

Examining Variation in Online Credit Hours and the Cost of Instruction

Preparing to Investigate the Impact of COVID-19



2021 Virtual Conference

- Marcia Preston, PhD •

Introductions



Marcia Preston
marcia@udel.edu

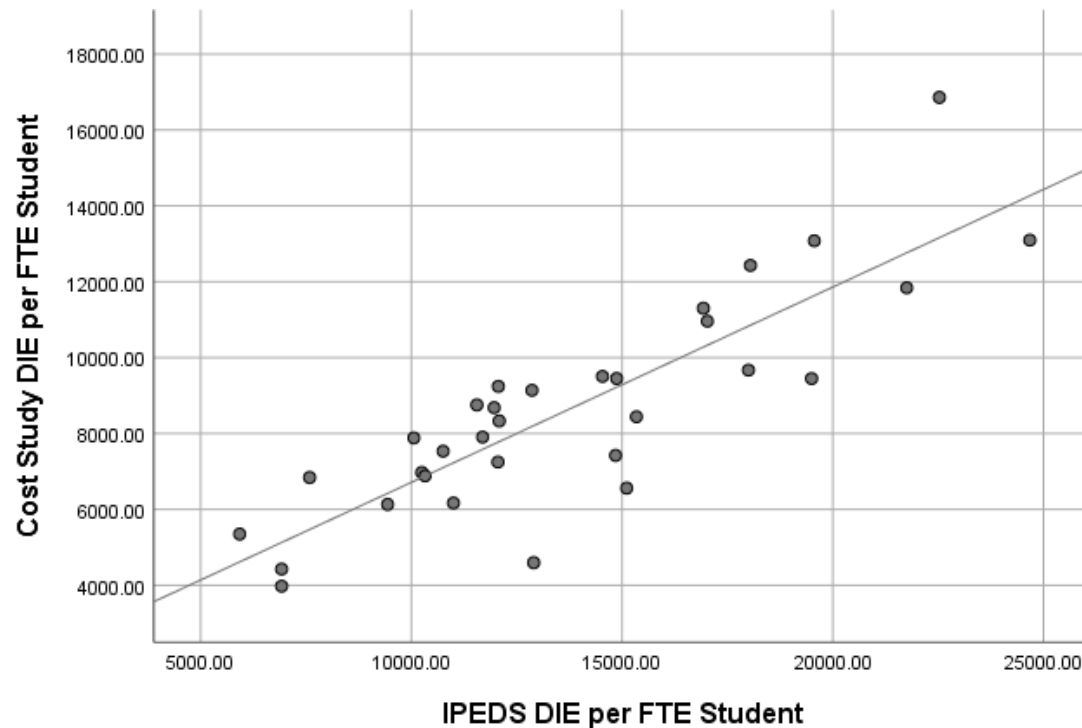


THE COST STUDY

at the University of Delaware

(The National Study of Instructional Costs and Productivity)

IPEDS Integrated Postsecondary
Education Data System



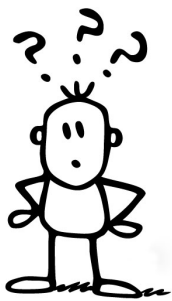
NATIONAL SCIENCE FOUNDATION
ALEXANDRIA, VA 22314

HIGHER EDUCATION RESEARCH AND DEVELOPMENT SURVEY

How does The Cost Study relate to other studies in terms of cost per student and research expense metrics?

Presentation Overview

- Theoretical Framework
- Scope of Online Learning
- Intro to The Cost Study and context from longitudinal research
- Descriptive Data of Online Instruction – 9 representative disciplines
- Comparison with Cost Data
- Conclusions, limitations and next steps in model development

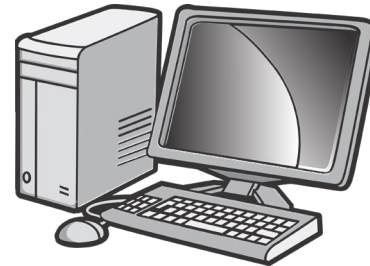
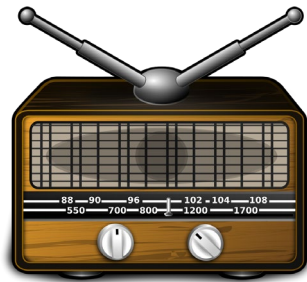


The Cost Study
at the University of Delaware



Theoretical Framework

- History of distance learning



- By 2000s pervasive and available to large sections of the public

Bartley, S.J. & Golek, J.H. (2004). Evaluating the cost effectiveness of online and face-to-face instruction. *International Forum of Educational Technology and Society*, 7(4), 167-175.

Benefits of Online Courses

- Global access
- Students juggling work, family, and social schedules
- Competitive advantage
- Economic benefits
- Lack of conclusive evidence about effectiveness, so cost may be primary criterion to determining whether to go online (Bartley & Golek, 2004)



Can Online Learning Bend the Higher Education Cost Curve? (Deming et al. 2015)

Deming, D.J., Goldin, C., Katz, L.F., Yuchtman, N. (2015). Can online learning bend the higher education cost curve?
American Economic Review: Papers and Proceedings, 105(5), 496-501.

Price versus instructional cost



College **price** ↑ 36% between
2008 and 2018 (College Board, 2018)

VS



Students and parents now
pay for >50% of costs
(Desrochers & Hurlburt, 2016)

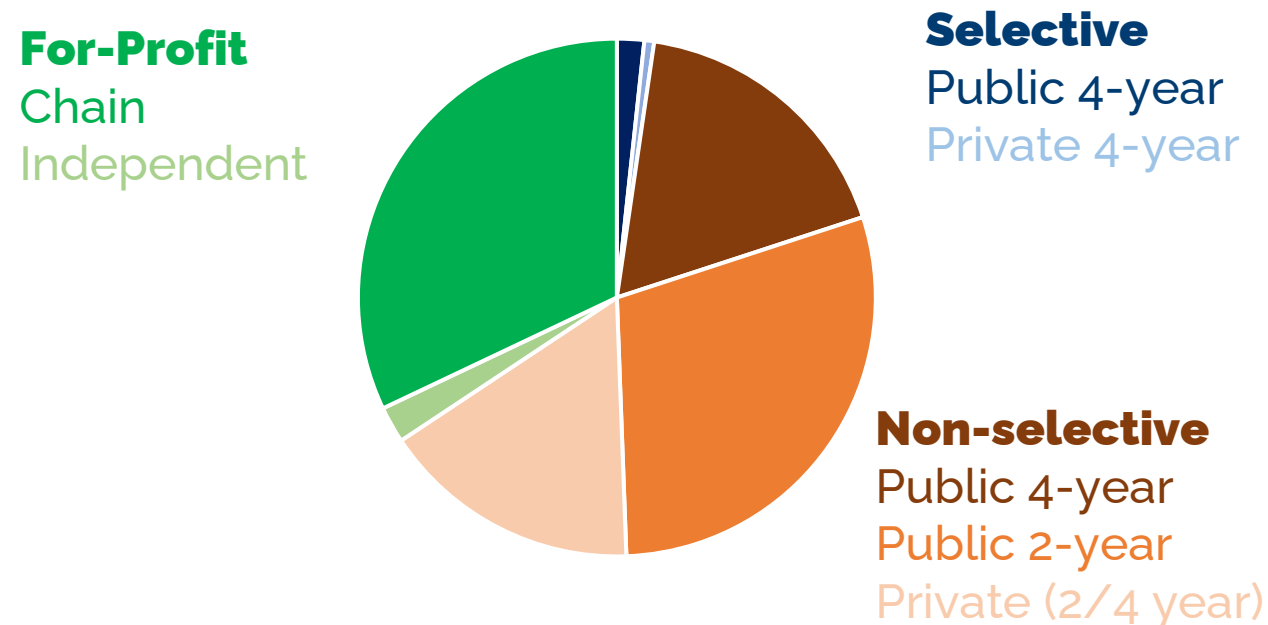
- Understanding costs → fuller picture of effects of policies
financial aid, free college, incentives to major in specific fields

Can Online Learning Bend the Higher Education ~~Cost~~ Price Curve? (Deming et al. 2015)

