Online Appendix for
The Slaughter of the Bison and Reversal of Fortunes on the Great Plains

Last Updated: August 8, 2022

Donn. L. Feir
University of Victoria, the Federal Reserve Bank of Minneapolis, & the IZA

Rob Gillezeau
University of Toronto

Maggie E.C. Jones
Emory University & NBER

Contents

A. Data Appendix

A.A1 Information on Data Sources

Measuring Bison Reliance

Map of Homelands: We use the map of ancestral tribal territories as of 1600 from Martin and O'Leary (1990). A digital reproduction of this map is found in Figure A2.

Anthropological Measure of Bison-Reliance: Our anthropological measure of bison-reliance is created based on content from the Smithsonian Institute's Handbook of the North American Indian. We code tribes as bison-reliant if the Smithsonian volumes described them as obtaining a significant portion of their calories from bison or indicated that bison hunting was economically important without specific mention of calories.

Map of the Bison Range: We use a digital reproduction of William Hornaday's (1889) map of the bison's range at various points in time. The original map, depicted in Figure A1, shows the bison's range as of 1730, 1870, and 1889. We digitize this version of the map and overlay it with our map of homelands to identify which nations overlapped with the range of the bison and were affected by the rapid slaughter.

Heights

We use heights as a measure of biological well-being given its availability during the time period immediately surrounding the bison's decline. These data were collected by Franz Boas and a team of anthropologists at the end of the 19th century. Boas' data include standing height, age, sex, a measure of perceived "full-bloodedness", as well as tribal information, which allow us to match individuals to our measures of bison-reliance.

Mortality, Sex, Fertility, and Occupation in 1900

To compute measures of child mortality, fertility, and sex ratios, we use data from the 1900 IPUMS Native American over-samples that have been linked to US Censuses. We also add the 1910 IPUMS Native American over-sample and the 1930 Census to study occupational rank, the probability of reporting an occupation, industry of employment, and the probability of reporting an industry. The occupational rank measure is constructed using the IPUMS occupational income score. This income score ranks occupations using the median income for each occupation from data published in the Census Bureau's 1956 special report on occupational characteristics. Importantly, the data also include tribal affiliation, allowing us to match individuals to our measures of bison-reliance.

Income (1945-2019) & Potential Mechanisms

We use data on income per-capita between 1945 and 2019 at the reservation-level from Leonard et al. (2020). Importantly for our analysis, the Leonard et al. (2020) data also include population, measures of exposure to the *General Allotment Act* (e.g., whether the reservation was allotted and the degree of land-ownership fractionation), as well as whether the nation had a constitution under the *Indian Reorganization Act (IRA)*. Their data also includes the percent prime land, which they compute from additional sources on soil quality and rainfall. The Leonard et al. (2020) data also include a range of important pre-slaughter variables, like those from Murdock (1967)'s Ethnographic Atlas (wealth distinctions, calories from agriculture, etc.), as well as the measures of forced coexistence and historical centralization from Dippel (2014). We match these variables to our measures of bison-reliance at the tribal nation-level.

Pre-Slaughter Confounders

War: In addition to the measures included in the Leonard et al. (2020) data, we also consider the number of battles a nation engaged in with the United States as an important pre-slaughter control. We use data compiled by Carlos et al. (2021) on violent conflict merged with our shapefiles of traditional territories to compute the number of battles in a tribe's ancestral territory in the pre-slaughter period. Their original sources are from Paulin (1932), which is a subset of major U.S.-Indigenous battles, and is also supplemented with additional information on the Apache and Rouge River Wars.

Pre-Settlement Population Density: The HYDE 3.1 database uses a number of historical sources to compile comparable estimates of global population density at a five arc minute resolution, including Denevan (1992), Maddison (2001), Lahmeyer (2004), Livi-Bacci (2007), and McEvedy and Jones (1978). One could suppose population to proxy for wealth, as in Acemoglu, Johnson, and Robinson (2001); however, we remain agnostic on its precise meaning, given that nomadic or semi-nomadic societies could hold large territories relative to their population as a sign of their wealth. We use the log of population as of 1500 and 1600 to proxy for initial population size, and population declines due to early disease.

Settler Population: Settler population densities in 1790 and 1870 (as well as other decades) come from Bazzi et al. (2020). Their data are based on U.S. Decadal Census county level population data normalized to 2010 counties. We overlay these county-level population data with our map of tribal nation homelands to create the homeland settler population by summing the population of all counties that overlap with a given homeland, weighted by their proportion of overlap.

Railways: We introduce a series of railway controls from Atack (2016). We overlay Atack's

railway mappings with ancestral homelands to generate the date the railway first entered each tribal territory.

Timing of Land Cessions: The timing of land cessions comes from maps from the Bureau of American Ethnology in 1899 created under the guidance of Charles C. Royce, and digitized by Saunt (2014). We take the date of the first land cession that overlaps with a given nation's tribal territory.

Cost Adjusted Distances: In the Online Appendix, we provide additional specifications that instrument "Exposure to Slaughter" with a set of cost-adjusted distances to cities that were historically important for the trade in bison hides. We use the transportation costs constructed in Donaldson and Hornbeck (2016). This measure is computed by calculating the combination of railway, wagon, and waterway routes between counties and assigning each route a cost based on the per ton-mile cost of shipping goods by each means. Our instruments are the costs of shipping freight between the county in which the centroid of a tribe's traditional territory is located and the counties containing the cities of St. Louis, Fort Leavenworth, New York, Chicago, and Baltimore. We include the cost of transporting goods to St. Louis, Fort Leavenworth, New York, and Chicago in 1870, as these were the primary cities involved in trading bison robes in 1870. We also include the cost of transporting goods to Baltimore and New York in 1890, since these cities were the exit points for hides being shipped overseas. To compute the transportation cost between each tribal territory and Montreal in 1870, we use the cost of transportation to Buffalo, New York from Donaldson and Hornbeck (2016), and then rely on the estimates of transportation costs between Buffalo and Montreal, Canada, from Inwood and Keay (2013, 2015).[1]

Possible Confounders and Mechanisms

Historical and Modern Banks: Data for the number of commercial banks in counties that overlap with reservations in 1870 are from Jaremski and Fishback (2018), supplemented with additional counts from the various banker directories of the period courtesy of Matthew Jaremski. Banking data from 1920-1936 come from Hornbeck (2012) and the modern (1980-2010) banking data come from Haines, Fishback, and Rhode (2018).

Net Migration: We compute net in-migration between two decades as, e.g.:

$$\text{pop}_{1960} - \text{pop}_{1950} - \sum_{t=1950}^{1959} \text{births}_t + \sum_{t=1950}^{1959} \text{deaths}_t$$

[1] Inwood and Keay (2013, 2015) focus the cost of shipping pig iron (CAD/Net Ton), while Donaldson and Hornbeck (2016) focus on the cost of transporting grain and meat (USD/Net Ton). We assume an exchange rate of 1 CAD = 1.51375 USD in 1870 (Historical Statistics of the United States, Table EE618).

Here, yearly births come from the NBER data portal,[2] which provides county-level Natality Data from the National Vital Statistics System of the National Center for Health Statistics. Yearly deaths also come from the NBER data portal.[3] For the years 1940-1950, 1950-1960, and 1960-1970, we only know county-level data on white and non-white people, whereas for 1970-1980, 1980-1990, and 1990-2000 we have information for Native Americans. We combine these births and deaths with population counts from NHGIS.

Agricultural Production: As measures of agricultural production, we use the value of crops, value of livestock, and the number of cows included in the counties that overlap a reservation (weighted by the share of reservation area in each county). These values come from Hornbeck (2012) prior to 1997, from the ICPSR United States Agriculture Data 1840-2012 for 2002-2012, and from the USDA National Agricultural Statistics Service for 2017.

Selective Out-migration: We evaluate selective out-migration in a number of ways. First, we evaluate the difference between counties that overlap with bison and non-bison reservations with respect to age distributions, high school graduation, the number of white and non-white residents, births, deaths, and the percent of population that is urban. All these variables are gathered for available years from Haines and Inter-University Consortium for Political and Social Research (2010).

Dust Bowl: Values of the percent of each county that experienced medium and high erosion during the Dust Bowl were compiled by Hornbeck (2012).

Sources of Historical Income: The percentage of income from land sales, land leases, livestock sales, rations, wages, crops raised, native industries, and treaties are gathered from the Indian Affairs Annual Reports (1915-1920), Table 10 for 1915-1919 and Table 11 for 1920.

Self-Governance Measures: In addition to the IRA information from Leonard et al. (2020), we also use a measure of self-governance from Gregg (2018). This measure equals one if the nation has an Indian Health Services compact or a compact under Public Law 93-638.

