

# **NCE and SEE Annual Report**

## **Calendar Year 2020**

### **Summary of NCE and SEE Performance and Clinical Experience**

**January 1, 2020 – December 31, 2020**

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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 2020 (CY2020), January 1, 2020 through December 31, 2020. It should be noted that starting in 2019, the NBCRNA has transitioned to align its fiscal year (FY) with the calendar year (CY).

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 2020. 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 established 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 2020.

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.

The pandemic brought about some changes in NCE and SEE testing during 2020. In mid-March, all Pearson Professional Centers were briefly closed. When they reopened it was with limited and frequently fluctuating capacities due to local and state regulatory influences. Scheduling was limited to critical occupation certification programs, which included both the NCE and SEE. The NBCRNA acted quickly to expand testing opportunities by supplementing the traditional testing channel from PPC only, to include both PPCs and "third-party channel testing locations." These third-party channels are most often colleges and universities, who are not owned or operated by PearsonVUE, but are required to meet test-delivery requirements established by PearsonVUE. All third-party locations offer secure proctored testing, although without the standardization common to the Pearson owned and operated PPCs. To further accommodate candidates, the testing channel was expanded in July of 2020 to include testing for the NCE and SEE on US military bases (where testing is available), for active-duty military candidates.

## Candidate Performance on the NCE

The information in **Table 1** addresses the performance of candidates on the NCE during the CY2020 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 2,630 first-time candidates is 85.2%. The pass rate is lower for repeat examinees, consistent with the previous year's data.

The CY2020 first-time pass rate (85.2%) is higher than the CY2019 pass rate (84.4%). The cumulative first-time pass rate averaged over the previous five years is 84.2% as shown in the final column of **Table 1** (Years 2016–2020 represents January 1, 2016–December 31, 2020, total N = 15,551). First-time examinee pass rates for the NCE, by year since 2008, can be found in **Table A1** in Appendix A of this report.

Numbers of NCE candidates testing increased in 2020, despite pandemic constraints. In CY2020 there were 2,630 first-time candidates compared to 2,421 in CY2019.

**Table 1. Pass/Fail Summary for NCE Candidates, 2020**

First-Time Candidates	Frequency	Percent	5-year Trend %
Pass	2,242	85.2%	84.2%
Fail	388	14.8%	15.8%
<b>Total</b>	<b>2,630</b>	<b>100.0%</b>	<b>100.0%</b>
Repeat Candidates	Frequency	Percent	5-year Trend %
Pass	314	62.8%	61.3%
Fail	186	37.2%	38.7%
<b>Total</b>	<b>500</b>	<b>100.0%</b>	<b>100.0%</b>

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 (59.3%) were administered 70 items (not including the 30 unscored pretest items). Only 3.3% of NCE candidates failed the test in 70 items. Approximately 19.2% of the candidates took the maximum test length of 140 items.

The number of candidates getting a score determination in 70 items increased slightly in CY2020 over CY2019. In 2019, 60.9% of candidates fell into this category compared to 62.6% in CY2020. The five-year trend is 61.4%.

**Table 2. Pass/Fail Summary by Test Length for First-Time NCE Candidates, 2020**

	Frequency	Percent	5-year Trend %
Pass in 70 items	1,559	59.3%	57.1%
Pass in 71 to 139 items	378	14.4%	15.0%
Pass in 140 items	305	11.6%	12.1%
Fail in 70 items	86	3.3%	4.3%
Fail in 71 to 139 items	103	3.9%	4.3%
Fail in 140 items	199	7.6%	7.2%
<b>Total</b>	<b>2,630</b>	<b>100.0%</b>	<b>100.0%</b>

## Demographic Characteristics of NCE Candidate Population, 2020

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 60.3% of the NCE candidates were female and 39.7% were male. The pass rates for both females and males in 2020 were slightly higher, with males continuing to show a slightly higher pass rate: 2020 (84.6% vs. 86.3%); 2019 (83.9% vs. 85.1%); FY2018 (83.2% vs. 85.9%), consistent with the five-year trend (final column of Table 3).

The percent of females in the population increased in CY2020 to 60.3% from 59.0% in CY2019.

**Table 3. Gender of NCE Candidates, 2020**

Gender	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Female	1,341	84.6%	245	15.4%	1,586	60.3%	83.5%
Male	901	86.3%	143	13.7%	1,044	39.7%	85.3%
<b>Total</b>	<b>2,242</b>	<b>85.2%</b>	<b>388</b>	<b>14.8%</b>	<b>2,630</b>	<b>100.0%</b>	<b>84.2%</b>

**Table 4** presents the pass rate by age group. The pass rate decreased as examinee age increased, both for the 2020 sample and the five-year trend analysis. Younger students tend to perform better on the NCE. The pass rate differences between the age groups of 30-35 and 36-39 were substantially smaller in 2020 than in 2019 (84.4% vs. 81.3% in 2020, 86.4% vs. 73.1% in 2019). The average age of the 2020 *first-time* NCE candidates was 32.6 years.

