

# Adult Cessation Media Evaluation: FY-CY 2012

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## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>I</b>
<b>INTRODUCTION TO THE CONNECTICUT QUITLINE CESSATION MEDIA EVALUATION .....</b>	<b>1</b>
ABOUT THE INITIATIVE.....	1
The Media Campaign.....	1
The Connecticut Quitline.....	1
Evaluation of the Campaign.....	1
ABOUT THIS REPORT .....	2
Report Content and Organization .....	2
Methodology .....	3
Limitations .....	4
<b>QUITLINE REACH.....</b>	<b>5</b>
INTRODUCTION .....	5
Methodology.....	5
Limitations .....	5
RESULTS.....	7
FY 2012 Promotional Reach.....	7
FY 2012 Treatment Reach.....	8
ENROLLMENT OVER TIME.....	9
CONCLUSIONS .....	10
<b>MEDIA IMPLEMENTATION .....</b>	<b>11</b>
MEDIA BUDGET.....	11
DESCRIPTION OF CONNECTICUT MEDIA IMPLEMENTATION .....	12
Introduction.....	12
CAMPAIGN INTENSITY .....	17
Overall Strength of ad buys .....	17
Comparison of ad buys to recommend intensity levels .....	19
CONCLUSIONS .....	20
<b>MEDIA IMPACT ON QUITLINE REGISTRATIONS .....</b>	<b>22</b>
INTRODUCTION .....	22
Methodology .....	22
Data Sources .....	22
Limitations .....	23
Analyses.....	23
RESULTS.....	28
Model Success .....	28

Media Impact on Total Registrations and Hispanic Registrations.....	29
Interpretation.....	31
CONCLUSIONS .....	33
<b>APPENDIX – END CARD TAGS.....</b>	<b>34</b>

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# Executive Summary

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The Connecticut Department of Public Health (CT DPH) has funded a tobacco control counter-marketing campaign with the goals of increasing tobacco cessation among adults, and preventing use among youth and young adults. In FY 2010 and FY 2011, the majority of the media budget was allocated to a prevention campaign, which used a contest format to solicit self-produced anti-tobacco advertisements from youth and young adults. Winning ads were chosen through a combination of expert panel selection and public voting. The winning spots were placed online and on broadcast and cable television. In FY-CY 2012, the prevention campaign saw a significant reduction in funding as dollars shifted to the adult cessation media campaign.

The adult cessation media campaign was originally designed to supplement an existing tobacco cessation campaign known as “Become an EX” which was developed and funded by the American Legacy Foundation (Legacy) and was active in Connecticut from 2009-2010. The purpose of the campaign was to encourage tobacco users to quit tobacco, and to connect them to cessation resources including the DPH-funded Connecticut Quitline. In FY-CY 2012, the cessation campaign was modified to include different how-to-quit and why-to-quit messages and to more directly promote the Quitline.

PDA is conducting three evaluation studies to assess the effectiveness of the tobacco control counter-marketing campaign. This report presents findings from the third of these studies: an exploration of the extent to which the cessation media buys are associated with increased Quitline registrations. This report will cover the cessation media effort from September 2011 to December 2012, and will describe the media’s impact on Quitline registrations. In the report, we label the period of September 2011-December 2012 as FY-CY 2012. Because this is the last of the three reports, PDA aimed to provide as comprehensive of an evaluation as possible and so extended the time period for this report through the end of the 2012 calendar year. The section on Quitline reach, however, is only for FY 2012, and does not extend to the end of the calendar year.

## Key Findings

**Quitline reach.** In FY12, The Connecticut Quitline served a total of 9,600 tobacco users. The Quitline attained a promotional reach of approximately 2.02% of cigarette users in the state; approximately 20 out of every 1,000 smokers in the state called the Quitline last year. The FY 2012 reach figure is substantially higher than the average reach achieved by quitlines nationwide (approximately 1%), though significantly lower than the target reach suggested by the CDC (8%). It is understandable that Connecticut’s Quitline reach did not approach CDC’s benchmarks. The benchmarks are based on media spending of \$2.00 per capita for health communications; in contrast, Connecticut spent an estimated \$0.095 per capita in FY 2012. Given the relatively high reach rate in CT and relatively low per person media expenditure, it appears that CT had a very efficient return on the dollar, over 5 times what the CDC is proposing. We recommend that the DPH continue to explore strategies to increase Quitline reach within the budget available, including increasing referrals from physicians, increasing the cigarette tax, and ensuring any additional dollars generated through tobacco tax increases are directed toward the CT Quitline operations and media promotion.

Another measure of quitline quality is treatment reach. Treatment reach indicates the potential impact of the Quitline, as those who receive at least minimal treatment are expected to have a greater chance of quitting and potentially impacting state prevalence. The Connecticut Quitline reached approximately 1.62% of cigarette smokers in the state, with a 95% confidence interval of 1.50% to 1.76%. Therefore, approximately 16 out of every 1,000 cigarette smokers in the state received counseling via the Quitline in FY 2012. Overall, this is a very positive finding for the campaign. However, approximately 15% of callers who register with the Quitline did not receive a minimal level of treatment; the extent to which the Quitline vendor could provide counseling to these individuals would be likely to increase the number of quitters in Connecticut even more and potentially impact state prevalence.

We also calculated the overall number of callers to the quitline, and the number of quitline callers receiving evidenced-based treatment over time. In FY 2010, 3,611 callers called the quitline, and 3,085 of them received evidence-based treatment. 85.4% of all callers received treatment in FY 2010. In FY 2011, the number of callers to the quitline (6,040) and callers receiving evidenced-based treatment (4,877) both increased, although the percentage of callers receiving treatment decreased to 80.7%. In FY 2012, the number of callers to the quitline (9,600) and callers receiving treatment again increased (7,685). Overall, this is a very positive finding for the campaign. Registrations nearly tripled between FY 2010 and FY 2012, and showed a steady increase from year to year. This suggests that CT DPH's media is having a tangible effect on the number of callers to the quitline.

**Media implementation.** There were two overarching media efforts funded by CT DPH that may have helped connect tobacco users to cessation resources. The first was the adult cessation media campaign, which included broadcast and cable television, online ads, a Facebook page, paid internet search results, and out-of-home advertisements. The television, online and paid search ads were primarily English language ads, but each included some Spanish language placements. This campaign is the primary focus of this report. The second media effort funded by the CT DPH was a prevention campaign, which consisted of the prevention contest and the placement of winning spots. The prevention campaign delivered anti-tobacco messages, but the messages were directed primarily toward youth, although they did tag the Quitline. The majority of the Connecticut DPH overall media budget in FY-CY 2012 was devoted to cessation among adults (\$210,800), with a smaller portion allocated to promoting prevention among youth and young adults (\$65,568). Additionally, the CDC placed ads in Connecticut DMAs as part of the national "Tips" campaign. These ads focused on the dangers of smoking and tagged the 1-800-QUIT-NOW telephone number, which funnels CT residents to the CT Quitline. Finally, CT DPH tagged ads from their Secondhand Smoke (SHS) campaign with the Quitline.

The strength of the cessation buy was greatly increased from 2011 to 2012 as dollars were shifted from the prevention to cessation campaigns. The increase in intensity and the longer timespan of the campaign are likely the primary reasons why promotional reach increased from FY 11 to FY 12. Connecticut residents were exposed to cessation ads at a higher frequency and for a longer amount of time in FY-CY 12, and this is reflected in increased registration numbers. We recommend continuing to allocate the majority of dollars to cessation rather than prevention, as this shift may be contributing to increased reach rates. We also strongly recommend continuing to tag all media with the Quitline number.

Additionally, we commend CT DPH for promoting the Quitline in social media through their Facebook page, and recommend a continuation of this strategy. It is paramount, however, that

CT DPH monitor the page closely to ensure that they “control the message.” The impact of pro-tobacco posts or ads could be significant, and thus it is critical to closely monitor the page.

Finally, CT DPH has been running highly emotional appeals in their advertising. These types of ads have been shown to be rated more highly on recall, memory, and conversation, and we recommend continuing to air such ads whenever possible.

**Overall Strength of ad buys.** The strength of the cessation buy was greatly increased from FY 2011 to FY-CY 2012. The increase in intensity and the longer timespan of the campaign are likely the primary reasons why Quitline reach had a sizable increase. Connecticut residents were exposed to cessation ads at a greater frequency, and for a much longer period of time in FY-CY 12. CT DPH and Cronin & Company should be commended for improving the strength of the media buy and making a greater commitment to cessation.

The intensity levels of the CT DPH cessation ads met the benchmark for quarterly TRP levels and fell just short of the benchmark for four-week GRP levels for FY-CY 2012. CT DPH should be commended on maintaining a steady level of GRPs for the cessation campaign. The prevention contest and winning spots campaigns fell short of the intensity levels that have been shown to be effective elsewhere, both in terms of quarterly and 4-week TRP levels. However, given that this was not a primary focus for CT DPH in FY-CY 2012, this is to be expected. We recommend continuing to air ads on a continuous schedule, and allocating as many dollars as possible to cessation such that ad buys can come as close as possible to meeting recommended levels.

**Relationship between media and Quitline registrations.** Analyses were conducted to determine the relationship between each media campaign component and Quitline registrations. Three factors stood out as having a significant and meaningful effect on increasing Quitline registrations. First, the cessation broadcast campaign significantly impacted registrations for those ages 18 and older, and the effect was positive and moderate. Second, the SHS radio spots were associated with increased registrations for ages 18 and older, and the effect was positive and moderate. Finally, the Facebook cessation ad clicks were associated with increased registrations among the target audience, but the impact was small. None of the cessation components (broadcast, online ads, or paid search) had a large impact on registrations for this target audience.

We conclude that the cessation media campaign successfully connected tobacco users to the Quitline and contributed to an increase in the number of people served by the interventions. However, the impact of the media campaigns on registrations is modest, despite the larger investment in cessation media compared to past years.

**In summary,** the CT Quitline has experienced a substantial increase in the number of people served in the state, and reach among cigarette smokers in the state is higher than national averages. The current media plan shows a refined effort to make the most out of the budget, including a shifting of dollars from prevention to cessation, a commitment to tagging all media, a Facebook page, and a continuous and prolonged media buy. Recommendations for refining the media plan include continuing to tag all media, moderating the Facebook page, and a focus on running emotionally provocative ads. Overall, CT DPH should be commended on a sound media strategy, which is reflected in high reach numbers and increased Quitline registrations.

# Introduction to the Connecticut Quitline Cessation Media Evaluation

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## About the Initiative

### The Media Campaign

The CT DPH has funded a tobacco control counter-marketing campaign with the goals of preventing tobacco use among youth and young adults, and increasing cessation among adults. The main focus of the media effort was on prevention for FY 2010 and FY 2011; 75% of the media budget for those two years was allocated to prevention and 25% to cessation. For FY-CY 2012, these percentages changed conversely; approximately 75% of the media budget was allocated for cessation and 25% to prevention. The prevention campaign used a contest format to solicit self-produced anti-tobacco advertisements from youth and young adults. Winning ads were chosen through a combination of expert panel selection and public voting. The winning spots were placed online, on broadcast and cable television, and in print ads.

The purpose of the adult cessation campaign was to encourage tobacco users to quit tobacco, give some guidance on how to quit, and drive viewers to online resources where they could obtain information and support for quitting. In addition, the DPH added tags to all of the ads directing viewers to the Quitline—a change from FY 2010 and FY 2011. The DPH purchased existing ads from this campaign, and from 2011-2012 placed them on broadcast and cable television, as well as online.

