Changes in the Slave Population of the Virginia Tidewater and Piedmont, 1830-1860: A Stable Population Analysis

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Several years ago, an American mathematician writing in the French demographic journal *Population* noted, "La plus grave lacune de la documentation sur l'évolution de la population des États-Unis concerne les esclaves." [1] Such a gap meant that much of the knowledge about the nature of American slavery — particularly the conditions of life for the enslaved and their families, their treatment at the hands of the master, and the economics of slavery — rested upon an uncertain base of conflicting contemporary impressions. But this same gap invited the attention of several scholars; their work has had great significance for historians interested in the structure of the slaveholding society that once existed in the American South.

Philip D. Curtin's publication of *The Atlantic Slave Trade: A Census* in 1969 was one such stimulating examination of one of the most important and basic quantitative aspects of slavery. Although the nature of the evidence restrained the author from making any elaborate absolute claims, some of Curtin's conclusions were sufficiently startling to spur the reexamination of many assumptions about the character of slavery. Even after conceding, as Curtin did, a possible 20 percent error as a "range of accuracy" for his work, the fact remains that only 3.5 to 5.5 percent of all the slaves transported across the Atlantic actually arrived on the North American continent. Yet nearly one-third of the present Afro-American population may be found in Canada and the United States, a remarkable increase. By contrast it might be noted that although 43 percent of the slaves shipped to the New World landed in the Caribbean Islands, only 20 percent of all Afro-Americans are now found there.[2]

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One of the obvious problems such figures create is that of seeking an explanation for the apparently phenomenal increase in the North American population with African origins and the stagnation or decline of similar populations elsewhere in the hemisphere. What is most startling about this population growth is the fact that it was the result, particularly after 1810, of natural increase.[3] It may be granted that in some manner the nature of North American slavery was comparatively more favorable to this natural increase than was the case in the remainder of the New World. But in what way? As C. Vann Woodward has pointed out, there are many serious difficulties complicating the attempt to determine the relationship between a set of demographic variables and the social institutions that produced or accompanied them. As for one possible explanation, Woodward feared, "The temptation to attribute the unique rate of increase among the South's slaves to a deliberate policy of commercial breeding on the plantations will be irresistable for some." At the other extreme from this explanation others might be expected to see this increase "as prima facie evidence if not final proof of the superior mildness and humaneness of Southern slavery . . . ." [4]

The conditions that might be expected to assist such natural population growth may be of some use in assessing whether the character of American slavery lay closer to one or the other of the two extremes. First, such growth would be much more likely in a population with a sex ratio within a normal range — somewhere between 94 and 104 males per 100 females, that is a population between 48.5 and 51 percent male. Additionally, there would have to be some interest by the master class in the production of offspring. If the owner's sole interest lay in the extraction of a maximum amount of labor from each hand, regardless of sex, then fertility would have remained low and infant mortality might well have claimed most of those actually born. While there is ample documentation for the exploitative nature of American slavery there is also evidence that masters showed an interest in the perpetuation or increase of their human property. This consideration tempered, to some degree, the emphasis upon the extraction of labor. Traditionally, this concern with reproduction increased whenever the external source of slaves was eliminated,

a condition that prevailed to a large extent in the United States after the cessation of the legal external slave trade in 1808.[5]

The above conditions typified much of eastern Virginia and Maryland during the first half of the nineteenth century. It was in these two states that slavery persisted longest after the closure of the external slave trade.[6] Yet even as the slave population had begun its remarkable increase, the ability of the economies of these two states to absorb the growing population declined with the waning tobacco culture in the early 1800's. Simultaneously, however, the great agricultural development of present-day Alabama and Mississippi had also begun. The development of these new lands depended upon the black population boom in the upper South. The upper South to Southwest pattern of both the internal slave trade and wholesale movements of planters and their property has been well documented. The scope of this emigration has not received such close scrutiny. Frederic Bancroft, the historian of the internal slave trade, attempted to estimate the extent of the movement of Negroes into or out of the various southern states by considering the decennial censuses and the decennial rate of increase in the Negro population. His estimates have, however, recently been criticized as inadequate and misleading, largely because of Bancroft's lumping together of victims of the slave trade and individuals who may have accompanied the movement of entire labor forces with masters removing to new locations.[7] Yet another failing was the lack of any information about the age and sex characteristics of those involved in the population change. This meant that one could obtain only a vague notion of which proportion of change was due to the actual removal of individuals and which to the birth of individuals who would have been born in the upper South had their parents not been removed to another state. In the case of Virginia, Bancroft did attempt to consider those individuals who escaped bondage either as runaways or through manumission.[8]

