ARDMS®

Job Task Analysis for
ARDMS Pediatric Sonography

Data Collected: March 3, 2014

Reported: March 10, 2014

Analysis Summary for Pediatric Sonography Examination

Survey Dates	**02/04/2014 – 03/03/2014**
Invited Respondents	**5,100**
Those Who Completed Survey	**1,576 (completed at least one question)**
Those Currently Practicing/Teaching Pediatric Sonography	**1,166 (answered yes)**
Response Rate, Completed Surveys	**29%**

Demographics

Education Level

Highest level of education **in sonography** is displayed in the table and figure below.

Sonography Education Level		
	N	**Percent**
No formal / on-the-job training	214	18%
Certificate program	456	39%
2-year college degree	290	25%
4-year college degree	169	14%
Master's degree	8	1%
Doctoral degree	2	0%
Professional degree	30	3%
Total	**1,169**	**100%**

Table 1. Sonography Education Level

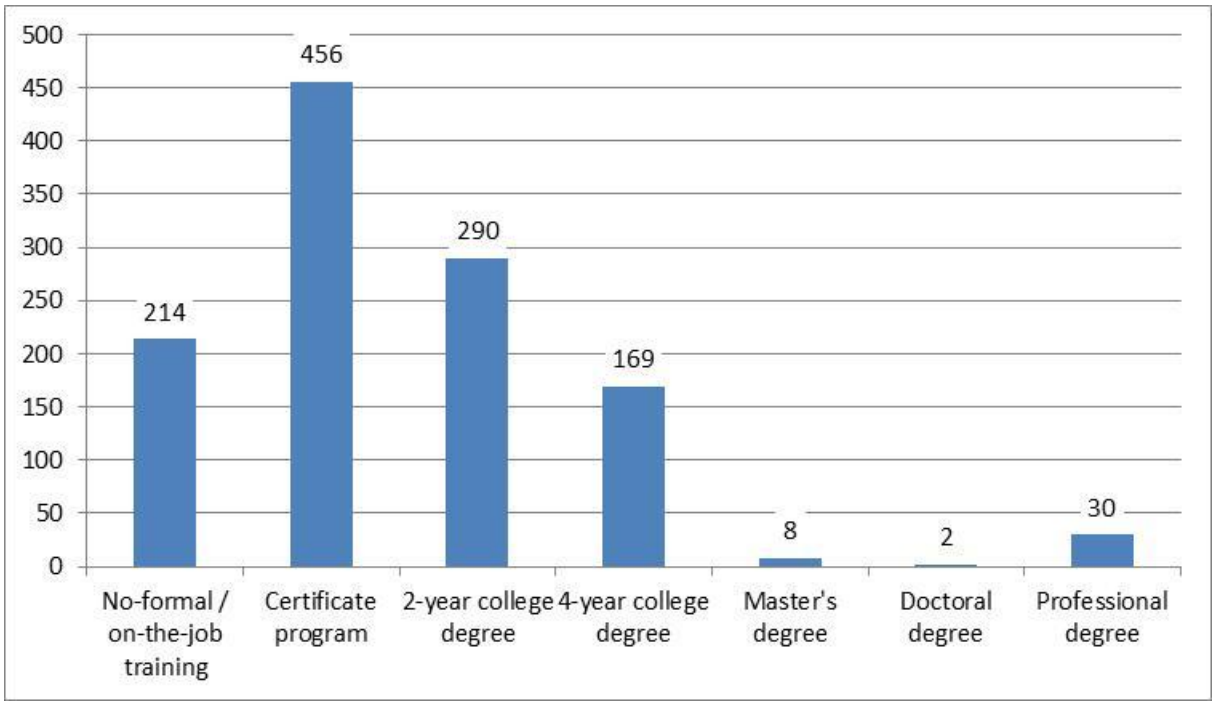

Figure 1. Sonography Education Level

Highest level of education **overall** is displayed in the table and figure below.

Highest Education Level		
	N	**Percent**
Some secondary level education	25	2%
High school diploma / GED	22	2%
Some college	162	14%
2-year college degree	374	32%
4-year college degree	427	37%
Master's degree	79	7%
Doctoral degree	12	1%
Professional degree	68	6%
Total	**1,169**	**100%**

