Data Appendix for "Survey of Pre-Doctoral Research Experiences in Economics"

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August 2020

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Survey Methodology

We collected responses for our survey in June and July of 2020. We recruited participants through the following methods:

1. We contacted current post-undergraduate, pre-doctoral researchers at the following academic institutions: Abdul Latif Jameel Poverty Action Lab, Columbia University[1], Harvard University[2], Innovations for Poverty Action, Massachusetts Institute of Technology[3], National Bureau of Economic Research, Northwestern University[4], New York University[5], Princeton University[6], Stanford University[7], UC Berkeley[8], University of Chicago[9], and Yale University[10].

2. We contacted current post-undergraduate, pre-doctoral researchers at the following non-academic institutions: the Consumer Financial Protection Bureau, the Federal Reserve Bank of New York, the Federal Reserve Bank of Chicago, the Federal Reserve Board of Governors, the International Monetary Fund, Microsoft Research, RAND Corporation, and the World Bank.

3. We advertised our survey on Twitter using our personal Twitter accounts and the #EconTwitter hashtag.

We received a total of 410 clicks on our survey distribution link, and 258 participants completed the survey. All completed responses were manually validated using the email address provided by participants. We limited our analytic sample to valid participants in recent full-time positions at U.S. institutions, leaving us with a total of 203 responses. We decided against presenting results for non-U.S institutions due to limited sample size. Table 1 explains the filtering criteria we employed in further detail. Table 2 presents counts of participants by institution in our analytic sample.

A number of questions were optional for participants to answer. Table 3 provides the percent of responses non-missing in our analytic sample for each optional question. The remaining of this data appendix will consist of our survey instrument as well as tabulations or summary statistics by institution type for every close-ended question.

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[1]Columbia Business School
[2]Harvard Economics, Harvard Kennedy School, and Opportunity Insights Lab
[3]MIT Economics
[4]Global Poverty Research Lab
[5]NYU Stern School of Business
[6]Industrial Relations Section and Princeton Public Finance
[7]Stanford Graduate School of Business, Stanford Institute for Economic Policy Research, and Stanford Law School
[8]UC Berkeley Economics and UC Berkeley Haas School of Business
[9]Becker Friedman Institute, Energy & Environment Lab, and University of Chicago Booth School of Business
[10]Tobin Center for Economic Policy

Table 1: **Sample Sizes**

Criterion	N
Clicked on survey distribution link	410
Consented and finished survey	258
Valid e-mail	254
Full-time position	247
Institution in U.S.	226
Position end date $\geq$ 2018	222
Position started $\leq$ March 2020	203

Note: Sample sizes are cumulative of criteria; i.e., they indicate the number of observations given a criterion and all preceding criteria.

Table 2: **Institution Counts**

Academic		Non-academic	
Institution	Count	Institution	Count
Stanford	27	Fed system	26
Harvard	21	RAND	17
UChicago	20	IMF	11
Yale	15	CFPB	4
Princeton	11	Microsoft Research	3
Northwestern	9	Other non-academic	4
MIT	6		
NYU	6		
Columbia	5		
JPAL / IPA	4		
NBER	4		
Other academic	10		
Total	138		65

Note: Institutions with small cell counts are grouped to protect confidentiality.

Table 3: **Percent Non-Missing for Optional Questions**

Variable	Non-Missing
U.S. citizen or permanent resident	99.0%
Racial or ethnic heritage	98.0%
Gender	99.0%
Year of bachelor's degree	99.0%
Parent highest level of schooling	98.5%
Name of position's program, group, or lab	67.5%
Name of bachelor's institution	84.7%
Name of master's institution	78.4%
Name of PhD institution	92.2%

Note: Percents for *Name of master's institution* and *Name of PhD institution* are conditional on respondents answering that they hold a master's degree and that they are attending a PhD program in economics or a related field, respectively.

Survey of Post-Undergraduate Research Experiences in Economics

Thank you for your interest in our survey!

Study Overview

Participating in a post-undergraduate research experience (e.g., a predoctoral fellowship, full time research assistant position) is becoming increasingly common for incoming PhD students in economics and related fields (Schlauch and Startz 2018). However, often the information on how to get these positions and what they entail is passed only through informal networks. The goal of this survey is to make this information more transparent and widely available.

This survey will take 10-15 minutes to complete.

Throughout the survey, you will be asked the following information:

1. Demographic background;
2. Current institution characteristics;
3. Academic background;
4. Application process for position;
5. Day-to-day environment;
6. Future plans.

Voluntary Participation

Participation in this survey is completely voluntary. To ensure the accuracy of responses, we ask that you provide a work email address (e.g., the ones that end with @school.edu or @company.com). Please rest assured that the collection of this information will be used solely for validation and communication. Email addresses will be removed from all responses during analysis.

Your private information collected as part of the research, even if identifiers are removed, will not be used or distributed for future research studies.

Compensation

There is no compensation for participating in this survey.

Privacy and Confidentiality

All data collected will be stored on a secure server and analyzed in an anonymous way. No raw, individual response-level data will be made public.

Risks and Benefits

There are no foreseeable risks associated with this survey. The benefits which may reasonably be expected to result from this research include increasing the accessibility of post-undergraduate research experiences in economics and related fields. The research team cannot and does not guarantee or promise that you will receive any benefits from this survey.

Contact Information

All questions, comments or complaints are welcome! Please send them to Dominic Russel (dom-russel@gmail.com), Pauline Liang (paulineliang7829@gmail.com), and Zong Huang (zongyhuang@gmail.com).

If you are not satisfied with how this survey is being conducted, or if you have any concerns, complaints, or general questions about the research or your rights as a participant, please contact the Stanford Institutional Review Board (IRB) to speak to someone independent of the research team at IRB2-Manager@lists.stanford.edu, or toll free at 1-866-680-2906. You can also write to the Stanford IRB, Stanford University, 1705 El Camino Real, Palo Alto, CA 94306.

Please indicate below whether you agree to participate in the study.

- I agree to participate in the survey.
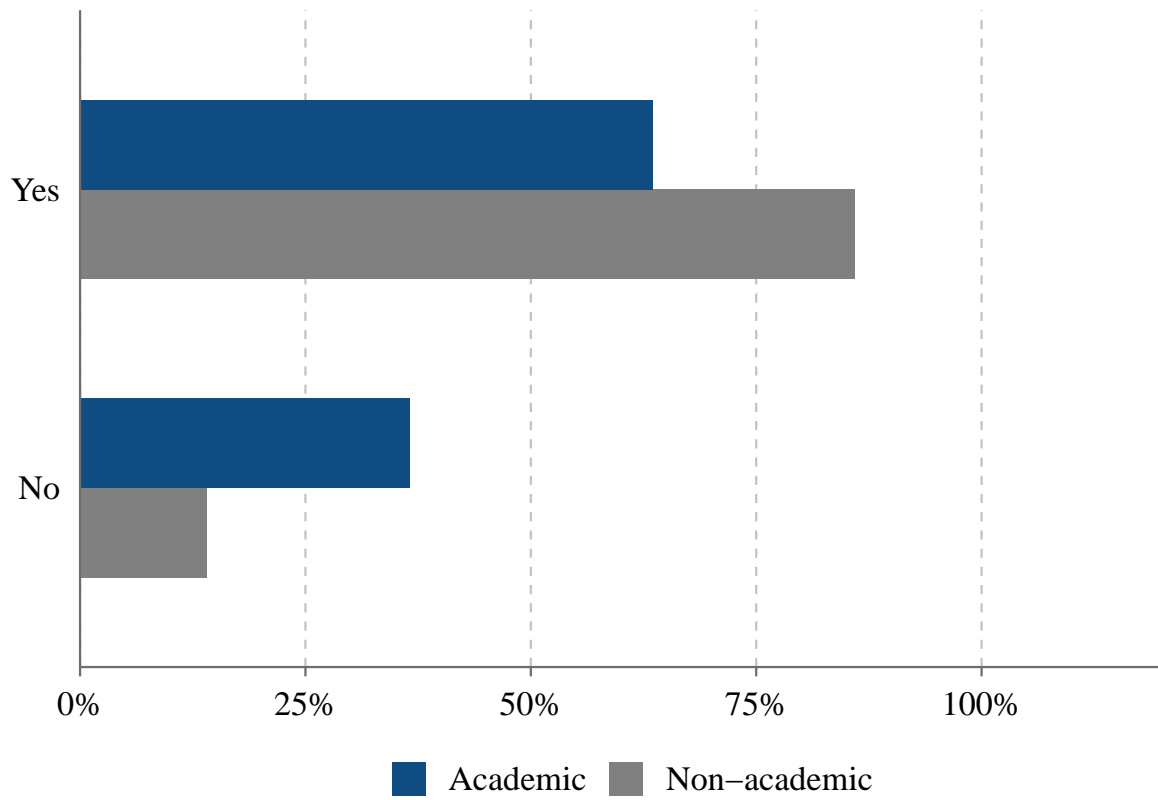- I do not agree to participate in the survey.

What is your work email address?

Demographic Background (Optional)

Please tell us about your demographic background. This section is optional. If you prefer not to answer any question in this section, please click next.

Are you a U.S. citizen or permanent resident?
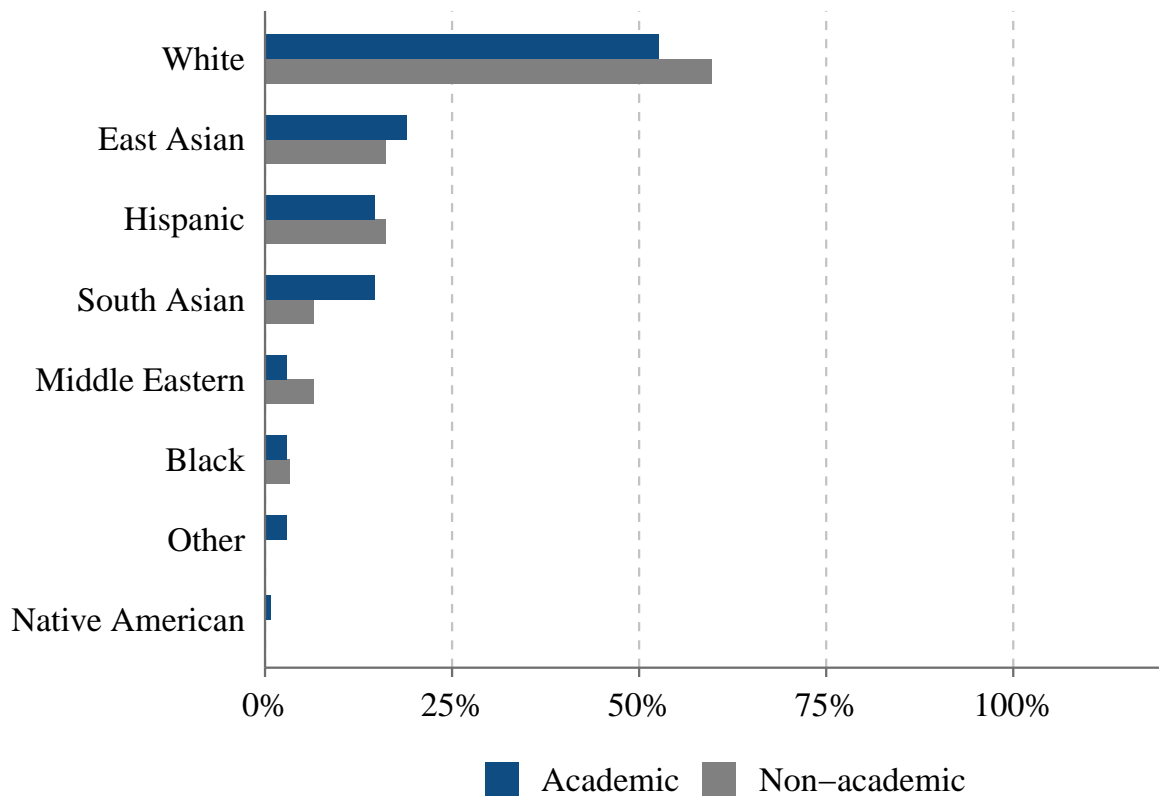
- Yes
- No

Which of the following best represents your racial or ethnic heritage? Please select all that apply.

- Black, Afro-Caribbean, or African American East
- Asian or Asian American
- Hispanic, Latino, or Spanish
- Middle Eastern or Arab American
- Native American or Alaskan Native
- Non-Hispanic White or Caucasian
- South Asian, Indian, or Indian American
- Other

To which gender do you most identify?

- Male
- Female
- Non-binary
- Other
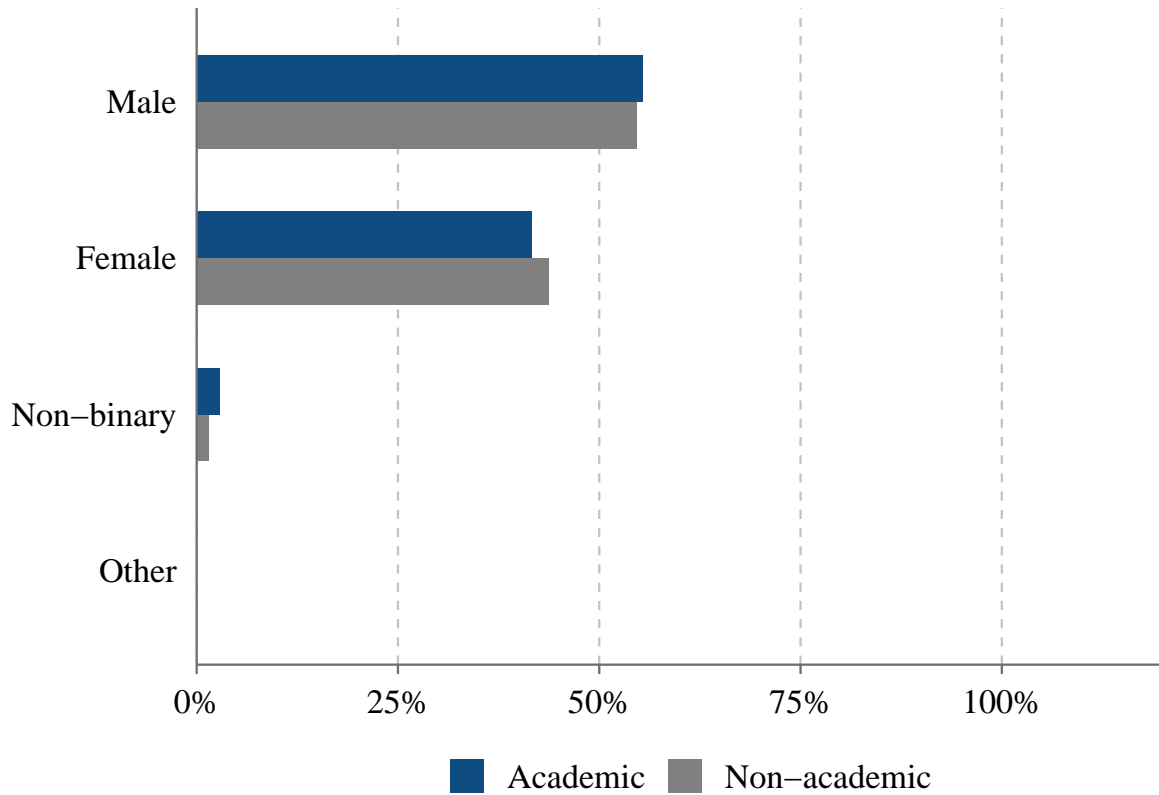
In what year did you receive your bachelor's degree?

Academic   Non–academic
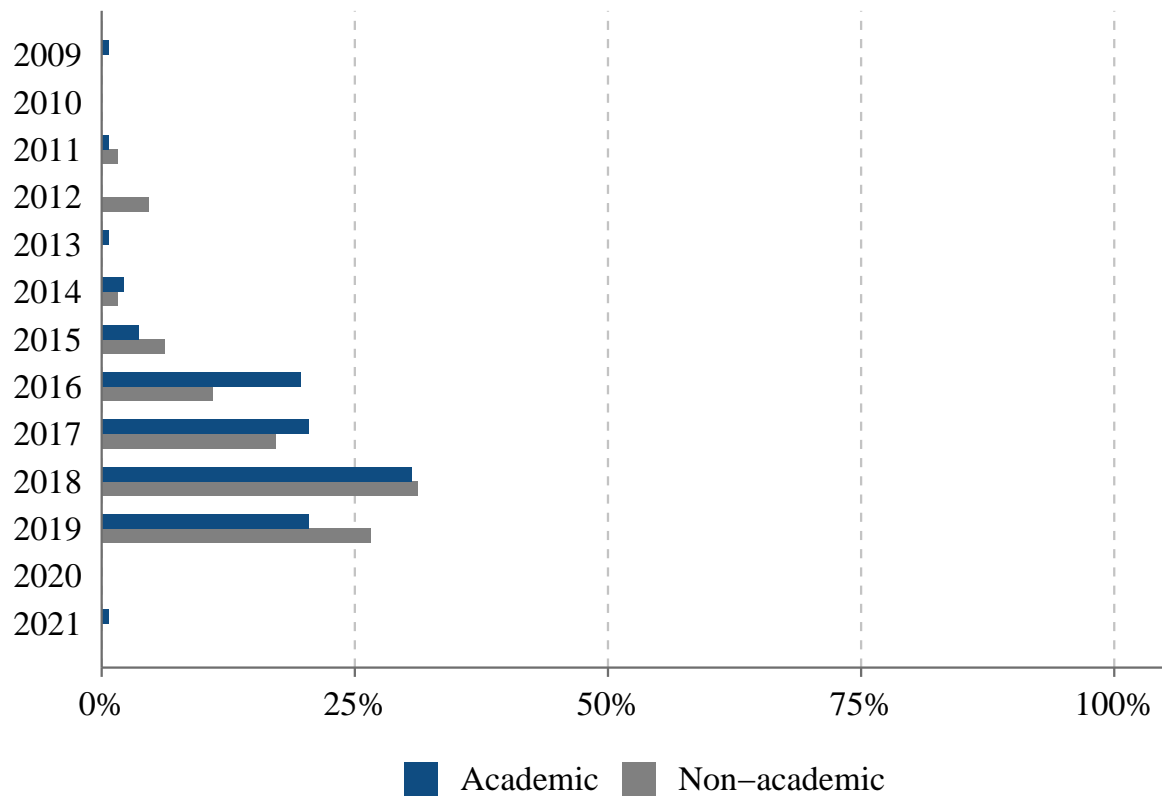
What is the highest level of schooling completed by your parents or guardians?

- Less than a high school diploma
- High school diploma or equivalent (e.g., GED)
- Associate's degree
- Bachelor's degree
- Master's or professional graduate degree (e.g., MD, MBA, JD)
- Doctoral degree
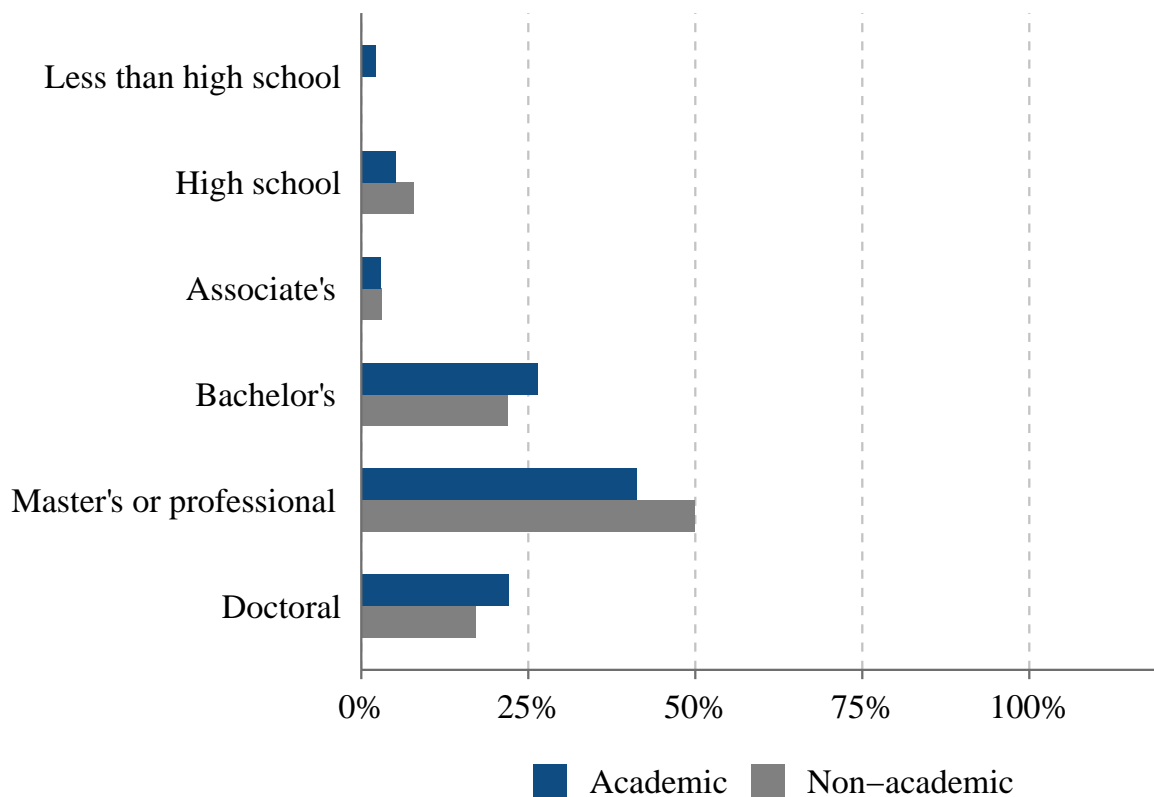
Current Institution Characteristics

Please tell us about the institution for your current position. If you are a former post-undergraduate researcher, please answer all questions referring to current position as if you were still in your most recent post-undergraduate research experience.

