

Employment volatility in the academic workforce: Implications for faculty financial and retirement plans

Manuel S. González Canché,
University of Pennsylvania,
TIAA Institute Fellow

Ji Yeon Bae,
University of Pennsylvania

Taylor K. Odle,
University of Pennsylvania

Adam Edgerton,
Learning Policy Institute

Corrinne Fahl,
University of Pennsylvania

Abstract

Analyses of nontenure-related faculty appointments in the United States have not accounted for the growing presence of adjunct faculty holding annual or less-than-annual contracts, which are the most volatile or insecure type of appointments. Short-term appointments in the academic workforce account for about two thirds of all faculty appointments, and yet we know little about the financial needs, experiences, and professional stability of the vast numbers of people experiencing this employment volatility. This study offers a better understanding of how faculty with volatile/insecure appointments navigate their financial planning and retirement needs. These newfound understandings may be used to inform programs and strategies that financial firms and employing institutions can implement to help these faculty improve their saving and retirement prospects. We recruited 40 faculty members with employment contracts of one year or less across the contiguous United States employed in different institution types. Our sample is constituted by full- and part-time employees. The latter typically hold appointments in different colleges or outside academe. Relying on a network analysis of qualitative data along with temporal data visualization and data mining, we found that faculty holding these employment types can be classified into those who are dedicated full-time to this employment type as a primary source of income and those for whom these appointments represent extra income. We also uncovered that at times participants view these appointments as degrading because of differential treatment, such as lower matching retirement account contributions and salaries compared to those available to full-time faculty. Indeed, salaries for adjunct faculty are often so

This project was sponsored by research grants from the TIAA Institute. The content does not represent the views of this organization. All potential errors remain the authors.

We are grateful to Penn GSEs' higher education division Master's alumni: Qiaowen Yang, Gabriel Gutierrez Aragon, Chi L. Chan, and Arkadijs Zvaigzne for their support for data preparation and cleaning of transcribed data.

Contact information University of Pennsylvania, Email: msgc@upenn.edu, <https://scholar.gse.upenn.edu/canche/> Phone: 215-898-0332, 208 South 37th Street, Room 207, Philadelphia, PA 19104

Any opinions expressed herein are those of the authors, and do not necessarily represent the views of TIAA, the TIAA Institute or any other organization with which the authors are affiliated.

low that they may prevent adjunct faculty from taking advantage of matching contributions, hence forfeiting an important savings and retirement benefit. Among the indicators that can be included in plan designs that faculty members mentioned, were the possibility of having a unified matching plan that accounts for their full academic salary even across multiple academic institutions and a desire to learn more about retirement plans and potential tax benefits.

Introduction

Contract types of the academic workforce may be classified into two mutually exclusive categories: tenure-related and nontenure-related appointments. The former is composed of tenure-track and tenured faculty, whereas the latter encompasses all other positions, which are often referred to as “adjunct”¹ or “contingent” faculty. Despite the fact that contingent faculty hold different contract lengths and job security levels, prior research has not accounted for their level of job “volatility” or “insecurity” and has instead analyzed their role (Kezar & Sam, 2013), influence (Baldwin & Wawrzynski, 2011; Jaeger & Eagan, 2011), growth (Charlier & Williams, 2011), and hiring and evaluation processes (Langen, 2011) under a single nontenure, adjunct category. With respect to studies focused on the influence of academic contract types on faculty behaviors and job satisfaction, recent scholarship has revealed that contingent faculty may have retirement plan preferences that diverge from their tenure-related counterparts (Toutkoushian, Sanford, Riffe, & Ness, 2018). In the case of job satisfaction, despite the prevalence of faculty holding nontenure-related appointments, less than 10% of the analytic sample in Webber’s (2018) study captured this segment of the academic workforce. Consequently, it is safe to conclude that even in recent studies, the dichotomy of tenure-related versus nontenure-related academic contracts remains the standard, with the category of nontenured-related academic contracts treated as a single, homogeneous block.

The present study aims to advance the literature on contingent faculty in at least two aspects. First, it focuses on faculty members holding the most insecure appointments: faculty holding annual or less-than-annual contracts (who represent about two-thirds of the total professoriate). This focus on this volatile type of appointment is a marked departure from the literature on this topic, which has studied contingent faculty under a sole nontenure-related category, including faculty holding multiyear, annual, and less-than-annual contracts. Second, also departing from previous literature, the study primarily focuses on investigating the financial implications of these volatile employment conditions while also identifying challenges and strategies these faculty members have used to participate in savings and retirement plans. Therefore, this study seeks to offer a better understanding of how faculty holding nontenure-related appointments with contract lengths of one year or less have coped with this employment insecurity and, when applicable, the strategies they have implemented to identify and participate in savings and retirement plans. In cases where participants do not have savings or retirements plans, the study seeks to identify resources or conditions these faculty perceive as necessary for them to be able to adopt such accounts tailored to their financial needs and circumstances. With the information resulting from this study, financial firms (such as TIAA) may be better positioned to implement programs and strategies designed to address the needs of the millions of faculty members holding insecure appointments and help them improve their retirement plans and overall financial well-being.

Purpose and questions

The purpose of this project is to offer a better understanding of how faculty members holding volatile academic employments navigate their savings and retirement plans and to explore the implications of these short-term contracts on the overall professional and economic well-being of these faculty. To address this purpose, we collected data on a wide array of

¹ Note that “adjunct” faculty typically refers to part-time nontenure track appointees (see Yakoboski, 2018, 2019, 2020)

faculty holding volatile appointments at a diverse set of institutions and interviewed 40 faculty members. The ultimate goal of this study is to expand knowledge and inform programs and strategies that financial firms can implement to better help these faculty improve their saving and retirement prospects.

To explore dimensions of individual savings and retirement planning, we considered the following questions:

1. How do faculty members holding volatile contracts conceptualize and deal with job insecurity, and how do such insecurities influence their savings and retirement behaviors?
2. To what extent do adjunct faculty holding volatile appointments participate in retirement planning? Among those who have managed to establish individual retirement plans, what strategies have they followed to achieve this outcome?
3. What factors do faculty perceive to be associated with an increased likelihood of participation in savings and retirement plans, regardless of their current participation status?
4. Would alternative retirement plans or saving opportunities be attractive to this subset of faculty? If so, what programmatic inclusions are most important? How knowledgeable are these faculty about their retirement options?

Given that differences across sectors and individuals would likely lead to different responses, strategies, and outcomes, we contextualize the responses provided by each participant. Specifically, relying on data mining and visualization techniques, we show the evolution of participants' responses and the job-related and even personal attributes of each participant in addition to the information provided during each contribution. This strategy is not only useful to us as researchers but also to readers who want to further explore these responses. To access to the interactive outputs containing this evolution of information, as explained below, visit https://msgc.github.io/movie/TIAA_Analyses.html. To protect

confidentiality and anonymity all faculty, names have been removed from these interactive plots.

Background and prior literature

In the past few decades, the traditional image of the American professoriate as tenure-track and full-time has become all but obsolete. Nontenure-track faculty—also referred to as adjunct or contingent faculty—have become the new majority in the faculty workforce. In addition to documenting the scope and nature of this shift (Schuster & Finkelstein, 2006), prior work has examined the roles, responsibilities, and characteristics of nontenure-track faculty (Kezar, 2013), institutional practices around hiring, evaluation, and support (Cross & Goldenberg, 2009; Kezar & Sam, 2013; Langen, 2011), and the effect of contingent faculty on institutional finances (Hearn & Burns, 2020) as well as on teaching, learning, and student outcomes (Baldwin & Wawrzynski, 2011; Eagan & Jaeger, 2009; Ehrenberg & Zhang, 2005; Jacoby, 2006).

Research on nontenure-track faculty tends to group these appointments under a single umbrella when, in reality, there are varying roles and responsibilities, contract types, appointment lengths, and working conditions that comprise this workforce (Kezar & Sam, 2010). Specifically, adjuncts who are contracted semester-to-semester and full-time faculty with multiyear contracts may be grouped under the same “nontenure-track” label, despite having very different levels of job security, benefits, and support (Kezar, 2013). Those who are full-time and on multiyear contracts tend to have working conditions and benefits that more closely resemble their tenured colleagues (Kezar, 2013; Kezar & Sam, 2010). Meanwhile, those on short-term contracts navigate the greatest deal of employment volatility and insecurity. For example, Waltman et al. (2012) found that while a sense of a job insecurity permeated all groups of nontenure-track faculty whom they interviewed, this anxiety and uncertainty were particularly pronounced among those with short-term contracts.

While navigating the greatest volatility in their employment, those on semester-to-semester or year-by-year contracts make up the majority of the

nontenure-track faculty workforce. According to a survey by the American Federation of Teachers (2020), 75% of all contingent faculty respondents (N = 3,076) had positions that were contracted only from term to term, and 41% did not have confirmation of their appointment until one month before the beginning of the academic year. Population-level data on U.S. higher education institutions confirm that those with these volatile conditions via short-term contracts are the majority. Starting in 2012, the Integrated Postsecondary Education Data System's (IPEDS) annual survey began collecting information that enabled users to differentiate faculty appointments based on contract length—multiyear, annual, and less-than-annual contracts—allowing for a more accurate picture of the faculty workforce. According to recent data released by IPEDS (2019) corresponding to the academic year 2019-2020, these volatile contracts account for 52.9% of all faculty appointments (3.34 million of the total 6.39 million faculty positions). Moreover, when considering only *nontenure-line* appointments, these appointments of one year or less represent 77.79% of the 4.30 million contingent positions in the United States. Despite evidence of this strong prevalence, the literature has yet to specifically examine those faculty with annual or less-than-annual contracts—a gap that this project seeks to address. Note that recent reports (Yakoboski, 2018, 2019, 2020) have focused on part-time nontenure track faculty. However, although the analytic samples of those reports (specifically see Yakoboski 2018 and 2019) may include faculty members with volatile appointments as we define here, this contract length was not an inclusion criterion. Our efforts to focus on faculty holding *annual or less-than-annual contracts* is driven by our desire to contribute to this literature by better understanding the effects of job insecurity, added to adjunct status.

