

Medical School Performance, Alumni Membership, and Giving: How Do Scholarship Recipients and Non-Recipients Differ?

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Purpose: This study examines student recipients of merit, need-based, service, or minority scholarships, their performance in medical school, and the relationship to future alumni association membership and financial giving.

Method: Retrospective data on grade-point average attained across the four-year curriculum and extracurricular activities reported at graduation were collected on students at the University of Kentucky College of Medicine from 1981-1991. Comparisons of academic performance and participation in institutional activities were made across scholarship recipients and non-recipients. These data were then linked to other data tracking alumni association membership and institutional giving.

Results: Compared to other scholarship recipients and non-recipients, merit scholars were more likely to be ranked above their class medians and be involved in extracurricular activities, including membership in Alpha Omega Alpha. However, seven years post-graduation, there was no difference between scholarship recipients and non-recipients in alumni association membership or donations to the medical school. Instead, students graduating in the upper half of their class, as compared to graduates in the lower half, and UKCOM graduates who attended the University of Kentucky as undergraduates, rather than students who attended other in-state or out-of state institutions, were more likely to join the medical alumni association. Alumni association members were more likely than non-members to make donations to the institution.

Conclusions: More should be done to ensure that graduates who received scholarships are afforded meaningful ways to give back to the institution that supported them as students.

Medical schools make scholarship support available to students as institutional or societal investments in individuals' medical training and eventual service. Merit scholarships are awarded on the basis of academic achievement according to criteria established by the institution or donor, while need-based scholarships are awarded in consideration of student and/or family income. Service scholarships are linked with a year-for-year return of service to such entities as the military, National Health Service Corp, or community/hospital-based programs. Special institutional scholarships are awarded to students who help fulfill a particular medical school mission, such as diversity (minority students) or commitment to an underserved population (rural students).

A relevant but largely overlooked aspect of scholarships is their relationship to academic performance and, from a longer-term perspective, to institutional commitment as students graduate and become alumni of a given medical program. Alumni donors are frequently the source of scholarship funds awarded by their home institutions. In this time of

dwindling state budgets, alumni may be tapped as a source of institutional support for their alma maters. In spite of the increased need of medical schools to diversify revenue streams, what little research on alumni that does exist lies in the undergraduate college arena, and focuses on increasing alumni association membership via program development and nurturing early participation in alumni activities.¹⁻² Virtually no studies of alumni donation patterns or involvement in alumni associations have appeared in the medical education literature.

While much has been written regarding the impact of medical school debt on students and graduates,³⁻⁶ little is known about the investment of scholarship dollars in attracting applicants, or how recipients perform once enrolled. Further, no published studies have explored the potential long-term impact of scholarship dollars received on individuals' future support for their institution through alumni association membership or donations. This study is a retrospective examination of medical students receiving scholarship awards, their performance in medical

school, and the relationship of receipt of a medical school scholarship to future alumni association membership and giving. The study addresses the following research questions:

1. What percent of students received merit, need-based, service, or minority recruitment scholarships at the University of Kentucky College of Medicine (UKCOM) from 1981-1991?
2. Does academic achievement, participation in extracurricular activities, membership in Alpha Omega Alpha (AOA) honor society, or receipt of a UKCOM commendation differ between scholarship and non-scholarship recipients at graduation?
3. Does scholarship support, academic achievement, socio-demographic characteristics, location of residence at admission or site of medical practice, and medical specialty differ between current UKCOM Alumni Association members and non-members?
4. Does scholarship support, socio-demographic characteristics, location of medical practice, medical specialty, and alumni association membership differ between financial donors and non-donors to the UKCOM seven years following graduation (1992-2002)?

Methods

The study population was University of Kentucky College of Medicine students comprising the entering classes of 1981-1991. The UKCOM graduated its first class of students in 1964. Thus, the research period coincides with initial institutional efforts, starting in the early 1980's, to offer incoming students newly designated merit, need-based, service, or special scholarships as recruitment incentives. Student records for 1981-1991 were obtained from admissions, financial aid, and graduation data.

Membership in the UKCOM Alumni Association is encouraged, but voluntary, and membership types reflect payment options more than levels of commitment. Within individual years, alumni membership was examined both as an ordinal measure (non-membership, regular membership, partial life membership, life membership) and as a nominal, dichotomous variable (non-membership, any membership). For the purpose of this study, we tracked membership from the period of seven years post-graduation to 2002. To address membership across multiple years, a composite variable using dichotomous (0/1) coding was summed across all eligible years (i.e., "membership-years" defined as from the year of graduation--to 2002, the last year of data col-

lection) to reflect participation in the UKCOM Alumni Association – represented as the percentage of years membership was maintained.

