

Application of the Statistical Adjustment Model in the VR Program: Measurable Skill Gains Indicator

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Presentation Outline

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- Using RSA-911 Data
- Performance Accountability Indicators
- Statistical Adjustment Model (SAM)
- Establishing Levels of Performance: Process
- Application of Statistical Adjustment Model for Performance Indicator: Measurable Skill Gains
- SAM Preliminary Results
- Summary Results and Next Steps
- Audience Q&A

Using RSA-911 Data

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RSA-911 data: Five Major Purposes

Using RSA-911 Data: Five Major Purposes

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- Program Management
- WIOA data collection and reporting
- Identify TA needs and guide TA efforts
- Provision for reporting on students receiving Pre-Employment Transition Services who may not be VR applicants or participants
- Transparency in performance and accountability

Performance Accountability Indicators

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What are the common performance measures?

WIOA Performance Measures

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- **Employment Rate 2nd Quarter after Exit**
- **Employment Rate 4th Quarter after Exit**
- **Median Earnings in the 2nd Quarter after Exit**
- **Credential Attainment Rate**
- **Measurable Skill Gains**
- **Effectiveness in Serving Employers**

Statistical Adjustment Model (SAM)

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- Why is the SAM needed?
- What is the SAM methodology?
- How and When will RSA and State VR agencies use the SAM?

Why SAM is needed?

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- Section 116(b)(3)(A)(v) of the WIOA requires the Secretary of Labor and the Secretary of Education (Secretaries) to reach agreement with States on negotiated levels of performance.
- The negotiation process must be based on the factors set forth in section 116(b)(3)(A)(v) of WIOA.
- WIOA requires the Secretaries to develop and disseminate “an objective statistical model” that adjusts State performance levels for economic conditions and the characteristics of participants per Sec.116 (b)(3)(A)(viii) of WIOA, and to take certain specified actions to determine expected levels of performance for State agencies with respect to the legislatively mandated performance measures.

Why SAM is needed?

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- WIOA requires the use of a SAM as part of the negotiations process of performance levels for the WIOA core programs, prior to the start of the program year.
- The SAM is used to adjust negotiated levels of performance after the program year's end, using States' results from the program year and updating economic conditions.
- Performance success or failure will be determined by comparing a State's actual results to the adjusted levels of performance.

Why SAM is needed?

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- Failure by a State for two consecutive years on either the average State score on all WIOA performance indicators and/or the State's performance across core programs on any one indicator, will result in a financial sanction.
- The financial sanction is to be taken from the State's title I Governor's reserve.
- The regulations provide that until at least two years of complete WIOA State data are available for all of the primary indicators of performance, the Departments will assess the State's performance on the overall program scores and the overall indicator scores based on the indicators with at least two years of data available.

What Methodology is used for SAM?

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- A fixed-effect regression model will be used to estimate how much each factor influences the performance outcomes.
- A fixed-effect model is a statistical model in which the model parameters are fixed or non-random quantities.

What Methodology is used for SAM?

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- The assumption of fixed-effect model is that there are no changes in service quality over time (time-invariance) with each State that is not controlled for.
- The regulations require at least two years of data to perform the analyses.

What Methodology is used for SAM?

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Identify a set of variables measuring:

1. The characteristics of participants

- Demographic information: such as age, gender, ethnicity, veteran status, disability type; and
- WIOA required variables related to barriers to employment:
 - ✓ *Indicators of poor work history/Lack of work experience*
 - ✓ *Lack of educational or occupational skills attainment*
 - ✓ *Dislocation from high-wage and high-benefit employment*
 - ✓ *Low levels of literacy or English proficiency*
 - ✓ *Homelessness*
 - ✓ *Ex-offender status*
 - ✓ *Welfare dependency*

2. Conditions of the labor market

- State quarterly unemployment rate (obtained from BLS)
- State industrial information (job losses or gains industries) (obtained from BLS)

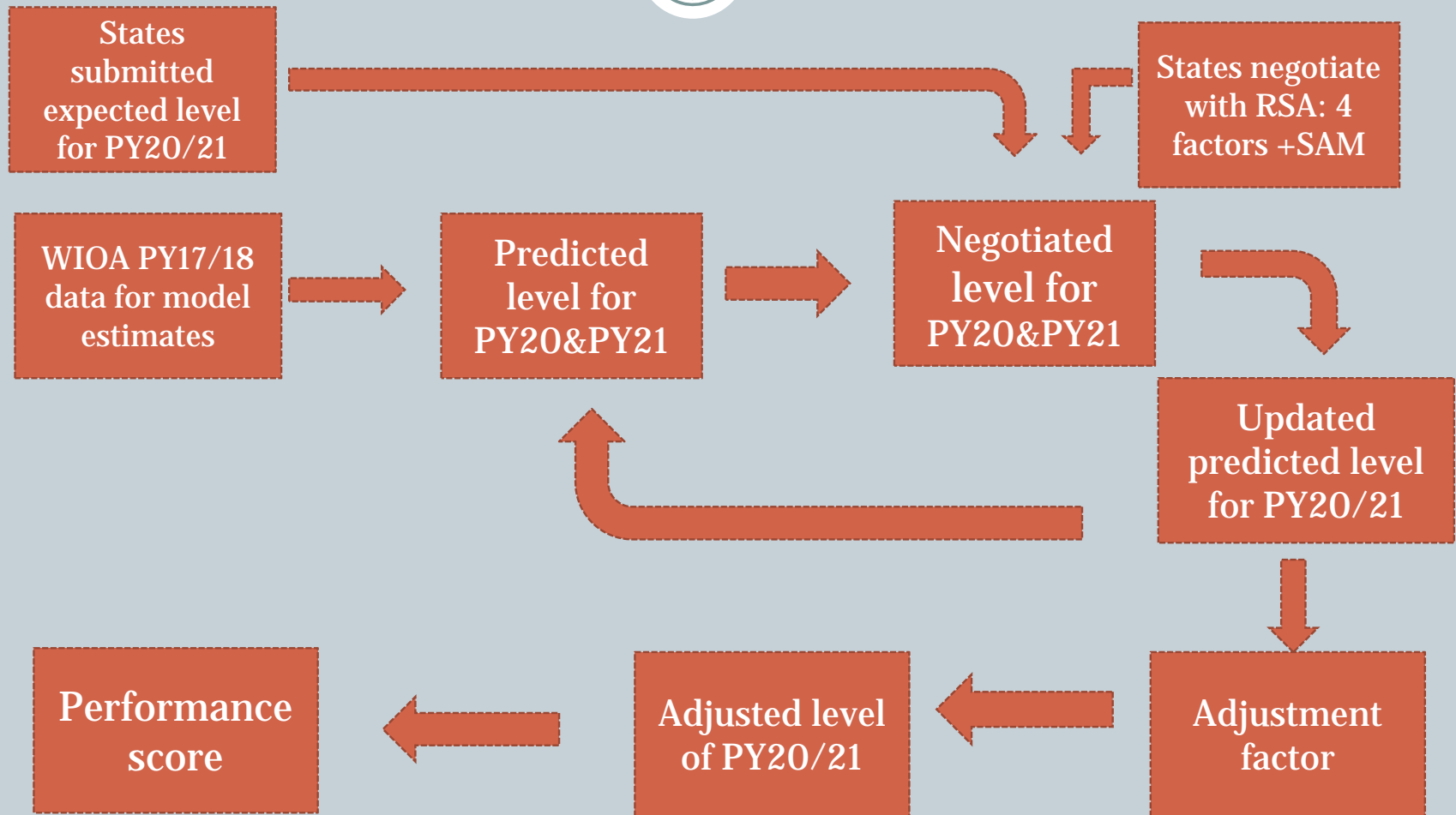
How and When will the SAM be applied?

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- The regression targets represent an estimate of the outcomes that should be attained given:
 - The characteristics of the individuals being served
 - The conditions of the labor market
 - Constant service quality
- The SAM is one factor used in the negotiation process.

Establishing Levels of Performance: Process

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VR Program: Data Availability

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Program Years 2020 and 2021

- **MSG**
 - Program Year Data Available: PYs 2017 and 2018
 - When States submit Plans in March/April 2020, RSA will also have PY 2019 Q1 and Q2 reports.
 - RSA may establish a level of performance with VR programs for MSG.

Program Years 2022 and 2023

- **MSG, Credential Attainment, Median Earning 2nd Quarter after Exit, and Employment 2nd and 4th Quarters after Exit**
 - Program Year Data Available: PYs 2017, 2018, 2019, 2020
 - When States submit Plans in March/April 2022, RSA will also have PY 2021 Q1 and Q2 reports.

