

Effectiveness of the Kansas Tobacco Quitline



Background

The Kansas Tobacco Use Prevention Program (TUPP) operates within the Bureau of Health Promotion (BHP) at the Kansas Department of Health and Environment (KDHE). TUPP was established in 1992 and is the lead state program for comprehensive tobacco prevention and control. TUPP incorporates CDC's Best Practices for Comprehensive Tobacco Control Programs and uses approaches compatible with the Healthy People 2020 risk reduction strategies for tobacco use. In addition to providing resources and technical assistance to community coalitions for development, enhancement and evaluation of state and local initiatives to prevent morbidity and mortality from tobacco use, TUPP also manages the Kansas Tobacco Quitline. The Quitline provides one-on-one cessation counseling to Kansas residents. The Quitline is promoted primarily through earned and paid media, and health and dental care providers.

The Quitline has provided proactive telephone counseling to Kansas residents since November 2003. The Quitline provides intake services 24 hours a day, seven days a week. All calls are answered live. Intake and counseling services are available in English and Spanish, with translation services available for 150 other languages. Alere Wellbeing (formerly Free & Clear Inc.) has provided Quitline services for Kansas since January 2010. Alere's Quitline services meet FDA criteria for cessation resources.

In 2010, Kansas received federal funding to expand and enhance Kansas Tobacco Quitline services by providing online cessation services in addition to phone counseling. A portion of this funding was used to evaluate the effectiveness of Quitline services by conducting a callback survey of telephone Quitline participants seven months following their registration with the Quitline.

Survey Methods Overview

The survey included caller registrations between February 2010 and June 2011. Originally, the plan was to randomly sample registrants stratified by month, but a lack of eligible callers required the adoption of census sampling to achieve the target of 800 completed surveys. Surveys were administered over the telephone by Alere Wellbeing survey staff. To allow for multiple survey attempts to be made, surveying started two weeks prior to a caller's seven-month registration anniversary and closed approximately two weeks after a caller's seven-month anniversary.

Callers were *included* in the survey sample if they:

- were a tobacco user age 18 or older,
- had received at least one intervention from a tobacco cessation specialist (Quit Coach®),
- were English speaking, and
- had a valid phone number in the Alere Wellbeing database.

Callers were *excluded* from the survey sample if they were proxy callers (i.e., calling to obtain information for someone else), health care providers, calling as a prank, calling for information only, or were randomized for inclusion in an American Legacy Foundation research study.

All possible efforts were made to include participants in the survey sample only once, regardless of the number of contacts they had with the Quitline. Additionally, efforts were made to contact only one caller per household, as people living in the same household might influence each other's responses. Of the 2,068 people called, 823 completed the follow-up survey for an overall response rate of about 40 percent. Of those who completed the survey, 808 provided seven-day and 30-day quit information.

Survey Representativeness

Table 1 and figures 1 through 7 provide demographic information of Kansas adults who smoke¹, 4,758 Kansas Tobacco Quitline registrants who use tobacco² and the 823 respondents to the seven-month callback survey. With the exception of annual income, the seven-month callback survey demographic measures had 11 or fewer missing values (approximately 1 percent or less of completed surveys). Annual income was not collected by Alere at registration until November 2010, so there were 349 missing annual income values from the seven-month callback survey and 2,278 missing annual income values from Quitline registrants who use tobacco. All missing values are excluded from analysis. Kansas smoker demographic information comes from the Kansas Behavioral Risk Factor Surveillance System, which provides representative estimates of all Kansas adults.

With few exceptions, seven-month callback participants seem to represent the Quitline user base. There appears to be less young adult and low income representation in the callback survey than in the Quitline user base. This is consistent with most U.S. phone-based surveys that tend to have better participation among older adults with higher annual incomes. The most salient demographic differences between Kansas adult smokers and Quitline registrants who use tobacco are in gender and annual income groups. That female smokers are more likely than male smokers to call the Quitline is consistent with national Quitline trends. The most obvious deviation is seen in reported annual income between Kansas adult smokers and Quitline registrants who use tobacco. One-third of Kansas adult smokers have an annual income less than \$25,000 while nearly 70 percent of the Quitline user base reports an annual income less than \$25,000. Both estimates come from self-reported phone-based surveys, so it is difficult to rationalize response bias as the cause for the discrepancy. The notable number of missing annual income values from Quitline participants is largely attributable to a lack of annual income data collection prior to November 2010. Although there may be a temporal effect modifying reported annual income, it seems unlikely such an effect would be large enough to explain the observed differences in annual income distribution. More likely, this wide discrepancy speaks to the efficiency with which TUPP Quitline promotions reaches the low income population of Kansas and the disproportionate burden of tobacco use in that population.

