Effects of NIBRS on Crime Statistics

BJS Special Report

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Purpose of Study

- Initial purpose - to research the effect of NIBRS on assault rate estimates
- Discovered interesting reporting patterns for other types of crime

Issues to Be Addressed

- Hierarchy rule suppresses less serious offenses
- Misapplication of Hierarchy Rule
- More accurate reporting
- Definitions: changes or restructuring
  - Rape
  - Burglary
  - Assault
- Counting differences between states
- Role of data processing in maintaining uniformity of reporting

Characteristics of Summary UCR Data

- Consists of monthly aggregate crime counts for eight Index crimes
- Records one offense per incident as determined by *hierarchy rule*
- Does not distinguish between attempted and completed crimes, except for forcible rape
- Records rape of females only
- Collects weapon information for murder, robbery, and aggravated assault
- Provides counts on arrests for the 8 Index crimes and 21 other offenses

Characteristics of NIBRS Data

- Consists of individual incident reords for the 8 Index crimes and 38 other offenses
- Records each offense occuring in incident
- Distinguishes between attempted and completed crimes
- Records rape of male victims by female offenders
- Restructures definition of assault
- Collects weapon information for all violent offenses
- Provides details on arrests for the 8 Index crimes and 49 other offenses

Source of NIBRS Data

- FBI provided NIBRS offense counts aggregated by agency for years 1991 to 1996
- Every offense segment is included in the NIBRS count
- FBI converted NIBRS to Summary UCR
- BJS selected agencies with
  - full year NIBRS reporting
  - nonzero populations
  - 4068 cases met selection criteria
- FBI provided NIBRS incident files for 1996
- FBI edits for certain crime combinations began in 1997 and were not run on this data

Basis for Calculations

- Cases consist of both NIBRS and Summary UCR aggregate crime counts within an agency for each year between 1991 and 1996 that the agency reported 12 months of NIBRS data

- Percent change represents:
  $$100 \times \frac{(\text{NIBRS Rate} - \text{Summary Rate})}{\text{Summary Rate}}$$

