Does it matter where you came from? Ancestry composition and economic performance of U.S. counties, 1850 - 2010

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Full paper available at: http://ssrn.com/abstract=2608567

Indeed, the more advanced a society becomes in material terms, the stronger is the determinant powers of its folkways, for modern technologies act as amplifiers, and modern institutions as stabilizers, and modern elites as organizers of the complex cultural processes.
—*Albion's Seed: Four British Folkways in America* (Fischer, 1989, p. 10)

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Immigration to the United States

- United States absorbed more immigrants than all other nations *combined*
  - People from many different **origins**
  - Come at different **times,**
  - Go to different **places** within the United States
  - Where they **mix**, and interact with people from other origins
  - And continue to **move**, so the mix changes and evolves

- If groups bring something with them when they move that persists (Putterman and Weil, 2010)

- $\Rightarrow$ US provides a great laboratory for understanding what matters for development

Constructing ancestry

- Construct from 1850-2010, share of each **county's** population descended from ancestors who come from every **country** of origin
    - Use micro-samples from census recording place of birth to construct
    - Create a mapping of ancestry in US in each decade
    - Stock measure, not just tracking first generation migrants
- Construct county level measure of GDP per capita
    - First complete sub-state measure of income or GDP before 1950
    - Use occupation from census micro-samples to construct measure of services value added
    - Services crucial if want to consider cities

Does the changing makeup of a county matter?

- Composition matters.
  - US is not a "melting pot"
  - Differences persistent for a long time
  - Something groups bring with them and pass on to their children continues to matter.
- What matters?
  - Effect of ancestry correlated with cultural, economic, institutional, and human capital endowments
- Culture appears to play the most important and robust role
  - Culture may work through better functioning local institutions, may reflect good local institutions of home country
- Diversity matters as well
  - Diverse origins good for development
  - Diverse cultural attributes bad

Deep determinants of development?

1. **Institutions**
   - Acemoglu and Robinson (2012); Banerjee and Iyer (2005)

2. **Culture**
   - Guiso, Sapienza, and Zingales (2006); Nunn and Wantchekon (2011); Tabellini (2010)
   - Culture <-> Institutions (Alesina and Giuliano, 2013)

3. **Geography**
   - Diamond (1998); Bloom and Sachs (1998)
   - Geography -> Culture/Ethnicity (Michalopoulos, 2012)

4. **Human capital**
   - Barro and Lee (1994); Glaeser et al. (2004)

5. **Diversity and conflict**
   - Ashraf and Galor (2013); Alesina, Baqir, and Easterly (1999)

Deep determinants of development

- Big questions that are difficult to study (Spolaore and Wacziarg, 2013)
    - Much work in cross-section, difficult to separate out place from people
    - Not many natural experiments
    - Increasing use of use of history to find variation

- A key contribution: our work has **panel**
    - Can examine changes in composition and county GDP
    - Sweep out many of the confounding factors
    - Examine dynamic effects
    - Diversity

Constructing county ancestry

SCHEDULE 1.—Inhabitants in ...., in the County of ...., State of .... enumerated by me on the .... day of June, 1880.

....
Enumerator.

[Census schedule form with columns: In Cities, Personal Description, Civil Condition, Occupation, Health, Education, Nativity — numbered columns 1 through 26]

- Micro samples from census start in 1850 from IPUMS
- Only "county groups" available after 1950, aggregate somewhat to maintain consistent geography

Constructing county ancestry

Nativity.

Place of Birth of this person, naming State or Territory of United States, or the Country, if of foreign birth. | Place of Birth of the FATHER of this person, naming the State or Territory of United States, or the Country, if of foreign birth. | Place of Birth of the MOTHER of this person, naming the State or Territory of United States, or the Country, if of foreign birth.

▸ Additional details   ▸ Initial distribution   ▸ More on ethnicity

Iterative construction 1

Year   1870
Age   40
Birthplace   Ireland
Living   Suffolk, MA
Mother's birthplace   –
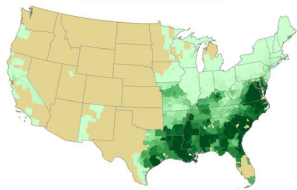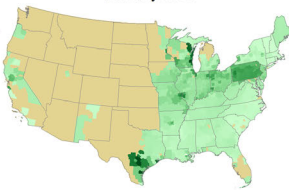Father's birthplace   –
Race   "White"
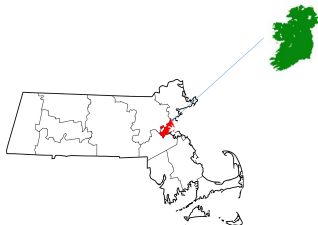
Ancestry

(	1	0	0	)
	Ireland	Germany	Africa	

Iterative construction 2

Year	1880
Age	25
Birthplace	Pennsylvania
Living	Suffolk, MA
Mother's birthplace	Ireland
Father's birthplace	Germany
Race	"White"
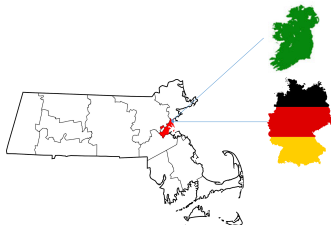
Ancestry

$$(\quad 0.5 \qquad 0.5 \qquad 0 \quad) = 0.5 * (1, 0, 0) + 0.5 * (0, 1, 0)$$

Ireland   Germany   Africa

Iterative construction 3

Year	1880
Age	23
Birthplace	Pennsylvania
Living	Suffolk, MA
Mother's birthplace	Ireland
Father's birthplace	Pennsylvania
Race	"White"
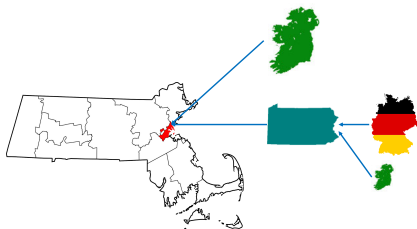
Ancestry

$$\left(\ \underset{\text{Ireland}}{0.55}\quad \underset{\text{Germany}}{0.45}\quad \underset{\text{Africa}}{0}\ \right) = 0.5 * (1, 0, 0) + 0.5 * (\text{Father's AV})$$

Father's AV = Ancestry in Pennsylvania in 1860 among
"White" 20-30 year olds
= (0.1, 0.9, 0)

Iterative construction 4

Year	2010
Age	45
Birthplace	Pennsylvania
Living	Suffolk, MA
Mother's birthplace	–
Father's birthplace	–
Race	"Black"
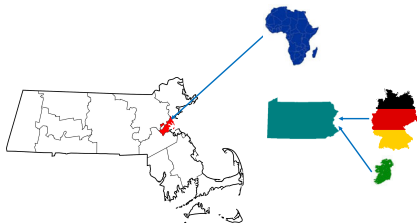
Ancestry

$$(\quad 0 \qquad 0 \qquad 1 \quad)$$

Ireland   Germany   Africa

▸ More on race

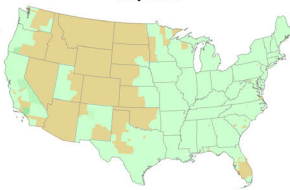# Ancestry over time

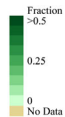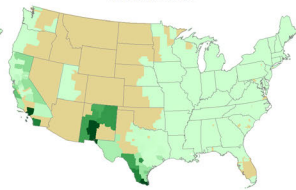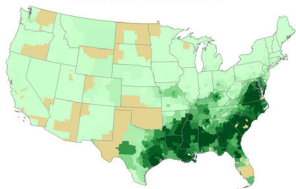# Ancestry in 1850