These data demonstrate the quality of the seven-month callback survey data collection and support the generalization of survey results to all Kansas Tobacco Quitline registrants. These data also demonstrate that the Quitline user base consists primarily of low income tobacco users and does not represent all Kansas smokers.

Table 1. Demographics of Kansas smokers, Quitline registrants who use tobacco and Quitline 7-month callback respondents.

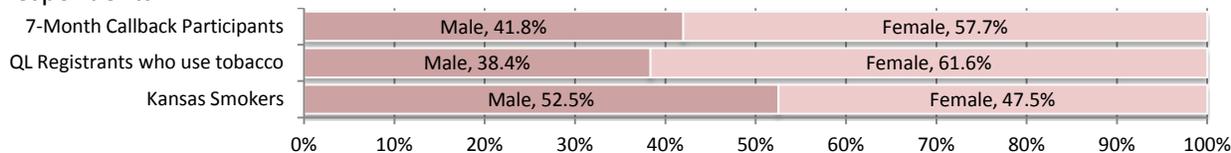
		7-Month Callback Participants	QL Registrants who use tobacco	Kansas Smokers
Gender	Male	41.8%	38.4%	52.5%
	Female	57.7%	61.6%	47.5%
Age Group	Age 18-24	6.1%	11.3%	14.6%
	Age 25-34	19.0%	22.5%	23.4%
	Age 35-44	15.9%	18.0%	16.7%

¹ From 2010 Kansas Behavioral Risk Factor Surveillance System.

² This is all Kansas Tobacco Quitline registrants who used tobacco between January 2010 and December 2011.

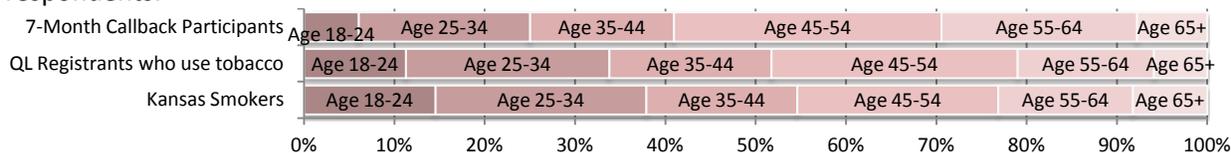
	7-Month Callback Participants	QL Registrants who use tobacco	Kansas Smokers
Age 45-54	29.7%	27.3%	22.3%
Age 55-64	21.6%	15.1%	14.9%
Age 65+	7.8%	5.9%	8.2%
Race			
White	85.2%	79.8%	84.8%
African American	7.8%	11.1%	5.3%
Other	7.0%	9.1%	9.9%
Ethnicity			
Hispanic	3.8%	5.9%	4.9%
Not Hispanic	96.2%	94.1%	95.1%
Education			
< \$25k	61.2%	69.4%	33.3%
\$25k to < \$50k	25.5%	19.5%	31.4%
\$50k or more	13.3%	11.1%	35.3%
Health Insurance Status			
Has Health Insurance	69.9%	64.4%	73.6%
Does not have Health Insurance	30.1%	35.6%	26.4%

Figure 1. Gender of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



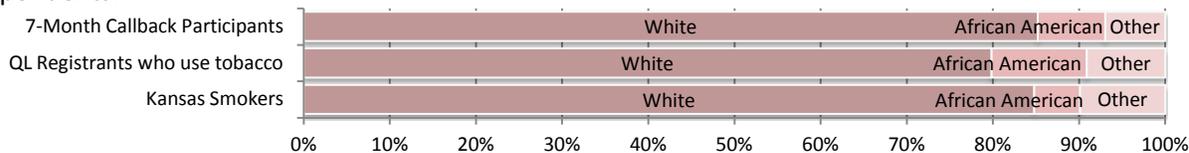
*QL Registrants who use tobacco frequency missing = 226.

