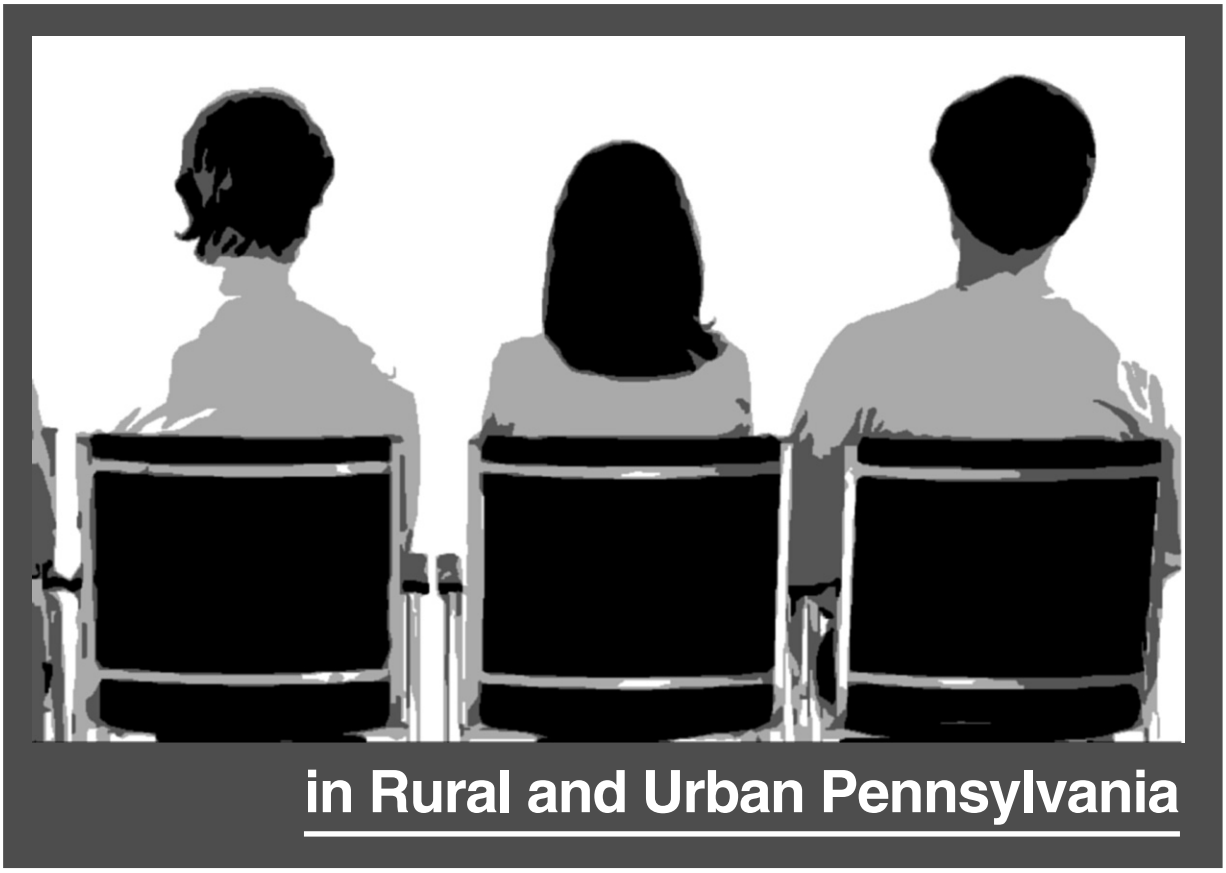
Measuring and Analyzing Juvenile Recidivism



in Rural and Urban Pennsylvania

The Center for Rural Pennsylvania
A Legislative Agency of the Pennsylvania General Assembly

Measuring and Analyzing Juvenile Recidivism in Rural and Urban Pennsylvania

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Executive Summary

This research provides a comprehensive analysis of juvenile recidivism in Pennsylvania, with special reference to differences between rural and urban counties. Pennsylvania is one of the few states that do not report on juvenile recidivism. Recidivism is defined as a relapse into criminal activity and is one of the most important measures used to gauge the success of juvenile justice intervention programs. The study analyzed data from 1997 to 2005 on approximately 190,000 juveniles with a prior conviction to determine the factors leading to a reconviction.

According to the research analysis, recidivism rates were lowest in rural counties and highest in urban counties. The lower rural recidivism rates were especially pronounced for blacks, males, and those with a prior felony. Other estimates indicated that the length of time to relapse into crime was from 3 percent to 30 percent longer in rural counties.

The research identified juvenile characteristics that deserve closer scrutiny to help reduce recidivism. The characteristics associated with increased recidivism are: living in an urban county, being male or Hispanic, living with a single mother, having at least one deceased parent, committing a prior felony, and attending alternative education. According to the research, special attention should be given to juveniles living with single mothers or those with at least one deceased parent. More frequent contact with probation officers and closer court supervision may be beneficial for juveniles living in single-parent families as a means of reducing recidivism.