What follows is an examination of population change among the slaves of Tidewater and Piedmont Virginia utilizing a census survival technique similar to that employed by Engerman and Fogel in their controversial *Time on the Cross*.[9] The area surveyed includes the entire state east of the crest of the Blue Ridge, with the exception of Alexandria County, a portion of the District of

Columbia until 1846. Eastern Virginia was, of course, the oldest slaveholding portion of the state. In addition, the bulk of the state's slave population could be found here. This region was the most likely to produce a surplus population of which masters could dispose.

TABLE I: SLAVE POPULATION OF VIRGINIA, 1820-1860[10]

	1820	1830	1840	1850	1860
Virginia	425,153	469,757	449,087	472,528	490,865
East of the Blue Ridge	393,595	416,838	395,250	408,439	423,159
% of Slaves East of the Blue Ridge	92.5	87.5	88.0	86.4	86.2

In order to arrive at some understanding of the dimensions of the out-migration of slaves, life tables based upon the annual rates of population growth used by Reynolds Farley were constructed. To do this successfully in the absence of adequate vital statistics one must deal with a stable population, that is a population in which there are fixed age-specific fertility and mortality rates for an extended period and in which immigration is absent. In the present case it will be assumed that immigration was negligible as were losses due to manumissions and successful escapes from slavery. Reynolds Farley demonstrated the stable population tendency of the nineteenth-century Negro population as a whole, and there is little reason to doubt the validity of extending this condition to large subdivisions of this population.[11]

The primary difficulty encountered in constructing such life tables arises from the exceedingly large age categories used in the slave censuses prior to 1850. Even in the two final slave censuses ten-year age intervals were used beyond age nineteen. The age distribution of the 1850 census was, therefore, applied to the 1830 and 1840 trial life tables after adjustments to bring it into conformation with the reported age intervals of those two censuses. After the construction of the trial life tables, the $_0e_{10}$'s [the life expectancy of those reaching age ten] for both sexes in

the decades from 1830 to 1860 (inherent in the resulting model life tables) were applied to the ten-year intervals of the trial tables. This was done in order to obtain the necessary five-year intervals for the determination of net migration by census survivor rates. The $_{0}e_{10}$ rather than the $_{0}e_{0}$ was used because of the lack of census date for those under age one. The assumption is made in such cases that $_{0}e_{10}$ and $_{0}e_{0}$ are so closely related that one might be substituted for the other in order to select an appropriate model life table.[12]

The first decade studied, that of 1830-1840, yielded an $_{0}e_{10}$ of 35.83 for males and 35.86 for females, corresponding to "west" level 2 of Coale and Demeny's regional model life tables published by Princeton.[13] Alternately, United Nations model life tables could be applied. Both the Princeton and U.N. tables have serious shortcomings in the methods of their construction and in their application to populations with such extremely low expectations of life. But the "west" tables and the U.N. tables are generally close substitutes, particularly in situations where the mortality pattern is unclear.[14] The stable population application revealed net out-migration in nearly every age group for both sexes, the apparent bulk of the out-migration occurring among those of both sexes who were between the ages of five and fourteen at the beginning of the decade.

In the following decade, the trial life tables produced an $_{0}e_{10}$ of 40.23 for males and 41.92 for females. These were applied to the Princeton "east" table at level 3. "East" life tables represent populations "characterized by high mortality rates in infancy and increasingly high rates over age 50." [15] Although the demographic experience of eastern Europe underlies these tables, they do, particularly in their emphasis upon infant mortality, correspond to much of the slave experience. The stable population application demonstrated once again that the largest depletion of slave population occurred in both sexes among that group aged five to fourteen at the onset of the decade. In this instance, however, large positive values appear in the net migration column for the groups aged 0-4 and 50-59 in 1840, anomalies that may reflect the inadequacies of the life table but which are also derived from the persistent errors of enumerators in the underlying census data.