Aside from the important contributions by Yakoboski (2018, 2019, 2020), few researchers have focused on the influence of adjunct faculty appointments—and their contract length constraint—on adjunct faculty behaviors *themselves*, especially their financial behaviors. In his 2019 report, Yakoboski found that 64 % of adjunct faculty [part-time nontenure line] reported personally saving for retirement in the previous year. Among these,

56% contributed to a retirement plan offered by a college or university where they worked (Yakoboski, 2019). Although these figures are encouraging, prior work has documented the inequities in salary and benefits between tenure- and nontenure-track faculty, as well between full- versus part-time nontenure-track faculty (Kezar & Sam, 2010). In addition to lower compensation, contingent faculty in general (that is outside of colleges and universities) tend to lack other financial resources such as health insurance and retirement benefits. For example, among those surveyed by the American Federation of Teachers (2020), employer-provided health insurance was available to fewer than half of the participants. Moreover, 37% of these respondents said that they viewed any plan for secure retirement as inaccessible. Notably, however, according to Yakoboski and DiCesare (2020), the benefit conditions of contingent faculty in colleges and universities depict a better panorama. Based on 16 systems and 105 institutions, these authors found that 91% of participating institutions and 100% of the 16 higher education systems included permit all or some adjunct faculty to defer salary into a sponsored retirement savings plan. Moreover, 83% of these institutions and 75% of systems cover first-time adjuncts who teach only one course. Contributions by adjunct faculty are matched by 37% of institutions and 60% of the systems (Yakoboski and DiCesare, 2020).

Overall, although there is recent evidence that a sizable portion of adjunct faculty (around 40%) have access to some form of retirement benefits through their academic employer (American Federation of Teachers, 2020; Yakoboski and DiCesare, 2020), the terms and conditions of these benefits continue to be largely unknown (Coalition on the Academic Workforce, 2012). Brought together, not only do inadequate compensation, benefits and lack of job security may influence faculty's job satisfaction (Bolitzer, 2019; Weber et al., 2018), but also all these conditions may without a doubt negatively impact overall quality of life (American Federation of Teachers, 2020).

Despite descriptively knowing these structural conditions, however, little is known about how contingent faculty conceptualize and navigate this landscape. In a recent

review of literature on adjunct faculty as teachers, Bolitzer (2019) pointed out the lack of research into adjuncts' behaviors to facilitate their teaching. Similarly, little is known about adjunct faculty's actual financial behaviors. Prior research revealed that contingent faculty may have retirement plan preferences that diverge from their tenure-related counterparts (Toutkoushian, Sanford, Riffe, & Ness, 2018), suggesting that employment and contract terms have a bearing on faculty's financial behavior. Therefore, this study seeks to better understand how nontenure-track appointments of *short contract length* (yearly, less than a year) influence the financial perceptions and retirement behaviors of adjunct faculty and to identify opportunities for national leadership and future research in this area. A focus on the sense-making and behaviors of faculty holding insecure or volatile appointments —while recognizing the heterogenous nature of this group—could inform bottom-up, rather than top-down, practices and policies that support this important segment of the professoriate.

Data and methods

Description of participants

The target participants were faculty holding annual and less-than-annual contracts, regardless of whether these faculty held full-time or multiple part-time appointments (see description of single or multi-institutional appointments below). Given the goal of identifying

potential variation in responses, outcomes, and behaviors across diverse institutional types, the analytic sample consisted of faculty employed at public two-year, public four-year, and private not-for-profit four-year colleges. Furthermore, institutions from both rural (town or rural as defined by IPEDS) and nonrural (suburban or urban) localities were intentionally included to capture heterogeneity arising from geographic differences.

Adjunct faculty working in institutions from our analytic sample were contacted and recruited using publicly available directory information for the respective institutions. In cases when enough participants could not be recruited within a single institution of a particular sector and locality (e.g., rural public 2-year institutions), we contacted faculty from institutions with a similar sector and locality profile. Our research team conducted semi-structured interviews in the spring, summer, and fall of 2019, with interviews ranging from about 50 to 70 minutes.

In total, 40 interviews were conducted. Table 1 captures the types of institutions that were included in the final interview pool. Some types of institutions were overrepresented due to challenges in recruitment. Participants also spanned a wide range of disciplines (e.g., STEM, social science, health-related fields, art), job titles (e.g., adjunct faculty, adjunct instructor, lecturer), and included both full- and part-time faculty.

Table 1. Distribution of institution type wherein participants were contacted and interviewed

		Number of Interviews	% of Interviews
Public 2-yr	Rural	5	13%
	Nonrural	8	20%
Public 4-yr	Rural	4	10%
	Nonrural	14	35%
Private 4-yr	Rural	3	8%
	Nonrural	6	15%
Total		40	

Participants' personal, professional, and employment attributes and characteristics as retrieved during the interview process are shown in Table 2 in the findings section. These attributes were used to contextualize their responses in the visual representation of the qualitative analysis, as discussed below.

Methods

The analyses relied on a fully mixed-methods equal design status design (Alexander, et al., 2019). In this design qualitative and quantitative methods are equally fundamental to build our understandings. Specifically, in our study, information gathered was transcribed and qualitatively coded using inductive coding (Boyatzis, 1998; Eickhoff & Wieneke, 2018; Tashakkori & Teddlie, 2008) in R for qualitative data analysis (Huang, 2018). The resulting topics were compared and refined through two additional rounds of review and deliberation. Redundant topics were collapsed to generate larger categories that we refer to as *code categories* or *code families*. The analytic approach relied on Network Analysis for Qualitative Data (see González Canché, 2019), and temporal information systems (Artale, 2007).

Our approach blends quantitative, mathematical, and qualitative principles to analyze written (or transcribed) data to harness the mathematical power of network analysis in mapping processes dynamically via temporal information systems (TIS) principles (Artale, 2007). The incorporation of time as part of the analytic framework may illuminate processes and consequences of change or continuity and may open the possibility of analyzing the evolution of trends and dynamics in our research settings (Artale, et al., 2007, Neale, 2015). Following TIS principles, we systematically recorded the chronological evolution of events as they emerged (Chomicki & Toman, 1998; Theodoulidis, et al., 1991) using global time stamps (Artale, et al., 2007) to standardize the evolution of information across all participants. This standardization, allowed us to observe the simultaneous depiction of information generation even though all 40 interviews took place asynchronously. This analytic exercise will enable us to detect general trends, or hot zones (i.e., clustering of information or topics) emerging from participants' responses (Alexander, et al., 2019) as shown in Figures 2 and 3, for example.

Our analytic framework also implemented the three modeling requirements of temporal information systems (Artale, et al., 2007): Orthogonality, the independent specification and retrieval of classes, relationships, and attributes; reproducibility, the complete rebuilding of the temporal evolution of a database, at both the individual and group levels; and compatibility, the capability of accounting for, preserving, and retrieving "at each instance of time" non-temporal elements that may help us contextualize the information being provided over time (Artale, et al., 2007, p. 13).

Network Modeling. To operationalize the evolution of information via TIS we relied on network analysis. Networks are a collection of potentially interactive units (Kolaczyk & Csárdi, 2014; Mitchell, 2006; Wasserman & Faust, 1994). These units are typically referred to as *nodes* or *vertices* (e.g., actors, participants, or entities that participants may interact with or be ascribed to), and the connections resulting from their interactions are referred to as *edges* or *links* (Wasserman & Faust, 1994). When the units configuring a given network are of the same type and hierarchy (e.g., students interacting with other students) they form a one-mode network. When the units configuring the network are different (e.g., professors ascribed to their employing universities or ascribed to a particular set of beliefs) they form *two-mode networks*. In this study, we applied network modeling to detect connections among actors (research participants) and the categorized/coded pieces of information or evidence they provided (in a two-mode network) during the data collection.

Temporal Analyses. Following TIS's principles and network modeling, all chronologically categorized pieces of information linking faculty members with the qualitatively coded parts of their discourse were used to recreate the contexts and the evolution and flow of events over time. This temporal component facilitated the visual observation of the creation and re-creation of discourses and knowledge. Specifically, we were able to capture the chronological emergence of information as retrieved from or produced by participants' storytelling (Murray, 2018) and episodic memories (Maxwell, 2013) across each interview among all participants. As depicted in the findings and discussion, the observation

of the temporal emergence allows us to more clearly contextualize the contributions, reasons, and standings of these faculty members.

