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Supplement: Victimization Costs in Bill Fiscal Impact Analyses

This year SPAC estimates sentencing policies' effect on victimizations. This estimation has two components:

(1) Recidivism rates may change due to differences in time served caused by:
   a. Incapacitation until "aged out;"
   b. Sufficient time to access rehabilitative programming;
   c. Punishment severe enough to deter future crime; and/or
   d. Exposure to criminal peers or trauma of incarceration.

(2) Social benefits or costs due to the change in timing of recidivism events because of changes in the length of stay.

This supplement explains SPAC's methodology and findings with regards to the above components. The findings are solely for purposes of use in SPAC's fiscal impact analyses for proposed legislation. Further research would be necessary to make any of the causal claims implied by possible effects.

Regardless of the cause, SPAC finds these trends sufficiently consistent to allow for inclusion in analyzing criminal justice bills. Criminal justice bills are intended to improve public safety and omission of possible victimization benefits or costs places undue emphasis on Illinois' government spending. SPAC will continue to improve and refine these findings to improve the accuracy of the fiscal impact analyses.

Recidivism Rate Changes Due to Time Served

First, changes in sentence lengths may change recidivism patterns of offenders, for better or worse. Researchers studying the length of stay issue have suggested that prison stay may (1) incapacitate the offender until they "age out," (2) allow sufficient time for rehabilitative programs, (3) deter future crime because of the severity of the punishment, or (4) increase recidivism through exposure to criminal peers and the trauma of incarceration.

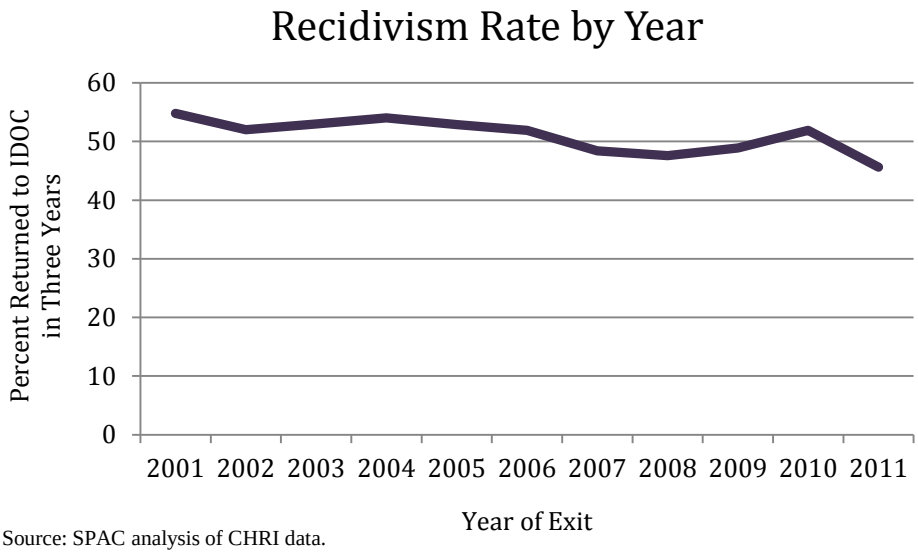
In order to analyze the effect of sentence length on recidivism for Illinois offenders, SPAC analyzed the recidivism patterns found from historical data from 2001 through 2011 in the state's criminal history record information (CHRI). This data includes both arrests known to law enforcement and convictions from an Illinois court. In calculating victimization costs, SPAC uses the total number of convictions as evidence of crimes—and therefore victimization costs actually realized—in determining the costs to be discounted.

SPAC approached this issue by first looking at the recidivism patterns of Illinois offenders based on age of exit and length of time served. Using these two methods provides insight into the age-crime curve and the effect of deterrence, respectively. These two theories also overlap, as longer sentences may intend to age-out the offender.

"Age Out" Effect

SPAC examined recidivism by age at exit to determine if incapacitation may "age out" offenders before release. Theoretically, inmates may mature in prison and may have lower recidivism rates at later exit ages. The age at the time of the offense would likely remain the same for any particular offense, but increasing the length of a sentence would simply move the average age older.

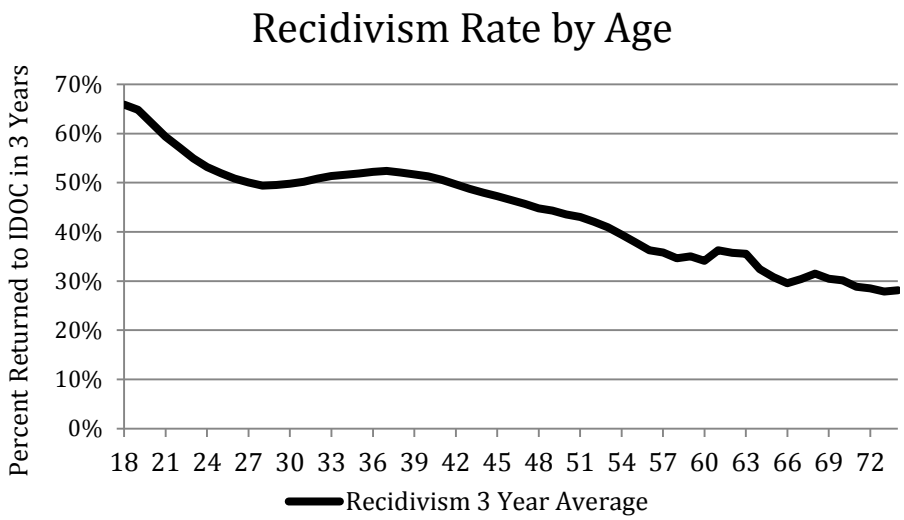
Because SPAC wanted to see general recidivism by age regardless of offense type, we examined ten years of exits and included all offenses, felony classes, and admissions. Some offenders had multiple admissions over these ten years. Over the ten years, the recidivism rate generally followed a downward trend.



Source: SPAC analysis of CHRI data.

Here the recidivism rate is defined as a return to prison within three years of release. This number will differ slightly from IDOC's internal recidivism calculations because of slight variations in the data.

When grouping all of these years together, the average recidivism rate by age at exit shows a robust estimate of recidivism by age. The graph below shows the recidivism rate by age at exit from IDOC. The general downward trend has a hump between the ages of 27 and 36, where the recidivism rate raises from 49.4% at age 27 to 52.6% at age 36.



