



Bureau of Justice Statistics Special Report

March 1997, NCJ-160092

Lifetime Likelihood of Going to State or Federal Prison

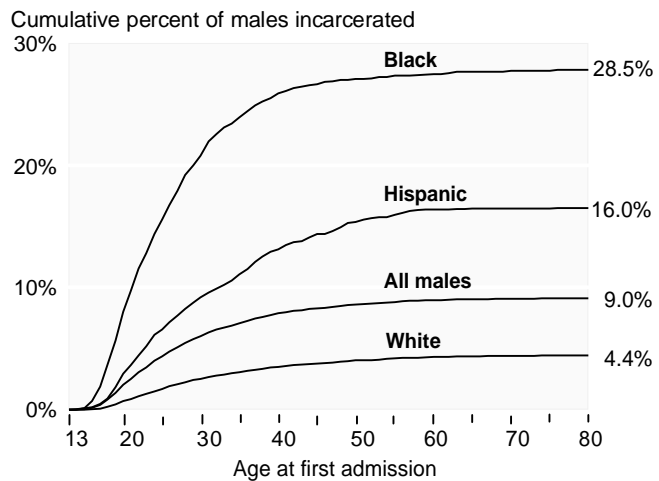
By Thomas P. Bonczar
and Allen J. Beck, Ph.D.
BJS Statisticians

An estimated 5.1% of all persons in the United States will be confined in a State or Federal prison during their lifetime, if incarceration rates recorded in 1991 remain unchanged in the future. The lifetime chances of a person going to prison are higher for men (9.0%) than for women (1.1%) and higher for blacks (16.2%) and Hispanics (9.4%) than for whites (2.5%). At current levels of incarceration a black male in the United States today has greater than a 1 in 4 chance of going to prison during his lifetime, while a Hispanic male has a 1 in 6 chance and a white male has a 1 in 23 chance of serving time.

The lifetime likelihood of incarceration, the focus of this study, represents the percentage of all U.S. residents expected to be incarcerated in a prison at some time in life. Such a measure is hypothetical — based on the assumption that recent rates of incarceration (and death rates) will not change in the future. Unlike a standard incarceration rate, which expresses the prevalence of incarceration on a single day, the lifetime likelihood measure summarizes the chances of a person being incarcerated at some time over an entire lifetime.

Highlights

Percentage of U.S. males likely to ever go to prison, based on constant 1991 rates of first incarceration, by age, race, and Hispanic origin



- If recent incarceration rates remain unchanged, an estimated 1 of every 20 persons (5.1%) will serve time in a prison during their lifetime.
- The chance of going to prison for the first time declines with age —

Not yet incarcerated by age	Chance of going to prison during rest of life		
	All persons	White men	Black men
Birth	5.1%	4.4%	28.5%
20	4.5	4.1	25.3
25	3.1	3.0	17.3
30	2.1	2.1	10.8
35	1.4	1.5	6.5
40	.9	1.1	3.6
45	.6	.8	2.1

- Men (9.0%) are over 8 times more likely than women (1.1%) to be incarcerated in prison at least once during their life.
- Among men, blacks (28.5%) are about twice as likely as Hispanics (16.0%) and 6 times more likely than whites (4.4%) to be admitted to prison during their life.
- Among women, 3.6% of blacks, 1.5% of Hispanics, and 0.5% of whites will enter prison at least once.

- Nearly two-thirds of those admitted to prison for the first time will have been on probation and a third will have served a sentence to a local jail or juvenile facility.

Summarizing life experiences based on annual rates

Estimates of the lifetime likelihood of going to prison are derived from standard life table techniques used by demographers and actuaries to summarize observed rates and to project them into the future. When applied to the study of the U.S. prison population, the lifetime estimates represent the combined experience of first admission to prison and mortality by age of the U.S. resident population during a 12-month period.

The estimates do not reflect the experience of any actual group but rather of a hypothetical group that is subject to a fixed set of age-specific rates of first incarceration and mortality. As such, the estimates depict the projected mortality and incarceration experience of newborn U.S. residents, assuming that the mortality and incarceration rates observed during a 12-month period remain unchanged in the future. (See *Methodology*, page 8.)

Life table techniques have been applied in numerous fields to summarize the likelihood that an event may occur. The following four examples use

lifetime rates to express statistics about familiar life events:

- 5 out of 6 persons are expected to be a victim of an attempted or completed violent crime (rape, robbery, and assault, excluding murder) at least once during life, based on 1975-84 annual victimization rates. (See *Lifetime Likelihood of Victimization*, BJS, NCJ-10427, March 1987.)
- 1 of every 100 men and of every 323 women are expected to be a victim of murder, based on 1978-80 annual murder rates and lifetime probabilities. (See *Crime in the United States, 1981*, FBI.)
- 49.6% of all new marriages are expected to end in divorce, based on marriage and divorce statistics for 1976-77. (See *National Estimates of Marriage Dissolution and Survivorship: United States*, National Center for Health Statistics, November 1980.)
- 1 of every 8 American women are projected to develop breast cancer in their lifetime, if 1987-88 rates remain unchanged. (See *The Lifetime Risk of Developing Breast Cancer*, Journal of the National Cancer Institute, June 1993.)

The chances of going to prison, by sex, race, and Hispanic origin

Life table procedures have been repeated for males and females, whites, blacks, and Hispanics — subgroups with different rates of death and first incarceration. Estimates coming from these procedures summarize the combined impact of the differential rates.

Overall, an estimated 5.1% of all persons in the United States will serve time in a State or Federal prison during their lifetime, if recent rates of first incarceration and mortality remain unchanged (table 1).

Men are over 8 times more likely than women to be incarcerated in prison at least once during their lifetime. A male has a 9.0% (or 1 in 11) chance in his lifetime of going to prison, while a female has a 1.1% (or 1 in 91) chance.

Blacks in the U.S. resident population (16.2%), regardless of their sex, are nearly twice as likely as Hispanics (9.4%) and 6 times more likely than whites (2.5%) to be admitted to prison during their lives.