A.A2 Method for Linking County-Level Data to Reservations

We link data sources that are at the county-level to reservations using the U.S. Tigerline Shape 2010 shapefiles for both counties and reservations. We compute the area of intersection for each county and reservation and take the reservation-area weighted average of a given variable at the level of the reservation.

[2] `https://www.nber.org/research/data/vital-statistics-natality-birth-data`

[3] `https://www.nber.org/data/vital-statistics-mortality-data-multiple-cause-of-death.html`

A.A3 Methods for Linking Native Nation-Level Data to Reservations

We match reservations to tribes using the linkage by Leonard et al. (2020) when using their base datafiles, and in cases where multiple tribes share a reservation, we take either an average, sum, minimum, or maximum across all tribes on a given reservation for the given control variable of interest. We take the minimum of land cession year, and railway year. We take the sum of the number of wars within a given territory. We take the average of latitude, distance removed to ones reservation, ruggedness, and historic population densities. We take the maximum of bison-reliance, but our results are not sensitive to taking the minimum.

B. Details on the Heights Event Study

We estimate an event study design where the estimating equation is given by:

$$\mathrm{H}_{int} = \sum_{t=-20, t\neq 0}^{20} \delta_t \mathrm{cohort}_t \times \mathrm{B}_n + \zeta \mathrm{B}_n + \mathrm{cohort}_t + \mathrm{X}_{int}\boldsymbol{\theta} + + \hat{\gamma}_n + \hat{\alpha}_t + \varepsilon_{int}, \tag{A1}$$

where, the interaction of bison-reliance and the indicator for being born after the bison's decimation is replaced by a set of interaction terms, $\sum_{t=-20, t\neq 0}^{20} \delta_t \mathrm{cohort}_t \times \mathrm{B}_n$, that measure the differential change in heights between bison-reliant and non-bison-reliant cohorts for a forty-year window surrounding the beginning of the slaughter in 1871. We leave out cohorts born in $t = 0$, so that all coefficients are measured relative to the year in which the slaughter began. The dependent variable is height in centimeters or height-for-age adjusted z-scores. Note that we group these cohorts into five year birth year intervals to reduce random variation in any given year. We also include specifications that include a linear pre-trend in height for completeness. We include a full set of age fixed effects, α_t, to control for age-trends in height and a full set of nation-level fixed effects, γ_n, to control for tribe invariant characteristics that may influence biological well-being. We also condition on a matrix of controls, X_{int}. In all specifications these controls include survey year fixed effects, and five-year birth year cohort fixed effects, as well as indicators for whether the individual is full blood or female. The "extended controls" control for all of the above and also include a dummy variables for whether there was a railway through an individual's nations' territory when they were born, whether they were born before or after the first land cession, the settler population in their region the decade they were born, whether they were born during a major war with their nation as well as the interaction between all non-cohort varying controls and cohort.[4] Date of birth is restricted to be after 1850. Data are from Franz Boas' 1889 to 1903 sample. The results of the event study can be found in Figure 2 and A3 and Tables A3 and A4.

[4]Specifically, these interactions are birth year interacted with whether a nation was nomadic, the log of their population as of 1500, whether they were historically centralized, whether their were wealth distinctions, and whether a nation is missing a value for any of these characteristics, the log ruggedness of their traditional territory, their latitude, and the log area of their traditional territory.

C. Details on the Instrumental Variables Results

In Table 4, we showed that our estimates are robust to controlling for a wide range of potential confounding factors; however, there may still be concern that an unobservable factor that is correlated with both exposure to the slaughter and long-run income per capita is driving the correlation between exposure and income. For example, one might expect the OLS estimates to be biased upwards if tribes that were more likely to engage in inter-tribal warfare were more likely to be affected by the slaughter and, simultaneously, if inter-tribal warfare was negatively related to long-run income. To mitigate this concern, we use an IV specification that leverages the cost of traveling between nations' ancestral homelands and historical cities that were important for the trade in bison robes. Identification here is grounded in the idea that these costs would be correlated with the speed at which bison were removed from traditional homelands, but uncorrelated with long-run income, other than through their effect on the loss of the bison. This IV specification also controls for the distance to the nearest metropolitan statistical area, to account for the fact that nations that were close to historically important trading cities may have also been close to economically important cities, more generally.

The historical accounts suggest that a number of cities may have been important either as transit points or destination points for the trade in bison hides. At the beginning of the nineteenth century many buffalo hides made their way along the Missouri river to St. Louis to be traded (Taylor, 2011). Fort Leavenworth, Kansas was also an important transit point for hides being collected from the interior (Taylor, 2011), while the cities of New York, Chicago, and Montreal were involved in the sale of bison robes (Hornaday, 1889). By the time of the slaughter, the ports of New York and Baltimore were most involved in shipping the bison robes overseas to be treated in the tanneries in Germany, France, and the United Kingdom (Taylor, 2011). We compute transport costs based on the cost estimates from Donaldson and Hornbeck (2016) for American cities, and from Inwood and Keay (2013, 2015) to compute transport cost estimates to Montreal.

Table A8 displays the two-stage least squares estimate of the treatment effect, the first stage and the reduced form estimates from these specifications. In both cases the IV estimates are slightly larger than the baseline estimates, providing reassurance that our baseline estimate is not an artifact of an unobserved confounding factor. However, as noted by the F-statistics in the table, these instruments are weak, and therefore do not explain a large portion of the variation in treatment. As a result, we caution the reader from making too much of the IV estimates.

D. Additional Figures

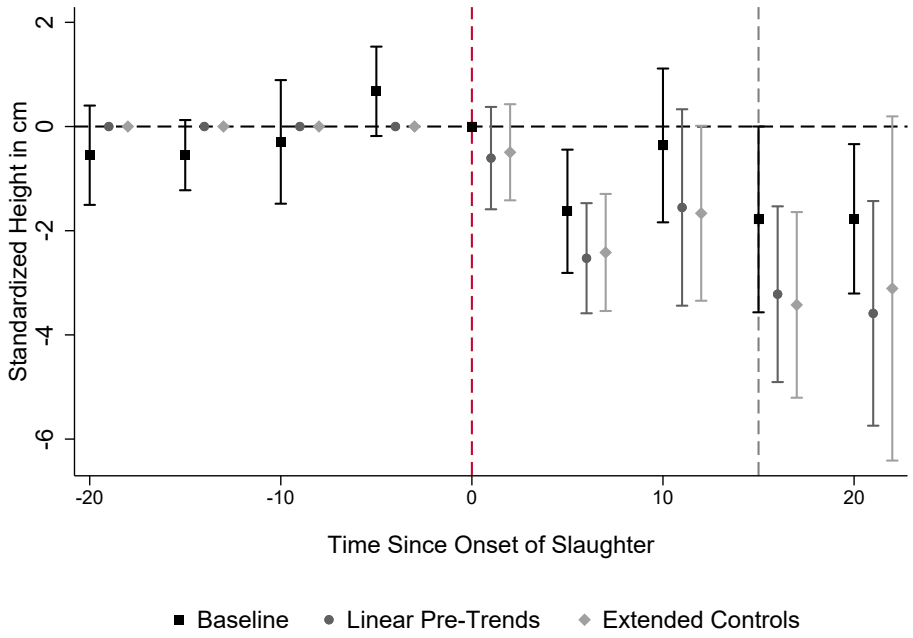
Figure A1: The Extermination of the American Bison

Notes: This map illustrates the timing and original range of the North American bison and is found in Hornaday (1889), "Extermination of the North American Bison with a Sketch of its Discovery and Life History," in the Report of the National Museum under the direction of the Smithsonian Institution, pp. 367-548. The red border depicts the bison's original range as of 1730, the middle (dark blue) region depicts the range as of 1870, and the light blue regions are the remaining herds (with labelled sizes) as of 1889. The 1889 herds were in ranched captivity.

Figure A2: Traditional Indigenous Territories

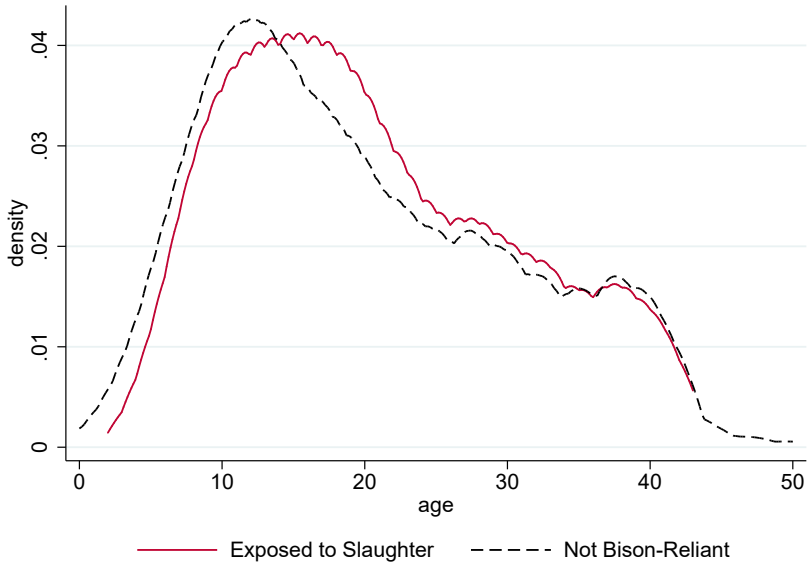
Notes: This figure displays a digital reproduction of detailed regional maps of traditional Indigenous territories from the "General Ethnic Map of Native North America ca A.D. 1600" from Martin and O'Leary (1990).

