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TABLE 3.4

Percentage of Infants Born at Low Birthweight, by Race, U.S., Selected Years, 1950-1984

Year	All Races	White	Nonwhite		Ratio of Black to White
			Black	Total	
1950	7.5	7.1	—	10.2	—
1955	7.6	6.8	—	11.7	—
1960	7.7	6.8	—	12.8	—
1961	7.8	6.9	—	13.0	—
1962	8.0	7.0	—	13.1	—
1963	8.2	7.1	—	13.6	—
1964	8.2	7.1	—	13.9	—
1965	8.3	7.2	—	13.8	—
1966	8.3	7.2	—	13.9	—
1967	8.2	7.1	—	13.6	—
1968	8.2	7.1	—	13.7	—
1969	8.1	7.0	14.1	13.5	2.01
1970	7.9	6.8	13.9	13.3	2.04
1971	7.7	6.6	13.4	12.7	2.03
1972	7.7	6.5	13.6	12.9	2.09
1973	7.6	6.4	13.3	12.5	2.08
1974	7.4	6.3	13.1	12.4	2.08
1975	7.4	6.3	13.1	12.2	2.08
1976	7.3	6.1	13.0	12.1	2.13
1977	7.1	5.9	12.8	11.9	2.17
1978	7.1	5.9	12.8	11.9	2.17
1979	6.9	5.8	12.6	11.6	2.17
1980	6.8	5.7	12.5	11.5	2.19
1981	6.8	5.7	12.5	11.4	2.19
1982	6.8	5.6	12.4	11.2	2.21
1983	6.8	5.6	12.6	11.2	2.25
1984	6.7	5.6	12.4	11.1	2.21

Source: National Center for Health Statistics.

TABLE 3.5

Percentage of Infants Born at Very Low Birthweight, by Race, U.S., 1979-1984

Year	All Races	White	Black
1979	1.15	0.90	2.35
1980	1.15	0.90	2.43
1981	1.16	0.90	2.47
1982	1.17	0.91	2.51
1983	1.18	0.93	2.54
1984	1.19	0.92	2.56

Source: National Center for Health Statistics.

TABLE 3.6

Percentage of Babies Born to Women Receiving First Trimester Care, by Race, U.S., 1969-1984

Year	All Races	White	Nonwhite	
			Black	Total
1969	68.0	72.4	42.7	44.5
1970	67.9	72.4	44.3	46.0
1971	68.6	73.0	46.6	48.1
1972	69.4	73.6	49.0	50.6
1973	70.8	74.9	51.4	52.9
1974	72.1	75.9	53.9	55.3
1975	72.3	75.9	55.8	57.0
1976	73.5	76.8	57.7	58.8
1977	74.1	77.3	59.0	60.1
1978	74.9	78.2	60.2	61.4
1979	75.9	79.1	61.6	62.9
1980	76.3	79.3	62.7	63.8
1981	76.3	79.4	62.4	63.8
1982	76.1	79.3	61.5	63.2
1983	76.2	79.4	61.5	63.4
1984	76.5	79.3	62.2	64.1

Source: National Center for Health Statistics.

TABLE 3.7

Percentage of Babies Born to Women Receiving Late or No Prenatal Care, by Race, U.S., 1969-1984

Year	All Races	White	Nonwhite	
			Black	Total
1969	8.1	6.3	18.2	17.7
1970	7.9	6.2	16.6	16.2
1971	7.2	5.8	14.6	14.1
1972	7.0	5.5	13.2	13.1
1973	6.7	5.4	12.4	12.3
1974	6.2	5.0	11.4	11.2
1975	6.0	5.0	10.5	10.4
1976	5.7	4.8	9.9	9.8
1977	5.6	4.7	9.6	9.5
1978	5.4	4.5	9.2	9.1
1979	5.1	4.3	8.9	8.8
1980	5.1	4.3	8.8	8.8
1981	5.2	4.3	9.1	8.9
1982	5.5	4.5	9.6	9.3
1983	5.6	4.6	9.7	9.4
1984	5.6	4.7	9.6	9.3

Note: Late care is defined as starting in the third trimester.

Source: National Center for Health Statistics.

TABLE 3.8

Births to Mothers Under Age 20 as a Percentage of Total Births, by Race, U.S., Selected Years, 1950-1984

Year	All Races	White	Nonwhite	
			Black	Total
1950	11.94	10.46	21.22	21.72
1955	12.10	10.83	19.56	19.05
1960	13.9.	12.79	20.25	—
1961	14.27	13.17	20.18	—
1962	14.58	13.62	20.62	—
1963	14.49	13.40	21.18	—
1964	14.73	13.26	22.25	23.11
1965	15.92	14.28	23.95	25.16
1966	17.45	15.62	26.39	27.78
1967	17.18	14.98	27.91	29.46
1968	17.15	14.75	29.05	30.85
1969	17.08	14.62	29.21	31.04
1970	17.59	15.13	29.45	31.29
1971	17.98	15.44	29.65	31.67
1972	19.28	16.51	31.48	33.82
1973	19.66	16.84	31.95	34.44
1974	19.24	16.50	31.29	33.85
1975	18.91	16.26	30.34	32.90
1976	18.01	15.51	28.72	31.21
1977	17.15	14.74	27.34	29.72
1978	16.62	14.34	26.01	28.47
1979	16.03	13.82	25.07	27.50
1980	15.56	13.53	23.84	26.48
1981	14.79	12.86	22.63	25.29
1982	14.22	12.32	21.86	24.62
1983	13.71	11.78	21.35	24.25
1984	13.01	11.11	20.75	23.64

Source: National Center for Health Statistics.

TABLE 3.9

Infant Mortality Rates, All Races, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	16.1	14.4	15.1	13.0	13.8	13.1	12.9	-0.53	-3.9	-0.65
Alaska	14.4	15.9	12.3	12.7	11.1	12.4	11.2	-0.53	-2.2	-0.37
Arizona	13.1	13.6	12.4	11.8	9.3	9.5	9.5	-0.60	-0.5	-0.08
Arkansas	16.4	13.4	12.7	11.9	10.1	10.7	10.9	-0.92	-1.9	-0.32
California	11.8	11.2	11.1	10.2	9.9	9.7	9.4	-0.40	-0.4	-0.07
Colorado	11.2	10.6	10.1	10.0	9.1	10.0	10.2	-0.17	-1.2	-0.20
Connecticut	11.6	12.1	11.2	12.1	11.1	10.1	10.4	-0.20	-1.4	-0.23
Delaware	13.2	17.0	13.9	13.4	14.1	10.0	10.8	-0.40	-1.8	-0.30
District of Columbia	27.3	22.2	25.0	25.1	21.2	19.3	21.0	-1.05	-12.0	-2.00
Florida	14.1	14.9	14.6	13.3	12.8	12.2	10.8	-0.55	-1.8	-0.30
Georgia	15.4	15.1	14.5	13.8	12.7	13.4	12.9	-0.42	-3.9	-0.65
Hawaii	11.1	10.0	10.3	9.8	8.8	9.4	9.9	-0.20	-0.9	-0.15
Idaho	11.7	10.0	10.7	9.2	9.9	10.8	9.8	-0.32	-0.8	-0.13
Illinois	15.7	15.2	14.8	13.9	13.6	12.4	12.1	-0.60	-3.1	-0.52
Indiana	13.1	13.0	11.9	11.7	11.4	11.4	11.1	-0.33	-2.1	-0.35
Iowa	12.6	10.6	11.8	10.0	10.2	8.9	8.8	0.00	0.0	0.00
Kansas	12.5	11.3	10.4	11.4	10.4	10.3	10.1	-0.40	-1.1	-0.18
Kentucky	12.7	11.5	12.9	12.2	12.0	11.6	11.5	-0.20	-2.5	-0.42
Louisiana	17.3	15.6	14.3	13.7	13.0	13.5	12.1	-0.87	-3.1	-0.52
Maine	10.4	9.9	9.2	10.9	9.0	8.7	8.4	0.00	0.0	0.00
Maryland	14.7	14.5	14.0	12.6	11.9	11.8	11.8	-0.48	-2.8	-0.47
Massachusetts	11.1	10.9	10.5	9.7	10.1	9.1	9.0	0.00	0.0	0.00
Michigan	13.8	13.3	12.8	13.1	12.1	11.8	11.7	-0.35	-2.7	-0.45
Minnesota	12.0	10.8	10.0	10.3	9.5	9.8	8.9	0.00	0.0	0.00
Mississippi	18.7	17.6	17.0	15.4	15.4	15.1	14.4	-0.72	-5.4	-0.90
Missouri	14.8	13.7	12.4	12.6	11.7	10.7	10.4	-0.73	-1.4	-0.23
Montana	11.6	10.7	12.4	10.7	10.1	9.0	8.8	0.00	0.0	0.00
Nebraska	13.0	11.6	11.5	9.9	10.0	9.9	9.6	-0.57	-0.6	-0.10
Nevada	12.5	12.5	10.7	11.2	10.2	10.7	10.5	-0.33	-1.5	-0.25
New Hampshire	10.4	10.6	9.9	9.7	11.0	8.6	10.2	-0.03	-1.2	-0.20
New Jersey	13.0	12.9	12.5	10.7	11.7	11.5	10.9	-0.35	-1.9	-0.32
New Mexico	14.1	14.0	11.5	9.8	11.3	10.0	9.6	-0.75	-0.6	-0.10
New York	14.0	13.6	12.5	12.4	12.1	11.6	11.0	-0.50	-2.0	-0.33
North Carolina	16.6	15.1	14.5	13.1	13.7	13.2	12.4	-0.70	-3.4	-0.57
North Dakota	13.5	11.9	12.1	11.2	10.6	8.9	8.1	0.00	0.0	0.00
Ohio	13.3	12.8	12.8	12.3	11.5	11.2	10.4	-0.48	-1.4	-0.23
Oklahoma	14.3	12.5	12.7	11.9	12.3	10.9	11.0	-0.55	-2.0	-0.33
Oregon	12.9	10.9	12.2	10.9	10.5	9.6	9.9	-0.50	-0.9	-0.15
Pennsylvania	13.7	13.3	13.2	11.9	11.6	11.3	10.4	-0.55	-1.4	-0.23
Rhode Island	13.6	14.1	11.0	11.8	10.0	11.7	9.9	-0.62	-0.9	-0.15
South Carolina	18.6	17.1	15.6	16.1	16.1	15.0	14.7	-0.65	-5.7	-0.95
South Dakota	13.5	11.2	10.9	11.5	10.2	10.8	10.0	-0.58	-1.0	-0.17
Tennessee	14.8	13.6	13.5	12.6	12.0	12.8	11.8	-0.50	-2.8	-0.47
Texas	14.3	12.9	12.2	11.6	10.9	11.1	10.5	-0.63	-1.5	-0.25
Utah	11.4	10.7	10.4	9.8	11.0	8.8	9.1	-0.38	-0.1	-0.02
Vermont	13.6	8.5	10.7	7.7	9.3	8.7	8.7	0.00	0.0	0.00
Virginia	13.8	14.6	13.6	12.5	12.8	11.9	12.1	-0.28	-3.1	-0.52
Washington	12.5	11.5	11.8	10.5	10.6	9.5	10.2	-0.38	-1.2	-0.20
West Virginia	15.1	13.8	11.8	13.0	11.4	10.9	11.0	-0.68	-2.0	-0.33
Wisconsin	11.2	10.8	10.3	10.4	9.5	9.6	9.9	-0.22	-0.9	-0.15
Wyoming	13.0	13.2	9.8	10.6	9.8	9.8	11.1	-0.32	-2.1	-0.35
United States Total	13.8	13.1	12.6	11.9	11.5	11.2	10.8	-0.50	-1.8	-0.30

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.10

Infant Mortality Rates, White, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	12.1	11.4	11.6	10.2	10.3	10.3	9.7	-0.40	-0.7	-0.12
Alaska	13.5	13.4	9.4	11.1	11.1	10.7	9.3	-0.70	-0.3	-0.05
Arizona	12.4	12.5	11.8	11.0	9.1	8.9	8.8	0.00	0.0	0.00
Arkansas	14.3	11.4	10.3	9.8	8.0	9.1	9.2	-0.85	-0.2	-0.03
California	11.2	10.8	10.6	9.9	9.6	9.4	9.1	-0.35	-0.1	-0.02
Colorado	11.0	10.5	9.8	10.1	9.1	10.0	9.9	-0.18	-0.9	-0.15
Connecticut	10.0	1.9	10.2	10.6	9.8	8.9	9.2	-0.13	-0.2	-0.03
Delaware	9.9	13.1	9.8	10.0	11.2	7.3	8.4	0.00	0.0	0.00
District of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	11.8	12.4	11.8	10.4	10.1	9.9	8.5	0.00	0.0	0.00
Georgia	11.8	11.7	10.8	10.3	9.6	9.9	10.0	-0.30	-1.0	-0.17
Hawaii	10.5	10.1	11.6	9.6	8.9	10.3	7.7	0.00	0.0	0.00
Idaho	11.8	10.0	10.7	9.4	10.2	10.7	9.8	-0.33	-0.8	-0.13
Illinois	12.8	12.1	11.7	11.2	10.8	9.7	9.5	-0.55	-0.5	-0.08
Indiana	11.9	12.0	10.5	10.8	10.4	10.7	10.2	-0.28	-1.2	-0.20
Iowa	12.3	10.3	11.5	9.8	10.0	8.6	8.8	0.00	0.0	0.00
Kansas	11.7	10.6	9.5	10.6	10.4	10.0	9.4	-0.38	-0.4	-0.07
Kentucky	12.0	10.7	12.0	11.8	11.4	11.0	10.9	-0.18	-1.9	-0.32
Louisiana	12.7	12.1	10.5	10.2	9.4	9.8	8.9	0.00	0.0	0.00
Maine	10.5	9.7	9.4	11.1	9.0	8.7	8.4	0.00	0.0	0.00
Maryland	11.7	11.6	11.6	10.4	8.9	8.9	9.6	-0.32	-0.8	-0.13
Massachusetts	10.5	10.5	10.1	9.3	9.6	8.5	8.6	0.00	0.0	0.00
Michigan	11.8	11.5	10.6	10.9	9.8	9.6	9.4	-0.40	-0.4	-0.07
Minnesota	11.6	10.4	9.6	9.9	9.1	9.6	8.9	0.00	0.0	0.00
Mississippi	11.5	11.9	11.1	10.5	10.4	10.7	10.0	-0.25	-1.0	-0.17
Missouri	12.2	12.1	11.1	11.7	10.1	9.2	9.0	0.00	0.0	0.00
Montana	10.4	10.6	11.8	10.1	10.2	8.6	8.9	0.00	0.0	0.00
Nebraska	12.1	11.0	10.7	9.5	9.6	9.5	9.2	-0.48	-0.20	-0.03
Nevada	11.9	11.2	10.0	10.4	9.7	10.4	10.5	-0.23	-1.5	-0.25
New Hampshire	10.5	10.7	9.9	9.8	11.0	8.6	10.2	-0.05	-1.2	-0.20
New Jersey	10.5	10.5	10.3	9.0	9.6	9.5	9.3	-0.20	-0.3	-0.05
New Mexico	13.4	12.9	11.3	9.7	11.2	9.8	9.4	-0.67	-0.4	-0.07
New York	11.9	11.9	10.8	10.6	10.6	9.9	9.8	-0.35	-0.8	-0.13
North Carolina	13.0	11.2	12.1	10.7	10.8	10.5	9.9	-0.52	-0.9	-0.15
North Dakota	13.4	11.1	11.7	10.7	9.8	8.5	7.7	0.00	0.0	0.00
Ohio	12.1	11.6	11.2	10.8	10.3	9.8	9.3	-0.47	-0.3	-0.05
Oklahoma	13.4	11.8	12.1	11.5	12.3	10.7	11.1	-0.38	-2.1	-0.35
Oregon	12.9	10.8	12.2	10.8	10.4	9.6	10.0	-0.48	-1.0	-0.17
Pennsylvania	12.5	12.0	11.9	10.7	10.3	9.8	8.8	0.00	0.0	0.00
Rhode Island	12.2	12.5	10.9	11.5	9.3	11.0	9.4	-0.47	-0.4	-0.07
South Carolina	13.3	12.4	10.8	12.4	11.9	11.3	11.0	-0.38	-2.0	-0.33
South Dakota	12.1	9.6	9.0	10.2	8.4	8.3	8.8	0.00	0.0	0.00
Tennessee	13.1	11.5	11.9	10.2	10.1	10.7	9.8	-0.55	-0.8	-0.13
Texas	12.9	11.5	11.2	10.7	10.0	10.4	9.7	-0.53	-0.7	-0.12
Utah	11.3	10.7	10.5	9.7	11.0	8.9	9.0	0.00	0.0	0.00
Vermont	13.5	8.6	10.7	7.6	9.4	8.5	8.8	0.00	0.0	0.00
Virginia	11.5	12.5	11.9	10.7	10.7	9.6	9.9	-0.27	-0.9	-0.15
Washington	12.3	11.6	11.5	10.2	10.5	9.2	9.9	-0.40	-0.9	-0.15
West Virginia	14.9	13.4	11.4	12.7	11.4	10.7	10.8	-0.68	-1.8	-0.30
Wisconsin	10.9	10.3	9.7	9.8	8.7	9.0	9.2	-0.28	-0.2	-0.03
Wyoming	13.4	13.2	9.3	10.8	9.9	9.9	11.2	-0.37	-2.2	-0.37
United States Total	12.0	11.4	11.0	10.5	10.1	9.7	9.4	-0.43	-0.4	-0.07

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.11

Infant Mortality Rates, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	23.7	19.9	21.6	18.2	20.4	18.5	19.2	-0.75	-7.2	-1.20
Alaska	—	—	—	—	—	—	—	—	—	—
Arizona	18.7	24.5	18.4	21.1	—	20.7	16.9	-0.30	-4.9	-0.82
Arkansas	22.6	19.6	20.0	18.3	16.9	15.6	16.7	-0.98	-4.7	-0.78
California	19.9	17.9	18.0	15.5	15.9	16.7	15.6	-0.72	-3.6	-0.60
Colorado	17.1	15.9	19.1	—	12.4	15.5	17.0	-0.02	-5.0	-0.83
Connecticut	22.0	21.2	19.1	22.4	21.1	19.6	19.3	-0.45	-7.3	-1.22
Delaware	23.4	30.1	27.9	24.4	23.9	17.3	19.4	-0.67	-7.4	-1.23
District of Columbia	30.2	25.6	26.7	26.7	24.1	21.3	24.3	-0.98	-12.3	-2.05
Florida	20.8	22.4	22.8	22.0	21.1	19.3	18.4	-0.40	-6.4	-1.07
Georgia	22.1	21.4	21.0	19.9	18.2	19.8	18.5	-0.60	-6.5	-1.08
Hawaii	—	—	—	—	—	—	—	—	—	—
Idaho	—	—	—	—	—	—	—	—	—	—
Illinois	26.7	26.8	26.3	24.4	24.6	23.1	22.0	-0.78	-10.0	-1.67
Indiana	23.4	22.2	23.4	19.6	20.2	18.1	19.1	-0.72	-7.1	-1.18
Iowa	—	—	27.2	—	—	—	—	—	—	—
Kansas	22.0	19.2	20.6	20.9	17.7	15.3	18.5	-0.58	-6.5	-1.08
Kentucky	19.9	19.9	22.0	17.1	18.3	18.1	18.4	-0.25	-6.4	-1.07
Louisiana	24.6	21.2	20.6	19.9	19.2	19.9	17.4	-1.20	-5.4	-0.90
Maine	—	—	—	—	—	—	—	—	—	—
Maryland	22.5	21.6	20.4	18.2	19.3	18.6	17.0	-0.92	-5.0	-0.83
Massachusetts	20.1	16.4	16.8	16.0	18.6	16.8	14.2	-0.98	-2.2	-0.37
Michigan	24.6	23.0	24.2	24.9	24.6	23.1	23.5	-0.18	-11.5	-1.92
Minnesota	26.7	23.4	20.0	25.9	18.2	22.5	—	-0.84	-10.5	-1.50
Mississippi	26.4	23.6	23.7	20.6	20.8	20.0	19.5	-1.15	-7.5	-1.25
Missouri	29.0	23.2	20.7	18.7	20.6	19.1	18.3	-1.82	-6.3	-1.05
Montana	—	—	—	—	—	—	—	—	—	—
Nebraska	28.1	—	25.2	—	—	—	—	—	—	—
Nevada	—	—	—	22.8	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—	—	—	—
New Jersey	22.8	22.5	21.9	18.3	20.4	19.4	18.4	-0.73	-6.4	-1.07
New Mexico	—	—	—	—	—	—	—	—	—	—
New York	21.9	20.7	20.0	19.3	18.1	18.1	16.2	-0.95	-4.2	-0.70
North Carolina	24.9	24.2	20.0	19.1	20.6	19.6	18.8	-1.02	-6.8	-1.13
North Dakota	—	—	—	—	—	—	—	—	—	—
Ohio	21.5	20.6	23.0	22.1	19.3	19.5	17.7	-0.63	-5.7	-0.95
Oklahoma	21.5	18.7	21.8	18.4	16.8	14.9	14.8	-1.12	-2.8	-0.47
Oregon	—	—	—	—	—	—	—	—	—	—
Pennsylvania	22.1	22.5	23.1	21.1	20.8	21.1	21.3	-0.13	-9.3	-1.55
Rhode Island	—	—	—	—	—	—	—	—	—	—
South Carolina	26.5	24.2	22.9	21.8	22.7	20.9	20.7	-0.97	-8.7	-1.45
South Dakota	—	—	—	—	—	—	—	—	—	—
Tennessee	21.2	20.9	19.3	21.2	19.3	20.3	18.9	-0.38	-6.9	-1.15
Texas	22.6	21.3	18.8	17.8	16.6	16.3	15.8	-1.13	-3.8	-0.63
Utah	—	—	—	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	21.7	21.3	19.8	18.8	20.1	20.0	19.6	-0.35	-7.6	-1.27
Washington	21.2	12.5	16.4	15.5	16.9	18.5	21.3	0.02	-9.3	-1.55
West Virginia	—	—	—	—	—	—	—	—	—	—
Wisconsin	15.2	18.8	18.5	17.5	20.2	16.4	18.7	0.58	-6.7	-1.12
Wyoming	—	—	—	—	—	—	—	—	—	—
United States Total	23.1	21.8	21.4	20.0	19.6	19.2	18.4	-0.78	-6.4	-1.07

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.12

Infant Mortality Rates, Nonwhite, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Change in Rate 1978-1984: Total needed	Change in Rate 1978-1984: Needed per yr
Alabama	23.4	19.7	21.4	18.1	20.0	18.3	18.9	-0.75	-6.9	-1.15
Alaska	16.7	22.0	18.9	16.4	14.9	16.5	16.1	-0.10	-4.1	-0.68
Arizona	16.4	19.7	15.8	15.9	10.3	12.3	13.2	-0.53	-1.2	-0.20
Arkansas	22.1	19.1	19.4	17.7	16.1	15.3	16.0	-1.02	-4.0	-0.67
California	14.5	13.3	13.0	11.4	10.8	11.0	10.6	0.00	0.0	0.00
Colorado	13.3	11.6	13.7	9.0	8.9	10.7	12.5	-0.13	-0.5	-0.08
Connecticut	22.0	20.0	17.6	21.2	18.9	17.6	17.2	-0.80	-5.2	-0.87
Delaware	23.2	29.2	26.8	23.3	23.2	17.6	18.6	-0.77	-6.6	-1.10
District of Columbia	29.7	25.2	26.3	26.6	24.3	21.0	24.1	-0.93	-12.1	-2.02
Florida	20.1	21.6	22.0	21.2	20.4	18.5	17.7	-0.40	-5.7	-0.95
Georgia	21.5	20.9	20.7	19.6	17.9	19.5	18.2	-0.55	-6.2	-1.03
Hawaii	11.3	10.0	9.9	9.8	8.7	9.1	10.6	0.00	0.0	0.00
Idaho	—	—	—	—	—	—	—	—	—	—
Illinois	25.1	25.0	24.7	22.5	22.8	21.4	20.5	-0.77	-8.5	-1.42
Indiana	22.3	21.1	22.0	18.6	18.9	17.0	17.8	-0.75	-5.8	-0.97
Iowa	21.0	18.3	20.8	—	—	—	—	—	—	—
Kansas	19.7	17.0	17.9	17.9	14.4	13.0	15.8	-0.65	-3.8	-0.63
Kentucky	19.1	18.7	20.3	15.9	16.9	16.5	17.3	-0.30	-5.3	-0.88
Louisiana	24.3	20.8	20.3	19.3	18.7	19.3	16.9	-1.23	-4.9	-0.82
Maine	—	—	—	—	—	—	—	—	—	—
Maryland	21.3	20.3	19.1	17.1	18.1	17.5	15.9	-0.90	-3.9	-0.65
Massachusetts	17.0	14.1	14.3	13.7	14.7	14.1	12.3	-0.78	-0.3	-0.05
Michigan	23.2	21.6	22.7	23.3	22.9	21.7	22.0	-0.20	-10.0	-1.67
Minnesota	18.3	17.5	16.0	15.7	14.0	13.2	8.7	0.00	0.0	0.00
Mississippi	26.1	23.5	23.3	20.6	20.9	19.8	19.2	-1.15	-7.2	-1.20
Missouri	28.2	22.1	19.5	17.5	19.7	18.2	17.3	-1.82	-5.3	-0.88
Montana	21.5	—	—	—	—	—	—	—	—	—
Nebraska	25.7	20.0	21.7	15.9	14.9	—	—	—	—	—
Nevada	—	19.8	14.3	15.2	13.1	12.0	—	—	—	—
New Hampshire	—	—	—	—	—	—	—	—	—	—
New Jersey	21.7	21.2	19.9	16.8	19.0	18.3	16.7	-0.83	-4.7	-0.78
New Mexico	17.4	19.5	12.6	10.3	11.5	11.2	10.6	0.00	0.0	0.00
New York	20.9	19.2	17.8	18.2	16.8	16.7	14.8	-1.02	-2.8	-0.47
North Carolina	23.9	23.3	19.4	18.3	19.7	19.0	17.9	-1.00	-5.9	-0.98
North Dakota	—	—	—	—	—	—	—	—	—	—
Ohio	20.6	19.8	21.9	20.9	18.5	18.7	16.9	-0.62	-4.9	-0.82
Oklahoma	17.8	15.2	15.3	13.3	12.3	11.3	10.6	0.00	0.0	0.00
Oregon	—	11.7	12.3	11.5	11.9	—	—	—	—	—
Pennsylvania	21.2	21.3	21.9	19.5	19.4	20.0	20.0	-0.20	-8.0	-1.33
Rhode Island	—	30.9	—	—	—	—	—	—	—	—
South Carolina	26.0	23.8	22.5	21.6	22.2	20.5	20.2	-0.97	-8.2	-1.37
South Dakota	22.4	21.3	22.3	19.7	20.2	23.8	16.1	-1.05	-4.1	-0.68
Tennessee	20.7	20.4	18.8	20.7	18.7	19.8	18.5	-0.37	-6.5	-1.08
Texas	21.5	20.2	17.5	16.6	15.2	14.7	14.4	-1.18	-2.4	-0.40
Utah	—	—	—	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	20.1	20.1	18.4	17.5	18.7	18.3	18.3	-0.30	-6.3	-1.05
Washington	15.0	10.4	13.6	12.7	11.9	11.6	12.4	-0.43	-0.4	-0.07
West Virginia	—	—	—	—	—	—	—	—	—	—
Wisconsin	14.2	16.2	16.3	16.4	17.1	15.4	16.7	0.42	-4.7	-0.78
Wyoming	—	—	—	—	—	—	—	—	—	—
United States Total	21.2	19.8	19.1	17.8	17.3	16.8	16.1	-0.85	-4.1	-0.68

