

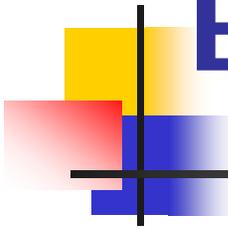
The Leadership Alliance's

SUMMER RESEARCH-EARLY IDENTIFICATION PROGRAM

(SR-EIP):

A Summative Evaluation

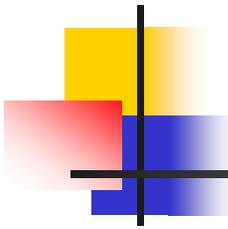
**Cheryl B. Leggon
Evaluation Team Member
AGEP Conference
San Juan, Puerto Rico
February 2, 2007**



Evaluation Team

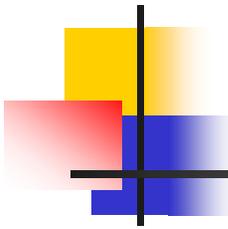
- **5 PhD social scientists who are faculty at Research I universities**
- **1 MBA in strategic planning & implementation**
- **Evaluation expertise + substantial contributors to research literature on STEM**

Theme: synergy among research, evaluation, programs, policies, practices



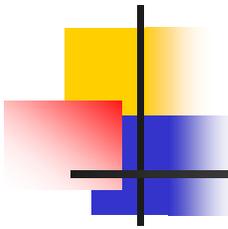
Summer Symposium

- Hallmark = Summer symposium
- Modeled on scientific conferences
- Symposium serves several sets of specific purposes for its various constituents
 - **Students**
 - **Program Directors**
 - **Leadership Alliance**



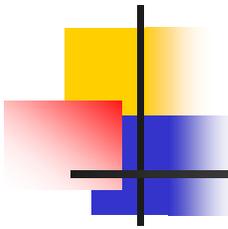
Symposium: Students

- Tangible goal for summer research experience: **present research results** to peers & potential recruiters
- **Establish contacts with recruiters**
- **Network with peers**



Symposium: Program Directors

- The conference provides the program directors with an opportunity to:
 - **recruit** potential graduate students from other programs
 - **learn about best practices** from peers
 - develop a closer relationship with the central Leadership Alliance administration and staff.



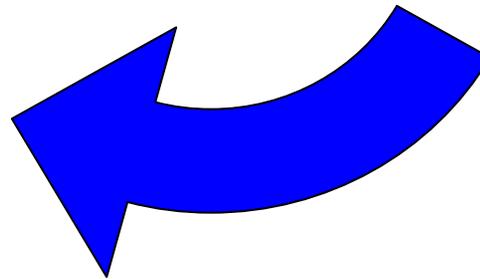
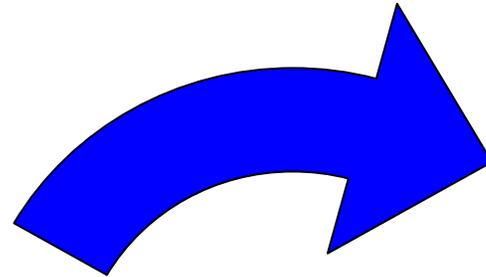
Symposium: Leadership Alliance

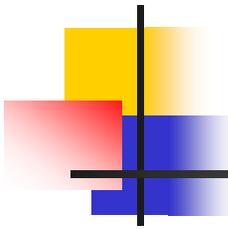
- The symposium provides the Leadership Alliance with a platform to:
 - **create networks among students from different programs**
 - **establish a venue for recruitment of under-represented minorities to graduate school and**
 - **Enhance visibility to constituents**
 - Students
 - Participating schools
 - Supporting agencies

Systematic Mixed Method Evaluation (since 2002)

Quantitative

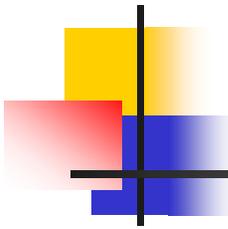
Qualitative





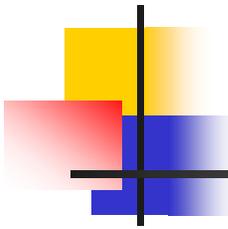
Quantitative: Survey

- Engagement in various facets of scientific research with mentors
- Outcomes of engagement: short- and long-term career goals



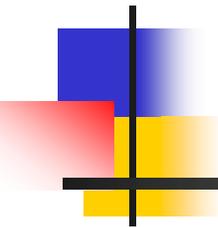
Survey Response Rates

- Average response rate = 79%
- Lowest response rate = 70% (e-survey)
- **Response rate without e-survey = 83%**

