

# Does access to trade school improve wages? Evidence from the 1917 Smith-Hughes Vocational Education Act

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# A shift in public conversation

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THE WALL STREET JOURNAL.

March 16, 2023 5:30 am ET

## More Students Are Turning Away From College and Toward Apprenticeships

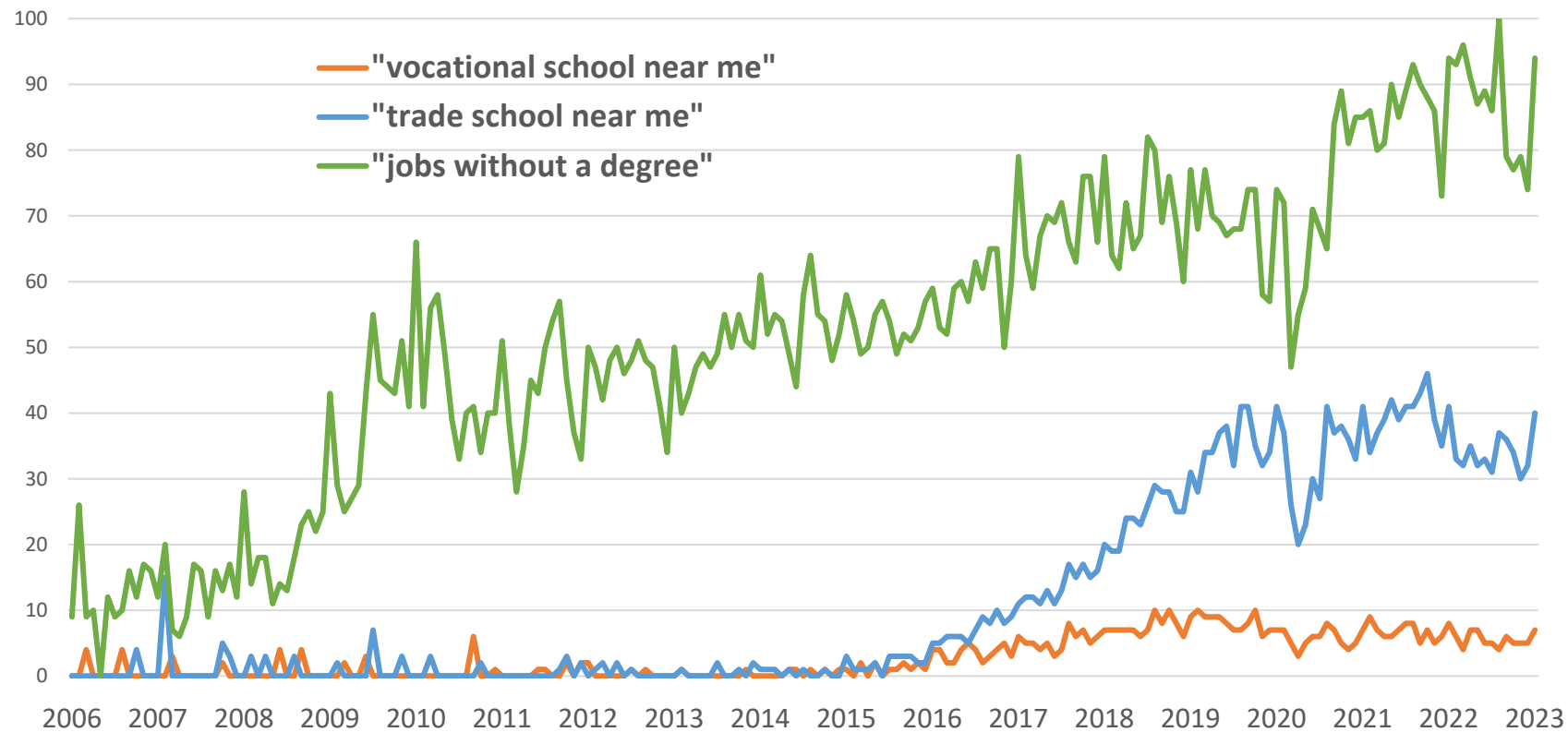


Fri, Sep 15 2017

## Why California is investing over \$200 million in vocational education

# Renewed interest in trade school

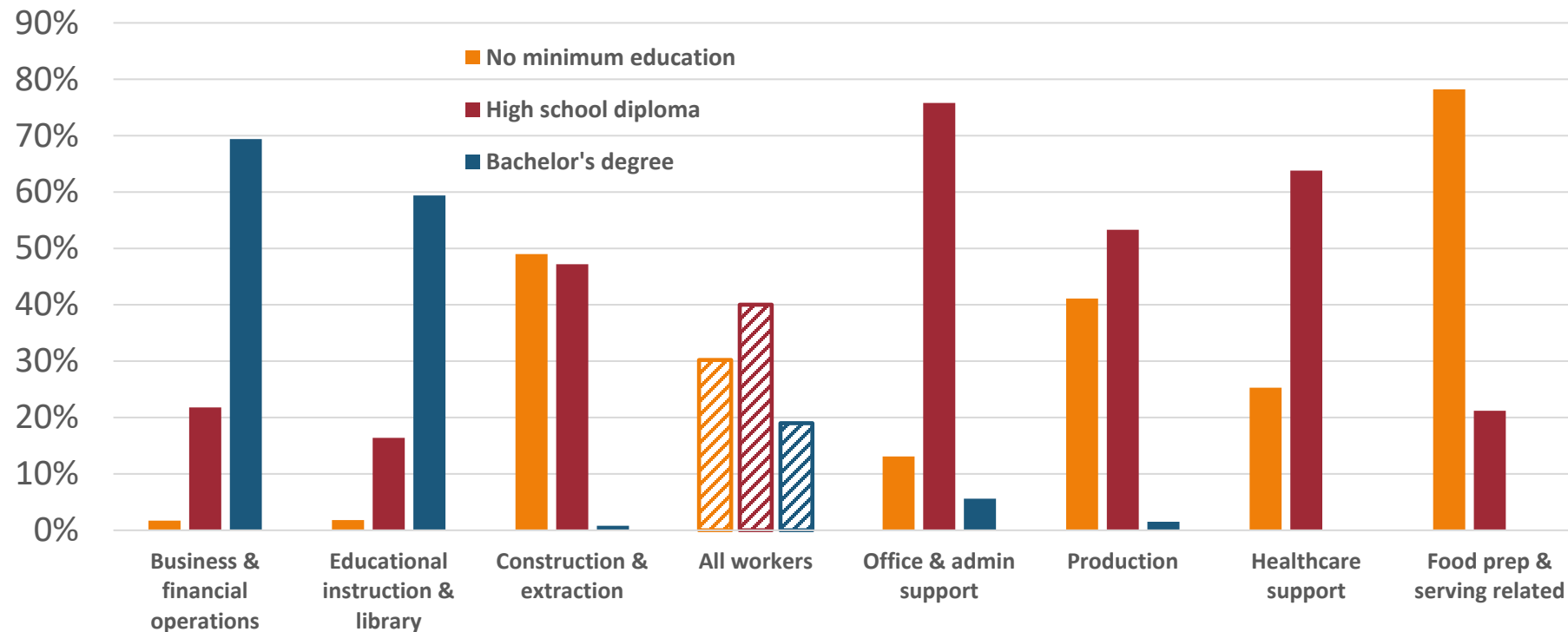
[Google Trends](#): Web search interest over time