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.13

Neonatal Mortality Rates, All Races, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	11.0	9.4	9.9	8.4	9.2	8.3	8.7	-0.38	-2.2	-0.37
Alaska	9.4	9.7	6.5	8.0	6.5	6.6	5.7	0.00	0.0	0.00
Arizona	9.0	8.9	8.3	7.4	5.7	5.8	5.7	0.00	0.0	0.00
Arkansas	10.5	8.0	7.6	7.0	5.8	6.2	6.9	-0.60	-0.4	-0.07
California	7.7	7.4	7.2	6.5	6.3	6.2	6.0	0.00	0.0	0.00
Colorado	6.9	6.4	6.6	6.5	5.7	5.9	5.8	0.00	0.0	0.00
Connecticut	9.3	9.3	8.1	9.5	8.6	7.8	7.5	-0.30	-1.0	-0.17
Delaware	9.6	13.6	10.0	10.0	10.3	6.8	7.6	-0.33	-1.1	-0.18
District of Columbia	20.2	17.5	18.3	19.5	15.6	14.1	16.0	-0.70	-9.5	-1.58
Florida	9.3	9.9	9.8	8.9	9.0	7.7	6.9	-0.40	-0.4	-0.07
Georgia	10.3	10.0	9.5	8.8	8.3	9.0	8.7	-0.27	-2.2	-0.37
Hawaii	7.6	6.8	7.2	7.2	5.7	6.3	6.5	0.00	0.0	0.00
Idaho	7.3	6.6	6.2	5.3	6.3	5.8	5.0	0.00	0.0	0.00
Illinois	10.9	10.4	10.0	9.8	9.3	8.2	8.1	-0.47	-1.6	-0.27
Indiana	8.6	9.2	7.9	8.0	7.7	7.5	7.1	-0.25	-0.6	-0.10
Iowa	8.9	7.2	7.9	6.5	6.3	5.6	5.9	0.00	0.0	0.00
Kansas	8.7	7.9	6.8	8.1	6.9	6.1	6.5	0.00	0.0	0.00
Kentucky	8.6	7.7	8.2	8.0	7.8	7.9	7.4	-0.20	-0.9	-0.15
Louisiana	12.0	10.3	10.0	9.3	8.4	9.0	8.0	-0.67	-1.5	-0.25
Maine	6.1	5.7	5.8	6.8	6.2	5.9	5.1	0.00	0.0	0.00
Maryland	11.1	10.3	10.2	9.1	8.4	8.1	8.1	-0.50	-1.6	-0.27
Massachusetts	8.1	8.1	7.7	6.9	7.6	6.4	6.1	0.00	0.0	0.00
Michigan	9.2	9.0	8.9	9.1	8.7	8.0	8.1	-0.18	-1.6	-0.27
Minnesota	8.3	7.2	6.2	6.6	5.9	6.2	5.5	0.00	0.0	0.00
Mississippi	12.3	11.1	11.0	10.5	10.2	9.3	9.0	-0.55	-2.5	-0.42
Missouri	10.8	9.5	8.2	8.7	7.5	7.2	6.4	0.00	0.0	0.00
Montana	7.3	7.1	7.7	6.3	6.5	4.3	4.5	0.00	0.0	0.00
Nebraska	9.1	7.9	7.5	6.1	6.9	6.5	6.2	0.00	0.0	0.00
Nevada	8.6	6.6	6.7	6.5	6.3	5.8	6.0	0.00	0.0	0.00
New Hampshire	8.0	7.7	7.5	6.3	8.6	5.8	7.1	-0.15	-0.6	-0.10
New Jersey	9.3	9.2	8.6	7.3	8.2	7.8	7.5	-0.30	-1.0	-0.17
New Mexico	9.0	8.9	7.3	5.9	6.6	5.5	6.0	0.00	0.0	0.00
New York	10.1	9.7	8.7	8.6	8.5	7.8	7.5	-0.43	-1.0	-0.17
North Carolina	11.4	10.3	10.0	8.8	9.5	8.7	8.1	-0.55	-1.6	-0.27
North Dakota	9.6	9.0	7.7	7.3	6.8	6.1	4.5	0.00	0.0	0.00
Ohio	9.2	8.8	8.7	8.6	7.9	7.7	6.8	-0.40	-0.3	-0.05
Oklahoma	9.0	8.0	8.1	7.2	7.4	6.8	7.0	-0.33	-0.5	-0.08
Oregon	7.7	6.6	7.0	6.9	6.2	5.4	4.8	0.00	0.0	0.00
Pennsylvania	10.5	9.7	9.7	8.5	8.2	7.9	7.2	-0.55	-0.7	-0.12
Rhode Island	10.6	10.2	8.5	9.3	8.0	9.1	7.0	-0.60	-0.5	-0.08
South Carolina	12.4	11.3	10.9	10.9	10.7	9.8	9.8	-0.43	-3.3	-0.55
South Dakota	9.4	5.8	5.7	7.6	7.0	5.8	5.5	0.00	0.0	0.00
Tennessee	10.5	9.1	9.1	8.9	8.0	8.4	8.0	-0.42	-1.5	-0.25
Texas	9.8	8.6	8.2	7.6	7.0	6.9	6.6	-0.53	-0.1	-0.02
Utah	7.8	6.8	6.6	5.8	6.8	5.4	5.6	0.00	0.0	0.00
Vermont	9.1	6.3	6.0	4.3	6.1	6 2	5.5	0.00	0.0	0.00
Virginia	9.7	10.7	9.8	9.0	9.3	8.3	8.7	-0.17	-2.2	-0.37
Washington	7.9	7.1	7.0	6.3	6.0	5.4	5.4	0.00	0.0	0.00
West Virginia	10.3	9.1	8.0	8.8	7.2	7.0	7.1	-0.53	-0.6	-0.10
Wisconsin	7.6	7.1	6.7	6.9	6.2	6.3	6.3	0.00	0.0	0.00
Wyoming	8.1	8.4	6.2	8.1	5.9	5.1	7.1	-0.17	-0.6	-0.10
United States Total	9.5	8.9	8.5	8.0	7.7	7.3	7.0	-0.42	-0.5	-0.08

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.14

Neonatal Mortality Rates, White, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	8.7	7.8	7.8	6.8	7.4	6.9	6.9
Alaska	9.6	8.5	5.3	7.2	6.0	5.8	4.7
Arizona	9.0	8.7	8.3	7.3	6.1	5.7	5.6
Arkansas	9.4	7.2	6.5	6.1	4.8	5.6	5.7
California	7.3	7.1	6.9	6.3	6.1	6.0	5.8
Colorado	6.8	6.4	6.4	6.5	5.6	5.7	5.6
Connecticut	8.1	8.3	7.1	8.3	7.7	6.8	6.6
Delaware	6.9	9.9	6.3	7.6	8.7	4.8	6.1
District of Columbia	—	—	—	—	—	—	—
Florida	8.1	8.6	8.3	7.1	7.2	6.4	5.7
Georgia	8.2	8.2	7.5	6.6	6.5	6.8	6.6
Hawaii	7.0	7.2	8.3	8.2	—	7.0	—
Idaho	7.4	6.6	6.1	5.5	6.4	5.8	5.0
Illinois	9.4	8.7	8.1	8.2	7.7	6.7	6.6
Indiana	8.0	9.5	7.1	7.7	6.9	7.2	6.6
Iowa	8.7	7.1	7.7	6.4	6.2	5.5	5.9
Kansas	8.1	7.5	6.2	7.6	6.7	6.0	6.0
Kentucky	8.0	7.2	7.8	7.6	7.4	7.7	6.9
Louisiana	9.4	8.4	7.3	7.0	6.3	6.6	5.9
Maine	6.2	5.8	5.9	7.0	6.2	5.9	5.0
Maryland	8.7	8.4	8.5	7.5	6.3	6.0	6.7
Massachusetts	7.8	7.9	7.5	6.7	7.2	6.1	5.9
Michigan	7.8	7.7	7.3	7.5	6.9	6.4	6.4
Minnesota	8.1	7.1	6.1	6.4	5.8	6.2	5.5
Mississippi	8.3	8.1	7.7	7.0	6.9	7.0	7.0
Missouri	9.0	8.4	7.9	8.2	6.3	6.1	5.5
Montana	6.9	7.5	7.4	6.5	6.8	4.0	4.6
Nebraska	8.4	7.6	7.1	5.8	6.7	6.5	5.9
Nevada	8.1	5.9	6.4	6.0	6.1	5.8	6.1
New Hampshire	8.2	7.7	7.5	6.3	8.7	5.8	7.1
New Jersey	7.8	7.7	7.6	6.4	7.1	6.6	6.8
New Mexico	9.0	8.8	7.5	6.1	6.9	5.5	6.2
New York	8.8	8.6	7.7	7.4	7.6	7.0	6.9
North Carolina	9.2	8.0	8.4	7.1	7.2	7.0	6.7
North Dakota	10.0	8.4	7.7	7.0	6.6	5.9	4.5
Ohio	8.3	7.9	7.8	7.5	7.1	6.8	6.1
Oklahoma	8.7	8.0	7.7	7.1	7.4	6.8	7.2
Oregon	7.7	6.6	6.9	6.9	6.2	5.4	4.9
Pennsylvania	9.7	8.9	8.8	7.7	7.4	6.9	6.1
Rhode Island	9.8	9.3	8.9	9.0	7.6	8.7	6.7
South Carolina	9.4	8.8	7.6	8.1	8.1	7.1	7.8
South Dakota	9.3	5.5	5.2	7.2	6.3	5.3	5.0
Tennessee	9.1	7.6	8.1	7.0	6.6	7.0	6.4
Texas	8.9	7.8	7.6	7.0	6.5	6.4	6.2
Utah	7.7	7.0	6.6	5.7	6.9	5.4	5.4
Vermont	8.9	6.3	6.0	4.3	6.2	6.1	5.5
Virginia	8.0	9.3	8.4	7.6	7.6	6.4	7.2
Washington	7.8	7.2	7.1	6.4	6.0	5.4	5.3
West Virginia	10.1	8.8	7.8	8.6	7.1	6.9	7.0
Wisconsin	7.6	6.9	6.5	6.7	5.8	6.1	5.8
Wyoming	8.3	8.6	6.1	8.4	5.9	5.0	7.0
United States Total	8.4	7.9	7.5	7.1	6.8	6.4	6.2

Source: National Center for Health Statistics.

TABLE 3.15

Neonatal Mortality Rates, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	15.2	12.4	13.6	11.5	12.9	10.9	12.2
Alaska	—	—	—	—	—	—	—
Arizona	—	15.0	—	15.7	—	—	—
Arkansas	13.8	10.6	11.3	9.6	9.0	7.9	10.8
California	13.7	11.4	11.6	9.9	10.0	11.3	9.7
Colorado	—	—	—	—	—	—	—
Connecticut	18.3	16.7	15.7	17.6	15.8	15.3	14.2
Delaware	17.3	25.4	22.4	18.0	16.1	—	—
District of Columbia	22.2	20.0	19.4	20.1	18.2	15.1	18.7
Florida	12.9	14.0	14.4	14.4	14.6	11.6	10.9
Georgia	14.2	13.4	13.1	12.7	11.7	13.2	12.7
Hawaii	—	—	—	—	—	—	—
Idaho	—	—	—	—	—	—	—
Illinois	16.9	17.1	16.9	16.1	15.9	13.8	13.8
Indiana	14.6	15.2	15.0	11.4	14.3	11.0	12.3
Iowa	—	—	—	—	—	—	—
Kansas	14.9	13.3	14.2	14.6	11.0	—	11.8
Kentucky	14.4	12.9	13.6	12.5	12.3	10.9	12.5
Louisiana	16.1	13.4	14.5	13.3	11.9	13.0	11.6
Maine	—	—	—	—	—	—	—
Maryland	17.3	15.2	14.8	13.1	13.7	13.3	11.8
Massachusetts	14.1	12.2	11.9	11.0	13.7	12.1	8.8
Michigan	16.1	15.8	17.1	17.6	18.4	16.2	16.9
Minnesota	—	—	—	19.1	—	—	—
Mississippi	16.7	14.4	14.6	14.2	13.7	11.8	11.4
Missouri	20.4	16.2	12.9	12.1	12.6	13.3	11.5
Montana	—	—	—	—	—	—	—
Nebraska	—	—	—	—	—	—	—
Nevada	—	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—
New Jersey	15.4	15.0	13.2	11.6	12.6	12.3	11.0
New Mexico	—	—	—	—	—	—	—
New York	14.8	14.5	13.4	13.3	12.0	11.4	10.0
North Carolina	16.5	15.8	13.7	12.9	15.2	12.7	11.8
North Dakota	—	—	—	—	—	—	—
Ohio	15.1	13.9	14.4	15.6	13.2	13.1	11.1
Oklahoma	12.3	10.5	14.3	10.2	10.8	9.4	9.2
Oregon	—	—	—	—	—	—	—
Pennsylvania	16.0	15.4	15.9	14.4	14.1	14.4	14.6
Rhode Island	—	—	—	—	—	—	—
South Carolina	16.9	15.1	15.7	15.0	14.9	14.1	13.1
South Dakota	—	—	—	—	—	—	—
Tennessee	15.4	14.4	12.8	15.5	13.1	13.4	13.5
Texas	15.6	13.5	12.4	12.1	10.3	10.6	9.7
Utah	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—
Virginia	15.6	15.3	14.7	14.0	15.0	14.8	13.6
Washington	—	—	—	—	10.5	9.9	12.6
West Virginia	—	—	—	—	—	—	—
Wisconsin	9.4	11.2	10.7	10.4	12.5	9.4	12.2
Wyoming	—	—	—	—	—	—	—
United States Total	15.5	14.3	14.1	13.4	13.1	12.4	11.8

Source: National Center for Health Statistics.

TABLE 3.16

Neonatal Mortality Rates, Nonwhite, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	15.0	12.3	13.5	11.3	12.6	10.9	12.1
Alaska	—	12.5	—	10.0	—	6.7	—
Arizona	9.2	10.3	8.4	8.0	3.7	8.4	5.8
Arkansas	13.5	10.3	11.0	9.4	8.6	7.9	10.3
California	9.8	8.6	8.5	7.3	6.9	7.3	6.5
Colorado	—	—	9.0	—	—	7.8	8.1
Connecticut	17.1	15.7	14.5	16.4	14.0	13.7	12.7
Delaware	17.3	24.7	21.5	17.3	15.8	12.6	—
District of Columbia	21.8	19.7	19.1	20.1	18.3	14.8	18.5
Florida	12.5	13.5	13.9	13.8	14.1	11.2	10.5
Georgia	13.8	13.1	12.9	12.5	11.5	12.9	12.5
Hawaii	7.9	6.7	6.8	6.9	5.8	6.1	7.0
Idaho	—	—	—	—	—	—	—
Illinois	16.0	15.9	15.9	14.9	14.8	12.9	12.8
Indiana	13.9	14.5	14.0	10.8	13.4	10.2	11.3
Iowa	—	—	—	—	—	—	—
Kansas	13.2	11.6	12.0	12.3	9.0	6.7	10.3
Kentucky	13.7	12.1	12.5	11.6	11.5	9.9	11.8
Louisiana	15.9	13.2	14.2	12.9	11.7	12.6	11.2
Maine	—	—	—	—	—	—	—
Maryland	16.2	14.2	13.9	12.4	12.8	12.4	11.0
Massachusetts	11.9	10.4	10.3	9.4	10.7	9.9	7.6
Michigan	15.3	14.8	16.1	16.5	17.0	15.0	15.6
Minnesota	11.0	9.2	8.2	10.1	7.6	7.0	—
Mississippi	16.5	14.4	14.4	14.2	13.7	11.7	11.2
Missouri	19.7	15.4	12.0	11.3	12.0	12.6	11.0
Montana	—	—	—	—	—	—	—
Nebraska	17.9	—	—	—	—	—	—
Nevada	—	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—
New Jersey	14.8	14.2	12.1	10.6	11.9	11.7	10.2
New Mexico	8.9	9.5	—	—	—	—	—
New York	14.1	13.5	11.9	12.3	11.2	10.4	9.1
North Carolina	15.9	15.1	13.3	12.3	14.3	12.4	11.2
North Dakota	—	—	—	—	—	—	—
Ohio	14.5	13.4	13.7	14.8	12.7	12.5	10.7
Oklahoma	10.3	7.8	9.7	7.5	7.5	6.9	6.5
Oregon	—	—	—	—	—	—	—
Pennsylvania	15.4	14.6	15.0	13.2	13.1	13.6	13.7
Rhode Island	—	—	—	—	—	—	—
South Carolina	16.6	14.9	15.4	14.9	14.5	13.8	12.8
South Dakota	—	—	—	—	—	—	—
Tennessee	15.0	14.0	12.5	15.2	12.7	12.9	13.1
Texas	14.9	12.7	11.5	11.2	9.5	9.4	8.7
Utah	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—
Virginia	14.5	14.5	13.7	13.0	14.0	13.6	12.8
Washington	8.5	6.2	6.9	6.1	6.2	5.6	6.4
West Virginia	—	—	—	—	—	—	—
Wisconsin	8.5	9.4	9.4	9.5	10.5	8.5	10.8
Wyoming	—	—	—	—	—	—	—
United States Total	14.0	12.9	12.5	11.8	11.3	10.8	10.2

Source: National Center for Health Statistics.

TABLE 3.17

Postneonatal Mortality Rates, All Races, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	5.1	5.0	5.2	4.6	4.6	4.8	4.2	-0.15	-1.7	-0.28
Alaska	5.0	6.2	5.8	4.7	4.6	5.8	5.5	-0.08	-3.0	-0.50
Arizona	4.1	4.7	4.1	4.4	3.6	3.8	3.9	-0.03	-1.4	-0.23
Arkansas	5.9	5.4	5.1	4.9	4.3	4.5	4.0	-0.32	-1.5	-0.25
California	4.1	3.8	3.9	3.7	3.6	3.5	3.5	-0.10	-1.0	-0.17
Colorado	4.3	4.2	3.5	3.5	3.4	4.1	4.3	0.00	-1.8	-0.30
Connecticut	2.3	2.8	3.1	2.6	2.5	2.3	2.9	0.10	-0.4	-0.07
Delaware	3.6	3.4	3.9	3.4	3.8	—	3.2	-0.07	-0.7	-0.12
District of Columbia	7.1	5.0	6.7	5.6	5.6	5.2	5.0	-0.35	-2.5	-0.42
Florida	4.8	5.0	4.8	4.4	3.8	4.5	3.9	-0.15	-1.4	-0.23
Georgia	5.2	5.1	5.0	5.0	4.4	4.4	4.2	-0.17	-1.7	-0.28
Hawaii	3.5	3.2	3.1	2.6	3.1	3.1	3.4	-0.02	-0.9	-0.15
Idaho	4.4	3.4	4.5	3.9	3.6	5.0	4.7	0.05	-2.2	-0.37
Illinois	4.8	4.8	4.8	4.1	4.3	4.2	4.0	-0.13	-1.5	-0.25
Indiana	4.5	3.8	4.0	3.7	3.7	3.9	4.0	-0.08	-1.5	-0.25
Iowa	3.7	3.4	3.9	3.5	3.9	3.3	2.9	-0.13	-0.4	-0.07
Kansas	3.8	3.4	3.6	3.3	3.5	4.2	3.6	-0.03	-1.1	-0.18
Kentucky	4.1	3.8	4.7	4.2	4.2	3.7	4.2	0.02	-1.7	-0.28
Louisiana	5.3	5.3	4.3	4.4	4.6	4.5	4.0	-0.22	-1.5	-0.25
Maine	4.3	4.0	3.4	4.1	2.8	2.8	3.3	-0.17	-0.8	-0.13
Maryland	3.6	4.2	3.8	3.5	3.5	3.7	3.7	0.02	-1.2	0.20
Massachusetts	3.0	2.8	2.8	2.8	2.5	2.7	2.9	-0.02	-0.4	-0.07
Michigan	4.6	4.3	3.9	4.0	3.4	3.8	3.7	-0.15	-1.2	-0.20
Minnesota	3.7	3.6	3.8	3.7	3.6	3.6	3.4	-0.05	-0.9	-0.15
Mississippi	6.4	6.6	6.0	4.9	5.2	5.8	5.4	-0.17	-2.9	-0.48
Missouri	4.0	4.2	4.2	3.9	4.2	3.5	4.0	0.00	-1.5	-0.25
Montana	4.3	3.6	4.7	4.4	3.6	4.7	4.4	0.02	-1.9	-0.32
Nebraska	3.9	3.7	4.0	3.8	3.1	3.4	3.5	-0.07	-1.0	-0.17
Nevada	3.9	5.9	4.0	4.7	3.9	4.9	4.5	0.10	-2.0	-0.33
New Hampshire	—	2.9	2.4	3.4	2.4	2.8	3.1	—	—	—
New Jersey	3.7	3.7	3.9	3.4	3.5	3.7	3.4	-0.05	-0.9	-0.15
New Mexico	5.1	5.1	4.2	3.5	4.7	4.5	3.6	-0.25	-1.1	-0.18
New York	3.9	3.9	3.8	3.6	3.5	3.5	3.5	-0.07	-1.0	-0.17
North Carolina	5.2	4.8	4.5	4.3	4.2	4.5	4.3	-0.15	-1.8	-0.30
North Dakota	3.0	2.9	4.4	3.9	3.8	2.8	3.6	-0.05	-1.1	-0.18
Ohio	4.1	4.0	4.1	3.7	3.6	3.5	3.7	-0.07	-1.2	-0.20
Oklahoma	5.3	4.5	4.6	4.7	4.9	4.1	3.9	-0.23	-1.4	-0.23
Oregon	5.2	4.3	5.2	4.0	4.3	4.2	5.1	-0.02	-2.6	-0.43
Pennsylvania	3.2	3.6	3.5	3.4	3.4	3.4	3.2	0.00	-0.7	-0.12
Rhode Island	3.0	3.9	2.5	2.5	2.0	2.6	2.9	-0.02	-0.4	-0.07
South Carolina	6.2	5.8	4.7	5.2	5.4	5.2	4.9	-0.22	-2.4	-0.40
South Dakota	4.1	5.4	5.2	3.9	3.2	5.0	4.5	0.07	-2.0	-0.33
Tennessee	4.3	4.5	4.4	3.7	4.0	4.4	3.9	-0.07	-1.4	-0.23
Texas	4.5	4.3	4.0	4.0	3.9	4.2	3.9	-0.10	-1.4	-0.23
Utah	3.6	3.9	3.8	4.0	4.2	3.4	3.6	0.00	-1.1	-0.18
Vermont	4.5	—	3.7	—	—	—	—	—	—	—
Virginia	4.1	3.9	3.8	3.5	3.5	3.6	3.5	-0.10	-1.0	-0.17
Washington	4.6	4.4	4.8	4.2	4.6	4.1	4.8	0.03	-2.3	-0.38
West Virginia	4.8	4.7	3.8	4.2	4.2	3.9	3.9	-0.15	-1.4	-0.23
Wisconsin	3.6	3.7	3.6	3.5	3.3	3.3	3.6	0.00	-1.1	-0.18
Wyoming	4.9	4.8	3.6	—	3.9	4.7	4.0	-0.15	-1.5	-0.25
United States Total	4.3	4.2	4.1	3.9	3.8	3.9	3.8	-0.08	-1.3	-0.22

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.18

Postneonatal Mortality Rates, White, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	3.4	3.6	3.8	3.4	2.9	3.4	2.7
Alaska	—	4.9	—	—	—	4.9	4.6
Arizona	3.4	3.8	3.5	3.7	3.0	3.2	3.2
Arkansas	4.9	4.2	3.8	3.7	3.2	3.5	3.5
California	3.9	3.7	3.7	3.6	3.5	3.4	3.3
Colorado	4.2	4.1	3.4	3.6	3.5	4.3	4.3
Connecticut	1.9	2.6	3.1	2.3	2.1	3.1	2.7
Delaware	—	—	—	—	—	—	—
District of Columbia	—	—	—	—	—	—	—
Florida	3.7	3.8	3.5	3.3	2.9	3.5	2.8
Georgia	3.6	3.5	3.3	3.7	3.1	3.1	3.3
Hawaii	—	—	—	—	—	—	—
Idaho	4.4	3.4	4.6	3.9	3.8	4.9	4.8
Illinois	3.4	3.4	3.6	3.0	3.1	3.0	2.9
Indiana	3.9	3.5	3.4	3.1	3.5	3.5	3.6
Iowa	3.6	3.2	3.8	3.4	3.8	3.1	2.9
Kansas	3.6	3.1	3.3	3.0	3.7	4.0	3.3
Kentucky	4.0	3.5	4.2	4.2	4.0	3.3	4.0
Louisiana	3.3	3.7	3.2	3.2	3.1	3.2	3.0
Maine	4.3	3.9	3.5	4.1	2.8	2.8	3.4
Maryland	3.0	3.2	3.1	2.9	2.6	2.9	3.1
Massachusetts	2.7	2.6	2.6	2.6	2.4	2.4	2.7
Michigan	4.0	2.8	3.3	3.4	2.9	3.2	3.0
Minnesota	3.5	3.3	3.5	3.5	3.3	3.4	3.4
Mississippi	3.2	3.8	3.4	3.5	3.5	3.7	3.0
Missouri	3.2	3.7	3.7	3.5	3.5	3.1	3.5
Montana	3.5	3.1	4.4	3.6	3.4	4.6	4.3
Nebraska	3.7	3.4	3.6	3.7	2.9	3.0	3.4
Nevada	3.8	5.3	3.6	4.4	3.6	4.6	4.4
New Hampshire	—	3.0	2.4	3.5	2.3	2.8	3.1
New Jersey	2.7	2.8	2.7	2.6	2.5	2.9	2.5
New Mexico	4.4	4.1	3.8	3.6	4.3	4.3	3.2
New York	3.1	3.3	3.1	3.2	3.0	2.9	2.8
North Carolina	3.8	3.2	3.7	3.6	3.6	3.5	3.2
North Dakota	3.4	2.7	4.0	3.7	3.2	—	3.2
Ohio	3.8	3.7	3.4	3.3	3.2	3.0	3.2
Oklahoma	4.7	3.8	4.4	4.4	4.9	3.9	3.9
Oregon	5.2	4.2	5.3	3.9	4.2	4.2	5.0
Pennsylvania	2.8	3.1	3.1	3.0	3.9	2.9	2.7
Rhode Island	—	3.2	—	—	—	—	2.7
South Carolina	3.9	3.6	3.2	4.3	3.8	4.2	3.3
South Dakota	2.8	4.1	3.8	3.0	—	3.0	3.8
Tennessee	4.0	3.9	3.8	3.2	3.5	3.7	3.4
Texas	4.0	3.7	3.6	3.7	3.5	4.0	3.6
Utah	3.6	3.7	3.9	4.0	4.1	3.5	3.6
Vermont	4.6	—	4.7	—	—	—	—
Virginia	3.5	3.2	3.5	3.1	3.1	3.2	2.8
Washington	4.5	4.4	4.4	3.8	4.5	3.8	4.6
West Virginia	4.8	4.6	3.6	4.1	4.3	3.8	3.8
Wisconsin	3.3	3.4	3.2	3.1	2.9	2.9	3.4
Wyoming	5.1	4.6	3.2	—	4.0	4.9	4.2
United States Total	3.6	3.5	3.5	3.4	3.3	3.3	3.3

Source: National Center for Health Statistics.

TABLE 3.19

Postneonatal Mortality Rates, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	8.5	7.5	8.0	6.7	7.5	7.6	7.0
Alaska	—	—	—	—	—	—	—
Arizona	—	—	—	—	—	—	—
Arkansas	8.8	9.0	8.7	8.7	7.9	7.7	6.0
California	6.2	6.5	6.4	5.6	5.9	5.4	5.9
Colorado	—	—	—	—	—	—	—
Connecticut	—	—	—	—	—	—	—
Delaware	—	—	—	—	—	—	—
District of Columbia	8.0	5.6	7.3	6.6	5.9	6.2	5.5
Florida	7.9	8.4	8.4	7.6	6.5	7.7	7.5
Georgia	6.9	8.0	7.9	7.2	6.5	6.6	5.9
Hawaii	—	—	—	—	—	—	—
Idaho	—	—	—	—	—	—	—
Illinois	9.8	9.7	9.4	8.3	8.7	9.3	8.2
Indiana	8.8	7.0	8.4	8.2	5.9	7.1	6.8
Iowa	—	—	—	—	—	—	—
Kansas	—	—	—	—	—	—	—
Kentucky	7.6	6.3	7.0	8.4	5.4	4.4	—
Louisiana	8.5	7.8	6.1	6.6	7.3	6.9	5.8
Maine	—	—	—	—	—	—	—
Maryland	5.2	6.4	5.6	5.1	5.6	5.3	5.2
Massachusetts	—	—	—	—	—	—	5.4
Michigan	8.5	7.2	7.1	7.3	6.2	6.9	6.6
Minnesota	—	—	—	—	—	—	—
Mississippi	9.7	9.2	9.1	6.4	7.1	8.2	8.0
Missouri	8.8	7.0	7.8	6.6	8.0	5.8	6.8
Montana	—	—	—	—	—	—	—
Nebraska	—	—	—	—	—	—	—
Nevada	—	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—
New Jersey	7.4	7.5	8.7	6.7	7.8	7.1	7.4
New Mexico	—	—	—	—	—	—	—
New York	7.1	6.2	6.6	6.6	6.1	6.7	6.2
North Carolina	8.4	8.4	6.3	6.2	5.4	6.9	7.0
North Dakota	—	—	—	—	—	—	—
Ohio	6.4	6.7	8.6	6.5	6.1	6.4	6.6
Oklahoma	9.2	8.2	7.5	8.2	6.0	5.5	5.6
Oregon	—	—	—	—	—	—	—
Pennsylvania	6.1	7.1	7.2	6.7	6.7	6.7	6.6
Rhode Island	—	—	—	—	—	—	—
South Carolina	9.6	9.1	7.2	6.8	7.8	6.8	7.6
South Dakota	—	—	—	—	—	—	—
Tennessee	5.8	6.5	6.5	5.7	6.2	6.9	5.4
Texas	7.0	7.8	6.4	5.6	6.3	5.7	6.1
Utah	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—
Virginia	6.1	6.0	5.1	4.8	5.1	5.2	6.0
Washington	—	—	—	—	—	—	—
West Virginia	—	—	—	—	—	—	—
Wisconsin	5.8	7.6	7.8	7.1	7.7	7.0	6.5
Wyoming	—	—	—	—	—	—	—
United States Total	7.6	7.5	7.3	6.6	6.5	6.8	6.5

Source: National Center for Health Statistics.