Figure A3: Event Study Coefficients Indicating the Relative Declines in Height of those Exposed to the Rapid Slaughter.



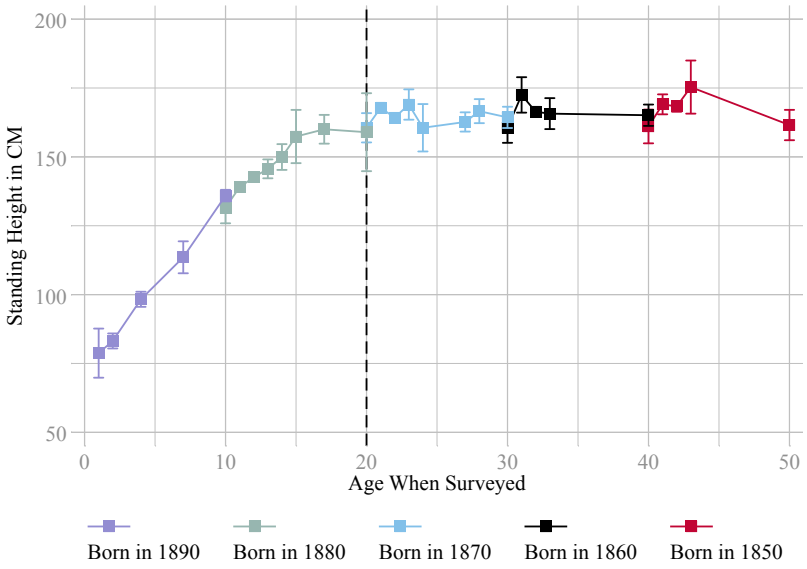
Notes: This figure plots coefficient estimates from event study specifications where the dependent variable is the standing height in centimeters. Coefficient estimates are presented for five-year birth cohorts with 90% confidence intervals. The dashed red line indicates the start of the slaughter (1871) and the gray dashed line indicates the end of feasible bison reliance (1886). All specifications include tribe, age, and five-year cohort fixed effects, as well as an indicator for perceived lack of white ancestors. Coefficient estimates from the "linear pre-trends" model condition on a linear trend for the pre-1871 cohorts. Estimates from the "extended trends" model condition on colonial, cultural and geographic controls described in the main text. The date of birth in these specifications is restricted to be after 1850. The main data source is Franz Boas' 1889 to 1903 sample of Native American stature.

Figure A4: The Age Distributions of Individual Heights by Exposure to the Slaughter



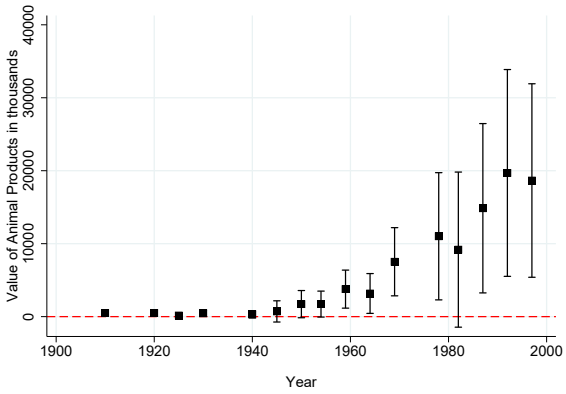
Notes: This figure displays the age distribution of individuals who were from tribes that were exposed to the slaughter and those that were not bison-reliant. The sample sizes of individuals exposed to the slaughter and those that were not bison-reliant are N=2,75 and N=1,230, respectively. The data are from Franz Boas' sample of individual heights, collected between 1890 and 1901.

Figure A5: Heights by Age and Birth Cohort

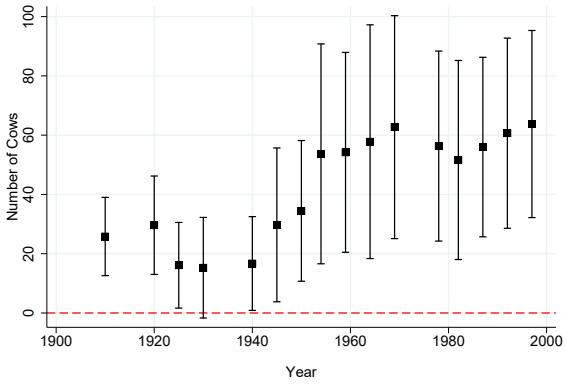


Notes: This figure displays trends in heights over the life cycle for individuals from different birth cohorts. The vertical axis displays standing height in cm and the horizontal axis displays age at the time of survey. Different colors represent different birth cohorts by decade. The data are from Franz Boas' sample of individual heights, collected between 1890 and 1901 and include all individuals included in our regression analysis.

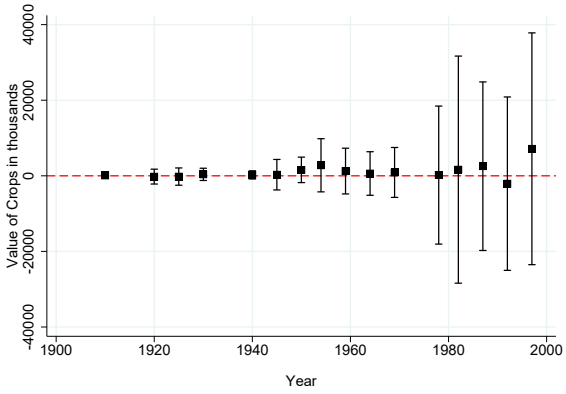
Figure A6: Differences in Agricultural Production Between Those Exposed to the Slaughter and Those That Were Not Bison-Reliant



(a) Value of Livestock (1000s)



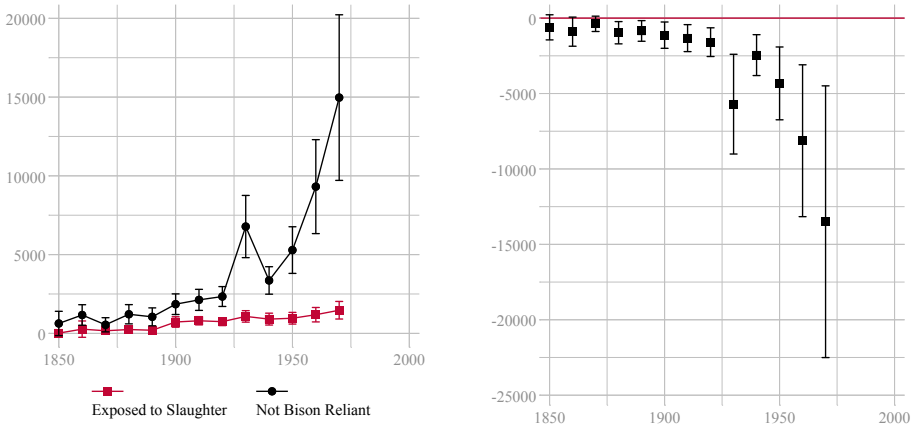
(b) Number of Cows (1000s)



(c) Value of Crops (1000s)

Notes: This figure shows differences in the value of livestock, the number of cows, and the value of crops between those that were exposed to the bison's slaughter and those that were not bison-reliant. The outcomes were constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The panels present coefficient estimates from a regression of the outcome on an indicator for exposure to the rapid slaughter, by year. Data are a weighted average by the area of counties that overlap with any given reservation. The data for this figure are from Hornbeck (2012). Dollar values are in real 2010 dollars.