Alumni membership records for 1985-2002 were combined with 1992-2002 development data detailing alumni giving. Assuming graduation four years after initial receipt of the scholarship, the seven-year lag between graduation date and donation data reflected the time necessary for alumni to complete graduate training and enter medical practice (i.e., for graduates of 1985, beginning in 1992; for graduates of 1986, beginning in 1993). Data sets were linked using a common identifier, with all such identifiers removed prior to analysis. The study protocol was approved by the UKCOM Institutional Review Board. No external funding was sought in support of this study.

Results

Sample Characteristics - From 1985-1995, data were available for 969 graduates, with class sizes ranging from 80 to 100 students. The vast majority (93.1%) were Kentucky residents from urban (53.6%), rural (24.6%), and rural-Appalachian (21.8%) areas of the state. About two-thirds (67.1%) were male, and 97.7% were white. Most students earned their undergraduate degrees at the University of Kentucky (35.0%) or another Kentucky college or university (37.8%). One-half (49.6%) of graduates matched in a primary care area (i.e., family medicine, general internal medicine, pediatrics, obstetrics and gynecology), with 1 in 5 graduates (20.1%) choosing family medicine. Over a third (37.7%) of graduates remained in Kentucky to complete their residency training, most (30.5%) doing so at UKCOM. Half (50.8%) of alumni reported residing in Kentucky with most (55.6%) located in urban counties, followed by areas designed as rural (28.8%) and rural-Appalachian (15.6%).

Scholarship Recipients in Medical School - A total of 551 awards for merit (recruitment at admission or academic performance during enrollment), need-based, service, or minority scholarships were made to 432 (44.6%) students graduating from 1985-1995. Among recipients, roughly three-quarters (74.3%) received a single type of award, 103 students (23.8%) received two separate scholarships, and 8 students (1.9%) received monies from three sources. Students who received scholarships from a single source (n = 321) were most likely to be awarded merit-based assistance (42.1%), followed by service- (38.9%), and need-based monies (14.3%). Only

4.7% of all single scholarship awards made were related to minority recruitment.

With satisfactory academic performance, students were eligible to receive scholarships for up to four years. Sizes of awards varied greatly, with merit and minority recruitment scholarships being the largest. Over the study period, the median total award to any individual student was \$5,000. Upcoming comparisons involve only students who received either no scholarship or a scholarship from a single source (n = 858).

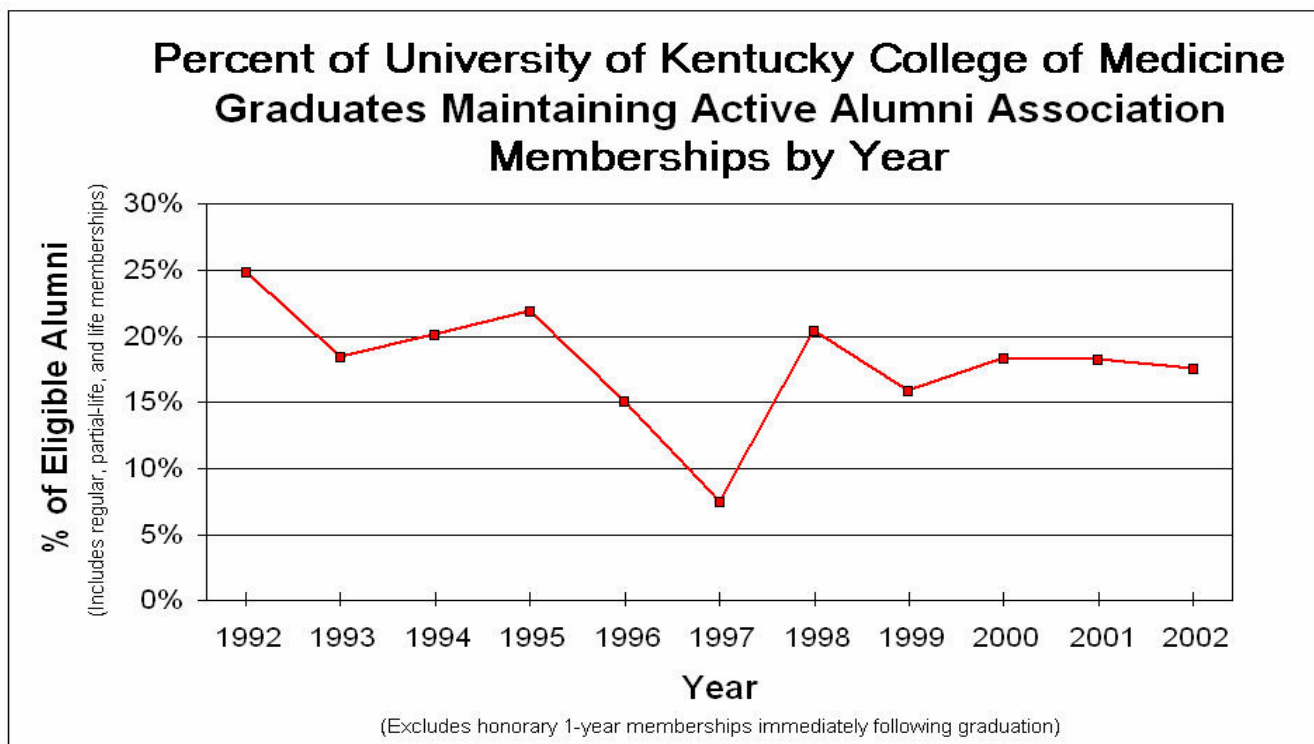
Recipients of merit scholarships were predominantly ranked above their class medians, 82.1% vs. 39.0% ($X^2 = 84.40$, OR = 7.2, df = 1, p = < .001). Students receiving need-based scholarships were also disproportionately situated in the upper 50th percentiles, 60.9% vs. 44.9% ($X^2 = 4.46$, OR = 1.9, df = 1, p = .035). Differences were found between recipients and non-recipients of minority scholarships, where a significantly smaller percentage of the former fell above their class medians, 6.7% vs. 46.5% ($X^2 = 9.41$, OR = 0.1, df = 1, p = .002). No significant differences were noted between recipients and non-recipients of service-related scholarships.