TABLE 3.20

Postneonatal Mortality Rates, Nonwhite, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	8.4	7.4	7.9	6.8	7.4	7.4	6.8
Alaska	—	—	—	—	—	—	—
Arizona	7.2	9.4	7.4	7.9	6.6	5.6	7.4
Arkansas	8.6	8.8	9.4	8.3	7.5	7.4	5.7
California	4.7	4.7	4.5	4.1	3.9	3.7	4.0
Colorado	—	—	—	—	—	—	—
Connecticut	—	—	—	—	—	—	—
Delaware	—	—	—	—	—	—	—
District of Columbia	7.9	5.5	7.2	6.5	6.0	6.2	5.6
Florida	7.6	8.1	8.1	7.4	6.3	7.3	7.2
Georgia	7.7	7.8	7.8	7.1	6.4	6.6	5.7
Hawaii	3.4	3.3	3.1	2.9	2.9	3.0	3.6
Idaho	—	—	—	—	—	—	—
Illinois	9.1	9.1	8.8	7.6	8.0	8.5	7.7
Indiana	8.4	6.6	8.0	7.8	5.5	6.8	6.5
Iowa	—	—	—	—	—	—	—
Kansas	—	—	—	—	—	—	—
Kentucky	5.4	6.6	7.8	—	5.4	6.6	—
Louisiana	8.4	7.6	6.1	6.4	7.0	6.7	5.6
Maine	—	—	—	—	—	—	—
Maryland	5.1	6.1	5.2	4.7	5.3	5.1	4.9
Massachusetts	5.1	—	—	4.3	4.0	4.2	4.7
Michigan	7.9	6.8	6.6	6.8	5.9	6.7	6.4
Minnesota	—	—	7.8	5.6	6.4	—	—
Mississippi	9.6	9.1	8.9	6.4	7.2	8.1	8.0
Missouri	8.5	6.7	7.5	6.2	7.7	5.6	6.3
Montana	—	—	—	—	—	—	—
Nebraska	—	—	—	—	—	—	—
Nevada	—	—	—	—	—	—	—
New Hampshire	—	—	—	—	—	—	—
New Jersey	6.9	7.0	7.8	6.2	7.1	6.6	6.5
New Mexico	8.5	10.0	—	—	—	—	—
New York	6.8	5.7	5.9	5.9	5.6	6.3	5.7
North Carolina	8.0	8.2	6.1	6.0	5.4	6.6	6.7
North Dakota	—	—	—	—	—	—	—
Ohio	6.1	6.4	8.2	6.1	5.8	6.2	6.3
Oklahoma	7.5	7.4	5.6	5.8	4.8	4.4	4.1
Oregon	—	—	—	—	—	—	—
Pennsylvania	5.8	6.7	6.9	6.3	6.3	6.4	6.3
Rhode Island	—	—	—	—	—	—	—
South Carolina	9.4	8.9	7.1	6.7	7.7	6.7	7.4
South Dakota	—	—	—	—	—	15.2	—
Tennessee	5.7	5.6	6.3	5.5	6.0	6.9	5.3
Texas	6.6	7.5	6.0	5.4	5.7	5.3	5.7
Utah	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—
Virginia	5.6	5.6	4.7	4.5	4.7	4.7	5.5
Washington	6.5	—	6.7	6.6	5.7	6.0	6.0
West Virginia	—	—	—	—	—	—	—
Wisconsin	5.7	6.8	6.9	6.9	6.6	6.9	5.9
Wyoming	—	—	—	—	—	—	—
United States Total	7.1	6.9	6.6	6.0	6.0	6.0	5.8

Source: National Center for Health Statistics.

TABLE 3.21

Percentage of Infants Born at Low Birthweight, All Races, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	8.4	8.0	7.9	7.9	7.9	7.9	7.9	-0.08	-2.9	-0.48
Alaska	5.3	5.7	5.4	4.9	4.9	4.7	4.8	0.00	0.0	0.00
Arizona	6.1	6.0	6.2	6.1	5.9	6.1	6.1	0.00	-1.1	-0.18
Arkansas	7.9	7.1	7.6	7.4	7.4	7.8	7.5	-0.07	-2.5	-0.42
California	6.4	6.0	5.9	5.9	5.9	6.0	5.9	-0.08	-0.9	-0.15
Colorado	8.2	8.2	8.2	8.0	7.7	7.9	7.6	-0.10	-2.6	-0.43
Connecticut	6.7	7.2	6.7	6.8	6.8	6.4	6.6	-0.02	-1.6	-0.27
Delaware	7.2	7.6	7.7	7.8	7.3	7.2	7.4	0.03	-2.4	-0.40
District of Columbia	13.1	12.7	12.8	13.3	13.4	13.1	12.5	-0.10	-7.5	-1.25
Florida	7.8	7.8	7.6	7.4	7.5	7.4	7.4	-0.07	-2.4	-0.40
Georgia	8.7	8.6	8.6	8.5	8.5	8.4	8.3	-0.07	-3.3	-0.55
Hawaii	7.2	7.0	7.1	6.8	7.3	7.0	7.2	0.00	-2.2	-0.37
Idaho	5.6	5.2	5.3	5.1	5.3	5.6	5.1	-0.08	-0.1	-0.02
Illinois	7.4	7.4	7.2	7.4	7.2	7.2	7.1	-0.05	-2.1	-0.35
Indiana	6.5	6.5	6.3	6.3	6.4	6.3	6.3	-0.03	-1.3	-0.22
Iowa	5.3	5.2	5.0	5.0	4.8	5.0	4.9	0.00	0.0	0.00
Kansas	6.3	6.4	5.8	6.3	6.2	6.1	6.1	-0.03	-1.1	-0.18
Kentucky	7.1	7.0	6.8	7.0	6.9	6.9	6.9	-0.03	-1.9	-0.32
Louisiana	8.9	8.2	8.6	8.5	8.4	8.6	8.5	-0.07	-3.5	-0.58
Maine	5.4	5.2	5.2	5.3	5.1	5.6	5.5	0.02	-0.5	-0.08
Maryland	7.8	7.7	8.2	7.7	7.4	7.7	7.4	-0.07	-2.4	-0.40
Massachusetts	6.5	6.1	6.1	6.0	5.9	5.9	5.9	-0.10	-0.9	-0.15
Michigan	7.2	7.0	6.9	6.9	6.9	7.0	7.0	-0.03	-2.0	-0.33
Minnesota	5.3	5.1	5.1	5.3	4.9	5.1	4.9	0.00	0.0	0.00
Mississippi	8.8	8.7	8.7	8.6	8.8	8.8	8.7	-0.02	-3.7	-0.62
Missouri	7.0	6.7	6.6	6.7	6.6	6.7	6.7	-0.05	-1.7	-0.28
Montana	5.9	5.6	5.6	5.5	5.6	5.6	5.8	-0.02	-0.8	-0.13
Nebraska	5.8	5.6	5.6	5.5	5.5	5.4	5.4	-0.07	-0.4	-0.07
Nevada	7.4	7.3	6.6	7.0	6.4	7.0	6.7	-0.12	-1.7	-0.28
New Hampshire	5.6	5.9	5.4	5.0	5.2	5.1	5.0	-0.10	0.0	0.00
New Jersey	7.5	7.3	7.2	7.1	6.9	7.2	7.0	-0.08	-2.0	-0.33
New Mexico	8.6	8.3	7.6	7.4	7.8	7.6	7.6	-0.17	-2.6	-0.43
New York	7.7	7.6	7.4	7.4	7.2	7.2	7.0	-0.12	-2.0	-0.33
North Carolina	8.1	8.1	7.9	7.9	8.0	7.8	7.8	-0.05	-2.8	-0.47
North Dakota	5.4	5.1	4.9	4.5	4.8	4.7	4.8	0.00	0.0	0.00
Ohio	7.0	6.8	6.8	6.7	6.6	6.7	6.4	-0.10	-1.4	-0.23
Oklahoma	7.1	6.5	6.8	6.6	6.8	6.7	6.3	-0.13	-1.3	-0.22
Oregon	5.1	5.2	4.9	4.8	4.9	5.0	5.2	0.02	-0.2	-0.03
Pennsylvania	6.9	6.8	6.5	6.5	6.5	6.7	6.6	-0.05	-1.6	-0.27
Rhode Island	6.4	6.6	6.3	5.9	6.1	6.4	6.0	-0.07	-1.0	-0.17
South Carolina	8.9	8.8	8.6	8.9	8.9	8.6	8.8	-0.02	-3.8	-0.63
South Dakota	5.2	5.0	5.1	5.3	5.1	5.1	5.1	-0.02	-0.1	-0.02
Tennessee	8.1	7.9	8.0	8.0	7.9	8.0	7.9	-0.03	-2.9	-0.48
Texas	7.3	7.0	6.9	6.9	6.9	6.9	6.8	-0.08	-1.8	-0.30
Utah	5.7	5.5	5.2	5.3	5.6	5.6	5.6	-0.02	-0.6	-0.10
Vermont	6.2	6.1	5.9	6.2	5.9	5.9	6.1	-0.02	-1.1	-0.18
Virginia	7.4	7.5	7.5	7.3	7.2	7.2	7.2	-0.03	-2.2	-0.37
Washington	5.6	5.2	5.1	5.2	5.1	5.2	5.1	-0.08	-0.1	-0.02
West Virginia	6.8	6.8	6.7	7.1	6.7	6.7	6.9	0.02	-1.9	-0.32
Wisconsin	5.6	5.5	5.4	5.3	5.0	5.4	5.1	-0.08	-0.1	-0.02
Wyoming	7.8	7.5	7.3	6.6	7.2	7.1	7.1	-0.12	-2.1	-0.35
United States Total	7.1	6.9	6.8	6.8	6.8	6.8	6.7	-0.07	-1.7	-0.28

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.22

Percentage of Infants Born at Low Birthweight, White, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Change in Rate 1978-1984: Total needed	Change in Rate 1978-1984: Needed per yr
Alabama	6.2	5.8	5.6	5.9	5.7	6.0	5.7	-0.08	-0.7	-0.12
Alaska	4.8	5.2	5.0	4.5	4.2	4.5	4.3	0.00	0.0	0.00
Arizona	5.8	5.8	5.9	5.8	5.8	5.8	5.9	0.02	-0.9	-0.15
Arkansas	6.1	5.7	5.9	5.8	5.8	6.1	6.0	-0.02	-1.0	-0.17
California	5.6	5.3	5.2	5.2	5.2	5.3	5.1	-0.08	-0.1	-0.02
Colorado	7.8	7.8	7.9	7.8	7.4	7.6	7.3	-0.08	-2.3	-0.38
Connecticut	5.8	6.3	6.1	5.8	5.8	5.6	5.6	-0.03	-0.6	-0.10
Delaware	5.4	5.9	5.4	5.5	5.7	5.3	6.1	0.12	-1.1	-0.18
District of Columbia	6.7	5.8	6.3	5.8	5.8	6.7	5.1	-0.27	-0.1	-0.02
Florida	6.2	6.1	6.0	5.9	5.9	5.9	6.0	-0.03	-1.0	-0.17
Georgia	6.1	6.3	6.4	6.0	6.1	6.1	5.9	-0.03	-0.9	-0.15
Hawaii	5.6	5.7	6.0	5.7	6.4	5.8	6.1	0.08	-1.1	-0.18
Idaho	5.6	5.1	5.3	5.0	5.3	5.5	5.0	0.00	0.0	0.00
Illinois	5.6	5.6	5.4	5.5	5.5	5.3	5.3	-0.05	-0.3	-0.05
Indiana	5.8	5.8	5.6	5.6	5.7	5.6	5.7	-0.02	-0.7	-0.12
Iowa	5.1	4.8	4.8	4.8	4.6	4.9	4.7	0.00	0.0	0.00
Kansas	5.8	5.8	5.3	5.7	5.6	5.5	5.5	-0.05	-0.5	-0.08
Kentucky	6.4	6.5	6.3	6.6	6.5	6.4	6.4	0.00	-1.4	-0.23
Louisiana	6.3	6.0	6.0	5.9	5.8	5.8	5.7	-0.10	-0.7	-0.12
Maine	5.3	5.2	5.2	5.3	5.1	5.6	5.4	0.02	-0.4	-0.07
Maryland	5.9	5.8	6.1	5.8	5.4	5.5	5.4	-0.08	-0.4	-0.07
Massachusetts	6.1	5.7	5.7	5.6	5.5	5.4	5.5	-0.10	-0.5	-0.08
Michigan	5.9	5.8	5.7	5.7	5.6	5.6	5.5	-0.07	-0.5	-0.08
Minnesota	5.1	4.9	4.9	5.0	4.7	4.9	4.7	0.00	0.0	0.00
Mississippi	6.0	5.7	5.8	5.6	6.0	5.9	6.0	0.00	-1.0	-0.17
Missouri	5.8	5.6	5.6	5.7	5.5	5.5	5.6	-0.03	-0.6	-0.10
Montana	5.9	5.6	5.5	5.5	5.6	5.5	5.7	-0.03	-0.7	-0.12
Nebraska	5.4	5.2	5.2	5.0	5.0	5.0	5.0	0.00	0.0	0.00
Nevada	6.6	6.6	6.0	6.4	5.8	6.5	6.1	-0.08	-1.1	-0.18
New Hampshire	5.6	5.9	5.3	5.0	5.2	5.0	5.0	0.00	0.0	0.00
New Jersey	5.8	5.8	5.8	5.6	5.4	5.7	5.7	-0.02	-0.7	-0.12
New Mexico	8.6	8.1	7.6	7.4	7.9	7.6	7.8	-0.13	-2.8	-0.47
New York	6.3	6.3	6.1	6.1	5.9	5.9	5.7	-0.10	-0.7	-0.12
North Carolina	6.3	6.2	6.1	6.0	6.0	5.9	6.1	-0.03	-1.1	-0.18
North Dakota	5.1	4.9	4.8	4.4	4.7	4.6	4.5	0.00	0.0	0.00
Ohio	6.0	5.7	5.7	5.7	5.7	5.7	5.5	-0.08	-0.5	-0.08
Oklahoma	6.4	6.0	6.2	6.2	6.3	6.1	5.8	-0.10	-0.8	-0.13
Oregon	5.0	5.0	4.7	4.6	4.7	4.8	5.0	0.00	0.0	0.00
Pennsylvania	5.8	5.8	5.6	5.5	5.5	5.6	5.5	-0.05	-0.5	-0.08
Rhode Island	5.8	6.2	5.9	5.4	5.5	6.0	5.6	-0.03	-0.6	-0.10
South Carolina	6.0	6.2	5.9	6.2	6.2	6.1	6.2	0.03	-1.2	-0.20
South Dakota	5.1	5.0	4.8	4.9	4.8	4.8	4.8	0.00	0.0	0.00
Tennessee	6.7	6.5	6.4	6.4	6.4	6.5	6.4	-0.05	-1.4	-0.23
Texas	6.2	6.1	6.0	6.0	6.0	6.0	6.0	-0.03	-1.0	-0.17
Utah	5.7	5.4	5.1	5.3	5.5	5.5	5.4	-0.05	-0.4	-0.07
Vermont	6.2	6.1	6.0	6.2	5.9	5.9	6.2	0.00	-1.2	-0.20
Virginia	5.9	6.0	5.8	5.8	5.6	5.7	5.7	-0.03	-0.7	-0.12
Washington	5.3	4.9	4.8	4.9	4.7	5.0	4.7	0.00	0.0	0.00
West Virginia	6.6	6.5	6.4	6.9	6.6	6.5	6.6	0.00	-1.6	-0.27
Wisconsin	5.1	5.0	4.8	4.7	4.5	4.8	4.6	0.00	0.0	0.00
Wyoming	7.7	7.4	7.2	6.5	7.1	7.0	7.1	-0.10	-2.1	-0.35
United States Total	5.9	5.8	5.7	5.7	5.6	5.7	5.6	-0.05	-0.6	-0.10

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.23

Percentage of Infants Born at Low Birthweight, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	12.4	11.8	12.0	11.8	11.9	11.6	12.1	-0.05	-3.1	-0.52
Alaska	8.7	—	—	7.5	8.6	—	7.1	0.00	0.0	0.00
Arizona	11.5	11.3	11.1	11.4	9.1	12.7	11.9	0.07	-2.9	-0.48
Arkansas	13.0	11.3	12.7	12.3	12.3	13.1	12.3	-0.12	-3.3	-0.55
California	12.0	11.0	11.4	11.2	11.0	11.4	11.4	-0.10	-2.4	-0.40
Colorado	15.4	14.2	14.4	12.3	12.4	13.3	13.0	-0.40	-4.0	-0.67
Connecticut	13.3	13.5	11.5	14.3	13.4	12.6	12.9	-0.07	-3.9	-0.65
Delaware	13.1	13.0	15.6	14.9	12.6	12.7	11.8	-0.22	-2.8	-0.47
District of Columbia	14.3	14.0	14.0	14.9	15.1	14.6	14.2	-0.02	-5.2	-0.87
Florida	12.3	12.4	12.2	11.9	11.9	12.0	11.9	-0.07	-2.9	-0.46
Georgia	13.3	12.6	12.4	12.8	12.7	12.7	12.6	-0.12	-3.6	-0.60
Hawaii	8.3	9.1	10.1	9.1	9.4	10.9	9.0	0.00	0.0	0.00
Idaho	—	—	—	—	—	—	—	—	—	—
Illinois	13.6	13.8	13.6	14.2	13.6	13.9	13.8	0.03	-4.8	-0.80
Indiana	12.1	12.5	12.1	11.9	12.0	12.2	11.7	-0.07	-2.7	-0.45
Iowa	13.1	11.0	12.2	10.0	10.9	11.9	10.6	-0.42	-1.6	-0.27
Kansas	12.1	12.5	11.6	12.2	12.2	12.0	12.1	0.00	-3.1	-0.52
Kentucky	13.1	12.3	11.9	11.5	11.3	12.3	12.0	-0.18	-3.0	-0.50
Louisiana	12.8	12.6	12.8	12.8	12.8	13.4	13.1	0.05	-4.1	-0.68
Maine	—	—	—	—	—	—	—	—	—	—
Maryland	12.4	12.0	13.0	12.1	12.1	12.7	12.0	-0.07	-3.0	-0.50
Massachusetts	11.7	11.1	10.9	10.9	11.0	11.4	11.0	-0.12	-2.0	-0.33
Michigan	13.5	13.4	12.9	13.2	13.8	14.2	14.2	0.12	-5.2	-0.87
Minnesota	12.0	10.5	12.1	11.8	10.4	12.3	10.6	-0.23	-1.6	-0.27
Mississippi	11.8	12.0	11.8	11.8	12.0	12.0	11.7	-0.02	-2.7	-0.45
Missouri	13.4	12.6	12.9	12.5	12.6	13.1	12.6	-0.13	-3.6	-0.60
Montana	—	—	—	—	—	—	—	—	—	—
Nebraska	13.5	12.4	12.6	12.7	12.9	11.3	11.6	-0.32	-2.6	-0.43
Nevada	13.0	12.4	11.6	12.5	11.6	10.3	10.2	-0.47	-1.2	-0.20
New Hampshire	—	—	—	—	—	—	—	—	—	—
New Jersey	13.6	13.2	12.7	13.3	12.9	12.8	12.4	-0.20	-3.4	-0.57
New Mexico	15.6	15.2	7.8	11.3	11.7	12.5	9.8	-0.97	-0.8	-0.13
New York	13.0	12.9	12.4	12.3	12.1	12.0	11.7	-0.22	-2.7	-0.45
North Carolina	12.2	12.5	12.2	12.1	12.4	12.4	12.2	0.00	-3.2	-0.53
North Dakota	—	—	—	—	—	—	—	—	—	—
Ohio	13.4	13.0	12.9	13.0	12.6	13.1	12.2	-0.20	-3.2	-0.53
Oklahoma	13.1	11.8	12.3	11.3	12.6	11.9	11.5	-0.27	-2.5	-0.42
Oregon	10.4	11.0	10.4	10.2	10.6	9.7	10.9	0.09	-1.9	-0.32
Pennsylvania	13.5	13.8	13.0	13.4	13.2	13.8	13.9	0.07	-4.9	-0.82
Rhode Island	13.4	11.4	11.5	11.2	12.4	11.0	11.6	-0.30	-2.6	-0.43
South Carolina	13.2	12.7	12.6	12.8	13.0	12.6	12.7	-0.08	-3.7	-0.62
South Dakota	—	—	—	—	—	—	—	—	—	—
Tennessee	13.3	12.7	13.6	13.7	13.2	13.3	13.2	-0.02	-4.2	-0.70
Texas	13.1	12.6	12.4	12.8	12.2	12.6	12.2	-0.15	-3.2	-0.53
Utah	—	—	—	—	11.2	10.3	—	—	—	—
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	12.0	11.8	12.3	12.0	12.2	12.1	12.0	0.00	-3.0	-0.50
Washington	10.6	9.4	10.2	10.3	10.1	9.3	10.5	-0.02	-1.5	-0.25
West Virginia	11.9	13.1	12.3	11.7	10.0	11.1	13.4	0.25	-4.4	-0.73
Wisconsin	12.5	12.7	12.7	12.6	12.1	12.8	12.1	-0.07	-3.1	-0.52
Wyoming	—	—	—	—	—	—	—	—	—	—
United States Total	12.9	12.6	12.5	12.5	12.4	12.6	12.4	-0.08	-3.4	-0.57

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.24

Percentage of Infants Born at Low Birthweight, Nonwhite, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Change in Rate 1978-1984: Total needed	Change in Rate 1978-1984: Needed per yr
Alabama	12.3	11.8	11.9	11.8	11.8	11.6	12.0	-0.05	-3.0	-0.50
Alaska	6.7	7.1	6.3	5.9	6.5	5.0	6.1	0.00	0.0	0.00
Arizona	7.6	7.0	7.4	7.8	6.6	7.3	7.4	0.00	0.0	0.00
Arkansas	12.8	11.1	12.5	12.1	12.0	12.8	12.0	-0.13	-3.0	-0.50
California	9.9	9.1	9.1	8.9	8.6	8.7	8.7	0.00	0.0	0.00
Colorado	12.7	12.5	12.4	10.6	11.2	11.6	11.0	-0.28	-2.0	-0.33
Connecticut	12.7	12.9	11.0	13.2	12.6	11.8	12.2	-0.08	-3.2	-0.53
Delaware	12.8	12.7	15.1	14.6	12.6	12.5	11.4	-0.23	-2.4	-0.40
District of Columbia	14.2	14.0	13.9	14.8	15.1	14.5	14.2	0.00	-5.2	-0.87
Florida	12.0	12.1	11.9	11.7	11.7	11.8	11.6	-0.07	-2.6	-0.43
Georgia	13.1	12.4	12.3	12.7	12.5	12.6	12.5	-0.10	-3.5	-0.58
Hawaii	7.7	7.4	7.4	7.2	7.6	7.5	7.6	0.00	0.0	0.00
Idaho	6.9	8.7	7.1	7.4	6.2	6.8	7.9	0.00	0.0	0.00
Illinois	13.1	13.2	13.0	13.5	12.9	13.3	13.1	0.00	-4.1	-0.68
Indiana	11.9	12.2	11.7	11.4	11.6	11.8	11.2	-0.12	-2.2	-0.37
Iowa	11.5	15.2	10.5	8.5	9.0	9.4	8.8	0.00	0.0	0.00
Kansas	10.9	11.4	10.2	10.7	11.0	10.9	10.9	0.00	-1.9	-0.32
Kentucky	12.7	11.6	11.5	11.3	10.8	11.6	11.7	-0.17	-2.7	-0.45
Louisiana	12.7	11.6	12.6	12.6	12.5	13.1	12.8	0.02	-3.8	-0.63
Maine	—	—	—	—	—	—	—	—	—	—
Maryland	12.0	11.7	12.6	11.7	11.6	12.1	11.6	-0.07	-2.6	-0.43
Massachusetts	10.6	10.2	10.0	10.0	9.9	10.1	9.8	-0.13	-0.8	-0.13
Michigan	13.0	12.8	12.3	12.6	13.0	13.6	13.5	0.08	-4.5	-0.75
Minnesota	9.3	8.7	8.6	9.1	8.2	8.4	7.8	0.00	0.0	0.00
Mississippi	11.7	11.8	11.7	11.7	12.0	11.9	11.6	-0.02	-2.6	-0.43
Missouri	13.0	12.3	12.3	12.2	12.2	12.7	12.3	-0.12	-3.3	-0.55
Montana	6.3	5.9	6.7	6.0	5.8	6.4	6.9	0.00	0.0	0.00
Nebraska	11.3	10.2	11.1	11.2	11.2	10.0	9.7	-0.27	-0.7	-0.12
Nevada	11.6	11.1	9.8	9.6	9.5	9.1	9.6	-0.33	-0.6	-0.10
New Hampshire	—	—	—	—	—	—	—	—	—	—
New Jersey	13.1	12.7	12.1	12.5	12.2	12.2	11.6	-0.25	-2.6	-0.43
New Mexico	8.7	9.4	7.3	7.1	7.4	7.4	6.6	0.00	0.0	0.00
New York	12.3	12.1	11.5	11.5	11.3	11.3	10.9	-0.23	-1.9	-0.32
North Carolina	11.8	12.1	11.8	11.8	12.1	12.1	11.7	-0.02	-2.7	-0.45
North Dakota	8.9	7.0	6.7	5.4	5.7	5.9	7.3	0.00	0.0	0.00
Ohio	12.9	12.7	12.6	12.6	12.1	12.7	11.8	-0.18	-2.8	-0.47
Oklahoma	9.7	8.7	8.8	8.4	8.9	8.9	8.3	0.00	0.0	0.00
Oregon	7.9	8.1	8.2	8.1	7.8	7.4	7.4	0.00	0.0	0.00
Pennsylvania	13.1	13.4	12.5	12.9	12.6	13.2	13.3	0.03	-4.3	-0.72
Rhode Island	12.0	10.7	10.8	10.3	11.0	10.3	10.1	-0.32	-1.1	-0.18
South Carolina	13.0	12.6	12.4	12.7	12.8	12.4	12.6	-0.07	-3.6	-0.60
South Dakota	6.2	5.6	7.1	8.0	6.9	7.0	6.3	0.00	0.0	0.00
Tennessee	13.1	12.5	13.4	13.4	13.0	13.0	13.0	-0.02	-4.0	-0.67
Texas	12.7	12.2	11.8	12.1	11.5	11.9	11.5	-0.20	-2.5	-0.42
Utah	5.7	6.9	6.0	6.3	7.5	7.0	8.7	0.00	0.0	0.00
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	11.6	11.4	12.0	11.5	11.7	11.5	11.4	-0.03	-2.4	-0.40
Washington	8.2	7.1	7.3	8.0	7.6	7.2	8.0	0.00	0.0	0.00
West Virginia	11.4	12.4	11.9	11.1	10.0	10.8	12.8	0.23	-3.8	-0.63
Wisconsin	11.0	11.0	11.1	10.9	10.3	11.2	10.3	-0.12	-1.3	-0.22
Wyoming	9.5	9.6	8.3	7.5	8.3	8.5	—	—	—	—
United States Total	11.9	11.6	11.4	11.4	11.2	11.4	11.1	-0.13	-2.1	-0.35

