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Adrian Haws
David R. Just
Joseph Price

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ABSTRACT

Farm succession is a central issue in agricultural policy. Yet while many studies explore succession planning, little is known about how farms are actually transferred. We provide the first population-level evidence on intergenerational farm succession by linking US census records for millions of farmers' children in 1900 and 1910 to identify which children own and operate the family farm up to 40 years later. We first show that daughters are rarely successors. Using a within-family identification strategy, we find that first-born sons are slightly more likely than their younger brothers to be successors while their parents are working aged. However, birth order is not predictive of who receives the farm when parents are older or deceased. For later farm transfers, sons who were previously tenant farmers are much more likely than their brothers to be successors, possibly because they are better prepared. Fewer than one-fifth of farmers transfer their farm to any son. Our study relies on rich historical data because current policy prevents the necessary data linkages for studying intergenerational farm succession. Providing a secure system for researchers to link modern agricultural data to population microdata, similar to what has been achieved with other data sources, would yield crucial insights into long-term agricultural policy issues in the US.

Adrian Haws
Cornell University
434 Warren Hall
Ithaca, NY 14853
aah226@cornell.edu

David R. Just
Cornell University
210C Warren Hall
Ithaca, NY 14850
drj3@cornell.edu

Joseph Price
Department of Economics
Brigham Young University
2129 WVB
Provo, UT 84602
and NBER
joseph_price@byu.edu

Succession is vital to American agriculture. During the 20th century, however, succession became a more prominent issue as farm consolidation and off-farm migration threatened the continuity of family farms (Gibson and Ellis 1953; Dimitri, Effland, and Conklin 2005).[1] Currently, succession is again at the forefront of agricultural policy because an aging stock of farmers are expected to transfer their farmland within the coming years (Kirkpatrick 2012; Bigelow, Borchers, and Hubbs 2016; Roberts 2021). Recognizing the issues that can arise when farmers fail to choose a successor (Lobley, Baker, and Whitehead 2010), the Heirs' Property Relending Program was authorized in 2018 to "keep farmland in farming, protect family farm legacies and support economic viability (U.S. Department of Agriculture 2024)." Additionally, Cooperative Extension offices throughout the US provide resources on succession planning.[2]

Despite the significant role of succession in agricultural policy, there are fundamental questions that economists have not addressed. In fact, the *American Journal of Agricultural Economics* contains only one article on any aspect of farm succession.[3] The scarcity of research on succession is jarring, given its widely acknowledged importance, and has drawn attention for at least a half century.[4] Among existing succession studies, most rely on cross-sectional surveys to identify whether farmers have a succession plan.[5] Yet these studies are limited because they do not observe the timing of succession or which child (if any) ultimately receives the farm.

[1] Between 1900 and 2000, the agricultural employment share collapsed from 41 percent to 1.9 percent while average farm size more than doubled (Dimitri, Effland, and Conklin 2005) and continues to rise (MacDonald, Hoppe, and Newton 2018).
[2] We identify articles or workshops on succession planning from extension services in 45 states, with the earliest from 1953 (Gibson and Ellis 1953).
[3] As of June 14, 2024, a jstor.org search with the term "succession" yielded one article, by Chang (2013), in either the *American Journal of Agricultural Economics* or its predecessor, the *Journal of Farm Economics*. We also find no discussion of farm succession in the *Handbook of Agricultural Economics*. However, the Core Historical Literature of Agriculture contains many works related to farm succession in sociology journals and in less prominent agricultural economics journals.
[4] Richard Easterlin (1976) remarks that "it is distressing, indeed, to note the paucity of [succession studies]."
[5] The FARMTRANSFERS survey (Errington and Tranter 1991) has been carried out in 13 countries and 8 US states (Lobley and Conway 2024). See also Corsi (2017) for a review of recent studies on farm succession planning.

Although a few studies examine actual farm transfers, these are based on samples of fewer than 1,000 households (Tarver 1952; Kennedy 1991; Burton and Walford 2005; Dribe and Lundh 2005) which limits their statistical inference and generalizability.[6]

In this paper, we produce the first population-level study of intergenerational farm succession by linking census records for 1.3 million farmers in 1900 or 1910 to their children's succession outcomes up to 40 years later.[7] We first analyze whether first-born sons are more likely to become successors, using a within-family comparison to account for unobserved characteristics related to birth order. We then explore whether birth order effects vary by the timing of succession. In the case of later farm transfers, we extend the analysis to test the role of sons' prior migration and occupational choices in their likelihood of becoming successors. Finally, we compute the rates of having any successor and having multiple successors, across all families in our dataset.

Our study relies on rich historical data because current policy prevents the necessary data linkages for studying intergenerational farm succession.[8] Yet several patterns indicate that farm succession had important consequences during the early 20th century. First, the share of employment in agriculture and the share of population in rural areas both fell (Dimitri, Effland, and Conklin 2005). Second, rising rates of farm tenancy and falling homestead claims signal that affordable farmland was becoming more scarce (Black and Allen 1937; U.S. Department of Commerce 1976). Third, the Great Depression and the Dust Bowl upended farmers' financial stability and increased the difficulties of taking over a family farm.

[6] While Stiglbauer and Weiss (2000) follow 42,000 households in Austria over 15 years, they are limited in the research questions that can be addressed because they do not observe individual characteristics of successors.
[7] As shown in Table 2, there are 618,452 farm families with at least one son in 1900 and 689,196 in 1910, for a total of 1,307,648 household-level observations. However, some families are observed in both years.
[8] We discuss modern data constraints in the conclusion section of the paper.

We find that daughters are rarely successors and that there is a small and monotonic birth order effect among sons. Among sons whose parents are under 65 years old, first-born sons are up to 0.5 percentage points more likely than second-born sons, 0.6 percentage points more likely than third-born sons, and 0.9 percentage points more likely than fourth-born sons to inherit the family farm (conditional on family characteristics and year of birth).[9] Qualifying as a successor while parents are still working may indicate a plan to gradually transfer responsibilities. When parents are over 65, we do not find a preference for first-born sons. Instead, sons who inherit the family farm are up to 7.7 percentage points more likely to have previously been tenant farmers and 5.1 percentage points less likely to have previously lived in a city.

In the full sample, the probability of having a son successor is increasing and concave over the farmers' lifetime (similar to Stiglbauer and Weiss (2000)), and also increases with the number of sons. Forty years after the children are observed in the parents' household, 17 percent of families with a son have at least one son successor and 3 percent have two or more son successors. The rates of completed succession in our study are considerably lower than rates found in surveys of succession plans (Lobley, Baker, and Whitehead 2010; Liu, Maule, and Zhang 2023), suggesting that many succession plans are not carried out. However, our findings are similar to anecdotal evidence on the frequency of completed succession (Pitts et al. 2009).[10] The rate of succession is notably lower for families with children reaching adulthood around 1930, who may have been disproportionately impacted by the Great Depression.

[9] Although the terms "inherit" and "inheritance" can imply that the farmer has passed away, we use these terms in combination with "successor" and "succession" to discuss transfers that could occur while the farmer is still living. See the data section for technical details on how we define succession outcomes.

[10] Pitts et al. (2009) state that "only a fifth of family farms survive the transfer to the second generation." The citation for this statistic is an unpublished Cornell Cooperative Extension bulletin from 1993, further illustrating the lack of evidence on farm transfers.

Background

Farm succession is notoriously fraught with deeply personal and idiosyncratic motivations (Pitts et al. 2009) but can also be influenced by general laws and customs. To successfully pass a farm to the next generation, both parent and child must agree on the transfer. Personal disagreements between a child's plans for the future and their parents' succession plans can cause turmoil within the family.

Economic modeling of succession decisions often focuses on the individual motivations of the parent and child and the mechanisms that align their incentives. Kennedy (1991) proposes that the parent is motivated to secure a share of the farm income as they age. The parent may also use the promise of future succession to incentivize older children to provide labor. For the child, the value of the future estate is weighed against other competing options for employment. Chu (1991) considers an overlapping generations model in the context of ancient times, where the probability of a child's survival is dependent on the size of their bequest. In this model, primogeniture is an equilibrium outcome resulting from high mortality rates. A similar outcome could occur in a more recent context if returns to scale make a larger farm more viable.

Other models consider succession as a cooperative endeavor. Kimhi (1997) suggests that generations cooperate in maximizing productivity across a farm transfer. In this model, binding constraints on borrowing would favor older children and earlier succession. Pesquin, Kimhi, and Kislev (1999) and Kimhi and Nachlieli (2001) examine the role of income and risk sharing between generations as a substitute for retirement programs or annuities.

In addition to financial considerations, parents are motivated by their social-emotional connection to their children. Parents often hope to see their farm continue in the family, and are willing to accept much smaller payments when selling land to their children (Perry and Robison 2001). Given the financial and social-emotional incentives, a parent may have competing

considerations in passing their land to the next generation. Dividing the farm equally among children may provide satisfaction and reduce conflicts, but could result in farms that are too small to be viable. A desire for greater financial security in retirement would motivate parents to choose a successor who has accumulated more wealth by the time of succession. This desire could bring about a preference for male successors, who have greater access to wealth and credit during the period of our study, and to a preference for older sons, who have more time to accumulate wealth.

Children may also have complicated motivations. Successors receive land, physical capital, and managerial training to help them successfully run the business. Their emotional attachment and deep familiarity with the farm may also provide satisfaction and improve their productivity. In order to inherit the farm, however, the child often forfeits other opportunities. Indeed, Errington (2002) finds that many planned successors remain on the farm with minimal engagement in management until the parent executes the transfer. This suggests that there are likely to be shifts in succession patterns as economy-wide factors impact the relative attractiveness of outside opportunities.

