

Online Supplemental Material A: SDR Questions

Item	Question
A01	Were you working for pay or profit during the week of February 1, 2019?
A02	Did you look for work during the four weeks preceding February 1, 2019? This would be between January 4th and February 1st.
A03.1	What were your reasons for not working during the week of February 1, 2019? (Marked Retired)
A03.2	What were your reasons for not working during the week of February 1, 2019? (Marked On layoff from a job)
A03.3	What were your reasons for not working during the week of February 1, 2019? (Marked Student)
A03.4	What were your reasons for not working during the week of February 1, 2019? (Marked Family responsibilities)
A03.5	What were your reasons for not working during the week of February 1, 2019? (Marked Chronic illness or permanent disability)
A03.6	What were your reasons for not working during the week of February 1, 2019? (Marked Suitable job not available)
A03.7	What were your reasons for not working during the week of February 1, 2019? (Marked Did not need or want to work)
A03.8	What were your reasons for not working during the week of February 1, 2019? (Marked Other, specify)
A03A0	If retired, please indicate the year you retired

A04	Prior to the week of February 1, 2019, when did you last work for pay or profit?
A05	What was the title of the last job you held prior to the week of February 1, 2019?
A06	What kind of work were you doing on this last job – that is, what were your duties and responsibilities on your last job? Please be as specific as possible, including any area of specialization
A07	Using the JOB CATEGORY list on pages 16-17,choose the code that best describes the last jobyou held prior to the week of February 1, 2019.
A08	Although you were working during the week of February 1, 2019, had you previously retired from any position?
A09	Who was your principal employer during the week of February 1, 2019?
A10	What was that employer's main business or industry – that is, what did that employer make or do?
A11	Counting all locations where this employer operates, how many people worked for your principal employer? Your best estimate is fine.
A12	Did your principal employer come into being as a new business within the past 5 years?
A13	Which one of the following best describes your principal employer during the week of February 1, 2019? Were you... self employed or a business owner; private sector employee; U.S. government employee; other type of employee
A14	Was your principal employer an educational institution?
A15	Was the educational institution where you worked a...

A16.1	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked President, Provost, or Chancellor (any level))
A16.2	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Dean (any level), department head, or department chair)
A16.3	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Research faculty, scientist, associate or fellow)
A16.4	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Teaching faculty)
A16.5	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Adjunct faculty)
A16.6	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Postdoc (e.g., postdoctoral fellow or associate))
A16.7	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Research assistant)
A16.8	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Teaching assistant)
A16.9	During the week of February 1, 2019, what type of academic position(s) did you hold at this institution? (Marked Other, specify)
A17	What was your faculty rank?
A18	What was your tenure status?
A19	What was the title of the principal job you held during the week of February 1, 2019?

A20	What kind of work were you doing on this job – that is, what were your duties and responsibilities on your principal job? Please be as specific as possible, including any area of specialization.
A21	Using the JOB CATEGORY list on pages 16-17, choose the code that best describes the principal job you held during the week of February 1, 2019.
A22.1	Did your duties on this job require technical expertise of a bachelor's degree in engineering, computer science, math, or the natural sciences?
A22.2	Did your duties on this job require technical expertise of a bachelor's degree or higher in the social sciences?
A22.3	Did your duties on this job require technical expertise of a bachelor's degree or higher in some other field (e.g., health, business or education)?
A23	Was this job a postdoc?
A24.1	What were your reasons for taking this postdoc? (Response to: 'Additional training in PhD field')
A24.2	What were your reasons for taking this postdoc? (Response to: 'Training in an area outside of PhD field')
A24.3	What were your reasons for taking this postdoc? (Response to: 'Work with a specific person or place')
A24.4	What were your reasons for taking this postdoc? (Response to: 'Other employment not available')
A24.5	What were your reasons for taking this postdoc? (Response to: 'Postdoc generally expected for a career in this field')
A24.6	What were your reasons for taking this postdoc? (Response to: 'Postdoc generally expected for a career in this field')

A25.1	Which two reasons in [the previous question] were your most important reasons for taking this postdoc? (Response to: Most important reason)
A25.2	Which two reasons in [the previous question] were your most important reasons for taking this postdoc? (Response to: Second most important reason)
A26	During what month and year did you start this job (that is, the principal job you held during the week of February 1, 2019)?
A27	To what extent was your work on your principal job related to your first U.S. doctoral degree?
A28.1	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Pay, promotion opportunities)
A28.2	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Working conditions (e.g., hours, equipment, working environment))
A28.3	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Job location)
A28.4	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Change in career or professional interests)
A28.5	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Family-related reasons (e.g., children, spouse's job moved))
A28.6	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Job in doctoral degree field not available)
A28.7	Did these factors influence your decision to work in an area outside the field of your first U.S. doctoral degree? (Response to: Some other reason)

A29.1	Which two factors in [the previous question] were your most important reason for working in an area outside the field of your first U.S. doctoral degree? (Most important reason)
A29.2	Which two factors in [the previous question] were your most important reason for working in an area outside the field of your first U.S. doctoral degree? (Second most important reason)
A30.01	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Accounting, finance, contracts)
A30.02	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Basic research - study directed toward gaining scientific knowledge primarily for its own sake)
A30.03	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Applied research - study directed toward gaining scientific knowledge to meet a recognized need)
A30.04	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Development - using knowledge gained from research for the production of materials, devices)
A30.05	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Design of equipment, processes, structures, models)
A30.06	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Computer programming, systems or applications development)
A30.07	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Human resources - including recruiting, personnel development, training)

A30.08	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Managing or supervising people or projects)
A30.09	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Production, operations, maintenance (e.g., chip production, operating lab equipment))
A30.10	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Professional services (e.g., health care, counseling, financial services, legal services))
A30.11	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Sales, purchasing, marketing, customer service, public relations)
A30.12	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Quality or productivity management)
A30.13	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Teaching)
A30.14	Which of the following work activities occupied at least 10 percent of your time during a typical work week on this job? (Response to: Other)
A31.1	On which two activities in [the previous question] did you work the most hours during a typical week on this job? (Response to: Activity most hours)
A31.2	On which two activities in [the previous question] did you work the most hours during a typical week on this job? (Response to: Activity second most hours)
A32	Did you supervise the work of others as part of the principal job you held during the week of February 1, 2019?
A33.1	(If Yes) How many people did you typically... Supervise directly?

