to general education plus approximately five risk

factor education campaigns each year. Specific goals with regard to behavior were; reductions in plasma cholesterol levels, blood pressure, salt intake, reduced weight, plus increased physical activity, use of antihypertensive medications, reduction in cigarette smoking, and reduced caloric intake. Education was carried out through television, radio, and newspaper advertisements and programs, other print media, plus direct education in classes and courses. Like the Three-Community project, Spanish language materials were developed. The researchers estimated that each adult in the treatment communities were exposed to 26 hours of messages over a five year period of intervention, mostly by television, radio, and booklets.

With Monterey and Salinas as the treatment cities, Modesto, San Luis Obispo, and Santa Maria were chosen as control cities. Cross-sectional samples in each city were surveyed at baseline and months 25, 51, and 73. Additionally, cohort surveys were conducted at baseline and months 17, 39, and 60. Surveys measured knowledge and took various physical measurements (height, weight, body mass index (BMI), blood pressure, and cholesterol levels).

Results of the project were mixed (Farquhar, Fortmann, Flora, et al., 1990; Flora, Fortmann, Taylor, & Maccoby, 1985; Fortmann, Winkleby, Flora, Haskell, & Taylor, 1990):

- Treatment cities significantly increased their **CVD knowledge** over control cities
- **Cholesterol** levels in the cohort studies decreased more in the treatment cities, at least at months 17 and 39, while the cross-sectional studies detected no effect
- **Blood pressure** decreased by approximately 4 percent in treatment over control in both cross-sectional and cohort studies
- There was a 13 percent decrease in **smoking** in treatment over control in the cohort studies, though no significant difference was detected in the independent samples
- Significant differences in **BMI** were only detected in month 73 of the cross-sectional surveys

In general, the cohort studies tended to show more positive effects, although one of the more disappointing results was the general lack of consistently increasing effect sizes over time. In fact, few effects were detected in the final months of evaluation, and over an eight year period, improvements in control cities tended to mirror those detected in the treatment cities (Winkleby, Fortmann, & Rockhill, 1992). In some cases, rather substantive effects were found in the cohort studies while null effects were found concurrently in the cross-sectional studies (Fortmann, Taylor, Flora, et al., 1993).

Results from measures of CVD events were even less encouraging. A combination measure of fatal CHD, fatal myocardial infarction, nonfatal myocardial infarction, and fatal and nonfatal stroke was within chance levels between treatment and control cities from 1979 to 1992 (Fortmann, & Varady, 2000). With regard to increases in knowledge, similar results, or lack thereof, were found in cohort groups (Young, Haskell, Taylor, et al., 1996).

An analysis of media supplementation in the project did detect a number of results with regard to awareness. Respondents in treatment communities were significantly different than those in control communities with regard to recall of various media interventions, and such positive effects increased with time. Additionally, those who consumed the most media reported the highest levels of recall. As previously mentioned, significant increases were found in the cross-sectional studies with regard to CVD knowledge as compared to the control group. Newspaper reliant individuals learned the most over the course of the campaign. Heavy television watchers learned the least, yet still learned more than their control city counterparts. Self-efficacy was also found to improve in treatment cities (Schooler, Flora, & Farquhar, 1993).

The Stanford Five-City Project was the largest CVD intervention and evaluation in U.S. history. However, the project failed to find consistently significant effects on the community,

nor did the project detect any interventional effect that grew over the duration of the project. Overall, the project was successful in raising awareness and knowledge, and some evidence suggests small, isolated effects on some measures. Overall however, consistent effects were not found in reducing CVD risk factors, and no effects were detected in lowering overall CVD.

The Minnesota Heart Health Program (MHHP)

Similar to the Stanford projects, MHHP was designed to reduce CVD risk factors across intervention communities. Three pairs of communities were selected based on similarity in size, type, and distance to Minneapolis-St. Paul. Cross-sectional surveys were conducted periodically, collecting information on medical history, attitudes and beliefs, plus medical risk factor measurements. A cohort subset of the cross-sectional baseline was created and re-surveyed at either two or four years as well as after approximately six years of intervention (Jacobs, Luepker, Mittlemark, at al., 1986).

Community leaders and organizations were recruited to participate in intervention programs. Mass media were designed to create individual–level exposure to the program. Health professionals were also recruited for participation. Specific interventions included walking events, a "fitfest," programs for school children, and a self-training brochure available at multiple locations.

Few significant findings have been detected. Improvements attributed to MHHP, as described by the principal investigators, have been "modest…and within chance levels" (Luepker, Murray, Jacobs, et al., 1994; Jeffery, Hellerstedt, Schmid, 1990).

The North Karelia Project

Launched in 1972, the 10-year Finnish North Karelia Project has reported somewhat more positive behavioral results than did the Five-City project. The project included both an

intense media educational campaign as well as treatment and counseling. Every five years cross-sectional populations were surveyed to assess the level of CVD risk in two different eastern provinces in Finland. Surveys gathered data on medical history, health behavior, and attitudes, as well as measurements of height, weight, blood pressure, and cholesterol levels. Additionally, detailed dietary surveys were conducted in 1982 and 1992 (Puska, 1983).

Initially, the treatment area of North Karelia showed a remarkable decline in CVD death rates, cancer mortality, cholesterol levels, blood pressure, and smoking. However, as the evaluation continued, the slope of declines in these measures become indistinct between North Karelia and the rest of the country (Vartiainen, Puska, Jousilahti, et al., 1994). Similar results were found for specific health behaviors, such as fat intake and sodium intake (Pietinen, Vartiainen, Seppanen, et al., 1996).

The Pawtucket Heart Health Program (PHHP)

Another community-wide program was enacted in Pawtucket, Rhode Island. The program included both mass media as well as community interventions and a partnership with the Pawtucket Parks and Recreation Department as well as other groups such as the American Cancer Society plus local libraries, schools, and clubs. In addition to a regular newspaper column, the campaign included radio and television Public Service Announcements (PSAs) and an exercise show on cable television (Lasater, Abrams, Artz, et al., 1984).

Similar to other studies, results were mixed and tended toward null effects. While the treatment community exhibited low BMI , no other significant effects were detected.

The Pennsylvania County Health Improvement Program (CHIP)

CHIP was a study of Lycoming County, Pennsylvania that set out to mobilize county residents to improve their health practices, sustain such changes, and reduce risk factors and thus mortality

and morbidity from CVD. Mass media was used to set the public agenda by introducing CHIP to the community, to increase residents' knowledge about CVD, and to provide information on CHIP activities. Radio, television, newspapers, billboards, and pamphlets were used to create over 800,000 mediated impressions in one month alone. Specific interventions were created for work sites, health professionals, schools. Evaluation criteria for CHIP was not as extensive as for other studies, focusing only on a limited work site evaluation and a study of resources available within Lycoming County and a reference county. Results of these evaluations were positive, as the campaign doubled the inventory of CVD resources in Lycoming (Stunkard, Felix & Cohen, 1983).

Fighting Fat, Fighting Fit (FFFF)

England's largest CVD prevention campaign to date, the Fighting Fat, Fighting Fit campaign was specifically designed to prevent and reduce obesity through healthy eating and increased physical activity. The campaign included seven weeks of peak and day-time programming across a number of BBC medium. Unlike other campaigns, FFFF was designed to specifically target groups with a high prevalence of obesity. The BBC developed a booklet, book, video, and a number of television programs. In addition, over 60 magazines, 9 national newspapers and 120 community newspapers mentioned the FFFF campaign. An at-home survey measured effectiveness of the campaign.

Results showed that 57 percent of the population had heard of the campaign, although only 29 percent said they recalled watching a FFFF program and about the same could successfully describe what the campaign was designed to do. Of those who recalled specific lifestyle change messages, most were 25 – 34 years of ages and held 12 or more years of education (Wardle, Rapoport, Miles, Afuape, & Duman, 2001).

The campaign encouraged people to register with the campaign to take part actively in changing their health practices. A baseline and follow-up survey was taken of registrants (those who registered but did not participate) and participants. The BBC sent out over a quarter of a million registration pacts and over 33,000 were returned with limited demographic information. A random sample of 6,000 were sent a baseline questionnaire. Participants lost 2.3 kg. during the campaign and the percent of individuals defined as obese declined by 6 percent. Fruit and vegetable intake increased by nearly one portion per day while the number of participants who said they ate fried foods less than once per week increased by 16 percent. Prevalence of walking and psychological well-being increased as well (Miles, Rapoport, Wardle, Afuape, & Duman, 2001).

Other Media-Inclusive CVD Campaigns

A number of additional small-scale campaigns have been conducted over the past few decades. Most have followed the lead of the Stanford projects in purpose, design, and execution, although such project are smaller in scope and size, usually resulting in more specific, sometime singular goals (e.g., increasing vegetable intake or smoking cessation) and smaller, more tightly focused interventions (e.g., less often community-wide and more focused on specific populations). Additionally, quite a few of these studies have limited or no evaluation aspect. A number of such studies are briefly reviewed below.

Five a Day for Better Health Campaign: Conducted in California from 1988 to 1990, the Five a Day campaign was designed to increase fruit and vegetable consumption. Intervention techniques included supermarket chain participation of various sorts, and mass media interventions, including newspaper and magazine articles. Using cross-sectional surveys, the study detected an increase in knowledge, beliefs, and attitudes about cancer. Fruit and

vegetable consumption increased over one percent per year, although with this study design it is of course impossible to distinguish these trends as secular or intervention-based (Foerster, Kizer, Disogra, Bal, Krieg, & Bunch, 1995).

The Coronary Risk Factor Study (CORIS): CORIS was a South African study that attempted to increase knowledge of CVD risk factors through mass media interventions. Three areas were recruited, one serving as a control, and the white population was surveyed at baseline and four years later, from 1979 to 1983. The mass media campaign included billboards, posters, newspapers and electronic media interventions in the two treatment areas. In addition, one of the treatment areas included an interpersonal intervention for high-risk individuals. Significant increases in knowledge were detected in the treatment area as compared to the control. Furthermore, participants who had knowledge levels below median improved the most, in contrast to many other studies of CVD knowledge change (Langenhoven, et al., 1991).

The Choose to Move Campaign: Designed and implemented by the American Heart Association, the Choose to Move Campaign was a 12-week education intervention based on recruitment by direct mail, the media, and health care providers. Participants received a welcome kit and weekly information on how to manage CVD risk factors. Participants doubled their reported physical activity and those who said they were limiting calories increased from 84 to 91 percent. Additionally, knowledge and awareness of CVD substantially increased in participants (Koffman et al., 2001).

The Australia Heart Week Campaign: The general goal of this campaign was to encourage individuals with symptoms of possible myocardial infarction to seek immediate help. Three surveys were conducted of patients admitted to coronary care units nationwide. The second and third surveys followed intensive public education campaigns that included events,

media coverage of events, radio advertising, newspaper stories, magazine articles, bus banners, shopping bag advertisements, leaflets, car stickers, and professional papers. Seventy two percent of those surveyed were aware of the campaign, although no significant decrease in response time to care was detected (Bett, Aroney, & Thompson, 1993).

Jacksonville, IL, and King Country, WA Public Education Campaigns to Reduce Myocardial Infarction: Like the Australia Heart Week Campaign, these campaigns (which are completely separate and different efforts) were designed to educate and persuade individuals through brochures, mass media advertisements, public talk, posters and mass media coverage to seek help immediately at the onset of symptoms of myocardial infarction. After a three year intervention, no significant differences were detected, although there was a significant increase in knowledge of the campaigns (Ho, et al., 1989; Moses, et al., 1991).