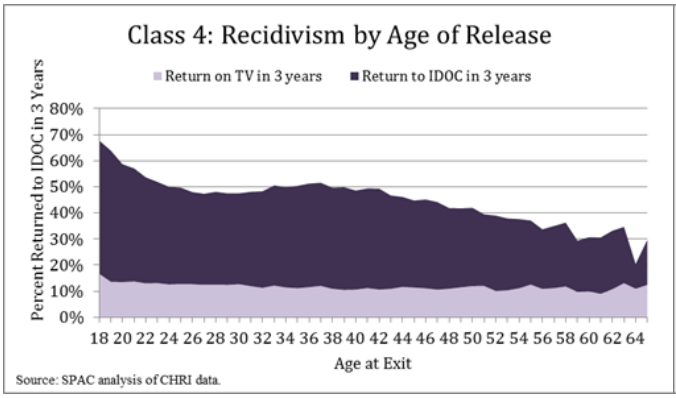
Source: SPAC analysis of CHRI data.

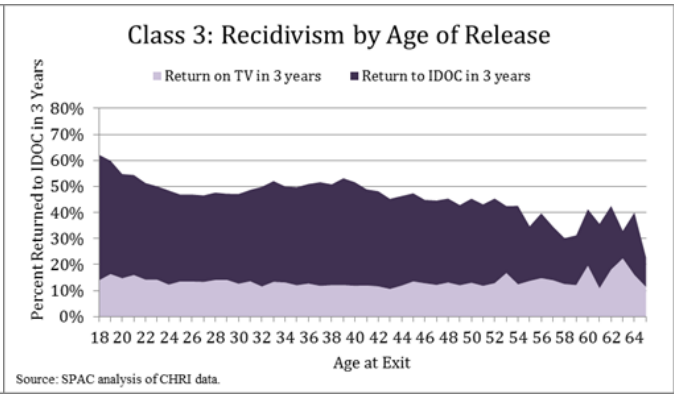
To analyze the effect of a delayed release, SPAC can analyze the effect of a recidivism changes in the average age. For example, the average age of Joe D.O., the average drug offender, is 31. If he were incarcerated for an extra year to the average age of 32, the average recidivism rate for this type of offender could be expected to increase from 50.2% to 50.8%.

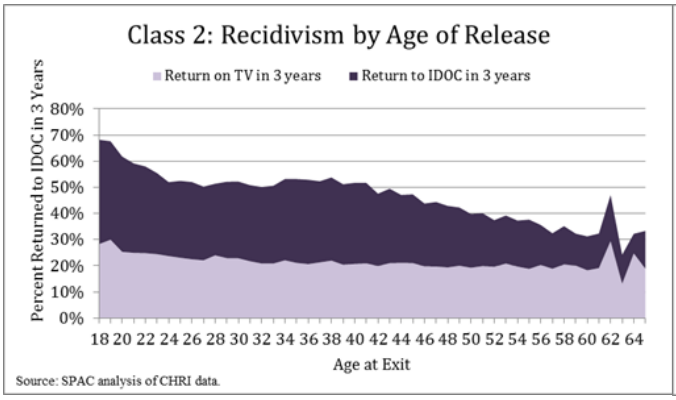
Proposed changes to lengths of stay affect individuals, however, and not averages. To address the effect of a delayed release on individuals, SPAC breaks down each offense into age groups. For example, offenders exiting between the ages of 18 and 27 see their recidivism rates drop with each additional year in prison by, on average, 1.5 percentage points. Offenders exiting between the ages of 27 and 36 increase their recidivism rate 0.1 percentage points each additional year in prison. Applied, by way of example, to average drug offenders, 36% of offenders would see the recidivism drop 1.5 points.

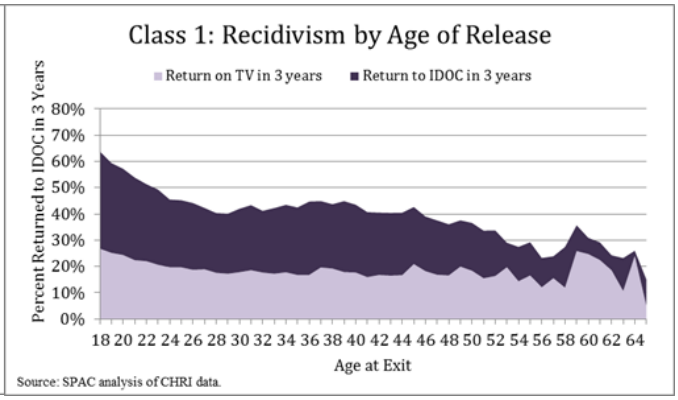
The general theory of offenders aging out of criminality usually does suggest an increase from the late-twenties to mid-thirties. SPAC analyzed whether this anomaly was present only in some subset of the prison exits and instead found it fairly consistent across time, felony classes, and offense types. Because of this consistency, SPAC concluded the general trends could be applied for all fiscal impact analyses.

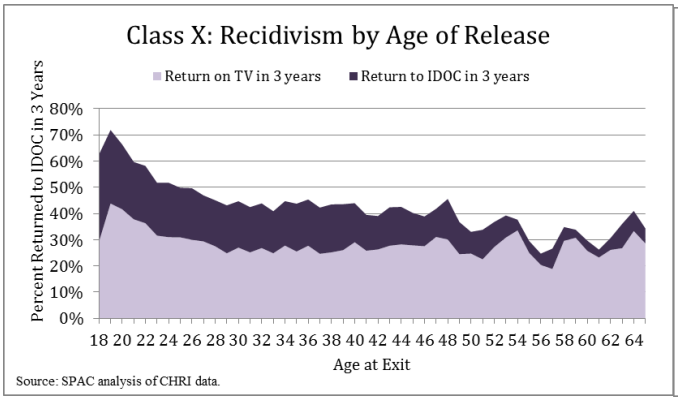
Below are the trends by felony class. The single recidivism rate by age is divided into cases with new sentences and those with only a technical violation that returned the offender to prison. If the offender had any new sentence over the three years post-release, the offender is counted as a new sentence return.