A33.2	(If Yes) How many people did you typically... Supervise indirectly through subordinate supervisors?
A34.1	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's salary
A34.2	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's benefits
A34.3	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's job security
A34.4	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's job location
A34.5	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's opportunities for advancement
A34.6	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's intellectual challenge
A34.7	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's level of responsibility
A34.8	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's degree of independence
A34.9	Thinking about your principal job held during the week of February 1, 2019, please rate your satisfaction with that job's contribution to society
A35	How would you rate your overall satisfaction with the principal job you held during the week of February 1, 2019?
A36	As of the week of February 1, 2019, what was your basic annual salary on your principal job, before deductions?

A37	Was this salary based on a 52-week year, or less than that?
A37.WKS	Was this salary based on a 52-week year, or less than that? (Responded Less than 52 weeks and entered number of weeks per year.)
A38	During a typical week on your principal job, how many hours did you work?
A39	Did you want to work 35 or more hours per week on your principal job?
A40.1	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Previously retired or semi-retired)
A40.2	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Student)
A40.3	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Family responsibilities)
A40.4	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Full-time job not available)
A40.5	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Held more than one job)
A40.6	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Did not need or want to work more hours)
A40.7	For which of the following reasons did you usually work fewer than 35 hours per week on the principal job you held during the week of February 1, 2019? (Response to: Other)

A40A	If previously retired or semi-retired, please indicate the year you retired.
A41.1	Concerning your principal job during the week of February 1, 2019, were any of the following benefits available to you, even if you chose not to take them? (Response to: Health insurance that was at least partially paid by your employer)
A41.2	Concerning your principal job during the week of February 1, 2019, were any of the following benefits available to you, even if you chose not to take them? (Response to: A pension plan or a retirement plan)
A41.3	Concerning your principal job during the week of February 1, 2019, were any of the following benefits available to you, even if you chose not to take them? (Response to: A profit-sharing plan)
A41.4	Concerning your principal job during the week of February 1, 2019, were any of the following benefits available to you, even if you chose not to take them? (Response to: Paid vacation, sick, or personal days)
A42	Thinking back now to 2018, was any of your work during 2018 supported by contracts or grants from the U.S. Federal Government?
A43.01	Which Federal agencies or departments were supporting your work? (Marked Dept. of Defense (DOD))
A43.02	Which Federal agencies or departments were supporting your work? (Marked Dept. of Education)
A43.03	Which Federal agencies or departments were supporting your work? (Marked Dept. of Energy (DOE))
A43.04	Which Federal agencies or departments were supporting your work? (Marked National Institutes of Health (NIH))
A43.05	Which Federal agencies or departments were supporting your work? (Marked Dept. of Health and Human Services (except NIH))

A43.06	Which Federal agencies or departments were supporting your work? (Marked "National Aeronautics and Space Administration (NASA)")
A43.07	Which Federal agencies or departments were supporting your work? (Marked National Science Foundation (NSF))
A43.08	Which Federal agencies or departments were supporting your work? (Marked Other)
A43.09	Which Federal agencies or departments were supporting your work? (Marked Don't Know Source Agency)
A44	Counting all jobs held in 2018, what was your total earned income for 2018, before deductions?
B01	Were you working for pay or profit during both of these time periods -- the week of February 1, 2017, and the week of February 1, 2019?
B02	During these two time periods - the week of February 1, 2017, and the week of February 1, 2019 -- were you working for?
B03.1	Why did you change your employer or your job? (Marked Pay, promotion opportunities)
B03.2	Why did you change your employer or your job? (Marked Working conditions (e.g., hours, equipment, working environment))
B03.3	Why did you change your employer or your job? (Marked Job location)
B03.4	Why did you change your employer or your job? (Marked Change in career or professional interest)
B03.5	Why did you change your employer or your job? (Marked Family-related reasons (e.g., children, spouse's job moved))

B03.6	Why did you change your employer or your job? (Marked School-related reasons (e.g. returned to school, completed a degree))
B03.7	Why did you change your employer or your job? (Marked Laid off or job terminated (includes company closings, mergers, buyouts, grant or contract ended))
B03.8	Why did you change your employer or your job? (Marked Retired)
B03.9	Why did you change your employer or your job? (Marked Some other reason)
C01	During the past 12 months, did you attend any work-related training, such as workshops or seminars?
C02.1	For which of the following reasons did you take training during the past 12 months? (Response to: To improve skills or knowledge in your current occupational field)
C02.2	For which of the following reasons did you take training during the past 12 months? (Response to: To increase opportunities for promotion or advancement in your current occupational field)
C02.3	For which of the following reasons did you take training during the past 12 months? (Response to: For licensure or certification in your current occupational field)
C02.4	For which of the following reasons did you take training during the past 12 months? (Response to: To facilitate a change to a different occupational field)
C02.5	For which of the following reasons did you take training during the past 12 months? (Response to: Required or expected by employer)
C02.6	For which of the following reasons did you take training during the past 12 months? (Response to: For leisure or personal interest)

C02.7	For which of the following reasons did you take training during the past 12 months? (Response to: Other)
C03	What was your most important reason from question C2 for taking training?
C04	During the past 12 months, did you attend any professional society or association meetings or professional conferences?
C05	To how many regional, national, or international professional societies or associations do you currently belong?
C06.1	When thinking about a job, how important is each of the following factors to you?..(Response to: Salary).
C06.2	When thinking about a job, how important is each of the following factors to you?..(Response to: Benefits).
C06.3	When thinking about a job, how important is each of the following factors to you?..(Response to: Job security).
C06.4	When thinking about a job, how important is each of the following factors to you?..(Response to: Job location).
C06.5	When thinking about a job, how important is each of the following factors to you?..(Response to: Opportunities for advancement).
C06.6	When thinking about a job, how important is each of the following factors to you?..(Response to: Intellectual challenge).
C06.7	When thinking about a job, how important is each of the following factors to you?..(Response to: Level of responsibility).
C06.8	When thinking about a job, how important is each of the following factors to you?..(Response to: Degree of independence).

