Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Elizabeth J. Harker Date

Demographics Influencing Awareness of Centers for Disease Control and Prevention HIV/AIDS Testing Campaigns Among Men Who Have Sex with Men

By

Elizabeth J. Harker
Degree to be awarded: MPH

Epidemiology

Aaron Siegler, PhD, MHS
Committee Chair

Demographics Influencing Awareness of Centers for Disease Control and Prevention HIV/AIDS Testing Campaigns Among Men Who Have Sex with Men

By

Elizabeth J. Harker

Bachelor of Science in Biology
University of Virginia
2014

Thesis Committee Chair: Aaron Siegler, PhD, MHS

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Epidemiology
2016

Abstract

Demographics Influencing Awareness of Centers for Disease Control and Prevention HIV/AIDS Testing Campaigns Among Men Who Have Sex with Men

By Elizabeth J. Harker

Men who have sex with men (MSM) in the US face a high risk for contracting human immunodeficiency virus (HIV), with MSM who identify as Black or Hispanic/Latino disproportionately affected. This paper assesses two Centers for Disease Control and Prevention (CDC) campaigns that sought to promote HIV testing among Black and Latino MSM. *Testing Makes Us Stronger* was launched in 2011 and targeted African American MSM aged 18-44. *My Reasons for Getting Tested*, launched in 2013, was aimed at Hispanic/Latino MSM aged 18-39. This analysis used data from a 2013-2014 national online survey of MSM. For both CDC campaigns, there was higher campaign awareness (having ever seen the campaign materials or heard the slogan) among targeted racial demographics. The increased awareness of *Reasons* was observed despite limited funding and a short promotional period. Results were less successful with age-based targeting, with younger age groups in most analyses not associated with campaign awareness in hypothesized directions. HIV testing was significantly associated with awareness of the *Testing* campaign, but not with awareness of the Reasons campaign. Media campaigns regarding HIV testing can have substantial public health impact, and racial targeting of these campaigns can be effective. Future research is needed to explore the drivers within campaign strategy that make some campaigns more successful than others in achieving desired public health outcomes.

Length: 219

Demographics Influencing Awareness of Centers for Disease Control and Prevention HIV/AIDS Testing Campaigns Among Men Who Have Sex with Men

By

Elizabeth J. Harker

Bachelor of Science in Biology
University of Virginia
2014

Thesis Committee Chair: Aaron Siegler, PhD, MHS

A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Epidemiology
2016

I. Introduction

Current estimates state that around 1.2 million people are currently living with HIV in the United States[8, 9]. However, the Centers of Disease Control and Prevention (CDC) also predicts that nearly 1 in 8 people living with HIV/AIDS (PLWHA) may not be aware that they are infected[8]. Those at the greatest risk are men who have sex with men (MSM), however this population is not the only at risk[1-9]. HIV disproportionately affects people of African American (AA) and Hispanic heritage, including particularly pronounced disparities among MSM[8, 9].

HIV/AIDS testing is a gateway into providing care and prevention services to PLWHA and those at risk of infection. Many prevention programs seek to promote HIV testing and other preventative behaviors, and have been successful. Programs such as National HIV Testing Day (NHTD) have resulted in increases in testing among older populations, non-Hispanic black MSM, and people with low-risk heterosexual contact[9]. However, despite reaching many at risk populations, the NHTD campaign did not appear to expand testing in the Hispanic/Latino community[9]

Mass media interventions have been shown to be correlated with desirable changes in HIV prevention behaviors when they reach their targeted audiences. A 2008 review of studies examining the effects of behavioral interventions aimed at reducing risk for HIV or STD transmission among MSM found that behavioral interventions resulted in reduced self-reported unprotected anal sex among mainly white populations, though not among those of African American or Hispanic heritege. Another review concluded that mass media intervention resulted in an immediate increase in HIV testing among the general population, though no long term benefits were seen[10]. Conversely, a European study found no change in

prevention behaviors due to media campaigns, and only a slight increase in HIV testing, likely due to low campaign awareness [2].

Media based prevention campaigns can be an invaluable way to raise awareness among and provide information[2, 10]. However, it is crucial that these campaigns target at risk demographics and are being seen and remembered by these populations. The present analysis seeks to describe awareness of two CDC HIV testing campaigns, *Testing Makes Us Stronger* and *My Reasons for Getting Testing*, and to assess whether demographic features were predictors for campaign awareness. The aim is to provide insight into whether the campaigns were effective in reaching their intended audience, as measured by greater awareness of the campaign among targeted demographics

II. Methods

Recently, the CDC ceased to actively promote two HIV testing campaigns that were launched earlier in the decade. *Testing Makes Us Stronger* (*TMUS*) and *My Reasons for Getting Tested* (*Reasons*) were both targeted campaigns that aimed to increase HIV testing among at-risk populations. Launched in December of 2011, the *TMUS* campaign was targeted to African American MSM aged 18-44, with an emphasis on those 18-24. It was primarily implemented in Atlanta, GA; Baltimore, MD; Chicago, IL; Dallas, TX; Houston, TX; New Orleans, LA; New York, NY; Oakland, CA; and Washington, DC. To a lesser extent, resources were also extended to Detroit, MI; Los Angeles, CA; Miami, FL; and Philadelphia, PA[7].

Reasons, launched in June 2013, and was a bilingual campaign that encouraged Hispanic/Latino MSM to get tested for HIV. The targeted audience was MSM 18-49, but within this audience the campaign focused on those 18-39. Promotion of the campaign was

focused in Los Angeles, CA; Miami, FL; Portland, OR; San Antonio, TX; San Diego, CA; San Juan, PR; and Washington, DC. Secondary locations included Chicago, IL and New York, NY. Also included in the campaign were Dallas, TX; Houston, TX; Orlando, FL; and Tampa, Fl[5].

For the two campaigns, the CDC promoted the programs both online and at local PRIDE events created for each respective demographic. Occasionally while attending PRIDE events, the CDC would collaborate with local HIV testing units, but did not directly fund any testing centers. Information on the campaigns was also provided to facilities that requested more information or materials. Pamphlets, videos, and other educational materials were freely available at CDC websites for the campaigns [1, 5, 7]. While *TMUS* and *Reasons* ceased to be actively promoted in September of 2015, events continued after this date. As of early 2016, the educational materials provided by these campaigns are still available at their respective CDC websites.

The American Men's Internet Survey (AMIS) is an annual survey of of behaviors of MSM in the United States. The dataset informing the present analysis are from the 2013-2014 cycle of the online, cross-sectional survey. The survey was conducted from December 2013 through May 2014, and gathered information from eligible men, with 12,469 complete and included in the present analysis. Participants for this survey were recruited online through banner ads and emails to website members. Eligible participants were those who provided informed consent to be a part of the study, were 18 years of age or older, consider themselves to be male, and also reported having oral or anal sex with a man at least once in the past. Survey domains included demographics, sexual behavior, HIV testing history, drug and alcohol use, and HIV prevention services exposure. In addition, participants were also asked a randomized question subset about one of the following three areas: knowledge and

use of antiretrovirals for HIV prophylaxis, disclosure of sexual identity and experiences of stigma, or additional details about their most recent male sex partner[6].

IRB approval was received from Emory University. SAS 9.4 was used for all data analysis. The variables examined were Age, Race, Education, Income, Number of Male Partners, HIV Test in the Last 12 Months, STI Test in the last 12 Months, and Comdomless Sex in the Last 12 Months. Both targeted and non-targeted cities were examined for each campaign to view trends in campaign awareness. .

First, the overall awareness of the campaigns viewed by the variables Age, Race, Education, Income, Number of Male Partners in the Last 12 Months, HIV Test in the Last 12 Months, STI Test in the last 12 Months, and Comdomless Sex in the Last 12 Months. Participants were considered to be "Aware" of a campaign if they responded with "Rarely", "Sometimes", "Often", or "Very Often" when asked how often they had heard or seen the campaign's slogan. Those who answered "Never" were determined to be "Unaware" as they reported not having any familiarity or recognition of the campaign. Responses of "I prefer not to answer" and "Don't know" were considered as "Missing".

Age was classified as 15-24, 25-34, 35-44, and 45 and older. Race was self reported as "White", "American Indian/Alaska Native", "Asian/Native Hawaiian/Other Pacific", "Black", "Hispanic/Latino", or "Other/Multiple". Education categories were defined by "High School Diploma or Equivalent or Less", "Some College or Technical Degree", and "College Degree or Post Graduate". Income was divided into annually salaries of 1-$19,999, $20,000- $39,999, $40,000-$74,999, and $75,000 or higher. The categories for the number of male partners a participant had were 1, 2, 3, or 4 and higher. The rest of the variables were "Yes/No" questions.

