



October 2017

# CONTINGENT WORKFORCE

Size, Characteristics,  
Compensation, and  
Work Experiences of  
Adjunct and Other  
Non-Tenure-Track  
Faculty

## Why GAO Did This Study

Contingent faculty play a large role in postsecondary education but may not have the same job protections as tenured or tenure-track faculty. In 2015, GAO reported that contingent workers—those in temporary, contract, or other non-standard employment arrangements—earn less, are less likely to have work-provided benefits, and are more likely to experience job instability than standard workers. GAO was asked to examine issues related to contingent faculty.

This report examines (1) what is known about the makeup and utilization of the postsecondary instructional workforce; (2) the roles different types of faculty fill at selected institutions and the factors administrators consider when determining faculty makeup; (3) what is known about how economic circumstances compare across different faculty types; and (4) what contingent faculty members report as advantages and disadvantages of their work.

GAO analyzed data from nationally representative sources and from public institutions in three states—Georgia, North Dakota, and Ohio. GAO selected these states based primarily on data availability. GAO interviewed administrators from 9 postsecondary institutions in these states and one large for-profit institution. GAO selected institutions based on factors such as institution size and percent of contingent faculty. GAO also conducted 21 discussion groups with contingent faculty.

The Department of Education did not have comments on this report. The National Science Foundation provided technical comments, which we incorporated, as appropriate.

View [GAO-18-49](#). For more information, contact Cindy Brown Barnes at (202) 512-7215 or [brownbarnesc@gao.gov](mailto:brownbarnesc@gao.gov).

## CONTINGENT WORKFORCE





# Size, Characteristics, Compensation, and Work Experiences of Adjunct and Other Non-Tenure-Track Faculty

## What GAO Found

According to 2015 Department of Education data, contingent faculty—those employed outside of the tenure track—made up about 70 percent of postsecondary instructional positions nationwide, though this varied by type of institution. In addition, data from three selected states show that contingent faculty teach about 45 to 54 percent of all courses at 4-year public institutions, and higher proportions at 2-year public institutions. In terms of job stability, some full-time contingent positions with annual or longer contracts may be relatively stable while part-time positions with short-term contracts may be among the least stable, though it is unknown whether faculty in these positions have other employment. In contrast, tenure-track positions are often viewed as having a high degree of job security that is somewhat unique to postsecondary education.

Administrators GAO interviewed at selected postsecondary institutions said full-time contingent faculty generally carry heavy teaching loads, and some also take on additional responsibilities, such as conducting research or advising students. However, administrators stated that part-time contingent faculty generally focus solely on teaching. As shown in the figure below, administrators also described factors they consider in determining their institution's faculty makeup.

### Factors Administrators Cited That May Affect Their Decisions about Faculty Makeup

 Financial	 Institutional	 Faculty needs	 Student needs
<ul style="list-style-type: none"> <li>Budget uncertainty</li> <li>Compensation costs for different faculty types</li> <li>Legal or grant program requirements</li> </ul>	<ul style="list-style-type: none"> <li>Enrollment changes</li> <li>The supply of qualified candidates</li> <li>The need for subject specialists</li> <li>Balancing priorities</li> </ul>	<ul style="list-style-type: none"> <li>Professional and life circumstances</li> <li>Prioritizing the needs of existing full-time faculty</li> <li>Faculty preferences and career goals</li> </ul>	<ul style="list-style-type: none"> <li>Various learning opportunities from different faculty types</li> <li>Contributions of full-time faculty to school community</li> </ul>

Source: GAO analysis of interviews with administrators from selected postsecondary institutions. | GAO-18-49

GAO examined recent data from North Dakota and Ohio public institutions and found that, among faculty who primarily teach—which excludes individuals such as administrators or researchers—part-time and full-time contingent faculty were paid about 75 percent and 40 percent less per course, respectively, compared to full-time tenure-track faculty. This comparison includes earnings for all of their responsibilities, including teaching and any other duties. However, when estimating faculty earnings for teaching duties only, pay disparities decreased to about 60 percent and 10 percent less per course for these contingent faculty, respectively. In addition, state and national data also showed that relatively few part-time contingent faculty received work-provided health or retirement benefits.

In discussion groups with GAO, contingent faculty cited advantages such as the flexibility to balance professional and personal responsibilities, skill development, or working with students, and described disadvantages that included uncertainty due to short-term contracts, untimely contract renewals, and pay—including a lack of compensation for some of their work. Other concerns they cited included limited career advancement opportunities, not having a voice in institutional decision-making, and not having certain types of institutional support.

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### Abbreviations

AAAS	American Academy of Arts and Sciences
AAUP	American Association of University Professors
AIP	American Institute of Physics
APSA	American Political Science Association
ASA	American Sociological Association
ASEC	Annual Social and Economic Supplement
CPS	Current Population Survey
Education	Department of Education
HDS	Humanities Departmental Survey
IPEDS	Integrated Postsecondary Education Data System
DOL	Department of Labor
FERPA	Family Educational Rights and Privacy Act
MLA	Modern Language Association
NCES	National Center for Education Statistics
NCSES	National Center for Science and Engineering Statistics
NDUS	North Dakota University System
NSF	National Science Foundation
ODHE	Ohio Department of Higher Education
PPACA	Patient Protection and Affordable Care Act
SDR	Survey of Doctorate Recipients
SEH	science, engineering, or health
SEIU	Service Employees International Union
STEM	science, technology, engineering, and math
USG	University System of Georgia

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October 19, 2017

The Honorable Robert C. “Bobby” Scott  
Ranking Member  
Committee on Education and the Workforce  
House of Representatives

The Honorable Suzanne Bonamici  
House of Representatives

Contingent faculty—those employed outside of the tenure track, such as full-time non-tenure-track professors and lecturers, part-time instructors and adjuncts, and graduate student instructors—are part of the broader contingent workforce. In 2015, we reported that contingent workers—those in temporary, contract, or other non-standard employment arrangements—earn less, are less likely to have work-provided benefits such as retirement plans or health insurance, and are more likely to experience job instability than standard workers.<sup>1</sup>

In terms of the postsecondary instructional workforce, as a subset of the overall workforce, tenured or tenure-track faculty may be considered standard workers.<sup>2</sup> Tenure affords faculty academic freedom—the ability to express thoughts or ideas without repercussion—and economic security by providing certain job protections, including employment that cannot be terminated except under limited circumstances, such as for adequate cause, financial exigencies of an institution, or closure of an academic program.<sup>3</sup> Unlike other standard employment arrangements

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<sup>1</sup> GAO, *Contingent Workforce: Size, Characteristics, Earnings, and Benefits*, [GAO-15-168R](#) (Washington, D.C.: April 20, 2015). Standard work arrangements are ongoing jobs with a traditional employer-employee relationship.

<sup>2</sup> Tenure-track positions are those that ultimately lead to tenure following a probationary period. Unless otherwise noted, when we use the term “tenure-track” throughout this report, we are referring to both tenured and tenure-track faculty. For clarity and consistency, we use the term “faculty” throughout our work to refer to any postsecondary instructional staff, though institutions may use the term differently and not all instructional staff have faculty status.

<sup>3</sup> American Association of University Professors (AAUP) and Association of American Colleges and Universities, *1940 Statement of Principles on Academic Freedom and Tenure*, accessed October 10, 2017, <https://www.aaup.org/file/1940%20Statement.pdf> and AAUP, *Recommended Institutional Regulations on Academic Freedom and Tenure*, accessed October 10, 2017, <https://www.aaup.org/report/recommended-institutional-regulations-academic-freedom-and-tenure>.

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that may vary in terms of job security, tenured faculty are often viewed as having essentially permanent job security because of the job protections tenure provides. The tenure guarantee is an employment model that is somewhat unique to academia, though other professions, such as K-12 teachers, may have similar arrangements.

For the purposes of this work, we refer to contingent faculty as any full- or part-time, non-tenure-track faculty. In contrast to tenure-track faculty, and much like contingent workers in the overall workforce, contingent faculty generally have contract employment arrangements that expire at the end of a set term—whether it be a semester, a school year, or a multi-year term. In addition, contingent faculty may not have the same job protections as tenured or tenure-track faculty. The employment situations of faculty who fall under the umbrella of “contingent” also may vary considerably. For example, while some contingent faculty may have contracts that are renewable on a continuous basis, others may resemble contingent workers more broadly and be in precarious employment situations with no guarantee for future work.

We were asked to examine issues related to contingent faculty. This report examines (1) what is known about the makeup and utilization of the postsecondary instructional workforce; (2) what roles different types of faculty fill at selected institutions and what factors administrators consider when determining their faculty makeup; (3) what is known about how economic circumstances compare across different faculty types; and (4) what contingent faculty members report as advantages and disadvantages of their work.

To address the first question, we analyzed national and state data to determine faculty makeup and utilization. Our primary source of national data was the Department of Education’s (Education) Integrated Postsecondary Education Data System (IPEDS), which we analyzed in 4-year intervals from 1995 to 2011 and separately for 2015.<sup>4</sup> Additional sources of national data were the Department of Labor’s (DOL) March 2016 Current Population Survey (CPS) Annual Social and Economic

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<sup>4</sup> IPEDS gathers information from every college, university, and technical and vocational institution that participates in federal student financial aid programs, as well as other institutions that report data voluntarily. For simplicity, we refer to IPEDS data by the start of the academic year; for example, we refer to IPEDS data from the 2015-16 collection as 2015 IPEDS data. IPEDS data collection covers an academic year, and faculty data are generally reported as of November 1 of the academic year. Education changed IPEDS definitions of instructional faculty in 2012-13 so we analyzed the 2015-16 data separately.



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Supplement (ASEC) and survey data for 2012-13 collected by the American Academy of Arts & Sciences (AAAS).<sup>5</sup> See table 12 in appendix I for a comprehensive list of the data sources we analyzed.<sup>6</sup> We also obtained and analyzed comprehensive faculty and course data for public postsecondary institutions from three states—Georgia, North Dakota, and Ohio.<sup>7</sup> We chose these states primarily based on the availability of these data and also considered the state’s location and the number of institutions in the state to reflect some variation by region and size. For the purposes of this study, we limited our analyses to instructional faculty in order to focus on the population that is most responsible for educating students.<sup>8</sup>

To address the second question, we interviewed administrators at selected institutions in Georgia, North Dakota, and Ohio to obtain information on the roles different types of faculty fill and factors institutions consider in determining their faculty makeup. In each state, we interviewed administrators at one 4-year public institution, one 4-year private institution, and one 2-year public institution.<sup>9</sup> We selected the specific institutions for our interviews based on factors such as the size of the institution, percent of contingent faculty, and whether the institution is located in an urban, suburban, or rural area. In addition, we met with administrators of one large online-based for-profit institution. In total, we interviewed administrators from 10 institutions. The findings from our discussions with administrators are not generalizable.

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<sup>5</sup> We generally refer to these data as CPS data throughout this report. The March 2016 ASEC contains data that refer to calendar year 2015.

<sup>6</sup> Education used to collect information on the backgrounds, responsibilities, workloads, salaries, benefits, attitudes, and future plans of both full- and part-time faculty through the National Study of Postsecondary Faculty; however, there is currently no single, comprehensive federal source of data on postsecondary faculty.

<sup>7</sup> Data from North Dakota and Ohio included 2- and 4-year institutions and data from Georgia included only 4-year institutions. For consistency and clarity, we use the term “course” throughout our work to generally refer to course sections (e.g., two separate sections of Biology 101 are counted as two courses); for more information about this terminology, see appendix I.

<sup>8</sup> The definitions of instructional faculty vary depending on the data set. For example, in IPEDS, instructional faculty are individuals whose primary work responsibility is instruction or for whom it is not possible to differentiate between instruction and other responsibilities. In the state data, instructional faculty are individuals who teach at least one course.

<sup>9</sup> For the purposes of this study, we use the term “private institution” to refer to 2-year and 4-year private, not-for-profit institutions.

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To compare the economic circumstances of different types of faculty—including various earnings analyses, access to retirement and health benefits, and satisfaction with job security and opportunities for advancement—we analyzed nationally representative data from the 2016 CPS ASEC and from the Survey of Doctorate Recipients (SDR) in science, technology, engineering, and math (STEM), health, and social sciences fields for 2013, which is conducted by the National Science Foundation’s (NSF) National Center for Science and Engineering Statistics (NCSES).<sup>10</sup> We also analyzed state data.

To obtain contingent faculty members’ views on the advantages and disadvantages of their work, we conducted discussion groups with different types of contingent faculty, the majority of which (19 out of 21) took place at the same selected institutions where we interviewed administrators. At each institution, we met with full- and part-time contingent faculty and graduate student instructors, where applicable.<sup>11</sup> Administrators at the institutions solicited participants for these interviews on our behalf. We also conducted two additional discussion groups with part-time contingent faculty who work at multiple institutions.<sup>12</sup> We did not systematically review the specific policies these institutions have with respect to contingent faculty. In addition, the views of faculty at institutions in states with greater levels of unionization or with larger metropolitan areas may differ from those in our study. Factors such as larger pools of faculty labor, greater ability to commute between schools, and collective bargaining dynamics could affect work experiences. The findings from our discussions with faculty are not generalizable. We also conducted interviews with the National Center for the Study of Collective Bargaining in Higher Education and the Professions, the American Association of University Professors, and the Service Employees International Union to obtain their views.

For all of the datasets used in our study, we reviewed documentation, interviewed or obtained information from officials responsible for the data, and tested the data for inaccuracies. We determined that these data are

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<sup>10</sup> NCSES documentation states that SDR collects data from individuals with a research doctoral degree in a science, engineering, or health (SEH) field from a U.S. academic institution. We use different terminology that captures the same fields.

<sup>11</sup> At one Georgia institution, part-time contingent faculty were unavailable to meet with us.

<sup>12</sup> We worked with the New Faculty Majority—an advocacy organization for contingent faculty—to identify faculty to participate in these discussion groups.

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sufficiently reliable for the purposes of this report.<sup>13</sup> In addition, we reviewed relevant federal laws and regulations related to all of the objectives of this review. See appendix I for more detailed information about our scope and methodology.

We conducted this performance audit from May 2016 to October 2017 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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## Background

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### Characteristics of Postsecondary Institutions

In fall 2015, almost 20 million students were enrolled in over 4,500 2- and 4-year postsecondary institutions, according to IPEDS data.<sup>14</sup>

Postsecondary institutions vary in terms of their funding, the length and type of programs offered, and instructional mission, among other characteristics. Public institutions, which include state universities and community colleges, are traditionally supported by federal, state, and local funds, in addition to revenue from tuition and fees. Private, not-for-profit schools are owned and operated by independent or religious organizations, and their net earnings do not benefit any shareholder or individual. Tuition and fees as well as other revenue sources primarily support these schools. For-profit institutions are privately owned and

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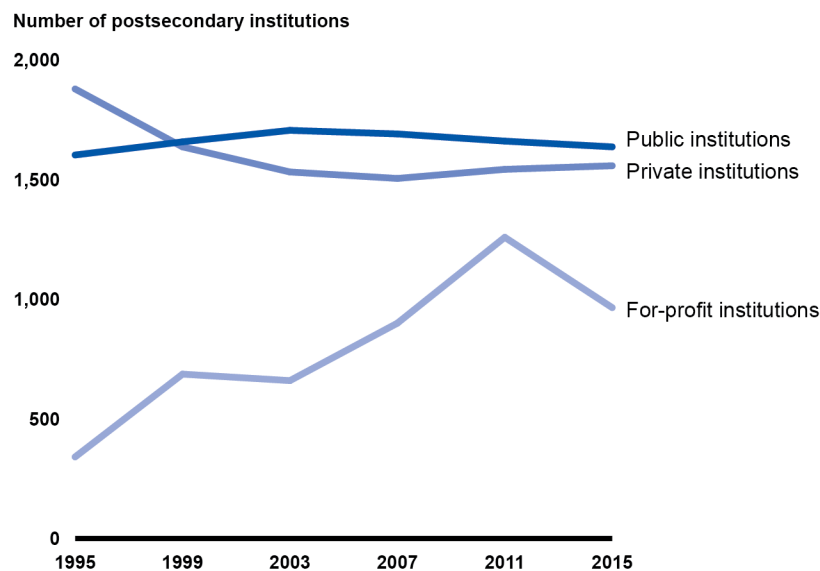
<sup>13</sup> Throughout our report, survey-based estimates are reported with their applicable margins of error. Because each survey's sample is only one of a large number of samples that might have been drawn and each sample could have provided different estimates, we express our confidence in the precision of our particular sample's results as the margin of error (i.e., the half width of the 95 percent confidence interval—for example, +/- 7 percentage points). This is the interval that would contain the actual population value for 95 percent of the samples that could have been drawn.

<sup>14</sup> The number of students is based on enrollment in 2-year and 4-year degree-granting institutions participating in programs under Title IV of the Higher Education Act, as amended. Many other institutions report data to IPEDS, including non-degree-granting and less-than-2-year institutions. In 2015, more than 7,000 institutions reported data to IPEDS.

earnings can benefit shareholders or individuals.<sup>15</sup> Two-year institutions often provide career-oriented programs at the certificate and associate's degree levels. Four-year institutions tend to have a broad range of instructional programs at the undergraduate level leading to bachelor's degrees. Many 4-year institutions also offer master's or doctorate level programs, and some 4-year institutions have a research focus.

The landscape of postsecondary institutions has changed over the past 20 years, particularly with respect to for-profit institutions. The number of public institutions remained relatively constant and the number of private institutions declined slightly; however, the number of for-profit institutions more than tripled between 1995 and 2011 before declining slightly to 2015 levels (see fig. 1).<sup>16</sup>

**Figure 1: Number of Postsecondary Institutions Nationwide, 1995-2015**



Source: GAO analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 1995-2015. | GAO-18-49

<sup>15</sup> Throughout our report, when we refer to public and private institutions, we always include only not-for-profit institutions. For-profit institutions are referred to as a separate group throughout our report.

<sup>16</sup> Changes in numbers of institutions can be due to, for example, new school openings, school closings, consolidation or merging of institutions, changes in whether institutions' branch campuses report independently or as part of their parent institution, or slight changes in the criteria we used for identifying institutions due to changes in how institutional characteristics were reported over time (see appendix I for more information).

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## How National Data Count Faculty

IPEDS and CPS both provide data on postsecondary faculty.

### IPEDS

#### Postsecondary Institution Types Defined

The Integrated Postsecondary Education Data System (IPEDS) categorizes postsecondary institutions based on length of degree offering, control, and nonprofit status. For the purposes of this review, we focused on:

- 4-year public, not-for-profit
- 4-year private, not-for-profit
- 2-year public, not-for-profit
- 2-year private, not-for-profit
- 4-year private, for-profit
- 2-year private, for-profit

We combined similar sectors for various analyses, using the following terminology:

- “4-year institutions” or “2-year institutions” includes public and private, not-for-profit institutions of the specified length
- “for-profit institutions” includes both 2-year and 4-year private, for-profit institutions
- “public institutions” or “private institutions” includes both 2-year and 4-year, not-for-profit institutions of the specified control

Source: GAO analysis of data from IPEDS. | GAO-18-49

IPEDS data can provide information on positions filled by different types of faculty across postsecondary education or by types of institutions (see sidebar for how we categorize institutions using IPEDS data).<sup>17</sup> In terms of faculty types, IPEDS distinguishes between tenure-track and contingent positions and also has data on graduate assistants, though we cannot determine whether these graduate teaching assistants are the instructors of record for courses or are instead providing classroom support (e.g., grading, leading discussions, and lab setup).<sup>18</sup> Because IPEDS counts positions, any faculty who teach at more than one institution are counted multiple times—for each position they fill.<sup>19</sup>

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<sup>17</sup> Counts reported by a single institution represent both individual positions and faculty. However, because faculty can work at more than one school, when institutions are combined, counts represent individual positions and somewhat duplicated faculty. This is similar to counting jobs in the U.S. economy, though some people may hold more than one of those jobs.

<sup>18</sup> IPEDS relies on the Bureau of Labor Statistics’ Standard Occupational Classification to define graduate teaching assistants as those who “assist faculty or other instructional staff in postsecondary institutions by performing teaching or teaching-related duties, such as teaching lower level courses, developing teaching materials, preparing and giving examinations, and grading examinations or papers.” The definition also notes that “Teacher Assistants” are excluded.

<sup>19</sup> The extent to which this occurs is unknown.

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CPS

CPS counts the number of actual workers in a given occupation and, in terms of faculty, provides data on how many individuals are employed as postsecondary teachers in colleges and universities nationwide. CPS does not differentiate faculty by type of institution or by tenure status. For example, CPS cannot identify full-time contingent faculty separately from full-time tenure-track faculty.

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## Contingent Faculty Fill Most Instructional Positions Nationwide and Teach Close to Half or More of All Courses at Public Institutions in Three Selected States

From 1995 to 2011, the Number of Instructional Positions Filled by Contingent Faculty More than Doubled While Those Filled by Full-Time Tenure-track Faculty Increased By 10 Percent

According to IPEDS data, from 1995 to 2011, the percentage of postsecondary instructional positions filled by contingent faculty increased from 57.6 to 71.6 percent.<sup>20</sup> During this period the number of instructional faculty positions at all institutions nationwide grew by over 60 percent—though most of this growth was among positions held by contingent faculty. More specifically, the number of positions held by full-time and part-time non-tenure-track faculty—which we define as contingent—both doubled during this period, while the number of positions held by full-time tenure-track faculty grew by about 10 percent (see table 1). In addition to full- and part-time contingent faculty, some graduate assistants may also teach courses. During the same period, the number of graduate teaching assistant positions grew by 63.8 percent.<sup>21</sup>

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<sup>20</sup> Graduate teaching assistants are not included in position counts. The IPEDS data we used to analyze faculty populations from 1995 to 2011 do not differentiate part-time tenure-track faculty from part-time contingent faculty. For this analysis, we include all part-time faculty in the contingent faculty group because, based on analyses of current faculty populations, the vast majority of part-time faculty are non-tenure-track.

<sup>21</sup> As noted previously, the IPEDS data do not distinguish between graduate assistants who teach classes and those who provide support for other teachers.

**Table 1: Growth in the Number of Instructional Positions by Type at All Institutions Nationwide, 1995-2011**

Year	Number of institutions	Total positions <sup>a</sup>	Individual faculty position types		
			Full-time tenure-track positions <sup>b</sup>	Full-time contingent positions	Part-time positions <sup>c</sup>
1995	3,823	939,175	398,166	158,360	382,649
1999	3,982	1,047,496	401,608	198,182	447,705
2003	3,898	1,186,252	415,460	221,193	549,599
2007	4,096	1,380,656	430,470	278,733	671,453
2011	4,463	1,535,281	436,403	331,313	767,565
<b>Percent change</b>		<b>63.5%</b>	<b>9.6%</b>	<b>109.2%</b>	<b>100.6%</b>

Source: GAO analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 1995-2011. | GAO-18-49

<sup>a</sup>Graduate teaching assistants are not included in the table because the IPEDS data do not distinguish between those who may be instructors of record for courses or those who may instead resemble teaching assistants or classroom support of various kinds (e.g., grading, discussion leading, and lab setup).

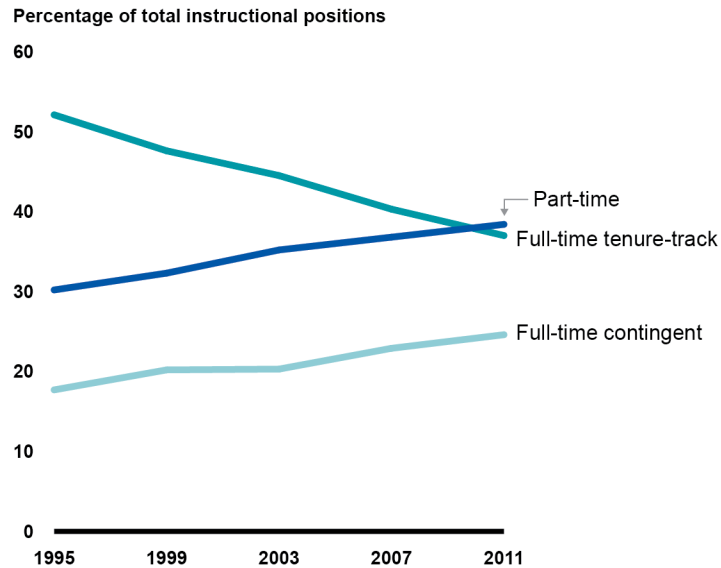
<sup>b</sup>Tenure-track refers to both tenured and tenure-track positions.

<sup>c</sup>The IPEDS data we used to analyze faculty populations from 1995 to 2011 do not differentiate part-time tenure-track faculty from part-time contingent faculty.

Some of the increase in the percentage of contingent faculty positions is due to the growth of the for-profit sector and growth among 2-year institutions, which as a whole rely primarily on contingent faculty. For example, the number of positions nationwide across for-profit institutions in 2011 was almost 9 times as many as in 1995. However, the shift towards contingent faculty positions was clear even among only 4-year public and private institutions (see fig. 2).<sup>22</sup>

<sup>22</sup> We combined similar sectors using the following terminology: “4-year institutions” or “2-year institutions” includes public and private, not-for-profit institutions of the specified length; “for-profit institutions” includes both 2-year and 4-year private, for-profit institutions; and “public institutions” or “private institutions” includes both 2-year and 4-year, not-for-profit institutions of the specified control.

**Figure 2: Growth in the Share of Instructional Positions Filled by Contingent Faculty at 4-Year Institutions Nationwide, 1995-2011**



Source: GAO analysis of data from the Integrated Postsecondary Education Data System (IPEDS), 1995-2011. | GAO-18-49

Note: The IPEDS data we use to analyze faculty populations from 1995 to 2011 do not differentiate part-time tenure-track faculty from part-time contingent faculty.

**Contingent Faculty Fill about 70 Percent of Instructional Positions Nationwide, Though This Varies Greatly by Institution and Many of These Positions Have Some Job Stability**

Contingent faculty currently fill most instructional positions nationwide, though these numbers cannot be compared to historical data.<sup>23</sup> According to 2015 IPEDS data, contingent faculty fill 69.5 percent of the 1,444,774 postsecondary instructional positions across all institutions nationwide, including about 61.4 percent of instructional positions at 4-year institutions, 83.5 percent at 2-year institutions, and 99.7 percent at for-profit institutions (see fig. 3).<sup>24</sup> As noted previously, aggregated IPEDS data count faculty who teach at multiple institutions multiple times; therefore, there are likely more contingent faculty positions than there are contingent faculty workers. Although it is unknown how many faculty hold jobs at multiple institutions, this is likely to be more prevalent among

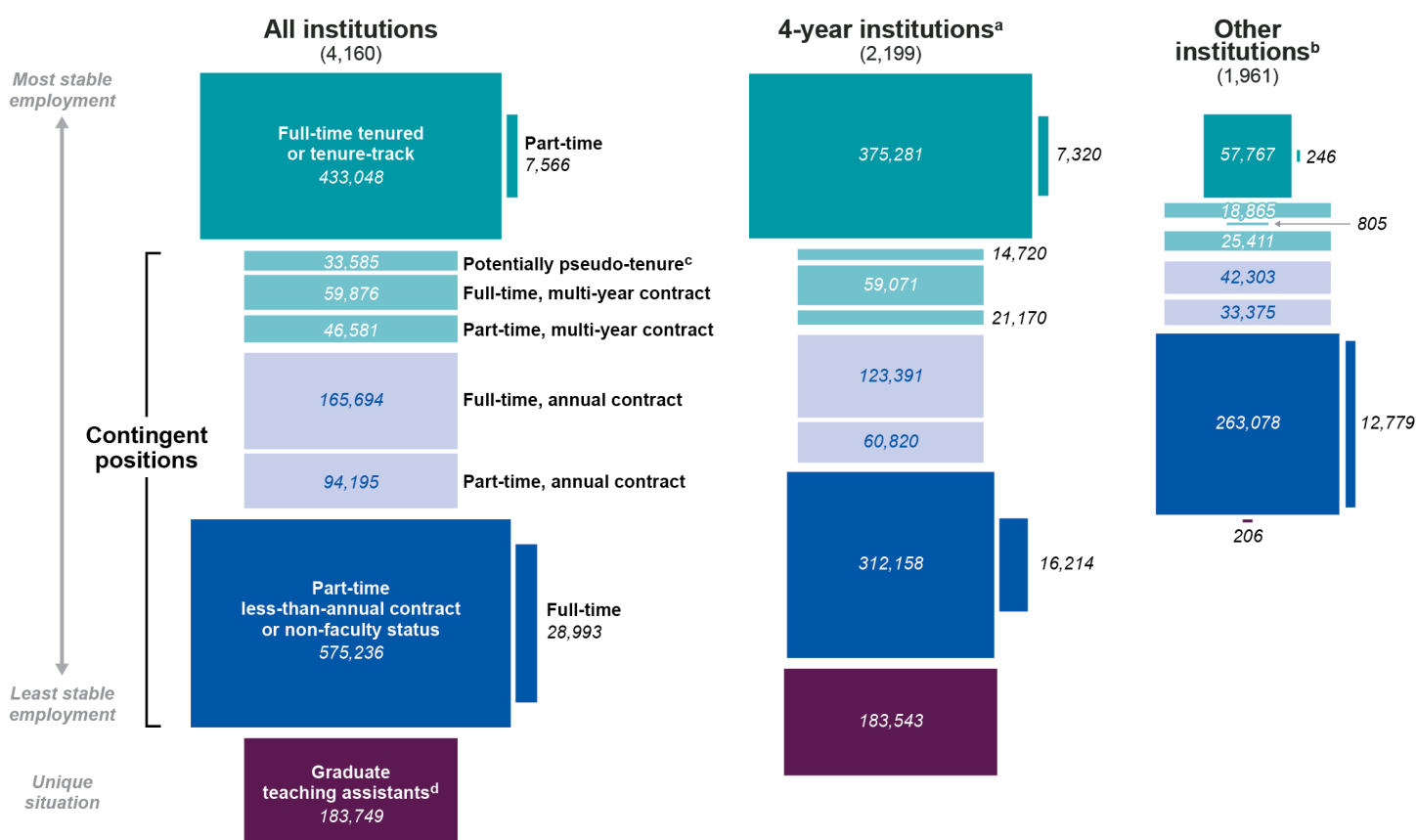
<sup>23</sup> As noted previously, Education changed IPEDS definitions of instructional faculty in 2012-13, so data prior to and after this change are not comparable.