Figure 2. Age of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



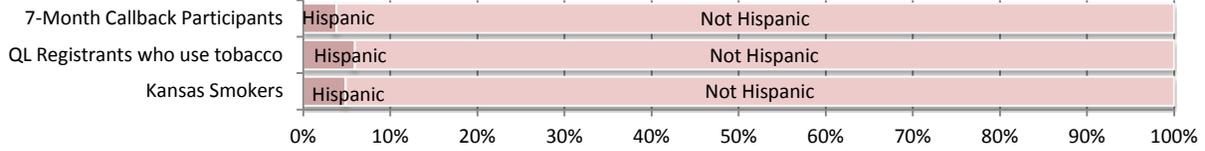
*QL Registrants who use tobacco frequency missing = 338.

Figure 3. Race of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



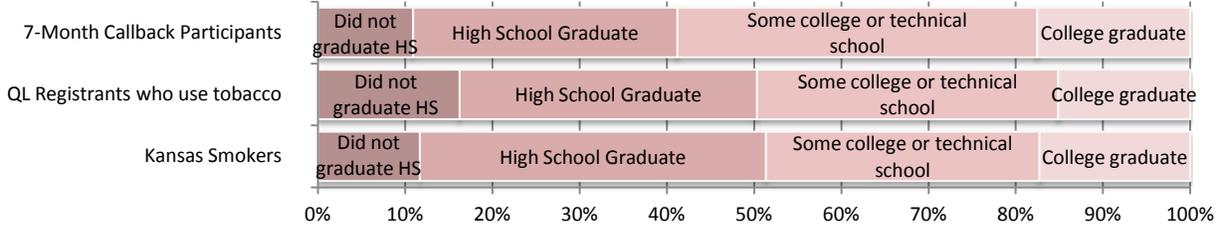
*QL Registrants who use tobacco frequency missing = 684.

Figure 4. Ethnicity of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



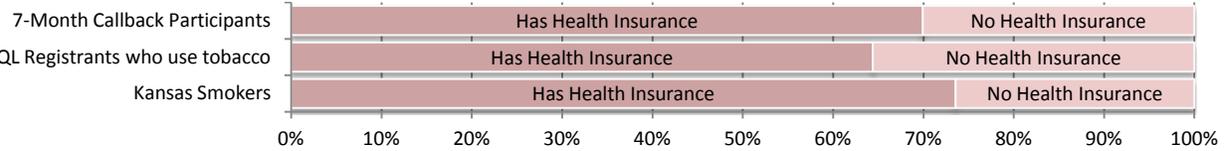
*QL Registrants who use tobacco frequency missing = 689.

Figure 5. Education of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



*QL Registrants who use tobacco frequency missing = 722.

Figure 6. Health insurance status of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



*QL Registrants who use tobacco frequency missing = 502.

Figure 7. Reported annual income of Kansas smokers, Quitline registrants who use tobacco and 7-month callback respondents.