C06.9	When thinking about a job, how important is each of the following factors to you?..(Response to: Contribution to society).
D01	Between February 2017 and February 2019 did you complete another degree, such as a master's or another doctorate?
D02	What type of degree did you earn?
D03	What was the primary field of study for this degree?
D04	In what month and year was this degree awarded?
D05	From which academic institution did you receive this degree?
D06.1	For which of the following reasons did you obtain your most recent degree? (Response to: 'To gain further education before beginning a career')
D06.2	For which of the following reasons did you obtain your most recent degree? (Response to: 'To prepare for graduate school or further education')
D06.3	For which of the following reasons did you obtain your most recent degree? (Response to: 'To change your academic or occupational field')
D06.4	For which of the following reasons did you obtain your most recent degree? (Response to: 'To gain further skills or knowledge in your academic or occupational field')
D06.5	For which of the following reasons did you obtain your most recent degree? (Response to: 'For licensure or certification')
D06.6	For which of the following reasons did you obtain your most recent degree? (Response to: 'To increase opportunities for promotion, advancement or higher salary')?

D06.7	For which of the following reasons did you obtain your most recent degree? (Response to: 'Required or expected by employer')?
D06.8	For which of the following reasons did you obtain your most recent degree? (Response to: 'For leisure or personal interest')
D06.9	For which of the following reasons did you obtain your most recent degree? (Response to: 'Other, specify')?
D07	During the week of February 1, 2019, were you enrolled in or taking courses at a college or university?
D08	Were you taking courses or enrolled as ... (Response to: full-time/part-time/not enrolled but taking courses)
D09	Toward what degree were you working?
D10	What was the primary field of study for this degree?
D11.1	For which of the following reasons were you taking classes or enrolled? (Response to: To gain further education before beginning a career)
D11.2	For which of the following reasons were you taking classes or enrolled? (Response to: To prepare for graduate school or further education)
D11.3	For which of the following reasons were you taking classes or enrolled? (Response to: To change your academic or occupational field)
D11.4	For which of the following reasons were you taking classes or enrolled? (Response to: To gain further skills or knowledge in your academic or occupational field)
D11.5	For which of the following reasons were you taking classes or enrolled? (Response to: For licensure or certification)

D11.6	For which of the following reasons were you taking courses or enrolled? (Response to: To increase opportunities for promotion, advancement or higher salary)
D11.7	For which of the following reasons were you taking courses or enrolled? (Response to: Required or expected by employer)
D11.8	For which of the following reasons were you taking classes or enrolled? (Response to: For leisure or personal interest)
D11.9	For which of the following reasons were you taking classes or enrolled? (Response to: Other, specify)
D12	Were any of your school-related costs for taking courses paid for by an employer?
E01	On February 1, 2019 were you... (Response to: marital status categories)...
E02	During the week of February 1, 2019, was your spouse or partner working?
E03.1	Did your spouse's or partner's duties on this job require technical expertise of a bachelor's degree or higher in... (Response to: Engineering, computer science, math or the natural sciences)
E03.2	Did your spouse's or partner's duties on this job require technical expertise of a bachelor's degree or higher in... (Response to: Social sciences)
E03.3	Did your spouse's or partner's duties on this job require technical expertise of a bachelor's degree or higher in... (Response to: Some other field (e.g. health, business, or education))
E04	As of the week of February 1, 2019 did you have any children living with you as part of your family?
E05.1	(If Yes) How many of these children living with you as part of your family were... Under age 2

E05.2	(If Yes) How many of these children living with you as part of your family were... Aged 2-5
E05.3	(If Yes) How many of these children living with you as part of your family were... Aged 6-11
E05.4	(If Yes) How many of these children living with you as part of your family were... Aged 12-18
E05.5	(If Yes) How many of these children living with you as part of your family were... Aged 19 or older
E06	On February 1, 2019, were you living in the United States or Puerto Rico, another U.S. territory, or were you living in another country?
E07	On February 1, 2019 were you a... (Response to: US or Non-US citizen)
E08	<p>Were you a U.S. citizen?</p> <p>... Born in the United States, PuertoRico or another U.S. territory</p> <p>... Born abroad of U.S. citizenparent(s)</p> <p>... By naturalization</p>
E09	(If Non-U.S. citizen) Were you a non-U.S. citizen... (Response to: permanent/temporary visa type)
E10	Of which country are you a citizen?
E11	What is your birthdate?
E12a	<p>These questions are asked to verify that our records are correct and that we have reached the correct person selected for this study.</p> <p>At which U.S. institution did you receive your first research doctorate?</p>