<sup>24</sup> The most recent IPEDS data available are for 2015. Graduate teaching assistant positions are not included in counts or percentages of instructional positions. We include all 4,160 active, Title IV, degree-granting 2-year and 4-year primarily postsecondary institutions that are generally open to the public, have at least 15 full-time equivalent staff, and reported at least 1 instructional staff member or graduate teaching assistant.



faculty filling part-time positions. To illustrate, according to CPS data—which counts individuals—an estimated 31.7 percent (+/- 4.1) of individuals employed as postsecondary teachers in colleges and universities worked part-time in 2015.<sup>25</sup> In contrast, according to IPEDS data, part-time faculty held about 50.0 percent of instructional positions.

**Figure 3: Postsecondary Instructional Positions by Level of Employment Stability Nationwide, 2015**



Source: GAO analysis of 2015 data from the Integrated Postsecondary Education Data System (IPEDS). | GAO-18-49

<sup>a</sup>Public and private (not-for-profit) 4-year institutions are combined.

<sup>25</sup> According to CPS data, nationwide in 2015, an estimated 1,517,660 individuals (+/- 8.6 percent) were employed as postsecondary teachers in colleges and universities. While the overall CPS count of teachers may appear similar to the number of positions identified in IPEDS, the data are not directly comparable. For example, CPS counts individuals from a broader universe of postsecondary institutions, but it does not double-count individual faculty who teach at multiple institutions.

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<sup>b</sup>Other institutions includes 2-year public and private (not-for-profit) institutions and all for-profit institutions (2-year and 4-year), as these institution types have far fewer tenure-track positions than 4-year institutions.

<sup>c</sup>We define positions for full-time, non-tenure-track faculty with multi-year contracts at institutions that do not offer tenure to be “potentially pseudo-tenure” positions. These may represent long-term renewable contracts that can only be terminated for adequate cause, such as gross professional misconduct. An institution may use these contracts instead of a tenure system, though how similar they are to tenured positions depends on specific contract provisions and other factors. Full-time, non-tenure-track faculty with multi-year contracts at institutions that do offer tenure are listed separately in the figure.

<sup>d</sup>IPEDS defines graduate teaching assistants as those who “assist faculty or... [perform] teaching or teaching-related duties, such as teaching lower level courses, developing teaching materials, preparing and giving examinations, and grading examinations or papers.” We consider these positions to be unique situations because the IPEDS data do not provide information about whether the graduate students in these positions are instructors of record or are providing classroom support of various kinds.

Though the majority of instructional faculty positions across institutions are contingent, employment stability among these positions may vary widely. Many of these contingent positions may have some job stability, depending on contract specifics.<sup>26</sup> For example, about a quarter of contingent positions across all institutions have full-time, annual, multi-year, or potentially pseudo-tenure contracts (see fig. 3).<sup>27</sup> Some of these positions may expire at the end of a set term or have no option for renewal—potentially requiring a new application process—while others may be relatively long-term with continuously repeating contracts. For example, officials at one North Dakota institution we visited described their non-tenure-track positions as “tenure light” because full-time faculty receive 1-year contracts for their first 4 years and then, after a successful promotion review, receive continuous 3-year contracts that can be terminated only for adequate cause, such as gross professional misconduct. In contrast to these more stable contingent positions, more than half of the contingent positions across all institutions nationwide are part-time and have less-than-annual contracts or lack faculty status—

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<sup>26</sup> The 2015 IPEDS data cannot distinguish between levels of employment stability beyond contract length, and Education officials told us that there is wide variation across institutions in the level of security provided by different contract lengths. However, the 2016-17 IPEDS data will identify positions with indefinite duration (e.g., continuing or “at will”) separately from positions with fixed lengths (e.g., multi-year, annual, less-than-annual).

<sup>27</sup> We define positions for full-time, non-tenure-track faculty with multi-year contracts at institutions that do not offer tenure to be “potentially pseudo-tenure” positions. These may represent long-term renewable contracts that an institution uses instead of a tenure system, though how similar they are to tenured positions depends on specific contract provisions and other factors that may vary by institution. About 40 percent of these pseudo-tenure positions are at 4-year private institutions.

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which we define as being among the least stable (see fig. 3).<sup>28</sup> For some of the faculty filling these positions, this employment may be their sole source of income. Similar to contingent workers in the broader labor force, as we reported previously, these faculty may face volatility and uncertainty in their economic circumstances.<sup>29</sup> Other faculty in these positions may have employment or sources of income outside of teaching. For example, some part-time instructors are employed full-time in their fields and teach on the side as subject-matter experts or to stay connected with their local university community.

**Examples of Part-Time Faculty Situations from Faculty Discussion Groups at Selected Institutions**

- Two part-time faculty members at an institution in Ohio said they had jobs outside of teaching and said they teach on the side because they love it, rather than relying on it for subsistence.
- One part-time faculty member at an institution in Georgia said that she was retired, but teaches courses to keep a foot in the education world while also enjoying free time in retirement.
- One younger part-time faculty member at an institution in North Dakota stated that she teaches on a semester-to-semester contract and that this was her primary employment.

Source: GAO analysis of part-time faculty discussion groups in Georgia, North Dakota, and Ohio. | GAO-18-49

While it is unknown how many faculty rely on their instructional positions as their primary employment, nationally representative data from the Current Population Survey (CPS) and Survey of Doctorate Recipients (SDR) provide some limited information that suggests many part-time

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<sup>28</sup> Slightly more than a quarter of all part-time and full-time faculty in the least stable employment group are those who lack faculty status. At a 2014 IPEDS Technical Review Panel, panelists noted that there is some confusion about the “without faculty status” designation and that institutions may have different policies and practices related to who they include in this category (e.g., some faculty may have tenure status or employment contracts of specified lengths). Despite this potential inconsistency across institutions, we placed these faculty in the least stable employment group because their lack of faculty status implies some level of uncertainty to their employment arrangement. Although some of these faculty may have stable employment arrangements, the vast majority are part-time and thus being tenured is unlikely. IPEDS Technical Review Panel 44, “Report and Suggestions from IPEDS Technical Review Panel 44: Improvements to the Human Resources Survey for Degree-Granting Institutions” (2014).

<sup>29</sup> [GAO-15-168R](#).

faculty prefer working part-time.<sup>30</sup> The CPS data show that an estimated 46.2 percent (+/- 6.3) of part-time faculty reported wanting to work part-time, while only 10.0 percent (+/- 5.1) reported working part-time because they could only find a part-time job or because of seasonal or temporary fluctuations in the availability of employment.<sup>31</sup> Similarly, SDR data on doctorate-holding instructional faculty in STEM (science, technology, engineering, and math), health, and social sciences fields show that most part-time contingent faculty report wanting to work part-time, though among those who reported wanting a full-time job, most reported not being able to find one (see table 2).

**Table 2: Estimated Percentage of Part-Time Contingent Faculty in STEM, Health, and Social Sciences Fields Seeking Full-Time Work and Reasons for Working Part-Time, 2013**

	Want to work full-time	Do not want to work full-time
Percent of all part-time, contingent faculty	30.0 (+/- 4.4)	70.0 (+/- 4.4)
Reason(s) for working part-time <sup>a</sup>		
Did not need/want to work full-time	N/A	70.7 (+/- 5.0)
Full-time job not available	85.6 (+/- 5.4)	23.0 (+/- 4.5)
Family responsibilities	13.0 (+/- 6.1)	25.7 (+/- 4.4)
Student, illness, hold another job, or other	42.7 (+/- 8.4)	64.0 (+/- 5.2)

Source: GAO analysis of data from the Survey of Doctorate Recipients (SDR), 2013. | GAO-18-49

Notes: The SDR data we analyzed include doctorate-holding faculty in science, technology, engineering, and math (STEM), health, and social sciences fields whose primary or secondary work activity on their principal job was teaching. Responses refer to the primary job held in February 2013. Margins of error at the 95 percent confidence level are shown in parentheses. Proportions may not add up to 100 percent due to rounding.

<sup>a</sup>Percentages associated with reasons for working part-time are among those respondents who reported either wanting or not wanting to work full-time. Respondents could select multiple reasons for working part-time, so percentages do not add up to 100.

<sup>30</sup> IPEDS data do not provide information about the individual faculty who fill positions. Scholars have previously used survey data from the 2004 National Study of Postsecondary Faculty to examine the extent to which faculty may have employment outside academia, and other related issues. For one such study, see Martin J. Finkelstein, Valerie Martin Conley, and Jack H. Schuster, *The Faculty Factor: Reassessing the American Academy in a Turbulent Era* (Baltimore, MD: Johns Hopkins University Press, 2016), 111-126.

<sup>31</sup> The remaining part-time faculty responded that they worked part-time for “other” reasons. The CPS data are different from IPEDS in that the population of faculty in the CPS covers a broader universe of postsecondary education (e.g., beyond just degree-granting schools).

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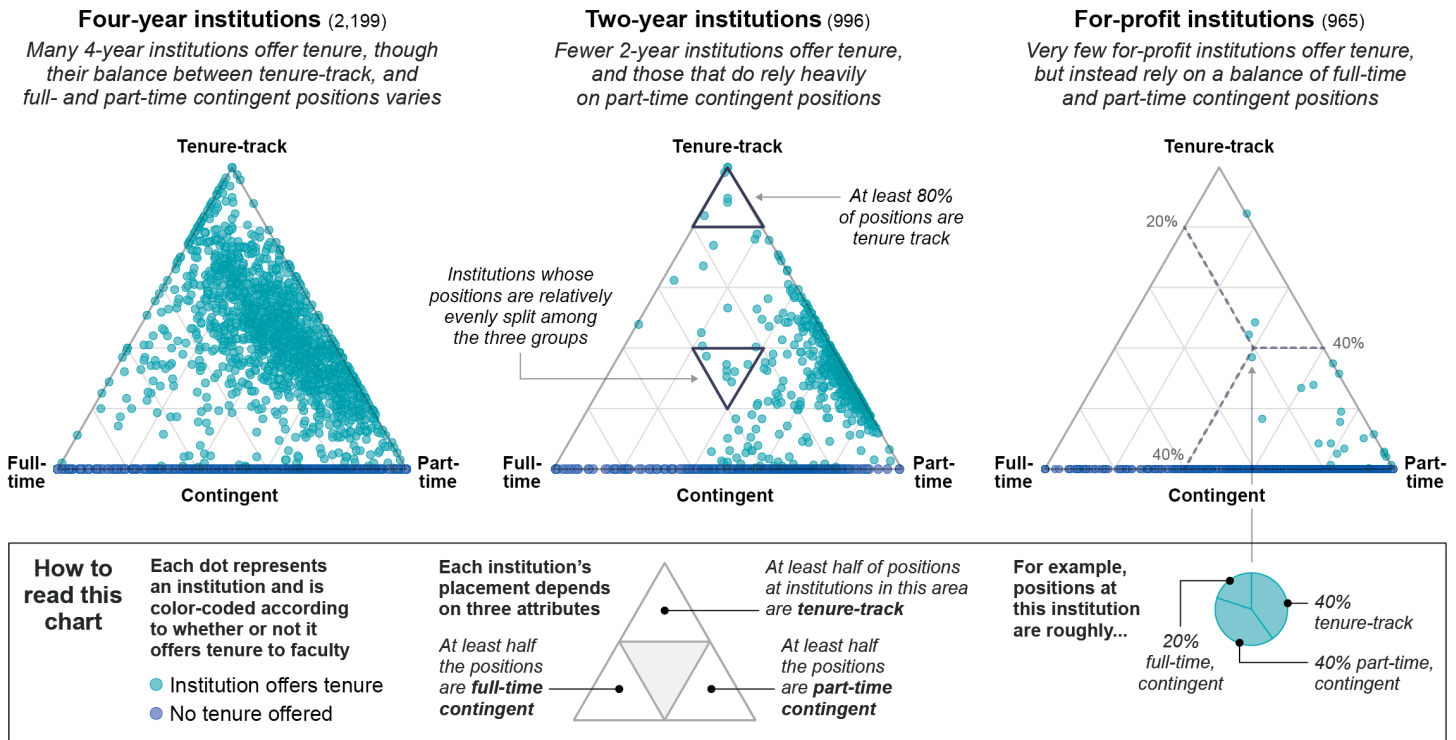
According to IPEDS data, different types of postsecondary institutions rely more heavily on different segments of the instructional workforce. As shown in figure 4, many 4-year institutions employ tenure-track, full-time contingent, and part-time contingent positions—though the balance varies.<sup>32</sup> Far fewer 2-year institutions and very few for-profit institutions have tenure-track positions. Part-time and short-term positions are substantially more prevalent at these institutions. For example, part-time contingent positions make up 67.9 percent and 80.5 percent of instructional positions at 2-year and for-profit institutions, respectively, as compared to 39.8 percent at 4-year institutions.<sup>33</sup>

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<sup>32</sup> For example, 4-year private institutions have a lower concentration of tenure-track positions (30.9 percent of instructional positions) and rely more heavily on part-time contingent positions (47.1 percent) than their public counterparts (44.7 percent and 34.2 percent, respectively).

<sup>33</sup> Part-time positions with less-than-annual contracts make up 45.6 percent and 31.2 percent of instructional positions at 2-year and for-profit institutions, respectively, as compared to 22.8 percent at 4-year institutions.

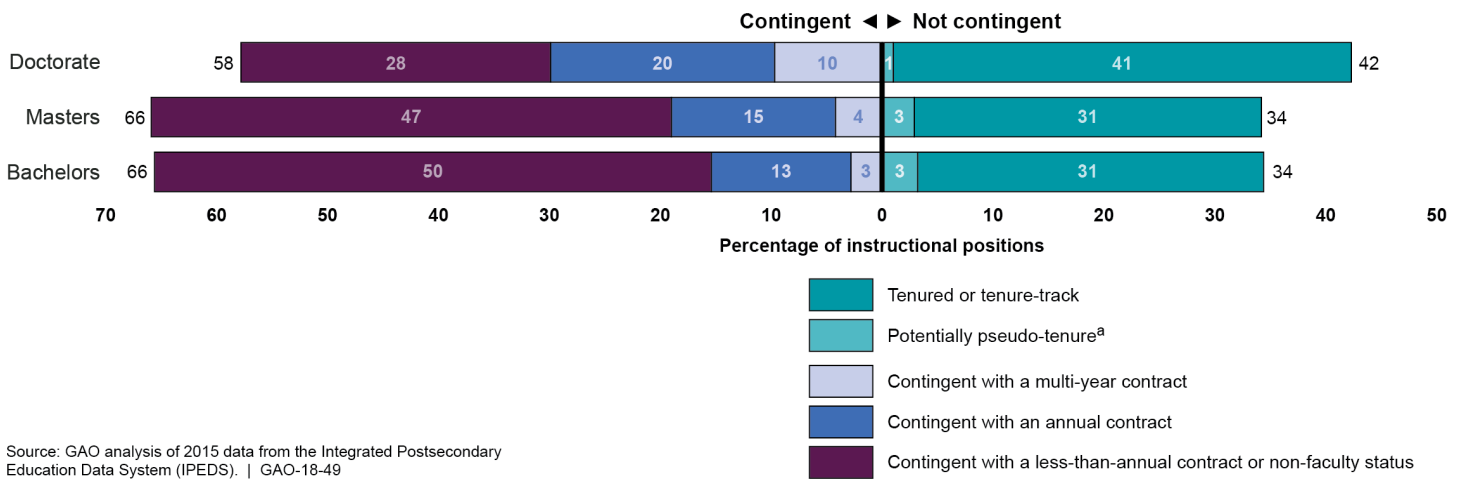
**Figure 4: Distribution of Institutions Based on Their Balance of Instructional Position Types Nationwide, 2015**



Source: GAO analysis of 2015 data from the Integrated Postsecondary Education Data System (IPEDS). Plot: Nicholas Hamilton (2017). ggtern: An Extension to 'ggplot2', for the Creation of Ternary Diagrams. R package version 2.2.2. <https://CRAN.R-project.org/package=ggtern>. | GAO-18-49

Beyond institution type, reliance on different types of faculty positions also varies by institutional characteristics, such as size and highest degree offered. For example, across 4-year institutions with more than 10,000 students, 43.1 percent of positions are tenure-track, as compared to 30.6 percent across institutions with fewer than 5,000 students. Similarly, a higher percentage of instructional positions are tenure-track across 4-year institutions that offer doctorate degrees, compared to those institutions that do not offer doctorate degrees (see fig. 5).

**Figure 5: Percent of Instructional Positions at 4-Year Institutions by Highest Degree Offered Nationwide, 2015**



Source: GAO analysis of 2015 data from the Integrated Postsecondary Education Data System (IPEDS). | GAO-18-49

<sup>a</sup>We define positions for full-time, non-tenure-track faculty with multi-year contracts at institutions that do not offer tenure to be “potentially pseudo-tenure” positions. These may represent long-term renewable contracts that can only be terminated for adequate cause, such as gross professional misconduct. An institution may use these contracts instead of a tenure system, though how similar they are to tenured positions depends on specific contract provisions and other factors. Full-time, non-tenure-track faculty with multi-year contracts at institutions that do offer tenure are included elsewhere in the figure.

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## At 4-Year Public Institutions in Three Selected States, Contingent Faculty Teach Close to Half or More of All Courses and Credit Hours

Contingent faculty fill more than half of instructional positions at 2- or 4-year public institutions in the three selected states (see fig. 6). Two-year public institutions in North Dakota and Ohio were especially reliant on contingent faculty, where they fill about 72 and 84 percent of instructional positions, respectively (see sidebar for our definition of instructional faculty in the state data, as compared to our other data analyses).<sup>34</sup>

### Varying Definitions of Instructional Faculty

How we define instructional faculty varies by data source, based on available information.

Integrated Postsecondary Education Data System (IPEDS, 2015): individuals whose responsibilities are primarily instructional or whose instructional responsibilities cannot be differentiated from other duties—excludes graduate teaching assistants (who may or may not be teachers of record)

State public postsecondary institution data: individuals who teach at least one course—includes instructional graduate assistants (who are identified in the state data as teachers of record)

Survey of Doctorate Recipients (SDR): individuals whose primary or secondary work activity on their principal job is teaching

Current Population Survey (CPS): individuals who hold the occupation of postsecondary teacher and who are employed in the colleges and universities industry

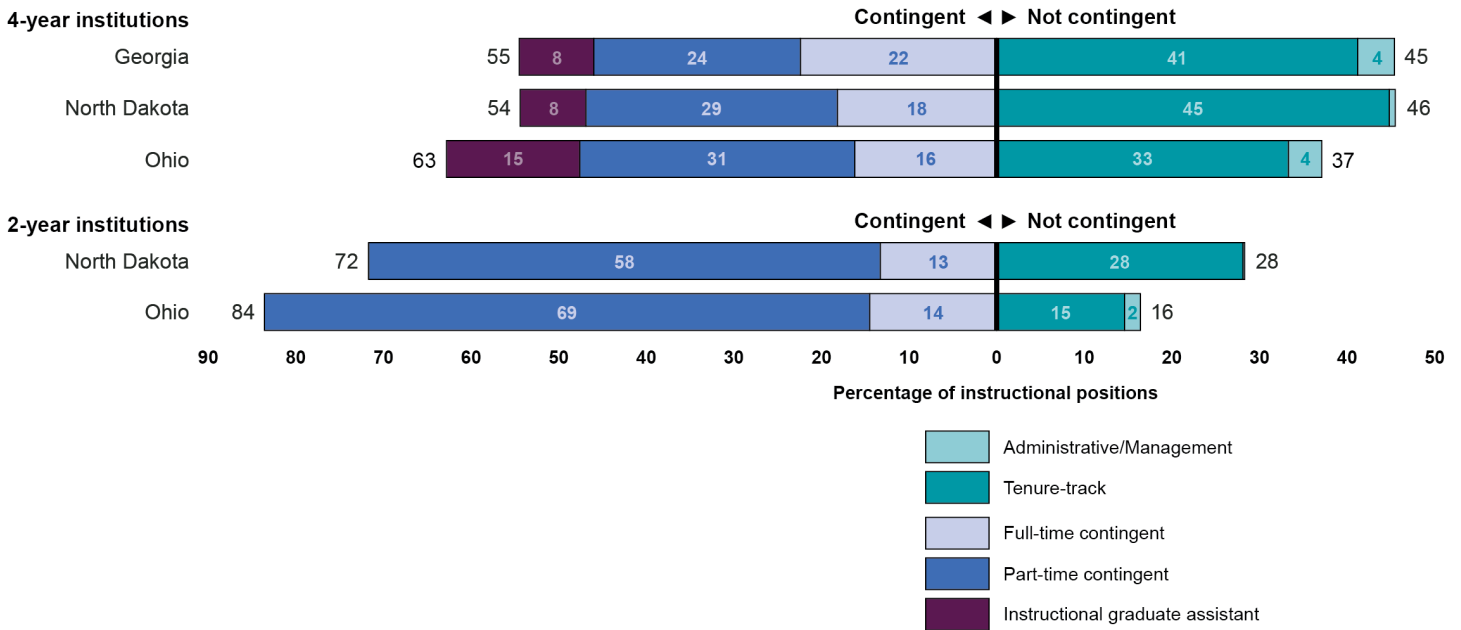
Source: GAO analysis of IPEDS, CPS, SDR, and Georgia, North Dakota, and Ohio postsecondary data systems. | GAO-18-49

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<sup>34</sup> In each of our states, other types of staff, such as administrators, coaches, research faculty, and postdocs fill about 2-10 percent of positions, depending on institution type and state. In addition, instructional graduate assistants—who are the instructors of record—fill about 8 to 15 percent of positions at 4-year institutions in the three states. The timeframes of the state data we analyzed are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. Based on a comparison to institutions identified in our IPEDS analysis universe, the data included all 4-year public institutions (non-tribal) in all three states. The North Dakota data included all non-tribal 2-year public institutions, the Ohio data included most public 2-year institutions, and the Georgia data did not include 2-year institutions. For more information, see appendix I.



**Figure 6: Percent of Instructional Positions by Type at Public Institutions in Georgia, North Dakota, and Ohio**



Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: The timeframes of the state data we analyzed are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. Proportions may not add up to 100 percent due to rounding. Georgia data did not include 2-year institutions.

While contingent faculty fill more than half of instructional positions at 2- or 4-year public institutions in the three selected states, the percentage of courses and credit hours they teach varies across institutions. In general, the percent of courses taught by contingent faculty is lower than the proportion of positions they fill (see table 3).<sup>35</sup> For example, across 4-year public institutions in all three states, contingent faculty teach about 45 to 54 percent of all courses, whereas they fill 55 to 63 percent of positions.<sup>36</sup>

<sup>35</sup> Due to rounding, there may be slight differences between figure 6 and table 3 in the total percent of instructional positions filled by contingent faculty.

<sup>36</sup> In our analyses of utilization, we counted unique course sections taught by a given faculty member (e.g., two separate sections of Biology 101 are counted as two courses). We only counted courses for which there was a faculty member of record listed. We made a number of decisions about how to count courses consistently across institutions and states. For example, we excluded independent studies, internships, thesis research, and dissertation guidance, among others. We also accounted for cross-listed courses, multiple lab sections, and faculty outliers to more accurately capture faculty workloads. For more information, see appendix I.

However, accounting for the number of students enrolled in courses and for variation in course credits (e.g., 1-credit labs or 3-credit lecture courses) provides a slightly different picture. At 4-year institutions, the student credit hours measure is greater than the courses taught measure for contingent faculty because they teach relatively more courses with higher enrollment or that offer more credits, as compared to tenure-track faculty. The reverse is true at 2-year schools, based on our analysis of North Dakota and Ohio data.

**Table 3: Contingent Faculty Share of Instructional Positions and Utilization at Public Institutions in Selected States**

Contingent faculty	Percent of instructional positions	Percent of courses taught	Percent of student credit hours taught
<b>4-year institutions</b>			
Georgia	54.5%	44.5%	56.8%
North Dakota	54.5%	44.7%	49.5%
Ohio	62.8%	53.7%	60.4%
<b>2-year institutions</b>			
Georgia	N/A	N/A	N/A
North Dakota	71.7%	53.9%	47.0%
Ohio	83.6%	72.1%	68.5%

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: Contingent faculty in the table include full-time and part-time contingent, as well as instructional graduate assistants. We counted unique course sections (e.g., two separate sections of Biology 101 are counted as two courses) and only included those for which there was a faculty member of record listed. We made a number of decisions about how to count courses consistently across institutions and states. For example, we excluded independent studies, internships, thesis research, and dissertation guidance, among others. The timeframes of the state data we analyzed are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. Georgia's data did not include 2-year institutions.

We also found that across 4-year institutions in the three states, utilization of contingent faculty types (e.g., full-time, part-time, and instructional graduate assistants) differs. For example, as shown in table 3, contingent faculty in Georgia teach 44.5 percent of all courses across 4-year institutions, though most of this instruction is by full-time contingent faculty who teach 27.2 percent of all courses. Part-time contingent faculty in Georgia teach 13.5 percent, and instructional graduate assistants teach 3.8 percent. This balance of contingent faculty utilization varies across the three states, with full-time contingent faculty teaching a greater proportion of all courses in Georgia and North Dakota and part-time contingent faculty teaching a slightly greater proportion in Ohio. See table 16 in appendix I for more information on the number of courses taught by

different types of faculty within each state. This variation is not a result of greater concentrations of certain faculty types in each state. For instance, while part-time contingent faculty fill similar proportions of positions in North Dakota and Ohio (see fig. 6 above), they teach 17.3 percent of all courses in North Dakota and 24.4 percent in Ohio.<sup>37</sup>

In all three states, 4-year institutions utilize contingent faculty more in lower level courses. At the undergraduate level, contingent faculty teach most courses identified as developmental (e.g., below the freshman level), though these only make up about 1 to 2 percent of all courses.<sup>38</sup> Among undergraduate courses in the traditional 4-year track, contingent faculty as a group teach higher percentages of lower level courses (e.g., freshman and sophomore levels) than upper level courses (e.g., junior and senior levels), though this differs somewhat by faculty type (see table 4). For example, in contrast to the utilization of contingent faculty as a whole, across North Dakota and Ohio 4-year institutions, full-time contingent faculty taught roughly equal proportions of lower level and upper level undergraduate courses. In addition, at the graduate level, contingent faculty as a group teach only about 26 to 32 percent of courses across 4-year public institutions in all three states.

**Table 4: Percent of Undergraduate Lower and Upper Level Courses Taught by Faculty Type at 4-Year Public Institutions in Selected States**

	Administrators /management	Tenure-track	Full-time contingent	Part-time contingent	Instructional graduate assistants	Total contingent <sup>a</sup>
<b>Georgia</b>						
Undergraduate lower courses	2.0%	42.2%	32.8%	17.3%	5.6%	<b>55.7%</b>
Undergraduate upper courses	2.3%	60.7%	24.5%	9.6%	2.9%	<b>37.0%</b>
Difference	+0.3	+18.5	-8.3	-7.8	-2.7	<b>-18.8</b>
<b>North Dakota</b>						
Undergraduate lower courses	0.3%	45.8%	24.5%	22.7%	6.7%	<b>53.9%</b>
Undergraduate upper courses	0.2%	59.9%	24.8%	12.9%	2.1%	<b>39.8%</b>
Difference	-0.0	+14.1	+0.3	-9.8	-4.6	<b>-14.1</b>

<sup>37</sup> Instructional graduate assistants also fill a greater proportion of positions and teach a higher percentage of all courses across Ohio public institutions, as compared to Georgia and North Dakota.