In the final ante-bellum decade, marked by a slightly lower

growth rate, the above pattern appears slightly altered. In this instance the trial life table produced an $_{0}e_{10}$ of 38.39 for both sexes. Princeton's "east" level 1 table was then consulted. The derivation of migration figures showed a considerable diminution of the scale of out-migration, while large positive values again appeared in the age categories 0-4 and 50-59.

A few specific trends, obvious from the tabular data,[16] have been mentioned. It is also necessary to consider the meaning of the statistics for the entire period. First, the specific figures should not be regarded as more than representative of some of the major dimensions of the shifting population of Virginia slaves. At these low levels of life expectancy "the recorded experience is virtually nil, hence the models should be considered as somewhat tentative extrapolations." [17] Furthermore, no reference has been made to the numbers of slaves securing free status through manumission or escape. Yet neither of these categories may be presumed to have created significant distortions in the general pattern.

One particularly interesting tendency suggested by the life tables was that slightly more women than men seem to have departed from the state during the three decades before the Civil War. The prevailing sex ratios of this period provide additional confirmation on this point.

TABLE V: SEX RATIOS FOR VIRGINIA EAST OF THE BLUE RIDGE, 1830-1860 [18]

	1830	1840	1850	1860
Male Slaves	212,122	200,874	207,213	214,715
Female Slaves	204,716	194,376	201,226	208,444
Sex Ratio	103.62	103.34	102.98	103.01

Although Table V suggests that slightly more males than females may have departed from Virginia, the stable sex ratios over these thirty years do confirm the similar population experiences of both sexes. It also makes the widespread practice of the kind of polygynous slave breeding discussed by Kenneth Stampp seem highly unlikely.[19] If only a few males were needed

to service "breeding wenches" whose offspring could be sold south at a considerable profit, then why were there actually more males than females among the slaves of eastern Virginia?

As has been previously noted, individuals in the same age intervals of each sex appear to have had similar migration experiences. Although this might seem somewhat questionable, upon reflection it makes a good deal of sense. The frequent mention of "breeding wenches" in the advertisements, the correspondence, and plantation journals suggests the importance of the natural increase of slaves to a planter in a nation that had proscribed the external slave trade.[20] The chronic shortage of fluid capital available for investment in these human capital goods made a large natural increase welcome wherever a demand for such labor existed. Thus, a ready market existed for female as well as male slaves in their prime productive and reproductive years. The gradual decline in the migration from Virginia was at least the partial result of the successful natural increase of the slave population of the southwestern states, an increase that had its origins in Virginia and other old slave states. In addition, improved economic conditions in the Old Dominion may have caused the retention of more slaves within the commonwealth. Their labor and their offspring had ceased to be a surplus in the local economy.

The sex ratios and the ages of those constituting the bulk of the emigration from Virginia hint at the possibility that the population movement may have been less disruptive of slave marriages than is generally assumed to be the case. This is not to deny the frequent occurrence of such tragedies. But it should be noted that the majority of those who left Virginia were just entering adulthood and the age at which most slave marriages occurred. Hence they would have been more likely to have established a marriage bond in their new home than to have suffered the anguish of separation from a mate. Then too, the purchaser in the southwestern states or the master who moved west with his household appreciated the importance of a stable slave family as an efficient means of securing a natural increase, a gain to the slaveholder that also mitigated, to some extent, the harshness of bondage for married slaves. As Eugene Genovese has noted, planters recognized "that stable unions yielded

children and contributed to a level of plantation morale which would be reflected in higher economic productivity." [21]

Such compromises on the part of the master class toward the enslaved and the responses of the slaves to them suggest that slavery was a far more varied experience than it has often been portrayed. Yet each party to these compromises had to make, consciously or unconsciously, some significant concessions. Whenever the master yielded, in his own interest to be sure, something to his slaves they became more than slaves since they had demonstrated that they were not totally at the whim of the master. But even as the slaves gained something as valuable as more security for their families, they validated to some extent the power of the master over their lives.

