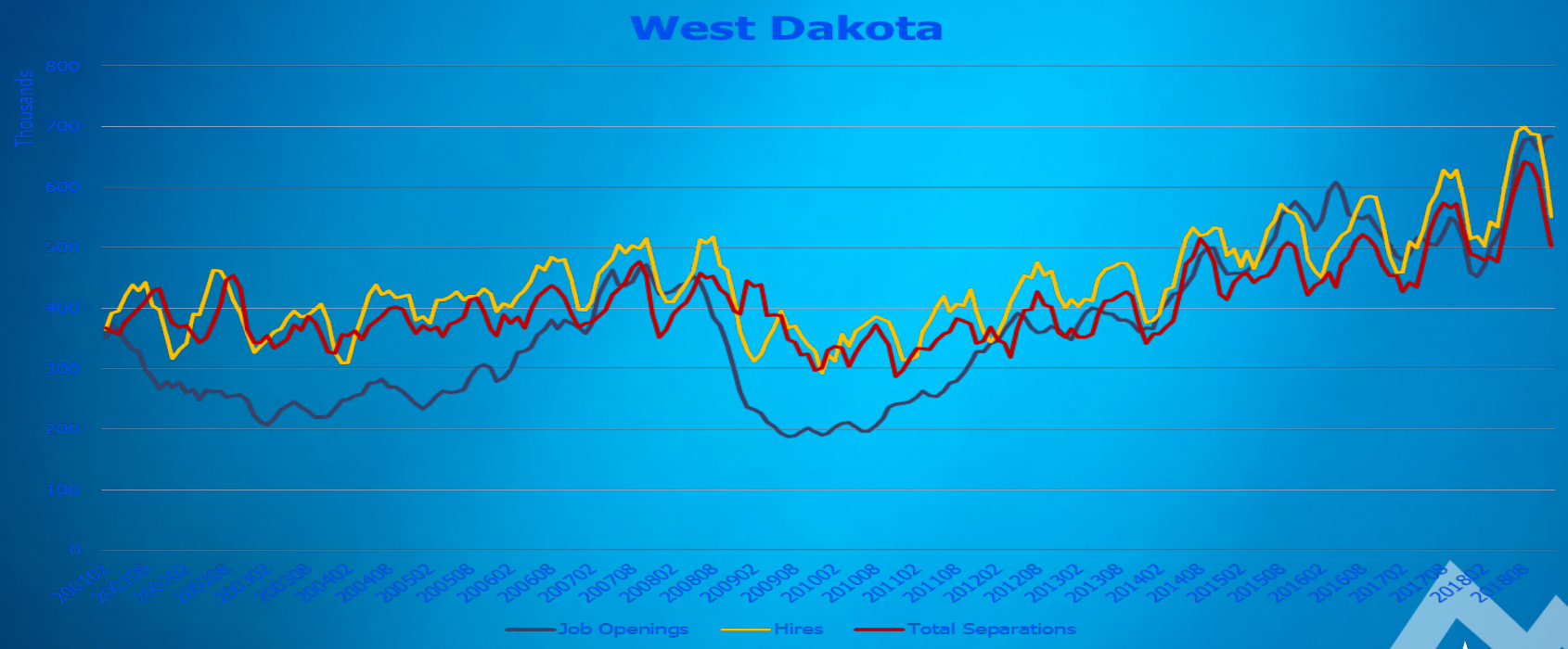
An Overview of Experimental JOLTS State Estimates

Larry Akinyooye

Economist

Job Openings & Labor Turnover Survey (JOLTS)



Agenda

- JOLTS State Estimates History
- Current Status
- Accessing State Estimates
- State Analysis
- Methodology
- Ongoing Release Plans
- Q&A

JOLTS Experimental State Estimates

History

- BLS started considering the possibility of JOLTS state estimates in 2014
- Discussed this possibility with states at the 2015 LMI meeting
- Shared first round of experimental estimates with states in 2018

JOLTS Experimental State Estimates

History

- Solicited State input on;
  - Data smoothing using 3MMA
  - Current monthly Estimates Versus Lagged quarterly/semi-annual Estimates
  - Choice of Benchmark models;
    - QCEW benchmark vs Census J2J LEHD benchmark