**Table 4. Age of NCE Candidates, 2020**

Age	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
Under 30	707	92.5%	57	7.5%	764	29.0%	90.3%
30 - 35	1,097	84.4%	202	15.6%	1,299	49.4%	84.6%
36 - 39	257	81.3%	59	18.7%	316	12.0%	76.7%
40 or more	181	72.1%	70	27.9%	251	9.5%	67.8%
<b>Total</b>	<b>2,242</b>	<b>85.2%</b>	<b>388</b>	<b>14.8%</b>	<b>2,630</b>	<b>100.0%</b>	<b>84.2%</b>

**Table 5** displays pass rates for candidates' clinical background. Approximately 30% of the candidates reported their clinical background as ICU/CCU, down from 34.8% in 2019. Pass rate comparisons between different clinical settings should be made with caution, however, because some subgroups for the 2020 data feature small sample sizes. Also, the clinical background categories tend not to 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 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, 2020**

Clinical Background	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
CCU	307	86.2%	49	13.8%	356	13.5%	85.6%
ER	158	78.6%	43	21.4%	201	7.6%	80.0%
ICU/CCU	662	85.1%	116	14.9%	778	29.6%	83.4%
MICU	393	86.6%	61	13.4%	454	17.3%	87.0%
NEURO ICU	137	87.3%	20	12.7%	157	6.0%	84.0%
NICU	34	89.5%	4	10.5%	38	1.4%	79.1%
OR	83	87.4%	12	12.6%	95	3.6%	82.3%
PACU	10	71.4%	4	28.6%	14	0.5%	80.2%
PICU	74	87.1%	11	12.9%	85	3.2%	86.9%
SICU	288	86.7%	44	13.3%	332	12.6%	85.3%
TRAUMA ICU	96	80.0%	24	20.0%	120	4.6%	82.8%
<b>Total</b>	<b>2,242</b>	<b>85.2%</b>	<b>388</b>	<b>14.8%</b>	<b>2,630</b>	<b>100.0%</b>	<b>84.2%</b>

**Table 6** displays distribution of pass rates by degree attained. Of 2,630 first-time NCE takers in 2020, 19.2% (n=504) were from programs that awarded a Master of Science in Nursing degree; 20.1% (n=529) graduated from programs awarding a Master of Science in Nurse Anesthesia degree; 10.6% (n=280) were from other master's programs; and 50.1% (n=1,317) were from programs that awarded a doctoral degree. The takers from doctoral degrees continued to grow and constituted over half of all first-time takers in 2020. This is a substantial increase from the 35.2% that doctoral candidates comprised in 2019.

When comparing pass rates across clinical background subgroups, pass rate differences across degrees should be viewed with caution because some demographic subgroups feature small sample sizes (Table 6). 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 MSN programs appear to exhibit the highest rates of success on the NCE. The performance differences between graduates of Doctoral Degrees and MSN became smaller in 2020 than in 2019 (86.8% and 88.9% vs. 84.4% and 87.4%).

**Table 6. Types of Graduate Degrees Reported by NCE Candidates, 2020**

Degree Upon Completion	Pass		Fail		Total		5-year Trend
	N	Percent	N	Percent	N	Percent	Pass %
MS Nursing	448	88.9%	56	11.1%	504	19.2%	87.5%
MS Nurse Anesthesia	429	81.1%	100	18.9%	529	20.1%	81.6%
Other Masters	222	79.3%	58	20.7%	280	10.6%	83.6%
Doctoral Degree	1,143	86.8%	174	13.2%	1,317	50.1%	84.6%
<b>Total</b>	<b>2,242</b>	<b>85.2%</b>	<b>388</b>	<b>14.8%</b>	<b>2,630</b>	<b>100.0%</b>	<b>84.2%</b>

## Descriptive Information on Number of Clinical Experiences, 2020

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 2020, and not the sample of NCE candidates during this time frame.* As a result, sample sizes presented in this section (2,576) will not equal the number of first-time NCE candidates (2,630) as reported in Tables 1 through 6.