Definitions

# Only 20% of workers need a B.A.

Percentage of workers with selected minimum education requirements by occupational group (2022)

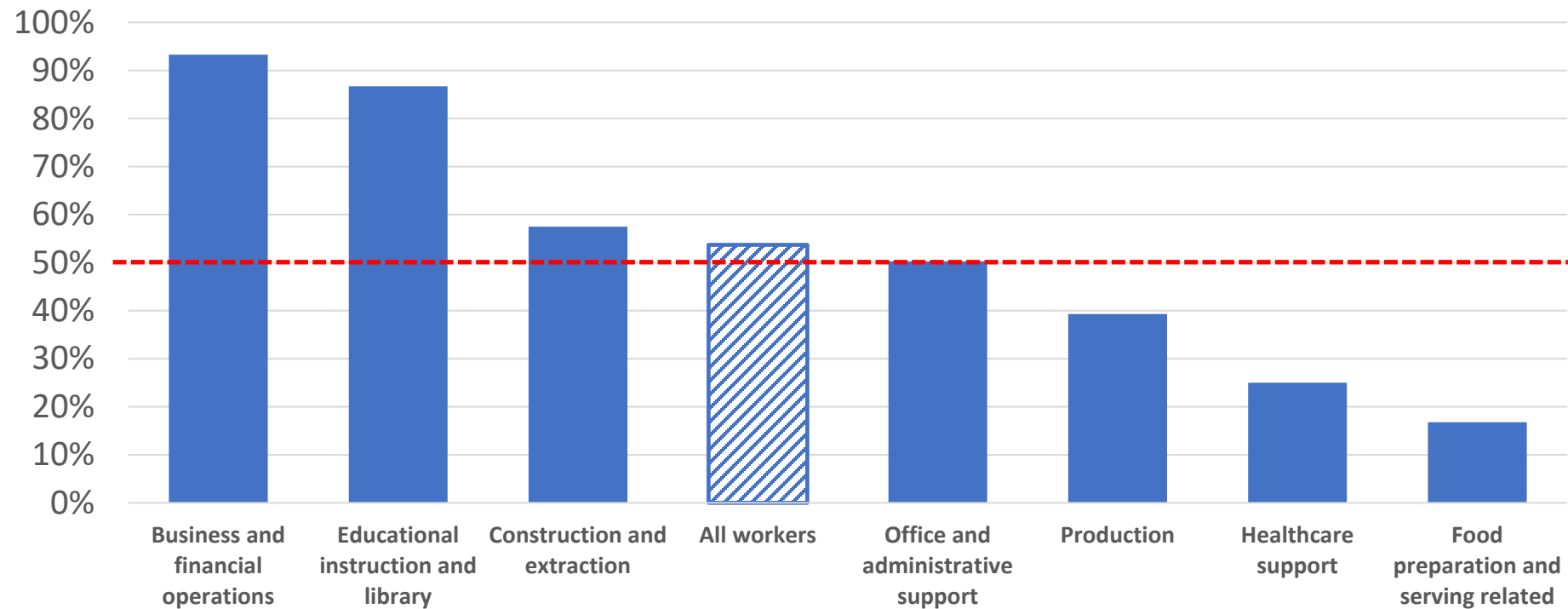


Source: Bureau of Labor Statistics, U.S. Department of Labor, <https://www.bls.gov/opub/ted/2023/half-of-civilian-workers-required-over-1-year-of-preparation-time-to-perform-their-jobs-in-2022.htm>

Earnings

# But 50% need at least some training

Percentage of workers with over 1 year of specific vocational preparation time by occupational group (2022)



Educational attainment (ORS)

Educational attainment (CPS)

Source: Bureau of Labor Statistics, U.S. Department of Labor, <https://www.bls.gov/opub/ted/2023/half-of-civilian-workers-required-over-1-year-of-preparation-time-to-perform-their-jobs-in-2022.htm>

# This project

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## Main research questions:

1. Does improved access to secondary-level vocational training improve wages for non-degree earners in the U.S.?
2. How has federal support for vocational training affected and responded to labor market changes over the last 100 years?
  - Today's presentation: 1917-1950

## Approach:

- State/county-level investment variation → public records
- Frequent policy changes 1917--2018
- Link to microdata

# Related literature

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## Effects of public school funding

- Goldin (2001), Goldin & Katz (2003)

## Investment in human capital/training

- Becker (1962), Spence (1973), Stiglitz (1975)
- Acemoglu & Pischke (1998), Bedard (2001), Clark & Martorell (2014)

## Returns to vocational education

- Hanushek et al. (2017), Malamud & Pop-Eleches (2010), Oosterbeek & Webbink (2007), Silliman & Virtanen (2022)
- Country-specific: Zilic (2018), Attanasio et al. (2011), Bertrand et al. (2021), Brunello & Rocco (2017), Dionisius et al. (2009), Hartog et al. (2022)