Application of SAM for Measurable Skill Gains (MSG)

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Program Year 2017

Current Data used for SAM Analysis

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- PY 2017
- 77 agencies: 23 general, 23 blind, 32 combined agencies.
- Combined States with two separate agencies data into one State data
- Used quarterly data (PY17Q1, PY17Q2, PY17Q3, and PY17Q4)
- Only participant data is used (must have IPE and receive VR services)
- Computed percentage by the characteristics of participants in each quarter
- The provisions of the SAM under WIOA apply to each of the 50 States, the District of Columbia, and Puerto Rico.
- SAM does not apply to: American Samoa, Guam, CNMI, the Virgin Islands.
- 208 total records used in preliminary SAM development

Explanatory Variables on Participants' Characteristics from RSA-911

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Identify a set of variables measuring:

The characteristics of participants:

- Demographic information: Age, Gender, Ethnicity, Veteran Status
- Others VR variables:
 - Education level at application
 - Employment status at application
 - Disability types
 - Significant disability
 - Employment barriers
 - Welfare dependency (e.g., receiving any public support at app.)
 - Receiving any career, training, and other services

Explanatory Variables on Participants' Characteristics from RSA-911

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Gender (DE9)
Male (code 1)
Female (code 2)
Age (DE127-DE8)
Less than 16
Age 16 to 18
Age 19 to 24
Age 25-44
Age 45 to 54
Age 55 to 59
Age 60+
Race (DE10-15)
Race: American Indian or Native Alaskan (DE10, code 1)
Race: Asian (DE11, code 1)
Race: Black (DE12, code 1)
Race: Hawaiian/Pacific Islander (DE13, code 1)
Race: White (DE14, code 1)
Ethnicity-Hispanic Ethnicity (DE15, code 1)
Race: More than one (DE10-15, code 1)
Veteran (DE16)
Yes (code 1)
No (code 0)

Received public support at application (DE 23-29)
Any one of seven public supports (DE23-29, code 1)
<ul style="list-style-type: none"> • SSDI • SSI • TANF • General assistance (State or local government) • Veterans' disability benefits • Workers' compensation • Unemployment compensation
Disability type (DE43)
Visual (codes: 1, 2, and 8)
Auditory and communicative (codes: 3,4,5,6,7, and 9)
Physical (codes: 10,11,12,13,14,15 and 16)
Intellectual and learning disability (code:17)
Psychosocial and psychological (codes: 18 and 19)
Significance of disability (DE45)
Individual has a significant disability (code 1)
Individual is most significantly disabled (code 2)
Individual has no significant disability (code 0)
Employed at IPE (DE50)
Yes (codes: 1 to 6)
No (codes:7 to 10)

Explanatory Variables on Participants' Characteristics from RSA-911

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Employment barriers (DE62-73)

Long-term unemployed (DE62, code 1)

TANF recipient (DE63, code 1)

Foster care youth (DE64, code 1)

Homeless individual, runaway youth (DE65, code 1)

Ex-offender (DE66, code 1)

Low-income (DE67, code 1)

Limited English-language proficiency (English language learner (DE68, code 1), Basic skills deficient/low levels of literacy (DE69, code 1), Cultural barriers (DE70, code 1)

Single parent (DE71, code 1)

Displaced homemaker (DE72, code 1)

Migrant and seasonal farmworker (DE73, code 1)

Highest educational level completed at IPE (DE76)

No educational level was completed (code 9)

High school diploma or equivalency (codes: 1 and 2)

Special education certificate/completion no HS diploma (code 3)

Postsecondary education no degree/ or certificate (codes 4 and 5)

Associate's degree (code 6)

Bachelor's degree (code 7)

Beyond a bachelor's degree (code 8)

Explanatory Variables on Participants' Characteristics from RSA-911

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Training Services

Received training services (any of the following 13 services)

- **Work-based learning experience (DE103-108)**
- **Graduate college or university training (DE129-135)**
- **Four-year college or university training (DE136-142)**
- **Junior or community college training (DE143-149)**
- **Occupational or Vocational training (DE150-156)**
- **On the job training (DE157-163)**
- **Registered Apprenticeship training (DE164-169)**
- **Basic academic remedial or literacy training (DE170-176)**
- **Job readiness training (DE177-183)**
- **Disability-related skills training (DE184-190)**
- **Miscellaneous training (DE191-197)**
- **Randolph-Sheppard entrepreneurial training (DE198-204)**
- **Customized training (DE205-211)**

Career Services

Received career services (any of the following 15 services)

- **Job exploration counseling (DE97-102)**
- **Counseling on enrollment opportunities (DE109-114)**
- **Workplace readiness training (DE115-120)**
- **Instruction in self advocacy (DE121-126)**
- **Assessment (DE212-218)**
- **Diagnosis and treatment of impairment (DE219-225)**
- **Vocational rehab. counseling and guidance (DE226-232)**
- **Job search assistance (DE233-239)**
- **Job placement assistance (DE240-246)**
- **Short-term job supports (DE 247-253)**
- **Supported employment services (DE254-260)**
- **Information and referral services (DE261-267)**
- **Benefits counseling (DE268-274)**
- **Customized employment services (DE275-281)**
- **Extended services (DE282-286)**

Explanatory Variables on Participants Characteristics from RSA-911

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Other Services

Received other services (any of the following 8 services)

- **Transportation (DE287-292)**
- **Maintenance (DE294-299)**
- **Rehabilitation technology (DE301-306)**
- **Personal assistance services (DE308-313)**
- **Technical assistance services including self-employment (DE315-320)**
- **Reader services (DE322-327)**
- **Interpreter services (DE329-334)**
- **Other services (DE336-341)**

Explanatory Variables on Economic Conditions from BLS

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Conditions of the labor market include:

- Unemployment (unseasonably adjusted) rate by quarter
- Job losses or gains in particular industries:
 - Natural Resources and Mining
 - Construction
 - Manufacturing
 - Trade, Transportation, and Utilities
 - Information
 - Financial Activities
 - Professional and Business Services
 - Education and Health Services
 - Leisure and Hospitality
 - Other Services
 - Public Administration
 - Unclassified

Explanatory Variables on Economic (Labor Market) Conditions from BLS

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Economic Variables based on BLS Super-Sectors and Unemployment Rate	Definition
Natural Resources and Mining	Percentage of total employment in Sector 11-Agriculture, Forestry, and Hunting and Sector 21-Mining
Construction	Percentage of total employment in Sector 23-Construction
Manufacturing	Percentage of total employment in Sector 31-33-Manufacturing
Trade, Transportation and Utilities	Percentage of total employment in Sector 42-Wholesale Trade, Sectors 44, 45-Retail Trade, Sectors 48, -Transportation and Warehousing, or Sector 22-Utilities
Information	Percentage of total employment in Sector 51-Information
Financial Activities	Percentage of total employment in Sector 52-Finance and Insurance and Sector 53-Real Estate and Rental and Leasing
Professional and Business Services	Percentage of total employment in Sector 54-Professional, Scientific, and Technical Services, Sector 55-Management of Companies and Enterprises, and Sector 56-Administrative and Waste Services
Education and Health Services	Percentage of total employment in Sector 61-Educational Services and Sector 62-Health Care and Social Assistance
Leisure and Hospitality	Percentage of total employment in Sector 71-Arts, Entertainment, and Recreation and Sector 71-Accommodations and Food Services
Other Services	Percentage of total employment in Sector 81-Other Services
Public Administration	Percentage of total employment in Sector 92-Public Administration
Unclassified	Percentage of Unclassified
Unemployment Rate	Not seasonally adjusted quarterly unemployment rate

Sources: Unemployment rate: <http://www.bls.gov/lau>; Employment: <http://www.bls.gov/cew/datatoc.htm>;
Seasonal adjustment: <http://www.bls.gov/cps/seasfaq.htm>.

