

Chart & Figure Package

Foreign Agricultural Labor, Modernization, and the Transition to Productivity

Production draft | July 2026

Executive Guide

This package is a production-ready visual appendix for the flagship article and its companion policy paper. It distinguishes empirical charts built from government data from editorial figures that synthesize the argument. The figures are designed to replace prose, not merely decorate it.

Figure Status

Figure	Type	Status	Best use
1. H-2A growth	Empirical	Publication-ready	Section 2
2. Crop-worker legal status	Empirical	Publication-ready	Section 2
3. Geographic concentration	Empirical	Publication-ready	Section 2
4. Employer concentration	Empirical	Needs exact middle categories	Section 2
5. Farms and average size	Empirical	Publication-ready	Section 3
6. Producer age	Empirical	Publication-ready	Section 3
7. Labor-expense concentration	Empirical	Verify dairy share	Section 3
8. Intent vs. outcome	Hybrid	Insert final verified quote	Section 2
9. Capital bottleneck	Conceptual	Publication-ready	Section 4
10. Technology readiness	Editorial synthesis	Expert review required	Section 3
11. Transition framework	Conceptual	Publication-ready	Section 5

Design Rules

- One claim per figure. Titles state the argument rather than the topic.
- Empirical figures identify the unit, period, and source in the figure note.
- Certified H-2A positions are not described as unique workers or visas.
- NAWs legal-status estimates exclude H-2A and livestock workers.
- Conceptual figures are labeled as editorial synthesis and are not presented as measured data.
- Technology-readiness judgments must be reviewed by crop and engineering specialists before publication.

Figure 1. H-2A certified positions have become structurally important

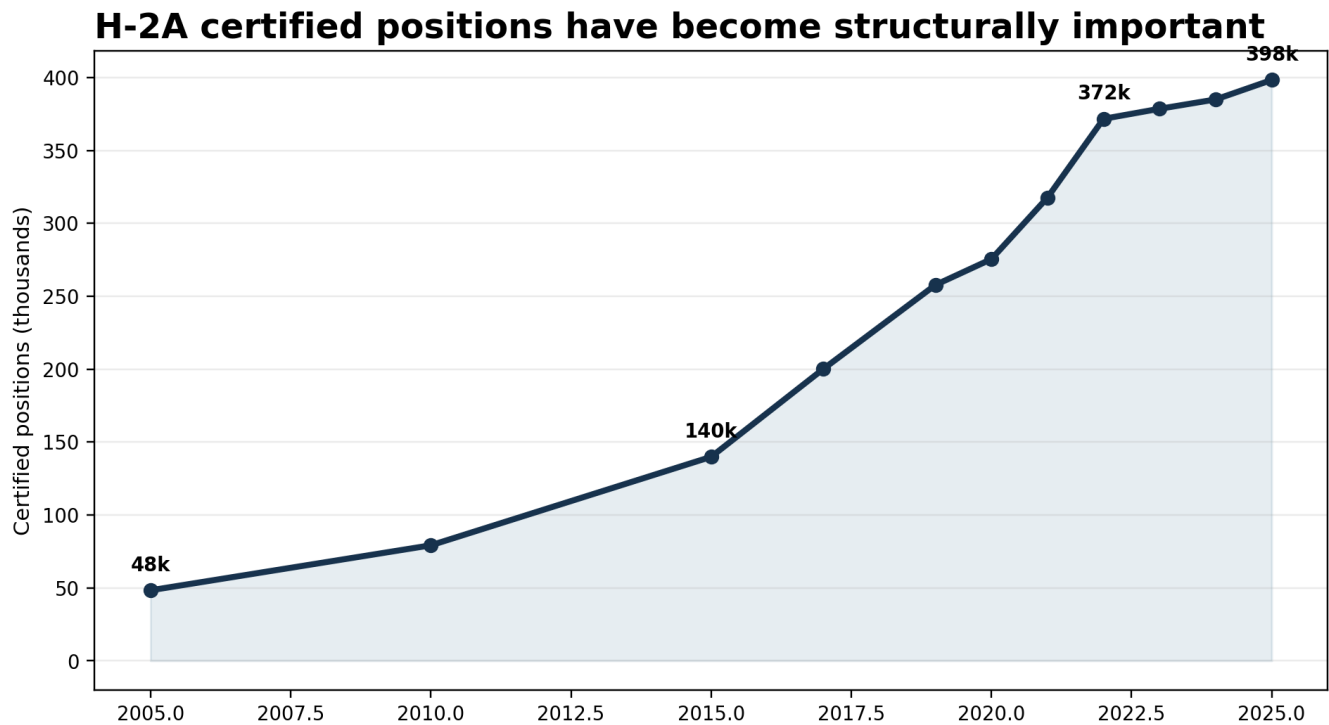


Figure 1. H-2A certified positions have become structurally important

Purpose

Show that H-2A is no longer a niche program.

Question answered

How much has the program grown?

Argument carried by the figure

Certified positions increased more than eightfold between FY2005 and FY2025.

Visual specification

Line chart using selected milestone years. Values are positions certified, not visas or distinct workers.

Primary source basis

U.S. Department of Labor, Office of Foreign Labor Certification, annual selected statistics; USDA ERS Farm Labor page.

Placement and editorial use

Use in the historical section immediately after explaining H-2A. The chart can replace 150-200 words of trend description.

Caveats and reviewer challenges

- Selected milestone years are shown rather than every annual observation.
- FY2025 reflects DOL year-end selected statistics.
- A worker may fill more than one certified position; some certified positions do not result in visas.

