

Analysis of the
Data Table for the National Research Council's
*A Data-Based Assessment of Research-Doctorate
Programs in the United States*

Tom Ladd
College of Business Administration
The University of Tennessee

Context

- Top 25 Task Force on Graduate Education
- Increase the number of PhDs graduating from UT
- Analyses address Target and Aspiration Schools

Target Group

Georgia

Clemson

Purdue

Texas A&M

Minnesota

Rutgers

Indiana

Michigan State

Aspiration Group

Berkeley

UCLA

Virginia

Michigan

North Carolina

Illinois

Wisconsin

Cal.– Davis

Cal.–Santa Barbara

Washington

Penn State

Florida

Texas

Ohio State

Maryland

Pittsburgh

Variables of Interest

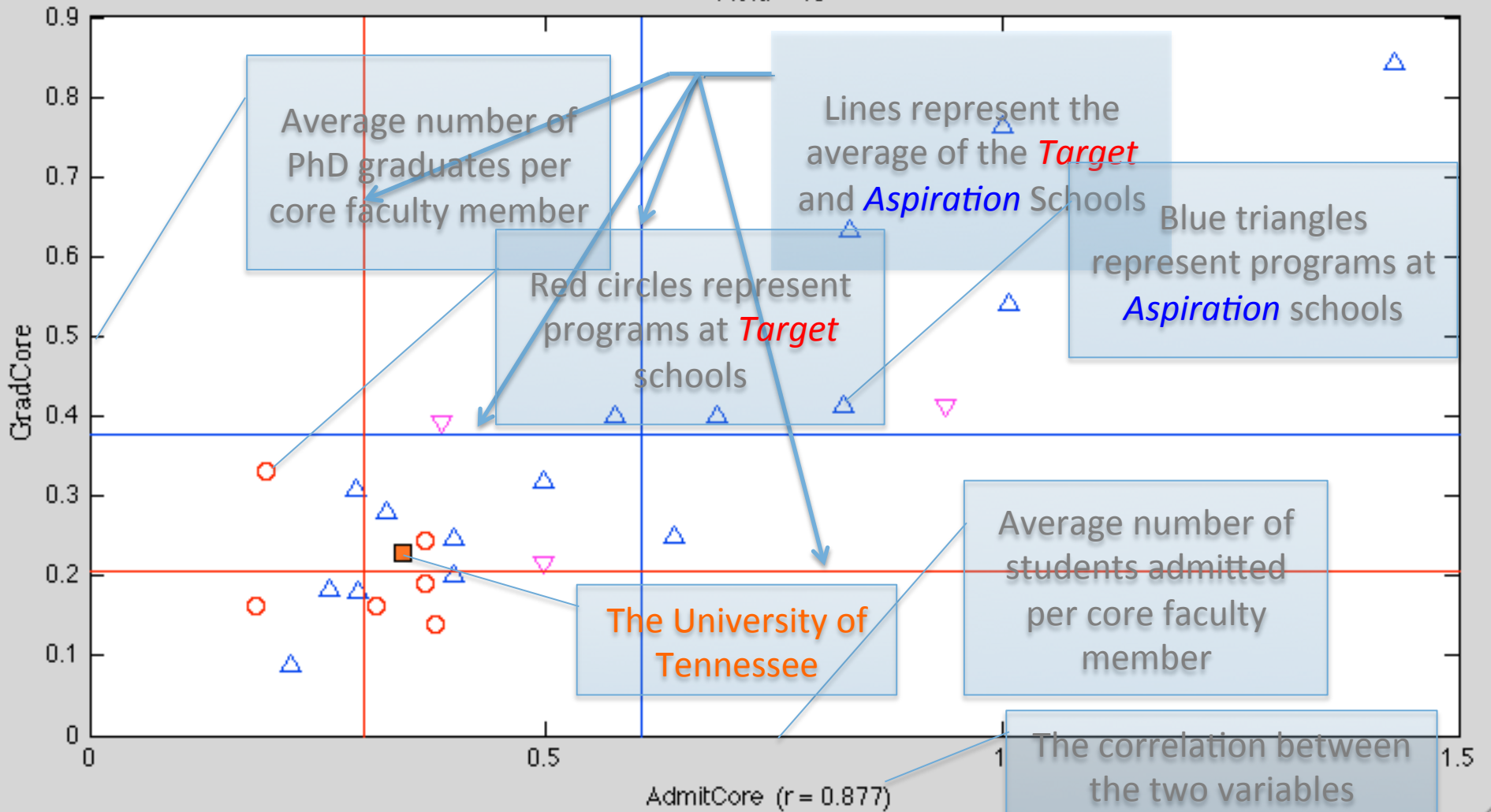
- Students in the Program
- Average number of program admissions
- Average number of program graduates
- Median time to completion
- Research assistantship percentage
- Teaching assistantship percentage
- Students with academic plans percentage
- Average GRE-Q Score
- Program completion percentage
- *Admissions per core faculty member*
- *Graduations per core faculty member*
- Number of Core Faculty
- Annual publications per faculty
- Annual citations per publication
- Percent of faculty with grant support
- *Citations per core faculty member*
- R-Rank of the program
- S-Rank of the program
- Rank of the program's research
- Rank of the program's student support
- Rank of the program's diversity