Among men, more than 1 in 4 blacks and 1 in 6 Hispanics, compared to 1 in 23 whites, will enter prison at least once if current first-incarceration rates

Table 1. Chances of going to State or Federal prison for the first time, by age, sex, race, and Hispanic origin

	Cumulative percent of resident population expected to go to State or Federal prison for the first time, by age—									
	20	25	30	35	40	45	50	55	65	Lifetime
Total	1.1%	2.4%	3.3%	4.0%	4.4%	4.7%	4.9%	5.0%	5.1%	5.1%
Sex										
Male	2.0%	4.3%	5.9%	7.0%	7.8%	8.2%	8.5%	8.7%	9.0%	9.0%
Female	.1	.3	.6	.8	.9	1.0	1.0	1.0	1.1	1.1
Race/Hispanic origin										
White*	.4%	0.9%	1.4%	1.7%	2.0%	2.1%	2.3%	2.4%	2.5%	2.5%
Male	.7	1.7	2.5	3.0	3.5	3.7	4.0	4.1	4.3	4.4
Female	0	.2	.3	.4	.4	.5	.5	.5	.5	.5
Black*	4.1%	8.4%	11.6%	13.6%	14.9%	15.4%	15.7%	15.8%	16.0%	16.2%
Male	7.9	15.9	21.4	24.6	26.6	27.4	27.8	28.0	28.3	28.5
Female	.3	1.1	2.0	2.7	3.1	3.3	3.4	3.5	3.6	3.6
Hispanic	1.5%	3.6%	5.2%	6.3%	7.5%	8.2%	8.8%	9.1%	9.4%	9.4%
Male	2.8	6.3	8.8	10.7	12.7	13.9	14.9	15.4	15.9	16.0
Female	.1	.4	.7	.9	1.2	1.3	1.4	1.5	1.5	1.5

Note: The cumulative percents represent the chances of being admitted to State or Federal prison for the first time, by age. Estimates were obtained by sequentially applying age-specific first-

incarceration rates and mortality rates for each group to a hypothetical population of 100,000 births. (See *Methodology*, page 8.) *Excludes persons of Hispanic origin.

incarcerated. Unlike the lifetime chances and the cumulative percents by age, these estimates represent the chances of going to prison in the future for persons not previously sentenced to prison.

If age-specific first-incarceration rates remain unchanged, the future chances of going to prison among persons not previously incarcerated decline with age. For example, among U.S. residents who are age 30 and have not

been previously incarcerated, an estimated 2.1% are expected to go to prison at some time before they die (table 2). Among those 35 years old, an estimated 1.4% will go to prison; among those age 40, fewer than 1%.

The chances of going to prison decline with age among all persons regardless of their sex, race, or Hispanic origin. The likelihood of going to prison is highest among black males and Hispanic males. Among men age 30 or

younger, blacks have a greater chance of incarceration than Hispanics; among men age 35 or older, Hispanics have a greater chance of incarceration than blacks.

Except for black and Hispanic males, persons who reach age 45 without having been sentenced to prison will have less than a 1% chance of going to prison during the rest of their life. After age 45, about 0.1% of all females and 0.8% of white males are expected to be incarcerated for the first time.

Table 3. Characteristics of persons admitted to State or Federal prisons for the first time during the 12 months preceding July 1991

Characteristic	Percent of persons admitted		
	Total	State	Federal
Number of persons admitted^a	169,773	157,148	12,625
Most serious offense^b			
Violent offenses	32.8%	34.9%	7.3%
Homicide	5.7	6.1	.6
Sexual assault	7.5	8.1	.3
Robbery	9.9	10.3	4.5
Assault	8.1	8.7	1.2
Property offenses	24.5%	25.3%	14.8%
Burglary	10.1	10.9	0.0
Larceny	5.4	5.7	1.7
Fraud	4.6	4.0	11.8
Drug offenses	33.4%	31.1%	61.6%
Trafficking	21.4	19.3	46.6
Possession	11.3	11.2	13.2
Public-order offenses	8.5%	8.1%	12.9%
Other offenses	.8%	.6%	3.3%
Prior sentence to probation			
No	36.4%	34.7%	62.5%
Yes	62.5	65.3	37.5
Number of times			
1	36.2	37.5	25.5
2	15.6	16.4	7.3
3 or more	10.7	11.4	4.7
Prior sentence to local jail^c			
No	67.6%	66.9%	85.1%
Yes	31.4	33.1	14.9
Number of times			
1	14.6	15.1	10.0
2	6.1	6.5	2.0
3 or more	10.8	11.6	2.9
Current sentence length			
Mean ^d	85 mo	86 mo	73 mo
Median	60	60	51

Note: The 1991 surveys of State and Federal prisoners provided estimates of persons in prison at the time of each survey who had been admitted for the first time during 12 months preceding the surveys. Excluded from these estimates are persons admitted during the 12 months who had been released prior to the surveys.

^aData on offense were known for 98% of first admissions; on prior sentences to probation and jail for 99%; and on sentence length for 96%.

^bDetail may not sum to total because only selected offenses are presented.

^cIncludes those inmates who had been admitted to juvenile facilities.

^dExcludes persons with sentences of life, life without parole, life plus additional years, and death.

The number of first admissions by age, sex, race, and Hispanic origin

All of the life table calculations are derived from the number of first admissions to prison by age. Based on the 1991 surveys of State and Federal prisoners, a total of 169,773 persons in State and Federal prison at the time of the survey had been admitted to prison for the first time during the previous 12 months. An estimated 157,148 persons had been admitted to State prison and 12,625 to Federal prison. These estimates, however, exclude persons who had been admitted and then subsequently released during the 12 months prior to the surveys.

To obtain the total number of first admissions, a series of adjustment factors (by sex, race, and Hispanic origin) were applied to the survey estimates. Based on data from the 1990 and 1991 National Corrections Reporting Program, these factors take into account the number of persons who entered and then were released prior to the surveys.