The expectation of inheriting (or not inheriting) the farm is likely to impact education, occupation, and migration decisions. If a child expects to inherit the farm, they are less incentivized to develop non-farm skills, opportunities, or assets. Alternatively, if a child does not expect to inherit the farm, they will invest in other opportunities, and may migrate elsewhere. Key to these decisions is whether the child anticipates the opportunity of succession. If the parent does not plan for a successor prior to retirement or death, the possible future opportunity of succession will be weighed against current endeavors. When the farmer retires or passes away, succession will be more attractive to some children than others. For example, those with real assets elsewhere may find the opportunity unattractive (Calus, Van Huylenbroeck, and Van

Lierde 2008). Similarly, children employed outside of farming may be reluctant to return. Thus the characteristics of successors might differ substantially, depending on whether succession is expected or unexpected.

Farmers in the US were relatively unconstrained by succession laws. As of the late 19th century, most states in the US required equal inheritance among children when landowners died without a will, but no restrictions applied to transfers through a will or while the landowner was living.[11] Without legal restrictions, families may have imported well-established succession customs when they immigrated.[12]

Succession laws and customs vary widely, and have been intensely debated for centuries. As a notable example, Adam Smith and Alexis De Tocqueville argued that England's law of primogeniture was inefficient and perpetuated inequality (Kent and Barnes 1884).[13] France required equal inheritance among the children, as part of the Napoleonic Code, but some thinkers warned of its potential for leading to poverty and social disorder.[14] Even when laws required equal inheritance, there is evidence that the custom of primogeniture prevailed in regions of Norway (Abramitzky, Boustan, and Eriksson 2013) and Germany (Lloyd 1877).[15] Variations in succession laws and customs have wide-ranging consequences. Succession institutions in parts of Germany varied by village, with those tending toward primogeniture seeing higher out-migration

[11] Exceptions include Tennessee, which gave preference to male children, and Louisiana, which restricted the size of inter vivos donations to any one child. Otherwise, "complete liberty…as to the power of disposing of all kinds of property, either by will or otherwise, generally exist[ed] (Lloyd 1877)."
[12] Immigrants contribute significantly to American agriculture (Cance 1925; Saloutos 1976) and Danish immigrants provide an example of agricultural practices carrying over to the US (Boberg-Fazlić and Sharp 2024). There is also evidence that the economic behavior of immigrants and their children is affected by gender and birth order norms from the source country (Blau 2015; Isungset, Lillehagen, and Ugreninov 2020).
[13] The English law only required primogeniture when landowners died without a will.
[14] Charles Forbes Montalembert (1856) claimed that sub-division of land would be "the first step…into the abyss of despotism" if applied in England, while Eyre Lloyd (1877) argued that it would lead to "pauper proprietors."
[15] The 1845 Swedish law of inheritance required equal division among children. In Württemberg "the eldest son, and in some parts of the country the youngest, succeeds to the whole of the property…. and though the written law provides that all properties should upon the death of the owner be divided among his children, the above custom is respected by the Law Courts, and not interfered with (Lloyd 1877)."

(Huning and Wahl 2021; Wegge 2021) and wealth inequality (Wegge 2021), and lower economic and population growth in the long run (Huning and Wahl 2021). On the other hand, villages where children shared equally in the inheritance have greater present-day social equality (Hager and Hilbig 2019) and higher incomes (Bartels, Jäger, and Obergruber 2024).

Existing research on completed farm succession is difficult to generalize because it relies on small samples. Kennedy (1991) studies intergenerational succession in Ireland in the early 20th century, finding that oldest sons are around 40 percent of successors and daughters are only 5 percent of successors. In pre-industrial Sweden, Dribe and Lundh (2005) show that sons inherit the farm in a plurality of cases, but many farms are transferred to sons-in-law, other relatives, or non-family members. Burton and Walford (2005) study a sample of 131 historically large farms in England from 1960 to 1999, finding that about a third of transfers are to multiple successors. In the largest prior study, Stiglbauer and Weiss (2000) use census records from Austria to follow 42,000 farms from 1980 to 1995. Of these farms, about 5,500 change hands over the course of the study. Of the farms that either change hands or exit farming, 49 percent are likely transferred within the family. The probability of succession increases with the age of the farmer, but at a decreasing rate. Succession is also more likely for larger farms. However, the data does not include the characteristics of successors.

Within the US, Tarver (1952) surveys 636 farmers in Wisconsin whose farms had been in the same family for a century or longer. From 1848 to 1948, these farms were passed solely to sons in 75 percent of cases, with little evidence of a birth order effect. Friedberger (1983) uses probate dockets and deed books from seven townships in Illinois and Iowa to show that 68

percent of household heads in 1900 eventually had a successor in the next generation, but only 28 percent of transfers occurred while the parent was still alive.[16]

Given the empirical and theoretical findings in the literature, we address a series of research questions:

1. **What is the rate of intergenerational succession?** Prior data is sparse and idiosyncratic, providing very little information on succession rates in the US.
2. **How frequently does more than one child become a successor?** While some prior work indicates that multiple succession is common, no work has examined this in the US. It is unclear whether farm sizes would sustain multiple division among children.
3. **Are sons more likely to be successors?** While gender discrimination limited the economic opportunities for women in the early 20th century, the relative likelihood of daughters inheriting the farm is unknown.
4. **Are first-born sons more likely than their siblings to be successors?** It is unclear whether a birth order preference existed in the 20th-century US. This is of particular interest given the relationship between primogeniture and inequality.
5. **Are early successors less likely to invest in college education than later successors?** Children who expect to inherit their parent's farm may be less likely to invest in off-farm opportunities.
6. **Are later successors less likely than their siblings to have moved to a city, invested in real assets, or chosen an occupation outside of farming?** When a family has no early successors, the children's migration, investment, and occupational decisions in adulthood may affect their likelihood of succession when a parent later retires or passes away.

[16] Other work examines intergenerational succession in colonial Massachusetts (Greven 1970).

Data

Our analysis draws on microdata from the full-count US Census of Population every ten years from 1900 to 1940 (Ruggles et al. 2024a; Ruggles et al. 2024b). The 1900 and 1910 US Census includes a unique set of questions that allow us to identify farm owners and their children's birth order. We then observe the children's succession outcomes in 1920 through 1940, using linkages from the Census Tree Project.[17]

We construct our baseline samples using the 1900 and 1910 US Census, aiming to select children of farm owners where the oldest child is observed in the household. To ensure that we focus on farm owners, we restrict the sample to households living on a farm where the household head is a farmer and the house is not rented.[18] We then apply a series of restrictions to establish that we observe the oldest child of farm owners.[19] First, we restrict our focus to couples who have been married for 18 or fewer years, so that no children are older than 18 (and may have moved away). Second, we limit the possibility of older children from a previous marriage by removing families with stepchildren or with single parents.[20] If a parent has a stepchild, they may have older stepchildren who are not in the household. Additionally, single parents may have older children from a previous relationship. Third, we focus on parents who are between 15 and 60 years old because it is more likely that their oldest child is still at home (the parent would have been 42 years old when an 18-year-old child was born). Fourth, we use a census question that is only available in the 1900 and 1910 censuses to require that the mother's number of living

[17] Data from the 1950 US Census recently became available, but the name fields are not yet available for linking.
[18] We follow Collins and Wanamaker (2022) by using home ownership as a proxy for farm ownership. Because married women living with their husbands are never recorded as household heads prior to 1980 (see U.S. Census Bureau 2023) all households in our sample are characterized by a male farmer.
[19] Table A1 of the Appendix contains details on the number of households removed with each restriction.
[20] Stepchildren of the household head are reported directly, and we infer stepchildren of the mother if any children in the household are older than the duration of the marriage.

children is equal to the number of children observed in the household.[21] We also remove families with twins to distinguish birth order.[22]

To observe children's succession outcomes as adults, we construct a longitudinal dataset that links 3.5 million observations of farm children to their place of residence, occupation, and home ownership in census records 20 or more years after childhood. We use links from the Census Tree Project, which contains the largest number of links across historical US census records (Price et al. 2021; Buckles et al. 2023) and which include women as well as men. As reported in Table 1, between 73 and 76 percent of sons and between 63 and 65 percent of daughters in 1900 and 1910 are linked to a census record 20 years after childhood.[23]

Ideally, we would measure succession by observing whether a child owns and operates the family farm as an adult. While we cannot observe this directly, it is fairly straightforward to identify children who own and operate a farm. Similar to the criteria for their parents, farm owner-operators are defined as heads of household who are farmers by occupation and who own a home on a farm.[24] The additional step is to establish that children own their parents' farm.[25] Because the census does not identify farms over time, we use various measures to approximate whether a child lived in the same place in childhood and in adulthood.

We infer that a child lives on the family farm as an adult if they reside in the same county as their childhood home. We refer to this main definition as the *County* measure of succession. In tracking counties over time, we account for temporal changes in county boundaries using a

[21] Although the census does not report the total number of a father's children, our empirical results are not sensitive to removing fathers who were over 25 when married to their current spouse (see Table A3 of the Oline Appendix).
[22] This is a common sample restriction in papers studying birth order (e.g. Black, Devereux, and Salvanes (2011)).
[23] We are able to link nearly two-thirds of daughters, despite the difficulty of linking women across surname changes that occur at marriage. The Census Tree Project leverages data from a genealogy website where users often establish census links on the basis of private information about their ancestors.
[24] We thereby avoid applying our definition of succession to dependent children who are working on the family farm. Our classification also includes women as successors if they are married to the household head.
[25] Our classification scheme allows for multiple successors in one family.

method described by Gabriel et al. (2023) (see also Otterstrom, Price, and Van Leeuwen (2022)). A limitation of the *County* measure is that it could incorrectly apply to children who own a farm in the county where they grew up, but on land that was never owned by their parents.

