Helping Young Smokers Quit

Identifying Best Practices for Tobacco Cessation

Program Attendance in 41 Youth Smoking Cessation Programs in the U.S.

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Presentation Overview

- Objective: examine factors associated with attendance rates of participants enrolled in youth smoking cessation programs
- Background: Helping Young Smokers Quit Initiative
- Describe data sources
- Define measures
- Review analytical methods
- Present results
- Summarize findings
- Discuss limitations, implications, and next steps

Why Look At Attendance?

- If cessation programs work, keeping people in treatment may be a factor in quitting outcomes.
- There is little information about what affects attendance, especially for youth smoking cessation programs.
- Attendance would be important for either the dose-response model and full course of treatment model.
- Preliminary, bivariate analysis of HYSQ data suggests a relationship between an individual's level of attendance and being quit at program end and at six-month follow-up.

Helping Young Smokers Quit

- Robert Wood Johnson Foundation National Program Office at the University of Illinois at Chicago, Institute for Health Research and Policy, Susan Curry, Program Director
  - Additional funding from NCI and CDC
- Addresses the critical need to disseminate effective, developmentally appropriate cessation programs for adolescent smokers. Mission is to accelerate knowledge about effective interventions for youth tobacco cessation.

Multi-Year, Three-Phase Initiative

- Main Activities
  - Phase I: National survey of programs
  - ➤ Phase II: Program Evaluations
  - Phase III: Sustainability survey
  - Various other activities and products

HYSQ Program Evaluation

- Evaluate a sample of 'real world' youth cessation programs
- Identify characteristics of programs that show promise for improving cessation outcomes
- Assess contextual, program & participant factors
- Identify resources and barriers to successful youth cessation program implementation

HYSQ Phase II Data Collection

Phase II collected and analyzed data at multiple levels.

- Program youth participants – 4 rounds, at beginning and end of program, 6 months and 12 months following program
- Program providers (group leaders, facilitators, cessation counselors, teachers, etc.)
- Organization that sponsored the program
- Community where program is located

Programs

- National outreach and web-based recruitment
- 135 applications from 33 states
- 73 phone interviews
- 41 selected and participating programs from 18 states
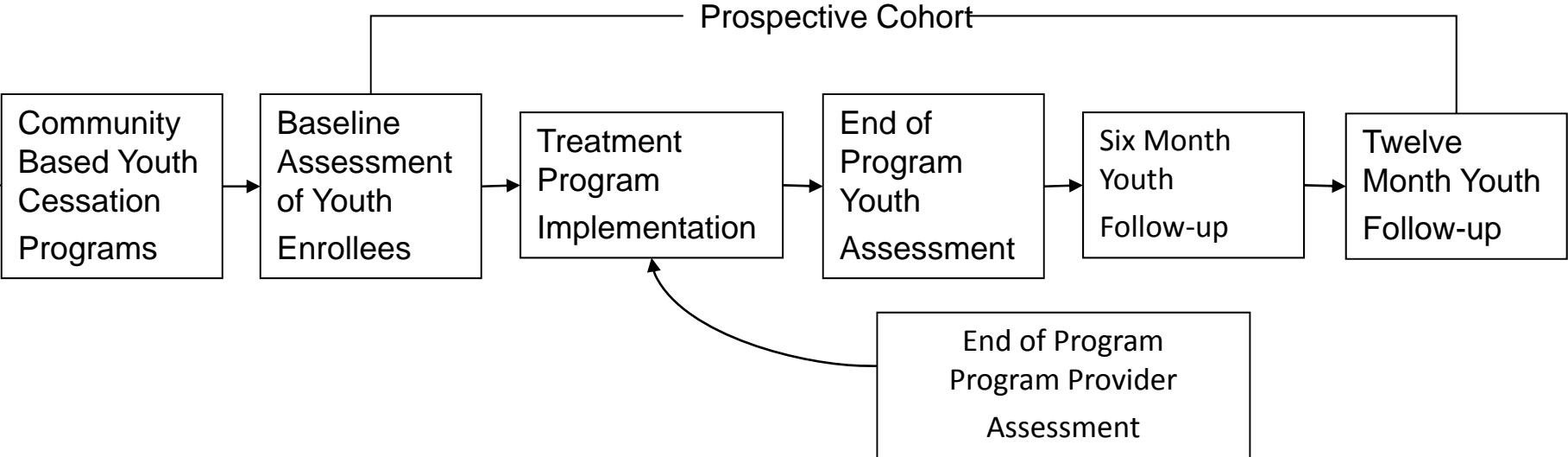- 31 were school-based programs

