



Annual Exam Report - 2024

Introduction

This report first summarizes exam volume, exam performance, individual percentile ranks, and education program percentile ranks (as applicable) for each examination separately. Each following section then presents a brief content outline for the exam and the number of items in each category. Specific results for 2024 include mean scaled section scores, mean total scaled scores, and pass rates as well as charts with historical pass rates and candidate volumes for each exam. Finally, if the exam has a primary eligibility pathway, the section will include a map detailing candidate volume, mean scaled score, and percent passing for educational programs in each state.

Unless otherwise specified, this report presents statistics based each candidate's first attempt. ARRT uses the first attempt because it is the only one that all candidates are guaranteed to see. Including repeat attempts would overrepresent a subpopulation of candidates and bias the report.

Data in this report are not intended to be used as the sole source for educational program evaluation. When interpreting performance at the educational program or state level, it is important to acknowledge that these results are sensitive to multiple factors. These factors may include but are not limited to the number of candidates upon which the means are computed, characteristics of those candidates, educational program admissions criteria, and the emphasis of an educational program's curriculum.

Interpretation of Scores

Total Scaled Score: The ARRT uses scaled scores to report exam results. Total scaled scores can range from 1 to 99.

Scaled scores are desirable because they account for any differences in difficulty between two or more versions of an exam. The use of scaled scores adjusts for differences in exam difficulty such that a given scaled score corresponds to the same level of performance regardless of exam form and permits comparison of exam results over time. Using scaled scores also ensures that those taking different forms are not penalized for taking a slightly more difficult exam.

Scaled scores are sometimes mistaken for percent correct scores. This confusion likely arises because ARRT scaled scores and percentages share a similar range of values. However, a scaled score of 75 does not mean that a candidate correctly answered 75% of the test items.

Section Scores: Scaled scores are used to report performance on each section of the exam. The primary purpose of the section scores is to provide information to candidates regarding their relative strengths and weaknesses in particular content categories. Section scores can range from 0.1 to 9.9 and are reported in one-tenth point intervals (e.g., 8.1, 8.6). Section scores are intentionally placed on a narrower scale because they are derived from a smaller number of test items. Therefore, section scores are not as reliable as the total scaled score and should be interpreted with some caution.



Passing Score: A total scaled score of 75 is required to pass all ARRT exams. This pass-fail point, called the “cut score,” is established by ARRT’s Board of Trustees through a process called standard setting. During the standard setting process, the Board receives input from a panel representing a broad constituency of subject matter experts. The cut score represents the performance standard required to obtain certification and registration; those who meet or exceed the standard pass the exam. Beginning in 2013, the Sonography exam also requires a section scaled score of 7.5 or greater in both the Abdomen and OB/GYN sections.

Readers are encouraged to visit the [exam statistics](#) page of the ARRT website for additional reporting, such as past years’ reports or an explanation of ARRT’s scaling procedures.

Updates

Updated content specifications went into effect January 2024 for Sonography and Vascular Sonography. You can read more in the [Updated Sonography Documents](#) and the [Updated Vascular Sonography Documents](#) news releases at ARRT.org.



Summary Statistics

Exam Volume

Exam	First-time Candidates	Repeat	State	Reinstatement	Total
Radiography	12665	2654	47	513	15879
Nuclear Medicine Technology	464	105	1	8	578
Radiation Therapy	963	226	3	36	1228
Sonography	667	313	0	0	980
Magnetic Resonance Imaging	3071	1026	0	24	4121
Mammography	1778	217	169	26	2190
Computed Tomography	4788	1795	0	23	6606
Vascular Sonography	8	7	0	0	15
Bone Densitometry	301	87	0	0	388
Cardiac Interventional	124	64	0	0	188
Vascular Interventional	402	207	0	0	609
Breast Sonography	168	20	0	0	188
Radiologist Assistant	27	14	0	1	42

Note: The "State" category includes non-ARRT candidates who take an exam only for state licensure. The "Reinstatement" category includes all reinstatement by re-examination candidates.

Exam Performance

Exam	Approximate % Correct to Pass	Mean Scaled Score	Pass %
Radiography	67	82.9	85.2
Nuclear Medicine Technology	63	81.1	80.0
Radiation Therapy	68	81.9	83.6
Sonography*	68	76.1	51.0
Magnetic Resonance Imaging	66	79.9	73.1
Mammography	66	84.1	89.4
Computed Tomography	66	79.2	73.9
Vascular Sonography	68	73.9	62.5
Bone Densitometry	70	78.1	68.8
Cardiac Interventional	66	74.4	48.4
Vascular Interventional	70	74.7	52.5
Breast Sonography	65	81.2	82.1
Radiologist Assistant	66	80.0	77.8

*Sonography candidates must achieve a scaled score of 75 or greater overall scaled score, as well as section scaled scores of 7.5 or greater in both the Abdominal and OB/GYN sections to pass the exam.



Individual Performance Percentiles

Percentile Rank	Scaled Score												
	RAD	NMT	THR	SON	MRI	MAM	CT	VS	BD	CI	VI	BS	RA
95	94	93	92	90	93	94	91		92	89	88	92	
90	92	91	90	88	91	92	89		90	86	86	90	
85	91	90	89	87	89	91	87		89	83	84	89	
80	90	88	88	85	88	90	86		86	81	83	87	
75	89	87	87	84	87	89	85	80	85	80	82	86	85
70	88	86	86	82	86	88	84		84	79	80	85	
65	87	85	85	80	85	87	83		83	78	78	84	
60	86	84	85	79	84	87	82		81	77	77	84	
55	85	83	84	78	82	86	81		80	75	77	83	
50	84	82	83	77	81	85	80	78	79	74	75	82	81
45	83	81	82	75	80	84	79		78	73	74	81	
40	82	80	81	74	79	83	78		76	73	73	81	
35	81	78	80	73	77	82	77		75	72	72	79	
30	80	78	79	71	76	81	75		74	71	70	78	
25	78	76	77	70	74	80	74	70	72	69	69	77	75
20	77	75	76	68	72	79	73		70	67	68	75	
15	75	72	74	67	70	77	71		68	66	66	73	
10	72	70	72	63	67	74	69		66	62	63	72	
5	67	67	69	59	62	71	65		62	58	59	68	

Note: This percentile rank indicates the percentage of candidates scoring below a specified scaled score. Exams with fewer than 60 candidates are reported with fewer percentile categories.



Educational Program Mean Performance Percentiles

Percentile Rank	Scaled Score				
	RAD (N = 706)	NMT (N = 61)	THR (N = 90)	SON (N = 86)	MRI (N = 48)
95	89	90	88	86	
90	88	88	87	84	90
85	87	88	86	82	
80	86	85	86	81	88
75	86	85	85	80	
70	85	84	84	79	84
65	85	84	83	79	
60	84	83	83	78	83
55	84	83	82	77	
50	83	82	82	76	82
45	83	82	82	75	
40	83	81	81	74	80
35	82	81	81	73	
30	82	80	80	72	78
25	81	79	80	71	
20	80	78	79	70	76
15	79	77	78	69	
10	78	77	77	67	74
5	74	75	76	62	

Note: This percentile rank indicates the percentage of educational programs below a specified scaled score. Exams with fewer than 60 educational programs are reported with fewer percentile categories. "N" signifies the number of educational programs represented in the report year.



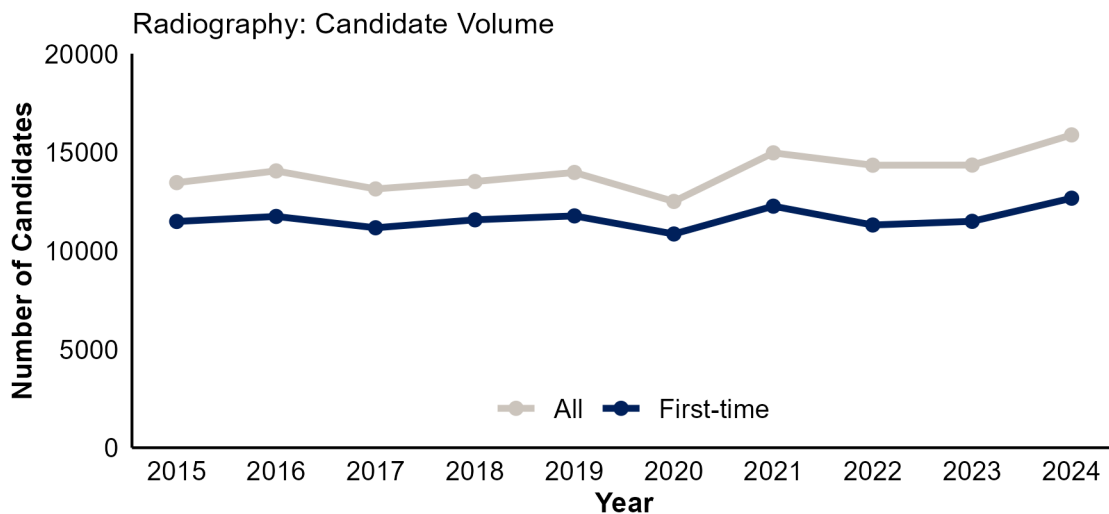
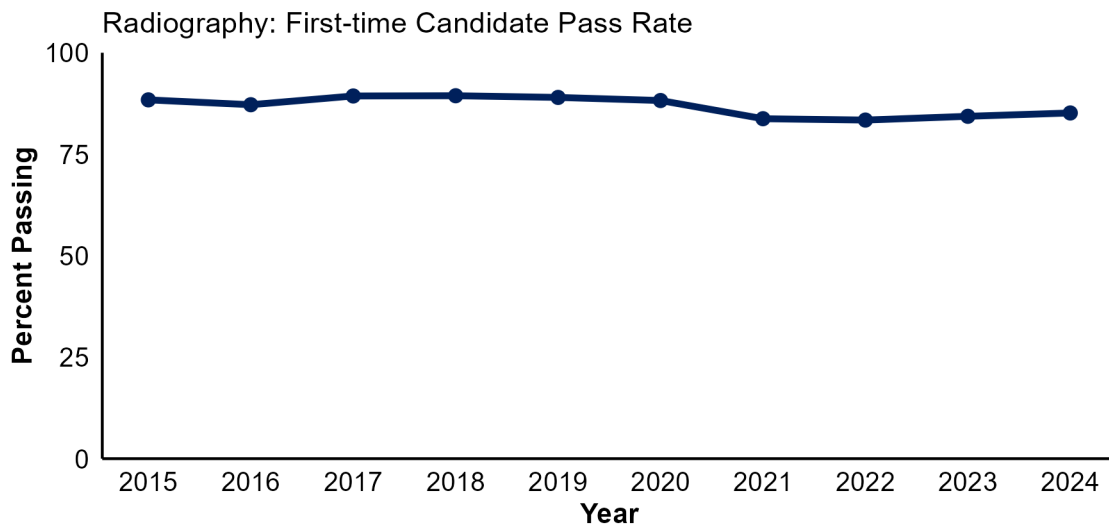
Radiography (RAD)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	33	8.2
Radiation Physics and Radiobiology	21	8.3
Radiation Protection	29	8.3
Image Acquisition and Evaluation	26	8.4
Equipment Operation and Quality Assurance	25	8.3
Head, Spine, and Pelvis Procedures	18	8.2
Thorax and Abdomen Procedures	20	8.1
Extremity Procedures	<u>28</u>	<u>8.3</u>
Total	200	82.9

