

New Educators Workshop
SIGCSE 2018

Career-path perspectives for CS educators

Zach Dodds
Harvey Mudd College

The landscape today...



and not all
of it is
visible!

the spectrum of possibilities is vast

A remarkable time for CS educators

My path (so far...)



1993 spring
(egg) fling

91-94 High-school teacher at Evansville Day School (in IN)

94-99 Grad student and TA, Yale University

99-18 CS professor at Harvey Mudd College

05-18 Adjunct professor at Claremont Graduate University



2018

My path (so far...)



1993 spring
(egg) fling

- 91-94 High-school teacher at Evansville Day School (in IN) *[4] Teaching per se (though not college-level)*
- 94-99 Grad student and TA at Fairleigh Dickinson University *[1] Research university (as a grad student)*
- 99-18 CS professor at Harvey Mudd College *[3] Liberal Arts College experience*
- 05-18 Adjunct professor at Claremont Graduate University *[2] Regional/Teaching-university experience*



2018

Impressions...

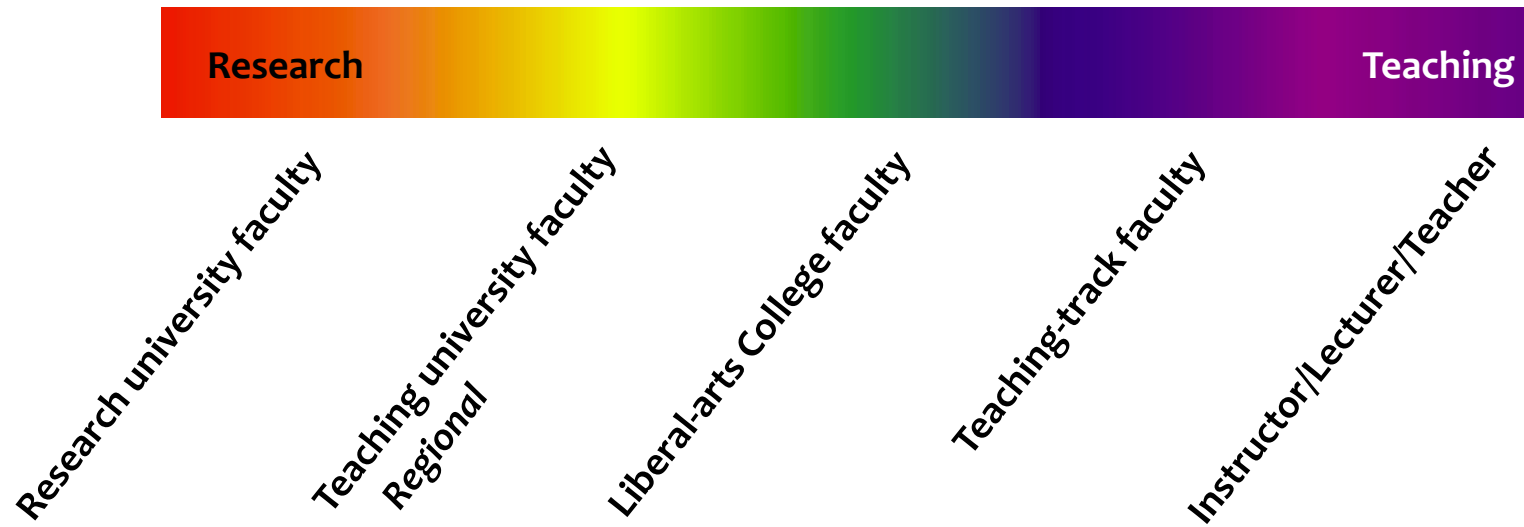
Let's "*push around*" our impressions of different types of faculty positions*:

1. Research university faculty
2. Teaching/regional university faculty
3. Liberal arts college faculty
4. Teaching-track faculty

* SIGCSE-centric,
but far from
exhaustive

so that...

