Investment in Health: How Alabama's Tobacco Quitline Saves Lives (and Dollars)

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Executive Summary

The available evidence indicates that Alabama's state-run tobacco Quitline is successful in its mission to aid Alabama tobacco users in their efforts to quit smoking. Furthermore, funding the Quitline is a good investment for the state, as the long-term outcomes of improved health and productivity which can be attributed to tobacco cessation become dollars saved by former tobacco users, health care and government systems that support them, and industries that employ them.

According to the 2013 North American Quitline Consortium's (NAQC) annual benchmarking survey, Alabama's state Quitline ranks third in the nation in quit rates among 31 quitlines that use 1-800 QUIT NOW. Currently, Alabama's Quitline enrolls approximately 6,000 participants in a year, with a quit rate of 32 percent among participants who are successfully contacted for an independent follow-up survey 6 months after enrolling, and an intent-to-treat (ITT) quit rate (based on total number of enrollees) of 6.3 percent. At its current capacity, in a year's time, Alabama's Tobacco Quitline program helps approximately 380 tobacco users quit smoking. These successes save an estimated $2.66 million dollars per year in recouped medical and productivity expenses. When this success is compared to the cost of the program, the return-on-investment (ROI) for funding the Quitline ranks high nationally. The current annual cost of providing Alabamians with quitline services is approximately $690,000, which amounts to slightly more than a quarter of the annual savings realized as a result of the program. The reported ROI for other state-run tobacco prevention and control programs typically ranges from $1 to $4 saved for every dollar spent; thus Alabama Quitline's annual ROI of $3.86 places it at the high end among similar programs.

Continuing to fund and expand the Quitline is in the best interest of the state of Alabama and its population. An estimated 8,600 tobacco users die each year in Alabama from tobacco-related causes and thousands more suffer from smoking-related illnesses. But these deaths and illnesses are preventable, and the Quitline is a tobacco control measure that is considered a "best practice" when it comes to the battle to combat the negative effects of tobacco use. While Alabama's tobacco prevention and control efforts may continue to be underfunded, ongoing support for the Quitline and plans for broadening its reach and enhancing its capacity can go a long way toward bridging the gap between what is available and what is desirable when it comes to improving the state's preventable death outlook.

Tobacco quitlines are effective in helping tobacco users quit, and the evidence supporting this claim continues to accumulate. A review of the randomized clinical trial research found strong evidence to support the effectiveness of tobacco quitlines and stated that they were cost-effective, especially when counseling was combined with nicotine replacement therapy (NRT) (Fiore, 2008). Overall, the review found that compared to no assistance in quitting tobacco use, quitlines increase 6-month cessation rates by 12.7 percent, and quitline services combined with medication increase 6-month cessation rates by 28.1 percent. An evaluation of Minnesota's QUITPLAN service also found that when free NRT was offered as part of the quitline, the number of calls for service increased dramatically (Fiore, 2008).

In response to this evidence, the Centers for Disease Control and Prevention (CDC) recommend that sustaining, expanding, and promoting tobacco quitline services is a "best practice" in reducing the prevalence of tobacco use (CDC, 2014a). The demonstrated success of quitlines has led to the establishment of a national network of tobacco quitlines, which may be accessed through 1-800-QUIT-NOW. This national portal is the result of a 2004 partnership among CDC and the National Cancer Institute's Cancer Information Service, NAQC, and state tobacco prevention and control programs (CDC, 2014a). When individuals call this national toll-free number, they are immediately transferred to quitline services administered by their state of residence to complete the intake process.

Since 2007, all 50 states have offered some degree of tobacco quitline services (CDC, 2007). A review of several states' quitline websites demonstrates that states are having success in helping citizens quit tobacco use. Research shows that state-administered tobacco quitlines are effective in helping tobacco users quit, regardless of their race/ethnicity, age, education level, gender, or area of residence (rural vs. urban) (Cummins et al., 2007; Maher et al., 2007). More recently, a meta-analysis of 27 studies examining quitlines that offered counseling sessions plus NRT found quit rates among program participants who are reached for follow-up surveys to be between 24.5 percent and 32 percent (Stead, et al., 2013).

Tobacco use has direct and indirect financial costs for states, health insurers, employers, and the public (Fosson & McCallum, 2011), in addition to causing more than 400,000 deaths per year nationwide. Therefore, the effectiveness of state-run quitlines is encouraging, both in terms of how many lives they save every year by helping tobacco users quit, and in terms of the dollars that can be saved by tobacco users and the systems that surround and support them. Given that Alabama has recently expanded the capacity of its state-administered quitline, examination of the program's effectiveness is warranted.

