INTRODUCTION

The ARRT offers two categories of certification and registration: primary and postprimary. This report summarizes the results of postprimary examinations from July 2018 through June 2019, which includes Mammography, Computed Tomography, Magnetic Resonance Imaging, Cardiac-Interventional Radiography, Vascular-Interventional Radiography, Sonography, Vascular Sonography, Bone Densitometry, and Breast Sonography. This report uses an annual cycle from July to June that aligns with updates to the content specifications and clinical experience requirements for ARRT postprimary exams.

Candidates for postprimary certification and registration must meet three sets of eligibility requirements: certification and registration by ARRT in an appropriate supporting category, completion of clinical experience requirements, and 16 hours of structured education in the content covered by the examination. In some cases, a certificate from ARDMS or NMTCB will serve as a supporting category. The reader should consult an ARRT certification and registration handbook for specific requirements.

This report summarizes the results for each examination separately. Each section presents a brief content outline for the exam and the number of items in each category. Specific results for July 2018 through June 2019 are presented including mean scaled section scores, mean total scaled scores, and pass rates. Charts with historical pass rates and candidate volumes for each exam are also presented. The text below describes ARRT scaled scores and offers some suggestions for interpretation.

INTERPRETATION OF SCORES

Total Scaled Score. The ARRT uses scaled scores to report exam results. A total scaled score can range from 1 to 99, and a total scaled score of 75 is required to pass an examination.

Scaled scores take into account any differences in difficulty between two or more versions of an exam because a scaled score of 75 represents the same level of exam performance, regardless of which version of an exam is taken. The use of scaled scores also permits comparison of exam results over time.

Scaled scores are sometimes mistaken for percent correct scores. This confusion likely arises because both scaled scores and percentages have a similar range of values. A scaled score of 75 does not mean that a candidate correctly answered 75% of the test questions.

Section Scores. Scaled scores are also used to report performance on each section of the exam. The primary purpose of the section scores is to provide general information to candidates regarding their strengths and weaknesses in particular content categories. Pass/fail decisions are not made for individual sections of the exam. The only score that is important for pass/fail decisions is the total scaled score. Sonography is an exception to this rule. In addition to obtaining a scaled score of 75 or greater on the exam, candidates must have a scaled section score of 7.5 in both the Abdomen and the OB/GYN sections.

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 often based on a small number of test questions. 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. 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. 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 radiologic technologists. The cut score represents the performance standard required to obtain certification and registration; those who exceed the standard pass the exam.

The scaled score required to pass remains constant at 75. Using scaled scores ensures that those taking different forms are not penalized for taking a slightly more difficult exam. The use of scaled scores adjusts for differences in exam difficulty such that a given scaled score corresponds to the same level of competence regardless of exam form.

Summary Statistics for July 2018 – June 2019

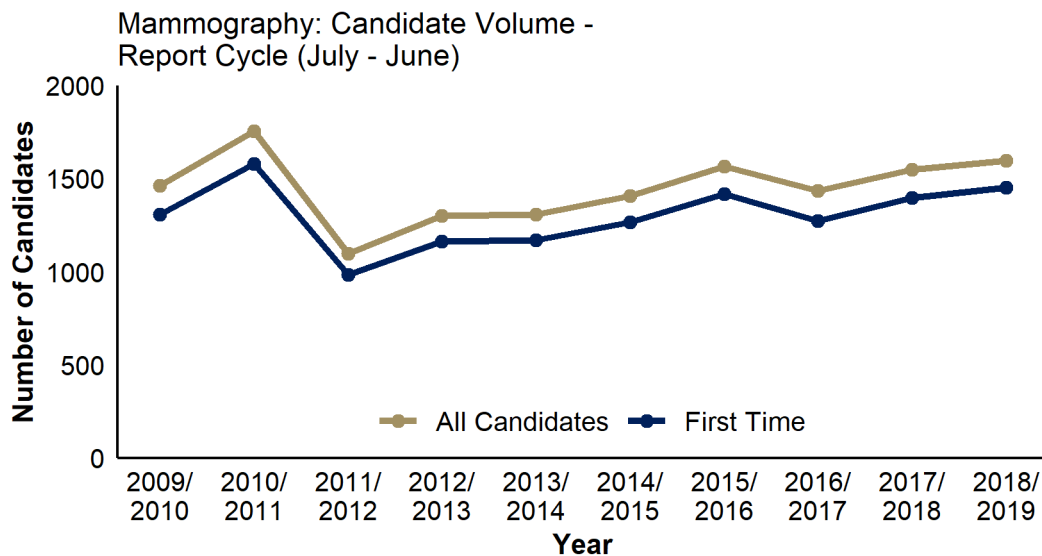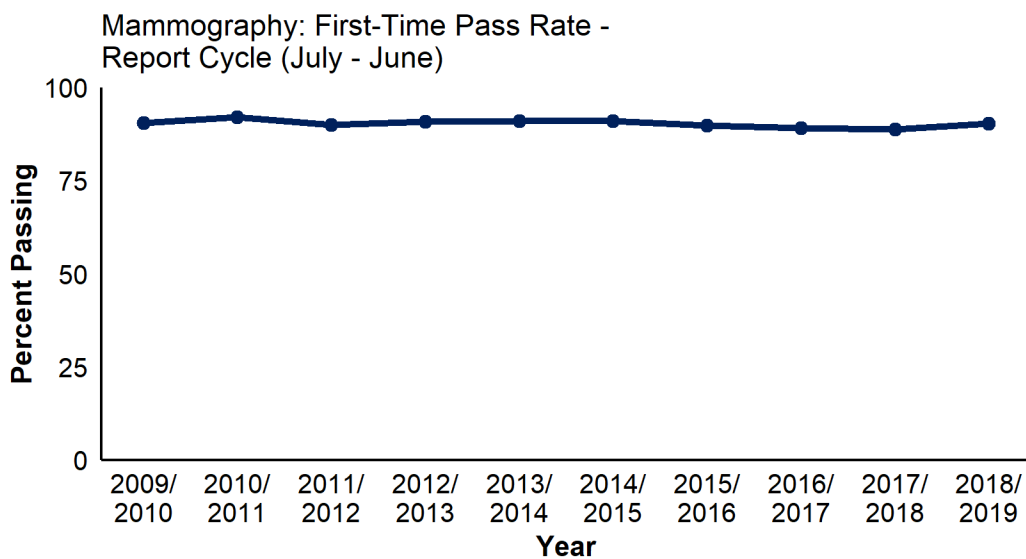**Postprimary Exam Summary Statistics July 2018 - June 2019**