Figure A7: Non-White Population by Exposure to the Rapid Slaughter

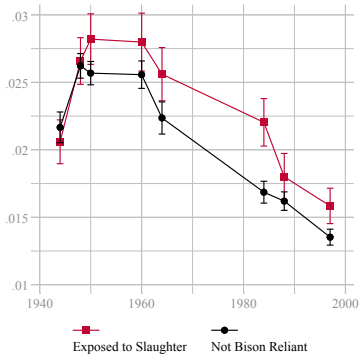


(a) Non-White Population

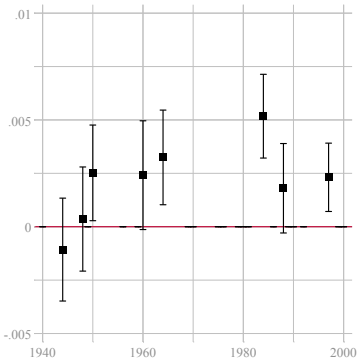
(b) Non-White Population

Notes: This figure shows trends in the non-white population for nations that were exposed to the slaughter and those that were not bison-reliant. The outcome was constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The left panel shows means and 95% confidence intervals for each group. The right panel shows coefficient estimates from a regression of the outcome on the interaction of exposure to the rapid slaughter and year, conditional on year fixed effects, so that the coefficient estimates can be interpreted as the average differences between the two groups in a given year. The population data for this figure come from the ICPSR Historical, Demographic, Economic, and Social Data: The United States, 1790-2002.

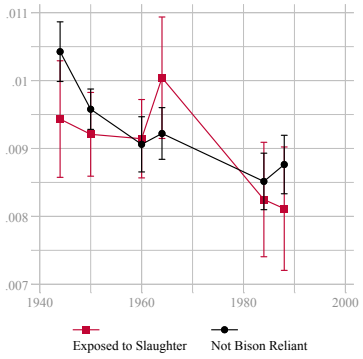
Figure A8: Births, Deaths, and Urban Population (Per Capita) by Exposure to the Rapid Slaughter



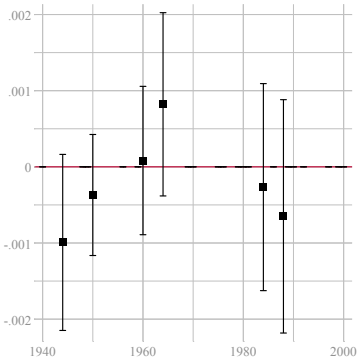
(a) Births Per Capita



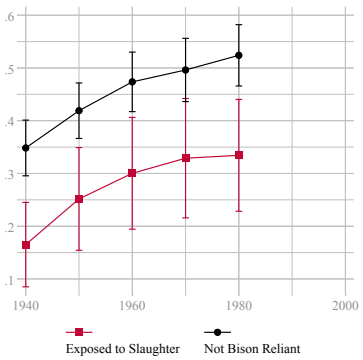
(b) Births Per Capita



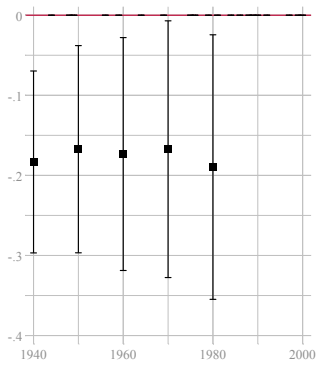
(c) Deaths Per Capita



(d) Deaths Per Capita



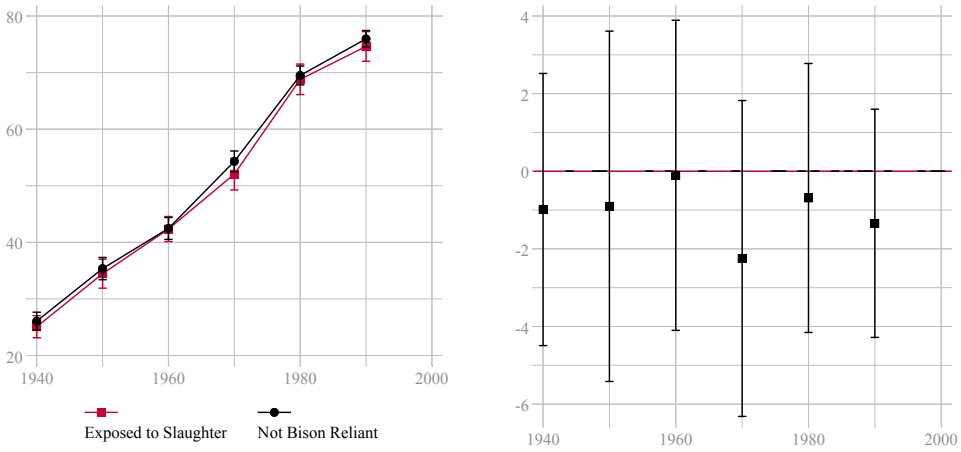
(e) Urban Pop Per Capita



(f) Urban Pop Per Capita

Notes: This figure shows trends in the number of births, deaths, and the urban population, all in per capita terms, for nations that were exposed to the slaughter and those that were not bison-reliant. Each outcome was constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The left panels show means and 95% confidence intervals for each group. The right panels show coefficient estimates from a regression of the outcome on the interaction of exposure to the rapid slaughter and year, conditional on year fixed effects, so that the coefficient estimates can be interpreted as the average differences between the two groups in a given year. The data for this figure come from the ICPSR Historical, Demographic, Economic, and Social Data: The United States, 1790-2002.

Figure A9: The Percent of the Population with a High School Education by Exposure to the Rapid Slaughter

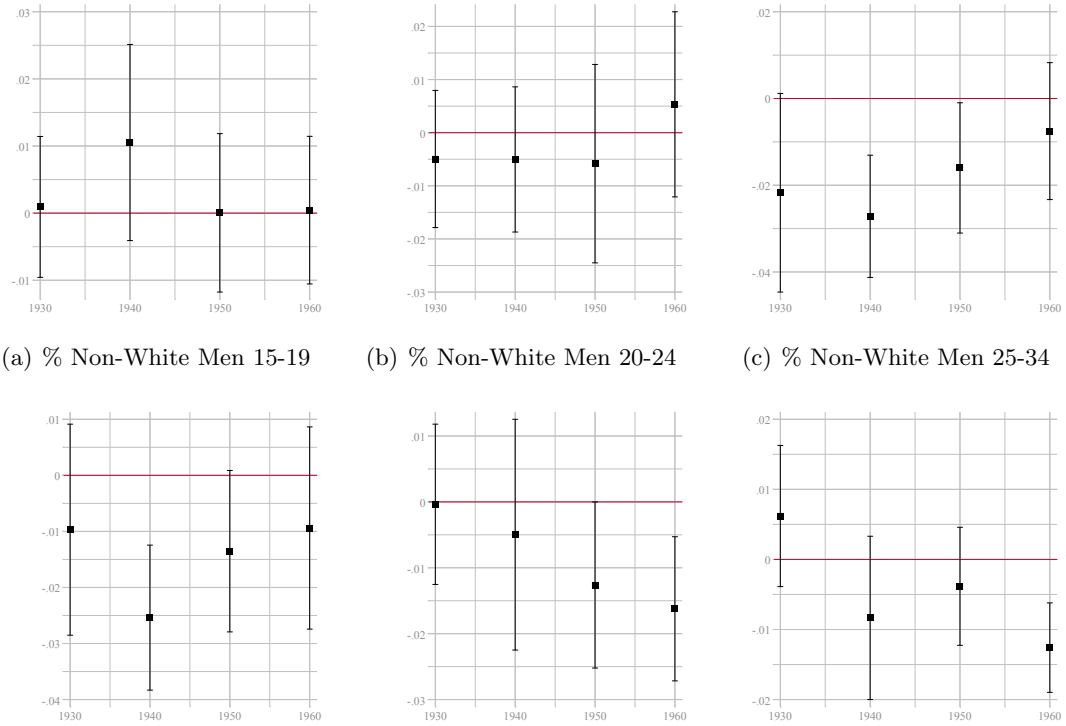


(a) % With a High School Education

(b) % With a High School Education

Notes: This figure shows trends in the percent of the population with a high school education for nations that were exposed to the slaughter and those that were not bison-reliant. The outcome was constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The left panel shows means and 95% confidence intervals for each group. The right panel shows coefficient estimates from a regression of the outcome on the interaction of exposure to the rapid slaughter and year, conditional on year fixed effects, so that the coefficient estimates can be interpreted as the average differences between the two groups in a given year. The data for this figure come from the ICPSR Historical, Demographic, Economic, and Social Data: The United States, 1790-2002.

