



## **CTC Impact in Pennsylvania Findings from the 2001 and 2003 PA Youth Survey**

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# **CTC Impact in Pennsylvania**

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### **Executive Summary**

This report summarizes findings from the evaluation of two years of survey data on risk factors, alcohol and substance use, and delinquency among Pennsylvania youth in 6<sup>th</sup> through 12<sup>th</sup> grades. The goal of the evaluation is to determine whether Communities That Care (CTC) has had a significant impact on risk factors, problem behaviors, and teenage crime in Pennsylvania communities. The results of state-of-the-art statistical analyses indicate that CTC-related school districts have lower levels of some risk factors and rates of substance use and delinquent behaviors than non-CTC school districts, controlling for prevalence of poverty in the community. There is some evidence that effects are especially consistent for 6<sup>th</sup> graders. This conforms to a general view that risk characteristics of younger youth may be more malleable than those for older youth.

For future evaluation purposes, we recommend continuing to collect survey data from the grade cohorts represented in both the CTC and non-CTC affiliated school districts. Given the low number of non-CTC school districts that participated in both 2001 and 2003, longitudinal analyses in the current evaluation were somewhat restricted.

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# **Impact of Communities That Care in Pennsylvania Findings from the 2001 and 2003 PA Youth Survey**

## **Evaluation Goal**

The goal of this evaluation was to test whether the Communities That Care (CTC) program has had a positive impact on Pennsylvania youth by utilizing the Pennsylvania Youth Survey (PAYS) data for 2001 and 2003. The PAYS is administered to a sample of Pennsylvania youth in grades 6, 8, 10, and 12. This evaluation compared levels of risk factors and substance use outcomes for students in communities with CTC programs to corresponding data for students in non-CTC communities. This is the first broad-scale evaluation of student outcomes in communities using the CTC Program (Hawkins & Catalano, 1992).

## **Evaluation Method**

We examined the 2001 and 2003 PAYS data for differences in risk factors and outcomes between students in CTC and non-CTC affiliated school districts. The PAYS was conducted by Channing Bete, utilizing the CTC Youth Survey.

The sample size for the PAYS data is described in Table 1, and the risk factors and outcomes assessed are listed in Table 2. The school districts in the entire PAYS sample had an average of 6.0 percent of households below the poverty line (range 1.0 to 22.0); and an average of 7.9 percent female-headed households (range 3.0 – 35.2).

Data Gathering and Preliminary Steps. Because CTC is implemented in multiple contexts (community, county, school district), a number of preliminary steps were taken prior to analysis. The first step was to identify those school districts in the PAYS data set that were associated with CTC sites and programs and those that were not. School districts were identified as CTC-related or non-CTC based on a number of sources of information. This included individualized phone and/or email questionnaire response data from each CTC site (CTC mobilizers and program directors) that was active during the 2001–2003 period. When sufficient information was not available locally, we sought information from PCCD staff and CTC regional strategic consultants. In each case, it was ascertained whether CTC operated in the school district catchment area, what age population was a target for CTC programs during which years, and what types of programs were being implemented.

The second step was to conduct a propensity analysis to determine if CTC was more likely to occur in school districts that had higher levels of poverty, higher percentages of families from non-white racial/ethnic backgrounds, greater population size, higher population density, or higher percentage of female-headed family households. This step is essential to ensure that any possible confounding variable that might bias CTC vs. non-CTC communities would be identified. We found that CTC sites were more likely to be in place in school districts that had a higher proportion of poor family households. (The average percent of households below the poverty line was 5.8 for non-CTC and 6.0 for CTC districts.) As a result, we eliminated a small number of CTC districts that demonstrated a greater propensity to have CTC based on this poverty factor than did any other non-CTC districts (11 school districts).<sup>1</sup> These sites were removed for lack of similar comparison (non-CTC) sites. In addition, we utilized the measure of poverty as a control (covariate) in all analyses.

Plan for Analyses. We conducted analyses separately for 2001 and 2003 PAYS data, and separately by grade (6<sup>th</sup>, 8<sup>th</sup>, 10<sup>th</sup>, 12<sup>th</sup>) since risk and outcomes vary in a nonlinear fashion across grades.