- Percentages are rounded

Average Percent Difference in Crime Rate Estimates When Reported through NIBRS Rather Than Summary UCR
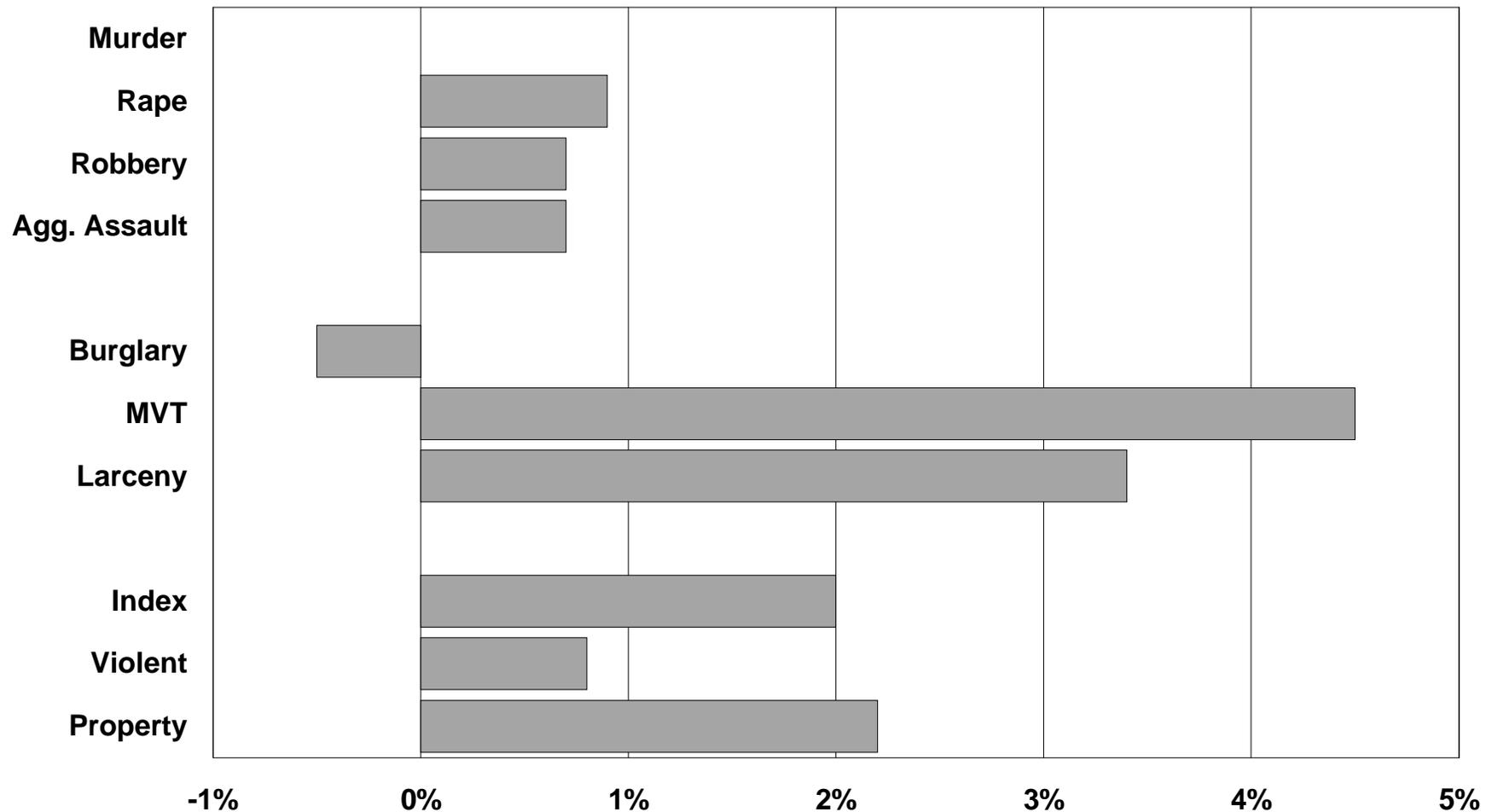
Percent of Cases with Change of +5.5% or Less Comparing NIBRS to Summary UCR
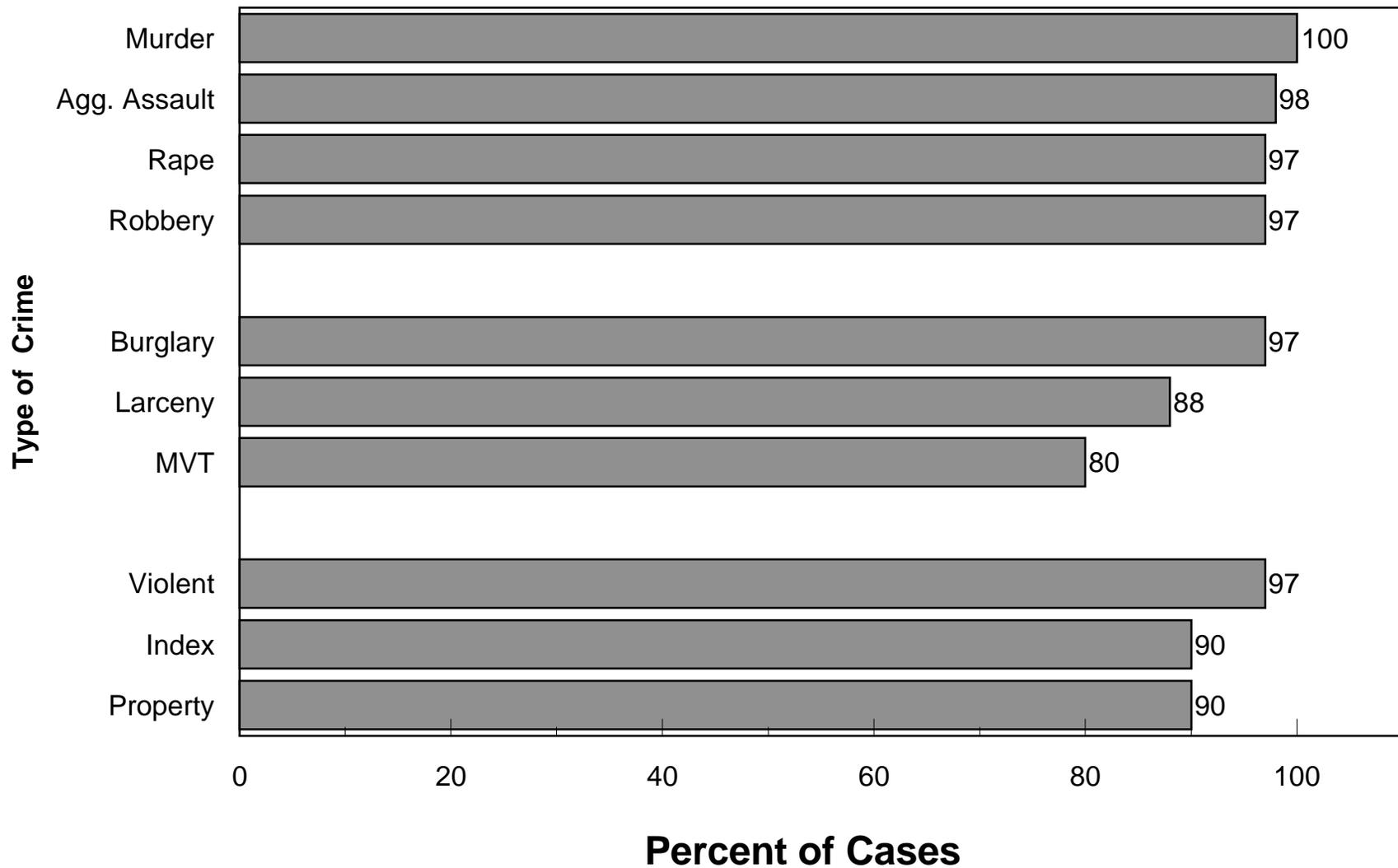
Bureau of Justice Statistics, July 2000

Index Crime Rate Estimates:
Changes from 0 to 15 Percent
Comparing NIBRS to Summary UCR

Number of Cases

Percent Change (rounded)

Bars (Percent Change : Number of Cases):
- 0 : 1,931 (1583 are exactly 0%)
- 1 : 833
- 2 : 372
- 3 : 185
- 4 : 113
- 5 : 65
- 6 : 54
- 7 : 29
- 8 : 45
- 9 : 22
- 10 : 26
- 11 : 21
- 12 : 18
- 13 : 13
- 14 : 21
- 15 : 13

Violent Crime Rate Estimates: Changes from 0 to 15 Percent Comparing NIBRS to Summary UCR

Number of Cases

(3341 are exactly 0%)

Percent Change (rounded)	Number of Cases
0	3,426
1	263
2	131
3	50
4	37
5	28
6	21
7	12
8	12
9	9
10	16
11	7
12	4
13	1
14	4
15	0

Percent Change (rounded)

Property Crime Rate Estimates: Changes from 0 to 15 Percent Comparing NIBRS to Summary UCR

Number of Cases

(1631 are exactly 0%)

