Web Appendix for The Rate of Return to the High/Scope Perry Preschool Program

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A. Background on the Perry Preschool Curriculum

Preschool Overview. During each wave of the experiment, the preschool class consisted of 20–25 children, whose ages ranged from 3 to 4. This is true even of the first and last waves, as the first wave admitted 4-year-olds, who only received one year of treatment, and the last wave was taught alongside a group of 3-year-olds, who are not included in our data. Classes were 2-1/2 hours every weekday during the regular school year (mid-October through May).

The preschool teaching staff of four produced a child-teacher ratio ranging from 5 to 6.25 over the course of the program. Teaching positions were filled by public-school teachers who were "certified in elementary, early childhood, and special education," (Schweinhart et al., 1993, p.32).

Home Visits. Home visits lasting 1-1/2 hours were conducted weekly by the preschool teachers. The purpose of these visits was to "involve the mother in the educational process," and "implement the curriculum in the home," (Schweinhart et al., 1993, p.32). By way of encouraging the mothers' participation, teachers also helped with any other problems arising in the home during the visit. Occasionally, these visits would consist of field trips to stimulating environments such as a zoo.

Curriculum. The Perry Preschool curriculum was based on the Piagetian concept of *active learning*, which is centered around play that is based on problem-solving and guided by open-ended questions. Children are encouraged to plan, carry out, and then reflect on their own activities. The topics in the curriculum are not based on specific facts or topics, but rather on *key*

experiences related to the development of planning, expression, and understanding. The key experiences are then organized into ten topical categories, such as "creative representation", "classification" (recognizing similarities and differences), "number", and "time."[4] These educational principles are reflected in the types of open-ended questions asked by teachers: for example,"What happened? How did you make that? Can you show me? Can you help another child?" (Schweinhart et al., 1993, p.33)

As the curriculum was developed over the course of the program, its details and application varied from year to year. While the first year involved "thoughtful experimentation" on the part of the teachers, experience with the program and series of seminars during subsequent years led to the development and systematic application of teaching principles with "an essentially Piagetian theory-base." During the later years of the program, all activities took place within a structured daily routine intended to help children "to develop a sense of responsibility and to enjoy opportunities for independence," (Schweinhart et al., 1993, pp. 32–33).

[4]For a full list, see Schweinhart et al. (1993).

B. Data Sources

After initial program costs, each area of costs or benefits relies on two types of data sources: information on the Perry subjects — from subject interviews or public records retrieved by High/Scope — and data from external sources, with the latter used to compute unit costs or transform the Perry records into a more usable form. Table B.1 summarizes the data sources used in this paper.

Program Costs (Section 3.1, Appendix C). Program costs are those reported in Barnett (1996). Costs related to program administration (such as screening, test administration, staff, and preschool supplies) are recorded directly from historical program expenditures. Costs related to conducting the preschool in a public school facility were estimated using depreciation costs from the Ypsilanti Public School District.

Education (Section 3.2, Appendix D). K-12 records on special education, grade completion, and graduation time (number of years held back) were obtained directly from school districts. GED, college, and vocational education records were also obtained from public or private institutions indicated during subject interviews. Annual per-pupil K-12 school expenditure come from the annual Digest of Education Statistics (1975–1982), with special education cost estimates from Chambers et al. (2004). GED expenditures are taken from Heckman and LaFontaine (2008). Public expenditures on college and university tuition are taken from Washtenaw Community College and Michigan State University. Vocational training unit costs are taken from estimates in Tsang (1997).

Table B.1: Data Sources

Category	Data Source	Contents/Usage
Program Costs (3.1, Apx. C)	Barnett (1996)	Program Costs
Education (3.2, Apx. D)	Perry Interviews	College, vocational training
	Public School Records	Special education, grade completion, graduation
	Digest of Education Statistics (1975–1982)	Per-pupil K-12 school expenditure
	Heckman and LaFontaine (2008)	GED expenditures
	Chambers, Parrish, and Harr (2004)	Per-pupil special education expenditure
	State and county educational institutions	Per-pupil college and university expenditure
	Tsang (1997)	Vocational training costs
Employment / Earnings (3.3, Apx. G)	Perry Interviews	Employment spells, earnings
	NLSY79[a]	Earnings imputation and extrapolation
	PSID[b], March CPS[c]	Earnings extrapolation
	NVSR[d] (2004)	Survival rates
Crime (3.4, Apx. H)	County / state / federal police records	Juvenile, misdemeanor, and felony arrests and charges
	State department of corrections	Incarceration and parole records
	NCVS[e]	National victimization levels, by crime type
	UCR[f]	National arrest levels, by crime type
	Cohen (2005)	Criminal victimization unit costs
	CJEE[g]	Overall criminal-justice system expenditures
Tax Payments (3.5)	Perry Interviews	Earnings
	Tax Policy Center (2007)	Marginal & FICA tax rate
Welfare (3.6, Apx. I)	State and country records	Time spent on welfare, types of benefits
	NLSY79, PSID	Extrapolation: cash assistance / food stamp amount
	SIPP[h]	Extrapolation: In-kind transfers

Notes: (a) The National Longitudinal Survey of Youth, 1979; (b) The Panel Study of Income Dynamics; (c) Current Population Survey; (d) National Vital Statistics Reports; (e) National Criminal Victimization Survey; (f) Uniform Crime Reports; (g) Criminal Justice Expenditure and Employment Survey; (h) Survey of Income and Program Participation.

Employment / Earnings (Section 3.3, Appendix G). Subject interviews provided information on the timing and length of employment spells, as well as earnings during those spells. Data quality issues (such as right-censoring of employment spells or incomplete earnings information) are resolved using one of four different imputation methods, all of which use data from the NLSY79. Lifetime Earnings are extrapolated past age 40 using the March Current Population Survey (CPS) and the PSID. The National Vital Statistics Reports (2004) are used to factor survival rates into this extrapolation.

Crime (Section 3.4, Appendix H). Individual criminal activity comes from public record searches: At the county level, arrests, convictions, and incarceration are reported; at the state (Michigan) level, arrests are only reported when they lead to convictions. Data quality for subjects residing outside Michigan is low, as many other states did not cooperate with attempted record searches. State and county correctional departments provided incarceration and parole records. Arrest levels were transformed into victimization rates using a ratio of arrest levels from the Uniform Crime Report (UCR) and victimization levels from the National Criminal Victimization Survey (NCVS). Criminal victimization unit costs estimates are taken from Cohen (2005). State expenditures on the criminal justice system (CJS) from the Criminal Justice Expenditure and Employment Survey (CJEE) are combined with criminal justice system volume records from the UCR to compute CJS unit costs.

Tax Payments (Section 3.5). Subject earnings are taken from the sources indicated in a preceding paragraph. Federal Income tax and FICA tax rates are taken from Tax Policy Center (2007).

Welfare(Section 3.6, Appendix I). Social service records from Washtenaw County and the State of Michigan provided a timeline of social service receipt by type of benefit. National longitudinal records were used to extrapolate amounts past age 40: the NLSY79 and PSID for cash assistance and food stamp programs, and the Survey of Income and Program Participation (SIPP) for in-kind transfers.

C. Program Initial Costs

This appendix breaks out the costs of various components of education.

Table C.1: Overall Costs

Category	1962–63	1963–64	1964–65	1965–66	1966–67
Instructional Staff	171,454	171,832	179,123	187,932	103,165
Administrative and Support Staff	7,521	7,200	9,194	9,467	4,707
School District Overhead	11,420	10,473	13,548	14,042	7,281
Classroom Supplies	3,183	3,142	3,097	3,029	1,532
Developmental Screening	1,552	753	774	757	0
Interest & Depreciation of Facilities	15,499	14,636	14,658	17,766	8,501
Total	210,628	208,036	223,555	232,994	125,186
Number of Children	21	20	25	25	12
Annual Cost Per Child	10,030	10,402	8,942	9,320	10,432

Source: (Barnett, 1996, Table 4).

Notes: All monetary values are in year-2006 dollars. Deadweight cost of taxation to fund the program is ignored.

Table C.2: Instructional Staff Costs

Category	1962–63	1963–64	1964–65	1965–66	1966–67
Teacher Salaries (4 positions)					
(Position 1)	6,260	5,720	6,270	7,700	7,720
(Position 2)	6,150	6,490	6,160	5,710	6,178
(Position 3)	6,040	6,270	6,930	6,930	8,260
(Position 4)	5,600	5,830	6,380	7,150	7,365
Total	24,050	24,310	25,740	27,490	29,523
State Retirement Fund Payments					
As % of Salaries	5.00%	5.12%	5.16%	5.79%	5.89%
Total Contribution	1,230	1,245	1,328	1,592	1,739
Employer-Paid Social Security					
Maximum Taxable Earnings	4,800	4,800	4,800	4,800	4,800
Total Taxable Earnings (4 teachers)	19,200	19,200	19,200	19,200	25,978[a]
Employer Tax Rate	3.125%	3.625%	3.625%	3.625%	3.85%
Total Instructional Staff Costs	600	696	696	696	1,000
Salaries	24,050	24,310	25,740	27,490	29,523
Retirement Fund	1,203	1,245	1,328	1,592	1,739
Social Security	600	696	696	696	1,000
Proportion of preschoolers in study	—[b]	—	—	—	12/23
Total	25,853	26,251	27,764	29,778	32,262

Source: (Barnett, 1996, Table 5)

Notes: Costs are in each year's current dollars. (a) Includes one salary of $6,178, which is below the maximum taxable earnings level; (b) The Perry Preschool study consists of the first four entry cohorts of the Perry Preschool, but the fourth entry cohort attended (during their second year of treatment) alongside three-year-olds who are not included in the study.

Table C.3: Special Services, Administrative, and Support Staff Costs

Year	**# of Students**	**Costs**	
		Total	Per-Student[a]
1962–63	21	1,134	54
1963–64	20	1,100	55
1964–65	25	1,425	57
1965–66	25	1,500	60
1966–67	12	768	64

Source: (Barnett, 1996, Table 6)
Notes: Costs are in each year's current dollars. The special education budget includes a director, a secretary, and special education support staff. (a) Calculation of cost per child is based on the 1968–69 average of $72 per student, for a total of $43,747 for all 609 students.

Table C.4: Program Overhead Costs

Year	**# of Students**	**Overhead Costs**	
		Total	Per-Student
1962–63	21	7,122	82
1963–64	20	1,600	80
1964–65	25	2,100	84
1965–66	25	2,225	89
1966–67	12	1,188	99

Source: (Barnett, 1996, Table 7)
Notes: Costs are in each year's current dollars.

Table C.5: Program Screening Costs

Entry Year	# of Children		Screening Costs		
	Treatment	Control	Total, Full Sample	Total, Treatment	Per-Child, Treatment
1962–63	13	15	250	116	9
1963–64	8	9	250	118	15
1964–65	12	14	250	115	10
1965–66	13	14	250	120	9
1966–67	12	13	250	120	10

Source: (Barnett, 1996, Table 8)

Notes: Costs are in each year's current dollars.

D. Educational Attainment

This Web Appendix presents estimates of the effects of the Perry program on educational attainment. For additional discussion of the Perry results on educational attainment see Heckman, Moon, Pinto, Savelyev, and Yavitz (2009).

Table D.1: Educational Attainment up to Age 27

		Males				**Females**			
		N (C/T)*	Ctl	Trt	p-values	N (C/T)	Ctl	Trt	p
K-12	Years in school[a]	72(36/31)	12.52	12.12	0.786	51(23/24)	11.47	12.58	0.049
	Years held back[a]	66(36/30)	0.56	0.70	0.766	46(22/24)	0.91	0.29	0.018
	Years in special education[a]	66(36/31)	3.28	2.48	0.203	46(22/24)	4.00	1.33	0.016
	HS Grad. at 27	72(39/33)	0.54	0.48	0.672	51(26/25)	0.27	0.84	0.000
	GED at 27[b]	31(17/14)	0.24	0.21	0.553	22(19/3)	0.00	0.00	–
2-Yr Col.	Degree Attempted	72(39/33)	0.26	0.15	0.859	51(26/25)	0.15	0.24	0.224
	Degree Earned[c]	15(10/5)	0.00	0.00		10(4/6)	0.00	0.00	
	# Credits Attempted[c]	15(10/5)	37.0	77.0	0.036	10(4/6)	46.5	19.7	0.083
	# Credits Attempted[d]	72(39/33)	9.5	11.7	0.370	51(26/25)	7.2	4.7	0.689
4-Yr Col.	Degree Attempted	72(39/33)	0.05	0.03	0.669	51(26/25)	0.12	0.12	0.480
	Degree Earned[c]	3(2/1)	0.00	0.00		6(3/3)	0.00	0.33	0.187
	# Credits Attempted[c]	3(2/1)	169.5	9.0		6(3/3)	67.3	95.3	0.315
	# Credits Attempted[d]	72(39/33)	8.7	0.3	0.894	51(26/25)	7.8	11.4	0.347

Notes: All p-values are one-sided. (a) For grade 1 – grade 12; (b) For high school dropouts; (c) For subjects who attempted degrees; (d) For all subjects.

*N = Sample size for the outcome measure; C/T= Ratio of controls to treated.

Table D.2: Educational Attainment, Ages 27–40

(a) Pooled Sample: Male and Female Total

27/40	Dropout	GED	H. S.	Some Col.	2 Yrs.	4 Yrs.	Grad. (MA)	(miss.)*	**Total**
Dropout	38	5	0	1	0	0	0	2	46
GED	0	6	0	1	1	0	0	0	8
H. S.	0	0	22	5	2	0	0	0	29
Some Col.	0	0	0	35	0	1	1	0	37
2 Yrs.	0	0	0	0	1	1	0	0	2
4 Yrs.	0	0	0	0	0	0	1	0	1
Total	38	11	22	42	4	2	2	2	123

∗Missing

(b) Males: Ratio Control/Treatment

27/40	Dropout	GED	H. S.	Some Col.	2 Yrs.	4 Yrs.	Grad. (MA)	(miss.)*	**Total**
Dropout	12/10	1/1	–	1/0	–	–	–	1/0	26
GED	–	3/3	–	–	0/1	–	–	–	7
H. S.	–	–	8/6	2/1	–	–	–	–	17
Some Col.	–	–	–	11/9	–	0/1	1/0	–	22
2 Yrs.	–	–	–	–	–	–	–	–	–
4 Yrs.	–	–	–	–	–	–	–	–	–
Total	22	8	14	24	1	1	1	1	72

∗Missing

(c) Females: Ratio Control/Treatment

27/40	Dropout	GED	H. S.	Some Col.	2 Yrs.	4 Yrs.	Grad. (MA)	(miss.)*	**Total**
Dropout	13/3	2/1	–	–	–	–	–	1/0	20
GED	–	–	–	1/0	–	–	–	–	1
H. S.	–	–	1/7	0/2	1/1	–	–	–	12
Some Col.	–	–	–	6/9	–	–	–	–	15
2 Yrs.	–	–	–	–	1/0	0/1	–	–	2
4 Yrs.	–	–	–	–	–	–	0/1	–	1
Total	16	3	8	18	3	1	1	1	51

∗Missing

Notes: "–" denotes "not applicable."

Table D.3: Vocational Training Attainment

	Males				Females			
	N (C/T)[a]	Ctl	Trt	p	N (C/T)a	Ctl	Trt	p
Certificate Attempted	72(39/33)	0.41	0.45	0.355	51(26/25)	0.42	0.36	0.674
Certificate Earned[b]	31(16/15)	0.81	0.87	0.347	20(11/9)	0.18	0.67	0.014
# Certificates Earned[b]	31(16/15)	1.00	1.13	0.282	20(11/9)	0.27	0.78	0.052
Months in training[b]	31(16/15)	33.9	18.1	0.869	20(11/9)	1.8	9.9	0.010
Months in training[c]	72(39/33)	13.9	8.2	0.800	51(26/25)	0.8	3.6	0.038

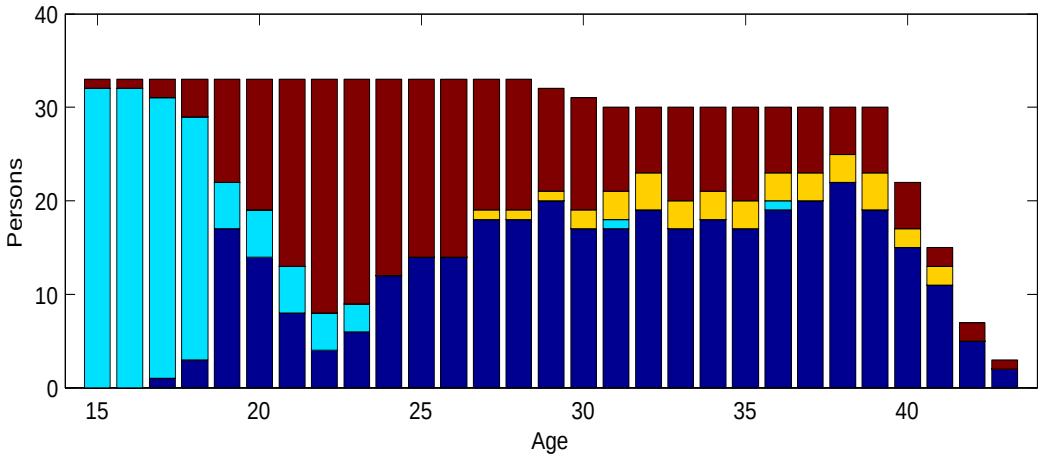
Notes: All p-values are one-sided. (a) N= Number of participants in sample for this variable, C/T= Ratio of controls to treated; (b) For subjects who attempted certificates; (c) For all subjects.

E. Life Cycle Activity and Employment Outcomes

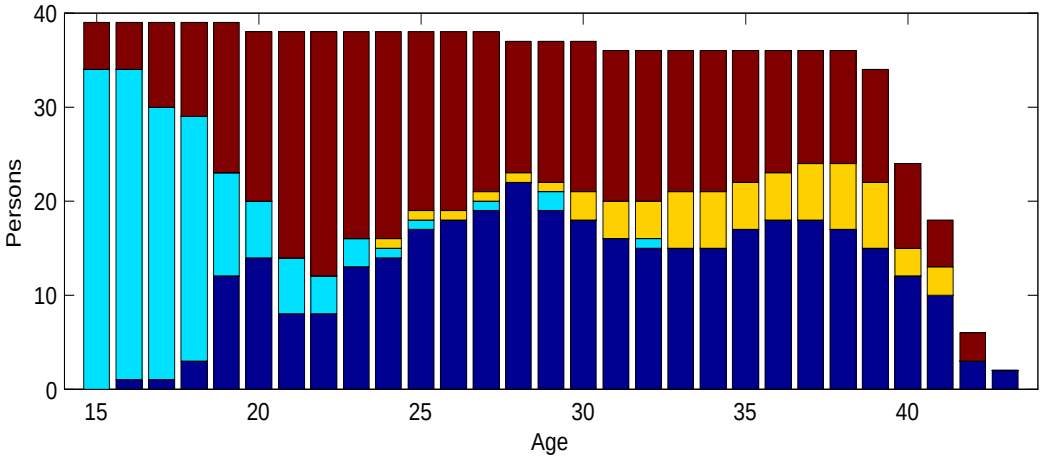
These graphs present the age lines of activity status for treatments and controls of both genders.

Figure E.1: Economic Activity Status by Age: Male

(a) Treatment (persons)



(b) Control (persons)



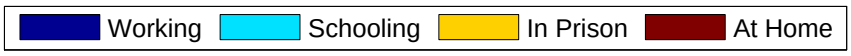
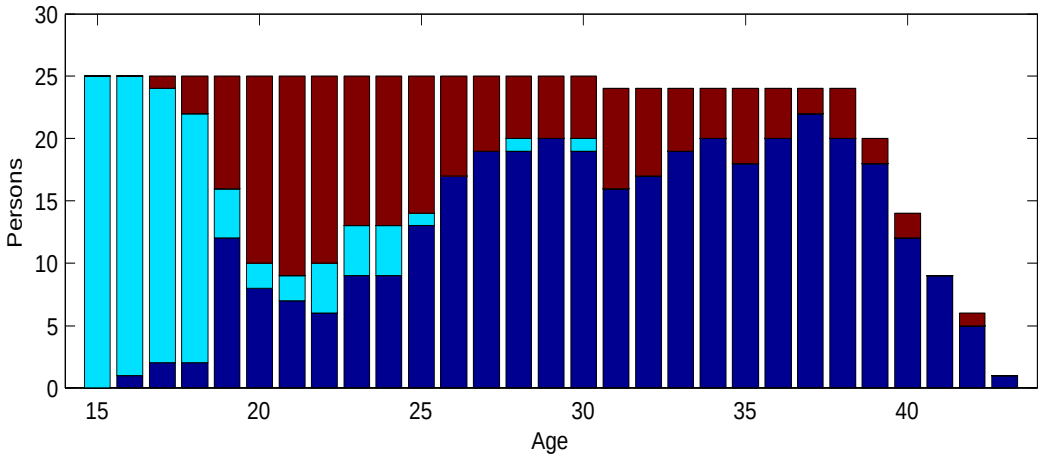
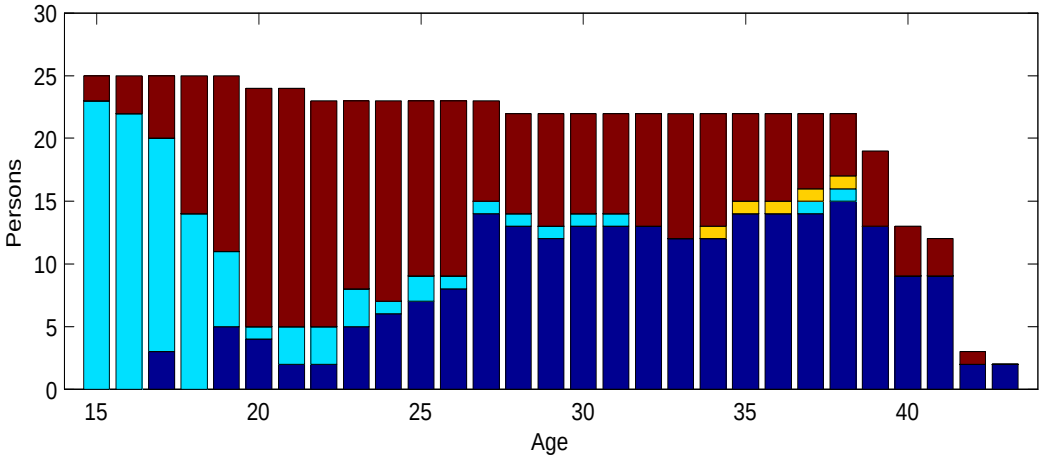


Figure E.2: Economic Activity Status by Age: Female

(a) Treatment (persons)



(b) Control (persons)



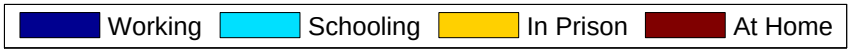
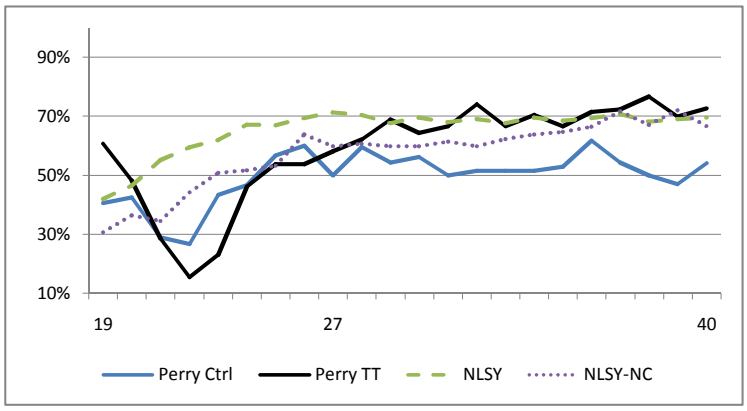
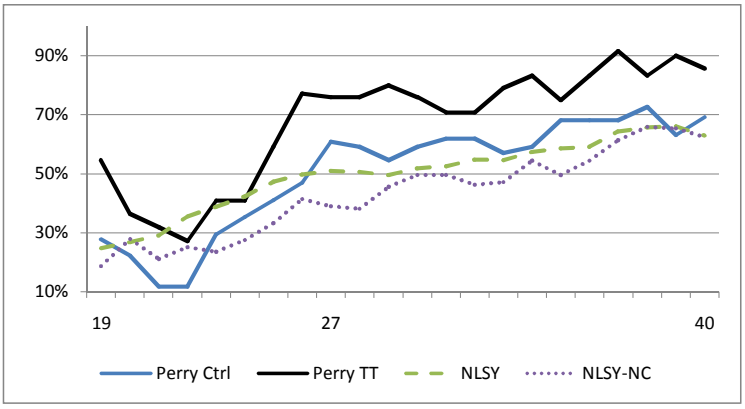


Figure E.3: Proportion of Employed Population: Male, Percentage



Notes: Missing values in Perry dataset are imputed by the use of the corresponding gender group averages; "NLSY" is a "low-ability" subset of NLSY79 black subsample, where "low-ability" is defined as age and education-adjusted AFQT $<$ the black median; "NC" denotes a subset of all those in the "North-Central" region at age 14. Details of construction of the low ability sample are given in Web Appendix F.

Figure E.4: Proportion of Employed Population: Female, Percentage



Notes: Missing values in Perry dataset are imputed by the use of the corresponding gender group averages; "NLSY" is a "low-ability" subset of NLSY79 black subsample, where "low-ability" is defined as age and education-adjusted AFQT $<$ the black median; "NC" denotes a subset of all those in the "North-Central" region at age 14. Details of construction of the low ability sample are given in Web Appendix F.