E12b	<p>These questions are asked to verify that our records are correct and that we have reached the correct person selected for this study.</p> <p>In what field of study did you receive your first research doctorate?</p>
E12c	<p>These questions are asked to verify that our records are correct and that we have reached the correct person selected for this study.</p> <p>In what month and year did you receive your first research doctorate?</p>
E13.1	<p>The next several questions are designed to help us better understand the career paths of individuals with specific functional limitations.</p> <p>What is the USUAL degree of difficulty you have with...</p> <p>SEEING words or letters in ordinary newsprint (with glasses/contact lenses, if you usually wear them)</p>
E13.2	<p>The next several questions are designed to help us better understand the career paths of individuals with specific functional limitations.</p> <p>What is the USUAL degree of difficulty you have with...</p> <p>HEARING what is normally said in conversation with another person (with hearing aid, if you usually wear one)</p>
E13.3	<p>The next several questions are designed to help us better understand the career paths of individuals with specific functional limitations.</p> <p>What is the USUAL degree of difficulty you have with...</p> <p>WALKING without human or mechanical assistance or using stairs</p>
E13.4	<p>The next several questions are designed to help us better understand the career paths of individuals with specific functional limitations.</p> <p>What is the USUAL degree of difficulty you have with...</p> <p>LIFTING or carrying something as heavy as 10 pounds, such as a bag of groceries</p>

E13.5	<p>The next several questions are designed to help us better understand the career paths of individuals with specific functional limitations.</p> <p>What is the USUAL degree of difficulty you have with...</p> <p>CONCENTRATING, REMEMBERING, or MAKING DECISIONS because of a physical, mental, or emotional condition</p>
E14	What is the earliest age at which you first began experiencing any difficulties in any of these areas?

Online Supplemental Material: Bibliography

- Adams, S., N. Bose, and C. Banerjee. 2017. *To Stay or Not to Stay: Location Choice of Foreign Born U.S. Doctorates*. Preprint. DOI: <https://doi.org/10.2139/ssrn.2924652>.
- Åstebro, T., S. Braguinsky, P. Braunerhjelm, and A. Broström. 2018. “Academic Entrepreneurship: The Bayh-Dole Act versus the “Professor’s Privilege.” *Industrial and Labor Relations Review* 72(5): 1094–1122. DOI: <https://doi.org/10.1177/0019793918819809>.
- Banerjee, C. 2019. *Job-Skill Match in the Labor Market for Scientists and Its Aggregate Implications*. Preprint Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3439993.
- Bender, K.A., and J.S. Heywood. 2009. “Educational Mismatch among Ph.D.s: Determinants and Consequences.” In *Science and Engineering Careers in the United States: An Analysis of Markets and Employment*, edited by R.B. Freeman and D.L. Goroff: 229–255. University of Chicago Press.
- Black, G., S.G. Levin, A.E. Winkler, and P.E. Stephan. 1997. *The Changing Career Outcomes of Citizen and Non-Citizen Scientists and Engineers in Higher Education*. Alfred P. Sloan Foundation. Available at: <https://works.bepress.com/grant-black/16/> (accessed December 2020):
- Blau, D.M., and B.A. Weinberg. 2017. “Why the US science and engineering workforce is aging rapidly.” *Proceedings of the National Academy of Sciences* 114(15): 3879–3884. DOI: <https://doi.org/10.1073/pnas.1611748114>.
- Blume-Kohout, M.E. 2014. *Understanding the Gender Gap In STEM Fields Entrepreneurship*. U.S. Small Business Administration Office of Advocacy. Available at:

<https://advocacy.sba.gov/2014/10/01/understanding-the-gender-gap-in-stem-fields-entrepreneurship/> (accessed December 2020).

Blume-Kohout, M.E., and J.W. Clack. 2013. "Are graduate students rational? Evidence from the market for biomedical scientists." *PLoS One* 8(12): e82759. DOI: <https://doi.org/10.1371/journal.pone.0082759>.

Borjas, G. 2005. "The Labor Market Impact of High-Skill Immigration." *The American Economic Review* 95(2): 56–60. DOI: <https://doi.org/10.1257/000282805774670040>.

Borjas, G.J. 2006. *Immigration in High-Skill Labor Markets: The Impact of Foreign Students on the Earnings of Doctorates* : 12085. National Bureau of Economic Research. DOI: <https://doi.org/10.3386/w12085>.

Calka, A. *Why Do Female Faculty Members Still Earn Less? Gender Pay Gap in Higher Education in Science, Health and Engineering Fields*. PhD diss. Seton Hall University, 2020. Available at: <https://scholarship.shu.edu/dissertations/2775/>.

Ceci, S.J., D.K. Ginther, S. Kahn, and W.M. Williams. 2014. "Women in Academic Science: A Changing Landscape." *Psychological Science in the Public Interest* 15(3): 75–141. DOI: <https://doi.org/10.1177/1529100614541236>.

Chang, W.-Y., and L.M. Milan. 2012. *International Mobility and Employment Characteristics among Recent Recipients of U.S. Doctorates* : 13–300. National Science Foundation. Available at: <https://www.nsf.gov/statistics/infbrief/nsf13300/> (accessed December 2020).

Cheng, S.D. 2020a. Careers Versus Children: How Childcare Affects the Academic Tenure-Track Gender Gap. Available at: https://scholar.harvard.edu/files/sdcheng/files/sdcheng_kids_jmpv7.pdf (accessed

December 2020).

Cheng, S.D. 2020b. *What's Another Year? The Lengthening Training and Career Paths of Scientists*. Available at:

https://scholar.harvard.edu/files/sdcheng/files/sdcheng_careers_v2.pdf (accessed December 2020).

Cheng, S.D. 2020c. *Where are All the Scientists? Resources for Studying the Long-Term Careers of STEM Ph. Ds.* National Bureau of Economic Research. Available at:

<https://www.nber.org/sites/default/files/2020-08/Where%20are%20All%20the%20Scientists-Resources%20for%20Studying%20the%20Long-Term%20Careers.pdf> (accessed December 2020).