A final word might be said about the connection between the limited demographic data of this paper and the broad statements of the preceding paragraphs. One important function of quantitative history is the formulation of new points of view or of new questions to be probed. Conclusions drawn from such large aggregations can only serve as tentative statements of what might have been. They await confirmation or refutation from other sources. A more thorough understanding of all aspects of the demography of slavery may require the modification of many assumptions about the nature of slavery. In this sense it is not meant to supersede but to complement traditional approaches.

NOTES

1. Ernest Rubin, "Les esclaves aux États-Unis de 1790 à 1860. Données sur leur nombres et leurs caractéristiques demographiques," *Population*, 14 (January-March, 1959), 33.

2. Phillip D. Curtin, *The Atlantic Slave Trade: A Census* (Madison, 1969), pp. 89-93, 268.

3. *Ibid.*, p. 73.

4. C. Vann Woodward, "Southern Slaves in the World of Thomas Malthus," in *American Counterpoint, Slavery and Racism in the North-South Dialogue* (Boston, 1971), passim and pp. 93-95, 98-99.

5. *Ibid.*, pp. 97-98.

6. Robert McColley, *Slavery and Jeffersonian Virginia*, 2nd ed. (Urbana, 1973), pp. 163-67. Virginia restricted the external slave trade in 1778, thirty years before the Federal limit.

7. Frederic Bancroft, *Slave Trading in the Old South* (Baltimore, 1931), passim

and esp. pp. 382-406. Cf. William Calderhead, "How Extensive Was the Border State Slave Trade? A New Look," *Civil War History*, 18 (March, 1972), 42-45.

8. Bancroft, *Slave Trading*, pp. 382-406.

9. Robert William Fogel and Stanley L. Engerman, *Time on the Cross: Evidence and Methods — A Supplement* (Boston, 1974), pp. 43-48.

10. J.D.B. DeBow, *Statistical View of the United States* (Washington, 1854), p. 82; Joseph C.G. Kennedy, *Population of the United States in 1860* (Washington, 1864), p. 515.

11. Reynolds Farley, "The Demographic Rates and Social Institutions of the Nineteenth Century Negro Population: A Stable Population Analysis," *Demography*, 2 (1965), 390-91.

12. Henry S. Shryock, Jacob S. Siegel, and Associates, *The Methods and Materials of Demography* (Washington, 1971), II, 813-14; Farley, "Demographic Rates," 391.

13. Ansley J. Coale and Paul Demeny, *Regional Model Life Tables and Stable Populations* (Princeton, 1966).

14. Shryock and Siegel, *Methods and Materials*, II, 814.

15. Coale and Demeny, *Model Life Tables*, pp. 13-14.

16. See Tables II, III, and IV, below.

17. Shryock and Siegel, *Methods and Materials*, II, 814.

18. Sources are the same as those for Tables II, III, and IV.

19. Kenneth Stampp, *The Peculiar Institution: Slavery in the Ante-Bellum South* (New York, 1956), pp. 247-48.

20. Bancroft, *Slave Trading*, pp. 67-68; Woodward, "Malthus," p. 99.

21. Eugene Genovese, *Roll, Jordan, Roll: The World the Slaves Made*, (New York, 1974), p. 464; see also John W. Blassingame, *The Slave Community: Plantation Life in the Antebellum South* (New York, 1972), pp. 77-94 for more on the slave family and the marriage tie.