Simplified spectrum*

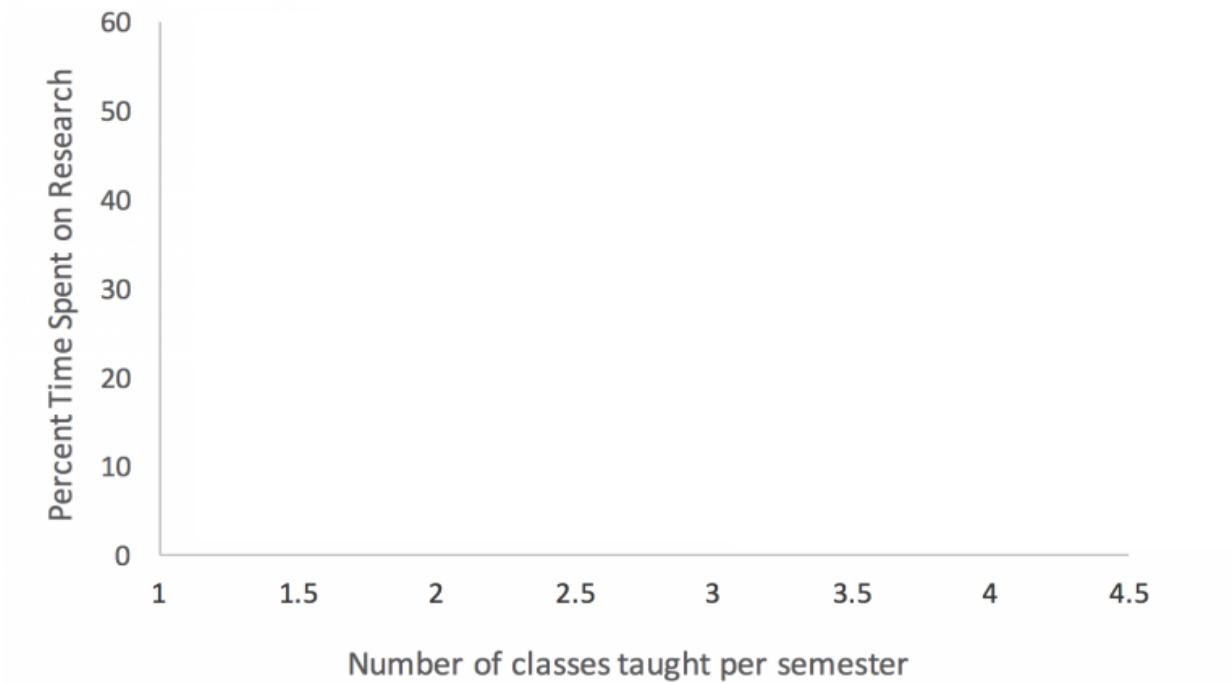


*not to
scale

only 1d

Data?

n = 90; STEM; 2016
Alexandra Wright

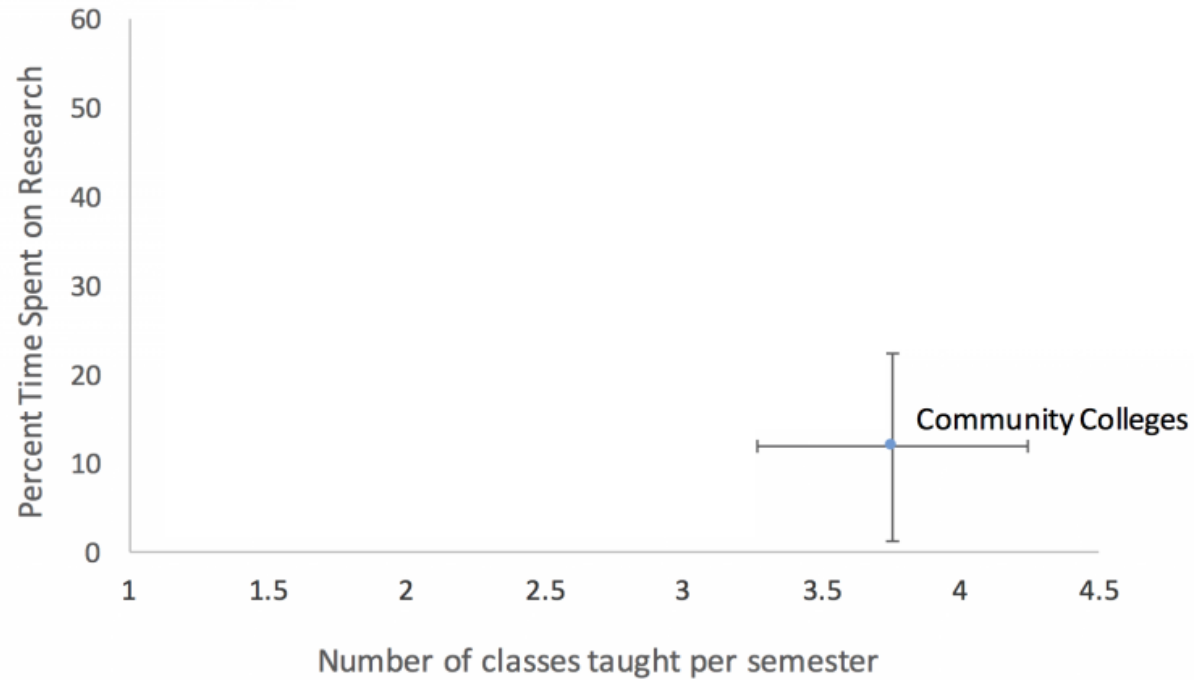


Balancing acts

Estimate the middle 50% range for # of classes and % time on research
for [1] R1s [2] Regional "R2" Univ. [3] SLACs [4] Teaching-track faculty

Data!