### The Connecticut Quitline

The Connecticut Quitline is a service provided to all residents in the state who seek information about quitting tobacco, or who would like to receive materials and counseling to personally quit or stay quit. The service is provided all days of the week, 24-hours a day, and counselors are available who are fluent in English, Spanish, and other languages. For those who choose counseling, up to five telephone coaching sessions are available, along with access to an interactive web-based smoking cessation website, home mailings of educational materials, and referral to support groups in the community. Free nicotine replacement therapy (NRT patch, gum or lozenge) is provided to interested callers who meet eligibility requirements.

### Evaluation of the Campaign

From 2009-2013 Professional Data Analysts, Inc. (PDA) was funded by CT DPH to conduct three evaluation studies to assess the effectiveness of the tobacco control counter-marketing campaign. First, PDA conducted a process evaluation of the prevention media campaign to assess the extent to which selected ads and the media buys are in alignment with best practices in tobacco control, and provide guidance to the media contractor as the campaign is being implemented. Second, PDA completed an outcome evaluation of the prevention campaign utilizing a population-based survey to assess recognition and recall of the contest and winning

spots, as well as the extent to which the campaign is successful in changing attitudes about tobacco and other key outcomes. Finally, PDA conducted an outcome evaluation of the adult cessation media campaign, which is the subject of this report. This study explores the extent to which the cessation media buys are associated with increased enrollments in the Quitline, especially among target populations.

While the primary purpose of this evaluation is to examine the relationship between media and registrations, the purposes of the CT DPH cessation media campaign are two-fold: (1) connect tobacco users to cessation resources, including the CT Quitline, and (2) increase awareness of and influence social norms toward quitting. This evaluation study addresses only the first goal.

## **About this Report**

This report is the third of three planned reports on the effectiveness of the adult cessation media campaign. The first report, submitted in January 2011, presented preliminary findings from the analysis of cessation media buy effectiveness. At the time of the first report, the cessation media campaign was still in progress and complete media buy data were not yet available. The second report, submitted in October 2011, covered an evaluation of cessation media efforts over a period of about two years, May 2009 to September 2011, and described the media's impact on not just Quitline enrollments but BecomeAnEx.org website enrollments as well. Its purpose was to provide information for future improvement and decisions regarding media. The present report will cover cessation media efforts from September 2011 to December 2012 and will describe the media's impact on Quitline enrollments.

FY-CY 2012, for the purposes of this report, is defined as September 26, 2011-December 31, 2012. PDA received media data that began on September 26, 2011, and thus this report begins its evaluation at this point. Additionally, because this is the last of the three reports, PDA wanted to provide the most comprehensive analysis possible, and thus included data through calendar year 2012. Importantly, the Quitline Reach section uses the precise definition of FY 2012, rather than the definition described above, in reporting reach.

The primary audience for this report is the Connecticut Department of Public Health (DPH), so that staff responsible for current Quitline and media administration can reflect upon the previous campaign and apply lessons learned to upcoming media efforts. The evaluation may also provide early indications that resources spent on Quitline-related media are justified or not. Findings may be helpful in responding to Legislative and public inquiries about the current use of funds to support Quitline media. The PDA evaluation team welcomes comments, suggestions, and questions' regarding this report, as the intent is to make this information optimally useful to the DPH, the CT Tobacco and Health Trust Fund Board, and other identified stakeholders.

## **Report Content and Organization**

Evaluating the impact of this anti-tobacco media campaign is complex not only because of the multi-faceted nature of the media design, but also because the CT DPH media campaign coincided with other campaigns that used similar (sometimes identical) media. However, it is vital that DPH receive information on the extent that the media campaigns may have helped to connect tobacco users with cessation resources, namely the Quitline. Ultimately, increased calls to the CT Quitline may lead to decreased prevalence in tobacco use among Connecticut residents. Therefore, PDA conducted an outcomes analysis to examine the impact of media on CT Quitline registrations and reach.

This report contains three main sections. First, we describe the CT Quitline registrations and Quitline reach, which is the extent to which the Quitline has served all smokers in the state. Next, we describe the implementation of anti-tobacco media campaigns present in CT, including their budgets, purpose, timing, and intensity. Finally, we explore the relationship between the DPH-funded media and Quitline registrations.

## **Evaluation Design and Questions**

The purpose of this outcome evaluation is to determine the effectiveness of the cessation media campaign in generating calls to the CT Quitline. The study will answer these evaluation questions:

1. What are the promotional and treatment reach of the CT Quitline?
2. What was the nature of the media campaign and ads?
3. What was the intensity of the campaign, and how does this compare to targets set by the CDC?
4. To what extent are media campaign buys associated with increased enrollments in the Quitline?
5. Overall, what are successes and areas for improvement of the adult cessation media campaign outcomes? What are areas for programmatic changes?

Desired outcomes are increased Quitline enrollments among adults age 18 and older. In our analysis we examined adults 18 and older—the target audience for the campaign. The nature of results may inform future media buys.

## **Methodology**

The studies in this report are observational in nature and are based on call volume and caller-provided information collected by Alere Wellbeing, Inc., the Quitline vendor. Additionally, information on media campaigns was provided by Cronin and Company, the media vendor, as well as CT DPH.

PDA received media buy data from CT DPH and from the media vendor Cronin in PDF, rich text format, Word documents, and Excel documents. PDA imported data into the statistical software package SPSS for descriptive analysis. These data provide information about the timing of the media buys, the audience reached, and the intensity of the media effort. For broadcast and cable television, the data provided includes the target audience, gross rating points, station, affiliation, day, day part, time, program, duration of ad, reach, and frequency. PDA weighted the broadcast television data by population within each DMA, since the majority of the population lives within the Hartford/New Haven DMA. Online advertisement data files provide weekly impressions served, clicks, and click-through rates for each ad placed. Paid internet search files include weekly impressions, clicks, and click through rates. For print media, daily impressions were provided.

Analyses were conducted using Excel and the statistical software package SPSS. Descriptive statistics and regression modeling were conducted. Reach was calculated based on Quitline registrations divided by population estimates of smoking using the 2011 Connecticut Behavioral Risk Factor Surveillance System (BRFSS), according to standards set by the North American

Quitline Consortium (NAQC). More detailed descriptions of study methodologies may be found in each of the respective study sections below.

## **Limitations**

First, this study is limited by several methodological factors. Since this study is observational and not a controlled, randomized experiment, it is impossible to conclude from this study that media “caused” registrations to rise or fall. Instead, this report describes the relationship of registrations to media campaign strength, a relationship which may be influenced by many other factors, such as national trends in smoking or quitting prevalence; the availability of other, local assistance to quit; personal household factors such as a relative who died of lung cancer; and the like.

Second, the evaluation is built around a theory of change that well-executed media products, when distributed through appropriate media channels and at an adequate frequency, will reach Connecticut tobacco users. The expectation is that once ads reach tobacco users, viewers will become aware of and receptive to the ads, which will motivate them to engage in quitting behaviors. However, this evaluation focuses on the relationship between media buys and quitting behaviors as expressed by Quitline calls. Due to the nature of the analysis, viewers’ awareness of and receptivity to the ads is not accounted for. While a strong relationship between media buys and registrations is a strong indication of media success, understanding the relationship between media buys, viewer ad awareness and receptivity, and registrations provides more comprehensive information.

# Quitline Reach

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## Introduction

One goal of the cessation media campaign was to connect tobacco users with cessation services, particularly the CT Quitline. In this section an examination of the “reach” of the Quitline is provided. Reach is a measure of the degree of program enrollment. The “reach” of cessation programs describes the extent to which the program has been successful in drawing in and engaging members of target populations. This section reports the overall rate of reach of the Connecticut Quitline for FY 2012, and presents a comparison of enrollment numbers over time.

## Methodology

Reach can be calculated in several different ways depending on the purpose of the investigation. There has been debate within the tobacco cessation community about standards for reach rate calculations. An issue paper<sup>1</sup> was developed on behalf of the North American Quitline Consortium (NAQC, 2009) which provides a rationale and methodology for measuring different types of reach.

PDA calculates two types of program reach, using NAQC-recommended processes:

- **Promotional reach** is a measure of the effectiveness of media and other promotional efforts. Promotional reach is calculated by dividing the number of tobacco users that registered or enrolled in the Quitline by the number of tobacco users residing in the state.
- **Treatment reach** describes the percent of tobacco users in the state that received evidence-based cessation treatment from the Quitline. The treatment reach rate will usually be lower than the promotional reach rate, since treatment reach is based only on those callers who go on to participate in Quitline counseling after enrollment.

## Limitations

NAQC recommends that reach be calculated using a numerator and denominator that are as comparable as possible. Ideally, both the numerator and denominator should match the definition of the Quitline target population. For the Connecticut Quitline, this would be all tobacco users residing in Connecticut who are at least 13 years of age. However, due to a number of limitations in the Quitline and BRFSS datasets, we must report reach among a subset of this target population.

- First, we are limited to presenting reach among *cigarette users* only, rather than people who use tobacco of any type (including cigars, pipes, or smokeless tobacco)<sup>2</sup>.

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<sup>1</sup> NAQC. (2009). *Measuring Reach of Quitline Programs. Quality Improvement Initiative* (S. Cummins, PhD). Phoenix, AZ.

<sup>2</sup> The 2011 CT BRFSS did not ask the complete set of questions needed to calculate the number of people who use tobacco of any/all types. Data on pipe or cigar use was not collected. Information about smokeless tobacco use was collected, which would have allowed expansion of the denominator to include cigarette and smokeless tobacco users. However, in the Quitline intake dataset the proportion of missing data in the smokeless tobacco item was so

- Second, the BRFSS estimates of tobacco users in Connecticut are based only on adults ages 18 and older; therefore youth who use the Quitline are excluded from reach calculations.
- Third, the CT BRFSS uses a relatively small sample size, which can result in somewhat unstable smoking prevalence estimates from year to year. To compensate for this, we calculated a 95% confidence interval for the reach rates. The confidence interval describes the range within which the actual prevalence estimate would fall 95% of the time.

Finally, In addition, in 2011 the BRFSS introduced major methodological changes resulting in a higher, but more accurate estimate of smoking prevalence. As a result, the CDC recommends that BRFSS 2011 prevalence data be considered a baseline year for data analysis and is not directly comparable to previous years of BRFSS data because of the changes in weighting methodology and the addition of the cell phone sampling frame<sup>3</sup>. For this reason, Quitline reach rates cannot be compared to those from previous years. We will present reach rates for the most recent fiscal year only, and we will rely on the number of Quitline registrations rather than reach rates to describe Quitline enrollment trends over time.

The exact definitions used in the reach calculations for this report are as follows:

- For promotional reach, the numerator is the number of adults who are current “every day” or “some day” cigarette users, and enrolled in the Quitline during the fiscal year, as indicated by Quitline caller intake data. The denominator for the reach calculations is the number of current adult cigarette users in Connecticut. To obtain the denominator, we took the total number of adult (18+) residents in Connecticut according to the U.S. Census, and multiplied it by the percent of all CT adults (18+) who are “every day” or “some day” cigarette smokers, according to the CT BRFSS.
- For treatment reach, the numerator is limited to adult cigarette smokers who enrolled in the Quitline during the fiscal year, and receive at least one telephone counseling from the Quitline, with or without receipt of nicotine replacement therapy (NRT) from the Quitline<sup>4</sup>. We used the Quitline vendor’s utilization data to identify callers who met this criterion. The denominator is the same as that used for promotional reach.

