Evaluation of KY-INBRE Student Learning Outcomes

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Introduction

The main purpose of this evaluation study is to assess the success of the KY-INBRE program in engaging undergraduate students in research activities, and in increasing their level of competency to pursue graduate biomedical and health research.

A literature review gave breadth and depth to our understanding of the undergraduate student learning outcomes and of their correlates, and it also lead to identification of a validated student self-assessment instrument, the Undergraduate Research Student Self-Assessment (URSSA) tool. While there are numerous assessment models and tools to measure and track gains in student learning, only a few are widely accepted by the evaluation community as reliable and valid options for our student population. The URSSA tool was developed by a group of ethnographic and evaluation researchers at the University of Colorado at Boulder.

The main finding from the literature was related to the characteristics of the students who are most likely to benefit from the summer undergraduate research programs: females, minority, from primarily undergraduate colleges and universities.

Evaluation Framework

The evaluation plan for the KBRIN SUR is only one component of the KBRIN Program Evaluation framework and includes both a retrospective and a prospective approach.

Retrospective evaluation: using existing programmatic data, the administrative paper records:

a. application forms and academic transcripts (2002-2011)
b. pre-post paper surveys (2007-2010).

Prospective evaluation: using the newly developed online surveys conducted during the last week of May 2011 (pre) and during the first week of August 2011 (post).

Data Collection Tools

The evaluability assessment informed about the existing programmatic data , which was used to develop electronic datasets in SPSS, and provided a starting point for the development of an electronic data collection system (survey and database) using REDCap. The data collected via REDCap was downloaded in SPSS and merged with the administrative records. Study data for 2011 were collected using REDCap electronic data capture tools hosted at the University of Louisville; Study data for 2001 to 2011 managed using the IBM SPSS program.

Data Items

The 2011 pre-post surveys included items from the URSSA* student self-assessment tool which was validated in different types of undergraduate institutions, and additional items specific, to KY-INBRE program. Our final tool includes measures of student research competencies, of learning outcomes (ex, communication, critical thinking, work organization, computing, and life skills - equally important in the development of a competent research workforce) and, of students' satisfaction with the program and of its impact on their career plans.

Data Analysis

We used traditional descriptive statistics to report on the characteristics of the applicants and of the participants in the KBRIN program, on the main program outcomes, and on the student satisfaction with the program.

* URSSA, Undergraduate Research Student Self-Assessment (2009). Ethnography & Evaluation Research, University of Colorado at Boulder, Boulder, CO. www.salgsite.org