In previous years, there were different academic requirements for Doctoral and Master's candidates, so results were reported separately. While requirements are now the same, results in this section still break out by Doctoral and Master's candidates to allow analysis of differences as well as comparison to previous periods. For clarity, these two groups of students are reported separately in Tables 7a through 15a for Master's students (n=1,241), and in Tables 7b through 15b, for Doctoral students (n=1,335), 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 2020 records.
- The *Standard Deviation* column describes the dispersion in the number of cases reported on the 2020 records.
- The *Median* column indicates the median number of cases (50<sup>th</sup> 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 *Minimum* column indicates the smallest number of cases reported on the 2020 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	1,241	600	801.6	113.6	779	600
Total Hours of Anesthesia	1,241	0	1,604.9	289.0	1,558	857
Total Clinical Hours	1,241	0	2,419.2	367.5	2,382	1,923

**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	1,335	600	839.7	138.3	813	600
Total Hours of Anesthesia	1,335	0	1,645.2	331.1	1,609	816
Total Clinical Hours	1,335	0	2,644.0	343.8	2,598	2,000

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

<b>Area</b>	<b>N</b>	<b>Number of Cases Required</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Median</b>	<b>Minimum</b>
Class I	1,241	0	71.4	33.9	66	0
Class II	1,241	0	318.1	79.6	308	75
Class III-VI Total	1,241	200	412.2	89.9	403	206
Class III	1,241	50	332.7	76.9	322	100
Class IV	1,241	10	75.7	31.2	72	10
Class V	1,241	0	3.2	3.8	2	0
Class VI	1,241	0	0.6	1.1	0	0

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

<b>Area</b>	<b>N</b>	<b>Number of Cases Required</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Median</b>	<b>Minimum</b>
Class I	1,335	0	79.5	38.9	72	4
Class II	1,335	0	335.1	90.8	324	109
Class III-VI Total	1,335	200	424.9	98.9	416	200
Class III	1,335	50	347.0	83.3	339	156
Class IV	1,335	10	74.4	34.0	68	10
Class V	1,335	0	3.0	3.9	2	0
Class VI	1,335	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	1,241	100	252.6	69.1	241	104
Pediatric, 2-12 years	1,241	30	59.6	26.8	53	30
Pediatric, under 2 years	1,241	10	18.9	10.3	16	10
Neonatal, under 4 weeks	1,241	0	1.0	1.6	0	0
Trauma/Emergency	1,241	30	51.5	18.7	47	30
Obstetrical Management	1,241	30	65.3	31.7	57	30
Cesarean delivery	1,241	10	31.3	15.3	28	10
Analgesia for labor	1,241	10	33.5	21.6	27	10
Pain Management Encounters	1,241	15	45.1	32.9	34	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Geriatric, 65+ years	1,335	100	252.1	70.6	243	107
Pediatric, 2-12 years	1,335	30	65.8	32.4	58	30
Pediatric, under 2 years	1,335	10	20.5	10.4	17	10
Neonatal, under 4 weeks	1,335	0	1.1	1.7	0	0
Trauma/Emergency	1,335	30	50.9	19.7	46	30
Obstetrical Management	1,335	30	63.5	30.6	56	30
Cesarean delivery	1,335	10	27.9	13.1	25	10
Analgesia for labor	1,335	10	35.6	23.3	29	10
Pain Management Encounters	1,335	15	52.6	41.6	40	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	1,241	75	172.9	54.8	161	77
Intracranial Total	1,241	5	13.8	9.0	12	5
Intracranial Open	1,241	3	9.8	5.6	8	3
Intracranial Closed	1,241	0	4.0	6.3	3	0
Oropharyngeal	1,241	20	82.1	41.9	75	20
Intrathoracic Total	1,241	15	42.9	24.0	39	15
Heart	1,241	5	26.8	14.2	24	5
Open Heart Total	1,241	5	14.6	8.0	13	5
Open Heart with CPB	1,241	0	12.8	7.5	11	0
Open Heart without CPB	1,241	0	1.8	2.6	1	0
Closed Heart	1,241	0	12.2	11.0	9	0
Lung	1,241	5	10.5	5.9	9	5
Other	1,241	0	5.6	16.9	3	0
Neck	1,241	5	21.1	9.6	20	5
Neuroskeletal	1,241	20	42.2	21.1	37	20
Vascular	1,241	10	36.9	18.2	34	10

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Intra-abdominal	1,335	75	177.3	61.2	167	79
Intracranial Total	1,335	5	14.2	8.2	12	5
Intracranial Open	1,335	3	10.5	6.0	9	3
Intracranial Closed	1,335	0	3.7	4.8	2	0
Oropharyngeal	1,335	20	94.0	46.5	87	20
Intrathoracic Total	1,335	15	41.1	18.3	37	15
Heart	1,335	5	23.5	13.2	20	5
Open Heart Total	1,335	5	12.9	7.0	11	5
Open Heart with CPB	1,335	0	11.3	6.4	10	0
Open Heart without CPB	1,335	0	1.5	2.1	1	0
Closed Heart	1,335	0	10.6	9.7	8	0
Lung	1,335	5	10.5	5.5	9	5
Other	1,335	0	7.1	9.3	4	0
Neck	1,335	5	22.9	10.9	21	5
Neuroskeletal	1,335	20	44.4	22.2	39	20
Vascular	1,335	10	37.3	17.2	35	10