TABLE II: STABLE POPULATION DETERMINATION OF NET MIGRATION, 1830-1840

Part 1. Trial Life Table (Assumed r=2.25)

Ages	Males					Females	
	c(a)	a	ra	e^{ra}	$c(a)e^{ra}$	c(a)	$c(a)e^{ra}$
0	2.53	.5	.01125	1.0114	2.56	2.78	2.81
1-4	15.67	3.0	.06750	1.0698	16.77	16.10	17.22
5-9	17.04	7.5	.16875	1.1838	20.17	17.10	20.24
10-14	13.49	12.5	.28125	1.2348	17.87	13.20	17.49
15-19	10.04	17.5	.39375	1.4826	14.89	10.07	14.93
20-29	15.53	25.0	.56250	1.7551	27.26	15.21	26.70
30-39	10.10	35.0	.78750	2.1979	22.20	10.07	22.13
40-49	7.38	45.0	1.01250	2.7525	20.31	7.31	20.12
50-59	4.41	55.0	1.23750	3.4460	15.20	4.24	14.61
60-69	2.39	65.0	1.46250	4.1368	9.89	2.30	9.51
70-79	.97	75.0	1.68750	5.4060	5.24	1.07	5.78
80+	.46	87.5	1.96875	7.1618	3.29	.55	3.94
	T_0=175.65		c(10)=3.80			T_0=175.48	c(10)=3.77
	T_{10}=136.15		$_0e_{10}$=35.83			T_{10}=135.21	$_0e_{10}$=35.86

Part 2. Net Migration by Survival Rates, Males

Ages	Census 1830	$_5S_x$	$_{10}S_x$	Est. 1840	Census 1840	Net	%Net
0-4	38606	.80839	.76542		34852		
5-9	36145	.94684	.89783		32642		
10-14	28615	.94824	.88032	29549	28585	- 964	-03.26
15-19	21297	.92837	.84544	32452	20872	-11580	-35.68
20	18169	.91067	.81812	25190	17845	- 7345	-29.16
25	14774	.89837	.79254	18005	15018	- 2987	-16.59
30	11008	88220	.75937	14864	11712	- 3152	-21.21
35	10416	.86118	.72200	11709	9621	- 2088	-17.83
40	8942	.83839	.67780	8363	8587	+ 224	+02.68
45	6713	.80869	.62234	7520	6720	- 800	-10.64
50	5546	.76956	.55026	6060	4595	- 1465	-24.17
55	3809	.71503	.45515	4175	3354	- 821	-19.66
60	3233	.63655	.34568	3052	2976	- 76	-02.49
65	1836	.54306	.22996	1733	2086	+ 353	+20.37
70	1496	.42345	.11379		1462		
75	561	.26873			587		
80+	976						
Total 10-65				162672	131969	-30703	-18.88

Part 3. Net Migration by Survival Rates, Females

Ages	Census 1830	$_5S_x$	$_{10}S_x$	Est. 1840	Census 1840	Net	%Net
0-4	38650	.81044	.76224		28204		
5-9	35006	.94052	.88459		38428		
10-14	27023	.94053	.86974	29461	26035	- 3426	-11.63
15	20615	.92423	.84294	30966	19885	-11081	-35.78
20	17175	.91155	.82110	23503	16368	- 7135	-30.36
25	13962	.90077	.80172	17377	13665	- 3712	-21.36
30	11487	.89004	.78471	14102	10895	- 3207	-22.74
35	9128	.88166	.77092	11194	8990	- 2204	-19.69
40	8392	.87440	.74669	9014	7856	- 1158	-12.85
45	6573	.85395	.69729	7037	6388	- 649	-09.22
50	5075	.81655	.61776	6266	5576	- 690	-11.01
55	3605	.75655	.51125	4583	4259	- 324	-07.07
60	3578	.67576	.39190	3135	3119	- 16	-00.51
65	1130	.57994	.26415	1843	1954	+ 101	-05.48
70	1564	.45547	.13118		1329		
75	626	.28801			420		
80	1126				758		
Total 10-65				159481	125980	-33501	-21.07

TABLE III: STABLE POPULATION DETERMINATION OF NET MIGRATION, 1840-1850

Part 1. Trial Life Table (Assumed r=2.25)

