

Tenure Density and Student Population Growth

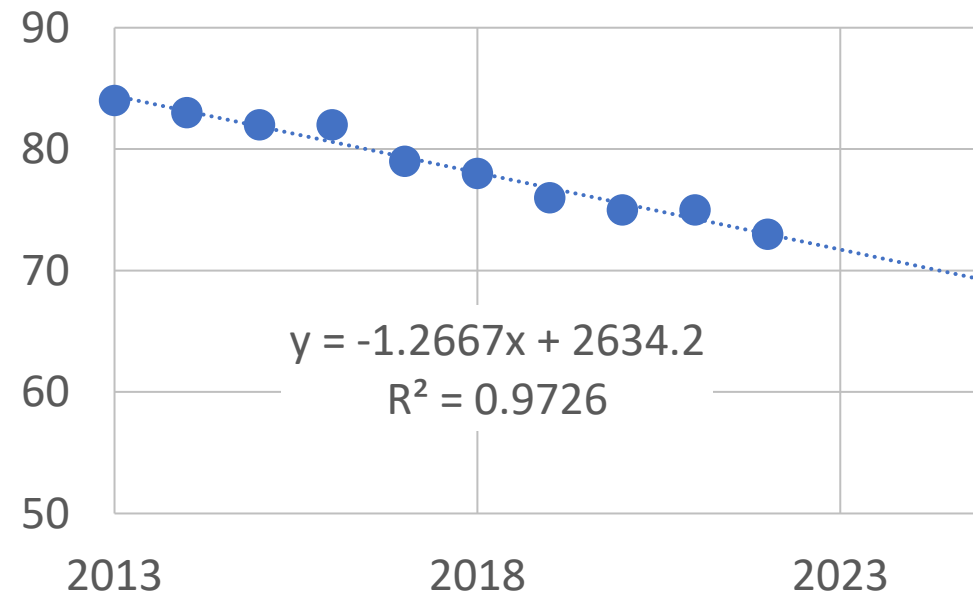
Profs. Martin Mourigal, Abdul-Hamid Zureick, Jonathan Colton

March 28, 2023

The Future? No Tenure Track Professors at GT

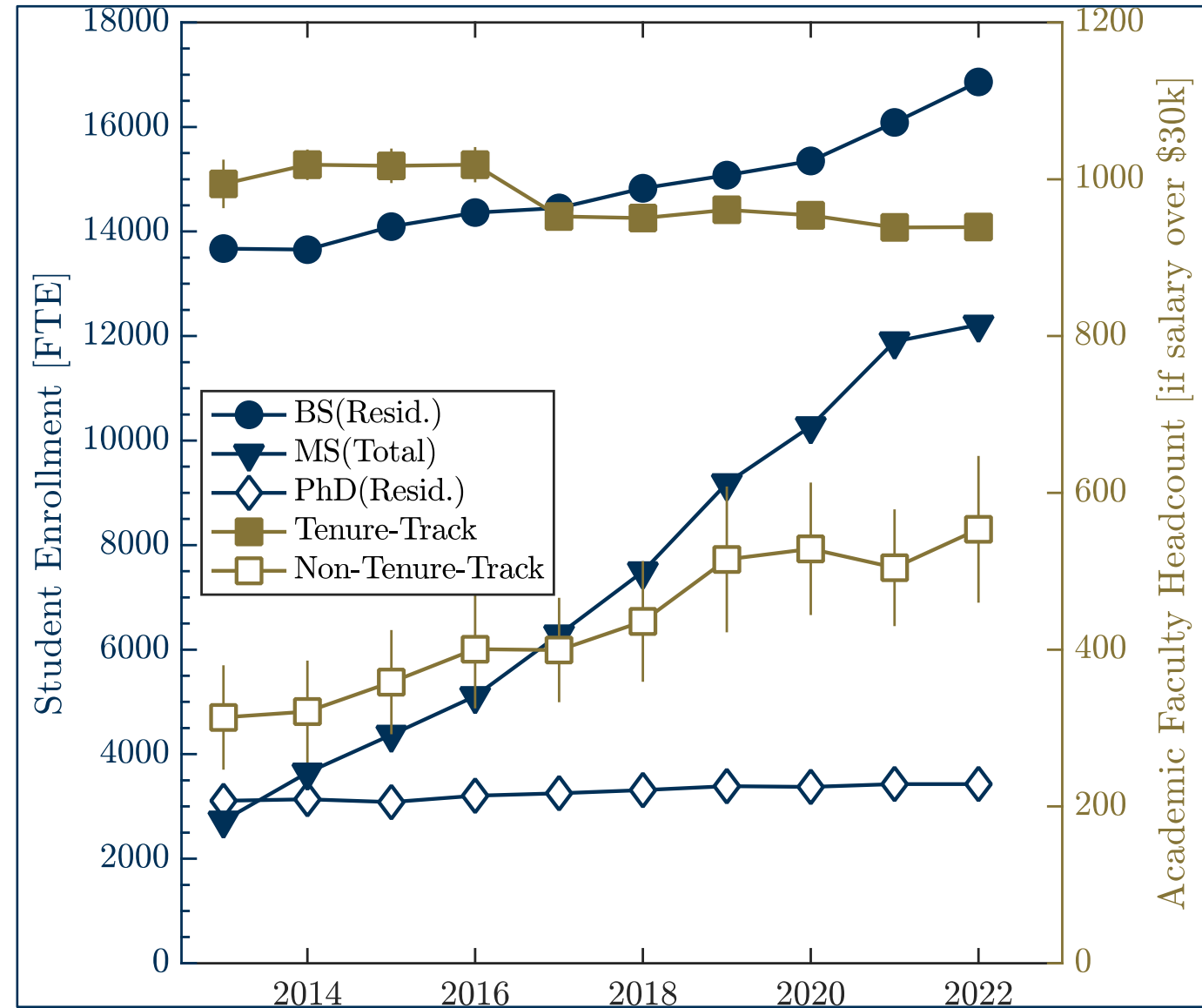
Year	Tenure Density
2013	84%
2023	72%
2033	59%
2043	46%
2053	34%
2063	21%
2073	8%
2079	0.5%

Tenure density is the ratio of Tenure track professors to Total number of academic faculty

