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# Food Safety Consumer Research Literature Review Report

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# **Food Safety Consumer Research: Literature Review**

## **Draft Report**

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# Executive Summary

Public health communication campaigns employ mass media channels to inform or persuade an audience about the value of engaging in health-promoting behaviors. In support of the U.S. Department of Agriculture's Food Safety and Inspection Service's (FSIS's) interest in public health communication campaigns, RTI International conducted a systematic review of the peer-reviewed literature to capture information on elements and characteristics of consumer-focused public health campaigns. This research provides insight into consumers' diverse food safety needs and the messaging and accompanying materials needed to improve consumers' food safety behavior.

We identified food safety-related health behaviors and relevant public health behavior outcomes for our search. The primary criteria for selecting relevant public health behaviors included low-cost behaviors, behavioral adoption, and behaviors that are carried out frequently or repeatedly. Electronic database searches with an agreed upon set of key words yielded approximately 1,200 peer-reviewed published articles.<sup>1</sup> Articles were reviewed and retained based on the following decision criteria:

- The study presents a public health or risk communication campaign.
- The campaign addresses one of the selected health domains.
- The campaign is consumer focused.
- The campaign was conducted in the United States, United Kingdom, Europe, Australia/New Zealand, Canada, or Mexico.

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<sup>1</sup> Note, we use the terms "article" and "study" interchangeably in this report.

- The study reports measured outcomes of the campaign (e.g., behavior, attitude, knowledge, awareness).
- The study is not a review or editorial or limited to qualitative findings.

The abstract review resulted in the inclusion of 124 articles for data abstraction. Next, the full text for each study was subjected to a systematic coding process that extracted information on study and campaign characteristics, campaign development and formative research, message characteristics, campaign dissemination characteristics, audience characteristics, and evaluation characteristics. The following summarizes the topline findings of the data abstracted from the articles.

- Across all campaigns in the review, 42% were implemented at a nationwide or statewide level.
- More than half of the campaigns in the review (55%) were implemented for a general audience, while the remaining 45% targeted a priority audience.
- Of the 104 articles, between 75% and 90% did not mention any of the formative research methods measures. Of the articles that did mention formative research, input from stakeholders and message testing were most often mentioned (25% and 29%, respectively).
- The channel used by the greatest number of campaigns was radio/television (71%), followed by print (64%) and Internet (35%). Six articles used social media as a campaign channel.
- Behavior change (i.e., self-reported) was the most commonly reported evaluation outcome (87%) followed by awareness (62%), attitudes (48%), and knowledge (39%).

The findings in this report provide an overview of the literature on public health communication campaigns conducted over the last 36 years. The 104<sup>2</sup> articles cover a range of public health topics. The largest number of articles are about campaigns focused on chronic disease prevention; only five of the articles focused on food safety.

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<sup>2</sup> During data abstraction, twenty articles were removed based on the inclusion / exclusion criteria described above, leaving 104 articles in the review.

Campaign evaluation results include the following:

- 87% measured behavior and 61% of the results were statistically significant
- 48% measured attitudes and 56% of the results were statistically significant
- 39% measured knowledge and 76% of the results were statistically significant
- 62% measured awareness and 56% of the results were statistically significant

This report provides limited information on campaign development or the use of formative research. Those planning public health communication campaigns should recognize that the investment of time and resources in campaign planning and formative research could increase message receptivity and campaign effectiveness.

Most of the articles included good descriptions of communication channels but little information on exposure or population reach. Evidence of campaign recall was reasonably good. Although radio/television was the most commonly employed channel for disseminating campaign messages, this finding needs to be considered in light of the time span of the campaigns and articles included in this report. Given the comparatively low costs and increased reach of social media, it would not be surprising to see radio/television begin to decline in terms of its impact as a message delivery channel.

This report includes lessons learned from the field. The key lessons from this body of literature include the following:

- Using sound behavior theory is a key factor in targeting motivation to change.
- Partnerships and collaboration are an essential component of campaign planning that should be considered after assessing readiness among potential partners.
- Messages should be carefully developed to resonate with priority audiences. Recognizing and tapping into psychosocial characteristics of priority audiences can help develop messages that are more likely to be received favorably.
- Reinforcement can include the use of different communication channels and dissemination at multiple levels of the socio-ecological framework.
- It is necessary to match dissemination plans with message characteristics such as complexity. Using one simple, focused message can be more effective than multiple, complex messages that may have limited long-term effectiveness.
- Television is credited with the greatest ability to generate audience awareness, but it comes at a very high cost. Campaign planners should carefully consider balanced media purchases that allow for the greatest potential for exposure.



# 1

## Introduction

The U.S. Department of Agriculture's Food Safety and Inspection Service's (USDA's/FSIS's) Office of Public Affairs and Consumer Education (OPACE) strives to continuously increase consumer awareness of recommended food safety practices with the intent to improve food-handling behaviors at home. Through its consumer education programs, OPACE educates the public on recommended food safety practices to enable consumers to make safe food handling and preparation decisions when cooking at home, thus helping reduce the incidence of foodborne illnesses, hospitalizations, and deaths. OPACE shares its messages through

- the Food Safe Families campaign,
- other advertising,
- social media,
- the USDA web site and FoodSafety.gov
- the Meat and Poultry Hotline and Ask Karen (an online guide to answer food safety questions),
- publications, and
- events.

These messages are focused on the four core food safety behaviors: clean, separate, cook, and chill. Additionally, OPACE's public education and outreach initiatives place an emphasis on reaching vulnerable and underserved populations, such as adults aged 60 or older, pregnant women, parents of children 5 years of age or younger, diabetes patients, cancer patients, individuals with compromised immune systems, and the underserved.

FSIS contracted with RTI International to test new and tailored consumer messages, which will enable FSIS to effectively communicate with the public and work to improve consumer

food safety practices. As part of this project, RTI conducted a systematic review of the peer-reviewed literature to determine thematic elements of consumer public health campaigns. This research will provide insight into consumers' diverse food safety needs and the messaging and accompanying materials needed to improve consumers' food safety behavior.

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## **1.1 PURPOSE**

The purpose of the literature review was to review and summarize findings from public health communication campaigns and provide recommendations on how campaign practices can be related to food safety and other health and safety behaviors. Public health communication campaigns attempt to inform or persuade an audience about the value of engaging in health-promoting behavior. They use mass media channels that are open to the public to disseminate messages. This places them in a separate category from interventions or other public health approaches that target specific individuals.

This review includes campaigns that address food safety behaviors (e.g., clean, separate, cook, and chill) and other safety and health-promoting behaviors (e.g., healthy eating, firearm safety). The report captures lessons learned from the broad literature on public health communication that can be applied to food safety campaigns. OPACE can use this review to inform the design of FSIS communication campaigns.

This report describes the results of the literature review and is organized as follows:

- Section 2 describes the methods used for the systematic literature review.
- Section 3 describes the results, with subsections for each component of campaign development, implementation, and evaluation.
- Section 4 highlights the key findings and lessons learned from the literature reviewed.
- Section 5 concludes the report.

In addition, the appendices provide the following:

- Appendix A: Search Terms
- Appendix B: Coding Manual

# 2

## Methods

RTI conducted a systematic literature review in four steps: (1) searched academic databases using specific search terms, (2) reviewed article titles for inclusion in the study, (3) reviewed abstracts, and (4) abstracted data from the full-text articles included in this systematic review. This section describes these steps in more detail.

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### 2.1 DATABASE SEARCH

RTI and FSIS collaboratively identified five food safety–related health behaviors:

The literature review identified articles that reported on public health communication campaigns on the following topics:

- Food safety
- Poison control
- Smoke alarms/home safety
- Oral health/hygiene
- Exercise
- Healthy eating
- Condom use/sexual behavior
- Secondhand smoke
- Firearm storage

1. Food safety (general, safe food handling, prevention of foodborne illness)
2. Clean—handwashing (related to food preparation), cleaning surfaces, not washing poultry to avoid cross-contamination in the kitchen
3. Separate—using separate cutting boards
4. Cook—using a food thermometer and cooking to recommended temperatures
5. Chill—cooling foods, properly storing leftovers, thawing meat/poultry

We recognized that the literature on public health communication campaigns that focus on safe food handling practices may be limited. Additionally, FSIS wanted to learn about effective campaigns in other areas that improved consumer behavior. To bolster the literature review, we also included the following related public health domains because they may provide useful information on the role of national public health campaigns in changing consumer behavior:

1. Poison control
2. Smoke alarms/home safety

3. Oral health/hygiene
4. Exercise
5. Healthy eating
6. Condom use/sexual behavior
7. Secondhand smoke (prevention)
8. Safe firearm storage

The primary criteria for selecting related public health domains included low-cost behaviors, behavioral adoption, and behaviors that are carried out frequently or repeatedly.

RTI created a set of search terms that could be applied to each selected behavior:

[*behavior of interest*<sup>3</sup>] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change]

We then conducted bibliographic searches by public health domain to increase our ability to sort and target the set of identified abstracts. We searched PubMed, Web of Science, CINAHL, and Food Science & Technology Abstracts databases. Using RTI's Library and Information Services, we searched for articles published in English between the years of 1980 and 2016. The search yielded 1,205 citations.

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## 2.2 TITLE REVIEW

To determine the relevance of identified peer-reviewed studies, a team of four experienced RTI researchers independently reviewed the title and citation of each article. The aim of this process was to exclude studies that clearly did not meet the review's inclusion criteria. Accordingly, we excluded studies written in languages other than English, studies conducted in countries other than those of interest (United States, Canada, Australia/New Zealand, the European Union, or Mexico), and studies that did not match the identified behavior domain or did not include a public health communication campaign. The title

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<sup>3</sup> Search terms for each safe food handling behavior and public health domain of interest are provided in Appendix A.

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review resulted in the retention of 289 studies for the abstract review.

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## 2.3 ABSTRACT REVIEW

Of the 1,205 articles initially identified in the database search:

- 289 abstracts were reviewed
- 124 articles were reviewed
- 104 articles were included in the final review.

Figure 2-1 provides a flow diagram for our approach to identifying relevant studies to include in the systematic literature review. Two trained researchers independently reviewed each remaining abstract based on the following inclusion criteria:

- The article reports an evaluation of a public health/risk communication campaign.
- The campaign addresses one of the selected public health domains.
- The campaign targeted a consumer audience.
- The campaign was conducted in the United States, United Kingdom, Europe, Australia/New Zealand, Canada or Mexico.
- The article reports outcomes related to behavior, attitude, knowledge, or awareness.

We excluded review and editorial studies, as well as studies limited to qualitative findings from focus groups or interviews, because the literature review focused on publications that reported outcomes.

Any discrepancies between the decisions of the two reviewers were resolved through discussion until an agreement was reached for each abstract.

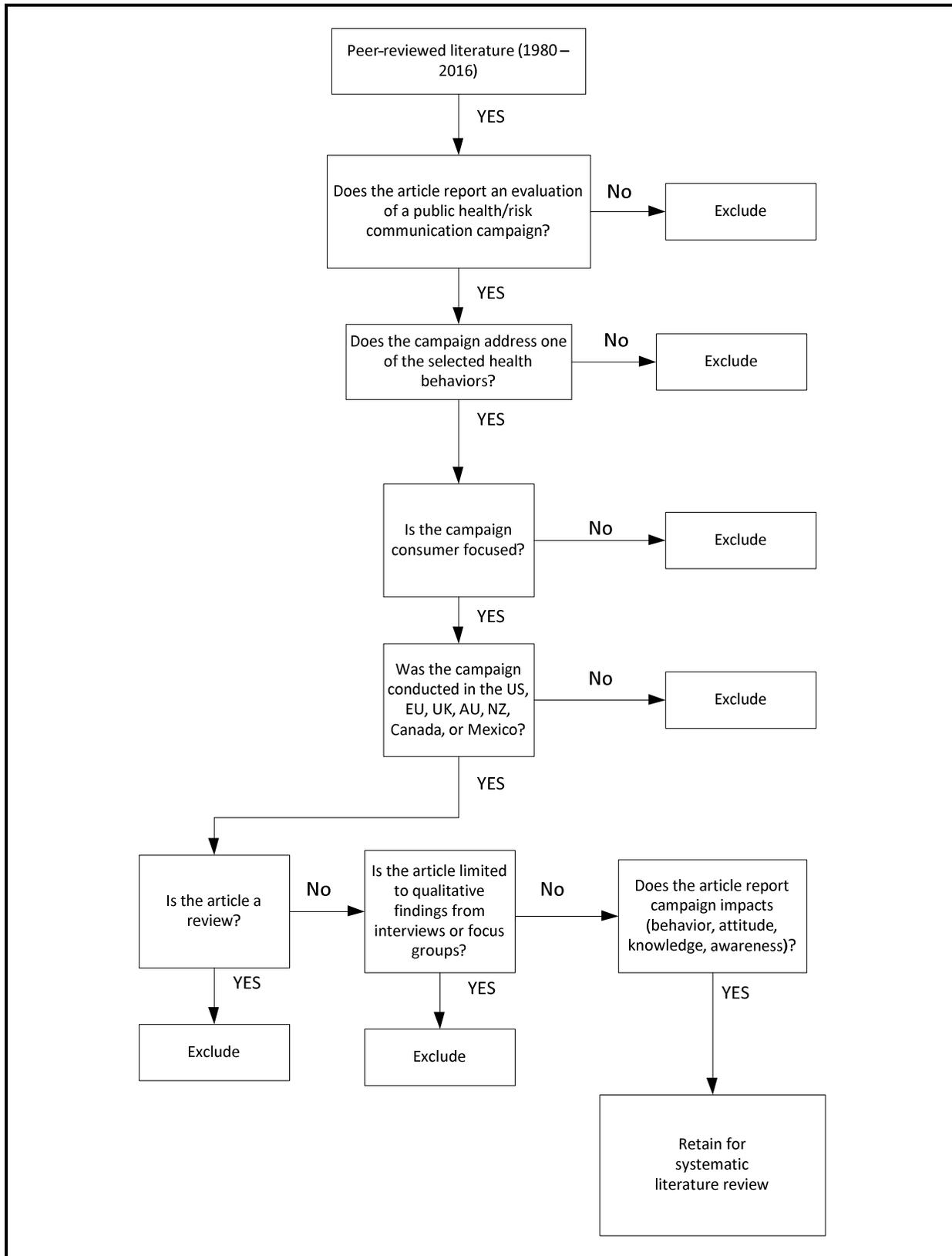
The abstract review resulted in the inclusion of 124 articles for data abstraction.

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## 2.4 DATA ABSTRACTION

After reviewing the abstracts, we obtained the full-text original articles for those studies that met the inclusion criteria. Five reviewers independently coded the articles based on a defined set of criteria to ensure consistency (see Appendix B for the coding manual). Reviewers participated in three 1-hour training meetings where the coding manual and data abstraction approach were explained. In addition, the lead author (JLB) annotated two articles and walked the reviewers through the coding process on an item-by-item basis. Approximately 10% of the articles were double-coded for quality control by the

Figure 2-1. Inclusion/Exclusion Criteria Flow Diagram



primary reviewer and the lead author. This process was part of a training exercise designed to ensure that all coders understood the terminology and concepts associated with the coding criteria. Agreement between the two coders averaged 76.4%, ranging from 100.0% to 64.1%. As part of the training process, discrepancies were discussed and resolved so that both coders achieved complete agreement on all variables.

During the data abstraction process, reviewers identified 20 articles that did not meet the inclusion criteria shown in Figure 2-1. These articles were eliminated, resulting in 104 articles in the final review.

Reviewers coded the following characteristics for all articles:

- **Study and campaign characteristics:** public health domain, location of campaign (country), setting where campaign was disseminated, and the funding source of the evaluation
- **Campaign development and formative research:** theoretical basis, social marketing/branding, and formative research
- **Message characteristics:** message framing, focus, call to action, and visual cues
- **Campaign dissemination:** channels, media exposure, and reach
- **Evaluation characteristics:** evaluation design, measured period of exposure, recall, outcome(s) reported, and statistical significance

Additional information on the items describing each characteristic and their set of coding options is presented in Appendix B. Following data abstraction, we cleaned, summarized, and analyzed the coded data. Based on thematic similarities, we condensed the original 13 public health domains into three public health domains:

- **Food safety:** general food safety, clean, separate, cook, and chill
- **Public safety:** poison control, smoke alarms, and firearm storage
- **Chronic disease prevention:** oral health, exercise, healthy eating, condom use, and secondhand smoke prevention

Frequencies were reported for each characteristic, and the mean, minimum, and maximum were reported for select characteristics. All analyses were performed using SAS and imported into Excel.

# 3

## Results

This section presents the results of the literature review on public health campaigns. We report on the campaign characteristics, campaign and formative development, message characteristics, and dissemination characteristics, and campaign evaluations. The results are presented overall and by three public health domains: food safety ( $n = 5$ ), public safety ( $n = 5$ ), and chronic disease prevention ( $n = 94$ ).

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### 3.1 CAMPAIGN CHARACTERISTICS REPORTED

Table 3-1 highlights the campaign characteristics that were reported for each study in the review. These characteristics include the year the campaign began, the country in which the campaign was conducted, the type of setting in which the campaign was implemented, the intended audience, and the source of sponsorship or funding.

Approximately half of these articles (51%) focused on campaigns based in the United States. The most common level of implementation for the campaigns was at the nationwide or statewide level (42%), and 55% of all campaigns discussed in the articles targeted the general population. A federal or national government agency was the most common source of campaign funding across all articles (25%).

#### 3.1.1 Campaign Location

Location indicates the country where the public health communication campaign was conducted. Options included the United States, the United Kingdom, Europe (not UK), Australia/New Zealand, Canada, and Mexico.