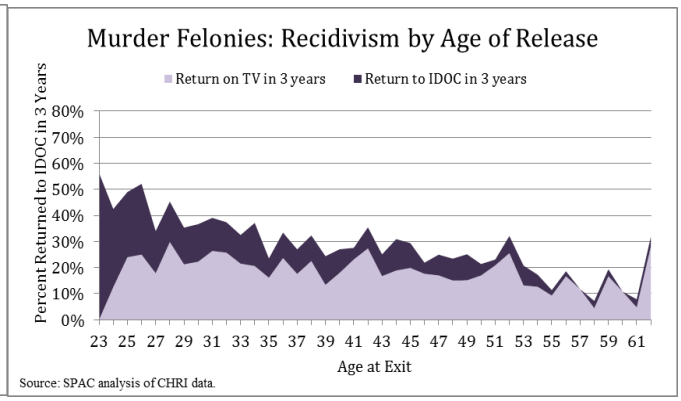

Class 4: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.

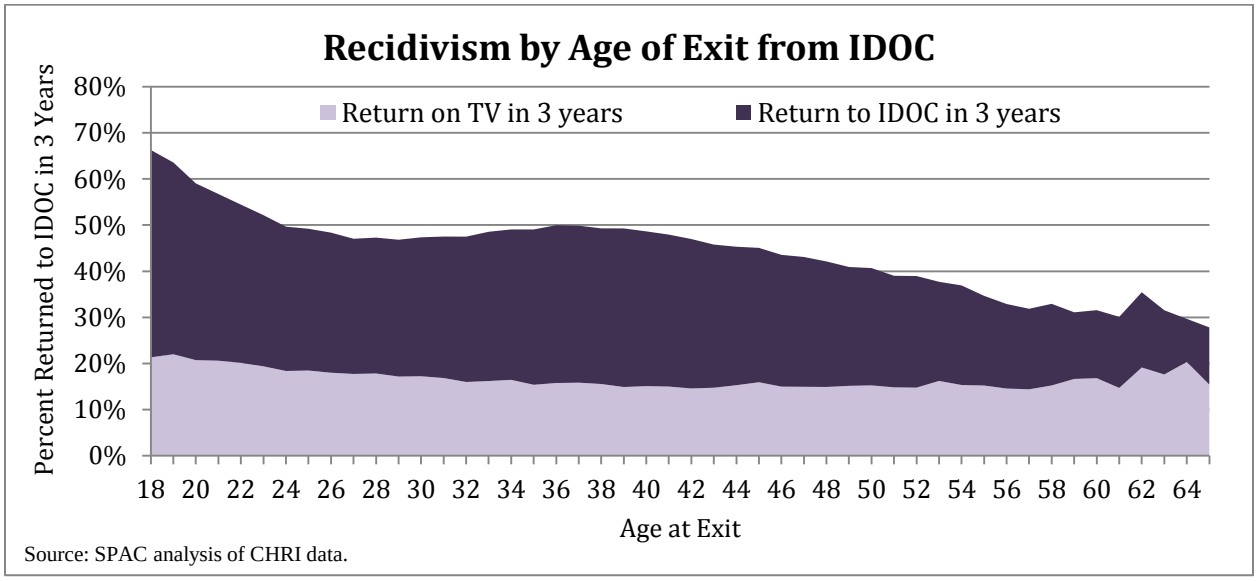

Class 3: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.


Class 2: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.


Class 1: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.


Class X: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.

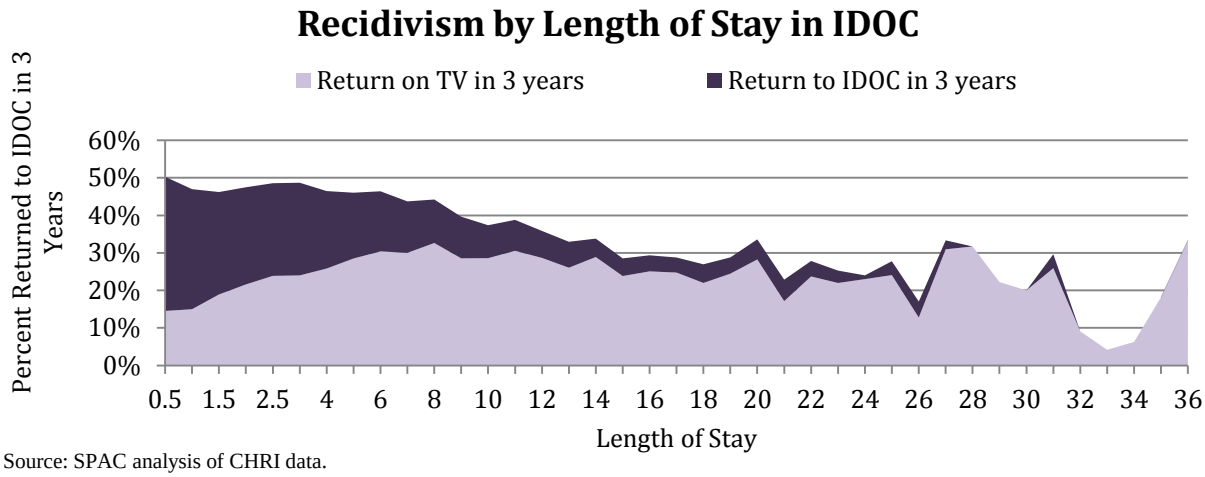

Murder Felonies: Recidivism by Age of Release
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61
Age at Exit
Source: SPAC analysis of CHRI data.


Recidivism by Age of Exit from IDOC
Return on TV in 3 years
Return to IDOC in 3 years
Percent Returned to IDOC in 3 Years
80%
70%
60%
50%
40%
30%
20%
10%
0%
18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
Age at Exit
Source: SPAC analysis of CHRI data.

Rehabilitative, Deterrent, or Criminogenic Effects

Changes in lengths of stay may also affect recidivism by (1) allowing sufficient time for rehabilitative programs, (2) deterring future crime because of the severity of the punishment, or (3) increasing recidivism through exposure to criminal peers and the trauma of incarceration. If these theories are correct, the age at release is less reliable than the total time served.

SPAC examined the overall recidivism rates of those released between 2001 and 2011 based on the length of time served. Consistent with national research, the length of time served has little effect on recidivism until the sentence length is relatively long (Meade et al., 2012). The first four years have a recidivism rate above 46%. In fact, until seven years of incarceration, the recidivism rate stayed above 45%.



Source: SPAC analysis of CHRI data.

