

Cognitive Human Capital and Wealth Accumulation of Former Slaves

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The past is not dead. In fact, it's not even past.

William Faulkner

Motivation

- Legacy of slavery
 - Du Bois
 - Myrdal
 - Moynihan (Glazier)
 - Fogel and Engerman; Gutman
- Human capital
 - Education and training
 - Smith; Mincer; Schultz; and Becker
 - Health
 - Grossman
 - Cognitive ability, personality
 - INCAP studies: Chavez and Martinez; Hoddinott et. al.
 - NCDS: Case and Paxson; Schick and Steckel
 - Currie; Almond

Outline

- Consider four empirical findings
 - Sharp growth in wealth owned by southern blacks beginning in 1890s
 - Jump in literacy rates for black cohorts born immediately after the CW
 - Child mortality rates
 - Under slavery, double those of whites
 - Nearly converged to white rates by 1900
 - Slave children were exceptionally short but adults remarkably tall
 - Why the pattern of growth depression and recovery?
- These phenomena were interconnected
 - Early childhood nutrition, cognition and economic achievement
- Potential implications
 - Economics of slavery
 - Birth cohort patterns of wealth accumulation
 - The rise of Jim Crow and violence against southern blacks

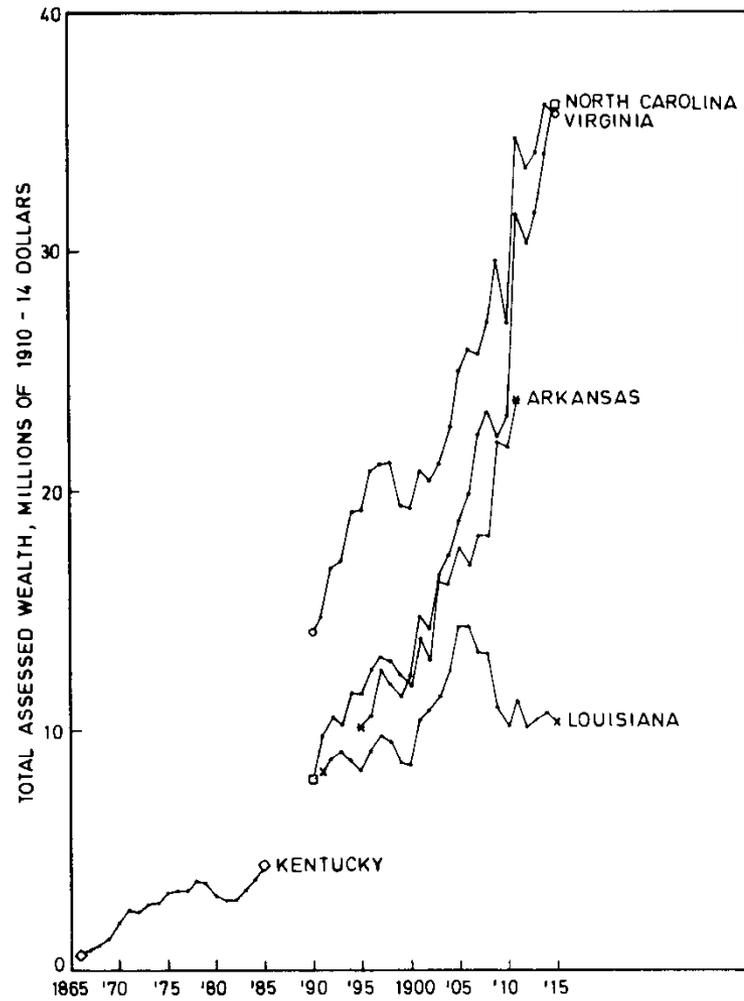


FIGURE 1. TOTAL ASSESSED VALUE OF BLACK WEALTH:
 NORTH CAROLINA; VIRGINIA; ARKANSAS;
 LOUISIANA; KENTUCKY

Literacy Rate of Blacks in Four Southern States, 1900*

Birth Cohort	Men		Women		Men and Women	
	%	N	%	N	%	N
1850-54	35.43	3,387	11.69	3,318	23.68	6,705
1855-59	45.46	2,554	19.81	2,806	32.03	5,360
1860-64	50.31	4,365	25.96	4,769	37.58	9,124
1865-69	54.44	4,390	37.24	4,646	45.60	9,036
1870-74	55.18	6,638	45.55	7,067	50.22	13,705
1875-79	55.42	9,153	53.30	10,055	54.31	19,208
1880-84	51.24	9,980	60.26	11,351	56.04	21,331
1885-89	38.67	11,490	50.04	11,144	44.22	22,634

* South Carolina, Georgia, Alabama and Mississippi

Source: IPUMS. N = 3,387

Plantation Demographic Records: Births on the Hammond Plantation (SC)