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.25

Percentage of Babies Born to Women Receiving Early Prenatal Care, All Races, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	71.2	70.9	71.7	72.3	72.5	73.2	73.6	0.40	16.4	2.73
Alaska	71.6	74.4	75.1	75.0	76.6	75.2	75.7	0.68	14.3	2.38
Arizona	66.6	69.0	70.2	73.6	74.2	72.6	71.7	0.85	18.3	3.05
Arkansas	68.5	69.8	70.1	70.1	68.9	68.1	68.9	0.07	21.1	3.52
California	73.2	75.2	76.5	76.9	77.1	77.1	76.9	0.62	13.1	2.18
Colorado	76.7	77.2	78.9	78.2	76.1	76.4	77.2	0.08	12.8	2.13
Connecticut	86.3	86.8	86.8	86.1	85.8	85.7	85.6	-0.12	4.4	0.73
Delaware	75.2	74.5	78.6	78.6	78.2	76.6	78.0	0.47	12.0	2.00
District of Columbia	58.1	62.7	67.5	65.6	61.4	59.0	60.3	0.37	29.7	4.95
Florida	69.8	69.2	69.3	69.3	67.9	68.2	67.7	-0.35	22.3	3.72
Georgia	71.5	73.2	74.5	74.0	73.0	75.2	75.8	0.72	14.2	2.37
Hawaii	72.0	75.1	76.5	76.9	74.8	74.1	75.8	0.63	14.2	2.37
Idaho	74.2	75.2	75.6	76.4	75.8	75.7	76.5	0.38	13.5	2.25
Illinois	74.2	75.1	75.4	76.5	76.9	77.8	77.9	0.62	12.1	2.02
Indiana	77.3	78.3	78.7	78.5	77.7	77.2	78.0	0.12	12.0	2.00
Iowa	83.6	84.4	84.3	84.9	84.4	85.6	85.3	0.28	4.7	0.78
Kansas	78.9	79.8	80.8	80.6	80.4	81.2	81.5	0.43	8.5	1.42
Kentucky	69.6	70.7	72.1	73.9	74.9	75.0	75.6	1.00	14.4	2.40
Louisiana	75.1	76.3	78.1	77.8	77.3	78.3	77.6	0.42	12.4	2.07
Maine	78.6	80.5	80.9	81.5	81.6	84.0	82.8	0.70	7.2	1.20
Maryland	81.2	79.6	80.9	79.5	78.7	78.5	79.3	-0.32	10.7	1.78
Massachusetts	87.8	88.5	88.9	89.1	88.0	85.6	85.6	-0.37	4.4	0.73
Michigan	76.9	78.6	80.0	80.5	80.9	81.2	81.4	0.75	8.6	1.43
Minnesota	76.0	77.3	77.9	77.6	77.9	79.1	79.9	0.65	10.1	1.68
Mississippi	72.1	73.6	74.8	74.4	74.1	74.6	74.8	0.45	15.2	2.53
Missouri	75.2	78.5	79.3	78.9	79.1	79.2	79.9	0.78	10.1	1.68
Montana	78.4	77.6	79.2	79.5	78.9	79.2	79.0	0.10	11.0	1.83
Nebraska	77.7	78.6	79.6	79.8	79.7	80.6	79.9	0.37	10.1	1.68
Nevada	74.7	72.9	73.6	75.8	74.1	74.1	75.8	0.18	14.2	2.37
New Hampshire	80.5	82.4	84.1	84.5	83.9	84.8	84.6	0.68	5.4	0.90
New Jersey	77.4	78.2	79.1	79.6	80.0	80.7	82.0	0.77	8.0	1.33
New Mexico	—	—	60.1	60.0	60.9	61.5	61.2	—	—	—
New York	69.1	70.9	71.9	71.2	71.0	71.2	72.2	0.52	17.8	2.97
North Carolina	74.4	75.9	76.6	76.7	77.5	77.8	78.2	0.63	11.8	1.97
North Dakota	76.7	78.3	78.2	79.6	79.3	81.5	82.0	0.88	8.0	1.33
Ohio	78.8	79.9	80.5	80.3	81.0	81.0	81.7	0.48	8.3	1.38
Oklahoma	68.8	68.2	68.0	68.1	67.6	67.4	69.4	0.10	20.6	3.43
Oregon	74.2	76.3	78.0	77.6	76.9	77.5	77.1	0.48	12.9	2.15
Pennsylvania	79.8	79.0	79.5	79.6	79.4	79.0	78.9	-0.15	11.1	1.85
Rhode Island	87.3	88.2	87.4	88.0	87.0	84.7	85.5	-0.30	4.5	0.75
South Carolina	70.3	70.2	70.5	68.4	66.9	66.5	67.6	-0.47	22.4	3.73
South Dakota	69.3	69.9	69.1	71.5	70.9	72.1	72.7	0.57	17.3	2.88
Tennessee	72.4	74.1	74.4	74.3	73.8	74.7	75.7	0.55	14.3	2.38
Texas	70.9	71.9	69.1	68.4	68.1	67.7	68.1	-0.47	21.9	3.65
Utah	81.7	82.5	81.4	81.1	81.8	82.3	82.0	0.05	8.0	1.33
Vermont	78.7	79.2	78.0	77.6	81.6	82.9	82.3	0.60	7.7	1.28
Virginia	81.0	81.7	81.2	81.3	80.9	80.6	80.3	-0.12	9.7	1.62
Washington	78.4	79.7	79.6	79.7	77.6	77.6	78.1	-0.05	11.9	1.98
West Virginia	65.1	66.8	69.0	69.8	70.5	72.0	71.2	1.02	18.8	3.13
Wisconsin	82.1	82.5	83.2	83.7	83.6	83.8	84.1	0.33	5.9	0.98
Wyoming	76.1	75.5	75.9	78.1	78.6	78.7	80.6	0.75	9.4	1.57
United States Total	74.9	75.9	76.3	76.4	76.1	76.2	76.5	0.27	13.5	2.25

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.26

Percentage of Babies Born to Women Receiving Early Prenatal Care, White, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	80.1	80.0	80.0	80.9	81.2	81	81.5	0.23	8.5	1.42
Alaska	76.3	78.1	78.5	79.2	80.1	79	78.8	0.42	11.2	1.87
Arizona	69.6	71.4	72.3	75.7	76.0	74.8	74.1	0.75	15.9	2.65
Arkansas	74.3	75.3	75.3	75.1	74.4	73.9	73.8	-0.08	16.2	2.70
California	73.6	75.5	76.8	77.2	77.5	77.6	77.5	0.65	12.5	2.08
Colorado	77.5	78.0	79.7	79.1	77.1	77.2	77.9	0.07	12.1	2.02
Connecticut	88.3	88.8	89.0	88.6	88.4	88.7	88.5	0.03	1.5	0.25
Delaware	80.3	79.2	82.5	82.5	82.6	82.1	81.9	0.27	8.1	1.35
District of Columbia	70.9	74.6	78.5	78.9	76.0	76.0	75.7	0.80	14.3	2.38
Florida	75.8	75.0	75.2	75.2	73.7	74.1	73.3	-0.42	16.7	2.78
Georgia	79.3	80.4	81.7	81.2	80.7	81.8	82.6	0.55	7.4	1.23
Hawaii	73.7	76.9	79.3	80.2	75.9	75.1	78.5	0.80	11.5	1.92
Idaho	74.6	75.4	75.9	76.8	76.1	76.0	76.8	0.37	13.2	2.20
Illinois	77.8	78.8	78.7	79.9	80.7	81.5	81.6	0.63	8.4	1.40
Indiana	78.7	79.8	80.4	80.2	79.6	79.5	79.9	0.20	10.1	1.68
Iowa	84.1	84.8	84.8	85.4	84.9	86.1	86.0	0.32	4.0	0.67
Kansas	80.0	80.9	81.9	82.1	82.1	82.8	83.1	0.52	6.9	1.15
Kentucky	71.7	73.1	74.1	75.6	76.6	76.6	77.2	0.92	12.8	2.13
Louisiana	85.0	85.3	85.3	85.2	85.2	85.9	85.8	0.13	4.2	0.70
Maine	78.7	80.6	81.1	81.7	82.0	84.1	82.9	0.70	7.1	1.18
Maryland	85.5	84.3	85.4	84.7	84.2	84.3	85.4	-0.02	4.6	0.77
Massachusetts	88.4	89.2	89.6	89.9	88.8	86.6	86.6	-0.30	3.4	0.57
Michigan	79.1	80.7	82.0	82.5	82.9	83.3	83.3	0.70	6.7	1.12
Minnesota	76.8	78.2	79.1	79.2	79.6	80.6	81.5	0.78	8.5	1.42
Mississippi	83.3	84.3	85.3	84.6	85.0	85.1	85.3	0.33	4.7	0.78
Missouri	80.4	80.7	81.4	81.2	81.2	81.7	82.3	0.32	7.7	1.28
Montana	80.2	79.6	81.1	81.8	81.1	81.6	81.7	0.25	8.3	1.38
Nebraska	78.8	79.7	80.6	80.9	81.1	81.9	81.6	0.47	8.4	1.40
Nevada	77.0	75.6	76.2	78.1	76.6	76.7	77.9	0.15	12.1	2.02
New Hampshire	80.6	82.5	84.1	84.6	84.1	84.9	84.7	0.68	5.3	0.88
New Jersey	82.4	82.5	83.5	83.8	83.9	84.6	85.5	0.52	4.5	0.75
New Mexico	—	—	63.4	63.1	63.6	64.2	63.5	—	—	—
New York	75.4	77.1	78.2	77.1	77.5	77.5	78.2	0.47	11.8	1.97
North Carolina	81.7	83.0	83.2	83.3	83.7	83.9	84.0	0.38	6.0	1.00
North Dakota	78.3	79.8	80.0	81.0	81.2	82.8	83.5	0.87	6.5	1.08
Ohio	81.0	82.0	82.5	82.5	83.2	83.5	84.1	0.52	5.9	0.98
Oklahoma	72.6	71.8	72.0	72.3	71.5	71.6	73.6	0.17	16.4	2.73
Oregon	74.8	76.9	78.8	78.7	77.9	78.3	77.8	0.50	12.2	2.03
Pennsylvania	82.4	81.9	82.3	82.5	82.3	81.9	81.9	-0.08	8.1	1.35
Rhode Island	88.1	89.0	88.4	89.2	88.3	86.9	87.4	-0.12	2.6	0.43
South Carolina	79.4	79.2	79.5	77.7	75.7	73.0	76.7	-0.45	13.3	2.22
South Dakota	73.0	74.2	73.1	75.6	75.3	76.8	76.7	0.62	13.3	2.22
Tennessee	76.3	77.6	77.7	77.8	77.5	78.3	79.5	0.53	10.5	1.75
Texas	73.1	73.9	70.9	70.1	69.8	69.3	69.6	-0.58	20.4	3.40
Utah	82.3	83.2	82.1	81.9	82.6	83.0	82.9	0.10	7.1	1.18
Vermont	78.8	79.2	78.0	77.7	81.6	83.0	82.4	0.60	7.6	1.27
Virginia	83.8	84.5	84.1	84.3	84.3	84.4	84.4	0.10	5.6	0.93
Washington	79.7	80.9	80.9	80.5	79.2	79.2	79.5	-0.03	10.5	1.75
West Virginia	65.7	67.4	69.6	70.5	71.3	72.7	71.9	1.03	18.1	3.02
Wisconsin	83.4	84.0	84.7	85.3	85.2	85.6	86.1	0.45	3.9	0.65
Wyoming	76.5	76.2	76.5	78.5	79.1	79.3	81.0	0.75	9.0	1.50
United States Total	78.2	79.1	79.3	79.4	79.3	79.4	79.6	0.23	10.4	1.73

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.27

Percentage of Babies Born to Women Receiving Early Prenatal Care, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	54.7	54.6	56.7	56.5	56.5	58.0	58.8	0.68	31.2	5.20
Alaska	62.7	73.1	75.5	69.9	74.1	73.7	69.8	1.18	20.2	3.37
Arizona	58.5	61.5	59.7	67.8	71.7	69.0	64.9	1.07	25.1	4.18
Arkansas	51.4	53.6	54.7	55.0	51.6	49.6	53.2	0.30	36.8	6.13
California	70.6	73.1	74.3	74.7	73.4	72.6	71.9	0.22	18.1	3.02
Colorado	66.3	68.1	69.7	70.8	67.4	67.5	69.7	0.57	20.3	3.38
Connecticut	69.6	71.0	71.1	69.0	66.6	64.8	66.3	-0.55	23.7	3.95
Delaware	59.0	59.1	66.0	66.2	63.1	59.9	64.4	0.90	25.6	4.27
District of Columbia	55.5	60.2	65.5	62.7	57.9	54.9	56.7	0.20	33.3	5.55
Florida	53.4	52.6	52.4	52.3	50.9	50.8	50.1	-0.55	39.9	6.65
Georgia	58.3	60.6	62.1	61.5	59.6	63.1	63.2	0.82	26.8	4.47
Hawaii	68.8	69.8	74.8	75.9	72.4	70.6	73.0	0.70	17.0	2.83
Idaho	70.1	71.8	65.8	76.7	71.0	67.8	71.8	0.28	18.2	3.03
Illinois	61.3	62.9	64.6	64.8	63.9	64.8	65.3	0.67	24.7	4.12
Indiana	62.8	62.6	62.7	62.3	58.2	55.3	58.5	-0.72	31.5	5.25
Iowa	69.6	74.5	73.6	73.6	72.3	73.7	73.3	0.62	16.7	2.78
Kansas	68.9	70.9	71.5	69.1	68.8	69.9	70.1	0.20	19.9	3.31
Kentucky	51.0	49.1	54.0	58.2	60.2	60.2	61.1	1.68	28.9	4.82
Louisiana	60.6	62.5	66.2	66.0	64.4	66.5	64.8	0.70	25.2	4.20
Maine	75.6	77.4	70.9	71.0	75.5	77.3	74.3	-0.22	15.7	2.62
Maryland	70.8	69.0	70.5	67.7	66.3	65.1	65.2	-0.93	24.8	4.13
Massachusetts	79.5	79.6	81.1	81.0	79.2	74.8	75.5	-0.67	14.5	2.42
Michigan	66.0	68.5	70.1	69.3	71.0	70.8	72.3	1.05	17.7	2.95
Minnesota	65.4	64.4	65.2	63.4	60.8	65.1	63.4	-0.33	26.6	4.43
Mississippi	60.4	62.4	63.5	63.6	62.1	63.2	63.5	0.52	26.5	4.42
Missouri	66.9	67.0	67.7	67.1	67.5	66.0	67.1	0.03	22.9	3.82
Montana	87.3	72.9	70.4	72.7	66.7	67.6	79.7	-1.27	10.3	1.72
Nebraska	63.7	65.8	67.2	68.4	63.2	64.4	61.6	-0.35	28.4	4.73
Nevada	61.3	52.7	55.3	61.0	56.7	57.9	62.4	0.18	27.6	4.60
New Hampshire	69.4	74.7	74.2	76.8	68.3	76.8	81.0	1.93	9.0	1.50
New Jersey	57.3	61.0	62.2	63.1	64.7	65.1	67.9	1.77	22.1	3.68
New Mexico	—	—	49.1	53.3	51.4	51.8	52.7	—	—	—
New York	46.0	48.1	49.9	49.6	48.4	48.7	50.6	0.77	39.4	6.57
North Carolina	58.5	60.6	62.0	62.3	63.8	64.0	64.8	1.05	25.2	4.20
North Dakota	82.9	70.4	67.0	75.4	65.9	79.5	74.2	-1.45	15.8	2.63
Ohio	65.5	67.2	68.3	67.0	67.2	65.4	66.8	0.22	23.2	3.87
Oklahoma	53.5	52.6	51.5	51.6	49.2	48.4	51.4	-0.35	38.6	6.43
Oregon	62.4	65.4	66.2	67.2	64.2	68.4	65.2	0.47	24.8	4.13
Pennsylvania	62.4	59.7	59.7	61.0	60.0	59.7	59.0	-0.57	31.0	5.17
Rhode Island	76.9	79.9	77.5	76.1	76.2	68.1	71.9	-0.83	18.1	3.02
South Carolina	57.5	56.8	57.2	54.6	53.6	51.9	53.5	-0.67	36.5	6.08
South Dakota	69.0	65.2	65.4	51.5	59.3	60.2	63.0	-1.00	27.0	4.50
Tennessee	59.3	62.7	63.7	62.4	61.0	62.1	62.7	0.57	27.3	4.55
Texas	58.2	60.3	58.4	58.1	57.3	57.4	58.2	0.00	31.8	5.30
Utah	66.7	67.0	75.0	70.0	69.1	69.7	67.7	0.17	22.3	3.72
Vermont	—	—	—	—	—	—	—	—	—	—
Virginia	72.4	73.6	73.0	72.5	70.9	69.2	68.0	-0.73	22.0	3.67
Washington	63.3	68.7	67.4	68.0	64.7	65.4	65.7	0.40	24.3	4.05
West Virginia	52.2	52.6	54.6	52.0	54.5	54.3	53.9	0.28	36.1	6.02
Wisconsin	65.6	65.6	67.7	67.8	67.6	67.5	68.5	0.48	21.5	3.58
Wyoming	65.5	65.7	66.1	68.6	74.8	71.7	79.8	2.38	10.2	1.70
United States Total	60.2	61.6	62.7	62.4	61.5	61.5	62.2	0.33	27.8	4.63

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.28

Percentage of Babies Born to Women Receiving Early Prenatal Care, Nonwhite, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984	Change in Rate 1978-1984: Actual per yr	Total needed	Needed per yr
Alabama	54.9	54.8	56.8	56.7	56.7	58.2	59.0	0.68	31.0	5.17
Alaska	60.0	65.6	67.1	65.3	67.8	65.9	67.4	1.23	22.6	3.77
Arizona	50.3	55.2	58.2	61.8	64.5	61.2	58.9	1.43	31.1	5.18
Arkansas	51.8	54.2	55.1	55.4	52.3	50.5	53.8	0.33	36.2	6.03
California	71.4	74.2	75.3	76.0	75.5	75.0	74.6	0.53	15.4	2.57
Colorado	66.0	67.7	69.2	68.5	65.7	67.7	68.9	0.48	21.1	3.52
Connecticut	71.5	72.4	71.9	70.2	68.1	66.7	68.2	-0.55	21.8	3.63
Delaware	59.9	59.8	66.0	67.0	63.6	60.6	65.4	0.92	24.6	4.10
District of Columbia	55.5	60.4	65.6	62.8	58.0	55.0	56.8	0.22	33.2	5.53
Florida	54.1	53.4	53.0	53.1	51.7	51.6	51.1	-0.50	38.9	6.48
Georgia	58.5	60.9	62.4	61.8	58.7	63.4	63.6	0.85	26.4	4.40
Hawaii	71.4	74.5	75.8	75.9	73.7	73.8	74.9	0.58	15.1	2.52
Idaho	61.5	68.0	64.7	65.0	66.9	66.0	67.3	0.97	22.7	3.78
Illinois	62.2	63.6	65.1	65.5	64.8	65.7	66.2	0.67	23.8	3.97
Indiana	63.8	63.6	63.6	63.4	59.9	57.1	60.2	-0.60	29.8	4.97
Iowa	70.0	73.5	71.5	71.2	70.1	73.5	70.3	0.05	19.7	3.28
Kansas	68.8	70.0	71.2	68.4	67.1	68.5	68.9	0.02	21.1	3.52
Kentucky	51.9	50.1	54.8	58.9	60.5	60.7	61.5	1.60	28.5	4.75
Louisiana	60.5	62.4	66.3	66.0	64.5	66.5	65.1	0.77	24.9	4.15
Maine	74.1	74.8	69.0	72.7	75.3	80.9	76.9	0.47	13.1	2.18
Maryland	71.5	69.8	71.2	68.6	67.4	66.5	66.7	-0.80	23.3	3.88
Massachusetts	80.7	80.9	81.8	81.4	79.7	76.1	76.6	-0.68	13.4	2.23
Michigan	66.6	69.0	70.5	70.0	71.3	73.9	72.7	1.02	17.3	2.88
Minnesota	60.1	60.1	56.9	54.3	54.8	57.7	58.0	-0.35	32.0	5.33
Mississippi	60.4	62.5	63.5	63.6	62.2	63.3	63.5	0.52	26.5	4.42
Missouri	67.2	67.3	68.2	67.5	68.0	66.6	67.7	0.08	22.3	3.72
Montana	63.2	60.1	62.8	61.8	62.0	60.6	59.5	-0.62	30.5	5.08
Nebraska	61.5	63.1	65.2	65.9	63.6	64.5	60.1	-0.23	29.9	4.98
Nevada	62.8	57.7	60.1	64.3	61.6	61.9	65.9	0.52	24.1	4.02
New Hampshire	74.7	79.8	79.7	78.4	75.4	78.8	79.5	0.80	10.5	1.75
New Jersey	59.2	62.8	64.2	64.9	66.5	67.0	70.0	1.80	20.0	3.33
New Mexico	—	—	45.4	47.2	48.5	48.4	50.8	—	—	—
New York	48.2	50.3	52.4	52.3	50.9	51.4	53.1	0.82	36.9	6.15
North Carolina	59.3	61.3	62.6	63.1	64.5	64.6	65.3	1.00	24.7	4.12
North Dakota	57.4	61.0	58.1	64.3	60.7	68.1	66.7	1.55	23.3	3.88
Ohio	66.2	67.9	69.0	68.0	67.9	66.4	67.8	0.27	22.2	3.70
Oklahoma	53.3	53.9	52.8	51.6	51.7	50.9	53.3	0.00	36.7	6.12
Oregon	65.1	66.7	66.2	63.1	64.7	68.3	67.8	0.45	22.2	3.70
Pennsylvania	63.3	60.8	60.6	61.9	61.2	60.9	60.2	-0.52	29.8	4.97
Rhode Island	78.0	79.5	76.1	74.9	73.7	64.9	68.8	-1.53	21.2	3.53
South Carolina	57.8	57.1	57.5	54.9	53.8	52.2	53.7	-0.68	36.3	6.05
South Dakota	44.4	42.2	44.4	46.3	44.9	46.3	50.4	1.00	39.6	6.60
Tennessee	59.5	62.8	63.8	62.6	61.3	62.3	63.0	0.58	27.0	4.50
Texas	59.4	61.4	59.5	59.3	59.0	59.1	60.0	0.10	30.0	5.00
Utah	64.0	63.0	63.4	64.7	64.5	66.3	64.1	0.02	25.9	4.32
Vermont	74.6	77.4	72.7	69.5	76.0	75.4	64.5	-1.68	25.5	4.25
Virginia	73.0	74.1	73.4	72.9	71.3	70.0	69.0	-0.67	21.0	3.50
Washington	66.7	69.0	68.4	67.7	66.1	66.1	68.0	0.22	22.0	3.67
West Virginia	52.2	53.8	55.4	53.5	55.7	56.1	56.0	0.63	34.0	5.67
Wisconsin	66.6	66.1	67.1	66.8	66.6	65.9	66.2	-0.07	23.8	3.97
Wyoming	70.2	62.2	62.7	70.5	68.5	67.1	73.2	0.50	16.8	2.80
United States Total	61.4	62.9	63.8	63.8	63.2	63.4	64.1	0.45	25.9	4.32

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.29

Percentage of Babies Born to Women Receiving Late or No Prenatal Care, All Races, 1978-1984

State name	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*
Alabama	6.1	6.3	6.5	6.3	6.4	6.1	5.9
Alaska	5.3	5.1	4.7	4.8	4.6	4.6	4.8
Arizona	8.9	8.1	7.7	6.9	6.6	7.7	8.2
Arkansas	6.8	6.3	6.3	6.6	7.1	7.4	7.9
California	5.5	4.9	4.6	4.4	4.6	4.8	5.1
Colorado	4.9	4.7	4.4	4.9	5.5	5.8	5.4
Connecticut	2.4	2.3	2.4	2.9	2.7	2.7	2.6
Delaware	5.0	4.5	4.4	3.8	3.9	4.6	3.7
District of Columbia	14.6	8.0	7.1	7.4	7.8	11.1	10.0
Florida	6.2	7.0	7.3	7.6	8.7	8.5	8.9
Georgia	6.7	6.0	5.2	5.7	5.8	5.4	5.1
Hawaii	5.3	4.9	4.8	4.5	5.0	5.5	4.7
Idaho	5.4	5.0	5.2	5.0	4.9	5.4	4.8
Illinois	5.2	5.2	5.0	4.4	4.3	4.2	4.4
Indiana	4.1	3.9	3.8	4.0	4.5	4.6	4.4
Iowa	2.3	2.3	2.2	2.2	2.4	2.2	2.2
Kansas	3.4	3.4	3.4	3.3	3.6	3.4	3.7
Kentucky	7.9	7.5	6.9	4.9	5.3	5.4	5.3
Louisiana	5.4	5.0	4.9	4.9	4.5	4.3	4.8
Maine	2.5	2.3	2.4	3.2	2.8	1.8	2.4
Maryland	2.9	3.6	3.3	3.9	3.9	4.3	4.0
Massachusetts	1.7	1.6	1.6	1.6	1.9	2.4	2.3
Michigan	3.7	3.3	3.1	3.0	3.2	3.1	3.0
Minnesota	3.5	3.3	3.4	3.7	3.9	3.6	3.6
Mississippi	5.2	4.5	4.4	4.6	4.5	4.6	4.4
Missouri	4.0	4.0	3.8	4.2	4.4	4.4	4.0
Montana	3.4	3.6	3.7	3.7	3.9	3.8	4.2
Nebraska	3.7	3.4	3.4	3.2	3.3	3.2	3.5
Nevada	5.8	7.2	6.0	4.7	6.9	6.1	6.0
New Hampshire	2.7	2.3	2.3	2.1	2.6	2.2	2.3
New Jersey	5.2	5.1	5.1	4.9	4.6	4.4	4.0
New Mexico	—	—	12.5	12.7	12.1	12.8	13.2
New York	9.8	8.9	8.7	8.8	9.5	9.7	9.2
North Carolina	4.5	4.2	4.2	4.1	3.9	4.0	3.9
North Dakota	3.7	3.3	3.1	3.1	3.0	2.7	2.7
Ohio	3.4	3.3	3.2	3.4	3.3	3.6	3.6
Oklahoma	8.1	8.6	8.6	8.2	9.5	9.2	8.5
Oregon	4.8	4.6	4.2	4.8	5.2	5.0	5.2
Pennsylvania	3.8	3.9	3.9	4.3	4.1	4.3	4.4
Rhode Island	1.6	1.7	1.9	1.6	1.9	2.4	2.2
South Carolina	5.8	6.0	6.2	6.7	7.5	8.0	7.7
South Dakota	6.2	6.5	6.9	6.3	6.8	7.4	6.6
Tennessee	5.9	5.3	5.4	5.4	5.9	5.7	5.3
Texas	8.6	8.1	9.1	9.5	9.9	10.4	10.6
Utah	2.4	2.6	2.8	2.8	3.0	2.9	3.1
Vermont	3.0	3.4	2.7	2.6	2.6	2.6	2.7
Virginia	3.6	3.4	3.6	3.5	3.6	3.7	3.8
Washington	3.7	3.6	3.7	4.0	4.5	4.6	5.0
West Virginia	6.9	6.3	6.3	6.1	6.1	6.0	6.3
Wisconsin	2.7	2.7	2.6	2.4	2.7	2.5	2.6
Wyoming	4.0	4.7	4.3	3.6	3.6	3.8	4.1
United States Total	5.4	5.1	5.1	5.2	5.5	5.6	5.6

Source: National Center for Health Statistics.