Timing of Release Causes Victim Benefits or Costs

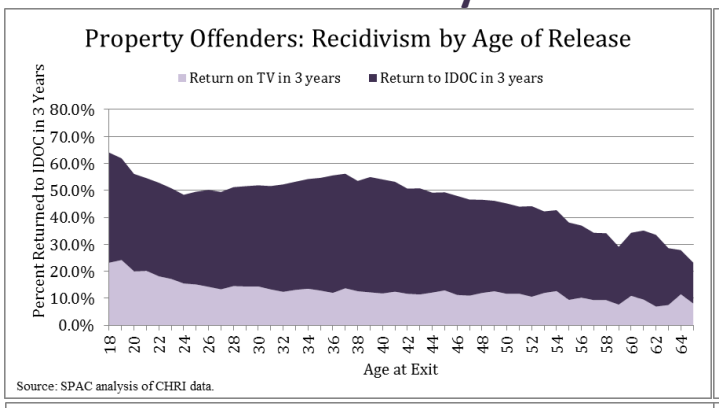
Second, changes in sentence lengths affect the onset of the current recidivism patterns. If the recidivism patterns indicate offenders of X crime cause $100,000 of victimization costs in the first year after release, delaying the release of those offenders one year delays the victimization costs by one year. Unless treatment or some evidence-based practice is provided, there is no indication that release a year later dramatically changes an offenders recidivism pattern. Using a 3% social discount rate, the present value of those crimes is $97,100—victims received $2,900 worth of benefit from not being victimized for an extra year.

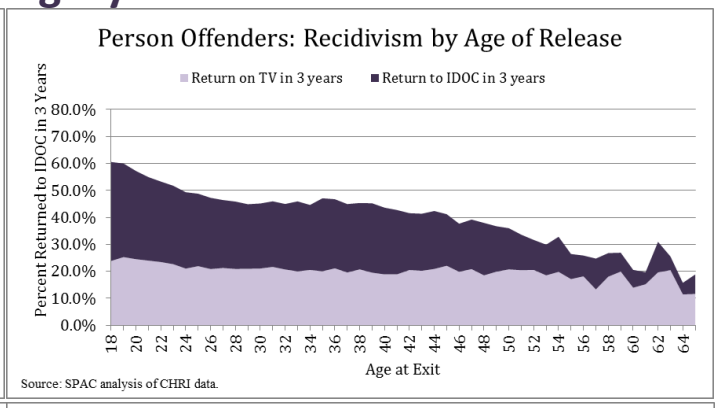
The low discount rate is appropriate for crimes as they are a social cost. Analysts may use higher discount rates when considering financial costs or benefits because the rate incorporates the opportunity cost of not investing in alternative goods. For social items, investing in alternatives is not an option and a low or zero discount rate may be more appropriate. SPAC uses a 3% discount rate here to represent the value to victims for having an additional year without being victimized.

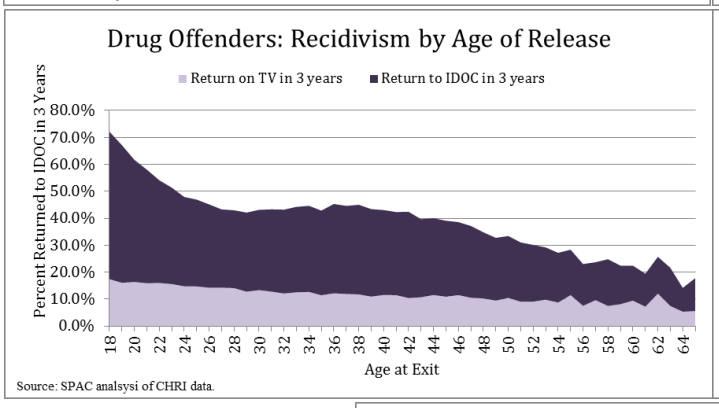
In SPAC's fiscal impact analyses, we calculate *what the costs and benefits would have been had the bill been in effect*, such that only the most certain costs or benefits are counted. Unreported, non-arrest, or unprosecuted crimes are not included in fiscal impact analyses for bills and

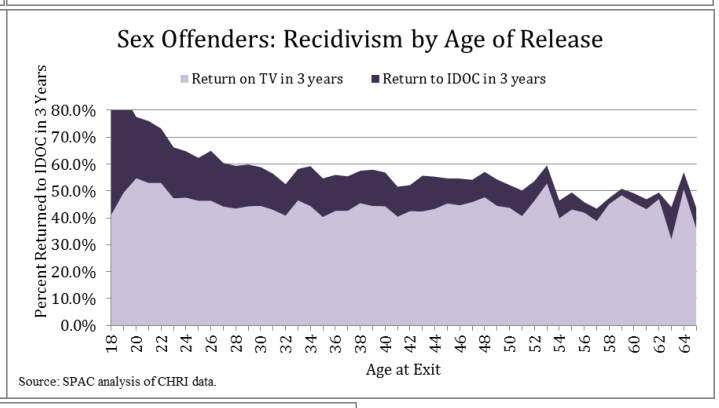
therefore the true victimization costs are underestimated. This approach is a conservative estimate of both the benefits and costs. More complete estimates are included in the Illinois Results First cost-benefit model, which accounts for uncertainty and variation.

