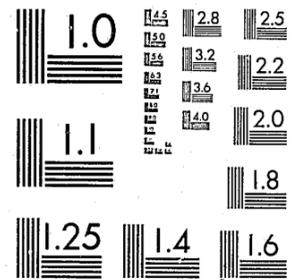


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ADDENDUM

To

"Variations in Imprisonment Rates  
in Mississippi"

Prepared at the request of  
Rep. Perrin Grissom,  
Mississippi House of Representatives,  
Penitentiary Committee

U.S. Department of Justice 82307  
National Institute of Justice

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Degree of Urbanization as a  
Factor in Imprisonment Rates

Upon reading "Variations in Imprisonment Rates in Mississippi," Rep. Perrin Grissom of Leland noted that most of the urban counties had high imprisonment rates and suggested that I investigate the relationship between the degree of urbanization and the imprisonment rates for the counties. That relationship is the subject of this addendum.

Urban population is defined by the U.S. Census as those people living in places of more than 2,500 people. Mississippi counties range from 0% urban to 83.9% urban. As illustrated in the table at the end of this addendum, of the 16 counties that are 50% or more urban, only two (Adams and Coahoma) have an imprisonment rate of less than 140 per 100,000. This was the basis for Rep. Grissom's observation. However, it should also be noted in the same table that of the 40 counties with imprisonment rates of 140 or above 26 of them are less than 50% urban and 8 of them are 100% rural, as is Issaquena with the highest imprisonment rate of 298. So there are preliminary indications that relationship is far from perfect.

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In doing the regression analysis, when the percentage of the population that is urban is considered alone it statistically accounts for 16.9% ( $R^2 = .169$ ) of the variation in imprisonment rates (significant at .0001). This is a moderate relationship, but stronger than the other variables considered in the original report.

However, and importantly, when the percentage that is urban is considered in combination with the crime rate for the 57 counties for which such data is available, it disappears completely from the regression equation. That means that for those 57 counties, the crime rate is a more powerful variable than the percentage urban and that once it is allowed to account for what it will (15.6% of the variation), the percentage urban adds nothing toward accounting for the variation in imprisonment rates.

When such a situation occurs in regression analysis it normally means that there is a strong relationship between two of the variables being used to try to account for the other. That is true in this instance. The modest relationship that exists between both the crime rate and the percentage urban (considered individually) and the imprisonment rate is not increased when the two are combined because

they are closely related to each other. The Mississippi Statistical Analysis Center found an  $R^2$  of .637 (significant at .00001) between the percentage urban and the crime rates for Mississippi counties.<sup>1</sup> This means that the percentage urban statistically accounts for 63.7% of the variation in crime rates, and shows why considering them together adds nothing to the explanation of imprisonment rates. They are too closely related to each other.

The fact that when both are considered together the crime rate is more powerful statistically than the percentage urban in accounting for imprisonment rates makes sense theoretically. Although the percentage urban seems to affect the crime rate, the crime rate itself should have more direct causal effect on the imprisonment rate when both are considered, and this seems to be the case. However, it is important to stress once again both the unreliability of the crime statistics and the relatively modest nature of the relationship between the crime rates and the imprisonment rates.

The information in this addendum is summarized in the following table:

ADDENDUM TABLE I

## Imprisonment Rates, Percentage Urban, and Crime Rates

Dependent Variable: Imprisonment Rate

Independent Variable(s): Percentage Urban (82 counties)  
 $R^2 = .169$  significant at  
.0001Crime Rate (57 counties)  
 $R^2 = .156$  significant at  
.005Percentage Urban not signifi-  
cant when considered with  
Crime Rate

