Identification of Barriers to Student Registered Nurse Anesthetist Participation in Independent Certified Registered Nurse Anesthetist Clinical Rotation Sites

Lauren M. Phoenix MS, MBA, CRNA

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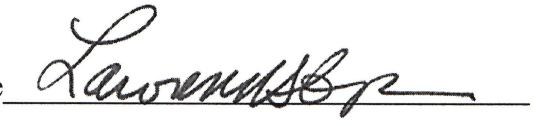
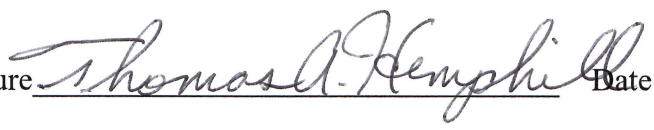
Primary Advisor:

Lawrence R. Stump MEd, CRNA

Signature  Date January 4, 2021

Second Reader:

Thomas A. Hemphill PhD

Signature  Date January 4, 2021

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I must also thank the countless and often unrecognized librarians at the University of Michigan Flint and the Jackson Public Library. They selflessly guide students every day and painstakingly assisted my literature review. They also kicked me out at closing time, or I would still be there printing "just one more article please."

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Abstract

The objective of this study was to assess Michigan Student Registered Nurse Anesthetist and Nurse Anesthesia Program Director experience with independent (CRNA only) student clinical practice rotations. The study took place between February 1 and July 31, 2020. A mixed methods approach was used to obtain both qualitative and quantitative data regarding barriers to and perceived value of independent practice rotations. Data was obtained from nurse anesthesia education programs in Michigan during video interviews with program directors or assistant program directors and from student registered nurse anesthetists by an anonymous online survey. One hundred percent of the Michigan nurse anesthesia programs participated. Twenty-nine senior students began the survey and seventeen completed it. The survey results indicated that 60% of Michigan nurse anesthesia programs mandate independent practice rotations. Student respondents expected to complete an average of 5.2 weeks in independent practice before graduation. They reported traveling an average of 138.5 miles to the practice site and an average of $660 for out-of-pocket expenses. Barriers for program directors included communication with site coordinators and finding lodging for students. Program directors are using grants and funds earned by student seminars to help offset these costs. Both groups agreed that these rotations have significant value to students and 48% of student respondents would consider working in independent practice in the future because of their independent practice experience.

Introduction

In Michigan, most of the clinical education of Student Registered Nurse Anesthetists (SRNAs) takes place in Anesthesia Care Team settings (ACTs) in the major metropolitan areas. In rural Michigan, anesthetics are typically administered by Certified Registered Nurse Anesthetists (CRNAs) practicing independently with a surgeon, without the presence of a Physician Anesthesiologist (PA). The American Association of Nurse Anesthetists (AANA) and Council on Accreditation of Nurse Anesthesia Educational Programs (COA) has identified that sometimes, ACT practices limit the access of SRNAs to case types and procedures, thereby restricting learning opportunities and creating gaps in their clinical education.[1] This restriction of clinical learning limits the opportunity to develop a full scope of practice (SOP), which includes the administration of various types of regional anesthesia, pain management procedures, point of care ultrasound, and the placement of invasive monitoring devices such as central venous catheters and arterial lines. Within some of the large academic clinical sites, there is additional competition for specialty cases due to the presence of physician anesthesia resident training programs.

Fifty-six of the 83 counties in Michigan are considered rural or mostly rural. In these communities, there are 36 Critical Access Hospitals (CAHs). One in four Medicaid enrollees reside in a county that is dependent on a CAH.[2] Thirty-four of the 83 counties in Michigan have no obstetrical (OB) services.[3] PAs in the Midwest work predominantly in large urban medical centers medically directing or supervising CRNAs. A study on the viability of the anesthesia workforce indicated that in 2020, there was a shortage of PAs and a surplus of CRNAs.[4] CRNAs in Michigan independently administer over 65% of all anesthetics in rural and underserved

communities.[5] Rural communities therefore depend on having CRNAs who are competent in all anesthesia techniques.

Several CAHs have closed and consequently, citizens in some rural areas of Michigan are denied convenient access to health care. This situation contributes to the difficulties SRNAs in Michigan experience in relation to receiving clinical instruction. A shortage of qualified CRNAs who are willing and able to serve in rural Michigan is likely to become a public health threat. Developing a strategy to maintain learning opportunities for SRNAs is critical to the sustainability and relevance of nurse anesthesiology in Michigan.

Developing SRNAs into CRNAs who can practice various types of anesthesia does not only affect rural Michigan. There is a national trend due to market force pressures which are incentivizing hospital CEOs to re-evaluate the sustainability of the current anesthesia care models in their facilities. These market incentives include the passage of the Affordable Care Act, changes in Medicare reimbursement (bundling payments), and an increased demand for hospital subsidies for anesthesia groups.[6,7]

When re-evaluating the anesthesia workforce and financial sustainability of current anesthesia care models, healthcare CEOs may consider changes to PA:CRNA supervision ratios or changing to an all CRNA model. This innovation is forestalled by internal hospital policies and politics that limit CRNA SOP which are not supported by law in any state.[8] CRNAs who are able to function with full scope offer value and affordability, yet in the ACT environment, patients presenting for surgery are automatically assigned two providers: a PA and a CRNA. Restriction of CRNA SOP, lack of consumer knowledge, lack of choice, and lack of cost transparency have all contributed to market failure in the business of anesthesiology.

Moving forward, it is critical for educators to develop a strategy that delivers opportunities for SRNAs to become skilled and confident in the provision of all anesthesia techniques. One of the most advantageous places to ensure the SRNA is exposed to the full scope of practice is at independent CRNA practice sites. It is there that CRNAs control the narrative. Additionally, during rural community rotations, students in healthcare can potentially grow in adaptability and autonomy.

Independent clinical sites are often a significant distance from where SRNAs attend their academic programs or where they reside. Students also experience additional barriers to attending these rotations, including a range of personal sacrifices. It is the intent of this study to evaluate the current state of independent practice rotations for SRNAs in Michigan, to identify the existing barriers to these independent rotations, and to determine the perceived value of independent practice rotations. In order to evaluate these perceptions and barriers, four research questions will be addressed:

1. What is the current state of SRNA participation in and access to independent CRNA practice locations in the State of Michigan?
2. What are the barriers to SRNA access to independent CRNA practice locations in the State of Michigan?
3. What are the perceptions of SRNAs and Program Directors (PDs) value of exposure to independent CRNA practice locations during SRNA clinical education?
4. As a result of this study, what private and public policies are recommended for implementation in the State of Michigan?

Literature Review

A literature search was completed using the databases CINAHL, PubMed, Google Scholar, EBSCO, and ProQuest. AANA.com and personal communication were also utilized. Search terms used included Survey Development, Student Registered Nurse Anesthetists, Barriers to Independent Practice Sites, Student Registered Nurse Anesthetist Scope of Practice, Certified Registered Nurse Anesthetist Independent Practice in Michigan, Anesthesia Group Composition, Development of Confidence in Health Education, Medically Supervised versus Independently Practicing Certified Registered Nurse Anesthetists, and Advanced Practice Nurses. Inclusion criteria for this study's literature review were papers written in English and published within the last 15 years. Fifteen years was selected due to the small number of articles found that described the experience of SRNAs with independent CRNA clinical rotation sites. To date, no study has been undertaken that specifically addresses the perceptions of SRNAs and PDs regarding independent site rotations, barriers to them, and their perceived value.

The barriers to CRNAs and other Advanced Practice Registered Nurses (APRNs) achieving full scope of practice are well documented.[9-11] These barriers include differences in internal and external policy/regulations. State laws, medical staff bylaws, departmental practice restrictions, credentialing agencies, and reimbursement discrimination are all barriers for CRNAs' practicing to the full scope of their education and training.[9-11]

Physician Anesthesiologists limit SRNA access to clinical sites, to specialty cases, and to anesthesia procedures.[12] Their political motivation for this is job security. In its 2018 position statement, the American Society of Anesthesiologists recommended further restrictions on SRNA education, urging facilities to mandate 1:1 CRNA-SRNA supervision, preventing CRNAs from overseeing two SRNAs simultaneously which would allow development of student

autonony.[13] In contrast, the COA permits a 2:1 SRNA to CRNA supervision ratio when deemed clinically appropriate.[14]

These internal policies are often politically motivated and affect the training of SRNAs regarding access to cases and opportunities to think and function independently when providing care. CRNAs working in ACT settings have reported "moral distress" which trickles down to students rotating in those facilities.[15] This distress is compounded when students are restricted in their access to specific surgery cases. An unpublished capstone project reported 69% of participating SRNAs reported being "bullied" by anesthesiologists.[16] This behavior undermines their professional development and confidence. Many of these difficulties could be eliminated by SRNAs participating in clinical rotations in facilities where CRNAs are practicing independently.

The number of "CRNA only" groups in the United States had decreased from 402 in 2015 to 341 in 2019, and 76% of these groups have less than ten members.[17] These groups may be employees of a facility or independent contractors. In 2019, CRNAs outnumbered anesthesiologists in the United States by 40,513 to 37,321.[17] Nationally, market forces are nudging a trend toward the formation of large anesthesia groups, several of which are owned and operated by private equity investors. These market forces are multifactorial. Larger anesthesia groups wield more negotiation power with healthcare facilities because they can offer consistent anesthesia staff and flexible staffing models. Additionally, large anesthesia groups use case volumes as leverage to negotiate with payers for higher reimbursement. They also have resources to navigate complex anesthesia billing regulations. Utilization of "CRNA only" practices is the most cost-effective approach in healthcare.[18-20]

The financial motivation for physician anesthesiologists to train SRNAs is weak because when supervising two SRNAs, they receive only 50% of the allowed reimbursement for each case, whereas they receive 100% of the allowed reimbursement for each case when supervising two anesthesia residents.[21] In 2019, the median physician anesthesiologist salary was $372,900 compared to a CRNA salary of $169,450.[22,23] This represents savings of over 60% in anesthesia compensation which could contribute to facility maintenance and sustainability.

Interestingly, the Center for Medicare and Medicaid (CMS) allocates money for graduate medical education (anesthesiology residents) but not for graduate SRNA education, yet once the anesthesia provider is in practice, Medicare pays the same anesthesia fee whether a CRNA is working independently, a PA is working independently, or they are functioning within an ACT.[21] This practice discriminates against CRNA education and favors the education of the more expensive anesthesia provider.

In an ACT, the PA receives 50% of the anesthesia reimbursement for each anesthetic when medically directing any number of CRNAs up to four.[21,24] In order to sustain the high compensation for the PA, the facility often provides a stipend to the anesthesia group to compensate for services that generate little income. This negatively affects the healthcare system cost structure without any increase in quality or availability of anesthesia services.

National attention has been given to mitigating healthcare costs by utilizing APRNs. Both physician groups and the US government have contributed opinions to this notion. In 2010, the National Academy of Medicine, a non-profit institution that provides objective advice on science, technology and health, (formerly known as the Institute of Medicine) published a landmark report that recommended that all advanced practice nurses should be able to practice to the full extent of their education and training.[25] In 2018, the Department of Health and Human

Services (DHHS) identified barriers to market competition at the federal and state levels which dissuade hospital administrators from exploring more cost-effective anesthesia models.[26]

In 2001, with the primary goal of enhancing anesthesia services, the Centers for Medicare and Medicaid Services (CMS) allowed states to opt-out of physician supervision for CRNAs. Seventeen states have currently opted out. Michigan is not an opt out state and requires physician supervision, yet supervision can come from any physician, not necessarily an anesthesiologist. No state requires CRNA supervision by a PA. Hospital and smaller healthcare facilitiy CEOs ignore the cost savings and safety record of CRNAs and report choosing anesthesia staffing models based solely on surgeon preference, organizational inertia, and norms for their geographic location.[27]

A 2015 study found that a geographical imbalance of anesthesia providers exists in the United States. The national distribution of the anesthesia workforce indicates that CRNAs have a strong presence in rural areas. CRNAs are more likely than anesthesiologists to be distributed in counties that have lower median income, higher numbers of uninsured or Medicaid patients, and higher unemployment rates. Sixty-four percent of anesthesiologists and 42% of CRNAs were located in counties where the median household income was in the top 75th percentile. CRNAs were consistently located in counties where the median income was in the 25th percentile despite whether the county was urban or ruraly.[28]

In addition to per capita income as a variable influencing anesthesia provider location, the distribution of anesthesiologists was 4 times more negatively correlated with the Medicaid eligible population than CRNAs. CRNAs were more correlated with the Medicare disabled and Medicare blind populations. CRNAs were aggregated to the north west, north central, and southern states while anesthesiologists aggregated to coastal areas in the east and west. The

north west and north central states are primarily opt-out states where CRNAs can practice independently without physician supervision.[28]

The above data on the distribution of CRNAs to predominantly rural areas nationally aligns with anesthesia provider distribution in Michigan as well. As discussed earlier 67% of the counties in Michigan are considered rural or mostly rural and CRNAs administer over 65% of anesthetics in the rural areas of Michigan. To date, the exact number and location of sites in Michigan where CRNAs practice independently has not been formally reported. However, in 2018 the Michigan Association of Nurse Anesthetists Government Relations Committee (MANA-GRC) collected data on the number and location of independent CRNA practice sites through self-reporting. Though not an all-inclusive list, to date, this provides the best data available. Twenty-six hospitals and eight physician offices or pain clinics were reported to the GRC as facilities where CRNAs practice independently in Michigan.[29] Many of these locations are geographically remote from the five SRNA training programs and located in rural areas.

