

Table 1 Definitions of the model parameters

Symbol	Definition
Mixture Parameters	
$\pi$	Mixing proportion (% primary subpopulation)
$\mu_1$	Mean primary subpopulation
$\mu_2$	Mean secondary subpopulation
$\sigma_1$	Standard Deviation primary subpopulation
$\sigma_2$	Standard Deviation secondary subpopulation
Mortality Parameters (a, b, and c are coefficients of a second degree polynomial)	
$a_1$	Constant primary subpopulation
$b_1$	Linear term primary subpopulation
$c_1$	Squared term primary subpopulation
$a_2$	Constant term secondary subpopulation
$b_2$	Linear term secondary subpopulation
$c_2$	Squared term secondary subpopulation

Table 2 Summary Statistics for the Observed NYS Birth Cohorts 1985-88

Birth Cohort	Births	NA*	Mean &	StDev.&	Skewness	Deaths	Mortality*
As. Am. f.^	6118	0.65	3220	449	0.51	27	4.41
As Am. m.^	6656	0.15	3316	460	0.37	27	4.06
His. Af. Am. f.^	7395	1.89	3216	579	0.87	68	9.20
His.Af. Am. m.^	7725	2.72	3338	598	0.85	96	12.43
Af. Am. f.	54968	1.27	3119	611	0.88	690	12.55
Af. Am. m.	57449	1.64	3240	627	0.96	848	14.76
His. Am. f.	68708	2.42	3263	543	0.72	479	6.97
His. Am. m.	72411	2.51	3376	578	0.67	586	8.09
Eur Am. f.	255516	1.99	3375	524	0.55	1294	5.06
Eur Am. f. 1985	62863	1.30	3369	519	0.54	332	5.28
Eur. Am. f. 1986	62379	1.73	3376	523	0.54	314	5.03
Eur. Am. f. 1987	63635	2.44	3375	524	0.59	296	4.65
Eur. Am f. 1988	66639	2.45	3379	529	0.52	352	5.28
Eur. Am. m.	270189	2.09	3507	557	0.61	1734	6.42
Eur Am. m. 1985	67005	1.42	3502	554	0.59	464	6.92
Eur. Am. m. 1986	65733	1.83	3510	555	0.59	417	6.34
Eur. Am. m. 1987	66835	2.39	3509	557	0.64	407	6.09
Eur. Am. m. 1988	70616	2.70	3509	563	0.61	446	6.32