**Table 3-1. Campaign Characteristics**

<b>First Author and Year of Publication</b>	<b>Year Campaign Began</b>	<b>Country</b>	<b>Setting</b>	<b>Priority Audience<sup>a</sup></b>	<b>General Audience</b>	<b>Sponsor</b>
<b>Food Safety (n = 5)</b>						
Abbot (2012) (clean, cook, chill, leftovers)	NR	United States	U	✓		Grant funded
Dharod (2004) (Fight BAC)	2000	United States	C (S)	✓		Grant funded
James (2013) (leftovers)	NR	United States	N/S	✓		Federal government
Ratnapradipa (2009) (mercury in fish)	2005	United States	N/S		✓	Public-private partnership
Tiozzo (2011) ( <i>Salmonella</i> )	2007	Europe (not United Kingdom)	C (G)		✓	Federal government
<b>Public Safety (n = 5)</b>						
Greene (2015) (lead poisoning)	2004	United States	C (G)		✓	Grant funded
Henry (2003) (air quality)	1998	United States	C (S)		✓	Public-private partnership
McLaughlin (2004) (lead poisoning)	NR	United States	C (G)	✓		Federal government
Roberto (2002) (firearm safety)	NR	United States	C (G)		✓	State government
Robinson (2014) (suicide prevention)	2007	United Kingdom	C (G)		✓	Public-private partnership
<b>Chronic Disease Prevention (n = 94)</b>						
Acharya (2006) (healthy eating)	2000	United States	C (G)		✓	State government
Albarracin (2003) (alcohol abstinence)	NR	United States	NR		✓	Grant funded
Arikan (2014) (obesity)	NR	Europe (not United Kingdom)	N/S		✓	Federal government
Bauman (2001) (exercise)	1998	Australia/New Zealand	N/S		✓	State government
Bauman (2003a) (exercise)	1999	Australia/New Zealand	N/S		✓	Federal government
Bauman (2003b) (exercise)	1998	Australia/New Zealand	N/S		✓	Federal government
Bell (2013) (healthy eating and exercise)	2007	Australia/New Zealand	C (G)	✓		Not reported

(continued)

**Table 3-1. Campaign Characteristics (continued)**

<b>First Author and Year of Publication</b>	<b>Year Campaign Began</b>	<b>Country</b>	<b>Setting</b>	<b>Priority Audience<sup>a</sup></b>	<b>General Audience</b>	<b>Sponsor</b>
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>						
Berry (2009) (healthy eating and exercise)	2007	Canada	N/S	✓		State government
Blitstein (2012) (sexual behavior)	2007	United States	N/S	✓		Federal government
Boles (2014) (healthy eating)	2011	United States	C (G)		✓	Federal government
Booth-Butterfield (2004) (healthy eating)	NR	United States	C (S)		✓	Public-private partnership
Bovet (2011) (healthy eating and exercise)	2010	Europe (not United Kingdom)	C (G)		✓	State government
Brorsson (1988) (sexual behavior)	1987	Europe (not United Kingdom)	N/S		✓	Public-private partnership
Bull (2008) (condom use)	2004	United States	C (G)	✓		Public-private partnership
Cagampang (1997) (sexual behavior)	1992	United States	N/S	✓		State government
Campbell (1987) (sexual behavior)	1987	United Kingdom	N/S		✓	Federal government
Chen (2002) (sexual behavior)	NR	United States	C (S)	✓		State government
Cochrane (2008) (exercise)	NR	United Kingdom	C (S)	✓		Grant funded
Craig (2006) (exercise)	2003	Canada	N/S		✓	Public-private partnership
Craig (2007) (exercise)	2004	Canada	N/S		✓	Public-private partnership
Darrow (2008) (sexual behavior)	2003	United States	C (S)	✓		State government
de Vroome (1990) (condom use)	1987	Europe (not United Kingdom)	N/S		✓	Federal government
Dixon (1998) (healthy eating)	1992	Australia/New Zealand	N/S		✓	Public-private partnership
Donate (2010) (sexual behavior)	2006	United States	C (S)	✓		Grant-funded
Dooley (2010) (healthy eating)	NR	Canada	O		✓	Federal government

(continued)

**Table 3-1. Campaign Characteristics (continued)**

First Author and Year of Publication	Year Campaign Began	Country	Setting	Priority Audience <sup>a</sup>	General Audience	Sponsor
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>						
DuRant (2006) (sexual behavior)	1999	United States	N/S		✓	Public-private partnership
Eves (2012) (exercise)	NR	United Kingdom	C (G)		✓	Grant funded
Fernandez Cerdeno (2012) (condom use)	2006	United States	C (S)	✓		Grant funded
Foerster (1995) (healthy eating)	1988	United States	N/S		✓	Grant funded
Gase (2015) (healthy eating)	2012	United States	C (G)		✓	Other
Gee (2007) (sexual behavior)	2003	United States	C (G)		✓	Public-private partnership
Gibson (2010) (drug use prevention)	NR	United States	C (G)	✓		Grant funded
Gilbert (2013) (sexual behavior)	2009	Canada	C (S)	✓		Grant funded
Glasson (2013) (healthy eating)	2008	Australia/New Zealand	N/S	✓		Federal government
Goodwin (2014) (exercise)	2007	United Kingdom	C (G)		✓	Nonprofit/philanthropic
Guy (2009) (sexual behavior)	2004	Australia/New Zealand	C (G)	✓		Public-private partnership
Hatfield (2016) (healthy eating)	NR	United States	C (S)	✓		Grant funded
Hlavinkova (2014) (sexual behavior)	2008	Europe (not United Kingdom)	C/S	✓		Federal government
Hota (2010) (healthy eating)	NR	Europe (not United Kingdom)	C (G)	✓		Not reported
Howlett (2012) (healthy eating)	2001	United States	N/S		✓	State government
Huhman (2010) (exercise)	2002	United States	N/S	✓		Federal government
James (2015) (secondhand smoke exposure)	2008	United States	N/S		✓	Grant funded

(continued)

**Table 3-1. Campaign Characteristics (continued)**

<b>First Author and Year of Publication</b>	<b>Year Campaign Began</b>	<b>Country</b>	<b>Setting</b>	<b>Priority Audience<sup>a</sup></b>	<b>General Audience</b>	<b>Sponsor</b>
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>						
King (2013) (exercise)	2008	Australia/New Zealand	N/S		✓	Federal government
Leavy (2013) (exercise)	2008	Australia/New Zealand	N/S		✓	State government
Lim (2015) (sexual behavior)	2009	Australia/New Zealand	N/S	✓		Grant funded
Maddock (2007) (healthy eating)	2004	United States	NR		✓	Public-private partnership
Mann (2013) (sexual behavior/condom use)	2011	Canada	C (G)	✓		State government
Martensson (2004) (oral health)	1999	Europe (not United Kingdom)	N/S		✓	Other
Martinez-Donate (2009) (sexual behavior/condom use)	2006	United States	C (S)	✓		Grant funded
McMahon (2004) (sexual behavior)	2000	Australia/New Zealand	N/S	✓		Federal government
Merom (2005) (exercise)	2003	Australia/New Zealand	N/S		✓	Federal government
Miles (2001) (healthy eating and exercise)	1999	United Kingdom	N/S		✓	Commercial/private industry
Moatti (1992) (condom use)	1987	Europe (not United Kingdom)	N/S		✓	Not reported
Montoya (2005) (sexual behavior)	2002	United States	C (S)	✓		State government
Mork (2015) (healthy eating)	NR	Europe (not United Kingdom)	N/S	✓		Federal government
Murtomaa (1984) (oral health)	1981	Europe (not United Kingdom)	N/S		✓	Public-private partnership
Nigg (2005) (exercise)	2002	United States	N/S		✓	Other
O'Hara (2011) (healthy eating and exercise)	2009	Australia/New Zealand	NR		✓	Not reported
Parker (2004) (cancer awareness)	2002	United States	N/S		✓	Public-private partnership

(continued)

**Table 3-1. Campaign Characteristics (continued)**

First Author and Year of Publication	Year Campaign Began	Country	Setting	Priority Audience <sup>a</sup>	General Audience	Sponsor
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>						
Pedrana (2012) (sexual behavior)	2008	Australia/New Zealand	C (S)	✓		Nonprofit/philanthropic
Pivonka (2011) (healthy eating)	2007	United States	N/S	✓		Public-private partnership
Plant (2010) (sexual behavior)	2002	United States	C (S)	✓		Public-private partnership
Plant (2014) (sexual behavior)	2007	United States	C (S)	✓		Other
Pollard (2008) (healthy eating)	2002	Australia/New Zealand	C (G)		✓	State government
Potter (2008) (exercise)	2002	United States	NR	✓		Federal government
Reger (1999) (healthy eating)	1996	United States	C (G)		✓	Public-private partnership
Reger (2000) (healthy eating)	1997	United States	C (G)		✓	Grant funded
Reger (2002) (exercise)	2001	United States	C (S)	✓		Grant funded
Reger-Nash (2005) (exercise)	2001	United States	C (S)	✓		Not reported
Reger-Nash (2008) (exercise)	2005	United States	C (S)		✓	Not reported
Rise (1988) (oral health)	1981	Europe (not United Kingdom)	N/S		✓	Other
Rogers (2013) (healthy eating)	2006	United States	C (G)		✓	Public-private partnership
Rogers (2014) (healthy eating and exercise)	NR	United States	C/S	✓		Grant funded
Romer (2009) (sexual behavior)	2006	United States	C (S)	✓		Federal government
Ross (1993) (sexual behavior)	1987	United Kingdom	C (G)		✓	Not reported
Schmidt (2009) (smoking)	2006	Canada	N/S	✓		Public-private partnership
Singer (1991) (condom use)	1988	United States	N/S		✓	Federal government
Siska (1992) (sexual behavior)	1990	United States	C (G)		✓	Federal government

(continued)

**Table 3-1. Campaign Characteristics (continued)**

First Author and Year of Publication	Year Campaign Began	Country	Setting	Priority Audience <sup>a</sup>	General Audience	Sponsor
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>						
Smith (2009) (secondhand smoke exposure)	2002	Canada	C (G)		✓	Other
Solorio (2016) (sexual behavior)	2014	United States	C (S)	✓		Grant funded
Southcote (2016) (healthy eating)	2013	United States	U		✓	State government
Stekler (2013) (sexual behavior)	2009	United States	C (S)	✓		Public-private partnership
Sutherland (2013) (healthy eating)	2004	United Kingdom	N/S		✓	Federal government
Thrasher (2013) (smoking)	2005	Mexico	C (G)	✓		Not reported
Trussell (2001) (sexual behavior)	1997	United States	N/S	✓		Nonprofit/philanthropic
Turrell (1997) (healthy eating)	NR	Australia/New Zealand	N/S		✓	Federal government
Wagman (1993) (sexual behavior)	NR	Canada	C (G)	✓		Other
Wammes (2007) (healthy eating and exercise)	2002	Europe (not United Kingdom)	N/S		✓	Federal government
Wardle (2001) (healthy eating and exercise)	1998	United Kingdom	N/S		✓	Nonprofit/philanthropic
Wechem (1997) (healthy eating)	1992	Europe (not United Kingdom)	C (G)		✓	Not reported
Wechem (1998) (healthy eating)	1991	Europe (not United Kingdom)	N/S		✓	Public-private partnership
White (2015) (secondhand smoke exposure)	2008	United States	N/S		✓	State government
Whittingham (2008) (condom use)	NR	Europe (not United Kingdom)	C/S	✓		Federal government
Zimmerman (2007) (condom use)	2003	United States	C (G)		✓	Not reported

C (G) = Community (general); C (S) = Community (specific); C/S = Child care/school; N/S = Nationwide/statewide; O = Other; NR = Not reported; U = University

<sup>a</sup> Priority audiences include subgroups of the general population with special needs (e.g., pregnant women, children below the age of 5 years, the elderly, and persons who are immunocompromised).

Approximately half of the campaigns in the review were conducted in the United States (51%). Nine percent were based in the United Kingdom, 15% were in Europe, 15% were in Australia/New Zealand, 9% were in Canada, and 1% were based in Mexico.

For the five food safety campaigns included in this review, four were based in the United States and one in Europe. This finding is similar to the five public safety campaigns, of which four were based in the United States and one was based in the United Kingdom. For the chronic disease prevention campaigns, almost half of the studies were based in the United States (48%). The remaining chronic disease campaigns were conducted in the United Kingdom (9%), Europe (16%), Australia/New Zealand (17%), Canada (10%), and Mexico (1%).

### **3.1.2 Setting**

The setting describes the level at which the campaign was implemented. Settings could be classified as nationwide or statewide; within a community (general or tailored to a specific group); or at a childcare, school, or university. The setting has an impact on how the campaign is designed and evaluated, particularly in terms of channels, sample size, and other measures.

Across all campaigns in the review, 42% were implemented at a nationwide or statewide level. Of the remaining studies, 28% focused generally in a community; 20% focused on a specific group within a community; 5% focused on childcare, school or university settings; and 1% focused on other settings. Four percent of the studies did not report a campaign setting.

Focusing on each campaign domain:

- Of the five food safety campaigns, two were either implemented at a nationwide or statewide level, one was focused generally in a community, one was aimed at a specific group or groups in a community, and one was implemented at the university level.
- Of the five public safety campaigns, four were focused generally in a community, and one took place in a specific community setting. This campaign, related to air pollution, was conducted in a workplace setting and focused on drivers in the Atlanta area.

- Of the chronic disease prevention campaigns, 45% were implemented at either a nationwide or statewide level; 26% were implemented generally in a community; 20% were focused in a specific community setting; 4% occurred within childcare, school, or university settings; 1% occurred within other settings; and 4% were not reported.

### **3.1.3 Audience Characteristics**

Campaigns can reach a general audience (e.g., everyone within the setting) or a specific group. For public health campaigns, specific groups of interest to FSIS included populations who are most vulnerable to foodborne illness, such as children, the elderly, pregnant women, and minorities.

More than half of the campaigns in the review (55%) were implemented for a general audience, while the remaining 45% targeted a priority audience. By campaign domain, two of the food safety campaigns focused on a general audience and three on a priority audience; four of the public safety campaigns targeted a general audience and one targeted a priority audience; and 51 of the chronic disease prevention campaigns targeted a general audience, while 43 focused on a priority audience.

Among the 45% of studies that targeted specific subgroups ( $n = 51$ ), 24% focused on homosexual men or men who have sex with men (MSM), 20% on parents, 16% each on teens and ethnic minorities, 10% on women, 8% on children, and 2% each on pregnant women and the elderly.

### **3.1.4 Sponsorship**

The most common source of funding or sponsorship for campaigns across all studies was a federal or national government agency (25%). The next most common source of funding was public-private partnerships (21%), where the government and an industry or commercial entity collaborated to develop and implement a campaign. Eighteen percent of the studies were grant funded, 14% were state government funded, and less than 1% were funded by the commercial/private industry alone (0.96%). Other sources, such as industry trade associations and city governments, funded 7% of the studies. The remaining 10% of studies did not report a source of sponsorship or funding.

Additional information on sponsorship information is provided according to the campaign type (Table 3-2). For this assessment, we broke the chronic disease prevention category into three groups: healthy eating and physical activity, condom use, and other chronic disease prevention. Proportionally, public-private partnership was the most common among public safety campaigns, while federal government funding is more common for food safety healthy eating and physical activity, and condom use. Other chronic disease prevention was most commonly funded supported by grant funding. Food safety was the only health behavior not supported by state government funding.

**Table 3-2. Additional Sponsorship Information**

	State Government N (%)	Federal Government N (%)	Non-profit/ Philanthropic N (%)	Grant-Funded N (%)	Commercial/ Private Industry N (%)	Public/ Private Partnership N (%)	Other N (%)	Not Reported N (%)
Food safety	0 (0%)	2 (40%)	0 (0%)	2 (40%)	0 (0%)	1 (20%)	0 (0%)	0 (0%)
Public safety	1 (20%)	1 (20%)	0 (0%)	1 (20%)	0 (0%)	2 (40%)	0 (0%)	0 (0%)
Healthy eating & physical activity	7 (14.6)	14 (29.2)	2 (4.2%)	6 (12.5%)	1 (2.1%)	10 (20.8%)	2 (4.2%)	6 (12.5%)
Condom use	5 (15.6%)	8 (25%)	2 (6.25%)	6 (18.75%)	0 (0%)	6 (18.75%)	2 (6.25%)	3 (9.4%)
Other chronic disease prevention	2 (14.3%)	1 (7.1%)	0 (0%)	4 (28.6%)	0 (0%)	3 (21.4%)	3 (21.4%)	1 (7.1%)
Total	15	26	4	19	1	22	7	10

### 3.2 CAMPAIGN AND FORMATIVE DEVELOPMENT

Table 3-3 details the types of formative research supporting campaign development by each domain. Formative development included the use of focus groups, interviews with the priority population, expert elicitation, input from stakeholders, and message testing<sup>4</sup>. Of the 104 articles, between 75% and 90% did not mention any of the formative research methods listed above; this is most likely a function of the inclusion and exclusion criteria used to select peer-reviewed studies. Input from stakeholders and message testing were most often mentioned (25% and 29%, respectively).

<sup>4</sup> This study does not include consumer surveys conducted prior to a campaign as part of formative development.

The following theories were commonly used by the campaigns in this review:

- Theory of Planned Behavior/Reasoned Action: a persuasion model, used to predict how individuals will behave based on preexisting attitudes, behavioral intentions, and subjective norms
- Social Cognitive Theory: based on the idea that people learn by observing others

Interviews with the priority population and expert elicitation were least mentioned (11% and 14%, respectively).

Theories used to guide campaign development were also identified. The most frequently used theories were Theory of Planned Behavior/ Reasoned Action/Integrated Theory of Behavior Change (TPB/TRA) (12%) and Social Cognitive Theory (SCT) (8%). Agenda Setting and Extended Parallel Process Model were not mentioned in any article. Over 60% of the articles did not mention any theory.

We also examined social marketing and branding of the campaigns. Social marketing uses a marketing mix (product, price, placement, and promotion) in campaign development to encourage a specific behavior. More than half of the articles did not mention social marketing at all (54%); those that did were evenly split between not well described and very well described<sup>5</sup> (23% for each, respectively). Branding—the process of creating an impression in consumers’ minds that promotes a favorable attitude toward the target behavior—was mentioned in 13% of the studies reviewed. Of these, 5% described their branding very well.

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<sup>5</sup> The level of description is based on coder judgment. The coding manual instructed the coder to mark a feature as “very well described” if the study provided enough information to understand the author’s position and to mark the feature as “not well described” if the feature is briefly mentioned.