Recommended source note

Source: U.S. Department of Labor, Office of Foreign Labor Certification, annual selected statistics; USDA ERS Farm Labor page. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 2. Foreign labor dependence extends beyond H-2A

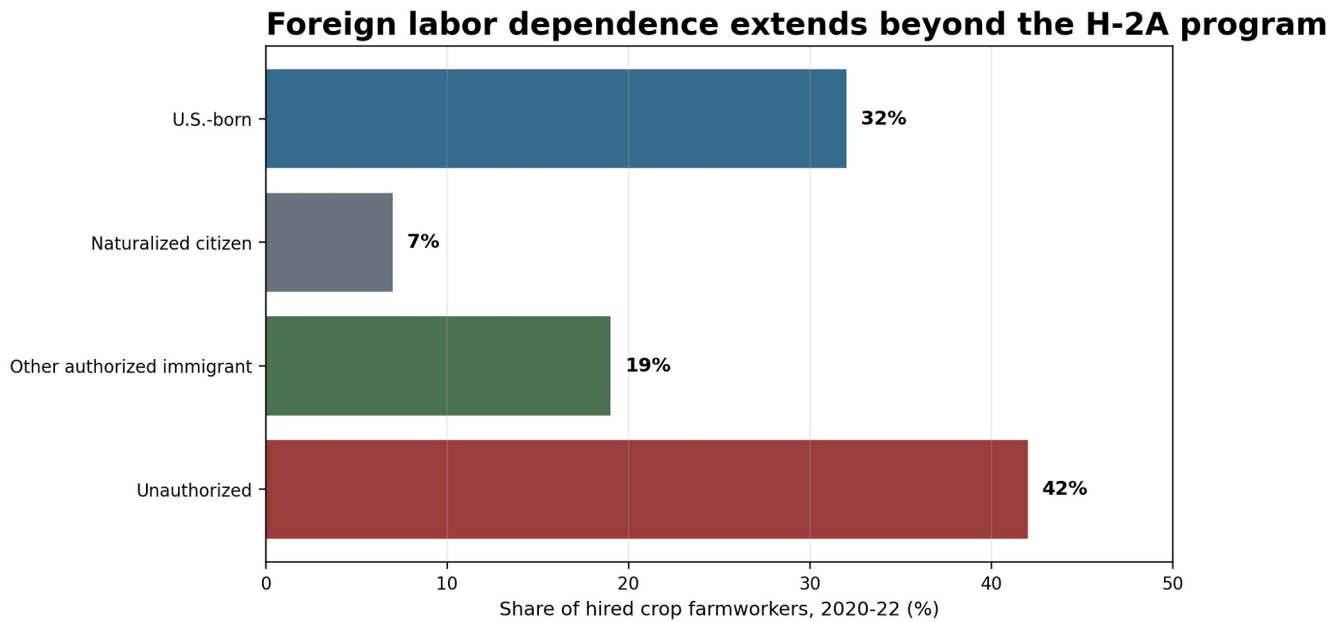


Figure 2. Foreign labor dependence extends beyond H-2A

Purpose

Prevent the article from treating H-2A as the entire foreign-labor system.

Question answered

Who makes up the hired crop workforce?

Argument carried by the figure

In 2020-22, 42 percent of hired crop farmworkers surveyed by NAWS lacked work authorization.

Visual specification

Horizontal bar chart showing the four legal-status categories.

Primary source basis

USDA Economic Research Service, based on the Department of Labor National Agricultural Workers Survey.

Placement and editorial use

Place beside the H-2A growth chart to demonstrate coexistence rather than substitution.

Caveats and reviewer challenges

- NAWS excludes H-2A workers and livestock workers.
- Legal status is difficult to measure and is self-reported in a trusted survey setting.
- The chart is about hired crop farmworkers, not all agricultural workers.

Recommended source note

Source: USDA Economic Research Service, based on the Department of Labor National Agricultural Workers Survey. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 3. H-2A dependence is concentrated geographically