Analyses were conducted with statistical techniques that accounted for the clustering of students within school districts (i.e., multilevel models). In other words, because students in this study were not randomly drawn from the population of all Pennsylvania students, this fact needed to be accounted for in the analyses. Results are described below.

Several follow-up analyses were conducted: First, one would not expect CTC to impact all the risk factors assessed in the Youth Survey – at least not in a relatively short period of time. For example, there are five risk factors in the Community domain, such as Transitions and Mobility and Low Neighborhood Attachment. CTC programs are generally designed to impact youth and families directly; rarely are program implemented in the current CTC framework that focus substantial resources on changes in these community risk factors. Although change in community organizational factors may occur as a result of CTC, these changes are

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<sup>1</sup> One of these excluded districts was Philadelphia. The other large-city school district in the state, Pittsburgh, did not participate in the PAYS. (School districts in Allegheny County, but not in Pittsburgh, are represented in the data set.) Even if Philadelphia and Pittsburgh had not been excluded from the data set for these reasons, it would have been prudent to remove them anyway because they represent very different demographic and community organizational profiles than other communities in the state, permitting little comparison between them and other communities.

likely to be the gradual result of accumulated change in individual youths and families, and the diffusion of effects from the collaboration of community organizations and residents in the planning process itself. Thus we assessed significant differences in risk factors and outcomes, excluding the community domain risk factors.

Second, because some CTC sites were not using evidence-based programs, we analyzed the data with all CTC sites included as well as only CTC sites that used evidence-based programs. Although a central feature of the CTC model involves selecting evidence-based programs, for a variety of reasons some CTC sites decide to utilize other programs. Other research in prevention science would suggest that the effects of CTC should be most likely when evidence-based programs are used. Consequently, for each site and age group it was determined whether any of the site's programs were on the SAMHSA model or effective program lists or the Blueprints lists of effective or promising programs. We then repeated the analysis including only the CTC affiliated school districts where evidence-based programs had been employed.

In addition, it was determined whether the programs reported on by local CTC staff were designed to target the youths in the grades responding to the surveys. In some cases, the programs were implemented only after the survey data were collected. In other cases, the programs targeted either other age groups (e.g., a program for high school students would not be expected to impact middle school students) or other populations (e.g., mothers with small children). In a third set of follow-up analyses, grade cohorts at individual school districts were excluded where the program implementation and program design did not indicate that the youths would be affected.

Fourth, we examined whether the data indicated a greater impact on risk factors vs. outcomes. As risk factors predispose individuals to negative outcomes, we would expect changes to occur first in risk factors, followed by improved outcomes at a later date. In the fifth follow-up strategy we inspected whether there were particular risk factors or outcomes that appeared to be impacted by CTC, either across the board or for particular grades.

Next, we conducted analyses of change in risk factors and outcomes across 2001 to 2003 for those districts responding at both time points. Because the surveys were completed anonymously, there is no way to link individual youth responses at the two waves. We therefore computed change scores for the grade cohort as a whole. We examined change in two ways: (1) Cross age/Same cohort: e.g., a 6th grade's

results at 2001 compared to the 8<sup>th</sup> grade's results two years later; and (2) Same age/cross cohort: e.g., a 6<sup>th</sup> grade's results at 2001 compared to the 6<sup>th</sup> grade in 2003.

## Results

**Overall Analyses. Overall, the pattern of results indicates that CTC-related school districts have lower levels of some risk factors and rates of substance use and delinquent behaviors than do non-CTC school districts, controlling for level of poverty.** The pattern of effects is demonstrated in Table 3.

Because there were 4 grades, and 24 risk factors and outcomes per grade, there were 96 comparisons for 2001. Two additional scales were included in 2003, yielding 104 comparisons for 2003. At the conventional level of significance (.05, or 5%), for 2001 and 2003, 4.8 and 5.2 comparisons, respectively, would be expected to be significant based on chance alone. Those chance significant comparisons would be expected to be roughly evenly divided between effects in the expected direction (CTC sites doing better than non-CTC) and half in the non-expected direction. Thus, based purely on chance, we would expect 2.4 and 2.6 significant comparisons, respectively at 2001 and 2003, to indicate that CTC is doing better in those districts than in non-CTC districts.

