ex program enterprise

Return on Investment Analysis

of EX Program by Truth Initiative, a digital tobacco cessation program

Conducted by NORC at the University of Chicago

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About Truth Initiative:

Founded in 1999, Truth Initiative is America's largest nonprofit public health organization dedicated to creating a future free from lifelong addiction, fostering healthier lives and a more resilient nation. Our mission is clear: prevent youth and young adult nicotine addiction and empower quitting for all.

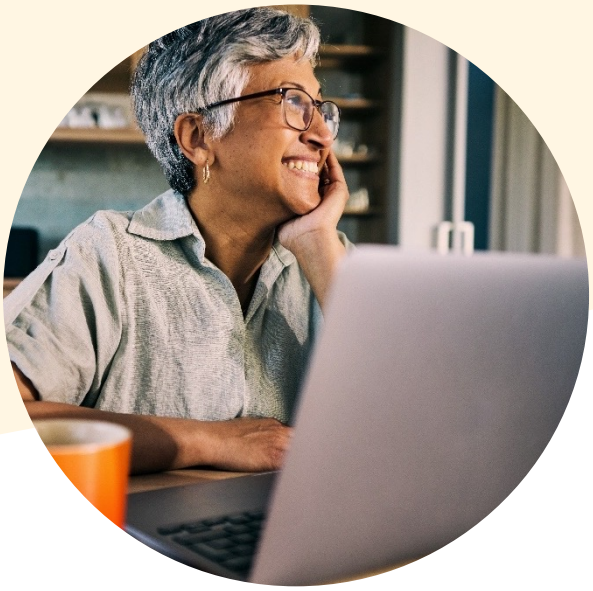
Since 2008, Truth Initiative has collaborated with Mayo Clinic Nicotine Dependence Center to deliver world-class tobacco dependence treatment through a personally tailored and interactive digital cessation program. Since that time, EX Program has helped millions of tobacco users of all ages to develop the skills and confidence to successfully quit.

About NORC at the University of Chicago:

Founded in 1941 as a nonprofit social science research and public policy organization, the National Opinion Research Center (NORC) at the University of Chicago conducts rigorous research and analysis in the public interest. NORC partners with government, corporate, and nonprofit clients around the world to provide the objectivity and expertise necessary to inform the critical decisions facing society.

Developed with Mayo Clinic, EX Program by Truth Initiative is the leading digital health program for nicotine addiction.

Based on a biopsychosocial model of tobacco dependence treatment, EX Program integrates medication management, cognitive and behavioral skills training, and the empathy and accountability of 1:1 coaching and online community support in an engaging digital platform.



Key Insights

In 2024, NORC at the University of Chicago conducted a cost effectiveness study of EX Program.

The study used healthcare claims data from n=6,141 employees of B. Braun Medical Inc. and their spouses who were insured by the company's health plan and eligible to participate in EX Program between November 2020 and December 2023.

Healthcare costs of EX Program enrollees in the year prior to program enrollment ("pre-period expenditures") and in the 12 months post-enrollment ("post-period expenditures") were compared to those of a control group of non-enrollees matched to enrollees.

Costs of absenteeism and presenteeism to employers were sourced from published literature.

For B. Braun Medical, Inc., EX Program delivered:

4.75x ROI in healthcare cost savings in year 1
relative to matched controls

$1,910 in savings per individual in year 1
combining healthcare cost savings and productivity gains

An estimated
$400,000 of savings
in the year following enrollment in EX Program

Background & Aims

Smoking costs the U.S. economy nearly $600 billion each year.[1] Employers and health plans bear the brunt of these costs.

Each employee who smokes costs an additional $8,156 annually compared to a non-smoker. Smoking accounts for 11.7% of U.S. healthcare spending, including 16.4% of inpatient costs and 13.4% of prescription drug costs.

The benefits of quitting tobacco and nicotine accrue quickly. The combination of behavioral and pharmacologic interventions for tobacco dependence is the most effective treatment approach.[2] Smoking cessation treatment is one of the most cost-effective medical interventions.[3]

The U.S. Surgeon General recommends digital smoking cessation treatment.[4] Specifically, Internet and text message interventions are proven effective, especially when they use proven behavior change techniques and individually tailored, interactive features.