Overall, nearly 20% of all persons admitted from court during the period (July 16, 1990, to July 15, 1991) were released prior to the surveys. As a result, an adjustment factor of 1.245 was applied to the survey estimate to produce a total of 211,400 first admissions. Separate factors were applied to each group by sex, race, and Hispanic origin. (See *Methodology* for details.)

	Number of first admissions	
	1991 survey estimate	Estimated total number
Total	169,773	211,400
Sex		
Men	154,002	190,100
Women	15,771	21,600
Race/Hispanic origin		
White	57,461	72,500
Black	73,066	92,100
Hispanic	35,414	40,600
Other	3,832	6,200
Age at admission		
17 or younger	5,664	7,100
18-24	62,494	77,800
25-34	62,170	77,400
35-44	28,000	34,900
45-54	7,549	9,400
55 or older	3,896	4,900

Note. Detail may not add to total because categories were estimated separately.

Characteristics of first admissions

Among persons admitted to State or Federal prison for the first time in the 12 months prior to the 1991 inmate surveys, nearly a third had committed a violent offense (table 3). Another third had committed a drug offense, and a quarter a property offense. The most frequent offense among first time admissions was drug trafficking — 19.3% of all State prisoners and 46.6% of Federal prisoners.

The type of offense leading to the first admission to prison varied with the age of the offender. About 22% of first-time prisoners age 45 or older had committed a sexual assault, compared to fewer than 5% among those under age 25 (table 4). Nearly 20% of first-time prisoners under age 20 had committed robbery, and 13% burglary, compared to 1% of those age 45 or older who had committed robbery and fewer than 1% burglary. The percentage of persons admitted for a public-order offense (such as driving under the influence, commercialized vice, weapons offenses, and Federal regulatory offenses) increased with age.

Two-thirds of all persons entering prison for the first time had a prior sentence to probation and a third had been sentenced to a local jail or served time in a juvenile facility. Persons entering State prisons were more likely than those entering Federal prison to have had prior sentences to jail or probation.

On average, persons entering State prison for the first time had received a total maximum sentence of 86 months; those entering Federal prison received a sentence of 73 months. Half of all first admissions to State and Federal prisons combined had received a sentence of 60 months or more.

Such characteristics of first admissions to State and Federal prison may also be viewed prospectively — if the patterns of offending and sentencing remain unchanged. For example, among the 5.1% of the hypothetical birth cohort who are expected to go to

prison during their lifetime, nearly two-thirds will have been on probation and a third will have served a sentence to a local jail or juvenile facility before entering prison. In addition, about two-thirds of those going to prison will have been sentenced for either a violent or drug offense.

Steady chances of going to prison since 1991

Although the life table calculations are derived from survey data collected in 1991, other data suggest that the chances of going to State or Federal prison have not since changed. Data collected annually in the National Prisoners Statistics (NPS) series, when combined with data from surveys of State prisoners conducted in 1974, 1979, 1986, and 1991, indicate that factors underlying calculations of the lifetime likelihood of incarceration have not changed since 1991.

Table 4. Most serious offense of persons admitted to State and Federal prison for the first time, by age

Most serious offense	Percent of prison inmates, by age					
	All ages	19 or younger	20-24	25-34	35-44	45 or older
Total	100%	100%	100%	100%	100%	100%
Violent offenses	32.8%	44.5%	32.2%	29.4%	29.6%	39.8%
Homicide	5.7	6.0	4.8	5.8	4.9	9.9
Sexual assault	7.5	4.4	4.1	6.6	12.4	22.1
Robbery	9.9	19.7	12.3	8.8	3.8	1.1
Assault	8.1	12.6	8.6	6.8	7.2	6.4
Other violent	1.6	1.8	2.4	1.4	1.3	.3
Property offenses	24.5%	24.8%	28.7%	26.0%	18.7%	12.4%
Burglary	10.1	13.4	12.8	11.0	4.9	.1
Larceny	5.4	4.5	5.9	5.9	5.3	2.5
Fraud	4.6	1.4	3.7	5.2	5.8	9.1
Other property	4.4	5.5	6.4	3.9	2.7	.7
Drug offenses	33.4%	26.5%	30.8%	35.7%	39.1%	30.5%
Trafficking	21.4	18.6	19.2	23.6	23.3	18.8
Possession	11.3	7.6	10.8	11.3	15.2	11.1
Public-order offenses	8.5%	4.2%	7.7%	8.2%	11.1%	16.4%
Other offenses	.8%	0	.6%	.8%	1.5%	.8%
Number of persons admitted	166,754	21,802	46,014	60,760	28,395	9,783

do not change. An estimated 28.5% of black men, 16.0% of Hispanic men, and 4.4% of white men are expected to serve a State or Federal prison sentence.

In general, women have lower lifetime chances of incarceration than men; however, black women (3.6%) have nearly the same chance as white men (4.4%) of serving time in prison. Among women, blacks are more than twice as likely as Hispanics (1.5%) and 7 times more likely than whites (0.5%) to be admitted to prison during their lives.

The likelihood of going to prison, by age

In addition to permitting calculation of the lifetime chances of incarceration, the same life table techniques produce estimates of the likelihood of incarceration for persons at specific ages.

If the rates of first incarceration and mortality recorded in 1991 remain unchanged, an estimated 1.1% of all persons born today will go to prison by the time they are age 20; 3.3%

by the time they are 30; and 4.4% by the time they are 40.

At every age, men have higher chances of going to prison than women, and blacks and Hispanics have higher chances than whites. Based on current rates of first incarceration, an estimated 7.9% of black males will enter State or Federal prison by the time they are age 20, compared to 2.8% of Hispanic males and 0.7% of white males.

The percentages double in the next 5 years of life and then begin to increase more slowly:

By age 25, 15.9% of black males, 6.3% of Hispanic males, and 1.7% of white males are expected to have served some time in State or Federal prison.

