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Literacy and Occupation among Free People in the Antebellum United States

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Abstract:

This paper utilizes the 1 percent microdata sample from the 1860 United States Census of Population to examine the patterns of literacy among free adults and document its statistical association with labor market outcomes. Serving as an empirical application of human capital frameworks to a historical context, we evaluate the determinants of literacy and its effects on occupational choice and economic status – the latter proxied by the Integrated Public Use Microdata Series (IPUMS) Occupational Income Score. We model the conditional probability of being literate among free adults using logistic regression to capture how literacy varies across demographic characteristics, including gender, nativity, race, age cohorts, and regional proximity to the institutional structures of slavery. OLS regression models demonstrate a robust, positive relation between occupational income scores and literacy, an association that remains statistically significant when employing a predicted literacy framework to mitigate potential measurement error in reported literacy rates. Our procedure is likely to underestimate the economic value of literacy as it measures the benefits from literacy changing one's occupation, but it cannot measure the economic benefits from becoming literate within an occupation. Our findings indicate that even in the mid-nineteenth century an individual's human capital, as measured by literacy, was strongly tied to higher economic standing.

Keywords: Literacy, Human Capital, Occupational Status, Occupational Income Score, 1860 Census of Population, Antebellum United States, Labor Market Analysis, Unreported Family Workers, Immigrants

JEL codes: N31, J15, J62

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I. Introduction

During the first half of the nineteenth century, the United States underwent a profound educational transformation, shifting from decentralized, tuition-based private schooling toward the tax-supported, local government-regulated "common school." Spearheaded by reformers advocating for free, non-sectarian primary instruction, this movement fundamentally reordered the nation's human capital formation. As graded classrooms, standardized curricula, and institutionalized school terms took root, this systemic expansion directly accelerated literacy acquisition, yielding measurable gains across successive age cohorts entering the antebellum workforce. For historical investigations into the relationship between education and labor-market mobility, this period establishes a critical juncture where rising literacy rates began to reshape patterns of occupational attainment.

These developments were recognized by the statistical community at the time. The 1850 Census was the first census to include a measure of education for free adults; it asked those age 20 and over if they cannot read and write in any language (De Bow, 1854). This was also the first census to ask males age 15 and over their occupation, with the occupation question extended to include females in the 1860 Census. Consequently, the 1860 Census provides the earliest comprehensive federal baseline linking basic education (literacy) to labor market status for the entire free adult population.

Despite the rhetoric of universalism espoused by the common school reformers, access to and utilization of the common school were sharply mediated by region, gender, and nativity (Kaestle, 1983; Vinovskis, 1995). Geographically, public schooling flourished primarily in the North and, to some extent, the Western frontier, while the South lagged due to rural dispersion, cultural resistance to local public taxation, and an economy built on enslaved labor that legally suppressed Black literacy, even among free Blacks (Bertocchi & Dimico, 2014; Span, 2005). Within participating communities, primary enrollment achieved relative parity between young boys and girls, though advanced academic pathways remained heavily stratified in favor of boys. Furthermore, the dominant Protestant moral framework of common school curricula created intense friction with Catholic European immigrants navigating cultural assimilation,

thereby stimulating the emergence of a separate but parallel Catholic school system. African Americans – both free and enslaved – faced systemic exclusion from the public education system (Anderson, 1988; Beaubrun, 2020).

This paper positions itself at the intersection of human capital analysis and American economic history, proposing and testing empirical hypotheses initially formalized for late twentieth-century labor markets in the context of the mid-nineteenth century. By doing so, it extends the empirical robustness of Human Capital Theory. Utilizing the one-percent microdata sample from the 1860 United States Census of Population, this study evaluates the relationship among free adults between literacy – the sole proxy for educational attainment available for adults in these data – and labor market outcomes, as measured by occupational attainment.

Our analysis proceeds in two distinct stages. We begin with an econometric analysis of the micro-level factors related to literacy. We then examine how literacy is related to employment profiles, evaluating both broad occupational categories (e.g., professional, craftsman, farmer, and unreported family workers) and the continuous Occupational Income Score (OccInc) associated with detailed occupational codes. Crucially, these analyses explore deeply rooted historical stratifications by gender and nativity among the antebellum free population.

This investigation addresses a significant empirical gap in the economic history literature. While modern labor economics establishes a clear link between human capital and economic success, the standard metrics leveraged in late twentieth-century research – namely, formal years of graded schooling and direct earnings data – are entirely absent from mid-nineteenth-century federal enumerations. To overcome these data constraints, this paper examines the structural relationship between the available proxy measures: literacy as an index of human capital stock, and the Occupational Income Score as an index of material economic success.

While clear descriptive patterns emerge regarding which demographic cross-sections of nineteenth-century society were literate, this paper advances the literature by utilizing multivariate econometric models. Specifically, we generate a model of predicted literacy that controls for the intersectional realities of gender, race, and nativity, among other demographic factors. Furthermore, we assess the relationship between literacy and occupational attainment not only for adult men, but also for women, whose labor market contributions within family enterprises have historically been marginalized or overlooked in aggregate economic accounts. The findings demonstrate the robustness across time of human capital theory developed in the context of the late 20th century, expand our understanding of the development of skills and labor market outcomes in the antebellum period, and provide a scalable empirical methodology that can be applied to other historical epochs where detailed educational and wage data are unavailable.

II. Literature Review

The consensus within historical and economic literature focusing on the antebellum United States establishes a clear, positive trajectory between human capital accumulation – predominantly measured via basic literacy and early common schooling – and upward occupational mobility. Historians emphasize that early literacy reduced information asymmetries, facilitated entry into high-status commercial and professional sectors, and protected workers from macroeconomic volatility during an era of rapid commercialization, urbanization, and industrialization.[1] However, these structural benefits were far from uniform, exhibiting wide variations across gender, racial, nativity, and geographic lines.

Historically, researchers have quantified human capital in early censuses via indirect measures such as self-reported literacy or childhood school attendance. Soltow and Stevens (1981) demonstrate that the United States entered the nineteenth century with exceptionally high literacy rates relative to

[1] See, for example, Ferrie (1997), Murray (2004), Beaubrun (2020), and Althoff et al (2025). See also Schultz (1975) for a summary of studies on the positive economic effects of basic education for self-employed farmers in mid-20th century India.

European counterparts, asserting that the aggressive expansion of the "common school" movement fostered an adaptable, highly trainable labor force. Their work indicates that literacy served as a structural gatekeeper: high literacy rates opened paths to clerical, managerial, and artisanal crafts, whereas illiteracy remained heavily concentrated among manual laborers and low-status agricultural farmhands. Similarly, Murray's (2004) study using early nineteenth-century Southern data demonstrated that childhood literacy directly shaped adult occupational attainment, thereby enhancing labor market flexibility and economic mobility. Specifically, he found that literate children (i.e., those who could sign their names) were more likely to be placed into apprenticeships that would lead to better career outcomes than those available to children who had not achieved this basic level of literacy.

This human capital framework aligns with studies on historical occupational mobility. Ferrie (1997) establishes that nineteenth-century American society exhibited uniquely high rates of geographic and occupational mobility compared to contemporary Western European nations. While structural factors such as frontier land availability and westward migration patterns were undeniable drivers, it was individual education and literacy that ultimately allowed workers to successfully transition into more complex, higher-status mercantile and craft positions when these opportunities arose. Ferrie's (1997) research on a sample of recent immigrants and their labor market outcomes found a strong link between literacy and occupational mobility. According to Ferrie (1997, p. 320), "Literacy increased upward mobility… immigrants who arrived as farmers or unskilled workers and who could read or write were 30 percentage points more likely to move up after arrival than those who could not."

Ferrie's (1997) work underscores literacy as a critical determinant of economic assimilation for mid-nineteenth-century immigrants. Immigrants in the antebellum era often faced challenges when attempting to apply technical skills acquired abroad to the distinct realities of the American economy. Ferrie (1997) illustrates that literate immigrants achieved vastly superior occupational trajectories compared to their illiterate counterparts, though these outcomes were heavily mediated by country of origin. British and German immigrants typically arrived with higher baseline literacy rates and more

transferable technical skills, enabling them to secure craft, merchant, and managerial roles with relative speed. Conversely, a substantial proportion of the antebellum Irish influx, fleeing catastrophic famine conditions, lacked formal literacy or specialized trades, leaving them structurally trapped in low-wage, unskilled manual labor and domestic service sectors upon arrival and afterwards.[2] Literacy acted as a primary mechanism for reducing linguistic and institutional friction, allowing foreign-born workers to successfully navigate complex American labor contracts, commercial transactions, and localized employment markets.

For women, the labor market options provided by investments in their own human capital were significantly constrained by pervasive legal, social, and institutional barriers (Chiswick & Robinson, 2023; Lerner, 1992). Despite these hurdles, the expansion of common schools and female academies significantly expanded female literacy rates, providing an institutional pathway for women to enter non-manual fields (Lerner, 1992). While the vast majority of paid female labor remained relegated to domestic service and localized textile manufacturing or to unpaid household production, literacy altered the composition of the formalized female workforce (Chiswick & Robinson, 2023). Specifically, literate women disproportionately gained access to the rapidly professionalizing field of teaching – one of the few socially sanctioned, middle-class occupational sectors open to unmarried women prior to the American Civil War. Nevertheless, structural gender norms largely excluded women from formally participating in managerial, legal, and skilled artisan trades, meaning that while human capital elevated a woman's absolute occupational status, it did not eliminate vast systemic gender inequalities in the broader labor market (Chiswick & Robinson, 2023; Lerner, 1992).

Finally, the interaction between human capital and agricultural occupational attainment presents a nuanced dynamic. Traditional family farming relied far less on formal, institutionalized schooling than urban commercial or professional employment. Nonetheless, literacy retained profound operational value

[2] See Table A-4 in the Appendix for a demonstration of the relative lack of occupational mobility among Irish immigrants compared to others.

in rural environments; it facilitated modern farm management, enabled active participation in expanding regional mercantile networks, permitted accurate bookkeeping, and accelerated the adoption of scientifically advanced agricultural publications (Danbom, 1979; Olmstead & Rhode, 2008; Schultz, 1961, 1975). Literate farmers were also highly mobile, capable of liquidating agricultural capital to exploit urban commercial vacancies or secure optimal land holdings across western frontier regions (Ferrie, 1995). However, because agricultural advancement was driven heavily by physical land ownership and inheritance rather than scholastic training, the direct economic returns to literacy were consistently lower in rural agrarian communities than in rapidly growing urban-commercial centers (Galor & Moav, 2004).