470

Births

1856				1857			
January	27	Abram	Selvy & Charles C.	May	11	Martha	Henry & Berley B
March	16	+ Pompey	Jane B & Pompey B	13	Austen	Betsy & Harry "	
"	"	+ Martha	oo oo (Swins) "	18	Billy	Maggie & Cyrus "	
"	10	Daniel	Filby & Daniel B	June	4	Nelen	Selvy & Charles C
May	11	+ Rolando	Juliana & Arthur B	9	Peter	Sybil & Wallace "	
"	14	Edward	Maggie & Cyrus "	Aug	13	Silthor	Filby & Daniel B
June	6	Elias	Georgina & Robert C	29	+ Albert	Georgiana C	
July	1	+ Wiley	Cudry & Robert B	Sept	12	Suey	Laurie & Robert B
"	5	+ Rena	Lindy & Pompey C	13	+ Miedred	Sip & Wallace "	
Aug	6	+ Frazer	Jenny Seabrook B	Oct	24	Lizzie	Hager & Simons C
"	9	+ Suey	Alice & Thomas C	Nov	13	Sala	Suey & Pompey C
Sept	9	Sam	Sibby & Wallace C	Dec	23	+ Maria	Ephraim & Rebecca B
Nov	27	Noah	Laurie & Seel "	1859.			
Dec	23	+ Cloisa	Sarah Lang C	Jan	27	Willie	Amy C
"	29	+ Goodwin	Amy C	Mar	7	Nelan	Jane & Molly C
				"	11	Pink	Billy R. & Peter C
				Feb	6	Anthony	Alice & Anna Betty B

1857

Mortality Rates by Age

Table 1 Mortality rates per thousand for slaves and the antebellum population

Age	Slaves	Entire United States
0	350	179
1-4	201	93
5-9	54	28
10-14	37	19
15-19	35	28
20-24	40	39

Sources: Age 0, slaves, see Notes 5 and 17; slaves aged 1 and above, Steckel (1979b: 92); United States, Haines and Avery (1980: 88), average of Model West and logit tables.

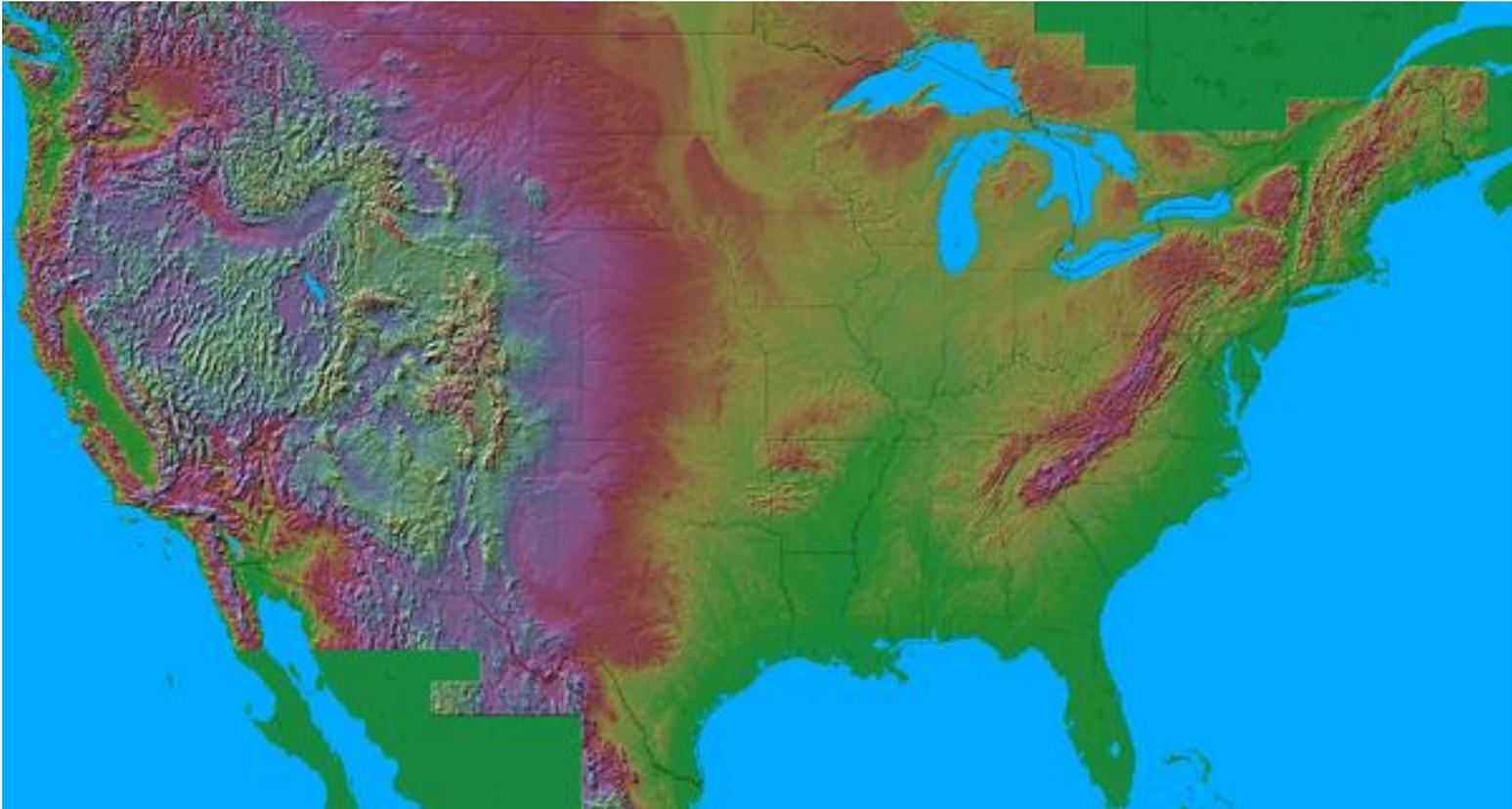
Infant Mortality in 1900

White		Black	
Rate	Group	Rate	Group
0.120	national	0.170	national

Sources: Haines (1998)

When did rates begin to converge?