By age 30 ^¾ 21.4% of black males, 8.8% of Hispanic males, and 2.5% of white males

By age 35 ^¾ 24.6% of black males, 10.7% of Hispanic males, and 3.0% of white males

By age 40 ^¾ 26.6% of black males, 12.7% of Hispanic males, and 3.5% of white males will have served time.

The chances of going to prison decline with advancing age

The life table calculations also provide estimates of the likelihood of going to prison at some time during the rest of life among persons not previously

Why lifetime estimates exclude admissions to local jails

Jails are locally operated correctional facilities that confine persons before and after adjudication. Unlike prisons, jails admit persons with sentences of a year or less. Jails also hold a wide variety of categories of inmates ^¾ including those persons awaiting arraignment or trial; those with sentences of more than a year and awaiting transfer to State or Federal facilities; and those temporarily detained, under protective custody, or awaiting transfer to appropriate health facilities.

Estimates of the lifetime likelihood of incarceration are limited to the chances of going to State or Federal prison. Data on first admissions to local jails, which are needed to incorporate the chances of going to a local jail in these calculations, do not exist:

- In 1993, when the most recent Census of Local Jails was conducted, the annual number of new admissions to local jails totaled 9.8 million ^¾ nearly 30 times the number of new court commitments to State and Federal prison during that year. (See *Jails and Jail Inmates 1993-94*, NCJ-151651, April 1995.) The census did not collect any data on the number of persons admitted to jail for the first time.

- Most jail inmates serve only a few days before release. (See *Pretrial Release of Felony Defendants, 1992*, NCJ-148818, November 1994.) As a result, surveys of inmates based on persons held on a single day will not provide reliable statistics on those persons admitted during a 12-month period.

Table 2. Chances of going to State or Federal prison at some time during the rest of life, by age, sex, race, and Hispanic origin

	Percent expected to go to State or Federal prison at some time during the rest of life among persons not previously incarcerated, by age ^¾						
	Birth	20	25	30	35	40	45
Total	5.1%	4.5%	3.1%	2.1%	1.4%	.9%	.6%
Sex							
Male	9.0%	7.9%	5.5%	3.7%	2.5%	1.6%	1.0%
Female	1.1	1.0	.8	.6	.3	.2	.1
Race/Hispanic origin							
White*	2.5%	2.3%	1.7%	1.2%	.9%	.6%	.4%
Male	4.4	4.1	3.0	2.1	1.5	1.1	.8
Female	.5	.5	.4	.3	.2	.1	.1
Black*	16.2%	14.1%	9.6%	6.0%	3.6%	2.0%	1.2%
Male	28.5	25.3	17.3	10.8	6.5	3.6	2.1
Female	3.6	3.5	2.8	1.9	1.1	.6	.4
Hispanic	9.4%	8.7%	6.4%	4.9%	3.8%	2.3%	1.6%
Male	16.0	14.8	11.1	8.6	6.8	4.3	3.0
Female	1.5	1.5	1.2	.9	.6	.4	.2

Note: Estimates were obtained by subtracting the cumulative percent first incarcerated for each age from the lifetime likelihood of incarceration. (See *Methodology*, page 8.)
*Excludes persons of Hispanic origin.

of 1% of U.S. residents to a State or Federal prison (table 6).

These rates, though small when compared to the total adult population, represent large numbers of offenders who experience incarceration. At yearend 1995 nearly 1.1 million adults were held in a State or Federal prison. During 1995 more than 360,000 adults received a prison sentence of more than a year from State and Federal courts.

Unlike 1-day prevalence rates or 1-year admission rates, the lifetime likelihood measures summarize the chances of going to prison over an entire lifetime. Overall, the lifetime chances (5.1%) based on the 1991 survey data were nearly 10 times the 1-day prevalence rates (0.55% or 550

per 100,000) observed at yearend 1995.

All of the measures of incarceration reveal large differences by sex, race, and Hispanic origin; however, differences in lifetime rates are typically smaller than differences in 1-day prevalence rates.

Over a lifetime men are about 9 times more likely than women to serve a sentence in a State or Federal prison. At yearend 1995 men were 17 times more likely than women to be in prison. (See the figures below.)

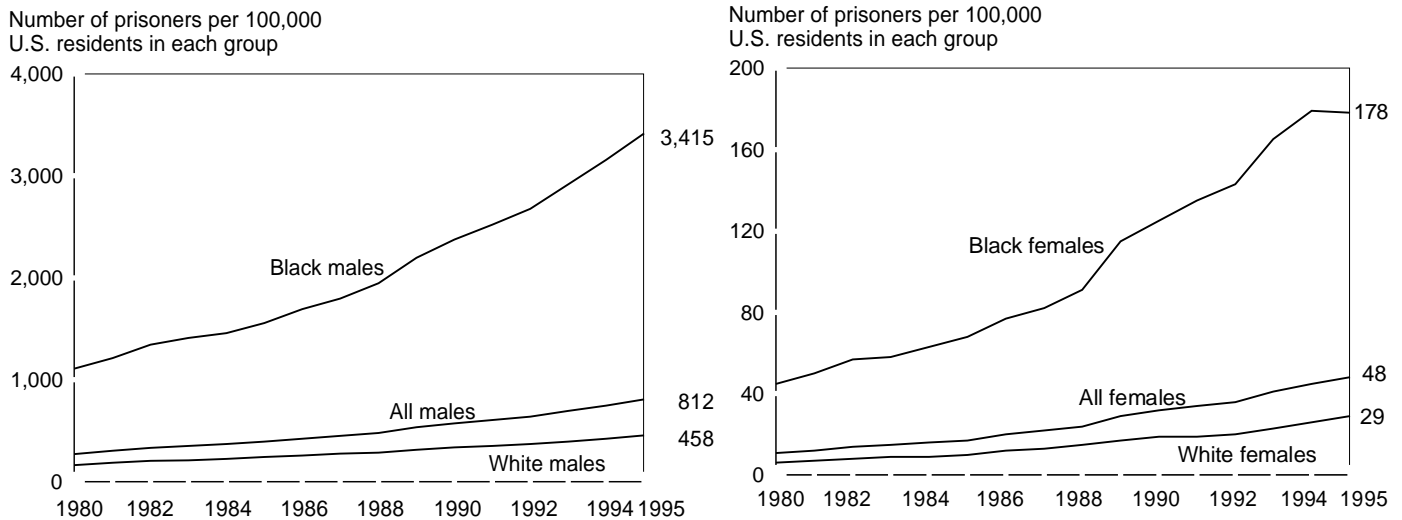
Among non-Hispanic men, blacks are 6.5 times more likely than whites to serve some time in prison during their life, but 8.7 times more likely to be in