Methods

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Fixed-effect model (state fixed effect):

$$y_{stq} = \sum_1^x \beta_x X_{xstq} + \alpha_s + \varepsilon_{stq}$$

y_{stq} = MSG percent in state s year t quarter q

X_{xstq} = a set of individuals with disability characteristics variables from 1 to X and unemployment rate and industry data in state s year t quarter q

α_s = state fixed effect

ε_{stq} = error term

SAM Preliminary Results

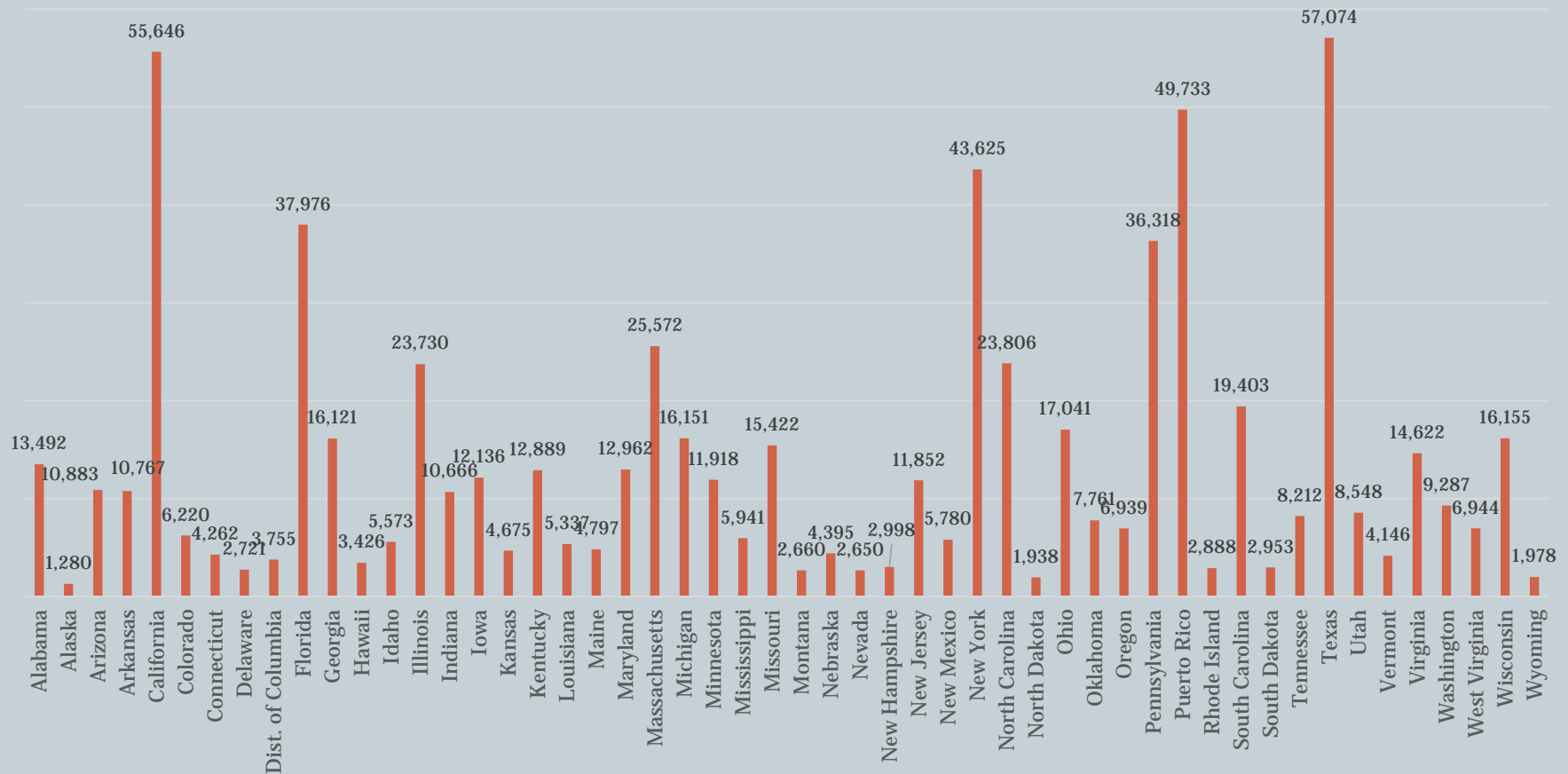
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Analyses Results

SAM Preliminary Results

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Figure 1. Average Number of Participants by State in PY 2017



SAM Preliminary Results

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Table 1. Summary of Descriptive Statistics of Variables Used

Variable Name	Minimum	Maximum	Mean	SD
Percent of MSG	0.00%	77.50%	14.21%	14.73%
Percent of Male	43.62%	60.58%	54.67%	2.62%
Percent of Female	39.42%	56.37%	45.24%	2.61%
Percent of Age under 16	0.00%	7.54%	1.47%	1.69%
Percent of Age between 16 to 18	6.92%	60.55%	26.21%	11.21%
Percent of Age between 19 to 24	12.42%	52.32%	19.88%	4.69%
Percent of Age between 25 to 44	10.94%	39.83%	26.81%	5.79%
Percent of Age between 45 to 54	3.68%	22.35%	13.99%	3.35%
Percent of Age between 54 to 59	1.11%	10.12%	6.13%	1.73%
Percent of Age 60 and Over	0.66%	17.94%	5.50%	2.62%
Percent of American Indian Non-Hispanic	0.01%	23.28%	2.91%	4.20%
Percent of Asian Non-Hispanic	0.02%	45.27%	2.60%	6.07%
Percent of Black Non-Hispanic	0.09%	88.92%	20.09%	17.58%
Percent of White Non-Hispanic	0.47%	95.03%	65.08%	20.57%
Percent of Native Hawaiian Non-Hispanic	0.02%	34.68%	1.09%	4.66%
Percent of More Than One Race	0.00%	23.93%	2.75%	3.54%
Percent of Hispanic	0.00%	99.43%	10.82%	15.83%
Percent of No Public Support	41.90%	93.69%	62.14%	9.74%
Percent of Received Public Support	6.31%	57.68%	37.18%	9.72%
Percent of Veteran	0.00%	8.81%	2.70%	1.29%
Percent of No Veteran	91.19%	100.00%	97.30%	1.29%

SAM Preliminary Results

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Table 1. Summary of Descriptive Statistics of Variables Used (cont.)

Variable Name	Minimum	Maximum	Mean	SD
Percent of Blind/Visually Impaired Disability	2.02%	17.43%	6.60%	2.90%
Percent of Communicative Disability	2.80%	26.44%	8.40%	4.00%
Percent of Physical Disability	11.17%	38.99%	19.24%	5.19%
Percent of Cognitive Disability	13.44%	56.17%	33.93%	7.49%
Percent of Psychosocial Disability	17.56%	47.47%	31.53%	6.59%
Percent No Significant Disability	0.00%	32.62%	4.56%	6.75%
Percent of Significant Disability	0.12%	86.67%	35.85%	18.57%
Percent of Most Significant Disability	10.47%	99.79%	59.59%	20.38%
Percent of Employed at Application	0.59%	46.39%	13.91%	7.85%
Percent of Long-term Unemployed	3.09%	73.47%	39.55%	17.21%
Percent of Exhausting TANF within two years	0.00%	98.67%	2.95%	13.46%
Percent of Foster Care Youth	0.14%	100.00%	3.97%	11.76%
Percent of Ex-Offender	0.04%	49.23%	9.08%	8.71%
Percent of Low Income	3.08%	100.00%	49.29%	17.45%
Percent of Limited English	4.22%	100.00%	30.45%	16.63%
Percent of Single-Parent	0.00%	47.59%	6.43%	6.22%
Percent of Displaced Homemaker	0.07%	100.00%	3.58%	13.43%
Percent of Migrant and Seasonal Farmworker	0.00%	44.19%	0.90%	4.38%
Percent of Homeless or Runaway Youth	0.05%	100.00%	5.52%	16.97%
Percent of Received Training Services	5.50%	75.91%	23.85%	14.28%
Percent of Received Career Services	1.18%	100.00%	67.46%	26.15%
Percent of Received Other Services	5.27%	74.61%	25.73%	15.50%

SAM Preliminary Results

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Table 1. Summary of Descriptive Statistics of Variables Used (cont.)