<sup>38</sup> Contingent faculty taught 59.1 percent, 69.1 percent, and 92.6 percent of developmental courses at 4-year public institutions in Georgia, North Dakota, and Ohio, respectively.

	Administrators /management	Tenure-track	Full-time contingent	Part-time contingent	Instructional graduate assistants	Total contingent <sup>a</sup>
<b>Ohio</b>						
Undergraduate lower courses	2.1%	24.1%	24.3%	36.1%	13.5%	<b>73.8%</b>
Undergraduate upper courses	2.0%	44.7%	24.2%	22.3%	6.8%	<b>53.3%</b>
Difference	-0.1	+20.6	-0.1	-13.8	-6.6	<b>-20.5</b>

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: Undergraduate lower level courses generally represent freshman and sophomore levels and upper level courses generally represent junior and senior levels. The timeframes of the state data we analyzed are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio. Percentages may be added by course type across unshaded columns, though totals may not add up to 100 percent due to rounding. Percentage point differences between undergraduate lower and upper courses taught by faculty type may not equate to total difference shown because of rounding.

<sup>a</sup>Total contingent includes full- and part-time contingent faculty and instructional graduate assistants.

Our analysis of data from the three states, as well as from a nationally representative survey of humanities departments at 4-year institutions suggests that utilization—both in terms of instructional positions filled and courses taught by contingent faculty—varies by discipline.<sup>39</sup> For example, across 4-year public institutions in Ohio, contingent faculty fill 56.2 percent of positions in natural sciences and mathematics while they teach 47.7 percent of courses in these disciplines. In the arts and humanities, contingent faculty fill 69.6 percent of positions but teach 57.8 percent of courses in these disciplines. When comparing across the five largest disciplines across all three states, education fields rely the most heavily on part-time contingent positions and health fields rely the most heavily on full-time contingent positions, both in terms of percentages of positions filled and courses taught.<sup>40</sup> Our analysis of nationally representative data on 4-year institutions collected in 2012-13 for a study sponsored by the American Academy of Arts & Sciences (AAAS) similarly shows that reliance on contingent faculty varies by subject area. For example, classical studies departments had a lower estimated percentage of part-time, contingent faculty (14 percent, +/- 6) than departments of

<sup>39</sup> National data sources such as IPEDS and CPS do not differentiate faculty positions by discipline.

<sup>40</sup> The largest disciplines in the state data are arts and humanities, natural science and mathematics, social and behavioral sciences, health, and education.

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communication, English, and languages and literatures other than English (28-33 percent, +/- 8).<sup>41</sup>

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## Women Fill More Contingent Faculty Positions than Men Nationwide, and in Selected States Lower Proportions of Faculty in Contingent Positions Have Graduate or Doctoral Degrees

We examined several different demographic characteristics of contingent faculty including gender, race, educational attainment, and age.<sup>42</sup>

### Gender

According to 2015 IPEDS data, instructional positions nationwide are divided roughly evenly between the sexes, but women fill fewer tenure-track positions and more contingent positions than men do. As shown in figure 7, across all institutions, women hold a substantially lower proportion of full-time tenured positions (38.4 percent) than men do, though women fill 48.9 percent of full-time positions that are on a tenure track but not yet tenured, and that are generally more recent hires. Across all institutions, women also hold a slightly greater proportion of contingent positions (about 53 percent). This imbalance in representation, in part,

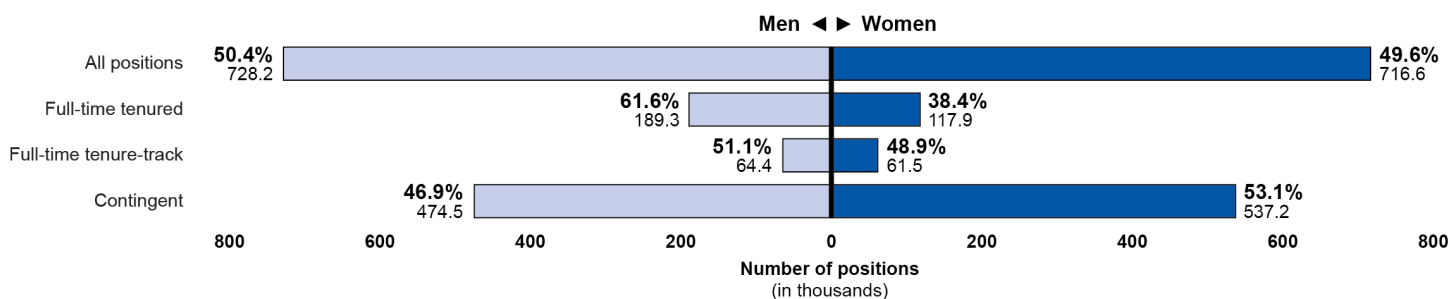
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<sup>41</sup> We calculated margins of error around these estimates at the 95 percent confidence level; see appendix I for more information. Susan White, Raymond Chu, and Roman Czujko, *The 2012-13 Survey of Humanities Departments at Four-Year Institutions: Full Technical Report* (College Park, MD: Statistical Research Center, American Institute of Physics, 2014; sponsored by the American Academy of Arts & Sciences). We identified several other discipline-specific academic associations that have collected or are currently collecting data on faculty makeup in their departments, including contingent faculty. However, we did not compare the results of other department surveys to the AAAS survey because the response rates in other surveys were too low to be considered generalizable or because any observable differences in faculty composition could be attributed to differences in survey methodology or timeframe covered. For more information, see appendix I.

<sup>42</sup> The IPEDS data we used to analyze faculty populations by gender and race do not differentiate part-time tenure-track faculty from part-time contingent faculty. For these analyses, we included all part-time faculty in the contingent faculty group because, based on analyses of current faculty populations, the vast majority of part-time faculty are non-tenure-track.

reflects the higher concentration of women at 2-year and for-profit institutions, where they fill 54.3 and 55.9 percent of positions, respectively. These institutions generally rely more heavily on contingent faculty positions than do 4-year institutions.

**Figure 7: Percent of Instructional Positions Held by Men and Women Nationwide, 2015**



Source: GAO analysis of 2015 data from the Integrated Postsecondary Education Data System (IPEDS). | GAO-18-49

Notes: The IPEDS data we used to analyze faculty populations by gender do not differentiate part-time tenure-track faculty from part-time contingent faculty. For this analysis, we included all part-time faculty in the contingent faculty group because, based on analyses of current faculty populations, the vast majority of part-time faculty are non-tenure-track.

## Race/Ethnicity

White (non-Hispanic) faculty fill almost three-quarters of instructional positions across all institutions nationwide.<sup>43</sup> This racial/ethnic representation is relatively consistent across full-time tenure-track, full-time contingent, and part-time positions. Though filling 27.6 percent of positions across all institutions, racial and ethnic minorities have slightly greater representation at institutions in large cities (33.2 percent) and at for-profit institutions (38.4 percent).

## Educational Attainment

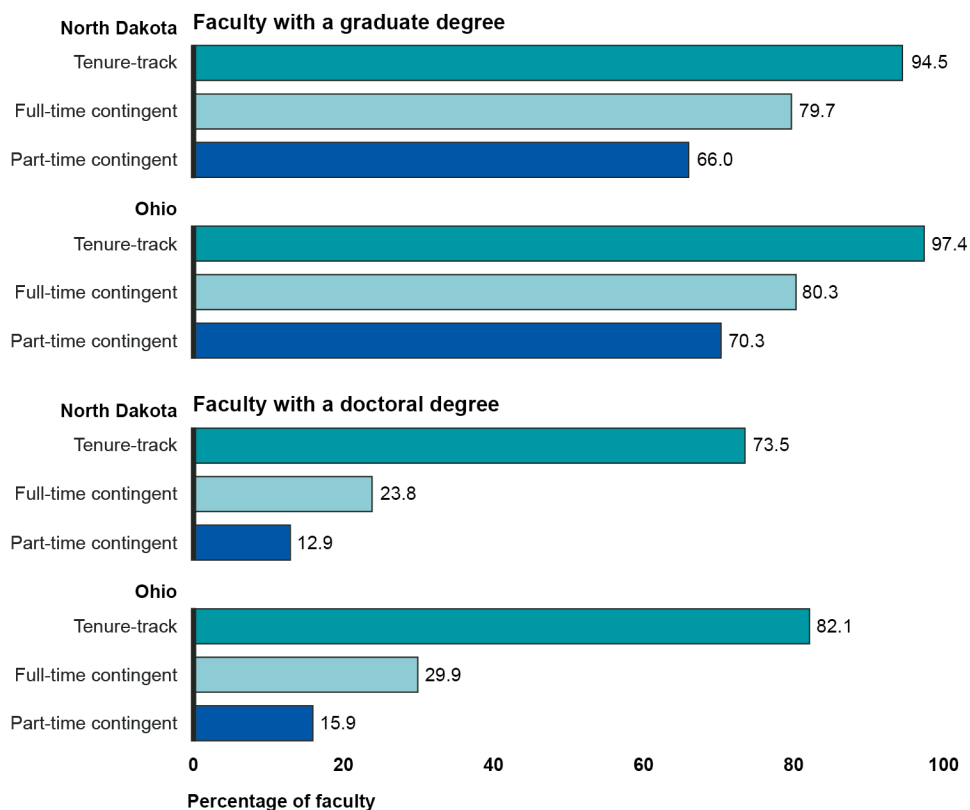
Our analysis of state data suggests that across 4-year public institutions in North Dakota and Ohio, lower proportions of individuals in contingent positions have a graduate or doctoral degree (see fig. 8).<sup>44</sup> While the differences between tenure-track and contingent faculty are substantial, possible explanations include variation in degree requirements by

<sup>43</sup> For more detailed information on the racial and ethnic distribution of faculty positions by institution type, nationwide, according to 2015 IPEDS data, see appendix II.

<sup>44</sup> The Ohio and North Dakota data did not indicate whether the highest degrees held by faculty are terminal. Georgia's data included information on whether a faculty member's degree is terminal, but not what the degree is; however, this information is unknown for almost a quarter of the analysis population, so we did not report this information.

discipline or individual circumstances, such as having professional experience in the field.<sup>45</sup>

**Figure 8: Highest Degree Earned by Faculty Type at 4-Year Public Institutions in Ohio and North Dakota**



Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Note: Tenure-track includes both full-time and part-time tenure track faculty. The timeframes of the state data we analyzed are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio.

Age

Across public institutions in all three selected states, and excluding positions held by instructional graduate students, most positions held by

<sup>45</sup> Differences in highest degree held between tenure-track and contingent faculty are generally smaller at 2-year institutions, though overall percentages of all faculty groups holding graduate or doctoral degrees are also smaller. For example, while 82.1 percent of tenure-track faculty at 4-year public institutions in Ohio have doctoral degrees, 25.0 percent at 2-year institutions have doctoral degrees.

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the youngest faculty are contingent, and the most common positions held by the oldest faculty are part-time contingent. More specifically, most positions held by individuals under age 40 are contingent—60.2 percent in Georgia, 66.9 percent in North Dakota, and 74.5 percent in Ohio (excluding instructional graduate assistants).<sup>46</sup> This suggests that newer graduates may be more likely to be hired into contingent rather than tenure-track positions. In addition, the most common positions held by faculty ages 70 and older are part-time contingent positions—51.0 percent in Georgia, 45.5 percent in North Dakota, and 59.4 percent in Ohio (excluding instructional graduate assistants). This suggests that a segment of the part-time contingent workforce may consist of retirees or workers who are approaching retirement.

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## Administrators Said Contingent Faculty Have a Range of Responsibilities, and They Consider Multiple Needs When Determining Faculty Makeup

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### Full-Time Contingent Faculty at Institutions We Visited May Have a Variety of Responsibilities, but Part-Time Contingent Faculty Generally Focus on Teaching

According to administrators we interviewed, institutions utilize full-time contingent faculty for different purposes, which may involve responsibilities beyond teaching. Administrators said full-time contingent faculty are hired primarily to teach and generally have larger course loads than tenure-track faculty who may teach fewer courses per semester due to significant research responsibilities.<sup>47</sup> However, they also noted that—similar to tenure-track faculty—many full-time contingent faculty carry out additional responsibilities. For example, some full-time contingent faculty may perform service, conduct research, advise students, serve as

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<sup>46</sup> We excluded positions held by instructional graduate assistants because they are still in school and are thus generally younger.

<sup>47</sup> Tenure-track faculty generally have responsibilities in the areas of teaching, research, and service to their institution.



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department chairs, or manage student recruitment efforts for their programs. Many other full-time contingent faculty serve as instructors or lecturers whose sole responsibility is to teach. For example, administrators from one institution explained that they employ professional instructors who teach four courses per semester and have no service or research responsibilities. In addition, some full-time contingent faculty are hired because they have certain professional qualifications or experience. For example, one institution we visited employed academic professionals who may teach one or two courses per year while carrying out administrative, marketing, mentoring, or other duties.

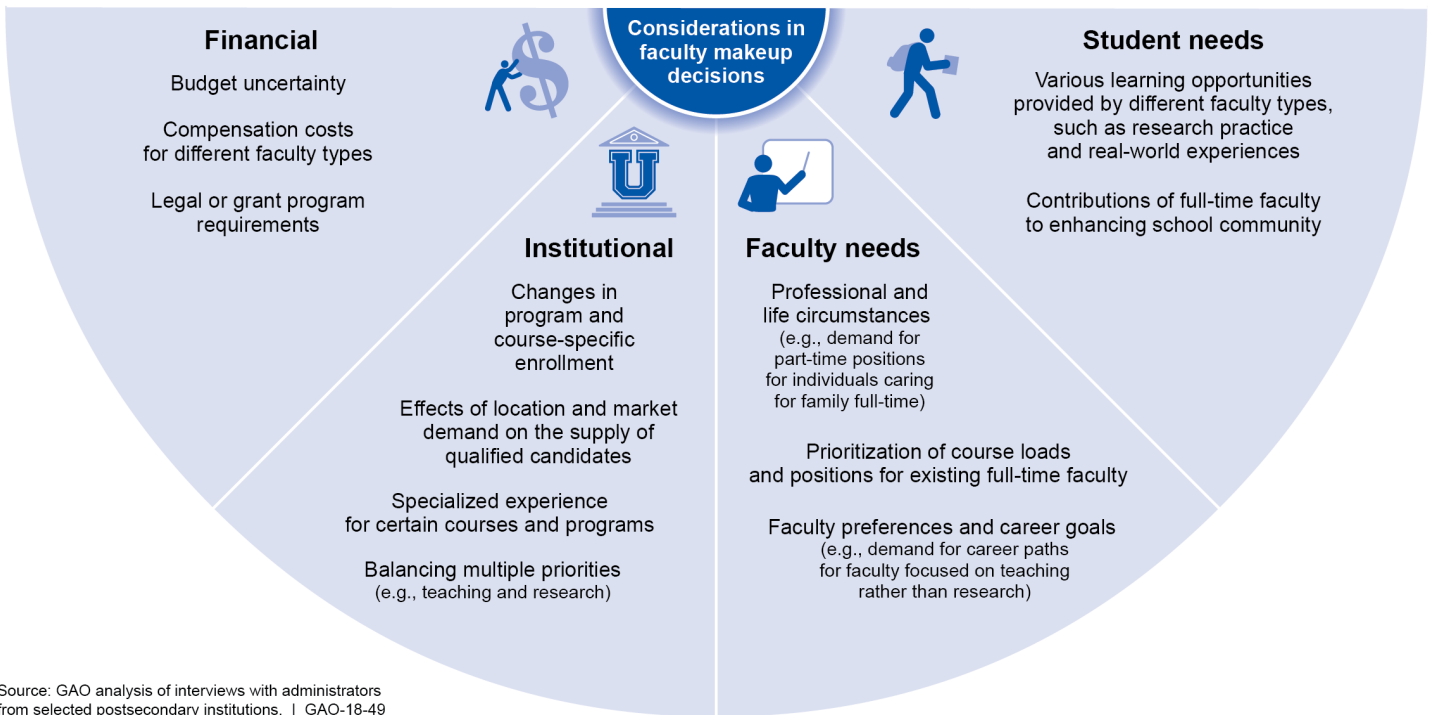
While full-time contingent faculty may have a variety of responsibilities, administrators stated that part-time contingent faculty generally focus on teaching, though they also may fulfill different purposes. In some cases, part-time contingent faculty serve as expert practitioners who teach specific subject matter. For example, administrators from one institution said that they hire part-time contingent faculty to teach instrumental music courses because teaching each instrument requires specialized expertise, and there may not be enough students learning any single instrument to warrant a full-time position. In other cases, part-time contingent faculty teach general education courses, such as Introduction to English Composition, which most students are required to take. In addition, while some part-time contingent faculty may have full-time jobs outside of academia, others may be working toward long-term careers as tenure-track professors, according to administrators. Administrators from some institutions also told us that they hire part-time contingent faculty help to manage lab courses (e.g., setting up laboratory equipment, assisting students) or to serve as mentors to students in specific programs (e.g., theological studies).

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### Administrators Consider Financial, Institutional, Faculty, and Student Needs When Determining Faculty Makeup

University and college administrators we interviewed identified a number of financial and institutional considerations as well as faculty and student needs that affect their decisions regarding faculty makeup (see fig. 9).

**Figure 9: Factors Administrators Cited That May Affect Their Decisions about Faculty Makeup at Selected Postsecondary Institutions**



Source: GAO analysis of interviews with administrators from selected postsecondary institutions. | GAO-18-49

## Financial Considerations

Administrators stated that utilizing contingent faculty allows for flexibility in managing various financial considerations, including the following:

- **Budget uncertainty:** Administrators from several public institutions explained that utilizing contingent faculty helps them manage uncertainty regarding the level of public funding they may receive. Administrators have the option not to renew contracts of contingent faculty if they experience a decrease in their funding, whereas institutions commit to retain tenure-track faculty until they retire. In addition, administrators from several public institutions noted that, as a result of decreased state funding, they have become more reliant on tuition to meet their budget needs. They told us that hiring contingent faculty to focus on teaching rather than research allows the institution to offer more classes and serve additional students, which in turn, generates more tuition revenue.

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- Compensation costs: Administrators stated that, in general, they cannot employ tenure-track faculty for all courses because they can be more expensive to employ than contingent faculty. In addition to the long-term commitment associated with tenure, other costs may include spending to support research conducted by tenure-track faculty (e.g., investment in specialized labs or equipment).
  - Legal or grant program requirements: Some administrators said that legal or grant program requirements affect their decisions regarding the utilization of contingent faculty. For example, administrators from several institutions told us that they had reduced teaching loads for part-time faculty because the Patient Protection and Affordable Care Act (PPACA) requires certain employers to provide health insurance for employees working 30 hours or more per week.<sup>48</sup> Administrators from another institution stated that they utilized in-house faculty and hired additional contingent faculty to staff a federal grant program aimed at providing training for inmates at correctional facilities because—after receiving notification that they had been awarded the grant—they had approximately 2 months to staff 160 course sections.<sup>49</sup> In addition, since they did not know whether the grant would be renewed, they did not know whether they would be able to retain those faculty at the end of the program.

## Institutional Considerations

Administrators said that utilizing contingent faculty also allows flexibility to meet different institutional needs. Examples of institutional considerations cited by administrators include the following:

- Enrollment: By utilizing contingent faculty, institutions have more flexibility to meet course demand if there is a surge in enrollment or to downsize if there is a drop in enrollment, according to administrators. For example, administrators from one 2-year institution noted that enrollment generally increases when the economy is weak and

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<sup>48</sup> PPACA provides that large employers—those with 50 or more employees—who fail to offer their full-time employees (and their dependents) health care coverage that meets certain requirements under the Act are subject to a tax penalty. A full-time employee under the Act is one who works on average at least 30 hours per week. 26 U.S.C. § 4980H.

<sup>49</sup> The federal grant to which administrators referred was Education's Second Chance Pell Pilot program to allow incarcerated individuals to receive Federal Pell Grants to pursue postsecondary education through selected institutions partnering with correctional facilities. The program is intended to help incarcerated individuals become better prepared for employment and, in turn, to reduce re-incarceration rates.

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decreases when the economy is strong. These administrators also said that their enrollment fluctuates greatly with changes in the economy and that, in their experience, prospective students are more likely to choose 4-year institutions rather than 2-year institutions when the economy is strong. In addition, when offering a course, administrators said part-time faculty may teach that course during a trial period while administrators decide whether to offer the course long term.

- **Location and market demand:** Some administrators stated that they offer contingent faculty positions in response to market conditions. For example, administrators from institutions located in small towns or rural areas said they rely on local professionals to teach certain courses on a part-time basis, in part, because of challenges finding qualified faculty and having fewer students enrolled at remote sites. Some administrators also said contingent faculty positions offer certain advantages that help them recruit high quality instructors. For example, administrators from one university noted that their institution offers stable, full-time employment to recent graduates looking to gain experience before applying for tenure-track positions at other institutions.
- **Specialized experience:** Contingent faculty may bring professional expertise to certain courses. For example, administrators from several institutions stated that their programs for health professionals rely on contingent faculty working in their field to teach clinical courses so that students may gain experience at an established medical practice. Administrators said that hiring practitioners from local industry as part-time instructors is an effective way to support specialized courses that have a limited number of sections. Administrators from one institution also noted that practitioners may have the qualifications needed to meet accreditation requirements for certain programs and departments (e.g., professional and technical programs).
- **Balancing priorities:** Administrators said that utilizing a combination of tenure-track and contingent faculty helps their institutions fulfill both teaching and research missions and accommodate the hiring needs of different programs and departments. For example, administrators from one institution noted that the additional revenue from increased course offerings—staffed by part-time contingent faculty—allows them to invest more money in research programs for tenure-track faculty. Administrators from two institutions explained that hiring part-time contingent faculty in a given department allows them to reallocate resources as needed, for example, to hire full-time contingent or tenure-track positions in another department. In addition, while

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## Faculty Needs

contingent faculty may help fulfill accreditation requirements for certain programs, administrators from several institutions also stated that their accrediting bodies require a balance of contingent and tenure-track faculty, or alternatively, full-time and part-time contingent faculty. For example, administrators from one 4-year institution told us that part-time faculty may teach no more than 25 percent of student credit hours within their business school.

As part of faculty utilization decisions, administrators said that they consider the personal and professional needs of faculty. Examples of faculty needs cited by administrators include the following:

- **Flexibility:** Administrators told us that they offer part-time positions, in part, because many qualified candidates want to work part-time for professional, family, or other reasons.<sup>50</sup> For example, administrators at one institution said that part-time contingent faculty positions allow expert-practitioners to continue working full-time in their field while pursuing an interest in teaching. Alternatively, for those teaching as full-time contingent faculty, in some cases, their position may offer a more predictable schedule or other benefits compared to their professional field.<sup>51</sup>
- **Course loads:** Administrators at some institutions said they prioritize the professional needs of existing full-time faculty before hiring part-time faculty by ensuring that full-time faculty have enough courses to meet their required teaching loads.
- **Career paths:** Some institutions have established mechanisms to support long-term career paths for full-time contingent faculty. For example, administrators from one institution stated that full-time contingent faculty may qualify for multi-year contracts that can be terminated only for adequate cause, such as gross professional misconduct. Administrators from several institutions said that they offer the full set of professorial ranks (i.e., Assistant Professor, Associate Professor, and Professor) to some full-time contingent faculty positions in order to provide opportunities for advancement.

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<sup>50</sup> The results of our analyses of CPS and SDR data earlier in this report also suggest that many part-time faculty prefer to work part-time.

<sup>51</sup> We provide information on contingent faculty members' views on their working conditions later in this report.

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## Student Needs

Administrators stated that having a combination of tenure-track and contingent faculty—or full-time and part-time contingent faculty at institutions without tenure—is necessary to meet different student needs. Examples of student needs cited by administrators include the following:

- **Learning opportunities:** Administrators stated that different types of faculty may offer different opportunities to students. For example, administrators told us that tenure-track faculty may provide research and academic networking opportunities whereas contingent faculty may not have the same opportunities to develop professional networks or conduct research in their field.<sup>52</sup> Some administrators also said that the academic freedom associated with tenure or having faculty who conduct research in their field may be beneficial to students. Nonetheless, administrators from several institutions emphasized that contingent faculty were equally qualified to teach and that their positions allowed them to focus on teaching. Administrators also noted that contingent faculty may bring professional expertise and real-world experiences to the classroom. In addition to courses that require specialized experience, administrators from one institution said they also value the outside experience that contingent faculty bring to general education courses. As an example, they stated that part-time contingent faculty with experience from other jobs or professions may be able to relate to the real-world needs of their students because the majority of students will seek employment outside of academia.
- **Community:** Administrators said that, regardless of tenure status, they depend on having full-time faculty to help create a sense of community. They discussed informal ways that faculty support their campus community. For example, some administrators noted that full-time faculty contribute by mentoring students and participating in activities on campus. In contrast, part-time faculty are not able to spend as much time on campus because they often have other jobs or commitments, according to administrators.

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<sup>52</sup> Our analysis of 2013 SDR data also suggests that a larger proportion of tenure-track faculty may participate in broader academic community events compared to contingent faculty. Among a sample of instructional, doctorate-holding faculty in STEM, health, and social sciences fields, a larger proportion of full-time tenure-track faculty, 81.7 percent (+/- 1.1), had attended professional association meetings or conferences during the previous 12 months, compared 64.8 percent (+/- 3.0) of full-time contingent faculty and 37.7 percent (+/- 4.5) of part-time contingent faculty.

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## Absent National Information on Pay Rates, Contingent Faculty in Two Selected States Are Paid Less per Course, and Relatively Few Part-Time Faculty Receive Health or Retirement Benefits

Data from Two States Show Contingent Faculty Are Paid Less per Course, Though Disparities Shrink If Pay for Research and Service Is Excluded

National data on contingent faculty pay rates are not available, but data from two states show that contingent faculty are paid less per course. IPEDS data cannot be used to determine faculty pay rates because salary data are not collected for part-time faculty nor are they collected at the individual faculty level, and CPS data do not differentiate between full-time tenure-track and full-time contingent faculty.<sup>53</sup> Given the limitations of national data, we used data from two states to compare annual earnings across different types of faculty. The differences in median annual earnings shown in table 5 provide some insight into the generally lower overall compensation of contingent faculty, though these data are not generalizable. Further, particularly for part-time faculty who may be paid on a piecemeal or per-course basis, this measure does not provide information about whether compensation differences are due to lower pay rates or less work performed (e.g., courses taught or hours worked).<sup>54</sup>

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<sup>53</sup> IPEDS salary data include institutions' total annual salary outlays for full-time faculty, by gender and rank, as well as weighted average monthly salaries. According to CPS data, in 2015, part-time faculty nationwide had estimated median annual earnings of \$14,911, which, as expected, were lower than the \$60,809 for full-time faculty. At the 95 percent confidence level, the estimated earnings are within +/- 5.3 percent of the actual amount for full-time faculty and within +/- 9.5 percent of the actual amount for part-time faculty.

<sup>54</sup> For example, a part-time faculty member who earned \$15,000 in a year may have taught one course or several; the associated pay rate would vary widely depending on how many courses, and as a result might compare favorably or unfavorably to other faculty.

Thus, we use the state data to calculate and examine comparable pay rates per course for all faculty types. Private organizations have attempted to collect data specifically on pay-per-course rates for part-time faculty, though efforts have been limited.<sup>55</sup>

**Table 5: Median Annual Earnings of Instructional Faculty at Public Institutions in Selected States**

	Full-time tenure-track	Full-time contingent	Part-time contingent	Instructional graduate assistants
<b>4-year institutions</b>				
North Dakota	\$88,410	\$59,819	\$7,650	\$14,649
Ohio	\$85,782	\$48,750	\$8,235	\$13,500
<b>2-year institutions</b>				
North Dakota	\$65,517	\$51,789	\$4,155	
Ohio	\$82,988	\$57,179	\$8,187	

Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: The earnings data for North Dakota and Ohio covered academic years 2015-16 and 2014-15, respectively.

<sup>55</sup> We identified efforts by the American Association of University Professors (AAUP), the College and University Professional Association for Human Resources (CUPA-HR), the Coalition on the Academic Workforce (CAW), and the Chronicle of Higher Education (integrating data from the Adjunct Project with individually self-reported pay rates), though these efforts generally relied on opt-in survey methodologies or self-reported information, which could result in potential for bias. Thus, we do not analyze or report these data.



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### Interpreting Total Pay per Course and Instructional Pay per Course

Our regression analyses examined both total and instructional pay per course. These two measures represent different perspectives on faculty compensation and the most appropriate comparison of pay-per-course rates may lie somewhere between these alternatives.