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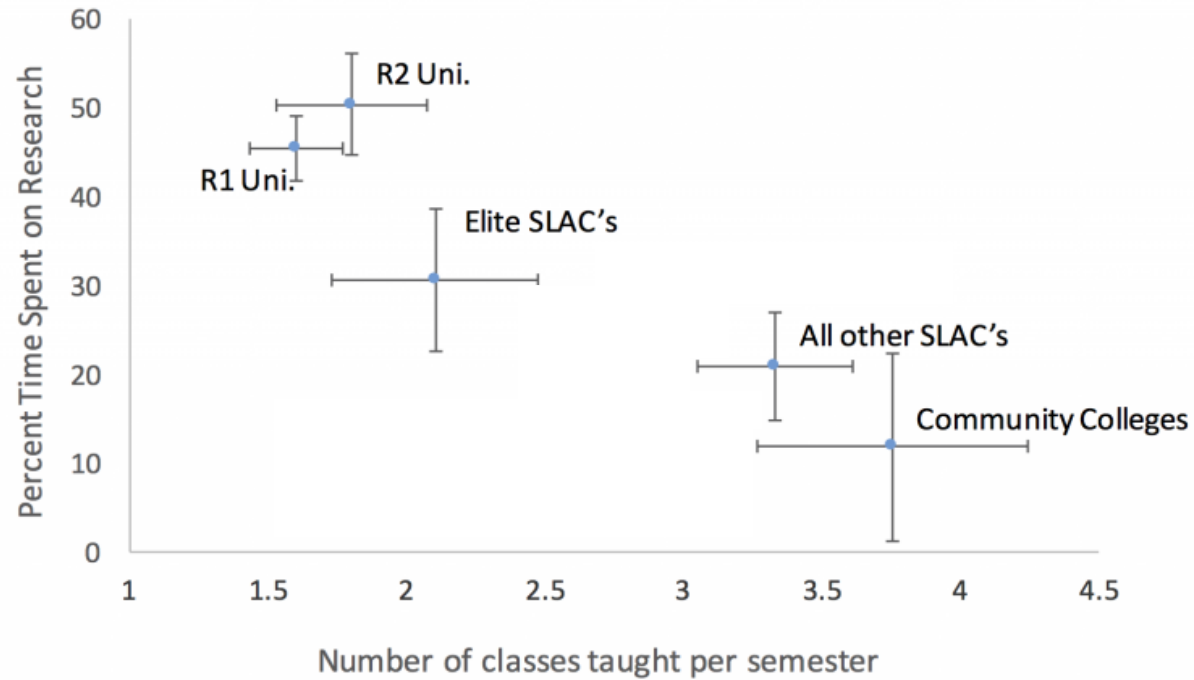


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Voices > Data

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2. Teaching/regional university faculty
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We* asked colleagues on these four paths to share:

- A. What do you **like most** about your type of position?
- B. What **goals and characteristics** suit/suggest this career path?
- C. What **advice** do you have for someone starting this path?

*thank you, Dave Reed!

Research universities

the soup that CS grad students may be most familiar with

research is central to career ~ and advancement

- writing grants, conducting research, advising grad students, running seminars
- some teaching expected, perhaps of grads or undergrads, TA support

teaching may not define the institution's identity

- teaching may vary widely
- bad teaching might cost you tenure, but good teaching alone won't earn it



Susanne Hambrusch, Purdue



Dan Grossman, U. Washington

What do you like?

I enjoy the flexibility my career offers, especially as a more senior individual: choose your research paths.



You juggle several different things: research, undergraduate teaching, graduate teaching, advising, service work, grant-writing, and more. It sounds like a 'minus' but it's not: you get to pick out the interesting parts and as your career progresses you get to change how you divide your limited time to pursue new interests.



Characteristics?

Excitement for many different opportunities: you'll have opportunities for interdisciplinary research, opportunities for administrative experiences (chair, dean), opportunities for leaves to work at funding agencies, a wide range of opportunities for mentoring students and junior faculty, building new academic programs, and more.



You should enjoy leading a large research agenda, writing large grants, writing several papers a year, and working closely with PhD students for 5+ years of their lives because it is not an optional part of the career, at least not for the first 15-20 years.