Alabama's Quitline: The Investment

Alabama has the thirteenth highest smoking prevalence rate in the United States. (CDC, 2013), while also ranking forty-ninth nationally in state spending for tobacco prevention (Campaign for Tobacco Free Kids (CTFK), 2015). The nationwide prevalence of smoking in 2013 was 17.8 percent, while the prevalence in Alabama was 21.5 percent. CDC recommends that a total of $55.9 million be spent per year in Alabama to fully fund the tobacco prevention and control efforts needed statewide (CDC, 2014). In 2015, however, the total amount available in the state for tobacco programs was just over $2 million, most of which was acquired through federal grants.

Nevertheless, Alabama's telephone and web-based tobacco Quitline has been successful in its mission to provide cessation services to tobacco users who wish to quit. The 2014 Alabama Adult Tobacco Survey found that 37 percent of tobacco users were aware of the Quitline, and according to the CDC's State Tobacco Activities Tracking and Evaluation System, there were 15,451 calls to the Alabama Tobacco Quitline in 2013 (CDC, 2014b). Additionally, 2013 data from the NAQC Annual Survey indicated that Alabama had the third highest quit rate among 31 state quitlines that use 1-800 QUIT NOW (NAQC, 2013).

Recently, an influx of funds from a grant awarded by CDC facilitated the expansion of Alabama's Quitline. Prior to the August 2014 start of this award, earmarked for increasing Quitline capacity, a call for proposals for a state Quitline vendor was issued. This call resulted in a contract with National Jewish Health (NJH), the largest nonprofit provider of tobacco cessation services in the United States. The Quitline's history of success, coupled with additional financial support provided by the capacity expansion grant funding, represents critical potential in an area of need.

The Alabama Tobacco Quitline services typically include telephone and online coaching; a two-week supply of NRT, if enrolled in coaching through the phone or web program and medically eligible; email, text messaging, and mobile apps; and printed support material. All callers are offered "Breathe Easy: A Guide to Help You Quit Tobacco," a 22-page tobacco cessation workbook that is available in English and Spanish. These services are available to any Alabama resident. Recently (as of April 2015), additional state funding has made it possible to temporarily provide eight weeks of nicotine replacement patches to Quitline callers, rather than two.

Telephone coaching services for Alabama's Quitline are available 6 a.m. until midnight, 7 days a week for a total of 126 hours of availability per week. The website and mobile applications are available 24 hours a day, 7 days a week. NJH offers materials in Spanish and 27 percent of its staff is bilingual. Coaching is also offered in 191 languages via the Language Line, a service that

provides real time phone interpreters. Current funding levels permit minimal media advertising for the Quitline, but the program leverages CDC's *Tips* campaign and other opportunities to generate substantial earned media promoting Quitline services.

The total annual budget for administration and functioning of the Quitline was $690,416 for fiscal year 2014-2015, much of which was provided by CDC capacity expansion grant. The majority of these costs represent those incurred by the Quitline vendor for materials, counseling, and nicotine replacement medications provided directly to program participants. The remaining funds support the state management of Quitline data, media costs, and evaluation of program outcomes. On average, this equates to less than $58,000 per month of the Alabama Department of Public Health's Tobacco Prevention and Control Program budget and encompasses less than half of the state's tobacco prevention and control budget. Costs per user, calculated by dividing the annual cost of the program by the annual number of enrollees (approximately 6,000), are approximately $114.

Alabama Quitline Costs per User	
Average cost per enrolled participant	$ 114

Alabama's Quitline: Success rates

The effectiveness of a tobacco quitline can be estimated utilizing data from follow-up surveys completed by program participants after completion of the program. For Alabama's Quitline, NJH employs six-month follow-up satisfaction surveys that involve an independent survey organization contacting willing program participants six months after their enrollment in the program. These surveys gauge not only participants' satisfaction with the program itself, but also the success of their quit attempts following receipt of its services. Upon program enrollment, all callers are asked if they are willing to be contacted for the follow-up survey, and only those who say yes are subsequently called. Additionally, not all potential participants can be reached. Therefore, reported quit rates are considered rough estimates, as they represent only a sample of the Quitline participant population.