**Total Pay per Course:** These regression models may overestimate pay differences because they do not account for differences in work responsibilities among different types of faculty. Some faculty may be compensated for other responsibilities besides instruction, such as research and administrative duties or other service to the institution. Total pay does not account for such differences and treats all faculty as performing similar functions.

**Instructional Pay per Course:** These regression models may underestimate pay differences because, in reality, instructional work responsibilities may be more similar across faculty types than their official roles might suggest. To isolate pay for equivalent work, these models adjust earnings to an amount that approximates compensation for instructional activities. However, a full-time contingent lecturer who has a teaching-only role might actually spend 25 percent of her time serving on committees or conducting research, similar to other faculty with official research and service responsibilities.

**Our Results in Context:** Our results do not suggest whether observed pay differences between faculty groups are appropriate or not. For instance, institutions may pay some faculty more than others because of the prestige their research brings to the institution. While our models account for pay differences that stem from variation in work activities, they do not account for certain other factors institutions may consider in setting faculty compensation, such as faculty quality or prestige.

Source: GAO analysis. | GAO-18-49

On a per-course basis, we found that contingent faculty at public institutions in two states are paid less per course taught, on average, than full-time tenure-track faculty, though the extent of differences varies depending on contingent faculty group and pay measure.<sup>56</sup> We conducted regression analyses of total pay per course and instructional pay per course, which provide two different perspectives on faculty compensation (see sidebar for explanations of these approaches and see appendix I for details on our methods). These analyses controlled for other factors that may affect earnings, such as employing institution, discipline, highest degree earned, and demographics.<sup>57</sup> As shown in table 6, in terms of total pay per course, we found the following:

- Part-time contingent faculty in both states are paid about 75 percent less per course regardless of whether the population includes all faculty or is limited to “primarily teaching” faculty. The primarily teaching group excludes faculty who primarily hold other roles unrelated to instruction (e.g., administrators and research faculty).<sup>58</sup>
- Full-time contingent faculty are paid about 35 percent less per course in North Dakota and about 40 percent less per course in Ohio, among primarily teaching faculty—differences are larger in Ohio if all faculty are included.

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<sup>56</sup> The North Dakota and Ohio data allowed us to link faculty members’ pay with the number of courses they taught to calculate pay-per-course rates for different types of faculty for a given academic year. We did not run these analyses with the Georgia data because the Georgia earnings data and course data covered different time periods. Consistent with our methods used elsewhere, the total number of courses excluded atypical courses (e.g., independent studies, internships, thesis research, among others) and accounted for cross-listed courses, multiple lab sections, and faculty outliers. The North Dakota and Ohio data included a small number of faculty (1.1 and 0.5 percent of observations, respectively) with especially large workloads (greater than 15 courses taught over the year) and also some faculty who had especially small or large pay-per-course values when compared to the overall distribution. To preserve the integrity of the data, we did not exclude these observations from the analyses. However, we tested our models with and without these observations and found substantively similar results. For more information, see appendix I.

<sup>57</sup> The North Dakota data also allowed us to control for whether faculty received grant funding. Various independent variables capture and control for many different characteristics across different types of faculty and institutions, yet unobservable factors that may cause earnings differences may exist; thus, regression results do not prove causality.

<sup>58</sup> We also ran our regression models on a more refined population that only included primarily teaching faculty at 4-year institutions; see appendix I for these analyses.

- Instructional graduate assistants earn more per course than part-time faculty (though still less than full-time tenure-track faculty).<sup>59</sup> However, compensation for these groups is fundamentally different because instructional graduate assistants generally receive a stipend, similar to an annual salary, rather than being paid by the course like many part-time faculty. In addition, graduate assistantships may be awarded for academic merit or recruitment, and could also be considered as compensation for a graduate assistant's work as a student.

**Table 6: Contingent Faculty Total Pay per Course as a Percentage of Full-Time Tenure-track Faculty at North Dakota and Ohio Public Institutions**

Contingent faculty earnings as a percentage of full-time tenure-track	North Dakota	Ohio	North Dakota	Ohio
	All Faculty	All Faculty	Primarily Teaching	Primarily Teaching
<b>Faculty observations</b>	3,485	30,656	3,404	28,811
<b>Total pay per course<sup>a</sup></b>				
Full-time contingent	0.682	0.516	0.649	0.597
Part-time contingent	0.250	0.230	0.245	0.223
Instructional graduate assistants	0.376	0.443	0.361	0.428

Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: Unless otherwise noted, regression coefficients are statistically significant at least at the level of p-value < 0.05. Our models controlled for factors that affect earnings, such as employing institution, academic discipline, highest degree, demographics, and whether faculty members received grant funding (North Dakota data only), taught a course during the summer term, or filled other roles at the institution (e.g., deans, administrators, or coaches). Various independent variables capture and control for many different characteristics across different types of faculty and institutions, yet unobservable factors that may cause earnings differences may exist; thus, regression results do not prove causality. Part-time tenure-track faculty are not shown due to their small proportion of the overall population. The primarily teaching population excludes faculty who are listed as primarily holding other roles unrelated to instruction, such as administrators and management, coaches (North Dakota data only), postdocs (North Dakota data only), and research faculty. This shrinks the analysis population by about 2 percent in North Dakota and about 6 percent in Ohio. The state data we analyzed included 2-year and 4-year public institutions, and the timeframes of data are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio.

<sup>a</sup>Total pay per course does not account for differences in work responsibilities among different types of faculty. While some faculty may be compensated for their other responsibilities besides instruction, such as research, total pay per course does not account for this and treats all faculty as performing similar functions.

Disparities in instructional pay per course—which measures pay for equivalent work (see sidebar above)—are smaller for all contingent

<sup>59</sup> In the state data, these instructional graduate students are listed as the teachers of record.

faculty groups than those for total pay per course.<sup>60</sup> As shown in table 7, we found the following:

- Part-time contingent faculty in both states are paid about 60 percent less per course regardless of whether the population includes all faculty or is limited to primarily teaching faculty.
- Among primarily teaching faculty in both states, full-time contingent faculty are paid about 10 percent less per course than full-time tenure-track faculty.
- As with total pay, the instructional pay disparity for full-time contingent faculty in Ohio is larger if all faculty are included. However, when all faculty are included in North Dakota, the pay difference between full-time contingent and full-time tenure-track faculty is not significant at the 95 percent confidence level.<sup>61</sup>

**Table 7: Contingent Faculty Instructional Pay per Course as a Percentage of Full-Time Tenure-track Faculty at North Dakota and Ohio Public Institutions**

Contingent faculty earnings as a percentage of full-time tenure-track	North Dakota	Ohio	North Dakota	Ohio
	All Faculty	All Faculty	Primarily Teaching	Primarily Teaching
<b>Faculty observations</b>	3,485	30,656	3,404	28,811
<b>Instructional pay per course<sup>a</sup></b>				
Full-time contingent	0.924 <sup>b</sup>	0.753	0.875	0.891
Part-time contingent	0.412	0.378	0.402	0.367
Instructional graduate assistants	0.621	0.751	0.597	0.726

Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: Unless otherwise noted, regression coefficients are statistically significant at least at the level of p-value < 0.05. Our models controlled for factors that affect earnings, such as employing institution, academic discipline, highest degree, demographics, and whether faculty members received grant

<sup>60</sup> To estimate instructional pay, we prorated total earnings of faculty at 4-year institutions in North Dakota and Ohio by a percentage amount relevant to an individual's job type and rank based on empirical data from several Georgia 4-year institutions; we only prorated earnings of administrators at 2-year institutions. The changes in pay disparities occur because most of our prorating of earnings to account for non-instructional activities applies to the full-time tenure-track group, who are most likely to have other work responsibilities. Some prorating occurs in the full- and part-time contingent groups, most noticeably for faculty who have a job type that indicates significant administrative and management roles and for those with a rank of full professor. No prorating occurs for instructional graduate assistants.

<sup>61</sup> This difference has a p-value of 0.062. Thus, we could state with 90 percent confidence—rather than 95 percent—that these full-time contingent faculty in North Dakota are paid less per course than full-time tenure-track faculty.

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funding (North Dakota data only), taught a course during the summer term, or filled other roles at the institution (e.g., deans, administrators, or coaches). Various independent variables capture and control for many different characteristics across different types of faculty and institutions, yet unobservable factors that may cause earnings differences may exist; thus, regression results do not prove causality. Part-time tenure-track faculty are not shown due to their small proportion of the overall population. The primarily teaching population excludes faculty who are listed as primarily holding other roles unrelated to instruction, such as administrators and management, coaches (North Dakota data only), postdocs (North Dakota data only), and research faculty. This shrinks the analysis population by about 2 percent in North Dakota and about 6 percent in Ohio. The state data we analyzed included 2-year and 4-year public institutions, and the timeframes of data are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio.

<sup>a</sup>Instructional pay per course isolates earnings for equivalent work by adjusting faculty earnings to an amount that approximates their compensation for instructional activities. However, in reality, instructional work responsibilities may be more similar across faculty types than their official roles and this pay adjustment might suggest.

<sup>b</sup>This regression coefficient is not statistically significant at the level of p-value < 0.05. With a p-value of 0.062, this coefficient is significant at a lower threshold of p < 0.1.

Consistent with our other findings, when we analyzed national data from the 2013 Survey of Doctorate Recipients (SDR), we also found that contingent faculty in sciences fields earned less annually than full-time tenure-track faculty. Full-time contingent faculty earned 22 percent less than full-time tenure-track faculty, on average, and part-time contingent faculty earned 70 percent less, among instructional, doctorate-holding faculty in STEM, health, and social sciences fields.<sup>62</sup> Unlike our analyses of state data, the SDR analysis cannot account for differences in the number of courses taught, and thus the results represent the combined effects of lower pay rates and smaller workloads, to the extent either exists.

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<sup>62</sup> Our regression coefficients were statistically significant at least at the level of p-value < 0.05. These data cover a much narrower population than IPEDS or CPS data. We controlled for factors that affect earnings, such as demographics, number of weeks worked, discipline, and institution type. For more information on the SDR regression methodology, see appendix I.

## Relatively Few Part-Time Contingent Faculty Receive Health or Retirement Benefits from Their Employment

Data from North Dakota and Georgia, as well as national data covering different populations, suggest that relatively few part-time contingent faculty receive health or retirement benefits from their employment though full-time contingent faculty may.<sup>63</sup> Although not generalizable, data from North Dakota and Georgia include data on actual benefits provided to faculty by institutions, as opposed to self-reported rates of coverage found in national survey data.<sup>64</sup> Relatively few part-time contingent faculty and instructional graduate assistants in the North Dakota and Georgia data receive retirement, health, and life insurance benefits from their employment. For example, in Georgia and North Dakota, about 98 percent or more of individuals in full-time tenure-track and full-time contingent positions receive work-provided retirement benefits, compared to 19.4 and 9.3 percent, respectively, of those in part-time contingent positions (see table 8). An even smaller percentage of instructional graduate assistants in both states receive any of these benefits from their employment; however, instructional graduate assistants are students, so the terms of their employment may be different than traditional full-time and part-time employees.

**Table 8: Percent of Faculty Positions Providing Retirement, Health Insurance, or Life Insurance Benefits at Public Institutions in Georgia and North Dakota**

	Full-time tenure-track	Full-time contingent	Part-time contingent	Instructional graduate assistants
<b>Georgia (percent receiving benefit)</b>				
Retirement benefits	99.1%	97.9%	19.4%	0.9%
Health insurance	89.3%	78.8%	7.1%	0.8%
Life insurance	91.4%	91.5%	9.3%	0.7%
<b>North Dakota (percent receiving benefit)</b>				
Retirement benefits	99.5%	98.4%	9.3%	2.6%
Health insurance	92.3%	88.0%	9.1%	3.0%
Life insurance	99.8%	99.5%	9.7%	2.6%

Source: GAO analysis of data from Georgia and North Dakota public postsecondary institution data systems. | GAO-18-49

<sup>63</sup> We reported previously that contingent workers are less likely to have work-provided benefits, such as retirement plans and health insurance. Part-time contingent faculty are similar to the contingent workforce as a whole in this way, while full-time contingent faculty are generally in a different situation. See [GAO-15-168R](#).

<sup>64</sup> The Ohio data track benefits in terms of institution expenditures by faculty and thus are not comparable.

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Notes: Georgia's data do not include 2-year institutions. North Dakota's data include 4-year and 2-year public institutions. The timeframes of the state data we analyzed are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio.

## National Data on Retirement Benefits

Similarly, our analysis of SDR and CPS data show that relatively few part-time contingent faculty nationwide receive retirement benefits from their employment. According to the 2013 SDR data, among instructional, doctorate-holding faculty in STEM, health, and social sciences fields, an estimated 48.4 percent (+/- 4.2) of part-time contingent faculty report having access to “a retirement plan to which [their] employer contributed,” compared to the vast majority of full-time tenure-track and full-time contingent faculty.<sup>65</sup> According to CPS data covering employment in 2015, an estimated 16.6 percent (+/- 6.1) of part-time faculty report participating in a work-provided retirement plan, as compared to 60.8 percent (+/- 4.7) of full-time faculty.<sup>66</sup>

## National Data on Health Insurance Benefits

While comparing health insurance coverage is complicated because workers may be covered by other family members' plans, in both the SDR and CPS data, smaller proportions of part-time faculty had health insurance through their own employment. According to the 2013 SDR data, only 39.4 percent (+/- 4.6) of part-time contingent faculty had access to “health insurance that was at least partially paid by [their] employer” compared to almost all full-time tenure-track and full-time contingent faculty.<sup>67</sup> Similarly, in the CPS data, much smaller percentages of part-time faculty than full-time faculty report having health insurance through their own employment (see table 9).

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<sup>65</sup> An estimated 98.4 percent (+/- 0.4) of full-time tenure-track faculty and 88.7 percent (+/- 1.9) of full-time contingent faculty reported having access to a retirement plan.

<sup>66</sup> Full-time faculty in the CPS data include both tenure-track and contingent faculty—though this grouping is not as big a limitation in examining benefits as it is in other analyses, such as earnings, because access to benefits may be based simply on hours worked.

<sup>67</sup> An estimated 99.2 percent (+/- 0.3) of full-time tenure-track faculty and 93.2 percent (+/- 1.9) of full-time contingent faculty reported having access to health insurance coverage.

**Table 9: Estimated Percentages of Health Insurance Coverage for Full-Time and Part-Time Faculty**

	<b>Full-Time Faculty</b>	<b>Part-Time Faculty</b>
Covered by any private insurance plan <sup>a</sup>	94.1% (+/- 2.8)	85.9% (+/- 5.3)
Covered by private insurance in own name	81.4% (+/- 4.0)	55.4% (+/- 7.4)
Worker has work-provided health insurance plan <sup>b</sup>	77.7% (+/- 4.4)	35.3% (+/- 7.7)

Source: GAO analysis of data from the 2016 Annual Social and Economic Supplement to the Current Population Survey. | GAO-18-49

Note: Estimates for part-time faculty are statistically different from full-time faculty at the 95 percent confidence level. Proportions shown in the table do not add to 100 percent as each represents a different population of workers. Margins of error at the 95 percent confidence level are shown in parentheses.

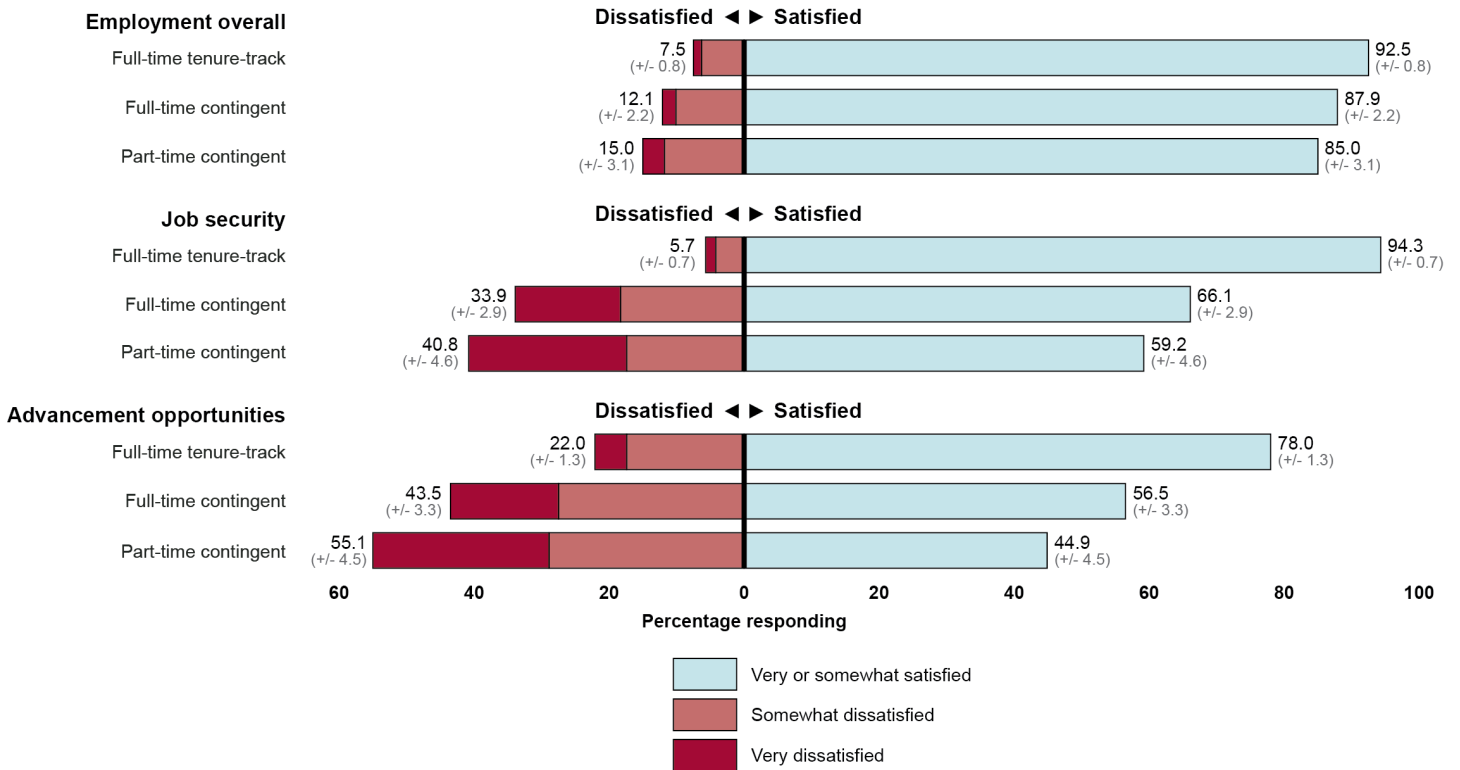
<sup>a</sup>Private insurance includes work-provided and other health plans, such as those purchased directly from insurers.

<sup>b</sup>Participation in a work-provided plan does not indicate whether full-time and part-time faculty have access to work-provided health insurance because a worker could be offered a work-provided plan but choose not to participate (e.g., if the worker is covered under a spouse's plan).

### Data from a 2013 Sample of Faculty with Doctorates Show That Contingent Faculty Were Less Satisfied with Certain Aspects of their Economic Circumstances

In addition to the lower pay and access to benefits experienced by some contingent faculty, among a national sample of instructional, doctorate-holding faculty in STEM, health, and social sciences fields, contingent faculty were less satisfied with their job security and career prospects. Based on our analysis of 2013 SDR data, the vast majority of all instructional faculty, including contingent faculty, stated that they are very or somewhat satisfied with their employment overall. However, compared to full-time tenure-track faculty, more contingent faculty reported some level of dissatisfaction (see fig. 10). While most faculty reported satisfaction with their employment, at least a third of both full- and part-time contingent faculty stated that they are dissatisfied with their job security and opportunities for career advancement. For example, an estimated 55.1 percent (+/- 4.5) of part-time contingent faculty reported some level of dissatisfaction with opportunities for advancement (see fig. 10), and the proportion who said they were very dissatisfied—26.1 percent (+/- 3.8)—is around 5 times greater than for full-time tenure-track faculty.

**Figure 10: Estimated Levels of Satisfaction with Employment, Job Security, and Opportunities for Career Advancement Reported by Faculty in STEM, Health, and Social Sciences Fields, 2013**



Source: GAO analysis of data from the 2013 Survey of Doctorate Recipients (SDR). | GAO-18-49

Notes: The SDR data we analyzed include doctorate-holding faculty in science, technology, engineering, and math (STEM), health, and social sciences fields whose primary or secondary work activity on their principal job was teaching. Responses refer to the primary job held in February 2013. Margins of error at the 95 percent confidence level are shown in parentheses. Proportions may not add up to 100 percent due to rounding.



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## While Contingent Faculty at Selected Institutions Said Their Work Offers Certain Advantages, They Expressed Concerns about Contracts, Wages, and Institutional Support

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### Contingent Faculty Identified Certain Advantages of Their Work

Contingent faculty at selected institutions said their work offers certain advantages, including those allowing them to balance professional and personal responsibilities, develop skills, or work with students.<sup>68</sup> Part-time contingent faculty in some discussion groups said they choose to work part-time because it gives them needed flexibility to balance teaching with working full-time or to meet family needs, such as childcare or caring for sick parents. As stated previously, our analysis of nationally representative 2013 SDR data showed that, among a sample of instructional faculty with doctorate degrees in STEM, health, and social sciences fields, many faculty preferred to work part-time for reasons including family responsibilities or holding another job. In terms of developing skills, one instructional graduate assistant told us that having teaching experience gives her an advantage in the job market.<sup>69</sup> In addition, in both full- and part-time discussion groups, some contingent faculty told us they primarily want to teach, and their roles allow them to do that rather than having to conduct research or take on other responsibilities. In some discussion groups, contingent faculty said they

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<sup>68</sup> The advantages and disadvantages contingent faculty described in our discussion groups varied according to their individual circumstances. For example, full-time faculty just starting their careers may have been more interested in opportunities for career advancement or institutional involvement compared to faculty who were retired or work in other industries and teach part-time.

<sup>69</sup> For consistency, we use the term instructional graduate assistant because the example pertains to a graduate assistant who teaches a course, similar to our analyses of the state data.

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are committed to teaching because they find it rewarding to interact with students.<sup>70</sup>

**Insight from a Full-Time Contingent Faculty Member about Connecting with Students**

“I have yet to meet a contingent faculty member that does not say that student contact is extremely important to them...We're excellent teachers. We're interested in teaching. We are interested in being with students.”

Source: GAO analysis of discussion group transcripts. | GAO-18-49

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**Contingent Faculty Expressed Concerns about Short-term Contracts, Untimely Contract Renewals, and Compensation**

**Contract-Related Concerns**

Contingent faculty in some of our discussion groups expressed concerns about contractual issues. In particular, they cited concerns regarding contract length, untimely contract renewals, or insufficient notice about their class schedules. Full- and part-time contingent faculty said short-term contracts—annual or semester-to-semester contracts—produce anxiety about job stability because of uncertainty about whether contracts will be renewed.<sup>71</sup> Part-time faculty who teach at multiple institutions additionally said that short-term contracts hinder their ability to form lasting relationships with institutions or students.<sup>72</sup> In some discussion groups, full- and part-time contingent faculty said untimely contract renewals can make it difficult to find another position if a contract is not renewed. For example, a full-time contingent faculty member said she received notification in August that her contract was not being renewed for the fall semester, at which point she could not find another position elsewhere for that semester. Part-time contingent faculty told us that

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<sup>70</sup> As noted previously, our analysis of 2013 SDR data also showed that contingent faculty generally reported being satisfied with their employment overall.

<sup>71</sup> As previously discussed in this report, our analysis of the 2013 SDR data showed that, among a sample of doctorate holding faculty in STEM, health, and social sciences fields, over a third of both full- and part-time contingent faculty were dissatisfied with their job security.

<sup>72</sup> At the institutions we visited in Georgia, North Dakota, and Ohio, the majority of part-time faculty who submitted responses to our questionnaire worked at one institution.

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notices about the status of their class schedules are also sometimes untimely. One full-time contingent faculty member said that, when he worked part-time, he sometimes did not know, until the first night of class, that a course he was scheduled to teach had been given to a full-time faculty member instead. While some contingent faculty expressed concerns about contract lengths and renewals, some contingent faculty said they do not have concerns in this area. Faculty members in some part-time discussion groups told us teaching is not their primary source of income or they are retired, so they are not concerned about job security and contract renewals.

**Insight from a Full-Time Contingent Faculty Member**

“The lack of long term job security/stability that results from short term contracts is my biggest concern. I find it insulting when comments like “great work, we’re committed to you” are coupled with actions like one year contracts when I have been in this position for 15 years. It does not make me feel valued.”

Source: GAO analysis of discussion group transcripts. | GAO-18-49

**Compensation-Related Concerns**

Contingent faculty we spoke with identified insufficient compensation as a disadvantage of their employment (see table 10). Full-time and part-time contingent faculty in some discussion groups said they must supplement their teaching income to cover their living expenses. For example, one full-time contingent faculty member said he does consulting work, bookkeeping, and product reviews to increase his income because his teaching salary is not adequate. In addition, some part-time faculty said they teach at several institutions to make ends meet financially and some instructional graduate assistants also said they take on extra work to cover living expenses. Union officials at the national level said their members have expressed similar concerns. Specifically, Service Employees International Union (SEIU) officials told us some contingent faculty members qualify for public assistance due to the low level of compensation they receive.

**Insight from Part-Time Contingent Faculty Member Teaching at Multiple Institutions**

“Society at large, I think, associates the college professor with a rather well paid and stable career. And I think most of us who worked in this field know that is anything but the case.”

Source: GAO analysis of discussion group transcripts. | GAO-18-49

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**Table 10: Contingent Faculty Concerns about Insufficient Compensation**

Contingent faculty type	Examples of concerns about insufficient wages
Full-time	<ul style="list-style-type: none"><li>• Wages less than living expenses</li><li>• Not compensated for extra responsibilities, such as administrative or advising duties</li><li>• Not commensurate with their qualifications</li><li>• No pay raises</li></ul>
Part-time	<ul style="list-style-type: none"><li>• Wages less than living expenses</li><li>• Paid for teaching but not for full extent of other responsibilities, such as planning or advising</li><li>• Teach heavy course loads at multiple institutions to make ends meet</li></ul>
Instructional graduate assistants	<ul style="list-style-type: none"><li>• Wages less than living expenses</li><li>• Teach in excess of what they are contracted to do</li><li>• Take on extra work to make ends meet</li></ul>

Source: GAO analysis of discussion group transcripts. | GAO-18-49

Some contingent faculty in both full- and part-time discussion groups said they are not paid for all of their job requirements or are undercompensated given their qualifications. Full- and part-time contingent faculty and graduate student instructors said they are required to assume extra responsibilities at no additional pay. For example, a faculty member in a full-time discussion group told us she was given additional duties of advising 15 students and attending meetings, neither of which was included in her contract. Both full- and part-time faculty in some discussion groups said their pay is not commensurate with their academic credentials.<sup>73</sup> One full-time faculty member told us an administrator with a doctorate who works in the local school district near her institution is paid double her salary. Similarly, a part-time faculty member told us her salary is less than \$20 an hour, a rate she considers as too low for a professional with a doctorate.<sup>74</sup>

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<sup>73</sup> As discussed previously, institutions may consider a range of factors beyond credentials in determining faculty compensation, such as work responsibilities, faculty quality, or prestige.

<sup>74</sup> The degree requirements for different types of faculty vary. For example, at one institution we visited, tenure-track professors must have a terminal degree—the highest degree attainable for their discipline. In contrast, certain contingent faculty positions at the institution do not require a terminal degree, and the appointment is based on the experience and academic background of the individual.

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## Some Contingent Faculty at Selected Institutions Said They Have Limited Career Advancement or Institutional Involvement Opportunities and Lack Certain Types of Professional Support

### Limited Career Advancement Opportunities

Contingent faculty in some discussion groups said they would like to move into a tenure-track or full-time position, but face barriers doing so, and union officials expressed similar views.<sup>75</sup> For example, one full-time contingent faculty member told us teaching 6 to 10 classes per year does not allow her time to conduct the research needed to be competitive for a tenure-track position. In some discussion groups, both full- and part-time faculty said that they perceive that their colleagues sometimes view them as less capable because they are not tenure-track faculty. As a result, these faculty may not be considered for tenure-track positions when they become available. A part-time contingent faculty member who teaches at multiple institutions noted that availability of full-time positions may be limited because many institutions hire only part-time faculty. Union officials from the American Association of University Professors (AAUP) and SEIU also cited the decline in the availability of tenure-track positions as a barrier regarding career advancement for contingent faculty.

#### **Insight from a Part-Time Contingent Faculty Member Who Teaches at Multiple Institutions**

“It wasn’t that long ago that once you went to work for a college as an adjunct and you were there a certain number of years, there was a real expectation that you would be offered a full-time position or at least you would move to an annual contract so you only had to worry once a year. That’s disappearing. More and more colleges are moving away from that. Also, a lot of colleges are moving away from full-time positions.”