Our dynamic data visualization and data mining processes employed, allowed us to capture each specific context and even the actual content of the message or code shared by each participant when these connections emerged (Butts et al., 2016; González Canché, 2018). Because each code is chronologically captured following the interview temporal process, the resulting visualization naturally enables us to (a) observe how these asynchronous elements evolved over time and as discussed below, (b) to assess their contribution to our research topic. These chronological depictions provide more transparency to the research analysis while also making this process more interactive.

Data Format. Procedurally, in order to map, organize, and visualize all these interdependence events (MOVIE), we relied on qualitatively coded written information that is structured in an *edgelist*, or list of connections format (Csárdi & Nepusz, 2006; González Canché, 2018). These relationships have two minimum components: a column *A* in a data frame containing the *sender* or *provider* of information (e.g., an interviewee providing episodic memory accounts or a directed message); a column *B* containing the code that was provided by an actor in column *A*. Each row in these two columns is operationalized as a link or connection in the form $A_i \rightarrow B_i$, meaning that an actor in row *i* in column *A* sends a link to an actor or code in row *i* in column *B*. In order to map the evolution of texts, a third column *C* in the dataset must contain the content of the code (i.e., quote) provided by actors in column *A* as it evolved over time, as detailed below.

Additionally, three more columns can add descriptive information to actors, such as personal attributes and characteristics like gender and marital status, as well as job-related indicators such as whether they have one main job or hold multiple appointments, what type of institution is their main employer, and whether they

have insurance or retirement providers, and even if they do not, whether their employer offers these services for faculty holding volatile appointments. These attributes, which are more formally described in Table 2, can be observed by clicking on each participant's representation in our interactive plot (available here https://msgc.github.io/movie/TIAA_Analyses.html).²

Based on network principles, a faculty member is linked to the qualitative codes they provided, with each code weighted to capture the number of times it was mentioned. Additionally, our data analysis and retrieval tool enabled us to easily access the content of information contained in each faculty→code relationship by clicking on the joining lines or links shown in the HTML version of the figures further described below. The result of this click shows the content of the code (AKA a quote) at a given point in time. Because each faculty member provided *N* number of codes during our interviews, the quote (i.e., the actual text constituting a code in a given time) changes over time, making this a dynamic visualization of the evolution of these pieces of information (to access the dynamic output of this analysis, follow this link: https://msgc.github.io/movie/TIAA_Analyses.html). The information resulting from accessing the actual quote of each code can then be triangulated with each participant's attribute. This process makes it possible to gain a richer and more contextualized understanding of the quotes provided by each participant and enhances the transparency of our analytic process.

The frequency of each participant's connections to their respective codes was mathematically analyzed to highlight the relevance of each actor's contribution and each code's prevalence in the network. Based on these frequencies, the edgelist or lists of connections analyzed in this study were read in graphical form to identify measures of importance or centrality, as described in the network analysis literature (González Canché, 2019).

² To replicate the analyses, we offer access to a software to implement these MOVIE analyses here (<https://movie.shinyapps.io/MOVIE/>).

Actor and Code Centralities. In our analytic approach we identified both actors' and codes' relevance, or centrality, relying on three measures—eigenvector, betweenness, and degree centralities (González Canché, 2018). Following a key actor analysis technique (Borgatti, 2006), the importance of units may be better understood as a function of the intersection of two or more of these centrality measures because each of them highlights different roles in the network. The first centrality measure, *eigenvector centrality*, evaluates the relevance of a given unit based on the importance of the units that are connected with such a unit (González Canché, 2018). From this perspective, an individual is relevant if the information this individual provided to the code is shared by other highly active individuals in the network, which may highlight that their contributions (e.g., concerns, ideas, recommendations) are shared by other influential actors in the network. This indicator is referred to as “Influence index” in our interactive visualization and can be accessed by clicking on a circle (code) or triangle (actor).

The second centrality measure we used is *betweenness*, a measure of the extent to which a given unit bridges multiple units (González Canché, 2018). In our case, betweenness helped us visually observe the extent to which actors shared similar codes throughout their interviews. Given the temporal nature of our analysis, betweenness centrality was programmed to evolve so that actors with more qualitative codes in common are visually linked; the size of such common codes reflects their relevance, with bigger sizes indicating greater relevance.

Finally, we also relied on *degree centrality*, which is a count of the number of times that a given actor mentioned a given code. This information allowed us to estimate the percentage with respect to the total number of contributions that an actor mentioned a given code. For example, if an actor mentioned “job_insecurity” once during her entire participation, and the number of contributions of this actor was 100, for this actor, “job_insecurity” would not be that important or relevant to describe her job conditions. If for another actor this code represented a quarter of her/his interactions, it

is reasonable to assume that this issue is much more prevalent for this actor given her/his particular situation. To access this information in the HTML version of the analyses, users can click on each link between actors and codes. As stated above, the information displayed also contains the *actual content* of that code, which is also referred as a *quote*. In sum, key actor analysis involving these three measures of relevance is important given that it uncovers the structure emerging from sharing codes, which detects particularly relevant topics among adjunct faculty members.

Findings

Participants' attributes

Table 2 lists all participant attributes collected during the interview process, disaggregated into faculty employed at multiple or at a single postsecondary institution. Although we aimed to get all these attributes for every participant, some faculty did not answer some prompts either because they did not feel comfortable, like in the case of their current highest degree (only 26 faculty replied), or because they did not know the answer, like in the case of the provider or the availability of a providers of savings and/or retirement plans or programs (six faculty did not respond to this prompt).

Personal Attributes. The overall sample had about 60% representation of women, but a greater percentage (64%) of women faculty are employed in a single institution. Another indicator of interest for us, given its repercussions for savings and retirement, is marital status. About one-third of faculty employed at multiple institutions reported not having a partner. In the case of faculty employed in a single institution, only two of the 11 (or 18.2%) reported being single or divorced. We also asked participants about their seniority level because of its effects on retirement plans and prospects. This indicator, as reported in Table 2, refers to the stage in the career of the faculty members, with those categorized as “seniors” being employed for 10 years or more in academe. This distribution was similar for both faculty employed at a single or multiple institutions, with 54.5% and 58.6% of them, respectively, being classified as seniors.

Another indicator of interest for us was highest current degree. Overall, only one faculty member reported holding a bachelor's degree, two reported holding a JD. The most popular degree reported was PhD, with 44.4% and 50% of faculty employed at multiple and single institutions, respectively, reporting this degree level. The second most prevalent degree reported was master's degree, with nine faculty in total. Additionally, two faculty employed at multiple institutions also reported being PhD candidates.

Regarding their self-assessed knowledge of retirement plans or the retirement process in general, 55% of all participants reported feeling comfortable with their knowledge level. This percentage was higher among faculty employed at different institutions, reaching 58.6%, whereas for faculty employed at a single institution this percentage was 45.5%.

In terms of the availability of a provider in their employing institution, the most popular provider was TIAA (44.1%).

About 60% of participants reported that they are or have participated in retirement plans or that they have some amount in those plans, even if they are currently not contributing, but only 45.5% of those employed at a single institution reported having participated. Health insurance participation rates are lower, with 44.8% of faculty employed at multiple institutions but only 27.3% of those employed at a single institution having a current insurance policy. Overall, about 44.8% of faculty employed at multiple institutions mentioned being worried about their ability to retire, with a lower proportion (36.4%) of those employed at a single institution expressing this concern. Finally, we also asked participants to identify their primary employing institution. Of faculty employed at multiple institutions, about 20% reported a community college as their primary employer and 42.3% reported a public four-year institution as their primary employer. In the case of faculty employed at a single institution, 54.6% of them reported a community college as their sole employer.

Table 2. Distribution of participants' personal and professional attributes by single or multiple employment status

	Category	Multiple Institutions		Single Institution		Total	
		Freq	Percent	Freq	Percent	Freq	Percent
woman	Man	13	44.8	4	36.4	17	42.5
	Woman	16	55.2	7	63.6	23	57.5
	all	29	100	11	100	40	100
single_divorced	No	19	65.5	9	81.8	28	70
	Yes	10	34.5	2	18.2	12	30
	all	29	100	11	100	40	100
seniority_level	No senior	12	41.4	5	45.5	17	42.5
	Senior	17	58.6	6	54.5	23	57.5
	all	29	100	11	100	40	100
highest_current_degree	BA	0	0	1	12.5	1	3.8
	JD	2	11.1	0	0	2	7.7
	Masters	6	33.3	3	37.5	9	34.6
	PhD	8	44.4	4	50	12	46.1
	PhD candidate	2	11.1	0	0	2	7.7
	all	18	100	8	100	26	100
knowledgeable	No	12	41.4	6	54.5	18	45
	Yes	17	58.6	5	45.5	22	55
	all	29	100	11	100	40	100
Availability of provider	Fidelity	0	0	1	10	1	2.9
	Independent	1	4.2	0	0	1	2.9
	Navy	1	4.2	0	0	1	2.9
	None	1	4.2	0	0	1	2.9
	Not specified	1	4.2	0	0	1	2.9
	Other	5	20.8	1	10	6	17.6
	Other state	1	4.2	0	0	1	2.9
	Private state run	1	4.2	0	0	1	2.9
	Self	0	0	1	10	1	2.9
	Current state	1	4.2	0	0	1	2.9
	TIAA	9	37.5	6	60	15	44.1
	TRS (Georgia)	2	8.3	1	10	3	8.8
	Vanguard	1	4.2	0	0	1	2.9
	all	24	100	10	100	34	100
currently_w_retirement	No	11	37.9	6	54.5	17	42.5
	Yes	18	62.1	5	45.5	23	57.5
	all	29	100	11	100	40	100
currently_w_insurance	No	16	55.2	8	72.7	24	60
	Yes	13	44.8	3	27.3	16	40
	all	29	100	11	100	40	100
worried_retirement_savings	No	16	55.2	7	63.6	23	57.5
	Yes	13	44.8	4	36.4	17	42.5
	all	29	100	11	100	40	100
main_employer	Community_college	5	19.2	6	54.6	11	29.7
	Law firm	1	3.8	0	0	1	2.7
	Outside_academia	1	3.8	0	0	1	2.7
	Private 4-year	8	30.8	2	18.2	10	27
	Public 4-year	11	42.3	3	27.3	14	37.8
	all	26	100	11	100	37	100

Analyses of interview responses

Our coding schemes rendered a total of 705 “**actors** → **codes**” relationships. In other words, there were 705 total code contributions made by the 40 participants in the dataset. Additionally, our detailed analysis of the content of responses rendered 103 unique qualitative codes, grouped in eight code categories. Although our main analyses will be based on “**actors** → **codes**” relationships, as part of our analytic findings we also show the analyses of “**codes** → **code categories**” available in HTML format here https://msgc.github.io/movie/codes_codes_cat_TIAA.html.