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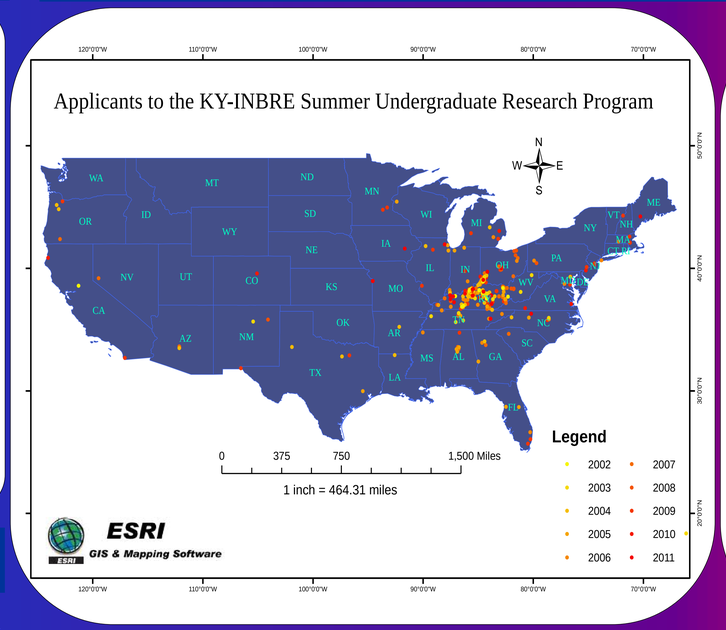
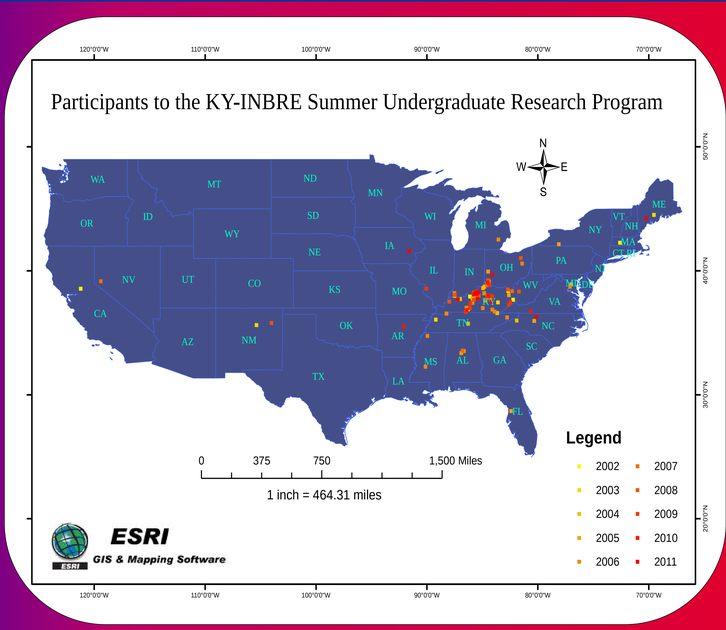
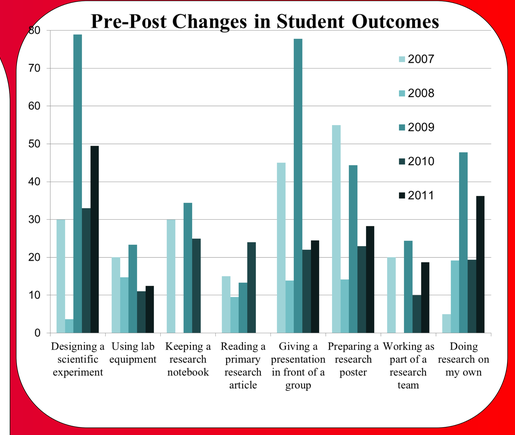
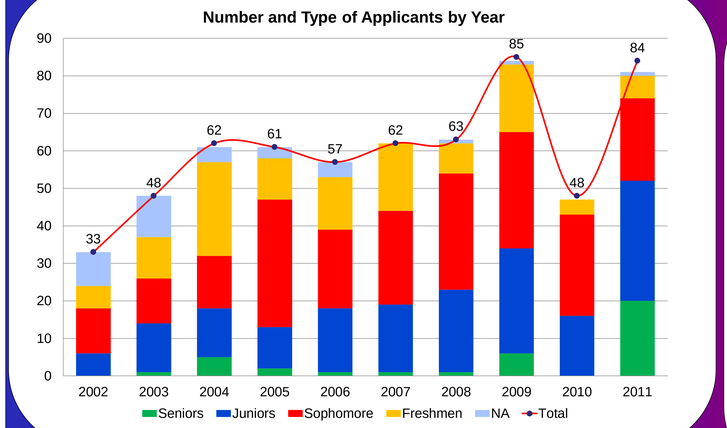
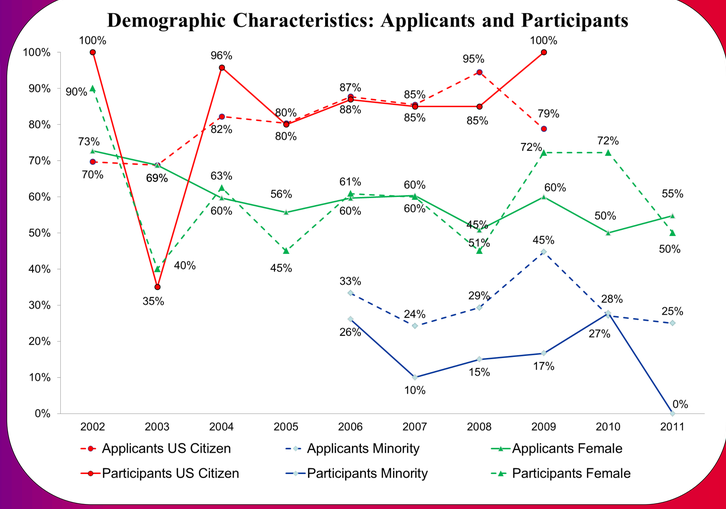
Kentucky-INBRE Summer Undergraduate Research Program Outcomes