African American 1850 · Germany 1850 · Ireland 1850 · Scandinavian 1850 · Italy 1850 · Mexico 1850
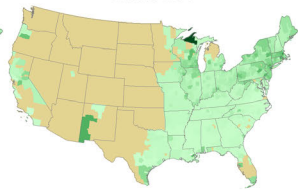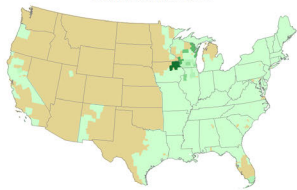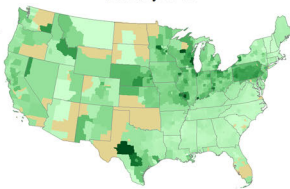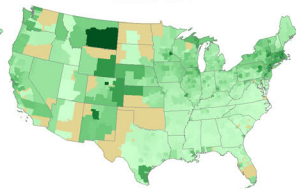
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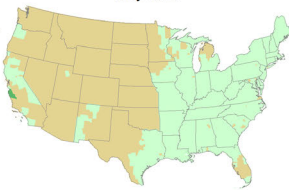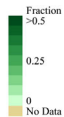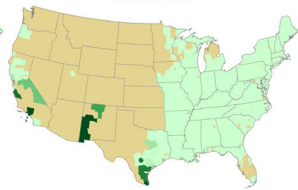
Ancestry in 1860

African American 1860
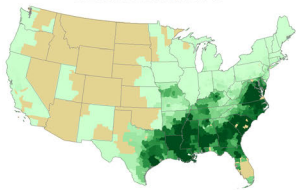
Germany 1860
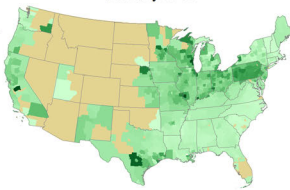
Ireland 1860
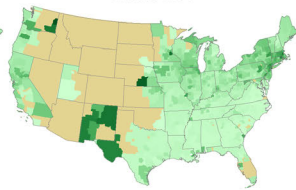
Scandinavian 1860
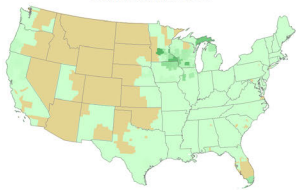
Italy 1860

Mexico 1860

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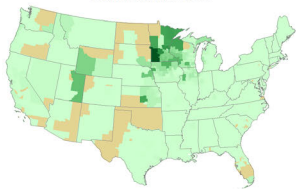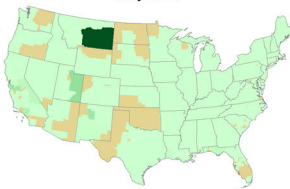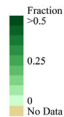No Data

Ancestry in 1870

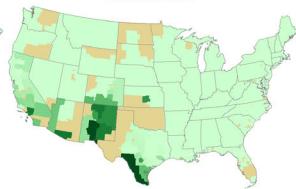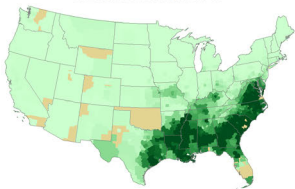African American 1870 · Germany 1870 · Ireland 1870 · Scandinavian 1870 · Italy 1870 · Mexico 1870

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Ancestry in 1880

African American 1880 | Germany 1880 | Ireland 1880
Scandinavian 1880 | Italy 1880 | Mexico 1880
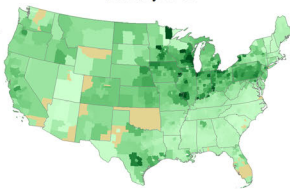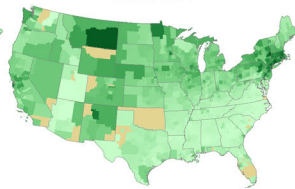
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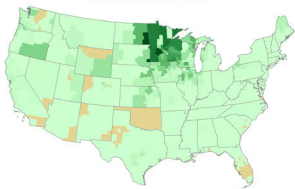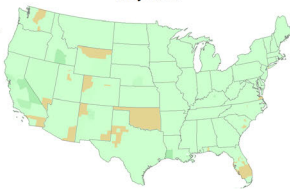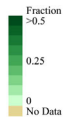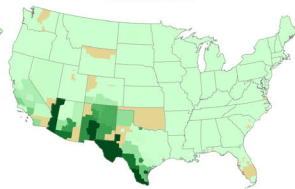African American 1890   Germany 1890   Ireland 1890
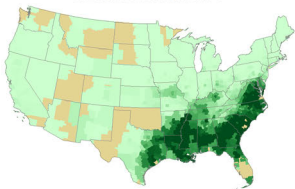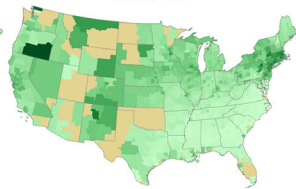
Scandinavian 1890   Italy 1890   Mexico 1890

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Ancestry in 1900

African American 1900
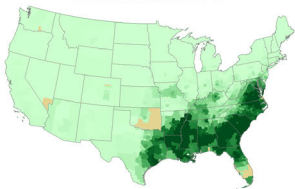
Germany 1900
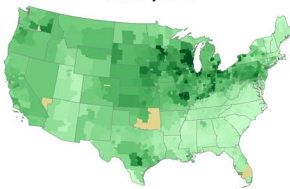
Ireland 1900
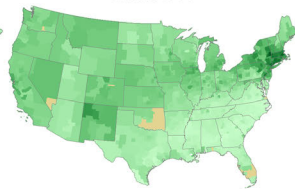
Scandinavian 1900

Italy 1900

Mexico 1900

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Ancestry in 1910

African American 1910 · Germany 1910 · Ireland 1910 · Scandinavian 1910 · Italy 1910 · Mexico 1910
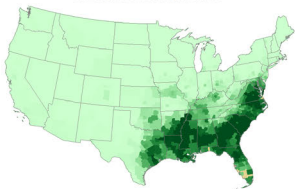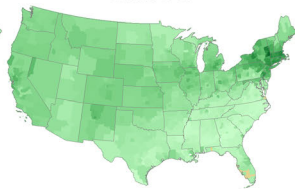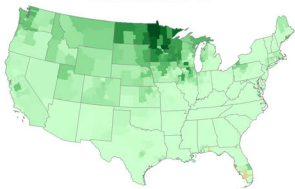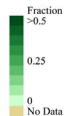
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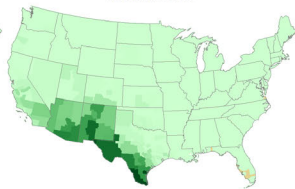
Ancestry in 1920

African American 1920 · Germany 1920 · Ireland 1920 · Scandinavian 1920 · Italy 1920 · Mexico 1920
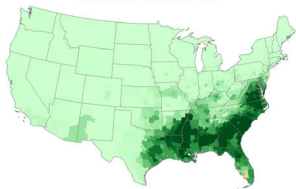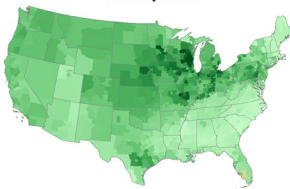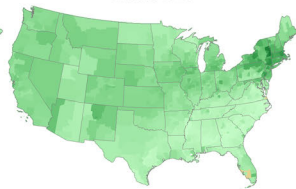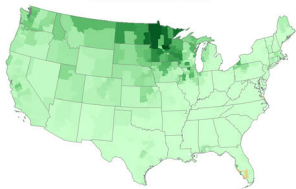
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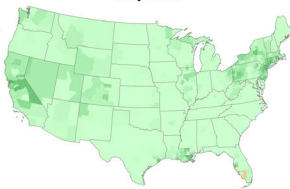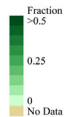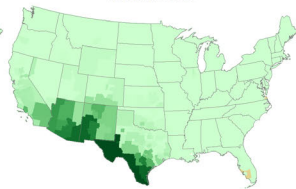
Ancestry in 1930