Percent Change (rounded)
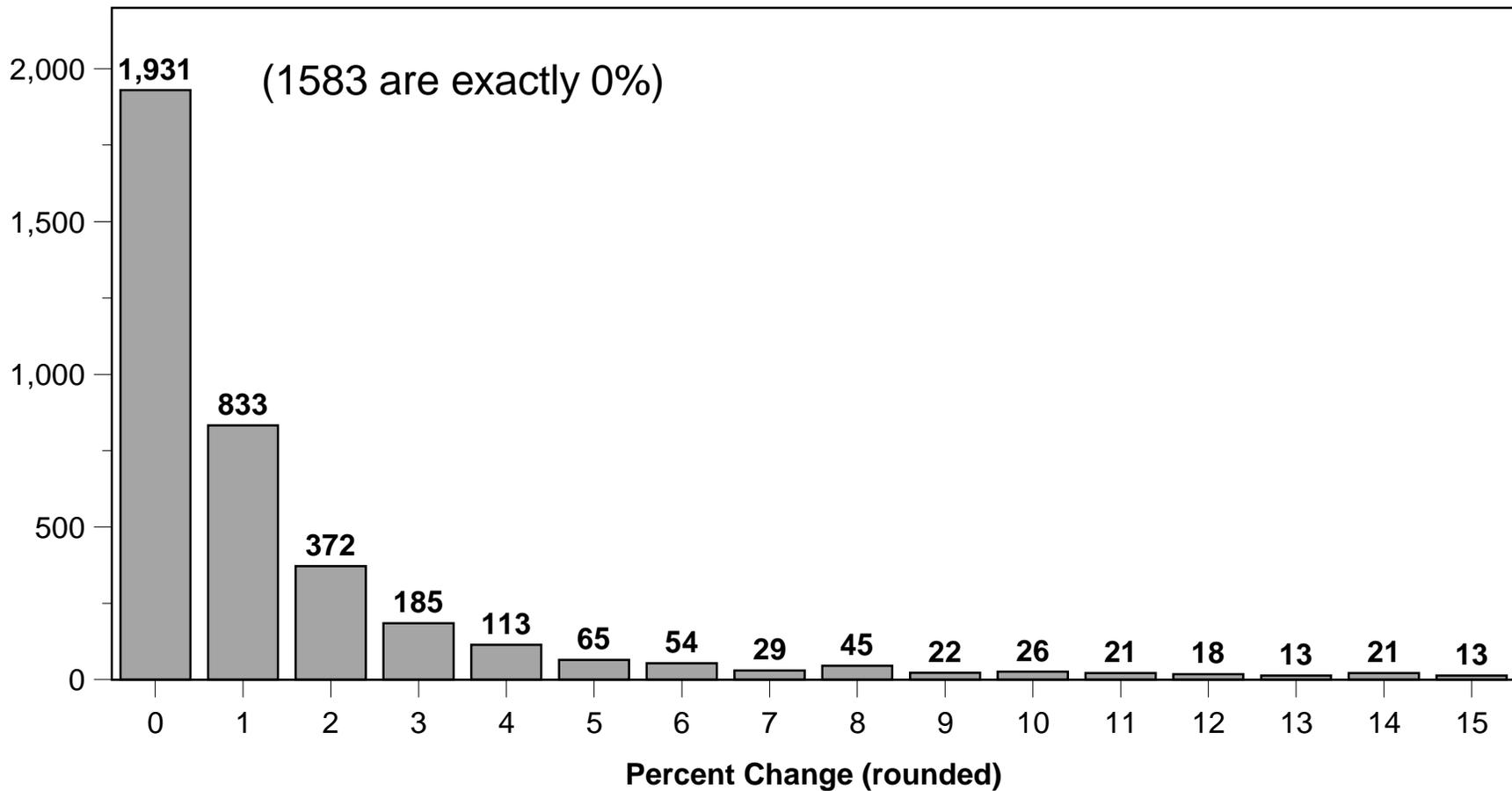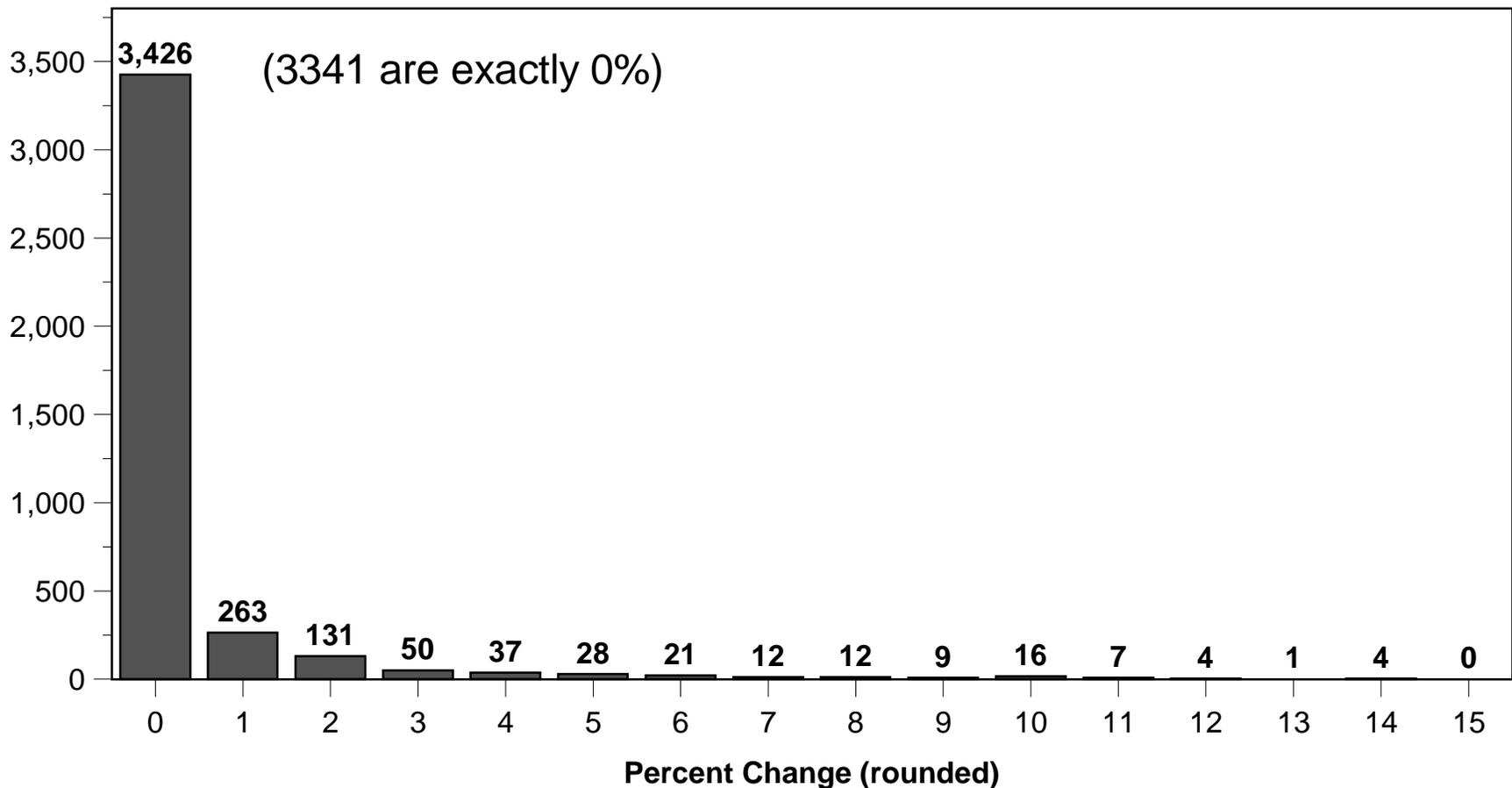