**Table 3-3. Types of Formative Research Supporting Campaign Development**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop.)	Expert Elicitation	Stakeholders	Message Testing
<b>Food Safety (n = 5)</b>					
Abbot, 2012 (clean, cook, chill, leftovers)	●	⊙	●	⊙	●
Dharod, 2004 (Fight BAC)	⊙	⊙	⊙	⊙	⊙
James, 2013 (leftovers)	⊙	⊙	⊙	⊙	⊙
Ratnapradipa, 2009 (mercury in fish)	⊙	⊙	⊙	⊙	⊙
Tiozzo, 2011 ( <i>Salmonella</i> )	●	⊙	⊙	⊙	⊙
<b>Public Safety (n = 5)</b>					
Greene, 2015 (lead poisoning)	●	⊙	⊙	⊙	●
Henry, 2003 (air quality)	⊙	⊙	⊙	●	⊙
McLaughlin, 2004 (lead poisoning)	⊙	⊙	⊙	⊙	⊙
Roberto, 2002 (firearm safety)	⊙	⊙	⊙	⊙	⊙
Robinson, 2014 (suicide prevention)	⊙	⊙	⊙	⊙	⊙
<b>Chronic Disease Prevention (n = 94)</b>					
Acharya, 2006 (healthy eating)	⊙	⊙	⊙	●	⊙
Albarracin, 2003 (alcohol abstinence)	⊙	⊙	⊙	⊙	●
Arikan, 2014 (obesity)	⊙	⊙	⊙	⊙	⊙
Bauman, 2001 (exercise)	●	⊙	⊙	⊙	⊙
Bauman, 2003 (exercise)	●	⊙	⊙	⊙	⊙

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>					
Bauman, 2003 (exercise)	⊙	⊙	⊙	⊙	⊙
Bell, 2013 (healthy eating and exercise)	●	⊙	⊙	●	⊙
Berry, 2009 (healthy eating and exercise)	⊙	⊙	⊙	●	⊙
Blitstein, 2012 (sexual behavior)	⊙	⊙	⊙	⊙	●
Boles, 2014 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Booth-Butterfield, 2004 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Bovet, 2011 (healthy eating and exercise)	⊙	⊙	⊙	⊙	⊙
Brorsson, 1988 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Bull, 2008 (condom use)	●	⊙	⊙	⊙	⊙
Cagampang, 1997 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Campbell, 1987 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Chen, 2002 (sexual behavior)	⊙	⊙	●	●	●
Cochrane, 2008 (exercise)	⊙	⊙	⊙	⊙	⊙
Craig, 2006 (exercise)	⊙	⊙	⊙	⊙	⊙
Craig, 2007 (exercise)	⊙	⊙	⊙	⊙	⊙
Darrow, 2008 (sexual behavior)	⊙	⊙	⊙	●	●

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
de Vroome, 1990 (condom use)	⊖	⊖	⊖	⊖	⊖
Dixon, 1998 (healthy eating)	⊖	⊖	⊖	●	●
Donate, 2010 (sexual behavior)	⊖	⊖	⊖	⊖	⊖
Dooley, 2010 (healthy eating)	●	●	⊖	⊖	●
DuRant, 2006 (sexual behavior)	⊖	⊖	⊖	⊖	⊖
Eves, 2012 (exercise)	⊖	⊖	⊖	⊖	●
Fernandez Cerdeno, 2012 (condom use)	●	●	⊖	●	⊖
Foerster, 1995 (healthy eating)	⊖	●	●	●	●
Gase, 2015 (healthy eating)	●	⊖	●	●	●
Gee, 2007 (sexual behavior)	⊖	⊖	⊖	⊖	●
Gibson, 2010 (drug use prevention)	⊖	⊖	⊖	⊖	⊖
Gilbert, 2013 (sexual behavior)	⊖	⊖	⊖	⊖	⊖
Glasson, 2013 (healthy eating)	⊖	⊖	⊖	⊖	⊖
Goodwin, 2014 (exercise)	⊖	⊖	⊖	●	⊖
Guy, 2009 (sexual behavior)	⊖	⊖	⊖	⊖	⊖
Hatfield, 2016 (healthy eating)	⊖	●	●	●	●
Hlavinkova, 2014 (sexual behavior)	●	●	●	●	⊖

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
Hota, 2010 (healthy eating)	⊙	⊙	⊙	⊙	●
Howlett, 2012 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Huhman, 2010 (exercise)	⊙	⊙	⊙	⊙	⊙
James, 2015 (second-hand smoke exposure)	⊙	⊙	⊙	⊙	⊙
King, 2013 (exercise)	⊙	⊙	⊙	⊙	●
Leavy, 2013 (exercise)	⊙	⊙	●	⊙	⊙
Lim, 2015 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Maddock, 2007 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Mann, 2013 (sexual behavior/condom use)	●	●	●	⊙	⊙
Martensson, 2004 (oral health)	⊙	⊙	⊙	⊙	⊙
Martinez-Donate, 2009 (sexual behavior/condom use)	⊙	⊙	⊙	⊙	⊙
McMahon, 2004 (sexual behavior)	●	⊙	●	⊙	●
Merom, 2005 (exercise)	⊙	⊙	⊙	⊙	⊙
Miles, 2001 (healthy eating and exercise)	⊙	⊙	⊙	⊙	⊙
Moatti, 1992 (condom use)	⊙	⊙	⊙	⊙	●
Montoya, 2005 (sexual behavior)	⊙	⊙	●	●	●

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>					
Mork, 2015 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Murtomaa, 1984 (oral health)	⊙	⊙	⊙	⊙	⊙
Nigg, 2005 (exercise)	⊙	⊙	⊙	⊙	⊙
O'Hara, 2011 (healthy eating and exercise)	⊙	⊙	⊙	⊙	⊙
Parker, 2004 (cancer awareness)	●	⊙	⊙	●	●
Pedrana, 2012 (sexual behavior)	●	⊙	⊙	⊙	⊙
Pivonka, 2011 (healthy eating)	●	●	●	●	●
Plant, 2010 (sexual behavior)	●	⊙	⊙	●	●
Plant, 2014 (sexual behavior)	●	⊙	⊙	●	●
Pollard, 2008 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Potter, 2008 (exercise)	⊙	⊙	⊙	⊙	⊙
Reger, 1999 (healthy eating)	⊙	⊙	●	⊙	⊙
Reger, 2000 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Reger, 2002 (exercise)	⊙	●	⊙	⊙	●
Reger-Nash, 2005 (exercise)	⊙	⊙	⊙	●	⊙
Reger-Nash, 2008 (exercise)	⊙	⊙	⊙	●	⊙
Rise, 1988 (oral health)	⊙	⊙	⊙	⊙	⊙

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>					
Rogers, 2013 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Rogers, 2014 (healthy eating and exercise)	●	●	⊙	●	●
Romer, 2009 (sexual behavior)	⊙	●	⊙	⊙	⊙
Ross, 1993 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Schmidt, 2009 (smoking)	●	⊙	⊙	●	●
Singer, 1991 (condom use)	⊙	⊙	⊙	⊙	⊙
Siska, 1992 (sexual behavior)	⊙	⊙	⊙	●	⊙
Smith, 2009 (secondhand smoke exposure)	⊙	⊙	⊙	●	⊙
Solorio, 2016 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Southcote, 2016 (healthy eating)	⊙	⊙	⊙	⊙	⊙
(Stekler, 2013 (sexual behavior)	●	●	⊙	⊙	⊙
Sutherland, 2013 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Thrasher, 2013 (smoking)	⊙	⊙	⊙	⊙	●
Trussell, 2001 (sexual behavior)	⊙	⊙	⊙	⊙	⊙
Turrell, 1997 (healthy eating)	⊙	⊙	●	●	⊙
Wagman, 1993 (sexual behavior)	●	⊙	⊙	⊙	●

(continued)

**Table 3-3. Types of Formative Research Supporting Campaign Development (continued)**

First Author and Year of Publication	Type of Formative Research				
	Focus Group	Interviews (priority pop)	Expert Elicitation	Stakeholders	Message Testing
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>					
Wammes, 2007 (healthy eating and exercise)	⊙	⊙	●	⊙	⊙
Wardle, 2001 (healthy eating and exercise)	⊙	⊙	●	●	●
Wechem, 1997 (healthy eating)	⊙	⊙	⊙	⊙	⊙
Wechem, 1998 (healthy eating)	⊙	⊙	⊙	⊙	⊙
White, 2015 (secondhand smoke exposure)	⊙	⊙	⊙	⊙	⊙
Whittingham, 2008 (condom use)	⊙	⊙	⊙	⊙	●
Zimmerman, 2007 (condom use)	●	⊙	⊙	⊙	●

⊙ = Not specified

● = Yes, but not well described

● = Yes, described very well

### 3.2.1 Food Safety

Three of the five articles under the food safety domain reported using the following theories: one each for the TPB/TRA, Health Belief Model (HBM), and Diffusion of Innovations Model theories. One study used what was described as “Communication” theory, although it is unclear what this means. One study did not report a theory.

Social marketing was mentioned in two of the five studies, although the use of social marketing was not well described. James et al. (2013) described the development and evaluation of the “4 Day Throw Away” social marketing campaign. Tiozzo et al. (2011) described how social marketing concepts were reviewed before the development of their campaign. None of the food safety campaigns were branded.

Examining the formative research that led to the development of the campaigns, we found that none of the five food safety campaigns reported interviews with the priority population or input from stakeholders. Two described their methods using focus groups very well. Only one study we reviewed, Abbot et al. (2012), described their methods using focus groups, expert elicitation, and message testing very well. This particular study described the development of a university campus-based food safety media campaign for young adults in the United States.

### **3.2.2 Public Safety**

Two of the five studies under the public safety domain reported using the SCT and HBM theories (one each). The remaining three studies did not specify a theory. Greene et al. (2015), described in detail the use of Bandura's SCT to help prevent childhood lead exposure.

The social marketing component was described in four of the five studies; two were not well described and the other two were very well described. Greene et al. (2015), who based their campaign on SCT, also described how they used Bandura's social marketing model. None of the public safety campaigns were branded.

Interviews with the priority population and expert elicitation were not used in any of the public safety campaigns. Stakeholder input was mentioned in one study, although it was not well described. Message testing was also described in only one study, although it was very well described. As part of the social marketing model Greene et al. (2015) used, planning and tracking measures were implemented to revise the campaign if necessary. Using focus groups also resulted in changes to the original campaign to better resonate with the target audience, in this case young children who resided in neighborhoods with high rates of childhood lead poisoning.

### **3.2.3 Chronic Disease Prevention**

The 94 studies under the chronic disease prevention domain used a variety of theories, although the majority were not specified (66%). The most reported were TPB/TRA, SCT, and ecological models (e.g., Social Ecological Model [SEM], Behavioral Ecological Model) (12%, 7%, and 6%, respectively). Huhman et al. (2010) mentioned both TPB/TRA and SCT in their evaluation of the Centers for Disease Control and

Prevention's (CDC's) VERB campaign, which was designed to promote physical activity among tweens (i.e., children between the ages of 10 and 13 years). Campaign messages were designed using components of both theories such as self-efficacy and social influences. In the United States, Rogers et al. (2013) attempted to address childhood obesity using the SEM at each level: individual, interpersonal, organizational, and policy. The campaign disseminated messages targeted toward increasing knowledge among children and their families while implementing initiatives and policies at local schools that participated.

Social marketing was used in almost half of the campaigns in the chronic disease prevention domain ( $n = 42$ ). Of these, 20 articles did not describe this component well and 22 described it very well. Branding was mentioned less frequently than social marketing; 85% of the studies did not report using this campaign tool. Five studies that included branding described it very well and also described social marketing very well. Four of the five were campaigns focused on sexually transmitted disease/HIV prevention. One of these evaluations, Montoya et al. (2005) used branding in their social marketing campaign to increase syphilis testing and knowledge in men who have sex with men (MSM). These researchers hired a social marketing company to help brand and implement the campaign.

Exploring the formative research that led to the development of the chronic disease prevention campaigns, we found that between 70% and 90% of the studies did not mention any of the methods we considered for this component: focus groups, interviews with the priority population, expert elicitation, input from stakeholders, or message testing. Twenty campaigns used focus groups, and articles on eight of those studies described their methods and design very well. Eleven studies conducted interviews with the priority population. Of the 14 studies mentioning expert elicitation, only 2 described these methods very well. The two types of formative research used most often were input from stakeholders and message testing (27% and 30%, respectively). Articles on 18 studies that used stakeholder input and message testing did not describe these well; of these 7 and 10, respectively, described these methods very well.

Across this domain, Pivonka et al. (2011) was the one study that consistently described all five methods very well, including

social marketing and branding of the campaign. These authors developed the Fruits & Veggies—More Matters campaign, which replaced the 5 A Day Program created in the late 1980s. A brand development agency was hired to help create this campaign. Stakeholder input was evaluated by gaining the perspectives of 20 government, nonprofit, grower, grocery, and foodservice organizations on the old 5 A Day Program. Interviews with mothers and children were held before the campaign was developed to understand knowledge, attitudes, beliefs, facilitators, and barriers of consumers. Message testing consisted of several rounds of focus groups and a survey for each factor of the campaign. Focus groups were held in three cities with mothers to choose a statement to serve as a brand platform; then both men and women participated in a set of groups in Maryland to choose graphics and logos for the campaign; finally, an online survey was conducted to assess the campaign's slogan. A task force was selected for this campaign development; members included government agencies, nonprofit agencies, and industry marketers. This task force reviewed and made changes to each campaign factor before consumers provided input through the focus groups and online survey. For our purposes, we consider this method an expert elicitation.

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### **3.3 CAMPAIGN MESSAGE CHARACTERISTICS**

The campaign message characteristics that we examined in each study included message framing; message focus; a call to action; and the use of visual cues or icons to promote the campaign, a set of visual images (logo, mascot, use of color) used consistently to promote the campaign.

Reviewers coded for the most common frames, which are gain frame and loss frame. A gain-framed message suggests added benefits from engaging in the desired behavior (e.g., increase your exercise for better health; quit smoking and you'll live longer). Loss-framed messages emphasize the costs or risks associated with behaviors (e.g., too much added sugar in your diet can lead to diabetes; washing poultry can spread bacteria). The vast majority of the campaigns (97%) did not report message framing.

Reviewers also looked for explicit information on whether the campaign employed messages that appealed to logic (rational

focus) or emotion (emotional focus). Among the examined studies, 98% did not report a rational or emotion focus for the campaign. Figure 3-1 provides additional information on the studies that discussed emotion-focused campaigns.

### Figure 3-1. Deeper Dive: Emotional Appeals

Many public health campaigns seek to change behavior by using persuasive messaging. These campaigns are based on appeals that are either logical or emotional. Logical appeals are based on facts and rely on logical (i.e., if-then) thinking. They are associated with more deliberative and purposeful cognitive processing. In contrast, emotional appeals attempt to activate subjective, experiential thinking. Emotional appeals are associated with more shallow or peripheral cognitive processing. Emotional appeals can evoke negative emotions (e.g., fear, anger) or positive emotions (e.g., pride, love). As described below, 2 of the 104 studies summarized in this review used emotional appeals.

**The Use of Emotion to Rebrand a Healthy Eating Campaign (Pivonka et al., 2011).** In 2005, the Produce for Better Health (PBH) Foundation sought to revive the 5-A-Day for Better Health Program, a social marketing program designed to promote eating at least 5 servings of fruit and vegetables every day. To reinvigorate the 5-A-Day brand, PHB, in collaboration with the National Cancer Institute and CDC, conducted extensive formative research with individuals from the priority audience (i.e., mothers). Interviews suggested that using emotional appeals to motivate consumers. There was no question that fruit and vegetables were viewed as an important part of a healthy diet, but the formative research suggested that most consumers did not see any benefit to increasing their intake of fruit and vegetables. Using a marketing research approach, PHB developed two emotional appeals:

- **Serve Up the Passion:** Food is one of the world's greatest delights and is an incredible source of creativity, imagination, and self-expression. As a mom, you take great pleasure in preparing meals your family enjoys.
- **Thrive:** As a mom, you are happiest when you see your family happy, active, and vital. You seek to give them every advantage to help them thrive. So if you want your mind and body, as well as those of your family, to flourish, you need to nourish them inside and out.

The 5-A-Day for Better Health Program was rebranded as the Fruits and Veggies – More Matters program. Awareness of the revamped program increased from 12% in 2007 to 18% in 2010. Of the mothers who were aware of the Fruits and Veggies – More Matters logo, the percentage who said it motivated them to help their families eat more fruit and vegetables increased from 23% in 2007 to 38% in 2010.

**The Use of Emotion to Encourage Syphilis Testing (Plant et al., 2010).** In 2001, several local organizations in Los Angeles developed a social marketing campaign to try to curb rising rates of syphilis among MSM. The Stop the Sore Campaign was based on an existing campaign that had been well received in San Francisco. The Los Angeles Stop the Sore's campaign branding used humor to break through the "HIV prevention fatigue" and set it apart from other sexual health messages. The campaign "sold" syphilis testing by appealing to the emotional attributes of peace of mind and desire for health. This approach emotionally reinforced the idea that getting a syphilis test is in the best interest of MSM. Survey results indicate that a majority of respondents (71%) was aware of the campaign, and 27% spontaneously mentioned the campaign (i.e., unaided awareness).

A call to action is a messaging device designed to provoke an audience response. Calls to action are usually expressed in the form of an imperative, such as "get out and vote" or "eat your five-a-day." Approximately 33% of the campaigns reported using a call to action in the campaign. In one example, Blitstein

et al. (2012) evaluated the Parents Speak Up national campaign that urged parents to communicate with their children about sexual behavior. In these call-to-action campaigns, 35% used visual cues or icons.

### **3.3.1 Food Safety**

There was little information describing the campaign message characteristics for the five food safety campaigns. None reported message framing or a message focus. Only one of the five studies reported using a call to action, but it was not well described.

Four of the five studies reported using a visual cue or icon to promote the campaign. Two of these were well described. The first used a '#4' mascot as a visual icon to signify the campaign message of discarding leftovers; the study included photos of the mascot, poster, and magnet used in the "4 Day Throw Away" campaign (James et al., 2013). The second used a stylized and animated illustration of a *Salmonella* bacterium that was created for a *Salmonella* awareness campaign in Italy (Tiozzo et al., 2011).

### **3.3.2 Public Safety**

None of the public safety campaigns reported using a message frame or message focus. Similar to the food safety campaigns, one of the five public safety campaigns reported a call to action, but it was not well described. One of the five articles reported using visual cues or icons for promotion, but it too was not well described.

### **3.3.3 Chronic Disease Prevention**

Overall, the studies reporting chronic disease prevention campaigns provided more detailed information than the studies reporting food safety or public safety campaigns.

Three of the campaigns provided message framing; all three presented messages as gain frames. Two campaigns described a message focus; both campaigns employed an emotional appeal.

Thirty-four percent of the chronic disease prevention campaigns included a call to action; of these, 58% were described well. For example, Dixon et al. (1998) described the 2 Fruit 'n' 5 Veg Every Day campaign, and Plant et al. (2014) described the call to action to get tested for syphilis.

Thirty-four of the chronic disease campaigns used visual cues or icons to promote the campaign; 18 of these were well described, while 14 were not described very well.

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### **3.4 CAMPAIGN DISSEMINATION CHARACTERISTICS**

Campaign dissemination characteristics included channel, exposure, population reach, and recall. Although not part of our a priori coding scheme, reviewers noted a number of studies that reported using earned media to heighten exposure. Earned media refers to instances where the program receives attention in the media through press releases and other news stories, where paid advertising or marketing is not occurring. Seven of the 104 studies reported earned media.

Message channels are the different media that can be used to deliver message content. Channels were coded to include the categories of public spaces (buses, billboards), print (newspapers, magazines), radio/television, Internet/social media, unspecified mass media, other, or not specified. Table 3-4 displays the channels used for each of the public health campaigns in the review. The channel used by the greatest number of campaigns was radio/television at 71%, followed by print channels at 64%. Six studies used social media as a campaign channel (see Figure 3-2). Three of the studies did not specify the channel used to implement the campaign, and 13 referred to unspecified mass media.

Exposure is a measure that quantifies the proportion of a given population that is likely to view a particular message. Exposure is based on a media provider's estimate rather than self-report. For radio and television, exposure is often reported as GRPs (Gross Rating Points), TARPs (Total Audience Rating Points), or "media share"; for print media, exposure is often reported as "impressions"; for billboards and other media, exposure may be reported as the number of "views" or "looks." These reports are an assessment of potential exposure among the population, not the study sample. The majority of studies (88%) did not report a measure of exposure.