JOLTS Experimental State Estimates

Release Status

- First Experimental estimates released to public on May 24th, 2019
  - Estimates released through December 2018
  - Requested data users input on methodology and usability of estimates for future release updates
- Second September 25th,2019
  - Estimates released through June 2019
  - Data benchmarked through December 2018

JOLTS State Experimental Estimates September 25th Release

TOTAL NONFARM, February 2001-June 2019
COMPOSITE SYNTHETIC ESTIMATES (February 2001-December 2018)
COMPOSITE REGIONAL ESTIMATES (January 2019-June 2019)

			Levels in Thousands					Rates in Percent				
Period (YYYYMM)	State	Region	Job Openings	Hires	Quits	Layoffs & Discharges	Total Separations	Job Openings Rate	Hires Rate	Quits Rate	Layoffs & Discharges Rate	Total Separations Rate
200102	Alabama	S	67	65	39	28	73	3.3	3.3	2.0	1.5	3.8
200102	Alaska	W	14	17	8	8	17	4.8	6.1	2.9	2.9	6.1
200102	Arizona	W	112	116	52	53	111	4.7	5.1	2.3	2.3	4.8
200102	Arkansas	S	43	41	26	19	49	3.6	3.5	2.3	1.6	4.3
200102	California	W	664	589	295	253	595	4.3	4.0	2.0	1.7	4.0
200102	Colorado	W	96	105	53	49	109	4.1	4.7	2.4	2.2	4.9
200102	Connecticut	NE	56	48	25	24	53	3.2	2.8	1.5	1.4	3.2
200102	Delaware	S	16	17	10	7	19	3.9	4.3	2.6	1.8	4.9
200102	District of Columbia	S	21	18	13	7	22	3.2	2.8	2.0	1.1	3.5
200102	Florida	S	283	305	163	102	284	3.8	4.2	2.3	1.4	3.9
200102	Georgia	S	164	156	93	65	170	3.9	3.9	2.3	1.6	4.3
200102	Hawaii	W	19	22	11	10	22	3.5	4.1	2.0	1.8	4.1
200102	Idaho	W	22	25	14	16	32	3.8	4.5	2.6	2.8	5.7
200102	Illinois	MW	183	194	128	109	251	3.0	3.3	2.1	1.8	4.2
200102	Indiana	MW	91	104	64	57	128	3.0	3.5	2.2	1.9	4.4
200102	Iowa	MW	46	49	32	27	63	3.0	3.4	2.2	1.9	4.3
200102	Kansas	MW	44	51	27	25	55	3.2	3.8	2.0	1.8	4.1
200102	Kentucky	S	57	56	36	25	66	3.1	3.1	2.0	1.4	3.7
200102	Louisiana	S	73	75	43	28	77	3.6	3.9	2.2	1.5	4.0
200102	Maine	NE	24	19	12	11	26	3.9	3.2	2.1	1.9	4.3
200102	Maryland	S	96	80	52	40	99	3.8	3.2	2.1	1.6	4.0
200102	Massachusetts	NE	123	96	55	53	115	3.5	2.8	1.6	1.6	3.4
200102	Michigan	MW	153	156	97	101	210	3.2	3.4	2.1	2.2	4.6
200102	Minnesota	MW	97	97	59	47	112	3.5	3.6	2.2	1.8	4.2
200102	Mississippi	S	44	43	26	20	50	3.7	3.7	2.2	1.7	4.3
200102	Missouri	MW	90	108	71	52	129	3.2	4.0	2.6	1.9	4.8
200102	Montana	W	16	18	10	10	22	4.0	4.7	2.7	2.6	5.7
200102	Nebraska	MW	35	38	22	18	42	3.7	4.2	2.4	1.9	4.6
200102	Nevada	W	39	48	24	23	50	3.6	4.6	2.3	2.2	4.8