Similarly, although we present the main findings in graphical form below, we encourage readers to interact with the HTML version of these “**actors** → **codes**” findings at https://msgc.github.io/movie/TIAA_Analyses.html.

Figure 1 shows the initial state of the interactive output that readers will observe when first accessing the HTML file. The three lines located at the top right of the figure are controls for the speed of the temporal visualizations or movements. The higher the number selected, the slower each transition will be. The controls shown in the bottom right activate the transitions. The farthest right and left buttons advance the animation forward or backward one transition point at a time. For example, the current state of the network shown in Figure 1 is zero. To observe the first contribution, press the farthest right button. The buttons to the right and left of the pause button show the evolution of interactions from zero to N. The backward or rewind button, located to the left of the pause button, initiates the devolution of these interactions until time zero. Use the pause button to stop the animation at any point in between zero to N.

The numbers at the bottom indicate the number of contributions each participant made to the interview. That is, at least one participant provided more than 60 codes (61 quotes to be precise) as part of their interview. The number zero indicates that no interview has started yet across all 40 participants and the 103 codes they provided collectively. All codes are orange circles; other colored circles indicate various job attributes. Shapes other than circles reflect individual or personal attributes. The information box in Figure 1 shows the personal attributes for participant ID23 as well as details about her contributions to the research. As the box shows, this person is not participating in a retirement or savings retirement plans, and while she is knowledgeable of this process, she is worried about her abilities or possibilities to retire. This personal information, drawn from information contained in Table 2, is included with the goal of providing more context to each participant’s contribution.

The “No. of contributions” line in the information box indicates the total number of codes or quotes that participant ID23 provided to our research. The “Influence index” refers to the eigenvector centrality, which is standardized to range between 0 and 1, with 1 being the highest centrality possible. This information box also indicates that this participant does not hold multiple jobs, is employed at a public two-year institution, and did not disclose her maximum degree attained. Moreover, she is married and is classified as holding a senior appointment given her employment length. The HTML files display similar information as the one depicted here for every actor. The box information presented when clicking a given code will contain the relevance index and a count of the number of times that code was used by research participants.

Figure 1. Initial state of the evolution of information representing 40 academics and 103 codes

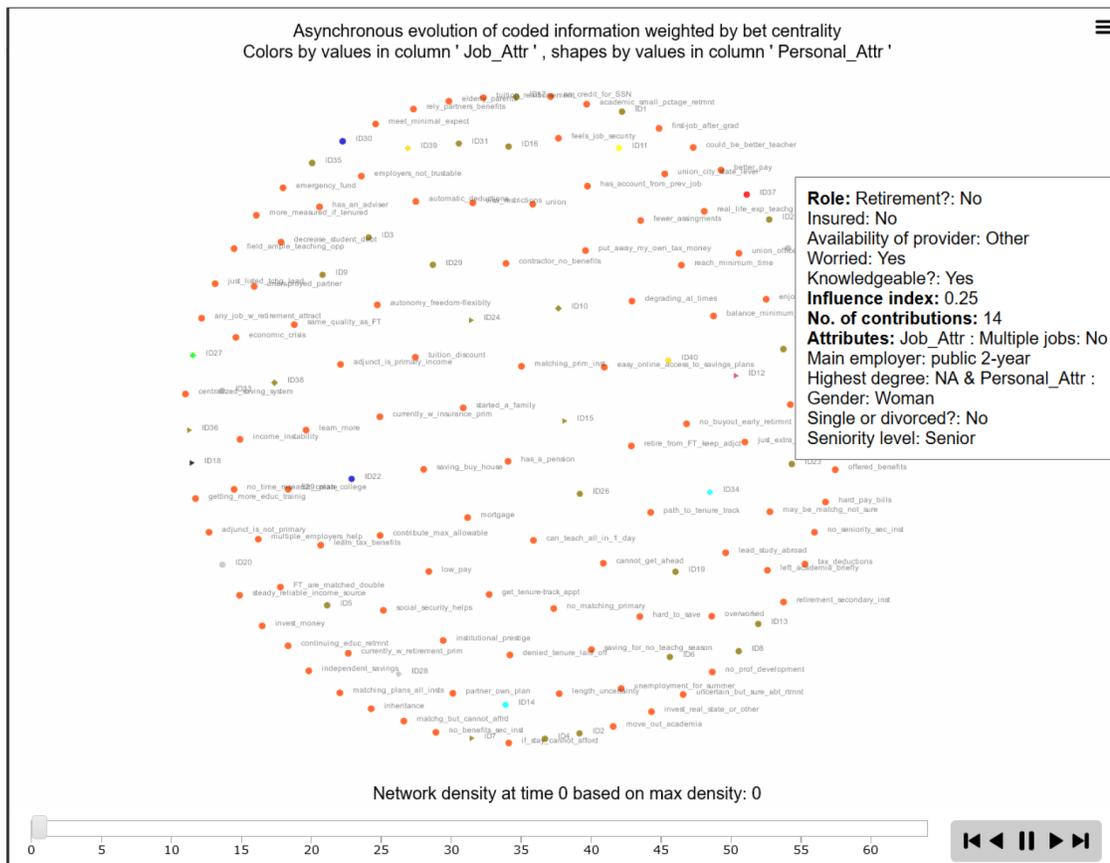


Figure 2 shows the first code, or quote, provided by each respondent. Although each respondent participated in asynchronous interviews, our analytic approach enables us to observe their responses collectively. From these collective responses, we can clearly observe several group formations that classified adjunct faculty into (a) those who decided to take this appointment because they enjoy teaching (upper left side of the map); (b) those who took this appointment because it is a secondary

source of income that is not their primary job (middle left side); (c) those who took this appointment because it was their first job after graduate school (upper right side); and (d) another group of four faculty who accepted this appointment because it was a full-time offer (middle right side). Other initial responses included reasons like the availability of a union, having access to savings and retirement plans, and having a safety net due to the loss of other appointments.

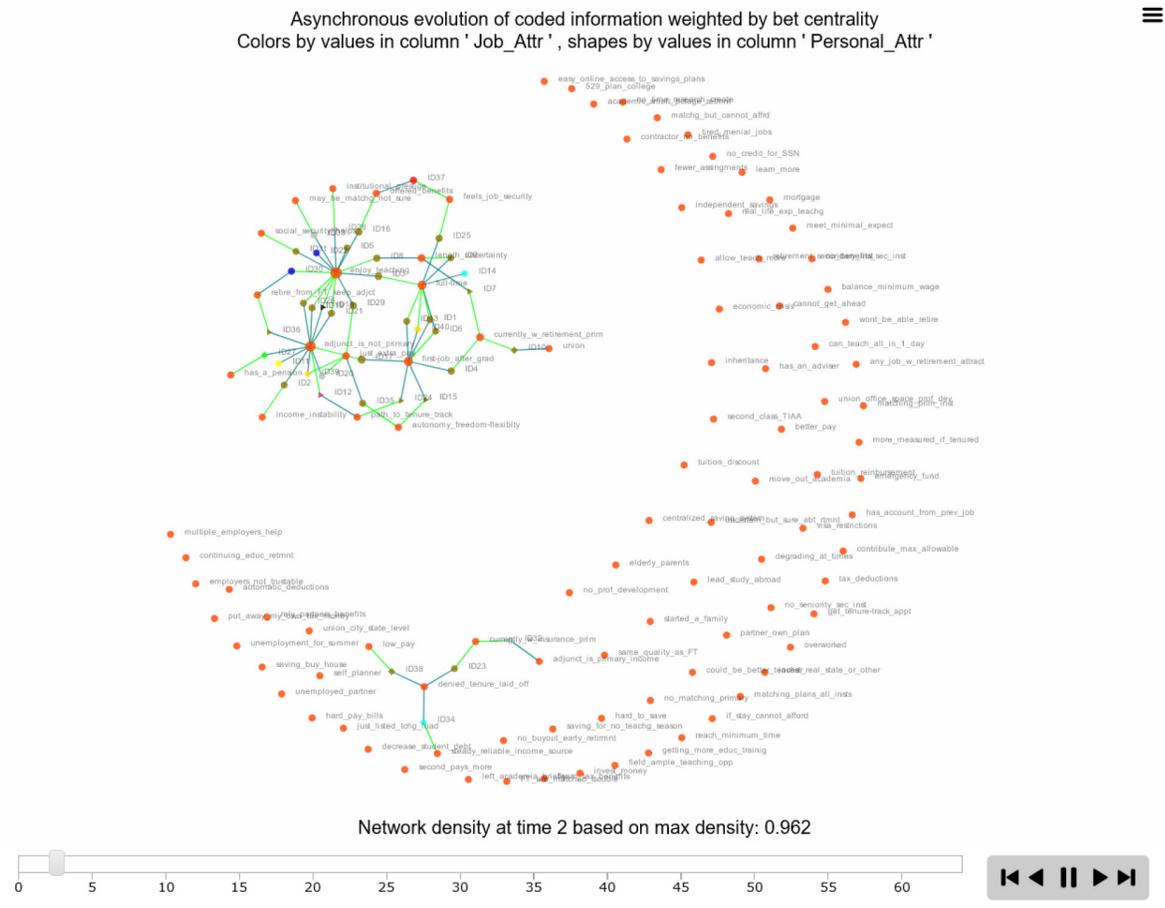
Figure 2. Initial codes provided by all 40 participants