The Health Style Campaign: In 1981, the Department of Health and Human Services initiated Health Style, a national campaign to increase public awareness of lifestyle health, to increase knowledge of healthy lifestyles, and to stimulate information seeking behavior. The campaign included television and radio spots, bus cards, posters, and newspaper advertisements. A booklet contained educational information and recommendations for action. Evaluations centered on the effect of receiving booklets. There were no statistically significant differences between those who received the booklet and those that did not in terms of CVD knowledge and beliefs, although those who did receive the booklet expressed a more positive attitude toward local health programs. Some self-reported behaviors, specific to nutrition and/or exercise increased as well (Davis & Iverson, 1984).

Goteborg Campaign to Reduce Delay Times Regarding Myocardial Infarction: Similar to previously mentioned delay time campaigns, the Goteborg campaign was designed to

decrease the time it took patients to be admitted to coronary care units. This campaign did find significantly lower delay times after a one year radio, newspaper, and banner campaign (Herlitz, Blohm, et al., 1992).

Dietary Approaches to Stop Hypertension (DASH): A study by the National Heart, Lung and Blood Institute, DASH used targeted mailings, mass mailings, community screenings, and mass media advertising/PSAs. Unlike other recruitment studies, DASH specifically targeted minority groups and found that African Americans, more so than White participants, joined because of dietary concerns and were more likely to cite learning about blood pressure and healthy eating habits as primary important outcomes of the study (Vollmer, et al., 1998).

The Bootheel Heart Health Project: The purpose of Bootheel was to lower CVD risk through the organizing and conducting of exercise groups, health cooking demonstrations, blood pressure and cholesterol screenings, and CVD education classes. Conducted in six southeastern Missouri counties, the project included fitness festivals, church-based CVD education, poster contests at schools, and a weekly newspaper column. The project's surveys detected increased cholesterol screenings and reported higher rates of physical activity.

Programa Latino para Dejar de Fumar: The purpose of this intervention was to reduce smoking in Spanish-speaking households in San Francisco, CA. Using radio and television PSAa, talk shows, pamphlets, fliers, posters, billboards, bus banners, and newspaper articles, the program reported some effects for those who reported high exposure to campaign materials, including a lowering of cigarettes smoked per day and increased quit attempts. However, the evaluation failed to find significant effects for smoking cessation in the community, and knowledge of the campaign was similarly unrelated to smoking cessation.

Although to date there have been no published evaluations on many projects, it is important to note that there have been a wide range of additional media-inclusive intervention programs, many which continue today. Some of the more significant studies include:

- Closing the Health Gap, DHHS
- VERB, It's What You Do Youth Media Campaign, DHHS
- Wisewoman Health Campaign, Connecticut Dept of Public Health
- American Heart, Connecticut Dept of Public Health
- Know Your Number, Mississippi Department of Health
- Eat Right Montana, Montana Department of Public Health and Human Services
- Start With Your Heart, North Carolina Department of Health and Human Services
- Be Counted, Nebraska Department of Health & Human Services
- Smoking Stops Here, State of Maryland
- Closing the Health Gap, DHHS, ABC Radio, CDC

Entering the Third Wave

As is evident from the above review, things did not turn out as researchers and health professionals had hoped in the second wave of campaigns to improve cardiovascular health practices…or did they? While the majority of measures within and across studies that measured community-wide effects failed, on average, to show any substantial effectiveness, the overall health practices of the nation improved tremendously during the fifteen years in which these campaigns took place. Nevertheless, it is paramount to investigate what went wrong in the evaluations, for the health care community has been at the crux of entering a third stage or wave of health care campaigns, one that learns from the lessons, results, and even mistakes of the

second wave. Only by investigating what went wrong can we as health professionals begin to design effective campaigns for the present and future.

The place to begin is with the principal investigators of the major campaigns that have taken place. The researchers involved in the North Karelia project have noted that compared to most countries, Finland has a significantly homogenous population, and secular trends seen throughout the country may have muted the overall effect (Vartiainen, Puska, Pekkanen, et al., 1994). Most other scholars have noted strong secular trends in studies in the U.S. as well (Frank et al., 1992; Luepker et al., 1994).

Mittlemark (1999) offers six possible explanations, many of which have been offered by other investigators as well (e.g., Frank et al., 1992):

1. Ineffectiveness of the educational programs
2. Inadequate surveys and measurement methodology
3. Strong secular trends
4. Over-optimistic expected effects
5. Poor study design
6. Ill-founded conceptual basis

Most of these possible explanations are not consistent with the evidence gathered in the major campaigns detailed above. First, educational programs did impact populations in the very early studies and at the beginning of the studies of the second wave. Knowledge more often than not significantly improved in target populations, and awareness certainly improved. Second, researchers did not use inadequate methods: These same methods were shown to be very effective in the Three-Community Project, and the researchers' proposals passed rigorous peer scrutiny prior to commencement of their projects. Third, the studies were all premised upon

well-established and well-documented theory, and thus the final potential confound, that of poor conceptual basis, does not ring true.

Mittlemark's conclusion is that a combination of strong secular trends, over-optimistic effect sizes, and a study design not able to capture small effect sizes over a large scale population to be the source of the null findings in most of the studies reviews above. None of the investigators expected the strong secular improvement in cardiovascular-related behavior to occur, and nor was there reason to expect such trends when these campaigns were designed. Smoking, blood pressure, cholesterol, and physical activity all came under public scrutiny, discussion and debate precisely at the time these campaigns entered the field.

Studies that set out to document some of these trends found some startling results:

Knowledge	**Time 1**	**Time 2**
Lowering cholesterol helps lower CVD risk [a]	64%	72
Reducing intake of fatty foods helps lower CVD risk [a]	66	72
Eating fewer high cholesterol foods helps lower CVD risk [a]	60	70
Heard of cholesterol [a]	77	81
Provided correct list of causes of high cholesterol [a]	70	75
Know that saturated fats primarily found in animal products [a]	55	60
Have checked cholesterol level [a]	35	46
Know own cholesterol level [a]	3	7
Knowledge test of 10 cholesterol items [b]	36	50
Dietary fiber can lower cholesterol [b]	32	76

Table 1

[a] From Schucker et al., 1987: surveys fielded in 1983 and 1986
[b] From Frank et al., 1992: surveys fielded in 1979-80 and 1989-90, averaged between the two control cities in the Stanford Five-City project

Clearly, given the dramatic change during the 1980's, some taking place in just three years, secular change certainly confounded most studies design to assess specific CVD campaigns. In the face of such changes, study designs were indeed poor, for they were not equipped to detect changes in the face of such trends. Furthermore, effect sizes were optimistic, perhaps, but paled in comparison to the size of change produced secularly.

I believe an additional explanation has to be taken into account as to why the campaigns described above failed to find consistent effects. Two key developments seem to have coincided to produce null effects, developments that directly provide an initial answer as to what direction public health campaigners should take now and in the future. While some of the studies had significant minority components, the impact of these components paled in comparison to the expenditures and efforts put forward over the course of the campaign. Furthermore, many of the studies took place in areas with significantly large minority populations. Also, the designers of the campaigns focused their efforts on newspaper columns, newspaper ads, drive-time radio, and television PSAs. As I will review, such media caters to a population skewed toward higher education and income. The second important development to note is that the majority of secular improvement in CVD knowledge and behavior was similarly skewed: individuals lower in education and low in other measures of SES, as well as ethnic minorities, did not improve at the same pace as did higher SES members of the population (Finnegan & Viswanath, 1999; Frank et al., 1992; Mittlemark, 1999).

Put together, these two developments provide a clear explanation for the null effects found in many campaigns: campaigns were designed, more or less, generically, that is, designed to reach non-marginalized populations, while at the same time, it was precisely these individuals who accounted for the majority of the secular trend documented by scholars. Seen in this light, there should be little surprise that most community campaigns during the 1980's found little effect from their interventions.

The results of the second wave of campaigns and subsequent inquiries into null effects has thus led scholars to take a step back and place greater emphasis on a wider body of theory. Since the beginning, scholars have modeled their campaigns on a number of behavioral health

theories, for example, the health belief model (Rosenstock, 1974), social learning theory (Bandura 1986), and the theory of reasoned action (Ajzen & Fishbein, 1980). More recently, the transtheoretical model (Prochaska & DiClemente, 1986) has also been considered in some campaign designs. These theories are important foundations to health campaigns as will be briefly reviewed shortly. But more importantly, scholars and researchers have also noted the importance of communication theories, most of all, social marketing theory. The most important aspect of this theory is that of segmentation: In short, one message will not work for all audiences. Nor, for that matter, will the same medium. In fact, in some cases, messages that have been found effective for some audiences are in fact detrimental to other audiences. Such is the case for anti-drug messages: those that are persuasive to individuals who have never tried drugs are sometimes found to produce highly adverse reactions to those who are presently using drugs. The same, I would argue, is true for CVD health. How does the use of a fit, white, well-dress model on a billboard (such as one I recently saw along the highway), urging people to walk for exercise, cater to overweight, poor, ethnic minorities? Indeed, in some neighborhoods, walking may not even be a safe activity.

Clearly, the time has come for campaigns to become multifaceted and more sophisticated, both in the theory they employ, the messages they craft, the medium they employ, and the effects they expect by certain segments of the population. It is important to note, as I will show, that not all divisions of the general population need be across racial lines. In fact, with regard to cardiovascular health, many other forms of segmentation may be just as insightful with regard to cardiovascular health.

To enter the third wave, researchers and health campaigners need to understand the theory of social marketing and theories of health behavior change. More importantly, they must

also know their audience, what research has indicated will be effective messages for each segment, and which media individuals in each segment consume. The lesson of the second wave of health campaigns is that only with this information can a campaign expect to document significant results. And, if the goal of the campaign in not evaluation but simple effectiveness, research has nevertheless shown that only through the attainment of the above requirements will a campaign achieve its maximum effectiveness. What follows, then, is a brief theoretical review of major health behavior theories and social marketing theory, followed by a review of what research has shown with regard to segmenting the population relevant to CVD prevention, and some information about different media options available to CVD campaign planners. These reviews naturally lead up to a discussion and recommendation for future CVD campaigns, which is provided at the end of this report.

The Theory of Mass Media-Inclusive Health Campaigns

The Health Belief Model

The Health Belief Model posits that adhering to best practice health behavior depends upon the perceived risk of potential illness, along with perception of personal vulnerability and the strength of the belief that change in behavior outweighs barriers to making the change. Prior research has provided some empirical support of this model with regard to exercise and other CVD behaviors. Perceived barriers in particular have been shown to be strongly correlated with different kinds of physical activity (Sallis et al., 1989).

Social Learning Theory

The key position of this theory is that we learn behaviors from observing others performing those behaviors and imitating them. The model states that self-efficacy and outcome expectancies are critical in determining whether a behavior is attempted and adhered to.

Efficacy is determined by personal experience, vicarious experience, and persuasion. With regard to CVD, the model underscores that self-efficacy can be changed through the media (as vicarious experience and persuasion), subsequently improving the chances that an individual will enact best practices. In addition to self-efficacy, Social Learning Theory holds that behavior is determined by expectancies about the consequences of one's actions and the assessment of value of a particular behavior.

The Theory of Reasoned Action

There are two main components to the Theory of Reasoned Action: personal attitudes and subjective norms. Self-efficacy is also an important precursor to behavioral intention. Personal attitudes are built upon expectation and personal assessment of the outcome of a behavior. Subjective norms are primarily opinions about what other people important to oneself believe should be done with regard to a particular behavior. Importantly, the Theory of Reasoned Action makes a distinction between behavior and behavioral intentions, as various environmental factors may interfere with performing a behavior despite the intention to do so. Thus far there have been few direct tests of the Theory of Reasoned Action with regard to CVD.