Another interesting result is that an increase in the number of police per capita is associated with a slight decrease in recidivism. The socio-economic status of the juvenile's county also affected recidivism. Juveniles living in counties with a higher per capita income had modestly improved recidivism rates. Lower socio-economic counties, as measured by Temporary Assistance for Needy Families per capita, had higher rates of recidivism.

This research demonstrated the feasibility, importance, and ongoing need to study juvenile recidivism in Pennsylvania. Many states already report on recidivism to better understand which intervention programs are successful and which need to be changed.

The researchers recommend that Pennsylvania begin to document juvenile recidivism and regularly issue formal reports. These reports could begin to document recidivism rates from juveniles released from specific placement facilities, such as group homes, secure detention facilities, drug and alcohol treatment programs, and Outward Bound-type programs.

The researchers also suggest linking the criminal records of adults with their juvenile records. By doing so, future research could help to determine what sorts of juvenile records are most likely to be followed by serious criminal offenses when the juvenile reaches adulthood, and what sorts of juvenile programs or dispositions are most effective in reducing the likelihood of future crime.

Introduction

Juvenile crime remains a serious problem in the United States and continues to affect millions of people despite a downward trend in recent years. In 2003, more than 2.2 million juveniles (under age 18) in the U.S. were arrested for various crimes, including 92,300 arrested for violent crimes, such as murder, non-negligent manslaughter, forcible rape, robbery, and aggravated assault (Snyder and Sickmund, 2006). According to Paternoster, Brame, and Farrington (2001), documentation shows a strong association between involvement in adolescent delinquency and involvement in adult criminality. In fact, many hardened criminals and serial offenders began their criminal careers as juveniles (Farrington, 1992). To alleviate adult criminal activity, society may first have to address juvenile crime.

This research, conducted in 2007, estimated the extent of juvenile criminal recidivism in Pennsylvania, examining how and whether various characteristics of both the juvenile justice system and juvenile offender affect recidivism. Recidivism is defined as a relapse or return to criminal activity by juvenile offenders.

Pennsylvania provided a unique setting to study juvenile recidivism given that it is one of the largest rural states in the U.S. Approximately 28 percent of the state's 12.4 million people live in a rural county (defined as less than 274 people per square mile).

In Pennsylvania, unlike other states, little is known about juvenile criminal recidivism. Pennsylvania, Alabama, Indiana, Kansas, and Tennessee are the only states that do not track juvenile recidivism (Virginia Department of Juvenile Justice, 2005). This paucity of information is unfortunate since recidivism is an important measure of the effectiveness of the juvenile justice system, capturing the system's ability to deter criminal relapse and rehabilitate juveniles. Of course, recidivism is not only affected by the juvenile justice system but depends on the decisions and choices made by juveniles, who are likely influenced by socioeconomic and sociodemographic factors.

The direct costs of recidivism are the psychological and monetary costs to victims, including increased costs of the juvenile justice system. A relapse into crime may have other costs, too, such as reducing the juvenile's educational attainment and labor market opportunities. In fact, research suggests that it might be possible to increase educational attainment, even of non-juvenile offenders, by reducing juvenile recidivism (Grogger 1997), since reductions in violence at school and in the surrounding area make it easier for students to concentrate on their studies, while making it less likely they will miss school because of fear of violence.

As previously mentioned, Pennsylvania does not report data on juvenile recidivism, although the Pennsylvania Department of Corrections has been publishing *Recidivism in Pennsylvania State Correctional Institutions* since 1999, which providies recidivism statistics of adult offenders released from Pennsylvania's correctional institutions. However, many states publish reports on the recidivism of juvenile offenders as well as adult offenders, and use them as outcome measures of juvenile justice programs and initiatives. For example, the Maryland Department of Juvenile Services publishes an annual report that includes juvenile recidivism rates for youths who were released from different programs, such as secure detention and substance abuse programs. These data are used for planning and assessing prevention efforts.

There are no national statistics on juvenile recidivism, although the U.S. Department of Justice, in *Juvenile Offenders and Victims: 2006 National Report,* presents average rates of recidivism for a select group of states. Juveniles who were released from incarceration have a one-year recidivism rate of 55 percent. In other words, 55 percent of juveniles are rearrested within one year of their release.

The data used in this study were from a large database of juvenile activity maintained by the Center for Juvenile Justice Training and Research in Pennsylvania (CJJTR).[1] The micro-level data were rich and detailed in terms of sociodemographic variables. Over the analysis period of 1997 to 2005, the final data sample used in this study contained about 190,000 observations from both rural and urban counties.

This study explored juvenile recidivism, defined as the time between the juvenile's first and second referral to the juvenile justice system. A referral occurs when an arresting officer informs a county's Juvenile Probation Department of the charges against a juvenile. The first and second referral must have led to a substantiated charge; therefore, this study explored recidivism on the basis of reconviction, one of the most commonly used measures of recidivism (Mbuba, 2005).

[1] Founded in 1982, CJJTR is housed at Shippensburg University, but it is not part of the university. It is a division of the Juvenile Court Judges' Commission (JCJC), established by the Pennsylvania General Assembly in 1959, with the responsibility of overseeing the juvenile justice system. The CJJTR provides professional training for juvenile justice practitioners, such as probation officers and court judges, and collects and disseminates data on juvenile delinquency.