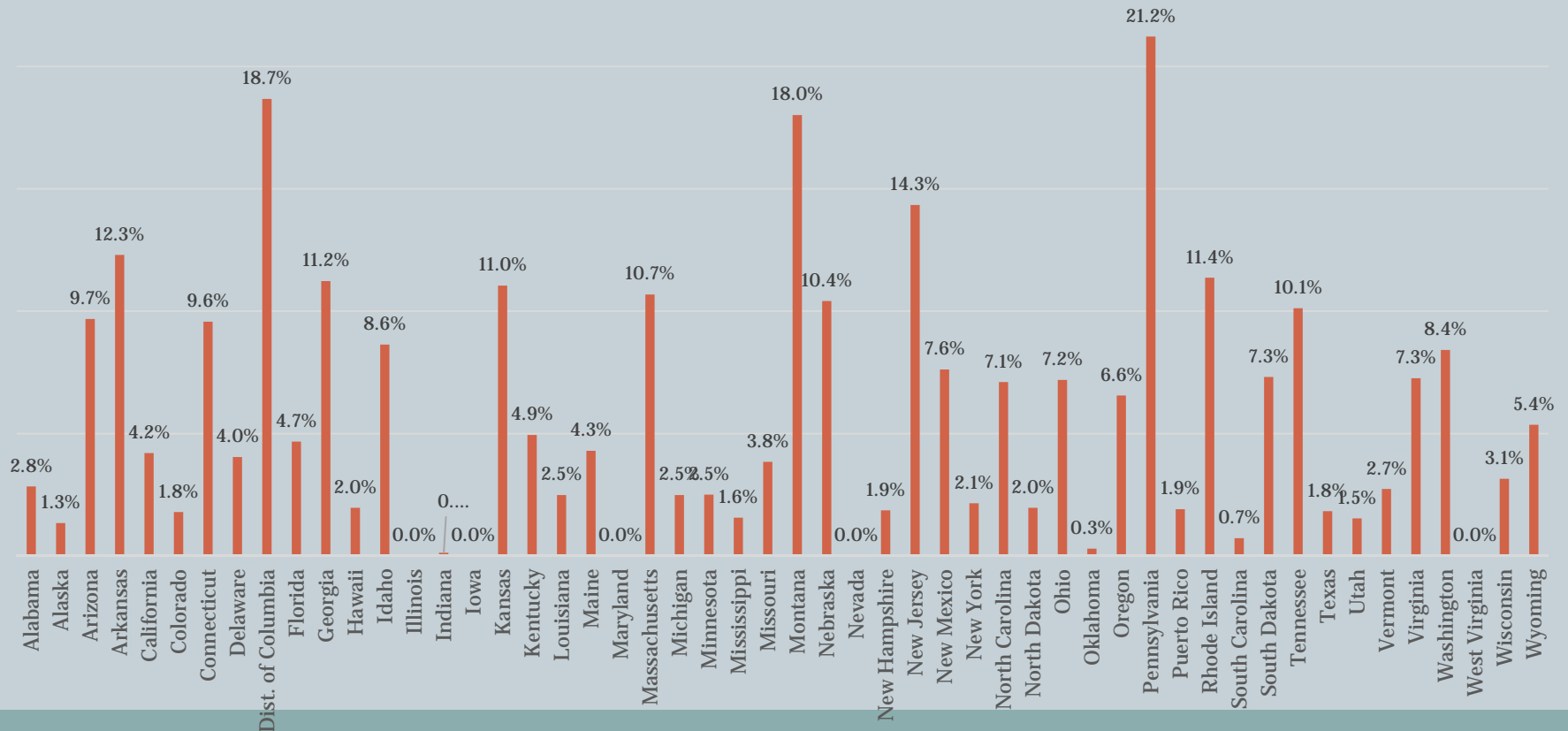
Variable Name	Minimum	Maximum	Mean	SD
Percent of NO Education	0.41%	68.08%	30.40%	15.03%
Percent of High School Diploma or Equivalency	0.00%	78.40%	38.63%	12.41%
Percent of Special Edu Certificate No HS Diploma	0.00%	30.42%	4.24%	4.90%
Percent of Postsecondary Education No Degree	1.02%	49.38%	12.95%	6.70%
Percent of Associate's Degree	0.00%	11.42%	3.62%	1.81%
Percent of Bachelor's Degree	0.00%	11.95%	4.96%	2.17%
Percent of Beyond Bachelor's Degree	0.00%	4.91%	1.71%	0.94%
Percent of Natural Resources and Mining	0.00%	8.74%	1.60%	1.60%
Percent of Construction	0.01%	8.22%	4.99%	1.21%
Percent of Manufacturing	0.01%	17.94%	8.65%	3.76%
Percent of Trade, Transportation and Unities	5.37%	23.01%	19.72%	2.41%
Percent of Information	0.94%	4.04%	1.77%	0.60%
Percent of Financial Activities	3.49%	11.70%	5.44%	1.35%
Percent of Professional and Business Services	6.72%	22.73%	13.25%	2.83%
Percent of Education and Health Services	16.01%	30.59%	23.66%	2.70%
Percent of Leisure and Hospitality	8.48%	26.57%	11.71%	2.68%
Percent of Other Services	0.00%	9.64%	3.06%	1.09%
Percent of Public Administration	3.13%	25.65%	6.05%	3.41%
Percent of Unclassified	0.00%	0.81%	0.08%	0.15%
Quarterly Unemployment Rate	1.98%	11.06%	4.11%	1.30%

SAM Preliminary Results

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Figure 2. MSG Rate Outcome Measure by State

PY17Q1 MSG Rate

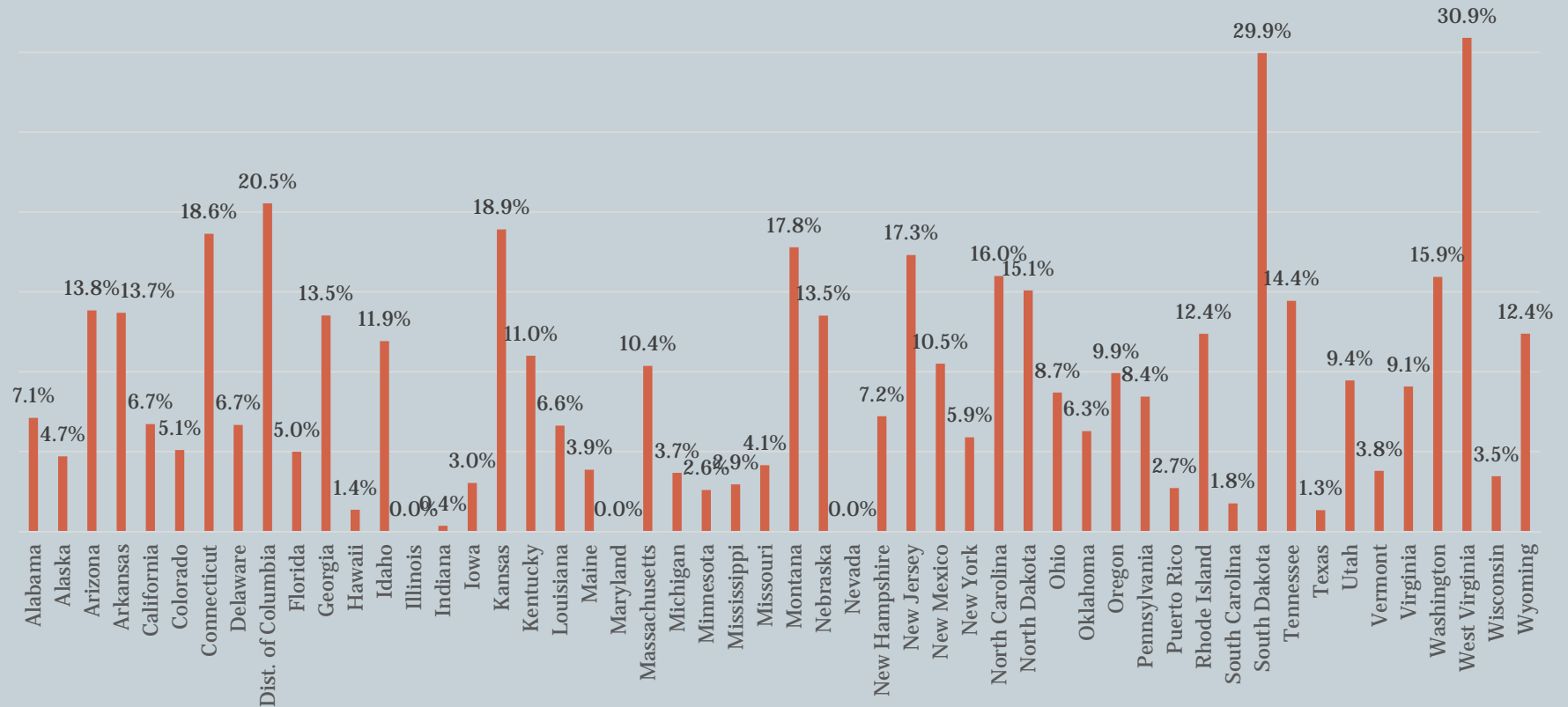


SAM Preliminary Results

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Figure 2. MSG Rate Outcome Measure by State (cont.)