U.S. Relief Map



A Slave Manifest

Manifest of Slaves on board the *S. Boat Lady* of the *Lake* of
 burthen _____ tons, whereof *water* _____ is at
 present Master, bound from the Port of *Mobile* to the Port of *New Orleans*

NAMES.	SEX.	AGE.	STATURE.		CLASS.	SHIPPERS' OR OWNERS.	RESIDENCE.
			FEET.	INCHES.			
<i>Sam</i>	<i>male</i>	<i>25</i>	<i>5</i>	<i>4</i>	<i>Dark</i>	<i>W. G. G. G.</i>	<i>Sam</i>
<i>Phie</i>	<i>ag</i>	<i>18</i>	<i>5</i>	<i>6</i>	<i>do</i>		
<i>B. Isaac</i>	<i>ag</i>	<i>27</i>	<i>5</i>	<i>6 3/4</i>	<i>do</i>		
<i>Tom</i>	<i>do</i>	<i>52</i>	<i>5</i>	<i>5</i>	<i>do</i>		
<i>Toby</i>	<i>do</i>	<i>58</i>	<i>5</i>	<i>5</i>	<i>do</i>		
<i>Jack</i>	<i>do</i>	<i>60</i>	<i>5</i>	<i>3 1/2</i>	<i>do</i>		
<i>Subter</i>	<i>do</i>	<i>28</i>	<i>5</i>	<i>9 1/4</i>	<i>do</i>		
<i>B. Isaac</i>	<i>do</i>	<i>28</i>	<i>5</i>	<i>9 3/4</i>	<i>Mentor</i>		
<i>Cain</i>	<i>do</i>	<i>28</i>	<i>5</i>	<i>7</i>	<i>Dark</i>		
<i>Jammy</i>	<i>do</i>	<i>40</i>	<i>5</i>	<i>6</i>	<i>do</i>		
<i>Narrow</i>	<i>do</i>	<i>20</i>	<i>5</i>	<i>3 1/4</i>	<i>do</i>		
<i>L. Tom</i>	<i>do</i>	<i>20</i>	<i>5</i>	<i>6</i>	<i>do</i>		
<i>Dave</i>	<i>do</i>	<i>28</i>	<i>5</i>	<i>10 1/4</i>	<i>do</i>		
<i>March</i>	<i>do</i>	<i>17</i>	<i>5</i>	<i>5</i>	<i>do</i>		
<i>Jacob</i>	<i>do</i>	<i>17</i>	<i>5</i>	<i>5</i>	<i>do</i>		

DISTRICT OF MOBILE—PORT OF MOBILE.

The 30 day of January, 1840
The owner _____ of the Slave^s named and particularly described
in the within MANIFEST, and the _____ master of the Lady
of the Lane do solemnly, sincerely and truly swear, according to the
best of our knowledge and belief, that the person above described was not
imported into the United States since the first day of January, 1808—and that, under
the laws of the State, and _____ held to service and labor.
DISTRICT OF MOBILE. SO HELP ME GOD.

PORT OF MOBILE, the 30 day of Jan 1840
I P. J. Fox by _____ Collector of the District of Mobile, do hereby
Certify, that the within is a true copy of the original Manifest or List of Slaves left
on file in this office; and I do hereby further certify, that the _____ of
said Slave and the _____ master of the Lady of the Lane
have this day made oath in manner directed in the ninth section of the Act of Con-
gress, passed the second day of March, 1807, prohibiting the importation of Slaves
into the United States. I do hereby authorize the said Master to proceed with the
said Slave named as within, and being 44 in number, to the Port of New Orleans

GIVEN under my hand at the Custom House, Mobile, the day above written.