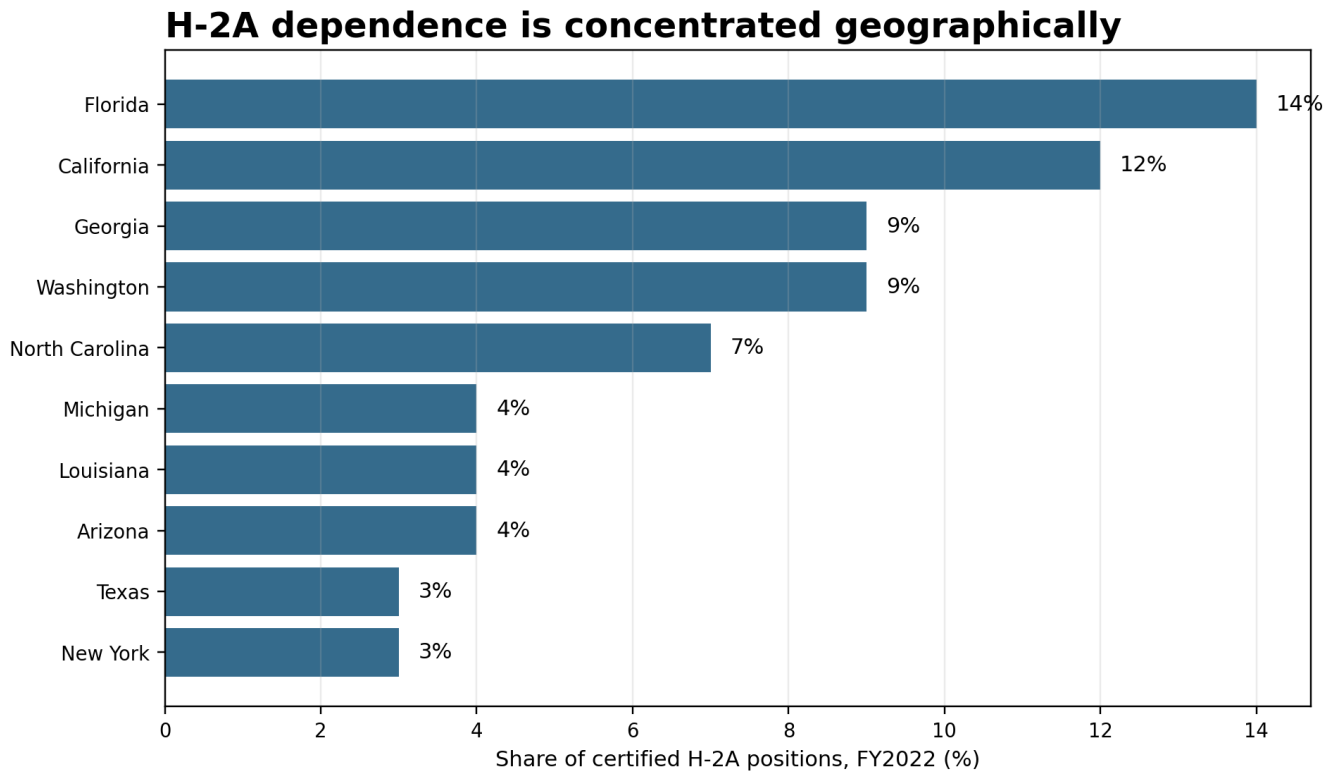


Figure 3. H-2A dependence is concentrated geographically

Purpose

Show that national averages conceal state-level dependence.

Question answered

Where are H-2A positions concentrated?

Argument carried by the figure

Ten states accounted for roughly two-thirds of FY2022 certified positions; Florida, California, and Georgia alone accounted for 35 percent.

Visual specification

Ranked horizontal bar chart.

Primary source basis

USDA ERS, based on DOL certification data.

Placement and editorial use

Use to demonstrate that the transition will require commodity- and region-specific sequencing.

Caveats and reviewer challenges

- Shares are rounded and therefore do not sum precisely.

- State assignment follows certified job location.
- FY2022 is used because USDA published a clean, comparable state breakdown.

Recommended source note

Source: USDA ERS, based on DOL certification data. Author calculations or editorial synthesis as indicated.

Notes: See caveats above.

Figure 4. A small share of employers account for most H-2A positions

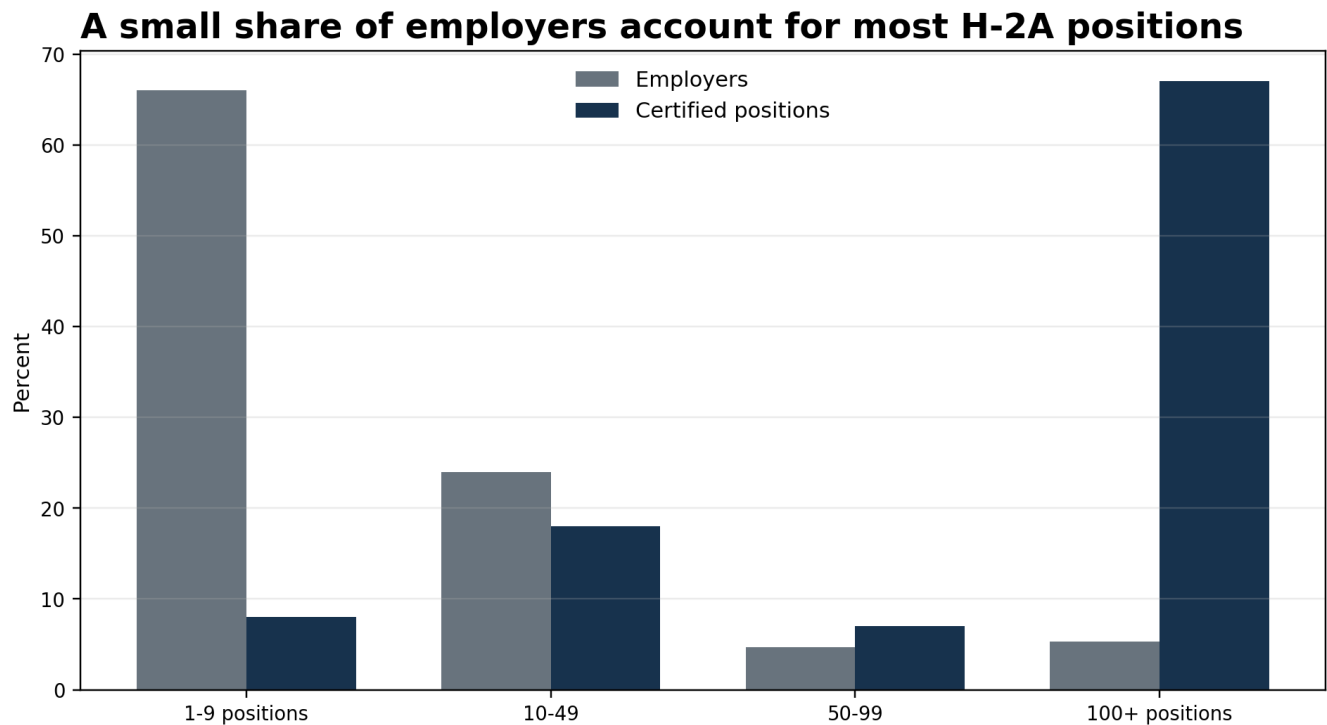


Figure 4. A small share of employers account for most H-2A positions

Purpose

Show that program use is highly concentrated even though most participating employers request few workers.