What is the type of institution affiliated with your current position?

- Academic (e.g., a university or research lab)
- Government agency (e.g., Federal Reserve, IMF)
- Economic consulting (e.g., NERA, Cornerstone)
- Think tank (e.g., RAND, Brookings)
- Other
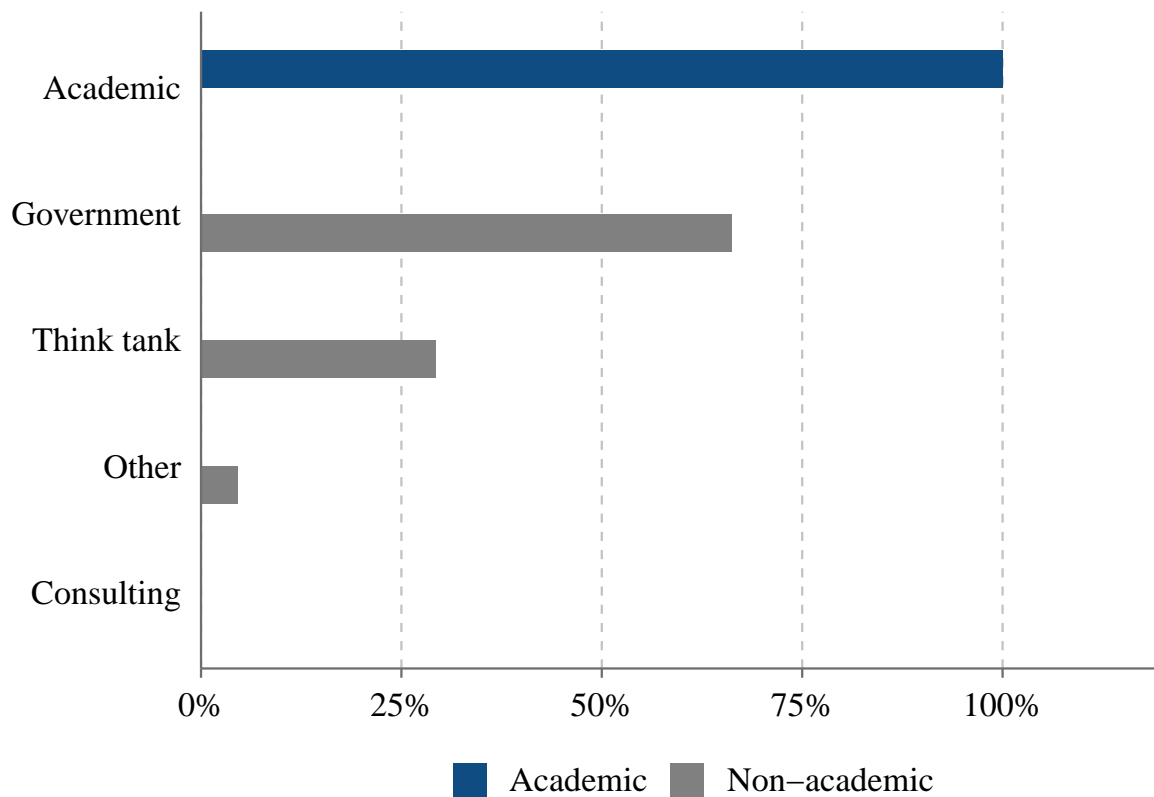
Is your current position part-time or full-time?

- Full-time
- Part-time
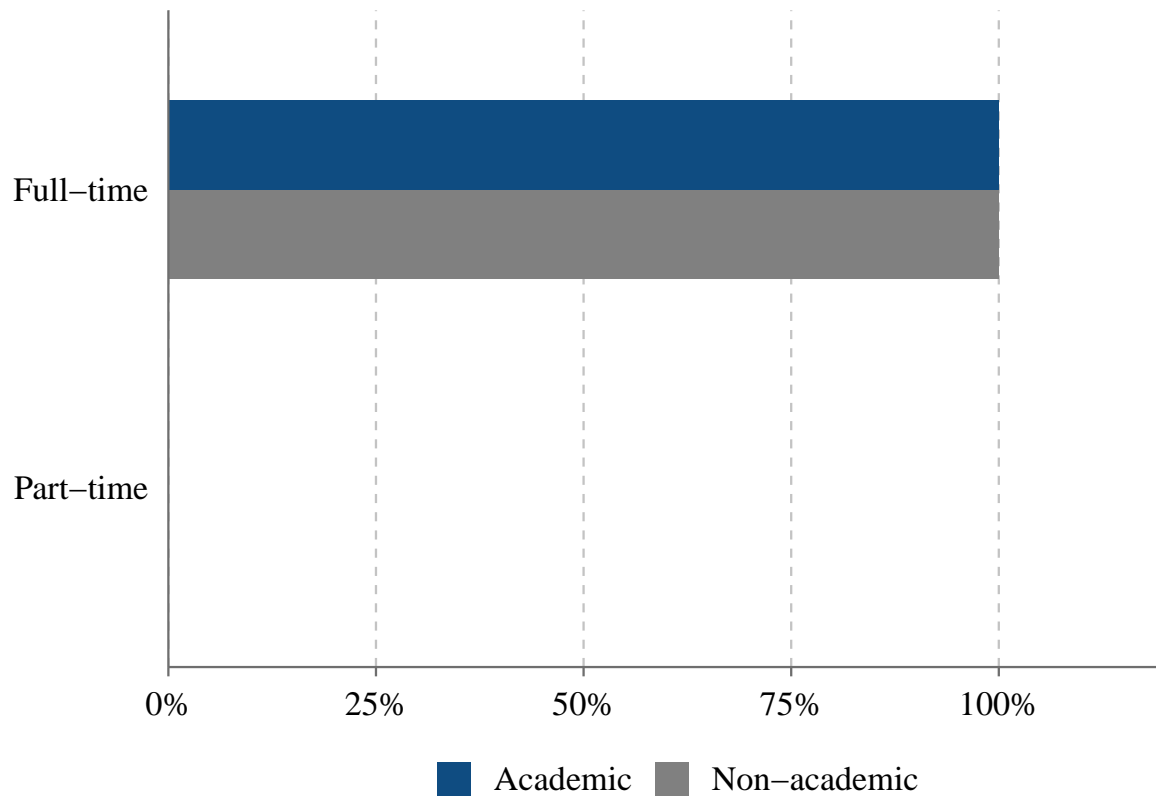
When did you start your current position and when do you plan to leave?

- Month
- Year

Start year of position

End year of position

Duration of position (in years)
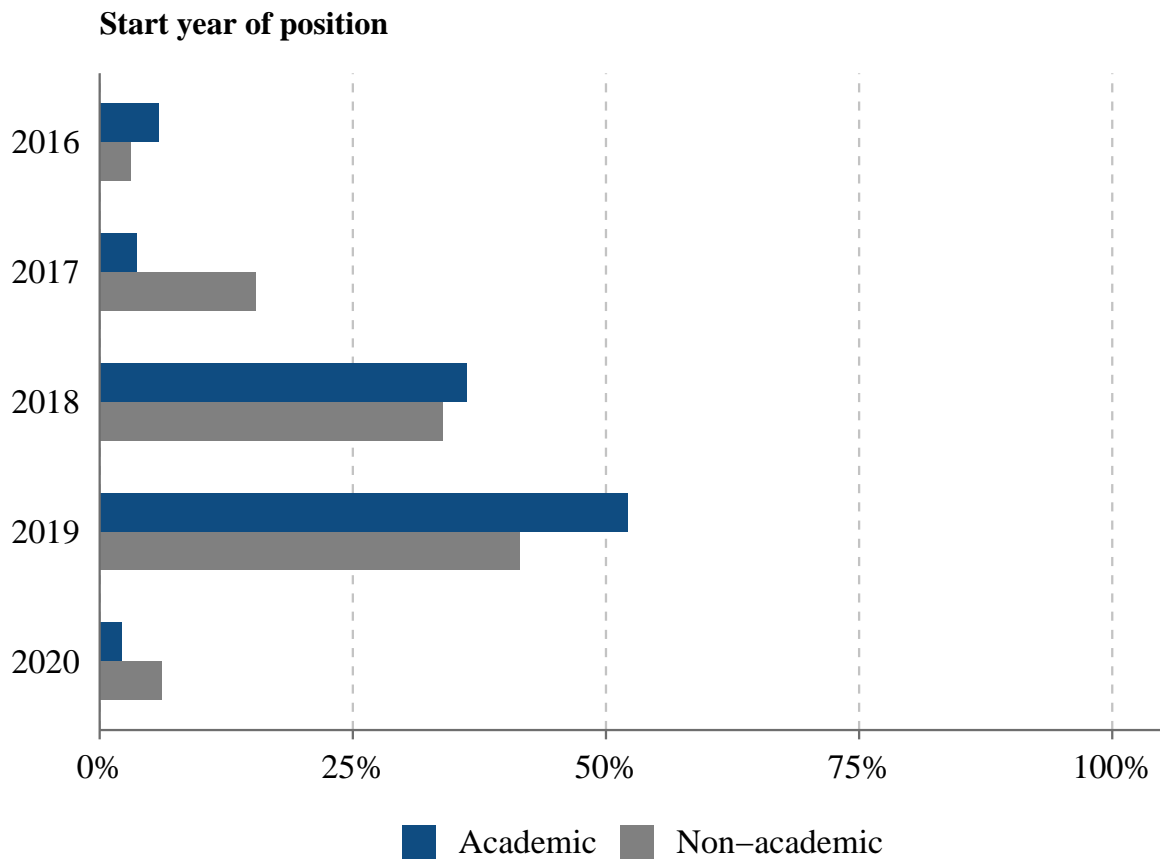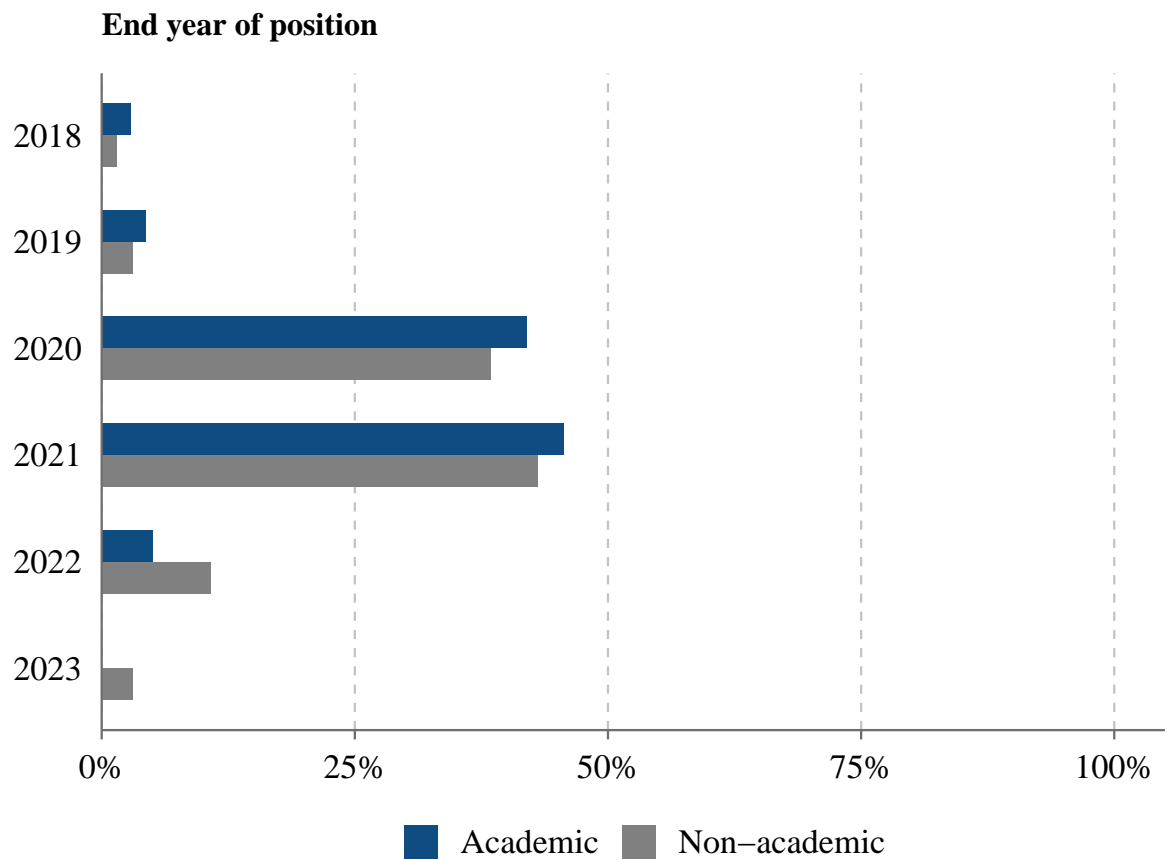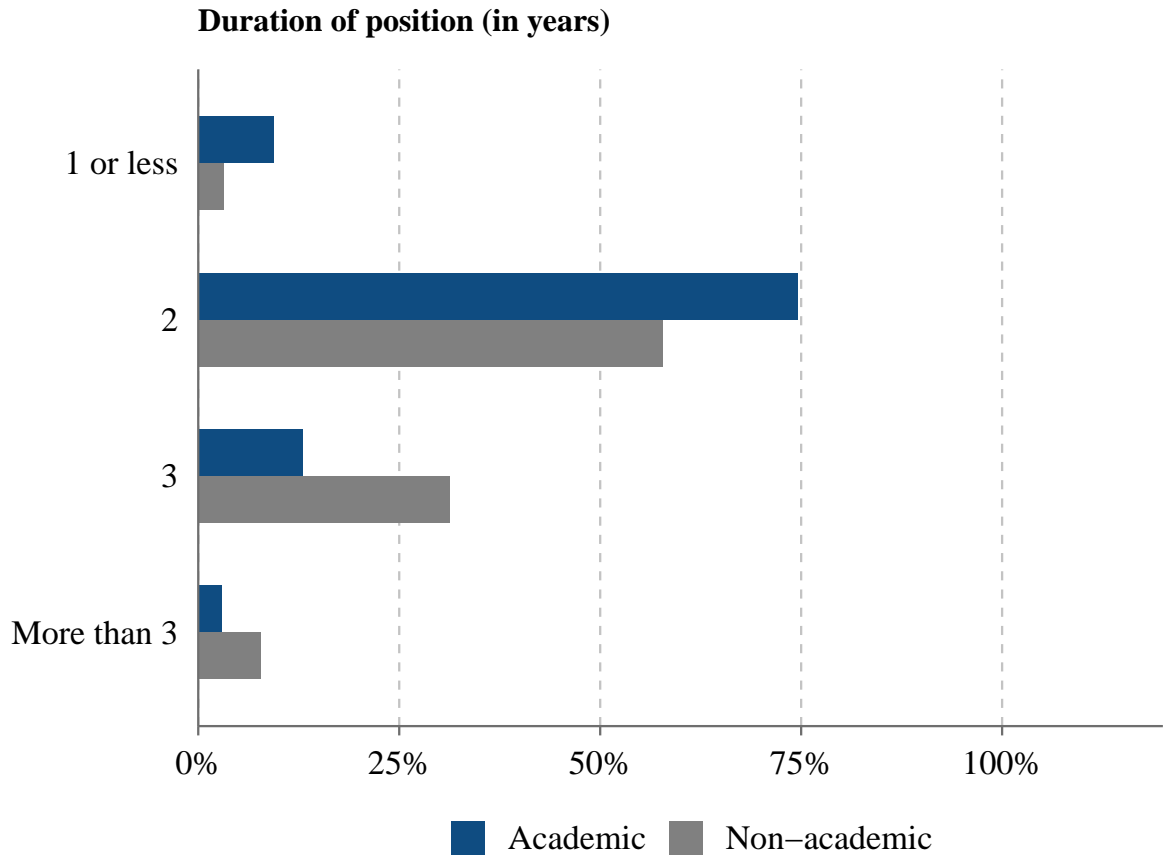
Note: *1 or less* includes all durations less than 1.25 years. *2* includes all durations between 1.25 years and 2.25 years. *3* includes all durations between 2.25 years and 3.25 years. *More than 3* includes all durations greater than 3.25 years.

Is the institution located in the United States?

- Yes
- No
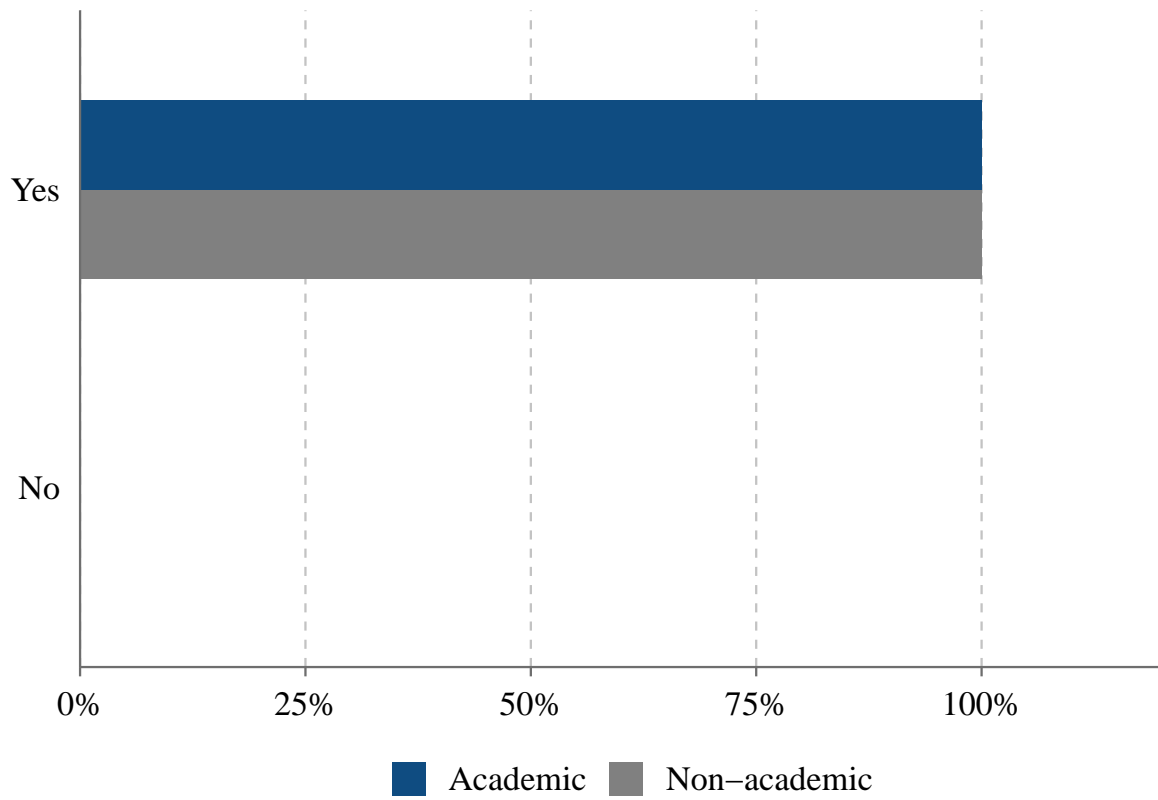
Does the institution provide international visa support for you or others in your position?

- Yes

- No

- Not sure
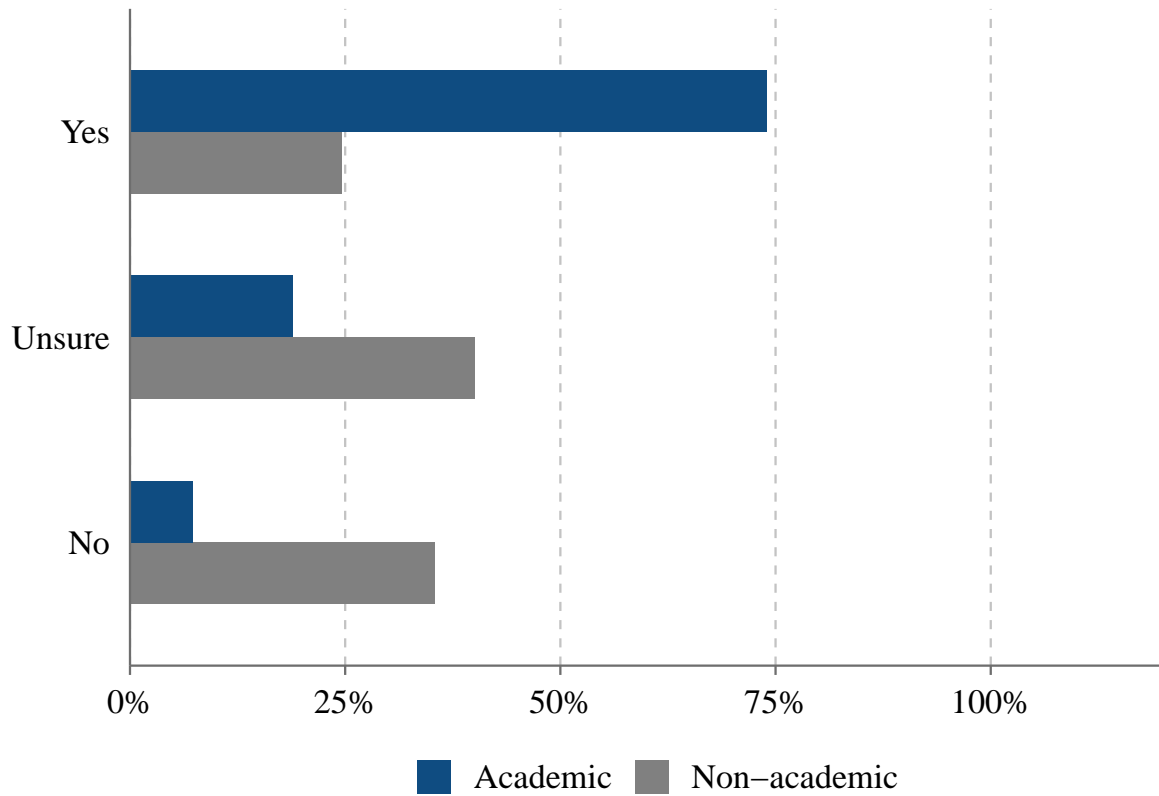
What is the name of the institution affiliated with your position?

