

Annual NCE and SEE Report
Summary of NCE and SEE
Performance and Clinical Experience
Calendar Year 2019 (CY 2019)
January 1, 2019 - December 31, 2019

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Introduction

This report presents a summary of information on individual performance on the National Certification Examination (NCE) and the Self-Evaluation Examination (SEE) in the Calendar Year 2019 (CY 2019), January 1, 2019 through December 31, 2019. It should be noted that starting in 2019, the NBCRNA transitioned its fiscal year to align with the Calendar Year (CY). To help with the transition, in February 2020, the NBCRNA released the performance summary of NCE and SEE based on the previous Fiscal Year (FY 2019, September 1, 2018 through August 31, 2019).

Performance on the NCE is summarized first, with pass/fail outcomes presented according to several demographic variables: gender, age, clinical background, and type of graduate degree. Trend data summarizing pass rates over the past five years are also provided in the last column of each table for each demographic. Readers should note that there was no change to the NCE passing standard in CY 2019. The passing standard was last changed on January 1, 2014; the NBCRNA Board of Directors reviewed the results of the 2017 standard setting study and voted to retain the standard set in 2014.

NCE pass rate summaries are followed by an analysis of candidates' responses on a satisfaction survey administered at the end of the NCE. The survey requested information pertaining to candidates' satisfaction with their registration and test experience. Additionally, descriptive statistics (e.g., mean, standard deviation) are provided for the number of cases performed in various clinical areas by students of nurse anesthesia educational programs who graduated in CY 2019.

Finally, information about scaled scores for the SEE is presented in the last part of the report, summarizing performance by gender, age, clinical background, type of graduate degree, and year in program. Trend data summarizing the past five years in each demographic subgroup are also provided in the final column of each table.

Please note that the following changes have been included in this CY 2019 Annual NCE and SEE Report:

- Under Descriptive Information on Number of Clinical Experiences, Position Categories and Pharmacological Agents are no longer reported as these are no longer tracked.
- Clinical experiences are reported separately for individuals who matriculated into master's and doctoral anesthesia programs.

Candidate Performance on the NCE

The information in **Table 1** addresses the performance of candidates on the NCE during the reporting period. Pass rates appear separately for first-time candidates versus repeat candidates, based on the passing standard that took effect on January 1, 2014. The pass rate for the 2,421 first-time candidates is 84.4%. The pass rate is lower for repeat examinees, consistent with the previous years' data.

The CY 2019 pass rate (84.4%) is nearly the same as the FY 2018 pass rate (84.3%) and is comparable to the cumulative first-time pass rate (84.1%) averaged over the previous five years as shown in the final column of **Table 1** (Years 2015–2019 represents January 1, 2015–December 31, 2019, total N = 15,410). First-time examinee pass rates for the NCE, by year since 2008, can be found in **Table A1** in Appendix A of this report.

Table 1. Pass/Fail Summary for NCE Candidates, CY 2019

First-Time Candidates	Frequency	Percent	5-year Trend %
Pass	2,043	84.4%	84.1%
Fail	378	15.6%	15.9%
Total	2,421	100.0%	100.0%
Repeat Candidates	Frequency	Percent	5-year Trend %
Pass	394	61.9%	61.8%
Fail	243	38.1%	38.2%
Total	637	100.0%	100.0%

The NCE total scores and domain-level information for first-time candidates can be found in **Table A2** of Appendix A.

Table 2 shows the distribution of test length and pass/fail status. Only *first-time* candidates are included in Table 2. Of the candidates who passed, the majority (56.4%) were administered 70 items (not including the 30 unscored pretest items). Only 4.5% of NCE candidates failed the test in 70 items. Approximately 19.1% of the candidates took the maximum test length of 140 items.

Table 2. Pass/Fail Summary by Test Length for First-Time NCE Candidates, CY 2019

	Frequency	Percent	5-year Trend %
Pass in 70 items	1,365	56.4%	56.1%
Pass in 71 to 139 items	377	15.6%	15.6%
Pass in 140 items	301	12.4%	12.5%
Fail in 70 items	108	4.5%	4.4%
Fail in 71 to 139 items	107	4.4%	4.3%
Fail in 140 items	163	6.7%	7.2%
Total	2,421	100.0%	100.0%

Demographic Characteristics of NCE Candidate Population, CY 2019

The next several tables present pass rates on the NCE grouped by gender, age, clinical background, and degree earned. Only *first-time* candidates are included in these tables. **Table 3** indicates that 59.0% of the NCE candidates were female and 41.0% were male. The pass rates between females and males were consistent with the five-year trend (final column of Table 3), showing a smaller difference in CY 2019 (83.9% vs. 85.1%) than in FY 2018 (83.2% vs. 85.9%).

Table 3. Gender of NCE Candidates, CY 2019

Gender	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Female	1,199	83.9%	230	16.1%	1,429	59.0%	83.4%
Male	844	85.1%	148	14.9%	992	41.0%	85.1%
Total	2,043	84.4%	378	15.6%	2,421	100.0%	84.1%

Table 4 presents the pass rate by age group. The pass rate decreased as examinee age increased, both for the CY 2019 sample and the five-year trend analysis. Younger students tend to perform better on the NCE. The average age of the 2019 *first-time* NCE candidates was 32.2 years.