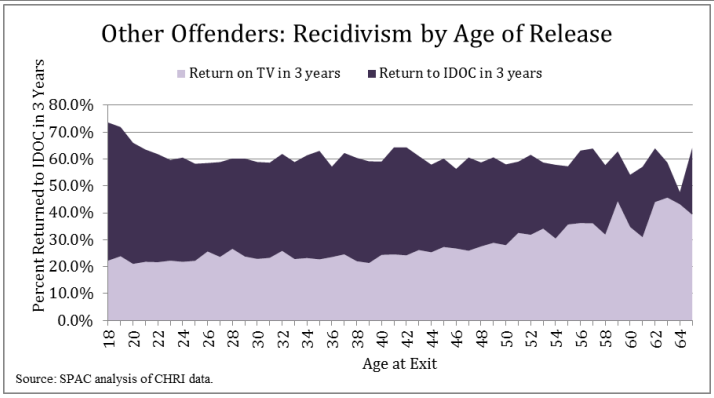
Recidivism Trends by Offense Category



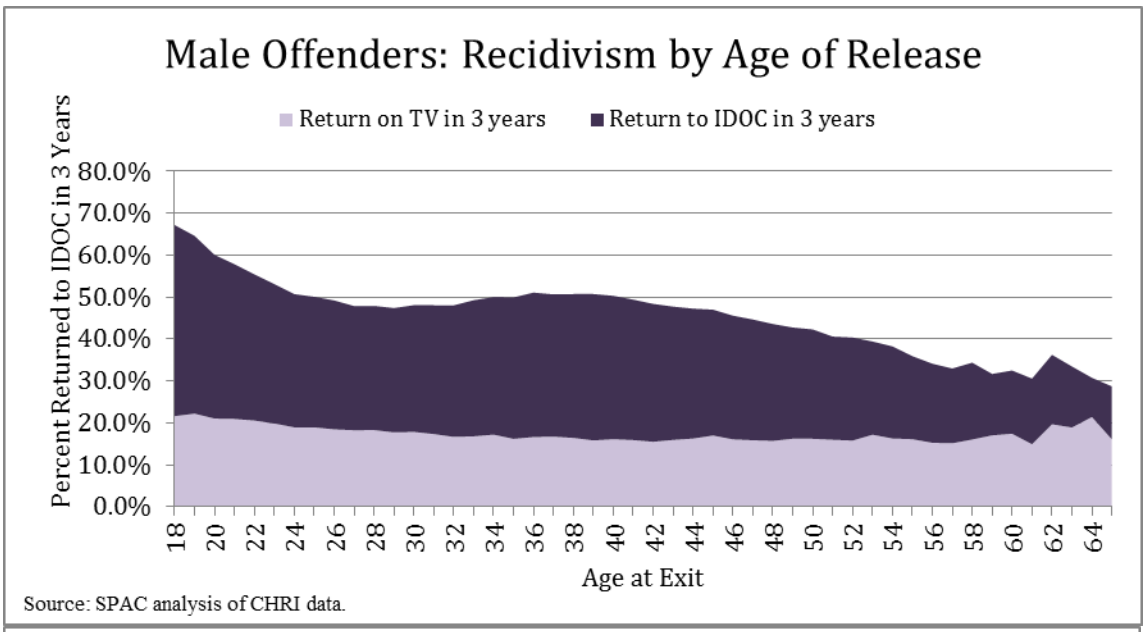




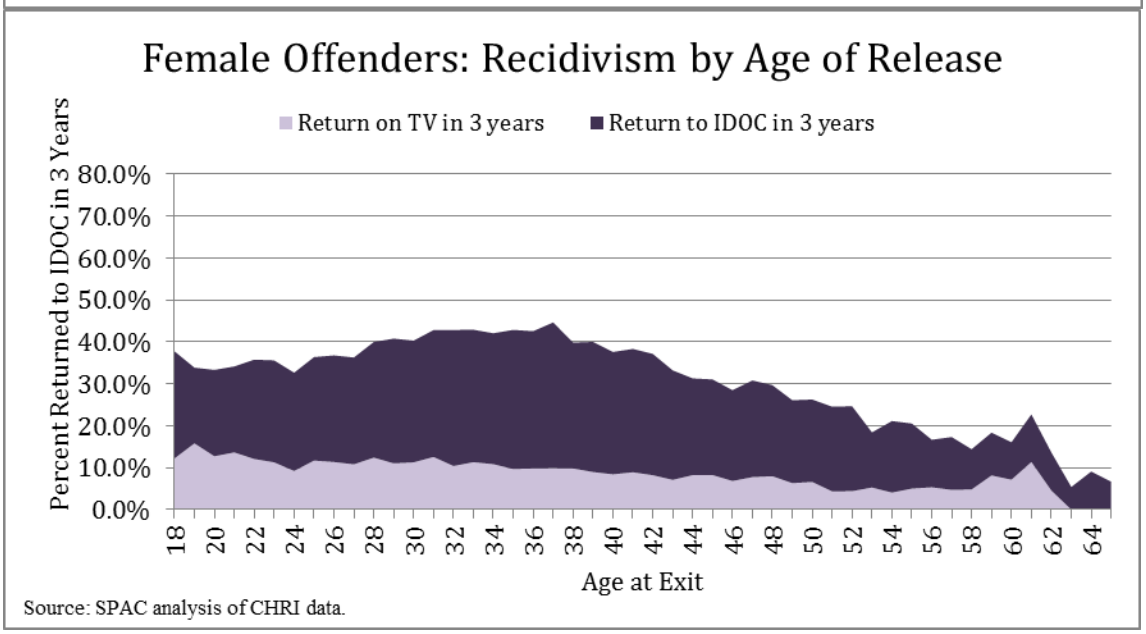




Recidivism Trends by Gender