PY17Q2 MSG Rate

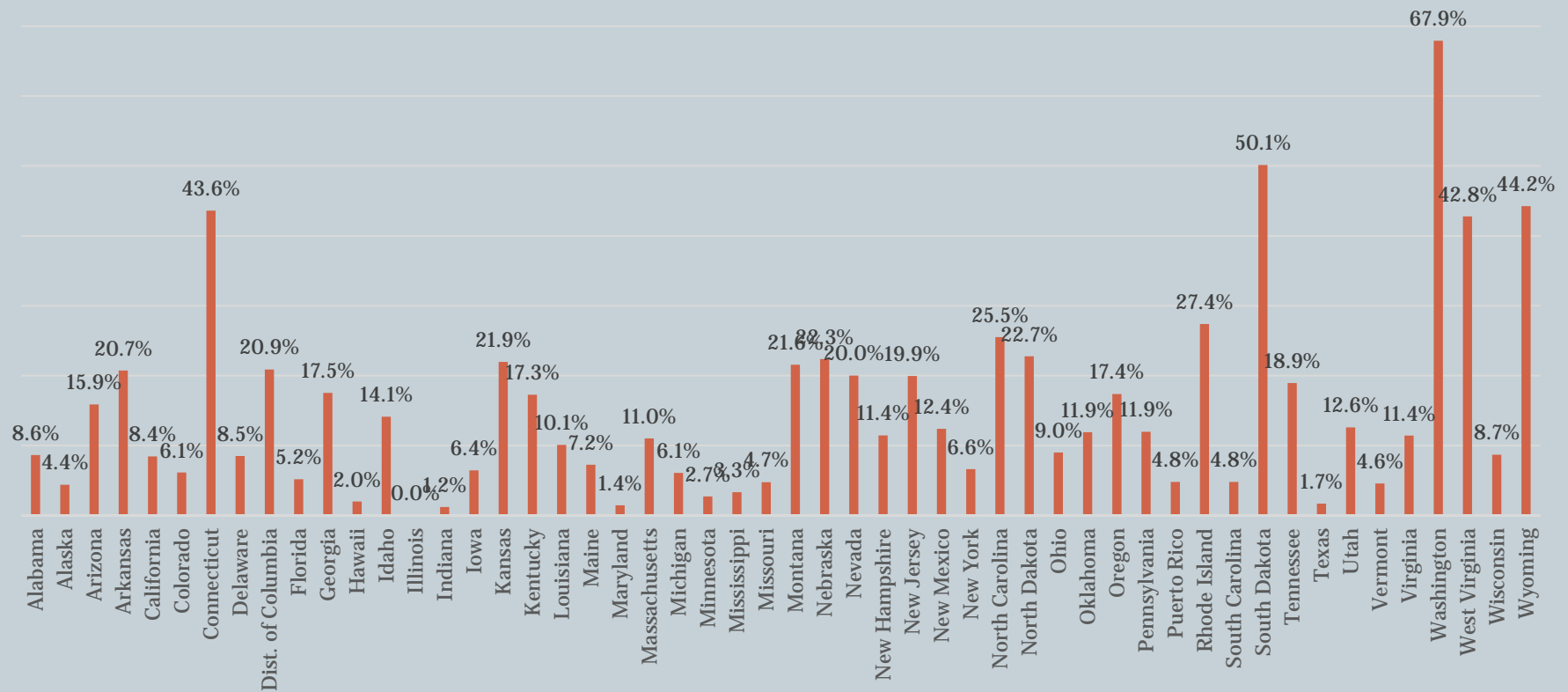


SAM Preliminary Results

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Figure 2. MSG Rate Outcome Measure by State (cont.)

PY17Q3 MSG Rate

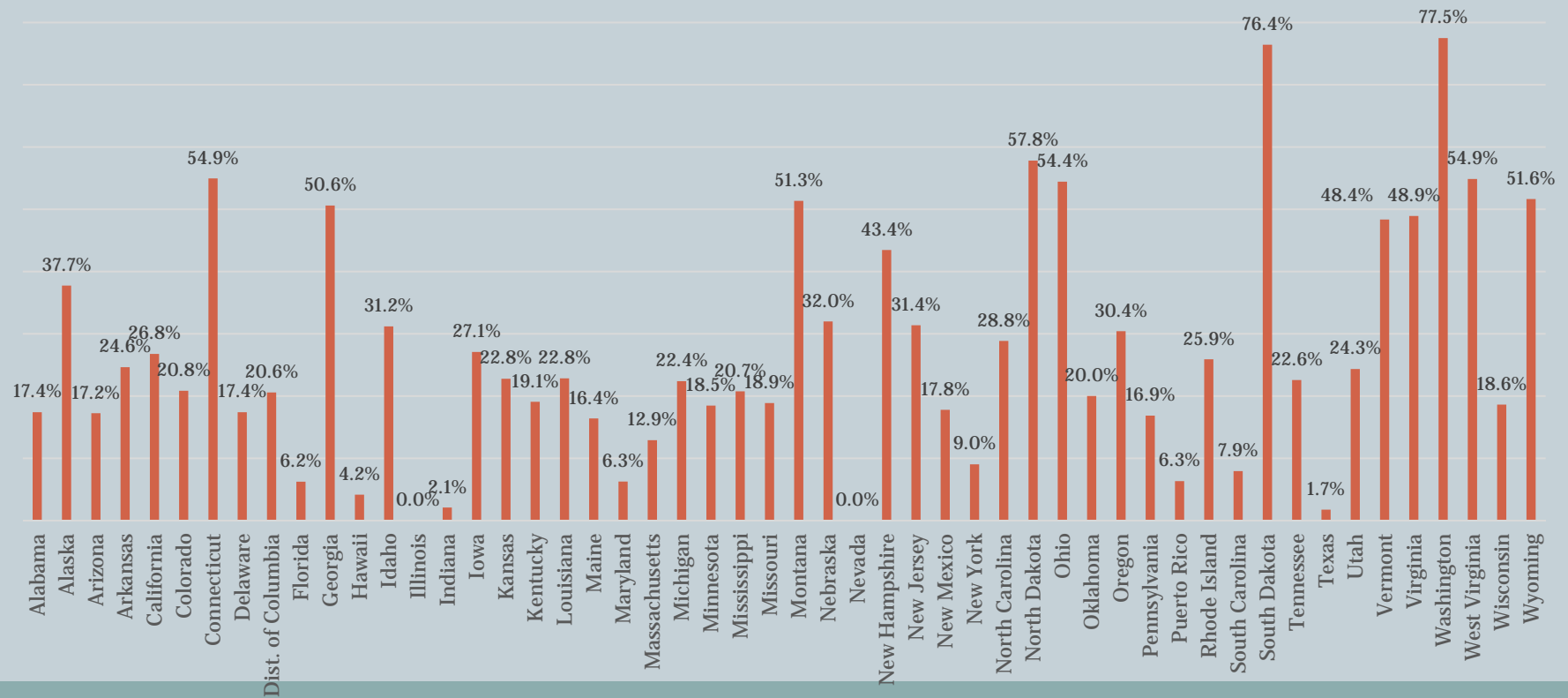


SAM Preliminary Results

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Figure 2. MSG Rate Outcome Measure by State (cont.)

PY17Q4 MSG Rate



SAM Preliminary Results

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Table 2. Correlation between MSG Outcome Measure and Explanatory Variables

Outcome Measure Variable	MSG	
Explanatory Variables	Pearson Correlation	Sig. (2-tailed)
Percent of Male	-0.134	0.053
Percent of Female	0.125	0.071
Percent of Age under 16	-0.003	0.962
Percent of Age between 16 to 18	-0.046	0.509
Percent of Age between 19 to 24	-0.012	0.866
Percent of Age between 25 to 44	0.073	0.293
Percent of Age between 45 to 54	0.014	0.840
Percent of Age between 54 to 59	0.058	0.408
Percent of Age 60 and Over	0.004	0.951
Percent of American Indian Non-Hispanic	.170*	0.014
Percent of Asian Non-Hispanic	-0.105	0.129
Percent of Black Non-Hispanic	-0.096	0.167
Percent of White Non-Hispanic	.195**	0.005
Percent of Native Hawaiian Non-Hispanic	-0.092	0.187
Percent of More Than One Race	0.027	0.702
Percent of Hispanic	-0.131	0.059
Percent of No Public Support	-0.053	0.450
Percent of Received Public Support	0.077	0.270
Percent of Veteran	0.009	0.896
Percent of No Veteran	-0.009	0.896

SAM Preliminary Results

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Table 2. Correlation between MSG Outcome Measure and Explanatory Variables (cont.)