(Optional) If applicable, please tell us the specific program, group or lab you work for (e.g., Opportunity Insights at Harvard University, the financial intermediation team at the Federal Reserve Bank of New York).

Academic Background

Please tell us about your academic background.

Did you complete your undergraduate studies in the United States?

- Yes
- No
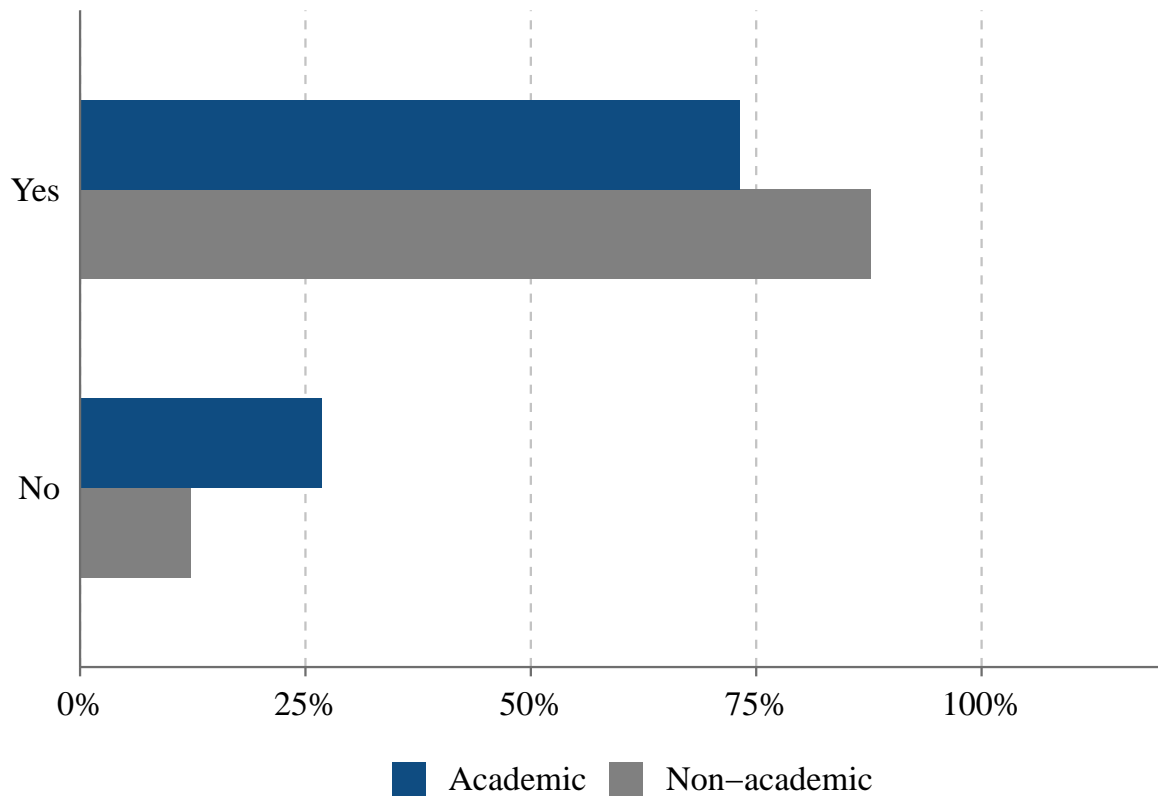
(Optional) What is the name of your undergraduate institution?

Undergraduate field(s) of study. Please select all that apply.

- Economics
- Mathematics
- Statistics
- Computer science
- Other
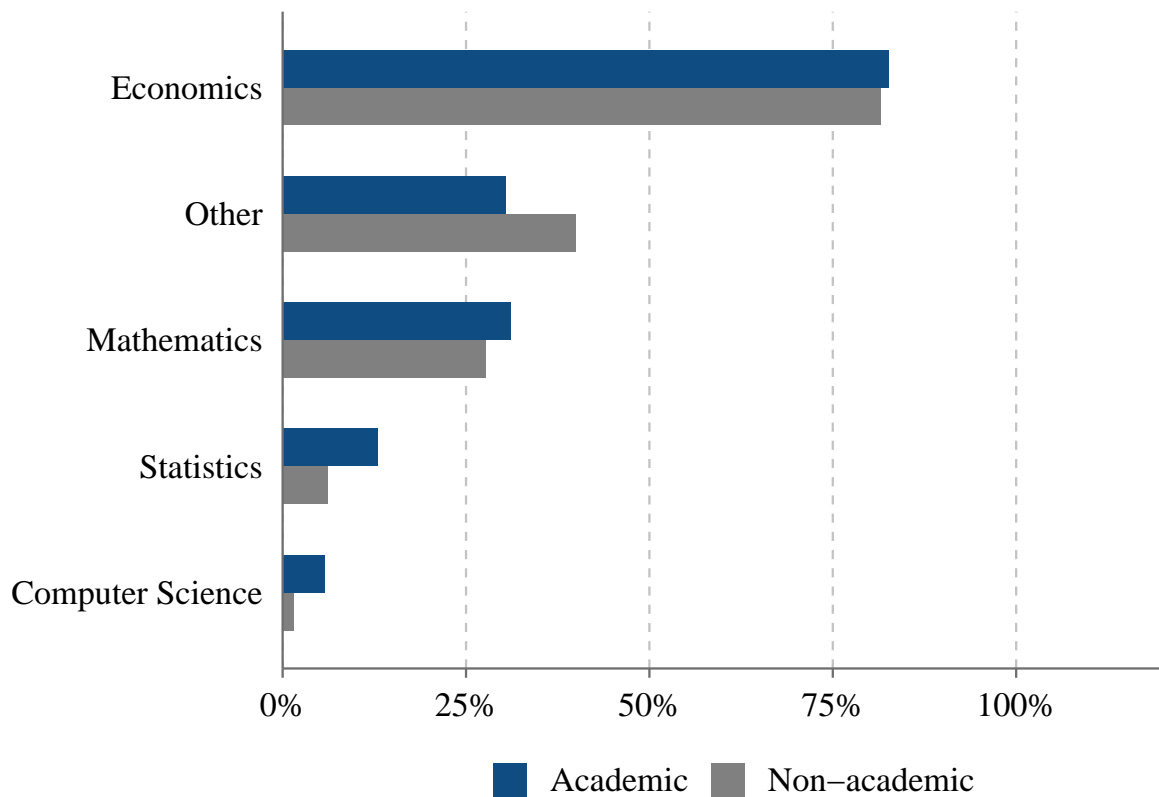
Do you hold a master's degree?

- Yes
- No
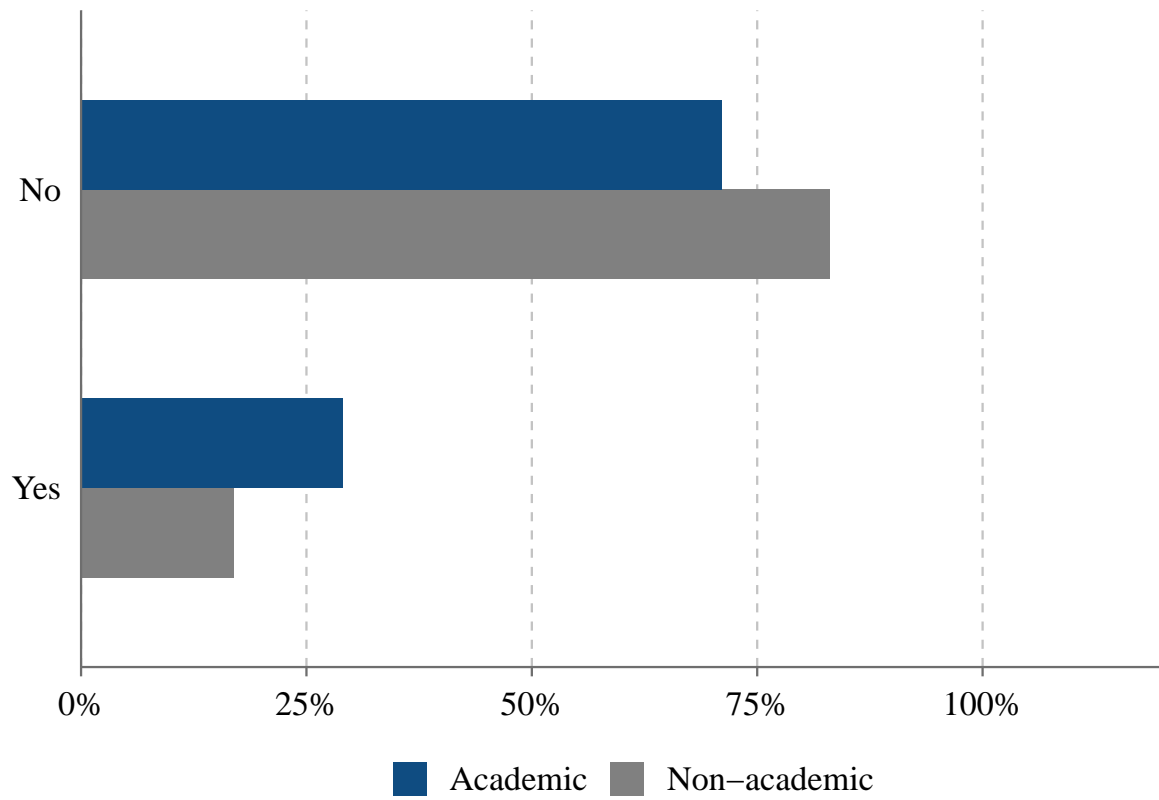
Did you complete your graduate studies in the United States?

- Yes
- No
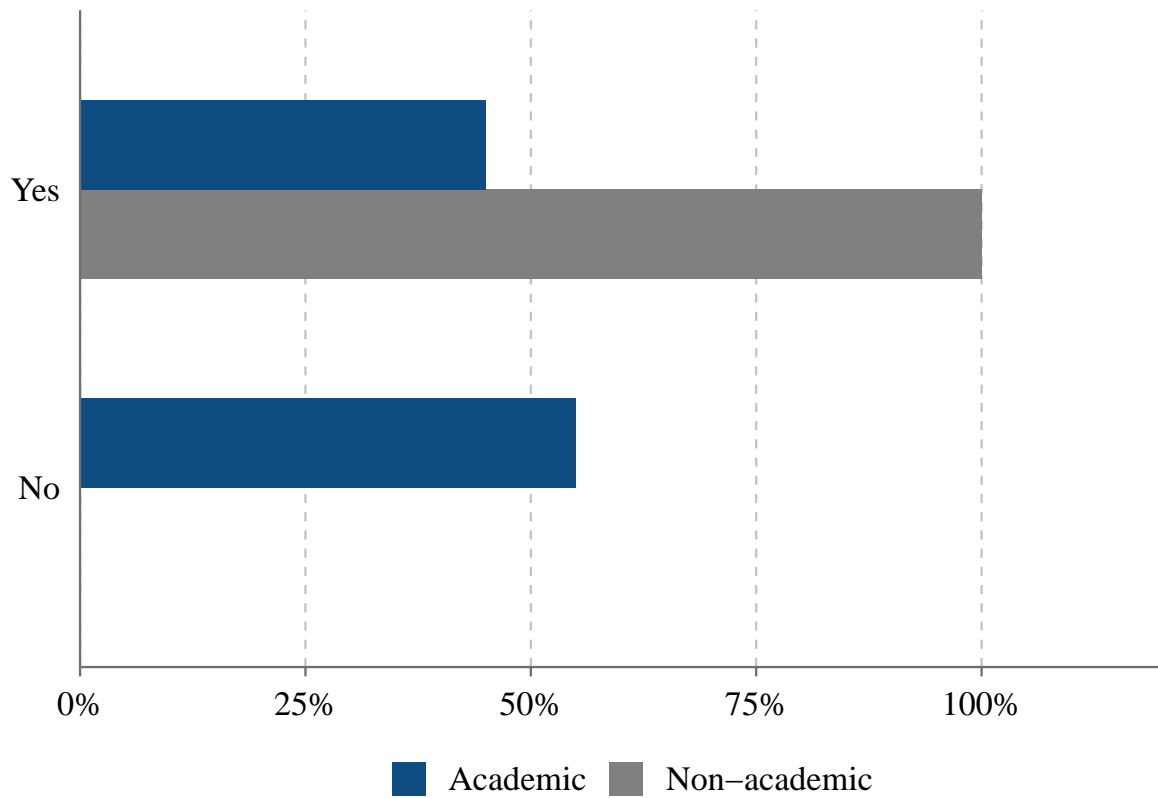
(Optional) What is the name of your graduate institution?

Graduate field(s) of study. Please select all that apply.

- Economics
- Mathematics
- Statistics
- Computer
- Science
- Other
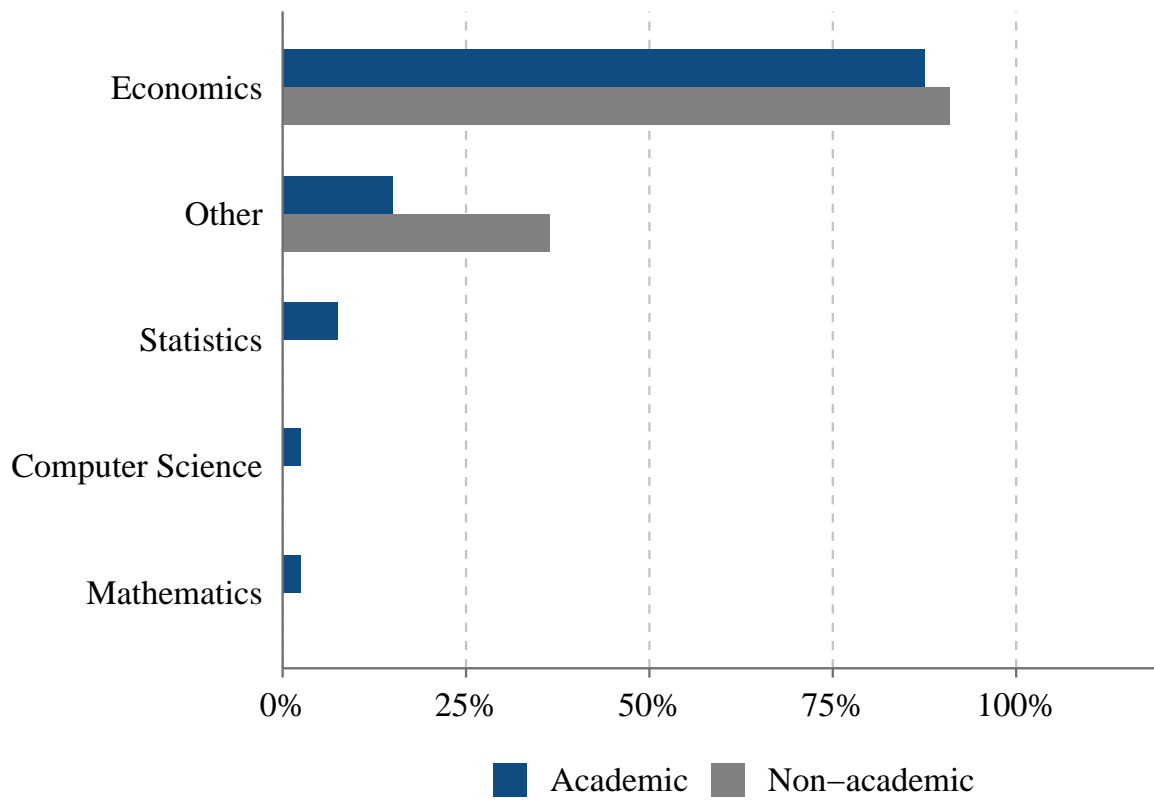
What math classes had you taken PRIOR to the start of your position? Please select all that apply.

- Multivariate Calculus (often Calculus III)
- Linear Algebra
- Statistics and Probability
- Ordinary Differential Equations
- Real Analysis
- None
- Other
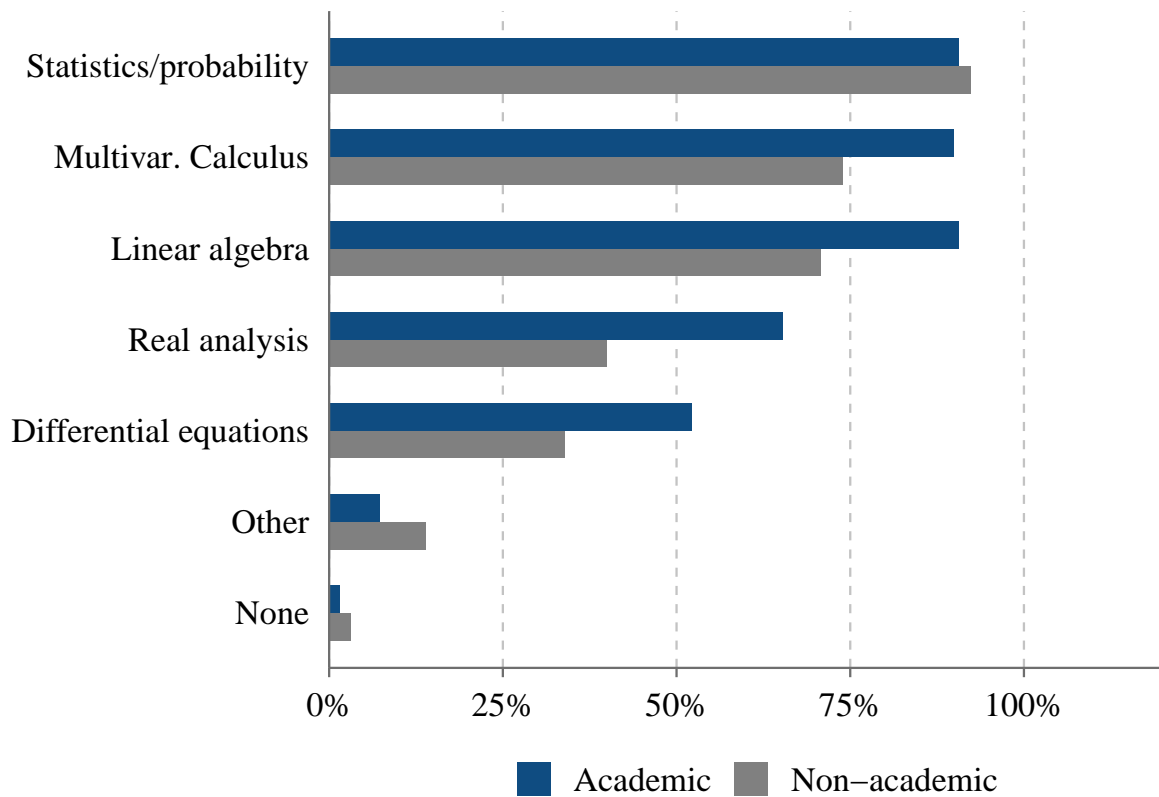
What economics classes had you taken PRIOR to the start of your position? Please select all that apply.