African American 1930 · Germany 1930 · Ireland 1930 · Scandinavian 1930 · Italy 1930 · Mexico 1930
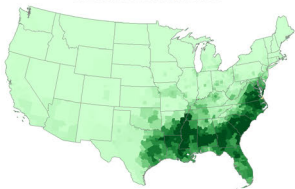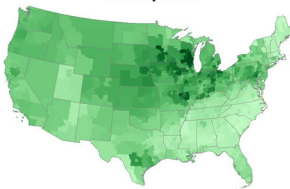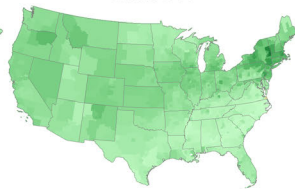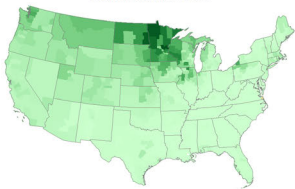
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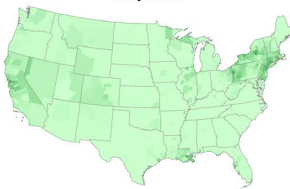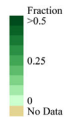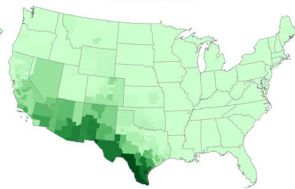
Ancestry in 1940

African American 1940 · Germany 1940 · Ireland 1940 · Scandinavian 1940 · Italy 1940 · Mexico 1940
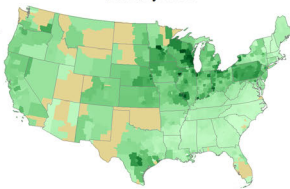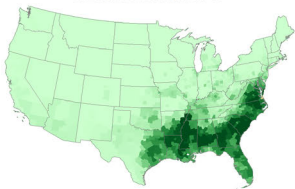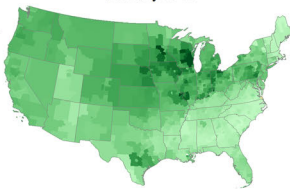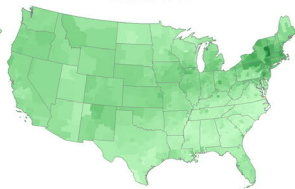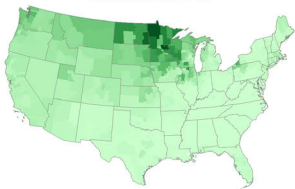
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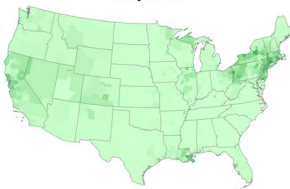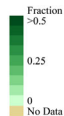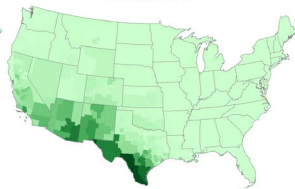
Ancestry in 1950

African American 1950   Germany 1950   Ireland 1950
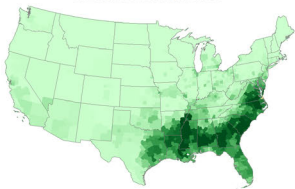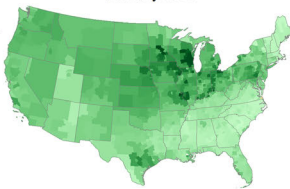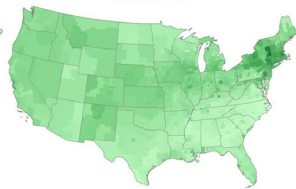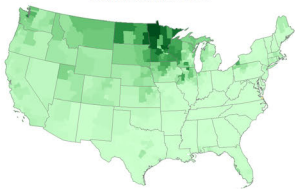
Scandinavian 1950   Italy 1950   Mexico 1950

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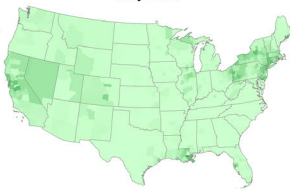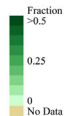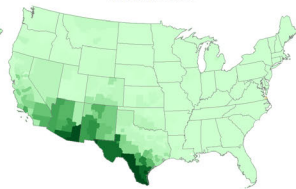
Ancestry in 1960

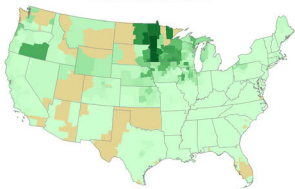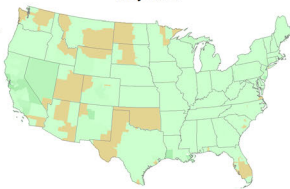African American 1960   Germany 1960   Ireland 1960
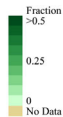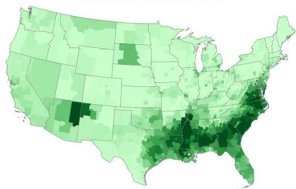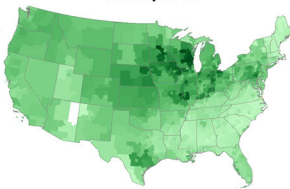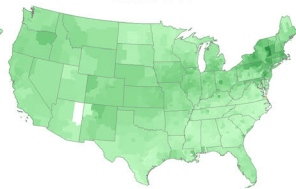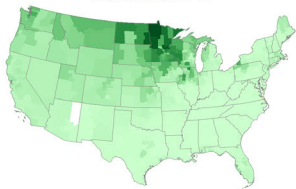
Scandinavian 1960   Italy 1960   Mexico 1960

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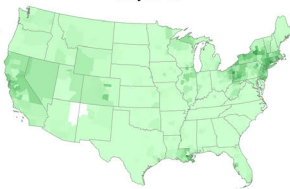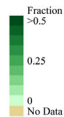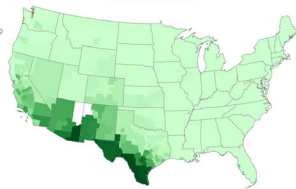
Ancestry in 1970

African American 1970 · Germany 1970 · Ireland 1970 · Scandinavian 1970 · Italy 1970 · Mexico 1970
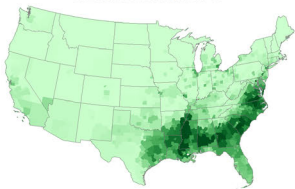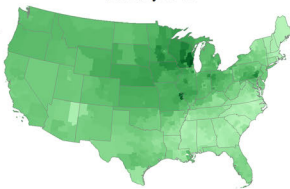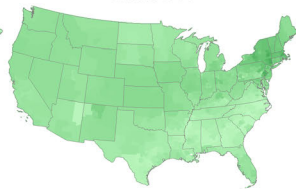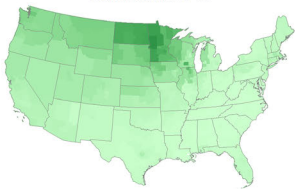
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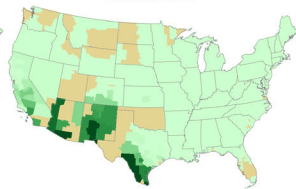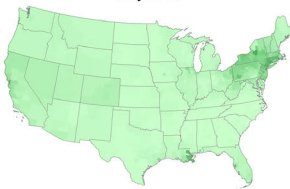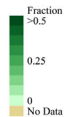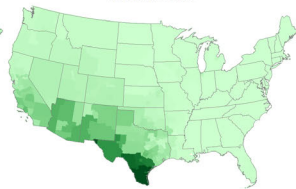
Ancestry in 1980