	EXAM VOLUME				FIRST TIMERS	
Exam	First-Time Candidates	Repeat	Re-Rex	Total	Pass %	Mean Scaled Score
Mammography	1,453	139	3	1,595	90.2%	84.2
Computed Tomography	4,773	1,642	8	6,423	74.7%	79.6
Magnetic Resonance Imaging	2,016	624	9	2,649	77.8%	81.0
Sonography	6	1	0	7	83.3%	86.7
Vascular Sonography	9	2	0	11	77.8%	80.6
Bone Densitometry	289	69	0	358	72.3%	79.6
Cardiac-Interventional	138	54	0	192	63.0%	77.5
Vascular-Interventional	497	221	0	718	58.4%	75.8
Breast Sonography	101	9	0	110	95.0%	84.6

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Education and Assessment	12	8.3
Image Production: Equipment Operation and Quality Assurance	43	8.3
Procedures: Anatomy, Physiology, and Pathology	23	8.4
Procedures: Mammographic Positioning, Special Needs, and Imaging Procedures	37	8.6
Total	115	84.2
Pass Rate		90.2%

Mammography: First-Time Pass Rate -
Report Cycle (July - June)

Mammography: Candidate Volume -
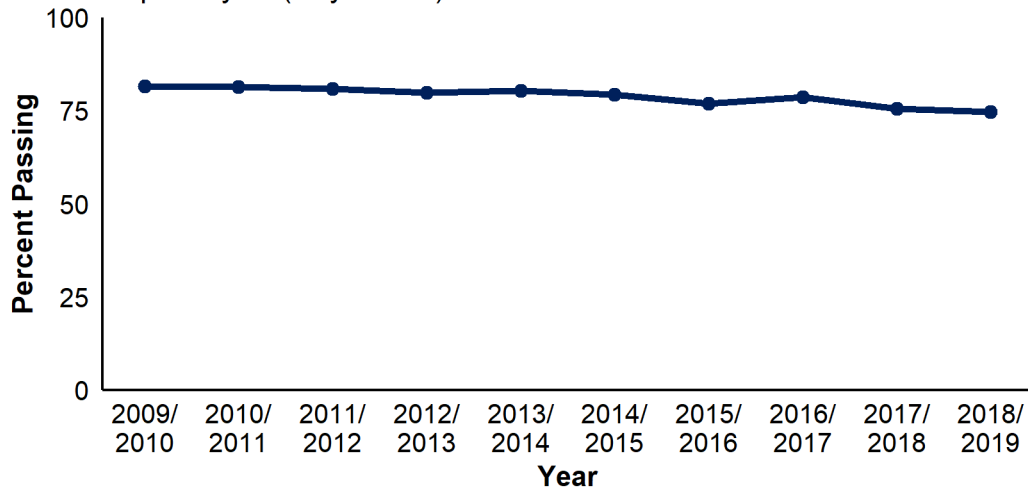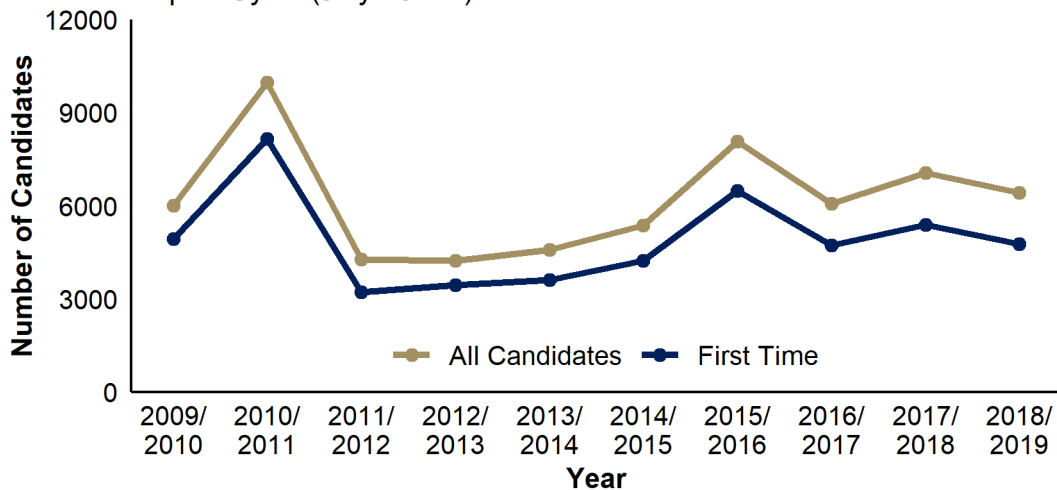Report Cycle (July - June)

Exam Performance for Computed Tomography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	22	8.3
Safety: Radiation Safety and Dose	20	7.8
Image Production: Image Formation	30	7.8
Image Production: Image Evaluation and Archiving	25	7.6
Procedures: Head, Spine, and Musculoskeletal	24	7.9
Procedures: Neck and Chest	20	8.2
Procedures: Abdomen and Pelvis	24	8.1
Total	165	79.6
Pass Rate		74.7%

Computed Tomography: First-Time Pass Rate - Report Cycle (July - June)

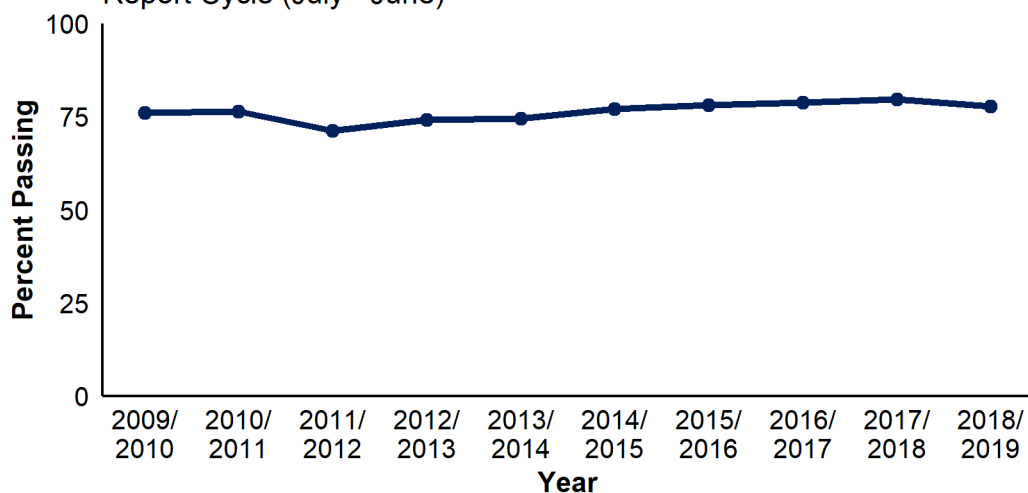Computed Tomography: Candidate Volume - Report Cycle (July - June)