To address the potential for misclassification with the *County* measure of succession, we further require that, as an adult, a child has at least one neighbor who has not moved.[26] We refer to this stricter definition as the *Neighbor* measure of succession. Because neighbors of farmers are also likely to be farmers, the out-migration rate may be lower than the general population. We can thus infer geographic stability at a finer level by relying upon census links of neighbors. A weakness of the *Neighbor* measure is that it would exclude heirs for whom all neighbors migrated during the time between censuses. Nonetheless, it provides a higher degree of certainty in linking farmland across census years, and allows us to test the sensitivity of results to mis-classifying successors.

Analytic Strategy

Our empirical analysis focuses on estimating the relationship between a child's characteristics, including birth order, gender, and occupation, and their likelihood of inheriting their family's farm. We use linear probability models where the outcome variable is an indicator for being a farm owner-operator and living in the same county as during childhood.

The size of our dataset makes it possible to estimate the effect of birth order within families—using family fixed effects—instead of relying on estimates that do not fully account for differences across families. Within-family estimates overcome selection bias from parental characteristics that differ across families, which could otherwise confound causal effects of birth

[26] We link neighbors to a later census to determine whether they reside near the child during both childhood and adulthood. Neighbors are defined as the set of up to 50 households enumerated immediately before or after the child in each census. The order of enumeration is commonly used to proxy for neighboring households in historical census data (Brown et al. 2021; Price et al. 2021; Helgertz et al. 2022).

order (Rodgers et al. 2000). A within-family estimation strategy also needs to include year of birth indicators to account for external trends (Blake 1989; Black, Devereux, and Salvanes 2011).[27] Additionally, we follow previous birth order studies (Black, Devereux, and Salvanes 2011) by generating estimates separately by family size.[28] We also generate pooled estimates across family sizes to increase statistical precision.

We begin by investigating the relative probability of succession by gender and birth order within the same estimating equation. This preliminary analysis is not likely to be causal because a child's gender may be endogenous to their parents' fertility choices and daughters who inherit the farm may be unobserved if their husband is listed as a farmer in the census. Despite its challenges, this preliminary analysis provides some evidence of whether the likelihood of succession can be explained by birth order and gender. We will later analyze birth order among sons, which faces fewer challenges for interpretation. The specification is as follows:

(1) $$Inherit_{ij} = \alpha + \beta_1 Son_{ij} + \beta_2 Oldest_{ij} + \beta_3 Son_{ij} x\ Oldest_{ij} + \sum_{l=1}^{18} \delta_l\, 1\{Age_{ij} = l\} + \gamma_j + \epsilon_{ij}$$

The unit of observation is child i in family j. Our independent variables of interest are binary indicators for gender (equal to 1 for sons), birth order (equal to 1 for oldest children), and the interaction of the first two indicators. We include family fixed effects, denoted by γ_j, and age fixed effects (which are identical to birth year effects in our setting). Standard errors are clustered at the family level.

We estimate Equation 1 separately by along two different dimensions for any given sample of children. First, we analyze the relationship of farm succession with gender and birth

[27] In our study, national trends in education and migration could bias the relationship between birth order and farm succession by presenting different opportunities for children within the same family. For example, high school graduation and enrollment grew sharply between 1910 and 1920 (Goldin 1998), so a 14-year-old in 1910 might have more educational opportunities than their 18-year-old sibling. Additional years of education could lead the younger child to seek employment in a city, or to use their knowledge to improve the family farm.

[28] Table 2 shows that family size is associated with family-level succession outcomes, which further supports our approach of exploring heterogeneous estimates by family size.

order across different points in time. For a child in the 1900 sample, we observe succession outcomes separately in 1920, 1930, and 1940. For a child in the 1910 sample, we observe succession outcomes in 1930 and 1940. While the linked sample diminishes with the length of time after childhood, a temporal analysis helps us observe succession as parents age. Second, we estimate separate models for families with two, three, or four children, and between two and four children. We focus on families with four or fewer children to simplify our reported results while including sufficient variation in gender and birth order.

Motivated by our research questions and the low rates of observed farm succession among daughters, we focus the remainder of our analysis on sons.[29] We aim to estimate the reduced form of a possible causal relationship, with an estimating equation that is informed by a large literature on birth order effects. Farm succession involves complex decisions by parents and their children, and we do not attempt to estimate parameters of a structural model. We specify the relationship between sons' birth order and succession as follows:

$$(2) \quad Inherit_{ij} = \alpha + \sum_{k=2}^{4} \beta_k \, 1\{SonOrder_{ij} = k\} + \sum_{l=1}^{18} \delta_l \, 1\{Age_{ij} = l\} + \gamma_j + \epsilon_{ij}$$

We include a set of binary indicator variables for a son's birth order among sons in the family, omitting the category k=1 (first-born sons). As with Equation 1, we separately analyze succession for different outcome years and for families with two, three, or four sons.

We extend this analysis by separately estimating Equation 2 for families with a successor after 20 years (which we refer to as "families with an early successor") and families with no successors 20 years after the initial census ("families without an early successor"). We also calculate the differences in estimated birth order coefficients between families with or without an

[29] See Table A2 of the Appendix for an analysis of daughters' birth order.

early successor.[30] The age of fathers has implications for succession timing because the average age of fathers after 20 years (around 57 years) is within working age but the average age of fathers after 30 years (around 67) is above the retirement age (set at age 65 by the Social Security Act of 1935) and life expectancy during this period.[31]

We additionally modify Equation 2 to study whether children's occupations and locations of residence as adults are associated with inheriting the family farm by the time of a later census. For families without an early successor, we estimate the relationship between succession 30 years after childhood and binary indicators for being the first-born son, being a tenant farmer (20 years after childhood) and living in an urban area (20 years after childhood). We also include age and family fixed effects and remove the binary indicators for second sons, third sons, and fourth sons. We define tenant farmers as individuals who are farmers by occupation and live on a farm, but do not own a home.[32]

Finally, we estimate an equation with the dependent variable as a binary indicator for having completed at least 4 years of college by the time of the 1940 census. We estimate a version of Equation 2, where we replace the birth order variables with a binary indicator for whether a child inherited the family farm (in either 1930 or 1940). We again compare the estimated coefficients between families with or without an early successor.

[30] We use a two-sided statistical test for equality of coefficients across the "Yes" and "No" columns using a standard normal estimator of the following form: $z = \frac{(\beta_1 - \beta_2)}{\sqrt{se(\beta_1)^2 + se(\beta_2)^2}}$.

[31] As reported in Table 2, the average age of fathers in our 1900 sample is 36.8 years, which would be 66.8 years in 1930. There is evidence that, in 1930, male life expectancy at birth was less than 60 years (Smith and Bradshaw 2006) and life expectancy at 30 was 67.5 years (Dublin and Lotka 1934).

[32] The available census data do not allow us to observe farmers who rent only some of their farmland.

Results

Data Description

Table 1 highlights the prevalence of intergenerational farm succession (research question 1), census linking rates, and ages of over 5 million observations of children of farm owners in the 1900 and 1910 censuses. Several notable patterns appear in the data. First, sons are much more likely than daughters to inherit the family farm as adults. No more than 0.4 percent of daughters in the 1900 childhood sample (the 1900 cohort) and 0.2 percent of daughters in the 1910 childhood sample (the 1910 cohort) are classified as successors.[33] Second, the proportion of sons who are successors declines with birth order. As a typical example, 6.9 percent of first-born sons in the 1900 Census cohort are successors in 1920 using the *County* measure, while 5.1 percent of second-born sons, 3.7 percent of third-born sons, and 2.5 percent of fourth-born sons are successors. Third, the proportion of children who are successors increases with the time after childhood. Fourth, the 1910 cohort has lower rates of succession than the 1900 cohort. Fifth, as expected, succession rates are lower with the *Neighbor* measure.

Figure 1 displays the fraction of farm families with a son successor either 20, 30, or 40 years after childhood, among families with at least one son. Between 20 and 30 years after childhood, the percentage of families with a son successor jumps from 9.5 to 15.6 for the 1900 cohort and from 6.9 to 12.3 for the 1910 cohort. However, the percentage only increases to 17.3 after 40 years for the 1900 cohort (40 years is not available for the 1910 cohort). These patterns also appear with the *Neighbor* measure of succession.

[33] Missing census links cause our succession rates to be understated. However, it is possible to compute the fraction of successors among the linked subsample by dividing the fraction of successors by the census linkage rate. For example, while 5.6 percent of sons in 1900 are successors in 1920 (by the *County* measure), 7.7 percent of sons with a census link are successors.

Table 2 provides more details on the characteristics and succession outcomes for 1.3 million families with at least one son (research questions 1 and 2). We show that, even 40 years after the childhood census, only 17.3 percent of families have a son successor (with 3.0 percent having two or more son successors).[34] Multiple succession accounts for 12 to 18 percent of cases among families with any son successors. Additionally, the likelihood of having a successor is up to twice as high for families with four sons than for families with only two sons.