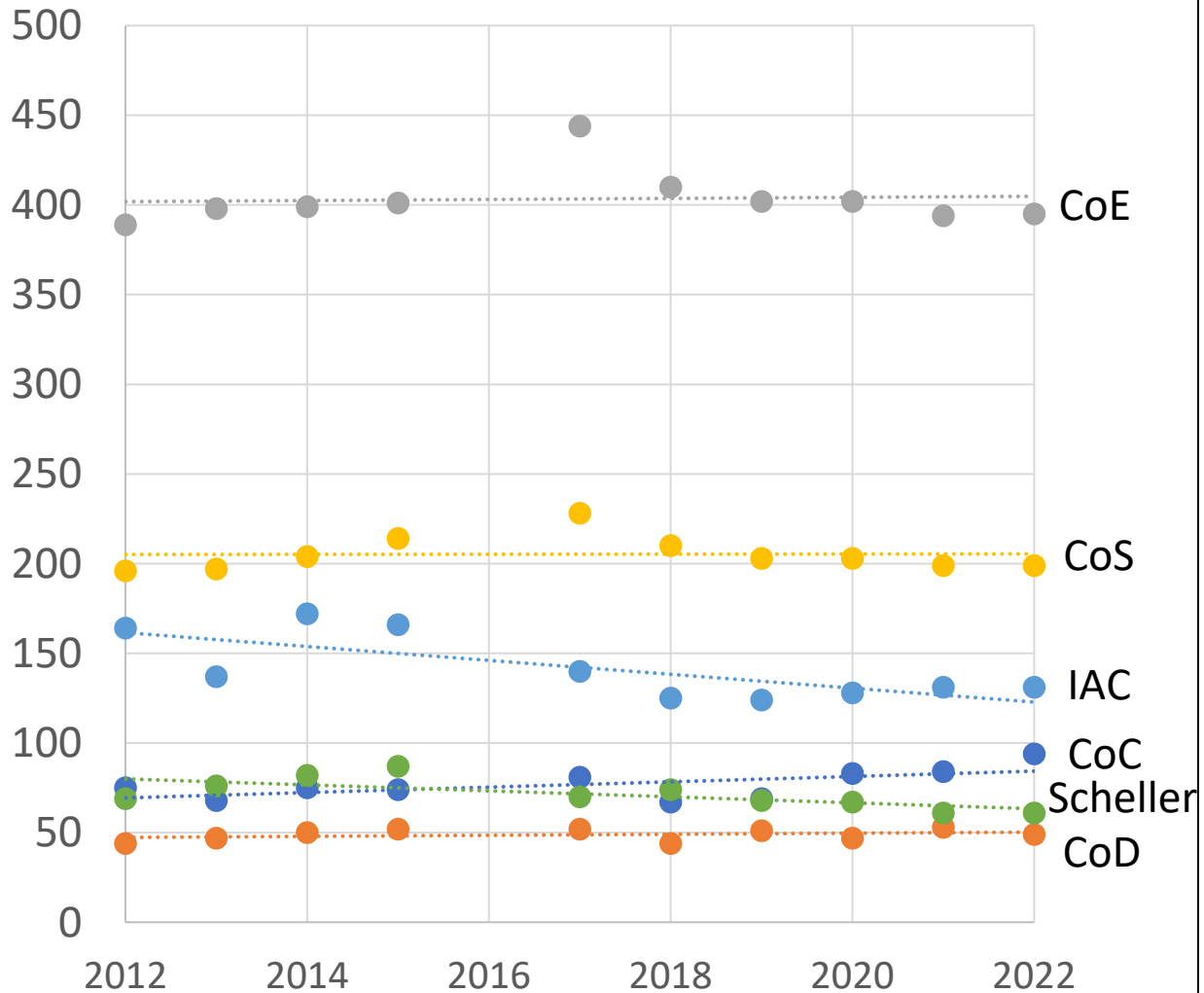


Faculty Decline (gold); Student Population Growth (blue)

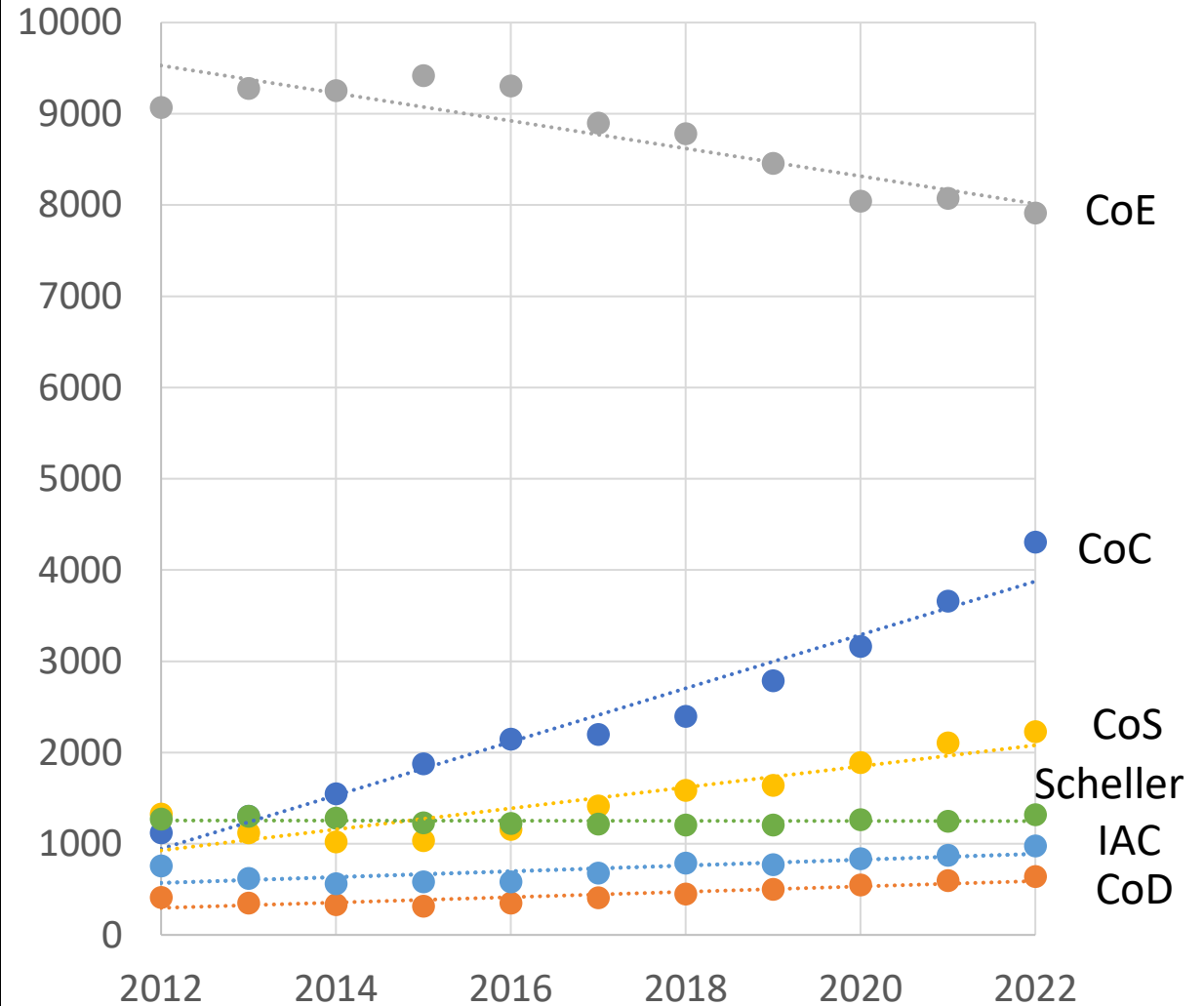
- Since 2016, the number of Tenure track professors has declined
- In the past decade,
 - The numbers of undergraduate, masters, and non-tenure track academic faculty have increased very rapidly
 - The number of PhD students has stagnated
 - The number of MS students has skyrocketed, driven by on-line (?)
- Undergraduate growth is driven by first-year and transfer students