The actual results for all CTC sites compared to non-CTC sites indicated 5 significant comparisons favoring CTC in 2001 and 12 in 2003. Thus, there were about 2 times as many significant comparisons favoring CTC as were expected by chance in 2001 and 4.6 times as many in 2003. Moreover, there were fewer significant comparisons favoring non-CTC sites across the two years than would be expected by chance.

**Follow-up Analyses.** We followed up this analysis in several ways. First, excluding the Community Domain risk factors from consideration (because they were not expected to be altered by CTC), the results indicated that there were about three times as many significant comparisons favoring CTC in 2001 as expected by chance, and 5.7 times in 2003 (the actual number of significant comparisons were 4 and 12 in 2001 and 2003). This result indicates an increase in the impact of CTC in 2003 as compared to 2001. As there were a large number of newer CTC sites that were coming on line in between the two surveys, evidence of greater impact in 2003 conforms with what one would expect.

The second follow-up analysis excluded CTC sites that were not implementing an evidence-based model program. The results indicated 2 and 10 significant

comparisons for 2001 and 2003 (1 and 9, excluding the Community Domain risk factors). The failure to find stronger effects when limiting the analysis to sites implementing model programs may be due to a number of factors. For example, the number of schools and students was smaller in this analysis, reducing the power needed to detect significant effects. In addition, the sites that were not using programs on the SAMHSA or Blueprints lists may have been using other promising approaches that have some limited evidence. Given the CTC model's emphasis on research-backed programs, it is likely that some of the sites excluded from this analysis were indeed using programs that were promising but had not been fully researched as yet.

Third, we excluded grade cohorts at school districts when they would not be expected to be impacted by a local CTC program. Because of the timeframe of CTC implementation for a large number of the later CTC cycles, this approach excluded too many of the 2001 grade cohorts to conduct the analysis with that year's survey data. For the 2003 data, we found 20 significant comparisons favoring the CTC sites, 5 times the number expected by chance (and 5.4 times the number expected by chance when the Community Domain risk factors are excluded).

Fourth, we examined whether significant comparisons were more likely for the 20 risk factors than the 6 outcome measures. For the expected program impact analyses, risk factors were more than twice as likely to reach significance as compared to outcomes.

Fifth, we examined the distribution of significant comparisons by grade and by risk factor/outcome. For the full 2003 data, the greatest number of significant comparisons was found for the 6<sup>th</sup> grade. The analyses limited to grade cohorts with expected impact indicated the greatest number of significant comparisons occurred for 6<sup>th</sup> grade, and secondly for the 12<sup>th</sup> grade. In this analysis, CTC impact for the 6<sup>th</sup> grade was primarily limited to risk factors such as Parental Attitudes toward ATOD, several peer-related risk factors, and individual attitude risk factors; and each of the outcomes with the exception of the composite drug use index. In the 6<sup>th</sup> through 10<sup>th</sup> grades, the outcome of Delinquency demonstrated evidence of impact from CTC. In the 10<sup>th</sup> and 12<sup>th</sup> grades, Academic Failure demonstrated impact. And for the 12<sup>th</sup> grade, Alcohol Use, Binge Drinking and Drug Use demonstrated evidence of CTC impact.

Sixth, we examined *change* in risk factors and outcomes for sites where data were collected both in 2001 and 2003. Considering all grades together, we did not find evidence of CTC impact on change in risk factors or outcomes. However, for the 6<sup>th</sup>

grade 2001 to 6<sup>th</sup> grade 2003 comparison, there were 9 times as many significant comparisons for the risk factors (excluding the Community Domain) as expected by chance (3 significant comparisons, expectation of .35 by chance). When we included comparisons that demonstrated a trend towards significance ( $p=.10$ ), we found 9 times as many significant and near-significant risk factor comparisons as expected by chance (6, expecting .7 by chance). All of these significant and near-significant comparisons favored the CTC sites.

## **Conclusion**

The consistent pattern of findings found in the analysis of the 2001 and 2003 PAYS data represent important evidence for the positive impact of CTC on reducing risk factors and improving outcomes for youth in Pennsylvania communities. The pattern of results was slightly stronger when comparative analyses were limited to only grade cohorts in CTC school districts where the timing and design of programs leads to an expectation of impact on the youths surveyed. This finding further validates the hypothesis that CTC youth programming is responsible for the findings of this study.