The average family has two sons (conditional on having at least one son). The duration of the parents' marriage is nearly 11 years on average, while mothers are around 32 years old. The relatively young age of mothers indicates that our sample restrictions, which make it possible to observe the oldest child, may underestimate total rates of farm succession by excluding later-born children.[35] Fathers in the sample are around 37 years old on average.

Gender and Birth Order

Table 3 and Table 4 analyze the joint roles of children's birth order and gender in predicting their likelihood of farm succession (research questions 3 and 4). We use linked census data to estimate a series of linear probability models as specified in Equation 1, using both the *County* and *Neighbor* measures to identify whether children stayed on the family farm. Because succession may be implied too frequently using the *County* measure and too infrequently using the *Neighbor* measure, the resulting estimates should provide reasonable bounds for these relationships. We observe these associations for farm succession in 1920, 1930, and 1940 for children in the 1900 cohort (Table 3) and in 1930 and 1940 for children in the 1910 cohort (Table 4).

[34] We use the *County* succession measure in Table 2. Summary statistics using the *Neighbor* measure are included in Table A5 of the Appendix.

[35] We later discuss the sensitivity of our results to excluding younger mothers from the sample, as reported in Table A4 of the Appendix.

Sons are more likely than daughters to become successors, within the same family and accounting for year of birth. In families with two to four children, sons in the 1900 cohort are 4.9 percentage points (using the *Neighbor* measure) to 5.7 percentage points (using the *County* measure) more likely ($p < .01$) than daughters to become successors by 1920. For the same period, only 0.1 percent of daughters are successors. While up to 0.7 percent of daughters are successors in 1940, sons maintain up to a 15.5 percentage point advantage. Similar patterns emerge for the 1910 cohort, with a large gender gap in succession that widens over time.

Relative to gender, birth order plays a smaller role in farm succession. In the 1900 cohort, we find that sons who are the oldest child are 1.6 percentage points (using the *Neighbor* measure) to 2.1 percentage points (using the *County* measure) more likely than other sons to become successors by 1920, in families with two to four children. However, the apparent birth order advantage disappears by 40 years after childhood. Sons who are the oldest child are no more likely than other sons to become successors in 1940. The birth order relationship for sons similarly weakens over time for the 1910 cohort.

A different pattern is observed for daughters. In the 1900 cohort, daughters who are the oldest child in the family are 2 percentage points (using the *Neighbor* measure) to 2.4 percentage points (using the *County* measure) less likely ($p < .01$) than other daughters to become successors by 1920, in families with two to four children.[36] The birth order relationship again weakens over time for both the 1900 and 1910 cohorts. We further explore birth order among daughters in Table A2 of the Appendix, with limited evidence of any birth order effects.

[36] While the negative coefficient for oldest children makes it appear that oldest daughters have a negative total probability of succession, the probability is positive after accounting for family and age fixed effects.

Sons' Birth Order

In Table 5 and Table 6 we explore whether sons' birth order predicts their likelihood of succession (research question 4). For clarity we only discuss results using the *County* measure, but the same general patterns are replicated by the *Neighbor* measure (as reported in the tables). We first show that first-born sons are slightly more likely than their brothers to become successors 20 years after childhood. Second, the probability of inheritance 20 years after childhood declines monotonically for sons who are born later. Third, as time progresses after childhood, first-born sons are not more likely to become successors.

Focusing on outcomes in 1920 for the 1900 cohort, second-born sons in families with only two sons are 0.5 percentage points less likely ($p < .01$) than first-born sons to inherit the family farm, controlling for age and family effects.[37] In the same set of families, 9.8 percent of first-born sons are successors. In families with three sons, second-born sons are 0.4 percentage points less likely ($p < .05$) than first-born sons to be successors, while third-born sons are 0.6 percentage points less likely ($p < .1$) than first-born sons. Because 12.1 percent of first-born sons are successors in these families, birth order accounts for even less of the probability of inheriting the family farm. In families with four sons, the estimated coefficients for second-born, third-born, and fourth-born sons are statistically indistinguishable from zero.

Similar patterns emerge in 1930 for the 1910 cohort. Second-born sons in families with two sons are 0.4 percentage points less likely ($p < .05$) than first-born sons to inherit the family farm. In families with three sons there is no statistical difference between first and second sons, while third sons are 0.5 percentage points less likely ($p < .1$) than first-born sons to inherit the family farm. In families with four sons, fourth-born sons are 0.9 percentage points less likely (p

[37] Estimates of birth order coefficients in Table 4 could be interpreted as causal, following previous literature using within-family models that assume birth order is randomly assigned conditional on age and family fixed effects.

< .05) than first-born sons to become successors, and we cannot distinguish a difference in succession for other sons.

The association between succession and birth order changes for longer periods after childhood, over which time farms are likely to require a successor because of old age or death. For the 1910 cohort, estimated birth order coefficients are not statistically significant after 30 years for any family size. A more nuanced pattern appears after 30 or 40 years for the 1900 cohort. Younger sons are no less likely than first-born sons to become successors, but second- and third-born sons are actually more likely to become successors than first-born sons among some specifications. Table 7 provides more clarity on these patterns by displaying the signs of coefficients that are estimated with *p*-values of less than 0.05. Our subsequent analysis addresses why the advantage for first-born sons disappears over time among each cohort.

Succession Timing

In Table 8 we analyze the relationship between succession outcomes and the timing of farm transfers.[38] Our analysis helps to uncover whether the disappearing advantage for first-born sons over time is explained either by younger sons eventually receiving an inheritance or by later transfers in families that never show a preference for first-born sons. To answer this question, we compare the birth order of successors 30 or 40 years after childhood between families with or without at least one son successor after 20 years.

We find that families with an early successor continue to be more likely to have a first-born successor 30 years after the childhood census, while there is no birth order pattern in families without an early successor. If an early successor is present, second-born sons are 2.6

[38] Table 8 only reports results from the *County* measure of succession because of limited space. Table 9 also includes only the *County* measure because of its similar organization. We report estimates using the *Neighbor* measure in Table A6 and Table A7 of the Appendix.

percentage points less likely ($p < .01$) than first-born sons to be successors (in families with two to four sons). Similarly, third-born sons are 2.5 percentage points less likely ($p < .01$) than first-born sons to be successors, but we do not distinguish a difference for fourth-born sons (possibly because of a small sample). No birth order differences appear among families with no son successors after 20 years, and we estimate large differences in birth order effects across groups. After 40 years we do not find a preference for first-born sons in either type of family, although one of the coefficient estimates is negative and marginally statistical significant (at the 10 percent level) for families with an early successor.

In Table 9 we explore whether the timing of succession is related to sons' likelihood of receiving a college education by 1940 (research question 5). Successors are between 3.4 to 4 percentage points less likely ($p < .01$) than their brothers to complete four years of college, in either type of family. For succession outcomes in 1930, we do not find a difference in the relative education of successors across families with or without an early successor. By contrast, successors in 1940 are 0.4 percentage points more likely to complete college ($p < .05$), relative to their non-successor brothers, if their family had an early successor.

Predictors of Succession in Later Farm Transfers

While the role of birth order diminishes over time, other differences among sons could be important for predicting succession. In Table 10, we explore the role of sons' migration, investment, and occupational decisions, 20 years after childhood, in predicting their later succession outcomes (research question 6). We focus on families without an early successor. We find that tenant farmers are 7.4 percentage points more likely than their brothers ($p < .01$) to later become successors (in families with two to four sons). Sons who live in a city are 4.6 percentage points less likely ($p < .01$) to later become successors with the *County* measure. In the same

regression models we find no evidence that first-born sons are more likely than their brothers to become successors.

Specification Tests

Our analysis includes a more stringent definition of geographic stability for the *Neighbor* succession measure, which attenuates our estimates but establishes reasonable bounds on the predictive power of birth order and gender. Additional specification tests allow us to address sample selection and measurement challenges, with results reported in the Appendix.

The centrality of birth order in our analysis lends particular importance to correctly identifying the oldest child of farming parents. If the oldest child is no longer living with their parents, then each child living at home is assigned an incorrect birth order. To reduce the probability of older children living outside the household, we focus on a subsample of children whose fathers were 25 years or younger when they married their current spouse. As shown in Table A3, we do not find different patterns of birth order estimates compared to our main results.

Family size is difficult to measure because we do not observe children who are born after the focal census year. Younger mothers may be especially likely to have children who are not in our sample, leading our observed family sizes to be biased downward and potentially affecting the validity of results reported by family size. We show in Table A4 that the signs of our estimates are similar when removing children of younger mothers (under age 35) from the sample, although smaller sample sizes reduces the statistical precision.

Discussion

While first-born sons have tended to inherit the family farm in some places and periods, it is not clear whether this would be true for early 20th-century America. Our analysis demonstrates that first-born sons are more likely than their siblings to inherit the farm. However, birth order differences among sons are small in magnitude, and are only found among farm transfers that

occur within 20 years after childhood (while parents are under 65 on average). Our findings indicate that farmers in our sample are unlikely to be constrained by rigid inheritance customs. However, farmers are incentivized to choose first-born sons because of their greater opportunity to accumulate wealth and establish credit before the time of the farm transfer. Compared with their siblings, first-born sons have more time to build wealth and credit and do not face the structural barriers to women's economic participation. Yet our analysis is not well suited for comparing succession across gender, because it is difficult to identify whether an inherited farm is operated by the farmer's son-in-law.