Table 4. Age of NCE Candidates, CY 2019

Age	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Under 30	754	90.8%	76	9.2%	830	34.3%	89.9%
30 - 35	924	86.4%	146	13.6%	1,070	44.2%	84.6%
36 - 39	226	73.1%	83	26.9%	309	12.8%	76.5%
40 or more	139	65.6%	73	34.4%	212	8.8%	68.0%
Total	2,043	84.4%	378	15.6%	2,421	100.0%	84.1%

Table 5 displays pass rates for candidates' clinical background. Close to one-third of the candidates reported their clinical background as ICU/CCU (34.8%). Pass rate comparisons between different clinical settings (Table 5) should be made with caution, however, because some subgroups for the CY 2019 data feature small sample sizes. Also, the clinical background categories tend to not be mutually exclusive. While examinees report their clinical background as discrete categories, actual experience may be more diverse and complex (e.g., SICU in some facilities may include CVICU patients, and many other permutations can exist). Finally, this data is self-reported and could be subject to inaccuracies.

When comparing pass rates across clinical background subgroups, readers are advised to refer to the 5-year trend column of Table 5. The pass rates in this column are more reliable for comparisons because they are based on a much larger sample. For instance, over the past five years, first-time NCE examinees

with MICU, PICU, CCU, and SICU clinical backgrounds respectively have demonstrated the highest rates of success on the NCE.

Table 5. Clinical Background of NCE Candidates, CY 2019

Clinical Background	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
CCU	237	85.9%	39	14.1%	276	11.4%	85.0%
ER	135	78.9%	36	21.1%	171	7.1%	80.7%
ICU/CCU	703	83.5%	139	16.5%	842	34.8%	83.5%
MICU	360	88.5%	47	11.5%	407	16.8%	87.6%
NEURO ICU	117	78.0%	33	22.0%	150	6.2%	84.1%
NICU	18	72.0%	7	28.0%	25	1.0%	76.0%
OR	6	54.5%	5	45.5%	11	0.5%	75.4%
PACU	13	81.3%	3	18.8%	16	0.7%	82.2%
PICU	85	87.6%	12	12.4%	97	4.0%	87.1%
SICU	246	86.3%	39	13.7%	285	11.8%	84.5%
Trauma ICU	87	87.0%	13	13.0%	100	4.1%	83.9%
Other	36	87.8%	5	12.2%	41	1.7%	83.7%
Total	2,043	84.4%	378	15.6%	2,421	100.0%	84.1%

Table 6 displays distribution of pass rates by degree attained. Of 2,421 first-time NCE takers in CY 2019, 19.0% (n=461) were from programs that awarded a Master of Science in Nursing degree; 27.6% (n=669) graduated from programs awarding a Master of Science in Nurse Anesthesia degree; 18.1% (n=439) were from other master's programs; and 35.2% (n=852) were from programs that awarded a doctoral degree. Pass rate comparisons between different degrees (Table 6) should be made with caution because some demographic subgroups feature small sample sizes.

When comparing pass rates across degree obtained subgroups, readers are advised to refer to the 5-year Trend column of Table 6. For instance, over the past five years, first-time NCE examinees coming out of Master of Science in Nursing (MSN) programs appear to exhibit the highest rates of success on the NCE.

Table 6. Types of Graduate Degrees Reported by NCE Candidates, CY 2019

Degree Upon Completion	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
MS Nursing	403	87.4%	58	12.6%	461	19.0%	86.7%
MS Nurse Anesthesia	554	82.8%	115	17.2%	669	27.6%	82.3%
Other Masters	367	83.6%	72	16.4%	439	18.1%	83.9%
Doctoral Degree	719	84.4%	133	15.6%	852	35.2%	84.0%
Total	2,043	84.4%	378	15.6%	2421	100.0%	84.1%

Descriptive Information on Number of Clinical Experiences, CY 2019

The tables in this section report data collected about the number of anesthesia cases performed in clinical areas, as submitted by program directors to the NBCRNA for individuals completing nurse anesthesia programs in the reporting period. *This data reflects records of clinical experiences submitted for individuals with a graduation date in CY 2019 and not the sample of NCE candidates during this time frame.* As a result, sample sizes presented in this section (2,393) will not equal the number of first-time NCE candidates (2,421) as reported in Tables 1 through 6.

As noted, students in master’s programs and students in doctoral programs have different academic requirements based on the Council on Accreditation (COA) Standards. For clarity, these two groups of students are reported separately in Tables 7a through 15a for master’s students (n=1,489), and in Tables 7b through 15b, for doctoral students (n=904), respectively. Clinical experiences are aligned in the table pairs to easily compare the degree types.