Goals and Objectives

The goal of this research was to understand one important aspect of juvenile crime, namely, juvenile recidivism in rural Pennsylvania.

The two major objectives of the research were to calculate basic descriptive statistics on juvenile recidivism for Pennsylvania, the most fundamental of which was the recidivism rate or the percentage of juveniles who return to crime within a specified time period; and to examine how sociodemographic variables of the juvenile, juvenile's family, and county of residence affected recidivism. For example, this study compared recidivism rates by sex, race, whether the juvenile lived in a single- or two-parent household, and whether the juvenile committed a felony or non-felony crime.

The achievement of these objectives may make it possible to identify juveniles who are at increased risk of recidivism.

Methodology

The researchers used data from CJJTR. CJJTR is part of the Juvenile Court Judges' Commission (JCJC), and was created in 1959 by the Pennsylvania General Assembly. JCJC is responsible for advising juvenile courts on court procedures and care of delinquents, overseeing administrative practices in probation offices, and collecting and reporting juvenile court statistics, such as the *Pennsylvania Juvenile Court Dispositions*, published annually.

This study used a large database of juvenile activity for Pennsylvania collected and maintained by CJJTR. It included demographic variables, charges, substantiated charges, number of counts, disposition outcomes, and criminal or civil sanctions, such as fines, consent decrees, community service, probation, informal adjustment, and type of placement of all juveniles in Pennsylvania who were referred to their county's juvenile justice system. Each record or observation provided information on an individual juvenile's disposition. The period of analysis was 1997 to 2005. CJJTR reported that, prior to 1997, the data were neither reliable nor consistent with more recent data, owing to changes in how the variables were collected and reported. For each year, CJJTR collects and compiles data, which are initially entered by the juvenile court in each of Pennsylvania's 67 counties, on each juvenile referred to the juvenile court system of Pennsylvania. A juvenile may be referred to the court by the police, a school, a probation officer, a relative, a social agency, another juvenile court, or a district justice. For every juvenile record, there was information on charges filed and whether the charges were substantiated. In addition, the juvenile's outcome at disposition was reported, which may include dismissal of the case, fines, probation, informal adjustment (a juvenile who was not adjudicated a delinquent may nonetheless be required to visit a probation officer periodically and perform other duties), consent decree (a juvenile guilty of an act may have his case expunged if he fulfills several court requirements, such as victim restitution), warning and counseling, and placement, such as secure detention, drug and alcohol treatment program, and group home. Along with these variables, information was also available on the juvenile's race, age, ethnicity (Hispanic or non-Hispanic), county of residence, family status (whether the juvenile's parents were currently married, divorced, separated, never married, or one or both deceased), and living arrangements (whether the juvenile was living with both parents, mother, father, relative, father and stepmother, mother and stepfather, or foster parents). The researchers used the county of residence information to determine whether a juvenile was living in a rural or urban county. A rural county, as defined by the Center for Rural Pennsylvania, has fewer than 274 persons per square mile. Furthermore, the county information allowed the researchers to add additional variables to the analysis, such as the number of police officers per capita, real (inflation adjusted) income per capita, and other sociodemographic variables in the surrounding community that may affect recidivism.

A recidivism study requires longitudinal data, which includes a juvenile's record of encounters with the juvenile justice system over a period of time. In its present form, the CJJTR data set was not suitable for studying recidivism because it did not contain a complete set of unique IDs that would allow for the creation of a juvenile criminal history; however, there was information in the data to help create unique IDs. For 33 counties, the data contained unique IDs for juveniles, making it rather straightforward to compile their histories. To create juvenile crime histories, the juvenile IDs were matched within each county over the analysis period. Unfortunately, some of these counties changed their ID system over the years, making it

difficult to collect the entire criminal history of a juvenile. For example, Columbia and Greene counties started using a new ID system in 2004, so there was no way to determine whether juveniles who had contact with the county's juvenile justice prior to 2004 were referred in 2004 or later.

The juvenile IDs for the 34 remaining counties were created by matching within a county the juveniles' first and last names along with date of birth. One potential problem with this matching technique was that the names of juveniles were not always consistently entered by the county's juvenile justice system. For example, a juvenile named Joseph Smith may sometimes be entered into the system as Joe Smith, Joseph E. Smith, or Joey Smith Jr. The researchers attempted to minimize these occurrences by manually correcting the obvious cases. Furthermore, if a juvenile was referred to several different county juvenile justice systems, there was no effective way to construct the juvenile's complete criminal history because each county used its own ID system that did not follow a juvenile across county lines. The same problem will arise if juveniles were to move across counties. After deletion of observations with missing variables and juveniles whose charges were not substantiated, the final dataset contained approximately 187,000 observations.

Given these data limitations, in addition to not having criminal histories prior to 1997, the researchers could not determine whether the juvenile's first substantiated charge listed in the dataset was indeed the juvenile's actual first offense. However, the frequency of multiple offenders in the dataset indicated that there were relatively few juveniles who committed three or more offenses. Therefore, the researchers expected that the majority of cases examined were for the juveniles' first and second referrals.