Cohen, W.M., H. Sauermann, and P. Stephan. 2018. *Academics' Motives, Opportunity Costs and Commercial Activities Across Fields*. NBER Working Paper Series. National Bureau of Economic Research. Available at:

https://www.nber.org/system/files/working_papers/w24769/revisions/w24769.rev0.pdf.

Corley, E.A., and M. Sabharwal. 2007. "Foreign-born academic scientists and engineers: Producing more and getting less than their U.S.-born peers?" *Research in Higher Education* 48(8): 909–940. DOI: <https://doi.org/10.1007/s11162-007-9055-6>.

Crown, D., and A. Faggian. 2019. "Naturalization and the productivity of foreign-born doctorates." *Journal of Geographical Systems* 21: 533–556. DOI: <https://doi.org/10.1007/s10109-019-00301-6>.

Cummings, W.K., and O. Bain. 2018. "US Doctoral Study to Early Career. " In *Doctoral Education for the Knowledge Society*, edited by J.C. Shin, B.M. Kehm, and G.A. Jones:

91–103. Springer. DOI: https://doi.org/10.1007/978-3-319-89713-4_6.

Denton, M., N.H. Choe, K.A. Nguyen, M.J. Borrego, D.B. Knight, W.E. Wall Bortz, and T.J. Kinoshita. 2019. “Predictors of Engineering Doctoral Students’ Future Career Sector.” Presentation at the 2019 ASEE Annual Conference and Exposition, June 15–19, Tampa, Florida, U.S.A. DOI: <https://doi.org/10.18260/1-2--33185>.

Eagly, A.H. 2020. “Do the social roles that women and men occupy in science allow equal access to publication?” *Proceedings of the National Academy of Sciences* 117(11). DOI: <https://doi.org/10.1073/pnas.2001684117>.

Ehrenberg, R.G. 1992. “The Flow of New Doctorates.” *Journal of Economic Literature* 30(2): 830–875.

Flaherty, C. 2017. *Gender Gaps Shrinking and Lingering*. Inside Higher Ed. Available at: <https://www.insidehighered.com/news/2017/05/01/study-faculty-job-market-finds-some-gender-gaps-shrinking-and-others-remaining> (accessed December 2020).

Frehill, L.M., and K. Zippel. 2011. “Gender and International Collaborations of Academic Scientists and Engineers: Findings from the Survey of Doctorate Recipients, 2006.” *Journal of the Washington Academy of Sciences* 97(1): 49–69. Available at: <https://www.jstor.org/stable/24536496> (accessed December 2020).

Frehill, L.M. 2009. “Faculty of Color in the Professoriate and Science and Engineering.” Presentation at Pacific Sociological Association, April 8–11. San Diego, CA, U.S.A.

Garrison, H.H., S.A. Gerbi, and P.W. Kincade. 2003. “In an era of scientific opportunity, are there opportunities for biomedical scientists?” *The FASEB Journal* 17(15): 2169–2173. DOI: <https://doi.org/10.1096/fj.03-0836life>.

Ghaffarzadegan, N., and R. Xu. 2017. *Effects of late retirement on the aging of U.S. science and*

engineering professors. Department of Industrial and Systems Engineering, Virginia Tech. Available at:

https://www.researchgate.net/profile/Navid_Ghaffarzadegan/publication/320335641_Effects_of_late_retirement_on_the_aging_of_US_science_and_engineering_professors/links/59de68d6458515376b29de23/Effects-of-late-retirement-on-the-aging-of-US-science-and-engineering-professors.pdf (accessed December 2020).

Ginther, D.K. 2003. “Is MIT an Exception? Gender Pay Differences in Academic Science.”

Bulletin of Science, Technology & Society 23(1): 21–26. DOI: <https://doi.org/10.1177/0270467602239767>

Ginther, D.K. 2004. *Gender Differences in Salary and Promotion in Political Science*. Presented at the American Political Science Association Annual Meeting. Available at:

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.595.4036&rep=rep1&type=pdf>.

Ginther, D.K., and K.J. Hayes. 1999. “Gender Differences in Salary and Promotion in the Humanities.” *The American Economic Review* 89(2): 397–402.

Ginther, D.K., and S. Kahn. 2004. “Women in Economics: Moving Up or Falling Off the Academic Career Ladder?” *Journal of Economic Perspectives* 18(3): 193–214. DOI: <https://doi.org/10.1257/0895330042162386>.

Ginther, D.K., and S. Kahn. 2006. *Does Science Promote Women? Evidence from Academia 1973–2001*: 12691. National Bureau of Economic Research, November. DOI: <https://doi.org/10.3386/w12691>.

Ginther, D.K., W.T. Schaffer, J. Schnell, B. Masimore, F. Liu, L.L. Haak, and R.S. Kington. 2009. *Diversity in Academic Biomedicine: An Evaluation of Education and Career Outcomes with Implications for Policy*. Preprint. Available at:

<https://ssrn.com/abstract=1677993>.

Gopal, G. 2019. "Supply chain education: One step forward and another step back?" *Modern Materials Handling*. Available at:

https://www.mmh.com/article/supply_chain_education_one_step_forward_and_another_step_back.

Goulden, M., M.A. Mason, and K. Frasch. 2011. "Keeping Women in the Science Pipeline." *The ANNALS of the American Academy of Political and Social Science* 638(1): 141–162.

DOI: <https://doi.org/10.1177/0002716211416925>.

Hampton, S.E., and S.G. Labou. 2017. "Careers in ecology: A fine-scale investigation of national data from the U.S. Survey of Doctorate Recipients." *Ecosphere* 8(12): e02031. DOI: <https://doi.org/10.1002/ecs2.2031>.

Hayter, C.S., and M.A. Parker. 2019. "Factors that influence the transition of university postdocs to non-academic scientific careers: An exploratory study." *Research Policy* 48(3): 556–570. DOI: <https://doi.org/10.1016/j.respol.2018.09.009>.