**Table 3-4. Types of Dissemination Channels**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Food Safety</b>							
Abbot, 2012 (clean, cook, chill, leftovers)	•	•	•	•			
Dharod, 2004 (Fight BAC)	•	•	•			•	
James, 2013 (leftovers)	•	•	•	•			
Ratnapradipa, 2009 (mercury in fish)						•	
Tiozzo, 2011 ( <i>Salmonella</i> )						•	
<b>Public Safety</b>							
Greene, 2015 (lead poisoning)	•						
Henry, 2003 (air quality)	•	•	•				
McLaughlin, 2004 (lead poisoning)	•	•	•		•		
Roberto, 2002 (firearm safety)			•				
Robinson, 2014 (suicide prevention)	•	•	•		•	•	
<b>Chronic Disease Prevention</b>							
Acharya, 2006 (healthy eating)		•	•				•
Albarracin, 2003 (alcohol abstinence)		•	•				
Arikan, 2014 (obesity)	•	•	•	•			•
Bauman, 2001 (exercise)		•	•				
Bauman, 2003 (exercise)	•	•	•				

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Bauman, 2003 (exercise)					•		
Bell, 2013 (healthy eating and exercise)		•	•		•		
Berry, 2009 (healthy eating and exercise)			•				
Blitstein, 2012 (sexual behavior)		•	•	•			
Boles, 2014 (healthy eating)	•	•	•	•			
Booth-Butterfield, 2004 (healthy eating)	•	•	•			•	
Bovet, 2011 (healthy eating and exercise)	•	•	•	•			
Brorsson, 1988 (sexual behavior)		•	•		•		
Bull, 2008 (condom use)	•						
Cagampang, 1997 (sexual behavior)		•	•		•		
Campbell, 1987 (sexual behavior)		•	•				
Chen, 2002 (sexual behavior)	•	•	•	•			
Cochrane, 2008 (exercise)	•					•	
Craig, 2006 (exercise)			•			•	
Craig, 2007 (exercise)					•		

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Darrow, 2008 (sexual behavior)	•	•	•	•			
de Vroome, 1990 (condom use)	•	•			•	•	
Dixon, 1998 (healthy eating)		•	•				
Donate, 2010 (sexual behavior)	•	•	•				
Dooley, 2010 (healthy eating)							•
DuRant, 2006 (sexual behavior)	•		•				
Eves, 2012 (exercise)						•	
Fernandez Cerdeno, 2012 (condom use)	•						
Foerster, 1995 (healthy eating)	•	•	•			•	
Gase, 2015 (healthy eating)	•		•	•			
Gee, 2007 (sexual behavior)	•			•		•	
Gibson, 2010 (drug use prevention)		•	•			•	
Gilbert, 2013 (sexual behavior)	•			•			
Glasson, 2013 (healthy eating)		•				•	
Goodwin, 2014 (exercise)	•						
Guy, 2009 (sexual behavior)	•	•	•	•			
Hatfield, 2016 (healthy eating)		•	•				

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Hlavinkova, 2014 (sexual behavior)		•		•			
Hota, 2010 (healthy eating)			•				
Howlett, 2012 (healthy eating)							•
Huhman, 2010 (exercise)		•	•	•		•	
James, 2015 (second-hand smoke exposure)	•	•	•	•			
King, 2013 (exercise)		•	•	•			
Leavy, 2013 (exercise)	•	•	•	•		•	
Lim, 2015 (sexual behavior)	•	•	•				
Maddock, 2007 (healthy eating)	•	•	•	•		•	
Mann, 2013 (sexual behavior/condom use)				•			
Martensson, 2004 (oral health)		•	•				
Martinez-Donate, 2009 (sexual behavior/condom use)	•	•	•				
McMahon, 2004 (sexual behavior)		•	•			•	
Merom, 2005 (exercise)		•	•			•	
Miles, 2001 (healthy eating and exercise)		•	•	•			

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Moatti, 1992 (condom use)	•	•	•				
Montoya, 2005 (sexual behavior)	•	•		•			•
Mork, 2015 (healthy eating)					•		
Murtomaa, 1984 (oral health)		•	•				•
Nigg, 2005 (exercise)			•	•			•
O'Hara, 2011 (healthy eating and exercise)		•	•				
Parker, 2004 (cancer awareness)		•	•	•			•
Pedrana, 2012 (sexual behavior)	•	•	•	•			•
Pivonka, 2011 (healthy eating)							•
Plant, 2010 (sexual behavior)	•	•	•	•			
Plant, 2014 (sexual behavior)	•	•		•			•
Pollard, 2008 (healthy eating)		•	•				
Potter, 2008 (exercise)			•				
Reger, 1999 (healthy eating)		•	•				•
Reger, 2000 (healthy eating)	•	•	•				
Reger, 2002 (exercise)	•	•	•	•			
Reger-Nash, 2005 (exercise)		•	•				

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Reger-Nash, 2008 (exercise)		•	•				•
Rise, 1988 (oral health)		•	•				
Rogers, 2013 (healthy eating)	•		•	•			
Rogers, 2014 (healthy eating and exercise)				•			•
Romer, 2009 (sexual behavior)			•				
Ross, 1993 (sexual behavior)					•		
Schmidt, 2009 (smoking)	•	•	•	•			•
Singer, 1991 (condom use)			•				•
Siska, 1992 (sexual behavior)			•				
Smith, 2009 (second-hand smoke exposure)		•	•				•
Solorio, 2016 (sexual behavior)		•	•	•			
Southcote, 2016 (healthy eating)	•						•
Stekler, 2013 (sexual behavior)		•		•			•
Sutherland, 2013 (healthy eating)					•		
Thrasher, 2013 (smoking)			•				
Trussell, 2001 (sexual behavior)		•	•	•	•		

(continued)

**Table 3-4. Types of Dissemination Channels (continued)**

First Author and Year of Publication	Public Spaces (buses, billboards)	Print (newspaper, magazines)	Radio/ TV	Internet/ Social Media	Mass Media (unspecified)	Other <sup>a</sup>	Not Reported
<b>Chronic Disease Prevention (n = 94) (cont'd)</b>							
Turrell, 1997 (healthy eating)							•
Wagman, 1993 (sexual behavior)	•						
Wammes, 2007 (healthy eating and exercise)		•	•	•		•	
Wardle, 2001 (healthy eating and exercise)		•	•	•			
Wechem, 1997 (healthy eating)					•		
Wechem, 1998 (healthy eating)		•	•			•	
White, 2015 (second-hand smoke exposure)	•	•	•	•			
Whittingham, 2008 (condom use)			•				
Zimmerman, 2007 (condom use)			•				

<sup>a</sup> Includes promotional items (such as coloring books or printed bags), direct mailings, or public relation events.

### Figure 3-2. Deeper Dive: Social Media

Computers and digital media have changed the way we connect with the public and disseminate public health communication campaigns. In the first decade of the 21st century, the Internet provided a platform for expanded or enhanced information. Because the amount of information one can include in a print ad or 30-second PSA is limited, many public health campaigns included an Internet address (i.e., URL) with prompts to drive traffic toward their websites where consumers could obtain additional, more detailed information. This type of media use is still highly prevalent but limited in that it is typically uni-directional, which limits user interaction, and it is difficult for users to encourage other potential audience members to participate.

The advent of social media—including Facebook, Twitter, YouTube, and blogging websites—provides another, more immersive opportunity for engaging the public. We define social media as interactive computer-mediated platforms that allow for information sharing in an open (typically public) access format. Key characteristics include user-generated content, the ability to disseminate information to a large group, and opportunity for other network members to provide feedback. Communication on social media can be characterized as having potentially high reach, high frequency, immediacy, and permanence.

Among the 104 articles reviewed for this report, 36 reported using the Internet as a dissemination channel. Of these, 34 included a website in their campaign dissemination, 12 mentioned the use of traditional online ads (e.g., banner ads), and 6 included social media activities. Implementation of the six campaigns that reported using social media ranged from 2008 to 2014. Three of the studies (Boles et al., 2014; Gase et al., 2015; White et al., 2015) provided limited information. They noted that social media was part of a larger campaign dissemination effort and mentioned a few specific details such as the use of Facebook, Twitter, or a blog, but the authors provided no details on the social media outreach or effects of social media activity. This is not surprising, because the studies included in this review varied substantially in the amount and quality of information provided on specific dissemination activities. The other three studies that included social media are detailed below.

**Using Social Media to Encourage HIV Testing (Solorio et al., 2016).** The *Tu Amigo Pepe* social marketing campaign was fielded in Seattle, Washington, in 2014. The campaign targeted Latino MSM who do not identify as gay. The campaign's primary aim was to encourage young, sexually active men to get tested for HIV. The campaign used a mix of marketing channels but relied heavily on the Internet. As noted in the study, "All engagement was viral or directed from media partner sites and social posts" (Solorio et al., 2016). The campaign includes social media messaging, a campaign website, and social media advertising. It also included the establishment of campaign-specific hashtags (#), a device that can be used to share, promote, and track messages and communications. The campaign also included a "reminder" app (reminder to get tested) and a web-based zip-code location finder to help individuals locate testing sites.

(continued)

**Figure 3-2. Deeper Dive: Social Media (continued)**

The campaign used Google insight and analytics and other mobile platform tracking tools to assess community engagement. As the authors note, this feature allowed the implementation team to quickly adapt the campaign to increase response rate and user engagement (Solorio et al., 2016). For example, the campaign staff was able to increase the number of community members using the zip-code locator by moving it to a more prominent place on the web page. The campaign achieved a 10% engagement rate on Facebook; the authors point out that typical direct social media engagement averages 2%. The campaign also received 68,300 impressions from Facebook users (e.g., likes, shares). Furthermore, the campaign generated 79 new Twitter followers. These numbers should be viewed as highly encouraging to others consider this approach in light of the fact that the campaign relied on user-driven dissemination rather than traditional media purchases.

**Using Social Media to Get Consumers to Throw Away Left-Overs (James et al., 2013).** The 4-Day Throw Away social marketing campaign was conducted as a pilot study in three communities in the Midwest. The campaign used both traditional media and social media to deliver the message that leftovers should not be kept for longer than 4 days. Social media activities included a Facebook page and Twitter account. Other digital elements included a website, YouTube videos, and an iPad/iPhone app. The campaign also included a hashtag and a hashtag-based mascot, #4, who was portrayed as a superhero. For tracking purposes, the campaign included two web site addresses. Including two addresses allowed the authors to track whether users accessed the website from traditional media or social media sources. During the 6-month campaign period, approximately 60% of the website traffic came from traditional media and 40% came from social media.

The campaign's social media reach was estimated at 53,463. This number included 11,759 YouTube views, 166 Facebook users and 21,240 Facebook impressions, 51 Twitter followers, 4,679 mobile app users with 13,592 logged app sessions, and 1,976 website visits. Although the preponderance of campaign awareness was driven by tradition media, these numbers reflect a substantial level of engagement through social media outlets.

**Using Social Media to Inform Youth about Type-II Diabetes (Rogers et al., 2014).** The Bigger Picture social marketing campaign was designed to reframe the discussion of type 2 diabetes from one that emphasized individual behavior change to a focus on the social and environmental determinants that increase type 2 diabetes risk factors, particularly in distressed communities. The campaign was fielded in the San Francisco, California, area. The campaign developed an innovative community outreach (i.e., local youth poets who developed content and disseminated messages in local public schools) and social media activities. The campaign planners decided that a social media presence was a necessary communication medium because of the heavy use of social media among their priority audience—school-aged children (Rogers et al., 2014). Social media activities included a website that was available in English and Spanish. The website provided appealing, clear, and reliable information about diabetes. Other digital content included YouTube-like video public service announcements and downloadable educational materials. To increase campaign dissemination, the campaign developed a Facebook page and a Twitter account. No information on the effects of the social media activities is provided, but the study authors repeatedly noted the importance of leveraging social media to engage young priority audiences.

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*The average period of exposure to the public health campaigns in the review was 15 months.*

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Population reach is a measure of potential global exposure among the population. Unlike media exposure, which is specific to a type of medium, reach is more commonly reported as a measure for the entire campaign dissemination plan. Only 7% of the studies reported population reach.

The average period of exposure to the public health campaigns in the review was 15 months, with a median of 7 months, minimum of 1 week, and a maximum of 5 years.

#### **3.4.1 Food Safety**

Three of the five food safety campaigns were implemented through public spaces and print, three were implemented by radio/television, and two by Internet/social media.

One food safety campaign reported exposure, which was reported for total social media reach at 53,463 (YouTube video views, Facebook users and posts, Twitter followers, mobile app users, and website visits) and total traditional media reach at 28,508 (magnets, posters, and notecards distributed).

Similarly, one of the food safety campaigns reported population reach, which was estimated at 21%. This article defined reach as the percentage of households that reported receiving the information material (Tiozzo et al., 2011).

#### **3.4.2 Public Safety**

Four of the five public safety campaigns were implemented through public spaces and radio/television, and three were print-based campaigns. None of the public safety campaigns reported the use of Internet/social media. No public safety campaigns reported exposure. Only one public safety campaign reported campaign reach, which was averaged at 42% across all channels used (McLaughlin et al., 2004).

#### **3.4.3 Chronic Disease Prevention**

The majority of the chronic disease campaigns used radio/television as the dissemination channel (71%), followed by print (64%). Forty-eight percent used public spaces as part of their campaign, and 36% used Internet/social media. Twelve percent of the chronic disease campaigns reported using mass media, but the medium was unspecified. Six percent of the chronic disease campaigns did not specify a delivery channel.

Seven of the chronic disease campaigns reported earned media. These campaigns were related to drinking 1% milk, increasing physical activity, maintaining oral health, and preventing HIV. Twelve of the chronic disease campaigns reported a measure of exposure, primarily reported as GRPs (ranged from 15.5 GRPs to 8,565 GRPs). Two campaigns, on obesity and physical activity, reported TARPs (ranged from 150 to 800). One study on the 5 A Day campaign reported 80 million media impressions, while another on healthy eating and exercise reported 3,664 new incoming service calls and 389 visitors per week.

Chronic disease campaigns reported the highest reach. Five campaigns reported a 75% mean reach, with the highest at 92% (increasing physical activity) and the lowest at 62% (preventing obesity).

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### **3.5 CAMPAIGN EVALUATION CHARACTERISTICS**

The effects of a campaign can be measured with one group or multiple groups, once or multiple times. The campaigns included in the review collected evaluation data with one group at one time (post-campaign) (21%) and over multiple time periods (43%) and with multiple groups at one time (16%) and over multiple time periods (21%).

To evaluate the effectiveness of campaigns, a little more than two thirds of all studies used an observational design (69%), and almost one third used a comparative design (30%). A comparative design is one that measures the effects of the campaign by comparing a group that was exposed to the campaign to a control or comparison group that was not exposed to the campaign. An observational design, on the other hand, surveys one group of people, usually in a particular market or geographic area, who may have been exposed to the campaign.

Possible outcomes of public health campaigns include increases in knowledge or awareness and changes in attitude or behavior.<sup>6</sup> The studies in the review measured the following outcomes:

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<sup>6</sup> In the evaluation of public health communication campaigns, data are collected via survey, and behavior is based on self-report.

- 39% measured knowledge, of which 76% showed a statistically significant result;
- 48% measured attitudes, of which 56% showed a statistically significant result;
- 62% measured awareness, of which 56% showed a statistically significant result; and
- 87% measured behavior, of which 61% showed a statistically significant result.

These outcomes are most commonly measured using frequencies (number of people or events), but they can also be measured using odds ratios (the probability of an event), means (continuous measures), or status (change from one category to another). The average sample size for a campaign evaluation was 2,947 people, with a minimum of 33 and a maximum of 80,192.

In the following sections (Sections 3.5.1 through 3.5.3) we present a series of tables (Tables 3-5 through 3-7) with descriptive information on campaign evaluation outcomes. These tables are summative across the public health domain (i.e., food safety, public safety, chronic disease prevention) and display the proportion of studies that reported each type of evaluation outcome (i.e., behavior, attitude, knowledge, awareness), the proportion of those reports that were statistically significant, and the scale of measure used for the reported measure. Additional information on the behaviors addressed in each study can be found in the relevant section of Table 4-1.

### **3.5.1 Food Safety**

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*Four of the five food safety campaigns measured behavior, knowledge, and awareness, with nearly all of these showing statistically significant changes.*

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Of the five food safety campaigns, three used observational designs (i.e., measuring the effects of the campaign with one group) with pre- and post-intervention measurements. The remaining two studies used comparative designs.

Table 3-5 provides an overview of campaign evaluation activities for the food safety campaigns. Four of the five food safety campaigns measured behavior, knowledge, and awareness. Attitude was measured in one study. Most of the reported outcomes indicated statistically significant change or difference. Some of the behaviors measured in these studies were related to hand washing, proper food storage and

thawing, and speaking to medical professionals about preventing foodborne illness.

**Table 3-5. Evaluation Measures of Food Safety Campaigns ( $n = 5$ )**

<b>Campaign Outcome</b>	<b>Number of Studies Reporting Outcome<sup>a</sup></b>	<b>Number of Studies with Statistically Significant Outcome</b>
Behavior	4	4
Attitude	1	1
Knowledge	4	4
Awareness	4	3

<sup>a</sup> Number of studies that report each type of campaign outcome.

### 3.5.2 Public Safety

Of the five public safety campaigns, four used observational designs (i.e., measuring the effects of the campaign with one group) with pre- and post-intervention measurements. The remaining study used a comparative design.

Table 3-6 provides an overview of campaign evaluation activities for the public safety campaigns. All five studies measured behavior, four measured awareness, three measured knowledge, and two measured attitudes. However, few of these reported outcomes indicated statistically significant change or difference. Behaviors measured in these studies were related to reporting peeling paint and other lead poisoning prevention tactics, reducing driving time (for air quality), obtaining a gun trigger-lock, and preventing suicide. This table indicates that measures of behavior and awareness are common, while measures of attitudes are uncommon, among public safety campaigns.

**Table 3-6. Evaluation Measures of Public Safety Campaigns ( $n = 5$ )**

<b>Campaign Outcome</b>	<b>Number of Studies Reported Outcome<sup>a</sup></b>	<b>Number of Studies with Statistically Significant Outcome</b>
Behavior	5	2
Attitude	2	0
Knowledge	3	2
Awareness	4	1

<sup>a</sup> Number of studies that report each type of campaign outcome.

### 3.5.3 Chronic Disease Prevention

Of the 94 chronic disease prevention campaigns, 65 used an observational design method (i.e., measuring the effects of the campaign with one group) with pre- and post-intervention measurements. The other 28 studies used comparative designs.

Table 3-7 provides an overview of campaign evaluation activities for the chronic disease prevention campaigns. Among the 94 chronic disease prevention campaigns, 76 measured behavior, 67 measured awareness, 44 measured knowledge, and 37 measured attitudes. Between half and three-fourths of the reported outcomes indicated statistically significant change or difference. Behaviors measured in these studies include increases in self-protective behaviors (e.g., condom use, physical activity, health screening), reduction in health risk behaviors (e.g., premature sexual debut, drug use), and reduction of community health risks (e.g., air pollution, second-hand smoke).

**Table 3-7. Evaluation Measures of Chronic Disease Prevention Campaigns (n = 94)**

<b>Outcome Type</b>	<b>Measured Outcome<sup>a</sup></b>	<b>Statistically Significant Outcome</b>
Behavior	76	46
Attitude	37	22
Knowledge	44	33
Awareness	67	37

<sup>a</sup> Number of studies that report each type of campaign outcome.