The columns are the same in Tables 7 through 15, presenting the following information:

- The first column contains the clinical area in which cases were performed.
- The *N* column represents the number of master’s or doctoral records submitted in the reporting period.
- The *Number of Cases Required* column indicates the minimum number of cases that must be completed by an applicant for the applicant to be deemed eligible to take the NCE. If a minimum number of cases is not required, a “0” is entered in this column.
- The *Mean* column indicates the average number of cases reported on the CY 2019 records.
- The *Standard Deviation* column describes the dispersion in the number of cases reported on the 2019 records.
- The *Median* column indicates the median number of cases (50th percentile) reported on the records in the reporting period. Half the records contained values higher than this number and half contained a value below this number. The median may be a better indication of overall cases reported as there is considerable variability in range in many areas.
- The *Minimum* column indicates the smallest number of cases reported on the CY 2019 records.

Table 7a. Sections I, II and III: Clinical Experience (Master’s)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Total Number of Cases	1,489	600	850.9	131.3	829	606
Total Hours of Anesthesia	1,489	0	1,674.8	324.4	1,621	828
Total Clinical Hours	1,489	0	2,572.8	352.1	2,536	1,713

Table 7b. Sections I, II and III: Clinical Experience (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Total Number of Cases	904	600	892.5	146.3	868	600
Total Hours of Anesthesia	904	0	1,780.8	350.9	1,733	1,076
Total Clinical Hours	904	0	2,809.6	381.3	2,730.5	2,000

Table 8a. Section IV: Patient Physical Status (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Class I	1,489	0	80.8	37.1	76	11
Class II	1,489	0	347.4	85.7	335	83
Class III-VI Total	1,489	200	422.5	97.7	411	207
Class III	1,489	50	340.8	82.7	332	100
Class IV	1,489	10	78.1	33.6	73	11
Class V	1,489	0	3.2	3.4	2	0
Class VI	1,489	0	0.5	0.9	0	0

Table 8b. Section IV: Patient Physical Status (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Class I	904	0	84.9	39.8	79	0
Class II	904	0	354.1	99.6	352.5	4
Class III-VI Total	904	200	453.4	122.4	438	207
Class III	904	50	369.5	106.9	351	148
Class IV	904	10	80.3	36.3	73	16
Class V	904	0	3.1	3.3	2	0
Class VI	904	0	0.5	0.9	0	0

Table 9a. Section V: Special Cases (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	1,489	100	257.4	70.7	249	103
Pediatric, 2-12 years	1,489	30	69.8	32.3	63	30
Pediatric, under 2 years	1,489	10	21.5	11.3	18	10
Neonatal, under 4 weeks	1,489	0	1.3	2.0	0	0
Trauma/Emergency	1,489	30	54.2	26.7	48	30
Obstetrical Management	1,489	30	69.0	35.0	59	30
Cesarean delivery	1,489	10	33.2	16.6	30	10
Analgesia for labor	1,489	10	35.6	24.1	29	10
Pain Management Encounters	1,489	15	48.7	43.5	35	15

Table 9b. Section V: Special Cases (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	904	100	264.3	72.9	257	110
Pediatric, 2-12 years	904	30	71.9	31.5	66	30
Pediatric, under 2 years	904	10	21.7	11.3	18	10
Neonatal, under 4 weeks	904	0	1.3	2.1	1	0
Trauma/Emergency	904	30	55.4	22.5	49	30
Obstetrical Management	904	30	67.3	30.6	60	30
Cesarean delivery	904	10	29.9	13.8	27	10
Analgesia for labor	904	10	37.4	22.9	31	10
Pain Management Encounters	904	15	56.4	53.8	40	15

Table 10a. Section VII: Anatomical Categories (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	1,489	75	182.9	60.3	170	76
Intracranial Total	1,489	5	14.2	8.0	13	5
Intracranial Open	1,489	3	10.7	6.0	9	3
Intracranial Closed	1,489	0	3.5	4.8	2	0
Oropharyngeal	1,489	20	90.4	48.0	83	20
Intrathoracic Total	1,489	15	42.4	17.0	39	15
Heart	1,489	5	26.3	13.7	23	5
Open Heart Total	1,489	5	16.2	8.3	15	5
Open Heart with CPB	1,489	0	13.8	8.3	13	0
Open Heart without CPB	1,489	0	2.4	3.5	1	0
Closed Heart	1,489	0	10.2	10.5	8	0
Lung	1,489	5	11.1	5.7	10	5
Other	1,489	0	5.0	4.8	4	0
Neck	1,489	5	22.0	10.2	20	5
Neuroskeletal	1,489	20	43.9	19.4	40	20
Vascular	1,489	10	38.3	19.0	35	10

