Was Your Service Job As Good As Your Father's?
Developing a Time Varying Occupational Prestige Index

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Introduction

Income inequality in the United States has been on the rise over the past several decades. The Census Bureau began using the Gini Index in the late 1940s as a means of studying the distribution of incomes. While there was an initial decline in income inequality between 1940 and 1968, the trend reversed itself by 1968 as income inequality increased substantially into the 21st Century. As the gap between the wealthiest and those at the bottom continues to widen, we must also examine changes in rates of social mobility, over the same period. To do this, researchers have developed several scales to measure occupational prestige. The Duncan Socioeconomic Index and the Occupational Income Score are two commonly used methods of ranking occupations.

Background

For each census year, the Census Bureau generates a unique three digit occupational coding system to categorize individuals based on the type of work that they perform. As is expected, different occupations can be found within each decade's occupational codes, as new professions arise and older ones become less common.

• The Duncan Socioeconomic Index measures occupational prestige based on average income and educational attainment levels

• The equation employs coefficients from an OLS Regression that assigns individuals a score ranging from

$$SEI = B_0 + B_1[Income] + B_2[Education]$$

• The Occupational Income Score assigns an individual a value based on the mean income for his/her occupation

$$OCCSCORE = mean\ [income]\ 1950's\ Occupation$$

• These methods allow researchers to apply a measure of SEI based on one variable – the individual's occupation

Problems

The Duncan Socioeconomic Index (SEI) and Occupational Income Score are constructed using the 1950's occupational codes

• A significant shift in Census Bureau occupational classifications took place in 1980 that makes it difficult to use either the Duncan index or the Occupational Income Score to compare periods before and after 1980
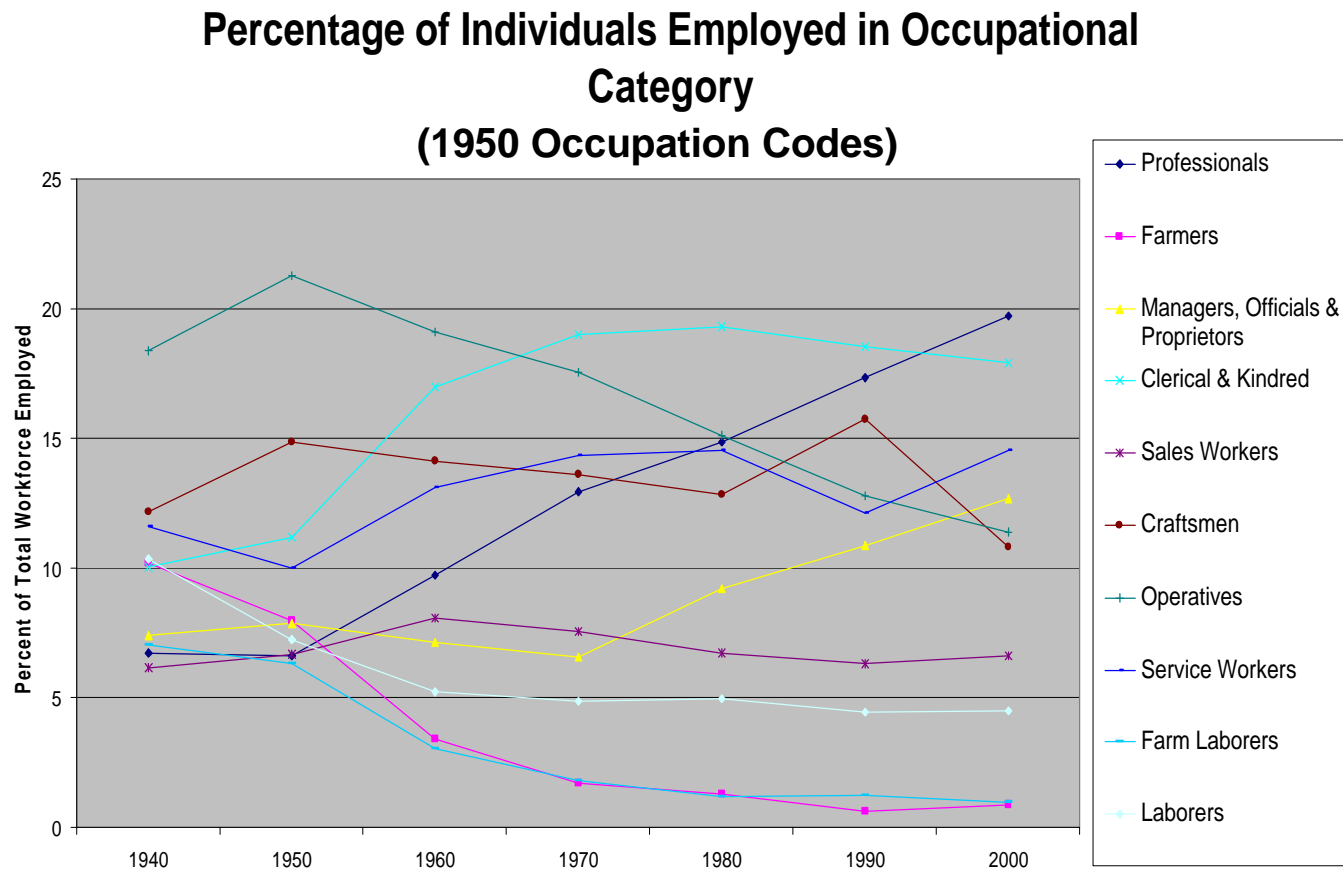
• The Duncan Socioeconomic Index (SEI) and Occupational Income Score are constructed using the 1950's occupational codes
• A significant shift in Census Bureau occupational classifications took place in 1980 that makes it difficult to use either the Duncan index or the Occupational Income Score to compare periods before and after 1980
• Between 1950 and 2000, mean occupational incomes changed