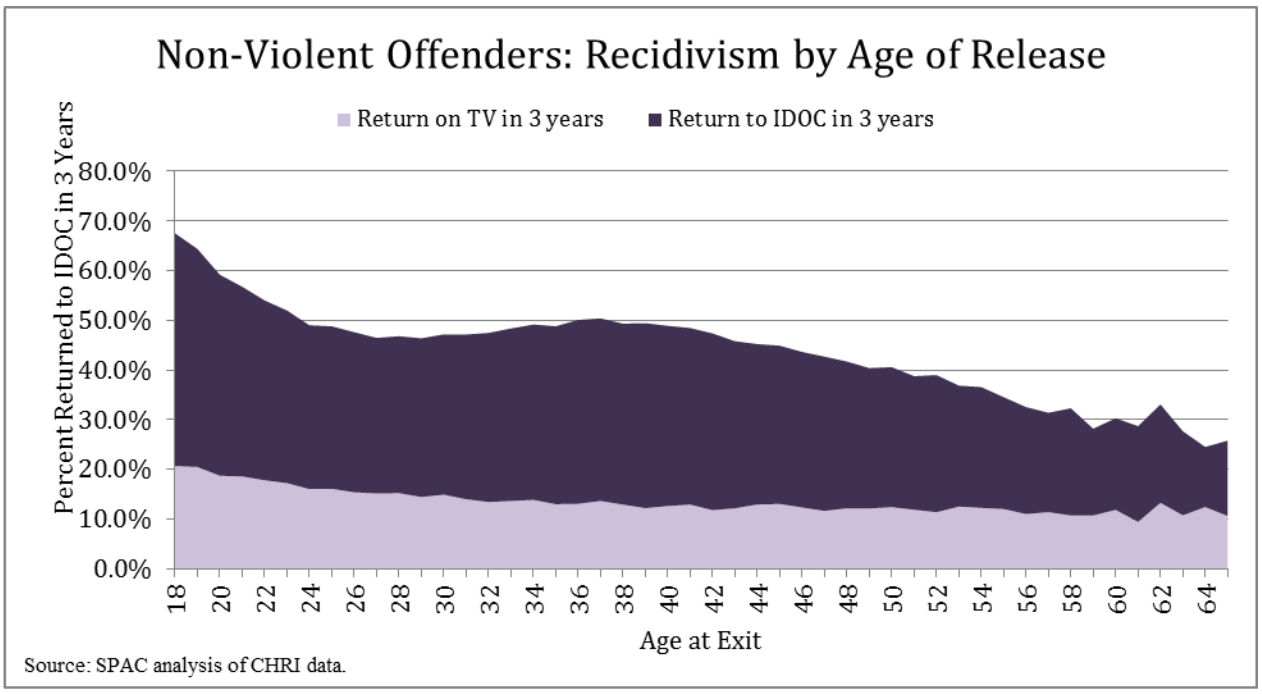


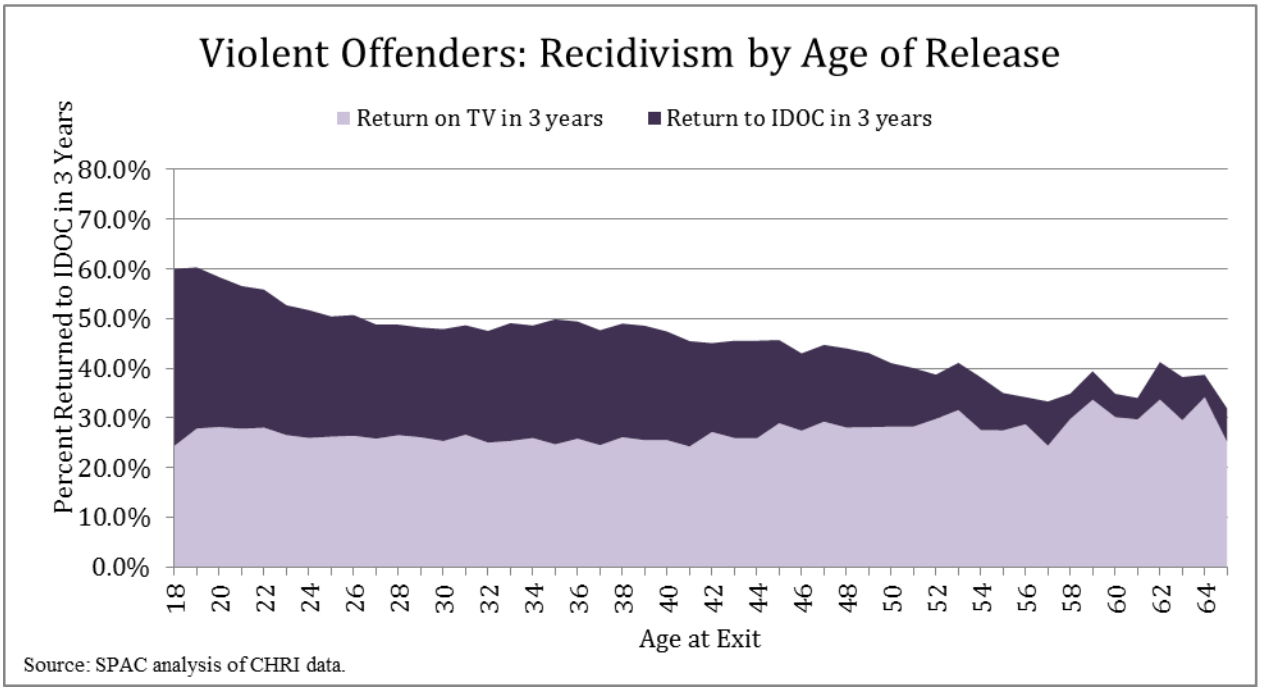
Source: SPAC analysis of CHRI data.



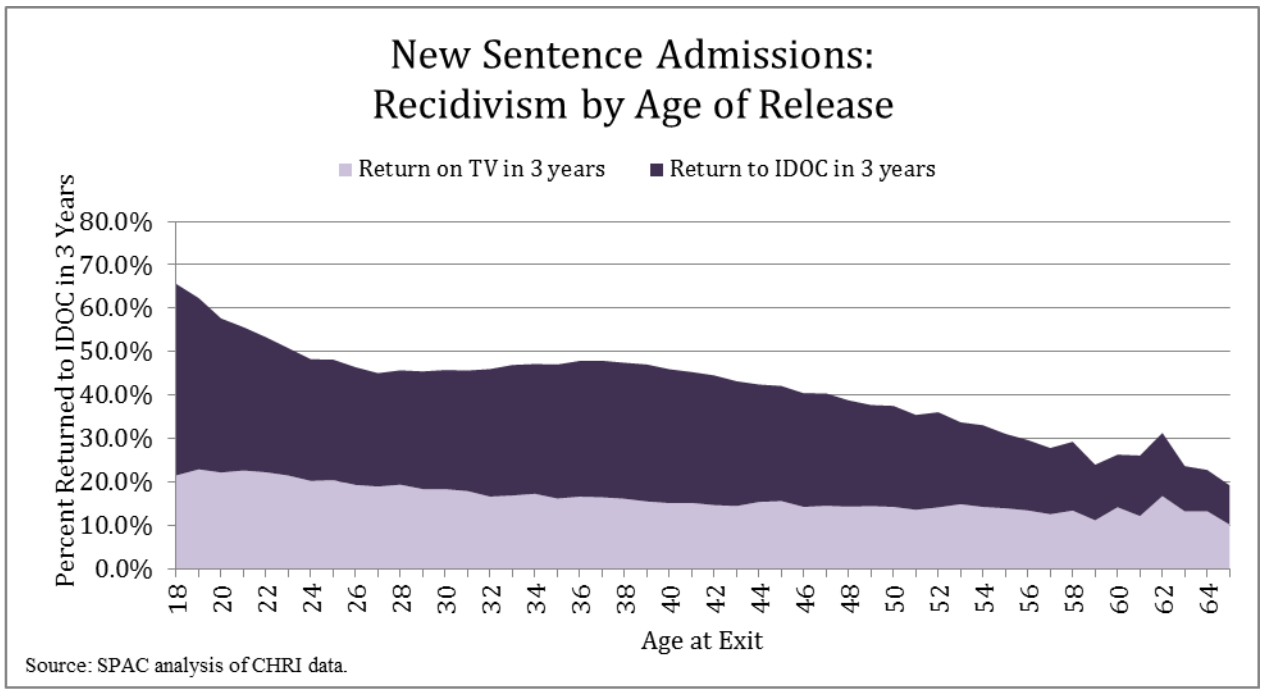
Source: SPAC analysis of CHRI data.