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	1,241	400	578.3	100.9	561	403
Inhalation Induction	1,241	25	70.9	37.0	61	25
Mask Management	1,241	25	50.2	46.7	37	25
Supraglottic Airway Devices (total of a & b)	1,241	35	105.9	46.6	99	35
a. Laryngeal mask	1,241	0	101.2	45.0	95	0
b. Other	1,241	0	4.7	16.9	0	0
Tracheal Intubation (total of a & b)	1,241	250	376.2	69.8	369	250
a. Oral	1,241	0	361.3	68.3	354	0
b. Nasal	1,241	0	14.7	12.7	12	0
Alternative Tracheal Intub/Endo (total of a & b)	1,241	25	70.1	47.8	60	25
a. Endoscopic techniques, total	1,241	5	14.5	15.6	9	5
1. Actual Placement	1,241	0	10.5	14.8	6	0
2. Simulated Placement	1,241	0	3.9	6.9	2	0
3. Airway Assessment	1,241	0	14.1	55.5	6	0
b. Other techniques	1,241	5	55.6	48.4	48	5
Emergence from Anesthesia	1,241	300	544.7	115.2	528	311
Regional Techniques	1,241					
Actual Administration (total of a, b, c & d)	1,241	35	121.6	74.2	104	35
a. Spinal (total of 1 & 2)	1,241	10	44.4	29.1	38	10
1. Spinal Anesthesia	1,241	0	40.3	26.7	35	0
2. Spinal Pain Management	1,241	0	4.1	9.3	1	0
b. Epidural (total of 1 & 2)	1,241	10	32.5	22.2	26	10
1. Epidural Anesthesia	1,241	0	9.2	13.7	4	0
2. Epidural Pain Management	1,241	0	23.3	19.2	18	0
c. Peripheral (total of 1, 2, 3 & 4)	1,241	10	37.4	52.6	23	10
1. Anesthesia Upper	1,241	0	9.8	15.6	6	0
2. Anesthesia Lower	1,241	0	9.3	21.5	5	0
3. Pain Management Upper	1,241	0	7.5	14.7	3	0
4. Pain Management Lower	1,241	0	10.9	23.8	5	0
d. Other	1,241					
1. Anesthesia	1,241	0	4.3	10.6	1	0
2. Pain Management	1,241	0	2.0	4.4	0	0
Management (total of 1 & 2)	1,241	35	89.4	48.2	78	35
1. Anesthesia	1,241	0	50.7	36.8	43	0
2. Pain Management	1,241	0	38.7	30.7	32	0
Moderate/deep sedation	1,241	25	116.1	67.1	102	25

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
General Anesthesia	1,335	400	593.6	107.5	580	400
Inhalation Induction	1,335	25	78.6	44.6	70	26
Mask Management	1,335	25	55.2	55.3	39	25
Supraglottic Airway Devices (total of a & b)	1,335	35	114.1	52.5	108	35
a. Laryngeal mask	1,335	0	109.2	46.6	104	0
b. Other	1,335	0	4.8	24.0	0	0
Tracheal Intubation (total of a & b)	1,335	250	385.6	76.6	376	251
a. Oral	1,335	0	367.6	73.2	357	202
b. Nasal	1,335	0	18.0	15.2	14	0
Alternative Tracheal Intub/Endo (total of a & b)	1,335	25	74.3	37.2	68	25
a. Endoscopic techniques, total	1,335	5	13.4	16.8	8	5
1. Actual Placement	1,335	0	9.5	15.5	6	0
2. Simulated Placement	1,335	0	3.9	8.5	2	0
3. Airway Assessment	1,335	0	10.2	27.5	6	0
b. Other techniques	1,335	5	60.9	34.4	57	5
Emergence from Anesthesia	1,335	300	576.9	135.2	558	300
Regional Techniques	1,335					
Actual Administration (total of a, b, c & d)	1,335	35	132.2	72.1	113	36
a. Spinal (total of 1 & 2)	1,335	10	42.9	27.2	36	10
1. Spinal Anesthesia	1,335	0	37.8	24.5	32	1
2. Spinal Pain Management	1,335	0	5.1	9.9	2	0
b. Epidural (total of 1 & 2)	1,335	10	33.8	22.6	27	10
1. Epidural Anesthesia	1,335	0	10.9	13.4	6	0
2. Epidural Pain Management	1,335	0	22.9	19.4	18	0
c. Peripheral (total of 1, 2, 3 & 4)	1,335	10	47.0	40.6	34	10
1. Anesthesia Upper	1,335	0	11.5	12.4	8	0
2. Anesthesia Lower	1,335	0	12.1	18.1	7	0
3. Pain Management Upper	1,335	0	8.4	12.9	4	0
4. Pain Management Lower	1,335	0	15.1	23.6	7	0
d. Other	1,335					
1. Anesthesia	1,335	0	3.0	7.5	0	0
2. Pain Management	1,335	0	5.5	12.3	1	0
Management (total of 1 & 2)	1,335	35	96.5	57.8	79	35
1. Anesthesia	1,335	0	52.6	38.3	44	0
2. Pain Management	1,335	0	43.9	37.3	35	0
Moderate/deep sedation	1,335	25	145.0	88.8	131	25