Question answered

Is H-2A primarily a small-farm program?

Argument carried by the figure

The largest 5.3 percent of H-2A employers accounted for more than two-thirds of certified jobs in FY2022.

Visual specification

Grouped bars comparing share of employers with share of positions.

Primary source basis

USDA ERS, H-2A Temporary Agricultural Job Certifications Continued To Soar in 2022.

Placement and editorial use

Useful for discussing implementation, contractors, and where transition financing could generate early impact.

Caveats and reviewer challenges

- The middle category shares are reconstructed from ERS narrative and should be replaced with exact downloadable chart data.
- Employer records may include farm labor contractors serving multiple farms.
- Employer concentration does not necessarily equal farm concentration.

Recommended source note

Source: USDA ERS, H-2A Temporary Agricultural Job Certifications Continued To Soar in 2022. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 5. Fewer farms, larger average operations

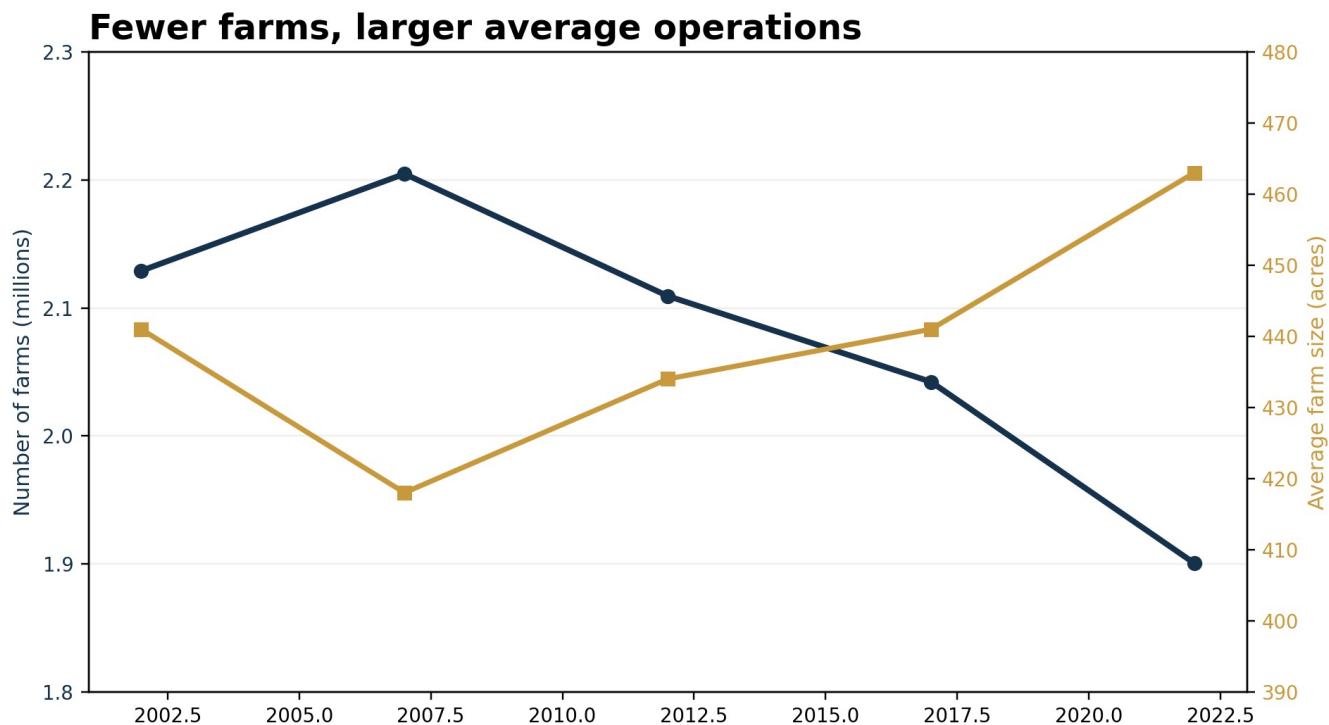


Figure 5. Fewer farms, larger average operations

Purpose

Provide structural context without claiming labor policy caused consolidation.

Question answered

How has the farm structure changed?

Argument carried by the figure

The number of farms declined while average farm size rose, especially from 2017 to 2022.

Visual specification

Dual-axis line chart covering five Census of Agriculture years.

Primary source basis

USDA NASS, 2022 Census of Agriculture, U.S. Summary and State Data.

Placement and editorial use

Use in the modernization section as context for who can absorb capital-intensive equipment.

Caveats and reviewer challenges

- The federal farm definition includes many very small operations.
- Dual axes can exaggerate visual relationships; no causal relationship is implied.
- Retain Census methodological notes in the technical appendix.

Recommended source note

Source: USDA NASS, 2022 Census of Agriculture, U.S. Summary and State Data. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 6. The producer population is shifting toward retirement age