# 4

## Key Findings and Lessons Learned

The 104 articles included in this report included a large and diverse set of lessons learned that OPACE can use to guide the development of future public health and risk communication campaigns. These lessons learned are presented in Table 4-1 along with key findings by study. The following sections summarize lessons learned by topic.

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### 4.1 CAMPAIGN DEVELOPMENT

Lessons learned and suggestions related to campaign development emphasize the importance of using credible theories and frameworks in planning communication campaigns. Some of the theories specifically identified include diffusion of innovation (Dharod et al., 2004), gain frame and exchange theory (Goodwin et al., 2014), and social marketing approaches (Plant et al., 2010). The use of sound behavior theory is recommended as a key factor in targeting motivation to change.

Several authors emphasized the benefits of partnership and collaboration. Authors talked about the importance of establishing partnerships (Foerster et al., 1995) and developing alliances both within and between organizations. Several noted the importance of collaborating with community groups (Fernandez Cerdeno et al., 2012; Hatfield et al., 2016; Miles et al., 2001). As a cautionary note, Cochrane & Davey (2008) pointed out that the behavior change aims of public health communication campaigns can be undermined when potential partner groups are recruited with insufficient preparation. This suggests that assessing readiness among potential partners could be a valuable part of planning efforts.

**Table 4-1. Key Findings and Lessons Learned**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Food Safety</b>		
Abott, 2012 (clean, cook, chill, leftovers)	<ul style="list-style-type: none"> <li>▪ Campaign increased self-ratings of food safety knowledge and skill, actual food safety knowledge, food safety self-efficacy, stage of change for safe food handling, and reported hand-washing behaviors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Long-term follow-up may be needed to determine the extent to which the changes in knowledge, self-efficacy, and stage of change are sustained.</li> </ul>
Dharod, 2004 (Fight BAC)	<ul style="list-style-type: none"> <li>▪ Campaign improved food safety awareness and knowledge but not behaviors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The use of multiple media channels can help maximize exposure campaign messages.</li> <li>▪ It is essential to take theory (e.g., diffusion of innovation) into account to explain campaign related-changes.</li> <li>▪ Social marketing campaigns that take advantage of multiple culturally relevant media channels are likely to improve food safety awareness and bring about changes in food safety knowledge and attitudes among Latino consumers.</li> </ul>
James, 2013 (leftovers)	<ul style="list-style-type: none"> <li>▪ Individuals from the pilot test communities were significantly more aware of the campaign than those from the control communities.</li> <li>▪ Pilot test communities also had a greater percentage of individuals throwing leftovers away after 4 days compared with control communities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Large social marketing campaigns should use an appropriate mix of traditional media and social media methods when focusing on food safety topics.</li> </ul>
Ratnapradipa, 2009 (mercury in fish)	<ul style="list-style-type: none"> <li>▪ Consumers did not exhibit an increase in general knowledge nor did they indicate any attitudinal or behavioral changes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Food Safety (cont'd)</b>		
Tiozzo, 2011 ( <i>Salmonella</i> )	<ul style="list-style-type: none"> <li>▪ Percentage of households that received material was 21%.</li> <li>▪ Of the persons who received material,               <ul style="list-style-type: none"> <li>– 89% remembered the topic of the campaign;</li> <li>– 7% only remembered that the campaign focused on food-related health or good food-handling practices; and</li> <li>– 4% gave no answer or a completely wrong answer.</li> </ul> </li> <li>▪ Of the people who read the material,               <ul style="list-style-type: none"> <li>– 45% hung it in the kitchen;</li> <li>– 20% discussed it with household members;</li> <li>– 12% discarded it after reading; and</li> <li>– 14% did not remember what they did with it.</li> </ul> </li> <li>▪ For all 10 questions, the percentage of correct responses was higher for the people who had read the material than for those who had not received it.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaign development is strengthened when based on explicit principles of communication theory and the use of formative research to define the campaign’s characteristics.</li> <li>▪ Postal channel seems to have been less efficient in the larger town than in smaller towns, indicating that alternative and better targeted forms of communication may be needed.</li> </ul>
<b>Public Safety</b>		
Greene, 2015 (lead poisoning)	<ul style="list-style-type: none"> <li>▪ Increased proportion of respondents who reported seeing information on lead poisoning.</li> </ul>	<ul style="list-style-type: none"> <li>▪ It is difficult to control surrounding media or events that may produce similar or contradictory information during a campaign.</li> </ul>
Henry, 2003 (air quality)	<ul style="list-style-type: none"> <li>▪ Significantly fewer miles were driven on days when ozone levels were expected to exceed the standards.</li> <li>▪ Government workers reduced the number of trips they took on alert days, but the overall reduction in trips was not significant.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Public Safety (cont'd)</b>		
McLaughlin, 2004 (lead poisoning)	<ul style="list-style-type: none"> <li>▪ Recall of campaign components ranged from 22% to 63%.</li> <li>▪ Approximately 45% of respondents reported they took specific steps to learn more about or prevent lead poisoning because of at least one of the components of the campaign.               <ul style="list-style-type: none"> <li>– 73% reported they asked their doctor about blood tests for lead poisoning.</li> <li>– 21% reported they called a phone number to learn more about lead poisoning.</li> <li>– 76% reported they changed the way they cooked or cleaned.</li> <li>– 43% reported they changed the kinds of foods they feed their families.</li> <li>– 41% reported they spoke to their landlord.</li> <li>– 60% reported they took other steps to prevent lead poisoning.</li> </ul> </li> <li>▪ Among those reporting they took specific steps to learn more about or prevent lead poisoning               <ul style="list-style-type: none"> <li>– 51% indicated they took steps because of the newspaper advertisements.</li> <li>– 35% were prompted by a billboard.</li> <li>– 24% were prompted by a sign on a bus or bus shelter.</li> <li>– 14% were prompted by a sign on a sanitation truck.</li> <li>– 12% were prompted by the video.</li> <li>– 11% were prompted by the hardware store display.</li> <li>– 7% were prompted by either the postmark or the artwork display.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Public Safety (cont'd)</b>		
Roberto, 2002 (firearm safety)	<ul style="list-style-type: none"> <li>▪ Approximately 20% of individuals heard the PSA.</li> <li>▪ After the campaign there was a significant increase in uncued knowledge of the locking-related gun-safety practices in the treatment county.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Robinson, 2014 (suicide prevention)	<ul style="list-style-type: none"> <li>▪ Among the 28% of respondents who were aware of the campaign, 39% said it made them more aware of suicide prevention services.</li> <li>▪ Changes in attitude were associated with those who were already aware of the intervention.</li> <li>▪ There was no statistically significant impact on behavior, but 31% of women compared with 19% of men who recognized the campaign said they would talk to someone thinking about suicide.</li> </ul>	<ul style="list-style-type: none"> <li>▪ In large-scale campaigns, different communication efforts may be needed because regional differences can influence outcomes in behavior and awareness.</li> </ul>
<b>Chronic Disease Prevention</b>		
Acharya, 2006 (healthy eating)	<ul style="list-style-type: none"> <li>▪ The campaign significantly increased the probability of a consumer purchasing a healthy menu item by 4%.</li> <li>▪ By improving consumer attitudes toward healthy menu items, the campaign indirectly increased purchases of these items by 4%.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Albarracin, 2003 (alcohol abstinence)	<ul style="list-style-type: none"> <li>▪ Participants reported stronger intentions to drink when they initially received the abstinence message than when they received the moderation message.</li> <li>▪ Among participants who tried the product, those exposed to the abstinence message had stronger intentions to use it than those exposed to the moderation message.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Theory provides useful guidelines regarding message factors that influence beliefs, attitudes, and intentions.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Arikan, 2014 (obesity)	<ul style="list-style-type: none"> <li>▪ 85% of participants reported receiving information through TV ads, 28% through radio ads, 11% from newspapers, 11% from family and/or friends, 6% from billboards, and 8% from the Internet and other sources.</li> <li>▪ 29% of participants reported desired behavioral changes after the campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Television generated a large share of the campaign's awareness, emphasizing its importance as a media channel for health promotion.</li> </ul>
Bauman, 2001 (exercise)	<ul style="list-style-type: none"> <li>▪ This integrated campaign positively influenced short-term physical activity message recall, knowledge, and behavior of the target population compared with the population in the region that was not exposed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Within-individual analyses may provide a different perspective in assessing media campaigns, when compared with analyses based on independent samples.</li> <li>▪ Campaigns can only produce short-term effects and need to be set against the pervasive influences of social and structural factors that tend to promote unhealthy behavior.</li> </ul>
Bauman, 2003 (exercise)	<ul style="list-style-type: none"> <li>▪ Prompted recognition of the campaign tagline increased from 14% to 42%.</li> <li>▪ Knowledge increased as a result of the campaign, from 2% to 7% depending on the question.</li> <li>▪ Adult participation in physical activity declined by 6%, although the decline was less in states with the campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Additional investments in strategic planning may be beneficial.</li> </ul>
Bauman, 2003 (exercise)	<ul style="list-style-type: none"> <li>▪ The Push Play initiative increased awareness of physical activity and intention to be active among adults in New Zealand.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Bell, 2013 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Participants were significantly more likely to have seen, read, or heard about the program in the media.</li> <li>▪ Program awareness remained significantly higher at each subsequent survey with awareness peaking at 59%.</li> <li>▪ Participants were significantly more likely to identify all three key messages.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Berry, 2009 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Unprompted recall was very poor: 0.4% participants recalled the healthy eating advertisement, and 0.5% recalled the physical activity advertisement.</li> <li>▪ Prompted recall was somewhat better: 19% participants recalled the healthy eating advertisement, and 17% participants recalled the physical activity advertisement.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Results of qualitative data indicate that government messages may not be considered credible.</li> </ul>
Blitstein, 2012 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Fathers exposed to campaign messages demonstrated an increasing trajectory of father-child communication compared with control fathers.</li> <li>▪ Mother-child communication did not differ between mothers exposed to campaign messages and control mothers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Repeated exposure offers multiple opportunities for learning and persuasion, repeated exposure increases the likelihood that a person will receive the message when they are receptive, and repeated messaging increases the social expectations (i.e., normative value) associated with the message.</li> </ul>
Boles, 2014 (healthy eating)	<ul style="list-style-type: none"> <li>▪ 80% of people who saw, heard, or read about the campaign said they intended to reduce the amount of soda or sugary drinks they offered to a child.</li> <li>▪ About half said they intended to reduce the amount of soda or sugary drinks they consume themselves.</li> <li>▪ No change in soda consumption behavior after the campaign was observed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Booth-Butterfield, 2004 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Campaign significantly increased intention and attitude.</li> <li>▪ Campaign positively changed beliefs about the healthiness, taste, and cost of low-fat milk.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

First Author and Year of Publication (Behavior)	Key Findings	Lessons Learned
<b>Chronic Disease Prevention (cont'd)</b>		
Bovet, 2011 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Campaign was recalled by 7% of adults spontaneously and by 46% of adults passively (i.e., with aid), hence by a total of 53% of all adults.</li> <li>▪ 33% of all adults were sensitized to the health-promoting messages and 25% to the importance of undergoing screening.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns with short time frames may result in low turnout rates.</li> <li>▪ Community members (i.e., pharmacists) can play important role in communicating health issues.</li> </ul>
Brorsson, 1988 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ General public awareness about how the HIV virus is carried and transmitted increased over the period studied.</li> <li>▪ Respondents who were celibate the month before surveys increased from 28 to 36%.</li> <li>▪ Respondents who indicated they would avoid touching a stranger who was bleeding and needed help increased in each successive survey.</li> <li>▪ Respondents who indicated they would avoid close contact with an infected work colleague decreased.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Bull, 2008 (condom use)	<ul style="list-style-type: none"> <li>▪ No differences between neighborhoods with and without the POWER campaign with regard to primary outcomes were found.</li> <li>▪ Post hoc analyses showed that women exposed to POWER posters were 1.50 times as likely to have used a condom at last sex.</li> </ul>	<ul style="list-style-type: none"> <li>▪ If campaign and comparison neighborhoods are situated too close to one another, contamination can reduce measured impacts.</li> <li>▪ Researchers should consult with statisticians and conduct a priori power calculations.</li> </ul>
Cagampang, 1997 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Majority of youths and their parents thought it was a valuable program.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Before a large, complex, and high profile campaign is launched, preliminary research must ensure that the core elements of the campaign will have their intended effect.</li> </ul>
Campbell, 1987 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Results suggest that, even before the government's leaflet and television campaigns, the publicity surrounding AIDS had increased the public level of knowledge about the disease.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Chen, 2002 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Weekly calls to hotline increased by 600% during the outbreak.</li> <li>▪ 80% of surveyed individuals cited the media as the source of awareness.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Cochrane, 2008 (exercise)	<ul style="list-style-type: none"> <li>▪ Increased uptake of physical activity in urban community of low-income status.</li> <li>▪ Compared with the control group, the intervention sample reported an increase in physical activity and better overall health.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Alignment of institutional policy is important, and sustained collective effectiveness can only be achieved when all contributions are made in the same direction and at the same time.</li> <li>▪ Potentially fruitful interagency collaborations can be foiled when professionals or organizations are not in an appropriate stage of readiness to support change.</li> <li>▪ The key requirements for sustainable programs are that the activities themselves should be available, accessible, affordable, and appropriate.</li> </ul>
Craig, 2006 (exercise)	<ul style="list-style-type: none"> <li>▪ Initiative increased awareness and usage of pedometers in the Canadian population.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

First Author and Year of Publication (Behavior)	Key Findings	Lessons Learned
<b>Chronic Disease Prevention (cont'd)</b>		
Craig, 2007 (exercise)	<ul style="list-style-type: none"> <li>▪ There was 2.4% and 2.3% higher prevalence of sufficient walking among those recognizing the campaign brand and its general message.</li> <li>▪ The prevalence of sufficient walking among those recognizing the tagline was higher than that among those aware of the campaign brand and its general message and was associated with 23% higher adjusted odds of sufficient walking compared with those who did not recognize that specific tagline.</li> <li>▪ Sufficient walking was also associated with pedometer ownership; those owning a pedometer were 14% more likely than those not owning one to engage in sufficient walking.</li> <li>▪ Being aware of the specific tagline and owning a pedometer had an additive impact on the odds of sufficient walking; those reporting this combination were 1.52 times more likely to report sufficient walking than those who did not meet this condition, which was associated with a significantly higher prevalence of sufficient walking between these two groups.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Achievement of public health goal might only be observed through ongoing surveillance of continuous longer term campaigns.</li> <li>▪ The effectiveness of campaign messages may be improved by combining motivational and explicit health-related messages with a user-friendly and affordable tool for self-monitoring purposes.</li> <li>▪ Repeated and lasting population effects may require a public health commitment to provide continuous message delivery, supported by ancillary services and programs.</li> </ul>
Darrow, 2008 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Exposure to campaign materials increased over the 6-month study period.</li> <li>▪ Syphilis knowledge scores remained unchanged.</li> <li>▪ No statistically significant increases in clinic visits, testing for syphilis, or treatment of syphilitic infections occurred as a result of the campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
de Vroome, 1990 (condom use)	<ul style="list-style-type: none"> <li>▪ From the first exposure to HIV mass media campaigns, by 1989, knowledge about the prevention of HIV transmission with condoms reached 98% of the study sample.</li> <li>▪ Surveys conducted from 1987 to 1989 indicated statistically significant changes in knowledge, attitudes, and sexual behaviors with regard to condom use as a means of HIV prevention.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Dixon, 1998 (healthy eating)	<ul style="list-style-type: none"> <li>▪ When promotional activity was most intense and the television advertising buys were highest, relatively high levels of campaign awareness were established, and spontaneous recall of healthy diet ads promoting fruit and/or vegetables peaked.</li> <li>▪ As the television advertising budget decreased in later years of the campaign, there were significant declines in awareness and knowledge of the slogan.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns may need to be long term if sustained change is to be achieved.</li> </ul>
Donate, 2010 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Campaign was effective in reaching both heterosexually identified Latino men who have sex with women and men who have sex with men and women (MSMW).</li> <li>▪ Campaign was associated with a significant reduction in the number of male partners with whom heterosexually identified Latino MSMW had unprotected anal sex.</li> <li>▪ Campaign did not seem to have any significant impact on other cognitive and behavioral variables, such as knowledge of HIV testing locations, knowledge of the clinic that offered the male health exam, perception of HIV risk, and condom carrying.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Evaluation can be limited by the lack of comparison communities, small sample size, and differences in the sociodemographic profiles of the study samples.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Dooley, 2010 (healthy eating)	<ul style="list-style-type: none"> <li>▪ A pre-post experiment revealed that body-image public service advertisements (PSAs) may increase anxiety compared with unrelated PSAs.</li> <li>▪ Health benefit PSAs were more readable than all other PSA groups and showed higher healthy eating planning compared with unrelated ones.</li> <li>▪ No significant weight attitudes, self-esteem, and stages of change differences were found by message type.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
DuRant, 2006 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Among parents living in counties where billboards or city bus signs were displayed, 27% reported seeing the message one or more times compared with 21% of parents who lived outside these counties.</li> <li>▪ Among parents who reported seeing the billboards or city bus signs, parents living in counties where the billboards were displayed were much more likely to have recalled the message correctly than parents living outside these counties.</li> <li>▪ Parents living in a county where the TV PSAs were aired were equally as likely to report having seen the PSAs one or more times as parents living outside the viewing areas.</li> <li>▪ Among parents who reported seeing a TV PSA about sex, correct knowledge about the message in the PSA was higher among parents living in counties where the PSAs were aired than parents living outside of these counties and was associated with the frequency of seeing the PSA.</li> </ul>	<ul style="list-style-type: none"> <li>▪ TV messages seem to have the strongest effects on behaviors and attitudes in health campaigns.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
DuRant, 2006 (sexual behavior) (cont'd)	<ul style="list-style-type: none"> <li>▪ Parents living in a county where the TV PSAs were aired were equally as likely to report having seen the PSAs one or more times as parents living outside the viewing areas.</li> <li>▪ Among parents who reported seeing a TV PSA about sex education, correct knowledge about the message in the PSA was higher among parents living in counties where the PSAs were aired than parents living outside of these counties and was associated with the frequency of seeing the PSA.</li> <li>▪ The scale assessing the frequency that parents had talked to their children about sexual issues during the previous 6 months was associated significantly with the reported frequency of seeing billboards or bus signs, TV PSAs, and hearing radio PSAs about both sexual issues and teenage pregnancy.</li> </ul>	
Eves, 2012 (exercise)	<ul style="list-style-type: none"> <li>▪ Campaign increased stair climbing, with greater effects at the Poster + Stairwell messages site than Posters alone.</li> <li>▪ Follow-up revealed higher agreement with two statements about caloric outcomes of stair climbing in the site where they were installed in the stairwell.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Fernandez Cerdeno, 2012 (condom use)	<ul style="list-style-type: none"> <li>▪ Participants who reported exposure to the campaign were significantly more likely to have been tested for HIV, intend to be tested during the next 6 months, and know where to get tested.</li> <li>▪ Significant and positive changes in perception of HIV risk, knowledge of testing locations, and condom carrying among heterosexually identified Latinos.</li> <li>▪ Significant reduction in rates of recent unprotected sex with women and men among heterosexually identified Latino MSMW.</li> </ul>	<ul style="list-style-type: none"> <li>▪ More effort should have been directed to forge alliances and involve local institutions in the community during the planning stage to sensitize them to the public health needs of the target population.</li> <li>▪ Dual strategy that articulates both broad and narrow approaches allowed development of a nonthreatening, socially and culturally acceptable campaign.</li> </ul>
Foerster, 1995 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Campaign generated nearly 80 million media impressions. From January 1990 to March 1991, a total of 137 print articles on diet and cancer prevention appeared in California newspapers, of which 88% were attributable to or mentioned the 5 A Day campaign.</li> <li>▪ Highly significant associations were found between intermediate variables and the amount of fruit and vegetables consumed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Public resources can be leveraged by working with the industries to provide consumers with information and services.</li> <li>▪ Factors like intensity and duration need to be matched to population characteristics to support widespread behavior shifts.</li> </ul>
Gase, 2015 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Campaign had relatively broad reach and limited but positive impacts on knowledge, attitudes, behavioral intentions, and behaviors.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The fact that 10% of respondents reported seeing the ad in newspapers and 6.8% reported seeing the ad in the mail (although the ads were not disseminated through these channels) suggests some issues with recall.</li> </ul>
Gee, 2007 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ 91% of the women knew about emergency contraception, compared with 82% at the beginning.</li> <li>▪ 49% knew its mechanism of action compared with 39%.</li> <li>▪ 38% discussed it with a provider compared with 25%.</li> <li>▪ 22% received an advance prescription for it compared with 12%.</li> <li>▪ 79% were more likely to use it compared with 63%.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Grassroots community education campaigns can be effective methods on improving knowledge on a particular health topic.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Gibson, 2010 (drug use prevention)	<ul style="list-style-type: none"> <li>▪ 56% had seen a prevention-related poster, 45% had seen 2 or more copies of the newsletter, 29% had seen the television show, and 41% had seen the stress grip.</li> <li>▪ Exposure to the narrowcasting posters and newsletter significantly increased the odds of post-intervention low-risk injection status.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Social marketing may be a cost-effective strategy for controlling the spread of HIV among injection drug users.</li> </ul>
Gilbert, 2013 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Significantly improved detection among MSM at clinic sites with preexisting high HIV detection rates.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Glasson, 2013 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Among parents who were aware of campaign, there was a net increase of 0.5 servings of fruit and vegetables daily compared with those who were unaware.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Adequate funding for local programs that deliver community-based education and “below the line” social marketing needs to be provided to allow a greater reach and a higher dosage of program strategies.</li> </ul>
Goodwin, 2014 (exercise)	<ul style="list-style-type: none"> <li>▪ 84% of respondents had not seen the campaign image.</li> <li>▪ 21% of respondents had heard of the campaign and related physical activity schemes.</li> <li>▪ 67% of respondents indicated that they were not likely to get involved with campaign activities in the future.</li> <li>▪ 36% of respondents gave a negative response surrounding the image, text, design and/or information content, with 24% giving an incorrect interpretation of either the image or message.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Planners need to develop practices that ensure communication among key stakeholders concerning the design concepts.</li> <li>▪ Incorporating key theories like gain frame, exchange theory, and TPB into the planning and design of a health promotion campaign raises the odds of influencing a targeted population’s motivation for behavior change.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

