

**EXPLANATION OF NORC DATA
FOR PhD's GRANTED TO
UNDERREPRESENTED
GROUPS: ACHIEVEMENTS IN
THE PRODUCTION OF PhD's IN
THE NATURAL SCIENCES AND
ENGINEERING FIELDS BY PR-
LSAMP INSTITUTIONS**

**Explanation of NORC Data for PhDs Granted to Underrepresented Groups
for the Natural Sciences and Engineering**

The National Opinion Research Center (**NORC**), located at the University of Chicago, conducts a systematic collection of data on PhDs conferred to underrepresented groups at the National level. The data are collected in **five-year cohorts** (a cohort is: a group of people who share common characteristics) of underrepresented students that receive their PhD in the Natural Sciences or Engineering.

Because the numbers of PhD recipients from these groups are relatively small, the data is collected as a **running average** in order to smooth out short-term fluctuations and highlight longer-term trends in the number of degrees conferred. The cohorts that are used for the running average consist of the total number of students who have received their PhDs in five consecutive years by discipline and ethnic group.

Because of the methods that are used to collect the data, the number presented in the tables below for the five-year cohort running average cannot be added among successive cohorts because each cohort contains PhD graduates from the previous cohort. The correct way to interpret these data is to compare the total number of students in each cohort with the next cohort in order to measure trends in the increasing production of PhD students for a given ethnic group.

Tables 1 and 2, as they appear in the text of the proposal, are separated for Hispanic Ph.D. recipients that were PR-LSAMP alliance students, ordered in five-year cohorts, and compares them to the total number of degrees conferred for five-year cohorts of all Hispanics that received their PhD in the Nation.

**Table 1 - US Hispanic PhD Recipients by Institution of Origin of their BS Degree -
Science Fields¹**

Institution	2000-05	2001-06	2002-07	2003-08	2004-09
PR-LSAMP Institutions	302	340	344	367	413
Total US	1784	1845	2025	1555	2481

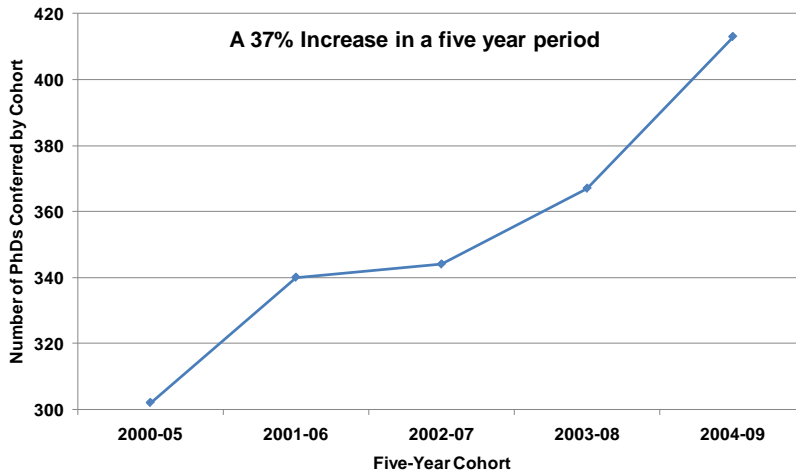
**Table 2 - US Hispanic PhD Recipients by Institution of Origin of their BS Degree -
Engineering Fields¹**

Institution	2000-05	2001-06	2002-07	2003-08	2004-09
PR-LSAMP Institutions	71	80	98	105	119
Total US	425	416	487	511	579

The best way to interpret these data is plotting the number of students receiving their Ph.D. in each cohort as a function of time.

Graph 1

Increase in the Number of PhDs Conferred in the Natural Sciences to PR-LSAMP Students by Five Year Cohort Numbers as a Function of Time

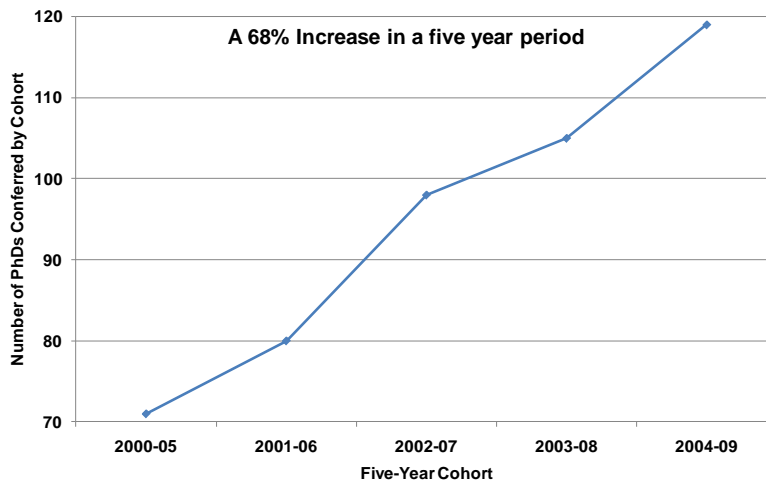


Graph 1 illustrates that the PR-LSAMP graduates excel in degrees conferred among Hispanics in the Natural Sciences, going from 302 degrees in 2000-05 cohort to 413 in the 2004-09 cohort, the last published data from NORC.

This represents a 37% increase in degrees awarded to former PR-LSAMP students in a period of five years. Furthermore, PR-LSAMP students received 17% of all PhDs granted in Natural Sciences to Hispanics in the Nation for the cohort of 2004-09.

Graph 2

Increase in the Number of PhDs Conferred in Engineering to PR-LSAMP Students by Five Year Cohort Numbers as a Function of Time



Graph 2 illustrates that the PR-LSAMP graduates excel in degrees conferred among Hispanics in Engineering, going from 71 degrees in 2000-05 cohort to 119 in the 2004-09 cohort, the last published data from NORC.