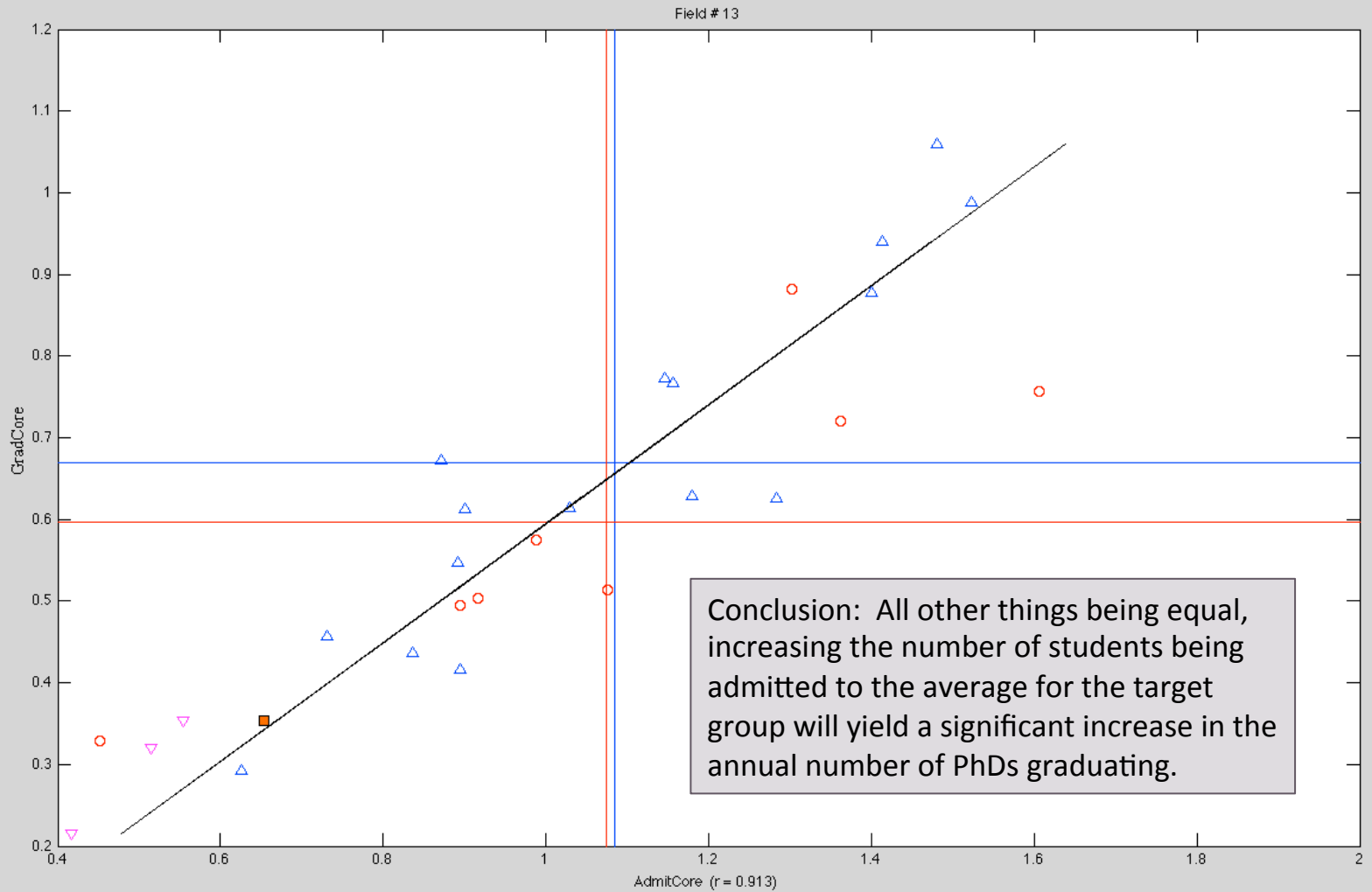
Analysis Conditions / Limitations

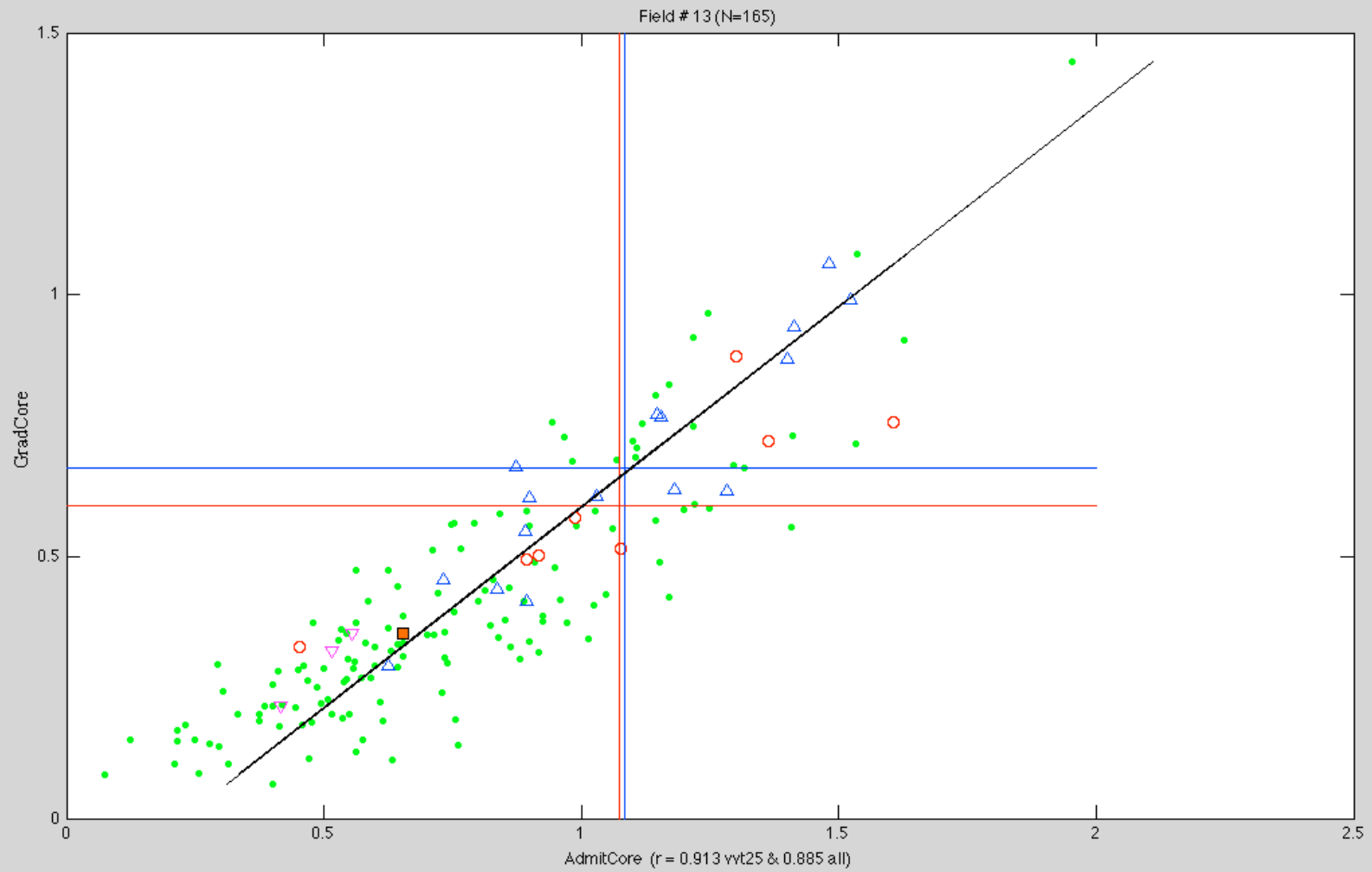
- Data is from 2006 – change may have occurred
- Analyses address specific programs (or fields)
- Not all UT programs are represented
 - Nuclear Engineering, Law, Business Administration, Social Work...
- Multiple programs combined by field