While most variables had very few missing observations, STI testing within the last 12 months was missing over 67% of responses. Due to the lack of response, this variable could not be included in multivariate analysis.

The descriptive statistics for each campaign were calculated. Then the odds ratio and its confidence interval was determined in comparison to the reference group. Additionally, the fake campaign "*PROTEST*" was also examined in this fashion in order to examine the possibility of response bias influencing the data.

This was repeated for data from both the targeted and non-targeted cities of the campaigns. In addition, multivariate logistic regression predicting campaign awareness was assessed, with age, race, education, income, number of male partner, HIV testing, and condomless sex categories of predictor variables. Dummy variables were created for analysis of the multi-level variables age, race, education, income, and number of partners. There was no indication of significant interaction between variables and the models were assessed for collinearity issues, which were not observed. The best-fitting predictive model was determined through backwards elimination and through consideration of maximum likelihood chi-square values. The initial model included all variables specified above, and at each step non-significant variables were removed from the model until a final model was determined.

III. Results

Overall, 23% of participants claimed to be aware of the campaign *Testing Makes Us Stronger*. 11% were aware of *My Reasons for Getting Tested*, and 6% claimed to be aware of the fake campaign, *Protest*. A larger portion of those surveyed were aware of the campaigns within there targeted cities, with 28% having knowledge of *Testing* and 12% of participants

aware of *Reasons*. Within the cities targeted by Testing, 6% of responders answered as having heard of *PROTEST* and 7% responded as such within *Reasons'* targeted cities. Campaign awareness was lower in non-targeted cities; only 21% of those surveyed knew of *Testing* and 11% had heard of *Reasons*. Claiming knowledge of *PROTEST* was slightly less common in non-targeted cities with 5% of participants in *Testing's* non-targeted cities and 6% within *Reason's* non-targeted cities answering that they had heard of the campaign.

The results for overall demographics can be found in Table 1. For *TMUS* those aged 25-34 years old were slightly more likely to aware of the campaign compared to those who were aged 15-24 (OR: 1.20 CI: 1.02-1.41). Furthermore, those who identified as "Asian/Native Hawaiian/Other Pacific" (OR: 1.72 CI:1.25-2.35), "Black" (OR:2.17 CI:2.09,-3.52), or "Hispanic/Latino" (OR:1.44 CI:1.21-1.72) were also more likely to be aware of the campaign than those who identified as "White". Participants with more male sex partners reported in the last year were more likely to be aware compared to those who had no partners. MSM with one partner were 22% more likely to know of the campaign (OR: 1.22 CI: 1.02-1.44). Those with two partners were 25% more likely (OR: 1.25 CI: 1.02-1.55). Participants who reported three male partners were 37% more likely to be aware (OR: 1.37 CI: 1.10-1.70), and those with four or more partners were 53% more likely (OR:1.53 CI: 1.30-1.80). Additionally, those who had either an HIV test (OR: 1.50 CI: 1.36-1.66) or a STI test (OR:1.64 CI:1.37-1.96) in the last 12 months had a higher likelihood of awareness. There was no significant correlation between education, income, or having condomless sex and *TMUS* awareness.

Older age groups were more aware *Reasons* than those aged 15-24 (Table 1). Those who identified as "Black" (OR: 2.13 CI: 1.54-2.94) or "Hispanic/Latino" (OR: 1.62 CI: 1.31-2.02) had a greater likelihood of campaign awareness, and those with income of $20,000 to

$39,999 annually were 33% more likely to be aware of the campaign then those who made $0- $19,999 (OR: 1.33 CI: 1.07-1.65). Higher education was negatively associated with awareness, as those who answered "Some College or Technical Degree" (OR: 0.81 CI: 0.66-0.99) or "College Degree or Post Graduate" (OR: 0.59 CI: 0.48-0.72) were less likely to be aware. Number of male partners, having an HIV test, having an STI test, or having condomless sex were not associated with awareness.

Overall, there was no relationship between perceived knowledge of the fake campaign *PROTEST* and age, number of partners, having condomless sex, HIV testing or STI testing (Table 1). Those who had "Some College or Technical Degree" (OR: 0.76 CI: 0.59-0.97) and those who had a "College Degree or Post Graduate" (OR: 0.41 CI: 0.32-0.52) were less likely to claim awareness of the campaign. Higher levels of income were also negatively associated with campaign awareness with those who made $40,000 to $74,999 annually (OR: 0.68 CI: 0.53, 0.89) and those who made $75,000 or more annually (OR: 0.42 CI: 0.32-0.55) were less likely to state they had heard of the campaign. Those who identified as "Black" (OR: 2.90 CI: 1.99-4.22), "Hispanic/Latino" (OR: 1.99 CI: 1.53-2.60), or "Other/Multiple" (OR: 1.52 CI: 1.04-2.24) were more likely to respond has being aware of the campaign.

Within targeted cities (Table 2), race was correlated with awareness of *TMUS*. Being Black" (OR: 2.73 CI: 1.72-4.33), "Hispanic/Latino" (OR:1.89 CI:1.219-1.76), or identifying as "Other/Mulitple" (OR: 2.34 CI: 1.36-4.05) were more likely to be aware than those who identified as "White". Having two (OR: 1.96 CI: 1.16-3.28), 3 (OR: 1.99 CI: 1.16-3.40), or four or more (OR: 2.12 CI: 1.38-3.25) partners was also associated with awareness. Those who received an HIV test in the last year were 64% more likely to have heard of *TMUS* (OR: 1.64 CI: 1.32-2.04). Condomless sex was also related to awareness (OR: 1.30 CI: 1.05-

1.61). Having an annual income of $75,000 or more was associated with being unaware of the campaign (OR:0.56 CI: 0.39-0.81). There was no significant association of STI testing, age, or education with awareness within targeted cities.

Awareness of *PROTEST* within the cities targeted by the *TMUS* campaign (Table 2) was correlated with race; participants who identified as "Black" were more likely to respond as having heard of the campaign (OR: 2.74 CI: 1.36-5.57). Furthermore, those who made $75,000 or more a year were significantly less likely to answer as knowing of the campaign (OR: 0.38 CI: 0.20- 0.71). No other variables were significantly associated with claiming awareness of *PROTEST*.

Those 45 and older were more likely to be aware of *Reasons* within its targeted cities (OR: 1.92 CI: 1.08-3.42), (Table 3). Identifying as Hispanic/Latino" also had a greater likelihood of being aware (OR: 1.81, CI: 1.08-3.03) then those who identified as "White". However, no other variables were determined to be significantly associated with campaign awareness of *Reasons*. Within the targeted cities of the *Reasons* campaign, the only variable significantly associated with knowledge of *PROTEST* was earning $75,000 or more annually (OR: 0.28 CI: 0.14- 0.56).

Cities not targeted by the CDC (Table 4) for the *TMUS* campaign saw age being significantly associated with awareness. Compared to 15-24 year olds, those aged 25-34 (OR: 1.26 CI: 1.05-1.52), 35-44 (OR: 1.34 CI: 1.10-1.63), or 45 and older (OR: 1.22 CI: 1.04-1.43) were more likely to be aware of the campaign. As in targeted cities, those who identified as "Asian/Native Hawaiian/Other Pacific" (OR: 1.53 CI: 1.07-2.18), "Black" (OR: 2.56 CI: 1.86-3.52), or as "Hispanic/Latino" (OR: 1.33 CI: 1.09-1.63) were more likely to be aware when compared to those who answered "White". Additionally, those who had 4 or more male partners in the last year were 40% (OR: 1.40 CI: 1.17-1.67) more likely to be aware than

those who did not have any male partners. HIV testing (OR: 1.44 CI: 1.29-1.61) and STI testing (OR: 1.72 CI: 1.40-2.10) were also associated with awareness. Condom use, income, and education had no significant correlation with campaign awareness.

