National AGEP Evaluation

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Today’s Presentation

- Quantitative Analysis
  - Preliminary Observations
  - Completion Data
  - Enrollment Data
- Qualitative Data
Quantitative Data
With roughly half as many institutions, AGEP enrolled similar numbers of URMs in STEM graduate departments as Non-AGEP institutions

With roughly half as many institutions, AGEP awarded more STEM PhDs to URMs than Non-AGEP institutions

AGEP URM enrollment and completion data in Physical Sciences and Math & Statistics is increasing faster than Non-AGEP numbers

AGEP URM completion data in Engineering is increasing faster than Non-AGEP while enrollment is relatively similar

Non-AGEP URM enrollment data in Biological Sciences is increasing faster that AGEP numbers
African American enrollment in Non-AGEP biological and computer science graduate departments increases faster than AGEP institutions.

Completion and enrollment of URMs in STEM is increasing across all institutions while Non-URM data fluctuates but remains relatively flat.

More STEM PhDs are awarded to Hispanics at institutions outside Puerto Rico than within.
Completion Data

*PhDs Awarded in STEM Disciplines from 1990 to 2007 (Preliminary)*
With roughly half as many institutions, AGEP awarded more STEM PhDs to URMs than Non-AGEP institutions.

AGEP URM completion data in Physical Sciences, Engineering, and Math & Statistics is increasing faster than Non-AGEP numbers.
Completion of URMs in STEM is increasing across all institutions while Non-URM data fluctuates but remains relatively flat.

More STEM PhDs are awarded to Hispanics at institutions outside Puerto Rico than within.
Underrepresented Minorities Defined

- U.S. citizens and permanent residents: African American, Non Hispanic; American Indian or Alaskan Native; Hispanic
- Data for Native Hawaiian /Pacific Islander was not available until 2001, so they are not included in overall URM numbers but are presented separately

STEM Disciplines Include:
- Engineering, Math and Statistics, Physical Sciences, Biological Sciences, and Computer Sciences
Total Completion of STEM PhDs
Completion of STEM PhDs by URMs

Year

AGEP Institutions (104)
Non-AGEP Institutions (199)
Completion of STEM PhDs at AGEP Institutions, URM and Non-URM
Completion of STEM PhDs by All URMs by AGEP Cohort

Year:
- 91
- 93
- 95
- 97
- 99
- 01
- 03
- 05
- 07

Number of PhDs:
- 1998 Cohort (29)
- 1999 Cohort (41)
- 2000 Cohort (18)
- 2003 Cohort (16)
Due to the very small number of PhDs awarded to this group, trend analysis is not possible.

Completion data for Native Hawaiian/Pacific Islanders was not reported separately until 2001.

Due to the very small number of PhDs reported, trend analysis is not possible.

Data Presented here is aggregated from 2001-2007.
Completion of STEM PhDs by American Indian/Alaskan Natives

- Due to the very small number of PhDs reported, trend analysis is not possible.
Completion of STEM PhDs by Hispanics

Year

AGEP Institutions (96)

Non-AGEP Institutions (175)
Completion of STEM PhDs by Hispanics (Without Puerto Rican Institutions)
Completion of STEM PhDs by African Americans

Year

AGEP Institutions (96)
Non-AGEP Institutions (181)
Completion of Engineering PhDs by All URM

Year

AGEP Institutions (81)
Non-AGEP Institutions (109)
Enrollment Data

Graduate Enrollment from 1992 to 2007 (Preliminary)
Data presented are Enrollment in Graduate Programs at institutions offering PhDs in at least one STEM discipline (at least one GSS-eligible unit confers doctoral degrees in a STEM department)

Enrollment in Masters Programs is included
With roughly half as many institutions, AGEP enrolled similar numbers of URMs in STEM graduate departments as Non-AGEP institutions.

AGEP URM enrollment data in Physical Sciences and Math & Statistics is increasing faster than Non-AGEP numbers.

Non-AGEP URM enrollment data in Biological Sciences is increasing faster that AGEP numbers.
African American enrollment in Non-AGEP biological and computer science graduate departments increases faster than AGEP institutions.

Enrollment of URMs in STEM is increasing across all institutions while Non-URM data fluctuates but remains relatively flat.
Graduate Enrollment of URMs in STEM Departments

- AGEP Institutions (109)
- Non-AGEP Institutions (232)
Graduate Enrollment in STEM Departments at AGEP Institutions, URM and Non-URM

URMs (109 Institutions) - Scaled to Left Axis
Non-URMs (109 Institutions) - Scaled to Right Axis
Graduate Enrollment of URMs in STEM Departments by AGEP Cohort
Graduate Enrollment of URMs in STEM Departments at Puerto Rican Institutions

- Due to the small number of institutions, trend analysis is not presented.
Graduate Enrollment of American Indian/Alaskan Natives in STEM Departments

Year

AGEP Institutions (102)
Non-AGEP Institutions (196)
Graduate Enrollment of Hispanics in STEM Departments

![Graph showing the enrollment of Hispanics in STEM departments over years, with a legend indicating AGEP Institutions (107) and Non-AGEP Institutions (230).]
Graduate Enrollment of Hispanics in STEM Departments (Without Puerto Rican Institutions)
Graduate Enrollment of African Americans in STEM Departments

Year

AGEP Institutions (109)
Non-AGEP Institutions (226)
Graduate Enrollment of URMs in Physical Science Departments

Year

1993 1995 1997 1999 2001 2003 2005 2007

AGEP Institutions (106)
Non-AGEP Institutions (178)
Qualitative Data
Interviewed Student Profile Summary: Race/Ethnicity