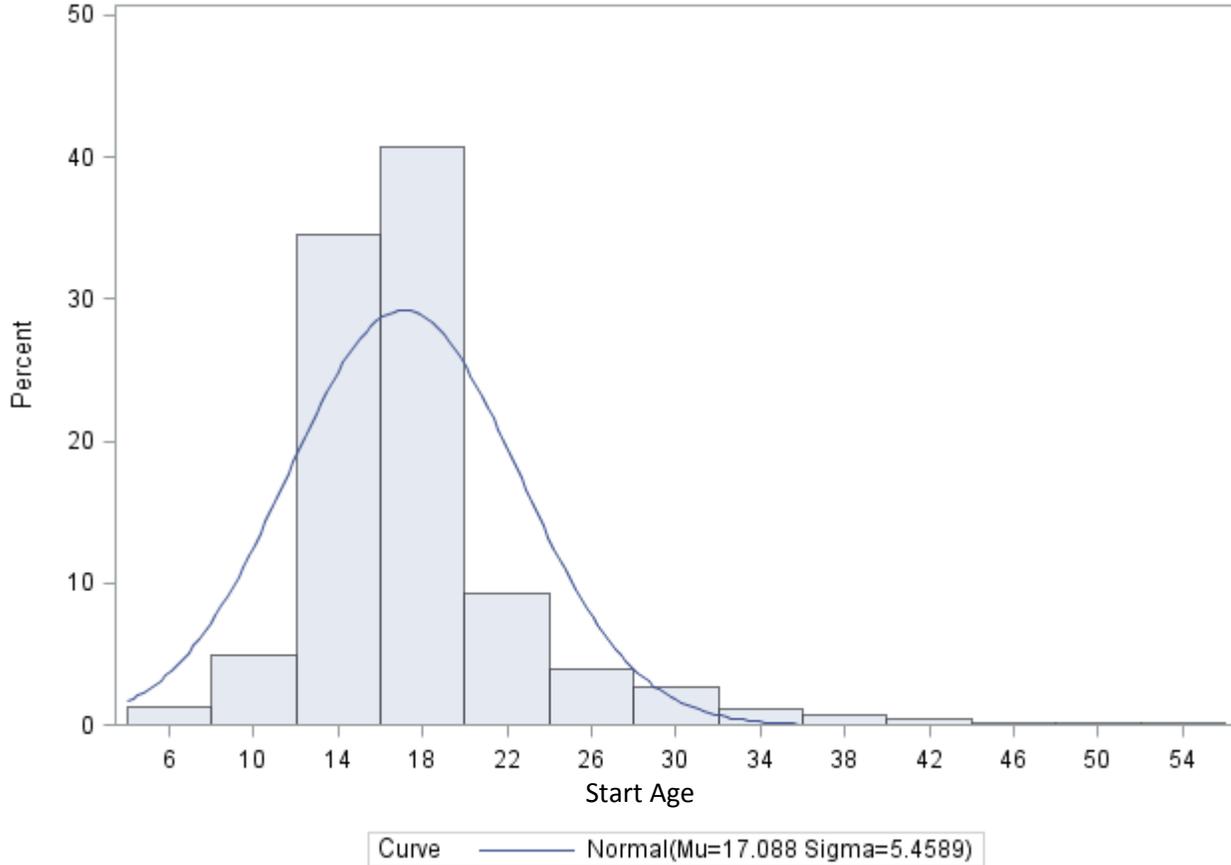
*QL Registrants who use tobacco frequency missing = 2,278.

Survey Results

Of the 2,068 people called for the survey, 823 completed the follow-up survey for an overall response rate of about 40 percent. Of those who completed the survey, 808 provided seven-day and 30-day quit information. Of the 808 who provided quit information, 236 respondents, or 29 percent, had been quit for at least 30 days and 267, or 33 percent, had been quit for at least seven days. Overall satisfaction, measured by the percent of respondents who were “very,” “mostly” or “somewhat” satisfied with Quitline services, was 93 percent.

The age at which respondents reported first starting to use tobacco varied from 5 to 55 years old, with a median age of 16 and mean age of 17.1 (figure 8). Sixty-two percent of respondents reported first using tobacco before they were 18 years old.

Figure 8. Distribution of reported age of first tobacco use among survey respondents.



Most respondents (777 of 821, or 94.6 percent) were cigarette smokers, of which about 5 percent also used cigars, smokeless tobacco or pipes. Table 2 demonstrates the extent of dual and poly tobacco use among survey respondents. Although cigarette-only use is common among cigarette smokers, constituting 95.2 percent of the sample that reported smoking cigarettes, dual and poly tobacco use is very common in the other tobacco product categories, constituting about half of cigar smokers and smokeless tobacco users. This heavy representation of cigarette-only smokers in the sample may be because users of other tobacco products may not know that the Quitline provides cessation counseling for any kind of tobacco addiction, not just cigarette smoking, or they may be less inclined to want to quit.

Table 2. Respondent tobacco use by product type and number of products used as reported to Quitline counselors.

Reported Number of Products Used	CIGARETTE		CIGAR		SMOKELESS		PIPE	
1 Tobacco Product	740	95.2%	17	48.6%	25	56.8%	1	14.3%
2 Tobacco Products	34	4.4%	15	42.9%	16	36.4%	5	71.4%
3 Tobacco Products	2	0.3%	2	5.7%	2	4.5%	0	0.0%
4 Tobacco Products	1	0.1%	1	2.9%	1	2.3%	1	14.3%
TOTAL	777		35		44		7	

Number of respondents who provided tobacco use information, N = 821
 Frequency Missing = 2

Most respondents had made more than one quit attempt in the past. The length of respondents' most successful quit attempts ranged from less than a day to more than six months, with more than half falling somewhere between 24 hours and six months in length. The desire to quit is very common among cigarette smokers. More than half of adult smokers in Kansas have tried to quit at least once in the past year³.