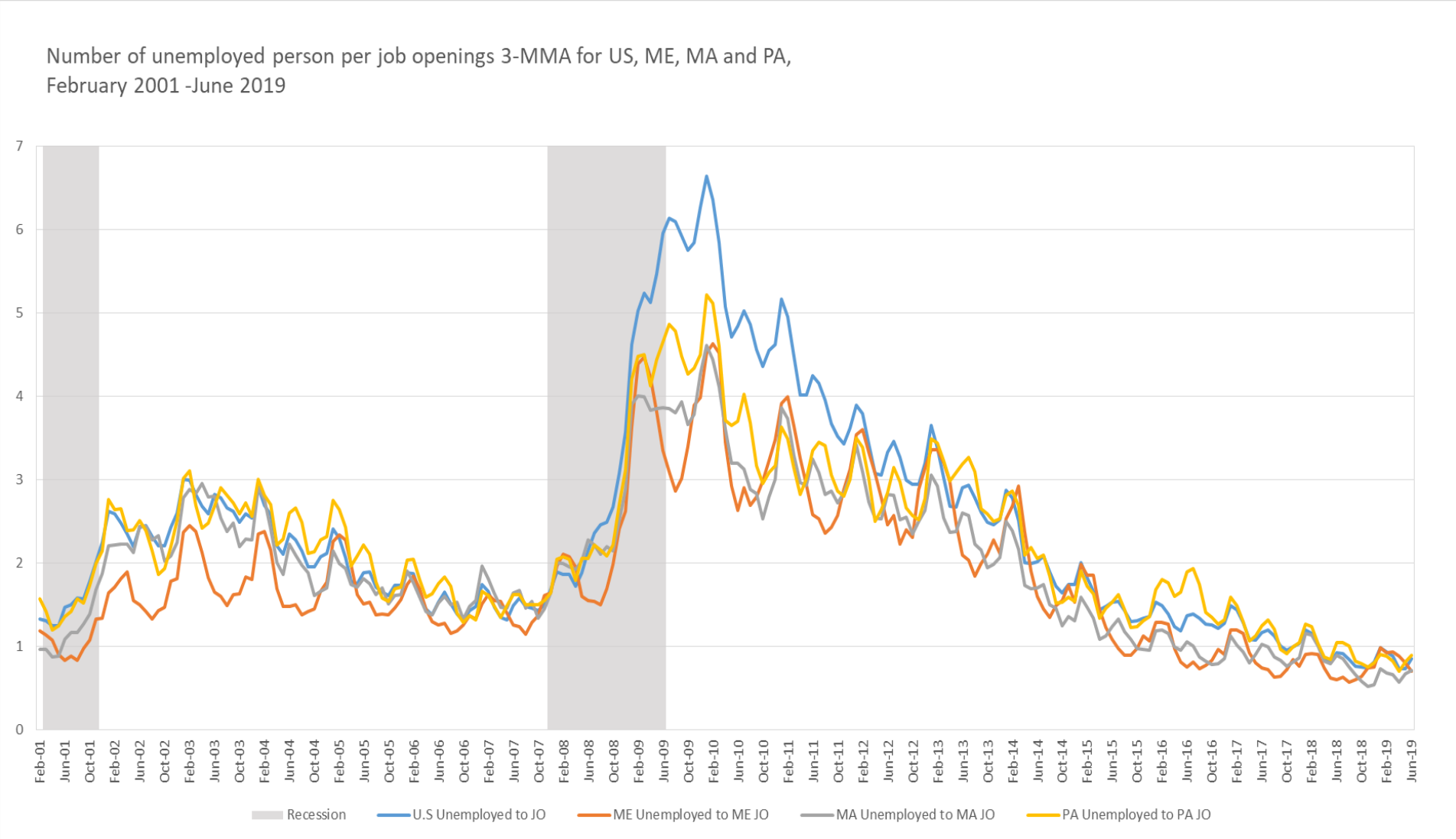
State_Estimates

JOLTS Experimental State Estimates Openings

JOB Openings - Analysis: Jun. 2019					
MEASURE	MA	ME	PA	REGION - NE	US
RATES					
Month	4.4%	4.2%	4.6%	4.1%	4.7%
Year LOW	4.4%	4.1%	4.6%	4.0%	4.5%
Year HIGH	4.9%	4.6%	4.8%	4.2%	4.7%
LEVELS					
Month	171,000	28,000	295,000	1,195,000	7,380,333
OTY Change	10,000	(11,000)	8,000	(35,000)	48,000
OTY %Change	6.2%	-28.2%	2.8%	-2.8%	0.7%
Year LOW	171,000	27,000	293,000	1,153,333	7,066,333
Year HIGH	190,000	30,000	305,000	1,209,000	7,466,333
OTHER					
UE/JO NSA	0.66	0.78	0.80	0.81	0.78