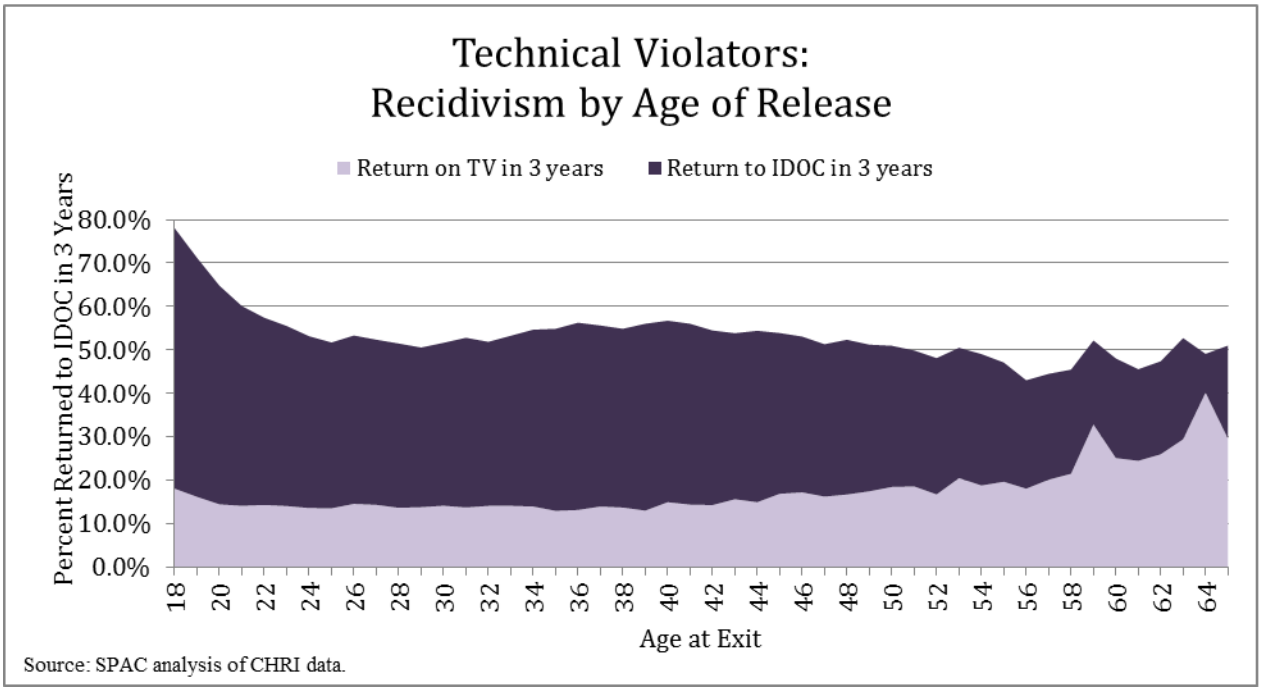
Recidivism Trends by Violent and Non-Violent





Recidivism Trends by Type of Admission





Recidivism Benefits Calculations

Research has found that offenders generally age out of crime, an effect that can be seen on the age-crime curve. As offenders age, they are less likely to commit a crime. In our example of a reduced length of stay, the average age at exit would be younger, so the recidivism rate is expected to be slightly higher as younger felons generally recidivate more. SPAC calls this effect a *Recidivism Benefit*.

The following chart appears in SPAC fiscal impact analyses showing the calculations used for the recidivism benefits estimation. Because the desired criminal justice outcome is fewer crimes which create victimization benefits, SPAC labels this value positive when crime falls (a positive benefit) and negative when increased victimizations increase victim costs (a negative benefit).

	Age Groups	Percent of Offenders in Each Age Group	Number Offenders	Recidivism Rate Change per Year Older	Difference in Years	Predicted Recidivism Rate Change	Ratio of Conviction Rate to Recidivism Rate	Three Year Victimization Costs per Offender	Victimization Benefits
Recidivism Benefits		P	N x P = N'	K	L' - L = T	K x T = E	(Convictions : Recidivism) = Z	V3	N' x E x Z x V3
	18 to 27	33.3%	167	-2.1%	-1.00	2.1%	1.65	-$56,340	-$325,038
	28 to 36	33.3%	167	0.3%	-1.00	-0.3%	1.65	-$56,340	$46,434
	37 to 50	33.4%	167	-0.7%	-1.00	0.7%	1.65	-$56,340	-$108,671
	Total	**100%**	**500**						**-$387,275**

The estimate presented here calculates the victim effects due to changes in recidivism for three age groups: Those offenders under 27, who have falling recidivism rates with increased age; those offenders between 28 and 36 with rising recidivism rates; and those offenders older than 37, who exhibit gradual reductions in recidivism rates. The percent of offenders who fall in each age group (*P*) is multiplied by the number of offenders (*N*) affected by the incarceration change to get the number of offenders in each age group (*N′*). Both *P* and *N* are unique for each fiscal impact analysis.

SPAC created the age groups because of the consistent change in recidivism rates with each additional year of age at release (*K*). For example, if the 18 to 27 age group were incarcerated for an additional year, their overall recidivism rate would be expected to fall 2.1 percentage points each year. In the example above, the current length of stay is reduced from two years (*L*) to one year (*L′*). The difference in stay is one year (*T*), which would increase the recidivism rate by 2.1% (*E*). Both *L* and *L′* are unique for each fiscal impact analyses.

Importantly, this methodology takes advantage of correlations that appear consistent across many variables. The correlation may not indicate a causal relationship between incarceration and recidivism changes. Additional factors, which may be discovered with future research, may explain why these correlations consistently appear in recidivism patterns. Until that research is completed, SPAC will use this approach to provide a reasonable estimation of possible victimization changes due to sentencing policy changes.