Advice

Build your research career; get help and advice from experienced faculty; focus on what matters for tenure. You will have more options later in your academic career.



Get lots of advice from more senior mentors, but if you really want to do something, **don't ask** for advice about whether you should: If the advice comes back "no" it becomes harder to pursue a "yes." So, seek advice when you're honestly not sure what you should do.



Regional universities

regional universities/colleges **may** place more emphasis on teaching

- tend to be tuition-driven, not grant-driven ~ student-experience incentive
- may be B.S. only, or possibly M.S.

teaching load may be higher; research/scholarship still expected

- may have lower expectations regarding grants/publications
- may have limited grad students, so research may involve undergrads



Liz Johnson, Xavier



Ray Toal, LMU

What do you like?

An academic position gives you an incredible opportunity to serve. You serve students that you come into contact with and that trust you for guidance. It's a big responsibility but there are few better feelings than helping people turn around or get out of troublesome situations. You get to serve an institution that works for the betterment of society through education. You serve your peers that are also looking to make changes in society and the world by bringing up new ideas.



"I like the idea that I am making a difference in the future of individual students and, therefore, in the world through them. Whether I'm teaching majors or non-majors, I like the feeling that what I do matters."



Characteristics?

We look for a service mentality, technical competence, a willingness to engage in dialog, a love of trying new things, and people who are both friendly and empathetic, but also with a good understanding of professional distance. We like honesty and openness and an inclusive mindset.



It's essential to have a love of teaching, a good sense of humor, and an ability to multi-task. It's not necessary to be an extrovert at heart -- I'm certainly not -- but you do need to be able to connect with lots of different types of people -- both colleagues and students. The job can be exhausting at times, especially for junior faculty members -- you have to love it.



Advice

Have a good understanding of what you hope to accomplish in life, how you would live your life, and how you would bring joy to others (certainly by coaching, mentoring, and opening the eyes of young people, but also by bringing wonder to everyday people through good work in your chosen field).



Seek out mentors you trust, both in your department and out. They can give advice, commiserate, congratulate and are just downright essential.



Liberal Arts Colleges

Even more student-centered than teaching universities

- typically, small departments and small enrollments
- faculty must teach a wide range of classes
- greater emphasis on faculty-student interaction, e.g., independent studies

Scholarship and publications are expected, at varying levels

- grant writing unlikely to be essential
- variety of valued venues, e.g., SIGCSE!
- student involvement in scholarship is expected



Deepak Kumar, Bryn Mawr



Valerie Barr, Union College et al.

What do you like?

I love having real interaction with my students, both inside and outside of the classroom. I can have students to a lot of hands-on work with supervision, and try to use a lot of question/answer-style of lecturing in running my class.



Focus of my position is equally on doing good scholarship AND teaching. CS in the liberal arts context goes beyond the engineering aspects to CS as discipline of intellectual inquiry with a healthy dose of a sense of history, critical thinking, its place in society, and relationship to other academic pursuits.



Characteristics?

It helps to want to actually deal with students, to be social, to value interaction. If you are someone who wants to hide away in your office, be on campus two days a week, to "lecture and leave," the small college experience is not for you!



The ability to recognize and take advantage of opportunities offered by liberal arts colleges to rethink and innovate the curriculum (i.e., Not a cog in the big wheel.) A commitment to engaging students in research and lifelong mentoring.



Advice

Research productivity will be slower if you are at a liberal arts college. You have to be okay with that, be willing to not measure your 'success' against that of your grad school peers who go into research institutions.



Faculty positions at liberal arts colleges are NOT teaching jobs. In fact quite the opposite. They give you the freedom to carry out your scholarship. But, you do need a deep commitment to sharing your scholarship through your teaching. You also have to be a good teacher."



Teaching-track faculty

Many R1 universities have introduced teaching-track faculty positions

- allow gifted teachers to focus on classes with fewer research expectations
- highly valued ~ and greater job security (tenure, SOE)
- usually cover intro courses and the undergraduate curriculum

Other instructor/lecturer positions offer many options

- can provide flexibility, chance to gain experience
- especially in CS, schools run the gamut from 2-year to R1 (don't forget H.S.!)
- may not carry full benefits or security of employment



Julie Zelenski, Stanford



Dan Garcia, UC Berkeley

What do you like?

The delight in teaching new-to-computing students. Not having to worry about a paper trail or grant writing for promotion. Feeling 'Parental' -- nurturing young students from frosh through senior. Getting to play -- writing a new project, learning a new tool, etc. Knowing you're making a difference in kids' lives (who graduate and tell you that years later)."