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high that we judged the data field to be unreliable. Therefore the numerator and denominator in the reach calculations are limited to the number of cigarette smokers rather than tobacco users.

<sup>3</sup> Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.

<sup>4</sup> Nicotine replacement therapy is also an evidence-based cessation treatment. However, since the Connecticut Quitline requires callers to complete one counseling call prior to distribution of NRT, minimal evidence-based treatment is defined as completing at least one counseling call, with or without NRT.

# Results

## EQ1. What are the promotional and treatment reach of the CT Quitline?

### FY 2012 Promotional Reach

The Connecticut Quitline reached approximately **2.02%**, of cigarette users in the state (see Table 1) with a 95% confidence interval of **1.87%** to **2.20%**. Approximately, 20 out of every 1,000 smokers in the state called the Quitline last year.

The reach rate was calculated as follows: There were **474,935** current cigarette smokers in CT, according to the BRFSS 2011. This is the denominator for the reach rates. The numerator is the total number of callers to the Quitline from July 1, 2011 through June 30, 2012. While there were a total of **10,640** unique callers to the Quitline during this time, the purpose of the CT Quitline is to reach tobacco users. Therefore, callers who do not call the Quitline for personal help in quitting or staying quit, but are instead calling as a proxy for a friend or family member, or as a healthcare professional or community organization calling for information, are not included in the numerator. There were **9,880** callers calling about quitting. We further reduced this number to cigarette users calling for *themselves only*, resulting in a count of **9,600** current cigarette users.

The number of cigarette users who called the Quitline (9,600) is divided by the number of cigarette smokers in Connecticut as estimated by the BRFSS (474,935), equaling a reach rate of 2.02%. Overall, the promotional reach of 2.02% is a very positive finding for the campaign.

**Table 1. Promotional Reach of the Connecticut Quitline**

	<b>FY 2012</b>
State population estimate, age 18 and over	2,777,295 <sup>5</sup>
Tobacco use prevalence (95% confidence interval)	17.1% <sup>6</sup> (15.7% - 18.5%)
Estimated number of smokers	474,395
Quitline call volume <sup>7</sup>	9,600
<b>Promotional Reach percentage</b> (95% confidence interval)	<b>2.02%</b> (1.87% - 2.20%)

As a guide for interpreting these numbers, results from a recent study published in the Journal of Tobacco Control reports that the average quitline in the United States during 2005 achieved a

<sup>5</sup> Source: 2011 U.S. Census population estimates

<sup>6</sup> Source: 2011 Connecticut BRFSS

<sup>7</sup> Source: Alere Wellbeing, Inc., Quitline caller intake data

reach of approximately 1%, although individual state quitline reach ranged from 0.01% to 4.3%.<sup>8</sup> The 2011 NAQC Annual Survey of Quitlines<sup>9</sup> provides similar but more recent contextual information. In 2010, the average quitline reach for states responding to the survey was 1.22% (N=46 quitlines). It is important to note that the NAQC rates were calculated using a different methodology. The NAQC methodology produces a reach rates that are inflated, since it uses older BRFSS sampling and weighting procedures which are less accurate. However, taking the methodology differences into account, the CT Quitline reach rate (2.02) still compares very favorably to the U.S. average.

The Center for Disease Control and Prevention (CDC) provides additional guidance for quitlines with regard to reach. The 2007 Best Practices for Comprehensive Tobacco Control Programs suggests that “with sufficient promotion and clinician referral, and with NRT made more easily available, a state quitline could serve 8% of tobacco users aged 18 years and older” and that “approximately 75% of callers (6% of a state’s tobacco users) would seek counseling services.” It is understandable that Connecticut’s Quitline reach did not reach CDC’s benchmarks because the benchmarks are based on media spending of \$2.00 per capita for health communications. In contrast, Connecticut spent an estimated \$0.095 per capita in FY 2012 (based on an estimated media budget of \$265,800 and state population of those 18 and over 2,777,395 based on the 2011 United States Census). Given the relatively high reach rate in CT and relatively low per person media expenditure, it appears that CT had a very efficient return on the dollar, over 5 times what the CDC is proposing.

Finally, sustainable methods to achieve greater reach have been found in other states, including Maine, a state that increased quitline reach from 1.9% to 6% in a four-year span by increasing the cigarette tax (although it should be noted Connecticut already has the third highest tax rate in the nation), expanding hours of quitline operation (CT already has 7 day-24 hour service), and increasing referrals from physicians from 10% to 38% of quitline callers<sup>10</sup>. A sustainable method may be to increase the number of callers who are referred by physicians, and to ensure any additional dollars generated through tobacco tax increases are directed toward the CT Quitline operations or media promotion.

## **FY 2012 Treatment Reach**

We calculated treatment reach for the Connecticut Quitline to determine the proportion of smokers in Connecticut who receive at least minimal evidence-based treatment. Treatment reach indicates the potential impact of the Quitline, as those who receive at least minimal treatment are expected to have a greater chance of quitting and potentially impacting state prevalence.

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<sup>8</sup> Sharon E Cummins, Linda Bailey, Sharon Campbell, Carrie Koon-Kirby, and Shu-Hong Zhu. Tobacco cessation quitlines in North America: a descriptive study. *Tob. Control*, Dec 2007; 16: i9 - i15.

<sup>9</sup> North American Quitline Consortium. 2011. Results from the 2010 NAQC Annual Survey of Quitlines. Available at <http://www.naquitline.org/?page=survey2010>

<sup>10</sup> Susan S. Woods, and Amy Haskins. Increasing reach of quitline services in a US state with comprehensive tobacco treatment. *Tob. Control*, 2007, 16(Suppl 1):i33-i36.

The Connecticut Quitline reached approximately **1.62%** of cigarette smokers in the state, with a 95% confidence interval of **1.50%** to **1.76%**. Approximately 16 out of every 1,000 cigarette smokers in the state received counseling via the Quitline in FY 2012.

The treatment reach rate was calculated as follows: There were **9,600** cigarette users who called the Connecticut Quitline to ask for help with personally quitting or staying quit in FY 2012. Of those callers, there were **9,116** who requested counseling and **7,685** received at least one live counseling call (see Table 2). The total number of smokers in the state of Connecticut as estimated by BRFSS 2011 and 2011 U.S. Census population estimate was **474,935**.

Overall, this is a very positive finding for the campaign. However, approximately 15%<sup>11</sup> of callers who register with the Quitline do not receive a minimal level of treatment; the extent to which the Quitline vendor could encourage more cigarette users to avail themselves of Quitline services would in turn increase the number of quitters in Connecticut and therefore impact state prevalence.

**Table 2. Treatment Reach of the Connecticut Quitline by fiscal year**

	<b>FY 2012</b>
State population estimate, age 18 and over	2,777,295 <sup>12</sup>
Tobacco use prevalence (95% confidence interval)	17.1% <sup>13</sup> (15.7% - 18.5%)
Estimated number of cigarette smokers	474,395
Number of Quitline callers receiving evidence-based treatment <sup>14</sup>	7,685
Treatment Reach percentage (95% confidence interval)	<b>1.62%</b> (1.50% - 1.76%)

## Enrollment over Time

We also calculated the overall number of callers to the quitline, and the number of quitline callers receiving evidenced-based treatment over time (see Table 3). In FY 2010, 3,611 callers called the quitline, and 3,085 of them received evidence-based treatment. 85.4% of all callers received treatment in FY 2010. In FY 2011, the number of callers to the quitline (6,040) and callers receiving evidenced-based treatment (4,877) both increased, although the percentage of callers receiving treatment decreased to 80.7%. In FY 2012, the number of callers to the quitline (9,600) and callers receiving treatment again increased (7,685). The percentage of overall callers receiving treatment stayed about the same, at 80.0%.

<sup>11</sup> See Final Quitline Evaluation Report, submitted by PDA to the Connecticut Department of Health, March 2013.

<sup>12</sup> Source: 2011 U.S. Census population estimates

<sup>13</sup> Source: 2011 Connecticut BRFSS

<sup>14</sup> Source: Alere Wellbeing, Inc., Quitline caller data

**Table 3. Quitline Registrations and Number Receiving Treatment over Time**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Quitline registrations (current cigarette users only)<sup>15</sup></b>	3,611	6,040	9600
<b>Number of quitline callers receiving evidence-based treatment</b>	3,085	4,877	7,685
<b>Percent receiving treatment</b>	85.4%	80.7%	80.0%

Overall, this is a very positive finding for the campaign. Registrations nearly tripled (2.65 fold increase) between FY 2010 and FY 2012, and showed a steady increase from year to year. This suggests that CT DPH's media is having a tangible effect on the number of callers to the quitline. However, the number of callers receiving evidence-based treatment decreased by about 5% from FY 10 to FY 12, suggesting CT DPH should continue to monitor this trend.

## **Conclusions**

In FY 2012, the Connecticut Quitline achieved a promotional reach of 2.02%. Given that the current reach rate is higher than the average reach of other state quitlines, this is a very positive finding. Furthermore, it should be noted that smoking prevalence in Connecticut (17.1%) is lower than the U.S. state median (21.2%<sup>16</sup>), meaning that the proportion of smokers in the state is relatively lower. Since cessation media must be targeted to a smaller population, it may require more precise targeting of media to reach this group, making it more challenging to affect reach in this lower-prevalence state. This is further evidence of the success of the campaign in terms of promotional reach.

Connecticut's treatment reach is 1.62%. This should be taken as another positive finding for the campaign. However, approximately 15% of callers who register with the Quitline do not receive a minimal level of treatment; the extent to which the Quitline vendor could encourage these individuals to enroll for counseling would likely increase the number of quitters in Connecticut and potentially impact state prevalence.

Finally, it should be noted that reach is constrained by Quitline funding and funding policies. Quitline reach may only increase to the extent that funding is available. Additional resources may be obtained by increasing the Quitline budget and/or reducing NRT benefits and reallocating the funds to Quitline counseling services and media promotion. Second, it is important to note that Cronin's media promotions likely motivated many more tobacco users to quit who did not call the Quitline, but did attempt to quit on their own or through other supports, such as their Facebook page. These effects of the media campaign are not accounted for in reach calculations.

<sup>15</sup> Source: Alere Wellbeing, Inc., Quitline caller intake data

<sup>16</sup> Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.

# Media Implementation

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In this section, we first present the overall DPH media budget. Next we describe the DPH-funded adult cessation media campaign, since that is the main focus of our analyses. We then provide similar information for the DPH-funded prevention campaign. Both the cessation and prevention campaign had a Hispanic component—this data is included within each of the two campaigns.

## Media Budget

A substantial part of the Connecticut DPH overall media budget in FY 2012 was devoted to cessation among adults, with a smaller portion allocated to promoting prevention among youth and young adults. The media budgets for FY 2010, 2011 and 2012 are provided in Table 4.

The cessation campaign included broadcast and cable television buys, online banner ads, sponsored internet search engine results, and out-of-home (billboards). The cessation budget for FY 2010 and FY 2011 had a very similar media mix, with the largest portion of cessation media resources dedicated to online banners (42%), followed by the broadcast television (32%). In FY-CY 2012, the majority of funding was spent on broadcast television (78%). The remaining 22% was allocated to cable and Hispanic television, sponsored search results, and out-of-home. The overall cessation budget increased substantially from FY 2011 to FY-CY 2012, nearly tripling from \$75,000 in FY 2011 to \$210,800 in FY-CY 2012.