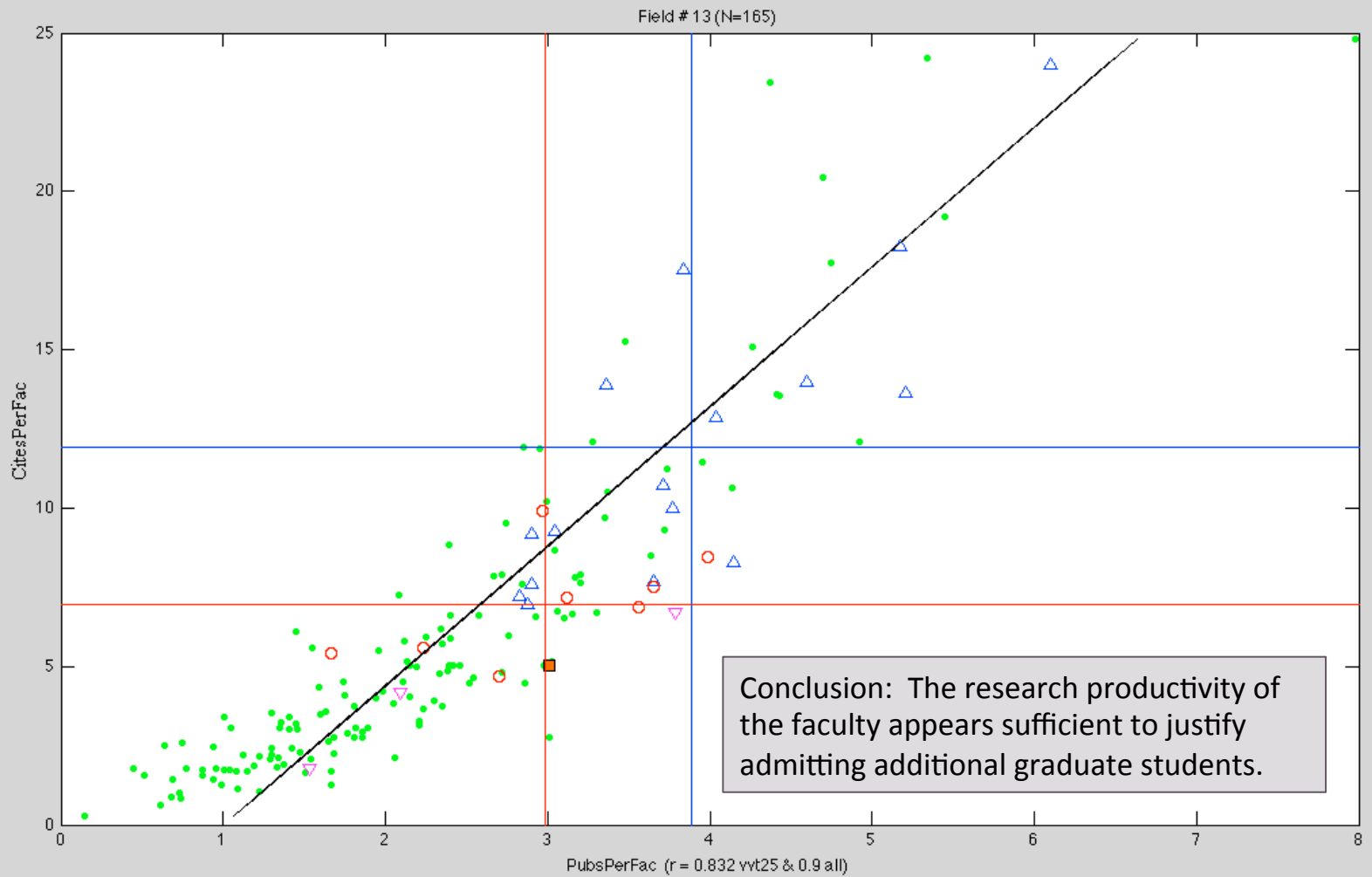
“A picture is worth a thousand words/numbers”