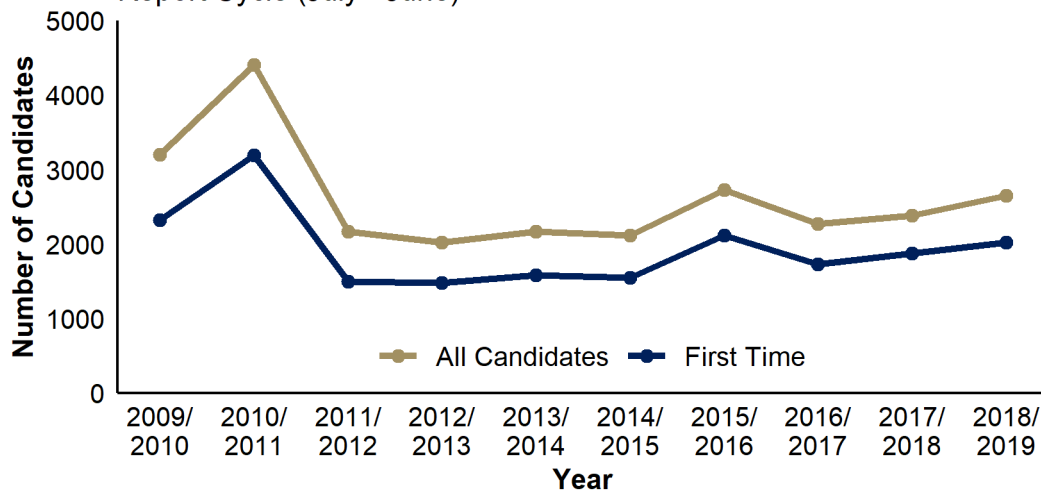# Exam Performance for Magnetic Resonance Imaging

Major Exam Content Categories: First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	17	8.4
Safety: MRI Screening and Safety	15	8.1
Image Production: Physical Principles of Image Formation	40	8.0
Image Production: Sequence Parameters and Options	38	8.1
Image Production: Data Acquisition and Processing	34	7.7
Procedures: Neuro	26	8.4
Procedures: Body	20	8.0
Procedures: Musculoskeletal	10	8.3
Total	200	81.0
Pass Rate		77.8%

Magnetic Resonance Imaging: First-Time Pass Rate - Report Cycle (July - June)

Magnetic Resonance Imaging: Candidate Volume - Report Cycle (July - June)

Exam Performance for Sonography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores (July 1, 2018 - December 31, 2018; n = 5)
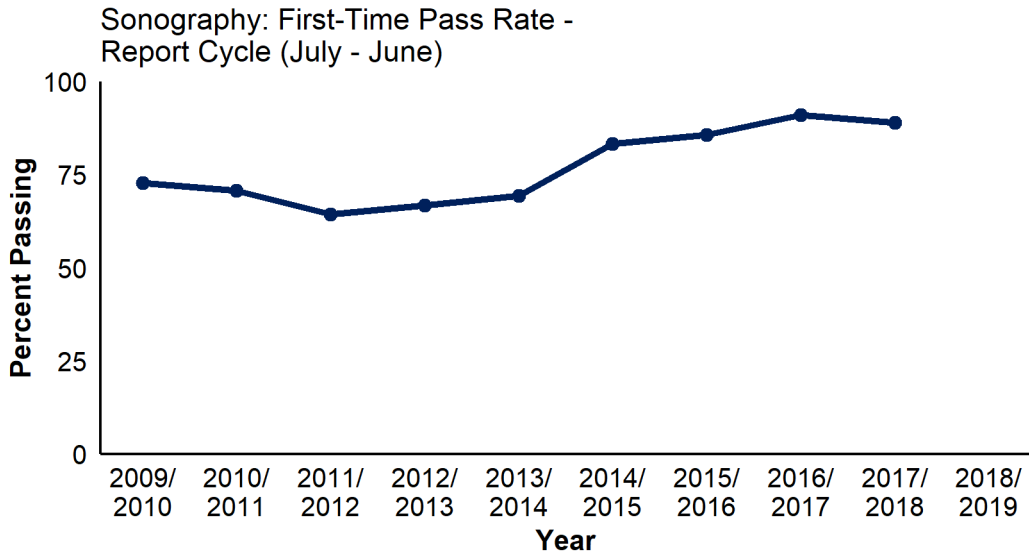
Content Categories	# Questions	Mean Score
A. Patient Care	29	9.2
B. Physical Principles of Ultrasound	115	9.2
C. Abdominal Procedures	76	9.1
D. Obstetrical and Gynecological Procedures	108	9.0
E. Superficial Structures and Other Sonographic Procedures	32	8.2
Total	360	90.0
Pass Rate		100%