Ages	Males					Females	
	c(a)	a	ra	e^{ra}	$c(a)e^{ra}$	c(a)	$c(a)e^{ra}$
0	2.41	.5	.01125	1.0114	2.44	2.33	2.36
1-4	14.94	3.0	.06750	1.0698	15.98	12.18	13.03
5-9	16.25	7.5	.16875	1.1838	19.24	19.77	23.40
10-14	14.23	12.5	.28125	1.3248	18.85	13.41	17.77
15-19	10.59	17.5	.39375	1.4826	15.90	10.23	15.17
20-29	16.36	25.0	.56250	1.7551	28.71	15.45	27.11
30-39	10.62	35.0	.78750	2.1979	23.34	10.23	22.48
40-49	7.62	45.0	1.01250	2.7525	20.97	7.43	19.45
50-59	3.96	55.0	1.23750	3.4460	13.65	5.06	17.47
60-69	2.52	65.0	1.46250	4.1368	10.44	2.61	10.80
70-79	1.02	75.0	1.68750	5.4060	5.51	.90	4.87
80+	.38	87.5	1.96875	7.1618	2.72	.39	2.79

$T_0=177.65$
$T_{10}=139.99$
$c(10)=3.48$
$_0e_{10}=40.23$

$T_0=176.70$
$T_{10}=137.91$
$c(10)=3.29$
$_0e_{10}=41.92$

Part 2. Net Migration by Survival Rates, Male

Ages	Census 1840	$_5S_x$	$_{10}S_x$	Est. 1850	Census 1850	Net	% Net
0-4	34852	.82685	.79119		32664		
5-9	32642	.95637	.92415		30533		
10-14	28585	.96581	.91979	27565	29235	+1670	+06.06
15	20872	.94944	.89155	30166	21769	-8397	-27.84
20	17845	.93903	.87768	26292	18244	-8048	-30.61
25	15018	.93467	.86306	18609	15538	-3071	-16.50
30	11712	.92338	.83703	15512	12873	-2639	-17.01
35	9621	.90648	.80383	12961	10618	-2343	-18.08
40	8587	.88676	.76539	9803	8977	- 826	-08.43
45	6720	.86313	.71653	7734	7053	- 681	-08.81
50	4595	.83015	.64751	6567	6140	- 421	-06.41
55	3354	.77999	.54821	4815	4483	- 332	-07.41
60	2976	.70285	.41956	4814	6761	+1947	+40.44
65	2086	.59694	.27940				
70	1462	.46808	.13605		2745		
75	587	.29066					
80+					1180		
Total 10-69				164838	141697	-23141	-14.04

Part 3. Net Migration by Survival Rates, Female

Ages	Census 1840	$_5S_x$	$_{10}S_x$	Est. 1850	Census 1850	Net	%Net
0-4	28204	.83383	.79407		33271		
5-9	38428	.95232	.91448		30117		
10-14	26035	.96027	.91001	22396	27642	+ 5246	+23.4
15	19885	.94766	.88654	35142	21080	-14062	-40.0
20	16368	.93550	.86674	23692	17160	- 6532	-27.5
25	13665	.92650	.85190	17629	14697	- 2932	-16.6
30	10895	.91948	.84079	14187	11584	- 2603	-18.3
35	8990	.91442	.83093	11641	9477	- 2164	-18.5
40	7856	.90870	.81034	9160	8457	- 703	-07.6
45	6388	.89176	.76063	7470	6863	- 607	-08.1
50	5576	.85295	.67233	5766	5447	- 319	-05.5
55	4259	.78824	.54818	4858	4109	- 749	-15.4
60	3119	.69545	.40221	5953	6860	+ 907	+15.2
65	1954	.57835	.25615				
70	1329	.44289	.12318		2933		
75	420	.27812					
80+	758				1529		
Total 10-69				157894	133376	-24518	-15.5

TABLE IV: STABLE POPULATION DETERMINATION OF NET MIGRATION, 1850-1860

Part 1. Trial Life Table (Assumed r=2.00)