As.=Asian, Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

NA = births missing birth weight data

\* = rate / 1000 births

& = birth weight

^=excluded from some analyses due to small numbers of births and deaths

Table 3 The Mixture Parameter Estimates and 95% Confidence Limits

Birth Cohort	$\pi$ (LCL - UCL)	$\mu_1$ (LCL - UCL)	$\mu_2$ (LCL - UCL)	$\sigma_1$ (LCL - UCL)	$\sigma_2$ (LCL - UCL)
As. Am. f.	0.90 (0.86 - 0.94)	3236 (3222 - 3248)	3065 (2888 - 3175)	370 (355 - 384)	888 (776 - 1014)
As Am. m.	0.90 (0.81 - 0.94)	3332 (3318 - 3343)	3179 (3057 - 3301)	386 (363 - 401)	866 (729 - 952)
His. Af. Am. f.	0.88 (0.85 - 0.91)	3283 (3271 - 3292)	2693 (2531 - 2850)	442 (429 - 458)	1077 (1003 - 1153)
His.Af. Am. m.	0.91 (0.88 - 0.93)	3400 (3387 - 3412)	2706 (2481 - 2871)	473 (458 - 487)	1163 (1073 - 1222)
Af. Am. f.	0.87 (0.86 - 0.88)	3200 (3196 - 3205)	2542 (2478 - 2594)	455 (449 - 461)	1110 (1086 - 1140)
Af. Am. m.	0.88 (0.87 - 0.89)	3328 (3323 - 3332)	2577 (2511 - 2626)	465 (460 - 470)	1138 (1112 - 1162)
His. Am. f.	0.93 (0.92 - 0.93)	3307 (3302 - 3311)	2690 (2634 - 2752)	451 (447 - 455)	1079 (1044 - 1110)
His. Am. m.	0.90 (0.89 - 0.91)	3429 (3424 - 3433)	2906 (2845 - 2971)	467 (462 - 473)	1074 (1041 - 1108)
Eur Am. f.	0.94 (0.94 - 0.95)	3403 (3401 - 3404)	2916 (2870 - 2948)	451 (450 - 454)	1120 (1096 - 1142)
Eur Am. f. 1985	0.94 (0.94 - 0.95)	3396 (3392 - 3400)	2908 (2827 - 2989)	449 (444 - 454)	1115 (1063 - 1164)
Eur. Am. f. 1986	0.94 (0.93 - 0.95)	3402 (3399 - 3406)	2946 (2877 - 3029)	452 (446 - 455)	1115 (1057 - 1163)
Eur. Am. f. 1987	0.94 (0.94 - 0.95)	3405 (3401 - 3408)	2864 (2784 - 2928)	453 (450 - 457)	1115 (1078 - 1160)
Eur. Am f. 1988	0.94 (0.93 - 0.95)	3407 (3404 - 3412)	2939 (2875 - 3003)	452 (449 - 455)	1131 (1091 - 1185)
Eur. Am. m.	0.94 (0.93 - 0.94)	3543 (3541 - 3545)	2988 (2952 - 3028)	476 (474 - 478)	1129 (1108 - 1151)
Eur Am. m. 1985	0.93 (0.92 - 0.94)	3537 (3532 - 3540)	3041 (2963 - 3106)	472 (467 - 476)	1094 (1056 - 1134)
Eur. Am. m. 1986	0.93 (0.93 - 0.94)	3545 (3541 - 3548)	3005 (2929 - 3073)	476 (471 - 480)	1118 (1071 - 1158)
Eur. Am. m. 1987	0.94 (0.93 - 0.95)	3546 (3542 - 3550)	2907 (2838 - 2983)	478 (474 - 482)	1141 (1109 - 1187)
Eur. Am. m. 1988	0.93 (0.93 - 0.94)	3544 (3540 - 3548)	2992 (2906 - 3051)	478 (473 - 482)	1159 (1114 - 1206)

As.=Asian, Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

LCL=lower 95% confidence limit, UCL=upper 95% confidence limit

Table 4. The Mortality Parameter Estimates and 95% Confidence Limits, Primary Subpopulation