Table 10b. Section VII: Anatomical Categories (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	904	75	193.3	70.3	181	78
Intracranial Total	904	5	15.8	11.5	13	5
Intracranial Open	904	3	11.0	6.8	10	3
Intracranial Closed	904	0	4.9	8.4	3	0
Oropharyngeal	904	20	100.7	50.7	94	20
Intrathoracic Total	904	15	42.5	18.3	39	15
Heart	904	5	23.9	13.4	22	5
Open Heart Total	904	5	14.6	8.4	13	5
Open Heart with CPB	904	0	12.9	7.7	11	1
Open Heart without CPB	904	0	1.8	2.3	1	0
Closed Heart	904	0	9.2	8.5	8	0
Lung	904	5	11.1	5.5	10	5
Other	904	0	7.6	8.9	5	0
Neck	904	5	23.8	10.5	23	5
Neuroskeletal	904	20	46.9	27.1	40	20
Vascular	904	10	39.2	16.1	37	10

Table 11a. Section IX: Methods of Anesthesia (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	1,489	400	613.3	111.6	598	402
Inhalation Induction	1,489	25	83.3	43.1	74	25
Mask Management	1,489	25	58.4	65.9	41	25
Supraglottic Airway Devices (total of a & b)	1,489	35	120.6	54.8	110	35
a. Laryngeal mask	1,489	0	112.2	52.5	104	0
b. Other	1,489	0	6.8	27.1	1	0
Tracheal Intubation (total of a & b)	1,489	250	392.5	75.2	381	250
a. Oral	1,489	0	368.3	88.3	363	0
b. Nasal	1,489	0	16.5	15.5	13	0
Alternative Tracheal Intub/Endo (total of a & b)	1,489	25	66.2	43.4	58	25
a. Endoscopic techniques, total	1,489	5	14.4	15.6	9	5
1. Actual Placement	1,489	0	10.6	14.1	6	0
2. Simulated Placement	1,489	0	3.8	8.3	2	0
3. Airway Assessment	1,489	0	12.1	47.7	6	0
b. Other techniques	1,489	5	51.8	43.8	45	5
Emergence from Anesthesia	1,489	300	586.3	132.1	568	311
Regional Techniques	1,489					
Actual Administration (total of a, b, c & d)	1,489	35	127.0	73.9	108	37
a. Spinal (total of 1 & 2)	1,489	10	46.1	26.4	41	10
1. Spinal Anesthesia	1,489	0	42.2	24.2	37	0
2. Spinal Pain Management	1,489	0	3.9	8.0	1	0
b. Epidural (total of 1 & 2)	1,489	10	35.2	23.9	28	10
1. Epidural Anesthesia	1,489	0	10.0	13.8	5	0
2. Epidural Pain Management	1,489	0	25.3	21.1	20	0
c. Peripheral (total of 1, 2, 3 & 4)	1,489	10	40.5	52.3	26	10
1. Anesthesia Upper	1,489	0	11.3	14.7	7	0
2. Anesthesia Lower	1,489	0	10.0	17.3	6	0
3. Pain Management Upper	1,489	0	7.9	16.2	3	0
4. Pain Management Lower	1,489	0	11.2	25.9	5	0
d. Other	1,489					
1. Anesthesia	1,489	0	1.8	4.4	0	0
2. Pain Management	1,489	0	3.7	8.0	1	0
Management (total of 1 & 2)	1,489	35	95.7	55.2	81	35
1. Anesthesia	1,489	0	55.1	40.7	47	0
2. Pain Management	1,489	0	40.4	34.4	32	0
Moderate/deep sedation	1,489	25	126.3	81.3	111	25

Table 11b. Section IX: Methods of Anesthesia (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	904	400	626.6	113.5	614.5	403
Inhalation Induction	904	25	83.4	40.1	75	25
Mask Management	904	25	56.5	52.6	43	25
Supraglottic Airway Devices (total of a & b)	904	35	112.5	53.6	101	36
c. Laryngeal mask	904	0	105.8	53.7	97	0
d. Other	904	0	4.0	20.2	0	0
Tracheal Intubation (total of a & b)	904	250	416.4	82.4	400.5	254
c. Oral	904	0	376.3	115.9	377.5	0
d. Nasal	904	0	18.6	14.3	16	0
Alternative Tracheal Intub/Endo (total of a & b)	904	25	74.8	39.7	65	25
c. Endoscopic techniques, total	904	5	19.3	30.4	10	5
4. Actual Placement	904	0	15.4	29.2	7	0
5. Simulated Placement	904	0	3.9	8.7	2	0
6. Airway Assessment	904	0	14.0	59.4	7	0
d. Other techniques	904	5	55.5	34.4	50	5
Emergence from Anesthesia	904	300	605.2	140.0	593	313
Regional Techniques	904					
Actual Administration (total of a, b, c & d)	904	35	133.3	68.9	114	35
e. Spinal (total of 1 & 2)	904	10	44.8	24.8	39	10
3. Spinal Anesthesia	904	0	39.8	22.9	35	0
4. Spinal Pain Management	904	0	5.0	8.9	2	0
f. Epidural (total of 1 & 2)	904	10	36.3	22.7	30	10
3. Epidural Anesthesia	904	0	12.5	14.3	8	0
4. Epidural Pain Management	904	0	23.8	19.7	18	0
g. Peripheral (total of 1, 2, 3 & 4)	904	10	45.4	40.9	31	10
5. Anesthesia Upper	904	0	12.6	13.1	8.5	0
6. Anesthesia Lower	904	0	12.5	17.1	7	0
7. Pain Management Upper	904	0	8.6	14.3	4	0
8. Pain Management Lower	904	0	11.6	18.6	5	0
h. Other	904					
3. Anesthesia	904	0	2.9	6.8	1	0
4. Pain Management	904	0	5.0	10.1	1	0
Management (total of 1 & 2)	904	35	99.5	69.2	82	35
3. Anesthesia	904	0	56.1	50.8	44	0
4. Pain Management	904	0	42.9	38.9	32	0
Moderate/deep sedation	904	25	153.7	95.1	136	25