The prevention campaign included a Call for Entries component which publicized an ad contest, and placement of winning contest entries using broadcast and cable television buys. The prevention budget decreased by \$223,432 from FY 2011 to FY-CY 2012, as focus shifted to the cessation campaign. In addition, dollars were shifted from online ads to broadcast for FY-CY 2012. FY-CY 2012 included only television, with the majority of the budget devoted to broadcast television, and the rest to cable and Hispanic television.

CT DPH received funding through the American Recovery and Reinvestment Act (ARRA) to conduct a second-hand smoke media campaign. Radio and television ads were placed in FY 2011 (\$40,000 budget) and FY-CY 2012 (\$152,790). All ads were tagged with the CT Quitline telephone number and the CTQuits Facebook page web address.

**Table 4. FY 2010, 2011 and 2012 Connecticut DPH media budgets**

<b>Service</b>	<b>FY 2010 Budget</b>	<b>FY 2011 Budget</b>	<b>FY-CY 2012 Budget</b>
Broadcast television	\$25,000	\$25,000	\$163,800
Cable television	\$10,000	\$10,000	\$10,200
Hispanic television			\$9,800
Online ads	\$35,000	\$30,000	Included in paid search
Sponsored search results	\$10,000	\$10,000	\$10,000
Out-of-home (billboards)			\$17,000
<b>Total Cessation Media</b>	<b>\$80,000</b>	<b>\$75,000</b>	<b>\$210,800</b>
Wave 1:Broadcast television and radio		\$40,000	
Wave 2:Broadcast television and radio			\$55,000
<b>Total ARRA Secondhand Smoke Media</b>		<b>\$40,000</b>	<b>\$152,790</b>
Broadcast television	\$151,000	\$184,000	\$50,815
Cable television	\$40,000	\$40,000	\$4,753
Hispanic Television			\$10,000
Online ads	\$85,000	\$55,000	\$0
Sponsored search results	\$10,000	\$10,000	\$0
Print	\$40,000	\$0	\$0
Mobile	\$10,000	\$0	\$0
<b>Total Prevention Media</b>	<b>\$336,000</b>	<b>\$289,000</b>	<b>\$65,568</b>
<b>Overall Annual Budget</b>	<b>\$416,000</b>	<b>\$404,000</b>	<b>\$429,158</b>

## **Description of Connecticut Media Implementation**

### **Introduction**

There were two overarching media efforts funded by CT DPH that may have helped connect tobacco users to cessation resources. The first was the adult cessation media campaign, which included broadcast and cable television, online ads, paid internet search results, and out-of-home advertisements. The television, online and paid search ads were primarily English language ads, but each included some Spanish language placements. This campaign is the primary focus of this report. The second media effort funded by the CT DPH was a prevention campaign, which consisted of the prevention contest and the placement of winning spots. The prevention campaign delivered anti-tobacco messages, but the messages were directed primarily toward youth, although they did tag the Quitline. Although the prevention campaign

has the potential to encourage cessation among current tobacco users, we expect it is less likely to influence Quitline registrations due to the target audience and limited budget. Additionally, the CDC placed ads in Connecticut DMAs as part of the national “Tips” campaign. These ads focused on the dangers of smoking and tagged the 1-800-QUIT-NOW telephone number, which directs CT residents to the CT Quitline. Finally, CT DPH tagged ads from their Secondhand Smoke (SHS) campaign with the Quitline. Because both of these campaigns tagged the Quitline, we have included them in the report as potentially impacting the number of registrations.

This section is organized by evaluation question. First the campaign advertisements are described. This is followed by information about the campaign timing and intensity. Finally, the strength of buys is compared to benchmarks set by the Centers for Disease Control (CDC).

**EQ2. What was the nature of the Campaigns and Ads?**

As an overview, a summary description of the FY-CY 2012 television and radio broadcast campaigns is provided in Table 5, along with how they were tagged. The campaigns and associated media are further described in the sections following the table.

**Table 5. Overview of FY-CY 12 campaigns, including sponsor, advertisements, and tagging**

Sponsor	Campaign	Tagging <sup>17</sup>
Connecticut DPH	Adult Cessation Campaign – English and Spanish	Connecticut Quitline 1-800-QUIT-NOW www.facebook.com/ctquits
	Youth Prevention Campaign - Contest – English and Spanish	www.itsawaste.org Connecticut Quitline 1-800-QUIT-NOW www.QueDesperdicio.org
	Youth Prevention Campaign - Winners Spot– English and Spanish	www.itsawaste.org QueDeperdicio.org (Spanish) Connecticut Quitline 1-800-QUIT-NOW
CDC TIPS	Adult cessation	1-800-QUIT-NOW

**Adult Cessation Campaign (English & Spanish)**

The objective of the cessation media placed by Cronin was to promote cessation and provide information on how to quit and where to get help with quitting. The DPH-funded ads were placed to supplement existing media buys, thus extending the presence of cessation media over a longer time span. The DPH-funded cessation campaign was run from September of 2011 to February 2013, though due to timing and data constraints this report only includes data through December, 2012. All broadcast and online ads and paid search results tagged or linked the Quitline and posted the Quitline logo and telephone number, as well as the “CT Quits”

<sup>17</sup> Within each campaign, tagging may vary by individual ad placement.

Facebook page. Spanish language online and broadcast ads tagged the Quitline number and [www.QueDesperdicio.org](http://www.QueDesperdicio.org) (the DPH Spanish-language youth prevention site). A copy of the “end card” tags can be found in the Appendix.

### **Prevention Campaign (English and Spanish)**

**Prevention contest** - The first component of the youth prevention campaign was a call for entries for the “It’s a Waste” contest, in which youth were asked to create an anti-tobacco video message. Winning ads would be selected by public vote using a format similar to the popular television show, *American Idol*. The winning entries would be featured in a television and internet ad campaign. Ads promoting the contest were run from March 26, 2012 through May 22, 2012. The target audience for this campaign was all youth and young adults 13-24 years old. The prevention campaign directly tagged the Quitline and promoted the telephone number; all ads tagged [www.itsawaste.org](http://www.itsawaste.org).

**Prevention - Winners Spot** – The second youth prevention component featured the winners of the “It’s a Waste” contest, and winning ads were run September 12, 2012 through December 30, 2012. The target audiences were youth 13-24 years old. Three English-language ads were selected as winners. All winning ads used the “It’s a Waste” message. All ads tagged [www.itsawaste.org](http://www.itsawaste.org) and Spanish language ads tagged [www.QueDesperdicio.org](http://www.QueDesperdicio.org); in addition all prevention spots tagged the Quitline telephone number.

### **Secondhand Smoke Campaign**

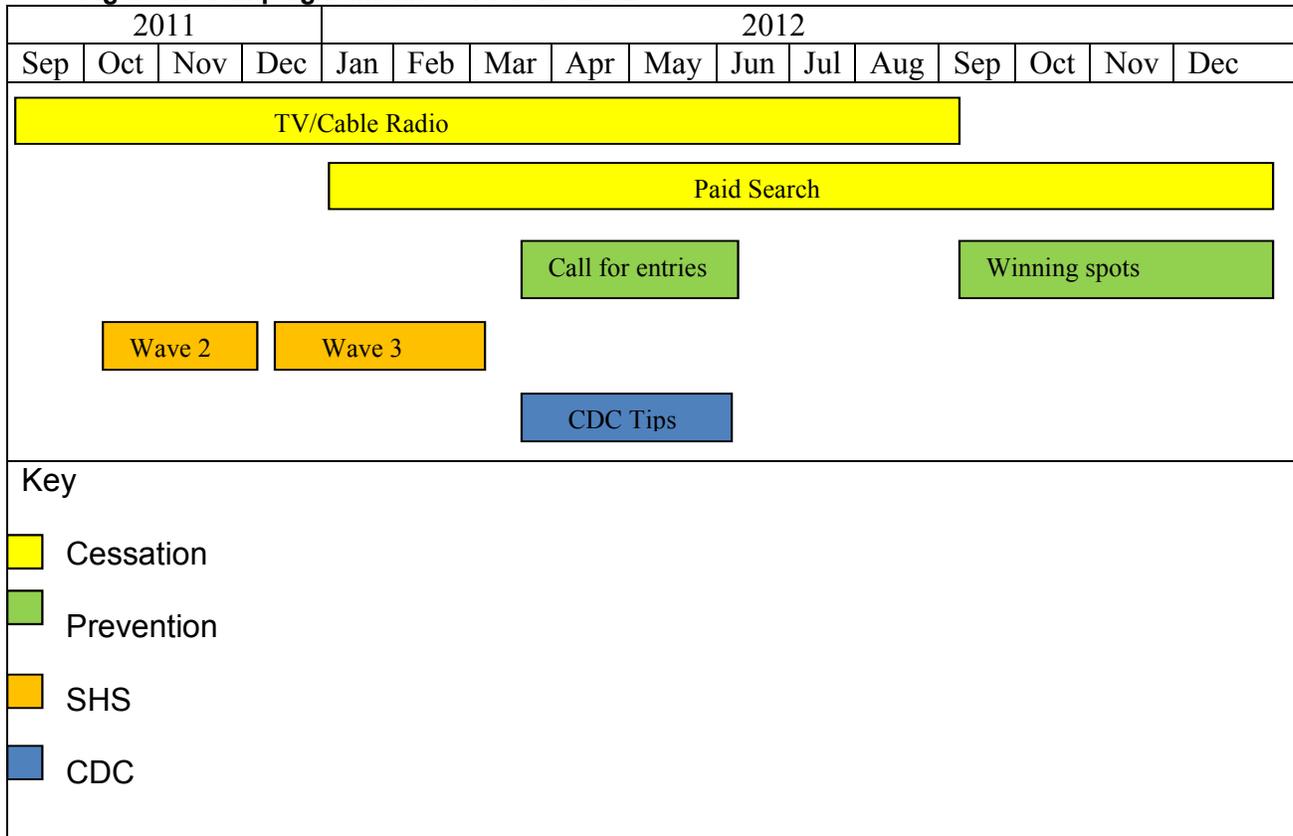
In addition to the cessation and prevention campaigns, CT DPH ran the second wave of their secondhand smoke campaign (SHS) in October and November of 2011, and the third wave from December 2011-February 2012. The campaign included radio and television ads, and Internet banner ads. The aim of the SHS campaign is to educate Connecticut residents about the dangers of secondhand smoke. CT DPH ran a number of ads that specifically highlighted the costs of secondhand smoke. These ads tagged the Quitline, and are thus included in the analyses as a potential contributor to registrations.

### **External Broadcast Campaigns in Connecticut**

#### **CDC “Tips” Campaign**

The Center for Disease Control and Prevention began running a national anti-tobacco campaign in March of 2012. The ads featured “tips” from former smokers related to their experiences with smoking and how smoking has changed their lives. CT DPH ran “Tips” ads from March 19, 2012-June 4, 2012 at a total of 1,520 GRPs. The ads were tagged with 1-800-QUIT-NOW. Because the ads targeted the Quitline, they are included in the analyses as potentially impacting the number of registrations. Figure 1 below provides the campaign timeline.