Ages	Males					Females	
	c(a)	a	ra	e^{ra}	$c(a)e^{ra}$	c(a)	$c(a)e^{ra}$
0	2.19	.5	.0100	1.0101	2.21	2.44	2.46
1-4	13.55	3.0	.0600	1.0618	14.39	14.16	14.94
5-9	14.73	7.5	.1500	1.1618	17.11	15.03	17.46
10-14	14.11	12.5	.2500	1.2840	18.11	13.81	17.71
15-19	10.50	17.5	.3500	1.4191	14.90	10.53	14.94
20-29	16.24	25.0	.5000	1.6487	26.77	15.91	26.23
30-39	10.56	35.0	.7000	2.0138	21.27	10.53	21.21
40-49	7.72	45.0	.9000	2.4596	18.99	7.65	18.81
50-59	5.12	55.0	1.1000	3.0042	15.38	4.77	14.23
60-69	3.27	65.0	1.3000	3.6693	11.99	3.33	12.21
70-79	1.32	75.0	1.5000	4.4817	5.92	1.47	6.59
80+	.49	87.5	1.7500	5.7546	2.82	.75	4.22
		$T_0=169.86$				$T_0=171.01$	
		$T_{10}=136.15$				$T_{10}=136.15$	
		$c(10)=3.52$				$c(10)=3.52$	
		${}_0e_{10}=38.39$				${}_0e_{10}=38.39$	

Part 2. Net Migration by Survival Rates, Male

Ages	Census 1850	${}_5S_x$	${}_{10}S_x$	Est. 1860	Census 1860	Net	%Net
0-4	32664	.78452	.74409		30382		
5-9	30533	.94851	.91040		30968		
10-14	29235	.95982	.90287	24304	31278	+ 6974	+28.6
15	21769	.94076	.87545	27792	24324	- 3468	-12.5
20	18244	.92847	.85327	26395	19500	- 6895	-26.1
25	15538	.92331	.84027	19058	16412	- 2646	-13.9
30	12873	.91007	.81046	15567	12803	- 2764	-17.8
35	10618	.89055	.77343	13056	10688	- 2468	-18.9
40	8977	.86851	.73227	10433	9250	- 1183	-11.3
45	7053	.84314	.68148	8212	7267	- 945	-11.5
50	6140	.80826	.60998	6554	6134	- 420	-06.4
55	4483	.75468	.50699	4824	4478	- 338	-07.0
60		.67179		} 6018	} 7590	} +1572	} +26.1
65		.55936					
70		.42600					
75		.26692					
80+	1180				988		
Total 10-69				162213	149730	-12483	-07.7

Part 3. Net Migration by Survival Rates, Female

Ages	Census 1850	$_5S_x$	$_{10}S_x$	Est. 1860	Census 1860	Net	%Net
0-4	33271	.79507	.74958		34480		
5-9	30117	.94279	.89819		30255		
10-14	27642	.95269	.89345	24939	28875	+ 3936	+15.8
15	21080	.93782	.86596	27051	23666	- 3385	-12.5
20	17160	.92338	.84279	24697	17667	- 7030	-28.4
25	14697	.91272	.82566	18256	14749	- 3507	-19.2
30	11584	.90461	.81313	14121	12463	- 1658	-11.7
35	9477	.89887	.80295	12466	10238	- 2228	-17.9
40	8457	.89329	.78133	9419	8558	- 861	-09.1
45	6863	.87467	.72652	7610	6918	- 692	-09.1
50	5447	.83062	.62907	6598	5624	- 974	-14.8
55	4109	.75735	.49535	4996	4242	- 754	-15.1
60		.65406	.34490	} 5462	} 6637	+ 1175	+21.5
65		.52732					
70		.38597			} 2705		
75		.24369					
80+	1429				1367		
Total 10-69				155615	139637	-15978	+10.3

Source of the population data: *Fifth Census, or Enumeration of the Inhabitants of the United States, 1830* (Washington: Duff Green, 1832), pp. 84-5; *Sixth Census or Enumeration of the Inhabitants of the United States* (Washington: Blair and Rives, 1841), p. 210; J. D. S. DeBow, *The Seventh Census of the United States: 1850* (Washington: Robert Armstrong, 1853), pp. 252-55; Joseph C. G. Kennedy, *Population of the United States in 1860* (Washington: Government Printing Office, 1864), pp. 508-13.

Source of the life table data: Ansley J. Coale and Paul Demeny, *Regional Model Life Tables and Stable Populations* (Princeton: Princeton University Press, 1966).