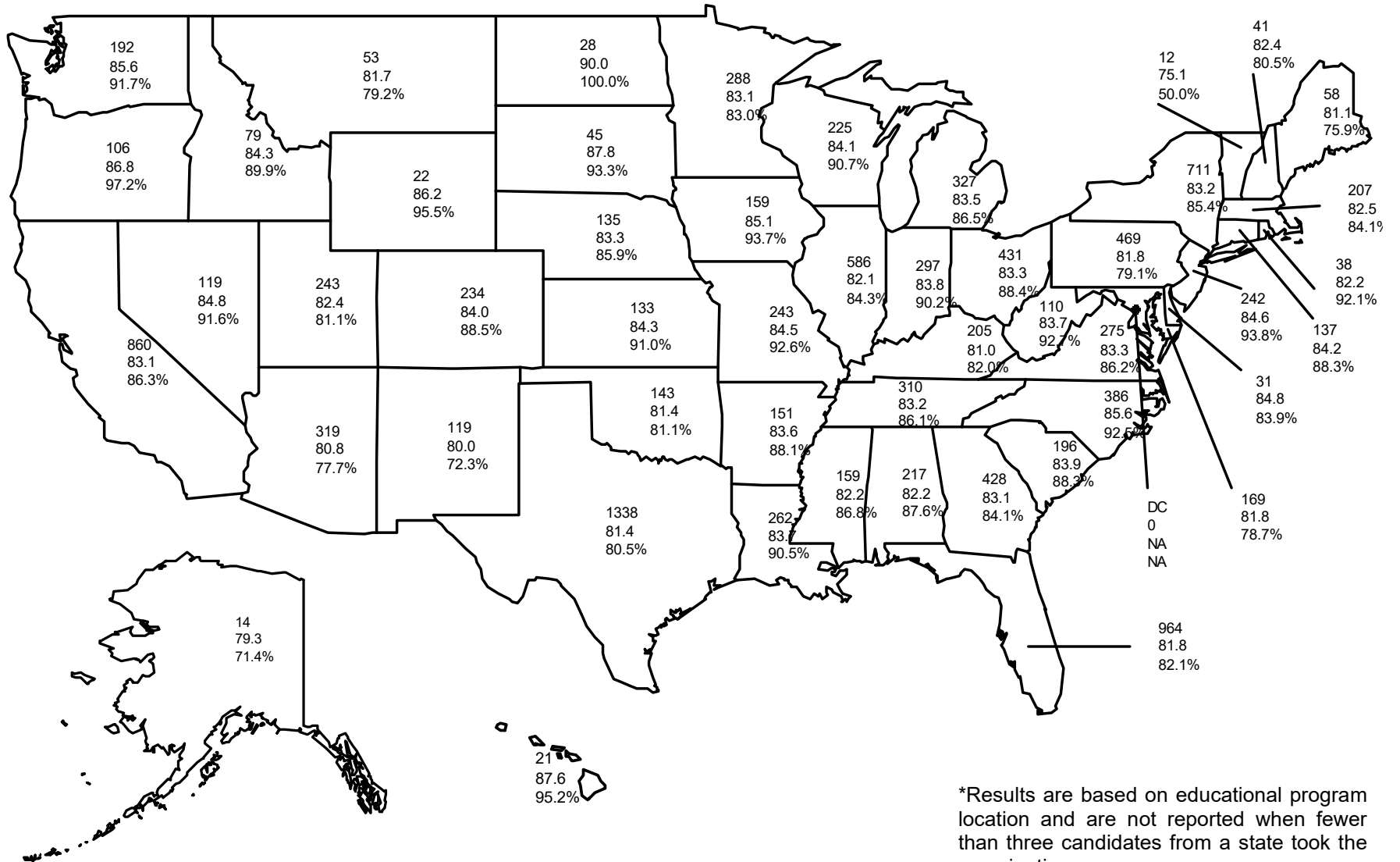
Pass Rate: 85.2%

Historical Exam Volume and Pass Rate



Radiography

Number of First-time Candidates, Mean Scaled Score, and Percentage Passing*



*Results are based on educational program location and are not reported when fewer than three candidates from a state took the examination.



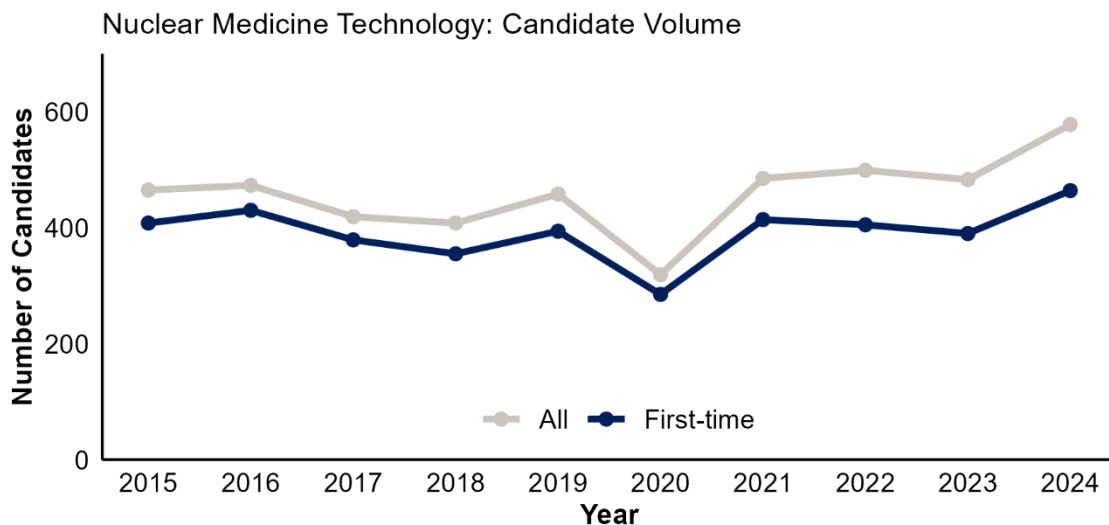
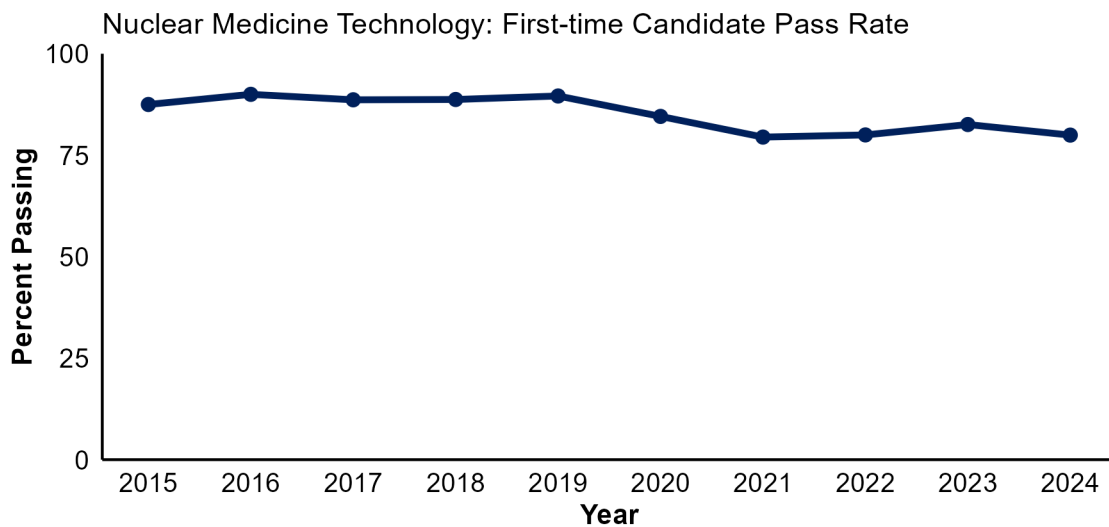
Nuclear Medicine Technology (NMT)