III. Human Capital and the 1860 Census of Population

Conducted immediately prior to the outbreak of the American Civil War in 1861, the Eighth Census of the United States (enumerated primarily between June and October 1860) captured a total nationwide population of 31.4 million individuals. For this study of literacy and occupational attainment, the empirical framework relies on Schedule 1 (The Free Inhabitant Schedule), which details a free population of 27.4 million people. This paper utilizes the 1% sample of the 1860 Census of Population microdata, made available by the Minnesota Population Center (2025).

A persistent methodological barrier to testing human capital frameworks in the mid-nineteenth-century United States is the omission of modern educational variables in data sources. The federal census did not collect direct, continuous information regarding individual years of completed schooling or formalized educational credentials until the mid-twentieth century. Consequently, economic historians must rely on indirect, proxy variables recorded within the 1860 population schedule.

The primary metric of adult human capital in the 1860 Census is a binary literacy question. Federal census takers were explicitly instructed to identify and mark any individual over the age of twenty who “cannot read and write” and the instructions to enumerators clarify that “if the person can read and

write in a foreign language or in our own" they should not be marked as unable to read and write (US Office of the Census, 1860). This directive fundamentally yields a discrete, binary variable rather than a continuous distribution of educational attainment. Individuals are cleanly divided into literate or illiterate categories, masking all internal variation regarding functional reading or writing proficiency, specialized technical expertise, or advanced education. Moreover, it is not possible to determine if the absence of a mark on the literacy question is because the respondent *is* truly literate or because the question was not asked or because the respondent refused to answer. Despite these limitations, quantitative economic historians treat this binary indicator as the baseline operational measure of adult human capital stocks in the antebellum era (for example, Bleakley & Ferrie, 2016; Ferrie, 1997; Go & Lindert, 2010; Goldin, 2016).[3]

The 1860 Census explicitly instructed enumerators to record the "profession, occupation, or trade of each person, male and female, over 15 years of age" (US Office of the Census, 1860). However, systemic cultural biases and social stigmas surrounding formalized female labor market activities caused enumerators to leave 78 percent of working-age female entries blank, compared to just 11 percent for males. Consequently, official reports recorded only 8.3 million individuals with an occupation, drastically undercounting women's economic contributions. To correct for this severe measurement error and evaluate a more accurate relationship between female human capital and their likely economic contributions, this study implements the Chiswick-Robinson (2021) imputation methodology. This framework identifies "unreported family workers" – primarily wives and adult daughters living in households with a family member who is a self-employed farmer, merchant, or artisan. The idea is that

[3] Additionally, the 1860 census captured educational participation among younger demographics by tracking whether an individual had "attended school within the last year" (US Office of the Census, 1860). While highly useful for mapping current institutional access among children and young adults, school attendance at some point in the past year remains an imperfect indicator of long-term human capital accumulation among adults. The census schedule provides no means of distinguishing between a child who attended a common school intermittently for a few weeks out of the year and one who engaged in rigorous, continuous academic study, nor the level of schooling attended.

they provided vital direct or ancillary labor to a family enterprise, even though no occupation is reported for them.[4]

To ensure analytical transparency, we explicitly acknowledge the core limitations of these census measures. The data lacks the precision needed to distinguish between an individual with basic signature literacy and a university-educated professional; both appear identically as literate. The measure isolates a bare baseline of linguistic competence, failing to capture critical variations in numeracy, fluency, or even in which language the individual had achieved literacy – factors that heavily guided wage-earning potential. Further, potential bias arises in that literacy was frequently reported by a single head of household or determined via the subjective assessment of the enumerator rather than through independent standardized testing, introducing potential measurement error. This may have been particularly relevant when a language barrier prevented clear communication between the household representative and the enumerator, perhaps leading to disproportionately misreported responses among non-English speaking immigrants. Nonetheless, when handled via robust econometric instruments, these metrics reveal clear, structurally consistent insights across native-born, immigrant, male, and female cohorts.[5]

Appendix A, Statistical Appendix, describes the dependent and explanatory variables in greater detail.

IV. Literacy

[4] This is based on the methodology developed by C. Chiswick (1983) for the study of rice farmers in Thailand.

[5] Of the 125,530 individuals age 20-60 in the 1 percent data file, roughly 2.5 percent (3,258 individuals) had the majority of entries on the Census schedule left blank by the enumerator (including occupation, literacy, disability status, real estate value, and personal property values) for *all* persons in their household. This suggests there was likely some recording error, resulting in inaccurate enumeration. Because it is impossible to determine whether these individuals were truly literate or whether their "literacy" is presumed because the enumerator failed to ask/record their responses to all questions for every member of their household, these individuals have been dropped from the sample.

To evaluate the micro-level allocation of human capital, we analyze the baseline distribution of literacy across the free population aged twenty to sixty. Descriptively, the 1860 sample reveals that literacy among free adult Americans was exceptionally high by international standards, tracking at 91.2 percent in the aggregate (see Table 1). A gender breakdown confirms that free men possessed a modest advantage over free women, registering a literacy rate of 93.0 percent compared to 89.2 percent. This narrow gender gap is historically significant, underscoring the aggressive expansion of institutionalized common schooling and female secondary academies across northern states during the early nineteenth century.

The data indicate a clear cohort effect (Table 1). In these cross-sectional data, literacy declines monotonically with age, approximately 93 percent of individuals aged twenty to twenty-nine were recorded as literate, dropping to 89 percent for cohorts aged fifty and older. This does not arise from a decline in literacy with age, but from an increase in literacy among younger age cohorts. This pattern underscores shifts in educational infrastructure over time, especially reflecting the long-run institutional educational reforms that swept the northern states during the 1830s and 1840s.[6]

Systemic racial disparities are starkly visible within the descriptive data (Table 1). White literacy stands at approximately 92 percent, whereas literacy rates among free Black and "Mulatto" individuals plunge to roughly 62 percent.[7] This significant gap reflects pervasive institutional barriers, statutory exclusions, underfunded segregated environments, and overt legal restrictions penalizing Black education, which persisted across northern, southern, and border states prior to the Civil War (Beaubrun, 2020; Span, 2005; Margo, 1990). These disparities indicate entrenched structural inequalities rather than varying private propensities for educational investment. Even in northern states that prohibited slavery, public

[6] See Kaestle & Vinovskis (1980) and Goldin & Katz (2003) for additional information about educational reforms and the institution of common schooling in nineteenth century America.

[7] The 1860 Census Schedule 1 (for free people) does not indicate whether free Blacks and Mulattos were born free nor, if not, when they became free.

school systems frequently utilized formal racial exclusions or severely underfunded segregated "colored schools," which effectively capped minority educational attainment despite documented high private demands for learning among free Black communities (Span, 2005). In southern and border states, these structural constraints hardened into explicit, state-sanctioned anti-literacy statutes (especially regarding enslaved people) that criminally penalized Black instruction, systematically institutionalizing a racial human capital gap even among free people through the power of the state (Beaubrun, 2020; Margo, 1990).

Birthplace further directed an individual's specific competencies and literacy levels in any language (Table 1). While foreign-born individuals collectively were recorded as having lower literacy rates than native-born citizens (89.4 percent versus 91.8 percent), this aggregate conceals dramatic variations by country of origin. German immigrants exhibited the highest overall literacy rate at 97.7 percent, surpassing even the native-born baseline. British immigrants similarly displayed high literacy levels at 96.2 percent. Conversely, Irish immigrants registered an acute human capital deficit, with a literacy rate of just 80.9 percent – a rate that declines to 77.1 percent among female Irish immigrants (Table 2). These patterns accurately map onto the disparate institutional maturity of European primary school systems and explain subsequent paths of immigrant economic assimilation in the United States.[8] Further, they point to potential differences in the "quality" of immigrants, due to the disparate reasons they were leaving their homeland.

Geographic origin and regional exposure to the institutional structures of slavery were strongly correlated with literacy outcomes among free people (Table 1). This is evidenced by the strong negative

[8] It is possible that enumerator bias, or possibly inability to overcome language barriers, also played a role in these disparities. Since any entry left blank was coded as "literate" (i.e., having the ability to read and write), if the enumerator did not ask all questions of the respondent due to inability to communicate or other reasons, and instead left the entries blank, the recorded literacy rate for certain groups could be artificially high. To mitigate this potential error, we identified and removed individuals in which this scenario was likely (based on the blank entries for all members of their household in the enumeration).

correlation between individual literacy and local “slave intensity” – the relative proportion of the total local population that was enslaved – measured both at birth and at the time of enumeration. The plantation economies of the South generated deeply unequal wealth distributions and weak public incentives to invest in mass White literacy or institutionalized common school networks. Consequently, free individuals in high-intensity slave areas exhibited significantly lower literacy rates than those in low slave-intensity border states or slavery-free Northern states (83.7 percent versus 91.1 percent and 96.3 percent, respectively).

To isolate the independent effects of these intersecting demographic factors, we estimate multivariate logistic regressions where the dependent variable is a binary indicator of individual literacy. Table 3 presents the Marginal Effects at the Means (MEM) alongside respective t-statistics.

The econometric results strongly validate our descriptive observations. Free women are significantly less likely to be literate than comparable men, as indicated by the negative MEM for the female variable in Table 3, Column 1 (−0.4848, $t = -22.93$). The large negative value and highly significant t-statistic ($p < 0.001$) confirm that a gender gap in basic human capital persisted among free adults in the antebellum United States, even after controlling for factors like age cohort, race, nativity, and geographic region.

The youngest cohort (ages 20–29) displays a robust, positive, and statistically significantly higher likelihood of literacy relative to the omitted 30–39 reference group, with older cohorts reporting lower literacy rates than the benchmark, consistent with an expansion of public educational access over time.

Even when controlling for geographic and socioeconomic variables, non-White status remains one of the dominant negative predictors of literacy ($t = -37.45$ in Table 3, column 1), demonstrating the significant influence of the antebellum racial hierarchy on educational access or, potentially, enumerator racial biases. Nativity tracking remains highly consistent: compared to the native born, Irish birth exerts a

large, statistically significant negative effect on the probability of literacy (t = -54.10), British birth is statistically not different than native-born literacy, while German immigrants maintain a significant positive literacy premium over the native-born. Persistent negative correlations reveal that being born in the Deep South (high slave intensity states) or the border states (low slave intensity) was strongly associated with lower literacy (t = -49.38 and -23.12, respectively, Table 3, column 1) among the White population, likely reflecting the limited access to formal education in those areas.