Children's incentives for succession are different if the farm is transferred when the farmer is elderly or deceased, instead of while the farmer is still working. It is plausible that farmers with a succession plan begin the transfer at an earlier date, giving them the opportunity to train their successor. In many cases, intended successors work on the family farm until the formal transfer of ownership (Errington 2002). Thus, the parents' promise of a future succession opportunity can keep children engaged on the farm.

Later farm transfers alter the children's incentives for succession because they may not have expected the opportunity. A child who does not expect succession is free to pursue other opportunities, but may consider taking over the family farm when the opportunity later arises. The benefits of inheritance are less appealing if a child has a successful career elsewhere. However, children who are tenant farmers may greatly benefit, because inheritance allows them to apply their farming skills on land which they own. By elevating the standing of landless farmers, succession may be an equalizing influence among the children. However, this interpretation is limited if children lease land from their parents in expectation of becoming a successor. Additionally, if children expect to inherit the family farm later in life they may avoid purchasing a separate farm.

Sons who receive an earlier farm transfer are somewhat more likely than their brothers to receive four years of college education. This finding contrasts with the explanation that children who expect to inherit the farm will not invest in postsecondary education. If families with an early successor are more likely to have a succession plan, then perhaps their higher propensity to send successors to college (compared to their brothers) reflects an aspect of management training. Yet the effect is small, and successors remain less likely than their brothers to attend college, whether succession occurs early or late.

We find much lower rates of succession than have been found in prospective studies of succession plans, which suggests that many succession plans fail. These plans could fail for a host of personal and external reasons. Stiglbauer and Weiss (2000) find that the likelihood of having a successor falls with age, and suggest that "a farmer who postpones succession will have more difficulties in finding a successor within the family." Our study confirms that the rate of new succession declines as farmers age.

We also find that most family farms had one successor, possibly because multiple succession would subdivide the land and reduce profitability. In the case of multiple succession, we are unable to distinguish whether successors practice joint ownership or separately cultivate sub-plots of land. We also do not observe alternative forms of compensation to children, such as selling the farm and dividing the proceeds among all children. Thus, it is possible that intergenerational transfers were less unequal than they appear.

Our estimates of population-level succession rates are somewhat limited. Our focus on identifying oldest children leads us to omit some younger children from the sample, who may eventually inherit the family farm. Additionally, we may omit some successors because we cannot link all children across several decades. Finally, we are unable to observe farm transfers that occur after 1940, when it is more likely that the parents have deceased.

Surprisingly, our main findings are similar across childhood cohorts, despite dramatic changes in US agriculture over just a few years. Children under 18 years old in 1900 all reached adulthood by 1920, when agricultural prices fell after historic highs during World War I (1914–1918).[39] Children in 1910 reached adulthood by 1930, during the Great Depression (1929–1939) and the Dust Bowl (1930–1936). The Great Depression caused steep drops in agricultural prices, which shrunk farm profits and led to foreclosures. To boost prices, the federal government later enacted the Agricultural Adjustment Act. During the same time, the Dust Bowl caused regional crop failures, foreclosures, and out-migration.

While there are similar patterns of succession across childhood cohorts, we observe two small but notable differences. First, fewer families in the 1910 cohort had a successor. This could be explained by the effects of the Great Depression and the Dust Bowl on children's occupation and migration decisions in early adulthood. Interestingly, a lower rate of succession during the Great Depression could partially explain the contemporaneous decline in the number of family farms. Second, there is an apparent advantage to second-born sons in the 1900 cohort. While we do not have an answer to this puzzle, a possible explanation is that second-born sons may have been necessary workers on the farm while their older brothers served in World War I, and later inherited the farm by their parents' choice or because their brothers sought other opportunities.

Our study uses rich historical data to gain original insights into farm succession, but researchers do not currently have access to more recent data to answer the same questions. USDA policy prevents researchers from linking the Census of Agriculture to population microdata collected by other government agencies, which is essential for observing the children

[39] While the war may have affected birth order and gender patterns of succession, any effect through mortality is likely very small. While over 4 million served in the military, US losses were around 116,000.

of farmers.[40] Researchers can apply to access restricted microdata through a secure computing environment at the USDA, but the data are isolated from demographic datasets.

There is a clear path forward for linking agricultural microdata to population microdata, which would immediately enable policy-relevant insights.[41] The USDA Economic Research Service already collaborates with the US Census Bureau to link individuals in the Current Population Survey Food Security Supplement to other demographic datasets (Bondurant 2023). Similarly, the USDA National Agricultural Statistics Service could work with the Census Bureau to provide linked microdata in the Federal Statistical Research Data Centers.[42] These Centers maintain a high standard of data disclosure avoidance and require researchers to attain Special Sworn Status. Farm establishments could also be linked over time, as demonstrated by the Longitudinal Employer-Household Dynamics at the US Census Bureau. Finally, it may be possible to link responses from the Census of Agriculture to surveys on succession planning.[43]

Conclusion

Our study quantifies the patterns of intergenerational farm succession in the United States using millions of linked census records from 1900 to 1940. We find that first-born sons are slightly more likely than their younger brothers to inherit the farm. The birth order effect is driven by sons who become successors while their parents are under 65. For later farm transfers, sons who were previously tenant farmers in adulthood are more likely to subsequently inherit the farm. We

[40] The USDA conducts the Census of Agriculture every five years, collecting farm-level information on family ownership, retirement, place of residence, when the farmer began operations, involvement in business and succession planning decisions, and management decisions. The Census of Agriculture was also conducted during the period of our study, but farm-level records are no longer extant.
[41] Alternatively, conducting a new longitudinal survey of intergenerational farm ownership would take decades to produce the same insights.
[42] Federal Statistical Research Data Centers have been found to increase data diffusion and the visibility of empirical and policy-related research (Nagaraj and Tranchero 2023).
[43] See Basker (2012) for an example of successfully linking an external dataset to data within the Federal Statistical Research Data Centers.

rarely observe female successors. The fraction of farmers with a successor is substantially lower than the fraction who report a succession plan in modern surveys, but increases with family size and the age of the farmer. A small minority of families with a successor had multiple successors, but this fraction also increases with family size.

Our findings support and extend previous research which has been limited by small sample sizes and the inability to observe actual succession outcomes. Similar to the research on succession planning, we find a higher probability of succession for larger families and a declining probability of succession with the age of the farmer. Our findings also support much of the prior research that shows a preference for early birth order sons.

We present the first estimates of realized succession rates in the population, finding a much lower rate of intergenerational succession than rates of planned succession shown in prior studies. The difference between planned and completed succession rates suggests that many plans fail. We also find differences in successors' characteristics for those who inherit the farm while their parent is still working aged, rather than inheriting when their parent is retired or deceased. Later farm transfers may be unexpected, implying that unplanned succession tends to benefit farmers with fewer fixed assets.

Our work demonstrates the power of using linked administrative data to analyze agricultural policy issues. Yet the insights from our study are difficult to apply to a modern policy context. Unfortunately, the USDA data infrastructure does not allow researchers to link more recent agricultural data in a way that would enable the study of farm transfers. We argue that existing federal data linkages demonstrate the feasibility of linking the Census of Agriculture to population microdata while preserving privacy.

Linking agricultural census data would have unprecedented potential for informing policy. Modern data linkages would allow researchers to study detailed questions about the

timing of succession, the involvement of retired farmers, the relationship between farm profitability and succession, the frequency of having multiple successors, and whether succession plans are carried out. We therefore echo a longstanding call from agricultural economists to expand the functionality of existing agricultural data (Zilberman et al. 1997; Just and Pope 2002).[44]

[44] In the AAEA Data Task Force Final Report, Zilberman et al. (1997) suggest that the USDA "should consider developing a panel (longitudinal) data set to capture the responses of farmers to policy/regulatory changes, technological innovation, etc. Currently, there is no capacity within the [USDA] ERS/NASS data collection activities to follow a set of producers to observe intertemporal responses."

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Tables and Figure

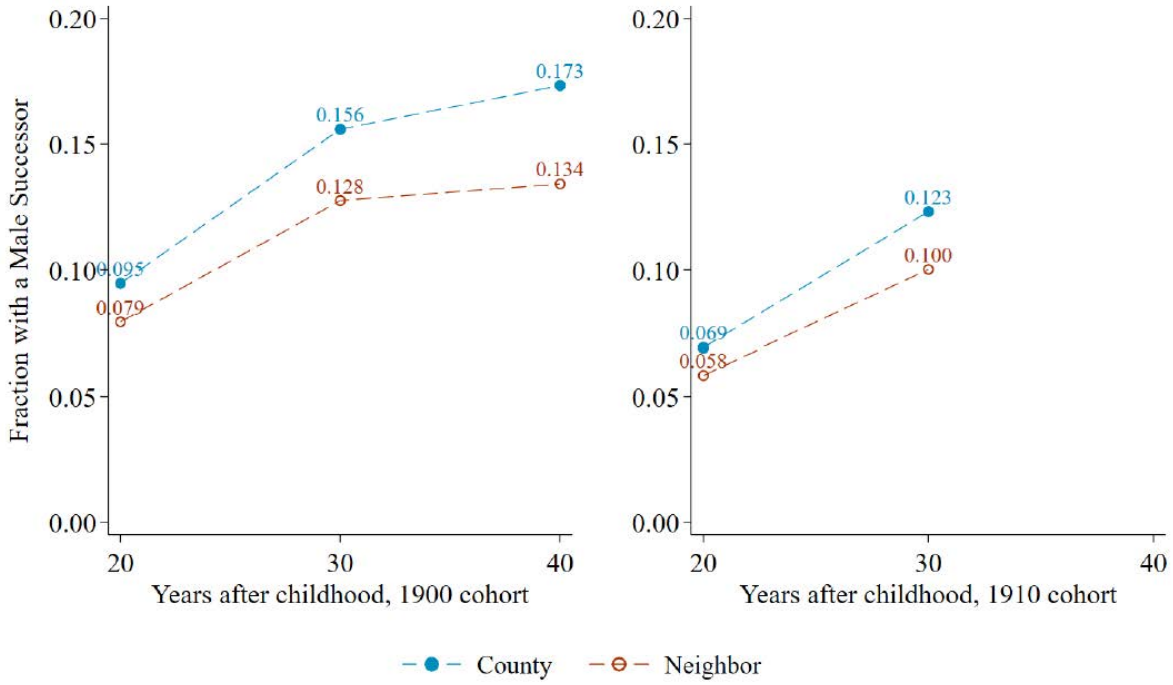

Figure 1: Fraction of farm families with a son successor

Notes: Fraction of farm families in 1900 or 1910 with at least one son who inherited the farm after 20 or more years. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 1: Summary statistics, children in farm families