## Challenges (Muehlemann & Wolter (2020)):

- Appropriate counterfactual
- Selection
- Outcomes depend on policy objective
- External validity

References

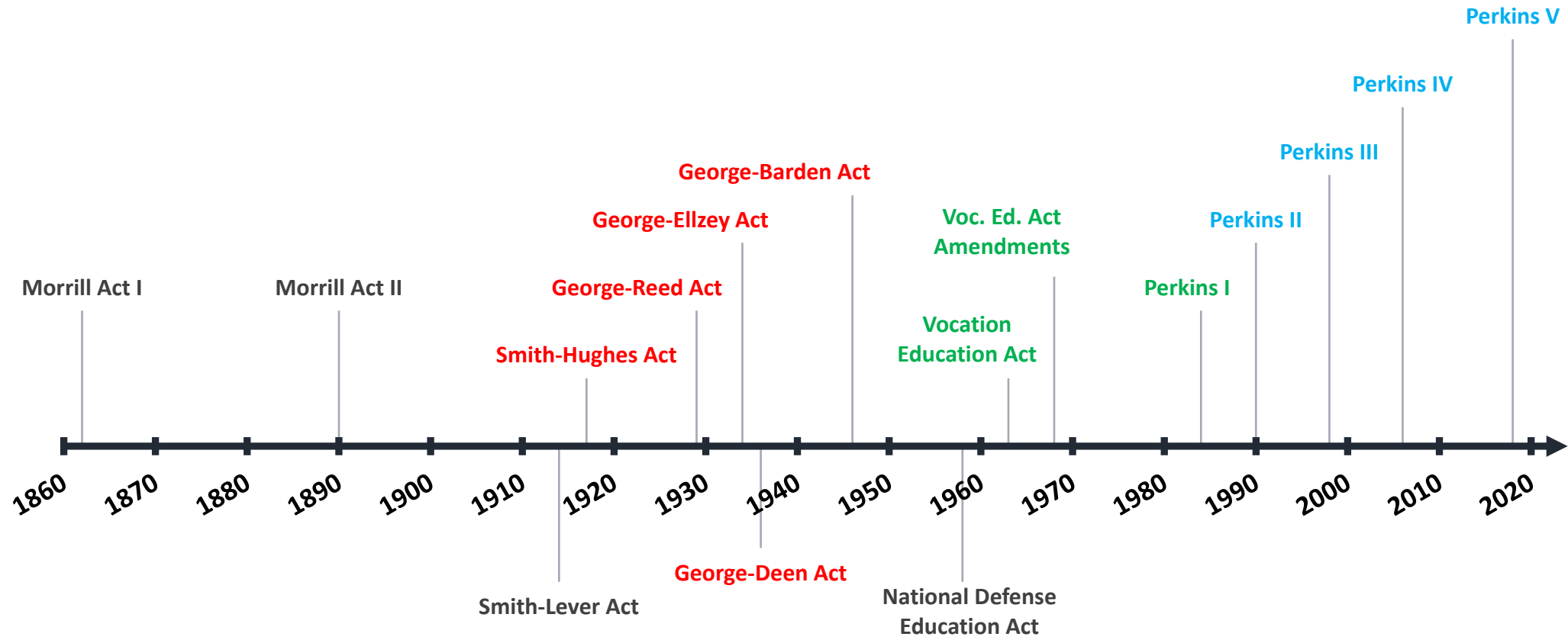
# Why a historical view?

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- Different epochs of U.S. education
  - Early 20<sup>th</sup> cen. → 1940s-50s → 1960s-70s → 1980s-00s → ?
  - Must evaluate policies in context
- Modern legislation has deep roots
- Ability to study intergenerational mobility



# Timeline of legislation 1862-2018



# Timeline of legislation 1862-1946

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## 1862 Morrill Land Grant Act

- Federally land gifts to States to open colleges for agriculture and mechanical arts
- 1890: expanded access for Black students

## 1917 Smith-Hughes Act

- \$7 million annual federal aid to states
- Promotion of vocational education in agriculture, trade/industrial education, and home economics
- Explicitly below college level

## 1929 George-Reed & 1934 George-Elzey Acts

- Increase of \$1 million annually until 1934; then \$3 million for three years

## 1936 George-Deen Act

- Increased to \$14 million
- Expanded to “distributive occupations” → e.g., retail sales, store managers, purchasing agents

## 1946 George-Barden Act

- Increased to \$29 million

More legislation

# Views on vocational education

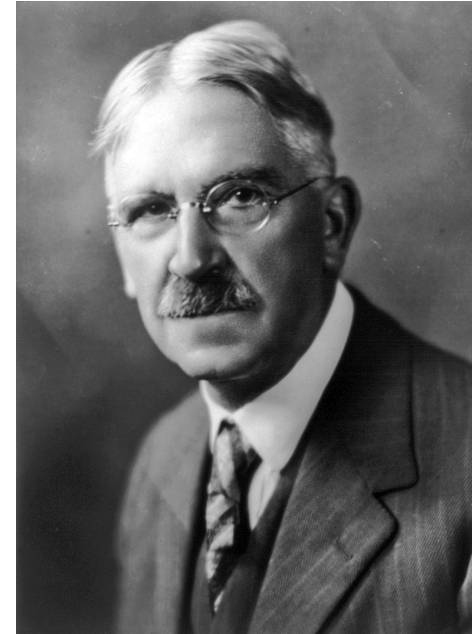
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Charles Prosser (1871-1952)

- “Father of Vocational Education” in U.S.
- Designed Smith-Hughes Act
- Supported segregated vocational track

*Teach a vocation*



John Dewey (1859-1952)

- Co-founder, American Federation of Teachers
- Democracy in education
- Opposed dual track

*Teach through a vocation*

# Smith-Hughes Act provisions

*An Act to provide for the promotion of vocational education; to provide for cooperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for cooperation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure – February 23, 1917, Ch. 114, §1, 39 Stat. 929*

\$7 million annually to the States

- Salaries of teachers, supervisors, or directors
  - \$3 million → agricultural subjects
  - \$3 million → trade, home economics, & industrial subjects
- Preparing teachers, supervisors, and directors
  - \$1 million

Fund allocation rules

- Agricultural → ratio of rural pop. to total U.S. rural
- Trade/Home Econ/Industrial → ratio of urban pop. to total U.S. urban
- Teacher training → ratio of population to total U.S.