Due to the intersectionality of gender and nativity with reported literacy rates, these analyses were done separately by gender and nativity (Table 3, Columns 2-5). While these subgroup specifications capture nuanced demographic interactions, the core determinants of literacy remain remarkably consistent across specifications. Adult women maintain a lower baseline probability of literacy than adult men across native and immigrant cohorts, all else equal. The associated impact of regional differences in birthplace among both groups remain consistent: the effect of being born in the deep South versus border states has twice the magnitude negative effect on a free individual's literacy, regardless of gender (Table 3, Columns 2 and 3). Nativity effects follow a similar cross-gender trajectory: Irish birth significantly decreases the likelihood of literacy for both men and women, whereas German birth provides a notable literacy premium relative to the British-born reference group (whose outcomes remain statistically indistinguishable from native-born citizens) (Table 3, Columns 1, 4, and 5).

A striking divergence emerges regarding non-White status between native-born and foreign-born populations. Native-born non-Whites (both male and female) exhibit significantly lower expected literacy rates than their White counterparts, reflecting severe structural exclusion from schooling among free Black, mixed-race, and indigenous populations (Table 3, Columns 2 and 3). Conversely, foreign-born non-white males display a positive coefficient ($1.3581, t = 3.72$) (Table 3, Column 4). This anomaly is largely driven by the demographic composition of the foreign-born non-white sample, which predominantly comprised Chinese immigrants (90.7 percent of whom were recorded as literate, as

detailed in Table 1) facing dissimilar socioeconomic realities compared to native-born minorities (primarily Native American and Black).

Notably, the predicted aggregate literacy rates generated by these multivariate logistic models exhibit close alignment with recorded baseline figures across all analyzed cohorts, as evidenced by the final row of Table 3 relative to Table 1. This methodological convergence confirms the robustness of the logistic regression specification in accurately capturing the underlying structural distribution of human capital within the 1860 census's free adult population.

V. Occupational Attainment and Literacy

Human capital theory posits that formal literacy is strongly associated with positive labor market outcomes, arising from higher worker productivity, faster information processing, and a greater capacity to adjust to dynamic economic transitions (Schultz, 1975). The empirical occupational data extracted from the 1860 Census align with this framework.

As indicated in the descriptive statistics in Table 4, literacy varies across occupational designations. Interestingly, those with a reported gainful occupation exhibit a lower literacy rate (93.0 percent for males and 86.8 percent for females) than those classified as unreported family workers (97.0 percent and 90.6 percent, respectively) or those with no reported occupation (89.7 percent and 88.6 percent, respectively).

For females, this pattern indicates that formal, market-wage employment for antebellum women could be driven by economic necessity, drawing disproportionately from marginalized, illiterate cohorts working in low-status manual labor or domestic service. Unreported family workers – defined as individuals (with no reported occupation) living in households with parents or spouses who are self-employed farmers, merchants, or craftsmen – exhibit high literacy rates (91.0 percent overall, with native-born family workers reaching 90.8 percent and foreign-born reaching 92.3 percent). Within this group, female family members display high literacy (90.6

percent), reflecting alignment with the higher socioeconomic and human capital standing of self-employed household heads.

Native-born individuals exhibit slightly higher overall literacy (91.8 percent) compared to the foreign-born population (89.4 percent). Among the foreign-born, those with no identified occupation experience the lowest literacy rate (84.9 percent), whereas foreign-born unreported family workers display the highest literacy rate within that subgroup (92.3 percent).

Evaluating the distribution across the major occupational categories reveals the robust structural returns to human capital (Table 5). Among the native born, literate workers were disproportionately concentrated in professional, clerical, managerial, sales, and craft occupations. Clerical occupations – which structurally required writing and record keeping – were entirely comprised of literate individuals. Conversely, illiterate individuals were heavily confined to low-status farm and non-farm labor and service occupations.

Among the immigrant labor force, these human capital sorting mechanisms are equally stark. Literate foreign-born workers successfully integrated into skilled crafts, commerce, management, and independent farming. In sharp contrast, illiterate foreign-born men were primarily employed in manual tasks; over half (51.6 percent) of all illiterate foreign-born men worked as non-farm laborers (with no additional detail provided by the enumerator beyond “laborer” or “day laborer”). This confirms that transferable human capital was an important component of immigrant economic assimilation.

For women for whom an occupation was reported, the occupational patterns reveal both the distinct advantages and the limitations of literacy. Literate native-born women were nearly twice as likely as their male counterparts to be in professional occupations, particularly as teachers. However, due to pervasive social barriers and exclusionary labor market customs, the vast majority of literate women remained heavily clustered in service and operative manufacturing positions. Thus, while literacy

broadened some women's occupational options, it was insufficient to dismantle deep gender-based segregation.

These structural dynamics shift when we assign imputed occupations to unreported family workers (Table 6). Incorporating these family workers dramatically expands the recorded presence of women within the agricultural sector as self-employed farming was the primary occupation of the father or husband with whom they lived. This adjustment corrects a systemic defect in conventional data on the labor force activities of women in the 19th century, which routinely obscured women's economic value by omitting productive labor rendered inside family enterprises (Chiswick & Robinson, 2021, 2023). Integrating these imputed workers provides a more comprehensive assessment of the relationship between human capital and economic activity for women.

To quantify the economic benefits of literacy, we estimate ordinary least squares (OLS) regressions where the dependent variable is the natural logarithm of the IPUMS Occupational Income Score (OccInc). As explained in greater detail in Appendix A, the OccInc is based on the median income of individuals in the occupation derived from the 1950 Census data. Because of the positive skewness of this measure of occupational status, the natural logarithm of OccInc is used in the econometric analysis. Table 7 provides the full empirical results, displaying two distinct specifications: Columns 1-3 uses *predicted* literacy values derived from our Section IV logit architecture to mitigate potential mismeasurement error for recorded literacy, while Columns 4-6 utilize the *recorded* census literacy.

The model reveals a strong, statistically significant premium on literacy. Workers recorded as literate occupied roles with higher occupational income scores compared to otherwise identical individuals. The base coefficient (Table 7, column 1) of 0.9215 (t = 24.26) implies a substantial economic and occupational advantage directly tied to literacy. When using recorded literacy, which is subject to measurement error, the estimated effect remains positive and highly significant (t = 27.1), but smaller at 0.1430.

The mean lnOccInc for all men, regardless of nativity, is about 2.9 – the equivalent of a laborer, whereas the mean lnOccInc for all women is about 2.3 – roughly the equivalent of working as a farm laborer. The effect of being recorded as literate compared to illiterate, other variables the same, is an increase in lnOccInc of 0.16 for men, which is the equivalent of moving from an occupation as a laborer to a craftsman, or 0.11 for women, which is the equivalent of moving from an occupation as a farm laborer to a dressmaker or personal attendant.[9] These coefficients can be interpreted as implying that compared to illiterates, literacy increases the annual earnings of men by 16 percent, and the annual earnings of working women by 11 percent. This is likely to be an underestimate of the total effect as it does not account for the effect of literacy on earnings within occupational categories.

Several additional coefficients warrant close historical attention. The coefficient on the female dummy variable is large, negative, and highly significant (e.g., −0.2849, $t = -94.97$ in the recorded literacy specification), reflecting the severe structural barriers, wage penalties, and occupational segregation that restricted women to lower-status economic sectors. Estimated work experience displays the classic concave profile predicted by human capital theory, with occupational standing increasing with age but at a decreasing rate (Est. Experience is positive; Est. Experience Squared is negative). The foreign-born (FB) dummy variable reveals contrasting dynamics by gender: foreign-born males experience a significant positive premium in occupational income (Table 7, Column 5, coefficient of 0.1623, $t = 9.40$), whereas foreign-born females face a substantial negative coefficient (Table 7, Column 6, −0.2717, $t = -9.64$), highlighting distinct gender-based immigrant assimilation pathways.

Similarly there are disparate relationships between men and women for the effect of estimated years since migration on the occupational income scores.[10] Studies of both earlier (1850s) and later (twentieth century) immigrant occupational attainment have demonstrated statistically significant positive returns to years since migration for male immigrants that counteracts the initial negative impact of being foreign-born on occupational standing (see, for example, Chiswick & Robinson, 2026; Chiswick, 1978a, 1978b, 1986). However, that relationship does not hold in this analysis, where the signs are reversed for

[9] For more details on the occupational income scores by gender and nativity, as well as specific occupation income scores, see the Appendix Tables A-1 and A-3.

[10] No measure of year of arrival in the US or duration or residence in the US is available in the 1860 Census for the foreign born. An algorithm was developed (based on Chiswick & Robinson, 2026; see Appendix A) to estimate a probability distribution of years since migration for male and female immigrants for those from four country categories: Great Britain, Ireland (including Northern Ireland), Germany, and all other countries. This methodology is likely to produce estimates of YSM with substantial measurement error for individuals but provide insight into the aggregate assimilation and outcomes.

both the coefficient on being foreign born and on estimated YSM for males, though there are the expected signs and significance for the coefficients for both partial effects for females. In cross-sectional historical data like the 1860 Census, a negative coefficient on Years Since Migration (YSM) could reflect cohort effects, aging dynamics, and selective return migration rather than a decline in an individual's assimilation over time.[11] Many of the immigrant men arriving in the 1850's were attracted by prospects of high incomes from employment in the gold and silver mining industries in the western areas acquired in the Mexican-American War. The laborers in the mining industry have a very high occupational income score compared to employment in other laborers or low-skilled jobs. Furthermore, selective return migration – where more successful immigrants returned to Europe – could leave long-duration cohorts with lower average occupational scores compared to aggressive newer cohorts who rapidly sorted into booming economic sectors.

This issue is explored in more detail in Tables 8 and A-4. In Table 8, we see that once predicted literacy rather than recorded literacy is included in the model limited to the foreign-born individuals, the coefficients on YSM are no longer significantly different than zero, while the partial effect of predicted literacy (compared to recorded literacy) is much larger in magnitude and remains statistically significantly positive. This shift highlights a crucial methodological insight regarding how human capital, specifically literacy, absorbs the true economic returns to assimilation. Once this more robust measure of human capital is accounted for, the direct effect of Years Since Migration (YSM) loses its independent statistical significance because literacy operates as the primary engine driving immigrant economic assimilation and upward mobility in this period. In other words, much of what appeared to be a separate duration-of-residence effect in simpler specifications may actually be capturing unobserved differences in human capital accumulation with duration.