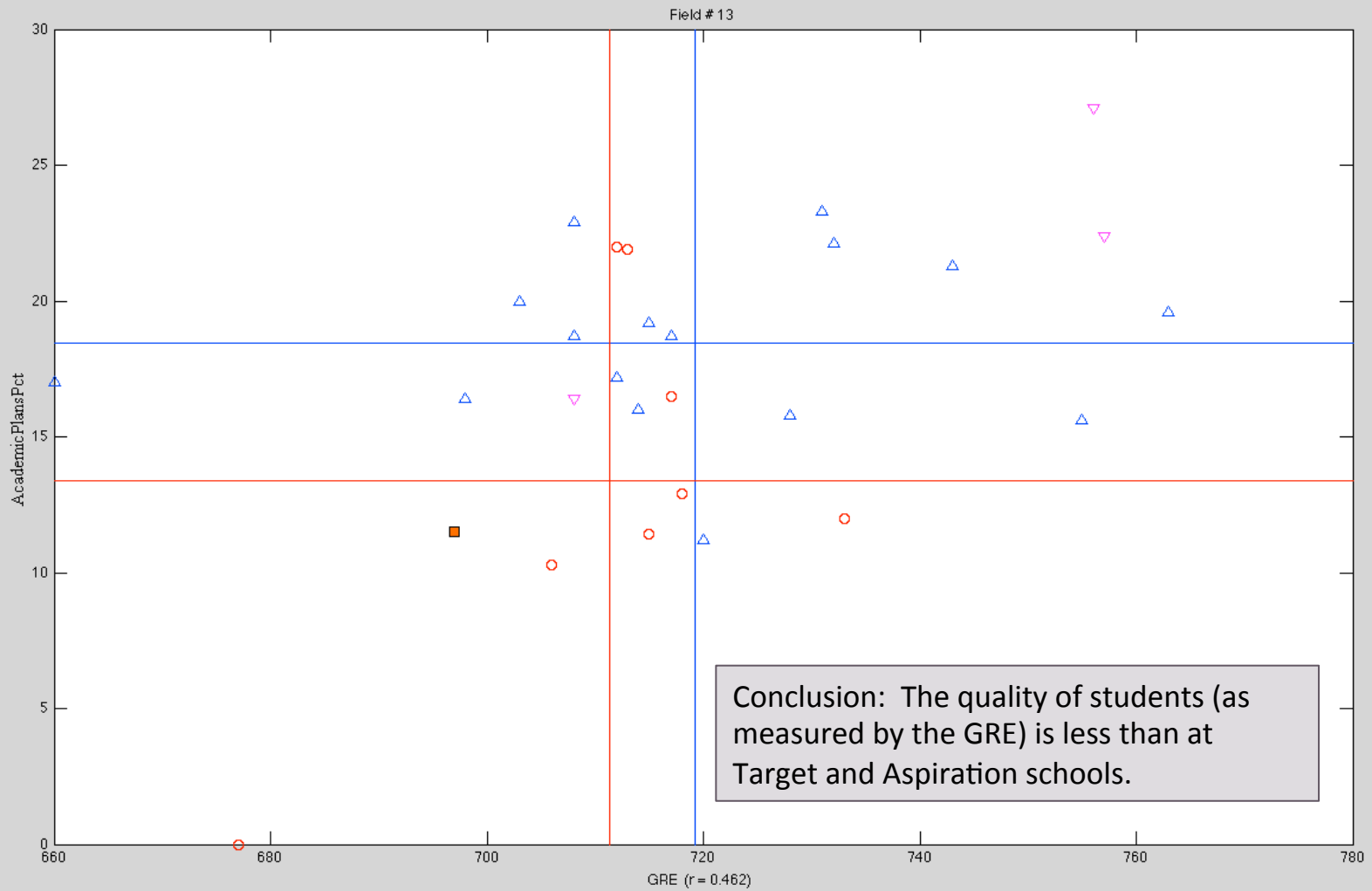
Field # 40



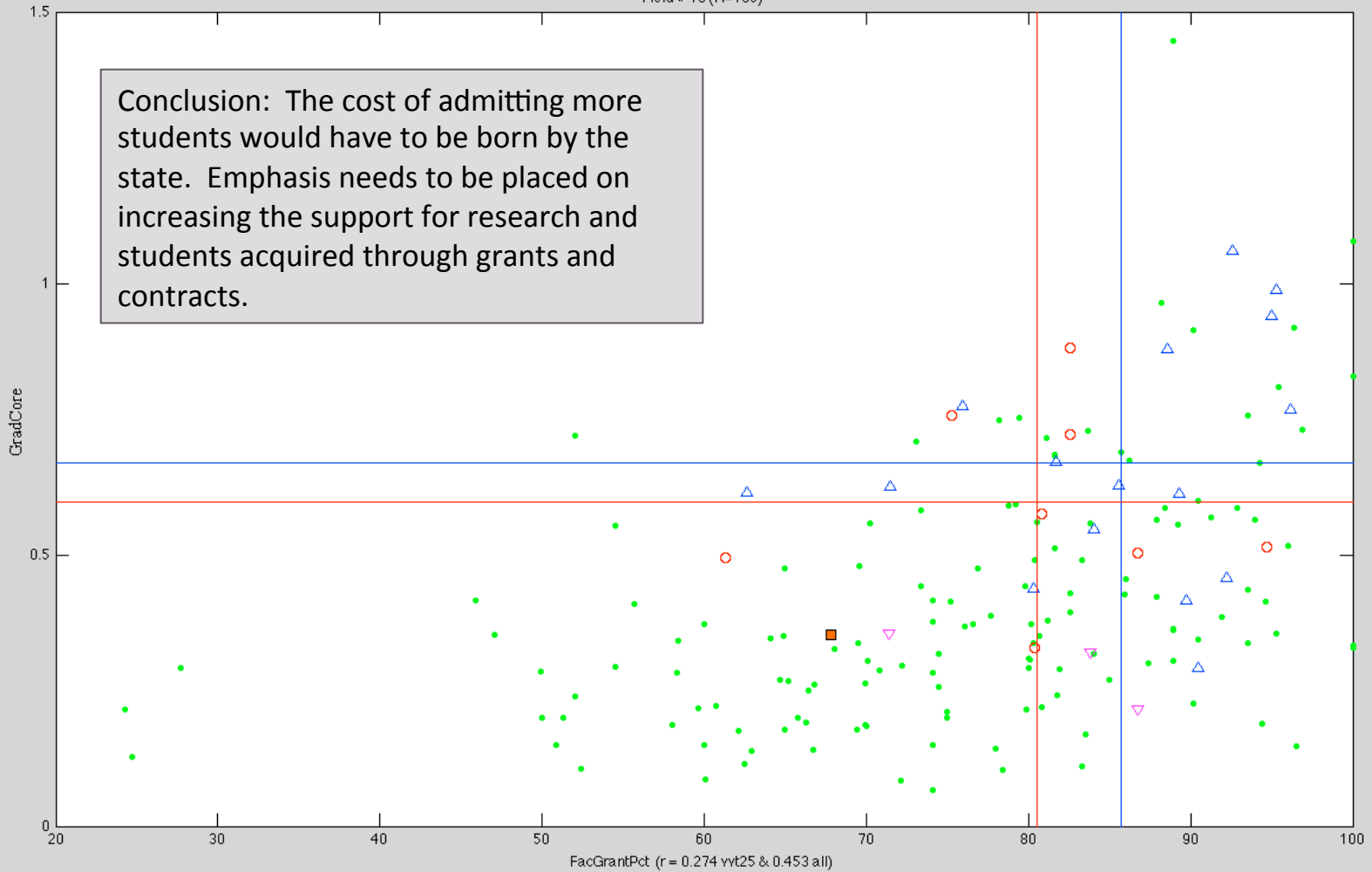








Field # 13 (N=165)



	Faculty Grant Percentage			GRE-Q		
	Aspiration	Target	UT	Aspiration	Target	UT
Animal Sciences	78	78	48	647	631	490
Anthropology	43	45	37	641	611	592
Biochem, Biophysics, and Structural Biology	90	77	71	735	700	727
Biomedical Engineering and Bioengineering	83	81	97	760	753	790
Chemical Engineering	90	91	82	771	762	742
Chemistry	86	81	68	719	711	697
Civil and Environmental Engineering	87	86	82	768	759	764
Communication	25	31	25	629	637	567
Computer Sciences	82	66	77	788	764	774
Earth Sciences	86	77	66	719	697	676
Ecology and Evolutionary Biology	79	81	72	712	683	666
Economics	43	39	46	786	765	745
Electrical and Computer Engineering	84	78	78	791	785	793
English Language and Literature	9	12	21	668	648	637
Food Science	87	80	76	730	670	620
Forestry and Forest Sciences	85	85	91	669	673	634
Geography	65	60	67	664	657	596
History	19	19	29	632	600	585
Kinesiology	69	52	32	649	646	646
Materials Science and Engineering	89	84	74	760	753	795
Mathematics	68	65	48	791	790	777
Mechanical Engineering	88	80	81	773	772	766
Microbiology	89	77	81	695	667	746
Nursing	64	85	23	530	581	515
Nutrition	79	79	52	697	668	753
Ops Rsch, Sys and Ind Engineering	76	66	65	781	776	770
Philosophy	10	12	0	659	653	582
Physics	88	85	79	781	763	760
Plant Sciences	86	83	88	680	669	616
Political Science	28	27	16	688	659	610
Psychology	69	60	35	703	676	647
Sociology	48	46	24	664	615	505
Spanish and Portuguese Language and Lit	13	9	0	529	511	511
Statistics and Probability	69	55	0	791	784	779

The Ranking / Composite Variables

R-Ranking & S-Ranking

Publications per Allocated Faculty
Citations per Publication
Percent Faculty with Grants
Percent Faculty Interdisciplinary
Percent Non-Asian Minority Faculty
Percent Female Faculty
Awards per Allocated Faculty
Average GRE
Percent 1st yr. Students with Full Support
Percent 1st yr. Students with External Funding
Percent Non-Asian Minority Students
Percent Female Students
Percent International Students
Average PhDs 2002 to 2006
Percent Completing within 6 Years
Time to Degree Full and Part Time
Percent Students with Academic Plans
Student Work Space
Health Insurance
Number of Student Activities Offered

Research

Publications per Allocated Faculty
Citations per Publication
Percent Faculty with Grants
Awards per Allocated Faculty

Student Support

Percent 1st yr. Students w/ Full Support
Percent Completing within 6 Years
Time to Degree Full and Part Time
Percent Students with Academic Plans
Program Collects Outcomes Data