EX Program by Truth Initiative is an individually tailored, interactive digital tobacco cessation program developed with Mayo Clinic. Since its launch, EX Program has helped millions of tobacco users on their journey to quit.

In 2024, Truth Initiative engaged the National Opinion Research Center (NORC) at the University of Chicago, a nonprofit social science research and public policy organization, to conduct a cost effectiveness study of EX Program.

This study addressed 3 main questions:

1. **How much money can EX Program save on healthcare?**

   By analyzing medical claims data, we calculated how much less is spent on healthcare when people participate in EX Program compared to those who don't. This tells us the program's potential to reduce medical expenses.

2. **How does EX Program impact productivity at work?**

   We estimated the value of increased workplace productivity among people who joined EX Program. This included benefits like fewer sick days and improved job performance.

3. **Is EX Program a worthwhile investment?**

   We calculated the overall Return on Investment (ROI) by comparing the costs of offering EX Program to the combined savings in healthcare and gains in productivity. This helps show whether the benefits of the program outweigh its costs.

Program Design & Clinical Effectiveness

EX Program blends the accessibility of a digital platform with the empathy and accountability of human support. At the center of a federally-funded research portfolio for 15+ years, the evidence behind EX Program is unrivaled.

Synchronous 1:1 Live Chat Coaching

EX Coaches are certified Tobacco Treatment Specialists, trained at Mayo Clinic. Using proven behavior change techniques and motivational interviewing strategies,[5] they help EX Program members build an individualized quit plan.

EX Coaches blend the science of tobacco dependence treatment with the art of engaging tobacco users that has been field-tested at Mayo Clinic Nicotine Dependence Center for over 30 years.[6]

Peer-to-Peer Support

The EX Community is the largest and longest running online social network dedicated to quitting tobacco. Members benefit from in-the-moment advice and encouragement—day or night—from other tobacco users and Mayo Clinic experts.

Participation in the EX Community is a prospective predictor of quit success.[7]

Medication Decision Support & Delivery

Nicotine replacement therapy doubles the chances of quitting successfully. EX Program educates members about medication options through interactive tools, videos, and expert decision support. EX Coaches help members to create a personalized medication plan and coordinate medication delivery. Individually tailored text messages support adherence.

Dynamically Tailored Text Messaging

EX Program's robust text messaging platform delivers interactive and tailored messages based on how each individual engages with the program. A simple yet powerful form of treatment, text messages build skills for quitting and remind tobacco users of their commitment to quit.

Our federally-funded research shows that this dynamic, personalized approach increases the depth of engagement with tobacco cessation treatment.[8]

EX Program also includes the only proven-effective intervention for youth vaping cessation on the market today.[9-10]

Methods

Study Design

Observational study spanning 5 years of data (2019-2023) that compared changes in healthcare and productivity costs between EX Program members and a matched control group.

Participants

Participants were n=6,141 U.S.-based employees and spouses of B. Braun Medical, Inc., a large, self-insured, multinational manufacturing company.

Data Sources

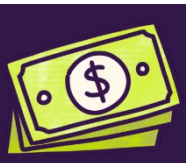
1. **Eligibility files.** HIPAA-compliant data files received from B. Braun Medical, Inc. contained information about individuals eligible for EX Program, including age, sex, tobacco use, and zip code. Zip codes were linked with estimates of median household income from the American Community Survey as a measure of socioeconomic status.

Data Sources

2 **Health insurance claims data.** Health insurance claims data. HIPAA-compliant data files on service expenditures and diagnostic (ICD-10) and procedure (CPT) codes were received from the company's health plan for medical claims occurring between January 1, 2019, and December 31, 2023.

Healthcare costs were inflation-adjusted to 2023 dollars and split into pre-period and post-period costs for each individual. Cost data and CPT codes were used to identify high-cost claims, catastrophic medical events, and delivery of specific services. ICD-10 codes indicated specific medical diagnoses.

3 **Worker productivity parameters.** The value of worker productivity is the product of average wage rate, number of hours worked, and absenteeism, and presenteeism, expressed as percentages. These parameters were sourced from peer-reviewed published studies and government reports.