Outcome Measure Variable	MSG	
Exploratory Variables	Pearson Correlation	Sig. (2-tailed)
Percent of Blind/Visually Impaired Disability	0.132	0.057
Percent of Communicative Disability	-0.119	0.087
Percent of Physical Disability	0.030	0.669
Percent of Cognitive Disability	-0.023	0.740
Percent of Psychosocial Disability	0.016	0.820
Percent of No Significant Disability	-0.040	0.565
Percent of Significant Disability	-0.082	0.237
Percent of Most Significant Disability	0.088	0.205
Percent of Employed at Application	0.043	0.537
Percent of Long-term Unemployed	-0.018	0.797
Percent of Exhausting TANF within two years	-0.113	0.104
Percent of Foster Care Youth	0.036	0.607
Percent of Ex-Offender	-0.020	0.770
Percent of Low Income	-0.017	0.813
Percent of Limited English	-0.037	0.591
Percent of Single-Parent	-0.023	0.738
Percent of Displaced Homemaker	0.031	0.661
Percent of Migrant and Seasonal Farmworker	.334**	0.000
Percent of Homeless or Runaway Youth	0.000	0.996
Percent of Received Training Services	-0.091	0.191
Percent of Received Career Services	0.085	0.223
Percent of Received Other Services	-.162*	0.019

SAM Preliminary Results

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Table 2. Correlation between MSG Outcome Measure and Explanatory Variables (cont.)

Outcome Measure Variable	MSG	
	Pearson Correlation	Sig. (2-tailed)
Exploratory Variables		
Percent of NO Education	-0.060	0.391
Percent of High School Diploma or Equivalency	0.045	0.514
Percent of Special Edu Certificate No HS Diploma	-0.120	0.085
Percent of Postsecondary Education No Degree	.153*	0.027
Percent of Associate's Degree	0.080	0.252
Percent of Bachelor's Degree	0.122	0.080
Percent of Beyond Bachelor's Degree	0.027	0.695
Percent of Natural Resources and Mining	.200**	0.004
Percent of Construction	0.032	0.641
Percent of Manufacturing	-0.058	0.407
Percent of Trade, Transportation and Unities	-0.046	0.507
Percent of Information	.137*	0.048
Percent of Financial Activities	-0.045	0.521
Percent of Professional and Business Services	-.174*	0.012
Percent of Education and Health Services	.195**	0.005
Percent of Leisure and Hospitality	-0.113	0.104
Percent of Other Services	0.075	0.282
Percent of Public Administration	0.039	0.577
Percent of Unclassified	0.011	0.880
Quarterly Unemployment Rate	-0.040	0.565

SAM Preliminary Results

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Table 3. Parameter Estimates from State Fixed Effect Regression Model

Variables	B	Std. Error	t	Sig.
Percent of Female	1.492	2.518	0.593	0.555
Percent of Age between 16 to 18	-10.347	2.961	-3.494	0.001
Percent of Age between 19 to 24	-10.972	2.829	-3.878	0.000
Percent of Age between 25 to 44	-14.409	3.557	-4.050	0.000
Percent of Age between 45 to 54	-18.911	4.770	-3.964	0.000
Percent of Age between 54 to 59	-1.892	5.788	-0.327	0.744
Percent of Age 60 and Over	-11.089	6.439	-1.722	0.088
Percent of Asian Non-Hispanic	8.532	9.926	0.860	0.392
Percent of Black Non-Hispanic	1.277	2.342	0.545	0.587
Percent of White Non-Hispanic	0.036	1.895	0.019	0.985
Percent of Native Hawaiian Non-Hispanic	18.341	12.712	1.443	0.152
Percent of More Than One Race	0.154	0.515	0.299	0.766
Percent of Hispanic	0.103	0.378	0.273	0.785
Percent of Received Public Support	-0.392	1.260	-0.311	0.756
Percent of Veteran-Yes	8.835	6.571	1.344	0.182
Percent of Communicative Disability	5.432	2.703	2.009	0.047
Percent of Physical Disability	-1.837	2.612	-0.703	0.483
Percent of Cognitive Disability	-4.466	1.787	-2.500	0.014
Percent of Psychosocial Disability	6.580	1.727	3.809	0.000
Percent of Significant Disability	-0.084	1.591	-0.053	0.958
Percent of Most Significant Disability	2.330	1.238	1.882	0.063
Percent of Employed at Application	-0.301	1.055	-0.285	0.776

SAM Preliminary Results

Table 3. Parameter Estimates from State Fixed Effect Regression Model (cont.)

Variables	B	Std. Error	t	Sig.
Percent of Long-term Unemployed	-0.053	0.514	-0.104	0.918
Percent of Exhausting TANF within two years	0.691	4.124	0.168	0.867
Percent of Foster Care Youth	-0.698	0.316	-2.212	0.029
Percent of Ex-Offender	-2.258	1.767	-1.278	0.204
Percent of Low Income	0.069	0.506	0.137	0.891
Percent of Limited English	0.938	0.546	1.718	0.089
Percent of Single-Parent	0.154	0.402	0.384	0.702
Percent of Displaced Homemaker	0.032	0.146	0.221	0.826
Percent of Migrant and Seasonal Farmworker	1.515	0.648	2.337	0.021
Percent of Homeless or Runaway Youth	-0.607	0.240	-2.528	0.013
Percent of Received Training Services	0.329	0.232	1.421	0.158
Percent of Received Career Services	0.007	0.081	0.081	0.936
Percent of Received Other Services	-0.482	0.248	-1.945	0.054
Percent of High School Diploma or Equivalency	0.512	0.153	3.345	0.001
Percent of Special Edu Certificate No HS Diploma	-0.113	0.528	-0.215	0.831
Percent of Postsecondary Education No Degree	0.044	0.253	0.174	0.862
Percent of Associate's Degree	-1.892	2.142	-0.883	0.379
Percent of Bachelor's Degree	1.128	1.798	0.627	0.532
Percent of Beyond Bachelor's Degree	-9.935	6.651	-1.494	0.138
Percent of Natural Resources and Mining	-10.774	17.754	-0.607	0.545
Percent of Construction	-20.853	18.885	-1.104	0.272
Percent of Manufacturing	-22.614	18.678	-1.211	0.229
Percent of Trade, Transportation and Unities	-33.519	18.605	-1.802	0.075
Percent of Information	-69.964	32.244	-2.170	0.032
Percent of Financial Activities	-30.495	23.412	-1.303	0.196
Percent of Professional and Business Services	-6.962	20.119	-0.346	0.730
Percent of Education and Health Services	-20.506	18.501	-1.108	0.270
Percent of Leisure and Hospitality	-20.103	18.326	-1.097	0.275
Percent of Other Services	-9.759	21.042	-0.464	0.644
Percent of Public Administration	-34.605	19.784	-1.749	0.083
Quarterly Unemployment Rate	4.250	2.761	1.539	0.127

SAM Preliminary Results

Table 3. Parameter Estimates from State Fixed Effect Regression Model

Variables	B	Std. Error	t	Sig.
Alabama	33.721	19.645	1.716	0.089
Alaska	33.649	19.655	1.712	0.090
Arizona	30.049	19.589	1.534	0.128
Arkansas	32.211	19.551	1.647	0.103
California	32.417	19.606	1.653	0.101
Colorado	32.035	19.751	1.622	0.108
Connecticut	31.262	19.795	1.579	0.117
Delaware	32.833	19.913	1.649	0.102
Dist. of Columbia	30.233	20.017	1.510	0.134
Florida	30.916	19.684	1.571	0.119
Georgia	33.128	19.550	1.695	0.093
Hawaii	20.695	20.752	0.997	0.321
Idaho	30.622	19.713	1.553	0.123
Illinois	31.183	19.700	1.583	0.117
Indiana	32.811	19.783	1.659	0.100
Iowa	31.969	19.630	1.629	0.106
Kansas	32.194	19.773	1.628	0.107
Kentucky	31.706	19.677	1.611	0.110
Louisiana	30.621	19.609	1.562	0.121
Maine	32.022	19.710	1.625	0.107
Maryland	29.856	19.797	1.508	0.135
Massachusetts	30.120	19.805	1.521	0.131
Michigan	30.255	19.684	1.537	0.127
Minnesota	30.971	19.785	1.565	0.121
Mississippi	32.512	19.650	1.655	0.101

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Table 3. Parameter Estimates from State Fixed Effect Regression Model (cont.)