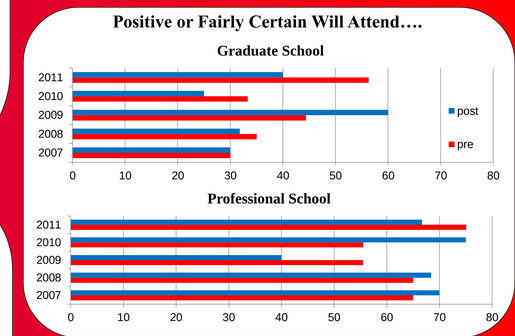


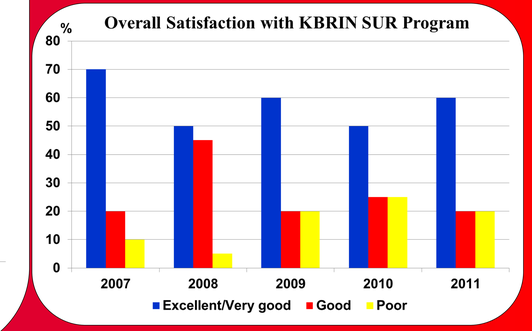


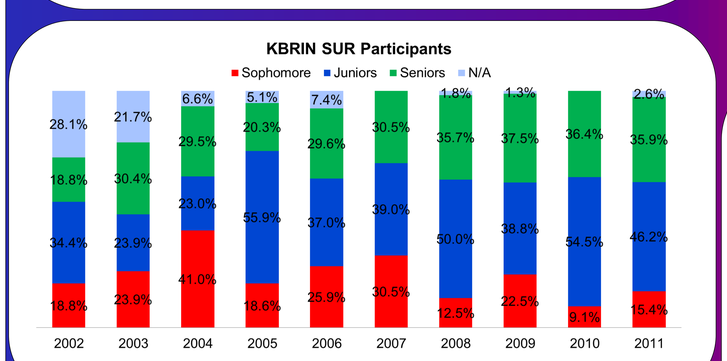


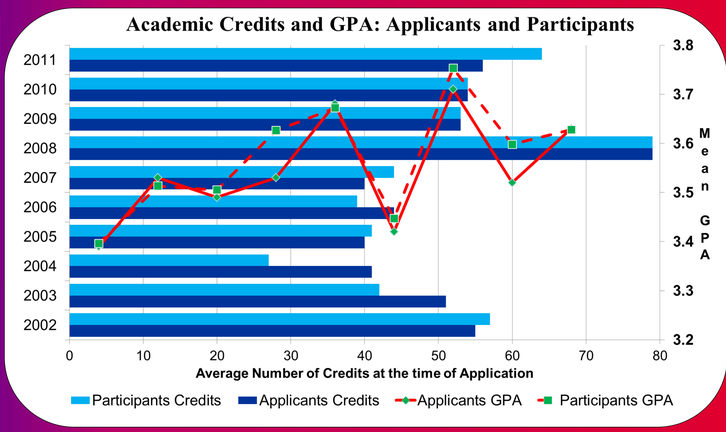












Student Comments: Program Usefulness

KBRIN activities greatly supported my learning. I [have] not only gained experience with new lab techniques, but I also learned how to design experiments and how to ask new research questions based on the results of our conducted experiments. I learned how to prepare a poster presentation, how to work as part of a lab team, what it is like to conduct research on a full-time basis, and much more.

They encouraged me to use my own critical thinking skills to solve problems and come up with solutions. They taught me new techniques that I have not learned in any of my previous classes as of yet.

I was exposed to a level of science that I had never previously known. I was challenged by concepts that at first seemed far too advanced for me; however, I was able to adapt and really get the feel for what it was like to work in a real lab.

The summer program weekly meetings allowed me to learn about other student projects going on this summer. Also, the KBRIN program allowed me to create a poster presentation which I have never done. I thought that this was a valuable experience for anyone interested in a career in science.

Comments provided via post online REDCap survey, 2011