Participants

HYSQ Phase II youth participants were …

- Recruited into HYSQ after joining a cessation program

- Given formal informed consent (selves and parents)

- Not required to participate in HYSQ to participate in the program, but nearly all volunteered for HYSQ

- 12-18 years old, but mainly high school age

Program Context
•Archival abstraction of state and local tobacco control ordinances
•Community key informant surveys in the education, public health, and juvenile justice sectors
•Program sponsoring organization administrative leader interview

Prospective Cohort

Community Based Youth Cessation Programs → Baseline Assessment of Youth Enrollees → Treatment Program Implementation → End of Program Youth Assessment → Six Month Youth Follow-up → Twelve Month Youth Follow-up

End of Program Program Provider Assessment

Data Collection Statistics

- Individual-level: Youth participant surveys
  - Baseline (n=878)
  - End of the program (n=801),
  - Follow-ups at 6-months (n= 672) and 12-months (n=601)
- Site-level data
  - Program provider interviews (n=79)
 - Organization leader (n=64)

Data Sources for Attendance Analysis

- **Youths** - at each round, 75-100 questions about smoking behavior & attitudes, smoking & quitting history & intentions, social & psychological measures, reactions to program

- **Providers** - Questions about recruitment & participants, program details & logistics, program content, personal style & program delivery, program support, and personal background

- Providers maintained a contemporaneous **attendance log** for each youth participating in HYSQ

Two Other Key Concepts

- Group (all the youths taking the program together at the same time)
- Session (e.g., a program could have eight 45-minute sessions)

Picture of Nested Relationships
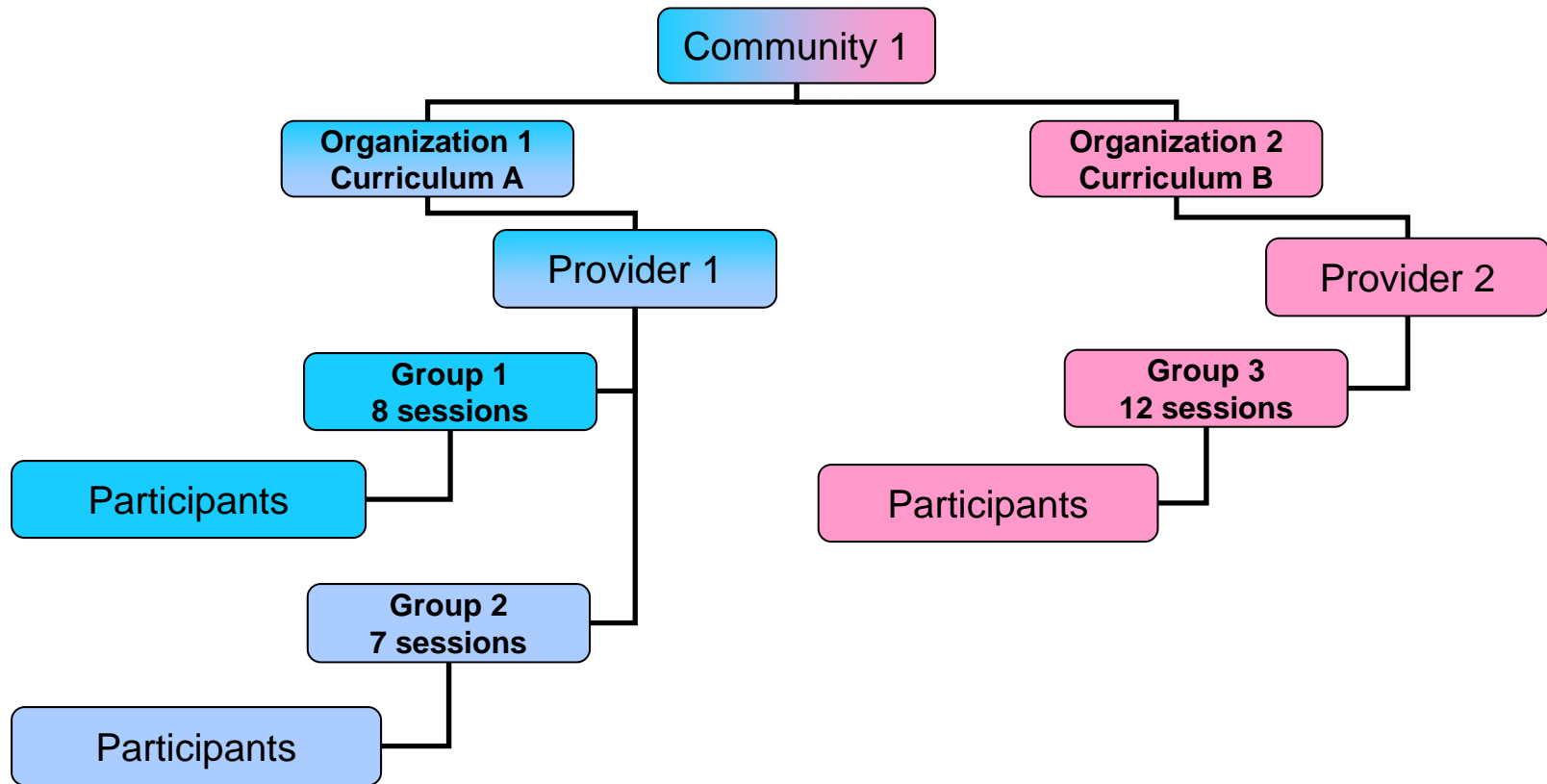
Clustering for Attendance Analysis