Job Openings

U.S Unemployed Per Job Openings



JOLTS Experimental State Estimates
Hires

HIRES - Analysis: Jun. 2019					
MEASURE	AL	DC	TX	REGION - S	US
RATES					
Month	4.5%	3.9%	4.8%	4.4%	4.3%
Year LOW	3.2%	2.7%	4.2%	3.7%	3.2%
Year HIGH	4.5%	3.9%	4.8%	4.4%	4.3%
LEVELS					
Month	94,000	30,000	612,000	2,444,667	6,424,000
OTY Change	2,000	4,000	(12,000)	2,333	(2,333)
OTY %Change	2.2%	15.4%	-1.9%	0.1%	0.0%
Year LOW	65,000	21,000	533,000	2,026,667	4,820,333
Year HIGH	94,000	30,000	612,000	2,444,667	6,424,000
OTHER					
HIRES/JO	0.90	0.79	0.95	0.93	0.87

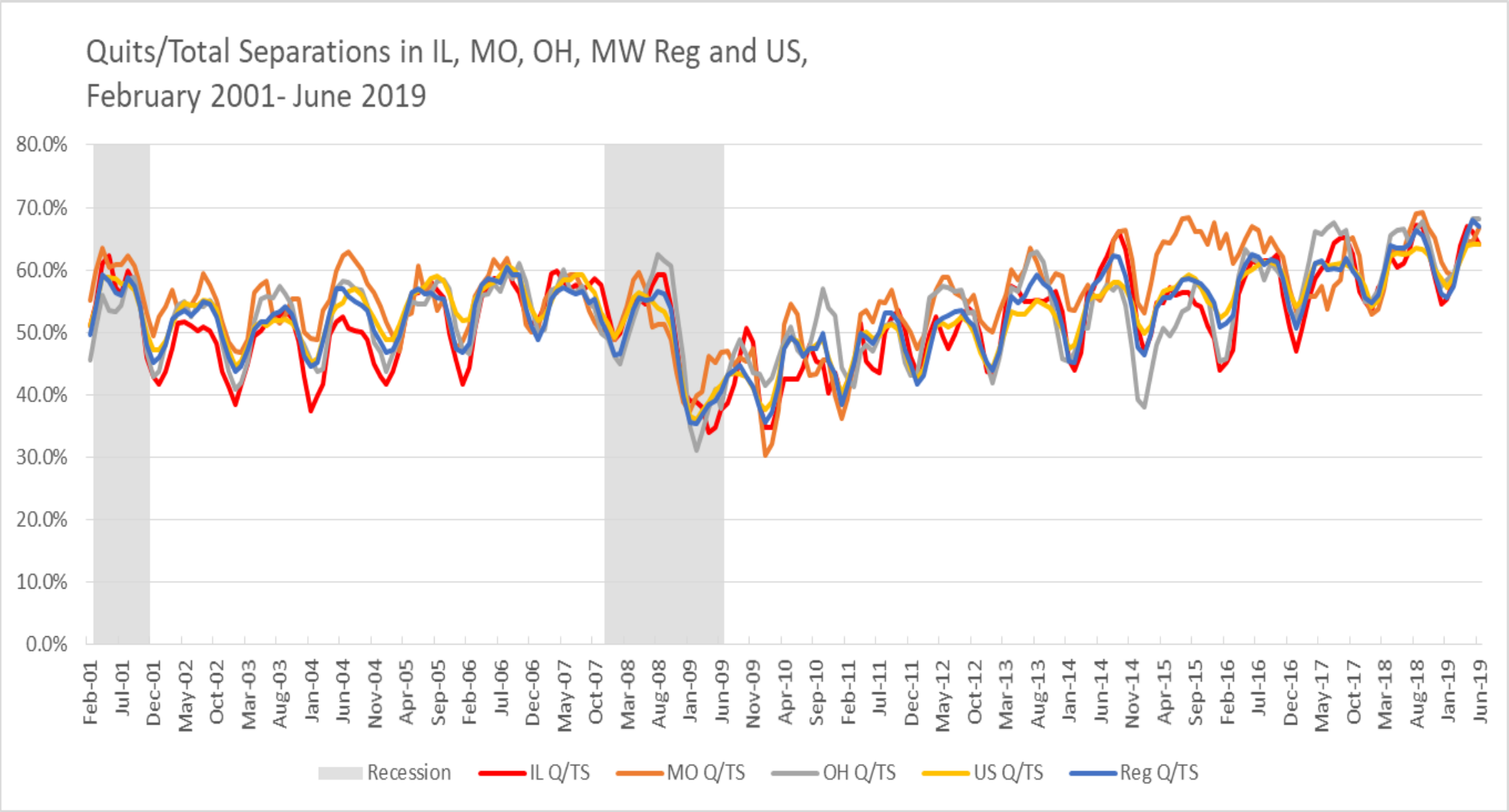
JOLTS Experimental State Estimates
Total Separations