**Figure 1. Campaign timeline for FY-CY 2012**



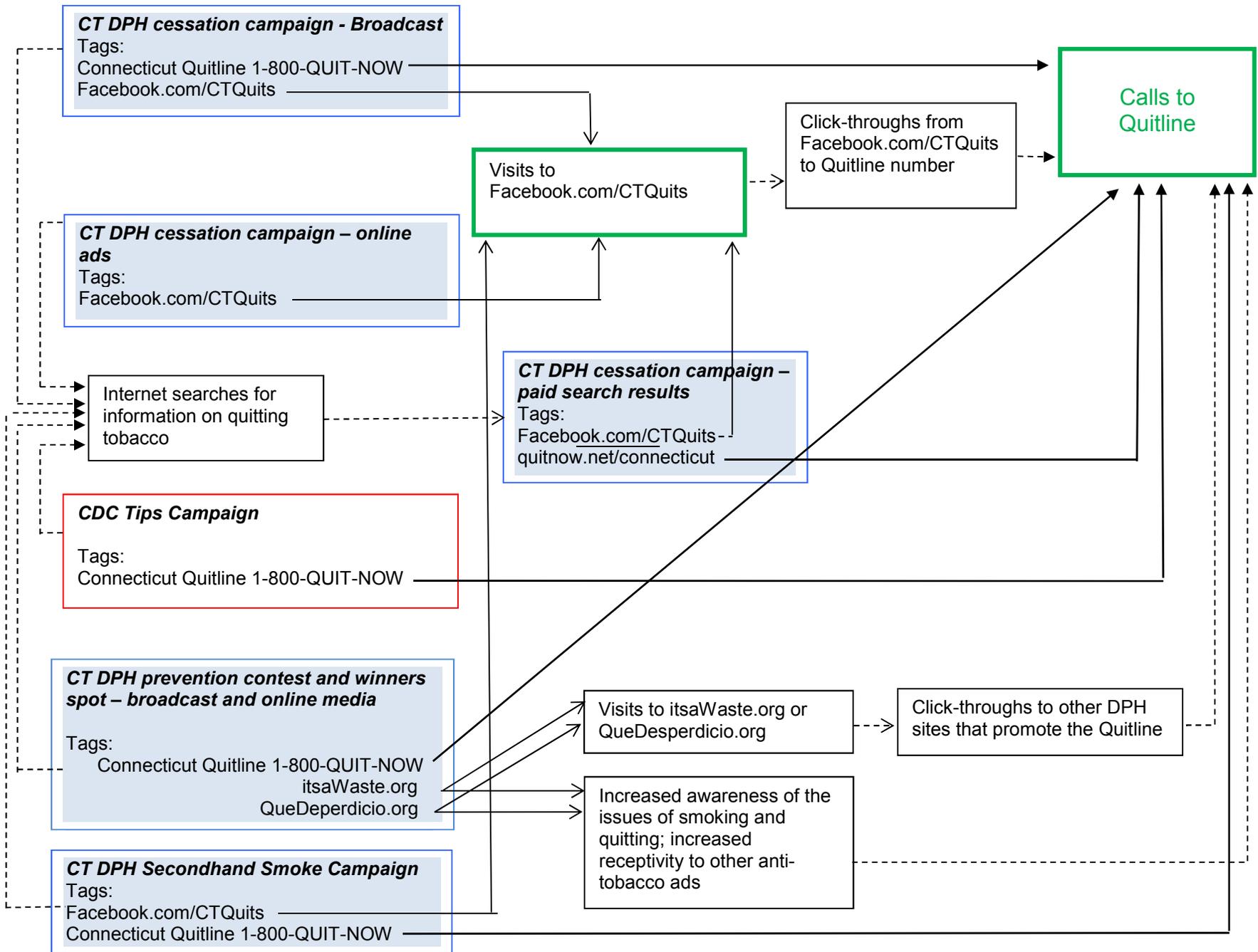
**Potential connections between media campaigns and the Quitline or other cessation resources**

All of the media campaigns described above directly promoted the Quitline by tagging the ads with the Quitline logo and telephone number. These ads are intended to promote and encourage quitting behavior, and provide information about how to connect with the Quitline. The cessation campaign also tagged [www.facebook.com/ctquits](http://www.facebook.com/ctquits). In addition to providing support and resources to quit, the CT Quits Facebook page provides the Quitline number, and as such is an indirect route through which people can get connected to the Quitline. The prevention campaign ads tagged the [www.itsawaste.org](http://www.itsawaste.org) website and also the Quitline number. Although this prevention website is aimed at prevention, it may increase viewers’ awareness of the issues of tobacco and the importance of quitting. This heightened awareness may increase viewers’ receptivity to other ads they may see, including ads that do promote the Quitline. In this way, the [itsawaste.org](http://www.itsawaste.org) website could in theory have an impact on Quitline registrations, and thus serves as an indirect connection.

The potential pathways connecting ad viewers to the Quitline are depicted in Figure 2.

- In the figure, direct connections from media to an anti-tobacco resource are depicted with solid arrows, and indirect connections with dashed arrows.
- DPH-funded media activities are shaded in blue.
- Connections to a cessation service are outlined in green.
- The CDC “Tips” campaign is outlined in red.

**Figure 2. Potential pathways connecting ad viewers to Quitline and online resources**



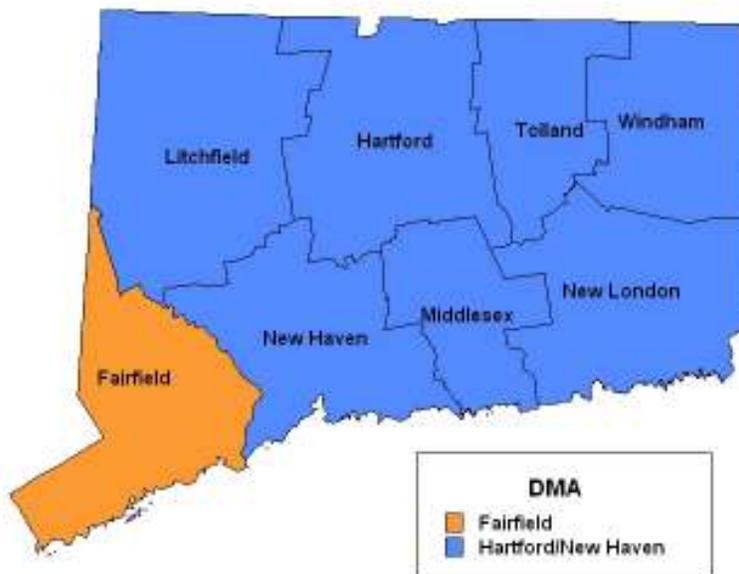
## Campaign Intensity

### EQ3. What was the intensity of the campaign, and how does this compare to targets set by the CDC?

To evaluate the intensity of the CT DPH broadcast campaigns, we use the media measures of Gross Rating Points (GRP) and the more refined Targeted Rating Points (TRPs). The total intensity of a broadcast media campaign can be measured in Gross Rating Points (GRPs) for ongoing anti-tobacco campaigns. The calculation multiplies the placement (stations ads will run on and the timing of the ads) by the number of spots, which provides an overall measure of the strength of the campaign. GRPs describe the potential viewership of an ad within the ad's specific target audience. GRPs are dependent on many factors, including the program, station, and time of day that an advertisement is placed. PDA received GRPs for each ad, for each designated marked area (DMA) by week.

The state of Connecticut includes two DMAs, the Hartford/New Haven DMA, which covers most of the state, and the Fairfield DMA, which covers the southwest corner (see Figure 3). Broadcast media within the Fairfield DMA overlaps with that of New York City. In order to specifically target CT residents within the Fairfield DMA, advertisements were placed on cable television. For this reason, GRPs are only provided for the Hartford/New Haven DMA.

**Figure 3. Hartford/New Haven and Fairfield DMAs**



### Overall Strength of ad buys

Table 6 indicates the strength of buys for this DMA for FY 2010, FY 2011 and FY-CY 2012 combined. The cessation ads had the highest total GRPs, with over 80% of those occurring during FY-CY 2012 (see Table 7). DPH clearly made a much bigger financial commitment to

cessation during FY-CY 2012, and this is reflected in the GRP levels. However, cessation ads still had lower average weekly GRPs (across all three years), because the campaign was spread out over a much larger timeframe than the prevention campaign. The Prevention Contest and Prevention Winning Spots had very similar levels of GRPs. However, the Call for Entries GRPs were loaded onto a very brief time period, while the Winning Spots were spread out over more than a year, resulting in very different levels of intensity over time. The CDC ads, although condensed to eleven weeks, had the highest average number of GRPs per week, with 138.2, although CT DPH had no control over these ad buys. It should also be noted that the SHS campaign ran during part of this time as well, although we do not have any information on GRPs. This suggests the overall strength of the buy is even higher than what is reported here, but we do not have enough information to determine how much the strength of the buy increased.

**Table 6. Strength of buy (GRPs) in the Hartford/New Haven DMA for all three fiscal years (new dates) combined**

Campaign	Total GRPs	Weeks with any GRPs	Average GRPs per week
DPH Cessation ads	3945.95	76	51.9
DPH Prevention: Contest	2,298.4	18	127.7
DPH Prevention: Winning spots	2,488.9	70	35.5
CDC Tips	1,520.0	11	138.2

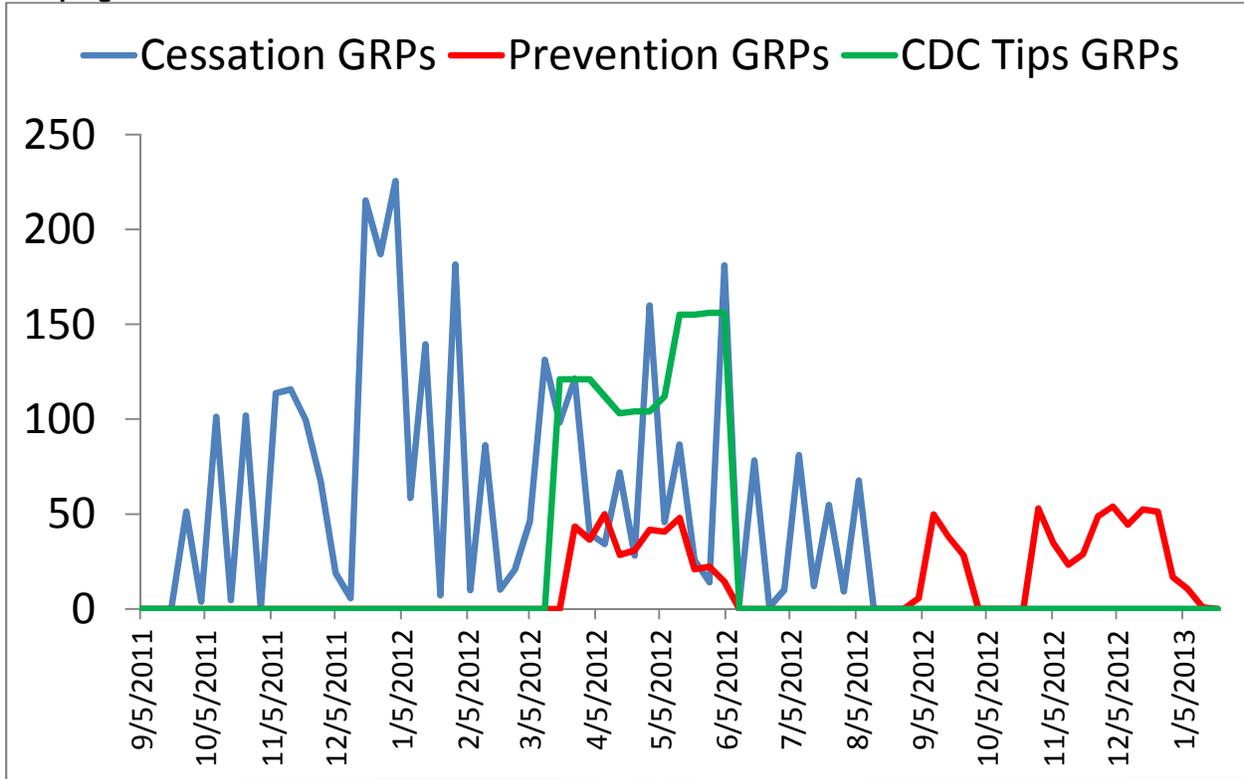
**Strength of buys by FY:** Table 7 indicates the strength of buys for the Hartford/New Haven DMA by fiscal year. For the cessation campaign, there is a very large increase in the intensity of the campaign (total GRPs) and in the duration of the campaign (weeks with any GRPs) from FY 2010 to FY 2012. The average number of GRPs per week also rose substantially. The increase in intensity and the longer timespan of the campaign are likely the primary reasons why promotional reach showed a large increase from FY 10 to FY 12. Connecticut residents were exposed to cessation ads at a much greater frequency, and for a much greater amount of time in FY 12. CT DPH and Cronin should be commended for increasing the strength of the media buy while maintaining the same budget across the three years.