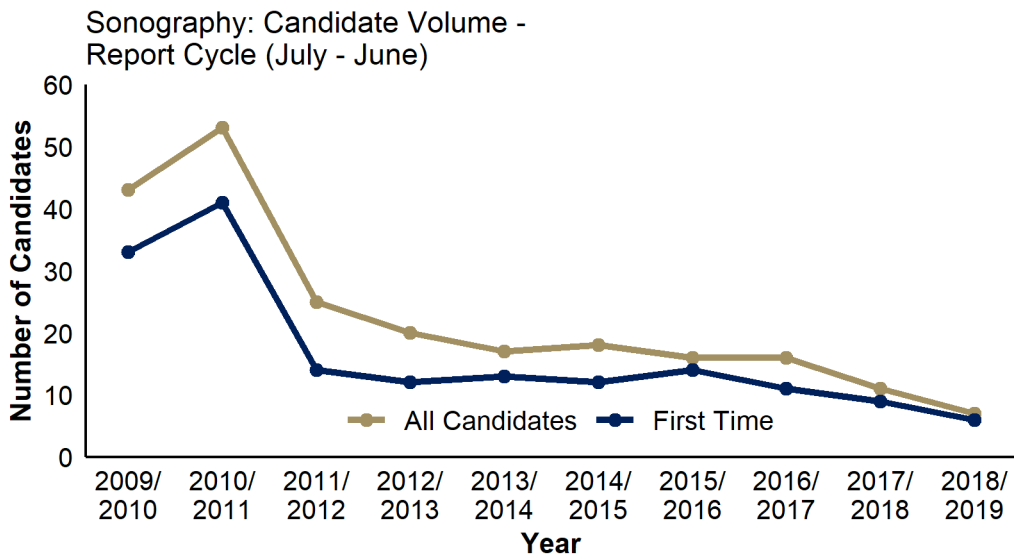**Major Exam Content Categories and First-Time Candidate Mean Scaled Scores (January 1, 2019 - June 30, 2019; n = 1)***

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	29	NA
Image Production: Basic Principles of Ultrasound	50	NA
Image Production: Image Formation	44	NA
Image Production: Evaluation and Selection of Representative Images	21	NA
Procedures: Abdomen	75	NA
Procedures: OB/GYN	109	NA
Procedures: Superficial Structures and Other Sonographic Procedures	32	NA
Total	360	NA
Pass Rate		NA

*ARRT does not report mean statistics when there are less than three candidates.

Sonography: First-Time Pass Rate -
Report Cycle (July - June)

Note: ARRT does not report mean statistics when there are less than 3 candidates

Sonography: Candidate Volume -
Report Cycle (July - June)

Exam Performance for Vascular Sonography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

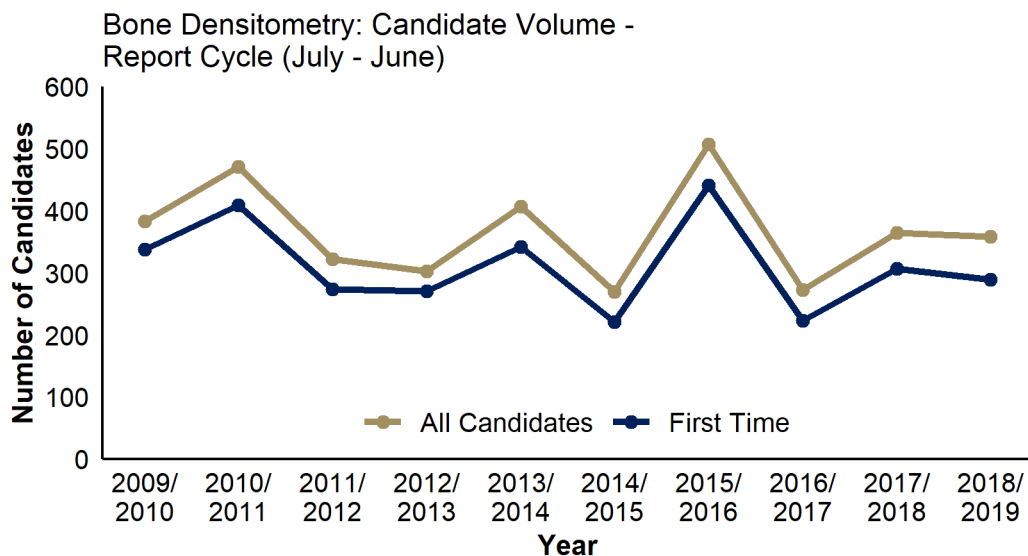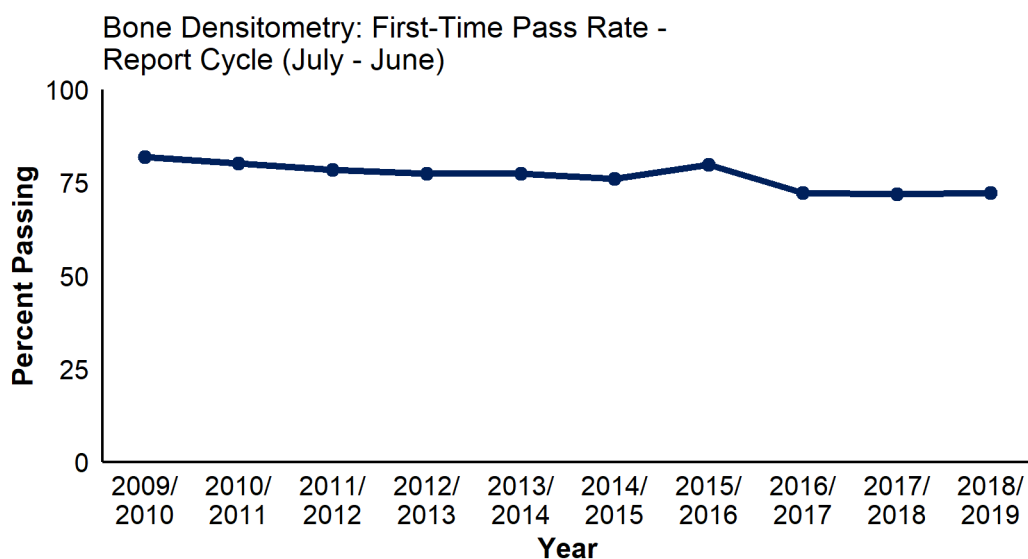| Content Categories	# Questions	Mean Score
Image Production	75	8.0
Procedures	85	8.1
Total	160	80.6
Pass Rate		77.8%