According to the National Rural Health Association, 98 rural hospitals in the United States closed between 2010 and 2019, an additional 700 rural hospitals are vulnerable to closure, and 46% of rural hospitals operate at a loss.[30] Eleven rural hospitals in Michigan have discontinued obstetrical services since 2008.[3] In the course of one year, Manistee Hospital, Sturgis Hospital, and Sparrow Carson Hospital all closed their obstetric units.[3] Thirty-four of the 83 counties in Michigan have no obstetric service. This alarming trend is forcing some women to drive for over an hour if they wish to give birth in a hospital.[3] The difference in cost between employing a CRNA and an anesthesiologist could save hospitals over 60% in anesthesia provider compensation and support the operation of rural hospitals in Michigan.[18,20]

By January 1, 2022, all CRNA programs will be granting a Doctor of Nursing Practice (DNP) or a Doctor of Nurse Anesthesia Practice (DNAP) degree. Masters-level nurse anesthetist programs can typically be completed in around 29 months, with roughly 64 credit hours required. Doctoral-level CRNA programs will take 36 months and will require around 100 credit hours.[29] Time is usually split equally between clinical and didactic education, thus affording extra time for independent site rotations. The additional credit hours in the doctoral programs have caused the educational costs to escalate. Statistics for 2018 show that SRNAs are currently graduating with up to $200,000 in student loan debt.[31] SRNA graduates want a higher return on their financial and personal investment. They have a legitimate expectation to graduate with proficiency in all types of anesthesia techniques and monitoring which ultimately increases their marketability and expands professional opportunities

Potential barriers to SRNA access to independent CRNA sites to be evaluated by this study include, but are not limited to:

1. Lack of knowledge of independent sites in Michigan.
2. No financial incentive for independent CRNAs to teach clinical anesthesia.
3. Surgeons at sites uncomfortable with SRNAs administering anesthesia to their patients.
4. Independent sites located too far from training programs and there is not a requirement for independent practice rotations by the Council on Accreditation of Nurse Anesthesia Programs.
5. Financial disincentives for students to travel long distances and secure lodging.
6. Time away from family when at remote sites.
7. Independent practice CRNAs are not familiar with the current SRNA curriculum.
8. Independent CRNAs do not want the liability.

The Council on Accreditation of Nurse Anesthesia Programs (COA) currently does not require exposure to independent CRNA practice.[14] Thus, there is no external incentive for SRNA training programs to offer this unique and important clinical experience. Moreover, among the five SRNA training programs in Michigan, there lacks consistent mandatory independent practice rotations. SRNAs report that the role transition from student to practitioner is stressful and is facilitated by mastery of self-efficacy and confidence.[32]

Development of professional confidence in health education is closely linked with the role of the preceptor.[20] Students have different perceptions of clinical rotations in rural and metropolitan settings, and there is emerging evidence that rural placements are highly valued and should be considered essential in diversifying preceptorship programs.[33] An independent clinical site rotation is a premier opportunity for mentoring SRNAs and for refining their independent thinking process during the latter part of their clinical education.

Methodology

Due to the exploratory nature of this study and to the complexity of the data to be collected from SRNAs and PDs, representing multiple anesthesia training programs, a mixed methods approach was used. Interview questions for PDs and survey questions for SRNAs were designed around the four research questions. The study took place between February 1, 2020 and July 31, 2020.

Materials

Qualtrics software, personal computer, survey tool, interview questionnaire.

Population

The study population included all SRNAs, anesthesia program directors (PDs) and/or assistant program directors (APDs) in the State of Michigan. Responses were kept confidential. The anesthesia programs included were University of Michigan-Flint, University of Detroit Mercy, Oakland University, Wayne State University, and Michigan State University.

Implementation

This study was evaluated and deemed exempt from IRB oversight by the University of Michigan-Flint Institutional Review Board for Human Subject Research and was approved by the University of Michigan-Flint Nurse Anesthesia Scholarly Project Committee. After approval, PDs in Michigan were emailed an explanation of the study and an invitation to participate. The initial email also contained a Qualtrics link for student participation. The PDs were asked to forward this link to their students through their university email. Students were informed of their anonymity and that their participation constituted their informed consent. They were also told that they did not have to answer every question as they were all at various places in the educational process and had varying levels of clinical experience. The SRNA survey contained 25 questions, which included demographic data, Likert-type questions, and open-ended questions. Thus, the sample size for each question is the number of students who answered it. One week later, the SRNAs were sent a follow-up email through their PDs, reminding them to complete the survey if they had not already done so.

Recorded interviews were conducted via video conferencing with the PDs or APDs from each of the five nurse anesthetist programs in Michigan. The APDs were interviewed with permission from the PD. Consent for videotaping was obtained from each participant and each interview lasted approximately 30 minutes. The identity of participants was kept confidential.

Interviews consisted of a mix of demographic, Likert-type questions, and open-ended questions. Three of the programs currently grant doctoral degrees and two are in a transition process and have a mixture of master's degree students completing their program, and doctoral degree students beginning their program.

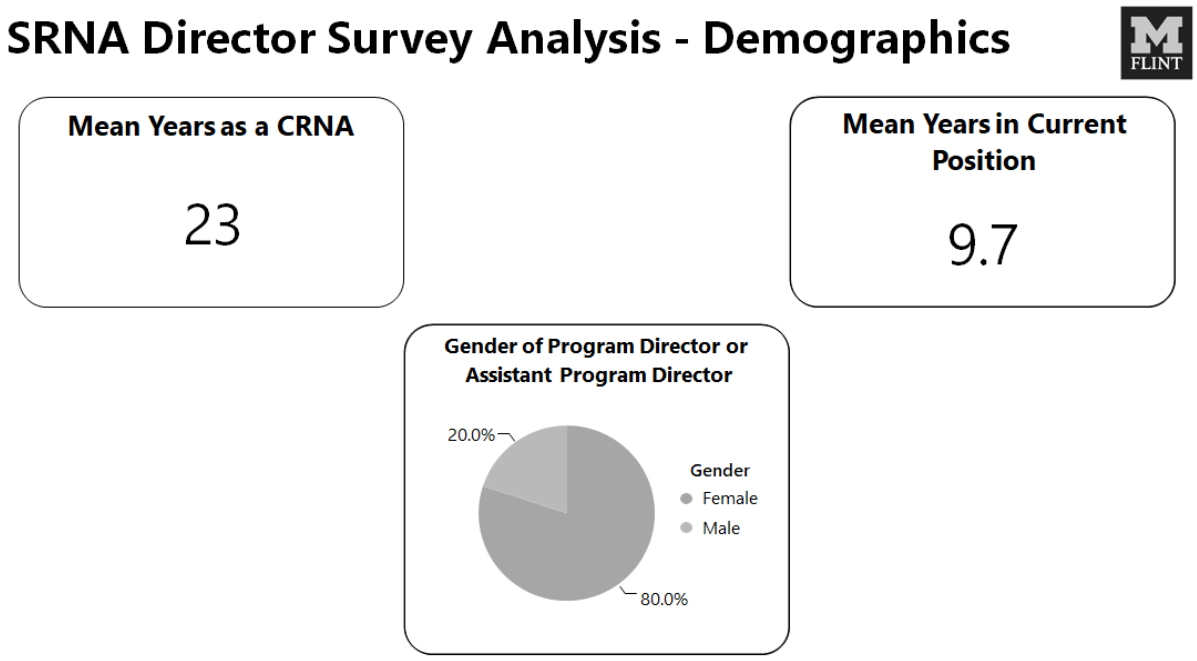
As this was a mixed methods study, qualitative and demographic data from both study groups were analyzed using Qualtrics software. The qualitative data were analyzed by creating an affinity diagram to identify patterns and relationships among responses to standardized open-ended questions for both groups.

Results

Demographics

As mentioned previously, this study consisted of two populations and thus resulted in two distinct data sets. First, the population of Program Directors (Figure 1) consisted of five individuals, two PDs and three APDs (with the permission of their PDs) which represented 100% program participation. Furthermore, the population represented 80% female and 20% male. Lastly, the mean time as PD or APD was 9.7 years and the mean time as a practicing CRNA was 23 years.

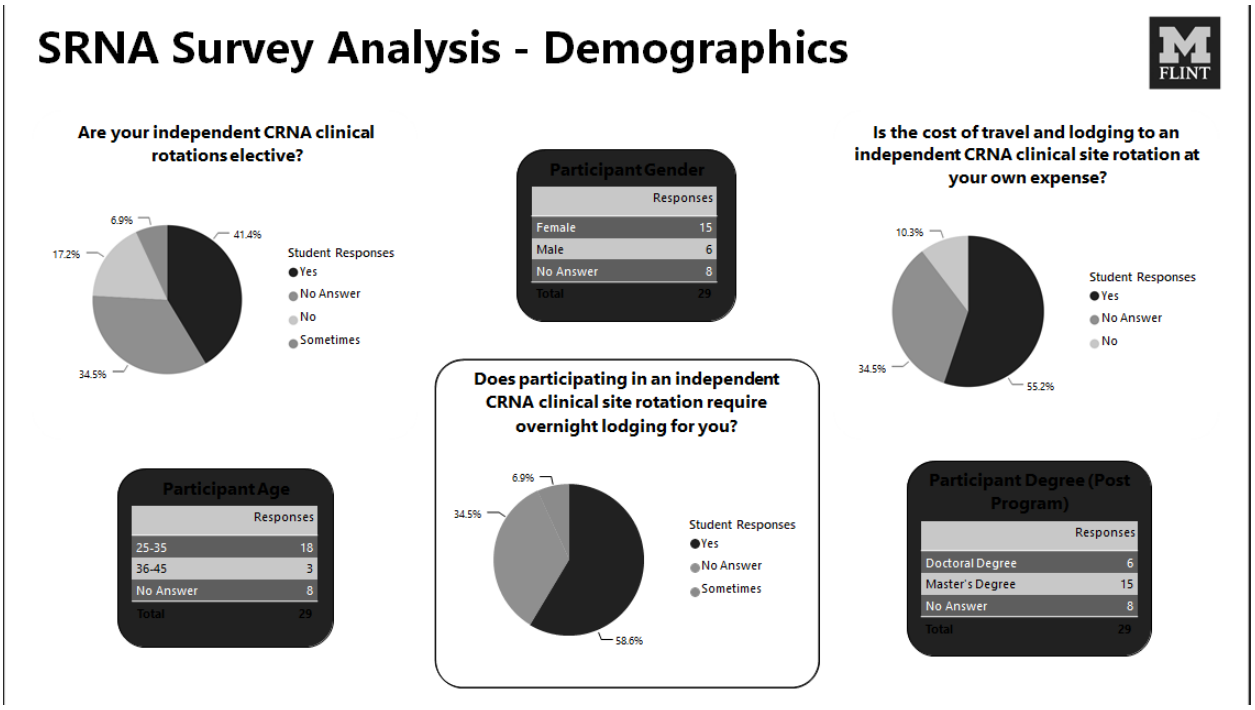
Figure 1



The student population consisted of 29 individuals at the start of the survey (Figure 2). Fifteen were female, six were male and eight did not identify their gender. Fifteen were in a master's program, six were in a doctoral program, and eight did not identify. Eighteen of the student participants were in the 25–35 age range, three were aged 36–45, and eight did not report. The

mean number of years practicing as an RN before entering the SRNA program was 4.7. Seventeen SRNAs completed all parts of the survey.

Figure 2



Research Question 1: Current Status of Independent Practice in Michigan

The current status of independent practice rotations for SRNAs in Michigan was determined from the PD interviews and the SRNA survey. Three of the five programs mandate that all students must rotate to independent practice sites and two make this voluntary (Figure 3). Of the two programs that make these rotations voluntary, in one, most of their students (70–80%) choose to attend, while in the other program, six out of 24 seniors (27%) attended. There were between 10 and 25 senior students in each graduate program (Figure 4). Programs had 4-5 independent practice sites for students to choose from for their 1-2 month rotations (Figure 5).

Figure 3

SRNA Director Survey Analysis - Numerical

Question 4: Are independent site rotations mandatory for your students? If not, what percent of your students attend at least one independent practice site rotation?

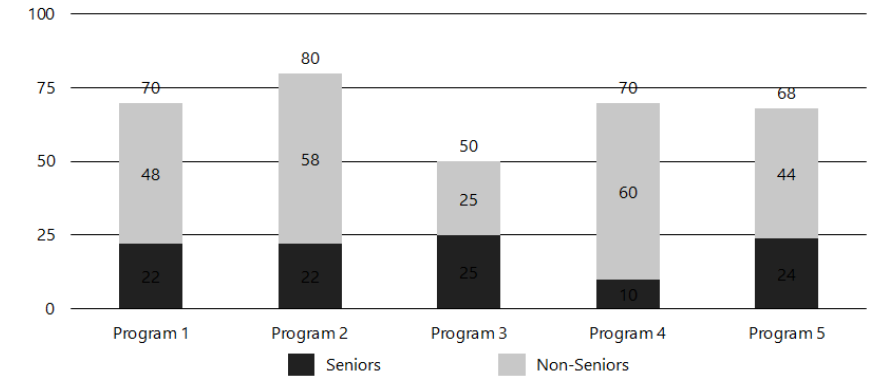
Independent Site Rotation Details

Program	Status	% of Students
Program 1	Voluntary	70-80%
Program 2	Mandatory	100%
Program 3	Mandatory	100%
Program 4	Mandatory	100%
Program 5	Voluntary	27%

Figure 4

SRNA Director Survey Analysis - Numerical

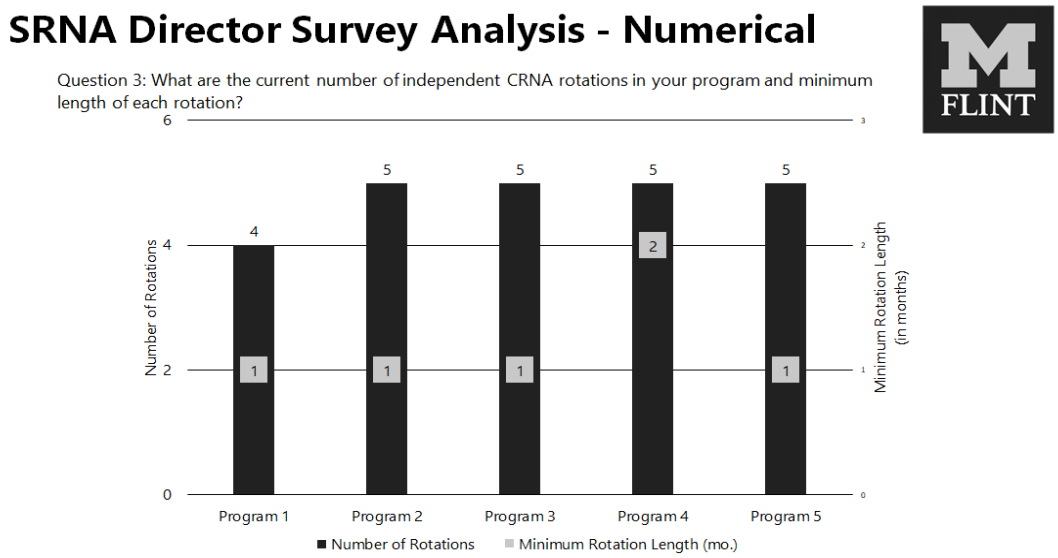
Question 2: Number of students/seniors in your program



Summary Statistics - Total Students

67.60	70	10.90	118.80	5
Mean	Median	Standard Deviation	Variance	Sample Size

Figure 5



All the independent practice rotations are positioned in the rural areas of Michigan. Most students (65%) stated that they would not want to rotate to the independent sites until at least year two of their program. There were mixed feelings among the PDs regarding the transition to a doctoral program affording more time for independent clinical rotations. Two strongly agreed that this was the case, one somewhat agreed, and two were neutral on the matter.