**Table 7. Strength of buy (GRPs) in the Hartford/New Haven DMA FY 2010-FY-CY 2012**

Campaign	Total GRPs			Weeks with any GRPs			Average GRPs per week		
	FY 10	FY 11	FY-CY 12	FY 10	FY 11	FY-CY 12	FY 10	FY 11	FY-CY 12
DPH Cessation ads	79.9	639.5	3,226.6	4	28	44	20.0	22.8	73.3
DPH Prevention: Contest	1,921.4	0	377.0	7	0	11	274.5	0	34.3
DPH Prevention: Winning spots	375.7	1,573.1	540.1	5	51	14	22.1	52.4	38.6
CDC Tips			1,520			11			138.2

**Strength of ad buys within the target audience** -The weekly broadcast spots are presented by campaign, and the intensity levels are provided in Figure 4.

**Figure 4. Gross rating points for combined TV, cable, and radio spots broadcast over time, by campaign**



### Comparison of ad buys to recommend intensity levels

The CDC Best Practices for Comprehensive Tobacco Control Programs provides recommendations on the reach of ads (measured in TRPs) for ongoing anti-tobacco campaigns. The recommendation is that campaigns should achieve 1,200 TRPs per quarter during the introduction of a campaign and 800 TRPs per quarter thereafter. A second benchmark by which to assess campaign levels is presented in the Global Dialogue for Effective Stop Smoking Campaigns Tool Kit (2007)<sup>18</sup>, which reports that positive results have been found in campaigns that maintained a presence of 400-600 TRPs/GRPs per four weeks during periods when their campaigns are on air.

The intensity levels of the CT DPH cessation ads met the benchmark for quarterly TRP levels and fell just short of the benchmark for four-week GRP levels for FY-CY 2012. CT DPH

<sup>18</sup> Global Dialogue for Effective Stop Smoking Campaigns. (2007) Tool Kit. Available from: [http://www.stopsmokingcampaigns.org/campaign\\_tool\\_kit](http://www.stopsmokingcampaigns.org/campaign_tool_kit)

maintained a steady level of GRPs for the cessation campaign. The prevention contest and winning spots campaigns fell short of the intensity levels that have been shown to be effective elsewhere, both in terms of quarterly and 4-week TRP levels. However, given that this was not a primary focus for CT DPH in FY-CY 2012, this is to be expected.

Finally, The Global Dialogue for Effective Stop-Smoking Campaign Tool Kit states that during the first six to twelve months of a media campaign, messages should be aired as continuously as possible, especially if a brand is trying to be established. This recommendation supports the chosen strategy for the CDC “Tips” campaign, which was to build upon and extend the presence of the existing CT DPH campaigns through airing the “Tips” ads and tagging the Quitline. During FY-CY 12, the combination of CDC and DPH buys provided for a consistent presence of cessation messages across most of the calendar year.

Furthermore, CT DPH should be commended for tagging *all* ads with the Quitline. This is a significant step and reflects recommendations made by PDA in last year’s Media Call Volume Report. In tagging cessation, prevention, CDC and SHS ads with the Quitline, CT DPH has significantly improved Quitline exposure through media. Future media efforts should continue to tag the Quitline and CT Quits Facebook page.

## **Conclusions**

### **Strength of the campaign**

The strength of the cessation buy was greatly increased from 2011 to 2012 as dollars were shifted from the prevention to cessation campaigns. The increase in intensity and the longer timespan of the campaign are likely the primary reasons why promotional reach showed a large increase from FY 11 to FY-CY 12. Connecticut residents were exposed to cessation ads at higher frequency and for a longer amount of time in FY-CY 12, and this is reflected in increased registration numbers. CT DPH and Cronin should be commended for improving the strength of the media buy.

Considering the relative strength of all media campaigns that were present in Connecticut during the three-year study period, the campaign with the strongest presence among adults 18 and over is the cessation campaign. These are followed by the two prevention campaigns, and the “Tips” campaign. The commitment CT DPH has shown to the cessation campaign, particularly over the past year, is strong.

Additionally, CT DPH has promoted the Quitline in social media through their Facebook page. Although evidence is still emerging on the impact of social media, this is a very low-cost step that has the potential to reach a large number of people, and thus should be continued in the future. It is paramount, however, that CT DPH monitor the page closely to ensure that they “control the message.” The impact of pro-tobacco posts or ads could be significant, and thus it is critical to closely monitor the page.

Furthermore, CT DPH has shown a commitment to running highly emotional appeals in their advertising. These type of ads have been shown to be rated more highly on recall, memory, and

conversation, and should be used whenever possible in anti-smoking advertising<sup>19</sup>. CT DPH should continue to look for opportunities to air emotionally provocative ads.

Despite the increase in intensity levels over time, the CT DPH cessation and prevention winning spots campaigns fell short of the intensity levels that have been shown to be effective elsewhere, both in terms of quarterly and 4-week TRP levels for the cumulative period of FY 2010-FY 2012. Additional media funds would be required to extend the presence of cessation media year-round, and to raise the intensity level of the campaign closer to recommended levels.

Finally, it should be noted that better documentation of ads, GRP levels, budgets and media buys would help significantly in assessing campaign impact. At times, data was difficult to obtain and contained missing information, making some analyses incomplete. In order to fully benefit from evaluation of the media campaigns, compiling accurate and complete records of all media is essential.

### **Tagging**

In integrating the campaigns through increased tagging of the Quitline, CT DPH has increased Quitline exposure without increasing cost, an effort which is particularly notable. PDA recommended increased tagging in the previous Call Volume Report, and CT DPH clearly applied these recommendations successfully.

In tagging not just cessation, but all anti-tobacco efforts, CT DPH has increased campaign and Quitline exposure while maintaining costs. This is likely one of the reasons for the increase in registrations, and CT DPH should be commended for this. Future efforts should continue to tag the Quitline and CT Quits Facebook page whenever possible.

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<sup>19</sup> Terry-McElrath Y.M., Wakefield M.A., Ruel E, et al. (2005) The effect of anti-smoking advertisement executional characteristics on youth appraisal and engagement. *Journal of Health Communication*, 10, 127-143.

# Media Impact on Quitline Registrations

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## Introduction

The evaluation team examined the impact of a variety of media on Quitline registrations. This analysis tested the theory that well-produced, well-placed broadcast, Internet and other media would be expected to positively impact Quitline calls. More specifically, the more quality media that tobacco users are exposed to the greater the number of tobacco users that will register for services. This hypothesis is tested using multivariate models, and results facilitate an assessment of the quality and quantity of CT DPH media efforts.

In this section we will provide a critical description of the range of media activities funded by DPH and produced by Cronin, LLC and Elkinson + Sloves Marketing Group between September 5, 2011 and January 27, 2013. This time period follows the time period reported on in PDA's previous call media report<sup>20</sup>.

### **EQ4. To what extent are media campaign buys associated with increased enrollments in the Quitline?**

## Methodology

This study is observational in nature. Data on Quitline registrations, caller characteristics, and indicators of the strength of media efforts were collected retrospectively and analyzed in a regression model to understand the relationship of registrations to a full range of CT DPH-sponsored media: cessation television and online advertisements, paid internet search results and out of home advertisements; secondhand smoke television and radio advertisements; and prevention television and online advertisements and paid online search results. Next, the data sources, analyses, and limitations of this methodology are described.

## Data Sources

Data on media was obtained through Cronin and DPH, as described in previous sections of this report.

Data on the CDC "Tips from a former smoker" campaign was provided by DPH.

Data on Quitline registrations and caller characteristics was obtained from Alere Wellbeing, Inc., the Quitline vendor. This analysis reports on all tobacco users ages 18 and older with available county data who were calling to quit themselves. This subset of callers (N =10,981) was

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<sup>20</sup> *Adult Cessation Media: Impact on Quitline Call Volume and Website Visits: FY 2010 – FY 2011*. Professional Data Analysts, Inc., submitted to the Connecticut Department of Public Health, October 7, 2010.

selected for analysis because tobacco users are the desired audience of the cessation media campaigns. The analysis is conducted on weekly registrations within each DMA. Weighting was conducted with 75% weighted for the Hartford/New Haven DMA and 25% for the Fairfield DMA, analogous to the relative CT smoking population distributions. The study period includes 73 weeks starting September 5, 2011 through January 27, 2013.

## Limitations

Because this study is observational and not a controlled, randomized experiment, it is impossible to definitively conclude from these results that media “caused” Quitline registrations to rise or fall. Instead, this report describes the relationship of the weekly number of registrations to media campaign strength, a relationship which may be influenced by many other factors.

Further, PDA did not conduct a survey or other analyses to evaluate the extent that Connecticut residents were receptive to and recalled specific media campaigns. Therefore, a limitation to the current results is the lack of information about residents’ recall of anti-tobacco media campaigns, which is essential to more fully understanding the role of media awareness and receptivity to the campaigns in tobacco users’ choice to call the CT Quitline.

PDA was not able to obtain complete data for all media components.

- The SHS campaign was conducted in three waves. No data were provided for Wave 2, which was placed from October 31, 2012 – Dec 3, 2012. Wave 2 represents about 29% of the overall SHS media budget.
- In addition, a portion of the SHS Wave 3 radio buy data was not available. A review of the planned buy suggests that about half of the spots, predominantly those placed in the Hartford/New Haven DMA, are missing.
- Finally, data for the SHS buys and Hispanic media buys include only the number of spots aired rather than the more specific TRP or GRP data. Using the number of spots limits the ability to observe a relationship with registrations.

## Analyses

Quitline registration data obtained from Alere were combined with data regarding broadcast, internet, and other media. Quitline registration data was analyzed in two separate linear regression models, one for registered callers 18 years and older, the target audience for cessation broadcast media, and one for Hispanic callers 18 and older. Regression was conducted using the statistical software package SPSS, Release 18.