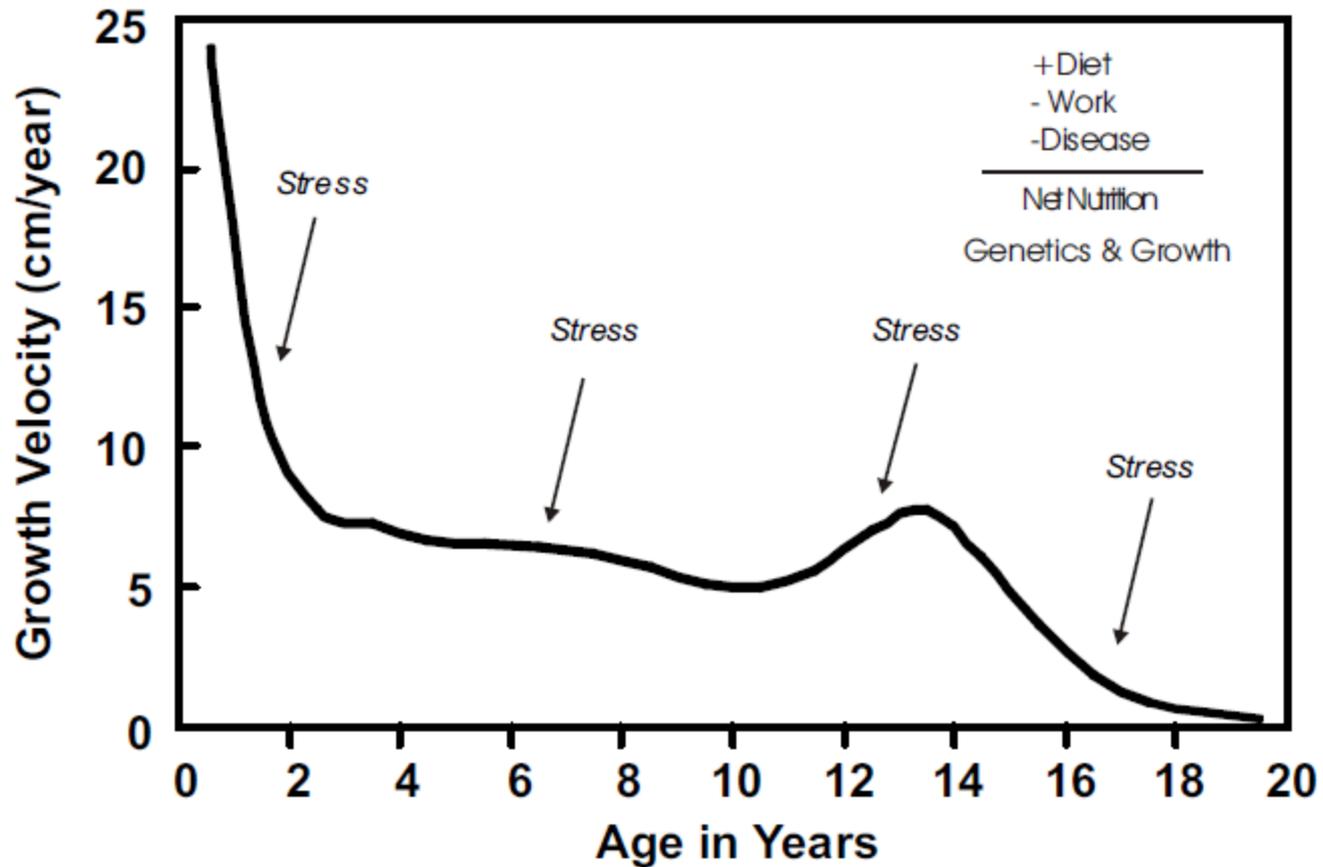
Jan 30

Wm. B. Fox

Number of Slaves Shipped by Time Period

Year	Number	Percent
1815-19	2,233	1.55
1820-24	11,705	8.11
1825-29	19,100	13.24
1830-34	13,106	9.09
1835-39	18,677	12.95
1840-44	17,053	11.82
1845-49	23,367	16.20
1850-54	23,420	16.24
1855-59	14,324	9.93
1860	1,268	0.88
1815-1860	144,253	100.00

Growth under Good Conditions



HEIGHTS OF MALE SLAVES BY AGE COMPARED TO MODERN AMERICAN HEIGHT STANDARDS

Age	Slaves (1800-1865)			Modern Height Standards		Standard Deviations Below	Slave Height as a Percentile of Modern
	Standard		N	Adjusted Standard			
	Mean	Deviation		Mean	Deviations		
4	36.85	5.77	445	41.97	1.74	2.94	0.16%
5	39.04	5.52	410	44.53	1.84	2.98	0.14%
6	41.39	5.16	437	46.85	1.93	2.83	0.23%
7	44.32	5.06	432	48.98	2.03	2.30	1.07%
8	45.54	4.95	594	51.02	2.12	2.58	0.49%
9	48.61	5.15	606	53.07	2.27	1.96	2.50%
10	50.29	5.35	1068	55.24	2.47	2.00	2.28%
11	52.24	4.23	825	57.64	2.75	1.96	2.50%
12	53.71	4.38	1514	60.24	3.10	2.11	1.74%
13	55.27	4.09	1104	62.95	3.35	2.29	1.10%
14	57.25	4.05	1614	65.43	3.31	2.47	0.68%
15	59.94	4.19	1241	67.52	3.01	2.52	0.59%
16	62.39	3.45	1576	68.98	2.69	2.45	0.71%
17	64.17	3.07	1740	69.57	2.54	2.13	1.66%
18	65.19	2.84	3064	69.61	2.55	1.73	4.18%
19	66.06	3.00	2598	69.61	2.55	1.39	8.23%
20	66.39	2.76	3987	69.61	2.55	1.26	10.38%
21	67.02	2.62	2774	69.61	2.55	1.02	15.39%
22	66.97	2.72	3722	69.61	2.55	1.04	14.92%
23-49	67.10	2.74	####	69.61	2.55	0.98	16.35%

HEIGHTS OF FEMALE SLAVES BY AGE COMPARED TO MODERN AMERICAN HEIGHT

Age	Slaves (1800-1865)			Modern Height Standards		Standard Deviations Below	Slave Height as a Percentile of Modern
	Mean	Standard Deviation	N	Mean	Adjusted Standard Deviations		
4	36.67	5.33	428	41.34	1.61	2.90	0.19%
5	39.32	4.66	444	43.94	1.81	2.55	0.54%
6	41.39	5.58	527	46.30	2.03	2.42	0.78%
7	43.48	4.94	499	48.62	2.26	2.27	1.16%
8	45.69	5.03	678	50.91	2.47	2.11	1.74%
9	48.24	4.78	717	53.23	2.66	1.88	3.01%
10	49.86	5.44	1034	55.71	2.75	2.13	1.66%
11	51.92	4.45	907	58.35	2.75	2.34	0.96%
12	53.58	4.32	1379	60.87	2.69	2.71	0.34%
13	55.89	3.87	1252	62.60	2.66	2.52	0.59%
14	57.90	3.77	1646	63.46	2.66	2.09	1.83%
15	60.11	3.40	1784	63.82	2.66	1.39	8.23%
16	61.39	3.18	2578	64.06	2.55	1.05	14.69%
17	62.20	2.89	2121	64.33	2.38	0.89	18.67%
18	62.52	2.98	3221	64.45	2.00	0.97	16.60%
19	62.83	3.10	1499	64.45	2.30	0.70	24.20%
20	62.71	3.08	1532	64.45	2.30	0.76	22.36%
21	62.99	3.09	808	64.45	2.30	0.63	26.43%
22	62.92	2.87	808	64.45	2.30	0.67	25.14%
23-49	63.16	3.05	####	64.45	2.30	0.56	28.77%