County (ranked by imprisonment)	Imprisonment Rate	Percentage Urban	Crime Rate
1. Issaquena	298	0	1150.9
2. Warren	292	57.1	2412.1
3. Forrest	278	77.1	-
4. Leake	264	17.8	-
5. Scott	256	31.3	861.7
6. Clay	252	35.6	1987.7
7. Marion	228	32.7	1195.2
8. Madison	220	35.3	-
9. Leflore	215	53.2	7130.2
10. Hinds	214	83.9	5682.1
11. Neshoba	213	30.7	-
12. Harrison	207	83.1	5950.7
13. Lowndes	199	60.3	3674.0

Addendum Table I - Continued

County (ranked by imprisonment)	Imprisonment Rate	Percentage Urban	Crime Rate
14. Simpson	193	15.0	568.7
15. Washington	193	69.3	6199.6
16. Jeff Davis	188	0	37.6
17. Quitman	188	16.7	-
18. Webster	185	0	749.8
19. Lafayette	184	57.1	-
20. Sharkey	180	0	-
21. Carroll	174	0	425.0
22. Wayne	174	36.3	1345.1
23. Jackson	173	71.6	4404.5
24. Tunica	173	0	290.7
25. Bolivar	172	42.0	1910.3
26. Jones	172	51.1	3236.9
27. Grenada	171	50.1	-
28. Copiah	169	34.9	1128.9
29. Oktibbeha	161	55.6	1513.4
30. Chickasaw	160	34.0	-
31. Benton	155	0	388.0
32. Lauderdale	153	67.2	3031.1
33. Stone	153	37.5	1447.4
34. Panola	151	14.2	-
35. Lincoln	150	40.8	885.7
36. Holmes	149	23.7	1201.3
37. Pearl River	144	37.4	-

Addendum Table I - Continued

County (ranked by imprisonment)	Imprisonment Rate	Percentage Urban	Crime Rate
38. Hancock	143	58.0	2888.5
39. Sunflower	143	31.3	962.9
40. Walthall	140	0	863.3
41. Pike	137	37.1	926.2
42. Kemper	134	0	498.1
43. Claiborne	132	25.5	-
44. Lamar	128	2.2	713.8
45. Newton	126	18.7	963.7
46. Rankin	124	27.7	-
47. Alcorn	121	42.4	2054.3
48. Lee	119	44.4	2240.4
49. Pontotoc	119	19.8	-
50. Wilkinson	118	0	235.6
51. Attala	117	37.1	-
52. Adams	116	52.8	-
53. Coahoma	114	53.5	3263.2
54. Choctaw	111	0	366.5
55. Humphreys	111	21.6	1371.6
56. Winston	107	36.4	436.8
57. Tallahatchie	104	13.7	-
58. Monroe	103	39.5	-
59. Tishomingo	99	0	-
60. Calhoun	97	0	226.6

Addendum Table I - Continued

County (ranked by imprisonment)	Imprisonment Rate	Percentage Urban	Crime Rate
61. Yazoo	93	39.6	2858.9
62. Marshall	83	23.8	-
63. Montgomery	82	41.9	530.8
64. DeSoto	80	24.9	-
65. Perry	80	0	438.9
66. Covington	79	0	906.1
67. Union	77	33.7	311.6
68. George	75	0	298.5
69. Yalobusha	75	19.0	1116.7
70. Lawrence	74	0	710.5
71. Clarke	63	18.6	296.6
72. Tate	63	22.9	578.1
73. Jasper	62	0	620.5
74. Amite	53	0	610.3
75. Smith	53	0	1477.5
76. Franklin	49	0	339.8
77. Tippah	49	21.9	-
78. Noxubee	46	19.8	115.4
79. Ittawamba	44	17.2	-
80. Jefferson	44	0	-
81. Prentiss	43	29.3	2497.4
82. Greene	34	0	-

Data Sources: Department of Corrections  
Mississippi Statistical Analysis Center  
U. S. Census Bureau (1970)

FOOTNOTE

<sup>1</sup>Mississippi Statistical Analysis Center, Criminal Justice Planning Commission, "Crime Analysis for the State of Mississippi," (Jackson: 1980) p. A-45.

**END**