Figure A10: Differences in Non-White Male Age Distributions Between Those Exposed to the Slaughter and Those That Were Not Bison-Reliant

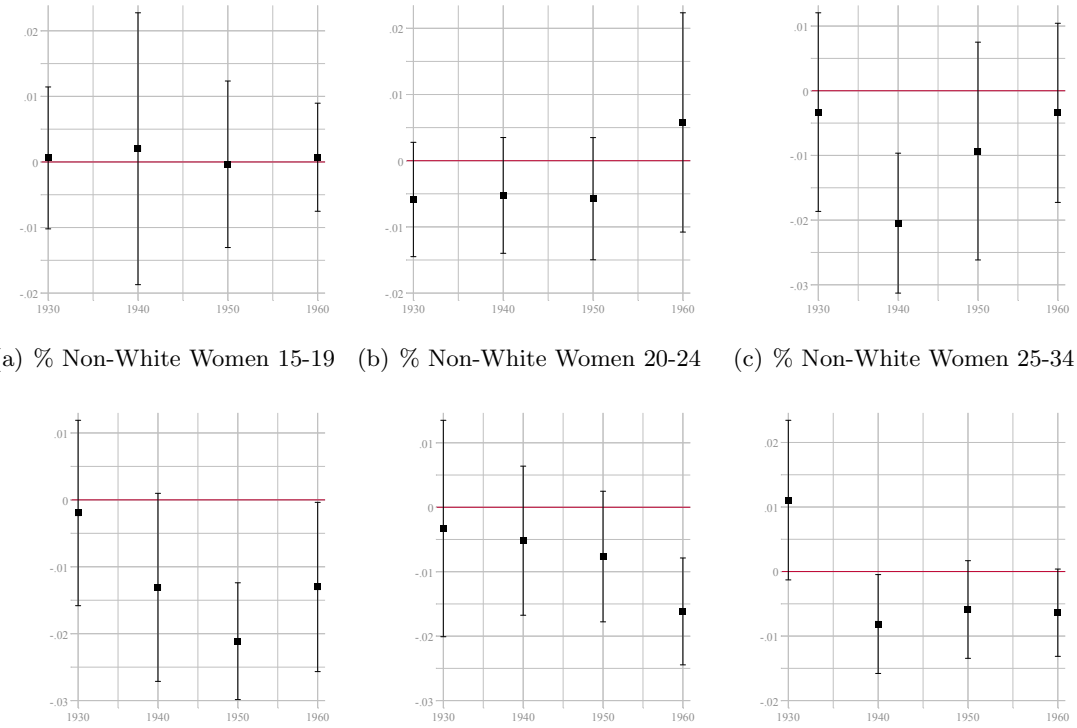


(a) % Non-White Men 15-19 (b) % Non-White Men 20-24 (c) % Non-White Men 25-34

(d) % Non-White Men 35-44 (e) % Non-White Men 45-54 (f) % Non-White Men 55-64

Notes: This figure shows differences in the working age population distributions of the non-white male population between those that were exposed to the bison's slaughter and those that were not bison-reliant. The outcomes were constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The panels present coefficient estimates from a regression of the outcome (an indicator that equals one if the individual is the age displayed in the subfigure title) on an indicator for exposure to the rapid slaughter, by year. The data for this figure come from the ICPSR Historical, Demographic, Economic, and Social Data: The United States, 1790-2002.

Figure A11: Differences in Non-White Female Age Distributions Between Those Exposed to the Slaughter and Those That Were Not Bison-Reliant



(a) % Non-White Women 15-19 (b) % Non-White Women 20-24 (c) % Non-White Women 25-34

(d) % Non-White Women 35-44 (e) % Non-White Women 45-54 (f) % Non-White Women 55-64

Notes: This figure shows differences in the working age population distributions of the non-white female population between those that were exposed to the bison's slaughter and those that were not bison-reliant. The outcomes were constructed as an average of all counties that overlap with a reservation's boundary, weighted by the area of the overlap. The panels present coefficient estimates from a regression of the outcome (an indicator that equals one if the individual is the age displayed in the subfigure title) on an indicator for exposure to the rapid slaughter, by year. The data for this figure come from the ICPSR Historical, Demographic, Economic, and Social Data: The United States, 1790-2002.

E. Additional Tables

Table A1: Complete Summary Statistics by Exposure to the Rapid Slaughter

	Exposed	Indeterminate	Not Reliant	Not, Outside Range	Not, Inside Range
	(1)	(2)	(3)	(4)	(5)
EA Fully/Partly nomadic	0.609	0.219	0.245	0.259	0.200
	(0.499)	(0.420)	(0.432)	(0.441)	(0.408)
EA Historic Centralization	0.565	0.406	0.500	0.556	0.320
	(0.507)	(0.499)	(0.502)	(0.500)	(0.476)
EA Wealth Differences	0.130	0.219	0.340	0.420	0.080
	(0.344)	(0.420)	(0.476)	(0.497)	(0.277)
EA Missing - Nomadic	0.174	0.469	0.292	0.272	0.360
	(0.388)	(0.507)	(0.457)	(0.448)	(0.490)
EA Missing - HC	0.174	0.469	0.302	0.272	0.400
	(0.388)	(0.507)	(0.461)	(0.448)	(0.500)
EA Missing - Wealth Differences	0.217	0.469	0.302	0.284	0.360
	(0.422)	(0.507)	(0.461)	(0.454)	(0.490)
Latitude (centroid of territory)	42.893	37.979	38.609	39.330	36.272
	(4.647)	(5.740)	(5.283)	(5.343)	(4.418)
Log Ruggedness	2.756	2.496	3.331	3.555	2.607
	(0.885)	(1.107)	(1.105)	(1.026)	(1.057)
Log Area of territory	11.298	10.400	9.515	9.231	10.434
	(0.939)	(1.285)	(1.347)	(1.201)	(1.406)
Population density 1500	0.009	0.033	0.037	0.039	0.029
	(0.011)	(0.067)	(0.078)	(0.088)	(0.029)
Population density 1600	0.003	0.008	0.010	0.010	0.009
	(0.004)	(0.006)	(0.021)	(0.023)	(0.011)
Part of Major Indian War	0.478	0.156	0.104	0.099	0.120
	(0.511)	(0.369)	(0.306)	(0.300)	(0.332)
# of Battles Before 1871	1.000	0.719	0.292	0.210	0.560
	(1.706)	(1.853)	(0.756)	(0.564)	(1.158)
# of Battles After 1871	0.739	0.063	0.047	0.062	0.000
	(1.738)	(0.354)	(0.254)	(0.289)	(0.000)
Land ceded before 1800	0.043	0.281	0.245	0.173	0.480
	(0.209)	(0.457)	(0.432)	(0.380)	(0.510)
Ceded 1801-1820	0.130	0.313	0.028	0.000	0.120
	(0.344)	(0.471)	(0.167)	(0.000)	(0.332)
Ceded 1821-1840	0.261	0.031	0.009	0.012	0.000
	(0.449)	(0.177)	(0.097)	(0.111)	(0.000)
Ceded 1841-1870	0.565	0.281	0.651	0.728	0.400
	(0.507)	(0.457)	(0.479)	(0.448)	(0.500)
Settler pop dens. 1790	0.000	0.130	3.150	3.311	2.627
	(0.000)	(0.414)	(9.902)	(11.038)	(4.735)
Settler pop dens. 1870	0.807	14.794	14.732	14.431	15.706
	(2.838)	(16.328)	(40.456)	(45.378)	(17.184)
No railways	0.000	0.000	0.094	0.111	0.040
	(0.000)	(0.000)	(0.294)	(0.316)	(0.200)
Rail entered 1821-1840	0.000	0.156	0.198	0.136	0.400
	(0.000)	(0.369)	(0.400)	(0.345)	(0.500)
Rail entered 1841-1870	0.217	0.531	0.132	0.111	0.200
	(0.422)	(0.507)	(0.340)	(0.316)	(0.408)
Observations	23	32	106	81	25

Notes: Column 1 includes nations that were bison-reliant and lost the bison during the period of the rapid slaughter (our main treatment group), column 2 includes those that were bison-reliant, but whose speed of loss is in-determinant from available data, column 3 includes all nations that were not bison-reliant regardless of geography (our primary comparison group), column 4 includes nations that were not bison-reliant and outside of the original bison range, and the final column includes nations that were not bison-reliant, but within the original bison range. Note that none of the non-bison-reliant nations were within the rapid slaughter region. The means are reported with the standard deviations in parenthesis. Significance levels: * 0.05 ** 0.01 *** 0.001

Table A2: Summary Statistics for Pre-1900 and 1900 Outcomes and Controls by Exposure to the Rapid Slaughter Not Reported in the Main Text