Birth Cohort	a <sub>1</sub> (LCL UCL)	b <sub>1</sub> (LCL UCL)	c <sub>1</sub> (LCL UCL)
As. Am. f.	11.0 (-535.8 22.8) <sup>ns</sup>	-0.011 (-0.018 0.356) <sup>ns</sup>	1.70e-6 (-6.16e-5 2.77e-6) <sup>ns</sup>
As Am. m.	16.1 (-8124.1 25.0) <sup>ns</sup>	-0.012 (-0.018 3.886) <sup>ns</sup>	1.67e-6 (-6.37e-4 2.46e-6) <sup>ns</sup>
His. Af. Am. f.	-2.4 (-42.8 8.7) <sup>ns</sup>	0.001 (-0.007 0.031) <sup>ns</sup>	-5.18e-7 (-5.32e-6 7.00e-7) <sup>ns</sup>
His.Af. Am. m.	16.4 (-7.8 20.8) <sup>ns</sup>	-0.012 (-0.015 0.001) <sup>ns</sup>	1.72e-6 (-2.45e-7 2.13e-6) <sup>ns</sup>
Af. Am. f.	9.9 (6.5 13.3)	-0.009 (-0.011 -0.007)	1.19e-6 (8.66e-7 1.53e-6)
Af. Am. m.	9.7 (7.2 11.7)	-0.008 (-0.010 -0.007)	1.12e-6 (8.68e-7 1.31e-6)
His. Am. f.	10.5 (6.7 13.0)	-0.009 (-0.011 -0.007)	1.25e-6 (8.29e-7 1.50e-6)
His. Am. m.	12.7 (7.8 14.8)	-0.010 (-0.011 -0.007)	1.33e-6 (8.67e-7 1.51e-6)
Eur Am. f.	13.7 (11.5 15.3)	-0.011 (-0.012 -0.010)	1.47e-6 (1.27e-6 1.63e-6)
Eur Am. f. 1985	10.5 (-16.0 14.2) <sup>ns</sup>	-0.009 (-0.011 0.007) <sup>ns</sup>	1.19e-6 (-1.27e-6 1.57e-6) <sup>ns</sup>
Eur. Am. f. 1986	14.1 (9.4 16.1)	-0.011 (-0.013 -0.008)	1.53e-6 (1.08e-6 1.75e-6)
Eur. Am. f. 1987	14.1 (7.2 17.5)	-0.011 (-0.013 -0.008)	1.50e-6 (9.77e-7 1.80e-6)
Eur. Am f. 1988	14.7 (10.4 17.1)	-0.011 (-0.013 -0.009)	1.55e-6 (1.06e-6 1.78e-6)
Eur. Am. m.	11.7 (8.9 13.6)	-0.009 (-0.010 -0.008)	1.18e-6 (9.37e-7 1.33e-6)
Eur Am. m. 1985	12.9 (9.4 15.8)	-0.010 (-0.012 -0.008)	1.29e-6 (1.01e-6 1.55e-6)
Eur. Am. m. 1986	11.2 (3.6 14.3)	-0.009 (-0.011 -0.005)	1.09e-6 (4.82e-7 1.33e-6)
Eur. Am. m. 1987	10.6 (5.9 14.3)	-0.009 (-0.011 -0.006)	1.09e-6 (6.78e-7 1.41e-6)
Eur. Am. m. 1988	11.0 (2.5 14.3)	-0.009 (-0.011 -0.004)	1.15e-6 (5.69e-7 1.41e-6)

As.=Asian, Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

LCL=lower 95% confidence limit, UCL=upper 95% confidence limit

<sup>ns</sup> = not significantly different from zero based on the bootstrapped confidence limits

Table 5. The Mortality Parameter Estimates and 95% Confidence Limits, Secondary Subpopulation

Birth Cohort	a <sub>2</sub> (LCL UCL)	b <sub>2</sub> (LCL UCL)	c <sub>2</sub> (LCL UCL)
As. Am. f.	2.67 (-6.20 7.71) <sup>ns</sup>	-0.004 (-0.011 0.008) <sup>ns</sup>	4.64e-7 (-6.32e-6 1.48e-6) <sup>ns</sup>
As Am. m.	5.30 (-3.59 388.78) <sup>ns</sup>	-0.007 (-0.398 0.025) <sup>ns</sup>	7.82e-7 (-2.07e-5 4.17e-5) <sup>ns</sup>
His. Af. Am. f.	3.96 (0.89 5.65)	-0.006 (-0.008 0.001) <sup>ns</sup>	8.65e-7 (-2.72e-6 1.23e-6) <sup>ns</sup>
His.Af. Am. m.	4.66 (2.67 7.88)	-0.007 (-0.011 -0.004)	9.19e-7 (4.84e-7 1.56e-6)
Af. Am. f.	3.84 (3.29 4.49)	-0.006 (-0.007 -0.005)	8.98e-7 (7.29e-7 1.08e-6)
Af. Am. m.	4.42 (3.70 5.07)	-0.006 (-0.007 -0.005)	7.11e-7 (-1.30e-7 8.30e-7) <sup>ns</sup>
His. Am. f.	3.87 (3.02 4.82)	-0.006 (-0.007 -0.005)	8.64e-7 (5.41e-7 1.02e-6)
His. Am. m.	3.70 (2.93 4.64)	-0.005 (-0.006 -0.004)	5.73e-7 (4.56e-7 7.35e-7)
Eur Am. f.	3.39 (2.95 3.86)	-0.005 (-0.006 -0.005)	5.46e-7 (4.87e-7 6.30e-7)
Eur Am. f. 1985	3.15 (1.80 4.56)	-0.005 (-0.007 -0.003)	5.15e-7 (3.36e-7 8.13e-7)
Eur. Am. f. 1986	2.89 (1.88 3.61)	-0.005 (-0.005 -0.003)	4.42e-7 (-5.43e-7 5.90e-7) <sup>ns</sup>
Eur. Am. f. 1987	3.31 (2.41 4.59)	-0.005 (-0.007 -0.004)	5.34e-7 (4.00e-7 8.32e-7)
Eur. Am f. 1988	4.18 (3.01 5.83)	-0.006 (-0.009 -0.005)	6.72e-7 (5.29e-7 9.51e-7)
Eur. Am. m.	3.89 (3.48 4.30)	-0.005 (-0.006 -0.005)	5.73e-7 (4.94e-7 6.78e-7)
Eur Am. m. 1985	4.04 (3.29 5.13)	-0.005 (-0.006 -0.004)	5.29e-7 (3.42e-7 7.50e-7)
Eur. Am. m. 1986	3.87 (2.79 4.71)	-0.005 (-0.006 -0.004)	5.24e-7 (3.05e-7 6.56e-7)
Eur. Am. m. 1987	4.11 (3.41 4.97)	-0.006 (-0.007 -0.005)	6.98e-7 (5.04e-7 8.36e-7)
Eur. Am. m. 1988	3.53 (2.77 4.66)	-0.005 (-0.006 -0.004)	5.29e-7 (3.38e-7 6.65e-7)