Vascular Sonogrpahy: First-Time Pass Rate - Report Cycle (July - June)

Vascular Sonogrpahy: Candidate Volume - Report Cycle (July - June)
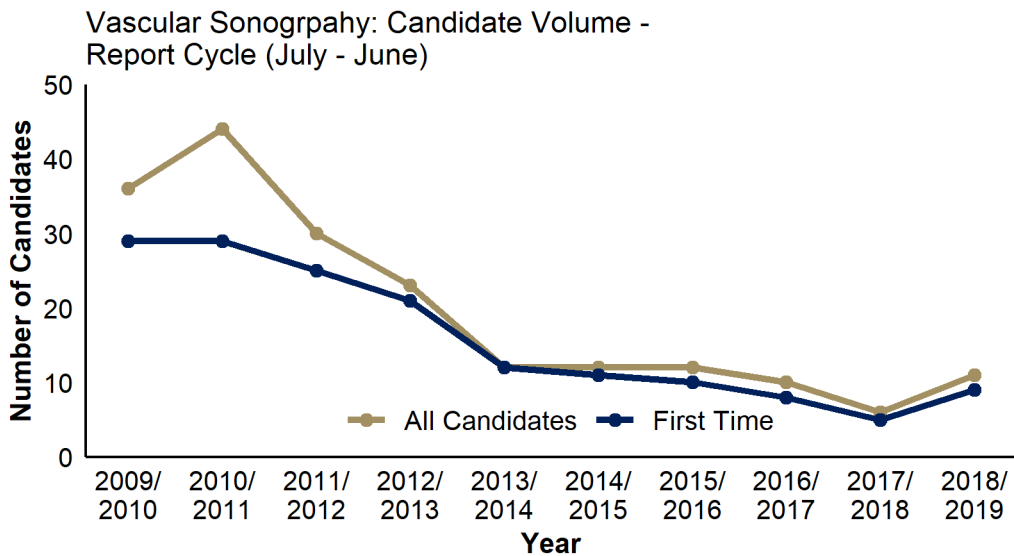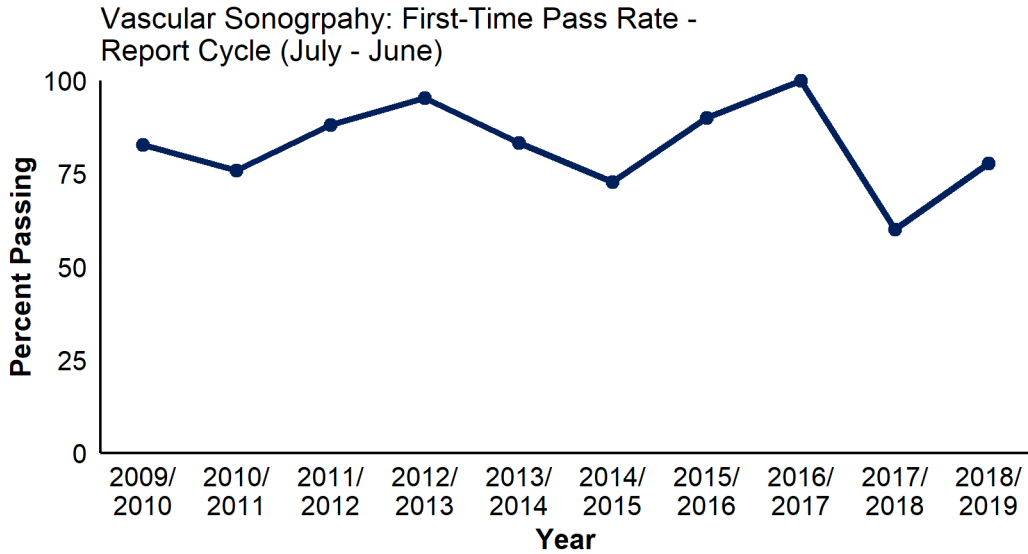
Exam Performance for Bone Densitometry