Diversity

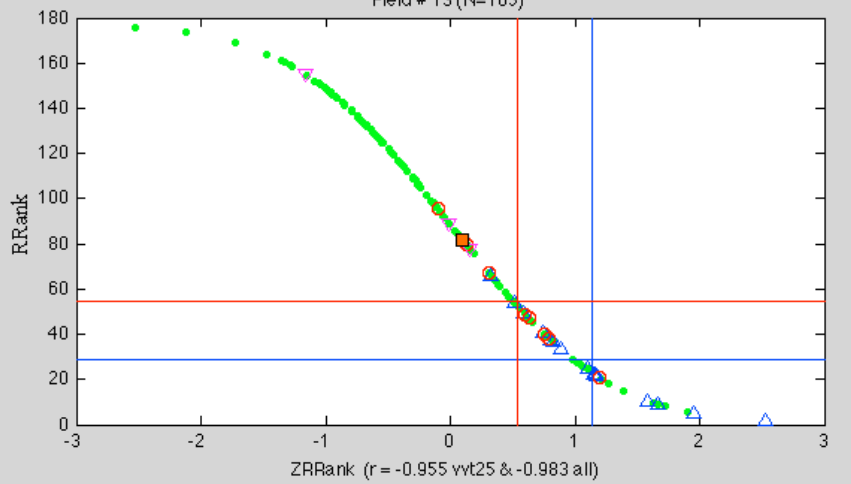
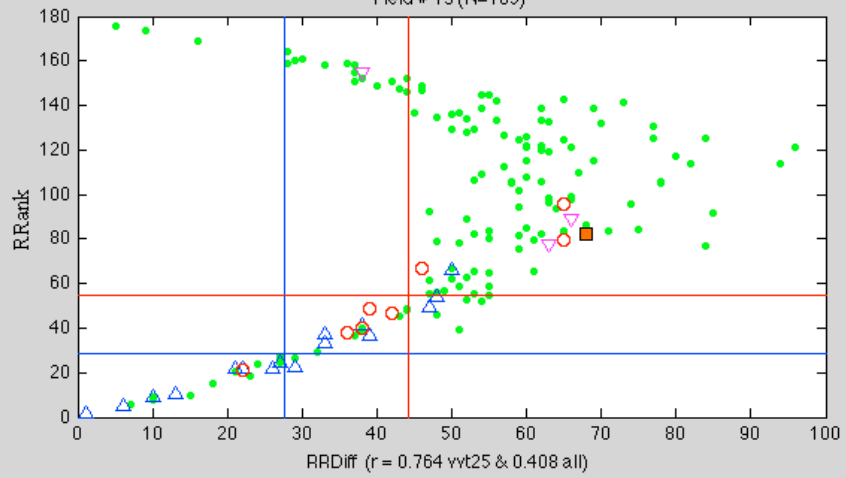
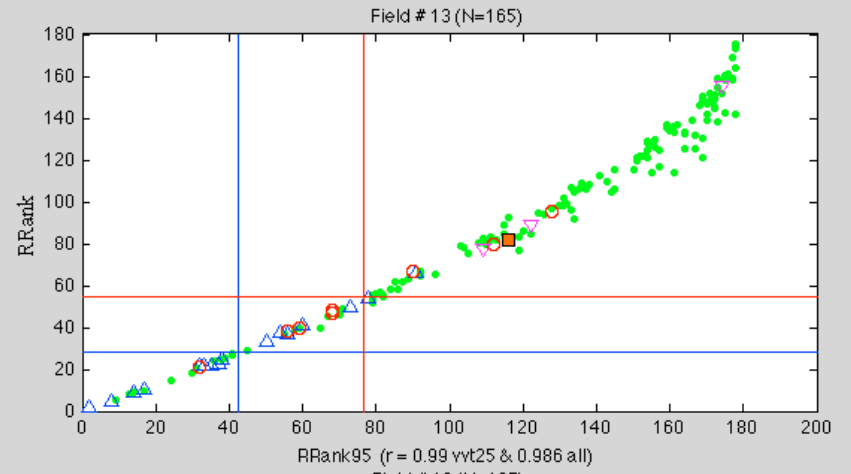
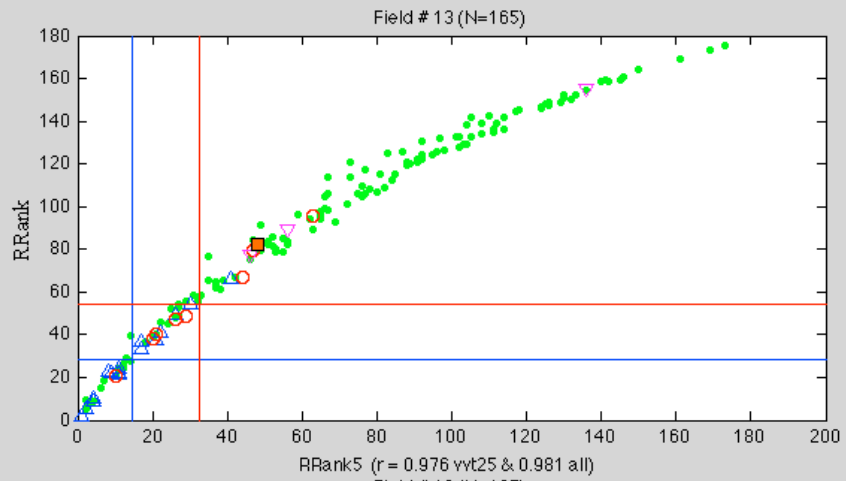
Percent Non-Asian Minority Faculty
Percent Female Faculty
Percent Non-Asian Minority Students
Percent Female Students
Percent International Students

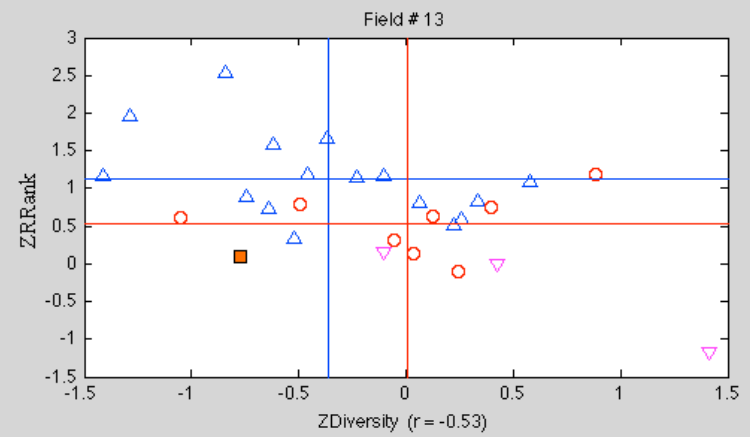
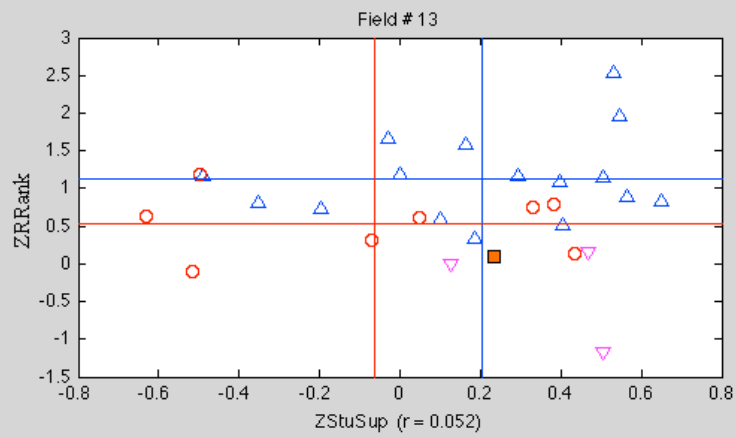
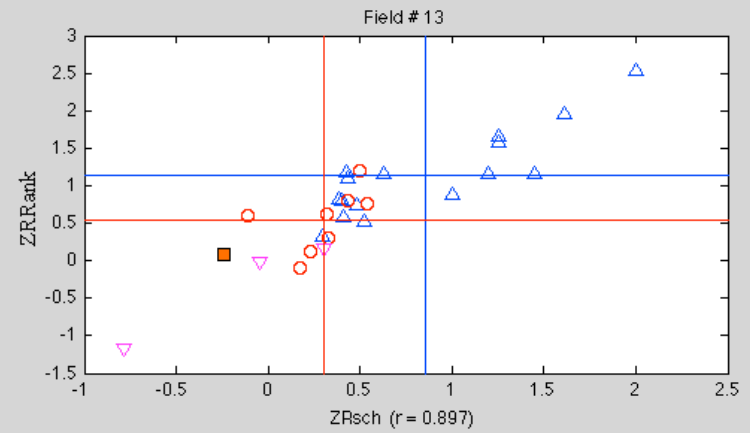
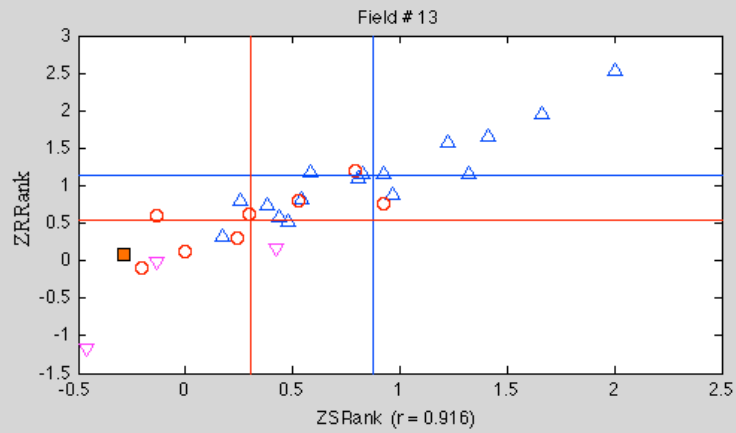
Troubling Issues