As.=Asian, Af. =African, His= Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

LCL=lower 95% confidence limit, UCL=upper 95% confidence limit

<sup>ns</sup> = not significantly different from zero based on the bootstrapped confidence limits

Table 6. Hierarchical Analysis of the 2<sup>nd</sup> order terms of the mortality polynomial and heterogeneity of mortality patterns. Standard log likelihood ratio test (Chi. Sq.)

Null hypothesis Population	$c_1 = 0.0$ (3.84 needed to reject)	$c_2 = 0.0$ (3.84 needed to reject)	$c_1 = c_2 = 0.0$ (5.99 needed to reject)	$a_1 = a_2; b_1 = b_2; c_1 = c_2$ (7.81 needed to reject)
As. Am. f.	6.34	0.41 <sup>ns</sup>	2.06 <sup>ns</sup>	2.52 <sup>ns</sup>
As Am. m.	0.97 <sup>ns</sup>	0.55 <sup>ns</sup>	1.77 <sup>ns</sup>	0.55 <sup>ns</sup>
His. Af. Am. f.	0.20 <sup>ns</sup>	5.66	11.74	8.75
His.Af. Am. m.	9.52	1.30 <sup>ns</sup>	29.41	10.74
Af. Am. f.	25.75	22.42	115.70	55.65
Af. Am. m.	43.19	3.33 <sup>ns</sup>	66.65	58.88
His. Am. f.	24.74	21.48	86.90	21.54
His. Am. m.	25.43	3.84 <sup>ns</sup>	81.96	82.04
Eur Am. f.	85.01	13.69	177.85	99.10
Eur Am. f. 1985	3.29 <sup>ns</sup>	4.73	26.96	3.25 <sup>ns</sup>
Eur. Am. f. 1986	24.93	1.04 <sup>ns</sup>	44.54	26.65
Eur. Am. f. 1987	17.28	3.41 <sup>ns</sup>	28.96	31.92
Eur. Am f. 1988	39.97	5.35	78.89	45.25
Eur. Am. m.	77.71	20.03	208.37	119.64
Eur Am. m. 1985	27.29	2.78 <sup>ns</sup>	53.27	17.26
Eur. Am. m. 1986	14.95	2.52 <sup>ns</sup>	27.39	35.63
Eur. Am. m. 1987	16.80	6.39	69.02	32.44
Eur. Am. m. 1988	15.89	10.19	57.75	37.96