- In 2013, 11.1% of all US undergraduate degree seeking students in an all online program
- 32% of all-online students are at for-profit “chains”

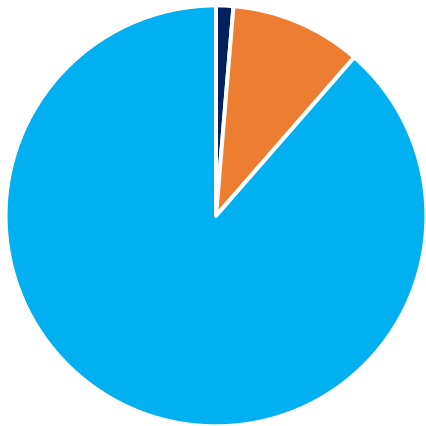
Can Online Learning Bend the Higher Education ~~Cost~~ Price Curve? (Deming et al. 2015)

- Distribution of all-online students across institution type



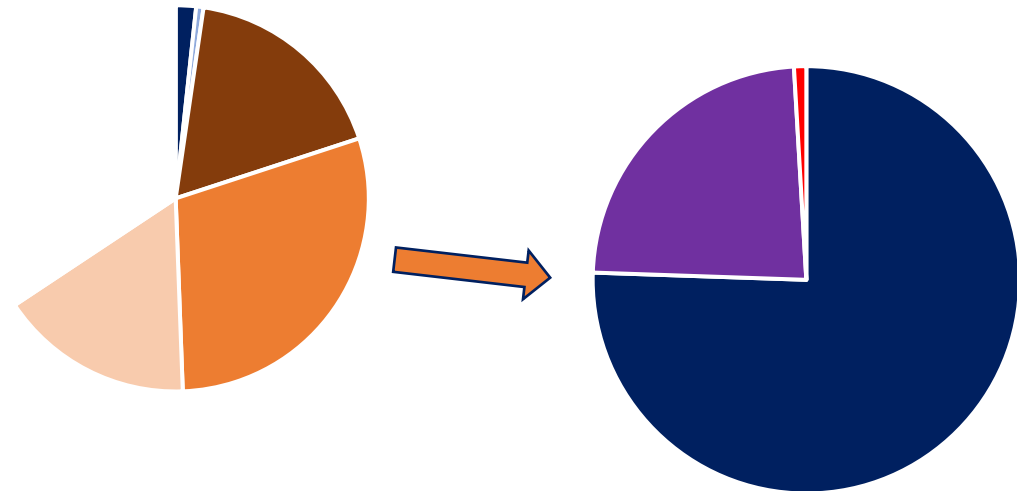
Can Online Learning Bend the Higher Education ~~Cost~~ Price Curve? (Deming et al. 2015)

- 1.3% students in selective institutions are fully online



■ All online ■ Some online ■ No online

- Residency of all online students at non-profit institutions



■ In-State ■ Out-of-State ■ International

Can Online Learning Bend the Higher Education ~~Cost~~ Price Curve? (Deming et al. 2015)

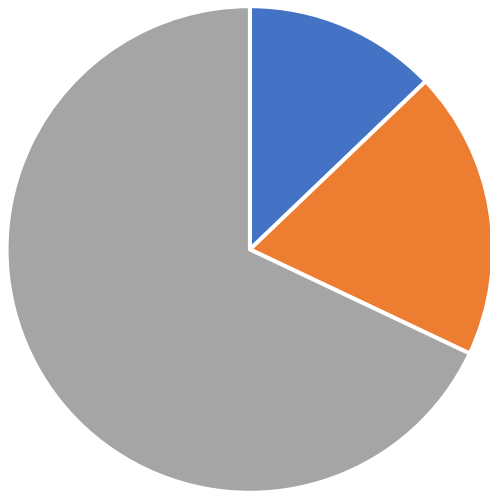
- Conclusions

- Institutions with more online students charge lower prices
- Impact of online on the quality of education remains uncertain
- Future of online learning may exert competitive pressure to lower prices and/or increase efficiency