[11] This is comparable to the apparent "negative assimilation" for immigrants to the US from Great Britain and Canada found in the 1980, 1990, and 2000 Censuses of Population (Chiswick & Miller, 2011). For the late 20th century, this was attributed to the very high degree of the transferability of the skills across the two countries, the favorable selectivity of migrants from Britain and Canada, and the prospect or expectation of high economic achievement that motivated the move but which did not persist over time. Whether a similar analysis explains the apparent negative assimilation seen here for immigrant men in the antebellum period awaits further investigation.

Furthermore, because predicted literacy presents a much larger effect on occupational status in these specifications, it demonstrates that true skill and educational attainment – rather than merely time spent in the country – were the dominant determinants of an immigrant's occupational success in the antebellum labor market. Nonetheless, Table A-4 presents a picture of gradual economic assimilation among immigrants over time. For the aggregate foreign-born population, average occupational income scores and literacy rates show notable shifts across YSM brackets. Longer-duration immigrants (top 25% YSM) exhibit slightly higher average OccInc values (20.84) compared to the bottom 25% (19.29). We also see the disparate occupational mobility by country of birth. German and British immigrants in higher YSM brackets successfully concentrated in higher-status independent farming and managerial/proprietor positions (e.g., German managers/proprietors rising to 4.59 percent in higher YSM cohorts), accompanied by exceptionally high literacy rates exceeding 97 percent. However, Irish immigrants faced severe, persistent structural disadvantages across all YSM ranges. Even among the longest duration bracket, Irish immigrants remained heavily concentrated in low-wage non-farm labor (38.76 percent) and private household service jobs, with lower baseline literacy rates (around 80.94 percent) compared to their British and German counterparts.

An important finding here is the interactions among literacy, gender, nativity, and occupational attainment. Within every nativity group and YSM tier, high literacy rates consistently tracked with employment in skilled crafts, commerce, and self-employed farming, whereas illiterate foreign-born workers were

overwhelmingly relegated to non-farm laborer categories regardless of how long they had resided in the United States.

VI. Summary and Conclusions

This study utilized the 1 percent IPUMS microdata sample created by the Minnesota Population Center (2025) from the 1860 United States Census of Population to evaluate the demographic characteristics related to human capital and its subsequent relationship with occupational attainment among the free adult population. Given the absence of direct measures of completed schooling or individual earnings data for this historical era, we analyze adult literacy and the IPUMS Occupational Income Score as useful and methodologically sound proxy measures for evaluating human capital theory in a historical context.

Several central findings emerge from our analysis. First, our analysis highlights the extensive demographic and institutional stratification among free adults in the antebellum United States. While literacy among free people was high by nineteenth-century international standards, it was unevenly distributed. Literacy was strongly related to being male, in a younger age cohort, white, and native born, particularly in the northern states. Conversely, exposure to high-intensity slave economies was associated with lower literacy among free White people, demonstrating that regional institutional structures heavily dictated individual human capital investment, even among white people.

Second, it is important to note the immigrant divergence, not only in comparison to the native born but also by nativity of the foreign born. Striking variations exist across foreign-born cohorts. German and British immigrants possessed higher literacy rates that allowed them to more rapidly integrate into high-status craft, merchant, and managerial sectors. Conversely, Irish immigrants faced severe literacy deficits, leaving them disproportionately employed in lower-status manual labor (males) and domestic service (females) fields.

This analysis provides additional evidence of the substantial economic benefits to human capital accumulation. OLS regression models demonstrate a robust, positive, and statistically significant

relationship between literacy and occupational status as measured by the occupational income scores. This premium remains robust when utilizing predicted literacy, demonstrating that literacy is a strong determinant of an individual's placement within the antebellum labor market. Other variables the same, becoming literate has the effect of changing the occupation of a man from the equivalent of a laborer to a craftsman, and for women from being a farm laborer to a dressmaker or personal attendant. Yet, our methodology underestimates the likely value of becoming literate because it does not include the potential increased income from literacy within an occupation. Moreover, the regression analysis indicates that among free people occupational status, other variables the same, was lower for women, non-whites, was higher for married men than those not married, increased at a decreasing rate with labor market experience, and was lower for white people born in states where slavery was legal, more so in high slave intensity areas.

Ultimately, these empirical insights offer robust historical validation for the generalizability of human capital theory. More than a century prior to the formal mathematical codification of modern labor economics, basic literacy functioned as a critical, structurally compensated predictor of economic attainment and upward mobility. These findings demonstrate that the foundational relationships governing education, productivity, and labor market outcomes operate dynamically across divergent historical epochs and institutional regimes.

Tables:

Table 1

Descriptive Statistics on Literacy, 1860 Census of Population

Variable	Literate (%)	Sample Size
Gender		
All	91.16	122,272
Male	92.96	64,329
Female	89.16	57,943
Age		
20-29	92.81	49,108
30-39	90.57	34,766
40-49	90.07	22,581
50 and over	88.87	15,817
Race		
White	91.72	119,724
Free Black	61.69	1,339
Free “Mulatto”	63.04	771
“Indian”	30.83	133
Chinese	98.03	305
Birthplace		
Born in US	91.75	91,068
No Slavery Area	96.29	44,839
Low Slavery Area	91.09	22,884
High Slavery Area	83.69	23,345
Foreign Born	89.43	31,204
Great Britain	96.19	4,430
Ireland	80.93	12,833
Germany	97.73	9,412
Other	89.67	4,529
Current Residence (1860)		
No Slavery Area	93.54	89,468
Low Slavery Area	84.71	15,970
High Slavery Area	84.65	16,834

Notes: Includes all free individuals ages 20-60, regardless of occupational status.

Source: Minnesota Population Center (2025).

Table 2

Literacy by Nativity and Gender, 1860 Census (percents)

	% Literate	Sample Size
Total	91.16	122,272
US Born	91.75	91,068
Foreign Born	89.43	31,204
Great Britain	96.19	4,430
Ireland	80.93	12,833
Germany	97.73	9,412
Other FB	89.67	4,529
Males	92.96	64,329
US Born	93.40	46,995
Foreign Born	91.75	17,334
Great Britain	96.59	2,549
Ireland	84.65	6,495
Germany	98.38	5,482
Other FB	90.85	2,808
Females	89.16	57,943
US Born	89.99	44,073
Foreign Born	86.53	13,870
Great Britain	95.64	1,881
Ireland	77.12	6,338
Germany	96.82	3,930
Other FB	87.74	1,721

Notes: Includes all free individuals ages 20-60, regardless of occupational status.

Source: Minnesota Population Center (2025).

Table 3

Logit Literacy Regression Analysis, Free Individuals, Age 20-60, 1860 Census

	All	Native Born		Foreign Born	
		Males	Females	Males	Females
Female	-0.4848***				
	(-22.93)				
Age 20-29	0.3146***	0.2446***	0.3042***	0.2735***	0.4980***
	(11.97)	(5.06)	(7.24)	(3.85)	(7.85)
Age 40-49	-0.003708	0.1914***	-0.04715	-0.07212	-0.1374
	(-0.12)	(3.34)	(-0.98)	(-0.93)	(-1.86)
Age 50+	-0.03529	0.03286	0.08321	-0.2341**	-0.3098***
	(-1.07)	(0.55)	(1.58)	(-2.62)	(-3.70)
Non-White	-1.7020***	-2.1447***	-1.6991***	1.3581***	-0.8920
	(-37.45)	(-30.81)	(-26.38)	(3.72)	(-1.86)
Born in Great Britain	-0.04432				
	(-0.54)				
Born in Ireland	-1.8342***			-1.6667***	-1.9600***
	(-54.10)			(-14.54)	(-16.69)
Born in Germany	0.4706***			0.7358***	0.2910*
	(6.38)			(4.81)	(2.00)
Other FB	-0.9807***			-1.1754***	-1.1732***
	(-17.47)			(-9.17)	(-8.65)
Slave Intensity at Birth - Low	-0.8172***	-0.7959***	-0.8842***		
	(-23.12)	(-14.52)	(-18.76)		
Slave Intensity at Birth - High	-1.5387***	-1.4526***	-1.6191***		
	(-49.38)	(-30.44)	(-39.08)		
Constant	3.4249***	3.3730***	2.9978***	3.3289***	3.0397***
	(107.41)	(71.05)	(71.98)	(28.70)	(25.53)
N	122,272	46,995	44,073	17,334	13,870
Predicted Literacy Rate	91.2	93.4	90.0	91.8	86.5

Note: This is logit regression with the dependent variable "literate." Marginal Effects at the Means (MEM) are reported, with t-statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ The reference groups for categorical variables are: Age 30-39, White, Born in the US – No Slavery Area (for columns 1-3), No enslaved population in 1860, born in Great Britain (for columns 4 and 5).

Source: Minnesota Population Center (2025).

Table 4

Literacy by Occupational Status, Nativity, and Gender, 1860 Census (percents)

	% Literate Total	% Literate – Males	% Literate – Females	Sample Size Total
Total	91.16	92.96	89.16	122,272
Reported Gainful Occupation	92.19	92.95	86.83	69,036
Unreported Family Worker	91.02	96.95	90.59	25,959
No Identified Occupation	88.68	89.74	88.59	27,277
Native Born	91.75	93.40	89.99	91,068
Reported Gainful Occupation	92.65	93.39	87.17	49,700
Unreported Family Worker	90.85	97.01	90.38	22,779
No Identified Occupation	90.45	90.03	90.48	18,589
Foreign Born	89.43	91.75	86.53	31,204
Reported Gainful Occupation	91.01	91.80	86.09	19,336
Unreported Family Worker	92.26	96.30	92.50	3,180
No Identified Occupation	84.89	88.82	84.64	8,688

Notes: Includes all free individuals ages 20-60. Unreported Family Workers are non-disabled individuals for whom no occupation is reported, but who live in a household with a relative who is likely a self-employed farmer (owner or tenant), merchant, or craftsman.

Source: Minnesota Population Center (2025).