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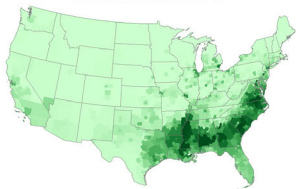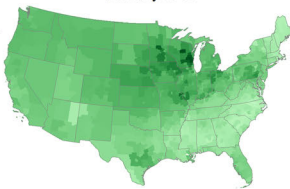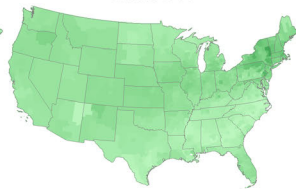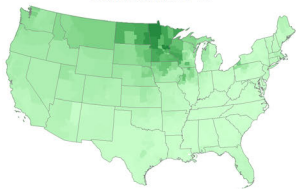
Scandinavian 1980   Italy 1980   Mexico 1980

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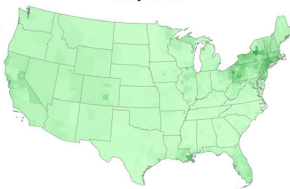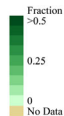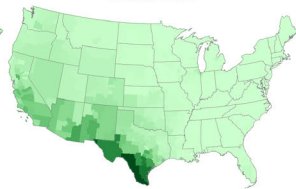
Ancestry in 1990

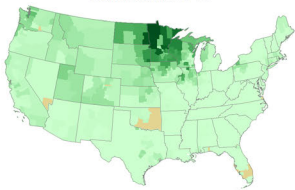African American 1990   Germany 1990   Ireland 1990
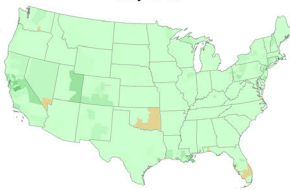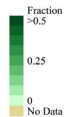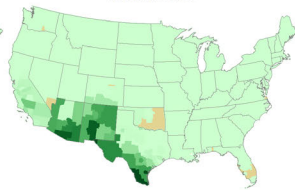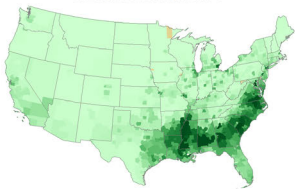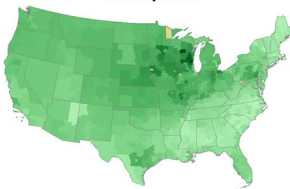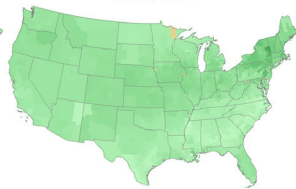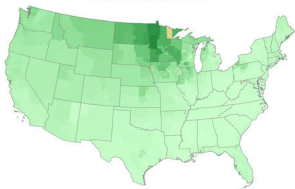
Scandinavian 1990   Italy 1990   Mexico 1990

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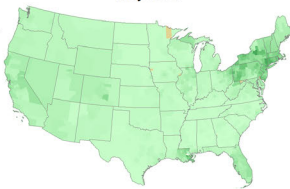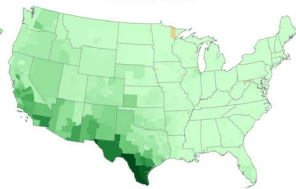
Ancestry in 2000

African American 2000 · Germany 2000 · Ireland 2000 · Scandinavian 2000 · Italy 2000 · Mexico 2000
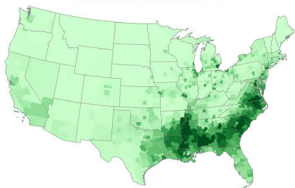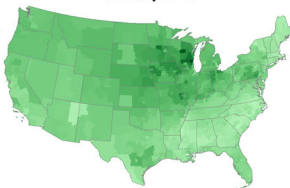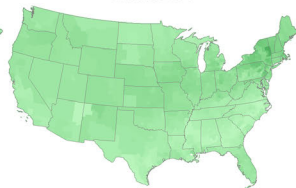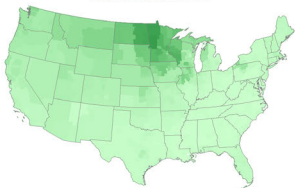
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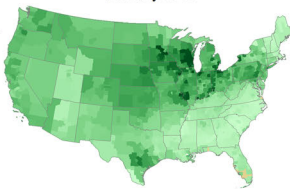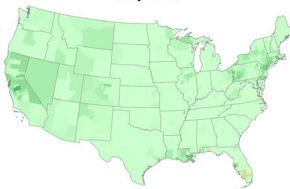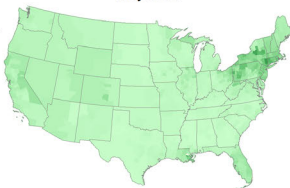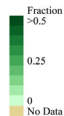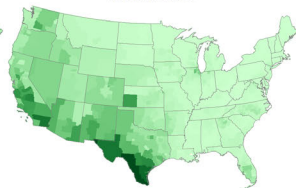
Ancestry in 2010

African American 2010 | Germany 2010 | Ireland 2010
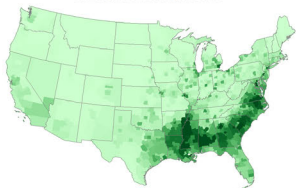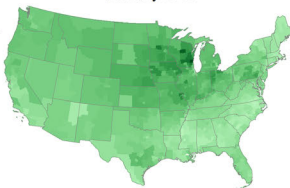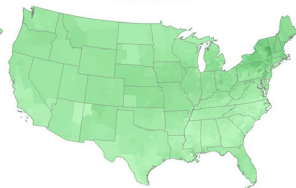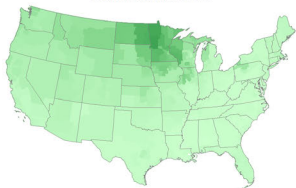
Scandinavian 2010 | Italy 2010 | Mexico 2010

Fraction
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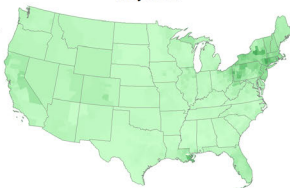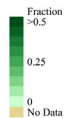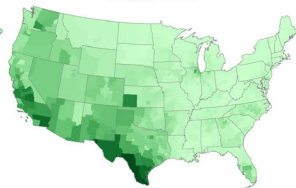
County GDP over time

- Problem: Measures of county income available only after 1950
  - Before that only manufacturing and agriculture from census
  - But services matter if want to compare areas that include cities
- Construct measure of services value added using census micro-samples on occupations
  - Use national estimates of value added for each occupation
  - Micro-samples -> number of people engaged detailed occupation within county
    - Allows New York City with many high-value-added finance occupations to have much higher income
- Combine with county income measures after 1950, assuming growth in income same as growth in GDP
- To our knowledge: the first measure of GDP below state level before 1950.