TOTAL SEPARATIONS - Analysis: Jun. 2019					
MEASURE	CA	CO	HI	REGION - W	US
RATES					
Month	3.5%	3.9%	4.0%	3.8%	3.7%
Year LOW	2.8%	3.2%	3.3%	3.2%	3.3%
Year HIGH	3.5%	3.9%	4.0%	3.8%	3.7%
LEVELS					
Month	614,000	110,000	25,000	1,336,000	5,650,333
OTY Change	59,000	(22,000)	2,000	50,000	100,667
OTY %Change	10.6%	-16.7%	8.7%	3.9%	1.8%
Year LOW	494,000	89,000	21,000	1,117,667	4,962,667
Year HIGH	614,000	110,000	25,000	1,336,000	5,650,333

JOLTS Experimental State Estimates Separations - Quits

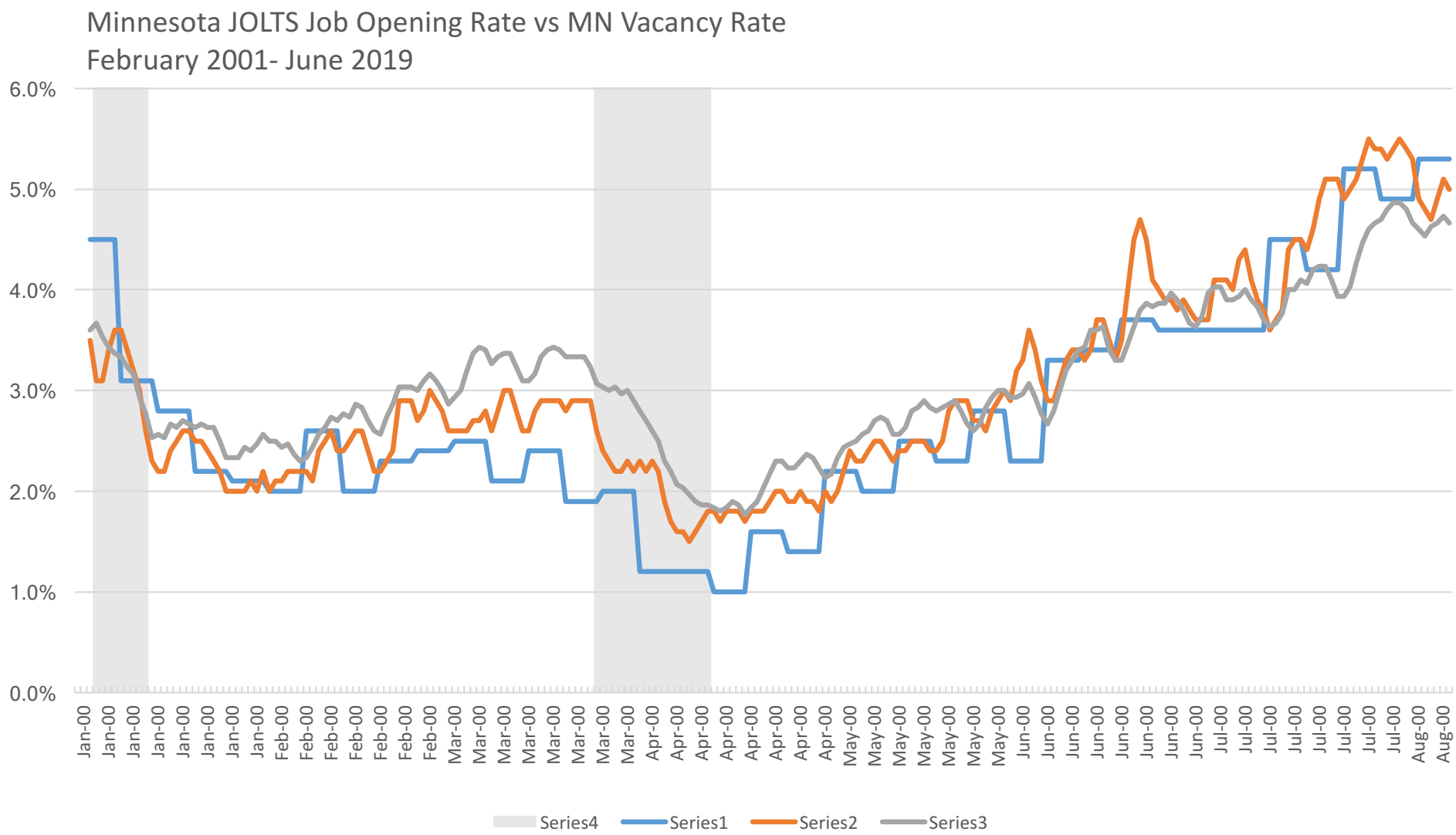
QUITS - Analysis: Jun. 2019					
MEASURE	IL	MO	OH	REGION	US
RATES					
Month	2.0%	2.5%	2.6%	2.4%	2.4%
Year LOW	1.9%	2.0%	2.1%	2.0%	2.0%
Year HIGH	2.0%	2.5%	2.6%	2.4%	2.4%
LEVELS					
Month	121,000	74,000	146,000	808,000	3,617,000
OTY Change	(1,000)	11,000	3,000	42,667	155,667
OTY %Change	-0.8%	17.5%	2.1%	5.6%	4.5%
Year LOW	115,000	58,000	119,000	666,333	3,068,000
Year HIGH	125,000	74,000	146,000	808,000	3,617,000
OTHER					
%Total Separations	64.0%	66.7%	68.2%	66.9%	64.0%