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	1,241	25	50.9	20.1	47	25
Intraarterial Blood Pressure Monitoring	1,241	30	75.1	25.2	72	30

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Arterial Puncture/Catheter Insertion	1,335	25	55.0	23.6	50	25
Intraarterial Blood Pressure Monitoring	1,335	30	79.6	26.7	75	30

**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)	1,241	10	14.9	7.1	12	10
a. Non-PICC, Actual	1,241	0	10.6	8.8	10	0
b. Non-PICC, Simulated	1,241	0	4.2	4.5	3	0
Placement—PICC (total of a & b)	1,241	0	0.8	2.9	0	0
a. PICC, Actual	1,241	0	0.6	2.4	0	0
b. PICC, Simulated	1,241	0	0.2	1.1	0	0
Monitoring	1,241	15	22.9	8.5	20	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)	1,335	10	14.3	6.1	12	10
a. Non-PICC, Actual	1,335	0	10.3	7.3	10	0
b. Non-PICC, Simulated	1,335	0	4.0	3.9	3	0
Placement—PICC (total of a & b)	1,335	0	0.5	1.8	0	0
a. PICC, Actual	1,335	0	0.4	1.4	0	0
b. PICC, Simulated	1,335	0	0.1	0.7	0	0
Monitoring	1,335	15	22.0	8.6	19	15

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	1,241	0	5.2	5.9	3	0
Monitoring	1,241	0	10.9	7.7	10	0

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

Area	N	Number of Cases Required	Mean	Standard Deviation	Median	Minimum
Placement	1,335	0	4.7	5.0	4	0
Monitoring	1,335	0	9.5	7.2	9	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)	1,241	0	38.6	50.3	25	0
a. Regional	1,241	0	26.3	45.2	13	0
b. Vascular	1,241	0	12.3	15.0	8	0
Intravenous Catheter Placement	1,241	100	160.2	70.0	136	100
Advanced Noninvasive Hemodynamic Monitoring	1,241	0	20.1	85.7	2	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)	1,335	0	49.7	50.6	36	0
a. Regional	1,335	0	34.4	43.2	20	0
b. Vascular	1,335	0	15.4	16.0	11	0
Intravenous Catheter Placement	1,335	100	184.3	88.5	155	100
Advanced Noninvasive Hemodynamic Monitoring	1,335	0	24.9	103.8	3	0

## NCE 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;
- Nine statements related to aspects of the examination experience such as readability, fairness of test questions, and use of testing software;
- Six 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*. 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.

The responses represent tests administered. If a candidate tested more than once during 2020, their responses would be counted each time they completed the survey.

The N for each response differs for two reasons.

- Respondents do not always answer all the questions, as reflected by the unequal sample size across the sections of the survey.
- Due to its length, the survey is split into two unique parts, which are randomly administered. There are small differences in the final numbers of candidates exposed to each of these two survey parts.

Responses were analyzed based on samples of NCE test takers who were administered the exit survey during the period of CY2020. After each test administration, the test taker can contact the NBCRNA office 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 a question concerning scheduling mode – internet or phone, not included in the table below, indicate that 93.4% of NCE candidates scheduled their examination on the Internet rather than by phone. This is a lower percent than in previous years (in CY2019 it was 99.5%). Candidates may have needed additional help finding openings with capacity limited due to the pandemic. As seen from responses to later questions, satisfaction with ultimately finding convenient centers registered high overall. Responses to the other six survey questions are summarized in **Table 16**.

The numbers of candidates registering satisfaction with scheduling an acceptable test date and time increased over the previous year (86.9% and 89.7% for CY2019 respectively), surprising as Pearson VUE centers had reduced capacity during the March-December time period due to the pandemic. NBCRNA did work with Pearson VUE to make some centers other than the top tier Pearson Professional Centers available to candidates and it appears that this created needed availability.

Overall satisfaction with scheduling and registration remains high.

**Table 16. Responses to Survey Questions: Scheduling and Registration**

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
I was able to schedule an acceptable test date.	1,452	92.7%	115	7.3%
I was able to schedule an acceptable test center location.	1,424	91.0%	141	9.0%
The exam reservation process was easy to use.	1,516	96.7%	51	3.3%
The test center was easy to locate.	1,545	98.3%	26	1.7%
The test center staff was helpful and knowledgeable.	1,553	99.0%	16	1.0%
The testing center registration/check-in process was handled in a professional and efficient manner.	1,545	98.6%	22	1.4%

The next nine 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 (98.1% agreement), the CY2020 NCE examinees were satisfied with their testing experience. Agreement concerning the fairness of test questions increased from 85.1% in 2019 to 87.1% in CY2020.