Within the non-targeted cities of the *TMUS* campaign, age, number of male partners, HIV testing, and participating in condomless sex were not associated with responding as having heard of *PROTEST* (Table 4). However, those who identified as "Black" (OR: 2.95 CI: 1.89-4.61), "Hispanic/Latino" (OR: 2.03 CI: 1.51- 2.71), or "Other/Multiple" (OR: 1.55 CI: 1.02-2.34) were more likely to have heard of the campaign. Furthermore, receiving and STI test with the last year was significantly associated with knowledge of the campaign (OR: 1.56 CI: 1.09-2.22). Participants who responded as having "Some College or Technical Degree" (OR: 0.74 CI: 0.57-0.96) or "College Degree or Post Graduate" (OR: 0.37 CI: 0.28-0.49) were less likely to claim awareness of the campaign than those who had a "High School Diploma or Equivalent or Less". Additionally, making $40,000 to $74,999 annually (OR: 0.66 CI: 0.50- 0.88) or $75,000 or more annually (OR: 0.42 CI: 0.31-0.56) was also negatively associated with knowledge of the *PRTOEST*.

Those within the non-targeted cities of *Reasons* were more likely to be aware of the campaign if they were 35-44 (OR: 1.40 CI: 1.08-1.82) or older (OR: 1.41 CI: 1.14-1.75) than those who were 15-24 (Table 5). Identifying as "Black" (OR: 2.33 CI: 1.63-3.32) or as "Hispanic" (OR: 1.57 CI: 1.24-2.00) was also associated with campaign awareness when compared to those who identify as "White". An income of $20,000-$39,999 also correlated with increased awareness compared to those who annually made 0-$19,999 (OR: 1.34 CI: 1.06-1.69). Education was negatively associated with awareness, as those who received "Some College or Technical Degree" (OR: 0.79 CI: 0.64-0.99) or "College Degree or Post Graduate" (OR: 0.56 CI: 0.46-0.69) were less likely to be aware than those who had a high

school diploma or less. Campaign awareness of *Reasons* was not associated with number of male partners, HIV testing, or STI testing.

Perceived awareness of *PROTEST* within the non-targeted cities of *Reasons* was not significantly associated with age, number of male partners, HIV testing, STI testing, or participating in condomless sex (Table 5). Those who responded as being "Black" (OR: 2.90 CI: 1.90-4.42), "Hispanic/Latino" (OR: 2.00 CI: 1.50-2.68), or "Other/Multiple" (OR: 1.55 CI: 1.03-2.33) were more likely to answer as having heard of the campaign. When compared to having a "High School Diploma or Equivalent or Less", higher levels of education such as "Some College or Technical Degree" (OR: 0.76 CI: 0.59-0.98) or a "College Degree or Post Graduate" (OR: 0.38 CI: 0.29-0.50) were negatively associated with campaign awareness. Additionally, those who made $40,000 to $74,999 annually (OR: 0.68 CI: 0.52, 0.90) and $75,000 or more annually (OR: 0.44 CI: 0.32, 0.58) were also less likely to respond that they had heard of the campaign.

Upon performing multivariate logistic regression analysis, the overall significant predictors of campaign awareness for *TMUS* were: HIV testing within the last month, identifying as "Asian/Native Hawaiian/Other Pacific", "Black", "Hispanic/Latino", being aged 35-44 or 45 and older, earning $75,000 or more annually, and having four or more male partners (Table 6). Predictors of knowledge of the campaign within the targeted cities were: HIV testing within the last month, being "Asian/Native Hawaiian/Other Pacific", "Black", "Hispanic/Latino", or "Other/Multiple", earning $75,000 or more a year annually, and participating in condomless sex within the last year (Table 7). Modeling of the fake campaign *PROTEST* within these cities determined that identifying as "Black", being aged 25-34, 35-44 or 45 and older, and having an income of $75,000 or more annually are predictive of the fake campaign (Table 13). Within non-targeted cities significant predictors were: HIV testing

within the last month, identifying as "Asian/Native Hawaiian/Other Pacific", "Black", or "Hispanic/Latino", being 35-44 or 45 or older, and having 4 or more partners (Table 8). Predictors of *PROTEST* awareness within these areas were: identifying as "Black" or "Hispanic/Latino", being aged 35-44 or 45 and older, earning $75,000 or more annually, and having a "College Degree or Post Graduate" (Table 14).

Overall, significant predictors of awareness of the *Reasons* campaign were: identifying as "Black" or "Hispanic/Latino", being 25-34, 35-44, or 45 or more years old, having an income of $20,000 to $39,999, and having a "College Degree of Post Graduate" (Table 9). The predictive demographics within targeted cities for awareness of the *Reasons* campaign were: identifying as "Hispanic/Latino", being 45 or older, and making $75,000 or more anually (Table 10). Within these cities predictive variables of *PROTEST* include: identifying as "Black", being 25-34, 35-44, or 45 or older, and earning $40,00 to $74,999 or $75,000 or more annually (Table 15). The model for non-targeted cities for the campaign had predictive variables of: identifying as "Black", identifying as "Hispanic/Latino", being 25-34, 35-44, or 45 or older, having and income of $20,000 to $39,999 annually, and having a "College Degree or Post Graduate" (Table 11). The significant predictors of awareness of *PROTEST* in these cities were: identifying as "Black" or "Hispanic/Latino", being aged 35-44 or 45 and older, earning $75,000 or more annually, and having a "College Degree or Post Graduate" (Table 16).

IV. Limitations

Approximately 76% of those surveyed answered questions pertaining to awareness of HIV/AIDS campaigns. Since participants could choose whether or not to respond to this part of the survey it may have resulted in self-selection bias within the sample. For example,

those who had experience with testing campaigns may have been more willing to answer these optional questions than someone with no prior exposure.

Another limitation was that the survey was recruited and conducted online, limiting the pool of participants to those who frequented the websites targeted. Since these sites were used because they are popular among MSM, they may have also been used to promote the CDC testing campaigns. Furthermore, the men who visited these sites and decided to participate in the survey, may not be representative of the MSM population as a whole leading to sampling bias.

Moreover, while the CDC did not directly fund any testing centers, material about the campaigns was provided to facilities that asked for information. This may have resulted in confounding and influenced the demographics of those with campaign awareness, since testing centers may have been a source of exposure to campaign materials.

As with all self-reporting based surveys, response bias is concern in regards to the accuracy of the information received.

V. Discussion

Exposure to either campaign materials or the slogan of *Testing Makes Us Stronger* was significantly greater in cities targeted by the campaign. Awareness of *My Reasons for Getting Tested* was slightly higher in targeted cities. A marginally higher amount of participants claimed to have knowledge of the created campaign, *PROTEST*, in targeted cities than in non-targeted cities. However, the difference observed was smaller than that seen between the targeted and non-targeted areas of the CDC campaigns suggesting that the higher awareness numbers in targeted cities are not due to an increased tendency to respond in the positively in these areas. Higher awareness of the real campaigns in these target cities

indicates that the additional resources placed into targeting were effective in promoting campaign awareness.

Additionally, awareness of *TMUS*, a program directed at AA, was higher among AA in targeted and in non-targeted cities. Other racial minorities were more likely to be aware of the campaign despite not being the targeted audience. While the campaign was successful at reaching the intended demographic, campaign materials may also have been relevant to other racial minorities. Identifying as AA was a consistently associated with awareness of the artificial campaign, *PROTEST*. Yet, the relative increase (9%) of awareness of the *PROTEST* campaign for AA, relative to White respondents does not account for the relative increase seen in the TMUS campaign (22%), indicating that the observed increase in awareness is unlikely to be an artifact of differential reporting.

TMUS was also intended to reach MSM aged 18-44, with an emphasis on those 18-24. However, increased awareness was not observed in this group in targeted or non-targeted cities. Moreover, in non-targeted cities participants aged 18-24 were less likely to respond as having heard of the campaign. However, this association was also observed in these areas for *PROTEST*, indicating that older MSM may be less likely to claim awareness of campaigns. The lack of association between age and knowledge of the *TMUS* campaign shows that age based targeting was not successful during the span of campaign.

While participating in condomless sex was predictive of campaign awareness in targeted cities, and having four or more partners was predictive in non-targeted cities, these results were not consistent. Thus, the relationship seen between high risk activities and knowledge of *TMUS* may not be indicative of a consistent relation between regarding risk and campaign awareness.