Table 3. Number of quit attempts and length of previous quit attempt.

Number of Previous Quit Attempts			Longest Previous Quit Attempt		
	Frequency	Percent		Frequency	Percent
0 Attempts	64	8.0%	<24 hrs	38	5.2%
1 Attempt	155	19.5%	24 hrs - 1 month	227	30.9%
2 to 5 Attempts	416	52.4%	1-6 months	190	25.9%
6+ Attempts	158	19.9%	>6 months	278	37.9%
Frequency Missing = 30			Frequency Missing = 90		

Between November 2010 and April 2011, KDHE contracted with Alere to provide free nicotine replacement therapy (NRT) to Quitline callers. More than 800 two-week supplies of NRT were shipped to Kansans, of which 322, or 39.1 percent of NRT recipients, responded to the callback survey. There is a mismatch between respondents who were sent NRT and those who reported using any medication (Table 4). This is likely due to poor recall. As reported, about half (51.2 percent) of respondents who used medication were not provided free NRT, but sought out and used medication on their own. If the 46 respondents who were sent NRT and did not report using any medication are re-categorized to have used medication, the percent of respondents who were not sent NRT, but sought out and used medication on their own remains at about half (47.1 percent).

Table 4. Reported use of any kind of NRT by promotional NRT recipient status.

	Not sent NRT	Sent NRT	Total
Used medication	272	259	531
Did not use medication	209	46	255
Total	481	305	786

Frequency Missing = 37

Similar to how respondents reported using multiple tobacco products, many respondents also used multiple medications. Of the 531 who reported using medication to help them quit using tobacco, 124, or about one in four (23.4 percent), reported using two or more medications.

Table 5. Reported number of medications used to help quit using tobacco.

Reported number of medications used	Frequency	Cumulative frequency
Refused, missing or zero medications	292	292
1 medication	407	699
2 medications	100	799
3 medications	19	818
4 medicatons	3	821
5 medications	2	823

³ From 2010 Kansas Behavioral Risk Factor Surveillance System.

Table 6 shows a breakdown of the type of medication used by the total reported number of medications used by each respondent. The nicotine patch appears to be the most popular type of medication: 56 percent of respondents (299 of N=531) who reported using medication reported using the nicotine patch. The nicotine patch also has a relatively high percent of nicotine patch-only users (68 percent). The other 32 percent of respondents who reported using the nicotine patch reported using some other kind of product as well. The other two popular types of medication were nicotine gum (140 of N=531, or 26 percent of respondents who used medication) and Chantix/Varenicline (130 of N=531, or 24 percent of respondents who used medication). Chantix/Varenicline also had relatively high sole use with 68 percent of users reporting using only Chantix/Varenicline. The patch and gum were the only types of free NRT provided by the Quitline during the promotional period, which largely explains their popularity and makes the popularity of Chantix/Varenicline all the more striking.

Table 6. Type of medication used by reported number of medications used.

	1 Medication		2+ Medications	
Used nicotine patches	203	68%	96	32%
Used Chantix/Varenicline	88	68%	42	32%
Used nicotine gum	74	53%	66	47%
Used Zyban/Bupropion/Wellbutrin	17	37%	29	63%
Used nicotine lozenges	10	26%	29	74%
Used some other medication	9	47%	10	53%
Used nicotine inhaler	5	63%	3	38%
Used nicotine nasal spray	1	20%	4	80%

Number of respondents who used any kind of medication, N = 531
Frequency Missing = 1

Interestingly, the most popular “other medication” reported was e-cigarettes or “vapor” cigarettes, which are electronic devices that look like cigarettes and vaporize a nicotine-laden solution for the user to inhale. Eleven of the 19 “other medication” respondents indicated they used e-cigarettes. Other responses included various other drugs including albuterol inhalers and allergy medications. These other medications and e-cigarettes are not recommended strategies for cessation, but are reported here to support tobacco use prevention and cessation planning and evaluation.