Updated 2018 data from IPEDS

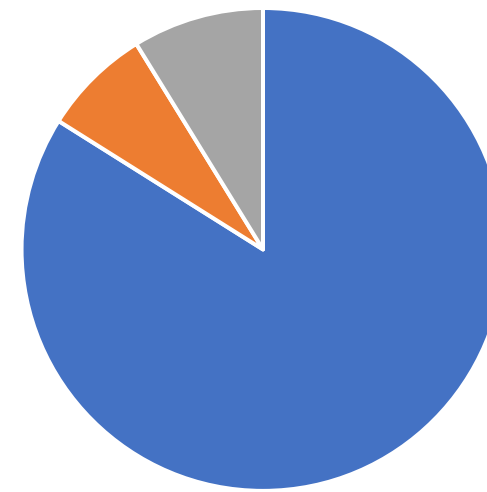
Number of students enrolled online

Baccalaureate, Masters, Doctoral
Non-Profit Institutions



■ All Online ■ Some Online ■ None Online

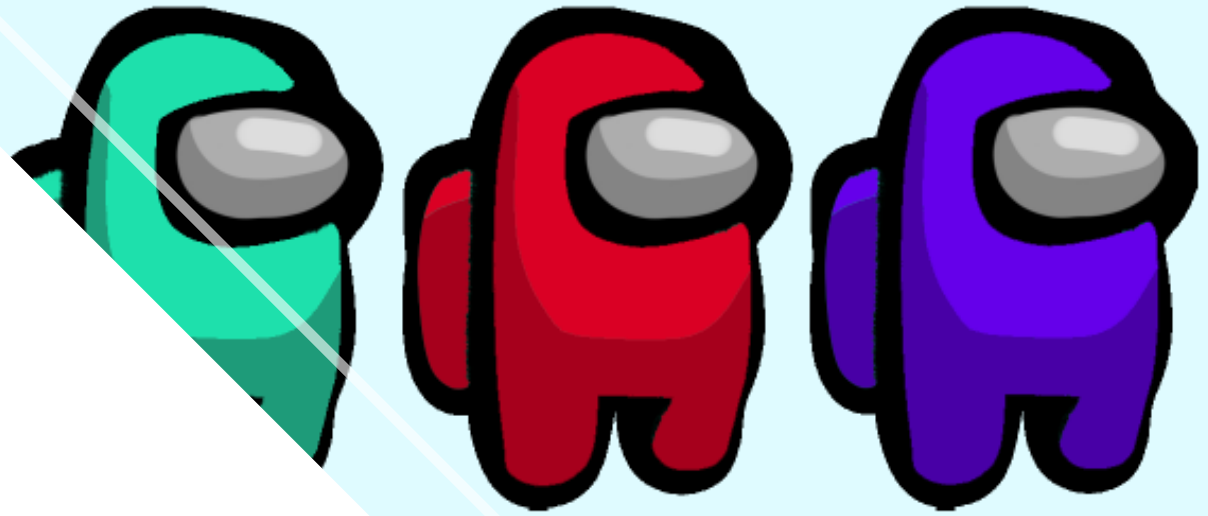
For-profit Institutions



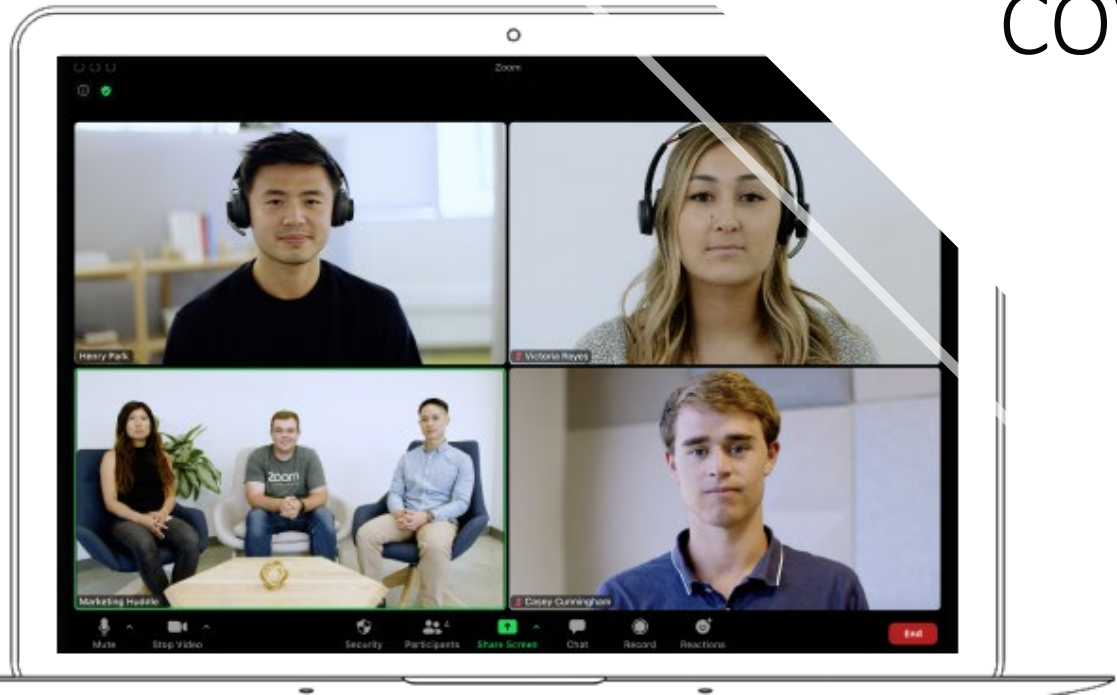
■ All Online ■ Some Online ■ None Online

Can Online Learning Bend the Higher Education ~~Cost~~ Price Curve? (Deming et al. 2015)

- Conclusions
 - Institutions with more online students charge lower prices
 - Impact of online on the quality of education remains uncertain
 - Future of online learning may exert competitive pressure to lower prices and/or increase efficiency
- Alternative Conclusions???



Now... impact of
COVID-19



Instructional Cost Data Elements

THE COST STUDY

at the University of Delaware

(The National Study of Instructional Costs and Productivity)



Who...

T/TE, other regular, supplemental faculty, TAs



...is teaching what to whom...

Student credit hours, organized class sections, online, undergrad/grad

And at what cost...

Instructional, research, public service expense



National Norm Reporting

Institutional Carnegie Classification

Research (R1&R2), Doctorate/Professional (R3), Comprehensive (M1,M2,M3), Baccalaureate (B1,B2)

Highest Degree Awarded

Doctorate, Master's, Bachelor's, Non-Degree



Proportion of Undergraduate Degrees

0-24% Undergrad, 25-49% Undergrad, 50-74% Undergrad, 75-100% Undergrad

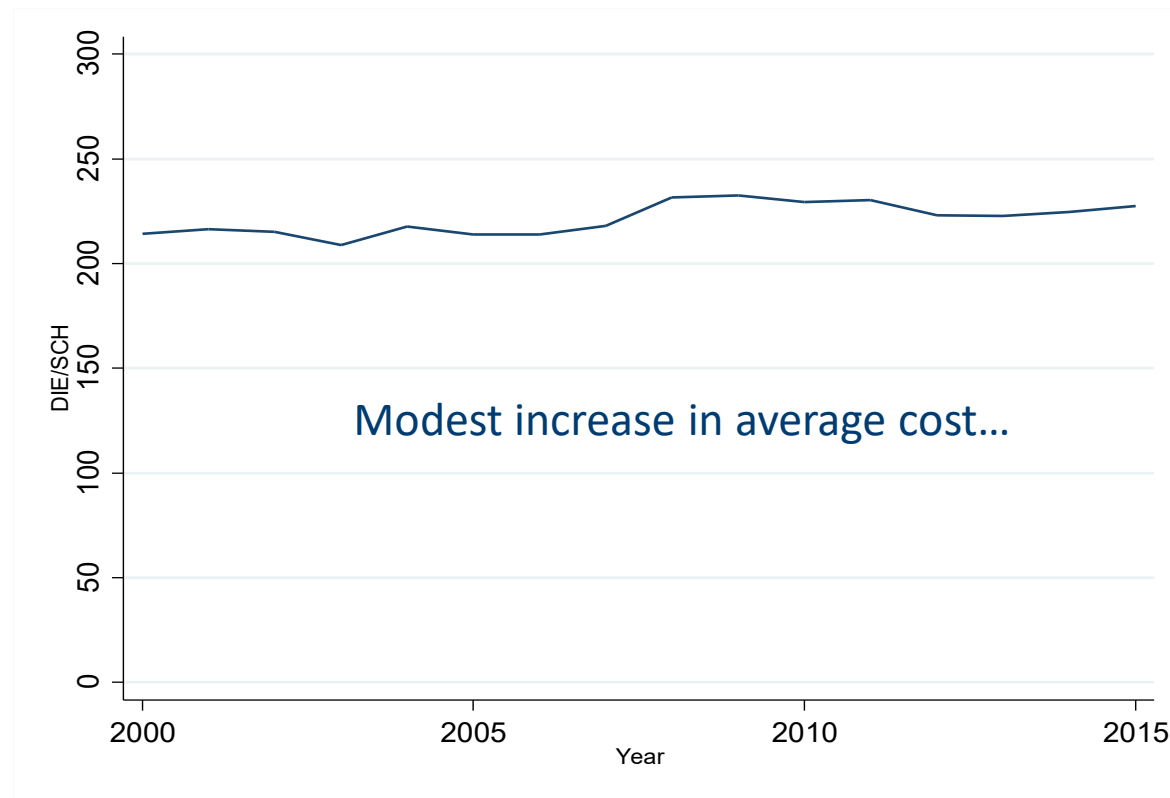


Context for examining **instructional expense**: longitudinal findings

Across all academic disciplines

Weighted average Direct Instructional Expenditures per Student Credit Hour

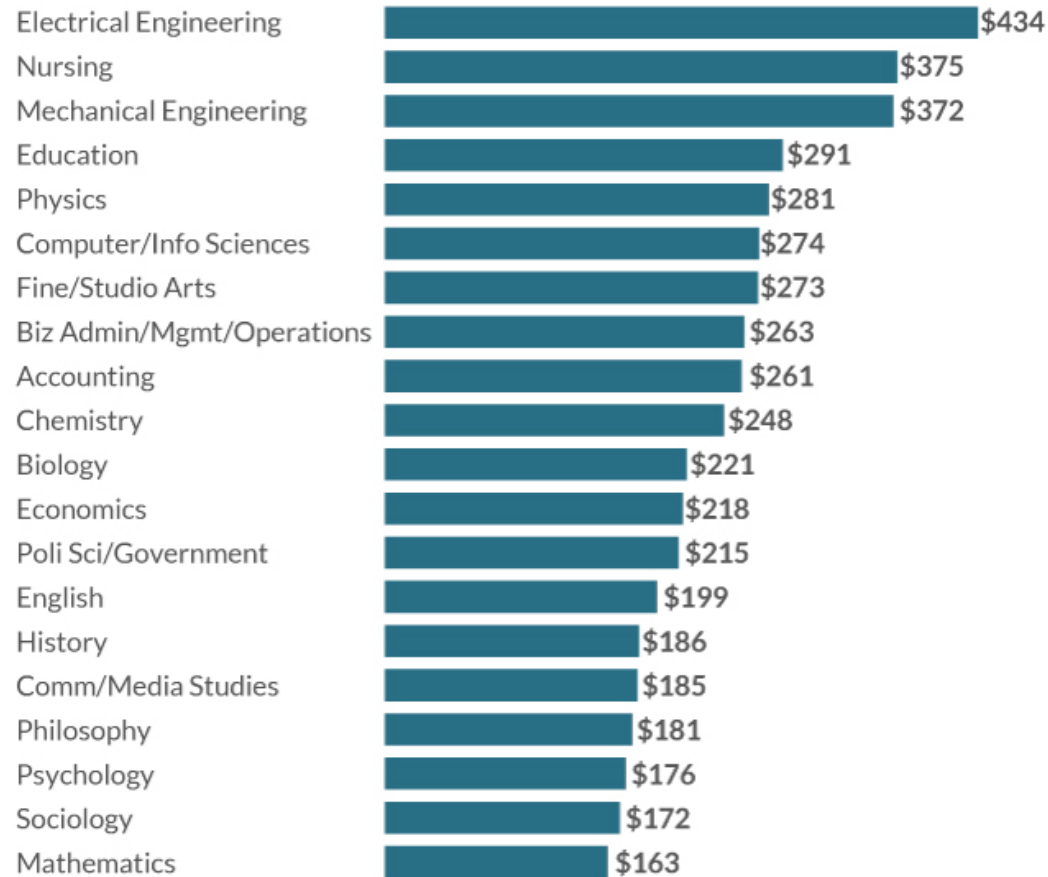
2000-2015



2012 – 2105 Average Cost Per Student Credit Hour (2015 dollars)