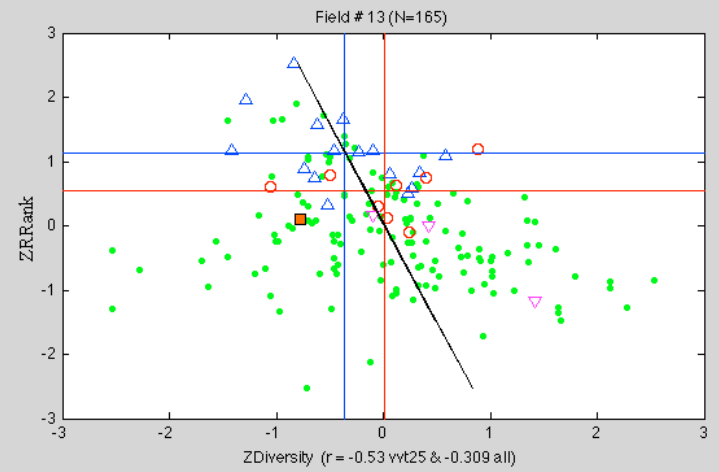
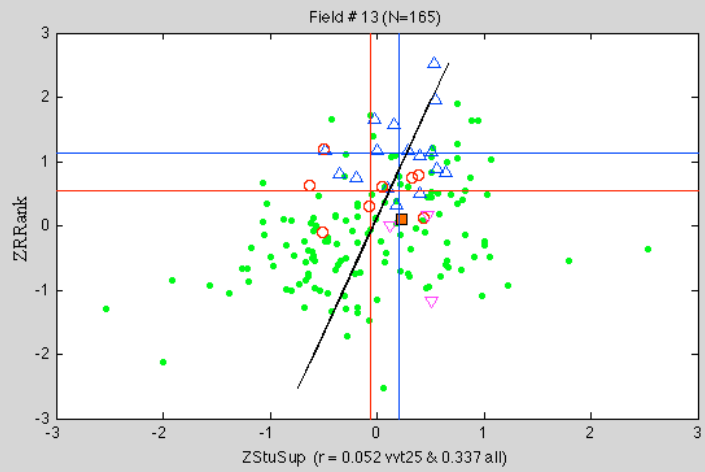
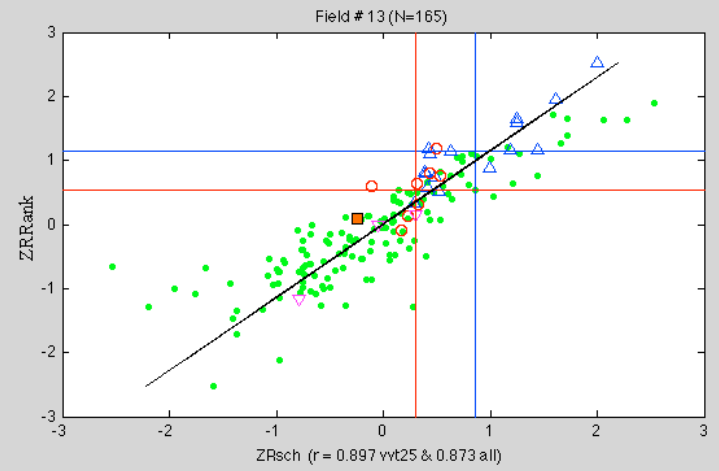
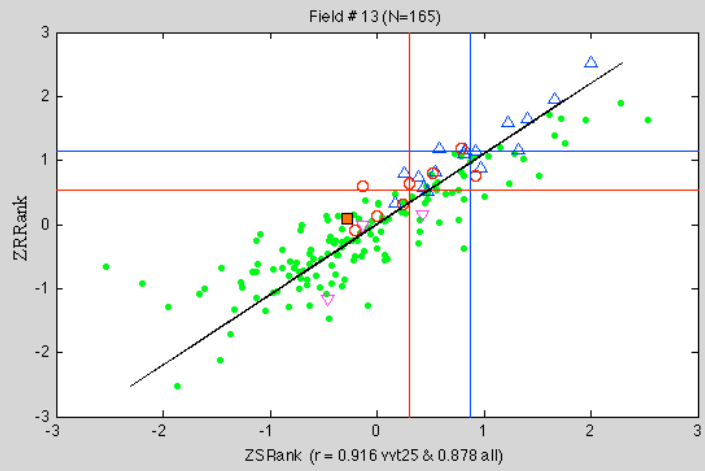
Description	Variable	IO-PSYC @ UT				PSYC @ UT				PSYC @ TEXAS			
		Program	Standardized	Regression	Product of	Program	Standardized	Regression	Product of	Program	Standardized	Regression	Product of
		Value*	Program Value	Coefficient [†]	Col 4 X Col 5	Value*	Program Value	Coefficient [†]	Col 4 X Col 5	Value*	Program Value	Coefficient [†]	Col 4 X Col 5
Publications per Allocated Faculty	V1	0.218	-1.271	0.113	-0.144	0.586	-0.419	0.113	-0.047	1.368	0.920	0.090	0.083
Cites per Publication	V2	1.372	-0.702	0.139	-0.097	2.133	-0.056	0.138	-0.008	3.140	0.940	0.110	0.104
Percent Faculty with Grants	V3	0.500	1.180	0.123	0.145	0.196	-1.618	0.122	-0.197	0.766	1.154	0.103	0.119
Percent Faculty Interdisciplinary	V4	0.765	2.884	0.022	0.065	0.618	2.046	0.020	0.041	0.064	-0.701	-0.028	0.020
Percent Non-Asian Minority Faculty	V5	0.000	-1.179	-0.022	0.025	0.033	-0.383	-0.018	0.007	0.068	-0.025	0.042	-0.001
Percent Female Faculty	V6	0.250	-1.134	-0.002	0.002	0.324	-0.377	-0.001	0.000	0.250	-1.233	-0.027	0.034
Awards per Allocated Faculty	V7	0.195	-0.312	0.113	-0.035	0.139	-0.363	0.113	-0.041	0.236	-0.204	0.105	-0.021
Average GRE	V8	647.273	-0.509	0.093	-0.047	646.719	-0.310	0.090	-0.028	692.766	0.672	0.049	0.033
Percent 1st yr. Students with Full Support	V9	1.000	0.380	0.018	0.007	0.952	0.773	0.014	0.011	1.000	0.478	0.044	0.021
Percent 1st yr. Students with External Funding	V10	0.000	-0.418	-0.018	0.007	0.048	-0.278	-0.020	0.006	0.053	-0.265	0.007	-0.002
Percent Non-Asian Minority Students	V11	0.000	-1.303	-0.014	0.019	0.076	-0.440	-0.012	0.005	0.061	-0.662	-0.021	0.014
Percent Female Students	V12	0.586	-0.781	0.044	-0.034	0.708	-0.088	0.047	-0.004	0.643	-0.271	0.068	-0.018
Percent International Students	V13	0.069	-0.378	-0.012	0.005	0.069	-0.284	-0.015	0.004	0.131	0.440	0.046	0.020
Average PhDs 2002 to 2006	V14	3.400	-0.980	0.104	-0.102	14.200	1.327	0.107	0.142	15.000	1.062	0.067	0.071
Percent Completing within 6 Years	V15	0.303	-0.015	0.045	-0.001	0.815	1.786	0.045	0.081	0.424	-0.183	0.030	-0.005
Time to Degree Full and Part Time	V16	5.879	0.262	0.008	0.002	5.300	-0.088	0.011	-0.001	5.000	-0.966	0.008	-0.007
Percent Students in Academic Positions	V17	0.313	0.152	0.039	0.006	0.313	0.786	0.043	0.034	0.335	0.706	0.046	0.033
Student Work Space	V18	1.000	1.000	-0.004	-0.004	-1.000	-1.000	-0.004	0.004	1.000	1.000	0.016	0.016
Health Insurance	V19	1.000	1.000	0.022	0.022	1.000	1.000	0.019	0.019	1.000	1.000	0.000	0.000
Number of Student Activities Offered	V20	14.000	-0.664	0.045	-0.030	17.000	0.336	0.048	0.016	18.000	1.224	0.093	0.114