At the time of answering the survey, the student respondents had completed an average of 15.9 months of clinical training and had spent an average of 2.2 weeks in independent rotations. They reported that they expected to complete an average of 5.2 weeks in independent rotations before graduation (Figure 6). Overall, PDs reported that only senior students should rotate to independent practice sites (Figure 7).

Figure 6

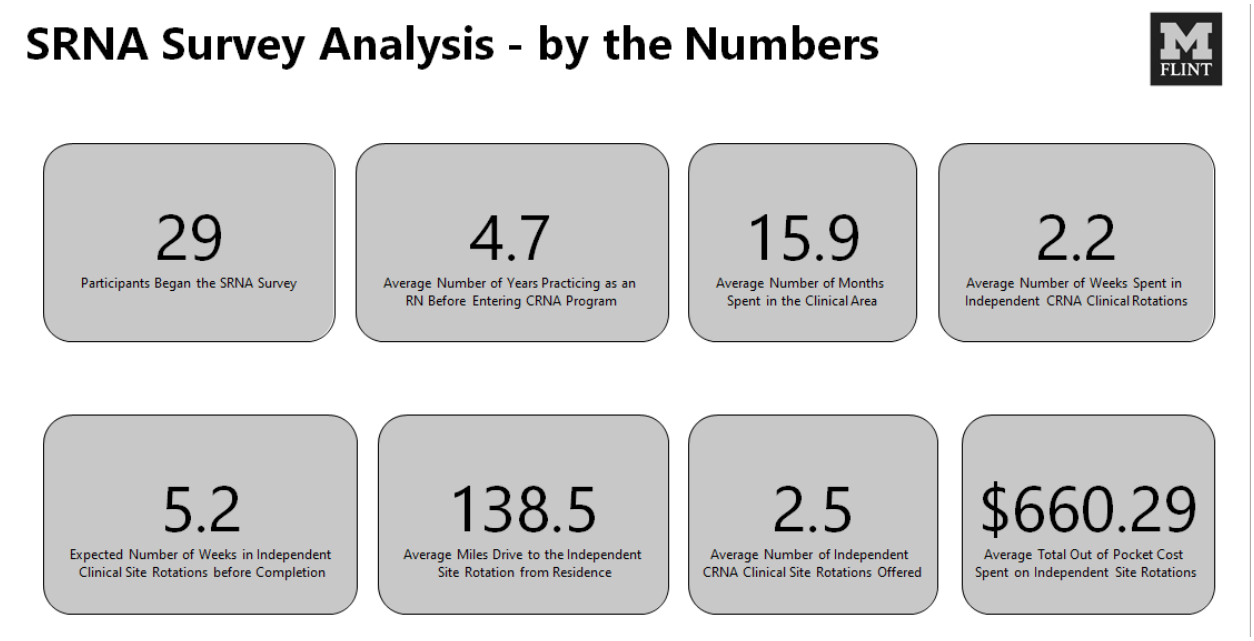
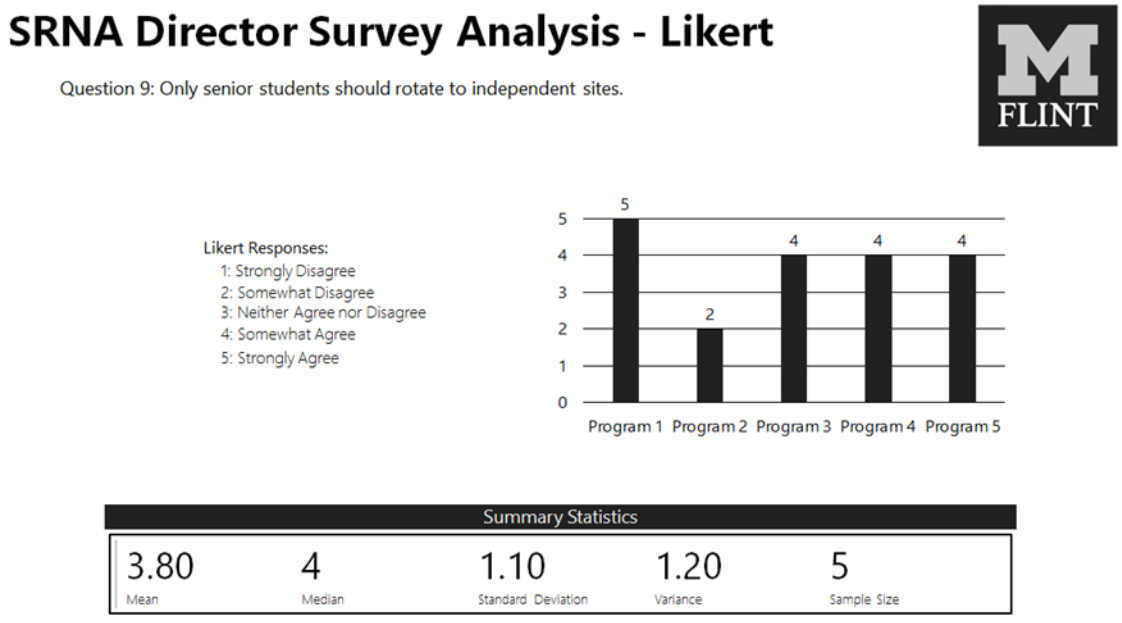


Figure 7



Students reported being satisfied with the amount of autonomy they were getting in their program (Figure 8). Fifty three percent disagreed or strongly disagreed that they wanted more autonomy than they were getting. Thirty five percent were neutral about it and only 12% agreed that they would like more autonomy than they were currently receiving in their program. No students strongly agreed. Student responses regarding autonomy conflicted with PD response to a similar question. Eighty percent of PDs (4 out of 5) somewhat agreed that SRNAs have expressed a desire for more autonomy in the operating room, while 20% (1 out of 5) somewhat disagreed (Figure 9). Students did not report wanting an increasing level of autonomy than they were already experiencing in their program (Figure 10).

Figure 8

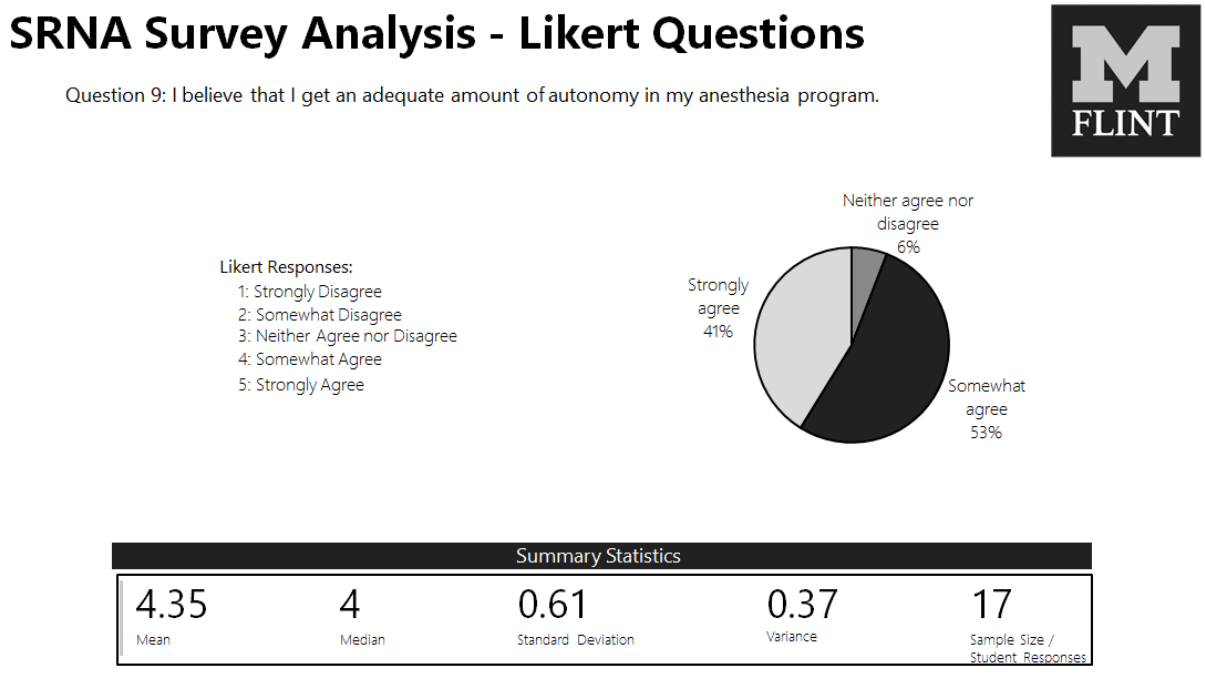


Figure 9

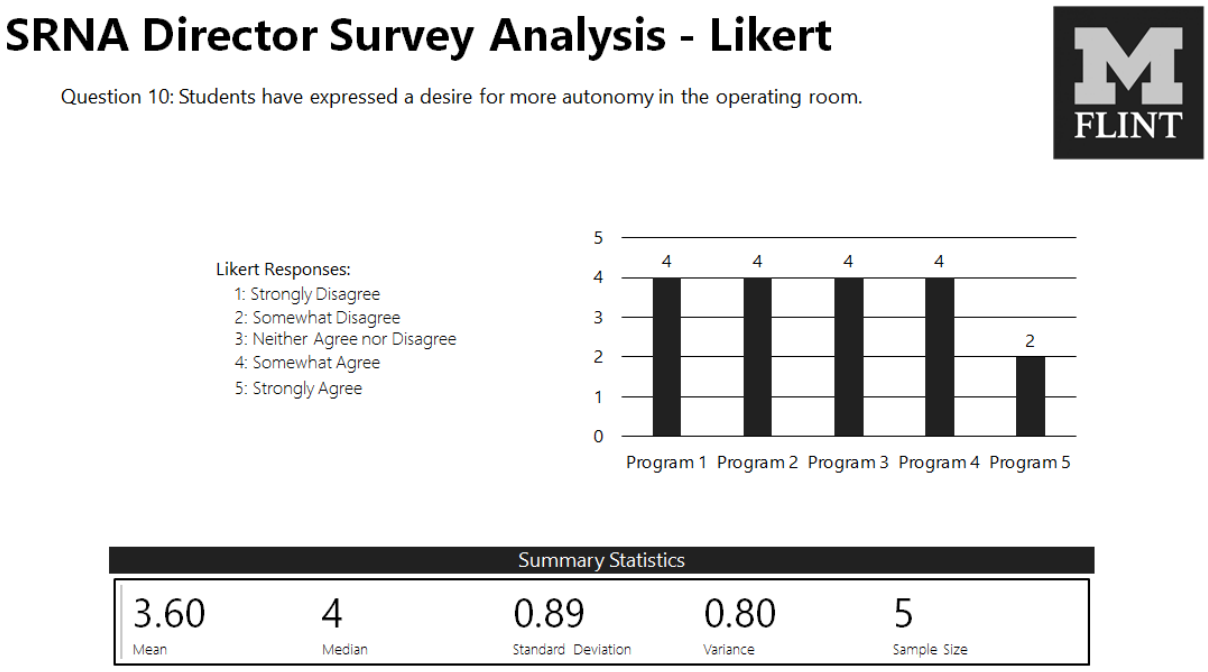
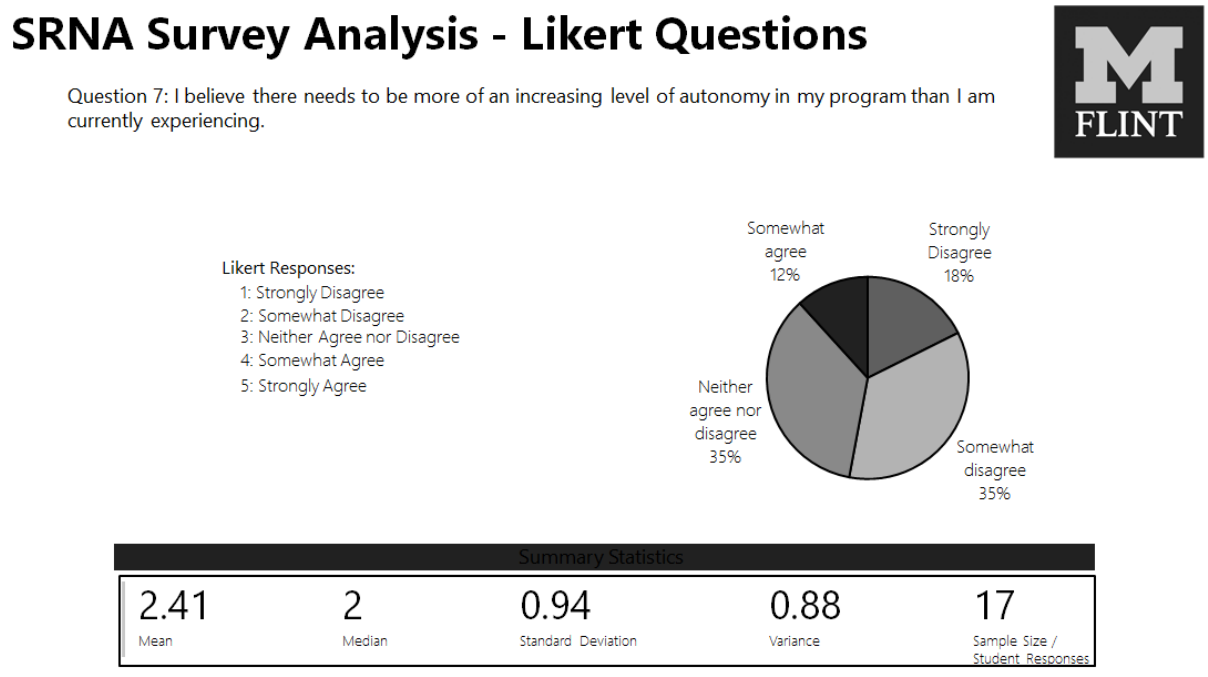


Figure 10



Research Question 2: Barriers to Independent Practice

Although the majority of SRNAs in Michigan do rotate to independent sites, the program administrators and the students experienced barriers when incorporating independent practice rotations into the educational process. Specifically, PDs encountered administrative challenges when procuring and maintaining the sites while students incurred personal barriers.