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Bone Health, Care, and Radiation Principles	16	7.9
Image Production: Equipment Operation and Quality Control	21	7.8
Procedures: DXA Scanning	38	8.0
Total	75	79.6
Pass Rate		72.3%

Bone Densitometry: First-Time Pass Rate -
Report Cycle (July - June)

Bone Densitometry: Candidate Volume -
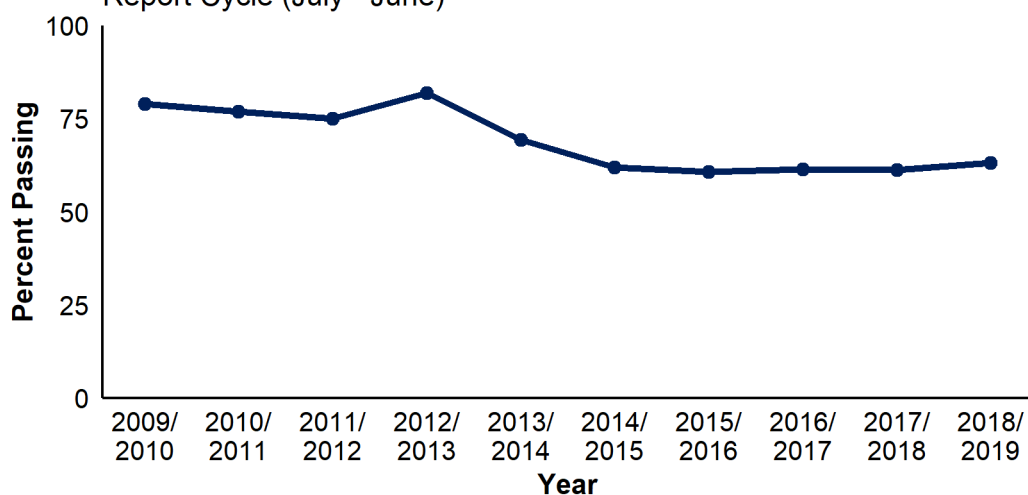Report Cycle (July - June)

Exam Performance for Cardiac-Interventional Radiography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	35	7.8
Image Production: Image Acquisition and Equipment	30	7.8
Procedures: Diagnostic and Conduction System Studies	36	7.8
Procedures: Hemodynamics, Calculations, and Percutaneous Intervention	44	7.7
Total	145	77.5
Pass Rate		63.0%

Cardiac-Interventional Radiography: First-Time Pass Rate - Report Cycle (July - June)