prison on any 1 day (table 6). Among non-Hispanic women, blacks are 7.2 times more likely than whites to go to prison during their life, but 8.1 times more likely to be in prison on any 1 day.

Underlying these differences are variations between men and women and among blacks, whites, and Hispanics in rates of recidivism. (See *Recidivism of Prisoners Released in 1983*, NCJ-11940, April 1989.)

Measures of the lifetime chances of going to prison, based on age-specific first-incarceration rates, are unaffected by differences in recidivism among groups. One-day prevalence rates, however, include persons who have been to prison before.

One-day prevalence rates: the number of sentenced prisoners of each sex and race in State or Federal prisons per 100,000 U.S. residents in each group, yearend 1980-95



Methodology

Life table techniques

Life table techniques were used to incorporate the effects of mortality and incarceration into a single statistical model. In generating estimates of the lifetime chances of going to prison, the model assumes a constant set of age-specific mortality and incarceration rates. Since the computations involve two forms of exit from an initial cohort, they represent an application of what is known to demographers as double-decrement life table techniques. (For other applications, see Shryock and Siegel, *The Methods and Materials of Demography*, U.S. Department of Commerce, October 1971.)

Conceptually, a life table traces a cohort of 100,000 newborn babies through their entire lives under the assumption that they will be subject to currently observed age-specific mortality and incarceration rates. Lifetime estimates are computed by successively reducing this hypothetical population of 100,000 births by the number of persons expected to die and the number of persons incarcerated for the first time at each year of age.

The cumulative sum of the projected number of persons incarcerated at each age represents the number of persons per 100,000 expected to be incarcerated over the course of a lifetime. Dividing the total by 1,000 yields an estimate of the percentage of persons likely to be incarcerated during their lifetimes.

All of the life table calculations are based on mortality and incarceration rates for single years of age through age 100. Calculations for age groups 0 to 13 and ages 56 or older were based on data for each single year of age and then grouped for presentation. Calculations were closed out at age 100.

Appendix table 1. Age-specific mortality rates, July 1, 1991, to June 30, 1992

Age	Number dying per 100,000	Age	Number dying per 100,000
0 - 13	...	36	189
14	48	37	201
15	67	38	211
16	84	39	220
17	97	40	230
18	104	41	242
19	107	42	255
20	109	43	270
21	111	44	286
22	113	45	305
23	114	46	326
24	114	47	352
25	113	48	383
26	113	49	418
27	114	50	458
28	118	51	502
29	122	52	552
30	128	53	608
31	134	54	670
32	141	55	737
33	151	56-60	...
34	163	61-70	...
35	175	71 or older	...

Note: These age-specific mortality rates represent the proportion of persons alive at the beginning of the age interval dying during the interval (times 100,000). For basic assumptions and estimation procedures, see *Population Projections of the United States, by Age, Sex, Race, and Hispanic Origin: 1993 to 2050*, Current Population Reports, P25-1104, November 1993.

...Not shown, because all calculations were based on rates for single years of age.

Age-specific mortality rates

The Population Division, U.S. Bureau of the Census, provided age-specific mortality data for 12 different demographic groups, defined by sex, race, and Hispanic origin. The rates for each demographic group were estimated for each year of age based on death data reported to the National Center for Health Statistics for the 12-month period ending June 30, 1992.

Unlike crude death rates (based on the number of deaths divided by the number of persons of the same age), age-specific mortality rates represent the proportion of persons alive at the beginning of an age interval who are expected to die during the age interval. For each year of age, these mortality rates may be interpreted as the probability that persons at their x-th birthday will die before reaching their next birthday. For ease of reporting, these probabilities have been expressed as rates per 100,000. (See Appendix table 1.)

Estimating the number of persons at risk to first incarceration

The population at risk to first incarceration is the number of persons in the

U.S. resident population by exact year of age who have not been previously incarcerated in a State or Federal prison (Appendix table 2). To calculate the population at risk, estimates of

the U.S. resident population on January 1, 1991, were obtained from the U.S. Bureau of the Census. (See *U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1990 to 1995*, PPL-41, February 1996.)

These published data were adjusted for the undercount in the 1990 decennial census, by age, sex, race, and Hispanic origin, using the 1990 Post Enumeration Survey. (National adjustment data were released by the Population Division, U.S. Bureau of the Census, in May 1996.)

The number of persons in State and Federal prison or on parole at yearend 1990 were then subtracted from these adjusted population estimates to obtain the population at risk to first incarceration. Excluded from the population estimates by age, sex, race, and Hispanic origin were those persons known to be incarcerated or previously incarcerated (on parole).

Estimating the number of first admissions to prison

The number of persons admitted to a State or Federal prison for the first time by age were estimated by combining information from the 1991 Survey of Inmates in State Correctional Facilities and the 1991 Survey of Inmates in Federal Correctional Facilities with data from the 1990 and 1991 National Corrections Reporting Program (NCRP).

The surveys provide an estimate of the number of persons still in prison who first entered prison during the 12-month period before the surveys were conducted. The NCRP files provide information with which to estimate the number of persons who entered during the 12-month period ending July 15, 1991, and who had already been released prior to the survey dates.