Source: GAO analysis of discussion group transcripts. | GAO-18-49

### Limited Institutional Involvement

Contingent faculty in some discussion groups expressed concerns that they do not have a voice in institutional decision-making because they cannot serve on some department or university-level committees or vote

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<sup>75</sup> As previously discussed in this report, our analysis of 2013 SDR data showed that, among a sample of doctorate holding faculty in STEM, health, and social sciences fields, 43.5 percent of full-time contingent faculty and 55.1 percent of part-time contingent faculty were dissatisfied with their opportunities for career advancement.

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on particular issues. They explained that sometimes a school's policy prohibits their service or relevant policy is not clearly articulated. For example, a full-time contingent faculty member told us that contingent faculty members at her institution cannot participate on governance committees, which she said leaves administrators free to ignore the concerns of contingent faculty.

**Insight from a Full-Time Contingent Faculty Member**

"We have no voice. We have no say. We have no governance. We don't have any of that. And yet, we all—every one of us around here earned the same degree, worked the same amount. So there is huge inequality between choosing to focus on research primarily, and therefore, getting this basic job guarantee until [you] die and choosing to focus on teaching, [but] not having that [job guarantee], even though in many other ways we are equivalent."

Source: GAO analysis of discussion group transcripts. | GAO-18-49

Contingent faculty in some discussion groups also told us they are reluctant to voice their views because they do not have job protections. For example, a full-time contingent faculty member in one discussion group told us she would feel more comfortable speaking up if she had a continuing contract rather than her current annual contract. An official from the National Center for the Study of Collective Bargaining in Higher Education and the Professions said that an issue for contingent faculty broadly is whether they are protected by due process. He said it can be unclear for contingent faculty whether they can be terminated without due process consideration when, for example, a student complains about the content of a faculty member's lecture.<sup>76</sup>

Despite concerns about opportunities for institutional involvement, contingent faculty told us they preferred to use informal mechanisms to raise issues with the administration and had mixed views about the value of unions. Several full- and part-time faculty members said they are comfortable approaching their department chairperson or even university administrators to ask questions or express concerns. In terms of unions, some faculty in both full-time and part-time discussion groups said they

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<sup>76</sup> AAUP and the Association of American Colleges and Universities have issued a statement on academic due process, including procedural standards presented as a guide to be used in faculty dismissal proceedings. The procedural requirements actually used may vary by institution and jurisdiction. American Association of University Professors (AAUP) and Association of American Colleges and Universities, Statement on Procedural Standards in Faculty Dismissal Proceedings, accessed October 10, 2017, <https://www.aaup.org/report/statement-procedural-standards-faculty-dismissal-proceedings>.

were opposed to unions based on prior experiences or not wanting to pay dues. In contrast, some faculty said they thought a union could be beneficial by helping with certain issues, such as compensation and working conditions. Union officials told us there has been greater interest in recent years from contingent faculty—including graduate assistants—in learning about faculty unionization or in organizing into unions. However, one union official noted that it can be challenging for part-time faculty to form a union because they may move from one institution to another.

## Institutional Support

### Examples of Academic Associations' Efforts to Focus on Contingent Worker Issues

The American Political Science Association (APSA): Convened a committee in 2016 on the status of contingent faculty in the profession to expand ways to support contingent faculty members. The committee sponsored a roundtable at the APSA Annual Meeting in August 2017 to examine a range of topics related to contingent faculty, including promotion paths, fairness within the profession, and the role of unionization.

The American Sociological Association (ASA): Formed a task force on contingent faculty in November 2015 to examine the implications of the recent growth of contingent employment among sociologists. The task force's interim report, issued in August 2017, includes recommendations to ASA and universities, for improving contingent faculty working conditions.

The Modern Language Association: (MLA) Convened a committee that will work through June 2019 to examine issues that affect contingent faculty, including salary and benefits, workplace issues and conditions of employment, demographics, participation in departmental and institutional governance, academic freedom, and professional development. The committee plans to identify effective policies and practices related to contingent faculty.

The American Institute of Physics (AIP): Conducted a survey of individual faculty in 2016 that included questions on school climate and culture. As of February 2017, AIP was in the early stages of analyzing the survey response rates and results.

Source: GAO analysis of interviews and correspondence with academic associations and reviews of documentation from task forces. | GAO-18-49

Contingent faculty in some discussion groups also described a lack of institutional support in areas that can affect faculty teaching duties, such as access to information systems or office space. For example, a part-time faculty member told us her access to institutional email and the online grading system was terminated too soon because her contract ended a few days before she gave final examinations. Part-time faculty and faculty teaching at multiple institutions also raised concerns that they sometimes lack appropriate office space to ensure student privacy. Union officials we spoke with also said contingent faculty nationwide commonly cite these areas of limited institutional support as concerns. Some discipline-specific academic associations have also begun to focus on issues related to contingent faculty (see sidebar).

### Insight from a Part-Time Contingent Faculty Member Who Teaches at Multiple Institutions

"The office space problem is a big problem. Either one doesn't have any office space or it's a jointly shared office space, a very large space with lots of people in it. It is very difficult to have kind of close conversations with students. I think it brings up some Family Educational Rights and Privacy Act (FERPA) problems, anonymity problems as well."

Source: GAO analysis of discussion group transcripts. | GAO-18-49

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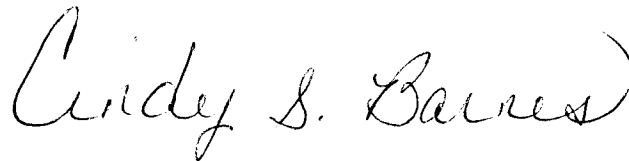
## Agency Comments, Third Party Views, and Our Evaluation

We provided a draft of this report to Education, NSF, and experts on contingent faculty issues or the data used in this report for their review and comment. Education did not have any comments. NSF and expert reviewers provided technical comments, which we incorporated, as appropriate.

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As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies to the appropriate congressional committees, to the Secretary of Education and the Director of the National Science Foundation, and to other interested parties. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-7215 or [brownbarnesc@gao.gov](mailto:brownbarnesc@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix III.



Cindy Brown Barnes  
Director, Education, Workforce,  
and Income Security Issues



# Appendix I: Objectives, Scope, and Methodology

The objectives of this review were to determine (1) what is known about the makeup and utilization of the postsecondary instructional workforce; (2) the roles different types of faculty fill at selected institutions and the factors administrators consider when determining their faculty makeup; (3) what is known about how economic circumstances compare across different faculty types; and (4) what contingent faculty members report as advantages and disadvantages of their work.

To address objectives 2 and 4, we interviewed administrators and contingent faculty members during site visits at selected institutions in three states—Georgia, North Dakota, and Ohio. In each state, we visited one 4-year public institution, one 4-year private (non-profit) institution, and one 2-year public institution (see table 11). We selected institutions in these states, in part, to provide context for our analysis of faculty and course data that we obtained from their postsecondary data systems (see Section 1 of this appendix for more information). In addition to data availability, we considered size and geographic location as part of our state selection process. When selecting institutions within each state, we considered factors such as the size of the instructional faculty workforce, the percentage of contingent faculty, and whether the institution is located in an urban, suburban, or rural area.

**Table 11: Postsecondary Institution Site Visits, January — March 2017**

Institution type	Georgia	North Dakota	Ohio
4-year public	University of Georgia	North Dakota State University	The Ohio State University
4-year private, not-for-profit	Mercer University	University of Jamestown	Ashland University
2-year public	Chattahoochee Technical College	Lake Region State College	Central Ohio Technical College

Source: GAO. | GAO-18-49

In our interviews with administrators—chief academic officers, vice presidents, or deans, among others—we asked about the roles different types of instructional faculty fill and the factors administrators consider when determining their institution’s faculty makeup. In addition to administrators at the institutions above, we also interviewed administrators from one large online-based for-profit institution, which we selected primarily based on size of the institution. In total, we interviewed administrators from 10 institutions. The findings from these interviews are not generalizable.

At each institution, we held discussion groups with full-time and part-time contingent faculty and graduate student instructors, where applicable.<sup>1</sup> University administrators solicited participants for the discussion groups on our behalf. During these discussion groups, we asked contingent faculty broad, open-ended questions about the advantages and disadvantages of their work and about their working conditions. Participants were invited to complete a written questionnaire to provide demographic information about themselves. Among the 109 contingent faculty members who completed our questionnaire, the average age of full- and part-time contingent faculty we met with was 53. Graduate student instructors were younger, with an average age of 30. Contingent faculty we interviewed came from a range of disciplines, including English, music, engineering, and the health professions. The vast majority of full- and part-time contingent faculty indicated that they held a master's or doctorate degree. At the institutions we visited in Georgia, North Dakota, and Ohio, the majority of part-time faculty worked at one institution. To ensure we collected a broad range of perspectives, we conducted two additional discussion groups with contingent faculty who taught at multiple institutions.<sup>2</sup> In total, we conducted 21 discussion groups with contingent faculty.

Finally, we conducted additional interviews to obtain background and context for our work. We met with individuals knowledgeable about issues related to postsecondary faculty and unions representing postsecondary faculty, including the American Association of University Professors and the Service Employees International Union. For all questions, we also reviewed relevant federal laws and regulations.

The remainder of this appendix provides detailed information about the data and quantitative analysis methods we used in our review, as follows:

- Section 1: Key data sources
- Section 2: Quantitative analysis methods used to address the makeup, utilization, and economic circumstances of postsecondary instructional faculty (objectives 1 and 3)

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<sup>1</sup> We were not able to coordinate a meeting with part-time contingent faculty from one institution we visited as a result of scheduling challenges. We conducted discussion groups with graduate assistants at each 4-year public institution.

<sup>2</sup> These two discussion groups were coordinated by the New Faculty Majority—a national advocacy group for contingent faculty—based on our input.

- Section 3: Pay-per-course regression analysis methods (objective 3)
- Section 4: Annual earnings regression analysis methods (objective 3)

## Section 1: Data Sources

To address our objectives, we used data from multiple sources (see table 12).

Table 12: Data Sources Used in GAO Analyses

Data file	Organization responsible	Type of information in file used in analyses	Population examined	Timeframe covered by data
<b>Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC)</b>	Department of Labor's Bureau of Labor Statistics; Census Bureau	Population counts, worker characteristics, annual earnings, and benefits by employment status	Individuals who hold the occupation of postsecondary teacher and who are employed in the colleges and universities industry	Calendar year 2015 <sup>a</sup>
<b>Survey of Doctorate Recipients (SDR)</b>	National Science Foundation's National Center for Science and Engineering Statistics (NCSES)	Annual earnings, benefits, and job satisfaction by faculty type	Individuals with doctorate degrees in STEM, health, or social sciences fields and whose primary or secondary work activity on their principal job is teaching <sup>b</sup>	2013 (employment as of Feb. 1, 2013)
<b>Integrated Postsecondary Education Data System (IPEDS)<sup>c</sup></b>	Department of Education			
Employees by Assigned Position file		Population counts by type of faculty position, contract length, and institution	Individuals whose responsibilities are primarily instructional or whose instructional responsibilities cannot be differentiated from other duties	2015 (employment as of Nov. 1, 2015)
Fall Staff file		Population counts by type of faculty position and institution	Individuals with instruction or research or public service responsibilities	1995, 1999, 2003, 2007, 2011 (employment as of Nov. 1 of each year)
		Population counts by type of faculty position, gender, race, contract length, and institution	Individuals whose responsibilities are primarily instructional or whose instructional responsibilities cannot be differentiated from other duties	2015 (employment as of Nov. 1, 2015)

**Appendix I: Objectives, Scope, and Methodology**

<b>Data file</b>	<b>Organization responsible</b>	<b>Type of information in file used in analyses</b>	<b>Population examined</b>	<b>Timeframe covered by data</b>
Institutional Characteristics and Flags files		Characteristics of postsecondary institutions (e.g., degree-granting status, size, etc.)	Active, Title IV, degree-granting 2-year and 4-year primarily postsecondary institutions that are generally open to the public, have at least 15 full-time equivalent staff, and reported at least 1 instructional staff member or graduate teaching assistant <sup>d</sup>	1995, 1999, 2003, 2007, 2011, 2015
<b>12-Month Enrollment file</b>		Student enrollment by level of student and institution	Undergraduate, graduate, and professional student enrollment by institution	2014-2015 (July 1, 2014-June 30, 2015)
<b>Georgia postsecondary institution administrative data<sup>e</sup></b>	University System of Georgia	Characteristics of faculty, including position type, demographics, earnings, and benefits, and information about courses taught by faculty	Individuals who teach at least one course over the academic year at 4-year public institutions (the data include all 29 of the Georgia 4-year public institutions identified in our IPEDS universe) <sup>f</sup>	2015-16 academic year (fall term 2015, spring term 2016, summer term 2016)
<b>North Dakota postsecondary institution administrative data</b>	North Dakota University System	Characteristics of faculty, including position type, demographics, earnings, and benefits, and information about courses taught by faculty	Individuals who teach at least one course over the academic year at 4-year and 2-year public institutions (the data include all 11 of the North Dakota non-tribal public institutions identified in our IPEDS universe—7 4-year institutions and 4 2-year institutions) <sup>g</sup>	2015-16 academic year (fall term 2015, spring term 2016, summer term 2016)
<b>Ohio postsecondary institution administrative data</b>	Ohio Department of Higher Education	Characteristics of faculty, including position type, demographics, and earnings, and information about courses taught by faculty	Individuals who teach at least one course over the academic year at 4-year and 2-year public institutions (the data include all 34 of the Ohio 4-year public institutions identified in our IPEDS universe, and 21 of the 25 2-year public institutions) <sup>h</sup>	2014-15 academic year (summer term 2014, fall term 2014, spring term 2015)
<b>Humanities Departmental Survey (HDS)</b>	American Association of Arts and Sciences	Population counts by faculty type and discipline	Faculty in humanities departments at 4-year institutions <sup>i</sup>	2012-13 academic year (employment as of fall term 2012)

Source: GAO analysis of various data sources. | GAO-18-49

<sup>a</sup>We analyzed data from the 2016 ASEC, which provides information about employment during the prior year (i.e., calendar year 2015).

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<sup>b</sup>NCSSES documentation states that SDR collects data from individuals with a research doctoral degree in a science, engineering, or health (SEH) field from a U.S. academic institution. We use different terminology that captures the same fields.

<sup>c</sup>For simplicity, we refer to IPEDS data by the start of the academic year; for example, we refer to IPEDS data from the 2015-16 collection as 2015 IPEDS data.

<sup>d</sup>The 1995 and 1999 data do not have all of the same variables as in later years. To approximate our definition in the 1995 data, we identified institutions that offered at least an associate's degree or higher and that were active institutions eligible for financial aid (to approximate Title IV institutions). For the 1999 data, we used different variables that also identified institutions that fit our definition.

<sup>e</sup>We counted institutions in the state datasets by their unique IPEDS institution code, some of which may represent branch campuses of parent institutions. Thus, other counts of state postsecondary institutions may not match depending on how those counts treat branch campuses.

<sup>f</sup>Georgia's data extract included data from one 2-year institution that had recently consolidated with a 4-year institution. We excluded this 2-year institution from our data since Georgia did not provide data on any other 2-year institutions.

<sup>g</sup>NDUS did not provide data on three tribal public institutions that were in our IPEDS universe.

<sup>h</sup>Of the 4 missing 2-year institutions, 3 were not included in our data extract because of inconsistencies in how they report data to Ohio that prevented their faculty being matched to their course data and 1 was not included for reasons of timing. In addition, one 4-year institution included in our data extract did not report faculty position numbers to IPEDS in 2015.

<sup>i</sup>Includes both departments and programs that award degrees in humanities disciplines; not every degree-granting unit is a department.

To gain an understanding of and provide context for the relevant faculty data that we analyzed, we interviewed officials from federal, state, and non-governmental agencies who collect and maintain the respective datasets, including the Department of Education (Education), Labor, National Science Foundation, North Dakota University System (NDUS), Ohio Department of Higher Education (ODHE), University System of Georgia (USG), and American Academy of Arts & Sciences (AAAS).

The Integrated Postsecondary Education Data System (IPEDS) and the state administrative data represent the entire populations they cover, and while the Current Population Survey (CPS), the Survey of Doctorate Recipients (SDR), and the Humanities Departmental Survey (HDS) are sample survey data, when weighted, they also represent the populations they cover. Because the sample surveys followed a probability procedure based on random selections, each respective sample is only one of a large number of samples that might have been drawn. Since each sample could have provided different estimates, we express our confidence in the precision of our particular sample's results as the margin of error (i.e. the half width of the 95 percent confidence interval—for example, +/- 7 percentage points). This is the interval that would contain the actual population value for 95 percent of the samples that could have been drawn. Throughout our analyses, for estimates from survey data we reported the applicable margins of error. In some cases, the confidence intervals around our estimates were asymmetrical; however, we

presented the maximum half-width for simplicity and for a consistent and conservative representation of the sampling error associated with our estimates. Our analyses of CPS and SDR survey data are weighted analyses using sample design information, replicate weights, and survey analysis software to get the proper sample survey estimates and margins of error. Additional details about the datasets follow.

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**Integrated Postsecondary  
Education Data System  
(IPEDS)**

IPEDS is a system of interrelated surveys conducted annually by Education's National Center for Education Statistics (NCES). IPEDS gathers information from every college, university, and technical and vocational institution that participates in federal student financial aid programs, as well as other institutions that report data voluntarily.<sup>3</sup> In 2015, more than 7,500 institutions reported data to IPEDS. IPEDS collects data in the following 12 areas: institutional characteristics; completions; 12-month enrollment; fall enrollment; graduation rates; 200% graduation rates; student financial aid; outcome measures; admissions; human resources; finance; and academic libraries. As of the 2005 IPEDS data collection, information on faculty and staff are collected as part of the human resources survey component, and include information on faculty demographics and types of positions, among other things. We used IPEDS data from 1995, 1999, 2003, 2007, 2011, and 2015.<sup>4</sup> We utilized IPEDS as our primary data source because we are able to identify a universe of postsecondary institutions and also because the data allow us to distinguish between tenure-track and contingent positions.

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**Current Population Survey  
(CPS) Annual Social and  
Economic Supplement  
(ASEC)**

The CPS is sponsored jointly by the Census Bureau and the Department of Labor's Bureau of Labor Statistics. It is the source of official government statistics on employment and unemployment in the United States. The basic monthly survey is used to collect information on employment, such as employment status, occupation, and industry, as

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<sup>3</sup> Since 1993, completion of the IPEDS survey has been mandatory for all postsecondary institutions that participate in or are eligible to participate in any federal student financial assistance program authorized by Title IV of the Higher Education Act, as amended. For institutions not eligible to participate in Title IV programs, participation in IPEDS is voluntary.

<sup>4</sup> Faculty data reported by institutions is generally as of November 1 of the academic year. For simplicity, we refer to IPEDS data by the start of the academic year; for example, we refer to IPEDS data from the 2015-16 collection as 2015 IPEDS data.

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well as demographic information, among other things. The survey is based on a sample of the civilian, non-institutionalized population of the United States. Using a multistage stratified sample design, about 54,000 households are interviewed monthly based on area of residence to represent the country as a whole and individual states; the total sample also includes additional households that are not interviewed for various reasons, such as not being reachable. In addition to these interviewed and non-interviewed households from the basic CPS monthly sample, the ASEC includes additional households; the total sample size for the 2016 ASEC was almost 100,000 households. The ASEC provides supplemental data on work experience, income components, such as earnings from employment, and noncash benefits, such as health insurance coverage, among other things. Data on employment and income refer to the preceding calendar year, although demographic data refer to the time of the survey. This report used data from the March 2016 ASEC, which refers to employment and income during calendar year 2015.

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## Survey of Doctorate Recipients (SDR)

SDR is a biennial survey conducted by the National Science Foundation's (NSF) National Center for Science and Engineering Statistics (NCSES) that provides demographic and career history information about individuals with a research doctoral degree in a science, technology, engineering, and math (STEM), health, or social sciences field from a U.S. academic institution.<sup>5</sup> The survey follows a large sample of individuals throughout their careers from the year they received their doctoral degree until age 75, plus a sample of new doctoral recipients added in each cycle. The survey includes questions regarding occupation (including discipline area for postsecondary faculty), earnings, job satisfaction, faculty tenure status, and faculty rank, among other topics. While some data from the survey are released publicly, other data are restricted from public use—including data on tenure and rank—in order to protect the anonymity of survey respondents. This report used data from the 2013 SDR, which refers to employment in February 2013. We

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<sup>5</sup> NCSES documentation states that SDR collects data from individuals with a research doctoral degree in a science, engineering, or health (SEH) field. We use different terminology that captures the same fields.

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obtained the publicly available data and a few additional restricted-use variables that NCSES recoded for our use.<sup>6</sup>

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**Faculty and Course Data Received from Selected States**

The data from Georgia, North Dakota, and Ohio contained variables on faculty characteristics, earnings and benefits, and courses taught. We developed data requests through discussions with officials in each state.

**Georgia Postsecondary Institution Administrative Data (USG data)**

The data from USG covered all 4-year public institutions in Georgia identified in our IPEDS universe and included course and enrollment data from an academic database merged with faculty and earnings data from USG's Human Resources Data Mart.<sup>7</sup> The Georgia data also included information on the percentage of individual faculty members' roles comprised of instruction, research, and other responsibilities. The course and enrollment data covered academic year 2015-16—courses taught during fall term 2015, spring term 2016, and summer term 2016. Most faculty data are from fall 2015. For some faculty who were not in the fall 2015 data file because they started teaching in spring 2016, for instance, USG matched fall 2016 faculty data to the course data. Earnings data covered calendar year 2015 and included earnings year-to-date through November.

**North Dakota Postsecondary Institution Administrative Data (NDUS data)**

The data from NDUS officials covered all non-tribal 4-year and 2-year public institutions in North Dakota identified in our IPEDS universe and included course and enrollment data, as well as faculty and earnings data. All of the data covered academic year 2015-16—courses taught and earnings during fall term 2015, spring term 2016, and summer term 2016. The data included common unique identifiers that allowed us to merge extracts we received according to faculty ID and institution. The data were downloaded by NDUS officials from a centralized data system into which the North Dakota institutions report their data directly.

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<sup>6</sup> We received access to recoded variables that provided information about faculty rank, tenure status, and institution type. NCSES aggregated these variables into broader categories to protect the anonymity of survey respondents. For example, for faculty rank, individuals who self-identified as an assistant professor, associate professor, or professor were recoded as "professoriate."

<sup>7</sup> The USG is a separate system from the Technical College System of Georgia, which oversees technical institutions. The data extract we received included data from one 2-year public institution that had recently consolidated with a 4-year public institution. USG officials confirmed that the data for this institution corresponded to when it operated as a 2-year institution. As a result, we did not include this data in our study because analyzing one institution would not be representative of all public 2-year institutions across the state.



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Ohio Postsecondary Institution Administrative Data (ODHE data)

The data from ODHE covered all 4-year public institutions and most 2-year institutions in Ohio identified in our IPEDS universe and included: (1) course and enrollment data, (2) faculty data, and (3) faculty earnings data.<sup>8</sup> All of the data were from ODHE’s Higher Education Information (HEI) system, a comprehensive relational database that includes student enrollment, course, financial aid, personnel, finance, and other data submitted by Ohio’s colleges and universities.<sup>9</sup> The course and enrollment data covered academic year 2014-15—courses taught during summer term 2014, fall term 2014, and spring term 2015. Faculty and earnings data covered fiscal year 2015 (i.e., July 2014 through June 2015).<sup>10</sup>

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Humanities Departmental Survey (HDS)

The HDS is a collaborative effort to collect and analyze information from humanities departments across a number of academic fields. The HDS is sponsored by AAAS, and national humanities organizations and disciplinary associations, such as the Modern Language Association and the American Historical Association, helped develop the HDS. The survey collects a variety of information for each humanities field, including data on the number and types of faculty and students taught by faculty type. The survey has been administered twice, covering academic years 2007-08 and 2012-13. In both instances, the Statistical Research Center of the American Institute of Physics administered the surveys to a nationally representative stratified sample of humanities departments in four-year colleges and universities that existed in 2007-08 and was updated for

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<sup>8</sup> The missing 2-year institutions were not included in our data extract because of inconsistencies in how they report data to Ohio that prevented their faculty being matched to their course data or for reasons of timing.

<sup>9</sup> Data came from the “Enrollment,” “Faculty-Staff,” and “Financial” data areas. Two components in the “Faculty-Staff” data area—the all employee and faculty demographics files—included some similar demographics variables. In accordance with guidance received from ODHE, we generally relied on the variables from the faculty demographics file because they are more closely monitored.

<sup>10</sup> According to an ODHE official, earnings data for faculty teaching a summer course could show up in the fiscal year 2014 or 2015 data, depending on whether the faculty member was paid before or after July 1, 2014. The earnings data we received was for fiscal year 2015. Thus, the earnings for summer courses may be misaligned slightly for some faculty. We chose to analyze summer 2014 courses with fiscal year 2015 data; according to the ODHE official, this was most appropriate because summer 2014 represents the start of the academic year 2014-15.

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new disciplines in 2012-13.<sup>11</sup> The 2012-13 survey included 2,127 departments in its sample across 13 humanities fields, and its overall response rate was 71 percent.<sup>12</sup> Information about faculty referred to employment levels as of fall 2012.

We identified several other discipline-specific academic associations that have collected or are currently collecting data on faculty makeup in their departments, including contingent faculty. However, we did not compare the results of other department surveys to the HDS because the response rates in other surveys were too low to be considered generalizable or because any observable differences in faculty composition could be attributed to differences in survey methodology or timeframe covered.<sup>13</sup>

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## Data Reliability

For each of the datasets described above, we conducted a data reliability assessment of variables included in our analyses. We reviewed technical documentation and related publications and websites with information about the data. We spoke with the appropriate officials at each agency or organization to review our plans for analyses, as well as to resolve any questions about the data and any known limitations. We also conducted electronic testing, as applicable, to check for logical consistency, missing data, and consistency with data reported in technical documentation. We

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<sup>11</sup> AAAS sampled departments or programs within each field separately, stratified by three levels of Carnegie classification: research intensive, comprehensive, and primarily undergraduate. The same set of departments that were sampled in 2007-2008 were invited to participate in 2012-13, plus an additional sample from departments in communication, folklore, musicology, classical studies and philosophy departments.

<sup>12</sup> Departments surveyed include art history, MLA combined English / languages & literatures other than English, English, languages & literatures other than English (i.e., foreign languages), religion, communication, folklore, history, musicology, history of science, classical studies, linguistics, and philosophy.

<sup>13</sup> The Modern Language Association surveyed departments of English and other modern languages in 2015 about faculty numbers as of the fall term of 2014 (response rate: 16 percent). According to officials, the American Institute of Physics conducts a survey in even-numbered years of all degree-granting physics and astronomy departments on faculty rank and employment status (response rate: over 90 percent). Officials from the American Political Science Association said their departmental survey is conducted annually, but 2014-2015 was the first year they asked about faculty makeup, including adjunct, contingent, part-time, and full-time faculty, as well as tenure status and rank (response rate: 26 percent). An official from the American Sociological Association said the organization has conducted a department-level survey of faculty every five years beginning in 2002, which includes data on contingent faculty; but also stated that there were issues in how they defined the term "contingent faculty" which may have impacted the quality of the results.

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determined that the variables we used from the data we reviewed were sufficiently reliable for the purposes of this report.

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## Section 2: Quantitative Analyses of the Makeup, Utilization, and Economic Circumstances of the Postsecondary Instructional Workforce

This section discusses the quantitative analysis methods (not including regression analyses) we used to address the makeup, utilization, and economic circumstances of the postsecondary instructional workforce. We used federal data from CPS, IPEDS, and SDR, state data from Georgia, North Dakota, and Ohio, and non-governmental data from HDS for these analyses.

In each of the analyses that follow, our population of analysis was postsecondary instructional faculty. However, our definition of instructional faculty varied depending on the data source, as different sources provide different information regarding instructional responsibilities. For example, IPEDS indicates whether an individual's responsibilities are primarily instructional whereas the state data indicates whether an individual teaches a course. For each set of analyses, we explain what definition of instructional faculty we used. Within our population of instructional faculty, we defined as contingent faculty any full-time or part-time faculty who do not have tenure or are not on the tenure track.