Aggregate county GDP
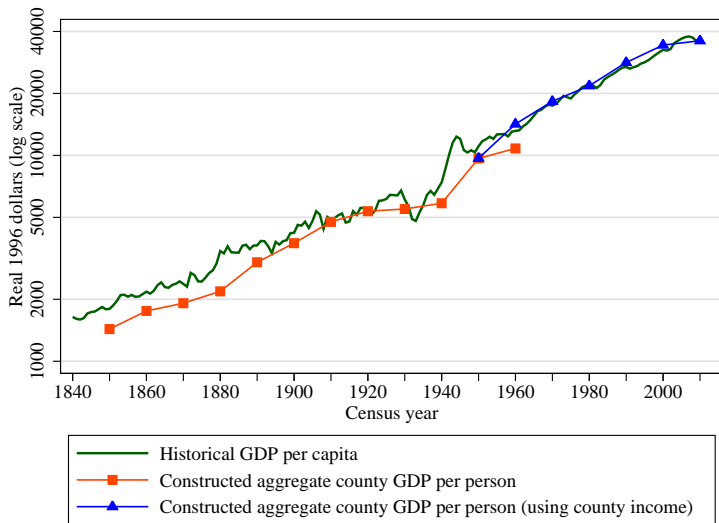
Share of economy
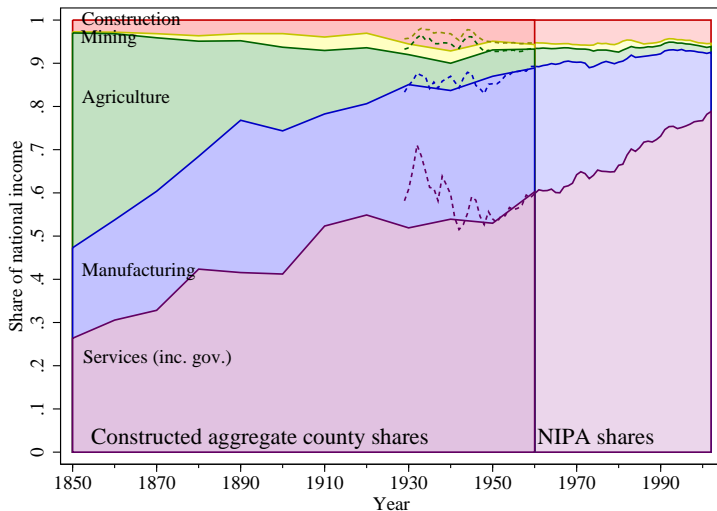
Does ancestry matter? How?

1. Test whether ancestry matters for local development
   - Unrestricted effect for each ancestry
   - What are these effects correlated with?

2. What matters?
   - Weight country-of-origin measures by ancestry in each county
   - Which characteristics of country-of-origin matter?
   - Which matter most?

3. Dynamics and endogeneity

4. Diversity

Does ancestry matter?

$$y_{ct} = \theta_c + \lambda_t + \sum_{a=1}^{A} \alpha_a \pi_{ct}^a + \gamma X_{ct} + \epsilon_{ct}$$
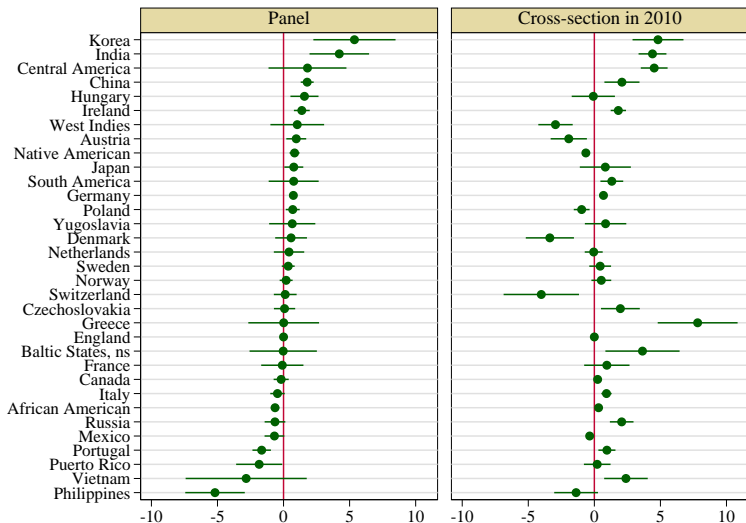
Yes, ancestry matters

$$y_{ct} = \theta_c + \lambda_t + \sum_{a=1}^{A} \alpha_a \pi_{ct}^a + \gamma X_{ct} + \epsilon_{ct}$$

- Joint test of α_a all zero.
- Reject very strongly in all cases
  - With fixed effects
  - Only testing Non-African-American ancestries
  - With State X Year effects (only within state identification)
  - With lagged county income
  - With Countygroup trends
  - With controls for county education, population density, and fractionalization
  - Clustering at state level

How does ancestry matter?

- **Economic**: A summary measure of what groups could bring,
  - GDP per capita in 1870 from Maddison (1995)
  - Ratio to US GDP at time of arrival
- **Institutional**:
  - Political participation compared to US
  - State Centralization in 1500 (Putterman and Weil, 2010)
- **Human capital**:
  - Education in country of origin at time of migration,
  - Education of immigrants at time of migration
- **Cultural**:
  - Trust, Obedience, Respect for others, as measured in World Values Surveys since 1980 (Tabellini, 2010)

Economic: 1870 GDP / Economic: Arrival weighted origin GDP / Economic: 2010 GDP / Economic: Arrival weighted origin GDP
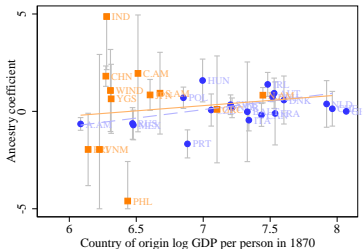
Top-left panel (Economic: 1870 GDP):
- x-axis: Country of origin log GDP per person in 1870
- y-axis: Ancestry coefficient
- Ancestries before 1924 slope (s.e.) = 0.866 (0.241)
- All ancestries slope (s.e.) = 0.537 (0.270)
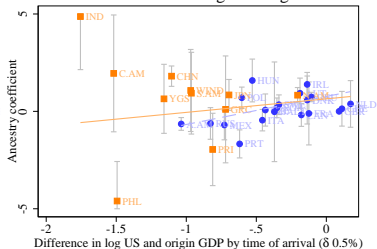
Top-right panel (Economic: Arrival weighted origin GDP):
- x-axis: Difference in log US and origin GDP by time of arrival (δ 0.5%)
- y-axis: Ancestry coefficient
- Ancestries before 1924 slope (s.e.) = 1.439 (0.357)
- All ancestries slope (s.e.) = 0.703 (0.396)
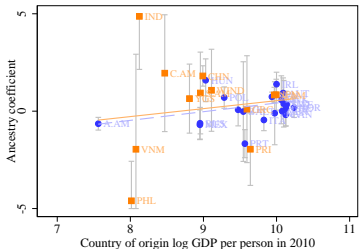
Bottom-left panel (Economic: 2010 GDP):
- x-axis: Country of origin log GDP per person in 2010
- y-axis: Ancestry coefficient
- Ancestries before 1924 slope (s.e.) = 0.445 (0.160)
- All ancestries slope (s.e.) = 0.409 (0.171)
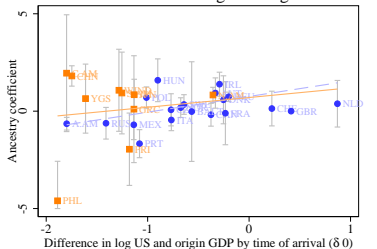
Bottom-right panel (Economic: Arrival weighted origin GDP):
- x-axis: Difference in log US and origin GDP by time of arrival (δ 0)
- y-axis: Ancestry coefficient
- Ancestries before 1924 slope (s.e.) = 0.807 (0.210)
- All ancestries slope (s.e.) = 0.465 (0.239)