First Author and Year of Publication (Behavior)	Key Findings	Lessons Learned
<b>Chronic Disease Prevention (cont'd)</b>		
Guy, 2009 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ No evidence that HIV testing rates increased following a health promotion campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns may fail to influence behavior when media spending is not well matched to the target audience.</li> <li>▪ Campaigns may fail if they do not adequately resonate with the target population. For example, messages may not have caught the attention of those who saw them, or if they were received, the messages may not have been interpreted by those targeted as sufficiently motivating.</li> </ul>
Hatfield, 2016 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Intervention decreased BMI z-scores among children in the intervention community relative to control communities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaign messages and corresponding environmental changes must be aligned and mutually reinforcing.</li> <li>▪ Communications must be grounded in comprehensive formative research, including active collaboration with local partners, to inform message tailoring.</li> <li>▪ Time required for formative research— and incorporation of insights generated—should be included in project planning and budgeting.</li> <li>▪ Messaging should reinforce efforts at multiple levels within a whole-systems framework, saturating the environment through diverse channels.</li> <li>▪ Local alliances can strengthen communications campaigns.</li> <li>▪ Local partnerships may enhance program sustainability.</li> <li>▪ Communications should be developed collaboratively with stakeholders, designed to engage community members at multiple levels and through multiple channels, and supported and sustained through local partnerships.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Hlavinkova, 2014 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Campaign significantly increased young people’s knowledge of HIV/AIDS.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Formative research should evaluate key differences among the intended audience and allow for message tailoring.</li> </ul>
Hota, 2010 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Perceived “child friendliness” of the Fruit PSA significantly influenced children’s attitudes toward it.</li> <li>▪ Children’s attitude toward the Fruit PSA was influenced by their attitude toward fruit after exposure to the PSA for both types of PSAs.</li> <li>▪ Children’s attitude toward fruit after exposure to the Fruit PSA was influenced by children’s perceptions of the persuasiveness of the PSA.</li> <li>▪ Children’s attitude toward fruit after exposure to the Fruit PSA had a similar influence on the persuasiveness of the PSA.</li> <li>▪ Children’s attitude toward fruit after exposure to the Fruit PSA influenced their hypothetical choice of snack foods for the evening.</li> <li>▪ Children’s attitude toward fruit after exposure to the Fruit PSA had a similar influence on their hypothetical choice of snack foods for the evening.</li> <li>▪ Children’s attitudes toward the Fruit PSA directly influenced their perceptions of the persuasiveness of the PSA for both PSAs.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriately designed, program-length television material can influence children’s behavior more effectively than short advertisements.</li> <li>▪ The use of a special animated character or spokesperson could be used to convey positive public service messages.</li> <li>▪ Program planners should consider the role of cultural context in the development of effective pro-health communication campaigns.</li> </ul>
Howlett, 2012 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Across states, weekly consumption of fruit and vegetables was greater in states with marketing programs than in states without marketing programs.</li> <li>▪ In states with marketing campaigns, those meeting the five or more daily fruit and vegetable serving criterion went from 24% to 27% at post-test.</li> <li>▪ In states without the campaign, the percentage meeting the five-a-day recommendation was mostly unchanged, going from 23.2 to 23.7%.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Huhman, 2010 (exercise)	<ul style="list-style-type: none"> <li>▪ 28% of children had unprompted recall of VERB, and 47% recalled VERB after prompting, for a total awareness level of 75%. Total awareness of VERB among the target audience increased significantly from 2003 to both later cohorts, as did unprompted recall of the campaign.</li> <li>▪ Higher percentages of children were physically active the more they saw the campaign, ranging from 62.4% with no campaign exposure to 68.4% for those who saw it every day.</li> <li>▪ The more frequently children were exposed to the campaign, the more they believed in the benefits of physical activity, their self-efficacy to be physically active, and social influences on their physical activity.</li> <li>▪ As frequency of exposure to VERB increased, adolescents reported more free-time physical activity sessions, ranging from 2.02 sessions for those unexposed to the campaign to 4.9 sessions for those exposed every day.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
James, 2015 (second-hand smoke exposure)	<ul style="list-style-type: none"> <li>▪ Daily users of tobacco who were exposed to the campaign were twice as likely to make a quit attempt compared with those not exposed to the campaign.</li> <li>▪ There was a highly statistically significant effect of campaign exposure on awareness of a helpline or website for quitting tobacco use.</li> <li>▪ Campaign exposure had a significant impact on nonusers' desire to curb tobacco use and tobacco advertising.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
King, 2013 (exercise)	<ul style="list-style-type: none"> <li>▪ Campaign awareness was higher among women than men and among more educated and more affluent adults.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Leavy, 2013 (exercise)	<ul style="list-style-type: none"> <li>▪ Awareness of the campaign increased from 30% to 49% from baseline to second follow-up.</li> <li>▪ Intention to engage in physical activity doubled to 21% at second follow-up.</li> <li>▪ Significant median increases were seen in self-reported walking, vigorous physical activity, and total physical activity.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The type of media, its dose, and reach all have the ability to affect campaign awareness.</li> <li>▪ High levels of campaign awareness can be generated through the use of concentrated media purchased that targeted priority groups.</li> </ul>
Lim, 2015 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Low recognition and message recall for the campaign among young people surveyed at a music festival.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Health campaigns targeting young people should consider appropriate message style and media channels to maximize campaign reach and impact.</li> </ul>
Maddock, 2007 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Consumption of low-fat milk significantly increased from post-campaign and at 3-month follow-up.</li> <li>▪ Attitude significantly increased from baseline to post-test and at 3-month follow-up.</li> <li>▪ 20.5% reported changing the way they think about milk because of the campaign.</li> <li>▪ 25.3% reported being motivated to switch to low-fat milk.</li> </ul>	<ul style="list-style-type: none"> <li>▪ For sustained effects, booster sessions may be needed to firmly establish behavior change.</li> <li>▪ Partnerships can be a key to the success of communication programs.</li> </ul>
Mann, 2013 (sexual behavior/condom use)	<ul style="list-style-type: none"> <li>▪ There were a total of 13,385 website hits, 82% of which were unique visitors. On average, the website received 732 hits per month.</li> <li>▪ A total of 104 requisitions were submitted for chlamydia and gonorrhea testing.</li> <li>▪ 53% of respondents reported they would change one or more behaviors as a result of visiting the website.</li> <li>▪ When asked about what actions they would undertake, 31% stated they would ask their partner to get tested, 30% stated they would increase the frequency of testing, and 24% stated they would use condoms more often.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Martensson, 2004 (oral health)	<ul style="list-style-type: none"> <li>▪ There was a significant increase in the number of correct answers regarding diagnosis, symptoms, and treatments of periodontitis.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Martinez-Donate, 2009 (sexual behavior/ condom use)	<ul style="list-style-type: none"> <li>▪ Almost 86% of heterosexual Latino men and heterosexually identified (HI) Latino MSMW had seen or heard about the campaign and their components.</li> <li>▪ Survey results documented positive behavioral responses to the campaign among both heterosexual Latinos and HI Latino MSMW.</li> <li>▪ Almost one out of three survey respondents exposed to the campaign reported having enacted at least one of several potential risk reduction measures as a result of the campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The use of aided recall can result in an overestimation of the reach of the campaign and incorrect classification of subjects' exposure status.</li> </ul>
McMahon, 2004 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ There was no significant increase in the proportion of HIV tests performed that could be attributed to the campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ When implementing a short (two-week) campaign with limited funding across ethnically diverse groups, it could be more beneficial to focus on a smaller range of ethnicities to ensure a more successful implementation and evaluation.</li> </ul>
Merom, 2005 (exercise)	<ul style="list-style-type: none"> <li>▪ Significant reductions in car-only trips to work replaced by walking or cycling or trips combining walking and public transport.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Miles, 2001 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ The average post-campaign weight was 2.3 kg lower than before the campaign, with 44% losing weight.</li> <li>▪ Fruit and vegetable intake significantly increased by 0.8 portions per day.</li> <li>▪ Percentage eating 5 portions of fruit and vegetables a day significantly increased by 13%.</li> <li>▪ Number of participants eating fried food less than once a week significantly increased by 16%.</li> <li>▪ Proportion consuming whole milk significantly decreased from 10 to 7%.</li> <li>▪ There were significant increases in brisk walking, moderate activity, and vigorous activity.</li> <li>▪ 39% of participants increased their activity levels following the campaign.</li> <li>▪ Total number of minutes spent in activity per week significantly increased by 94 min per week.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns should follow recommendations like broadcasting the campaign message over years rather than weeks or months to increase the likelihood of long-term change.</li> <li>▪ Mass-media health campaigns should form strong links community and health centers.</li> </ul>
Moatti, 1992 (condom use)	<ul style="list-style-type: none"> <li>▪ Respectively, 25%, 12%, and 11% reported that the campaigns have made them more concerned about individual risk of HIV infection and prompted them to use condoms and be tested for HIV.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Montoya, 2005 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Significant increases in syphilis awareness, knowledge, and testing.</li> <li>▪ 80% of gay and bisexual men surveyed were aware of the campaign.</li> <li>▪ One third of the sample spontaneously mentioned (unaided awareness) the campaign when asked to “recall any ads or public events that provided information about sexual health issues.”</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Mork, 2015 (healthy eating)	<ul style="list-style-type: none"> <li>▪ The campaign had a positive effect on the number of products sold with the front-of-package label.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Murtomaa, 1984 (oral health)	<ul style="list-style-type: none"> <li>▪ In 1980, 54% of the interviewees had visited the dentist in the last 12 months.</li> <li>▪ In 1983, 65% of the interviewees had visited the dentist in the last 12 months.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mass media channels are effective in reaching a large sector of the population, but each channel has unique characteristics that program planners should be familiar with in order to achieve behavior change.</li> </ul>
Nigg, 2005 (exercise)	<ul style="list-style-type: none"> <li>▪ Initial results of workshops to train teachers in health standards and physical education standards are very positive, and the public education component is being successfully disseminated.</li> <li>▪ Newspaper content analysis revealed an increase in coverage of the initiative topic areas.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
O'Hara, 2011 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Paid television advertising shows a dose-response relationship to the campaign goal.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A greater volume of sustained advertising is necessary to achieve higher levels of behavior change.</li> </ul>
Parker, 2004 (cancer awareness)	<ul style="list-style-type: none"> <li>▪ The survey results showed that negative attitudes decreased among women who went unscreened, their confidence in cancer screening and treatment increased, and fewer viewed a diagnosis of cancer as a death sentence.</li> <li>▪ A small overall change took place in the knowledge and behaviors of Georgians aged 45–74 regarding cancer screenings between the October 2002 and March 2003 survey.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Pedrana, 2012 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ High levels of campaign awareness among the target population, both unaided (43%) and aided (86%), were found up to 14 months following the launch of campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns that use data sources not explicitly designed to evaluate campaign outcomes may be limited in their ability to make causal attributions.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Pivonka, 2011 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Campaign awareness increased from 12% to 18%.</li> <li>▪ Percentage of mothers who said they were more likely to buy a product with the campaign logo rose from 40% to 45%.</li> <li>▪ 38% of mothers aware of the logo said it motivated them to help their families eat more fruit and vegetables.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conducting formative research of campaigns and messages is critical for effectiveness.</li> <li>▪ If campaign resources are limited, adopting tested campaigns and messages, and delivering them consistently and repeatedly to consumers could be a cost-effective alternative.</li> </ul>
Plant, 2010 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Campaign was significantly associated with syphilis testing in the past 6 months and with syphilis awareness and knowledge among MSM in Los Angeles County.</li> <li>▪ A majority (71%) of gay and bisexual men were aware of campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Adherence to social marketing principles, including product, price, place, and promotion, in addition to market research, audience segmentation, and branding, can help ensure that campaign objectives are met.</li> <li>▪ Using unprompted questions to assess campaign awareness and knowledge should become a standard in social marketing evaluation.</li> </ul>
Plant, 2014 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Syphilis knowledge was higher among those with unaided campaign awareness.</li> <li>▪ There was no significant correlation between campaign awareness and syphilis testing in the last 6 months.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