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## IPEDS Analyses of Historical and Current Makeup

To analyze whether and how the size of the contingent faculty workforce has changed over time, we used IPEDS data to identify instructional staff nationwide by type of institution in 1995, 1999, 2003, 2007, 2011, and 2015, which is the most recently available year of data. The five historical snapshots used data from the fall staff surveys to examine counts of faculty and any trends in postsecondary education during the period 1995-2011. The 2015 snapshot used data from the "employees by assigned position" survey to examine current counts of faculty by position type and used data from the fall staff survey to examine counts of faculty by gender and race. We could not compare the historical and current snapshots of faculty counts due to a significant change in 2012-13 to how IPEDS defines instructional staff. Prior to this change, instructional staff included those "whose primary responsibility is instruction, research, and/or public service" combined in a single category. After the change, instructional staff included only those whose responsibilities are primarily instructional or those "for whom it is not possible to differentiate between instruction or teaching, research, and public service because each of these functions is an integral component of his/her regular assignment."

As a result, data on instructional faculty collected since 2012 is not comparable to data collected prior to 2012.

For each of these years of faculty data, we merged information from the IPEDS institutional characteristics file and focused our analyses on a universe of institutions that fit as close as possible to the following definition:

- Active, Title IV, degree-granting 2-year and 4-year primarily postsecondary institutions that are generally open to the public, have at least 15 full-time equivalent staff, and reported at least 1 instructional staff member or graduate teaching assistant.<sup>14</sup>

The number of postsecondary institutions can change from year to year due to new schools opening or existing schools closing or consolidating with other schools, as well as due to changes in how schools elect to report data to IPEDS.<sup>15</sup>

Not all of the same variables were available in the 1999 and 1995 IPEDS institutional characteristics files. As a result, for the 1999 data, we used different variables that also identified institutions that fit this definition. For the 1995 data, we approximated this definition by identifying institutions that offered at least an associate's degree or higher and that were active institutions eligible for student financial aid (to approximate Title IV institutions).

For the historical snapshots, we identified counts of faculty by institution type (i.e., control: public, private, for-profit; and level: 2-year, 4-year). We categorized faculty according to the following position types:

- full-time tenure-track (both tenured and non-tenured but on a tenure track);
- full-time contingent;
- part-time; and

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<sup>14</sup> We did not exclude institutions outside of the U.S. (e.g., Puerto Rico or outlying areas) or tribal colleges, provided they met the other criteria for inclusion in our universe.

<sup>15</sup> Institutions can choose to report as a single campus or have their campuses report individually, and this can change over time.

- graduate teaching assistant.<sup>16</sup>

The historical IPEDS data (from the fall staff surveys) do not break out part-time tenure-track from part-time contingent.

For the 2015 snapshot, we identified counts of faculty by institution type, as well as by other institutional characteristics, such as size and the highest degree offered by the institution.<sup>17</sup> We categorized faculty according to the following position types:<sup>18</sup>

- full-time tenure-track (both tenured and non-tenured but on a tenure track);
- part-time tenure-track (both tenured and non-tenured but on a tenure track);
- full-time contingent;
- part-time contingent; and
- graduate teaching assistant.

We also identified contingent faculty positions by their contract types:

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<sup>16</sup> IPEDS relies on the Bureau of Labor Statistics' Standard Occupational Classification to define graduate teaching assistants as those who "assist faculty or other instructional staff in postsecondary institutions by performing teaching or teaching-related duties, such as teaching lower level courses, developing teaching materials, preparing and giving examinations, and grading examinations or papers." The definition also notes that "Teacher Assistants" are excluded. We consider these positions to be unique situations because the IPEDS data do not provide information about whether the graduate students in these positions are instructors of record or are providing classroom support of various kinds. As a result, we do not include graduate teaching assistant in our overall counts of instructional faculty positions.

<sup>17</sup> We also analyzed faculty position counts by other characteristics that did not emerge as critical to our findings. For example, we examined faculty position counts by institutions' student enrollment balance—graduate versus undergraduate—using IPEDS 12-month enrollment data.

<sup>18</sup> While the 2015 IPEDS employees by assigned position data file identifies medical school faculty separately from other, we did not exclude medical school faculty from our analyses because the IPEDS data do not allow us to exclude other kinds of specialized graduate program faculty, such as law school faculty. In addition, while the 2015 IPEDS employees by assigned position data file identifies faculty by narrower groups, such as those who are "primarily instructional," as well as those within the primarily instructional group who teach for-credit or not-for-credit courses, examining these narrower groups was beyond the scope of our work.

- multi-year contract;<sup>19</sup>
- annual contract;
- less-than-annual contract; and
- non-faculty status.

We used the 2015 IPEDS fall staff survey data to identify faculty by gender and race/ethnicity group. For full-time faculty, we were able to examine the full spectrum of tenure-track versus contingent with various contracts. However, because these data were from the 2015 IPEDS fall staff survey, the data do not break out part-time tenure-track from part-time contingent. The IPEDS race/ethnicity categories we analyzed were:

- Asian
- Black or African American
- Hispanic or Latino
- Nonresident alien
- Other or unknown (includes the IPEDS race/ethnicity categories: American Indian or Alaska Native; Native Hawaiian or other Pacific Islander; two or more races; and race/ethnicity unknown)<sup>20</sup>
- White (non-Hispanic)

Aggregated IPEDS data represent the universe of postsecondary instructional faculty positions, rather than a mutually exclusive count of unique instructional faculty members. IPEDS data are reported at the institution level, and so for any given institution the counts they report represent both the number of faculty at the institution and the number of positions they fill. However, because faculty who teach at more than one institution are counted and reported by each institution, when faculty counts are aggregated across multiple institutions, these faculty are

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<sup>19</sup> For full-time non-tenure-track faculty positions with multi-year contracts, we distinguish between whether these positions are at an institution that offers tenure or not. At institutions that do not offer tenure, we use the term “potentially pseudo-tenure” to describe these positions because they may represent long-term renewable contracts that the institution uses instead of a tenure system. While in some cases these positions may closely approximate tenured positions, depending on specific contract provisions and other factors, at other institutions, they may not.

<sup>20</sup> We combine these groups into a single category for ease of analysis and interpretation of results, and because these groups comprise a small proportion of all instructional positions.

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counted multiple times—for each position they fill. As a result, aggregated counts based on IPEDS data represent the universe of unique instructional faculty positions, rather than the universe of unique faculty workers.

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### CPS Analyses of Current Faculty Makeup and Economic Circumstances

We used CPS data from the March 2016 ASEC to estimate the numbers of workers employed as postsecondary teachers in colleges and universities nationwide during calendar year 2015. We categorized as postsecondary instructional faculty any worker whose employment was in both the “postsecondary teachers” occupation (census code 2200) and the “colleges and universities, including junior colleges” industry (Census code 7870).<sup>21</sup> We also determined whether a worker was employed full-time (35 hours or more) or part-time (less than 35 hours) using another variable in the ASEC.

Among other differences with IPEDS data (see discussion of IPEDS above), CPS data capture the number of workers rather than the number of positions in postsecondary education and counts each worker once even if they work at multiple institutions. In addition, because CPS represents the entire labor force, the data include workers at postsecondary institutions that we may have excluded from our IPEDS analyses (e.g., non-degree-granting institutions).<sup>22</sup> We utilized CPS data to provide context for the total number of postsecondary teachers and to estimate the proportions of the instructional workforce represented by full-time and part-time faculty. However, analysis of CPS data was not a primary component of our report because the data cannot differentiate workers by institution or by tenure status. As a result, the estimated population of full-time faculty includes both tenure-track and contingent faculty. Because CPS identifies workers as opposed to positions (which might yield a lower count than the IPEDS data) and includes workers at postsecondary institutions that we excluded from our IPEDS analyses (which might yield a higher count than the IPEDS data), the count of workers in the CPS data and the count of positions in the IPEDS data are not directly comparable.

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<sup>21</sup> We identified workers according to the occupation and industry associated with the longest job they held during the prior year (i.e., calendar year 2015).

<sup>22</sup> Because the CPS data do not identify faculty by institution, we could not narrow the population to match our IPEDS analysis population.

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We also examined the reasons part-time faculty reported they worked part-time. We focused our analysis on 3 groups of part-time faculty: (1) those who reported wanting to work part-time; (2) those who reported they could only find a part-time job; and (3) those who reported seasonal or temporary fluctuations in the availability of employment (i.e., “slack work”)—we combined the latter two groups because they are both related to economic circumstances.

To analyze the economic circumstances of contingent faculty, we used CPS data to estimate the median earnings of full-time and part-time faculty, as well as their receipt of work-provided retirement and health benefits. Our analysis of median earnings used ASEC data on the self-reported amount earned from a worker’s employer before deductions. In examining benefits, we used the term “work-provided” rather than “employer-sponsored” because the ASEC survey questions ask about benefits offered by a worker’s employer or union. For our analysis of access to work-provided retirement plans, we counted a worker as having a work-provided retirement plan if they responded “yes” to both of the following questions from the ASEC: (1) “Other than Social Security, did the employer or union that [worker] worked for [last year] have a pension or other type of retirement plan for any of the employees?” and (2) “Was [worker] included in that plan?” We also estimated the percentages of full-time and part-time faculty who were covered by any private health insurance plan; were covered by private health insurance in their own name; or had a work-provided health insurance plan. Those individuals without insurance could have received insurance coverage through a family member or other means.

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SDR Analyses of Compensation and Employment Experiences

To compare—at the national level—the compensation and employment experiences of contingent faculty and tenure-track faculty, we used 2013 SDR data to identify different faculty types and examined the extent to which there were differences in earnings, benefits, and job satisfaction. SDR data only include doctorate holders in STEM, health, and social sciences fields, and thus our estimates cannot be generalized to non-doctorate holders or to fields outside of STEM, health, and social



sciences fields. For that reason, we did not present faculty population size estimates using SDR data.<sup>23</sup>

We created our analysis population of instructional faculty based on responses to questions regarding work activities and institution type. Using these variables, we classified as instructional faculty any respondents who said that their “primary or secondary work activity is teaching,” and whose institution type was a 2-year college; 4-year college or university; medical school; or university-affiliated research institute.<sup>24</sup> This resulted in an analysis population of 7,232 instructional faculty respondents; however, our analyses are weighted analyses that generalize to the population.

Within our analysis population, we identified faculty types based on tenure status (i.e., tenured/on the tenure track or not on the tenure track) and whether respondents said they worked 36 hours or more per week or less than that (i.e., full-time versus part-time).<sup>25</sup> We categorized graduate assistants separately, though we chose not to present estimated percentages for graduate assistants.<sup>26</sup> Given that SDR is a survey of doctorate holders, it may be that graduate assistants in the SDR data are—for example—working toward another doctoral degree or have remained at their degree-granting institution in a postdoctoral position. In either case, we believe the working arrangements and economic circumstances of these individuals may be unique from those of most other graduate assistants.<sup>27</sup> Without more detailed information, the data

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<sup>23</sup> Our analyses of other data sources suggest that population and utilization vary by discipline and many contingent faculty in public institutions in North Dakota and Ohio do not have doctorates.

<sup>24</sup> To identify instructional responsibilities, we also examined two variables: (1) ACTTCH indicates whether the respondent reported that teaching is their primary or secondary work activity, and (2) WATEA includes respondents who said that teaching makes up 10 percent or more of their work activity. We opted to use ACTTCH instead of WATEA because it is more consistent with the definition of instructional faculty in our analysis of IPEDS data.

<sup>25</sup> The publicly available variable for hours worked per week has four categories, including 36-40 hours and greater than 40.

<sup>26</sup> We created a flag for graduate assistants using the teaching/reaching/other assistant position variable and excluding respondents who also said that they were tenured, on the tenure track, or held an administrator position.

do not allow us to determine the exact nature of graduate assistant positions in the SDR data or explain how they compare to other types of positions. We also chose not to present estimated percentages for part-time tenure-track faculty given that they represented a small proportion of our analysis population.

To analyze the economic circumstances of contingent faculty, we used SDR data to calculate median annual earnings by faculty type, as well as data on the availability of work-provided benefits. We calculated median earnings using data on basic annual salary from the respondent's principal job. We analyzed data on the following types of benefits: health insurance, pension or retirement plans, profit-sharing plans, and paid vacation/sick/personal days.<sup>28</sup> Respondents were asked whether each type of benefit was available to them regardless of whether they chose to take the benefits.

To analyze the employment experiences of contingent faculty, we used SDR data on job satisfaction, reasons for working part-time, and attendance of professional meetings. To examine job satisfaction, we used data on satisfaction with overall employment, job security, opportunities for advancement, salary, and benefits, from which we estimated the percentage of faculty who were satisfied, somewhat dissatisfied, or very dissatisfied by faculty type.

Our analysis of part-time work first included whether a respondent who reported working part-time said they wanted to work full-time.<sup>29</sup> Secondly, among those who wanted—and who did not want—to work full-time, we calculated the percentage who said they worked part-time (1) for family reasons, (2) because a full-time job was not available, (3) because they did not need/want full-time work, and (4) because they were a student, had an illness, or held another job. Respondents could indicate more than one reason for working part-time. We also analyzed a variable on

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<sup>27</sup> For example, we estimated that the median annual earnings for graduate assistants in the SDR data, \$63,641 (+/- 11.0 percent), are nearly as much as for full-time contingent faculty, \$64,544 (+/- 1.7 percent). These results differ from our analyses of state data, in which estimated earnings for graduate assistants were much lower.

<sup>28</sup> The survey questions did not address the level of benefits or number of days of paid leave, for example.

<sup>29</sup> We classified as part-time those individuals who reported working 35 hours per week or fewer, in part, based on the four categories in the publicly available data (e.g., 21–35 hours per week).

attendance of professional meetings to calculate the percentage of faculty, by faculty type, who reported attending professional association meetings or conferences during the past 12 months.

The SDR data included other variables that identify a respondent’s academic position, such as research faculty, administrators, adjuncts, and others. We analyzed these variables to determine whether to use them to categorize faculty, but found that they were not the most appropriate for our purposes. However, we observed that these variables may have implications on the economic circumstances of different types of faculty and so used them as control variables in two of our regression models on annual earnings.<sup>30</sup> For example, we analyzed earnings of instructional faculty who said they were “adjunct” faculty or administrators.<sup>31</sup> Among full-time and part-time contingent faculty, estimated median annual earnings decreased when we included only faculty who said that they were adjunct faculty (see table 13).<sup>32</sup> However, the data do not allow us to explain how or whether the positions for faculty who identified as adjuncts are different compared to the positions of those who did not identify as adjuncts, and, based on our team’s interviews with administrators, different institutions and individuals apply different meanings to the term “adjunct.” As may be expected, among full-time tenure-track and full-time contingent faculty, estimated median annual earnings increased when we limited the population to only those faculty who said they were administrators (see table 13).

**Table 13: Estimated Median Annual Earnings in STEM, Health, and Social Sciences Fields by Faculty Type, 2013**

	Full-time tenure-track	Full-time contingent	Part-time contingent
All faculty	\$84,446 (+/- 0.8 percent)	\$64,544 (+/- 1.7 percent)	\$20,586 (+/- 22.4 percent)
Adjunct faculty	N/A	\$44,852 (+/- 20.4 percent)	\$14,617 (+/- 4.9 percent)
Administrator faculty	\$89,923 (+/- 4.2 percent)	\$77,532 (+/- 13.2 percent)	—

Source: GAO analysis of 2013 SDR data. Responses refer to employment in February 2013. | GAO-18-49

<sup>30</sup> For more information, see discussion of SDR regressions later in this appendix.

<sup>31</sup> We created a flag for adjunct faculty using the adjunct position variable and excluding respondents who also said that they were tenured, on the tenure track, or held an administrator position.

<sup>32</sup> We observed similar differences with respect to benefits, with smaller estimated proportions of adjunct faculty reporting that they have benefits, compared to their respective contingent faculty group overall (e.g., full-time contingent adjunct faculty compared to full-time contingent faculty overall).

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Notes: Relative margins of error at the 95 percent confidence level are shown in parentheses. N/A indicates not applicable based on our coding of the adjunct faculty variable, which excludes tenure-track faculty. Dashes indicate a suppressed estimate due to a low number of observations.

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## State Data Analyses of Makeup and Utilization

We used consistent methods to analyze data from Georgia, North Dakota, and Ohio on faculty workforce makeup and utilization, though we analyzed the data from each state separately. In addition, while each state dataset was structured slightly differently, used different variable names, and contained some unique elements or ways of capturing information about faculty or courses, we restructured and compiled the information to provide consistency across the states.

In the state data, we identified instructional faculty as any individual who taught a course during the given academic year. This definition includes a variety of staff (e.g., deans, administrators, coaches, research faculty, and postdocs) who fill about 2-10 percent of positions, depending on institution type and state. In addition, instructional graduate assistants—who are listed in the state data as instructors of record—fill about 8 to 15 percent of positions at 4-year institutions in the three states.

Each state's data were ultimately structured as a set of unique faculty-institution pair observations—where faculty were listed once, by their employing institution.<sup>33</sup> Each faculty-institution pair observation had variables describing the faculty member's and institution's characteristics, as well as counts of courses, students, and student credit hours taught by the faculty member at that institution (including by academic term and by course characteristics).

## Faculty Data Compilation and Restructuring

For all three state datasets, we coded and grouped certain faculty characteristics variables, including academic rank, age group, race/ethnicity, sex, and tenure status, to ensure consistency across states.<sup>34</sup> For example, in coding tenure status, we consistently

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<sup>33</sup> Faculty members could be listed in the dataset more than once if they taught at multiple institutions.

<sup>34</sup> Due to the relatively small representation of racial and ethnic minority groups in the state data, we combined Black/African American and Latino/Hispanic faculty in one group, and "other" may include American Indian, Native Hawaiian, Pacific Islander, multi-racial, no race identified, or unknown, depending on the state. Some faculty in the Georgia data did not have information on tenure status. For these observations, we used job categories provided in the data to assign a tenure status. We coded full professors as tenure-track and other categories, such as part-time, temporary, and visiting faculty as non-tenure-track.

categorized faculty as “non-tenure-track” if they were identified in the source data as not in a tenure-track position, as having been denied tenure, as being in some other status, or as being in a position for which tenure was not applicable. Some faculty characteristics variables were structured differently in each of the three states and thus required unique methods of recoding, though we applied consistent approaches and logic in each case (see table 14).

**Table 14: Recoding of Selected Data Elements in the Georgia, North Dakota, and Ohio Datasets**

Data Element and Purpose	Georgia	North Dakota	Ohio
<p>Work status To identify graduate assistants, part-time, and full-time faculty</p>	<p>We identified graduate assistants by a job category code. We identified part-time faculty using three variables, beginning with the most precise/detailed: by a job category code indicating an individual as “part-time” or “adjunct”, then by a pay group code indicating an individual as “part-time”, then by a code indicating an individual as not full-time. We identified full-time faculty by the code indicating that status.</p>	<p>We identified graduate assistants by a job family code. We identified faculty as part-time if they were in a job family called “part-time instructional” or if their standard work schedule was less than 35 hours per week. We identified any remaining faculty as full-time if their standard work schedule was greater than or equal to 35 hours per week.</p>	<p>We identified faculty as graduate assistants, part-time, or full-time by an appointment code variable that indicated an individual’s work status.</p>
<p>Earnings To identify annual earnings of faculty</p>	<p>Because earnings information was provided as earnings year-to-date (covering Jan.-Nov., inclusive), we inflated these earnings values by additional pay period amounts to produce an earnings value for the entire calendar year.<sup>a</sup></p>	<p>Data included total earnings over the course of the academic year and broken out by term (fall, spring, summer).</p>	<p>Data included unrestricted and restricted amounts paid during the fiscal year to an individual by institution and funding unit. We aggregated these amounts paid to identify total earnings an individual received from a single institution during the fiscal year (i.e., combined unrestricted and restricted amounts and combined amounts if multiple funding units within a single institution paid the individual).</p>
<p>Benefits To identify faculty receipt of various benefits provided by institution (e.g., retirement plan, health or life insurance, etc.)</p>	<p>Benefits information was provided as the plan an individual was enrolled in, so we coded individuals as having a given benefit if they had a plan listed, as opposed to a “no” or blank data indicated.</p>	<p>Benefits information was provided as the value of benefits an individual received by type (health, life, retirement), so we coded individuals as having a given benefit if they had a value listed in any term of the academic year.</p>	<p>Unique structure – data only include the monetary value of all benefits provided to an individual and are not a meaningful measure of whether an individual received various types of benefits.</p>

**Appendix I: Objectives, Scope, and Methodology**

<b>Data Element and Purpose</b>	<b>Georgia</b>	<b>North Dakota</b>	<b>Ohio</b>
<p>Job category To identify faculty by job category (e.g., teaching faculty, graduate assistants, administration or management, etc.)</p>	<p>We categorized faculty according to a job category code included in the dataset.</p> <p>Codes indicated various types of graduate assistants, postdocs, coaches, and administration/management personnel.</p> <p>We identified “primarily teaching” faculty according to traditional faculty titles (e.g., professor and lecturer) and where the code did not indicate that the individual was “research faculty.”</p> <p>We categorized all others as “research/other” faculty.</p>	<p>We categorized faculty according to a job family code included in the dataset.</p> <p>Codes indicated various types of graduate assistants, postdocs, coaches, and administration/management personnel.</p> <p>We identified “primarily teaching” faculty according to traditional faculty titles (e.g., professor and lecturer) and where the code did not indicate that the individual was “research faculty.”</p> <p>We categorized all others as “research/other” faculty.</p>	<p>We categorized faculty according to a work category code included in the dataset.</p> <p>Codes indicated various types of graduate assistants.</p> <p>We identified administration/management personnel with a code that indicated “management occupations.”</p> <p>We identified “primarily teaching” faculty according to codes that indicated they were “primarily instruction” or “instruction combined with research and/or public service” or “other teaching and instructional support.”</p> <p>We categorized all others as “research/other” faculty.</p>
<p>Highest degree To identify the highest educational degree held by faculty</p>	<p>Unique structure – data only include whether an individual’s educational degree is terminal or not</p>	<p>The data include a variable with the highest education level attained by the individual.</p> <p>We identified an individual’s highest educational degree as a doctorate if they were listed as having a doctorate or post-doctorate and we included additional individuals as having a graduate degree if they were listed as having a professional or master’s degree.</p>	<p>The data include a variable with the highest degree attained by the individual.</p> <p>We identified an individual’s highest educational degree as a doctorate if they were listed as having a doctorate and we included additional individuals as having a graduate degree if they were listed as having a professional or master’s degree.</p>

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

<sup>3</sup>Georgia’s data also included information about earnings in the prior pay period. If an individual had positive earnings in the prior pay period, we assumed they would have similar earnings through the one remaining month of the calendar year. Thus, we increased their earning year-to-date amount by a multiple of their prior pay period amount, depending on whether they were paid monthly or biweekly. The result approximated their total annual earnings for the calendar year. If an individual had no positive earnings in the prior pay period, we did not increase their earnings year-to-date amount because we assumed they were not currently employed and would not be so during the one remaining month of the calendar year.

We also identified each individual’s academic discipline based on information provided in each state’s data about their department. Faculty members’ departments in the Georgia and Ohio data are identified by

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their standardized Classification of Instructional Programs (CIP) code.<sup>35</sup> The North Dakota data did not include the CIP code for faculty members' departments and department names in the North Dakota data were not consistent across institutions. Thus, we coded North Dakota departments by matching them manually to corresponding CIP codes.

After manually assigning CIP codes to faculty in the North Dakota data, we identified the highest level 2-digit CIP code for each faculty member in all three state datasets.<sup>36</sup> However, because the 2-digit CIP code identifies over 40 fields of study, we grouped these by academic discipline for our analyses. To group departments, we used a crosswalk provided by Ohio that listed CIP codes according to 12 possible disciplines they were most closely associated with.<sup>37</sup> Although the Department of Education's CIP coding system does not include a commonly accepted list of disciplines, we determined that Ohio's convention was reasonable and we applied the coding consistently across all three states to identify the academic discipline of each individual.

The North Dakota data included multiple observations for some faculty members within a single institution and term. This occurred for a variety of reasons, such as a faculty member holding two positions at the same institution (e.g., both a coach and an instructor, or half time as an

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<sup>35</sup> The Department of Education's National Center for Education Statistics catalogs a Classification of Instructional Programs (CIP) that, according to NCES, "provides a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program[s]." These CIP codes catalog academic programs at various levels of detail (from 2-digit specificity to 6-digit specificity). For example, the 2-digit code for "social sciences" is 45, and within that, there are 14 4-digit codes, such as "political science and government" (45.10), within which are additional 6-digit codes, such as "political economy" (45.1004).

<sup>36</sup> Some faculty in the Georgia data had a department name listed, but were missing CIP codes or had CIP codes that indicated their department was unknown. These department names were also listed for other faculty for whom the CIP code was not missing. Thus, we identified the most prevalent 2-digit CIP code for each department name, provided at least 25 percent of the observations with that department name had the same CIP code, and we assigned that CIP code where an individual was missing that information. For the many faculty in the Ohio data who had an unknown department (i.e., CIP code), we assigned a department based on the most prevalent course subject they taught, provided at least 25 percent of their courses taught observations were in that same subject (course subjects were also identified by CIP codes).

<sup>37</sup> For example, the CIP code for "biological and biomedical sciences" was identified as being in the "natural science & mathematics" discipline.

instructional graduate assistant and half time as a research graduate assistant). To compile a consistently structured dataset of unique faculty-institution pair observations, we implemented the following sequential process to select and eliminate duplicate faculty observations. We confirmed with North Dakota officials that our approach and methods were appropriate.

- For faculty with multiple observations, we dropped any observations where (1) no earnings were listed in any term or earnings were only listed for the summer term but the faculty member taught no courses at the given institution in the summer; or (2) the work responsibilities associated with the faculty observation were not directly related to teaching (e.g., graduate assistant research or grading, management, administration, research, or coaching) and a different observation for that faculty member at the same institution had teaching duties listed. We dropped these duplicate observations because there was a more appropriate observation to be used for the given faculty member at the given institution with earnings information and an associated instructional position.
- For the remaining faculty with multiple observations, we sequentially kept one observation as the primary faculty position based on hierarchical logic we developed. For example, we dropped any additional observations with an employee status other than “active” or a position identified as “temporary.” As appropriate, we either aggregated hours worked and earnings across the multiple observations before dropping the duplicate observations or we took the hours worked and earnings values from the observation identified as primary.

### Course Data Compilation and Restructuring

Course data from all three states included each unique course section taught over the academic year by institution, term, and faculty instructor. We analyzed course sections for which there was an instructor identified and enough information about that faculty member to categorize them by faculty type (e.g., full-time tenure-track versus part-time contingent,



etc.).<sup>38</sup> For all three states, we aggregated these data by course type and other information to the level of the unique faculty-institution pair. For example, a single faculty member at a single institution may have taught 10 course sections, all at the undergraduate level and spread across the year—4 in fall term, 4 in spring term, and 2 in summer term. Courses are listed in the state data at both the course number level (e.g., Biology 101) and the course section level (e.g., Biology 101, Sections A, B, and C). Our analyses generally examined unique course sections by faculty member (e.g., two separate sections of Biology 101 are considered as two courses), as that is a more accurate depiction of faculty workload. Thus, for consistency and clarity throughout our report, we use the term “courses” to refer to our analyses of course sections. In a few special circumstances, we counted courses at the course number level instead of the course section level to minimize potential bias in our work (see additional information below).

The course data included information about courses that we systematically coded and grouped to ensure consistency across the three states. For example, each state identified the academic level of each course. The Georgia and North Dakota data identified courses along a spectrum—generally developmental, freshman, sophomore, junior, senior, or graduate.<sup>39</sup> The Ohio data had a different classification series:

- Developmental: All courses which are below college level

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<sup>38</sup> We identified 136,427 unique course sections in Georgia, 28,570 in North Dakota, and 155,094 in Ohio, after accounting for course sections that were cross-listed, lab sections that may have been inconsistently listed, and course sections that were listed multiple times due to multiple faculty sharing responsibility for the course section (for more information about these, see details later in this section). Of the universe of unique course sections in each state, a certain number of course section observations were missing necessary data and thus were excluded from our analyses: 5.8 percent of course sections in Georgia, 12.2 percent in North Dakota, and about 0 percent in Ohio (19 course sections). For example, a course section may not have had an instructor identified or we may not have had sufficient information about the instructor who was listed to categorize her by faculty type (e.g., the instructor’s tenure status and full-time or part-time work status were both missing). Some of these course sections that were excluded due to missing information would not have ultimately been within our primary scope of analysis (e.g., atypical courses, such as independent studies, internships, thesis research, among others; for more information about these, see details later in this section).

<sup>39</sup> In the Georgia data, courses below the freshman level were identified as “learning support” and in the North Dakota data, a yes/no variable indicated whether a course was “developmental.”

- General Studies: All courses which are general, introductory, or core courses
- Technical: Only those courses which are part of an associate degree program of technical education and are within the technical portion of a curriculum
- Baccalaureate: All courses which are specialized within a discipline for the baccalaureate degree
- Master's / Doctoral / Professional – All graduate courses of various types

To categorize undergraduate course levels consistently across the states, we identified courses as (1) undergraduate lower if they were at the freshman, sophomore, general, or technical levels; or (2) undergraduate upper if they were at the junior, senior, or baccalaureate levels. Developmental and graduate courses were identified consistently in each state's data.