There is some evidence that effects are especially consistent for the 6<sup>th</sup> graders, which conforms to a general view that the risk characteristics of younger youth may be more malleable than those for older youth. The analyses of change, while not yielding significant impact for the older grades, did indicate that the 6<sup>th</sup> graders in 2003 were positively impacted by CTC compared to the 6<sup>th</sup> grade cohort in 2001. In addition, 12<sup>th</sup> graders showed consistent impact for the analyses limited to CTC sites/cohorts where there was expected impact.

There are several important features of the comparison of CTC and non-CTC data to understand. These considerations are usually discussed by evaluators to rationalize the non-significant findings of an evaluation. Here however, these considerations serve to strengthen the findings reported here because collectively these considerations suggest that the results represent a conservative estimate of CTC impact. First, the overall test of PAYS data comparing CTC vs. non-CTC communities does not take into account effects of CTC programs that target age groups not included in the survey. For example, some sites initiated home visiting programs for mothers of young children that would not be expected to affect middle and high school students.

Second, because of funding constraints, in some communities programming was offered for the target age groups but was not implemented with the entire age



cohort. However, the PAYS questionnaires were completed by the entire population of a school/grade cohort. Analysis of CTC impact is underestimated when the intervention occurs with only a subset of the population that provides data.

Third, this study cannot assess the quality of implementation/delivery of local programming. Quality of implementation was likely quite variable across communities. A series of studies have found that prevention programs have their strongest impact on outcomes when they are presented with high fidelity and quality of implementation (Greenberg, Domitrovich, Grazyk, & Zins, 2003). Thus, to the extent that quality and fidelity of local programming were variable, the impact of CTC would likely be less than under optimal conditions.

Fourth, in many cases prevention programs have their strongest effects over time. This “snowball effect” might be most likely to occur when prevention is implemented during periods of high risk. Adolescence is such a period, as there are dramatic increases in risk-taking, delinquency, and substance use. As this study is short term, it is not likely to assess the full impact of these programs as the effects unfold over time.

Fifth, this study is not comparing communities that use CTC to communities that are not providing prevention services. CTC is one of many approaches that communities are taking to address adolescent risk and problem behavior. Non-CTC sites are likely implementing programs either using a different community framework or as independent agencies/organizations. Thus, analyses do not compare CTC against no prevention activity, but against “business as usual” in Pennsylvania communities.

The findings of this report indicate the substantial impact that CTC programs have had on Pennsylvania’s youth during the past few years. Further, it is likely that these findings indicate substantial economic savings to the Commonwealth, although such economic impact cannot be well estimated here. A recent study of family-strengthening programs in Iowa (Spath, Gyll & Day, 2002) showed a very positive benefit-cost with approximately 9 dollars saved for each dollar invested (primarily the result of reduction in the many costs associated with alcoholism).

These findings are also quite promising in light of the fact that other national studies of community coalition-style programs have not shown significant effects. The best-known of these, Fighting Back (funded by the Robert Wood Johnson Foundation), showed no influence on substance abuse outcomes compared to non-

coalition communities (Hallfors et al., 2002). The authors derive a number of tentative conclusions for the discouraging findings, including (a) many competing agendas that may have paralyzed the process and reduced efficiency and quality, (b) the lack of requirements for coalitions to use tested and effective programs—thus programs that were implemented may have had no impact, and (c) the coalitions may have been poorly organized and implemented.

In consideration of their findings, Hallfors et al. (2002) suggest that coalitions have limited and clearly focused goals, outcomes, and benchmarks. In addition, communities should be strongly encouraged to use evidence-based programs and policies and should carefully monitor dosage and quality of implementation of programs. To do so requires ongoing technical assistance (TA) for program choice, program implementation, and program evaluation. The findings of the present study in Pennsylvania support these conclusions as CTC has clear goals and benchmarks, utilizes evidence-based programs, provides ongoing technical assistance, and monitors outcomes.