87.3% of candidates agreed that the content outline was fairly represented. It should be noted that the content outline is rigidly adhered to for the scored items on the exam. Pretest items may not reflect content outline specifications however, and, as candidates cannot distinguish these from scored items, it may appear to them that the exam does not reflect the outline.



**Table 17. Responses to Survey Questions: Examination and Testing Experience**

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
I thought the examination questions were fair.	1,346	87.1%	199	12.9%
The graphs, figures, and diagrams in the questions were easy to read.	1,414	91.9%	124	8.1%
The graphs, figures, and diagrams in the questions fit onto the screen.	1,314	85.8 %	218	14,2%
I was able to 'scroll' the test window in order to view an entire graph or figure in a question.	1,509	98.1%	30	1.9%
The areas of the content outline were fairly represented.	1,344	87.3%	196	12.7%
My testing environment was clean, quiet, and comfortable.	1,526	97.3%	43	2.7%
I encountered no technical problems with the test administration software.	1,529	97.6%	37	2.4%
The test administration software was user-friendly.	1,558	99.4%	9	0.6%
Overall, I was satisfied with my testing experience.	1,540	98.1%	30	1.9%

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). **Table 18** summarizes the responses to six survey questions related to the MCR, SA, drag and drop, and hotspot question formats. Overall candidates responded positively to questions concerning fairness of these item types, consistent with responses seen in past years.

**Table 18. Responses to Survey Questions: Alternative Question Formats**

Survey Question	Agree		Disagree	
	Count	Percent	Count	Percent
The questions in the Multiple Correct Response format were fair.	1,412	91.5%	132	8.5%
The questions in the Short Answer/Calculation format were fair.	1,443	93.6%	99	6.4%
The questions in the Drag and Drop format were fair.	1,460	94.4%	86	5.6%
The questions in the Hotspot format were fair.	1,412	91.2%	136	8.8%
I understood how to respond to the questions in the alternative formats.	1,514	98.0%	31	2.0%
I needed help figuring out how to respond to the questions in the alternative formats.	591	38.2%	956	61.8%

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 CY2020, over 79% (79.2% increased from 77.4% in 2019) stated that the SEE helped them in their certification examination preparation. This is a substantial and steady increase in the past two years (under 60% in FY2017 to 67.9% in FY2018). Of 1,570 who completed the question regarding preparation for the NCE, 95.4% responded they attended a review course. Finally, 94% reported that their nurse anesthesia educational program featured computerized testing; this number has been increasing since 2013. Although it is lower than 98.7% in CY2019, and the decrease was likely caused by the pandemic learning solutions.

**Table 19. Responses to Survey Questions: Preparation for the NCE**

<b>Survey Question</b>	<b>Response</b>	<b>Count</b>	<b>Percent</b>
Taking the SEE helped prepare me to take the certification examination.	Agree	1,234	79.2%
	Disagree	261	16.7%
If you took a review course in preparation for this examination, please indicate below which review course you took.	Valley Anesthesia	138	9%
	Core Concepts	36	2.3%
	Howard Review	4	0.3%
	R&R Board Review	1	0.1%
	PACES	44	2.9%
	CRNA Secrets	3	0.2%
	APEX Anesthesia Review	1,194	77.9%
	Other commercial	11	0.7%
	Course Organized by My Program	32	2.1%
Please indicate below if your nurse anesthesia educational program featured any academic tests using computer-based testing.	Did Not Take	70	4.6%
	Yes	1,450	94.0%
	No	92	6.0%

## Demographic Characteristics of the SEE Candidate Population, 2020

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 (Year 2016 through 2020, January 1, 2016–December 31, 2020, N = 20,483) 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: 38.7% of SEE examinees were male and 61.3% were female. The mean total score for Year-2 examinees (416.7, n=1,455) was higher than the mean total score for Year-1 examinees (404.1, n=99). The mean SEE score for the Year-3-and-above students was highest at 432.4 (n=2,896).