Table 2. Highest Education Level

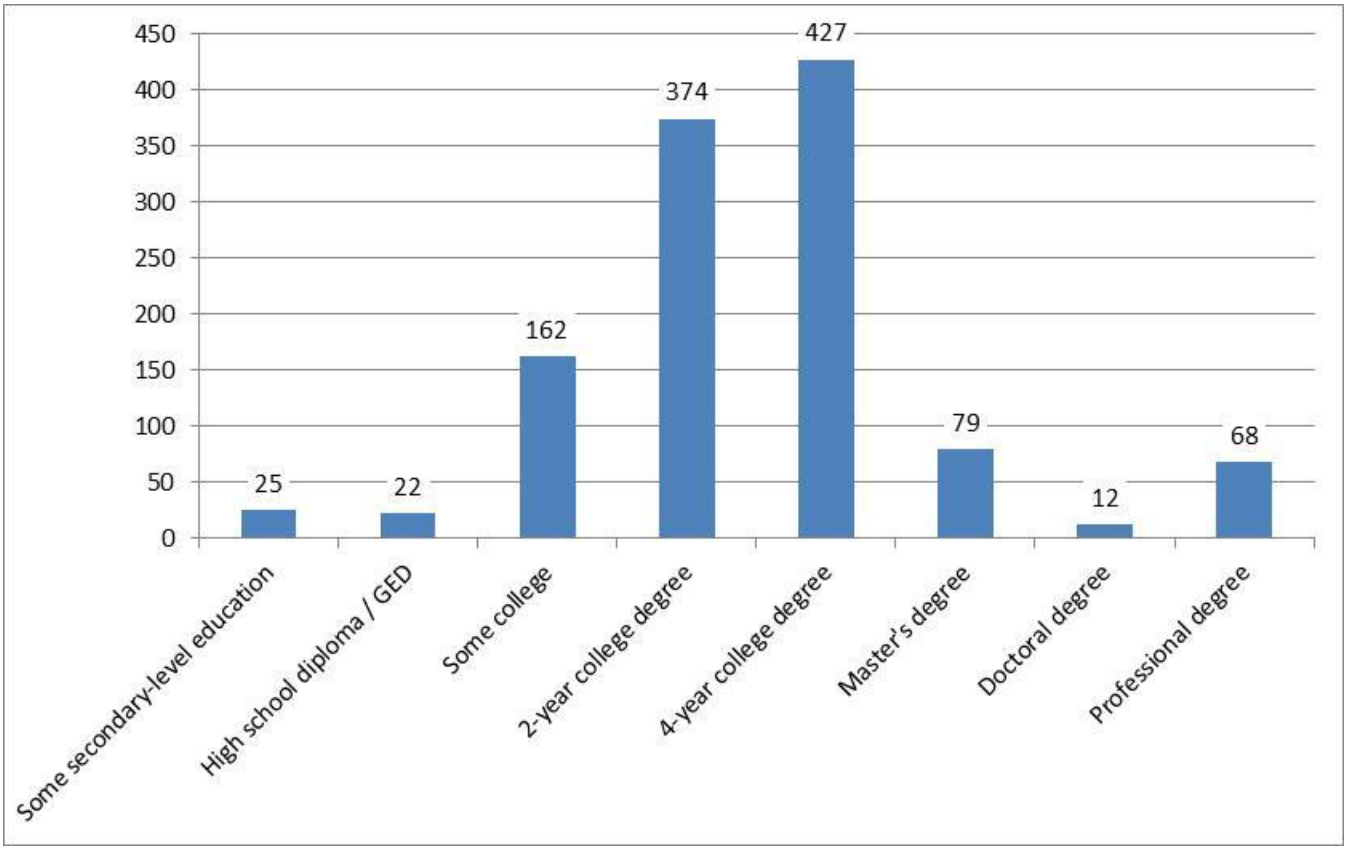

Figure 2. Highest Education Level

The survey respondents were asked if they are sonography educators. Table 3 and Figure 3 demonstrate the results.

Sonography Educator		
	N	**Percent**
Yes	356	30%
No	813	70%
Total	**1,169**	**100%**

Table 3. Sonography Educator

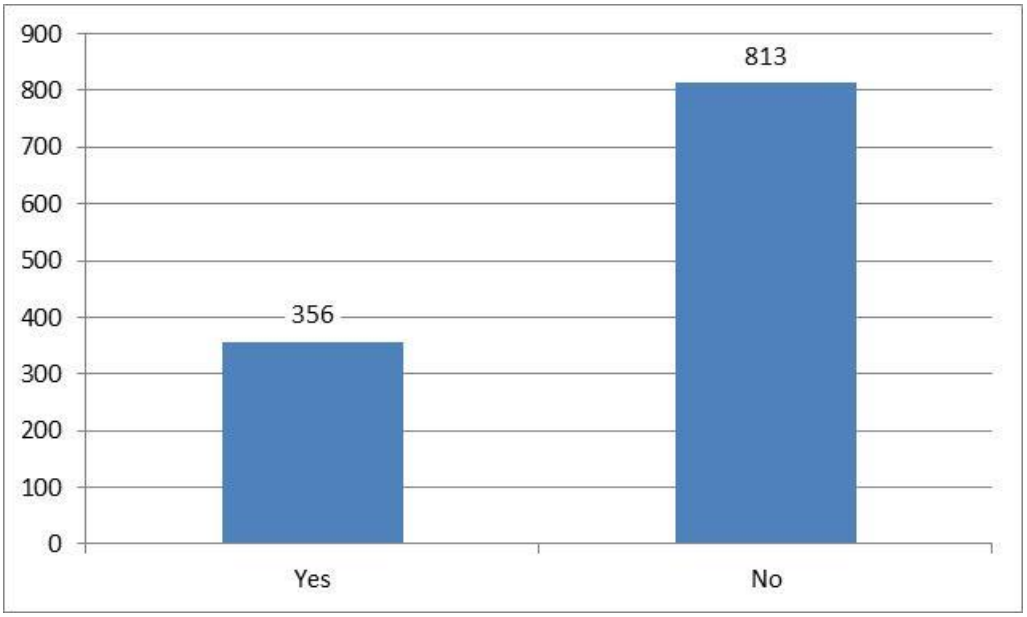

Figure 3. Sonography Educator

Number of Sonographers in Lab

The survey included a question that asked respondents how many sonographers practice in their lab, including themselves. Table 4 and Figure 4 show the results.

Number of Sonographers in Lab		
	N	**Percent**
0	13	1%
1-5	433	37%
6-10	337	29%
11-15	210	18%
16-20	85	7%
21+	85	7%
Total	**1,163**	**100%**