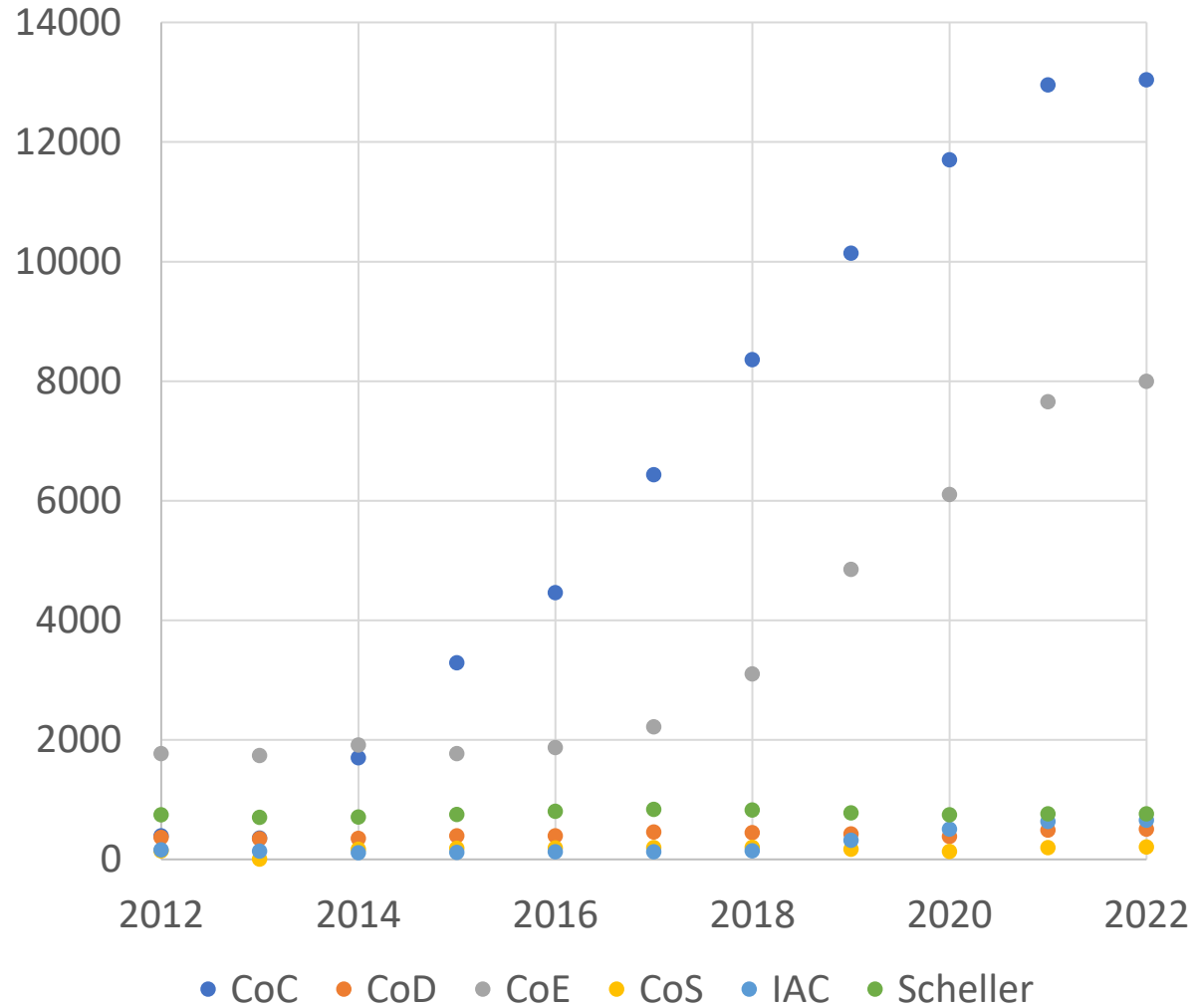
TT Professors by College



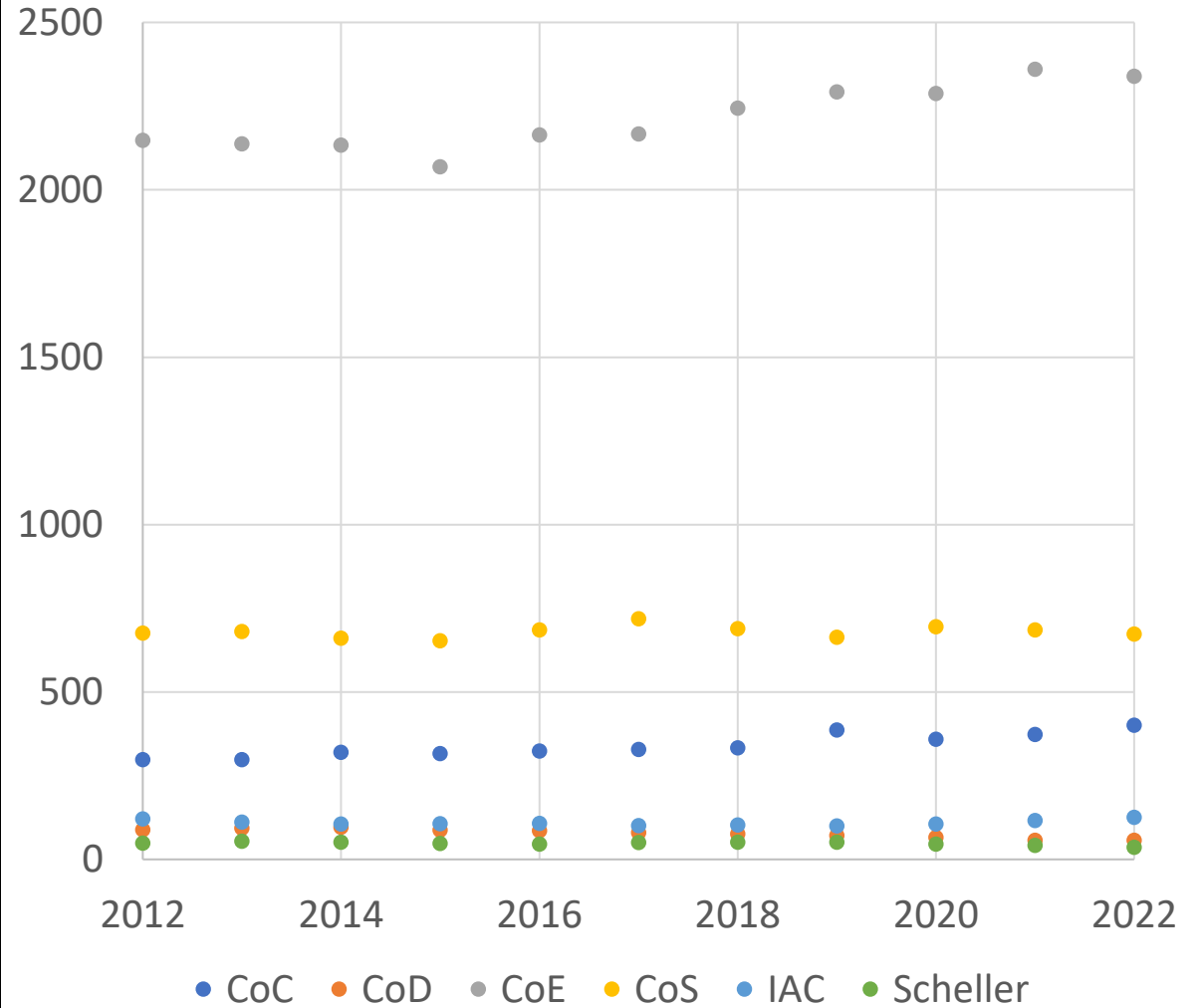