Extracurricular participation was calculated as a summed total of self-reported activities for each student listed in the graduation program. The mean number of activities listed was 1.26 (SD = 1.52;

range 0-8). A sizeable proportion of all graduates (41.4%) listed no extracurricular activities. Students receiving scholarships related to merit (t = -4.84, df = 836, p = < .001) and service (t = -2.71, df (adjusted) = 144, p = .008) reported being involved in significantly more extracurricular activities than non-recipients. This general trend also held for minority scholarship recipients, although the difference was not statistically significant. No significant differences in extracurricular activity were noted between recipients and non-recipients of need-based scholarships.

Two in five (40.0%) students receiving merit scholarships were elected to membership in AOA, compared with 7.9% of non-recipients ($X^2 = 104.17$, OR = 7.8, df = 1, p = < .001). Students receiving service-related assistance were significantly less likely to attain AOA membership ($X^2 = 10.38$, OR = 0.2, df = 1, p = < .001). Whether or not students received a minority or a need-based scholarship was unrelated to AOA membership. Receipt of a commendation at graduation did not differ significantly between recipients of minority, service, or need-based scholarships and non-recipients. However, students receiving merit scholarships were significantly more likely to be honored with a commendation ($X^2 = 16.28$, OR = 6.4, df = 1, p = < .001) than non-recipients.

Alumni Association Membership - As depicted



in Figure 1, membership in the UKCOM Alumni Association fluctuated between 1992 and 2002. In 1992, 154 memberships constituted 24.9% of UKCOM alumni. In 2002, 170 (17.6%) graduates maintained some level of alumni association membership – the majority (14.5%) being life memberships. Among all graduates, 52.9% (n = 513) had no formal ties with the alumni association apart from the initial one-year “introductory” membership provided immediately following graduation. Conversely, 13.0% (n = 133) of graduates kept active memberships \geq 50% of the years; twelve (1.2%) alumni maintained continuous, uninterrupted memberships across all study years. The mean percentage of membership-years was 17.0% (SD = 26.4) for all alumni, and 36.0% (SD = 28.1) for graduates who maintained voluntary memberships for at least one year.

We examined the characteristics of members of the UKCOM Alumni Association. Looking at recipients and non-recipients of any type of scholarship at UKCOM, no differences in alumni association membership status (members, non-members) were evidenced. As illustrated in Table 1, alumni association membership status did not differ significantly by gender, residency status at admission (in-state, out-of-state), or pre-admission criteria (i.e., MCAT scores, science GPA, total GPA). Academically, however, those finishing in the upper halves of their graduating classes were significantly more likely to be alumni association members in 2002 ($X^2 = 6.59$, OR = 1.5, df = 1, p = .010) – compared with graduates who were ranked below their class medians (20.7% vs. 14.4%).