Was the Catch-up Growth Genuine?: Possible Biases

- Selective mortality
- Selective purchases by slave traders
- Regional mixture of slaves with different age-height profiles
- Was it biologically possible?

Why Were Young Slave Children so Small?

1. Pronounced Seasonal Patterns of Early Infant Mortality

Table 3 The probability of death within one calendar month of birth by month of birth and data source^a

Month of birth	Rate > .30	All plantations
January	0.116	0.179
February	0.221	0.471
March	0.692	0.488
April	0.335	0.375
May and June	0.197	0.222
July and August	0.054	0.154
September	0.464	0.310
October	0.342	0.220
November	0.380	0.351
December	0.265	0.230

Source: Calculated from Table 2.

^a Probability per month of 30.4 days.

2. Seasonal Fevers

Table 5 Mortality and discharges for fevers in New Orleans by month in 1850

Month	Mortality ^a (Percent)	Discharges ^b (Percent)
January	6.3	9.4
February	4.0	3.8
March	4.7	0.9
April	3.0	2.1
May	3.4	3.4
June	4.3	3.8
July	8.4	6.8
August	29.6	14.5
September	19.1	17.1
October	7.2	18.4
November	4.7	13.7
December	5.2	6.0
Total	99.9	99.9
N	920	234

Source: Editor (1851: 81) and McKelvey (1851: 292).

^a New Orleans Charity Hospital.

^b United States Marine Hospital.

3. Cotton Picking Rates Relative to Delivery

Table 4 Daily cotton picking rates before and after birth

Time period	Rate (lbs.) ^a	Percent
9-12 weeks before	73.2	83.4
5-8 weeks before	69.2	78.8
1-4 weeks before	67.0	76.3
Week of birth and week after	31.3	35.6
2-3 weeks after	8.6	9.8
4-7 weeks after	58.9	67.1
8-11 weeks after	80.6	91.8
Other weeks	87.8	100.0

Source: Calculated from Metzger (1974: 27-28).

^a Assumes the woman was 25 years old.

4. Growth after Infancy

- Food: often prepared in central kitchens
 - Typical daily ration for working hands:
 - 0.5 lbs. pork, 1 peck cornmeal, fruit & veg in season
 - Slave gardens, chickens
 - Children not mentioned or received “proportionally less”
- Disease
 - Declining mortality rates after age 5
 - Reduction of hookworm?
- Work
 - Children began systematic field work around age 10

Diet as an Investment

- Meat was the most expensive component of the diet
- Assume various levels of protein deficiency in childhood
- Estimate protein content of pork & cost of pork
- Value of slaves per inch of height ($\uparrow 1.4\%$)
- Calculate rate of return

Returns Under Various Protein Deficiency Levels, Mortality Rates at 50%

Protein Deficiency (%)	Plantation Records	West, level 4
10	14.845	14.366
15	10.829	10.372
20	8.133	7.690
25	6.123	5.690
30	4.530	4.106
35	3.217	2.800
40	2.104	1.691
45	1.139	0.731
50	0.290	-0.114
55	-0.468	-0.869
60	-1.151	-1.549
65	-1.773	-2.168
70	-2.343	-2.735
75	-2.868	-3.258
80	-3.355	-3.743

16 g, ages 1-3; 20g, ages 4-6; 25g ages 7-9

A Contemporary View of Diet and Supervision Costs of Children

- *Oliver Twist*, Dickens (1838), after Oliver attacked Noah Claypole for insulting his mother.
- "Meat, ma'am, meat," replied Bumble, with stern emphasis. "You've over-fed him, ma'am. You've raised a artificial soul and spirit in him, ma'am, unbecoming a person of his condition: as the board, Mrs. Sowerberry, who are practical philosophers, will tell you. What have paupers to do with soul or spirit? It's quite enough that we let 'em have live bodies. If you had kept the boy on gruel, ma'am, this would never have happened."