Table 4. Number of Sonographers in Lab

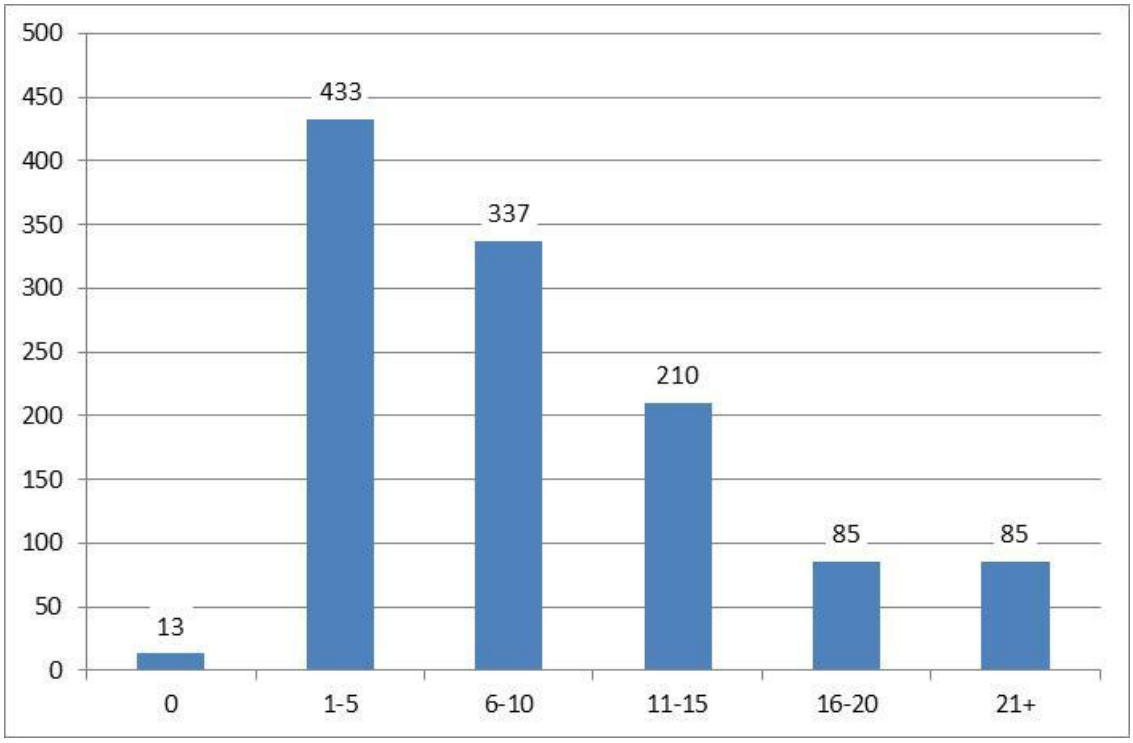

Figure 4. Number of Sonographers in Lab

Lab Sonographers Performing Pediatric Sonography

The survey asked respondents for the percentage of sonographers in their lab who are currently performing pediatric sonography. Table 5 and Figure 5 show the results.

Sonographers Performing Pediatric Sonography		
	N	**Percent**
0-25%	215	19%
26-50%	100	9%
51-75%	90	8%
76-100%	744	65%
Total	**1,149**	**100%**

Table 5. Percent of Sonographers in Lab Performing Pediatric Sonography

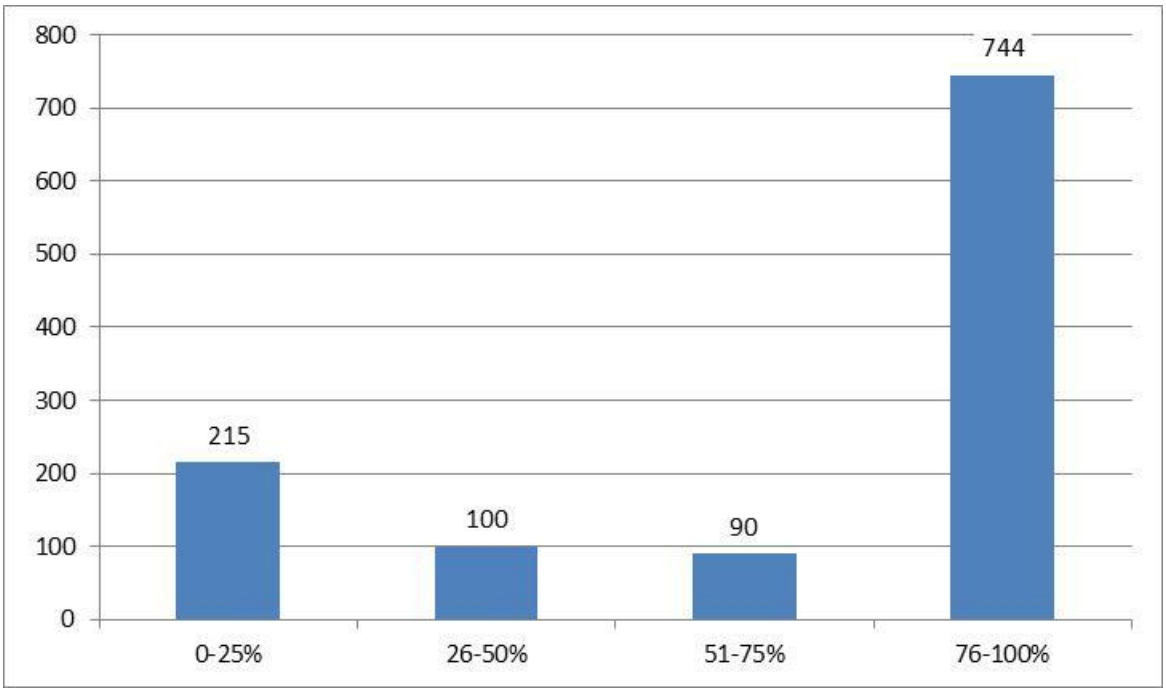

Figure 5. Percent of Sonographers in Lab Performing Pediatric Sonography

Exams Performed by Respondents

Table 6 and Figure 6 show the number of exams that respondents stated they typically perform per month in their own practice.

Number of Exams Respondents Perform per Month		
Exams	**N**	**Percent**
0	17	1%
1-25	205	18%
26-50	123	11%
51-75	126	11%
76-100	204	18%
101+	488	42%
Total	**1,163**	**100%**