UKCOM graduates holding undergraduate degrees from the University of Kentucky (n = 326) were significantly more likely to be UKCOM Alumni Association members in 2002 than those receiving undergraduate degrees from another Kentucky college or university (n = 352) ($X^2 = 7.82$, OR = 1.8, df = 1, p = .005). Students receiving out-of-state undergraduate degrees (n = 290) were more likely than in-state, non-U.K. graduates to be UKCOM Alumni Association members (18.3% versus 13.4%) – although this difference was not statistically significant.

Location of post-graduate medical training was unrelated to 2002 alumni association membership. As a whole (n = 968), primary care physicians were significantly less likely to maintain active memberships ($X^2 = 4.32$, OR = 0.7, df = 1, p = .038) than physicians in other specialties. Among alumni physicians currently residing in-state (n = 482), membership did not differ significantly between those in urban and

rural Kentucky counties or primary care and non-primary care providers. Yet, nearly twice the proportion ($X^2 = 4.09$, OR = 0.5, df = 1, p = .043) of alumni living in non-Appalachian Kentucky counties (rural and urban) maintained active memberships (21.6% vs. 11.9%) than alumni residing in Appalachian counties.

Alumni Donations - Examining donations by UKCOM alumni, we focused on data available a minimum of seven years post-graduation to allow for graduates' completion of residency training and fellowships, prior to beginning medical practice. From 1995-2002, 41.4% (n = 399) of alumni made a total of 1,064 monetary contributions to UKCOM. Single donations varied widely, from \$1 to \$10,183; total donations varied similarly, ranging from \$5 to \$10,393.

For each of the years studied, UKCOM Alumni Association members were significantly more likely than non-members to contribute to the College of Medicine. On average, a donation was 3.4 times more likely to be given by a UKCOM Alumni Association member than non-member. Donations exceeding \$100 were most often made by alumni association members; non-members were more likely to donate less than \$100.

Donors to UKCOM were also significantly more likely to give money to other University of Kentucky sources – such as athletics and public radio ($X^2 = 91.06$, OR = 4.8, df = 1, p = < .001), although the total amounts to each were only weakly correlated (r = .09, p = .057). Life members, as a group, accounted for the majority of large donations (\$1,000 and above). Annual members and, to a lesser extent, partial life members, tended to make donations similar in size to those given by non-members.

Because of their increased likelihood of alumni association membership, alumni residing in Kentucky were significantly more likely to have made a donation to UKCOM during the study period ($X^2 = 13.97$, df = 1, OR = 1.6, p = < .001) – as were those living in urban versus rural counties of the state ($X^2 = 5.41$, df = 1, OR = 1.5, p = .020). Donations were significantly less likely to come from alumni practicing in primary care specialties ($X^2 = 7.59$, df = 1, OR = 0.7, p = .006). UKCOM donations were unrelated to alumni gender or, among Kentucky residents, to residing in Appalachian versus non-Appalachian counties.

Finally, with the sole exception of minority scholarship recipients – who were significantly less

Table 1
Characteristics of University of Kentucky College of Medicine Alumni Association Members and Non-Members, 2002

Variable	Members	Non-Members	p
Gender			
Male	18.0% (117)	82.0% (533)	
Female	16.7% (53)	83.3% (265)	0.65
Residency Status at Admission			
In-State	17.8% (157)	82.2% (725)	
Out-of-State	20.3% (13)	79.7% (51)	0.61
MCAT*			
Total	52.89 (170)	52.04 (771)	0.22
Undergraduate GPA			
Science	3.54 (169)	3.49 (774)	0.10
Total	3.59 (170)	3.54 (774)	0.07
Class Rank at Graduation			
Upper 50%	51.7% (411)	40.9% (69)	
Lower 50%	48.3% (384)	59.2% (100)	0.01
Undergraduate Degree			
UK	21.5% (70)	78.5% (256)	
Other KY	13.4% (47)	86.6% (305)	
Non-KY	18.3% (53)	81.7% (237)	0.02
Graduate Medical Education			
UK	17.8% (52)	82.2% (240)	
Non-UK	17.8% (118)	82.2% (546)	1.00
Medical Specialty			
Primary Care	15.0% (72)	85.0% (408)	
Non-Primary Care	20.1% (98)	79.9% (390)	0.04
State of Practice			
KY	19.9% (96)	80.1% (386)	
Non-KY	15.9% (74)	84.1% (392)	0.11
KY County of Practice			
Urban	21.3% (57)	78.7% (211)	
Rural	18.2% (39)	81.8% (175)	0.41
Appalachian	11.9% (10)	88.1% (74)	
Non-Appalachian	21.6% (86)	78.4% (312)	0.04

*MCAT (1977 version) consists of biology, chemistry, physics, problem-solving, reading, and quantitative scales, with scoring ranges on each scale from 1-15.

likely to contribute to UKCOM during the study period ($X^2 = 7.19$, $df = 1$, $OR = 0.1$, $p = .007$) – donations were no more likely to originate from scholarship recipients than non-recipients. Moreover, the total amount of scholarship dollars received was not significantly associated with total donations to UKCOM ($r = -.04$) or other university sources ($r = .06$). Similarly, the amount of scholarship monies received, calculated as a percentage of tuition costs (then-current in-state or out-of-state tuition x 4 years), was also unrelated to the total amounts of donations to either source.