Mean Income by 1 Digit Occupational Category (1950 Occupation Codes)
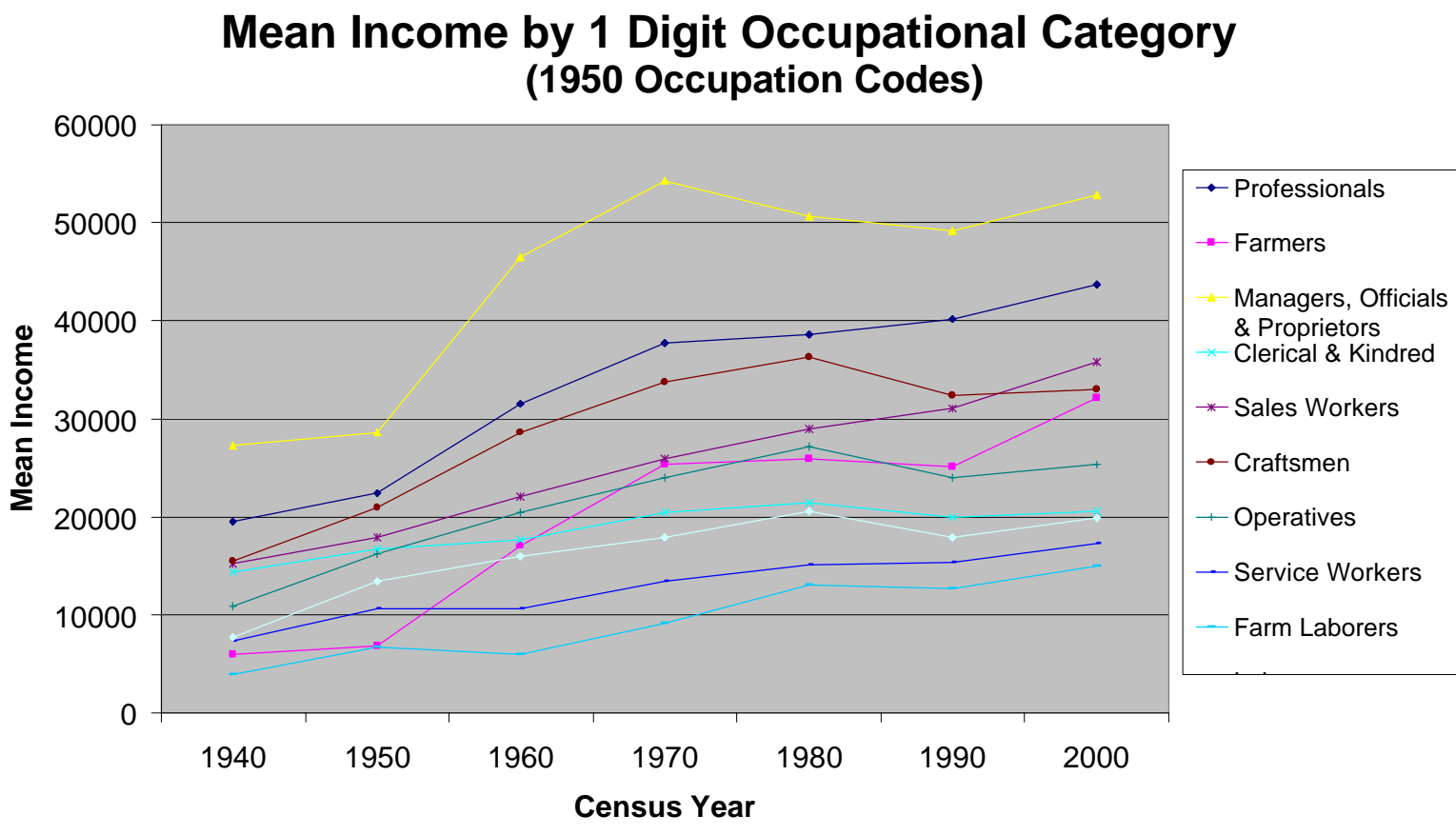
There is also a dramatic shift in the percent employed within each occupation