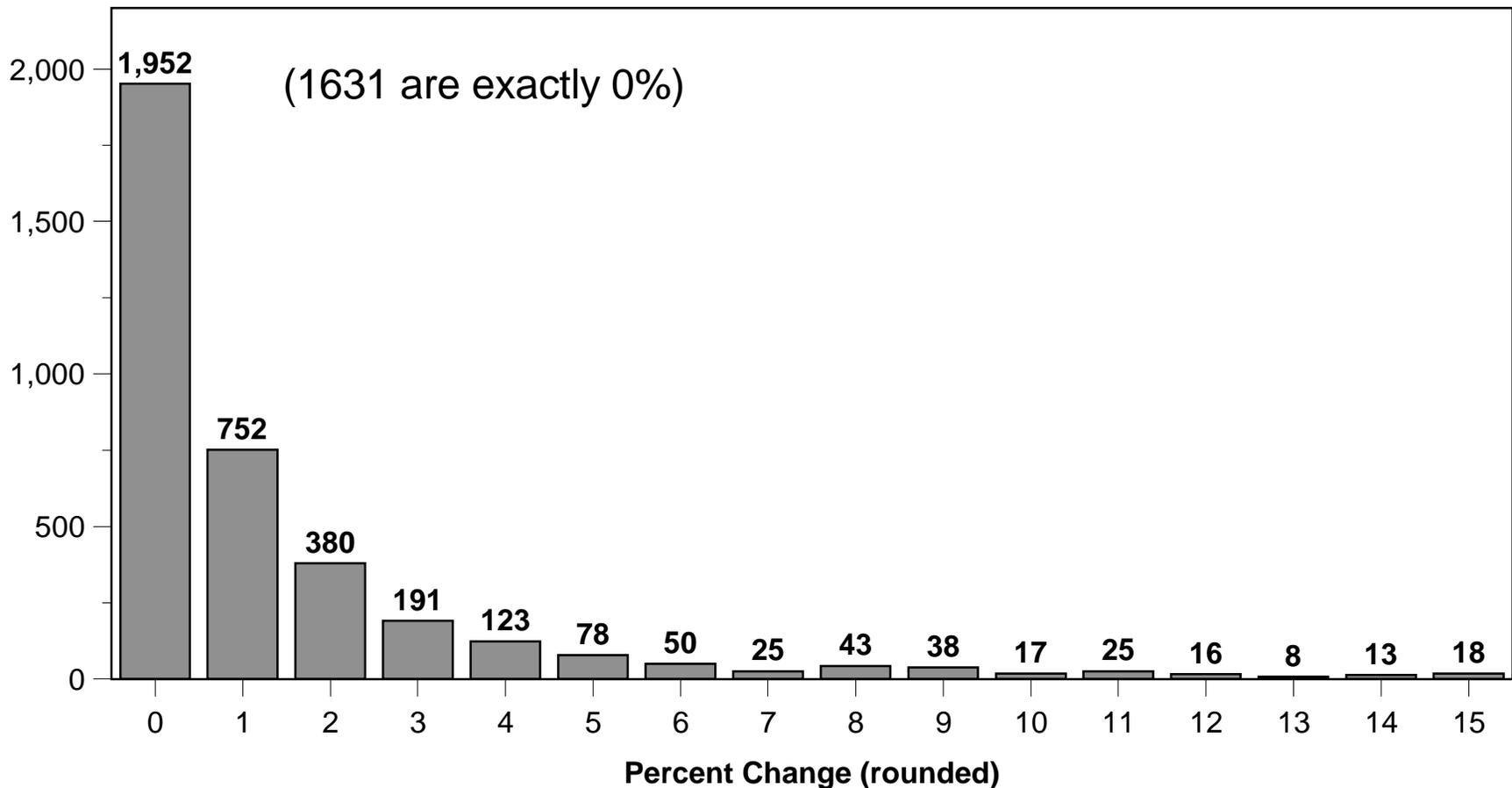
# An Overall Look at Jurisdictions with Larger Populations