Table 12a. Section X: Arterial Technique (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	1,489	25	54.0	24.2	48	25
Intraarterial Blood Pressure Monitoring	1,489	30	78.8	28.1	75	30

Table 12b. Section X: Arterial Technique (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	904	25	61.5	28.5	55	25
Intraarterial Blood Pressure Monitoring	904	30	88.3	30.2	84	35

Table 13a. Section XI: Central Venous Pressure Catheter (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	1,489	10	15.3	8.7	12	10
a. Non-PICC, Actual	1,489	0	10.6	9.9	10	0
b. Non-PICC, Simulated	1,489	0	4.7	5.1	3	0
Placement—PICC (total of a & b)	1,489	0	0.6	2.1	0	0
a. PICC, Actual	1,489	0	0.5	1.8	0	0
b. PICC, Simulated	1,489	0	0.1	0.9	0	0
Monitoring	1,489	15	24.3	9.7	21	15

Table 13b. Section XI: Central Venous Pressure Catheter (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement—Non-PICC (total of a & b)	904	10	15.3	7.4	13	10
a. Non-PICC, Actual	904	0	12.0	8.4	11	0
b. Non-PICC, Simulated	904	0	3.3	3.6	2	0
Placement—PICC (total of a & b)	904	0	0.5	1.3	0	0
a. PICC, Actual	904	0	0.4	1.0	0	0
b. PICC, Simulated	904	0	0.1	0.7	0	0
Monitoring	904	15	23.7	9.6	21	15

Table 14a. Section XII: Pulmonary Artery Catheter (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	1,489	0	5.0	6.4	3	0
Monitoring	1,489	0	11.9	8.1	11	0

Table 14b. Section XII: Pulmonary Artery Catheter (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	904	0	5.7	6.3	5	0
Monitoring	904	0	10.8	7.6	10	0

Table 15a. Section XIII: Other (Master's)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound (US)-Guided Techniques (total of a & b)	1,489	0	38.5	49.1	24	0
a. Regional	1,489	0	26.5	43.4	14	0
b. Vascular	1,489	0	11.9	14.8	7	0
Intravenous Catheter Placement	1,489	100	167.8	76.1	142	100
Advanced Noninvasive Hemodynamic Monitoring	1,489	0	22.6	96.7	3	0

Table 15b. Section XIII: Other (Doctoral)

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Ultrasound (US)-Guided Techniques (total of a & b)	904	0	44.3	48.4	30	0
a. Regional	904	0	27.5	39.3	14	0
b. Vascular	904	0	15.4	18.2	11	0
Intravenous Catheter Placement	904	100	210.4	111.3	177	100
Advanced Noninvasive Hemodynamic Monitoring	904	0	3.1	31.6	0	0

Exit Survey Results

Candidates provide important ongoing sources of evaluative information about the examination process. This information serves as essential input for the continuous quality improvement initiatives of the NBCRNA. Candidates are asked to complete a post-examination survey regarding their testing experience. The post-examination survey addressed the following four areas:

- Seven statements related to pre-examination activities such as registration and scheduling, locating the testing center, and interaction with test center staff;
- Eight statements related to aspects of the examination experience such as readability, fairness of test questions, and use of testing software;
- Five statements related to examinee perception of the alternative question formats; and
- Three statements related to their personal preparation prior to examination.

Most of the questions employ a Likert-type rating scale, where respondents are asked to indicate their level of agreement with the survey statements. For the purposes of this report, the Likert response categories, *Strongly Agree* and *Agree*, are combined into a single *Agree* category, and *Strongly Disagree* and *Disagree* are combined into *Disagree*. The survey questions and format were developed by the NBCRNA and representatives from Pearson VUE, Inc. Completion of the survey is not required as part of the examination process and is not part of the three-hour time limit for the NCE. To reduce the burden on respondents, the survey is split in half, and each half is administered randomly to candidates. Respondents do not always answer all the questions, as reflected by the unequal sample size across the sections of the survey.

Responses were analyzed based on a sample of NCE test takers who were administered the exit survey in CY 2019. After each test administration, the test taker can contact the NBCRNA to address any problems or concerns related to the NCE.

The first seven statements pertain to pre-examination scheduling and registration activities. The responses to the first statement, not included in the **Table 16**, indicate that nearly all (99.5%) of the NCE candidates report scheduling their examination on the Internet rather than by phone. Responses to the other six survey questions are summarized in **Table 16**.