Table 6. Number of Exams Respondents Perform per Month

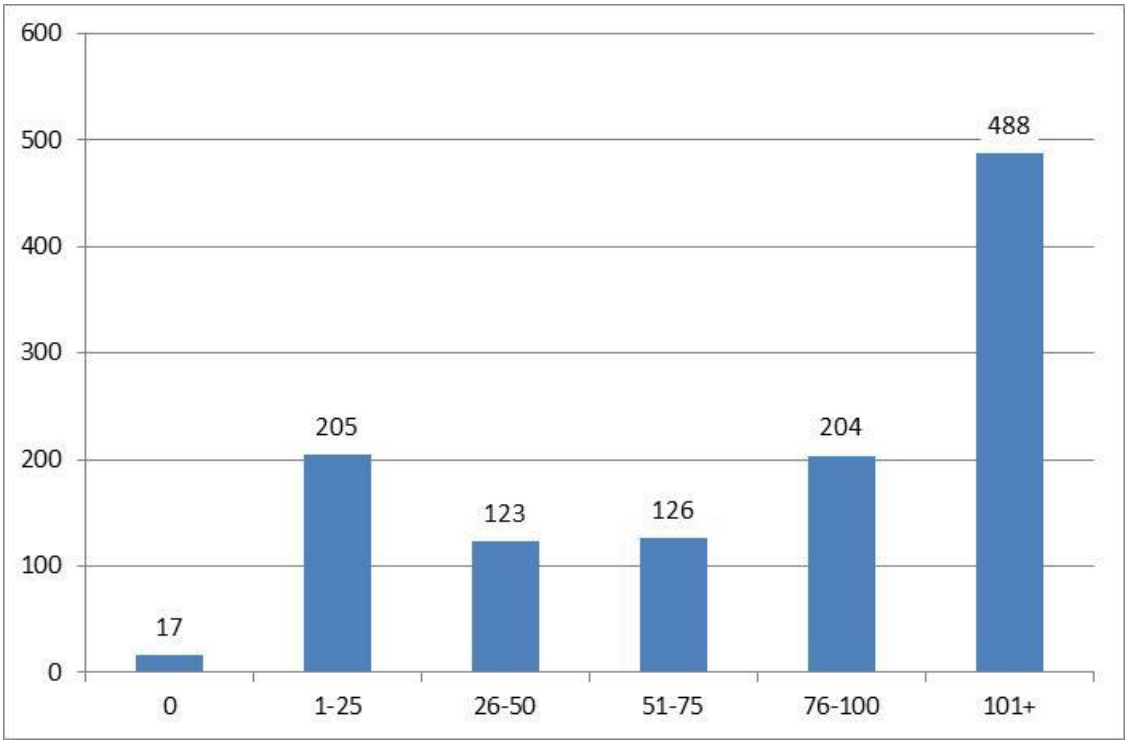

Figure 6. Number of Exams Respondents Perform per Month

Exams Performed by Respondents' Lab

Table 7 and Figure 7 show the number of exams performed in the respondents' lab in a typical month.

Exams Performed per Month by Respondents' Lab		
Exams	**N**	**Percent**
0	20	2%
1-200	247	21%
201-500	283	24%
501-1000	279	24%
1001+	334	29%
Total	**1,163**	**100%**

Table 7. Exams Performed per Month by Respondents' Lab

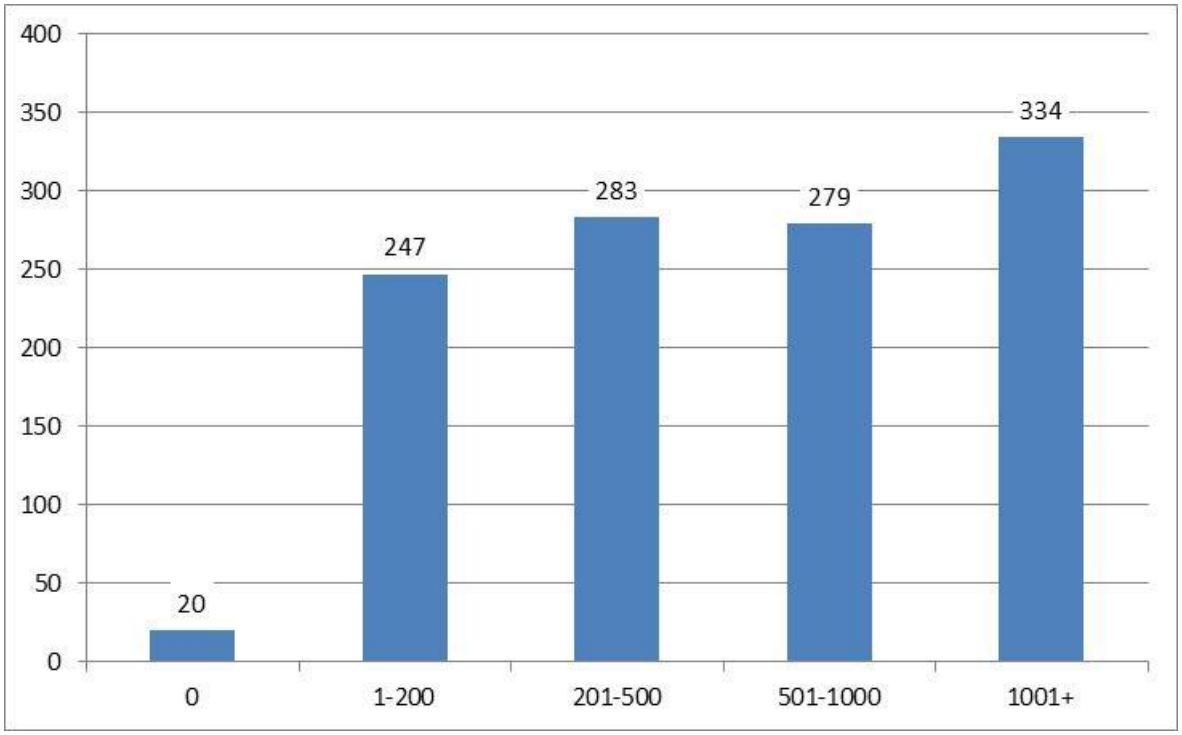

Figure 7. Exams Performed per Month by Respondents' Lab

Experience in the Sonography Profession

Respondents were asked the number of years they have served in the sonography profession. Table 8 and Figure 8 show these results.