F. Constructing Comparison Groups to Facilitate Interpolation

F.1. National Longitudinal Survey of Youth 1979 (NLSY79)

We use the National Longitudinal Survey of Youth 1979 (NLSY79) to interpolate missing data in the Perry sample. It is a nationally-representative longitudinal survey whose respondents are almost the same age (birth years 1956–1964) as the Perry sample (birth years 1957–1962). Our main comparison group is sorted by birth order, socioeconomic status (SES) index, and AFQT test score. These restrictions are chosen to mimic the program eligibility criteria of the Perry study.

A practical difficulty in imposing these restrictions on NLSY79 is that we do not have enough information to perfectly replicate program eligibility criteria. For example, we do not know the number of rooms in each NLSY79 respondent's dwelling at the of age 3. This variable is used to construct the SES index in the Perry study. We do not know IQ in the NLSY79. Given this lack of information, we construct proxies for these two items. First, to construct a proxy for the SES index, we first regress the number of rooms in the Perry data set on mother's education, father's occupation, and the family size to estimate a linear relationship. The estimated function is then used to predict the number of rooms for each NLSY79 black respondent, which in turn is used to construct a proxy for the SES index. Second, without having IQ scores in NLSY79, we instead use Armed Forces Qualification Test (AFQT) scores as proxies for IQ. AFQT is an achievement test and not an IQ test. However, it can serve as a proxy for IQ as long as achievement and ability are highly correlated. We adjust AFQT score for age and educational level at the time of test taking using the procedure of Carneiro, Heckman,

and Masterov (2005), which is a simpler version of the method of Hansen, Heckman, and Mullen (2004). We use adjusted scores as a proxy for ability. The early childhood background characteristics— the pre-experimental measures in the Perry sample—that we are comparing in this appendix are parents' average highest grade completed, an SES index, and mother's age at subject birth, all measured at age 3. Adult outcomes are earnings at ages 27 and 40.

Relative to the entire black NLSY79 subsample, Perry control group members are more disadvantaged. This is not surprising, as the Perry program was targeted toward such children. This disadvantage is also reflected in adult earnings. Compared to the more restricted NLSY79 subsample that we use, however, Perry controls are very similar in both childhood and adult outcomes. Our sample restrictions induce broad comparability for the Perry sample. We use this sample as a comparison group for the Perry treatment sample and as a source of interpolating information.

We use this sample to impute missing earnings and welfare receipts up to age 40 for the Perry subjects. Even though this imputation procedure can be justified for the control group, it cannot be justified for the treatment group given that there is no appropriately matched comparison group for them. We justify our use of matching in two ways. First, if the observables that we use capture the treatment effects, we can match the treatment group to a comparison group selected using these observables once we control for the observables. Second, our approach is conservative. Under the null hypothesis of no treatment effect, our procedure is correct. Using treatment sample data that imputes from the NLSY79 data likely understates true earnings

for treatment group members because it assigns them the predicted missing earnings of the controls. None of the controls were enrolled in alternative child development programs. (Schweinhart, Barnes, and Weikart, 1993)

F.2. Panel Study of Income Dynamics (PSID)

To extend the Perry data on earnings and receipts of welfare to ages after 40, we use the Panel Study of Income Dynamics (PSID). This dataset contains persons of older generations. From its black subsample, we extract household heads and wives and form a restricted sample using a proxy for ability. In this dataset, there is a word completion test score which consists of 13 word completions asked in 1972. Even though scores on the word completion test are not ideal ability measures, we use it as a proxy after adjusting it for age and education at the time of test-taking.

F.3. Comparisons

Tables F.1 and F.2 show the close correspondence in outcomes between Perry controls and the restricted NLSY79 samples for males and females, respectively. For further analysis of this comparison, see Heckman, Moon, Pinto, Savelyev, and Yavitz (2009).

Table F.1: Comparison of Perry Subjects and Black Population: Males at Ages 3, 27, and 40

		Perry Subjects		**NLSY79: Restricted Black Subsamples**				
		Ctl.	Treat.	All[a]	Younger Sibling[b]	Low-Ability[c]	Low-SES[d]	All Re-rictions[e]
	Sample Size	39	33	706	564	352	290	128
	Pop. Represented			2,222,597	1,749,519	1,085,137	879,363	372,004
Age 3	Parents' Education	9.5 (2.0)	9.3 (2.0)	10.7 (2.6)	10.5 (2.7)	9.9 (2.5)	9.8 (2.3)	9.3 (2.4)
	SES	8.6 (1.4)	8.9 (1.7)	10.7 (3.0)	10.6 (3.0)	10.0 (2.6)	8.9 (1.3)	8.6 (1.4)
	Mother's Age at Birth	25.6 (6.6)	26.5 (6.5)	25.1 (6.7)	26.2 (6.5)	25.2 (7.0)	25.6 (7.0)	26.7 (6.9)
Age 27	High School Graduation	0.54 (0.51)	0.48 (0.51)	0.71 (0.45)	0.68 (0.47)	0.59 (0.49)	0.71 (0.45)	0.59 (0.49)
	Employed	0.56 (0.50)	0.60 (0.50)	0.82 (0.38)	0.80 (0.40)	0.77 (0.42)	0.84 (0.37)	0.76 (0.43)
	Yearly Earnings	14,632 (13,296)	17,399 (12,380)	23,700 (21,384)	22,014 (18,560)	19,145 (17,372)	22,563 (19,093)	17,072 (13,840)
Age 40	Employed	0.50 (0.51)	0.70 (0.47)	0.84 (0.37)	0.83 (0.37)	0.76 (0.43)	0.82 (0.38)	0.75 (0.43)
	Yearly Earnings	24,730 (28,069)	32,023 (28,366)	33,642 (31,534)	32,297 (30,515)	23,069 (21,016)	31,608 (29,575)	22,085 (24,891)

Notes: All NLSY79 figures weighted by the initial (1979) sampling weights. Numbers in parentheses are standard deviations. All monetary values in year-2006 dollars. (a) No restrictions; (b) subjects with at least one elder sibling (all Perry subjects also meet this criterion); (c) AFQT scores below the black median; (d) Socioeconomic status (SES) index at most 11; (e) Combines all three restrictions used in the previous three columns.

Table F.2: Comparison of Perry Subjects and Black Population: Females at Ages 3, 27, and 40

		Perry Subjects		**NLSY79: Restricted Black Subsamples**				
		Ctl.	Treat.	All[a]	Younger Sibling[b]	Low-Ability[c]	Low-SES[d]	All Re-rictions[e]
	Sample Size	26	25	957	732	434	385	146
	Pop. Represented			2,305,560	1,757,547	1,007,214	902,001	341,721
Age 3	Parents' Education	9.0 *(2.0)*	9.0 *(1.9)*	10.4 *(2.7)*	10.1 *(2.8)*	9.6 *(2.7)*	9.4 *(2.5)*	8.7 *(2.8)*
	SES	8.5 *(1.2)*	8.7 *(1.4)*	10.6 *(3.0)*	10.3 *(2.9)*	9.7 *(2.6)*	8.9 *(1.3)*	8.4 *(1.4)*
	Mother's Age at Birth	25.7 *(7.5)*	26.7 *(5.9)*	25.1 *(6.9)*	26.5 *(6.7)*	24.9 *(7.0)*	25.5 *(7.3)*	27.2 *(6.9)*
Age 27	High School Graduation	0.31 *(0.47)*	0.84 *(0.37)*	0.76 *(0.42)*	0.75 *(0.43)*	0.60 *(0.49)*	0.75 *(0.43)*	0.60 *(0.49)*
	Employed	0.55 *(0.51)*	0.80 *(0.41)*	0.65 *(0.48)*	0.62 *(0.48)*	0.50 *(0.50)*	0.60 *(0.49)*	0.45 *(0.50)*
	Yearly Earnings	10,523 (10,547)	13,530 (10,999)	14,873 (15,082)	13,875 (14,327)	8,879 (10,045)	13,385 (14,193)	7,334 (9,109)
Age 40	Employed	0.82 *(0.39)*	0.83 *(0.38)*	0.78 *(0.41)*	0.78 *(0.41)*	0.70 *(0.46)*	0.78 *(0.42)*	0.70 *(0.46)*
	Yearly Earnings	20,345 (19,798)	24,434 (23,762)	23,847 (21,585)	22,847 (20,674)	14,741 (13,333)	22,980 (21,854)	13,502 (12,746)

Notes: All NLSY79 figures weighted by the initial (1979) sampling weights. Numbers in parentheses are standard deviations. All monetary values in year-2006 dollars. (a) No restrictions; (b) subjects with at least one elder sibling (all Perry subjects also meet this criterion); (c) AFQT scores below the black median; (d) Socioeconomic Status (SES) index at most 11; (e) Combines all three restrictions used in the previous three columns.

G. Imputation and Extrapolation of Earning Profiles

G.1. Imputation

We impute missing values of earnings in the Perry data using the following four alternative methods.

G.1.1. Imputation Method 1: Piece-wise Linear Interpolation

Suppose that we observe individual i's earnings Y_a^i and Y_c^i but not Y_b^i where the subscripts a, b and c are individual i's ages and are ordered so that $a < b < c$. Piece-wise linear interpolation uses a weighted average of Y_a^i and Y_c^i to estimate Y_b^i: $\hat{Y}_b^i = \frac{c-b}{c-a} Y_a^i + \frac{b-a}{c-a} Y_c^i$. This is the weighted average of the nearest observed data points around a missing value. This approach is also used by Belfield, Nores, Barnett, and Schweinhart (2006). For truncated spells[5], we first impute missing employment status by the mean of the corresponding gender-treatment data from the available sample at the relevant time period, and we then interpolate.

G.1.2. Imputation Method 2: Cross-section Regression Imputation

We estimate a Mincer earnings function on each gender-age cross-section of the NLSY79 black subsample which is extracted using the procedure explained in Web Appendix F.1. We use education, labor market experience and its square as regressors. Tables G.1 and G.2 present the estimated earning functions for selected ages. Finally, we use the predicted value

[5]As mentioned in the main text, the job spells at the time of interview may not be fully specified. For example, we cannot specify the end point of a job spell at the time of age-27 interview unless the retrospective employment history record collected by the age-40 interview provides information about this job.

$\hat{Y}^i_{P,a} = X^i_{P,a}\hat{\beta}_{N,a}$ to impute missing earnings.[6] Subscript a is an age indicator and P and N denotes "Perry" and "NLSY79", respectively. i denotes the individual in the appropriate sample.[7]

G.1.3. Imputation Method 3: Kernel Matching

We use a kernel matching method which matches each Perry subject to "similar" subjects in the NLSY79 sample so that we can use the matched NLSY79 samples to impute missing values in Perry. Using the Mahalanobis distance measure (Mahalanobis, 1936), we estimate a distance for each pair of Perry and NLSY79 subjects:

$$d_{ij}(X^i_P, X^j_N, \Sigma_P, \Sigma_N) = \left[(X^i_P - X^j_N)\right]' (\Sigma_P + \Sigma_N)^{-1} \left[(X^i_P - X^j_N)\right].$$

We use ability measures (IQ score in Perry and adjusted AFQT score in NLSY79), gender, educational attainment, earnings & employment history as our covariates. Each of the Perry subjects is matched to all observations in the NLSY79 comparison group sample, but with different weights which depend on this distance measure. We use Epanechnikov kernel functions to smooth the estimated distance measures. (See, e.g., Ichimura and Todd, 2007.) Finally, we obtain $\hat{Y}^i_P = \sum_J \frac{K(i,j)}{\sum_J K(i,j)} Y^j_N$ as our imputed earnings

[6] In practice, we add the prediction error $\hat{\varepsilon}^i_{P,a} = Y^i_{P,a} - \hat{Y}^i_{P,a}$ to this, which is randomly drawn from NLSY79 sample by Monte Carlo resampling procedure. This adjustment does not affect the mean profiles but does affect their variances. The purpose of this adjustment is to have correct standard errors. This is discussed in Web Appendix K.

[7] We used 5 categories of educational attainment: high school drop-out, GED certificate, high school graduate, 2-year college graduate, and 4-year college graduate. We also tried several other categorizations, for example, merging GEDs and high school graduates or 2-year and 4-year college degree. But the resulting earning profiles are not sensitive to these alternative clusters of categories since only a small fraction of the Perry sample holds a GED or is a college graduate. Further, we use the actual working experience (in years) as the measure of experience instead of the potential labor market experience.

measure.

G.1.4. Imputation Method 4: Hause Procedure

Suppose that an individual's lifecycle earnings process follows the dynamic model developed by Hause (1980):

$$\begin{aligned} Y_a^i &= f(X_a^i, \beta) + U_a^i \\ &= f(X_a^i, \beta) + \phi_1^i + a\phi_2^i + \varepsilon_a^i, \end{aligned}$$

where ϕ_1^i is individual i's intercept and ϕ_2^i is individual i's growth rate with age, and

$$\varepsilon_a^i = \rho\varepsilon_{a-1}^i + \upsilon_a^i, \tag{G.1}$$

where subscript a indicates age and υ_a^i is assumed to be independent across periods and individuals.

This dynamic earnings function decomposes individual earnings processes into a person's observed abilities, unobserved level and growth terms and serially correlated shocks. Our procedure is as follows. We first estimate the dynamic earnings function on NLSY79 panel to get $\hat{\beta}_N$, and then estimate the individual parameters $\hat{\phi}_{1,P}^i$ and $\hat{\phi}_{2,P}^i$ on the Perry sample using $\hat{\beta}_N$. Finally, we obtain the predicted value $\hat{Y}_{P,a}^i = f(X_a^i, \hat{\beta}_N) + \hat{\phi}_{1,P}^i + a\hat{\phi}_{2,P}^i$ for each individual i. In this way, we link the NLSY79-determined equation to the levels of earnings in the Perry treatment and control samples. In estimating NLSY79 dynamic earning functions, a constant and 3 education dummy variables are included among the X_a^i and a *3SLS* method is used following MaCurdy (2007). In the first stage, a least squares procedure estimates $\hat{\beta}_N$ generating $\hat{U_a^i}$. In the second stage, a maximum likelihood procedure estimates the ϕs and ε_a^i assuming a Gaussian distribution. At the third stage,

the AR(1) model (G.1) is estimated. Running an individual-specific GLS of $Y_a^i - f(X_a^i, \hat{\beta}_N)$ on $(1\ a)'$ for each Perry subject i, we obtain $\hat{\phi}_{1,P}^i$ and $\hat{\phi}_{2,P}^i$. For the weighting matrix, we can use the estimated variance-covariance matrix of ε_a^i from the NLSY79.[8]

G.1.5. Comparing Imputation Methods

The first three methods are conservative in that they impose the same earnings dynamics structure for treatments and controls, and hence tend to eliminate any differences between the two groups. The fourth method also assumes the same dynamics for treatments and controls, but accounts for differences in the unobservables between treatment and control groups.

G.2. Extrapolation

Since all earnings profiles end at the age-40 interview, to estimate lifetime earnings profiles, we use the following extrapolation methods, when extrapolation is employed.

G.2.1. Extrapolation 1: CPS Projection

We use the 2002 March Current Population Survey (CPS) dataset to obtain earnings growth rates up to age 65. Since the CPS does not contain test scores, it is not possible to extract relevant "low-ability" subsamples. Instead, we use age-by-age growth rates (rather than levels of earnings) of three-year moving average of earnings for each race-gender-education group to extend profiles from the last observed earning. We link the first year of the CPS base to the final year of Perry earnings. This procedure eliminates the

[8]In practice, we add the prediction error $\hat{\varepsilon}_{P,a}^i = Y_{P,a}^i - \hat{Y}_{P,a}^i$ to this, which is randomly drawn from NLSY79 sample by Monte Carlo resampling procedure. This is discussed in Web Appendix K.

potential for the bias that comes from using high ability persons to forecast the earnings of low-ability persons — the procedure used in Belfield, Nores, Barnett, and Schweinhart (2006).

G.2.2. Extrapolation 2: PSID Projection

We also use the Panel Study of Income Dynamics (PSID). There is a word completion test score in the PSID from which we can extract a "low ability or achievement" subsample in a fashion similar to what is done in the NLSY79 for AFQT scores. This test score consists of 13 word completion questions. The test was administered in 1972. To extend Perry earning profiles, we first estimate a Random Effect GLS model on PSID using a lagged earning, education dummies, age dummies and a constant as regressors: $\hat{Y}^i_{P,a} = Y^i_{P,a-1}\hat{\alpha}_{N,a} + X^i_{P,a}\hat{\beta}_{N,a}$.[9,10] Table G.3 presents the estimated earnings equation. We use the fitted model for extrapolation.

G.2.3. Extrapolation 3: Hause Procedure

We also use individual parameters estimated by the Hause procedure as explained in Web Appendix G.1.4. Since we can estimate $\hat{\phi}^i_{1,P}$ and $\hat{\phi}^i_{2,P}$ using each individual's earnings up to age-40 interview, we use these estimates to extrapolate earnings profiles beyond 40.[11]

[9]To remove cohort and year effects, we take residuals from a regression of earnings on a constant, period dummies and birth year dummies. By doing this, we can remove fluctuations in earnings due to period-specific and cohort-specific shocks. See Rodgers et al. (1996).

[10]In practice, we add the prediction error $\hat{\varepsilon}^i_{P,a} = Y^i_{P,a} - \hat{Y}^i_{P,a}$ to this, which is randomly drawn from PSID sample by Monte Carlo resampling procedure. This is discussed in Web Appendix K.

[11]In practice, we add the prediction error $\hat{\varepsilon}^i_{P,a} = Y^i_{P,a} - \hat{Y}^i_{P,a}$ to this, which is randomly drawn from each person's own earnings before-40 ages by Monte Carlo resampling procedure. This is discussed further in Web Appendix K.

G.2.4. Comparing Extrapolation Methods

All three methods are conservative in that they assume the same earnings dynamics for treatments and controls. However, all three account for final-year earnings differences between treatments and controls in projecting future earnings. The method used by Belfield et al. (2006) does not.

G.3. Estimated Earnings Profiles from the Various Procedures

Tables G.4 and G.5 report, for males and females respectively, the earnings streams for treatments and controls under different assumptions. Different assumptions produce different *levels* of earnings for treatments and controls, but variations among procedures in generating lifetime *differences* in earnings are much less pronounced, although they are still substantial. These differences are a main driver of the differences in the estimated rates of return that we report in this paper.

Table G.1: NLSY79 Cross-section Earnings Functions: Female, Age 19, 27 and 40

Female	Age 19			Age 27			Age 40		
	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value
Enrolled in School[a]	-540.003	326.847	0.113	(dropped)	-	-	(dropped)	-	-
HS Dropout[a]	(dropped)	-	-	-238.903	493.743	0.630	-370.893	580.787	0.526
GED[a]	(dropped)	-	-	172.748	395.824	0.664	-928.024	796.068	0.249
2YR College[a]	-162.501	326.847	0.624	364.415	362.105	0.318	1559.047	667.031	0.023
4YR College[a]	-583.001	353.822	0.114	724.961	373.913	0.056	1282.059	519.829	0.017
Work Experience[b]	(dropped)	-	-	249.505	238.197	0.298	120.906	129.451	0.355
Work Experience[b] sq.	(dropped)	-	-	-9.618	22.049	0.664	-2.104	5.022	0.677
Constant	957.455	182.713	0.000	259.210	594.057	0.664	615.685	761.110	0.422
Obs.		25			81			60	
R-squared		0.1703			0.2346			0.3216	

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly earnings of the currently employed at the corresponding age. NLSY79 "low ability" black subsample is used. (a) High school graduate is the base; (b) Defined as the total number of years employed up to the corresponding age. We compute regressions for each age.

Table G.2: NLSY79 Cross-Sectional Earnings Functions: Males, Ages 19, 27 and 40

Male	Age 19			Age 27			Age 40		
	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value
Enrolled in School[a]	-738.591	255.708	0.007	(dropped)	-	-	(dropped)	-	-
HS Dropout[a]	-344.193	343.068	0.323	-315.781	351.798	0.372	-1045.074	470.323	0.032
GED[a]	-112.848	372.755	0.764	-27.631	437.576	0.950	319.370	769.012	0.680
2YR College[a]	369.768	676.540	0.589	670.102	589.596	0.259	-492.020	1301.589	0.707
4YR College[a]	-736.937	676.540	0.284	1157.272	459.349	0.014	1895.616	572.326	0.002
Work Experience[b]	(dropped)	-	-	78.541	342.422	0.819	160.398	255.670	0.534
Work Experience[b] sq.	(dropped)	-	-	7.486	28.974	0.797	0.372	8.899	0.967
Constant	1131.298	180.813	0.000	1105.185	927.077	0.237	-150.116	1765.899	0.933
Obs.		37			85			46	
R-squared		0.2517			0.1851			0.49	

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly earnings of the currently employed at the corresponding age. NLSY79 "low-ability" black subsample is used. (a) High school graduate is the base; (b) Defined as the total number of years employed up to the corresponding age. We compute regressions for each age.

Table G.3: PSID Random Effect Model of Earnings, by Gender

Coefficient	**Males**			**Females**		
	Estimate	Std. Err.	p-Value	Estimate	Std. Err.	p-Value
Lag Earnings	0.86	0.01	0.000	0.77	0.01	0.000
Less than HS	-33.25	48.57	0.494	-14.70	67.56	0.828
HS	35.10	49.55	0.479	165.34	70.56	0.019
More than HS	351.32	64.93	0.000	404.95	99.01	0.000
Constant	13.72	112.94	0.903	260.77	182.77	0.154
Age 22	422.10	128.93	0.001	-120.47	219.67	0.583
Age 23	131.28	122.74	0.285	-121.54	202.97	0.549
Age 24	154.26	122.72	0.209	48.28	196.10	0.806
Age 25	-57.17	120.60	0.635	-7.23	194.70	0.970
Age 26	233.79	118.87	0.049	-150.41	193.05	0.436
Age 27	60.26	116.90	0.606	-65.34	191.60	0.733
Age 28	183.96	116.90	0.116	-127.01	190.64	0.505
Age 29	71.89	116.42	0.537	-125.17	189.46	0.509
Age 30	90.20	115.34	0.434	-17.41	188.43	0.926
Age 31	57.82	114.77	0.614	-121.26	187.40	0.518
Age 32	136.44	114.41	0.233	-44.79	187.51	0.811
Age 33	133.76	113.17	0.237	22.84	187.19	0.903
Age 34	107.34	112.77	0.341	46.16	186.68	0.805
Age 35	60.41	112.16	0.590	4.44	186.62	0.981
Age 36	74.26	111.31	0.505	-71.43	185.97	0.701
Age 37	162.24	111.02	0.144	-127.04	185.51	0.493
Age 38	150.93	110.76	0.173	15.24	185.76	0.935
Age 39	185.50	110.59	0.093	3.09	184.92	0.987
Age 40	109.99	109.85	0.317	-90.30	184.47	0.624
Age 41	58.73	109.51	0.592	53.86	184.62	0.771
Age 42	83.51	109.65	0.446	-65.71	184.48	0.722
Age 43	274.17	109.33	0.012	-34.96	184.73	0.850
Age 44	86.09	109.48	0.432	80.55	184.36	0.662
Age 45	227.18	109.19	0.037	72.55	184.37	0.694
Age 46	126.88	109.00	0.244	-128.36	184.72	0.487
Age 47	133.66	109.15	0.221	219.61	185.32	0.236
Age 48	170.04	109.22	0.120	-86.27	185.33	0.642
Age 49	45.40	109.54	0.679	-60.37	185.40	0.745
Age 50	104.26	109.38	0.341	74.94	184.79	0.685
Age 51	155.72	109.21	0.154	26.44	184.37	0.886
Age 52	165.16	109.11	0.130	-107.21	185.69	0.564
Age 53	136.37	108.96	0.211	83.83	185.69	0.652
Age 54	134.31	109.01	0.218	-22.77	185.67	0.902
Age 55	78.70	109.18	0.471	-90.19	186.62	0.629
Age 56	153.63	109.02	0.159	-63.00	186.59	0.736
Age 57	106.22	109.35	0.331	-92.81	186.94	0.620
Age 58	115.68	109.65	0.291	-64.79	186.44	0.728
Age 59	150.23	109.64	0.171	11.04	186.83	0.953
Age 60	106.88	109.85	0.331	-57.95	187.06	0.757
Age 61	52.25	109.94	0.635	-135.14	187.21	0.470
Age 62	58.08	110.14	0.598	-86.39	187.42	0.645
Age 63	66.29	110.07	0.547	-262.22	188.10	0.163
Age 64	72.81	110.84	0.511	-289.41	189.30	0.126
Age 65	-12.05	113.98	0.916	-287.25	192.80	0.136
Observations		307			514	
R-Squared		0.7765			0.6174	
$p > \chi^2$		0.000			0.000	

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly earnings at each age. PSID "low-ability" black subsample is used.