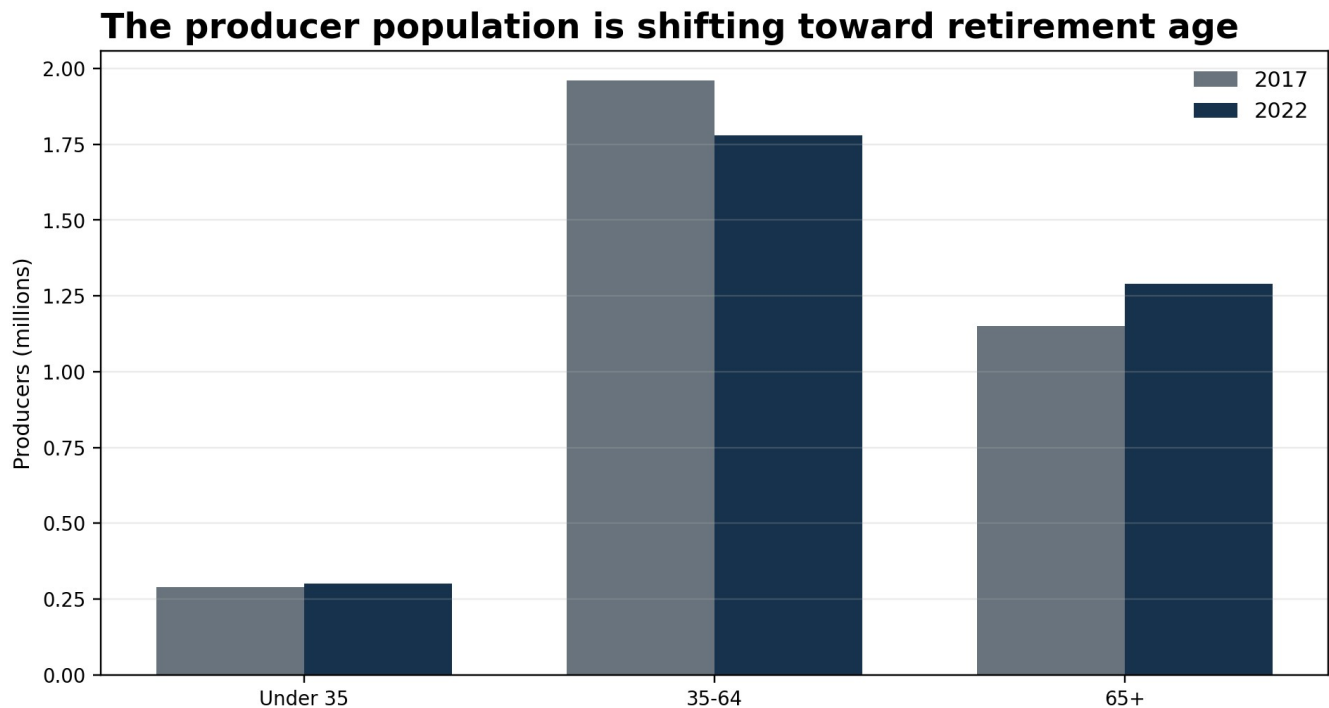


Figure 6. The producer population is shifting toward retirement age

Purpose

Show why succession and adoption capacity matter.

Question answered

How is the age distribution changing?

Argument carried by the figure

Between 2017 and 2022, producers ages 35-64 declined by 9 percent while producers 65 and older increased by 12 percent.

Visual specification

Grouped bars by age category.

Primary source basis

USDA NASS, Farm Producers: 2022 Census of Agriculture Highlights.

Placement and editorial use

Use to explain why financing must be paired with technical assistance, dealer support, and succession planning.

Caveats and reviewer challenges

- Producer counts are not the same as full-time farmers.
- A farm may have multiple producers.
- Decision-maker reporting patterns affect comparisons.

Recommended source note

Source: USDA NASS, Farm Producers: 2022 Census of Agriculture Highlights. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 7. Labor expenses are concentrated in a handful of farm industries

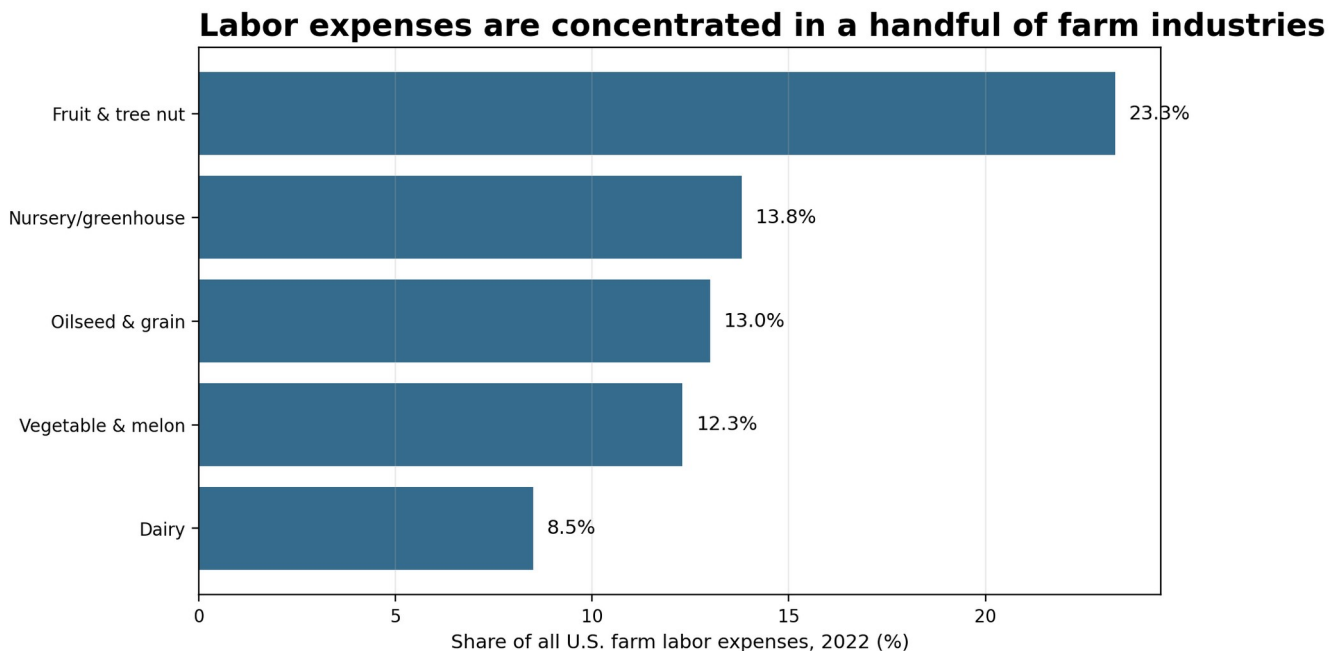


Figure 7. Labor expenses are concentrated in a handful of farm industries

Purpose

Identify where modernization financing can matter most.