Table 16. Responses to Survey Questions: Scheduling and Registration
(N=1,559 with less than 1% omitted responses to some questions)

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
I was able to schedule an acceptable test date.	1,355	86.9%	191	12.3%
I was able to schedule an acceptable test center location.	1,398	89.7%	149	9.6%
The exam reservation process was easy to use.	1,523	97.7%	23	1.5%
The test center was easy to locate.	1,524	97.8%	24	1.5%
The test center staff was helpful and knowledgeable.	1,538	98.7%	10	0.6%
The testing center registration/check-in process was handled in a professional and efficient manner.	1,530	98.1%	16	1.0%

The next eight statements relate to topics such as the fairness of test questions and readability of the examination. **Table 17** summarizes the responses to these survey questions. Overall, 97.8% of the CY 2019 NCE examinees were satisfied with their testing experience.

Table 17. Responses to Survey Questions: Examination and Testing Experience
(N=1,506 – 1,559 with about 1.0% -2.0% omitted responses to some questions)

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
I thought the examination questions were fair.	1,281	85.1%	201	13.3%
The graphs, figures, and diagrams in the questions were easy to read.	1,352	89.8%	131	8.7%
I was able to 'scroll' the test window in order to view an entire graph or figure in a question.	1,457	96.7%	24	1.6%
The areas of the content outline were fairly represented.	1,314	87.3%	168	11.2%
My testing environment was clean, quiet, and comfortable.	1,536	98.5%	12	0.8%
I encountered no technical problems with the test administration software.	1,514	97.1%	32	2.1%
The test administration software was user-friendly.	1,534	98.4%	12	0.8%
Overall, I was satisfied with my testing experience.	1,525	97.8%	18	1.2%

Since August 2009, the NBCRNA has administered alternative question formats on the NCE in addition to traditional multiple-choice items. These question formats include multiple correct response (MCR, where the examinee is directed to select an indicated number of correct responses), short answer/calculation (SA, where the examinee enters short numerical responses), drag and drop (used for matching or ordering of elements in question), and hotspot (where an examinee is directed to point with their computer mouse and click on the correct region of an image). Of all 3,058 takers of the NCE in 2019, about half (N = 1,506) were randomly surveyed and provided feedback on these question formats.

Table 18 summarizes the responses to the survey questions related to the MCR, SA, drag and drop, and hotspot question formats.

Table 18. Responses to Survey Questions: Alternative Question Formats (N=1,506 with about 2.0% omitted responses to different questions)

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
The questions in the Multiple Correct Response format were fair.	1,348	89.5%	134	8.9%
The questions in the Short Answer/Calculation format were fair.	1,416	94.0%	63	4.2%
The questions in the Drag and Drop format were fair.	1,395	92.6%	85	5.6%
The questions in the Hotspot format were fair.	1,350	89.6%	133	8.8%
I understood how to respond to the questions in the alternative formats.	1,438	95.5%	46	3.1%

Responses to the last three items on the exit survey, addressing methods that candidates used to prepare for their examination, are summarized in **Table 19**. Of the NCE examinees tested in CY 2019, over three-fourths (77.4%) stated that the SEE helped them in their certification examination preparation. This is a substantial and steady increase over the past two years from under 60% in FY 2017 to 67.9% in FY 2018 reported that the SEE was helpful. Of 1,506 who completed the question regarding preparation for the NCE, 99.0% responded they attended a review course. Finally, 98.7% reported that their nurse anesthesia educational program featured computerized testing; this number has been increasing every year since FY 2013.

**Table 19. Responses to Survey Questions: Preparation for the NCE
(N=1,506 with about 1.3% omitted responses to different questions)**

Survey Question	Response	Count	Percent
Taking the SEE helped prepare me to take the certification examination.	Agree	1,165	77.4%
	Disagree	301	20.0%
If you took a review course in preparation for this examination, please indicate below which review course you took.	Valley Anesthesia	176	11.7%
	Core Concepts	33	2.2%
	R&R Board Review	1	0.1%
	PACES	45	3.0%
	CRNA Secrets	--	--
	Review Course at AANA Annual Meeting	--	--
	APEX Anesthesia Review	1,169	77.6%
	Other commercial	2	0.1%
	Course Organized by My Program	11	0.7%
	Did Not Take	--	--
Please indicate below if your nurse anesthesia educational program featured any academic tests using computer-based testing.	Yes	1,486	98.7%
	No	--	--

Demographic Characteristics of the SEE Candidate Population, CY 2019

The following section of this report summarizes performance, as indicated by overall average examination scores on the SEE, according to a variety of demographic variables, including gender, age, clinical background, and degree. The scores are presented by year in the program for each variable. Also, the last column on the right of each table displays the five-year trend average (Years 2015 through 2019, Calendar Year January 1, 2015–December 31, 2019, N = 19,355) for each demographic subgroup. Finally, summaries of SEE total scores and domain-level information can be found in **Tables A3** of Appendix A.