The Transtheorectical Model

Unlike other models, the transtheoretical model focuses on the importance of recognizing that there are stages of change that individuals go through in changing their behaviors. These stages are summarized in Table 2 below:

Stage	Definition	Effective Interventions
Precontemplation	No intention to change; can't see the problem	Consciousness raising; dramatic relief
Contemplation	Aware of problem, thinking about overcoming problem, no commitment to future action	Self-(re)evaluation; Environmental re-evaluation
Preparation	Intending to take action in next month; may have done some reduction to problem or unsuccessfully taken action in recent past	Self-liberation

Action	Behavior modification successfully for 1 day to 6 months	Counterconditioning; Stimulus control
Maintenance	Working against relapse, consolidating gains, over six months. Behavior change stabilizing into status quo	Reinforcement management; Helping relationships

Based on Prochaska & DiClemente, 1986

Table 2

As is clear above, the transtheoretical model provides very specific strategies for different populations, and has built into itself a specific segmentation: where each individual lies within the stages of change. Unfortunately it is often difficult to translate the stages of change into specific target populations, although for each health behavior there is the chance for symmetry between demographic and attitudinal variables and the stages of change. Nevertheless, the crux of the theory is in its noting of the importance of readiness for each individual and the differential strategies that must be enacted for each stage of change.

Social Marketing Theory

Social marketing as a concept was effectively summed up by a single question posed by G. D. Weibe (1952, in Kolter and Zaltman, 1971): "Why can't you sell brotherhood like you sell soap?" Since then, a wide range of scholars has contributed to a broad range of insight on social marketing. The first important point made in social marketing, like traditional marketing, is that, as communication scholars have known for decades, there is no such thing as a "hypodermic needle" type of media effect: That is, one does not simply inject media consumers with knowledge, attitudes, opinions, or persuasion. First, the message must match the audience. As stated by Fox and Kolter (1980a), a message that encourages people to improve their diet cannot work for individuals who lack knowledge on which foods are healthy, or who lacked money to buy or have access to such foods. Second, people screen out messages: They may not attend to a message, they may only selectively perceive some portions of the message, they may distort its

message to their own meaning, and they may forget the message entirely. The most important aspect of persuasion research is the realization that messages are passed through a number of filters, to the extent that in most cases, the message simply does not get through. Not only does one need to be exposed to the message, but then a number of additional steps must be achieved: awareness, recall, development of favorable attitudes, intention to adopt contents of a message, and adoption itself (Kolter and Roberto, 1989). Each stage filters out potential adopters at a precipitous rate.

Because of this, social marketing and mass media theories underscore a number of critical points. These points are designed to maximize that the message does get though, that it is present, attended to, and yielded to by its target audience. Generally, marketing theory dictates four primary elements to achieve results. First, market research should be performed to fully understand the market and its attributes. Second, the product should be developed to match what is known about the market. Third, incentives can be used to further connect the project with its intended audience. Finally, facilitation must occur in order to make it as easy as possible for the intended audience to use the product (Fox and Kolter, 1980a).

Unfortunately, it is often more difficult in practice to enact these four points. First, markets are often difficult to analyze. Second, it is often difficult to target only a small segment of a population, and to leave all other potential customers untouched. Third, it is also sometimes difficult to match product strategy with customer. With regard to social marketing, three additional factors typically come into play, making implementation even more difficult. First, marketing a behavior rather than a product limits the strategies that can be used. One cannot simply lower the price of, say, exercise, in order to persuade audience members to increase their levels of physical activity. Second, distribution of the "product" is often impossible, as is often

the case with improving CVD related practices. Third, many communications strategies that are perfectly acceptable in product marketing are not acceptable in social marketing.

The general principle of social marketing, thus, is similar to product marketing, although it typically involves additional difficulties. As summarized by Fox and Kolter (1980b), social marketing involves seven steps:

Steps In Social Marketing

1.	Problem Definition
2.	Goal Setting
3.	Target Market Segmentation
4.	Consumer Analysis
5.	Influence Channels Analysis
6.	Marketing Strategy and Tactics
7.	Implementation and Evaluation

Table 3

A successful health communication campaign begins by planning out each step provided above. However, with regard to health communication campaigns, a number of additional lessons have been learned that qualify the development of each stage. The most important of these is that there is strong and persuasive evidence on what mass media itself can and cannot do.

Flora et al. (1989) defines a number of different levels of health promotion intervention possible by the mass media. These include raising awareness, increasing knowledge, changing attitudes, improving self-efficacy, modeling skills, and changing behavior. Raising awareness is considered to be the most powerful potential effect of the mass media. A number of studies have also shown that mass media is particularly effective at increasing knowledge on a wide variety of subjects, including health topics. However, evidence suggests that it is difficult for mass media alone to impact health attitudes, self-efficacy, skills and behavior. In their respective order, increasingly more direct intervention is needed to make effective changes. Thus, while mass

media may be relatively effective at changing some attitudes without direct intervention, there is little evidence that media alone is able to change health behaviors (Farquhar et al., 1991; Flora et al., 1989).

Importantly, mass media may have a positive impact on a number of precursors to important elements within various health communication theories reviewed earlier. For example, mass media has been found in some studies to increase personal judgement of risk and self-efficacy (Coleman, 1993). These results provide some insight into media's role in higher order persuasion, namely attitude and behavior change. In short, mass media impacts many of the precursors to attitude and behavior change, while direct intervention serves as the main motivator to actual change. As summarized by Finnegan and Viswanath (1999), the primary purpose of media is to set the agenda, to create frames of interpretation, and to engage individuals at different levels of involvement. But to be effective, health campaigns must build a community agenda, as "media attention alone is seldom sufficient without sustained efforts by empowered community groups and coalitions" (p. 123).

Based on prior research and theory, then, a number of conclusions can be made with regard to future health communication campaigns:

- Health communication campaigns must take into account established theories of health behavior change and the principles of social marketing
- Campaigns should take into account the knowledge that media alone can raise awareness and increase knowledge, but without community intervention it is difficult for mass media to affect widespread attitudinal and behavioral change
- Campaigns need to segment their audience, and if possible, take into account the proclivity of certain segments to be in various stages of changes, and implement strategies fitting those stages of change
- Secular change has changed the face of the state of health communication: High SES individuals have made most change while low SES individuals remain with little behavioral change over the past few decades.

It is because of this last finding, and because of the principle of segmentation, that it is vitally important to investigate how various populations may differ with regard to current health practices, knowledge, desire to change, and also with regard to current media practices and consumption. These areas represent the final pieces to creating a complete picture of the state of health communication campaigns today, and allow for a recommendation for future implementations assured to be effective and productive.

Audience Segmentation: Health Awareness, Knowledge, and Behaviors

The vast majority of studies concerning audience segmentation with regard to CVD health practices have segmented over a single dimension: ethnicity. This is true, I believe, for two reasons. First, such segmentation has provided the clearest, most substantively significant differences. Some studies have in fact made efforts to account for such differences through other variables, namely education and other SES measures. However, even in the most complex of multivariate analyses, differences due to ethnicity still remain stronger than any other measures.

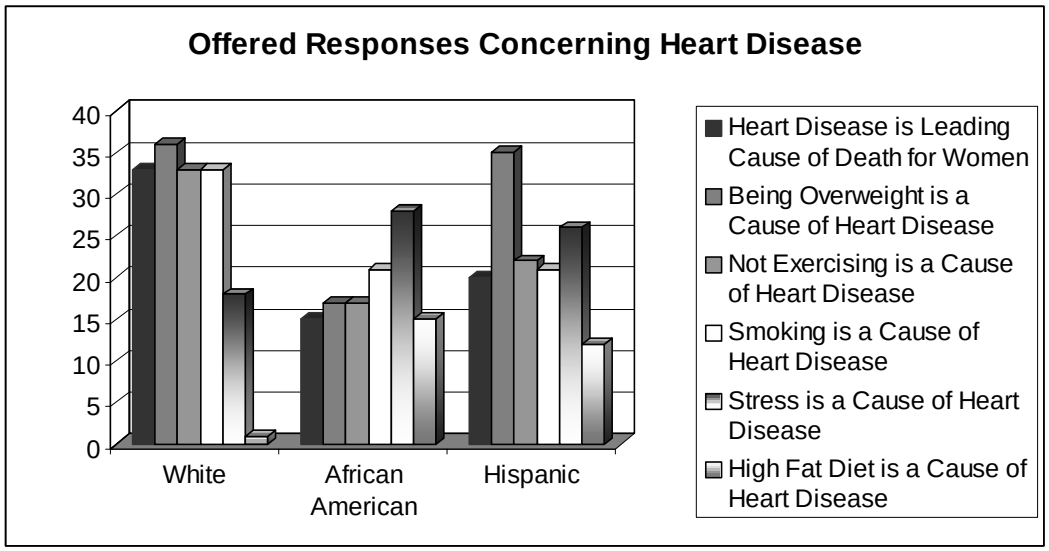
More recently, a number of scholars have made sophisticated "lifestyle analyses" that incorporate demographic variables with a host of attitudinal and behavioral variables. Such studies, I believe, provide as much if not more relevant insight valuable to health communication campaigns. As such, both types of studies will be reviewed below.

Awareness and Knowledge

Surprisingly, research on awareness and knowledge by population segmentation has by no means been comprehensive. However, enough studies have been conducted to provide a reasonable picture.

In one of the most significant projects studying differential knowledge of women across ethnicity, Mosca et al. (2000) found the following significant results provided in figure 1 below:

Figure 1



Whites scored highest on recognizing that CVD is the leading cause of death for women, and most frequently recognized obesity, lack of exercise and smoking—the three leading risk factors—as causes of CVD. Both African Americans and Hispanics recognized stress as a potential cause of heart disease, as well as a high fat diet. It is interesting to note first that only one percent of Whites mentioned a high-fat diet as a cause of CVD, and second that stress is mentioned significantly more than other risk factors for both African Americans and Hispanics. As the authors feared, all women across ethnicity believed cancer to be the leading cause of death for women, and breast cancer was specifically mentioned as the leading health concern for women today.

Although many studies suffer from lack of sample sizes for certain ethnicities (resulting in basically no data for knowledge on CVD by Asian Americans and Native Americans), the Stanford Five-City Project did have significant numbers of Latino respondents. With regard to knowledge, they found that Hispanics trailed Whites on nearly every cholesterol knowledge

measure (Frank et al., 1992). In a study of food (fruit and vegetable) knowledge, Beech et al. (1999) found that African –Americans scored significantly lower than Whites, Hispanics, and Other Races on a 22-item scale.

Although differences in ethnicity still persist when education is taken into account, education still exhibits separate and significant differences with regard to knowledge. First, low SES and low education groups received less exposure to health-related messages (Ribisl et al., 1998). Additionally, lower education individuals, as should be no surprise, have consistently scored lower on knowledge measured regarding CVD.

One of the most fruitful methods to investigate the knowledge of various ethnic groups has been the use of focus groups. While not providing empirical comparative data, focus groups can detect very specific areas in which particular groups lack knowledge.

In a focus group held in Washington, DC in 1995, immigrant Latinos provided much useful insight. Most participants associated heart disease with poor diet, lack of exercise, stress, and being overweight. Poor diet was due to eating too much fat, not eating a balanced diet, or simply eating too much. Due in part because of differences in translation, many participants associated "prevention" with avoiding behaviors rather than enacting behaviors to lower CVD risk. Many participants had misconceptions about cholesterol, thinking is was a fatal disease whose onset is quick and sudden. Most respondents lacked knowledge about high blood pressure. Those who did respond associated high blood pressure with stress, worries, and a failure to keep calm. Concerning nutrition, there was widespread belief that American foods have higher fat content, preservatives, and chemical, leading to obesity Moreno et al., 1997).

Another focus group comprised of low-income Latino women (Mein & Winkleby, 1998) in San Jose, California. In this study, participants did not view CVD as a progressive illness but

as a “quick illness.” While dietary factors were recognized as a major risk factor, the sources of this risk factor were not well understood. Most participants did not know how to effectively reduce their fat intake. A number of respondents rejected the notion that being overweight was a factor in CVD, as long as one eats the proper foods.