Appendix table 2. Estimates of the number of U.S. residents at risk to first incarceration, by age, January 1, 1991

Age	U. S. resident population, 1/1/91 ^a (1)	Number of persons in prison or on parole, 12/31/90 ^b (2)	Number of persons at risk to first incarceration, 1/1/91 ^c (3)
0 - 13	53,027,564	0	53,027,564
14	3,404,925	116	3,404,809
15	3,401,313	117	3,401,196
16	3,436,075	1,536	4,253,833
17	3,475,353	2,665	3,472,688
18	3,567,430	8,520	3,558,910
19	3,994,822	16,911	3,977,911
20	4,280,930	27,097	4,253,833
21	3,984,084	37,062	3,947,022
22	3,802,151	45,201	3,756,950
23	3,767,250	48,969	3,718,281
24	3,921,965	52,667	3,869,298
25	4,088,954	58,505	4,030,449
26	4,259,741	61,782	4,197,959
27	4,363,213	61,696	4,301,517
28	4,257,819	63,465	4,194,354
29	4,539,502	62,230	4,477,272
30	4,736,119	61,758	4,674,361
31	4,409,419	61,695	4,347,724
32	4,416,914	58,519	4,358,395
33	4,454,119	52,088	4,402,031
34	4,465,642	51,317	4,414,325
35	4,393,016	45,608	4,347,408
36	4,189,629	43,912	4,145,717
37	4,080,089	41,183	4,038,906
38	3,874,636	34,604	3,840,032
39	3,948,668	30,362	3,918,306
40	3,975,783	31,065	3,944,718
41	3,659,296	26,700	3,632,596
42	3,669,784	22,640	3,647,144
43	3,789,348	20,441	3,768,907
44	3,459,696	18,114	3,441,582
45	2,920,338	16,132	2,904,206
46	2,824,184	13,152	2,811,032
47	2,967,838	10,540	2,957,298
48	2,775,615	10,699	2,764,916
49	2,647,185	9,020	2,638,165
50	2,480,456	7,818	2,472,638
51	2,284,098	6,901	2,277,197
52	2,271,908	5,648	2,266,260
53	2,214,263	5,208	2,209,055
54	2,160,156	4,697	2,155,459
55	2,130,246	4,580	2,125,666
56-60	10,352,262	15,699	10,336,563
61-70	20,174,425	13,638	20,160,787
71 or older	19,429,758	2,513	19,427,245

^aEstimates of the number of U.S. residents by age on 1/1/91 were obtained from the U.S. Bureau of the Census (*U.S. Population Estimates, by Age, Sex, Race, and Hispanic Origin: 1990 to 1995, PPL-41*.) Using Post Enumeration Survey (PES) estimates, the published data were adjusted for the undercount in the 1990 decennial census by adding an adjustment factor for each year of age.

^bThe number of persons in State and Federal prison or on parole, by age, at yearend 1990 were estimated. Yearend totals were obtained from BJS' National Prisoners Statistics (NPS-1) and Annual Parole Data Survey. Counts by each year of age were then estimated by multiplying the age distribution of prisoners (from the 1991 inmate surveys) or by the age distribution of new parolees (from the 1991 National Corrections Reporting Program).

^cEstimates were calculated by subtracting column (2) from column (1). This procedure may result in a slight overestimate of the population at risk and thereby lead to an underestimate of the percent entering prison. (See *Limitations of the life table estimates*, page 13.)

The State and Federal inmate surveys were conducted in June, July, and August of 1991. Included in these surveys were detailed questions about the current and past prison sentences of State and Federal inmates. A total of 13,986 inmates in State prisons and 6,572 inmates in Federal prisons were interviewed. (For a description of the sample designs and accuracy of the survey estimates, see *Comparing Federal and State Prison Inmates, 1991*, NCJ-145864.)

These surveys permit identification of those inmates who had entered prison for the first time on any sentence during the 12-month period prior to the conduct of the survey. Based on the midpoint of the survey period, the surveys cover those inmates who entered prison after July 15, 1990, and who were still in prison 12 months later.

Estimates by age, sex, race, and Hispanic origin, were then developed using weighting factors derived from the probability of selection in each sample. For each demographic group, the number of first admissions by age were obtained by adding estimates from the State and Federal surveys (Appendix table 3).

The survey estimates, however, underestimate the total number of first admissions to prisons — excluded from the surveys are those persons admitted during the 12-month period who had already been released. To correct for this incomplete coverage, adjustment

factors were calculated based on data reported in the 1990 and 1991 NCRP collections. (For a description of NCRP reporting criteria, see *National Corrections Reporting Program, 1991*, NCJ-145861.)

Appendix table 3. Estimates of the number and rate of first admissions to State or Federal prison, by age, July 16, 1990, to July 15, 1991

Age at first admission	First admissions to State or Federal prison during 12 months preceding the 1991 surveys		
	Number in prison at time of survey ^a (1)	Total number admitted during 12-month period ^b (2)	Rate per 100,000 U.S. residents ^c (3)
0 - 13	0	0	0
14	60	75	2
15	415	517	15
16	1,717	2,138	62
17	3,472	4,323	124
18	6,530	8,131	228
19	9,638	12,001	302
20	12,025	14,973	352
21	8,425	10,490	266
22	9,035	11,250	299
23	7,598	9,461	254
24	9,243	11,509	297
25	7,386	9,197	228
26	7,839	9,761	233
27	7,507	9,347	217
28	7,388	9,199	219
29	6,774	8,435	188
30	5,831	7,260	155
31	6,560	8,168	188
32	5,019	6,249	143
33	3,876	4,826	110
34	3,990	4,968	113
35	4,692	5,842	134
36	4,089	5,091	123
37	3,799	4,730	117
38	3,018	3,758	98
39	2,840	3,536	90
40	2,690	3,349	85
41	2,083	2,594	71
42	1,957	2,437	67
43	1,425	1,774	47
44	1,407	1,752	51
45	1,024	1,275	44
46	940	1,170	42
47	1,063	1,324	45
48	1,009	1,256	45
49	964	1,200	45
50	746	929	38
51	367	457	20
52	422	525	23
53	524	652	30
54	490	610	28
55	538	670	32
56-60	1,813	2,257	...
61-70	1,134	1,412	...
71 or older	411	512	...