There were other shortcomings of the data. First, there was no information on whether juveniles living in Pennsylvania have committed crimes in neighboring states, so the data might not have captured the complete criminal history of a juvenile. Second, the data did not include information on juveniles who were convicted of a delinquent act in Pennsylvania and then moved out of state. As long as juveniles moving out of state were not substantially more or less likely than nonmovers to commit a subsequent offense, the estimated results will be unbiased. Taken together, all the shortcomings and weaknesses of the data will have the effect of understating the extent of recidivism.

Pennsylvania's Act 33 of 1996 created more conditions in which a juvenile under age 18 could be excluded from juvenile court jurisdiction. Prior to Act 33, only juveniles charged with murder were excluded from the juvenile court's jurisdiction. Act 33 amended the law by expanding the transfer mechanisms. Under this act, juveniles could now be excluded if they were aged 15 or older and charged with "rape; involuntary deviate sexual intercourse; aggravated assault; robbery; robbery of a motor vehicle; aggravated indecent assault; kidnapping; voluntary manslaughter; or an attempt, conspiracy, or solicitation to commit murder or any of the crimes listed."[2] In addition, the juvenile must either have used a deadly weapon or have previously been adjudicated to have committed one of the excluded offenses. Even if there is a prima facie case (a case in which, on first impression, the evidence appears strong) and the exclusion criteria are met, it is possible that some cases may return to juvenile court following a decertification hearing in criminal court whereby a juvenile files a request that the case be tried in juvenile court. As a result of the foregoing exclusions, the dataset used in this study did not contain information on juveniles who committed some of the most violent crimes, and this will lead to an underreporting of recidivism. However, this omission was a minor problem since the number of juveniles excluded from juvenile court was small. In 1996, only 473 cases were excluded from juvenile jurisdiction, leading to 109 convictions in criminal court.

The researchers used three different survival techniques to examine recidivism: Kaplan Meier, parametric survival models, and Cox regression. These models estimated how recidivism was affected by the juvenile's sociodemographic factors, and the punitiveness of the juvenile justice system. Moreover, the results were compared to juvenile recidivism rates in urban areas of Pennsylvania. Special attention was given to how the juvenile's family and living arrangement affected recidivism. In addition, the researchers explored whether characteristics, such as income, Temporary Assistance to Needy Families, the number of police, and the arrest rates of the juvenile's county of residence, were related to recidivism.

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[2] Office of Justice Programs, U.S. Department of Justice available at: http://www.ncjrs.gov/html/ojjdp/summary/08_2000/jtcc_10.html.

Results

A First Look at Juvenile Recidivism in Pennsylvania

Table 1 provides summary statistics for the number of juvenile offenders, number of reoffenders, and percent of reoffenders by county and by rural and urban areas. From 1997 to 2005, there were 187,173 juveniles who were charged with substantiated offenses. Of these juveniles, 35,337, or about 19 percent, were later charged with at least one more substantiated offense during the period. The majority of offenders came from urban counties. There were 140,144 offenders in urban counties compared to 47,029 in rural counties, with the percent of reoffense higher in urban counties than rural counties (20 percent vs. 16 percent, respectively). The percent of juveniles who reoffend varied greatly among the counties, ranging from 1 percent in Adams to 36 percent in Fayette. By way of comparison, Philadelphia's rate was 25 percent. Again, it is important to note that the data in Table 1 did not include those juveniles who were convicted in criminal court, which will likely result in an underreporting of the percent of reoffenders. Furthermore, since violent crime is more prevalent in urban counties, the percent of reoffenders is likely biased lower in urban counties.[3]

As shown in Table 2 on Page 10, those juveniles whose first offense was a felony were more likely to commit another offense. Of the 32,456 felony offenders, 24 percent committed a second offense, while 18 percent of the 154,717 nonfelony offenders reoffended. The rate of reoffense was lower in rural counties than in urban counties regardless of the offense type. For example, the percent of reoffenders who initially committed a felony in rural and urban counties were 19 and 25 percent, respectively.

The data in Table 3 on Page 10 indicate that, as might be expected, there were substantially more male offenders and reoffenders than female offenders and reoffenders. The difference in the percent of reoffenders between urban and rural counties also was larger for males than females.

Table 4 on Page 10 compares the number of offenders and reoffenders in urban and rural counties by race. The results are presented separately for whites, blacks, and juveniles of other races (Asians, Pacific Islanders, and Native Americans). The lowest rate of reoffense was among other races, followed by whites and then blacks. For all races, the percent of reoffenders was lower in rural counties than in urban counties. In particular, for the other race category, the percent of reoffenders was 15 percent in urban counties compared to only 7 percent in rural counties, the largest difference among the races.

Table 5 on Page 10 compares non-Hispanic and Hispanic juvenile offenders and reoffenders. This ethnicity classification did not distinguish among races. For Hispanic offenders, 7,733 resided in urban counties and 353 resided in rural counties. The percent of reoffenders was substantially different between Hispanics who resided in urban and rural counties. In urban counties, the rate of reoffense for Hispanics was 30 percent and in rural counties was 13 percent. The statewide percent of reoffense for Hispanics was 29 percent, compared to 18 percent for non-Hispanics, or about 1.6 times higher. It should be noted that the data did not include information about citizenship or immigration status.