- Introductory Micro/Macro
- Intermediate Micro/Macro
- Econometrics
- Game Theory
- PhD-level Micro/Macro/Metrics
- None
- Other
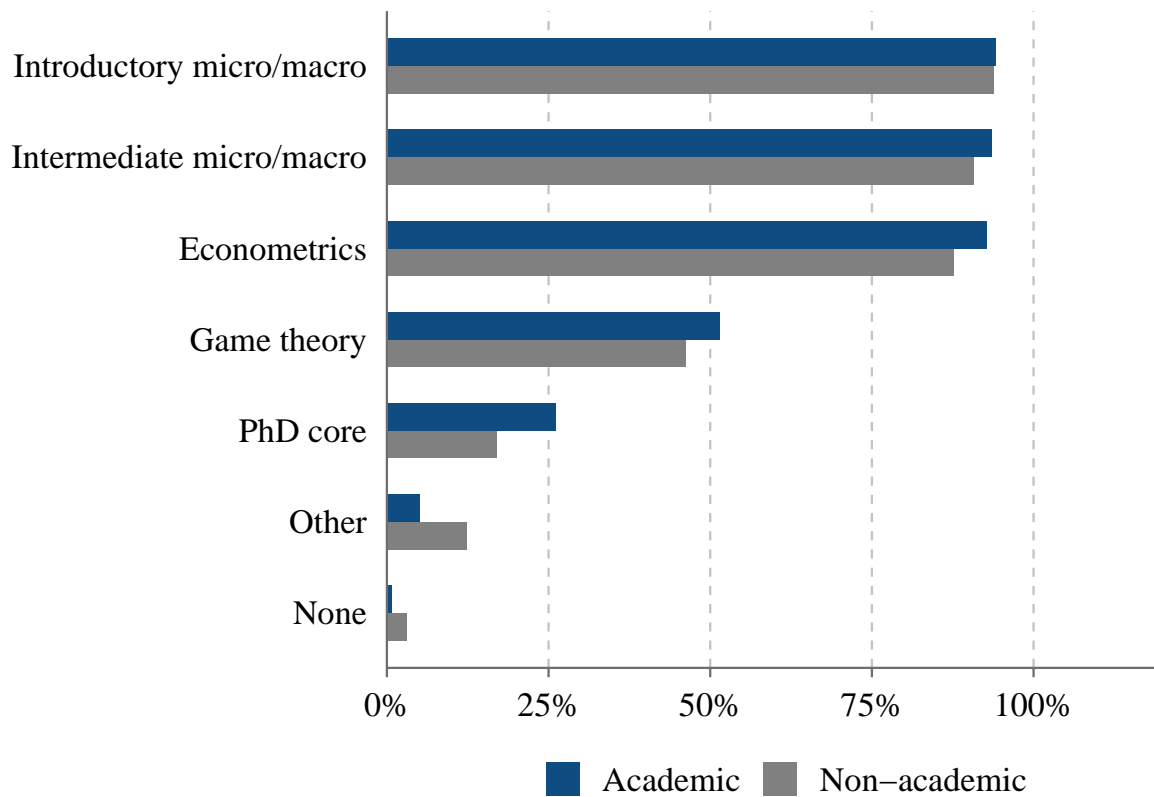
What programming or statistical tools had you known PRIOR to the start of your position? Please select all that apply.

- Stata
- Python
- R
- MATLAB
- Julia
- SAS
- SQL
- LaTeX
- Git
- None
- Other
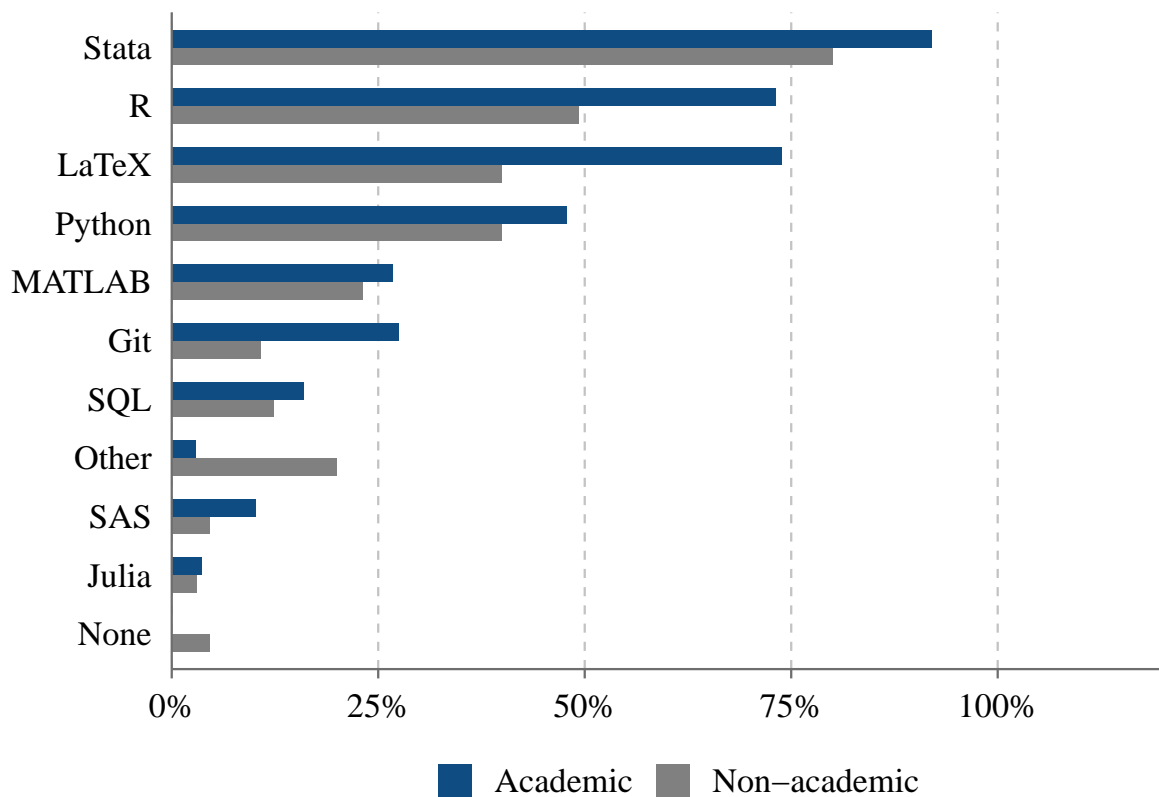
What research and/or professional experience did you have PRIOR to the start of your position? Please select all that apply.

- Independent research (e.g., honors thesis)
- Part-time undergraduate/graduate RA
- Summer RA internship/training (e.g., summer RA at the Fed, AEA Summer Program)
- Other full-time RA position
- Non-research full-time professional experience (e.g., position in private sector)
- None
- Other
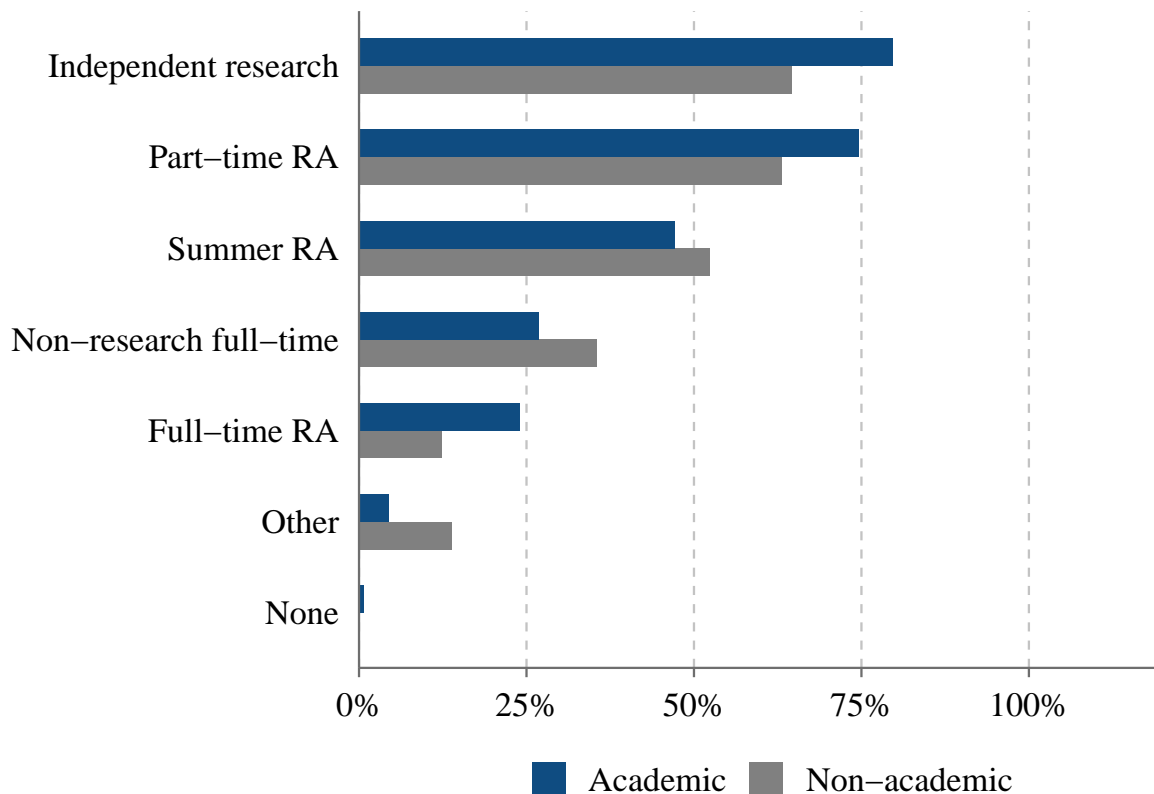
Application Process for Position

Please tell us about the application process for your current position.

How did you find out about your current position? Please select all that apply.

- Department email or listserv
- Job board (e.g., NBER job listings)
- Faculty
- University career center
- Social media (e.g., Twitter)
- Informally (e.g., through friends or acquaintances)
- Other
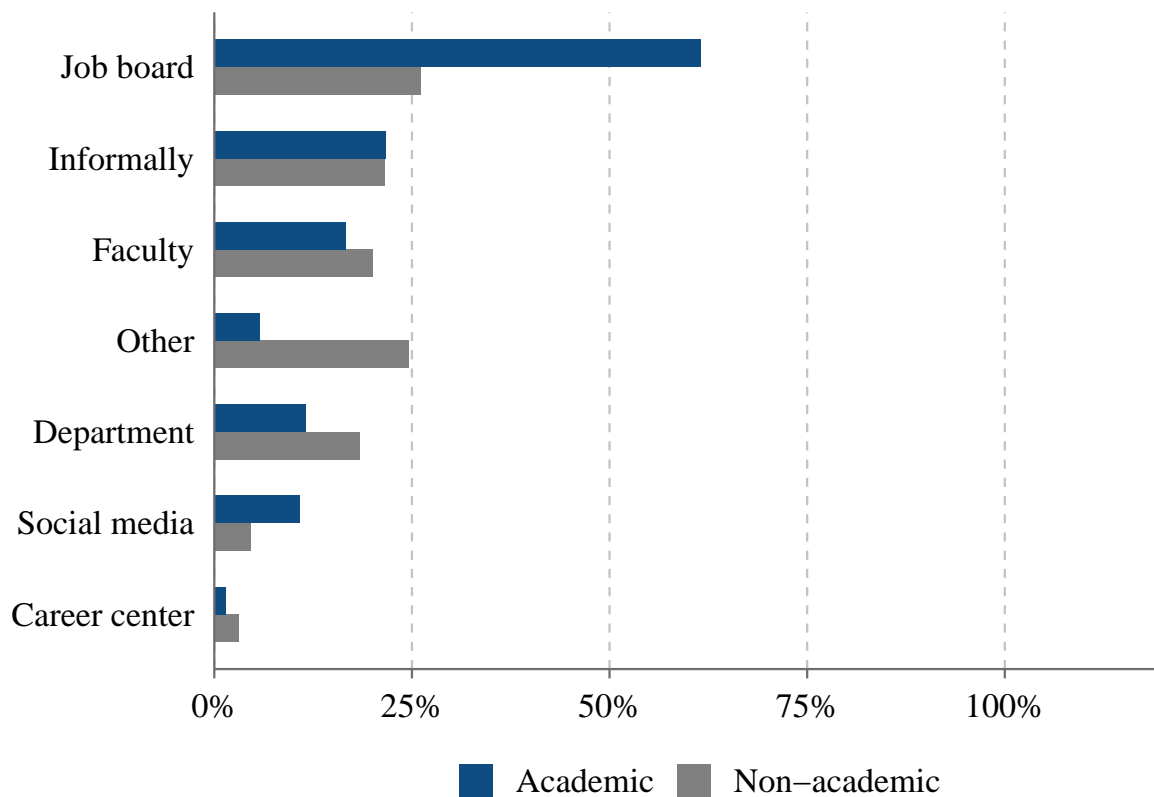
What materials did the application process for your position require you to submit? Please select all that apply.

- Resume/CV
- Cover letter
- Transcript
- References
- Application through job portal
- Writing sample
- Coding sample
- Other
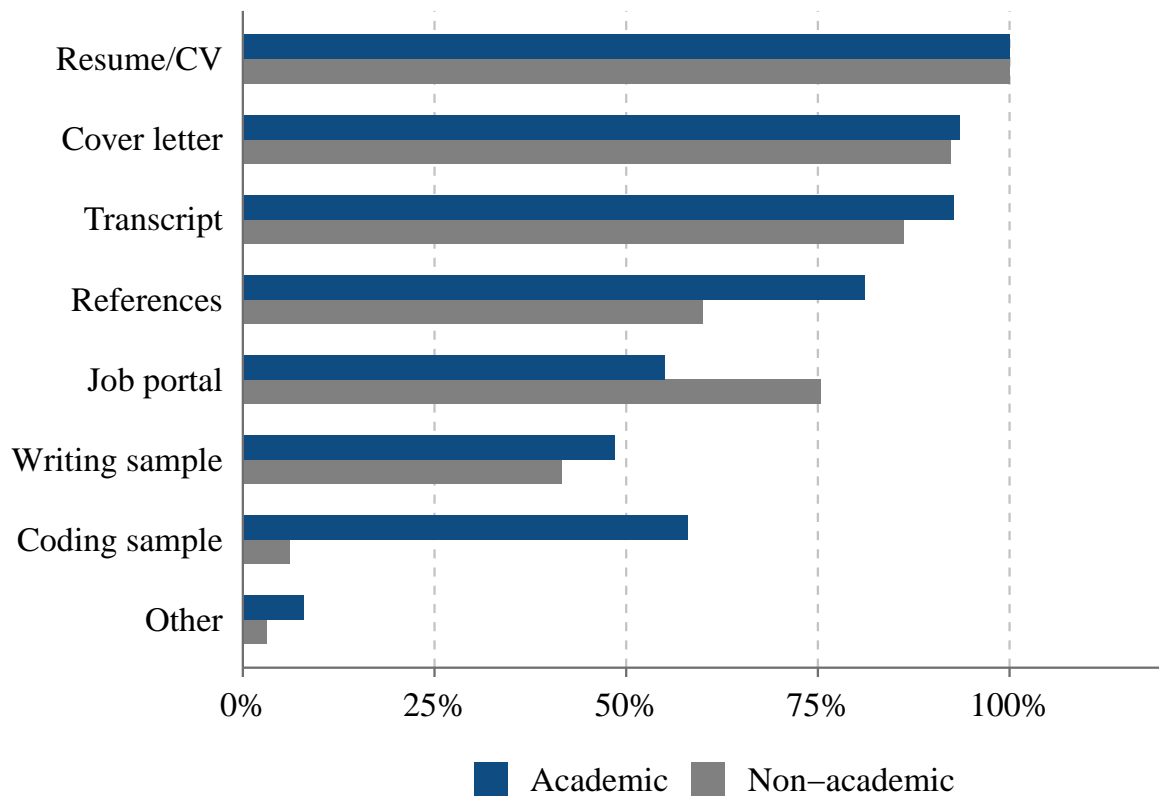
When did you start the application process and when did you receive an offer?

- Month
- Year

Month began application process

Duration of application process (in months)
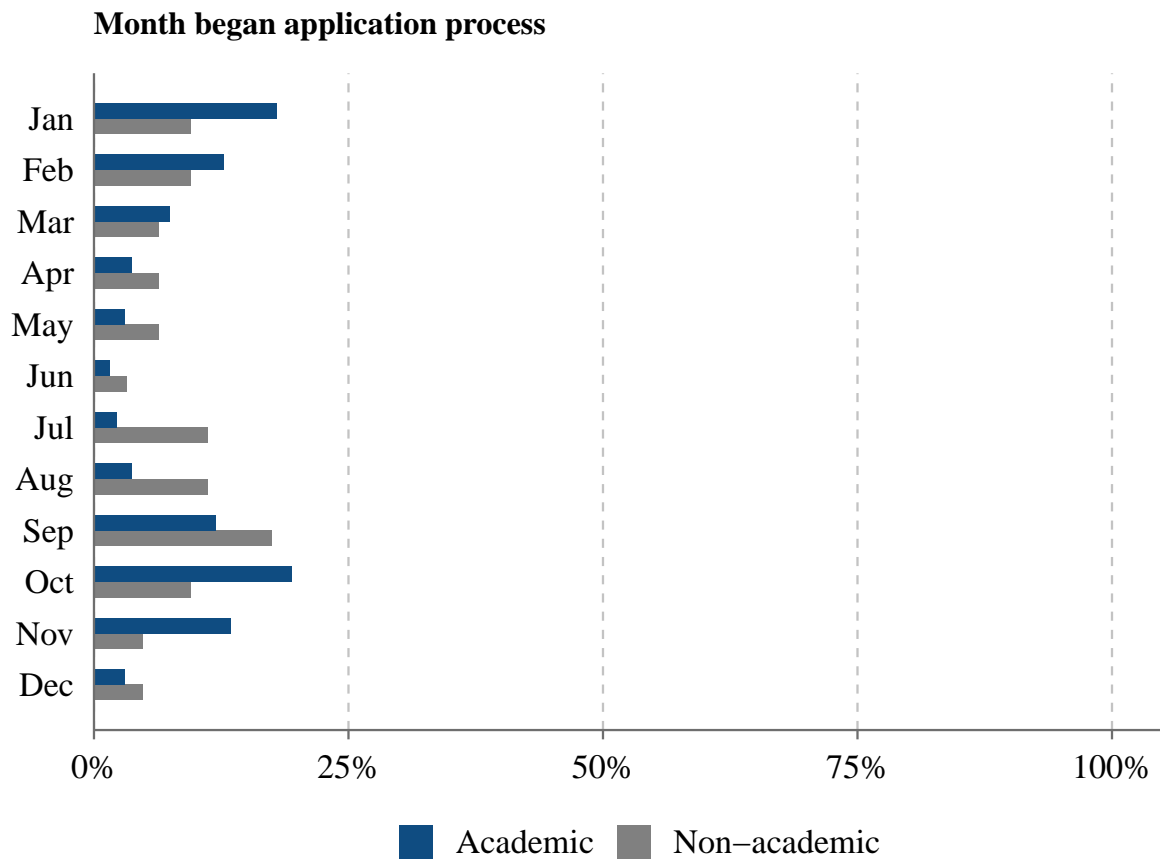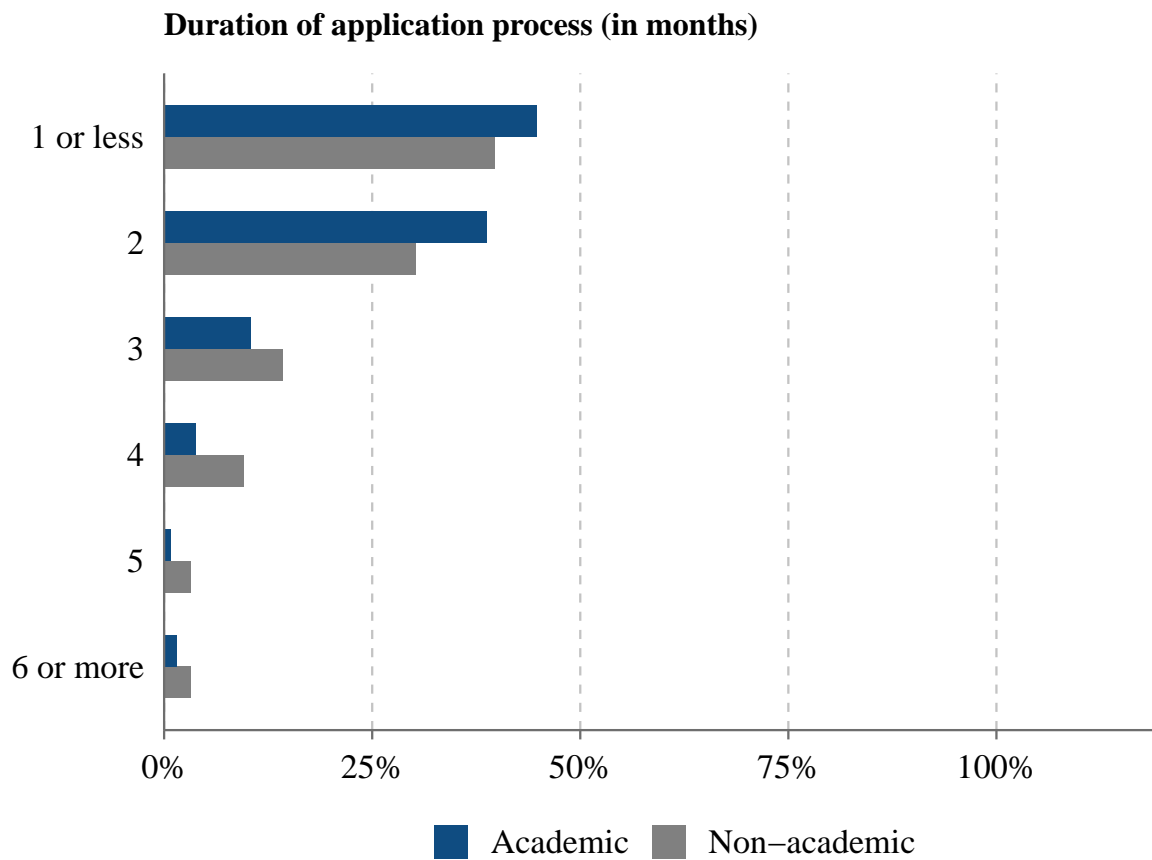
Note: Durations are rounded to the nearest month.

Did the application process for your position include coding challenges?