Some recurring themes surfaced during the PD group interviews regarding the administrative barriers that they faced. One of the most challenging involves the difficulties encountered when first setting up a rotation, such as site visits to the remote areas, time-consuming efforts to get contracts reviewed by the legal departments at the clinical site and the associated university. Other barriers included securing living accommodation for students and having consistent communication with the liaison CRNA from the site.

Sixty percent of the PD group strongly agreed and 40% agreed that students should receive some financial assistance to attend independent clinical rotations (Figure 11). This aligns with SRNAs reports of financial barriers to attending independent practice sites (Figures12-13). PDs were also in agreement that independent CRNA sites do want to have students rotating at their facility (Figure 14) and four out of the five respondents strongly disagreed with the statement that the sites did not desire to have students rotating and the remaining respondent disagreed.

Figure 11

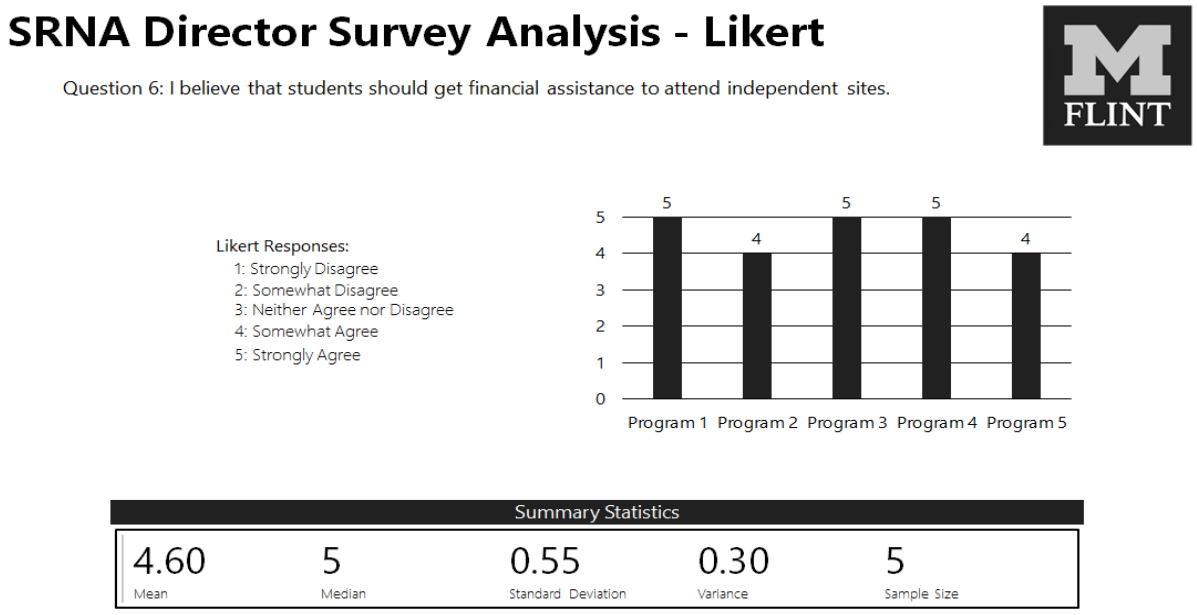


Figure 12

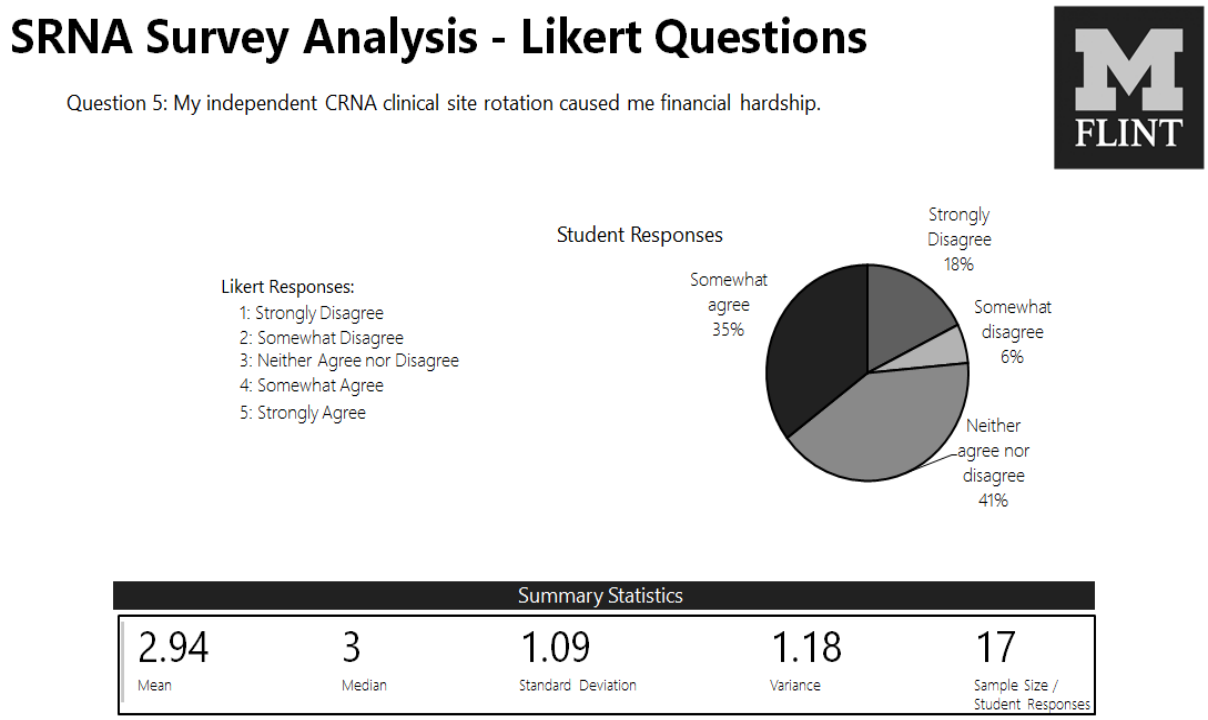


Figure 13

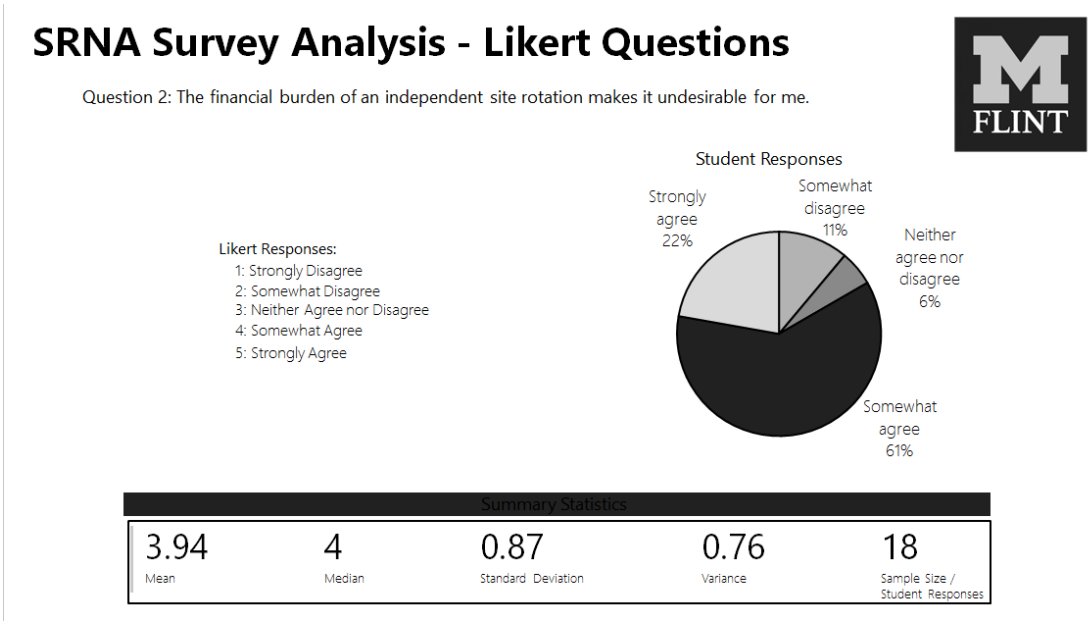
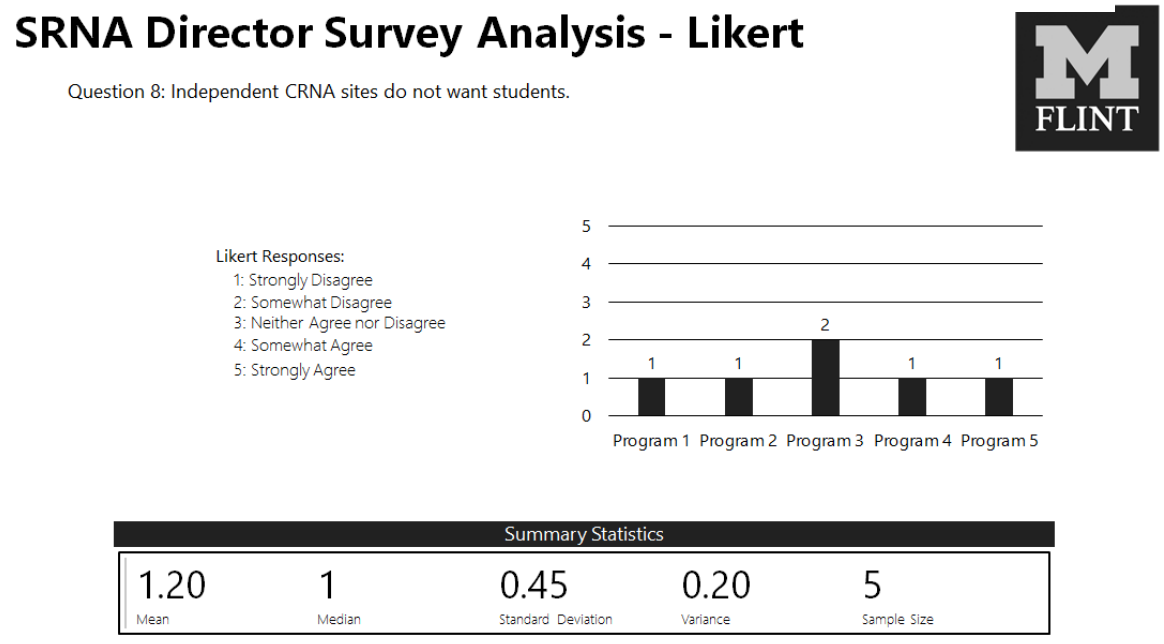
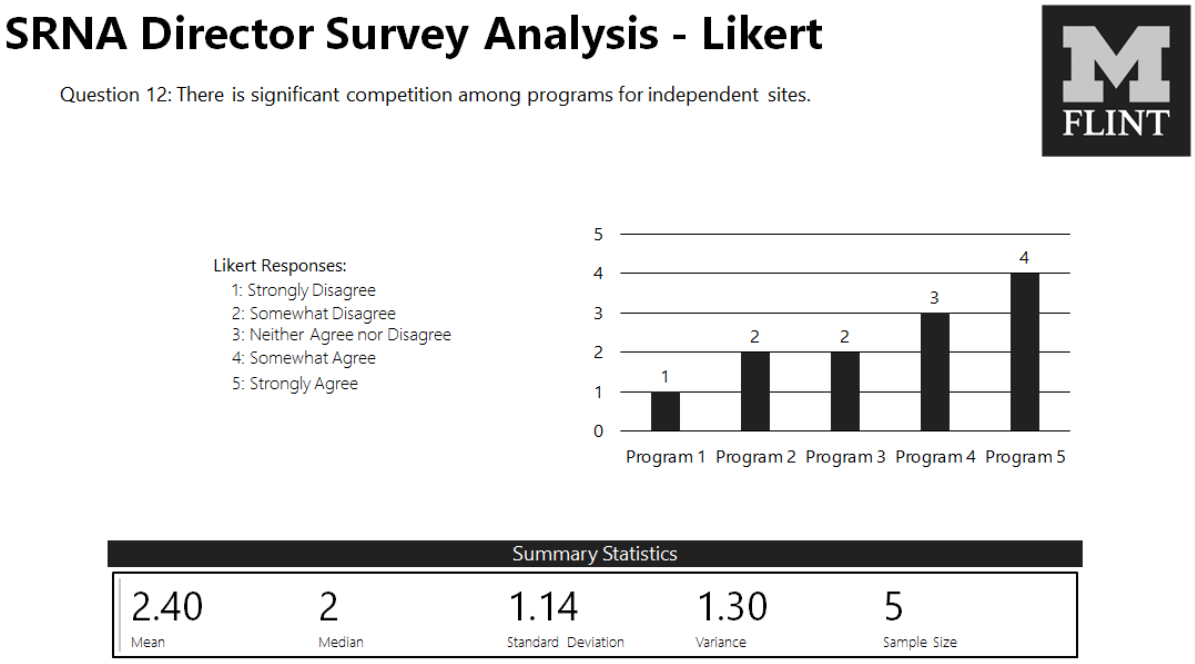


Figure 14



The issue of competition among programs for independent clinical rotations was also discussed and the PD group disagreed that competition was a barrier. Only one of the respondents strongly agreed that there was significant competition. Three of the PDs opined that there is significant collaboration among programs to locate and secure independent practice for their students (Figure 15).

Figure 15

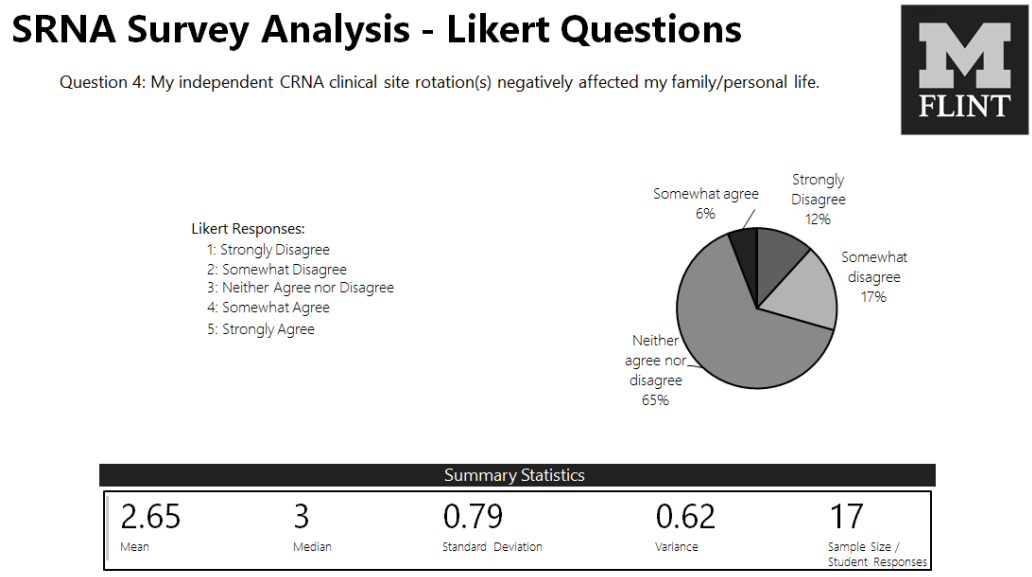


The SRNAs also experience clinical education barriers when doing independent practice rotations. Fifty nine percent of the students reported that these clinical rotations required overnight lodging and 55% responded that the rotations were at their personal expense. Sixty-one percent of the SRNA group somewhat agreed and 22% strongly agreed that the financial burden of an independent site rotation made it undesirable. The majority (65%) were neutral on whether

the rotations negatively affected their family or personal life, while 28% either disagreed or strongly disagreed that this was the case. Only 6% of respondents somewhat agreed that their family or personal life was affected by attending a remote clinical site (Figure 16).