Cardiac-Interventional Radiography: Candidate Volume - Report Cycle (July - June)
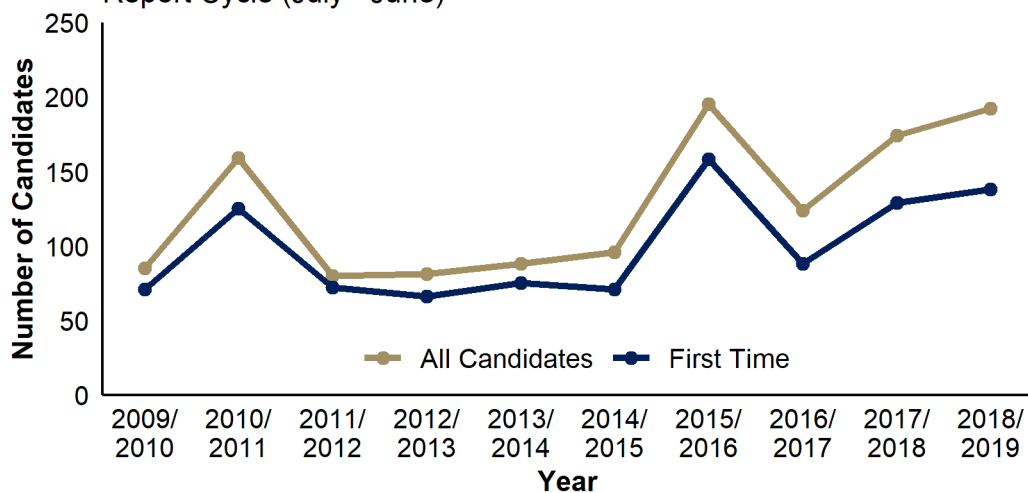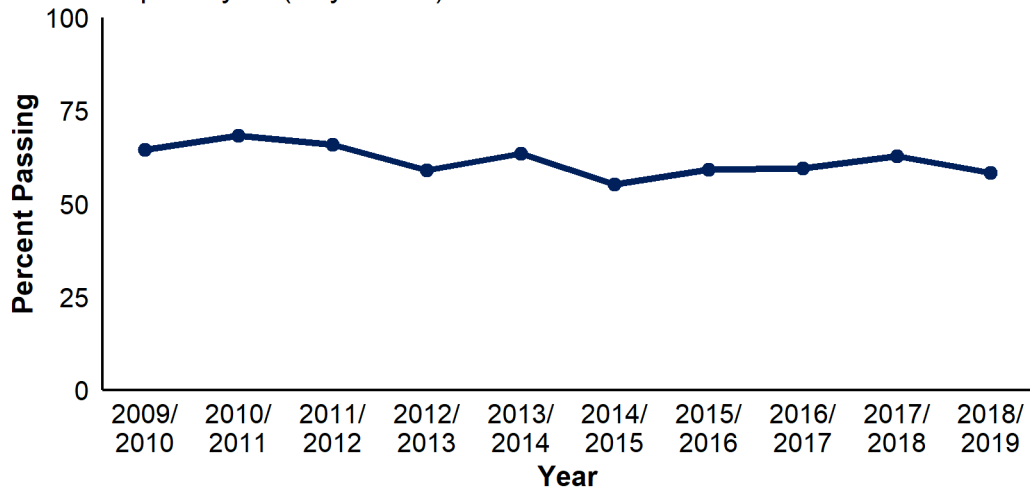
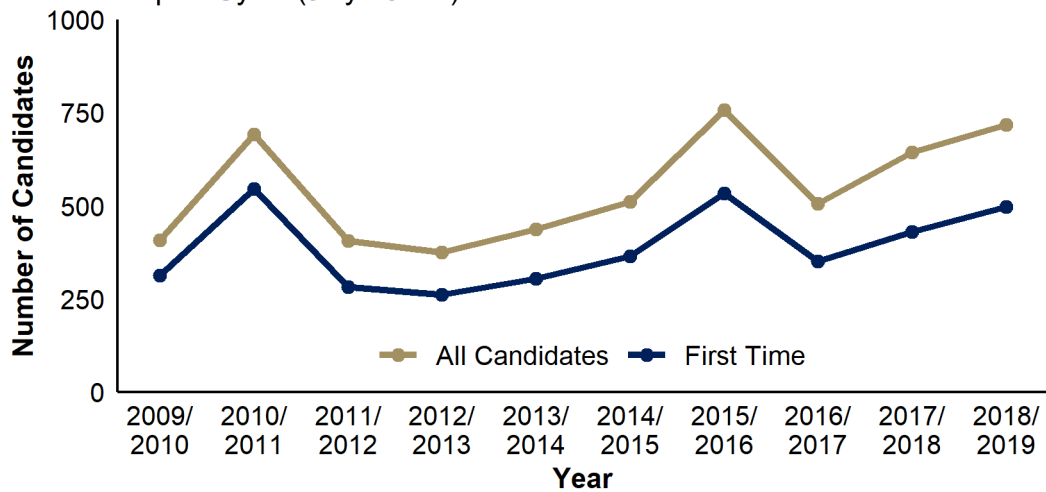# Exam Performance for Vascular-Interventional Radiography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	30	8.0
Image Production: Image Acquisition and Equipment	25	7.7
Procedures: Vascular Diagnostic Procedures	50	7.2
Procedures: Vascular Interventional Procedures	35	7.8
Procedures: Nonvascular Procedures	20	7.3
Total	160	75.8
Pass Rate		58.4%

Vascular-Interventional Radiography: First-Time Pass Rate - Report Cycle (July - June)

Vascular-Interventional Radiography: Candidate Volume - Report Cycle (July - June)

Exam Performance for Breast Sonography

Major Exam Content Categories and First-Time Candidate Mean Scaled Scores

Content Categories	# Questions	Mean Score
Patient Care: Patient Interactions and Management	14	8.9
Image Production: Basic Principles of Ultrasound and Equipment	42	7.6
Image Production: Image Formation	27	8.4
Image Production: Evaluation and Selection of Representative Images	32	8.5
Procedures: Anatomy and Physiology	17	9.1
Procedures: Pathology	33	8.8
Procedures: Surgical/Treatment Changes and Interventional Procedures	20	8.9
Total	185	84.6
Pass Rate		95.0%

Breast Sonography: First-Time Pass Rate -
Report Cycle (July - June)

Breast Sonography: Candidate Volume -
Report Cycle (July - June)