# Smith-Hughes Act provisions (cont.)

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Established Federal Board of Vocational Education(1917-1946)

- Unprecedented oversight of secondary education

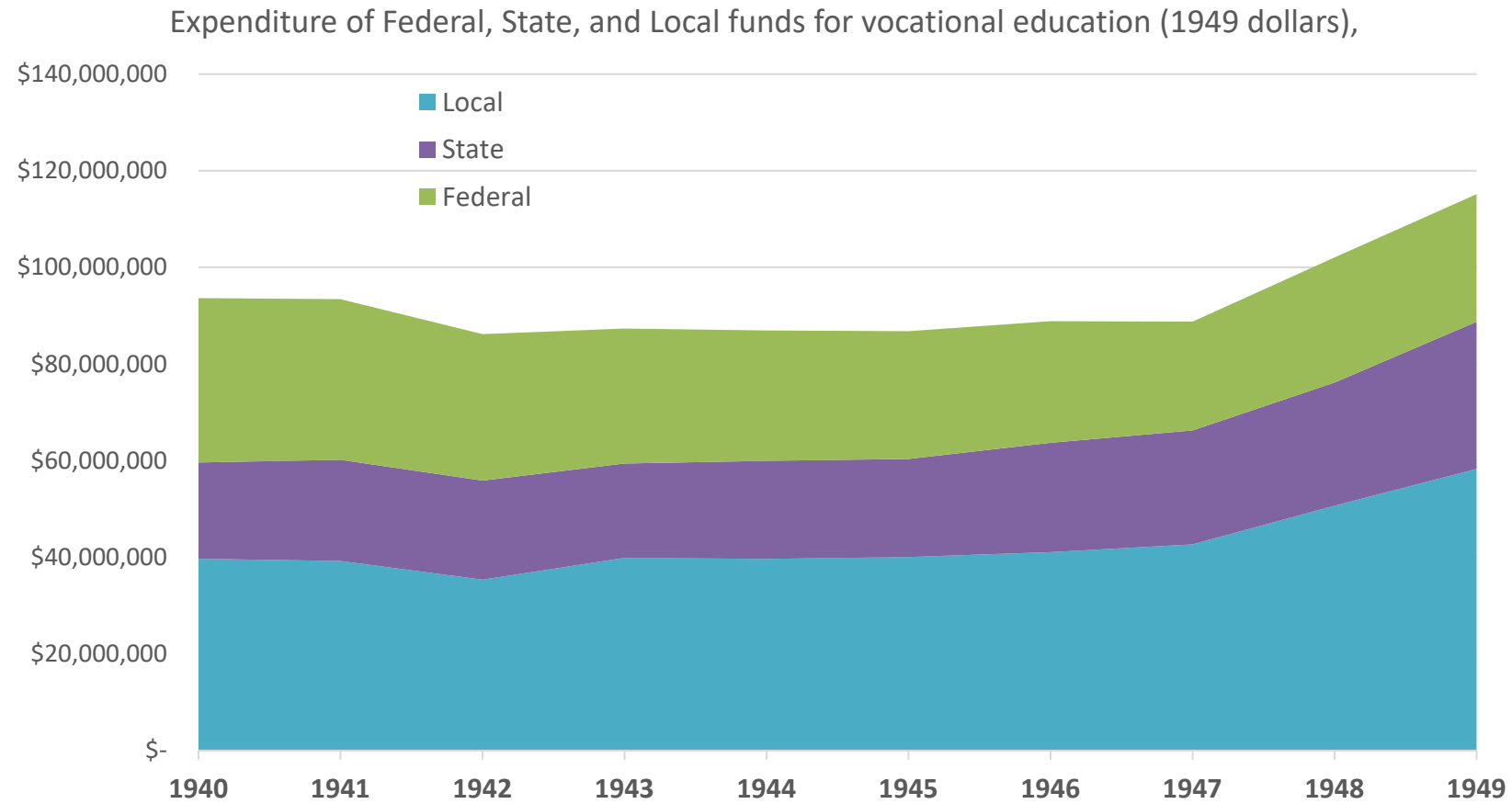
State boards of vocational education

- Prepare plans for fund use
- Annual report to Congress work done + receipts/expenditures
- Match Federal dollar amount

School requirements:

- Under public supervision
- Make students “fit for useful employment”
- Less than college grade
- Students over 14 years