Tables 1 through 5 seem to suggest that living in a rural county is correlated with lower rates of reoffense; however, caution should be exercised in inferring causation.

A Cursory Examination of Multiple Reoffenders

Although the main objective of this study was to examine the timing to the first reoffense (the time between the juvenile's first and second referral), the researchers also explored the issue of juveniles who committed multiple reoffenses. Tables 6 through 8 on Page 11 present the frequency distributions of reoffenses at the statewide level and for urban and rural counties. Table 6 shows that, of the 187,173 juveniles who were charged with a substantiated offense, 24,755 (approximately 13 percent) committed one more offense during 1997-2005, while 7,139 (4 percent) committed exactly two more subsequent offenses. Approximately 2 percent (3,443 juveniles) committed three or more subsequent offenses.

For juveniles in rural counties, 3 percent of those charged with a substantiated offense later committed two reoffenses, and about 4 percent in urban counties did so. Overall, juveniles who lived in rural counties appeared to commit fewer multiple reoffenses compared to their counterparts in urban counties.

[3] The FBI's Uniform Crime Reporting data for 2002 indicate that the violent crime rate in urban areas was 545.6 per 100,000 population compared to 212.6 per 100,000 population in rural counties (available at: http://www.fbi.gov/ucr/cius_02/html/web/offreported/02-nviolent02.html).

Table 1. Juvenile Recidivism Rates by County, 1997-2005

	Number of Offenders	Number of Offenders Per 100,000	Number of Reoffenders	Percent of Reoffenders
PENNSYLVANIA	187,173	1,509	35,337	19%
RURAL	47,029	1,370	7,523	16%
URBAN	140,144	1,562	27,814	20%
ADAMS	1,850	1,855	20	1%
ALLEGHENY	16,270	1,320	5,035	31%
ARMSTRONG	1,134	1,608	120	11%
BEAVER	4,050	2,290	380	9%
BEDFORD	405	812	39	10%
BERKS	6,815	1,720	1,808	27%
BLAIR	1,702	1,345	215	13%
BRADFORD	754	1,206	100	13%
BUCKS	8,327	1,344	124	1%
BUTLER	1,920	1,058	128	7%
CAMBRIA	2,431	1,645	90	4%
CAMERON	137	2,449	35	26%
CARBON	925	1,495	182	20%
CENTRE	870	620	108	12%
CHESTER	5,874	1,240	1,014	17%
CLARION	335	829	71	21%
CLEARFIELD	1,218	1,474	241	20%
CLINTON	393	1,056	92	23%
COLUMBIA	971	1,499	314	32%
CRAWFORD	1,497	1,673	441	29%
CUMBERLAND	1,770	794	483	27%
DAUPHIN	6,484	2,563	1,989	31%
DELAWARE	7,986	1,440	318	4%
ELK	336	1,004	86	26%
ERIE	5,415	1,933	1,302	24%
FAYETTE	1,909	1,306	688	36%
FOREST	109	1,675	11	10%
FRANKLIN	2,253	1,641	273	12%
FULTON	150	1,024	23	15%
GREENE	462	1,143	60	13%
HUNTINGDON	439	959	21	5%
INDIANA	1,039	1,174	105	10%
JEFFERSON	646	1,413	104	16%
JUNIATA	211	901	47	22%
LACKAWANNA	2,241	1,069	158	7%
LANCASTER	7,075	1,444	1,978	28%
LAWRENCE	1,526	1,651	325	21%
LEBANON	1,969	1,570	547	28%
LEHIGH	5,142	1,557	633	12%
LUZERNE	5,623	1,798	1,699	30%
LYCOMING	2,367	2,004	724	31%
MCKEAN	636	1,438	102	16%
MERCER	1,746	1,466	175	10%
MIFFLIN	340	738	82	24%
MONROE	2,012	1,239	231	11%
MONTGOMERY	9,615	1,241	1,157	12%
MONTOUR	273	1,518	49	18%
NORTHAMPTON	4,498	1,565	1,075	24%
NORTHUMBERLAND	2,470	2,677	247	10%
PERRY	650	1,453	142	22%
PHILADELPHIA	28,196	1,936	6,965	25%
PIKE	698	1,242	69	10%
POTTER	333	1,878	37	11%
SCHUYLKILL	1,887	1,284	518	27%
SNYDER	600	1,581	135	23%
SOMERSET	900	1,142	204	23%
SULLIVAN	105	1,651	9	9%
SUSQUEHANNA	508	1,211	87	17%
TIOGA	707	1,708	107	15%
UNION	392	908	46	12%
VENANGO	731	1,307	129	18%
WARREN	597	1,422	88	15%
WASHINGTON	2,252	1,091	322	14%
WAYNE	461	912	49	11%
WESTMORELAND	4,773	1,300	156	3%
WYOMING	742	2,639	32	4%
YORK	8,021	1,965	993	12%

Table 2. Recidivism Rates by Severity of First Offense, 1997-2005

	Number of Offenders	Number of Offenders Per 100,000	Number of Reoffenders	Percent of Reoffenders
Felony				
PENNSYLVANIA	32,456	262	7,757	24%
RURAL	6,406	187	1,203	19%
URBAN	26,050	290	6,554	25%
Nonfelony				
PENNSYLVANIA	154,717	1,247	27,580	18%
RURAL	40,623	1,183	6,320	16%
URBAN	114,094	1,272	21,260	19%