Exploration of the data revealed that clustering of the participants within their group was the most important for attendance analysis, as compared to higher-level clusters, such as provider or organization.

Attendance Measure: How to Define?

Attendance to be measured for the individual, not in the aggregate for groups or programs. Four measures were considered:

1. Present at final session? (Yes/No)
2. **Percentage of all sessions actually attended (0-100%)**
3. Perfect attendance (variant of #2, defined as dichotomous, 100% or not)
4. Time-to-drop-out (session-number of last-attended session, as a ratio of total sessions in program, ignoring any absences prior to final drop-out)

HYSQ Attendance Record (Hypothetical)

		Smoking Cessation Program Session Number						
		1	**2**	**3**	**4**	**5**	**6**	7
Session Date (MM/DD) →		10/1	10/8	10/15	10/22	10/29	11/5	11/12
Youth Name	**Youth ID**							
1)	01	X	X	X	X	X	X	X
2)	02	X				X		X	X
3)	03	X	X	X	X			
4)	04	X		X	X	X		
5)	05	X	X	X	X	X	X	
6)	06	X	X	X	X	X		X
7)	07	X	X	X	X	X	X	X
8)	08		X	X	X	X	X	

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Attendance Measure Adopted for Analysis

- Conceptually and empirically, the percentage of sessions attended proved to be the best measure of overall attendance.

- Attendance was analyzed using attendance rate as a continuous variable.

- Because the number of sessions varied across programs, identical percentages can represent different absolute numbers of sessions attended.

- The number of sessions in the HYSQ Phase II programs ranged from 4 to 16, after excluding three groups from one outlier program.