First Author and Year of Publication (Behavior)	Key Findings	Lessons Learned
<b>Chronic Disease Prevention (cont'd)</b>		
Pollard, 2008 (healthy eating)	<ul style="list-style-type: none"> <li>▪ 62% of respondents were spontaneously aware of campaign and 90% were aware when prompted with a description.</li> <li>▪ Correct knowledge of the recommended number of servings of fruit and vegetables increased significantly over the campaign period.</li> <li>▪ Mean daily fruit and vegetable intake increased by 0.8 servings over the campaign period, an increase of 0.2 servings of fruit (not significant) and 0.6 servings of vegetables (significant).</li> <li>▪ Overall, the proportion of the population who reported eating two or more servings of fruit and five or more of vegetables daily increased significantly.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Well-executed social marketing campaigns are an effective method to increase awareness of dietary recommendations and to motivate behavior change.</li> <li>▪ Results demonstrate the importance of implementing social marketing campaigns over an extended period so that incremental growth in knowledge, intentions, and behavior can occur and be maintained.</li> </ul>
Potter, 2008 (exercise)	<ul style="list-style-type: none"> <li>▪ There was no significant effect on behavioral variables assessing physical activity.</li> <li>▪ There was a slight effect on some cognitive variables related to physical activity.</li> <li>▪ Although there was a substantial effect on awareness of the campaign, there was no effect on the frequency of awareness variable.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Reger, 1999 (healthy eating)	<ul style="list-style-type: none"> <li>▪ 34% of high-fat milk drinkers switched to low-fat milk compared with 4% in the comparison city.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A media-only approach may not be effective in eliciting behavior change, depending on the complexity of the behavior.</li> </ul>
Reger, 2000 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Campaign was effective in encouraging high-fat milk drinkers to switch to low-fat milk.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Paid advertising alone was not an effective long-term strategy for promoting behavior change.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Reger, 2002 (exercise)	<ul style="list-style-type: none"> <li>▪ Observation data of walking showed a significant effect with a 23% increase in walking observations in the intervention versus a 6% decrease in the comparison.</li> <li>▪ 32% of the baseline sedentary population in the intervention reported meeting the recommendation for moderate-intensity physical activity versus 18% in the comparison.</li> <li>▪ While comparison respondents reported no change in intention, intervention respondents reported significant changes in their intention.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Reger-Nash, 2005 (exercise)	<ul style="list-style-type: none"> <li>▪ 92%, 85%, and 89% of residents knew about the campaign at 3 months, 6 months, and 12 months.</li> <li>▪ Respondents reported higher proportions of sufficiently active walkers than did those in the control city. For the most sedentary nonwalkers, this difference was significantly higher at 3 months and 12 months.</li> <li>▪ Compared with the control city, one intervention group was almost twice as likely to have made any increase in their daily walking time and significantly more likely to have achieved sufficiently active walking status.</li> <li>▪ In comparing the median minutes walked per week, the significant gains for the intervention group were 0, 75, 50, and 80 compared with the control group gains of 0, 0, 0, and 5.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Using one simple, focused message in community interventions may be more efficacious than more costly and complex multi-message community campaigns.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Reger-Nash, 2008 (exercise)	<ul style="list-style-type: none"> <li>▪ The campaign resulted in a significant increase in walking behavior among the target population compared with the control population.</li> <li>▪ No other significant increases in other moderate-to-vigorous physical activities were observed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Rise, 1988 (oral health)	<ul style="list-style-type: none"> <li>▪ An increase in preventive knowledge and behavior related to periodontal diseases was observed throughout the whole study period.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Rogers, 2013 (healthy eating)	<ul style="list-style-type: none"> <li>▪ There were significant increases in fruit and vegetable consumption and in parental awareness of the program after the 5-year campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community-level efforts can result in a multiyear branding behavior change campaign that is appealing and memorable.</li> <li>▪ Building on existing community relationships is a viable approach to establishing the partnerships essential for successful and sustained community-based behavior change.</li> </ul>
Rogers, 2014 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Short-term changes in knowledge of and attitudes about type 2 diabetes were observed, with two of the three measures being statistically significant.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaign developers should consider a range of potential development models and behavior theories.</li> </ul>
Romer, 2009 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ The mean reported exposure rate to HIV prevention messages was significantly higher in the media cities than in the nonmedia cities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Ross, 1993 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Television-based media campaigns produced the greatest increase in testing rates, with an average 46% increase over 2 months compared with newspapers and poster campaigns (average 6% increase over 2 months).</li> <li>▪ Regional HIV testing rates correlated significantly with clinic testing rates.</li> <li>▪ No increase in positive HIV tests was seen following media campaigns.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Television-based media campaigns appear to be the most effective way of increasing awareness.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Schmidt, 2009 (smoking)	<ul style="list-style-type: none"> <li>▪ 60% of participants remembered the campaign slogan.</li> <li>▪ 52% remembered hearing or seeing the advertisements on radio and/or television.</li> <li>▪ 80% who had been exposed to the posters indicated they liked them and 85% said they liked the campaign PSAs.</li> <li>▪ A higher proportion of respondents tried to convince an older experimenting sibling to quit smoking at the time of the post-test compared with the pretest.</li> <li>▪ At post-test, most respondents were more likely to tell other experimenters not to smoke, support smokers to quit tobacco use, and listen to people who told them about the benefits of being abstinent from tobacco.</li> <li>▪ Although there was little change in respondents' attitudes and behaviors, there were a greater number of students who became involved in delivering tobacco reduction/prevention programming at their schools at post-test.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Stakeholders may experience difficulties with implementation processes and working timelines if the demands of campaign development are not fully explained to them.</li> <li>▪ Campaigns can benefit from targeting specific segmented audiences beyond age group (e.g., targeting youth from different ethnic and socioeconomic backgrounds).</li> </ul>
Singer, 1991 (condom use)	<ul style="list-style-type: none"> <li>▪ Effects of the campaign were minimal; there was a small but statistically significant increase in reported condom use.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Siska, 1992 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Proportion of exposed participants recalling “an AIDS message” was significantly higher in Tennessee than in Illinois.</li> <li>▪ 59% of those in Tennessee assigned to the exposure group could correctly recall specific elements of the PSA.</li> <li>▪ 21% of those in Illinois assigned to the exposure group could correctly recall specific elements of the PSA.</li> <li>▪ Proportion of participants mentioning AIDS as an important issue increased at both sites from recruitment to follow-up for the exposed groups, but not for the unexposed groups.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The testing of finished public health media material is beneficial for practical decision-making.</li> </ul>
Smith, 2009 (second-hand smoke exposure)	<ul style="list-style-type: none"> <li>▪ Intervention site showed no greater improvement than the control site in smoke-free homes status.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Solorio, 2016 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ High exposure rate among the target population.</li> <li>▪ Significant changes in intentions toward HIV testing and HIV testing behavior.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Southcote, 2016 (healthy eating)	<ul style="list-style-type: none"> <li>▪ No evidence of behavior change following the intervention.</li> <li>▪ 88% of participants at follow-up reported noticing the campaign, with 55% believing it to be about disease prevention.</li> </ul>	<ul style="list-style-type: none"> <li>▪ When implementing a health campaign in a university setting, messaging should not be authoritative while conveying the intended health message.</li> <li>▪ It is important to be aware of vulnerable populations.</li> <li>▪ Social media marketing might have a greater impact among young adults than print media or point-of-purchase labeling.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Stekler, 2013 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ 23% of men reported seeing the campaign.</li> <li>▪ 25% knew what the slogan referred to.</li> <li>▪ 72% who saw the campaign recognized symptoms.</li> <li>▪ Diagnosis of cases decreased from 51% pre-campaign to 44% post-campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported.</li> </ul>
Sutherland, 2013 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Reduction in salt use at the table was significantly greater after campaign.</li> </ul>	<ul style="list-style-type: none"> <li>▪ It is particularly important for public health interventions that require behavior changes to be effective in reaching socially disadvantaged populations to avoid increasing already present disparities between socioeconomic groups.</li> </ul>
Thrasher, 2013 (smoking)	<ul style="list-style-type: none"> <li>▪ Greater knowledge and quit-related psychosocial responses and behaviors among smokers exposed to pictorial health warning labels compared with those exposed to text-only health warning labels.</li> <li>▪ The media campaign was associated with additive effects related to higher campaign-related knowledge and stronger psychosocial responses to pictorial health warning labels.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Trussell, 2001 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ Significant increase occurred in the proportion of women who knew pregnancy can be prevented after sex.</li> <li>▪ Among women who knew something can be done after sex to prevent pregnancy, there were significant increases in the proportions knowing the term “emergency contraceptive pills.”</li> <li>▪ The fraction of women knowing the 72-h time limit rose significantly only in Philadelphia and Seattle.</li> <li>▪ Significant increases in the proportion of women who had heard of the Emergency Contraception Hotline.</li> </ul>	<ul style="list-style-type: none"> <li>▪ News media coverage can be an invaluable addition to PSA placement.</li> <li>▪ Local spokespeople—particularly physicians and nurse practitioners—can be invaluable messengers.</li> <li>▪ Clinicians can be particularly important in articulating health information in a knowledgeable and nonjudgmental manner.</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Turrell, 1997 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Between 40% and 60% of respondents regularly engaged in food behaviors that were consistent with guideline recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns should develop strategies that are specifically designed and targeted toward groups that are difficult to reach.</li> </ul>
Wagman, 1993 (sexual behavior)	<ul style="list-style-type: none"> <li>▪ High pretest level of knowledge and awareness of HIV transmission, although a biased understanding of risk associated with "risk group" was very common.</li> <li>▪ At post-test, only a small number of people recalled seeing the outdoor promotion. Of those who did, 25% retained the primary message.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Wammes, 2007 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ Campaign awareness ranged from 61% after the initial campaign to 88% after the final campaign.</li> <li>▪ Message recall ranged from 42% to 68%.</li> <li>▪ There were noted differences in changes of attitude and intentions for prevention of weight gain.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaign materials and activities should be pilot tested in controlled settings for their efficacy before nationwide implementation to avoid implementation of ineffective materials.</li> </ul>
Wardle, 2001 (healthy eating and exercise)	<ul style="list-style-type: none"> <li>▪ More than half of respondents heard of the campaign.</li> <li>▪ 30% recalled the healthy lifestyle messages.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Different approaches might be needed to maximize participation from groups most in need of lifestyle change.</li> </ul>
Wechem, 1997 (healthy eating)	<ul style="list-style-type: none"> <li>▪ 56% of the respondents were aware of campaign.</li> <li>▪ As opposed to the control community, there was a significant decrease in actual fat consumption between pre- and post-test.</li> <li>▪ After the campaign, significantly more respondents in the experimental community intended to eat lower-fat food products and reported a behavioral change in the last 6 months.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>

(continued)

**Table 4-1. Key Findings and Lessons Learned (continued)**

<b>First Author and Year of Publication (Behavior)</b>	<b>Key Findings</b>	<b>Lessons Learned</b>
<b>Chronic Disease Prevention (cont'd)</b>		
Wechem, 1998 (healthy eating)	<ul style="list-style-type: none"> <li>▪ Attention for healthy or unhealthy food products was significantly higher in the first and second post-tests than in the pretest.</li> <li>▪ No significant improvement in attitudes was found after 6 months.</li> <li>▪ 29% of all post-test respondents reported seriously considering buying lower fat food products in the next 6 months, which was a significant increase relative to the pretest.</li> <li>▪ Intention to lower dietary fat intake increased significantly at post-test.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Television appears to be the most effective channel of mass communication in general.</li> </ul>
White, 2015 (second-hand smoke exposure)	<ul style="list-style-type: none"> <li>▪ Comparing pre- and post-campaign results, Oklahomans demonstrated significant increases in:               <ul style="list-style-type: none"> <li>✓ supporting smoke-free bars (24% to 55%);</li> <li>✓ reporting beliefs that secondhand smoke causes heart disease (59% to 73%), is very harmful (64% to 71%), and causes sudden infant death (24% to 34%); and</li> <li>✓ reporting they are very likely to ask someone not to smoke nearby (45% to 52%).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Whittingham, 2008 (condom use)	<ul style="list-style-type: none"> <li>▪ Exposure to the television commercial produced a positive effect on risk perception.</li> <li>▪ There was also a positive effect on the intention to buy and carry condoms and on the intention to take initiative in discussing condom use before having sex.</li> </ul>	<ul style="list-style-type: none"> <li>▪ None reported</li> </ul>
Zimmerman, 2007 (condom use)	<ul style="list-style-type: none"> <li>▪ Campaign was effective in increasing the condom-use beliefs and behaviors in target population.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Campaigns can leverage psychosocial characteristics for segmentation and message targeting and this can be highly effective when the psychosocial characteristics is correlated with the intended behavior change.</li> </ul>

## **4.2 FORMATIVE RESEARCH**

Lessons learned and suggestions related to formative research emphasized the importance of project planning and message testing. Authors pointed out that very often they felt they should have allowed more time for planning and formative research (Hatfield et al., 2016). Others highlighted the importance of piloting messages in controlled settings before tackling broad, media-based dissemination (Wammes et al., 2007). For example, Greene and colleagues (2015) suggest that information gathered from focus groups was instrumental improving campaign messages about preventative action in a campaign designed to reduce household exposure to sources of lead poisoning.

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## **4.3 MESSAGE CHARACTERISTICS**

Lessons learned and suggestions related to message characteristics address credibility, sensitivity, and reinforcement. With respect to credibility, Berry and colleagues (2009) noted that many consumers view source credibility as a relative phenomenon. Specifically, public health messages from government sources may be viewed as more credible than public health messages from commercial sources, but that does not mean that government sources are necessarily viewed as credible.

Several authors provided insights to the way messages should be carefully developed to resonate with priority audiences. For example, messages developed for young adult audiences should avoid strong authoritarian language (Southcote et al., 2016). Similarly, recognizing psychosocial characteristics of priority audiences can lead to messages that are more likely to be received favorably (Zimmerman et al., 2007). Hota and colleagues (2010) highlighted the need for public health message developers to be aware of the cultural context of the populations they hope to affect. Several authors provided suggestions related to reinforcing messages. Reinforcement can include the use of different communication channels and dissemination at multiple levels of the socio-ecological framework. Highlighting the importance of reinforcement, Blitstein and colleagues (2012) showed that repeated messaging offers multiple opportunities for learning and persuasion that increase the likelihood that a person will

receive the message when they are receptive. Echoing the value of repetition, several authors recommended developing campaigns with longer dissemination plans to increase the likelihood of long-term change (Miles et al., 2001) and allow for incremental growth in knowledge, intentions, and behavior (Pollard et al., 2008). It is, of course, necessary to match dissemination plans with message characteristics such as complexity. The study by Reger-Nash and colleagues (2005) highlighted the efficacy of using one simple, focused message rather than more costly and complex messages that may have had limited long-term effectiveness. McMahon and colleagues (2004) suggested that when resources are limited, targeting messages to cultural groups may help ensure successful message dissemination.

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#### **4.4 CAMPAIGN DISSEMINATION**

Lessons learned and suggestions related to campaign dissemination primarily address the use of different communication channels, but also highlight issues related to campaign reach. Several authors indicated the benefits of multichannel approaches, which are credited with maximizing exposure (Dharod et al., 2004; James et al., 2013). Murtomaa and colleagues (1984), while encouraging the use of multiple communication channels, cautioned program planners to understand the characteristics, strengths, and limitations of the different channels in their media mix. For example, several authors emphasized the impact of television (Arikan et al., 2014; DuRant et al., 2006; van Wechem et al., 1998). This medium is credited with the greatest ability to generate audience awareness. However, the capacity of television to reach audiences comes at a very high cost, and campaign planners should carefully consider balanced media purchases that allow for the greatest potential for exposure. Trussell and colleagues (2001) demonstrated the value of news coverage, or earned media, which is typically free and can have multiplier effects when stories generated by one source are picked up and carried by others. Other authors provided suggestions for improving campaign reach. Cochrane and Davey (2008) stated that for programs to be successful, campaign messages and materials have to be available, accessible, affordable, and appropriate. In other words, the campaign has to meet the audience where they live, in a way that can be grasped by the

audience members, at a reasonable cost (including factors such as time and convenience), and in a form that resonates with the audience's previously held beliefs and understanding.

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## **4.5 AUDIENCE**

Lessons learned and suggestions related to audience emphasize the importance of segmenting and maintaining health equity. Segmenting, the process of dividing audiences into smaller, homogeneous groups, can allow for targeted messages with greater resonance. Schmidt and colleagues (2009) suggested extending segmentation beyond traditional demographic characteristics like age and race/ethnicity. Segmentation can be applied to ensure that public health campaigns do not inadvertently contribute to health disparities. It is important for public health interventions, especially those promoted by government agencies, to effectively reach socially disadvantaged populations to avoid increasing already present disparities among socio-economic groups (Sutherland et al., 2013). For example, messages like "eat more fruit and vegetables" may be more accessible and affordable for groups with more household resources. Program planners should consider that different approaches might be needed to maximize participation from groups most in need of lifestyle change.

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## **4.6 EVALUATION CHARACTERISTICS**

Lessons learned and suggestions related to evaluation characteristics involve considering factors that may confound or influence evaluation outcomes, including issues related to measuring and assessing change. Other suggestions involve methods for assessing campaign awareness. Several authors noted plausible explanations for why evaluation findings did not meet expectations. These include regional differences that could have influenced (i.e., confounded) behavior and campaign awareness (Sutherland et al., 2013), spillover effects due to the proximity of campaign and comparison communities (Bull et al., 2008), secular events that influence target behaviors in a manner that is similar to the proposed campaign messages (Greene et al., 2015), and statistical power (Bull et al., 2008). Other comments refer to measurement issues related to assessing change. Bauman and colleagues (2001), discussing a campaign designed to promote physical activity,

pointed out that examining within-person change (i.e., over time) rather than differences between independent populations can yield different results. Although this is undoubtedly true, it should also be noted that each of these approaches yields a different inference regarding campaign effects. Specifically, assessing within-person change addresses evaluation questions about person-level change, or individual growth, while measuring campaign effects between independent groups addresses evaluation questions about population differences. There seems to be a consistent message regarding the assessment of campaign awareness among the studies included in this review: aided, or prompted, recall measures yield spuriously high rates of awareness (Martinez-Donate et al., 2009). In fact, Gase and colleagues (2015) noted that 10% of respondents indicated seeing ads in sources where they were not placed. This type of phantom awareness has been noted by other researchers (Blitstein et al., 2016). One author went as far as to call for unprompted recall to be adopted as the standard in all social marketing campaigns (Plant et al., 2010).



# 5

## Conclusions

Literature review is a historical process with results that should be considered in light of the time span of the campaigns and studies examined. The findings of this report provide an overview of the literature on public health communication campaigns conducted over the last 36 years. The 104 articles cover a range of public health topics. Not surprisingly, the largest number of studies are from campaigns focused on chronic disease prevention, with HIV prevention and obesity prevention (i.e., diet and physical activity) representing the majority. Only five of the studies focused on food safety. This breakdown supports the prior assumption that we would have found limited information had we focused solely on consumer food safety public health communication campaigns. To some extent, this distribution reflects the perceived importance and available resources across addressable public health issues. Accordingly, it is not surprising that the most common source of funding was a federal or national government. However, as noted in the lessons learned section, governments may not be seen as credible sources. Thus, government agencies planning public health communication campaigns should consider carefully their reputation with the general public and find partners who can bolster audience acceptability of campaign messages.

This report provides limited information on campaign development or the use of formative research. This limited information does not mean that these campaigns were not based on good scientific theory and practices. On the contrary, some of the campaigns included in this review are well-respected public health efforts (e.g., 1% or Less; CDC's Verb campaign) known to have influenced public health outcomes. It is, in fact, more likely that the limited amount of information on campaign development is a function of the inclusion and

exclusion criteria used to select peer-reviewed studies. In particular, we excluded qualitative studies and studies limited to data from focus groups in favor of studies that reported outcomes such as behaviors, attitudes, knowledge, and awareness. In fact, the studies that provided more information on campaign development, formative research, and message characteristics were also the studies that tended to provide less evidence on campaign outcomes. Nevertheless, formative research and campaign development approaches, such as the use of behavior theory, are best practices that need to be given careful and considerable attention. Those planning public health communication campaigns should recognize that the investment of time and resources in campaign planning and formative research can increase message receptivity and campaign effectiveness. As Noar (2006, p. X) pointed out over a decade ago in a review of mass media campaigns, "Formative research ... can enable campaign planners to truly understand their target audience in terms of the problem behavior at hand, their message preferences, and the most promising channels through which they can be reached."

Most of the studies we reviewed included good descriptions of their communication channels but relatively little information on exposure or population reach. Evidence of campaign recall, collected from sample participants and often used as a gauge of campaign awareness, was reasonably good. Although we see that radio/television was the most commonly employed channel for disseminating campaign messages, this finding needs to be considered in light of the time span of the campaigns and studies included in this report. Consider, for example, that of the 36 articles that describe using the Internet as a communication channel, the only ones that specifically used social media were published in the last 3 years, representing campaigns that were in the field between 2008 and 2014. Rogers and colleagues (2014) noted the importance of reaching children and young adults through social media. In fact, many people now—both young and old—use social media as a primary source of news and other information about the world around them. Given the comparatively low cost and increased reach of this medium, it would not be surprising to see radio/television begin to fall in terms of its impact as a message delivery channel.

A review of the reported findings from the articles included here indicates that behavior and awareness are the two most commonly measured outcomes. For example, self-reported behavior change was measured in all five articles that focused on food safety, and all five demonstrated statistically significant behavior change in the frequency of performing safe food handling behavior. Caution is urged in interpreting this information given the small number of articles in this group and the large and recognized bias toward publishing articles with statistically significant findings. Behavior change was measured in about 80% of the articles that focused on chronic disease prevention with just less than half of these articles demonstrating statistically significant results. In some respects, the use of public health communication campaigns can be considered a more mature practice in chronic disease prevention, and this more balanced finding likely reflects the fact that acknowledging both positive (i.e., significant) and negative (i.e., nonsignificant) results contributes to the development of a mature body of evidence.