Section Performance

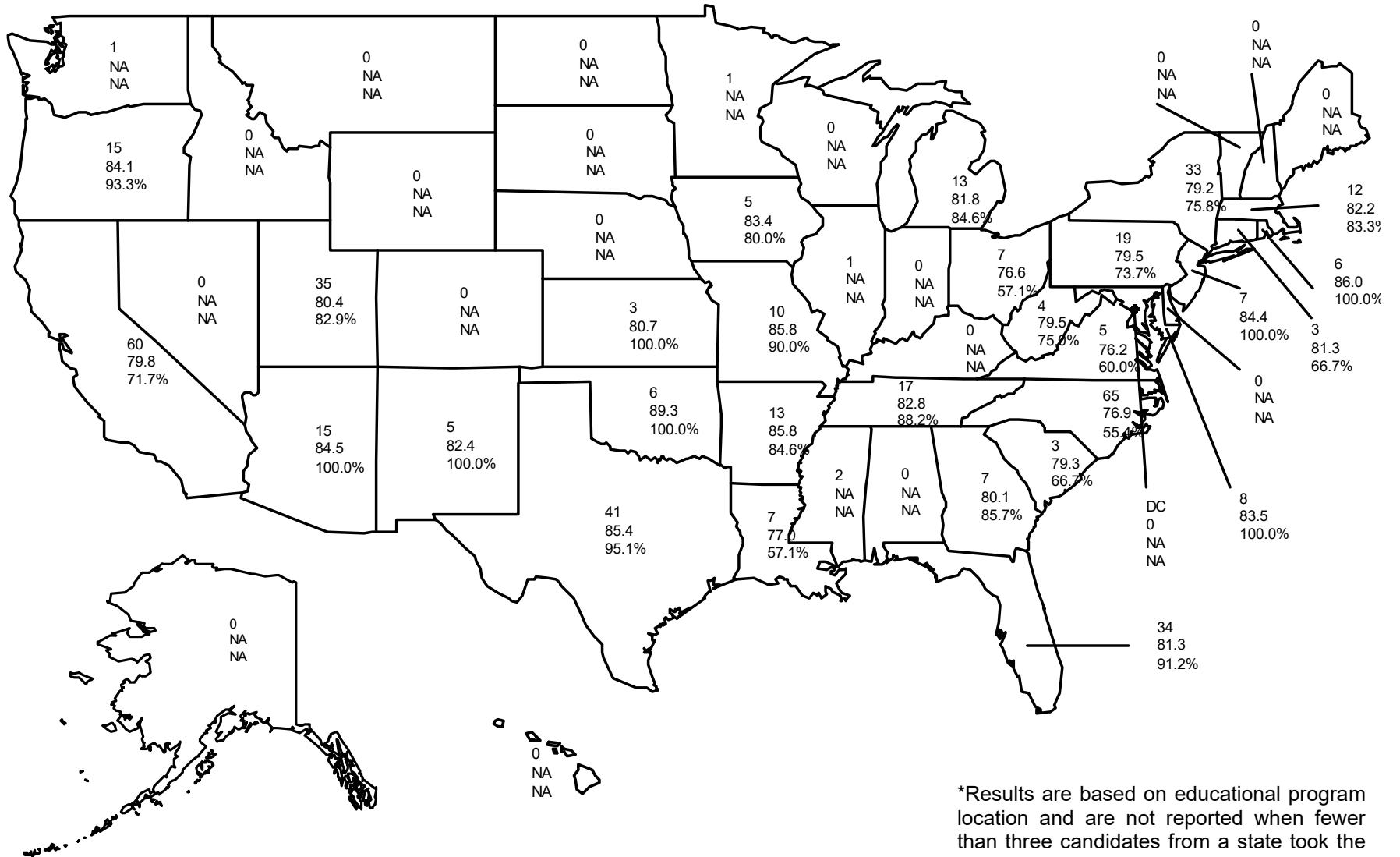
Content Categories	# Items	Mean Score
Patient Interactions and Management	24	8.2
Radiation Physics, Radiobiology, and Regulations	25	8.1
Instrumentation	33	8.0
Radionuclides and Radiopharmaceuticals	28	8.1
Cardiac Procedures	25	8.1
Endocrine and Oncology Procedures	25	8.1
Gastrointestinal and Genitourinary Procedures	18	8.2
Other Imaging Procedures	<u>22</u>	<u>8.0</u>
Total	200	81.1

Pass Rate: 80.0%

Historical Exam Volume and Pass Rate



Nuclear Medicine **Number of First-time Candidates, Mean Scaled Score, and Percentage Passing***



*Results are based on educational program location and are not reported when fewer than three candidates from a state took the examination.



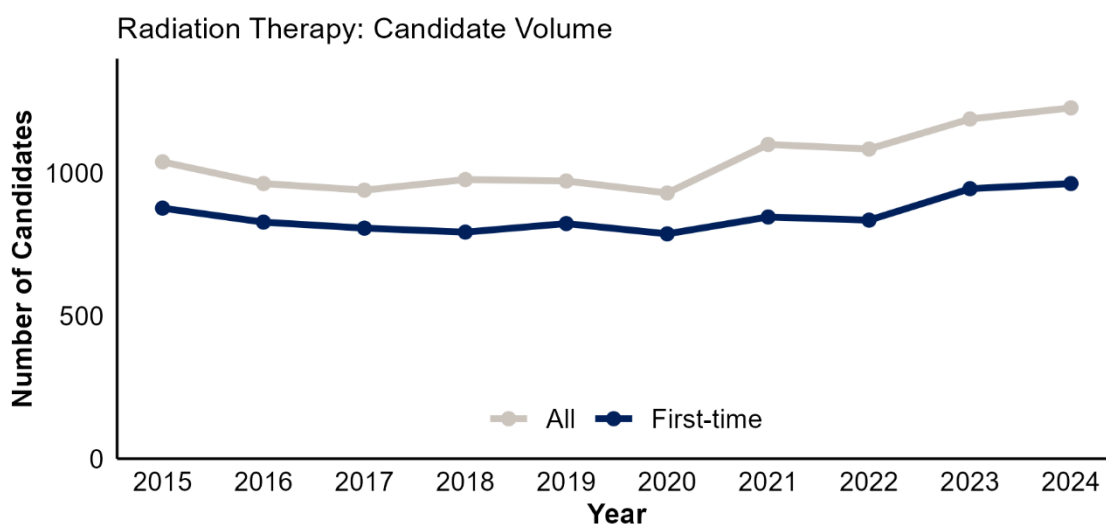
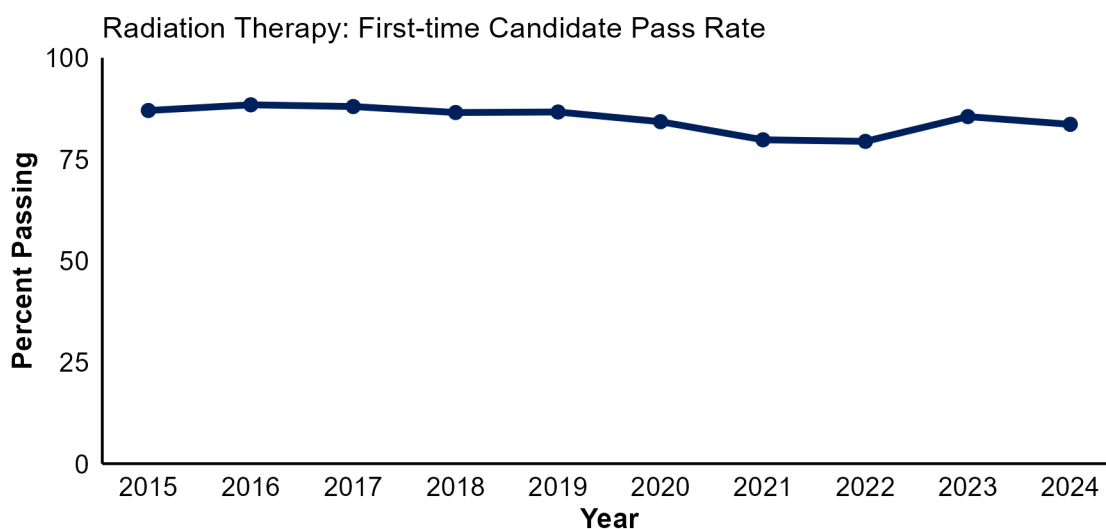
Radiation Therapy (THR)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	29	8.4
Patient and Medical Record Management	17	8.1
Radiation Physics and Radiobiology	21	8.3
Radiation Protection, Equipment Operation, and Quality Assurance	30	8.3
Treatment Sites and Tumors	26	8.2
Treatment Volume Localization	18	8.1
Prescription and Dose Calculation	24	8.1
Treatments	<u>35</u>	<u>8.1</u>
Total	200	81.9

