



A Rural Pathways Program for High School Students: Reinforcing a Sense of Place

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BACKGROUND AND OBJECTIVES: The affinity model predicts that students from rural areas who train in smaller towns will be more likely to choose rural practice. Most pipeline programs based on this model begin in college or medical school. Many rural students first encounter academic and career planning challenges prior to college, and a few programs are focused on high school students.

METHODS: We report pre- and post-program opinions and American College Testing (ACT) practice scores from 151 participants in a high school rural scholar program over the first 10 years of the program.

RESULTS: After participation, the students showed significantly more positive opinions about their county's health care resources and their knowledge of career options, and they knew more names of the providers in their county. Their practice ACT scores increased slightly, and their assessment that they were well prepared to take the ACT improved. Seventy-five percent have pursued a health career, and 10% have entered medical school.

CONCLUSIONS: A summer program that allows high school students to shadow health professionals in their hometown and study in a virtual classroom can accomplish modest academic gains while producing more positive opinions about the health care in their county. They also report better understanding of the career options available to them.

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The maldistribution of physicians in the United States has been a problem for a long time.¹ Recent student surveys have shown that only 5% to 9% (depending on the definition used) of current medical students plan a rural practice career,² while 19.3% of Americans live in rural areas.³ The affinity model supports that when a student who is from a rural area is trained in less urbanized areas, that student is more likely to return to a small town to practice.⁴ Kentucky studies support the affinity model and

emphasize the sense of place innate in many Kentucky students.⁵⁻⁸

Successful pipeline programs recruit students from rural areas and provide exposure to medical careers and academic preparation to facilitate their success. Most of these programs begin with college and continue through medical school.⁹⁻¹⁸ Some, however, are focused on the need to move these efforts earlier in the pipeline, at the key point where many rural students first experience academic difficulty and lower their expectations and aspirations.

We previously reported the initial experience with a High School Rural Scholar (HSRS) program for rising seniors.¹⁹ We report here the experience with the first 10 years of this program.

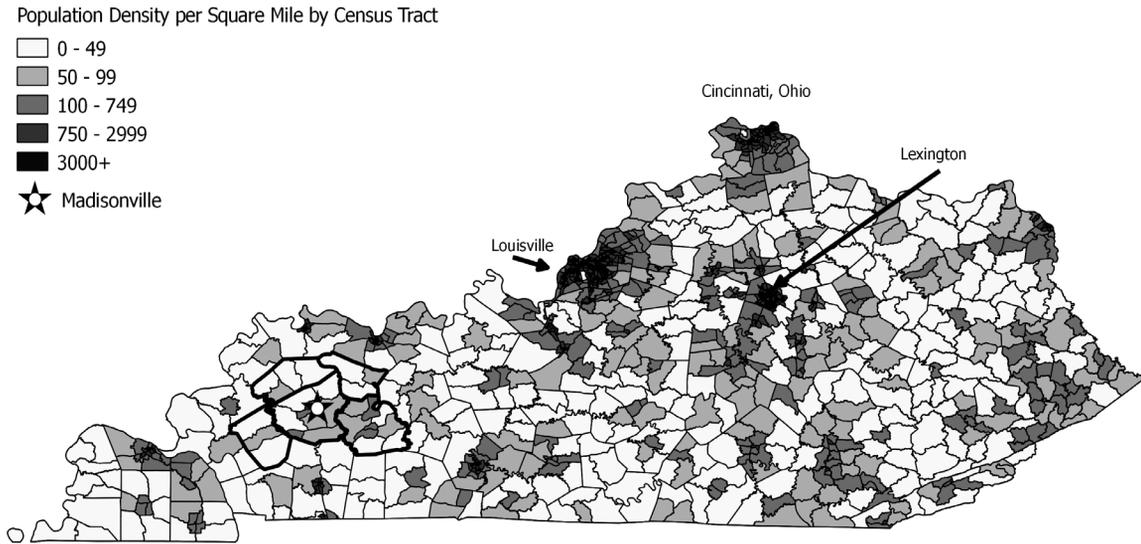
The 3-week HSRS program is coordinated by the University of Louisville Trover Campus in rural Madisonville, KY.²⁰ (See Figure 1). Each summer, 12–18 participating rising seniors from five contiguous rural counties live at home, shadow health professionals in their home county, and participate daily in a virtual classroom assisted by virtual college tutors. They meet weekly in Madisonville for group sessions and tours. Individual county advisory committees recruit, interview, and select the scholars (See Table 1). The approximate total annual cost was \$15,000, with about \$2,000 in student stipends supported by the communities themselves.

