



The Demographics of Georgia Tech Doctoral Program Attrition

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INTRODUCTION

Undergraduate attrition rate is a common statistic often released by universities that informs the undergraduate application process. In general, it serves as an indicator of student quality of life and a measure of student success. Graduate attrition, however, is not widely publicized, or even studied. This analysis attempts to begin understanding graduate attrition at Georgia Tech, by defining and identifying it. It is hoped that this information can be used as a tool to help guide diversity and inclusion efforts in the campus graduate student community.

What is attrition for graduate studies?

In this study, we define attrition as a student leaving their degree program before the completion of the degree for which they entered. *For example:* A student who entered to complete a Ph.D. but left with a masters degree would be considered attrition, whereas a student who entered for a masters degree and completed it would not.

What difference in attrition rates is significant?

For the purposes of this study, we consider a difference of 10% or greater in completion rate within a demographic type (e.g. race, gender, etc) significant. Significant differences are indicated below in bold.

METHODS

Approval for access to student data was granted through Georgia Tech IRB and the registrar. Anonymized data was provided by Georgia Tech IRP for students entering Georgia Tech graduate studies between 2002-2012. Data collected included entry semester, final semester, number of semesters attended, initial degree program and department, self-identified race and gender, country of citizenship, and degree granted.

Algorithms (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	5 of 12	42%	Men 17 of 26 65%
Asian	21 of 30	70%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	19 of 35	54%	Women Sample size too small Men Sample size too small

Aerospace (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	31 of 83	37%	Men 172 of 455 38%
Asian	90 of 210	43%	Women 15 of 39 38% Men 75 of 171 44%
Black or African-American	5 of 15	33%	Women Sample size too small Men Sample size too small
Hispanic or Latino	12 of 31	39%	Women Sample size too small Men Sample size too small
White	92 of 273	34%	Women 12 of 34 35% Men 80 of 239 33%

Chemical Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	98 of 155	63%	Men 196 of 290 68%
Asian	152 of 220	69%	Women 48 of 81 59% Men 104 of 139 75%
Black or African-American	21 of 37	57%	Women 11 of 19 58% Men 10 of 18 56%
Hispanic or Latino	15 of 22	68%	Women 8 of 10 80% Men 7 of 12 58%
White	102 of 161	63%	Women 30 of 43 70% Men 72 of 118 61%

Civil Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	41 of 94	44%	Men 132 of 295 45%
Asian	90 of 200	45%	Women 18 of 41 44% Men 72 of 159 45%
Black or African-American	7 of 12	58%	Women Sample size too small Men Sample size too small
Hispanic or Latino	11 of 27	41%	Women Sample size too small Men Sample size too small
White	63 of 147	43%	Women 17 of 42 40% Men 46 of 105 44%

Computer Science (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	34 of 65	52%	Men 210 of 378 56%
Asian	150 of 265	56%	Women 21 of 41 51% Men 130 of 225 58%
Black or African-American	5 of 13	38%	Women Sample size too small Men Sample size too small
Hispanic or Latino	5 of 12	42%	Women Sample size too small Men Sample size too small
White	77 of 139	55%	Women 9 of 18 50% Men 68 of 121 56%

Physics(2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	20 of 52	38%	Men 139 of 301 46%
Asian	74 of 159	47%	Women 12 of 29 41% Men 62 of 130 48%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	8 of 16	50%	Women Sample size too small Men Sample size too small
White	72 of 164	44%	Women 7 of 21 33% Men 65 of 143 45%

Polymer Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	9 of 13	69%	Men 25 of 28 89%
Asian	22 of 26	85%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	11 of 13	85%	Women Sample size too small Men Sample size too small

Applied Biology (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	25 of 59	42%	Men 22 of 37 59%
Asian	16 of 32	50%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	27 of 57	47%	Women 15 of 32 47% Men 12 of 25 48%

Applied Math (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	10 of 10	100%	Men 13 of 30 43%
Asian	Sample size too small	Women Sample size too small Men Sample size too small	
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	92 of 273	34%	Women Sample size too small Men Sample size too small

Earth Science (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	43 of 83	52%	Men 47 of 88 53%
Asian	50 of 96	52%	Women 22 of 41 54% Men 28 of 55 51%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	10 of 20	50%	Women Sample size too small Men Sample size too small
White	27 of 52	52%	Women 14 of 31 45% Men 13 of 21 62%

Electrical Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	57 of 132	43%	Men 552 of 1069 52%
Asian	369 of 662	56%	Women 37 of 77 48% Men 332 of 585 57%
Black or African-American	24 of 54	44%	Women 6 of 17 35% Men 18 of 37 49%
Hispanic or Latino	20 of 49	41%	Women Sample size too small Men Sample size too small
White	180 of 402	45%	Women 13 of 30 43% Men 167 of 372 45%