Separations
Quits/Total Separations



JOLTS Modelled Versus State Sample-based Estimate

JOLTS JOR vs MN VR



Methodology
Estimation Models

- Initial estimates -> Composite-Regional Model
  - Current/Monthly Estimates (Preliminary)
  - $J_{State} = \sum_{SS}\{\alpha D_{State} + (1-\alpha)\boldsymbol{M}^{\boldsymbol{R}}_{\boldsymbol{State}}\}$

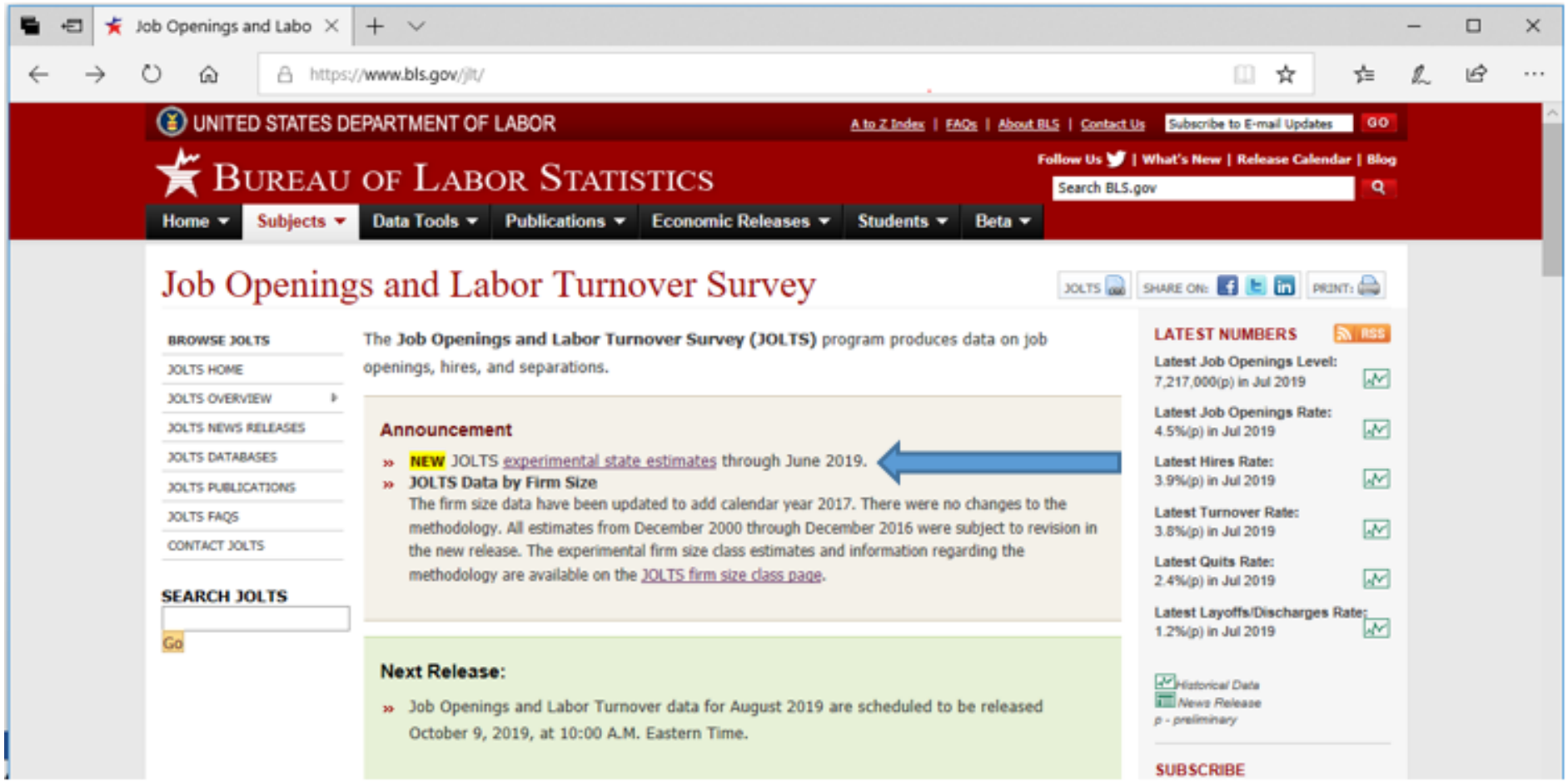
- Final estimates -> Composite-Synthetic Model
  - Benchmark Estimates (Annual Revisions)
  - $J_{State} = \sum_{SS}\{\alpha D_{State} + (1-\alpha)\boldsymbol{M}^{\boldsymbol{S}}_{\boldsymbol{State}}\}$

Methodology
Variable Definitions

- J is Openings, Hires, Separations, Quits, or L&D
- SS is industry supersector
- D is a State <u>sample-based</u> J (SS) estimate, if sufficient sample is available
- M is <u>model-based</u> (SS) estimate
  - M^R *is a Regional Model*
  - M^S *is a Synthetic Model*
- α is between 0 and 1 – variable by Super-Sector
  - More sample → higher weight (on data, less on model)
- D_{State} = data/sample based estimate at State/SS level
- M^R_{State}=regional model at State/SS level
- M^S_{State}=synthetic model at State/SS level

JOLTS State Experimental Estimates

September 25th Release



JOLTS State Estimates – Landing Page

Job Openings and Labor Turnover Survey

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JOLTS Experimental State Estimates

The Job Openings and Labor Turnover Survey (JOLTS) data are based on a national sample of approximately 16,000 establishments. These data are used by policymakers to better understand the current state of the U.S. economy, and by academics, industry experts, economists, and others to understand the dynamic activity of businesses in the economy that lead to aggregate employment changes. While the sample size is designed to support estimates for major industries at the national level and total nonfarm estimates at the regional level, the Bureau of Labor Statistics has been researching the possibility of leveraging the sample to produce model assisted estimates at the state total nonfarm level. These estimates are experimental. We encourage data users to review these estimates and provide input on both the technical aspects of the models and on the usability of the resulting data.

The experimental data are developed using two composite models. These models are designated as:

1. Composite Regional model: this model is used to produce the initial monthly state estimates.
2. Composite Synthetic model: this model is used to refine the state estimates as part of annual processing—by incorporating data from the Quarterly Census of Employment and Wages (QCEW) that were not available when the initial estimates were produced.