...Not shown, because subsequent calculations were based on rates for single years of age.

^a The number of persons admitted to a State or Federal prison for the first time were estimated from information in the 1991 inmate surveys. These surveys, conducted in June, July, and August 1991, provide an estimate by age of the number of inmates still in prison who had been admitted for the first time in the previous 12 months. Not included in the surveys are those who had been admitted during the 12-month period and had already been released.

^b Ratio adjustment factors derived from the 1990-91 NCRP, when multiplied by column (1) provide an estimate of the total number of first admissions.

^c Calculated by dividing column (2) by the number of persons at risk to first incarceration (Appendix table 2, column 3) and then multiplying by 100,000.

The NCRP data provide counts by sex, race, and Hispanic origin of the number of new court commitments to State or Federal prison during the 12-month period ending July 15, 1991. The NCRP data also provide counts of those released before July 15, 1991, among those who had been admitted during the period. For each group, an adjustment factor was computed by dividing the number of new court commitments by the number of new court commitments minus the number of releases (Appendix table 4). These factors were then multiplied by the survey estimates to generate the total number of first admissions for each age group.

To illustrate the calculation and use of the NCRP adjustment factors, consider the estimate of the number of persons admitted to prison for the first time at age 20. Based on the combined estimates from the State and Federal surveys, a total of 12,025 persons age 20 were first admitted to prison between July 16, 1990, and July 15, 1991. The NCRP data reveal that 19.7% of all new court commitments during the period had been released before the end of the period. By multiplying 12,025 by the adjustment factor 1.245 (or 1/.803), the actual total number of first admissions was estimated at 14,973.

Estimates of the rate of first admissions to State or Federal prison at each age (Appendix table 3, column 3) were calculated by dividing the number of persons admitted to State or Federal prison during the 12 months prior to the 1991 surveys (column 2) by the estimated number at risk to first incarceration in each age group (Appendix table 2, column 3) and then multiplying by 100,000.

For example, approximately 14,973 of the estimated 4,253,833 persons at risk were admitted to prison for the first time at age 20 in the 12 months prior to the 1991 surveys — the equivalent of 352 per 100,000 persons age 20 in the U.S. resident population.

Appendix table 4. NCRP adjustment factors for estimating the total number of first admissions to prison, from July 16, 1990, to July 15, 1991

	Total	Male	Female
Total	1.245	1.235	1.370
Non-Hispanic			
White	1.262	1.251	1.391
Black	1.261	1.250	1.385
Hispanic	1.146	1.141	1.228

Note: Adjustment factors based on new court commitments and first releases as reported in the 1990 and 1991 NCRP for the period July 16, 1990, to July 15, 1991. Data were restricted to 28 States and the Federal Bureau of Prisons, which provided information on admission and release records. Data were further restricted to inmates with a total maximum sentence of more than a year. Each adjustment factor represents the ratio of the total number of new court commitments during the 12-month period to the number of new court commitments minus the number of releases during the same period. For presentation, the adjustment factors were rounded to 3 decimal places.

Calculating the lifetime chances of going to prison

To illustrate the application of life table techniques to the lifetime chances of going to prison, consider the following computations for the hypothetical cohort of 100,000 births:

1. Estimates of the expected number of persons in the original population of 100,000 who will die during each age interval were obtained by multiplying the age-specific mortality rates (from Appendix table 1) by the number of persons alive and not previously incarcerated at each year of age (Appendix table 5, columns 1 and 2).

- For example, among those persons who reach age 20 without having been previously incarcerated, a total of 106 are expected to die before reaching age 21 (that is, 97,563 times the rate of .00109).

2. The number of persons in this hypothetical cohort who are at risk to incarceration during an age interval was then calculated by subtracting the number dying from the number alive and not previously incarcerated at the beginning of the age interval (column 1 minus column 2).

- 97,457 of the persons who survived to age 20 without being incarcerated are expected to reach age 21 (not shown).

3. The projected number of persons in the original 100,000 population who will be admitted to prison at each age (column 3) was then obtained by applying the age-specific first admission rates (from Appendix table 3) to the number of persons alive and not previously incarcerated.

- Among the 20 years old in the original population who had not previously been incarcerated and were expected to reach their next birthday, 343 are expected to be incarcerated before their 21st birthday (.00352 times 97,457).

4. The number of persons in the original 100,000 population who are expected to be incarcerated by the time they reach a specific age was then calculated by summing the number incarcerated at each age for all younger age groups (column 4).

- The cumulative sum of persons age 20 or younger, for instance, is 1,064. This number indicates that of the original 100,000 population, 1,064 (or 1.06%) will be incarcerated before their 21st birthday.

5. An estimate of the lifetime likelihood of incarceration is obtained by summing the number incarcerated for all age groups. As a result, 5,147 persons in this hypothetical population of 100,000 (or 5.15%) are expected to go to prison at least once during their lifetime.

6. These procedures also provide estimates of the likelihood of going to prison in the future for persons not yet incarcerated at any given age (column 6). For each age interval, the percent expected to go to prison in the future was estimated by subtracting from 5,147 the cumulative number incarcerated before reaching the age interval (column 5); then dividing by the number of persons alive and not yet incarcerated at the beginning of that age interval (column 1); and multiplying by 100%.

- Among persons who live to age 20 without being incarcerated, the likelihood of going to prison in the future (4.54%) was calculated by subtracting

721 (the cumulative number incarcerated before age 20) from 5,147; dividing by 97,563; and multiplying by 100%.