High expectation about teaching effectiveness coupled with low teaching load. I have time/focus to invest in a superb job on the one (or at most two) courses I am teaching and I feel my efforts are recognized and rewarded."



Characteristics?

Loves people, outgoing. Loves computer science. Loves to be on stage with hundreds of students (i.e., enjoys the spotlight). Enjoys managing staff. Is reflective, always wants to improve. Is a perfectionist, optimist, cheerful. Can handle ~30 initiatives going on at once.



Very strong interest in teaching, not hoping to do much/any research, appreciate or at least be ok with any different-class citizen arrangement re: teaching versus research faculty (note I didn't say second-class, but depending on the institution YMMV)."



Advice

Your career can easily fill 120 hours a week. The trick is keeping it between 40-80, and knowing how and where to set boundaries. Nurture incredible staff, include them in all decisions. Who you know is just as important as what you know. Network early, often. Don't be afraid to try something crazy, new."



Get experience as a grad student — find opportunity to move beyond head TA/preceptor type duties if possible: co-teach with experienced instructor, teach summer course, etc. Come to SIGCSE!



Bonus Quotes

"When I'm doing *research*, I'm often nervous, frustrated, or worried and rarely particularly enthusiastic or excited. **When things go well, I'm relieved.**"

"When I'm *teaching*, I'm often nervous, frustrated, or worried but almost always enthusiastic and excited as well. **When things go well, I'm exhilarated.**"