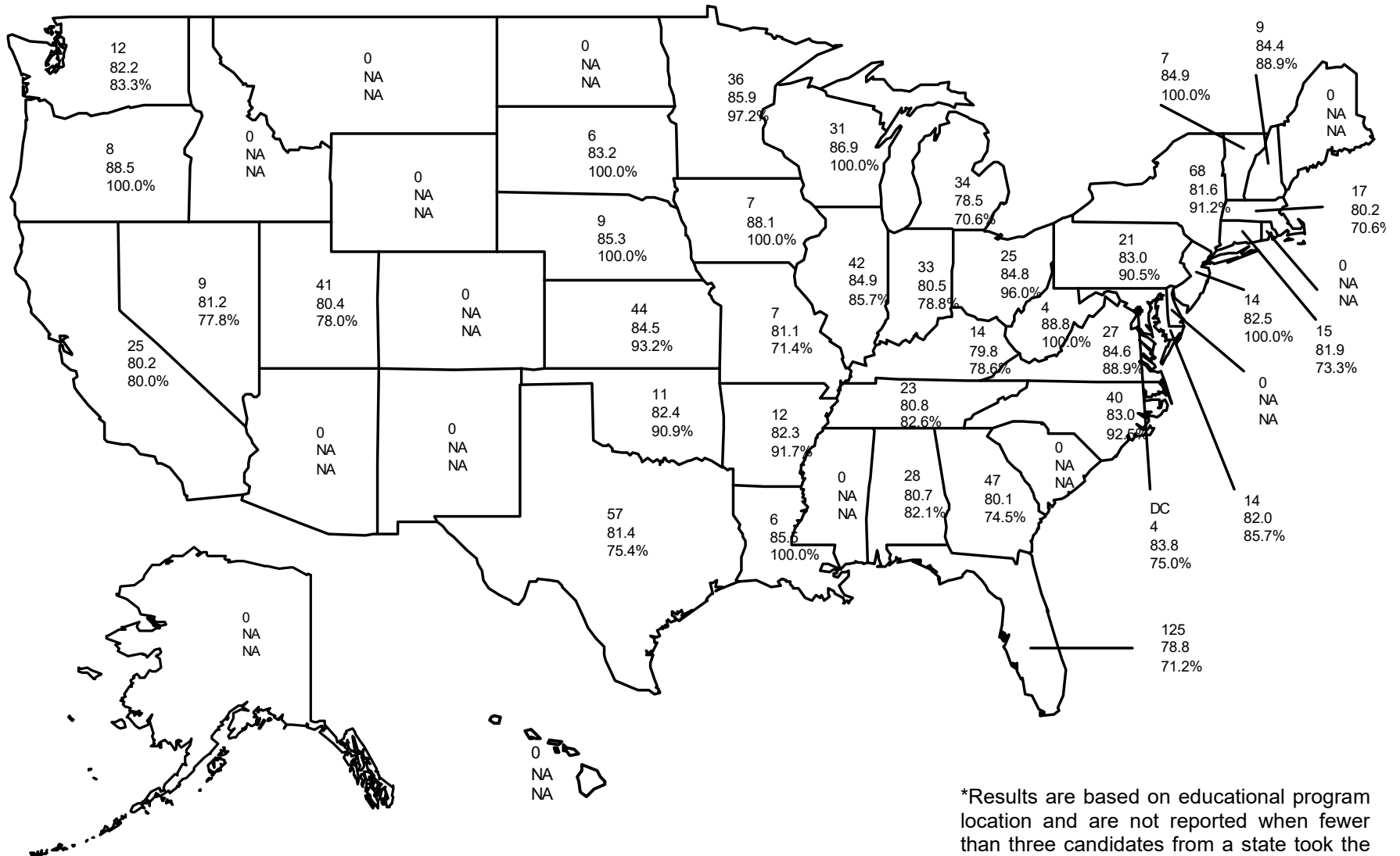
Pass Rate: 83.6%

Historical Exam Volume and Pass Rate



Radiation Therapy

Number of First-time Candidates, Mean Scaled Score, and Percentage Passing*



*Results are based on educational program location and are not reported when fewer than three candidates from a state took the examination.

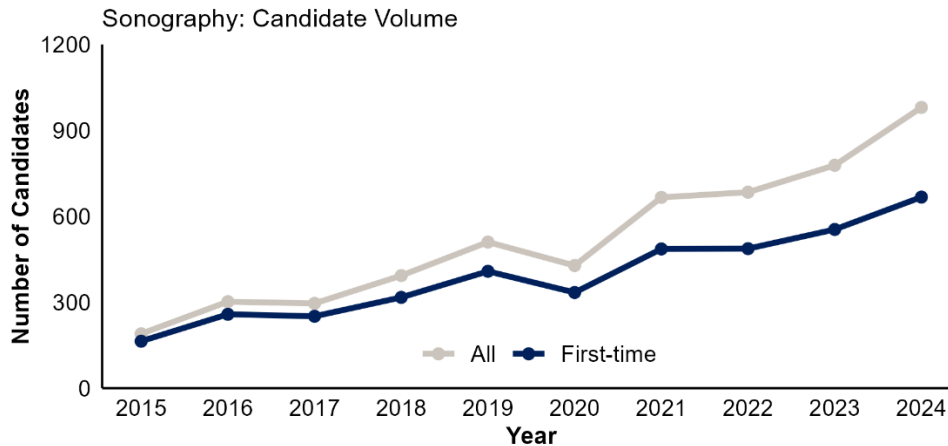
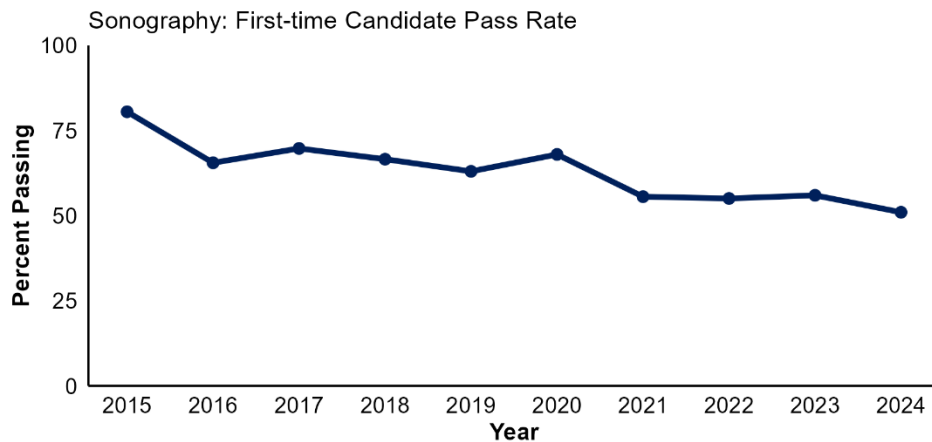


Sonography (SON)

Section Performance

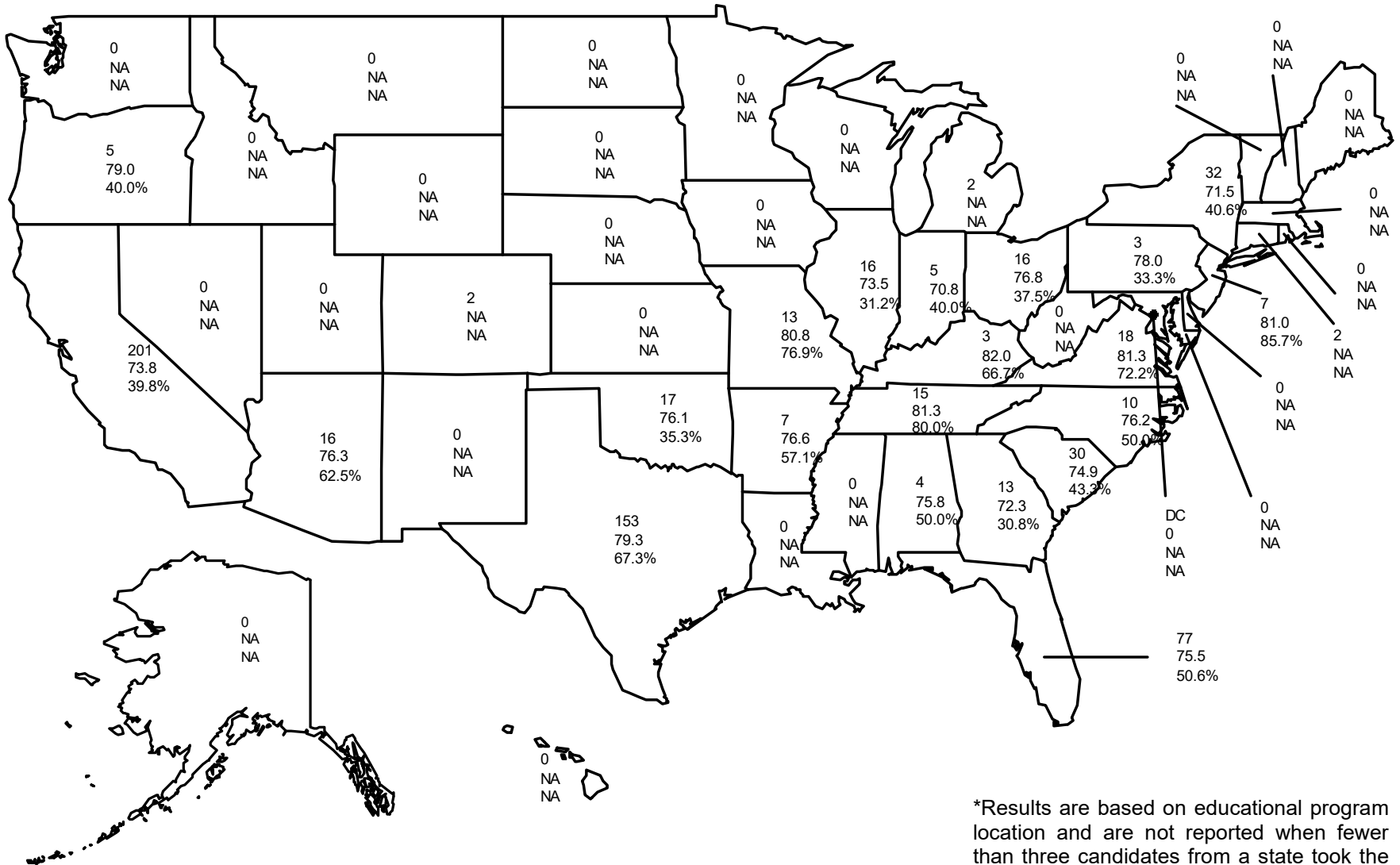
Content Categories	# Items	Mean Score
Patient Interactions and Management	26	7.4
Basic Principles of Ultrasound	45	7.5
Image Formation	47	7.5
Evaluation and Selection of Representative Images	26	8.0
Abdomen	75	7.8
OB/GYN*	109	7.6
<i>First Trimester Obstetrics</i>	20	7.7
<i>Second/Third Trimester and High Risk Obstetrics</i>	57	7.4
<i>Gynecology</i>	32	7.8
Superficial Structures and Other Sonographic Procedures	<u>32</u>	<u>7.4</u>
Total	360	76.1
Pass Rate: 51.0%		
* The OBGYN score is a composite of the First Trimester Obstetrics, Second/Third Trimester and High Risk Obstetrics, and Gynecology sections.		