We made a number of decisions about how to categorize and count courses consistently across institutions and states. For example, we dropped cancelled courses or courses with no student enrollment. We also excluded from our primary analyses courses that would likely be student-led or student-initiated and thus could be considered atypical courses. We excluded these courses to minimize the potential bias of inflating the percentage of courses taught and deflating the earnings per course of one faculty type relative to another. After reviewing course types and titles, as well as associated student enrollment numbers and credit hours, we identified courses that met this definition and categorized them as atypical. Among the courses we identified as student-led or student-initiated were:

- Art or musical exhibitions, performances, or recitals
- Continuing enrollment
- Independent studies
- Independent, supervised, dissertation, or thesis research
- Internships, fieldwork, practicums, cooperative experiences
- Transfer credits
- Tutorials
- Tutoring
- Varsity athletics

These atypical courses made up close to a quarter of all courses across 4-year institutions in the three states and less than 10 percent of courses at 2-year institutions. As expected, and due to many being independent or single-student enrollment courses, they generally represented much smaller proportions of student credit hours across all institutions. Across 4-year public institutions in all 3 states, tenure-track faculty taught close to 75 percent or more of these courses.

We also accounted for cross-listed courses and multiple lab sections to more accurately capture faculty workloads. Some courses in the Georgia and North Dakota data were cross-listed in multiple departments with different course acronyms for each department. For example, the course “Intro Robotics Research” taught by a single faculty member at one institution was listed three times under different department acronyms, with several students enrolled under each listing. Course sections listed multiple times due to being cross-listed would artificially inflate counts of courses taught, as these cross-listings actually represent only one course section. To avoid inappropriately counting them as separate courses, we counted cross-listed courses by using their course numbers (and also their course name in North Dakota) without the course acronyms attached. Thus, when we aggregated counts of courses by faculty-institution pair, term, and course type, these cross-listed courses were counted as one course and numbers of students and student credit hours were aggregated in association with the course. Due to inconsistencies in how lab sections were organized in the data, we aggregated labs by their course number (within a faculty-institution pair and term). For example, some lab sections were listed as 4-credit courses that appeared to have the lecture and lab components combined in a single listing, while others had a 3-credit lecture course listed and multiple sections of a 1-credit lab. To be as consistent across states as possible and to minimize the potential bias of inflating the percentage of courses taught and deflating the earnings per course of one faculty type relative to another, we combined lab sections into a single course count. To do so, we identified the lab sections within a particular course number, instructor, institution, and term and then flagged the first lab section for counting. Thus, similar to the cross-listed courses, when we aggregated counts of courses by faculty-institution pair, term, and course type, these lab sections were counted as one course and enrollment numbers aggregated in association with the course.

For outlier faculty who taught especially large numbers of course sections, we counted their courses taught at the course number level (e.g., Biology 101) instead of the course section level (e.g., section 1 of

Biology 101). After compiling the data and producing preliminary counts of course sections taught, some faculty in all three states emerged as outliers—teaching large numbers of course sections in a given term, in some cases, more than 50, for example. Though the data do not provide exact reasons for the large numbers of course sections taught, these outliers may have a number of possible explanations that could vary by state and institution.<sup>40</sup> Among other effects, these outlier observations could artificially inflate the percentage of courses taught and deflate the earnings per course of one faculty type relative to another. To mitigate these effects, we counted courses taught for these outlier faculty at the course number level—where they are clearly distinct—instead of the course section level—where it is less clear why there are multiple sections. For example, Biology 101 is clearly a different course than Biology 201 or Chemistry 101 (regardless of section number), whereas section A of Biology 101 could actually be combined with section B and they are just listed separately for other reasons. We did not set a maximum number of courses that an individual could teach (i.e., individual faculty could still be listed as teaching large numbers of courses if they were associated with large counts at the course number level). We counted course numbers for outlier faculty because their large numbers of course sections listed suggested the possibility of a data anomaly; for all others (non-outlier faculty), we counted course sections. We set our outlier threshold as 15 course sections taught over the academic year based on an examination of the range of course sections taught by faculty in the three states' data and conversations with administrators during our site visits. According to preliminary counts of course sections taught after excluding atypical courses, more than 95 percent of faculty in each state taught 15 course sections or fewer over the entire academic year.<sup>41</sup> In addition, during our site visits, the largest number of course sections taught per term that administrators identified was 6, which could reasonably result in 15 course sections over the year (6 in fall term, 6 in spring term, and 3 in summer term—half the amount due to the condensed format).

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<sup>40</sup> For example, potentially multiple sections are listed for what is actually a single large lecture course due to separate discussion groups led by teaching assistants, or potentially multiple sections of a course are all listed under a department chairperson even though they are taught by different faculty.

<sup>41</sup> These counts and percentages do not incorporate the outlier process and thus are not comparable to final results presented in the report.

Analysis of Faculty Makeup and Utilization

To analyze faculty makeup and utilization by institution, we merged information about institutional characteristics from IPEDS onto our state datasets. We analyzed faculty makeup, including counts and percentages of faculty positions by type of position and faculty characteristics (e.g., age, education, and academic discipline), by the following faculty categories (based, in part, on faculty tenure and work statuses):

- Administrators/management
- Full-time tenure-track
- Part-time tenure-track
- Full-time contingent
- Part-time contingent
- Instructional graduate assistants

We sometimes analyzed full-time and part-time contingent faculty and instructional graduate assistants combined as “contingent faculty” and full-time and part-time tenure-track combined as “tenure-track faculty.” Unlike our analyses of IPEDS data, we included instructional graduate assistants in our combined contingent faculty group because they were listed as teachers of record for courses in the state data. We analyzed administrators/management as a separate group because these individuals represent a non-traditional class of faculty. For example, administrators may not have tenure-track status due to their management roles, but are in positions that may not be appropriate to be considered “contingent” (e.g., a dean might not be a tenure-track faculty member, but neither are they a contingent faculty member). We analyzed educational attainment of faculty by calculating the percentage of faculty with graduate or doctoral degrees by faculty type and institution type in in North Dakota and Ohio. Table 15 shows the total number of instructional faculty positions by institution type in each state, as well as selected faculty demographics.

**Table 15: Instructional Faculty Positions and Selected Demographics of Instructional Faculty at Public Institutions in Georgia, North Dakota, and Ohio**

	Georgia	North Dakota	Ohio
<b>Total instructional positions</b>	<b>19,901</b>	<b>3,608</b>	<b>34,461</b>
<b>Instructional positions at 4-year institutions</b>	<b>19,901</b>	<b>3,060</b>	<b>26,385</b>
Administrators/management	838	22	1,012
Full-time tenure-track	8,102	1,339	8,540

**Appendix I: Objectives, Scope, and Methodology**

	<b>Georgia</b>	<b>North Dakota</b>	<b>Ohio</b>
Part-time tenure-track	106	32	256
Full-time contingent	4,461	558	4,286
Part-time contingent	4,706	879	8,282
Instructional graduate assistants	1,688	230	4,009
<b>Instructional positions at 2-year institutions</b>	<b>N/A</b>	<b>548</b>	<b>8,076</b>
Administrators/management	N/A	1	148
Full-time tenure-track	N/A	146	1,134
Part-time tenure-track	N/A	8	46
Full-time contingent	N/A	73	1,170
Part-time contingent	N/A	320	5,578
<b>Instructional faculty demographics</b>			
<b>Sex</b>			
Men	10,361	1,867	17,037
Women	9,539	1,739	17,424
Not indicated	1	2	0
<b>Race/Ethnicity<sup>a</sup></b>			
Asian	1,895	253	1,656
Black/African American or Hispanic/Latino	2,791	97	2,561
Other	726	144	3,448
White (non-Hispanic)	14,489	3,114	26,796
<b>Age</b>			
Under 30	1,584	304	4,260
30-39	4,715	910	7,233
40-49	5,110	930	7,746
50-59	4,461	789	8,036
60-69	3,382	576	6,069
70 and over	649	99	1,117

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Note: The timeframes of the state data we analyze are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. Georgia's data did not include 2-year institutions.

<sup>a</sup>Due to the relatively small representation of racial and ethnic minority groups in the state data, we combined Black/African American and Latino/Hispanic faculty in one group, and "other" may include American Indian, Native Hawaiian, Pacific Islander, multi-racial, no race identified, or unknown, depending on the state.

We analyzed faculty utilization by aggregating counts of courses, students, and student credit hours taught by each faculty category above,

and by term and type of course, and by calculating percentages taught out of the entire population and certain subgroups. As a first step in this process, we aggregated counts of courses, students, and student credit hours for each faculty-institution pair by term and type of course. As a result, each faculty-institution pair had count variables that listed, for example, how many courses and students they taught in fall term at the undergraduate upper level. The Georgia and Ohio data listed courses multiple times if multiple faculty share the instructional responsibility. To ensure course sections were not double-counted, we counted them in fractional terms based on how many instructors were listed; for example, if a course section was listed twice—with two faculty members having equal responsibility for the course—we counted each faculty member as teaching half of that course. We also used this fractional count to pro-rate or assign responsibility for students and student credit hours.<sup>42</sup> We calculated this fractional count slightly differently for the Georgia and the Ohio data:

- Georgia: The Georgia data provided a teaching responsibility percentage for each faculty member associated with a course section. For example, a course section that was listed 3 times (for 3 different faculty with responsibility) might be split evenly  $1/3$ - $1/3$ - $1/3$  or might be split as 50-30-20 percent responsibility to each of the three faculty members. Thus, we used this individually provided fractional value.
- Ohio: The Ohio data did not provide a teaching responsibility percentage for each faculty member associated with a course section. Thus, we assigned equal responsibility (as the simplest assumption) to all staff listed for a course.

After aggregating counts to the faculty-institution pair level, we further aggregated counts to the faculty category and institution type level. Our analyses focused on counts and percentages of courses and student

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<sup>42</sup> For counts at the course number level, as opposed to the course section level, we used a slightly different process to ensure that when course counts are aggregated, each faculty member would have a count of one for each of the unique courses at the course number level that they taught.

credit hours by these faculty categories.<sup>43</sup> Table 16 shows the total number of courses taught by institution and faculty types in each state.

**Table 16: Courses Taught by Faculty Type at Public Institutions in Georgia, North Dakota, and Ohio**

Courses taught by faculty type	Georgia	North Dakota	Ohio
<b>Courses taught at 4-year institutions</b>	<b>97,960</b>	<b>15,654</b>	<b>83,425</b>
Administrators /management	2,334	80	2,204
Full-time tenure-track	51,803	8,480	35,715
Part-time tenure-track	183	99	707
Full-time contingent	26,641	3,668	18,591
Part-time contingent	13,260	2,707	20,343
Instructional graduate assistants	3,739	620	5,865
<b>Courses taught at 2-year institutions</b>	<b>N/A</b>	<b>3,171</b>	<b>33,105</b>
Administrators /management	N/A	1	396
Full-time tenure-track	N/A	1,420	8,672
Part-time tenure-track	N/A	41	176
Full-time contingent	N/A	487	7,483
Part-time contingent	N/A	1,222	16,378

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: The timeframes of the state data we analyzed are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. We counted unique course sections (e.g., 2 separate sections of Biology 101 are counted as 2 courses) and only included those for which there was a faculty member of record listed. We made a number of decisions about how to count courses consistently across institutions and states. For example, we excluded independent studies, internships, thesis research, and dissertation guidance, among others. Georgia's data did not include 2-year institutions.

We also analyzed economic circumstances by examining median annual earnings and receipt of work-provided retirement, health insurance, and life insurance benefits by faculty type. We calculated an annual earnings amount for each faculty member and then analyzed median earnings by

<sup>43</sup> Our analyses produced counts at the course number level, the course section level, and at the course section level corrected for outlier faculty. Throughout our report, we generally focus on the outlier-corrected course section level analyses. We also generally do not focus on counts and percentages of students taught for simplicity of interpreting results—focusing on courses and student credit hours provides sufficient alternatives for considering utilization.



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faculty type.<sup>44</sup> For benefits, we identified whether individual faculty received a given benefit during the year, and then calculated the percentage of each faculty type receiving those benefits. We were unable to analyze benefits in this way for faculty in Ohio. See table 14 above for additional details about our earnings and benefits calculations by state.

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## HDS Analyses of Faculty Makeup

To estimate population percentages by faculty type and discipline in humanities departments at 4-year institutions, we used HDS data that were published in a technical report sponsored by AAAS.<sup>45</sup> Our population of instructional faculty included faculty in humanities departments at 4-year institutions.<sup>46</sup> The sample was stratified by discipline and degree level of courses taught (i.e., bachelor's, master's, and doctoral degree courses). We were unable to access the data with the sample design information (i.e. sampling weights and stratification identifiers) necessary to calculate margins of errors that took into account the sample design features. To allow us to estimate margins of error for the estimates presented in the report, AAAS provided information on the number of respondents associated with each response category since the survey had unit and item nonresponse.<sup>47</sup> We incorporated this information into a simple random sampling formula, which we adjusted for the design effect due to unequal weighting that resulted from stratification within

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<sup>44</sup> The earnings data for Georgia covered calendar year 2015 or 2016 and the earnings data for North Dakota and Ohio covered academic years 2015-16 and 2014-15, respectively.

<sup>45</sup> Susan White, Raymond Chu, and Roman Czujko, *The 2012-13 Survey of Humanities Departments at Four-Year Institutions: Full Technical Report* (College Park, MD: Statistical Research Center, American Institute of Physics, 2014; sponsored by the American Academy of Arts & Sciences).

<sup>46</sup> Our analysis population included both departments and programs that award degrees in humanities disciplines; not every degree-granting unit is a department. Results from this survey would not necessarily generalize to departments established after 2007-08 in some fields, including art history, English, language and literatures other than English, history, history of science, linguistics, MLA combined, and religion, because departments established in those fields after 2007-08 were not included in the frame from which the 2012-13 sample of departments was selected.

<sup>47</sup> We received this information from officials at the American Institute of Physics, which is the organization AAAS contracted to administer the survey and analyze the results.

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departments (e.g., differences in the extent to which departments may offer bachelor's, master's, and doctoral degree courses).<sup>48</sup>

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## Section 3: Pay per Course Regression Analysis (State Data)

This section discusses the regression analysis methods we used to analyze and compare pay-per-course rates across different types of faculty at public institutions in North Dakota and Ohio. We used data from the three states to conduct multivariate regression analyses that examined rates of compensation across faculty types. Data from North Dakota and Ohio allowed us to link faculty members' pay over the course of an academic year with the number of courses they taught to calculate pay-per-course rates that are comparable across faculty types. Data from Georgia did not allow us to do this because the earnings data from Georgia is for a calendar year that did not align with the course data for the academic year. However, we used Georgia's data to develop assumptions about faculty work activities (see below for more details). The state data we used to analyze pay-per-course rates covered courses taught and earnings from fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio.

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## Analysis Population

The faculty populations included in our regression analyses of the North Dakota and Ohio data begin with the same population of instructional faculty analyzed elsewhere in our work—any individual who teaches a course at a 4-year or 2-year public institution in the state. However, due to some faculty observations missing information for independent variables, as well as the specifications of some of our models that focused on subgroups within the data, the number of faculty observations in our regression analyses differed slightly from those in our other analyses. In assessing the association between faculty type (e.g., contingent faculty) and pay per course, we focused on three primary populations: (1) all faculty; (2) primarily teaching faculty; and (3) primarily teaching faculty at 4-year institutions. The primarily teaching faculty group excludes faculty who primarily hold other roles unrelated to instruction (e.g., administrators and research faculty). We also examined a

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<sup>48</sup> Population and sample sizes for the sampling strata are available in the AAAS documentation for 2007-2008 and 2012-2013 reports. The same set of departments that were sampled in 2007-2008 were invited to participate in 2012-13, plus an additional sample from departments in communications, folklore, musicology, classical studies, and philosophy.

population limited to 4-year institutions because their pay and faculty utilization structures may differ substantively from 2-year institutions.

- North Dakota: Compared to the 3,608 faculty observations with complete faculty and course identification data across North Dakota public institutions that we analyze for workforce makeup and utilization, the number of observations included in our regression analysis population is reduced to 3,486 due to our dropping of cases where total earnings was less than one dollar or missing, or where the number of in-scope courses taught was zero (more information below under discussion of dependent variables).<sup>49</sup> After introducing the full range of independent variables in our complete model with all faculty at all institutions, our population is reduced to 3,485 due to one faculty member being omitted due to missing data. When we limit the population to primarily teaching faculty at all institutions, there are 3,404 observations, and when we only include 4-year institutions, there are 2,876 observations.<sup>50</sup>
- Ohio: Compared to the 34,461 faculty observations with complete faculty and course identification data across Ohio public institutions that we analyze for workforce makeup and utilization, the number of observations included in our regression analysis population is reduced to 30,672 due to our dropping of cases where total earnings was less than one dollar or missing, or where the number of in-scope courses taught was zero (more information below under discussion of dependent variables).<sup>51</sup> After introducing the full range of independent variables in our complete model with all faculty at all institutions, our population is reduced to 30,656 due to 16 faculty members missing data for covariates. When we limit the population to primarily teaching faculty at all institutions, there are 28,811 observations, and when we only include 4-year institutions, there are 21,482 observations.<sup>52</sup>

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<sup>49</sup> Some faculty in the North Dakota data taught only courses that we identified as atypical, and thus they were not analyzed as in-scope in the regression analyses.

<sup>50</sup> The unadjusted model has 3,486 observations and differs from the complete model with all faculty due to some faculty having missing data about their demographics or other characteristics used as independent variables.

<sup>51</sup> Some faculty in the Ohio data taught only courses that we identified as atypical, and thus they were not analyzed as in-scope in the regression analyses.

<sup>52</sup> The unadjusted model has 30,672 observations and differs from the complete model with all faculty due to some faculty having missing data about their demographics or other characteristics used as independent variables.

## Approximating Instructional Pay from Georgia Data on Faculty Work Activities

As explained earlier in the report, we examined instructional pay per course as a way to isolate the earnings for comparable work across faculty types—for example, those who only teach (salaried or paid by the course) versus those who have other responsibilities beyond teaching. Institutions do not generally structure compensation by types of work activities, though some faculty have work responsibility expectations associated with their positions; for example, a full time tenure-track assistant professor may have work responsibility expectations of 60 percent instructional, 30 percent research, and 10 percent other service to the institution. If this faculty member earns \$80,000 per year and teaches 8 courses over the course of the year, her total pay per course, which ignores time spent on research and other activities, would be  $\$80,000/8 = \$10,000$  per course. However, prorating the earnings to those for instructional work activities only, the instructional pay per course would be  $(\$80,000 \times 0.6)/8 = \$6,000$ . We assessed each regression model based on the outcomes of total pay per course and instructional pay per course, where earnings were prorated for instructional time.

Because information about faculty work activity was unavailable in the North Dakota and Ohio data, but was available in the Georgia data, we used empirical data that we received on four of the Georgia 4-year public institutions to identify work activity percentages by faculty type.<sup>53</sup> We then assigned those percentages to similar faculty in North Dakota and Ohio. We identified the median instructional work activity percentages for the faculty in Georgia's 4-year public institutions within profiles based on a combination of faculty characteristics including faculty category (e.g., full-time tenure-track, full-time non-tenure-track, part-time non-tenure-track, etc.), job category (e.g. administration/management, teaching faculty, research/other faculty, etc.), and when applicable, rank (e.g. full professor, assistant professor, instructor/lecturer, etc.). We then applied the median instructional work activity percentage from the Georgia data by these profile groups to faculty at 4-year institutions in the North Dakota and Ohio data with the same profile. For faculty in the job categories of administrators/management staff, instructional graduate assistants, coaches, and postdocs, the median instructional work activity percentage in those groups overall was sufficiently explanatory. For the remaining two job category groups of instructional faculty and research/other faculty,

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<sup>53</sup> These four institutions broke out instructional, research, and other responsibilities in detail, while other 4-year institutions combined these various responsibilities under "instructional" responsibilities.

we used median work activity percentages by faculty category (e.g., full-time tenure-track) and rank (e.g., full professor). If a faculty member did not have a rank identified in the data, we used the median work activity percentage for the faculty category overall (see table 17). Because the data on work responsibilities pertained to public 4-year institutions in the Georgia data, we did not prorate faculty at 2-year institutions accordingly. Because 2-year institutions generally do not have a research mission, we coded all faculty at 2-year institutions as 100 percent instructional, except for administrators/management staff. We prorated administrators/management staff according to the same method as at 4-year institutions due to their likely having substantial non-teaching responsibilities.

**Table 17: Instructional Activity Percentage of Faculty Group Profiles Based on Georgia Data and Other Assumptions, and Number of Faculty in North Dakota and Ohio Analysis Populations in Each Profile Group**

Faculty profile group	Instructional activity percentage (i.e., prorate amount) based on Georgia data and other assumptions (see notes)	North Dakota faculty population in each group	Ohio faculty population in each group
<b>Total Faculty</b>		<b>3,486</b>	<b>30,672</b>
<b>Faculty at 2-year institutions</b>		<b>531</b>	<b>7,698</b>
Administrators/management <sup>a</sup>	5%	1	122
All other faculty at 2-year institutions <sup>b</sup>	100%	530	7,576
<b>Faculty at 4-year institutions</b>		<b>2,955</b>	<b>22,974</b>
Administrators/management	5%	20	531
Graduate assistants, postdocs, coaches <sup>c</sup>	100%	269	2,947
<b>Instructional and other faculty (with rank)</b>			
<b>Full-time tenure-track</b>			
Full professor	40%	378	2,872
Associate professor	50%	515	3,289
Assistant professor	60%	387	1,920
Instructor/lecturer	60%	15	38
<b>Full-time contingent</b>			
Full professor	20%	5	93
Associate professor	40%	41	225
Assistant professor	65%	146	658
Instructor/lecturer	100%	138	1,954
<b>Part-time tenure-track</b>			
Full professor	30%	11	97
Associate professor	40%	11	71
Assistant professor	100%	5	23

**Appendix I: Objectives, Scope, and Methodology**

<b>Faculty profile group</b>	<b>Instructional activity percentage (i.e., prorate amount) based on Georgia data and other assumptions (see notes)</b>	<b>North Dakota faculty population in each group</b>	<b>Ohio faculty population in each group</b>
Instructor/lecturer	100%	0	12
<b>Part-time contingent</b>			
Full professor	68%	5	63
Associate professor	100%	13	57
Assistant professor	100%	25	387
Instructor/lecturer	100%	122	3,832
<b>Instructional and other faculty (without rank)</b>			
Full-time tenure-track	51%	1	6
Full-time non-tenure-track	80%	160	724
Part-time tenure-track	30%	0	24
Part-time non-tenure-track	100%	688	3,151

Source: GAO analysis of data from Georgia, North Dakota, and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: The timeframes of the state data we analyze are fall 2015 through summer 2016 for Georgia and North Dakota, and summer 2014 through spring 2015 for Ohio. Because the Georgia data on work responsibilities pertained to public 4-year institutions, we based any earnings proration for faculty at 2-year institutions on our own set of assumptions.

<sup>a</sup>We prorated administrators/management staff according to the same method as for those at 4-year institutions due to their likely having substantial non-teaching responsibilities

<sup>b</sup>Because 2-year institutions generally do not have a research mission, we coded all non-administrator/management faculty at 2-year institutions as 100 percent instructional.

<sup>c</sup>Postdocs and coaches are only present in the North Dakota analysis population.

Faculty earnings in the North Dakota and Ohio data were multiplied by the relevant median instructional work activity percentage in order to adjust pay to reflect instructional work activity, resulting in an “instructional pay” amount. The majority of adjustments—prorating of earnings to account for non-instructional activities—were applied to faculty in the full-time tenure-track group, who were most likely to have other work responsibilities. Some adjustment to earnings also occurred in the full- and part-time contingent groups, as well as for faculty who had a job type that indicated substantial administrative and management roles. No prorating occurred for instructional graduate assistants.

**Dependent Variables**

We conducted regressions using the following dependent variables:

- a) Log (total pay per course) – In our analysis of the North Dakota and Ohio data, we used the natural logarithm of the total pay per course, which is defined as the total annual earnings (i.e., total pay) divided by the total courses taught within that year.

b) Log (instructional pay per course) – In our analysis of the North Dakota and Ohio data, we also used the natural logarithm of the instructional pay per course, which is defined as total annual earnings adjusted to reflect instructional work activity (i.e., instructional pay) divided by the total courses taught within that year.

We excluded cases from our analysis if they were missing values for either total annual earnings or total courses taught within that same year because these variables were the primary components of pay per course. We dropped cases where total earnings were less than one dollar or missing (19 observations in North Dakota and 2,869 observations in Ohio) or the number of courses taught was zero (103 observations in North Dakota and 920 observations in Ohio) since division by zero is undefined, and our population is intended to reflect any individual who actually teaches a course at 4-year and 2-year public institutions in the state.<sup>54</sup> We then divided pay (total or instructional) by the number of courses taught to obtain the pay-per-course value. We use the log of total and instructional pay per course for the dependent variables in a linear model reflecting both the assumption that the underlying distribution is closer to the log normal than normal, and also to present results in terms of percentage changes in pay per course.

In the Ohio data, because we use fractional counts for courses when multiple faculty are listed as having responsibility for the course, 3,453 faculty in the analysis population teach less than 1 course. For those faculty, we round all course counts that are less than 1 up to 1 to avoid dividing faculty earnings by a fractional course count (between 0 and 1), which would result in an inaccurate and substantially large pay-per-course value.<sup>55</sup>

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<sup>54</sup> Consistent with the methods used in our analyses of workforce makeup and utilization, the number of courses taught by faculty excluded atypical courses (e.g., independent studies, internships, thesis research, among others) and accounted for cross-listed courses, multiple lab sections, and faculty outliers (for more information, see prior section on state data methodology). As a result, any faculty in our population who taught only atypical courses have a total course count of 0. These faculty were dropped from our regression population as essentially out of scope.

<sup>55</sup> For example, without this adjustment, a faculty member who earned \$1,000 and taught half of a course during the year (due to shared responsibility for their course) would have a total pay-per-course value of \$2,000 (i.e.,  $\$1,000 / 0.5$ ), which is unreasonable given the person only earned \$1,000.

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## Independent Variables

The primary independent variable of interest in our analysis was faculty type. We categorized faculty into five types: full-time tenure-track, full-time contingent, part-time tenure-track, part-time contingent, and graduate assistant. Our main interest was comparing contingent faculty and graduate assistants to full-time tenure-track faculty. We controlled for the part-time tenure-track group, but due to the small size of this population (at most, 35 faculty in North Dakota and 274 faculty in Ohio), we did not substantively examine these estimates. All regression models set the base group for faculty type as full-time tenure-track.

We included in our regression models additional independent variables as controls for faculty and institution characteristics. Faculty characteristics include sex, race, age, age squared (to account for the potential non-linear relationship between earnings and age), highest degree earned, and academic discipline. Other faculty characteristics we controlled for in our models included whether a faculty member had grant funds (North Dakota only), whether a faculty member taught summer courses, and indicators identifying non-traditional faculty roles, such as administrators/management or coaches.<sup>56</sup> We also included fixed effects for institutions to control for differences between institutions, especially in terms of pay due to factors such as size, sector, and research/graduate component, among other things.<sup>57</sup>

We also examined rank of faculty (e.g. associate professor, assistant professor, instructor/lecturer, etc.), but excluded it from our complete models due to collinearity with the faculty type variable.<sup>58</sup>

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## Regression Model Detailed Results

Tables 18 and 19 (below) shows the coefficients and standard errors from each of our final pay-per-course regression models, as well as for the

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<sup>56</sup> Summer courses may be structured or compensated differently than courses in other terms, due to their condensed formats or other factors.

<sup>57</sup> Various independent variables capture and control for many different characteristics across different types of faculty and institutions, yet unobservable factors that may cause earnings differences may exist; thus, regression results do not prove causality.

<sup>58</sup> For example, in our analyses of faculty workforce makeup, over 95 percent of part-time contingent faculty in both the North Dakota and Ohio data had a rank of N/A/other or instructor/lecturer, and practically all graduate assistants had a rank of N/A/other. In addition, around 90 percent and 85 percent of faculty in North Dakota and Ohio, respectively, who had ranks of full professor or associate professor were in full-time tenure-track positions.



unadjusted model that included only the primary independent variable of interest (total pay-per-course results at the top and instructional pay-per-course results below). For our categorical variables, estimated coefficients are relative to the excluded (reference) category. For example, since the reference category for our main independent variable, faculty type, was full-time tenure-track, the estimated coefficients for other categories of this variable are always relative to this excluded reference category, holding all other variables in the model constant. Thus, in model 2 for North Dakota, the coefficient for full-time contingent faculty is 0.682. This can be interpreted as full-time contingent faculty pay per course is 0.682 that of full-time tenure-track faculty (i.e., full-time contingent faculty are paid 68.2 percent what full-time tenure-track are, per course), holding all other variables in the model constant. Because the dependent variables in the earnings models are the natural logarithms of earnings, subtracting one from the presented coefficients on categorical variables can be interpreted as the percentage change in the dependent variable associated with a change in the categorical variable, relative to the reference category, holding all other variables constant. In this same example, full-time contingent faculty are paid an estimated 31.8 percent less than full-time tenure-track faculty, because  $0.682 - 1 = -0.318$ , or 31.8 percent less.