Overview of Attendance Rates

- Distribution of attendance rates
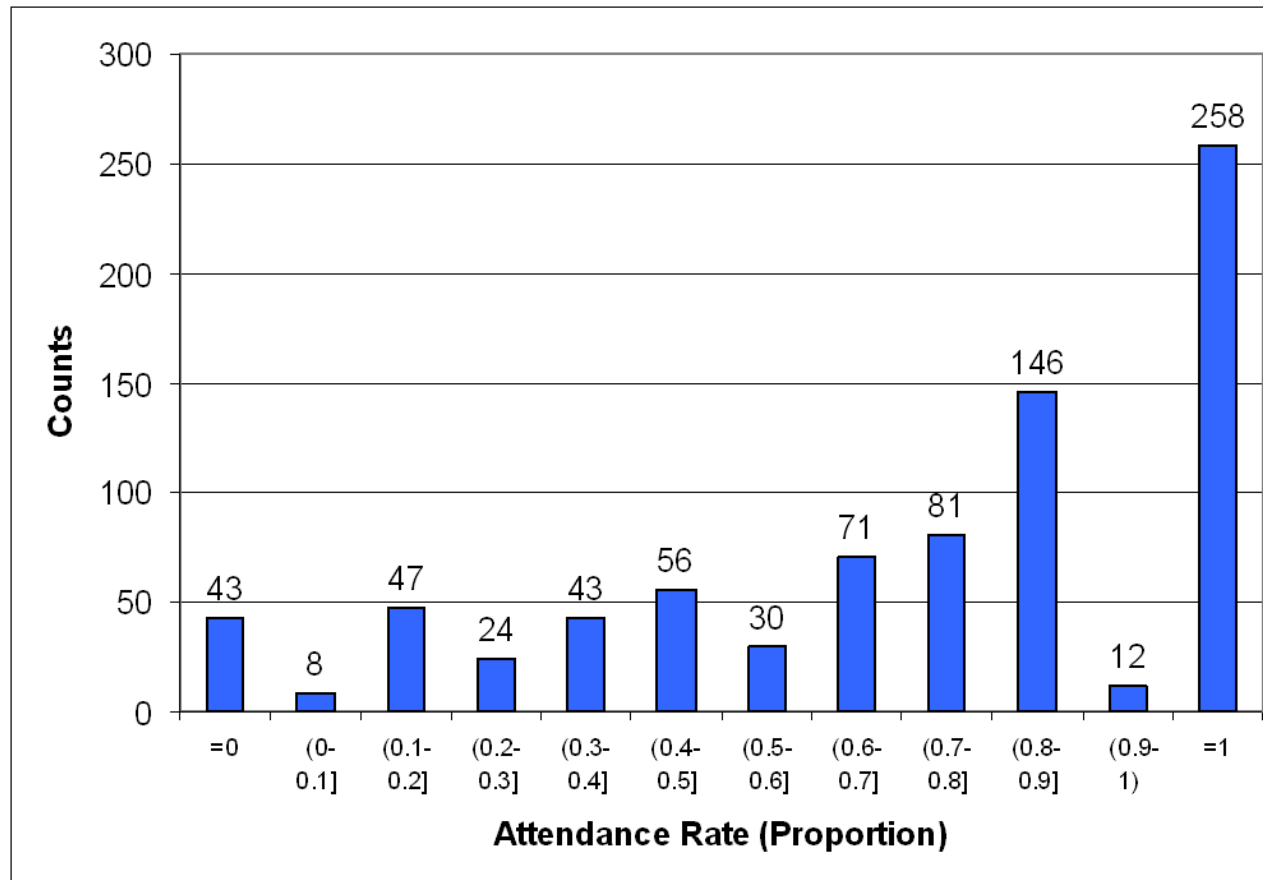
Overview of Attendance Rates: Another View

Some categorized attendance rate distributions

Attendance rate	Percent
0-25%	12.2%
25-50%	9.5%
50-75%	19.5%
75-100%	58.7%
< 85%	54.0%
> = 85%	46.0%
100%	31.5%

Domains Explored for Analysis

Based on the literature for adult and youth cessation programs or their conceptual appeal, we explored many items in several domains for predictors, moderators, or covariates. These domains covered:

- Participant
- Provider
- Program

Participant Domains

Personal Characteristics

- Social connection & support
- Time competition
- Academic achievement
- School attendance
- Smoking status
- Smoking behavior
- Quitting behavior
- Quitting motivation
- Motivation for program participation

Response to Program

- Fulfilling requirements
- Response to provider
- Response to social setting
- Response to curriculum
- General response

Basis for Participation

- Mandatory vs. voluntary

Mandatory vs. Voluntary Participation

- There is a reasonable conceptual basis to hypothesize a relationship between this characteristic and attendance.

- The current analysis uses participant self-report rather than program mission to define mandatory/voluntary for the participant.

- "Mandatory" generally applies to presence in the program, not necessarily to required, enforced attendance at every session.