Historical Exam Volume and Pass Rate



Sonography

Number of First-time Candidates, Mean Scaled Score, and Percentage Passing*



*Results are based on educational program location and are not reported when fewer than three candidates from a state took the examination.



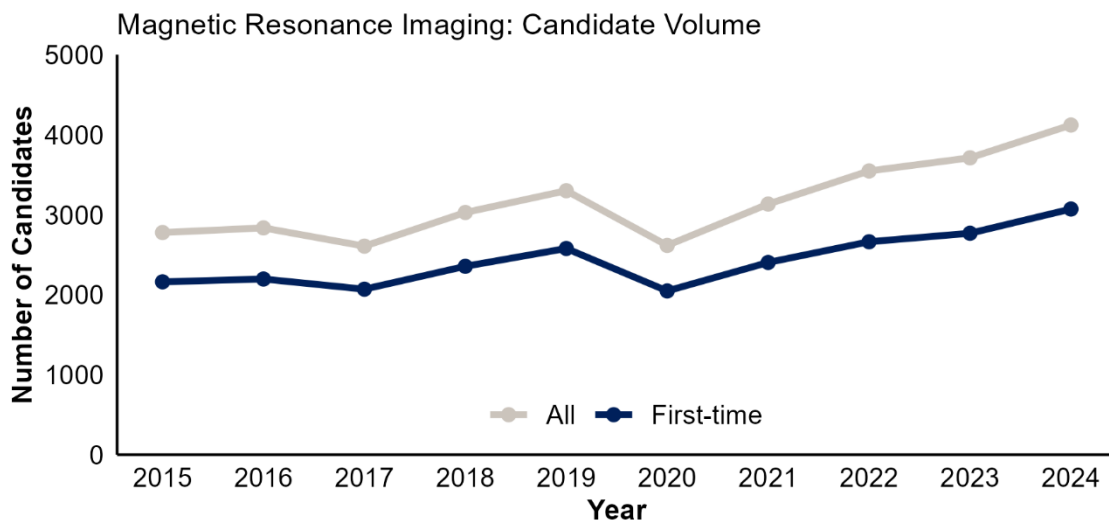
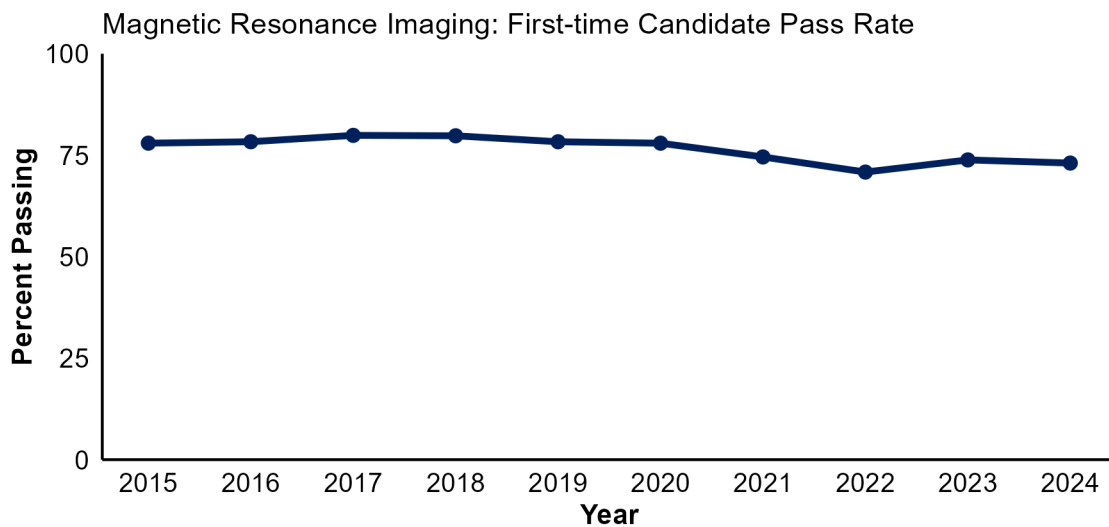
Magnetic Resonance Imaging (MRI)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	18	8.1
MRI Screening and Safety	20	8.2
Physical Principles of Image Formation	39	8.0
Sequence Parameters and Options	36	7.9
Data Acquisition, Processing, and Storage	30	7.9
Neurological	25	8.0
Body	15	8.0
Musculoskeletal	<u>17</u>	<u>8.1</u>
Total	200	79.9

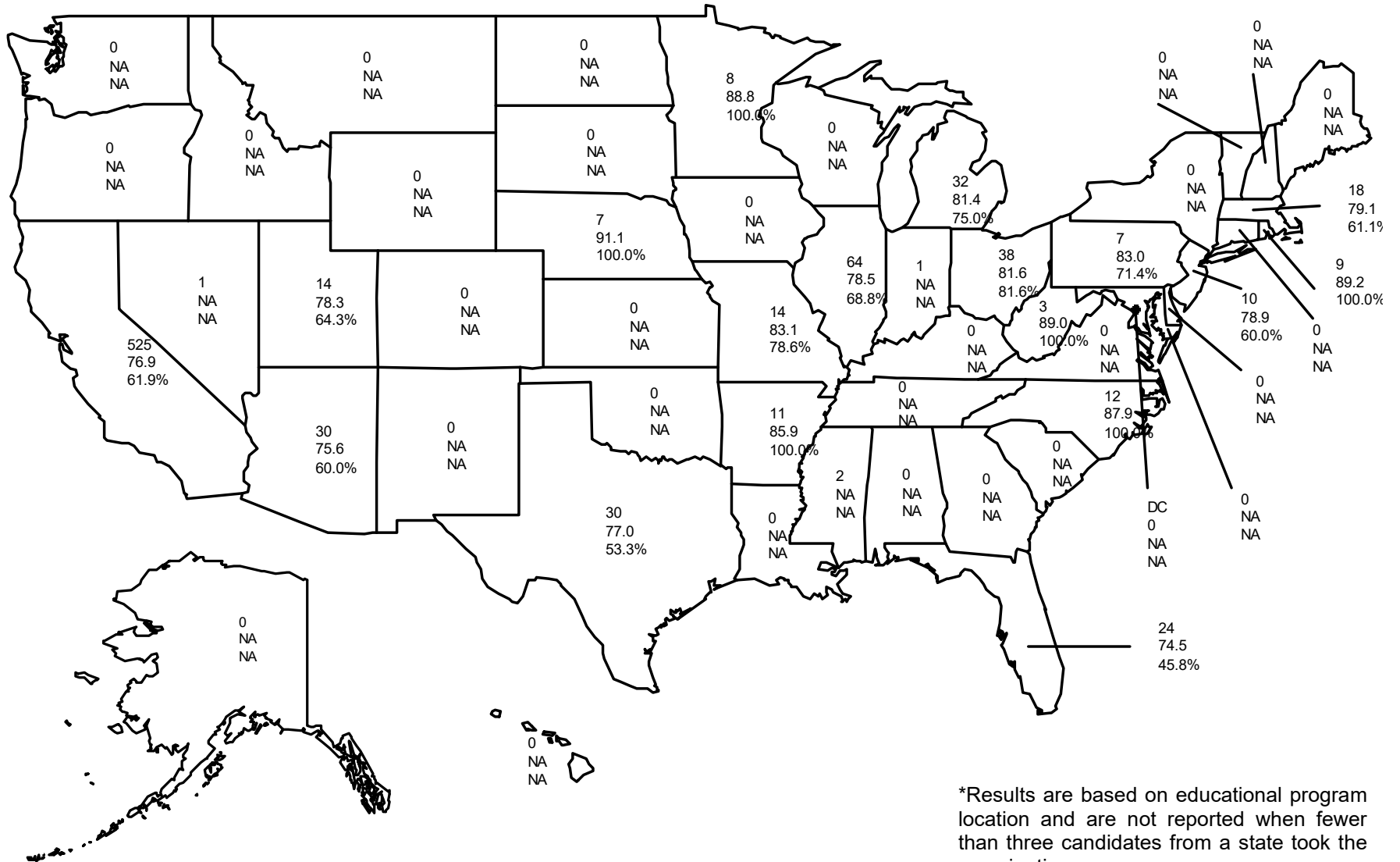
Pass Rate: 73.1%

Historical Exam Volume and Pass Rate



Magnetic Resonance Imaging

Number of First-time Candidates, Mean Scaled Score, and Percentage Passing*



*Results are based on educational program location and are not reported when fewer than three candidates from a state took the examination.