	Daughters	Sons	1st sons	2nd sons	3rd sons	4th sons
1900 cohort						
Successor in 1920, County	0.1	5.6	6.9	5.1	3.7	2.6
Successor in 1920, Neighbor	0.1	4.6	5.7	4.3	3.1	2.2
Linked to 1920	65.2	73.2	74.0	72.9	71.9	71.3
Successor in 1930, County	0.2	9.6	10.4	9.5	8.3	7.6
Successor in 1930, Neighbor	0.2	7.7	8.4	7.6	6.7	6.0
Linked to 1930	59.6	72.1	72.7	72.0	71.3	70.6
Successor in 1940, County	0.4	10.6	11.0	10.6	9.8	9.1
Successor in 1940, Neighbor	0.3	8.0	8.3	8.0	7.4	6.9
Linked to 1940	54.9	68.4	68.4	68.5	68.5	68.2
Age	6.2	6.3	7.6	5.8	4.5	3.4
	(4.4)	(4.5)	(4.7)	(4.0)	(3.4)	(2.8)
Observations	1,164,120	1,218,988	605,982	344,916	165,634	68,353
1910 cohort						
Successor in 1930, County	0.1	4.0	5.2	3.6	2.5	1.8
Successor in 1930, Neighbor	0.1	3.4	4.3	3.0	2.1	1.5
Linked to 1930	62.8	76.1	77.0	75.8	74.8	74.2
Successor in 1940, County	0.2	7.4	8.3	7.1	6.2	5.4
Successor in 1940, Neighbor	0.1	5.9	6.7	5.6	4.9	4.3
Linked to 1940	55.9	73.7	74.4	73.5	72.7	71.9
Age	6.4	6.4	7.8	6.0	4.6	3.6
	(4.5)	(4.5)	(4.7)	(4.0)	(3.4)	(2.9)
Observations	1,309,771	1,370,126	678,381	382,785	184,572	78,719

Notes: We report the group-level means (as percentages) of indicators for farm succession and census linkage by the gender and birth order of children in farm families in the 1900 (top panel) and 1910 (bottom panel) US censuses. Means and standard deviations are reported for ages. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 2: Summary statistics, farm families

	1+ sons	2 sons	3 sons	4 sons
1900 cohort				
1 male successor in 1920	8.2	8.5	11.3	13.5
2+ male successors in 1920	1.4	1.2	2.7	4.2
First-born son successor in 1920	6.9	7.2	8.8	9.5
1 male successor in 1930	13.0	13.7	16.5	17.8
2+ male successors in 1930	2.9	2.7	5.6	8.4
First-born son successor in 1930	10.4	10.5	11.3	11.1
1 male successor in 1940	14.3	15.3	17.6	18.5
2+ male successors in 1940	3.0	2.9	6.0	8.6
First-born son successor in 1940	10.8	10.9	10.7	10.0
Number of sons	2.0	2.0	3.0	4.0
	(1.2)	(0.0)	(0.0)	(0.0)
Father age	36.8	37.0	38.3	39.2
	(7.1)	(6.8)	(6.3)	(6.0)
Mother age	31.7	31.8	33.1	34.0
	(6.4)	(6.1)	(5.6)	(5.2)
Years since marriage	10.8	11.1	12.6	13.8
	(4.6)	(4.2)	(3.7)	(3.3)
Observations	618,452	182,079	99,967	46,407
1910 cohort				
1 male successor in 1930	6.4	6.4	8.9	10.9
2+ male successors in 1930	0.9	0.7	1.6	2.7
First-born son successor in 1930	5.2	5.3	6.6	7.5
1 male successor in 1940	11.0	11.4	13.9	15.9
2+ male successors in 1940	1.9	1.7	3.7	5.6
First-born son successor in 1940	8.3	8.3	8.9	9.1
Number of sons	2.0	2.0	3.0	4.0
	(1.2)	(0.0)	(0.0)	(0.0)
Father age	36.9	37.0	38.2	39.2
	(7.1)	(6.9)	(6.4)	(6.1)
Mother age	31.9	32.0	33.1	34.0
	(6.2)	(5.9)	(5.4)	(5.0)
Years since marriage	10.9	11.1	12.5	13.6
	(4.6)	(4.2)	(3.7)	(3.4)
Observations	689,196	200,606	108,829	51,164

Notes: We report the group-level means (as percentages) and standard deviations of farm succession indicators, family size, and parents' age and duration of marriage by the number of sons in the 1900 (top panel) and 1910 (bottom panel) census households. The sample includes households living on a farm where the household head is a farmer and the house is not rented, with additional restrictions described in the paper. We define successors as farm owner-operators who live on a farm in the same county as their childhood home.

Table 3: Farm succession by gender and birth order, children in 1900

	2-4 children		2 children		3 children		4 children	
Succession measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1920								
Son	5.7***	4.9***	4.7***	4.2***	5.5***	4.7***	6.3***	5.2***
	(0.1)	(0.1)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Oldest child	-2.4***	-2.0***	-1.8***	-1.3***	-2.7***	-2.2***	-3.0***	-2.5***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)
Son x Oldest child	4.5***	3.6***	3.6***	2.8***	4.8***	3.8***	5.9***	4.8***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Observations	846,595		242,346		301,400		302,849	
Mean, daughters	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1930								
Son	12.9***	10.5***	12.5***	10.3***	13.1***	10.7***	13.0***	10.5***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)
Oldest child	-1.6***	-1.2***	-1.0***	-0.8***	-1.8***	-1.3***	-1.9***	-1.4***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.1)	(0.2)	(0.1)
Son x Oldest child	2.2***	1.6***	1.8***	1.4***	2.2***	1.6***	2.6***	2.0***
	(0.1)	(0.1)	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)
Observations	803,082		228,358		286,009		288,715	
Mean, daughters	0.3	0.3	0.3	0.2	0.3	0.2	0.4	0.3
1940								
Son	15.5***	12.1***	15.5***	12.4***	15.5***	12.0***	15.5***	12.0***
	(0.1)	(0.1)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)
Oldest child	-1.0***	-0.7***	-0.7**	-0.5*	-1.0***	-0.7***	-1.1***	-0.7***
	(0.1)	(0.1)	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)
Son x Oldest child	0.9***	0.5***	1.3***	0.6*	0.9***	0.6**	0.6**	0.1
	(0.2)	(0.1)	(0.3)	(0.3)	(0.3)	(0.2)	(0.3)	(0.2)
Observations	753,269		214,418		268,293		270,558	
Mean, daughters	0.7	0.5	0.7	0.5	0.7	0.5	0.6	0.4

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1920 (top panel), 1930 (middle panel), or 1940 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes children in farm families in the 1900 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 4: Farm succession by gender and birth order, children in 1910

	2-4 children		2 children		3 children		4 children	
Succession measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1930								
Son	3.9***	3.3***	3.5***	3.1***	3.8***	3.2***	4.1***	3.5***
	(0.1)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Oldest child	-2.0***	-1.7***	-1.7***	-1.5***	-2.0***	-1.7***	-2.6***	-2.2***
	(0.1)	(0.0)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Son x Oldest child	3.5***	2.9***	2.7***	2.3***	3.6***	2.9***	4.5***	3.7***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.2)	(0.1)
Observations	938,635		277,161		331,998		329,476	
Mean, daughters	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1940								
Son	9.7***	7.9***	10.0***	8.3***	9.6***	7.8***	9.6***	7.8***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)
Oldest child	-1.4***	-1.1***	-0.8***	-0.6***	-1.4***	-1.2***	-1.7***	-1.2***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)
Son x Oldest child	2.3***	1.9***	1.6***	1.3***	2.3***	1.9***	2.7***	2.0***
	(0.1)	(0.1)	(0.3)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Observations	872,018		255,283		308,468		308,267	
Mean, daughters	0.3	0.2	0.3	0.3	0.3	0.2	0.3	0.2

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1930 (top panel) or 1940 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes children in farm families in the 1910 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 5: Farm succession by sons' birth order, children in 1900