Similar trends were found in a focus group held with older Latinos in Northeast Massachusetts. Additionally, when asked to name acceptable physical activities and exercises to stay healthy, the most frequent responses were performing home duties, cleaning, shopping, going up and down stairs, keeping up with children, working out at a gym, doing exercises, swimming and bicycling (Melillo et al., 2001).

Finally, Carter-Edwards et al. (1998) conducted a session with African Americans in North Carolina. She and her colleagues found a number of key areas in which knowledge seemed lacking. First, the term hypertension was frequently misunderstood as hyperactivity or excess tension. Once defined, participants named stress most often as a cause, although exercise and diet were also named.

Overall, research suggests a number of trends with regard to CVD knowledge. First, individuals with less than a high school education lag behind others in CVD related knowledge. Second, ethnic minorities tend to lag behind Whites in the perceptions and knowledge regarding healthy lifestyles and behaviors. Finally, focus group research has noted a number of specific areas in which certain ethnic minorities need further information. In general, the amount of research on CVD related knowledge still lags behind the amount of research done with regard to actual behaviors and attitudes regarding CVD.

Attitudes and Behavior

Of course, there has been significantly more research on risk factors and CVD-related behaviors than for knowledge and awareness. Many studies have focused on specific ethnicities, including Asian Americans and Native Americans. Due to small sample sizes, most studies have researched only Whites, African Americans, and Hispanics.

There have been few documented differences in health attitudes by ethnicity, although as I will later mention, there are a number of interesting differences in attitudes regarding smoking cessation. Since self-efficacy and lifestyle have been found to be significant precursors to enacting healthy behaviors, a handful of scholars have investigated whether any significant differences exist with regard to these measures, by ethnicity. Weitzel and Waller (1990) found some differences in health locus of control, a measure related to self-efficacy, among blue-collar workers of different ethnicities. In a similar study conducted by Weitzel et al. (1994), no significant differences were found in subgroup ethnic analyses, but a number of interesting trends were detected. Whites were more likely to score lower on two scales, the Powerful Others Health Locus of Control and Chance Health Locus of Control. This indicates that Whites general feel more empowered about taking their own health matters into their own hands, rather than feeling that their health is partially controlled by others and by chance. African Americans, on the other hand, scored highest on these scales, with Hispanics splitting the difference. On a number of Health Promoting Lifestyle Scales, Whites similarly scored higher than other ethnic groups, specifically with regard to their nutrition, stress management, interpersonal support, and exercise. Hispanics scored lowest on self-actualization, health responsibility, and exercise, while African Americans scored lowest on the interpersonal support and stress management. Both groups scored equally low on the nutrition scale. Overall, there is some evidence to suggest that

Blacks and Hispanics lag behind Whites concerning their personal views about their ability to remain fit and maintain healthy lifestyles, although the evidence is slight at best.

A critical component to building a media campaign on CVD best practices it to first understand the wide gap in the mortality rate across various population segments. The current ratio of deaths for Whites to African American is 1.63 (Williams, 2002, for women only). In other words, for every eight White female deaths attributed to CVD, there are 13 CVD related African American female deaths. On the other hand, the ratio of Whites to American Indians, Asian Americans, and Hispanics, respectively, is .80, .54, and .70 based on data for the year 2000. However, there is concern that some of these ratios are shifting, particularly with the American Indian population.

Measures of risk factors tend to support these ratios. As shown below in figures 2 and 3, African Americans exceed Whites on a majority of risk factors, while Hispanics show a mixed pattern (Sunquist et al., 2001):

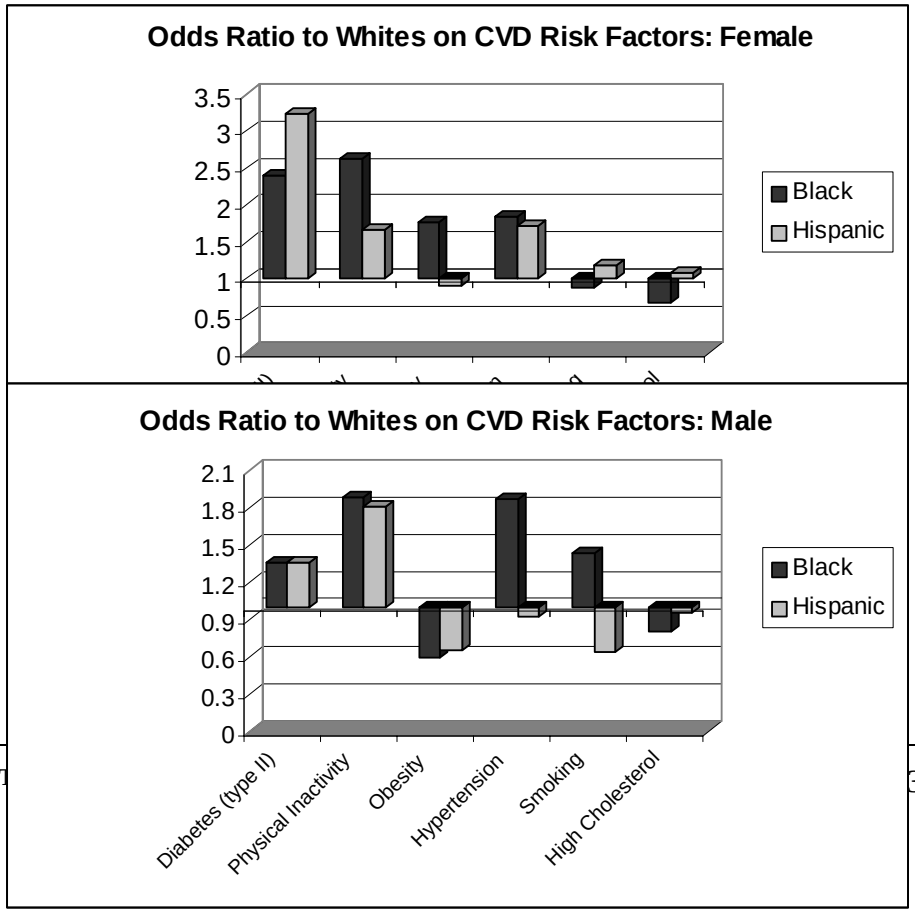


Figure 2
Figure 3

When education is controlled, these differences remain. In a study of White, African American and Mexican American women, blood pressure, BMI, physical inactivity and diabetes were all significantly higher for both African and Mexican Americans, as compared to Whites (Winkleby, Kraemer, Ahn, & Varady, 1998). Again with education used as a control variable, another study found Hispanic men to have greater incidences of being overweight as compared to Whites. However, White men measured significantly higher on most other variables, including smoking rate, blood pressure, high blood pressure, and cholesterol levels (Ribisl et al., 1998).

On average, the African American smoking rate is 34 percent, compared to Whites of which 28.8 percent smoke. However, it has also been noted that African Americans report stronger motivations to quit and that quitting rate are typically higher for African American than for Whites (Koepke, Flay and Johnson, 1990). Additionally, there have been a number of differences by ethnicity with regard to smoking, which are summarized below in figures 4 and 5 (from Koepke, Flay and Johnson, 1990):

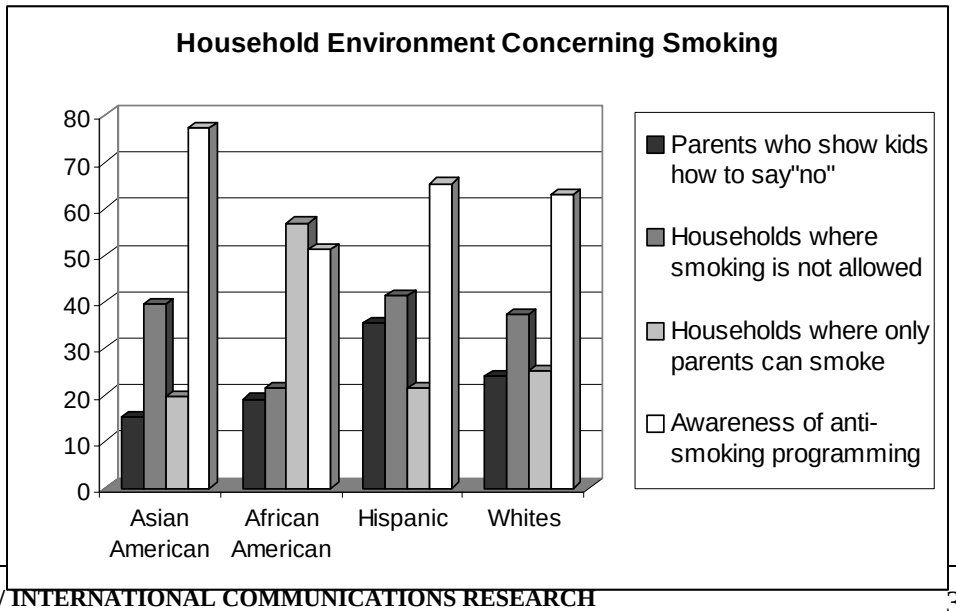


Figure 4

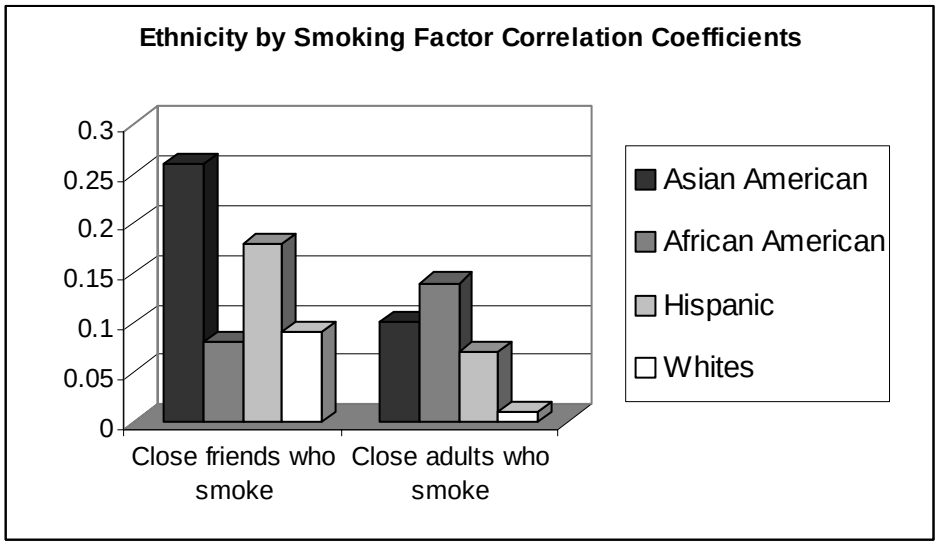


Figure 5

From this data very different profiles of smoking by ethnicity become evident. American Americans clearly have very different antecedents related to the risk of smoking. African Americans lag behind other ethnicities in their knowledge of smoking prevention programming and have the strongest correlation to knowing adults who smoke. But more importantly, African Americans households, far more than other ethnicities, are smoking households, if only for the adults. In fact the rate of smoking in African American households is near double that of other ethnicities.