Average instructional cost

By field, per credit hour



Source: The National Bureau of Economic Research

Online Credit Hour Metrics

- Fall Data and Annual Data
 - % online UG SCH
 - % online Grad SCH
 - % online Total SCH
 - Online SCH/FTE
 - Online SCH/FTE excl. TAs

If Providing Instruction Online, then Percent online instructional delivery 2015

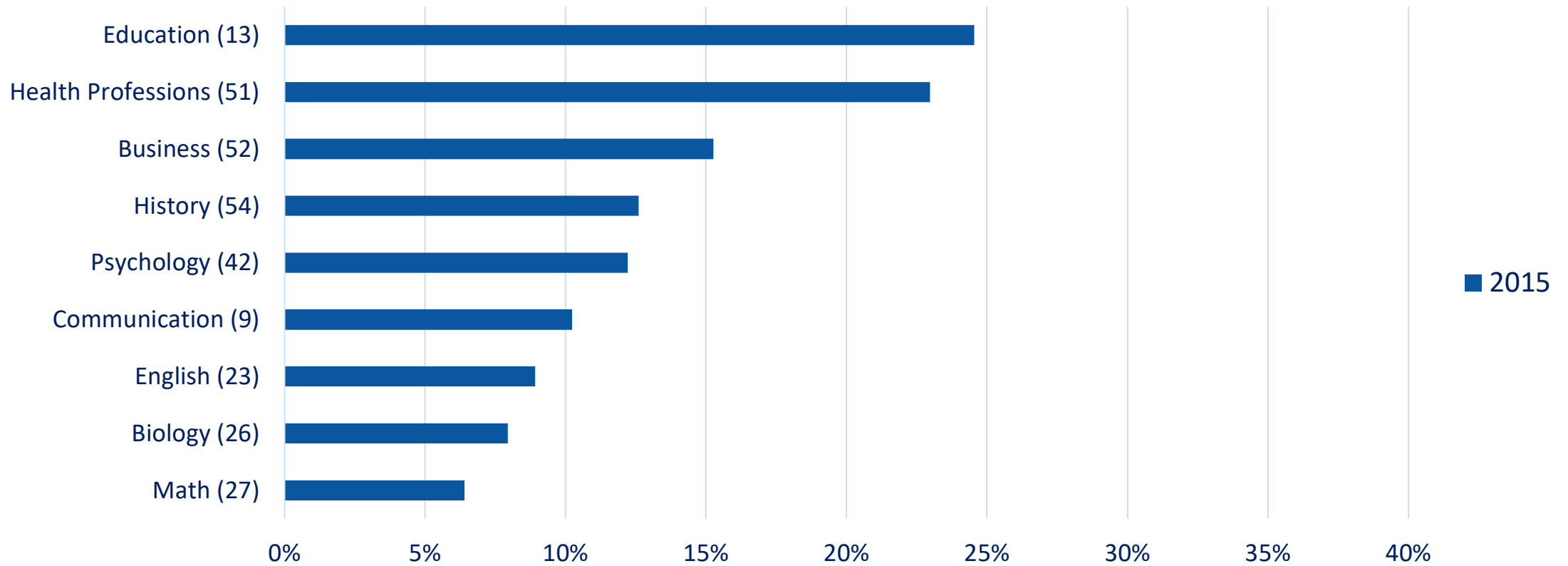
	Undergrad Proportion SCH online	Graduate Proportion SCH Online	Total Proportion SCH Online
Engineering (14)	4%	12%	6%
Math (27)	6%	7%	6%
Physical Sciences (40)	8%	4%	7%
Biology (26)	7%	8%	8%
Agriculture (01)	8%	13%	9%
English (23)	9%	10%	9%
Communication (9)	10%	17%	10%
Psychology (42)	12%	7%	12%
History (54)	12%	10%	13%
Computer and Info Sciences (11)	14%	21%	15%
Social Sciences (45)	15%	12%	15%
Business (52)	14%	25%	15%
Health Professions (51)	22%	32%	23%
Education (13)	15%	37%	25%

If Providing Instruction Online, then Percent online instructional delivery 2015

	Undergrad Proportion SCH online	Graduate Proportion SCH Online	Total Proportion SCH Online
Engineering (14)	4%	12%	6%
Math (27)	6%	7%	6%
Physical Sciences (40)	8%	4%	7%
Biology (26)	7%	8%	8%
Agriculture (01)	8%	13%	9%
English (23)	9%	10%	9%
Communication (9)	10%	17%	10%
Psychology (42)	12%	7%	12%
History (54)	12%	10%	13%
Computer and Info Sciences (11)	14%	21%	15%
Social Sciences (45)	15%	12%	15%
Business (52)	14%	25%	15%
Health Professions (51)	22%	32%	23%
Education (13)	15%	37%	25%