Question answered

Which industries account for farm labor spending?

Argument carried by the figure

Five industries accounted for more than 70 percent of U.S. farm labor expenses in 2022.

Visual specification

Ranked horizontal bars.

Primary source basis

USDA ERS, Farm Labor Expenses: Evidence from the 1997-2022 Census of Agriculture.

Placement and editorial use

Use before discussing task-specific automation.

Caveats and reviewer challenges

- The dairy share shown is a working value and must be checked against EB-47.
- Expense share is not identical to labor intensity or automation potential.
- Oilseed and grain appears because of scale, not unusually high labor intensity per acre.

Recommended source note

Source: USDA ERS, Farm Labor Expenses: Evidence from the 1997-2022 Census of Agriculture. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 8. Intent and outcome diverged

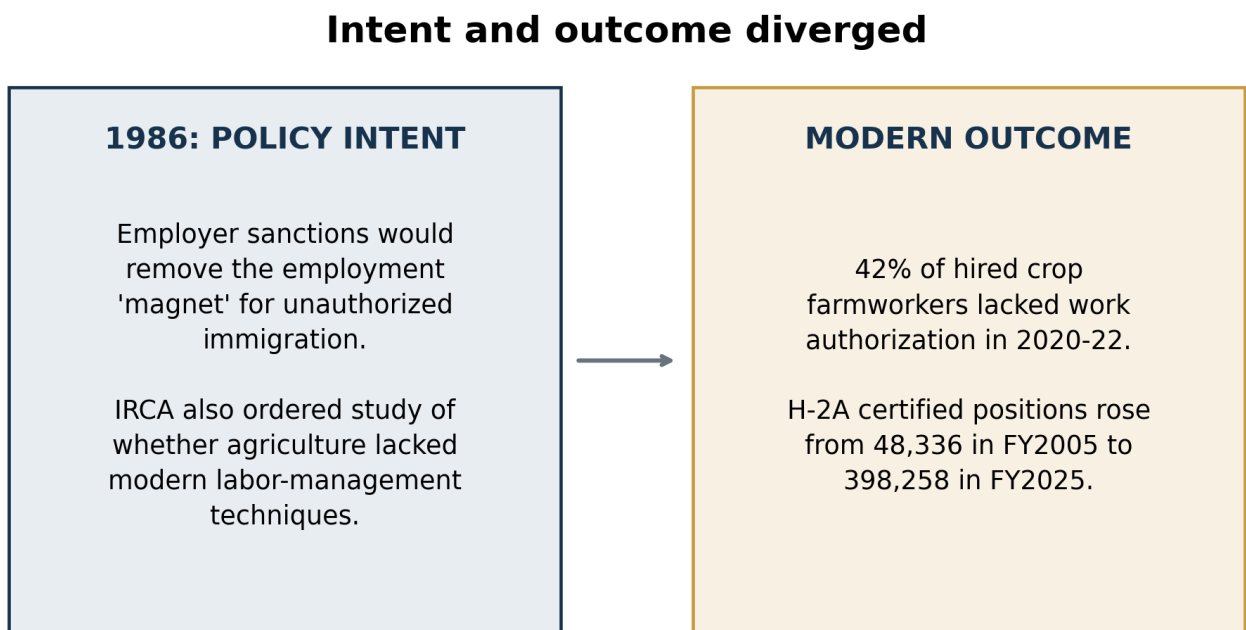


Figure 8. Intent and outcome diverged

Purpose

Create the article's signature intent-versus-outcome visual.

Question answered

Did IRCA's stated theory of change materialize?

Argument carried by the figure

Employer sanctions did not eliminate unauthorized farm employment, while the lawful seasonal program expanded dramatically.

Visual specification

Two-panel quotation-and-data figure.

Primary source basis

President Reagan's 1986 signing statement; IRCA commission language; USDA ERS and DOL outcome data.

Placement and editorial use

Use at the end of the history section. Replace the placeholder paraphrase with one short verified quotation.

Caveats and reviewer challenges

- Do not claim Congress promised H-2A would remain small without a verified quotation.

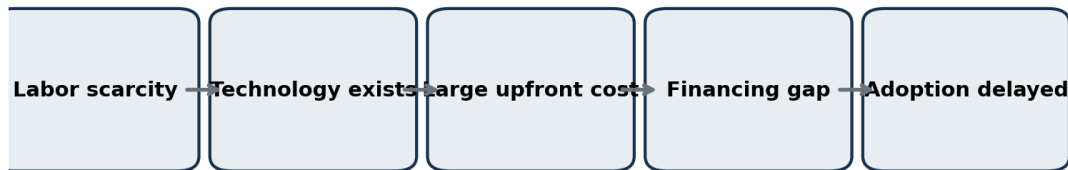
- Keep the quotation brief and fully cited.
- The outcome data do not prove that IRCA caused H-2A growth.

Recommended source note

Source: President Reagan's 1986 signing statement; IRCA commission language; USDA ERS and DOL outcome data. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 9. The modernization bottleneck is often financial, not technological

The modernization bottleneck is often financial, not technological



Recurring labor demand can remain easier in the short run than a productivity-enhancing capital investment.