Variables	B	Std. Error	t	Sig.
Missouri	32.125	19.764	1.625	0.107
Montana	33.204	19.648	1.690	0.094
Nebraska	33.155	19.779	1.676	0.097
Nevada	31.181	19.684	1.584	0.116
New Hampshire	33.312	19.770	1.685	0.095
New Jersey	31.322	19.670	1.592	0.114
New Mexico	31.967	19.654	1.626	0.107
New York	32.595	19.703	1.654	0.101
North Carolina	32.657	19.699	1.658	0.100
North Dakota	32.382	19.554	1.656	0.101
Ohio	31.337	19.637	1.596	0.114
Oklahoma	32.443	19.547	1.660	0.100
Oregon	32.477	19.757	1.644	0.103
Pennsylvania	31.043	19.762	1.571	0.119
Puerto Rico	33.849	19.563	1.730	0.087
Rhode Island	30.324	19.784	1.533	0.128
South Carolina	32.780	19.736	1.661	0.100
South Dakota	33.717	19.740	1.708	0.091
Tennessee	32.326	19.633	1.647	0.103
Texas	31.718	19.640	1.615	0.109
Utah	33.116	19.700	1.681	0.096
Vermont	31.876	19.782	1.611	0.110
Virginia	30.084	19.704	1.527	0.130
Washington	33.430	19.682	1.698	0.092
West Virginia	32.209	19.554	1.647	0.103
Wisconsin	33.159	19.661	1.687	0.095
Wyoming	32.769	19.551	1.676	0.097

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Table 4. Actual MSG vs Predicted MSG using PY17Q3 as An Example

State	Actual MSG Rate in PY17Q3	Predicted MSG Rate in PY17Q3	Absolute value of difference between actual and predicted MSG rate Difference
Alabama	8.62%	12.65%	4.03%
Alaska	4.36%	10.11%	5.75%
Arizona	15.86%	16.04%	0.18%
Arkansas	20.72%	26.53%	5.81%
California	8.41%	8.52%	0.11%
Colorado	6.12%	11.07%	4.95%
Connecticut	43.60%	37.54%	6.06%
Delaware	8.49%	4.29%	4.20%
Dist. of Columbia	20.87%	16.93%	3.94%
Florida	5.17%	7.46%	2.29%
Georgia	17.51%	13.68%	3.83%
Hawaii	1.97%	0.67%	1.30%
Idaho	14.10%	18.71%	4.61%
Illinois	0.00%	0.00%	0.00%
Indiana	1.18%	0.00%	1.18%
Iowa	6.43%	9.95%	3.52%
Kansas	21.94%	23.08%	1.14%
Kentucky	17.26%	17.99%	0.73%
Louisiana	10.07%	12.03%	1.96%
Maine	7.23%	5.12%	2.11%

SAM Preliminary Results

Table 4. Actual MSG vs Predicted MSG using PY17Q3 as An Example

State	Actual MSG Rate in PY17Q3	Predicted MSG Rate in PY17Q3	Absolute value of difference between actual and predicted MSG rate
Maryland	1.43%	3.43%	2.00%
Massachusetts	11.00%	9.57%	1.44%
Michigan	6.06%	10.19%	4.13%
Minnesota	2.69%	8.49%	5.80%
Mississippi	3.29%	6.78%	3.49%
Missouri	4.74%	1.67%	3.07%
Montana	21.55%	31.50%	9.95%
Nebraska	22.35%	22.54%	0.19%
Nevada	20.00%	16.56%	3.44%
New Hampshire	11.43%	21.27%	9.84%
New Jersey	19.93%	19.16%	0.77%
New Mexico	12.37%	14.27%	1.90%
New York	6.61%	3.60%	3.02%
North Carolina	25.50%	24.53%	0.97%
North Dakota	22.75%	27.61%	4.86%
Ohio	8.99%	19.72%	10.73%
Oklahoma	11.90%	17.91%	6.01%
Oregon	17.36%	21.59%	4.23%
Pennsylvania	11.95%	11.81%	0.14%
Puerto Rico	4.77%	7.99%	3.22%
Rhode Island	27.37%	25.92%	1.45%
South Carolina	4.78%	9.17%	4.39%
South Dakota	50.13%	48.54%	1.59%
Tennessee	18.93%	20.01%	1.08%
Texas	1.68%	5.03%	3.35%
Utah	12.58%	18.58%	6.00%
Vermont	4.55%	6.75%	2.20%
Virginia	11.40%	26.14%	14.74%
Washington	67.92%	49.83%	18.09%
West Virginia	42.78%	43.65%	0.86%
Wisconsin	8.66%	9.37%	0.71%
Wyoming	44.25%	29.45%	14.80%

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Steps to calculate the predicted MSG outcomes:

1. Multiply each coefficient by its associated input value.
 - For example, to calculate AL predicted MSG rate, the coefficient for female participants is 1.49188. The associated variable value (the percent of female participants in AL) is 0.44213 (44.2%). The product of multiplying these two numbers is 0.6596. This is repeated for each coefficient and associated variable value.
2. Add up all the resulting products from Step 1. For the example of AL, the sum of these product is -33.5175
3. The result is an estimate that takes into account the effects of the specific State programs as well as other factors specific to the State, that is State-fixed effect. For example, AL is 33.72064.

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4. Add the results from steps 2 and 3 to obtain the Alabama predicted MSG rate which is 0.20319 (20.3%)
5. The Fixed Effects table shows the effect of each State on the target estimated for each measure. The difference relative to the “average State effect” gives States a sense of their performance relative to the national average. The magnitude of the difference is less important than its direction (i.e., whether it is positive/above or negative/below than the national average).

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Table 5. Predicted MSG Outcome in PY20/21 using SAM: An Example of Alabama

Participant data used in forecasting (latest PY available)	2017		
Measure	Measurable Skill Gains		
Predicted Outcome	0.20319		
Parameter	Coefficient	Latest PY data (PY18Q1)	cross-product
Percent of Female	1.49188	0.44213	0.65960
Percent of Age between 16 to 18	-10.34654	0.39966	-4.13511
Percent of Age between 19 to 24	-10.97174	0.18066	-1.98221
Percent of Age between 25 to 44	-14.40897	0.21398	-3.08317
Percent of Age between 45 to 54	-18.91079	0.09749	-1.84361
Percent of Age between 54 to 59	-1.89232	0.04193	-0.07934
Percent of Age 60 and Over	-11.08859	0.04959	-0.54992
Percent of Asian Non-Hispanic	8.53180	0.00360	0.03068
Percent of Black Non-Hispanic	1.27740	0.42252	0.53973
Percent of White Non-Hispanic	0.03622	0.55156	0.01998
Percent of Native Hawaiian Non-Hispanic	18.34134	0.00122	0.02240
Percent of More Than One Race	0.15404	0.00685	0.00106
Percent of Hispanic	0.10329	0.01669	0.00172
Percent of Received Public Support	-0.39250	0.35855	-0.14073
Percent of Veteran-Yes	8.83457	0.00963	0.08511
Percent of Communicative Disability	5.43224	0.11289	0.61325
Percent of Physical Disability	-1.83743	0.17212	-0.31625
Percent of Cognitive Disability	-4.46639	0.44878	-2.00442
Percent of Psychosocial Disability	6.57989	0.19247	1.26643
Percent of Significant Disability	-0.08382	0.66113	-0.05542
Percent of Most Significant Disability	2.33024	0.26486	0.61718
Percent of Employed at Application	-0.30084	0.12992	-0.03908

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Table 5. Predicted MSG Outcome in PY20/21 using SAM: An Example of Alabama

Parameter	Coefficient	Latest PY data (PY18Q1)	cross-product
Percent of Long-term Unemployed	-0.05328	0.33541	-0.01787
Percent of Exhausting TANF within two years	0.69130	0.00265	0.00183
Percent of Foster Care Youth	-0.69818	0.00251	-0.00175
Percent of Ex-Offender	-2.25812	0.02999	-0.06771
Percent of Low Income	0.06935	0.32666	0.02265
Percent of Limited English	0.93844	0.14525	0.13631
Percent of Single-Parent	0.15423	0.01214	0.00187
Percent of Displaced Homemaker	0.03220	0.00183	0.00006
Percent of Migrant and Seasonal Farmworker	1.51455	0.01282	0.01942
Percent of Homeless or Runaway Youth	-0.60748	0.01242	-0.00754
Percent of Received Training Services	0.32899	0.12395	0.04078
Percent of Received Career Services	0.00654	0.39111	0.00256
Percent of Received Other Services	-0.48183	0.13562	-0.06534
Percent of High School Diploma or Equivalency	0.51187	0.27266	0.13957
Percent of Special Edu Certificate No HS Diploma	-0.11334	0.05041	-0.00571
Percent of Postsecondary Education No Degree	0.04406	0.12788	0.00563
Percent of Associate's Degree	-1.89174	0.02741	-0.05185
Percent of Bachelor's Degree	1.12787	0.04322	0.04874
Percent of Beyond Bachelor's Degree	-9.93509	0.01757	-0.17457
Percent of Natural Resources and Mining	-10.77360	0.00935	-0.10069
Percent of Construction	-20.85282	0.04461	-0.93027
Percent of Manufacturing	-22.61440	0.13600	-3.07555
Percent of Trade, Transportation and Utilities	-33.51868	0.20583	-6.89911
Percent of Information	-69.96388	0.01120	-0.78350
Percent of Financial Activities	-30.49510	0.04957	-1.51178
Percent of Professional and Business Services	-6.96152	0.12582	-0.87591
Percent of Education and Health Services	-20.50588	0.22199	-4.55204
Percent of Leisure and Hospitality	-20.10262	0.10789	-2.16882
Percent of Other Services	-9.75901	0.02389	-0.23316
Percent of Public Administration	-34.60476	0.06385	-2.20959
Quarterly Unemployment Rate	4.24970	0.03954	0.16804
State Coefficient (State-specific effect)	State fixed effect	difference from average	-33.51745
Average	31.77979		
Alabama	33.72064	1.94084	