Table 3. Recidivism Rates by Gender, 1997-2005

	Number of Offenders	Number of Offenders Per 100,000	Number of Reoffenders	Percent of Reoffenders
Male				
PENNSYLVANIA	141,584	1,141	29,660	21%
RURAL	35,803	1,043	6,259	17%
URBAN	105,781	1,179	23,401	22%
Female				
PENNSYLVANIA	45,589	367	5,677	12%
RURAL	11,226	327	1,264	11%
URBAN	34,363	383	4,413	13%

Table 4. Offenders and Reoffenders by Race, 1997-2005

	Number of Offenders	Offenders Per 100,000	Number of Reoffenders	Percent of Reoffenders
White				
PENNSYLVANIA	120,646	973	20,559	17%
RURAL	38,494	1,121	6,350	16%
URBAN	82,152	916	14,209	17%
Black				
PENNSYLVANIA	54,303	438	13,312	25%
RURAL	3,998	116	871	22%
URBAN	50,305	561	12,441	25%
Other Race				
PENNSYLVANIA	12,224	99	1,466	12%
RURAL	4,537	132	302	7%
URBAN	7,687	86	1,164	15%

Table 5. Offenders and Reoffenders by Ethnicity, 1997-2005

	Number of Offenders	Number of Offenders Per 100,000	Number of Offenders Per Capita	Percent of Reoffenders
Non-Hispanic				
PENNSYLVANIA	179,087	1,444	32,960	18%
RURAL	46,676	1,359	7,478	16%
URBAN	132,411	1,476	25,482	19%
Hispanic				
PENNSYLVANIA	8,086	65	2,377	29%
RURAL	353	10	45	13%
URBAN	7,733	86	2,332	30%

Estimates of Juvenile Recidivism

This section provides the first estimates of juvenile recidivism in Pennsylvania. Figure 1 shows the survival rate for all juveniles in Pennsylvania, where the survival rate measured the percent of juveniles who did not receive a second substantiated referral at a specific time period. The survival at day 1,000 was approximately 75 percent, meaning that 1,000 days after the juvenile's first substantiated referral, roughly 75 percent of the juveniles did not return to the juvenile justice system. An alternative interpretation is that 25 percent of the juveniles did receive a referral leading to a second substantiated charge during the first 1,000 days. At day 2,000, the survival rate was lower (only about 60 percent of the juveniles did not commit a second offense by this time), implying that the recidivism rate was higher. More specifically, the one-, two-, and three-year recidivism rates were 11, 20, and 28 percent, respectively.

Figure 2 on Page 12 compares the survival rates between juveniles living in rural and urban counties. The survival curves were statistically significant from one another. As juveniles in rural counties have lower recidivism rates, the survival curve for juveniles who lived in rural counties lies completely above the survival curve for juveniles who lived in urban counties. The difference in recidivism rates between rural and urban counties became larger over time. The one-, two- and three-year recidivism rates in rural counties were 10, 17, and 23 percent, respectively; for urban counties these rates were 11, 21, and 29 percent, respectively. Restricting the analysis to the period 2002-2005 revealed that the

Table 6. Frequency Distribution of Reoffenses in Pennsylvania, 1997-2005

Number of Reoffenses	Number of Reoffenders	Percent
0	151,836	81
1	24,755	13
2	7,139	4
3	2,233	1
4	791	<1
5	263	<1
6	88	<1
7	35	<1
8	19	<1
9	9	<1
10	2	<1
11	2	<1
12	1	<1
Total	187,173	

Table 7. Frequency Distribution of Reoffenses in Rural Counties, 1997-2005

Number of Reoffenses	Number of Reoffenders	Percent
0	39,506	84
1	5,404	11
2	1,380	3
3	448	1
4	154	<1
5	72	<1
6	24	<1
7	18	<1
8	13	<1
9	6	<1
10	2	<1
11	1	<1
12	1	<1
Total	47,029	

Table 8. Frequency Distribution of Reoffenses in Urban Counties, 1997-2005

Number of Reoffenses	Number of Reoffenders	Percent
0	112,330	80
1	19,351	14
2	5,759	4
3	1,785	1
4	637	<1
5	191	<1
6	64	<1
7	17	<1
8	6	<1
9	3	<1
11	1	<1
Total	140,144	

one-, two-, and three-year recidivism rates in rural counties were 11, 20, and 27 percent, respectively, which implied a slight rise in recidivism since the 1997-2001 period. The modest rise in recidivism may be attributable to recent improvements in data collecting and reporting.