Methods

In addition to a program evaluation completed at the conclusion of the 3 weeks, each scholar completed an opinion survey on the first and last day of the experience. They were also

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Figure 1: Kentucky Population Density by Census Tract With Location of the ULTC High School Rural Scholars Program



ULTC—University of Louisville Trover Campus

Table 1: Trover Campus High School Rural Scholar Program

Goal	Method	Measure
1. Maintain or increase interest in a rural health career	3 weeks summer shadowing in a rural area	Survey question #1
2. Provide academic preparation and confidence in test-taking skills	a. Virtual classroom b. ACT prep work	a. Survey question # 2 b. Increment in pretest to posttest scores
3. Increase knowledge of available health careers	a. Group career sessions b. Daily journal entry describing training requirements of the person shadowed	Survey question # 8
4. Improve student attitude about health care quality in home community	a. Shadowing b. Daily journal entry about process of care while shadowing	Survey questions #3, #4, #6
5. Highlight need for specific health careers in home county	a. Shadowing b. Group career sessions	Survey questions #5 and #9
6. Increase student confidence and preparation for entry-level health job	Basic Life Support class and certification	a. 100% pass rate b. Frequently cited in student evaluations as value added
7. Attract “second tier” of students with strong rural ties, average academic scores, and families of modest means that are not reached by existing programs	a. Schedule during Governor’s Scholar b. Provide \$100 per week stipend to replace usual summer job c. Allow all activities to be close to home (no “urban disruption”)	a. Many more applicants than existing programs that require urban experience far from home b. Application ACT scores/grades lower than existing programs
8. Promote community ownership of program	a. County health councils interview and choose successful applicants b. County-based shadowing coordinator manages recruitment of professionals and daily scheduling (receives \$200 stipend) c. Council secures funding for some scholar stipends	a. Attendance at council meetings and interviews b. Professional and student satisfaction with shadowing c. Shadowing coordinator frequently donates stipend to fund additional scholar positions d. Councils consistently replace lost funding for scholar stipends

ACT—American College Testing

asked to provide the names of the providers in their county known to them at the time. A practice American College Testing (ACT) test was administered on the first and last day of the program. Pre- and post-survey results were collated in Microsoft Excel 2003 and imported into SPSS v. 21 (IBM Corp, Armonk, NY). Results from the pretest and post-test surveys were analyzed by using the SPSS v. 21 nonparametric Wilcoxon Signed Ranks Test, and the ACT pre- and post-test results were analyzed using a paired *t* test. This study was reviewed and approved by the Baptist Health Madisonville Institutional Review Board.

Results

The practice test ACT composite scores increased from an average of 20.9 to 21.3, giving an overall 1.9% increase in score ($P=.038$). The students began with an average composite score higher than the average of 19.4 in Kentucky for 2010. After ACT prep, the students' average composite score surpassed the

national average composite score of 21 for 2010.²¹ Program evaluations were uniformly positive, with shadowing clearly the most liked and the ACT prep the least. One student excitedly stated, "I learned so much; I improved my ACT and got BLS training."