UG Students by College



MS Students by College

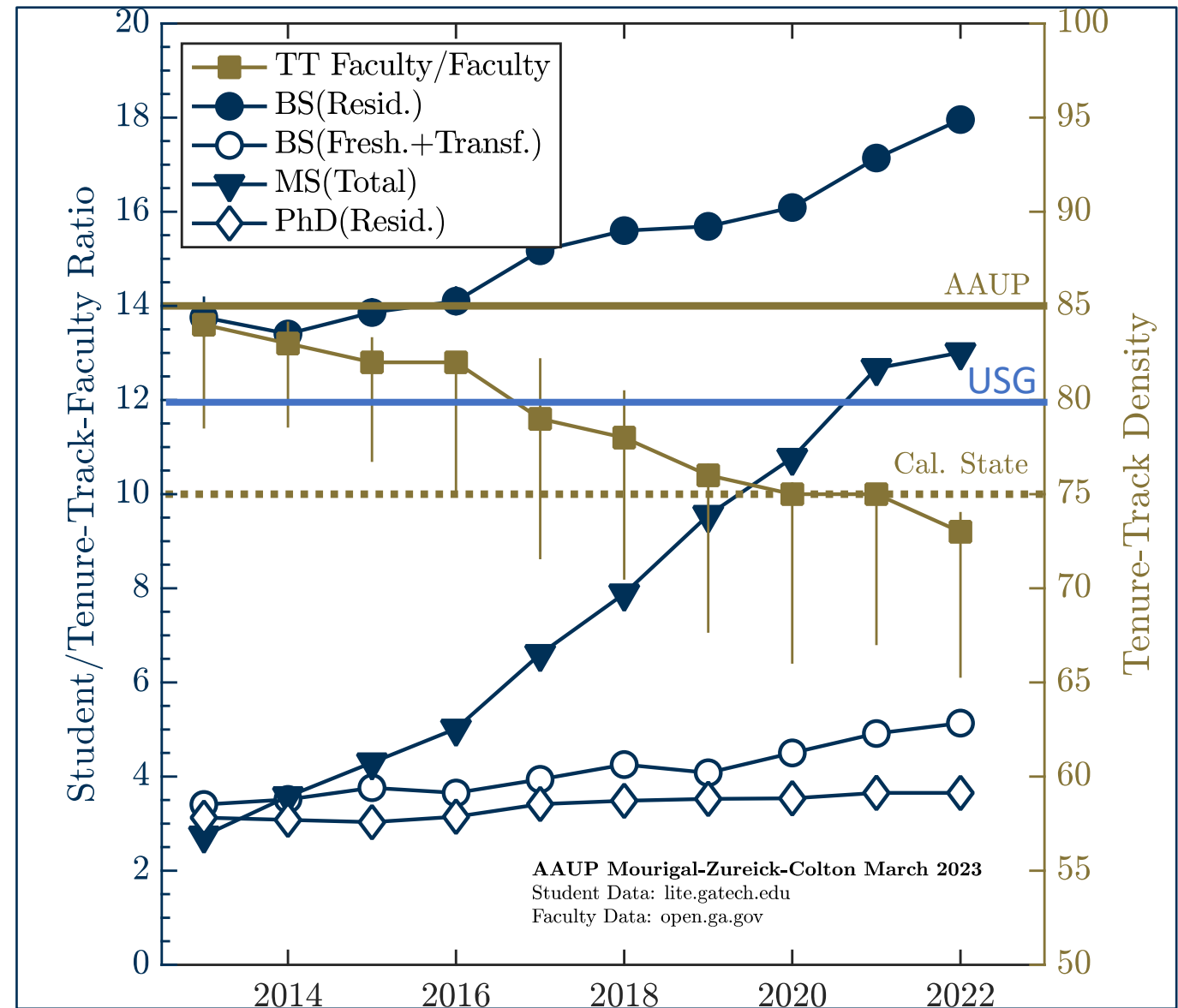


PhD Students by College