Implications for Wealth Accumulation

- Growth depression and recovery was profitable
- Owners followed price signals to modify net nutrition
- If stunting was due to profit maximizing behavior, the end of slavery should have alleviated poor net nutrition of children
- Early childhood nutrition and cognitive development

Alleviation:

1. Large Decline in Hours Worked by Women

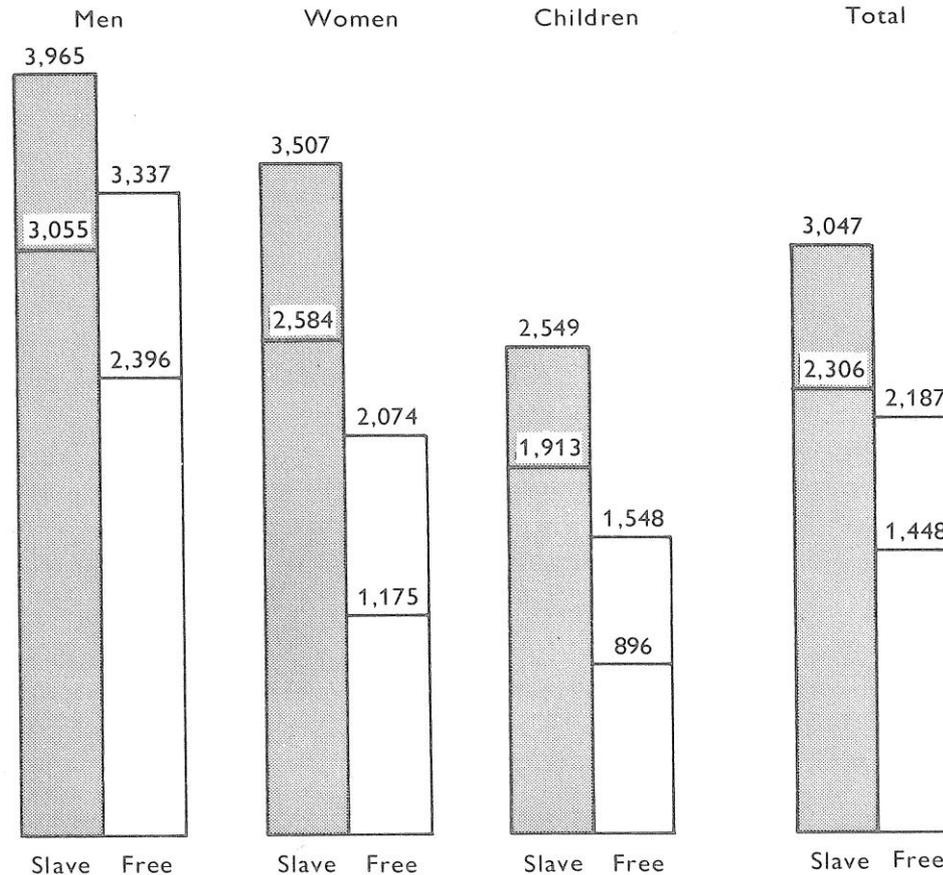


Figure 3.1 Maximum and minimum estimates of the number of hours worked per year by the black population over ten; as slaves in 1850s and freedmen in 1870s. Total presented is the male-equivalent hours supplied per person ten years old or older. (Source: Appendix C, Table C.1.)

Alleviation:

2. Survival Rates Children, 1870-1880

Page No. _____ }

Inquiries numbered 7, 16, and 17 are not to be

SCHEDULE 1.—Inhabitants in _____

of _____, enumerated by me on the _____

Post Office: _____

1	2	3	DESCRIPTION.			7
			4	5	6	
Dwelling-houses, numbered in the order of visitation.	Families, numbered in the order of visitation.	The name of every person whose place of abode on the first day of June, 1870, was in this family.	Age at last birth-day. If under 1 year, give months in fractions, thus, $\frac{1}{2}$.	Sex—Males (M.), Females (F.)	Color—White (W.), Black (B.), Mulatto (M.), Chinese (C.), Indian (I.)	Profession, Occupation, or Trade of each person, male or female.
1						
2						
3						

1870 form (con't)

asked in respect to infants. Inquiries numbered 11, 12, 15, 16, 17, 19, and 20 are to be answered (if at all) merely by an affirmative mark, as /.