Years in Sonography		
Years	**N**	**Percent**
0-5	88	8%
6-10	150	13%
11-15	217	19%
16-20	198	17%
21+	509	44%
Total	**1,162**	**100%**

Table 8. Years in Sonography

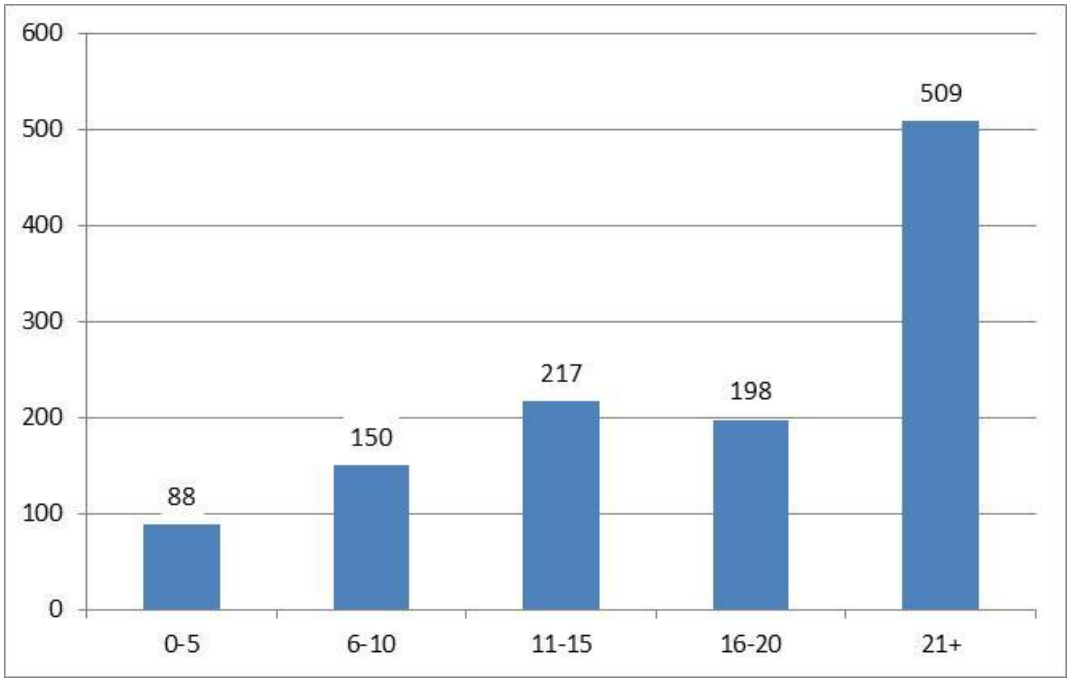

Figure 8. Years in Sonography

Work Environment

The survey respondents were asked in which environment they perform most of their sonographic exams. Results are displayed in Table 9 and Figure 9.

Work Environment		
	N	**Percent**
Hospital: non-university	548	47%
Medical office	68	6%
Hospital: university	308	26%
Outpatient facility	81	7%
Multiple environments	55	5%
Mobile unit	4	0%
Imaging center	65	6%
Educational facility	18	2%
Athletic facility	0	0%
Other	21	2%
Total	**1,168**	**100%**

Table 9. Work Environment

From the respondents who chose 'Other' (*unedited*):

- Hosital and Medical office
- Application specialist
- University setting and outpatient care
- We perform the exams in both hospital and office settings
- Children's Hospital
- Outpatient- university, medical center affiliation
- Hospital and outpatient facility
- Teach Echocardiography
- Also work on day off in private office
- AFILIATED WITH BRENNERS CHILDREN,WFUP.
- Outpatient Center and Hospital University
- Hospital that teaches students from other universities and colleges
- Hospital and outpatient facility
- Physicians office
- Hospital Based Pediatric Speciality Clinic (Cardiology)
- research
- Training hospital, training clinic
- Intracardiac Echocardiography in multiple centers
- university hospital and diagnostic clinic in Iran and Canada, respectively
- industry
- I'm an educator and I continue to work in a University affiliated hospital that performs the majority of adult congenital echocardiograms for the province of BC

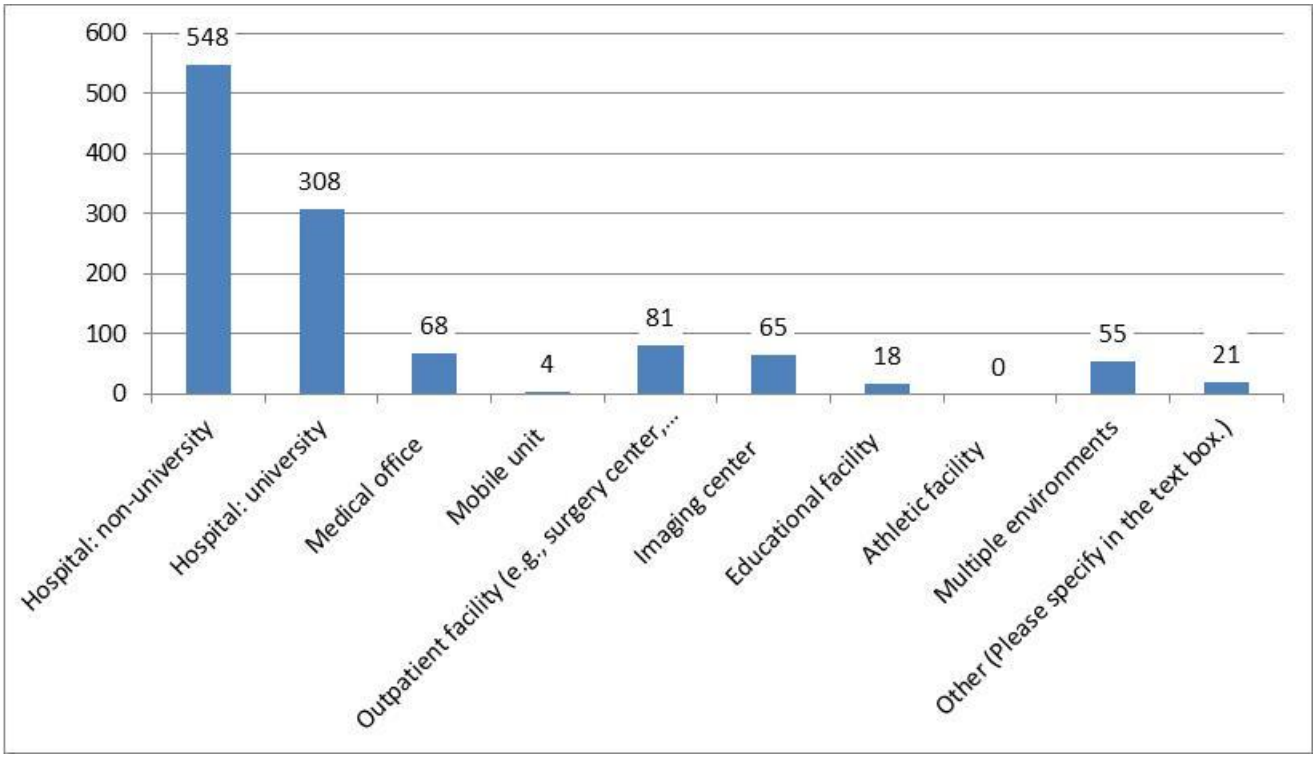

Figure 9. Work Environment

Continuing Education

Respondents were asked if their employer provides a means for continuing their medical education. Table 10 and Figure 10 demonstrate the results.