As.=Asian, Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

<sup>ns</sup>= not significant

Table 7. Some Characteristics of Fits of the Observed Birth Cohorts

	$1-\pi$	$\mu_2-\mu_1$	Secondary CDR	Primary CDR	Cross	Area <sup>1</sup>
As. Am. f.	0.10	170	17.2	2.5	1	1426550
As Am. m.	0.10	153	10.4	3.0	0	1154718
His. Af. Am. f.	0.12	589	52.0	3.6	1	729258
His.Af. Am. m.	0.09	694	66.3	6.6	0	1470614
Af. Am. f.	0.13	658	59.3	6.5	0	937817
Af. Am. m.	0.12	750	72.4	7.2	0	895769
His. Am. f.	0.07	617	44.5	4.0	0	918056
His. Am. m.	0.10	523	35.7	4.8	0	1027701
Eur Am. f.	0.06	487	36.7	3.0	0	1105549
Eur Am. f. 1985	0.06	488	39.0	3.1	0	805885
Eur. Am. f. 1986	0.06	457	35.2	2.9	0	1185419
Eur. Am. f. 1987	0.06	540	39.4	2.5	0	1063254
Eur. Am f. 1988	0.06	468	33.1	3.3	0	1222123
Eur. Am. m.	0.07	555	43.1	3.6	0	801447
Eur Am. m. 1985	0.07	496	38.2	4.0	0	866886
Eur. Am. m. 1986	0.07	540	42.3	3.6	0	754350
Eur. Am. m. 1987	0.06	639	50.4	3.3	0	733587
Eur. Am. m. 1988	0.07	552	44.8	3.5	0	771038

As.=Asian, Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

CDR = subpopulation specific crude death rates per 1000 births.

Cross= whether the subpopulation and birth weight specific mortality curves cross.

Area=area between the subpopulation and birth-weight specific mortality curves as described in footnote 1.

Table 8. Ratio of Hessian to Bootstrapped Confidence Intervals

	Af. Am. f.	Eur. Am. m.
$\pi$	1.0	1.0
$\mu_1$	1.2	1.2
$\mu_2$	1.0	0.9
$\sigma_1$	0.9	1.1
$\sigma_2$	1.2	1.0
$a_1$	0.8	0.7
$b_1$	0.9	0.7
$c_1$	0.9	0.8
$a_2$	1.0	0.3
$b_2$	1.0	0.4
$c_2$	0.8	0.8

Af.=African, Eur. = European, Am.= American, f.= females, m.= males

Table 9. Percent Mean Bias of Parameter Estimation and Significance of Bias by Sample Size for the Three Case Studies

	Af. Am. f.			Eur. Am. m.			Simulated Parameter Sets		
	25k	50k	100k	25k	50k	100k	25k	50k	100k
$\pi$	0.20	0.13	-0.08	0.14	0.11	-0.04	0.02	0.24	-0.15
$\mu$	0.00	-0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00
<sup>1</sup> $\mu$	0.02	0.01	-0.03	-0.08	-0.03	-0.02	-0.03	-0.02	-0.09
<sup>2</sup> $\sigma$	-0.05	-0.01	0.01	-0.02	-0.02	0.01	0.01	-0.02	0.02
<sup>1</sup> $\sigma$	-0.05	0.05	0.07	-0.08	0.03	-0.02	0.09	-0.06	0.04
<sup>2</sup> $a_1$	-2.77	-1.68	-1.07	-2.34	0.51	0.52	-0.54	-0.08	-0.46
$b_1$	-2.17	-1.25	-0.85	-2.13	0.16	0.24	-0.60	-0.13	-0.46
$c_1$	-2.74	-1.49	-1.07	-2.96	-0.12	0.09	-0.84	-0.23	-0.58
$a_2$	0.79	0.38	0.24	-7.80	-6.02	-3.80	-2.45	-2.65	-0.91
$b_2$	0.20	0.26	0.22	-16.74	-12.44	-6.99	-6.42	-5.38	-2.27
$c_2$	-3.34	-0.35	0.15	-232.82	-112.97	-41.28	-51.19	-34.32	-13.55

k = 1000s, Af. = African, Eur. = European, Am. = American, f. = females, m. = males

The largest value of t for any cell is 0.63. None of the bias estimates approach significance.