Huang, Y., B. Cantwell, and B.J. Taylor. 2016. "Reasons for Becoming a Postdoc: Differences by Race and Foreign-Born Status." *Teachers College Record* 118(11): 1–29. DOI: <https://doi.org/10.1177/016146811611801106>.

Hur, H. 2017. *Three Essays on Policies to Help Government Improve Workforce Resilience*. Phd diss, Ohio State University. Available at:

http://rave.ohiolink.edu/etdc/view?acc_num=osu1492098355373946.

Hur, H., M.A. Andalib, J.A. Maurer, J.D. Hawley, and N. Ghaffarzadegan. 2017. Recent trends in the U.S. Behavioral and Social Sciences Research (BSSR) workforce." *PLoS One* 12(2): e0170887. DOI: <https://doi.org/10.1371/journal.pone.0170887>.

- Johnson, A. 2019. *The Perfect Match? Correlates of Job Placement Among PhD Earners*. Master's thesis, University of Nebraska – Lincoln. Available at: <https://digitalcommons.unl.edu/sociologydiss/59/>.
- Kahn, S. 1993. "Gender Differences in Academic Career Paths of Economists." *The American Economic Review* 83(2): 52–56. Available at: <https://www.jstor.org/stable/2117639>.
- Kahn, S., and D. K. Ginther. 2017. "The impact of postdoctoral training on early careers in biomedicine." *Nature Biotechnology* 35: 90–94. DOI: <https://doi.org/10.1038/nbt.3766>.
- Kahn, S., and M. MacGarvie. 2018. "Immigration Policy and Stay Rates of STEM PhDs." Presentation at the 23rd International Conference on Science and Technology Indicators, Leiden, The Netherlands, September 12. Available at: <https://hdl.handle.net/1887/65334>.
- Kahn, S., and M. MacGarvie. 2020. "The impact of permanent residency delays for STEM PhDs: Who leaves and why." *Research Policy*, 49(9). DOI: <https://doi.org/10.1016/j.respol.2019.103879>.
- Kawa, N.C, J.A. Clavijo Michelangeli, J.L. Clark, D. Ginsberg, and C. McCarty. 2018. "The Social Network of US Academic Anthropology and Its Inequalities." *American Anthropologist* 121(1): 14–29. DOI: <https://doi.org/10.1111/aman.13158>.
- Khosla, P. 2017a. "Family-Wage Gap and Highly Skilled Women." *International Journal of Gender and Women's Studies* 5(1): 35–47. DOI: <https://doi.org/10.15640/ijgws.v5n1p4>.
- Khosla, P. 2017b. *Three Essays on the Labor Market Outcomes of the Doctoral Recipients from the U.S. Universities*. Ph.D diss, University of Colorado, Boulder. Available at: https://scholar.colorado.edu/concern/graduate_thesis_or_dissertations/sn009x784.
- Khosla, P. 2018. "Wait time for permanent residency and the retention of immigrant doctoral recipients in the U.S." *Economic Analysis and Policy* 57: 33–43. DOI:

<https://doi.org/10.1016/j.eap.2017.11.002>.

Kinoshita, T.J., D.B. Knight, M. Borrego, and W.E. Wall Bortz. 2020. “Illuminating systematic differences in no job offers for STEM doctoral recipients.” *PLoS One* 15(4): e0231567.

DOI: <https://doi.org/10.1371/journal.pone.0231567>.

Kniffin, K.M., and A.S. Hanks. 2018. “The trade-offs of teamwork among STEM doctoral graduates.” *American Psychologist* 73(4): 420–432. DOI:

<https://doi.org/10.1037/amp0000288>.

Kulp, A.M. 2020. “Parenting on the Path to the Professoriate: A Focus on Graduate Student Mothers.” *Research in Higher Education* 61: 408–429. DOI:

<https://doi.org/10.1007/s11162-019-09561-z>.

Langin, K. 2019. “In a first, U.S. private sector employs nearly as many Ph.D.s as schools do.” *Science*. Available at: <https://doi.org/10.1126/science.caredit.aax3138>.

Laurence, D. 2017. “Outside the Box: Occupational Horizons for Modern Language Doctoral Programs.” *Profession*. Available at: <https://profession.mla.org/outside-the-box-occupational-horizons-for-modern-language-doctoral-programs/> (accessed December 2020).

Levin, S.G., G.C. Black, A.E. Winkler, and P.E. Stephan. 2004. “Differential Employment Patterns for Citizens and Non-Citizens in Science and Engineering in the United States: Minting and Competitive Effects.” *Growth and Change* 35(4): 456–475. DOI: <https://doi.org/10.1111/j.1468-2257.2004.00257.x>.

Levin, S.G., and P.E. Stephan. 1991. “Research Productivity Over the Life Cycle: Evidence for Academic Scientists.” *The American Economic Review* 81(1): 114–132.

Lorenz, R. G., D.S. Karcher, M.D. Gautreaux, M. Limson, and D.S. Zander. 2018. “The

Pathology Workforce and Clinical Licensure: The Role of the PhD Clinical Laboratorian in the United States.” *Academic Pathology* 5: 1–8. DOI: <https://doi.org/10.1177/2374289518775948>.

Main, J.B., and Y. Wang. 2019. “Is postdoctoral training linked to faculty careers and higher salaries in engineering fields?” *American Society for Engineering Education*. Available at: <https://par.nsf.gov/biblio/10141107>.

Mason, M.A., and M. Goulden. 2002. ”Do babies matter?” *Academe* 88 (6): 21–27.

Mason, M.A., and M. Goulden. 2004a. “Do Babies Matter (Part II)?: Closing the Baby Gap.” *Academe* 90(6): 11–15.