_____, in the County of _____, State
 ____ day of _____, 1870.

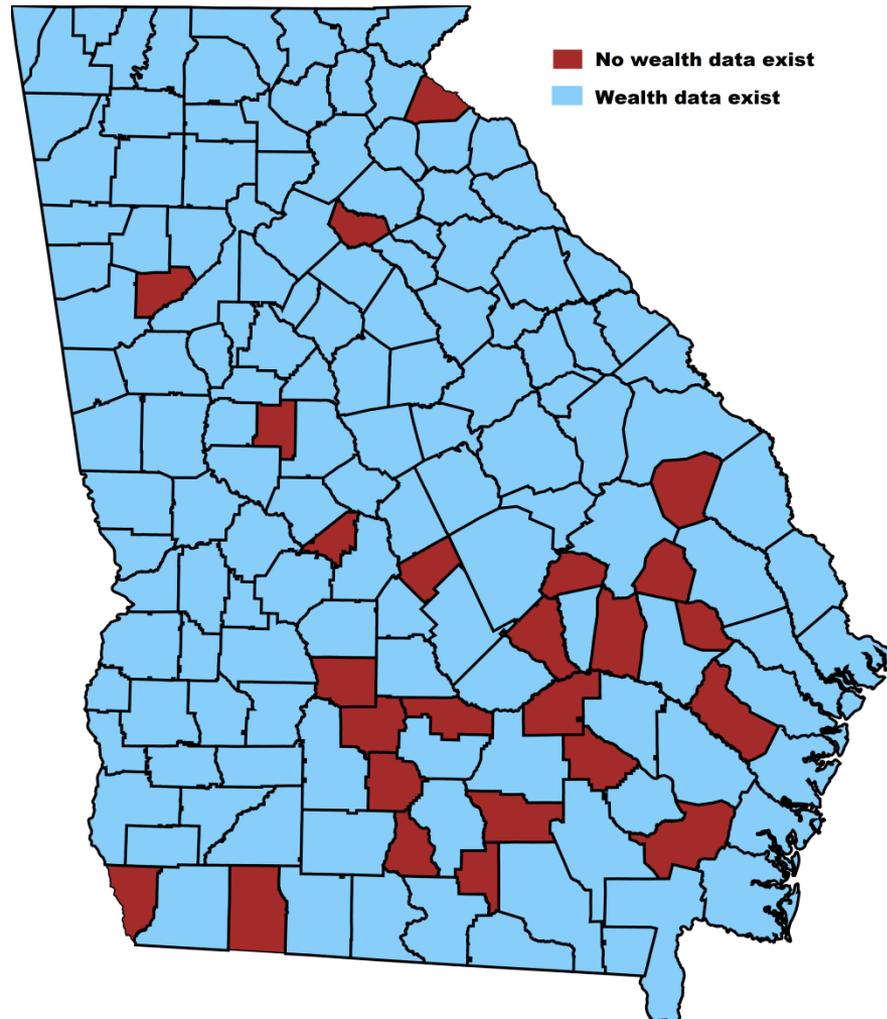
_____, *Ass't Marshal.*

VALUE OF REAL ESTATE OWNED.		Place of Birth, naming State or Territory of U. S.; or the Country, if of foreign birth.	PARENTAGE.		If born within the year, state month (Jan., Feb., &c.)	If married within the year, state month (Jan., Feb., &c.)	Attended school within the year.	EDUCATION.		Whether deaf and dumb, blind, insane, or idiotic.	CONSTITUTIONAL RELATIONS.	
Value of Real Estate.	Value of Personal Estate.		Father of foreign birth.	Mother of foreign birth.				Cannot read.	Cannot write.		Male Citizens of U. S. of 21 years of age and upwards.	Male Citizens of U. S. of 21 years of age and upwards, whose right to vote is denied or abridged on other grounds than rebellion or other crime.
8	9	10	11	12	13	14	15	16	17	18	19	20

1
2
3

Testing the Cognitive Change Hypothesis:

1. Georgia Counties with Wealth Records



Census manuscript schedule, 1900

State

County

Township or other division of county [Insert name]

Name of incorporated city, town, or village, within the

Enumerated by

LOCATION.				NAME of each person whose place of abode on June 1, 1900, was in this family. Enter surname first, then the given name and middle initial, if any. INCLUDE every person living on June 1, 1900. OMIT children born since June 1, 1900.	RELATION.
IN CITIES.		Number of dwelling- house, in the order of visitation.	Number of family, in the order of visitation.		Relationship of each person to the head of the family.
Street.	House number.			1	
1					
2					

Use Georgia Records

- 2,500 black, white male heads matched in 1900 and in 1910
- Match names with tax lists maintained by the county
 - Assume no taxable wealth if not found in tax records

Estimation

- Explain wealth holdings in 1900 and 1910 (and change in wealth):
 - S, B = black born before (after) 1865; A = Age; L = literate
 - H, C = household and county characteristics; t = year
 - $\ln W_{it} = \beta_0 + \beta_1 B_i + \beta_2 S_i + \beta_3 A_i + \beta_4 A_i^2 + \beta_5 A_i B_i + \beta_6 A_i^2 B_i + \beta_7 A_i S_i + \beta_8 A_i^2 S_i + \beta_9 L_i + \beta_{10} L_i B_i + \beta_{11} L_i S_i + \beta_{12} t + \alpha_1 H_i + \alpha_2 C_k + \epsilon_i$
- If the cognitive deficit hypothesis is correct then:
- Post CW-born blacks would have owned more wealth ($\beta_1 B_i + \beta_5 A_i B_i + \beta_6 A_i^2 B_i > \beta_2 S_i + \beta_8 A_i S_i + \beta_9 A_i^2 S_i$), their age-wealth profile would have been steeper ($\beta_5 B_i + 2\beta_6 B_i > \beta_7 S_i + 2\beta_8 A_i S_i$), and the benefits of literacy would have been greater ($\beta_{10} L_i B_i > \beta_{11} L_i S_i$)

Explaining the log of wealth

Variable	β_i	Coefficient	t	P> t	Sample Mean
black_born_after_1865	1	2.4452	0.57	0.566	0.158829
black_born_pre_1865	2	-9.5991	-2.17	0.030	0.159716
age	3	0.0800	2.27	0.023	39.86868
age_squared	4	-0.0005	-1.27	0.205	1764.453
age_black_after	5	-0.2425	-0.88	0.381	4.713398
age_square_black_after	6	0.0045	1.02	0.310	145.1003
age_black_pre	7	0.3482	2.01	0.045	7.877551
age_square_black_pre	8	-0.0034	-2.04	0.042	403.0665
literate	9	0.5216	1.64	0.101	0.786158
lit_black_after	10	-0.1453	-0.31	0.755	0.094055
lit_black_pre	11	-0.2660	-0.56	0.578	0.060337
year_1910		1.0386	5.93	0.000	0.2937
black_1910		0.0079	0.02	0.983	0.068323
farmer		0.6714	3.97	0.000	0.456965
farm_laborer		-0.5022	-1.85	0.065	0.09583
manager		0.5032	1.82	0.070	0.074534
housework		-0.4800	-1.59	0.112	0.066548
num_child_under_10		0.0143	0.29	0.771	1.252884
num_child_over_10		0.0168	0.41	0.684	1.420586
married		0.3666	1.95	0.051	0.800355
mountain_county		0.5487	3.18	0.001	0.321207
piedmont_county		0.6116	3.51	0.000	0.255546
_cons		0.5176	0.64	0.520	
N = 1127; F (22, 1104) = 16.39; R ² = 0.246					