Employer Provides Means for Continuing Medical Education		
	N	**Percent**
Yes	791	68%
No	371	32%
Total	**1,162**	**100%**

Table 10. Employer Provides Means for Continuing Medical Education

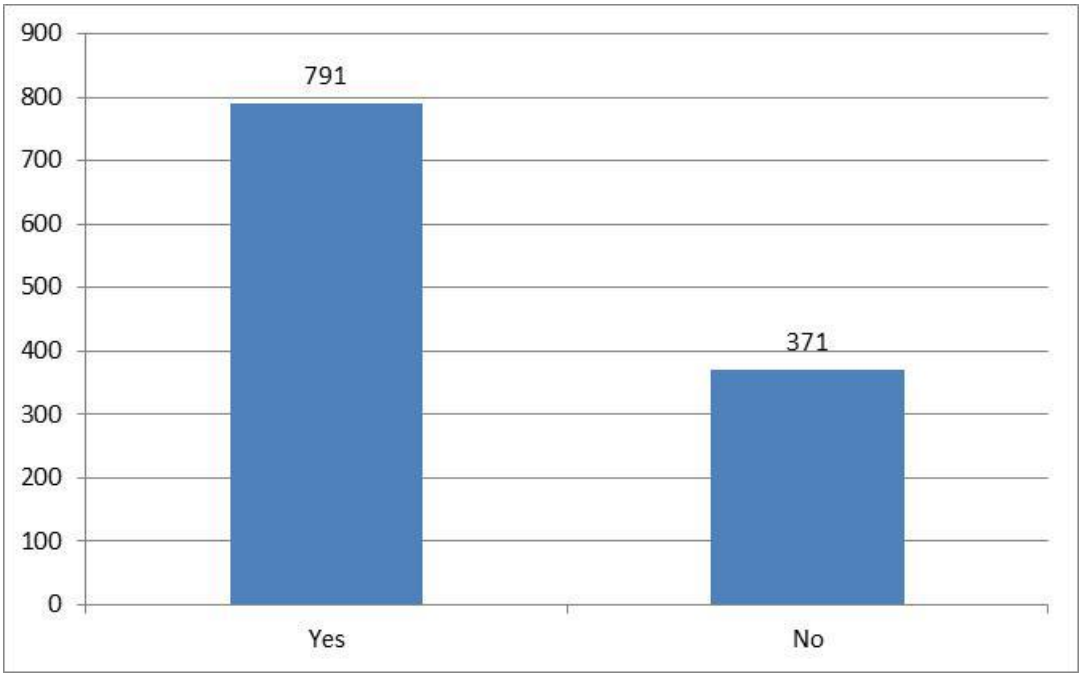

Figure 10. Employer Provides Means for Continuing Medical Education

Primary Work Location

Registrants were asked to designate their primary country of work. Table 11 lists their responses.

Primary Country of Work		
	N	**Percent**
United States of America	1,045	89%
Canada	97	8%
China	5	0%
Hong Kong (S.A.R.)	3	0%
Australia	2	0%
India	2	0%
Pakistan	2	0%
Republic of Korea	2	0%
Afghanistan	1	0%
Algeria	1	0%
Belarus	1	0%
Iran, Islamic Republic of...	1	0%
Saudi Arabia	1	0%
Sweden	1	0%
Switzerland	1	0%
United Arab Emirates	1	0%
United Kingdom of Great Britain and Northern Ireland	1	0%
Viet Nam	1	0%
Total	**1,168**	**100%**

Table 11. Primary Country of Work

Registrants working mainly in the United States of America were asked in which state they primarily work. Results are in Table 12.

Primary State of Work					
	N	**Percent**		**N**	**Percent**
California	119	11%	Utah	13	1%
Florida	76	7%	Oklahoma	12	1%
Texas	72	7%	Alabama	11	1%
Illinois	51	5%	New Hampshire	11	1%
New York	43	4%	New Mexico	11	1%
Ohio	43	4%	Kansas	9	1%
Colorado	42	4%	Kentucky	9	1%
Pennsylvania	40	4%	Connecticut	8	1%
Massachusetts	32	3%	Indiana	8	1%
Michigan	32	3%	Maine	7	1%
Georgia	29	3%	Arkansas	6	1%
New Jersey	27	3%	Nevada	5	0%
Minnesota	24	2%	West Virginia	5	0%
Missouri	24	2%	Delaware	4	0%
North Carolina	24	2%	Montana	4	0%
Oregon	24	2%	South Dakota	4	0%
Wisconsin	23	2%	Rhode Island	3	0%
Virginia	22	2%	District of Columbia	2	0%
Tennessee	21	2%	Hawaii	2	0%
Washington	21	2%	Mississippi	2	0%
South Carolina	19	2%	Puerto Rico	2	0%
Maryland	18	2%	Vermont	2	0%
Nebraska	18	2%	Alaska	1	0%
Arizona	16	2%	I do not reside in the United States	1	0%
Iowa	15	1%	North Dakota	1	0%
Idaho	13	1%	Wyoming	1	0%
Louisiana	13	1%	**Total**	**1,045**	**100%**

Table 12. Primary State of Work

Respondents working mainly in Canada were asked in which province or territory they primarily work.

Primary Province or Territory of Work		
	N	**Percent**
Alberta	22	23%
British Columbia	12	12%
Manitoba	4	4%
Newfoundland and Labrador	1	1%
Nova Scotia	1	1%
Ontario	55	57%
Saskatchewan	2	2%
Total	**97**	**100%**

Table 13. Primary Province or Territory of Work

Volunteer Opportunities

Respondents were asked if they knew of the various volunteer opportunities at ARDMS. In Table 14 and Figure 14 are the results.