Table 5

Occupational Distribution and Literacy of Reported Workers, Age 20-60, by Nativity and Gender, 1860
(percents)

	Native Born			Foreign Born		
	Total	Male	Female	Total	Male	Female
Literate	92.65	93.39	87.17	91.01	91.80	86.09
Not Literate	7.35	6.61	12.83	8.99	8.20	13.91
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	49,700	43,814	5,886	19,336	16,662	2,674
Literate						
PTK	5.01	4.45	9.55	1.88	1.83	2.17
Farmers	39.37	42.91	11.19	15.80	17.65	3.56
Managers	6.08	6.59	2.03	6.04	6.60	2.35
Clerical	0.70	0.76	0.25	0.41	0.46	0.04
Sales	2.35	2.59	0.49	2.42	2.69	0.61
Craft	15.77	17.17	4.64	20.80	23.24	4.60
Operatives	9.41	7.52	24.56	17.57	17.14	20.37
Service	5.75	1.06	43.09	10.39	2.35	63.81
Farm Laborers	8.69	9.47	2.46	5.75	6.51	0.74
Non-Farm Laborers	6.86	7.50	1.75	18.95	21.54	1.74
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	46,049	40,918	5,131	17,597	15,295	2,302
Not Literate						
PTK	0.05	0.03	0.13	0.00	0.00	0.00
Farmers	44.95	51.73	18.94	11.56	14.19	1.88
Managers	0.30	0.31	0.26	1.04	0.95	1.34
Clerical	0.00	0.00	0.00	0.00	0.00	0.00
Sales	0.08	0.10	0.00	0.40	0.44	0.27
Craft	4.93	5.97	0.93	6.33	7.17	3.23
Operatives	7.61	5.59	15.36	15.30	14.48	18.28
Service	12.30	1.35	54.30	16.39	1.46	71.24
Farm Laborers	13.50	15.88	4.37	7.76	9.73	0.54
Non-Farm Laborers	16.27	19.03	5.70	41.23	51.57	3.23
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	3,651	2,896	755	1,739	1,367	372

Notes: Free men and women who reported an occupation. PTK is Professional, Technical and Kindred occupations, Farmers includes farm owners, farm tenants, and farm managers, Managers is limited to non-farm managers. All apprentices are included as operatives. Detail may not add to total due to rounding.

Source: Minnesota Population Center (2025).

Table 6

Occupational Distribution and Literacy of Reported and Unreported Family Workers, Age 20-60, by Nativity and Gender, 1860 (percents)

	Native Born			Foreign Born		
	Total	Male	Female	Total	Male	Female
Literate	92.09	93.52	89.68	91.18	91.84	89.25
Not Literate	7.91	6.48	10.32	8.82	8.16	10.75
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	72,479	45,420	27,059	22,516	16,824	5,692
Literate						
PTK	3.46	4.28	2.02	1.61	1.81	0.98
Farmers	54.78	44.74	72.35	24.95	18.39	44.88
Managers	6.64	6.53	6.84	7.42	6.60	9.96
Clerical	0.48	0.73	0.05	0.35	0.46	0.02
Sales	1.62	2.49	0.10	2.07	2.66	0.28
Craft	11.51	16.57	2.66	18.15	23.01	3.35
Operatives	6.50	7.24	5.19	15.06	16.97	9.23
Service	4.28	1.07	9.89	9.23	2.34	30.28
Farm Laborers	6.00	9.13	0.52	4.93	6.44	0.33
Non-Farm Laborers	4.73	7.22	0.37	16.24	21.32	0.79
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	66,774	42,476	24,267	20,531	15,451	5,080
Not Literate						
PTK	0.03	0.03	0.04	0.00	0.00	0.00
Farmers	64.26	52.51	76.65	20.76	14.42	34.97
Managers	0.65	0.31	1.00	1.81	1.02	3.59
Clerical	0.00	0.00	0.00	0.00	0.00	0.00
Sales	0.05	0.10	0.00	0.35	0.44	0.16
Craft	3.35	5.88	0.68	5.69	7.14	2.45
Operatives	4.85	5.50	4.15	13.40	14.42	11.11
Service	7.86	1.32	14.76	15.06	1.53	45.42
Farm Laborers	8.59	15.62	1.18	6.80	9.69	0.33
Non-Farm Laborers	10.36	18.72	1.54	36.12	51.35	1.96
Total	100.00	100.00	100.00	100.00	100.00	100.00
Sample Size	5,736	2,944	2,792	1,985	1,373	612

Notes: Unreported workers are categorized into the occupational category of the self-employed household member. Farmers includes farm owners, farm tenants, and farm managers, Managers is limited to non-farm managers. All apprentices are included as operatives. Detail may not add to total due to rounding.

Source: Minnesota Population Center (2025).

Table 7

Occupational Income Score Regression Analysis, Free Individuals, Age 20-60, 1860 Census

	All	Male	Female	All	Male	Female
Predicted Literate	0.9215***	0.1335**	1.3764***			
	(24.26)	(2.66)	(22.28)			
Recorded Literate				0.1430***	0.1575***	0.1103***
				(27.21)	(23.35)	(13.52)
Female	-0.2540***			-0.2849***		
	(-76.12)			(-94.97)		
Married	0.09839***	0.04077***	0.1790***	0.1053***	0.04397***	0.1949***
	(27.12)	(9.14)	(29.27)	(29.14)	(9.90)	(32.02)
Number of Children	-0.02109***	-0.02825***	-0.009261***	-0.02013***	-0.02747***	-0.007872***
	(-26.42)	(-28.33)	(-7.09)	(-25.21)	(-27.65)	(-5.98)
Non-White	0.06125***	0.01441	-0.1060***	-0.1281***	0.01841	-0.4719***
	(4.43)	(0.87)	(-4.11)	(-12.29)	(1.51)	(-24.97)
Estimated Experience	0.01777***	0.02318***	0.007164***	0.01576***	0.02277***	0.003350**
	(28.22)	(30.12)	(6.68)	(25.31)	(29.93)	(3.16)
Est. Experience Squared	-0.0003477***	-0.0004336***	-0.0001320***	-0.0003158***	-0.0004285***	-0.00007185**
	(-26.93)	(-27.77)	(-5.90)	(-24.65)	(-27.72)	(-3.23)
Low Slave Intensity - Birth	0.01709***	-0.01638**	0.04486***	-0.01507***	-0.01530**	-0.02119**
	(3.86)	(-3.05)	(5.92)	(-3.65)	(-3.03)	(-3.08)
High Slave Intensity - Birth	0.04261***	-0.04375***	0.1181***	-0.04543***	-0.04224***	-0.05791***
	(7.34)	(-6.37)	(11.04)	(-11.45)	(-8.63)	(-8.87)
FB	0.004114	0.1691***	-0.2218***	0.0007522	0.1623***	-0.2717***
	(0.28)	(9.73)	(-7.89)	(0.05)	(9.40)	(-9.64)
YSM	0.006151***	-0.008112***	0.01738***	0.001885	-0.007362***	0.01194***
	(4.43)	(-5.01)	(6.52)	(1.38)	(-4.68)	(4.48)
Constant	1.8469***	2.5865***	1.2021***	2.6273***	2.5652***	2.4417***
	(47.90)	(51.35)	(19.58)	(327.18)	(262.12)	(189.73)
N	94615	62119	32496	94615	62119	32496
R^2	0.128	0.039	0.095	0.129	0.047	0.087

Notes on Table 7: These are OLS regressions with the dependent variable the natural logarithm of the augmented occupational income score (OccInc), which includes unreported family workers. Includes only those with a non-zero augmented OccInc. Predicted literacy is a continuous variable from 0-1, with a higher value indicate a higher likelihood of being literate; recorded literacy is a binary variable 0 or 1, with 0 indicating the person was recorded as "not able to read and write". t-statistics in parentheses. $^{\#}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Minnesota Population Center (2025).

Table 8

Occupational Income Score Regression Analysis by Nativity, Free Individuals, Age 20-60, 1860 Census

NATIVE BORN	All	Male	Female	All	Male	Female
Predicted Literate	0.3505***	-0.3566*	-0.7356***			
	(3.89)	(-2.42)	(-4.45)			
Recorded Literate				0.1344***	0.1738***	0.08855***
				(22.16)	(20.40)	(10.56)
Female	-0.2255***			-0.2335***		
	(-49.26)			(-70.59)		
Low Slave Intensity at Birth	-0.005819	-0.03084***	-0.05867***	-0.01364***	-0.01328*	-0.01627*
	(-1.08)	(-4.31)	(-5.61)	(-3.34)	(-2.54)	(-2.55)
High Slave Intensity at Birth	-0.01979#	-0.08688***	-0.1691***	-0.04454***	-0.03792***	-0.05639***
	(-1.85)	(-5.85)	(-7.21)	(-11.32)	(-7.46)	(-9.30)
Constant	2.4023***	3.0452***	3.3255***	2.6201***	2.5203***	2.5102***
	(26.44)	(20.71)	(20.32)	(291.90)	(213.23)	(193.17)
N	72,175	45,322	26,853	72,175	45,322	26,853
R^2	0.099	0.033	0.059	0.105	0.041	0.063

FOREIGN BORN	All	Male	Female	All	Male	Female
Predicted Literate	0.5343***	0.2374***	0.9784***			
	(9.55)	(4.15)	(9.78)			
Recorded Literate				0.1116***	0.1168***	0.1377***
				(10.50)	(10.87)	(5.95)
Female	-0.7477***			-0.7834***		
	(-71.44)			(-83.01)		
YSM	0.001531	-0.003154	-0.006283	-0.01595***	-0.007344*	-0.05106***
	(0.38)	(-0.81)	(-0.67)	(-4.75)	(-2.29)	(-6.43)
Constant	2.3936***	2.7218***	1.3923***	2.9228***	2.8671***	2.4601***
	(31.63)	(36.10)	(9.85)	(93.80)	(95.19)	(35.06)
N	19262	16636	5643	19262	16636	5643
R^2	0.322	0.013	0.215	0.323	0.019	0.207

Notes on Table 8: These are OLS regressions with the dependent variable the natural logarithm of the augmented occupational income score (OccInc). Includes only those with a non-zero augmented OccInc. All models include additional demographic variables as controls. Full tables are provided in the Appendix. Predicted literacy is a continuous variable from 0-1, with a higher value indicate a higher likelihood of being literate; recorded literacy is a binary variable 0 or 1, with 0 indicating the person was recorded as "not able to read and write". t-statistics in parentheses. $^{\#}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Source: Minnesota Population Center (2025).