Provider Items

Treatment-related Experience

- Hours of training in cessation

- Years leading cessation programs

- Number of times delivered the program at the site

Personal characteristics

- Education

- Smoking status

Program Items

Program characteristics
- Session length (minutes)
- Number of sessions
- Duration of program (weeks)
- Activities requiring personal initiative
- Activities requiring personal time outside of sessions
- Incentives for attendance

Program dynamics
(as assessed by the provider)
- Participant interactions
- Participant mutual support
- Affinity between provider and participants

Exploration of Candidate Variables

- Bivariate analyses using Pearson correlations led to a reduced set of variables to be considered for attendance model

- Examples of bivariate associations between attendance rate and participant characteristics:
  - Age: (-0.11721, p=0.0008)
  - Male: (-0.08626, p=0.0139)
  - White: (0.11521, p=0.0014)
  - Academic grades: (-0.04475, p=0.2018)

Analytical Methods

- Since the HYSQ data is naturally clustered (participants within groups, groups within organizations, etc.), we explored whether a model that accounts for clustering was needed.
  - The intraclass correlation (ICC) describes how strongly units within a cluster resemble each other.
  - The ICC for the group level is 0.207, which is fairly high, suggesting that a method that takes clustering into account is needed. Other types of clustering (within organizations or within community) were not problematic for this analysis.

- We decided to apply a standard, two-level random-effect (linear mixed) model to the attendance rate
  - The estimates from this kind of model account for clustering and can be interpreted just like standard regression estimates

11Variables Included in Final Model

- <u>Participant-level</u>
  - Gender
  - Participated in school clubs (Y/N)
  - Number of school days missed in last 30 days (6-level ordinal)
  - Wanted to quit smoking (Y/N)
  - Rating of program helpfulness (5-point scale)
  - Rating of comfort level in talking with provider (5-point scale)
  - Participation in the program was mandatory (Y/N)
- <u>Other levels</u>
  - Proportion of participants in program who were mandatory (continuous, in steps of 10%)
  - Program delivered at a school (Y/N)
  - Program gave a gift certificate as incentive for attendance (Y/N)
  - Number of times provider led quit-smoking program at the site

Results

Predictors of Attendance Rate	Estimate	p-value
Intercept	.4768	<.0001*
Person-level (baseline)		
Male	-.0706	.0004*
School club participation	-.0884	.0003*
Missed school days	-.0257	.0004*
Wanted to quit smoking	-.0511	.0596
Mandatory (participant)	.0441	.3474
Person-level (end of program)		
Thought program helped	.0434	<.0001*
Felt comfortable talking to leader	.0373	<.0001*
Other levels		
Mandatory (group)	.0283	<.0001*
School site	.1040	.0055
Gift certificate given	.0763	.0370*
Times provider led program at the site	.0022	.0173*
		* p < .05

About The Model

- Recall that the intra-class correlation (ICC) before adopting the model was 0.207

- After the model was applied, the ICC was 0.065
  - This is a fairly large reduction and indicates that the clustered model was necessary and appropriate.

- In addition, there was a 76.6% reduction in the other-level variance (with a corresponding increase in the p value from < 0.0001 to 0.0173)
  - This pattern further indicates that the clustered model was necessary and appropriate.

Findings and Implications

- Most factors in the model are conceptually, statistically, and empirically important.
- Statistically significant factors that are associated with the attendance rate include (these are all positive associations):
  - Participants feeling that the program met their needs
  - Participants feeling comfortable talking with the provider
  - Gift certificate incentive for attendance
  - Number of times the provider led the program at the site
  - Mandatory participation is also positively associated with program attendance rates, but this isn't a technique that program planners can necessarily apply to improve attendance rates for a given group of participants.
- All <u>significant</u> effects are in the expected direction.

Limitations and Next Steps

- Substantively
  - There is still some room to improve the model with other participant-level and other-level predictors.
  - Mediating and moderating mechanisms remain to be explored.
  - The negative association between wanting to quit smoking and the attendance rate is puzzling.
  - Similar to attendance, program outreach and recruitment may be important in getting youths to quit smoking, but are not included in this analysis.

Limitations and Next Steps

- Statistically
  - There is further analytic work to be done to appropriately model the non-normal, non-binomial attendance rate.
  - We are currently working on improving the modeling methods.

Strength of the Current Attendance Analysis

- Based on a relatively large number of programs (40), groups (76), and participants (~800)

- Includes a diverse set of programs and curriculums

- Uses multi-level modeling to account for clustering within groups

Implications for Program Development and Implementation

- This investigation of elements associated with youth smoking cessation program attendance rates reveals some specific areas that appear to affect attendance.

- This is a topic where little guidance has been available. Administrators and providers may wish to consider these elements when
  - planning and developing their programs,
  - organizing groups and sessions, or
  - recruiting young smokers for participation in their program.

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Thank You!

Questions

Comments

Suggestions