Mason, M.A., and M. Goulden. 2004b. “Marriage and Baby Blues: Redefining Gender Equity in the Academy.” *The ANNALS of the American Academy of Political and Social Science* 596(1): 86–103. DOI: <https://doi.org/10.1177/0002716204268744>.

Mervis, J. 2016. “Employment crisis” for new Ph.D.s is an illusion.” *Science* 352(6288): 880. DOI: <https://doi.org/10.1126/science.352.6288.880>.

Meyers, L.C., A.M. Brown, L. Moneta-Koehler, and R. Chalkley. 2018. “Survey of checkpoints along the pathway to diverse biomedical research faculty.” *PLoS One* 13(1): e0190606. DOI: <https://doi.org/10.1371/journal.pone.0190606>.

Millar, M.M. 2013. “Interdisciplinary research and the early career: The effect of interdisciplinary dissertation research on career placement and publication productivity of doctoral graduates in the sciences.” *Research Policy* 42(5): 1152–1164. DOI: <https://doi.org/10.1016/j.respol.2013.02.004>.

Moguérou, P. 2002. *Job satisfaction among US Ph.D. graduates: The effects of gender and employment sector*. Labor and Demography, University Library of Munich, Germany.

Available at: <https://econpapers.repec.org/paper/wpawuwpla/0204002.htm>.

Myers, K.R., W.Y. Tham, Y. Yin, N. Cohodes, J.G. Thursby, M.C. Thursby, P.E. Schiffer, J.T.

Walsh, K.R. Lakhani, and D. Wang. 2020. *Quantifying the Immediate Effects of the COVID-19 Pandemic on Scientists*. Preprint. Available at:
<https://arxiv.org/abs/2005.11358>.

National Research Council. 2001. *From Scarcity to Visibility: Gender Differences in the Careers of Doctoral Scientists and Engineers*, edited by J.S. Long. The National Academies Press. DOI: <https://doi.org/10.17226/5363>.

National Science Foundation, National Center for Science and Engineering Statistics. 2019. *Women, Minorities, and Persons with Disabilities in Science and Engineering*: 19-304. Alexandria, VA. Available at: <https://www.nsf.gov/statistics/wmpd>.

National Science Board, National Science Foundation 2020. *Science and Engineering Indicators 2020: The State of U.S. Science and Engineering*: 2020-1. Alexandria, VA. Available at:
<https://ncses.nsf.gov/pubs/nsb20201/>.

National Science Board, National Science Foundation 2019. *Science and Engineering Indicators 2020: Science and Engineering Labor Force*. *Science and Engineering Indicators 2020: 2019* (8). Alexandria, VA. Available at: <https://ncses.nsf.gov/pubs/nsb20198/>.

Nazar, K., M Waslin, and J.C. Witte. 2018. *The 2018 Nobel Laureates and Foreign-Born Scholars in the U.S. Higher Education System* Institute for Immigration Research. Fairfax, VA: George Mason University. Available at:
<https://www.immigrationresearch.org/node/2316>.

Perez-Silva, R., M.D. Partridge, and W.E. Foster. 2019. “Are foreign-born researchers more innovative? Self-selection and the production of knowledge among PhD recipients in the

USA.” *Journal of Geographical Systems* 21: 557–594. DOI:

<https://doi.org/10.1007/s10109-018-0281-6>.

Pitt, R.N., and L. Zhu. 2019. “The relationship between college major prestige/status and post-baccalaureate outcomes.” *Sociological Perspectives* 62(3): 325–345. DOI: <https://doi.org/10.1177/0731121418803325>.

Risler, L.L. 2019. *Female STEM Doctorate Holders in the Academic Workforce: An Event-History Analysis*. Phd diss. Ohio University. Available at:
http://rave.ohiolink.edu/etdc/view?acc_num=ohiou1565782219452302.

Rissler, L.J., K.L. Hale, N.R. Joffe, and N.M. Caruso. 2020. ”Gender Differences in Grant Submissions across Science and Engineering Fields at the NSF.” *BioScience* 70(9): 814–820. DOI: <https://doi.org/10.1093/biosci/biaa072>.

Roach, M., and H. Sauermann. 2017. “The declining interest in an academic career.” *PLoS One* 12(9): e0184130. DOI: <https://doi.org/10.1371/journal.pone.0184130>.

Robst, J. 2008. “Overeducation and college major: Expanding the definition of mismatch between schooling and jobs.” *The Manchester School* 76(4): 349–368. DOI: <https://doi.org/10.1111/j.1467-9957.2008.01064.x>.

Sabharwal, M. 2013a. “Comparing Research Productivity Across Disciplines and Career Stages.” *Journal of Comparative Policy Analysis: Research and Practice* 15(2): 141–163. DOI: <https://doi.org/10.1080/13876988.2013.785149>.

Sabharwal, M. 2013b. “Productivity and Leadership Patterns of Female Faculty Members in Public Administration.” *Journal of Public Affairs Education* 19(1): 73–96. DOI: <https://doi.org/10.1080/15236803.2013.12001721>.

Sabharwal, M. 2017. “Asians as Model Minorities: A Myth or Reality among Scientists and

Engineers in Academia.” In *People’s Movements in the 21st Century—Risks, Challenges and Benefits*, edited by I. Muenstermann, IntechOpen. DOI: <https://doi.org/10.5772/66827>.

Sabharwal, M., and E.A. Corley. 2008. “Categorization of Minority Groups in Academic Science and Engineering.” *Journal of Women and Minorities in Science and Engineering* 14(4): 427–446). DOI: <https://doi.org/10.1615/JWomenMinorScienEng.v14.i4.50>.

Sabharwal, M., and E.A. Corley. 2009. “Faculty job satisfaction across gender and discipline.” *The Social Science Journal* 46(3): 539–556. DOI:

<https://doi.org/10.1016/j.soscij.2009.04.015>.