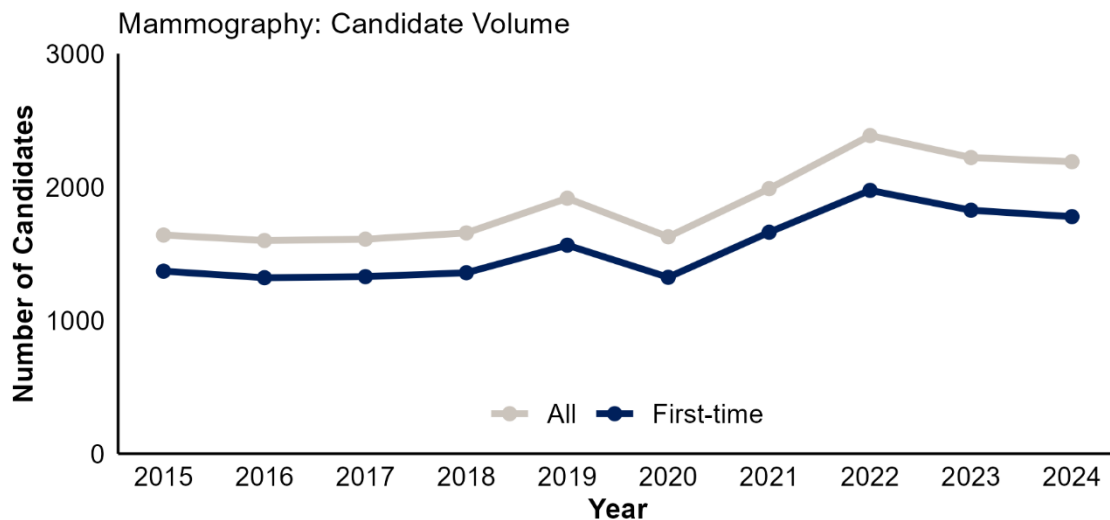
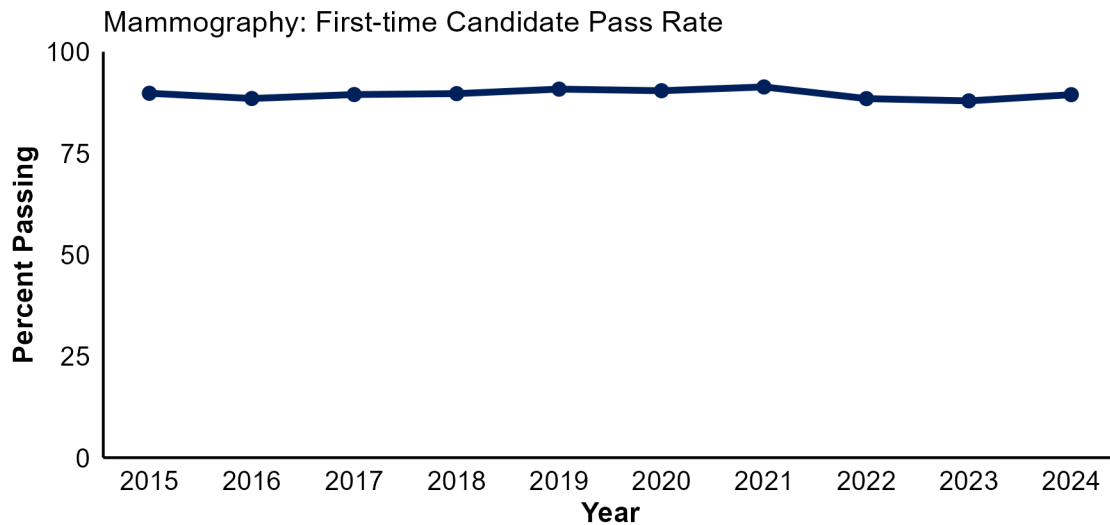
Mammography (MAM)

First-time Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	14	8.4
Image Acquisition and Quality Assurance	33	8.3
Anatomy, Physiology, and Pathology	26	8.4
Mammographic Positioning, Special Needs, and Imaging Procedures	<u>42</u>	<u>8.4</u>
Total	115	84.1

Pass Rate: 89.4%

Historical Exam Volume and Pass Rate



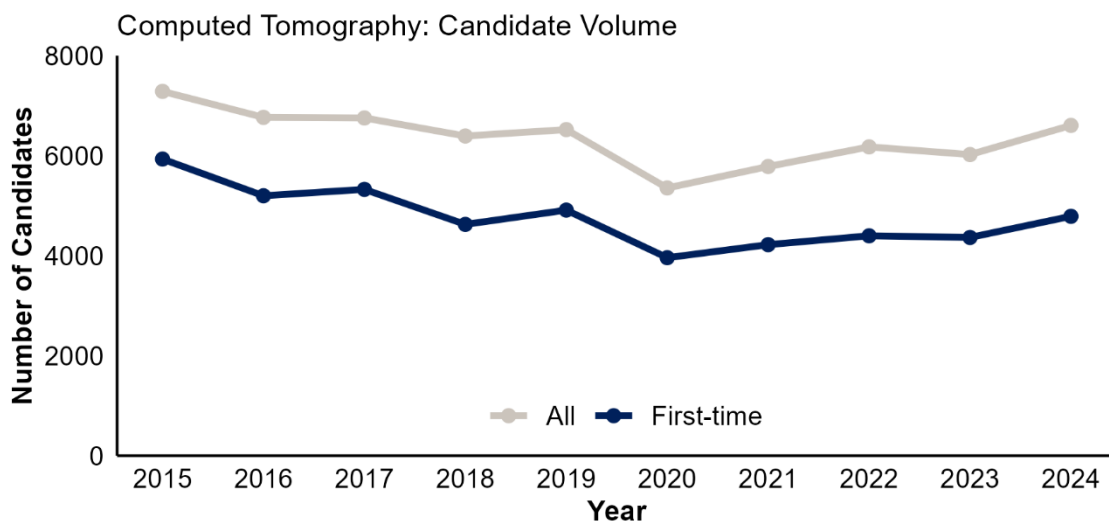
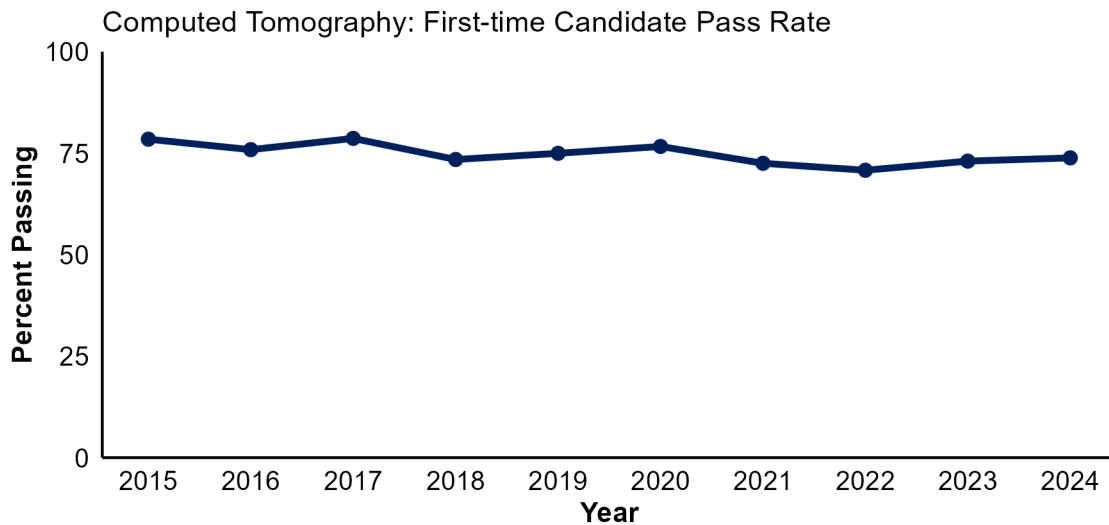
Computed Tomography (CT)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	22	8.0
Radiation Safety and Dose	22	8.2
Image Formation	28	7.7
Image Evaluation and Archiving	22	8.0
Head, Spine, and Musculoskeletal	25	7.8
Neck and Chest	21	7.9
Abdomen and Pelvis	<u>25</u>	<u>7.8</u>
Total	165	79.2

Pass Rate: 73.9%

Historical Exam Volume and Pass Rate



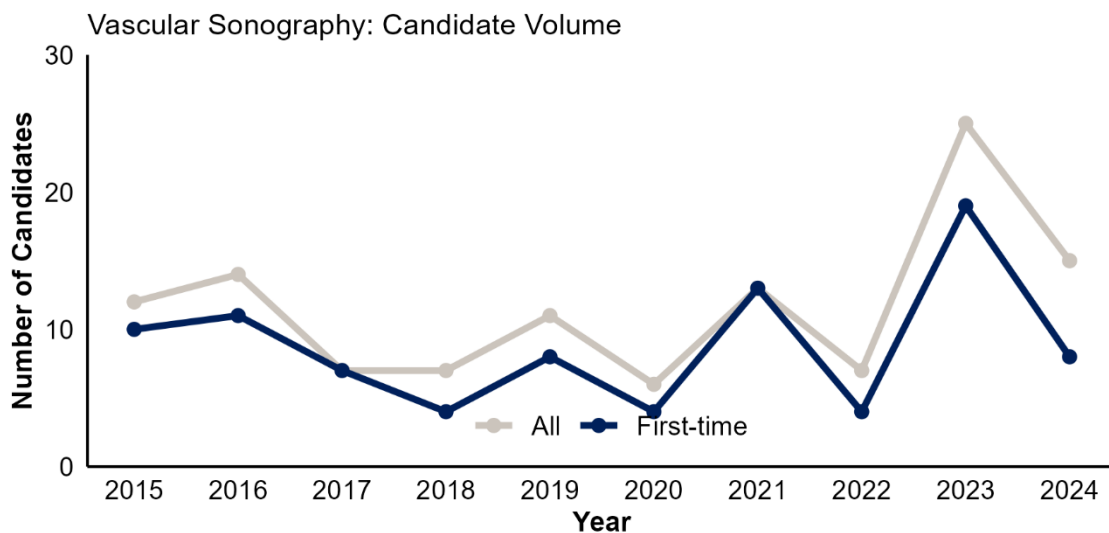
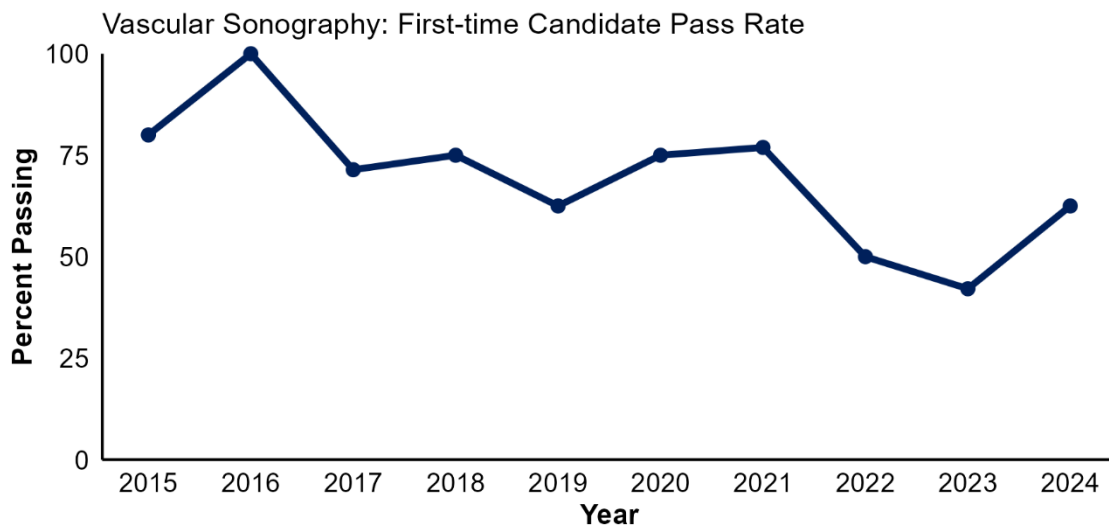
Vascular Sonography (VS)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	20	7.1
Basic Principles of Ultrasound	23	7.8
Image Formation	12	8.0
Evaluation and Selection of Representative Images	35	7.7
Abdominal/Pelvic Vasculature	19	7.4
Arterial Peripheral Vasculature	25	7.8
Venous Peripheral Vasculature	25	7.3
Extracranial Cerebral Vasculature and Other Sonographic Procedures	<u>16</u>	<u>7.6</u>
Total	175	73.9