Overall, in targeted cities, and in non-targeted cities, awareness of *TMUS* campaign was associated with having an HIV test within the last year. This was also a significant indicator of campaign awareness, as determined through multivariate analysis. The goal of the *Testing* campaign was to encourage MSM to seek HIV testing, so this association may indicate that knowledge of the campaign resulted in a person being more likely to get an HIV test. Conversely, this association could be due to the fact that the CDC did provide campaign resources to testing centers that requested the materials. However, these facilities were not directly funded nor were materials provided without the center's request. Further suggesting that *TMUS* influenced testing behaviors is the fact that the relationship between HIV testing and perceived campaign awareness is not seen in the *PROTEST* campaign.

STI testing was also determined to be significantly associated with increased awareness of the *TMUS* campaign in non-targeted cities and overall. This could be related to the increase seen in HIV testing if participants underwent multiple tests during the same visit to a testing center. The increase awareness associated with HIV testing and STI testing could indicate that the campaign was reaching those already involved in proper primary care. Furthermore, the lack of correlation in targeted cities may be due to the fact that the campaign promoted HIV testing at PRIDE events in these areas. Individuals in targeted cities may have been more likely to be testing for HIV at these events rather than undergoing more comprehensive testing at a primary care provider.

There were fewer participants aware of *My Reasons for Getting Tested* than *Testing Makes Us Stronger*. This is mostly likely due to the fact that less resources were dedicated to this campaign. Promotion of this campaign also began later than *TMUS*, and the campaign was only active for a five months before data collection for the survey began. *Reasons* was created to increase HIV testing among Hispanic/Latino MSM, and awareness among this

demographic was higher than among those who identified as White. This is further confirmed by the fact that identifying as Hispanic/Latino was not a predictive variable for claimed awareness of *PROTEST* within the targeted cities of *Reasons*, indicating that this association is not due to response bias. Despite the lack of funding and overall lower awareness, *Reasons* managed to successfully reach the intended audience within targeted cities. However, the significance of awareness in the subpopulation is questionable in non-targeted cities and overall since identifying as Hispanic/Latino was associated with *PROTEST* in these areas. More so, the relative increase in awareness among Hispanic/Latino MSM compared to White participants observed in the *PROTEST* campaign (5%) is similar to the relative increase seen for the *Reasons* campaign (6%) indicating that increases in awareness can be attributed to deferential reporting. For the overall data and data collected from non-targeted cities awareness was also higher among AA, but once again this was also a predictive variable for knowledge of the artificial campaign. Despite reaching its targeted demographic within targeted cities; knowledge of *Reasons* was not associated with any increase in HIV testing. Thus, this CDC campaign may not have not achieved its intended goal of increasing HIV testing.

Reasons was aimed at those aged 18-49, but was mainly directed at those 18-39 years old. Overall, awareness was concluded to be significantly higher among all levels of older individuals than those aged 18-24 years old. This was also true in non-targeted cities. However, in these non-targeted cities, modeling determined that reported knowledge of *PROTEST* was associated with being aged 35-44 or 45 or more years old indicating that these subgroups may have been more likely to claim knowledge of campaigns. MSM aged 25-34 were more likely to be aware of *Reasons*, though since this association was viewed in non-targeted cities it may be spurious. Within targeted cities, being aged 45 and older was

associated with knowledge of the campaign. This finding indicates that, like *TMUS*, age-based targeting for this campaign was not successful.

Unlike its counterpart, knowledge of the *Reasons* was associated with education and income, though not within targeted cities. Overall and in non-targeted cities, having some college or technical school or having a college or graduate degree was negatively associated with campaign awareness. However, this correlation was also observed in the modeling of *PROTEST*, and this finding could be due to response bias. Furthermore, having an annual income of $20,000 to $39,999 was associated with knowledge of the campaign, though this finding is most likely spurious since it is not seen in targeted cities.

Interestingly, those who answered as having higher education or income levels were less likely to claim to have knowledge of the fake awareness campaign, *PROTEST*. Furthermore, identifying as AA or Hispanic was a significant predictive value for responding as having heard of the campaign within the non-targeted cities of both CDC campaigns and overall. Within targeted cities, those who self responded as being Black were more likely to answer as being familiar with the campaign. This reporting bias may have influenced the racial differences seen in the CDC campaigns, especially *TMUS* wich was targeted at AA. However, in all instances the percentage of individuals who claimed to know of the campaign was much lower than those who reported hearing of *TMUS* or *Reasons*. It may be interesting to look further into factors that contribute to participants to identify artificial campaigns as familiar.

Now that the campaigns are no longer being actively promoted it would be beneficial to observe what long term effects on HIV testing they may have had. A previous study found that though mass media campaigns immediately influenced testing, there was no long term influence, and it would be interesting to see if the same conclusion can be drawn about

the CDC campaigns. This analysis highlights the need for future research into HIV testing campaigns. For example, further investigation should be conducted to determine why age-based targeting was unsuccessful for both campaigns. Also, it would be important to understand why the *Reasons* campaign, despite receiving less resources than *TMUS* and having a shorter promotional time, was able to influence the intended racial demographic when it was questionable how successful *TMUS* was at reaching the targeted audience. Even more interesting is why, although it was concluded that *Reasons* was successful in targeting Hispanic MSM, there was no change in HIV testing behaviors. Both *Testing Makes Us Stronger* and *My Reasons for Getting Tested* had success and failures in reaching their targeted demographics and encouraging HIV testing. Further research can aid in refining HIV testing campaigns and increasing their abilities to reach and influence at risk population.

Works Cited

1. "Act Against AIDS." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 15 July 2015. Web. 8 Sept. 2015. <http://www.cdc.gov/actagainstaids/>.
2. French, Rebecca S et al. An Exploratory Review of HIV Prevention Mass Media Campaigns Targeting Men Who Have Sex with Men. *BMC Public Health* 14 (2014): 616. *PMC*. Web. 18 Sept. 2015.
3. Johnson WD, Diaz RM, Flanders WD, Goodman M, Hill AN, Holtgrave D, Malow R, McClellan WM. Behavioral interventions to reduce risk for sexual transmission of HIV among men who have sex with men. Cochrane Database of Systematic Reviews 2008, Issue 3. Art. No.: CD001230. DOI: 10.1002/14651858.CD001230.pub2.
5. "My Reasons For Getting an HIV Test." *Take Action*. Centers for Disease Control and Prevention, n.d. Web. 08 Sept. 2015. <https://gettested.cdc.gov/Reasons/>.
6. Sanchez TH, Sineath RC, Kahle EM, Tregear SJ, Sullivan PS. The Annual American Men's Internet Survey of Behaviors of Men Who Have Sex With Men in the United States: Protocol and Key Indicators Report 2013, JMIR Public Health Surveill 2015;1(1):e3 DOI: 10.2196/publichealth.4314
7. "Testing Makes Us Stronger." *Testing Makes Us Stronger*. Centers for Disease Control and Prevention, n.d. Web. 08 Sept. 2015. <https://gettested.cdc.gov/Stronger/index.html>.
8. "Today's HIV/AIDS Epidemic." *Centers for Disease Control and Prevention*. Centers for Disease Control and Prevention, 26 Mar. 2015. Web. 12 Sept. 2015. <http://www.cdc.gov/nchhstp/newsroom/HIVFactSheets/Epidemic/index.htm#2>
9. Van Handel, Michelle, and Mesfin S. Mulatu. Effectiveness of the U.S. National HIV Testing Day Campaigns in Promoting HIV Testing: Evidence from CDC-Funded HIV Testing Sites, 2010. *Public Health Reports* 129.5 (2014): 446–454. Print.
10. Vidanapathirana J, Abramson MJ, Forbes A, Fairley C. Mass media interventions for promoting HIV testing. Cochrane Database of Systematic Reviews 2005, Issue 3. Art. No.: CD004775. DOI: 10.1002/14651858.CD004775.pub2.