- Yes
- No
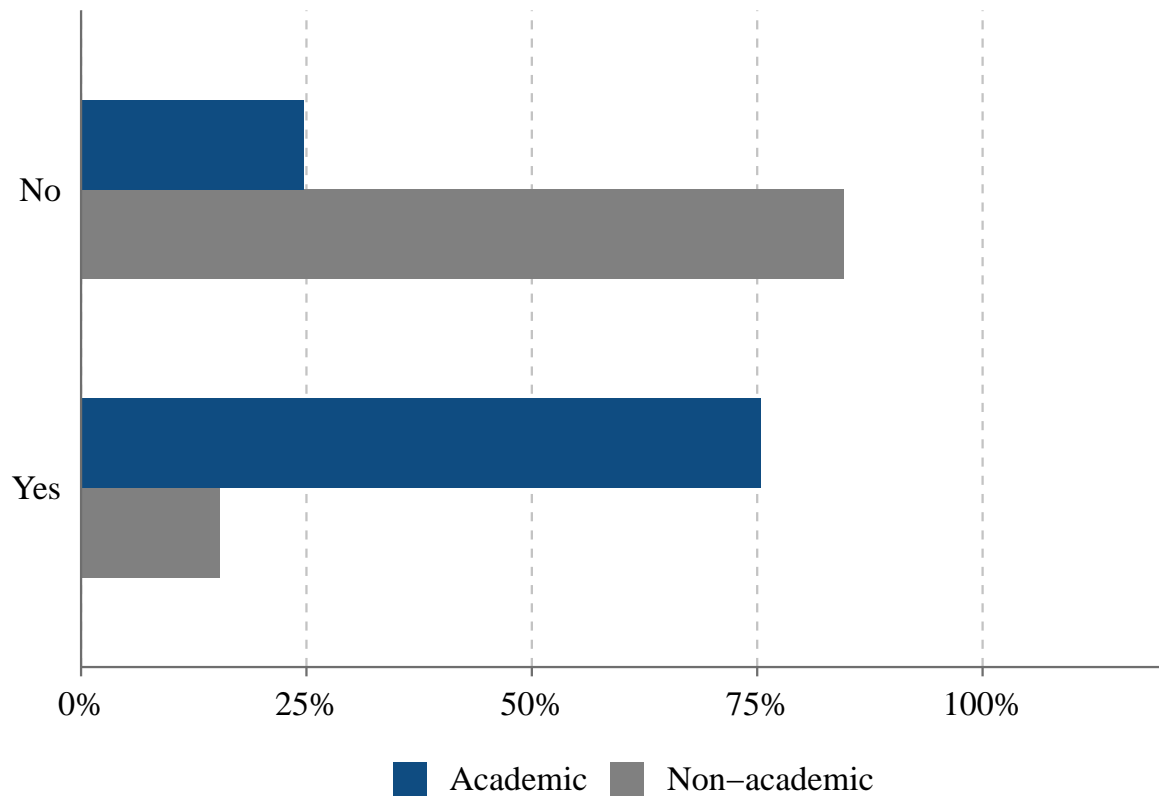
Did the coding challenge require a specific programming or statistical tool?

- Yes
- No
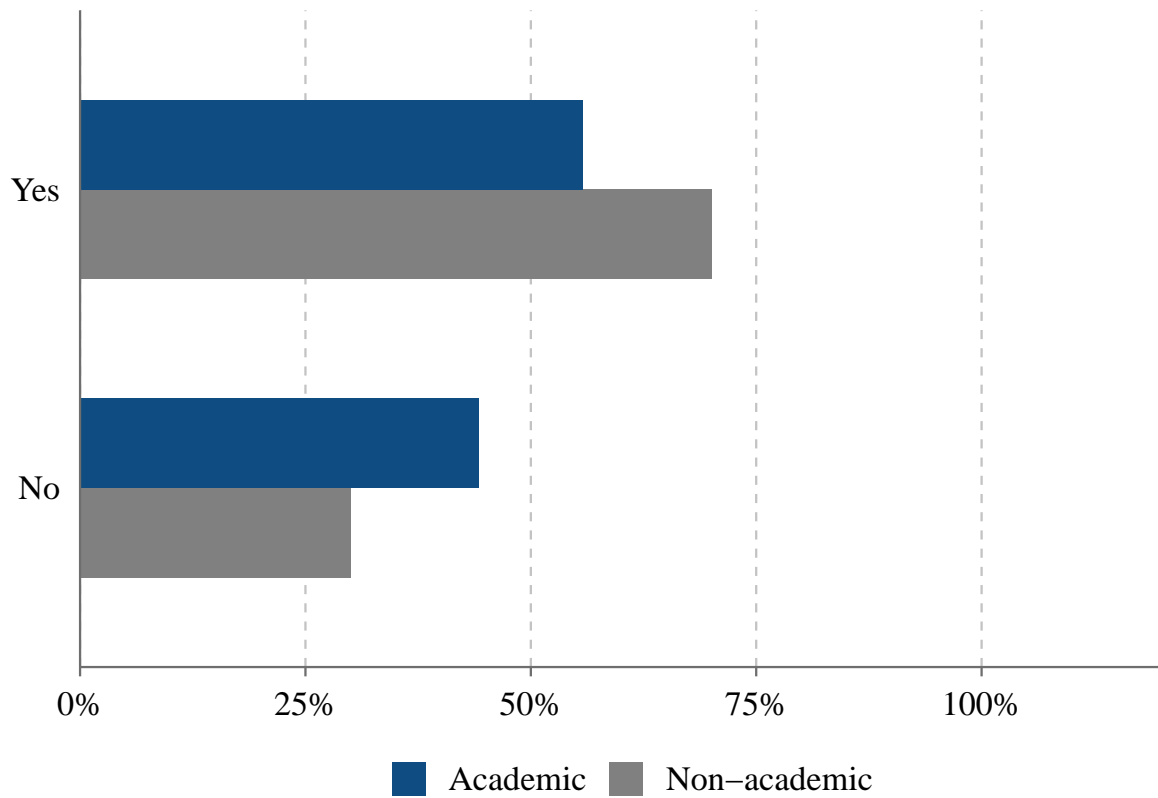
What programming or statistical tools did you use for your coding challenges? Please select all that apply.

- Stata
- Python
- R
- MATLAB
- Julia
- SAS
- SQL
- Other
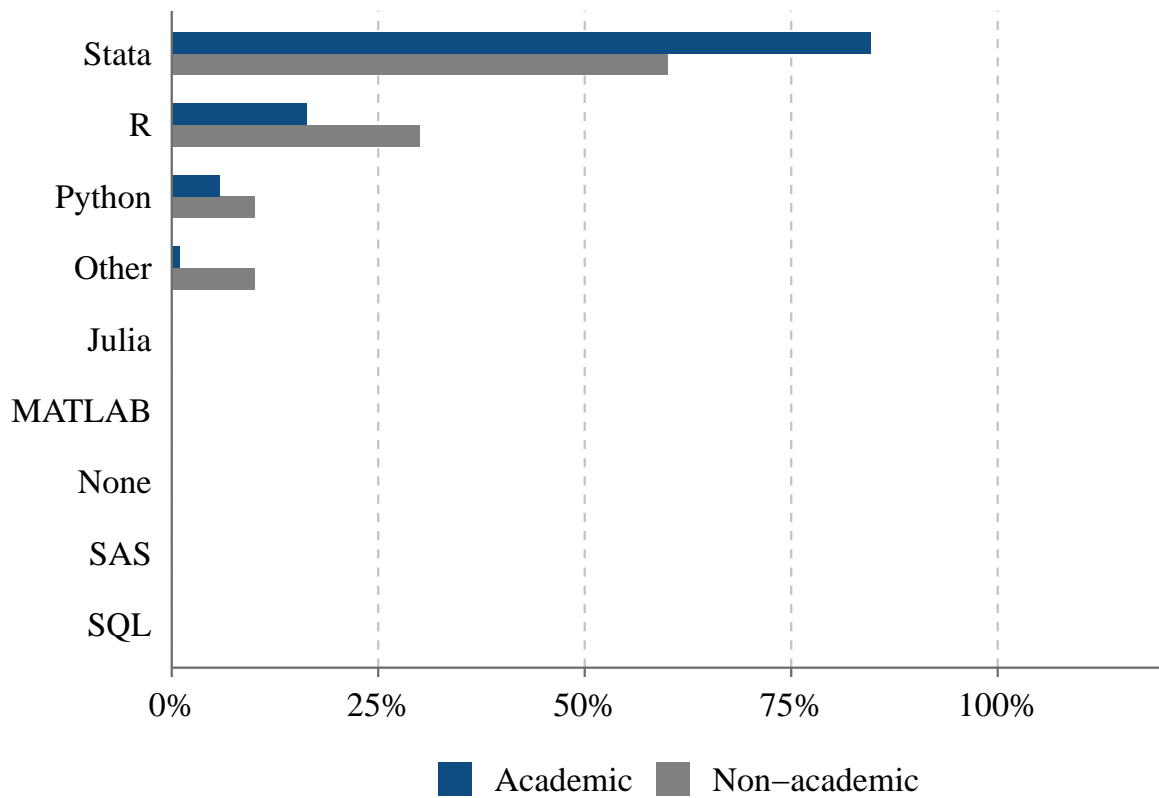
How long did the coding challenges cumulatively take?

- 0-4 hours
- 5-9 hours
- 10-14 hours
- 15-19 hours
- 20 hours or more
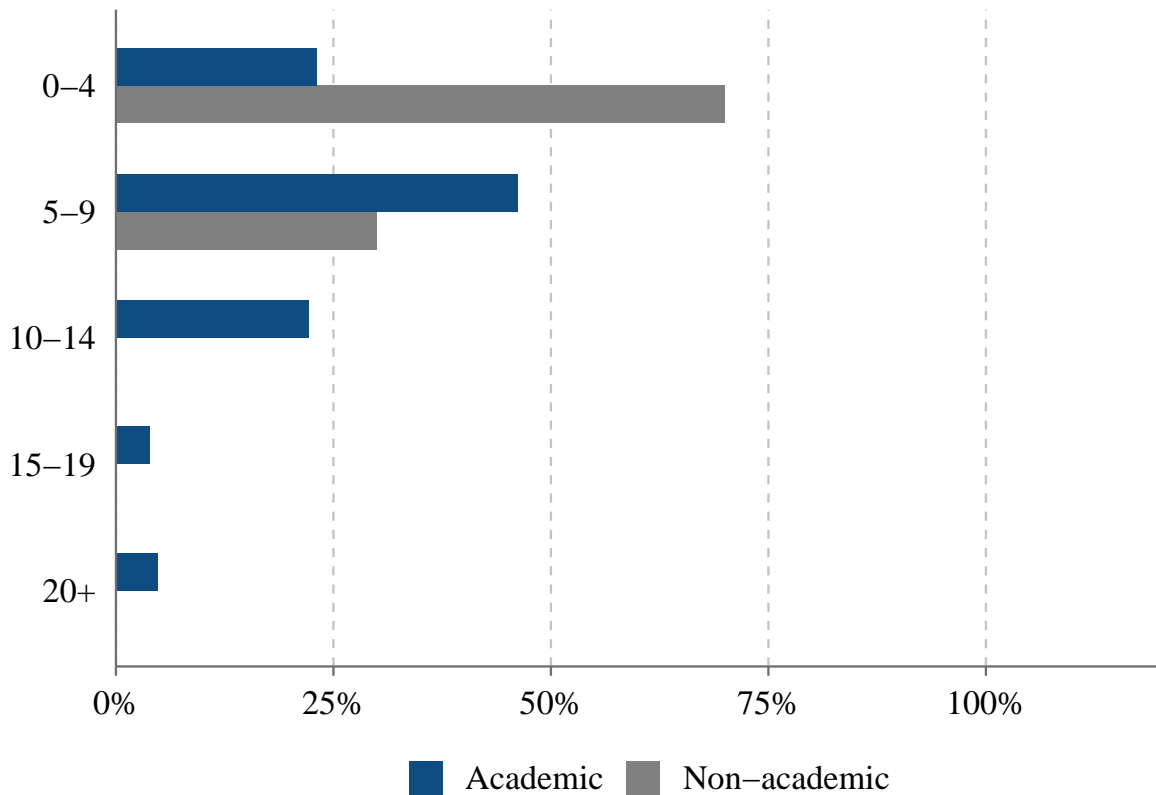
Did the application process for your position include interviews?

- Yes
- No
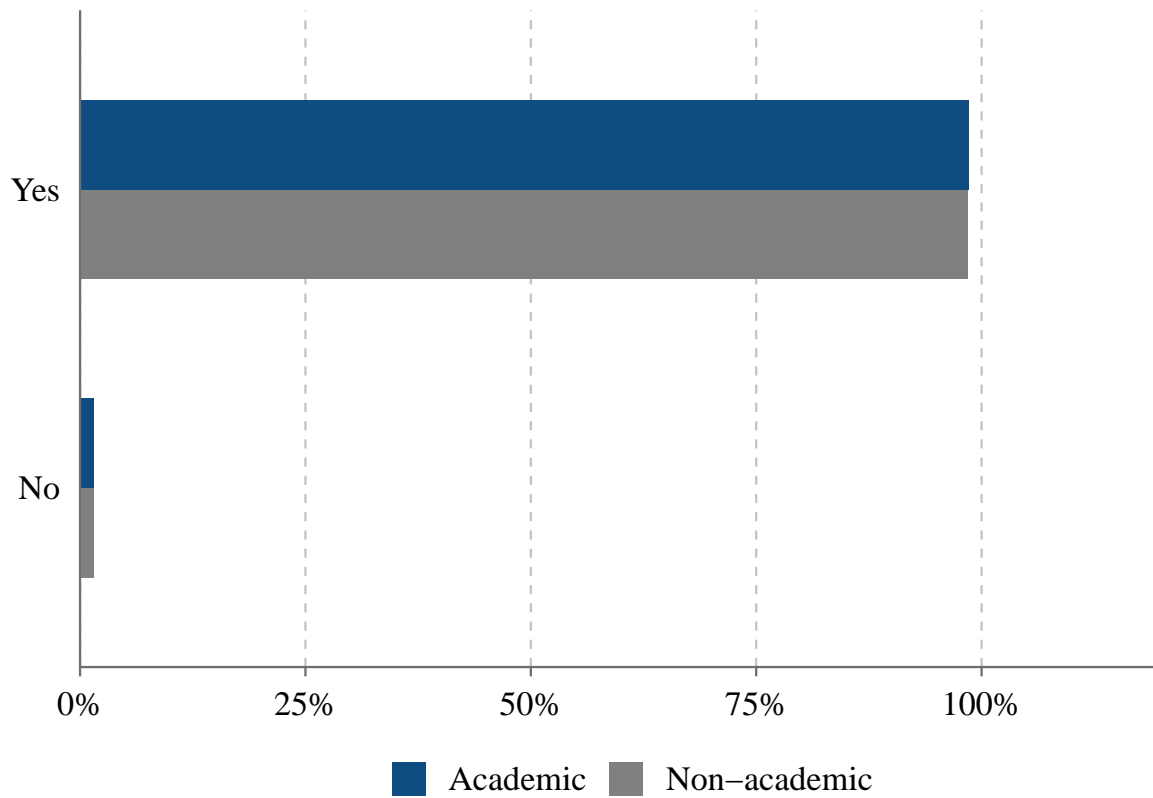
Who interviewed you? Please select all that apply.

- Professor/senior researcher
- Graduate student/junior researcher
- Another post-undergraduate researcher
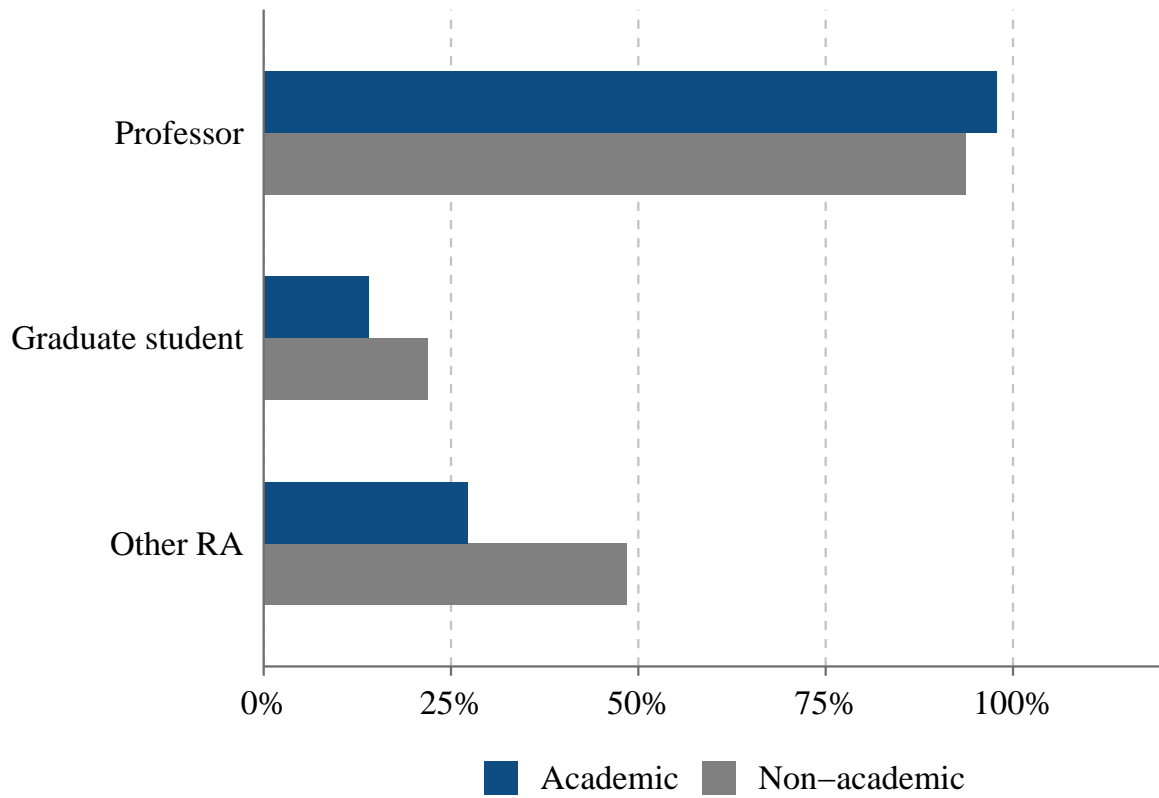
What types of topics were discussed during your interviews? Please select all that apply.

- Behavioral questions
- Research experience
- Programming experience
- Case questions
- Results of coding challenges
- Other
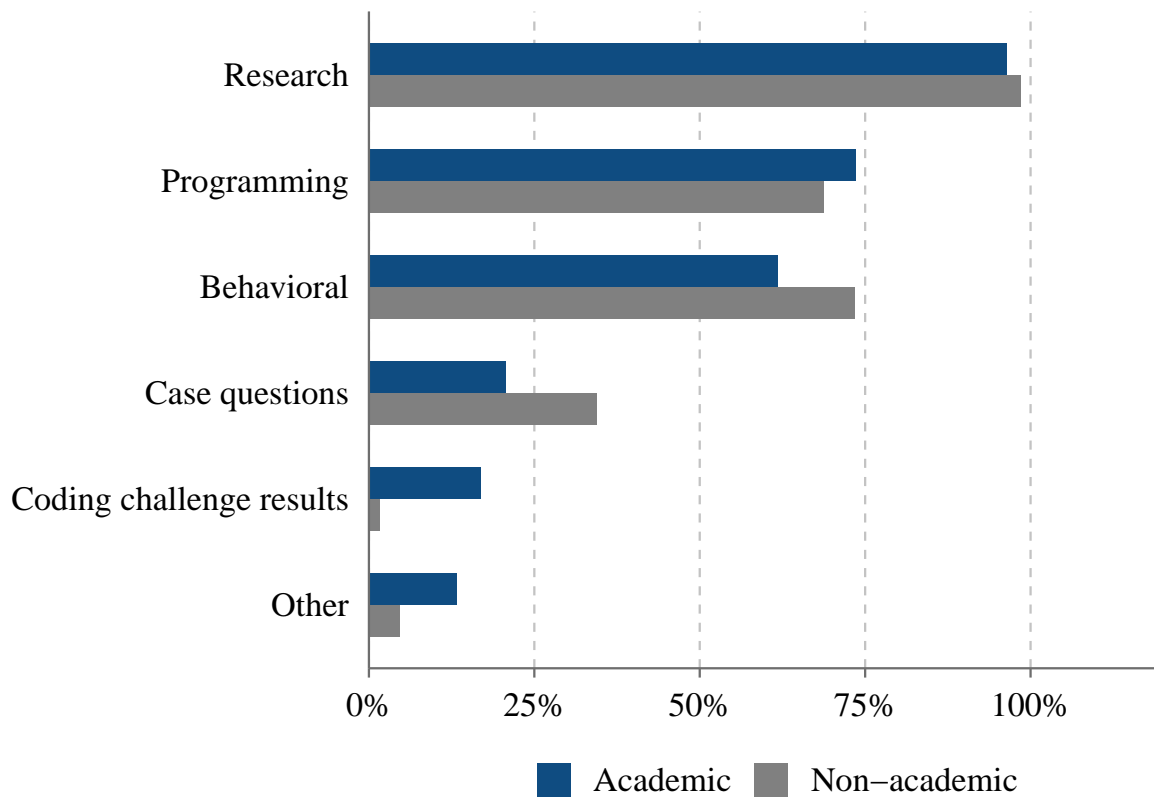
How many other post-undergraduate research positions did you apply to concurrently?