The average total out-of-pocket costs that students reported spending on an independent clinical rotation was $660.29, and the average miles driven to the site was 135.5. Thirty five percent of students somewhat agreed that these rotations caused them financial hardship.

Figure 16

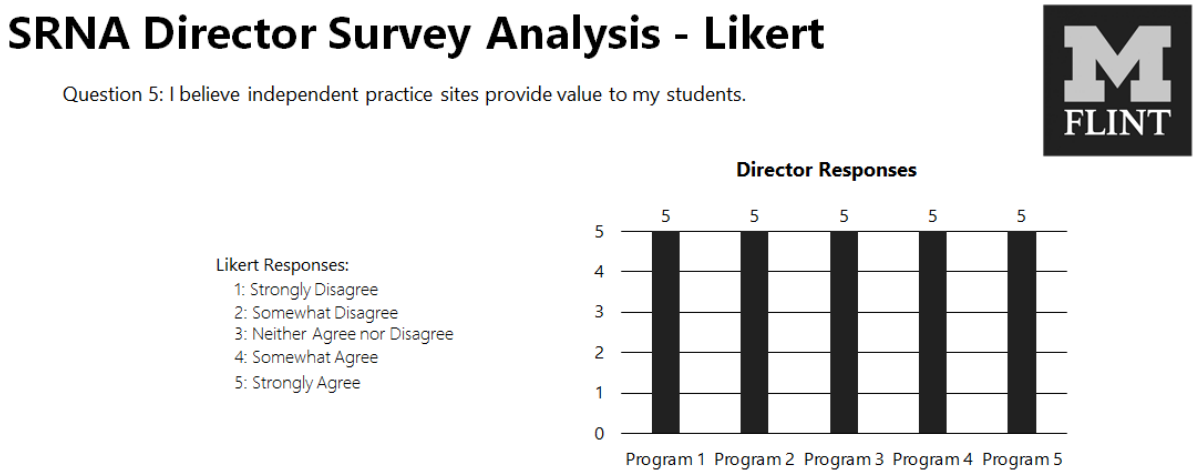


Research Question 3: Perceived Value of Independent Practice Rotations

Despite the barriers and burdens experienced by the PD groups and SRNAs in this study, another component of the research was to assess the perceived value of these rotations in both study groups. One hundred percent of PD groups strongly agreed that independent CRNA

clinical rotations provided value to their students, and 80% strongly disagreed that these site rotations were not necessary for all students. Only one respondent somewhat agreed that they were not necessary for all students (Figure 17).

Figure 17



This division corresponded with whether the rotations were mandatory in their programs (Figures 18-19). SRNAs reported that independent practice sites provide value to their education that they do not experience in ACT rotations (Figure 20).

Figure 18

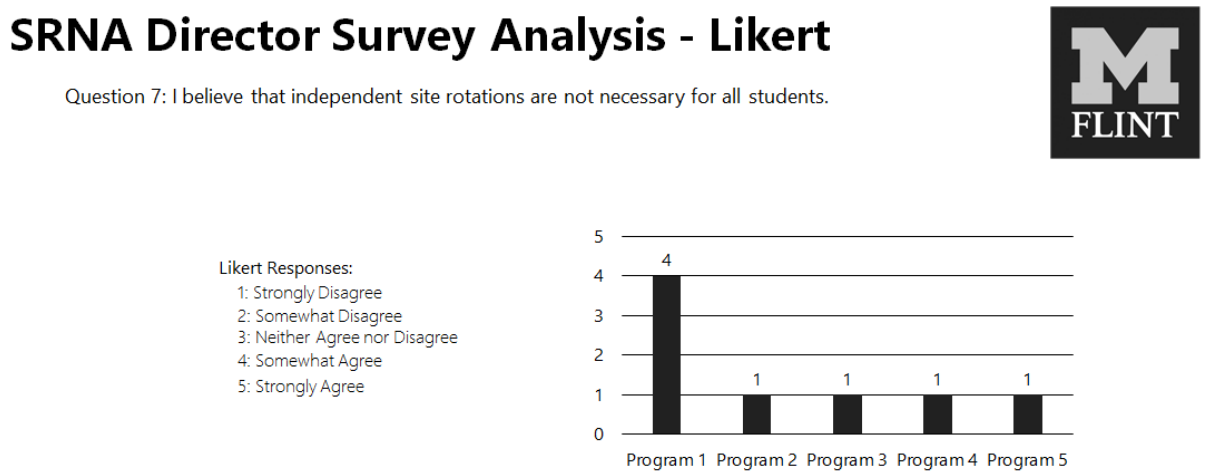


Figure 19

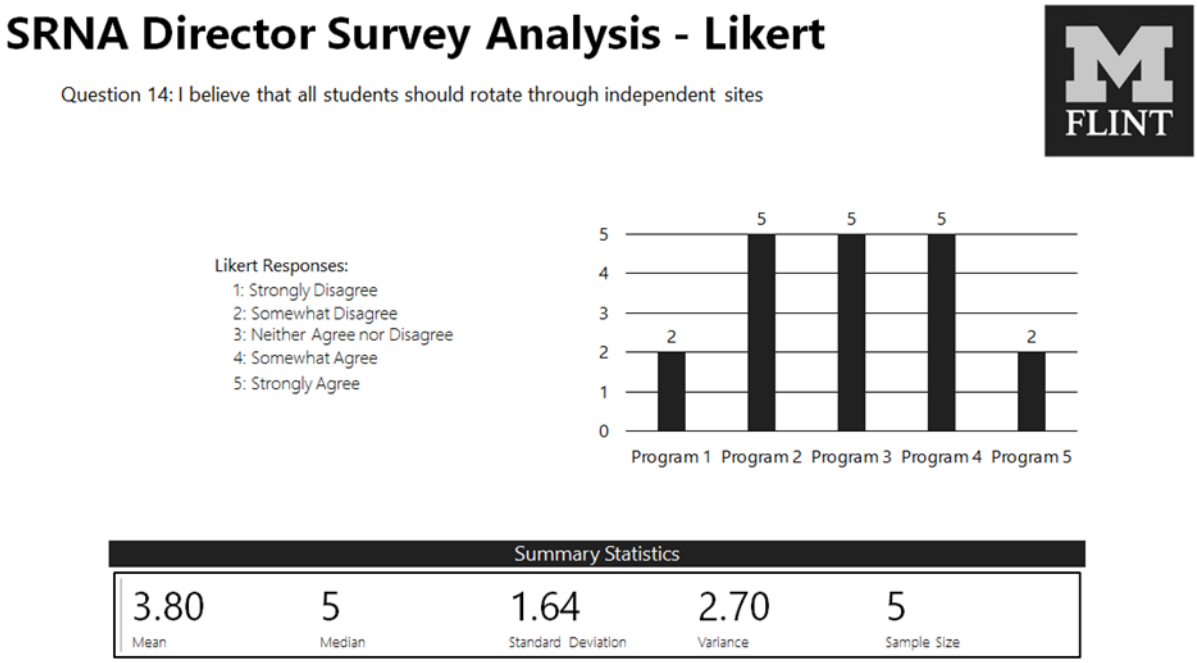
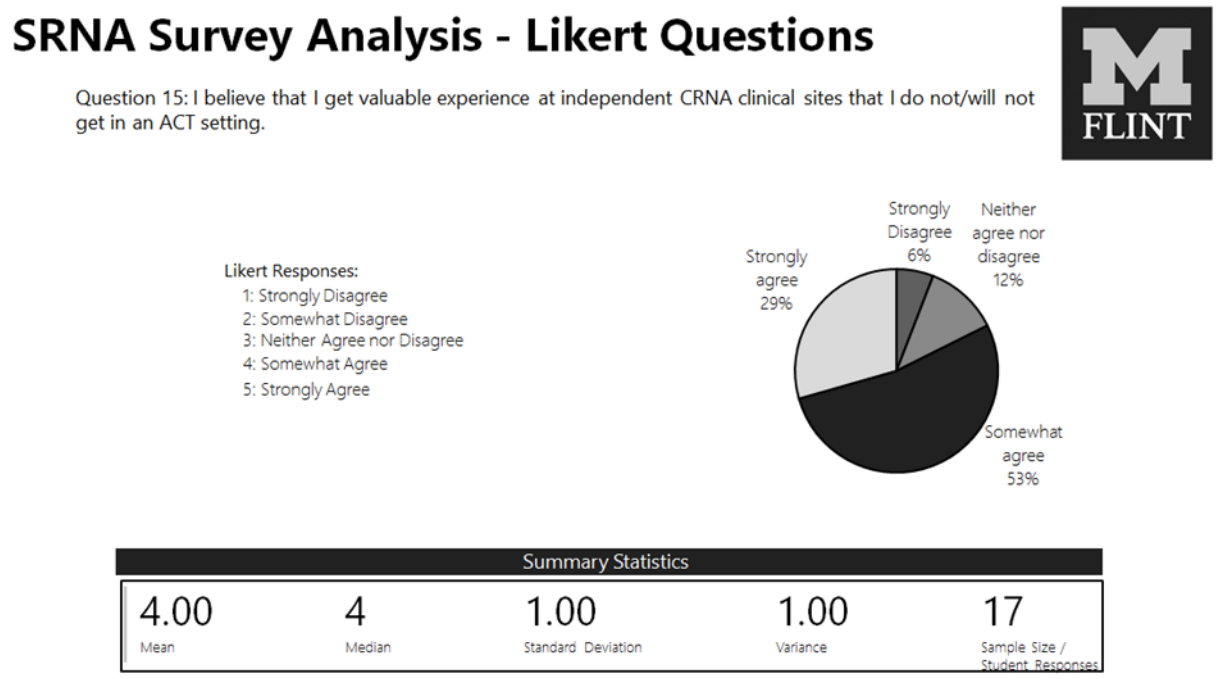


Figure 20



The same 60% of PDs and APDs who believed that independent clinical rotations should be mandatory for all students in their programs, were also in strong agreement that their students were ready for independent practice immediately upon graduation. Twenty percent agreed and the remaining 20% somewhat disagreed that their students were ready to enter independent practice immediately upon graduation. (Figure 21). The respondents who did not strongly agree that their students were ready to enter independent practice immediately upon graduation were all from the programs that did not make the rotations mandatory. PDs did agree that there should be some consistency between programs for mentoring senior SRNAs into CRNAs (Figure 22).

Figure 21

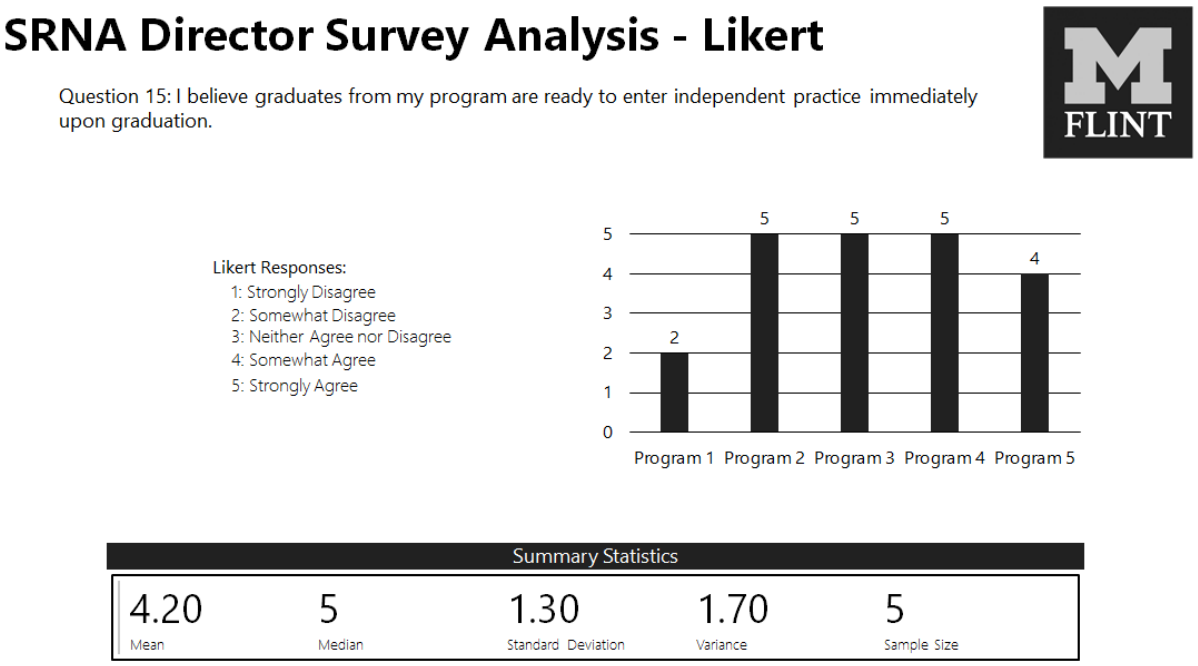
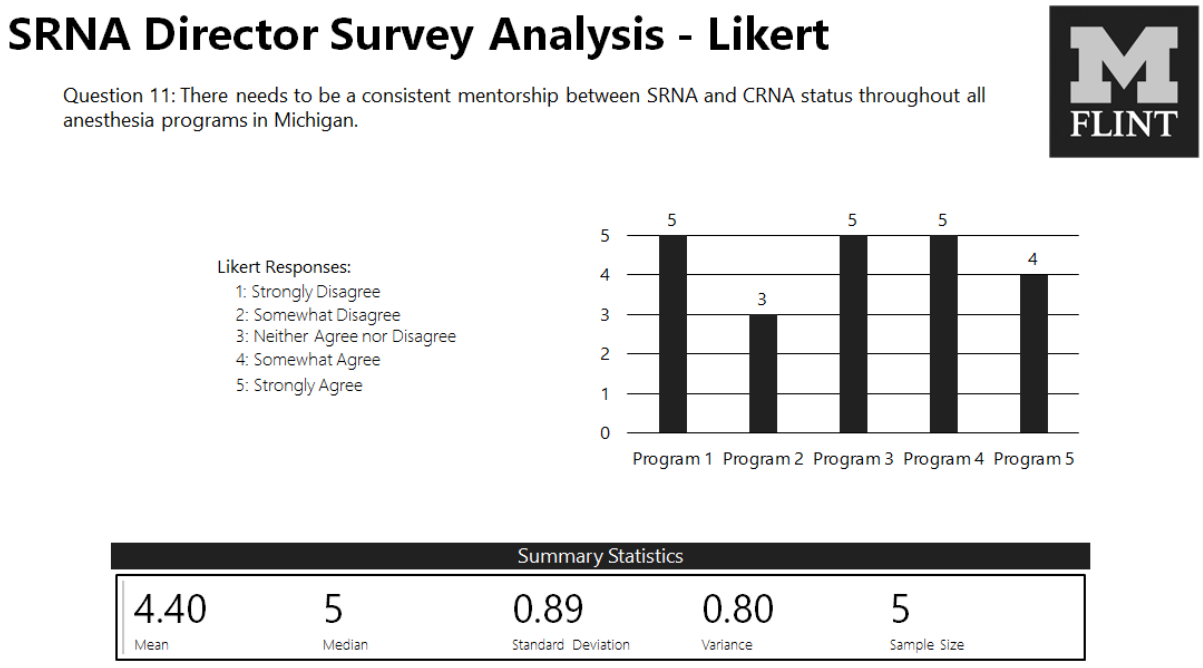