Table 1: Overall Demographic for *TMUS, Reason, PROTEST,* and All Particpants Surveyed

	Testing Makes Us Stronger			Reasons			PROTEST			All Surveyed Participants
	Aware (N=2147)*	Unaware (N=7329)	OR (95% CI)	Aware (N=1052)*	Unaware (N=8409)	OR (95% CI)	Aware (N=589)	Unaware (N=8895)	OR (95% CI)	(N=12369)
Age										
18-24	311 (21%)	1194 (79%)	Referent	129 (9%)	1375 (91%)	Referent	94 (6%)	1409 (94%)	Referent	2178
25-34	465 (24%)	1487 (76%)	1.20 (1.02, 1.41)	202 (10%)	1748 (90%)	1.23 (0.98, 1.55)	101 (5%)	1860 (95%)	0.81 (0.61, 1.09)	2894
35-44	327 (24%)	1050 (76%)	0.84 (0.70, 0.99)	159 (12%)	1217 (88%)	1.39 (1.09, 1.78)	94 (7%)	1280 (93%)	1.10 (0.82, 1.48)	1901
45+	1044 (22%)	3598 (78%)	0.89 (0.77, 1.03)	562 (12%)	4069 (88%)	1.47 (1.20, 1.80)	300 (6%)	4346 (94%)	1.03 (0.81, 1.31)	5396
Race										Missing=236
White	1654 (21%)	6161 (79%)	Referent	812 (10%)	6986 (90%)	Referent	421 (5%)	7398 (95%)	Referent	9710
Asian/Native Hawaiian/Other Pacific Islander	59 (32%)	128 (68%)	1.72 (1.25, 2.35)	21 (11%)	167 (88%)	1.08 (0.68, 1.71)	12 (7%)	171 (93%)	1.23 (0.68, 2.23)	276
Black	102 (42%)	140 (58%)	2.17 (2.09, 3.52)	48 (20%)	194 (80%)	2.13 (1.54, 2.94)	34 (14%)	206 (86%)	2.90 (1.99, 4.22)	412
Hispanic/Latino	191 (28%)	494 (72%)	1.44 (1.21, 1.72)	109 (16%)	578 (84%)	1.62 (1.31, 2.02)	70 (10%)	617 (90%)	1.99 (1.53, 2.60)	1227
Other/Multiple	94 (25%)	278 (75%)	1.26 (0.99, 1.60)	39 (11%)	332 (89%)	1.01 (0.72, 1.42)	30 (8%)	346 (92%)	1.52 (1.04, 2.24)	508
Education										Missing=71
HS Diploma or Equivalent or Less	225 (23%)	750 (77%)	Referent	147 (15%)	826 (85%)	Referent	100 (10%)	877 (90%)	Referent	1342
Some College or Technical Degree	680 (23%)	2323 (77%)	0.98 (0.83, 1.17)	378 (13%)	2613 (87%)	0.81 (0.66, 0.99)	239 (8%)	2753 (92%)	0.76 (0.59, 0.97)	4030
College Degree or Post Graduate	1229 (23%)	4206 (77%)	0.98 (0.83, 1.15)	518 (9%)	4921 (91%)	0.59 (0.48, 0.72)	243 (4%)	5215 (96%)	0.41 (0.32, 0.52)	6926
Income (Yearly)										Missing=29
0 to $19,999 annually (0 to $1667 monthly)	301 (23%)	1007 (77%)	Referent	144 (11%)	1160 (89%)	Referent	112 (9%)	1202 (91%)	Referent	1799
$20,000 to $39,999 annually ($1668 to $3333 monthly)	458 (25%)	1362 (75%)	1.12 (0.95, 1.32)	257 (14%)	1551 (86%)	1.33 (1.07, 1.65)	150 (8%)	1661 (92%)	0.96 (0.75, 1.25)	2453
$40,000 to $74,999 annually ($3334 to $6250 monthly)	540 (23%)	1845 (77%)	0.97 (0.83, 1.14)	264 (11%)	2123 (89%)	1.00 (0.80, 1.24)	244 (6%)	2243 (94%)	0.68 (0.53, 0.89)	3138
$75,000 or more annually ($6251 or more monthly)	682 (21%)	2537 (79%)	0.89 (0.77, 1.04)	297 (9%)	2919 (91%)	0.81 (0.66, 1.01)	122 (4%)	3099 (96%)	0.42 (0.32, 0.55)	40005
Partners										
None	234 (18%)	1047 (82%)	Referent	151 (12%)	1127 (88%)	Referent	90 (7%)	1190 (93%)	Referent	1418
1	593 (21%)	2180 (79%)	1.22 (1.02, 1.44)	298 (11%)	2476 (89%)	0.89 (0.72, 1.10)	167 (6%)	2611 (94%)	0.84 (0.65, 1.10)	3078
2	212 (22%)	753 (78%)	1.25 (1.02, 1.55)	115 (12%)	855 (88%)	1.00 (0.77, 1.29)	63 (7%)	906 (93%)	0.92 (0.66, 1.28)	1188
3	185 (24%)	603 (76%)	1.37 (1.10, 1.70)	80 (10%)	701 (90%)	0.85 (0.63, 1.13)	54 (7%)	734 (93%)	0.97 (0.68, 1.38)	1019
4+	814 (26%)	2380 (74%)	1.53 (1.30, 1.80)	342 (11%)	2849 (89%)	0.89 (0.73, 1.09)	172 (5%)	3015 (95%)	0.75 (0.57, 0.98)	5092
Months										
No	1257 (20%)	4984 (80%)	Referent	667 (11%)	385 (12%)	Referent	382 (6%)	5870 (94%)	Referent	7588
Yes	890 (28%)	2345 (72%)	1.5 (1.36, 1.66)	5558 (89%)	2851 (88%)	1.12 (0.98, 1.28)	207 (6%)	3025 (94%)	1.05 (0.88, 1.25)	4781
Condomless Sex in last 12 Months										
No	1065 (22%)	3787 (78%)	Referent	573 (12%)	4271 (88%)	Referent	320 (7%)	4549 (93%)	Referent	5892
Yes	1082 (23%)	3542 (77%)	1.09 (0.98, 1.19)	479 (10%)	4138 (90%)	0.86 (0.75, 0.98)	269 (6%)	4346 (94%)	0.87 (0.74, 1.04)	12369
STI Test in last 12 Months										Missing=8358
No	452 (20%)	1780 (80%)	Referent	228 (10%)	2006 (90%)	Referent	112 (5%)	2127 (95%)	Referent	2721
Yes	256 (29%)	612 (71%)	1.64 (1.37, 1.96)	119 (14%)	755 (86%)	1.39 (1.09, 1.75)	62 (7%)	804 (93%)	1.46 (1.06, 2.01)	1290

* N is sum of those who answered Rarely, Sometimes, Often, or Very Often in response to how often they had seen particular program.

Table 2: Demographics for *TMUS* and *PROTEST* within Targeted Cities of *TMUS* Campaign

	Testing Makes Us Stronger			PROTEST (Within Testing Targeted Cities)		
	Aware (N=475)*	Unaware (N=1222)	OR (95% CI)	Aware (N=109)*	Unaware (N=1577)	OR (95% CI)
Age						
18-24	76 (32%)	158 (67%)	Referent	12 (5%)	217 (93%)	Referent
25-34	111 (31%)	250 (69%)	0.92 (0.65, 1.31)	25 (7%)	337 (93%)	1.34 (0.66, 2.72)
35-44	75 (25%)	220 (75%)	0.71 (0.48, 1.03)	18 (6%)	275 (94%)	1.18 (0.55, 2.51)
45+	213 (26%)	594 (74%)	0.75 (0.54, 1.02)	54 (7%)	748 (93%)	1.30 (0.68, 2.48)
Race						
White	342 (25%)	1036 (75%)	Referent	75 (5%)	1299 (95%)	Referent
Asian/Native Hawaiian/Other Pacific Islander	15 (48%)	16 (52%)	2.84 (1.38, 5.80)	2 (7%)	27 (93%)	1.28 (0.29, 5.49)
Black	37 (47%)	41 (53%)	2.73 (1.72, 4.33)	10 (14%)	63 (86%)	2.74 (1.36, 5.57)
Hispanic/Latino	48 (38%)	77 (62%)	1.89 (1.29, 2.76)	12 (10%)	113 (90%)	1.83 (0.97, 3.48)
Other/Multiple	24 (44%)	31 (56%)	2.34 (1.36, 4.05)	4 (7%)	50 (93%)	1.39 (0.49, 2.94)
Education						
HS Diploma or Equivalent or Less	28 (26%)	79 (74%)	Referent	10 (9%)	99 (90%)	Referent
Some College or Technical Degree	113 (26%)	321 (74%)	0.99 (0.61, 1.60)	35 (8%)	388 (92%)	0.89 (0.42, 1.86)
College Degree or Post Graduate	332 (29%)	815 (71%)	1.15 (0.73 1.80)	63 (6%)	1081 (94%)	0.57 (0.28, 1.15)
Income (Yearly)						
0 to $19,999 annually (0 to $1667 monthly)	56 (35%)	102 (65%)	Referent	16 (10%)%	144 (90%)	Referent
$20,000 to $39,999 annually ($1668 to $3333 monthly)	83 (35%)	154 (65%)	0.98 (0.64, 1.49)	19 (8%)	208 (92%)	0.82 (0.40, 1.65)
$40,000 to $74,999 annually ($3334 to $6250 monthly)	121 (30%)	282 (70%)	0.78 (0.52, 1.15)	31 (8%)	368 (92%)	0.75 (0.40, 1.42)
$75,000 or more annually ($6251 or more monthly)	180 (24%)	582 (76%)	0.56 (0.39 0.81)	31 (4%)	732 (96%)	0.38 (0.20, 0.71)
Partners						
None	30 (18%)	138 (82%)	Referent	12 (7%)	158 (93%)	Referent
1	121 (25%)	363 (75%)	1.53 (0.98, 2.39)	26 (5%)	459 (95%)	0.74 (0.36, 1.51)
2	48 (30%)	115 (70%)	1.96 (1.16, 3.28)	10 (6%)	152 (94%)	0.86 (0.36, 2.06)
3	42 (30%)	97 (70%)	1.99 (1.16, 3.40)	12 (9%)	124 (91%)	1.27 (0.55, 2.93)
4+	206 (32%)	446 (68%)	2.12 (1.38, 3.25)	40 (6%)	603 (94%)	0.87 (0.44, 1.70)
HIV Test in last 12 Months						
No	247 (24%)	783 (76%)	Referent	67 (6%)	957 (94%)	Referent
Yes	228 (34%)	436 (66%)	1.64 (1.32, 2.04)	42 (6%)	620 (94%)	0.97 (0.65, 1.44)
Condomless Sex in last 12 Months						
No	215 (25%)	635 (75%)	Referent	57 (7%)	792 (93%)	Referent
Yes	260 (31%)	587 (69%)	1.30 (1.05, 1.61)	52 (6%)	785 (94%)	0.92 (0.62, 1.36)
STI Test in last 12 Months						
No	96 (26%)	273 (74%)	Referent	21 (6%)	348 (94%)	Referent
Yes	60 (32%)	130 (68%)	1.31 (0.89, 1.92)	12 (6%)	177 (94%)	1.12 (0.54, 2.33)