Table G.4: Lifetime Gross Earnings, by Imputation and Extrapolation Method: Females

Imputation	Extra-polation	Control			Treatment			Lifetime Diff.
		19–27	28–40	41–65	19–27	28–40	41–65	
Linear Interpolation	CPS	78,337	247,240	506,412	114,858	389,912	713,194	385,975
	PSID	78,337	247,240	438,973	114,858	389,912	552,705	292,925
Cross-Sectional Regression[a]	CPS	60,971	197,454	289,846	102,218	335,817	511,523	401,286
	PSID	60,971	197,454	472,094	102,218	335,817	575,008	282,524
	Hause	60,971	197,454	492,232	102,218	335,817	772,038	459,415
Kernel Matching[b]	CPS	165,059	290,948	455,032	189,633	356,159	660,713	295,466
	PSID	165,059	290,948	402,315	189,633	356,159	524,181	211,651
	Hause	165,059	290,948	620,703	189,633	356,159	914,206	383,289
Hause (1980)	CPS	92,159	124,576	428,454	161,232	309,388	673,493	498,923
	PSID	92,159	124,576	386,686	161,232	309,388	687,214	554,411
	Hause	92,159	124,576	607,957	161,232	309,388	979,005	624,933
Belfield et al. (2006)[c]	CPS	106,101	290,854	669,259	165,463	365,537	733,992	198,778
NLSY79 Comparison Group[d]	CPS	62,229	197,813	459,231				
	PSID	62,229	197,813	474,108				
	Hause	62,229	197,813	593,899				

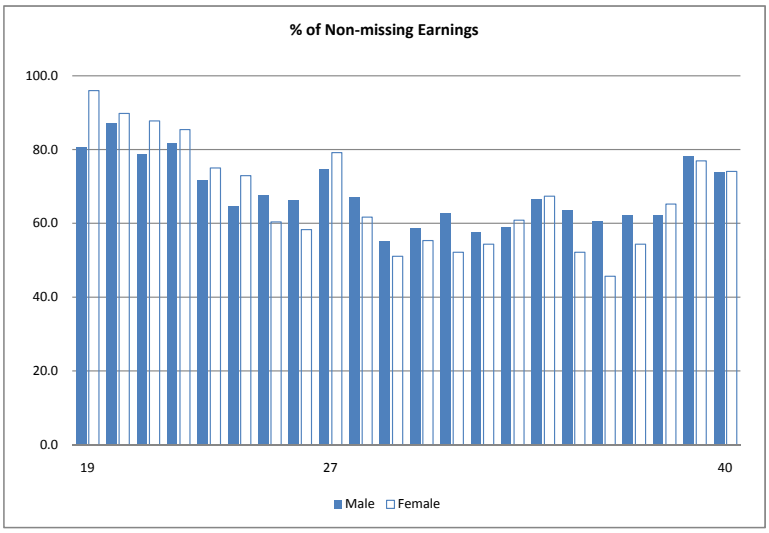
Notes: Discount rate is set at 0 percent; Except for "Kernel Matching", missing data in employment is imputed by the group average; "Cross-Sectional Regression" and "Hause (1980)" series are obtained from yearly datasets, so they are not directly comparable with other series. (a) Based on annual earnings; (b) Based on monthly earnings; (c) Profile A2 in Belfield, Nores, Barnett, and Schweinhart (2006); (d) NLSY79 low-ability comparison group, where "low-ability" is defined as AFQT below the black median.

Table G.5: Lifetime Gross Earnings, by Imputation and Extrapolation Method: Males

Imputation	Extra-polation	Control			Treatment			Lifetime Diff.
		19–27	28–40	41–65	19–27	28–40	41–65	
Linear Interpolation	CPS	110,839	294,622	634,725	102,793	424,764	866,380	353,751
	PSID	110,839	294,622	567,959	102,793	424,764	644,176	198,313
Cross-Sectional Regression[a]	CPS	108,920	215,464	377,118	111,651	294,211	465,881	170,241
	PSID	108,920	215,464	639,215	111,651	294,211	675,771	118,035
	Hause	108,920	215,464	496,160	111,651	294,211	642,929	228,247
Kernel Matching[b]	CPS	185,239	287,290	474,045	186,923	370,772	636,265	247,387
	PSID	185,239	287,290	503,699	186,923	370,772	563,995	145,461
	Hause	185,239	287,290	565,790	186,923	370,772	761,276	280,652
Hause (1980)	CPS	250,992	355,526	622,575	269,418	470,969	742,527	253,821
	PSID	250,992	355,526	562,751	269,418	470,969	639,955	211,073
	Hause	250,992	355,526	625,488	269,418	470,969	838,662	347,158
Belfield et al. (2006)[c]	CPS	216,353	343,611	901,535	241,501	445,923	941,798	167,722
NLSY79 Comparison Group[d]	CPS	137,520	325,457	702,981				
	PSID	137,520	325,457	579,654				
	Hause	137,520	325,457	599,419				

Notes: Discount rate is set at 0 percent; Except for "Kernel Matching", missing data in employment is imputed by the group average; "Cross-Sectional Regression" and "Hause (1980)" series are obtained from yearly datasets, so they are not directly comparable with other series. (a) Based on annual earnings; (b) Based on monthly earnings; (c) Profile A2 in Belfield, Nores, Barnett, and Schweinhart (2006); (d) NLSY79 low-ability comparison group, where "low-ability" is defined as AFQT below the black median.

Figure G.1: Proportion of Non-Missing Earnings



Source: Perry Preschool Program micro datasets: interviews at ages 19, 27, and 40. At each age, the sample includes students, prisoners, and persons out of the labor force.

H. Estimating the Social Cost of Crime

We account for two broad varieties of crime cost borne by society: victimization costs and criminal justice system (CJS) costs; see Tables H.1–H.2 for a full typology of crime costs. Different cost components are incurred at different points of time, from the commission of a crime through the potential incarceration of the perpetrator.[12] Each component of crime cost is computed using an appropriate incidence level and an associated unit cost. Victimization costs are incurred when the crime committed produces victims. Thus the relevant incidence level is the level of crimes committed. Among criminal justice system (CJS) costs, police, court, and correctional costs are incurred when criminals are processed through these systems. Data limitations require that we assume an "average course" through the police and court systems — and thus, average costs — following an initial arrest.[13] Finally, since crime records end at around the time of the age-40 interview,[14] we extrapolate year by year outside these bounds using data from the 2002 Uniform Crime Report (UCR) records of total criminal activity.

Section H.1 describes our model for estimating crime costs. Section H.2 describes the Perry Preschool Program crime data that are available to estimate the different types of crime cost: arrest and incarceration records

[12] In this model, we make the simplifying assumption that each arrest and/or conviction is linked to a unique crime, and vice versa. Likewise, we assume that police do not arrest or charge the innocent and the courts do not convict them.

[13] Additionally, as explained below in Section H.1, "baseline" components of CJS costs such as policing avoidance costs are assumed to be spread evenly out evenly over arrests, so we consider them as being incurred on a per-arrest basis.

[14] Precisely speaking, our crime record ends at the year 2002, so that the youngest subject's record ends at age 39 while the oldest subjects' records end at age 44.

Table H.1: Crime Cost Typology

Cost Category	Party who bears cost				
	Victim	V's family	Offender	O's family	Society
Costs of Crime					
Productivity Losses					
Lost workdays					
Lost wages for unpaid workdays	O				
Lost productivity					O
Temporary labor and training of replacements					O
Lost housework		O			
Lost school days					
Forgone wages owing to lack of education	O				
Forgone non-pecuniary benefits of education	O				
Forgone social benefits owing to lack of education					O
Medical and Mental Health Care					
Costs not reimbursed by victim family	O	O			O
Costs reimbursed by insurance					O
Administrative cost: insurance reimbursement					O
Direct Property Losses					
Losses not reimbursed by insurance	O				
Losses reimbursed by insurance					O
Administrative cost: insurance reimbursement					O
Administrative cost: recovery and processing by police					O
Indirect Costs of Victimization					
Avoidance behavior	O				
Expenditures on moving, alarms, guard dogs, etc.	O				
Pain and Suffering/Quality of Life	O				
Loss of Affection/Enjoyment		O			
Death					
Lost quality of life	O				
Loss of affection/enjoyment		O			
Funeral and burial expenses		O			
Psychological injury/treatment		O			
Legal Costs asociatated with tort claims	O	O			O
Victim Services					
Expenses charged to victim	O				
Expenses paid by agency					O
"Second-generation costs"					
Future victims of crime committed by earlier victims					O
Future social costs associated with "second crime"					O

Source: (Cohen, 2005, pp. 10–11).

Table H.2: Crime Cost Typology

Cost Category	Party who bears cost				
	Victim	V's family	Offender	O's family	Society
Costs of Society's Response to Crime					
Avoidance Costs					
Avoidance behavior					O
Expenditures on moving, alarms, guard dogs, etc.					O
Fear of Crime					O
Criminal Justice system					
Police and investigative costs					O
Prosecutors					O
Courts					O
Legal fees					
public defenders					O
private legal fees			O		
Incarceration costs					O
Non-incarcerative sanctions					O
Victim/faimly time	O	O			
Jury and witness time					O
Victim Services					
Victim service organizations					O
Victim service volunteer time					O
Victim compensation programs			O		O
Victim/family time	O	O			
Other non-criminal justice programs					
Hot-lines and public service announcements					O
Community treatment programs					O
Private therapy/counseling			O		O
Incarcerated offender costs					
Lost wages			O	O	
Lost tax revenue and productivity					O
Value of lost freedom			O		
Psychological cost to family/loss of consortium				O	
"Overdeterrence" costs					
Innocent individuals accused of offense					O
Restriction of legitimate activity					O
Actions taken by offenders to avoid detection					
"Justice" costs					
Constitutional protections to avoid false accusations					O
Cost of increasing detection rate to avoid differential punishment					O
Offender Cost					
Opportunity cost of time spent in illegal activity instead of "working"					O
Resources devoted to illegal activity			O		

Source: (Cohen, 2005, pp. 10–11).

through age 40. Estimating victimization costs requires estimating total victimization levels using arrest data. Section H.3 details the process by which arrests counts are "inflated" using ratios of total victimization levels reported by the National Crime Victimization Survey (NCVS/NCS) and total arrest levels from the Uniform Crime Report (UCR). Direct arrest and correctional records make such estimation unnecessary for CJS costs. Unit costs for all crime types are estimated in Section H.4. For CJS unit costs and estimated victimization levels, both nationally- and locally-based estimates are presented, although sensitivity analysis shows comparable results from either source in terms of total costs and IRR estimates.

H.1. General Framework

This section develops a time-series of crime costs for each individual in the Perry Preschool Program Study. For each individual $i = 1, \ldots, N$ and each year $t = 1, \ldots, T$, overall crime cost $C_{i,t}$ is the sum of victimization costs $C_{\mathrm{V},i,t}$, police and court costs $C_{\mathrm{PJ},i,t}$ and correctional costs $C_{\mathrm{C},i,t}$:

$$C_{i,t} = C_{\mathrm{V},i,t} + C_{\mathrm{PJ},i,t} + C_{\mathrm{C},i,t}. \tag{H.1}$$

For each subject i, let $V_{i,j,t}$ denote a the number of victims who suffered a crime of type j in period t. Suppose that each victimization carries a unit cost $\omega_{\mathrm{V},j,t}$.[15] Then total victim costs can be written as

$$C_{\mathrm{V},i,t} = \sum_{j \in \{\mathrm{V,PJ,C}\}} V_{i,j,t} \omega_{\mathrm{V},j,t}. \tag{H.2}$$

For the purposes of this paper, we assume that police and court costs are incurred on a per-arrest level due to significant gaps in knowledge of the life course of a Perry subject through the criminal-justice system (see Section H.2 for details). By computing unit costs on a per-arrest level and allocating them evenly across arrests, we assume an "average course" following an arrest. As a simplifying assumption, general police/court costs (e.g. "avoidance costs") are also computed on a per-arrest basis. For each subject i, let $A_{i,j,t}$ denote the total number of crimes of type j cited at arrests during year j.[16], each of which carries a unit cost of $\omega_{\mathrm{PJ},j,t}$. Then total police/court costs for subject

[15] The crime categorizations used in decomposing victimization costs and police / court costs need not be the same, although we assume that they are here. For details on our specific breakdown of crime into types, see Section H.3.1.

[16] Multiple offenses of any type may be cited at a single arrest.

i in period t are

$$C_{\mathrm{PJ},i,t} = \sum_j A_{i,j,t}\omega_{\mathrm{PJ},j,t}. \tag{H.3}$$

Correctional costs are the result of either incarceration ($j = \mathrm{I}$) or parole ($j = \mathrm{P}$), and carry annual unit costs $\omega_{\mathrm{C,I},t}$ and $\omega_{\mathrm{C,P},t}$, respectively. Since the unit of time t is years, and the observed correctional records are more fine-grained, let $I_{i,t}$ and $P_{i,t}$ denote the fraction of period t that subject i spent incarcerated or paroled. Then total correctional costs for subject i and period t is

$$C_{\mathrm{C},i,t} = I_{i,t}\omega_{\mathrm{C,I},t} + P_{i,t}\omega_{\mathrm{C,P},t}. \tag{H.4}$$

Plugging all the cost components back into equation (H.1), we obtain

$$C_{i,t} = \Big(\sum_j V_{i,j,t}\omega_{\mathrm{V},j,t}\Big) + \Big(\sum_j A_{i,j,t}\omega_{\mathrm{PJ},j,t}\Big) + \Big(I_{i,t}\omega_{\mathrm{C,I},t} + P_{i,t}\omega_{\mathrm{C,P},t}\Big). \tag{H.5}$$

There are three hurdles that are faced in estimating Perry crime costs:

1. **Unobserved Victimizations ($\mathbf{V_{i,j,t}}$):** The Perry Preschool Program Study provides records on arrests and incarceration/parole, but not victimizations. Section H.3 describes how a ratio of national victimization levels $\overline{V}_{j,t}$ from the NCVS and national arrest levels $\overline{A}_{j,t}$ from the UCR are used to estimate the number of victims $\tilde{V}_{i,j,t}$ arising from each individual's arrest citations that year:

$$\tilde{V}_{i,j,t} = \left(\overline{V}_{j,t}/\overline{A}_{j,t}\right) A_{i,j,t}.$$

2. **Unknown Unit Costs ($\omega_{\mathbf{k,j,t}}$):** Unit costs must be estimated for each type of victimization and CJS event for each period. This topic is discussed in Section H.4. In summary, victimization unit costs $\tilde{\omega}_{\mathrm{V},j,t}$ are

drawn from a well-established source, and CJS unit costs $\tilde{\omega}_{\mathrm{PJ},j,t}$, $\tilde{\omega}_{\mathrm{C,I},t}$, and $\tilde{\omega}_{\mathrm{C,P},t}$ are estimated using data on governmental expenditures and national arrest totals and correctional population sizes.

3. **Time-Bounded Records:** Crime records end at around age 40, so extrapolation is used to estimate the cost of possible crimes committed later in life.

Extrapolation. Perry crime records are available through age 40, but individuals commit crime throughout life.[17] To estimate such costs, we fit Perry criminal records to lifetime arrest records from the 2002 UCR, which are broken up by gender, age range, and crime type (see Table H.3). For each crime type j and each individual i, the total number of crimes cited at arrest over the years for which we have data (age ≤ 40) are summed to form "in-bounds arrests" $A_{i,j}$:

$$A_{i,j} = \sum_{t|\mathrm{age}_{i,t} \leq 40} A_{i,j,t},$$

where $\mathrm{age}_{i,t}$ denotes the age of subject i in period t.

To extrapolate criminal records to ages 41–65, we assume for each crime type j that the Perry ratio of arrests during the extrapolation period ($\tilde{A}_{i,j}^{[41,65]}$) to arrests during the record period ($A_{i,j}$) is equal to the corresponding UCR

[17] In practice, we limit the scope of our extrapolation to ages 40–65, since the UCR shows that less than 1% of crimes are committed by criminals over age 65. See FBI (1981, 2002.)

Table H.3: UCR Lifetime Arrests (2002), by Gender, Age, and Crime Type

(a) Males

Age	**< 18**	**18–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**> 65**
Murder	9.7%	42.8%	15.9%	9.7%	7.2%	5.3%	4.3%	2.2%	1.4%	0.7%	0.7%
Rape	16.4%	29.6%	12.3%	12.1%	10.7%	8.1%	4.9%	2.6%	1.5%	0.8%	1.0%
Robbery	23.5%	38.8%	11.0%	9.2%	7.7%	5.5%	2.6%	1.0%	0.4%	0.1%	0.1%
Assault	12.5%	26.7%	14.3%	12.6%	11.6%	9.8%	6.1%	3.2%	1.6%	0.8%	0.8%
Burglary	30.7%	33.2%	9.5%	8.3%	7.7%	5.8%	3.0%	1.2%	0.4%	0.1%	0.1%
Larceny	28.3%	27.3%	8.9%	8.9%	9.0%	7.8%	5.0%	2.6%	1.1%	0.5%	0.5%
MV Theft	30.1%	34.3%	10.6%	8.7%	7.3%	4.8%	2.5%	1.0%	0.4%	0.1%	0.1%
Arson	51.7%	19.0%	6.3%	5.8%	5.8%	4.6%	3.3%	1.8%	0.8%	0.5%	0.3%
Violent crime	14.7%	29.6%	13.6%	11.8%	10.7%	8.8%	5.3%	2.7%	1.4%	0.7%	0.7%
Property crime	29.3%	29.3%	9.2%	8.7%	8.5%	7.0%	4.2%	2.1%	0.9%	0.4%	0.4%
All Crime	15.3%	30.8%	12.6%	10.8%	10.1%	8.9%	5.7%	3.0%	1.5%	0.7%	0.6%

(b) Females

Age	**< 18**	**18–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**> 65**
Murder	9.2%	30.3%	14.0%	11.6%	12.0%	10.0%	6.0%	2.9%	1.6%	0.7%	1.6%
Rape	39.2%	21.2%	9.0%	7.6%	11.2%	6.5%	3.6%	0.7%	0.0%	0.0%	1.1%
Robbery	19.9%	33.1%	12.1%	12.2%	10.4%	7.3%	3.3%	1.1%	0.3%	0.1%	0.1%
Assault	15.3%	24.3%	13.8%	13.5%	13.1%	10.2%	5.6%	2.4%	1.1%	0.4%	0.4%
Burglary	25.3%	29.0%	11.6%	11.0%	9.7%	7.3%	3.6%	1.4%	0.6%	0.2%	0.2%
Larceny	31.3%	26.1%	9.6%	9.1%	8.5%	6.8%	4.2%	2.1%	1.1%	0.6%	0.6%
MV Theft	31.5%	29.0%	11.7%	11.0%	8.5%	4.9%	2.2%	0.7%	0.3%	0.1%	0.1%
Arson	37.0%	14.8%	8.4%	8.3%	9.4%	10.3%	6.4%	2.9%	1.2%	0.7%	0.6%
Violent crime	15.7%	25.3%	13.6%	13.3%	12.8%	9.9%	5.3%	2.3%	1.0%	0.4%	0.4%
Property crime	30.9%	26.4%	9.8%	9.3%	8.6%	6.8%	4.0%	2.0%	1.0%	0.5%	0.6%
All Crime	20.8%	26.6%	11.6%	11.5%	11.4%	9.1%	5.0%	2.2%	1.0%	0.4%	0.5%

Source: Uniform Crime Reports (UCR) for 2002.

ratio of arrests during ages 41–65 ($\overline{A}_{i,j}^{[41,65]}$) to arrests through age 40 ($\overline{A}_{i,j}$):[18]

$$\frac{\tilde{A}_{i,j}^{[41,65]}}{A_{i,j}} = \frac{\overline{A}_{i,j}^{[41,65]}}{\overline{A}_{i,j}}$$
$$\Leftrightarrow \quad \tilde{A}_{i,j}^{[41,65]} = A_{i,j}\left(\frac{\overline{A}_{i,j}^{[41,65]}}{\overline{A}_{i,j}}\right).$$

Given these estimates of total arrests over the extrapolation period, it remains to select (a) victimization/arrest ratios to estimate total number of victimizations (using the machinery of Section H.3) and (b) estimates for the various types of unit cost per crime. For victimization/arrest ratios, we choose the mean of the ratios for all available years.[19] For unit costs, we use the average unit cost over the whole periods for which individual records are available.

[18] Using the 2002 UCR. In practice, the UCR ratios only vary over individuals i based on that individual's gender. See Table H.3.

[19] In Section H.3, this is also described as the "static" ratio estimates.

H.2. Perry Crime Data

For estimating crime in the Perry data, we use three sources of data: Perry Preschool Program Study crime data, the Uniform Crime Reports (UCR), and the National Crime Victimization Survey (NCS/NCVS). This section deals with the first of these sources, while the other two are covered below in the discussion on estimating victimization levels (Section H.3.1). In estimating crime costs, we use only arrest and correctional records from the Perry study. Records exist concerning many other events related to Perry subjects' criminal activity and their aftermath, but they are not used for a number of practical reasons that are described below. The source for the information below is a combination of the analyses by Schweinhart et al. (2005), the documentation for the age-27 dataset, and the Perry data themselves.

Crime Records. Record searches at the county, state, and federal levels yield information on civil offenses, misdemeanors, and felonies for most subjects. Each reported arrest yields a list of charges cited at the time of arrest, and it is these full lists of charges that we operate on in determining costs due to crime. These searches were performed around the time of age-40 interviews (2001–2002), and records terminate at that time. For consistency, records are truncated to 1/1/2001. After this date, data are missing for many subjects. Crimes with missing offense dates are imputed to have occurred at this date, since this late occurrence gives it the smallest impact on our rate-of-return calculations.

Limitations exist on the information available on numerous crime types. County-level searches were performed only for residents of Michigan. Misde-

meanors at this level were only available 7–10 years before the record search. At the state level, arrests within Michigan are only reported if they led to charges filed. Crimes committed outside Michigan required records searches which were not uniformly successful. Federal records were garnered through a search performed by a federal court clerk.

Crime records include information on whether a trial was held. This information would be useful in principle for separating out crimes associated with court costs from those that are not. However, this separation is prevented by the presence of missing values. Similarly, the information or whether a trial was held cannot be used to separate out crimes that bear court costs from those that do not, in the absence of knowing whether there was a trial without conviction. Data on whether charges were brought are not useful without knowing whether they were subsequently dropped or led to a trial in the court system.

Tables H.8–H.9 show, for males and females respectively, the Perry arrest totals by age, crime type, and treatment group. For years when records are not available, values are extrapolated. The categorization of crime is that used later to match the Perry dataset up with national datasets for the purposes of estimating total victimizations. This is discussed below in Section H.3.

Correctional Records. Incarceration, parole, and probation records are available for sentences served at the state level or the county level (Washtenaw County). Records consist of the start/end dates of each spell of incarceration, parole and probation. As with the crime records, the data on incarceration, parole and probation terminates at the time of the records search (2001–

2002), so all correctional data are truncated to the beginning of this range (1/1/2001). There is no reported incarceration prior to age 19 for either males or females.

The "end of correction" date is missing for a number of observations, leading to uncertainty as when (or whether) incarceration/parole/probation ended. The existing data do not provide a clear way to estimate the release date with a reasonable amount of certainty. Minimum and maximum sentencing dates are often available, but it is not always possible to determine when a subject would be released. In the case of multiple sentences, it is unknown whether any are concurrent, or suspended, or reduced subsequent to initial sentencing. Changes in employment status do not imply that parole has or has not ended, since parolee employment requirements are at the discretion of the court. As a result, in the absence of a release date — or obvious indications in non-crime measures that the subject is no longer incarcerated — it is assumed that incarceration or parole continues through the truncation date.

As a final note, if a subject is released from incarceration to parole, they are considered simultaneously "incarcerated" and "paroled" for the month beginning parole/end of incarceration. This allows for uncertainty about the exact timing of the transition.

H.3. Estimating Victimization Levels

The Perry crime records (described above in Section H.2) contain comprehensive arrest data. Unobserved are any crimes that do not result in an arrest. The estimation of victimization costs resulting from to crimes committed by Perry subjects requires an estimate of this unobserved true level of criminal activity. To accomplish this goal, we use data from two national sources: arrest totals from the Uniform Crime Reports (UCR), and victimization totals from the National Crime Victimization Survey (NCVS). Following the notation of Section H.1, an estimate of the true crime level in the sample $\tilde{V}_{i,j,t}$ (for individual i, crime type j, and time t) can be made by weighting the arrest count $A_{i,j,t}$ by a ratio of total national levels of victimization $\overline{V}_{j,t}$ and arrests $\overline{A}_{j,t}$:

$$\tilde{V}_{i,j,t} = \left(\overline{V}_{j,t}/\overline{A}_{j,t}\right).$$

Application of this method of estimation gives rise to three issues. The first issue is the cross-categorization of crime type that permits indexing all three data sets with the same set of crime types (the j). No completely consistent categorization is possible among the three data sources, even when considered pairwise. Below, we discuss the categorizations employed by the two national data sets and present the cross-categorization used in this study. A second issue is the lack of concordance between the crime levels (and periods of rising/falling crime) reported by the UCR and the NCS/NCVS. This problem is intractable within the bounds of this study, but we review some of the claims concerning UCR-NCS/NCVS concordance. A related issue is the redesign of the NCS in the early 1990s — thereafter named the NCVS — which resulted in a break in comparability across datasets before

and after the redesign date. We resolve this last problem by restricting ourselves to national data after the redesign, although we present and discuss the calculation of victimization/arrest ratios for both pre- and post-redesign below.

As a final note, the crime category "murder" is treated in a special way. A survey exists — the Supplemental Homicide Report (SHR) — that directly reports the number of arrests per victim, which can be inverted to estimate total murder victims from arrests.[20]

H.3.1. National Datasets

Uniform Crime Reports (UCR). The UCR provides annual county-level arrest data between 1977 to 2004.[21] This captures the Perry population from the point at which the oldest are reaching the age of legal majority.

From 1977 to 1984, the crimes are divided into eight categories.[22] From 1985 onward, assault arrests were differentiated by type (aggravated or simple), and many additional categories were added, including categories for less-serious crimes.[23]

There is incomparability between the 1977–1993 data and the 1994–2004

[20]This method is used only in the case when murder victim cost takes into account the value of a statistical life; See the discussion in Section H.4.

[21]As of the 2002 survey, there are 12 agencies reporting for Washtenaw county. Additionally, total county population — the total population under the jurisdiction of reporting agencies — is also provided for each county, so comparisons can be run against comparably-sized counties with similar characteristics.

[22]Murder, rape, robbery, assault (all types), burglary, larceny, vehicle theft, and arson.