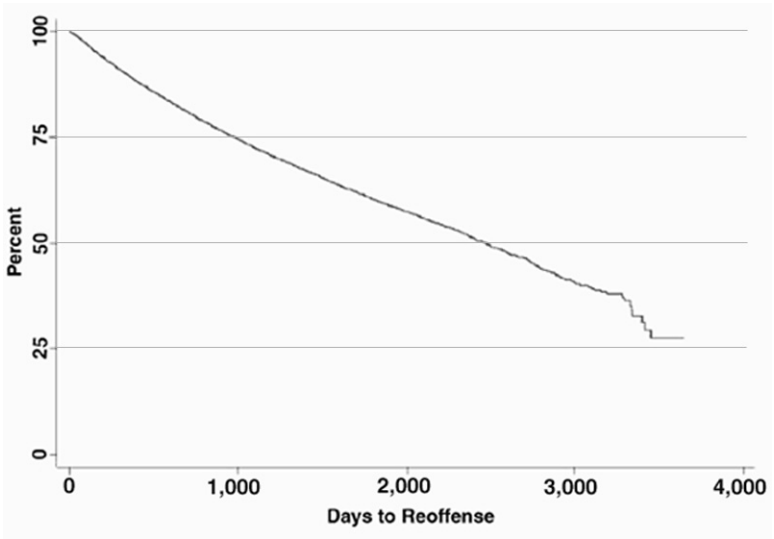
Analysis of Juvenile Recidivism

To explore how various demographic characteristics may affect recidivism, the researchers conducted a separate survival analysis. The estimates (Kaplan-Meier) are informative but they cannot control for the effect that a particular variable may have on recidivism. For example, the initial analysis suggested that juveniles residing in rural counties had lower recidivism rates. These results, however, did not control for other confounding factors, such as race, family characteristics and other sociodemographic variables. Controlling for these omitted variables may cause the differences in recidivism rates between rural and urban counties to disappear.

The initial model suggested that juveniles living in rural counties had a longer expected time to their second referral than juveniles who lived in urban counties. To test this result, the researchers reran the model and excluded juveniles from Philadelphia. Despite the exclusion of Philadelphia, the model showed that living in a rural county was correlated with reduced recidivism.

The first model contained variables that characterize the juvenile's sociodemographic status. There was a variable indicating whether the juvenile was male to test for differences in recidivism between males and females. To help control for the effect of age on recidivism, the juvenile's age and

Figure 1. Survival Estimates, All Juveniles, 1997-2005



age squared were used as explanatory variables. A variable was included indicating whether the juvenile was black and another variable indicated whether the juvenile belonged to another race, such as Asian or Native American.

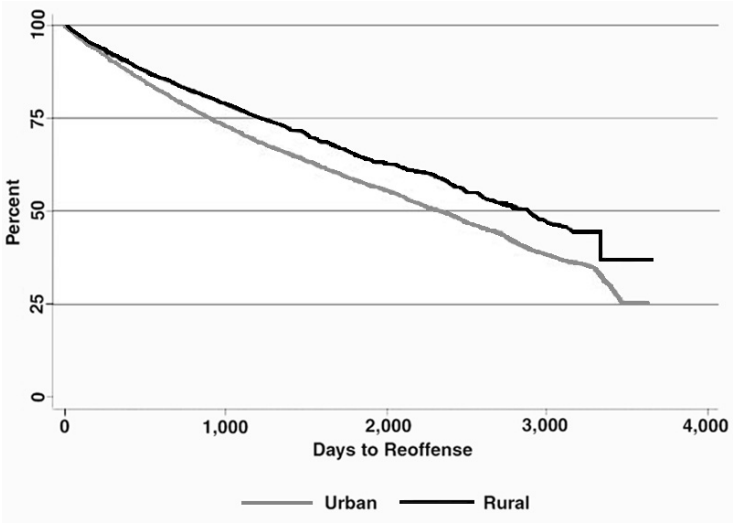
Juveniles residing in rural counties had longer times to their second referral than juveniles residing in urban counties, holding constant the sociodemographic variables.

For the county-level variables, per capita income and the number of police per capita were associated with lengthening the time to the juvenile's second referral. Per capita TANF, arrest rate, and percent of cases dismissed in juvenile court reduced the time to the second referral.

The researchers further investigated the effects of living in a rural county on the length of time to the second referral. The rural variable was interacted with all the sociodemographic variables, creating 11 interaction variables. Some findings were that males living in rural counties had longer times to second referral, as well as those who committed a felony in rural counties. Juveniles who were represented by a private attorney in rural counties also had longer survival times. There were two cases in which living in a rural county appeared to adversely affect recidivism: juveniles who lived with their mother only, and those who received alternative education had quicker relapses into criminal activity.

In models estimated but not described, the effects of the percent of cases in a county leading to placement were examined. The most common types of delinquency placement were private institutions, group homes, drug and alcohol treatment, and boot camps. The results were mixed. An examination revealed that juveniles who received placement were slightly more likely to have a quicker relapse into criminal activity. These results did not suggest that placement was ineffective but that the juveniles who were placed were simply more troubled and more likely to return to crime.

Figure 2. Survival Estimates, Rural and Urban Counties, 1997-2005



Conclusions

The research data show that Pennsylvania's one-, two-, and three- year recidivism rates were 11, 20, and 28 percent. In other words, the three-year recidivism rate estimated that approximately 28 percent of juveniles who were convicted of a first offense would experience another conviction within three years. The recidivism rates were lower in rural counties, with one-, two-, and three-year recidivism rates of 10, 17, and 23 percent, respectively. In contrast, the one-, two-, and three-year recidivism rates in urban counties were 11, 21, and 29 percent, respectively. For male juveniles living in rural counties, the rates of recidivism were much lower than their urban counterparts. For example, the three-year recidivism rate for males in rural counties was 25 percent compared to a rate of 33 percent for males in urban counties.