Future Analyses. The current results indicate the value of continuing to follow these cohorts of students over time. For example, the analyses of change indicated CTC impact on 6<sup>th</sup> graders in 2003 relative to 6<sup>th</sup> graders in 2001 for risk factors, but not for substance use or delinquency. This is not surprising given that levels of substance use and delinquency are relatively low at the beginning of adolescence, but then begin to climb quickly during early and middle adolescence (8<sup>th</sup> and 10<sup>th</sup> grades). Differences in negative outcomes will not generally become apparent until levels of the negative outcome increase in the comparison (non-CTC) group. Thus, it will be important to examine whether CTC impact is amplified as this youngest cohort grows older. In order to facilitate analyses, it is recommended that future data collection (2005) should include the *same* CTC and non-CTC school districts to the extent possible as were included in the 2001 and 2003 PAYS data sets.

Finally, we note that we are continuing to examine these data. For example, we are currently examining whether gender of the child plays a role in determining the impact of CTC programs; whether particular programs may be more effective than others; whether CTC teams with better improved internal functioning produce greater outcomes (Feinberg, Greenberg, & Osgood, 2004); or whether the level of poverty in the community may determine how effective CTC programs are in reducing risk. Further analyses and reports will thus examine differential impact within and between populations.

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**Table 1. PAYS Sample:  
Number of School Districts and Students in All Grades for 2001 and 2003.**

<b>Year</b>		<b>Total PAYS Sample</b>	<b>Non-CTC Sample</b>	<b>CTC Sample</b>	<b>CTC subsample with strong Evidence-Based Programs*</b>	<b>CTC subsample with Expected Program Impact**</b>
<b>2001</b>	Districts	79	41	38	30	-
	Students	38,107	14,588	23,519	16,730	-
<b>2003</b>	Districts	147	52	95	64	47
	Students	98,436	30,974	67,462	43,923	26,028
<b>Districts Participating at both 2001 and 2003</b>	Districts	42	13	29	21	-

\*Includes only CTC-affiliated districts where CTC has administered evidence-based prevention programs (see report text).

\*\*Includes only CTC-affiliated districts communities the timing of program implementation and data collection allows an expectation of positive effects from administered programs.

**Table 2. Risk Factor and Outcome Indices**

<b>Risk Factor Scales</b>	<b>Number of Items</b>
Low neighborhood attachment*	3
Community disorganization*	5
Personal transitions and mobility*	4
Laws and norms favorable to drug use and firearms*	6
Perceived availability of drugs and firearms*	5
Family conflict	3
Family history of antisocial behavior	10
Parental attitudes favorable to ATOD use	3
Academic Failure	2
Low school commitment	7
Rebelliousness	3
Friends' delinquent behavior	6
Friends' use of drugs	4
Peer rewards for antisocial behavior	4
Favorable attitudes toward antisocial behavior	5
Favorable attitudes toward ATOD use	4
Low perceived risks of drug use	4
Early initiation	8
Sensation seeking	3
Gang involvement	4
<b>Outcome Variables</b>	
30-day alcohol use	1
30-day cigarette use	1
2-week prevalence of binge drinking	1
12-month prevalence of being drunk or high at school	1
Delinquent Behaviors	7
Drug use	3

\* Denotes Community Domain Risk Factors

**Table 3. CTC Communities vs. Non-CTC Communities**

RISK FACTORS																						
Year	Grade	Low Neighborhood Attachment	Community Disorganization	Transitions and Mobility	Laws and Norms	Availability	Family Conflict	Family History	Parental Attitudes Toward ATOD	Academic Failure	Low Commitment to School	Rebelliousness	Friends' Delinquency	Friends' ATOD	Peer Rewards for Antisocial Behavior	Fav. Att. Toward Antisocial Behavior	Favorable Attitudes Toward ATOD	Low Perceived Risk of Drugs	Early Initiation	Sensation Seeking	Gang Involvement	
2001	6						n/a						++									n/a
2001	8		++	-			n/a			++	++		++									n/a
2001	10	+					n/a															n/a
2001	12						n/a															n/a
2003	6						+	+	++		+		+	+	++	++	++				++	
2003	8																					
2003	10							++					+									
2003	12				+								++	+				++	+			