Parting thoughts

be passionate

do what you love and don't be afraid to show it

be aware

caution walking into a new school/department/tradition

be realistic

you can only do so much ~ prioritize and pick your battles

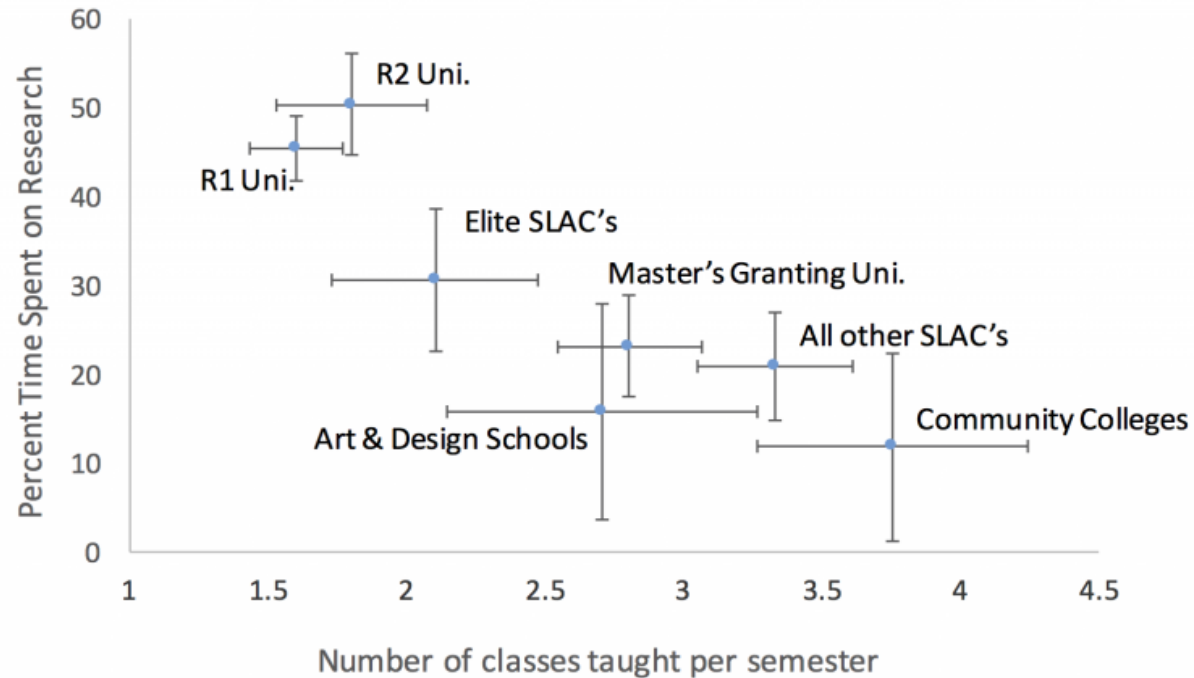
be social

network across your campus, the CS community, and beyond

 *connect at NEW & SIGCSE...*

Impressions

2d Data

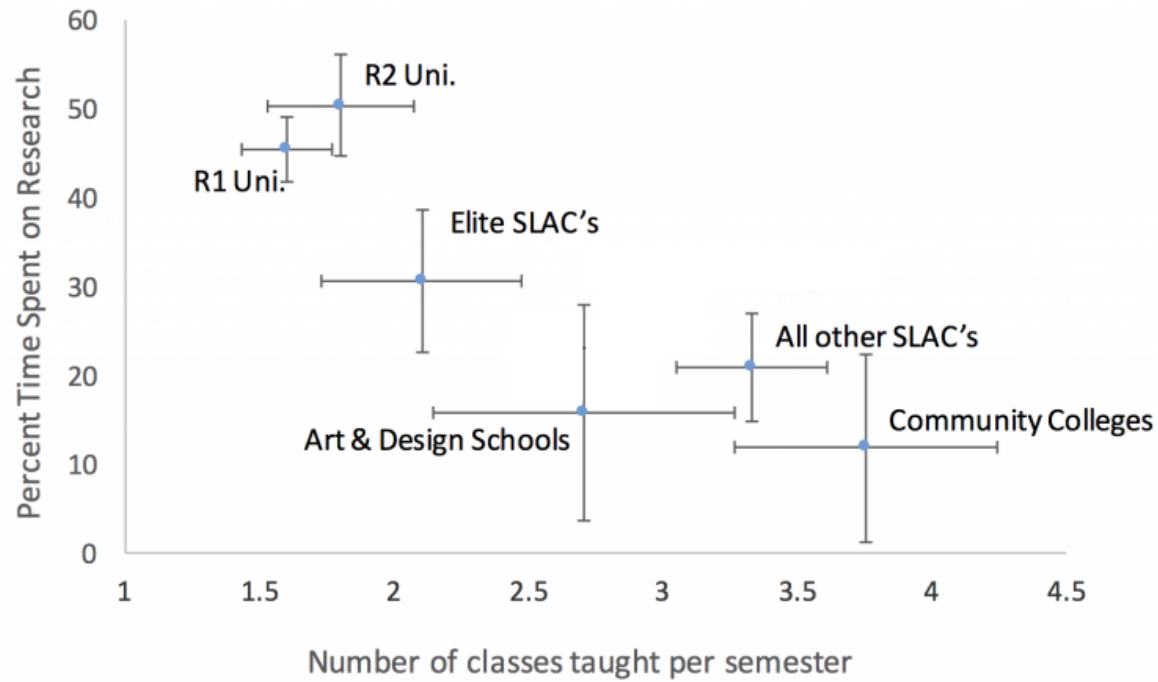


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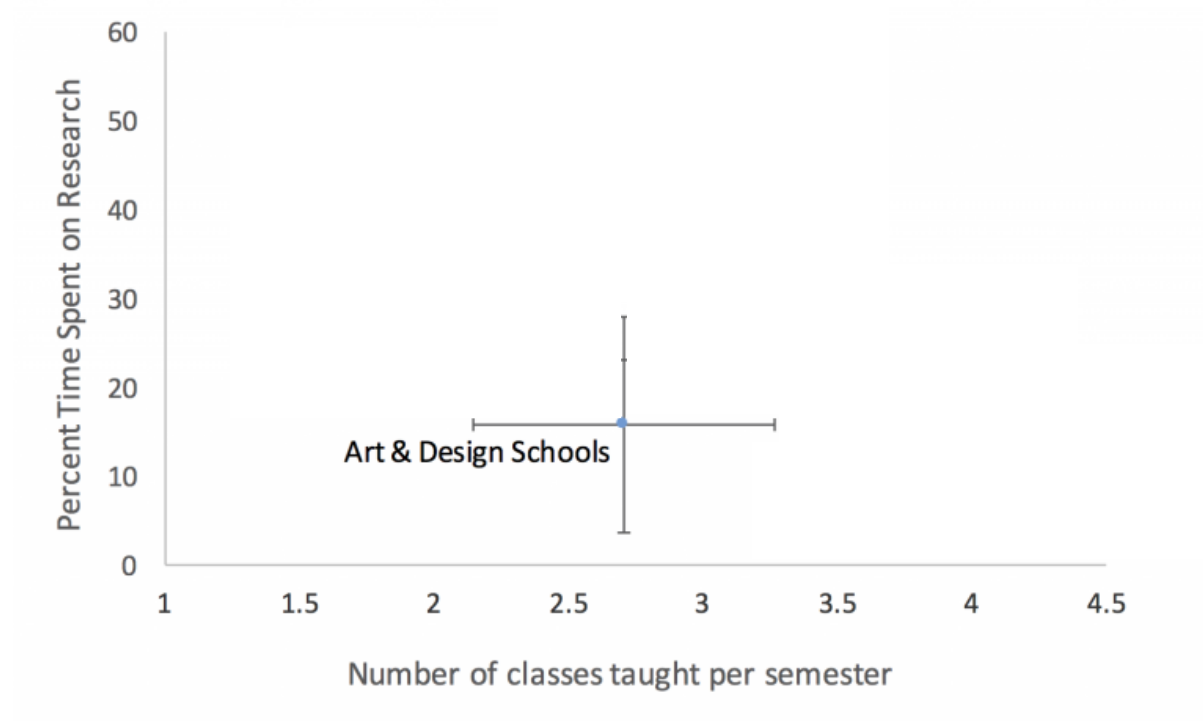