TABLE 3.30

Percentage of Babies Born to Women Receiving Late or No Prenatal Care, White, 1978-1984

State name	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*
Alabama	4.2	4.2	4.5	4.2	4.3	4.0	3.9
Alaska	3.5	3.6	3.3	3.3	3.1	3.5	3.6
Arizona	7.5	6.8	6.5	5.8	5.6	6.5	7.2
Arkansas	5.3	4.9	5.0	5.3	5.6	5.9	6.4
California	5.6	5.0	4.6	4.4	4.6	4.7	5.0
Colorado	4.7	4.5	4.1	4.6	5.1	5.5	5.1
Connecticut	2.0	1.9	1.5	2.4	2.1	1.9	2.0
Delaware	3.9	3.9	3.7	3.0	3.0	3.1	2.8
District of Columbia	10.9	7.0	4.6	5.7	5.2	5.8	5.0
Florida	5.1	5.7	6.1	6.2	7.0	6.8	7.2
Georgia	5.1	4.3	3.9	4.0	3.9	3.9	3.8
Hawaii	5.1	3.9	3.8	3.2	3.9	4.2	3.6
Idaho	4.7	4.9	5.0	4.9	4.7	5.3	4.7
Illinois	4.2	4.2	4.2	3.7	3.5	3.3	3.5
Indiana	3.8	3.6	3.4	3.6	2.5	4.0	3.9
Iowa	2.2	2.2	2.0	2.0	2.2	2.1	2.0
Kansas	3.2	3.2	3.0	3.0	3.2	3.0	3.1
Kentucky	7.0	6.1	5.9	4.9	4.8	5.0	4.9
Louisiana	3.3	3.1	3.0	2.9	2.9	2.6	2.8
Maine	2.5	2.2	2.4	3.1	2.7	1.8	2.4
Maryland	2.3	2.6	2.3	2.7	2.7	2.9	2.5
Massachusetts	1.6	1.5	1.5	1.4	1.7	2.2	2.1
Michigan	3.1	2.7	2.6	2.4	2.5	2.5	2.4
Minnesota	3.2	2.9	2.9	3.2	3.3	3.0	2.9
Mississippi	3.0	2.6	2.6	2.7	2.4	2.5	2.4
Missouri	3.8	3.5	3.4	3.6	3.9	3.8	3.4
Montana	2.5	2.7	2.8	2.8	2.8	2.8	3.1
Nebraska	3.3	3.0	3.0	2.9	2.9	2.8	3.0
Nevada	5.1	6.3	5.1	4.1	6.0	5.3	5.4
New Hampshire	2.7	2.3	2.3	2.1	2.6	2.2	2.3
New Jersey	3.5	3.5	3.3	3.3	3.4	3.2	3.1
New Mexico	—	—	10.5	10.8	10.8	11.5	12.1
New York	6.8	6.2	5.8	6.2	6.5	6.9	6.6
North Carolina	2.9	2.7	2.7	2.7	2.6	2.5	2.5
North Dakota	2.8	2.6	2.2	2.6	2.3	2.1	2.1
Ohio	3.0	2.9	2.8	2.8	2.7	2.7	2.8
Oklahoma	6.5	7.0	7.0	6.6	7.8	7.5	6.9
Oregon	4.7	4.4	3.9	4.4	4.8	4.7	4.9
Pennsylvania	3.2	3.2	3.2	3.2	2.5	3.4	3.5
Rhode Island	1.4	1.6	1.6	1.3	1.5	1.9	1.3
South Carolina	3.8	3.9	4.1	4.5	5.0	5.1	4.6
South Dakota	4.0	3.5	4.2	3.6	4.2	4.2	4.0
Tennessee	5.1	4.6	4.6	4.5	5.0	4.7	4.2
Texas	8.2	7.8	8.7	9.1	9.6	10.0	10.3
Utah	2.1	2.3	2.4	2.4	2.6	2.5	2.7
Vermont	3.1	3.4	2.7	2.6	2.5	2.6	2.6
Virginia	3.0	3.0	3.2	2.9	3.0	2.9	2.9
Washington	3.4	3.2	3.4	3.5	4.0	4.1	4.5
West Virginia	6.7	6.0	6.1	5.9	5.9	5.8	6.1
Wisconsin	2.4	2.3	2.1	2.0	2.2	2.0	2.2
Wyoming	3.7	4.5	4.1	3.3	3.4	3.5	4.0
United States Total	4.5	4.3	4.3	4.3	4.5	4.6	4.7

Source: National Center for Health Statistics.

TABLE 3.31

Percentage of Babies Born to Women Receiving Late or No Prenatal Care, Black, 1978-1984

State name	1978	1979	1980	1981	1982	1983	1984
Alabama	9.7	9.9	10.2	10.0	10.3	10.0	9.5
Alaska	—	—	—	—	—	—	—
Arizona	8.8	8.7	7.4	8.4	7.2	8.5	9.5
Arkansas	11.3	10.3	10.1	10.4	11.6	11.8	12.7
California	5.0	4.3	4.2	3.9	4.6	4.9	5.4
Colorado	7.6	6.5	6.0	6.7	8.4	7.3	8.0
Connecticut	5.6	5.5	6.2	6.7	7.2	8.3	6.8
Delaware	8.3	6.2	6.5	6.2	6.8	9.2	6.7
District of Columbia	15.5	8.3	7.6	8.4	8.5	12.5	11.4
Florida	9.1	10.7	10.9	11.7	13.7	13.4	14.3
Georgia	9.4	8.8	7.5	8.8	9.3	8.2	7.5
Hawaii	—	5.8	—	5.5	4.4	5.4	3.8
Idaho	—	—	—	—	—	—	—
Illinois	8.8	8.4	7.4	6.9	7.0	7.2	7.5
Indiana	6.6	7.7	7.4	7.8	9.2	10.7	9.8
Iowa	5.2	5.6	4.6	5.1	6.3	4.8	4.5
Kansas	4.9	5.1	5.6	5.4	5.8	5.2	6.4
Kentucky	15.9	20.0	16.2	10.7	9.7	9.4	10.0
Louisiana	8.5	7.6	7.9	8.0	7.1	6.7	7.8
Maine	—	—	—	—	—	—	—
Maryland	4.6	5.8	5.5	6.6	6.5	7.7	7.3
Massachusetts	2.9	3.1	2.6	3.4	3.8	4.8	4.4
Michigan	6.6	6.3	5.9	6.4	6.6	6.2	5.5
Minnesota	7.4	7.7	7.5	9.4	9.2	9.8	10.6
Mississippi	7.3	6.3	6.3	6.5	6.8	6.8	6.4
Missouri	6.2	6.5	6.1	7.1	7.3	7.9	7.3
Montana	—	—	—	—	—	—	—
Nebraska	6.4	7.4	6.8	6.7	8.2	8.6	8.9
Nevada	9.0	13.7	11.7	7.2	12.6	10.6	8.8
New Hampshire	—	—	—	—	—	—	—
New Jersey	11.7	11.6	12.0	11.0	9.5	9.0	8.0
New Mexico	—	—	18.9	14.4	15.0	15.2	14.5
New York	20.9	19.4	18.9	18.6	20.2	20.1	19.2
North Carolina	8.3	7.6	7.6	7.4	6.7	7.4	7.2
North Dakota	—	—	—	—	—	—	—
Ohio	6.1	5.6	5.6	6.9	7.2	8.5	8.5
Oklahoma	12.9	14.5	14.0	13.5	17.0	17.1	15.4
Oregon	6.3	7.2	7.0	6.7	8.9	9.1	8.5
Pennsylvania	7.8	8.4	9.0	11.6	9.8	9.8	11.1
Rhode Island	—	—	—	4.7	4.9	6.6	5.6
South Carolina	8.7	9.1	9.3	10.1	11.4	12.5	12.5
South Dakota	—	—	—	—	—	—	—
Tennessee	8.5	7.6	7.8	8.1	8.9	8.9	8.9
Texas	10.8	10.0	11.0	11.7	12.4	12.5	12.7
Utah	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—
Virginia	5.4	4.7	5.0	5.2	5.6	6.2	6.2
Washington	7.0	5.5	6.6	6.4	7.2	8.4	9.5
West Virginia	12.2	12.7	12.0	13.1	12.3	12.1	12.2
Wisconsin	6.4	6.9	6.4	7.0	7.0	6.6	6.5
Wyoming	—	—	—	—	—	—	—
United States Total	9.3	8.9	8.8	9.1	9.6	9.7	9.6

Source: National Center for Health Statistics.

TABLE 3.32

Percentage of Babies Born to Women Receiving Late or No Prenatal Care, Nonwhite, 1978-1984

State name	*1978*	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*
Alabama	9.6	9.9	10.1	10.0	10.3	10.0	9.5
Alaska	9.6	8.8	8.2	8.4	8.3	7.2	8.0
Arizona	16.8	15.7	14.7	13.0	11.7	15.9	13.2
Arkansas	8.4	11.6	10.1	10.4	11.6	11.9	12.5
California	5.2	4.6	4.8	4.4	4.8	4.9	5.5
Colorado	8.3	7.4	7.6	8.8	9.7	9.1	9.1
Connecticut	5.3	5.3	6.0	6.4	6.8	7.9	6.4
Delaware	8.2	6.1	6.4	6.0	6.8	8.9	6.6
District of Columbia	15.4	8.2	7.5	8.4	8.4	12.4	11.2
Florida	9.1	10.5	10.8	11.5	13.5	13.2	14.0
Georgia	9.4	8.8	7.5	8.7	9.0	8.2	7.5
Hawaii	5.3	5.2	5.1	4.9	5.4	5.9	5.1
Idaho	9.7	9.3	10.1	9.0	12.0	9.6	9.6
Illinois	8.6	8.3	7.4	6.8	6.9	7.0	7.3
Indiana	6.5	7.5	7.2	7.6	8.8	10.2	9.4
Iowa	5.5	6.2	5.8	6.6	8.0	6.1	7.0
Kansas	5.4	5.6	6.0	5.8	7.0	6.6	8.0
Kentucky	15.5	19.3	15.6	10.8	9.6	9.2	9.7
Louisiana	8.7	7.8	7.9	8.1	7.2	6.9	7.8
Maine	—	—	—	—	—	—	—
Maryland	4.5	5.8	5.4	6.4	6.3	7.4	7.0
Massachusetts	2.8	2.9	2.8	3.5	3.7	4.6	4.4
Michigan	6.6	6.2	5.8	6.2	6.5	6.3	5.5
Minnesota	10.3	11.2	12.8	12.1	12.7	12.5	13.1
Mississippi	7.4	6.4	6.3	6.5	6.8	6.8	6.5
Missouri	6.2	6.5	6.0	7.0	7.3	7.7	7.1
Montana	11.5	11.5	12.0	10.6	12.1	11.6	12.3
Nebraska	8.6	9.8	8.3	8.0	8.7	8.3	9.5
Nevada	9.2	12.2	10.7	8.1	11.5	10.1	9.3
New Hampshire	—	—	—	—	—	—	—
New Jersey	11.1	10.8	11.2	10.3	8.9	8.5	7.4
New Mexico	—	—	20.9	20.8	18.6	18.5	17.9
New York	19.6	18.1	17.5	17.2	18.9	18.7	17.8
North Carolina	8.0	7.4	7.4	7.2	6.5	7.2	7.0
North Dakota	13.6	12.1	13.4	9.6	10.5	9.2	9.5
Ohio	6.0	5.6	5.5	6.7	7.0	8.3	8.2
Oklahoma	14.4	14.7	14.7	14.6	16.0	15.6	14.6
Oregon	7.2	7.6	8.7	9.9	10.0	9.1	8.9
Pennsylvania	7.5	8.1	8.9	11.4	9.5	9.6	10.7
Rhode Island	—	3.3	5.2	4.5	5.8	7.5	6.4
South Carolina	8.6	9.1	9.3	10.1	11.3	12.4	12.4
South Dakota	21.3	25.8	23.7	22.7	22.1	24.7	21.5
Tennessee	8.6	7.7	8.0	8.2	9.0	9.0	8.8
Texas	10.6	9.7	10.8	11.5	12.1	12.1	12.2
Utah	11.2	10.8	11.4	11.1	11.9	10.2	9.8
Vermont	—	—	—	—	—	—	—
Virginia	5.2	4.7	5.0	5.1	5.5	6.1	6.1
Washington	7.2	6.5	6.8	7.5	8.1	8.4	8.8
West Virginia	12.0	12.0	11.6	12.1	11.5	11.6	11.2
Wisconsin	6.6	7.3	7.0	7.4	7.6	7.4	6.9
Wyoming	8.9	6.6	8.9	8.1	6.5	8.8	7.9
United States Total	9.1	8.7	8.8	8.9	9.3	9.4	9.3

Source: National Center for Health Statistics.

TABLE 3.33

State Vital Statistics, All Races, 1985

	Infant Mortality Rate	*Percent Low Birthweight*	*Percent Early Prenatal Care*	*Percent Late or No Prenatal Care*
Alabama	—	—	—	—
Alaska	11.0	4.8	75.9	3.6
Arizona	9.6	6.3	71.2	7.8
Arkansas	11.7	—	—	—
California	—	—	—	—
Colorado	9.8	—	—	—
Connecticut	—	—	—	—
Delaware	—	—	—	—
District of Columbia	—	—	57.7	13.3
Florida	—	—	—	—
Georgia	12.7	8.1	—	—
Hawaii	8.7	5.7	75.4	5.1
Idaho	10.4	5.5	73.6	5.2
Illinois	11.6	—	77.9	4.6
Indiana	10.9	—	76.5	4.8
Iowa	9.4	5.2	85.5	2.1
Kansas	9.1	6.1	81.2	3.8
Kentucky	11.2	7.1	76.1	5.1
Louisiana	11.9	8.7	78.4	4.9
Maine	8.9	5.0	81.8	3.8
Maryland	11.9	7.7	79.9	4.0
Massachusetts	—	—	—	—
Michigan	—	—	—	—
Minnesota	—	—	—	—
Mississippi	13.7	8.8	75.1	4.2
Missouri	10.2	6.7	80.3	4.0
Montana	10.3	—	78.5	4.1
Nebraska	9.6	5.3	80.4	3.4
Nevada	—	—	—	—
New Hampshire	—	—	—	—
New Jersey	—	—	—	—
New Mexico	10.6	—	58.7	13.2
New York	8.8	7.1	68.5	9.9
North Carolina	12.0	7.9	77.9	4.2
North Dakota	8.5	4.9	82.6	2.6
Ohio	10.4	6.7	82.2	3.4
Oklahoma	10.6	6.4	71.1	6.8
Oregon	—	—	—	—
Pennsylvania	10.8	6.6	79.2	4.5
Rhode Island	8.2	6.3	85.9	1.4
South Carolina	—	8.6	68.3	8.0
South Dakota	9.7	5.8	71.9	5.2
Tennessee	—	—	—	—
Texas	9.8	—	67.8	10.8
Utah	—	—	—	—
Vermont	—	—	—	—
Virginia	11.5	7.1	79.8	4.0
Washington	10.6	5.3	77.9	4.6
West Virginia	10.7	6.9	71.5	6.1
Wisconsin	—	—	—	—
Wyoming	12.2	7.0	79.4	4.3

Note: A dash on the table indicates that the data were not available, while an asterisk indicates that the data were insufficient to reliably calculate a rate or percentage.

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.34

State Vital Statistics, White, 1985

	Infant Mortality Rate	*Percent Low Birthweight*	*Percent Early Prenatal Care*	*Percent Late or No Prenatal Care*
Alabama	—	—	—	—
Alaska	9.6	4.6	83.1	3.2
Arizona	9.1	6.1	73.1	7.1
Arkansas	10.9	—	—	—
California	—	—	—	—
Colorado	9.1	—	—	—
Connecticut	—	—	—	—
Delaware	—	—	—	—
District of Columbia	—	4.9	77.6	6.0
Florida	—	—	—	—
Georgia	9.4	6.1	—	—
Hawaii	*	4.3	79.2	3.4
Idaho	10.5	5.5	—	—
Illinois	9.1	—	81.6	3.7
Indiana	9.9	—	78.5	4.0
Iowa	9.3	5.1	85.9	2.0
Kansas	8.7	5.5	82.5	3.5
Kentucky	10.3	6.6	77.5	4.7
Louisiana	8.6	5.9	85.8	3.0
Maine	8.9	—	—	—
Maryland	9.0	5.1	85.9	2.6
Massachusetts	—	—	—	—
Michigan	—	—	—	—
Minnesota	—	—	—	—
Mississippi	9.3	5.9	85.4	2.4
Missouri	9.0	5.6	82.6	3.4
Montana	9.3	—	81.0	3.2
Nebraska	9.0	4.9	82.2	2.9
Nevada	—	—	—	—
New Hampshire	—	—	—	—
New Jersey	—	—	—	—
New Mexico	10.6	—	—	—
New York	8.5	5.6	75.4	6.9
North Carolina	9.5	6.0	83.6	2.7
North Dakota	8.3	4.9	84.1	2.0
Ohio	9.3	4.9	84.6	2.7
Oklahoma	—	5.9	74.5	5.5
Oregon	—	—	—	—
Pennsylvania	9.4	5.5	—	—
Rhode Island	8.1	5.9	—	—
South Carolina	—	5.9	—	—
South Dakota	8.6	5.3	75.5	3.1
Tennessee	—	—	—	—
Texas	8.9	—	69.4	10.4
Utah	—	—	—	—
Vermont	—	—	—	—
Virginia	9.2	5.6	—	—
Washington	11.1	4.9	79.9	3.9
West Virginia	10.2	6.7	72.2	5.9
Wisconsin	—	—	—	—
Wyoming	12.2	7.0	80.1	4.0

Note: A dash on the table indicates that the data were not available, while an asterisk indicates that the data were insufficient to reliably calculate a rate or percentage.

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

TABLE 3.35

State Vital Statistics, Nonwhite, 1985

	Infant Mortality Rate	*Percent Low Birthweight*	*Percent Early Prenatal Care*	*Percent Late or No Prenatal Care*
Alabama	—	—	—	—
Alaska	13.9	5.4	58.2	4.5
Arizona	13.0	7.5	58.5	12.1
Arkansas	14.4	—	—	—
California	—	—	—	—
Colorado	23.3	—	—	—
Connecticut	—	—	—	—
Delaware	—	—	—	—
District of Columbia	—	15.0	53.2	14.9
Florida	—	—	—	—
Georgia	18.8	11.6	—	—
Hawaii	10.2	6.9	73.6	5.9
Idaho	*	7.8	—	—
Illinois	20.0	—	65.5	7.5
Indiana	19.4	—	56.4	11.9
Iowa	*	9.1	72.2	5.0
Kansas	12.7	11.4	69.3	6.8
Kentucky	19.5	12.1	62.6	9.5
Louisiana	16.7	12.9	67.3	7.7
Maine	*	*	*	*
Maryland	17.8	12.0	67.7	7.1
Massachusetts	—	—	—	—
Michigan	—	—	—	—
Minnesota	—	—	—	—
Mississippi	18.7	12.1	63.5	6.3
Missouri	16.1	12.5	68.9	7.1
Montana	18.5	—	57.8	12.3
Nebraska	16.4	9.6	62.6	9.7
Nevada	—	—	—	—
New Hampshire	—	—	—	—
New Jersey	—	—	—	—
New Mexico	10.6	—	—	—
New York	13.4	11.3	47.7	18.9
North Carolina	17.5	12.2	65.3	7.5
North Dakota	11.3	5.9	67.6	8.4
Ohio	16.2	11.6	68.7	7.0
Oklahoma	—	8.6	56.7	12.0
Oregon	—	—	—	—
Pennsylvania	18.8	12.8	—	—
Rhode Island	*	9.7	—	—
South Carolina	—	12.8	—	—
South Dakota	15.9	8.2	50.9	16.8
Tennessee	—	—	—	—
Texas	15.6	—	57.1	13.7
Utah	—	—	—	—
Vermont	—	—	—	—
Virginia	18.2	11.3	—	—
Washington	8.2	6.9	63.9	9.7
West Virginia	*	11.7	56.2	12.2
Wisconsin	—	—	—	—
Wyoming	*	7.1	66.9	10.1

Note: A dash on the table indicates that the data were not available, while an asterisk indicates that the data were insufficient to reliably calculate a rate or percentage.

Source: National Center for Health Statistics. Calculations by Children's Defense Fund.

Technical Notes

National, International, State, and City Natality and Infant Mortality

The natality and infant mortality data shown in this book for the years 1978-1984 are based on published and unpublished statistics from the National Center for Health Statistics (NCHS). These data are provided to NCHS through the Vital Statistics Cooperative Program, through which states report birth and death certificate information. Readers may obtain further details about states' participation in this program from NCHS, U.S. Department of Health and Human Services.

In calculating rates and percentages, data were excluded if the total number of events was fewer than thirty. The only exception to this rule is in the case of the total number of birt.. women younger than twenty and younger than fifteen and the percent of births to women younger than twenty and younger than fifteen, found on the state fact sheets in Section 2. Here we chose to present the data, even if the number of events was fewer than thirty, to give a fuller picture of teenage childbearing patterns.

The international infant mortality rates for 1950-1985 are from the United Nations Children's Fund (UNICEF). The Children's Defense Fund calculated the percent change between the 1950-1955 rates and the 1980-1985 rates.

The 1985 natality and mortality data were supplied by state health departments and state vital statistics offices. All data are final. The rates and percentages were calculated by the Children's Defense Fund, based on uniform methodologies applied to raw numbers supplied by the states. Most states were able to provide final 1985 data by Fall 1986. However, sixteen states were unable to do so.

These 1985 state data may vary from states' individually calculated rates and from the final statistics produced by NCHS. Therefore, the 1985 state vital statistics presented in this book should not be compared to 1978-1984 state data presented here. However, they may be considered a preliminary indication of states' 1985 rate of progress in reducing infant mortality and improving infant health.

The availability of city-level data is limited. NCHS does not routinely publish these data, and some statistics are unavailable even in unpublished form. City-to-city comparisons based on other data sources generally are not considered reliable. Comparable NCHS city data for two indicators have been used in this book.

Program-Related Statistics

Calculations using comparisons to the federal poverty level are based on 1986 poverty income guidelines issued in February 1986 (51 Federal Register, p. 5105). For purposes of this book, the poverty level for a family of three has been selected as a standard of comparison since many of the families receiving public aid consist of a single parent and two children. A single annual poverty income standard is set for the District of Columbia and all but two states. Poverty guidelines for Alaska and for Hawaii are scaled up by 25 and 15 percent, respectively. The poverty level for a three-person family in the continental United States was $9,120 in 1986; for Alaska it was $11,400 and for Hawaii it was $10,490 that year.

States' AFDC standard of need and payment level data are based on information on file with the Social Security Administration as of January 1986. Some states may have revised their need standards or payment

levels prior or subsequent to that date. However, because states revise welfare eligibility standards throughout the year, we are forced to present the most recent official program "snapshot" available to us.

Statistics on Medicaid recipient trends come from information on file with the Health Care Financing Administration (HCFA) of the U.S. Department of Health and Human Services for Fiscal Years 1978 through 1985. Analysis of the recipient trends was done by CDF.

Information on the categorical characteristics of state Medicaid and non-federally matched assistance programs comes from CDF surveys of state Medicaid and public assistance officials conducted during July and October 1986. These surveys update a 1983 Congressional Research Service survey.

The source for AFDC categorical coverage information is the Social Security Administration publication, "Characteristics of State Plans for AFDC, 1986," supplemented by a 1986 CDF survey. As with AFDC and Medicaid financial information, some states' categorical coverage rules may have changed since the date of our most recent survey.

To assure consistency in presentation of information on cash benefits provided, we have modified this year's book to report separately those coverage categories under state plans for which federal financial assistance is claimed and those paid only with state funds. For example, some states provide 100 percent state-funded cash assistance to certain categories of individuals. However, because we cannot be sure that those state programs meet federal AFDC standards, we report them separately.

Statistics on the Special Supplemental Food Program for Women, Infants, and Children (WIC) are based on published and unpublished data from the U.S. Department of Agriculture (USDA). The data on participants are for September 1986, as reported in the USDA report, "State Agency Participation and Expenditure Report," November 21, 1986. The estimated number of "potentially eligible" persons is based on poverty data from the 1980 Census and represents the number who would qualify on the basis of income alone. Because of increases in poverty rates since 1979, this "potentially eligible" number may underestimate slightly the number of women, infants, and children who would be income-eligible. The figures may also slightly overestimate the number who actually would be eligible for WIC benefits, because eligibility is dependent on an applicant's being both low income and at nutritional risk status. However, this formula provides the best available estimate of the number of eligible persons.

Calculations of Progress Toward the Surgeon General's 1990 Objectives for the Nation

In 1978 and 1980, the Public Health Service set out five major goals, including the reduction of infant mortality, as well as objectives in fifteen priority areas, including pregnancy and infant health. In 1983, a set of specific implementation plans to accompany the fifteen objectives was published by the U.S. Department of Health and Human Services. In 1985, the Department undertook a mid-course review of the objectives. Results from this project were released in November 1986, in a book entitled, *The 1990 Health Objectives for the Nation: A Midcourse Review.*

This book uses six of the Surgeon General's thirteen pregnancy and infant health objectives to chart national and state-by-state rates of progress. These six objectives include infant mortality for all races, infant mortality for subgroups, neonatal mortality, low birthweight for all races, low birthweight for subgroups, and receipt of early prenatal care. An objective for postneonatal mortality, as published by the U.S. Public Health Service in *Public Health Reports* (1984 Vol. 99 No. 2, 184-192) also was used.

The time-trend data for each of these seven indicators are provided in Part 3 for the years 1978-1984. A conservative analysis of the trend data yielded the difference between 1978 and 1984 rates or percentages and the difference between the 1984 rate or percentage and the 1990 objective. Per-year changes are obtained by dividing the number of years into the total change for the period.

Calculations on Excess Number of Low-Birthweight Births, 1978-1990

Calculations were made of the number of excess low-birthweight births that can be expected to occur by 1990 as a result of the nation's failure to make sufficient progress toward meeting the Surgeon General's 1990 low birthweight objective. Using data from Table 4.1, the numbers of excess low-birthweight births for the period 1978-1984 were calculated in accordance with the following formula:

Excess number of low-birthweight births = C – [(A – unknown) × D]

TABLE 4.1

Low Birthweight Trends and Projections

Year	A Actual Number Of Births	B Actual Percent Of Low-Birthweight Births	C Actual Number Of Low-Birthweight Births	D Projected Percent Of Low-Birthweight Births	E Projected Number Of Low-Birthweight Births	F Excess Number Of Low-Birthweight Births
1978	3,333,279	7.11%	236,342	7.108%	236,342	(0)
1979	3,494,398	6.94%	241,826	6.933%	241,727	99
1980	3,612,258	6.84%	246,292	6.758%	243,332	2,960
1981	3,629,238	6.81%	246,749	6.583%	238,452	8,297
1982	3,680,537	6.75%	248,104	6.408%	235,482	12,622
1983	3,638,933	6.82%	247,668	6.233%	226,489	21,179
1984	3,669,141	6.72%	246,105	6.058%	221,978	24,127
1985	3,749,000	6.65%	249,183	5.883%	220,561	28,622
1986	3,752,723	6.58%	246,804	5.708%	214,213	32,591
1987	3,756,439	6.51%	244,419	5.533%	207,851	36,567
1988	3,760,137	6.44%	242,027	5.358%	201,476	40,552
1989	3,763,807	6.37%	239,629	5.183%	195,086	44,543
1990	3,767,440	6.30%	237,223	5.008%	188,681	48,542
TOTAL			3,172,371		2,871,670	300,701

The actual numbers of births (A), the number of "unknowns," and the actual number of low-birthweight births for 1978-1984 (C) are based on National Center for Health Statistics data printed annually in the agency's "Monthly Vital Statistics Report." The projected percent of low-birthweight births (D) is derived by subtracting the average annual changes needed between 1978-1990 to reach the objective from the actual percentage of low-birthweight births in 1978, which is the base year.

For the years 1985-1990, an additional step was taken to estimate the numbers of births, the numbers of low-birthweight births, and the percentage of low-birthweight births. The provisional number of births for 1985, as published by the National Center for Health Statistics ("Monthly Vital Statistics Report," Vol. 34, No. 13, September 19, 1986), was selected

TABLE 4.2

Costs of Neonatal Intensive Care for Low-Birthweight Infants (1982)*

Birthweight (grams)	*Frequency (%)*	*Costs per Infant*
less than 1,500	100.0	$20,720
1,501-2,500	32.8	2,090

TABLE 4.3

Costs of Rehospitalization of Low-Birthweight Infants (1982)*

Birthweight (grams)	*Frequency (%)*	*Costs per Infant*
less than 1,500	38.2	$3,920
1,501-2,500	19.0	1,560

*Source: Korenbrot, C. Comprehensive Prenatal Care as a Medical Benefit: Expected Costs and Savings, *Contract Report to Maternal and Child Health, Department of Health Services, California (1982)* and, Additional Costs to the State for Maternal and Child Health with Public Health Block Grants *(1983)*.

as the base. For each subsequent year, an average of population birth projections from the lowest and middle series was taken from the U.S. Department of Commerce's *Population Estimates and Projections** and added to the previous year's projected number of births. These numbers are shown as the "actual" numbers of births for 1985-1990 (A). The "actual" percentage of low-birthweight births for the years between 1985-1990 (B) were calculated by subtracting from each figure the annual change in the low birthweight figure for the 1978-1984 period (0.07). To calculate the "actual" numbers of low-birthweight births for each year, the "actual" percentage of low-birthweight births (B) was multiplied by the "actual" number of low-birthweight births (A). The final steps in determining the excess number of births for the years 1985-1990 is identical to the process used for the earlier years.