OUTCOMES							
Year	Grade	Alcohol	Smoking	Binge Drinking	Drunk at School	Delinquency	Drug Use
2001	6						
2001	8					+	
2001	10						
2001	12						
2003	6	+	++			+	
2003	8						
2003	10					++	
2003	12	++		++			+

- + p<.10 favoring CTC communities
- ++ p<.05 favoring CTC communities
- p<.10 favoring non-CTC communities
- p<.05 favoring non-CTC communities

**Table 4. CTC Evidence-based Program Communities vs. Non-CTC Communities**

RISK FACTORS																						
Year	Grade	Low Neighborhood Attachment	Community Disorganization	Transitions and Mobility	Laws and Norms	Availability	Family Conflict	Family History	Parental Attitudes Toward ATOD	Academic Failure	Low Commitment to School	Rebelliousness	Friends' Delinquency	Friends' ATOD	Peer Rewards for Antisocial Behavior	Fav. Att. Toward Antisocial Behavior	Favorable Attitudes Toward ATOD	Low Perceived Risk of Drugs	Early Initiation	Sensation Seeking	Gang Involvement	
2001	6						n/a															n/a
2001	8		++				n/a			++	+											n/a
2001	10						n/a															n/a
2001	12						n/a															n/a
2003	6															++	+				++	
2003	8															+						
2003	10							++					+		+							
2003	12				++								++	++				++	+			

OUTCOMES							
Year	Grade	Alcohol	Smoking	Binge Drinking	Drunk at School	Delinquency	Drug Use
2001	6						
2001	8					+	
2001	10			-			
2001	12						
2003	6		+				
2003	8						
2003	10					++	
2003	12	++		++		+	+

- + p<.10 favoring CTC communities
- ++ p<.05 favoring CTC communities
- p<.10 favoring non-CTC communities
- p<.05 favoring non-CTC communities

**Table 5. CTC Communities with Expected Program Outcomes vs. Non-CTC Communities**

RISK FACTORS																					
Year	Grade	Low Neighborhood Attachment	Community Disorganization	Transitions and Mobility	Laws and Norms	Availability	Family Conflict	Family History	Parental Attitudes Toward ATOD	Academic Failure	Low Commitment to School	Rebelliousness	Friends' Delinquency	Friends' ATOD	Peer Rewards for Antisocial Behavior	Fav. Att. Toward Antisocial Behavior	Favorable Attitudes Toward ATOD	Low Perceived Risk of Drugs	Early Initiation	Sensation Seeking	Gang Involvement
2003	6								++				++	+	++	++	++		+	++	+
2003	8											+	+			++	+		+		+
2003	10									++											
2003	12				++					+			++	++				++			

		OUTCOMES					
Year	Grade	Alcohol Use	Smoking	Binge Drinking	Drunk/High at School	Delinquency	Drug Use
2003	6	++	++	++	+	++	
2003	8					++	
2003	10					++	
2003	12	++		+			++

+ p<.10 favoring CTC communities

++ p<.05 favoring CTC communities



**Table 6. CTC vs. Non-CTC Differences in 2-Year Change**

RISK FACTORS																	
Grade	Low Neighborhood Attachment	Community Disorganization	Transitions and Mobility	Laws and Norms	Availability	Family History	Parental Attitudes Toward ATOD	Academic Failure	Low Commitment to School	Rebelliousness	Friends' Delinquency	Friends' ATOD	Peer Rewards for Antisocial Behavior	Favorable Attitudes Toward ATOD	Low Perceived Risk of Drugs	Early Initiation	Sensation Seeking
6 to 6				++			++				+			++	+	+	
8 to 8								-				-					
10 to 10		--		-													-
12 to 12																	
6 to 8							++										
8 to 10																	-
10 to 12	-																

OUTCOMES						
Grade	Alcohol Use	Smoking	Binge Drinking	Drunk/High at School	Delinquency	Drug Use
6 to 6					+	
8 to 8				--	-	
10 to 10						
12 to 12	--					
6 to 8						
8 to 10						
10 to 12						++

- + p<.10 favoring CTC communities
- ++ p<.05 favoring CTC communities
- p<.10 favoring non-CTC communities
- p<.05 favoring non-CTC communities