For the purposes of this report, Alabama Quitline outcome data for callers who enrolled in the program within the six-month period following the beginning of the state's contract with NJH as its new vendor (June-November, 2014) were examined. Quit rates of these callers were gathered during the six-month satisfaction survey following this period and thus represent data collected between December 2014 and May 2015. At follow-up, program participants were asked whether or not they had "smoked any cigarettes or used other tobacco products in the past 30 days." Those responding "no" are considered a quit. The follow-up survey data also

include information concerning each individual's participation in telephone coaching sessions, as well as whether or not they received NRT.

The table below presents data on quit rates for the six-month follow-up telephone surveys. The ITT quit rate represents the quit percentage based upon the number of callers who agreed to be contacted for follow-up surveys, regardless of their level of program participation. (Approximately two percent did not agree to be contacted later.) Because many of the program participants for whom a contact attempt was made could not be reached, the ITT quit rate, which treats these non-contacts as non-quits, is a very conservative metric and likely underestimates the quit rate. Therefore, the responder quit rate, which represents the percentage of program participants who have quit among those who were reached for follow-up, is also important to examine, although it is likely to be an overestimate. The responder quit rate is the metric recommended by NAQC for reporting and comparing quit rates.

Alabama Quitline 6 month quit data-November 2014-April 2015					
Participant Group	**Call Attempts**	**Callers Reached**	**Number Who Quit**	**Responder Quit Rate**	**ITT Quit Rate**
All callers	3020	590	190	32.2	6.3
Self-guided participants	736	76	11	14.5	1.5
All coaching participants	2284	514	179	34.6	7.8
Coaching only-no NRT	830	173	52	30.0	6.3
Coaching plus NRT	**1454**	**341**	**127**	**37.2**	**8.7**

Overall, the ITT quit rate for all call attempts was 6.3 percent. As seen in the table, callers receiving both coaching calls and NRT patches saw a greater rate of success when compared with callers participating in coaching only and those receiving neither service. The ITT success rate for the reporting period was approximately 8.7 percent, as a total of 127 tobacco users who called the quit line between June and November of 2014 and received both counseling and NRT were tobacco-free 6 months later. Examination of the data for self-guided callers (those who declined both coaching and NRT) indicates a much lower ITT quit rate of 1.5 percent or 11 tobacco users who quit. The responder quit rate for those fully participating in coaching plus NRT was 37.2 percent for the reporting period, with an overall rate for all survey responders of 32.2 percent. These results compare very favorably with those reported for other state

quitlines, which have been found to have quit rates between 24.5 percent and 32 percent (Stead, et al., 2013).

Alabama's Quitline: The Return

Data reported above represent both the financial costs of maintaining Alabama's state-run tobacco Quitline, as well as the number of tobacco users who utilize the Quitline to quit smoking or using other tobacco products. In order to estimate the cost savings of investing substantial funds in a cessation program such as a quitline, one must also consider the dollar amounts associated with the health care and lost productivity costs incurred by smokers and other tobacco users over and above what would be expected for non-smoking individuals. These costs represent savings, in dollar amounts, which can be expected as a result of a successful cessation program. Such estimates should include savings that affect not only individual tobacco users and their families, but also the larger societies to which these individuals belong.

For instance, estimates of the annual medical costs for individual smokers, over and above what would be expected for a non-smoker, have been calculated by numerous sources for numerous populations. These dollar amounts are not necessarily a direct burden to smokers themselves, but to the health care systems and the state and local governments that are responsible for covering the costs of their members' and constituents' health care expenses. For Alabama, the dollar amount computed for direct medical expenses per person per year that can be attributed to tobacco use is generally between $2,050 and $2,100 (Fosson & McCallum, 2011; McCallum, 2009; Rumberger, Hollenbeak, & Kline, 2010). The most conservative of these estimates, $2,051, comes from a recent analysis of the burden of tobacco in Alabama (Fosson & McCallum, 2011).

Most sources that estimate additional medical costs incurred by tobacco users also examine lost productivity costs, both in terms of losses due to premature death as well as direct losses due to absenteeism and reduced productivity while at work. One such study by Penn State University examined the potential benefits of smoking cessation for each state in the U.S. (Rumberger, Hollenbeak, & Kline, 2010). The benefit calculations included losses attributable to health care expenses and productivity losses associated with tobacco use. This analysis resulted in an estimated $4,578 in lost productivity per smoker per year in the state of Alabama (workplace loss, $1,362; premature death, $3,216). Studies such as these make it possible to quantify the monetary costs of smoking to individuals and to society, enabling dollar-to-dollar comparisons of the costs of prevention and cessation programs to the costs of continued tobacco use.