Table 10, Relative Reduction in Mean Squared Error (MSQE) with Increasing Sample Size<sup>&</sup> for the Three Case Studies. Values > 1.0 Indicate Improvement in Consistency as Sample Size Increases.

	Af. Am. f.		Eur. Am. m.		Simulated Parameter Sets	
	25k/50k <sup>&amp;</sup>	50k/100k <sup>&amp;</sup>	25k/50k <sup>&amp;</sup>	50k/100k <sup>&amp;</sup>	25k/50k <sup>&amp;</sup>	50k/100k <sup>&amp;</sup>
$\pi$	2.31	1.77	1.88	2.15	0.93	1.05
$\mu_1$	2.15	2.00	2.01	1.94	1.08	1.01
$\mu_2$	2.15	1.89	1.91	2.18	1.10	0.98
$\sigma_1$	2.14	1.93	2.11	1.88	1.05	1.06
$\sigma_2$	2.23	1.80	1.82	2.17	1.41	1.36
$a_1$	2.07	2.01	2.36	1.93	1.38	1.30
$b_1$	2.05	2.01	2.36	1.97	1.49	1.36
$c_1$	2.04	2.03	2.37	2.01	1.66	1.22
$a_2$	2.08	2.03	1.77	2.18	1.60	1.40
$b_2$	2.42	2.28	1.62	2.32	1.52	1.82
$c_2$	5.12	5.03	1.55	2.51	1.44	2.62
Mean	2.43	2.25	1.97	2.11	1.33	1.37

k = 1000s, Af.=African, Eur. = European, Am.= American, f.= females, m= males  
<sup>&</sup>= MSQE with smaller sample size / MSQE with larger sample size, e.g. 25k/50k.

Table 11 Number of Flips in Two Case Studies per 1000 Trials

Sample size	Eur. Am. m.		Simulated Parameter Sets	
	Primary	Secondary	Primary	Secondary
25,000	2	22	11	6
50,000	0	3	5	1
100,000	0	0	2	0

Eur. = European, Am.= American, m. = males

Table 12. The Logistic Regression Coefficients for Primary Flips

Parameter	Coefficient	Std. Error	t value
Intercept	-15.40	5.20	-3.0
$1-\pi$	6.195	2.623	2.4
$\mu_1$	4.58e-3	5.30e-4	8.7
$\mu_2$	1.03e-3	3.95e-4	2.6
$\sigma_1$	-1.33e-2	6.60e-3	-2.0
$\sigma_2$	-5.68e-3	2.41e-3	-2.4
$a_1$	-1.69	0.10	-17.3
$b_1$	-5192.20	269.58	-19.3
$c_1$	-16492159.95	936477.57	-17.6
$a_2$	1.34	0.13	10.1
$b_2$	3044.59	180.97	16.8
$c_2$	8981036.11	601720.63	14.9

Null Deviance: 2174.0 on 999 degrees of freedom

Residual Deviance: 332.2 on 988 degrees of freedom

Table 13. The regression coefficients for secondary flips

Need to rerun to get more significant places (Mike had the results rounded)

Parameter	Coefficient	Std. Error	t value
Intercept	-11.82	5.01	-2.4
$1-\pi$	-37.28	3.27	-11.4
$\mu_1$	-1.90e-3	6.09e-4	-3.1
$\mu_2$	4.88e-3	4.87e-4	10.0
$\sigma_1$	8.19e-3	7.41e-3	1.1
$\sigma_2$	-3.65e-3	2.36e-3	-1.5
$a_1$	9.61e-2	4.35e-2	2.2
$b_1$	158.85	89.77	1.8
$c_1$	1199184.55	469328.61	2.6
$a_2$	-7.21e-1	1.50e-1	-4.8
$b_2$	-1543.91	137.87	-11.2
$c_2$	-7095120.50	535387.72	-13.3

Null Deviance: 1134.2 on 999 degrees of freedom

Residual Deviance: 545.3 on 988 degrees of freedom

Table 14 – Power Estimates for Two Case Studies

Sample Size	12,500	25,000	50,000	100,000
Af. Am. f.				
Power	82.5	98.1	100.0	100.0
95% Confidence Limits	80.0 to 84.8	97.1 to 98.9	99.6 to 100.0	99.6 to 100.0
Eur. Am. m.				
Power	21.8	47.3	79.3	97.0
95% Confidence Limits	19.3 to 24.5	44.2 to 50.5	76.7 to 81.8	95.7 to 98.0

Results based on 1000 trials.