Those who were still using tobacco at the time of the survey were asked about any future plans or intentions to quit. Table 7 presents 491 categorical responses combined with 57 categorized open responses.

Table 7. Categorized future plans or intentions to quit of respondents who report recent tobacco use.

	Frequency	Percent
Planning to quit in the next 6 months	173	32%
Planning to quit in the next 30 days	169	31%
Planning to quit sometime in the future, but not in the next 6 months	78	14%
Do not know	31	6%
Have quit	24	4%
Not planning to quit, but planning to cut down	18	3%
Considering quitting or need to quit, but no specific plans or dates	17	3%
Not planning to quit or cut down	15	3%
Want to quit, or want to quit but cannot	8	1%

Plan to cut back	6	1%
Have cut back or are cutting back	4	1%
Plan to quit around or by New Years	3	1%
Quit when pregnant	1	0%
No money to quit	1	0%
Total	548	100%

Of those who report recent (past month) tobacco use, about 4 in 5 (81%) report that they have quit or plan to quit.

The survey also asked respondents about other types of assistance they received in the past seven months. Table 8 breaks down other types of assistance by type and by number of other types of assistance received. The most popular types of assistance, other than the Quitline, were advice from a health professional and the “something else” free response option. Of the 72 people who reported getting advice from a health professional, 10 respondents received assistance from a second source and one respondent received assistance from two additional sources.

Table 8. Assistance received other than from the Quitline by type and number of other types of assistance received.

Number of other types of assistance received	1	2	3	Total
Advice from a health professional (other than the Quitline)	61	10	1	72
Website (other than the Quitline)	4	1	1	6
Telephone program (other than the Quitline)	0	3	0	3
Counseling program (other than the Quitline)	0	2	1	3
Self-help materials (other than from the Quitline)	0	1	1	2
Something else (see Table 9)	123	7	2	132

The 132 “Something else” free responses were categorized into nine categories. About 37 percent indicated support from family and friends, or that they modified their social group by avoiding other smokers or surrounding themselves with nonsmokers. Seventeen indicated food or something to distract their hands or mouth with, such as gum, straw or toothpicks. Sixteen responses were not discernible or did not fit in another category. Another 15 respondents reported using e-cigarettes to help quit and 14 reported assistance from a hospital, seeing a doctor, hypnosis, acupuncture or some other therapeutic assistance. Finally, at least three indicated modified tobacco use to help them quit, including using filter tips to “take the tar out,” using smokeless tobacco and switching to a brand they do not like. Many of these, including e-cigarettes, are not recommended cessation strategies, but are reported here to inform tobacco prevention and cessation planning and evaluation.

Table 9. Categorized free-response types of assistance received other than the Quitline.

Family/Friend Support and Social Group Selection	49	37%
Food/Distracton Device	17	13%
Other or Unknown	16	12%
E-Cigarettes	15	11%
Clinical or Other Therapeutic Assistance	14	11%
Prayer or Religious Support	7	5%
Exercise	6	5%
Reading Books or Informational Pamphlets	5	4%
Modified Tobacco Use	3	2%
Total	132	100%

At seven-month follow up, 29 percent of respondents in the present study had been quit for 30 days or longer. A similar survey of Kansas Tobacco Quitline respondents was conducted with clients who registered between June 2006 and August 2008, when the Quitline was serviced by a different vendor. In the 2006-2008 evaluation, 20.7 percent of respondents had been quit for 30 days or longer at seven months post registration. While the actual 2006-2008 survey responses are not available for comparison, it is possible that the expanded services provided through the current contract have contributed to this dramatic improvement in outcomes.

An exploratory analysis of factors contributing to the chance of being quit for 30 days at the seven-month follow up was conducted by constructing a logistic model of the odds of being quit. Several predictors were considered, including reported motivation, confidence, education, age, race, reported annual income, ethnicity, medication used, receiving free NRT, health insurance type, gender, number of Quitline sessions, years of tobacco use, time after waking to first cigarette, cigarette frequency and types of assistance other than the Quitline. Univariate models showed the odds of being quit at the seven-month follow up varied significantly by reported level of motivation at registration, education level, annual income, health insurance type, number of Quitline sessions and time to first cigarette after waking. Unfortunately, reported annual income could not be used because of too many missing values. Interestingly, quit rates did not vary significantly by any type of medication use or confidence at time of registration. This does not mean that medication is ineffective in supporting tobacco cessation, but rather that other factors may have influenced quit outcomes in the present dataset. Finally, potential interaction terms were examined in the final model, but none contributed meaningfully to the model.