	Pre-period healthcare costs	Post-period healthcare costs
EX Program members	Year before EX Program enrollment	Year after EX Program enrollment
Control group	Year prior to study midpoint (Oct 2020 – Sept 2021)	Year following to study midpoint (Oct 2021 – Sept 2022)

Statistical Analyses

Propensity Score Matching

Individuals who enroll in a tobacco cessation program may differ from those who do not in ways that affect cessation outcomes and healthcare costs. These differences are called confounders. Propensity Score Matching (PSM) aims to ensure the groups being compared are balanced on confounders.

We used Exact and Propensity Score Matching to compare EX Program enrollees with a control group of non-enrollees matched on a range of baseline characteristics (Table 1).

Table 1. Baseline characteristics in PSM model

Participant characteristics

- Sex
- Employee vs spouse
- Attested to tobacco use status during open enrollment
- Expenditure in pre-period
- Screened for lung cancer (CPT codes: G0296 or 71271)

Medical and psychiatric diagnoses (ICD-10 codes)

- Oral or respiratory cancer (C00–C14, C30–C34)
- Diabetes (E08–E11, E13)
- Substance use disorders (F11–F19)
- Coronary Artery Disease (I20–I25)
- Nicotine use/dependence (F17, Z71.6, Z72.0, Z87.891)

Each enrollee was matched to non-enrollees who had the closest propensity to enroll. The matched sample consisted of 153 EX Program enrollees paired with 3,943 non-enrollees.

Using the matched dataset, we estimated the difference in post-period healthcare expenditure between EX Program members and control group participants.

We also estimated an alternative treatment effect using a difference-in-differences (DiD) approach to control for any residual baseline differences in healthcare costs that were not addressed through matching.

Return on Investment Model

1. Changes in worker productivity were calculated as the product of average wage rate, number of hours worked, and productivity level. The incremental value from productivity gains is the product of the proportion of time abstaining from tobacco use and the change in productivity value while abstinent. To be conservative, multiplier effects (i.e., productivity gains experienced by coworkers of those who quit) were not included in the model.

2. We combined productivity estimates with healthcare cost savings to produce the total change in value associated with enrollment in EX Program.

Results

Participant Characteristics

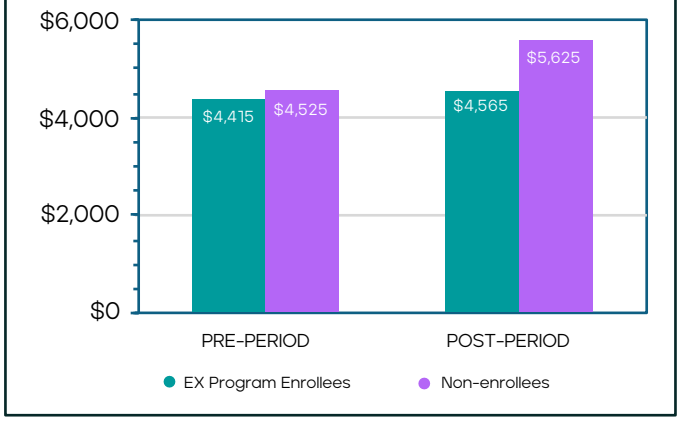
The average age of EX Program participants was 48.1 years (SD=10.6), 40% were female, 97% were employees of the company (3% were spouses of employees).

Difference in Health Expenditures

EX Program enrollees incurred, on average, $4,565 (in 2023 dollars) in healthcare costs in the year following enrollment compared to $5,625 for matched controls, a statistically significant difference of $1,060 (p=0.035).

After accounting for the small difference in baseline costs ($4,415 versus $4,525), the difference-in-differences estimate of the program's effect was a savings of $950 per enrollee per year (in 2023 dollars).

Inflation-adjusted Health Expenditure in EX Program Enrollees and the Matched Sample



4.75x ROI

from healthcare savings alone

ROI Results

EX Program yielded significant healthcare cost savings and a 4.75x ROI relative to matched controls for B. Braun Medical, Inc.

Enrolled individuals cost the B. Braun Medical insurance pool an average of $950 less in the year after enrollment.

When productivity gains were included in the ROI model, B. Braun Medical, Inc. gained an additional $960 in increased productivity in the year following enrollment.

Combining healthcare cost savings and productivity gains, B. Braun Medical, Inc. saved $1,910 per individual enrolled in EX Program, totaling an estimated

$400,000 of savings

for B. Braun Medical, Inc. in the year following enrollment in EX Program.