Volunteer Opportunities at ARDMS Known		
	N	**Percent**
Yes	520	48%
Maybe	105	10%
No	458	42%
Total	**1,083**	**100%**

Table 14. Volunteer Opportunities at ARDMS Known

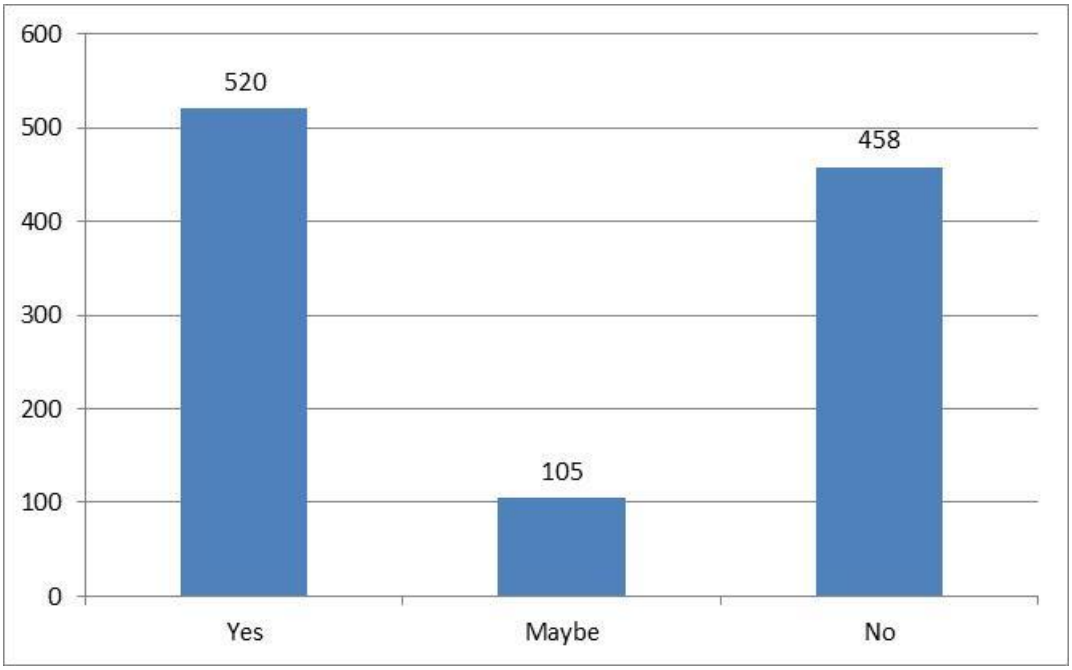

Figure 14. Volunteer Opportunities at ARDMS Known

Respondents were asked if they would like more information on the various volunteer opportunities at ARDMS. Table 15 and Figure 15 show the results.

Want More Information on Volunteer Opportunities		
	N	**Percent**
Yes	442	41%
Maybe	279	26%
No	362	33%
Total	**1,083**	**100%**

Table 15. Want More Information on Volunteer Opportunities

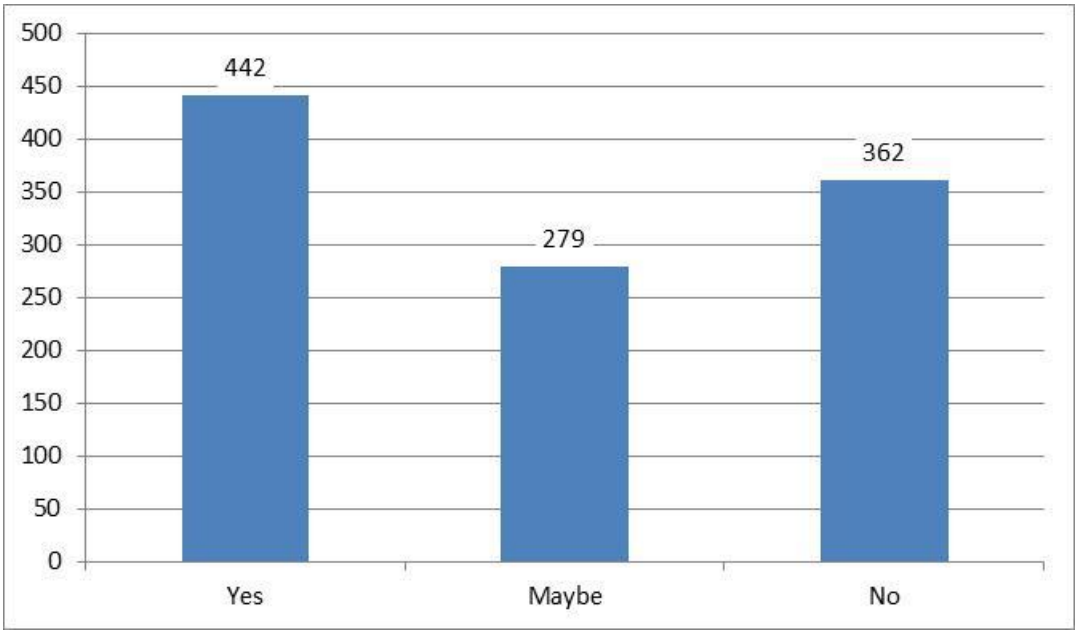

Figure 15. Want More Information on Volunteer Opportunities

Survey Topics Listing

Below is the complete list of topics as they appeared in the survey.