Table 20 summarizes SEE scores by gender: 39.9% of SEE examinees were male and 60.1% were female. The mean total score for Year-2 examinees (410.4, n=1,831) was higher than the mean total score for Year-1 examinees (409.0, n=192). The mean SEE score for the Year-3-and-above students was highest at 427.0 (n=2,603).

The five-year trend information (last column) shows a similar pattern. Average scores for Year-3-and-above students are higher than for Year-2, which are higher than Year-1 students. Also, males consistently attained higher scores on the SEE than females.

Table 20. SEE Candidate Performance by Gender and Program Year, CY 2019

Program Year	Gender	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Female	95	396.0	39.2	386.5
	Male	97	421.6	40.8	404.2
	Total	192	409.0	41.9	394.3
Year 2	Female	1,115	406.2	42.2	401.1
	Male	716	417.0	45.3	409.3
	Total	1,831	410.4	43.8	404.4
Year 3 and above	Female	1,571	425.0	39.0	413.7
	Male	1,032	430.1	40.6	422.4
	Total	2,603	427.0	39.7	417.2
Total	Female	2,781	416.5	41.5	405.9
	Male	1,845	424.6	42.9	414.7
	Total	4,626	419.7	42.3	409.5

Table 21 summarizes SEE scores by age group. The average age of Year-1 SEE examinees was 31.3 years. The average age of Year-2 SEE examinees was 31.3 years. The average age of Year-3 SEE examinees was 32.3 years. The mean age of all SEE examinees during the period was 31.9 years, on average similar to the sample of first-time NCE examinees (32.2 years). The largest age groups were composed of examinees under the age of 30 (39.4%) and examinees between the ages of 30 and 35 (40.6%). In 2019, the same as in previous years, younger examinees scored higher than older examinees. The same results were found in the five-year trending sample.

Table 21. SEE Candidate Performance by Age and Program Year, CY 2019

Program Year	Age	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Under 30	88	417.4	38.6	396.7
	30 - 35	72	404.3	42.6	395.1
	36 - 39	16	400.4	57.7	391.1
	40 or above	16	392.3	30.8	380.9
	Total	192	409.0	41.9	394.3
Year 2	Under 30	809	415.8	43.6	408.6
	30 - 35	707	407.6	43.5	403.3
	36 - 39	188	408.0	40.6	397.6
	40 or above	127	396.0	46.3	393.2
	Total	1,831	410.4	43.8	404.4
Year 3 and above	Under 30	924	430.7	40.3	421.3
	30 - 35	1,099	428.3	39.7	418.3
	36 - 39	341	418.2	38.6	411.2
	40 or above	239	419.6	36.0	402.9
	Total	2,603	427.0	39.7	417.2
Total	Under 30	1,821	423.5	42.3	412.7
	30 - 35	1,878	419.5	42.5	410.1
	36 - 39	545	414.1	40.2	404.1
	40 or above	382	410.6	41.1	397.3
	Total	4,626	419.7	42.3	409.5

Table 22 displays summaries of SEE scores by clinical background. Overall, the most commonly identified clinical setting was ICU/CCU (32.1%).

When comparing SEE performance across clinical background subgroups, readers are advised to refer to the five-year trend columns of Table 22. The averages in these columns are more reliable because they are based on much larger sample sizes.

Table 22. SEE Candidate Performance by Clinical Background and Program Year, CY 2019

	Clinical Background	Count	Mean	Std Dev	5-Yr Mean	Program Year	Clinical Background	Count	Mean	Std Dev	5-Yr Mean
Year 1	CCU	27	402.2	39.7	394.0	Year 3 & Above	CCU	291	430.1	40.4	421.6
	ER	3	442.7	15.8	398.0		ER	183	422.2	39.6	414.8
	ICU/CCU	36	417.8	39.4	393.3		ICU/CCU	896	426.0	39.0	416.9
	MICU	44	399.5	37.5	393.3		MICU	451	427.4	39.1	419.8
	NEURO ICU	15	418.2	49.9	392.2		NEURO ICU	170	427.3	41.6	417.2
	NICU	3	355.3	38.2	380.0		NICU	26	418.5	36.9	407.5
	OR	0	--	--	381.4		OR	10	429.9	26.2	411.9
	PACU	0	--	--	375.5		PACU	21	427.0	34.6	415.9
	PICU	9	391.3	40.3	401.7		PICU	91	430.9	41.7	414.0
	SICU	35	421.9	44.9	398.0		SICU	294	427.7	40.9	417.4
	Trauma ICU	19	402.1	39.1	398.5		Trauma ICU	119	431.5	40.0	414.6
	Other	1	450.0	.	382.9		Other	47	427.5	36.6	412.0
	Total	192	409.0	41.9	394.3	Total	2,599	427.1	39.6	417.2	
Year 2	CCU	204	413.7	44.2	407.2	Total	CCU	522	422.2	42.8	412.3
	ER	67	406.7	50.6	400.6		ER	253	418.3	43.1	407.2
	ICU/CCU	549	409.5	44.2	403.0		ICU/CCU	1,481	419.7	41.8	408.8
	MICU	387	413.5	43.7	406.9		MICU	882	419.9	41.9	411.6
	NEURO ICU	102	409.5	41.3	404.5		NEURO ICU	287	420.5	42.6	409.5
	NICU	24	390.2	40.0	393.9		NICU	53	402.1	41.7	399.9
	OR	4	411.0	14.8	401.0		OR	14	424.5	24.6	405.6
	PACU	6	381.0	17.4	390.5		PACU	27	416.7	36.9	403.0
	PICU	63	412.6	39.5	410.1		PICU	163	421.6	42.2	411.1
	SICU	288	409.1	43.7	405.8		SICU	617	418.6	43.3	410.2
	Trauma ICU	96	412.7	41.6	403.6		Trauma ICU	234	421.4	41.8	408.4
	Other	33	412.8	45.9	404.9		Other	81	421.8	40.9	407.4
	Total	1823	410.6	43.7	404.5	Total	4,614	419.8	42.2	409.5	