The second set of codes, represented in Figure 3, reflects the formation of a cluster encompassing four main codes that came together as opposed to being separated, as shown in Figure 2. This cluster is configured by enjoyment

of teaching, adjunct is not the primary occupation, this appointment was the first job after grad school, and this appointment is a full-time job.

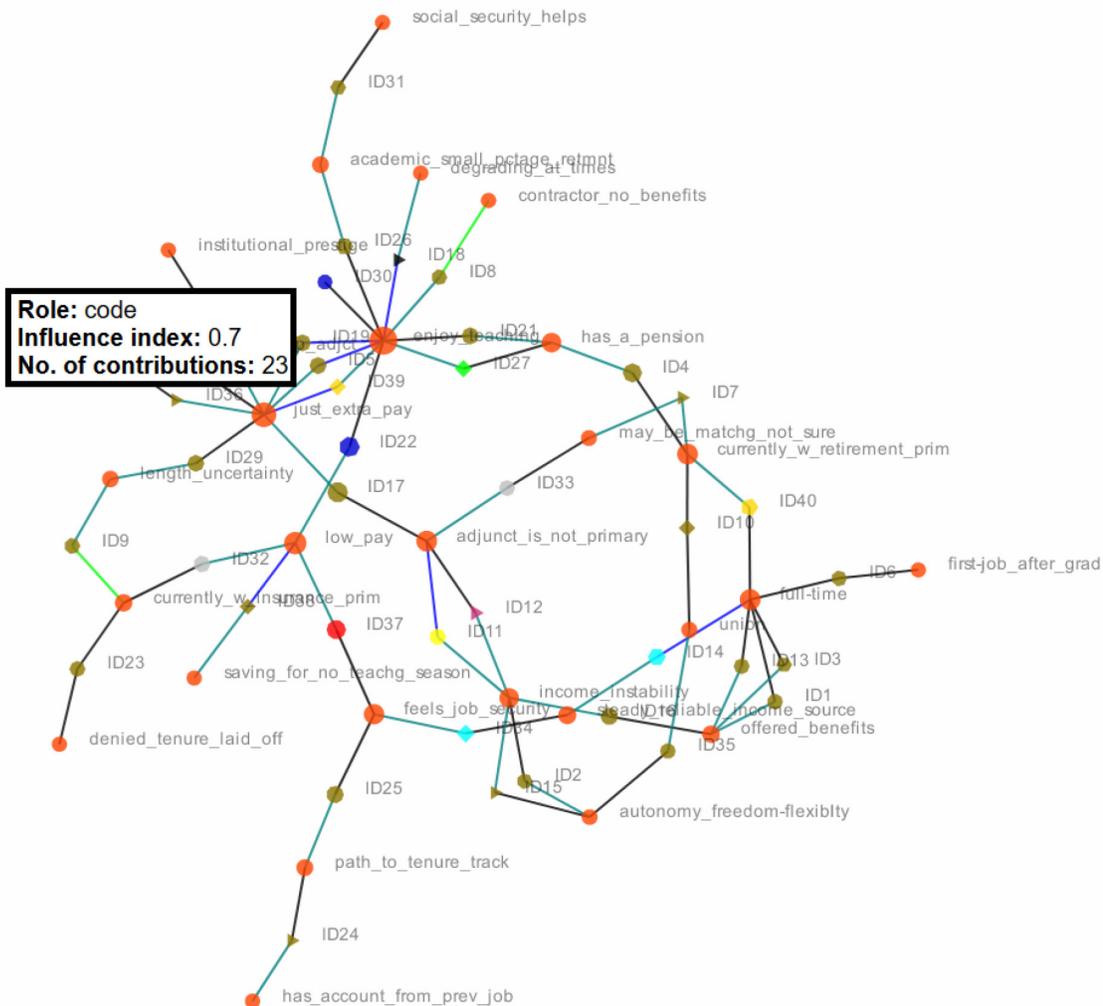
Figure 3. Second set of contributions



The relevance of including context in the responses of these participants is represented in the zoomed-in version of Figure 3, shown in Figure 4, where we can focus on participants' intersecting between these two themes. That is, with these intersections we can observe that a subset of adjunct faculty hold these appointments because they enjoy teaching but also because they have other primary appointments. So, in a sense, one could even say that for these faculty, this appointment is an activity that they can afford to participate in because it is not their primary job. However, by clicking on the codes “adjunct is not primary” and “enjoy teaching”

in the HTML versions, as depicted in Figure 4, we can see that, overall, “enjoy teaching” has a much more relevant presence among the participants. Indeed, its influence index is 1, the highest possible based on the eigenvector centrality measure described above. This difference in influence indicates that the enjoyment of teaching, although at this particular point not universally shared, was consistently mentioned by most or all faculty members, whereas this common presence is not true for the code “adjunct is not primary,” which is congruent with our discussion of Table 2.

Figure 5. Zoomed-in rendering including second and third contributions



By the fourth contribution of all participants (Figure 6), the code “just extra pay” became the unit with the highest betweenness centrality across the entire network (as depicted by its size), indicating that this code brought the majority of the “common” conversation together; that is, this code served as a link across participating faculty members. Note that at this point the relevance of unions started to gain momentum. Indeed, this code, representing the availability of unions in the academic employing institution, has an influence index of 0.98. The relevance of unions for these faculty is captured by actor ID17, who at this point mentioned that the presence of a union brings more security to her appointment:

They [union] kind of normalized it a lot more. So, at the end of every semester, [you] get this letter that basically thanks you for teaching. And there’s that. You know, there’s some kind of reasonable assurance that you will be granted a class to teach next semester if something’s available. So that’s something that I could find and read if you need the specifics. But there’s this more of a greater formality to the process. And my guess is that’s with the union and lawyers that is, then that is that we get at the end of the semester. (ID17, not insured, no retirement plan,

The eleventh iteration highlights a concern shared by some academics regarding the possibility of having matching plans across all employing institutions. This concern resembles the idea of having or enacting a centralized savings system so that these faculty do not have to worry about changing plans when moving from institution to institution or when simultaneously employed at multiple institutions. Nonetheless, despite the

soundness of these ideas, the influence indices of these codes were low, at 0.55 and 0.25 for matching plans and centralized savings systems, respectively, as can be seen in Figure 9. That is, some pieces of information that were not shared widely among participants may nonetheless provide relevant ideas to be considered when designing savings and retirement plans.

Figure 9. Cross-institutional matching plans and centralized saving systems



Around midway through the interviews, most participants started to express shared concerns related to holding an adjunct appointment. Specifically, in the top left corner of Figure 10, individual ID10 said that full-time nonadjunct professors are matched double the amount that they contribute to their retirement plans. Similarly, ID11, in the bottom right corner of Figure 10, reported that their adjunct position feels “degrading at times” (influence index of 0.97), mostly based on the low pay associated with the appointment. Indeed, ID11’s quote captures the meaning of this code:

[holding this appointment is] downright degrading at times to be really honest, because I have significant clinical experience and educational experience. I taught for 15 years before I went back for my second graduate degree. And so, it could be a little challenging. So, in some ways, being adjunct can make me feel like a slightly elevated level graduate assistant. (ID11, woman,

no insurance and no retirement through academia, she saves by herself and with her main employer)

Although there is little to nothing that organizations like TIAA can do about low pay for adjunct faculty, this constraint can be accounted for when crafting plans for these faculty members. ID18 noted that having this job as her main source of income makes it difficult to pay bills. Indeed, as an immediate follow-up to these concerns, faculty constrained by low pay stated that even though they appreciated employer matching and having this option at their institutions, they cannot afford to participate. Specifically, participant ID15 said that “there is a 6% match retirement plan available to me at community college of Philadelphia. I haven’t taken advantage of it because [...] I don’t want to give up that 6% because, uh, I don’t make that much money.” (ID15: No retirement no insurance, married, single job at a public two-year institution.)

Figure 10. Examples of concerns shared by faculty members



Among the incentives to participate that faculty members mentioned were tax deductions, including the possibility of contributing to retirement plans pretax, as well as becoming more proficient in using tax breaks and tax

advantages for retirement. These codes, however, have lower influence levels (0.36 for tax deductions and 0.07 for learning tax benefits or breaks).