Pass Rate: 62.5%

Historical Exam Volume and Pass Rate



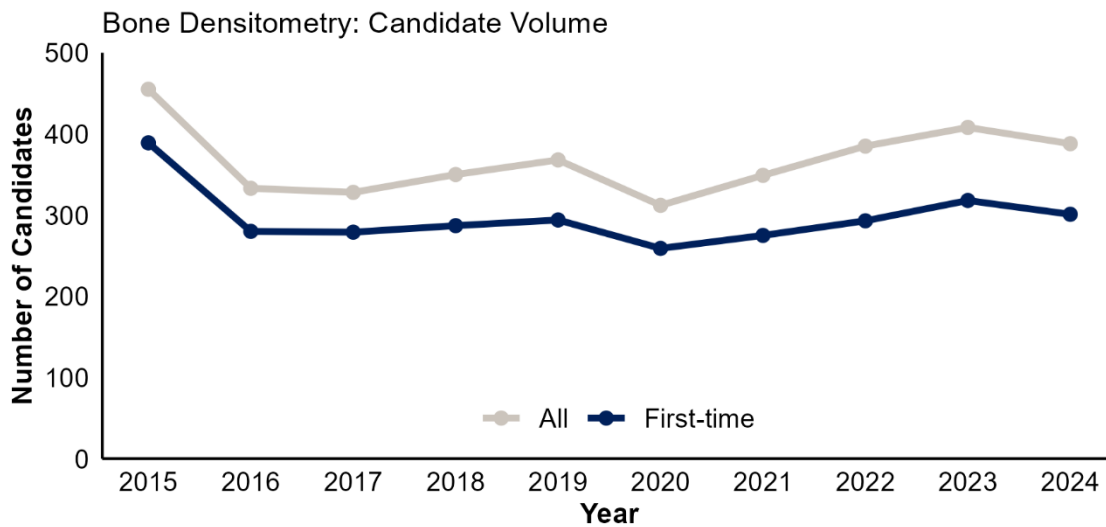
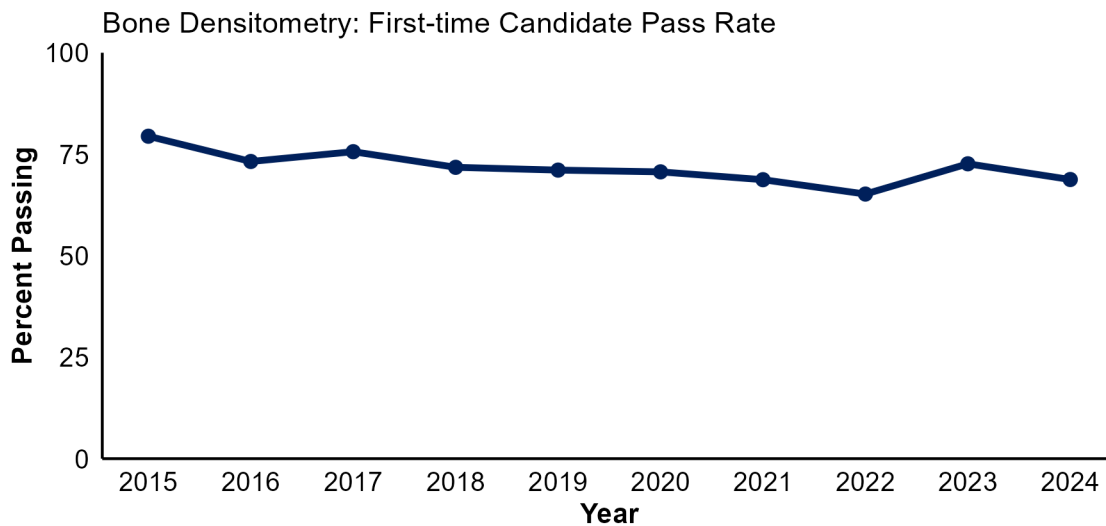
Bone Densitometry (BD)

Section Performance

Content Categories	# Items	Mean Score
Patient Bone Health, Care, and Radiation Principles	17	8.0
Equipment Operation and Quality Control	20	7.6
DXA Scanning	<u>38</u>	<u>7.9</u>
Total	75	78.1

Pass Rate: 68.8%

Historical Exam Volume and Pass Rate



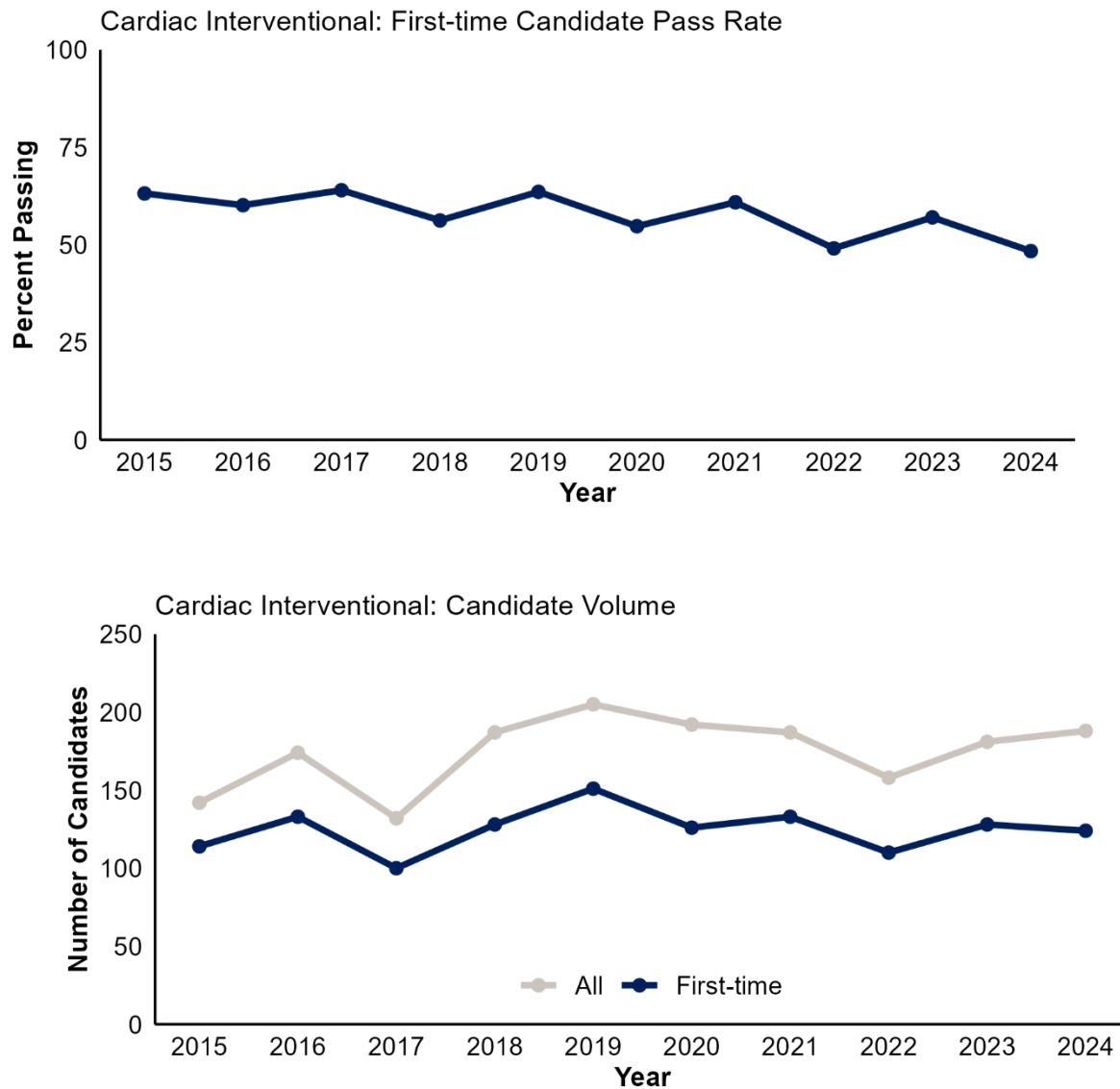
Cardiac Interventional Radiography (CI)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	40	7.4
Image Acquisition and Equipment	20	7.4
Diagnostic and Electrophysiology Procedures	35	7.4
Interventional Procedures	<u>50</u>	<u>7.5</u>
Total	145	74.4