- Research looks at the effects of NIBRS on crime rate estimates for larger jurisdictions
- Research from the same aggregate count file selected cases based on the following criteria
  - full year NIBRS reporting
  - population over 25,000
  - no combined reporters
  - 378 cases were selected

Jurisdictions population 25,000 or more Average percent difference in crime rates when reported through NIBRS rather than Summary UCR
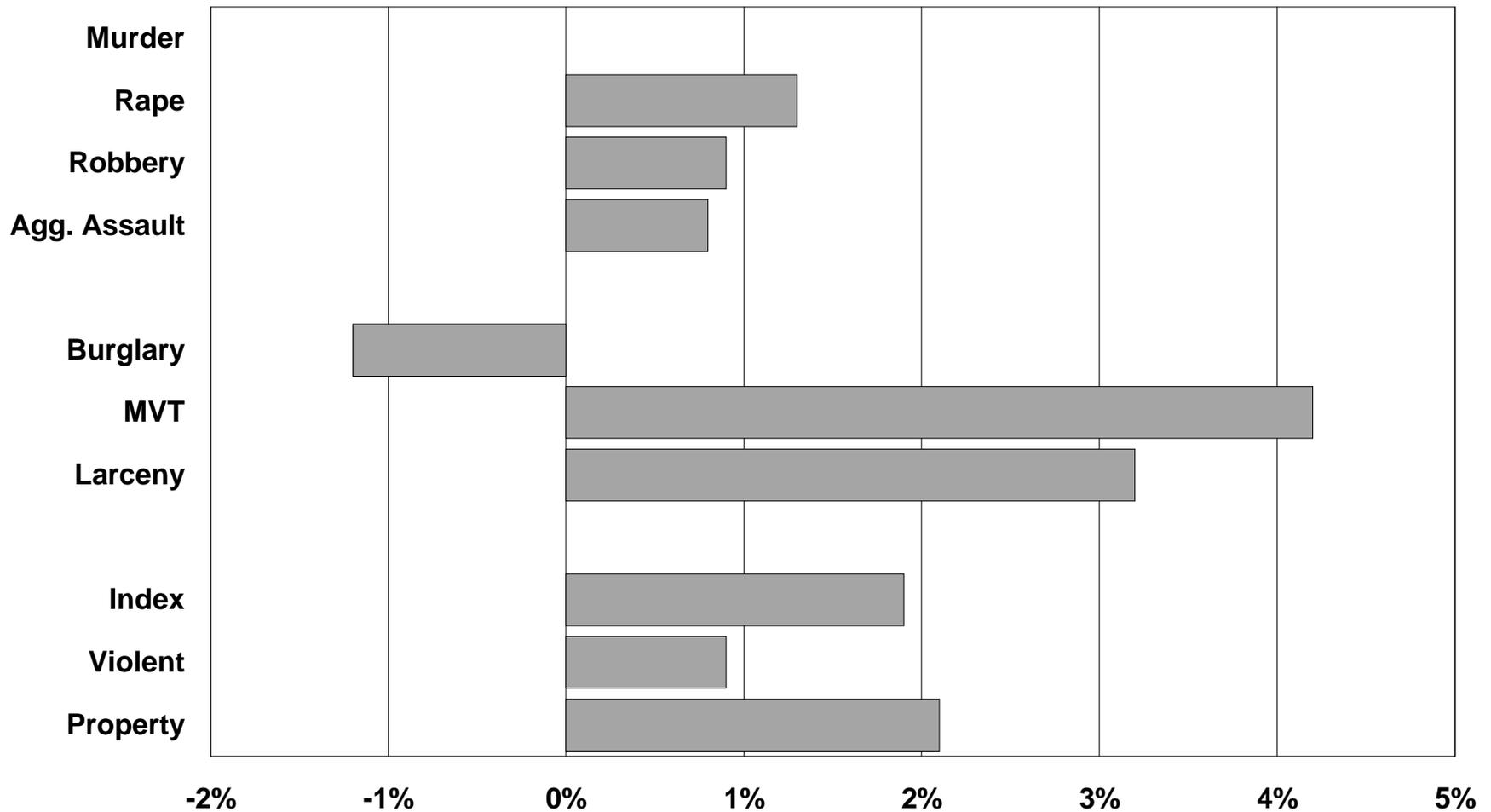
Jurisdictions 25,000-250,000 Population Difference in Violent Crime Rate Estimates Comparing NIBRS to Summary UCR

Percent of Cases

	Index	Violent	Murder	Rape	Robbery	Assault
Percent Difference						
Under - 5.5 %	0.5	0.0	0.0	0.0	0.0	0.0
- 5.5 to - 1.6 %	5.3	0.0	0.0	0.0	0.0	0.0
- 1.5 to - 0.6 %	3.2	0.0	0.0	0.0	0.0	0.0
- 0.5 to 0.5 %	31.5	51.9	100.0	84.1	71.4	65.9
0.6 to 1.5 %	39.2	29.1	0.0	0.8	10.8	16.9
1.6 to 5.5 %	15.8	17.4	0.0	8.0	13.5	14.8
Over 5.5 %	7.7	1.6	0.0	7.1	4.2	2.4
Exactly 0 %	6.3	39.2	100.0	84.1	69.8	51.6
Highest Percent Difference	*33.8%*	*10.0%*	*0.0%*	*50.0%*	*22.2%*	*11.4%*

Jurisdictions 25,000-250,000 Population Difference in Property Crime Rate Estimates Comparing NIBRS to Summary UCR

	Index	Property	Burglary	MVT	Larceny
			Percent of Cases		
Percent Difference					
Under - 5.5 %	0.5	0.5	9.5	0.0	0.0
- 5.5 to -1.6 %	5.3	2.9	11.7	0.0	0.0
- 1.5 to - 0.6 %	3.2	2.6	7.1	0.0	0.0
- 0.5 to 0.5 %	31.5	33.6	37.6	23.8	41.8
0.6 to 1.5 %	39.2	34.1	23.5	9.3	30.2
1.6 to 5.5 %	15.8	18.0	10.6	36.2	16.6
Over 5.5 %	7.7	8.2	0.0	30.7	11.4
Exactly 0 %	6.3	7.9	24.6	23.0	12.2
Highest Percent Difference	*33.8%*	*37.5%*	*4.7%*	*25.0%*	*64.9%*