- African American: 59%
- Hispanic: 25%
- White / Alaskan Native: 9%
- Asian: 1%
- Native Hawaiian / Pacific Islander: 1%
- Mixed Race: 4%
Interviewed Student Profile Summary: Discipline

N = 191 (92% of total)

- Biological Sciences: 30%
- Physical Sciences: 16%
- Engineering: 25%
- Math & Statistics: 5%
- Computer Sciences: 7%
- Non-STEM: 16%
- Agricultural Sciences: 1%

(Chart showing distribution of disciplines among interviewed students)
Interviewed Student Profile Summary: Undergraduate Institutions

N = 205 (99% of total)

HBCU 21%
HS I 13%
Tribal 1%
Other 65%
Perceived Benefits of AGEP

- **Staff perceptions**
  - Enhances recruitment activities
  - Continues pipeline built by programs such as McNair, Sloan, LS-AMP, etc.
  - Encourages improved programming supports for all students, not just URMs

- **Student perceptions**
  - Financial support for conferences, jump-start research, assistantships
  - Academic supports (e.g. pre-entry research opportunities, ongoing workshops, interactions with faculty)
  - Social supports (e.g. meeting other students, community of interest)
Perceptions of Alliance Structure

- **Benefits**
  - Systematic approach to recruiting and retaining URMs
  - Sharing ideas and best practices across campuses
  - Leveraging resources across campuses

- **Drawbacks**
  - Perceived inequitable distribution of funds
  - Unmet need for full-time AGEP leadership on some campuses
  - Campus programming is often in silos
Reported Obstacles to AGEP Implementation

- NSF funding challenges
  - Stalled momentum
  - Campus programming interrupted or cancelled
  - AGEP administrative positions left vacant
  - Program perceived as unstable on some campuses
- Limited student mobility for cross-campus activities
- General economic downturn on campuses limits some support
Pipeline to the Professoriate

- AGEP Faculty:
  - Often make PhD completion the goal of AGEP, not necessarily students’ entering the professoriate
  - Encourage careers in many areas, not just professoriate
Pipeline to the Professoriate:

- Students overall have an interest in academic careers
  - Opportunity to teach and mentor in STEM disciplines
  - Opportunity to teach and mentor URMs in STEM disciplines
  - Freedom to conduct their own research
Students do not necessarily want immediate tenure track jobs in a research institution
- Research institutions sometimes unattractive
  - Steep competition for jobs
  - Work-life imbalance
  - Constant need for research funding
- Teaching institutions serve “my community”
- More money to be made in industry, teaching part-time
Additional Data
PhD Completion Data from Survey of Earned Doctorates (SED)
- SED is a census: does not require any sampling
- Average response rate 1997-2007: 92%

AGEP Institution Identification Process
- NSF Master List
- Official AGEP website (www.agep.us)
- Individual Alliances’ Proposals and Direct Contact
- Alliances and their participating institutions which focus on a subject area other than STEM were not included
Enrollment Data Description and Sources

- Enrollment Data from Survey of Graduate Students and Post-doctorates in Science and Engineering (GSS)
  - Data are collected separately for each reporting unit (academic department or program, research center, or health facility)
  - 2004-2007 Average Response Rate: 95% (complete) 2%(partial)

- AGEP institutions, URMs, and STEM disciplines defined as for Completion Data
Completion of STEM PhDs at Non-AGEP Institutions, URM and Non-URM

- URM (199 Institutions) - Scaled to Left Axis
- Non-URM (232 Institutions) - Scaled to Right Axis
Completion of STEM PhDs by All URMs (Without Puerto Rican Institutions)
Completion of Physical Sciences PhDs by All URM[s]
Completion of Math and Statistics PhDs by All URMs
Completion of Biological Science PhDs by All URMs

Year

AGEP Institutions (88)
Non-AGEP Institutions (165)
Total Graduate Enrollment in STEM Departments
Graduate Enrollment in STEM Departments at Non-AGEP Institutions, URM and Non-URM

- URM (232 Institutions) - Scaled to Left Axis
- Non-URM (231 Institutions) - Scaled to Right Axis
Graduate Enrollment of URM in STEM Departments (Without Puerto Rican Institutions)
Graduate Enrollment of Native Hawaiian/Pacific Islanders in STEM Departments

Year

AGEP Institutions (77)
Non-AGEP Institutions (139)
Graduate Enrollment of African Americans in STEM Departments (Excluding Biological & Computer Sciences)
Graduate Enrollment of URM\textsubscript{s} in Math and Statistics Departments

Year

AGEP Institutions (102)

Non-AGEP Institutions (161)
Graduate Enrollment of URMs in Engineering Departments

- AGEP Institutions (94)
- Non-AGEP Institutions (143)
Graduate Enrollment of URMs in Biological Science Departments

Year

AGEP Institutions (105)

Non-AGEP Institutions (216)
Interviewed Student Profile Summary: Immigrants

N = 88 (43% of total)

- No: 92%
- Yes: 8%
Interviewed Student Profile Summary: Parents’ Characteristics

Immigrants

- Neither Parent: 81%
- Father Only: 8%
- Mother Only: 1%
- Both Parents: 10%

N = 87 (42% of total)

Attended College

- Neither Parent: 36%
- Both Parents: 34%
- Mother Only: 24%
- Father Only: 6%

N = 92 (44% of total)
Interviewed Student Profile Summary: Age

Average = 28
Range = 19 to 58
N = 196 (95% of total)
Interviewed Student Profile Summary: Years in Graduate Program

Average = 3.5
Range = 1 to 10
N = 206 (99% of total)