	Exposed to Slaughter	Not Bison-Reliant	Difference
	(1)	(2)	(3)
Panel A: Franz Boas Data			
Seen as full blood	0.82	0.82	0.00
	(0.38)	(0.38)	
Age	20.62	19.99	-0.62**
	(9.78)	(10.64)	
Log Population as of 1500	6.83	5.32	-1.51***
	(0.96)	(2.07)	
EA Fully nomadic	0.21	0.01	-0.20***
	(0.41)	(0.10)	
EA Historic Centralization	0.35	0.66	0.31***
	(0.48)	(0.47)	
EA Wealth Differences	0.13	0.33	0.20***
	(0.33)	(0.47)	
Missing - Nomadic	0.00	0.00	0.00***
	(0.00)	(0.06)	
EA Missing - HC	0.10	0.10	-0.00
	(0.30)	(0.30)	
EA Missing - Wealth Differences	0.10	0.10	-0.01
	(0.31)	(0.29)	
Log Ruggedness	2.64	3.60	0.96***
	(0.93)	(1.00)	
Latitude (centroid of territory)	43.40	43.83	0.44***
	(4.72)	(7.47)	
Log Area of territory	12.18	10.55	-1.63***
	(0.75)	(1.42)	
Born after first railway in territory	0.46	0.51	0.05***
	(0.50)	(0.50)	
Born after land first ceded	0.90	0.96	0.06***
	(0.30)	(0.21)	
Settler population in territory when born	1.83	11.27	9.43***
	(2.60)	(27.75)	
Born during a major war with the US	0.31	0.00	-0.31***
	(0.46)	(0.00)	
Observations	2753	6238	8993
Panel B: IPUMS 1900 Historical Over-samples - Women			
Age	31.20	30.17	-1.03***
	(7.33)	(7.10)	
Log Population as of 1500	6.91	6.39	-0.52***
	(1.01)	(1.59)	

Continued on next page

Table A2 – continued from previous page

	Exposed to Slaughter	Not Bison-Reliant	Difference
	(1)	(2)	(3)
EA Fully nomadic	0.16	0.00	-0.16***
	(0.36)	(0.00)	
EA Historic Centralization	0.33	0.77	0.44***
	(0.47)	(0.42)	
EA Wealth Differences	0.09	0.10	0.01
	(0.28)	(0.30)	
Missing - Nomadic	0.00	0.00	0.00
	(0.00)	(0.03)	
EA Missing - HC	0.15	0.02	-0.13***
	(0.36)	(0.14)	
EA Missing - Wealth Differences	0.16	0.05	-0.11***
	(0.37)	(0.22)	
Latitude (centroid of territory)	43.33	39.11	-4.22***
	(4.23)	(6.60)	
Log Ruggedness	2.52	2.98	0.45***
	(0.87)	(0.80)	
Log Area of territory	12.32	11.15	-1.17***
	(0.77)	(1.30)	
Born after first railway in territory	0.50	0.47	-0.03
	(0.50)	(0.50)	
Born after land first ceded	0.90	0.86	-0.05***
	(0.30)	(0.35)	
Settler population in territory when born	2.35	10.08	7.74***
	(2.76)	(20.37)	
Observations	1335	2331	3666
Panel C: IPUMS 1900 Historical Over-samples - Men			
Age	38.35	37.44	-0.91***
	(12.67)	(12.63)	
Has Industry	0.59	0.82	-0.24***
	(0.49)	(0.38)	
In Capital Intensive Industry	0.03	0.11	0.08***
	(0.16)	(0.31)	
In Agriculture	0.46	0.58	0.12***
	(0.50)	(0.49)	
Log Population as of 1500	6.86	6.42	-0.44***
	(1.13)	(1.61)	
EA Fully nomadic	0.15	0.00	-0.15***
	(0.36)	(0.00)	
EA Historic Centralization	0.39	0.78	0.38***
	(0.49)	(0.42)	
EA Wealth Differences	0.07	0.11	0.04***
	(0.25)	(0.31)	
Missing - Nomadic	0.00	0.00	0.00

Continued on next page

Table A2 – continued from previous page

	Exposed to Slaughter	Not Bison-Reliant	Difference
	(1)	(2)	(3)
	(0.00)	(0.02)	
EA Missing - HC	0.20	0.02	-0.17***
	(0.40)	(0.15)	
EA Missing - Wealth Differences	0.21	0.03	-0.17***
	(0.40)	(0.18)	
Latitude (centroid of territory)	43.03	39.28	-3.74***
	(4.39)	(6.62)	
Log Ruggedness	2.66	2.99	0.33***
	(0.88)	(0.81)	
Log Area of territory	12.17	11.10	-1.08***
	(0.75)	(1.32)	
Born after first railway in territory	0.43	0.56	0.13***
	(0.50)	(0.50)	
Born after land first ceded	0.84	0.83	-0.02**
	(0.36)	(0.38)	
Settler population in territory when born	1.51	10.74	9.23***
	(2.59)	(22.36)	
Born After First War with U.S.	0.32	0.04	-0.29***
	(0.47)	(0.18)	
Observations	4719	10226	14945

Notes: This table displays sample means with standard deviations below in parentheses for nations that were exposed to the slaughter and those that were not bison-reliant. Panel A presents summary statistics at the individual level for the Boas sample, and Panel's B and C present statistics at the individual level for the 1900 Census Over-sample for women and men, respectively. Column (1) reports summary statistics for nations who were exposed to the rapid slaughter and column (2) reports them for nations who were not bison-reliant. Column (3) reports difference-in-means tests between column (1) and (2). See Section III and Online Appendix Section A for more information, including data sources and variable construction. Additional summary statistics can be found in Table 1 of the main text. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A3: The Effect of the Bison's Slaughter on Height in Centimeters: Event Study Estimates

	(1)	(2)	(3)
Exposed to Slaughter X Born(1850-1854)	-0.551		
	(0.744)		
Exposed to Slaughter X Born(1855-1859)	-0.550		
	(0.526)		
Exposed to Slaughter X Born(1860-1864)	-0.295		
	(0.925)		
Exposed to Slaughter X Born(1865-1869)	0.676		
	(0.669)		
Exposed to Slaughter X Born(1870-1874)		-0.607	-0.494
		(0.766)	(0.720)
Exposed to Slaughter X Born(1875-1879)	-1.627*	-2.528***	-2.418***
	(0.923)	(0.825)	(0.876)
Exposed to Slaughter X Born(1880-1884)	-0.363	-1.554	-1.666
	(1.151)	(1.471)	(1.310)
Exposed to Slaughter X Born(1885-1889)	-1.783	-3.219**	-3.424**
	(1.391)	(1.316)	(1.390)
Exposed to Slaughter X Born(1890-1897)	-1.772	-3.587**	-3.109
	(1.118)	(1.682)	(2.577)
Exposed to Slaughter X Birth Year		0.0604	0.0898
		(0.043)	(0.062)
Baseline Controls	X	X	X
Linear Pre-Trends		X	X
Extended Controls			X
Observations	8993	8993	8993
Adjusted R^2	0.882	0.882	0.882
Number of Clusters	105	105	105

Notes: This table displays coefficient estimates from the event study specification (Equation A1). The dependent variable is standing height in centimeters. All columns include fixed effects for tribe, age, 5-year birth cohorts, and survey year. The sample is restricted to those born after 1850. Coefficient estimates from the "linear pre-trends" model condition on a linear trend for the pre-1871 cohorts. Estimates from the "extended trends" model condition on colonial, cultural and geographic controls. See Sections III and IV and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: The Effect of the Bison's Slaughter on Height-for-Age Z-Scores: Event Study Estimates

	(1)	(2)	(3)
Exposed to Slaughter X Born(1850-1854)	-0.0460		
	(0.098)		
Exposed to Slaughter X Born(1855-1859)	-0.0239		
	(0.070)		
Exposed to Slaughter X Born(1860-1864)	0.0181		
	(0.094)		
Exposed to Slaughter X Born(1865-1869)	0.108		
	(0.088)		
Exposed to Slaughter X Born(1870-1874)		-0.0985	-0.0823
		(0.093)	(0.089)
Exposed to Slaughter X Born(1875-1879)	-0.132	-0.261**	-0.259**
	(0.100)	(0.119)	(0.123)
Exposed to Slaughter X Born(1880-1884)	0.115	-0.0449	-0.0709
	(0.167)	(0.191)	(0.173)
Exposed to Slaughter X Born(1885-1889)	-0.0388	-0.225	-0.255
	(0.220)	(0.218)	(0.229)
Exposed to Slaughter X Born(1890-1897)	-0.278	-0.503*	-0.405
	(0.253)	(0.291)	(0.434)
Exposed to Slaughter X Birth Year		0.00637	0.0128
		(0.006)	(0.009)
Baseline Controls	X	X	X
Linear Pre-Trends		X	X
Extended Controls			X
Observations	8993	8993	8991
Adjusted R^2	0.169	0.169	0.178
Number of Clusters	105	105	104

Notes: This table displays coefficient estimates from the event study specification (Equation A1). The dependent variable is the World Health Organization's height-for-age Z-scores. All columns include fixed effects for tribe, age, 5-year birth cohorts, and survey year. The sample is restricted to those born after 1850. Coefficient estimates from the "linear pre-trends" model condition on a linear trend for the pre-1871 cohorts. Estimates from the "extended trends" model condition on colonial, cultural and geographic controls. See Sections III and IV and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: The Effect of the Slaughter of the Bison on Heights: Bounding Exercise