Balancing acts

Estimate the middle 50% range for # of classes (x) and % time on research (y) for [1] R1s [2] Regional "R2" Univ. [3] SLACs [5] Two-year colleges

Impressions

Data

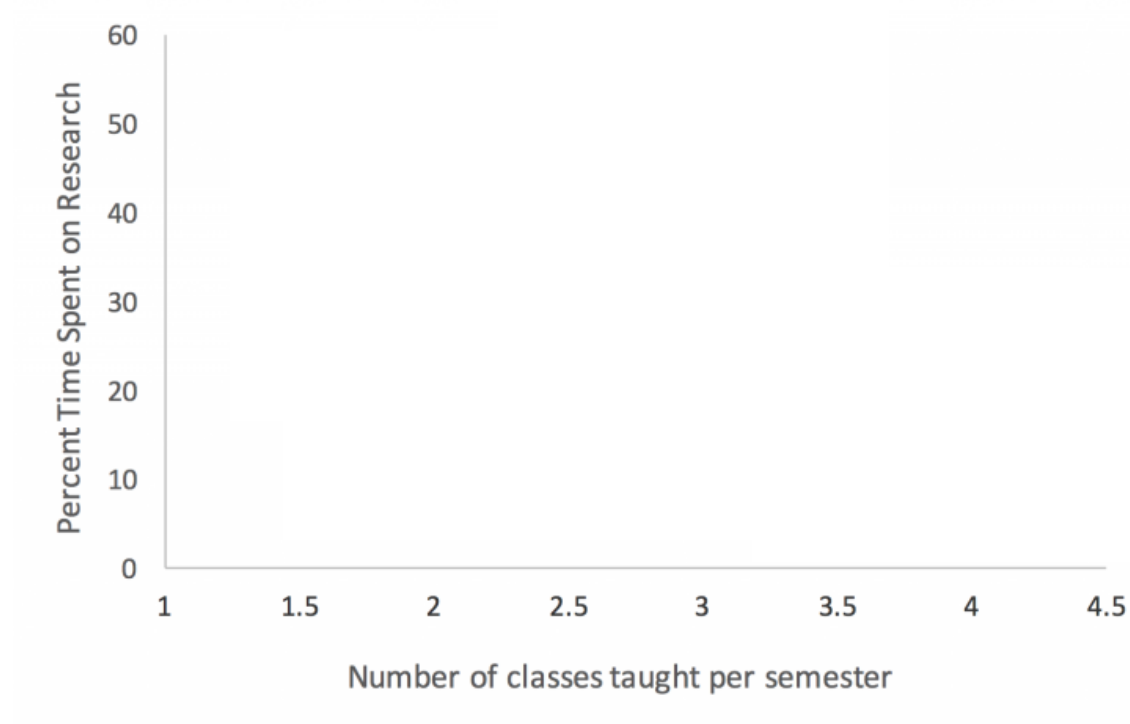


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Impressions

What's the balance?