Table 23 displays summaries of SEE scores by degree to be attained. As is noted, starting in FY 2017, “Post-Master’s Certificate” is no longer reported as a separate category; instead, it is reported together with Other Master’s degrees. Due to a transcript category change, MS Nurse Anesthesia/Anesthesiology is reported in the MS Nurse Anesthesia category, not in the Other masters as in the past. Although MSN is still a popular degree, the percentage of SEE candidates enrolled in MSN programs continued to decrease in CY 2019 (20.9%) in comparison to FY 2018 (23.7%) and FY 2017 (28.3%). The number of SEE examinees in doctoral programs continued to increase in CY 2019 (N = 2,047, 44.2%) over the previous fiscal years FY 2018 (N = 1,291, 30.8%) and FY 2017 (N=915, 23.8%). Score comparisons among groups in this table should be made with caution because of the small sample size of some subgroups.

Table 23. SEE Candidate Performance by Graduate Degree and Program Year, CY 2019

Program Year	Degree Upon Completion	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	MS Nurse Anesthesia	58	439.5	34.0	402.7
	MS Nursing Major	79	390.7	41.6	388.5
	Other Masters	52	401.7	31.6	394.3
	Doctoral*	3	425.0	6.2	379.8
	Total	192	409.0	41.9	394.3
Year 2	MS Nurse Anesthesia	376	417.5	44.5	406.5
	MS Nursing Major	557	414.1	43.8	410.2
	Other Masters	331	415.9	44.2	404.0
	Doctoral	567	399.0	40.7	392.5
	Total	1,831	410.4	43.8	404.4
Year 3 and above	MS Nurse Anesthesia	514	427.6	37.4	424.1
	MS Nursing Major	331	439.3	38.1	419.4
	Other Masters	281	424.4	40.3	410.9
	Doctoral	1,477	424.6	40.2	416.6
	Total	2,603	427.0	39.7	417.2
Total	MS Nurse Anesthesia	948	424.3	40.6	413.0
	MS Nursing Major	967	420.8	44.3	411.5
	Other Masters	664	418.4	42.1	405.3
	Doctoral	2,047	417.5	41.9	409.3
	Total	4,626	419.7	42.3	409.5

*There were few first-year doctoral students taking SEE in CY 2019 and in past 5-year trend sample. The performance results should be viewed with caution because of very small sample size.

Appendix A - Additional NCE and SEE Performance Data

Table A1. NCE Pass Rate Trends—First-Time Candidates 2008 through December 31, 2019

Reporting Period	Percent Passing
2008* (Graduates 2007 – 2008)	89.9
2009 (Graduates after 2008)	87.7
2010	88.9
2011	89.1
FY 2012	88.5
FY 2013	88.4
FY 2014**	87.8
FY 2015	85.0
FY 2016	84.5
FY 2017	82.6
FY 2018	84.3
CY2019***	84.4

*Passing standard increased in August 2008

**Passing standard increased in January 2014

***It indicates Calendar Year 2019.

Table A2. Descriptive Statistics for NCE Total and Domain-Level Scores—First-Time Candidates CY 2019

	Mean	Standard Deviation
Total Score	493.7	45.6
Basic Science	499.3	63.2
Equipment, Instrumentation and Technology	504.1	73.5
General Principles of Anesthesia	496.0	57.2
Anesthesia for Surgical Procedures and Special Populations	495.5	57.4

Table A3. Descriptive Statistics for SEE Scores and Domain-Level Information, CY 2019

	1st Year in Program		2nd Year in Program		3rd Year in Program		All	
	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Total	409.0	41.9	410.4	43.8	427.0	39.7	419.7	42.3
Basic Science	411.3	50.2	408.5	52.2	424.2	48.1	417.4	50.4
Equipment, Instrumentation and Technology	411.0	48.9	414.2	48.1	432.0	45.0	424.1	47.3
General Principles of Anesthesia	408.8	48.1	410.4	47.0	426.5	45.1	419.4	46.7
Anesthesia for Surgical Procedures and Special Populations	407.6	42.6	412.0	49.0	428.7	45.2	421.2	47.4