Pass Rate: 48.4%

Historical Exam Volume and Pass Rate



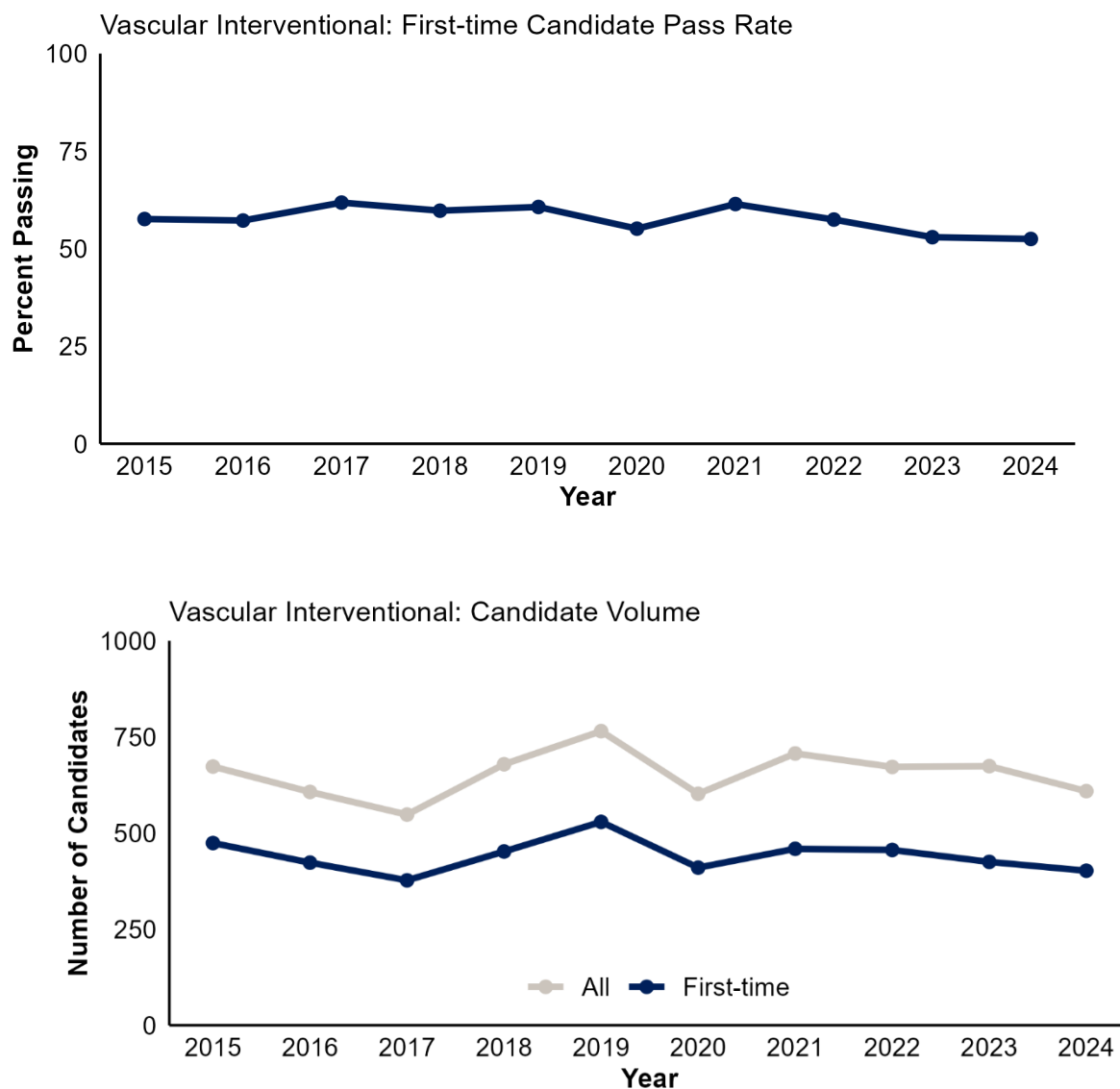
Vascular Interventional Radiography (VI)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	22	7.7
Image Acquisition and Equipment	26	7.3
Vascular Diagnostic Procedures	41	7.1
Vascular Interventional Procedures	41	7.6
Nonvascular Procedures	<u>30</u>	<u>7.7</u>
Total	160	74.7

Pass Rate: 52.5%

Historical Exam Volume and Pass Rate



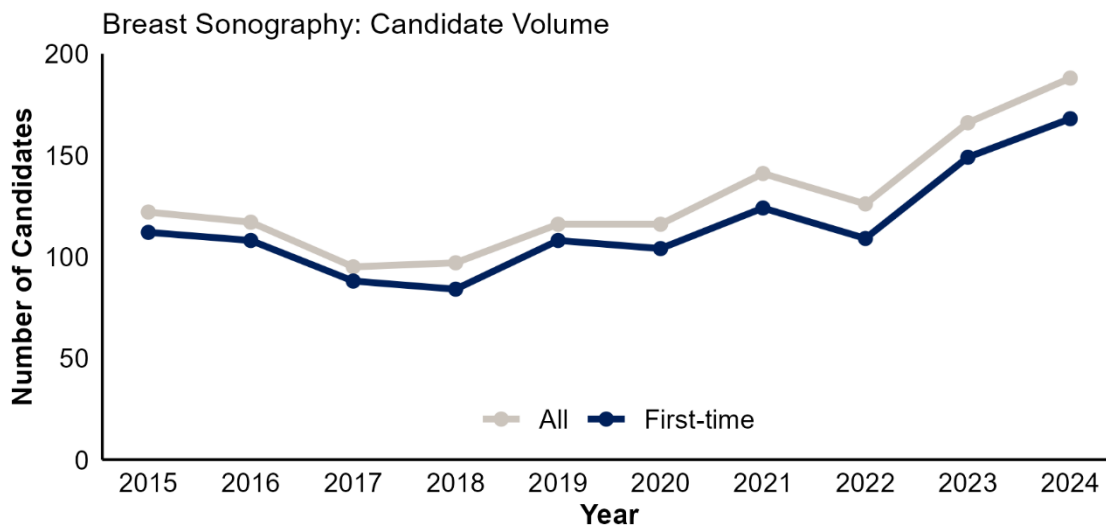
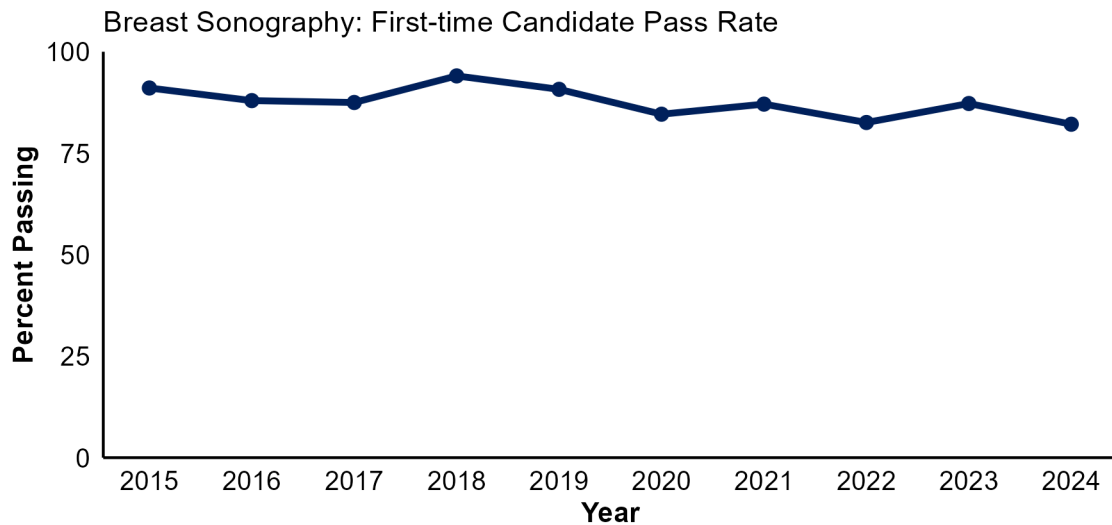
Breast Sonography (BS)

Section Performance

Content Categories	# Items	Mean Score
Patient Interactions and Management	18	8.5
Basic Principles of Ultrasound	37	7.7
Image Formation	32	8.3
Evaluation and Selection of Representative Images	33	8.3
Anatomy and Physiology	15	8.4
Pathology	35	8.5
Breast Interventions	<u>15</u>	<u>8.2</u>
Total	185	81.2

Pass Rate: 82.1%

Historical Exam Volume and Pass Rate



Radiologist Assistant (RA)

Section Performance

Content Categories	% of Exam*	Mean Score
Patient Management	14	8.6
Pharmacology	7	8.1
Patient Safety, Radiation Protection, and Equipment Operation	11	7.6
Abdominal Section	16	8.1
Thoracic Section	9	8.0
Musculoskeletal and Endocrine Sections	9	7.8
Neurological, Vascular, and Lymphatic Sections	9	7.9
Case Study	<u>25</u>	<u>7.8</u>
Total	100	80.0

Pass Rate: 77.8%

*The number of case study items varies based on the individual cases selected, but the section always accounts for twenty-five percent of the total exam points.

Historical Exam Volume and Pass Rate