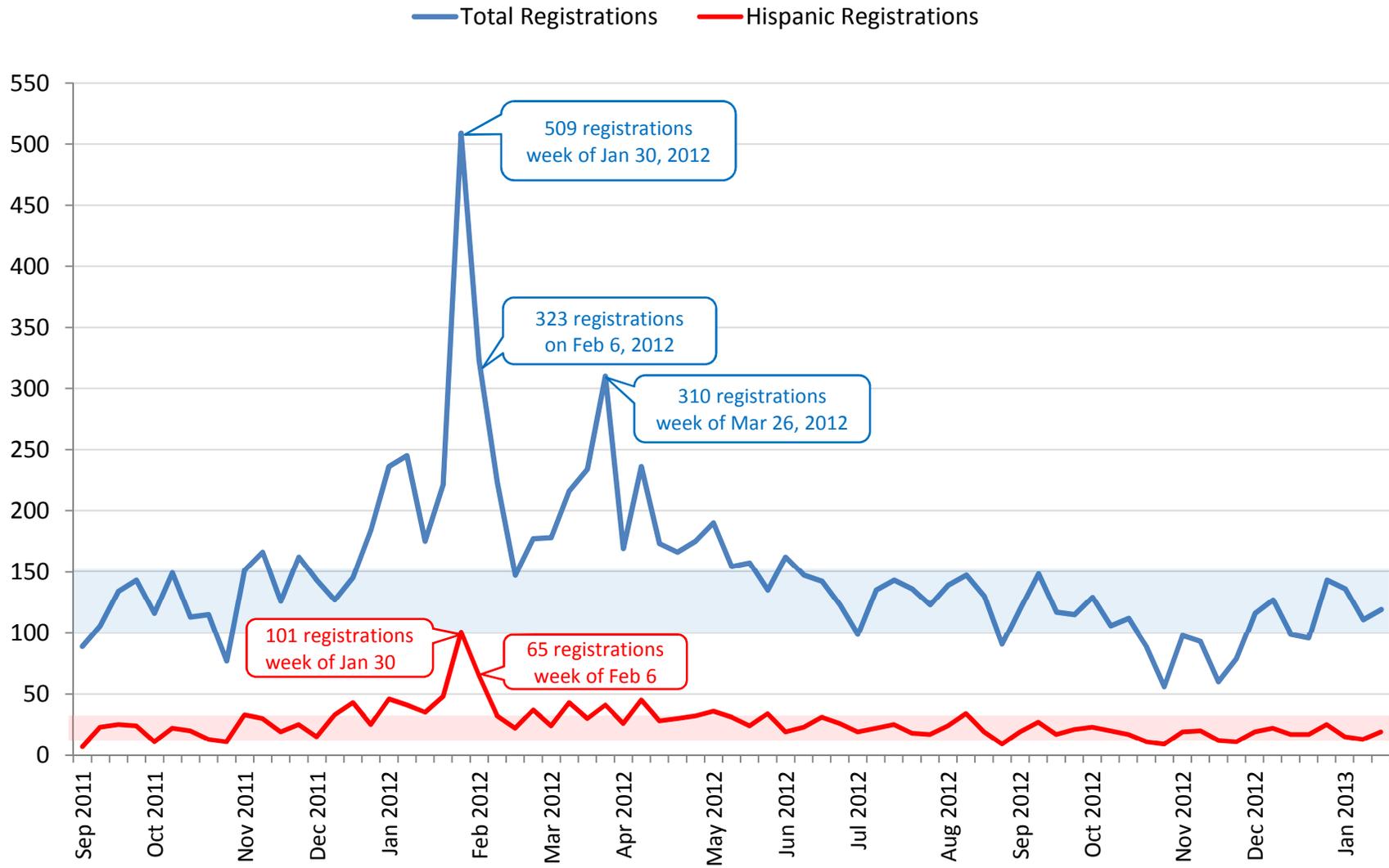
The multivariate analyses were first run producing one model for the weekly number of **quitline registrations for ages 18 and over**. A second model was produced for the weekly number of **quitline registrations for Hispanic callers ages 18 and over**. Registrations include people who signed up either via phone or through the online registration process.

See Figure 15 for the distribution of weekly counts of Quitline registrations over time. Looking across the entire 73-week study period, about half of the time the weekly registrations ranged between 100 and 150 (indicated by the blue shaded area of Figure 15). This occurred during 36 separate weeks. On only 12 weeks did registrations fall below 100, with the low points seen

during the months of October and November of each year. The highest weekly registration levels occurred primarily between January and May 2012. On 26 separate weeks the Quitline registered between 150 and 250 callers. There were three peaks that rose substantially higher than the typical range: the consecutive weeks beginning Jan 30, 2012 (509 registrations) and Feb 6, 2012 (323 registrations), and the week of March 26, 2012 (310 registrations).

The weekly number of Hispanic registrations ranged between 10 and 29 for most of the study period (47 weeks, see the red shaded area in Figure 5). There was a higher-volume period which coincides roughly with that of the Quitline overall. On 23 weeks registration totals were 30 or higher. The biggest spikes occurred in the consecutive weeks of Jan 30 and February 6, 2012, when the numbers of weekly Hispanic registrations were 101 and 65, respectively.

**Figure 1. Number of callers registering with the Quitline by week**



## Independent variables

A comprehensive set of independent variables was considered and those not contributing explanatory power to the model were eliminated. The independent variable Cessation Out-of-Home Digital Billboards was considered but not included in the model. The type of data provided (monthly impressions) was not sufficiently precise to use in the model.

The independent variables were entered individually into the two models, as described in Table 8 below.

**Table 8. Independent Variables**

<b>Variables</b>	<b>Description</b>
Covariate: A binary variable identifying DMA	More Quitline callers would be expected to call from DMAs with a larger number of tobacco users.
Covariate: Previous week's registrations	The number of people who registered (by phone or online) for the Quitline during the previous week. Transformed into a natural log to normalize the distribution.
<b>CDC Tips Campaign</b>	
◦ Broadcast	Gross Rating Points (GRPs) for the national CDC campaign placed in Hartford/New Haven DMA. Transformed into a natural log to normalize the distribution.
<b>CT DPH Cessation Campaign</b>	
◦ Broadcast and Cable TV (English, tagged with Quitline number)	Gross Rating Points (GRPs) for English TV campaign and estimated GRPs from cable spots combined. Transformed into a natural log to normalize the distribution.
◦ Broadcast and Cable TV (Spanish, tagged with Quitline number)	GRPs not available for Spanish campaigns; number of spots aired is used instead. Transformed into a natural log to normalize the distribution.
◦ Facebook ad clicks	Number of ad clicks. Transformed into a natural log to normalize the distribution
◦ Paid Google search result clicks	Number of ad clicks. Transformed into a natural log to normalize the distribution
<b>CT Secondhand Smoke Campaign</b>	
◦ Cable TV	GRPs not available; number of spots aired is used instead. Transformed into a natural log to normalize the distribution.
◦ Radio	GRPs not available; number of spots aired is used instead. Transformed into a natural log to normalize the distribution.

<b>Variables</b>	<b>Description</b>
<b>CT Youth Prevention Campaign</b>	
◦ Broadcast TV (English)	GRPs for English TV campaign and estimated GRPs from cable spots combined. Transformed into a natural log to normalize the distribution.
◦ Broadcast TV (Spanish)	GRPs not available for Spanish broadcast; number of spots aired is used instead. Transformed into a natural log to normalize the distribution.
◦ Facebook ad clicks	Number of ad clicks. Transformed into a natural log to normalize the distribution
◦ Paid Google search result clicks	Number of ad clicks. Transformed into a natural log to normalize the distribution

For each of the two models, predicting the number of registrations for all tobacco users and predicting number of weekly registrations of those self-identified as Hispanic, we entered the variables in the following way.

First, in block 1 of the regression model, we forced entry of the covariates to control for these effects first.

- DMA is forced into the model to control for the amount of variance that would be explained by the difference in the tobacco using population size of the two DMAs.
- The previous week's number of registrations was forced into the model. This variable is entered as a covariate because registrations in any given week are correlated with registrations in the previous week and we are interested in predicting the change in registrations from week to week.

In block 2, the predictors were entered using a stepwise procedure until no predictor added significantly to the model prediction of the dependent variable.

- The CDC Tips broadcast TRPs, all cessation broadcast (English and Spanish) TRPs, all cessation online ad clicks and paid search result clicks and SHS cable spots and SHS radio spots were entered stepwise.

In block 3, the remaining predictor variables were entered stepwise into the model, and those that reached significance remained in the model.

- All prevention broadcast (English and Spanish)TRPs, prevention Facebook and prevention paid Google search ad clicks were entered stepwise.

## Results

Results are organized into three sections. First, the success of the model in predicting total weekly registrations is discussed. Second, the impact of media on predicting registrations among Hispanic tobacco users is discussed. Finally, each model's findings are interpreted in a narrative form, with results highlighted where factors predict registrations unusually strongly or weakly for the target audience.

### Model Success

One indicator of success is the  $R^2$  statistic, or the proportion of variation in registrations that is explained by the independent variables. This indicates how much of the variation in increasing or decreasing number of weekly registrations, can be explained by media efforts.

The variation explained may be unique to an independent variable or shared between variables. This  $R^2$  statistic ranges from 0 to 1.0, with 0 indicating a poor model where 0% of variance in registrations is accounted for by the dependent variables, and 1.0 indicating a perfect model where 100% of variance is accounted for. An  $R^2$  statistic of 0.70 or greater is considered to be very good.<sup>21</sup>

As indicated in Table 9, the model was relatively successful in describing the relationship between media and registrations. The adjusted  $R^2$  statistic for the total registrations model was .917; that is over 90% of the variance in registrations was explained by the covariates and predictors. The adjusted  $R^2$  statistic for the Hispanic registration model was similar, at .705; meaning about 70% of the variance in Hispanic registrations was explained by the covariates and predictors.

The covariates (DMA and previous week registrations) were the most powerful predictors of registrations. However, the covariate variables are not of particular interest to this study because they do not reflect any media-specific activities. The findings below describe how much additional variance in registrations was explained by the media components. The adjusted R-Square attributable to the independent variables after the covariates have entered the model is 29.1% for the total registrations and 29.3% for the Hispanic registrations. Although these models are far from a perfect fit, they are considered sufficiently robust enough to allow for an in-depth analysis of the impact of the independent variables on registrations.