# Use of funds by the States

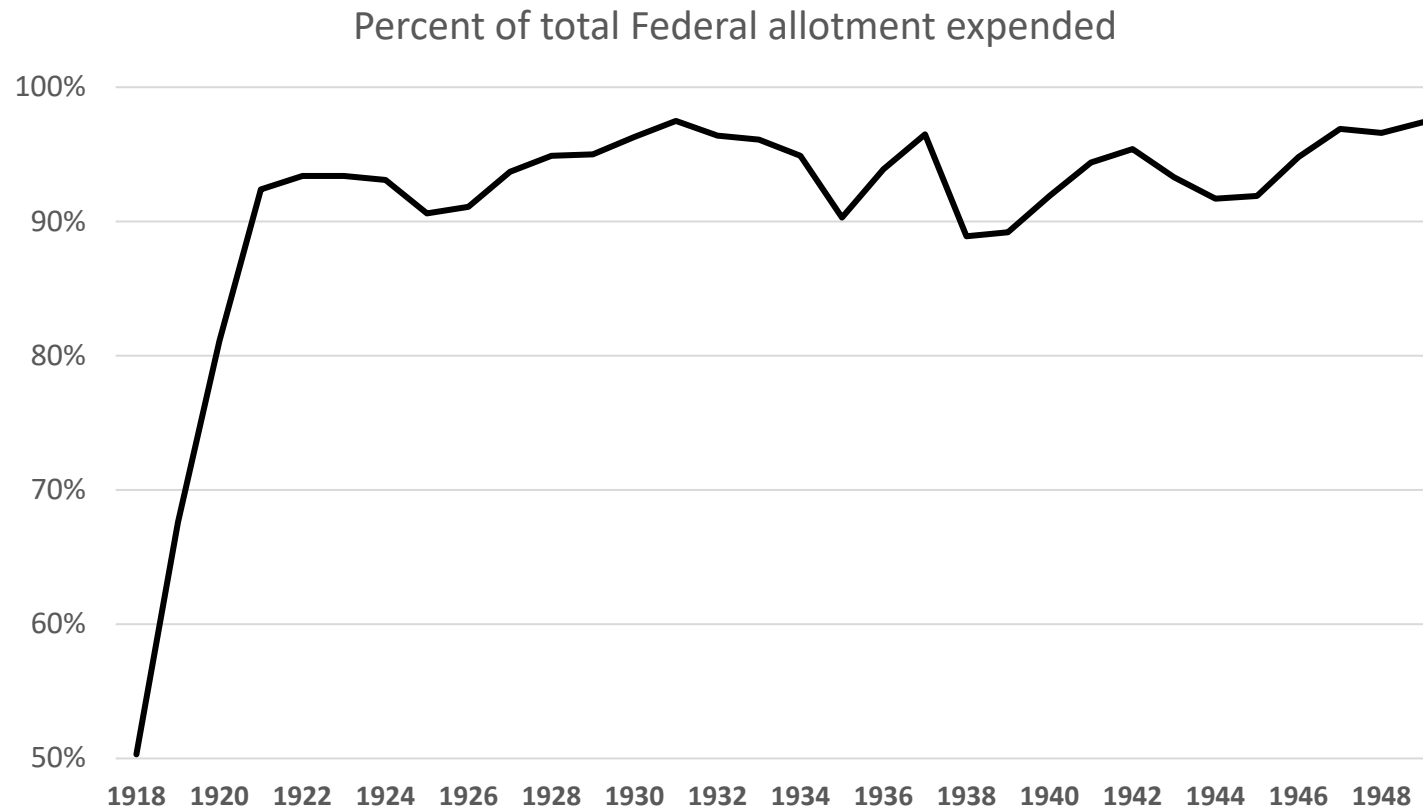


Source: Digest of annual reports of state boards for vocational education to the Office of Education, Division of Vocational Education (1949).

Nominal

# High up-take and use of funds

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Source: Digest of annual reports of state boards for vocational education to the Office of Education, Division of Vocational Education (1949).