- None
- 1-3
- 4-6
- 7-9
- 10 or more
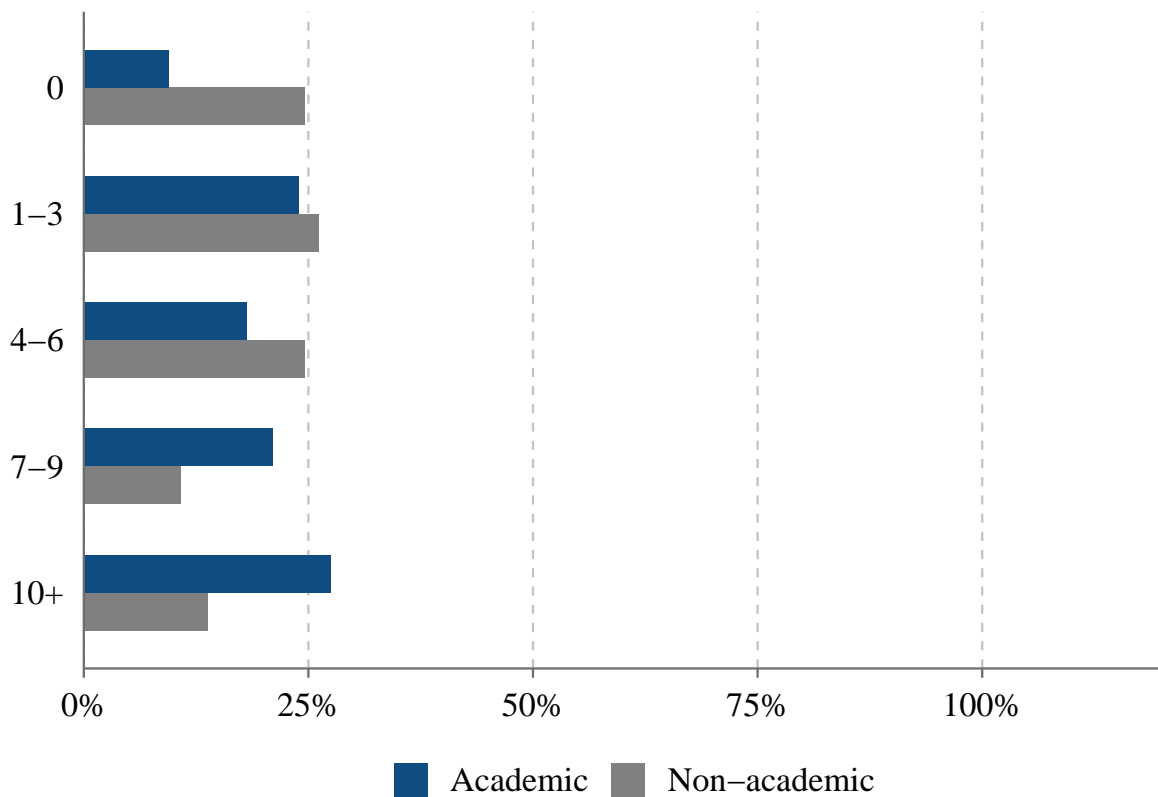
Day-to-Day Life

Please tell us about the day-to-day life of your current position. To the best of your ability, please answer these questions as you would have before any COVID-19 related changes to your work environment.

On average, how many hours per week do you spend on the following activities? Please round to the nearest 5 hours.

- Research for your institution
- Coursework
- Personal research agenda
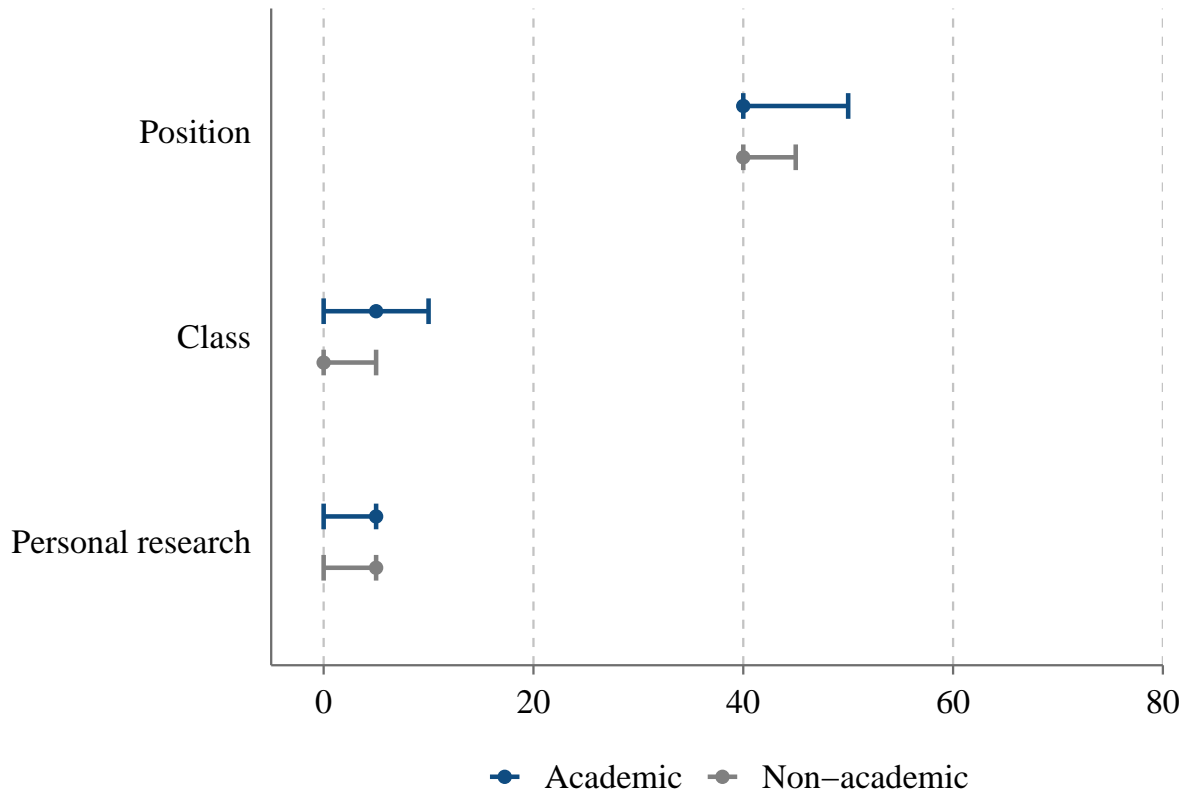
Note: Error bars present the 25th, 50th, and 75th percentile.

Based on the previous question, you spend X hours per week on research for your institution. On average, what fraction of those hours do you spend on the following activities? Total must sum to 100.

- Administrative work (e.g., taking notes, scheduling meetings)
- Data cleaning work (e.g., data entry, data wrangling)
- Data analysis work (e.g. creating plots, running regressions)
- Theory related work (e.g., writing proofs or models)
- Writing drafts or creating slides
- Other

Note: Error bars present the 25th, 50th, and 75th percentile.

53
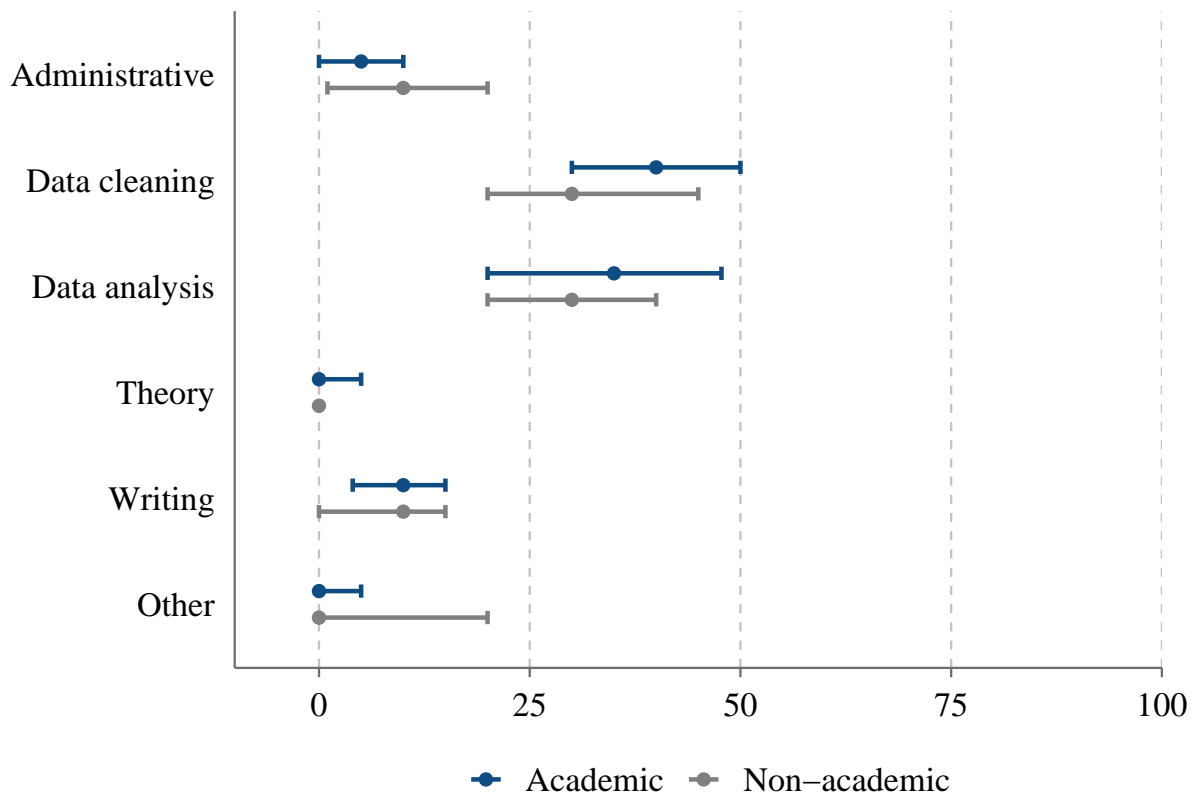
**Which programming or statistical tools do you use in your position? Please select all that apply.**

- Stata
- Python
- R
- MATLAB
- Julia
- SAS
- SQL
- LaTeX
- Git
- None
- Other
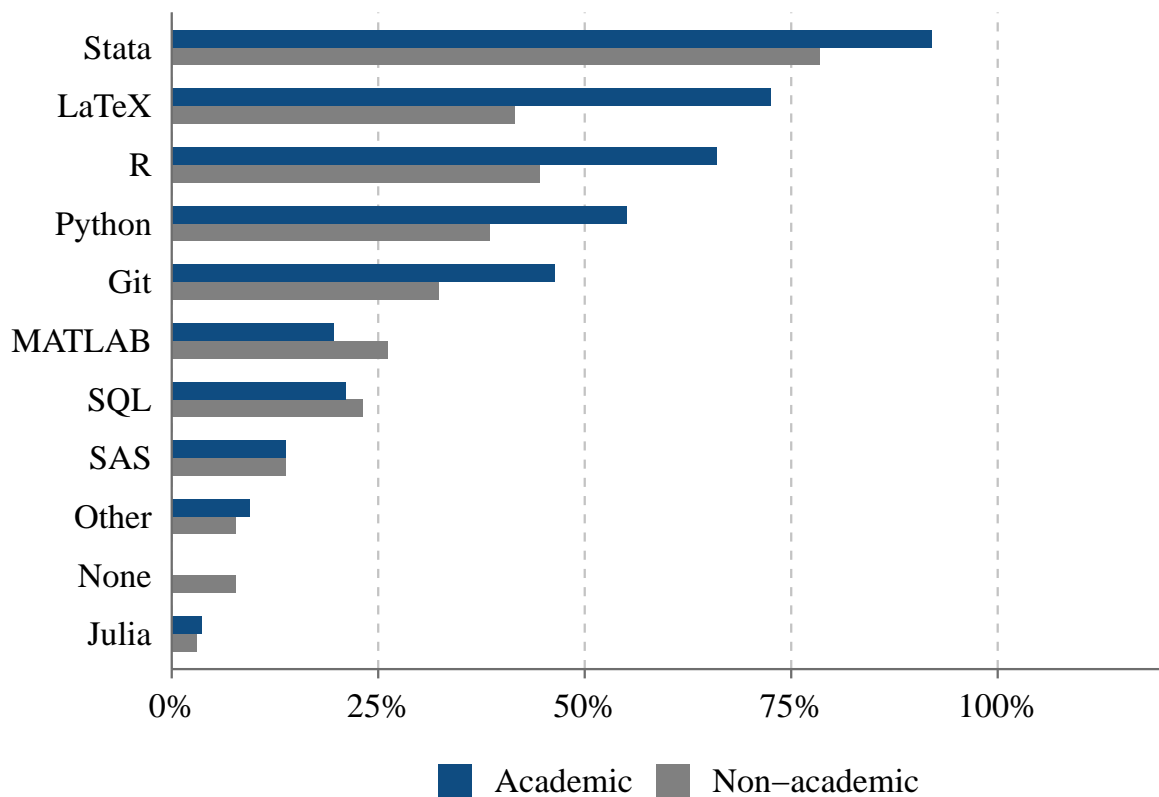
What is your annual salary in US dollars?

- Less than $35,000
- $35,000 - $39,999
- $40,000 - $44,999
- $45,000 - $49,999
- $50,000 - $54,999
- $55,000 - $59,999
- $60,000 - $64,999
- $65,000 - $69,999
- $70,000 - $74,999
- $8,000 or more
- Prefer not to answer
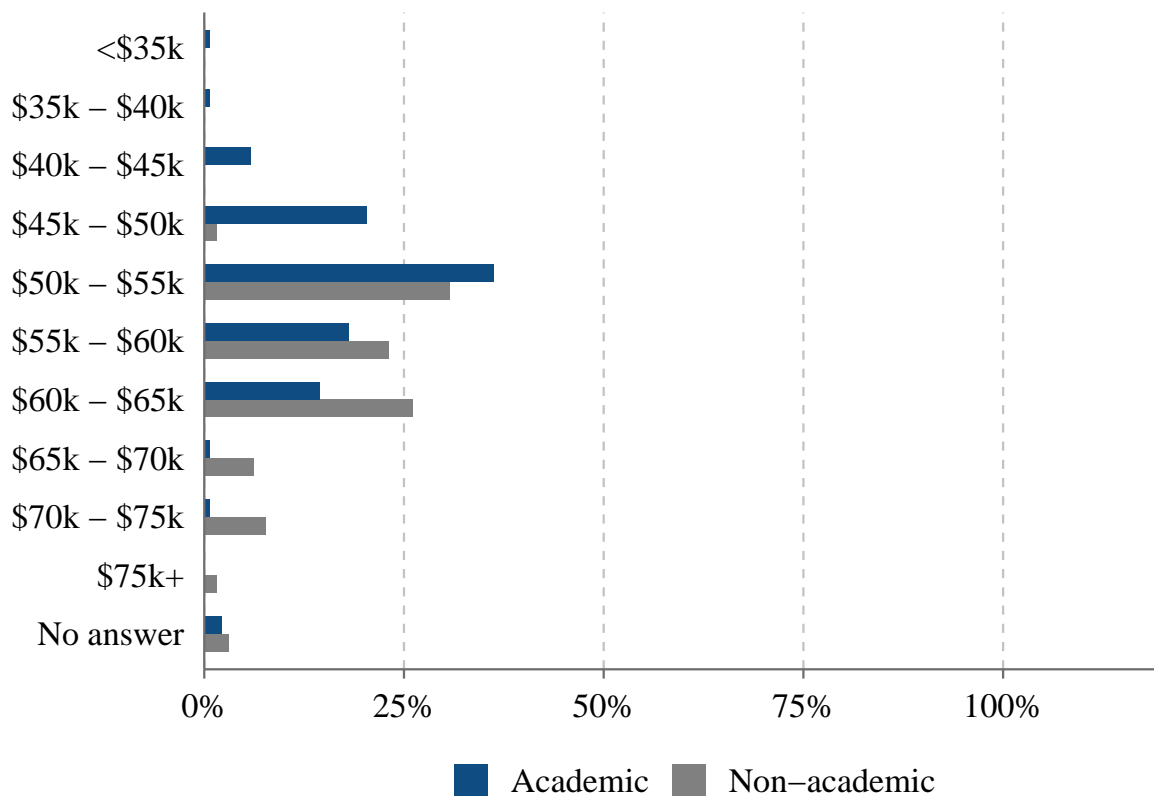
Does your position provide free health insurance?

- Yes.
- No, but I receive a health insurance subsidy.
- No, and I do not receive a health insurance subsidy.
- Not sure.
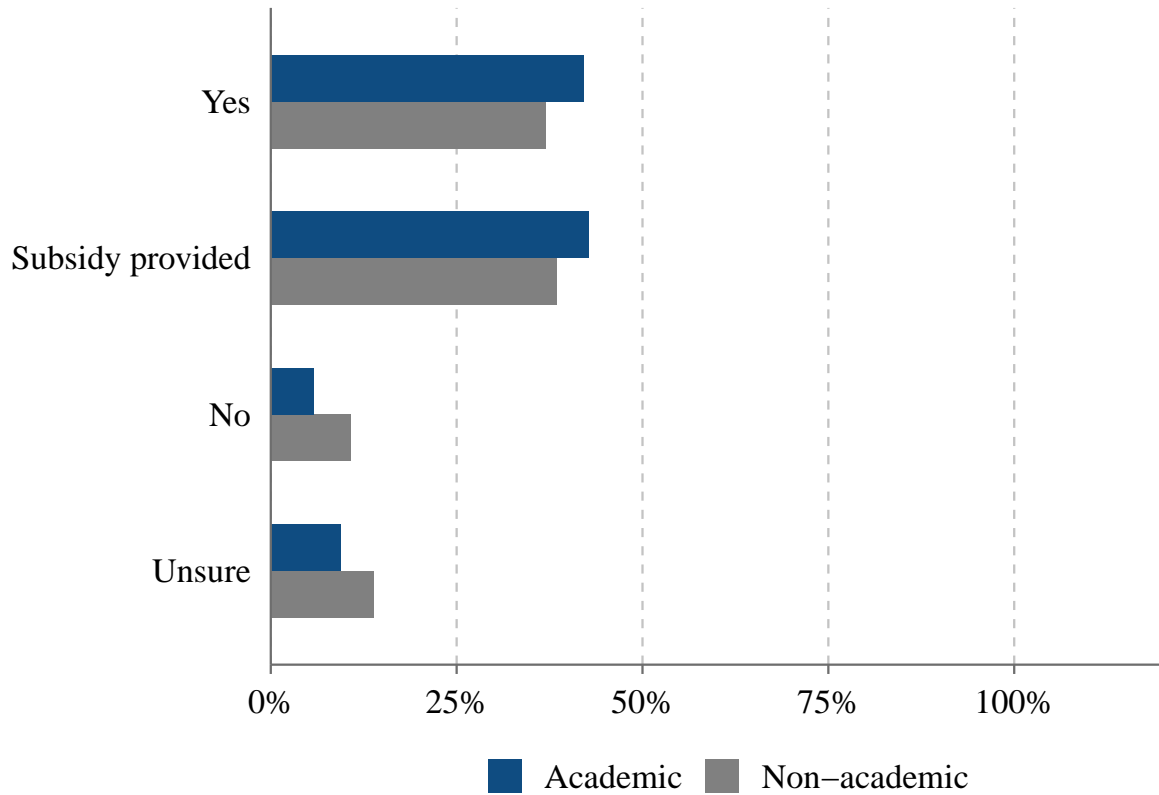
Which of the following opportunities for professional development does your institution provide? Please select all that apply.

- Free academic courses
- Discounted academic courses
- Opportunities to attend seminars or guest speaker discussions
- Opportunities to attend conferences
- Trainings or other skill building opportunities
- Support for PhD applications (e.g., free GRE preparation)
- None
- Other
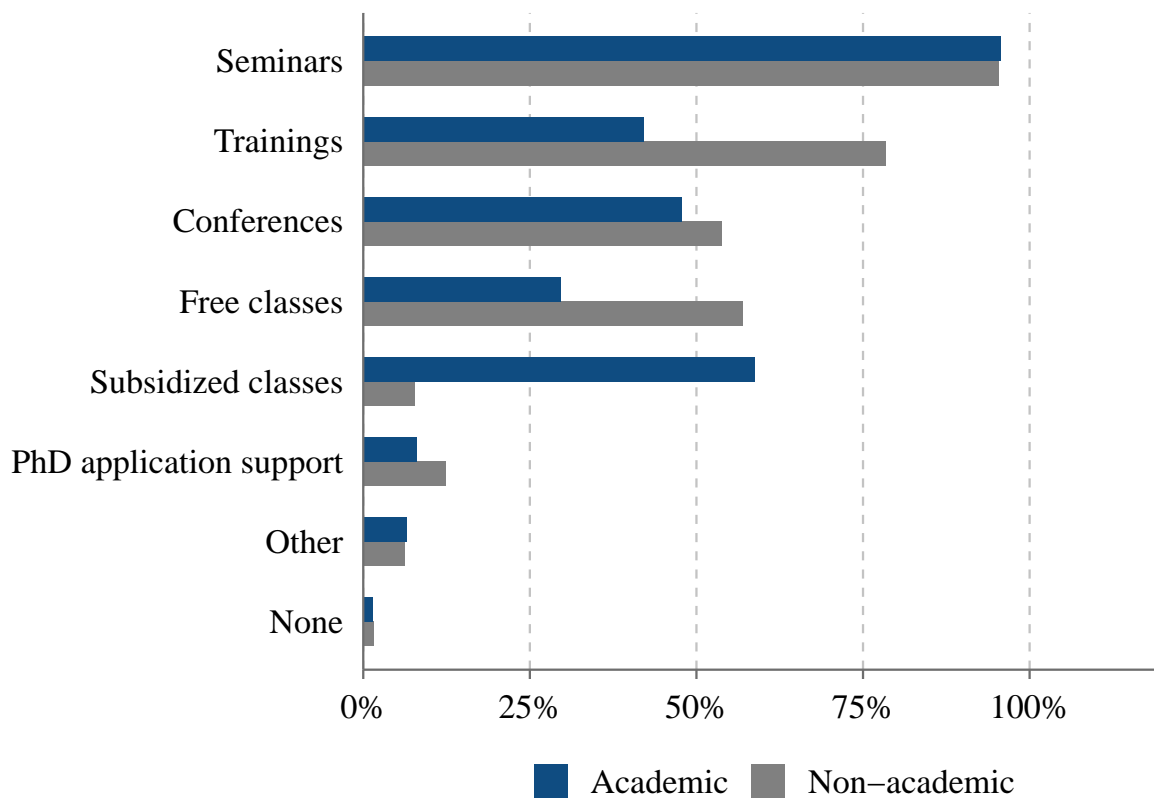
In this section, we will ask you questions about your principal investigators. Principal investigator (PI) refers to a person who makes the final decision and has ultimate responsibility for a given project (e.g. professor). This may differ from a supervisor who instructs you on the day-to-day tasks for a given project (e.g. graduate student, senior research assistant). We recognize that this distinction may be difficult to disentangle for your specific situation. Please answer the questions in this section to the best of your abilities.