**Table 18: North Dakota and Ohio Multivariate Regression Results on Contingent Faculty Total Pay per Course as a Percentage of Full-Time Tenure-track Faculty Total Pay per Course**

	North Dakota				Ohio			
	Model 1a	Model 2a	Model 3a	Model 4a	Model 1a	Model 2a	Model 3a	Model 4a
	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions
<b>Full-time tenure-track</b>	(base)	(base)	(base)	(base)	(base)	(base)	(base)	(base)
<b>Full-time contingent</b>	0.706 (0.032)	0.682 (0.028)	0.649 (0.027)	0.603 (0.025)	0.453 (0.006)	0.516 (0.007)	0.597 (0.008)	0.574 (0.009)
<b>Part-time tenure-track</b>	0.550 (0.089)	0.617 (0.079)	0.618 (0.079)	0.758 (0.100)	0.419 (0.021)	0.443 (0.020)	0.442 (0.018)	0.476 (0.021)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1a	Model 2a	Model 3a	Model 4a	Model 1a	Model 2a	Model 3a	Model 4a
	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions
<b>Part-time contingent</b>	0.149 (0.006)	0.250 (0.010)	0.245 (0.009)	0.270 (0.011)	0.164 (0.002)	0.230 (0.003)	0.223 (0.003)	0.214 (0.003)
<b>Instructional graduate assistant</b>	0.331 (0.022)	0.376 (0.026)	0.361 (0.025)	0.377 (0.025)	0.398 (0.007)	0.443 (0.010)	0.428 (0.009)	0.424 (0.009)
<b>Men</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Women</b>		0.975 (0.027)	0.978 (0.027)	0.967 (0.026)		1.002 (0.009)	1.001 (0.008)	1.003 (0.009)
<b>White (non-Hispanic)</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Asian</b>		1.023 (0.055)	1.026 (0.055)	0.999 (0.050)		1.048 (0.021)	1.072 (0.020)	1.054 (0.020)
<b>Black/African American or Hispanic/Latino</b>		0.982 (0.076)	0.986 (0.077)	0.954 (0.073)		0.929 (0.015)	0.954 (0.015)	0.947 (0.016)
<b>Other race/ethnicity</b>		1.052 (0.073)	1.023 (0.072)	0.981 (0.069)		1.036 (0.015)	1.026 (0.014)	1.022 (0.015)
<b>Age</b>		1.013 (0.008)	1.011 (0.008)	1.020 (0.008)		1.005 (0.003)	1.002 (0.002)	0.998 (0.003)
<b>Age squared</b>		1.000 (0.000)	1.000 (0.000)	1.000 (0.000)		1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
<b>Doctoral degree</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Professional degree</b>		1.094 (0.075)	1.114 (0.077)	1.106 (0.071)		1.015 (0.029)	1.025 (0.028)	1.070 (0.031)
<b>Master's degree</b>		0.834 (0.032)	0.843 (0.032)	0.866 (0.033)		0.842 (0.010)	0.862 (0.010)	0.859 (0.011)
<b>Bachelor's degree</b>		0.808 (0.040)	0.834 (0.042)	0.791 (0.041)		0.805 (0.013)	0.850 (0.013)	0.840 (0.016)
<b>Associate's degree</b>		1.147 (0.118)	1.197 (0.122)	1.268 (0.185)		0.792 (0.025)	0.816 (0.024)	0.864 (0.052)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1a	Model 2a	Model 3a	Model 4a	Model 1a	Model 2a	Model 3a	Model 4a
	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions
<b>Other degree</b>		0.640 (0.070)	0.704 (0.079)	0.718 (0.079)		0.789 (0.014)	0.843 (0.015)	0.849 (0.017)
<b>Degree type not indicated</b>		0.860 (0.066)	0.877 (0.067)	0.853 (0.064)				
<b>Discipline area:</b>								
<b>Services</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Arts and humanities</b>		0.951 (0.065)	0.956 (0.065)	0.991 (0.064)		1.104 (0.025)	1.067 (0.023)	1.196 (0.032)
<b>Business</b>		1.318 (0.109)	1.319 (0.108)	1.409 (0.112)		1.486 (0.039)	1.433 (0.036)	1.860 (0.057)
<b>Education</b>		0.890 (0.064)	0.901 (0.064)	0.934 (0.065)		1.068 (0.029)	1.078 (0.028)	1.243 (0.038)
<b>Engineering</b>		1.047 (0.085)	1.065 (0.086)	1.119 (0.086)		1.427 (0.038)	1.367 (0.035)	1.631 (0.051)
<b>Health</b>		2.283 (0.174)	2.293 (0.173)	2.443 (0.180)		2.088 (0.051)	1.967 (0.046)	2.152 (0.064)
<b>Law</b>		1.634 (0.261)	1.506 (0.245)	1.550 (0.232)		1.694 (0.082)	1.633 (0.075)	2.183 (0.117)
<b>Natural sciences and mathematics</b>		1.363 (0.094)	1.352 (0.092)	1.567 (0.103)		1.516 (0.036)	1.442 (0.033)	1.703 (0.048)
<b>Social and behavioral sciences</b>		1.279 (0.091)	1.291 (0.091)	1.402 (0.095)		1.234 (0.030)	1.189 (0.028)	1.376 (0.039)
<b>Trades and repair technicians</b>		1.183 (0.114)	1.117 (0.108)	1.028 (0.105)		1.117 (0.065)	1.080 (0.061)	1.257 (0.157)
<b>Unknown</b>		1.446 (0.135)	1.396 (0.132)	1.519 (0.163)		1.222 (0.066)	1.246 (0.065)	1.407 (0.081)
<b>Grant funding (base: no)</b>		1.471 (0.054)	1.442 (0.054)	1.368 (0.049)				
<b>Summer semester (base: no)</b>		0.759 (0.022)	0.771 (0.022)	0.760 (0.022)		0.850 (0.008)	0.834 (0.007)	0.809 (0.008)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1a	Model 2a	Model 3a	Model 4a	Model 1a	Model 2a	Model 3a	Model 4a
	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions	Unadjusted model	All faculty	Primarily teaching faculty	Primarily teaching faculty at 4-year institutions
<b>Administrator (base: no)</b>		2.992 (0.500)				0.733 (0.021)		
<b>Coach (base: no)</b>		2.142 (0.329)						
<b>Institution fixed effects</b>		(see notes)	(see notes)	(see notes)		(see notes)	(see notes)	(see notes)
<b>Unweighted observations</b>	3,486	3,485	3,404	2,876	30,672	30,656	28,811	21,482
<b>R2</b>	0.445	0.662	0.662	0.662	0.468	0.597	0.644	0.629
<b>F statistic</b>	697.03	168.26	173.40	166.24	6,743.16	553.23	640.86	604.70

Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: The primarily teaching population excludes faculty who are listed as primarily holding other roles unrelated to instruction, such as administrators and management, coaches (North Dakota data only), postdocs (North Dakota data only), and research faculty. This shrinks the analysis population by about 2 percent in North Dakota and about 6 percent in Ohio. The state data we analyzed included 2-year and 4-year public institutions, and the timeframes of the data are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio. Standard errors are presented in parentheses below the regression coefficients. The coefficients and standard errors are presented on the exponential scale. For categorical variables, estimated coefficients are expressed as a proportion of the excluded (base) category. We include fixed effects to capture unobserved differences between individual institutions (individual institutions and associated coefficients not listed in table).

**Table 19: North Dakota and Ohio Multivariate Regression Results on Contingent Faculty Instructional Pay per Course as a Percentage of Full-Time Tenure-track Faculty Instructional Pay per Course**

	North Dakota				Ohio			
	Model 1b	Model 2b	Model 3b	Model 4b	Model 1b	Model 2b	Model 3b	Model 4b
	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions
<b>Full-time tenure-track</b>	(base)	(base)	(base)	(base)	(base)	(base)	(base)	(base)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1b	Model 2b	Model 3b	Model 4b	Model 1b	Model 2b	Model 3b	Model 4b
	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions
<b>Full-time contingent</b>	1.018 (0.045)	0.924 (0.039)	0.875 (0.038)	0.859 (0.036)	0.623 (0.010)	0.753 (0.011)	0.891 (0.012)	0.912 (0.014)
<b>Part-time tenure-track</b>	0.539 (0.084)	0.581 (0.076)	0.581 (0.075)	0.660 (0.087)	0.379 (0.021)	0.388 (0.017)	0.388 (0.016)	0.404 (0.018)
<b>Part-time contingent</b>	0.283 (0.010)	0.412 (0.016)	0.402 (0.016)	0.508 (0.020)	0.321 (0.004)	0.378 (0.005)	0.367 (0.004)	0.415 (0.006)
<b>Instructional graduate assistant</b>	0.632 (0.041)	0.621 (0.044)	0.597 (0.042)	0.661 (0.043)	0.793 (0.015)	0.751 (0.016)	0.726 (0.015)	0.771 (0.017)
<b>Men</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Women</b>		0.996 (0.028)	1.000 (0.028)	0.990 (0.027)		1.018 (0.009)	1.018 (0.008)	1.020 (0.010)
<b>White (non-Hispanic)</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Asian</b>		1.045 (0.057)	1.056 (0.057)	1.043 (0.052)		1.020 (0.020)	1.048 (0.019)	1.052 (0.020)
<b>Black/African American or Hispanic/Latino</b>		1.009 (0.080)	1.018 (0.081)	0.995 (0.076)		0.928 (0.015)	0.957 (0.015)	0.955 (0.017)
<b>Other race/ethnicity</b>		1.056 (0.075)	1.030 (0.073)	0.979 (0.068)		1.060 (0.016)	1.049 (0.014)	1.041 (0.015)
<b>Age</b>		1.009 (0.008)	1.007 (0.008)	1.015 (0.008)		1.003 (0.003)	1.000 (0.002)	0.995 (0.003)
<b>Age squared</b>		1.000 (0.000)	1.000 (0.000)	1.000 (0.000)		1.000 (0.000)	1.000 (0.000)	1.000 (0.000)
<b>Doctoral degree</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Professional degree</b>		1.148 (0.080)	1.175 (0.082)	1.127 (0.073)		1.034 (0.029)	1.049 (0.028)	1.048 (0.031)
<b>Master's degree</b>		0.971 (0.038)	0.987 (0.039)	0.966 (0.036)		0.946 (0.012)	0.973 (0.011)	0.924 (0.012)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1b	Model 2b	Model 3b	Model 4b	Model 1b	Model 2b	Model 3b	Model 4b
	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions
<b>Bachelor's degree</b>		0.949 (0.048)	0.984 (0.050)	0.874 (0.045)		0.892 (0.015)	0.946 (0.015)	0.890 (0.017)
<b>Associate's degree</b>		1.413 (0.148)	1.478 (0.154)	1.465 (0.213)		0.842 (0.026)	0.870 (0.026)	0.924 (0.055)
<b>Other degree</b>		0.734 (0.081)	0.811 (0.092)	0.767 (0.085)		0.860 (0.016)	0.931 (0.016)	0.892 (0.017)
<b>Degree not indicated</b>		0.973 (0.076)	0.998 (0.078)	0.905 (0.068)				
<b>Discipline area:</b>								
<b>Services</b>		(base)	(base)	(base)		(base)	(base)	(base)
<b>Arts and humanities</b>		0.939 (0.065)	0.943 (0.065)	0.989 (0.064)		1.106 (0.025)	1.062 (0.023)	1.191 (0.032)
<b>Business</b>		1.312 (0.110)	1.310 (0.109)	1.400 (0.111)		1.503 (0.039)	1.444 (0.036)	1.880 (0.057)
<b>Education</b>		0.894 (0.066)	0.903 (0.066)	0.935 (0.065)		1.099 (0.030)	1.109 (0.029)	1.264 (0.038)
<b>Engineering</b>		1.066 (0.088)	1.081 (0.088)	1.136 (0.087)		1.426 (0.038)	1.357 (0.035)	1.609 (0.050)
<b>Health</b>		2.148 (0.167)	2.158 (0.166)	2.277 (0.168)		2.093 (0.052)	1.952 (0.046)	2.107 (0.062)
<b>Law</b>		1.696 (0.276)	1.571 (0.260)	1.614 (0.241)		1.626 (0.079)	1.536 (0.071)	2.044 (0.109)
<b>Natural sciences and mathematics</b>		1.348 (0.094)	1.330 (0.092)	1.567 (0.103)		1.514 (0.036)	1.432 (0.032)	1.681 (0.047)
<b>Social and behavioral sciences</b>		1.255 (0.091)	1.264 (0.091)	1.377 (0.093)		1.248 (0.031)	1.197 (0.028)	1.380 (0.039)
<b>Trades and repair technicians</b>		1.257 (0.123)	1.191 (0.117)	1.047 (0.107)		1.134 (0.067)	1.079 (0.061)	1.316 (0.164)
<b>Unknown</b>		1.469 (0.139)	1.410 (0.135)	1.451 (0.155)		1.223 (0.067)	1.242 (0.065)	1.380 (0.079)

**Appendix I: Objectives, Scope, and Methodology**

	North Dakota				Ohio			
	Model 1b	Model 2b	Model 3b	Model 4b	Model 1b	Model 2b	Model 3b	Model 4b
	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions	Unadjusted model	All faculty	Primarily teaching	Primarily teaching at 4-year institutions
<b>Grant funding (base: no)</b>		1.448 (0.054)	1.420 (0.054)	1.365 (0.049)				
<b>Summer semester (base: no)</b>		0.761 (0.022)	0.775 (0.023)	0.765 (0.022)		0.853 (0.008)	0.834 (0.007)	0.809 (0.008)
<b>Administrator (base: no)</b>		0.232 (0.039)				0.0503 (0.001)		
<b>Coach (base: no)</b>		2.480 (0.388)						
<b>Institution fixed effects</b>		(see notes)	(see notes)	(see notes)		(see notes)	(see notes)	(see notes)
<b>Unweighted observations</b>	3,486	3,485	3,404	2,876	30,672	30,656	28,811	21,482
<b>R2</b>	0.291	0.523	0.518	0.523	0.235	0.515	0.489	0.448
<b>F statistic</b>	357.69	94.34	95.00	91.68	2,358.71	395.69	339.81	289.26

Source: GAO analysis of data from North Dakota and Ohio public postsecondary institution data systems. | GAO-18-49

Notes: Instructional pay per course estimates faculty earnings for only their teaching duties (e.g., excluding estimated effective pay for research and service). The primarily teaching population excludes faculty who are listed as primarily holding other roles unrelated to instruction, such as administrators and management, coaches (North Dakota data only), postdocs (North Dakota data only), and research faculty. This shrinks the analysis population by about 2 percent in North Dakota and about 6 percent in Ohio. The state data we analyzed included 2-year and 4-year public institutions, and the timeframes of the data are fall 2015 through summer 2016 for North Dakota, and summer 2014 through spring 2015 for Ohio. Standard errors are presented in parentheses below the regression coefficients. The coefficients and standard errors are presented on the exponential scale. For categorical variables, estimated coefficients are expressed as a proportion of the excluded (base) category. We include fixed effects to capture unobserved differences between individual institutions (individual institutions and associated coefficients not listed in table).

**Additional Analyses and Sensitivity Tests**

The North Dakota and Ohio data used in the regression analyses include a small number of faculty (1.1 and 0.5 percent of observations, respectively) who are listed as teacher of record for more than 15 courses over the year, which may represent unusually high workloads or data anomalies. In addition, some faculty have small or large pay-per-course

values when compared to the overall distribution. To preserve the integrity of the data, we did not exclude these observations from the analyses. However, we tested our models with and without these observations to assess the effect on our substantive regression results. In order to assess the effect of faculty with a large workload, we conducted regression models 3 and 4 (in tables 18 and 19 above) limited to faculty who taught 15 or fewer courses over the year. In order to assess the effect of faculty with the outermost values of the dependent variable pay per course, we conducted the same regression models limited to faculty whose pay per course was within the middle 98 percent of pay-per-course values (i.e., we trimmed the bottom and top 1 percent of observations). In both of these sensitivity analyses, we found substantively similar results.

We also ran our regression models on a more refined population that only included primarily teaching faculty at 4-year institutions (faculty at 4-year institutions represent most of our analysis population). As shown in table 18 above, in terms of total pay per course, full-time contingent faculty in North Dakota and Ohio are paid about 40 and 43 percent less per course, respectively, than full-time tenure-track faculty—compared to 35 and 40 percent less per course, respectively, when both 4-year and 2-year institutions are included. This slightly larger pay-per-course disparity as compared to the population overall may be, in part, because pay and utilization of full-time faculty vary somewhat by institution type (e.g., at 4-year institutions, pay is generally higher but less flat, and some full-time tenure-track faculty teach fewer courses due to their more extensive research responsibilities).

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## Section 4: Annual Earnings Regression Analysis (SDR Data)

This section discusses the regression analysis methods we used to analyze and compare annual earnings among different types of faculty using national 2013 SDR data on doctorate-holding faculty in the STEM, health, and social sciences fields.

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### Dependent Variable

We conducted regressions using the following dependent variable: Log (annual salary)—the natural logarithm of annual salary, defined as the basic annual salary from the respondent's principal job.<sup>59</sup>

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<sup>59</sup> The publicly available variable for salary is a categorical variable with values rounded to the nearest thousand dollars.



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## Independent Variables

The primary independent variable of interest in our analysis was faculty type. We categorized faculty into five types: full-time tenure-track, full-time contingent, part-time tenure-track, part-time contingent, and graduate assistant. Our main interest was comparing contingent faculty to full-time tenure-track faculty. Though we controlled for the part-time tenure-track and graduate assistant groups, we did not substantively examine these estimates.<sup>60</sup> All regression models set the reference group for faculty type as full-time tenure-track.

We included in our regression models additional independent variables as controls for faculty and institution characteristics. Faculty characteristics included sex, race, age, age squared, number of weeks worked per year, and academic discipline.<sup>61</sup> Other faculty characteristics we controlled for included the year of highest degree earned—which we used as proxy for general experience—and whether a respondent indicated that they were an administrator. We also included institution type (e.g., 4-year college or university, 2-year college or university). After introducing the full range of independent variables in our complete model, our analysis sample was reduced from 7,232 faculty respondents to 7,226 due to 6 faculty respondents being omitted due to missing data.

We examined faculty rank (e.g. professoriate, instructor/lecturer) and academic position variables for “adjunct” faculty and postdocs, but we excluded these variables from our complete model, as we determined

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<sup>60</sup> As explained in Section 2 of this appendix, we do not present information on graduate assistants given that those in the SDR data already have doctorates and, as a result, may have different positions or economic circumstances compared to most graduate assistants. In addition, both graduate assistants and part-time tenure-track faculty represented small proportions of our analysis population.

<sup>61</sup> We recoded the weeks worked variable into three categories to approximate one-semester, two-semester, and full-year instructors. The occupation variable (N2OCPRPB) included academic discipline for those respondents who said their occupation is in postsecondary education, which was the case for the majority of individuals within our analysis population. We recoded the occupation variable by aggregating 27 occupations into 6 broader categories: (1) Postsecondary education: Natural science and mathematics, (2) Postsecondary education: Social and behavioral sciences, (3) Postsecondary education: Engineering, (4) Health-related occupations, (5) Upper level management, and (6) Other non-postsecondary occupations. We recoded the variable both to better align with the discipline variable used in Section 3 of this appendix and to better capture potential differences between postsecondary education occupations and non-postsecondary occupations.

they did not have meaningful information for the purpose of our analyses.<sup>62</sup>

**Regression Model  
Detailed Results**

In our complete model, full-time and part-time contingent faculty earned 22 percent less and 70 percent less, respectively, than full-time tenure-track faculty annually (see table 20).<sup>63</sup> Across our preliminary models (not shown below) and complete model, the coefficients related to our main independent variable remained relatively constant, ranging from 0.76 to 0.86 for full-time contingent faculty and 0.26 to 0.43 for part-time contingent faculty, expressed as proportion of full-time tenure-track faculty earnings.

**Table 20: Multivariate Regression Results on Annual Earnings of Contingent Faculty among Doctorate-Holding Faculty in STEM, Health, and Social Sciences Fields, 2013**

	Complete model regression coefficients
<b>Full-time tenure-track</b>	(base)
<b>Part-time tenure-track</b>	0.86 (0.02)
<b>Full-time contingent</b>	0.78 (0.01)
<b>Part-time contingent</b>	0.30 (0.01)

<sup>62</sup> In data we received from NCSES, individuals who responded that they were an Assistant Professor, Associate Professor, or Professor were recoded as “professoriate.”

<sup>63</sup> For categorical variables, estimated coefficients are always relative to the excluded reference (base) category. For example, since the reference category for our main independent variable, faculty type, is full-time tenure-track, the estimated coefficients for other categories of this variable are always relative to this excluded reference category, holding all other variables in the model constant. Thus, since the coefficient for full-time contingent faculty is 0.78, this can be interpreted as full-time contingent faculty earning 78 percent of what full-time tenure-track earn annually, holding all other variables in the model constant. Because the dependent variables are the natural logarithms of earnings, subtracting 1 from the presented coefficients on categorical variables can be interpreted as the percentage change in the dependent variable associated with a change in the categorical variable, relative to the reference category, holding all other variables constant. Thus, we can interpret full-time contingent faculty as earning 22 percent less than full-time tenure-track faculty annually, holding all other variables in the model constant.

Appendix I: Objectives, Scope, and Methodology

	Complete model regression coefficients
<b>Instructional graduate assistant<sup>a</sup></b>	0.72 (0.03)
<b>Age</b>	1.02 (0.01)
<b>Age squared</b>	1.00 (0.00)
<b>Men</b>	(base)
<b>Women</b>	0.92 (0.01)
<b>White (non-Hispanic)</b>	(base)
<b>Asian (non-Hispanic)</b>	1.04 (0.01)
<b>Other minority</b>	0.98 (0.02)
<b>Worked about one semester<sup>b</sup></b>	(base)
<b>Worked about two semesters</b>	2.36 (0.25)
<b>Worked about full-year</b>	2.57 (0.27)
<b>Administrator (base: no)</b>	1.04 (0.02)
<b>Year highest degree earned: 2011 or later</b>	(base)
2006-2010	1.08 (0.04)
2001-2005	1.16 (0.05)
1996-2000	1.27 (0.05)

**Appendix I: Objectives, Scope, and Methodology**

	<b>Complete model regression coefficients</b>
1991-1995	1.38 (0.06)
1986-1990	1.48 (0.07)
1981-1985	1.58 (0.07)
1976-1980	1.65 (0.08)
1971-1975	1.69 (0.10)
1966-1970	1.72 (0.14)
1965 or earlier	2.13 (0.23)
<b>4-year college or university</b>	(base)
<b>2-year college of university</b>	0.85 (0.03)
<b>Medical school or other university-affiliated research institute</b>	1.18 (0.02)
<b>Unweighted sample</b>	7,226
<b>R<sup>2</sup></b>	0.5288
<b>F statistic</b>	190.56

Source: GAO analysis of data from the Survey of Doctorate Recipients (SDR), 2013. | GAO-18-49

Notes: Responses refer to employment in February 2013. The coefficients and standard errors are presented on the exponential scale. For categorical variables, estimated coefficients are expressed as a proportion of the excluded (base) category. Standard errors are presented in parentheses below the regression coefficients. Full-time includes those who worked at least 36 hours per week.

<sup>a</sup>Given that SDR is a survey of doctorate holders, it may be that graduate assistants in the SDR data are—for example—working toward another doctoral degree or have remained at their degree-granting institution in a postdoctoral position. In either case, we believe the working arrangements and economic circumstances of these individuals may be unique from those of most other graduate assistants. We created a flag for graduate assistants using the teaching/research/other assistant position variable and excluding respondents who also said that they were tenured, on the tenure-track, or held an administrator position.

<sup>b</sup>Number of semesters worked is approximated based on the reported number of weeks worked.

# Appendix II: IPEDS Data on the Racial and Ethnic Distribution of Faculty Positions Nationwide, 2015

**Table 21: Percent of Positions Held by Faculty of Various Racial or Ethnic Identities Nationwide, 2015**

	All institutions	4-year institutions <sup>a</sup>	2-year institutions <sup>a</sup>	For-profit institutions <sup>a</sup>
<b>Total instructional positions<sup>b</sup></b>	1,444,774	990,145	349,004	105,625
Asian	6.5%	7.7%	3.9%	4.1%
Black or African American	7.0%	5.6%	8.3%	15.5%
Hispanic or Latino	5.7%	5.4%	5.8%	8.4%
Nonresident alien	2.0%	2.6%	0.7%	0.1%
Other or unknown <sup>c</sup>	6.3%	6.1%	5.8%	10.2%
White (non-Hispanic)	72.4%	72.5%	75.4%	61.6%
<b>Full-time tenure-track positions<sup>d</sup></b>	433,048	375,281	57,434	333
Asian	10.0%	10.6%	5.6%	1.8%
Black or African American	5.1%	4.9%	6.4%	6.0%
Hispanic or Latino	5.3%	4.9%	8.2%	47.7%
Nonresident alien	3.0%	3.3%	0.8%	0.0%
Other or unknown <sup>c</sup>	3.6%	3.5%	4.5%	3.3%
White (non-Hispanic)	73.0%	72.8%	74.5%	41.1%
<b>Full-time contingent positions</b>	288,148	213,396	54,514	20,238
Asian	7.2%	8.6%	2.5%	4.3%
Black or African American	6.5%	5.4%	9.0%	11.6%
Hispanic or Latino	5.3%	5.2%	4.2%	9.9%
Nonresident alien	3.0%	3.9%	0.5%	0.4%
Other or unknown <sup>c</sup>	4.6%	4.7%	3.6%	7.2%
White (non-Hispanic)	73.3%	72.1%	80.3%	66.6%
<b>Part-time positions<sup>e</sup></b>	723,579	401,468	237,056	85,055
Asian	4.3%	4.5%	3.9%	4.1%
Black or African American	8.3%	6.3%	8.7%	16.5%
Hispanic or Latino	6.2%	6.1%	5.6%	7.9%
Nonresident alien	1.0%	1.3%	0.7%	0.1%
Other or unknown <sup>c</sup>	8.6%	9.3%	6.6%	11.0%
White (non-Hispanic)	71.7%	72.4%	74.5%	60.5%
<b>Graduate teaching assistants</b>	183,749	183,543	4	202
Asian	5.8%	5.8%	0.0%	7.4%
Black or African American	3.5%	3.5%	0.0%	8.4%
Hispanic or Latino	5.5%	5.5%	50.0%	9.4%
Nonresident alien	27.8%	27.8%	0.0%	7.4%
Other or unknown <sup>c</sup>	8.4%	8.4%	0.0%	5.0%
White (non-Hispanic)	49.0%	48.9%	50.0%	62.4%

Source: GAO analysis of 2015 data from the Integrated Postsecondary Education Data System (IPEDS). | GAO-18-49

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**Appendix II: IPEDS Data on the Racial and Ethnic Distribution of Faculty Positions Nationwide, 2015**

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<sup>a</sup>4-year and 2-year institutions include both public and private not-for-profit institutions. For-profit institutions include both 4-year and 2-year for-profit institutions.

<sup>b</sup>Total instructional positions does not include graduate teaching assistants because the IPEDS data do not distinguish between those who may be instructors of record for courses or those who may instead resemble teaching assistants or classroom support of various kinds (e.g., grading, discussion leading, and lab setup). Numbers for total instructional positions are calculated from the employees by assigned position data file and all other numbers are calculated from the fall staff data file.

<sup>c</sup>Other or unknown includes the IPEDS race/ethnicity categories: American Indian or Alaska Native; Native Hawaiian or other Pacific Islander; two or more races; and race/ethnicity unknown. We combine these groups into a single category for ease of analysis and interpretation of results, and because these groups comprise a small proportion of all instructional positions.

<sup>d</sup>Tenure-track refers to both tenured and tenure-track positions.

<sup>e</sup>The IPEDS data we used to analyze faculty populations by race do not differentiate part-time tenure-track faculty from part-time contingent faculty. Based on analyses of current faculty populations, the vast majority of part-time faculty are non-tenure-track.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Cindy Brown Barnes, (202) 512-7215, [brownbarnesc@gao.gov](mailto:brownbarnesc@gao.gov)

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## Staff Acknowledgments

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