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, 2020**

Program Year	Gender	Count	Mean	Standard Deviation	5-year Trend Mean
Year 1	Female	60	397.2	45.8	388.0
	Male	39	414.6	55.0	404.6
	<b>Total</b>	<b>99</b>	<b>404.1</b>	<b>50.1</b>	<b>395.6</b>
Year 2	Female	835	411.2	46.6	403.3
	Male	620	424.2	46.8	413.4
	<b>Total</b>	<b>1,455</b>	<b>416.7</b>	<b>47.1</b>	<b>407.5</b>
Year 3 and above	Female	1,834	429.2	39.0	419.9
	Male	1,062	438.1	40.0	427.8
	<b>Total</b>	<b>2,896</b>	<b>432.4</b>	<b>39.6</b>	<b>423.0</b>
Total	Female	2,729	423.0	42.6	411.2
	Male	1,721	432.6	43.5	420.0
	<b>Total</b>	<b>4,450</b>	<b>426.7</b>	<b>43.2</b>	<b>414.8</b>

**Table 21** summarizes SEE scores by age group. The average age of Year-1 SEE examinees was 31.4 years. The average age of Year-2 SEE examinees was 31.8 years. The average age of Year-3 SEE examinees was 32.3 years. The mean age of all SEE examinees during the period was 32.1 years, on average similar to the sample of first-time NCE examinees (32.6 years). The largest age groups were composed of examinees under the age of 30 (35.0%) and examinees between the ages of 30 and 35 (44.9%). In 2020, the same as in previous years, younger examinees scored higher than older examinees within the same training year. The same results were found in the five-year trending sample.

**Table 21. SEE Candidate Performance by Age and Program Year, 2020**

<b>Program Year</b>	<b>Age</b>	<b>Count</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>5-year Trend Mean</b>
Year 1	Under 30	49	400.8	52.5	398.6
	30 - 35	31	411.5	48.1	396.3
	36 - 39	13	401.2	53.9	389.1
	40 or above	6	398.2	37.3	384.0
	<b>Total</b>	<b>99</b>	<b>404.1</b>	<b>50.1</b>	<b>395.6</b>
Year 2	Under 30	565	418.9	46.9	410.9
	30 - 35	614	418.7	48.2	407.2
	36 - 39	162	407.9	45.3	401.2
	40 or above	114	408.0	42.5	395.8
	<b>Total</b>	<b>1,455</b>	<b>416.7</b>	<b>47.1</b>	<b>407.5</b>
Year 3 and above	Under 30	944	436.9	39.6	427.4
	30 - 35	1,351	431.1	39.5	423.5
	36 - 39	348	429.9	38.9	417.2
	40 or above	253	426.3	40.0	410.8
	<b>Total</b>	<b>2,896</b>	<b>432.4</b>	<b>39.6</b>	<b>423.0</b>
Total	Under 30	1,558	429.3	43.9	417.7
	30 - 35	1,996	427.0	42.9	415.6
	36 - 39	523	422.4	42.7	409.5
	40 or above	373	420.3	41.6	403.5
	<b>Total</b>	<b>4,450</b>	<b>426.7</b>	<b>43.2</b>	<b>414.8</b>

**Table 22** displays summaries of SEE scores by clinical background. Overall, the most commonly identified clinical setting was ICU/CCU (28.8%).

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, 2020**

	Clinical Background	Count	Mean	Std Dev	5-Yr Mean	Program Year	Clinical Background	Count	Mean	Std Dev	5-Yr Mean
Year 1	CCU	23	393.7	41.3	394.7	Year 3 & Above	CCU	405	433.0	38.0	426.7
	ER	6	425.7	30.6	398.3		ER	190	435.5	43.6	420.5
	ICU/CCU	29	407.9	55.9	394.5		ICU/CCU	867	433.2	40.3	422.2
	MICU	16	398.6	47.1	395.1		MICU	489	428.9	38.5	424.0
	NEURO ICU	8	393.0	25.5	395.2		NEURO ICU	168	427.0	37.9	422.1
	NICU	3	441.3	55.7	395.6		NICU	41	429.6	41.7	414.4
	OR	3	408.0	78.7	381.0		OR	138	431.0	42.6	428.6
	PACU	1	394.0	.	382.8		PACU	15	421.4	27.2	418.1
	PICU	2	413.5	51.6	399.4		PICU	91	435.7	41.3	422.1
	SICU	4	456.3	57.4	400.1		SICU	370	433.5	40.0	424.0
	Trauma ICU	4	361.8	76.6	398.0		Trauma ICU	122	439.9	33.1	423.3
	<b>Total</b>	<b>99</b>	<b>404.1</b>	<b>50.1</b>	<b>395.8</b>		<b>Total</b>	<b>2,896</b>	<b>432.4</b>	<b>39.6</b>	<b>423.1</b>
Year 2	CCU	196	417.7	46.5	410.1	Total	CCU	624	426.8	42.0	417.4
	ER	123	416.4	50.1	404.3		ER	319	427.9	46.8	412.5
	ICU/CCU	386	413.7	47.7	405.1		ICU/CCU	1,282	426.8	44.0	413.6
	MICU	266	418.6	46.8	409.5		MICU	771	424.8	42.1	415.8
	NEURO ICU	82	429.3	44.8	409.5		NEURO ICU	258	426.7	40.3	415.4
	NICU	23	429.7	33.6	401.0		NICU	67	430.2	39.1	407.8
	OR	48	403.3	48.1	402.3		OR	189	423.6	46.0	419.3
	PACU	8	419.9	27.8	393.5		PACU	24	419.8	26.7	407.3
	PICU	56	410.7	43.9	412.5		PICU	149	426.0	43.8	416.3
	SICU	201	416.7	47.7	408.8		SICU	575	427.8	43.7	415.9
	Trauma ICU	66	419.3	47.1	409.0		Trauma ICU	192	431.2	41.7	415.6
	<b>Total</b>	<b>1455</b>	<b>416.7</b>	<b>47.1</b>	<b>407.4</b>		<b>Total</b>	<b>4,450</b>	<b>426.7</b>	<b>43.2</b>	<b>414.9</b>