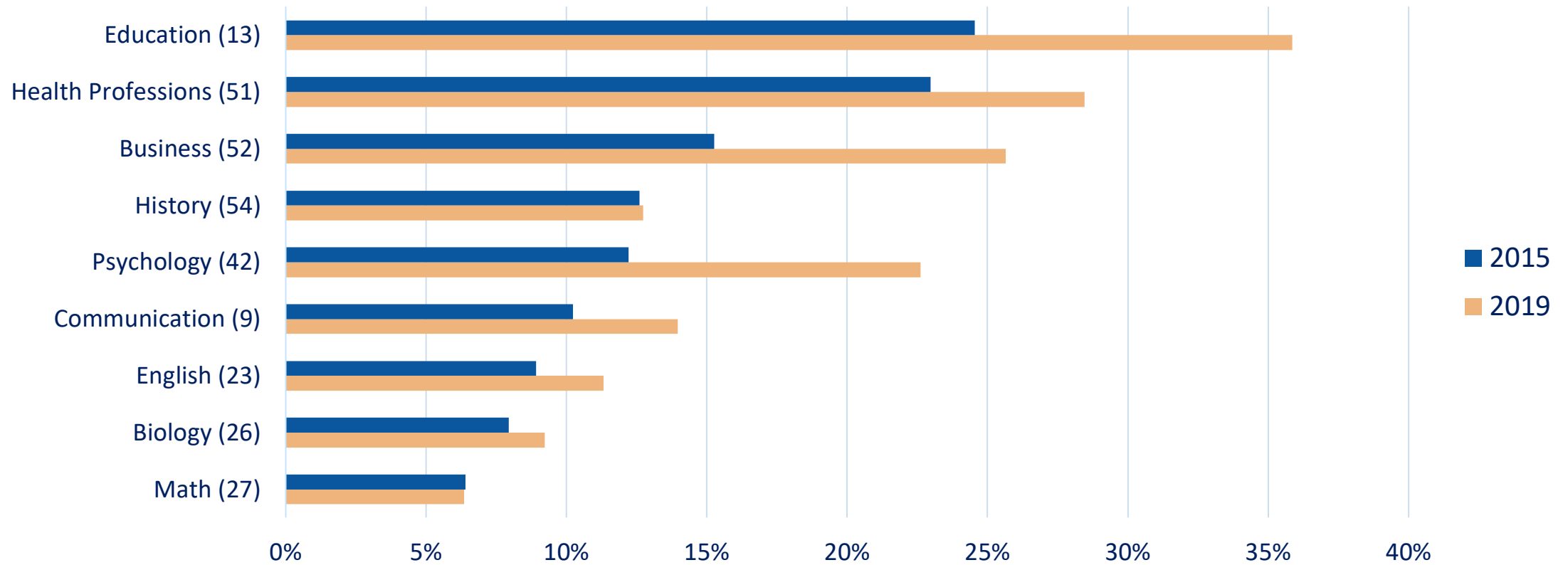
Percent of annual online SCH in 2015

Representative Academic Disciplines Reporting Non-Zero On-line SCH



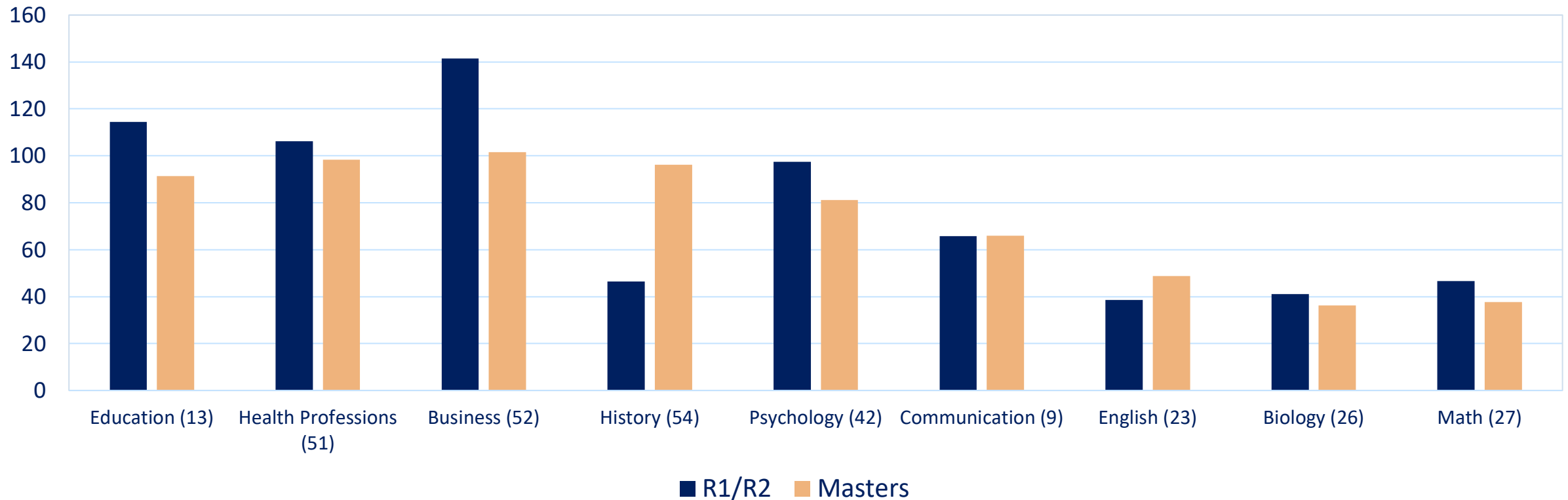
Growth in online instruction 2015-2019

Representative Academic Disciplines Reporting Non-Zero On-line SCH



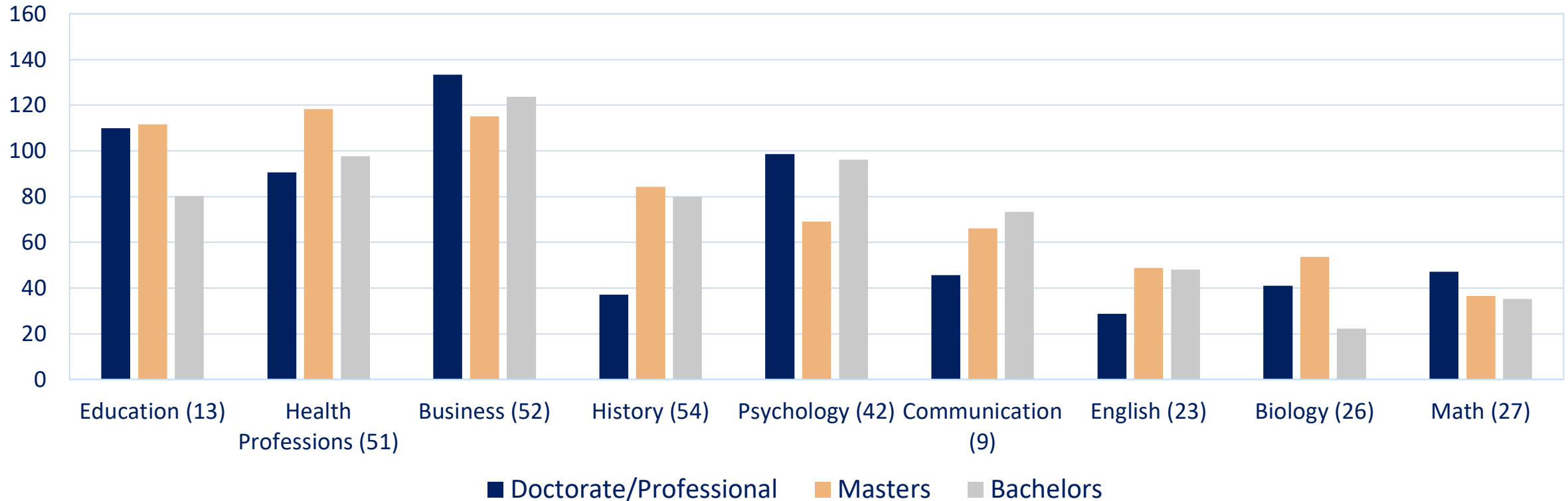
Variability Across Academic Disciplines and Carnegie Classes 2019

Online SCH / FTE Faculty by Carnegie Type



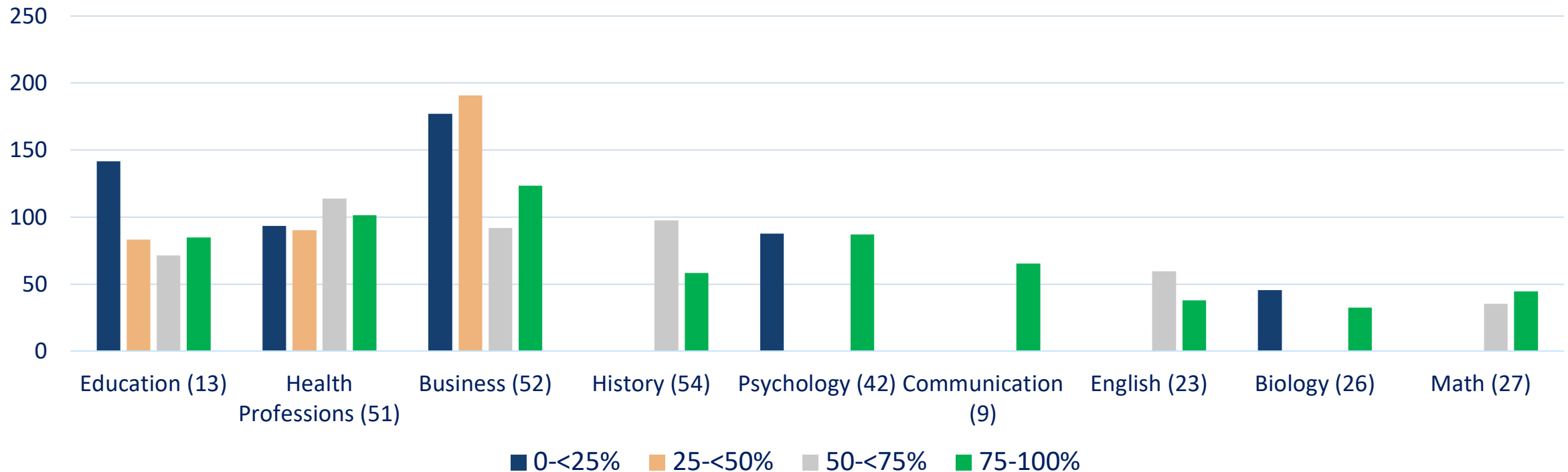
Variability Across Academic Disciplines by Highest Degree Awarded 2019