Code → Code_categories description

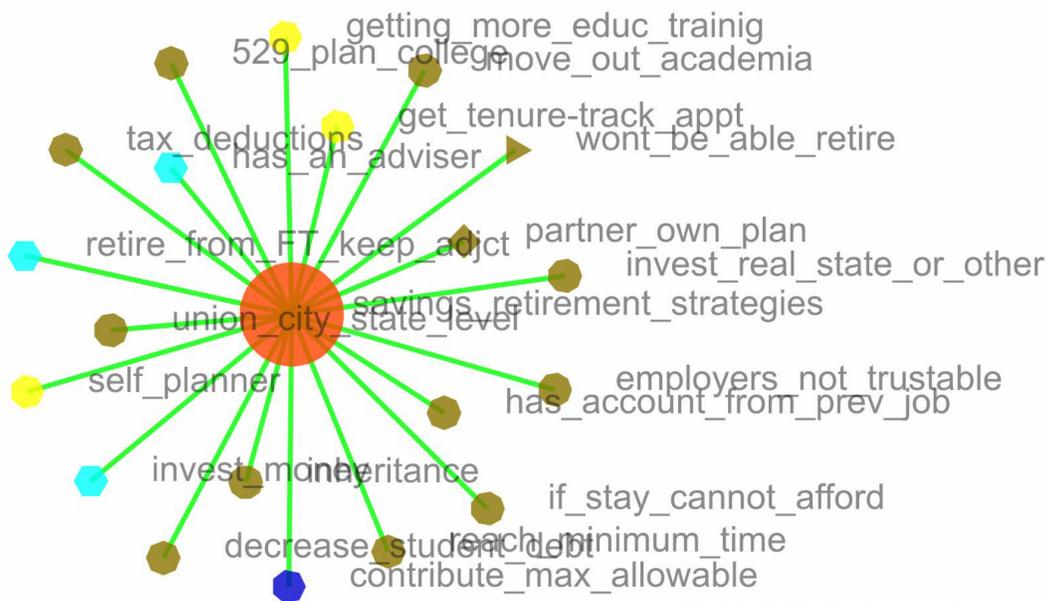
To summarize these findings, we present an analysis of the codes and their relations with their code families or categories. As indicated earlier, the interactive HTML versions of these analyses are available at https://msgc.github.io/movie/codes_codes_cat_TIAA.html.

The most frequently mentioned code family or category was “savings_retirement_strategies,” with 137 mentions. Among the strategies mentioned was getting more education or training, particularly a doctorate, with the hopes of attaining a tenure-track appointment. Other

adjunct faculty said that they plan to leave the academia because if they stay they would not be able to afford to retire. This code family also accounted for faculty responses representing savings and retirement accounts from previous jobs or from their partner. Additionally, some academics were interested in investing in real state as a strategy to generate income post-retirement.

Faculty who are part of a union were overall better off. These faculty were interested in tax deductions, contributing maximum amounts allowable to be matched, and even mentioned having access to advisers.

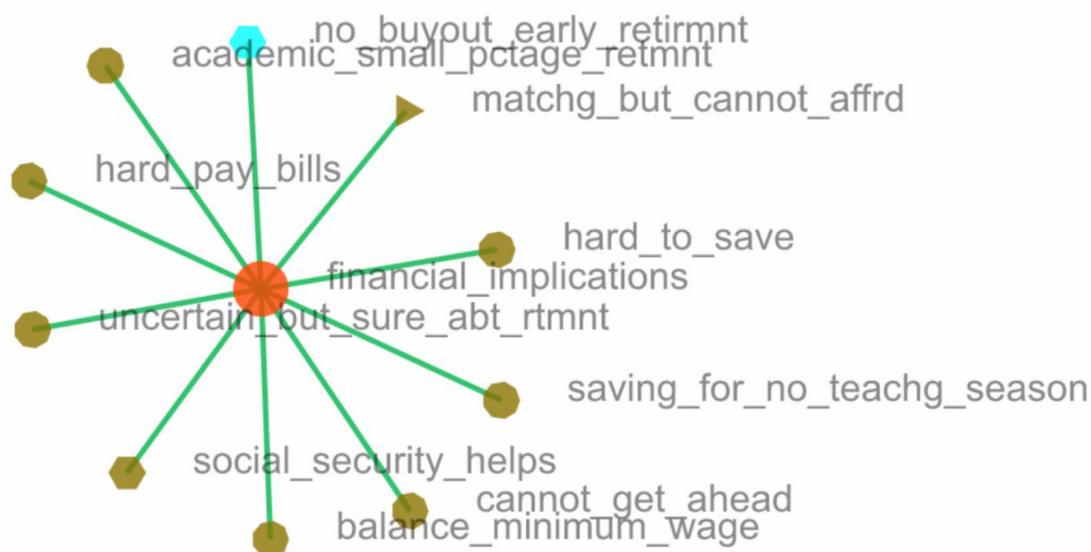
Figure 11. “Code → Code Categories” for saving and retirement strategies



The family of codes referred to as “financial implications” resulting from holding an adjunct position summarized participants’ concerns and uncertainty about their retirement prospects. For example, a faculty member mentioned that even though their salary of \$34,000 dollars might seem high, after accounting for time spent

preparing for class and grading implies they actually earn the equivalent of minimum wage, which makes it difficult to save, pay bills, and overall get ahead in life. Indeed, even if there their employer offers a matching plan, they cannot afford to participate and thus forfeit that benefit.

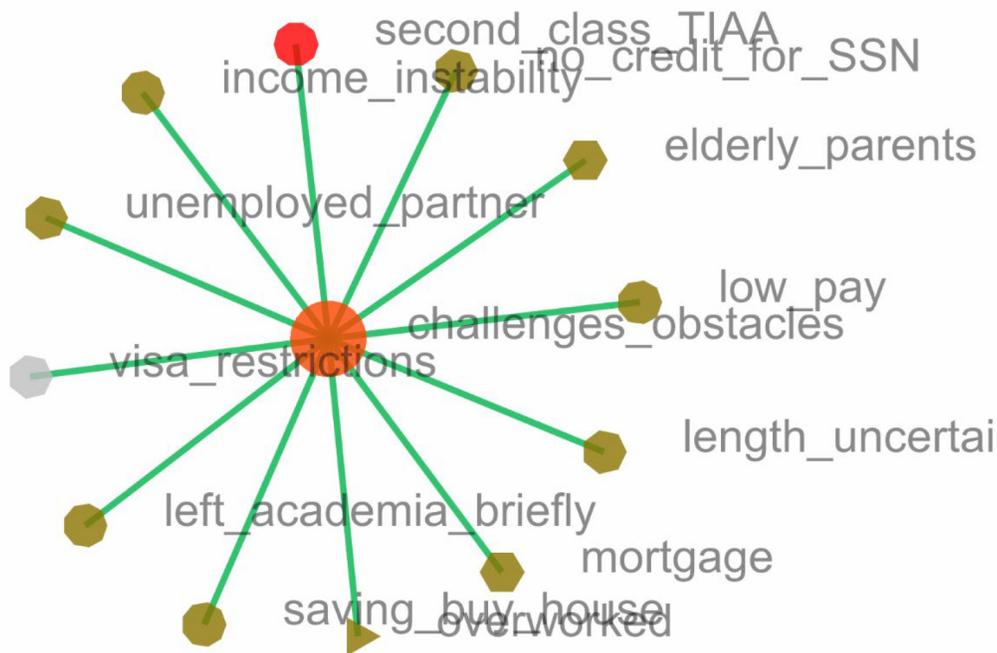
Figure 12. “Code → Code Categories” for financial implications



The next family of codes analyzed is “challenges and obstacles” related to participating in savings and retirements. Once more, academics mentioned low pay, income instability, and uncertainty about employment contract length as factors directly associated with their short-term academic appointments. Other obstacles were outstanding mortgages, unemployed partners, elderly parents, and in one case, visa restrictions. Note that the faculty member in Figure 13 mentioned to be saving to buy a house, which impedes her participation in savings

and retirement. This individual is interested in investing in real estate as a strategy to retire, which impedes her from participating in a matching plan. Although this saving behavior to buy a house is consistent with her strategy to retire, it may also reflect unrealistic expectations in terms of real estate investment. This person is close to 50 years of age, has outstanding student loan debt, is a single mother, and has not owned a house.