Figure 22



The students also reported that the independent practice rotations were valuable to their educational process and over 55% wanted more access to them (Figure 23). Twenty-nine percent agreed and 18% strongly agreed that, because of their attendance at independent practice rotations, they saw themselves as more likely to pursue a rural independent practice after graduation (Figure 24). An overwhelming majority (94%) of SRNAs either agreed or strongly agreed that it was important to their professional development to include independent practice sites in the rotation, and 94% agreed or strongly agreed that they were given an adequate amount of autonomy in their program.

Figure 23

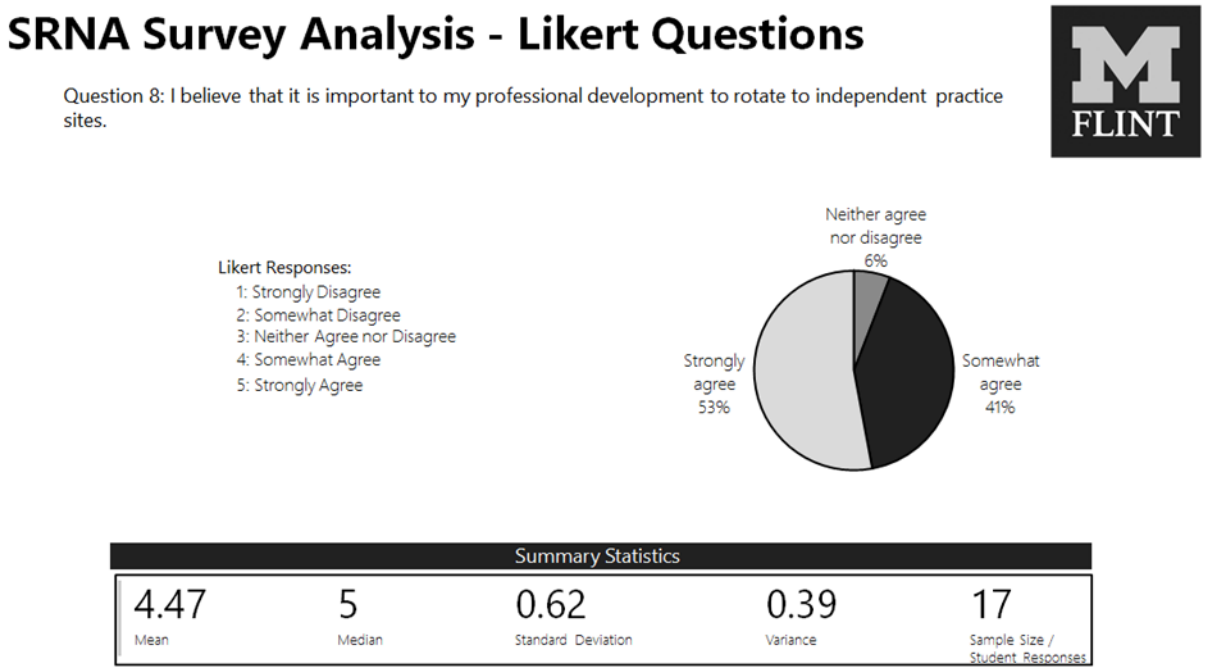
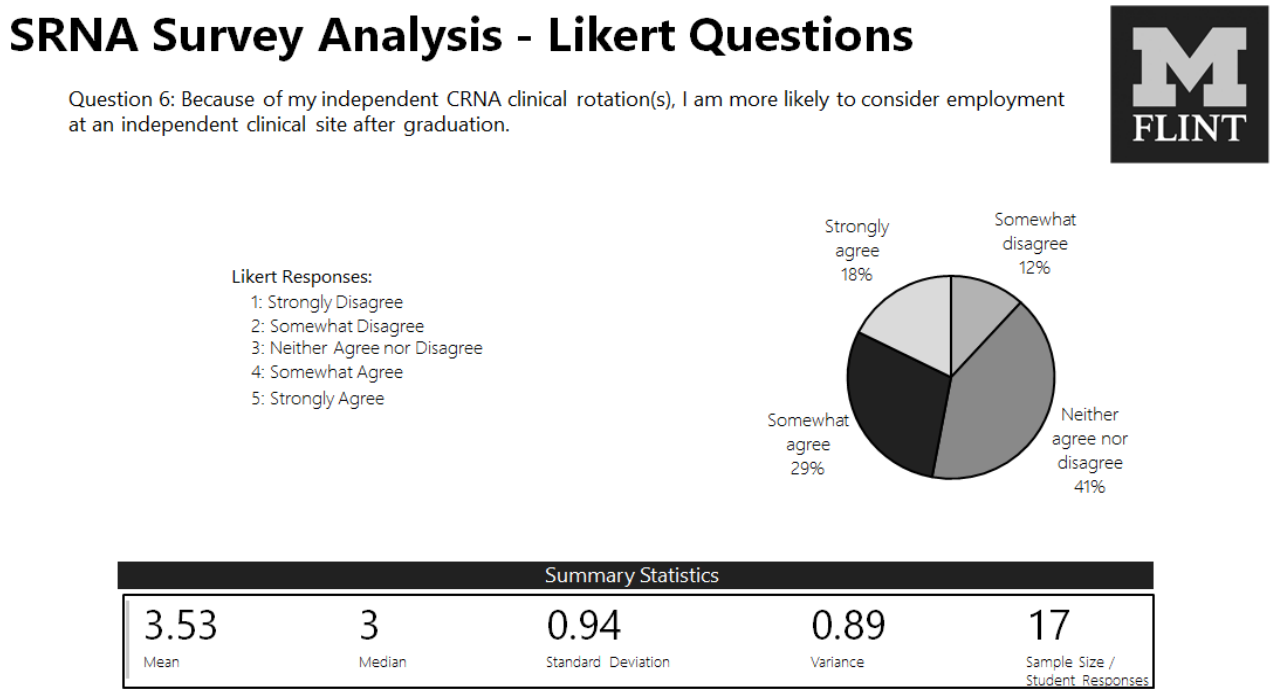


Figure 24



When working in non-independent (ACT) sites with an anesthesiologist present, an overwhelming majority of the SRNAs (88%) reported having their plan for anesthesia care changed by the anesthesiologist after having had it approved by their CRNA preceptor (Figure 25). Twenty-nine percent of respondents strongly agreed and 41% somewhat agreed that they had observed the physician anesthesiologist discounting their CRNA preceptor's input (Figure 26). Ninety-five percent of SRNA respondents strongly agreed or somewhat agreed that they have been denied clinical learning opportunities by physician anesthesiologists during their clinical rotation in facilities using the ACT model (Figure 27).