[23]Forgery/counterfeiting (1986, 1988–), fraud, embezzlement, having stolen property, vandalism, weapons violations, vice crimes, sex offenses, drug sale/manufacturing (opiates, marijuana, synthetics, or other), drug possession (same categories), gambling, offense against family / child, driving under the influence, liquor law violations, drunkenness, disorderly conduct, vagrancy, all other offenses (except traffic), suspicion, curfew / loitering, and being a run-away.

data, stemming from a 1994 change in the policy on handing incomplete data.[24] From 1994 onward, data from agencies reporting for periods between 3 and 11 months were weighted to produce a full-year estimate, while data from agencies reporting for < 3 months were replaced with estimates from "agencies reporting 12 months of data located in the agency's geographic stratum within their state." But prior to 1994, data from agencies reporting for < 6 months were dropped.[25]

Cross-Dataset Categorization. Combining levels across data sets by crime type requires a common crime categorization. Table H.4 shows our cross-categorization for crimes in the NCS/NCVS, the UCR, and the Perry crime records. The felony categorizations in grey correspond to those used in this study. For all other crime types, the associated victim costs were deemed insufficient to necessitate a category to facilitate estimation of the victimization level.

In contrast, Belfield et al. (2006, p. 170) apply a similar victimization-estimation method to the Perry arrest data using an 11-category typology of crime:

- **Felonies:** violent assault,[26] rape, drugs, poverty, vehicle theft, and other
- **Misdemeanors:** assault/battery, child abuse, drugs, driving, and other

[24] Incomplete data in this context are data from agencies that reported for < 12 months in the survey year.

[25] Furthermore, the data are dropped "silently," leaving no indicator.

[26] Notably, this includes murder: Barnett (1996) categorized murder this way due to "data limitations" and to avoid murder dominating the treatment effect, and Belfield et al. (2006) follows suit. See Belfield et al. (2006, p. 170ff)

Table H.4: Cross-Dataset Crime Categorization: Felonies

Category	UCR	NIBRS	Perry[a]	NCS/NCVS
Murder	Murder	Murder/Nonnegligent Manslaughter	Murder	
Rape	Rape	Rape, Forcible	Criminal Sexual Conduct	Rape[c]
		Sodomy, Forcible		Sexual Attack, w/ Assault[d]
		Sexual Assault, w/ an Object		Sexual Assault, w/o Injury
		Fondling, Forcible		Unwanted Sexual Contact, w/o Force
				Threat of Rape, Verbal
				Threat of Sexual Assault, Verbal
Robbery	Robbery	Robbery	Robbery, Armed or Unarmed	Robbery[c,e]
Aggravated Assault	Aggravated Assault	Aggravated Assault	Aggravated Assault	Aggravated Assault, w/ Injury
			Assault w/ Intent of Great Bodily Harm	Aggravated Assault, w/ Weapon, Attempted
			Assault w/ Intent of Murder	Threat of Assault, w/ Weapon, Attempted
			Assault, w/ Weapon	Simple Assault, w/ Injury
			Assault / Assault and Battery	Assault, w/o Weapon or Injury
				Threat of Assault, Verbal
Burglary	Burglary	Burglary / Breaking and Entering	Breaking and Entering[b]	Burglary, w/ Forcible Entry[c]
			Trespassing, Armed	Burglary, Unlawful Entry w/o Force
Larceny	Larceny	Pocket-Picking	Larceny (> $100)	Purse Snatching[c]
		Purse-Snatching	Larceny, in a Building	Pocket-Picking
		Shoplifting	Personal Larceny	Personal Larceny[c,f]
		Theft, from Building	Theft, of Rental Property	Household Larceny[c,f]
		Theft, from Coin-Operated Machine / Device	Larceny (< $100)	Theft[c,f]
		Theft, from / of Motor Vehicle	Larceny, from a Building	
		Parts / Accessories	Larceny, Shoplifting (< $100)	
		Larceny, Other		
Motor Vehicle Theft	Motor Vehicle Theft	Motor Vehicle Theft	Motor Vehicle Theft	Motor Vehicle Theft[c]
Arson	Arson	Arson	Arson	

Notes: Felony categories used in this study are in grey. (a) Shaded entries in the "Perry" column are the crimes included in that category, while all other crimes are not considered for the purpose of computing victimization costs; (b) Broken down into felony and misdemeanor; (c) Includes attempted crimes; (d) Serious or minor; (e) Broken down into crimes "w/ Injury from Serious Assault", "w/ Injury from Minor Assault"', and "w/o Injury"; (f) Broken down by amount: $<$ \$10, \$10\$49, \$50\$249, $>$ \$250, or amount "N/A";.

This selection is governed by "the availability of data for each crime type in three domains: incidences; victim costs; and criminal justice system costs." (Belfield et al., 2006, p. 170ff). Their analysis differs from ours by (a) counting minor offenses (e.g., traffic arrests) and attributing to them substantial costs; and (b) applying a high ((10-14):1) victimization/arrest ratio to drug crimes which are usually victimless. Both lead an overstatement of the costs of crime. Table H.7 compares these victimization/arrest ratios with the two varieties of ratio used in this paper: the principal ratios, which are based on nationwide total victimizations and arrests, and for sensitivity analysis, a set of ratios based on victimizations and arrests which occurred in urban areas of the Midwest.[27]

Incomparability of UCR and NCVS. As noted in the forward of the UCR report Federal Bureau of Investigation (2002),[28] the results derived from the UCR and those of the NCVS are "not strictly comparable."[29] This may understate the magnitude of the phenomenon. The incomparability between the NCS/NCVS and UCR is manifested in a lack of comparability between various measures of crime as reported by the two surveys. A recent collection of studies discussing this lack of comparability (Lynch and Addington, 2007) posits a number of possible reasons, including differences in sampling meth-

[27]For this purpose, the Midwest is defined as Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas. For the relevant sampling period (pre-2000), "urban" means occurring in an MSA, which is defined as an urban area with population greater than 50,000 and the economically and socially integrated surrounding counties.

[28]http://www.fbi.gov/ucr/cius_02/html/web/index.html

[29]For additional details from this source, see (Federal Bureau of Investigation, 2002, Appendix IV).

ods, differences in crime categorization (discussed above), and differences in crime reporting methods.

Murder as a Special Case. The crime category of "murder" is treated as a special case. The Supplemental Homicide Report (SHR), an FBI survey related to the UCR, provides the number of murder victims whose deaths result in an arrest. This survey is possible due to the tangible evidence of a crime committed — an individual whose death is attributed to homicide — and the linking of these records to arrest data by the FBI. For this special case, the ratio of victims to arrests is formed by inverting the ratio of arrests per murder reported by the SHR. The ratios reported for murder in Table H.6 shows the victimization/arrest ratios yielded by this source.

H.3.2. Estimated Victimization Rates & Levels

Victimizations Per Arrest. As noted in our description of the NCS/NCVS data previously given, ratios for individual years are only formed for the years following the NCS/NCVS redesign. The mean of these ratios is imputed as the ratio for all other years. Additionally, we compute ratios (and, later, crime cost totals) for two types of sensitivity analysis: varying ratio dynamics and crime categorization. For the former, we use an alternate set of rates that take the mean of rates for post-NCS/NCVS-redesign years for all years (that is, including the post-NCS/NCVS-redesign years themselves). For the latter, we present ratios (and later, crime cost calculations) that use ratios based on a coarser alternate crime categorization which considers all crimes as the same type. Table H.7 compares our annual series of victimization/arrest ratios (and sensitivity analyses) with those used in the work by Belfield, Nores, Barnett, and Schweinhart (2006). There is no clear ranking of the

two sets of estimates.

Victimization Levels. Tables H.8–H.9 show, for males and females respectively, the levels of unreported incidents and arrests by year and type of crime. The third and fourth columns use the national arrest victimization / arrest ratios, and the last two columns use the urban midwest victimization / arrest ratios. Tables H.10–H.11 show, for males and females respectively, the levels of unreported incidents and arrests by year and type of crime under the crime ratios and categorization used by Belfield et al. (2006).

Table H.5: Cross-Dataset Crime Categorization: Misdemeanors

Category	UCR	NIBRS	Perry[m]
Other Assaults	Other Assaults	Simple Assault Intimidation Negligent Manslaughter Justifiable Homicide	Aggravated Child Abuse
Forgery / Counterfeiting	Forgery / Counterfeiting	Counterfeiting / Forgery	Forgery
Fraud	Fraud	False Pretenses / Swindle / Confidence Game Fraud, Credit Card / ATM Impersonation Fraud, Welfare Fraud, Wire	Fraud. Credit Card[h] Fraud, Retail[h] Fraud, Uttering and Publishing Fraud, Welfare Fraudulent Activities Fraud, Food Stamp / Welfare Scheme to Defraud
Embezzlement	Embezzlement	Embezzlement	Embezzlement[i]
Possession Of Stolen Property	Possession of Stolen Property	Stolen Property Offenses[e]	Receiving / Concealing Stolen Property[j]
Vandalism	Vandalism	Destruction / Damage / Vandalism of Property	Destruction Of Property, Malicious[k]
Weapons Violations	Weapons Violations	Weapon Law Violations	Carrying a Concealed Weapon Carrying / Possession of a Firearm w/o License
Prostitution / Vice	Prostitution / Vice	Prostitution Assisting / Promoting Prostitution	Accosting and Soliciting
Sex Offenses	Sex Offenses	Incest Rape, Statutory	
Drug Offenses	Drugs Possession[d] Drugs Sale / Manufacture[d] Drugs Violations, All Drugs Other Dangerous Non-Narcotics	Drug / Narcotic Violations Drug Equipment Violations	Controlled Substances, Sale / Possession / Trafficking / Delivery Dangerous Drugs Habitual Offender Controlled Substances, Use Drug Paraphernalia Possession Drug Possession, Marijuana (< 20g)
Gambling	Gambling, All Bookmaking, Horses / Sport Illegal Lottery / Numbers Gambling, Other	Gambling, Betting / Wagering Gambling, Operating / Promoting / Assisting Gambling, Equipment Violations Sports Tampering	Gambling
Family / Child Offenses	Offenses Against Family / Child	Family Offenses, Nonviolent	Child Abuse / Neglect
DUI	DUI	DUI	Impaired Driving / Operating a Vehicle while Intoxicated
	Liquor Law Violations	Liquor Law Violations	
Disorderly Conduct	Disorderly Conduct Drunkenness	Disorderly Conduct Drunkenness	Escape Flee And Elude (w/ Violence) Obstructing Police Unlawful Driving Away Disorderly Conduct / Disturbing the Peace Fleeing / Attempting to Elude Police Hindering / Obstructing / Resisting / Interfering w/ Police
Loitering / Curfiew	Vagrancy Curfew / Loitering Laws	Loitering / Vagrancy / Curfew Violations	
Other[f]	All Other Offenses[f]	Kidnaping / Abduction Extortion / Blackmail Pornography / Obscene Material Bribery Bad Checks Peeping Tom Trespass of Real Property All Other Offenses	Failure to Stop at the Scene of a Personal Injury Accident Kidnapping Tampering With Witness Other Felonies Building Code Violation Criminal Mischief Failure to Appear under Bond Frequenting Place of Illegal Activity Indecent Exposure Invasion of Privacy Probation Violation Public Nuisance Trespassing Other Misdemeanors
	Suspicion		
	Runaways	Runaway	
Traffic			Driving, Reckless Driving, Unlicensed Driving, w/ Expired / Improper License Plate Driving, w/ Suspended License Driving, w/o Child Safety Seat Driving, w/o Insurance Driving, Other Mesdemeanor Failure to Stop at an Accident

Notes: Felony categories used in this study are in grey. (a) Includes attempted crimes; (b) Serious or minor; (c) Broken down by amount: <$10, $10–$49, $50–$249, >$250, or "N/A"; (d) Broken down by drug category: All drugs, marijuana, opium/cocaine, and synthetic drugs; (e) Includes receiving and selling stolen property; (f) Except traffic; (g) Broken down into crimes "w/ Injury from Serious Assault", "w/ Injury from Minor Assault", and "w/o Injury"; (h)Broken down into felony and misdemeanor; (i) Broken down into felony (>$100) and misdemeanor (>$100 and <$100); (j) Broken down into felony (>$100) and misdemeanor (<$100); (k) Broken down into felony (>$300) and misdemeanor (<$300); (l) Broken down into felony (>$25k) and misdemeanor (<$25k); (m) Unless otherwise noted, light grey indicates felony crimes and white indicates misdemeanors.

Table H.6: Victimizations, Arrests, and Victimization / Arrest Ratios, by Year and Crime Type

Year		**1996**			**1997**			**1998**	
	Total[a]	Rep.[b]	Ratio[c]	Total[a]	Rep.[b]	Ratio[c]	Total[a]	Rep.[b]	Ratio[c]
Murder[d]	21.6	14.4	1.49	19.3	12.8	1.52	17.9	12.3	1.45
Rape	98.0	24.3	4.03	115.0	22.1	5.20	110.0	21.9	5.02
Robbery	757.0	121.8	6.22	607.0	94.0	6.46	610.0	87.1	7.00
Assault	1,910.0	387.6	4.93	1,883.0	372.4	5.06	1,674.0	359.9	4.65
Burglary	4,845.0	264.2	18.34	4,635.0	245.8	18.86	4,054.0	233.4	17.37
Larceny	21,438.0	1,096.5	19.55	20,105.0	1,033.9	19.45	17,999.0	940.2	19.14
MV Theft	938.0	132.0	7.10	1,007.0	116.1	8.68	822.0	107.0	7.68
Violent[e]	2,029.6	426.4	4.76	2,017.3	407.3	4.95	1,801.9	394.1	4.57
Property[f]	27,978.0	1,614.5	17.33	26,354.0	1,489.8	17.69	23,485.0	1,367.8	17.17
All[g]	30,007.6	2,040.9	14.70	28,371.3	1,897.1	14.95	25,286.9	1,762.0	14.35

Year		**1999**			**2000**			**2001**	
	Total[a]	Rep.[b]	Ratio[c]	Total[a]	Rep.[b]	Ratio[c]	Total[a]	Rep.[b]	Ratio[c]
Murder[d]	21.6	14.9	1.45	13.8	8.7	1.59	22.0	13.7	1.61
Rape	141.0	29.2	4.83	92.4	17.9	5.16	83.6	27.3	3.07
Robbery	530.0	109.8	4.83	520.1	72.3	7.19	426.7	108.4	3.94
Assault	1,503.0	490.8	3.06	1,292.5	316.6	4.08	1,222.2	477.8	2.56
Burglary	3,652.0	301.5	12.11	3,443.7	189.3	18.19	3,139.7	291.4	10.77
Larceny	16,703.0	1,213.3	13.77	15,189.9	782.1	19.42	14,323.5	1,160.8	12.34
MV Theft	808.0	144.2	5.60	641.9	98.7	6.50	724.1	147.5	4.91
Violent[e]	1,665.6	534.9	3.11	1,398.8	343.3	4.08	1,327.8	518.7	2.56
Property[f]	21,693.0	1,768.8	12.26	19,795.5	1,142.4	17.33	18,613.9	1,708.1	10.90
All[g]	23,358.6	2,303.8	10.14	21,194.3	1,485.7	14.27	19,941.7	2,226.8	8.96

Notes: All crime levels reported on a national basis. (a) Total number of victimizations reported in the NCVS for that year and crime type (except in the case of murder; see d); (b) Total number of arrests reported in the UCR for that year and crime type; (c) The number of victimizations per arrest, calculated from total victimizations and total arrests (except in the case of murder; see d); (d) In the case of murder, ratios are not estimated; they are taken from the Supplemental Homicidal Report (SHR), and total victimizations are estimated using these ratios and total arrests; (e) Murder, rape, and assault; (f) Robbery, burglary, larceny, and MV theft; (g) Total across all crime types listed above.

Table H.7: Victimization/Arrest Ratios, by Year and Crime Type

		1996	1997	1998	1999	2000	2001	Static[a]	BNBS[b] Min.	BNBS[b] Max.
National[c]	Murder[d]	1.5	1.5	1.4	1.4	1.6	1.6	1.5		
	Rape	4.0	5.2	5.0	4.8	5.2	3.1	4.5	3.2	4.0
	Robbery	6.2	6.5	7.0	4.8	7.2	3.9	5.9		
	Assault	4.9	5.1	4.7	3.1	4.1	2.6	4.1	5.0	8.6
	Burglary	18.3	18.9	17.4	12.1	18.2	10.8	15.9		
	Larceny	19.6	19.4	19.1	13.8	19.4	12.3	17.3		
	MV Theft	7.1	8.7	7.7	5.6	6.5	4.9	6.7	6.6	10.0
	Drugs								10.9	14.0
	Other[e]								10.9	12.0
	Violent[f]	4.9	5.1	4.7	3.2	4.1	2.6	4.1		
	Property[g]	17.3	17.7	17.2	12.3	17.3	10.9	15.4	6.6	12.0
Local[h]	Murder[d]	1.5	1.5	1.4	1.4	1.6	1.6	1.5		
	Rape	2.3	3.4	4.5	4.4	6.1	4.1	4.1		
	Robbery	9.3	5.4	6.9	6.2	6.0	6.8	6.8		
	Assault	4.9	5.8	6.4	6.4	3.9	5.5	5.5		
	Burglary	18.5	17.5	17.5	20.5	17.3	18.3	18.3		
	Larceny	15.3	14.2	17.4	19.8	16.4	16.6	16.6		
	MV Theft	5.3	4.9	6.4	4.8	5.0	5.3	5.3		
	Violent[f]	4.7	5.6	6.2	6.2	4.0	5.3	5.3		
	Property[g]	14.4	13.2	15.7	17.2	14.5	15.0	15.0		

Notes: Values are the number of victimizations per arrest, calculated from total victimizations and total arrests (except in the case of murder; see note d). (a) "Static" ratios are a mean of all annual ratios for that crime type; (b) Upper and lower estimates provided by Belfield et al. (2006); (c) Computed using nationwide victimization and arrest totals; (d) In the case of murder, ratios are not estimated; they are taken from the Supplemental Homicidal Report (SHR), and total victimizations are estimated using these ratios and total arrests; (e) Includes all felonies not already categorized by Belfield et al. (2006), which are rape, assault, motor vehicle theft, and drug and property crimes; (f) Murder, rape, and assault; (g) Robbery, burglary, larceny, and MV theft; (h) Computed using arrests and victimizations that occurred in midwestern urban areas.

Table H.8: Victimizations vs. Arrests, Males, by Year

Ratio Type		Arrests[a]		Victimizations (Nat.)[b] Sep.[d]		Victimizations (Nat.)[b] V/P[e]		Victimizations (Loc.)[c] Sep.[d]		Victimizations (Loc.)[c] V/P[e]	
		Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.
Murder	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.03	0.00	0.05	0.00	0.12	0.00	0.05	0.00	0.16	0.00
	28–40	0.00	0.05	0.00	0.08	0.00	0.21	0.00	0.08	0.00	0.27
	40-65	0.01	0.01	0.01	0.01	0.02	0.04	0.01	0.01	0.03	0.05
	Total	0.04	0.06	0.05	0.09	0.15	0.25	0.05	0.09	0.19	0.33
Rape	≤ 18	0.09	0.03	0.41	0.12	0.37	0.10	0.25	0.11	0.32	0.14
	19–27	0.03	0.08	0.14	0.35	0.12	0.31	0.12	0.32	0.16	0.41
	28–40	0.03	0.26	0.14	1.19	0.12	0.98	0.12	1.07	0.16	1.44
	40-65	0.04	0.10	0.19	0.46	0.17	0.39	0.14	0.42	0.18	0.55
	Total	0.19	0.46	0.88	2.12	0.79	1.78	0.64	1.91	0.83	2.54
Robbery	≤ 18	0.12	0.08	0.72	0.46	1.87	1.19	0.82	0.52	1.82	1.15
	19–27	0.03	0.15	0.18	0.91	0.47	2.38	0.21	1.04	0.45	2.31
	28–40	0.09	0.13	0.54	0.79	1.40	2.03	0.62	0.85	1.36	1.91
	40-65	0.04	0.05	0.21	0.31	0.54	0.81	0.24	0.35	0.53	0.78
	Total	0.28	0.41	1.65	2.48	4.29	6.40	1.88	2.76	4.16	6.15
Assault	≤ 18	0.09	0.05	0.37	0.21	0.37	0.21	0.50	0.28	0.49	0.27
	19–27	0.15	0.28	0.61	1.14	0.62	1.15	0.83	1.54	0.81	1.51
	28–40	0.09	0.26	0.37	1.08	0.37	1.09	0.50	1.43	0.49	1.40
	40-65	0.11	0.19	0.44	0.80	0.45	0.81	0.60	1.07	0.59	1.05
	Total	0.44	0.78	1.80	3.23	1.81	3.25	2.42	4.32	2.37	4.23
Burglary	≤ 18	0.06	0.28	0.97	4.50	0.94	4.36	1.11	5.16	0.91	4.23
	19–27	0.21	0.18	3.38	2.86	3.28	2.77	3.88	3.28	3.18	2.69
	28–40	0.15	0.10	2.78	1.77	2.64	1.72	2.63	1.84	2.16	1.56
	40-65	0.08	0.10	1.27	1.62	1.22	1.58	1.36	1.83	1.11	1.51
	Total	0.50	0.66	8.39	10.75	8.07	10.43	8.98	12.12	7.37	9.99
Larceny	≤ 18	0.06	0.05	1.05	0.89	0.94	0.79	1.01	0.85	0.91	0.77
	19–27	0.06	0.67	1.05	11.52	0.94	10.30	1.01	11.08	0.91	10.00
	28–40	0.18	0.28	3.34	5.10	2.99	4.55	2.90	4.58	2.64	4.17
	40-65	0.10	0.31	1.71	5.50	1.53	4.91	1.54	5.18	1.40	4.69
	Total	0.40	1.31	7.14	23.01	6.39	20.55	6.46	21.70	5.86	19.64
MV Theft	≤ 18	0.03	0.05	0.20	0.35	0.47	0.79	0.16	0.27	0.45	0.77
	19–27	0.00	0.10	0.00	0.69	0.00	1.58	0.00	0.54	0.00	1.54
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.02	0.03	0.15	0.07	0.34	0.02	0.12	0.07	0.33
	Total	0.03	0.18	0.23	1.19	0.54	2.72	0.18	0.93	0.52	2.64

Notes: (a) Mean arrests observed in the Perry sample for that treatment assignment; (b) Estimated total victimizations, using the victimization/arrest ratios based on nationwide totals ("Nat."); (c) Estimated total victimizations, using the local ("Loc.") victimization/arrest ratios based on urban Midwestern totals; (d) Estimated using separate victimization/arrest ratios for each crime type; (e) Estimated using victimization/arrest ratios for crimes aggregated into violent crimes (murder, rape, assault) and property crimes (all others).

Table H.9: Victimizations vs. Arrests, Females, by Year

Ratio Type		Arrests[a]		Victimizations (Nat.)[b] Sep.[d]		Victimizations (Nat.)[b] V/P[e]		Victimizations (Loc.)[c] Sep.[d]		Victimizations (Loc.)[c] V/P[e]	
		Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.
Murder	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.00	0.04	0.00	0.06	0.00	0.16	0.00	0.06	0.00	0.21
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.01	0.00	0.02	0.00	0.05	0.00	0.02	0.00	0.06
	Total	0.00	0.05	0.00	0.08	0.00	0.21	0.00	0.08	0.00	0.27
Rape	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Robbery	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.00	0.04	0.00	0.23	0.00	0.59	0.00	0.26	0.00	0.58
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.01	0.00	0.04	0.00	0.11	0.00	0.05	0.00	0.10
	Total	0.00	0.05	0.00	0.27	0.00	0.70	0.00	0.31	0.00	0.68
Assault	≤ 18	0.04	0.00	0.16	0.00	0.16	0.00	0.22	0.00	0.21	0.00
	19–27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.01	0.00	0.05	0.00	0.05	0.00	0.07	0.00	0.07	0.00
	Total	0.05	0.00	0.21	0.00	0.21	0.00	0.28	0.00	0.28	0.00
Burglary	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28–40	0.00	0.04	0.00	0.61	0.00	0.59	0.00	0.70	0.00	0.58
	40-65	0.00	0.01	0.00	0.13	0.00	0.13	0.00	0.15	0.00	0.12
	Total	0.00	0.05	0.00	0.74	0.00	0.72	0.00	0.85	0.00	0.70
Larceny	≤ 18	0.00	0.12	0.00	1.99	0.00	1.78	0.00	1.92	0.00	1.73
	19–27	0.00	0.08	0.00	1.33	0.00	1.19	0.00	1.28	0.00	1.15
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.05	0.00	0.93	0.00	0.83	0.00	0.89	0.00	0.80
	Total	0.00	0.25	0.00	4.25	0.00	3.80	0.00	4.09	0.00	3.69
MV Theft	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19–27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	28–40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	40-65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes: (a) Mean arrests observed in the Perry sample for that treatment assignment; (b) Estimated total victimizations, using the victimization/arrest ratios based on nationwide totals ("Nat."); (c) Estimated total victimizations, using the local ("Loc.") victimization/arrest ratios based on urban Midwestern totals; (d) Estimated using separate victimization/arrest ratios for each crime type; (e) Estimated using victimization/arrest ratios for crimes aggregated into violent crimes (murder, rape, assault) and property crimes (all others).