Given the range of public health domains included in this study and the fact that effective messages need to be tailored both to the health behavior and the priority audience, summarizing and distilling a clear picture from the studies' key findings are difficult. Clearly, assessing campaign awareness is common and an important part of campaign evaluation. Because campaigns are disseminated in the public space, a person randomly surveyed may or may not have been exposed to the campaign, and measures of awareness can serve as an important manipulation check for program evaluators. It is worth noting that many articles concluded that effective campaigns can increase awareness of a public health problem, but awareness does not consistently translate into behavior change (e.g., [Boles et al., (2014); Bull et al. (2008); Darrow & Biersteker (2008)]) It is also worth noting that none of the articles in this review examined knowledge or attitude as a mediator of behavior. It may be that the inclusion/exclusion criteria omitted articles with this type of analysis. However, remembering that behavior change theories posit a sort of "pathway" for behavior change is important. Campaign evaluators should be encouraged to plan their evaluations with the key stepping stones along that pathway in mind. In particular, campaign evaluators should consider measuring cognitive and behavior

constructs that match the theory used during campaign planning and message development.

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# **Appendix A: Search Terms**



### **1. FOOD SAFETY campaign and behavior search terms**

[food safety OR consumer food handling OR food safety behavior OR food safety practices OR improper food handling OR food contamination OR foodborne disease prevention] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

### **2. CLEAN campaign and behavior search terms**

[Clean OR cleaning OR hand washing OR handwashing OR wash OR rinse OR soap OR hand hygiene OR sanitize] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

### **3. SEPARATE campaign and behavior search terms**

[separate OR cross contamination OR cross-contaminate OR cutting boards OR separation OR separate OR (bacteria OR bacterial) transfer] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

### **4. COOK behavior search terms**

[cook OR cooking OR thermometer OR food thermometer OR food temperatures OR temperature monitoring] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

### **5. CHILL campaign and behavior search terms**

[Cold storage OR refrigerate OR room temperature OR defrost OR defrosted cooling foods OR food holding OR holding food temperatures OR storing foods OR food storage OR thawing] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**6. POISON CONTROL campaign and behavior search terms**

[poison control OR poison exposure OR toxic exposure OR poisonous hazards OR hazardous poison OR poisoning OR poison information] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**7. SMOKE ALARMS/HOME SAFETY campaign and behavior search terms**

[home safety OR smoke alarm OR smoke detector OR fire alarm OR fire detector OR carbon monoxide detector OR Fire Safety] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**8. ORAL HEALTH/HYGIENE campaign and behavior search terms**

[oral health OR oral hygiene OR oral disease OR dental health OR dental hygiene] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**9. EXERCISE campaign and behavior search terms**

[exercise OR physical activity OR physical fitness OR fitness OR recreation OR sports] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**10. HEALTHY EATING campaign and behavior search terms**

[healthy eating OR healthy diet OR nutrition OR fruit and vegetable consumption OR obesity prevention] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**11. CONDOM USE/SEXUAL BEHAVIOR campaign and behavior search terms**

[condom OR contraception OR contraceptive OR sexual behavior OR sexual practices OR sexual activity OR sexually transmitted diseases OR sexually transmitted infections OR HIV OR AIDS OR abstinence OR safe sex] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**12. SECONDHAND SMOKE (PREVENTION) campaign and behavior search terms**

[secondhand smoke OR environmental smoke OR smoke exposure OR smoke free homes OR tobacco smoke exposure OR indoor air pollution] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].

**13. SAFE FIREARM STORAGE campaign and behavior search terms**

[firearm OR firearm safety OR firearm storage OR gun storage OR weapon storage OR gun safe OR firearm safe OR weapon safe OR handgun storage] AND [(communication OR risk OR media OR health) AND campaign] AND [consumer OR public] AND [behavior OR attitude OR knowledge OR awareness] AND [evaluation OR impact OR outcome OR change].



# **Appendix B: Coding Manual**



**December, 2016**  
**Food Safety Consumer Research Project**  
**Literature Review: Coding Manual**

Prepared for

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## Coding Manual: FSIS Food Safety Consumer Research Literature Review

### Introduction

This is the coding manual for the FSIS Food Safety Consumer Research Literature Review. *PLEASE READ THIS MANUAL CAREFULLY BEFORE YOU BEGIN CODING.* Your primary job as a coder is to extract information (variables) as detailed in this manual. You do not need read each article in full. You do not need a thorough understanding of each paper. This is a very structured exercise in abstracting and recording information.

Keep in mind that authors do not write for the purpose of systematic abstraction. That means that the information we need may not be presented or, in some cases, will only be mentioned briefly. Limit subjectivity, speculation, or trying to read between the lines. Most variables you will code include a “not specified” or “not mentioned” option. If the information is not presented, use the ‘not specified’ or similar coding categories and move on.

An in-depth understanding of the information you are recording is not required. For example, you do not need to have familiarity with Social Learning Theory to determine whether or not the authors reported using Social Learning Theory in the development of their evaluation. If the authors did not specifically mention Social Learning Theory, you should assume that it was not used.

In some places, you will be asked whether the information you are coding is “well described” by the authors. Use your judgement as a reader. For example, if the authors simply mention Social Learning Theory but provide no additional information, then the theory is not well described. If, on the other hand, the authors provide an explanation of the assumed mechanism of change, pointing out Social Learning Theory and certain key theoretical constructs, then the use of theory would seem to be well described. When confronted with questions about what qualifies as ‘well described’ ask yourself this question – “As a reader, did the author’s give me enough information to understand their position?”

### Statement of Eligibility

The data for this systematic review come from evaluations of public health campaigns. As in any systematic review, a clear statement of the eligibility criteria is required both to describe the set of included studies and to alert readers to the limits of the review. The following are the eligibility criteria used to select studies for this review:

1. The abstract is available in the English language
2. The study reports an evaluation of a public health / risk communication campaign
3. The study reports on a public health campaign conducted in the US, EU, UK, AU, NZ, Canada, or Mexico
4. The study reports on a campaign that addresses a specific health behavior
5. The study examines the effect of the campaign on consumers
6. The study includes quantitative findings
7. The study is not a review or editorial article

## A. Study / Report Characteristics

1. (CID) Coder ID number. Enter your coder ID number.
2. (RID) Report ID number. Enter the report ID number. This is the unique identifier for the data you enter. Indicate by checking the box if you have determined that the report is not appropriate for the literature review.
  - 0 = not appropriate for the literature review
  - 1 = OPEN TEXT (Record report ID)
3. (Country) Country of Origin: Where did the campaign take place? *Select all that apply.*
  - 1 = United States
  - 2 = Canada
  - 3 = United Kingdom
  - 4 = Europe (not UK)
  - 5 = Australia / New Zealand
  - 6 = Mexico
4. (PUB) Public Health Domain: What public health domain was the focus of the campaign? *Select all that apply.*
  1. Food Safety (general, safe food handling, prevention of food-borne illness)
  2. Clean – Handwashing (related to food prep), cleaning surfaces, not washing poultry
  3. Separate – keeping raw meat/poultry separate from ready-to-eat foods (e.g., using separate cutting boards)
  4. Cook – Thermometer use and use of proper cooking temperatures
  5. Chill – Refrigeration/cooler use, proper thawing
  6. Poison control
  7. Smoke alarms/home safety
  8. Oral health/hygiene
  9. Exercise
  10. Healthy eating
  11. Condom use/sexual behavior
  12. Secondhand smoke (prevention)
  13. Safe Fire Arm Storage
  14. Other

## B. Campaign Characteristics

5. (PER\_1) Period of campaign dissemination (start): Calendar year when the campaign was first disseminated. If this information is not provided or cannot be determined from the report, record “NR” for not reported.
  - 1 = OPEN TEXT (Record year)

6. (PER\_2) Period of campaign dissemination (end): Calendar year when the campaign was ended. If this information is not provided or cannot be determined from the report, record "NR" for not reported. *NOTE: If the authors indicate that the campaign is ongoing enter the year of article publication.*
- 1 = OPEN TEXT (Record year)
7. (SPON) Source / Sponsor: Enter the reported funding source for this campaign evaluation.
- 0 = Not reported
  - 1 = State government (direct sponsor)
  - 2 = Federal government (direct sponsor)
  - 3 = Non-profit / philanthropic
  - 4 = Grant-funded
  - 5 = Commercial / private industry
  - 6 = Public/Private partnership
  - 7 = Other (SPECIFY) \_\_\_\_\_
8. (SETTING) Place(s) where the campaign was disseminated: Describe where campaign was disseminated. If the authors only refer to a community-based campaign, code "Community (general)". Use the code "Community (specific)" only if the authors mention that the community context relevant to understand the impacts of the campaign. For example, if the campaign was culturally tailored for a Hispanic group, then dissemination in a Hispanic neighborhood would be relevant. If the campaign was for a general population and just happened to be disseminated in a Hispanic neighborhood, community would not be relevant.
- 0 = Not reported
  - 1 = National/State-wide
  - 2 = Community (general)
  - 3 = Community (specific) \_\_\_\_\_
  - 4 = Child Care/School
  - 5 = University
  - 6 = Other (SPECIFY) \_\_\_\_\_

### C. Campaign Development

9. (THEORY) Theory guiding the research: Indicate whether the authors identify a particular theory or framework that was used to guide campaign development. *Select All That Apply*
- 0 = Not specified
  - 1 = Social Learning/Social Cognitive Theory
  - 2 = Theory of Planned Behavior/Theory of Reasoned Action/Integrative Theory of Behavior Change
  - 3 = Health Belief Model
  - 4 = Diffusion of innovations

- 5 = Elaboration Likelihood Model (ELM)/ Heuristic Systematic Model (HSM)
- 6 = Transtheoretical Model (stages of change)
- 7 = Agenda Setting
- 8 = Extended Parallel Process Model
- 9 = Other (SPECIFY) \_\_\_\_\_

10. (SOCMAR) Social Marketing: Social marketing approaches use the “4 Ps” or marketing mix (product, price, placement, and promotion) in the campaign development to encourage a specific behavior. Look specifically for terms like “social marketing” or “marketing mix” along with descriptions of the steps taken to promote campaign messages.
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well
11. (BRAND) Branded: Branding is a process of creating an impression in the minds of consumers that promotes a favorable attitude toward the target behavior. If a campaign used branding it will be clearly referred to as “branded.” Also look for terms like “personality” or “identity”.
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well

## D. Formative Research

12. (FOCUS) Focus groups with priority audience: Do the authors describe or at least refer to the fact that focus group research was used to develop campaign messages. Select if a focus group was used in the study, and if the details are described well (e.g., number of focus group, number of participants in each group, content of discussion).
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well
13. (INTV) Interviews with the priority audience. Do the authors describe or at least refer to the fact that interviews were used to develop campaign messages. Select if interviews were used in the study, and if the details are described well (e.g., number of interviews, content of discussion).
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well
14. (EXPERT) Use of expert elicitation. Did the campaign developers seek information from experts in the field (e.g., academic, commercial/industrial) to inform campaign development?
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well

15. (STAKE) Input from stakeholders. Did the campaign developers seek input from stakeholders, persons who have an interest and are knowledgeable about the health domain in the population of interest?  
0 = Not mentioned  
1 = Yes, but not well described  
2 = Yes, described very well
16. (TESTING) Message Testing: The article describes a process of assessing the effects or receptivity to campaign messages. Message testing is done after message development and before implementation of the campaign. Did this campaign test its message?  
0 = Not mentioned  
1 = Yes, but not well described  
2 = Yes, described very well

## E. Message Characteristics

17. (FRAME) Message Frame: The two most common frames used in public health campaigns are gain frames and loss frames. A gain-framed message suggest added benefits from engaging in the desired behavior (e.g., increase your exercise for better health; quit smoking and you'll live longer). Loss framed messages emphasize the costs or risks associate with behaviors (e.g., too much added sugar in your diet can lead to diabetes; washing poultry can spread bacteria). Other frames may be described. If the author refer to a frame other than gain or loss, indicate "Other" and provide a brief description.  
0 = Not Specified  
1 = Gain Frame  
2 = Loss Frame  
3 = Other (Specify) \_\_\_\_\_
18. (FOCUS) Message Focus: Does the campaign have an emotional or rational focus? The authors will use the term "rational" or "emotional" if one of these approaches was used in development the messages. If neither is specifically mentioned, record "not specified."  
0 = Not specified  
1 = Rational Appeal  
2 = Emotional Appeal
19. (ACTION) Call to Action: A call to action is a messaging devices designed to provoke an audience response. Calls to action usually expressed in the form of an imperative, such as "get out and vote" or "eat your five-a-day".  
0 = Not mentioned  
1 = Yes, but not well described  
2 = Yes, described very well

20. (VISUAL) Visual Cues and Icons: Does the article describe a set of visual images (logo, mascot, use of color) used consistently to promote the campaign?
- 0 = Not mentioned
  - 1 = Yes, but not well described
  - 2 = Yes, described very well

## F. Campaign Dissemination Characteristics

21. (CHANNEL) Included Channels: What channel did the campaign use for its outreach efforts?  
*Select all that apply.*
- 0 = Not specified
  - 1 = Public spaces (buses, billboards)
  - 2 = Print (newspapers, magazines)
  - 3 = Radio / TV
  - 4 = Internet / social media
  - 5 = Mass media (unspecified)
  - 6 = Other \_\_\_\_\_
22. (MEDIA\_EXP) Measure of Exposure: Indicates the anticipated campaign exposure based on estimates provided by the media. This is an assessment of potential exposure among the population, not the study sample. For radio and TV, this will often be reported as GRPs (Gross Rating Points), TARPs (Total Audience Rating Points), or ‘media share’; For print media, exposure will often be reported as ‘impressions’; for billboards and other media, exposure may be reports as the number of ‘views’ or ‘looks.’
- 0 = Not specified
  - 1 = OPEN TEXT (Record number)
23. (REACH\_EXP) Population reach: This is another measure of potential exposure among the population. Unlike media exposure, which is specific to a type of medium, Reach is more commonly reported globally for the entire campaign. Look specifically for the term ‘reach’ or ‘campaign reach.’
- 0 = Not specified
  - 1 = OPEN TEXT (Record number)

Reported awareness of the campaign messages reported *by study participants* is call RECALL. **Aided recall** consists of providing the respondent with parts of the campaign message (e.g., a tag line, logo, or phrase) and asking them if they remember hearing or seeing that information. **Unaided recall** consists of asking respondents if they remember any hearing or seeing messages about the topic of interest. If the respondent says yes, they are then asked to describe or repeat the message to verify their claim. Look for the terms “aided recall” and “unaided recall.”

24. (A\_RECALL) What is the amount of Aided recall reported in this study? This will typically be reported as a percentage of the sample who recalled the message. If recall is reported in some other manner, record "999" for this variable and enter information on the amount and form of measure under FINDINGS.

0 = Not specified  
1 = OPEN TEXT (Report Number)

25. (UN\_RECALL) Unaided recall reported. What is the amount of unaided recall reported in this study? This will typically be reported as a percentage of the sample who recalled the message. If recall is reported in some other manner, record "999" for this variable and enter information on the amount and form of measure under FINDINGS.

0 = Not specified  
1 = OPEN TEXT (Report Number)

## G. Audience

26. (AUD) Did the campaign attempt to reach everyone in the general public, or only a specific group?

0 = General audience (SKIP TO Question 29)  
1 = Priority audience

27. (RISK) At-risk population: Is the priority audience one of the following at risk groups (Select all that apply)?

1 = Limited resources (e.g., low income)  
2 = Pregnant women  
3 = Children below the age of 5  
4 = Parents  
5 = Elderly (60 years and above)  
6 = Immunocompromised  
7 = None of the above

28. (SUBPOP) Priority population. Describe the key characteristics of the targeted population as appropriate. Key characteristics may include age, race/ethnicity, gender, and location

1 = OPEN TEXT (Describe)

## H. Evaluation Characteristics

29. (EVAL\_DES) Evaluation Design: What was the design of the evaluation of the campaign? An observational design is present in a study when all data are collected from individuals who were exposed to the communication campaign. Comparative designs include two groups of individuals, with one group that is exposure to the communications campaign and another group is not exposure to the communication campaign. *By definition, a comparative design include a control or comparison group.*
- 1 = Observational Study  
 2 = Comparative Design (experimental / quasi-experimental)  
 3 = Other \_\_\_\_\_
30. (TIME) Period of Exposure: How long was the audience exposed to the campaign message? Enter the in number of months. If this information is not given explicitly, but PER\_1 and PER\_2 can be determined, use these variables to estimate TIME. If only a year is given for either PER\_1 or PER\_2, assume the campaign launched/concluded in July. If TIME cannot be determined, enter NR.
- 1 = \_\_\_\_\_ Months (open field)
- For weeks, divide months by 4
  - For days, divide months by 30.5
  - For years, multiple months by 12
  - For message testing or other studies, where participant are exposed to a stimuli and asked to respond immediately, record zero (0)
31. (SAMPLE) Sample Size: What is the sample size for the primary analysis? Record information about the number of participants contributing to the analysis. This number may be different from the number of participants recruited. If pre- and post-surveys done, take the average of the two sample sizes.
- 1 = OPEN TEXT (Report number)
32. (MTYPE) Measure Type: How was data collected to assess the outcomes and impacts of the campaign? Studies may report a change from pre-test to post-test in one group, a difference between two groups measured after one group was exposed to the campaign, or they may measure two groups at two occasions and measure the change in one group relative to the change in the other group.
- 1 = Simple cross-sectional (one group, one time)  
 2 = Change over time, no control or comparison group  
 3 = Difference between two (or more) groups measured only once  
 4 = Change over time within two groups and compared those changes (i.e., difference-in-difference)

33. OUTCOME/IMPACT/SCALE. Item 33 is structured as a 3x4 data table:

	What were the reported campaign outcomes?	Is it statistically significant?	Scale of Measure
Behavior			
Attitude/belief			
Knowledge			
Awareness			

Dropdowns are provided for each of the following variables:

(OUTCOME) Outcome(s) Reported and effects: What were the reported outcome of the campaign? Did knowledge and/or awareness increase as a result of the campaign? Were behaviors and/or attitudes changed? *Indicate Yes/No for each.*

- 1 = Behaviors (Y/N)
- 2 = Attitude / belief (Y/N)
- 3 = Knowledge (Y/N)
- 4 = Awareness (Y/N)

(IMPACT) Reports of statistically significant change: For each outcome, did the authors report a statistically significant change or difference? **Report all that apply.**

- 1 = Behaviors (Y/N)
- 2 = Attitude / belief (Y/N)
- 3 = Knowledge (Y/N)
- 4 = Awareness (Y/N)

(MSCALE) Scale of Measure: Report the type measurement used to describe change in the study outcomes.

- 1 = Means (continuous measures)
- 2 = Odds ratio (probability of event)
- 3 = Frequency (number of people or events)
- 4 = Status (change from one category to another)
- 5 = Other (Specify)

## I. Findings and Lessons Learned

34. (FINDINGS) Study’s main findings: Record in few sentences the main results of the study. This will often be found in the first paragraph of the discussion section. Looks for comments that provide a general summary of the analyses presented or refer to the hypotheses tested.

- 1 = OPEN TEXT (Describe)

35. (LESSON) Lessons Learned: Lessons learned will typically be presented in the discussion section. Authors will note challenges with implementing or evaluation the campaign and offer suggestions to the reader to minimize or avoid encountering similar problems. Record in few sentences any lessons that were learned from the campaign.

0 = Not reported

1 = OPEN TEXT (Describe)