Descriptive Statistics for 3 Fields

	Mean	StdDev	Skewness	Kurtosis	Minimum	Median	Maximum	N
<i>Average of R-Rank05 & R-Rank95 (RRank)</i>	89.585	46.827	-0.137	-1.168	1.5	92.5	175.5	165
5th Percentile of R-Rank (RRank5)	65.158	43.848	0.364	-0.909	1	62	173	165
95th Percentile of R-Rank (RRank95)	114.012	51.370	-0.487	-1.035	2	124	178	165
<i>Difference between the 95th & 5th percentiles for R-Rank (RRDiff)</i>	48.855	18.757	-0.320	-0.088	1	52	96	165
<i>Z-score equivalent of RRank</i>	-0.005	0.858	0.179	-0.065	-2.532	-0.057	2.531	165
<i>Average of R-Rank05 & R-Rank95 (RRank)</i>	64.051	34.963	-0.045	-1.265	2	65	126.5	127
5th Percentile of R-Rank (RRank5)	50.811	34.125	0.240	-1.122	1	50	126	127
95th Percentile of R-Rank (RRank95)	77.291	36.418	-0.291	-1.145	3	78	127	127
<i>Difference between the 95th & 5th percentiles for R-Rank (RRDiff)</i>	26.480	9.584	-0.649	0.700	1	28	53	127
<i>Z-score equivalent of RRank</i>	0.019	0.907	0.171	-0.202	-2.414	-0.015	2.413	127
<i>Average of R-Rank05 & R-Rank95 (RRank)</i>	113.669	60.177	-0.099	-1.166	2	116.25	226	166
5th Percentile of R-Rank (RRank5)	83.151	55.508	0.325	-0.888	1	77.5	217	166
95th Percentile of R-Rank (RRank95)	144.187	66.534	-0.388	-1.100	3	153	235	166
<i>Difference between the 95th & 5th percentiles for R-Rank (RRDiff)</i>	61.036	23.035	-0.204	0.180	2	64	128	166
<i>Z-score equivalent of RRank</i>	0.023	0.879	0.243	0.282	-2.618	-0.025	2.617	166