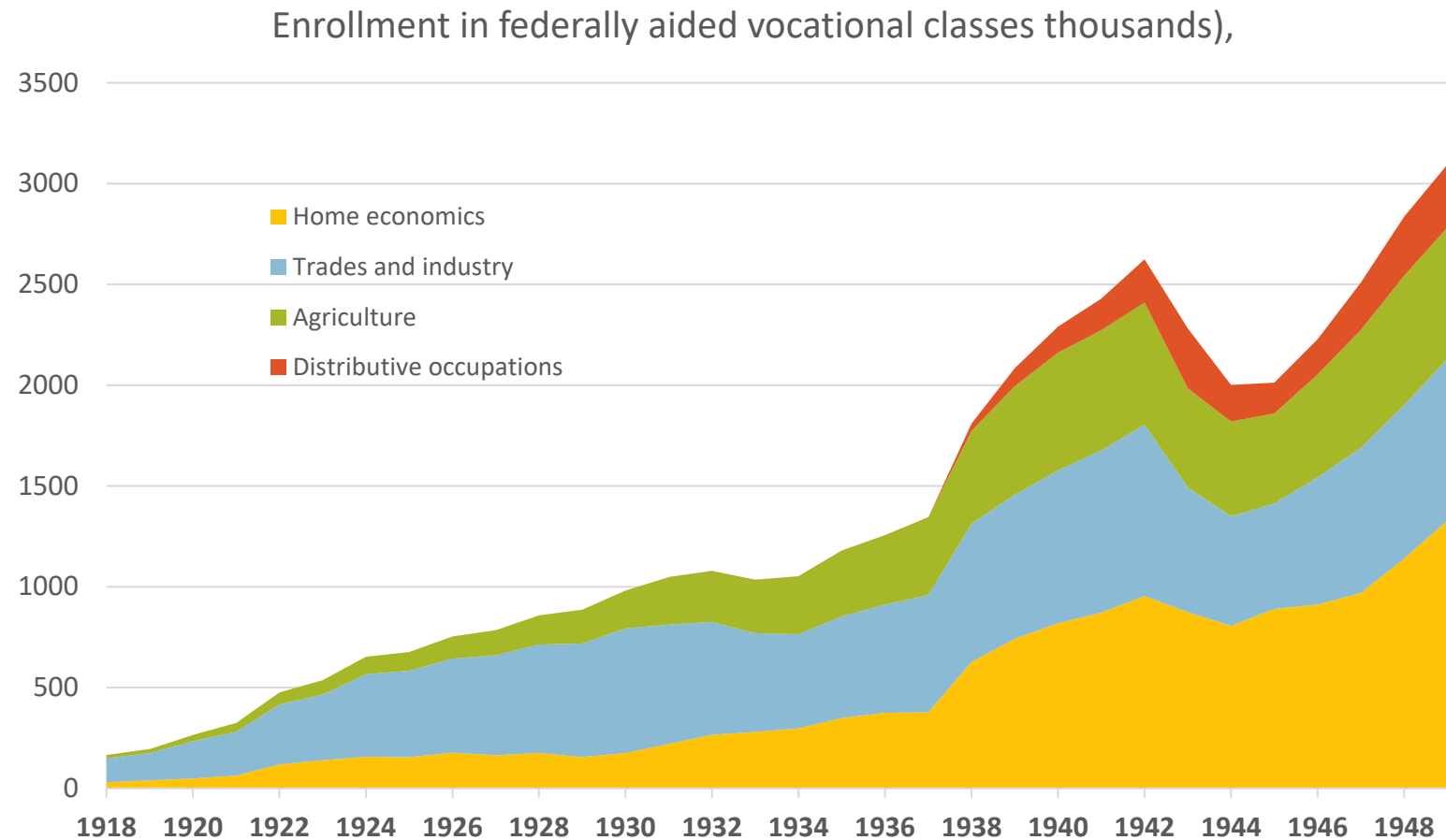
# Expenditures per dollar of Federal

Year	All programs	Agriculture	Distributive occupations	Home economics	Trades and industry	Teacher training
1940	\$ 1.75	\$ 1.53	\$ 0.71	\$ 1.73	\$ 2.28	\$ 1.13
1941	\$ 1.81	\$ 1.56	\$ 0.74	\$ 1.87	\$ 2.35	\$ 1.10
1942	\$ 1.84	\$ 1.66	\$ 0.75	\$ 2.03	\$ 2.27	\$ 1.13
1943	\$ 2.13	\$ 1.67	\$ 0.88	\$ 2.42	\$ 2.88	\$ 1.14
1944	\$ 2.22	\$ 1.78	\$ 0.97	\$ 2.57	\$ 2.96	\$ 1.19
1945	\$ 2.28	\$ 1.73	\$ 1.09	\$ 2.78	\$ 3.03	\$ 1.21
1946	\$ 2.53	\$ 1.99	\$ 1.31	\$ 3.23	\$ 3.16	\$ 1.34
1947	\$ 2.95	\$ 2.32	\$ 1.53	\$ 3.64	\$ 3.85	\$ 1.47
1948	\$ 2.94	\$ 2.09	\$ 1.49	\$ 3.49	\$ 3.79	
1949	\$ 3.36	\$ 2.35	\$ 2.02	\$ 4.18	\$ 4.19	

Source: Digest of annual reports of state boards for vocational education to the Office of Education, Division of Vocational Education (1949).



# First two decades of enrollment



Source: Digest of annual reports of state boards for vocational education to the Office of Education, Division of Vocational Education (1949).

# Next steps

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Request archival data from State dept. of education

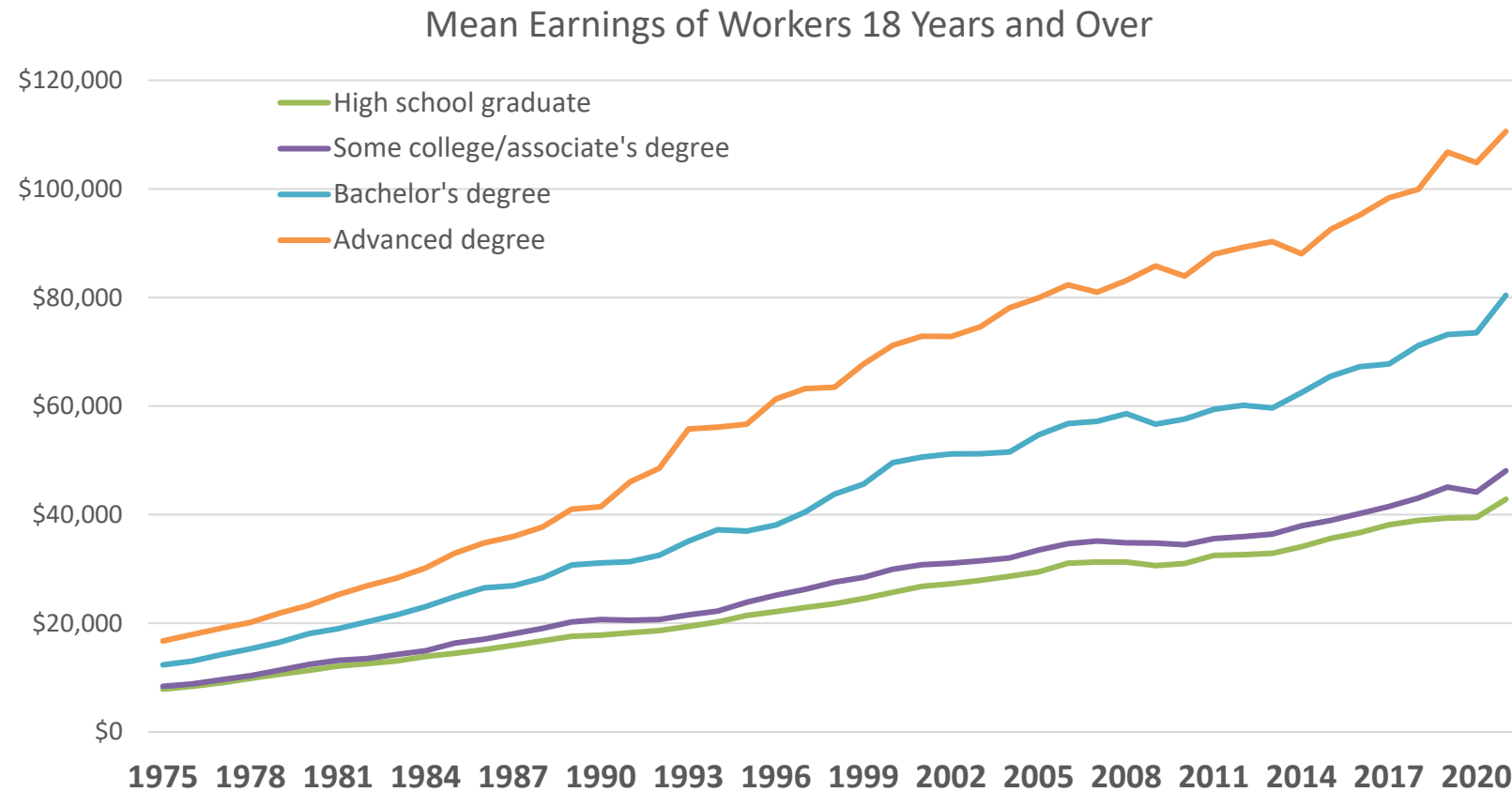
- Compliance with Smith-Hughes Act —————> records of State vocational education boards
- Compare several states