JOLTS Experimental State Estimates Table A contains both models as a 3-month moving average. The data are presented as a combination of Composite Regional (CompReg) and Composite Synthetic (CompSyn) estimates. More specifically, table A includes data from the CompSyn model from February 2001 to December 2018 with data from the CompReg model from January 2019 to June 2019. Please note the CompSyn modeled data will be updated with a full year of data annually going forward following the release of 12 months of CompReg data.

In this release of JOLTS Experimental State Estimates, we modified data inputs to use the JOLTS published regional aligned data rather than unaligned data. Aligned data have been adjusted to be more consistent with the employment change published by the Current Employment Statistics survey. This adjustment is consistent with estimating procedures for producing the current official national JOLTS estimates. When comparing the estimates released on May 24th to this release of JOLTS Experimental State Estimates, a level shift in the estimates may be observed in states with relatively small employment; however, the trend will still be consistent.

BLS plans to update these data on a quarterly basis while assessing data user input on the models and on the utility of these data. We encourage data users to provide input on these data at joltsinfo@bls.gov.

Models

Both models take the following form:

$J=w_1(D)+w_2(M)$

Where

- J is a JOLTS data element: job openings; hires; total separations; quits; layoffs and discharges
- w_1 is a weight between 0 and 1 and $w_2=1-w_1$
- D is a data-based estimate, as long as there are 5 or more sample units
- M is a modeled estimate, either using a regional approach or a synthetic approach (both are described below)
- Notes:
  - Estimates of J are developed at the North American Industry Classification System (NAICS) supersector level.
  - Once the NAICS supersector estimates are developed for the region, using either model, the sum of the estimated state levels for the region are ratio adjusted to the regional level of the JOLTS data element.
  - Within each state, the ratio adjusted values of J are then aggregated across NAICS supersectors to the total nonfarm level.

Composite Regional Model

$J=w_1(D)+w_2(M^R)$

Where

- M^R=regional_rate×state_employment. That is, the regional rate is multiplied by the state employment to get the state level of the JOLTS data item.

Composite Synthetic Model

$J=w_1(D)+w_2(M^S)$

Where

- M^S=a synthetic model that distributes hires to all businesses that increase employment, and separations to all businesses that lose employment, such that the hires and separations equal regional totals. All other JOLTS data elements are then modeled relative to these data elements:
  - Synthetic job openings are a function of the ratio of industry-regional job openings and hires. This ratio of published job openings to hires is applied to model hires estimates to derive model job opening estimates. Ratio-adjusting the JOLTS model hires and separations to the regional published JOLTS hires and separations estimates ensures that the JOLTS published churn rate is fully accounted for.
  - Synthetic quits and layoffs and discharges are a function of the relative percentage of the individual components of total separations at the industry-regional level. The relative percentages of each component is applied to the model separations estimates to derive model quits and layoffs and discharges.

A more complete description of both models can be found on the JOLTS Experimental State Estimates Methodology page. Some common questions and answers can be found on our Frequently Asked Questions page.

Archived release:

- Published May 24, 2019: Historical tables February 2001–December 2018

Last Modified Date: September 25, 2019

JOLTS State Experimental Estimates

TOTAL NONFARM, February 2001-June 2019
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200102	Maine	NE	24	19	12	11	26	3.9	3.2	2.1	1.9	4.3
200102	Maryland	S	96	80	52	40	99	3.8	3.2	2.1	1.6	4.0
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200102	Minnesota	MW	97	97	59	47	112	3.5	3.6	2.2	1.8	4.2
200102	Mississippi	S	44	43	26	20	50	3.7	3.7	2.2	1.7	4.3
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200102	Nevada	W	39	48	24	23	50	3.6	4.6	2.3	2.2	4.8

State_Estimates

JOLTS Experimental State Estimates

On-going Release Plans

- Quarterly Releases Planned for next 1-2 years
  - Release dates will be approximately in the following months;
    - December, March, June, September
    - June release possibly delayed to July, depending on availability of benchmark inputs.
  - We encourage data users to provide input on these data at joltsinfo@bls.gov.
- Revisions to be made during experimental period.
  - Input from users to be incorporated as needed

Thank You

Contact Information

Larry Akinyooye

Economist

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202 -691-7263

akinyooye.larry@bls.gov