Online SCH / FTE Faculty by Highest Degree



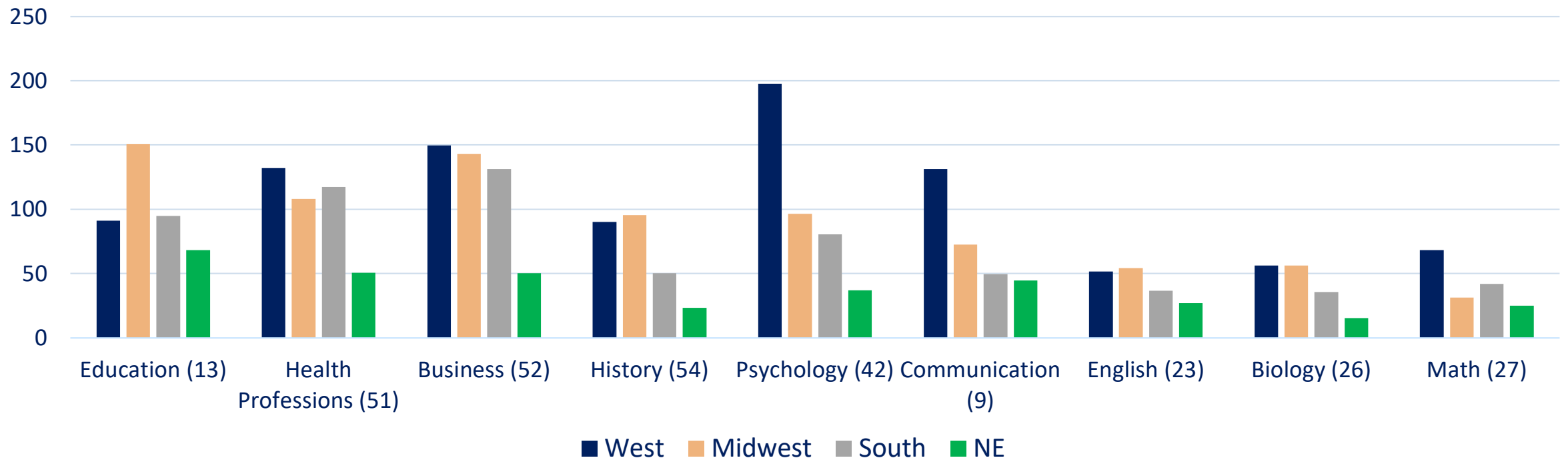
Variability Across Academic Disciplines by % Undergraduate Degrees Awarded 2019

Online SCH / FTE Faculty by % Undergraduate Degrees



Regional variability in 2019

Regional Variability in Online SCH / FTE Faculty



2015 to 2019 Growth in Average Cost per SCH

Academic Discipline	2015 \$/SCH	2019 \$/SCH	Change in \$/SCH
Business (52)	\$265	\$276	\$11
Education (13)	\$350	\$348	-\$3
Health Professions (51)	\$334	\$356	\$22
Psychology (42)	\$198	\$229	\$31
Communication (9)	\$218	\$245	\$27
Math (27)	\$168	\$192	\$24
History (54)	\$205	\$248	\$43
Biology (26)	\$297	\$302	\$4
English (23)	\$213	\$245	\$32

Note: excludes any program where DIE/SCH > \$1000.

Cost to Proportion Online Correlations

Academic Discipline	2015 \$/SCH	2019 \$/SCH	Growth in \$/SCH	Growth in % online SCH
Business (52)	\$265	\$276	\$11	10%
Education (13)	\$350	\$348	-\$3	11%
Health Professions (51)	\$334	\$356	\$22	5%
Psychology (42)	\$198	\$229	\$31	10%
Communication (9)	\$218	\$245	\$27	4%
Math (27)	\$168	\$192	\$24	0%
History (54)	\$205	\$248	\$43	0%
Biology (26)	\$297	\$302	\$4	1%
English (23)	\$213	\$245	\$32	2%

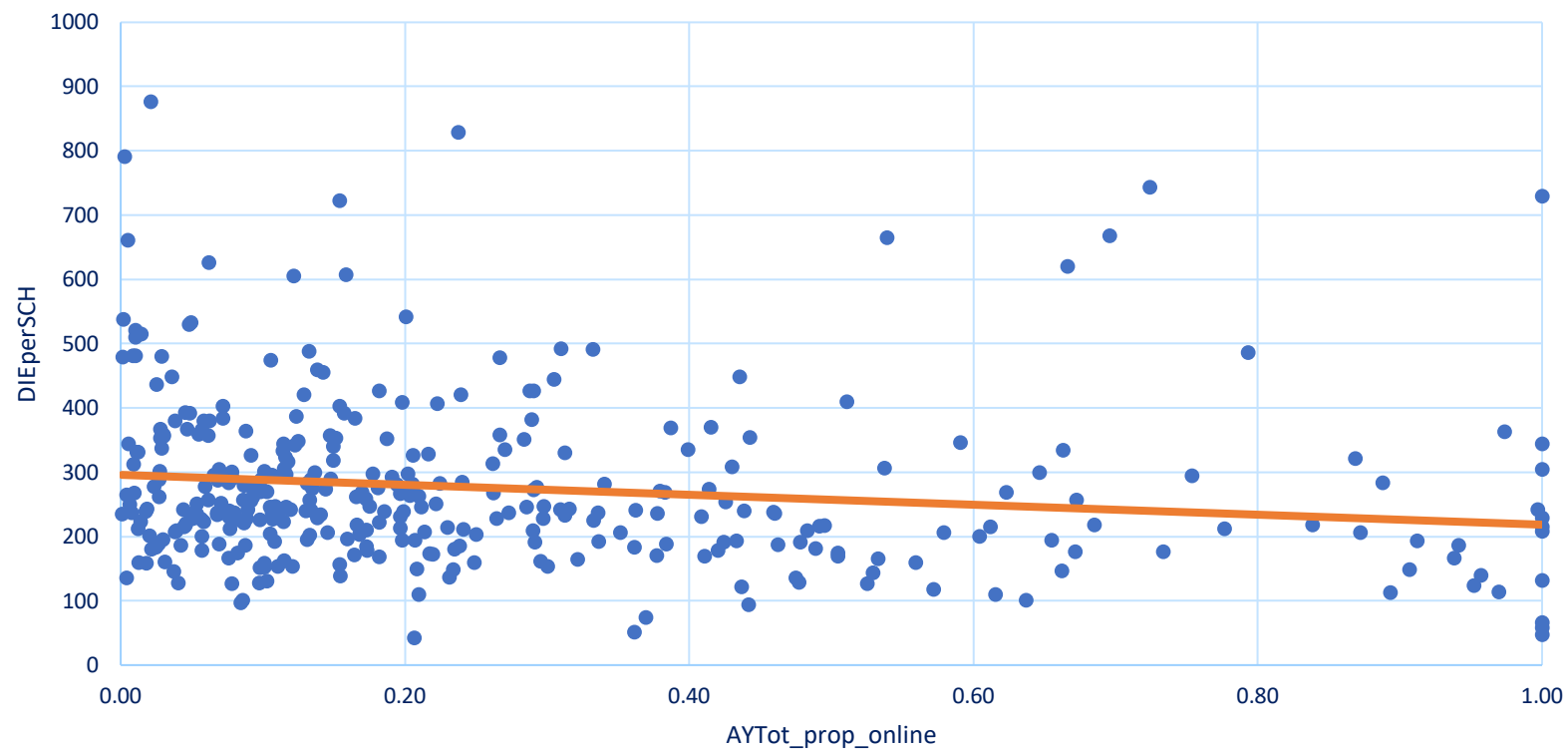
Note: excludes any program where DIE/SCH > \$1000.