How frequently do you exchange messages with your PI(s) (e.g. email, Github, Slack)?

- Everyday
- Every 2-3 days
- Once a week
- Every 2-3 weeks
- Once a month
- Less than once a month
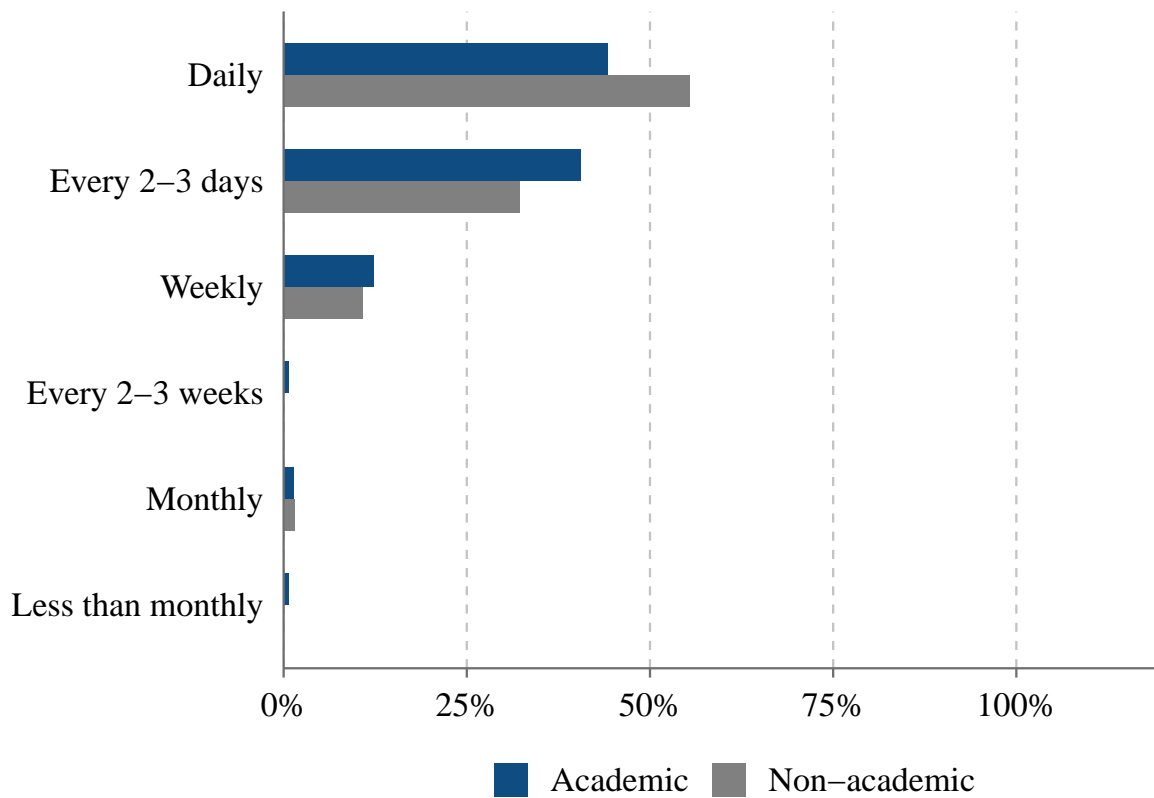
How frequently do you have a conversation with your PI(s) (e.g. in-person, phone call)?

- Everyday
- Every 2-3 days
- Once a week
- Every 2-3 weeks
- Once a month
- Less than once a month
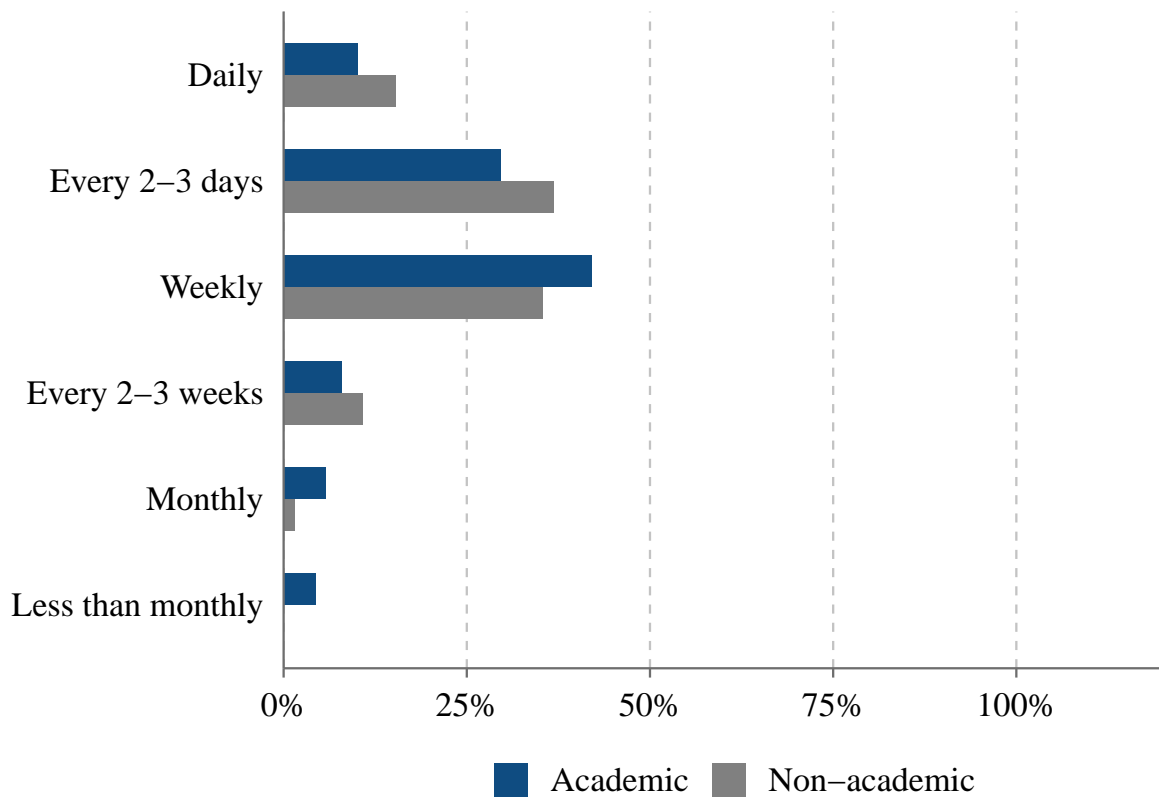
How frequently do you discuss your professional development or career with your PI(s)?

- At least once a week
- Every 2-3 weeks
- Once a month
- Every 2-3 months
- Every 4-6 months
- Less than every 6 months
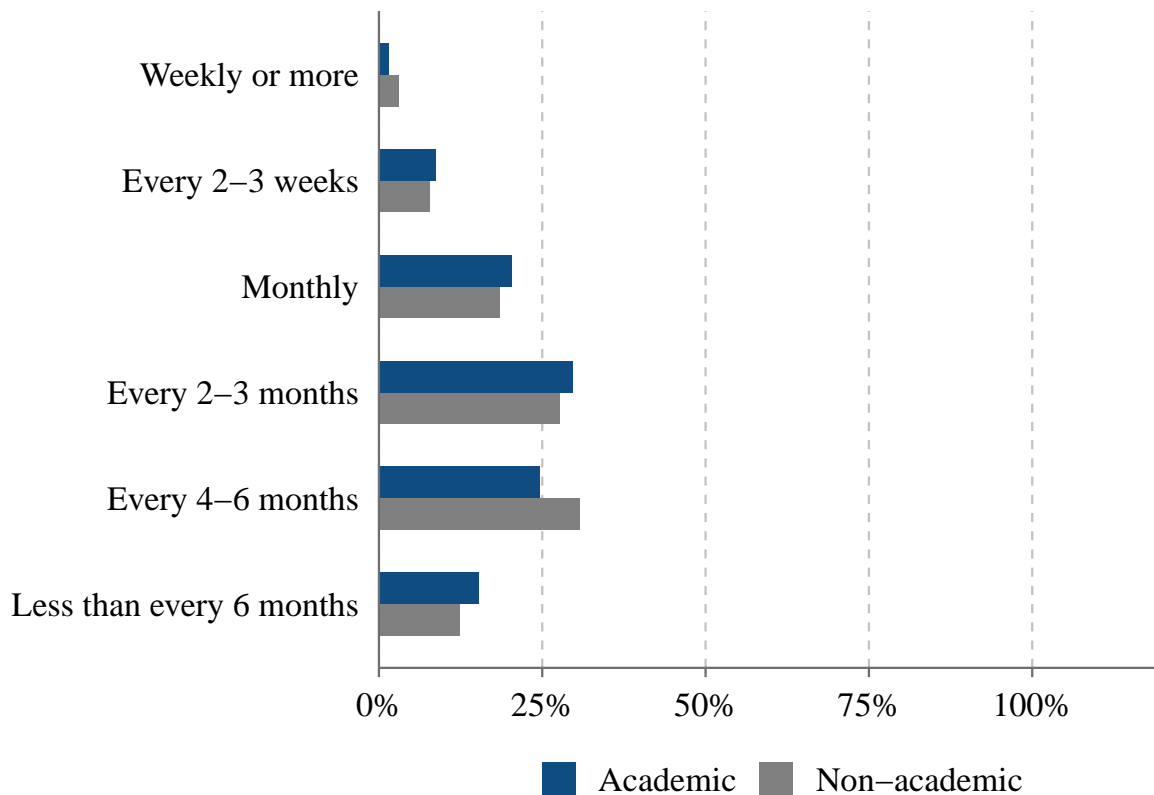
In your workplace, how many people are in similar position as yours (including yourself)?

- 1 (I am the only post-undergraduate researcher)
- 2-5
- 6-10
- More than 10
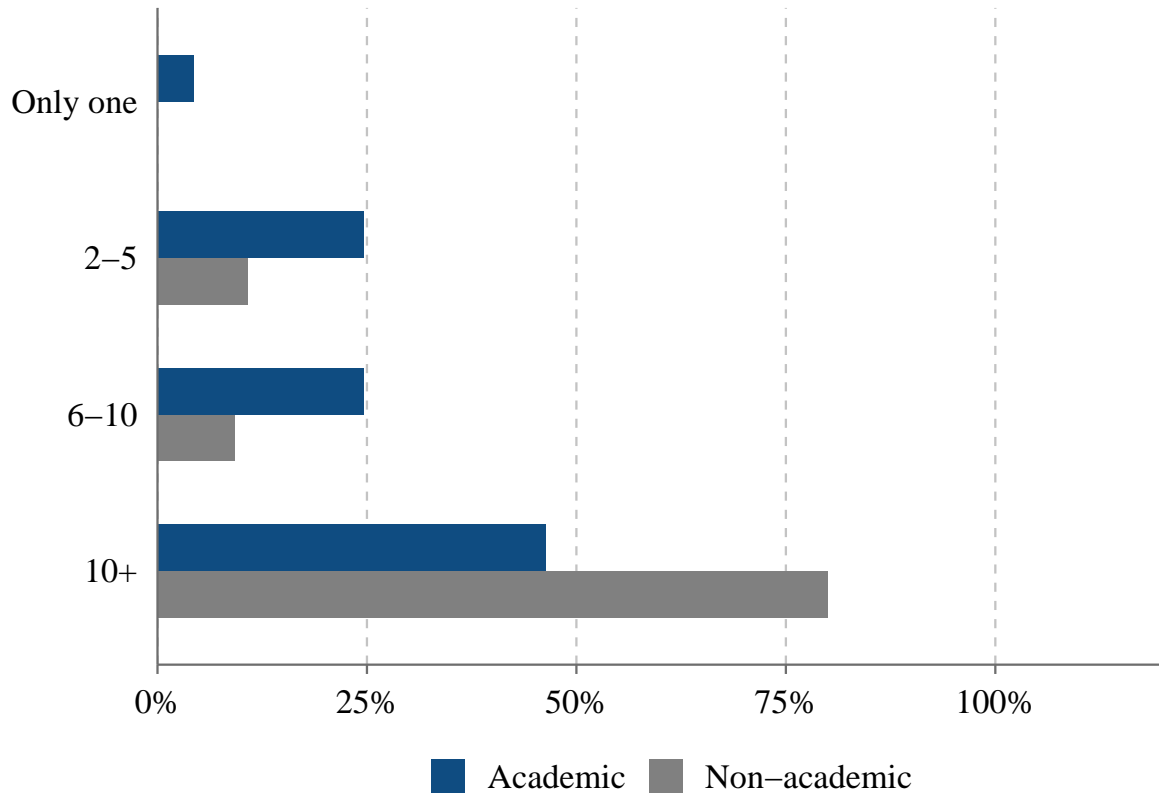
How frequently do you interact with other individuals in a similar position to you at your workplace?

- Everyday
- Every 2-3 days
- Once a week
- Every 2-3 weeks
- Once a month
- Less than once a month
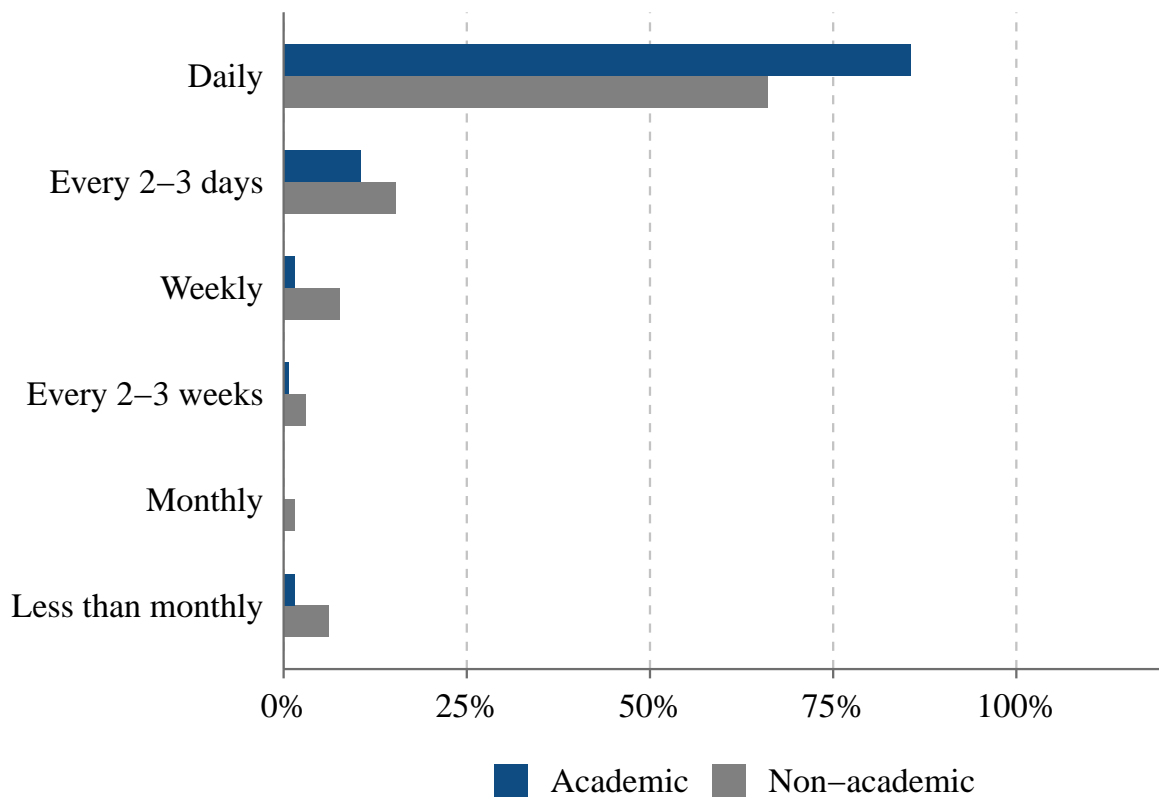
How many letters of recommendation do you plan to get from this position?

- 0
- 1
- 2
- 3 or more
- Not sure
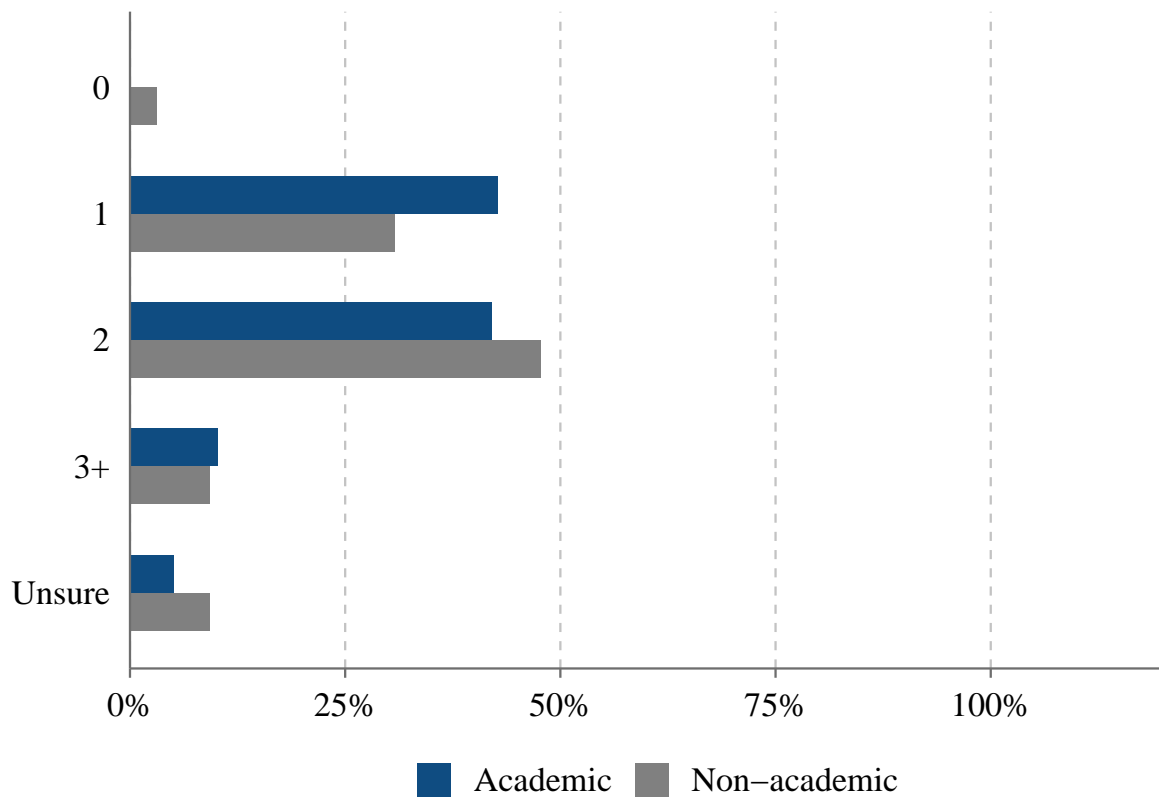
Have you or do you anticipate co-authoring papers with your PIs in this position?