Calculating Costs Associated with Excess Low-Birthweight Births, 1978-1990

The total cost associated with excess low-birthweight births between 1978 and 1990 is based on a per-case cost of $6,996.42. This was derived from neonatal intensive care and rehospitalization costs shown in Tables 4.2 and 4.3 These tables show these costs by birthweight in 1982 dollars and the probability of infants in each weight group requiring the services. To arrive at a cost per low-birthweight infant regardless of its exact weight below 2,500 grams, we calculated a weighted average of $5,230.21. When inflated to reflect 1986 medical care costs, the per-infant cost of care for babies born at low birthweight is $6,996.42.

*U.S. Department of Commerce, "Projection of the Population of the United States by Age, Sex, and Race 1983-2080," *Population Estimates and Projection*, Series P.25, No. 952, Issued May 1984.

INTERGOVERNMENTAL OPTIONS for REDUCING INFANT MORTALITY

PROCEEDINGS from a CONFERENCE

September 13-15, 1984

Edited by: Pamela Haynes, Dick Merritt and Douglas Reese

CONTENTS

EXECUTIVE SUMMARY

In September 1984, the Intergovernmental Health Policy Project (IHPP) sponsored a conference on Intergovernmental Options for Reducing Infant Mortality. With support from the United States Public Health Service, IHPP convened a broad-based group of individuals involved in programs designed to decrease infant mortality and morbidity. Participants included health officials, both executive and legislative, from all levels of the federal government - national, state, county and city. In addition, several health practitioners, educators and researchers were also present.

The conference was convened to achieve three major objectives. First, it provided a forum for participants to discuss their programs for improving maternal and infant health and to share their successes and failures. Second, it enabled federal, state and local government representatives to explore ways to more effectively coordinate their efforts to reduce infant mortality and morbidity. Finally, the conference served as a starting point for an ongoing dialogue between the three levels of government and private organizations.

Background

Although infant mortality rates have dropped dramatically over the last 40 years, the number of infant deaths and the related problem of low birth weight continue to be a significant public health problem. Between 1970 and 1981, the national infant mortality rate dropped from more than 45 per 1,000 live births to an estimated 11.9 per 1,000 live births. Still, the U.S. rate exceeds that of many other industrialized countries, including the United Kingdom, Canada, France, Spain and the Scandnavian nations. Furthermore, great discrepancies exist between racial and socioeconomic groups within the U.S. In 1981, the national infant mortality rate for whites was 10.5 per 1,000 live births, while the rate for blacks was nearly twice as high, at 20.0 per 1,000 live births. This has been a consistent trend for the last 40 years. Socioeconomic indicators other than race, including low income and low levels of educational attainment, are also characteristic of groups with higher infant mortality rates.

The incidence of low birth weight is a significant contributor to infant mortality and morbidity rates. The Institute of Medicine reports that in 1981, 6.8 percent of newborns were low birth weight (2,500 grams or less) and approximately 1 percent were very low birth weight (1,500 or less). Two-thirds of infant deaths during the neonatal period (the first 28 days after birth) are to low birth weight babies; very low birth weight infants are 200 times more likely than normal weight babies to die during the first 28 days. The increased risk of death also extends into the postneonatal period (between 28 days and one year). Low birth weight infants are five times more likely to die during the postneonatal period than normal weight babies and account for 20 percent of postneonatal deaths. In addition, these infants are at greater risk for neurodevelopmental disorders and other developmental disabilities that may require long-term medical care, impair educational success, and cause financial and emotional stress on their families.

In recognition of these problems, the Surgeon General in 1980 included reductions in the incidence of infant mortality and low birth weight in the Health Promotion/Disease Prevention Objectives for the Nation for 1990. Specifically, these objectives state that by 1990 no county and no ethnic or racial group should have an infant mortality rate greater than 12 per 1,000 live births. Furthermore, low birth weight babies should constitute no more than 5 percent of all live births nationally, and no county and no ethnic or racial group should have a low birth weight rate greater than 9 percent of all live births.

Issues and Themes

Several risk factors related to low birth weight and neonatal and postneonatal death were identified during the conference. These were largely maternal characteristics and can be clustered into three groups:

- Demographic factors, including race, age, socioeconomic status, educational level and marital status;
- Behavioral factors, such as smoking, alcohol and drug use, and poor nutrition;
- Medical factors, such as low weight for height, DES exposure, frequent pregnancies, a history of poor pregnancy outcomes, genetic factors, hypertension, preeclampsia, toxemia, incompetent cervix, and fetal anomalies.

Throughout the meeting, participants discussed strategies

for addressing these risks and improving pregnancy outcomes at three intervention points: before conception, during pregnancy, and after birth. They also explored approaches directed toward the unique problems of adolescent pregnancy and discussed ways to improve intergovernmental communication and cooperation. The following chapters describe a range of state, local and privately sponsored programs to reduce infant mortality and morbidity. Rather than enumerating the many programs discussed below, this summary highlights the major topics addressed and views expressed by participants.

Several themes emerged and were reiterated throughout the meeting. These related to improvements in the quality of and access to care, especially during pre- and postnatal periods; improved intergovernmental and intragovernmental communication and coordination of programs; and the need for evaluating these programs and sharing the results.

Prenatal and Postnatal Care

Participants stressed the importance of an increased commitment to preventive and prenatal care. Although developments in medical technology and neonatal intensive care have significantly reduced infant mortality, the value of expanding these costly services was questioned by many. Improving health education related to pregnancy risks, changing high-risk behavior patterns, and improving access to prenatal care may be more cost-effective approaches for improving infant health. Several programs, including the New Orleans media approach to educating women about pregnancy risks and care and the North Carolina Preconceptional Risk Assessment Program, are aimed at educating women and encouraging them to modify behaviors that may be harmful to their babies. Increasing access to prenatal care was advocated by most participants; however, simply channeling more women into existing prenatal programs was not. Rather, efforts should be made to identify high-risk women and to treat them in specially tailored prenatal programs. Florida's Preterm Risk Assessment plan was one of many approaches for identifying and directing high-risk women into specialized care. The Florida approach relies on training obstetricians, nurses and pregnant women to identify the risks and early warning signs of pre-term labor in time to administer labor-inhibiting drugs.

The effectiveness of different prenatal care regimens should be evaluated in terms of pregnancy outcome. In particular, innovative programs should be studied to identify potential new approaches to prenatal care. A recommendation was made that the Public Health Service sponsor a consensus group conference to set standards for timing, frequency,

content and procedures for prenatal care.

Conference participants generally did not see a need for a significant increase in neonatal intensive care units. Many felt that the problem is not the overall number of these specialized units but rather with the fact that many remain inaccessible to poor or geographically isolated women and infants. Several state and local health authorities, including South Carolina and the District of Columbia, have instituted programs to identify the level of obstetric and neonatal services offered by these facilities and encourage them to make their services more widely available. In addition, greater efforts are needed in directing women and infants to the correct level of care for their needs.

Postneonatal care is the critical third phase of improving infant mortality and morbidity rates. Even after regular prenatal care and the most sophisticated neonatal services, babies need a clean, healthful home environment, a nutritious diet, and protection from neglect and abuse to thrive. Several community outreach programs, including Kansas City's "Healthy Start" Program and the pediatric outreach program at the King/Drew Medical Center in Los Angeles, provide follow-up care to babies who might be at risk due to health or family environment factors.

Teenage Pregnancy

Babies born to adolescent mothers are at particularly high risk for both low birth weight and death during the first year. Because of this, the high incidence of pregnancy among adolescents and the unique problems they encounter, teenage pregnancy was treated as a separate topic. The majority of girls who become pregnant during their teens do not complete school, do not seek early and regular prenatal care, do not marry, and do not generally get adequate education or vocational skills to enable them to support their children independently. In addition, these children are more likely to have health or developmental disorders that may require long term care, impair their performance at school, require special education or limit their potential for leading productive lives. Most of the conferences participants agreed that interventions to reduce the incidence of adolescent pregnancy, improve pregnancy outcomes and break the cycle of repeated pregnancies are largely educational.

Families, churches and community youth organizations offer settings for educating young people about sexuality, pregnancy risk, prenatal care and the importance of developing parenting

skills. Schools also offer an opportunity for educating teens about these issues. In addition to being educational institutions, schools are important social institutions that have access to many hard-to-reach teens who are not motivated to join church or youth groups and who may not have family support systems.

Providing reproductive and parenting education through the schools is a controversial issue. Strong opposition to school-based sex education has been expressed by people who believe that sex education and values related to sexuality and child bearing should be learned at home. Many teachers and school administrators agree. Three reasons for this view among educators were raised during the conference: they may agree that these subjects are not a school responsibility; they may be uncomfortable discussing sexuality and personal values with students; and at a time when school budgets are tight and there is an increasing emphasis on educational fundamentals, they may not want to dedicate limited resources to these subjects.

Despite these arguments, many conference participants strongly advocated school-based sex education and in some cases, providing contraceptive counseling and services at the schools. Not only can schools help educate students about physiological aspects of reproduction, they can help young people develop personal values, learn the benefits of delaying sexual activity and child bearing, learn self esteem and the self confidence to say "no," and understand the responsibilities of parenthood. Many participants believe that these themes should be woven into the curriculum, not limited to separate sex education classes. Moreover, they feel that helping students, especially girls, develop a better sense of self and more ambitious personal and professional goals will help decrease the incidence of adolescent pregnancy. Finally, these programs must also emphasize the roles of young men in assuming responsibility for their sexual behavior and for parenting.

After unsuccessfully trying to improve pregnancy outcomes through nutrition and prenatal health care programs, the Pee Dee Health Districts in South Carolina initiated a school-based "student survival course" that emphasized personal values and assertiveness as well as reproductive education. This has resulted in a more successful approach to reducing teenage pregnancy. Inner-city school-based programs, including those in St. Paul, Minnesota, and Jackson, Mississippi, supplement sex education with contraceptive counseling and services, prenatal care, parenting education and child care for students who become pregnant. The result has been lower pregnancy rates, lower repeat pregnancies, and an increase in the number of new mothers who complete their high school educations.

Intergovernmental Issues

Discussion related to intergovernmental issues concentrated on three topics: the need for improved coordination among programs providing services to mothers and their infants, the need for improved integration of services, and the respective roles of federal, state and local authorities.

The importance of improving coordination among the many federal, state and local programs offering maternal and child health services was repeatedly emphasized by conference participants. Conflicting goals and regulations among agencies and different levels of government undermine the improvement of maternal and child health. Administrative and financial conflicts need to be resolved before these programs can work most effectively to improve infant mortality and morbidity rates. For example, eligibility standards for Medicaid, the Women, Infants and Children (WIC) program and other programs targeting these groups should be standardized. Although some participants thought this might increase costs to state and local governments, the majority believed that greater consistency would improve program administration and effectiveness.

At the same time, participants called for increased regulatory flexibility to give state and local authorities the opportunity to tailor their programs to local needs and budgets. The extension of Title XIX waivers related to freedom of choice of provider and reimbursement options repeatedly mentioned. The balance between program coordination and regulatory flexibility is a delicate one to achieve; however, clearly stated goals and objectives for programs aimed at reducing infant mortality and morbidity should mitigate these conflicts.

Closely related to coordination among programs is the integration of services. Activities to reduce infant mortality and morbidity should be more fully incorporated into and emphasized in existing federal, state and local efforts. For example, prenatal and postnatal care should be emphasized in Medicaid, family planning programs, and community and migrant health center services. The effects of smoking, alcohol, and drug use, and stress on fetal health should be highlighted in the activities of the National Institutes of Health, as well as substance abuse and mental health programs.

These responsibilities should not be borne exclusively by governmental agencies. Private organizations, such as the

American Cancer Association and the American Heart Association, should focus more on infant mortality and low birth weight issues. And coordination between public and private efforts and the development of networks between them should not be overlooked.

Federal, State and Local Roles and Responsibilities

The need for more federal leadership in the fight against infant mortality and morbidity was expressed throughout the conference. However, the importance of state and local efforts was also emphasized.

The federal government has a clear responsibility for setting national policy goals and priorities. The 1990 objectives for the nation are one example of this. The importance of reducing infant mortality and low birth weight, especially among racial and disadvantaged subpopulations, must be repeatedly stressed at the federal level. Members of Congress and the Administration should reiterate this priority throughout the legislative and regulatory policymaking processes. Some participants called for the President to convene a broad-based group including members of the private medical, business and educational communities as well as federal, state and local officials to plan a comprehensive strategy for improving infant mortality and morbidity rates.

The national focus should not be limited to the health care community. There are clear benefits for education and business to having healthier mothers and babies, including reduced incidence of developmental disabilities, the need for special education, and a healthier and better trained workforce. One area in which business can play a unique role is in monitoring the messages commercials give to adolescents about sexuality. Conference participants strongly believed that advertisers should be more responsible in not emphasizing sexuality in advertising targeted toward young audiences.

State and local public and private groups also have an important role to play in curbing infant mortality and morbidity rates. Federal block grants are distributed at the state level; however, local officials must play a key role in decisions about the distribution of these funds. City and county officials have become increasingly more sophisticated in public administration and should be given a more prominent role in program design and funding decisions.

A recommendation was made for representatives of national,

state and local organizations to develop plans for reducing infant mortality and low birth weight rates. These would be presented and discussed at the 1985 conference to review progress on the 1990 health objectives. Of critical importance in this process is a clear two-way communication from national to state to local groups and from local to state to national policymakers. Communication among these groups is also important.

Data Collection and Dissemination

The federal role in collecting and disseminating information about maternal and child health and infant mortality, such as matched birth/death certificate data, was also highlighted. Participants agreed that sharing these data and the evaluations of programs to reduce infant mortality and morbidity was a key factor in accomplishing the nationwide goal. While state and local jurisdictions can collect this information, they lack the resources to compile it and make it widely available in a timely fashion. This, participants believe, should be a federal responsibility. One impediment to this recommendation is Congressional initiatives to limit regulatory paperwork burdens and the funding available for data collection and dissemination. Increasing data collection and distribution related to infant mortality and morbidity may require trade-offs with other data collection efforts.

Participants also recommended a clearinghouse be established to collect and share information about state, local and privately sponsored programs.

Conclusion

Although the incidence of infant mortality and morbidity remains a serious public health problem in the United States, a number and variety of federal, state and local initiatives are underway to reduce these rates. The conference on Intergovernmental Options for Reducing Infant Mortality gave program administrators and other health policy makers an opportunity to discuss their programs and learn about other approaches for improving maternal and child health. They also had a unique opportunity for intergovernmental communication about these issues and the barriers they encounter in trying to address them. For many, this was a starting point in developing an ongoing network of national, state and local programs aimed at curbing infant mortality and morbidity.

One of the most encouraging points made during the

conference was that participants largely agreed that the technology and knowledge currently exist to further reduce national infant mortality rates and to significantly affect these rates among racial and disadvantaged groups. However, a clear national commitment to this goal and improved communication and coordination among federal, state and local programs are needed if it is to be achieved.

INFANT MORTALITY: A REVIEW of CAUSES and TRENDS

Alfred Brann, Jr., M.D.

Today I will present a position paper prepared for the Carter Center. The Carter Center requested us to analyze infant mortality and suggest how we can reduce it by using existing efficacious interventions universally applied.

No human being asked to come into this world, and no one chose his or her parents. I have become more aware of these facts as I have worked in pediatric neurology, in rural health clinics in Mississippi, and in urban health care delivery in Atlanta. The goal for reproductive health proposed in this report is that all pregnancies should be intended and cared for so that children and their families experience a minimum of mortality and the lowest possible incidence of morbidity, such as cerebral palsy, mental retardation, and birth defects. Because everyone in a society uses whatever prenatal health care system exists in that society at least once, we can consider the thoroughness and detail with which that society understands and deals with its reproductive health care needs as a measure of its sophistication.

Currently, a large and unacceptable gap exists between what is and what could be in infant mortality, infant morbidity, and unintended pregnancy. The problem can be described in four simple statements:

- Too many pregnancies are unintended.
- Too many normal birth weight infants die.
- Too many low birth weight infants are born.
- Too many cases of developmental disabilities occur.

This long-standing gap is an indication that our society has yet to deal effectively with what should be our greatest concerns--our reproductive health and raising healthy children.

The gap in what is and what could be is apparent at all levels of society, but it is concentrated on the following groups of women: adolescents, blacks, and the educationally or economically disadvantaged.

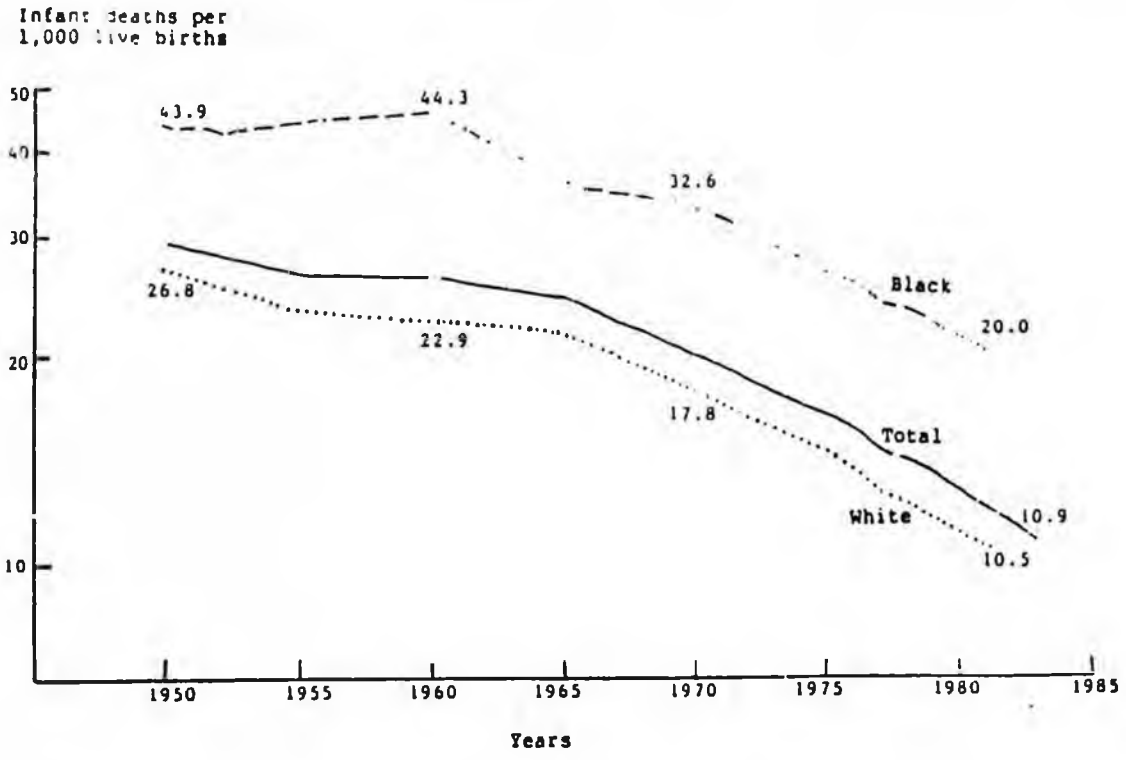
We have the medical knowledge and the technology to significantly reduce this gap, but we need to generate a public policy that clearly articulates the goal that every child born in the United States should be intended and as healthy as possible. From both a humanitarian and an economic perspective, we must not only improve access to existing technologies but also--and equally important--address the underlying economic and social disadvantages of some of our citizens, particularly minorities and women.

The intimate relationship between high rates of infant mortality and morbidity, unintended pregnancy, and economic social disadvantage is not unique to our country. It is a worldwide problem that exists within the larger issue of distributive justice and that problem does not lie clearly within the medical solutions for closing the gap selected as the topic for this report. If the economic and social part of the equation are not addressed, however, the use of medical models for solving the broader social dilemma will simply become increasingly more expensive. The cost of treating a surviving very low birth weight baby who possibly could have been brought to term, for example, is approximately $15,000. The cost for a term infant is approximately $2,100.

This report illustrates our approach for using matched birth-death certificate linkage, especially birth weight and age at death, to analyze the data, to identify existing gaps between subpopulations at increased risk for adverse pregnancy outcomes, and to recommend existing efficacious interventions that, if sharply focused and universally applied, will lead to a reduction in infant mortality and unintended pregnancy. This approach can be used for a state, a county, or any identifiable geographic, political, or economic region. It is a technique that has enabled us to suggest a broader solution for these issues in Georgia as well as in the United States.

This report is based on data from the 1980 natality survey of the National Center for Health Statistics used in conjunction with matched birth-death certificate linkages from nine jurisdictions: California, Georgia, Massachusetts, Michigan, New York City, New York state, North Carolina, South Carolina, and Tennessee. These areas account for approximately one-third of the births in this country.

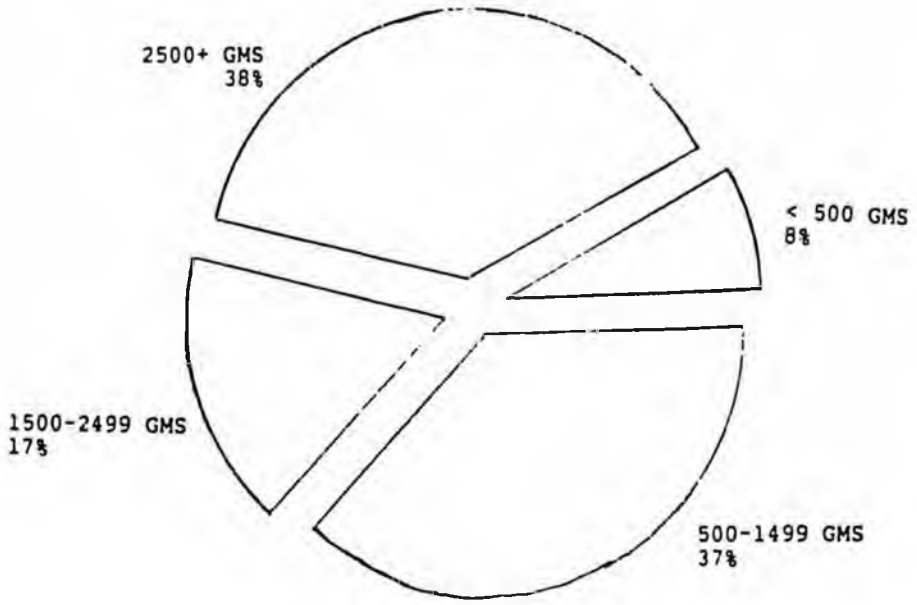
INFANT MORTALITY RATES
1950-83



While infant mortality has been reduced in both black and white populations, recently the rate of decline among blacks has been only about 4.8% while the rate among whites has been 5.1%. Thus, for the last few years, rates have been diverging not converging.

Total deaths in 1980 numbered 41,000. According to our estimate, approximately 22,000 were excessive; that is, they could have been avoided. Forty percent of these births, or 8,800, were whites, which make up approximately 83% of the population. About 60% of the excessive deaths, or 13,200, were blacks who account for about 17% of the population. (Only these two subpopulations are presented because other minority groups do not make up a large enough group for comparison.)

ESTIMATED DISTRIBUTION OF INFANT DEATHS BY BIRTHWEIGHT GROUP IN U.S., 1980

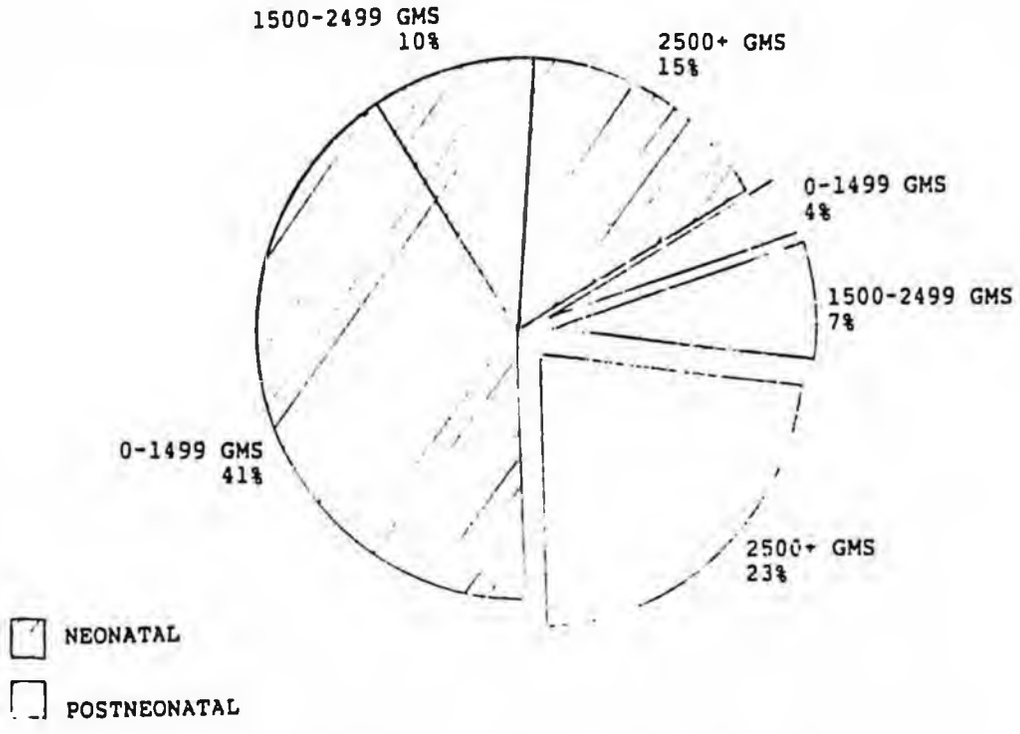


AGGREGATED BWSMR APPLIED TO NCHS 1980 NATALITY

Applying the infant natality data and matched birth-death linkages from the nine jurisdictions to the 1980 natality data indicates that 38% of the patients achieved term gestation, which suggests that the antenatal course for these patients was either good or not adverse. Thus, for at least 38% of the patients, the health care system was reasonable and infants reached term weight.

Forty-five percent of these patients, including those weighing under 500 grams and those weighing 500 to 1,499 grams, did not receive appropriate prenatal care. Either care was not accessible, not acceptable, not available, or not used. Thus, the level of care was suboptimal for at least 45% of these pregnancies.

BIRTHWEIGHT SPECIFIC MORTALITY AND AGE AT DEATH FOR INFANT DEATHS IN U.S.



AGGREGATED BWSMR APPLIED TO NCHS 1980 NATALITY

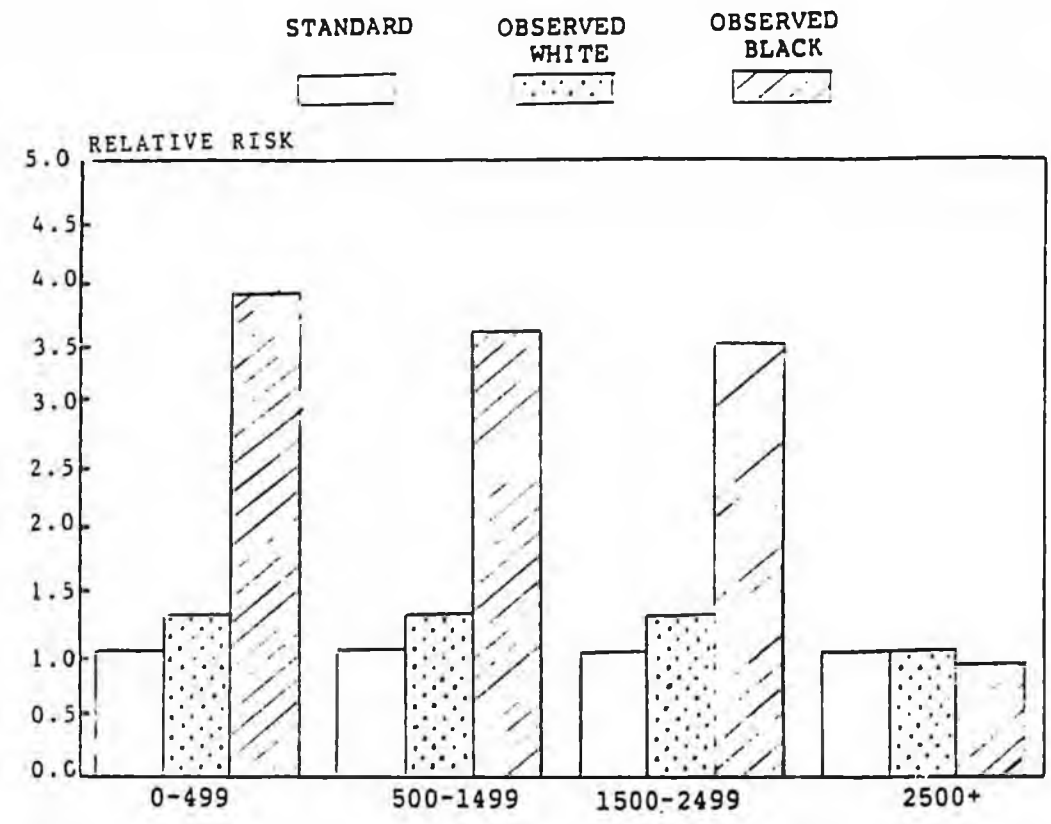
Sixty-two percent of infant mortality occurs in babies dying during the neonatal period. Approximately one-third die during the postneonatal period.