Figure 25

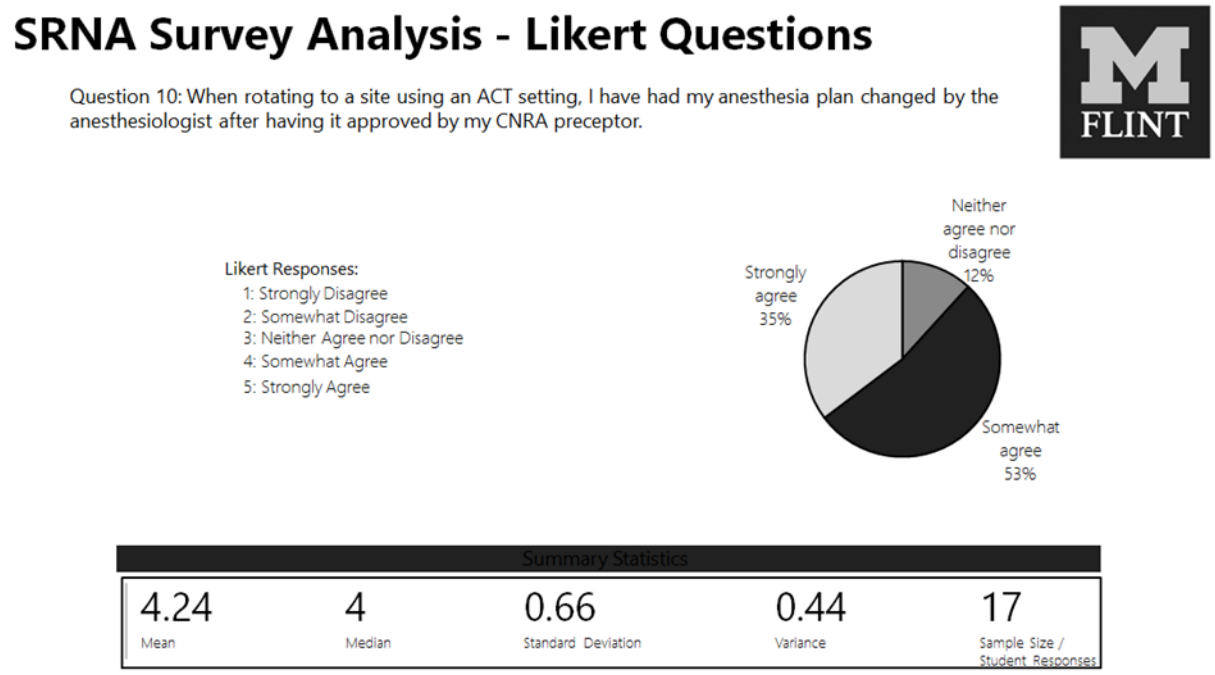


Figure 26

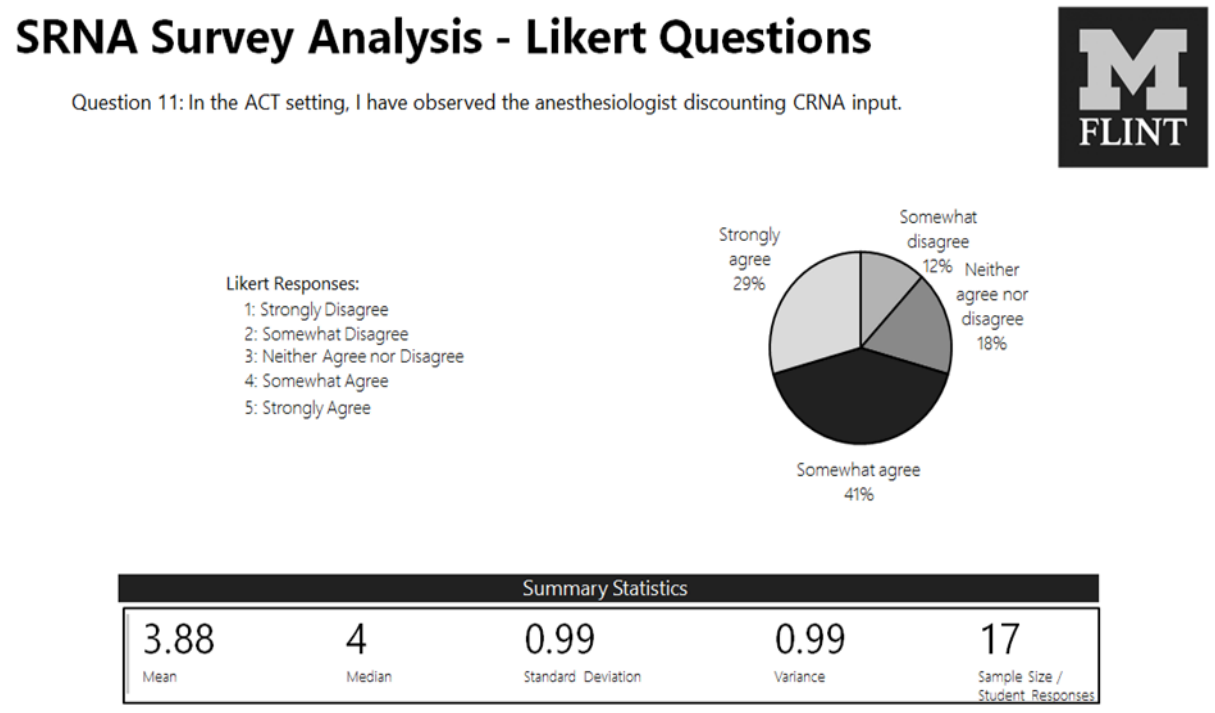


Figure 27

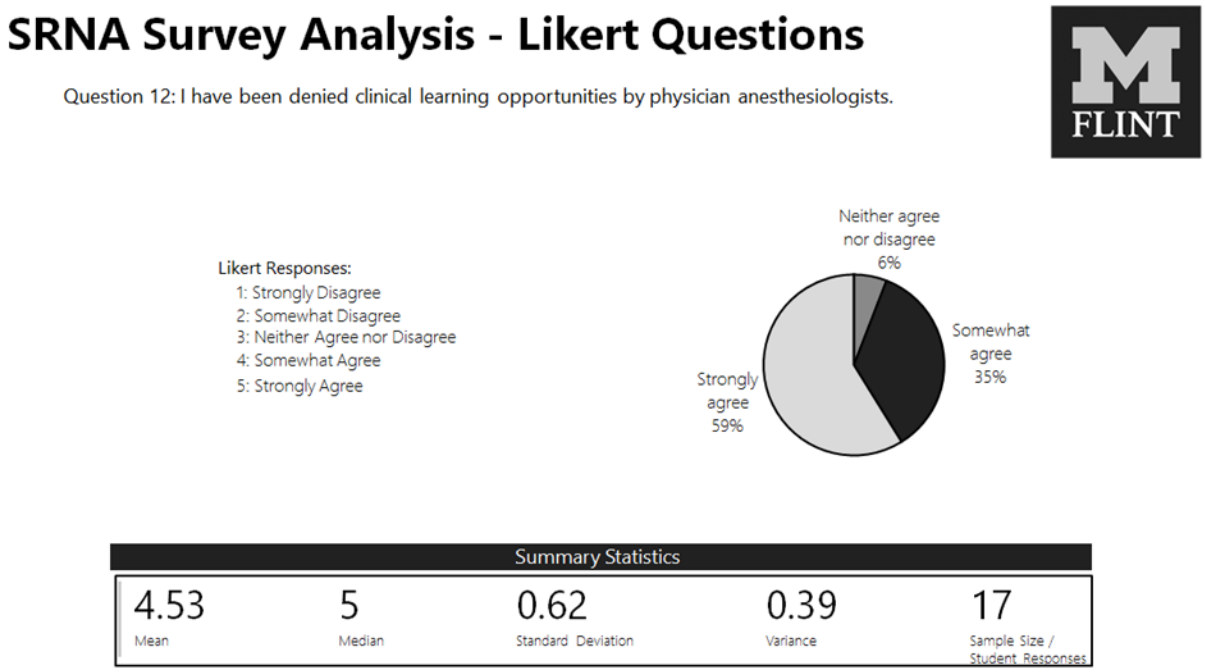
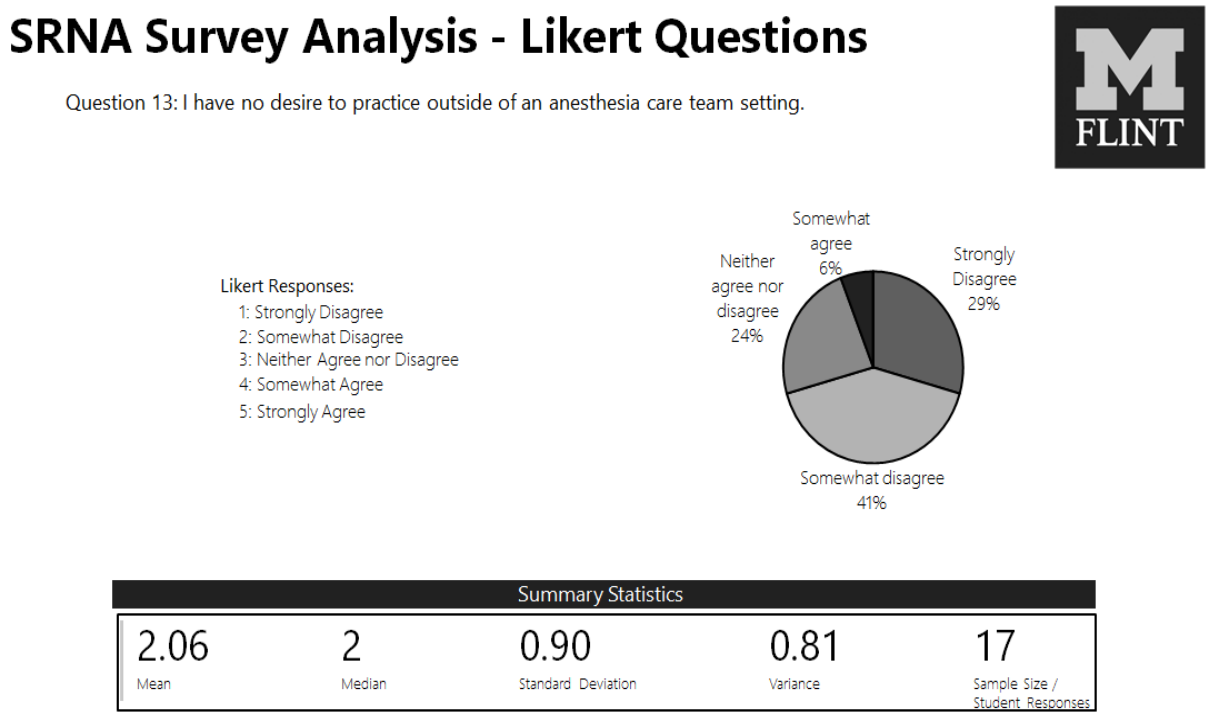


Figure 28



Students also somewhat disagreed (41%) or strongly disagreed (29%) with having no desire to practice outside of an ACT. Only 6% somewhat agreed to having no desire to practice outside of an ACT setting (Figure 28). Forty-one percent somewhat agreed and 30% strongly agreed they would be clinically prepared to enter an independent practice immediately after graduation (Figure 29). Fifty-three percent somewhat agreed and 29% strongly agreed that they had valuable experiences when working independently with a CRNA that they did not have in an ACT. Twelve percent were neutral on this and 6% strongly disagreed. Seventy-one percent of respondents believed that rotating to independent clinical sites was worth the cost and effort. Twenty-three percent were neutral and only 6% strongly disagreed (Figure 30).

Figure 29

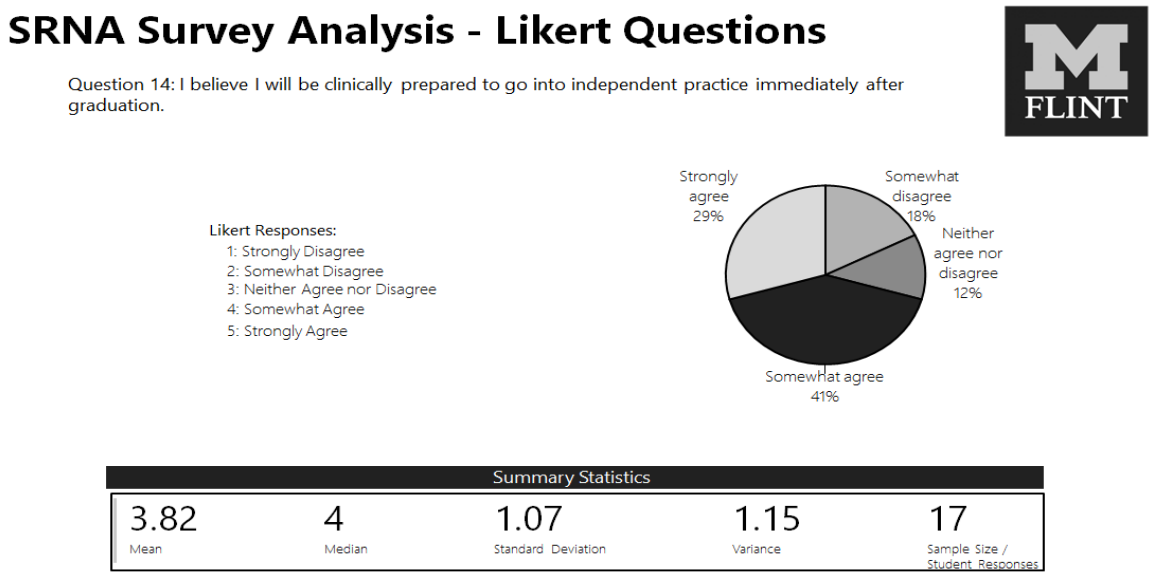
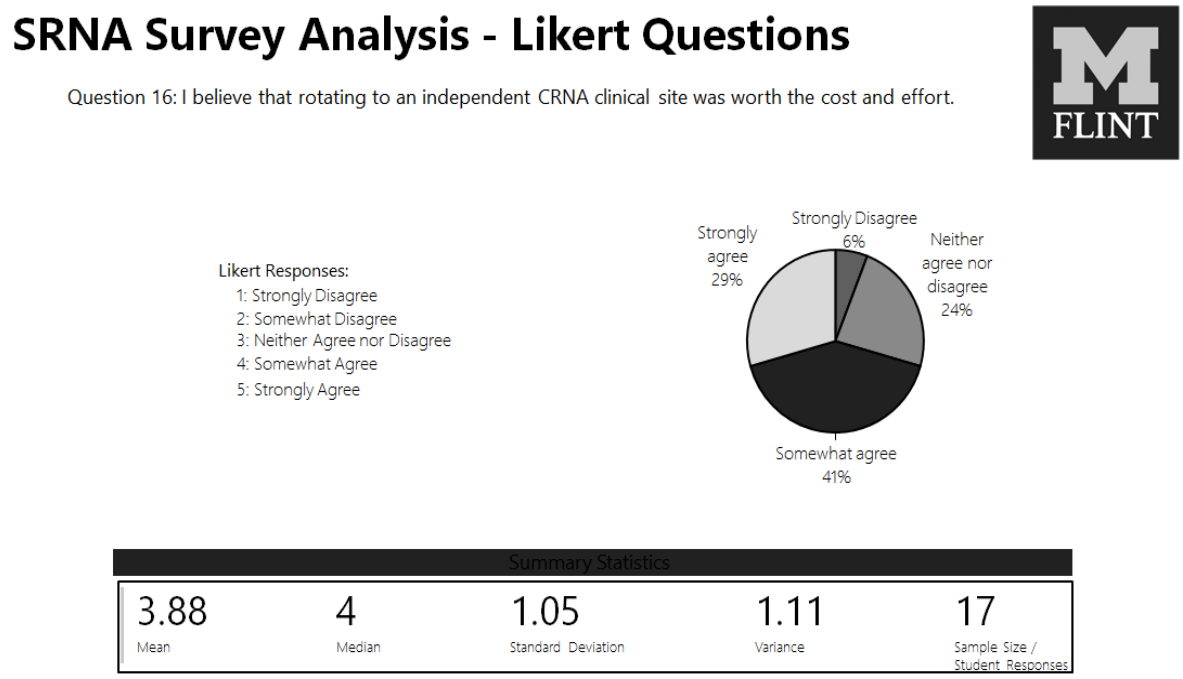


Figure 30



Consistent themes emerged during the interviews with PDs and APDs. Clearly, they were aware of the financial burden placed on students when traveling to independent rotations in rural areas of Michigan, and they were also aware of the challenges that SRNAs faced in securing accommodations in those locations. They addressed this in many ways, such as allowing their students to utilize funds from the yearly professional conference they conduct, or by applying for grants such as the Nurse Anesthetist Traineeship (NAT) Program through the Health Resources and Services Administration (HRSA). The purpose of the NAT is to increase the number of nurse anesthetists providing care, particularly in rural and underserved areas. All PDs and APDs also reported that they attempted to secure student accommodations by having the student lodge with one of the CRNAs working at the independent site or with a family member. Several commented that while this was a very informal network, it had been very successful. One

program had permitted students attend “mission trips” with a CRNA preceptor at their own out of pocket cost.

Another recurring theme expressed by both PDs and APDs was the importance of stressing to students that they are expected to think independently even when they are in an ACT. One PD opined that approximately 85% of CRNAs choose to practice in ACTs and that they are not less competent than those who choose to practice independently. They simply have a different skill set.

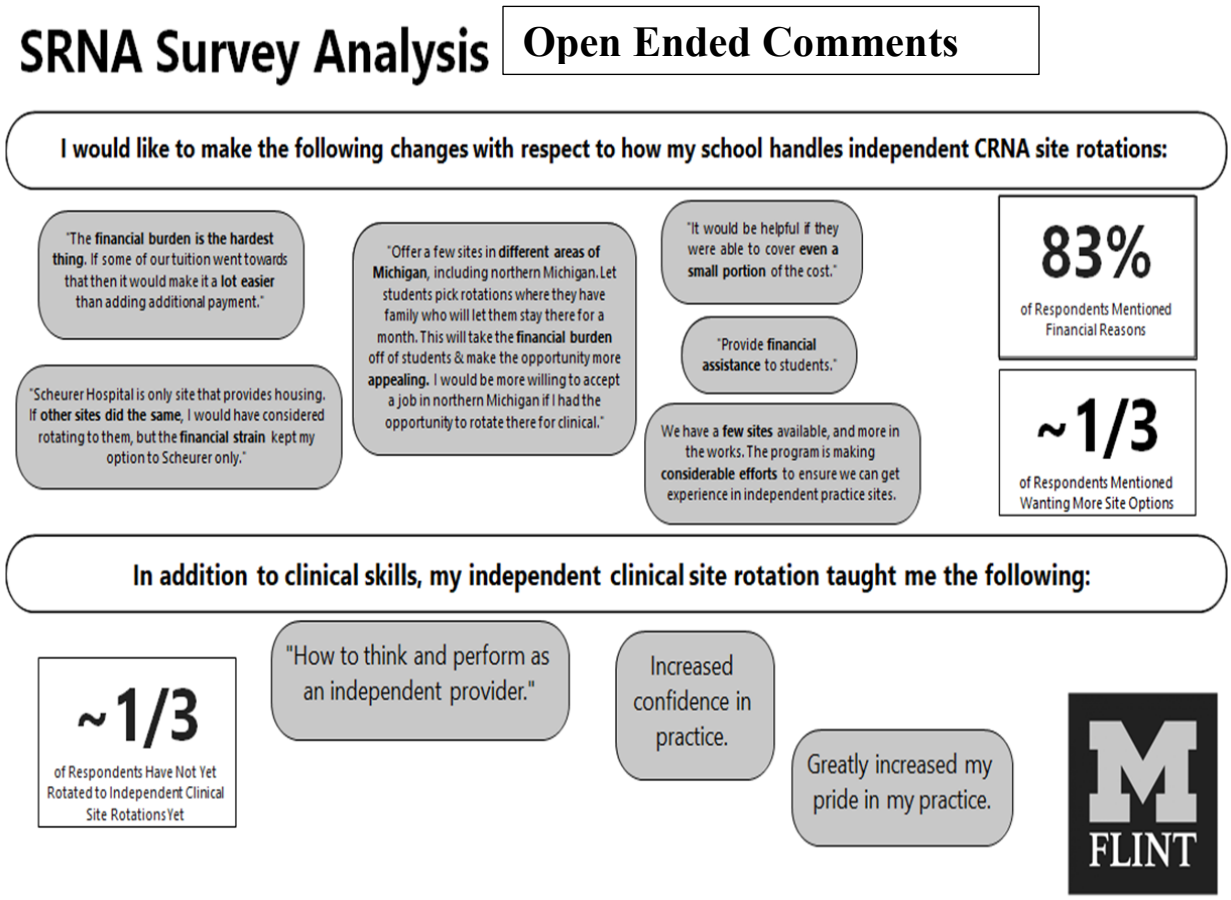
PD and APD interviews also revealed that the COVID-19 pandemic had a significant impact on SRNA programs in Michigan. The master’s programs were particularly affected as the seniors were already in their specialty and independent practice rotations. To protect the students, all clinical rotations ceased on or about March 15, 2020, and students were transitioned to remote learning. Many clinical sites did not have enough personal protection equipment (PPE) for both staff and students. Simulation labs were closed as well. Students lost approximately 11 weeks of clinical experience, and the programs started slowly sending them back to the clinical rotation on or about May 10, 2020, once adequate PPE became available. Priority was given to senior students, those with the lowest case numbers, and those lacking specific specialty cases required by the COA. All of those interviewed expressed that students were eager to return to their clinical rotations.