* N is sum of those who answered Rarely, Sometimes, Often, or Very Often in response to how often they had seen particular program.

Table 3: Demographics for *Reasons* and *PROTEST* within Targeted Cities of *Reasons* Campaign

	Reasons			PROTEST (Within Reasons Targeted Citites)		
	Aware (N=147)*	Unaware (N=1104)	OR (95% CI)	Aware (N=86)*	Unaware (N=1155)	OR (95% CI)
Age						
18-24	15 (8%)	166 (92%)	Referent	10 (6%)	166 (94%)	Referent
25-34	25 (9%)	263 (91%)	1.05 (0.54, 2.05)	21 (7%)	266 (93%%)	0.76 (0.35, 1.66)
35-44	24 (11%)	197 (89%)	1.35 (0.68, 2.65)	11 (5%)	208 (95%)	1.13 (0.47, 2.74)
45+	183 (15%)	478 (85%)	1.92 (1.08, 3.42)	44 (8%)	515 (92%)	0.70 (0.34, 1.43)
Race						
White	107 (11%)	888 (89%)	Referent	57 (6%)	932 (94%)	Referent
Asian/Native Hawaiian/Other Pacific Islander	4 (13%)	26 (87%)	1.28 (0.43, 3.72)	2 (7%)	26 (93%)	1.25 (0.29, 5.43)
Black	7 (14%)	42 (86%)	1.38 (0.60, 3.15)	7 (15%)	41 (85%)	2.79 (1.19, 6.49)
Hispanic/Latino	21 (18%)	96 (82%)	1.81 (1.08, 3.03)	12 (10%)	104 (90%)	1.88 (0.98, 3.63)
Other/Multiple	5 (13%)	34 (87%)	1.22 (0.47, 3.19)	3 (8%)	36 (93%)	1.36 (0.41, 4.56)
Education						
HS Diploma or Equivalent or Less	9 (13%)	61 (87%)	Referent	8 (11%)	62 (89%)	Referent
Some College or Technical Degree	42 (13%)	283 (87%)	1.01 (0.46, 2.17)	27 (8%)	292 (92%)	0.71 (0.31, 1.65)
College Degree or Post Graduate	95 (11%)	755 (89%)	0.85 (0.41, 1.77)	50 (6%)	796 (94%)	0.48 (0.22, 1.07)
Income (Yearly)						
0 to $19,999 annually (0 to $1667 monthly)	16 (14%)	99 (86%)	Referent	15 (13%)	102 (87%)	Referent
$20,000 to $39,999 annually ($1668 to $3333 monthly)	28 (17%)	137 (83%)	1.26 (0.64, 2.46)	14 (9%)	146 (91%)	0.65 (0.30, 1.40)
$40,000 to $74,999 annually ($3334 to $6250 monthly)	38 (13%)	253 (87%)	0.92 (0.49, 1.74)	24 (8%)	262 (92%)	0.62 (0.31, 1.23)
$75,000 or more annually ($6251 or more monthly)	50 (9%)	522 (91%)	0.59 (0.32, 1.08)	23 (4%)	549 (96%)	0.28 (0.14, 0.56)
Partners						
None	15 (14%)	95 (86%)	Referent	10 (9%)	102 (91%)	Referent
1	35 (10%)	313 (90%)	0.70 (0.37, 1.35)	21 (6%)	328 (94%)	0.65 (0.29, 1.43)
2	18 (15%)	102 (85%)	1.11 (0.53, 2.34)	9 (8%)	110 (92%)	0.83 (0.32, 2.13)
3	11 (11%)	92 (89%)	0.75 (0.33, 1.73)	7 (7%)	94 (93%)	0.75 (0.27, 2.07)
4+	57 (11%)	441 (89%)	0.81 (0.44, 1.50)	31 (6%)	457 (94%)	0.69 (0.32, 1.45)
HIV Test in last 12 Months						
No	79 (11%)	654 (89%)	Referent	50 (7%)	676 (9350	Referent
Yes	68 (13%)	450 (87%)	1.25 (0.88, 1.76)	36 (7%)	479 (93%)	1.01 (0.65, 1.58)
Condomless Sex in last 12 Months						
No	75 (12%)	72 (11%)	Referent	44 (7%)	570 (93%)	Referent
Yes	540 (88%)	564 (89%)	0.91 (0.65, 1.29)	42 (7%)	585 (93%)	0.93 (0.60, 1.44)
STI Test in last 12 Months						
No	32 (12%)	230 (88%)	Referent	13 (5%)	247 (95%)	Referent
Yes	15 (10%)	134 (89%)	0.80 (0.42, 1.54)	8 (5%)	141 (95%)	1.07 (0.43, 2.66)

* N is sum of those who answered Rarely, Sometimes, Often, or Very Often in response to how often they had seen particular program.

Table 4: Demographics for *TMUS* and *PROTEST* Within Non-Targeted Cities of *TMUS* Campaign