Conclusions

This retrospective study of UKCOM alumni graduating from 1985-1995 examined various performance characteristics of recipients of merit, need-based, service, or minority scholarships – including class rank at graduation, AOA membership, extracurricular activities, and commendations at graduation. The receipt of scholarship monies was then further examined in relation to alumni association membership and subsequent donations to UKCOM.

We found that as a group, merit and need-based scholarship recipients were more likely to graduate in the upper halves of their classes – differences that did not hold for service or minority scholarship recipients. Merit scholarship recipients participated in more extracurricular activities, and were more likely to have been elected to AOA and to have received commendations at graduation. Given that the purpose of merit-based monies is to recruit highly talented students, these data suggest that the broad goals of the merit scholarship program at UKCOM are being achieved. In spite of these encouraging outcomes, however, there are potential downsides to linking institutional assistance largely to academic merit. Since all medical schools possess a finite pool of scholarship dollars, some programs may be tempted to redirect funds away from need-based or minority scholarships. If such actions were taken, the rising cost of medical school tuition and the limited availability of scholarship support could reduce the number of prospective students from lower socioeconomic and minority backgrounds who could afford to attend.⁷

Merit, need, and service-based scholarship recipients were no more likely to support their medical school through alumni association membership or donations than non-recipients. Minority scholarship recipients, in fact, were less likely than others to contribute to the UKCOM. While the reasons for this cannot be known in the present study, it is important to consider issues of inclusion and the extent to which minority students feel part of a majority institution.

More should be done to ensure that scholarship recipients, once established in their professional careers, are afforded meaningful ways to give back to the institution that supported them as students. Their support of future generations of medical students should be encouraged. Recent initiatives to host scholarship banquets where current recipients meet with donors to help steward their scholarship donation may help those recipients experience their linkage in the “gift chain.” The establishment of the Alumni Association Scholarship endowment in 2002 also provides an opportunity for previous scholarship recipients and other alumni to give back to their alma mater.

Although the percentage (20%) of graduates holding alumni association memberships over a sustained period was unremarkable, active members across all years were more likely than non-members to make some level of contribution to UKCOM. This finding underscores the importance of promoting

alumni association membership as a direct linkage to development. Given the continued erosion of state support to colleges and universities, alumni donations are often relied upon to help fund educational growth and innovation - including student scholarships, library and technology resources, laboratory equipment, and the maintenance of classrooms, laboratories or clinical facilities.⁸ Thus, continuing efforts must be made to foster alumni giving - perhaps earmarking current areas of specific need - as linked with the donor’s interests.

These findings are limited by the fact that the study was performed at a single institution, and that most members of the study cohort are now in their late thirties to mid-forties. Thus, in the midst of repaying educational loans, building practices, and providing financial support to their families, it is perhaps not surprising that few donations were made during this period. Replicating this study when alumni are closer to retirement age may provide a useful perspective. Finally, monetary donations constitute but one form of giving that graduates may have demonstrated in support of their alma mater. Alumni also may have participated in alumni association activities or on UKCOM boards, or served as faculty or volunteer preceptors.

Replications of this study at other institutions could help determine the generalizability of the finding that scholarship recipients are no more likely than non-recipients to support their medical school through alumni membership and giving. It may also be worthwhile to explore whether scholarship dollars add to the likelihood of giving among cohorts of students already predisposed to making donations – such as those holding undergraduate degrees from the same university as the medical school. Future studies could be initiated nationally across medical schools of differing sizes and missions to examine more closely the association between scholarship support and later alumni membership and institutional giving.

The study provides an initial glimpse into the academic and non-academic performance of scholarship recipients and non-recipients in medical school, and their subsequent institutional involvement and support as UKCOM alumni. The study demonstrates efforts to evaluate the outcomes of the first cohort of students to receive significant scholarship support at this institution. The study findings highlight the ongoing necessity of educating both students and alumni of the importance of maintaining institutional ties through alumni membership and giving. Moreover, the findings are potentially useful for financial aid officers interested in evaluating the outcomes

across all scholarship programs, and alumni affairs and development officers who want to refine and refocus their stewardship efforts toward graduates.

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