Approximately 51% of deaths during the neonatal period occurred in only 1.5% of the births. That is, low birth weight, especially during the neonatal period, is not only a profound determiner of death, it is also a reflection of our ability to help women get to term.

Thus, the gap in infant mortality is caused primarily by two factors: an excess of low birth weight infants and an excess of postneonatal deaths of normal birth weight infants.

White, nonadolescent, upper-class women experience the lowest infant mortality, 7.4 per thousand births, because they have a very low incidence of low birth weight infants and a very low incidence of postneonatal mortality in infants over 2,500 grams. The average black mother, on the other hand, is 20, has a low birth weight rate of 12.7 per thousand births, and a postneonatal mortality rate of 4.6 per thousand births, in infants over 2,500 grams.

DEFINING THE GAP: RELATIVE RISK OF
EXPERIENCING DIFFERENT BIRTHWEIGHTS BY RACE

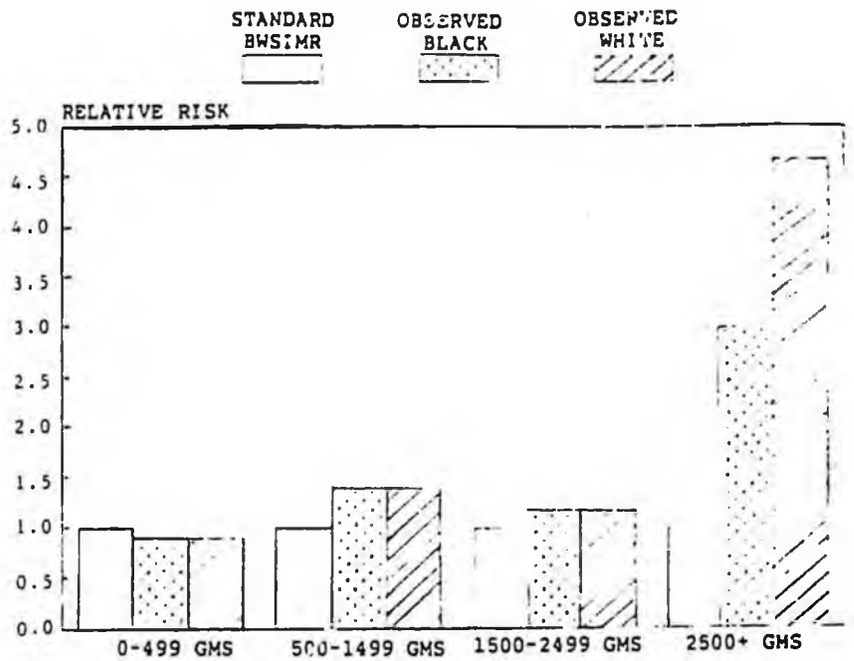


COMPARISION OF STANDARD WITH RACE SPECIFIC DATA FROM NCHS NATALITY 1980

Black infants are almost 4 times more likely to be of low birth weight than those born to white women who are at least 20 years of age, have 13 years or more of education, and sought prenatal care in the first trimester--the standard population. On almost every incidence of birth weight below 2,500 grams, the black mother experiences almost a fourfold greater relative risk of having a low birth weight infant than the standard population, and a greater chance than her white counterpart. No difference is apparent in either of the populations in terms of the birth weights for full-term infants.

The Carter Center used only educational level as a measure of socioeconomic status. Actual incomes may make the data separate out a little better. We are concerned about the high rate for socioeconomic status of 10.1 among blacks. It is not clear whether it is related to an inappropriate definition of socioeconomic status or to other factors, and we are investigating it.

DEFINING THE GAP: RELATIVE RISK OF EXPERIENCING
INFANT DEATH BY RACE AND BIRTHWEICHT

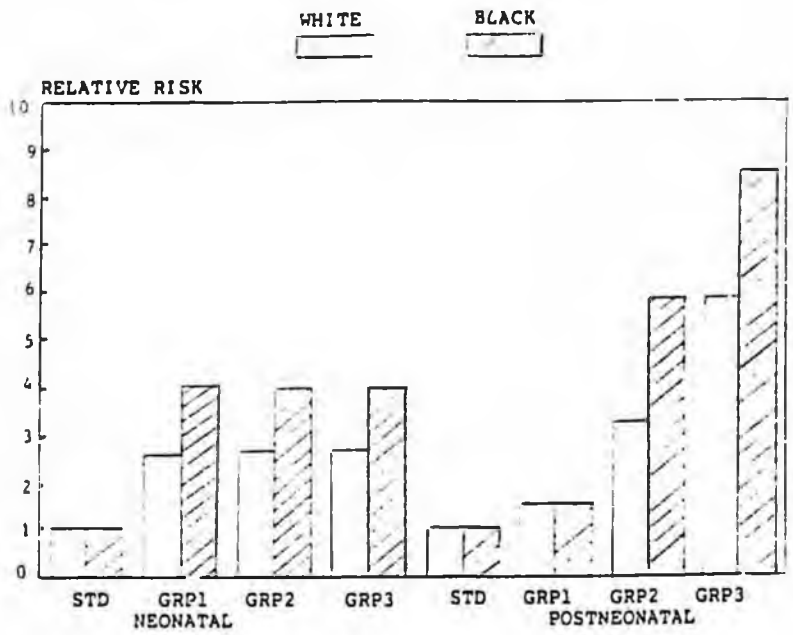


BIRTHWEIGHT GROUP IN U.S. 1980
COMPARISON OF BWSIMR IN STD. POPULATIONS WITH BWSIMR IN AGGREGATED DATA

The relative risk of experiencing death in all weight groups up to 2,500 grams is essentially the same. The big issue is that more children who are low birth weight are also black.

The gap is largest in the postneonatal rate. Infants of white adolescent mothers are 6 times more likely to die during the postneonatal period than those born to mothers of the best white standard. The increased rate for black infants is eightfold. A large problem exists in the relative risk rates.

RELATIVE RISK OF NEONATAL AND POSTNEONATAL DEATH FOR INFANTS ≥2500 GRAMS BY SEX AND RACE



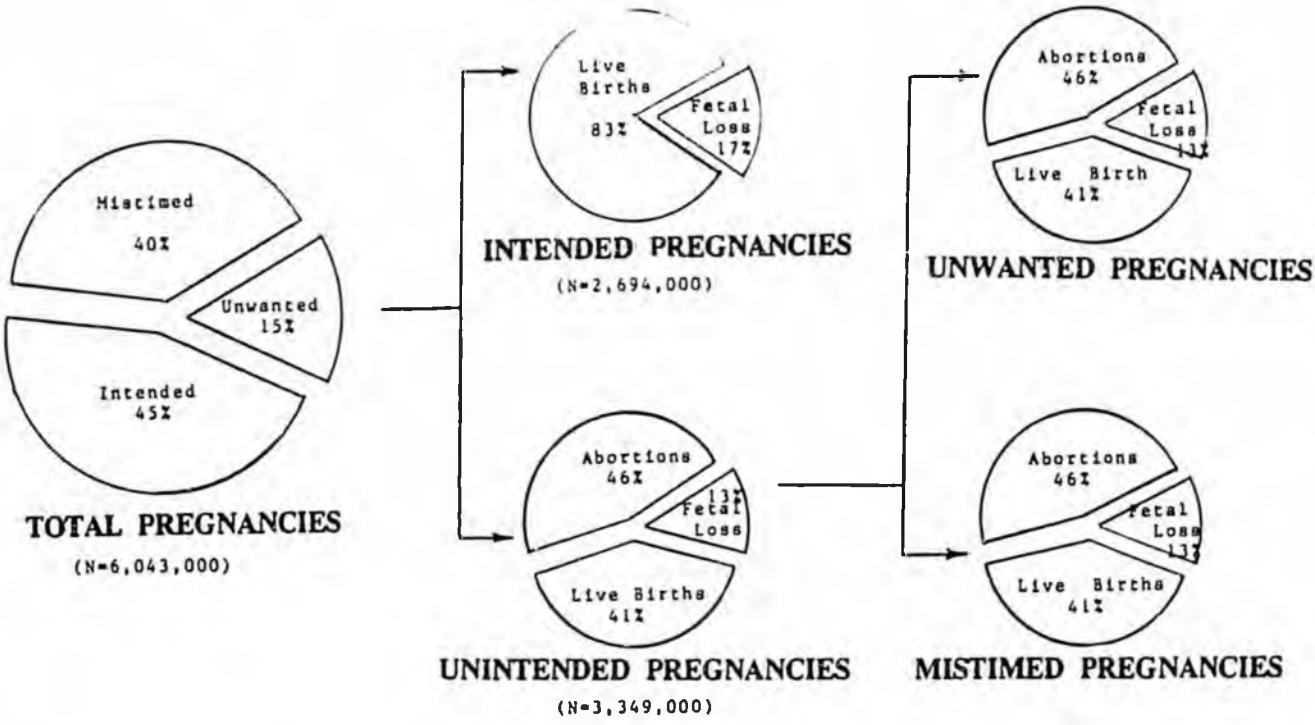
No difference is apparent in infant mortality among the first three groups. If a difference exists in comparison with the standard, it is a child at term without congenital anomaly who dies during the neonatal period--which is preventable.

If we spread out the postneonatal period, other areas become apparent where health care delivery can be focused and universally applied. No difference exists between black and white postneonates for Group One; however, a difference becomes apparent between blacks and whites of low socioeconomic status and the adolescent groups.

The question of access to care and to education in parenting skills comes into play when we consider health delivery systems. This area clearly could benefit from concentrated efforts. We believe that 7,500 postneonatal deaths between 1 month and 1 year--60% of the 13,000 postneonatal deaths in 1980--are preventable.

Second, we believe that with existing technology, the number of low birth weight infants (50,000) and infant deaths associated with low birth weight (4,000 or approximately 20% of the existing excess) can be reduced. Technologies currently under research cannot be evaluated at this time, so we looked only at existing efficacious interventions, including nutrition, the cessation of smoking, and the institution of prenatal care during the first trimester. Such interventions will affect babies primarily in the 1,500 to 2,499 gram group, which is not where the biggest problem is.

PERCENT DISTRIBUTION OF PREGNANCIES BY INTENTION STATUS AND OUTCOME IN THE U.S., 1980



Of the 6 million pregnancies in 1980, 55% were unintended. Of them, 40% were mistimed and 15% were unwanted. One in ten women who had a child never wanted to have another child, specifically not that one. This group can be divided into 2.6 million intended pregnancies and 2.3 unintended pregnancies.

Interventions are currently available that, if applied more widely, could prevent 2.2 million unintended pregnancies each year--65% of the 3.5 million unintended pregnancies in 1980. Assuming personal responsibility for their reproductive careers by men (and I emphasize men) and women is the basic tenet of a policy to reduce unintended pregnancy. The issue is not the reduction of live births; it is the principle of helping our citizens to plan their reproductive careers as they plan other events in their lives.

With current medical knowledge, technology, and equal access to care, we believe that by the year 2000 it would be possible to reduce unintended pregnancy by 65%, reduce the low birth weight rate by 20%, and reduce postneonatal infant mortality by 60%. These estimates consider only current efficacious interventions and could be improved even further if we had new information.

We are continuing to work on issues related to infant morbidity and potential interventions with the task force on perinatally related brain damage sponsored by the NICHD and NINCDS.

If infant mortality represents the visible tip of the poor child health iceberg, then infant morbidity represents the unseen portion. Major short-term morbidity is associated with hospitalization for low birth weight infants and for some correctable surgical anomalies and neurologic sequelae in some very low birth weight infants. We are making progress in this area with the use of neonatal intensive care, although this approach is a very expensive model for solving the problem.

Interventions that will reduce mortality will probably reduce morbidity as well. A few prenatal technologies exist that, if applied, will affect the outcome of 1,000 cases of Down's syndrome and spinal bifida. Each occurs approximately once in every 1,000 live births and can be diagnosed by amniocentesis during pregnancy. These problems are the two largest contributers to patients with significant neurologic disabilities and/or long-term neurologic sequelae that have an enormous emotional and economic impact. Amniocentesis, whether for alpha phenyl protein or for chromosomal culture, allows prospective parents to choose to plan for optimal care at birth or to terminate pregnancy. In the case of a myoma imbecile, for example, we can plan surgery in relation to a Caesarean section.

More than 55% of all pregnancies in the United States are unintended. Four of ten of our nation's young women become pregnant during their teen years--80% of them unintentionally--when they should be completing high school and preparing for adult roles. Early teenage childbearing usually terminates education, leaving the young woman unemployable and dependent on public welfare and public sources of medical care. The woman and her child are often confined to poverty and all the accompanying problems for the rest of their lives. This situation is avoidable by preventing untimely early pregnancies and giving young women a chance to complete their education and to learn parenting skills. Women experiencing unintended pregnacies tend to have similar characteristics to women who experience an infant death; hence, the reduction of unintended births could lead to the reduction of infant mortality rates. If 80% of teenage pregnancies are unintended, then potentially 80% of the resulting infant mortality could be prevented.

We recommend the following actions to achieve our goals:

1. Institute public education and disseminate information locally through schools, churches, and community groups to:

- Teach children to plan their reproductive careers and to understand the benefits of delaying childbirth until after the teenage years; and
- Promote the value of prenatal care and parenting skills.

2. Enact legislation to ensure access to family planning, to prenatal care (including prenatal diagnosis) for all women, to information about preventive care, and to counseling about genetic diseases.

3. Disseminate accurate and timely information from the public health sector to monitor regional progress toward these goals.

4. Develop creative strategies to:

- Maintain access to abortion for women who desire it;
- Prevent cost containment and the threat of malpractice suits from limiting access to quality care;
- Improve the standard of living and education; and
- Most important, provide incentives for women--especially young women--to assume active roles in those activities that make life in our society productive and rewarding.

If these recommendations are instituted, we believe we can reach the goals by the year 2000 and slow down the race between education and catastrophe.

disadvantaged portions of the population. As you know, the recent overall decline in infant mortality rates in the United States is due primarily not to an improved birth weight distribution, but rather to the increased survival rates of low birth weight infants through intensive hospital-based management, particularily neonatal intensive care. Like many others, our group has concluded that sustaining the decline in infant mortality will require new efforts to prevent low birth weight; that is, for numerous reasons, we cannot continue to rely so heavily on the salvage efforts of neonatal intensive care as our primary weapon in improving infant (particularly neonatal) mortality rates. We need to produce "better babies" at the outset, which means fewer low birth weight babies in particular.

Second, the contribution of low birth weight to morbidity (as distinct from mortality) in childhood is also important. Lower birth weight infants are at greater risk for neurodevelopmental handicaps, congenital anomalies, and lower respiratory tract conditions than normal birth weight infants. The negative effects of low birth weight on family functions and school performance are also judged to be important, though such sequelae require further study. In particular, very low birth weight (under 1,500 grams) survivors constitute a new and growing population. These infants probably will have long-term needs beyond those recognized for low birth weight infants in general, and require careful follow-up research.

Third, low birth weight is important because it seems to be a uniquely stubborn problem. As I noted earlier, there has been a steady decline in infant mortality over the last 15 years. In 1980, the infant mortality rate in the U.S. was about 13 per 1,000--a 47 percent decrease from the rate of 1965. Unfortunately, the decline in infant mortality rates has not been matched by (or produced by, as discussed above) decreased low birth weight rates. In the U.S. the proportion of low birth weight births only declined from 7.6 percent of live births in 1971, to 6.8 percent in 1981. There has been a decline, but not enough of one.

Finally, we all share a concern about low birth weight because we believe that its incidence could be reduced substantially. Part of this belief rests on the recognition that the rates of low birth weight, as well as very low birth weight, in the United States are significantly higher than in many other industrialized countries. In 1981, the United Nations Demographic Year Book published a chart displaying both low birth weight and very low birth weight rates for 11 developed countries. The U.S. had the second highest percentage of very low birth weight infants, after Hungary, and the third highest percentage of low birth weight infants among

PRELIMINARY FINDINGS from the INSTITUTE of MEDICINES COMMITTEE on LOW BIRTH WEIGHT

Sarah Brown, M.P.H.

I am speaking today as the staff director of a 1 1/2-year study of how this nation can act to decrease the incidence of low birth weight. This project, unlike many at the Institute of Medicine (IOM), was generated internally and grew out of a general interest in studying how this nation might best invest its resources to improve the health of its children. A planning group was convened to discuss several possibilities for an IOM project in the child health area. For a variety of reasons, the planning committee recommended a study of priorities for the prevention of low birth weight in the United States. An interdisciplinary study group was appointed to look at opportunities for preventing both prematurity and intrauterine growth retardation--the twin contributors to low birth weight. The committee was asked to assess the relationship of low birth weight to mortality and morbidity, to review existing information on the etiology of low birth weight and the risk factors associated with it, to examine trends over time, and then, against such background data, to recommend promising strategies for reducing its incidence. The committee was also asked to consider the costs of the preventive interventions it found most attractive in relation to the continued incidence of low birth weight. I must stress that my remarks today should be considered as provisional and tentative in that the review process for this report has not been completed and the findings are not yet final.

Unlike Dr. Brann's preceding presentation, the focus of the IOM effort has been on the prevention of low birth weight, not on the prevention of neonatal mortality. Like the Carter Center, however, we are searching for strategies that are currently available, rather than fantasies of what we might wish were available options.

The interest we all share in low birth weight is derived, I believe, from at least four factors. First, low birth weight (under 2,500 grams) is a major determinant of infant mortality in the United States and accounts in large part for the higher neonatal mortality rates experienced by some socioeconomically

factor just to low birth weight, not to the more specific measure of preterm delivery or fetal growth retardation. Studies commonly rely on estimates of gestational age, which are often approximate at best. Risk factors are often defined differently across studies, which makes pooling of data and comparisons difficult. Most important, many of the studies examine risk factors as independent entities, although several factors may cluster in an individual and may be causally related.

We have defined about 50 risk factors that have been identified in the literature as being associated with low birth weight. We excluded some, like noise pollution, that do not have a strong scientific base or do not seem to be proper markers for other conditions. The risk factors we selected for detailed analysis in the report cluster in several categories:

- Demographic risk factors--such as age (under 17 and over 34), marital status, race (black), socioeconomic status, and educational status;
- Maternal risk factors--including previous pregnancy, inadequate weight for height, previous DES exposure, high purity genital anomalies, previous surgery, diabetes, hypertension, and a problematic obstetric history, such as previous low birth weight infants or previous multiple spontaneous abortions;
- Medical risks in current pregnancy--such as short interval between pregnancies, hypo- and hypertension, preeclampsia toxemia, first or second trimester bleeding, placental problems, hyperemesis, polyhydramnios, oligohydramnios, anemia, multiple pregnancies, isoimmunization, and incompetent cervix;
- Behavioral and environmental risks--including poor weight gain, smoking, alcohol and other substance abuse, and even residence at a high altitude;
- Health care risks--including the absence or inadequacy of prenatal care and iatrogenic prematurity resulting from induction of labor or Caesarean section before adequate fetal maturity;
- More tentative risk areas--including physical and psychological stress, varying levels of uterine irritability and contractility, inadequate expansion of plasma volume, progesterone deficiency, and certain infections.

This grouping leads to the observation that many of the risk factors for low birth weight can be identified before pregnancy occurs; detection and possible intervention need not always wait until the prenatal period. The grouping also helps to highlight the importance of behavioral and environmental risks and the need for interventions that go beyond medical

all live births in those 11 countries.

Trends in Low Birthweight

In searching for ways to decrease the rate of low birth weight and thereby help to reduce infant mortality and improve child health, our group began by examining various trends in the incidence of low birth weight. We looked for clues that might help direct prevention efforts. For example, were declines in low birth weight in recent years distributed evenly among all populations? Were declines in low birth weight greater in some subgroups than in others? Our provisional conclusions included a few that I find particularly important.

The decline in low birth weight in the years we surveyed was almost totally confined to the moderately low birth weight group--1,500 to 2,500 grams. No decline, and possibly an increase, was observed in the very low birth weight group.

The observed decline in low birth weight was apparently concentrated in the full-term low birth weight group. Thus the contribution of prematurity to overall low birth weight has increased.

For the United States as a whole, the relative decline in the white low birth weight rate exceeded the corresponding decline in the black low birth weight rate. Characterizing black-white differences in this area depends to some extent on the measures used, but it is an inescapable fact that black infants are clearly at elevated risk of low birth weight, and the gap between white and black rates of low birth weight has not narrowed over the last decade.

Etiology and Risk Factors

In looking for clues for prevention, we surveyed the voluminous literature on the etiology of low birth weight and the risk factors associated with both preterm delivery and intrauterine growth retardation (IUGR). To oversimplify the situation, let me just say that the basic causes of these twin sources of low birth weight are not well understood, particularly with regard to prematurity. In the absence of a clear theory of etiology, a large literature has developed regarding the risk factor associated with low birth weight. Unfortunately, a range of methodological and conceptual problems make, its interpretation difficult. For example, many risk factor studies analyze the relationship of a given risk

especially important in the interval between pregnancies for women who have experienced a prior reproductive casualty. For example, a previous preterm birth is one of the strongest predictors of prematurity, that is, the relative risk that a second birth will be premature (less than 36 weeks) is 4.4 if the first birth was premature. Health professionals in contact with women who have had poor pregnancy outomes need to understand the threat of repeated poor outcomes and to focus on helping to avoid a recurrence in the future. Obstetricians, pediatricians, neonatologists, and family planning counselors have a role to play in this regard.

In so stating, however, I should also note that two very troublesome issues arise in connection with prepregnancy consultation. The first is that the women most likely to benefit from this kind of attention are the ones most likely to be outside of the health care system or alienated from it. Secondly, emphasizing preconception health conveys an image of women as always being "almost pregnant," which is obviously a touchy problem. Despite such important concerns, our group felt nonetheless that its emphasis on prepregnancy health has merit and deserves increased emphasis.

Our committee has also focused on health education--a second preconception area--arguing that health education curricula should include discussion of the major factors that put a woman at risk for low birth weight. The importance of early pregnancy diagnosis and prenatal care and altering health compromising behaviors should also be stressed. Schools, family planning centers, and other settings need to expand the topics they cover in their reproductive health education to include such themes and others that will be detailed in the final IOM report.

A third area is family planning. A number of studies suggest that the reduction in infant mortality in recent years is due in part to effective family planning. The evidence that family planning has contributed to the modest reduction in low birth weight is less complete. Our committee concluded nonetheless that family planning should be an important component of the overall effort to reduce low birth weight, and will argue strongly for a renewed public commitment to extending family planning care. The importance of family planning in reducing the risk of low birth weight is based on its capacity to avert pregnancy in a number of high-risk women, including ones with medical as well as sociodemographic risks. It helps to extend interpregnancy intervals, and has been particularly useful to low-income women and teenagers who are both high-risk groups for low birth weight.

care. The demographic measures can help to define target populations. The cluster of health care issues highlights the fact that not all risks for low birth weight derive from characteristics of women themselves. And finally, the category of evolving concepts of risk suggests some important research areas for improved understanding of low birth weight.

The Risk factor data also revealed several additional themes:

- Socioeconomic risk factors are especially significant.
- Many of the well-established risk factors, including those in the behavioral area, are amenable to prevention or therapy; that is, they are reversible.
- Risk factors do not always cluster in only a few high-risk groups; a substantial amount of low birth weight occurs among low-risk women, making it difficult to identify a limited number of groups to target.

Interventions for Preventing Low Birth Weight

Against a background of such findings, our group defined several approaches to preventing low birth weight. All rest on the basic conclusion that despite many unanswered questions regarding the causes of and risks for low birth weight, policy makers and health professionals presently know enough to intervene much more vigorously to reduce the incidence of low birth weight. Methods are already available that have demonstrated their value. These approaches and a few new ones merit more support and investment. This is not to say, however, that any single approach holds the answer. There are, unfortunately, no magic bullets.

Prepregnancy Interventions

The first area discussed by our group includes a set of interventions applicable before pregnancy. We concluded that health professionals need to be made much more aware of the importance of preconception care in improving future birth outcomes. Three strategies can be emphasized before or between pregnancies to reduce the risk of low birth weight: prepregnancy risk identification and reduction, health education, and family planning.

Prepregnancy risk identification and reduction are

of the total care package. As noted, a major theme of virtually all the studies reviewed is that prenatal care is most effective in reducing the chance of low birth weight among high-risk women, whether the risk derives from medical factors, sociodemographic factors, or both. Thus, differences in the risk status of various study populations may partially explain variations in the prenatal care effects observed across studies.

All of the studies reviewed that are based on large numbers of cases, particularly those using vital statistics data, show that prenatal care exerts a positive effect on birth weight. More variation exists among the results of studies evaluating special programs, although the majority show that prenatal care is associated with improved birth weight. Those special programs that have shown a positive impact on birth weight usually offer prenatal care that goes beyond more routine services to include flexible combinations of education, psycho-social and nutritional services, and certain clinical interventions medical risks, and a rapid response to the first signs of early labor.

The limited impact of prenatal care suggested by some of the special programs may result from the fact that the care was not organized to address what is now known about the causes and risks of low birth weight. For example, the care may not have focused on such factors as smoking reduction, adequate weight gain, reducing alcohol and other substance abuse, patient and provider education about prevention of prematurity, or specific medical risks associated with low birth weight, such as bacteriuria.

Thus, existing data on prenatal care suggest that we can in good conscience make an unequivocal commitment to expanding the availability of prenatal care in the United States. To make this a tangible recommendation, the IOM committee concentrated on defining who does get prenatal care and why, and how to ease the barriers identified. In 1981, close to one quarter of all births were to mothers who began prenatal care after the first trimester of pregnancy. Over five percent of mothers delayed care until the third trimester or received no care. Black mothers were more likely that white mothers to delay care until the third trimester or to receive no care. Mothers aged 25-29 and 30-34 were more likely to receive care in the first trimester than were younger mothers.

We also have some evidence that the increase in early prenatal care visits in the last decade may have halted or even begun to decline. Although the 1980 natality statistics state that the proportion of births to mothers who began prenatal

Family planning may also help to reduce the number of pregnancies that are unintended or unwanted. The 1980 National Natality Survey, which included only married women, showed that there was a strong relationship between wanting a pregnancy and seeking early prenatal care. Women who had not planned to have another child showed the most delay in seeking care. These factors accounted for about one-third of the black-white differential in the number of prenatal visits reported. Because prenatal care is in turn linked to improved birth weight--the next topic to be addressed--such data lend additional support to the importance of family planning in combating low birth weight.

Prenatal Care

Let me turn now to the very challenging question of whether participation in prenatal care reduces the risk of low birth weight--the answer to which provided the major underpinning of many other prevention strategies recommended by the IOM. Absence of prenatal care appears widely in the literature as a risk factor associated with low birth weight. The value of prenatal care, however, cannot be determined solely on the basis of relating its absence to increased risk. It is possible that it is not prenatal care itself that causes some women to give birth to infants of normal birth weight, but rather the other characteristics of women who seek such care, i.e., optimal childbearing age, high level of education or income above the poverty line. Conversely, women who do not receive adequate prenatal care may deliver low birth weight infants because of extreme youth or age, poor education, or poverty--characteristics not affected by prenatal services. These are very important questions for policymakers who must judge the utility of a major investment in prenatal care. Accordingly, we chose to face squarely the issue of whether inadequate prenatal care is uniquely a risk factor for low birth weight aside from its association with other risk factors. Clearly, unless we can be convinced that prenatal care makes an independent contribution to increased birth weight, we cannot expect others to share our view and cannot recommend changes in public policy to make prenatal care more widely available.