This represents a 68% increase in degrees awarded to former PR-LSAMP students in a period of five years. Furthermore, PR-LSAMP students received 20% of all PhDs in Engineering granted to Hispanics in the Nation for the cohort of 2004-09.

Baccalaureate Graduates that Continue Graduate Studies

The PR-LSAMP program has made a significant contribution to the NSF goal of a diversifying the STEM workforce. It has increased the number of STEM PhD granted to Hispanics from PR-LSAMP Institutions in Natural Sciences from 302 for cohort 2000-05 to 413 for cohort 2004-09, a 37% increase; and the number of STEM PhD granted to Hispanic in Engineering from PR-LSAMP Institutions from 71 for cohort 2000-05 to 119 for cohort 2004-09, a 68% increase.

Table 3 shows the leading U.S. Baccalaureate Institutions of U.S. Hispanic Ph.D.'s in the Natural Sciences for the 2004-2009 cohort, and Table 4 for the engineering fields.

**Table 3
Top 25 Baccalaureate Institutions of U.S. Hispanics PhDs (US Citizens Only)
Natural Sciences 2004-09**

Baccalaureate Origin Institution	Degrees Awarded	PR-LSAMP INSTITUTIONS
University of Puerto Rico-Mayaguez	146	UPR-MAYAGUEZ = 146
University of Puerto Rico-Rio Piedras Campus	145	UPR-RIO PIEDRAS = 145
University of California-Los Angeles	49	UPR-HUMACAO = 41
University of California-Berkeley	47	UPR-CAYEY = 29
University of Puerto Rico-Humacao	41	UPR-MEDICAL SC. = 18
The University of Texas at Austin	40	PUCPR = 16
University of Florida	40	IAU = 12
University of California-Davis	38	UPR-AGUADILLA = 6
University of Arizona	35	
New Mexico State University-Main Campus	34	
The University of Texas at El Paso	32	
Cornell University	31	
University of Miami	31	
Texas A & M University	30	
Massachusetts Institute of Technology	29	
University of California-Irvine	29	
University of Puerto Rico at Cayey	29	
Harvard University	28	
University of California-San Diego	28	
Florida International University	27	
Rutgers University-New Brunswick	27	
University of California-Santa Cruz	26	
University of New Mexico-Main Campus	25	
The University of Texas at San Antonio	24	
Florida State University	18	
TOTAL TOP 25 INSTITUTIONS	1029	
TOTAL RESEARCH DOCTORATES IN SCIENCE	2481	

Other institutions in Puerto Rico with BS graduates that went on to receive a PhD in the Natural Sciences during this period of time were: UPR Medical Sciences Campus (18); Pontifical Catholic University (16), Inter American University (12), and UPR-Aguadilla (6). In summary, from the top 25 of Hispanic doctorate recipients, institutions in Puerto Rico accounted for 38% of the baccalaureate origins of the Hispanic PhDs in the Natural Sciences, and 17% of all institutions.

Table 4
Top 25 Baccalaureate Institutions of U.S. Hispanics PhDs (US Citizens Only)
Engineering 2004-09

Baccalaureate Origin Institution	Degrees Awarded
University of Puerto Rico-Mayaguez	113
University of Florida	21
Massachusetts Institute of Technology	17
University of California-Berkeley	17
The University of Texas at El Paso	16
Florida International University	12
Georgia Institute of Technology-Main Campus	12
The University of Texas at Austin	12
Texas A & M University	11
University of California-San Diego	10
New Mexico State University-Main Campus	9
University of California-Davis	8
Cornell University	7
Rutgers University-New Brunswick	7
University of Illinois at Urbana-Champaign	7
University of Miami	7
Johns Hopkins University	6
Purdue University-Main Campus	6
University of California-Los Angeles	6
University of Puerto Rico-Rio Piedras Campus	6
Rensselaer Polytechnic Institute	5
University of Arizona	5
University of Maryland-College Park	5
University of Michigan-Ann Arbor	5
University of New Mexico-Main Campus	5
TOTAL TOP 25 INSTITUTIONS	335
TOTAL RESEARCH DOCTORATES IN ENGINEERING	579

Source: NSF/NIH/ USED/NEH/USDA/NASA, Survey of Earned
 Doctorates NORC

At the local level, the University of Puerto Rico's three graduate institutions, UPR-Rio Piedras, UPR-Mayaguez, and UPR-Medical Sciences awarded 49 PhD degrees in science and engineering in 2010. Table 5 presents the number of PhD degrees awarded by these three campuses in 2009-10 for science and engineering.

Table 5
Number of PhD Degrees Conferred during the academic year 2009-10 by UPR System

Institution	Number of PhD Degrees	Science and Engineering
UPR-Rio Piedras	25	Chemistry (11) Biology (3) Chemical Physics (10) Mathematics (1)
UPR-Medical Sciences	7	Microbiology (1) Anatomy (1) Biochemistry (3) Physiology(2)
UPR-Mayaguez	17	Marine Sciences (6) Engineering (10) Applied Chemistry (6) Computer Science (2)
Total	49	

Table 6
Number of PhD Degrees Conferred by the University of Puerto Rico
in Science and Engineering Fields from 1990 to 2010

Year degree was conferred	Number of PhD Degrees Conferred
1990	14
1991	9
1992	9
1993	17
1994	12
1995	10
1996	17
1997	16
1998	31
1999	22
2000	25
2001	36
2002	32
2003	30
2004	23
2005	31
2006	48
2007	29
2008	51
2009	52
2010	49
TOTAL	514