

Introduction

A substantial shortfall of traditionally trained agricultural teachers currently exists. Reliable forecasting can help teacher preparation programs and planners anticipate future needs, justify resources, and strengthen recruitment, preparation, and retention.

Framework

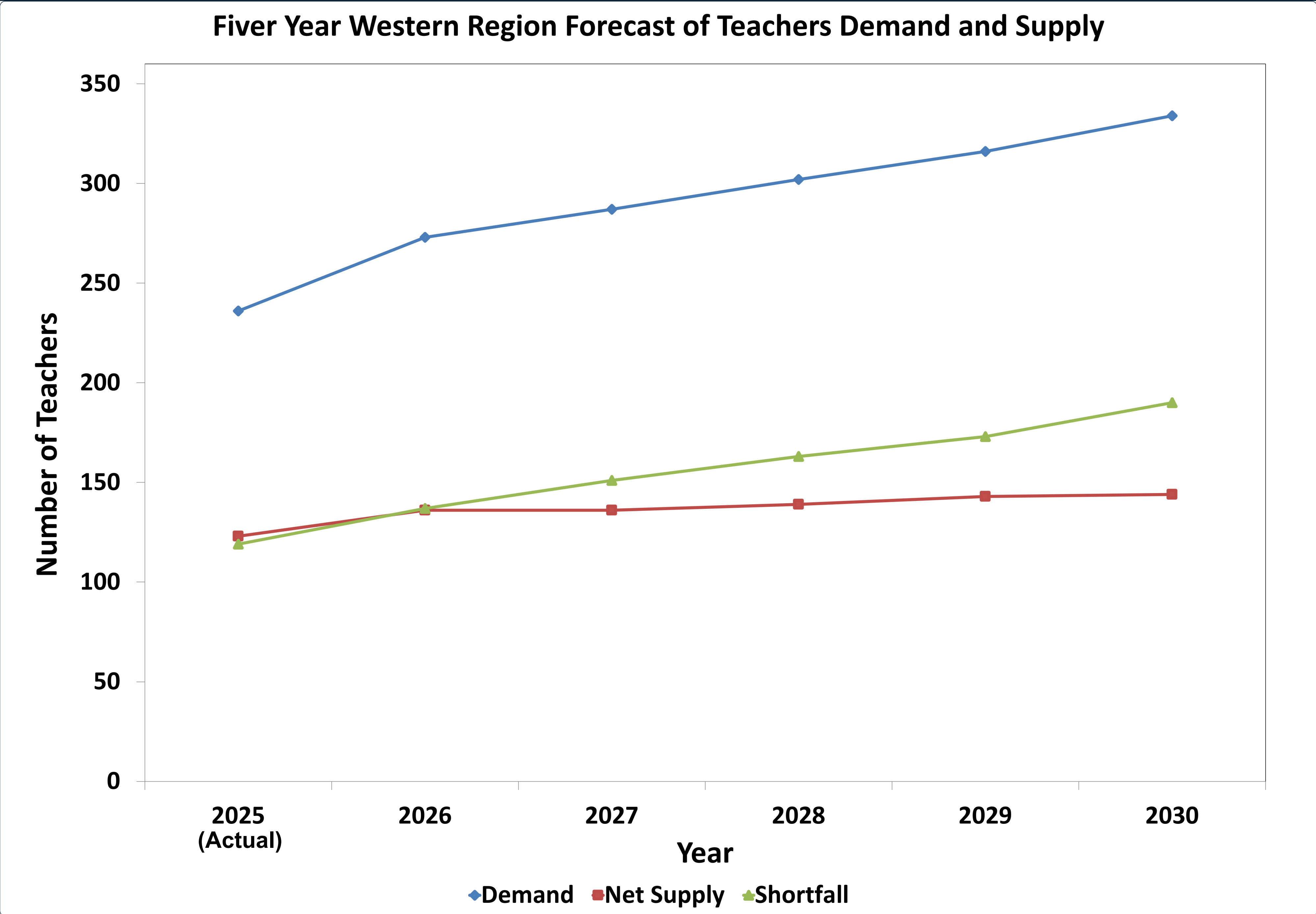
The National Supply and Demand (NSD) framework identifies factors contributing to school-based agricultural education (SBAE) teacher supply and demand. Supply includes traditionally trained program completers who take SBAE positions. Demand reflects teacher departures, new positions, and lost positions; the shortfall is the gap between demand and supply..

Methods

- NSD data collected from 2014–2025 were analyzed at the state level.
- Western Region analysis included 230 supply reports and 132 demand reports.
- Autoregressive integrated moving average (ARIMA), simple moving average, and exponential smoothing methods were compared using root mean square error (RMSE).

Crystal Ball: Forecasting Five-Year Supply, Demand, and Shortfall of Agricultural Educators in the Western Region

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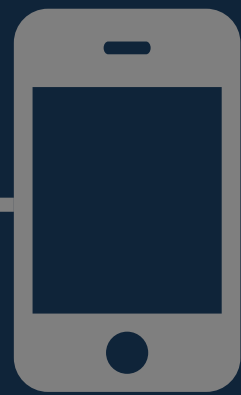


The supply of agricultural teachers is growing, but demand is outpacing supply, requiring proactive workforce planning.

Predicted Change Over Five Years

Change	Predicted Supply		Predicted Demand	
	Decline/No Change	Increase	Decline/No Change	Increase
No. of States	4	7	3	9

Note. Alaska and Hawaii have no teacher preparation programs. Hawaii does not report demand.



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Methods (contd..)

- Ordinary least squares (OLS) was selected because it produced the lowest RMSE and the lowest overall regional error.

Results

- Demand, supply, and shortfall all show an upward trend in the forecast.
- The shortfall of trained teachers rises from 137 teachers in 2026 to 190 in 2030.
- This represents an approximately 39% increase in the shortfall over five years.
- Substantial variation exists among states in predicted supply and demand.

Conclusions

- Demand for traditionally trained agricultural educators will continue to outpace supply.
- Schools may rely more heavily on alternatively licensed and unlicensed teachers as shortages grow but additional professional development and support would be is needed for these teachers.
- State-specific strategies to increase supply by growing existing SBAE programs and creating new programs are necessary to meet the growing demand.