Institutions: State history

Institutions: Political participation
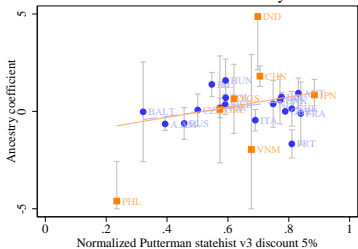
- - - Ancestries before 1924 slope (s.e.) = 1.743 (0.900)
——— All ancestries slope (s.e.) = 2.059 (0.859)
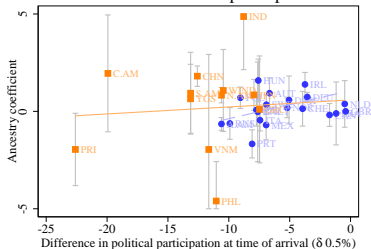
- - - Ancestries before 1924 slope (s.e.) = 0.145 (0.049)
——— All ancestries slope (s.e.) = 0.036 (0.045)

Human capital: Education of immigrants

Human capital: Origin education
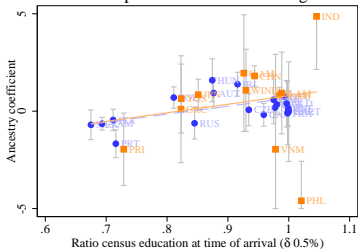
- - - Ancestries before 1924 slope (s.e.) = 4.097 (0.956)
——— All ancestries slope (s.e.) = 4.394 (1.049)
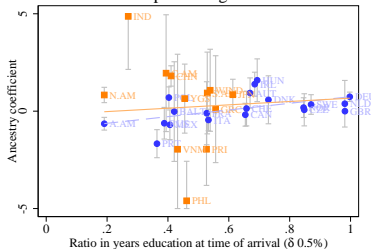
- - - Ancestries before 1924 slope (s.e.) = 1.710 (0.413)
——— All ancestries slope (s.e.) = 0.863 (0.492)

Culture: Trust

x-axis: Fraction origin: Most people can be trusted
y-axis: Ancestry coefficient
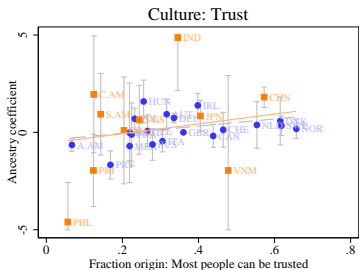
- - - Ancestries before 1924 slope (s.e.) = 1.839 (0.922)
——— All ancestries slope (s.e.) = 2.521 (0.849)

Culture: Obedience

x-axis: Fraction origin: Obedience important quality for children
y-axis: Ancestry coefficient
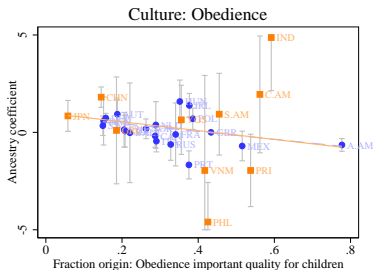
- - - Ancestries before 1924 slope (s.e.) = -2.010 (0.639)
——— All ancestries slope (s.e.) = -2.266 (0.657)

Culture: Principal component

x-axis: Principle component of trust, respect, control, obedience
y-axis: Ancestry coefficient
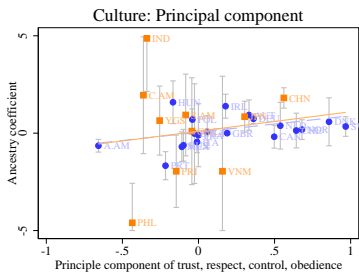
- - - Ancestries before 1924 slope (s.e.) = 0.848 (0.313)
——— All ancestries slope (s.e.) = 1.001 (0.319)

Values: Thrift

x-axis: Fraction origin: Thrift and saving important
y-axis: Ancestry coefficient
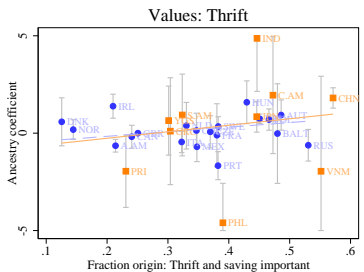
- - - Ancestries before 1924 slope (s.e.) = 2.354 (1.393)
——— All ancestries slope (s.e.) = 3.342 (1.226)

Measuring the importance of ancestry 1

- Create a weighted average for each county based on some country of origin characteristic

$$\hat{z}_{ct} = \sum_{a=1}^{A} \pi_{ct}^{a} z^{a}$$

- Predicted value for a county, if only know the ancestry composition and something about country of origin at one point in time

  - How does (economic) success of a county's ancestors in 1870 predict success today?
  - What is the expected trust of a county, given its composition?
  - Putterman and Weil (2010) construct similar measures across countries

Measuring the importance of ancestry 2

- What groups bring may change over time
  - Education of 1850 Irish, not the same as Irish in 1900
- Can form country of origin characteristic weighted by arrival density:

$$\tilde{z}_t^a = \sum_{\tau=0}^{t} (z_\tau^a / z_\tau^{US})^{(1-\delta)^{t-\tau}} F_t^a(\tau)$$

  - $F_t^a(\tau)$ is the arrival density of group a up to time τ
  - δ is the rate of depreciation of the importance of that characteristic

$$y_{ct} = \theta_c + \lambda_{st} + \beta\hat{z}_{ct} + \gamma X_{ct} + \epsilon_{ct}$$

| | log county GDP per person | | | |
	Each cell from a separate estimation			
1870 GDP weighted	0.722***	0.314***	0.225*	-0.121
by county AV	(0.0720)	(0.0738)	(0.112)	(0.105)
Migrant education/US	0.812***	0.0865	0.140	-1.246***
ratio at arrival ($\delta = 0$)	(0.124)	(0.0823)	(0.180)	(0.247)
Origin country education	0.874***	0.326***	0.148	-0.414**
US ratio at arrival ($\delta = 0$)	(0.125)	(0.0837)	(0.190)	(0.163)
State history in 1500	1.815***	0.773***	0.601**	-0.335
	(0.224)	(0.195)	(0.267)	(0.225)
Arrival political	0.0673***	-0.0271**	-0.0591**	-0.137***
participation	(0.0160)	(0.0107)	(0.0231)	(0.0217)
Trust	2.587***	1.343***	2.889***	1.234***
	(0.386)	(0.302)	(0.615)	(0.372)
Thrift	1.380***	1.751***	-0.377	2.063***
	(0.471)	(0.386)	(0.768)	(0.404)
Observations	16713	16,713	16,713	16,713
Year X State FE	No	Yes	No	Yes
Other controls	No	No	Yes	Yes
County groups	1151	1151	1151	1151

Controls: the fraction African-American, Native American, and the log population density

What matters most?

	Log(County group GDP per capita)			
Trust weighted	3.253***	3.508***	3.003***	2.830***
by county AV	(0.544)	(0.632)	(0.708)	(0.652)
State history in 1500	-0.0175	0.0819	0.411	0.357
	(0.372)	(0.310)	(0.348)	(0.249)
Migrant education/US	0.187	-1.318***	-0.299	-1.746***
ratio at arrival ($\delta = 0$)	(0.231)	(0.269)	(0.204)	(0.224)
Observations	16,713	16,713	16,704	16,704
R-squared	0.960	0.972	0.962	0.974
State X Year FE	No	Yes	No	Yes
Other controls	No	No	Yes	Yes
County groups	1151	1151	1148	1148

Controls: the fraction African-American, Native American, and the log population density
Principal component of Trust, Control, Respect, Obedience following Tabellini (2010)

- Trust most robust and important determinant

Is the relationship causal?