ROI Estimates for Alabama's State Quitline

When choosing whether to invest in a tobacco cessation program, it is advantageous for states to consider not only the value of the lives that are saved when tobacco users quit, but also the financial return on the state's monetary investment in the program. ROI is an economic measure used to compare the value of a program to the costs associated with implementing it. ROI can be calculated by dividing the financial benefit (return) of the state's investment by the cost of the investment. Published ROI for state-run tobacco prevention and control programs is generally between $1 and $4 saved for every $1 spent (CTFK, 2013).

To calculate the ROI for Alabama's Quitline, the information that is needed includes a) the effectiveness of the program (or how many users successfully quit tobacco use), b) how many dollars will be saved in health care costs and productivity indices for each successful quit, and c) the administrative and implementation costs of the program. As detailed above, Alabama's Quitline had an overall 6-month ITT quit rate of 6.3 percent and a responder quit rate of 32.2 percent during the period examined. This represents a total of 190 individuals who quit their tobacco use during a 6-month period or 31.7 quits per month, and 380 successful quits per year. This number is based only on those reached for the follow-up call, yielding a very conservative estimate of the total number of successful quits.

In other words, there were *at least* 190 Quitline participants who quit smoking during the first 6-month period, projected to 380 for a full year; among those who could not be contacted and those who did not consent to be called, there were most likely additional unreported successful quits. The cost per reported quit can be calculated by dividing the total annual cost of the program ($690,416) by the estimated number of successful quits per year (380), yielding $1,817 per reported quit for the 2014-2015 period examined.

Alabama Quitline Costs per Quit	
Average cost per successful quit at 6 months	$ 1,817

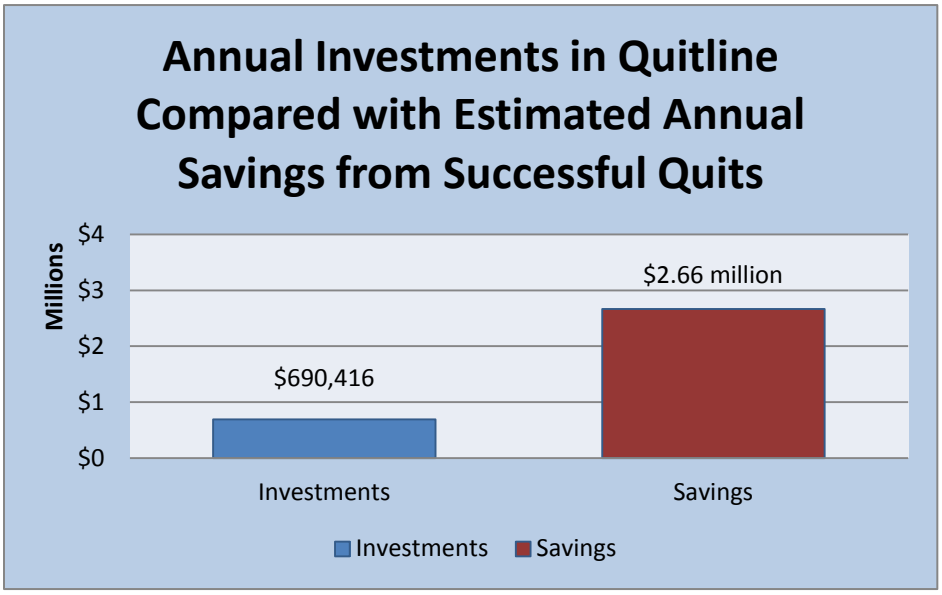
As has been reported by previous research, each Alabama smoker who quits represents an annual health care cost savings of approximately $2,051 per year, as well as $4,578 in productivity savings for a total amount of $6,629 that could be recouped per year for every smoker who quits. If these 2010 dollar amounts are adjusted for inflation and expressed in 2015 dollars, the health care cost savings become $2,168 and productivity savings become $4,840, for a total of $7,008 in savings per year for each successful quit. Given these numbers, it can be estimated that Alabama's Quitline, which helps approximately 380 tobacco users quit in

a given year, will save the state and its residents an average of $2,663,040 per year, just in health care costs and regained productivity associated with major medical issues and deaths. Clearly, while not all Alabama tobacco users call the Quitline for help, and only about half of those who call fully participate in the services offered, the number of callers who do quit translates to a significant cost savings for each year following those quits. By comparison, the cost of offering the service seems negligible.