Explaining $\ln(W_{it})$

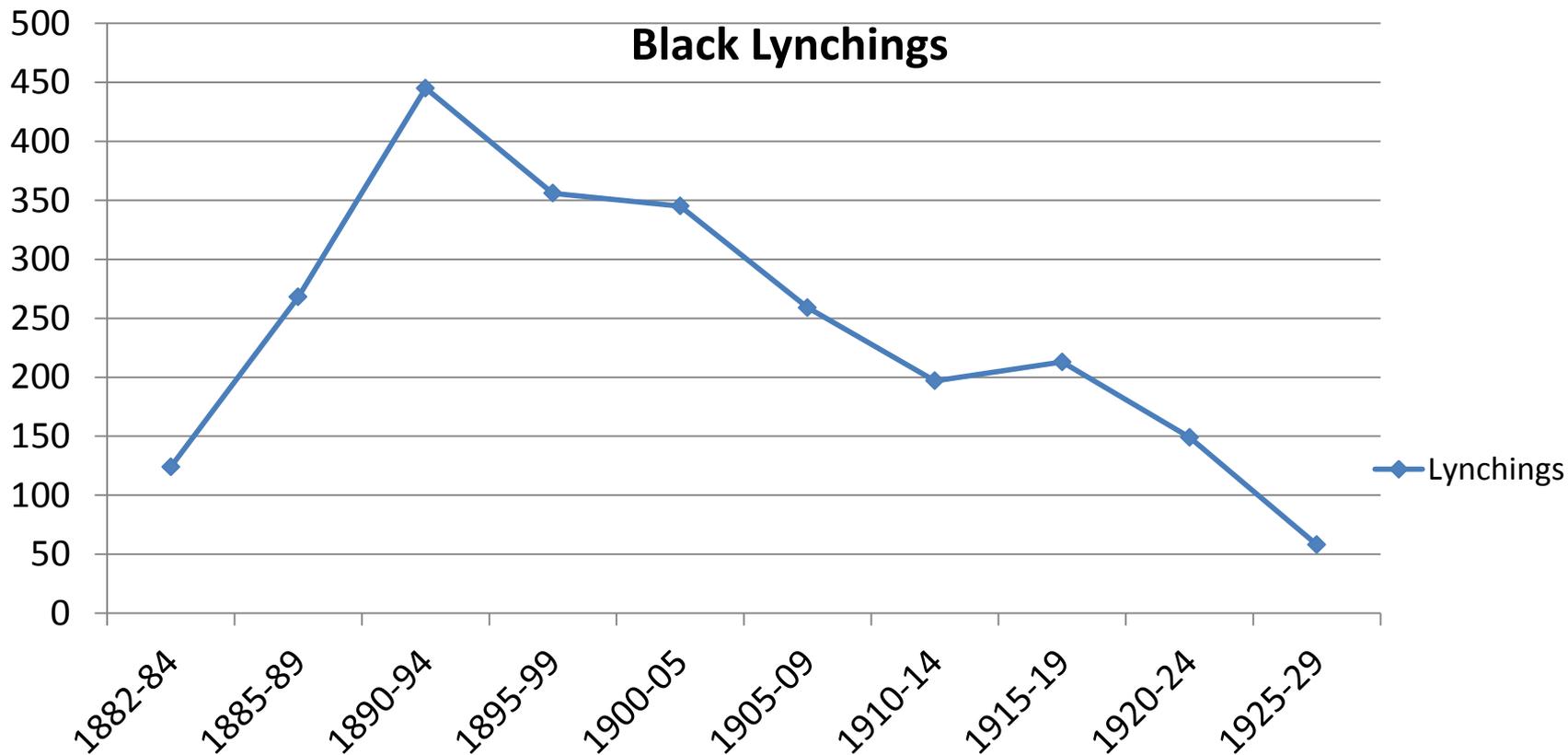
variable	B_i	Coeff	t	Mean
black_born_after_1865	1	2.44552	0.57	0.1588287
black_born_pre_1865	2	-9.599132	-2.17	0.1597161
age	3	.0799521	2.27	39.86868
age_squared	4	-.0004823	-1.27	1764.453
age_black_after	5	-.2424816	-0.88	4.713398
age_square_black_after	6	.0045017	1.02	145.1003
age_black_pre	7	.3482354	2.01	7.877551
age_square_black_pre	8	-.0033929	-2.04	403.0665
literate	9	.5216343	1.64	0.7861579
lit_black_after	10	-.1453005	-0.31	0.094055
lit_black_pre	11	-.2660073	-0.56	0.0603372

Expected Value of Wealth (\$)

Birth cohort	Age 30	Age 35	Age 40
Pre 1865	5.87	14.17	28.19
1865+	27.63	45.27	90.68

Possible Implications

- Blacks born after the CW came of age in the late 1800s
- This generation was more capable and demanding
- Repression: response of southern whites
 - Jim Crow
 - Lynchings
 - KKK activity



Source: Project HAL (Historical American Lynching)