African Americans typically start smoking later in life, are more likely to be concerned about the effect of smoking on health, and again, exhibit a stronger desire to quit. On the other hand, they are report being more worried about not being able to deal with the stress of quitting and are less likely to know where to get help to quit (Manfredi et al., 1992)

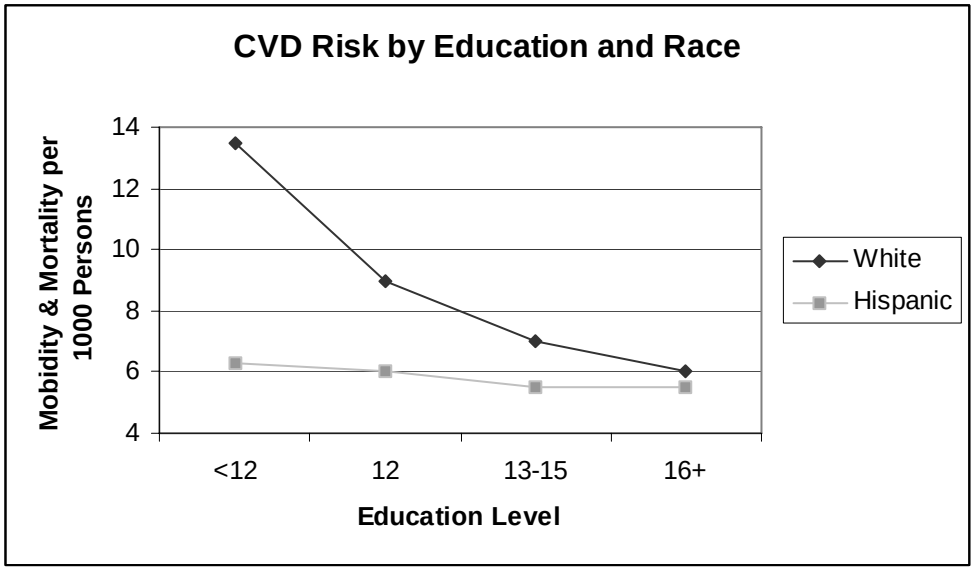
While acculturated Asian Americans do not have high smoking rates relative to other ethnicities, Asian Americans are far more likely to know friend who smoke, followed by Hispanics. While Hispanic households are less likely to teach children why cigarettes are bad for their health (not shown), these households are also far more likely to teach their children how to say no.

Only second to ethnicity, education has been shown to be a substantively significant predictor of differences in CVD related behavior and attitudes. Individuals with lower educational levels are far more likely to smoke: While 34.2 percent of adults with less than a high school education smoke only 18.4 percent of college graduates are smokers (Koepke, Flay & Johnson, 1990). Education is also negatively associated with smoking onset, amount smoked, and perceived difficulties with quitting, while positively related to planning to quit, beliefs that smoking is related to lung cancer, and knowledge of where to go to get help quitting smoking (Manfedi et al., 1992). Finally, ex-smokers are twice as likely to have a college education (15.6% vs. 7.1%) (Romano, Bloom & Syme, 1991).

In addition to smoking, low educational levels are also associated with lower levels of physical inactivity, higher BMI, and high non-HDL-C cholesterol (Winkleby, Kraemer, Ahn, & Varady, 1998). In a study that included White and Hispanic men, education was found to have significant effects, even when controlling for race. Lower levels of education were substantively associated with higher levels of smoking, blood pressure, high blood pressure, cholesterol, and weight (Ribisl et al., 1998).

Ribisl's study was an important one, for it documented a number of significant interactions between ethnicity and education. First, the authors found that while less educated Whites smoked at far greater rates than less educated Hispanics, the difference in smoking rates

was attenuated in higher educated groups. Furthermore, less educated Whites had significantly higher cholesterol levels than did other Whites, while there was no difference across education for Hispanics. Using a summative scale, the authors charted the overall CVD risk for Whites and Hispanics across education, and found that while Whites with less than a high school



education had over double the risk of CVD, the difference for individuals with a few years of college or more was insignificant. As is clearly represented in figure 6 below, education has little effect for Hispanics:

Figure 6

As previously noted, there appears to be separate yet significant effects for both ethnicity and education with regard to CVD knowledge, attitudes, and behavior. In a specific attempt to wipe away ethnic differences with education, effects due to ethnicity persisted (Winkleby et al., 1998). Even in their multivariate analysis, with other major determinants such as age and education, the beta coefficient for BMI was 2.8 in a comparison of African Americans to Whites. Other factors, including blood pressure, cholesterol, and physical inactivity, showed similar results. Compared to their White counterparts, African and Mexican American women had

significantly higher levels of BMI, blood pressure, diabetes, and physical inactivity. Mexican American women had lower rates of smoking than did Whites; the same was true for African American women and high cholesterol. Importantly, African and Mexican American groups had stable smoking rates across age, while Whites decreased in smoking in the older age groups. Additionally, African and Mexican American women had steeper slopes for incidences of high blood pressure by age.

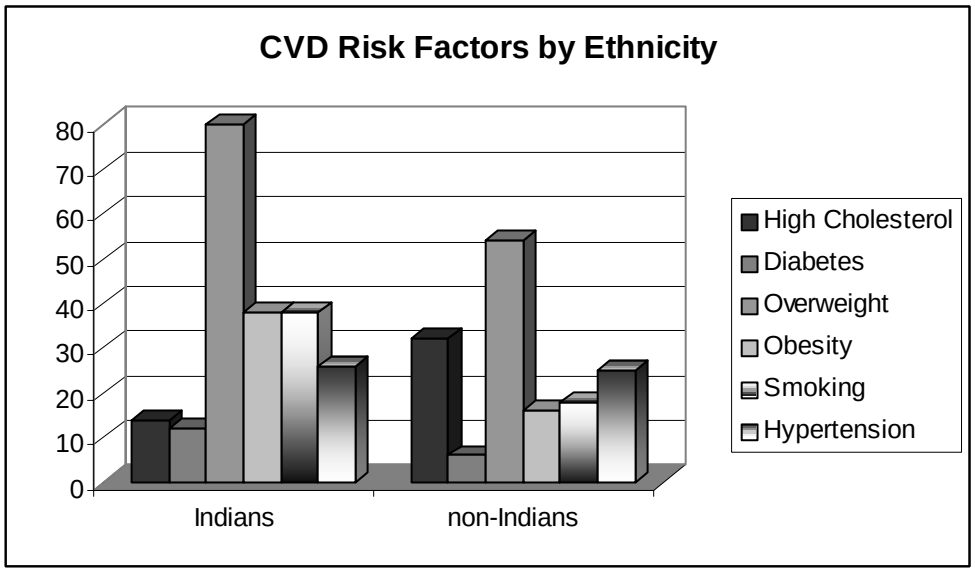
Generally speaking, the effect for education is separate and distinct from other variables. In addition to being separate from ethnicity, education also transcends lifestyle, although lifestyle can magnify the effect (Dressler, 1990). Generally, however, education and ethnicity, and of course, age and gender, are the four primary determinants of CVD, as summarized in the logistic regression summative odd ratios reported by Winkleby et al. (1999):

Significant Odds Ratios on CVD Risk Factor Outcomes						
	Smoking	Hypertension	Obesity	Inactivity	High Cholesterol	Diabetes
WOMEN						
Each year of Education	.85	.94	.93	.84	.95	.93
Black vs. White		2.86	1.92	2.26		
Hispanic vs. White	.19		1.48	1.63		
Each Year of Age	.97	1.1	1.02	1.02	1.08	1.06
MEN						
Each year of Education	.83		.95	.83		.92
Black vs. White	1.27	1.9		1.4		1.9
Hispanic vs. White	.37					
Each Year of Age	.98	1.07	1.03	1.02	1.04	1.06

Table 4

As I have indicated, few studies have directly compared all ethnic populations with lower overall incidences, specifically American and Asian Americans. However, there have been a handful of published studies on these populations that are important to note. Generally, approximately 22 percent of American Indians report hypertension, 30 percent are smokers, 16 percent have high cholesterol, and 7 percent have diabetes (CDC, 2000). In the late 1990s,

researchers began to note an increasing prevalence of CVD in American Indians (Howard, et al., 1999). One study comparing Indians to non-Indians found that while overall CVD was not significantly difference among these two populations, there were serious differences in the



prevalence of a number of risk factors, as shown in figure 7 below (from Harwell et al., 2001):

Figure 7

While non-Indians report higher overall levels of cholesterol, and the two populations do not significantly differ with regard to hypertension, Indians have a much greater prevalence of diabetes, being overweight or obese, and smoking. And, Indians under the age of 45 have a significantly higher rate of hypertension, while Indians over the age of 45 have significantly higher rates of cholesterol. As previous scholars had feared, these risk factors are now being translated into increased prevalence of CVD, in fact, at rates now higher than for non-Indian populations. In the ten years spanning 1987 – 1996, coronary artery disease, acute myocardial infarction, and cardiac event incidence rates for a southwest tribe studies by Sewell et al. (2002) increased from approximately 100 per 100,000 individuals to approximately 500 per 100,000.

Studies have recently investigated the risk of CVD in Asian American populations as well. Importantly, scholars have been quick to point out the differences within the Asian American population with regard to CVD (Klatsy & Armstrong, 1991; Klatsy et al., 1994). A number of these are shown in figure 8 and 9 below:

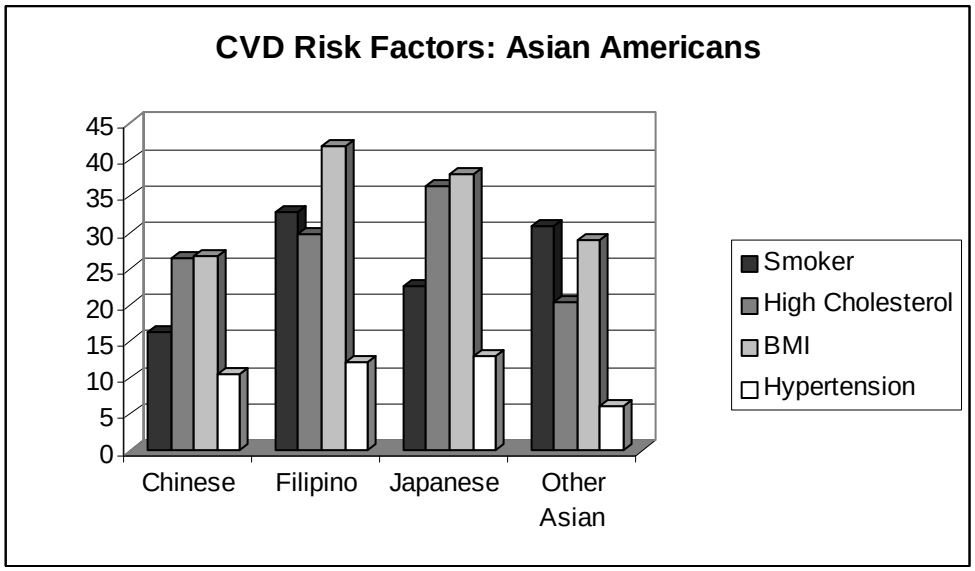


Figure 8

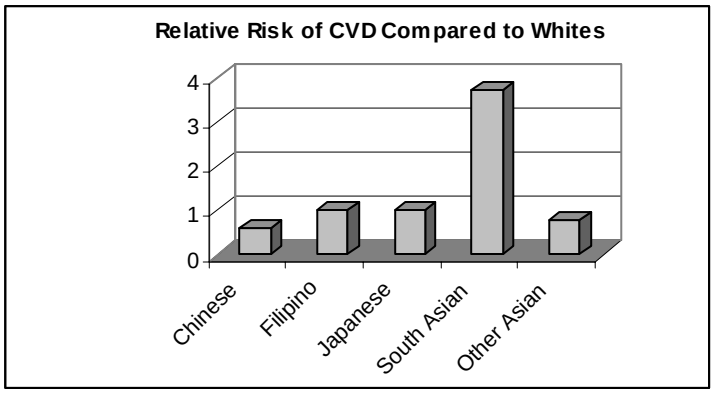


Figure 9

While Japanese Americans on average have the highest rates of cholesterol and hypertension, Filipinos have the highest BMI and prevalence of smoking. However, these populations have no significant difference in their prevalence of CVD compared to Whites. However, in their 1994 study Klatsy et al. found that South Asians have a much higher

prevalence of CVD than Whites and other Asian populations. The consistency of this finding, regardless of country of residence or other environmental factors, has led scholars to conclude that genetic traits are involved.