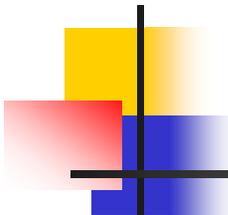


Qualitative

- **Focus groups, individual interviews, document analyses, and observation**
 - **LAP stakeholders: administrators, coordinators, undergraduate and graduate students, postdocs and others**
 - **Stakeholders in other programs on the same campus**



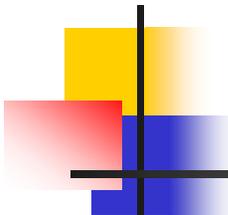
Highlights



Demographics

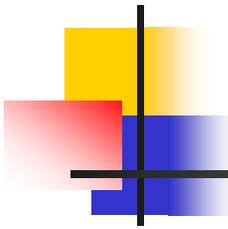
- **Stable across cohorts**
 - 70% Female
 - 50% African American
 - 40% Latino

African American males are more likely to be from majority institutions rather than minority institutions



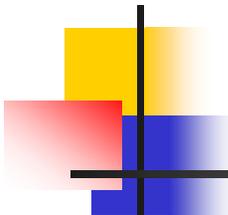
Demographics (2)

- **60% rising seniors**
- **60% from LAP institutions**
- **75% percent natural science majors, followed by social science and humanities**
- **Males are more likely to major in natural sciences**



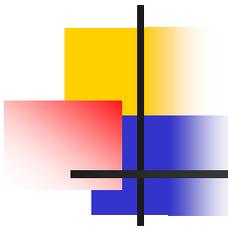
Demographics (3)

- **50% previous summer research experience***
 - **No gender variations**
 - **African Americans are more likely than other groups to have had previous summer research experience**
- **MIIs: 50%**
- **HBCUs: 30%**
- **HSIs: 20%**
- **Few African American males come from HBCU**



Institutional Origins and Majors

- Students from **MI**s are **more likely to major in social sciences** (20%); followed by HBCUs (10-15%); and HSIs (<10%)
- Students from **MI**s are **least likely to major in natural sciences**; followed by HBCUs, and HSIs



Findings

- **80% rate the summer experience as “very good” or “excellent”**
- Latino females and males more favorable

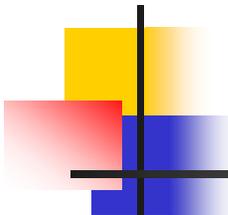
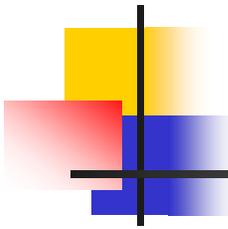


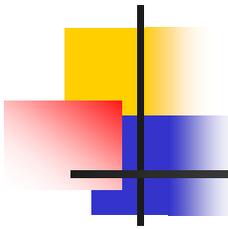
Table 1 Usefulness of the Program

- **Understand what it takes to do a PhD and become a researcher** 86
- Decision to pursue grad school 77
- Gaining knowledge about selecting/applying to grad school 75
- Making career choices and setting career goals 65
- What to do over the balance of undergraduate career 63
- **Availability of financial support for grad studies** 49



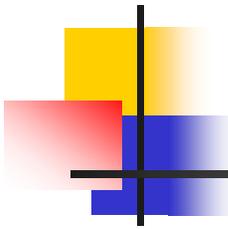
Findings

- Perceptions of “usefulness” do not vary significantly by gender and race/ethnicity
- Helps participants clarify career goals and sharpen understanding of the research process



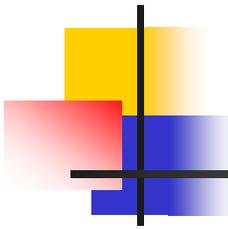
Findings

- **Having a mentor who helps “a great deal” in the student’s symposium presentation is related to increased “usefulness” scores**
- **Somewhat less useful in providing an understanding of financing graduate education***
- * The LAP has a scheduled session on applying for graduate school that includes a discussion of financial aid. However, attendance is not required. This response pattern may reflect the lack of attendance of the session.



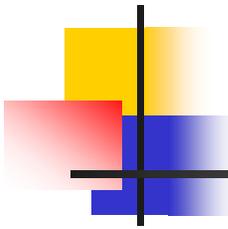
Decision to attend Grad School – 77%

- **Participating in the SR-EIP presents graduate school as a viable option:**
- **“It’s just realizing that research and grad school are an option. I’ve had it on my mind, but the last four years in school, it’s been ‘get a job, get a job, take courses for the job market.’ This is the first time I’ve had someone actually explain what the benefits are for going to grad school.”**



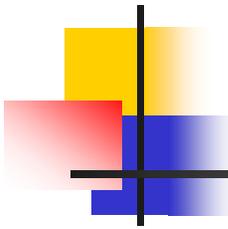
Decision to attend Grad School – 77%

- **Enables students to assess/reassess their likelihood of completing grad school:**
- “I like the ability to test whether or not I’m ready for graduate school...the work that I’m doing with the professor is at the graduate level. Now that I’ve been able to do that, it’s built my confidence a lot more than it would have if I had not had this program.”