	2-4 sons		2 sons		3 sons		4 sons	
Succession measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1920								
Second son	-0.4***	-0.2*	-0.5***	-0.3	-0.4**	-0.3*	0.0	0.2
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Third son	-0.6***	-0.4**			-0.6*	-0.5	-0.3	-0.1
	(0.2)	(0.2)			(0.3)	(0.3)	(0.4)	(0.4)
Fourth son	-0.8***	-0.4					-0.5	-0.1
	(0.3)	(0.3)					(0.6)	(0.5)
Observations	603,338		265,163		211,567		126,608	
Mean, first-born sons	11.0	9.0	9.8	8.1	12.1	10.0	13.4	10.8
1930								
Second son	0.1	0.1	-0.2	-0.2	-0.1	-0.1	1.1***	0.8***
	(0.2)	(0.1)	(0.3)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Third son	-0.3	-0.3			-0.5	-0.4	0.9*	0.6
	(0.3)	(0.2)			(0.4)	(0.4)	(0.5)	(0.4)
Fourth son	-0.5	-0.5					1.1	1.0
	(0.4)	(0.4)					(0.7)	(0.6)
Observations	595,405		260,406		209,254		125,745	
Mean, first-born sons	15.0	11.9	14.4	11.5	15.6	12.4	15.8	12.5
1940								
Second son	0.4**	0.3**	-0.4	-0.3	0.7***	0.6**	1.3***	0.9***
	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.2)	(0.4)	(0.3)
Third son	0.0	0.0			0.5	0.6	0.9*	0.4
	(0.3)	(0.3)			(0.5)	(0.4)	(0.5)	(0.5)
Fourth son	-0.2	0.0					1.1	0.8
	(0.4)	(0.4)					(0.8)	(0.7)
Observations	564,687		247,101		198,373		119,213	
Mean, first-born sons	16.2	12.1	16.2	12.2	16.5	12.1	16.0	11.7

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1920 (top panel), 1930 (middle panel), or 1940 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes sons in farm families in the 1900 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 6: Farm succession by sons' birth order, children in 1910

	2-4 sons		2 sons		3 sons		4 sons	
Succession measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1930								
Second son	-0.3***	-0.3***	-0.4**	-0.3*	-0.2	-0.2	-0.4	-0.2
	(0.1)	(0.1)	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)	(0.2)
Third son	-0.6***	-0.5***			-0.5*	-0.4*	-0.5	-0.5
	(0.2)	(0.2)			(0.3)	(0.2)	(0.3)	(0.3)
Fourth son	-0.6***	-0.5**					-0.9**	-0.9**
	(0.2)	(0.2)					(0.4)	(0.4)
Observations	689,537		303,040		240,121		146,376	
Mean, first-born sons	7.7	6.4	6.8	5.7	8.5	7.1	9.8	8.0
1940								
Second son	-0.1	-0.2	-0.1	-0.2	-0.2	-0.1	-0.3	-0.3
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.2)
Third son	-0.2	-0.2			-0.3	-0.0	-0.2	-0.3
	(0.2)	(0.2)			(0.3)	(0.3)	(0.4)	(0.4)
Fourth son	-0.5	-0.3					-0.7	-0.6
	(0.3)	(0.3)					(0.6)	(0.5)
Observations	668,206		292,776		233,185		142,245	
Mean, first-born sons	11.5	9.1	11.0	8.8	11.9	9.4	12.3	9.6

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1930 (top panel) or 1940 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes sons in farm families in the 1910 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table 7: Farm succession by sons' birth order

	Children in 1900			Children in 1910		
	2 sons	3 sons	4 sons	2 sons	3 sons	4 sons
20 years after childhood						
Second son	-	-	0	-	0	0
Third son		0	0		0	0
Fourth son			0			-
30 years after childhood						
Second son	0	0	+	0	0	0
Third son		0	0		0	0
Fourth son			0			0
40 years after childhood						
Second son	0	+	+			
Third son		0	0			
Fourth son			0			

Notes: We report the sign of estimates from linear probability models using the *County* specification of farm succession in Table 5 and Table 6. A "-" or "+" sign indicates that the regression estimate is negative or positive with $p < .05$, while 0 indicates that the coefficient is estimated with $p \geq .05$.

Table 8: Farm succession by sons' birth order across family types, children in 1900

	2-4 sons			2 sons			3 sons			4 sons		
Early successor in the family?	Yes	No	diff	Yes	No	diff	Yes	No	diff	Yes	No	diff
1930												
Second son	-2.6***	-0.0	-2.6***	-2.5**	-0.2	-2.3**	-3.7***	0.1	-3.8***	0.3	0.4	-0.1
	(0.6)	(0.1)		(1.1)	(0.2)		(0.9)	(0.2)		(1.1)	(0.3)	
Third son	-2.5***	-0.4	-2.2**				-4.8***	-0.3	-4.5***	-1.8	0.2	-2.0
	(0.9)	(0.2)					(1.5)	(0.4)		(1.6)	(0.5)	
Fourth son	0.4	-0.4	0.8							1.1	-0.0	1.2
	(1.3)	(0.4)								(2.2)	(0.7)	
Observations	87,872	507,533		29,266	231,140		33,357	175,897		25,249	100,496	
Mean, first-born sons	47.7	9.6		50.0	9.9		47.1	9.5		43.5	8.7	
1940												
Second son	-0.6	0.2	-0.8	-2.0*	-0.3	-1.7*	-0.6	0.6**	-1.1	1.5	0.6*	0.8
	(0.6)	(0.2)		(1.2)	(0.3)		(1.0)	(0.3)		(1.1)	(0.4)	
Third son	-0.9	-0.1	-0.8				-1.3	0.5	-1.7	-0.4	0.3	-0.6
	(1.0)	(0.3)					(1.5)	(0.5)		(1.6)	(0.5)	
Fourth son	0.5	-0.1	0.6							0.7	0.4	0.3
	(1.4)	(0.4)								(2.3)	(0.8)	
Observations	82,823	481,864		27,471	219,630		31,477	166,896		23,875	95,338	
Mean, first-born sons	42.2	12.0		44.3	12.6		41.9	11.5		37.8	10.4	

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: Similar to Table 5, we report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1930 (top panel) or 1940 (bottom panel). We estimate models separately by family size, with each model including household and age fixed effects. The sample includes sons in farm families in the 1900 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same county as their childhood home. Here we also estimate models separately by whether at least one son in the family was a successor in 1920, and report the differences in estimates.

Table 9: College completion in 1940 by sons' farm succession across family types, children in 1900

Early successor in the family?	Yes	No	diff
Successor in 1930	-3.4***	-3.4***	0.0
	(0.2)	(0.1)	
Observations	76,177	422,661	
Mean, non-successors	3.8	4.8	
Successor in 1940	-3.6***	-4.0***	0.4**
	(0.2)	(0.1)	
Observations	82,823	481,864	
Mean, non-successors	3.8	5.0	

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for having completed at least four years of college by 1940. The independent variable is an indicator for being a farm owner-operator and living on a farm in the same county as the childhood home. We estimate models separately by whether at least one son in the family was a successor in 1920, with each model including household and age fixed effects. We also report the differences in estimates across family types. The sample includes sons in farm families (with 2-4 sons) in the 1900 Census who are linked to the census in 1940 and when succession is measured.

Table 10: Predictors of farm succession in 1930 for families without an early successor, children in 1900

	2-4 sons		2 sons		3 sons		4 sons	
Succession measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
Tenant farmer	7.4***	5.5***	7.6***	5.9***	7.7***	5.7***	6.8***	4.9***
	(0.2)	(0.2)	(0.4)	(0.3)	(0.3)	(0.3)	(0.4)	(0.3)
Living in urban area	-4.6***	-3.6***	-5.1***	-4.2***	-4.0***	-3.2***	-4.7***	-3.7***
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
First-born son	-0.1	-0.0	0.2	0.3	-0.1	-0.1	-0.5	-0.2
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Observations	507,533		231,140		175,897		100,496	

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1930. Independent variables are binary indicators for being a tenant farmer in 1920, living in an urban area in 1920, or being the oldest son. We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes sons in farm families in the 1900 Census who are linked to a census record in 1920 and 1930 and where no sons in the family were successors in 1920. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Appendix

Table A1: Sample restrictions

	Households in 1900	Households in 1910
Farm owners		
Lives on a farm	5,244,274	5,887,982
Owns a home	3,308,880	3,697,233
Farmers		
Household head is a farmer	2,873,195	3,193,030
With children		
Children in the household	2,287,091	2,471,515
Observe the oldest child		
Observe the mother and father	2,026,555	2,226,108
Parents have been married 18 or fewer years	1,027,843	1,152,589
Parents could have a biological child 18 years or younger (ages 15-60)	993,758	1,117,886
Mother has no living children outside the household	944,644	1,059,286
Parents have no stepchildren in the household or a child older than the marriage	792,950	901,149
Observe the birth order		
No twins	763,171	876,933

Notes: Each row reports the number of households that are in the sample after an additional restriction is applied to the previous rows. Further restrictions on the number of sons and daughters in a household are applied for specific analyses, as indicated in the paper. The sample does not include US territories.