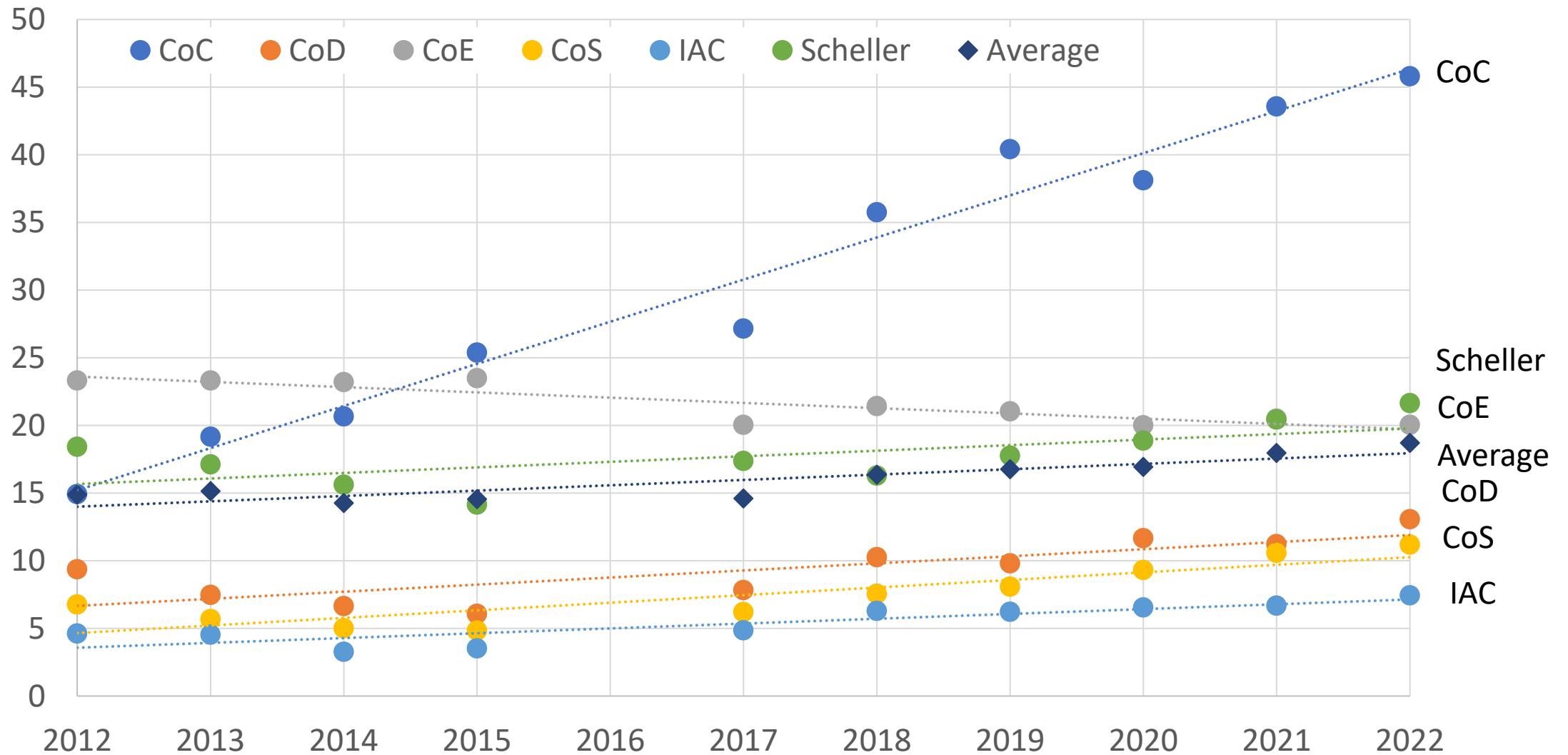


Tenure Density (gold); Student to Faculty Ratios (blue)