Table H.10: Total Incidents vs. Arrests, Males, by Year (Belfield et al., 2006)

			Arrests[a]		Unreported Crime[b]			
	Ratio Type				Low Est.[c]		High Est.[d]	
			Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.
Felonies	**Assault**	≤ 18	0.09	0.05	0.45	0.26	0.78	0.44
		19–27	0.21	0.28	1.06	1.41	1.83	2.43
		28–40	0.12	0.33	0.61	1.67	1.04	2.87
	Rape	≤ 18	0.09	0.03	0.29	0.08	0.36	0.10
		19–27	0.03	0.08	0.10	0.25	0.12	0.31
		28–40	0.03	0.26	0.10	0.82	0.12	1.03
	Drugs	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.21	0.36	2.31	3.90	2.97	5.03
		28–40	0.21	0.28	2.31	3.07	2.97	3.95
	Property	≤ 18	0.15	0.33	1.01	2.21	1.82	4.00
		19–27	0.39	1.05	2.62	6.98	4.73	12.62
		28–40	0.42	0.41	2.82	2.72	5.09	4.92
	MV Theft	≤ 18	0.03	0.05	0.20	0.34	0.30	0.51
		19–27	0.00	0.10	0.00	0.68	0.00	1.03
		28–40	0.00	0.00	0.00	0.00	0.00	0.00
	Other	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.18	0.26	1.98	2.79	2.18	3.08
		28–40	0.06	0.00	0.66	0.00	0.73	0.00
Misdemeanors	**Battery**	≤ 18	0.03	0.10	0.11	0.36	0.42	1.44
		19–27	0.09	0.33	0.32	1.18	1.27	4.67
		28–40	0.27	0.62	0.97	2.18	3.82	8.62
	Child Abuse	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.00	0.00	0.00	0.00	0.00
		28–40	0.03	0.00	0.33	0.00	0.42	0.00
	Drugs	≤ 18	0.00	0.03	0.00	0.28	0.00	0.36
		19–27	0.12	0.13	1.32	1.39	1.70	1.79
		28–40	0.15	0.36	1.65	3.90	2.12	5.03
	Driving	≤ 18	0.06	0.00	0.66	0.00	0.85	0.00
		19–27	0.73	1.15	7.91	12.54	10.18	16.15
		28–40	2.21	2.90	24.05	31.50	30.97	40.56
	Other	≤ 18	0.64	0.41	6.92	4.46	8.91	5.74
		19–27	0.67	1.10	7.25	11.98	9.33	15.44
		28–40	0.70	1.31	7.58	14.21	9.76	18.31

Notes: (a) Mean arrests observed in the Perry sample for that treatment assignment; (b) Estimated total victimizations, using victimization/arrest ratios; (c) Estimated using the "low" victimization/arrest ratio in (Belfield et al., 2006) for each age; (d) Estimated using the "high" victimization/arrest ratio in (Belfield et al., 2006) for each age.

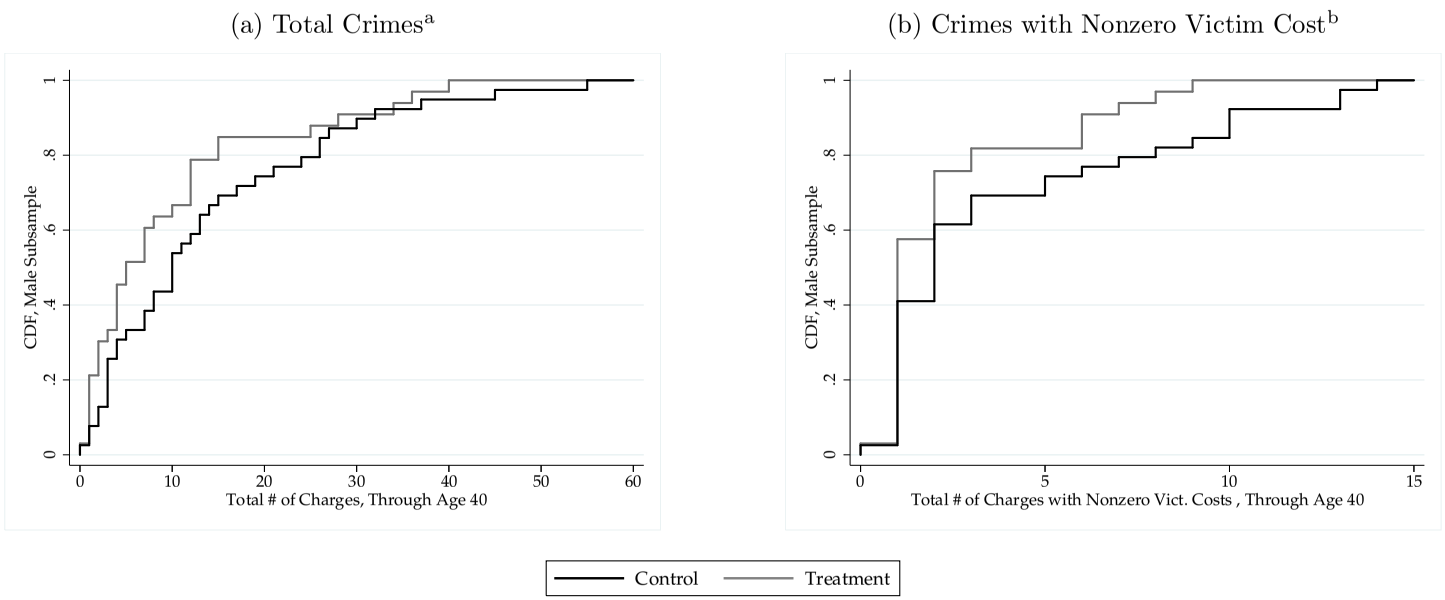
Table H.11: Total Incidents vs. Arrests, Females, by Year (Belfield et al., 2006)

			Arrests[a]		Unreported Crime[b]			
Ratio Type					Low Est.[c]		High Est.[d]	
			Trt.	Ctl.	Trt.	Ctl.	Trt.	Ctl.
Felonies	**Assault**	≤ 18	0.04	0.00	0.20	0.00	0.34	0.00
		19–27	0.00	0.04	0.00	0.19	0.00	0.33
		28–40	0.00	0.00	0.00	0.00	0.00	0.00
	Rape	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.00	0.00	0.00	0.00	0.00
		28–40	0.00	0.00	0.00	0.00	0.00	0.00
	Drugs	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.00	0.00	0.00	0.00	0.00
		28–40	0.00	0.19	0.00	2.09	0.00	2.69
	Property	≤ 18	0.00	0.12	0.00	0.77	0.00	1.38
		19–27	0.04	0.08	0.27	0.51	0.48	0.92
		28–40	0.00	0.04	0.00	0.26	0.00	0.46
	MV Theft	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.00	0.00	0.00	0.00	0.00
		28–40	0.00	0.00	0.00	0.00	0.00	0.00
	Other	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.04	0.00	0.43	0.00	0.48	0.00
		28–40	0.00	0.08	0.00	0.84	0.00	0.92
Misdemeanors	**Battery**	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.35	0.00	1.23	0.00	4.85
		28–40	0.04	0.23	0.14	0.82	0.56	3.23
	Child Abuse	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.00	0.00	0.00	0.00	0.00
		28–40	0.00	0.00	0.00	0.00	0.00	0.00
	Drugs	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.00	0.08	0.00	0.84	0.00	1.08
		28–40	0.08	0.15	0.87	1.67	1.12	2.15
	Driving	≤ 18	0.00	0.00	0.00	0.00	0.00	0.00
		19–27	0.20	0.27	2.17	2.93	2.80	3.77
		28–40	1.40	1.65	15.22	17.98	19.60	23.15
	Other	≤ 18	0.04	0.42	0.43	4.60	0.56	5.92
		19–27	0.20	0.69	2.17	7.53	2.80	9.69
		28–40	0.16	0.50	1.74	5.44	2.24	7.00

Notes: (a) Mean arrests observed in the Perry sample for that treatment assignment; (b) Estimated total victimizations, using victimization/arrest ratios; (c) Estimated using the "low" victimization/arrest ratio in (Belfield et al., 2006) for each age; (d) Estimated using the "high" victimization/arrest ratio in (Belfield et al., 2006) for each age.

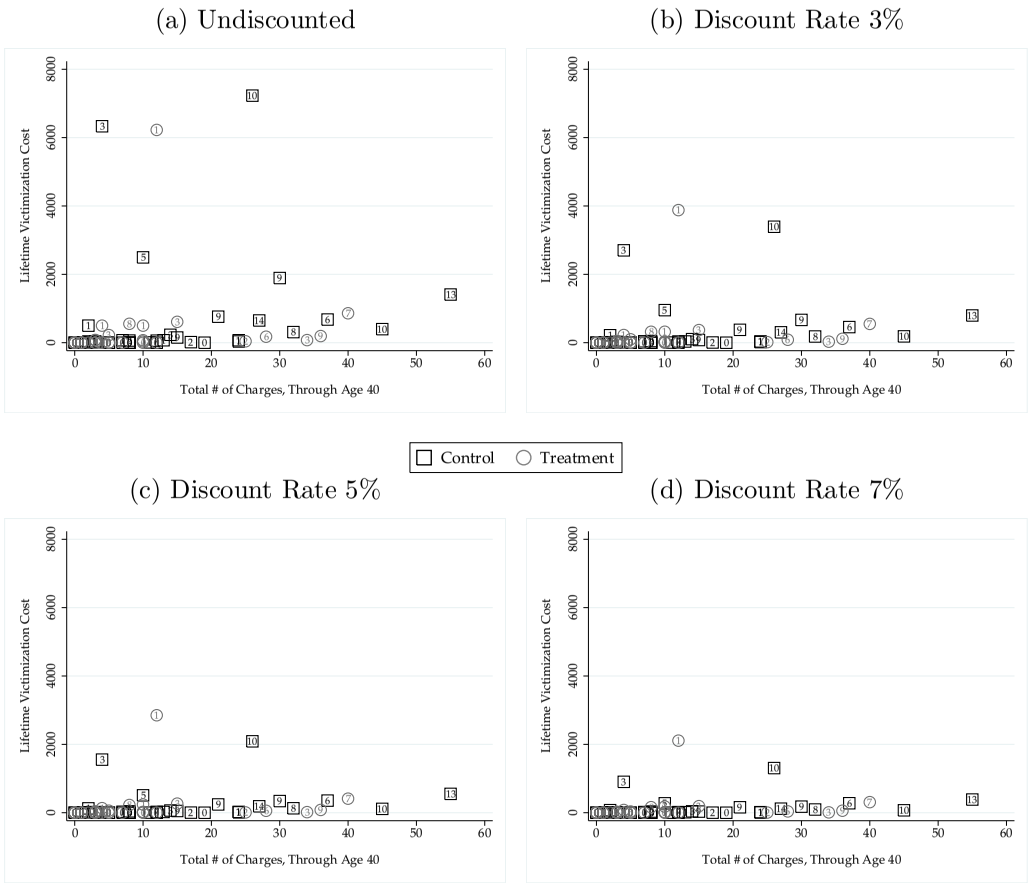
Introduction to Figures. Figures H.1–H.7 show the distribution of crimes by type and cost for Perry treatments and controls. These data are extensively analyzed in Heckman, Moon, Pinto, Savelyev, and Yavitz (2009). Here we note that overall crime is lower for treatment groups compared to control groups and crime with positive victimization costs. A few prolific criminals commit a lot of the crime, but those with the highest number of crimes are not, in general, those imposing the greatest cost of crime. Tables H.12a–H.12b reinforce this point, showing the number of crimes committed by the top 5% of the Perry sample.

Figure H.1: CDF of Lifetime Charges, All Crimes: Males



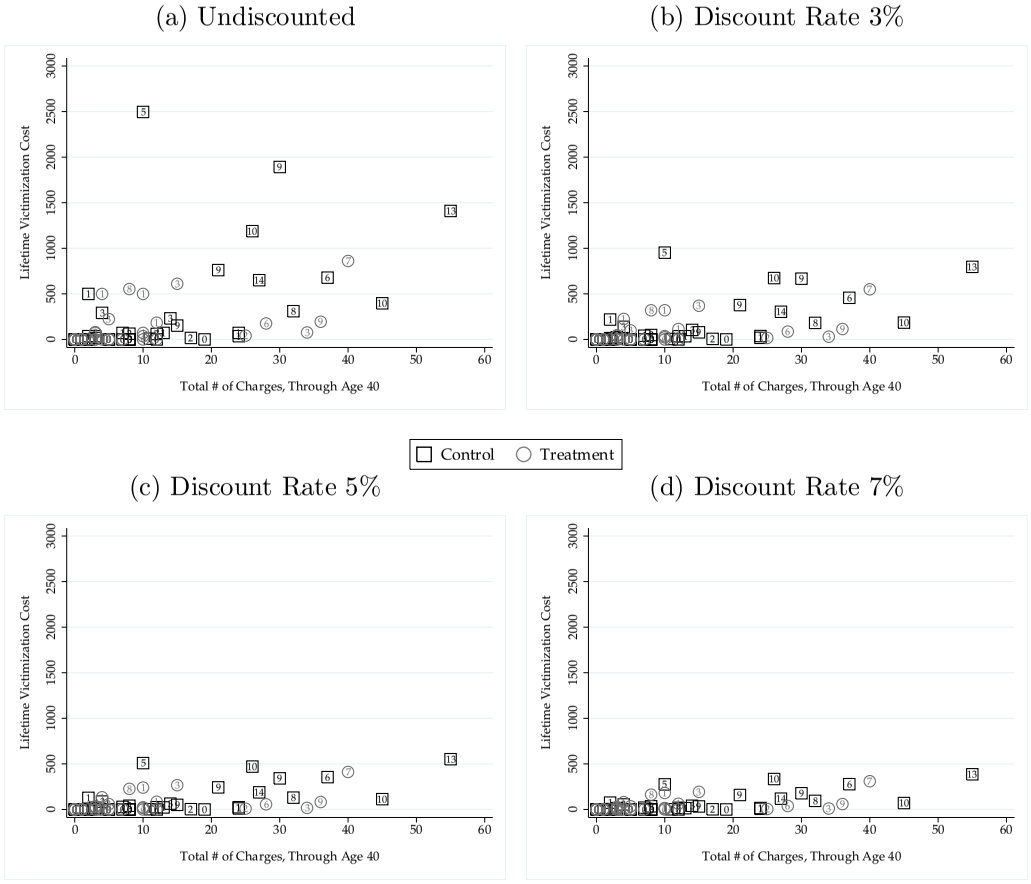
Notes: (a) Includes all charges cited at arrests through age 40; (b) Includes all charges with nonzero victim costs cited at arrests through age 40.

Figure H.2: Lifetime Costs vs. Charges, Males: Local, Separate Ratios; High Murder Cost



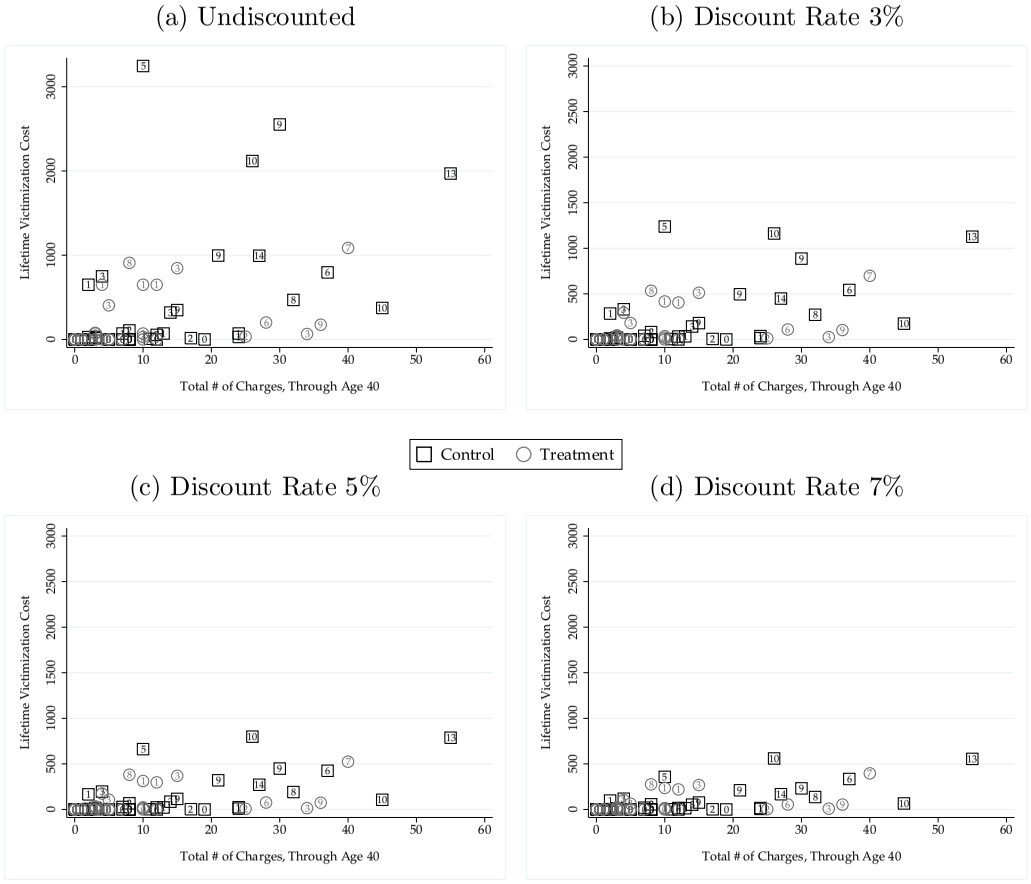
Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that allows each crime type to have a different victimization/arrest ratio. The victimization unit cost of murder includes the statistical value of life, assumed to be about $4.1 million (in year-2006 dollars).

Figure H.3: Lifetime Costs vs. Charges, Males: Local, Separate Ratios; Low Murder Cost



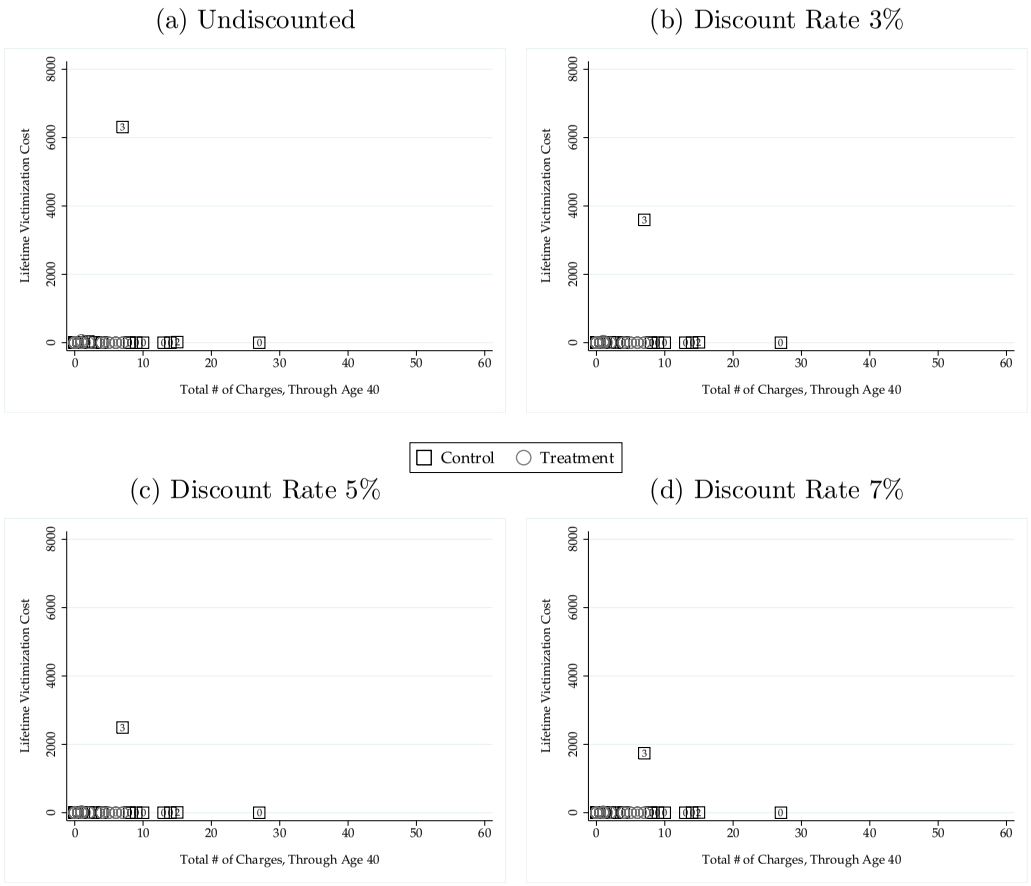
Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that allows each crime type to have a different victimization/arrest ratio. The victimization unit cost of murder does not include the statistical value of life, and is assumed to be the same as that of assault (about $13,000 in year-2006 dollars).

Figure H.4: Lifetime Costs vs. Charges, Males: Local, Violent vs. Property Ratios; Low Murder Cost



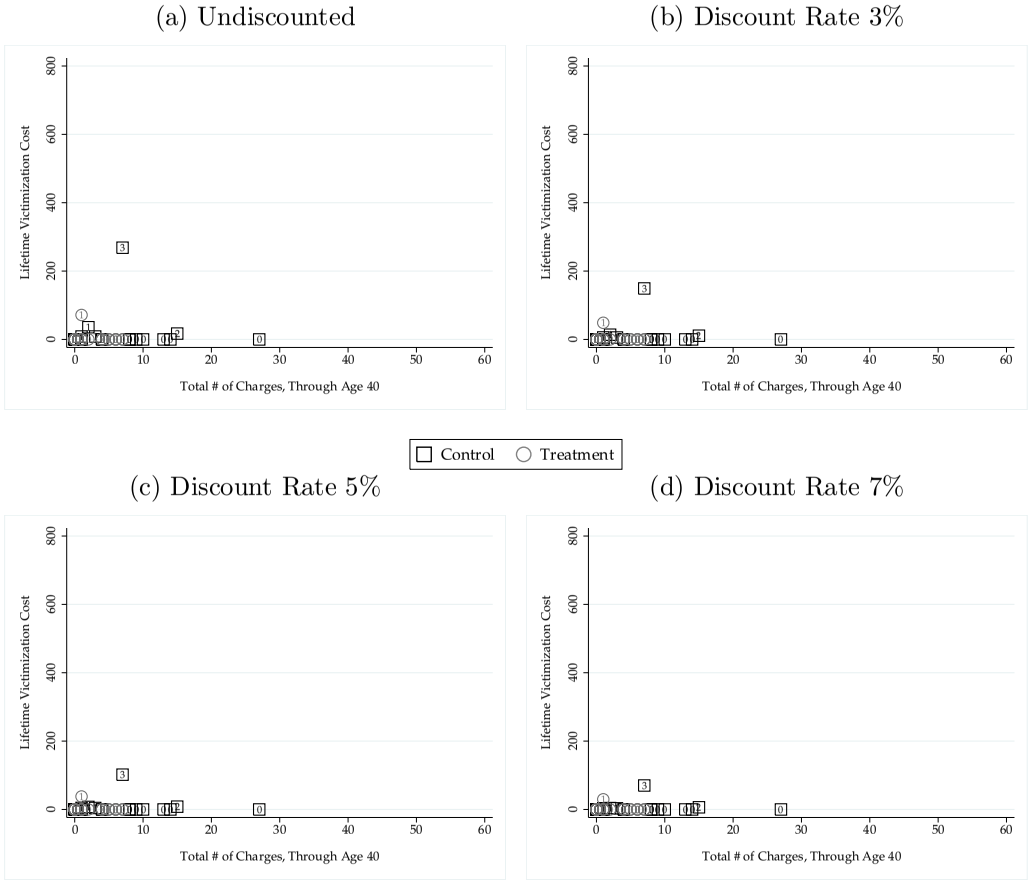
Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that assumes crime types have victimization/arrest ratios that depend on whether that type are constitute violent crimes or property crimes. The victimization unit cost of murder does not include the statistical value of life, and is assumed to be the same as that of assault (about $13,000 in year-2006 dollars).

Figure H.5: Lifetime Costs vs. Charges, Females: Local, Separate Ratios; High Murder Cost



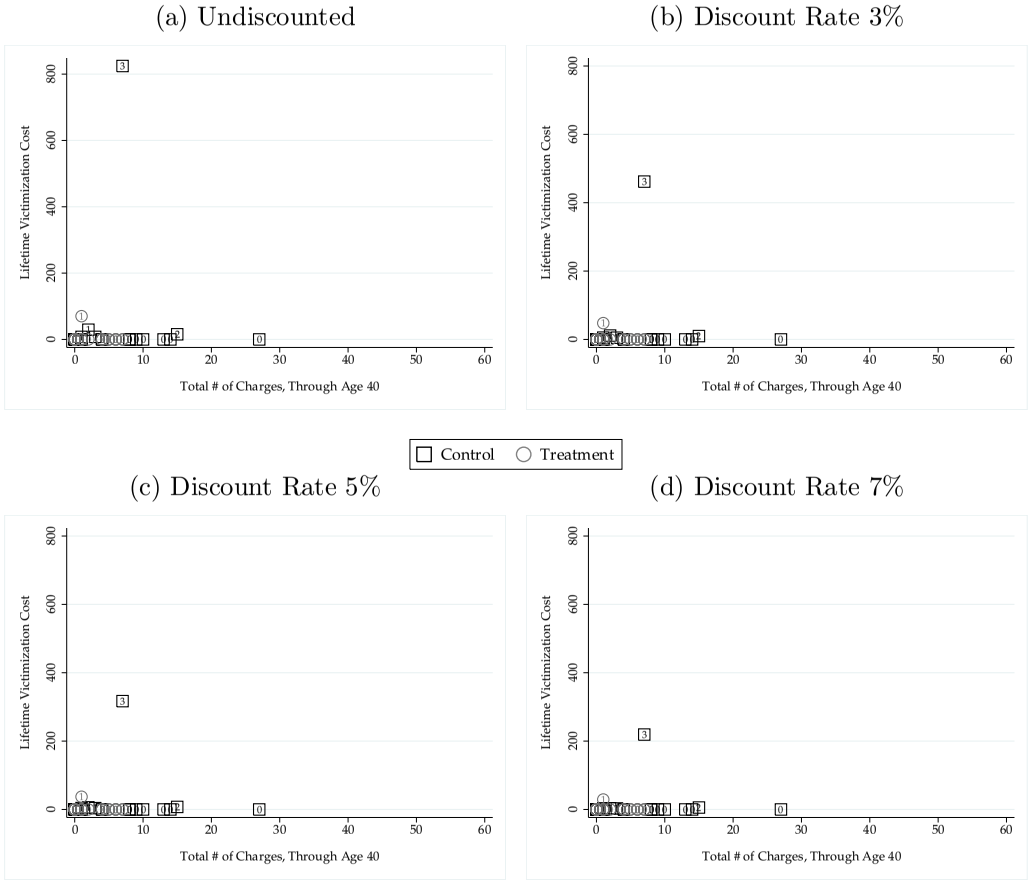
Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that allows each crime type to have a different victimization/arrest ratio. The victimization unit cost of murder includes the statistical value of life, assumed to be about $4.1 million (in year-2006 dollars).