Two research models were used to determine factors associated with increased risks of recidivism. The first showed that juveniles with certain characteristics have an increased risk of recidivism. The characteristics include being male, black, Hispanic, a felony offender, living with a single mother and having at least one deceased parent. The second model indicated that living in an urban county, being male or Hispanic, living with a single mother, having at least one deceased parent, committing a prior felony, and enrollment in alternative education, were all associated with increased recidivism.

Policy Considerations

This research demonstrated the feasibility of measuring juvenile recidivism in Pennsylvania by providing a comparison of recidivism between rural and urban counties. Recidivism is an important measure of the success and failure of juvenile justice interventions.

According to the Virginia Department of Juvenile Justice: "Recidivism is the key statistic in determining whether or not criminal justice interventions, from diversion through incarceration, are making a difference in keeping offenders from committing more crimes."[4] Unfortunately, Pennsylvania and a handful of other states do not measure juvenile recidivism (Virginia Department of Juvenile Justice, 2005).

The researchers recommend that Pennsylvania begin to document juvenile recidivism and issue formal reports on a regular basis. These reports could go beyond the analysis of this study by examining recidivism rates of juveniles released from specific placement facilities, such as group homes, secure detention facilities, drug and alcohol treatment programs, Outward Bound programs, and supervised independent living. If there are benefits to these programs, in terms of reduced recidivism, it would be possible to construct evidence-based measures of program effectiveness by cost-benefit analysis. Different types of intervention have different costs. This type of analysis might reveal that the most successful interventions, or those showing the greatest reduction in recidivism, may be the most costly, and thus should be used for the juveniles whose criminal behavior predicts the greatest cost to society.

It would also be extremely useful to link the criminal records of adults with their juvenile records. By doing so, one could determine what sorts of juvenile records are most likely to be followed by serious criminal offenses when the juvenile reaches adulthood, and what sorts of juvenile programs or dispositions are most effective in reducing the likelihood of future crime.

The Pennsylvania government agencies best suited to report on juvenile recidivism are the Pennsylvania Commission on Crime and Delinquency (PCCD) and the Center for Juvenile Justice Training and Research at Shippensburg University.

The direct policy implications of this research were the identification of juvenile characteristics that deserve closer scrutiny to help prevent a relapse into crime. The characteristics associated with increased recidivism were living in an urban county, being male or Hispanic, living with a single mother, having at least one deceased parent, committing a prior felony, and attending alternative education. With respect to the high rates of recidivism among Hispanics, it may be important for the juvenile justice system to better tailor interventions to meet the different cultural needs, language barriers, and customs of Hispanic juveniles and their parents.[5]

Special attention should also be given to juveniles living with their mother only and those with at least one deceased parent. More frequent contact with a probation officer may be beneficial. It also may be helpful to reduce the caseloads of probation officers assigned to juveniles who live in single-parent families so that they can interact more closely with these at-risk juveniles.

This research also documented a higher incidence of recidivism among juveniles with prior felony convictions. As with juveniles living in single-parent families, there may be a need for more intensive treatment or intervention for felony offenders in an effort to reduce recidivism. Overall, the juvenile justice system in Pennsylvania should address all the predictors of recidivism documented in this study. One method of doing so would be with increased program interventions and alternative treatment settings. However, it is important that all interventions, both old and new, are assessed for their effectiveness. One of the most important indicators of program effectiveness is recidivism. Therefore, program effectiveness should be measured at least in part by reports on recidivism.

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[4] Source: Virginia Department of Juvenile Justice, available at: http://www.vaperforms.virginia.gov/i-recidivism.php.

[5] Federal government mandates require health care organizations receiving federal money to provide culturally competent care, which includes calling for organizations to have strategies to recruit diverse staffs, and provide language interpreters and other culturally appropriate services.

References

Farrington, D. P. (1992). "Criminal Career Research in the United Kingdom." *British Journal of Criminology*, 32, 521–536.

Grogger, J. (1997). "Local Violence and Educational Attainment." *Journal of Human Resources*, 32(4), 659-682.

Mbuba, J. M. (2005). "A Refutation of Racial Differentials in the Juvenile Recidivism Rate Hypothesis." *African Journal of Criminology & Justice Studies.* 1(2). 51-68.

Paternoster, R., R. Brame, and D. P. Farrington. (2001). "On the Relationship Between Adolescent and Adult Conviction Frequencies." *Journal of Quantitative Criminology*, 17(3), 201-205.

Snyder, H. N., and M. Sickmund. (2006). *Juvenile Offenders and Victims: 2006 National Report*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Virginia Department of Juvenile Justice. (2005). "Juvenile Recidivism in Virginia." *DJJ Quarterly*, 3, 1-12. (Available at http://www.djj.state.va.us/About_Us/Administrative_Units/Research_and_Evaluation_Unit/recidivism_RQ.)

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