Sensitivity analyses demonstrated the robustness of these findings across baseline parameters for productivity and absenteeism.

Discussion

This cost effectiveness study conducted by NORC at the University of Chicago found that EX Program produced a total of $1,910 in savings per enrollee in the one-year period following enrollment compared to a matched control group of non-enrollees. Savings were roughly split between healthcare cost savings and productivity gains.

The study employed rigorous statistical methods to construct a statistically comparable control group drawn from the same population. Sensitivity analyses confirmed the robustness of findings. Estimated cost savings for B. Braun Medical, Inc. totaled $400,000 in the first year of implementing EX Program.

Study Strengths

1. **Sampling methodology.** Matching EX Program enrollees to individuals from the same company controls for unobservable characteristics common to both enrollees and non-enrollees.

   Comparing medical claims of employees to those of a different population such as market-wide commercial claims dataset cannot control for such unobservable characteristics and may result in a control group with important differences.

2. **Conservative estimates.** Values from the published literature for productivity analyses were conservatively applied in the model. Cost savings from productivity gains are likely an underestimate of the true savings an employer would achieve.

3. **Control group selection.** The control group was defined based on EX Program enrollment status rather than smoking status. Enrollment status is an objective measure with available data on the entire population of eligible individuals. Smoking status is subject to missing data and does not reflect fluctuations in abstinence and relapse and, thus, would have overstated savings.

Conclusion

EX Program provided a strong return on investment for B. Braun Medical, Inc., **yielding a 4.75x ROI** relative to matched controls in healthcare cost savings alone in the first year after program enrollment.

4.75x ROI

References

1 Centers for Disease Control and Prevention. Cost and Expenditures. Accessed June 13, 2023. https://www.cdc.gov/tobacco/php/data-statistics/economic-trends/index.html#:~:text=In%202018%2C%20cigarette%20smoking%20cost,related%20illnesses%20and%20health%20conditions.

2 Fiore M, Jaén C, Baker T, Tobacco Use and Dependence Guideline Panel. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service, 2008.

3 Cromwell J, Bartosch WJ, Fiore MC, Hasselblad V, Baker T. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *JAMA* 1997;278:1759-66.

4 U.S. Department of Health and Human Services. Smoking Cessation. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2020.

5 Burke MV, Cha S, Shumaker TM, LaPlante M, McConahey L, Graham AL. Delivery of smoking cessation treatment via live chat: An analysis of client-centered coaching skills and behavior change techniques. *Patient Educ Couns.* 2022;105(7):2183-2189.

6 Burke MV, Ebbert JO, Hays JT. Treatment of tobacco dependence. *Mayo Clin Proc.* 2008;83(4):479-484.

7 Graham AL, Zhao K, Papandonatos GD, et al. A prospective examination of online social network dynamics and smoking cessation. *PLoS One.* 2017;12(8):e0183655.

8 Graham AL, Papandonatos GD, Jacobs MA, et al. Optimizing Text Messages to Promote Engagement With Internet Smoking Cessation Treatment: Results From a Factorial Screening Experiment. *J Med Internet Res.* 2020;22(4):e17734.

9 Graham AL, Amato MS, Cha S, Jacobs MA, Bottcher MM, Papandonatos GD. Effectiveness of a Vaping Cessation Text Message Program Among Young Adult e-Cigarette Users: A Randomized Clinical Trial. *JAMA Intern Med.* 2021;181(7):923-930.

10 Graham AL, Cha S, Jacobs MA, et al. A Vaping Cessation Text Message Program for Adolescent E-Cigarette Users: A Randomized Clinical Trial. *JAMA.* 2024;332(9):713-721.

11 Halpern MT, Shikiar R, Rentz AM, Khan ZM. Impact of smoking status on workplace absenteeism and productivity. *Tob Control* 2001;10(3):233-238.

12 Baker CL, Flores NM, Zou KH, Bruno M, Harrison VJ. Benefits of quitting smoking on work productivity and activity impairment in the United States, European Union and China. *Int J Clin Pract* 2017; 71(1):e12900.

13 Bureau of Labor Statistics, Table B-3. Average hourly and weekly earnings of all employees on private non-farm payrolls by industry sector, seasonally adjusted. 2023. Available at https://www.bls.gov/news.release/empsit.t19.htm

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