Case studies of trade schools, foundations + closures

Microdata sources, vocational training participants

# Appendix

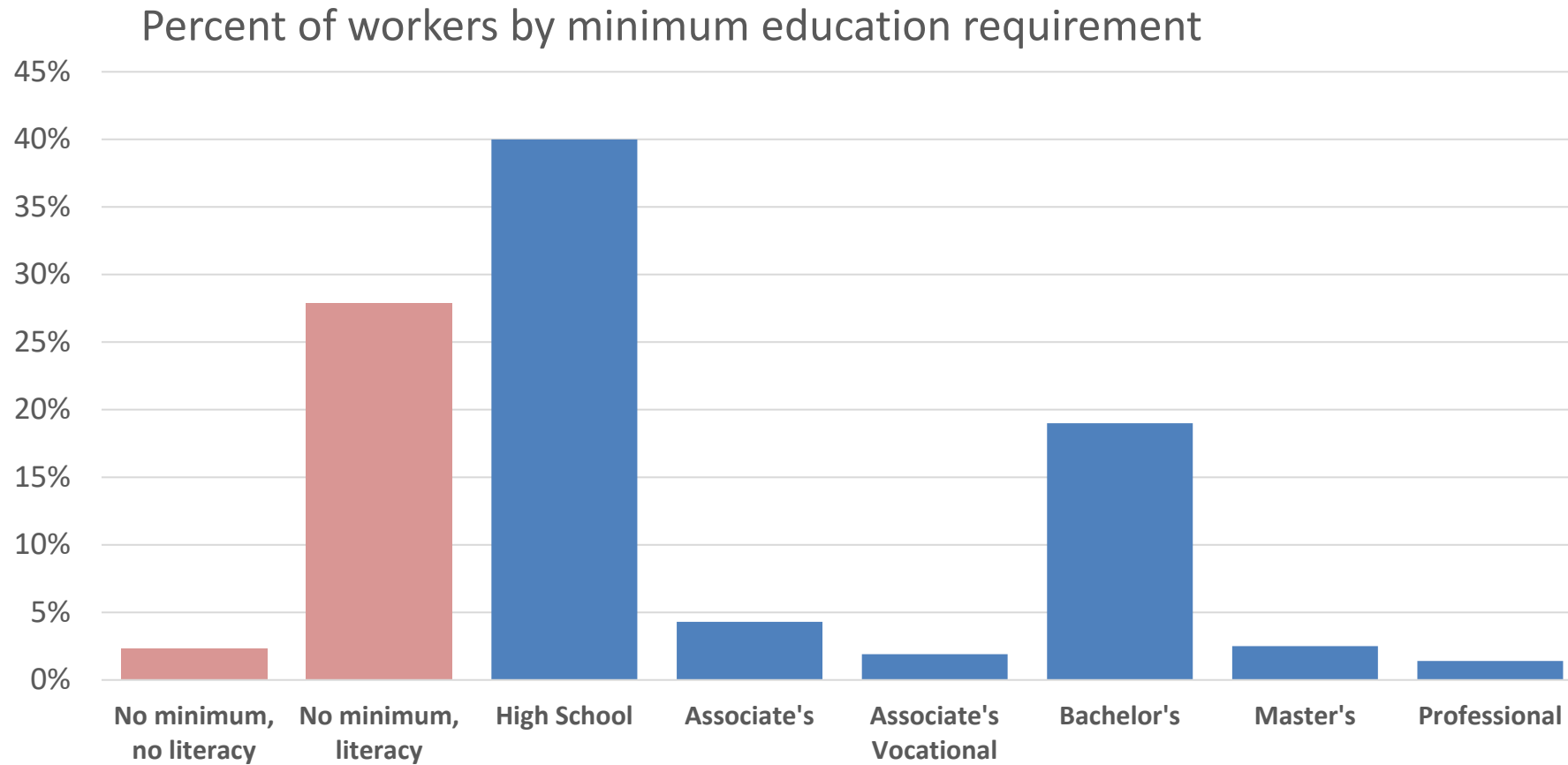
# Earnings by educational attainment



Source: U.S. Census Bureau (1975-2002) March Current Population Survey 2003 to 2022 Annual Social and Economic Supplement to the Current Population Survey noninstitutionalized population, excluding members of the Armed Forces living in barracks.

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# U.S. educational attainment, 2022

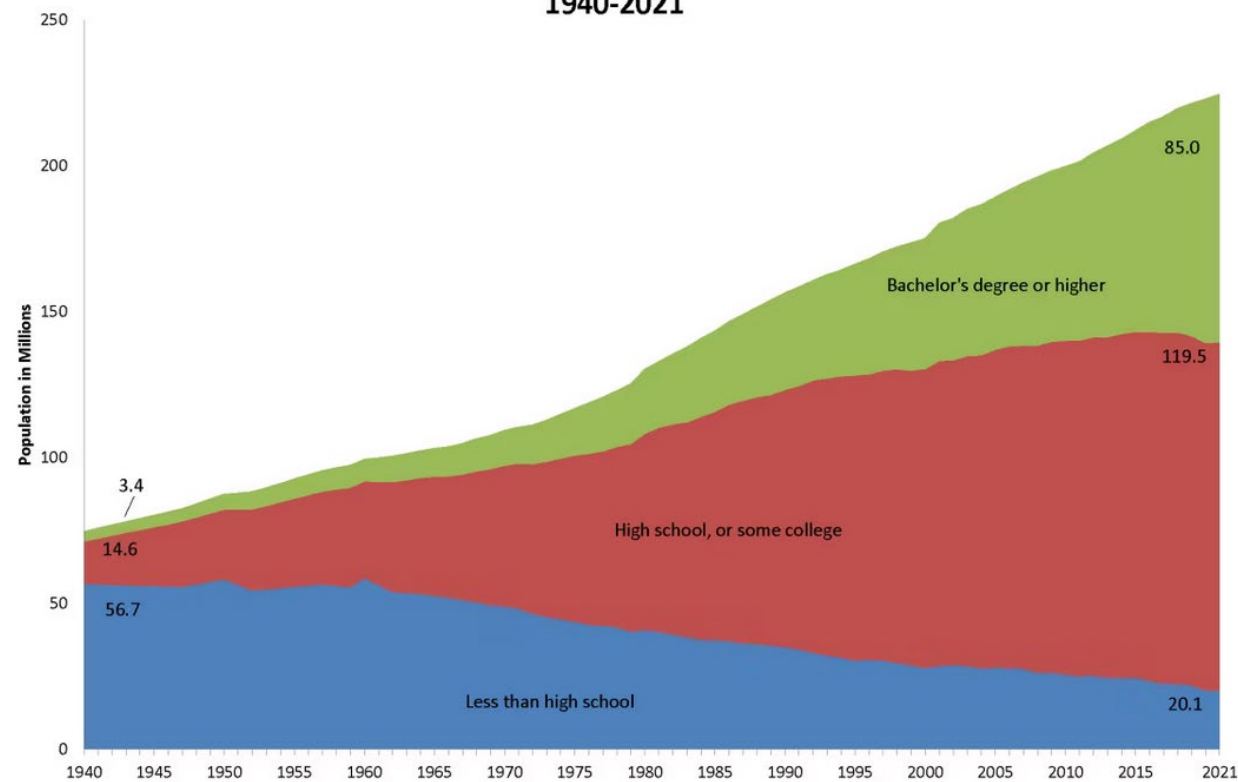


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Source: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Requirements Survey (2022), <https://www.bls.gov/ors/factsheet/minimum-formal-education.htm>