Annual Costs and Savings for Alabama's Tobacco Quitline			
Annual Costs		Annual Savings	
Total program costs per year	**$ 690,416**	Total savings from enrollees who quit	$2,663,040
Cost per quit	**$ 1,816**	Savings per quit	$ 7,008
Cost per enrollee	**$ 114**	Health care cost savings	$ 2,168
		Productivity loss savings	$ 4,840

Note: Amounts are expressed in 2015 dollars

Using fiscal year 2014-2015 as a base, the ROI can be calculated, with annual costs of operating Alabama's Tobacco Quitline totaling approximately $690,416 ($1,816 per successful quit), and future estimated annual savings of $2.66 million ($7008 per successful quit). For the 1-year period examined, $3.86 will be saved annually in medical and productivity costs for every $1 that was spent on Alabama's Quitline. This places the Quitline toward the high end of the ROI range ($1-$4) for tobacco prevention and control programs recently reviewed by CTFK, which examined not only state-run quitlines but also state-wide comprehensive programs.



Amounts and calculations reviewed thus far have reflected the most straightforward data in the simplest terms. Fully examining all aspects of the ROI for Alabama's (or any) Quitline necessarily involves considering the more long-term outcomes of the program, as well as those that can

easily be quantified within a single snapshot of time, such as a one-year period. For example, some smokers who quit will relapse, reducing the savings that would be expected in the long run if all quitters continued to abstain from tobacco use. According to previous research (Hughes, Peters, & Naud, 2008), a ten percent relapse rate for those who have quit at the six-month follow-up, can be expected within one year of cessation. Applying additional relapse rates over a 7-year period, when the rate falls to 1 percent or less (Krall, Garvey, & Garcia, 2002), the number of successful 2014-15 Alabama Quitline users who can be expected to permanently abstain from tobacco falls from 380 to 300.

Additionally, long-term examination of cost savings that result from smoking cessation reveals how savings accumulate throughout each former smoker's lifetime. It takes an average of about seven years for full annual savings to be achieved (O'Donnel & Roizen, 2011), but these savings of health care costs and productivity losses will be realized each year of each former smoker's life, both in years leading up to the seven-year mark of full savings and those which follow. That is, in the seven-year period following a quit, annual cost savings increase from year 1 ($1,050), to years 2 ($2,100), 3 ($3,150), 4 ($4,200) and so on until, by year 7 the full savings ($7,008) is achieved, and the accumulated savings per former smoker equals $29,400.

If these two adjustments for expected relapse and gradual savings are both made to the ROI calculation, the return is somewhat reduced; however, the complete cost of treatment will be recouped in the second year following the successful quits of the individuals receiving services in the 2014-2015 cohort. All health care and productivity savings after that are positive ROIs. By the third year, annual savings exceed the initial investment. By the seventh year, the accumulated savings would be $9.01 million or $9.01 for every $1 spent in the year treatment was received. The annual savings in Year 7, when further relapse is minimal and annual savings have reached the full level, would be $2.10 million, with an annual ROI of $3.04 per $1 spent in the treatment year. Thus, this more conservative approach also yields an ROI that is well-placed in the $1-$4 range for state tobacco prevention and control programs.

Conclusions

A large body of evidence indicates that tobacco quitlines are effective in helping tobacco users quit, in addition to being cost effective for states to fund (Fiore, 2008; Stead, et al., 2013). Investments in smoking cessation programs in general, and quitlines in particular, have been shown to improve health outcomes of tobacco users, leading to saved lives and increased quality of life for users who quit, while also lowering health care costs and saving money for tobacco users and their families, as well as their health care systems, employers, and state and local governments (Cummins et al., 2007; Maher et al., 2007; CDC, 2014a).

Results such as these are becoming increasingly important as more and better ways to improve the public's health and reduce the cost of health care services are sought. At its current capacity, in a year's time, Alabama's 1-800-QUIT-NOW program helps approximately 380 tobacco users quit smoking. This likely prolongs the lives of these individuals, while saving the state of Alabama in excess of $2.66 million per year, more than 3 times the cost of the program. Continuing and increasing funding for the quitline can only compound these positive outcomes, saving more lives and more dollars every year.

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