Appendix table 5. Estimating the lifetime likelihood of going to State or Federal prison

Age at first admission	Hypothetical population of 100,000 births reduced by mortality and incarceration in each successive year of age				Likelihood of going to prison during rest of life	
	Number alive and not incarcerated at beginning of age interval (1)	Expected number of deaths ^a (2)	Expected number of first admissions ^b (3)	Cumulative number of first admissions (4)	Number expected to go to prison ^c (5)	Percent ^d (6)
0 - 13	100,000	1,217	0	0	5,147	5.15
14	98,783	48	2	2	5,147	5.21
15	98,733	66	15	17	5,145	5.21
16	98,652	82	62	79	5,130	5.20
17	98,508	96	122	201	5,068	5.15
18	98,290	103	224	425	4,946	5.03
19	97,963	104	296	721	4,722	4.82
20	97,563	106	343	1,064	4,426	4.54
21	97,114	109	257	1,321	4,083	4.20
22	96,748	109	290	1,611	3,825	3.95
23	96,349	109	245	1,856	3,536	3.67
24	95,995	110	285	2,141	3,291	3.43
25	95,600	108	218	2,359	3,006	3.14
26	95,274	108	221	2,580	2,788	2.93
27	94,945	108	206	2,786	2,567	2.70
28	94,631	112	207	2,993	2,361	2.49
29	94,312	115	178	3,171	2,153	2.28
30	94,019	120	146	3,317	1,976	2.10
31	93,753	125	176	3,493	1,830	1.95
32	93,452	133	133	3,626	1,654	1.77
33	93,186	141	102	3,728	1,520	1.63
34	92,943	151	105	3,833	1,418	1.53
35	92,687	162	124	3,957	1,314	1.42
36	92,401	175	113	4,070	1,190	1.29
37	92,113	185	108	4,178	1,076	1.17
38	91,820	193	90	4,268	969	1.06
39	91,537	202	82	4,350	879	0.96
40	91,253	209	78	4,428	797	0.87
41	90,966	221	64	4,492	719	0.79
42	90,681	231	61	4,553	655	0.72
43	90,389	244	42	4,595	594	0.66
44	90,103	258	46	4,641	552	0.61
45	89,799	274	39	4,680	506	0.56
46	89,486	292	37	4,717	467	0.52
47	89,157	313	40	4,757	429	0.48
48	88,804	341	40	4,797	390	0.44
49	88,423	369	40	4,837	350	0.40
50	88,014	403	33	4,870	309	0.35
51	87,578	439	18	4,888	277	0.32
52	87,121	481	20	4,908	259	0.30
53	86,620	528	25	4,933	239	0.28
54	86,067	575	25	4,958	214	0.25
55	85,467	631	26	4,984	189	0.22
56-60	84,810	4,100	90	5,074	163	0.10
61-70	80,620	14,058	52	5,126	73	0.04
71 or older	66,510	...	21	5,147	21	0.00

Note: Calculations for ages 0 to 13 and ages 56 or older are based on data for each single year of age and then grouped for presentation. Also for presentation, data in columns 2 and 3 were rounded to produce the totals in column 4.

...Not shown.

^aTo estimate the number expected to die at each year of age, age-specific mortality rates (from Appendix table 1) were multiplied by the number of persons alive and not previously incarcerated (column 1).

^bTo estimate the number expected to go to prison at each year of age, age-specific first admission rates (from Appendix table 3, column 3) were multiplied by the number of persons surviving (column 1 minus column 2, above).

^cThe number expected to go to prison at each age and remaining ages was estimated by subtracting from 5,147 the cumulative number previously incarcerated (column 4, previous age interval).

^dPercents were calculated by dividing the number expected to go to prison (column 5) by the number alive and at risk to first incarceration (column 1) and then multiplying by 100%.

Limitations of the life table estimates

1. The age-specific incarceration rates are based upon the experiences of prisoners interviewed at one point in time, and do not incorporate a forecast of future rates of imprisonment, which may be affected by changes in criminal behavior, changes in law enforcement, and changes in sentencing policies.

Life table techniques assume stable mortality and first-incarceration rates. Recent data suggest that rates of first incarceration have remained relatively constant since 1991.

2. All of the calculations are based only on incarceration in State or Federal prison. Prior incarcerations in juvenile facilities and local jails and prior probation supervision were excluded because of the lack of data permitting estimation of the number of first admissions to these forms of correctional supervision. The estimates in this report generally approximate the likelihood of being incarcerated as an adult for a felony.

3. Estimates of the number of first admissions to prison by age, sex, race, and Hispanic origin are subject to sampling and nonsampling errors. Because a sample rather than a complete enumeration of the State and Federal prison population was conducted, the estimated number of first admissions may vary depending on the size of the estimate and the size of the base population for each demographic group. (For estimates of the sampling errors for the 1991 surveys, see *Comparing Federal and State Prison Inmates, 1991*, NCJ-145864.)

Nonsampling error can be attributed to many sources, such as nonresponse, differences in interpretation of questions, recall difficulties, and processing errors. Among inmates, the number of first admissions may be slightly overestimated because of under reporting of criminal histories. The full extent of nonsampling error is unknown.

4. Estimates of the population at risk to first incarceration by age may be overestimated. Although the population was adjusted for those persons in prison or on parole, the total number of previously incarcerated persons in the U.S. resident population is unknown. As a result, the age-specific rates of first incarceration may also be underestimated, leading to an underestimate of the lifetime likelihood of incarceration. (Calculations for population subgroups that experience high rates of incarceration are likely to be most affected.)

The Bureau of Justice Statistics is the statistical agency of the U.S. Department of Justice. Jan M. Chaiken, Ph.D., is director.

BJS Special Reports address a specific topic in depth from one or more datasets that cover many topics.

Thomas P. Bonczar and Allen J. Beck, Ph.D., wrote this report. Tom Hester and Priscilla Middleton edited the report. Marilyn Marbrook, assisted by Yvonne Boston, administered final production.

March 1997, NCJ-160092

This report and many of its data, as well as other reports and statistics, may be found at the Bureau of Justice Statistics Internet World Wide Web site:
<http://www.ojp.usdoj.gov/bjs/>