Percentage of Individuals Employed in Occupational Category (1950 Occupation Codes)

Data

Integrated Public Use Microdata Series (IPUMS-USA)

• 1% samples for each Census from 1950-2000 (1.9-2.8 million individuals)

General Social Survey (GSS)

• Annual personal interview survey of US households (1972-present)

• 38,000 respondents

Creating a Time Varying Index (OCCINC)

• GSS employs 1970's and 1980's occupational codes

• IPUMS date from 1950-2000 was transformed to 70's and 80's codes using Crosswalks by the US Bureau of Census

$$OCCINC = mean\ [income]\ for\ year$$

• Using GSS data, fathers OCCINC (PAOCCINC) is generated using the formula

$$PAOCCINC = OCCINC\ [occupation] -$$

for (year of Survey) - (age of Respondent) + 16

• Parents occupation in GSS is when respondent was 16 years old

Elasticity of Income

• Elasticity (B1) between father's and respondent's OCCINC

• 0 < B1 > 1

• As the elasticity approaches 1, the effect father's occupation on determining the respondents occupation increases

• ln (ROCCINC) = B0 + B1 ln (PAOCCINC) + U_i

• Traditional estimates place the elasticity between father and respondent's income between 0.2 and 0.6, with the average falling at 0.4

Elasticity of OCCINC for entire sample age 20-65 between 1972 and 2006

$$B_1 = 0.43$$

Individuals in peak earning years (30-45 years old)

$$B_1 = 0.53$$

Applications

Since the creation of the Duncan socioeconomic index, numerous social scientists have employed the SEI variable to understand trends in social mobility.

In a previous study conducted by Thomas Diprete, SEI was used to examine the linear and quadratic effects of fathers occupational prestige, race, and years of education on children's occupational prestige.

• Using our new time varying prestige index, we can replicate the same tests using the following model

$$Y_{ROCCINC} = B_0 + B_1PA + B_2RACE + B_3EDUC + B_4(PA*TIME) + B_5(RACE*TIME) +$$
$$B_6(EDUC*TIME) + B_7(PA*TIME^2) + B_8(RACE*TIME^2) + B_9(EDUC*TIME^2) +$$
$$B_{10}TIME + B_{11}TIME2 + U_i$$

• Race is a dummy variable (White=1/Non White=0)

• PA represents father's OCCINC

• EDUC is a continuous value for years of education (top coded at 17 years)

• Multiplying variables by time gives variables Linear Effect while multiplying by time square gives us the quadratic value

Regression Using Time Varying Index

Parameters	Intercept (1971)	Linear Effect	Quadratic Effect	Total Change	INFLECTION POINT
Male sample					
CONSTANT	10805.84* (2374.913)	-209.012 (343.779)	-16.193 (10.322)	-27151.8	1965
PAOCCINC	-.290* (.0397)	.0597* (.0051)	-.0017* (.00015)	0.007	1989
RACE	8249.19* (1527.95)	-557.349* (204.249)	12.336* (6.689)	-4395.62	1994
EDUC	1351.096* (170.269)	-64.854* (24.834)	3.91* (.7819)	2519.86	1979
Female sample					
CONSTANT	-2774.02 (2079.1)	-206.423 (292.709)	-4.047 (9.037)	-12182.4	1945
PAOCCINC	-.1959* (.0317)	.0403* (.0041)	-.0011* (.00012)	0.063	1989
RACE	1431.373 (1172.013)	-25.105 (154.005)	2.542 (4.525)	2232.475	1976
EDUC	1763.078* (156.083)	-59.48* (22.03)	2.639* (.612)	1453.725	1981

Regression Using Duncan SEI

Parameters	Intercept (1971)	Linear Effect	Quadratic Effect	INFLECTION POINT
Male sample				
CONSTANT	9.17* (2.526)	-.396 (.326)	.0065 (.0085)	2001
PASEI	-.0226 (.020)	.0257* (.003)	-.0006* (.00008)	1992
RACE	3.912* (1.872)	-.189 (.212)	.0045 (.0053)	1992
EDUC	2.038* (.188)	-.0362 (.024)	.0017* (.0006)	1982
Female sample				
CONSTANT	-3.007 (2.650)	-.181 (.3237)	.143 (.0083)	1977
PASEI	-.058* (.024)	.0324* (.0028)	-.00005* (.00007)	1990
RACE	2.598 (1.739)	.1229 (.1989)	-.0039 (.0047)	1987
EDUC	3.157* (.202)	-.0865* (.0245)	.0019* (.0006)	1994

Conclusion

Using a time varying occupational prestige index allows us to improve our ability to compare occupations across large periods of time. The time varying index produced similar results as the Duncan SEI with slightly higher explanatory values.