	Testing Makes Us Stronger			PROTEST (Within Testing Targeted Cities)		
	Aware (N=1672)*	Unaware (N=6107)	OR (95% CI)	Aware (N=408)*	Unaware (N=7318)	OR (95% CI)
Age						
18-24	235 (19%)	1036 (81%)	Referent	82 (6%)	1192 (94%)	Referent
25-34	354 (22%)	1237 (78%)	1.26 (1.05, 1.52)	76 (5%)	1523 (95%)	0.72 (0.52, 1.00)
35-44	252 (23%)	830 (77%)	1.34 (1.10, 1.63)	76 (7%)	1005 (93%)	1.09 (0.79, 1.51)
45+	831 (22%)	3004 (78%)	1.22 (1.04, 1.43)	246 (6%)	3598 (94%)	0.99 (0.76, 1.28)
Race						
White	1312 (20%)	5125 (80%)	Referent	346 (5%)	6099 (95%)	Referent
Asian/Native Hawaiian/Other Pacific Islander	44 (28%)	112 (72%)	1.53 (1.07, 2.18)	10 (6%)	144 (94%)	1.22 (0.63, 2.34)
Black	65 (40%)	99 (60%)	2.56 (1.86, 3.52)	24 (14%)	143 (86%)	2.95 (1.89, 4.61)
Hispanic/Latino	143 (26%)	417 (74%)	1.33 (1.09, 1.63)	58 (10%)	504 (90%)	2.03 (1.51, 2.71)
Other/Multiple	70 (22%)	247 (78%)	1.11 (0.84, 1.45)	26 (8%)	296 (92%)	1.55 (1.02, 2.34)
Education						
HS Diploma or Equivalent or Less	197 (23%)	676 (77%)	Referent	90 (10%)	778 (90%)	Referent
Some College or Technical Degree	567 (22%)	2002 (78%)	0.97 (0.81, 1.17)	204 (8%)	2365 (92%)	0.74 (0.57, 0.96)
College Degree or Post Graduate	897 (21%)	3391 (79%)	0.91 (0.76, 1.08)	180 (4%)	4134 (96%)	0.37 (0.28, 0.49)
Income (Yearly)						
0 to $19,999 annually (0 to $1667 monthly)	245 (21%)	905 (79%)	Referent	96 (8%)	1058 (92%)	Referent
$20,000 to $39,999 annually ($1668 to $3333 monthly)	375 (24%)	1208 (76%)	1.14 (0.95, 1.37)	131 (8%)	1453 (92%)	0.99 (0.75, 1.30)
$40,000 to $74,999 annually ($3334 to $6250 monthly)	419 (21%)	1563 (79%)	0.99 (0.82, 1.18)	113 (6%)	1875 (94%)	0.66 (0.50, 0.88)
$75,000 or more annually ($6251 or more monthly)	502 (20%)	1955 (80%)	0.94 (0.79, 1.12)	91 (4%)	2367 (96%)	0.42 (0.31, 0.56)
Partners						
None	204 (18%)	909 (82%)	Referent	78 (7%)	1032 (93%)	Referent
1	472 (21%)	1817 (79%)	1.15 (0.96, 1.38)	141 (6%)	2152 (94%)	0.86 (0.65, 1.15)
2	163 (20%)	638 (80%)	1.13 (0.90, 1.43)	53 (7%)	754 (93%)	0.93 (0.64, 1.33)
3	143 (22%)	506 (78%)	1.25 (0.99, 1.60)	42 (6%)	610 (94%)	0.91 (0.61, 1.34)
4+	608 (24%)	1934 (76%)	1.40 (1.17, 1.67)	132 (5%)	2412 (95%)	0.72 (0.54, 0.96)
HIV Test in last 12 Months						
No	1010 (19%)	4201 (81%)	Referent	315 (6%)	4913 (94%)	Referent
Yes	662 (26%)	1906 (74%)	1.44 (1.29, 1.61)	165 (6%)	2405 (94%)	1.07 (0.88, 1.29)
Condomless Sex in last 12 Months						
No	850 (21%)	3152 (79%)	Referent	263 (7%)	3757 (94%)	Referent
Yes	822 (22%)	2955 (78%)	1.03 (0.92, 1.14)	217 (6%)	3561 (94%)	0.87 (0.72, 1.04)
STI Test in last 12 Months						
No	356 (19%)	1507 (81%)	Referent	91 (5%)	1779 (95%)	Referent
Yes	196 (29%)	482 971%)	1.72 (1.40, 2.10)	50 (7%)	627 (93%)	1.56 (1.09, 2.22)

* N is sum of those who answered Rarely, Sometimes, Often, or Very Often in response to how often they had seen particular program.

Table 5: Demographics for *Reasons* and *PROTEST* Within Non-Targeted Cities of *Reasons* Campaign

	Reasons			PROTEST (Within Reasons Targeted Cities)		
	Aware (N=905)*	Unaware (N=7305)	OR (95% CI)	Aware (N=503)*	Unaware (N=7740)	OR (95% CI)
Age						
18-24	114 (9%)	1209 (91%)	Referent	84 (6%)	1243 (94%)	Referent
25-34	177 (11%)	1485 (89%)	1.26 (0.99, 1.62)	80 (5%)	1594 (95%)	0.74 (0.54, 1.01)
35-44	135 (12%)	1020 (88%)	1.40 (1.08, 1.82)	83 (6%)	1072 (93%)	1.14 (0.83, 1.56)
45+	479 (12%)	3591 (88%)	1.41 (1.14, 1.75)	256 (6%)	3831 (94%)	0.98 (0.76, 1.27)
Race						
White	705 (10%)	6098 (90%)	Referent	364 (5%)	6466 (95%)	Referent
Asian/Native Hawaiian/Other Pacific Islander	17 (11%)	141 (89%)	1.04 (0.62, 1.73)	10 (6%)	145 (94%)	1.22 (0.63, 2.34)
Black	41 (21%)	152 (79%)	2.33 (1.63, 3.32)	27 (14%)	165 (86%)	2.90 (1.90, 4.42)
Hispanic/Latino	88 (15%)	482 (85%)	1.57 (1.24, 2.00)	58 (10%)	513 (90%)	2.00 (1.50, 2.68)
Other/Multiple	34 (10%)	298 (90%)	0.99 (0.69, 1.42)	27 (8%)	310 (92%)	1.55 (1.03, 2.33)
Education						
HS Diploma or Equivalent or Less	138 (15%)	765 (85%)	Referent	92 (10%)	2461 (92%)	Referent
Some College or Technical Degree	336 (13%)	2330 (87%)	0.79 (0.64, 0.99)	212 (8%)	2461 (92%)	0.76 (0.59, 0.98)
College Degree or Post Graduate	423 (9%)	4166 (91%)	0.56 (0.46, 0.69)	193 (4%)	4419 (96%)	0.38 (0.29, 0.50)
Income (Yearly)						
0 to $19,999 annually (0 to $1667 monthly)	128 (11%)	1061 (89%)	Referent	97 (8%)	1100 (92%)	Referent
$20,000 to $39,999 annually ($1668 to $3333 monthly)	229 (14%)	1414 (86%)	1.34 (1.06, 1.69)	136 (8%)	1515 (93%)	1.01 (0.77, 1.33)
$40,000 to $74,999 annually ($3334 to $6250 monthly)	226 (11%)	1870 (89%)	1.00 (0.79, 1.26)	120 (6%)	1981 (94%)	0.68 (0.52, 0.90)
$75,000 or more annually ($6251 or more monthly)	247 (9%)	2397 (91%)	0.85 (0.68, 1.07)	99 (4%)	2550 (96%)	0.44 (0.32, 0.58)
Partners						
None	136 (12%)	1032 (88%)	Referent	80 (7%)	1088 (93%)	Referent
1	263 (11%)	2163 (89%)	0.92 (0.74, 1.149)	146 (6%)	2283 (94%)	0.86 (0.65, 1.15)
2	97 (12%)	753 (88%)	0.97 (0.74, 1.28)	54 (6%)	796 (94%)	0.92 (0.64, 1.31)
3	69 (10%)	609 (90%)	0.85 (0.63, 1.16)	47 (7%)	640 (93%)	0.99 (0.68, 1.45)
4+	285 (11%)	2408 (89%)	0.89 (0.72, 1.11)	141 (5%)	2558 (95%)	0.74 (0.56, 0.99)
HIV Test in last 12 Months						
No	588 (11%)	4904 (89%)	Referent	332 (6%)	5194 (94%)	Referent
Yes	317 (12%)	2401 (88%)	1.10 (0.95, 1.27)	171 (6%)	2546 (94%)	1.05 (0.86, 1.27)
Condomless Sex in last 12 Months						
No	498 (12%)	3731 (88%)	Referent	276 (6%)	3979 (94%)	Referent
Yes	407 (10%)	3574 (90%)	0.85 (0.74, 0.98)	227 (6%)	3761 (94%)	0.87 (0.72, 1.04)
STI Test in last 12 Months						
No	196 (10%)	1776 (90%)	Referent	99 (5%)	1880 (95%)	Referent
Yes	104 (14%)	621 (86%)	1.51 (1.17, 1.95)	54 (8%)	663 (92%)	1.54 (1.09, 2.18)

* N is sum of those who answered Rarely, Sometimes, Often, or Very Often in response to how often they had seen particular program.