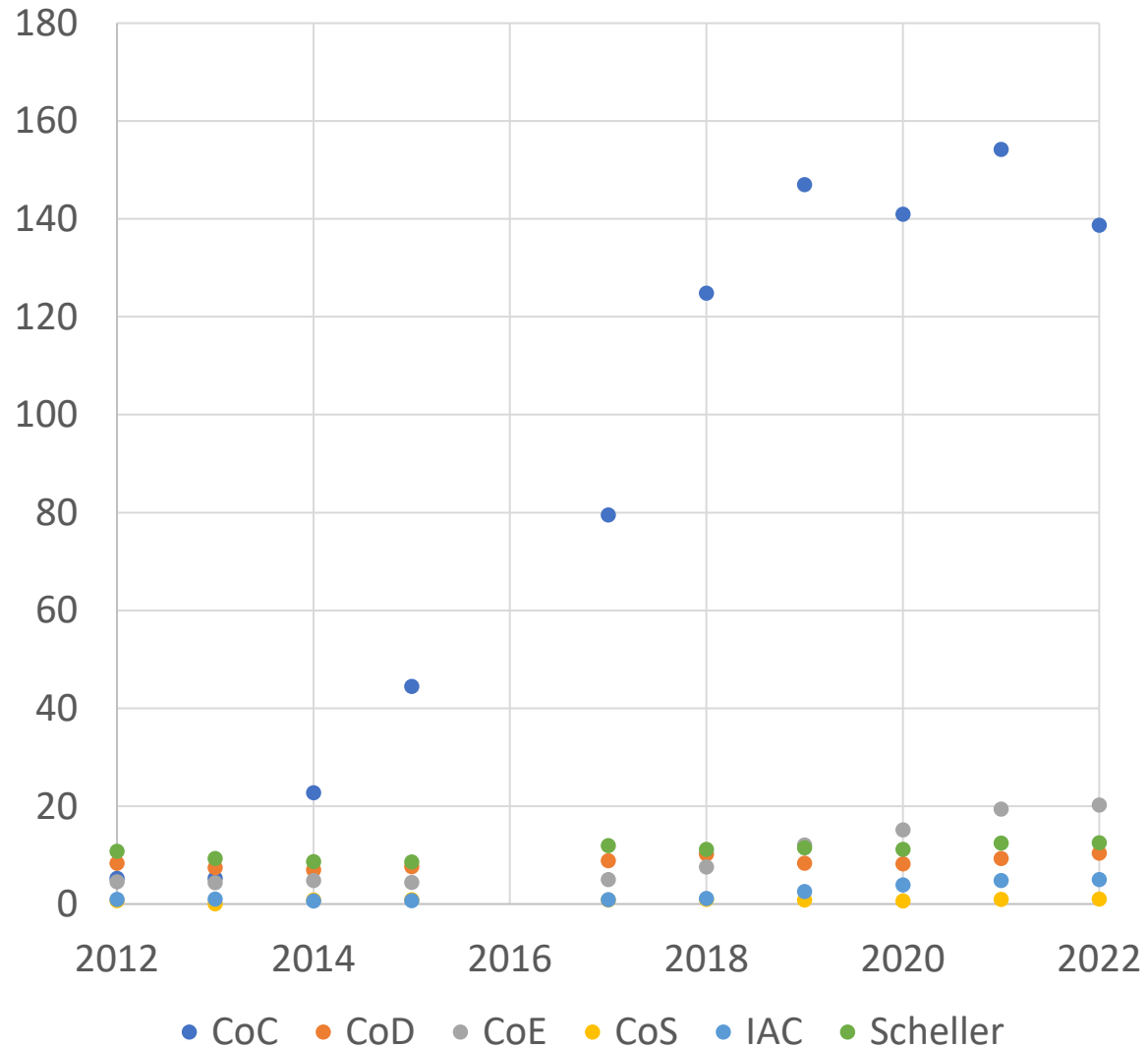
- In the 1980's, Tenure density was about 98%; i.e., all classes were taught by Tenure track professors
- Since at least 2014, Tenure density is below the AAUP threshold of 85%
- Since 2016, Tenure density is below the USG BoR limit of 80%
- Since 2022, Tenure density is below a critical value of 75% (CSU)



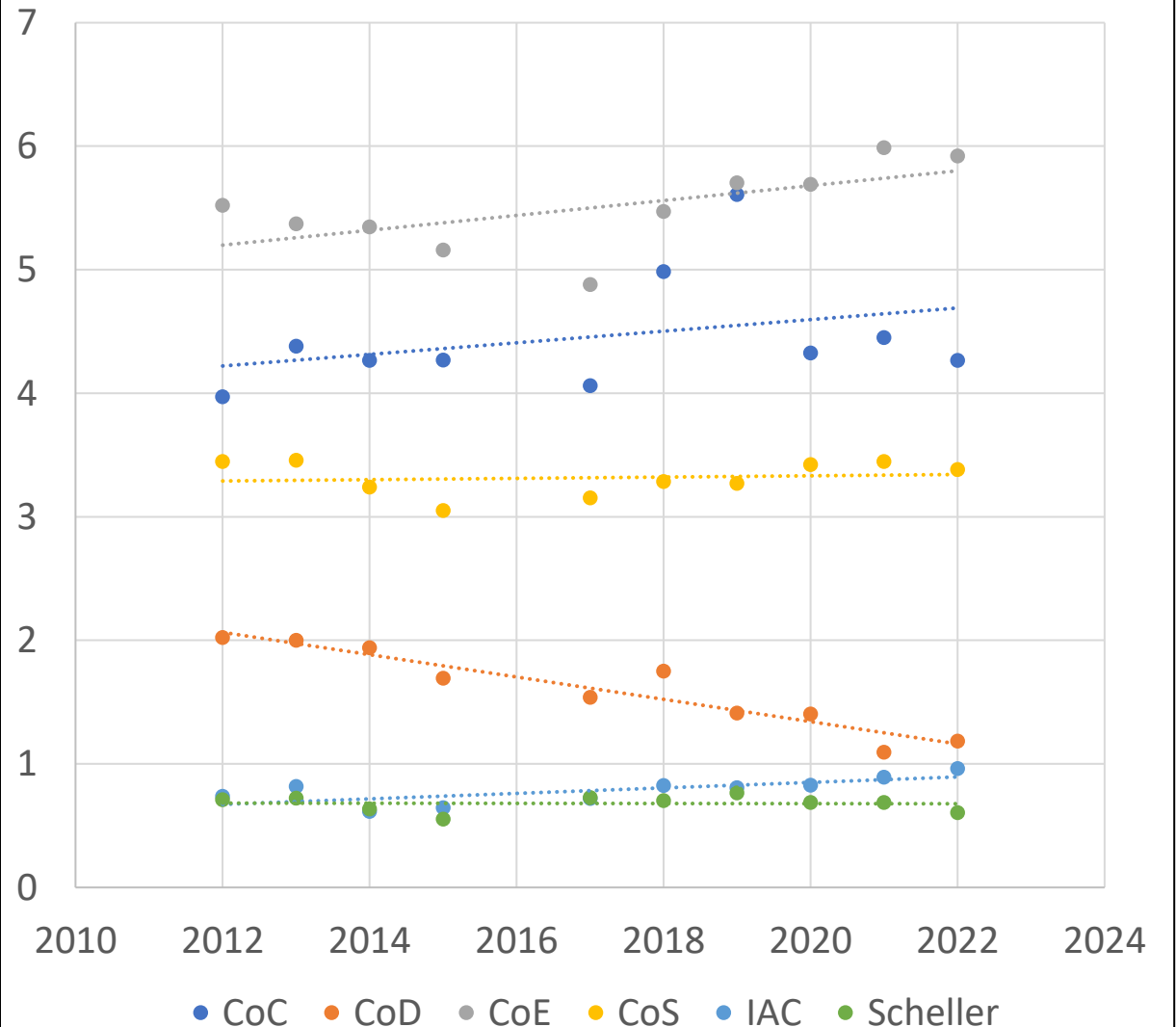
UG Students/TT Professors by College



MS students/TT Professors by College



PhD students/TT Professors by College



Campus Climate Survey – Tenure Track Professors

- Tenure track professors are not happy with support of their research programs (ratings 1:very dissatisfied to 4:very satisfied)
- Examples of areas of dissatisfaction:
 - Establishing networks of professional contacts
 - Guidance on obtaining grants
 - Guidance on publishing research
 - Support of research programs
 - Acknowledgment of contributions
 - Inclusion in strategic planning
 - Obtaining resources needed to excel