**Table 23** displays summaries of SEE scores by degree to be attained. As is noted, starting in FY2017, “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 2020 (16.2%) in comparison to 2019 (20.9%) and FY2018 (23.7%). The number of SEE examinees in doctoral programs continued to increase in 2020 (N=2,620, 58.9%) over the previous fiscal years 2019 (N = 2,047, 44.2%) and FY2018 (N = 1,291, 30.8%). 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, 2020**

<b>Program Year</b>	<b>Degree Upon Completion</b>	<b>Count</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>5-year Trend Mean</b>
Year 1*	MS Nurse Anesthesia	2	471.0	15.6	400.3
	MS Nursing Major	14	360.1	40.2	387.5
	Other Masters	47	424.2	54.2	399.2
	Doctoral	36	391.1	28.6	386.7
	<b>Total</b>	<b>99</b>	<b>404.1</b>	<b>50.1</b>	<b>395.6</b>
Year 2	MS Nurse Anesthesia	287	427.4	51.4	407.5
	MS Nursing Major	387	421.7	49.6	413.3
	Other Masters	152	420.0	47.5	411.0
	Doctoral	629	408.0	41.6	398.2
	<b>Total</b>	<b>1,455</b>	<b>416.7</b>	<b>47.1</b>	<b>407.5</b>
Year 3 and above	MS Nurse Anesthesia	362	437.2	38.6	421.5
	MS Nursing Major	318	441.2	37.4	426.4
	Other Masters	261	431.6	41.5	422.9
	Doctoral	1,955	430.2	39.6	422.6
	<b>Total</b>	<b>2,896</b>	<b>432.4</b>	<b>39.6</b>	<b>423.0</b>
Total	MS Nurse Anesthesia	651	433.0	44.9	412.3
	MS Nursing Major	719	429.2	46.4	416.1
	Other Masters	460	427.0	45.2	415.2
	Doctoral	2,620	424.4	41.3	415.6
	<b>Total</b>	<b>4,450</b>	<b>426.7</b>	<b>43.2</b>	<b>414.8</b>

\*There were few students in Year 1 taking SEE in 2020 overall and by Degree program 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, 2020**

Reporting Period	Percent Passing
2008* (Graduates 2007 – 2008)	89.9
2009 (Graduates after 2008)	87.7
2010	88.9
2011	89.1
FY2012	88.5
FY2013	88.4
FY2014**	87.8
FY2015	85.0
FY2016	84.5
FY2017	82.6
FY2018	84.3
2019***	84.4
2020***	85.2

\*Passing standard increased in August 2008

\*\*Passing standard increased in January 2014

\*\*\*Indicating Calendar Years 2019 and 2020.

**Table A2. Descriptive Statistics for NCE Total and Domain-Level Scores—First-Time Candidates 2020 (January 1, 2020 – December 31, 2020)**

	Mean	Standard Deviation
Total Score	496.2	44.5
Basic Science	500.7	60.5
Equipment, Instrumentation and Technology	507.0	70.6
General Principles of Anesthesia	496.7	55.8
Anesthesia for Surgical Procedures and Special Populations	499.8	57.9

**Table A3. Descriptive Statistics for SEE Scores and Domain-Level Information, 2020 (January 1, 2020 – December 31, 2020)**

	1st Year in Program		2nd Year in Program		3rd Year in Program		All	
	Avg	SD	Avg	SD	Avg	SD	Avg	SD
Total	404.1	50.1	416.7	47.1	432.4	39.6	426.7	43.2
Basic Science	400.1	60.2	419.2	53.6	429.7	46.4	425.6	49.6
Equipment, Instrumentation and Technology	407.3	53.6	419.5	51.6	436.8	45.5	430.4	48.6
General Principles of Anesthesia	412.8	54.7	416.8	51.6	432.2	44.4	426.7	47.7
Anesthesia for Surgical Procedures and Special Populations	399.9	51.9	414.8	51.1	434.1	45.3	427.0	48.4