	Baseline	10th ptile	20th ptile	30th ptile	40th ptile	50th ptile
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Mortality Selection on Younger Cohorts						
Exposed to Slaughter	-2.486***	-4.345***	-4.000***	-3.704***	-3.460***	-3.089***
	(0.839)	(1.128)	(1.143)	(1.110)	(1.123)	(1.110)
Observations	8993	9007	9007	9007	9007	9007
Adjusted R^2	0.882	0.882	0.882	0.882	0.882	0.882
# Clusters	105	105	105	105	105	105
Panel B: Mortality Selection on Older Cohorts						
Exposed to Slaughter	-2.486***	-1.488*	-1.830**	-2.089**	-2.305***	-2.535***
	(0.839)	(0.840)	(0.837)	(0.836)	(0.836)	(0.837)
Observations	8993	9415	9415	9415	9415	9415
Adjusted R^2	0.882	0.877	0.881	0.882	0.883	0.884
# Clusters	105	105	105	105	105	105

Notes: This table displays coefficient estimates from a difference-in-differences specification (Equation 1). The dependent variable in all columns and panels is standing height in centimeters. All columns include fixed effects for tribe, age, 5-year birth cohorts, and survey year. The sample is restricted to those born after 1850. The first column shows the baseline results. Each subsequent column shows the estimate of the treatment effect under the assumption that those who died would have been in the xth percentile of the heights distribution of their birth cohort and sex, where x represents the column title. See Sections III and IV and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: The Relationship Between the Bison's Slaughter and Male Occupations in 1900 Relative to Geographically Proximate Whites

	Occ Score		Has Occ		Occ Score | Some Occ	
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed to Slaughter	-0.714***	-0.673***	-0.318***	-0.336***	-0.299***	-0.254
	(0.104)	(0.182)	(0.049)	(0.081)	(0.088)	(0.158)
Born After 1871		X		X		X
Observations	47467	13048	47467	13048	44479	11873
Adjusted R^2	0.123	0.143	0.042	0.060	0.132	0.169
# Clusters	1163	1090	1163	1090	1161	1081

Notes: This table displays coefficient estimates from OLS specifications. The dependent variable in column (1) and (2) is the standardized occupational score. In column (3) and (4) it is an indicator that equals one if the individual reported having an occupation on the census. In column (5) and (6) it is the standardized occupational score, conditional on reporting an occupation. All specifications control for a quadratic in age, and county and year fixed effects. See Sections III and IV and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by county are in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: The Relationship Between the Bison's Slaughter and Occupational Reporting in 1900

	No Occ (Total)		"Other" Non-Occ		Occ Left Blank	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Relative to Non Bison-Reliant Indigenous Men						
Exposed to Slaughter	0.192***	0.167**	0.270***	0.313***	-0.0780***	-0.147***
	(0.065)	(0.064)	(0.063)	(0.064)	(0.026)	(0.035)
Observations	6850	2247	6850	2247	6850	2247
Adjusted R^2	0.235	0.262	0.387	0.448	0.058	0.083
# Clusters	97	86	97	86	97	86
Panel B: Relative to White Men in the Same County						
Exposed to Slaughter	0.318***	0.336***	0.288***	0.280***	0.0292*	0.0561
	(0.049)	(0.081)	(0.052)	(0.078)	(0.017)	(0.042)
Observations	47467	13048	47467	13048	47467	13048
Adjusted R^2	0.042	0.060	0.208	0.255	0.027	0.048
# Clusters	1163	1090	1163	1090	1163	1090
Born After 1871		X		X		X

Notes: This table displays coefficient estimates from OLS specifications. The dependent variable in column (1) and (2) is an indicator that equals one if the individual reported having no occupation on the census. This includes all occupation codes that are either blank, invalid, inmates, or categorized by an enumerator as an "other non-occupation response". In column (3) and (4) it is an indicator that equals one if the enumerator coded the individual's occupation as "other non-occupation response". In column (5) and (6) it is an indicator that equals one if the occupation was left blank. Panel A presents estimates where the comparison group is comprised of non bison-reliant Indigenous men. In this panel, all columns control for a quadratic in age, the logarithm of average ruggedness in a nation's homeland, the logarithm of the area of a nation's homeland, the latitude of the homeland, whether the nation was historically nomadic, whether they had wealth distinctions, population density in a nation's homeland in 1500 and 1600 and the interaction of all these variables with birth year. They also all include controls for whether a respondent was born after or during the year a railway first entered the nation's homeland, whether they were born after their land was ceded, settler population density in their nation's homeland at the time of their birth, and whether they were born after or during a major war with the United States, and year and census region fixed effects. Missing control values are dummied out. Panel B presents estimates where the comparison group is comprised of white men in counties that overlap with bison reservations. These specifications control for a quadratic in age, and county and year fixed effects. See Sections III and IV and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses in Panel A, and by county in Panel B. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Instrumental Variable Estimates of the Effect of the Bison's Slaughter on Income Per Capita, 1945-2019

	Reduced Form	First Stage	IV Estimate	Reduced Form	First Stage	IV Estimate
	(1)	(2)	(3)	(4)	(5)	(6)
Exposed to Slaughter			-0.327**			-0.310***
			(0.130)			(0.120)
Distance to closest MSA	-0.00157	0.0392	0.0275	-0.00196	0.0365	0.0264
	(0.028)	(0.039)	(0.033)	(0.028)	(0.039)	(0.033)
Cost to Chicago in 1870	0.171**	-0.167*		0.147	-0.324	
	(0.072)	(0.098)		(0.117)	(0.238)	
Cost to Fort Leavenworth in 1870	-0.0367	-0.0975		-0.0313	-0.0624	
	(0.082)	(0.146)		(0.086)	(0.134)	
Cost to New York in 1870	-0.0540	0.0335		-0.0596	-0.00364	
	(0.037)	(0.053)		(0.048)	(0.077)	
Cost to St. Louis in 1870	-0.0845	0.228		-0.0799	0.258	
	(0.162)	(0.266)		(0.163)	(0.288)	
Cost to Baltimore in 1890	0.204	-0.378*		0.226	-0.230	
	(0.148)	(0.193)		(0.206)	(0.147)	
Cost to New York in 1890	-0.197	0.366*		-0.220	0.213	
	(0.147)	(0.189)		(0.207)	(0.152)	
Cost to Montreal in 1870				0.0199	0.131	
				(0.094)	(0.136)	
Including Montreal				X	X	X
Observations	629	631	629	629	631	629
Adjusted R^2	0.583	0.307	0.556	0.583	0.317	0.557
# Clusters	61	61	61	61	61	61
F-statistic for Excluded Instruments		4.567			3.91	
Hansen's J Statistic p-Value		0.0874			0.1358	
Endogeneity Test p-Value		0.4732			0.5717	

Notes: This table displays coefficient estimates from the IV specification. The first three columns exclude the cost-adjusted distance to Montreal from the set of instruments, and the next three columns include it. Column (1) and (4) present reduced form estimates, where the dependent variable is the natural logarithm of income per capita for Native Americans living within reservation boundaries. Column (2) and (5) present first stage estimates, where the dependent variable is an indicator that equals one if the nation was exposed to the rapid slaughter, and zero if the nation was not bison-reliant. Column (3) and (6) present the IV estimates, where the dependent variable is the natural logarithm of income per capita for Native Americans living within reservation boundaries. All columns include year dummies and a control for the distance to the closest metropolitan statistical area. The endogeneity test is the Durbin-Wu-Hausman test and p-value reported is under the null hypothesis that exposure to the slaughter can be treated as exogenous.. See Sections III and V and Online Appendix Sections A and C for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: The Relationship Between the Bison's Slaughter and Income Per Capita, 1945-2019, Accounting for Spatial Autocorrelation

	(1)	(2)	(3)	(4)	(5)
Exposed to Slaughter	-0.171***	-0.179***	-0.173***	-0.159*	-0.166***
	(0.054)	(0.053)	(0.053)	(0.086)	(0.033)
Latitude, Territory	0.00550		-0.0119	-0.00489	
	(0.004)		(0.011)	(0.010)	
Longitude, Territory	0.000583		-0.000460	-0.00445	
	(0.002)		(0.005)	(0.006)	
Latitude, Reservation		0.000511	0.000859	0.0230	
		(0.002)	(0.005)	(0.006)	
Longitude, Reservation		0.00810*	0.0195*	0.0230	
		(0.004)	(0.012)	(0.016)	
State Fixed Effects				X	
Observations	390	390	390	390	390
p-value on Moran Statistic	0.710	0.721	0.624	0.105	