Cost to Proportion Online Correlations

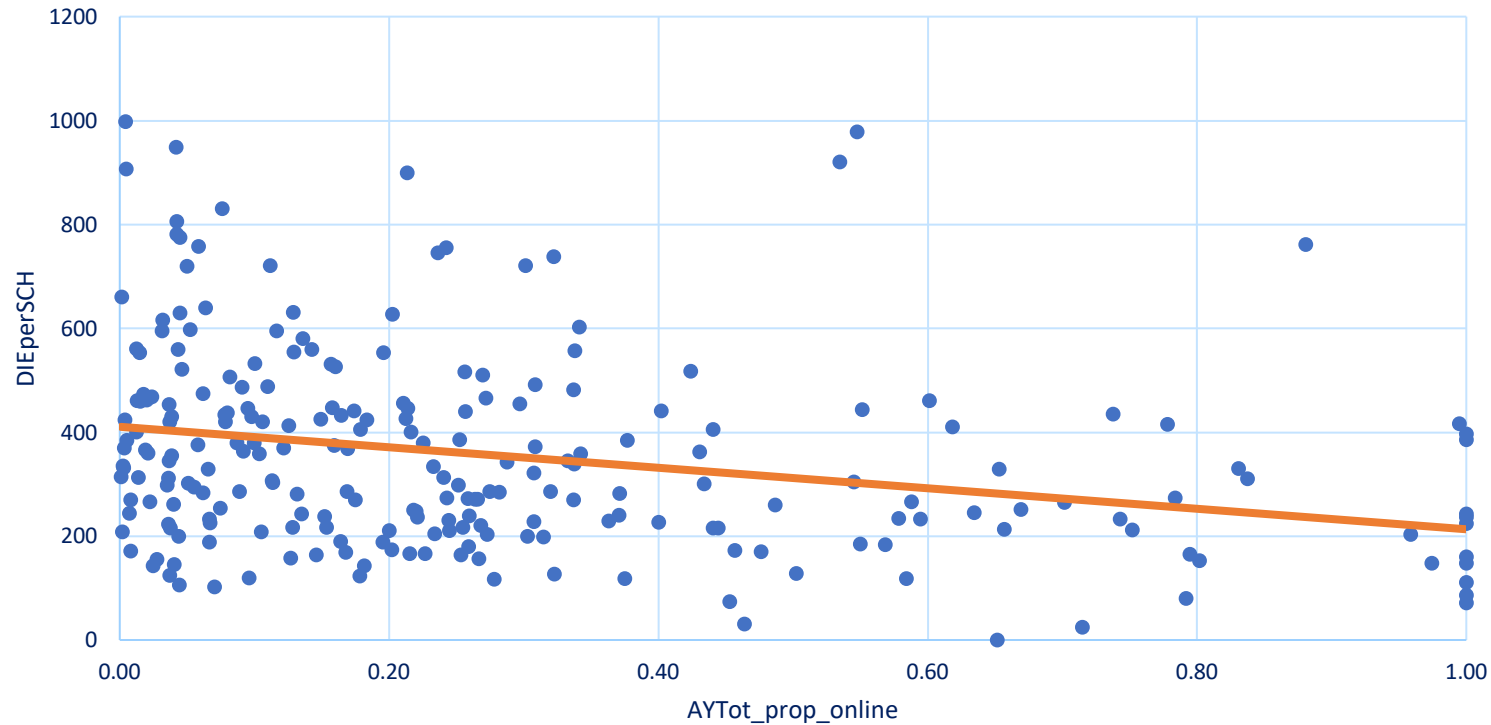
Academic Discipline	2015 \$/SCH	2019 \$/SCH	Growth in \$/SCH	Growth in % online SCH	Correlation with Proportion Online SCH
Business (52)	\$265	\$276	\$11	10%	$r = -.156, p = .003, n=357$
Education (13)	\$350	\$348	-\$3	11%	x
Health Professions (51)	\$334	\$356	\$22	5%	$r = -.279, p < .001, n=240$
Psychology (42)	\$198	\$229	\$31	10%	$r = -.258, p = .005, n=116$
Communication (9)	\$218	\$245	\$27	4%	x
Math (27)	\$168	\$192	\$24	0%	x
History (54)	\$205	\$248	\$43	0%	$r = -.322, p = .004, n=78$
Biology (26)	\$297	\$302	\$4	1%	x
English (23)	\$213	\$245	\$32	2%	x

Note: excludes any program where DIE/SCH > \$1000.

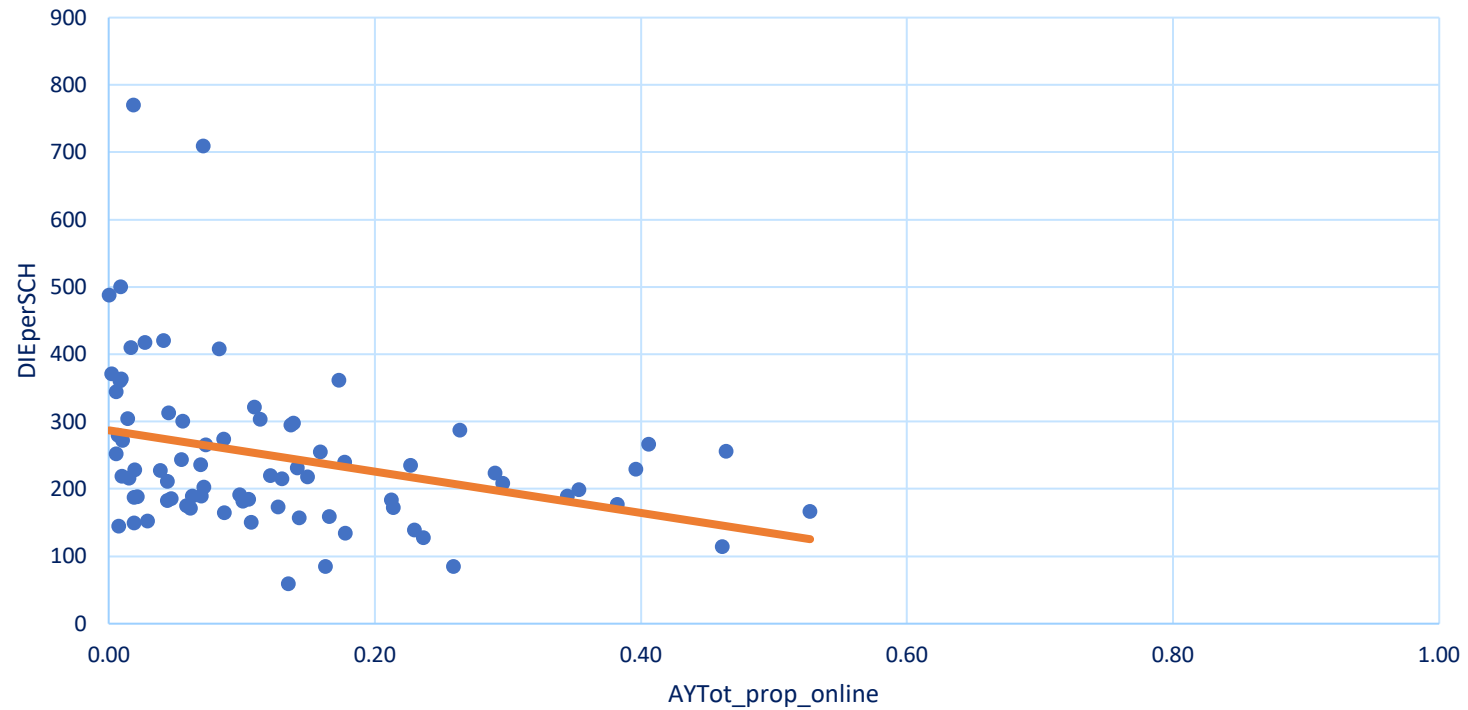
Business (52) - Scatterplot of DIE/SCH by Proportion of Online SCH for the year (2019)