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Appendix A. Statistical Appendix

Population under Study

The empirical analysis uses the 1 percent microdata sample of free individuals from Schedule 1 (Free Persons) of the 1860 United States Census of Population from the Integrated Public Use Microdata Series (IPUMS), Minnesota Population Center (2025). The sample is restricted to persons between the ages of 20 and 60. Of the 125,530 free individuals age 20-60 in the one-percent file, roughly 2.5 percent (3,258 individuals) had the majority of entries on the Census schedule left blank by the enumerator for all persons in their household. It is not known if this was due to enumerator error or households' refusal to answer questions. In either case, these individuals were deleted from the sample.

Dependent Variables

- Occupational Income Score (OccInc): The Occupational Income Score (OccInc) is a way of converting a categorical variable (occupational groups) into a continuous measure. It is calculated from the median incomes for each occupation from data published by the Bureau of the Census in a 1950 Special Report on occupational characteristics. Based on a 3.33 percent sample of the population, it measures the total money income (not just wage and salary income) of all persons with any given occupation in 1950. While the data by gender were published separately in the Census report, for the occupational income score the data are the weighted means of the two median figures in hundreds of 1950 US dollars. The MPC converted the 1950 occupational categories into the 1860 occupational equivalents and included the occupational income score for each 1860 occupation in the 1860 Census microdata file. The measure provide information on the economic (money income) standing in the US of an individual in a given occupation without regard for differences by gender, region of the country, or industry. It therefore provides no information on differences in earnings within an 1860 occupational category (Minnesota Population Center, 2025). This variable serves as the primary proxy for long-run economic status. The natural logarithm (lnOccInc) is used in the analysis due to the positive skewness of the variable.
- Augmented Occupational Income Score (OccInc_Augmented): An adjusted occupational income score that incorporates unreported family workers by imputing occupations based on the reported occupation of the self-employed family member. The adjustment is designed to better capture the economic contributions of female labor. The natural logarithm (lnOccInc_Augmented) is used in the analysis due to the positive skewness of the variable.
- Recorded Literacy: A binary indicator equal to 0 if the census enumerator marked the individual as "unable to read and write," and 1 otherwise. The literacy question was asked only of individuals aged 20 and older. Literacy refers to any language, but the language was not identified. The census did not define the threshold for literacy, making it unclear whether individuals who could only sign their name were considered literate. A non-response to the literacy question could mean that the respondent was literate or that the question was not asked or that the answer was simply not recorded. This measurement error issue is partially resolved by the deletion of individuals in households in which most questions were left blank, as per above.

Explanatory Variables

- Age: Self-reported age in completed years at the time of enumeration. Ages 20-60 years classified into 10-year cohorts for the analysis.
- Predicted Literacy: A continuous measure of literacy generated from the first-stage logistic regression model reported in Table 3.
- Slave Intensity (Birth State / State of Residence, 1860): Categorical indicators classifying an individual's state of birth and 1860 state of residence according to the relative concentration of enslaved persons in the total population (zero, low, or high slave intensity); that is, the number of enslaved persons divided by the total (free and enslaved) population. Zero indicates there was no

enslaved population. The mean slave intensity was calculated for all states in which the enslaved population was present; those states with less than average slave intensity were categorized as "low" slave intensity, while those with average or higher slave intensity were categorized as "high" slave intensity. Slave intensity at birth was coded as zero for all foreign born.

- Non-White: A binary indicator equal to 1 for individuals classified by census enumerators as Black/Negro, Mulatto, or American Indian, and 0 for individuals classified as White (left blank on the Census forms). Just under 400 individuals in the 1 percent sample microdata were coded as Chinese; it is not clear whether this was done retroactively by MPC or by Census enumerators outside of their given instructions.
- Married: A binary indicator equal to 1 if an individual is identified as married and residing with a spouse in the same household. Because marital status was not directly collected in the 1860 Census, this variable is constructed using the IPUMS spouse pointer variable coded by MPC, which identifies spousal relationships with an estimated accuracy rate of approximately 99 percent (IPUMS, n.d.).
- Children: The number of an individual's own children residing in the household, including biological, adopted, and stepchildren, regardless of age or marital status.
- Foreign Born: A binary indicator equal to 1 if an individual was born outside the United States and 0 otherwise. Countries of origin identified in the analysis include Ireland (including Northern Ireland), Britain, Germany, and all other foreign countries.
- Born in US South: A binary indicator equal to 1 if the individual's birthplace was part of the established southern United States in 1860 (primarily slaveholding states) and 0 otherwise. Southern states include Delaware, Missouri, Virginia (including present-day West Virginia), Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Texas, Kentucky, Maryland, Tennessee, and the District of Columbia.
- Born in US North: A binary indicator equal to 1 if the individual's birthplace was part of the established northern United States in 1860 (primarily non-slaveholding states) and 0 otherwise. Northern states include Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, New Jersey, Connecticut, Pennsylvania, Ohio, Indiana, Illinois, Wisconsin, Michigan, Iowa, and Minnesota.
- Born in US West: A binary indicator equal to 1 if the individual's birthplace was part of the western frontier of the United States in 1860 and 0 otherwise. It includes present day California and Oregon, as well as the unorganized and organized western territories that would become Washington, Nevada, Utah, Arizona, New Mexico, Colorado, Wyoming, Montana, Idaho, Nebraska, Kansas, and the Dakotas.
- Potential Labor Market Experience. Measured as: Potential Labor Market Experience $= \text{Age} - 15$
- Estimated Years Since Migration (YSM) Because the census did not record year of arrival in the United States, YSM is estimated using immigrant flow data for 1820–1860 by country of origin, gender, and age group. Separate probability distributions of arrival years were constructed for immigrants from Great Britain, Germany, Ireland, and a residual category of all other countries. This technique was developed in Chiswick & Robinson (2026).

Estimated years since migration for an individual in age group i and nativity group j are calculated as:

$$E(YSM_{ij}) = \sum_{x} xP(YS\,M_{ij} = x)$$

where x ranges from 1 (arrival during the year prior to the census) to 41 (arrival 41 years prior to the census). Probabilities are based on historical immigration flows, gender, and the individual's likely age category at the time of arrival (under 15, ages 15–40, or over 40). The resulting probability distributions are normalized so that the probabilities for each individual sum to one.

This procedure assigns identical YSM values to individuals of the same gender, age, and nativity while allowing YSM to vary across gender, age groups, and countries of origin. Although the method necessarily reduces within-group variation, it incorporates available information on age, nativity, and historical immigration patterns and represents the most systematic estimate possible in the absence of individual arrival records.

Occupational Categories

Occupations are classified by using the 1950 occupational coding scheme and grouped into the following categories:

- Professional, Technical, and Kindred (PTK)
- Farmers (owners, tenants, and managers)
- Managers (nonfarm)
- Clerical workers
- Sales workers
- Craft workers
- Operatives
- Service workers
- Farm laborers
- Nonfarm laborers
- No occupation reported
- Not applicable

Individuals recorded as laborers with no specified industry who reside in a farmer's household are reclassified as farm laborers.

Table A-1

Descriptive Statistics, Free Individuals Ages 20-60, By Gender and Nativity, 1860 Census of Population

	All			Native Born			Foreign Born		
	All	Male	Female	All	Male	Female	All	Male	Female
OccInc [a]	19.91	20.91	12.66	19.69	20.52	13.36	20.47	21.95	11.14
	(10.77)	(10.66)	(8.662)	(11.30)	(11.34)	(8.713)	(9.272)	(8.520)	(8.352)
Ln OccInc [a]	2.87	2.94	2.33	2.85	2.91	2.40	2.91	3.02	2.20
	(0.500)	(0.431)	(0.628)	(0.497)	(0.445)	(0.623)	(0.506)	(0.380)	(0.616)
OccInc Augd [b]	18.92	20.75	15.43	18.55	20.32	15.57	20.10	21.89	14.78
	(10.15)	(10.60)	(8.183)	(10.35)	(11.24)	(7.789)	(9.389)	(8.526)	(9.822)
Ln OccInc Augmented [b]	2.83	2.93	2.63	2.81	2.90	2.65	2.89	3.02	2.51
	(0.462)	(0.429)	(0.456)	(0.449)	(0.442)	(0.416)	(0.495)	(0.380)	(0.596)
Gainful Reported Occ	0.56	0.94	0.15	0.55	0.93	0.13	0.62	0.96	0.19
	(0.496)	(0.237)	(0.355)	(0.498)	(0.251)	(0.340)	(0.485)	(0.193)	(0.395)
Unreported Fam Worker	0.21	0.03	0.42	0.25	0.03	0.48	0.10	0.01	0.22
	(0.409)	(0.163)	(0.493)	(0.433)	(0.182)	(0.500)	(0.303)	(0.0962)	(0.413)
No Identified Occupation	0.22	0.03	0.43	0.20	0.03	0.39	0.28	0.03	0.59
	(0.416)	(0.177)	(0.496)	(0.403)	(0.180)	(0.487)	(0.448)	(0.169)	(0.492)
Recorded Literate	0.91	0.93	0.89	0.92	0.93	0.90	0.89	0.92	0.87
	(0.284)	(0.256)	(0.311)	(0.275)	(0.248)	(0.300)	(0.307)	(0.275)	(0.341)
Predicted Literate	0.91	0.93	0.89	0.92	0.93	0.90	0.89	0.92	0.87
	(0.075)	(0.060)	(0.085)	(0.071)	(0.056)	(0.080)	(0.084)	(0.068)	(0.093)
Female	0.47	0.00	1.00	0.48	0.00	1.00	0.44	0.00	1.00
	(0.499)	(0)	(0)	(0.500)	(0)	(0)	(0.497)	(0)	(0)
Age 20-29	0.40	0.39	0.41	0.41	0.41	0.42	0.37	0.34	0.40
	(0.490)	(0.488)	(0.493)	(0.492)	(0.491)	(0.494)	(0.482)	(0.475)	(0.489)
Age 30-39	0.28	0.29	0.28	0.27	0.27	0.26	0.33	0.34	0.32
	(0.451)	(0.454)	(0.448)	(0.443)	(0.444)	(0.441)	(0.472)	(0.475)	(0.467)
Age 40-49	0.18	0.19	0.18	0.18	0.19	0.18	0.19	0.20	0.17
	(0.388)	(0.392)	(0.383)	(0.388)	(0.390)	(0.385)	(0.389)	(0.397)	(0.378)
Age 50+	0.13	0.13	0.13	0.14	0.14	0.13	0.11	0.12	0.11
	(0.336)	(0.337)	(0.334)	(0.342)	(0.343)	(0.341)	(0.316)	(0.319)	(0.312)
Married	0.66	0.62	0.69	0.66	0.63	0.69	0.65	0.61	0.71
	(0.475)	(0.484)	(0.461)	(0.474)	(0.482)	(0.463)	(0.476)	(0.489)	(0.454)
Number of Children	2.03	1.84	2.24	2.10	1.92	2.30	1.82	1.62	2.06
	(2.237)	(2.225)	(2.231)	(2.299)	(2.293)	(2.289)	(2.031)	(2.013)	(2.027)
Non-White	0.02	0.02	0.02	0.02	0.02	0.03	0.01	0.02	0.00
	(0.143)	(0.143)	(0.143)	(0.154)	(0.146)	(0.162)	(0.103)	(0.132)	(0.0424)
White	0.98	0.98	0.98	0.98	0.98	0.97	0.99	0.98	1.00
	(0.143)	(0.143)	(0.143)	(0.154)	(0.146)	(0.162)	(0.103)	(0.132)	(0.0424)
Est.Work Experience	19.47	19.70	19.23	19.50	19.66	19.33	19.40	19.80	18.89
	(10.90)	(10.85)	(10.95)	(11.14)	(11.13)	(11.16)	(10.15)	(10.06)	(10.25)
Slave Intensity 1860 – Zero	0.73	0.73	0.73	0.68	0.68	0.68	0.87	0.86	0.89
	(0.443)	(0.443)	(0.443)	(0.465)	(0.465)	(0.465)	(0.336)	(0.350)	(0.317)
Slave Intensity 1860 – Low	0.13	0.13	0.13	0.15	0.15	0.15	0.08	0.09	0.07
	(0.337)	(0.338)	(0.335)	(0.355)	(0.355)	(0.354)	(0.273)	(0.282)	(0.260)
Slave Intensity 1860 – High	0.14	0.14	0.14	0.17	0.17	0.17	0.05	0.06	0.04
	(0.345)	(0.344)	(0.345)	(0.374)	(0.373)	(0.375)	(0.216)	(0.229)	(0.197)