Notes: This table displays coefficient estimates from OLS specifications. The dependent variable in all columns is the natural logarithm of income per capita for Native Americans living within reservation boundaries. Reservations have been selected to form a balanced panel of reservations for 1945-2019. All columns include year dummies. Following Kelly (2020), the first four columns include a set of spatial controls to evaluate the robustness of the treatment effect. Column (1) conditions on the latitude and longitude of the nation's traditional territory. Column (2) conditions on the latitude and longitude of the reservation. Column (3) conditions on both sets of geographic coordinates, and column (4) adds state fixed effects. The last row reports the p-value on the Moran I-statistic for the test that under the null-hypothesis that the errors are spatially uncorrelated. Standard errors in the first four specifications were computed using maximum likelihood estimation with a spectral-normalized inverse-distance weighting matrix where the geographic units are reservations in 2010. The final column displays the treatment effect for the balanced panel, with Conley standard errors in parentheses. These were computed with three lag periods and a 100km distance cut-off. See Sections III and V and Online Appendix Section A for more information, including data sources and variable construction. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10: The Relationship Between the Bison's Slaughter and Self-Employment and Home Ownership in 2010 and 2019

	Self-Employed	Owns Home
	(1)	(2)
Exposed to Slaughter	-0.0107**	-0.0677***
	(0.004)	(0.017)
	[0.132]	[0.075]
Female	-0.0276***	-0.0170**
	(0.004)	(0.006)
Age	0.00659***	-0.000665
	(0.001)	(0.002)
Age Sq	-0.000682***	0.000936***
	(0.000)	(0.000)
Ln(Total Income)	-0.00828**	0.0399***
	(0.003)	(0.013)
Observations	43125	43125
Adjusted R^2	0.014	0.083
# Clusters	21	21

Notes: This table displays coefficient estimates from OLS specifications. The dependent variable in column (1) is an indicator that equals one if the individual is self-employed. In column (2), it is an indicator that equals one if the individual owns their own home. All specifications include a year dummy for 2010, state fixed effects, a sex indicator, and a quadratic in age (with age squared divided by ten to make the coefficients more readable). See Sections III and VI and Online Appendix Section A for more information, including data sources and variable construction. Standard errors clustered by tribe are in parentheses and wild cluster bootstrap p-values are in brackets. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A11: Source of Income in 1915-1920 by Exposure to the Rapid Slaughter

	Exposed to Slaughter	Not Bison-Reliant	Difference
	(1)	(2)	(3)
% from land sales 1915-1920	10.55	5.15	-5.40
	(13.92)	(10.67)	
% from land leases 1915-1920	10.55	1.57	-8.98***
	(9.24)	(3.97)	
% from livestock sales 1915-1920	14.67	7.06	-7.61*
	(11.31)	(8.31)	
% from rations 1915-1920	4.01	1.25	-2.75**
	(3.47)	(1.89)	
% from wages 1915-1920	11.51	23.13	11.63**
	(12.03)	(18.40)	
% from crops raised 1915-1920	26.36	35.77	9.41
	(15.32)	(24.41)	
% native industries	1.58	11.93	10.35**
	(3.14)	(16.63)	
% from treaties 1915-1920	19.02	7.18	-11.84**
	(12.65)	(12.65)	
Observations	22	30	52

Notes: This table displays sample means with standard deviations below in parentheses for nations that were exposed to the slaughter and those that were not bison-reliant. Column (1) reports summary statistics for nations who were exposed to the rapid slaughter and column (2) reports them for nations who were not bison-reliant. Column (3) reports difference-in-means tests between column (1) and (2). These data come from the 1915-1920 Reports to the Commissioner of Indian Affairs (Table 10 in 1915 through 1919 and Table 11 in 1920). Averages across all years are reported. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12: Summary Statistics for 1979-2019 Analysis by Exposure to the Rapid Slaughter

	Exposed to Slaughter (1)	Not Bison-Reliant (2)	Difference (3)
Native American Per Capita Income	11019.33	14867.51	3848.17***
	(4521.16)	(7481.33)	
Native American Population	4354.39	1868.73	-2485.66***
	(3093.03)	(2558.76)	
Total Population Density	9.81	126.73	116.92***
	(14.50)	(187.71)	
# Banks in Counties 1980	5.70	62.01	56.31***
	(4.65)	(102.18)	
Distance to Closest Bank 1870, KM	36.02	38.51	2.49
	(15.84)	(29.75)	
# Bank Failures, 1936-1929	2.06	3.11	1.05***
	(1.09)	(2.19)	
Net Migration Rate, 1980 to 1990	1.86	6.61	4.75*
	(15.15)	(21.93)	
Net Migration Rate, 1990 to 2000	21.37	13.05	-8.32*
	(12.58)	(38.03)	
Observations	87	318	405

Notes: This table displays sample means with standard deviations below in parentheses for nations that were exposed to the slaughter and those that were not bison-reliant for the time periods between 1979 and 2019. Column (1) reports summary statistics for nations who were exposed to the rapid slaughter and column (2) reports them for nations who were not bison-reliant. Column (3) reports difference-in-means tests between column (1) and (2). See Section III and Online Appendix Section A for more information, including data sources and variable construction. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

References

Acemoglu, D., S. Johnson, and J. A. Robinson (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review 91*(5), 1369–1401.

Atack, J. (2016). Historical geographic information systems (GIS) database of U.S. railroads.

Bazzi, S., M. Fiszbein, and M. Gebresilasse (2020). Frontier culture: The roots and persistence of "rugged individualism" in the united states. *Econometrica 88*(6), 2329–2368.

Carlos, A. M., D. Feir, and A. Redish (2021). Indigenous nations and the development of the us economy: Land, resources, and dispossession. *QUCEH Working Paper Series* (21-04).

Denevan, W. (1992). The pristine myth: The landscape of the Americas in 1492. *Annals of the Association of American Geographers 82*, 369–385.

Dippel, C. (2014). Forced coexistence and economic development: Evidence from Native American reservations. *Econometrica 82*(6), 2131–2165.

Donaldson, D. and R. Hornbeck (2016). Railroads and american economic growth: A "market access" approach. *The Quarterly Journal of Economics 131*(2), 799–858.

Gregg, M. T. (2018). The long-term effects of American Indian boarding schools. *Journal of Development Economics 130*, 17–32.

Haines, M., P. Fishback, and P. Rhode (2018, 08). United states agriculture data, 1840 - 2012.

Haines, M. and Inter-University Consortium for Political and Social Research (2010). Historical demographic, economic, and social data: The united states, 1790–2002.

Hornaday, W. T. (1889). *The Extermination of the American Bison*. Vol. 1. Library of Alexandria.

Hornbeck, R. (2012). The enduring impact of the American Dust Bowl: Short- and long-run adjustments to environmental catastrophe. *The American Economic Review 104*(4), 1477–1507.

Inwood, K. and I. Keay (2013). Trade policy and industrial development: Iron and steel in a small open economy, 1870-1913. *Canadian Journal of Economics 46*(4), 1265–1294.

Inwood, K. and I. Keay (2015). Transport costs and trade volumes: Evidence from the Trans-Atlantic iron trade. *Journal of Economic History 75*(1), 95–124.

Jaremski, M. and P. V. Fishback (2018). Did inequality in farm sizes lead to suppression of banking and credit in the late nineteenth century? *The Journal of Economic History 78*(1), 155–195.

Kelly, M. (2020). Understanding persistence.

Lahmeyer, J. (2004). Populstat database. Growth of the population per country in a historical perspective, including their administrative divisions and principal towns.

Leonard, B., D. P. Parker, and T. L. Anderson (2020). Land quality, land rights, and indigenous poverty. *Journal of Development Economics 143*, 102435.

Livi-Bacci, M. (2007). *A Concise History of World Population* (4 ed.). Oxford: Blackwell Publishing.

Maddison, A. (2001). *The World Economy: A Millenial Perspective*. Paris: OECD.

Martin, M. M. and T. J. O'Leary (1990). *Supplement to the 4th Edition*, Volume 1: Indexes of *Ethnographic Bibliography of North America*. New Haven: Human Relations Area Files Press.

McEvedy, C. and R. Jones (1978). *World Atlas of Population History*. Hammondsworth: Penguin Books Ltd.

Murdock, G. P. (1967). *Ethnographic Atlas*. University of Pittsburgh Press.

Paulin, C. (1932). Atlas of the historical geography of the united states.

Saunt, C. (2014). Invasion of america. *ArcGIS Online. Retrieved from usg. maps. arcgis. com/apps/webap pviewer/index. html*.

Taylor, S. M. (2011). Buffalo hunt: International trade and the virtual extinction of the North American bison. *The American Economic Review 101*(7), 3162–3195.