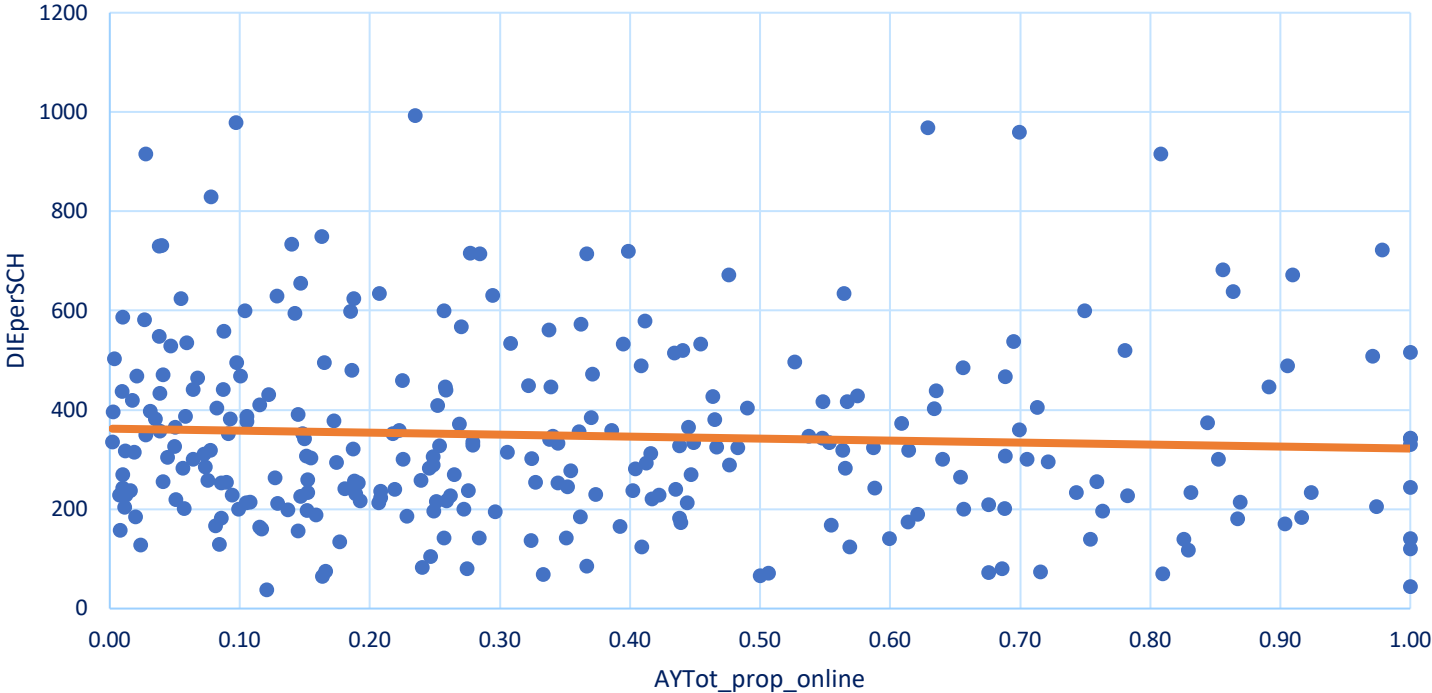
Health Professions (51) - Scatterplot of DIE/SCH by Proportion of Online SCH for the year (2019)



History (54) - Scatterplot of DIE/SCH by Proportion of Online SCH for the year (2019)

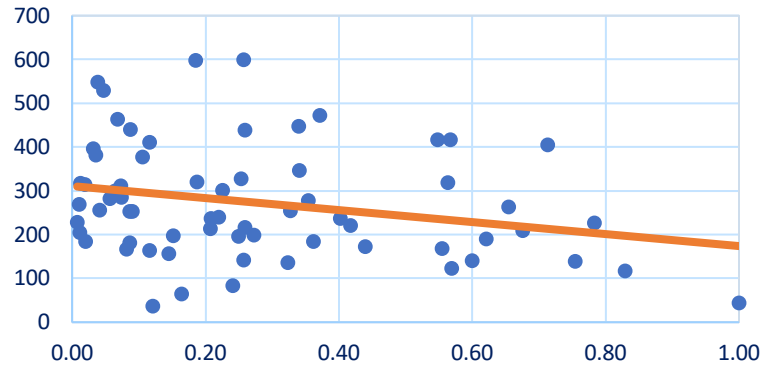


Education (13) – Scatterplot of DIE/SCH by Proportion of Online SCH for the year (2019)



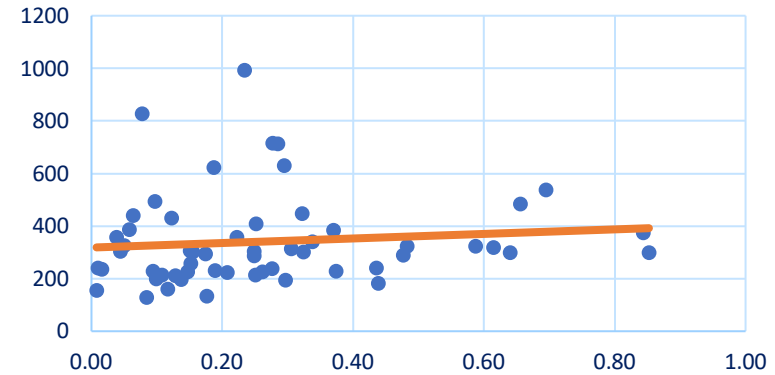
Education Scatterplots by Degree Group

Deg Grp 75-100% UG



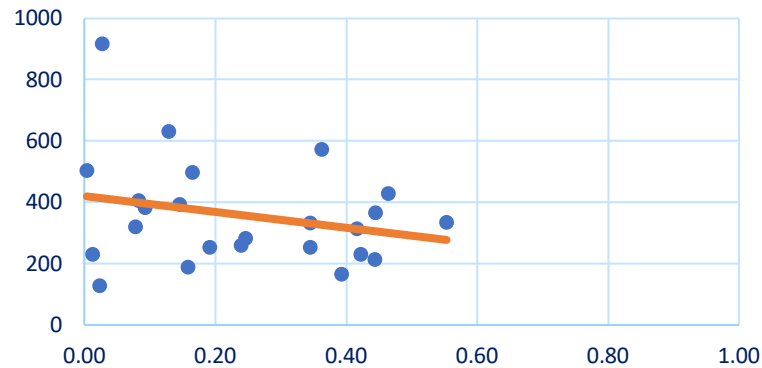
$r = -.255$
 $p = .039$
 $N = 66$

Deg Grp 50-<75% UG



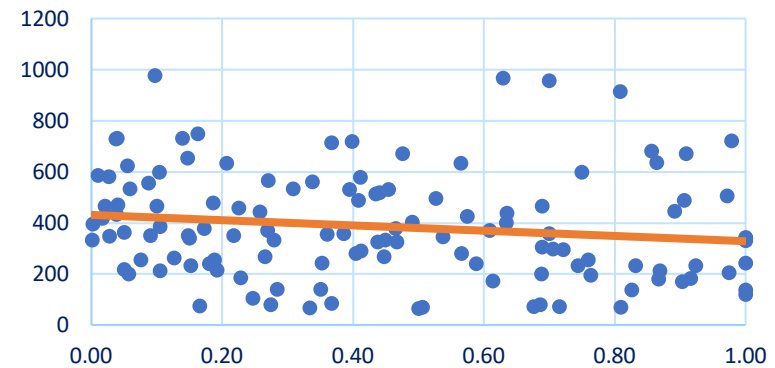
$r = .099$
 $p = .466$
 $n = 56$

Deg Grp 25-<50% UG



$r = -.253$
 $p = .234$
 $n = 24$

Deg Grp 0-<25% UG



$r = -.153$
 $p = .089$
 $n = 124$

Conclusions

- Discipline level variation in online student credit hours
- As percent of online courses increases, cost of instruction trends downward
- Many variables involved in the cost equation that aren't covered here
- Planning for future changes after COVID-19 will require discipline level comparisons

Limitations

- Analysis limited to departments where online SCH reported; potential for missing data
- Adjust 2015 benchmark cost data for inflation
- Correlation does not imply causality
- Many variables influence cost of instruction

Next Steps

- Expand analysis to larger subset of academic disciplines
- Develop multilevel model to account for differentiated faculty types and course levels
- 2020 cost study cycle as benchmark for pre-Covid 19 realities
 - What will be the lasting effects of our “New Normal”?

Thank you for attending!



Questions?

Click here for a link
to our new
introductory
brochure!

An Introduction to
THE COST STUDY
at the University of Delaware

ire-cost@udel.edu
or
<https://ire.udel.edu/cost/>

marcia@udel.edu