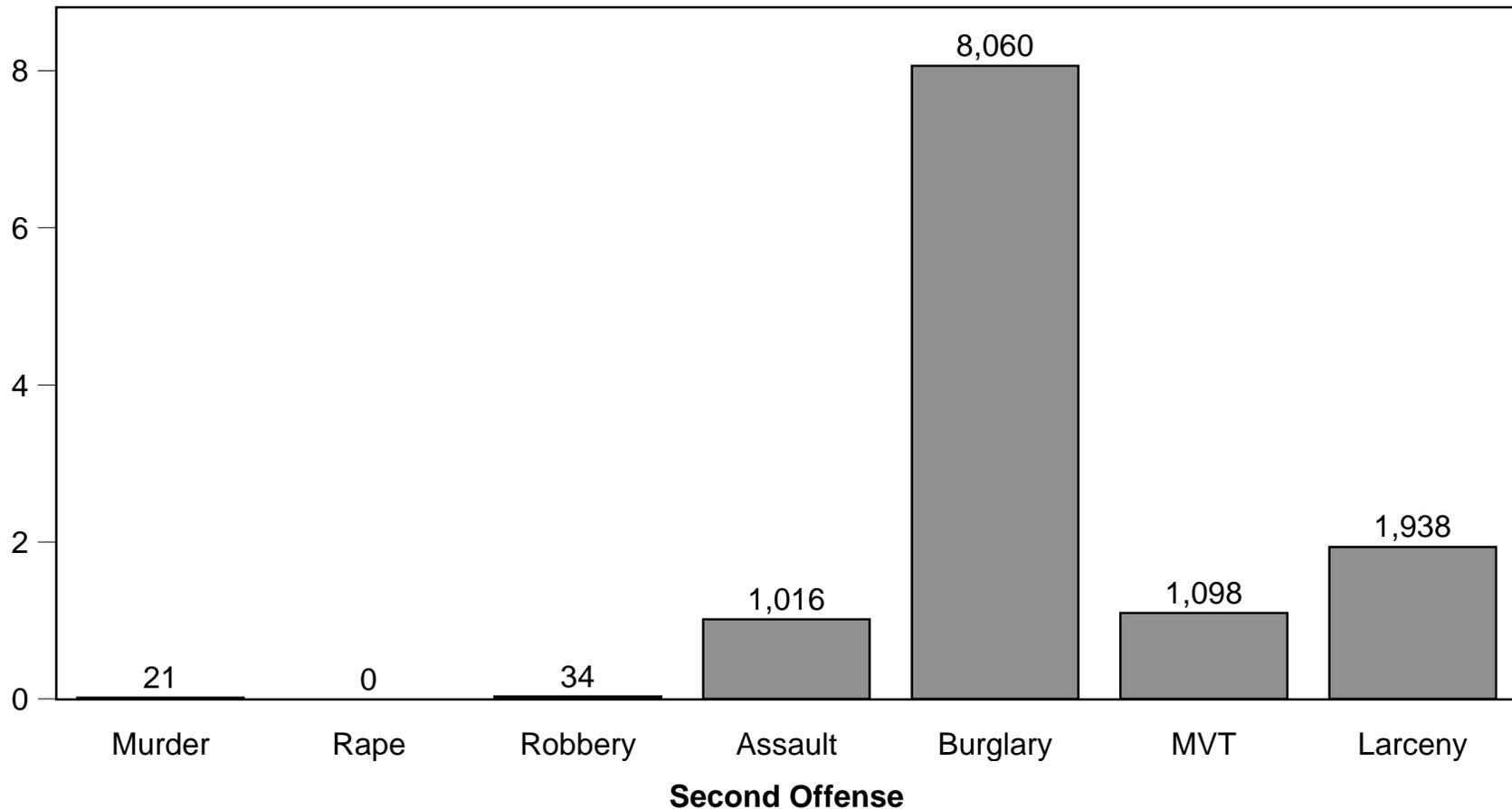# Comparing NIBRS Counts with NIBRS Converted to Summary UCR

- Homicide - no difference
- Assault   - NIBRS slightly higher
- Burglary - NIBRS may be lower or higher
- MVT   - NIBRS can be substantially higher
- Larceny   - NIBRS can be substantially higher