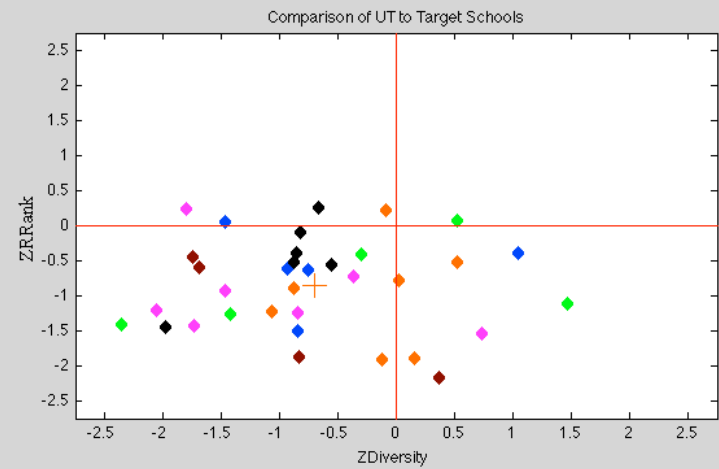
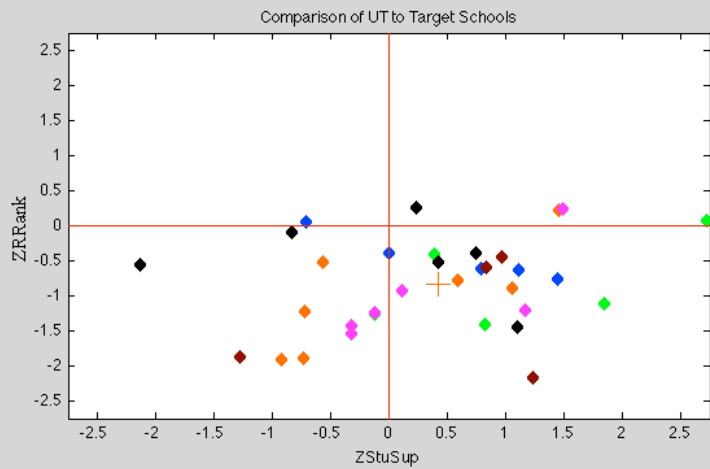
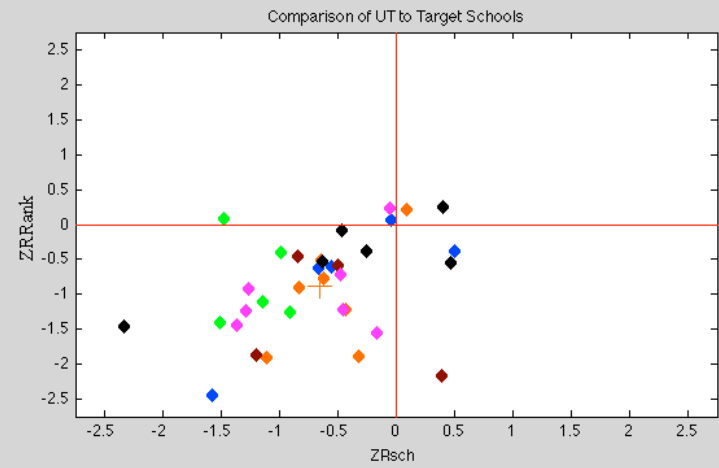
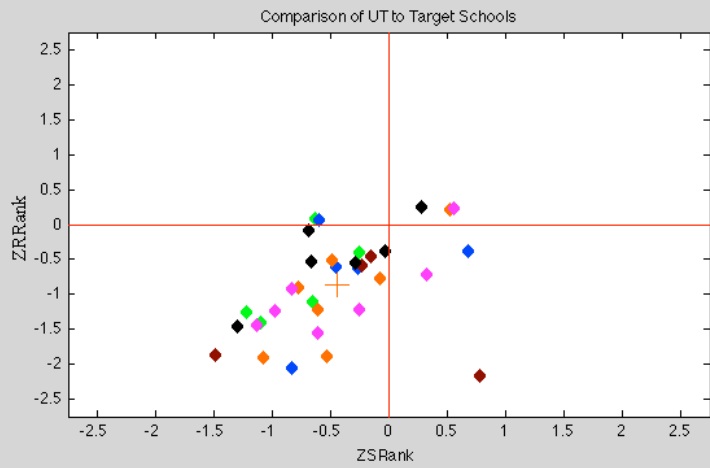






Departmental Comparisons within UT

- For ranking variables, convert to Z-scores by *Field*
- Within *Fields*, standardize the variable (*Mean=0, Standard Deviation=1*)
- Re-center the variable on the *Mean* for a referent group (Target or Aspiration group)
- Compare Fields (departments, programs) to the re-centered norm



Agricultural

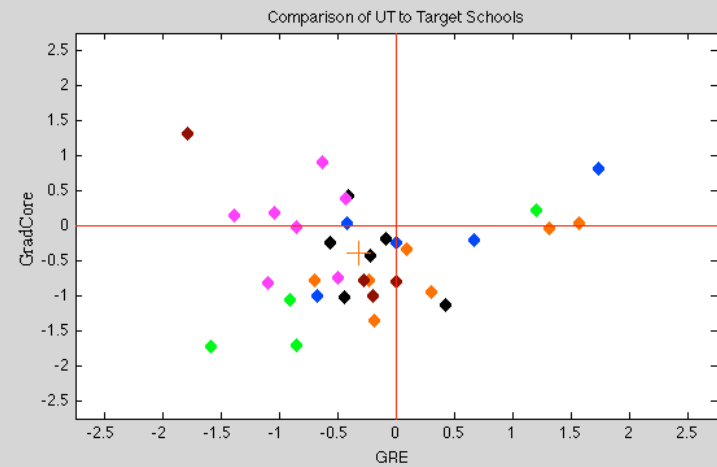
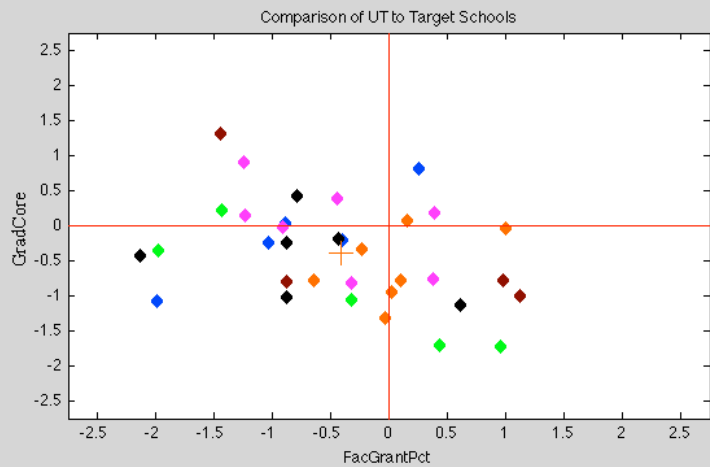
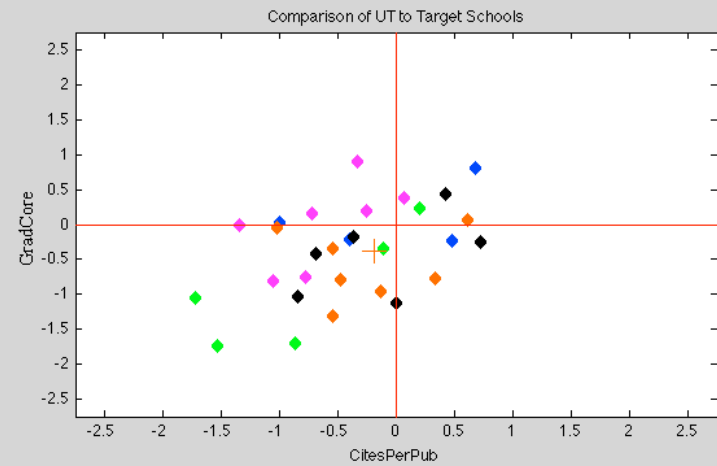
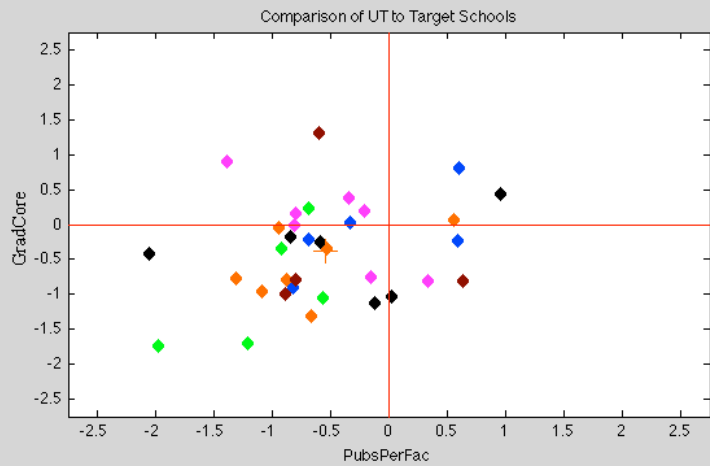
Biological & Health

Engineering

Humanities

Physical & Math

Social and Behavioral



Agricultural

Biological & Health

Engineering

Humanities

Physical & Math

Social and Behavioral