After careful consideration of the major methodological problems with understanding this issue, we found that the overwhelming weight of the evidence is that prenatal care contributes to a reduced risk of low birth weight and is probably most helpful to women who are at highest risk for this poor outcome--often the same women who get inadequate prenatal care. We also concluded that because content of prenatal care is not defined carefully in many of the studies reviewed, it is not possible to trace the benefits of care to specific aspects

need more services and more specialized care than low-risk women. The final report is likely to make a number of other complementary recommendations designed to enroll more women in the Medicaid program and thereby ease the problem of financial barriers to care.

The committee also focused heavily on the provider issue. The problem of inadequate numbers of private physicians providing prenatal care in some areas is well documented. A survey of Kentucky obstricians and gynecologists (OB/GYNs) showed that none accepted Medicaid patients in Lexington and Fayette County, even though these counties have the highest concentration of physicians in the state. Other studies show that the participation rate of OB/GYNs in Medicaid is particularly low among specialty groups and may even be decreasing. One study found that OB/GYNs had substantially lower Medicaid patient loads than either pediatricians or general surgeons. Thirty-six percent of the OB/GYNs in this study saw no Medicaid patients at all, compared to 23 percent of the pediatricians and 9 percent of the general surgeons.

Several factors contribute to this. Obstetricians receive unusually low Medicaid reimbursement rates and, because of lump-sum payment arrangements, may not be paid until 15 or 18 months after the initial prenatal visit. Medicaid-eligible women often require more intensive care, as noted earlier, which is not reflected in the basic Medicaid fee.

The increased risk of a poor pregnancy outcome among high-risk women, many of whom are covered by Medicaid, creates an additional disincentive to caring for them. Poor outcomes raise the possibility of a malpractice suit. And in obstetrics the threat of such suits has emerged as a serious barrier to expanding prenatal services. A 1983 survey of OB/GYNs revealed that although law suits were evenly divided between obstetrical and gynecological cases, the obstetrical suits involved higher sums of money than the suits derived from gynecological cases. In response to this fact and to the high and increasing malpractice insurance premiums that come as a consequence, OB/GYNs are revising their practices. Seventeen percent of the OB/GYNs surveyed said they had decreased their level of obstetric care to high-risk women; 10 percent have decreased the number of deliveries; and 9 percent no longer practice obstetrics at all. Our group will offer no solutions to the malpractice problem in obstetrics, but we will highlight it clearly because it is unquestionably a major contributer to the problem of access to prenatal services.

The report's discussion of access barriers is not intended, however, to be an exhaustive itemization of all the

care in the first trimester continued to increase, the 1981 and 1982 Advance Reports of natality statistics made no such claims. This may signal an end to a decade of improvement. The 1981 Advance Report also notes that 1981 was the first year since 1969 that there was not an increase in the percentage of black mothers initiating care in the first trimester. This finding is confirmed by small area studies, which strongly suggest a real change in the use of prenatal care by pregnant women. The timing of this change coincides with increased unemployment, reductions in Medicaid eligibility and benefits, and decreases in the number of public prenatal services, and suggests an overall decrease in access to prenatal care, with minorities probably affected the most.

Reasons for Not Seeking Prenatal Care

We identified six groups of reasons why women may not enroll in prenatal care early or at all:

- Financial constraints,including inadequate insurance or public funds such as Medicaid to purchase adequate prenatal care;
- Inadequate availability of maternity care providers, particularly those willing to serve socially disadvantaged or high-risk women;
- Insufficient prenatal care in some sites that often serve these groups, such as Community Health Centers and hospital outpatient departments;
- Experiences, attitudes and beliefs among the women themselves that make them disinclined to seek prenatal care;
- Transportation and child care problems that are poor or absent; and,
- Inadequate systems to bring in hard-to-reach women.

Let me expand on only a few of these points. It is unquestionable that the availability of funds to pay for prenatal care influences many women's decisions to seek care. Accordingly, our group paid considerable attention to the Medicaid program because it is the largest public program supporting prenatal care. Its cost-effectiveness, its capacity to reduce financial barriers for women seeking care, and data that associate Medicaid enrollment with improved pregnancy outcome make it particularly significant in efforts to reduce low birth weight. One of our preliminary recommendations concerning Medicaid relates to the high-risk status of Medicaid-eligible women. Because these women often require more intensive prenatal supervision than more affluent women, we are likely to recommend that Medicaid not set limits on the number of prenatal visits eligible women may make. Reimbursement rates should reflect the fact that such women

pregnancy (smoking, for example) and patient education on a variety of topics including the early signs of preterm labor. It may well be that the recommended schedule of visits should be revised to accommodate these additional emphases. In particular, clinicians need to be receptive to patient problems and complaints and to the prompt identification and treatment of preterm labor, including possible hospitalization for observation and rest. Educating patients about the risks and symptoms of preterm labor is of limited value if health care providers are not organized to respond to such problems.

Smoking reduction approaches and nutritional intervention also need to be improved and given more prominence in prenatal services. There is evidence to suggest that about one-third of pregnant smokers cease smoking on their own; another third can probably be reached through aggressive intervention, suggesting a major target of opportunity for maternity care providers.

The report will also address some other factors that are closely tied to the content of prenatal services, such as the importance of a caring environment in prenatal clinics, better telephone access of patients to their providers, and both child care and transportation services for women needing such support.

In considering the content of prenatal care, our group was particularly intrigued by the role of stress in pregnancy. Although the data linking stress to specific pregnancy outcomes (such as low birth weight) are quite murky, it is likely that stress reduction in pregnancy will gradually emerge as an important issue in the prenatal period. One stress-reducing approach not often viewed as such is maternity leave prior to childbirth. With regard to maternity p[illegible] the United States, Sheila Kamerman has detailed the [illegible]equacies of maternity protections for working pregnant women who wish to take leaves of absence before or after childbirth. She points out that available arrangements are usually a patchwork of sick leave, disability leave, unused annual leave, and leave without pay, which provide seriously inadequate income and job protection for pregnant women and new mothers who participate in the labor force. Inadequate maternity policies also make it exceedingly difficult for women to stop working in later pregnancy in order to reduce stress-related risk factors and other problems may require bed rest.

Changing prenatal practice patterns will be difficult and will require extensive research. It is apparent even at present, however, that many of the issues important to low birth weight prevention are of relatively low prominence in the practice standards of the American College of Obstetricians and

myriad problems that result in poor use of prenatal services. Our group, like many others, has come to the more fundamental conclusion that problems of access reflect the nation's patchwork, nonsystematic approach to making such services available. Although numerous programs have been developed in past years to extend prenatal care to more women, no institution bears responsibility for assuring that such services are genuinely available in some very fundamental, practical sense. That is, no local, state, or federal entity can be held accountable for inadequate care. Without such responsibility or accountability, it should not be surprising that gaps in care remain and that efforts to expand prenatal services often face enormous organizational and administrative difficulties. Thus, we will make a very strong recommendation about the need for increased human, intellectual, and financial resources at the state and federal levels designed to increase significantly the accessibility of prenatal services. We will also make specific suggestions for changing systems. For example, we will probably urge that in each community a single organization be designated by the state as a "residual guarantor" of prenatal services and provided with sufficient funds to care for pregnant women who remain out of the prenatal care system, even after the best of other efforts. Local health departments could meet this responsibility well. The point here is simply that solving the access problem in earnest is likely to require a far reaching and serious commitment to expanding prenatal services.

The Content of Prenatal Care

To this point, most of the subjects I have outlined have long been discussed within the field of maternal and child health--risk factors, preventive activities useful prior to pregnancy, and the value of prenatal care. The content of prenatal care, by contrast, has not been so widely addressed. Our findings strongly suggest that the content of care, not only its presence or absence, exerts a major influence on pregnancy outcome. Our report is therefore likely to advocate not only that prenatal care become universally available, but also that its content--its component parts--receive far more scrutiny and, in particular, that care be expanded to meet the needs of high-risk women.

We have developed a number of tentative suggestions for enriching the content of prenatal care. For example, to combat low birth weight, it is likely that a number of adjustments in clinical practice will be required. In addition to concentrating on the detection and prevention of problems that appear in the third trimester, such as toxemia, additional emphases should be placed on first and second trimester issues such as screening and management of behavioral risks in

Gynecologists. Practice standards for these and other providers may need to be revised to increase the "fit" between what we know of low birth weight risks and what the content of prenatal services is.

As noted, high-quality research in the area of prenatal care content is sorely needed. In reality, prenatal care as practiced in this country is an ill-defined entity--we do not know what goes on in most prenatal visits; in particular, we do not know which components of prenatal care make the biggest differences in pregnancy outcome. Accordingly, funding for studies of the content and effects of prenatal services should be a very high priority for foundations and other funding agencies active in the child health area. Research should include descriptive studies of the content of prenatal care, studies of the individual components and their effects, and research on the influence of specified combinations of interventions applied to well-defined populations.

Our group also has done some work in the area of the cost effectiveness of prenatal care. Although it is very difficult to make computations in this area, I think we are going to be able to show that providing prenatal care to a selected cohort of high-risk women (with less than a high school education and on welfare) is cost-effective. We did not explore the cost effectiveness of some of the other interventions due to various limitations in available data.

Our report will conclude with a discussion of the need for an expanded, sophisticated public information campaign about low birth weight prevention. Message areas and target audiences will be explored and a leadership role for the Healthy Mothers/Healthy Babies Coalition advocated. More fundamentally, our group will urge that we all act collectively to raise the issue of low birth weight prevention to a higher position on the national policy agenda. In order to get the resources we need for services and research, we need to bring heightened visibility to the enormous significance of this problem.

Responses to: PRELIMINARY FINDINGS from the INSTITUTE of MEDICINES COMMISSION on LOW BIRTH WEIGHT

Robert L. Hotchkiss, M.D.

This is an important and timely report, and it concurs with my research and experience in Missouri. Our inability to have a significant impact on low birth weight as a cause of infant mortality is a major frustration. More research and understanding in this area are necessary if we are to further reduce infant mortality rates and address the distressing difference between black and white infant mortality.

The critical importance of health data systems in various jurisdictions has been emphasized. In Missouri, if we had been unable to document the effectiveness of prevention and other public health interventions, resources for them might have disappeared during lean budget times. I specifically recommend that state and local authorities that do not yet have data systems with matched birth-death records develop them. Doing so is an important way to get the information needed to make tough decisions in tight fiscal times.

Smoking has repeatedly been mentioned as a risk factor. The State and Territorial Health Officers Executive Committee has just met and reaffirmed its strong commitment to eliminating smoking in this society by the end of the century. If we can document the total impact of smoking on low birth weight, low birth weight for gestational age, and postneonatal mortality and morbidity, we can probably add a great deal to the arguments for the elimination of smoking.

In Missouri, we have tried to revitalize the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program and are using it as a mechanism to reach eligible young women for counseling and preventive health interventions before they get pregnant.

In many ways, research into such interventions can affect our national policy makers. Policy is increasingly being developed on the basis of factual knowledge. We need to have

specific information to guide policy makers toward correct decisions. The immense cost of malpractice insurance, the confidentiality of peer review for perinatal deaths, and other policy issues need to be addressed as well. Finally, the ratio of funding for acute care and preventive interventions should move in favor of prevention when adequate data are available and have been analyzed. I am particularly concerned, however, that policy makers do not simply redirect a small portion of health expenditures toward prevention. To make a significant difference and to reduce total overall costs over time, we will need additional dollars for care with an increased percentage dedicated to prevention and to basic health research.

PART II

WORKSHOPS on INNOVATIVE STATE and LOCAL PROGRAMS

INTERVENTIONS BEFORE BIRTH

CALIFORNIA'S OBSTETRICAL ACCESS PILOT PROGRAM

Donald Lyman, M.S.

Eight years ago, child health indicators throughout California varied significantly. MediCal reimbursement rates were not adequate to cover a full range of services; the access to services by the poor was poor at best. In 1979, 20 of 58 counties had no obstetrician or gynecologist (OB/GYN) at all. Furthermore, the proportion of OB/GYNs accepting MediCal patients had dropped from 65% in 1974 to 46% in 1977. It was a bleak picture of access to care for people deemed to have the greatest need.

The California Obstetrical Access Pilot Program was begun as part of the solution to the problem. It operated between 1979 and 1982 and consisted of a series of capitation projects awarded to health departments and qualified primary care providers around the state. They were funded by Medicaid and Title V dollars, which cover low-income groups not eligible for MediCal. Of the 11 projects we awarded, none were to private providers; none wanted them. Some private physicians did, however, serve as subcontractors to primary care providers, including county health departments, and primary care clinics.

The capitation projects had several objectives:

- To improve access to comprehensive obstetrical care in areas where no obstetricians were located or where no obstetricians accepted MediCal;
- To reduce perinatal mortality and morbidity and the number of pregnancies with complications;
- To measure the program's impact and costs;
- To acquire data for future policy decisions.

Enrollment was voluntary, and the program included no strict controls against self-selection. The contractors recruited participants to fill quotas of those eligible for MediCal and for Title V. People who enrolled in the project were required to use a package of prenatal care services, including at least eight prenatal visits for a partial package

and 11 isits for the full package, health education, nutritional assessment, psychosocial assessment, birth education classes, and follow-up, if necessary, to the patient's homes.

The study was not a strictly controlled, double-blind study. Concurrent projects underway, however, provided comparison groups. We also drew comparisons with other MediCal populations in the state. The outcome we measured was low birth weight, because it is a measure of the success of prenatal care. The results were divided between patients who received the full package of services and those who received the partial package.

Did access improve? A total of 6,774 people were involved in this project. Eight-seven percent of the registrants started prenatal care in their first trimester. Eighty-four percent of the total completed the care that was offered. These results are not comparable to other projects.

What were the outcomes? Preliminary data indicate that 95% of all live births were carried to term. From July 1979 through June 1982, the incidence of low birth weight (below 2,500 grams) was about 6% statewide, including multiple births. The following data reflect only single births. For the comparable MediCal population at that time, the rate was 7% under 2,300 grams. For those who received the partial package, the incidence of low birth weight was 6.5%. The overall rate for the participating population was 4.7%. These numbers are statistically significant.

What were the costs and the cost-benefit ratio? The package was expensive. The total full-package cost, including delivery, was estimated at $900, which is what it would have cost according to itemized MediCal billing rates. When compared to the decreased incidence of low birth weight children and the expected costs of hospitalization and other care required, however, the cost-benefit ratio was between 1.7 and 2.6 to 1. Each dollar spent on the project resulted in a projected savings of $1.70 to $2.60 for up to the first 8 weeks of life. The long-term data have not yet been analyzed.

FLORIDA'S PRETERM RISK ASSESSMENT PROGRAM

Charles Mahan, M.D.

The infant mortality problems in Florida are primarily related to rapid population growth. Two years ago, an estimated 650 new people moved into the state every day. With over 1 million new residents in from Cuba, Haiti, Central America, and Southeast Asia, that rate has increased significantly since then. Our low birth weight problem relates to this growth rather than to problems in our health care system.

In 1982, Florida had 144,500 births. Of them approximately 85,000 were covered by insurance or cash payments, while nearly 60,000 were to medically indigent women, to the very poor, or to women who received no care at all. The state health department is responsible for finding care for these 60,000 low-income women. We believe about half of them had no prenatal care or inadequate prenatal care, that is, two or fewer prenatal visits.

We also have a problem with malpractice insurance. The premium rate is $55,000 a year for obstetricians in south Florida; my rate is $10,000. The patient ultimately pays for this expense. As a result, the number of women who can afford obstetrical care has decreased, while the number considered medically indigent has increased.

Strategies to Lower Infant Mortality Rates

In 1982, the State Health Officer appointed a task force to recommend a five-year plan to lower infant mortality rates. In retrospect, one of the smartest things we did with the plan was to send copies to private and public sector experts in ambulatory prenatal and infant care for their comments. We listed the names of these consultants in the document, which gave it credibility when the recommendations were considered. The first five recommendations were:

- To reduce the number of low birth weight babies;

- To reduce the number of teenage pregnancies;
- To improve access to prenatal care;
- To adequately finance this care;
- To ensure the availability of sterilization for those who want it.

Strategies to Reduce Low Birth Weight Babies

By far the biggest problem was the number of low birth weight infants being born. For 10 years, we have had an excellent perinatal care program in Florida to care for infants and mothers. But the bill for this program has risen to $28 million a year with no end in sight. Legislators have become concerned about the "black hole" they created and have begun to look at preventive strategies, which they realize they should have instituted a decade ago.

In some areas of the state women were getting good prenatal care; however, in most areas it was a hodge podge of services, and in many areas no services were available. We had to act quickly. We elected to try the Preterm Labor Staff Development model used by Dr. Robert Creasy and M.A. Herron in San Francisco. This program trains obstetricians, nurses, and pregnant women to identify the risks and early warning signs of preterm labor in time for labor-inhibiting drugs to be administered. It is based on the work of Dr. Emile Papiernik-Berkhauer in Paris, where he was successful in reducing the number of preterm births from 10% to 3% in 10 years. While this model still has some problems, we believe that even in the worst case, in 5 years Floridians will have better care than when it started. Our goal is to cut the rate of low birth weight babies in half by 1988. The March of Dimes is studying demonstrations of this model in five cities across the United States. We should have a large amount of information about it in the next 5 years.

Provider Education

First, we held a training program for leaders in public health nursing, nutrition, and perinatal care so they in turn could give local seminars. Last fall we held seminars in each of the state's 11 health districts. The staff development model was distributed to all of the nurses, physicians, and nutritionists who attended. Each program was tailored to its local area and problems. The only common threads were the materials and my introduction at each seminar. Over a period of 2 months, we trained approximately 1,500 health professionals. All of the hospitals, perinatal care centers,

and counties were represented.

Getting information to private doctors has been a significant and ongoing problem. We need to educate more doctors about this program in case a patient begins preterm labor and requires tocolytic agents. We have addressed this issue at state medical association meetings and through association journals. Although some private physicians have expressed interest in the project, the general level of interest among them has been low.

Patient Education

Patient education is an essential part of this strategy, and it was lacking or absent in most areas. Many providers had to be convinced of its importance.

We have developed an identification card for high-risk and other patients that has been one of the most popular parts of the program. It lists the danger signals for preterm birth and provides general information about lab work and patient visits. It is particularly helpful in areas where people are being seen only in outlying clinics and might not have a chart available when they reach the hospital.

We are currently finishing a media campaign to get women in for care earlier in their pregnancies. On average, low-income women in Florida do not seek care until their twenty-second week. If our media strategy is successful, however, we risk flooding our already overloaded system.

We are also targeting high-risk women for family planning counseling after a pregnancy to ensure they do not become pregnant again for 2 years if they do not want to.

Increased Access to Care

In addition to earlier prenatal care, we are increasing the number of home visits, especially to high-risk women. We are using the Women, Infants, and Children (WIC) program in each county and funding from the state's Improved Pregnancy Outcomes (IPO) program for this effort.

One of the biggest challenges is to perform pelvic examinations frequently on high-risk women. It means a weekly

examination of the cervix for symptoms of premature labor after the twenty-second week of pregnancy, but it is particularly hard to implement in areas where numbers of doctors, nurse practitioners, or nurse-midwives are inadequate.

Legislative Activities

We have just established a chapter of the National Coalition for Healthy Mothers and Healthy Babies to serve as our legislative lobbying arm to raise more money for the program. We are also revitalizing our state professional perinatal group to contribute the scientific research and information we need.

Some of our legislators are skeptical about the benefits and costs of such preventive programs. We have developed some interesting cost figures. We have compared the cost of prenatal and postpartum care to the costs per year of intensive care, long-term institutional care, and special education. We can show that if $10 million is invested in our program, we can save $22 million in those other costs. We believe this is a conservative estimate.

We have attacked the problem of low birth weight using state funds and the three federal programs that have been the backbone of these efforts in the past. Now it is critical to gain attention and support from the private sector.

Conclusions

The value of the Preterm Risk Assessment Program is that it gives all patients preterm birth education, it encourages frequent check-ups for high-risk patients, and it allows low-risk patients to get improved care. It also changes the way we have provided prenatal care. Instead of a system where every patient is seen monthly or when a problem arises, care is directed according to patients' need. Continuity of care is a key factor. Although it may be hard to coordinate, we are aiming for patients to be seen by the same doctors and nurses throughout the program, which should also reduce the risks of malpractice.

PRECONCEPTIONAL HEALTH PROMOTION: IMPROVING PERINATAL OUTCOMES

Merry-K. Moos, F.N.P., M.P.H.

The practice of obstetrics is not typically focused on primary prevention. Rather, it is a program of surveillance to quickly identify problems and to intervene at the earliest possible opportunity, thus avoiding endangering either the fetus or the mother. Primary prevention is a new area of obstetrics and is the principal focus of our Preconceptional Health Promotion Projects.[1]

Scope of the Problem

In North Carolina, approximately 20% of all conceptions result in spontaneous abortion. The fetal death rate is 11 per 1,000; the neonatal death rate is 10.4 per 1,000. Eight percent of all infants in North Carolina are delivered preterm. North Carolina's rate is higher than many states' and, as is true for most of the nation, has not changed significantly in the last 30 years. Approximately 3% of our infants have a congenital anomaly that can be diagnosed at birth; 6% have a congenital anomaly that can be diagnosed by the time they are 1 year old. These incidences, which mirror those of the nation, have not changed since the turn of the century.

The number of congenital anomalies may be rising may be the result of more toxins in the workplace, increasing maternal age, more women smoking, and more alcohol abuse. In the United States, 2.25 million women are alcoholics, and 3 million teenagers are problem drinkers. Medical advances are also contributing to increasing rates of congenital anomalies. Women with previously life-threatening conditions, such as diabetes, PKU, and epilepsy, are now living to experience

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pregnancy. However, because of their medical histories, their offspring have an increased risk of congenital anomalies and/or mental retardation. Thus, despite significant improvements in perinatal death rates in recent decades, reproductive casualties in the form of spontaneous abortions, stillbirths, neonatal deaths, prematurity and congenital defects persist.

Importance of Early Care

Three factors are important determinants in pregnancy outcomes:

- Intrinsic factors of the fetus, such as genetic and chromosomal characteristics;
- Fetal environment, that is, what the mother provides to the fetus as it develops; and
- Adequate prenatal care.

Our Preconceptional Health Promotion Projects, which address each of these determinants, are primarly directed toward the events preceding and involving the early weeks of the first trimester. Because the period of greatest environmental sensitivity for the developing fetus is between days 17 and 56 following conception, outcomes for many pregnancies are determined before the gravid woman enters prenatal care. Indeed, a majority of women do not have their pregnancies diagnosed until the critical weeks of fetal development are well underway or complete. During this period, cell organization, differentiation and organogenesis take place; any insult, whether nutritional, drug related, physiologic or viral, can jeopardize fetal development.

Our program attempts to identify and address potential problems before conception. We have developed our program for nonpregnant women and are presently using it in many family planning clinics. Family planning services are a locus of primary health care for many women in their childbearing years. We hope our program will aid family planning services to view themselves as an important component in the entire reproductive health care continuum, thereby expanding their focus and image beyond contraception.

The key components of preconceptional care include:

- Identification of women at risk;
- Education regarding any and all potential problem areas; and
- The availability of medical consultation.

Identifying Risks

In identifying the pregravid woman who is at potential risk for a poor perinatal outcome. we assess environmental factors that would affect a fetus, including the woman's medical and reproductive history. We have developed a preconceptional health appraisal form (see Attachment A) to do this. Women are given the appraisal when they visit family planning centers and fill it out in the waiting room. We ask specific questions about family history, social history, medical history, reproductive history, drug use, and nutrition history. In addition to obtaining a history, the objective is to identify potential problem areas for the patient and to recommend actions she can take to ameliorate the risk or to gain further information. We aim to give patients enough information so that they can make informed decisions about future childbearing.

We use a questionnaire format reproduced on NCR paper. The first pages list potential risk areas, grouped under the headings listed above. Patients place "X" marks next to any items that apply to them. The marks are transferred onto a third sheet, which provides one to two sentence suggestions of actions women might take to reduce or to learn more about a potential risk. The first page, with the potential risks and the "X" marks, is filed in the patient's record. The second part is used to help us monitor our field-testing process. The third sheet is given to the patient to serve as a reminder of actions she might take around the time of conception to maximize her opportunity for a healthy outcome. The health appraisal is now being field-tested in four local health departments. Patient and staff response has been overwhelmingly positive. It takes 7 to 8 minutes to complete the form. Patients share information from the completed appraisals with each other in the waiting room. These observations have been borne out in the actual implementation of the appraisal. Preliminary data suggest an average of seven potential problem areas per woman.

All patients who complete an appraisal meet with a health care professional before the conclusion of the clinic visit to review their responses. This gives patients an opportunity to have any questions answered and recommended actions explained and explored. Many sources of additional information are available for patients, including health department personnel, the state genetic counseling program, our preconception clinic, and personal physicians.

Health department staffs have been given considerable freedom in implementing the program. The only requirements for

the health departments are that every patient have an exit interview and that a balanced cross-section of patients be maintained. I have presented our Preconceptional Health Promotion Project to 10 health departments, and all 10 have chosen to participate. The Family Planning Branch of the State of North Carolina is interested in extending the program statewide and has recently been awarded a grant that will allow me, through a subcontract, to hire a full-time assistant. This person will develop a staff educational program around preconceptional health for the other 90 health departments in the state.

Education

Our second Preconceptional Health Promotion Project focuses on education. Its goal is to determine the mode of educational reinforcement that will result in the greatest level of cognitive change among patients. I do not believe we are going to change patients' eating, drinking, or smoking behavior until they understand why such a change would be significant. Therefore, we are looking at cognitive, not behavioral, change. We will not begin to measure outcomes until the tools we have developed are in place and have been adequately field-tested, and until we believe they are effective and acceptable to patients.

We developed preconceptional educational modules concerning alcohol, tobacco, nutrition, and drugs and chemicals. These topics were chosen because they relate to individual health behaviors. Each module includes a pretest, a posttest, an educational pamphlet, an active learning tool, a learning contract, and a resource manual for health professionals. All of the pamphlets are entitled "Looking Ahead" and begin with the following statement: "You may not be planning a pregnancy now, but someday perhaps you will." We want to keep patients' interest even though they may not yet be actively planning pregnancy. The pamphlets have been designed at the eighth grade level.

Six health departments have agreed to participate in testing these modules. In two health departments, every patient will be given individual instruction and a pamphlet about one of the four topics. In two other health departments, the patients will receive individual instruction, the pamphlet, and a learning contract (see Attachment B). The learning contract provides the patient with a tool to reinforce her commitment to take specific actions, such as discussing risk factors and preventive behaviors with her friends, husband, mother, or boyfriend. In the two final departments, the patient will get individual instruction, the pamphlet, and an

active learning tool (see Attachment C). On one side of the active learning tool are learning situations for the patient to think about, and on the other are suggested answers that build on the information provided in the pamphlet. In each instance, the patient is tested before receiving the material and then tested again at the next visit.

This design should help us understand what kind of educational reinforcement results in the greatest cognitive change. If we do not see a change in cognition with any of these approaches, I would suggest the written materials we typically rely on for health education are likely to be wasted efforts. Written materials are not expensive and they are not staff-intensive, but they also may not be effective.

Medical Counseling

The third part of our program is medical consultation. The University of North Carolina's Division of Maternal-Fetal Medicine in the Department of Obstetrics and Gynecology provides a preconceptional clinic at North Carolina Memorial Hospital. This clinic offers medical consultation to any woman desiring additional information about how her preconceptional health status or reproductive history might affect a future pregnancy. We are particularly eager to provide preconceptional access to obstetrical services for women with conditions such as diabetes, epilepsy, and PKU, because alterations in therapy to conception may well change perinatal outcomes.

Conslusion

These approaches are not novel. The idea of health appraisals and individualized education has been used previously, most notably related to cardiac risk. Our approach is novel because we are trying to improve perinatal outcomes by helping women better prepare for conception. We hope that this approach will result in women's being more deliberate in their decisions to stop contraception, more motivated to start early prenatal care, and more aware of actions they can take to maximize their opportunity for a healthy, happy, and successful pregnancy.