Figure 9. The modernization bottleneck is often financial, not technological

Purpose

Translate the capital argument into a causal chain.

Question answered

Why does viable technology remain underused?

Argument carried by the figure

Large upfront costs, uncertain resale values, seasonal cash flow, and lender unfamiliarity delay adoption.

Visual specification

Editorial flow diagram.

Primary source basis

Editorial synthesis informed by USDA adoption research and agricultural lending literature.

Placement and editorial use

Use as the lead figure in Section 4.

Caveats and reviewer challenges

- This is a conceptual model, not a measured decomposition.

- Barrier importance varies by crop, farm size, and technology.
- Avoid saying capital is always the principal barrier.

Recommended source note

Source: Editorial synthesis informed by USDA adoption research and agricultural lending literature.

Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 10. Automation readiness varies sharply by task and crop

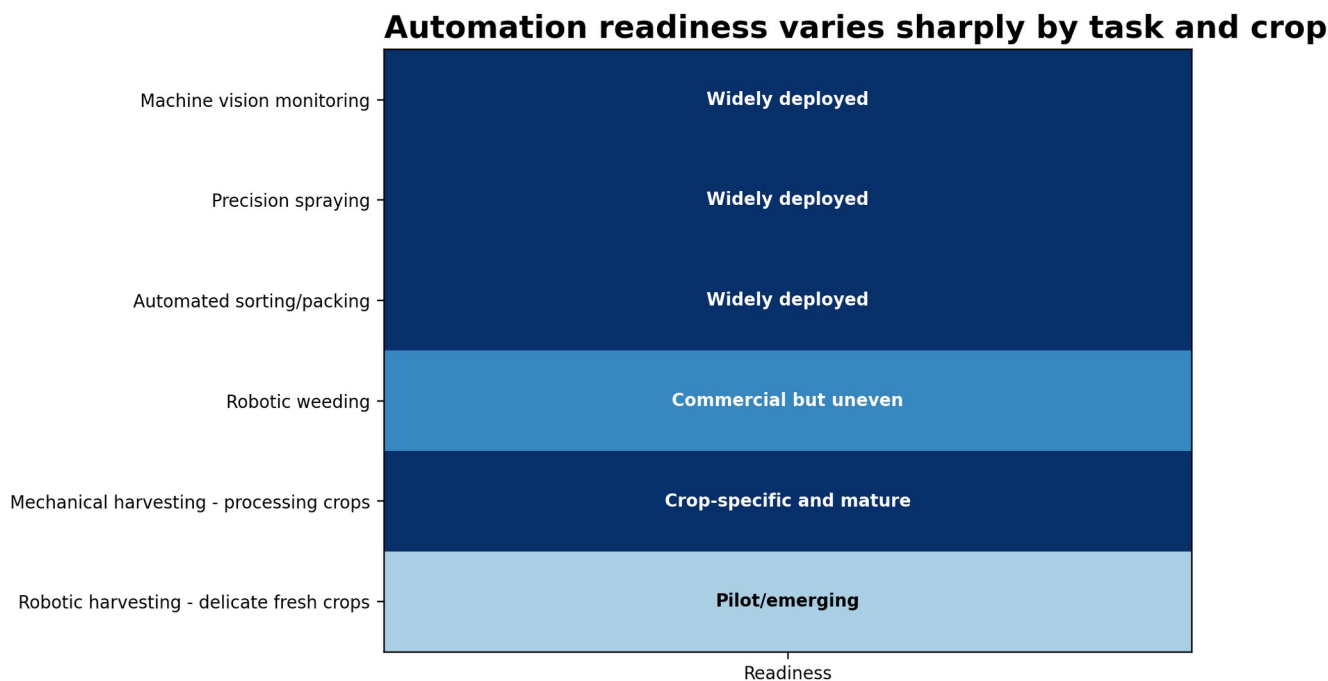


Figure 10. Automation readiness varies sharply by task and crop

Purpose

Preempt the claim that automation is either universally ready or universally speculative.

Question answered

Which agricultural functions are ready now?

Argument carried by the figure

Monitoring, spraying, and sorting are broadly commercial; delicate fresh-crop harvesting remains uneven and emerging.

Visual specification

Editorial readiness matrix.

Primary source basis

Synthesis of USDA, extension, manufacturer, and peer-reviewed robotics literature.

Placement and editorial use

Use in Section 3; expand in the policy paper.

Caveats and reviewer challenges

- Every row requires specialist review and named examples.

- Commercial availability does not guarantee positive farm-level ROI.
- Readiness varies within categories and field conditions.

Recommended source note

Source: Synthesis of USDA, extension, manufacturer, and peer-reviewed robotics literature. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Figure 11. A transition strategy must combine modernization with enforcement