Table 15 – Power Estimates for the Remaining 10 Independent Observed Data Sets

	12,5000 (95% CL)	25,000 (95% CL)	50,000 (95% CL)	100,000 (95% CL)
As. F.	58 (43.2 to 71.8)	84 (70.9 to 92.8)	98 (89.4 to 100)	100 (92.9 to 100)
As. M.	28 (16.2 to 42.5)	40 (26.4 to 54.8)	72 (57.5 to 83.8)	98 (89.4 to 100)
Af. Am. m.	72 (57.5 to 83.8)	100 (92.9 to 100)	100 (92.9 to 100)	100 (92.9 to 100)
Af His.c m.s	90 (78.2 to 96.7)	100 (92.9 to 100)	100 (92.9 to 100)	100 (92.9 to 100)
Eur. His. f.	44 (30.0 to 58.8)	70 (55.4 to 82.1)	100 (92.9 to 100)	100 (92.9 to 100)
Eur. His. m.	38 (24.7 to 52.8)	70 (55.4 to 82.1)	96 (86.3 to 99.5)	100 (92.9 to 100)
Eur Am. f. 1985	14 (5.8 to 26.7)	36 (22.9 to 50.8)	44 (30.0 to 58.8)	96 (86.3 to 99.5)
Eur. Am. f 1986	32 (19.5 to 46.7)	76 (61.8 to 86.9)	94 (83.5 to 98.7)	100 (92.9 to 100)
Eur. Am. f. 1987	20 (10.0 to 33.7)	48 (33.7 to 62.6)	88 (75.7 to 95.5)	100 (92.9 to 100)
Eur. Am. f. 1988	58 (43.2 to 71.8)	88 (75.7 to 95.5)	100 (92.9 to 100)	100 (92.9 to 100)

Estimates based on 50 trials each

As.=Asian to Af. =African, His. = Hispanic, Eur.= European, Am. = American, f. = female, and m. = male.

Table 16 – Logistic Regression of Power based on Data in Tables 7 and 15

Parameters	Coefficients	Standard Error	t-value
Intercept	-10.4	0.8	-12.7
Difference in Areas <sup>1</sup>	5.2e-6	5.7e-7	9.1
Primary Crude Death Rate	487	72	6.8
Difference in birth weight means	3.6e-3	6.1e-4	5.8
Indicator: crossing mortality curves	.74	.30	2.5
Sample Size	7.4e-5	4.8e-6	15.4

Null Deviance: 914.7 on 39 df

Residual Deviance: 84.2 on 34 df

Table 17 Comparison of Percent Power Predictions from Logistic Regression (Table 16) and Direct Estimation (1000 simulated trials) for the Two Case Studies (Table 14).

Sample Size	From Regression (95% Confidence Limits)	From 1000 Simulations (95% Confidence Limits)
Af. Am. f.		
12,500	71.8 (64.3 to 79.3)	82.5 (80.0 to 84.8)
25,000	86.5 (82.2 to 90.8)	98.1 (97.1 to 98.9)
50,000	97.6 (96.5 to 98.7)	100 (99.6 to 100)
100,000	99.9 (99.9 to 100.0)	100 (99.6 to 100)
Eur. Am. m.		
12,500	17.3 (12.6 to 22.0)	21.8 (19.3 to 24.5)
25,000	34.5 (28.0 to 41.0)	47.3 (44.2 to 50.5)
50,000	76.9 (70.9 to 82.8)	79.3 (76.7 to 81.8)
100,000	99.3 (98.7 to 99.8)	97.0 (95.7 to 98.0)

Af. = African, Eur. = European, f. = female, m. = male.