Table A2: Farm succession by daughters' birth order

	2-4 daughters		2 daughters		3 daughters		4 daughters	
Succession Measure	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1920, children in 1900								
Second daughter	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.1*	0.1
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)
Third daughter	-0.0	-0.1*			-0.0	-0.1	-0.0	-0.0
	(0.0)	(0.0)			(0.1)	(0.1)	(0.1)	(0.1)
Fourth daughter	-0.1	-0.1*					0.0	0.0
	(0.1)	(0.0)					(0.1)	(0.1)
Observations	509,447		230,089		177,526		101,832	
Mean, first-born daughters	0.2	0.2	0.2	0.1	0.3	0.2	0.3	0.3
1930, children in 1910								
Second daughter	0.0	0.0	-0.0	-0.0	0.1*	0.1*	0.0	-0.0
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Third daughter	-0.0	-0.0			0.0	0.0	0.0	-0.0
	(0.0)	(0.0)			(0.0)	(0.0)	(0.1)	(0.0)
Fourth daughter	-0.0	0.0					0.0	-0.0
	(0.0)	(0.0)					(0.1)	(0.1)
Observations	540,284		243,184		186,819		110,281	
Mean, first-born daughters	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1920 (top panel) or 1930 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes daughters in farm families in the 1900 Census (top panel) or 1910 Census (bottom panel) who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table A3: Farm succession by sons' birth order with fathers 25 or younger when married

	2-4 sons		2 sons		3 sons		4 sons	
	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1920, children in 1900								
Second son	-0.4***	-0.2	-0.6**	-0.4	-0.6**	-0.4	0.2	0.3
	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.4)	(0.4)
Third son	-0.9***	-0.7***			-0.8*	-0.6	-0.5	-0.2
	(0.3)	(0.3)			(0.5)	(0.4)	(0.6)	(0.5)
Fourth son	-1.3***	-0.8**					-0.9	-0.2
	(0.4)	(0.4)					(0.8)	(0.7)
Observations	335,976		144,980		118,220		72,776	
Mean, first-born sons	11.6	9.4	10.2	8.3	12.9	10.6	14.1	11.4
1930, children in 1910								
Second son	-0.4***	-0.3**	-0.4*	-0.2	-0.3	-0.3	-0.4	-0.3
	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Third son	-0.7***	-0.6***			-0.8**	-0.8**	-0.7	-0.6
	(0.2)	(0.2)			(0.4)	(0.3)	(0.4)	(0.4)
Fourth son	-0.7**	-0.6*					-1.4**	-1.1**
	(0.3)	(0.3)					(0.6)	(0.6)
Observations	384,162		165,505		135,406		83,251	
Mean, first-born sons	8.0	6.6	7.0	5.8	8.9	7.4	10.2	8.4

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1920 (top panel) or 1930 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes sons in farm families in the 1900 Census (top panel) or 1910 Census (bottom panel) who are linked to a census record in the outcome year and whose fathers were 25 years or younger when they married their current spouse. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table A4: Farm succession by sons' birth order with mothers 35 or older

	2-4 sons		2 sons		3 sons		4 sons	
	County	Neighbor	County	Neighbor	County	Neighbor	County	Neighbor
1920, children in 1900								
Second son	-0.3	-0.1	-0.1	0.2	-0.3	-0.3	-0.3	-0.1
	(0.2)	(0.2)	(0.4)	(0.4)	(0.4)	(0.3)	(0.5)	(0.4)
Third son	-0.4	-0.0			-0.7	-0.5	-0.5	0.0
	(0.4)	(0.3)			(0.6)	(0.5)	(0.6)	(0.6)
Fourth son	-0.6	0.0					-0.8	-0.2
	(0.5)	(0.5)					(0.9)	(0.8)
Observations	231,102		86,933		84,480		59,689	
Mean, first-born sons	13.7	11.4	13.1	11.0	14.1	11.7	14.8	11.9
1930, children in 1910								
Second son	-0.2	-0.2	-0.6**	-0.5*	0.1	0.0	0.0	0.0
	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.4)	(0.3)
Third son	-0.3	-0.3			-0.1	-0.2	-0.3	-0.4
	(0.3)	(0.3)			(0.5)	(0.4)	(0.5)	(0.5)
Fourth son	-0.5	-0.5					-0.9	-0.9
	(0.4)	(0.4)					(0.7)	(0.6)
Observations	271,828		104,269		97,916		69,643	
Mean, first-born sons	10.2	8.5	9.7	8.2	10.5	8.7	11.1	9.2

$^*p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1920 (top panel) or 1930 (bottom panel). We estimate models separately by family size and succession measures, with each model including household and age fixed effects. The sample includes sons in farm families in the 1900 Census (top panel) or 1910 Census (bottom panel) who are linked to a census record in the outcome year and whose mothers were 35 years or older. We define successors as farm owner-operators who live on a farm in the same place as their childhood home. Successors by the *County* definition live in the same county as their childhood home, while the *Neighbor* definition also requires successors to have one or more of the same neighbors in childhood and adulthood.

Table A5: Summary statistics, farm families (Neighbor succession measure)

	1+ sons	2 sons	3 sons	4 sons
1900 cohort				
1 male successor in 1920	6.9	7.2	9.7	11.6
2+ male successors in 1920	1.1	0.9	2.1	3.4
First-born son successor in 1920	5.7	6.0	7.3	7.8
1 male successor in 1930	10.8	11.4	13.8	15.2
2+ male successors in 1930	2.2	2.0	4.3	6.5
First-born son successor in 1930	8.4	8.4	9.0	9.0
1 male successor in 1940	11.4	12.2	14.3	15.6
2+ male successors in 1940	2.1	2.0	4.2	6.2
First-born son successor in 1940	8.3	8.3	8.1	7.7
Observations	606,423	179,193	97,245	44,352
1910 cohort				
1 male successor in 1930	5.4	5.4	7.5	9.2
2+ male successors in 1930	0.7	0.6	1.3	2.1
First-born son successor in 1930	4.3	4.4	5.4	6.1
1 male successor in 1940	8.9	9.2	11.3	13.1
2+ male successors in 1940	1.4	1.3	2.8	4.1
First-born son successor in 1940	6.7	6.6	6.9	7.1
Observations	675,773	197,475	105,633	48,894

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report the group-level means (as percentages) of farm succession indicators by the number of sons in the 1900 (top panel) and 1910 (bottom panel) census households. The sample includes households living on a farm where the household head is a farmer and the house is not rented, with additional restrictions described in the paper. We define successors as farm owner-operators who live on a farm in the same county as their childhood home and have one or more of the same neighbors in childhood and adulthood.

Table A6: Farm succession by sons' birth order across family types, children in 1900 (Neighbor succession measure)

	2-4 sons			2 sons			3 sons			4 sons		
Early successor in the family?	Yes	No	diff	Yes	No	diff	Yes	No	diff	Yes	No	diff
1930												
Second son	-2.0***	-0.1	-1.9***	-1.6	-0.3	-1.3	-3.4***	-0.0	-3.4***	0.8	0.2	0.6
	(0.6)	(0.1)		(1.2)	(0.2)		(1.0)	(0.2)		(1.2)	(0.3)	
Third son	-2.0**	-0.4*	-1.6*				-4.1***	-0.3	-3.8***	-1.7	0.1	-1.8
	(1.0)	(0.2)					(1.6)	(0.4)		(1.6)	(0.4)	
Fourth son	1.3	-0.6*	1.9*							1.8	-0.1	1.9
	(1.4)	(0.3)								(2.3)	(0.6)	
Observations	73,712	521,693		24,551	235,855		28,031	181,223		21,130	104,615	
Mean, first-born sons	42.5	7.8		44.9	8.0		41.7	7.7		38.4	7.2	
1940												
Second son	-0.6	0.2	-0.7	-2.6**	-0.1	-2.5**	-0.3	0.4*	-0.7	1.5	0.4	1.1
	(0.6)	(0.1)		(1.2)	(0.3)		(1.0)	(0.2)		(1.2)	(0.3)	
Third son	-1.5	0.0	-1.5*				-0.6	0.4	-1.0	-1.8	0.2	-2.0
	(1.0)	(0.2)					(1.6)	(0.4)		(1.7)	(0.5)	
Fourth son	0.7	-0.0	0.7							0.4	0.2	0.2
	(1.4)	(0.4)								(2.4)	(0.7)	
Observations	69,470	495,217		23,064	224,037		26,448	171,925		19,958	99,255	
Mean, first-born sons	35.3	9.0		37.7	9.5		34.8	8.5		30.7	7.8	

$^{*}p < .1$, $^{**}p < .05$, $^{***}p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for inheriting the family farm in 1930 (top panel) or 1940 (bottom panel). We estimate models separately by family size and whether at least one son in the family was a successor in 1920, with each model including household and age fixed effects. We also report the differences in estimates across family types. The sample includes sons in farm families in the 1900 Census who are linked to a census record in the outcome year. We define successors as farm owner-operators who live on a farm in the same county as their childhood home and have one or more of the same neighbors in childhood and adulthood.

Table A7: College completion in 1940 by sons' farm succession across family types, children in 1900 (Neighbor succession measure)

Early successor in the family?	Yes	No	diff
Successor in 1930	-3.3***	-3.4***	0.2
	(0.2)	(0.2)	
Observations	76,177	422,661	
Mean, non-successors	3.5	4.8	
Successor in 1940	-3.3***	-3.9***	0.6***
	(0.2)	(0.1)	
Observations	82,823	481,864	
Mean, non-successors	3.5	4.8	

*$p < .1$, **$p < .05$, ***$p < .01$

Notes: We report estimated coefficients (as percentage points) and standard errors from linear probability models where the dependent variable is an indicator for having completed at least four years of college by 1940. The independent variable is an indicator for being a farm owner-operator and living on a farm in the same county as the childhood home and have one or more of the same neighbors in childhood and adulthood. We estimate models separately by whether at least one son in the family was a successor in 1920, with each model including household and age fixed effects. We also report the differences in estimates across family types. The sample includes sons in farm families (with 2-4 sons) in the 1900 Census who are linked to the census in 1940 and when succession is measured.