	Tenure Track		
	N	Mean	s.d.
Actual number of respondents for each unit. Means are based on weighted counts.			
How satisfied are you with the following types of support you are receiving from your supervisor (chair/dean/director/etc.)?			
Advice on obtaining grants	113	2.55	1.026
Guidance on publishing your research	101	2.53	1.090
Support for your research program	136	2.73	1.116
Obtaining the resources you need to excel	142	2.62	1.083
Mentoring for leadership positions at GT or beyond	121	2.49	1.059
Informal invitations (e.g., lunch/coffee)	135	2.59	1.065
Understanding that individuals have different family and personal responsibilities	140	3.05	1.117
The honoring of agreements made by my supervisor	132	2.96	1.187
Acknowledgement of my contributions to my unit	144	2.78	1.188

Effects on an R1 university such as GT

- Tenure track professors are intensely involved in cutting edge research
- Reduced student-to-tenure-track-professors ratios reduce meaningful research experiences to students (UG and G)
- Fewer sections taught by tenure track professors reduce students' exposure to research brought into the classroom
- Stagnation of PhD student numbers reduces GT's research output
- Student retention and equity correlate with Tenure density
- Academic freedom, professional autonomy, and faculty governance correlate with Tenure and Tenure density
- Increased student-to-tenure-track-professors ratios reduce students' educational experiences

Potential effects on GT

- Diminished GT's value-proposition and competitiveness as a leading research university in Georgia
- Reduced reputation and hence attractiveness of GT to potential students and funding agencies
- Reduced economic impact of GT

Suggestions

- Increase number of tenure track professors to maintain tenure density above 85%
 - Since we are an R1 university, we should have a higher standard than USG 80%
- Improve support of tenure track professors and their research programs
- Further increase focus on quality and impact of residential instruction
- Provide more need-based student aid

Methods

Faculty numbers were obtained from the the publicly available salary data on *open.ga.gov* that reports the salary of any single GT employee in the 10 years from 2013 to 2022. The data was analyzed using a Matlab script available upon request. Out of the (growing) number of job descriptions at Georgia Tech, 20 categories that are relevant for student instruction were grouped in 4 bins:

- **TT** for Tenure-Track Faculty: "ASSISTANT PROFESSOR", "ASSOCIATE PROFESSOR", "PROFESSOR" and "REGENTS PROFESSOR".
- **AP** for Academic Professionals and Professors of the Practice: "ACADEMIC PROFESSIONAL AC", "ACAD PROFESSIONAL AC SENIOR" and "ACADEMIC SERVICES PROFESSIONAL".
- **LEC** for Lecturers: "LECTURER", "SENIOR LECTURER" and "PRINCIPAL LECTURER".
- **ADJ** for Adjunct, Temporary and Visiting professors: "ADJUNCT ASSOC PROFESSOR", "ADJUNCT ASST PROFESSOR", "ADJUNCT LECTURER", "ADJUNCT PROFESSOR", "ADJUNCT INSTRUCTOR", "VISITING ASST PROFESSOR", "VISITING LECTURER", "VISITING PROFESSOR", "TEMPORARY FACULTY" and "TEMPORARY FACULTY RETIREE".
- **FAC** for the total number of instructional faculty

The analysis is based both on headcount and on salary expenditures. For the headcount ratios, the analysis runs twice, the first time with all salaries, the second time excluding any faculty-employee with salary less than \$30,000. For the salary expenditure ratio, the analysis calculates the total expenditure on tenure-track-faculty salaries (scaled by 9/12 to account for summer salary) and compares it to the total expenditure on non-tenure-track faculty. Tenure-track density is calculated in two ways as the upper-bound ratio TT/(TT+AP) or the low-bound-ratio TT/FAC. Error-bars in plots depict the variation across the different analysis techniques above (Headcount, Headcount >\$30K and Salary Expenditure;). Examples are provided below.

Headcount (if salary >\$30K)

Year	TT	AP	LEC	ADJ	FAC
2013	963	180	67	17	1227
2014	999	188	68	17	1272
2015	995	199	93	10	1297
2016	996	212	113	5	1326
2017	948	205	128	44	1325
2018	942	228	131	36	1337
2019	953	291	131	34	1409
2020	943	304	140	42	1429
2021	931	302	128	29	1390
2022	933	327	133	37	1430

Tenure-Track Density (if salary >\$30K)

Year	TT/(TT+AP)[%]	TT/FAC[%]
2013	84.3	78.5
2014	84.2	78.5
2015	83.3	76.7
2016	82.5	75.1
2017	82.2	71.5
2018	80.5	70.5
2019	76.6	67.6
2020	75.6	66
2021	75.5	67
2022	74	65.2

Salary Expenditure (if salary >\$30K) and Tenure-Track Density in Expenditures

Year	TT[M\$]	AP[M\$]	LEC[M\$]	ADJ[M\$]	FAC[M\$]	GT[M\$]	TT/FAC	TT9/FAC
2013	137	14.3	3.9	0.8	156	635.8	87.8	84.4
2014	143	15.8	4.1	0.9	163.8	665.3	87.3	83.8
2015	148.9	16.8	6.1	0.5	172.3	703.3	86.4	82.7
2016	154	18.2	7.1	0.2	179.5	732.3	85.8	81.9
2017	155.1	18.5	8.3	3.2	185.1	781.1	83.8	79.5
2018	157.8	20.6	8.9	2.8	190.1	829.9	83	78.6
2019	161.3	24.6	10	2.2	198.1	861.4	81.4	76.7
2020	163.2	26.1	11	3.2	203.6	914.5	80.2	75.2
2021	159.8	26.3	10.6	2.1	198.7	940.3	80.4	75.5
2022	166.8	29.7	12	2.7	211.3	1050.4	78.9	73.8

Student numbers were taken directly from *lite.gatech.edu* "Student Enrollment" tab.