- Two main econometric issues in identifying the effect of ancestry on output:

- **Omitted variables.** We are able to control for:
  - Unchanging county characteristics through county fixed effects
  - Common temporal changes
  - State level changes through State-Year effects
  - Serial correlation through lagged dependent variable

- **Simultaneity/reverse causality**
  - If more trusting people move to a booming county $\Rightarrow$ simultaneity/reverse causality bias
  - Solution: use a one decade lag of trust, include lagged dependent variable $\Rightarrow$ Nearly the same coefficient
  - More general dynamic model: Reverse impact of GDP to ancestry composition significant but small ▸ Granger Causality

Rich ancestries in poor places

	Log(County group GDP per capita)					
1870 GDP weight by county AV	-0.336*** (0.0137)	0.314*** (0.0738)				
Trust weighted by county AV			-0.507*** (0.0574)	1.343*** (0.302)	1.065*** (0.0583)	
One decade lag						0.820*** (0.0566)
Decade lag of log county GDP					0.433*** (0.00658)	0.435*** (0.00661)
State X Year FE	Yes	Yes	Yes	Yes	Yes	Yes
County group FE	No	Yes	No	Yes	Yes	Yes
County groups		1151		1151	1151	1151

Rich ancestries are in poor places in the US!

Panel **necessary** to understand effects of culture and institutions.

Does who you come in contact with matter?

- Groups don't exist in a vacuum
- Must share decisions and work with other groups
- We show who groups interact with matters as well
- Fractionalization measures diversity of groups:

$$frac_{c,t} = 1 - \sum_{a=1}^{A}(\pi_{ct}^{a})^2$$

- Weighted fractionalization measures diversity of attributes:

$$frac_{c,t}^{w} = 1 - \sum_{j=1}^{A}\sum_{k=1}^{A}\pi_{ct}^{j}\pi_{ct}^{k}s_{ct}^{jk}$$

Does who you come in contact with matter?

	Log(County group income per capita)			
Trust weighted	0.405**	0.884***	1.424***	1.279***
by county AV	(0.162)	(0.123)	(0.173)	(0.224)
Fractionalization	1.101***	1.002***	1.044***	1.277***
	(0.167)	(0.135)	(0.152)	(0.190)
Trust weighted	-2.665***	-1.670***	-1.832***	-2.940***
fractionalization	(0.490)	(0.316)	(0.304)	(0.428)
State history in 1500	0.529**	0.448	1.197***	1.320***
weighted by AV	(0.257)	(0.275)	(0.291)	(0.295)
Migrant education/US	0.0495	-1.269***	-1.374***	-1.054***
ratio at arrival ($\delta = 0$)	(0.185)	(0.233)	(0.209)	(0.192)
State X Year	No	Yes	Yes	No
Other controls	No	No	Yes	Yes
Education controls	No	No	No	Yes
County group FE	Yes	Yes	Yes	Yes
County groups	1151	1151	1148	1148

Controls: the fraction African-American, Native American, and the log population density
County education: literacy before 1940, years education after

Does who you come in contact with matter?

	Log(County group income per capita)			
Trust weighted	2.015***	2.643***	2.773***	2.934***
by county AV	(0.411)	(0.371)	(0.720)	(0.471)
Fractionalization	3.281***	2.324***	3.322***	2.724***
	(0.550)	(0.529)	(0.487)	(0.385)
Trust weighted	-5.410***	-2.615***	-4.811***	-2.085***
fractionalization	(0.855)	(0.794)	(0.962)	(0.733)
Fractionalization^2	-1.751***	-0.976**	-1.807***	-1.511***
	(0.449)	(0.401)	(0.429)	(0.305)
(Trust weighted	8.136***	1.148	6.525***	0.817
fractionalization)^2	(2.010)	(1.921)	(2.113)	(1.752)
State hist, Mig. Ed	Yes	Yes	Yes	Yes
State X Year	No	Yes	No	Yes
Other controls	No	No	Yes	Yes
Education controls	No	No	No	Yes
County group FE	Yes	Yes	Yes	Yes
County groups	1151	1151	1148	1148

Controls: the fraction African-American, Native American, and the log population density
County education: literacy before 1940, years education after

Summary on diversity

- Positive effect of fractionalization
- Negative effect of trust fractionalization
- Marginal effect of fractionalization decreasing in its level
  - Positive effect larger for more homogenous societies
- Marginal effect of trust fractionalization decreasing in absolute value
  - Negative effect larger for more homogenous societies
- No interior maximum or minimum

Conclusion

- Ancestry has a persistent and large effect
  - Groups are different and differences persist for a long time
- The effect is closely related to conditions in the country of origin
  - Culture seems to play the most important and robust role
  - Economic and institutional experience matter also
  - Education on arrival either unimportant or negative
    - Perhaps education largely determined by local institutions—initial endowment ceases to matter quickly
- Diversity has a complicated relationship with development
  - In multi-cultural US, diversity by itself is good
  - Sharing with groups with very different cultural/economic endowments bad
- Panel is necessary
  - Rich and trusting groups are in poor places on average

Many interesting questions

- Long panel—160 years!—that can answer many interesting questions
- Why does culture matter?
    - Willingness to make contracts, trade?
    - Willingness to invest in capital or human capital?
    - Local institutions?
- Why is diversity important?
    - Role of genetic diversity (Ashraf and Galor, 2013)
- More on convergence
- Other outcomes: inequality, political institutions, ethnicity

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Missing records and aggregation

- 1890 individual records destroyed in a fire
  - Still have county aggregates for immigration, nativity
- 1960 micro-samples only give state of residence
- 1970 onwards only give some grouping of counties
  - "county group" or PUMA
- 1890 and 1960: use the larger aggregates to update for migration and immigration
  - Maintain the demographic structure from previous years
- To construct consistent panel
  - Use counties where available, then aggregate to 1980 PUMAs
  - 1100 PUMAs compared to 3200 counties
  - Have county level AV through 1940, county GDP per person entire period

Initialize

- Need to initialize for ancestry of non-migrants before 1850
- 1790 census provides "nationality" for each state
  - English and Welsh, Irish, Scotch, French, German (Hebrew), Dutch, and Other
- Update with immigration records
  - US started recording the country of origin of immigrants and state where end up by decade in 1820
  - Imperfect, but allows to capture immigrants before micro-samples of census
  - Immigrants who are still alive in 1850 captured, so Irish, Germans not a problem.

▸ Return

Race

- Rape of slave women common, but children still slaves (Kolchin, 2003; Higginbottham and Kopytoff, 2000, pp. 124-5)
- Anti-miscegenation laws still in effect in 17 states until ruled unconstitutional in 1967, meant little interracial mixing
- Anti-miscegenation laws required definition of race
  - While not universal, "one drop" rule meant considered black if any African ancestry (Kennedy, 2000)
- Inter-racial marriage still low (3.2% all marriages in 1980 among all races) but has grown rapidly since (Wang, 2012)

Ancestry and ethnicity

- Correlation between AV and ethnicity across county groups 2000
    - 0.79 Irish
    - 0.91 Italian
    - 0.89 German
    - 0.98 Mexican (often first generation)
    - 0.95 Norwegian
    - 0.92 Swedish
        - 0.96 combined Swedish/Norwegian
    - 0.99 African-American