Table A-1 continued

	All			Native Born			Foreign Born		
	All	Male	Female	All	Male	Female	All	Male	Female
Born in US – North	0.47	0.46	0.48	0.63	0.63	0.63	0.00	0.00	0.00
	(0.499)	(0.498)	(0.500)	(0.483)	(0.483)	(0.483)	(0)	(0)	(0)
Born in US – South	0.23	0.23	0.24	0.32	0.31	0.32	0.00	0.00	0.00
	(0.424)	(0.421)	(0.427)	(0.465)	(0.464)	(0.465)	(0)	(0)	(0)
Born in US – West	0.04	0.04	0.04	0.06	0.06	0.06	0.00	0.00	0.00
	(0.200)	(0.198)	(0.202)	(0.230)	(0.230)	(0.230)	(0)	(0)	(0)
St Slave Intensity at Birth – Zero [c]	0.62	0.63	0.61	0.49	0.49	0.49	1.00	1.00	1.00
	(0.485)	(0.483)	(0.487)	(0.500)	(0.500)	(0.500)	(0)	(0)	(0)
St Slave Intensity at Birth – Low	0.19	0.18	0.19	0.25	0.25	0.25	0.00	0.00	0.00
	(0.390)	(0.387)	(0.393)	(0.434)	(0.434)	(0.434)	(0)	(0)	(0)
St Slave Intensity at Birth – High	0.19	0.19	0.20	0.26	0.26	0.26	0.00	0.00	0.00
	(0.393)	(0.390)	(0.397)	(0.437)	(0.436)	(0.437)	(0)	(0)	(0)
Born in Great Britain	0.04	0.04	0.03	0.00	0.00	0.00	0.14	0.15	0.14
	(0.187)	(0.195)	(0.177)	(0)	(0)	(0)	(0.349)	(0.354)	(0.342)
Born in Ireland	0.10	0.10	0.11	0.00	0.00	0.00	0.41	0.37	0.46
	(0.306)	(0.301)	(0.312)	(0)	(0)	(0)	(0.492)	(0.484)	(0.498)
Born in Germany	0.08	0.09	0.07	0.00	0.00	0.00	0.30	0.32	0.28
	(0.267)	(0.279)	(0.251)	(0)	(0)	(0)	(0.459)	(0.465)	(0.451)
Other Foreign Born	0.04	0.04	0.03	0.00	0.00	0.00	0.15	0.16	0.12
	(0.189)	(0.204)	(0.170)	(0)	(0)	(0)	(0.352)	(0.368)	(0.330)
Yrs since Migration (YSM) [d]	10.59	10.76	10.37	0.00	0.00	0.00	10.59	10.76	10.37
	(2.302)	(2.325)	(2.255)	(0)	(0)	(0)	(2.302)	(2.325)	(2.255)
Not Literate Head of Household	0.11	0.12	0.11	0.10	0.10	0.10	0.14	0.16	0.12
	(0.315)	(0.322)	(0.307)	(0.302)	(0.303)	(0.300)	(0.350)	(0.365)	(0.329)
Sample Size	122,272	64,329	57,943	91,068	46,995	44,073	31,204	17,334	13,870

Notes**:** Means and Standard Deviations (in parentheses) for free individuals age 20-60 of any occupational status.
[a] Occupational Income Scores only for those with a reported occupation. Sample sizes, respectively: 68.728, 60,368, 8,360, 49,466, 43,732, 5,734, 19,262, 16,636, 2,626
[b] Augmented Occupational Income Scores only for those with a reported occupation and unreported family workers. Sample sizes, respectively: 94,615, 62,119, 32,496, 72,175, 45,322, 26,853, 22,440, 16,797, 5,643
[c] Slave Intensity at birth is assumed to be zero for all foreign born.
[d] For Foreign Born only. Sample sizes, respectively: 31,204, 17,334, 13,870

Source: Minnesota Population Center (2025).

Table A-2 – Full Regression Results from Table 8

Occupational Income Score Regression Analysis by Nativity, Free Individuals, Age 20-60, 1860 Census

NATIVE BORN	All	Males	Females	All	Males	Females
Predicted Literate	0.3505***	-0.3566*	-0.7356***			
	(3.89)	(-2.42)	(-4.45)			
Recorded Literate				0.1344***	0.1738***	0.08855***
				(22.16)	(20.40)	(10.56)
Female	-0.2255***	0	0	-0.2335***	0	0
	(-49.26)	(.)	(.)	(-70.59)	(.)	(.)
Married	0.07141***	0.03155***	0.1175***	0.07210***	0.03353***	0.1140***
	(17.33)	(5.81)	(18.78)	(17.59)	(6.20)	(18.27)
Number of Children	-0.02338***	-0.03229***	-0.01026***	-0.02230***	-0.03119***	-0.009067***
	(-26.53)	(-27.46)	(-7.80)	(-25.36)	(-26.62)	(-6.89)
Non-White	-0.1562***	-0.1410***	-0.7535***	-0.2049***	-0.009274	-0.5143***
	(-6.21)	(-3.90)	(-14.63)	(-18.00)	(-0.63)	(-29.09)
Estimated Experience	0.01853***	0.02643***	0.002128#	0.01787***	0.02691***	0.004358***
	(25.36)	(27.63)	(1.82)	(25.57)	(29.53)	(4.03)
Est. Experience Squared	-0.0003585***	-0.0004980***	-0.00006267**	-0.0003507***	-0.0005048***	-0.00009356***
	(-24.40)	(-26.30)	(-2.67)	(-24.40)	(-27.31)	(-4.12)
Low Slave Intensity - Birth	-0.005819	-0.03084***	-0.05867***	-0.01364***	-0.01328*	-0.01627*
	(-1.08)	(-4.31)	(-5.61)	(-3.34)	(-2.54)	(-2.55)
High Slave Intensity - Birth	-0.01979#	-0.08688***	-0.1691***	-0.04454***	-0.03792***	-0.05639***
	(-1.85)	(-5.85)	(-7.21)	(-11.32)	(-7.46)	(-9.30)
Constant	2.4023***	3.0452***	3.3255***	2.6201***	2.5203***	2.5102***
	(26.44)	(20.71)	(20.32)	(291.90)	(213.23)	(193.17)
N	72175	45322	26853	72175	45322	26853
R^2	0.099	0.033	0.059	0.105	0.041	0.063

Table A-2 - cont.

FOREIGN BORN	All	Males	Females	All	Males	Females
Predicted Literate	0.5343***	0.2374***	0.9784***			
	(9.55)	(4.15)	(9.78)			
Recorded Literate				0.1116***	0.1168***	0.1377***
				(10.50)	(10.87)	(5.95)
Female	-0.7477***	0	0	-0.7834***	0	0
	(-71.44)	(.)	(.)	(-83.01)	(.)	(.)
Married	0.06343***	0.05829***	0.4615***	0.06829***	0.06194***	0.4983***
	(7.85)	(7.56)	(25.58)	(8.46)	(8.06)	(28.28)
Number of Children	-0.01289***	-0.01632***	-0.003123	-0.01247***	-0.01614***	-0.001287
	(-6.51)	(-8.74)	(-0.74)	(-6.30)	(-8.67)	(-0.30)
Non-White	0.2355***	0.1725***	0.03681	0.1319***	0.1210***	-0.1843
	(8.99)	(7.04)	(0.20)	(5.44)	(5.46)	(-0.98)
Estimated Experience	0.01067***	0.01049***	0.006667*	0.01150***	0.01048***	0.008133*
	(7.51)	(7.35)	(2.09)	(8.12)	(7.39)	(2.54)
Est. Experience Squared	-0.0002333***	-0.0002173***	-0.00007622	-0.0001776***	-0.0002002***	0.00008884
	(-7.84)	(-7.44)	(-1.11)	(-6.16)	(-7.04)	(1.34)
Estimated YSM	0.001531	-0.003154	-0.006283	-0.01595***	-0.007344*	-0.05106***
	(0.38)	(-0.81)	(-0.67)	(-4.75)	(-2.29)	(-6.43)
Constant	2.3936***	2.7218***	1.3923***	2.9228***	2.8671***	2.4601***
	(31.63)	(36.10)	(9.85)	(93.80)	(95.19)	(35.06)
N	19262	16636	5643	19262	16636	5643
R^2	0.322	0.013	0.215	0.323	0.019	0.207

Notes on Table A2: These are the full regression tables for Table 8 – OLS regressions with the dependent variable the natural logarithm of the augmented occupational income score (OccInc). Includes only those with a non-zero augmented OccInc. Predicted literacy is a continuous variable from 0-1, with a higher value indicate a higher likelihood of being literate; recorded literacy is a binary variable 0 or 1, with 0 indicating the person was recorded as "not able to read and write". t-statistics in parentheses. $^{\#}\ p < 0.10$, $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

Source: Minnesota Population Center (2025).