Figure H.6: Lifetime Costs vs. Charges, Females: Local, Separate Ratios; Low Murder Cost



Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that allows each crime type to have a different victimization/arrest ratio. The victimization unit cost of murder does not include the statistical value of life, and is assumed to be the same as that of assault (about $13,000 in year-2006 dollars).

Figure H.7: Lifetime Costs vs. Charges, Females: Local, Violent vs. Property Ratios; Low Murder Cost



Notes: Each point represents an observation in the Perry dataset; value markers are the number of felony charges for that individual which were associated with nonzero victimization costs. Victim Costs are in thousands of year-2006 dollars, discounted at the rate indicate in plot subtitles. Uses victimization/arrest ratios based on victimizations and arrests in Midwestern MSAs, using a crime categorization that assumes crime types have victimization/arrest ratios that depend on whether that type are constitute violent crimes or property crimes. The victimization unit cost of murder does not include the statistical value of life, and is assumed to be the same as that of assault (about $13,000 in year-2006 dollars).

Table H.12: Top 5 Percent of Ranked Offenders, by Type of Charge: Pooled Sample

(a) All Charges

Rank[a]	**ID**	**Gender**	**Treatment**	**Murder[b]**	**# Lifetime Charges**
1	42	Male	No	No	55
2	85	Male	No	No	45
3	12	Male	Yes	No	40
4	25	Male	No	No	37
5	29	Male	Yes	No	36
6	107	Male	Yes	No	34

(b) Charges with Nonzero Victim Costs

Rank[a]	**ID**	**Gender**	**Treatment**	**Murder[b]**	**# Lifetime Charges**
1	61	Male	No	No	14
2	42	Male	No	No	13
3	85	Male	No	No	10
4	65	Male	No	Yes	10
5	38	Male	No	No	9
6	29	Male	Yes	No	9

Notes: (a) Ranked by the last column, over the full data; (b) Subject was arrested on the charge of murder during their lifetime.

H.4. Estimating Unit Costs

In the framework and notation of Section H.1, estimating total crime costs requires estimating four varieties of unit cost, each of which may vary across time t: incarceration unit cost ($\tilde{\omega}_{\mathrm{C,I},t}$), parole/probation unit cost ($\tilde{\omega}_{\mathrm{C,P},t}$), and, by crime type j, victimization unit cost ($\tilde{\omega}_{\mathrm{V},j,t}$) and police/court unit cost ($\tilde{\omega}_{\mathrm{PJ},j,t}$). The CJS unit costs are estimated using national budgets over the appropriate total national measure (prison/parolee population in the case of correctional costs, and arrests in the case of police / court costs). Victimization costs are drawn from Cohen (2005). However, the estimation of the victimization cost for murder is problematic due to the high value of a statistical life (VSL) — the additional victimization cost associated with fatal crimes. Different estimates of VSL are discussed briefly, and by way of sensitivity analysis we alternately assume that murders carry the same cost as assault.

H.4.1. Victimization Unit Costs

Victim cost estimates are drawn from Cohen (2005). In addition, we adopt the assumption of Belfield et al. (2006) of lumping murder with assault for victimization unit costs (and victimization/arrest ratios) in our sensitivity analysis.

Components of Victimization Costs. Our decomposition of victimization costs follows that of Cohen (2005), except for the omission of elements that would cause double-counting when combining victimization costs with police/court costs (whose breakdown is described below). These components also form a subset of those in our overall typology of crime costs (Tables H.1–H.2).

It's important to note that the victimization costs associated with property crimes only includes the value of destroyed or unrecoverable property. The reason for this is that the gain to criminals is counted against the loss to victims when calculating the net cost to society.

Estimating the Value of Statistical Life (VSL). For victimization unit costs, estimating the value of a statistical life (VSL) is a particular problem. The most prevalent method for estimating these costs is based on risk avoidance or acceptance — amounts of money people are willing to pay (accept) for an decrease (increase) in risk of death. A recent review of 40 estimates based on risk premiums in the U.S. labor market and finds that they "typically show a VSL in the range of $4 million to $9 million," (Viscusi and Aldy, 2003, p. 6).

Estimates of Victimization Unit Costs. Table H.13 shows the victimization unit costs drawn from Cohen (2005).

H.4.2. CJS Unit Costs

CJS costs are split between three sources: police costs, and court costs, and correctional costs. As described in Section H.1, police and court costs are counted per arrest, while correctional costs are counted over time incarcerated/paroled. Since we don't know each subjects' course through the justice system because of gaps in the Perry records, we assume an average level of cost per unit.

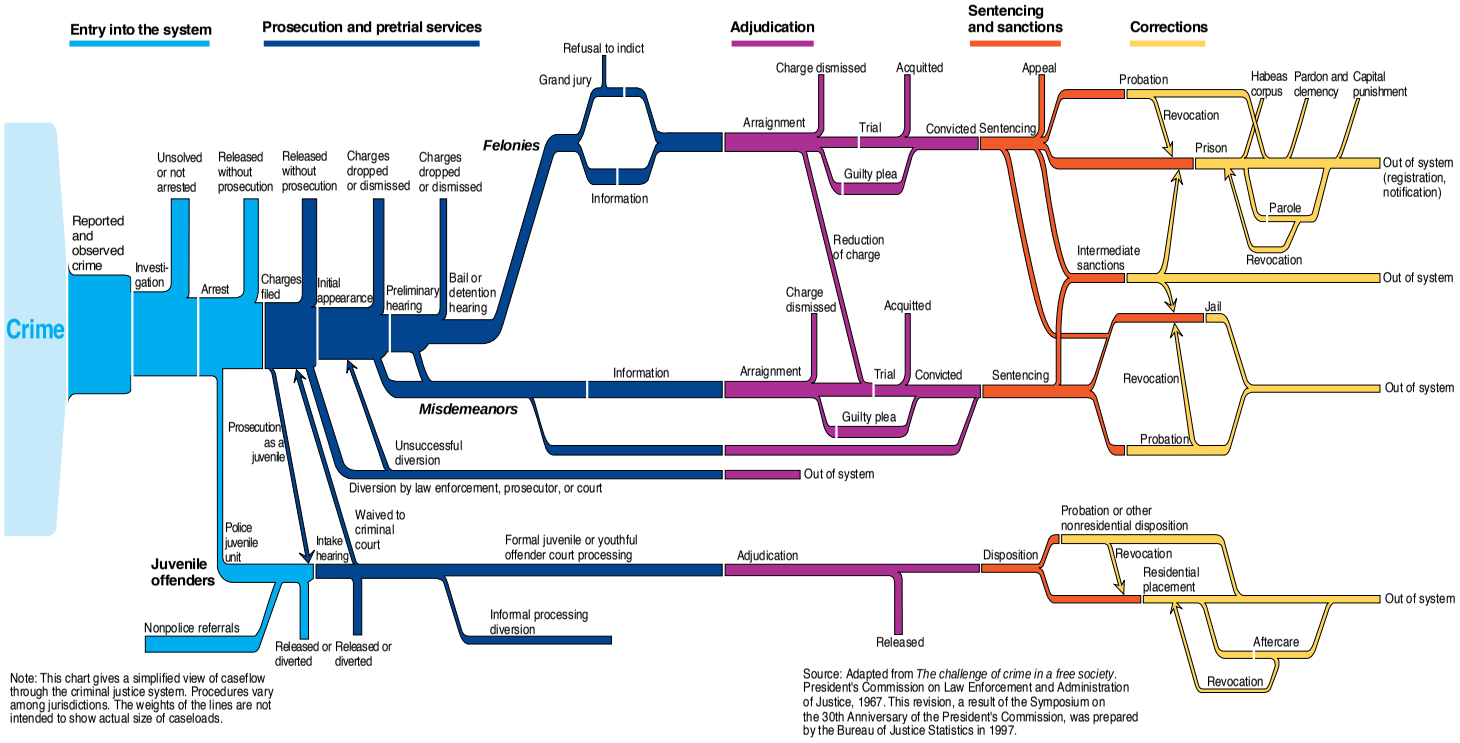
Police/Court Costs. Passage through the police and court systems entails many possible routes and points of exit (Figure H.8). However, given gaps in the Perry data set (e.g., trial with acquittal, dropped charges, settlement

Table H.13: Victimization Unit Costs, by Crime Type

Crime	Productivity	Medical / Ambulance	Medical / Health	Property Loss / Damage	Quality of Life	**Total**
Murder	1395156	22741	7	0	2665	4090
Rape	3069343	698	3	0	29	3103
Robbery	1325	516	0	1	8	11
Assault	1325	593	0	0	11	13
Burglary	17	0	0	1	0	2
Larceny	11	0	0	0	0	0
MV Theft	63	0	0	5	0	5

Notes: Victim costs per crime unit are from Cohen (2005) and presented in year-2006 dollars.

Figure H.8: Sequence of Criminal Justice System



Source: Bureau of Justice Statistics (1997).

vs. bench trial vs. jury trial, etc.; see Section H.2), we assume average CJS costs across all arrests, regardless of crime type.

Estimated CJS Unit Costs. Table H.14 shows estimated CJS unit costs. Local police/court estimates divide Michigan police and court estimates across the total number of arrests in Michigan. Local correctional estimates are per-prisoner estimates of institutional or non-institutional spending divided across the corresponding correctional sub-population; this includes the local- and state-level correctional systems in Michigan, and a share of the per-prisoner federal correctional costs proportional to Michigan's share of the U.S. population. Local costs are used in this paper's main results, as the figures are more specific to the area where the majority of Perry subjects remained throughout the study. For comparison, the table also includes national unit cost estimates, which are based on aggregated budgets and arrests (or correctional populations) for the entire U.S. For years other than those indicated in the table, linear interpolated/extrapolated was used to obtain a full time series of unit costs for the years 1980–2001.

Crime-Specific CJS Unit Costs. In this paper, we assume that CJS costs are equal across crime categories. Belfield et al. (2006) do not make this assumption; instead, they use an average of per-crime unit costs from two studies.

The first study, Cohen et al. (2004), is a willingness-to-pay program, gauging willingness of the public to pay for hypothetical programs with the effect of fractionally reducing certain types of crime. However, the value that the public places on crime prevention is a unit cost more appropriately applied to victimizations, and has no direct relationship with crime expenditures —

Table H.14: CJS Costs: Estimated Unit Costs, by Year and Geography

Year	Police/Court Costs		Incarceration Costs		Parole/Probation Costs	
	National[a]	Local[b]	National[a]	Local[b]	National[a]	Local[b]
1982	4,399	9,501	15,321	28,170	5,047	9,812
1987	5,694	8,270	18,314	35,937	5,524	3,677
1992	6,321	7,803	19,710	26,332	5,413	3,906
1997	7,059	9,136	18,310	31,091	4,150	2,659
2002	9,624	11,468	15,934	33,871	6,841	3,381

Sources: Uniform Crime Report(UCR) and Expenditure and Employment Data for the Criminal Justice System (CJEE) micro datasets for the corresponding years.

Notes: Costs are in year-2006 dollars. (a) Computed using nationwide expenditures and arrest or correctional population totals; (b) Computed using Michigan expenditures and arrest or correctional population totals.

except in the sense that equilibrium CJS expenditures will rise or fall to meet the willingness of the public to pay (or else tolerate higher levels of crime). Additionally, it is not clear that the unit cost estimates are limited in scope to CJS costs, which would be problematic as we account for victimization costs separately.

The second study, Cohen (1998) (using estimates from Cohen et al. (1994)) takes an enumerative approach, estimating per-crime CJS costs with public records on crime and expenditure. For each crime type and stage of the CJS (see Figure H.8), estimates are presented for the probability that a crime of that type will progress to that stage from an initial police report. These are used in conjunction with cost estimates for each stage of the CJS, based on a 1987 study of the police and courts of Dade County, Florida, to generate crime-type-specific unit CJS costs per reported crime. Finally, NCS/NCVS data on crime reports is combined with UCR data on arrests to estimate arrests per reported crime, which is used to create unit CJS costs per arrest. However, this method is questionable given the major differences between Dade County, Florida, and Washtenaw County, Michigan, and the lack of a substitute data source on per-stage CJS expenditures.[30]

[30]Dade or Miami-Dade County, Florida, is one of most-populous counties in the U.S., and as of year 2006 its population size is 7 times bigger than that of Washtenaw, Michigan. After the 1970s, the majority of the Dade County population has been Hispanic or Latino while 80% of residents in Washtenaw is White. During past three decades in Dade, Florida, the crime rate has been higher, the per-capita income has been lower significantly than those of Washtenaw. See "Demographic Profile Miami-Dade County, Florida, 1960–2000" available at Miami-Dade County government's website: http://www.miamidade.gov

I. Use of the Welfare System

Table I.1 presents the available information on Perry subjects' reliance on welfare programs. For ages before 27, only the total number of months on welfare programs is known so that some imputations are required to have lifetime profiles of welfare dependence. We employ the NLSY79 black "low-ability" subsample to impute the amount of welfare receipt as is done in constructing our earnings imputation. We impute a person's monthly welfare receipts at a specific year using coefficients from a NLSY79 regression by gender for the corresponding year with education indicators, a dummy variable for teenage pregnancy, the number of months in wedlock, employment status, earnings and the number of biological children as regressors. Tables I.2 and I.3 present our estimated relationships. In this regression, welfare receipts include all public transfers from the government through programs such as food stamps, unemployment insurance (UI), AFDC, Social Security, Supplemental Security Income (SSI) and any other public cash assistance available in NLSY79 dataset. This imputation is analogous to "cross-section regression imputation" in Web Appendix G so that the imputed welfare receipt has the form of $\hat{W}^i_{P,a} = X^i_{P,a}\hat{\beta}_{N,a}$ where $\hat{W}^i_{P,a}$ denotes estimated welfare transfer payment of Perry subject i.[31] Then, we calculate the cumulative amount of welfare receipt by multiplying the number of months on welfare which is known in the Perry dataset.

Second, for ages between 28 and 40, we use the Perry data which provide both the total number of months on welfare and the cumulative amount of

[31] We use a subscript P for the Perry sample and N for the comparison group samples.

receipts for UI, AFDC and food stamps. For the benefits from other cash assistance programs, we use the aforementioned-NLSY79 regression-based imputation using the total receipt net the sum of UI, AFDC and food stamps as the dependent variable. By adding these two components, we obtain the total amount of welfare receipt for each Perry subject.

Third, to extrapolate each subject's welfare receipt profile after age 40, we use the PSID dataset which allows estimation of life cycle over a longer stretch of the life cycle than is possible with the NLSY79 dataset. We extract a "low ability or achievement" subsample from PSID dataset, as done in the earnings extrapolation, using word completion test scores. To extend Perry welfare receipt profiles, we first estimate a random effect model on PSID using a lag of welfare receipt, education dummies, age dummies and a constant as regressors: $W^i_{P,a} = W^i_{P,a-1}\alpha_{N,a} + X^i_{P,a}\beta_{N,a}$. Table I.4 presents our model of estimated welfare costs. We use the fitted model to extrapolate. Again, the welfare receipts include all kinds of cash assistance available in PSID. This is analogous to PSID projection of earnings profile described in Web Appendix G.

After making these imputations, to account for in-kind transfers, we employ Survey of Income and Program Participation (SIPP) datasets and Moffitt (2003)'s estimates for real expenditures on the combined federal, state and local spending for the largest 84 means-tested transfer programs[32]. For each in-kind transfer program k, we estimate a linear probability model $D^{j,k}_{N,a} = X^j_{N,a}\gamma^k_{N,a}$ where $D^{j,k}_{N,a}$ denotes person j's probability of being on program k at age a. We use the fitted model to predict a Perry subject

[32]See Table 2 in Moffitt (2003).

i's probability $X^i_{P,a}\hat{\gamma}^k_{N,a}$. Then, we generate an inflator by the product of $X^i_{P,a}\hat{\gamma}^k_{N,a}$ and E^k_a/E^C_a which is the ratio of U.S. government's expenditure on in-kind transfer program k and cash assistance at this person's age a provided by Moffitt (2003). By multiplying this inflator by the amount that this person receives from cash assistance, we obtain the expected cash value of in-kind receipt.

Table I.1: Use of the Welfare System, Treatment vs. Control

		Male				Female			
		N	Ctl.	Trt.	p	N	Ctl.	Trt.	p
Ages 17–27	Any Welfare	72(39/33)	0.77	0.52	0.012	51(26/25)	0.85	0.68	0.084
	# of months (A)	19(30/17)	8.97	14.85	0.851	39(22/17)	62.61	43.71	0.102
	# of months (B)	72(39/33)	6.90	7.65	0.580	51(26/25)	52.98	29.72	0.036
	AFDC	72(39/33)	0.10	0.12	0.403	51(26/25)	0.50	0.48	0.445
	Food Stamp	72(39/33)	0.23	0.15	0.202	51(26/25)	0.42	0.48	0.345
	General Assistance	72(39/33)	0.26	0.12	0.076	51(26/25)	0.19	0.08	0.126
1/1996–5/2002	Any Welfare (in/ UI)	72(39/33)	0.59	0.52	0.266	51(26/25)	0.65	0.60	0.349
	Unemp. Ins. (UI)	72(39/33)	0.15	0.15	0.489	51(26/25)	0.15	0.20	0.337
	# of weeks (A)	11(6/5)	41.17	44.20	0.457	9(4/5)	12.25	45.40	0.956
	Total Amounts (A)	11(6/5)	$11,209	$12,203	0.549	9(4/5)	$2,949	$7,702	0.920
	# of weeks (B)	72(39/33)	6.33	6.70	0.527	51(26/25)	1.88	9.08	0.939
	Total Amounts (B)	72(39/33)	$1,724	$1,849	0.533	51(26/25)	$454	$1,540	0.907
	Any Welfare (ex/ UI)	72(39/33)	0.54	0.42	0.171	51(26/25)	0.54	0.48	0.342
	# of Months (A)	35(21/14)	37.24	35.14	0.596	26(14/12)	43.14	59.67	0.967
	# of Months (B)	72(39/33)	20.05	14.91	0.193	51(26/25)	23.23	28.64	0.735
	Cash Assistance	72(39/33)	0.36	0.24	0.146	51(26/25)	0.46	0.40	0.333
	Total Amounts (A)	22(14/8)	$541	$44	0.088	22(12/10)	$2,821	$4,096	0.699
	Total Amounts (B)	72(39/33)	$194	$10	0.069	51(26/25)	$1,302	$1,638	0.617
	Food Stamp	72(39/33)	0.51	0.39	0.160	51(26/25)	0.54	0.44	0.246
	Total Amounts (A)	33(20/13)	$714	$458	0.256	25(14/11)	$2,119	$8,860	0.996
	Total Amounts (B)	72(39/33)	$366	$180	0.160	51(26/25)	$1,141	$3,544	0.967
	Medical Assistance	72(39/33)	0.46	0.24	0.027	51(26/25)	0.38	0.44	0.653
	Family Counseling	72(39/33)	0.23	0.06	0.023	51(26/25)	0.31	0.16	0.111
	Others	72(39/33)	0.05	0.03	0.331	51(26/25)	0.04	0.12	0.856
Age ≤ 40	Any Welfare Program	72(39/33)	0.82	0.67	0.068	51(26/25)	0.92	0.76	0.057

Notes: All p-values are one-sided where $H_0 : \text{Ctrl} - \text{TT} > 0$; For unemployment insurance (UI), durations are measured in weeks; All monetary values are not adjusted for inflation; For Perry subjects, "Cash Assistance" includes all kinds of cash transfers (e.g. AFDC, GA, TANF, etc.).

Table I.2: NLSY79 Cross-section Welfare Functions: Female, Age 19, 27 and 40

Female	Age 19			Age 27			Age 40		
	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value
Enrolled in School[a]	520.6	1626.3	0.750	(dropped)	-	-	(dropped)	-	-
HS Dropout[a]	630.7	2756.1	0.820	1338.9	1054.7	0.207	-640.1	1014.1	0.530
GED[a]	6406.3	2465.0	0.011	-2936.6	1153.7	0.012	-3006.6	1397.5	0.035
2YR College[a]	-1544.1	2612.9	0.556	189.3	1369.5	0.890	-1325.6	1649.4	0.425
4YR College[a]	-986.9	2803.1	0.726	553.2	1326.9	0.677	-152.4	1308.5	0.908
Earnings[b]	-0.4	2.0	0.830	-0.3	0.4	0.430	-0.3	0.3	0.374
Teenage Pregnancy[c]	4420.8	1519.5	0.005	-123.4	737.0	0.867	914.8	762.4	0.235
Months in Wedlock	-48.8	21.0	0.023	-42.7	10.5	0.000	-9.1	11.4	0.426
Employment[d]	-1100.3	2136.9	0.608	-3892.1	832.9	0.000	-2406.2	941.1	0.013
# Biological Children[e]	-304.1	682.8	0.657	1853.1	317.5	0.000	-165.1	353.0	0.642
Constant	2167.0	1509.5	0.155	3574.6	693.4	0.000	3650.4	885.0	0.000
Obs.	91			142			71		
R-squared	0.2698			0.5399			0.2636		

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly receipt from cash assistance and food stamp at the corresponding age. NLSY79 "low ability" black subsample is used. (a) High school graduate is the base; (b) Monthly earnings at the corresponding age if employed. If not employed, set at 0; (c) A dummy variable for experience of teenage pregnancy; (d) Employment status at the corresponding age; (e) The total number of biological children born up to the corresponding age.

Table I.3: NLSY79 Cross-section Welfare Functions: Male, Age 19, 27 and 40

Male	Age 19			Age 27			Age 40		
	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value	Coefficient	Std.Err.	p-value
Enrolled in School[a]	66.8	239.5	0.781	(dropped)	-	-	(dropped)	-	-
HS Dropout[a]	67.1	436.6	0.878	315.4	415.8	0.450	1484.4	417.4	0.001
GED[a]	-6.6	400.0	0.987	306.9	392.7	0.437	190.1	523.4	0.719
2YR College[a]	-69.0	492.2	0.889	-198.4	619.1	0.749	437.2	1072.9	0.686
4YR College[a]	0.9	592.7	0.999	-105.0	537.0	0.845	-59.8	550.3	0.914
Earnings[b]	0.0	0.2	0.843	-0.1	0.1	0.551	0.1	0.1	0.606
Teenage Pregnancy[c]	-6.7	261.7	0.980	-51.7	347.1	0.882	-171.9	378.6	0.652
Months in Wedlock	0.9	5.2	0.867	2.3	6.0	0.700	-7.9	6.4	0.228
Employment[d]	-189.8	276.7	0.496	-398.7	401.2	0.323	-1101.2	468.9	0.024
Biological Children[e]	-175.2	136.1	0.203	-99.5	155.9	0.525	-197.5	161.4	0.229
Constant	331.0	257.8	0.204	741.9	327.1	0.026	1155.4	395.2	0.006
Obs.	68			99			48		
R-squared	0.0533			0.0678			0.3846		

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly receipt from cash assistance and food stamp at the corresponding age. NLSY79 "low-ability" black subsample is used (a) High school graduate is the base; (b) Monthly earnings at the corresponding age if employed. If not employed, set at 0; (c) A dummy variable for experience of teenage pregnancy; (d) Employment status at the corresponding age; (e) The total number of biological children born up to the corresponding age.