Ancestry and ethnicity

- English puzzling: AV for English (includes Welsh and Scotch Irish) much higher than English ethnicity
  - Correlation only 0.31
  - Census only 5.9% report English Ethnicity
  - But 7.2% report "American", 19.1 do not report, 1.4% report White/Caucasian
- Combining these categories with English, correlation with AV 0.93
- Support of hypothesis that "ethnicity" is optional for dominant group (Waters, 1996)
- Further evidence for constructivist approach, ethnicity self-reinforcing
  - Difference between AV and self-reported is increasing in AV
  - Where more people of German ancestry, disproportionately more say German
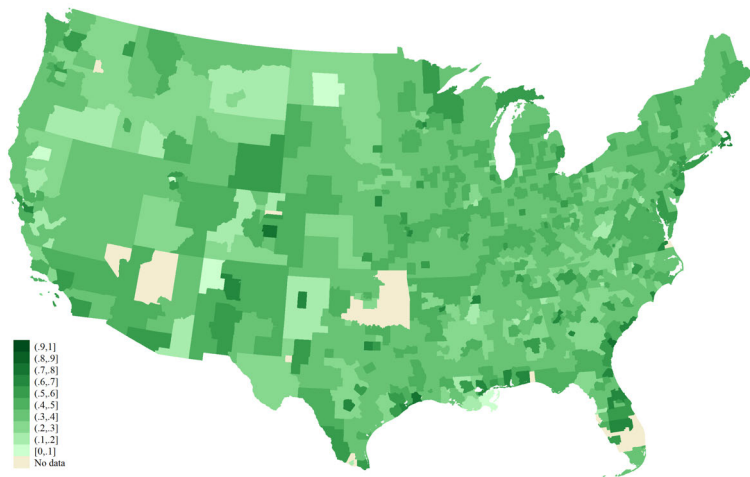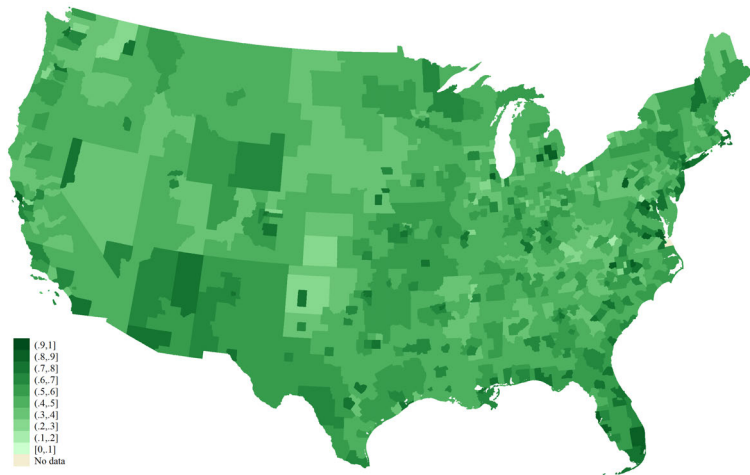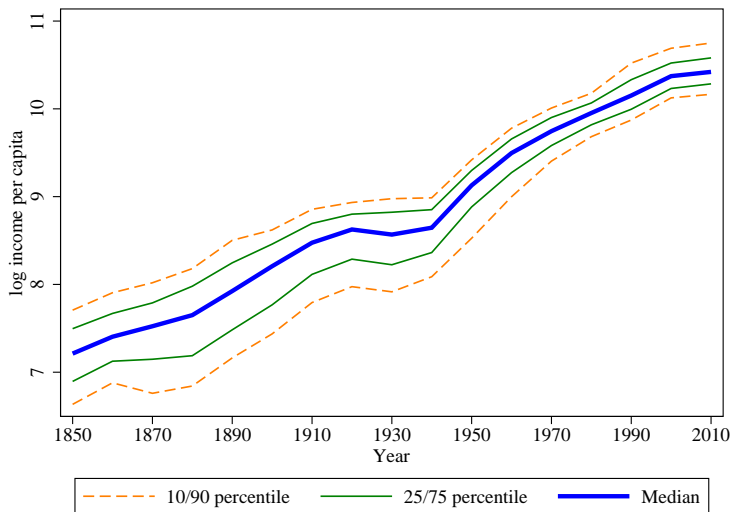
Aggregate county GDP

Services in 1870

Legend:
- (.9,1]
- (.8,.9]
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- (.6,.7]
- (.5,.6]
- (.4,.5]
- (.3,.4]
- (.2,.3]
- (.1,.2]
- [0,.1]
- No data
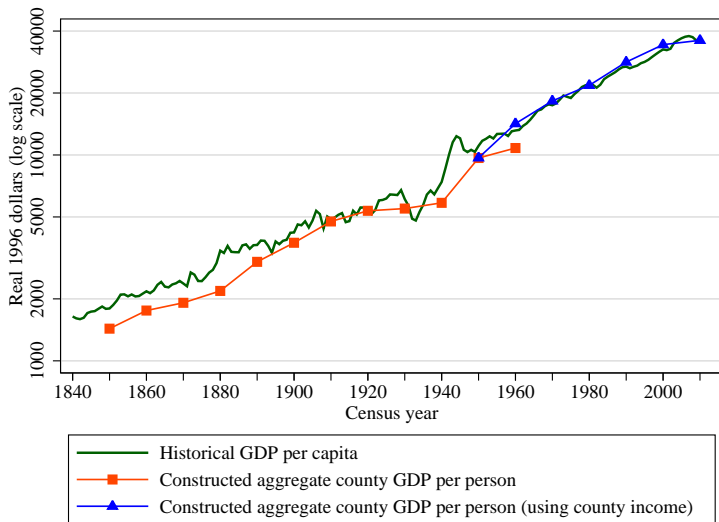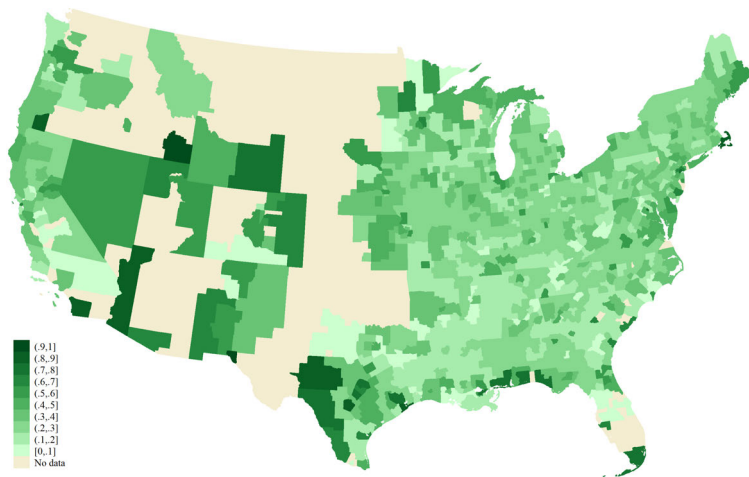
Services in 1900

Services in 1940

Shared growth

▸ Return

Endogeneity and Granger Causality

	log County GDP	Trust	log County GDP	Trust
Decade lag of log	0.510***	0.0133***	0.450***	0.00795***
county GDP	(0.0283)	(0.00292)	(0.0261)	(0.00242)
Two decade lag of log	0.0545***	-0.00124	0.0631***	-0.000469
county GDP	(0.0122)	(0.00162)	(0.00969)	(0.00128)
Decade lag of	1.039***	0.486***	0.566***	0.400***
weighted Trust	(0.174)	(0.0693)	(0.144)	(0.0725)
Two decade lag of	0.643***	0.198***	0.592***	0.184***
weighted Trust	(0.152)	(0.0248)	(0.128)	(0.0202)
Year X State FE	No	No	Yes	Yes
County group FE	No	No	No	No
F-test for joint significance				
Lags county GDP	226.0	11.10	249.0	5.563
p-value	0	0.000106	3.58e-07	0.00665
Lags Trust or 1870 GDP	32.38	82.29	20.40	47.92
p-value	1.09e-09	0	0	0