The Certified Registered Nurse Anesthetist (CRNA) faculty workforce is in healthcare settings delivering anesthesia throughout the country. The faculty workforce consists of a small core of academic faculty employed full time or part time by educational institutions and is joined by a large number of volunteer clinical faculty. Many studies of nursing programs focus on the academic faculty with much less focus on clinical faculty whose main responsibility is the delivery of patient care. This less visible component of the CRNA faculty workforce includes the largest number of faculty and provides much of the clinical teaching vital to the preparation of future CRNAs. The volunteer clinical faculty are critical to the success in education to ensure clinically competent nurse anesthetists; however, little is known about this large component of the faculty workforce. With the decision to move to doctoral preparation for entry into "nurse anesthesia practice by the year 2025" it is important to consider the important role fulfilled by unpaid clinical faculty and the implications of such a change on the workforce.

Seventy-two nurse anesthesia programs provided data in the 2007 Survey of Program Directors on faculty within their programs. These programs identified a total of 294 full-time equivalent (FTE) employed faculty with 263 of these FTEs being CRNAs and 27 being non-CRNAs. There were 4,851 affiliated volunteer faculty of whom 3,465 were CRNAs. These programs employed from 0 to 24 FTE funded faculty members with an average of 4.09 (SD, 3.44) per program (median, 3). An average of 0.37 were non-CRNA positions. In sharp contrast, there was an average of 69.3 (SD, 104.5) and a median of 23.5 volunteer faculty per nurse anesthesia program, which included individuals who taught in the program clinically and/or academically. Of these, an average of 48.8 (SD, 71.7) and a median of 18 of these volunteer faculty were CRNAs, and an average of 20.08 (SD, 35.4) and a median of 4.5 were volunteer faculty other than CRNAs.

The program directors identified a current need to fill an additional 287 CRNA volunteer faculty positions (average, 4.2; SD, 18.5; median, 0) and 84 other volunteer faculty (average, 1.2; SD, 6.2; median, 0). Program directors anticipate needing 330 volunteer CRNA faculty and 112 other volunteer faculty within the 72 programs over the next 5 years. There are a number of barriers making it difficult to fill current and future volunteer faculty positions. Program directors ranked these barriers as seen in Figure 1. The lack of financial incentive was the most frequently identified followed by the amount of work involved. Always being required to teach a student was ranked third, and the potential barrier of individuals lacking the appropriate credential was ranked last.

The importance of salary to fill positions for CRNA academic and clinical faculty has been previously discussed, and the need to consider compensation in relation to workload has been recognized. The existence of salary differentials for clinical faculty as compared to CRNAs with no faculty or student
supervision responsibilities is an important concern for the future comparisons of salary and workload. Using data from the American Association of Nurse Anesthetists (AANA) 2004 Practice Profile Database, 3 groups were studied, and they are: (1) **clinical faculty** (N = 2,320) who supervise student nurse anesthetists for some percentage of their time and who may or may not be employees of colleges or universities (but if they are employees of colleges or universities, they identified practice, not education or administration as their primary position, and more than 80% of these individuals practice at a university hospital); (2) all **nonfaculty CRNAs** (N = 8,892) reflecting those who do not supervise student anesthetists and are not academic faculty; and (3) **academic faculty** (N = 76), defined as those employed by a college or university who identify education (N = 68) or administration (N = 3) as the main focus of their position. The sample was limited to those who work full time and did not change positions within the prior year.

Some CRNA programs are administratively linked to hospitals (or sometimes to practice groups). Academic faculty affiliated with these programs cannot be identified within available data. Salaries of clinical faculty who are employed by CRNA programs have been described; however, most clinical faculty are unpaid volunteers. A comparison of work settings, workload, and income across clinical faculty, nonfaculty CRNAs, and other academic faculty provides information for planning, recruitment, and retention initiatives for clinical faculty.

Figure 2 shows different settings of practice for clinical faculty, nonfaculty CRNAs, and academic faculty. As expected, academic faculty have higher rates of practicing in university hospitals than either clinical faculty or nonfaculty CRNAs. Hospitals remain the predominant setting for practicing CRNA clinical faculty and practicing CRNAs that are not faculty.

Differences between workload and income may influence an individual’s choices to assume clinical faculty or nonfaculty positions. Clinical faculty administered fewer anesthetics with an average of 777 anesthetics in calendar year (CY) 2003 compared to 847 administered by nonfaculty CRNAs (t = 4.85, P = .0001). No significant difference was noted in total income (t = 1.75, P = .08) for clinical faculty (CY 2003, $136,447) compared to other CRNAs (CY 2003, $138,800). Figure 3 shows that the average number of anesthetics administered is lower for clinical faculty than for nonfaculty CRNAs, but clinical faculty members administer more anesthetics than academic faculty. The difference among the 3 groups is even more striking when the medians and modes are compared. The composition of work activities also varies by faculty status as seen in Figure 4.
The total number of hours worked over a 2-week time period is roughly the same for the 3 groups over the identical time period as seen in Table 1. The median hours for academic faculty are 100 hours compared to 96 hours for clinical faculty and 99 for nonfaculty. The mode of 80 hours is the same for all groups. The average hours range from 98 hours for academic faculty to 108 hours for clinical faculty and 118 hours for nonfaculty. The number of on-call hours are included in the number of hours worked. There was great variation in the average hours spent on-call based on the type of position.