Lifestyle Analyses

Although the lion's share of research done on CVD knowledge, attitudes and behavior has tended to focus on differences across ethnicity and education, recent studies have taken a greater interest in lifestyle analyses. These types of analyses employ a type of discriminant or cluster analysis to separate survey respondents into groups on a broad range of variables. Such analyses are important because they are able to note differences that go beyond ethnicity, age and education.

In a study specifically targeted at lifestyles and hypertension, Weir et al. (2000) found four divergent groups among individuals with hypertension. Group A comprised of 39 percent of the sample, had the highest education and was ethnically diverse. Additionally, the members of this group said that they attempt to maintain regular medication and a healthy lifestyle, eating the appropriate diet and exercising regularly. Of course, Group A members were in good health. Group B (19 percent) members were 63 percent female and are the "medication reliant" group. As such, Group B members do not believe they are in excellent health, do no exercise and are not particularly comfortable in their maintenance of a healthy diet. Group C (22 percent) is comprised of 64 percent women. This group scored highest on BMI, scored low on ability to control BP, do not exercise or eat a healthy diet, and unlike other groups, tend to forget to take the medication. Finally, Group D (23 percent) are 59 percent male, younger than other groups and scored very low in hypertension knowledge questions and significantly higher in blood pressure readings. Least likely to be concerned about not taking medication, Group D members

are far less engaged in therapy and medication for hypertension. Finally, they are also less likely to watch their diet, avoid bad foods, and have low confidence in their ability to maintain a healthy diet.

Lifestyle analysis can clearly successfully distinguish different lifestyles and lead to differential messaging to these different groups. Often, such groups transcend traditional demographic differences and are more focused on attitudinal and knowledge based measures.

In one the most comprehensive lifestyle analysis concerning CVD to date, Winkleby, Flora, & Kraemer (1994) studied various predictors of change for CVD prevention. Using Stanford Five-City Project data, they too found four divergent groups using signal detection analysis. Differences among these groups are summarized in the figures 10 and 11 below:

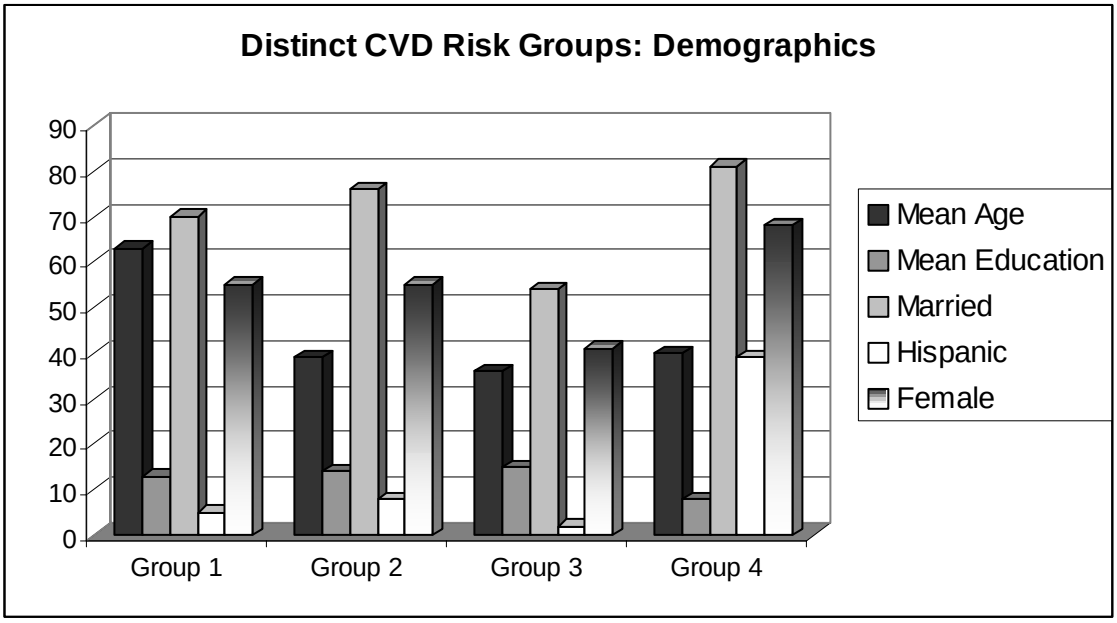


Figure 10

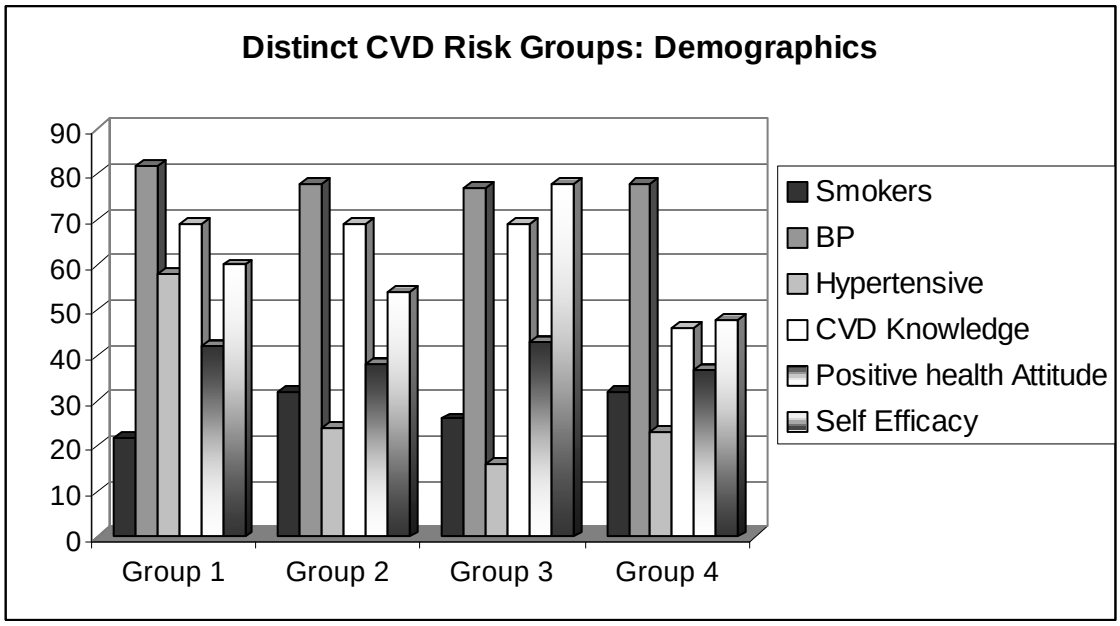


Figure 11

Group 1 is the older Americans group, and is differentiated from other groups in its high blood pressure and high rate of cholesterol (not shown). This group had the most positive motivation and information-seeking behavior. This group is those most likely to improve their health, not surprising given the high health media use, self-efficacy and perceived risk scores. Groups 2 and 3, defined as young, educated, but are differentiated based on self-efficacy. Group 2 had higher rates of smoking, being hypertensive, and having high cholesterol. Interestingly, Group 2 has a higher percentage of positive changers while having lower overall self-efficacy. The authors explain, however, that Group 3 was the youngest, most single, White, and educated, as well as scored best with regard to blood pressure and cholesterol. Thus, such individuals have little intention to change behaviors, despite believing they are empowered to do so. Group 4 is another high risk group, along with Group 1. This group has a low rate of behavioral change, were least educated, 40 percent Hispanic and 65 percent women. This group held the highest smoking rate, lowest score on CVD knowledge, and lowest self-efficacy scores. Clearly, this

group lacks the skills necessary to enact behavior change, lacking the knowledge and belief that change is possible.

Winkleby et al.'s analysis provides clear direction as how CVD campaigns should proceed, and offers an important analysis of differential groups not only by demographics but also attitudes, knowledge, and behavior. Two groups, due to a combination of demographics and risk factors are not deemed high risk while Groups 1 and 4 were. These groups have very different needs in terms of the knowledge, skills, and interventions that may be necessary in order to change their behavior. While Group 1 is in needs of direct intervention, Group 4 is in need of more basic knowledge and self-efficacy boost, and thus is a prime target for mass media intervention.

A final lifestyle analysis (Slater and Flora, 1991) investigated health lifestyles for the purpose of specific audience segmentation for health interventions. There study was generated specifically from the need to employ social marketing techniques to health communication campaigns. Through cluster analysis, the authors found the following groups:

- *Healthful Adults*: Mid-forties, 70 percent female, 81 percent married, 93 percent White, highest reported healthy diets, prevalence to walk regularly, nonsmoking, high household support, efficacy to change diet, eat healthy foods, and change behavior if needed.

- *Unhealthful Adults*: Mid-thirties, unmarried, smoker with bad diets, bad peer diets, high perceived risk, resistance to change, behavior or diet.

- *Worried Older Adults:* Low-fifties, poor, low education, only 74% white, 14 % Hispanic, bad diet, low exercise, low prevalence of walking, low health discussion, high perceived risk, don't think CVD is preventable and low in CVD knowledge, low in healthy foods, don't think they can exercise, worry about their health.

- *Healthful Talkers:* Mid-thirties, high income, highly educated, healthy diet, high prevalence of exercise, discussion about health, very high CVD knowledge, believe CVD is preventable, believe they can change their diet and exercise habits.

- *Healthful Young Adults:* Mid-twenties, highly educated, 73 percent male, 91 percent White, healthy diet, high prevalence to exercise, nonsmokers, peers do not smoke and have healthy diets, high health knowledge, believe they can change diet and behavior.

- *Unhealthful Young Adults:* Low-twenties, low education, high HH size, mostly female, 62% while, 27% Hispanic, bad waling, diet, low perceived risk, do not believe CVD preventable, low knowledge, CVD salience, weight as risk.

- *Young Athletes:* Low-twenties, high income, 75 percent male, 18 percent Hispanic, 6 percent Asian, very high exercise, non-smokers, worry about health, eat healthy food.

Slater and Flora's research indicates that there are three specific groups for which to be concerned regarding CVD. Each has different demographics,

Before incorporating these into an overall mass media strategy and recommendation, however, one final area of research requires coverage: media habits of the American populace. With at least some very basic knowledge of differential medium attributes, coupled with what I have reviewed concerning prior mass media-inclusive campaigns and differential knowledge and behavior concerning CVD, we will be in a position to provide a recommendation for strategic implementation of future CVD campaigns.

Audience Segmentation: Media Consumption & Attributes

Of course, a separate report itself could be easily written concerning differential media practices by ethnicity, age, gender, and other demographics. However, my purpose here is not to provide such detail, which would require extensive data and market research specific to different media markets in Minnesota. Rather, my goal is to provide a very brief review of some general capabilities of different media, in some cases with regard to various audience segments, again, to frame my overall recommendations to be provided shortly. Like research on health behaviors and knowledge, the majority of research has tended to focus on ethnic divisions. Thus most of

what I report will fall along similar lines, although my focus will also include general overall utility of various media.

Considering the focus of the present project, the beginning question must first be, where do different populations go for health information?