Environmental Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	26 of 62	42%	Men 45 of 84 54%
Asian	40 of 75	53%	Women 10 of 24 42% Men 30 of 51 59%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	25 of 56	45%	Women 13 of 32 41% Men 12 of 24 50%

Psychology (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	51 of 123	41%	Men 40 of 102 39%
Asian	11 of 32	34%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	72 of 177	41%	Women 39 of 92 42% Men 33 of 85 39%

Public Policy (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	34 of 56	61%	Men 33 of 58 57%
Asian	25 of 40	62%	Women 14 of 22 64% Men 11 of 18 61%
Black or African-American	11 of 19	58%	Women Sample size too small Men Sample size too small
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	23 of 42	55%	Women 11 of 18 61% Men 12 of 24 50%

Applied Physiology (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	9 of 13	69%	Men 10 of 13 77%
Asian	Sample size too small	Women Sample size too small Men Sample size too small	
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	13 of 16	81%	Women Sample size too small Men Sample size too small

Architecture (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	27 of 45	60%	Men 38 of 67 57%
Asian	36 of 57	63%	Women 12 of 21 57% Men 24 of 36 67%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	23 of 42	55%	Women 13 of 20 65% Men 10 of 22 45%

Human Computer Interaction (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	14 of 18	78%	Men 13 of 21 62%
Asian	8 of 11	73%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	17 of 24	71%	Women 8 of 10 80% Men 9 of 14 64%

History of Technology (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	8 of 24	33%	Men 7 of 32 22%
Asian	6 of 14	43%	Women Sample size too small Men Sample size too small
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	6 of 35	17%	Women 3 of 12 25% Men 3 of 23 13%

Industrial Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	53 of 125	42.4%	Men 130 of 300 46%
Asian	99 of 208	48%	Women 32 of 69 46% Men 68 of 140 49%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	12 of 33	36%	Women Sample size too small Men Sample size too small
White	70 of 164	43%	Women 19 of 49 39% Men 51 of 115 44%

Textile Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	16 of 21	76%	Men 31 of 40 78%
Asian	42 of 54	78%	Women 13 of 16 81% Men 29 of 38 76%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	Sample size too small	Women Sample size too small Men Sample size too small	

Caveats to data:
1) Students who switched departments for their degree are counted among the department in which they began their graduate studies
2) Only demographics with more than 10 students were analyzed.

Bioengineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	75 of 117	75%	Men 105 of 169 62%
Asian	76 of 121	63%	Women 32 of 49 65% Men 44 of 72 61%
Black or African-American	10 of 23	43%	Women Sample size too small Men Sample size too small
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	84 of 123	68%	Women 33 of 49 67% Men 51 of 74 69%

Biomedical Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	72 of 92	78%	Men 79 of 107 74%
Asian	54 of 67	81%	Women 27 of 36 75% Men 27 of 31 87%
Black or African-American	9 of 12	75%	Women Sample size too small Men Sample size too small
Hispanic or Latino	5 of 10	50%	Women Sample size too small Men Sample size too small
White	80 of 104	77%	Women 37 of 44 84% Men 43 of 60 71%

Management (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	27 of 39	69%	Men 36 of 65 55%
Asian	36 of 65	67%	Women 19 of 24 79% Men 17 of 30 57%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	23 of 43	53%	Women 6 of 13 46% Men 17 of 30 57%

Material Science and Engineering (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	26 of 44	59%	Men 125 of 180 69%
Asian	71 of 98	72%	Women 10 of 17 59% Men 61 of 81 75%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	70 of 110	64%	Women 13 of 24 54% Men 57 of 86 66%

Mathematics (2002-2012)			
	# Ph.D.s	Comp.	# Ph.D.s Comp.
Women	10 of 27	37%	Men 43 of 86 50%
Asian	26 of 55	47%	Women 5 of 15 33% Men 21 of 40 52%
Black or African-American	Sample size too small	Women Sample size too small Men Sample size too small	
Hispanic or Latino	Sample size too small	Women Sample size too small Men Sample size too small	
White	21 of 48	44%	Women 5 of 12 42% Men 16 of 36 44%

CONCLUSIONS

- Graduate attrition varies greatly among campus departments. Some departments have fairly similar attrition for all demographics while others show higher attrition for some underrepresented minority groups
- Limitations on tend to lead to unavailable data for some minority groups in smaller departments

FURTHER WORK

- An evaluation of ongoing diversity programs for departments with relatively equal attrition rates among all demographics
- Understanding problem semesters for students who withdraw from graduate studies among departments
- Survey of reasons for graduate attrition and a study of withdrawn student undergraduate preparation for graduate study
- Impact of attrition and graduate student mental health