Table 10. Probability of being quit for 30 days at 7-months post registration.

	Crude OR	95% Confidence Limits		Adj. OR	95% Confidence Limits	
Reported Level of Motivation (1-10 scale)	1.22*	1.10	1.36	1.20*	1.08	1.35
Level of Education						
GED	1.00			1.00		
College or Tech/Trade School Degree	3.52*	1.40	8.87	4.41*	1.24	15.64
Some College	2.10	0.85	5.22	3.18	0.91	11.07
High school degree or Some Tech/Trade School	1.75	0.69	4.39	2.65	0.75	9.36
Less than high school	1.86	0.69	5.02	3.23	0.86	12.13
Type of Health Insurance						
Medicaid	1.00			1.00		
Commercial or Medicare	2.65*	1.60	4.40	2.24*	1.22	4.08
Uninsured	1.86*	1.08	3.21	2.07*	1.10	3.88
Number of Quitline Counseling Calls Since Registration						
Less than 3 counseling calls	1.00			1.00		
3 or more counseling calls	2.39*	1.75	3.26	2.20*	1.54	3.13
Reported Time After Waking Before First Cigarette at Registration						
First cigarette within 5 minutes of waking	1.00			1.00		
Within 6-30 min. of waking	1.51*	1.04	2.19	1.24	0.82	1.85
Within 31-60 min. of waking	2.86*	1.72	4.78	2.39*	1.35	4.24
Over 60 min. after waking	2.36*	1.43	3.90	1.75*	1.00	3.07

*p<0.05.

After adjusting for age, gender, education, type of health insurance, number of Quitline counseling sessions and reported time after waking before first cigarette (Table 10, Adjusted Odds Ratio), those

reporting higher levels of motivation were still more likely to have been quit for 30 days at the seven-month follow up than those with lower levels of motivation. Similarly, participants who had three or more counseling calls with the Quitline were more than twice as likely to be quit at follow up as those who had less counseling calls. The impact of health insurance status is also interesting. After adjustment, both medically uninsured callers and those insured commercially or by Medicare were twice as likely to be quit at follow up as Medicaid recipients. Finally, respondents who reported a longer interval between waking and when they have their first cigarette (more than 30 minutes) had better odds of being quit for the past 30 days at seven months than those who have their first cigarette within five minutes of waking. Time after waking to first cigarette is considered a proxy measure for the level of nicotine dependence in individuals, so it is not surprising that those who indicate less dependence are more likely to have better cessation outcomes.

Conclusion

Overall the Quitline appears to be effective in supporting cessation. This is apparent in the overall higher quit rates and in the improved odds of quitting associated with increased Quitline participation. Quitline demographics point to effective marketing to disparately affected, low income groups. About 93 percent of respondents reported being somewhat, mostly or very satisfied with the Quitline and 85 percent of respondents said that the Quitline met their expectations. When asked why the Quitline did or did not meet their expectations, several themes become apparent.

Throughout the responses from people who said the Quitline met their expectations, one can find recurring satisfaction with the level of proactive support. Respondents seem pleased that the Quitline calls them on a regular basis to “check in,” that the Quitline followed through on commitments (“I was told what they would do and they did it”) and that Quitline counselors seemed genuinely concerned and interested in the participant’s ability to quit.

Among respondents who said the Quitline did not meet their expectations, there are consistent requests for expanded NRT availability. While the present dataset does not demonstrate improved quit outcomes associated with medication, it is worth noting that the Quitline experienced record call volumes during free NRT promotions. These responses support the observation that nothing drives callers to the Quitline like free NRT.

This report does not explore the effectiveness of online-only cessation support that was recently added to the Quitline, nor does it describe Quitline-related health care savings or return on investment, though these topics have been addressed in the literature.

The Kansas Tobacco Quitline is effective in supporting tobacco cessation. To support Quitline effectiveness, the Kansas Tobacco Use Prevention Program should educate the public on recommended cessation medications and improve access to these medications through the Quitline and commensurate Quitline promotion.

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