- Yes
- No
- Not sure
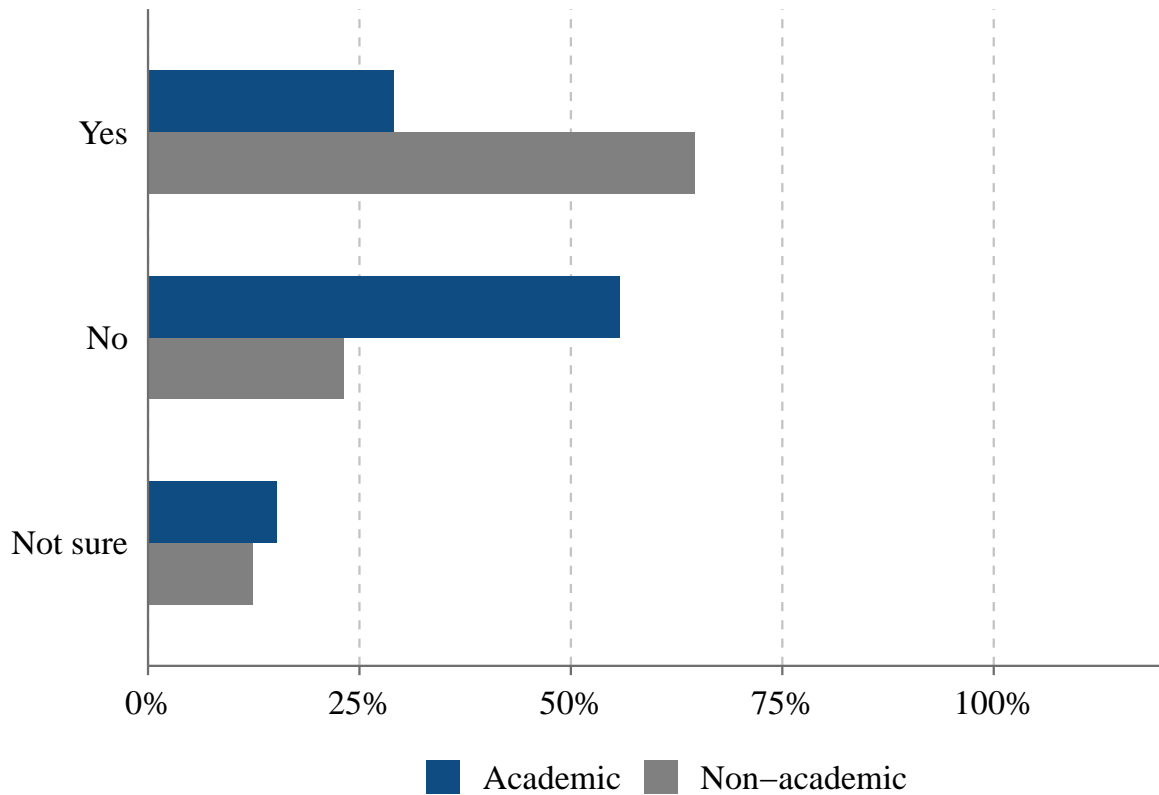
How did your current position affect your interest in applying for PhD programs in economics or related fields?

- Greatly increased
- Increased
- Did not change
- Decreased
- Greatly decreased
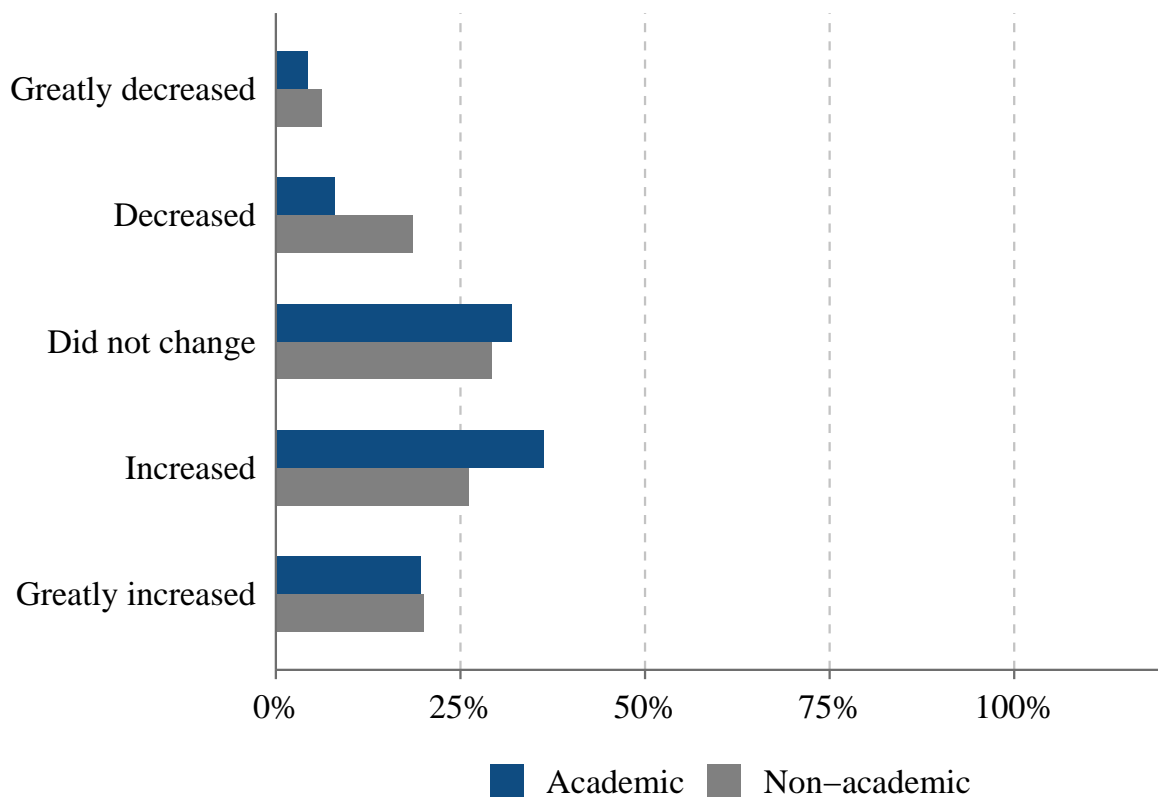
Please indicate your current status with regards to applying to PhD programs in economics or related fields.

- I have applied to PhD programs and am attending a PhD program.
- I have applied to PhD programs but will not be attending a PhD program.
- I anticipate applying to PhD programs in the future.
- I have not and will not be applying to PhD programs.
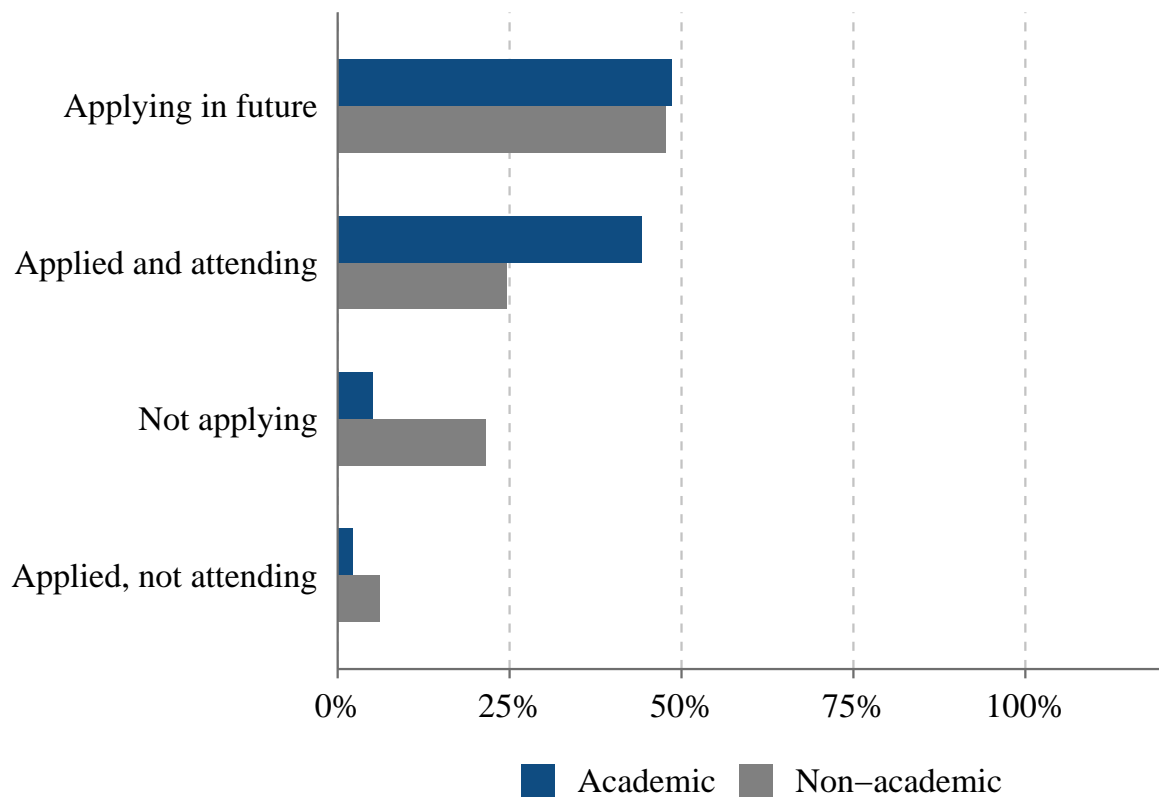
Will you be reapplying to PhD programs in economics or related fields in the future?

- Yes
- No
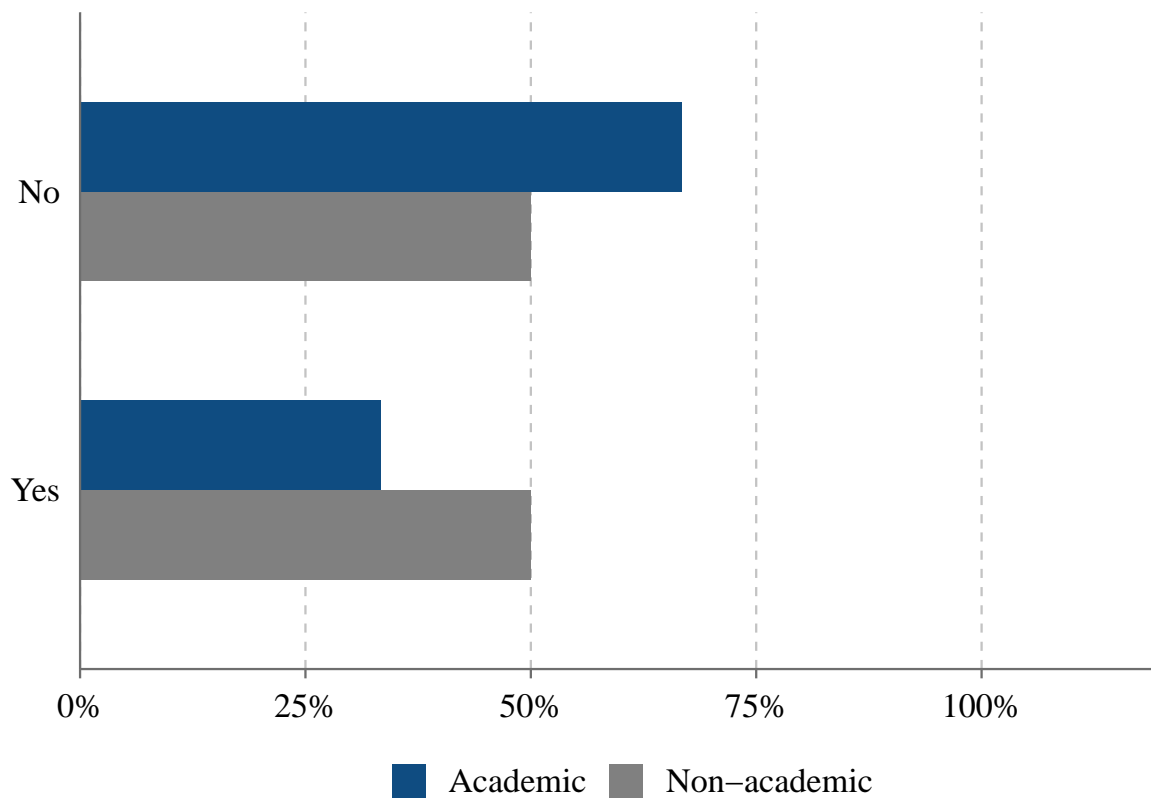
What do you expect to do instead of applying to PhD programs in economics or a related fields?

- I will apply to or attend a PhD program in a field unrelated to economics (e.g., computer science).
- I will apply to or attend a non-PhD graduate program (e.g., JD, MA, MBA).
- I will apply to or switch to a position at another institution.
- Other
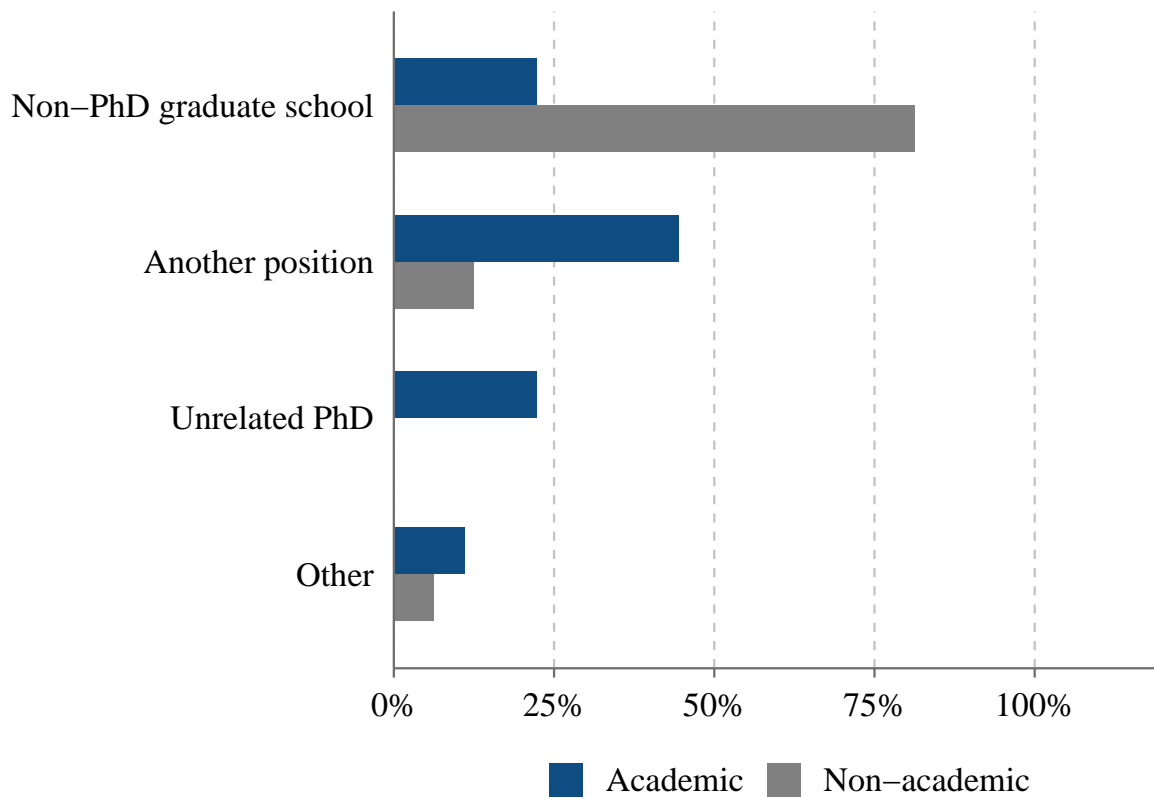
(Optional) What is the name of the program and institution you are attending? Please provide as complete of a name as possible (e.g., PhD in Economics at New York University).

Open-Ended Responses

(Optional) What is your advice to students applying to post-undergraduate research experiences?

87 individuals answered this open-ended question. Based on the responses, we organized advice into four topics:

    I. Applying to a position

   II. Selecting the 'right' position

  III. Succeeding during the position

  IV. Overall experience with the position

We then manually tagged responses by whether they mentioned a frequently re-occurring piece of advice on one of these topics. Below, we provide the most common pieces of advice, including representative quotes in italics. Within each topic, pieces of advice are organized from most to least frequently occurring.

I. Applying to a position

1. **Seek prior research experience and connections with professors**

   - *It's important to have prior research experience (e.g., honors thesis or part-time undergraduate RA)*

   - *Undergrad research experiences definitely help...don't be afraid to ask professors whether they have or if they know someone who is hiring part-time undergrad RAs.*

   - *Get (very) strong recommendation letters (preferably from professors who have connections)*

   - *Most important prep tip from my experience is to prove yourself to a professor at your institution and show them your motivation to do economics research.*

2. **Apply widely**

   - *Apply to a bunch of places*

   - *Apply to as many as possible! I was rejected by all but one that I applied to.*

   - *Apply to every position you can find, and email professors whose work you really like. RA skills are transferable so even if you get experience in a field you don't plan to*

pursue, you still get valuable research skills to use in your own field of interest later, and you might develop new interests and ideas too.

- *Look for [many] job postings on NBER website or @econ_ra on Twitter*

3. **Develop prior coding experience**

- *Find ways to learn Stata or R as much as possible as an undergrad*

- *Definitely learn how to code at least a bit, especially if coming from a more qualitative background.*

- *Learn as much programming as possible. If you are a great programmer you will have an easier time finding jobs and be more effective once you get there.*

- *Some of the coding skills that are valued for the positions are not traditionally taught in economics courses, such as writing efficient code without duplicated lines.*

- *If the position you are applying for asks for a coding sample...make sure that the code is well commented, well organized, and demonstrates your ability to perform a range of tasks, for eg. data cleaning, producing publication-quality tables and graphs etc.*

II. Selecting the 'right' position

1. **Talk to previous RAs and others about your potential supervisors**

- *Before accepting any position talk to RAs who have worked for that professor...The type of work and quality of advisor varies a lot across professors, even within university. While most RAs I know have had positive experiences, there is not much HR oversight in some places and there are a few professors that are a nightmare to work for*

- *Experience depends heavily on how well the PI treats you - talk to current RAs and make sure it seems like a good fit rather than choosing the most famous prof*

- *Try to talk to RAs at the institutions you are looking to apply. There is a tremendous amount of heterogeneity in experience, training, support, and mentorship in these jobs.*

- *If possible, reach out to ex-RAs or pre-docs who worked in that position via LinkedIn and ask for their experience working. Work experience as an RA greatly depends on the PI.*

- *If you get an offer, talk to the RA before you (or several). There's no real accountability on the PI's part, and it's hard to leave if it turns out to be a bad fit.*

- *Research closely the environment of the organization, it matters a lot more to your happiness and success than the relative fame of the organization*

- *Talk to as many RAs in the current position as possible and hope that someone gives you an honest answer about their experiences. Think deeply about how much you really believe research is what promotes social good or policy change. Think deeply about what your core values relating to research are and what your level of integrity is.*

- *Try to enquire about a PI before taking a job offer or even before applying to said job. The PI that you work for shapes your entire research experience*

2. **Seek programs with RA 'cohorts'**

- *I've loved having a community of fellow RAs*

- *I'd also recommend looking for RA positions that have cohorts...These kinds of programs more often have trainings and other learning opportunities. Perhaps even more importantly, they will make the often isolating work of the RA more enjoyable*

- *Join an RAship where there are many other RAs so you can make friends and have a support group throughout the process.*

3. **Take into account the reputation of researchers and past placements of RAs**

- *Frankly, getting hired by a "top" or at least tenured professor matters – their letter has much more weight in admissions.*

- *Ask about placement records from past RAs*

4. **Choose diverse working environments**

- *I would also suggest that students from "diverse" backgrounds pay close attention to the diversity makeup of the RAs currently working with a specific economist. It is normally quite telling whether you'll actually receive coauthorship and whether your boss will take your research interests seriously. It also can protect you from harassment*

- *Go somewhere that values diversity, says so openly, and has a record of having a diverse staff.*

III. Succeeding during the position

1. **Be self-sufficient**

- *Get comfortable with self-driven independent work (RAship work is very self-guided)*

- *Be prepared to self-teach yourself a lot of skills!*

- *Work hard and use it as an opportunity to primarily focus on picking up 2 key skills: 1. technical/coding skills and 2. project management- better organization of files, structuring of project tasks in a more efficient manner, etc.*

2. **Work to develop a relationship with your supervisor**

- *Make the most of your exposure to PIs and other faculty*

- *Get to know your PI. Ask them out for a meal, get to know them and the research they have done and advise about grad school. They know a lot!*

- *PIs want to work with you as a researcher but also a co-worker - it's okay to be friendly!*

3. **Don't be afraid to prioritize your own research or classes**

- *Make sure you have time and support to work on your own research or classes*

- *Prioritize independent research.*

- *If you want to take classes, figure out beforehand the amount of work hours you need to put in. Before accepting the job, communicate this with the PI and make your intentions of taking classes clear.*

IV. Overall experience with the position

1. **Positive experiences**

- *It's a good way to figure out whether academia is something you want to do.*

- *Predoctoral research positions provide the following: (1) the ability to test out doing real economic research and see if this is something you want to do as a career, (2) a way to get letters of recommendation for your doctoral applications that can attest to your research experience, and (3) additional time for you to take classes you need (real analysis, etc)...if you are interested in learning more about if a economics or economics-adjacent (finance, public policy, etc) research career is what you want, I would strongly recommend these programs.*

- *It's a great opportunity to develop skills, get a break from student life and a taste of the real world, and expand your understanding both of your discipline and the world at large.*

- *Do it! I have appreciated this time and space to experience and learn more that has shifted my focus and will affect my graduate school trajectory.*

2. **Negative experiences**

   - *It is a data cleaning job and nothing more. Long hours with no prospects for co-authorship. [However] One should clearly understand that this experience and recommendation letters would do a miracle [for grad school admissions]*

   - *Go to the private sector*

   - *I would recommend it only as a back-up. If you are unable to get into grad school without it, it will aid that ability. Other than working the system in this way, you will not learn particularly much that is relevant for your future plans.*

   - *You are trading pay for recommendations. The results and job quality will be 100% a function of the PI you work for.*

References

Schlauch, Garrison and Richard Startz. 2018. "The path to an economics PhD." *Economics Bulletin* 38 (4):1864–1876.