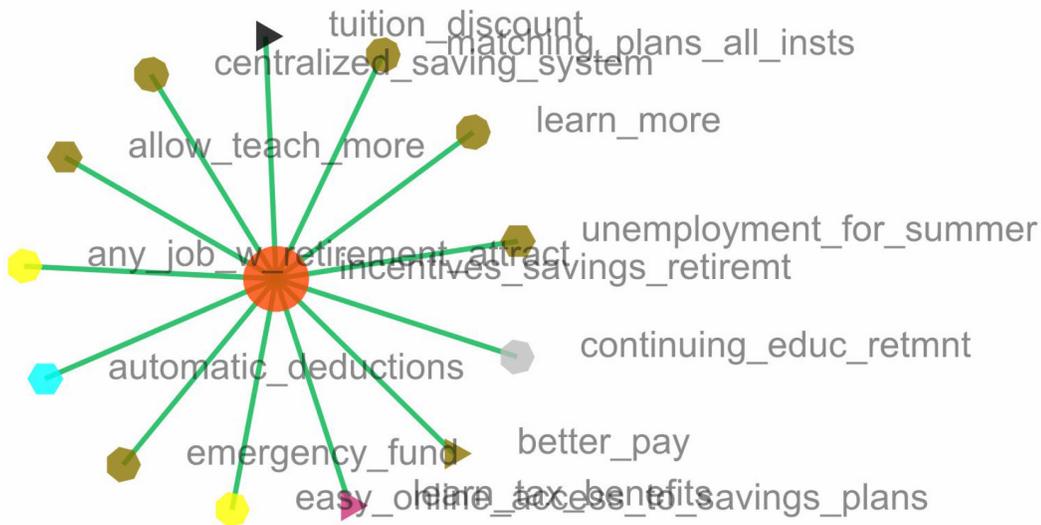
Figure 13. “Code → Code Categories” for challenges and obstacles



Our next family of codes accounted for the incentives for savings and retirements that faculty mentioned. Among the items mentioned in this family of codes were: investing money saved through tuition discounts into a retirement plan (these tuition discounts are typically offered by the employing college for full-time faculty and staff as a benefit for their offspring or for their spouses), a desire for matching plans that span institutions, and a desire for a centralized savings systems. Similarly, faculty also mentioned that it would be helpful to be able to teach more classes at their employing college; in some instances, they are not allowed to teach more than three classes due to legal requirements concerning

part-time and full-time status. Relatedly, some faculty said that if no more classes are allowed, their employers should at least consider offering them more pay for the classes they do teach. Some also mentioned the possibility of applying for unemployment benefits during their nonteaching season. Faculty who belong to the union system are particularly pleased with automatic deductions from their paychecks that are matched by their employers. Finally, about half of faculty expressed interest in learning more about retirement plans as well as participating in continuing education programs related to retirement strategies, benefits, and plans.

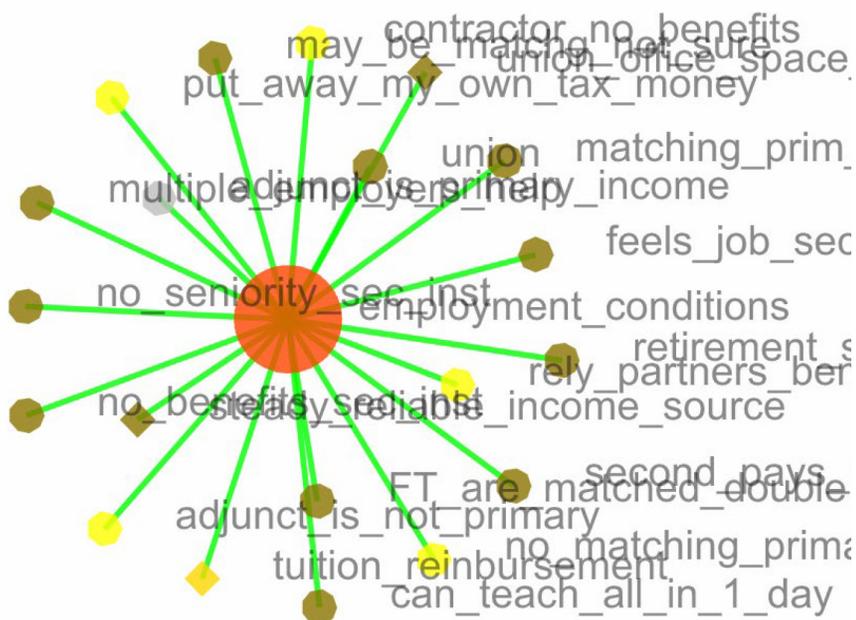
Figure 14. “Code → Code Categories” relationships related to incentives for savings and retirement



Finally, some employment conditions affect these faculty members’ participation in savings and retirement prospects. For example, in Figure 15 we see that being classified as a contractor and not having seniority is an important hurdle to participation. Similarly, related to the previously mentioned reports of the position feeling degrading at times, some participants pointed out full-time faculty getting bigger matching contributions to

retirement accounts. Not only do full-time tenured and tenure-track faculty receive substantially more pay, but in some cases their employers’ matching plans *double* the amount these faculty contribute to their retirement plans. As one faculty member said, [tenured and tenure-track faculty] only have to contribute 5%, and then the college will match them at 10%” (ID1, woman, divorced, multiple jobs, with insurance, plan provider: Fidelity).

Figure 15. “Code → Code Categories” relationships for employment conditions



Discussion

The analyses presented in this study indicate that faculty members holding these volatile contracts conceptualize and deal with job insecurity in different ways. First, this is not a homogeneous group. We detect at least two main groups: faculty who are completely dedicated to academia and hold one or multiple adjunct appointments, and faculty for whom holding these semester-to-semester or year-to-year contracts is an opportunity to make extra money. Those in the latter group are financially stable and have retirement plans available from their primary employers; some in this group go so far as to view their earnings from this employment as “vacation money” (see respondents ID5, ID19, ID20, and ID34).

On the other hand, members of the former group, who we refer to as *volatile adjunct faculty* (which may overlap with the population of interest surveyed by Yakoboski in his 2018 and 2019 reports), tend to be unable to afford participation in retirement plans even when at least one of their employers offers matching contributions. For members of this group, what some of them refer as the “not teaching season,” typically the summer months,

is a period of struggle; many report having to save their teaching salary during the teaching months to cope with these nonteaching months. These faculty clearly already have a savings mentality and attitude, but their need to save money for the short term precludes their participation in longer-term savings plans.

To be able to participate in retirement plans, *volatile adjunct faculty* mentioned a number of strategies that they have used or were considering using, included getting more education or training to increase their chances of obtaining an actual full-time or even a tenure-track academic job. Others viewed their current short-term employment conditions as unsustainable and are considering leaving academia. Without a doubt a key factor enhancing the retirement plans of these *volatile adjunct faculty* was the presence of a union, either at the state, city, or institution level—even at community colleges, which tend to be underfunded nationwide.

Among the most relevant factors that could potentially impact the savings and retirement plans of *volatile adjunct faculty* are better pay, being allowed to teach more classes, and having the option of teaching in the

summer months. These are factors that may impact the amount, or availability, of disposable income that could then be invested in retirement plans and, if matched, could truly be beneficial for them in the long run. Additionally, as seen in Table 2, over half of faculty mentioned an interest in learning more about these plans along with tax breaks and other benefits they may not know.

Faculty holding multiple adjunct jobs mentioned the difficulty of having disjointed plans and wondered about the possibility of having a consolidated retirement plan across institutions and even a matching program that works with their total combined contribution. Other programmatic inclusions that *volatile adjunct faculty* mentioned included matching and tax incentives, even in cases when participation is not possible due to low salary and having to save for nonteaching months. A programmatic question that emerged given the matching differentials for full-time and adjunct faculty was why contribution percentages are higher for full-time faculty, who already earn more than adjunct faculty? That is, if a full-time faculty earns \$50,000 and contributes 5% and the institution matches that 2-for-1, the employer's contribution is \$5,000. If an adjunct earns \$25,000 and is able to contribute 5%, and the institution matches this dollar-for-dollar, the employer's contribution is \$1,250. If the institution matches the adjunct's contribution 2-for-1, the employer's contribution would still be 50% lower (\$2,500) than when matching a full-time faculty. Although, arguably, there are more adjunct faculty, these matching differentials seem to be an important source of concern for adjunct faculty, some of whom see this appointment as degrading at times.

Closing thoughts and future directions

This qualitative study with mixed methods research methods did not aim to generalize these findings outside our participants. However, we uncovered important questions that could be addressed in the development of a survey designed to better guide programmatic indicators to serve these faculty members.

Since these groups of faculty members are not homogeneous, it would be useful to see what proportion

of them nationwide hold these volatile appointments as their primary source of income (i.e., as faculty holding volatile appointments) and what proportions hold these appointments *in addition* to their main appointment or whether they consider this appointment as their retirement job (a job they can conduct when they retire from their main job). In this respect, it is important to note that Yakoboski's research (2018), relying on a sample of 502 faculty, found that the part-time nontenure-track academic work force may be separated across three groups: (a) those with career employment outside higher education, accounting for 23% of his sample; (b) professors retired from a tenured position, which account for 11% of the survey's sample; and 66% correspond to our faculty members holding volatile employment conditions (though none are full-time). Given these distributions, the insights and understandings from our qualitative research are worrisome. If Yakoboski's distributions can be extrapolated to the population of faculty holding volatile appointments, even in the presence of institutional support to participate in savings and retirement plans, participation may be difficult for the vast majority of faculty holding insecure contracts.

Similarly, particularly among faculty holding multiple volatile appointments, it would be useful to know if they have individual savings even if such accounts are intended to be used in the short term, such as during nonteaching months. Such information is a useful indicator of their overall commitment to saving money. In this regard, once more Yakoboski's findings are informative. He found that almost 90% of part-time nontenure track faculty report that they (and their spouse or partner) are currently saving with retirement as the most common reason for saving and two-thirds of them actively saving for reasons aside from retirement (Yakoboski 2019). Again, despite difficulties associated with employment volatility these faculty continue to demonstrate an active commitment to save.