Larceny

- Hierarchy Rule
- Some records include larceny segments contrary to FBI instructions
- Larceny reporting practices differ by state
- Records could be standardized in the national database through data processing
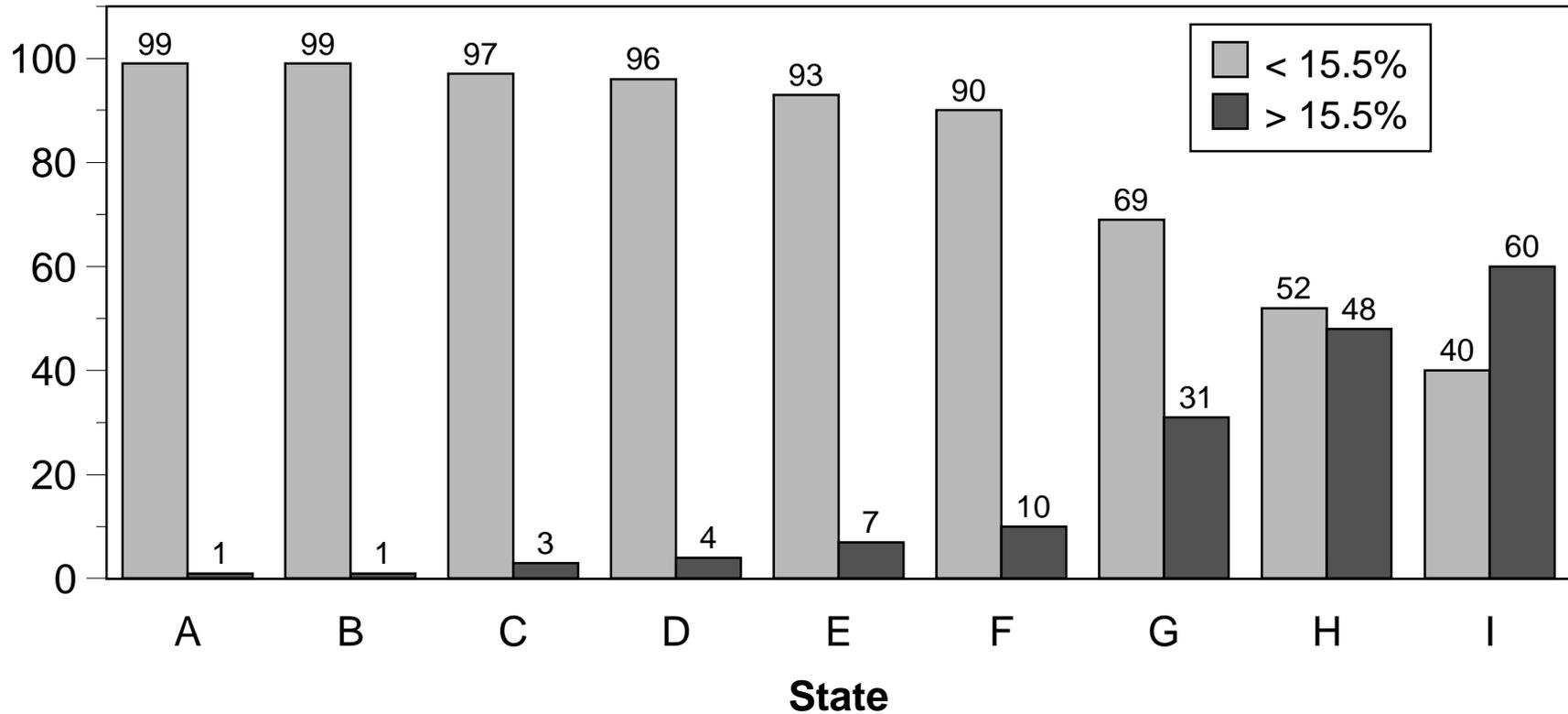
Larceny with Second Offense
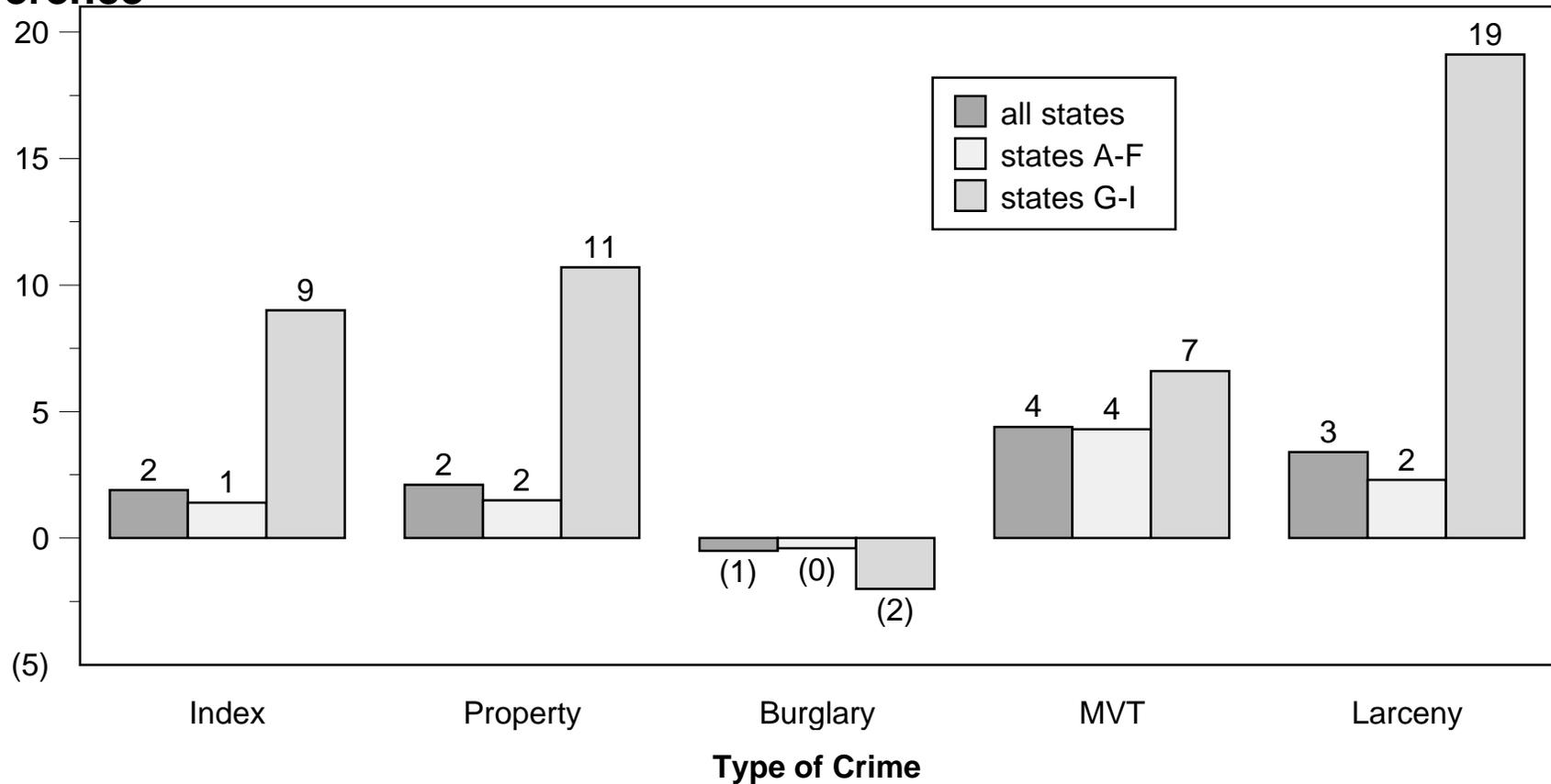# One Victim and One Offender