A transition strategy must combine modernization with enforcement

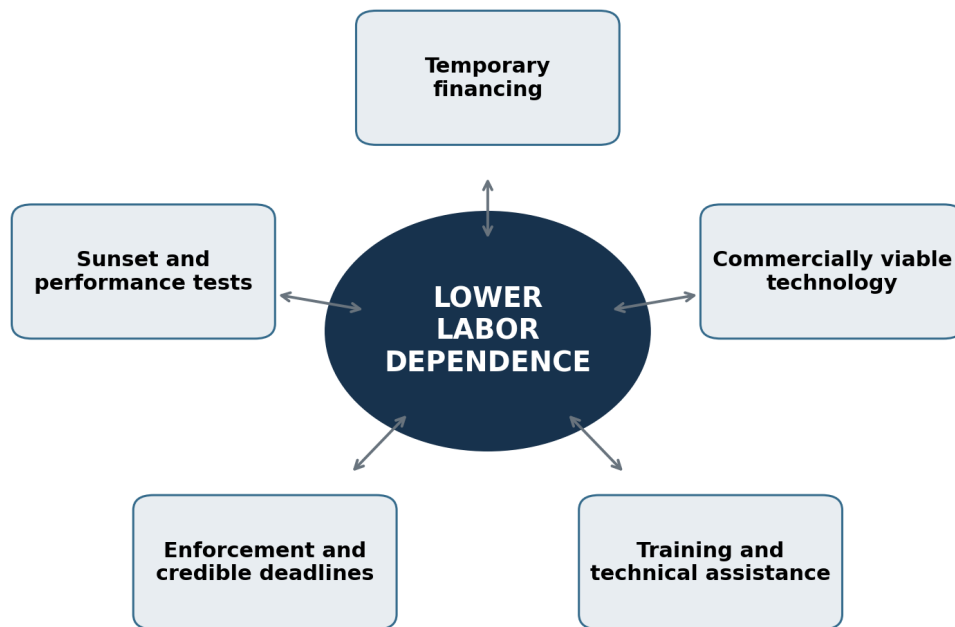


Figure 11. A transition strategy must combine modernization with enforcement

Purpose

Summarize policy principles without introducing detailed FAFP mechanics.

Question answered

What does a credible transition require?

Argument carried by the figure

Financing, proven technology, technical assistance, enforcement, performance tests, and a sunset must operate together.

Visual specification

Radial conceptual framework.

Primary source basis

Editorial synthesis.

Placement and editorial use

Use before the conclusion and as a bridge to the companion policy paper.

Caveats and reviewer challenges

- The figure describes principles, not program mechanics.
- It does not imply equal funding or importance for every component.
- The article should explain the disruption risk of enforcement without transition capacity.

Recommended source note

Source: Editorial synthesis. Author calculations or editorial synthesis as indicated. Notes: See caveats above.

Data Tables

Figure 1 - H-2A certified positions

Year	Positions
2,005	48,336
2,010	79,175
2,015	139,832
2,017	200,049
2,019	257,674
2,020	275,430
2,021	317,619
2,022	371,619
2,023	378,513
2,024	384,900
2,025	398,258

Figure 2 - Hired crop farmworker legal status

Status	Share
U.S.-born	32
Naturalized citizen	7
Other authorized immigrant	19
Unauthorized	42

Figure 3 - State shares of H-2A positions

State	Share
Florida	14
California	12
Georgia	9
Washington	9
North Carolina	7
Michigan	4
Louisiana	4
Arizona	4
Texas	3
New York	3

Figure 4 - Employer concentration

Employer size	Share of employers	Share of positions
1-9 positions	66	8
10-49	24	18
50-99	4.7	7
100+ positions	5.3	67

Figure 5 - Farms and average size

Year	Farms	Avg acres
2,002	2,128,982	441
2,007	2,204,792	418
2,012	2,109,303	434
2,017	2,042,220	441
2,022	1,900,487	463

Figure 6 - Producer age groups

Age group	2017	2022
Under 35	0.3	0.3
35-64	2.0	1.8
65+	1.1	1.3

Figure 7 - Labor expense shares

Industry	Share
Fruit & tree nut	23.3
Nursery/greenhouse	13.8
Oilseed & grain	13
Vegetable & melon	12.3
Dairy	8.5

Source Register

U.S. Department of Labor, Office of Foreign Labor Certification. Performance Data and H-2A Selected Statistics, FY2020-FY2025. <https://www.dol.gov/agencies/eta/foreign-labor/performance>

USDA Economic Research Service. Farm Labor topic page, including H-2A positions and legal status. <https://www.ers.usda.gov/topics/farm-economy/farm-labor>

USDA Economic Research Service. H-2A Temporary Agricultural Job Certifications Continued To Soar in 2022. <https://www.ers.usda.gov/amber-waves/2023/march/h-2a-temporary-agricultural-job-certifications-continued-to-soar-in-2022>

USDA Economic Research Service. Florida, California, and Georgia accounted for one-third of H-2A jobs in 2022. <https://www.ers.usda.gov/data-products/charts-of-note/106604>

USDA National Agricultural Statistics Service. 2022 Census of Agriculture: Farm Producers Highlights. https://www.nass.usda.gov/Publications/Highlights/2024/Census22_HL_FarmProducers_FINAL.pdf

USDA National Agricultural Statistics Service. 2022 Census of Agriculture, U.S. Summary and State Data. https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_1_US/

USDA Economic Research Service. Farm Labor Expenses: Evidence from the 1997-2022 Census of Agriculture, Economic Brief No. 47. <https://www.ers.usda.gov/media/9159/eb-47.pdf>

U.S. Government Accountability Office. Immigration Reform: Potential Impact on West Coast Farm Labor, HRD-89-89. <https://www.gao.gov/assets/hrd-89-89.pdf>

Ronald Reagan Presidential Library. Statement on Signing the Immigration Reform and Control Act of 1986. <https://www.reaganlibrary.gov/archives/speech/statement-signing-immigration-reform-and-control-act-1986>

Final-production checklist

- Replace Figure 4 reconstructed middle categories with exact downloadable chart values.
- Verify Figure 7 dairy share directly against EB-47's source table.
- Select and insert the final short IRCA quotation in Figure 8.
- Have an agricultural engineer and at least two specialty-crop operators review Figure 10.
- Export each final figure as SVG and 300-dpi PNG for publication.
- Apply the publication's typography and color system after the Data for the Republic template is confirmed.
- Maintain a reproducible CSV and code file for every empirical chart.