SPAC uses a multiplier (*Z*) to compare how changes in recidivism rates relate to crime. Because multiple crimes—here measured as convictions—may exist per recidivist, this ratio is larger than one. Mathematically, SPAC examined CHRI and IDOC data to relate the recidivism rate (51.1% from 2001 through 2011) to the total number of convictions per individuals (0.844 from 2001 through 2011).

$$\left(0.511\frac{recidivism}{person}\right)\times\left(Z\frac{convictions}{recidivism}\right)=0.844\frac{convictions}{person}$$

$$\left(Z\frac{convictions}{recidivism}\right)=\frac{0.844\frac{convictions}{person}}{0.511\frac{recidivism}{person}}$$

$$Z=1.65\frac{convictions}{recidivism}$$

To determine the three year cost of victimizations (*V3*) for the class of offenders affected by the sentencing change, SPAC examined CHRI data from 2001 through 2011 to find what type of crime and when (from release) crime occurs for offenders under the same offense as these 500 offenders. Here, recidivism events are convictions that are classified into categories matching a national study of victimization costs.[1] For example, *V3* presented here ($56,340) was calculated by examining convictions by crime type within one year of release, divided by the total number of individuals released from prison.[2] The calculations are shown below, where the likelihood scores are multiplied by the victimization costs of each crime type.

All Offenders	**Murder**	**Felony Property**	**Felony Sex**	**Robbery**	**Felony Drug or Similar**	**Aggravated Assault or Battery**	**Misde-meanor**	**Other**	
First year likelihood	0.0026	0.0504	0.0012	0.0057	0.0905	0.0100	0.0871	0.0291	
Second year likelihood	0.0046	0.1078	0.0029	0.0139	0.1959	0.0227	0.1799	0.0547	
Third year likelihood	0.0059	0.1558	0.0048	0.0209	0.2862	0.0344	0.2617	0.0759	
National Victimization Costs									
Tangible	$737,517	$1,922	$5,556	$3,299	$0	$8,700	$0	$0	
Intangible	$8,422,000	$0	$198,212	$4,976	$0	$13,435	$0	$0	
Total	$9,159,517	$1,922	$203,768	$8,275	$0	$22,135	$0	$0	
Likelihood Times National Costs									**Total**
First year costs (V1)	$24,058.41	$96.86	$244.79	$47.43	$0.00	$221.01	$0.00	$0.00	**$24,669**
Second year costs (V2)	$42,102.22	$207.20	$597.97	$114.70	$0.00	$501.57	$0.00	$0.00	**$43,524**
Third year costs (V3)	$54,131.42	$299.50	$974.49	$173.19	$0.00	$761.40	$0.00	$0.00	**$56,340**

In the example above (which examines all offenders affected by the change), an average offender could be expected to cause $56,340 in victimization costs three years from release. All three values, *V1*, *V2*, and *V3*, are unique to each fiscal impact analysis and based on the offense and recidivism characteristics of all offenders of the same offense from the years 2001 through 2011.

[1] McCollister, K.E., French, M.T., and Fang, H. (2010). The Cost of Crime to Society: New Crime-Specific Estimates for Policy and Program Evaluation. *Drug and Alcohol Dependence*, 108, 98-109. (These numbers are based on national trends and are not specific to Illinois. Illinois does not have a cap on pain and suffering awards and may therefore be higher. SPAC is confident that these numbers are a reliable proxy for Illinois costs. As we gather more information, we will update these numbers to provide the most accurate Illinois costs.)

[2] Because of the delay between murder events and murder convictions, the timing of murders was counted on the date of arrest rather than conviction. All other crimes are counted as occurring on the date of conviction.

If the total number of offenders is below 500, SPAC does not include the victimization analysis because it may be too sensitive to exceptional cases over the past ten years.

The total victimization benefits, as shown in the lower right of the *Recidivism Benefits* table, are the number of offenders in each age group times the recidivism rate change and the convictions-to-recidivism ratio, multiplied by the dollar value of the crimes. In the example above, a one year reduction in incarceration for 500 individuals would cost Illinois $387,275 in increased victimizations.

Incapacitation Benefits Calculations

Incapacitation of offenders means crimes are delayed: Recidivism crimes occur earlier or later based to the timing of their release. SPAC calls these timing benefits *Incapacitation Benefits*, which are victimization benefits based on the principle that a dollar stolen today is worth more than a dollar stolen tomorrow. The dollar value of this timing effect is generally referred to as the social discount rate. SPAC uses 3% as a low-but-reasonable value of the social discount rate.

The following chart appears in SPAC fiscal impact analyses showing the calculations used for the incapacitation benefits estimation. The desired criminal justice outcome is fewer crimes which would create victimization benefits; when the benefits are negative, these are costs due to increased victimizations.

Incapacitation Benefits	Length of Stay (Years)	Length of Stay Proposed (Years)	Difference in Years	One Year Victimization Costs per Offender	Net Present Value of Victimization Costs under Proposal (3% discount rate)	Net Present Value of Changes in Length of Stay	Number of Offenders	Victimization Benefits
	L	L'	L' - L = T	V1	V1/[(1+0.03)^T] = V1'	NPV = V1' - V1	N	NPV x N
	2.00	1.00	-1.00	-$24,669	-$25,409	-$740	500	-$370,028
							Total	**-$370,028**

In the example above, the current length of stay for 500 offenders (*N*) is reduced from two years (*L*) to one year (*L'*). The difference in stay is one year (*T*). The difference in release can be used with a social discount rate (3%) to calculate the net present value (*NPV*) of the dollar value of the difference in length of stay. In other words, the current example shows that those crimes would occur sooner and, due to the value in delayed crime, be more costly (*V1'*). The lengths of stay (*L* and *L'*) and the one year victimization costs are unique for each fiscal impact analysis.

Using the same methodology for *V3* as described in *Recidivism Benefits*, SPAC calculated *V1* for the class of offenders affected by the sentencing change. SPAC examined the types of crimes these offenders committed post release and applied the national victimization costs to these crimes. Here, the one year victimization costs per offender are expected to be $24,669.

The total incapacitation benefits are the multiplication of the benefits of the delayed release (*NPV*) times the number of offenders (*N*). In the example above, a one year reduction in incarceration for 500 individuals would cost Illinois $370,028 in increased victimizations.