Table 6: Model Results for *TMUS* Awareness Predictors

N=8187

Variable	Odds Ratio	95% CI
HIV Test in Last 12 Months		
No	Referent	
Yes	1.41	1.26, 1.57
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.71	1.21, 2.43
Black	2.49	1.86, 3.32
Hispanic/Latino	1.43	1.18, 1.74
Other	1.38	0.99, 1.66
Age		
18-24	Referent	
25-34	1.19	0.99, 1.44
35-44	1.29	1.06, 1.59
45+	1.32	1.11, 1.57
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.04	0.87, 1.25
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.92	0.77, 1.09
$75,000 or more annually ($6251 or more monthly)	0.84	0.71, 0.99
Partners		
None	Referent	
1	1.18	0.98, 1.41
2	1.14	0.91, 1.43
3	1.26	0.99, 1.59
4+	1.34	1.12, 1.61

CI: Confidence interval

Table 7: Model Results for *TMUS* Awareness Predictors in Targeted Cities

N=1531

Variable	Odds Ratio	95% CI
HIV Test in Last 12 Months		
No	Referent	
Yes	1.63	1.29, 2.05
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	2.94	1.33, 6.48
Black	2.21	1.34, 3.63
Hispanic/Latino	1.69	1.13, 2.55
Other	2.33	1.33, 4.06
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	0.98	0.63, 1.51
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.85	0.57 1.27
$75,000 or more annually ($6251 or more monthly)	0.62	0.42, 0.91
Condomless Sex in last 12 Months		
No	Referent	
Yes	1.33	1.07, 1.68

CI: Confidence interval

Table 8: Model Results for *TMUS* Awareness Predictors

N=7258

Variable	Odds Ratio	95% CI
HIV Test in Last 12 Months		
No	Referent	
Yes	1.37	1.21, 1.55
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.48	1.02, 2.14
Black	2.58	1.85, 3.60
Hispanic/Latino	1.39	1.13, 1.71
Other	1.15	0.87, 1.51
Age		
18-24	Referent	
25-34	1.21	0.99, 1.47
35-44	1.38	1.12, 1.69
45+	1.35	1.14, 1.60
Partners		
None	Referent	
1	1.14	0.95, 1.38
2	1.08	0.85, 1.37
3	1.19	0.93, 1.53
4+	1.27	1.05, 1.53

CI: Confidence interval

Table 9: Model Results for *Reasons* Awareness Predictors

N=8529		
Variable	**Odds Ratio**	**95% CI**
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.29	0.79, 2.14
Black	2.31	1.64, 3.26
Hispanic/Latino	1.83	1.45, 2.31
Other	0.96	0.67, 1.38
Age		
18-24	Referent	
25-34	1.44	1.10, 1.87
35-44	1.68	1.27, 2.23
45+	1.93	1.52, 2.45
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.33	1.06, 1.67
$40,000 to $74,999 annually ($3334 to $6250 monthly)	1.03	0.82, 1.67
$75,000 or more annually ($6251 or more monthly)	0.88	0.70, 1.11
Education		
HS Diploma or Equivalent or Less	Referent	
Some College or Technical Degree	0.86	0.69, 1.08
College Degree or Post Graduate	0.62	0.50, 0.78
CI: Confidence interval		

Table 10: Model Results for *Reasons* Awareness Predictors in Targeted Cities

N=1230		
Variable	**Odds Ratio**	**95% CI**
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.57	0.45, 5.49
Black	1.63	0.69, 3.87
Hispanic/Latino	2.11	1.21, 3.70
Other	1.35	0.50, 3.61
Age		
18-24	Referent	
25-34	1.35	0.62, 2.92
35-44	2.17	0.97, 4.85
45+	3.06	1.50, 6.24
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.14	0.57, 2.26
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.79	0.40, 1.54
$75,000 or more annually ($6251 or more monthly)	0.47	0.34, 0.89
CI: Confidence interval		

Table 11: Model Results for *Reasons* Awareness

N=7410		
Variable	**Odds Ratio**	**95% CI**
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.25	0.72, 2.16
Black	2.68	1.70, 3.62
Hispanic/Latino	1.77	1.37, 2.29
Other	0.92	0.62, 1.36
Age		
18-24	Referent	
25-34	1.46	1.10, 1.94
35-44	1.64	1.21, 2.21
45+	1.82	1.41, 2.37
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.35	1.06, 1.72
$40,000 to $74,999 annually ($3334 to $6250 monthly)	1.06	0.83, 1.35
$75,000 or more annually ($6251 or more monthly)	0.96	0.75, 1.23
Education		
HS Diploma or Equivalent or Less	Referent	
Some College or Technical Degree	0.84	0.66, 1.07
College Degree or Post Graduate	0.58	0.46, 0.73
CI: Confidence interval		

Tale 12: Model Results for PROTEST Awareness Predictors		
N=8545		
Variable	**Odds Ratio**	**95% CI**
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.61	0.83, 3.10
Black	3.05	2.04, 4.57
Hispanic/Latino	2.18	1.63, 2.92
Other	1.44	0.95, 2.17
Age		
18-24	Referent	
25-34	1.19	0.84, 1.68
35-44	1.93	1.36, 2.75
45+	1.92	1.42, 2.61
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.01	0.77, 1.32
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.76	0.58, 1.01
$75,000 or more annually ($6251 or more monthly)	0.48	0.36, 0.65
Education		
HS Diploma or Equivalent or Less	Referent	
Some College or Technical Degree	0.85	0.65, 1.12
College Degree or Post Graduate	0.53	0.40, 0.70
CI: Confidence interval		

Table 13: Model Results for *PROTEST* Awareness Predictors in *TMUS* Targeted Cities

N=1520

Variable	Odds Ratio	95% CI
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	0.95	0.12, 7.30
Black	2.49	1.15, 5.40
Hispanic/Latino	1.83	0.91, 3.63
Other	1.45	0.50, 4.21
Age		
18-24	Referent	
25-34	2.63	1.03, 6.74
35-44	3.44	1.29, 9.19
45+	3.15	1.23, 7.83
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	0.73	0.36, 1.49
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.62	0.31, 1.20
$75,000 or more annually ($6251 or more monthly)	0.29	0.15, 0.58

CI: Confidence interval

Table 14: Model Results for *PROTEST* Awareness Predictors in *TMUS* Non-Targeted Cities

N=7032

Variable	Odds Ratio	95% CI
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.76	0.88, 3.54
Black	3.22	2.00, 5.20
Hispanic/Latino	2.28	1.66, 3.15
Other	1.47	0.94, 2.30
Age		
18-24	Referent	
25-34	1.02	0.70, 1.49
35-44	1.77	1.21, 2.59
45+	1.82	1.31, 2.51
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.07	0.80, 1.43
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.77	0.57, 1.05
$75,000 or more annually ($6251 or more monthly)	0.53	0.38, 0.73
Education		
HS Diploma or Equivalent or Less	Referent	
Some College or Technical Degree	0.86	0.64 ,1.15
College Degree or Post Graduate	0.48	0.35, 0.66

CI: Confidence interval

Table 15: Model Results for *PROTEST* Awareness Predictors in *Reasons* Targeted Cities

N=1115

Variable	Odds Ratio	Confidence Limits
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	0.95	0.12, 7.41
Black	2.77	1.12, 6.86
Hispanic/Latino	1.86	0.90, 3.83
Other	1.63	0.47, 5.62
Age		
18-24	Referent	
25-34	2.92	1.02, 8.35
35-44	3.19	1.02, 10.02
45+	4.18	1.51, 11.60
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	0.56	0.25, 1.25
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.47	0.22, 0.99
$75,000 or more annually ($6251 or more monthly)	0.21	0.10, 0.48

CI: Confidence interval

Table 16: Model Results for *PROTEST* Awareness Predictors in *Reasons* Non-Targeted Cities

N=7434

Variable	Odds Ratio	Confidence Limits
Race		
White	Referent	
Asian/Native Hawaiian/Other Pacific Islander	1.73	0.86, 3.47
Black	3.01	1.91, 4.75
Hispanic/Latino	2.23	1.63, 3.08
Other	1.45	0.94, 2.25
Age		
18-24	Referent	
25-34	1.05	0.72, 1.53
35-44	1.85	1.28, 2.69
45+	1.78	1.29, 2.45
Income		
0 to $19,999 annually (0 to $1667 monthly)	Referent	
$20,000 to $39,999 annually ($1668 to $3333 monthly)	1.09	0.82, 1.45
$40,000 to $74,999 annually ($3334 to $6250 monthly)	0.81	0.59, 1.09
$75,000 or more annually ($6251 or more monthly)	0.54	0.39, 0.75
Education		
HS Diploma or Equivalent or Less	Referent	
Some College or Technical Degree	0.87	0.65, 1.61
College Degree or Post Graduate	0.49	0.36, 0.66