Figure 12 below, taken from Brodie et al., 1999, provides some interesting results based on their research:

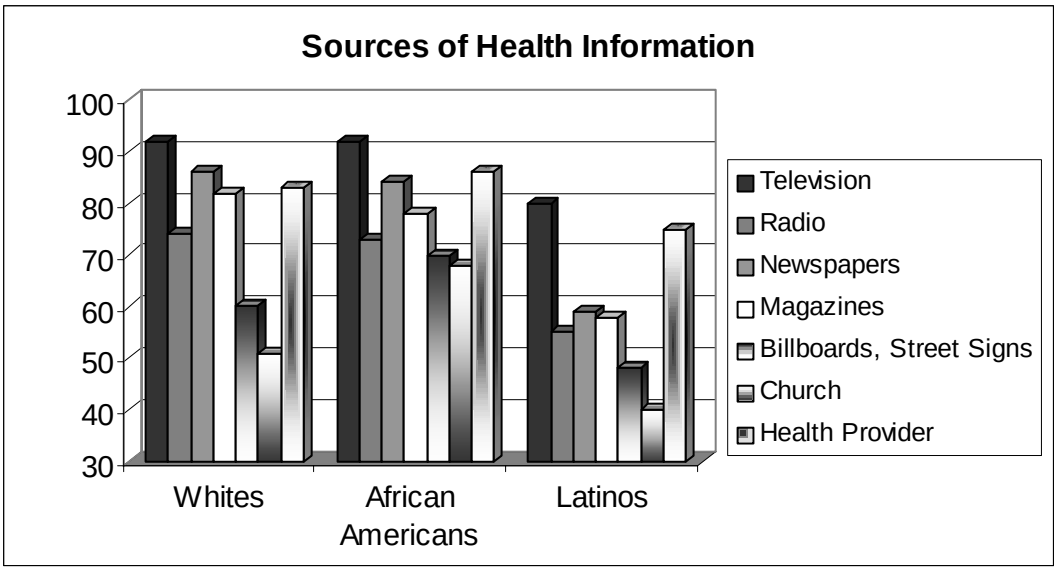


Figure 12

Across every group, television is the most preferred source of health information. This is particularly true of African Americans, both young (see Kurtz et al., 2001) and old (see Gollop, 1997). Latinos particularly rely on this source, along with their health provider. African Americans are of note for using the Church for health information, while Latinos exhibit scores lower than both Whites and African Americans on every source of information. Not surprisingly, African Americans feel that media specific to their respective ethnicity do a better job presenting health information than do the general media. There has been some call in the health profession that to reach Latinos one merely has to place health messages in Hispanic

oriented media outlets. However, Brodie et al. point out that English speaking and bilingual Latinos actually prefer general media to Latino or Spanish-speaking media. The more acculturated the individual, the more likely they are to rely and prefer on general media for health information. Overall, Latinos are significantly more likely to say that general market media, rather than Latino-oriented media, do a good job of providing them health information, provide relevant stories about health, and provide accurate coverage of important health issues.

One of the more influential theories in media studies is uses and gratifications theory (Katz, Blumler & Gurevitch 1974). Briefly summarized, the theory stresses the active role of audience members to make choices and be goal directed in the media use. A handful of authors have specifically explored this theory by ethnicity. Delener & Neelankavil (1990), for example, found in a comparison of Asians and Hispanics that Asians preferred newspapers and television while Hispanics favored television and radio. To provide more specifics, Albarran and Umphrey (1993) explored specific television uses and gratifications by ethnicity. They found that, in general, African Americans used television more for entertainment and diversionary gratifications than Whites or Hispanics. As such, African Americans used television primarily to spend time with their family, for enjoyment, when there was nothing else to do, and to help unwind, while Hispanics were more likely to stay television helps them learn about themselves. Unfortunately this study and others like it (see Blosser, 1988) do not control for overall television use, which is skewed toward African Americans. As such, African Americans are more likely to answer in the affirmative for most surveyed uses and gratifications.

When considering a social marketing campaign it is of course useful to have some knowledge of possible medium with which to spread awareness and knowledge, effect positive

attitudes, and encourage behavioral change. Below is a brief review of some of these important attributes.

Network Television: As mentioned, African Americans report higher use of network television than other groups. This is especially true for individuals over 50 during daytime television and for all African American households during primetime. Also of note is that Hispanics watch more daytime television than other groups, although their primetime viewing does not differ from the national average. It is important to note that African Americans differ significantly in what they watch during primetime. The top ten shows for African Americans are nearly all comprised of sporting events and programming with African American actors. Although the popular shows "The West Wing," "Frasier," "Friends," and "Everybody Loves Raymond" rated amongst the top 10 shows overall in the year 2000, none were rated in the top 15 most watched African American shows (Marketer's Guide to Media, 2001).

Of course, television viewing can also be delineated across a number of other variables. Heavy viewers tend to be mothers with babies to care for, older, retired persons, the chronically ill, homemakers, lower educated individuals and low income families. Light viewers tend to be full-time employees, full-time students, intellectuals, the affluent, and the socially active (TV dimensions, 2002).

Cable Television: Cable television tends to be watched by the same groups as network television, as cable television penetration now exceeds 70 percent. Of course, low income individuals are less likely to watch cable television. Cable television also has higher rates of viewing, as compared to network television, by the more highly educated, the middle aged, and larger households (Marketer's Guide to the Media, 2001). Unlike most network programming, cable television can be effective to use in CVD campaigns due to its lower cost of advertising,

more localized reach, and ability to reach specialized populations, for example, through the use of African American and Latino cable channels.

Radio: It is difficult to provide a simple description of who listens to the radio and when. There is no significant difference with the total breakdown of the American populace by radio viewing in terms of gender, and little difference with regard to age. Individuals with less than a high school education listen to the radio slightly less than those with a high school education or more. Similarly, those earning less than $30,000 a year listen to the radio slightly less than other income groups. Men listen to the radio more often in the car; women listen more often at home. Generally, reach by radio is highly dependent on channel, more so than television. For CVD campaigns, radio offers an attractive alternative to television due to its lower advertising cost and the ability to specifically target segmented groups by radio station format. Radio, like cable television, is also useful in providing a high frequency of message repetition, which may be critical to educate certain at CVD risk populations. However, radio, more so than many other medium suffers from the likelihood of listeners only partially hearing a message or missing it entirely (Sissor and Bumba, 1990).

Newspapers: Most data shows that national and city-wide newspapers are read more frequently by individuals in higher income brackets and higher educational attainment. Although many CVD campaigns have used newspapers columns and advertising, this strategy is flawed if one is interested in reaching ethnic minorities, or those with lower education and income. However, community newspapers offer a low-cost and more segmented alternative for these groups (Coleman et al., 1997; Romer & Kim, 1995). Indeed, a particularly effective way to reach certain African American, Hispanic and Asian American populations is through the use of these localized media, depending upon the market (Sissors & Bumba, 1990)

Other Media: CVD Campaigns have been particularly effective in using billboards, posters, bus banners, direct mail, super market inserts, and other mass media strategies to get the word out with regard to their interventions. These strategies offer generally low cost and the ability to achieve a high number of impressions to specific groups of interest to CVD campaigners. Direct mail is the most selective of all mass media, offering the possibility for personalization and very specific geographic targeting. However, direct mail may miss the mark, being thrown away as junk mail before impressions occur (Sissors and Bumba, 1990). Outdoor marketing is very useful in creating a high frequency of impression in specifically targeted geographic divisions. However, outdoor advertising is very limited in a number of ways: First, messages must remain simple. Second, outdoor advertisements attain very poor levels of recall. Finally, many forms of outdoor advertising are expensive relative to other forms of mass media (Sissor and Bumba, 1990). Finally, transit media may suffer from the same limitations as outdoor media, but may offer the possibility of specifically targeting low income and lower educated individuals, precisely the individuals who need to learn the most regarding CVD.

Certainly, there are other media strategies that have been used to promote CVD health and CVD interventions. These include direct dialing, word of mouth, church sermons, supermarket coupons and flyers, television programming, newspaper articles, and the use of pamphlets and flyers in key locations such as doctor's offices. These all offer potential opportunities and limitations regard CVD.

Discussion and Recommendation

This report has provided a broad canvas of four integrally related topics: a history of mass media-inclusive CVD campaigns, a summary of differential awareness, knowledge, attitudes, and behavior regarding CVD, a brief review of health behavior theories and social marketing theory, and a synopsis of various aspects of different types of media used in CVD campaigns.

The overall purpose of this report is to make recommendations for an upcoming CVD campaign in the state of Minnesota with regard to the mass media portion of the campaign. In general, I believe this report is useful for any CVD campaign organizers who are interested in creating campaigns more focused and effective than earlier attempts. The research documented in this report paves the way for answering four essential questions with regard to initiating a CVD campaign based on social marketing principles. These are:

- What can and should the mass media do in CVD campaigns?
- To whom should the mass media's messages be targeted?
- What messages should the mass media put forward?
- What medium should be used?

In what follows then, I offer my recommendations for the mass media segments of future CVD campaigns, following these four questions, and based on the research reviewed in this report.

What Should the Media Do?

Both social marketing research and studies of CVD campaigns have come to similar conclusions with regard to mass media. In short, mass media has historically been very effective at increasing awareness and increasing knowledge. To a lesser extent, media has been found to

impact some attitudes and motivate behavior change, but only in those primed to change but lack information on how to do so, where to go, etc.

Importantly, there has been some evidence that the media can positively affect self-efficacy and other related attitudinal measures such as locus of control. As mentioned earlier, for this reason mass media play a role in behavior change, but cannot affect change alone. Thus, messages that blatantly offer explicit behavioral change are not likely to be effective.

In short, the use of the mass media should be limited to the following objectives:

- Raising awareness of CVD, its prevalence, and impact
- Increasing knowledge about what leads to CVD
- Increasing knowledge as to who is at risk and why
- Increasing knowledge on what is necessary to reduce the risk of CVD
- Increasing knowledge on what constitutes a healthy diet and acceptable exercise
- Increasing awareness of programs available for those interested in smoking cessation, learning how to prepare proper diets, free cholesterol and blood pressure screenings, the prevalence of CVD risk reduction events, and programs for specific populations with regard to their needs for the reduction of CVD
- Selective targeting of increasing self-efficacy
- Selective targeting to increase perceived risk
- Modeling of best CVD practices

Based on the transtheoretical model of behavior change, the mass media's primary goal is to move individuals from the two lowest stages, those of precontemplation and contemplation, to higher stages of readiness for behavior change. As table 2 indicates, these goals are synonymous with the mass media's strengths as they require consciousness raising (increasing awareness and knowledge), dramatic relief (modeling of behaviors), and self evaluation (increasing efficacy and

perceived risk). To a lesser extent, mass media is capable of moving individuals from preparation to action, but only for those individuals who are merely lacking a vehicle to do so (e.g., where to go to get help) or some other kernel of critical knowledge.

One of the problems with early CVD campaigns was perhaps an over-reliance on mass media and overextension of its own capabilities. It is important to note that the study of mass media, like the history of CVD campaigns, has itself gone through three important stages. The first, previously coined as the age of "hypodermic needle" media effects, posited that mass media (using Nazi Germany as an exemplar) can have tremendous effects on the populace. However, with continuing modeling of theory and research, scholars came to realize this model was generally untenable, and indeed, found very little evidence that mass media can have any impact at all on individual attitudes and behaviors. In the present day, scholars have recognized a middle ground, that mass media can indeed have substantively significant effects, but only when the media is used with the utmost specialty, that is, when it targets the right group at the right time with the right message. Furthermore, detecting such effects entails measuring the right variables with the right population and the right time. A difficult task indeed, but one that, when conducted properly, can successfully show that mass media can have tremendous impact on individuals attitudes, opinions, and even behavior (see, for example, Zaller, 1992).

Thus, the first step in maximizing the effect of the mass media for CVD campaigns is to understand its limitations, its strengths, and its ability to impact CVD knowledge and best practices. One can maximize the mass media, then, by adhering to goals that are limited to the list provided above.

Who Should the Mass Media Target?

This report has gone to considerable length to document different potential audience segments with regard to CVD awareness, knowledge, attitudes, and behaviors. As I reviewed, there are primarily three different segmentation types that have been researched and reported. These are ethnicity, education, and lifestyle. When considering using the mass media to reach individuals, it is important to not only consider what is known by these three segments but the prospects for reaching each segment. For the mass media to be most effective, such segmentations must be bound either geographically or by media use.