# U.S. educational attainment, 1940-2021

Figure 1: Population Age 25 and Over by Educational Attainment:  
1940-2021



Sources: U.S. Census Bureau. 1947, 1952-2002 March Current Population Survey, 2003-2021 Annual Social and Economic Supplement to the Current Population Survey; 1940-1960 Census of Population. For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see <https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar21.pdf>



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# Terminology

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## Vocational education:

- “Organized educational programs offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment in current or emerging occupations requiring other than a baccalaureate or advanced degree.” (1990 Perkins Act)

## Career and technical education:

- Organized educational activities that offer a sequence of courses that provides individuals with coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current or emerging professions; provides technical skill proficiency, an industry-recognized credential, a certificate, or an associate degree. (2006 Perkins Act)

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# Timeline of legislation 1958-1984

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1958 National Defense Education Act

1962 Manpower Development and Training Act

1963 Vocational Education Act

1968 Vocational Education Amendments

1976 Vocational Education Amendments

1984 Carl D. Perkins Vocational Education Act (Perkins I)

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# Timeline of legislation 1990-today

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1990 Carl D. Perkins Vocational and Applied Technology Act (Perkins II)

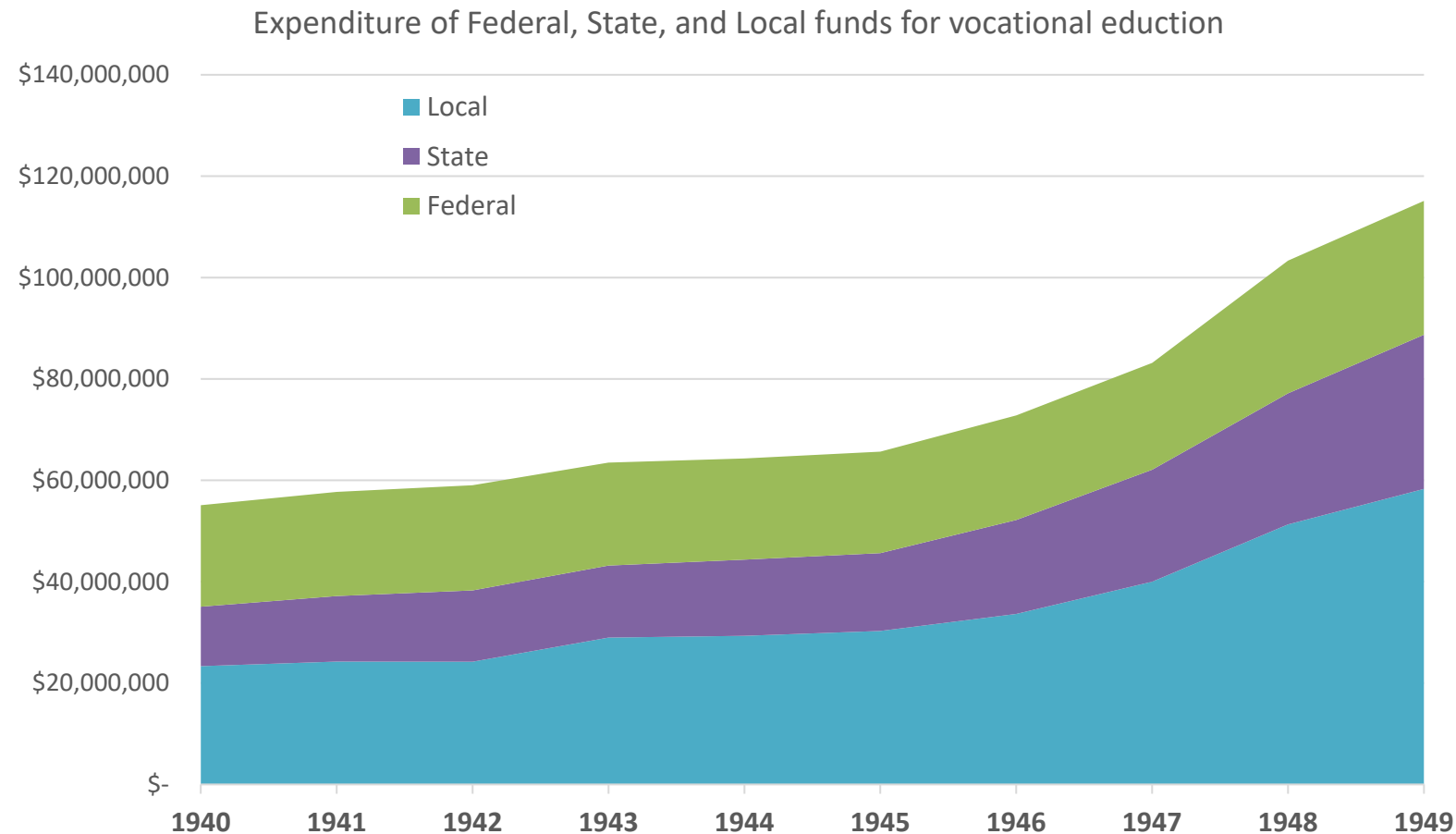
1998 Carl D. Perkins Vocational and Technical Education Act (Perkins III)

2006 Carl D. Perkins Career and Technical Education Act (Perkins IV)

2018 Strengthening Career and Technical Education for the 21st Century Act (Perkins V)

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# Unadjusted expenditures



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