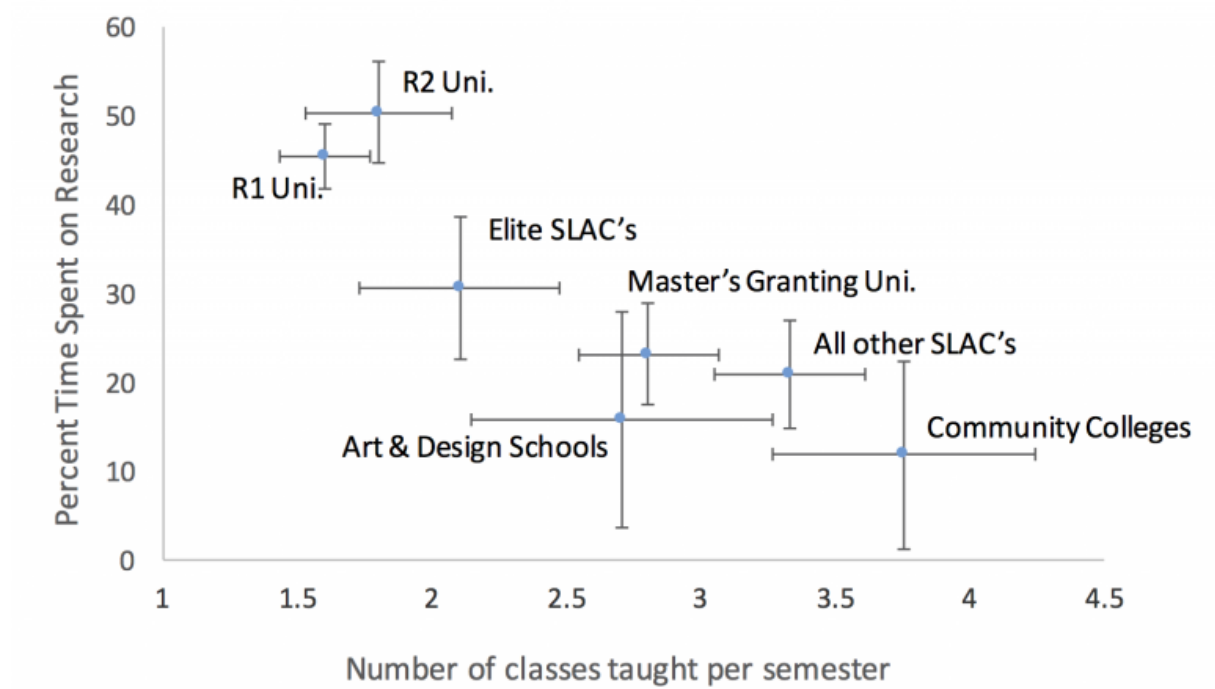


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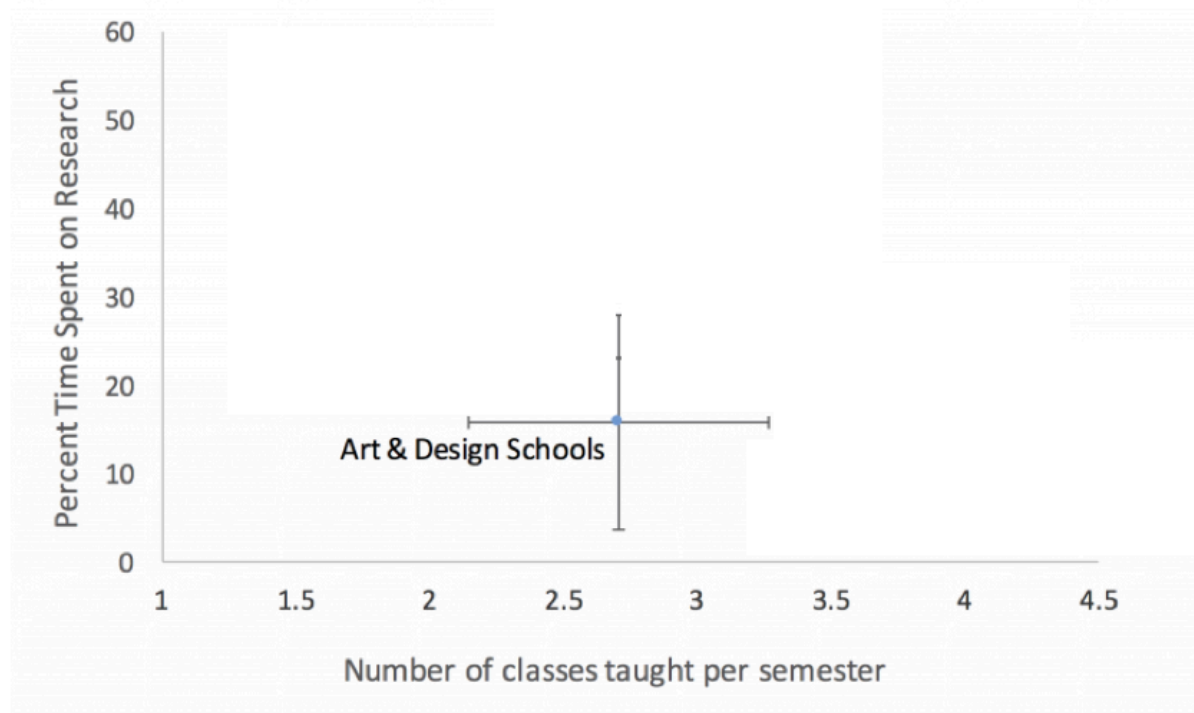


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