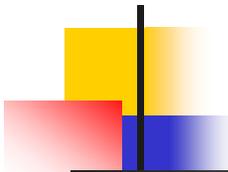
Informed Career Choices – 65%

- **Have an important role in a research project (NOT a “go-fer”)**
- **Learn about science by doing science**
 - “In my initial research experience, I felt more like a lab technician; I wasn’t really learning anything. After my Leadership Alliance summer experience, I was able to apply what I had learned in class to what I was actually doing in the lab.”



Informed Career choices

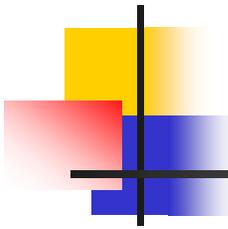
- **Learn the meaning of a career in science:** [Faculty mentor] “One good thing about the SR-EIP is that you are able to show these younger students what a graduate program is and what science is. It’s not just doing experiments; it’s why we are doing experiments.”
- **Graduate student program leaders report discussing science careers with the students**



Informed Career Choices

The summer research experience enables students to learn how science is done, as one faculty mentor described:

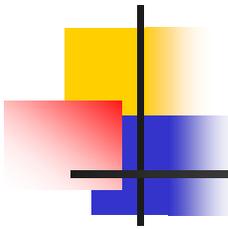
“There is a very good balance of finding out the joys and frustrations of what science is about, which is the unique thing they get out of the summer. Also having the programmatic things to make sure that it’s a positive experience. I think the presentations at the end are a good experience. I think it’s a good feeling for the student to put something together and present successfully.”



Informed choices: Multiple career paths

The Leadership Alliance experience provided students with accurate information about the Ph.D. and MD/PhD degrees—and the careers associated with each.

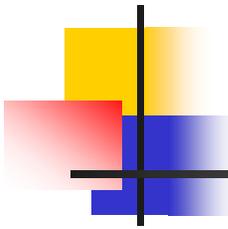
Many students reported that they learned about different career paths by working with both PhDs and MD/PhDs in their laboratory. Therefore, one result of the SR-EIP is to enhance students' ability to make a better informed career choice.



Informed Career Choices

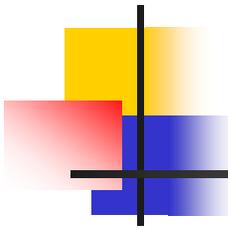
- **Enables students to put the science they have learned into a research context and increases the likelihood that they will attend graduate school:**

“The most satisfying thing for me was coming here this summer and realizing that my goal for pursuing a Ph.D. in educational psychology has become solidified because of the research that I’ve been doing. I really enjoy it so much that I know now that this is definitely what I want to do.”



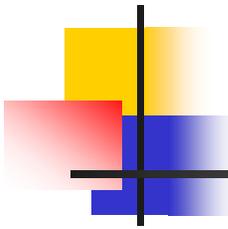
Conclusions

- **Program works best for participants who are part of a research group, under the supervision of a hands-on mentor**
- **Students in the humanities and social sciences are less likely to work in groups and more likely to work with an individual**



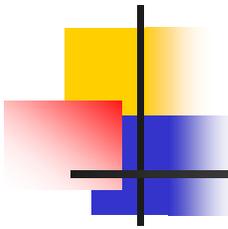
Conclusions

- **Experience science in context: not an isolated pursuit**
- LA students become aware of the organizational processes of contemporary scientific work groups as well as the sociability that infuses the group
- Interact in many different ways
- Professionally, collaboratively and socially



Conclusions

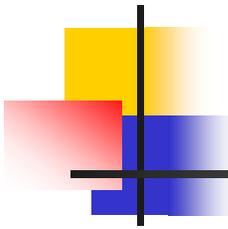
- **Many students cited their relationship with their mentor as a strong influence in their decision to attend graduate school**
- **Veteran faculty mentors contend that they do not need special training to mentor students but do need an “orientation” to the Leadership Alliance SR-EIP and the symposium**



Conclusions

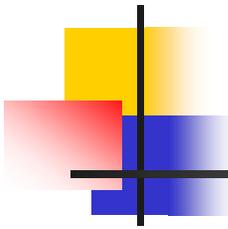
- **Develop an enhanced sense of community (extended network)**

Students were quick to mention the criticality of being surrounded by other students (and professionals) who were “so focused” on science. For some, enlarging their social network to include both peers and academics (including their mentors, the PIs, and postdocs) was an unintended yet meaningful outcome of their summer experience.