Table I.4: PSID Random Effect model of Welfare Receipt, by Gender

Coefficient	**Males**			**Females**		
	Estimate	Std. Err.	p-Value	Estimate	Std. Err.	p-Value
Lag Earnings	0.78	0.01	0.000	0.70	0.01	0.000
Less than HS	7.97	54.16	0.883	20.96	27.58	0.447
HS	-11.29	55.48	0.839	22.45	29.00	0.439
More than HS	-158.93	73.40	0.030	-2.89	40.79	0.943
Constant	148.88	143.28	0.299	56.69	89.32	0.526
Age 22	-25.73	136.43	0.850	49.94	82.53	0.545
Age 23	152.48	136.41	0.264	15.83	79.74	0.843
Age 24	247.48	134.08	0.065	18.80	79.17	0.812
Age 25	316.35	132.15	0.017	51.27	78.50	0.514
Age 26	28.01	130.02	0.829	33.59	77.91	0.666
Age 27	55.79	130.00	0.668	47.50	77.51	0.540
Age 28	153.14	129.45	0.237	-13.01	77.03	0.866
Age 29	73.98	128.26	0.564	58.89	76.62	0.442
Age 30	16.74	127.63	0.896	-12.94	76.19	0.865
Age 31	163.39	127.22	0.199	79.10	76.24	0.300
Age 32	146.51	125.84	0.244	26.18	76.10	0.731
Age 33	114.57	125.41	0.361	7.34	75.89	0.923
Age 34	125.16	124.74	0.316	-4.32	75.86	0.955
Age 35	86.39	123.82	0.485	25.78	75.58	0.733
Age 36	-50.26	123.51	0.684	64.38	75.40	0.393
Age 37	75.83	123.17	0.538	-43.94	75.50	0.561
Age 38	11.02	122.98	0.929	21.46	75.20	0.775
Age 39	58.43	122.20	0.633	28.81	75.03	0.701
Age 40	40.45	121.97	0.740	-50.91	75.23	0.499
Age 41	5.88	122.43	0.962	34.36	75.25	0.648
Age 42	-67.95	122.60	0.579	-12.93	75.43	0.864
Age 43	-36.03	122.86	0.769	-13.61	75.44	0.857
Age 44	-32.18	122.60	0.793	30.09	75.66	0.691
Age 45	-60.60	122.28	0.620	13.57	76.10	0.858
Age 46	-1.73	122.28	0.989	-62.38	76.43	0.414
Age 47	-35.38	122.21	0.772	13.87	76.56	0.856
Age 48	93.28	122.44	0.446	30.85	76.64	0.687
Age 49	9.50	122.37	0.938	13.37	76.30	0.861
Age 50	36.87	121.84	0.762	39.55	76.13	0.603
Age 51	4.86	121.71	0.968	2.23	76.50	0.977
Age 52	-31.81	121.64	0.794	24.25	76.39	0.751
Age 53	31.88	121.85	0.794	9.45	76.55	0.902
Age 54	-12.93	122.31	0.916	30.00	76.60	0.695
Age 55	57.53	122.26	0.638	9.86	76.65	0.898
Age 56	-27.44	122.67	0.823	-19.80	76.75	0.796
Age 57	86.91	123.21	0.481	26.50	76.67	0.730
Age 58	30.00	123.53	0.808	-0.82	76.91	0.991
Age 59	21.13	123.62	0.864	24.82	77.26	0.748
Age 60	64.20	124.20	0.605	88.44	77.16	0.252
Age 61	121.62	124.59	0.329	76.73	77.19	0.320
Age 62	90.99	124.49	0.465	180.80	77.60	0.020
Age 63	24.95	125.67	0.843	119.32	77.99	0.126
Age 64	221.06	130.62	0.091	185.10	79.89	0.021
Age 65	-21.26	125.52	0.865	-47.75	74.38	0.521
Observations		307			514	
R-Squared		0.6645			0.4797	
$p > \chi^2$		0.000			0.000	

Notes: All monetary values are in year-2006 dollars. The dependent variable is monthly receipt from cash assistance at each age. PSID "low-ability" black subsample is used.

J. Lifetime Profiles and the Sensitivity of Estimates to Alternative Imputations and Extrapolation Approaches and to Alternative Assumptions About Deadweight Costs of Taxation

Tables J.1–J.3 present the lifetime profiles for three cases that combine various methodologies for earnings imputation, crime cost calculation, and deadweight cost of taxation in different ways. Table J.1 uses NLSY79 cross-section regression imputation and the PSID project missing earnings, the separated crime categories and the high murder cost(i.e. $ 4.1 million), and no deadweight cost assumption. This table is followed by Table J.2 in which we use low murder cost(i.e. $13,000) keeping all other methodologies and assumptions the same as in Table J.1. In Table J.3, we assume 50% of deadweight cost of taxation using the same methodology and assumptions as in Table J.2. In all of these tables, the real discount rate is set at 0%.

In Table J.1, the education cost is split between individuals and the general public. The small cost of K-12 born by individuals represents GED test-taking costs. The total education cost born by the society is the sum of these two components. Earnings are split between individual's after-tax disposable earnings and income tax payment and the sum of these two terms accrues to the society as a whole, which is equal to individual's gross earnings. Criminal activity is not costly for individuals but is for the general public. Further, for recipients, welfare transfers are a source of income but the general public pays for it and also has to bear administrative costs. The total welfare cost that the society has to bear is the administrative cost.

Moving from Table J.1 to J.2 (i.e., from high to low murder costs), we observe that the social costs of crime decrease for all males and the control female. For males, this change occurs earlier among the treatment group

than the control group so that the resulting IRR *increases*. For females, this change decreases the IRR because no treatment female commits a murder. Moving from Table J.2 to J.3, we observe that some items of costs to the general public change: the initial program cost, educational expenditure, social cost of crime, welfare expenditure.[33] Accounting for deadweight cost increases the initial cost which decreases the IRR. At the same time, it changes benefit and cost streams. As shown in Tables J.4–J.5, the higher deadweight cost, the lower IRR.

[33]We do not apply this adjustment for income tax paid by Perry subjects to avoid double counting. Suppose that a person earns Y^* before tax. If a positive flat income tax rate $\tau > 0$ is imposed, she adjusts her labor supply so that her new earnings become $Y = (1-\delta)Y^*$ where δ denotes the propensity to avoid taxes. Gross earnings is split between individuals and the government so that an individual's disposable earnings is $(1-\tau)Y = (1-\tau)(1-\delta)Y^*$ and the government collects $\tau Y = \tau(1-\delta)Y^*$. The deadweight cost of taxation is $\alpha = \frac{\delta Y^*}{\tau Y} = \frac{\frac{\delta}{(1-\delta)}Y}{\tau Y} = \frac{\delta}{\tau(1-\delta)}$. Every dollar that the government collects and spends is associated with α dollars of deadweight cost. This deadweight cost is already incorporated in the disposable earnings and the tax collected.

Table J.1: Lifetime Cost-Benefit (No Discount, No Deadweight Cost of Taxation)

		For Participants Only				General Public				Society			
		Male		Female		Male		Female		Male		Female	
		Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
Education	K-12/GED	-14	-22	-7	0	-98,855	-107,575	-98,349	-98,678	-98,869	-107,597	-98,356	-98,678
	Col. upto 27	-1,200	-656	-1,000	-1,157	-19,735	-6,705	-16,929	-21,816	-20,935	-7,361	-17,930	-22,973
	Educ. after 27	-156	-122	-89	-338	-3,396	-2,409	-1,021	-7,770	-3,553	-2,531	-1,110	-8,108
	Voc. Training	0	0	0	0	-12,202	-7,223	-674	-3,120	-12,202	-7,223	-674	-3,120
	Lifetime diff.		571		-399		10,275		-14,409		10,845		-14,808
Earnings	Upto age 27	91,765	94,066	51,368	86,119	17,155	17,585	9,603	16,099	108,920	111,651	60,971	102,218
	Age 28 40	181,528	247,873	166,355	282,926	33,936	46,338	31,099	52,891	215,464	294,211	197,454	335,817
	Age 41 65	494,733	525,068	382,460	470,818	144,482	150,703	89,634	104,191	639,215	675,771	472,094	575,008
	Lifetime diff.		98,980		239,678		19,054		42,846		118,035		282,524
Crime	Upto age 18	0	0	0	0	-47,421	-63,479	-7,025	-3,731	-47,421	-63,479	-7,025	-3,731
	Age 19 27	0	0	0	0	-146,947	-258,803	-258,751	-4,034	-146,947	-258,803	-258,751	-4,034
	Age 28 40	0	0	0	0	-574,315	-97,300	-27,722	-14,399	-574,315	-97,300	-27,722	-14,399
	Age 41 65	0	0	0	0	-181,299	-97,481	-86,316	-5,350	-181,299	-97,481	-86,316	-5,350
	Lifetime diff.		0		0		432,918		352,299		432,918		352,299
Welfare	Upto age 27	303	235	36,085	18,590	-419	-324	-49,797	-25,654	-115	-89	-13,712	-7,064
	Age 28 40	7,108	2,186	15,556	30,398	-9,810	-3,017	-21,467	-41,950	-2,701	-831	-5,911	-11,551
	Age 41 65	6,965	4,034	19,377	17,178	-9,612	-5,566	-26,741	-23,706	-2,647	-1,533	-7,363	-6,528
	Lifetime diff.		-7,923		-4,852		10,933		6,695		3,011		1,844
Total Benefit			91,628		234,427		473,180		387,430		564,809		621,857
Initial Cost			0		0		17,759		17,759		17,759		17,759
Net Benefit			91,628		234,427		455,421		369,671		547,050		604,098

Notes: (1) Earnings are imputed by cross-section regression imputation and PSID projection; (2) Murder victim cost is assumed at $4.1 million which is an estimate of value of a statistical life.

Table J.2: Lifetime Cost-Benefit (No Discount, No Deadweight Cost of Taxation)

		For Participants Only				General Public				Society			
		Male		Female		Male		Female		Male		Female	
		Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
Education	K-12/GED	-14	-22	-7	0	-98,855	-107,575	-98,349	-98,678	-98,869	-107,597	-98,356	-98,678
	Col. upto 27	-1,200	-656	-1,000	-1,157	-19,735	-6,705	-16,929	-21,816	-20,935	-7,361	-17,930	-22,973
	Educ. after 27	-156	-122	-89	-338	-3,396	-2,409	-1,021	-7,770	-3,553	-2,531	-1,110	-8,108
	Voc. Training	0	0	0	0	-12,202	-7,223	-674	-3,120	-12,202	-7,223	-674	-3,120
	Lifetime diff.		571		-399		10,275		-14,409		10,845		-14,808
Earnings	Upto age 27	91,765	94,066	51,368	86,119	17,155	17,585	9,603	16,099	108,920	111,651	60,971	102,218
	Age 28 40	181,528	247,873	166,355	282,926	33,936	46,338	31,099	52,891	215,464	294,211	197,454	335,817
	Age 41 65	494,733	525,068	382,460	470,818	144,482	150,703	89,634	104,191	639,215	675,771	472,094	575,008
	Lifetime diff.		98,980		239,678		19,054		42,846		118,035		282,524
Crime	Upto age 18	0	0	0	0	-47,421	-63,479	-7,025	-3,731	-47,421	-63,479	-7,025	-3,731
	Age 19 27	0	0	0	0	-146,947	-75,745	-26,409	-4,034	-146,947	-75,745	-26,409	-4,034
	Age 28 40	0	0	0	0	-264,526	-97,300	-27,722	-14,399	-264,526	-97,300	-27,722	-14,399
	Age 41 65	0	0	0	0	-124,386	-63,835	-14,054	-5,350	-124,386	-63,835	-14,054	-5,350
	Lifetime diff.		0		0		382,605		28,515		382,605		28,515
Welfare	Upto age 27	303	235	36,085	18,590	-419	-324	-49,797	-25,654	-115	-89	-13,712	-7,064
	Age 28 40	7,108	2,186	15,556	30,398	-9,810	-3,017	-21,467	-41,950	-2,701	-831	-5,911	-11,551
	Age 41 65	6,965	4,034	19,377	17,178	-9,612	-5,566	-26,741	-23,706	-2,647	-1,533	-7,363	-6,528
	Lifetime diff.		-7,923		-4,852		10,933		6,695		3,011		1,844
Total Benefit			91,628		234,427		422,868		63,647		514,496		298,074
Initial Cost			0		0		17,759		17,759		17,759		17,759
Net Benefit			91,628		234,427		405,109		45,888		496,737		280,315

Notes: (1) Earnings are imputed by cross-section regression imputation and PSID projection; (2) Murder victim cost is assumed at $13,000 which is an estimate of victim cost of assault.

Table J.3: Lifetime Cost-Benefit Analysis (No Discount and 50 Percent Deadweight Cost of Taxation)

		For Participants Only				General Public				Society			
		Male		Female		Male		Female		Male		Female	
		Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
Education	K-12/GED	-14	-22	-7	0	-148,283	-161,363	-147,524	-148,017	-148,296	-161,384	-147,531	-148,017
	Col. upto 27	-1,200	-656	-1,000	-1,157	-29,602	-10,058	-25,394	-32,724	-30,802	-10,714	-26,394	-33,881
	Educ. after 27	-156	-122	-89	-338	-5,094	-3,614	-1,532	-11,655	-5,251	-3,736	-1,621	-11,993
	Voc. Training	0	0	0	0	-18,302	-10,835	-1,011	-4,680	-18,302	-10,835	-1,011	-4,680
	Lifetime diff.		571		-399		15,412		-21,614		15,983		-22,013
Earnings	Upto age 27	91,765	94,066	51,368	86,119	17,155	17,585	9,603	16,099	108,920	111,651	60,971	102,218
	Age 28 40	181,528	247,873	166,355	282,926	33,936	46,338	31,099	52,891	215,464	294,211	197,454	335,817
	Age 41 65	494,733	525,068	382,460	470,818	144,482	150,703	89,634	104,191	639,215	675,771	472,094	575,008
	Lifetime diff.		98,980		239,678		19,054		42,846		118,035		282,524
Crime	Upto age 18	0	0	0	0	-54,031	-70,500	-10,042	-4,166	-54,031	-70,500	-10,042	-4,166
	Age 19 27	0	0	0	0	-177,848	-92,647	-34,286	-6,052	-177,848	-92,647	-34,286	-6,052
	Age 28 40	0	0	0	0	-309,796	-128,375	-40,896	-21,599	-309,796	-128,375	-40,896	-21,599
	Age 41 65	0	0	0	0	-151,744	-82,349	-19,523	-8,025	-151,744	-82,349	-19,523	-8,025
	Lifetime diff.		0		0		319,547		64,906		319,547		64,906
Welfare	Upto age 27	303	235	36,085	18,590	-628	-486	-74,696	-38,481	-325	-251	-38,611	-19,891
	Age 28 40	7,108	2,186	15,556	30,398	-14,715	-4,525	-32,201	-62,924	-7,606	-2,339	-16,645	-32,526
	Age 41 65	6,965	4,034	19,377	17,178	-14,418	-8,350	-40,111	-35,559	-7,453	-4,316	-20,734	-18,381
	Lifetime diff.		-7,923		-4,852		10,933		6,695		8,477		5,191
Total Benefit			91,628		234,427		364,947		92,833		462,041		330,608
Initial Cost			0		0		26,639		26,639		26,639		26,639
Net Benefit			91,628		234,427		338,308		66,195		435,403		303,970

Notes: (1) Earnings are imputed by cross-section regression imputation and PSID projection; (2) Murder victim cost is assumed at $13,000 which is an estimate of victim cost of assault.

Table J.4: Internal Rates of Return, by Imputation and Extrapolation Method and Assumptions About Crime Costs Assuming 0 Percent Deadweight Cost of Taxation (Standard Errors in Parentheses)

Returns		To Individual			To Society Including the Individual (Nets out Transfers)								
Victimization/Arrest Ratio[a]					Separated			Separated			Property vs. Violent		
Murder Victim Cost[b]					High ($4.1 Mil.)			Low ($13K)			Low ($13K)		
Imputation	Extrapolation	All	Male	Female	All*	Male	Female	All*	Male	Female	All*	Male	Female
Piecewise[c]	CPS	6.5	4.9	9.1	8.0	9.1	17.1	8.4	10.2	11.5	8.1	10.5	12.0
Linear		(2.1)	(2.0)	(2.1)	(4.0)	(4.3)	(4.1)	(2.8)	(2.9)	(3.0)	(3.1)	(4.0)	(3.2)
Interpolation	PSID	6.0	3.5	8.9	7.8	8.8	16.8	8.1	10.0	11.3	8.0	10.5	12.1
		(2.1)	(2.2)	(1.3)	(4.2)	(4.2)	(4.1)	(2.6)	(3.1)	(3.0)	(3.1)	(3.5)	(2.9)
	CPS	6.5	5.9	7.9	8.2	9.5	16.8	8.0	10.5	10.0	8.0	11.1	10.5
Cross-[d]		(1.8)	(2.0)	(1.5)	(4.2)	(4.3)	(4.7)	(2.7)	(3.0)	(2.8)	(2.7)	(3.3)	(3.2)
sectional	PSID	6.2	5.5	7.4	9.2	10.3	17.0	7.7	10.7	9.2	7.8	11.2	10.3
Regression		(1.7)	(1.9)	(1.4)	(4.1)	(3.9)	(5.2)	(3.6)	(3.2)	(2.2)	(3.4)	(3.6)	(2.6)
	Hause	5.9	5.8	7.7	8.1	9.8	16.5	7.8	10.7	10.0	7.8	11.0	10.7
		(1.8)	(1.9)	(1.6)	(4.1)	(4.3)	(4.2)	(2.3)	(2.5)	(3.0)	(3.3)	(4.0)	(3.1)
	CPS	8.1	8.8	7.9	8.9	10.8	16.5	9.2	12.1	10.0	9.1	12.2	10.9
		(1.5)	(1.2)	(1.8)	(4.3)	(4.0)	(4.2)	(2.8)	(2.4)	(2.3)	(3.1)	(3.2)	(2.4)
Kernel[e]	PSID	7.6	8.4	7.8	9.9	11.4	17.1	9.0	12.2	9.8	8.9	12.5	10.7
Matching		(1.8)	(1.7)	(1.1)	(4.1)	(3.4)	(4.9)	(3.5)	(3.1)	(1.8)	(3.8)	(2.8)	(2.2)
	Hause	8.3	9.2	8.4	8.9	10.7	16.5	9.6	12.3	10.2	9.4	12.6	10.9
		(1.2)	(1.1)	(1.6)	(4.3)	(4.1)	(4.1)	(2.1)	(2.4)	(2.5)	(3.1)	(3.8)	(3.4)
	CPS	7.6	5.9	7.8	9.5	10.4	16.5	9.2	11.2	9.9	9.0	11.5	10.6
		(3.0)	(2.8)	(2.3)	(4.0)	(4.0)	(5.0)	(3.4)	(2.9)	(2.8)	(2.8)	(3.5)	(3.1)
Hause[f]	PSID	8.6	7.7	7.0	10.5	11.2	17.1	9.9	12.1	8.8	9.7	12.4	10.1
		(3.2)	(3.5)	(2.6)	(3.5)	(3.2)	(5.3)	(4.2)	(3.7)	(2.4)	(4.3)	(3.5)	(2.8)
	Hause	7.0	5.7	7.8	8.4	9.7	16.3	9.0	11.2	10.0	8.9	11.6	11.1
		(2.5)	(3.0)	(2.5)	(3.9)	(4.0)	(4.2)	(2.3)	(2.4)	(3.0)	(2.5)	(3.6)	(3.5)

Notes: All monetary values are in year-2006 dollars. All estimates reported are adjusted for compromised randomization. Standard errors in parentheses are calculated by Monte Carlo resampling of prediction errors and bootstrapping. (a) Victim costs are computed by inflating arrest records by ratios of national totals of victimizations and arrests. "Separated" ratios are computed for each crime separately; "Property vs. Violent" ratios are computed using arrests and victimizations aggregated across all crimes within each category' (b) High murder victim costs ($4.1 million) take into account the value of life; low murder victim costs ($13,000) do not' (c) The "All" IRR represents an average of the profiles of a pooled sample of males and females and may be lower or higher than the profiles for each gender group. (d) Piecewise linear interpolation linearly connects two reported earnings and interprets the profile as the real earning in-between periods' (e) Cross-sectional regression imputation of missing values in Perry dataset using a cross-section earning function estimation in NLSY79 black low-ability subsample. (f) Kernel-matching imputation matches every Perry subject to the NLSY79 sample based on earnings, job spell durations and background variables. (g) The Hause imputation scheme is based on estimates from a Hause (1980) model of earnings.

Table J.5: Internal Rates of Return, by Imputation and Extrapolation Method and Assumptions About Crime Costs assuming 100 Percent Deadweight Cost of Taxation

Returns		To Individual			To Society Including the Individual (Nets out Transfers)								
Victimization/Arrest Ratio[a]					Separated			Separated			Property vs. Violent		
Murder Victim Cost[b]					High ($4.1 Mil.)			Low ($13K)			Low ($13K)		
Imputaion	Extrapolation	All	Male	Female	All*	Male	Female	All*	Male	Female	All*	Male	Female
Piecewise[c]	CPS	4.6	3.4	6.8	7.8	8.9	13.6	7.3	9.1	9.0	7.2	9.2	9.5
Linear		(1.5)	(1.6)	(1.5)	(3.2)	(3.1)	(3.1)	(2.0)	(2.3)	(2.6)	(2.8)	(3.2)	(3.0)
Interpolation	PSID	3.6	0.8	6.5	7.2	8.0	13.8	7.5	9.0	9.2	7.0	9.1	9.4
		(1.6)	(1.7)	(1.3)	(3.2)	(3.2)	(3.1)	(2.5)	(2.2)	(2.7)	(2.6)	(3.0)	(2.7)
	CPS	4.2	3.8	5.8	7.3	9.1	13.2	7.0	9.2	8.1	7.1	9.7	8.5
Cross-[d]		(1.6)	(1.5)	(1.4)	(3.3)	(3.4)	(3.5)	(2.3)	(2.2)	(2.3)	(2.4)	(3.4)	(2.7)
sectional	PSID	3.9	3.1	5.0	8.1	9.5	13.3	6.6	9.4	6.6	6.7	9.8	7.5
Regression		(1.4)	(1.5)	(1.6)	(3.2)	(3.0)	(4.9)	(2.8)	(2.8)	(2.2)	(3.0)	(3.3)	(2.4)
	Hause	3.9	4.0	5.8	7.0	8.9	13.3	7.0	9.2	8.1	6.8	9.5	8.4
		(1.4)	(1.6)	(1.4)	(3.2)	(3.7)	(3.6)	(2.3)	(2.1)	(2.5)	(2.6)	(3.1)	(3.0)
	CPS	6.1	6.5	5.7	7.9	9.8	13.3	8.1	10.2	8.0	8.0	10.5	8.5
		(1.3)	(1.2)	(1.2)	(3.5)	(3.6)	(4.0)	(2.0)	(2.3)	(2.7)	(2.5)	(3.1)	(2.9)
Kernel[e]	PSID	5.3	5.9	5.7	8.7	10.2	13.6	7.6	10.4	7.5	7.6	10.7	8.3
Matching		(1.1)	(1.1)	(0.9)	(2.5)	(3.1)	(4.9)	(2.4)	(2.9)	(1.8)	(2.6)	(3.1)	(2.1)
	Hause	6.3	7.1	6.3	8.4	9.9	13.2	8.2	10.5	8.4	8.1	10.3	9.0
		(1.3)	(1.0)	(1.4)	(3.4)	(3.4)	(3.8)	(2.0)	(2.2)	(2.7)	(2.6)	(3.1)	(3.0)
	CPS	4.8	3.1	5.2	7.9	9.5	13.3	8.0	9.7	7.8	8.0	10.1	8.3
		(2.5)	(2.3)	(1.7)	(3.2)	(3.5)	(3.8)	(2.3)	(2.5)	(2.5)	(2.8)	(3.1)	(3.0)
Hause[f]	PSID	5.4	4.2	5.1	8.9	9.8	13.7	7.9	9.9	7.4	7.9	10.3	8.2
		(2.5)	(2.7)	(1.9)	(2.6)	(3.7)	(5.6)	(3.3)	(2.6)	(3.2)	(3.4)	(3.2)	(3.0)
	Hause	4.3	3.8	5.1	8.3	9.5	13.4	8.1	10.2	8.0	8.0	10.1	8.6
		(2.5)	(2.0)	(1.9)	(3.3)	(3.5)	(3.9)	(2.1)	(2.4)	(2.2)	(2.6)	(3.5)	(3.1)

Notes: All monetary values are in year-2006 dollars. All estimates reported are adjusted for compromised randomization. Standard errors in parentheses are calculated by Monte Carlo resampling of prediction errors and bootstrapping. (a) Victim costs are computed by inflating arrest records by ratios of national totals of victimizations and arrests. "Separated" ratios are computed for each crime separately; "Property vs. Violent" ratios are computed using arrests and victimizations aggregated across all crimes within each category. (b) High murder victim costs ($4.1 million) take into account the value of life; low murder victim costs ($13,000) do not. (c) The "All" IRR represents an average of the profiles of a pooled sample of males and females and may be lower or higher than the profiles for each gender group. (d) Piecewise linear interpolation linearly connects two reported earnings and interprets the profile as the real earning in-between periods. (e) Cross-sectional regression imputation of missing values in Perry dataset using a cross-section earning function estimation in NLSY79 black low-ability subsample. (f) Kernel-matching imputation matches every Perry subject to the NLSY79 sample based on earnings, job spell durations and background variables. (g) The Hause imputation scheme is based on estimates from a Hause (1980) model of earnings.