**Table 9. Adjusted  $R^2$  by Model**

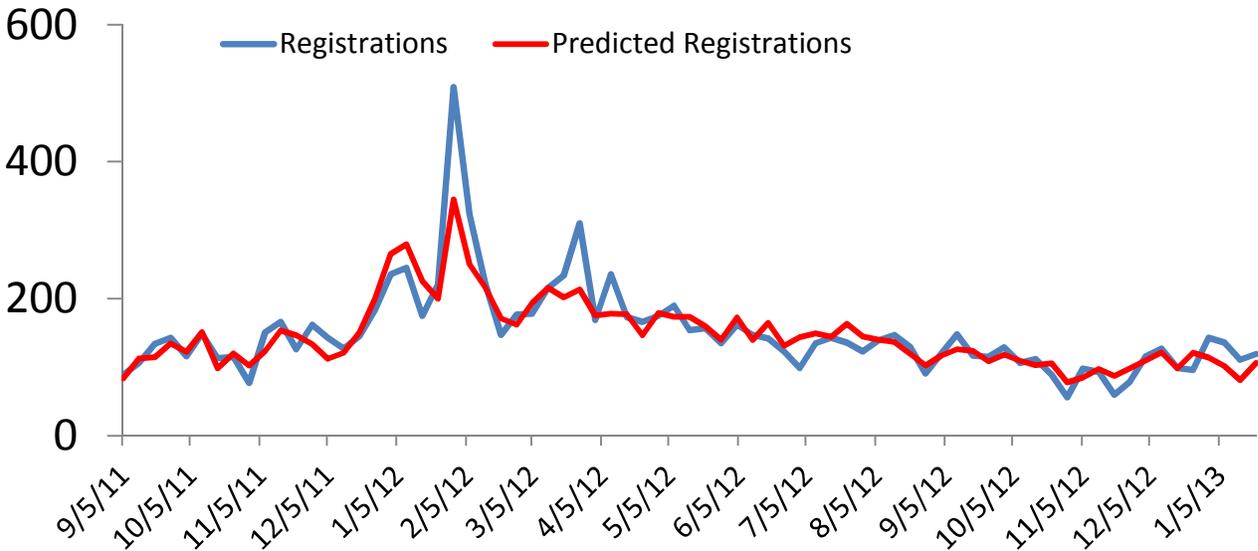
<b>Model:</b>	<b>Adjusted <math>R^2</math></b>
Total Registrations	.917
Hispanic Registrations	.705

The fit of the models is depicted graphically below. Figure 6 depicts the actual registrations by week, along with the predicted registrations determined by the regression model based on the covariates and independent variables, including media activity. Figure 7 presents the actual

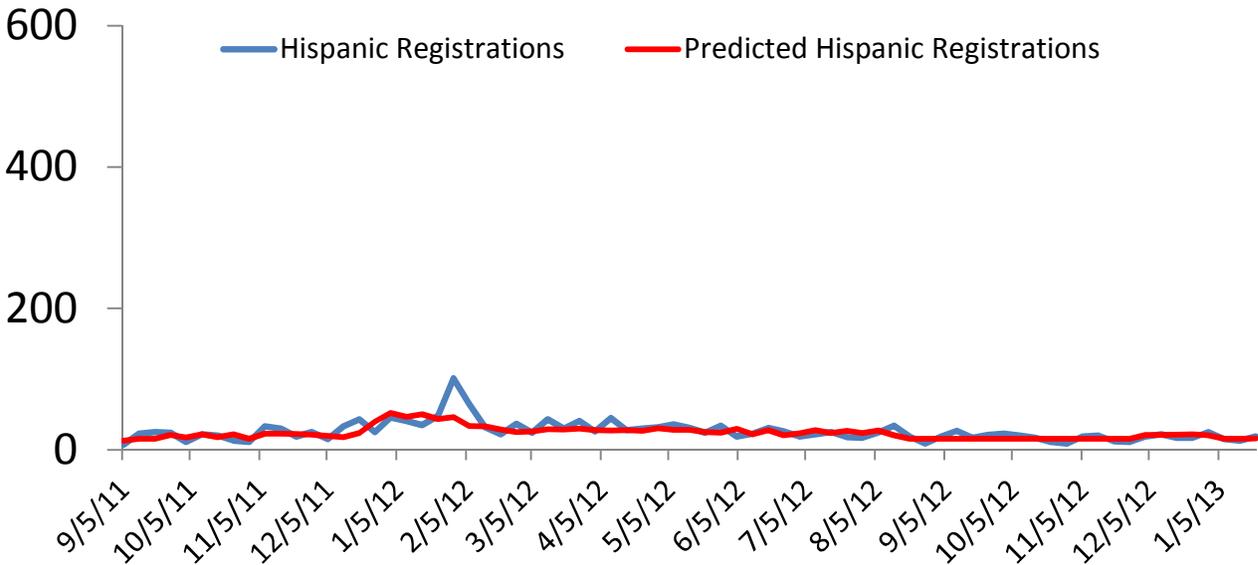
<sup>21</sup> Although  $R^2$  is commonly used to assess model success, a more realistic assessment is using adjusted  $R^2$ . Adjusted  $R^2$  lowers the  $R^2$  based on the number of predictors in the regression model.

number of Hispanic registrations by week, and the predicted number of Hispanic registrations as determined by the model.

**Figure 6. Regression Model Predicting Weekly number of Registrations for all tobacco users**



**Figure 7. Regression Model Predicting Weekly Number of Hispanic Registrations**



### Media Impact on Total Registrations and Hispanic Registrations

While understanding the proportion of the variation in Quitline registrations that the full model explains is helpful, it is also helpful to understand more about the impact of each specific independent variable (media component). The impact of each media component entered into the model is discussed below. In both models, the binary DMA variable and previous week's registrations were included. The findings below describe how much additional variance in

registrations was explained by media-specific activities. A positive impact means that an increase in media is associated with an increase in the number of weekly calls, or that a decrease in media is associated with decreased registrations. A negative impact indicates an inverse relationship (i.e., more media is associated with fewer registrations).

The significant associations between the media components and total registrations are presented in Table 10, with a summary version of the same results presented in Table 11. The significant associations between the media components and Hispanic registrations and a summary version are presented in Table 12 and Table 13. For each model, we present the following statistics:

- The p-value indicates if an independent variable is significantly and uniquely related to the dependent variable (in this case, quitline registrations)
- The standardized coefficient represents the unit change in a dependent variable for each change of one standard deviation in a predictor variable. It indicates the unique variance in the dependent variable accounted for by each media component. Thus, this statistic indicates the size of the effect. The greater the standardized coefficient, the larger the impact of the independent variable in predicting the dependent variable. The sign of the standardized Beta coefficient (positive (+) or negative (-)) indicates the direction of that significance (whether the media component is associated with increased or decreased quitline registrations)

**Table 10. Beta weights, p-values and standardized coefficients for Total Registrations Regression Analysis**

Dependent variable:	Natural Log of Registrations for Callers 18 and older	
	p	Standardized Coefficients
<i>Intercept</i>		.
<i>Covariate Variable</i>		
Previous week's registrations	<.001	.369
DMA binary variable	<.001	1.160
<i>CT Cessation Campaigns</i>		
Cessation Broadcast TRPs	<.001	.151
Facebook ad clicks	.028	.062
<i>CT SHS Campaigns</i>		
SHS Radio	<.001	.100

**Table 11. Summary: impact of media components on total registrations**

Media Component	Impact on Total Registrations
CT Cessation Broadcast	Moderate +
CT Cessation Facebook ad clicks	Small +
CT SHS Radio	Moderate +

**Table 12. Beta weights, p-values and standardized coefficients for Hispanic Registrations Regression Analysis**

Dependent variable:	Natural Log of Registrations for Hispanic Callers age 18 and over	
	p	Standardized Coefficients (Beta)
<i>Intercept</i>		.
<i>Covariate Variable</i>		
DMA binary variable	<.001	.669
Previous week's registrations	.846	-.014
<i>CT Cessation Campaigns</i>		
Cessation Broadcast TRPs	<.001	.208
Facebook ad clicks	.004	.147
<i>CT SHS Campaigns</i>		
SHS Radio	<.001	.187

**Table 13. Summary: impact of media components on Hispanic registrations**

Media Component	Impact on Hispanic Registrations
CT Cessation Broadcast	Moderate +
CT Cessation Facebook ad clicks	Moderate +
CT SHS Radio	Moderate +

## Interpretation

### Media impact on total registrations

**Cessation media.** The adult cessation campaign funded by CT DPH included television ads in English and Spanish, online Facebook ads and paid online search results. All cessation components tagged both the Quitline telephone number and the CTQuits Facebook page. We expect that the adult cessation campaign would positively influence the number of Quitline registrations.

Examining the p-values and standardized coefficients of the individual cessation media variables allows the hypothesis that cessation media impacts the number of weekly registrations to be tested directly. A clear finding emerged: the **cessation broadcast campaign significantly impacted registrations** for those ages 18 and older, and the effect was positive and moderate (Beta=.151).

The **Facebook cessation ad clicks were associated with increased registrations** among the target audience, and the impact was small (Beta=.062).

Finally, the **SHS radio spots were associated with increased registrations** for ages 18 and older, and the effect was positive and borderline moderate (Beta=.100).

In sum, the cessation broadcast media and SHS radio spots had a moderate impact on the target group, and the Facebook ads had a somewhat weaker impact. None of the cessation components (broadcast, online ads, or paid search) had a large impact on registrations for this target audience.

### **Media impact on Hispanic registrations**

**Cessation media.** The **cessation broadcast campaign significantly impacted registrations** for Hispanic callers ages 18 and older, and the effect was positive and moderate (Beta=.208).

The **Facebook cessation ad clicks were associated with increased registrations** among the target audience, and the impact was moderate (Beta=.147).

Finally, the **SHS radio spots were associated with increased registrations** for adult Hispanic callers, and the effect was positive and moderate (Beta=.187).

In sum, the cessation broadcast media, SHS radio, and Facebook ads had a moderate impact on the target group. None of the cessation components (broadcast, online ads, or paid search) had a large impact on registrations for this target audience.

### **Non-significant predictors of Quitline registrations**

Three **other cessation media components** (Hispanic TV ads, paid online search results, and secondhand smoke TV ads), **did not significantly influence registrations** (total registrations or Hispanic registrations).

In addition, the **Prevention media** including English and Spanish TV, online Facebook ads, and paid search results **did not significantly impact registrations**. The Prevention ads tagged both the Quitline telephone number and the prevention website [www.itsawaste.org](http://www.itsawaste.org). However, the prevention buys were smaller, and directed to a younger audience, which may explain the lack of relationship with Quitline registrations.

### **Earned Media: “Biggest Quitter Challenge”**

There was a very large spike in registrations during a short period, the weeks of January 30, 2012 and February 6, 2012. During this time a record 832 callers registered with the Quitline. We see that this spike is only partially explained by the media buys included in our analyses. We suspect that there may have been some additional factors that we were unaware of during this time that contributed to the rise in Quitline use. For example, earned media such as news coverage of tobacco-related issues may have contributed to increased registrations, particularly if the news coverage mentioned the Quitline phone number. The “Biggest Quitter Challenge,” which began in January 2012, overlaps with the peak enrollment period. The challenge involved partnerships with four TV stations who asked their employees or audience members who use tobacco to tell their stories to the public. Volunteers were paired with a tobacco cessation specialist provided by DPH and interviewed by the stations. The quitters were followed on both

TV and through the stations' blog as well as on the CTQuits Facebook page. In many cases, the news coverage promoted the CT Quitline and provided the telephone number. Although no data were available to describe the strength or frequency of earned media coverage, from PDA's experience we believe that the earned media associated with the Biggest Quitter Challenge likely contributed to the peak in Quitline registrations.

## **Conclusions**

Overall, the models were moderately successful in describing the relationship between media and registrations. The proportion of variation in both the total and Hispanic models that is explained by the media components is about 29%. Seventy percent variation accounted for is considered to be very good.

We conclude that the cessation media campaign successfully connected tobacco users to the Quitline and contributed to an increase in the number of people served by the interventions. However, the impact of the media campaigns on registrations is modest, despite the larger investment in cessation media compared to past years.

## Appendix – End Card Tags

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Cessation:



Prevention:

