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# Economic Outlook Symposium

## Tracking Retail Sales and Unemployment with CARTS and the CFLMI

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*The views expressed here do not necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.*

# We can use big data to fill the shutdown data gap

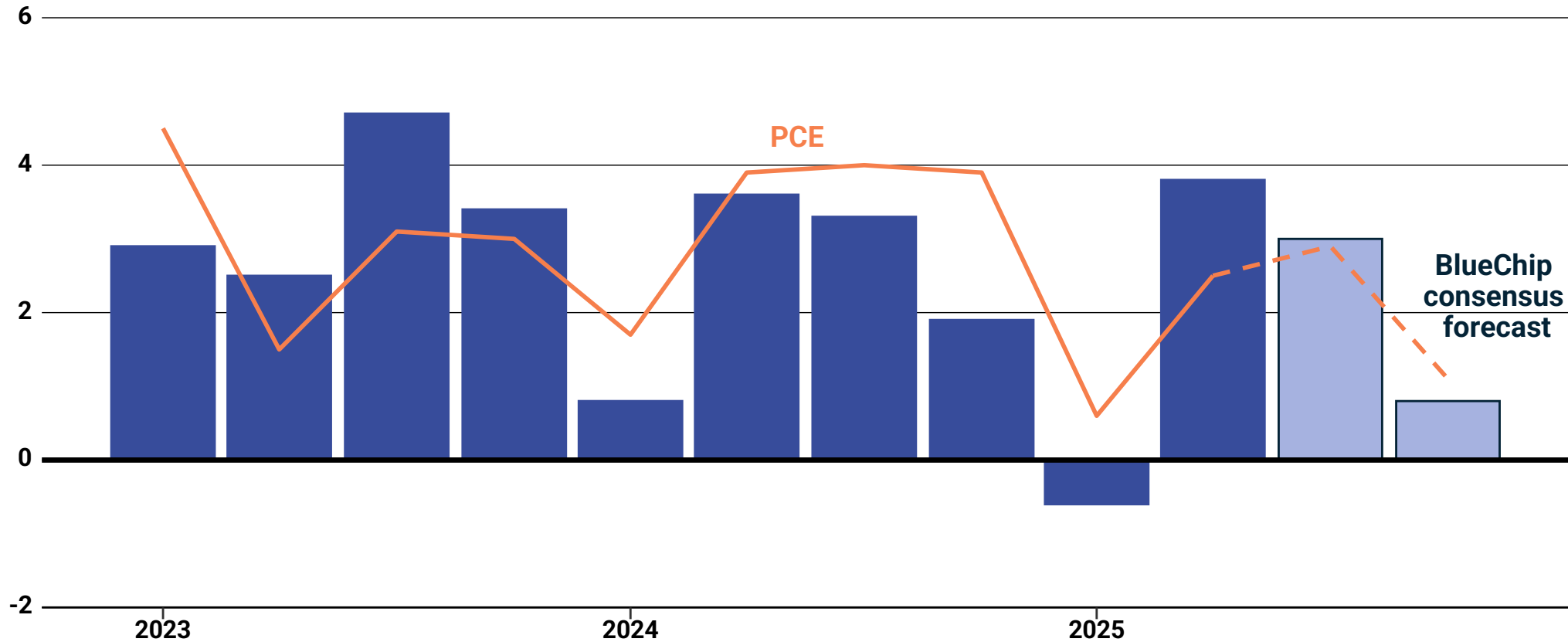
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- **Private sector (big data) are *complements, not substitutes* for official statistics**
  - But when you only have one (e.g., in a govt. shutdown), you make the most of it
- **Big data are typically not representative...although they are usually timelier**
  - They make it possible to forecast official statistics in almost real time (nowcasting)
- **Chicago Fed examples that do this by blending big data with official statistics**
  - Chicago Fed Advance Retail Trade Summary (CARTS)
    - Combines high-frequency data on transactions, foot traffic & sentiment with monthly Census data to nowcast retail and food services sales ex. autos
  - Chicago Fed Labor Market Indicators (CFLMI)
    - Combines high-frequency data on separations and hiring with monthly Bureau of Labor Statistics data to nowcast the civilian unemployment rate

# Consumer spending growth expected to moderate

## Real GDP and PCE growth

(Percent change, SAAR)



Source: BEA and BlueChip via Haver Analytics

# Chicago Fed Advance Retail Trade Summary (CARTS)

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- **Census Bureau runs a monthly survey of retailers (MARTS)**
  - Both store and non-store retailers
  - Used as GDP input by the BEA
- **October & November 2025 results have been delayed by the govt. shutdown**
- **We use high-frequency data to forecast MARTS...and call it CARTS**
  - Retail & food services sales ex. auto (broadest aggregate informing GDP)
  - Accurately predicted the September MARTS (+0.3% m/m)
  - Predicting similar nominal sales growth for next week's October MARTS (+0.4% m/m)

# What is CARTS and when is it updated?

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- **CARTS is a timely and comprehensive read on retail trade from consumers' POV**
  - *Weekly Index of Retail Trade*
    - Dynamically benchmarked to Census Bureau's seasonally adjusted retail sales data
  - *Weekly Index of Retail Prices*
    - Dynamically benchmarked to BEA and BLS seasonally adjusted data on retail prices
- **Preliminary (1-2 wks prior) and Final (1-2 days prior) releases ahead of MARTS**
- **Next (final) release for November data is on Friday December 19<sup>th</sup>**
  - Will include the October MARTS and CPI data rescheduled for 12/16 & 12/18
  - <https://chicagofed.org/carts>

# A big data approach to retail sales

Retail sales data	Retail prices data
<p><b>Census:</b> Retail &amp; food services sales ex. auto</p> <p><b>Transactions:</b> Credit/debit cards &amp; store receipts</p> <ul style="list-style-type: none"><li>• Consumer Edge</li><li>• Bloomberg Second Measure</li><li>• Numerator</li><li>• Facteus</li><li>• SafeGraph</li></ul> <p><b>Foot Traffic &amp; Sentiment:</b> Visits, gas sales, surveys</p> <ul style="list-style-type: none"><li>• Advan Research</li><li>• Energy Information Administration</li><li>• Morning Consult</li></ul>	<p><b>BEA:</b> Retail &amp; food services ex. auto prices*</p> <p><b>Prices:</b> CPI, online prices &amp; gas prices</p> <ul style="list-style-type: none"><li>• BLS CPI for commodities ex. autos</li><li>• State Street PriceStats total CPI</li><li>• Adobe Analytics Digital Price Index</li><li>• Energy Information Administration retail gasoline price</li></ul>

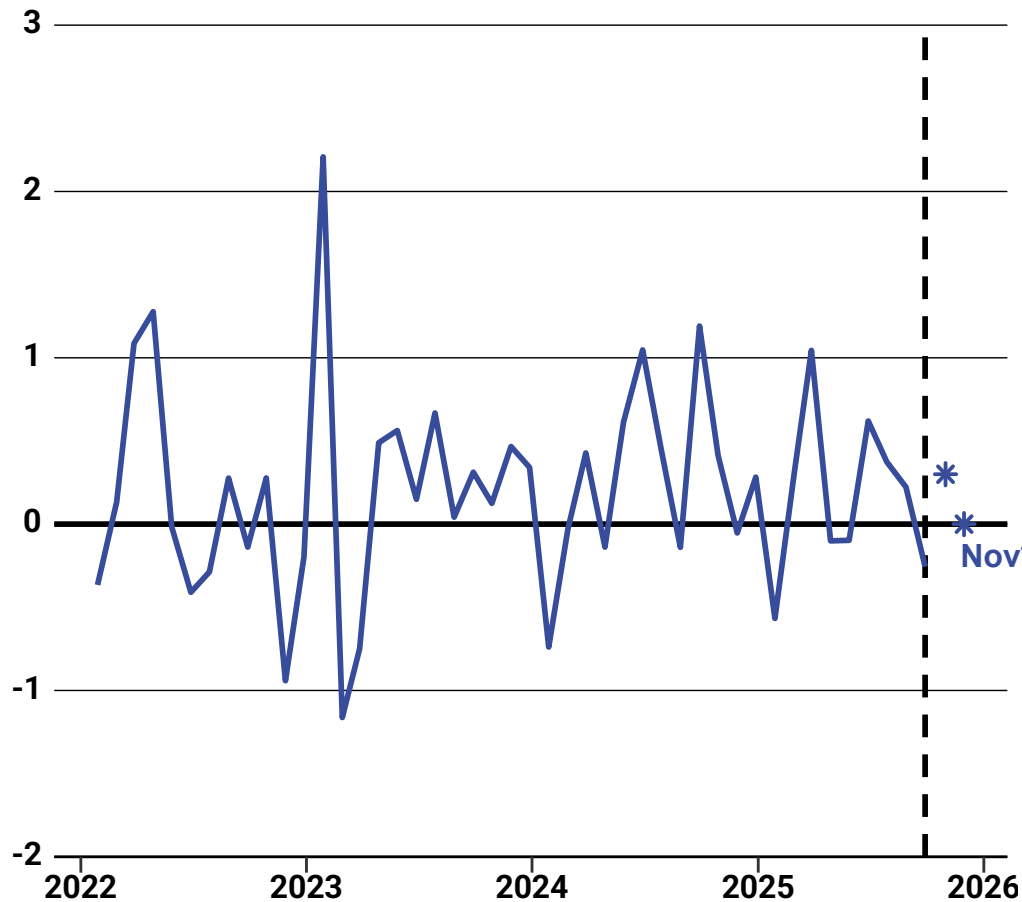
*\* BEA discontinued producing the price index for this category of retail spending in mid-2024.*

- Mixed-frequency dynamic factor model for retail sales
- Mixed-frequency VAR for retail prices

# Moderating sales growth, continued price pressures

## Real retail & food services sales ex. auto

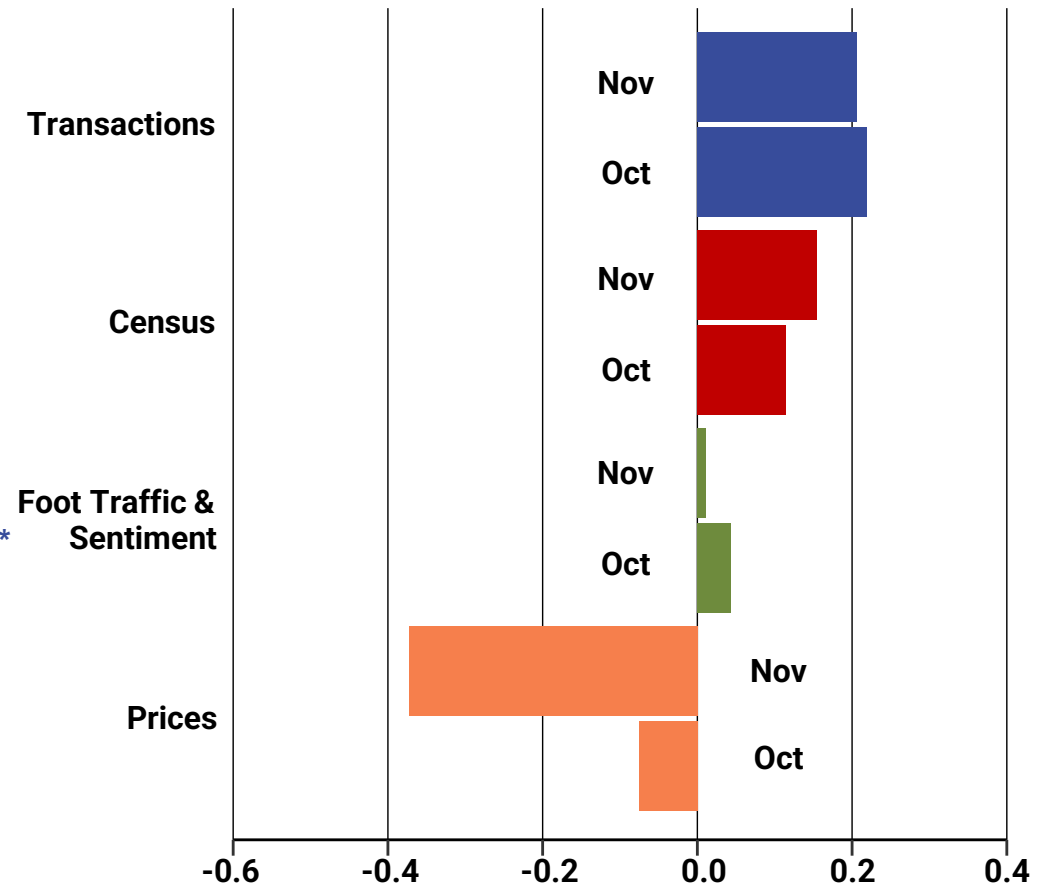
(m/m % chg, SA)



*\*Preliminary estimate using available sales and price data*

## CARTS real sales nowcast contributions

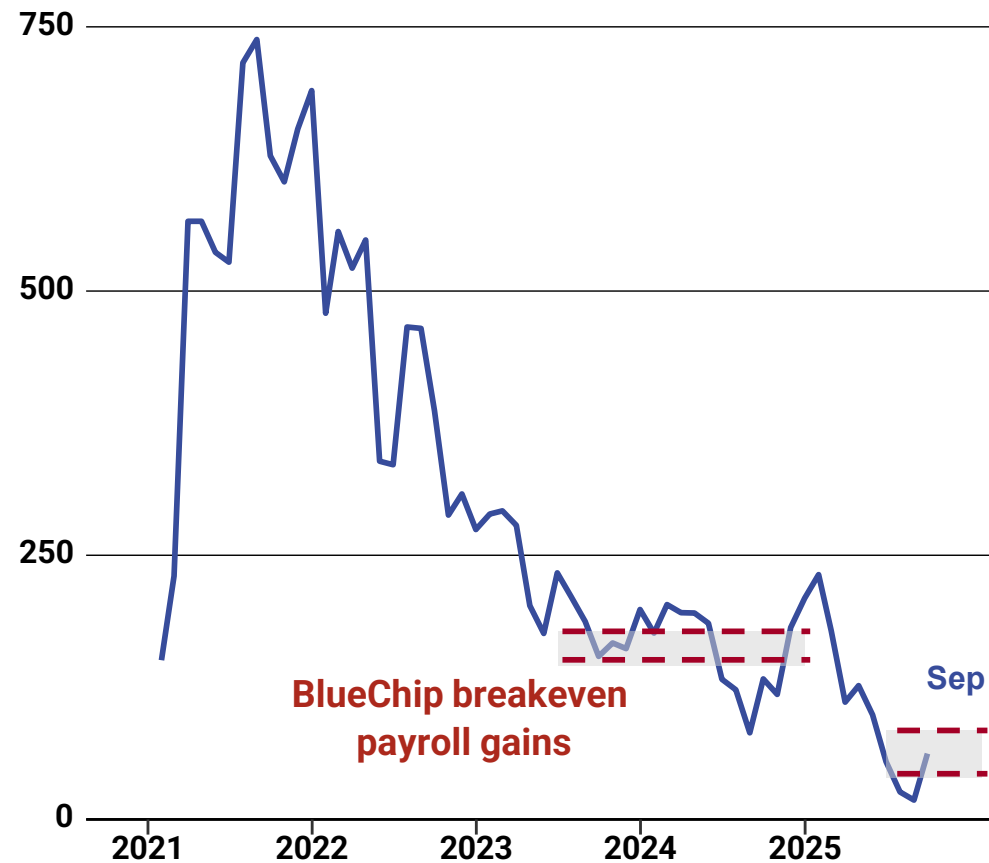
(m/m % chg, SA)



# Labor market is cooling, but still broadly in balance

## Payroll gains

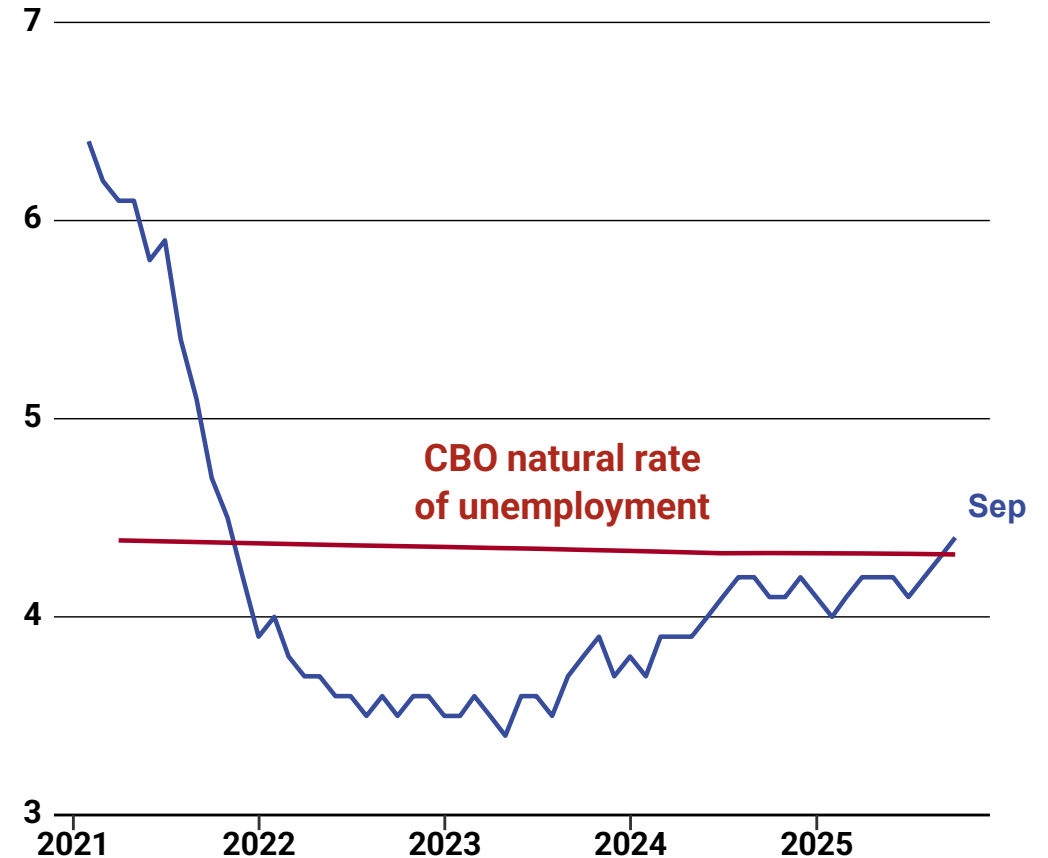
(3-month moving average, thousands, SA)



Source: BLS and BlueChip via Haver Analytics

## Unemployment rate

(Percent, SA)



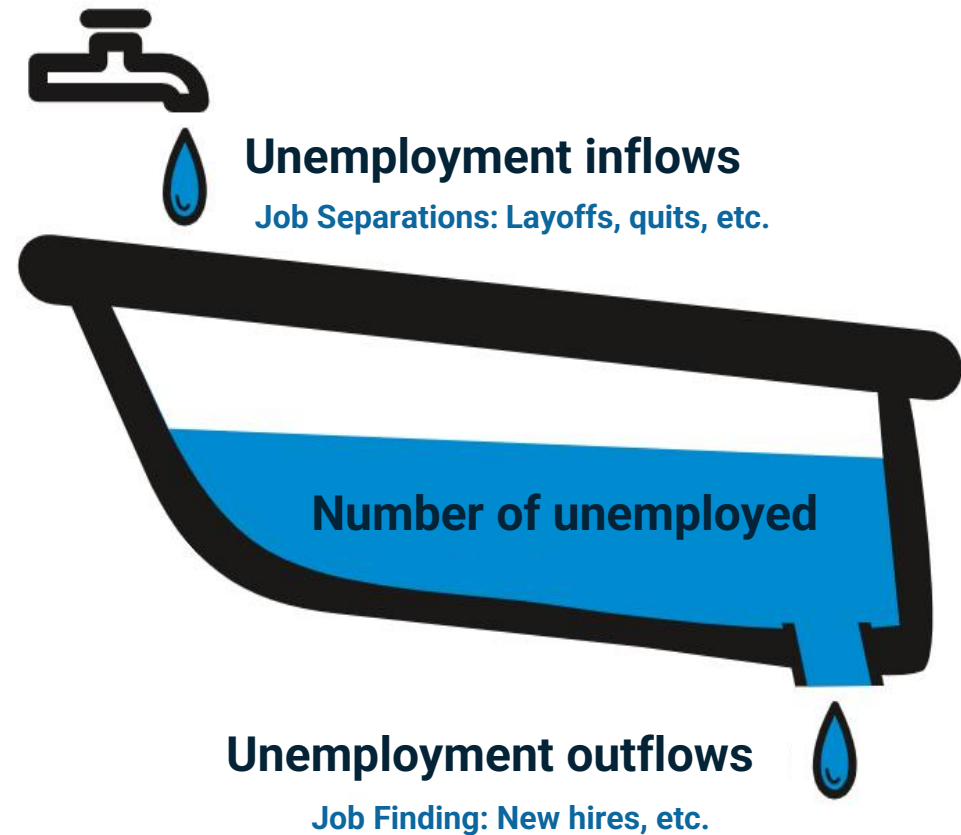
Source: BLS and CBO via Haver Analytics



# Chicago Fed Labor Market Indicators (CFLMI)

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- Compare unemployment inflows and outflows to predict the change in the unemployment rate
- Labor big data are well-suited to capture these flows in real time
- And big data can be blended with official flow data



Source: Image reproduced from [www.labormarketupdate.net](http://www.labormarketupdate.net).

# What are the CFLMI and when are they updated?

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- **CFLMI are a timely and comprehensive read of the forces shaping unemployment**
  - Layoffs & Other Separations Rate (Inflow rate)
  - Hiring Rate for Unemployed Workers (Outflow rate)
  - Flow-consistent Unemployment Rate (Inflow rate / (Inflow + Outflow rates))
  - Real-Time Unemployment Rate Forecast (BLS U-3)
- **Advance (1-2 wks prior) and Final (1-2 days prior) releases ahead of BLS reports**
- **Next (advance) release for December data is on Tuesday December 30<sup>th</sup>**
  - Will include Nov data from rescheduled BLS release on 12/16
  - <https://chicagofed.org/lmi>

# A big data approach to unemployment

Public sector labor market data	Private sector labor market data
<b>Bureau of Labor Statistics (BLS):</b> Job separation and finding rates; JOLTS layoff and hiring rates*	<b>ADP:</b> jobs recorded by payroll processing services
<b>Department of Labor (DoL):</b> Initial and continuing UI claims	<b>Indeed</b> and <b>Lightcast:</b> online job postings
<b>FRBNY:</b> Survey of Consumer Expectations mean probability of finding vs. losing a job	<b>Google Trends:</b> unemployment topic searches
	<b>Conference Board:</b> consumer survey of jobs plentiful vs. hard to get
	<b>Morning Consult:</b> consumer survey of unemployment, pay loss, and job search
	<b>Bloomberg Consensus:</b> unemployment forecast

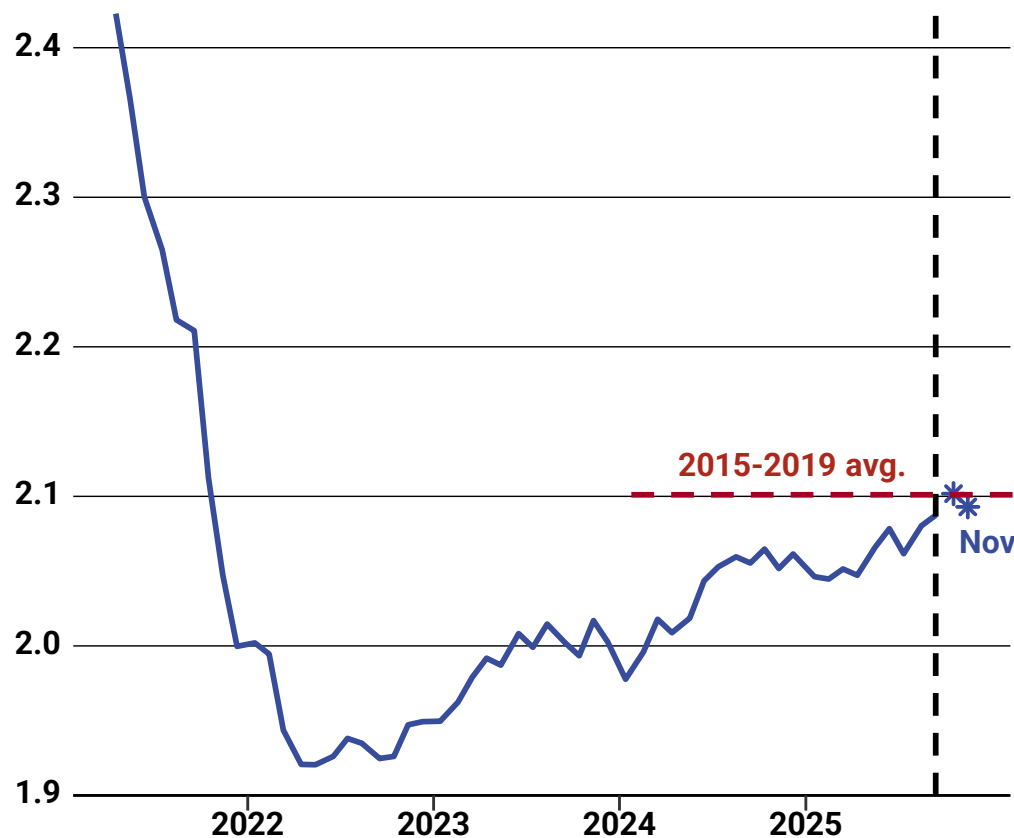
*\* When unavailable, JOLTS layoff and hiring rates are predicted using the latest **Revelio Labs** hiring & attrition rates, **NFIB** jobs hard-to-fill index, and Announced Job Cuts from **Challenger, Gray & Christmas***

- 2-factor partial least squares model for the job separations and finding rates
- Bayesian linear regression to predict the change in the unemployment rate

# Slow drip in and slower drain out

## Layoffs & other separations rate

(Percent of employed)



## Hiring rate for unemployed workers

(Percent of unemployed)



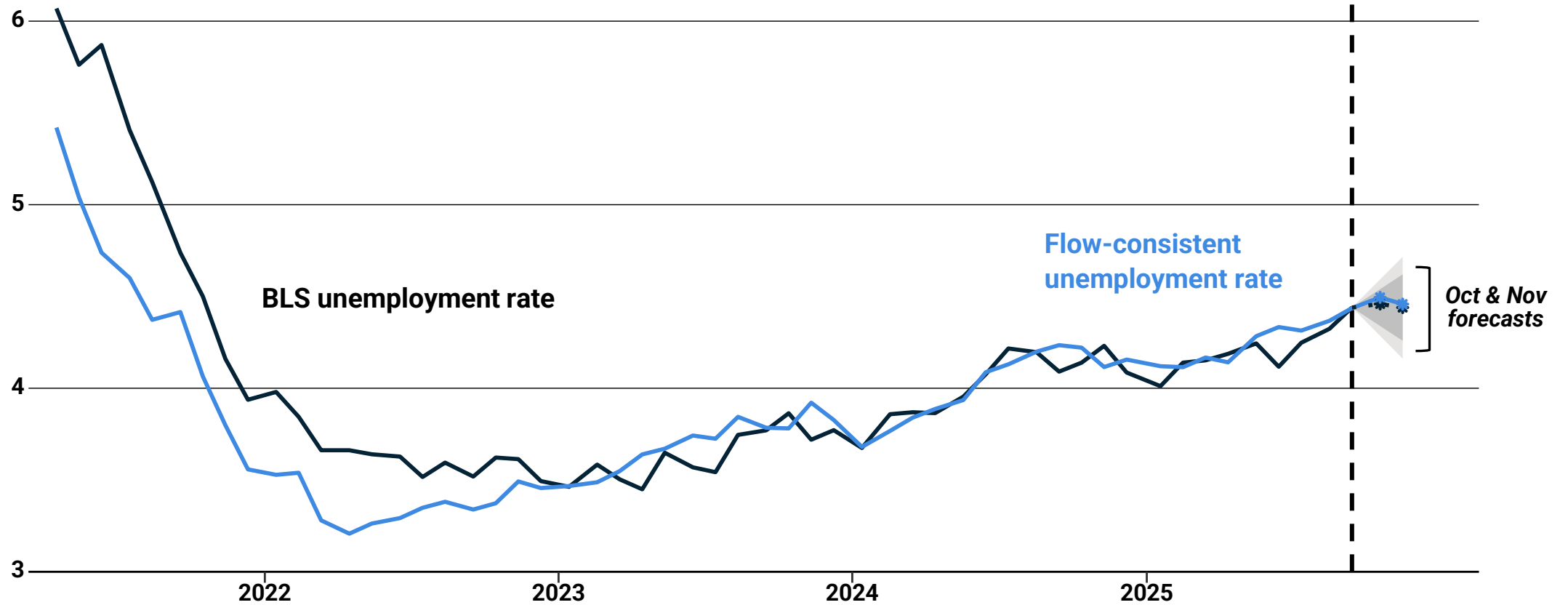
Note: Vertical line denotes the most recent BLS release for September 2025.

Source: Chicago Fed calculations using data as of the November 15<sup>th</sup> BLS reference week.

# Nets out to a gradual increase in unemployment

## Historical unemployment rates and Chicago Fed real time estimates

(Percent of labor force)



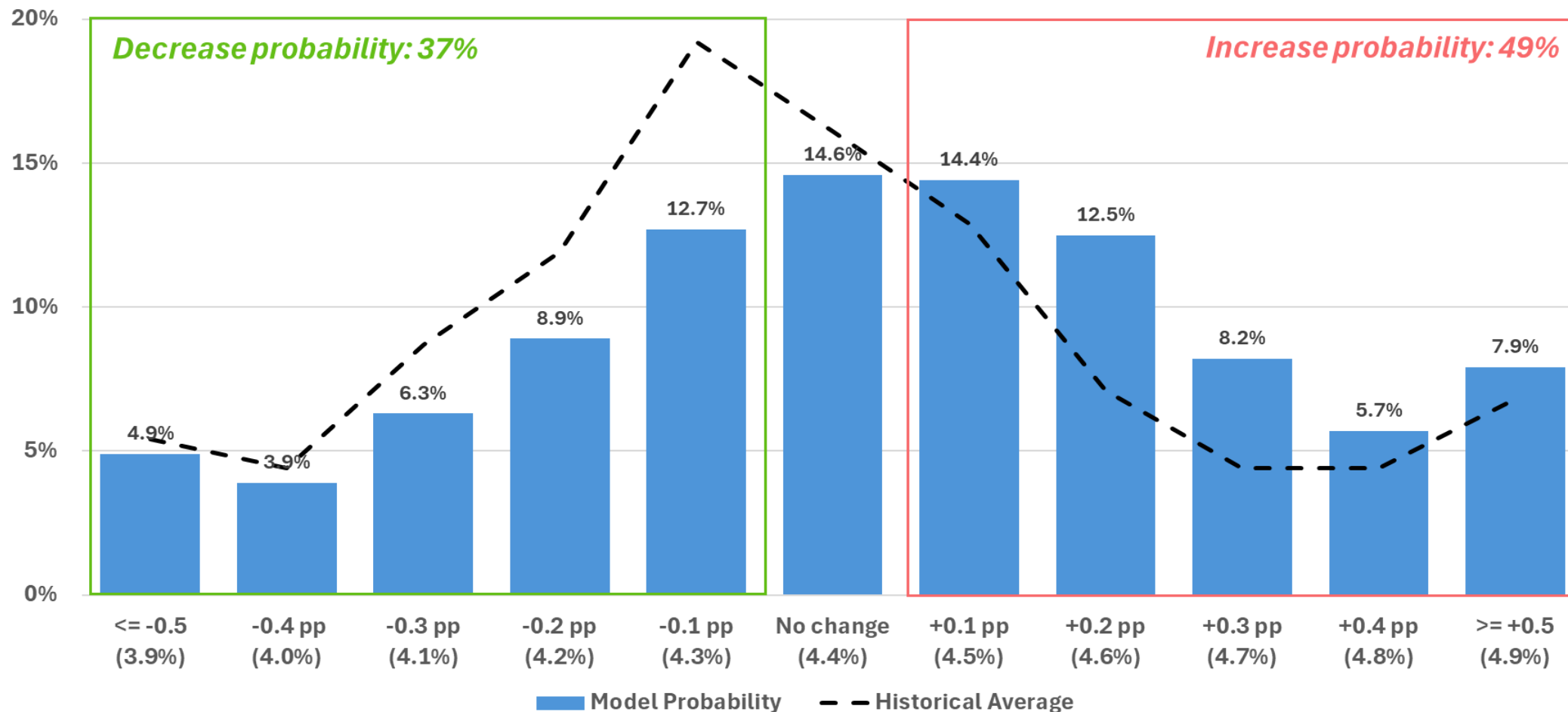
Note: Vertical line denotes the most recent BLS release for September 2025.

Source: Chicago Fed calculations using data as of the November 15<sup>th</sup> BLS reference week.

# November 2025 unemployment rate

## Unemployment rate probabilities

(2-month change from Sept 2025)



# Additional details can be found at [chicagofed.org](https://chicagofed.org)

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- **Find the latest data, additional background, and release dates at**
  - <https://chicagofed.org/lmi>
  - <https://chicagofed.org/carts>
- **Follow updates by subscribing to email alerts or on social media**
  - [Chicago Fed E-alerts](#)
  - LinkedIn: [Scott A. Brave](#)
  - X: [@BigDataGoSmall](#)
- **Thank you!**
  - Next CARTS release December 19<sup>th</sup>
  - Next CFLMI release December 30<sup>th</sup>



[www.chicagofed.org](http://www.chicagofed.org)