Table A-3

Occupational Income Scores (OccInc) for Selected Occupations with Gender and Nativity Distribution

Occupation[a]	Occ Inc	Ln OccInc	% Female	% FB	% Literate	# Reported
PTK						
Physicians & Surgeons (075)	80	4.38	0.54	8.23	100.00	559
Lawyers & Judges (055)	62	4.13	0.30	5.42	100.00	332
Clergymen (009)	24	3.18	0.63	13.21	99.69	318
Teachers (nec) (093)	27	3.30	53.20	7.45	100.00	859
Farmers						
Farmers (owners & tenants) (100)	14	2.64	3.49	13.12	99.91	22,707
Managers						
Landlords (230)	20	3.00	0.00	19.23	100.00	26
Officers & Administrators (nec), Public Admin (250)	36	3.58	0.00	6.25	100.00	96
Postmasters (270)	29	3.37	3.33	10.00	100.00	30
Managers, Officials, and Proprietors (nec) (290)	42	3.74	4.70	29.13	99.23	3,491
Clerical						
Bookkeepers (310)	22	3.09	1.99	22.52	100.00	151
Clerical & Kindred Workers (nec) (390)	25	3.22	12.16	20.27	100.00	74
Sales						
Hucksters & Peddlers (430)	13	2.56	4.10	55.90	95.90	195
Real Estate Agents (470)	35	3.56	0.00	18.18	100.00	22
Salesmen & Sales Clerks (nec) (490)	24	3.18	2.54	24.31	99.84	1,259
Craft						
Blacksmiths (501)	25	3.22	0.40	26.31	95.75	1,011
Carpenters (510)	24	3.18	0.23	20.93	98.32	2,556
Plumbers & Pipe Fitters (574)	33	3.50	0.00	50.00	98.15	54
Shoemakers & Repairers (except factory) (582)	20	3.00	0.51	41.37	96.78	1,368
Tailors & Tailoresses (590)	26	3.26	33.41	58.05	97.41	925
Operatives						
Dressmakers & Seamstresses (except factory) (633)	12	2.48	98.83	23.56	92.67	1,023
Boatmen, Canalmen, & Lock Keepers (623)	30	3.40	0.46	25.81	96.31	217
Deliverymen & Routemen (632)	27	3.30	5.00	55.00	85.00	20
Mine Operatives & Laborers (650)	24	3.18	0.36	61.43	92.50	1,387
Taxicab (Hackney) Drivers & Chauffeurs (682)	22	3.09	0.00	68.42	88.16	76

Table A-3 – cont.

Occupation[(a)]	Occ Inc	Ln OccInc	% Female	% FB	% Literate	# Reported
Services						
Private Household Workers (nec) (720)	6	1.79	94.84	40.02	86.22	3,818
Bartenders (750)	25	3.22	0.00	48.78	100.00	82
Boarding & Lodging House Keepers (752)	7	1.95	66.17	38.35	92.48	133
Marshalls & Constables (771)	24	3.18	0.00	7.32	100.00	41
Cooks (except private household) (754)	16	2.77	50.78	56.25	89.06	128
Laborers (farm)						
Farm Foremen (810)	23	3.14	9.52	0.00	95.24	21
Farm laborers (wage workers) (820)	9	2.20	3.14	20.42	88.80	5,597
Laborers (non-farm)						
Gardeners, except farm and groundskeepers (930)	17	2.83	4.05	78.03	95.38	173
Longshoremen & Stevedores (940)	25	3.22	0.00	66.67	92.59	27
Laborers (nec) (970)	20	3.00	2.44	52.54	82.49	7,297
Range:						
Highest OccInc: Physicians & Surgeons (075)	80	4.38	0.54	8.23	100.00	559
Lowest OccInc (males): Newsboys (460)	3	1.10	0.00	88.89	100.00	9
Lowest OccInc (females): Laundresses, private household (710)	4	1.39	98.67	42.44	62.60	377

[(a)] nec means not elsewhere classified. Occupation code number in parentheses.

Source: Minnesota Population Center (2025).

Table A-4

Occupational Income Scores (OccInc) for Most Common Occupations among Foreign Born by Nativity and YSM

	Occupation	Occ Inc	Ln OccInc	% Female	% Literate	% Reported
All Foreign Born						
Bottom 25% YSM (<9.05)	Average:	19.29	2.82	23.43	95.04	N: 4,460
	Farmers, owners & tenants (100)	14	2.64	2.75	95.75	8.97
	Private Household Workers (nec) (720)	6	1.79	95.43	86.39	15.20
	Farm laborers, wage workers (820)	9	2.20	1.99	94.53	9.01
	Laborers (nec) (970)	20	3.00	1.28	89.13	10.52
Middle 50% YSM	Average:	20.66	2.92	13.12	90.34	N: 9,270
	Farmers, owners & tenants (100)	14	2.64	2.46	93.89	12.96
	Private Household Workers (nec) (720)	6	1.79	93.46	82.61	7.40
	Laborers (nec) (970)	20	3.00	1.39	81.87	22.13
Top 25% YSM (>11.51)	Average:	20.84	2.94	6.87	88.77	N: 5,156
	Farmers, owners & tenants (100)	14	2.64	3.48	91.89	25.60
	Laborers (nec) (970)	20	3.00	0.82	78.34	23.55
Born in Great Britain						
Bottom 25% YSM (<8.72)	Average:	20.22	2.89	19.36	97.58	N: 661
	Farmers, owners & tenants (100)	14	2.64	3.12	98.44	9.68
	Private Household Workers (nec) (720)	6	1.79	93.94	98.48	9.98
	Farm laborers, wage workers (820)	9	2.20	1.56	95.31	9.68
	Laborers (nec) (970)	20	3.00	1.69	93.22	8.93

	Occupation	Occ Inc	Ln OccInc	% Female	% Literate	% Reported
Middle 50% YSM	Average:	22.38	3.02	5.98	96.59	N: 1,320
	Farmers, owners & tenants (100)	14	2.64	0.38	94.30	19.92
	Mine Operatives & Laborers (650)	24	3.18	0.00	90.72	7.35
	Operative & Kindred Workers (690)	23	3.14	6.38	100.00	7.12
	Laborers (nec) (970)	20	3.00	1.28	89.13	9.02
Top 25% YSM (>11.51)	Average:	22.04	3.00	6.39	95.41	N: 720
	Farmers, owners & tenants (100)	14	2.64	2.55	93.62	32.64
	Managers, Officials, Proprietors (290)	42	3.74	10.53	98.25	7.92
	Laborers (nec) (970)	20	3.00	0.00	94.23	7.22
Born in Ireland						
Bottom 25% YSM (<9.59)	Average:	16.65	2.65	38.06	89.19	N: 2,081
	Private Household Workers (nec) (720)	6	1.79	96.67	87.57	27.44
	Laborers (nec) (970)	20	3.00	1.15	84.83	20.90
Middle 50% YSM	Average:	19.17	2.83	20.09	83.00	N: 3,758
	Farmers, owners & tenants (100)	14	2.64	4.29	87.14	7.45
	Private Household Workers (nec) (720)	6	1.79	95.95	79.73	11.81
	Laborers (nec) (970)	20	3.00	1.58	75.48	32.01
Top 25% YSM (>11.61)	Average:	19.94	2.91	8.86	80.94	N: 2,167
	Farmers, owners & tenants (100)	14	2.64	3.51	85.46	18.41
	Laborers (nec) (970)	20	3.00	1.07	73.81	38.76

	Occupation	Occ Inc	Ln OccInc	% Female	% Literate	% Reported
Born in Germany						
Bottom 25% YSM (<8.35)	Average:	19.92	2.87	17.39	98.44	N: 1,156
	Farmers, owners & tenants (100)	14	2.64	6.73	98.08	9.00
	Private Household Workers (nec) (720)	6	1.79	93.75	97.22	12.46
	Farm laborers, wage workers (820)	9	2.20	2.36	98.43	10.99
	Laborers (nec) (970)	20	3.00	1.87	99.07	9.26
Middle 50% YSM	Average:	22.58	3.03	4.66	98.42	N: 2,854
	Farmers, owners & tenants (100)	14	2.64	1.77	98.62	17.80
	Managers, Officials, Proprietors (290)	42	3.74	4.03	99.60	8.69
	Laborers (nec) (970)	20	3.00	0.24	96.90	14.44
Top 25% YSM (>10.13)	Average:	21.40	2.98	4.90	97.97	N: 1,671
	Farmers, owners & tenants (100)	14	2.64	4.59	97.71	31.30
	Managers, Officials, Proprietors (290)	42	3.74	3.76	100.00	7.96
	Laborers (nec) (970)	20	3.00	0.79	96.03	15.08
Other Foreign Born						
Bottom 25% YSM (<8.73)	Average:	19.41	2.86	17.18	90.99	N: 710
	Mine Operatives & Laborers (650)	24	3.18	1.94	95.15	14.51
	Farm laborers, wage workers (820)	9	2.20	2.04	90.82	13.80
	Laborers (nec) (970)	20	3.00	1.30	74.03	10.85
Middle 50% YSM	Average:	21.92	3.00	7.09	91.44	N: 1,425
	Farmers, owners & tenants (100)	14	2.64	0.83	90.50	16.98

	Occupation	Occ Inc	Ln OccInc	% Female	% Literate	% Reported
	Mine Operatives & Laborers (650)	24	3.18	0.49	92.16	14.32
	Laborers (nec) (970)	20	3.00	2.26	76.84	12.42
Top 25% YSM (>12.15)	Average:	21.44	2.96	5.29	89.54	N: 813
	Farmers, owners & tenants (100)	14	2.64	3.85	92.74	28.78
	Mine Operatives & Laborers (650)	24	3.18	0.00	88.24	8.36
	Laborers (nec) (970)	20	3.00	0.00	76.24	12.42

Notes: YSM distribution based on each nativity group. nec means not elsewhere classified. Occupation code number in parentheses. The percentages in the finals column are based on those with a reported occupation, ages 20-60 with the designated nativity and YSM range,

Source: Minnesota Population Center (2025).