Comments by the students to open-ended questions focused predominantly on financial concerns relating to their clinical experiences. Eighty-three percent of respondents mentioned that it was a definite financial burden. Several students stated that they wished the rotations were closer to home or that the school could help them to pay for travel and lodging. This study indicates that the PDs and APDs are decidedly aware of this issue and are addressing it, albeit

not completely removing it. The students still experience significant out-of-pocket costs during an already expensive academic endeavor. One student respondent stated that he/she wished that their independent rotation counted as a credit hour for their university so at least some scholarship funds could defer the cost. Thirty-three percent of student respondents reported wanting more options for independent practice sites.

Another frequent comment in SRNA anecdotal responses addressed the students' increased confidence levels and pride in their practice. They verbalized that it simply "felt different" to them to be able to provide a full scope of anesthesia practice for their patients with minimal preceptor input. They also reported that independent rural clinical rotations engendered pride as they were caring for those who would otherwise not have had access to healthcare. The SRNAs also mentioned that the independent sites were where they were able to perform most of their invasive monitoring techniques and regional anesthesia (Figure 31).

Figure 31



Dissemination

The planned dissemination of this project is to present a poster at the Michigan Association of Nurse Anesthetists state meeting March 26-27, 2021.

Discussion and Recommendations

As this study consisted of two distinct sample groups, perspectives of both administrators and SRNAs emerged. Although both groups experienced barriers, the recurrent theme was that the value the students received from the independent practice rotations was worth the effort. Anesthesia training programs in Michigan reported strong support for independent practice rotations for their students. Sixty percent of programs have mandatory student rotations for at

least one month. The program directors all strongly agreed that these rotations provided value to the students, and yet interestingly, not all programs made them mandatory. The Council on Accreditation of Nurse Anesthesia Educational Programs (COA) also does not make them mandatory, thus most Michigan programs are transcending program accreditation standards for clinical experience by mandating that students extend their clinical opportunities.

Recommendations for Internal and External Policy Changes

The professional movement toward anesthesia providers practicing to their full scope in the workforce is profound. It is multifactorial and will only intensify as private equity firms continue to engage in anesthesia management. Given that student nurse anesthetists are investing enormous amounts of tuition dollars in their doctoral degrees, anesthesia programs need to consider making independent clinical rotations mandatory, and the COA should also consider this. Academic institutions have a responsibility to their students. Ultimately, universities are tasked with turning out products that the healthcare market desires.

There is a substantial need for anesthesia providers who are skilled in performing a full range of anesthesia and pain management. The geographical distribution of anesthesia providers indicate that it is primarily CRNAs who work in the rural areas. Clearly, CRNA practice in many ACTs is limited by the PAs due to draconian internal policies that have nothing to do with regulations and the law. These policies must be addressed, and CRNAs should be given hospital privileges to practice to the full scope of their education and training. Historically, the nurse anesthesia profession was predominantly female, however, this gender demographic is changing.

Currently, there is a national shortage of all anesthesia providers. One wonders how long hospital administrators and patients can sustain the current structure of two anesthesia providers per patient, which is the staffing model in the majority of facilities in Michigan. Restrictions

placed on CRNA practice by physician anesthesiologists diminish the CRNA's skillset. It is anti-competitive behavior and denies the public a choice in selecting a cost-effective anesthesia provider. It also stifles healthcare innovation. The trend of private equity investment in anesthesia has provided a new perspective on this situation, which has and will continue to incentivize all clinicians, (particularly the members of high-cost specialties), to practice to the full scope of their education and training.

Strengths and Limitations

Study Strengths

Perhaps the major strength of this study is that it is the first of its kind to evaluate the status of independent practice rotations for all nurse anesthesia training programs in one state. Another strength is the prominent level of program participation. One hundred percent of nurse anesthesia training programs in Michigan participated by sending surveys to their students and participating in videotaped interviews. The multi-modal study design allowed for both qualitative and quantitative data collection to evaluate multiple research questions. Additionally, incorporating two study groups afforded the opportunity to evaluate barriers and perceptions in two distinct contexts.

Limitations of Study

SRNAs in this study were at various levels of their educational process. They did not all answer every question in the survey. This study was conducted during the COVID-19 pandemic and the students' clinical rotations were suspended, limiting their opportunity to rotate to their scheduled independent practice clinicals for approximately 8-11 weeks in March to May of 2020.

Additionally, the study was conducted during the transition from the Master's to Doctoral programs in two of the five sites, thus limiting the number of senior students available to respond

to the survey. It would be helpful to repeat this study with a larger SRNA dataset in the future or to have it incorporated by PDs in student exit interviews upon graduation.

Conclusion

This study evaluated the current status of independent SRNA practice rotations in Michigan. Results indicated that in Michigan, there is a definite opportunity for SRNAs to experience independent CRNA practice. Independent practice rotations are mandated in 60% of training programs in the state for a one month minimum. The study also assessed barriers to these rotations that are experienced by both PDs and SRNAs. Barriers do exist and are mostly financial. These barriers are mitigated however by the value perceived by both students and PDs. This aligns with the AANA's interest in addressing full SOP of practice for CRNAs. Independent practice rotations are valued by both anesthesia PDs and SRNAs despite barriers incurred. Most of anesthesia training programs in Michigan deem independent practice rotations mandatory for their students and all programs offer at least 3 options for students to attend, usually during their senior year.

Some SRNAs in Michigan are requesting more autonomy in the OR and are looking to obtain the maximum amount of experience for increasing tuition dollars. SRNAs report gaining confidence while in independent practice rotations as they can take ownership of the anesthetic plan as well as perform various regional anesthesia techniques and invasive monitoring procedures that are restricted in some ACT rotations.

In May of 2020, the AANA and the COA task force recommended that the COA add independent CRNA rotations to clinical requirements and that they consider non-monetary incentives for independent practices to take students.[1] The results of this study align with comments by the AANA and COA in their Executive Summary regarding full scope of practice:

> "An independent practice rotation appears to be highly beneficial to the SRNAs educational and clinical experience. A variety of clinical practice settings can provide SRNAs with experiencing exercising independent practice. As supported by focus session data, SRNAs found that gaining exposure to and practicing in a CRNA only or rural environment was eye opening. The experience introduced them to a view of CRNA clinical practice which they may not have been able to obtain in anesthesia care team practices or large academic centers, where they may compete for cases with residents or are limited in the types of anesthetic procedures they are allowed to do (e.g., regional anesthesia.)"[1]

As private equity firms gain increasing market share in anesthesia management companies, CRNAs that possess a robust skillset will be undeniably more marketable. This puts the onus on anesthesia programs to turn out a product that the market is demanding. Bundled insurance payments and high deductible third party plans will incentivize PA to CRNA supervision ratios to increase in ACTs. CRNA only groups are poised to flourish. Internal department policies must address the need for practicing CRNAs to maintain their skillset in anticipation of future staffing demands and decreased reimbursement.

This study indicates that independent practice rotations in Michigan's SRNA anesthesia programs are valued and will likely continue in the future. SRNAs report that the rotations were worth the time and effort and that they are more likely to enter independent practice in the future because of their experiences. Students report an immediate increase in their confidence level upon completion of their time with an independently practicing CRNA. The AANA should

consider a nationwide study to evaluate which nurse anesthesia training programs are offering independent practice rotations to their students and then publish their findings. This will offer potential SRNAs the opportunity to evaluate which anesthesia program best aligns with their future career goals.

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Appendices

Appendix A

PROGRAM DIRECTOR OR ASSISTANT PROGRAM DIRECTOR INTERVIEW QUESTIONS:

1. General demographic data (Gender, years as a CRNA, years in current position).
2. Number of students in each year of your program.
3. What are the current number of independent CRNA rotations in your program and the length of each rotation?
4. What percentage of your students attends at least one independent practice site rotation?

Please answer the questions 5-15 with a number from 1 (strongly disagree) to 5 (strongly agree):

5. I believe independent practice sites offer value to my students.
6. I believe that students should get financial assistance to attend independent sites.
7. I believe that independent site rotations are not necessary.
8. Independent CRNA sites do not want students.
9. Only senior students should rotate to independent sites.
10. Students have expressed a desire for more autonomy in the operating room.
11. There needs to be consistent mentorship from SRNA to GRNA status throughout all anesthesia programs in Michigan.
12. There is significant competition among programs for independent sites.
13. The movement to a doctoral degree has allowed time for students to do more independent clinical internships.
14. I believe that all students should rotate through independent sites.
15. I believe graduates from my program are ready to enter independent practice immediately upon graduation.

Please discuss the following questions anecdotally:

16. Please list any current barriers you are experiencing in securing/developing independent CRNA practice rotations.
17. Please discuss how you have addressed these barriers.
18. How has the COVID-19 pandemic affected your program?
19. Anything else you would like to address in our discussion around this topic?

Appendix B

SRNA SURVEY

1. Demographics:
   Age_____
   Gender_____
   Number of years practicing as an RN before entering CRNA program_____
   Number of weeks spent in independent practice sites so far_____
2. My independent CRNA rotations are elective Yes_____ No_____

Please answer the questions 3-19 on a scale of 1 (strongly disagree) to 5 (strongly agree)

3. I want more access to independent sites
4. I believe there needs to be more of an increasing level of autonomy in my program than I am currently experiencing.
5. I believe that it is important to my professional development to rotate to independent practice sites.
6. I would like to be the only anesthesia provider in the operating room more often during my clinical training.
7. I have experienced my CRNA preceptor be disempowered (deprived of influence or importance) by the physician anesthesiologist we were working with.
8. I have been denied clinical learning opportunities by physician anesthesiologists
9. Driving to an independent site rotation would require overnight lodging for me.
10. Cost of my travel and lodging to an independent site rotation would be at my personal expense
11. The financial burden of an independent site rotation makes it undesirable for me.
12. I would not want to attend an independent site rotation until I have completed my second year as a SRNA.
13. I have no desire to practice outside of an anesthesia care team setting after graduation.
14. I believe that I will be clinically prepared to go into independent practice immediately after graduation.
15. My independent practice site rotation negatively affected my family/personal life
16. My independent practice site rotation caused me financial hardship
17. I believe that the independent practice site rotation was worth the cost and effort

18. Because of my independent site rotation, I am more likely to consider employment at an independent clinical site after graduation.

    Please answer the following questions anecdotally:

19. Approximate total out of pocket cost for me to rotate to an independent clinical rotation sites is/was $_____

20. Approximate travel distance from my university to the independent site rotation in **miles** is_____.
21. The length of my independent practice site rotation was/is _____
22. The number of independent clinical site rotations I have completed so far is _____.
23. I would make the following changes with respect to how my school handles independent CRNA site rotations……
24. In addition to clinical skills, my independent clinical site rotation taught me the following:
25. I have chosen not to rotate to elective independent clinical site rotations because:

Appendix C

IRB Exemption

Health Sciences and Behavioral Sciences Institutional Review Board (IRB-HSBS) • 2800 Plymouth Rd., Building 520, Room 1170, Ann Arbor, MI 48109-2800 • phone (734) 936-0933 • fax (734) 998-9171 • irbhsbs@umich.edu

To: Lauren Phoenix

From: Thad Polk

Cc:

Lawrence	Stump
Lauren	Phoenix

Subject: Notice of Exemption for [HUM00173865]

SUBMISSION INFORMATION:
Title: Barriers to Independent Practice Rotations for Student Registered Nurse Anesthetists
Full Study Title (if applicable): Identification of Barriers to Student Registered Nurse Anesthetist Participation in Independent Certified Registered Nurse Anesthetist Clinical Rotation Sites
Study eResearch ID: HUM00173865
Date of this Notification from IRB: 1/17/2020
Date of IRB Exempt Determination: 1/17/2020
UM Federalwide Assurance: FWA00004969 (For the current FWA expiration date, please visit the UM HRPP Webpage)
OHRP IRB Registration Number(s): IRB00000248

IRB EXEMPTION STATUS:
The IRB HSBS has reviewed the study referenced above and determined that, as currently described, it is exempt from ongoing IRB review, per the following federal exemption category:

EXEMPTION 2(i) and/or 2(ii) at 45 CFR 46.104(d):

Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) **if at least one of the following criteria is met**:

(i) The information obtained is recorded by the investigator in such a manner that **the identity of the human subjects cannot readily be ascertained**, directly or through identifiers linked to the subjects;

(ii) Any disclosure of the **human subjects' responses** outside the research **would not reasonably place the subjects at risk** of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation

Note that the study is considered exempt as long as any changes to the use of human subjects (including their data) remain within the scope of the exemption category above. Any proposed changes that may exceed the scope of this category, or the approval conditions of any other non-IRB reviewing committees, must be submitted as an amendment through eResearch.

Although an exemption determination eliminates the need for ongoing IRB review and approval, you still have an obligation to understand and abide by generally accepted principles of responsible and ethical conduct of research. Examples of these principles can be found in the Belmont Report as well as in guidance from professional societies and scientific organizations.

SUBMITTING AMENDMENTS VIA eRESEARCH:
You can access the online forms for amendments in the eResearch workspace for this exempt study, referenced above.

ACCESSING EXEMPT STUDIES IN eRESEARCH:
Click the "Exempt and Not Regulated" tab in your eResearch home workspace to access this exempt study.

Thad Polk
Chair, IRB HSBS