Table 2 shows the results of the opinion survey and listing of providers. Interest in a rural health career was very high on the pretest and showed little change. All the other items increased significantly, with the exception of high school preparation. Their opinion on their school varied widely across counties, with the smaller counties having lower agreement, and some actually worsened, suggesting that the work with ACT prep actually made the students more aware of their need to "catch up" with the larger counties.

To date, 75% of former HSRS have pursued some kind of health career training, and seven of the 72 (10%) who have completed college have entered medical school.

Discussion

The program accomplished the goals of increasing student knowledge and positive opinions about health careers in their home counties and providing some academic preparation. Table 3 shows how our program compares to others. The most remarkable difference is that all others require the student to move to a larger university town during the program. While that may decrease some of the anxiety about what college will be like, it also assures that the shadowing experience will be qualitatively different from that seen in a rural area. It also reinforces that to do something really special in health care training, one must go to a larger city, potentially causing "urban disruption" of the affinity model. Many former HSRS began their higher education at community colleges, and many of those who did attend 4-year colleges chose regional schools that are in small communities close to home. This reinforces the affinity model.

Table 2: Student Opinion Survey*

	Significance	Pretest	Posttest
1. I am interested in a rural health career.	.204	8.4	8.5
2. I am well prepared to take the ACT.	<.000	6.1	7.7
3. There are many problems in health care in my county.	.010	5.7	6.3
4. There is much to be proud of in my county.	<.000	6.9	7.6
5. I can make a difference in my county.	.053	8.1	8.3
6. The health care facilities in my county are adequate.	.002	7.3	7.7
7. My school has prepared me for success in college.	.232	7.1	7.2
8. I have access to effective health career information in my county.	.002	7.5	8.0
9. Number of health professionals named by HSRS.†	<.000	3.2	7.8

* n=151

Scale is 1–10, with 1 being the least or strongly disagree and 10 being the most or strongly agree. Because the Likert scale was nonparametric, we ran the Wilcoxon Signed Ranks Test.

† Data for 2005 (n=16) missing.

Table 3: Selected High School Pathways Programs in the United States

Program	Duration	Location	Prerequisites	Academics	url
Mississippi State University	5 weeks	Starkville Pop: 44,000	ACT 25	College courses (Biology/Math)	http://www.RMS.msucare.com
University of Alabama School of Medicine	5 weeks	Tuscaloosa Pop: 128,000	ACT 21, GPA 3.0	College courses —English, Chemistry	http://cchs.ua.edu/education/rural-programs/rural-health-scholars-2/
East Tennessee State University	1 week	Johnson City Pop: 79,000	GPA 3.0	Various workshops	http://www.etsu.edu/com/ruralprograms/premedical/hsmedicalcamp.aspx
Michigan State University	2 weeks	East Lansing Pop: 98,000	None listed	Tutors in Science	http://com.msu.edu/osteoamps/
University of Louisville Trover Campus	3–4 weeks	Western Kentucky Pop: 800 to 20,000	GPA 3.0	ACT Prep, Virtual Tutors	http://ultc.baptisthealthmadisonville.com

Other programs provide summer college courses in a college environment. Our decision to provide a virtual classroom facilitated by college instructors allowed the students to remain in their hometown while getting a sense of how hard college work will be, but we were unable to provide college credit. This was more than balanced by the reinforcement of the affinity model. Other programs also did not provide a stipend but supported the tuition and lodging costs. Early on we discovered that our target group of students needed to earn income during the summers, and our program stipend replaced what they missed from the usual fast food or retail jobs that they held before and after the program. We also varied the length of our program until we settled on 3 weeks as the optimal duration to accomplish our goals.

The other unique aspect of our program was community ownership. Our campus role was to provide the staff support and structure for the program and pay the shadowing coordinators and tutors, but the counties clearly felt ownership. In years when stipend support was temporarily lost, each county rallied to continue their involvement in the program. The value of the program

was shown when often the shadowing coordinators would donate their payment to add another scholar in their county. Others planning such a program may want to consider this community-based approach.

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