A comparison of the number of hours worked suggests that the composition of workload activities and time committed to work is similar for clinical faculty and other CRNAs, but both groups differ from academic faculty in work activities and in types of responsibilities during hours of professional commitment. Clinical faculty consistently fall between academic faculty and nonfaculty CRNAs in all workload measures as does total income for each of these 3 groups as seen in Figure 5.

Figure 6 shows a self-identified breakdown in workload for individuals filling different types of academic faculty roles relative to clinical faculty from the 2006 Survey of Program Directors and Faculty. The specific breakdowns are presented in Table 2. The major difference is seen between clinical faculty and program directors in terms of clinical activities, administrative functions, and research.

Table 1. Hours Worked by Type of Position and by Hours Being on Call
Data source: AANA 2004 Practice Profile Database.

<table>
<thead>
<tr>
<th>Role</th>
<th>Median</th>
<th>Mode</th>
<th>Mean</th>
<th>On call (home) mean</th>
<th>On call (in house) mean</th>
<th>Total call mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical faculty</td>
<td>96</td>
<td>80</td>
<td>108</td>
<td>15.6</td>
<td>9.8</td>
<td>25</td>
</tr>
<tr>
<td>Nonfaculty</td>
<td>99</td>
<td>80</td>
<td>118</td>
<td>30.7</td>
<td>8.4</td>
<td>39</td>
</tr>
<tr>
<td>Academic</td>
<td>100</td>
<td>80</td>
<td>98</td>
<td>6.5</td>
<td>1.4</td>
<td>8</td>
</tr>
</tbody>
</table>
A regression analysis was performed to determine factors that explain total income and evaluate differences in clinical faculty, nonfaculty CRNAs, and academic faculty incomes, but it explained only a very small portion of variation. Being male increased income as did the number of anesthetics administered. Age, being an academic faculty or being a clinical faculty relative to nonfaculty CRNAs, was not a significant factor in the model.

CRNAs who volunteer their time to the mission of preparing the next generation of CRNAs make up the largest cadre of CRNA faculty. The heavy reliance on volunteer clinical faculty together with barriers that exist to recruit these faculty members suggests the need to develop intrinsic and extrinsic reward mechanisms to support professional development of the existing clinical faculty and outreach initiatives to create goodwill to facilitate recruitment of new clinical faculty. The dependence on volunteer faculty to teach students places nurse anesthesia programs in a vulnerable position when faced with the highly competitive market for CRNAs. Programs may wish to examine their intrinsic and extrinsic rewards for clinical faculty to ensure recognition of these faculty for their critical role in nurse anesthesia education. Enhancing visibility and recognition of the clinical faculty may entice new graduates to engage in this critical responsibility.

The higher workload (excluding at home on-call hours) accompany-
ing faculty positions compounded by balancing between academia and clinical responsibilities offers challenges. Those responsible for programs may wish to examine the workload of faculty and explore strategies to support faculty in reducing the hours worked. An examination of the work activities of all 3 groups revealed little time spent in research and in faculty development activities. Opportunities to contribute to the knowledge base of nurse anesthesia through research and to participate in professional development activities may provide intrinsic benefits. These benefits may contribute to the growth of CRNA educators and to their retention in the demanding activity of educating the future workforce of CRNAs.

When planning for the implementation of doctoral preparation for entry into practice is implemented, it will be necessary to consider the implications for each type of faculty position. It is critical to recognize the important contributions of clinical faculty and to include these faculty in the development and transition to the clinical doctorate. Clinical faculty are essential collaborators in planning for the transition to the clinical doctorate. Strategies to address the concerns and needs of this important but sometimes less visible group of nurse anesthesia educators is critical to the future of nurse anesthesia education.

REFERENCES

AUTHORS
Elizabeth Merwin, RN, PhD, FAAN, a health services researcher, is the Madge M. Jones professor of nursing and the associate dean for research at the University of Virginia, Charlottesville, Virginia. Email: eim5u@virginia.edu.

Steven Stern, PhD, an economist, teaches labor economics and econometrics at the University of Virginia, Charlottesville, Virginia, where he is the Merrill Bankard professor in the Department of Economics. Email: Sns5r@Virginia.edu.

Lorraine M. Jordan, CRNA, PhD, is the AANA chief research officer and serves as the executive director of the AANA Foundation, Park Ridge, Illinois. Email: ljordan@aana.com.

ACKNOWLEDGMENTS
We appreciate the participation of program directors whose support made the implementation of this study possible. We thank all of the faculty participants. Funding from the American Association of Nurse Anesthetists and from the AANA Foundation made it possible to conduct this study.

The study was reviewed and approved by the University of Virginia Institutional Review Board. It was funded by the AANA and the AANA Foundation through a consulting arrangement with the first 2 authors who are principals of Quantitative Health Care Solutions, Inc.