I have reviewed a number of data that has reported a strong secular trend in CVD knowledge and best practices. This secular trend was created primarily by those at the upper bounds of education, and additionally, by ethnic majorities. Indeed, a number of studies showed that the risk factors within certain ethnic minorities transcend SES. The unfortunate finding in this regard is that as Whites increase in education and income their prevalence toward smoking, obesity, hypertension, and high blood pressure decrease, yet the same cannot be said for some ethnic minorities. This leads to one overarching conclusion: The "who" in "who should the mass media target" has to be, primarily, ethnic minorities. These populations remain at generally higher levels of risk, hold the lowest amount of health information, self-efficacy, and awareness of CVD prevention programs. These populations are also well positioned, geographically and culturally, to be targeted with mass media. And, generally speaking, ethnic minorities with similar levels of education are even more geographically and culturally bound, leading to the possibility of cost effective, highly selective uses of the mass media, with the promise of significant results, if only for moving individuals up to a higher stage of change.

The second primary type of segmentation analysis with regard to CVD reported here was lifestyle analysis. I believe that lifestyle analysis also offers an extremely valuable tool with which to answer the question of whom should be targeted by the mass media. Although groups discovered by such analyses may not be as geographically and culturally bound as ethnical and educational segmentations, lifestyle analysis does much of the work necessary in determining what types of messages should be communicated with the mass media.

The question of whether any particular CVD campaign should attempt to target specific lifestyles of specific ethnicities is one that must be answered by the CVD campaign planners themselves. This question is necessarily bound by budget, geography, and the goals set forth for each specific campaign. In the following section, I will provide recommendations, again based on the research reviewed above, for each, tailored to specific ethnicities and specific lifestyles.

What Messages Should the Mass Media Put Forward?

Clearly, for maximum effectiveness, the mass media should put forward messages that are sorely needed for specific populations of interest. As such, below I provide specific message recommendations for those populations who have been found to be in the greatest need, first by ethnicity (and education) and second by lifestyle.

Whites: Although much of the research has found ethnic minorities to be lagging behind Whites with regard to most CVD risk factors, there are still nevertheless a number of messages that can be crafted to Whites, specifically those in lower educational brackets. Below are specific recommendations:

- Continue to increase knowledge to Whites that high fat diets lead to CVD
- Increase awareness that CVD is the leading killer, more than cancer and/or breast cancer, among women of all ethnicities

- Increase awareness among those with low levels of education that smoking in general, the amount smoked per day, blood pressure obesity, and cholesterol all lead to CVD

- Increase awareness among women that there is support available to quit smoking

African Americans: African Americans have differential risk factors by gender. Overall, however, this group leads others in most risk factors as well as a number of specific areas of knowledge. In addition to the research reviewed earlier, a number of additional strategies below are based on recommendations made from African American focus groups (Carter-Edwards, 1998; Gettleman & Winlkeby, 2000):

- Increase awareness among African American women that they lead the nation in obesity and that obesity is a leading cause of CVD

- Increase awareness among African Americans of the leading causes of CVD

- Increase knowledge about the facts concerning smoking and African Americans, specifically, that African Americans tend to continue to smoke into their older years while other populations are quitting, and most importantly, that African American parents smoke in front of their kids in the home at a rate double that of any other group

- Provide information of available support groups for smoking and other CVD risk factors that will specifically help them deal with the stress of quitting and/or modifying their behavior

- Provide information as to where support programs are and how to contact them

- Increase knowledge on the healthy selection and preparation of pork products

- Increase knowledge on how to shop in order to cook healthy ethnic dishes

Hispanics: Even more than African Americans, Hispanics differ tremendously from one another according to specific ethnic origin, acculturation, and gender. This presents very specified message opportunities within the Latino community. A number of strategies

mentioned below are based on the recommendations of Hispanic focus groups (Gettleman & Winkleby, 2000; Mein & Winkleby, 1998; Melillo et al., 1991; Moreno et al., 1997):

- Non-English speaking Hispanics and/or Hispanics low on acculturation need to be provided knowledge that cholesterol is not a disease, that it is caused by specific dietary practices, and that CVD is built up through years of lack of exercise and poor diet
- Increase awareness about the risk of being overweight
- Increase awareness of where to go to learn about health foods and where to exercise
- Encourage checking of blood pressure and increase knowledge about high blood pressure and its connection to CVD
- Encourage eating healthy foods at fast food restaurants
- Increase knowledge that healthy items can cost less than unhealthy foods; specify a list a healthy foods
- Encourage male Hispanics to encourage their spouses/significant others to exercise
- Encourage inner city Hispanics to organize safe walking clubs or exercise clubs; increase awareness of such clubs
- Increase awareness of the importance of older Hispanics to exercise; provide messages that reduce the fear of some older Hispanics to exercise
- Increase awareness of healthy ethnic food choices and where to go to get more information

Indian Americans: Research has shown some differences by tribe with regard to Indian Americans, and clearly more research must be conducted to document Indian CVD risk and knowledge. However, a number of messages can be specifically crafted for this group:

- Increase awareness that Indian Americans are now at serious risk of CVD
- Increase knowledge of CVD risk factors, especially obesity and smoking
- Increase awareness of where to go to find smoking cessation programs

Asian Americans: More so than American Indians, little is known regarding effective message strategies regarding Asian Americans. What is known is that South Asians have a tremendous risk of CVD, that Japanese have a higher risk of high cholesterol and hypertension compared to other Asian groups, and that Filipinos have a greater likelihood of high BMI and smoking prevalence. Although further research is needed, media campaigns can begin with increasing awareness of these specific risk factors and what can be done to lower them.

In addition to ethnicity, as mentioned, lifestyle analysis offers a different brand of message strategy, based on specific lifestyles, Given the increased lifestyle specialization of the mass media, the targeting of specific lifestyle groups may prove very useful to CVD campaign planers.

Unhealthful Adults: Unhealthful adults are those in their mid-thirties, are single more than other adult groups (still 59 percent married), are 60 percent male, 85 percent white and on average have a high school education and a few years of college. This group could benefit from the following messages:

- Increase self-efficacy to change diets
- Increase awareness of ways to cope with quitting smoking when peers continue to smoke
- Messages designed to wear down a generalized resistance to change

Worried older adults: This group is disproportionately Hispanic, on average in their lower forties, low income, less than a high school education, nearly 60 percent female, and 77 percent married. This group could benefit from the following messages:

- Increase knowledge of CVD, CVD risk factors, and that CVD is preventable
- Increase awareness of exercise options and programs

- Encouragement to discuss health with friends and family
- Increase knowledge of what constitutes healthy foods, where to get them and where to get assistance learning how to change one's diet

Unhealthful Young Adults: This group is made up of individuals who on average are in their low twenties, did not go to college, live in large households, are 57 percent female, 79 percent single, and 27 percent Hispanic. This group could benefit from the following messages:

- Increase knowledge of CVD, CVD risk factors, and that CVD is preventable
- Increase awareness of exercise options and programs
- Messages that increase their perceived risk

Older Primed Adults: Unlike other older groups, this older group is on average age 62, mostly white, 70 percent married, and proportionately male and female. These adults are interested in improving their health and seek information to do so. This group could benefit from the following messages:

- Increased information on programs that fit their age category that are aimed to increase fitness and diet
- Increased knowledge of blood pressure lowering strategies and encouragement to see a doctor concerning blood pressure

Overall, there are multiple opportunities to craft very specific messages by ethnic and lifestyle segmentations. I have provided a list that likely is far more ambitious than a typical CVD campaign could enact. However, I have done so so that CVD campaigners can canvas those strategies that have empirical support and are most likely to produce success. Again, it is important to note that the measure of success for a CVD campaign should not be lower overall levels of CVD morbidity and mortality, nor a lowering of community-wide CVD risk factors:

We are beyond, in short, the expectation of hypodermic needle type of effects. Rather, success should be measured in getting very specific segments of the population to move up the stages of change. It is not realistic to move those in a precontemplative stage to action with a single intervention. It is important, however, to move such individuals to the contemplation stage and keep then there until they are ready to move to later stages in the future.

What Medium Should be Used

In general, most effective CVD campaigns have used a multi-media approach. Given my overall recommendation that future CVD campaigns should target those populations at the greatest risk and those populations that still reside on lower stages of change in the transtheoretical model, I would argue that it is most important to use media that allow for knowledge gain, awareness gain, and messages about self-efficacy and perceived risk. More importantly, medium should be used that best target ethnic minorities and those with low levels of education. However, using a lifestyle model, it is also acceptable to select media depending upon the specific lifestyle group one is interested in targeting.

Clearly, television advertising is one of the most important medium to use to reach ethnic minorities and specific lifestyles. Cable television can be used to target, for example, Older Primed Americans, Young non-English speaking Hispanics, and Unhealthful Young Adults. Network television can be used to effectively target African Americans, since their patterns of watching are so different than the rest of the population. For the same reasons, radio can be effectively used to reach very specific populations. Spanish radio can reach non-English speaking Hispanics. Other formats should also be employed, those specifically attractive to African Americans, Older Adults, Latinos, and Young Unhealthy Adults (see the appendix for a listing of different radio formats)

Of course, if a campaign is designed to target ethnic minorities with lower educational attainment, one can do so by employing bus banners, direct mail, and geographically bound billboards and supermarket inserts. One study in particular explored the difference between two different pamphlets, one generic and one specifically targeted to African Americans. The tailored pamphlet was geared toward smoking behaviors of African Americans and addressed obstacles African Americans specifically face. Those who received the tailored guides were significantly more likely to set a quit date with regard to smoking cessation, switch to a lower nicotine brand, and reduce the number of cigarettes smoked per day (Orleans et al., 1998). This study shows that specially targeted messages are more effective than generic messages. Those who received the tailored intervention more successfully moved up the stages of change.

In a similar vein, it is critical that messages be spoken in the language of the target audience, using realistic and identifiable role models. All too often campaigns in the past have used healthy, white, attractive role models to deliver health messages. Unfortunately, some research now indicates that matching on ethnicity is far more important, as is providing role models that represent the attainment of reasonable CVD reduction goals (for example, by using models who are still slightly overweight). And, most importantly, Spanish material must be provided in conversational Spanish, rather than Spanish considered idiomatically correct. Such printed materials should mirror the "photonovela" style of pamphlet.

Conclusion

Future CVD prevention and reduction campaigns must continue to strive for specifically tailored use of mass media. This report has provided a broad range of information regarding the use of mass media in such campaigns. It is paramount that CVD campaigns, however, do far more than what has been suggested in this paper. As research has indicated, the effectiveness of

mass media is multiplied when used as a preface to community interventions. There is clear evidence that media are particularly effective at recruiting individuals into programs, and that such programs offer the most significant increase in best practices for those who participate. Thus, mass media CVD campaigns must be tailored to open the door to behavior change both within and outside of such programs. This means encouraging further information, discussion, visiting one's doctor, getting assistance, and joining intervention programs.

Finally, I encourage CVD planers to recruit individuals who have expertise in the media markets in which planners are interested in intervening. My coverage of media outlets has been general because the design of specific interventions can only take place with the use of specific media market data. I have provided some of this information in the appendix. However, it is up to the media planners for the campaign to determine which outlets, which locations, and which medium will work best for that specific media market.

CVD campaigns, I believe, are on the cusp of the third wave: Just as the study of media effects has seen a recent revival as scholars have discovered the situations in which media can have strong effects (and the ways to measure such effects), CVD campaigns are beginning to utilize specific strategies based on sound theory and prior research, and will reap significant rewards. While such rewards may not include community or city-wide effects, future campaigns will make their mark on audience segments who are in the greatest need of their help.

Appendix

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