Methods

UG Students	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	1119	1,303	1,549	1,877	2,146	2,199	2,395	2,788	3,163	3,659	4,304
CoD	412	351	332	316	349	407	451	500	548	595	640
CoE	9069	9,278	9,253	9,418	9,306	8,896	8,781	8,456	8,041	8,073	7,913
CoS	1326	1,120	1,020	1,035	1,159	1,413	1,587	1,641	1,890	2,106	2,227
IAC	757	622	562	583	583	679	787	771	837	875	975
Scheller	1271	1,301	1,280	1,231	1,222	1,216	1,205	1,207	1,264	1,246	1,320
Total	13,954	13,975	13,996	14,460	14,765	14,810	15,206	15,363	15,743	16,554	17,379
TT Faculty	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	75	68	75	74		81	67	69	83	84	94
CoD	44	47	50	52		52	44	51	47	53	49
CoE	389	398	399	401		444	410	402	402	394	395
CoS	196	197	204	214		228	210	203	203	199	199
IAC	164	137	172	166		140	125	124	128	131	131
Scheller	69	76	82	87		70	74	68	67	61	61
Total	937	923	982	994		1015	930	917	930	922	929
Ratio	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	14.9	19.2	20.7	25.4		27.1	35.7	40.4	38.1	43.6	45.8
CoD	9.4	7.5	6.6	6.1		7.8	10.3	9.8	11.7	11.2	13.1
CoE	23.3	23.3	23.2	23.5		20.0	21.4	21.0	20.0	20.5	20.0
CoS	6.8	5.7	5.0	4.8		6.2	7.6	8.1	9.3	10.6	11.2
IAC	4.6	4.5	3.3	3.5		4.9	6.3	6.2	6.5	6.7	7.4
Scheller	18.4	17.1	15.6	14.1		17.4	16.3	17.8	18.9	20.4	21.6
Average	14.9	15.1	14.3	14.5		14.6	16.4	16.8	16.9	18.0	18.7

Data from GT Factbooks

Methods

MS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	398	360	1,705	3,290	4,464	6,439	8,362	10,143	11,703	12,955	13,042
CoD	368	350	352	398	397	462	450	427	388	494	511
CoE	1772	1,742	1,918	1,771	1,876	2,222	3,107	4,856	6,106	7,657	7,999
CoS	146	10	172	188	195	198	206	172	136	198	212
IAC	162	141	112	118	132	129	148	322	507	636	658
Scheller	748	708	711	752	805	838	829	783	751	763	766
Total	3,594	3,311	4,970	6,517	7,869	10,288	13,102	16,703	19,591	22,703	23,188
PhD	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	298	298	320	316	324	329	334	387	359	374	401
CoD	89	94	97	88	86	80	77	72	66	58	58
CoE	2148	2,138	2,134	2,069	2,164	2,167	2,244	2,293	2,288	2,360	2,339
CoS	676	681	661	653	686	719	690	664	695	686	673
IAC	121	112	106	107	108	101	103	100	106	117	126
Scheller	49	55	52	48	46	51	52	52	46	42	37
Total	3,381	3,378	3,370	3,281	3,414	3,447	3,500	3,568	3,560	3,637	3,634
TT Faculty	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	75	68	75	74		81	67	69	83	84	94
CoD	44	47	50	52		52	44	51	47	53	49
CoE	389	398	399	401		444	410	402	402	394	395
CoS	196	197	204	214		228	210	203	203	199	199
IAC	164	137	172	166		140	125	124	128	131	131
Scheller	69	76	82	87		70	74	68	67	61	61
Total	937	923	982	994		1015	930	917	930	922	929
TT/MS	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	5.31	5.29	22.73	44.46		79.49	124.81	147.00	141.00	154.23	138.74
CoD	8.36	7.45	7.04	7.65		8.88	10.23	8.37	8.26	9.32	10.43
CoE	4.56	4.38	4.81	4.42		5.00	7.58	12.08	15.19	19.43	20.25
CoS	0.74	0.05	0.84	0.88		0.87	0.98	0.85	0.67	0.99	1.07
IAC	0.99	1.03	0.65	0.71		0.92	1.18	2.60	3.96	4.85	5.02
Scheller	10.84	9.32	8.67	8.64		11.97	11.20	11.51	11.21	12.51	12.56
TT/PhD	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CoC	3.97	4.38	4.27	4.27		4.06	4.99	5.61	4.33	4.45	4.27
CoD	2.02	2.00	1.94	1.69		1.54	1.75	1.41	1.40	1.09	1.18
CoE	5.52	5.37	5.35	5.16		4.88	5.47	5.70	5.69	5.99	5.92
CoS	3.45	3.46	3.24	3.05		3.15	3.29	3.27	3.42	3.45	3.38
IAC	0.74	0.82	0.62	0.64		0.72	0.82	0.81	0.83	0.89	0.96
Scheller	0.71	0.72	0.63	0.55		0.73	0.70	0.76	0.69	0.69	0.61

References

- Lite.gatech.edu; open.ga.gov; diversity.gatech.edu/ccs
- Task force on tenure density at Cal State 1/2018
 - https://www.csulb.edu/sites/default/files/document/report_of_the_task_force_on_tenure_density_in_the_california_state_university_3-16-18_rev_3.22.18.pdf#:~:text=Today%2C%20only%2010%20campuses%20have%20tenure%20density%20of,force%20to%20examine%20tenure%20density%20in%20the%20CSU.
- Mark Stein: The End of Faculty Tenure
 - <https://www.insidehighered.com/views/2022/04/25/declining-tenure-density-alarming-opinion>
- AAUP: The Status of Non-Tenure-Track Faculty (1993)
 - <https://www.aaup.org/report/status-non-tenure-track-faculty>
- Kristi Kanel: Tenure Density and Student Success
 - <https://thesenateforum.wordpress.com/2019/01/30/tenure-density-and-student-success/>

USG BoR 8.3.8.2 Reappointment of Full-Time Lecturers

- Not more than 20 percent of an institution's full-time equivalent corps of primarily undergraduate instruction may be lecturers, senior lecturers, or principal lecturers.
- The spirit of 8.3.8.2 is that 80% tenure density should be our limit.