Number of Incidents

	Murder	Rape	Robbery	Assault	Burglary	MVT	Larceny
	21	0	34	1,016	8,060	1,098	1,938

Second Offense

Change in Larceny Rate Estimates Comparing NIBRS to Summary UCR

Percent of Cases

Bar chart legend: < 15.5% (light gray), > 15.5% (dark gray)

State	< 15.5%	> 15.5%
A	99	1
B	99	1
C	97	3
D	96	4
E	93	7
F	90	10
G	69	31
H	52	48
I	40	60

State

Average Percent Differences
in Property Crime Rate Estimates
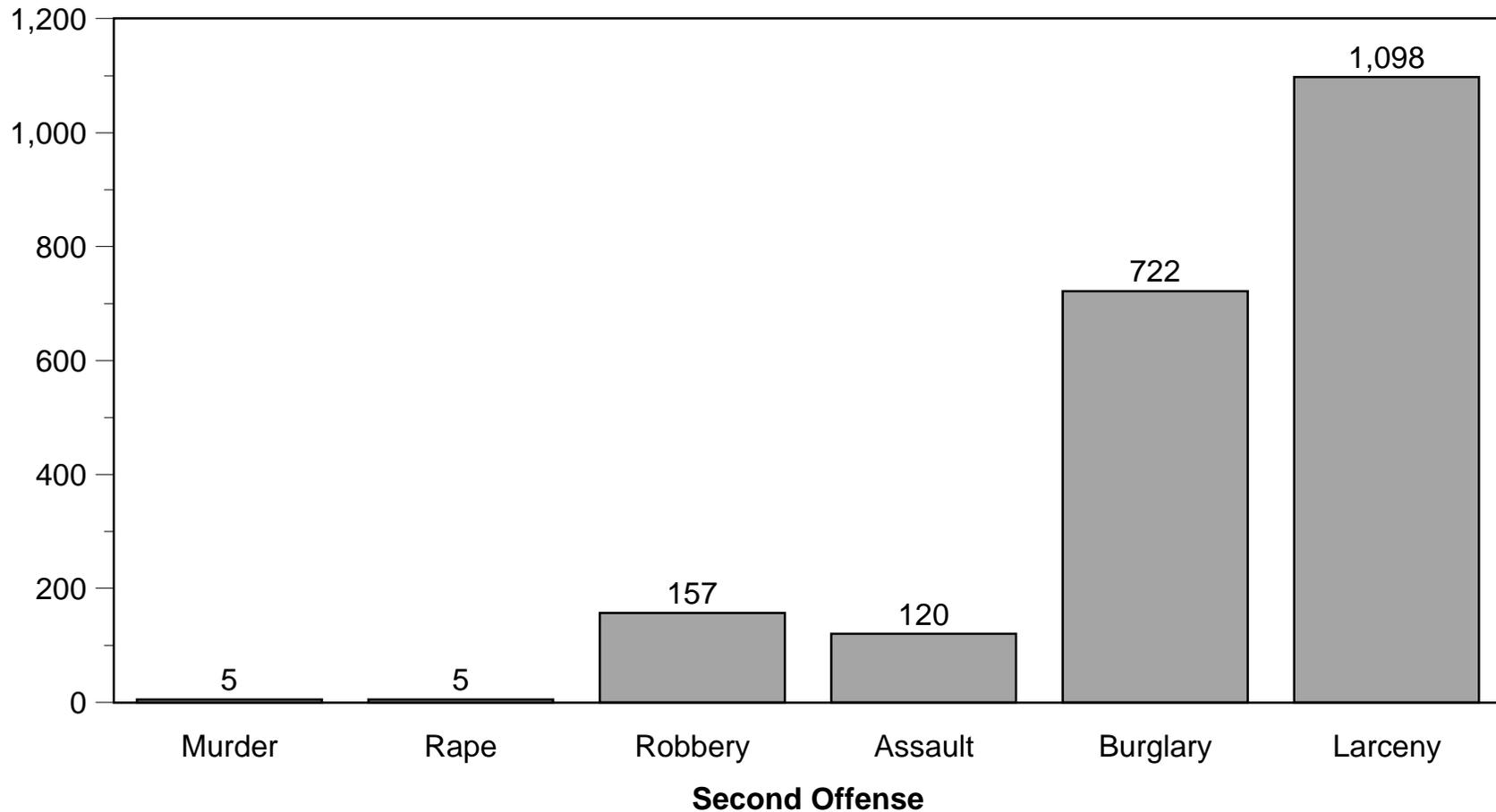# Comparing NIBRS to Summary Format

Motor Vehicle Theft

- Hierarchy Rule
- Possible mis-application of Hierarchy Rule in Summary reporting
- More accurate reporting

MVT with Second Offense
One Victim and One Offender

Number of Incidents

Bar chart showing Number of Incidents by Second Offense:
- Murder: 5
- Rape: 5
- Robbery: 157
- Assault: 120
- Burglary: 722
- Larceny: 1,098

Second Offense

Assault

- Hierarchy Rule
- Possible effect of restructured definition
- More accurate reporting

Aggravated Assault with Second Offense One Victim and One Offender

Number of Incidents