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Table 6 . Predicted MSG Rate in PY20 and PY21 using SAM

State	PY20/21 Predicted MSG	PY17 Annual Reported MSG	Absolute value of difference between actual and predicted MSG rate
Alabama	20.3	17.0	3.3
Alaska	40.3	26.3	14.0
Arizona	32.4	15.8	16.6
Arkansas	27.2	22.7	4.5
California	28.5	23.9	4.6
Colorado	14.3	13.5	0.8
Connecticut	49.9	48.1	1.8
Delaware	1.3	13.9	12.6
Dist. of Columbia	11.1	19.7	8.6
Florida	6.8	6.0	0.8
Georgia	48.3	38.6	9.7
Hawaii	14.3	4.4	9.9
Idaho	24.5	25.9	1.4
Illinois	14.2	0.0	14.2
Indiana	8.1	1.7	6.4
Iowa	23.7	22.0	1.7
Kansas	28.3	19.3	9.0
Kentucky	31.3	18.0	13.3
Louisiana	0.0	19.5	19.5
Maine	7.3	14.9	7.6
Maryland	10.2	6.2	4.0
Massachusetts	3.3	13.1	9.8
Michigan	17.1	18.6	1.5
Minnesota	11.7	17.6	5.9
Mississippi	9.5	18.6	9.1

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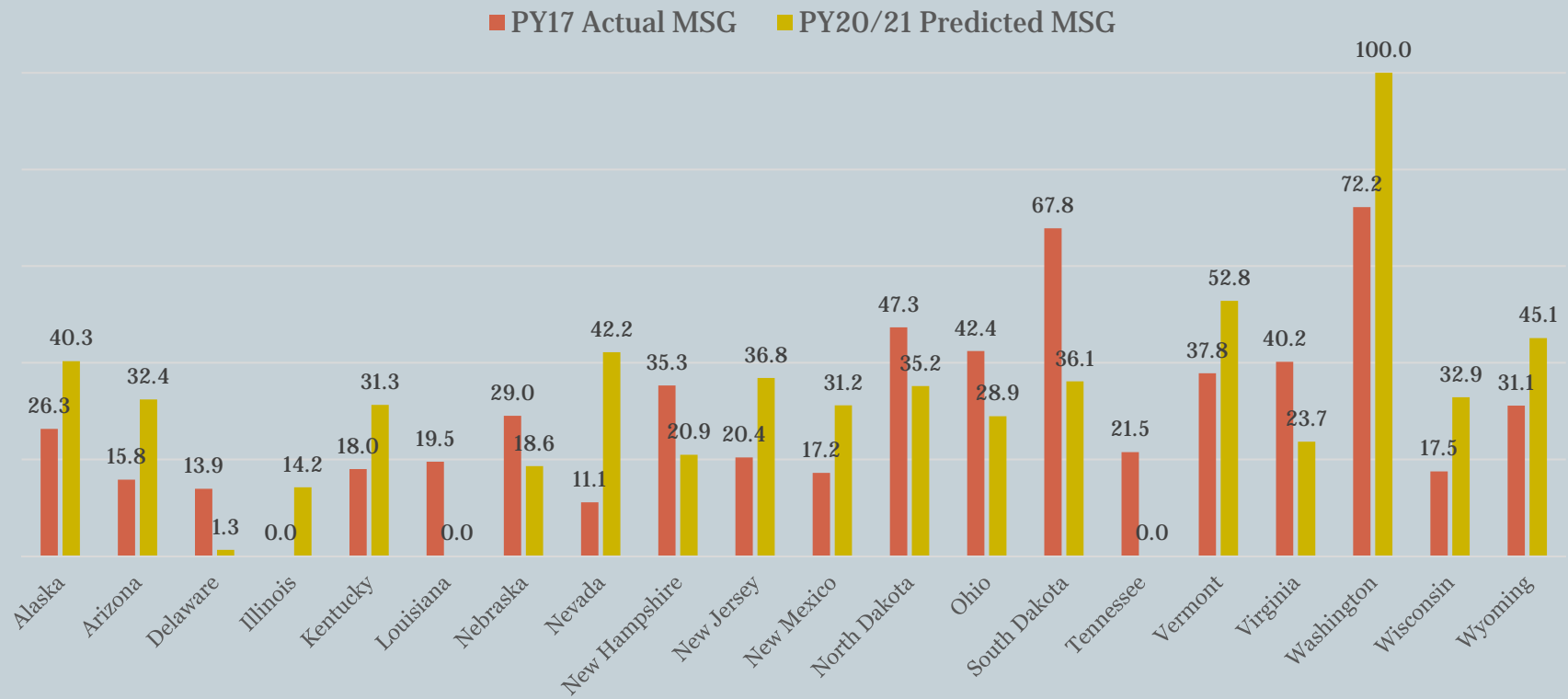
Table 6 . Predicted MSG Rate in PY20 and PY21 using SAM

State	PY20/21 Predicted MSG	PY17 Annual Reported MSG	Absolute value of difference between actual and predicted MSG rate
Missouri	18.2	15.9	2.3
Montana	51.0	44.1	6.9
Nebraska	18.6	29.0	10.4
Nevada	42.2	11.1	31.1
New Hampshire	20.9	35.3	14.4
New Jersey	36.8	20.4	16.4
New Mexico	31.2	17.2	14.0
New York	12.1	7.6	4.5
North Carolina	30.9	29.2	1.7
North Dakota	35.2	47.3	12.1
Ohio	28.9	42.4	13.5
Oklahoma	22.6	16.3	6.3
Oregon	26.5	26.4	0.1
Pennsylvania	17.4	15.9	1.5
Puerto Rico	0.0	6.2	6.2
Rhode Island	23.2	23.8	0.6
South Carolina	10.1	7.1	3.0
South Dakota	36.1	67.8	31.7
Tennessee	0.0	21.5	21.5
Texas	1.9	1.6	0.3
Utah	18.7	21.8	3.1
Vermont	52.8	37.8	15.0
Virginia	23.7	40.2	16.5
Washington	100.0	72.2	27.8
West Virginia	48.5	50.2	1.7
Wisconsin	32.9	17.5	15.4
Wyoming	45.1	31.1	14.0

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Figure 3. Predicted MSG Rate PY20/21 vs. PY17 Actual Reported MSG Rate



Summary Results and Next Steps

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Summary Results from Preliminary Analyses
Next Steps

Summary Results

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- Given the intrinsic characteristics of a specific State, its current population, and labor market conditions should lead to a performance level equal to the Predicted Outcome.
- For example, in AL, we expect it should have 20.3%, GA should have 48.3%, for example.
- Using PY17 data, the results of predicted MSG rate show inconsistent values for some States. More data is needed.

Summary Results

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- The results of RSA's initial testing and analysis suggest that BLS labor market variables negatively affected the model prediction.
- When WIOA variables were added, the results did not improve significantly.
- VR program data appear to have a large fixed effect.

Next Steps

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➤ Add PY 2018 data and re-test the SAM for MSG:

- ❖ PY 2017 was the first year the VR program reported WIOA data.
- ❖ Some VR agencies did not collect and report, as required, the necessary data elements for the MSG indicators.
- ❖ This negatively affects the predicted value accuracy and parameter estimates.

➤ Variable section in the SAM:

- ❖ State level performance outcomes are a function of the characteristic of participants being served as well as labor market conditions in the State.
- ❖ Careful selection of variables may result in better and more accurate predictions.

Next Steps

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- Ongoing technical assistance to expect data to more accurately reflect the VR program's performance with respect to the MSG indicator.
- Using SAM as one factor in establishing levels of performance in WIOA State Plans.

Q&A

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Yann-Yann.Shieh@ed.gov
(202) 245-7247