ID	PS Survey Tasks
1.	**Anatomy and Physiology**
1.1.	Evaluate anatomy of the brain and skull
1.2.	Evaluate anatomy of the spine
1.3.	Evaluate anatomy of the gastrointestinal system, i.e., liver, spleen, pancreas, bowel
1.4.	Evaluate anatomy of the neck
1.5.	Evaluate anatomy of superficial structures
1.6.	Evaluate anatomy of the chest, i.e., pleural space, lung, thymus
1.7.	Evaluate musculoskeletal anatomy, i.e., hips and joints
1.8.	Identify normal developmental changes
1.9.	Understand age-specific growth standards
1.10.	Evaluate peripheral vascular anatomy
1.11.	Evaluate abdominal vascular anatomy
1.12.	Evaluate intracranial vascular anatomy
1.13.	Evaluate anatomy of the genitourinary system, i.e., scrotum, kidneys, adrenal gland, bladder, uterus, ovaries
1.14.	Evaluate neck vascular anatomy
1.15.	Evaluate female pelvic vascular anatomy
1.16.	Evaluate scrotal vascular anatomy
2.	**Pathology**
2.1.	Identify vascular malformations
2.2.	Identify congenital abnormalities, i.e., neurulation, neural plate closure, migration anomalies, hindbrain, cerebellar, callosal agenesis
2.3.	Identify neurocutaneous syndromes, i.e. tuberous sclerosis, Von Hippel-Lindau, Sturge-Weber
2.4.	Identify hydrocephalus/ventriculomegaly
2.5.	Identify spinal malformations
2.6.	Evaluate for hepatobiliary abnormalities , i.e., choledochal cyst, biliary atresia
2.7.	Evaluate for splenic abnormalities, e.g., polysplenia
2.8.	Evaluate for pancreatic abnormalities, i.e., cystic fibrosis, pancreatitis, and lesions
2.9.	Evaluate for stomach, duodenum, and intestine abnormalities, i.e., duplication cysts, pyloric stenosis, necrotizing enterocolitis, intussusception, masses
2.10.	Evaluate for kidney abnormalities, i.e., horseshoe, duplication anomalies, cystic diseases
2.11.	Evaluate for ureter and bladder abnormalities, i.e., ureterocele, duplication, bladder extrophy, urachal anomalies, vesicoureteral reflux, obstructive process
2.12.	Evaluate for adrenal gland abnormalities, e.g., congenital adrenal hemor
2.13.	Evaluate male genital tract for abnormalities, e.g., hydroceles, cryptorchidism
2.14.	Evaluate female genital tract for abnormalities, e.g., hematometrocolpos
2.15.	Evaluate for neck abnormalities, e.g., vascular and nonvascular lesions
2.16.	Evaluate chest masses, e.g., sequestration vs. congenital pulmonary airway malformation
2.17.	Evaluate congenital diaphragmatic hernia contents
2.18.	Evaluate diaphragmatic paralysis (M-mode) and congenital hernia
2.19.	Evaluate the hip for developmental dysplasia
2.20.	Identify findings of hypoxic-ischemic insults in the preterm and term infants
2.21.	Evaluate intracranial hemorrhage, infection, and masses
2.22.	Identify hydrocephalus/ventriculomegaly

2.23.	Identify findings of sickle cell disease
2.24.	Evaluate for hepatobiliary disease, i.e., infection, obstruction, parenchymal liver disease, benign and malignant lesions, etc.
2.25.	Evaluate liver transplant
2.26.	Evaluate for splenic disease, i.e., infection, benign, malignant lesions, and congenital lesions
2.27.	Evaluate for pancreatic disease, i.e., pancreatitis, benign and malignant lesions
2.28.	Evaluate the stomach, duodenum, and small intestine for abnormalities, i.e., necrotizing enterocolitis, intussusception, masses
2.29.	Evaluate the colon for abnormalities, i.e., intussusception, appendicitis, inflammatory bowel disease
2.30.	Evaluate kidneys for abnormalities, i.e., stone disease, infection, masses, vascular disease
2.31.	Evaluate renal failure and transplants
2.32.	Evaluate ureter and bladder for abnormalities, i.e., infection, masses, vesicoureteral reflux
2.33.	Evaluate adrenal glands for masses and hemorrhage
2.34.	Evaluate male genital tract for abnormalities, i.e., torsion, infection, tumors
2.35.	Evaluate female genital tract for abnormalities, i.e., torsion, masses
2.36.	Evaluate the glands and soft tissues for infection, inflammation, lymph nodes, and masses
2.37.	Evaluate the pleural space and lungs for abnormalities, i.e., simple or complicated pleural effusion and consolidation
2.38.	Evaluate the spine for hemorrhage and masses
2.39.	Evaluate joint effusion in hips or other joints
2.40.	Evaluate tendons and synovium for tenosynovitis and synovial hypertrophy
2.41.	Evaluate superficial structures for foreign bodies, infections, and masses
2.42.	Evaluate intravenous lines and vessels for abnormalities, i.e., thrombosis, pseudoaneurysm, and narrowing
2.43.	Evaluate hernias, i.e., inguinal hernias
2.44.	Evaluate peritoneal cavity for the presence of fluid and abscess
2.45.	Evaluate retroperitoneum for masses, i.e., lymphadenopathy
2.46.	Evaluation following surgery and interventional procedure
3.	**Patient Care**
3.1.	Maintain infection control
3.2.	Use sterile technique when preparing for procedure
3.3.	Modify imaging protocol in the premature or critically ill infant
3.4.	Modify imaging protocol in the uncooperative infant/child
4.	**Integration of Data**
4.1.	Assess indications for examination requested
4.2.	Assess relevant clinical laboratory values for examination being performed
4.3.	Assess relevant patient signs and symptoms for examination being performed
4.4.	Correlate ultrasound findings with other imaging modalities
5.	**Protocols**
5.1.	Inform patient or referring practitioner of examination preparations (e.g., fasting for abdominal imaging)
5.2.	Modify the examination based on clinical history or sonographic findings
5.3.	Use multiple patient positions to evaluate anatomy
5.4.	Utilize appropriate acoustic windows and scan planes
5.5.	Obtain measurements of structures
5.6.	Obtain Doppler velocities and measurements
6.	**Physics and Instrumentation**
6.1.	Modify the examination due to gray-scale artifacts
6.2.	Modify the examination due to color Doppler artifacts
6.3.	Modify the examination due to spectral Doppler artifacts

6.4.	Adjust console settings to achieve optimal imaging display
6.5.	Select proper transducer
6.6.	Select proper examination technique, i.e., M-mode, B-mode, Doppler, harmonic imaging
7.	**Treatment**
7.1.	Provide ultrasound guidance during procedures
8.	**Other**
8.1.	Recognize findings that require immediate attention
8.2.	Identify abnormalities related to traumatic events