Table J.6: Benefit-To-Cost Ratios, by Earnings Estimation, Gender, and Victimization Cost Assumptions: 0% Discount Rate

Victimization/Arrest Ratio[a]		Separated			Separated			Property vs. Violent		
Murder Cost[b]		High ($4.1M)			Low ($13K)			Low ($13K)		
Earnings Interpolation	**Earnings Extrap.**	All	Male	Fem.	All	Male	Fem.	All	Male	Fem.
Piecewise Interpolation	CPS	28.7	29.2	26.9	20.6	21.8	15.5	22.9	27.0	16.5
		(11.5)	*(15.8)*	*(14.0)*	*(7.6)*	*(7.9)*	*(5.6)*	*(8.7)*	*(10.5)*	*(6.8)*
	PSID	25.7	25.2	25.5	17.6	19.8	14.0	20.0	22.9	15.0
		(10.3)	*(13.3)*	*(13.9)*	*(6.5)*	*(9.4)*	*(5.0)*	*(7.6)*	*(8.9)*	*(6.2)*
Cross-Sectional Regression	CPS	28.2	31.2	22.7	17.1	19.8	11.3	22.5	28.9	12.3
		(11.9)	*(17.8)*	*(13.3)*	*(7.8)*	*(10.3)*	*(4.6)*	*(8.5)*	*(11.3)*	*(4.9)*
	PSID	26.1	27.1	23.6	13.6	16.2	9.3	15.9	19.0	10.6
		(11.3)	*(17.4)*	*(14.8)*	*(5.6)*	*(8.6)*	*(5.2)*	*(6.3)*	*(9.9)*	*(5.5)*
	Hause	29.5	32.3	23.7	18.4	21.9	12.2	23.7	30.0	13.2
		(13.3)	*(17.0)*	*(12.3)*	*(8.6)*	*(8.9)*	*(4.4)*	*(9.5)*	*(11.7)*	*(6.0)*
Kernel Matching	CPS	34.0	40.6	23.2	21.9	25.2	11.8	28.3	38.3	12.8
		(15.3)	*(17.0)*	*(13.1)*	*(9.6)*	*(11.6)*	*(4.3)*	*(10.7)*	*(14.9)*	*(5.3)*
	PSID	31.5	33.7	27.0	17.1	22.8	12.7	21.4	25.6	14.0
		(11.3)	*(17.3)*	*(14.4)*	*(5.4)*	*(8.3)*	*(3.8)*	*(6.1)*	*(9.6)*	*(4.3)*
	Hause	43.0	50.1	30.7	29.9	34.7	15.3	37.3	47.8	20.3
		(13.6)	*(20.9)*	*(16.5)*	*(12.2)*	*(14.7)*	*(6.9)*	*(14.2)*	*(16.7)*	*(8.3)*
Hause Procedure	CPS	26.7	28.0	23.5	5.6	18.6	10.1	20.9	25.8	13.1
		(10.1)	*(14.4)*	*(16.2)*	*(7.1)*	*(9.1)*	*(4.4)*	*(8.0)*	*(9.0)*	*(5.4)*
	PSID	25.6	27.2	22.4	13.1	16.3	8.1	15.4	19.2	9.3
		(10.2)	*(14.8)*	*(17.4)*	*(4.9)*	*(8.9)*	*(6.0)*	*(5.2)*	*(9.7)*	*(6.5)*
	Hause	36.4	34.2	28.0	20.5	25.5	13.6	31.5	32.7	18.5
		(17.5)	*(13.7)*	*(15.8)*	*(14.2)*	*(10.1)*	*(6.3)*	*(12.0)*	*(11.4)*	*(7.6)*

Notes: Deadweight cost of taxation is assumed at 50%. All estimates reported are adjusted for compromised randomization. (a) A ratio of victimization rate (from the NCVS) to arrest rate (from the UCR), where "Property vs. Violent" uses common ratios based on a crime being either violent or property and "separate" does not; (b) "high" murder cost accounts for statistical value of life, while "low" does not; (c) "All" is computed from an average of the profiles of the pooled sample, and may be lower or higher than the profiles for each gender group;

Table J.7: Benefit-To-Cost Ratios, by Earnings Estimation, Gender, and Victimization Cost Assumptions: 3% Discount Rate

Victimization/Arrest Ratio[a]		Separated			Separated			Property vs. Violent		
	Murder Cost[b]	High ($4.1M)			Low ($13K)			Low ($13K)		
Earnings Interpolation	**Earnings Extrap.**	All	Male	Fem.	All	Male	Fem.	All	Male	Fem.
Piecewise Interpolation	CPS	10.6	9.4	11.6	6.6	5.4	7.3	8.5	9.6	6.5
		(4.2)	*(5.5)*	*(5.1)*	*(2.7)*	*(3.0)*	*(3.2)*	*(3.2)*	*(3.8)*	*(2.6)*
	PSID	9.9	8.5	11.3	5.9	6.6	5.7	7.8	8.7	6.2
		(4.0)	*(5.2)*	*(5.0)*	*(2.6)*	*(2.7)*	*(2.0)*	*(3.0)*	*(3.4)*	*(2.5)*
Cross-Sectional Regression	CPS	10.4	10.2	9.9	5.4	7.3	3.5	8.3	10.4	4.7
		(4.3)	*(6.9)*	*(5.0)*	*(2.9)*	*(3.3)*	*(1.7)*	*(3.1)*	*(3.7)*	*(1.9)*
	PSID	10.3	9.7	10.6	5.2	6.1	3.5	6.0	7.0	4.1
		(5.2)	*(7.9)*	*(5.1)*	*(2.4)*	*(3.7)*	*(1.8)*	*(2.7)*	*(4.4)*	*(2.1)*
	Hause	10.5	10.4	10.0	7.0	8.5	4.3	8.4	10.6	4.8
		(4.7)	*(6.8)*	*(5.5)*	*(3.0)*	*(3.6)*	*(1.5)*	*(3.2)*	*(4.3)*	*(2.1)*
Kernel Matching	CPS	12.3	13.1	10.4	8.3	9.3	4.7	10.2	13.4	5.2
		(5.5)	*(7.9)*	*(6.6)*	*(3.4)*	*(4.3)*	*(1.7)*	*(3.9)*	*(5.2)*	*(2.1)*
	PSID	12.2	12.1	11.6	7.1	8.6	4.5	7.9	9.5	5.1
		(5.3)	*(8.0)*	*(7.1)*	*(2.3)*	*(3.7)*	*(1.4)*	*(2.7)*	*(4.4)*	*(1.7)*
	Hause	14.1	15.0	11.9	9.1	10.1	6.2	12.0	15.2	6.7
		(5.7)	*(7.6)*	*(7.1)*	*(3.9)*	*(5.7)*	*(2.4)*	*(4.3)*	*(8.0)*	*(2.6)*
Hause Procedure	CPS	10.3	9.9	10.3	6.3	7.1	3.6	8.2	10.2	5.1
		(3.7)	*(6.7)*	*(7.6)*	*(2.8)*	*(3.6)*	*(1.7)*	*(3.1)*	*(3.6)*	*(2.1)*
	PSID	10.4	10.2	10.3	5.3	6.7	3.1	6.2	7.6	3.8
		(4.7)	*(6.8)*	*(8.4)*	*(2.2)*	*(4.1)*	*(2.3)*	*(2.3)*	*(4.4)*	*(2.7)*
	Hause	12.7	13.8	11.3	8.0	9.0	4.9	10.8	14.0	6.4
		(4.6)	*(7.1)*	*(7.0)*	*(4.8)*	*(4.3)*	*(2.1)*	*(4.1)*	*(4.9)*	*(2.6)*

Notes: Deadweight cost of taxation is assumed at 50%. All estimates reported are adjusted for compromised randomization. (a) A ratio of victimization rate (from the NCVS) to arrest rate (from the UCR), where "Property vs. Violent" uses common ratios based on a crime being either violent or property and "separate" does not; (b) "high" murder cost accounts for statistical value of life, while "low" does not; (c) "All" is computed from an average of the profiles of the pooled sample, and may be lower or higher than the profiles for each gender group;

Table J.8: Benefit-To-Cost Ratios, by Earnings Estimation, Gender, and Victimization Cost Assumptions: 5% Discount Rate

Victimization/Arrest Ratio[a]		Separated			Separated			Property vs. Violent		
Murder Cost[b]		High ($4.1M)			Low ($13K)			Low ($13K)		
Earnings Interpolation	**Earnings Extrap.**	All	Male	Fem.	All	Male	Fem.	All	Male	Fem.
Piecewise Interpolation	CPS	5.7 *(2.1)*	4.5 *(3.5)*	7.1 *(4.4)*	4.2 *(1.6)*	4.6 *(1.5)*	3.4 *(1.2)*	4.7 *(1.8)*	5.2 *(2.0)*	3.7 *(1.5)*
	PSID	5.5 *(2.2)*	4.1 *(3.4)*	7.1 *(4.5)*	4.0 *(1.5)*	4.3 *(1.5)*	3.3 *(1.2)*	4.5 *(1.7)*	4.8 *(1.9)*	3.6 *(1.5)*
Cross-Sectional Regression	CPS	5.6 *(2.3)*	4.9 *(4.9)*	6.1 *(4.5)*	4.1 *(1.6)*	5.1 *(1.8)*	2.3 *(1.0)*	4.6 *(1.7)*	5.7 *(2.0)*	2.7 *(1.1)*
	PSID	5.8 *(3.3)*	4.9 *(5.0)*	6.7 *(4.6)*	2.9 *(1.4)*	3.3 *(2.3)*	2.0 *(1.0)*	3.3 *(1.7)*	3.8 *(2.7)*	2.4 *(1.2)*
	Hause	5.6 *(2.5)*	4.9 *(4.8)*	6.1 *(4.1)*	4.1 *(1.6)*	5.1 *(1.9)*	2.4 *(0.8)*	4.6 *(1.7)*	5.7 *(2.3)*	2.7 *(1.0)*
Kernel Matching	CPS	6.6 *(2.7)*	6.4 *(5.3)*	6.4 *(4.2)*	5.1 *(1.8)*	6.6 *(2.5)*	2.7 *(1.0)*	5.6 *(2.1)*	7.1 *(2.8)*	3.0 *(1.1)*
	PSID	6.8 *(3.4)*	6.2 *(5.1)*	7.1 *(4.6)*	3.9 *(1.5)*	4.7 *(2.3)*	2.4 *(0.8)*	4.3 *(1.7)*	5.1 *(2.8)*	2.8 *(1.1)*
	Hause	7.2 *(3.6)*	7.0 *(5.5)*	7.0 *(4.5)*	5.7 *(2.1)*	7.2 *(2.7)*	3.2 *(1.4)*	6.2 *(2.2)*	7.8 *(3.0)*	3.6 *(1.4)*
Hause Procedure	CPS	5.7 *(1.9)*	5.0 *(3.8)*	6.4 *(4.4)*	4.2 *(1.6)*	5.2 *(2.1)*	2.6 *(0.9)*	4.7 *(1.8)*	5.8 *(2.0)*	3.0 *(1.1)*
	PSID	6.0 *(3.0)*	5.4 *(4.3)*	6.5 *(5.4)*	3.1 *(1.4)*	3.8 *(2.6)*	1.8 *(1.3)*	3.5 *(1.5)*	4.3 *(2.8)*	2.3 *(1.6)*
	Hause	6.3 *(2.3)*	6.3 *(3.7)*	6.5 *(4.4)*	5.0 *(2.4)*	6.5 *(2.1)*	3.0 *(1.1)*	5.4 *(2.1)*	7.0 *(2.4)*	3.3 *(1.4)*

Notes: Deadweight cost of taxation is assumed at 50%. All estimates reported are adjusted for compromised randomization. (a) A ratio of victimization rate (from the NCVS) to arrest rate (from the UCR), where "Property vs. Violent" uses common ratios based on a crime being either violent or property and "separate" does not; (b) "high" murder cost accounts for statistical value of life, while "low" does not; (c) "All" is computed from an average of the profiles of the pooled sample, and may be lower or higher than the profiles for each gender group;

Table J.9: Benefit-To-Cost Ratios, by Earnings Estimation, Gender, and Victimization Cost Assumptions: 7% Discount Rate

Victimization/Arrest Ratio[a]		Separated			Separated			Property vs. Violent		
Murder Cost[b]		High ($4.1M)			Low ($13K)			Low ($13K)		
Earnings Interpolation	**Earnings Extrap.**	All	Male	Fem.	All	Male	Fem.	All	Male	Fem.
Piecewise Interpolation	CPS	3.2	2.0	4.6	2.4	2.7	2.0	2.7	2.9	2.2
		(1.2)	*(1.8)*	*(3.1)*	*(1.0)*	*(0.9)*	*(0.7)*	*(1.0)*	*(1.1)*	*(0.8)*
	PSID	3.1	1.9	4.5	2.4	2.5	2.0	2.6	2.8	2.2
		(1.2)	*(1.5)*	*(2.6)*	*(0.9)*	*(0.9)*	*(0.7)*	*(1.0)*	*(1.1)*	*(0.8)*
Cross-Sectional Regression	CPS	3.1	2.3	3.9	1.7	1.9	1.4	2.6	3.2	1.6
		(1.3)	*(2.9)*	*(2.6)*	*(0.9)*	*(1.0)*	*(0.6)*	*(1.0)*	*(1.1)*	*(0.6)*
	PSID	3.3	2.4	4.3	1.6	1.9	1.2	1.9	2.1	1.4
		(2.2)	*(3.3)*	*(3.1)*	*(0.9)*	*(1.5)*	*(0.6)*	*(1.1)*	*(1.8)*	*(0.7)*
	Hause	3.1	2.3	3.9	2.1	2.4	1.4	2.6	3.2	1.6
		(1.4)	*(2.9)*	*(2.4)*	*(0.9)*	*(1.2)*	*(0.5)*	*(1.0)*	*(1.3)*	*(0.6)*
Kernel Matching	CPS	3.7	3.1	4.1	2.2	2.7	1.6	3.2	4.0	1.8
		(1.5)	*(3.1)*	*(2.4)*	*(1.0)*	*(1.4)*	*(0.6)*	*(1.2)*	*(1.6)*	*(0.7)*
	PSID	3.9	3.2	4.6	2.2	2.7	1.4	2.5	2.9	1.7
		(2.3)	*(3.4)*	*(3.1)*	*(0.9)*	*(1.5)*	*(0.5)*	*(1.1)*	*(1.8)*	*(0.7)*
	Hause	3.9	3.4	4.3	2.5	3.0	1.8	3.4	4.2	2.0
		(2.4)	*(3.2)*	*(2.6)*	*(1.3)*	*(1.5)*	*(0.7)*	*(1.3)*	*(1.7)*	*(0.8)*
Hause Procedure	CPS	3.3	2.5	4.1	1.9	2.3	1.6	2.8	3.4	1.8
		(1.1)	*(1.9)*	*(2.6)*	*(0.9)*	*(1.2)*	*(0.6)*	*(1.0)*	*(1.2)*	*(0.7)*
	PSID	3.5	2.8	4.3	1.8	2.3	1.1	2.1	2.5	1.4
		(2.0)	*(2.9)*	*(3.6)*	*(0.9)*	*(1.7)*	*(0.8)*	*(1.0)*	*(1.9)*	*(1.0)*
	Hause	3.5	2.8	4.1	2.1	2.5	1.7	3.1	3.5	1.9
		(1.3)	*(2.0)*	*(2.5)*	*(1.2)*	*(1.2)*	*(0.6)*	*(1.1)*	*(1.2)*	*(0.8)*

Notes: Deadweight cost of taxation is assumed at 50%. All estimates reported are adjusted for compromised randomization. (a) A ratio of victimization rate (from the NCVS) to arrest rate (from the UCR), where "Property vs. Violent" uses common ratios based on a crime being either violent or property and "separate" does not; (b) "high" murder cost accounts for statistical value of life, while "low" does not; (c) "All" is computed from an average of the profiles of the pooled sample, and may be lower or higher than the profiles for each gender group;

K. Calculating the Standard Errors for the IRR and Benefit-to-Cost Ratio

To calculate standard errors for the estimated IRRs and benefit-to-cost ratios, we use the bootstrap (See Horowitz (2001)). We draw 100 replications from the Perry sample to generate 100 IRRs or benefit-to-cost ratios and then calculate the standard errors by the bootstrap. Each replication has the same sample size and gender-treatment composition as the original Perry sample.

Simple bootstrapping methods do not fully capture the variability associated with various estimation methods that we use to impute missing values. There are two sources of error. First, if we impute missing values in, for example, earnings with $\hat{Y}^i_{P,a} = X^i_{P,a}\hat{\beta}_{N,a}$, we have to account for estimation errors associated with $\hat{\beta}_{N,a}$.[34] Second, we also have to account for prediction errors $\hat{\varepsilon}^i_{P,a} = Y^i_{P,a} - \hat{Y}^i_{P,a}$. To account for errors associated with the estimated parameters, we bootstrap the comparison group sample (i.e. NLSY79 and PSID) used in the interpolation and extrapolation procedure as well as the Perry sample so that each replication is based on the combined data sets.

The computation of standard errors is conducted by three steps. At the first step, we use bootstrapping procedure to simultaneously draw samples from Perry, NLSY79 and PSID. (The same procedure is used when other nonexperimental samples are used.) On each replication, we re-estimate all parameters that are used to impute missing values and re-compute all components used in construction of lifetime profiles. For example, even the social cost of crime whose computation does not depend on the comparison group

[34] A subscript P stands for Perry sample while N denotes the comparison group(e.g. NLSY79).

data is re-computed in this process because the replicated sample consists of randomly drawn Perry participants. Then in the second step, we adjust all imputed values for prediction errors on the bootstrapped sample by plugging in an error term which is randomly drawn from comparison group data by Monte Carlo resampling procedure. That is, to account for prediction errors $\hat{\varepsilon}^i_{P,a}$, we randomly draw $\hat{\varepsilon}^j_{N,a}$ from the comparison group and plug it for $\hat{\varepsilon}^i_{P,a}$. Combining these two steps allows us to account for both estimation errors and prediction errors. Finally we compute point estimates of IRRs for each replication to obtain bootstrapped standard errors. Notice that in this process, all components whose computations do not depend on the comparison group data also are re-computed (e.g. social cost of crime, educational expenditure, etc) because the replicated sample consists of randomly drawn Perry participants. We use a similar procedure when we account for corruption of the Perry randomization protocol. We bootstrap the estimates that condition on the variables that control for corruption of the experiment. See Heckman, Moon, Pinto, Savelyev, and Yavitz (2009) for further details on the adjustment for corrupted randomization.

L. Adjusting for the Compromised Randomization

The randomization protocol used in the Perry Project was complex. For each designated eligible entry cohort, children were assigned to treatment and control groups in the following way[35]:

1. In any entering cohort, younger siblings of previously enrolled families are assigned the same treatment status as their older siblings.[36]
2. Those remaining were ranked by their entry IQ score.[37] Odd- and even-ranked subjects were assigned to two separate groups.

Balancing on IQ produced an imbalance in family background measures. This was corrected in a second, "balancing", stage of the protocol.

3. Some individuals initially assigned to one group were swapped between the groups to balance gender and mean socio-economic (SES) score, "with Stanford-Binet scores held more or less constant."
4. A coin toss randomly selected one group as the treatment group and the other as the control group.
5. Some individuals provisionally assigned to treatment, whose mothers were employed at the time of the assignment, were swapped with control individuals whose mothers were not employed. The rationale for this swap was that it was difficult for working mothers to participate in home visits assigned to the treatment group.

[35]For details of this protocol, see Heckman, Moon, Pinto, Savelyev, and Yavitz (2009).

[36]The rationale for excluding younger siblings from the randomization process was that enrolling children in the same family in the treatment group and others in the control group would weaken the observed treatment effect due to within-family spillovers.

[37]Ties were broken by a toss of a coin.

Even after the swaps at stage 3 were made, pre-program measures were still somewhat imbalanced between treatment and control groups. This imbalance creates two potential problems.

First, it can induce correlation between treatment assignment and baseline characteristics of participants. If these baseline measures affect outcomes, then treatment assignments correlate with outcomes through the induced common dependence. This relationship between outcomes and treatment assignments violates the assumption of independence between treatment assignment and outcomes, even in the absence of treatment effects.

Second, even if the treatment assignment is statistically independent of the baseline variables, compromised randomization can still result in biased inference. A compromised randomization protocol can cause the distribution of treatment assignments to differ from the distribution that would result from the initially proposed randomization protocol. If this occurs, incorrect inference can result if the data are analyzed assuming that no compromise in randomization has occurred. Specifically, analyzing the Perry study assuming that a fair coin decides the treatment assignment of each participant — as if an idealized, non-compromised randomization had occurred — misspecifies the actual treatment assignment mechanism and hence the probability of assignment to treatment. This can produce incorrect critical values and improper control of Type-I error.

These potential problems are in addition to a distinct *third* problem, arising from the imbalance in the covariates between treated and controls resulting from the swaps performed at stage 3 of the randomization protocol.

To produce valid IRRs and standard errors, researchers should take into account the corruption of the randomization protocol used to evaluate the Perry program and to examine its effects on estimated rates of return. One way to control for potential biases is to condition all lifetime cost and benefit streams on the variables that determine reassignment such as father's presence at home, Socio-Economic Status (SES) index, and mother's employment status at program entry. By conditioning cost and benefit streams on these variables, corruption-adjusted IRRs and the associated standard errors can be computed. Table L.1 compares two sets of IRRs and Benefit-to-Cost ratios: one adjusted for the compromise in the randomization, the other unadjusted. The adjustment does not greatly change the estimates even though the effect is not always in the same direction.

Table L.1: IRRs(%) and Benefit-to-Cost Ratios

	Return:		**To Individual**			**To Society[d]**			**To Society[d]**			**To Society[d]**		
	Arrest Ratio[a] **Murder Cost[b]**					Separate High ($4.1M)			Separate Low ($13K)			Prop. / Violent Low ($13K)		
	Deadweight Loss[c]		All[e]	Male	Fem.	All[e]	Male	Fem.	All[e]	Male	Fem.	All[e]	Male	Fem.
Internal Rates of Return	0%	Adjusted[f]	7.6 *(1.8)*	8.4 *(1.7)*	7.8 *(1.1)*	9.9 *(4.1)*	11.4 *(3.4)*	17.1 *(4.9)*	9.0 *(3.5)*	12.2 *(3.1)*	9.8 *(1.8)*	8.9 *(3.8)*	12.5 *(2.8)*	10.7 *(2.2)*
		Unadjusted	7.4 *(1.2)*	8.0 *(1.2)*	7.9 *(1.6)*	8.0 *(4.2)*	9.6 *(4.8)*	16.3 *(4.3)*	9.4 *(2.5)*	12.4 *(3.0)*	10.4 *(3.3)*	9.2 *(3.4)*	12.6 *(4.1)*	11.1 *(4.3)*
	50%	Adjusted[f]	6.2 *(1.2)*	6.8 *(1.1)*	6.8 *(1.0)*	9.2 *(2.9)*	10.7 *(3.2)*	14.9 *(4.8)*	8.1 *(2.6)*	11.1 *(3.1)*	8.1 *(1.7)*	8.1 *(2.9)*	11.4 *(3.0)*	9.0 *(2.0)*
		Unadjusted	6.0 *(1.4)*	6.5 *(1.4)*	6.8 *(0.8)*	7.6 *(5.0)*	9.2 *(5.2)*	14.4 *(3.9)*	8.6 *(2.8)*	11.3 *(3.1)*	9.2 *(2.9)*	8.4 *(4.0)*	11.5 *(4.7)*	9.8 *(3.9)*
	100%	Adjusted[f]	5.3 *(1.1)*	5.9 *(1.1)*	5.7 *(0.9)*	8.7 *(2.5)*	10.2 *(3.1)*	13.6 *(4.9)*	7.6 *(2.4)*	10.4 *(2.9)*	7.5 *(1.8)*	7.6 *(2.6)*	10.7 *(3.1)*	8.3 *(2.1)*
		Unadjusted	5.1 *(1.1)*	5.6 *(1.3)*	5.7 *(1.3)*	7.4 *(3.6)*	8.9 *(3.6)*	13.2 *(4.3)*	8.1 *(2.1)*	10.6 *(2.5)*	8.6 *(3.1)*	8.0 *(2.6)*	10.8 *(3.6)*	9.1 *(3.2)*
Benefit-Cost Ratios	**Discount Rate**					All	Male	Fem.	All	Male	Fem.	All	Male	Fem.
	0%	Adjusted[f]	—	—	—	31.5 *(11.3)*	33.7 *(17.3)*	27.0 *(14.4)*	19.1 *(5.4)*	22.8 *(8.3)*	12.7 *(3.8)*	21.4 *(6.1)*	25.6 *(9.6)*	14.0 *(4.3)*
		Unadjusted	—	—	—	29.1 *(10.7)*	30.8 *(17.3)*	25.1 *(12.1)*	21.0 *(5.5)*	25.4 *(8.5)*	13.7 *(3.5)*	23.4 *(6.2)*	28.5 *(10.0)*	14.7 *(3.8)*
	3%	Adjusted[f]	—	—	—	12.2 *(5.3)*	12.1 *(8.0)*	11.6 *(7.1)*	7.1 *(2.3)*	8.6 *(3.7)*	4.5 *(1.4)*	7.9 *(2.7)*	9.5 *(4.4)*	5.1 *(1.7)*
		Unadjusted	—	—	—	11.2 *(5.0)*	11.0 *(8.1)*	10.7 *(5.9)*	8.2 *(2.3)*	10.1 *(3.6)*	5.1 *(1.3)*	9.1 *(2.6)*	11.2 *(4.3)*	5.6 *(1.5)*
	5%	Adjusted[f]	—	—	—	6.8 *(3.4)*	6.2 *(5.1)*	7.1 *(4.6)*	3.9 *(1.5)*	4.7 *(2.3)*	2.4 *(0.8)*	4.3 *(1.7)*	5.1 *(2.8)*	2.8 *(1.1)*
		Unadjusted	—	—	—	6.2 *(3.3)*	5.5 *(5.2)*	6.6 *(3.9)*	4.6 *(1.4)*	5.7 *(2.2)*	2.8 *(0.8)*	5.1 *(1.6)*	6.3 *(2.7)*	3.1 *(0.9)*
	7%	Adjusted[f]	—	—	—	3.9 *(2.3)*	3.2 *(3.4)*	4.6 *(3.1)*	2.2 *(0.9)*	2.7 *(1.5)*	1.4 *(0.5)*	2.5 *(1.1)*	2.9 *(1.8)*	1.7 *(0.7)*
		Unadjusted	—	—	—	3.5 *(2.2)*	2.8 *(3.5)*	4.2 *(2.6)*	2.7 *(0.9)*	3.4 *(1.4)*	1.6 *(0.5)*	3.0 *(1.0)*	3.7 *(1.7)*	1.9 *(0.6)*

Notes: Kernel matching is used to impute missing values for earnings before age-40, and PSID projection for extrapolation of later earnings. For details of these procedures, see Section 3. In calculating benefit-to-cost ratios, the deadweight loss of taxation is assumed to be 50%. Standard errors in parentheses are calculated by Monte Carlo resampling of prediction errors and bootstrapping; see Web Appendix K for details. (a) A ratio of victimization rate (from the NCVS) to arrest rate (from the Uniform Crime Report), where "Prop. /Violent" uses common ratios based on a crime being either violent or property and "Separate" does not; (b) "high" murder cost accounts for statistical value of life, while "low" does not; (c) Deadweight cost is dollars of welfare loss per tax dollar; (d) The sum of returns to program participants and the general public; (e) "All" is computed from an average of the profiles of the pooled sample, and may be lower or higher than the profiles for each gender group; (f) Lifetime net benefit streams are adjusted for corrupted randomization. For details, see Section 4.

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