Sassler, S., K. Michelmore, and K. Smith. 2017. “A Tale of Two Majors: Explaining the Gender Gap in STEM Employment among Computer Science and Engineering Degree Holders.” *Social Sciences* 6(3): 69. DOI: <https://doi.org/10.3390/socsci6030069>.

Saxon, T., and S. Weiler. 2019. “Defence spending and women in research: A cross-country comparison.” *Science and Public Policy*. DOI: <https://doi.org/10.1093/scipol/scz021>.

Selby, J.D., S. Bretschneider, and E.A. Corley. 2018. “The Case of Reverse Brain Drain: Why Do Foreign-Born Ph.D. Recipients Leave the U.S.?” In Proceedings of the Panel on Addressing the Problem of Reverse Brain Drain in U.S. Science, Technology, Engineering and Math (STEM) Fields: 2018 APPAM Fall Research Conference, November 8–10, Washington, D.C. U.S.A. Available at: <https://appam.confex.com/appam/2018/webprogram/Paper25727.html> (accessed December 2020).

Sharpe, R.V., and O.H. Swinton. 2012. “Beyond Anecdotes: A Quantitative Examination of Black Women in Academe.” *The Review of Black Political Economy* 39(3): 341–352.

DOI: <https://doi.org/10.1007/s12114-012-9134-6>.

Shauman, K. 2017. “Gender Differences in the Early Employment Outcomes of STEM Doctorates.” *Social Sciences* 6(1): 24. DOI: <https://doi.org/10.3390/socsci6010024>.

Shaw, A.K., and D.E. Stanton. 2012. “Leaks in the pipeline: Separating demographic inertia from ongoing gender differences in academia.” *Proceedings of the Royal Society B: Biological Sciences* 279(1743): 3736–3741. DOI: <https://doi.org/10.1098/rspb.2012.0822>.

Stephan, P.E., S. Gurmu, A.J. Sumell, and G. Black. 2007. “Who’s Patenting in the University? Evidence from the Survey of Doctorate Recipients.” *Economics of Innovation and New Technology* 16(2): 71–99. DOI: <https://doi.org/10.1080/10438590600982806>.

Tao, Y. 2018. “Earnings of Academic Scientists and Engineers: Intersectionality of Gender and Race/Ethnicity Effects.” *American Behavioral Scientist* 62(5): 625–644. DOI: <https://doi.org/10.1177/0002764218768870>.

Tao, Y., W. Hong, and Y. Ma. 2017. “Gender Differences in Publication Productivity Among Academic Scientists and Engineers in the U.S. and China: Similarities and Differences.” *Minerva* 55: 459–484. DOI: <https://doi.org/10.1007/s11024-017-9320-6>.

Torche, F. 2018. “Intergenerational Mobility at the Top of the Educational Distribution.” *Sociology of Education* 91(4): 266–289. DOI: <https://doi.org/10.1177/0038040718801812>.

Turk-Bicakci, L., A. Berger, and C. Haxton. 2014. *The Nonacademic Careers of STEM PhD Holders*. American Institutes for Research. Available at: <https://www.air.org/resource/nonacademic-careers-stem-ph-d-holders> (accessed December 2020).

U.S. Government Accountability Office. 2017. *Size, Characteristics, Compensation, and Work Experiences of Adjunct and Other Non-Tenure-Track Faculty* (Report GAO-18-49; Contingent Workforce). US GAO. Available at: <http://www.gao.gov/products/GAO-18-49>.

Van Ausdall, J. 2020. *The Effect of Switching Field of Study Between Degrees on Job Satisfaction*. Phd diss. University of Colorado, 2020. Available at: https://scholar.colorado.edu/concern/undergraduate_honors_theses/6t053h030.

Webber, K.L., and M.G. Canché. 2015. “Not Equal for All: Gender and Race Differences in Salary for Doctoral Degree Recipients.” *Research in Higher Education* 56: 645–672. DOI: <https://doi.org/10.1007/s11162-015-9369-8>.

Webber, K.L., and M. González Canché. 2018. “Is There a Gendered Path to Tenure? A Multi-State Approach to Examine the Academic Trajectories of U.S. Doctoral Recipients in the Sciences.” *Research in Higher Education* 59: 897–932. DOI: <https://doi.org/10.1007/s11162-018-9492-4>.

Webber, K.L., and L. Yang. 2015. “The Career Path of the Postdoctoral Researcher.” *Change: The Magazine of Higher Learning* 47(6): 53–58. DOI: <https://doi.org/10.1080/00091383.2015.1089760>.

Weinberger, C.J. 2011. “In search of the glass ceiling: Gender and earnings growth among US college graduates in the 1990s.” *ILR Review* 64(5): 949–980. DOI: <https://doi.org/10.1177/001979391106400506>.

Whittington, K.B. 2009. “Patterns of Male and Female Scientific Dissemination in Public and Private Science.” In *Science and Engineering Careers in the United States: An Analysis of Markets and Employment*, edited by R.B. Freeman and D. Goroff: 195–228. University

of Chicago Press. Available at: <http://www.nber.org/chapters/c11622>.

Winkler, A.E., S.G. Levin, and P.E. Stephan. 2010. “The Diffusion of IT in Higher Education: Publishing Productivity of Academic Life Scientists.” *Economics of Innovation and New Technology* 19(5): 481–503. DOI: <https://doi.org/10.1080/10438590903434844>.

Vrbovský, S. 2020. *Wage inequality among young college graduates: Can we find any evidence for reverse gender wage differential?*. Bachelor’s diss. Charles University.

Yang, L., and K.L. Webber. 2015. “A decade beyond the doctorate: The influence of a US postdoctoral appointment on faculty career, productivity, and salary.” *Higher Education*, 70(4) 667–687. DOI: <https://doi.org/10.1007/s10734-015-9860-3>.