

TAKE HOME EXAM
DUE MON OCT 29

PHI 169 – CRITICAL REASONING – PROBABILITY EXAM #1

NB: Check next page for FBJS data

Consider the statistics by the Federal Bureau of Justice Statistics. As convenient notation, let WM , BM and HM stand for “a person is a white male”, “a person is a black male” and “a person is a hispanic male”, respectively. Let I stand for “a person, male or female, is incarcerated”. Calculate the following probabilities or answer the following questions:

- (a) $P(I)$ in 2001 and $P(I)$ in 1974. Did the probability of being incarcerated increase or decrease? If yes, by how much?
(NB: Look up on-line the total US population in 2001 and 1974 to answer this question.)
- (b) $P(WM|I)$ in 2001.
- (c) $P(BM|I)$ in 2001.
- (d) If one is incarcerated in 2001, is this person more probably a white male or a black male?
- (e) What are people saying—exactly—when they say that blacks are disproportionately represented in the incarcerated population? Express this using the language of conditional probabilities. *Hint*: think about the difference between $P(I|BM)$ and $P(BM|I)$ and compare them with $P(I|WM)$ and $P(WM|I)$.

Bureau of Justice Statistics Special Report

August 2003, NCJ 197976

Prevalence of Imprisonment in the U.S. Population, 1974-2001

Highlights

At yearend 2001 over 5.6 million U.S. adults had ever served time in State or Federal prison

U.S. residents ever incarcerated	Number		
	1974	1991	2001
Total	1,819,000	3,437,000	5,618,000
Male	1,677,000	3,142,000	5,037,000
White	837,000	1,395,000	1,978,000
Black	595,000	1,181,000	1,936,000
Hispanic	94,000	392,000	911,000
Female	142,000	295,000	581,000
White	86,000	139,000	225,000
Black	51,000	109,000	231,000
Hispanic	8,000	30,000	86,000