Informed by our findings and by previous work conducted by Yakoboski (2018, 2019), if a national survey is designed or adapted, we recommend keeping the list of questions short and with Yes or No answer options. As an example, we propose the following items.

- Do you currently hold or have held in the past two academic years more than one adjunct appointment at the same time?

Yes _____ No _____

- Would you classify your academic employment as your main source of income or simply as extra pay?

Main source of income _____ Extra pay _____

- Do you currently have, or have you had a savings or retirement account provided by your academic employer?

Yes _____ No _____

Why? _____

- Are you interested in participating or continuing to participate in a savings program provided by your academic employer?

Yes _____ No _____

Why? _____

- Do you currently have, or have you had a retirement account provided by your academic employer?

Yes _____ No _____

- Are you interested in participating or continuing to participate in a retirement program provided by your academic employer?

Yes _____ No _____

Why? _____

- If there was a consolidated savings and retirement program that would consider your entire academic earnings, even across multiple employing institutions, would you be interested in participating?

Yes _____ No _____

Why? _____

- If there was a cross-institutional matching contribution plan (where you place X% and are matched this amount) that would consider your entire academic earnings, would you be interested in participating?

Yes _____ No _____

Why? _____

Closing thoughts

The academics who participated in our study are not a homogeneous group. As with any group, some face greater financial constraints. Although the prevalence of each faculty type is currently unknown at the population level, developing plans with programmatic features that may benefit these academics is relevant and worth pursuing. The current pandemic and the reliance on online learning has without a doubt posed more challenges for these faculty members, especially as it relates to technological hurdles that, in addition to decreases in enrollment rates, may jeopardize the filling of classes. The repercussions of the pandemic are yet to be observed, and the design of plans to serve this subset of population is perhaps needed now more than in past decades. The presence and prevalence of full-time adjunct faculty may increase as institutions face enrollment declines. Since these faculty are less costly, institutions may rely on their services even more. The long-term negative effects of temporary employment without seniority or retirement plans could be ameliorated with well-crafted plans designed to serve most at need. We hope the information provided in this report can be used to design such plans.

References

- Alexander, E., Eppler, M. J., & Bresciani, S. (2016). Visual replay methodology: A mixed methods approach for group discussion analysis. *Journal of Mixed Methods Research*, 13(1), 33-51.
- American Federation of Teachers. (2020). *An army of temps: AFT 2020 adjunct faculty quality of work/life report*. https://www.aft.org/sites/default/files/adjuncts_qualityworklife2020.pdf
- Artale, A., Parent, C., & Spaccapietra, S. (2007). Evolving objects in temporal information systems. *Annals of Mathematics and Artificial Intelligence*, 50(1), 5-38.
- Baldwin, R. G., & Wawrzynski, M. R. (2011). Contingent faculty as teachers: What we know; what we need to know. *American Behavioral Scientist*, 55(11), 1485–1509.
- Bogdan, R., & Bilken, S. K. (2007). *Qualitative research for education: An introduction to theories and methods* (5th ed.). Pearson.
- Bolitzer, L. A. (2019). What we know (and don't know) about adjunct faculty as teachers at four-year institutions. *The Review of Higher Education*, 43(1), 113–142.
- Borgatti, S. P. (2006). Identifying sets of key players in a social network. *Computational & Mathematical Organization Theory*, 12(1), 21–34.
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. sage.
- Butts, C. T., Leslie-Cook, A., Krivitsky, P. N., & Bender-deMoll, S. (2016). networkDynamic: Dynamic extensions for network objects. *R package version 0.9. 0*.
- Charlier, H. D., & Williams, M. R. (2011). The reliance on and demand for adjunct faculty members in America's rural, suburban, and urban community colleges. *Community College Review*, 39(2), 160–180.
- Coalition on the Academic Workforce. (2012). *A portrait of part time faculty members*. http://www.academicworkforce.org/CAW_portrait_2012.pdf
- Creswell, J. W. (2012). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). Sage.
- Cross, J. G., & Goldenberg, E. N. (2009). *Off-track profs: Nontenured teachers in higher education*. MIT Press.
- Csárdi, G., & Nepusz, T. (2006). The igraph software package for complex network research. *InterJournal, Complex Systems*, 1695(5).
- Eagan, M. K., & Jaeger, A. J. (2009). Effects of exposure to part-time faculty on community college transfer. *Research in Higher Education*, 50, 168–188.
- Ehrenberg, R. G., & Zhang, L. (2005). Do tenured and tenure-track faculty matter? *Journal of Human Resources*, 45(3), 647–659.
- Eickhoff, M., & Wieneke, R. (2018). Understanding topic models in context: A mixed-methods approach to the meaningful analysis of large document collections. *Proceedings of the 51st Hawaii International Conference on System Sciences*.
- González Canché, M. S. (2018). Geographical network analysis and spatial econometrics as tools to enhance our understanding of student migration patterns and benefits in the US higher education network. *The Review of Higher Education*, 41(2), 169–216.
- González Canché, M. S. (2019). Geographical, statistical, and qualitative network analysis: A multifaceted method-bridging tool to reveal and model meaningful structures in education research. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research*, Vol. 34. Springer.

- Huang, R. (2018). RQDA: R-based qualitative data analysis. *R package version 0.3-1*. Retrieved from <https://cran.r-project.org/web/packages/RQDA/RQDA.pdf>
- IPEDS (2019). Employees by Assigned Position, Number of staff by occupational category, faculty and tenure status: Fall 2019. National Center for Education Statistics. Available here: <https://nces.ed.gov/ipeds/datacenter/data/EAP2019.zip>
- Jacoby, D. (2006). Effects of part-time faculty employment on community college graduation rates. *Journal of Higher Education*, 77(6), 1081–1102.
- Jaeger, A. J., & Eagan, M. K. (2011). Examining retention and contingent faculty use in a state system of public higher education. *Educational Policy*, 25(3), 507–537.
- Kezar, A., & Sam, C. (2010). *Understanding the new majority of non-tenure-track faculty in higher education: Demographics, experiences, and plans of action* (ASHE Higher Education Report, 36[4]). Jossey-Bass.
- Kezar, A., & Sam, C. (2013). Institutionalizing equitable policies and practices for contingent faculty. *Journal of Higher Education*, 84(1), 56–87.
- Kezar, A. J. (2013). Changing faculty workforce models. *TIAA-CREF Institute*. Retrieved from <https://www.tiaa-crefinstitute.org/public/institute/research/dialogue/workforce-trends-and-issues>
- Kolaczyk, E. D., & Csárdi, G. (2014). *Statistical analysis of network data with R* (Vol. 65). Springer.
- Langen, J. M. (2011). Evaluation of adjunct faculty in higher education institutions. *Assessment & Evaluation in Higher Education*, 36(2), 185–196.
- Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (3rd ed.). Sage Publications.
- Mitchell, M. (2006). Complex systems: Network thinking. *Artificial Intelligence*, 170(18), 1194–1212.
- Murray, M. (2018). Narrative data. In U. Flick (Ed.), *The Sage handbook of qualitative data collection* (pp. 264–278). Sage Publications.
- Schuster, J. H., & Finkelstein, M. J. (2006). *The American faculty: The restructuring of academic work and careers*. Johns Hopkins University Press
- Tashakkori, A., & Teddlie, C. (2008). Introduction to mixed method and mixed model studies in the social and behavioral sciences. *The mixed methods reader*, 7–26.
- Toutkoushian, R. K., Sanford, P., Riffe, K. A., & Ness, E. C. (2018, July). *How do college employees select between defined benefit and defined contribution retirement plans?* (Research Dialogue Issue No. 144). TIAA Institute.
- Waltman, J., Bergom, I., Hollenshead, C., Miller, J., & August, L. (2012). Factors contributing to job satisfaction and dissatisfaction among non-tenure-track faculty. *The Journal of Higher Education*, 83(3), 411–434.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications* (Vol. 8). Cambridge University Press.
- Webber, K. L. (2018, March). *The working environment matters: Faculty member job satisfaction by institution type* (Research Dialogue Issue No. 142). TIAA Institute.
- Yakoboski, P. (2018). Adjunct faculty: Who they are and what is their experience. TIAA Institute: *Trends and Issues*. Available from <https://www.tiaainstitute.org/publication/adjunct-faculty-survey-2018>
- Yakoboski, P. (2019). Adjunct Faculty: Personal Finances and Retirement Savings. TIAA Institute: *Trends and Issues*. Available from <https://www.tiaainstitute.org/publication/adjunct-faculty-personal-finances-and-retirement-savings>
- Yakoboski, P. & DiCesare, P. (2020). Retirement benefits for adjunct faculty. TIAA Institute: *Trends and Issues*. Available from <https://www.tiaainstitute.org/publication/retirement-benefits-adjunct-faculty>

About the author

Manuel S. González Canché holds a Ph.D. in Higher Education with cognates in Biostatistics and Economics. He joined the Higher Education division as an associate professor in 2017 and serves as affiliated faculty with the Human Development and Quantitative Methods division and the International Educational Development Program. His research follows two interconnected paths. The first concerns issues of access, persistence, and success, with an emphasis on institution effects—such as 2-year versus 4-year college and distance from home—on students' outcomes. The second focuses on higher education finance, with emphases on spatial modeling and competition based on spatial proximity and spillover effects. Methodologically, González Canché employs econometric, quasi-experimental, spatial statistics, and visualization methods for big and geocoded data, including geographical information systems and network modeling.