Conclusions: confidence

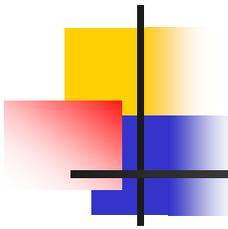
- Both students and faculty said that one of the major benefits of the SR-EIP Program is the increased confidence of the students.
- An administrator noted that the Leadership Alliance has a positive and transformative effect on students and that there is a noticeable difference between students who attend the SR-EIP program and those who do not: “Usually upon returning to campus after participating in the Alliance’s SR-EIP, the students are more self-confident.”



Conclusions: confidence

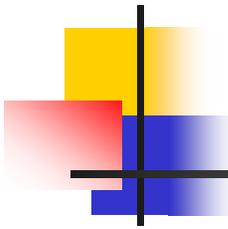
- **Presumably, students' increased self-confidence will increase the probability of completing graduate study, as one student articulated:**

When I left for the summer, I thought that I wouldn't know anything and I thought that I couldn't compete. But once I got there, I saw that I was pretty much on the same level. So that gave me a new boost and more confidence; when I graduate, I'll know that I'm as competitive as other students.



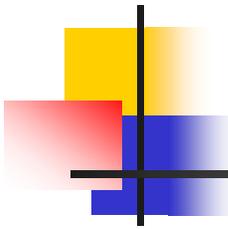
Conclusions

- Anticipatory socialization for graduate student mentors
- The summer project for Leadership Alliance students also serves as part of the research group training experience in mentoring for postdoctoral fellows and graduate students.
- **One unanticipated consequence of this model is that it gives the graduate student mentors valuable experience in teaching and mentoring undergraduate students.**



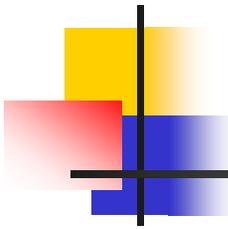
Conclusions

- **The Leadership Alliance is a repository of expertise for recruiting minority students to the sciences.**
- **The SR-EIP model has already been adopted in other programs at some of the Leadership Alliance member institutions.**
 - For example, the Dean of Engineering at a member institution adapted the model to his student recruitment efforts. At another member institution, graduate programs and departments have incorporated the model.
 - Indeed, at some member institutions the PMSE model has been adopted—not as a stand alone—but as an integral part of the way the university does business. Faculty and administrators report that they realize that SR-EIP is most helpful in recruiting and developing students from under represented minority groups. The new coordinators manual will disseminate information, experiences, and best practices to Leadership Alliance member institutions.



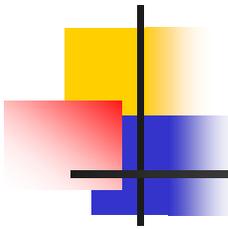
Conclusions

- **Institutionalization of programs, policies & practices to diversify the STEM workforce**
- **Not a stand-alone program**
- **An integral part of an institution's mission and standard operating procedures and therefore, one criterion on which to evaluate the performance of faculty and administrators**



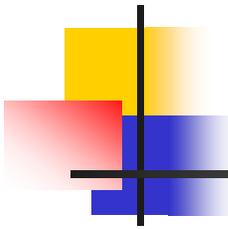
Evaluation Feedback: institutions

- **Feedback from the 2001 site visits was incorporated into the operations of some of the sites identified as “problematic.”**
 - For example, during the 2001 site visits the evaluators noted that one site had the greatest number of student complaints. Students reported that they felt that were left to “sink or swim” on their own, and that there were no planned social activities for them. During the 2003 site visits, however, dramatic changes occurred in the students’ experiences at this site. When asked what accounted for these changes, the site coordinator reported that excerpts from the first evaluation were shared with faculty
- Feedback was incorporated by some of the sites identified as **exemplary**



Evaluation feedback: national office

- The national LAP office has adopted some of the evaluators' suggestions.
- **handbook for coordinators**
- **database** to enhance the tracking of students and provide the longitudinal data necessary to assess the long-term effects of participating in the Leadership Alliance Program.



Finally...Evaluation

- **Interactive and iterative**
- **Provides real time feedback so that changes may be made as needed**
- **Synergy among and between**
 - **Evaluation**
 - **Research**
 - **Program/policies/practices**